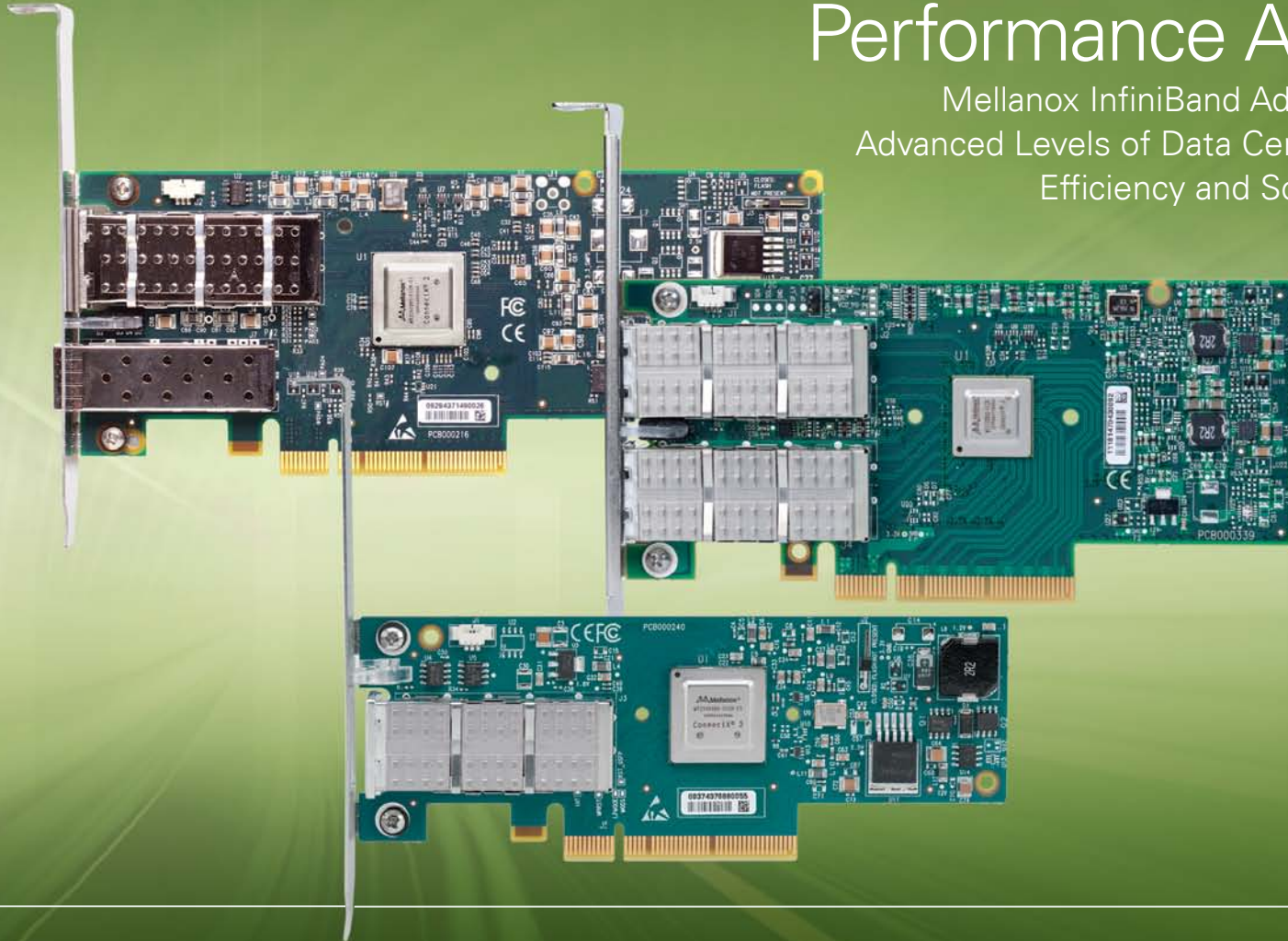


Performance Accelerated

Mellanox InfiniBand Adapters Provide
Advanced Levels of Data Center IT Performance,
Efficiency and Scalability



Mellanox continues its leadership

providing **InfiniBand Host Channel Adapters (HCA)** —

the highest performance interconnect solution for Enterprise Data Centers,
Web 2.0, Cloud Computing, High-Performance Computing,
and embedded environments.

