Force10

Dell Force10 S-Series

S25N and S50N Data Center Switches

Modular Dell Force10 Operating System (FTOS) software delivers inherent stability; 24-port and 48-port GbE fixed configuration 1-RU switch with up to four 10 GbE ports; scalable stacking technology supports 384 GbE ports with up to eight S50Ns.

S-Series S25N and S50N High Performance GbE/10 GbE Top-of-Rack Switches

The Dell Force10 S25N and S50N bring core-like resiliency in a compact form factor to the network edge, enabling cost-effective scalability. These high performance and low latency Gigabit Ethernet switches deliver the critical functionality that advanced data center network edges demand.

Key applications

Coupled with the Dell Force10 E-Series and C-Series, which deliver unmatched resiliency and performance, the S25N and S50N enable IT managers to deploy a reliable end-to-end 10 GbE solution thats spans from core to network edge.

- Line-rate GbE and 10 GbE rack switches for demanding data center, storage or compute facility
- Cost effective distribution layer into a 10 GbE LAN core or distributed data center deployments

Key features

The S25N and S50N are fixed configuration switches that deliver reliability and scalability for data centers and edge switching applications.

- 24 or 48 10/100/1000 ports in a 1-RU form factor
  - 20 or 44 ports 10/100/1000Base-T
  - 4 ports 10/100/1000Base-T shared with SFP ports
- 24 or 48 10/100/1000 ports in a 1-RU form factor
  - 2-port 10 GbE LAN PHY (pluggable XFP modules)
  - 2-port 10 GbE (CX4)
  - 2-port 12 Gbps stacking
  - 1-port 24 Gbps stacking
- Modular Dell Force10 FTOS with advanced monitoring and serviceability functions
- VirtualView™ real-time network and application traffic monitoring for virtualized data centers
- Supports jumbo frames of up to 9,252 bytes; ideal for high-end server connectivity and network attached file servers
- Full complement of standards-based Layer 2, IPv4 and IPv6 features for unicast and multicast applications
- Switching fabric capacity of up to 288 Gbps and forwarding capacity of more than 144 Mpps
- Stack up to eight S25N, S25P, S25V, S50N or S50V switches to deliver a scalable and flexible high capacity solution

High performance, low latency Layer 2 Gigabit switching for the data center edge

Specifications: S-Series Data Center Switches

Ordering Information

Order Number	Description
225-2459	24-port 10/100/1000Base-T chassis with 4 SFP ports, 2 modular slots, 2 AC power supplies, FTOS software
225-2514	48-port 10/100/1000Base-T chassis with 4 SFP ports, 2 modular slots, 1 AC + 1 DC power supply, FTOS software
225-2515	48-port 10/100/1000Base-T chassis with 4 SFP ports, 2 modular slots, 2 DC power supplies, FTOS software
331-5389	2-port 10 GbE XFP module
331-5313	2-port 10 GbE CX4 module
331-5315	2-port 12 Gbps stacking module
331-5314	1-port 24 Gbps stacking module
331-5264	60 cm stacking cable for S50-01-12G-2S
331-5261	4 m stacking cable for S50-01-12G-2S
331-5265	60 cm stacking cable for S50-01-24G-1S
331-5263	4 m stacking cable for S50-01-24G-1S
331-5268	S25N/S50N redundant power supply unit
331-5266	S25N/S50N power supply shelf, holds eight redundant power supply units
421-6978	Layer 3 FTOS software upgrade

Physical

S25N: 24 line-rate 10/100/1000Base-T ports
S50N: 48 line-rate 10/100/1000Base-T ports
4 SFP ports (shared)
1 RJ45 console/management port with RS232 signaling

Optional modules:
- 2 line-rate ports 10 Gigabit Ethernet XFP
- 2 line-rate ports 10 Gigabit Ethernet CX4
- 2 line-rate ports 12 Gigabit Stacking
- 1 line-rate port 24 Gigabit Stacking

