

ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter

Product Guide

The ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter delivers low sub-600 μ s latency, extremely high message rates, RoCE v2, NVMe over Fabric offloads and embedded PCIe switch. Mellanox provides the highest performance and lowest latency for the most demanding applications: High frequency trading, Machine Learning, Data Analytics, and more. This adapter ships ready to accept 10GbE, 25GbE or 40GbE network connections.

The following figure shows the ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter.

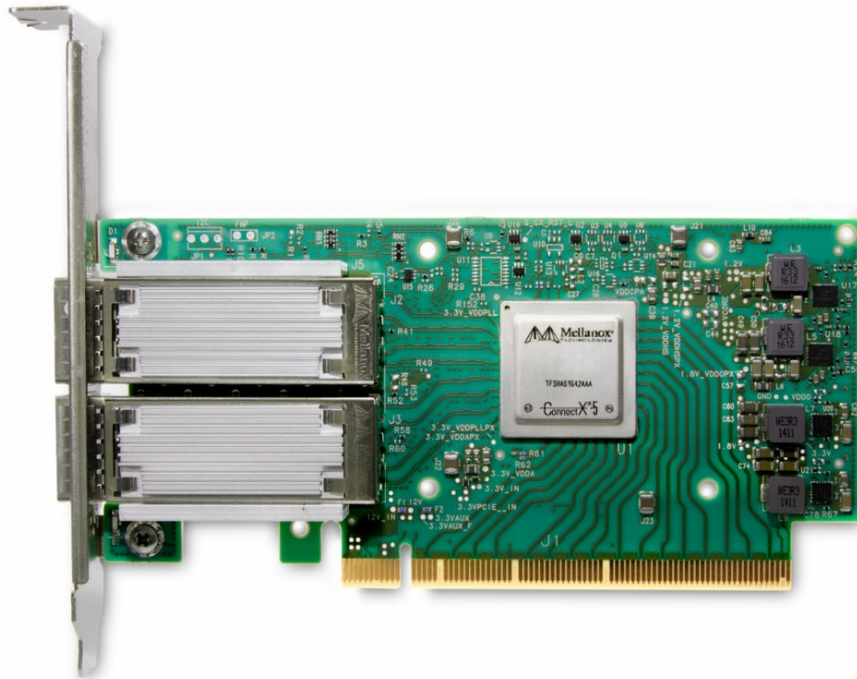


Figure 1. ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter (heatsink removed)

Did you know?

NVMe storage solutions are gaining popularity, offering very fast storage access. The evolving NVMe over Fabric (NVMe-oF) protocol leverages the Mellanox RDMA connectivity for remote access. ConnectX-5 offers further enhancements by providing NVMe-oF target offloads, enabling very efficient NVMe storage access with no CPU intervention, and thus improved performance and lower latency.

Part number information

The ordering information is listed in the following table.

Table 1. Ordering information

Part number	Feature code	Mellanox equivalent	Description
4XC7A08229	B31C	MCX516A-BDAT	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter

The adapter, when shipped as a stand-alone option, includes the following items:

- One Mellanox ConnectX-5 Ex EN adapter
- Two QSFP28 to SFP28 transceiver adapters (QSA28)
- Full-height (3U) bracket attached with low-profile (2U) bracket included in the box
- Documentation flyer

QSA28 adapters: The option part number includes the QSA28 adapters, however when ordering the adapter as part of a server CTO build, the feature code B31C *does not* include the adapters and they must be ordered separately.

Supported transceivers and cables

The adapter has two empty QSFP28 cages. The adapter also includes two QSA28 adapters that convert the QSFP28 cages to SFP28 for 25Gb connectivity.

The adapter either supports a connection to a 1Gb, 10Gb, 25Gb or 40Gb switch or can share a connection to a 100Gb switch using a 4:1 breakout cable.

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
1Gb transceivers		
00FE333	A5DL	SFP 1000Base-T (RJ-45) Transceiver
10Gb transceivers		
46C3447	5053	SFP+ SR Transceiver
4TC7A78615	BNDR	ThinkSystem Accelink 10G SR SFP+ Ethernet transceiver
25Gb transceivers		
7G17A03537†	AV1B	Lenovo 25GBase-SR SFP28 Transceiver (supports 10Gb and 25Gb)
4M27A67041	BFH2	Lenovo 25Gb SR SFP28 Ethernet Transceiver
40Gb transceivers		
4TC7A85336	BU8E	ThinkSystem Accelink 40G SR4 QSFP+ Ethernet transceiver
Converters		
4G17A10853*	B306	Mellanox QSA 100G to 25G Cable Adapter

* Two QSA adapters are included with the ConnectX-5 Ex adapter part number, however they are not included with the adapter when ordered with a server as part of a CTO build. For CTO orders, select the QSA adapters separately if needed.

