



DELL EMC NETWORKING S4048T-ON SWITCH

Energy-efficient 10GBASE-T top-of-rack switch optimized for data center efficiency

The Dell EMC Networking 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 EMC 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 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 Networking OS.

High density 1/10G BASE-T switch

The Dell EMC Networking 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 Networking OS, VLT, network virtualization features such as VRF-lite, VXLAN Gateway and support for Dell Embedded Open Automation Framework.

- The S4048T-ON is the only switch in the industry that supports traditional network-centric virtualization (VRF) and hypervisor centric virtualization (VXLAN). The switch fully supports L2 VXLAN gateway function and has hardware support for L3 VXLAN routing.

- The S4048T-ON also supports Dell EMC 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

- 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 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 - 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

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

- 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
- 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.

1/10G BASE-T cabling distances		
Cable Type	1G BASE-T	10G BASE-T
Cat 6 UTP	100m (330 ft)	55m (180 ft)
Cat 6 STP	100m (330 ft)	100m (330 ft)
Cat 6A UTP	100m (330 ft)	100m (330 ft)
Cat 7	100m (330 ft)	100m (330 ft)

Product	Description
S4048T	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
Redundant power supplies	S4048T, AC Power Supply, I/O Panel to PSU Airflow S4048T, AC Power Supply, PSU to I/O Panel Airflow
Fans	S4048T Fan Module, I/O Panel to PSU Airflow S4048T Fan Module, PSU to I/O Panel Airflow
Optics	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

Product	Description
Cables	<p>Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 0.5 Meter</p> <p>Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 1 Meter</p> <p>Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 3 Meter</p> <p>Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 5 Meter</p> <p>Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 7 Meter</p> <p>Cable, QSFP+, 40GbE, Active Fiber Optical Cable, 10 Meters (No optics required)</p> <p>Cable, QSFP+, 40GbE, Active Fiber Optical Cable, 50 Meters (No optics required)</p> <p>Cable, 40GbE QSFP+ to 4 x 10GbE SFP+, Active Optical Breakout Cable</p> <p>Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 0.5 Meters</p> <p>Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 1 Meter</p> <p>Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 3 Meters</p> <p>Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 5 Meters</p> <p>Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 7 Meters</p> <p>Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 1M(QSFP+,SFP+ Optics REQ,not incl)</p> <p>Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 3M(QSFP+,SFP+ Optics REQ,not incl)</p> <p>Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 5M(QSFP+,SFP+ Optics REQ,not incl)</p> <p>Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 7M(QSFP+,SFP+ Optics REQ,not incl)</p>
Software	<p>L3 Dell Networking OS</p> <p>S4048T: Dell Networking software license operating system software license for advanced L3 features, latest version</p> <p>S4048T: Dell Networking software license</p> <p>Dell Networking OS operating system software license, latest version</p> <p>Note: in-field change of airflow direction only supported when unit is powered down and all fan and power supply units are replaced with airflow moving in a uniform direction</p>
Supported operating systems	<p>Cumulus Linux OS</p> <p>Big Switch Networks Switch Light OS</p> <p>Dell Networking Operating System v9</p> <p>Pluribus OS</p>

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, 1.71 x 17.09 x 18.11" (4.35 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. operating specifications:

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 routes: 128K

IPv6 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: 511 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 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

