DELL EMC 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 10GbE ports, 2 ports of 40GbE and 4 ports of 100GbE in a 1RU form factor. The S4148U-ON model can support up to 28 8/16Gb fibre channel ports, or 16 ports of 32G fibre channel ports. The S4112T-ON is a half-rack width model that supports up to 12 ports of 10GbE or 12 ports 10GbE and 3 ports of 100GbE.

Using industry-leading hardware and a choice of Dell EMC 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 EMC PowerSwitch S4100-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.

Maximum performance and functionality

The S4100-ON series are high-performance, multifunction, 1/10/25/40/50/100 GbE and 8/16/32G FC 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 and FC 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 10GbE 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 (QSFP+)
- 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 10GbE ports, and up to three ports of 100GbE (QSFP28)
- Multi-rate 100GbE ports support 10Gbps. 10GbE ports support 1Gbps. Up to four different simultaneous speeds are possible in a given profile.
- Supports dynamic reconfiguration of unified ports on S4148U product as 10GbE or 8/16Gb FC on SFP+ ports, and 25GbE or 16/32Gb FC on QSFP28 ports
- 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 EMC 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

<table>
<thead>
<tr>
<th>S4112F-ON</th>
<th>S4112T-ON</th>
<th>S4128F-ON</th>
<th>S4128T-ON</th>
<th>S4148F-ON</th>
<th>S4148FE-ON</th>
<th>S4148T-ON</th>
<th>S4148U-ON</th>
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<tbody>
<tr>
<td>Ports</td>
<td>12xSFP+</td>
<td>12x10GbT</td>
<td>28xSFP+</td>
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<td>48xSFP+</td>
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<td>3xQSFP28</td>
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<td>Unified port</td>
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<tr>
<td>Max 10GbE density</td>
<td>24 (12 SFP+ and 12 via QSFP28 breakout)</td>
<td>24 (12 10GbT and 12 via QSFP28 breakout)</td>
<td>36 (28 SFP+ and 8 via QSFP28 breakout)</td>
<td>36 (28 10GbT and 8 via QSFP28 breakout)</td>
<td>72 (48 SFP+ and 24 via QSFP28 breakout)</td>
<td>72 (48 10GbT and 24 via QSFP28 breakout)</td>
<td>72 (48 10GbT and 24 via QSFP28 breakout)</td>
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<td>Max 25GbE density</td>
<td>12 via QSFP28 breakout</td>
<td>12 via QSFP28 breakout</td>
<td>8 via QSFP28 breakout</td>
<td>8 via QSFP28 breakout</td>
<td>16 via QSFP28 breakout</td>
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<td>1588v2 PTP timing</td>
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<td>Fans per fan tray</td>
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<tr>
<td>Weight</td>
<td>8.3lbs</td>
<td>8.4lbs</td>
<td>19.66lbs (9.32 kg)</td>
<td>20.67lbs (9.38 kg)</td>
<td>20.15lbs (9.14 kg)</td>
<td>20.85lbs (9.46 kg)</td>
<td>22.37lbs (10.15 kg)</td>
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<tr>
<td>Max thermal output</td>
<td>614 BTU/h</td>
<td>682 BTU/h</td>
<td>886 BTU/h</td>
<td>1,023 BTU/h</td>
<td>1,261 BTU/h</td>
<td>1,364 BTU/h</td>
<td>1,500 BTU/h</td>
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[Supported]
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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</table>
| **S4100-ON**   | S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to I/O Panel Airflow  
S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow  
S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow  
S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to I/O Panel Airflow  |
| **Redundant power supplies (not applicable to S4112)** | S4100, AC Power Supply, IO Panel to PSU Airflow  
S4100, AC Power Supply, PSU to IO Panel Airflow  
S4100, DC Power Supply, IO Panel to PSU Airflow (available as custom kit)  
S4100, DC Power Supply, PSU to IO Panel Airflow (available as custom kit)  
S4100, HV DC Power Supply, IO Panel to PSU Airflow  
S4100, HV DC Power Supply, PSU to IO Panel Airflow  |
| **Fans (not applicable to S4112)** | S4100, AC Power Supply, IO Panel to PSU Airflow  
S4100, AC Power Supply, PSU to IO Panel Airflow  
S4100, DC Power Supply, IO Panel to PSU Airflow (available as custom kit)  
S4100, DC Power Supply, PSU to IO Panel Airflow (available as custom kit)  
S4100, HV DC Power Supply, IO Panel to PSU Airflow  
S4100, HV DC Power Supply, PSU to IO Panel Airflow  |
| **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, 10GbE, LRM, SFP+ (for S4148FE only)  
Transceiver, 10GBASE-T use with QSFP in GSFP+ 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, LMG / SM4 Duplex GSFP+  
Transceiver, 100GbE, SR4 QSFP28  
Transceiver, 100GbE, LR4 QSFP28  
Transceiver, 100GbE, LR4Lite QSFP28  
Transceiver, 100GbE, CWDM4 2Km QSFP28  
Transceiver, 100GbE, PSM4 500m QSFP28  
Transceiver, 100GbE, PSM4-IR, QSFP28  
Transceiver, SFP+, 16Gbps Fibre Channel, SWL, 850nm, LC Duplex (S4148U model only)  
Transceiver, SFP+, 16Gbps Fibre Channel, SWL, 850nm, LC Duplex (S4148U model only)  
Transceiver, QSFP+, 4x16Gbps Fibre Channel, SW4, 850nm, MPO MMF (S4148U model only)  
Transceiver, QSFP28, 4x32Gbps Fibre Channel, SW4, 850nm, MPO MMF (S4148U model only)  |
| **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  |
Physical
1 RU45 console/management port with RS232 signaling
1 RU45 micro-USB-B console port
1 RU45 10/100/1000Base-T management Ethernet port
Size: 1 RU, 17.5"(h) x 17"(w) x 18"(d) (4.4cm (h) x 43.1cm (w) x 45.7cm (d))
S4112: 17.5"(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
Power supply (DC), applicable to S4112: rated -40 to -72 VDC
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
S4112 (DC): -40V/5A, -48V/4.2A, -72V/2.8A
Max Operating specifications:
Operating temperature: 410° to 1040° F (5° to 40° C)
Operating humidity: 5 to 85% (RH), (5° to 40° C)
Max. non-operating specifications:
Storage humidity: 5 to 95% (RH), (-40° C to 65° C)
Storage temperature: -40° to 149°F
Max. current draw per system: 6A/5A at -40 to -72 VDC