† This 25 Gb transceiver also supports 10 Gb when used with a Mellanox adapter

25Gb transceivers: When installed in this 25Gb Ethernet adapter, certain supported 25Gb transceivers (as listed in the above table) are designed to operate at either 25 Gb/s or 10 Gb/s speeds, depending on the negotiation with the connected switch. In most configurations, this negotiation is automatic, however in some configurations you may have to manually set the link speed or FEC mode.

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 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
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
QSFP Active Optical Cables		
00YL652	ATZ3	Lenovo 3m 40G QSFP+ to QSFP+ Active Optical Cable
00YL655	ATZ4	Lenovo 5m 40G QSFP+ to QSFP+ Active Optical Cable
00YL658	ATZ5	Lenovo 7m 40G QSFP+ to QSFP+ Active Optical Cable
00YL661	ATZ6	Lenovo 15m 40G QSFP+ to QSFP+ Active Optical Cable
00YL664	ATZ7	Lenovo 20m 40G QSFP+ to QSFP+ Active Optical Cable
7Z57A04256	AX42	Lenovo 1m 40G QSFP+ Active Optical Cable
QSFP 40Gb Optical Cables		
00VX003	AT2U	Lenovo 10m QSFP+ MPO-MPO OM3 MMF Cable
00VX005	AT2V	Lenovo 30m QSFP+ MPO-MPO OM3 MMF Cable
SFP28 25Gb Active Optical Cables		
7Z57A03541	AV1F	Lenovo 3m 25G SFP28 Active Optical Cable
7Z57A03542	AV1G	Lenovo 5m 25G SFP28 Active Optical Cable
7Z57A03543	AV1H	Lenovo 10m 25G SFP28 Active Optical Cable
7Z57A03544	AV1J	Lenovo 15m 25G SFP28 Active Optical Cable

Part number	Feature code	Description
7Z57A03545	AV1K	Lenovo 20m 25G SFP28 Active Optical Cable
QSFP28 100Gb Breakout Active Optical Cables		
7Z57A03551	AV1R	Lenovo 3m 100G to 4x25G Breakout Active Optical Cable
7Z57A03552	AV1S	Lenovo 5m 100G to 4x25G Breakout Active Optical Cable
7Z57A03553	AV1T	Lenovo 10m 100G to 4x25G Breakout Active Optical Cable
7Z57A03554	AV1U	Lenovo 15m 100G to 4x25G Breakout Active Optical Cable
7Z57A03555	AV1V	Lenovo 20m 100G to 4x25G Breakout Active Optical Cable

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

Table 4. Copper cables

Part number	Feature code	Description
QSFP-to-QSFP Cables		
49Y7890	A1DP	1m QSFP+-to-QSFP+ cable
49Y7891	A1DQ	3m QSFP+-to-QSFP+ cable
00D5810	A2X8	5m QSFP+ to QSFP+ Cable
00D5813	A2X9	7m QSFP+ to QSFP+ Cable
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
SFP+ 10Gb Active DAC Cables		
00VX111	AT2R	Lenovo 1m Active DAC SFP+ Cables
00VX114	AT2S	Lenovo 3m Active DAC SFP+ Cables
00VX117	AT2T	Lenovo 5m Active DAC SFP+ Cables
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 100G-to-4x25G 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

Features

The ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter has the following key features:

Ultra-low latency

Mellanox ConnectX-5 adapter cards feature exceedingly low latency and hardware-based RDMA technology that is perfect for meeting the needs of the financial services industry. Based on advanced technology providing sub-microsecond latency and a capacity of 200 million messages per second, ConnectX-5 offers the next generation of connectivity today.

Mellanox's [Messaging Accelerator \(VMA\)](#) transparently boosts performance for socket-based applications without having to modify the applications. By offloading network processing from the OS, traffic passes directly to the network adapter from the application user space, bypassing the kernel IP stack and minimizing context switches, buffer copies, and interrupts. The result is a reduction in latency by 500% and an increase in application throughput, as compared to applications running on a standard network kernel stack.

Cloud, SDN, and NFV environment support

Mellanox Accelerated Switching and Packet Processing (ASAP2) Direct technology allows to offload vSwitch/vRouter by handling the data plane in the NIC hardware while maintaining the control plane unmodified. As a result there is significantly higher vSwitch/vRouter performance without the associated CPU load

The vSwitch/vRouter offload functions that are supported by ConnectX-5 include Overlay Networks (for example, VXLAN, NVGRE, MPLS, GENEVE, and NSH) headers' encapsulation and de-encapsulation, as well as stateless offloads of inner packets, packet headers' re-write enabling NAT functionality, and more.

