



Force10

# Dell Force10 S-Series

## S4810 High-Performance 10/40 GbE Top-of-Rack Switch

High-density, 1RU 48-port 10 GbE switch with four 40GbE uplinks and ultra-low-latency, non-blocking performance to ensure line-rate performance; feature-rich Dell Force10 Operating System (FTOS); and storage optimization for iSCSI, FCoE Transit, and DCB.

### Ultra-low-latency, data center optimized

The Dell Force10 S-Series S4810 is an ultra low-latency 10/40 GbE 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 industry-leading density of 48 dual-speed 1/10 GbE (SFP+) ports as well as four 40 GbE QSFP+ uplinks to conserve valuable rack space and simplify the migration to 40 Gbps in the data center core (Each 40 GbE QSFP+ uplink can support four 10 GbE ports with a breakout cable). Priority-based Flow Control (PFC), Data Center Bridge Exchange (DCBX), Enhance Transmission Selection (ETS), coupled with ultra low latency and line rate throughput, make the S4810 ideally suited for iSCSI storage, FCoE Transit & DCB environments. In addition, the S4810 incorporates multiple architectural features that optimize data center network flexibility, efficiency, and availability, including IO panel to PSU airflow or PSU to IO panel airflow for hot/cold aisle environments, and redundant, hot-swappable power supplies and fans.

The S4810 also supports Dell Force10's Open Automation Framework, which provides advanced network automation and virtualization capabilities for virtual data center environments. The Open Automation Framework is comprised of a suite of inter-related network management tools that can be used together or independently to provide a network that is more flexible, available and manageable while reducing operational expenses.

### Key applications

- Ultra-low-latency 10 GbE switching in HPCC, high-speed trading, or other business-sensitive deployments that require the highest bandwidth and lowest latency
- High-density 10 GbE ToR server aggregation in high-performance data center environments
- Design with the E-Series or Z-Series core switch/router to create a flat, two-tier, non-blocking 1/10/40 GbE data center network design
- Design a distributed core Clos fabric with S4810 switch in leaf and spine with the S-Series 1/10GbE ToR switches for cost-effective aggregation of 10 GbE uplinks
- Regular iSCSI Storage deployment
- Enterprise iSCSI (iSCSI over DCB)
- FIP Snooping Bridge as part of storage solution

### Key features

- 1RU high-density 10/40 GbE ToR switch with 48 dual-speed 1/10 GbE (SFP+) ports and four 40 GbE (QSFP+) uplinks (totaling 64 10 GbE ports with breakout cables)
- 1.28 Tbps (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
- IO panel to PSU airflow or PSU to IO panel airflow
- Open Automation Framework adds VM-awareness as well as automated configuration and provisioning capabilities to simplify the management of virtual network environments
- Modular Dell Force10 Operating System (FTOS) software delivers inherent stability as well as advanced monitoring and serviceability functions
- Supports jumbo frames for high-end server connectivity
- 128 link aggregation groups with up to 8 members per group, using advanced hashing
- Redundant, hot-swappable power supplies and fans
- Hardware support for DCB
- Low power consumption
- VLT & eVLT: multichassis link to enable up to 576 10GE (3:1 over subscription)
- User Port stacking support for up to 6 units
- Support IPv6 Layer 2 and FIPS certification

Ultra low latency  
10GbE Top-of-Rack  
switch optimized for  
data center efficiency

