ThinkSystem NVIDIA ConnectX-7 NDR200 InfiniBand QSFP112 Adapters

Product Guide

The ThinkSystem NVIDIA ConnectX-7 NDR200 InfiniBand QSFP112 Adapters offer 200 Gb/s connectivity for both Ethernet and InfiniBand protocols. The adapters are suitable for providing high-performance connectivity when running HPC, cloud, storage and machine learning applications.

The following figure shows the ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter (the standard heat sink has been removed in this photo).

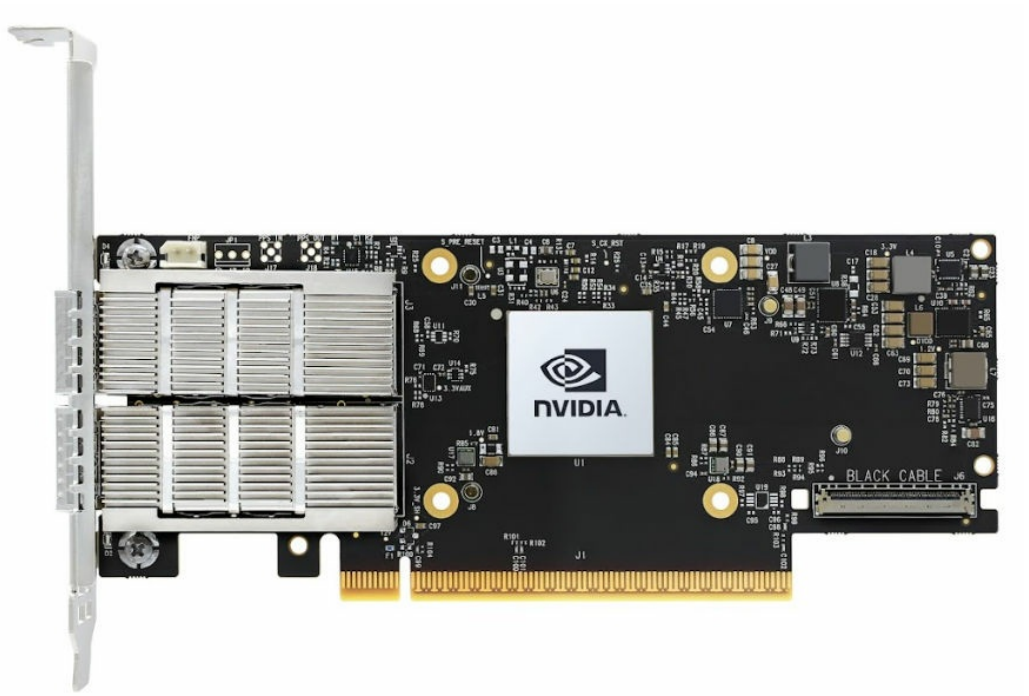

Figure 1. ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter

Did you know?

The ConnectX-7 NDR200 adapters are optimized to deliver accelerated networking for modern cloud, artificial intelligence, and traditional enterprise workloads. ConnectX-7 provides a broad set of software-defined, hardware-accelerated networking, storage, and security capabilities which enable organizations to modernize and secure their IT infrastructures.

Part number information

The following table shows the part numbers for the adapters.

Table 1. Ordering information

Part number	Feature code	NVIDIA equivalent	Description
Air-cooled adapter			
4XC7A81883	BQBN	MCX755106AS-HEAT	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter
Water-cooled adapter			
4XC7A86669	BKSL	MCX755106AS-HEAT-DWC	ThinkSystem NVIDIA ConnectX-7 NDR200/HDR QSFP112 2-Port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC

Non-DWC adapter part numbers includes the following:

- One NVIDIA adapter with full-height (3U) adapter bracket attached
- Low-profile (2U) adapter bracket
- Documentation

Supported transceivers and cables

The ConnectX-7 NDR200 adapters have two empty QSFP112 cages for connectivity. The following table lists the supported transceivers.

