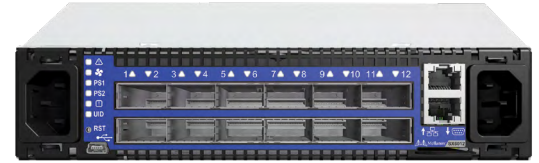# SX6012 Switch

12-port Non-blocking Managed 56Gb/s InfiniBand SDN Switch System

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The SX6012 switch system provides the highest performing fabric solution in a 1U half-width form factor by delivering up to 1.3Tb/s of non-blocking bandwidth with 200ns port-to-port latency.

SCALING-OUT DATA CENTERS WITH FOURTEEN DATA RATE (FDR) INFINIBAND

Faster servers based on PCIe 3.0, combined with high-performance storage and applications that use increasingly complex computations, are causing data bandwidth requirements to spiral upward. As servers are deployed with next generation processors, embedded system environments and fast storage will need every last bit of bandwidth delivered with Mellanox's next generation of FDR InfiniBand high-speed, low port density smart switches.

FDR

FDR InfiniBand technology moves from 8b/10b encoding to a more efficient 64/66 encoding while increasing the per lane signaling rate to 14Gb/s. Mellanox end-to-end systems can also take advantage of the efficiency of 64/66 encoding using Mellanox FDR-10 link speed supporting 20% more bandwidth over QDR using the same cables/connectors designed for 40 GbE.

SUSTAINED NETWORK PERFORMANCE

Built with Mellanox's 6th generation SwitchX®-2 InfiniBand switch device, SX6012 provides up to twelve 56Gb/s full bi-directional bandwidth per port. SX6012 is an ideal choice for smaller departmental or back-end clustering uses with high-performance needs, such as storage, database and GPGPU clusters.

SMART SWITCHES FOR SMART CLUSTERS

SX6012 has no Field Replaceable Units (FRUs) which simplifies the usage and maintenance of the switch. All connectors and cables including the power connector are on the same side of the switch making it unnecessary to require access to the non-connector side of the switch. A unique rail mounting kit allows two SX6012 switches to be mounted side-by-side in the same 1U space while allowing the switches to be serviced independently using less rack space for redundant switch configurations.

VIRTUAL PROTOCOL INTERCONNECT® (VPI)

Virtual Protocol Interconnect (VPI) flexibility enables any standard networking, clustering, storage, and management protocol to seamlessly operate over any converged network leveraging a consolidated software stack. VPI simplifies I/O system design and makes it easier for IT managers to deploy infrastructure that meets the challenges of a dynamic data center.

MANAGEMENT

SX6012 comes with an onboard subnet manager, enabling simple, out-of-the-box fabric bring-up for up to 648 nodes. The SX6012 MLNX-OS® software delivers complete chassis management to manage the firmware, power supplies, fans, ports and other interfaces.

HIGHLIGHTS

BENEFITS

– Software Defined Network (SDN) support

– Industry-leading, switch platform in performance, power, and density

– Designed for energy and cost savings

– Quick and easy setup and management

– Maximizes performance by removing fabric congestions

– Fabric management for cluster and converged I/O applications

KEY FEATURES

– 12 FDR (56Gb/s) ports in a 1U switch

– Up to 1.3Tb/s aggregate switching half-width capacity

– Compliant with IBTA 1.2.1 and 1.3

– FDR/FDR10 support for Forward Error Correction (FEC)

– Side-by-side mounting capability

†For illustration only. Actual products may vary.

SPECIFICATIONS

Mellanox SX6012

– 19" rack mountable chassis, 1U

– 12 QSFP non blocking ports with aggregate data throughput up to 1.344Tb/s (FDR)

– Port-to-port latency 200ns

Switch Specifications

– Compliant with IBTA 1.21 and 1.3

– 9 virtual lanes: 8 data + 1 management

– 256 to 4Kbyte MTU

– 4x48K entry linear forwarding database

Management Ports

– 10/100/1000 Ethernet port

– RS232 port over DB9

– Mini USB

Device Management

– CLI or SNMP

Fabric Management

– On-board SM for fabrics up to 648 nodes

– Unified Fabric Manager™ (UFM™) Agent

Connectors and Cabling

– QSFP connectors

– Passive copper or active fiber cables

– Fiber media adapters

Indicators

– Per port status LED Link, Activity

– System status LEDs: System, fans, power supplies

– Port Error LED

– Unit ID LED*

Physical Characteristics

– Dimensions: 1.72" H x 7.9" W x 15.7" D

– Weight: 6.6lb (2.98kg)

Power Supply

– Input range: 100-240VAC

– Frequency: 50-60Hz, single phase AC

Cooling

– Front-to-rear or rear-to-front cooling option

– Auto-heat sensing for silent fan operation

Power Consumption

– FDR - Typical power consumption:

– Passive cable: 126W

– Active cable: 152W

COMPLIANCE

Safety

– CB

– cTUVus

– CE

– CU

Power Supplies

– Korea KCC

EMC (Emissions)

– CE

– FCC

– VCCI

– ICES

– RCM

Operating Conditions

– Operating 0ºC to 45ºC, Non Operating -40ºC to 70ºC

– Humidity: Operating 10% to 85%

– Altitude: Operating -60 to 3200m

Acoustic

– ISO 7779

– ETS 300 753

Others

– RoHS-6 compliant

– Rack-mountable, 1U

– 1-year warranty

Table 1 - Part Numbers and Descriptions

OPN	Description
MSX6012F-1BFS	SwitchX®-2 based FDR InfiniBand 1U Switch, 12 QSFP+ ports, 1 Power Supply (AC), PPC460, short depth, Connector airflow out, Rail Kit must be purchased separately, RoHS6
MSX6012F-1BRS	SwitchX®-2 based FDR InfiniBand 1U Switch, 12 QSFP+ ports, 1 Power Supply (AC), PPC460, short depth, Connector airflow in, Rail Kit must be purchased separately, RoHS6
MSX6012F-2BFS	SwitchX®-2 based FDR InfiniBand 1U Switch, 12 QSFP+ ports, 2 Power Supplies (AC), PPC460, short depth, Connector airflow out, Rail Kit must be purchased separately, RoHS6
MSX6012F-2BRS	SwitchX®-2 based FDR InfiniBand 1U Switch, 12 QSFP+ ports, 2 Power Supply (AC), PPC460, short depth, Connector airflow in, Rail Kit must be purchased separately, RoHS6
MSX6012T-1BFS	SwitchX®-2 based FDR-10 InfiniBand 1U Switch, 12 QSFP+ ports, 1 Power Supply (AC), PPC460, short depth, Connector airflow out, Rail Kit must be purchased separately, RoHS6
MSX6012T-2BFS	SwitchX®-2 based FDR-10 InfiniBand 1U Switch, 12 QSFP+ ports, 2 Power Supplies (AC), PPC460, short depth, Connector airflow out, 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
UPGR-6012F-GW	InfiniBand to Ethernet gateway software license for Mellanox 6012 Switch
LIC-Fabric-Inspector	Enhanced IB Diagnostic license

*P2C is connector side outlet, C2P is connector side inlet.

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