



SX1012 Open Ethernet Switch

12-Port 40/56GbE, 48-Port 10GbE, High Performance and SDN in Small Scale

The SX1012 SDN switch system provides the highest-performing top-of-rack (ToR) solution in a half-width 1U form factor by delivering up to 672Gb/s of non-blocking throughput with a 10GbE or 40/56GbE form factor.

SX1012 is the ideal top-of-rack switch for small pods connecting a small number of servers with 40GbE. Each QSFP port can be used with a passive breakout cable to create four discrete SFP+ interfaces to be used as 10GbE ports, for a total of 48-ports, on the smallest form factor 10GbE ToR in the industry.

The SX1012 switch has a rich set of networking and application performance features that excel and enable Software Defined Networking in any data center, making this switch the perfect solution for your network.

SwitchX[®]-2 carries a unique design that offers users a straightforward platform for implementation of a Software Defined Network, allowing the construction of a high scale network with advanced, fine tuning, control plane capabilities. The SX1012 supports Virtual Protocol Interconnect[®] (VPI) technology which enables it to be used for both Ethernet and InfiniBand technology providing the user with flexibility and investment protection. The SX1012 provides a full suite of management options, including support for Mellanox's NEO[™], SNMP v1,2,3, and web user interfaces. In addition, the SX1012 incorporates a familiar industry-standard CLI which enables administrators to easily configure the switch.

To ensure long term applicability, the SX1012 is provisioned to enhance its current capabilities with additional L2 and L3 features through software upgrades.

WORLD-CLASS DESIGN

SX1012 carries a unique design to accommodate the highest performance in a small form factor. The unique design allows placement of two switches positioned side-by-side in a standard 19" rack to occupy 1RU height with high availability from the Network Interface Card level.

SX1012 is available as reverse or forward airflow, allowing the switch to fit into data centers with different thermal designs. Redundant power supplies and fans provide yet another level of high availability for the application running within the pod.

Status LEDs for fans and power supply units are placed on both sides of the system for easy status identification. Quick start guide, rack mount kit, AC power cord and RJ45 console cable are provided as part of the standard system providing an easy out-of-the-box experience.

END-TO-END

Mellanox is a leading supplier of end-to-end connectivity solutions. The SX1012, together with Mellanox cables and adapters, brings the networking industry's first end-to-end 40/56GbE.



HIGHLIGHTS

BENEFITS

- Unprecedented performance
 - Storage and server applications run faster
- Smallest form factor ToR switch
- 48 x 10GbE ports in half-width 1RU
- Side-by-side deployment in a standard rack
- Running Mellanox Onyx[™] (successor to MLNX-OS)
- Low latency, high performance
- Software Defined Networking (SDN) support
- Efficiency
 - Simple configuration, no need for QoS (40/56GbE vs. 10GbE)
- IPv6 IPsec

KEY FEATURES

- High density
 - 12 40/56GbE ports in 1RU
 - Up to 48 10GbE ports
- Lowest latency
 - 220nsec for 40GbE
 - 270nsec for 10GbE
- Lowest power
 - Maximum power consumption is <100 Watts

Figure 1. 10GbE ToR Switch

- 48 10GbE Ports
- 40 10GbE + 2 x 40GbE

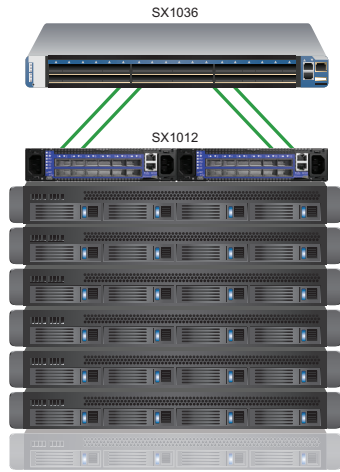
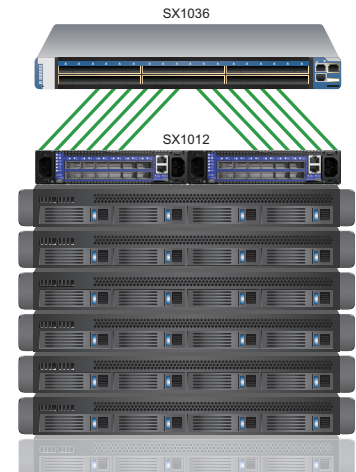