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
100Gb Transceivers		
4M27A67042	BFH1	Lenovo 100Gb SR4 QSFP28 Ethernet Transceiver
7G17A03539	AV1D	Lenovo 100GBase-SR4 QSFP28 Transceiver
4TC7A86257	BVA4	Lenovo 100GBase-SR4 QSFP28 Transceiver
200Gb Transceivers		
4TC7A81831	BQJZ	ThinkSystem NDR/NDR200 QSFP112 IB Multi Mode Solo-Transceiver
Converters/Adapters		
4G17A10853	B306	Mellanox QSA 100G to 25G Cable Adapter

The following table lists the supported fiber optic cables and Active Optical Cables.

Table 3. Optical cables

Part number	Feature code	Description
LC-LC OM3 Fiber Optic Cables (these cables require a 10 GbE SFP+ SR or 25 GbE SFP28 SR transceiver)		
00MN499	ASR5	Lenovo 0.5m LC-LC OM3 MMF Cable
00MN502	ASR6	Lenovo 1m LC-LC OM3 MMF Cable
00MN505	ASR7	Lenovo 3m LC-LC OM3 MMF Cable
00MN508	ASR8	Lenovo 5m LC-LC OM3 MMF Cable

Part number	Feature code	Description
00MN511	ASR9	Lenovo 10m LC-LC OM3 MMF Cable
00MN514	ASRA	Lenovo 15m LC-LC OM3 MMF Cable
00MN517	ASRB	Lenovo 25m LC-LC OM3 MMF Cable
00MN520	ASRC	Lenovo 30m LC-LC OM3 MMF Cable
SFP+ 10Gb Active Optical Cables		
00YL634	ATYX	Lenovo 1m SFP+ to SFP+ Active Optical Cable
00YL637	ATYY	Lenovo 3m SFP+ to SFP+ Active Optical Cable
00YL640	ATYZ	Lenovo 5m SFP+ to SFP+ Active Optical Cable
00YL643	ATZ0	Lenovo 7m SFP+ to SFP+ Active Optical Cable
00YL646	ATZ1	Lenovo 15m SFP+ to SFP+ Active Optical Cable
00YL649	ATZ2	Lenovo 20m SFP+ to SFP+ Active Optical Cable
SFP28 25Gb Active Optical Cables		
4X97A94008	AV1F	Lenovo 3m 25G SFP28 Active Optical Cable
4X97A94011	AV1G	Lenovo 5m 25G SFP28 Active Optical Cable
4X97A94012	AV1H	Lenovo 10m 25G SFP28 Active Optical Cable
4X97A94013	AV1J	Lenovo 15m 25G SFP28 Active Optical Cable
4X97A94702	AV1K	Lenovo 20m 25G SFP28 Active Optical Cable
QSFP28 100Gb Ethernet Active Optical Cables		
4X97A94703	B2UZ	Lenovo 1m 100G QSFP28 Active Optical Cable
4X97A94014	AV1L	Lenovo 3m 100G QSFP28 Active Optical Cable
4X97A94015	AV1M	Lenovo 5m 100G QSFP28 Active Optical Cable
4X97A94016	AV1N	Lenovo 10m 100G QSFP28 Active Optical Cable
4X97A94704	AV1P	Lenovo 15m 100G QSFP28 Active Optical Cable
4X97A94705	AV1Q	Lenovo 20m 100G QSFP28 Active Optical Cable
100G MPO OM4 MMF Cables (these cables require a transceiver)		
7Z57A03567	AV25	Lenovo 5m MPO-MPO OM4 MMF Cable
7Z57A03568	AV26	Lenovo 7m MPO-MPO OM4 MMF Cable
7Z57A03569	AV27	Lenovo 10m MPO-MPO OM4 MMF Cable
7Z57A03570	AV28	Lenovo 15m MPO-MPO OM4 MMF Cable
7Z57A03571	AV29	Lenovo 20m MPO-MPO OM4 MMF Cable
7Z57A03572	AV2A	Lenovo 30m MPO-MPO OM4 MMF Cable
QSFP28 100Gb Ethernet Breakout Active Optical Cables		
7Z57A03552	AV1S	Lenovo 5m 100G to 4x25G Breakout Active Optical Cable
7Z57A03554	AV1U	Lenovo 15m 100G to 4x25G Breakout Active Optical Cable
OM4 LC to LC Cables (these cables require a transceiver)		
4Z57A10845	B2P9	Lenovo 0.5m LC-LC OM4 MMF Cable
4Z57A10846	B2PA	Lenovo 1m LC-LC OM4 MMF Cable
4Z57A10847	B2PB	Lenovo 3m LC-LC OM4 MMF Cable
4Z57A10848	B2PC	Lenovo 5m LC-LC OM4 MMF Cable
4Z57A10849	B2PD	Lenovo 10m LC-LC OM4 MMF Cable
4Z57A10850	B2PE	Lenovo 15m LC-LC OM4 MMF Cable

