ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 Ethernet Adapters

Product Guide

The ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 Ethernet Adapters from NVIDIA Networking are high performance 25Gb Ethernet network adapters that offer multiple network offloads including RoCE v2, NVMe over Ethernet and Open vSwitch.

The following figure shows the ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter (the standard heat sink has been removed in this photo).

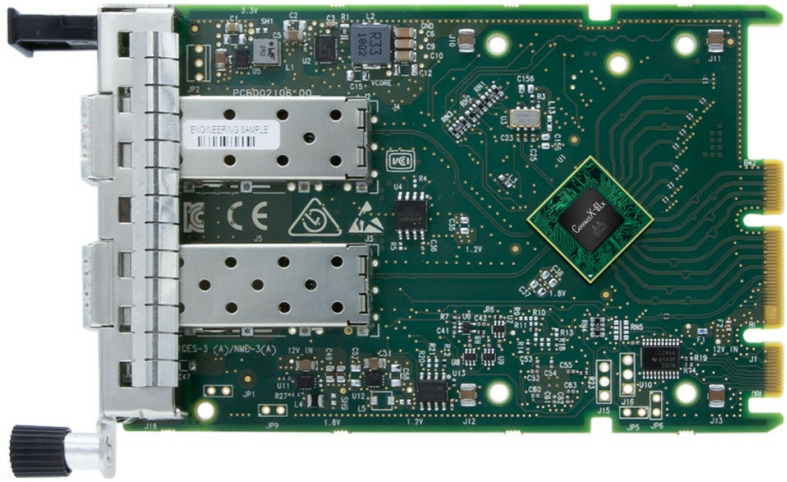

Figure 1. ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter (with heatsink removed)

Did you know?

NVMe storage devices are gaining popularity by offering very fast storage access. The evolving NVMe over Fabric (NVMe-oF) protocol leverages the RDMA connectivity for remote access. ConnectX-6 offers further enhancements by providing NVMe-oF target offloads, enabling very efficient NVMe storage access with no CPU intervention, and thus improving performance and reducing latency.

Part number information

The following table shows the part numbers for the adapters.

Table 1. Ordering information

Part number	Feature code	Mellanox part number	Description
4XC7A62580	BE4U	MCX631102AS-ADAT	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter
4XC7A62582	BE4T	MCX631432AS-ADAB	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter
CTO only	BMHD	MCX631432AS-ADAB	ThinkSystem SE450 Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter

The part numbers include the following:

- One adapter
- For the PCIe adapter: Low-profile (2U) and full-height (3U) adapter brackets
- Documentation

The following figure shows the ConnectX-6 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter (the standard heat sink has been removed in this photo).

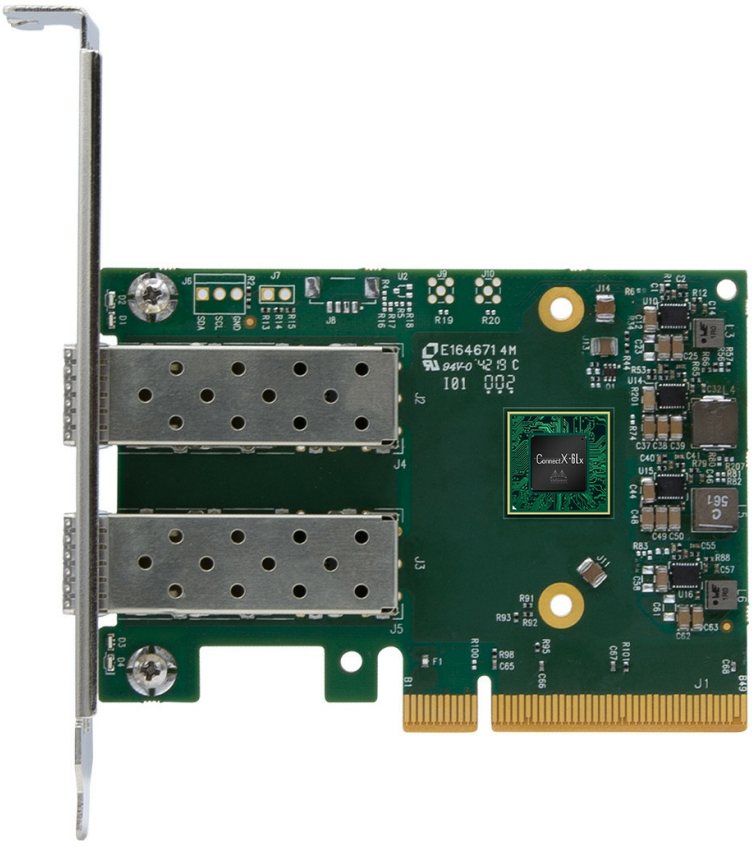

Figure 2. ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter (with heatsink removed)

Supported transceivers and cables

This section lists the supported transceivers and cables.

