



DELL EMC POWERSWITCH S4200-ON

10/40/100 GbE top-of-rack multi-function open networking switch

The Dell EMC PowerSwitch S4200-ON switch is Dell Technologies' latest disaggregated hardware and software data center networking solution, providing a broad range of functionality to meet the growing demands of today's data center environment. The S4200 is a performance-optimized open networking switch that provides deep buffering capability and enhanced hardware table capacities for internet routing or high density flow tables for software defined networking applications.

Using industry-leading hardware and a choice of leading network operating systems and tools, the S4200-ON delivers non-blocking performance for High Performance Computing (HPC), big data and other workloads sensitive to packet loss. It also provides optimum bandwidth for demanding environments with support for 10/40/100GbE ports for top of rack deployment in data centers.

Based on configuration options, the S4200-ON can be a full-functioned data center switch, low-cost WAN switch for internet routing, or scalable 10GbE SDN switch for access and aggregation layers of a SDN data center fabric. The Dell EMC PowerSwitch S4200-ON supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems.

Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to deliver the flexibility they need
- Multi-functional 10/40/100 GbE switching/routing in HPC clusters, big data clusters, Hadoop clusters, video distribution networks, storage networks or other business-sensitive deployments that require the highest performance
- High-density 10GbE ToR server aggregation in loss sensitive data center (DC) environments
- Innovative cloud providers, financial companies and Web 2.0 companies
- Deep tables for handling of full Internet routes and scalable SDN flow rules for enterprise data centers
- SaaS providers and carriers looking for best-of-breed SDN solutions

Key features

- 1RU high-density 10/40/100 GbE ToR switch with forty ports of 10GbE (SFP+), two ports of 40 GbE (QSFP+), and six ports of 100GbE (QSFP28)
- There are two variants of S4200-ON:
 - S4248FB-ON: with deep-buffering only
 - S4248FBL-ON: with deep-buffering and additional
- TCAM for expanded FIB and ACL tables and flows
- Multi-rate 100GbE ports support 10/25/40/50GbE; 40GbE ports support 10GbE; 10GbE ports support 1GbE
- 800Gbps (half-duplex)/1.6Tbps (full-duplex) switching fabric
- Deep buffering capability of up to 6GB packet buffering
- Supports virtual output queue (VoQ) architecture and deep packet buffering to eliminate head of line blocking
- Supports up to 2 million IPv4 route entries
- OpenFlow controllers
- IO panel to PSU airflow or PSU to IO panel airflow
- Supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems
- Redundant, hot-swappable power supplies and fans

Key features with Dell SmartFabric OS10

- Consistent DevOps framework across compute, storage and networking elements
- Standard networking features, interfaces and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
- Pervasive, unrestricted developer environment via Control Plane Services (CPS)
- Open and programmatic management interface via Common Management Services (CMS)
- Dell EMC SmartFabric OS10 software enables Dell Technologies'

Layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features

- Platform agnostic via standard hardware abstraction layer (OCPSAI)
- Unmodified Linux kernel and unmodified Linux distribution
- Leverage common open source tools and best practices (data models, commit rollbacks)
- 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

	S4248FB-ON	S4248FBL-ON
Buffer	6GB	6GB
CPU memory	8GB DDR3	32GB DDR3
SSD	16GB mSATA	64GB mSATA