Moreover, the intelligent ConnectX-5 flexible pipeline capabilities, which include flexible parser and flexible match-action tables, can be programmed, which enable hardware offloads for future protocols.

ConnectX-5 SR-IOV technology provides dedicated adapter resources and guaranteed isolation and protection for virtual machines (VMs) within the server. With ConnectX-5 Network Function Virtualization (NFV), a VM can be used as a virtual appliance. With full data-path operations offloads as well as hairpin hardware capability and service chaining, data can be handled by the Virtual Appliance with minimum CPU utilization.

With these capabilities data center administrators benefit from better server utilization while reducing cost, power, and cable complexity, allowing more Virtual Appliances, Virtual Machines and more tenants on the same hardware.

Specifications

The adapter has the following technical specifications:

- PCIe 4.0 x16 host interface
- Support for MSI/MSI-X mechanisms
- Two QSFP28 external connectors supporting a transceiver, converter, direct-attach copper (DAC) cable or active optical cable (AOC).
- Data rates supported: 1, 10, 25 and 40 Gb/s Ethernet
- TLP (Transaction Layer Packet) Processing Hints (TPH)
- Embedded PCIe Switch: Up to 8 bifurcations
- PCIe switch Downstream Port Containment (DPC) enablement for PCIe hot-plug
- Access Control Service (ACS) for peer-to-peer secure communication
- Advance Error Reporting (AER)
- Process Address Space ID (PASID) Address Translation Services (ATS)

- IBM CAPI v2 support (Coherent Accelerator Processor Interface)
- Support for MSI/MSI-X mechanisms

Ethernet:

- 40GbE / 25GbE / 10GbE / 1GbE
- IEEE 802.3by, Ethernet Consortium 25, supporting all FEC modes
- IEEE 802.3ba 40 Gigabit Ethernet
- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.3ap based auto-negotiation and KR startup
- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.1Q, 802.1P VLAN tags and priority
- IEEE 802.1Qau (QCN) Congestion Notification
- IEEE 802.1Qaz (ETS)
- IEEE 802.1Qbb (PFC)
- IEEE 802.1Qbg
- IEEE 1588v2
- Jumbo frame support (9.6KB)
- IPv4 (RFQ 791)
- IPv6 (RFC 2460)

Enhanced Features:

- Hardware-based reliable transport
- Collective operations offloads
- Vector collective operations offloads
- PeerDirect RDMA (GPUDirect) communication acceleration
- 64/66 encoding
- Extended Reliable Connected transport (XRC)
- Dynamically Connected Transport (DCT)
- Enhanced Atomic operations
- Advanced memory mapping support, allowing user mode registration and remapping of memory (UMR)
- On demand paging (ODP)
- MPI Tag Matching
- Rendezvous protocol offload
- Out-of-order RDMA supporting Adaptive Routing
- Burst buffer offload
- In-Network Memory registration-free RDMA memory access

CPU Offloads:

- RDMA over Converged Ethernet (RoCE)
- TCP/UDP/IP stateless offload
- LSO, LRO, checksum offload
- RSS (also on encapsulated packet), TSS, HDS, VLAN and MPLS tag insertion/stripping, Receive flow steering
- Data Plane Development Kit (DPDK) for kernel bypass applications
- Open VSwitch (OVS) offload using ASAP2:
 - Flexible match-action flow tables
 - Tunneling encapsulation/ de-capsulation
- Intelligent interrupt coalescence
- Header rewrite supporting hardware offload of NAT router

Storage Offloads:

- NVMe over Fabric offloads for target machine
- Erasure Coding offload – offloading Reed Solomon calculations

- T10 DIF – Signature handover operation at wire speed, for ingress and egress traffic
- Storage protocols: SRP, iSER, NFS RDMA, SMB Direct, NVMe-oF

Overlay Networks:

- RoCE over Overlay Networks
- Stateless offloads for overlay network tunneling protocols
- Hardware offload of encapsulation and decapsulation of VXLAN, NVGRE, and GENEVE overlay networks

Hardware-Based I/O Virtualization

- Single Root IOV
- Address translation and protection
- VMware NetQueue support
- SR-IOV: Up to 1K Virtual Functions
- SR-IOV: Up to 16 Physical Functions per host
- Virtualization hierarchies (e.g., NPAR and Multi-Host, when enabled):
 - Virtualizing Physical Functions on a physical port
 - SR-IOV on every Physical Function
- Configurable and user-programmable QoS
- Guaranteed QoS for VMs

