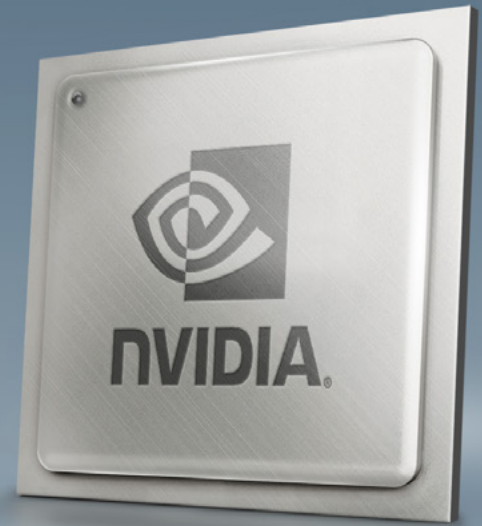




NVIDIA MELLANOX CONNECTX-6 LX 25G ETHERNET SMARTNIC IC



NVIDIA® Mellanox® ConnectX®-6 Lx SmartNIC IC delivers 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. The IC provides up to two ports of 25 GbE or a single-port of 50 GbE connectivity, and 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 delivers cutting edge 25 GbE performance and security for uncompromising data centers.

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.

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.

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.

Key Features

- > 10/25/50 Gb/s Ethernet
- > PCIe Gen 3.0/4.0 x8
- > Line speed message rate of 75 Mpps
- > Advanced RoCE
- > ASAP² - Accelerated Switching and Packet Processing
- > IPsec inline crypto acceleration
- > Overlay tunneling accelerations
- > Stateful rule checking for connection tracking
- > Hardware Root-of-Trust and secure firmware update
- > Best-in-class PTP performance
- > Platform agnostic: x86, Power, Arm

Solutions

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

FEATURES*

Network Interface

- > 2 x 10/25 GbE; 1 x 50GbE

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

Cyber Security

- > Inline hardware IPsec encryption & decryption
 - > AES-GCM 128/256 bit key
 - > IPsec over RoCE
- > 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 packet
- > 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
- > IPsec over RoCE
- > Selective repeat
- > GPUDirect[®]
- > Dynamically Connected Transport (DCT) Burst buffer offload

Management and Control

- > SMBus 2.0
- > Network Controller Sideband Interface (NC-SI)
- > NC-SI, MCTP over SMBus and MCTP over PCIe - Baseboard Management Controller interface
- > PLDM for Monitor and Control DSP0248
- > PLDM for Firmware Update DSP026
- > I²C interface for device control and configuration
- > General Purpose I/O pins
- > SPI interface to flash
- > JTAG IEEE 1149.1 and IEEE 1149.6

Remote Boot

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

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

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

ORDERING INFORMATION

IC Network Interface	PCI Express Interface	IPsec Crypto Acceleration	OPN
2 x 25GbE	PCIe Gen 4.0 x8	-	MT28942A0-NCCF-AE
		✓	MT28942A0-CCCF-AE
1 x 50GbE	PCIe Gen 4.0 x8	-	MT28941A0-NCCF-GE
		✓	MT28941A0-CCCF-GE

1 Only Crypto enabled devices can perform IPsec encryption and decryption offload.

2 All ConnectX-6 Lx IC devices support optional secure boot; contact Mellanox support for information on secure boot enablement and provisioning processes.

* 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-adapter-ic/connectx-6-lx-ic

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