Product	Description
S4200-ON	S4248FB, 40x 10GbE SFP+, 2x QSFP+, 6x 100GbE QSFP28, 2x AC PSU, 5x fan modules, I/O Panel to PSU Airflow S4248FB, 40x 10GbE SFP+, 2x QSFP+, 6x 100GbE QSFP28, 2x AC PSU, 5x fan modules, PSU to I/O Panel Airflow S4248FBL, 40x 10GbE SFP+, 2x QSFP+, 6x 100GbE QSFP28, 2x AC PSU, 5x fan modules, I/O Panel to PSU Airflow S4248FBL, 40x 10GbE SFP+, 2x QSFP+, 6x 100GbE QSFP28, 2x AC PSU, 5x fan modules, PSU to I/O Panel Airflow
Redundant power supplies	S4200, AC Power Supply, IO Panel to PSU Airflow S4200, AC Power Supply, PSU to IO Panel Airflow S4248, DC Power Supply, I/O Panel to PSU Airflow S4248, DC Power Supply, PSU to I/O Panel Airflow
Fans	S4200 fan module, IO Panel to PSU Airflow S4200 fan module, PSU to IO Panel Airflow
Optics	Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, LR4Lite QSFP28 Transceiver, 100GbE, CWDM4 2Km QSFP28 (*) Transceiver, 100GbE, PSM4 500m QSFP28 (*) Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, eSR4 optic QSFP+ Transceiver, 40GbE, LR4 optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+ Transceiver, 40GbE, PSM4 10Km, QSFP+ Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC Transceiver, 40GbE, LM4 / SM4 Duplex QSFP+ Transceiver, 40GbE QSFP+ to SFP+/SFP Adapter (QSA) Transceiver, 10GbE, SR SFP+, short reach Transceiver, 10GbE, LR SFP+, long reach Transceiver, 10GbE, ER SFP+, extended reach Transceiver, 10GbE, ZR SFP+ extra extended reach
Cables	100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC 100GbE, QSFP28 to QSFP28, active optical 100GbE, QSFP28 to QSFP28, passive DAC 100GbE, 2x50GbE, QSFP28 to 2xQSFP28, passive DAC, breakout (*) 40GbE, QSFP+ to QSFP+, active optical 40GbE, QSFP+ to QSFP+, passive DAC 40GbE, MTP to 4xLC optical breakout 40GbE, 4x10GbE, QSFP+ to 4xSFP+, passive DAC

Technical specifications

Physical

40 10 Gigabit Ethernet SFP+ ports
 2 40 Gigabit Ethernet QSFP+ ports
 6 100 Gigabit Ethernet QSFP28 ports
 1 RJ45 console/management port with RS232 signaling
 Size: 1 RU, 1.72 h x 17.1 w x 18.2" d (4.4 h x 43.4 w x 46.2 cm d)
 Weight: 22 lbs (9.98 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
 DC power supply: -36V to -72V
 Max. thermal output: 2047 BTU/h
 Thermal dissipation: 1433 BTU/hr (S4248FB-ON); 1604 BTU/hr (S4248FBL-ON)
 Max. current draw per system:
 6A/5A at 100/120V AC 3A/2.5A at 200/240V AC
 Typical power consumption (S4248FB-ON): 150W
 Max power consumption (S4248FB-ON): 420W
 Typical power consumption (S4248FBL-ON): 180W
 Max power consumption (S4248FBL-ON): 470W
 Max. operating specifications:
 Operating temperature: 32° to 104°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 95% (RH), non-condensing

Redundancy

Hot swappable redundant power
 Hot swappable redundant fans

Performance

Switch fabric capacity:
 1.6Tbps (full-duplex)
 800Gbps (half-duplex)
 Forwarding capacity: 720 Mpps
 Packet buffer memory: 6GB
 CPU memory:
 S4248FB-ON: 8GB
 S4248FBL-ON: 32GB
 Link aggregation: 32 links per group, 128 groups
 Layer 2 VLANs: 4K
 MSTP: 64 instances
 LAG load balancing: Based on layer 2, IPv4 or IPv6 headers

	S4248FB-ON	S4248FBL-ON
MAC scale	750K	750K
IPv4 hosts	96K	96K
PVST instance	128	128
Ingress ACL	8192	8192
Egress ACL	2048	2048
L3 VLAN	500	500
IPv4 routes	130K	2 Million
IPv6 routes	64K	400K