Table 2. Supported 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	Accelink SFP+ SR Transceiver
25Gb transceivers		
7G17A03537	AV1B	Lenovo 25GBase-SR SFP28 Transceiver
4M27A67041	BFH2	25Gb Ethernet SFP28 Optic/Transceiver Gen 2

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 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
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
MTP-4xLC OM3 MMF Breakout Cables (these cables require a transceiver)		
00FM412	A5UA	Lenovo 1m MPO-4xLC OM3 MMF Breakout Cable
00FM413	A5UB	Lenovo 3m MPO-4xLC OM3 MMF Breakout Cable
00FM414	A5UC	Lenovo 5m MPO-4xLC OM3 MMF Breakout 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

Part number	Feature code	Description
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
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
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
4Z57A10851	B2PF	Lenovo 25m LC-LC OM4 MMF Cable
4Z57A10852	B2PG	Lenovo 30m LC-LC OM4 MMF 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 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

Suitable solutions include: Enterprise data centers, Cloud-native, Web 2.0, hyperscale, Secured infrastructure, Telco and Network Function Virtualization (NFV)

Highlights

- High performance with line speed message rate of 75Mpps
- Advanced RoCE
- ASAP2 - Accelerated Switching and Packet Processing
- Overlay tunneling accelerations
- Stateful rule checking for connection tracking
- Hardware Root-of-Trust and secure firmware update
- Best-in-class PTP performance
- ODCC compatible

Performance and security

ConnectX-6 Lx adapters deliver scalability, high-performance, advanced security capabilities and accelerated networking with the best total cost of ownership for 25GbE deployments in cloud, telco, and enterprise data centers. The adapters provide two ports of 25GbE, PCIe Gen4 and Gen3 x8 host connectivity, and are available either as a low-profile PCIe or OCP 3.0 form factor.

Best-in-Class SDN acceleration

Mellanox's ASAP2 - Accelerated Switch and Packet Processing technology offloads the Software-Defined Networking (SDN) data plane to the adapter, accelerating performance and offloading the CPU in virtualized or containerized cloud data centers. Customers can accelerate their data centers with an SR-IOV or VirtIO interface while continuing to enjoy their SDN protocol of choice.

ConnectX-6 Lx ASAP2 rich feature set accelerates public and on-premises enterprise clouds, and boosts communication service providers (CSP) transition to NFV. ASAP2 supports these communication service providers by enabling packet encapsulations, such as MPLS and GTP, along side cloud encapsulations, such as VXLAN, GENEVE and others.

Industry-leading RoCE

Following the Mellanox ConnectX tradition of industry-leading RoCE capabilities, ConnectX-6 Lx enables more scalable, resilient, and easy-to-deploy RoCE solutions – Zero Touch RoCE. ConnectX-6 Lx allows RoCE payloads to run seamlessly on existing networks without requiring network configuration (no PFC, no ECN) for simplified RoCE deployments. ConnectX-6 Lx ensures RoCE resiliency and efficiency at scale.

Secure your infrastructure

The adapters support ASAP2 connection-tracking hardware offload to improve L4 firewall performance.

ConnectX-6 Lx also delivers supply chain protection with hardware Root-of-Trust (RoT) for Secure Boot as well as Secure Firmware Update using RSA cryptography and cloning-protection, via a device-unique key, to guarantee firmware authenticity.

Technical specifications

Physical adapter:

- Available in two form factors, Low profile PCIe adapter or OCP 3.0 SFF
- PCIe 4.0 x8 host interface (backward compatible with PCIe 3.0)
- Two SFP28 cages

Virtualization / Cloud Native:

- Single Root IOV (SR-IOV) and VirtIO acceleration, Up to 512 VFs per port and 8 PFs
- Support VXLAN, NVGRE, GENEVE
- Stateless offloads for overlay tunnels

Mellanox ASAP2:

- SDN acceleration for Bare metal, Virtualization, Containers
- Full hardware offload for OVS data plane
- Flow update through RTE_Flow or TC_Flower
- OpenStack support
- Kubernetes support
- Rich classification engine (L2 to L4)
- Flex-Parser: user defined classification
- Hardware offload for:
    - Connection tracking (L4 firewall)
    - NAT
    - Header rewrite
    - Mirroring
    - Sampling
    - Flow aging
    - Hierarchal QoS
    - Flow-based statistics

Cyber Security:

- Hardware root-of-trust
- Secure firmware update
- ASAP2 connection-tracking hardware offload

