ThinkSystem Marvell QL41132 and QL41134 10GBASE-T Ethernet Adapters

Product Guide

The QL41134 4-Port and QL41132 2-Port 10GBASE-T Ethernet Adapters are an advanced 10 Gb Ethernet adapters from Marvell which feature Universal Remote Direct Memory Access (RDMA) to offer concurrent support for RoCE, RoCE v2, and iWARP. The adapters are suitable for customers wishing to use advanced technologies while still maintaining their investment in RJ45 copper wiring.

The following figure shows the ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter.

Figure 1. ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter

Did you know?

10GBASE-T is a low-cost way to enter the 10 Gb Ethernet space. By using standard UTP twisted pair cabling, you eliminate the need for transceivers or fiber optic cabling.

Universal RDMA is the term used in Marvell and QLogic adapters that support RoCE, RoCEv2, and iWARP. Such support enables easy migration from one technology to another, since each port can operate a different RDMA protocol at the same time.

Part number information

The ordering information is listed in the following table.

Table 1. Ordering information

Part number	Feature code	Description
4XC7A08225	B31G	ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter
4XC7A08310	BB8U	ThinkSystem Marvell QL41132 10GBASE-T 2-port OCP Ethernet Adapter

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

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

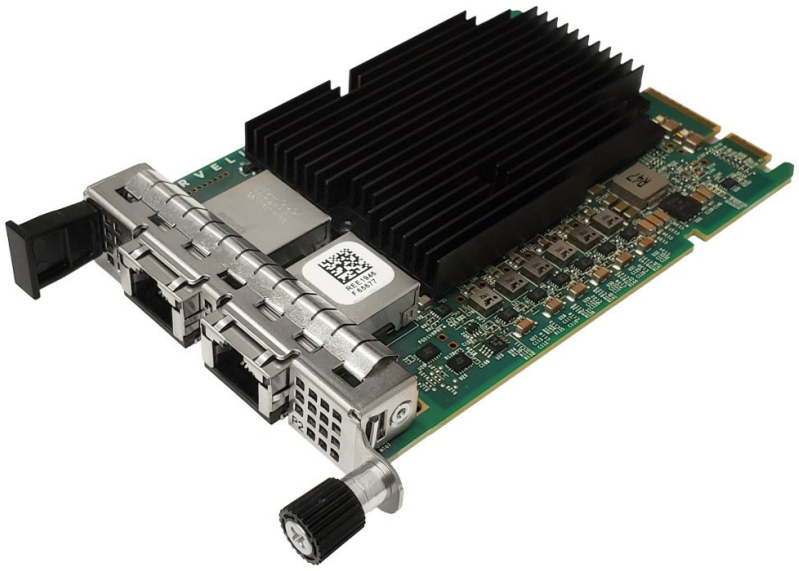

Figure 2. ThinkSystem Marvell QL41132 10GBASE-T 2-port OCP Ethernet Adapter

Network cabling requirements

The network cables that can be used with the adapters are as follows:

- 10GBASE-T
  - UTP Category 7 (100 m maximum)
  - UTP Category 6a (100 m maximum)
  - UTP Category 6 (55 m maximum)
- 1000BASE-T
  - UTP Category 7 (100 m maximum)
  - UTP Category 6a (100 m maximum)
  - UTP Category 6 (100 m maximum)
  - UTP Category 5e (100 m maximum)

The following table lists the supported Category 6 (CAT 6) cables.

Table 2. CAT6 cables

Part number	Feature code	Description
CAT6 Green Cables		
00WE123	AVFW	0.75m CAT6 Green Cable
00WE127	AVFX	1.0m CAT6 Green Cable
00WE131	AVFY	1.25m CAT6 Green Cable
00WE135	AVFZ	1.5m CAT6 Green Cable
00WE139	AVG0	3m CAT6 Green Cable
90Y3718	A1MT	10m CAT6 Green Cable
90Y3727	A1MW	25m CAT6 Green Cable
CAT6 Blue Cables		
90Y3721	A1MU	10m CAT6 Blue Cable
90Y3730	A1MX	25m CAT6 Blue Cable
CAT6 Yellow Cables		
90Y3715	A1MS	10m Cat6 Yellow Cable
90Y3724	A1MV	25m CAT6 Yellow Cable

The following table lists the supported Category 5e (CAT 5e) cables. These cables are not supported at 10Gb speeds.