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 hosts: 130K (in Scaled L3 routes mode)
Multicast hosts: 8K
Link aggregation: 32 links per group, 128 groups
Layer 2 VLANs: 4K
Layer3 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: 256
iSCSI Target: 16
F-Port: Max F-Port Sessions: 526
F-Port: Max members in a zone: 526

Dell EMC SmartFabric OS10 Software Specifications
IEEE Compliance
802.1AB – LLDP
TIA-1057 – LLDP-MED
802.1s MSTP
802.1w RSTP
802.3ad Gigabit Ethernet (1000Base-T)
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
802.1Qb PFC
802.1ad ETS
802.1s MSTP
802.1w RSTP
PVST+
802.1X Network Access Control
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
Layer 2 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
RFC Compliance
778 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
1535 IPv6
1568v2 PTP support
1812 Routers
1858 IP Fragment Filtering
2158 DHCP (server and relay)
5798 VRRP
IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)
OSPF
1587 NSSA
1745 OSPF/OSPF interaction
1765 OSPF Database overflow
2154 MD5
2328 OSPFv2
2370 Opaque LSA
3013 OSPF NSSA
3023 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
4380 Extended Communities
4893 4-byte ASN
5369 4-byte ASN Representation
5492 Capabilities Advertisement
Linux Distribution
Debian Linux version 8.4
Linux Kernel 3.16
MIBS
IP MIB – Net SNMP
IP Forward MIB – Net SNMP
Host Resources MIB – Net SNMP
IF MIB – Net SNMP

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**Network Management**

- LLDP MIB
- Entity MIB
- LAG MIB
- Dell-Vendor MIB
- TCP MIB – Net SNMP
- UDP MIB – Net SNMP
- SNMPv2 MIB – Net SNMP

**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
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 V1.4:2008 EMC for Network Equipment
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

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