



Dell Networking S Series

S60 high-performance 1/10GbE access switch with ultra-deep packet buffering

Non-blocking switching and routing, stackable 48-port GbE switch with up to four 10GbE ports in just 1RU, ultra-deep packet buffering, integrated network automation and virtualization technology with Dell Networking's Open Automation Framework in a flexible, resilient and energy-efficient design.

S Series S60 high-performance access switch

The Dell Networking S Series S60 is a high-performance 1/10GbE access switch optimized for lowering operational costs at the network edge. The S60 answers the key challenges related to network congestion in data center top-of-rack (ToR) and service provider aggregation deployments. As the use of bursty applications and services continue to increase, huge spikes in network traffic that can cause network congestion and packet loss also become more common. The S60 is equipped with one of the industry's largest packet buffers (1.25GB), enabling it to deliver lower application latency and maintain predictable network performance even when faced with significant spikes in network traffic. Providing 48 GbE ports and up to four optional 10GbE uplinks in just 1RU, the S60 conserves valuable rack space. Further, the S60 design delivers unmatched configuration flexibility, high reliability, and power and cooling efficiency to reduce costs.

In addition to delivering a compact and scalable design, the S60 also supports the Dell Networking 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.

Applications

- 1/10GbE server aggregation at the ToR in high-performance data center environments
- With the S4810/S4820T/Z9000 virtualized switch/router to create a flat, two-tier, non-blocking 1/10GbE data center network design

Key features

- The 1RU S60 switch delivers 48 GbE access interfaces
 - 44 10/100/1000Base-T copper ports (RJ45)
 - 4 GbE ports that can be configured for copper or fiber (SFP)

- Plus, the S60 provides two optional high-speed slots that support any of the following uplink modules:
 - 2-port 10GbE SFP+ module
 - 2-port 12Gbps stacking module
 - 1-port 24Gbps stacking module
- Ultra-deep packet buffering (1.25GB) eliminate congestion associated with bursty applications and services
- Energy-efficient, versatile design supports the lowest power consumption in its class as well as I/O to PSU panel airflow or PSU to I/O panel airflow
- 176Gbps switching capacity delivers low-latency switching
- Highly scalable layer 2 and layer 3 switching with a full complement of standards-based IPv4 and IPv6 features for unicast and multicast applications
- Networking's Open Automation Framework adds VM awareness as well as automated configuration and provisioning capabilities to simplify the management of virtual network environments
- Carrier-class, NEBS level 3 certified product design supports redundant, hot-swappable power supplies (AC or DC) and fans
- Stacking technology enables up to 12 S60 switches to be managed as a single unit
- Modular Dell FTOS software delivers inherent stability as well as advanced monitoring and serviceability functions
- Supports 9,252 byte jumbo frames

Wire-speed 1/10GbE with ultra-deep packet buffering delivers consistent and efficient application performance.

Specifications: S60 high-performance 1/10GbE ToR switch

Ordering information

S60
 44 x 10/100/1000Base-T, 4 x 1GbE SFP, 1 x AC PSU, 1 x FM, I/O to PSU Panels (Normal)
 44 x 10/100/1000Base-T, 4 x 1GbE SFP, 1 x AC PSU, 1 x FM, PSU to I/O Panels (Reverse)
 44 x 10/100/1000Base-T, 4 x 1GbE SFP, 1 x DC PSU, 1 x FM, I/O to PSU Panels (Normal)
 44 x 10/100/1000Base-T, 4 x 1GbE SFP, 1 x DC PSU, 1 x FM, PSU to I/O Panels (Reverse)
Redundant power supplies and fan modules*
 AC Power Supply, I/O to PSU Panels (Normal)
 AC Power Supply, PSU to I/O Panels (Reverse)
 DC Power Supply, I/O to PSU Panels (Normal)
 DC Power Supply, PSU to I/O Panels (Reverse)
 Fan Module, 3 x Fan, I/O to PSU Panels (Normal)
 Fan Module, 3 x Fan, PSU to I/O Panels (Reverse)
Modules*
 2-port 10GE SFP+ module
 2-port 12Gbps high-speed stacking module
 1-port 24Gbps high-speed stacking module
Optics*
 SFP+, 10GbE, SR, 850nm Wavelength, 300m reach
 SFP+, 10GbE, LR, 1310nm Wavelength, 10Km reach
 SFP+, 10GbE, ER, 1310nm Wavelength, 40Km reach
 SFP+, 10GbE, LRM, 1310nm Wavelength, 220m reach
 SFP, 1000Base-SX, 850nm Wavelength, 550m reach
 SFP, 1000Base-LX, 1310nm Wavelength, 10Km reach
 SFP, 1000Base-ZX, 1550nm Wavelength, 80Km reach
 SFP, 100Base-FX, 1310nm Wavelength, 2Km reach
 SFP, 1000Base-T
Cables*
 SFP+, CU, 10GbE, Direct Attach Cable, 0.5m
 SFP+, CU, 10GbE, Direct Attach Cable, 1m
 SFP+, CU, 10GbE, Direct Attach Cable, 2m
 SFP+, CU, 10GbE, Direct Attach Cable, 5m
 SFP+, CU, 10GbE, Direct Attach Cable, 7m
 Stacking Cable, 0.6m, 12Gbps
 Stacking Cable, 4m, 12Gbps
 Stacking Cable, 0.6m, 24Gbps
 Stacking Cable, 4m, 24Gbps
Software
 FTOS – Networking Operating System Software, L3, S60

