

ThinkSystem QLogic QML2692 16 Gb Enhanced Gen 5 Fibre Channel Adapter for Flex System

Product Guide (withdrawn product)

The ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter is an Enhanced Generation 5 (Gen 5) 16 Gb FC adapter for ThinkSystem blade servers. The adapter, based on Cavium technology, offer industry leading native FC performance with extremely low CPU usage with full hardware offloads. Enhanced Gen 5 FC technology provides advanced storage networking features capable of supporting the most demanding virtualized and private cloud environments, while fully leveraging the capabilities of high-performance 16 Gb FC (16GFC) and all-flash arrays (AFAs).

The following figure shows the ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter.

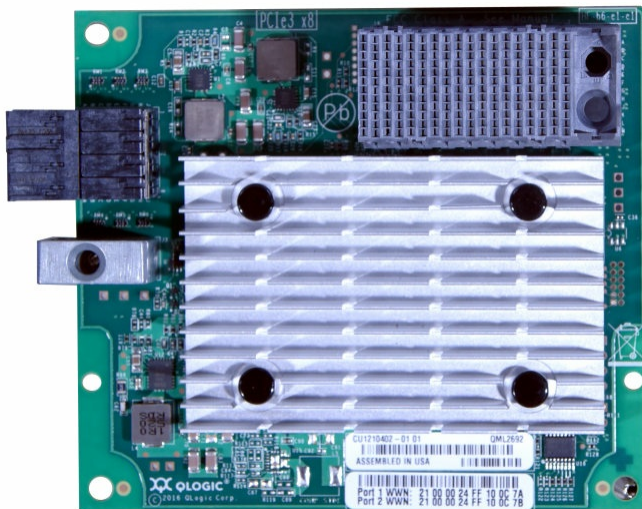


Figure 1. ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter

Did you know?

The Cavium StorFusion architecture delivers ultimate reliability to meet the needs of mission-critical enterprise applications with lower power and fewer CPU cycles, all while maintaining peak performance.

The QLogic 16Gb Enhanced Gen 5 mezz adapter is based on a 32 Gbps ASIC, which delivers higher IOPS and performance with lower power consumption compared to previous generation.

QLogic QConvergeConsole provides unified, single-pane-of-glass management across generations of QLogic FC adapters.

Part number information

The following table shows the part number to order these adapters.

Table 1. Part number and feature code for ordering

Part number	Feature code	Description
7ZT7A00520	AVCV	ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter

The part number includes the following items:

- One Flex System mezz adapter
- Adapter documentation

Key features

The ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter has the following features:

- Maximum performance with up to 1.3 million input/output operations per second (IOPS) to support larger server virtualization deployments and scalable cloud initiatives, and performance to match new multicore processors, SSDs/flash storage, and faster server host bus architectures.
- Independent function, transmit and receive buffers, an on-chip CPU, DMA channels, and a firmware image for each port enable complete port-level isolation, prevent errors and firmware crashes from propagating across all ports, and provide predictable and scalable performance across all ports.
- Support forward error correction (FEC) to enhance reliability of transmission and thereby performance.
- Industry-standard class-specific control (CS_CTL)-based frame prioritization Quality of Service (QoS) helps alleviate network congestion by prioritizing traffic for time-sensitive mission critical workloads for optimized performance.
- T10-PI data integrity with high performance offload provides end-to-end data corruption protection.
- Support for Message Signaled Interrupts eXtended (MSI-X) improves host utilization and enhances application performance.
- Fabric-assigned port worldwide name (FA-WWN) and fabric-based boot LUN discovery (F-BLD) pre-provisioning services allow servers to be quickly deployed, replaced, and moved across the SAN; the creation of zones, LUNs, and other services can be completed before the servers arrive on site.
- Using the Brocade ClearLink diagnostic port (D_Port) available on the Brocade Gen 5 switches, administrators can quickly run automated diagnostic tests to assess the health of links and fabric components.
- Read diagnostic parameters (RDP) feature provides detailed port, media, and optics diagnostics to easily discover and diagnose link-related errors and degrading conditions on any N_Port-to-F_Port link.
- Single-pane-of-glass management across generations of QLogic FC adapters with QLogic QConvergeConsole (QCC).
- Deployment flexibility and integration with third-party management tools, including the VMware vCenter and Brocade Network Advisor.
- Support for 16 Gb, 8 Gb, and 4 Gb FC devices.
- Comprehensive virtualization capabilities with support for N_Port ID Virtualization (NPIV).
- A common driver model allows a single driver to support all QLogic HBAs on a given OS.
- Exceptional performance per watt and price/performance ratios.
- Backward compatibility with existing 4Gb and 8Gb FC infrastructure, leveraging existing SAN investments.
- Allow application of SAN best practices, tools, and processes with virtual server deployments.

- Ensure data availability and data integrity.
- Boot from SAN capability reduces the system management costs and increases uptime.

