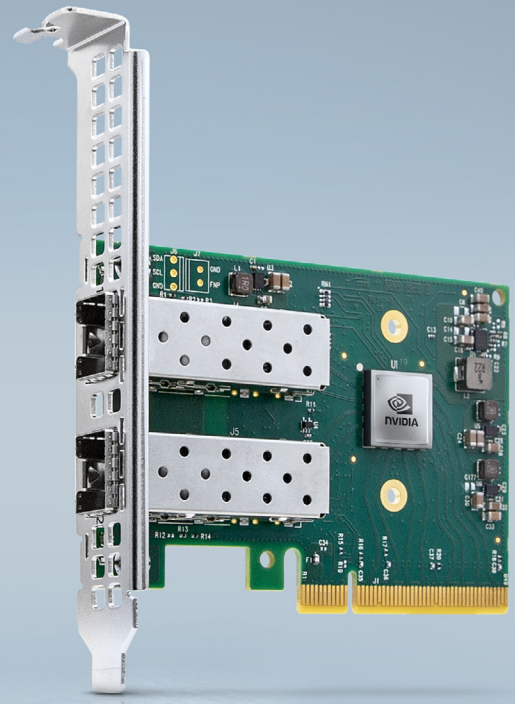




NVIDIA MELLANOX CONNECTX-6 LX LENOVO 25G ETHERNET SMARTNIC



NVIDIA® Mellanox® ConnectX®-6 Lx SmartNICs deliver scalability, high-performance, advanced security capabilities, and accelerated networking with the best total cost of ownership for 25 GbE deployments in cloud, telco, and enterprise data centers.

Providing up to two ports of 25 GbE connectivity, along with PCIe Gen 3.0/4.0 x8 host connectivity, ConnectX-6 Lx is a member of Mellanox's world-class, award-winning, ConnectX family of network adapters. Continuing Mellanox's consistent innovation in networking, ConnectX-6 Lx provides agility and efficiency at every scale.

ConnectX-6 Lx SmartNICs deliver cutting edge 25 GbE performance and security for uncompromising data centers.

WIDE SELECTION OF SMARTNICS

ConnectX-6 Lx SmartNICs are available in several form factors including low-profile PCIe and OCP 3.0 cards with SFP28 connectors for 10/25 GbE applications. Low-profile PCIe cards are available with tall and short brackets, while OCP3.0 cards are available with either a pull tab or an internal lock bracket.

BEST-IN-CLASS SDN ACCELERATION

Mellanox's ASAP² - Accelerated Switch and Packet Processing® technology offloads the SDN data plane to the SmartNIC, accelerating performance and offloading the CPU in virtualized or containerized cloud data centers. Customers can accelerate their data centers with an SR-IOV or VirtIO interface while continuing to enjoy their SDN of choice.

The ConnectX-6 Lx ASAP² rich feature set accelerates public and on-premises enterprise clouds, and boosts communication service providers (CSP) transition to NFV. ASAP² supports these communication service providers by enabling packet encapsulations, such as MPLS and GTP, along side cloud encapsulations, such as VXLAN, Geneve, and others.

SmartNIC Portfolio

- > 10/25 Gb/s Ethernet
- > Various form factors:
 - > PCIe low-profile
 - > OCP 3.0 Small Form Factor (SFF)
- > PCIe Gen 3.0/4.0 x8

Key Features

- > Line speed message rate of 75 Mpps
- > Advanced RoCE
- > ASAP² - Accelerated Switching and Packet Processing
- > Overlay tunneling accelerations
- > Stateful rule checking for connection tracking
- > Secure boot (via hardware Root of Trust)
- > Secure firmware update
- > Best-in-class PTP performance
- > ODCC compatible

Solutions

- > Enterprise data centers
- > Cloud-native, Web 2.0, hyperscale
- > Secured infrastructure
- > Telco and Network Function Virtualization (NFV)

INDUSTRY-LEADING ROCE

Following the Mellanox ConnectX tradition of industry-leading RoCE capabilities, ConnectX-6 Lx enables more scalable, resilient, and easy-to-deploy RoCE solutions—Zero Touch RoCE. ConnectX-6 Lx allows RoCE payloads to run seamlessly on existing networks without requiring network configuration (no PFC, no ECN) for simplified RoCE deployments. ConnectX-6 Lx ensures RoCE resiliency and efficiency at scale.

SECURE YOUR INFRASTRUCTURE

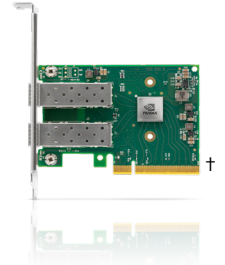
In an era where privacy of information is key and zero trust is the rule, ConnectX-6 Lx adapters offer a range of advanced built-in capabilities that bring infrastructure security down to every endpoint with unprecedented performance and scalability. ConnectX-6 Lx offers IPsec inline encryption/decryption acceleration. ASAP² connection-tracking hardware offload accelerates L4 firewall performance.