Table 3. CAT5e cables

Part number	Feature code	Description
CAT5e Blue Cables		
40K5679	3801	0.6m Blue Cat5e Cable
00WE111	AVFT	0.75m Blue Cat5e Cable
00WE115	AVFU	1.0m Blue Cat5e Cable
00WE119	AVFV	1.25m Blue Cat5e Cable
40K8785	3802	1.5m Blue Cat5e Cable
40K5581	3803	3m Blue Cat5e Cable
40K8927	3804	10m Blue Cat5e Cable
40K8930	3805	25m Blue Cat5e Cable
CAT5e Green Cables		
40K5563	3796	0.6m Green Cat5e Cable
00WE099	AVFQ	0.75m Green Cat5e Cable
00WE103	AVFR	1.0m Green Cat5e Cable
00WE107	AVFS	1.25m Green Cat5e Cable
40K5643	3797	1.5m Green Cat5e Cable
40K5793	3798	3m Green Cat5e Cable
40K5794	3799	10m Green Cat5e Cable
40K8869	3800	25m Green Cat5e Cable
CAT5e Yellow Cables		
40K8933	3791	0.6m Yellow Cat5e Cable
40K8951	3792	1.5m Yellow Cat5e Cable
40K8957	3793	3m Yellow Cat5e Cable
40K8801	3794	10m Yellow Cat5e Cable
40K8807	3795	25m Yellow Cat5e Cable

Features

The QL41132 and QL41134 10Gb 10GBASE-T Ethernet Adapters have the following key features:

NPAR partitioning support

Lenovo adapters feature a high-speed, flexible architecture and switch-independent network partitioning (NPAR) technology. Designed for both physical and virtual environments, this switch-agnostic approach enables administrators to split up the 10GbE network pipe to divide and reallocate bandwidth and resources, as needed, at the adapter level. With NPAR, the adapters can partition their network bandwidth into multiple virtual connections, making one quad-port adapter appear as 16 adapters (or a two-port adapter as 8 adapters) to the OS for use by the applications.

NPAR greatly simplifies the physical connectivity to the server, reduces implementation time, and lowers the acquisition cost of the 10GbE migration. The adapters are the ideal choice for migrating multiple 1GbE network connections to consolidated 10GbE.

In addition to NPAR, the adapter supports network virtualization technologies used in hypervisors:

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

SR-IOV delivers higher performance and lower CPU use with increased virtual machine (VM) scalability. Concurrent support for SR-IOV and NPAR enables virtual environments with the choice and flexibility to create an agile virtual server platform.

Enterprise-class 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 adapters efficiently handle 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.

High performance Universal RDMA Offload

The adapters support RoCE and iWARP acceleration to deliver low latency, low CPU utilization, and high performance on Windows Server Message Block (SMB) Direct 3.0 and 3.02, Windows Server Storage Spaces Direct (S2D), and iSER. The adapters have the unique capability to deliver Universal RDMA that enables RoCE, RoCEv2, and iWARP. Universal RDMA and emerging low latency I/O bus mechanisms such as Network File System over RDMA (NFSoRDMA) and Non-Volatile Memory Access Express over Fabric (NVMeoF) allow customers to accelerate access to data. Marvell's cutting-edge offloading technology increases cluster efficiency and scalability to many thousands of nodes.

Hyperscale Orchestration With OpenStack

The adapters support 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 adapters support 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 technology is integrated into the Data Plane Development Kit (DPDK) and can deliver up to 37 million packets per second to host the most demanding NFV workloads.

Specifications

The adapters have the following technical specifications:

- Marvell FastlinQ 41000 ASIC
- PCIe 3.0 x8 host interface
- Supports Message Signal Interrupt (MSI-X)
- Two or four RJ45 connectors
- Support for PXE boot and iSCSI boot (Note: Wake-on-LAN (WOL) is not supported)
- 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
- Performance
    - Data Plane Development Kit (DPDK) support
    - Maximum 60 Million packets per second
    - Low latency
    - 10Gbps line rate per-port
    - 1Gb/10Gb Auto Negotiation
- 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 (8 for the two-port adapter)
  - Unified Fabric Protocol (UFP) with 16 physical functions for the four-port adapter, 8 for the two-port adapter)
  - 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
  - NFSoRDMA
- 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
  - Support for Network Controller Sideband Interface (NC-SI) (OCP adapter only)
- 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 adapters support these IEEE specifications:

- IEEE 802.1AS (Precise Synchronization)
- IEEE 802.1ax-2008 (Link Aggregation) (IEEE 802.3ad)
- IEEE 802.1p Class of Service (CoS) traffic prioritization
- IEEE 802.1Q (VLAN)
- IEEE 802.1Qaz (DCBX and ETS)
- IEEE 802.1Qbb (Priority-based Flow Control)
- IEEE 802.3x (Flow Control)
- IEEE 802.3-2015 Clauses 55 and 40 (10GBASE-T and 1000BASE-T)
- IEEE 802.3ab 1000BASE-T copper twisted pair Gigabit Ethernet
- IEEE 802.3an 10GBASE-T copper twisted pair 10 Gb Ethernet
- IEEE 802.3az (Energy Efficient Ethernet)
- IEEE 1588-2002 PTPv1 (Precision Time Protocol)
- IEEE 1588-2008 PTPv2

The adapter supports these additional specifications:

- IPv4 (RFQ 791)
- IPv6 (RFC 2460)

Server support

The following table lists the ThinkSystem servers that are compatible.

