DELL EMC NETWORKING S4048-ON SWITCH
10/40GbE top-of-rack open networking switch

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 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 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 ovelray 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 lilke 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.

- 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.

- 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 support Fastboot feature enables min-loss software upgrade on a standalone S4048-ON without VLT/stacking

- S4048-ON supports Routable RoCE to enable convergence of compute and storage on Active Fabric

- User port stacking support for up to six units and a total stack bandwidth of up to 320Gbps bandwidth

Product	Description
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, ZX SFP, extended reach Transceiver, 1GbE, 1000Base-T SFP, 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 4x1000base-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

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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: 1RU, 1.71 x 17.09 x 17.13" (4.35 x 43.4 x 43.5cm (H x W x D)

Weight: 18.52 lbs (8.4kg)

ISO 7779 A-weighted sound pressure level: 59.6 dBA at 73.4°F (23°C)

Power supply: 100–240V AC 50/60Hz

DC Power supply: -40.5V ~ -60V

Max. thermal output: 799.64 BTU/h

Max. current draw per system:
2.344A/1953A at 100/120V AC,
1.145A/0.954A at 200/240V AC

Max. DC current : -40.5V/23.8A , -48V/19A , -60V/15.6A.

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 85% (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: 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

Ingress ACL: 2.5K

Egress ACL: 1K

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

802.1Qbb PFC

802.1Qaz ETS

802.1s MSTP

802.1w 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-X) with QSA

ANSI/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

2596 Assured Forwarding PHB Group

3164 BSD Syslog

3195 Reliable Delivery for Syslog

3246 Expedited Assured Forwarding

4364 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

2464 Transmission of IPv6 Packets over Ethernet Networks

2711 IPv6 Router Alert Option

4007 IPv6 Scoped Address Architecture

4213 Basic Transition 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 RIPv1 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

BGP

1997 Communities

2385 MD5

2545 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

4250, 4251, 4252, 4253, 4254 SSHv2

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4301 Security Architecture for IPSec
4302 IPSec Authentication Header
4303 ESP Protocol
4807 IPsecv Security Policy DB MIB
draft-ietf-pim-sm-v2-new-05 PIM-SMw
Data center bridging
802.1Qbb Priority-Based Flow Control
802.1Qaz Enhanced Transmission Selection (ETS)
Data Center Bridging eXchange (DCBx)
DCBx Application TLV (iSCSI, FCoE)
Network management
1155 SMIv1
1157 SNMPv1
1212 Concise MIB Definitions
1215 SNMP Traps
1493 Bridges MIB
1850 OSPFv2 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
2819 RMON MIB (groups 1, 2, 3, 9)
2863 Interfaces MIB
3273 RMON High Capacity MIB
3410 SNMPv3
3411 SNMPv3 Management Framework
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 SNMPv2
3417 Transport mappings for SNMP
3418 SNMP MIB
3434 RMON High Capacity Alarm MIB
3584 Coexistance between SNMP v1, v2 and v3
4022 IP MIB
4087 IP Tunnel MIB
4113 UDP MIB
4133 Entity MIB
4292 MIB for IP
4293 MIB for IPv6 Textual Conventions
4502 RMONv2 (groups 1,2,3,9)
5060 PIM MIB
ANSI/TIA-1057 LLDP-MED MIB
Dell_ITA.Rev_1_1 MIB
draft-grant-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-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
Europe: EN 55022: 2006+A1:2007 (CISPR 22: 2006),
     Class A
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A
Immunity
EN 300 386 V1.4.1:2008 EMC for Network
     Equipment
EN 55024: 1998 + A1: 2001 + A2: 2003
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

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 EMC 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 EMC 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.

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