802.3ba	40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4, 40GBase-LR4) on optical ports	2328	OSPFv2 OSPFv3	Network management	1155	SMIV1
802.3u	Fast Ethernet (100Base-TX)	2370	Opaque LSA 5340 OSPF for IPv6		1157	SNMPv1
802.3x	Flow Control	IS-IS			1212	Concise MIB Definitions
802.3z	Gigabit Ethernet (1000Base-X) with QSA	1142	Base IS-IS Protocol		1215	SNMP Traps
802.3az	Energy Efficient Ethernet	1195	IPv4 Routing		1493	Bridges MIB
ANSI/TIA-1057 LLDP-MED		5301	Dynamic hostname exchange mechanism for IS-IS		1850	OSPFv2 MIB
Force10 PVST+		5302	Domain-wide prefix distribution with two-level IS-IS		1901	Community-Based SNMPv2
Max MTU 9216 bytes		5303	3-way handshake for IS-IS pt-to-pt adjacencies		2011	IP MIB
RFC and I-D compliance with Dell Networking OS9		5303	3-way handshake for IS-IS pt-to-pt adjacencies		2096	IP Forwarding Table MIB
General Internet protocols		5304	IS-IS MD5 Authentication		2578	SMIV2
768	UDP	5306	Restart signaling for IS-IS		2579	Textual Conventions for SMIv2
793	TCP	5308	IS-IS for IPv6		2580	Conformance Statements for SMIv2
854	Telnet	5309	IS-IS point to point operation over LAN		2618	RADIUS Authentication MIB
959	FTP		draft-isis-igp-p2p-over-lan-06		2665	Ethernet-Like Interfaces MIB
General IPv4 protocols			draft-kaplan-isis-ext-eth-02		2674	Extended Bridge MIB
791	IPv4	BGP			2787	VRRP MIB
792	ICMP	1997	Communities		2819	RMON MIB (groups 1, 2, 3, 9)
826	ARP	2385	MD5		2863	Interfaces MIB
1027	Proxy ARP	2545	BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing		3273	RMON High Capacity MIB
1035	DNS (client)		2439	Route Flap Damping	3410	SNMPv3
1042	Ethernet Transmission		2796	Route Reflection	3411	SNMPv3 Management Framework
1305	NTPv3		2842	Capabilities	3412	Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
1519	CIDR		2858	Multiprotocol Extensions	3413	SNMP Applications
1542	BOOTP (relay)		2918	Route Refresh	3414	User-based Security Model (USM) for SNMPv3
1812	Requirements for IPv4 Routers		3065	Confederations	3415	VACM for SNMP
1918	Address Allocation for Private Internets		4360	Extended Communities	3416	SNMPv2
2474	Diffserv Field in IPv4 and Ipv6 Headers		4893	4-byte ASN	3417	Transport mappings for SNMP
2596	Assured Forwarding PHB Group		5396	4-byte ASN representations	3418	SNMP MIB
3164	BSD Syslog			draft-ietf-idr-bgp4-20 BGPv4	3434	RMON High Capacity Alarm MIB
3195	Reliable Delivery for Syslog			draft-michaelson-4byte-as-representation-05	3584	Coexistence between SNMP v1, v2 and v3
3246	Expedited Assured Forwarding			4-byte ASN Representation (partial)	4022	IP MIB
4364	VRF-lite (IPv4 VRF with OSPF, BGP, IS-IS and V4 multicast)			draft-ietf-idr-add-paths-04.txt ADD PATH	4087	IP Tunnel MIB
5798	VRRP	Multicast			4113	UDP MIB
General IPv6 protocols		1112	IGMPv1		4133	Entity MIB
1981	Path MTU Discovery Features	2236	IGMPv2		4292	MIB for IP
2460	Internet Protocol, Version 6 (IPv6) Specification	3376	IGMPv3		4293	MIB for IPv6 Textual Conventions
2464	Transmission of IPv6 Packets over Ethernet Networks		MSDP, PIM-SM, PIM-SSM		4502	RMONv2 (groups 1,2,3,9)
2711	IPv6 Router Alert Option	Security			5060	PIM MIB
4007	IPv6 Scoped Address Architecture	2404	The Use of HMACSHA- 1-96 within ESP and AH			ANSI/TIA-1057 LLDP-MED MIB
4213	Basic Transition Mechanisms for IPv6 Hosts and Routers	2865	RADIUS			Dell_ITA.Rev.1_1 MIB
4291	IPv6 Addressing Architecture	3162	Radius and IPv6			draft-grant-tacacs-02 TACACS+
4443	ICMP for IPv6	3579	Radius support for EAP			draft-ietf-idr-bgp4-mib-06 BGP MIBv1
4861	Neighbor Discovery for IPv6	3580	802.1X with RADIUS			IEEE 802.1AB LLDP MIB
4862	IPv6 Stateless Address Autoconfiguration	3768	EAP			IEEE 802.1AB LLDP DOT1 MIB
5095	Deprecation of Type 0 Routing Headers in IPv6	3826	AES Cipher Algorithm in the SNMP User Base Security Model			IEEE 802.1AB LLDP DOT3 MIB
IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)		4250, 4251, 4252, 4253, 4254	SSHv2			sFlow.org sFlowv5
VRF-Lite (IPv6 VRF with OSPFv3, BGPv6, IS-IS)		4301	Security Architecture for IPsec			sFlow.org sFlowv5 MIB (version 1.3)
RIP		4302	IPSec Authentication Header			DELL-NETWORKING-SMI
1058 RIPv1	2453 RIPv2	4303	ESP Protocol			DELL-NETWORKING-TC
OSPF (v2/v3)		4807	IPsecv Security Policy DB MIB			DELL-NETWORKING-CHASSIS-MIB
1587	NSSA 4552 Authentication/		draft-ietf-pim-sm-v2-new-05 PIM-SMw			DELL-NETWORKING-PRODUCTS-MIB
2154	OSPF Digital Signatures Confidentiality for	Data center bridging				DELL-NETWORKING-SYSTEM-COMPONENT-MIB
		802.1Qbb	Priority-Based Flow Control			DELL-NETWORKING-TRAP-EVENT-MIB
		802.1Qaz	Enhanced Transmission Selection (ETS)			DELL-NETWORKING-COPY-CONFIG-MIB
			Data Center Bridging eXchange (DCBx)			DELL-NETWORKING-IF-EXTENSION-MIB
			DCBx Application TLV (iSCSI, FCoE)			DELL-NETWORKING-FIB-MIB

DELL-NETWORKING-FPSTATS-MIB
DELL-NETWORKING-LINK-AGGREGATION-MIB
DELL-NETWORKING-MSTP-MIB
DELL-NETWORKING-BGP4-V2-MIB
DELL-NETWORKING-ISIS-MIB
DELL-NETWORKING-FIPSNOOPIING-MIB
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
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

International: CISPR 22, Class A
Australia/New Zealand: AS/NZS CISPR 22: 2009, Class A
Canada: ICES-003:2016 Issue 6, Class A
Europe: EN 55022: 2010+AC:2011 / CISPR 22: 2008, Class A
Japan: VCCI V-3/2014.04, Class A & V4/2012.04
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
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)

Immunity

EN 300 386 V1.6.1 (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

IT Lifecycle Services for Networking

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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.



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Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.



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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.



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Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.



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Retire

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