



Dell Networking S4810

High-performance 10/40GbE top-of-rack switch

High-density, 1RU 48-port 10GbE switch with four 40GbE uplinks and ultra-low-latency, non-blocking performance to ensure line-rate performance; complete with feature-rich Dell Networking OS and storage optimization for iSCSI, FCoE transit and DCB.

Ultra-low-latency, data center optimized

The Dell Networking S-Series S4810 is an ultra-low-latency 10/40GbE top-of-rack (ToR) switch purpose-built for applications in high-performance data center and computing environments. Leveraging a non-blocking, cut-through switching architecture, the S4810 delivers line-rate L2 and L3 forwarding capacity with ultra low latency to maximize network performance. The compact S4810 design provides 48 dual-speed 1/10GbE (SFP+) ports as well as four 40GbE QSFP+ uplinks to conserve valuable rack space and simplify the migration to 40Gbps in the data center core. Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhance transmission selection (ETS), coupled with ultra low latency and line rate throughput, make the S4810 ideally suited for iSCSI storage, FCoE transit and DCB environments. In addition, the S4810 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.

The S4810 also supports Dell Networking's Embedded Open Automation Framework, which provides advanced network automation and virtualization capabilities for virtual data center environments.

An Active Fabric™ design with S4810 switches can be built out to create scalable, high-performance 10/40GbE data center networks. The resiliency of an Active Fabric is superior to legacy, centralized core architectures, since the failure of a single node within a CLOS network cannot bring down the entire switching fabric.

The S4810 is supported with Active Fabric Manager (AFM), which helps automate design and deployment of multi-tier fabrics. AFM helps customers manage multiple fabrics from a single console, enabling a unified view of the entire fabric, when combined with Dell OMNM and other management solutions. With AFM, over 25 templates can be customized for specific workload and deployment scenarios, easily delivering active/active L2 or L3 designs for 1/10/40G with Dell Z Series switches to rack and blade infrastructures (including Dell MXL).

Key applications

- High-density 10GbE ToR server aggregation in high-performance data center environments
- Design with the Z Series fabric core switch to create a flat, two-tier, non-blocking 1/10/40GbE data center network design
- Design a Clos-based Active Fabric with Z Series switches in leaf and spine with the S4810/S4820T 10GbE ToR switches for cost-effective aggregation of 10GbE uplinks

- Enterprise iSCSI (iSCSI over DCB)
- High-performance SDN/OpenFlow 1.0/1.3* enabled with ability to inter-operate with industry standard OpenFlow controllers

Key features

- 1RU high-density 10/40GbE ToR switch with 48 dual-speed 1/10GbE (SFP+) ports and four 40GbE (QSFP+) uplinks (totaling 64 10GbE ports with breakout cables)
- 1.28Tbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load with 800ns latency
- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF, BGP and Policy Based Routing (PBR) 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
- User port stacking support for up to six units
- Embedded Open Automation Framework adds VM awareness as well as automated configuration and provisioning capabilities to simplify the management of virtual network environments
- Modular Dell Networking OS software delivers inherent stability as well as advanced 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
- Redundant, hot-swappable power supplies and fans
- Hardware support for DCB, FIPS operation

Ultra-low-latency
10GbE top-of-rack
switch optimized for
data center efficiency.

* Full 1.3 compliance available in early Q1CY15.

Specifications: S4810 high-performance 10/40-GbE top-of-rack switch

Dell SKU description

S4810

S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, I/O Panel to PSU Airflow
 Panel to PSU Airflow
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, PSU to I/O Panel Airflow
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, PSU to I/O Panel Airflow, Rear Mnt Bracket
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x DC PSU, 2x Fans, I/O Panel to PSU Airflow
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x DC PSU, 2x Fans, PSU to I/O Panel Airflow
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, I/O panel to PSU Airflow (Normal), TAA/FIPS/USGv6-L2
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, PSU to I/O Panel Airflow (Reverse), TAA/FIPS/USGv6-L2
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, I/O Panel to PSU (Normal) Airflow, TAA/FIPS/USGv6-L2
 S4810, 48x 10GbE SFP+, 4x QSFP+, 1x AC PSU, 2x Fans, PSU to I/O Panel (Reverse) Airflow, TAA/FIPS/USGv6-L2

Redundant power supplies

S4810, AC Power Supply, I/O Panel to PSU Airflow
 S4810, AC Power Supply, PSU to I/O Panel Airflow
 S4810, DC Power Supply, I/O Panel to PSU Airflow
 S4810, DC Power Supply, PSU to I/O Panel Airflow

Fans

S4810 Fan Module, I/O Panel to PSU Airflow
 S4810 Fan Module, PSU to I/O SR4 Panel Airflow

Optics

Transceiver, QSFP+, 40GbE SR Optics, 850nm Wavelength, 100–150m Reach on OM3/OM4
 Transceiver, QSFP+, 40GbE eSR Optics, 850nm Wavelength, 300–400m Reach on OM3/OM4
 Transceiver, SFP+, 10GbE, SR, 850nm Wavelength, 300m Reach
 Transceiver, SFP+, 10GbE, LR, 1310nm Wavelength, 10km Reach
 Transceiver, SFP+, 10GbE, DWDM, ITU Channel 17–61, 40km Reach
 Transceiver, SFP+, 10GbE, ER, 1310nm Wavelength, 40km Reach
 Transceiver, SFP+ LRM (Long Reach Multimode) Optic, 10GbE, 1310nm Wavelength, 220m Reach on MMF
 Transceiver, SFP, 1000Base-SX, 850nm Wavelength, 550m Reach
 Transceiver, SFP, 1000Base-LX, 1310nm Wavelength, 10km Reach
 Transceiver, SFP, 1000Base-T
 Transceiver, SFP, 1000Base-ZX, 1550nm Wavelength, 80km Reach typical on 9/125um SMF