VALUE PROPOSITIONS

- High Performance Computing needs high bandwidth, low latency, and CPU offloads to get the highest server efficiency and application productivity. Mellanox HCAs deliver the highest bandwidth and lowest latency of any standard interconnect enabling CPU efficiencies of greater than 95%.
- Data centers and cloud computing require I/O services such as bandwidth, consolidation and unification, and flexibility. Mellanox's HCAs support LAN and SAN traffic consolidation and provides hardware acceleration for server virtualization.
- Virtual Protocol Interconnect™ (VPI) flexibility offers InfiniBand, Ethernet, Data Center Bridging, EoIB, FCoIB and FCoE connectivity.

Mellanox InfiniBand Host Channel Adapters (HCA) provide the highest performing interconnect solution for Enterprise Data Centers, Web 2.0, Cloud Computing, High-Performance Computing, and embedded environments. Clustered data bases, parallelized applications, transactional services and high-performance embedded I/O applications will achieve significant performance improvements resulting in reduced completion time and lower cost per operation.

World-Class Performance

Mellanox InfiniBand adapters deliver industry-leading bandwidth with ultra low-latency and efficient computing for performance-driven server and storage clustering applications. Network protocol processing and data movement overhead such as RDMA and Send/Receive semantics are completed in the adapter without CPU intervention. Application acceleration and GPU communication acceleration brings further levels of performance improvement. Mellanox InfiniBand adapters' advanced acceleration technology enables higher cluster efficiency and large scalability to tens of thousands of nodes.

I/O Virtualization

Mellanox adapters utilizing Virtual Intelligent Queuing (Virtual-IQ) technology with SR-IOV provides dedicated adapter resources and guaranteed isolation and protection for virtual machines (VM) within the server. I/O virtualization on InfiniBand gives data center managers better server utilization and LAN and SAN unification while reducing cost, power, and cable complexity.

Storage Accelerated

A consolidated compute and storage network achieves significant cost-performance advantages over multi-fabric networks. Standard block and file access protocols leveraging InfiniBand RDMA result in high-performance storage access. Mellanox adapters support SCSI, iSCSI, NFS and FCoE protocols.

Software Support

All Mellanox adapters are supported by a full suite of drivers for Microsoft Windows, Linux distributions, VMware, and Citrix XENServer. The adapters support OpenFabrics-based RDMA protocols and software, and the stateless offloads are fully interoperable with standard TCP/UDP/IP stacks. The adapters are compatible with configuration and management tools from OEMs and operating system vendors.

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. Each port can operate on InfiniBand, Ethernet, or Data Center Bridging (DCB) fabrics, and supports Ethernet over InfiniBand (EoIB) and Fibre Channel over InfiniBand (FCoIB) as well as Fibre Channel over Ethernet (FCoE) and RDMA over Converged Ethernet (RoCE). 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.

ConnectX-3

Mellanox's industry-leading ConnectX-3 InfiniBand adapters provides the highest performing and most flexible interconnect solution. ConnectX-3 delivers up to 56Gb/s throughput across the PCI Express 3.0 host bus, enables the fastest transaction latency, less than 1usec, and can deliver more than 90M MPI messages per second making it the most scalable and suitable solution for current and future transaction-demanding applications. ConnectX-3 maximizes the network efficiency making it ideal for HPC or converged data centers operating a wide range of applications.

Complete End-to-End 56Gb/s InfiniBand Networking

ConnectX-3 adapters are part of Mellanox's full FDR 56Gb/s InfiniBand end-to-end portfolio for data centers and high-performance computing systems, which includes switches, application acceleration packages, and cables. Mellanox's SwitchX family of FDR InfiniBand switches and Unified Fabric Management software incorporate advanced tools that simplify networking management and installation, and provide the needed capabilities for the highest scalability and future growth. Mellanox's collectives, messaging, and storage acceleration packages deliver additional capabilities for the ultimate server performance, and the line of FDR copper and fiber cables ensure the highest interconnect performance. With Mellanox end to end, IT managers can be assured of the highest performance, most efficient network fabric.