ConnectX-6 Lx also delivers supply chain protection with hardware Root-of-Trust (RoT) for Secure Boot as well as Secure Firmware Update using RSA cryptography and cloning-protection, via a device-unique key, to guarantee firmware authenticity.

ORDERING INFORMATION

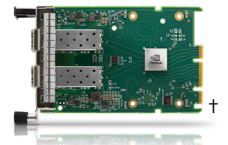
PCIe HHHL FORM FACTOR

Description	NVIDIA Mellanox OPN	Lenovo OPN
ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	MCX631102AS-ADAT	4XC7A62580



OCP 3.0 SMALL FORM FACTOR

Description	NVIDIA Mellanox OPN	Lenovo OPN
ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter	MCX631432AS-ADAI	4XC7A62582



*For illustration only. Actual products may vary.

FEATURES*

Network Interface

- > 2 x 10/25 GbE

Host Interface

- > PCIe Gen 4.0, 3.0, 2.0, 1.1
- > 16.0, 8.0, 5.0, 2.5 GT/s link rate
- > 8 lanes of PCIe
- > MSI/MSI-X mechanisms
- > Advanced PCIe capabilities

Virtualization/Cloud Native

- > Single Root IOV (SR-IOV) and VirtIO acceleration
 - > Up to 512 VFs per port
 - > 8 PFs
- > Support for tunneling
 - > Encap/decap of VXLAN, NVGRE, Geneve, and more
 - > Stateless offloads for overlay tunnels

Mellanox ASAP²

- > SDN acceleration for:
 - > Bare metal
 - > Virtualization
 - > Containers
- > Full hardware offload for OVS data plane
- > Flow update through RTE_Flow or TC_Flower
- > OpenStack support
- > Kubernetes support
- > Rich classification engine (L2 to L4)
- > Flex-Parser: user defined classification
- > Hardware offload for:
 - > Connection tracking (L4 firewall)
 - > NAT
 - > Header rewrite
 - > Mirroring
 - > Sampling
 - > Flow aging
 - > Hierarchical QoS
 - > Flow-based statistics

Platform Security

- > Hardware root-of-trust
- > Secure firmware update

Stateless Offloads

- > TCP/UDP/IP stateless offload
- > LSO, LRO, checksum offload
- > Receive Side Scaling (RSS) also on encapsulated packets
- > Transmit Side Scaling (TSS)
- > VLAN and MPLS tag insertion/stripping
- > Receive flow steering

Advanced Timing & Synchronization

- > Advanced PTP
 - > IEEE 1588v2 (any profile)
 - > PTP Hardware Clock (PHC) (UTC format)
 - > Line rate hardware timestamp (UTC format)
- > Time triggered scheduling
- > PTP based packet pacing
- > Time based SDN acceleration (ASAP²)

Storage Accelerations

- > NVMe over Fabric offloads for target
- > Storage protocols: iSER, NFSoRDMA, SMB Direct, NVMe-oF, and more

RDMA over Converged Ethernet

- > RoCE v1/v2
- > Zero-Touch RoCE: no ECN, no PFC
- > RoCE over overlay networks
- > Selective repeat
- > GPUDirect[®]
- > Dynamically Connected Transport (DCT)
- > Burst buffer offload

Management and Control

- > NC-SI, MCTP over SMBus and MCTP over PCIe
 - Baseboard Management Controller interface, NCSI over RBT in OCP 2.0/3.0 cards
- > PLDM for Monitor and Control DSP0248
- > PLDM for Firmware Update DSP026

Remote Boot

- > Remote boot over Ethernet
- > Remote boot over iSCSI
- > UEFI support for x86 and Arm servers
- > PXE boot

STANDARDS*

- > IEEE 802.3ae 10 Gigabit Ethernet
- > 25/50 Ethernet Consortium 25G and 50G supporting all FEC modes
- > IEEE 802.3by 25G supporting all FEC modes
- > IEEE 802.3ad, 802.1AX Link Aggregation
- > IEEE 802.3az Energy Efficient Ethernet (supports only "Fast-Wake" mode)
- > IEEE 802.3ap based auto-negotiation and KR startup
- > IEEE 802.1Q, 802.1P VLAN tags and priority
- > IEEE 802.1Qaz (ETS)
- > IEEE 802.1Qbb (PFC)
- > IEEE 802.1Qbg
- > IEEE 1588v2
- > IEEE 1149.1 and IEEE 1149.6 JTAG
- > PCI Express Gen 3.0 and 4.0

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

Learn more at www.mellanox.com/products/ethernet/connectx-smartnic

© 2020 Mellanox Technologies. All rights reserved. NVIDIA, the NVIDIA logo, Mellanox, ConnectX, GPUDirect, and ASAP² - Accelerated Switch and Packet Processing are trademarks and/or registered trademarks of Mellanox Technologies Ltd. and/or NVIDIA Corporation in the U.S. and in other countries. Other company and product names may be trademarks of the respective companies with which they are associated. SEP20/60383LPB-R2

Lenovo™

