



# Dell 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 and cloud service providers 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, 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.

The Dell PowerSwitch S5200-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell SmartFabric OS10 networking operating system, Enterprise SONiC Distribution by Dell Technologies, as well as of 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
- Supports Dell Enterprise SONiC Distribution by Dell Technologies. Dell Enterprise SONiC Distribution by Dell Technologies helps IT organizations to run their business with the innovation, automation and reliability that comes from a commercial offering of SONiC with production-ready enterprise feature enhancements, hardening and global support targeted for demanding data center leaf and spine fabrics.
- Supports Dell 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

## 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)
- Dell SmartFabric OS10 software enables 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

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	12 (SFP28) 12 (QSFP28 Breakout)	24 (SFP28) 16 (QSFP28 breakout)	48 (SFP28) 16 (QSFP28-DD breakout) 16 (QSFP28 breakout)	96 (SFP28) 32 (QSFP28 breakout)	124 (QSFP28 breakout) 2 (SFP+)
Max 25GbE density	12 (SFP28) 12 (QSFP28 Breakout)	24 (SFP28) 16 (QSFP28 breakout)	48 (SFP28) 16 (QSFP28-DD breakout) 16 (QSFP28 breakout)	96 (SFP28) 32 (QSFP28 breakout)	124 (QSFP28 breakout)
Max 40GbE density	3 (QSFP28)	4 (QSFP28)	6 (QSFP28) 4 (QSFP28-DD breakout)	8 (QSFP28)	32 (QSFP28)
Max 50GbE density	6 (QSFP28 breakout)	8 (QSFP28 breakout)	16 (QSFP28 breakout)	16 (QSFP28 breakout)	64 (QSFP28 breakout)
Max 100GbE density	3 (QSFP28)	4 (QSFP28)	4 (QSFP28) 4 (QSFP28-DD breakout)	8 (QSFP28)	32 (QSFP28)
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	440 Mpps (880 Mpps full duplex)	720 Mpps (1.42 Bpps full duplex)	1.5 Bpps (3.0 Bpps full duplex)	2.4 Bpps (4.8 Bpps full duplex)	2.4 Bpps (4.8 Bpps full duplex)
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

Features	Description
S5200-ON	<p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, Dell SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, Dell SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, I/O Panel to PSU Airflow, Dell SmartFabric OS10</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, PSU to I/O Panel Airflow, Dell 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 SmartFabric OS10, TAA</p> <p>S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, Dell SmartFabric OS10, TAA</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell SmartFabric OS10</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell 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 SmartFabric OS10, TAA</p> <p>S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell 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 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 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 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 SmartFabric OS10, TAA</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, Dell SmartFabric OS10</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell 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 SmartFabric OS10, TAA</p> <p>S5296F, 96x 25GbE SFP28 + 8x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell 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 SmartFabric OS10</p> <p>S5232F, 32x 100 GbE QSFB28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, Dell 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 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 SmartFabric OS10, TAA</p>
Redundant power supplies	<p>AC Power Supply, IO Panel to PSU Airflow</p> <p>AC Power Supply, PSU to IO Panel Airflow</p> <p>DC Power Supply, IO Panel to PSU Airflow (available as custom kit)</p> <p>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, Cables and Cable Management	Please refer to <a href="#">Dell Networking Transceivers and Cables spec sheet</a> for complete list of optics and cables. for a complete list of optics and cables.

## 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  
MAC Addresses: 32K min, 288K max\*\*  
IPv4 Hosts: 16K min, 168K max\*\*  
IPv6 Hosts: 8K min, 100K max\*\*  
IPv4 Routes: 128K\*\*  
IPv6 Routes: 64K\*\*  
Multicast Routes: 16K

L2 Ingress ACL: 2K  
L2 Egress ACL: 256  
IPv4 Ingress ACL: 2K  
IPv4 Egress ACL: 2K  
IPv6 Ingress ACL: 1K  
IPv6 Egress ACL: 1K  
VLANs: 4K  
MSTP instances: 63 instances  
PVST instances: 150 instances  
Total LAG: 128  
Total members per LAG: 16  
LAG load balancing: Based on layer 2, IPv4 or IPv6 headers

For Network Operating System (NOS) specific features, refer to [Dell SmartFabric OS10](#) and [Enterprise SONiC Distribution by Dell Technologies](#) spec sheets.

### 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

\*Maximum NPU and hardware performance. Please refer to specific Network Operating System scalability numbers for actual, validated values.

\*\*Depends on ALPM mode.

## IT Lifecycle Services for Networking

### Experts, insights and ease

Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.



#### Plan & Design

Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.



#### Deploy & Integrate

Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.



#### Educate

Ensure your staff builds the right skills for long-term success. Get certified on Dell Networking technology and learn how to increase performance and optimize infrastructure.



#### Manage & Support

Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.



#### Optimize

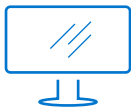
Maximize performance for dynamic IT environments with Dell Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.



#### Retire

We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

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



[Learn more](#) about Dell Networking solutions



[Contact](#) a Dell Technologies Expert



[View more](#) resources



Join the conversation with [@DellNetworking](#)