

ThinkSystem Marvell QL41232 10/25GbE SFP28 Ethernet Adapters

Product Guide (withdrawn product)

The ThinkSystem Marvell QL41232 10/25GbE SFP28 Ethernet Adapters are based on eighth-generation technology from Marvell and feature Universal Remote Direct Memory Access (RDMA) to offer concurrent support for RoCE, RoCE v2, and iWARP. The adapters are available in PCIe and OCP form factors.

They are suitable for existing 10Gb customers who want to maintain 10Gb network support and want the investment protection of supporting 25GbE network speeds, but don't need FCoE or iSCSI support.

The following figure shows the ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet.

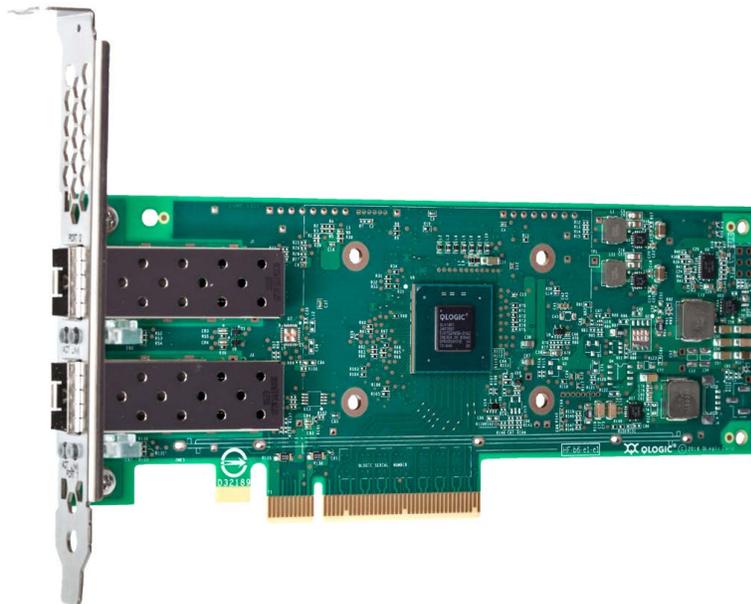


Figure 1. ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet (heatsink removed)

Did you know?

The QL41262 adapters and QL41232 adapters only differ in that the QL41232 adapters do not support the CNA functions, FCoE and iSCSI. All Ethernet functionality remains the same across the two adapter families.

The adapter supports FastLinQ SmartAN auto-negotiation for simplified connectivity with switches without user intervention. SmartAN automates the connection and control of 10Gb and 25Gb connections based on the capabilities of the cables and switches used. This technology ensures that the connection is made with the highest possible speed with highest possible reliability.

Part number information

The ordering information is listed in the following table.

Withdrawn: The adapters described in this product guide are now withdrawn from marketing.

Table 1. Ordering information

Part number	Feature code	Description
4XC7A08264	B5SW	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter
4XC7A08270	B652	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet Adapter

The adapters, when shipped as a stand-alone part number option, include the following items:

- One adapter
- PCIe adapter only: Full-height (3U) bracket attached with low-profile (2U) bracket included in the box
- Documentation flyer

The following figure shows the OCP adapter.



Figure 2. ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter

Supported transceivers and cables

The adapter has an empty SFP28 cage for connectivity. The adapter either supports a connection to a 1Gb, 10 Gb or 25 Gb switch or can share a connection to a 100 Gb 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		
00FE331	B0RJ	10GBASE-LR SFP+Transceiver
49Y4216	0069	Brocade 10Gb SFP+ SR Optical Transceiver
49Y4218	0064	QLogic 10Gb SFP+ SR Optical Transceiver
90Y9412	A1PM	SFP+ LR Transceiver
46C3447	5053	SFP+ SR Transceiver
69Y0389	6416	SFP+ Transceiver 10GbE SR 300m MMF
4TC7A78615	BNDR	ThinkSystem Accelink 10G SR SFP+ Ethernet transceiver
25Gb Transceivers		
4M27A67041	BFH2	Lenovo 25Gb SR SFP28 Ethernet Transceiver
4TC7A69045	BF10	Lenovo Dual Rate 10G/25G SR SFP28 85C 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)		

