SWITCH SYSTEM
PRODUCT BRIEF

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SN2010 Hyperconverged Switch

Half-width 10/25GbE and 100GbE Storage and Hyperconverged Ethernet Switch

The SN2010 switch is the ideal top of rack (ToR) solution for hyperconverged and storage deployments. Packed with 18 ports of 10/25GbE and 4 splittable ports of 40/100GbE, the SN2010 can deliver up to 1.7Tb/s aggregate throughput.

All Spectrum™-based switches including the SN2010 support low-latency line rate traffic for all packet sizes and are ONIE bootable with support for Cumulus Linux, MLNX-OS and other open source operating systems with a broad installed base that drives the world's most innovative data center infrastructures.

SN2010 introduces low latency for 10/25GbE and 100GbE switching, features a robust implementation of data, control and management planes, and offers the most compact form factor and lowest power consumption.

SN2010 supports the same features and scale as SN2700. The SN2010 design allows either stand-alone single switch installation, or side-by-side placement of two switches in a single 1RU slot of a 19" rack, delivering high availability to the hosts.

Just like the rest of the Mellanox interconnect portfolio, SN2010 can be managed using the Mellanox NEO™ management application that relieves some major network deployment obstacles. NEO enables a fully certified and interoperable design, speeds up time to service, and improves networking time to value.

Distributed storage, hyperconverged, analytic and database solutions require the ability to scale out without compromising performance or high availability. High throughput, low latency and active-active network switching capabilities are crucial when deploying clustered servers and storage. Many applications, such as Microsoft SQL Server, require 10/25GbE connectivity to many clients plus 40/100GbE connectivity to selected servers, storage systems or for network uplinks, and all with low latency. SN2010 is the best fit with a mix of 10/25GbE and 40/100GbE ports that are all designed for zero packet loss.

To support virtualization and private cloud, the SN2010 introduces hardware support for multiple tunneling protocols that enable increased reachability and scalability for today's data centers. Implementing NVGRE and VXLAN tunneling encapsulations in the network layer of the data center increases flexibility to terminate an overlay tunnel either in the network or on the server endpoint.

HIGHLIGHTS

BENEFITS

- Zero packet loss (learn more)
- True cut-through latency
- Arranged and organized data center
  - Supports speeds of 10/25/40/50/100GbE
  - Easy deployment
  - Easy maintenance
- Unprecedented performance
  - Line rate performance on all ports at all packet sizes
  - Storage and server applications run faster
- Software Defined Networking (SDN) support
- Open Ethernet available with MLNX-OS, Cumulus or ONIE

KEY FEATURES

- Throughput
  - 1.7Tb/s
  - 2.52B packets-per-second
- Lowest latency
  - 300nsec for 100GbE port-to-port
  - Consistently low latency regardless of packet size, or L2 vs L3 forwarding
  - Side by side configuration
  - Small port count
- Lowest power
  - 80W (ATIS) power consumption

† For illustration only. Actual products may vary.

While the Spectrum ASIC provides the acceleration to make the SN2010 the highest performing switch fabric element, an integrated, powerful, x86-based processor provides the ability to incorporate a Linux server running on the switch for additional management, reporting, and storage functionality. This opens up multiple application opportunities by combining the incredibly fast networking fabric and high CPU processing power to create unique appliance capabilities that can improve network implementation paradigms.

The SN2010 supports running Docker containers on the switch and provides complete SDK access to the applications that run in the container. This functionality can be leveraged to embed a simple yet powerful management, monitoring and debug infrastructure on the switch itself.

FEATURES

Layer 2 Feature Set
- Multi chassis LAG (MLAG)
- IGMP V1,V2, Snooping, Querier
- VLAN 802.1Q (4K)
- Q-In-Q
- 802.1W Rapid Spanning Tree
  - BPDU Filter, Root Guard
  - Loop Guard, BPDU Guard
- 802.1Q Multiple STP
- PVRST+ (Rapid Per VLAN STP+)
- 802.3ad Link Aggregation (LAG) & LACP
  - 32 Ports/Channel – 64 Groups Per System
- LLDP
- Store & forward / cut-through mode of work
- HLL
- 10/25/40/50/56/100GbE
- Jumbo Frames (9216 Bytes)

Layer 3 Feature Set
- User and management VRFs (BGP)
- IPv4 & IPv6 routing including route maps: BGP4, OSPFv2
- PIM-SSM
- BFD (BGP, OSPF, static routes)
- VRRP
- DHCPv4/v6 Relay
- Router Port, int VLAN, NULL Interface for Routing
- ECMP, 64-way
- IGMPv2/v3 Snooping Querier

