Dell Networking S3048-ON

1GbE top-of-rack open networking switch

High-density, 1RU 48-port 1000BASE-T+ with four 10GbE uplinks, non-blocking line-rate performance, featuring the Open Networking Install Environment (ONIE).

High density 1000BASE-T switch

The Dell Networking 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), such as Cumulus Linux.

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. As the only 1GbE platform with support for open networking, the S3048-ON offers the flexibility to run OS options optimized for these 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 10MB/100MB/1GB 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 eight 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 Networking's 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

- 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 Networking OS9.X for inherent stability and feature richness, or the flexibility of a third-part OS (such as Cumulus Linux)
- 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

Specifications: S3048-ON 1000BASE-T high-performance top-of-rack switch

S3048-ON 1000BASE-T

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 Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m

Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 1m

Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 3m

Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 5m

Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 7m

Software

Software, Dell Networking OS9.X,

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

802.3u 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

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

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)*

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
2710 Multicast Listener Discovery (MLD) for IPv6
2711 IPv6 Router Alert Option
3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
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 Confidentiality for
2328 OSPFv2 OSPFv3
2370 Opaque LSA 5340 OSPF 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

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1155 SMIv1
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draft-grant-tacacs-02 TACACS+
draft-ietf-idr-bgp4-mib-06 BGP MIBv1
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USA: FCC CFR 47 Part 15, Subpart B:2011, Class A

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*UC APL certification is contingent upon successful test completion

Learn More at Dell.com/Networking

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