The Dell EMC S5148 switch is an innovative, future-ready Top-of-Rack (ToR) open networking switch providing excellent capabilities and cost-effectiveness for the enterprise, mid-market, Tier2 cloud and NFV service providers with demanding compute and storage traffic environments.

The S5148F-ON 25GbE switch is Dell EMC's latest disaggregated hardware and software data center networking solution that provides state-of-the-art data plane programmability, backward compatible 25GbE server port connections, 100GbE uplinks, storage optimized architecture, and a broad range of functionality to meet the growing demands of today’s data center environment now and in the future.

The compact S5148F-ON model design provides industry-leading density with up to 72 ports of 25GbE or up to 48 ports of 25GbE and 6 ports of 100GbE in a 1RU form factor.

Using industry-leading hardware and a choice of Dell EMC’s OS10 or select 3rd party network operating systems and tools, the S5148F-ON Series offers flexibility by provision of configuration profiles and delivers non-blocking performance for workloads sensitive to packet loss. The compact S5148F-ON model provides multi rate speed enabling denser footprints and simplifying migration to 25GbE server connections and 100GbE fabrics.

Data plane programmability allows the S5148F-ON to meet the demands of the converged software defined data center by offering support for any future or emerging protocols, including hardware-based VXLAN (Layer 2 and Layer 3 gateway) support. Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the S5148F-ON an excellent choice for DCB environments.

The Dell EMC S5148F-ON model supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems.

Maximum performance and functionality

The Dell EMC Networking S-Series S5148F-ON is a high-performance, multi-function, 10/25/40/50/100 GbE ToR switch purpose-built for applications in high-performance data center, cloud and computing environments.

In addition, the S5148F-ON incorporates multiple architectural features that optimize data center network flexibility, efficiency, and availability, including 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 deliver the flexibility they need
- Use cases that require customization to any packet processing steps or supporting new protocols
- Native high-density 25 GbE ToR server access in high-performance data center environments
- 25 GbE backward compatible to 10G and 1G for future proofing and data center server migration to faster uplink speeds.
- Capability to support mixed 25G and 10G servers on front panel ports without any limitations
- iSCSI storage deployment including DCB converged lossless transactions
- Suitable as a ToR or Leaf switch in 100G Active Fabric implementations
- As a high speed VXLAN L2/L3 gateway that connects the hypervisor-based overlay networks with non-virtualized infrastructure
- Emerging applications requiring hardware support for new protocols

Key features

- 1RU high-density 25/10/1 GbE ToR switch with up to forty eight ports of native 25 GbE (SFP28) ports supporting 25 GbE without breakout cables
- Multi-rate 100GbE ports support 10/25/40/50 GbE
- 3.6 Tbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load**
- Programmable packet modification and forwarding
- Programmable packet mirroring and multi-pathing
- Converged network support for DCB and ECN capability
- IO panel to PSU airflow or PSU to IO panel airflow
- Redundant, hot-swappable power supplies and fans
- IEEE 1588v2 PTP hardware support
- Supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems
- Fibre Channel, FCoE, FCoE transit (FIP Snooping) and NPIV Proxy Gateway (NPG), Fibre Channel Forwarding (FCF)
- Full data center bridging (DCB) support for lossless iSCSI SANs, RoCE and converged network.
- Redundant, hot-swappable power supplies and fans
- I/O panel to PSU airflow or PSU to I/O panel airflow (reversible airflow)
- VRF-lite enables sharing of networking infrastructure and provides L3 traffic isolation across tenants
- 16, 28, 40, 52, 64 10GbE ports available

**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)
- Open and programmable management interface via Common Management Services (CMS)
- 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 programmable management interface via Common Management Services (CMS)
- OS10 Premium Edition software enables Dell EMC 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 (OCP-SAI)
- Unmodified Linux kernel and unmodified Linux distribution
- OS10 Open Edition software decoupled from L2/L3 protocol stack and services
- 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 DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV
- Rogue NIC control provides hardware-based protection from NICS sending out excessive pause frames