Table 4. ThinkSystem server support

	E	1S Intel				2S Intel								AMD		4S Intel				Dense/ Blade			
Description and part number	**SE350 (7Z46/7D1X)**	**ST50 (7Y48/7Y50)**	**ST250 (7Y45/7Y46)**	**SR150 (7Y54)**	**SR250 (7Y51/7Y52)**	**ST550 (7X09/7X10)**	**SR530 (7X07/7X08)**	**SR550 (7X03/7X04)**	**SR570 (7Y02/7Y03)**	**SR590 (7X98/7X99)**	**SR630 (7X01/7X02)**	**SR650 (7X05/7X06)**	**SR670 (7Y36/37/38)**	**SR635 (7Y98/7Y99)**	**SR655 (7Y00/7Z01)**	**SR850 (7X18/7X19)**	**SR850P (7D2F/2D2G)**	**SR860 (7X69/7X70)**	**SR950 (7X11/12/13)**	**SD530 (7X21)**	**SD650 (7X58)**	**SN550 (7X16)**	**SN850 (7X15)**
ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter, 4XC7A08225	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N
ThinkSystem Marvell QL41132 10GBASE-T 2-port OCP Ethernet Adapter, 4XC7A08310	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N

Operating system support

The following tables list the supported operating systems.

- ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter, 4XC7A08225
- ThinkSystem Marvell QL41132 10GBASE-T 2-port OCP Ethernet Adapter, 4XC7A08310

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

Table 5. Operating system support for ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter, 4XC7A08225 (Part 1 of 2)

Operating systems	SR250	SR635	SR655	SD530 (Gen 2)	SR530 (Gen 2)	SR550 (Gen 2)	SR570 (Gen 2)	SR590 (Gen 2)	SR630 (Gen 2)	SR650 (Gen 2)	SR850 (Gen 2)	SR850P	SR860 (Gen 2)	SR950 (Gen 2)	ST550 (Gen 2)
Microsoft Windows Server 2012 R2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Microsoft Windows Server 2016	Y	Y	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	Y	Y
Microsoft Windows Server version 1709	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Microsoft Windows Server version 1803	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 6.10	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 6.9	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 7.4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 7.5	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 7.6	N	Y	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	Y	Y
Red Hat Enterprise Linux 8.0	Y	Y	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	N	Y	Y	Y
SUSE Linux Enterprise Server 11 SP4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 11 SP4 with Xen	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 12 SP3	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
SUSE Linux Enterprise Server 12 SP3 with Xen	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
SUSE Linux Enterprise Server 12 SP4	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4 with Xen	N	Y	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	N	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
SUSE Linux Enterprise Server 15	Y	N	N	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	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 with Xen	Y	N	N	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	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 6.5 U1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 6.5 U2	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 6.7 U1	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U2	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 6. Operating system support for ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter, 4XC7A08225 (Part 2 of 2)

Operating systems	SD530 (Gen 1)	SR530 (Gen 1)	SR550 (Gen 1)	SR570 (Gen 1)	SR590 (Gen 1)	SR630 (Gen 1)	SR650 (Gen 1)	SR850 (Gen 1)	SR860 (Gen 1)	SR950 (Gen 1)	ST550 (Gen 1)
Microsoft Windows Server 2012 R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2016	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
Microsoft Windows Server version 1709	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server version 1803	Y	N	N	N	N	Y	Y	Y	Y	Y	N
Red Hat Enterprise Linux 6.10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 6.9	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.6	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
Red Hat Enterprise Linux 8.0	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
SUSE Linux Enterprise Server 11 SP4	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 11 SP4 with Xen	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP3 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4 with Xen	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
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15	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
SUSE Linux Enterprise Server 15 SP1 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 with Xen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.0 U3	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U2	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
VMware vSphere Hypervisor (ESXi) 6.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U1	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
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 7. Operating system support for ThinkSystem Marvell QL41132 10GBASE-T 2-port OCP Ethernet Adapter, 4XC7A08310

Operating systems	SR635	SR655
Microsoft Windows Server 2016	Y	Y
Microsoft Windows Server 2019	Y	Y
Red Hat Enterprise Linux 7.6	Y	Y
Red Hat Enterprise Linux 7.7	Y	Y
Red Hat Enterprise Linux 8.0	Y	Y
Red Hat Enterprise Linux 8.1	Y	Y
SUSE Linux Enterprise Server 12 SP4	Y	Y
SUSE Linux Enterprise Server 12 SP4 with Xen	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP1	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	Y	Y

Physical specifications

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

- Length: 16.7 cm (6.6 in.)
- Height: 6.9 cm (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 8. Ethernet LAN switches

Part number	Description
1 Gb Ethernet Rack switches	
7Y810011WW	Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)
7Z320O11WW	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)
7159C1X	Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)
7159CRW	Lenovo RackSwitch G8272 (Rear to Front)
7159GR6	Lenovo RackSwitch G8296 (Rear to Front)
25 Gb Ethernet switches	
7159E1X	Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)
7Z210O21WW	Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)
100 Gb Ethernet switches	
7159D1X	Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)
7Z210O11WW	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=4XC7A08225

Related product families

Product families related to this document are the following:

- 10 Gb Ethernet Connectivity
- Ethernet Adapters

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This document, LP0902, was created or updated on February 10, 2020.

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