Size: 1 RU, 1.7 h x 17.32 w x 16.73" d (4.3 h x 44 w x 42.5 cm d)
Weight: 14.39 lbs (6.54 kg)
ISO 7779 A-weighted sound pressure level:
- S25N: 42.0 dBA at 73.4°F (23°C), S50N: 59.6 dBA at 73.4°F (23°C)

Power supply: 100–240 VAC 50/60 Hz, –44 to -60 VDC
Max. thermal output: S25N: 349 BTU/h
- S50N (AC): 531 BTU/h, S50N (DC): 465 BTU/h

Max. current draw per system:
- 2 A at 100/120 VAC, 1 A at 200/240 VAC, 3.6 A at -48 VDC

Max. power consumption: S25N: 102 W
- S50N (AC): 156 W, S50N (DC): 136 W

Max. operating specifications:
- Operating temperature: 32° to 122°F (0° to 50°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

Reliability: S25N: MTBF 141,275 hours, S50N (AC): MTBF 169,315 hours, S50N (DC): MTBF 168,259 hours

Redundancy

Ring stacking topology with dynamic master election
Dual modular slots with up to four 10 GbE ports
Link aggregation across stack members
Power redundancy

Performance

MAC addresses:	S25N: 16K, S50N: 32K
IPv4 routes:	4K
IPv6 routes:	2,500
Switching fabric capacity:	S25N: 144 Gbps, S50N: 288 Gbps
User traffic capacity:	S25N: 128 Gbps (95 Mpps) S50N: 192 Gbps (144 Mpps)
Link aggregation:	8 links per group, 128 groups per stack
Stacking capacity:	96 Gbps per stack member
Queues per port:	4 queues
VLANs:	1024 VLANs with 4096 tag value support
Line-rate Layer 2 switching:	all protocols, including IPv4 and IPv6
Line-rate Layer 3 routing:	IPv4 and IPv6
LAG load balancing:	based on Layer 2, IPv4 or IPv6 headers
Switching latency:	<5 µs for 64 byte frames

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)
802.3ak	10 Gigabit Ethernet (10GBASE-CX4)
802.3i	Ethernet (10BASE-T)
802.3u	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 (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	1858	IP Fragment Filtering
2461	Neighbor Discovery (partial)	2675	Jumbograms
2462	Stateless Address Autoconfiguration (partial)	3587	Global Unicast Address Format
		4291	Addressing

RIP

1058	RIPv1	2453	RIPv2

OSPF

2154	MD5	3623	Graceful Restart
1587	NSSA	4222	Prioritization and Congestion Avoidance
2328	OSPFv2		
2370	Opaque LSA		

BGP

1997	Communities	2918	Route Refresh
2385	MD5	3065	Confederations
2439	Route Flap Damping	4360	Extended Communities
2796	Route Reflection	4893	4-byte ASN
2842	Capabilities	5396	4-byte ASN Representation
2858	Multiprotocol Extensions		
draft-ietf-idr-bgp4-20	BGPv4		
draft-ietf-idr-restart-06	Graceful Restart		

Multicast

1112	IGMPv1	3569	SSM for IPv4
2236	IGMPv2	4541	IGMPv1/v2 Snooping
3376	IGMPv3		
draft-ietf-pim-sm-v2-new-05	PIM-SM		

Network Management

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
2574	SNMPv3 USM
2575	SNMPv3 VACM
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
ANSI/TIA-1057	LLDP-MED 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
ruzin-mstp-mib-02	MSTP MIB (traps)
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-MON-MIB	
FORCE10-PRODUCTS-MIB	
FORCE10-SS-CHASSIS-MIB	
FORCE10-SMI	
FORCE10-SYSTEM-COMPONENT-MIB	
FORCE10-TC-MIB	
FORCE10-TRAP-ALARM-MIB	
FORCE10-FORWARDINGPLANE-STATS-MIB	

Regulatory Compliance

Safety

UL/CSA 60950-1, 1st Edition
EN 60950-1, 1st Edition
IEC 60950-1, 1st 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:2009, 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

The features and specifications are for FTOS.

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