Figure 2. 40/56GbE ToR Switch

- Smallest footprint
- Cost optimized
- 56GbE capable
- Best resiliency



FEATURES

Layer 2 Feature Set

- 1GbE, 10GbE, 40GbE, 56GbE
- 48K L2 Forwarding Entries
- Static MAC
- Jumbo Frames (9216 BYTES)
- VLAN 802.1Q (4K)
- 802.1W Rapid Spanning Tree Protocol
 - BPDU Filter
 - Root Guard
 - Loop Guard
 - BPDU Guard
- 802.1Q Multiple Spanning Tree Protocol
- PVRST+ (Rapid Per VLAN Spanning Tree+)
- 802.3ad Link Aggregation/LACP
 - 16 Ports/Channel
 - 64 Groups Per System
- 802.3X Flow Control
- 802.1Qbb Priority Flow Control (PFC)
- 802.1Qaz Enhanced Transmission Selection (ETS)

- DCBX
- 802.1AB LLDP
- 802.1x
- IGMP v1/v2/v3 Snooping Querier
- Access Control Lists (L2-L4)
- sFlow
- Port Mirroring

Layer 3 Feature Set

- Static Routes v4
- OSPFv2
- BGPv4
- Router Port Interface for Routing
- VLAN Interface for Routing
- PIM Bi-Dir
- DHCP Relay
- ECMP, 64-way
- VRRP
- IGMP v2/v3

Network Management

- 100/1000 Management port
- In-Band Management
- Serial Console Port

- SDN
- OpenFlow 1.0
- Embedded Puppet Agent
- RADIUS
- TACACS+
- LDAP
- SSHv2
- DHCP/Zeroconf
- Familiar Industry Standard CLI
- Management over IPv4/IPv6
- Telnet
- File Download via SCP, FTP & TFTP Client
- Network Time Protocol (NTP)
- Syslog
- Dual SW Image
- Auto Temperature Control
- System Alarms
- Port Counters
- Event Notification
- SNMP v1/v2/v3
- E-Mail
- Web UI

- Predefined Scheduled Scripts
 - System Health Monitoring
- ### Power Specifications
- ATIS Weighted Power Consumption: 49.9W
 - Max Power Consumption: 100W
 - Input Voltage Range: 100-240VAC

Physical Characteristics

- Dimensions: 1.72" H x 7.87" W x 15.74" D
- Weight: 7.1lbs (3.2 kg)

Supported Modules and Cables

- QSFP, SFP+ short and long range optics
- QSA - QSFP to SFP+ adapter
- QSFP to SFP+ DAC cable
- QSFP to QSFP DAC Cable
- QSFP breakout cables 40GbE to 4x10GbE
 - DAC, Optical
- QSFP AOC

* This section describes hardware features and capabilities. Please refer to the driver and firmware release notes for feature availability.

Table 1 - Part Numbers and Descriptions

| OPN | Description |
|---------------|--|
| MSX1012B-1BFS | SwitchX [®] -2 based 40GbE, 1U Open Ethernet Switch with Mellanox Onyx, 12 QSFP+ ports, 1 Power Supply (AC), short depth, PPC460, Connector airflow out, Rail Kit must be purchased separately, RoHS6 |
| MSX1012B-2BFS | SwitchX [®] -2 based 40GbE, 1U Open Ethernet Switch with Mellanox Onyx, 12 QSFP+ ports, 2 Power Supplies (AC), short depth, PPC460, Connector airflow out, Rail Kit must be purchased separately, RoHS6 |
| MSX1012B-2BRS | SwitchX [®] -2 based 40GbE, 1U Open Ethernet Switch with Mellanox Onyx, 12 QSFP+ ports, 2 Power Supplies (AC), short depth, PPC460, Connector airflow in, Rail Kit must be purchased separately, RoHS6 |
| MSX60-DKIT | Rack installation kit for SwitchX [®] -2 12-port series short depth 1U switches, allows installation of one or two switches side-by-side into a standard depth rack |