ETHERNET ADAPTER SILICON

PRODUCT BRIEF

ConnectX®-2 EN

Dual-Port 10 Gigabit Ethernet Controller with PCI Express 2.0

ConnectX®-2

Mellanox ConnectX-2 EN 10 Gigabit Ethernet Media Access Controller (MAC) delivers high-bandwidth and industry-leading 10GigE connectivity with stateless offloads for performance-driven server and storage applications in Enterprise Data Centers, High-Performance Computing, and Embedded environments.

Clustered databases, web infrastructure, and financial services are just a few applications that will achieve significant throughput and latency improvements resulting in faster access, real-time response and more users per server. ConnectX-2 EN improves network performance by increasing available bandwidth while decreasing the associated transport load on the CPU and providing enhanced performance, especially in virtualized server environments. The device is well suited for Blade Server and LAN on Motherboard (LOM) designs due to its small overall footprint requirement.

Optimal Price/Performance

ConnectX-2 EN removes I/O bottlenecks that are limiting application performance in mainstream servers. Servers supporting PCI Express 2.0 with 5GT/s will be able to fully utilize both 10Gb/s ports, balancing the I/O requirement of these high-end servers. Hardware-based stateless offload engines handle the TCP/UDP/IP segmentation, reassembly, and checksum calculations that would otherwise burden the host processes. Wake on LAN feature provide the ultimate power saving mode for unutilized server, to fully optimize the operational cost. Total cost of ownership is optimized by maintaining an end-to-end Ethernet network on existing operating systems and applications.

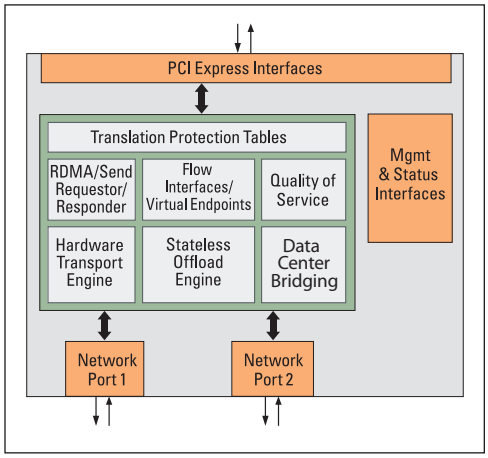

Figure 1. *ConnectX-2 EN Block Diagram*

Integrated CX4, KX4, XFI and KR PHYs reduce the number of components required. This in turn reduces the power, board space, and complexity of the system compared to other solutions. Each port is independently configured, increasing the options available to OEMs.

Converged Ethernet

ConnectX-2 EN delivers the features needed for a converged network with support for Data Center Bridging (DCB). T11 compliant FCoE support with full hardware offloads simplifies the storage network while keeping existing Fibre Channel targets. IBTA RoCE technology provides efficient RDMA services, delivering low-latency and high-performance to bandwidth and latency sensitive applications. With link-level interoperability in existing Ethernet infrastructure, Network Admin-

HIGHLIGHTS

- 10Gb/s full duplex bandwidth for servers and storage
- Industry-leading throughput and latency performance
- Virtualization acceleration
- Converged fabric with high-performance networking and storage access
- Software compatible with standard TCP/UDP/IP and iSCSI stacks
- Small PCB footprint
- Single chip architecture
  - *Integrated CX4, XFI and backplane PHY interfaces*
  - *No local memory needed*
- Dual 10 Gigabit Ethernet ports
- PCI Express 2.0 (up to 5GT/s)
- RDMA over Converged Ethernet
- Data Center Bridging support
- T11.3 FC-BB-5 FCoE
- TCP/IP stateless offload in hardware
- Traffic steering across multiple cores
- Hardware-based I/O virtualization
- Advanced Quality of Service

istrators can leverage existing data center fabric management solutions.

I/O Virtualization

ConnectX-2 EN provides dedicated adapter resources and guaranteed isolation and protection for virtual machines (VM) within the server. ConnectX-2 EN gives data center managers better server utilization and LAN and SAN unification while reducing costs, power, and complexity.