Part number	Feature code	Description
4Z57A10851	B2PF	Lenovo 25m LC-LC OM4 MMF Cable
4Z57A10852	B2PG	Lenovo 30m LC-LC OM4 MMF Cable
QSFP56 HDR IB Optical Cables		
4Z57A14188	B4QW	3m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14189	B4QX	5m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14190	B4QY	10m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14191	B4QZ	15m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14192	B4R0	20m Mellanox HDR IB Active Optical QSFP56 Cable
QSFP56 HDR IB to 2x HDR100 Optical Splitter Cables		
4Z57A14196	B4R4	3m Mellanox HDR IB to 2x HDR100 Splitter Optical QSFP56 Cable
4Z57A14197	B4R5	5m Mellanox HDR IB to 2x HDR100 Splitter Optical QSFP56 Cable
4Z57A14198	B4R6	10m Mellanox HDR IB to 2x HDR100 Splitter Optical QSFP56 Cable
4Z57A14199	B4R7	15m Mellanox HDR IB to 2x HDR100 Splitter Optical QSFP56 Cable
4Z57A14214	B4R8	20m Mellanox HDR IB to 2x HDR100 Splitter Optical QSFP56 Cable
Mellanox NDR Multi Mode Fibre Optical Splitter Cables		
4X97A81836	BQK4	Lenovo 3m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81837	BQK5	Lenovo 5m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81838	BQK6	Lenovo 7m NVIDIA NDR to 2x NDR200 Multi Mode MPO12 APC Optical Cable
4X97A81839	BQK7	Lenovo 10m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81840	BQK8	Lenovo 20m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable

The following table lists the supported direct-attach copper (DAC) cables.

Table 4. Copper cables

Part number	Feature code	Description
SFP+ 10Gb Passive DAC Cables		
00D6288	A3RG	0.5m Passive DAC SFP+ Cable
90Y9427	A1PH	1m Passive DAC SFP+ Cable
00AY764	A51N	1.5m Passive DAC SFP+ Cable
00AY765	A51P	2m Passive DAC SFP+ Cable
90Y9430	A1PJ	3m Passive DAC SFP+ Cable
90Y9433	A1PK	5m Passive DAC SFP+ Cable
00D6151	A3RH	7m Passive DAC SFP+ Cable
SFP28 25Gb Passive DAC Cables		
7Z57A03557	AV1W	Lenovo 1m Passive 25G SFP28 DAC Cable
7Z57A03558	AV1X	Lenovo 3m Passive 25G SFP28 DAC Cable
7Z57A03559	AV1Y	Lenovo 5m Passive 25G SFP28 DAC Cable
QSFP28 100Gb Ethernet Passive DAC Cables		
7Z57A03561	AV1Z	Lenovo 1m Passive 100G QSFP28 DAC Cable
7Z57A03562	AV20	Lenovo 3m Passive 100G QSFP28 DAC Cable
7Z57A03563	AV21	Lenovo 5m Passive 100G QSFP28 DAC Cable

