



# DELL EMC NETWORKING S6010-ON SWITCH

## High-performance 10/40GbE top-of-rack open networking switch

The Dell EMC Networking S6010-ON switch is the industry's first disaggregated hardware + software data center networking solution that empowers organizations to deploy modern workloads and applications designed for the open networking era.

Organizations that benefited from utilizing the disaggregation model with their data center server platforms can now leverage even greater benefits from Dell open networking solutions. Organizations can take advantage of this disaggregated networking model using industry-leading hardware and a choice of leading network operating systems to simplify data center fabric orchestration and automation and accelerate innovation.

These new offerings provide organizations the flexibility to transform their data centers and offer high-capacity network fabrics that are easy to deploy, cost-effective and provide a clear path to a software-defined data center.

The S6010-ON supports the open source Open Network Install Environment (ONIE) for zero-touch installation of alternate network operating systems.

### Data center optimized

The Dell EMC Networking S Series S6010-ON 10/40GbE top-of-rack (ToR) switch is purpose-built for applications in high-performance data center and computing environments. Leveraging a non-blocking switching architecture, the S6010-ON delivers line-rate L2 and L3 forwarding capacity to maximize network performance. The compact S6010-ON design provides industry-leading density of 32 ports of 40GbE or 96 ports of 10GbE<sup>1</sup> and eight additional ports of 40GbE to conserve rack space while enabling denser footprints and simplifying migration to 40Gbps in the data center core. In addition, the S6010-ON incorporates multiple architectural features that optimize data center network flexibility, efficiency and availability, including redundant, hot-swappable power supplies and fans.

### Key applications

- High-density 10/40GbE ToR server aggregation in high-performance data center environments
- Active Fabric™ implementation for large deployments in conjunction with the Z9500, S6100, and Z9100
- Small-scale Active Fabric implementation via the S6010 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

### Key features

- 1RU high-density 10/40GbE ToR switch with 32 ports of 40GbE (QSFP+) or 96 ports of 10GbE<sup>1</sup> and eight ports of 40GbE
- Up to 2.56Tbps of switching I/O bandwidth (full duplex) and available non-blocking<sup>2</sup> cut-through switching fabric delivering line-rate performance under full load<sup>2</sup> with sub 600ns latency
- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 VRF3 and IPv6 features, including OSPF and BGP routing support
- L2 multipath support via Virtual Link Trunking (VLT) and multiple VLT (mVLT) multi-chassis link aggregation technology
- VXLAN gateway functionality<sup>3</sup> support for bridging the non-virtualized and the virtualized overlay networks with line rate performance
- Open Automation Framework adding automated configuration and provisioning capabilities to simplify the management of network environments
- Modular Dell FTOS software delivering inherent stability as well as enhanced monitoring and serviceability functions
- Jumbo frame support for large data transfers
- 128 link aggregation groups with up to 16 members per group, using enhanced hashing
- Redundant, hot-swappable power supplies and fans
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV support
- I/O panel to power supply airflow or power supply to I/O panel airflow
- Tool-less enterprise ReadyRails™ mounting kits reducing time and resources for switch rack installation
- Power-efficient operation up to 45°C helping reduce cooling costs in temperature-constrained deployments
- Fastboot feature enables min-loss software upgrade on a standalone S6010 without VLT/stacking
- ROCE is also supported on S6010 enabling convergence of compute and storage on Active Fabric