Part number	Feature code	Description
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
7Z57A03541	C10R	Lenovo 3m 25G SFP28 Active Optical Cable
7Z57A03542	C10S	Lenovo 5m 25G SFP28 Active Optical Cable
7Z57A03543	C10N	Lenovo 10m 25G SFP28 Active Optical Cable
7Z57A03544	C10T	Lenovo 15m 25G SFP28 Active Optical Cable
7Z57A03545	C1MB	Lenovo 20m 25G SFP28 Active Optical Cable
QSFP28 100Gb Ethernet 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
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 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 ThinkSystem Marvell QL41232 10/25GbE SFP28 Ethernet Adapters have the following key features:

Cost effective single-lane connection

The 25 Gbps Ethernet specification enables network bandwidth to be cost-effectively scaled in support of next-generation server and storage solutions residing in cloud and Web-scale data center environments. 25GbE results in a single-lane connection similar to existing 10GbE technology—but it delivers 2.5 times greater bandwidth. Compared to 40GbE solutions, 25GbE technology provides superior switch port density by requiring just a single lane (versus four lanes with 40GbE), along with lower costs and power requirements. Marvell is a leading innovator driving 25GbE technologies across enterprise and cloud market segments.

High performance Universal RDMA Offload

The Lenovo QL41232 Adapter supports RoCE and iWARP acceleration to deliver low latency, low CPU utilization, and high performance on iSER and Windows Server Message Block (SMB) Direct 3.0 / 3.02. QL41232 25GbE adapters have the unique capability to deliver Universal RDMA that enables RoCE, RoCEv2, and iWARP. Marvell Universal RDMA and emerging low latency I/O bus mechanisms such as Network File System over RDMA (NFS over RDMA) and Non-Volatile Memory Express (NVMe) allow customers to accelerate access to data. Marvell's cutting-edge offloading technology increases cluster efficiency and scalability to many thousands of nodes.

High density server virtualization

The latest hypervisors and multicore systems use several technologies to increase the scale of virtualization. The Lenovo QL41232 Adapter supports:

- VMware NetQueue
- Windows Hyper-V Virtual Machine Queue (VMQ)
- Linux Multiqueue
- Windows, Linux, and VMware switch-independent NIC partitioning (NPAR)
- Windows Hyper-V, Linux Kernel-based Virtual Machine (KVM), and VMware ESXi SR-IOV

These features provide ultimate flexibility, quality of service (QoS), and optimized host and virtual machine (VM) performance while providing full 25Gbps bandwidth per port. Public and private cloud virtualized server farms can now achieve 2.5 times the VM density for the best price and VM ratio.

Wire-speed network virtualization

Enterprise-class data centers can be scaled using overlay networks to carry VM traffic over a logical tunnel using NVGRE, GRE, VXLAN, and GENEVE. Although overlay networks can resolve virtual Local Area Network (VLAN) limitations, native stateless offloading engines are bypassed, which places a higher load on the system's CPU. The Lenovo QL41232 Adapter efficiently handles this load with advanced NVGRE, GRE, VXLAN, and GENEVE stateless offload engines that access the overlay protocol headers. This access enables traditional stateless offloads of encapsulated traffic with native-level performance in the network. Additionally, the QL41232 25GbE adapter supports VMware NSX and Open vSwitch (OVS).

Hyperscale Orchestration With OpenStack

The Lenovo QL41232 Adapter supports the OpenStack open source infrastructure for constructing and supervising public, private, and hybrid cloud computing platforms. It provides for both networking and storage services (block, file, and object) for iSER. These platforms allow providers to rapidly and horizontally scale VMs over their entire, diverse, and widely spread network architecture to meet the real-time needs of their customers. Marvell's integrated, multiprotocol management utility, QConvergeConsole (QCC), provides breakthrough features that allow customers to visualize the OpenStack-orchestrated data center using auto-discovery technology.

Accelerate NFV workloads

In addition to OpenStack, the Lenovo QL41232 Adapter supports Network Function Virtualization (NFV) that allows decoupling of network functions and services from dedicated hardware (such as routers, firewalls, and load balancers) into hosted VMs. NFV enables network administrators to flexibly create network functions and services as they need them, reducing capital expenditure and operating expenses, and enhancing business and network services agility. Marvell 25GbE technology is integrated into the Data Plane Development Kit (DPDK) and can deliver up to 60 million packets per second to host the most demanding NFV workloads.