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SS148F-ON</strong></td>
<td>SS148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, I/O Panel to PSU Airflow SS148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, PSU to I/O Panel Airflow SS148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, I/O Panel to PSU Airflow - TAA SS148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, PSU to I/O Panel Airflow - TAA SS148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x DC PSU, 4x Fans, PSU to I/O Panel Airflow – NEBS Level 3 Certified*</td>
</tr>
<tr>
<td><strong>Redundant power supplies</strong></td>
<td>SS100, AC Power Supply, IO Panel to PSU Airflow SS100, AC Power Supply, PSU to IO Panel Airflow SS100, DC Power Supply, PSU to IO Panel Airflow*</td>
</tr>
<tr>
<td><strong>Fans</strong></td>
<td>SS100 fan module, IO Panel to PSU Airflow SS100 fan module, PSU to IO Panel Airflow</td>
</tr>
<tr>
<td><strong>Optics</strong></td>
<td>Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, LR4Lite QSFP28 Transceiver, 100GbE, PSM4 10Km QSFP28 (<em>) Transceiver, 100GbE, CWDM4 2Km QSFP28 (</em>) Transceiver, 100GbE, PSM4 500m QSFP28 (*) Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, eSR4 optic QSFP+ Transceiver, 40GbE, LRA optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+ Transceiver, 40GbE, PSM4 10Km, QSFP+ Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC Transceiver, 40GbE, LMA / SM4 Duplex QSFP+ Transceiver, 25GbE, SR4 SFP28 Transceiver, 25GbE, LR4 SFP28 Transceiver, 10GbE, SR4 SFP+ Transceiver, 10GbE, LR4 SFP+ Transceiver, 1GbE, SR4 SFP+ Transceiver, 1GbE, LR4 SFP+</td>
</tr>
</tbody>
</table>
## Product | Description
--- | ---
100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC | 802.1w  RSTP
100GbE, QSFP28 to QSFP28, active optical | 802.1s  MSTP
100GbE, QSFP28 to QSFP28, passive DAC | TIA-1057  LLDP-MED
100GbE, 2x50GbE, QSFP28 to 2xSFP28, passive DAC, breakout (*) | 802.1AB  LLDP
40GbE, QSFP+ to QSFP+, active optical | IEEE Compliance
40GbE, QSFP+ to QSFP+, passive DAC | TCP/UDP port)
40GbE, MTP to 4xLC optical breakout | LAG Load Balancing:  User Configurable (MAC, IP, MSTP: 64 instances
40GbE, 4x10GbE, QSFP+ to 4xSFP+, passive DAC | Layer 2 VLANs:  4K
25GbE SFP28 to SFP28, passive DAC, 1M, 2M, 3M, 5M | Link aggregation:  Unlimited links per group, up to 36 groups
25GbE SFP28 to SFP28, active optical cable, 7M, 10M, 15M, 20M | Layer 2 Protocols

### Physical
- 48 line-rate 25 Gigabit Ethernet SFP28 ports
- 6 line-rate 100 Gigabit Ethernet QSFP28 ports
- 1 RJ45 console/management port with RS232 signaling
- 1 Micro-USB type B optional console port
- 1 SFP+ type A port for the external mass storage
- Size: 1 RU, 172 x 171 x 181.4” d (44.4 x 43.4 x 46.4 cm d)
- Weight: 22lbs (9.97kg)
- ISO 7779 A-weighted sound pressure level: 59.6 dBA at 73-89°F (23°C)
- Power supply: 100–240 VAC 50/60 Hz
- Max. thermal output: 1956 BTU/h
- Max. current draw per system: 5.73A/4.8A at 100/120V AC
- Max. power consumption: 516 Watts (AC)
- Max. thermal output: 1956 BTU/h
- Max. current draw per system: 2.87A/2.4A at 200/240V AC
- 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 95% (RH), non-condensing
- Fresh Air Compliant to 45C
- Hot swappable redundant fans

