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
- FCoE transit (FIP Snooping)
- 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 programmatic management interface via Common Management Services (CMS)

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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<tbody>
<tr>
<td>S5148F-ON</td>
<td>S5148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, I/O Panel to PSU Airflow</td>
</tr>
<tr>
<td></td>
<td>S5148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, PSU to I/O Panel Airflow</td>
</tr>
<tr>
<td></td>
<td>S5148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, I/O Panel to PSU Airflow - TAA</td>
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<tr>
<td></td>
<td>S5148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x AC PSU, 4x Fans, PSU to I/O Panel Airflow - TAA</td>
</tr>
<tr>
<td></td>
<td>S5148F, 48x 25GbE SFP+, 6x 100GbE QSFP28, 2x DC PSU, 4x Fans, PSU to I/O Panel Airflow – NEBS Level 3 Certified*</td>
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<th>S5100 fan module, I/O Panel to PSU Airflow</th>
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<td>S5100 fan module, PSU to I/O Panel Airflow</td>
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<td>Transceiver, 100GbE, LR4Lite QSFP28 (*)</td>
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<td>Transceiver, 100GbE, PSM4 10Km QSFP28 (*)</td>
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<td></td>
<td>Transceiver, 100GbE, CWDM4 2Km QSFP28 (*)</td>
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<td>Transceiver, 100GbE, PSM4 500m QSFP28 (*)</td>
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<td>Transceiver, 40GbE, LR4 optic QSFP+</td>
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<td>Transceiver, 40GbE, ERA optics QSFP+</td>
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<td>Transceiver, 40GbE, PSM4 10Km, QSFP+</td>
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<td>Transceiver, 1GbE, SR4 SFP+</td>
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<td></td>
<td>Transceiver, 1GbE, LR4 SFP+</td>
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</tbody>
</table>

- 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 OSPP, 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>
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<tr>
<th>Product</th>
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<td>100GbE, QSFP28 to QSFP28, passive DAC</td>
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<td>10GbE, 2x50GbE, QSFP28 to 2xSFP28, passive DAC, breakout (*)</td>
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<tr>
<td>40GbE, QSFP+ to QSFP+, active optical</td>
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<tr>
<td>40GbE, QSFP+ to QSFP+, passive DAC</td>
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<tr>
<td>40GbE, MTP to 4xLC optical breakout</td>
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<td>40GbE, 4x10GbE, SFP+ to 4xSFP+, active optical</td>
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<tr>
<td>25GbE SFP28 to SFP28, passive DAC, 1M, 2M, 3M, 5M</td>
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<tr>
<td>25GbE SFP28 to SFP28, active optical cable, 7M, 10M, 15M, 20M</td>
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</table>

### Technical specifications

#### Physical
- 48 line-rate 25 Gigabit Ethernet SFP28 ports
- 6 line-rate 100 Gigabit Ethernet QSFP28 ports
- 1 RUI48 console/management port with RS232 signaling
- 1 Micro-USB type B optional console port
- 1 10/100/1000 Base-T Ethernet port used as management port
- 1 USB type A port for the external mass storage management port
- 1 RJ45 console/management port with RS232 signaling
- 6 line-rate 100 Gigabit Ethernet QSFP28 ports
- 48 line-rate 25 Gigabit Ethernet SFP28 ports
- 4 line-rate 40 Gigabit Ethernet QSFP28 ports
- 2 line-rate 100 Gigabit Ethernet QSFP28 ports
- 4 line-rate 100 Gigabit Ethernet QSFP28 ports
- 2 line-rate 100 Gigabit Ethernet QSFP28 ports

#### Cables
- 25GbE SFP28 to SFP28, active optical cable, 7M, 10M, 15M, 20M
- 25GbE SFP28 to SFP28, passive DAC
- 40GbE, SFP+ to SFP+, passive DAC
- 40GbE, MTP to 4xLC optical breakout
- 40GbE, 4x10GbE, SFP+ to 4xSFP+, active optical
- 25GbE SFP28 to SFP28, passive DAC, 1M, 2M, 3M, 5M

#### Redundancy
- Hot swappable redundant power supplies
- 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 128K
- IPv6 routes: Up to 64K
- Multicast hosts: Up to 64K
- Link aggregation: Unlimited links per group, up to 36 groups
- Layer 2 VLANs: 4K
- MSTP: 64 instances
- LAG Load Balancing: User Configurable (MAC, IP, TCP/UDP/Port)

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

#### RFC Compliance
- 778 UDP
- 763 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
- 1812 Routers
- 1858 IP Fragment Filtering
- 2131 DHCP (server and relay)
- 5798 VRRP
- 3021 31-bit Prefixes
- 3046 DHCP Option 82 (Relay)
- 3195 Reliable Delivery for Syslog
- 3246 Expedited Assured Forwarding
- 4354 VRF-lite (IPv4 VRF with OSPF and BGP)*

#### General IPv6 Protocols
- 1981 Path MTU Discovery*
- 2460 IPv6
- 2461 Neighbor Discovery*
- 2462 Stateless Address AutoConfig
- 2463 ICMPv6
- 2464 Ethernet Transmission
- 2675 Jumbo frames
- 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
- 4291 IPv6 Addressing Architecture
- 5095 Deprecation of Type 0 Routing Headers in IPv6
- 4291 IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, TFTP)

#### OSPF (v2/v3)
- 1597 NSSA
- 1745 OSPF/BGP interaction
- 1765 OSPF Database overflow
- 2154 MD5
- 2328 OSPFv2
- 2370 Opaque LSAs
- 3101 OSPF NSSA
- 3623 OSPF Graceful Restart (Helper mode)*

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<td>Capabilities Advertisement</td>
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**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 Detec

**Security**
- 2886 (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)*
- DCBX Application TLV (SCSI, FCoE*)

**Regulatory compliance**

**Safety**
- UL/CSA 60950-1: Second Edition
- EN 60950-1: Second Edition
- 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
- CNS13438 (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
- AT&T-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

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