



ConnectX-6 Lx 25G Ethernet NIC

Accelerated networking for modern enterprise data centers.

NVIDIA® ConnectX®-6 Lx Ethernet network interface cards (NIC) deliver high-performance network connectivity at 25 gigabit Ethernet (GbE) speeds coupled with advanced security and the best total cost of ownership for enterprise data centers. The NIC supports up to two ports of 25GbE networking, along with PCI Express (PCIe) Gen3 and Gen4 x8 host connectivity, to meet the demands of modern workloads in the cloud, in the data center, and at the edge.

Software-Defined Networking Acceleration

NVIDIA Accelerated Switch and Packet Processing (ASAP²)™ technology offloads the software-defined networking (SDN) data plane to the NIC, accelerating performance and offloading the CPU in virtualized or containerized cloud data centers. Customers can accelerate their data centers with a single-root input/output (IO) virtualization (SR-IOV) or VirtIO interface while continuing to enjoy their SDN solution of choice. The ConnectX-6 Lx ASAP² feature set accelerates public and on-premises enterprise clouds and boosts the transition of cloud service providers (CSPs) to network function virtualization (NFV). ASAP² supports these CSPs by enabling packet encapsulations, such as multiprotocol label switching (MPLS) and General Packet Radio Services (GPRS) Tunneling Protocol (GTP), alongside cloud encapsulations, such as Virtual Extensible LAN (VXLAN), Generic Network Virtualization Encapsulation (GENEVE), and others.

Industry-Leading RoCE

Following in the ConnectX tradition of providing industry-leading remote direct-memory access (RDMA) over converged Ethernet (RoCE) capabilities, ConnectX-6 Lx enables more scalable, resilient, and easy-to-deploy RoCE solutions. With zero-touch RoCE (ZTR), the ConnectX-6 Lx allows RoCE payloads to run seamlessly on existing networks without special configuration, either to priority flow control (PFC) or explicit congestion notification (ECN), for simplified deployments. ConnectX-6 Lx ensures RoCE resilience and efficiency at scale.

Product Specifications

Supported Ethernet speeds	10GbE, 25GbE
Number of network ports	2
Network interface technology	NRZ
Host interface	PCIe Gen3 and Gen4, 8 lanes
Platform security	Hardware root of trust and secure firmware update
Form factors	PCIe HHHL, OCP3.0 SFF
Network interface	SFP28

Secure Your Infrastructure

In the face of a growing cyber threat landscape, ConnectX-6 Lx adapters offer advanced, built-in capabilities that bring security down to every node in the data center. ConnectX-6 Lx offers Internet Protocol Security (IPsec) inline encryption and decryption acceleration. ASAP² connection-tracking hardware offload accelerates layer-4 firewall performance.

ConnectX-6 Lx also delivers supply chain protection with hardware root of trust (RoT) for secure boot and firmware updates using Rivest-Shamir-Adleman (RSA) cryptography and cloning protection via a device-unique key, guaranteeing firmware authenticity.

Features*

Network Interface

- > Two ports of 10/25GbE
- > Autodetection of switch speed
- > Up to 50 gigabits per second (Gb/s) of total bandwidth

Host Interface

- > PCIe Gen 4.0 compatible, eight lanes
- > Message Signaled Interrupts (MSI)/MSI-X mechanisms

Enhanced Networking

- > Zero-touch RoCE
- > NVIDIA ASAP² for SDN and virtual network functions (VNF) acceleration
- > SR-IOV
- > VirtIO acceleration
- > Overlay network acceleration: VXLAN, GENEVE, Network Virtualization using Generic Routing Encapsulation (NVGRE)
- > Programmable flexible parser
- > Connection tracking (L4 firewall)
- > Flow mirroring, sampling, and statistics
- > Header rewrite
- > Hierarchical quality of service (QoS)
- > Stateless Transmission Control Protocol (TCP) offloads

Cybersecurity

- > Inline hardware IPsec encryption and decryption
 - > IPsec over RoCE
- > Platform security
 - > Hardware RoT
 - > Secure firmware update

Management and Control

- > Network controller sideboard interface (NC-SI), Management Component Transport Protocol (MCTP) over System Management Bus (SMBus) and MCTP over PCIe—baseboard management controller (BMC) interface, NC-SI over reduced media independent interface (RMII)-Based Transport (RBT) in Open Compute Project (OCP) cards
- > Platform-Level Data Model (PLDM) for Monitor and Control DSP0248
- > PLDM for Firmware Update DSP0267

Remote Boot

- > Remote boot over Ethernet
- > Remote boot over Internet Small Computer Systems Interface (iSCSI)
- > Unified extensible firmware interface (UEFI) support for x86 and Arm® servers
- > Preboot Execution Environment (PXE) boot



ConnectX-6 Lx OCP 3.0 form factor.

