DELL Technologies

S3048 SPEC SHEET

DELL EMC NETWORKING S3048-ON

1GbE top-of-rack open networking switch

High density 1000BASE-T switch

The Dell EMC PowerSwitch S3048-ON 1000BASE-T top-of-rack (ToR) switch is the industry's first 1GbE enterprise switching platform to deliver both an industry hardened OS and support for open networking, providing freedom to run third-party operating systems (OS).

This open networking platform is built for high-performance, software-defined data centers and provides the features to run traditional workloads and the flexibility to deploy new workloads such as Hadoop, SDS and Big Data. The S3048-ON offers the flexibility to run OS options optimized for diverse deployment needs on a common hardware platform and architecture.

The S3048-ON features a non-blocking switching architecture coupled with OS9.X software, delivering line-rate L2/L3 features for maximized network performance. The S3048-ON design provides (48) 1000BASE-T ports that support 10MbE/100MbE/1GbE and four 10GbE SFP+ uplinks. Each 10GbE interface can be used as uplinks to the network spine/core, as stack ports to connect up to six units in a stacked configuration, or a combination of both, depending on network architecture and uplink/stack bandwidth requirements.

The S3048-ON incorporates multiple architectural features that optimize data center network flexibility, efficiency and availability including:

- I/O panel to PSU airflow or PSU to I/O panel airflow for hot/cold aisle environments
- Redundant, hot-swappable power supplies and fans with color coded touch points for ease of identification/removal
- Dell ReadyRails for efficient installation of the switch into data center cabinets

The S3048-ON also supports Dell Technologies' Embedded Open Automation Framework, which provides advanced network automation and virtualization capabilities for virtual data center environments. Embedded Open Automation Framework is a suite of network management apps that can be used together or independently to provide a network that is flexible, available and manageable while helping to reduce operational expenses.

Key applications

- High-density 1000BASE-T ToR server aggregation in high-performance data centers environments
- Active Fabric™ designs with the S- or Z-Series core switch to create a two tier, 1/10/40GbE data center network architecture
- Enterprise, Web 2.0 and cloud service providers' data center networks for ToR applications
- High-performance SDN/OpenFlow 1.3 enabled with ability to inter-operate with industry standard OpenFlow controllers

Key features

- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF, BGP and PBR (Policy Based Routing) support
- Four SFP+ 10GbE ports for maximum flexibility and investment protection
- I/O panel to PSU airflow or PSU to I/O panel airflow
- Redundant, hot-swappable power supplies and fans
- Supports ONIE for zero-touch installation of alternate network operating systems
- Open Networking offers choice of OS, such as Dell EMC SmartFabric OS10 and Dell EMC Networking OS9, for inherent stability and feature richness, or the flexibility of a third-party OS
- VRF-lite enables sharing of networking infrastructure and provides L3 traffic isolation across tenants (including support for multicast and IPv6 routing)
- Enhanced automation capabilities (puppet agent, REST API extensions)
- Supports jumbo frames for high-end performance in virtualized environments and IP storage/server communication
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with unique VLT capabilities like Routed VLT, VLT Proxy Gateway
- User port stacking support for up to six units managed as one logical device
- Embedded Open Automation Framework adds VM awareness automated configuration and provisioning capabilities to simplify the management of virtual network environments

Product	Description
S3048-ON	S3048-ON 1000BASE-T, 48 x 1000BASE-T, 4 x SFP+, 1 x AC PSU, 3 x Fans, IO I/O Panel to PSU Airflow S3048-ON 1000BASE-T, 48 x 1000BASE-T, 4 x SFP+, 1 x AC PSU, 3 x Fans,, PSU to I/O Panel Airflow S3048-ON 1000BASE-T, 48 x 1000BASE-T, 4 x SFP+, 1 x AC PSU, 3 x Fans, I/O Panel to PSU Airflow, TAA S3048-ON 1000BASE-T, 48 x 1000BASE-T, 4 x SFP+, 1 x AC PSU, 3 x Fans, PSU to I/O Panel Airflow, TAA
Redundant power supplies	S3048-ON 1000BASE-T, AC Power Supply, I/O Panel to PSU Airflow S3048-ON 1000BASE-T, AC Power Supply, PSU to IO I/O Panel Airflow
Fans	S3048-ON 1000BASE-T fan module, I/O Panel to PSU Airflow S3048-ON 1000BASE-T fan module, PSU to I/O SR4 Panel Airflow
Optics	Transceiver, SFP, 100BASE-FX, 1310nm wavelength, up to 2km reach Transceiver, SFP, 1000BASE-T Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach Transceiver, SFP+, 10GbE, LRM, 1310nm wavelength, up to 220m reach Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach Transceiver, SFP+, 10GbE, ZR, 1550nm wavelength, up to 80km reach
Cables	Dell EMC Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m Dell EMC Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 1m Dell EMC Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 3m Dell EMC Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 5m Dell EMC Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 7m Dell EMC Networking Cable, SFP+ to SFP+, 10GbE, Active Optical Cable, 15m
Software	Dell EMC Networking OS9, Dell EMC SmartFabric OS10*

Note: In-field change of airflow direction not supported.