# Specifications: S4810 High-Performance 10/40 GbE Top-of-Rack Switch

Dell SKU description
<b>S4810</b>
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, IO Panel to PSU Airflow
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, PSU to IO Panel Airflow
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, PSU to IO Panel Airflow, Rear Mnt Bracket
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x DC PSU, 2 x Fans, IO Panel to PSU Airflow
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x DC PSU, 2 x Fans, PSU to IO Panel Airflow
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, IO panel to PSU Airflow (Normal), TAA/FIPS/USGv6-L2
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, PSU to IO Panel Airflow (Reverse), TAA/FIPS/USGv6-L2
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, IO Panel to PSU (Normal) Airflow, TAA/FIPS/USGv6-L2
S4810, 48 x 10GbE SFP+, 4 x QSFP+, 1 x AC PSU, 2 x Fans, PSU to IO Panel (Reverse) Airflow, TAA/FIPS/USGv6-L2
<b>Redundant power supplies</b>
S4810, AC Power Supply, IO Panel to PSU Airflow
S4810, AC Power Supply, PSU to IO Panel Airflow
S4810, DC Power Supply, IO Panel to PSU Airflow
S4810, DC Power Supply, PSU to IO Panel Airflow
<b>Fans</b>
S4810 fan module, IO Panel to PSU Airflow
S4810 fan module, PSU to IO SR4 Panel Airflow
<b>Optics</b>
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, 850nm Wavelength, 300m Reach
Transceiver, SFP+, 10GbE, LR, 1310nm Wavelength, 10km Reach
Transceiver, SFP+, 10GbE, DWDM, ITU Channel 17-61, 40km Reach
Transceiver, SFP, 1000BASE-SX, 850nm Wavelength, 550m Reach
Transceiver, SFP, 1000BASE-LX, 1310nm Wavelength, 10km Reach
Transceiver, SFP, 1000BASE-T
Transceiver, SFP+, 10GbE, ER, 1310nm Wavelength, 40km Reach
Transceiver, SFP+ (Long Reach Multimode) Optic, 10GbE, 1310nm Wavelength, 220m Reach on MMF
<b>Cables</b>
Cable, 40GbE MTP to 4xLC 5M Optical Breakout Cable (optics not included)
Cable, 40GbE QSFP+ to 4xSFP+ 5M Direct Attach Breakout Cable
Cable, 40GbE QSFP+, Active Fiber Optic, 10m
Cable, 40GbE QSFP+, Active Fiber Optic, 50m
Cable, 40GbE QSFP+, Direct Attach Cable, 1m
Cable, 40GbE QSFP+, Direct Attach Cable, 5m
Cable, SFP+, CU, 10GbE, Direct Attach Cable, 0.5m
Cable, SFP+, CU, 10GbE, Direct Attach Cable, 1m
Cable, SFP+, CU, 10GbE, Direct Attach Cable, 2m
Cable, SFP+, CU, 10GbE, Direct Attach Cable, 5m
Cable, SFP+, CU, 10GbE, Direct Attach Cable, 7m
<b>Software</b>
Software, FTOS – Force10 Operating System Software, S4810
Software, Force10, iSCSI-Optimized Configuration, S4810
Software, Force10, FCOE-Optimized Configuration, S4810
<b>Note:</b> 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 h x 17.32 w x 18.11" d (4.4 h x 44 w x 46 cm 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: 100–240 VAC 50/60 Hz
Max. thermal output: 1194 BTU/h
Max. current draw per system:
4A at 100/120 VAC 2A at 200/240 VAC
10A at 36 VDC 5A at 72 VDC
Max. power consumption: 350 Watts (AC), 300 Watts (DC)
Typ. power consumption: 220 Watts
Max. operating specifications:
Operating temperature: 32° to 104°F (0° to 40°C)
Operating humidity: 10 to 85% (RH), non-condensing
Max. non-operating specifications:
Storage temperature: -40° to 158°F (-40° to 70°C)
Storage humidity: 5 to 95% (RH), non-condensing

## Redundancy

Hot swappable redundant power  
Hot swappable redundant fans

## Performance

MAC addresses: 128K  
IPv4 routes: 16K  
IPv6 routes: 8K (shared CAM space with IPv4)  
Switch fabric capacity: 1.28 Tbps (full-duplex)  
640 Gbps (half-duplex)