IEEE Compliance

802.1AB LLDP
 TIA-1057 LLDP-MED
 802.1s MSTP
 802.1w RSTP
 802.3ab Gigabit Ethernet (1000Base-T)
 802.3ad Link Aggregation with LACP
 802.3ae 10 Gigabit Ethernet (10GBase-X)
 802.3ba 40 Gigabit Ethernet (40GBase-X)
 802.3i Ethernet (10Base-T)
 802.3u Fast Ethernet (100Base-TX)
 802.3z Gigabit Ethernet (1000Base-X)
 802.1D Bridging, STP
 802.1p L2 Prioritization
 802.1Q VLAN Tagging, GVRP
 802.1Qbb PFC
 802.1Qaz ETS
 802.1X Network Access Control
 802.3ab Gigabit Ethernet (1000BASE-T) or breakout
 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, 40GBase-LR4, 100GBase-SR10, 100GBase-LR4, 100GBase-ER4) on optical ports
 802.3bj 100 Gigabit Ethernet
 802.3u Fast Ethernet (100Base-TX) on mgmt ports
 802.3x Flow Control
 802.3z Gigabit Ethernet (1000Base-X) with QSA ANSI/TIA-1057

LLDP-MED
 Jumbo MTU support 9,416 bytes

Layer2 Protocols

802.1D Compatible
 802.1p L2 Prioritization
 802.1Q VLAN Tagging
 802.1s MSTP
 802.1w RSTP
 802.1t RPVST+
 802.3ad Link Aggregation with LACP

VLT (Virtual Link Trunking)

Minloss Upgrades
 VLT Proxy Gateway
 RPVST over VLT
 DCB, FSB, iSCSI over VLT
 RSPAN over VLT

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
 1812 Routers
 1858 IP Fragment Filtering
 2131 DHCP (server and relay)
 5798 VRRP
 3021 31-bit Prefixes
 3046 DHCP Option 82 (Relay)
 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
 COPP: Control Plane Policing Policy Based Routing
General IPv6 Protocols
 1981 Path MTU Discovery
 2460 IPv6
 2461 Neighbor Discovery
 2462 Stateless Address AutoConfig
 2463 ICMPv6
 2464 Ethernet Transmission
 2675 Jumbo grams
 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 Basic Transition Mechanisms for IPv6 Hosts and Routers
 4291 IPv6 Addressing Architecture
 5095 Deprecation of Type 0 Routing Headers in IPv6
 IPv6 Management support (telnet, FTP, RADIUS, SSH, NTP)

OSPF

1587 NSSA
 1745 OSPF/BGP interaction
 1765 OSPF Database overflow
 2154 MD5
 2328 OSPFv2
 2370 Opaque LSA
 3101 OSPF NSSA
 3623 OSPF Graceful Restart (Helper mode), Partial Support

Multicast

2236 IGMPv2 Snooping
BGP
 1997 Communities
 2385 MD5
 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
 2439 Route Flap Damping
 2796 Route Reflection
 2842 Capabilities
 2918 Route Refresh
 3065 Confederations
 4271 BGP-4
 4360 Extended Communities
 4893 4-byte ASN
 5396 4-byte ASN Representation
 5492 Capabilities Advertisement

Linux Distribution

Debian Linux version 8.4
 Linux Kernel 3.16

MIBS

IP MIB
IP Forward MIB
Host Resources MIB
IF MIB
LLDP MIB
Entity MIB
LAG MIB
Dell-Vendor MIB
TCP MIB
UDP MIB
SNMPv2 MIB

Network Management

SNMPv1/2
SSHv2
FTP, TFTP, SCP
Syslog
Port Mirroring
RADIUS
802.1X
Support Assist (Phone Home)
Netconf APIs
XML Schema
CLI Commit (Scratchpad)
sFlow

Automation

Control Plane Services APIs
Linux Utilities and Scripting Tools

Quality of Service

Access Control Lists
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)

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: 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

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

Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A



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Consulting

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