*Ordered separately

Physical

48 line-rate 1000BASE-T ports
4 line-rate 10GbE SFP+ ports
1 RJ45 console/management port with RS232 signaling
Size: 1 RU, 1.71"h x 17.09" w x 12.6" d (4.4 h x 43.4 w x 32.0 cm d)
Weight: 12.8 lbs (5.84 kg) with 1 power supply, 14.8 lbs (6.74kg) with 2 power supplies
ISO 7779 A-weighted sound pressure level: <36 dBA at 78.8°F (26°C)
Power supply: 90–264 VAC 50/60 Hz
1) AC forward airflow
2) AC reverse airflow
Max. thermal output: 290 BTU/h
Max. current draw per system:
<1A at 100/120V VAC <0.5A at 200/240VAC
Max. power consumption: 87W
Typ. power consumption: 65 Watts
Max. operating specifications:
Operating temperature: 32° to 113°F (0° to 45°C)
Operating humidity: 5 to 85% (RH), non-condensing
Operating altitude: 0ft to 10,000ft above sea level
Max. non-operating specifications:
Storage temperature: –40° to 158°F (–40° to 70°C)
Storage humidity: 5 to 95% (RH), non-condensing

Redundancy

Hot swappable redundant power supplies
Hot swappable redundant fans
User port stacking up to 6 units

Performance

MAC addresses: up to 80k
IPv4 routes: 16K
IPv6 routes: 8K (shared CAM space with IPv4)
Switch fabric capacity: 260Gbps (full-duplex)
130 Gbps (half-duplex)
Forwarding capacity: 131 Mpps
Link aggregation: 16 links per group, 128 groups per stack
Queues per port: 8 queues
Layer 2 VLANs: 4K
MSTP : 64 instances
VRF-lite: 64 instances
Line-rate Layer 2 switching: all protocols, including IPv4 and IPv6
Line-rate Layer 3 routing: IPv4 and IPv6
IPv4 host table size up to 40k max
IPv6 host table size 8K
IPv4 Multicast table size 8K
LAG load balancing: based on Layer 2, IPv4 or IPv6 headers
Latency 3.7 µsec for 1000BASE-T, ~1.8 µsec for SFP+
Packet buffer memory: 4MB
CPU memory: 2GB

IEEE compliance

802.1AB LLDP
802.1D Bridging, STP
802.1p L2 Prioritization
802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
802.1s MSTP
802.1w RSTP
802.1X Network Access Control
802.3ab Gigabit Ethernet (1000BASE-T)
802.3ac Frame Extensions for VLAN Tagging
802.3ad Link Aggregation with LACP
802.3ae 10 Gigabit Ethernet (10GBASE-X) on optical ports
802.3az Energy Efficient Ethernet (EEE)
802.3u Fast Ethernet (100BASE-TX) on mgmt ports
802.3x Flow Control
802.3z Gigabit Ethernet (1000BASE-X)
ANSI/TIA-1057 LLDP-MED
Force10 PVST+
MTU 12,000 bytes

RFC and I-D compliance

General Internet protocols

768 UDP
793 TCP
854 Telnet
959 FTP

General IPv4 protocols

791 IPv4
792 ICMP
826 ARP
1027 Proxy ARP
1035 DNS (client)
1042 Ethernet Transmission
1305 NTPv3
1519 CIDR
1542 BOOTP (relay)
1812 Requirements for IPv4 Routers
1918 Address Allocation for Private Internets
2474 Diffserv Field in IPv4 and Ipv6 Headers
2596 Assured Forwarding PHB Group
3164 BSD Syslog
3195 Reliable Delivery for Syslog
3246 Expedited Assured Forwarding
4364 VRF-lite (IPv4 VRF with OSPF, BGP, IS-IS, and v4 multicast)
5798 VRRP