Specifications

The adapter has the following technical specifications:

- Marvell FastlinQ 41000 ASIC
- PCIe 3.0 x8 host interface
- Available in PCIe low profile and OCP 3.0 form factor
- Supports Message Signal Interrupt (MSI-X)
- Two SFP28 external connectors supporting a transceiver, direct-attach copper (DAC) cable or active optical cable (AOC).
- Support for PXE boot, iSCSI boot and Wake-on-LAN (WOL)
- Networking Features
 - Jumbo frames (up to 9600-Byte)
 - 802.3x flow control
 - Link Aggregation (IEEE 802.1AX-2008)
 - Virtual LANs-802.1q VLAN tagging
 - Configurable Flow Acceleration
 - Congestion Avoidance
 - IEEE 1588 and Time Sync
 - Forward Error Correction Clause 74, Clause 91 support over 25 Gbps
- Performance
 - Data Plane Development Kit (DPDK) support
 - Maximum 60 Million packets per second
 - Low latency
 - 25Gbps line rate per-port in 25GbE mode
 - 10Gbps line rate per-port in 10GbE mode

- Stateless Offload Features
 - IP, TCP, and user datagram protocol (UDP) checksum offloads
 - TCP segmentation offload (TSO)
 - Large send offload (LSO)
 - Giant send offload (GSO)
 - Large receive offload (LRO) (Linux)
 - Receive segment coalescing (RSC) (Windows)
 - Receive side scaling (RSS)
 - Transmit side scaling (TSS)
 - Interrupt coalescing
- Virtualization
 - VMware NetQueue support
 - Microsoft Hyper-V VMQ support (up to 208 dynamic queues)
 - Linux Multiqueue support
 - PCI SIG SR-IOV compliant with support for 192 Virtual Functions
 - Virtual NIC (vNIC) / Network Partitioning (NPAR) with support for up to 16 physical functions
 - Unified Fabric Protocol (UFP) with support for up to 16 physical functions
 - VXLAN-aware stateless offloads
 - NVGRE-aware stateless offloads
 - Geneve-aware stateless offloads
 - IP-in-IP-aware stateless offloads
 - GRE-aware stateless offloads
 - Stateless Transport Tunneling
 - Edge Virtual Bridging (EVB)
 - Per Virtual Function (VF) statistics
 - VF Receive-Side Scaling (RSS)/Transmit-Side Scaling (TSS)
- RDMA over Converged Ethernet (RoCE)
 - RoCEv1
 - RoCEv2
 - iSCSI Extensions for RDMA (iSER)
 - Internet wide area RDMA protocol (iWARP)
 - Storage over RDMA: iSER, SMB Direct, and NVMe over Fabrics
 - NFSoverRDMA
- Tunneling Offloads:
 - Virtual Extensible LAN (VXLAN)
 - Generic Network Virtualization Encapsulation (GENEVE)
 - Network Virtualization using Generic Routing Encapsulation (NVGRE)
 - Linux Generic Routing Encapsulation (GRE)
- Data Center Bridging (DCB)
 - Priority-based flow control (PFC; IEEE 802.1Qbb)
 - Enhanced transmission selection (ETS; IEEE 802.1Qaz)
 - Quantized Congestion Notification (QCN; IEEE 802.1Qau)
 - Data Center Bridging Capability eXchange (DCBX; IEEE 802.1Qaz)
- Manageability
 - QLogic Control Suite integrated network adapter management utility (CLI) for Linux and Windows
 - QConvergeConsole integrated network management utility (GUI) for Linux and Windows
 - QConvergeConsole Plug-ins for vSphere (GUI) and ESXCLI plug-in for VMware
 - QConvergeConsole PowerKit (Windows PowerShell) cmdlets for Linux and Windows
 - UEFI-based device configuration pages
 - Native OS management tools for networking
 - Full support for Lenovo OneCLI, ASU, XClarity Administrator and firmware updates
 - SNIA HBA API v2 and SMI-S APIs

- Power Saving
 - ACPI compliant power management
 - PCI Express Active State Power Management (ASPM)
 - PCI Express eCLKREQ support
 - PCI Express unused lane powered down
 - Ultra low-power mode
 - Power Management (PM) Offload

IEEE standards

The adapter supports these IEEE specifications:

- 802.1AS (Precise Synchronization)
- 802.1ax-2008 (Link Aggregation) (IEEE 802.3ad)
- 802.1q (VLAN)
- 802.1Qaz (DCBX and ETS)
- 802.1Qbb (Priority-based Flow Control)
- 802.3-2015 (10Gb and 25Gb Ethernet flow Control)
- 802.3-2015 Clause 52 (10Gb Ethernet optical)
- 802.3by-2016 (25G Ethernet)
- 1588-2002 PTPv1 (Precision Time Protocol)
- 1588-2008 PTPv2