Ordering Information

For product specifications, visit the online ConnectX-6 Lx user manual:

[OCP3.0 form factor](#) and [PCIe HHHL form factor](#).

Cisco SKU	Cisco PID	NVIDIA SKU	Product Description	Qualified Cisco Servers
30-100310-01	UCSC-O-N6CD25GF	900-9X625-0083-SB0 (Legacy OPN: MCX631432AC-ADAB)	ConnectX-6 Lx EN adapter card, 25GbE OCP3.0, with host management, dual-port SFP28, PCIe 4.0 x8, crypto and secure boot, thumbscrew (pull tab) bracket	Cisco rack servers: UCS C220 M6, UCS C240 M6, UCS C220 M7, UCS C240 M7
30-100312-01	UCSC-P-N6D25GF	900-9X662-0073-ST0 (Legacy OPN: MCX631102AS-ADAT)	ConnectX-6 Lx EN adapter card, 25GbE, dual-port SFP28, PCIe 4.0 x8, secure boot, no crypto, tall bracket	Cisco rack servers: UCS C220 M7, UCS C240 M7

Cards come assembled with a tall bracket PN MEC018771; if needed, the short bracket PN MEC016919 is available in the box as well.

Server qualification is presented as of the date of publication. For latest server qualification information, please visit the [Cisco Hardware Compatibility List \(HCL\)](#).

Optics and Cables

NVIDIA-Supported Cables and Modules

NVIDIA recommends using NVIDIA cables and modules. [Additional information on tested modules:](#)

Select firmware version > Select NVIDIA OPN > Select PSID > Select "Release Notes" under Download/Documentation.

Cisco-Branded Interoperable Cables and Modules: basic Interoperability by NVIDIA & UCS at NIC introduction.

SFP Product ID	Product Description	SFP Product ID	Product Description
SFP-H10GB-CU5M	10GBASE-CU passive cable 5m	SFP-H10GB-ACU7M	10GBASE-CU active copper cable 7m
SFP-H10GB-CU4M	10GBASE-CU active copper cable 4m	SFP-H25G-CU4M	25GBASE-CU passive cable 4m
SFP-H10GB-CU3M	10GBASE-CU passive cable 3m	SFP-H25G-CU3M	25GBASE-CU passive cable 3m
SFP-H10GB-CU1M	10GBASE-CU passive cable 1m	SFP-H25G-CU2.5M	25GBASE-CU passive cable 2.5m
SFP-H25G-CU1M	25GBASE-CU passive cable 1m	SFP-H25G-CU2M	25GBASE-CU passive cable 2m
SFP-25G-CU5M	25GBASE-CU passive cable 5m	SFP-H25G-CU1M	25GBASE-CU passive cable 1m
SFP-10G-SR	10GBASE-SR, 850nm, multi-mode fiber (MMF), 300m	SFP-H25G-AOC10M	25GBASE active optical SFP28 cable, 10m
SFP-10G-LR	10GBASE-LR, 1310nm, single-mode fiber (SMF), 10km	SFP-25G-AOC7M	25GBASE active optical SFP+ cable, 7m
SFP-25G-SR-S	25GBASE-SR SFP+, 850nm, MMF, 300m, S-Class	SFP-25G-AOC5M	25GBASE active optical SFP+ cable, 5m
SFP-10/25G-LR-S	10/25GBASE-LR SFP28 module for SMF	SFP-10G-AOC10M	10GBASE active optical SFP+ cable, 10m
SFP-H10G-ACU10M	10GBASE-CU active copper cable 10m		

For the latest updates and the TMG Supported Optics & Cables, please consult the [Cisco Transceiver Module Group \(TMG\) Compatibility Matrix](#). Break-out and split cables are not supported.