Part number	Feature code	Description
QSFP28 100G-to-4x25G Ethernet Breakout Cables		
7Z57A03564	AV22	Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
4Z57A85043	BS32	Lenovo 1.5m 100G to 4x25G Breakout SFP28 Breakout DAC Cable
4Z57A85044	BS33	Lenovo 2m 100G to 4x25G Breakout SFP28 Breakout DAC Cable
7Z57A03565	AV23	Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
7Z57A03566	AV24	Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
QSFP56 HDR InfiniBand Passive DAC Cables		
4Z57A14182	B4QQ	0.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14183	B4QR	1m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14184	B4QS	1.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14185	B4QT	2m Mellanox HDR IB Passive Copper QSFP56 Cable
QSFP56 HDR InfiniBand to 2x HDR100 Passive DAC Splitter Cables		
4Z57A14193	B4R1	1m Mellanox HDR IB to 2x HDR100 Splitter Passive Copper QSFP56 Cable
4Z57A14194	B4R2	1.5m Mellanox HDR IB to 2x HDR100 Splitter Passive Copper QSFP56 Cable
4Z57A11477	B68L	2m Mellanox HDR IB to 2x HDR100 Splitter Passive Copper QSFP56 Cable
QSFP56 200Gb Ethernet Passive DAC Cables		
4X97A12613	BF92	Lenovo 3m Passive 200G QSFP56 Ethernet DAC Cable
Mellanox NDRx2 OSFP800 to 4x NDR200 QSFP112 Splitter Copper Cables		
4X97A81832	BQK0	Lenovo 1m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81833	BQK1	Lenovo 1.5m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81834	BQK2	Lenovo 2m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81835	BQK3	Lenovo 3m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable

Features

The adapters have the following features:

- **Accelerated Networking and Security**

  ConnectX-7 provides a broad set of software-defined, hardware-accelerated networking, storage, and security capabilities which enable organizations to modernize and secure their IT infrastructures. Moreover, ConnectX-7 empowers 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.

- **Accelerate Software- Defined Networking**

  NVIDIA ASAP^2 technology accelerates software-defined networking, delivering line-rate performance with no CPU penalty.

- **Enhance Storage Performance**

  ConnectX-7 enables high- performance and efficient data storage by leveraging RDMA/RoCE, GPUDirect Storage, and hardware-based NVMe-oF offload engines.

- **SharedIO (4XC7A86669 only)**

  SharedIO (Shared I/O) is an implementation of Sockets Direct that is offered in Lenovo direct water-cooled (DWC) servers such as the SD650 V3, where there are two server nodes per DWC tray. In this implementation, the ConnectX-7 adapter is installed in a PCIe slot in one node and the adapter is connected via a cable to a PCIe connector on the second node. The result is that the two nodes share the network connection of the adapter with significant savings both in the cost of the adapters but also the cost of switch ports.

Technical specifications

The ConnectX-7 NDR200 adapters have the following technical specifications:

- Networking interfaces
  - Two QSFP112 cages for 200 Gb/s connectivity
  - 400Gb/s total bandwidth
- InfiniBand connectivity
  - Support for InfiniBand NDR200 or HDR with speeds up to 200 Gb/s
  - InfiniBand Trade Association Spec 1.5 compliant
  - RDMA, send/receive semantics
  - 16 million input/output (IO) channels
  - 256 to 4Kbyte maximum transmission unit (MTU), 2Gbyte messages
- Enhanced InfiniBand Networking
  - Hardware-based reliable transport
  - Extended Reliable Connected (XRC)
  - Dynamically Connected Transport (DCT)
  - GPUDirect RDMA
  - GPUDirect Storage
  - Adaptive routing support
  - Enhanced atomic operations
  - Advanced memory mapping, allowing user mode registration (UMR)
  - On-demand paging (ODP), including registration-free RDMA memory access
  - Enhanced congestion control

    - Burst buffer offload
    - Single root IO virtualization (SR-IOV)
    - Optimized for HPC software libraries including: NVIDIA HPC-X, UCX, UCC, NCCL, OpenMPI, MVAPICH, MPICH, OpenSHMEM, PGAS
    - Collective operations offloads
    - Support for NVIDIA Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)
    - Rendezvous protocol offload
    - In-network on-board memory
- Ethernet connectivity
    - Supports speeds up to 200 GbE
    - Supports NRZ (10G, 25G) and PAM4 (50G, 100G)
    - RDMA over Converged Ethernet (RoCE)
- Enhanced Ethernet 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
- Storage Accelerations
    - Block-level encryption: XTS-AES 256/512-bit key
    - NVMe over Fabrics (NVMe-oF)
    - NVMe over TCP (NVMe/TCP)
    - T10 Data Integrity Field (T10-DIF) signature handover
    - SRP, iSER, NFS over RDMA, SMB Direct
- Management and Control
    - NC-SI, MCTP over SMBus, and MCTP over PCIe
    - PLDM for Monitor and Control DSP0248
    - PLDM for Firmware Update DSP0267
    - PLDM for Redfish Device Enablement DSP0218
    - PLDM for FRU DSP0257
    - SPDM DSP0274
    - Serial Peripheral Interface (SPI) to flash
    - JTAG IEEE 1149.1 and IEEE 1149.6
- Remote Boot
    - Remote boot over InfiniBand
    - Remote boot over iSCSI
    - UEFI
    - PXE
- Cybersecurity
    - Platform security: secure boot with hardware root-of-trust, secure firmware update, flash encryption, and device attestation
- *}PCI Express Interface
    - PCIe Gen 5.0 x16 host interface
    - Support for PCIe bifurcation
    - SharedIO (NVIDIA Multi-Host) supports connection of up to two hosts (on supported water-cooled nodes only)
    - Transaction layer packet (TLP) processing hints (TPH)