The adapter supports these additional specifications:

- SFF8431 Annex E (10Gb Direct Attach Copper)
- 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 4)

Part Number	Description	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)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)	
4XC7A08264	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A08270	ThinkSystem Marvell QL41232 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	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)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)
4XC7A08264	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y
4XC7A08270	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y

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)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)
4XC7A08264	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter	Y	Y	N	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N
4XC7A08270	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	Y	Y	N	Y	Y	N	N	N	Y	Y	N	Y	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)
4XC7A08264	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A08270	ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	N	N	N	N	N	N	Y	N	N	N	N	N

Operating system support

The following tables list the supported operating systems:

- [ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter, 4XC7A08264](#)
- [ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet Adapter, 4XC7A08270](#)

Tip: These tables are automatically generated based on data from [Lenovo ServerProven](#).

Table 9. Operating system support for ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port OCP Ethernet Adapter, 4XC7A08264

Operating systems	SR630 V2	SR650 V2	SR850 V2	SR860 V2	SR635	SR645	SR655	SR665
Microsoft Windows Server 2016	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.6	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹
Red Hat Enterprise Linux 7.7	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹
Red Hat Enterprise Linux 7.8	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y	Y ¹	Y ¹	Y ¹	Y ¹
Red Hat Enterprise Linux 8.0	N	N	N	N	Y ¹	N	Y ¹	N
Red Hat Enterprise Linux 8.1	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹
Red Hat Enterprise Linux 8.10	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y	Y ¹	Y ¹	Y ¹	Y ¹
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y	Y	Y	Y	Y

	SR630 V2	SR650 V2	SR850 V2	SR860 V2	SR635	SR645	SR655	SR665
Operating systems								
Red Hat Enterprise Linux 8.9	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4	N	N	N	N	N	N	Y ¹	N
SUSE Linux Enterprise Server 12 SP4 with Xen	N	N	N	N	N	N	Y ¹	N
SUSE Linux Enterprise Server 12 SP5	Y	Y	N	N	N	N	Y	N
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y	N	N	N	N	Y	N
SUSE Linux Enterprise Server 15 SP1	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹
SUSE Linux Enterprise Server 15 SP1 with Xen	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
SUSE Linux Enterprise Server 15 SP2 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 18.04.5 LTS	Y	Y	N	N	N	N	N	N
Ubuntu 20.04 LTS	Y	Y	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 6.5 U3	N	N	N	N	N	N	Y ¹	N
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	N	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	N	Y	Y	Y ¹	Y	Y ¹	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y	Y	Y	Y

¹ The OS is not supported with EPYC 7003 processors.

Table 10. Operating system support for ThinkSystem Marvell QL41232 10/25GbE SFP28 2-Port PCIe Ethernet Adapter, 4XC7A08270

	SR630 V2	SR650 V2	SR850 V2	SR860 V2	ST650 V2	SR635	SR645	SR655	SR665	SR650 (Xeon Gen 2)	SR850 (Xeon Gen 2)	SR650 (Xeon Gen 1)	SR850 (Xeon Gen 1)
Operating systems													
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
Red Hat Enterprise Linux 7.6	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y
Red Hat Enterprise Linux 7.7	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y
Red Hat Enterprise Linux 7.8	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y	Y	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	N	N	N	N	N	Y ¹	N	Y ¹	N	Y	Y	Y	Y
Red Hat Enterprise Linux 8.1	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y

	SR630 V2	SR650 V2	SR850 V2	SR860 V2	ST650 V2	SR635	SR645	SR655	SR665	SR650 (Xeon Gen 2)	SR850 (Xeon Gen 2)	SR650 (Xeon Gen 1)	SR850 (Xeon Gen 1)
Operating systems													
Red Hat Enterprise Linux 8.10	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y	Y	Y ¹	Y ¹	Y ¹	Y ¹	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 8.8	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	N	N
SUSE Linux Enterprise Server 15 SP1	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	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 SP2 with Xen	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 SP3 with Xen	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
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 18.04.5 LTS	Y	Y	N	N	Y	N	N	N	N	N	N	N	N
Ubuntu 20.04 LTS	Y	Y	N	N	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 6.5	N	N	N	N	N	N	N	N	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U1	N	N	N	N	N	N	N	N	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U2	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	N	N	N	N	N	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U1	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U2	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	N	N	N	N	N	Y ¹	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	N	Y	Y	N	Y ¹	Y	Y ¹	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

¹ The OS is not supported with EPYC 7003 processors.

