

ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 Ethernet Adapter

Product Guide

The ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 Ethernet Adapter is a high performance 25Gb Ethernet network adapter that offers multiple network offloads including RoCE v2, NVMe over Ethernet and Open vSwitch.

The following figure shows the ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 Ethernet Adapter (the standard heat sink has been removed in this photo).



Figure 1. ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 Ethernet Adapter

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-5 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 number for the adapter.

Table 1. Ordering information

Part number	Feature code	Mellanox equivalent	Description
4XC7A62574	BEAP	MCX512A-ACAT	ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 2-port PCIe Ethernet Adapter

The part numbers include the following:

- One Mellanox adapter
- Low-profile (2U) and full-height (3U) adapter brackets
- Documentation

Supported transceivers and cables

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
10Gb Transceivers		
49Y4218	0064	QLogic 10Gb SFP+ SR Optical Transceiver
46C3447	5053	SFP+ SR Transceiver
4TC7A78615	BNDR	ThinkSystem Accelink 10G SR SFP+ Ethernet transceiver
25Gb Transceivers		
4M27A67041	BFH2	Lenovo 25Gb SR SFP28 Ethernet Transceiver
7G17A03537	AV1B	Lenovo Dual Rate 10G/25G SR SFP28 Transceiver
4TC7A88638	BYBJ	ThinkSystem Finisar Dual Rate 10G/25G SR SFP28 Transceiver

25Gb transceivers: When installed in this 25Gb Ethernet adapter, 25Gb transceivers are designed to operate at either 25 Gb/s or 10 Gb/s speeds as listed in the description of the transceiver, however the speed also depends 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
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 Breakout Active Optical Cables		
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
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 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

Features

The Mellanox ConnectX-5 EN 10/25GbE SFP28 Ethernet Adapter offers a number of features that are well suited for workloads, including the following:

Cloud and Web 2.0 Environments

ConnectX-5 adapter cards enable data center administrators to benefit from better server utilization and reduced costs, power usage, and cable complexity, allowing for more virtual appliances, virtual machines and tenants to co-exist on the same hardware.

Supported vSwitch/vRouter offload functions include:

- Overlay Networks (e.g., VXLAN, NVGRE, MPLS, GENEVE, and NSH) header encapsulation & decapsulation.
- Stateless offloads of inner packets and packet headers re-write, enabling NAT functionality and more.
- Flexible and programmable parser and match-action tables, which enable hardware offloads for future protocols.
- SR-IOV technology, providing dedicated adapter resources, guaranteed isolation and protection for virtual machines (VMs) within the server.
- Network Function Virtualization (NFV), enabling a VM to be used as a virtual appliance. The full data- path operation offloads, hairpin hardware capability and service chaining enables data to be handled by the virtual appliance, with minimum CPU utilization.

Cloud and Web 2.0 customers developing platforms on Software Defined Network (SDN) environments are leveraging the Virtual-Switching capabilities of the server operating systems to achieve maximum flexibility. Open vSwitch (OvS) is an example of a virtual switch that allows Virtual Machines to communicate with each other and with the outside world. Traditionally residing in the hypervisor where switching is based on twelve-tuple matching onflows, the virtual switch, or virtual router software-based solution, is CPU-intensive. This can negatively affect system performance and prevent the full utilization of available bandwidth.

Mellanox ASAP2 (Accelerated Switching and Packet Processing) technology enables offloading the vSwitch/vRouter by handling the data plane in the NIC hardware, without modifying the control plane. This results in significantly higher vSwitch/vRouter performance without the associated CPU load.

Storage Environments

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-5 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.

The embedded PCIe switch enables customers to build standalone storage or Machine Learning appliances. As with earlier generations of ConnectX adapters, standard block and file access protocols leverage RoCE for high-performance storage access. A consolidated compute and storage network achieves significant cost-performance advantages over multi-fabric networks.

ConnectX-5 enables an innovative storage rack design, Host Chaining, which enables different servers to interconnect without involving the top-of-rack switch. Leveraging Host Chaining, ConnectX-5 lowers the data center's total cost of ownership by reducing CAPEX (cables, NICs, and switch port expenses). OPEX is also reduced by cutting down on switch port management and overall power usage.

Telecommunications

Telecommunications service providers are moving towards disaggregation, server virtualization, and orchestration as key tenets to modernize their networks. Likewise, they're also moving towards Network Function Virtualization (NFV), which enables the rapid deployment of new network services. With this move, proprietary dedicated hardware and software, which tend to be static and difficult to scale, are being replaced with virtual machines running on commercial off-the-shelf (COTS) servers.

For telecom service providers, choosing the right networking hardware is critical to achieving a cloud-native NFV solution that is agile, reliable, fast and efficient. Telco service providers typically leverage virtualization and cloud technologies to better achieve agile service delivery and efficient scalability; these technologies require an advanced network infrastructure to support higher rates of packet processing. However, the resultant east-west traffic causes numerous interrupts as I/O traverses from kernel to user space, eats up CPU cycles and decreases packet performance. Particularly sensitive to delays are voice and video applications which often require less than 100ms of latency.

