



# DELL EMC POWERSWITCH S5200-ON SERIES SWITCHES

High-performance, open networking 25GbE top-of-rack and 100GbE spine/leaf switches

The PowerSwitch S5200-ON 25/100GbE fixed switches comprise Dell Technologies' latest disaggregated hardware and software data center networking solutions, providing state-of-the-art, high-density 25/100GbE ports and a broad range of functionality to meet the growing demands of today's data center environment.

These innovative, next-generation open networking switches offer optimum flexibility and cost-effectiveness for web 2.0, enterprise, mid-market and cloud service provider with demanding compute and storage traffic environments.

The S5200-ON is a complete family of switches: 12-port, 24-port, and 48-port 25GbE/100GbE ToR switches, 96-port 25GbE/100GbE Middle of Row (MoR)/End of Row (EoR) switch, and a 32-port 100GbE Multi-Rate Spine/Leaf switch. From the compact half-rack width S5212F-ON providing an ideal form factor for hyper-converged deployments, to the high density S5296F-ON for Middle of Row deployments, the S5200-ON series offers performance and flexibility for a variety of network designs.

In addition to 100GbE Spine/Leaf deployments, the S5232F-ON can also be used in high density deployments using breakout cables to achieve up to 128 10GbE or 128 25GbE ports.

Using industry-leading hardware and a choice of Dell EMC SmartFabric OS10 or select 3rd party network operating systems and tools, the S5200-ON switches incorporate multiple architectural features that optimize data center network flexibility, efficiency and availability, including IO panel to PSU or PSU to IO panel airflow for hot/cold aisle environments, redundant, hot-swappable power supplies and fans and deliver non-blocking performance for workloads sensitive to packet loss.

Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the S5200-ON family ideally suited for DCB environments.

Dell EMC PowerSwitch S5200-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell EMC SmartFabric OS10 networking operating system, as well as alternative network operating systems.

## Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to maximize flexibility
- High-density 10/25GbE ToR server aggregation in high-performance data center environments at the desired fabric speed with the S5248F-ON or S5296F-ON
- Low-density 10/25GbE server and storage aggregation with the S5212F-ON and S5224F-ON
- Small-scale Fabric implementation via the S5232F-ON switch in leaf and spine along with S5248F-ON 1/10/25GbE ToR switches enabling cost-effective aggregation of 10/25/40/50/100 uplinks
- Multi-functional 10/25/40/50/100GbE switching in High Performance Computing Clusters or other business-sensitive deployments requiring the highest bandwidth.
- iSCSI deployments, including DCB converged lossless transactions
- Single-pass VXLAN routing

## Key features

- 1 or 2RU high-density ToR switches with up to 48 or 96 ports of 25GbE or 32 ports of 100GbE
- Multi-rate 100GbE ports support 10/25/40/50/100GbE
- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF and BGP routing support
- Line-rate performance via non-blocking switch fabrics: 3.2Tbps (6.4Tbps full-duplex) on S5296F-ON and S5232F-ON, 2.0Tbps (4.0Tbps full-duplex) on S5248F-ON, and 1.08Tbps (2.16Tbps full-duplex) on S5224F-ON and S5212F-ON
- L2 multipath support via Virtual Link Trunking (VLT) and Routed VLT support

- VXLAN gateway functionality support for bridging and routing the non-virtualized and the virtualized overlay networks with line rate performance
- Support for Dell EMC SmartFabric OS10
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV support
- Routable RoCE to enable convergence of compute and storage on Leaf/Spine Fabric
- IO panel to PSU airflow or PSU to IO panel airflow Redundant, hot-swappable power supplies and fans on most models
- Supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems
- Tool-less enterprise ReadyRails™ mounting kits for most models reducing time and resources for switch rack installation (S5212F-ON will utilize a tandem tray for mounting)
- Power-efficient operation and Dell Fresh Air 2.0 compliant up to 45°C helps reduce cooling costs in temperature constrained deployments
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
- Pervasive, unrestricted developer environment via Control Plane Services (CPS)
- Dell EMC SmartFabric OS10 software enables Dell EMC layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features
- OS10 supports Precision Time Protocol (PTP, IEEE 1588v2) to synchronize clocks on network devices
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with unique VLT capabilities
- Scalable L2 and L3 Ethernet Switching with QoS, ACL and a full complement of standards based IPv4 and IPv6 features including OSPF, BGP and PBR
- Enhanced mirroring capabilities including local mirroring, Remote Port Mirroring (RPM), and Encapsulated Remote Port Mirroring (ERPM)
- Converged network support for Data Center Bridging, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV
- BGP EVPN with Integrated Routing and Bridging (IRB) in both Asymmetric and Symmetric modes, enabling controller less NVO