Physical specifications

The Low profile adapters have the following dimensions:

- Length: 167 mm (6.6 in.)
- Height: 69 mm (2.71 in.)

The OCP adapter has the following dimensions:

- Width: 76 mm (3 in.)
- Depth: 115 mm (4.5 in.)

Operating environment

The adapters are supported in the following environment:

- Temperature (operating): 0 to 55 °C (32 to 131 °F)
- Temperature (storage): -40 to 65 °C (-40 to 149 °F)
- Humidity (operating): 10 to 80% non-condensing
- Humidity (storage): 5 to 90% non-condensing

Warranty

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

Agency approvals

The adapters conform to the following standards:

- UL 60950-1
- CSA C22.2
- TUV EN60950-1
- TUV IEC 60950-1
- CB Certified
- FCC Rules, CFR Title 47, Part 15, Subpart Class A
- Industry Canada, ICES-003: Class A
- EN55032
- EN55024
- EN61000-3-2
- EN61000-3-3
- VCCI: Class A
- AS/NZS: Class A
- KC-RRA Class A
- BSMI CNS 13438
- RoHS compliant

Top-of-rack Ethernet switches

The following table lists the Ethernet LAN switches that are offered by Lenovo.

Table 11. Ethernet LAN switches

Part number	Description
1 Gb Ethernet Rack switches	
7Y810011WW	Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)
7Z320011WW	Lenovo ThinkSystem NE0152TO RackSwitch (Rear to Front, ONIE)
7159BAX	Lenovo RackSwitch G7028 (Rear to Front)
7159CAX	Lenovo RackSwitch G7052 (Rear to Front)
7159G52	Lenovo RackSwitch G8052 (Rear to Front)
7165H1X	Juniper EX2300-C PoE Switch
7165H2X	Juniper EX2300-24p PoE Switch
1 Gb Ethernet Campus switches	
7Z340011WW	Lenovo CE0128TB Switch (3-Year Warranty)
7Z360011WW	Lenovo CE0128TB Switch (Limited Lifetime Warranty)
7Z340012WW	Lenovo CE0128PB Switch (3-Year Warranty)
7Z360012WW	Lenovo CE0128PB Switch (Limited Lifetime Warranty)
7Z350021WW	Lenovo CE0152TB Switch (3-Year Warranty)
7Z370021WW	Lenovo CE0152TB Switch (Limited Lifetime Warranty)
7Z350022WW	Lenovo CE0152PB Switch (3-Year Warranty)
7Z370022WW	Lenovo CE0152PB Switch (Limited Lifetime Warranty)
10 Gb Ethernet switches	
7159A1X	Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)
7159B1X	Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)
7Z330011WW	Lenovo ThinkSystem NE1064TO RackSwitch (Rear to Front, ONIE)
7159C1X	Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)
7159CRW	Lenovo RackSwitch G8272 (Rear to Front)
7159GR6	Lenovo RackSwitch G8296 (Rear to Front)
7159BR6	Lenovo RackSwitch G8124E (Rear to Front)
25 Gb Ethernet switches	
7159E1X	Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)
7Z210021WW	Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)
7Z330021WW	Lenovo ThinkSystem NE2580O RackSwitch (Rear to Front, ONIE)
100 Gb Ethernet switches	
7159D1X	Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)
7Z210011WW	Lenovo ThinkSystem NE10032O RackSwitch (Rear to Front, ONIE)

For more information, see the list of Product Guides in the following switch categories:

- 1 Gb Ethernet switches: <http://lenovopress.com/networking/tor/1gb?rt=product-guide>
- 10 Gb Ethernet switches: <http://lenovopress.com/networking/tor/10gb?rt=product-guide>
- 25 Gb Ethernet switches: <http://lenovopress.com/networking/tor/25gb?rt=product-guide>
- 40 Gb Ethernet switches: <http://lenovopress.com/networking/tor/40gb?rt=product-guide>
- 100 Gb Ethernet switches: <https://lenovopress.com/networking/tor/100Gb?rt=product-guide>

Related publications

For more information, see the following resources:

- Marvell products for Lenovo:
<https://www.marvell.com/lenovo>
- 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=4XC7A08228>

Related product families

Product families related to this document are the following:

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

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