SWITCH SILICON

PRODUCT BRIEF

SwitchX™ EN

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

Mellanox continues its connectivity 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, the fifth 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 1 Gigabit to 10 Gigabit speeds per lane, makes SwitchX 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/fibre cables allow interconnect fabrics based on SwitchX to be utilized by network architects 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 10 GigE. 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 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 2.8Tb/s non-blocking bandwidths.

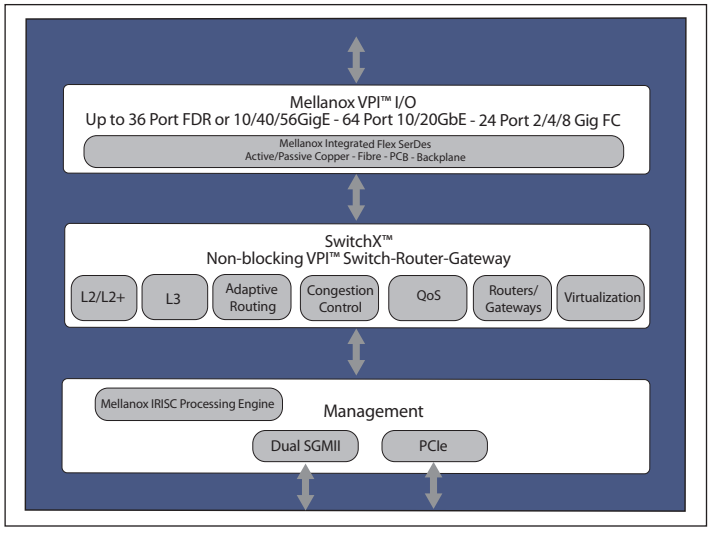

Figure 1: *Mellanox SwitchX Architecture*

HIGHLIGHTS

- 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 2.8Tb/s switching capacity
- Flexible Port Configurations
  - *Up to 36 40/56GigE Ports*
  - *Up to 64 10/20GigE Ports*
  - *Up to 24 2/4/8Gig 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
- IPv6 IPSEC

Virtual Protocol Interconnect (VPI)

SwitchX 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, Web2.0, EDC and Embedded environments providing "future proofing" of fabrics indpendent of protocol.

Configurations

SwitchX allows OEMs to deliver:

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

Switch Product Development Platforms

The SwitchX 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 10/40/56GigE and Fiber Channel functionality. In addition, SMA connectors are available for PHY characterization.

Mellanox Advantage

Mellanox is the leading supplier of industry standard InfiniBand and Ethernet HCA, NIC 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 Base 2.0 compliant, 1.1 compatible
- 2.5GT/s or 5GT/s link rate x4

CONNECTIVITY

- Interoperates with Ethernet, Fiber 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 40/56GigE ports, 64 10/20GigE ports, 24 2/4/8Gig FC ports or a combination of port types
- PCI Express 2.0 x4 5GT/s (1.1 compatible)
- 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
MT51136-A2-FCCR-Q	36, 40/56GigE Ports	55 Watts
MT51164A2-FCCR-S	64, 10GigE Ports	40 Watts

INFINIBAND™ TRADE ASSOCIATION

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