ConnectX-5 adapter cards drive extremely high packet rates, increased throughput and drive higher network efficiency through the following technologies; Open vSwitch Offloads (OvS), OvS over DPDK or ASAP2, Network Overlay Virtualization, SR-IOV, and RDMA. This allows for secure data delivery through higher-performance offloads, reducing CPU resource utilization, and boosting data center infrastructure efficiency. The result is a much more responsive and agile network capable of rapidly deploying network services.

Technical specifications

Physical adapter:

- PCIe 3.0 x8 host interface
- Low profile form factor (142mm length, 69mm height)
- Two SFP28 cages

Ethernet:

- 25GbE / 10GbE
- IEEE 802.3bj, 802.3bm 25 Gigabit Ethernet
- IEEE 802.3by, Ethernet Consortium 25 Gigabit
- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3ad Link Aggregation
- IEEE 802.1Q, 802.1P VLAN tags and priority
- IEEE 802.1Qau Congestion Notification
- IEEE 802.1Qaz D0.2 ETS
- IEEE 802.1Qbb D1.0 Priority-based Flow Control
- IEEE 1588v2
- Jumbo frame support (9600 byte)
- IPv4 (RFQ 791)
- IPv6 (RFC 2460)

Enhanced Features:

- Hardware-based reliable transport
- Collective operations offloads
- Vector collective operations offloads
- Mellanox PeerDirect RDMA (aka 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
- 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 - Mellanox ASAP²:

- Single Root IOV
- Address translation and protection
- VMware NetQueue support
 - SR-IOV: Up to 512 Virtual Functions
 - SR-IOV: Up to 8 Physical Functions per host
- Virtualization hierarchies (e.g., NPAR when enabled)
 - Virtualizing Physical Functions on a physical port
 - SR-IOV on every Physical Function
- Configurable and user-programmable QoS
- Guaranteed QoS for VMs

Management and Control:

- NC-SI over MCTP over SMBus and NC-SI over MCTP over PCIe - Baseboard Management Controller interface
- 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 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)
4XC7A62574	ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 2-port PCIe Ethernet Adapter	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 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)	ST150 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)
4XC7A62574	ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 2-port PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. 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)	ST150 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
4XC7A62574	ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 2-port PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 8. 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)
4XC7A62574	ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 2-port PCIe Ethernet Adapter	N	N	N	N	N	Y	Y	N	N	N	N	N

Operating system support

The adapter supports the operating systems listed in the following table.

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

Table 9. Operating system support for ThinkSystem Mellanox ConnectX-5 EN 10/25GbE SFP28 2-port PCIe Ethernet Adapter, 4XC7A62574

Operating systems	SR630 (Xeon Gen 2)	SR650 (Xeon Gen 2)	SR630 (Xeon Gen 1)	SR650 (Xeon Gen 1)
Microsoft Windows Server 2016	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	Y	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y
Microsoft Windows Server version 1709	N	N	Y	N
Microsoft Windows Server version 1803	N	N	Y	N
Red Hat Enterprise Linux 6.10	N	N	Y	Y
Red Hat Enterprise Linux 6.9	N	N	Y	Y
Red Hat Enterprise Linux 7.3	N	N	Y	Y
Red Hat Enterprise Linux 7.4	N	N	Y	Y
Red Hat Enterprise Linux 7.5	N	N	Y	Y
Red Hat Enterprise Linux 7.6	Y	Y	Y	Y
Red Hat Enterprise Linux 7.7	Y	Y	Y	Y
Red Hat Enterprise Linux 7.8	Y	Y	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	Y	Y	Y	Y
Red Hat Enterprise Linux 8.1	Y	Y	Y	Y
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y

	SR630 (Xeon Gen 2)	SR650 (Xeon Gen 2)	SR630 (Xeon Gen 1)	SR650 (Xeon Gen 1)
Operating systems				
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y
Red Hat Enterprise Linux 8.9	Y	Y	N	N
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	Y	Y	N	N
SUSE Linux Enterprise Server 12 SP4	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y	Y	Y
SUSE Linux Enterprise Server 15	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y
Ubuntu 22.04 LTS	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U1	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U2	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U1	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U2	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U1	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y	Y	Y

Regulatory approvals

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

Operating environment

Power consumption:

- Typical power: 9.5W (passive cable)
- Maximum power: 11.8 W (passive cable), 15.1W (1.5W active cable)

Maximum power through external connectors: 1.5W

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, 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-5 EN
<https://www.mellanox.com/products/ethernet-adapters/connectx-5-en>
- User Manual for ConnectX-5 EN
<https://docs.mellanox.com/display/ConnectX5EN>

Related product families

Product families related to this document are the following:

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

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