Cables

Cable, 40GbE QSFP+ to 4xSFP+, Direct Attach Breakout Cable, 0.5m, 1m, 3m, 5m, 7m
 Cable, 40GbE QSFP+, Active Fiber Optic, 10m, 50m
 Cable, 40GbE QSFP+, Direct Attach Cable, 0.5m, 1m, 3m, 5m, 7m
 Cable, 40GbE MTP to 4xLC, 1m, 3m, 5m, 7m Optical Breakout Cable (optics not included)
 Cable, 40GbE MTP Fiber over OM3, 1m, 3m, 5m, 7m, 10m, 25m, 50m (75m and 100m in 2014)
 Cable, SFP+, CU, 10GbE, Direct Attach Cable, 0.5m, 1m, 3m, 5m, 7m

Software

Software, Dell Networking Operating System, S4810
 Software, Networking, iSCSI-Optimized Configuration, S4810
 Software, Networking, FCOE-Optimized Configuration, S4810

Note: In-field change of airflow direction not supported.

Physical

48 line-rate 10 Gigabit Ethernet SFP+ ports
 4 line-rate 40 Gigabit Ethernet QSFP+ ports
 1 RJ45 console/management port with RS232 signaling
 Size: 1 RU, 1.73 x 17.32 x 18.11" (4.4 x 44 x 46 cm) (H x W x D)
 Weight: 14.39 lbs (6.54 kg)
 ISO 7779 A-weighted sound pressure level: 59.6 dBA at 73.4°F (23°C)
 Power supply: 100–240V AC 50/60Hz
 Max. thermal output: 1194 BTU/h
 Max. current draw per system:
 4A at 100/120V AC 2A at 200/240V AC
 10A at 36V DC 5A at 72V DC
 Max. power consumption: 350 Watts (AC), 300 Watts (DC)
 Typ. power consumption: 220 Watts
 Max. operating specifications:
 Operating temperature: 32°F to 104°F (0°C to 40°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 supplies
 Hot swappable redundant fans

Performance

MAC addresses: 128K
 IPv4 routes: 16K
 IPv6 routes: 8K (shared CAM space with IPv4)
 Switch fabric capacity: 1.28Tbps (full-duplex)
 640Gbps (half-duplex)
 Forwarding capacity: 960Mpps
 Link aggregation: 8 links per group, 128 groups per stack
 Queues per port: 4 queues
 Layer 2 VLANs: 4K
 MSTP: 64 instances
 VRF-lite: 64 instances
 Line-rate layer 2 switching: All protocols, including IPv4 and IPv6
 Line-rate layer 3 routing: IPv4 and IPv6
 IPv4 host table size: 8K
 IPv6 host table size: 4K

IPv4 multicast table size 4K
 LAG load balancing: Based on Layer 2, IPv4 or IPv6 headers

Latency: 800ns
 Packet buffer memory: 9MB
 CPU memory: 2GB

IEEE compliance

802.1AB LLDP
 802.1ag Connectivity Fault Management
 802.1D Bridging, STP
 802.1p L2 Prioritization
 802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
 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) on Optical Ports
 802.3u Fast Ethernet (100BASE-TX) on Management Ports
 802.3x Flow Control
 802.3z Gigabit Ethernet (1000BASE-X)
 ANSII/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	1918	Address Allocation for Private Internets
792	ICMP	2474	Diffserv Field in IPv4 and Ipv6 Headers
826	ARP	2596	Assured Forwarding PHB Group
1027	Proxy ARP	3164	BSD Syslog
1035	DNS (client)	3195	Reliable Delivery for Syslog
1042	Ethernet Transmission	3246	Expedited Assured Forwarding
1305	NTVp3	4364	VRF-lite (IPv4 VRF with OSPF and BGP)
1519	CIDR	5798	VRRP
1542	BOOTP (relay)		
1812	Requirements for IPv4 Routers		

General IPv6 protocols

1981 Path MTU Discovery Features
 2460 Internet Protocol, Version 6 (IPv6) Specification
 2464 Transmission of IPv6 Packets over Ethernet Networks
 2710 Multicast Listener Discovery (MLD) for IPv6
 2711 IPv6 Router Alert Option
 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
 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)

Security

2404	The Use of HMAC-SHA-1-96 within ESP and AH	4250, 4251, 4252, 4253, 4254	SSHv2
2865	RADIUS	4301	Security Architecture for IPsec
3162	Radius and IPv6	4302	IPSec Authentication Header
3579	Radius support for EAP	4303	ESP Protocol
3580	802.1X with RADIUS	4807	IPsecv Security Policy DB MIB
3768	EAP		
3826	AES Cipher Algorithm in the SNMP User Base Security Model		

RIP

1058	RIPv1	2453	RIPv2
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OSPF (v2/v3)

1587	NSSA	4552	Authentication/Confidentiality for OSPFv3
2154	OSPF Digital Signatures		
2328	OSPFv2	5340	OSPF for IPv6
2370	Opaque LSA		

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

MSPD
 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	Coexistence between SNMP v1, v2 and v3
4022	IP MIB
4087	IP Tunnel MIB
4113	UDP MIB
4133	Entropy 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: 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
 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)