Synchronization
- PTP IEEE-1588 (SMPTE profile)
- NTP

Quality of Service
- 802.3X Flow Control
- WRED, Fast ECN & PFC
- 802.1Qbb Priority Flow Control
- 802.1Qaz ETS
- DCBX – App TLV support
- Advanced QoS – Qualification, Rewrite, Policers – 802.1AB
- Shared buffer management

Management and Automation
- ZTP
- Ansible, Puppet
- FTP / TFTP / SCP
- AAA , RADIUS / TACACS+ / LDAP
- JSON & CLI , Enhanced Web UI
- SNMP v1,2,3
- In-band management
- DHCP, SSHv2, Telnet
- SYSLOG
- 10/100/1000Mb/s Ethernet RJ45 mng ports
- USB Console port for Management
- Dual SW image
- Events history
- ONIE

Network Virtualization
- VXLAN Hardware VTEP – L2 GW
- Integration with VMware NSX & OpenStack

Software Defined Network (SDN)
- OpenFlow 1.3:
  - Hybrid
  - Supported controllers: ODL, ONOS, FloodLight, RYU, etc.

Docker Container
- Full SDK access through the container
- Persistent container & shared storage

Monitoring & Telemetry
- sFlow
- Real time queue depth histograms & thresholds
- Port mirroring (SPAN & ERSPAN)
- Enhanced Link & Phy Monitoring
- BER degradation monitor
- Enhanced health mechanism
- 3rd party integration (Splunk, etc.)

Security
- USA Department of Defense certification – UC APL
- System secure mode – FIPS 140-2 compliance
- Storm Control
- Access Control Lists (ACLs L2-L4 & user defined)
- 802.1X - Port Based Network Access Control
- SSH server strict mode – NIST 800-181A
- CoPP (IP filter)
- Port Isolation (PVLAN)

SPECIFICATIONS

Power Specifications
- Typical power with passive cables (ATIS): 80W
- Input Voltage Range: 100-240VAC

Physical Characteristics
- Dimensions: 1.72"(43.8mm) H x 7.87"(200mm) W x 20"(508mm) D
- Weight: 4.54kg (10lb)

Supported Modules and Cables
- QSFP28, SFP28 short and long range optics
- QSFP28 to QSFP28 DAC cable
- QSFP28 splitter cables for 100GbE to 2x50GbE or 4x25GbE, and 40GbE to 4x10GbE; DAC or optical
- QSFP AOC
- SFP28 to SFP28 DAC cable
- 1000BASE-T module

Table 1 - SN2010 Series Part Numbers and Descriptions

OPN	Description
MSN2010-CB2F	Spectrum™ based 10/25GbE and 100GbE, 1U Open Ethernet Switch with MLNX-OS, 18 SFP28 and 4 QSFP28 ports, 2 Power Supplies (AC), short depth, Rangeley CPU, P2C airflow, Rail Kit must be purchased separately, RoHS6
MSN2010-CB2R	Spectrum™ based 10/25GbE and 100GbE, 1U Open Ethernet Switch with MLNX-OS, 18 SFP28 ports and 4 QSFP28 ports, 2 Power Supplies (AC), short depth, Rangeley CPU, C2P airflow, Rail Kit must be purchased separately, RoHS6
MSN2010-CB2FC	Spectrum™ based 10/25GbE and 100GbE, 1U Open Ethernet Switch with Cumulus, 18 SFP28 ports and 4 QSFP28 ports, 2 Power Supplies (AC), short depth, Rangeley CPU, P2C airflow, Rail Kit must be purchased separately, RoHS6
MSN2010-CB2RC	Spectrum™ based 10/25GbE and 100GbE, 1U Open Ethernet Switch with Cumulus, 18 SFP28 ports and 4 QSFP28 ports, 2 Power Supplies (AC), short depth, Rangeley CPU, C2P airflow, Rail Kit must be purchased separately, RoHS6
MSN2010-CB2FO	Spectrum™ based 10/25GbE and 100GbE 1U Open Switch with ONIE, 18 SFP28 ports and 4 QSFP28 ports, 2 AC PSUs, x86 2core, short depth, P2C airflow, Rail Kit must be purchased separately, RoHS6

Table 2 - Rail Kit Part Number and Description

OPN	Description
MTEF-KIT-D	Rack installation kit for SN2100/SN2010 series short depth 1U switches, allows installation of one or two switches side-by-side into standard depth racks
MTEF-KIT-E	Rack installation kit for SN2100/SN2010 systems short depth 1U half-width switches

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