BENEFITS

- *World-class cluster performance*
- *High-performance networking and storage access*
- *Efficient use of compute resources*
- *Guaranteed bandwidth and low-latency services*
- *Reliable transport*
- *I/O unification*
- *Virtualization acceleration*
- *Scales to tens-of-thousands of nodes*

TARGET APPLICATIONS

- *High-performance parallelized computing*
- *Data center virtualization*
- *Clustered database applications, parallel RDBMS queries, high-throughput data warehousing*
- *Latency sensitive applications such as financial analysis and trading*
- *Web 2.0, cloud and grid computing data centers*
- *Performance storage applications such as backup, restore, mirroring, etc.*

ConnectX[®] 2



Ports	1x20Gb/s	2x20Gb/s	1x20Gb/s 1x40Gb/s	2x20Gb/s 2x40Gb/s	1x40Gb/s 1x10Gb/s
Connector	microGiGaCN	microGiGaCN	QSFP	QSFP	QSFP, SFP+
Host Bus	PCI Express 2.0				
Features	VPI, Hardware-based Transport and Application Offloads, RDMA, GPU Communication Acceleration, I/O Virtualization, QoS and Congestion Control; IP Stateless Offload				
OS Support	RHEL, SLES, Windows, ESX				
Ordering Number	MHGH19B-XTR	MHGH29B-XTR	MHRH19B-XTR MHQH19B-XTR	MHRH29B-XTR MHQH29C-XTR	MHZH29B-XTR

ConnectX[®] 3



Ports	1x40Gb/s 1x56Gb/s	2x40Gb/s 2x56Gb/s
Connector	QSFP	QSFP
Host Bus	PCI Express 3.0	
Features	VPI, Hardware-based Transport and Application Offloads, RDMA, GPU Communication Acceleration, I/O Virtualization, QoS and Congestion Control; IP Stateless Offload; Precision Time Protocol	
OS Support	RHEL, SLES, Windows, ESX	
Ordering Number	MCX353A-QCBT MCX353A-FCBT	MCX354A-QCBT MCX354A-FCBT

FEATURE SUMMARY*

INFINIBAND

- IBTA Specification 1.2.1 compliant
- 10, 20, or 40, or 56Gb/s per port
- RDMA, Send/Receive semantics
- Hardware-based congestion control
- 16 million I/O channels
- 9 virtual lanes: 8 data + 1 management

ENHANCED INFINIBAND

- Hardware-based reliable transport
- Collective operations offloads
- GPU communication acceleration
- Hardware-based reliable multicast
- Extended Reliable Connected transport
- Enhanced Atomic operations

HARDWARE-BASED I/O VIRTUALIZATION

- Single Root IOV
- Address translation and protection
- Multiple queues per virtual machine
- VMware NetQueue support

ADDITIONAL CPU OFFLOADS

- RDMA over Converged Ethernet
- TCP/UDP/IP stateless offload
- Intelligent interrupt coalescence

STORAGE SUPPORT

- Fibre Channel over InfiniBand or Ethernet

FLEXBOOT™ TECHNOLOGY

- Remote boot over InfiniBand
- Remote boot over Ethernet
- Remote boot over iSCSI

COMPLIANCE

SAFETY

- USA/Canada: cTUVus UL
- EU: IEC60950
- Germany: TUV/GS
- International: CB Scheme

EMC (EMISSIONS)

- USA: FCC, Class A
- Canada: ICES, Class A
- EU: EN55022, Class A
- EU: EN55024, Class A
- EU: EN61000-3-2, Class A
- EU: EN61000-3-3, Class A
- Japan: VCCI, Class A
- Australia: C-Tick
- Korea: KCC

ENVIRONMENTAL

- EU: IEC 60068-2-64: Random Vibration
- EU: IEC 60068-2-29: Shocks, Type I / II
- EU: IEC 60068-2-32: Fall Test

OPERATING CONDITIONS

- Operating temperature: 0 to 55° C
- Air flow: 100LFM @ 55° C
- Requires 3.3V, 12V supplies

COMPATIBILITY

CONNECTIVITY

- Interoperable with InfiniBand or 10GigE switches
- Passive copper cable
- Powered connectors for optical and active cable support
- QSFP to SFP+ connectivity through QSA module

OPERATING SYSTEMS/DISTRIBUTIONS

- Novell SLES, Red Hat Enterprise Linux (RHEL), Fedora, and other Linux distributions
- Microsoft Windows Server 2008/CCS 2003, HPC Server 2008
- OpenFabrics Enterprise Distribution (OFED)
- OpenFabrics Windows Distribution (WinOF)
- VMware ESX Server 3.5, vSphere 4.0/4.1

PROTOCOL SUPPORT

- Open MPI, OSU MVAPICH, Intel MPI, MS MPI, Platform MPI
- TCP/UDP, EoIB, IPoIB, SDP, RDS
- SRP, iSER, NFS RDMA, FCoIB, FCoE
- uDAPL

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

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