#### Key features with Dell EMC SmartFabric OS10

- Consistent DevOps framework across compute, storage and networking elements
- Standard networking features, interfaces and scripting functions for legacy network operations integration

Features	S5212F-ON	S5224F-ON	S5248F-ON	S5296F-ON	S5232F-ON
Ports	12xSFP28 3xQSFP28	24xSFP28 4xQSFP28	48xSFP28 2xQSFP28-DD 4xQSFP28	96xSFP28 8xQSFP28	32xQSFP28 2xSFP+
Max 10GbE density	24	40	80	128	126
Max 25GbE density	24	40	80	128	124
Max 40GbE density	3	4	8	8	32
Max 50GbE density	6	8	16	16	64
Max 100GbE density	3	4	8	8	32
Switching capacity	1.08 Tbps (2.16 Tbps full duplex)	1.08 Tbps (2.16 Tbps full duplex)	2.0 Tbps (4.0 Tbps full duplex)	3.2 Tbps (6.4 Tbps full duplex)	3.2 Tbps (6.4 Tbps full duplex)
Throughput	892 Mpps	954 Mpps	1.9 Bpps	1.5 Bpps	1.5 Bpps

Features	S5212F-ON	S5224F-ON	S5248F-ON	S5296F-ON	S5232F-ON
Latency (nano sec)	906	881	847	850	877
1588v2 PTP timing (hardware)		●	●	●	●
CPU Memory	8GB	8GB	16GB	16GB	16GB
SSD	16GB	32GB	64GB	64GB	64GB
Packet Buffer	32MB	32MB	32MB	32MB	32MB
Maximum power	304W	455W	647W	893W	635W
Typical power	140W	200W	310W	457W	360W
Maximum current	2.8A@110VAC / 1.4A@220VAC	4.2A@110VAC / 2.1A@220VAC	5.8A@110VAC / 2.9A@220VAC	8.2A@110VAC / 4.1A@220VAC	5.8A@110VAC / 2.9A@220VAC
Fan modules	Fixed	4	4	4	4
Form Factor	1RU (half-width)	1RU	1RU	2RU	1RU
Dimensions	8.2"Wx19.3"D x1.6"H 20.9Wx49.0D x4.1H (cm)	17.1"Wx18.1"D x1.7"H 43.4Wx46.0D x4.4H (cm)	17.1"Wx18.1"D x1.7"H 43.4Wx46.0D x4.4H (cm)	17.4"Wx20.1"D x3.4"H 44.2Wx51.1D x8.7H (cm)	17.1"Wx18.1"D x1.7"H 43.4Wx46.0D x4.4H (cm)
Weight	4.5kg (10.05lbs)	9.7kg (21.4lbs)	9.7kg (21.4lbs)	15.1kg (33.2lbs)	9.8kg (21.6lbs)
Max thermal output	1037 BTU/h	1552 BTU/h	2208 BTU/h	3047 BTU/h	2167 BTU/h

Product	Description
S5200-ON	<p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, NO-OS</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, NO-OS</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5248F, 48x 25GbE SFP28 + 2x 200GbE QSFP28-DD + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10</p> <p>S5248F, 48x 25GbE SFP28 + 2x 200GbE QSFP28-DD + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10</p> <p>S5248F, 48x 25GbE SFP28 + 2x 200GbE QSFP28-DD + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS</p> <p>S5248F, 48x 25GbE SFP28 + 2x 200GbE QSFP28-DD + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS</p> <p>S5248F, 48x 25GbE SFP28 + 2x 200GbE QSFP28-DD + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5248F, 48x 25GbE SFP28 + 2x 200GbE QSFP28-DD + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10, TAA</p>

