



## DELL POWERSWITCH S4100-ON

High-performance open networking top-of-rack switches with multirate Gigabit Ethernet and unified ports

The S4100-ON 10GbE switches comprise Dell Technologies' latest disaggregated hardware and software data center networking solutions, providing state-of-the-art 100GbE uplinks, fibre channel connectivity and a broad range of functionality to meet the growing demands of today's data center environment. These innovative, next-generation top-of-rack open networking switches offer optimum flexibility and cost-effectiveness for the enterprise, midmarket and tier 2 cloud service providers with demanding compute and storage traffic environments.

The compact S4100-ON models provide industry-leading density with up to 48 ports of 10GbE or up to 48 ports of 10GBaseT ports, 2 ports of 40GbE and 4 ports of 100GbE in a 1RU form factor. The S4148U-ON model can support up to 28 8/16G fibre channel ports, or 16 ports of 32G\* fibre channel ports. The S4112-ON is a half-rack width model that supports up to 12 ports of 10GbE or 12 ports 10GBaseT, and 3 ports of 100GbE.

Using industry-leading hardware and a choice of Dell SmartFabric OS10 or select 3rd party network operating systems and tools, the S4100-ON Series offers flexibility by provision of configuration profiles and delivers non-blocking performance for workloads sensitive to packet loss. The compact S4100-ON models provide multirate speed, enabling denser footprints and simplifying migration to 100Gbps. Also unique to the S4100-ON series is the ability to meet the demands of converged and virtualized data centers by offering unified ports (S4148U) and hardware support for L2 and L3 VXLAN Gateway. Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the S4100-ON ideally suited for DCB environments. Dell PowerSwitch S4100-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell SmartFabric OS10 networking operating system, as well as of alternative network operating systems.

### Maximum performance and functionality

The S4100-ON series are high-performance, multifunction, 1/10/25/40/50/100 GbE top-of-rack (ToR) switches purpose-built for applications in high-performance data center, cloud and computing environments. Architectural features to optimize data center network flexibility, efficiency and availability include IO panel to PSU airflow or PSU to IO panel airflow for hot/cold aisle environments and redundant, hot-swappable power supplies and fans.

### Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to maximize flexibility
- Multi-functional 1/10/25/40/50/100 GbE switching in High Performance Computing Clusters or other business-sensitive deployments requiring the highest bandwidth. High-density 1/10 GbE ToR server access in high-performance data center environments
- iSCSI storage deployment, including DCB converged lossless transactions
- Small-scale data center fabric implementation via the S4100-ON switch in leaf and spine along with S-Series 1/10GbE ToR switches
- VXLAN layer 2/layer 3 gateway support

### Key features

- 1RU high-density 10/40/100 GbE ToR switches with up to 48 ports of 10 GbE (SFP+) or up to 48 ports of 10GBaseT ports, or up to 28 ports of 8/16 fibre channel, two ports of 40 GbE (QSFP+), and up to four ports of 100GbE (QSFP28) or four ports of 8/16/32G fibre channel
- The S4112 is a 1RU, half-rack width 10/100GbE ToR switch with up to 12 ports of 10GbE (SFP+) or up to 12 ports of 10GBaseT ports, and up to three ports of 100GbE (QSFP28)

\* Not line rate

- Multi-rate 100GbE ports support 10/25/40/50 GbE. 40GbE ports support 10GbE. 10GbE ports support 1GbE. Up to four different simultaneous speeds are possible in a given profile.
- 1.76Tbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load on S4148F-ON, S4148FE-ON, S4148T-ON and S4148U-ON.
- 960Gbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load on S4128F-ON and S4128T-ON
- 840Gbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load on S4112F-ON and S4112T-ON
- VXLAN gateway functionality support for bridging and routing the non-virtualized and the virtualized overlay networks with line rate performance
- Converged Network support with DCB
- IO panel to PSU airflow or PSU to IO panel airflow
- Redundant, hot-swappable power supplies and fans (S4112-ON has redundant, fixed power supplies and fans)
- Support for 10GBASE-LRM optics over OM1/OM2 fiber on S4148FE-ON product (not supported on other products in S4100 product family)
- IEEE 1588v2 supported on 48 port models