General IPv6 protocols

1981 Path MTU Discovery Features
2460 Internet Protocol, Version 6 (IPv6) Specification
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
4443 ICMP for IPv6
4861 Neighbor Discovery for IPv6
4862 IPv6 Stateless Address Autoconfiguration
5095 Deprecation of Type 0 Routing Headers in IPv6
IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)
VRF-Lite (IPv6 VRF with OSPFv3, BGPv6, and IS-IS)

RIP

1058 RIPv1 2453 RIPv2

OSPF (v2/v3)

1587 NSSA 4552 Authentication/
2154 OSPF Digital Signatures
2328 OSPFv2 OSPFv3
2370 Opaque LSA 5340 OSPF for IPv6

IS-IS

5301 Dynamic hostname exchange mechanism for IS-IS
5302 Domain-wide prefix distribution with two-level IS-IS
5303 Three way handshake for IS-IS point-to-point adjacencies
5308 IS-IS for IPv6

BGP

1997 Communities
2385 MD5
2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
2439 Route Flap Damping
2796 Route Reflection
2842 Capabilities
2858 Multiprotocol Extensions
2918 Route Refresh
3065 Confederations
4360 Extended Communities
4893 4-byte ASN
5396 4-byte ASN representations
draft-ietf-idr-bgp4-20 BGPv4
draft-michaelson-4byte-as-representation-05
4-byte ASN Representation (partial)
draft-ietf-idr-add-paths-04.txt ADD PATH

Multicast

1112 IGMPv1
2236 IGMPv2
3376 IGMPv3
MSDP
draft-ietf-pim-sm-v2-new-05
PIM-SMw

Network management

1155 SMIv1
1157 SNMPv1
1212 Concise MIB Definitions
1215 SNMP Traps
1493 Bridges MIB
1850 OSPFv2 MIB
1901 Community-Based SNMPv2
2011 IP MIB
2096 IP Forwarding Table MIB
2578 SMIv2
2579 Textual Conventions for SMIv2
2580 Conformance Statements for SMIv2
2618 RADIUS Authentication MIB
2665 Ethernet-Like Interfaces MIB
2674 Extended Bridge MIB
2787 VRRP MIB
2819 RMON MIB (groups 1, 2, 3, 9)
2863 Interfaces MIB
3273 RMON High Capacity MIB
3410 SNMPv3
3411 SNMPv3 Management Framework
3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
3413 SNMP Applications
3414 User-based Security Model (USM) for SNMPv3
3415 VACM for SNMP
3416 SNMPv2
3417 Transport mappings for SNMP
3418 SNMP MIB
3434 RMON High Capacity Alarm MIB
3584 Coexistance between SNMP v1, v2 and v3
4022 IP MIB
4087 IP Tunnel MIB
4113 UDP MIB
4133 Entity MIB
4292 MIB for IP
4293 MIB for IPv6 Textual Conventions
4502 RMONv2 (groups 1,2,3,9)
5060 PIM MIB
ANSI/TIA-1057 LLDP-MED MIB
Dell_ITA.Rev_1_1 MIB
draft-grant-tacacs-02 TACACS+
draft-ietf-idr-bgp4-mib-06 BGP MIBv1
IEEE 802.1AB LLDP MIB
IEEE 802.1AB LLDP DOT1 MIB
IEEE 802.1AB LLDP DOT3 MIB
sFlow.org sFlowv5
sFlow.org sFlowv5 MIB (version 1.3)
FORCE10-BGP4-V2-MIB Force10 BGP MIB (draft-ietf-idr-bgp4-mibv2-05)
FORCE10-IF-EXTENSION-MIB
FORCE10-LINKAGG-MIB

FORCE10-COPY-CONFIG-MIB
FORCE10-PRODUCTS-MIB
FORCE10-SS-CHASSIS-MIB
FORCE10-SMI
FORCE10-TC-MIB
FORCE10-TRAP-ALARM-MIB
FORCE10-FORWARDINGPLANE-STATS-MIB
3376 IGMPv3
MSDP
draft-ietf-pim-sm-v2-new-05 PIM-SMw

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 22: 2006, Class A
Canada: ICES-003, Issue-4, Class A
Europe: EN 55022: 2006+A1:2007 (CISPR 22: 2006), Class A
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2011, 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
Available with US Trade Agreements Act (TAA) compliance
USGv6 Host and Router Certified on Dell Networking OS 9.7 and greater
IPv6 Ready for both Host and Router
UCR DoD APL (core and distribution ASLAN switch)
Tested to meet or exceed Hi Pot and Ground Continuity testing per UL 60950-1

Warranty
1 year return to depot

Learn more at DellTechnologies.com/Networking

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