Product	Description
S5200-ON	<p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10, TAA</p>
	<p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10</p> <p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10</p> <p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS</p> <p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS</p> <p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell EMC SmartFabric OS10, TAA</p> <p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell EMC SmartFabric OS10, TAA</p>
Redundant power supplies	<p>AC Power Supply, IO Panel to PSU Airflow AC Power Supply, PSU to IO Panel Airflow</p> <p>DC Power Supply, IO Panel to PSU Airflow (available as custom kit) DC Power Supply, PSU to IO Panel Airflow (available as custom kit)</p>
Fans	<p>Fan module, IO Panel to PSU Airflow</p> <p>Fan module, PSU to IO Panel Airflow</p>
Optics	<p>Transceiver, 2x100GbE, 2xSR4, QSFP28-DD</p> <p>Transceiver, 2x100GbE, 2xPSM4-IR, QSFP28-DD</p> <p>Transceiver, 2x100GbE, 2xCWDM4, QSFP28-DD</p> <p>Transceiver, 100GbE, SR4 QSFP28</p> <p>Transceiver, 100GbE, PSM4 (500m) QSFP28 Transceiver, 100GbE, CWDM4 (2Km) QSFP28</p> <p>Transceiver, 100GbE, LR4 QSFP28</p> <p>Transceiver, 40GbE, SR4 optic QSFP+</p> <p>Transceiver, 40GbE, BiDi optic QSFP+ (Duplex) Transceiver, 40GbE, SM4 optic QSFP+ (Duplex)</p> <p>Transceiver, 40GbE, LM4 optic QSFP+</p> <p>(Duplex) Transceiver, 40GbE, PSM4 10Km, QSFP+</p> <p>Transceiver, 40GbE, LR4 optic QSFP+</p> <p>Transceiver, 40GbE, ER4 optics QSFP+</p> <p>Transceiver, 25GbE, SR, NOF SFP28</p> <p>Transceiver, 25GbE, LR, SFP28</p> <p>Transceiver, 10GbE, SR SFP+, short reach</p> <p>Transceiver, 10GbE, LR SFP+, long reach</p> <p>Transceiver, 10GbE, ER SFP+, extended reach</p> <p>Transceiver, 10GbE, ZR SFP+ extra extended reach 10G,</p> <p>Transceiver, 10GBASE-T use with QSA in QSFP+ port, 30m reach on CAT6a/7</p> <p>Transceiver, 1GbE, SX SFP</p> <p>Transceiver, 1GbE, LX SFP</p> <p>Transceiver, 1GbE, ZX SFP</p> <p>Transceiver, 1GbE, 10km, BiDi SFP</p> <p>Transceiver, 1GbE, 40km, BiDi SFP</p> <p>Transceiver, 1GbE, 80km, BiDi SFP</p> <p>Transceiver, 1GbE, 1000BASE-T, Gen2, SFP</p>
Cables	<p>100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC 100GbE, QSFP28 to QSFP28, active optical</p> <p>100GbE, QSFP28 to QSFP28, passive DAC</p> <p>100GbE, 2x50GbE, 2xQSFP to 2xQSFP28, passive DAC, breakout 40GbE, QSFP+ to QSFP+, active optical</p> <p>40GbE, QSFP+ to QSFP+, passive DAC 40GbE, MTP to 4xLC optical breakout</p> <p>40GbE, 4x10GbE, QSFP+ to 4xSFP+, passive DAC</p>
Cable management	<p>Z9100 Cable Breakout Kit, MTP to LC (1RU 64-port LC over MMF) Z9100 Cable Breakout Kit, MTP to LC (1RU 64-port LC over SMF)</p>

