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[1] 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[1] and eight ports of 40GbE

- Up to 2.56Tbps of switching I/O bandwidth (full duplex) and available non-blocking[2] cut-through switching fabric delivering line-rate performance under full load[2] 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[3] 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
S6010-ON	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
Power supplies	AC Power Supply, I/O Panel to PSU Airflow AC Power Supply, PSU to I/O Panel Airflow
Fans	S6010 Fan Module, I/O Panel to PSU Airflow S6010 Fan Module, PSU to I/O Panel Airflow

Optics	Transceiver, SFP, 1000BASE-SX, 850nm Wavelength, 550m Reach
	Transceiver, SFP, 1000BASE-LX, 1310nm Wavelength, 10km Reach
	Transceiver, SFP, 1GbE, ZX, 1550nm Wavelength, 80km Reach typical on 9/125um SMF
	Transceiver, SFP, 1000BASE-T SFP to RJ45
	Transceiver, SFP+, 10GbE, SR, 850nm Wavelength, 300m Reach
	Transceiver, SFP+, 10GbE, LR, 1310nm Wavelength, 10km Reach
	Transceiver, SFP+, 10GbE, ER, 1550nm Wavelength, 40km Reach
	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, 5m, or 15m pigtail to male
	  MPO SMF, 2km reach
	Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC
	Transceiver, 40GbE QSFP+ LR4, 10km Reach on SMF
	Transceiver, 40GbE, LM4 Duplex QSFP+. 150m Reach on MMF. 1km
	  Reach on SMF.
	Transceiver, 40GbE, SM4 Duplex QSFP+. 220m Reach on MMF
	Transceiver, 40GbE QSFP+ to 1GbE/10GbE SFP/SFP+ adapter, QSA

Cables	MTP to MTP OM3 or OM4 Fiber Cable. Available in 3, 5, 7, 10, 25, 50, 75, 100 meter lengths (optics required) Cable, 10GbE, SFP+ to SFP+, Active Optical Cable, 15 meter reach (optics included) Cable, 40GbE, QSFP+ to QSFP+, Active Optical Cable, 10 and 40 meter reach (optics included) Cable, 40GbE QSFP+ MTP to 4 x 10GbE SFP+, Active Optical Breakout Cable – 1, 3, 5, 7 meter lengths (optics required) Cable, 10GbE, SFP+ to SFP+, passive Copper Twinax DAC 0.5, 1, 3, 5, 7 meter reach Cable, 40GbE, QSFP+ to QSFP+, passive Copper Twinax DAC 0.5, 1, 3, 5, 7 meter reach Cable, 40GbE, QSFP+ to 4x10GbE SFP+ Passive Copper Breakout Cable – available in 0.5, 1, 3, 5, 7 meter lengths Cable, 40GbE, QSFP+ to 4x1000Base-T RJ45 Passive Copper Breakout Cable – 1 meter length
Supported operating systems	Cumulus Linux OS Big Switch Networks Switch Light OS Dell Networking Operating System v9 Pluribus OS

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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: 1462Mps
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	1042 Ethernet Transmission
792 ICMP	1305 NTPv3
826 ARP	1519 CIDR
1027 Proxy ARP	1542 BOOTP (relay)
1035 DNS (client)	
VRF: VRF-lite (VRF-aware IPv4 unicast (BGP, OSPF))	

General IPv6 protocols
1981 Path MTU Discovery Features (partial)	IPv6 Management (telnet, FTP, TACACS, RADIUS, SSH, NTP)
2460 IPv6	
2461 Neighbor Discovery (partial)	2462 Stateless Address Autoconfiguration (partial)

RIP
1058 RIPv1	2453 RIPv2

OSPF
1587 NSSA	2328 OSPFv2
2154 MD5	2370 Opaque LSA

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 IPv6Bar

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
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

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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/lifecycleservices

Learn more at Dell.com/Networking

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