Note: These adapters do not offer IPsec encryption & decryption offload

Stateless Offloads:

- TCP/UDP/IP stateless offload
- LSO, LRO, checksum offload
- Received Side Scaling (RSS) also on encapsulated packet
- Transmit Side Scaling (TSS)
- VLAN and MPLS tag insertion/stripping
- Receive flow steering

Advanced Timing & Synchronization:

- Advanced PTP
- IEEE 1588v2 (any profile)
- PTP Hardware Clock (PHC) (UTC format)
- Line rate hardware timestamp (UTC format)
- Time triggered scheduling
- PTP based packet pacing
- Time based SDN acceleration (ASAP2)

Storage Accelerations:

- NVMe over Fabric offloads for target
- Storage protocols: iSER, NFSoRDMA, SMB Direct, NVMe-oF, and more

RDMA over Converged Ethernet:

- RoCE v1
- RoCE v2
- Zero-Touch RoCE: no ECN, no PFC
- RoCE over overlay networks
- Selective repeat
- GPUDirect
- Dynamically Connected Transport (DCT)
- Burst buffer offload

Management and Control:

- SMBus 2.0
- Network Controller Sideband Interface (NC-SI)
- NC-SI, MCTP over SMBus and MCTP over PCIe - Baseboard Management Controller interface
- PLDM for Monitor and Control DSP0248
- PLDM for Firmware Update DSP026

Remote Boot:

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

IEEE standards:

- IEEE 802.3ae 10 Gigabit Ethernet
- 25/50 Ethernet Consortium 25G and 50G supporting all FEC modes
- IEEE 802.3by 25G supporting all FEC modes
- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.3az Energy Efficient Ethernet (supports only “Fast-Wake” mode)
- IEEE 802.3ap based auto-negotiation and KR startup
- IEEE 802.1Q, 802.1P VLAN tags and priority
- IEEE 802.1Qaz (ETS)
- IEEE 802.1Qbb (PFC)
- IEEE 802.1Qbg
- IEEE 1588v2
- IEEE 1149.1 and IEEE 1149.6 JTAG
- PCI Express Gen 3.0 and 4.0
- IPv4 (RFQ 791)
- IPv6 (RFC 2460)

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			Dense		2S Intel V2				AMD V1				
		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)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR670 V2 (7Z22 / 7Z23)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)
4XC7A62580	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	N	Y	N	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y
4XC7A62582	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	N	N	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	Y	Y
BMHD	ThinkEdge SE450 Mellanox CX6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	Y	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	4S/8S V2			4S V1			Dense V2				1S Intel V1				
		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)	SR250 (7Y52 / 7Y51)	
4XC7A62580	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	
4XC7A62582	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	
BMHD	ThinkEdge SE450 Mellanox CX6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	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)
4XC7A62580	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	N	N	N	N	N	Y	Y	N	N	N	N	N
4XC7A62582	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N
BMHD	ThinkEdge SE450 Mellanox CX6 Lx 10/25GbE SFP28 2-Port OCP Ethernet Adapter	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 Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter, 4XC7A62582
- ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter, 4XC7A62580

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

Table 8. Operating system support for ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter, 4XC7A62582

Operating systems	SR630 V2	SR650 V2	SR670 V2	SR850 V2	SR860 V2	SR635	SR645	SR655	SR665
Microsoft Windows 10	N	N	N	N	N	N	N	Y [2]	N
Microsoft Windows 11	N	N	N	N	N	N	N	Y	N
Microsoft Windows Server 2016	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.6	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]
Red Hat Enterprise Linux 7.7	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]
Red Hat Enterprise Linux 7.8	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]
Red Hat Enterprise Linux 7.9	Y	Y	Y	N	N	Y [1]	Y [1]	Y [1]	Y [1]
Red Hat Enterprise Linux 8.0	N	N	N	N	N	Y [1]	N	Y [1]	N
Red Hat Enterprise Linux 8.1	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]
Red Hat Enterprise Linux 8.2	Y	Y	Y	N	N	Y [1]	Y [1]	Y [1]	Y [1]
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4	N	N	N	N	N	Y [1]	N	Y [1]	N
SUSE Linux Enterprise Server 12 SP5	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]
SUSE Linux Enterprise Server 15 SP2	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 18.04.5 LTS	Y	Y	Y	N	N	N	N	N	N
Ubuntu 20.04 LTS	Y	Y	N	N	N	N	N	N	N
Ubuntu 22.04 LTS	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	N	N	N	N	N	Y [1]	N	N	N
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	N	N	N	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	N	N	Y	Y	Y [1]	Y	Y [1]	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	N	N	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	Y	Y	Y	Y	Y	Y	Y	Y

[1] The OS is not supported with EPYC 7003 processors.