# Technical specifications

## Physical

1 RJ45 console/management port with RS232 signaling  
 S5212F-ON: 12x25GbE SFP28 + 3x 100GbE QSFP28  
 S5224F-ON: 24x25GbE SFP28 + 4x 100GbE QSFP28  
 S5248F-ON: 48x25GbE SFP28 + 4x 100GbE QSFP28 + 2x100GbE QSFP28-DD  
 S5296F-ON: 96x25GbE SFP28 + 8x 100GbE QSFP28  
 S5232F-ON: 32x100GbE QSFP28 ports + 2xSFP+ 10GbE

## Environmental

Power supply: 100–240 VAC 50/60 Hz  
 Max Operating specifications:  
 AC Max. Operating specifications:  
 Operating temperature: 32° to 113°F (0° to 45°C)  
 Operating humidity: 5 to 90% (RH), non-condensing  
 Max. Non-operating specifications:  
 Storage temperature: –40° to 158°F (–40° to 70°C)  
 Storage humidity: 5 to 90% (RH), non-condensing  
 Fresh air Compliant to 45°C

## Redundancy

Hot swappable redundant power  
 Hot swappable redundant fans (fixed power supply and fans on S5212F-ON)

## Performance

Packet buffer memory: 32MB  
 CPU memory: 16GB  
 MSTP: 64 instances  
 LAG load balancing: Based on layer 2, IPv4 or IPv6 headers

## IEEE Compliance

802.1AB LLDAP  
 TIA-1057 LLDP-MED  
 802.3ad Link Aggregation  
 802.1D Bridging, STP  
 802.1p L2 Prioritization  
 802.1Q VLAN Tagging  
 802.1Qbb PFC  
 802.1Qaz ETS  
 802.1X Network Access Control  
 802.3ac Frame Extensions for VLAN Tagging  
 802.3x Flow Control  
 Layer2 Protocols  
 802.1D Compatible  
 802.1s MSTP  
 802.1w RSTP  
 802.1t RPVST+  
 VLT (Virtual Link Trunking)  
 VRRP Active/Active  
 RSTP & RPVST+  
 Port Mirroring on VLT ports  
 DCB, iSCSI, FIP Snooping Bridge  
 RPM/ERPM over VLT  
 VLT Minloss upgrade

## RFC Compliance

768 UDP  
 793 TCP  
 854 Telnet  
 959 FTP  
 1321 MD5

1350 TFTP  
 2474 Differentiated Services  
 2698 Two Rate Three Color Marker  
 3164 Syslog  
 4254 SSHv2

## General IPv4 Protocols

791 IPv4  
 792 ICMP  
 826 ARP  
 1027 Proxy ARP  
 1035 DNS (client)  
 1042 Ethernet Transmission  
 1191 Path MTU Discovery  
 1305 NTPv4  
 1519 CIDR  
 1588v2 PTP support  
 1812 Routers, Static Routes  
 1858 IP Fragment Filtering  
 2131 DHCPv4 (server and relay)  
 5798 VRRPv3  
 3021 31-bit Prefixes  
 1812 Requirements for IPv4 Routers  
 1918 Address Allocation for Private Internets  
 2474 Diffserv Field in IPv4 and Ipv6 Headers  
 2597 Assured Forwarding PHB Group  
 3195 Reliable Delivery for Syslog  
 3246 Expedited Forwarding PHB Group  
 VRF (BGPv4/v6)

## General IPv6 Protocols

1981 Path MTU for IPv6  
 2372 IPv6 Addressing  
 2460 IPv6 Protocol Specification  
 2461 Neighbor Discovery  
 2462 Stateless Address AutoConfig  
 2711 IPv6 Router alert  
 2463 ICMPv6  
 2464 Ethernet Transmission  
 2675 IPv6 Jumbograms  
 3484 Default Address Selection  
 3493 Basic Socket Interface  
 4291 Addressing Architecture  
 3542 Advanced Sockets API  
 3587 Global Unicast Address Format  
 4291 IPv6 Addressing  
 2464 Transmission of IPv6 Packets over Ethernet Networks  
 2711 IPv6 Router Alert Option  
 4007 IPv6 Scoped Address Architecture  
 4213 Transition Mechanisms for IPv6 Hosts and Routers  
 3315 DHCPv6 Server & Relay  
 IPv6 Static Routes