## 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)
- OS10 Enterprise Edition software enables Dell Technologies 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.
- 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 (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV 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

	S4112F-ON	S4112T-ON	S4128F-ON	S4128T-ON	S4148F-ON	S4148T-ON
Ports	12xSFP+ 3xQSFP28	12x10GbT 3xQSFP28	28xSFP+ 2xQSFP28	28x10GbT 2x QSFP28	48xSFP+ 2xQSFP+ 4xQSFP28	48x10GbT 2xQSFP+ 4xQSFP28
Max 10GbE density	24 (12 SFP+ and 12 via QSFP28 breakout)	24 (12 10GbT and 12 via QSFP28 breakout)	36 (28 SFP+ and 8 via QSFP28 breakout)	36 (28 10GbT and 8 via QSFP28 breakout)	72 (48 SFP+ and 24 via QSFP28 breakout)	72 (48 10GbT and 24 via QSFP28 breakout)
Max 25GbE density	12 via QSFP28 breakout	12 via QSFP28 breakout	8 via QSFP28 breakout	8 via QSFP28 breakout	16 via QSFP28 breakout	16 via QSFP28 breakout
Max 40GbE density	3	3	2	2	6	6
Max 50GbE density	6	6	4	4	8	8
Max 100GbE density	3	3	2	2	4	4

	S4112F-ON	S4112T-ON	S4128F-ON	S4128T-ON	S4148F-ON	S4148T-ON
Switching capacity	840Gbps	840Gbps	960Gbps	960Gbps	1.76Tbps	1.76Tbps
Throughput	625Mpps	625Mpps	720Mpps	720Mpps	1320Mpps	1320Mpps
1588v2 PTP timing					●	●
Max power consumption	180W	200W	260W	300W	370W	440W
Typical operating power	90W	120W	160W	250W	200W	320W
Number of fan trays	Fixed	Fixed	4	4	4	4
Fans per fan tray	3	3	1	1	1	2
Weight	8.30lbs	8.45lbs	19.66 lbs (8.92 kg)	20.67 lbs (9.38 kg)	20.15 lbs (9.14 kg)	22.37 lbs (10.15 kg)
Max thermal output	614 BTU/h	682 BTU/h	886 BTU/h	1,023 BTU/h	1261 BTU/h	1,500 BTU/h

● Supported

Product	Description
<b>S4100-ON</b>	<p>S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow</p> <p>S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow</p> <p>S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow</p> <p>S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow</p> <p>S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow</p> <p>S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow, TAA Certified</p> <p>S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow</p> <p>S4128T, 28x 10GBASE-T, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow</p> <p>S4128T, 28x 10GBASE-T, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow, TAA Certified</p> <p>S4128T, 28x 10GBASE-T, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow</p> <p>S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow</p> <p>S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow, TAA Certified</p> <p>S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow</p> <p>S4148T, 48x 10GBASE-T, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow</p> <p>S4148T, 48x 10GBASE-T, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow, TAA Certified</p> <p>S4148T, 48x 10GBASE-T, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow</p>
<b>Redundant power supplies (not applicable to S4112)</b>	<p>S4100, AC Power Supply, IO Panel to PSU Airflow</p> <p>S4100, AC Power Supply, PSU to IO Panel Airflow</p> <p>S4100, DC Power Supply, IO Panel to PSU Airflow (available as custom kit)</p> <p>S4100, DC Power Supply, PSU to IO Panel Airflow (available as custom kit)</p> <p>S4100, HV DC Power Supply, IO Panel to PSU Airflow</p> <p>S4100, HV DC Power Supply, PSU to IO Panel Airflow</p>
<b>Fans (not applicable to S4112)</b>	<p>S4100 fan module, IO Panel to PSU Airflow</p> <p>S4100 fan module, PSU to IO Panel Airflow</p>

