

# ConnectX<sup>®</sup>-3 EN

Single and Dual Port 10/40/56 Gigabit Ethernet Adapters with PCI Express 3.0

Mellanox ConnectX-3 EN 10/40/56 Gigabit Ethernet Network Interface Cards (NIC) with PCI Express 3.0 deliver high-bandwidth and industry-leading Ethernet connectivity for performance-driven server and storage applications in Enterprise Data Centers, High-Performance Computing, and Embedded environments.

Clustered databases, web infrastructure, and high frequency trading 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-3 EN improves network performance by increasing available bandwidth while decreasing the associated transport load on the CPU especially in virtualized server environments.

### World-Class Ethernet Performance

**RDMA over Converged Ethernet** – ConnectX-3 utilizing 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 Administrators can leverage existing data center fabric management solutions.

**Sockets Acceleration** – Applications utilizing TCP/UDP/IP transport can achieve industry-leading throughput over 10/40/56GbE. The hardware-based stateless offload and flow steering engines in ConnectX-3 reduce the CPU overhead of IP packet transport, freeing more processor cycles to work on the application. Sockets acceleration software further increases performance for latency sensitive applications.

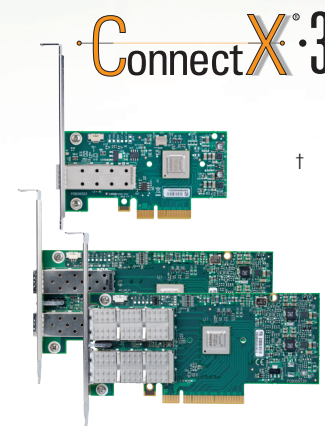
**I/O Virtualization** - ConnectX-3 EN provides dedicated adapter resources and guaranteed isolation and protection for virtual machines

(VM) within the server. ConnectX-3 EN gives data center managers better server utilization and LAN and SAN unification while reducing costs, power, and complexity.

**Precision Data Centers** – ConnectX-3 EN IEEE 1588 precision time protocol circuitry synchronizes the host clock to the data center master clock for accurate data delivery time stamping and data center SLA measurements. The hardware-based mechanisms ensure high accuracy and low jitter.

**Storage Acceleration** – A consolidated compute and storage network achieves significant cost-performance advantages over multi-fabric networks. Standard block and file access protocols can leverage RDMA for high-performance storage access.

**Quality of Service** – Resource allocation per application or per VM is provided and protected by the advanced QoS supported by ConnectX-3 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.



## HIGHLIGHTS

### BENEFITS

- 10/40/56GbE/s connectivity for servers and storage
- Industry-leading throughput and latency performance
- I/O consolidation
- Virtualization acceleration
- Software compatible with standard
- TCP/UDP/IP and iSCSI stacks

### KEY FEATURES

- Single and Dual 10/40/56 Gigabit Ethernet ports
- PCI Express 3.0 (up to 8GT/s)
- Low Latency RDMA over Ethernet
- Data Center Bridging support
- TCP/IP stateless offload in hardware
- Traffic steering across multiple cores
- Hardware-based I/O virtualization
- Intelligent interrupt coalescence
- Advanced Quality of Service
- RoHS-R6

## Software Support

ConnectX-3 EN is supported by a full suite of software drivers for Windows, Linux distributions, Ubuntu, VMware and Citrix XenServer. ConnectX-3 EN supports stateless offload and is fully interoperable with standard TCP/UDP/IP stacks. ConnectX-3 EN supports various management interfaces and has a rich set of configuring and management tools across operating systems.

## FEATURE SUMMARY \*

### ETHERNET

- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3ba 40 Gigabit Ethernet
- IEEE 802.3ad Link Aggregation and Failover
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.1Q, .1p VLAN tags and priority
- IEEE 802.1Qau Congestion Notification
- IEEE P802.1Qbb D1.0 Priority-based Flow Control
- IEEE 1588 Precision Clock Synchronization
- Jumbo frame support (1024B)
- 128 MAC/VLAN addresses per port

### HARDWARE-BASED I/O VIRTUALIZATION

- Single Root IOV
- Address translation and protection
- Dedicated adapter resources
- Multiple queues per virtual machine
- Enhanced QoS for vNICs
- VMware NetQueue support

### ADDITIONAL CPU OFFLOADS

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

### FLEXBOOT™ TECHNOLOGY

- Remote boot over Ethernet
- Remote boot over iSCSI

\* This section describes hardware features and capabilities. Please refer to the driver and firmware release notes for feature availability.

## COMPATIBILITY

### PCI EXPRESS INTERFACE

- PCIe Base 3.0 compliant, 1.1 and 2.0 compatible
- 2.5, 5.0, or 8.0GT/s link rate x8
- Auto-negotiates to x8, x4, x2, or x1
- Support for MSI/MSI-X mechanisms

### CONNECTIVITY

- Interoperable with 10/40GbE Ethernet switches. Interoperable with 56GbE Mellanox Switches.
- Passive copper cable with ESD protection
- Powered connectors for optical and active cable support
- QSFP to SFP+ connectivity through QSA module

### MANAGEMENT AND TOOLS

- MIB, MIB-II, MIB-II Extensions, RMON, RMON 2
- Configuration and diagnostic tools

### OPERATING SYSTEMS/DISTRIBUTIONS

- Citrix XenServer 6.1
- Novell SLES, Red Hat Enterprise Linux (RHEL), Fedora, and other Linux distributions
- Windows Server 2008/2012/2012 R2
- OpenFabrics Enterprise Distribution (OFED)
- OpenFabrics Windows Distribution (WinOF)
- Ubuntu 12.04
- VMware ESXi 4.x and 5.x

Ordering Part Number	Ethernet Ports	Dimensions w/o Brackets
MCX311A-XCAT	Single 10GbE SFP+	10.2cm x 5.4cm
MCX312A-XCBT	Dual 10GbE SFP+	14.2cm x 6.9cm
MCX313A-BCBT	Single 40/56GbE QSFP	14.2cm x 5.2cm
MCX314A-BCBT	Dual 40/56GbE QSFP	14.2cm x 6.9cm

NOTE: All tall-bracket adapters are shipped with the tall bracket mounted and a short bracket as an accessory.



350 Oakmead Parkway, Suite 100, Sunnyvale, CA 94085  
 Tel: 408-970-3400 • Fax: 408-970-3403  
[www.mellanox.com](http://www.mellanox.com)