Compatibility-Tested Network Switches

- > Cisco Nexus 93180YC-FX Switch
- > Cisco Nexus 93180YC-EX Switch
- > Cisco Nexus C93600CD-GX Switch
- > Cisco Nexus 5596UP Switch
- > Cisco Nexus 5596T Switch

Tested 200GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
200GbE	NVIDIA Spectrum™-3	MSN4600V-XXXX	64 QSFP56 ports, 200GbE 2U open Ethernet switch with Onyx	NVIDIA
200GbE	Spectrum-2	MSN3700-XXXX	32 QSFP56 ports, 200GbE open Ethernet switch System	NVIDIA

Tested 100GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
100GbE	Spectrum-3	MSN4600-XXXX	64-port non-blocking 100GbE open Ethernet switch system	NVIDIA
100GbE	Spectrum-2	MSN3700C-XXXX	32-port non-blocking 100GbE open Ethernet switch system	NVIDIA
100GbE	Spectrum-2	MSN3420-XXXX	48 SFP + 12 QSFP ports non-blocking 100GbE open Ethernet switch system	NVIDIA
100GbE	Spectrum	MSN2700-XXXX	32-port non-blocking 100GbE open Ethernet switch system	NVIDIA
100GbE	N/A	QFX5200-32C-32	32-port 100GbE Ethernet switch system	Juniper
100GbE	N/A	7060CX-32S	32-port 100GbE Ethernet switch system	Arista
100GbE	N/A	3232C	32-port 100GbE Ethernet switch system	Cisco
100GbE	N/A	N9K-C9236C	36-port 100GbE Ethernet switch system	Cisco
100GbE	N/A	93180YC-EX	48-port 25GbE + 6-port 100GbE Ethernet switch system	Cisco
100GbE	N/A	S6820-56HF	L3 Ethernet switch with 48 SFP28 ports and 8 QSFP28 ports	H3C
100GbE	N/A	BMS T7032-IX7	32 QSFP28 ports support for 10/25/40/50/100GbE	QuantaMesh

Environmental Specifications

Temperature

Operational: 0–55°C (32–131°F)

Nonoperational: –40–70°C (–40–158°F)

The nonoperational storage temperature specifications apply to the product without its package.

Airflow Requirements

For SKU 30-100310-01

Cable	Hot-Aisle Heatsink to Port		Cold-Aisle at 35°C Port to Heatsink	
	Active mode at 55°C	Standby mode at 45°C	Active mode	Standby mode
Passive cable	250LFM	100LFM	100LFM	100LFM
Active 0.8W NVIDIA cable	300LFM	100LFM	100LFM	100LFM

Airflow is measured in a wind tunnel.

For SKU 30-100312-01

Cable	Hot-Aisle Heatsink to Port at 55°
Passive cable	300LFM
Active 0.8W cable	350LFM
Active 1.5W cable ^(a)	400LFM

Airflow is measured in a wind tunnel.

^(a) The link fault management (LFM) number is based on a thermal 1.5W module. The actual LFM requirement may change depending on the active module thermal design.

Power

For SKU 30-100310-01

Cable	Cable Type	Active Mode	Standby Mode
Typical power (for ATIS traffic load)	Passive cable	11.8W	-
Maximum power	Passive cable	13.4W	9.2W
	Active 1.5W cable	16.7W	10.9W

Maximum power available through SFP28 port: 1.5W.

For SKU 30-100310-01

Cable	Cable Type	PCI Express Gen 3.0	PCI Express Gen 4.0
Typical power (for ATIS traffic load)	Passive cable	10.73W	11.53W
Maximum power	Passive cable	12.14W	12.94W

Power numbers are provided for passive cables only. For board power numbers while using active cables, please add the outcome of the following formula to the passive cables power numbers stated above: Active module power x number of modules x 1.1 (efficiency factor).

Ready to Get Started?

To learn more about NVIDIA NICs, visit:

[nvidia.com/ethernet-adapters](https://www.nvidia.com/ethernet-adapters)

* This section describes hardware features and capabilities. Please refer to the [driver](#) and firmware release notes for feature availability. Images are for illustration only; actual products may vary.

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