- PCIe switch Downstream Port Containment (DPC)
- Support for MSI/MSI-X mechanisms
- Advanced error reporting (AER)
- Access Control Service (ACS) for peer-to-peer secure communication
- Process Address Space ID (PASID)
- Address translation services (ATS)
- Support for SR-IOV

NVIDIA Unified Fabric Manager

NVIDIA Unified Fabric Manager (UFM) is InfiniBand networking management software that combines enhanced, real-time network telemetry with fabric visibility and control to support scale-out InfiniBand data centers.

The two offerings available from Lenovo are as follows:

- **UFM Telemetry** for Real-Time Monitoring
  The UFM Telemetry platform provides network validation tools to monitor network performance and conditions, capturing and streaming rich real-time network telemetry information, application workload usage, and system configuration to an on-premises or cloud-based database for further analysis.
- **UFM Enterprise** for Fabric Visibility and Control
  The UFM Enterprise platform combines the benefits of UFM Telemetry with enhanced network monitoring and management. It performs automated network discovery and provisioning, traffic monitoring, and congestion discovery. It also enables job schedule provisioning and integrates with industry-leading job schedulers and cloud and cluster managers, including Slurm and Platform Load Sharing Facility (LSF).

The following table lists the subscription licenses available from Lenovo.

Table 5. NVIDIA Unified Fabric Manager subscriptions

Part number	Feature code (7S02CTO1WW)	Description
UFM Telemetry		
7S02003HWW	S88D	UFM Telemetry 1-year License and Gold-Support for Lenovo clusters. Per node.
7S02003JWW	S88E	UFM Telemetry 3-year License and Gold-Support for Lenovo clusters. Per node.
7S02003KWW	S88F	UFM Telemetry 5-year License and Gold-Support for Lenovo clusters. Per node.
UFM Enterprise		
7S02003LWW	S88G	UFM Enterprise 1-year License and Gold-Support for Lenovo clusters. Per node.
7S02003MWW	S88H	UFM Enterprise 3-year License and Gold-Support for Lenovo clusters. Per node.
7S02003NWW	S88J	UFM Enterprise 5-year License and Gold-Support for Lenovo clusters. Per node.

For more information, see the following web page:
https://www.nvidia.com/en-us/networking/infiniband/ufm/

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 6. Server support (Part 1 of 4)

Part Number	Description	2S AMD V3				2S Intel V3			4S 8S Intel V3			Multi Node			GPU Rich				1S V3	
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4XC7A81883	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N
4XC7A86669	ThinkSystem NVIDIA ConnectX-7 NDR200/HDR QSFP112 2-Port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. Server support (Part 2 of 4)

Part Number	Description	Edge					Super Computing					1S Intel V2			2S Intel V2		
		SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)
4XC7A81883	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y	Y
4XC7A86669	ThinkSystem NVIDIA ConnectX-7 NDR200/HDR QSFP112 2-Port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC	N	N	N	N	N	Y	N	Y	Y	N	N	N	N	N	N	N

Table 8. Server support (Part 3 of 4)

Part Number	Description	AMD V1					Dense V2				4S V2		8S	4S V1			1S Intel V1			
		SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)	SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
4XC7A81883	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter	N	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
4XC7A86669	ThinkSystem NVIDIA ConnectX-7 NDR200/HDR QSFP112 2-Port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 9. Server support (Part 4 of 4)