HPC Software Libraries:

- Open MPI, IBM PE, OSU MPI (MVAPICH/2), Intel MPI
- Platform MPI, UPC, Open SHMEM

Management and Control:

- PLDM for Monitor and Control DSP0248
- PLDM for Firmware Update DSP0267
- SDN management interface for managing the eSwitch
- 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
- Unified Extensible Firmware Interface (UEFI)
- Pre-execution Environment (PXE)

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 5. Server support (Part 1 of 3)

Part Number	Description	Edge		1S Intel V2		AMD V3		Intel V3			Dense V3		2S Intel V2									
		SE350 (7Z46 / 7D1X)	SE450 (7D8T)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	SR675 V3 (7D9Q / 7D9R)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-1 V3 (7D7L)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR670 V2 (7Z22 / 7Z23)	
4XC7A08229	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 2 of 3)

Part Number	Description	AMD V1				4S/8S V2		4S V1		Dense V2		1S Intel V1							
		SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)
4XC7A08229	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	N

Table 7. Server support (Part 3 of 3)

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)
4XC7A08229	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	N	N	N	N	N	Y	Y	N	Y	N	N	N

Operating system support

The adapter supports the following operating systems:

Tip: This table is automatically generated based on data from [Lenovo ServerProven](#).

Table 8. Operating system support for ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter, 4XC7A08229

Operating systems	SD530 (Gen 2)	SR630 (Gen 2)	SR650 (Gen 2)	SR850 (Gen 2)	SR850P	SR860 (Gen 2)	SR950 (Gen 2)	SD530 (Gen 1)	SR630 (Gen 1)	SR650 (Gen 1)	SR850 (Gen 1)	SR860 (Gen 1)	SR950 (Gen 1)
Microsoft Windows Server 2012 R2	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2016	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	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
Microsoft Windows Server version 1709	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Microsoft Windows Server version 1803	N	N	N	N	N	N	N	Y	Y	N	N	Y	Y
Red Hat Enterprise Linux 6.10	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 6.9	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.3	N	N	N	N	N	N	N	Y	Y	Y	Y	N	Y
Red Hat Enterprise Linux 7.4	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.5	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 11 SP4	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP2	N	N	N	N	N	N	N	Y	Y	Y	Y	N	Y
SUSE Linux Enterprise Server 12 SP3	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

	SD530 (Gen 2)	SR630 (Gen 2)	SR650 (Gen 2)	SR850 (Gen 2)	SR850P	SR860 (Gen 2)	SR950 (Gen 2)	SD530 (Gen 1)	SR630 (Gen 1)	SR650 (Gen 1)	SR850 (Gen 1)	SR860 (Gen 1)	SR950 (Gen 1)
Operating systems													
SUSE Linux Enterprise Server 15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 22.04 LTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.0 U3	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	N	N	N	N	N	N	N	Y	Y	Y	Y	N	Y
VMware vSphere Hypervisor (ESXi) 6.5 U1	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Physical specifications

The adapter is a low-profile adapter with the following dimensions:

- Length: 14.2 cm (5.6 in)
- Height: 6.9 cm (2.71 in)

Operating environment

The adapter is supported in the following environment:

- Temperature (operating): 0 to 55 °C (32 to 131 °F)
- Temperature (storage): -40 to 70 °C (-40 to 158 °F)
- Humidity (operating): 10 to 90% non-condensing
- Humidity (storage): 5 to 90% non-condensing

Warranty

One-year limited warranty. When installed in a supported server, the adapter assumes the system's base warranty and any warranty upgrade.

Agency approvals

The adapter conforms to the following standards:

- Safety: CB / cTUVus / CE
- EMC: CE / FCC / VCCI / ICES / RCM
- RoHS: RoHS-R6

Related publications

For more information, see the following resources:

- Mellanox page for ConnectX-5 EN Ethernet adapters:
<https://www.nvidia.com/en-us/networking/ethernet/connectx-5/>
- Mellanox User Manuals:
<https://docs.nvidia.com/networking/display/ConnectX5EN>
- Mellanox Messaging Accelerator (VMA)
http://www.mellanox.com/page/software_vma?mtag=vma
- Networking Options for ThinkSystem Servers
<https://lenovopress.com/lp0765-networking-options-for-thinksystem-servers>
- Lenovo ServerProven compatibility information:
<http://www.lenovo.com/us/en/serverproven/>
- Support page for the adapter:
<https://datacentersupport.lenovo.com/us/en/search?query=4XC7A08229>

Related product families

Product families related to this document are the following:

- [25 Gb Ethernet Connectivity](#)
- [Ethernet Adapters](#)

Notices

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