### Performance
- Switch fabric capacity: 3.6Tbps
- Packet buffer memory: 16MB
- CPU memory: 16GB
- MAC addresses: Up to 512K
- ARP table: Up to 256K
- IPv4 routes: Up to 256K
- IPv6 routes: Up to 64K
- Multicast hosts: Up to 64K
- Link aggregation: Unlimited links per group, up to 56 groups
- Layer 2 VLANs: 4K
- MSTP: 64 instances
- LAG Load Balancing: User Configurable (MAC, IP, TCP/UDP/Port)

### IEEE Compliance
- 802.1AB  LLDP
- TIA-1057  LLDP-MED
- 802.1a  MSTP
- 802.1w  RSTP

### Cables
- 25GbE SFP28 to SFP28, passive DAC, 1M, 2M, 3M, 5M
- 25GbE SFP28 to SFP28, active optical cable, 7M, 10M, 15M, 20M

### Technical specifications

#### Layer2 Protocols
- Security Architecture for IPSec*
- IPSec Authentication Header*
- ESP Protocol*
- Compatibel
- L2 Prioritization
- VLAN Tagging
- MSTP
- RSTP
- RPVST+
- Link Aggregation with LACP
- Virtual Link Trunking

#### RFC Compliance
- UDP
- TCP
- Telnet
- FTP
- MD5
- TFTP
- Differentiated Services
- Two Rate Three Color Marker
- Syslog
- SSHv2

#### General IPv4 Protocols
- IPv4
- ICMP
- ARP
- Proxy ARP
- DNS (client)
- Ethernet Transmission
- Path MTU Discovery
- NTPv4
- CIDR
- IP Fragment Filtering
- DHCP (server and relay)
- VRRP
- 31-bit Prefixes
- DHCP Option 82 (Relay)
- Requirements for IPv4 Routers
- Address Allocation for Private Internets
- Diffserv Field in IPv4 and IPv6 Headers
- Assured Forwarding PHB Group
- Reliable Delivery for Syslog
- Expedited Assured Forwarding
- VRF-lite (IPv4 VRF with OSPF and BGP)*

#### General IPv6 Protocols
- Path MTU Discovery*
- IPv6
- Neighbor Discovery*
- Stateless Address AutoConfig
- ICMPv6
- Ethernet Transmission
- Jumbo frames
- Global Unicast Address Format
- IPv6 Addressing
- Transmission of IPv6 Packets over Ethernet Networks
- IPv6 Router Agent Option
- IPv6 Scoped Address Architecture
- Basic Transition Mechanisms for IPv6
- IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)

#### OSPF (v2/v3)
- NSSA
- OSPF/BGP interaction
- OSPF Database overflow
- OSPFV2
- Opaque LSA
- OSPF NSSA
- Graceful Restart (Helper mode)*
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 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
LLDP MIB
Entity MIB
LAG MIB
Dell-Vendor MIB
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

Security
2865 RADIUS
3162 Radius and IPv6
4250, 4251, 4252, 4253, 4254 SSHv2

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
FDA Regulation 21 CFR 1040.10 and 1040.11

Emissions & Immunity
EMC compliance
FCC Part 15 (CFR 47) (USA) Class A
ICES-003 (Canada) Class A
EN55032: 2015 (Europe) Class A
CISPR32 (International) Class A
AS/NZS CISPR32 (Australia and New Zealand) Class A
VCCI (Japan) Class A
KN32 (Korea) Class A
CSN13438 (Taiwan) Class A
CISPR22
EN55022
EN61000-3-2
EN61000-3-3
EN61000-6-1
EN300 386
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
NEBS
GR-63-Core
GR-1089-Core
ATT-TP-76200
VZ.TPR.9305

RoHS
RoHS 6 and China 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 Dell.com/Networking