Part Number	Description	2S Intel V1								Dense V1			
		ST550 (7X09 / 7X10)	SR530 (7X07 / 7X08)	SR550 (7X03 / 7X04)	SR570 (7Y02 / 7Y03)	SR590 (7X98 / 7X99)	SR630 (7X01 / 7X02)	SR650 (7X05 / 7X06)	SR670 (7Y36 / 7Y37)	SD530 (7X21)	SD650 (7X58)	SN550 (7X16)	SN850 (7X15)
4XC7A81883	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A86669	ThinkSystem NVIDIA ConnectX-7 NDR200/HDR QSFP112 2-Port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC	N	N	N	N	N	N	N	N	N	N	N	N

Operating system support

The adapters support the operating systems listed in the following tables.

- ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter, 4XC7A81883
- ThinkSystem NVIDIA ConnectX-7 NDR200/HDR QSFP112 2-Port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC, 4XC7A86669

Tip: These tables are automatically generated based on data from Lenovo ServerProven.

Table 10. Operating system support for ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter, 4XC7A81883 (Part 1 of 2)

Operating systems	SE455 V3	SD530 V3	SD535 V3	SD550 V3	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR675 V3	SR850 V3	SR860 V3	SR630 V2	SR650 V2	SR670 V2	SR850 V2
Microsoft Windows Server 2019	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.4	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
SUSE Linux Enterprise Server 12 SP5	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 22.04 LTS	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 22.04.2 LTS	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Ubuntu 22.04.3 LTS	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Ubuntu 24.04 LTS	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 11. Operating system support for ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter, 4XC7A81883 (Part 2 of 2)

Operating systems	SR645	SR665
Microsoft Windows Server 2019	Y	Y
Microsoft Windows Server 2022	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y
Red Hat Enterprise Linux 8.9	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y
Red Hat Enterprise Linux 9.3	Y	Y
Red Hat Enterprise Linux 9.4	N	N
SUSE Linux Enterprise Server 12 SP5	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y
Ubuntu 22.04 LTS	Y	Y
Ubuntu 22.04.2 LTS	N	N
Ubuntu 22.04.3 LTS	N	N
Ubuntu 24.04 LTS	N	N
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y

Table 12. Operating system support for ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter (SharedIO) DWC, 4XC7A86669

Operating systems	SD650 V3	SD650 V3 (5th Gen Xeon)	SD650-I V3 (4th Gen Xeon)	SD650-I V3 (5th Gen Xeon)
Red Hat Enterprise Linux 8.6	Y	N	Y	N
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	N	N	N
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y
Red Hat Enterprise Linux 9.4	Y	N	N	N
SUSE Linux Enterprise Server 15 SP4	Y	N	Y	N
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y
Ubuntu 22.04 LTS	Y	N	Y	N
Ubuntu 22.04.3 LTS	N	Y	N	Y

Regulatory approvals

The adapters have the following regulatory approvals:

- Safety: CB / cTUVus / CE
- EMC: CE / FCC / VCCI / ICES / RCM / KC
- RoHS: RoHS Compliant

Operating environment

The adapters have the following operating characteristics:

- Typical power consumption (passive cables): 19.3W
- Maximum power available through QSFP56 port: 5W
- Temperature
  - Operational: 0°C to 55°C
  - Non-operational: -40°C to 70°C
- Humidity: 90% relative humidity

Warranty

One year limited warranty. When installed in a Lenovo server, the adapter assumes the server's base warranty and any warranty upgrades.

Related publications

For more information, refer to these documents:

- ConnectX-7 user manual:
  https://docs.nvidia.com/networking/display/ConnectX7VPI/Specifications
- NVIDIA InfiniBand product page:
  https://www.nvidia.com/en-us/networking/infiniband-adapters/
- DCSC configurator
  https://dcsc.lenovo.com
- Networking Options for ThinkSystem Servers:
  https://lenovopress.com/lp0765-networking-options-for-thinksystem-servers
- ServerProven compatibility:
  https://serverproven.lenovo.com

Related product families

Product families related to this document are the following:

- Ethernet Adapters
- InfiniBand & Omni-Path Adapters

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This document, LP1693, was created or updated on September 27, 2023.

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