Switching capacity: 176Gbps
 Forwarding capacity: 131Mpps
 Link aggregation: 8 links per group, 128 groups per stack
 Stacking capacity: 96Gbps per stack member
 Queues per port: 4 queues
 VLANs: 4096
 Layer 2 switching: All protocols, including IPv4 and IPv6
 Layer 3 routing: IPv4 and IPv6
 LAG load balancing: Based on layer 2, IPv4 or IPv6 headers
 Switching latency: <9 µs for 64 byte frames
 Packet buffer memory: 1.25GB
 CPU memory: 2GB
 SD card: 8GB

IEEE compliance

802.1AB LDP
 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)
 802.3ak 10 Gigabit Ethernet (10GBase-CX4)
 802.3i Ethernet (10Base-T)
 802.3 Fast Ethernet (100Base-TX)
 802.3x Flow Control
 802.3z Gigabit Ethernet (1000Base-X)
 ANSI/TIA-1057 LLDP-MED
 Force10 FRRP (Force10 Redundant Ring Protocol)
 Force10 PVST+
 MTU 9,252 bytes

RFC and I-D compliance

General Internet protocols

768	UDP	1321	MD5
793	TCP	1350	TFTP
854	Telnet	2474	Differentiated Services
959	FTP	3164	Syslog

General IPv4 protocols

791	IPv4	1812	Routers
792	ICMP	1858	IP Fragment Filtering
826	ARP	2131	DHCP (server and relay)
1027	Proxy ARP	2338	VRRP
1035	DNS (client)	3021	31-bit Prefixes
1042	Ethernet Transmission	3046	DHCP Option 82
1191	Path MTU Discovery	3069	Private VLAN
1305	NTPv3	3128	Tiny Fragment Attack Protection
1519	CIDR		
1542	BOOTP (relay)		

General IPv6 protocols

1981	Path MTU Discovery (partial)	2463	ICMPv6
2460	IPv6	2464	Ethernet
2461	Neighbor Discovery (partial)	2675	Jumbograms
2462	Stateless Address Autoconfiguration (partial)	3587	Global Unicast Address Format Addressing

RIP

1058	RIPv1	2453	RIPv2
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OSPF

1587	NSSA	3623	Graceful Restart
2154	MD5	4222	Prioritization and Congestion Avoidance
2328	OSPFv2		

BGP

1997	Communities	3065	Confederations
2385	MD5	4360	Extended
2439	Route Flap Damping		Communities
2796	Route Reflection	4893	4-byte ASN
2842	Capabilities	5396	4-byte ASN representations
2858	Multiprotocol Extensions	4271	BGPv4
2918	Route Refresh	4724	Graceful Restart

Multicast

1112	IGMPv1	4541	IGMP v1/v2/v3
2236	IGMPv2		Snooping
3376	IGMPv3	4601	PIM-SM for IPv4
3569	SSM for IPv4		

Network management

1155	SMIPv1		
1156	Internet MIB		
1157	SNMPv1		
1212	Concise MIB Definitions		

1215	SNMP Traps		
1493	Bridges MIB		
1850	OSPFv2 MIB		
1901	Community-based SNMPv2		
1905	SNMPv2		
1907	SNMP MIB		
2011	IP MIB		
2012	TCP MIB		
2013	UDP MIB		
2024	DLsw MIB		
2096	IP Forwarding Table MIB		
2233	Interfaces MIB		
2570	SNMPv3		
2571	Management Frameworks		
2572	Message Processing and Dispatching		
2574	SNMPv3 USM		
2575	SNMPv3 VACM		
2576	Coexistence Between SNMPv1/v2/v3		
2578	SMIPv2		
2579	Textual Conventions for SMIPv2		
2580	Conformance Statements for SMIPv2		
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		
4273	BGP MIBv1		
4293	IPv6 MIB		
5060	PIM MIB		
ANSI/TIA-1057	LLDP-MED MIB		
draft-grant-tacacs-02	TACACS+		
IEEE 802.1AB	LDP MIB		
IEEE 802.1AB	LDP DOT1 MIB		
IEEE 802.1AB	LDP DOT3 MIB		
sFlow.org	sFlow v5		
sFlow.org	sFlow v5 MIB (version 1.3)		

MIBs

F10-CHASSIS-MIB
 F10-IF-EXTENSION-MIB
 F10-LINK-AGGREGATION-MIB
 F10-PRODUCTS-MIB
 F10-S-SERIES-CHASSIS-MIB
 FORCE10-BGP4-V2-MIB draft-ietf-idr-bgp4-mibv2-05
 FORCE10-COPY-CONFIG-MIB
 FORCE10-MSTP-MIB ruzin-mstp-mib-02 (traps only)
 FORCE10-SYSTEM-COMPONENT-MIB
 FORCE10-TRAP-EVENT-MIB

Regulatory Compliance

Safety

UL/CSA 60950-1, 2nd Edition
 EN 60950-1, 2nd Edition
 IEC 60950-1, 2nd 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
 China CCC

Emissions

Australia/New Zealand: AS/NZS CISPR 22: Class A
 Canada: ICES-003, Issue-4, Class A
 Europe: EN 55022: (CISPR 22), Class A
 Japan: VCCI Class A
 USA: FCC CFR 47 Part 15, Subpart B, Class A
 Brazil: Anatel

Immunity

EN 300 386 EMC for Network Equipment
 EN 55024
 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

NEBS

NEBS Level 3 on PSU to IO Panels (Reverse) models

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