## OSPF

1745 OSPF/BGP interaction  
 1765 OSPF Database overflow  
 2154 OSPF with DigitalSignatures  
 2328 OSPFv2  
 5340 OSPF for IPv6 (OSPFv3)  
 2370 Opaque LSA  
 3101 OSPF NSSA  
 4552 OSPFv3 Authentication

## Multicast

4541 IGMPv1/v2/v3 and MLDv1/v2 Snooping

## Security

2865 RADIUS  
 3162 Radius and IPv6

3579 Radius support for EAP  
 3580 802.1X with RADIUS  
 3826 AES Cipher in SNMP  
 1492 TACACS (Authentication, Accounting) Control Plane, VTY & SNMP ACLs

## IP Access Control Lists

## BGP

1997 Communities  
 2385 MD5  
 2439 Route Flap Damping  
 2796 Route Reflection  
 2918 Route Refresh  
 3065 Confederations  
 4271 BGP-4  
 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing  
 2858 Multiprotocol Extensions  
 4360 Extended Communities  
 4893 4-byte ASN  
 5396 4-byte ASN Representation  
 5492 Capabilities Advertisement  
 draft-ietf-idr-add-paths-04.txt ADD PATH

## Linux Distribution

Debian Linux version 9  
 Linux Kernel 4.9

## Network Management and Monitoring

SNMPv1/2c  
 IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP)  
 Syslog  
 Port Mirroring  
 RPM/ERPM  
 3176 SFlow  
 Support Assist (Phone Home)  
 RestConf APIs (Layer 2 features)  
 XML Schema  
 CLI Commit (Scratchpad)  
 Uplink Failure Detection  
 Object Tracking  
 Bidirectional Forwarding Detection (BFD) Automation  
 Control Plane Services APIs  
 Linux Utilities and Scripting Tools  
 CLI Automation (Multiline Alias)  
 Zero Touch Deployment (ZTD)  
 Ansible, Puppet, Chef, SaltStack  
 8040 RESTCONF APIs (L3)

## Quality of Service

Prefix List  
 Route-Map  
 Rate Shaping (Egress)  
 Rate Policing (Ingress)  
 Scheduling Algorithms  
 Round Robin  
 Weighted Round Robin  
 Deficit Round Robin  
 Strict Priority  
 Weighted Random Early Detect

## Data center bridging

802.1Qbb Priority-Based Flow Control  
 802.1Qaz Enhanced Transmission Selection (ETS)  
 Explicit Congestion Notification  
 Data Center Bridging eXchange (DCBx)  
 DCBx Application TLV (iSCSI, FCoE)  
 RoCEv2  
 Software Defined Networking  
 OpenFlow 1.3 (Native)

## MIBS

IP MIB  
IP Forward MIB  
Host Resources MIB  
IF MIB  
LLDP EXT1/3 MIB  
Entity MIB  
LAG MIB  
Dell-Vendor MIB  
TCP MIB  
UDP MIB  
SNMPv2 MIB  
ETHERLIKE-MIB  
SFLOW-MIB  
PFC-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

## Warranty

1 year return to depot



**Dell  
Technologies  
Services**

Plan, deploy, manage and support your IT transformation with our top-rated services

### Consulting

Dell Technologies Consulting Services provides industry professionals with a wide range of tools and the experience you need to design and execute plans to transform your business.

### Deployment

Accelerate technology adoption with ProDeploy Enterprise Suite. Trust our experts to lead deployments through planning, configuration and complex integrations.

### Management

Regain control of operations with flexible IT management options. Our Residency Services help you adopt and optimize new technologies and our Managed Services allow you to outsource portions of your environment to us.

### Support

Increase productivity and reduce downtime with ProSupport Enterprise Suite. Expert support backed by proactive and predictive artificial intelligence tools.

### Education

Dell Technologies Education Services help you develop the IT skills required to lead and execute transformational strategies. Get certified today.

Learn more at  
[DellTechnologies.com/Services](https://DellTechnologies.com/Services)

Learn more at [DellTechnologies.com/Networking](https://DellTechnologies.com/Networking)