DELL EMC NETWORKING S4100-ON

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

The S4100-ON 10GbE switches comprise Dell EMC’s 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, mid-market and Tier2 cloud service provider 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 EMC’s 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 Networking S4100-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell EMC’s OS10 networking operating system, as well as of alternative network operating systems.

Maximum performance and functionality

The S4100-ON series are high-performance, multi-function, 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 (available in hardware only)

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).
- 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.
- Supports dynamic reconfiguration of unified ports on S4148U product as 10GbE or 8/16G FC on SFP+ ports, and 25GbE or 16/32G FC on QSFP28 ports

* Not line rate
• 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 (hardware only) on 48 port models.

Key Features with Dell EMC Networking 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 EMC layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features.

• 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.
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<th>S4112T-ON</th>
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<td>24 (12 10GbT and 12 SFP+)</td>
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<td>36 (28 10GbT and 8 SFP+)</td>
<td>72</td>
<td>72</td>
<td>72 (48 10GbT and 24 SFP+)</td>
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<td>Max 25GbE density</td>
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<td>1320Mpps</td>
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<td>250W</td>
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<tr>
<td>Weight</td>
<td>8.30lbs</td>
<td>8.45lbs</td>
<td>19.66 lbs (8.92 kg)</td>
<td>20.67 lbs (9.38 kg)</td>
<td>20.15 lbs (9.14 kg)</td>
<td>20.85 lbs (9.46 kg)</td>
<td>22.37 lbs (10.15 kg)</td>
<td>20.52 lbs (9.31 kg)</td>
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<td>Max thermal output</td>
<td>614 BTU/hour</td>
<td>682 BTU/hour</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>
<td>1,568 BTU/h</td>
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● Supported
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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| **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 PSU to I/O Panel Airflow  
S4112T, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112T, 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 AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow  
S4112T, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow  
S4112T, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow  
S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow  
S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow  
S4128T, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow  
S4128T, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow  
S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow  
S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow  
S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fans, I/O Panel to PSU Airflow  
S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow  
S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU 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 fan module, IO Panel to PSU Airflow  
S4100 fan module, PSU to IO Panel Airflow  |
| **Optics** | 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 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, PSMA-LR MPO 10Km QSFP+ to LC  
Transceiver, 40GbE, LMA / SM4 Duplex QSFP+  
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, LWL, 1310nm, LC SMF (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 2xSFP28, passive DAC, breakout (*) |
### Physical

- 1 RJ-45 console/management port with RS232 signaling
- 1 RJ-45 micro-USB-B console port
- 1 RJ-45 10/100/1000Base-T management Ethernet port

#### Size
- 1 RU, 17.5”(h) x 17”(w) x 18”(d) (44.6cm (h) x 43.1cm (w) x 45.7cm (d))
- S4112: 1.7”(h) x 8.28”(w) x 18”(d)
- S4112 (DC): 40V/5A, -48V/4.2A, -72V/2.8A

#### 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

#### Operating specifications
- Operating temperature: 41°C to 104°F (5°C to 40°C)
- Operating humidity: 5 to 85% (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

#### 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:
255

#### ISCSI Target:
16

#### F-Port:
Max F-Port Sessions: 526

#### F-Port:
Max members in a zone: 526

### Dell EMC Networking OS10.3 Enterprise Edition Software Specifications

#### IEEn Compliance

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<tr>
<th>Protocol</th>
<th>Function</th>
<th>Version</th>
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<tbody>
<tr>
<td>802.1AB</td>
<td>LLDP</td>
<td>TIA-1057</td>
</tr>
<tr>
<td>802.1s</td>
<td>MSTP</td>
<td>TIA-1057</td>
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<tr>
<td>802.1w</td>
<td>RSTP</td>
<td>TIA-1057</td>
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<tr>
<td>802.3ab</td>
<td>Gigabit Ethernet (1000Base-T)</td>
<td>TIA-1057</td>
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<tr>
<td>F-Port: Max F-Port Sessions</td>
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<td>iSCSI Target</td>
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<td>iSCSI Sessions</td>
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<tr>
<td>Storage performance parameters</td>
<td>IPv6 Egress ACL: 500</td>
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<td>IPv6 Ingress ACL</td>
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<td>IPv4 Egress ACL</td>
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<td>Assured Forwarding PHB Group</td>
<td>IPv4 2597 Assured Forwarding PHB Group</td>
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<td>Reliable Delivery for Syslog</td>
<td>IPv4 3246 Reliable Delivery for Syslog</td>
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<td>IPv4 4364 VRF-lite (IPv4 VRF with OSPF and BGP)</td>
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<td>CQOP: Control Plane Policing</td>
<td>IPv4 4291 IPv6 Addressing</td>
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<td>Policy Based Routing</td>
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<td>IPv4 4213 Basic Transition Mechanisms for IPv6 Headers and Routers</td>
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<td>Security</td>
<td>IPv4 2865 IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)</td>
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### BGP

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<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux Distribution</td>
<td>Debian Linux version 8.4</td>
</tr>
</tbody>
</table>

### MIBS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP MIB – Net SNMP</td>
<td>IPv4 2450 IP MIB – Net SNMP</td>
</tr>
<tr>
<td>IP Forward MIB – Net SNMP</td>
<td>IPv4 4250 IP Forward MIB – Net SNMP</td>
</tr>
<tr>
<td>Host Resources MIB – Net SNMP</td>
<td>IPv4 4251 Host Resources MIB – Net SNMP</td>
</tr>
<tr>
<td>IF MIB – Net SNMP</td>
<td>IPv4 4252 IF MIB – Net SNMP</td>
</tr>
</tbody>
</table>

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TCP MIB – Net SNMP
UDP MIB – Net SNMP
SNMPv2 MIB – Net SNMP

**Network Management**
- SNMPv1/v2
- SSHv2
- FTP, TFTP, SCP
- Syslog
- Port Mirroring
- RADIUS
- 802.1X
- Support Assist (Phone Home)
- Netconf APIs
- XML Schema
- CLI Commit (Scratchpad)

**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 (SCSI, FCoE*)

**Fibre Channel**
- (applicable only to S4148U-ON)
  - FCF F-Port
  - FC Zoning

**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
- 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

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

**Immunity**
- EN 300 388 V1.4.1:2008 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

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Learn more at Dell.com/Networking

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