[2] ISG will not sell/preload this OS, but compatibility and cert only.

Table 9. Operating system support for ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter, 4XC7A62580

Operating systems	SE450	SR645 V3	SR665 V3	SR630 V2	SR650 V2	SR670 V2	SR850 V2	SR860 V2	ST650 V2	SR635	SR645	SR655	SR665	SR630 (Gen 2)	SR650 (Gen 2)	SR850P	SR950 (Gen 2)	SR630 (Gen 1)	SR650 (Gen 1)	SR950 (Gen 1)
Microsoft Windows 10	N	N	N	N	N	N	N	N	N	N	N	Y [2]	N	N	N	N	N	N	N	N
Microsoft Windows 11	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
Microsoft Windows Server 2016	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	N	N	Y	Y	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	Y
Microsoft Windows Server version 1709	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y
Microsoft Windows Server version 1803	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y
Red Hat Enterprise Linux 6.10	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 6.9	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 7.3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 7.4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 7.5	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 7.6	N	N	N	N	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.7	N	N	N	N	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.8	N	N	N	N	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.9	Y	N	N	Y	Y	Y	N	N	Y	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	N	N	N	N	N	N	N	N	N	Y [1]	N	Y [1]	N	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.1	N	N	N	N	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.2	N	N	N	Y	Y	Y	N	N	Y	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.3	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	N	N	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	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	N	N	N	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	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4	N	N	N	N	N	N	N	N	N	Y [1]	N	Y [1]	N	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1	N	N	N	N	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Operating systems	SE450	SR645 V3	SR665 V3	SR630 V2	SR650 V2	SR670 V2	SR850 V2	SR860 V2	ST650 V2	SR635	SR645	SR655	SR665	SR630 (Gen 2)	SR650 (Gen 2)	SR850P	SR950 (Gen 2)	SR630 (Gen 1)	SR650 (Gen 1)	SR950 (Gen 1)
Ubuntu 18.04.5 LTS	N	N	N	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
Ubuntu 20.04 LTS	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Ubuntu 22.04 LTS	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	N	N	N	N	N	N	N	N	N	Y [1]	N	Y [1]	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U1	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	N	N	N	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	N	N	N	N	N	N	N	N	N	Y [1]	Y [1]	Y [1]	Y [1]	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	N	N	N	N	N	Y	Y	N	Y [1]	Y	Y [1]	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	N	N	N	Y	N	N	Y	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	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

[1] The OS is not supported with EPYC 7003 processors.

[2] ISG will not sell/preload this OS, but compatibility and cert only.

Regulatory approvals

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

Physical specifications

Low profile PCIe adapter:

- Width: 96mm (3.8 inches)
- Height (without PCIe bracket): 69 mm (2.7 inches)

OCP 3.0 SFF adapter:

- Width: 76 mm (3 inches)
- Depth: 115 mm (4.5 inches)

Operating environment

Power consumption:

- Typical power (passive cables):
  - PCIe 4.0: 11.53 W
  - PCIe 3.0: 10.73 W
- Maximum power (passive cables):
  - PCIe 4.0: 12.94 W
  - PCIe 3.0: 12.14 W

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, this adapter assumes the server's base warranty and any warranty upgrades.

Related publications

For more information, refer to these documents:

- Networking Options for ThinkSystem Servers:
  https://lenovopress.com/lp0765-networking-options-for-thinksystem-servers
- ServerProven compatibility
  http://www.lenovo.com/us/en/serverproven
- Mellanox product page for ConnectX-6 Lx
  https://www.mellanox.com/products/ethernet-adapters/connectx-6-lx
- User Manual for ConnectX-6 Lx adapter
  https://docs.mellanox.com/display/ConnectX6LxEN/

Related product families

Product families related to this document are the following:

- 25 Gb Ethernet Connectivity
- Ethernet Adapters

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION ”AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

This document, LP1364, was created or updated on November 8, 2022.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:
  https://lenovopress.lenovo.com/LP1364
- Send your comments in an e-mail to:
  comments@lenovopress.com

This document is available online at https://lenovopress.lenovo.com/LP1364.

Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at https://www.lenovo.com/us/en/legal/copytrade/.

The following terms are trademarks of Lenovo in the United States, other countries, or both:
Lenovo®
ServerProven®
ThinkEdge®
ThinkSystem®

The following terms are trademarks of other companies:

Intel® is a trademark of Intel Corporation or its subsidiaries.

Linux® is the trademark of Linus Torvalds in the U.S. and other countries.

Microsoft®, Windows Server®, and Windows® are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.