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. 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 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

1 gigabit Ethernet, open architecture, purpose-built switch for the software-defined era
Specifications: Dell Networking S3048-ON switch

Ordering information

S3048-ON 1000BASE-T
S3048-ON 1000BASE-T, 48 x 1000BASE-T, 4 x SFP+, 1 x AC
PSU, 3 x Fans, 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, PSU to I/O Panel Airflow, TAA

Physical

48 line-rate 1000BASE-T ports
4 line-rate 10GbE SFP+ ports
1 RJ45 console/management port with RS232 signaling
Size: 1 RU, 17.1”h x 17.0”w x 22.6”d (44.4 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 100/120VAC <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: 0 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 IPv4
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 (1GBase-X) on optical ports
802.3az Energy Efficient Ethernet (EEE)
802.3u Fast Ethernet (10BASE-TX) on mgmt ports
802.3x Flow Control
802.5z Gigabit Ethernet (1000BASE-X)
ANSITIA-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 BOOFP (relay)
1812 Requirements for IPv4 Routers
1918 Address Allocation for Private Internets
2474 Diffserv Field in IPv4 and IPv4 Headers
2596 Assured Forwarding PHB Group
3164 BSD Syslog
3195 Reliable Delivery for Syslog
3246 Expedited Background 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 RIPv4 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 MDS
2345 BGP-4 Multiple Protocol Extensions for IPv4
2439 Inter-Domain Routing
2439 Route Flap Damping
2796 Route Reflection
2842 Capabilities
2858 Multiple Protocol Extensions
2918 Route Refresh
3065 Confederations
4360 Extended Communities
4893 4-byte ASN
5196 4-byte ASN representations

Cables*

Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m
PSU, 3 x Fans, IO Panel to PSU Airflow
Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 1m
PSU, 3 x Fans, PSU to I/O Panel Airflow
Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 3m
PSU, 3 x Fans, PSU to I/O Panel Airflow
Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 5m
PSU, 3 x Fans, PSU to I/O Panel Airflow
Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 7m
PSU, 3 x Fans, PSU to I/O Panel Airflow
Dell Networking Cable, SFP+ to SFP+, 10GbE, Active Optical Cable, 15m

Software

Software, Dell Networking OS9.X,
Note: In-field change of airflow direction not supported.

*Ordered separately

Optics*

Transceiver, SFP 1000BASE-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, LR, 1550nm wavelength, up to 80km reach

Software, Dell Networking OS9.X,
Note: In-field change of airflow direction not supported.

*Ordered separately
**Multicast**

1112 IGMPv1
2236 IGMPv2
3376 IGMPv3

**Network management**

1155 SMv1
1157 SNMPv1
1212 Concise MIB Definitions
1215 SNMP Traps
1493 Bridges MIB

1500 OSPFv2 MIB
1901 Community-Based SMv2
2011 IP MIB
2096 IP Forwarding Table MIB
2578 SMv2
2579 Textual Conventions for SMv2
2580 Conformance Statements for SMv2

2618 RADIUS Authentication MIB
2655 Ethernet-Like Interfaces MIB
2674 Extended Bridge MIB

2787 VRRP MIB
2819 RMON MIB (groups 1, 2, 3, 9)

2837 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

**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

**Emissions**

Australia/New Zealand: AS/NZS CISPR 22:
2006, Class A
Canada: ICES-003, Issue-4, 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 61000-3-2: Harmonic Current Emissions
EN 61000-3-3: Voltage Fluctuations and Flicker

FDA Regulation 21 CFR 1040.10 and 1040.11

**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)**

**Warranty**

1 year return to depot

**RoHS**

All S Series components are EU RoHS compliant.