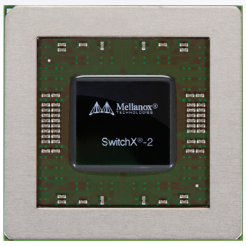
SWITCH SILICON

PRODUCT BRIEF

SwitchX®-2 Ethernet Optimized for SDN

SDN Optimized Switch Silicon for the Converged, Virtualized and Efficient Data Center Fabric



Mellanox continues its interconnect leadership by providing the highest performing server and storage system interconnect solution for Enterprise Data Centers, Cloud Computing, High-Performance Computing, and embedded environments.

SwitchX®-2, the sixth generation switching IC from Mellanox, further improves the company's tradition of leading bandwidth, low-latency, and scalability by integrating Ethernet and Fibre Channel traffic on a single 'one-wire' fabric. The industry-leading integration of 144 PHYs which are flexible enough to run 1Gb to 14Gb speeds per lane, makes SwitchX-2 an obvious choice for OEMs that must address end-user requirements for faster and more robust applications. Reduced power, footprint and a fully integrated PHY capable of connectivity across PCBs, backplanes as well as passive and active copper/fiber cables allow interconnect fabrics based on SwitchX-2 to be utilized by network architects to deploying leading, fabric-flexible computing and storage systems with the lowest TCO.

40/56 Gigabit Ethernet

Virtualized environments and wire convergence is driving the need for increased bandwidth above 1 and 10GbE. Flat, large-scale Layer 2 fabrics for the Cloud and Web 2.0 environments are driving requirements for lower latency in addition to increased bandwidth. SwitchX-2 addresses these requirements by providing "one-wire" fabric convergence with integrated Fibre Channel connectivity (NPIV gateways) on top of industry leading cut-through latencies and 4Tb/s non-blocking bandwidths.

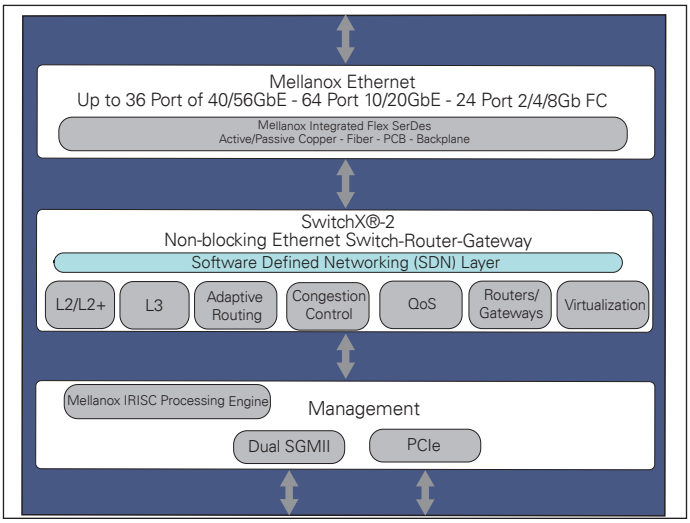


Figure 1: *Mellanox SwitchX-2 Architecture*

HIGHLIGHTS

- Software Defined Networking Optimized
  - *Complete support for OpenFlow*
  - *Remote configurable routing tables*
- Industry Leading Cut Through Latency
- I/O Consolidation
  - *FC Gateways (NPIV)*
- Virtualization Support
  - *VEB, VEPA (+), Port Extender*
- Data Center Bridging (DCB)
  - *PFC, DCBX, ETS*
- Low Cost Solution
  - *Single-Chip Implementation*
- Fully Integrated Phy
  - *Backplane and cable support*
  - *1, 2 and 4 Lane*
- Up to 4Tb/s switching capacity
- Flexible Port Configurations
  - *Up to 36 40/56GbE Ports*
  - *Up to 64 10/20GbE Ports*
  - *Up to 24 2/4/8Gb FC Ports*
- Adaptive Routing
- Congestion Control
- Quality of Service 802.1p, DIFFSERV
- Switch Partitioning
- Multichip Support
  - *All ports support stacking*
  - *Management across multiple devices*
- Energy Efficient Ethernet
- IEEE 1588 Clock Synchronization
- Active Power Governor
- IPv6 Ready

Optimized SDN Support

SwitchX-2 includes advanced capabilities of remote configurable routing tables, support for overlay networks, efficient control plans, and SDN-optimized software interfaces. SwitchX-2 enables IT managers to program and centralize their server and storage interconnect management and dramatically reduce their operation expenses by completely virtualizing their data center network.