Product	Description
<b>S6010-ON</b>	32-Port 40G QSFP+ Ports, Redundant AC PS, Fan Subsys, w/Airflow from I/O PNL to PS PNL 32-Port 40G QSFP+ Ports, Redundant AC PS, Fan Subsys, w/Airflow from PS PNL to I/O PNL
<b>Power supplies</b>	AC Power Supply, I/O Panel to PSU Airflow AC Power Supply, PSU to I/O Panel Airflow
<b>Fans</b>	S6010 Fan Module, I/O Panel to PSU Airflow S6010 Fan Module, PSU to I/O Panel Airflow
<b>Optics</b>	<p>Transceiver, SFP, 1000BASE-SX, 850nm Wavelength, 550m Reach</p> <p>Transceiver, SFP, 1000BASE-LX, 1310nm Wavelength, 10km Reach</p> <p>Transceiver, SFP, 1GbE, ZX, 1550nm Wavelength, 80km Reach typical on 9/125um SMF</p> <p>Transceiver, SFP, 1000BASE-T SFP to RJ45</p> <p>Transceiver, SFP+, 10GbE, SR, 850nm Wavelength, 300m Reach</p> <p>Transceiver, SFP+, 10GbE, LR, 1310nm Wavelength, 10km Reach</p> <p>Transceiver, SFP+, 10GbE, ER, 1550nm Wavelength, 40km Reach</p> <p>Transceiver, 40GE QSFP+ Short Reach Optic, 850nm Wavelength, 100-150m Reach on OM3/OM4</p> <p>Transceiver, 40GbE QSFP+ ESR, 300m Reach on OM3 / 400m on OM4</p> <p>Transceiver, 40GbE QSFP+ PSM4 with 1m, 5m, or 15m pigtail to male MPO SMF, 2km reach</p> <p>Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC</p> <p>Transceiver, 40GbE QSFP+ LR4, 10km Reach on SMF</p> <p>Transceiver, 40GbE, LM4 Duplex QSFP+. 150m Reach on MMF. 1km Reach on SMF.</p> <p>Transceiver, 40GbE, SM4 Duplex QSFP+. 220m Reach on MMF</p> <p>Transceiver, 40GbE QSFP+ to 1GbE/10GbE SFP/SFP+ adapter, QSA</p>
<b>Cables</b>	<p>MTP to MTP OM3 or OM4 Fiber Cable. Available in 3, 5, 7, 10, 25, 50, 75, 100 meter lengths (optics required)</p> <p>Cable, 10GbE, SFP+ to SFP+, Active Optical Cable, 15 meter reach (optics included)</p> <p>Cable, 40GbE, QSFP+ to QSFP+, Active Optical Cable, 10 and 40 meter reach (optics included)</p> <p>Cable, 40GbE QSFP+ MTP to 4 x 10GbE SFP+, Active Optical Breakout Cable – 1, 3, 5, 7 meter lengths (optics required)</p> <p>Cable, 10GbE, SFP+ to SFP+, passive Copper Twinax DAC 0.5, 1, 3, 5, 7 meter reach</p> <p>Cable, 40GbE, QSFP+ to QSFP+, passive Copper Twinax DAC 0.5, 1, 3, 5, 7 meter reach</p> <p>Cable, 40GbE, QSFP+ to 4x10GbE SFP+ Passive Copper Breakout Cable – available in 0.5, 1, 3, 5, 7 meter lengths</p> <p>Cable, 40GbE, QSFP+ to 4x1000Base-T RJ45 Passive Copper Breakout Cable – 1 meter length</p>
<b>Supported operating systems</b>	Cumulus Linux OS Big Switch Networks Switch Light OS Dell Networking Operating System v9 Pluribus OS

## Technical specifications

### Physical

32 line-rate 40 Gigabit Ethernet QSFP+ ports  
1 RJ45 console/management port with RS232 signaling

1 USB 2.0 type A storage port  
1 USB 2.0 type B console port

Size: 1 RU, 1.71 x 17.08 x 18.11"

Weight: 16.12 lbs (7.32 kg)

Power supply: 100–240 VAC 50/60 Hz

Max. power consumption: 411 Watts

Typ. power consumption: 274 Watts

Max. operating specifications:

Operating temperature: 32°F to 113°F (0°C to 45°C)

Operating humidity: 10 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

Fresh Air Compliant to 45°C

ReadyRails rack mounting system, no tools required

### Redundancy

Hot swappable redundant power

Hot swappable redundant fans

### Performance

MAC addresses: 160K

ARP table 128K

IPv4 routes: 128K

IPv6 hosts: 24K

IPv6 routes: 8K

Multicast hosts: 8K

Switch fabric capacity: 2.56Tbps (Full-Duplex)

Forwarding capacity: 1462Mpps

Link aggregation: 16 links per group, 128 groups per stack

Layer 2 VLANs: 4K

MST: 64 instances

LAG load balancing: Based on layer 2, IPv4 or IPv6 headers

Latency: Sub 600ns

Packet buffer memory: 16MB

CPU memory: 8GB

QOS data queues: 8

QOS control queues: 12

QOS: Default 768 entries scalable to 2.5K

Ingress ACL: 716

Egress ACL: 1K

### IEEE compliance

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)

802.3ba 40 Gigabit Ethernet (40GBase-SR4,

40GBase-CR4, 40GBase-LR4) on optical ports

802.3u Fast Ethernet (100Base-TX) on mgmt ports

802.3x Flow Control

802.3z Gigabit Ethernet (1000Base-X)

ANSI/TIA-1057 LLDP-MED

Force10 PVST+

MTU 12,000 bytes

### RFC and I-D compliance

#### General Internet protocols

768 UDP 854 Telnet

793 TCP 959 FTP

#### General IPv4 protocols

791 IPv4

792 ICMP

826 ARP

1027 Proxy ARP

1035 DNS (client)

VRF: VRF-lite (VRF-aware

IPv4 unicast (BGP, OSPF))

#### General IPv6 protocols

1981 Path MTU Discovery

Features (partial)

2460 IPv6

2461 Neighbor Discovery

(partial)

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MSDP

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

2012 TCP MIB

2013 UDP MIB

2096 IP Forwarding Table MIB

2570 SNMPv3

2571 Management Frameworks

2572 Message Processing and Dispatching

2576 Coexistence Between SNMPv1/v2/v3

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

2865 RADIUS

3273 RMON High Capacity MIB

3416 SNMPv2

3418 SNMP MIB

3434 RMON High Capacity Alarm MIB

3580 802.1X with RADIUS

4133 Entity MIB

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)

SSHv2 RFC 4250, 4251, 4252, 4253, 4254

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: 2006, 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:2011, 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

Available with US Trade Agreements Act (TAA) compliance

### 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.

Learn more at  
[Dell.com/lifecycle services](http://Dell.com/lifecycle services)

Learn more at [Dell.com/Networking](http://Dell.com/Networking)