Forwarding capacity: Link aggregation: Queues per port: Layer 2 VLANs: MSTP : Line-rate Layer 2 switching: Line-rate Layer 3 routing: IPv4 host table size IPv6 host table size IPv4 Multicast table size LAG load balancing: Latency Packet buffer memory: CPU memory:	960 Mpps 8 links per group, 128 groups per stack 4 queues 4K 64 instances all protocols, including IPv4 and IPv6 IPv4 and IPv6 8K 4K 4K based on Layer 2, IPv4 or IPv6 headers sub 700ns 9MB 2GB	2236 IGMPv2 3376 IGMPv3 draft-ietf-pim-sm-v2-new-05	4541 PIM-SM	
<b>Network Management</b>				
1155 SMIV1 1156 Internet MIB 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 5060 PIM MIB	LLDP-MED MIB TACACS+ BGP MIBv1 LLDP MIB LLDP DOT1 MIB LLDP DOT3 MIB MSTP MIB (traps) sFlow5 sFlow.org sFlow5 MIB (version 1.3) Force10 BGP MIB (draft-ietf-idr-bgp4-mibv2-05)			
ANSI/TIA-1057 Force10 PVST+ MTU	12,000 bytes	1350 TFTTP 2474 Differentiated Services 3164 Syslog 5880 BFD	1812 Routers 1858 IP Fragment Filtering 2131 DHCP (relay) 2338 VRRP 3021 31-bit Prefixes 3046 DHCP Option 82 3069 Private VLAN 3128 Tiny Fragment Attack Protection	
<b>RFC and I-D Compliance</b>				
<b>General Internet Protocols</b>				
768 UDP 793 TCP 854 Telnet 959 FTP 1321 MD5	1350 TFTTP 2474 Differentiated Services 3164 Syslog 5880 BFD	1812 Routers 1858 IP Fragment Filtering 2131 DHCP (relay) 2338 VRRP 3021 31-bit Prefixes 3046 DHCP Option 82 3069 Private VLAN 3128 Tiny Fragment Attack Protection	1812 Routers 1858 IP Fragment Filtering 2131 DHCP (relay) 2338 VRRP 3021 31-bit Prefixes 3046 DHCP Option 82 3069 Private VLAN 3128 Tiny Fragment Attack Protection	
<b>General IPv4 Protocols</b>				
791 IPv4 792 ICMP 826 ARP 1027 Proxy ARP 1035 DNS (client) 1042 Ethernet Transmission 1305 NTPv3 1519 CIDR 1542 BOOTP (relay)	1812 Routers 1858 IP Fragment Filtering 2131 DHCP (relay) 2338 VRRP 3021 31-bit Prefixes 3046 DHCP Option 82 3069 Private VLAN 3128 Tiny Fragment Attack Protection	1812 Routers 1858 IP Fragment Filtering 2131 DHCP (relay) 2338 VRRP 3021 31-bit Prefixes 3046 DHCP Option 82 3069 Private VLAN 3128 Tiny Fragment Attack Protection	1812 Routers 1858 IP Fragment Filtering 2131 DHCP (relay) 2338 VRRP 3021 31-bit Prefixes 3046 DHCP Option 82 3069 Private VLAN 3128 Tiny Fragment Attack Protection	
<b>General IPv6 Protocols</b>				
2460 IPv6 2461 Neighbor Discovery (partial) 2462 Stateless Address Autoconfiguration (partial) 2463 ICMPv6	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing	
<b>RIP</b>				
1058 RIPv1	2453	2453 RIPv2	2453 RIPv2	
<b>OSPF</b>				
2154 MD5 1587 NSSA 2328 OSPFv2 2370 Opaque LSA	3623 Graceful Restart 4222 Prioritization and Congestion Avoidance	3623 Graceful Restart 4222 Prioritization and Congestion Avoidance	3623 Graceful Restart 4222 Prioritization and Congestion Avoidance	
<b>BGP</b>				
1997 Communities 2385 MD5 RFC 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing 2439 Route Flap Damping 2796 Route Reflection 2842 Capabilities 2858 Multi-Protocol Extensions 2918 Route Refresh 3065 Confederations 4360 Extended Communities 4893 4-byte ASN 5396 4-byte ASN representations draft-ietf-idr-bgp4-20 draft-ietf-idr-restart-06 draft-michaelson-4byte-as-representation-05 4-byte ASN Representation (partial)	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing	1858 IP Fragment Filtering 2675 Jumbograms 3587 Global Unicast Address Format 4291 Addressing
<b>IS-IS</b>				
RFC 1195 Routing IPv4 with IS-IS RFC 5308 Routing IPv6 with IS-IS	3569 SSM for IPv4	3569 SSM for IPv4	3569 SSM for IPv4	
<b>Multicast</b>				
1112 IGMPv1	3569 SSM for IPv4	3569 SSM for IPv4	3569 SSM for IPv4	
<b>Regulatory Compliance</b>				
<b>Safety</b>				
UL/CSA 60950-1, Second Edition EN 60950-1, Second Edition IEC 60950-1, Second Edition Including all National Deviations and Group Differences	EN 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	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	
<b>Emissions</b>				
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	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	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	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	
<b>RoHS</b>				
All S-Series components are EU RoHS compliant.				

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