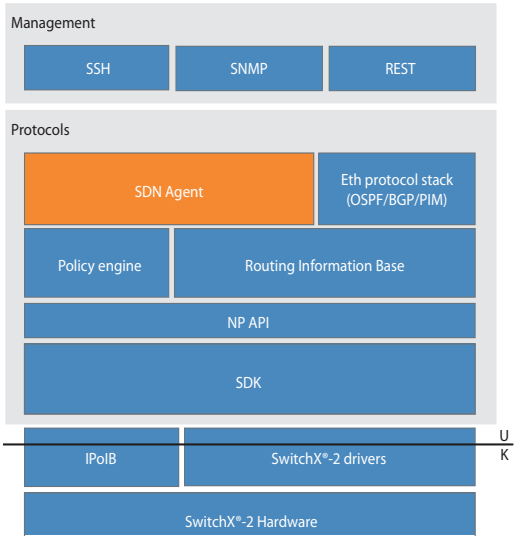


Figure 2: *Optimized SDN Support*

Virtual Protocol Interconnect® (VPI)

SwitchX-2 VPI devices enable industry standard networking, clustering, storage, and management protocols to seamlessly operate over a single "one-wire" converged network. With auto-sense capability, each SwitchX port can identify and operate Ethernet, Data Center Bridging (DCB) or Fibre Channel protocol. Combined with Mellanox's ConnectX family of VPI adapters, on-the-fly fabric repurposing can be enabled for Cloud, Web 2.0, EDC and Embedded environments providing "future proofing" of fabrics independent of protocol.

Configurations

SwitchX-2 allows OEMs to deliver:

- 36 Port 40/56GbE or 64 Port 10GbE L2, L2+ and L3 switch
- 48 Port 10GbE to 12 Port 40/56GbE Top-of-Rack switch
- Blade switches for converged fabrics
  - (16 - 40/56GbE to servers, 12 - 10GbE to LAN, 8 - 8Gb FC to SAN and 2 - 40/56GbE stacking ports)

Switch Product Development Platforms

The SwitchX-2 Evaluation Board (EVB) and Software Development Kit (SDK) are available to accelerate OEMs' time to market and for running benchmark tests. These rack mountable systems are available with a mix of QSFP and SFP+ connectors for verifying 10/40/56GbE and Fibre Channel functionality. In addition, SMA connectors are available for PHY characterization.

Mellanox Advantage

Mellanox is the leading supplier of industry standard InfiniBand and Ethernet adapter and switch silicon. Our products have been deployed in clusters scaling to thousands-of nodes and are being deployed end-to-end in data centers and TOP500 systems around the world.

SPECIFICATIONS

ETHERNET

- 1, 10, 20 40 and 56Gb/s
- DCB (PFC, ETS, DCBX)
- FCoE

COMPATIBILIITY

CPU

- PowerPC, IntelX86, AMDX86 and MIPS

PCI EXPRESS INTERFACE

- PCIe 3.0 compliant, 1.1 compatible
- 2.5GT/s or 5GT/s link rate x4

CONNECTIVITY

- Interoperates with Ethernet, Fibre Channel, CNA adapters and switches
- Drives active/passive copper cables, fiber optics, PCB or backplanes

MANAGEMENT AND TOOLS

- Supports Mellanox UFM and IBTA compliant Subnet Managers
- Diagnostic and debug tools

I/O SPECIFICATIONS

- 36 40/56GbE ports, 64 10/20GbE ports, 24 2/4/8Gb FC ports or a combination of port types
- SPI Flash interface, I^2C
- IEEE 1149.1 boundary-scan JTAG
- Link status LED indicators
- General purpose I/O
- 45 x 45mm FCBGA

Ordering Information

Ordering Part Number	Port Configuration	Typical power
MT51136A2-FCCR-BV	36 Port 40/56GbE Switch IC	55 Watts
MT51164A2-FCCR-X	64 Port 10GbE Switch IC	40 Watts

NOTE: 56GbE operation requires an additional license.

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