



ConnectX-7 4x25G Ethernet NIC

Accelerated networking for modern data center infrastructures.

NVIDIA® ConnectX®-7 with four 25 gigabit Ethernet (GbE) ports is a remote direct-memory access (RDMA) over converged Ethernet (RoCE) network adapter that supports Ethernet protocol at 25 gigabits per second (Gb/s). It enables a wide range of advanced, scalable, and secure networking solutions for enterprise needs, from traditional workloads to the world’s most-demanding AI, scientific computing, and hyperscale cloud data center workloads.

Accelerated Networking and Security

ConnectX-7 provides a broad set of software-defined, hardware-accelerated networking, storage, and security capabilities that help organizations modernize and secure their IT infrastructures. Moreover, ConnectX-7 powers agile and high-performance solutions from edge to core data centers to clouds, all while enhancing network security and reducing the total cost of ownership.

Accelerate Data-Driven Scientific Computing

ConnectX-7 provides ultra-low latency, extreme throughput, and innovative NVIDIA In-Network Computing engines to deliver the acceleration, scalability, and feature-rich technology needed for today’s modern scientific computing workloads.

Features*

Ethernet Interface

- > Four network ports supporting NRZ
- > Auto-detection of 10G/25G link
- > RDMA over converged Ethernet (RoCE)
- > Open vSwitch (OVS) acceleration
- > Overlay network acceleration: Virtual Extensible LAN (VXLAN), Generic Network Virtualization Encapsulation (GENEVE), Network Virtualization using Generic Routing Encapsulation (NVGRE)

Enhanced Ethernet Networking

- > Zero-touch RoCE
- > NVIDIA Accelerated Switch and Packet Processing (ASAP²)™ for software-defined networking (SDN) and virtual network functions (VNF)
- > Connection tracking (L4 firewall)
- > Flow mirroring, header rewrite, hierarchical quality of service (QoS)
- > Single-root IO virtualization (SR-IOV)
- > Stateless Transmission Control Protocol (TCP) offloads

Product Specifications	
Ethernet speeds	25GbE, 10GbE
Number of network ports	Four
Host interface	PCIe Gen4, up to x16 lanes
Form factor	PCIe HHHL
Network interface technology	NRZ (10G, 25G)

Management and Control

- > Network controller sideboard interface (NC-SI), Management Component Transport Protocol (MCTP) over System Management Bus (SMBus), and MCTP over PCIe
- > Platform-Level Data Model (PLDM) for Monitor and Control DSP0248
- > PLDM for Firmware Update DSP0267
- > PLDM for Redfish Device Enablement DSP0218
- > PLDM for Field-Replaceable Unit (FRU) DSP0257
- > Security Protocols and Data Models (SPDM) DSP0274
- > Serial Peripheral Interface (SPI) to flash
- > Joint Test Action Group (JTAG) Institute of Electrical and Electronics Engineers (IEEE) 1149.1 and IEEE 1149.6

Remote Boot

- > Remote boot over Internet Small Computer Systems Interface (iSCSI)
- > Unified Extensible Firmware Interface (UEFI)
- > Preboot Execution Environment (PXE)

Cybersecurity

- > Platform security:
 - > Secure boot with hardware root of trust
 - > Secure firmware update
 - > Flash encryption
 - > Device attestation

Compatibility

PCI Express Interface

- > PCIe Gen 4.0 compatible, 16 lanes
- > Support for PCIe bifurcation
- > Support for Message Signaled Interrupts (MSI)/MSI-X mechanisms

Operating Systems/Distributions

- > In-box drivers for major operating systems
 - > Linux: RHEL, Ubuntu
 - > Windows
- > Virtualization and containers
 - > VMware ESXi (SR-IOV)
 - > Kubernetes

Ordering Information

For product specifications, visit the online [ConnectX-7 PCIe user manual](#).

Cisco SKU	Cisco PID	NVIDIA SKU	Product Description	Qualified Cisco Servers
30-100326-01	UCSC-P-N7Q25GF	900-9X7AO-0003-STO (Legacy OPN: MCX713104AS-ADAT)	ConnectX-7 HHHL adapter card, 25GbE, quad-port SFP56, PCIe 4.0 x16, crypto disabled, secure boot enabled, 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 on 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.

Electrical and Thermal Specifications

Cable

Typical power with passive cables in PCIe Gen 4.0 x16

15.1W

Power numbers are provided for passive cables only. For board power numbers while using active cables, please use the following formula: Total module power (TMP) with active cables = TMP with passive cable + active module power x number of modules / 0.9 (efficiency factor).

Ready to Get Started?

To learn more about Ethernet network interface cards (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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