

ConnectX-6 Dx 200G Ethernet SmartNIC

Smart, accelerated networking for modern cloud data centers.

Advanced Networking and Security for the Most Demanding Cloud and Data Center Workloads

NVIDIA® ConnectX®-6 Dx is a highly secure and advanced smart network interface card (SmartNIC) that accelerates mission-critical cloud and data center applications, including security, virtualization, SDN/NFV, big data, machine learning, and storage. ConnectX-6 Dx provides up to two ports of 100Gb/s or a single port of 200Gb/s Ethernet connectivity and is powered by 50Gb/s (PAM4) or 25/10 Gb/s (NRZ) SerDes technology.







ConnectX-6 Dx features virtual switch (vSwitch) and virtual router (vRouter) hardware accelerations delivering orders-of-magnitude higher performance than software-based solutions. ConnectX-6 Dx supports a choice of single-root I/O virtualization (SR-IOV) and VirtIO in hardware, enabling customers to best address their application needs. By offloading cloud networking workloads, ConnectX-6 Dx frees up CPU cores for business applications while reducing total cost-of-ownership.

In an era where data privacy is key, ConnectX-6 Dx provides built-in inline encryption/decryption, stateful packet filtering, and other capabilities, bringing advanced security down to every node with unprecedented performance and scalability.

Built on the solid foundation of NVIDIA's ConnectX line of SmartNICs, ConnectX-6 Dx offers best-in-class RDMA over Converged Ethernet (RoCE) capabilities, enabling scalable, resilient, and easy-to-deploy RoCE solutions. For data storage, ConnectX-6 Dx optimizes a suite of storage accelerations, bringing NVMe-oF target and initiator offloads.

Specifications	
Maximum total bandwidth	200Gb/s
Supported Ethernet speeds	10/25/40/50/100/200GbE
Number of network ports	1/2
Network interface technologies	NRZ/PAM4
Host interface	PCIe Gen4.0 x16, with NVIDIA Multi-Host™ technology
DPDK message rate	Up to 215Mpps
Platform security	Hardware root-of-trust and secure firmware update
Form factors	PCIe HHHL, OCP3.0 SFF
Network interfaces	SFP56, QSFP56

Key Applications

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 Cloud Networking
- 
 Storage
- 
 Cybersecurity
- 
 HPC/AI
- 
 Telco and Edge
- 
 Media and Entertainment

Features

Network Interface

- > Dual ports of 10/25/40/50/100 GbE, or a single port of 200GbE
- > Up to 200Gb/s total bandwidth

Host Interface

- > PCIe Gen 4.0 compatible, 16 lanes
- > NVIDIA Multi-Host™ supports connection of up to 4x hosts

Enhanced Networking

- > Zero-Touch RoCE
- > ASAP² Accelerated Switch and Packet Processing™ for SDN and VNF acceleration
- > Single Root I/O Virtualization (SR-IOV)
- > VirtIO acceleration
- > Overlay network acceleration: VXLAN, GENEVE, NVGRE
- > Programmable flexible parser
- > Connection tracking (L4 firewall)
- > Flow mirroring, sampling and statistics
- > Header rewrite
- > Hierarchical QoS
- > Stateless TCP offloads

Cybersecurity

- > Inline hardware IPsec encryption and decryption
 - > AES-GCM 128/256-bit key
 - > RoCE over IPsec

- > Inline hardware TLS encryption and decryption
 - > AES-GCM 128/256-bit key
- > Data-at-rest AES-XTS encryption and decryption
 - > AES-XTS 256/512-bit key
- > Platform security
 - > Hardware root-of-trust
 - > Secure firmware update

Storage Offloads

- > Block-level encryption: XTS-AES 256/512-bit key
- > NVMe over Fabrics offloads for target machine
- > T10 DIF signature handover operation at wire speed, for ingress and egress traffic
- > Storage protocols: SRP, iSER, NFS RDMA, SMB Direct, NVMe-oF

Advanced PPT Timing and Synchronization

- > IEEE 1588v2 (any profile)
- > PTP hardware clock (PHC) (UTC format)
- > Nanosecond-level accuracy
- > Line rate hardware timestamp (UTC format)
- > PPS in and configurable PPS out
- > Time-triggered scheduling

- > PTP-based packet pacing
- > Time-based SDN acceleration (ASAP²)
- > Time-sensitive networking (TSN)
- > Dedicated precision timing card option

Management and Control

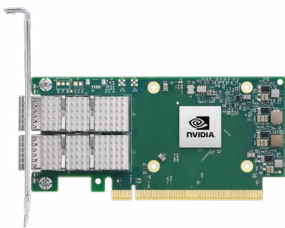
- > NC-SI, MCTP over SMBus and MCTP over PCIe—Baseboard Management Controller interface, NCSI over RBT in Open Compute Project (OCP) 3.0 cards
- > PLDM for Monitor and Control DSP0248
- > PLDM for Firmware Update DSP0267
- > I²C interface for device control and configuration

Remote Boot

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

Portfolio and Ordering Information

For the NVIDIA portfolio and ordering information, contact your NVIDIA sales representative or visit the online ConnectX-6 Dx user manuals: [PCIe HHHL form factor](#) and [OCP 3.0 form factor](#).



PCIe x16 HHHL Card



PCIe Card with Active Cooling



OCP 3.0 Small Form Factor

Ready to Get Started?

To learn more about NVIDIA SmartNICs visit: [nvidia.com/en-us/networking/ethernet-adapters](https://www.nvidia.com/en-us/networking/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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