Product	Description
Optics	Transceiver, 1000Base-T, 1GbE (SFP to RJ45) 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 10G, Transceiver, 10GbE, USR, SFP+ Transceiver, 10GBASE-T use with QSA in QSFP+ port, 30m reach on CAT6a/7 Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, eSR4 optic QSFP+ Transceiver, 40GbE, LR4 optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+ Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC Transceiver, 40GbE, SM4 Duplex QSFP+ Transceiver, 100GbE, FR1 2Km QSFP28 Transceiver, 100GbE, BiDi, short reach QSFP28 Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, CWDM4 2Km QSFP28 Transceiver, 100GbE, PSM4-IR, QSFP28
Cables	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 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

## Technical specifications

### Physical

1 RJ45 console/management port with RS232 signaling  
 1 RJ45 micro-USB-B console port  
 1 RJ45 10/100/1000Base-T management Ethernet port  
 Size: 1 RU, 1.75"(h) x 17"(w) x 18"(d) (4.4cm (h) x 43.1cm (w) x 45.7cm (d))  
 S4112: 1.7"(h) x 8.28"(w) x 18"(d) (4.125cm (h) x 20.9cm (w) x 45cm (d))  
 Power supply: 100–240 VAC 50/60 Hz  
 Max. current draw per system: 6A/5A at 100/120V  
 AC; 3A/2.5A at 200/240V AC  
 S4112: 2A/1.7A at 100/120V AC; 1A/0.8A at 200/240V AC  
 Max. operating specifications:  
 Operating temperature: 41° to 104° F (5° to 40° C)  
 Operating humidity: 5 to 85% (RH), non-condensing  
 Max. non-operating specifications:  
 Storage temperature: -40° to 149°F (-40° C to 65° C)  
 Storage humidity: 5 to 95% (RH), non-condensing

### Redundancy

Hot swappable redundant power (not applicable to S4112)  
 Hot swappable redundant fans (not applicable to S4112)  
 Fixed, redundant power supply and fan for S4112

### Performance

Packet buffer memory: 12MB  
 CPU memory: 4GB  
 MAC addresses: 272K (in Scaled L2 mode)  
 PVST: 128 instances  
 ARP table 200K (in Scaled L3 host mode)

IPv4 routes: 200K (in Scaled L3 routes mode)  
 IPv6 hosts: 64K  
 IPv6 routes: 130K (in Scaled L3 routes mode)  
 Multicast hosts: 8K  
 Link aggregation: 32 links per group, 128 groups  
 Layer 2 VLANs: 4K  
 Layer 3 VLANs: 500  
 MSTP: 32 instances  
 LAG load balancing: Based on layer 2, IPv4 or IPv6 headers  
 L2 Ingress ACL: 6K  
 L2 Egress ACL: 1K  
 IPv4 Ingress ACL: 6K  
 IPv4 Egress ACL: 1K  
 IPv6 Ingress ACL: 3K  
 IPv6 Egress ACL: 500  
 Storage performance parameters  
 iSCSI Sessions: 255  
 iSCSI Target: 16  
 F-Port: Max F-Port Sessions: 526  
 F-Port: Max members in a zone: 526

### Dell SmartFabric OS10 Software Specifications

#### 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 (1000BaseX)  
 802.1D Bridging, STP  
 802.1p L2 Prioritization  
 802.1Q VLAN Tagging

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 9,216 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)

VLT Enhancements  
 Minloss Upgrades  
 VLT Proxy Gateway  
 RVPST over VLT  
 DCB, FSB, iSCSI over VLT  
 RSPAN over VLT

## Technical specifications

### 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
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
4364	VRF-lite (IPv4 VRF with OSPF and BGP)

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, TACACS, 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)

### Security

2865	RADIUS
3162	Radius and IPv6
4250, 4251, 4252, 4253, 4254	SSHv2
4301	Security Architecture for IPsec
4302	IPsec Authentication Header
4303	ESP Protocol

### BGP

1997	Communities
2385	MD5
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 9  
Linux Kernel 4.19

### MIBS

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

### 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)

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 32: Class A  
Canada: ICES-003, Issue-4, Class A  
Europe: EN 55032: 2015+A1:2007 (CISPR 32), 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

#### Warranty

1 Year Return to Depot

## 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

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