Quality of Service

Resource allocation per application or per VM is provided and protected by the advanced QoS supported by ConnectX-2 EN. Service levels for multiple traffic types can be based on IETF DiffServ or IEEE 802.1p/Q allowing system administrators to prioritize traffic by application, virtual machine, or protocol. This powerful combination of QoS and prioritization provides the ultimate fine-grained control of traffic – ensuring that applications run smoothly in today's complex environments.

Software Support

ConnectX-2 EN is supported by a full suite of software drivers for Microsoft Windows, Linux distributions, VMware and Citrix XENServer. ConnectX-2 EN supports stateless offload and is fully interoperable with standard TCP/UDP/IP stacks. ConnectX-2 EN supports various management interfaces and has a rich set of configuring and management tools across operating systems.

vmware® READY

FEATURE SUMMARY

ETHERNET
- IEEE Std 802.3ae 10 Gigabit Ethernet
- IEEE Std 802.3ak 10GBASE-CX4
- IEEE Std 802.3ap Backplanes, including FEC
- IEEE Std 802.3ad Link Aggregation and Failover
- IEEE Std 802.1Q VLAN tags, .1p Priorities
- IEEE P802.1au D2.0 Congestion Notification
- IEEE P802.1az D0.2 Enhanced Transmission Selection
- IEEE P802.1bb D1.0 Priority-based Flow Control
- Jumbo frame support (10KB)
- 128 MAC/VLAN addresses per port

TCP/UDP/IP STATELESS OFFLOAD
- TCP/UDP/IP checksum offload
- TCP Large Send (< 64KB) or Giant Send (64KB-16MB) Offload for segmentation
- Receive Side Scaling (RSS) up to 32 queues
- Line rate packet filtering

ADDITIONAL CPU OFFLOADS
- RDMA over Converged Ethernet
- FC checksup offload
- VMDirect Path support
- Traffic steering across multiple cores
- Intelligent interrupt coalescence
- Compliant to Microsoft RSS and NetDMA

HARDWARE-BASED I/O VIRTUALIZATION
- Single-Root IOV
- Address translation and protection
- Dedicated adapter resources and guaranteed isolation
- Multiple queues per virtual machine
- Hardware switching between guest OSs
- Enhanced QoS for vNICs
- VMware NetQueue Support

STORAGE SUPPORT
- T11.3 FC-BB-5 FCoE

FLEXBOOT™ TECHNOLOGY
- Remote boot over Ethernet
- Remote boot over iSCSI

COMPATIBILITY

PCI EXPRESS INTERFACE
- PCIe Base 2.0 compliant, 1.1 compatible
- 2.5GT/s or 5.0GT/s link rate x8
- Auto-negotiates to x8, x4, x2, or x1
- Support for MSI/MSI-X mechanisms

CONNECTIVITY
- Interoperable with 10GigE switches and routers
- Drives copper cables, fiber optic modules, or backplanes

OPERATING SYSTEMS/DISTRIBUTIONS
- Novell SuSE Linux Enterprise Server (SLES), Red Hat Enterprise Linux (RHEL), and other Linux distributions
- Microsoft Windows, Server 2003 / 2008, CCS 2003
- VMware ESX Server 3.5, vSphere 4.0/4.1
- Citrix XenServer 4.1, 5.0, 5.5

MANAGEMENT
- MIB, MIB-II, MIB-II Extensions, RMON, RMON 2
- Configuration and diagnostic tools
- NC-SI

Ordering Part Number	Ethernet Port	Host Bus	Power (Typical)	Standby Power (Typical)
MT25408B0-FCC-SE	Dual 1/10GigE	PCIe 2.0 2.5GT/s	4.5W	1.4W
MT25408B0-FCC-TE	Dual 1/10GigE	PCIe 2.0 5.0GT/s	4.9W	1.4W

*This product brief describes all of the hardware features and capabilities. Please refer to the driver release notes on www.mellanox.com for feature availability.

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