Technical specifications

The adapter has the following specifications:

- Host interface: PCIe 3.0 x8
- Ports: Dual-port adapter
- Link speed: Support for 16 Gb, 8 Gb and 4 Gb FC link speeds, which are automatically negotiated
- Data rate: 14.025 Gbps (1600 MBps), 8.5 Gbps (800 MBps), and 4.25 Gbps (400 MBps) autosensing (per port), with full duplex
- Performance: Up to 1,300,000 IOPS (up to 650,000 IOPS per port)
- Fibre Channel standards: FC-PI-5, FC-GS-2, FC-GS-3, SCSI-FCP, FCP-2, FC-TAPE
- Topology: Point-to-point and switched fabric
- Management software:
 - The QLogic unified management application, QLogic QConvergeConsole (QCC), provides single-pane-of-glass management across generations of QLogic FC adapters.
 - QLogic supports all major APIs for deployment flexibility and integration with third-party management tools, including the VMware vCenter and Brocade Network Advisor.

Server support

The adapter is supported in the the ThinkSystem compute nodes as indicated in the following table.

Table 2. Supported servers

Part number	Description	x220 (7906)	x222 (7916)	x240 (8737, E5-2600)	x240 (8737, E5-2600 v2)	x240 (7162)	x240 M5 (9532)	x440 (7917)	x440 (7167)	x880/x480/x280 X6 (7903)	x280/x480/x880 X6 (7196)	SN550 (7X16)	SN850 (7X15)
7ZT7A00520	ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter	N	N	N	N	N	N	N	N	N	N	Y	Y

For the latest information about the expansion cards that are supported by each blade server type, see ServerProven at the following web address:

<http://www.lenovo.com/us/en/serverproven/flexsystem.shtml>

The following figure shows the location of the I/O expansion connectors.

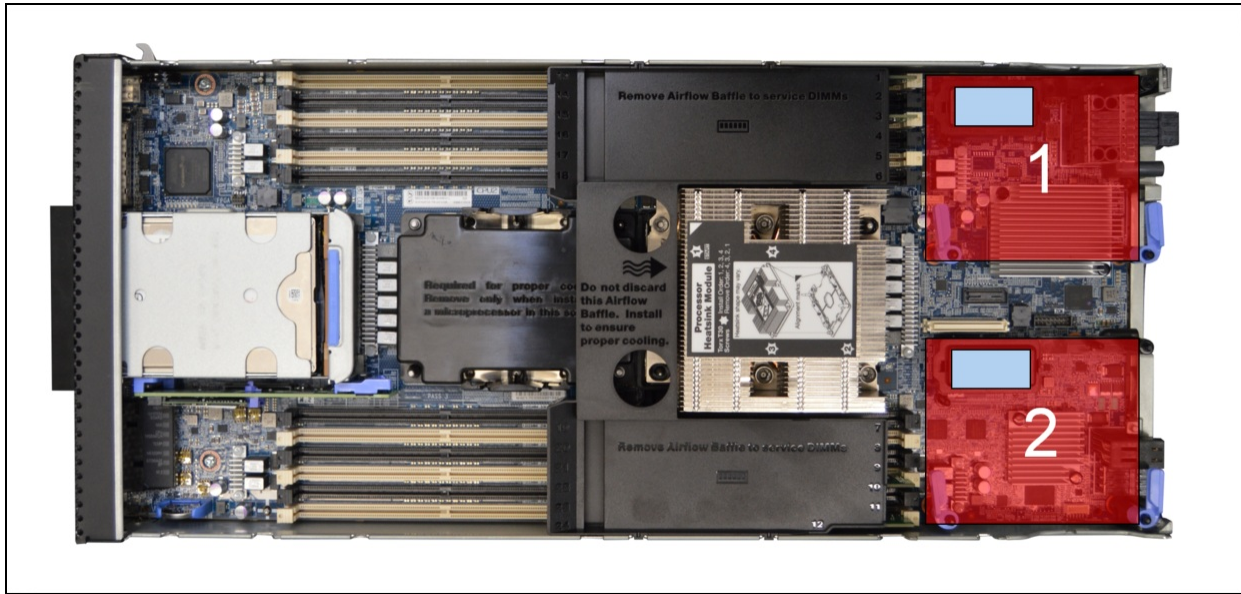


Figure 2. Location of the I/O adapter slots in the Flex System SN550 Compute Node

I/O Module support

The adapters support the I/O module that is listed in the following table. One or two compatible switches must be installed in the corresponding I/O bays in the chassis. Installing two switches means that both ports of the adapter are enabled and connected to switch ports.

Table 3. I/O modules that are supported by the adapter

Part number	Description	Supports the QML2692 Mezz
69Y1930	Flex System FC3171 8Gb SAN Switch	Yes
69Y1934	Flex System FC3171 8Gb SAN Pass-thru	Yes
88Y6374	Flex System FC5022 16Gb SAN Scalable Switch	Yes
00Y3324	Flex System FC5022 24-port 16Gb SAN Scalable Switch	Yes
90Y9356	Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	Yes

The following table shows the connections between adapters that are installed in the compute nodes to the switch bays in the chassis.

Table 4. Adapter to I/O bay correspondence

I/O adapter slot in the server	Port on the adapter	Corresponding I/O module bay in the chassis
Slot 1	Port 1	Module bay 1
	Port 2	Module bay 2
Slot 2	Port 1	Module bay 3
	Port 2	Module bay 4
Slot 3 (x440 only)	Port 1	Module bay 1
	Port 2	Module bay 2
Slot 4 (x440 only)	Port 1	Module bay 3
	Port 2	Module bay 4

The connections between the adapters that are installed in the compute nodes to the switch bays in the chassis are shown in the following figure.

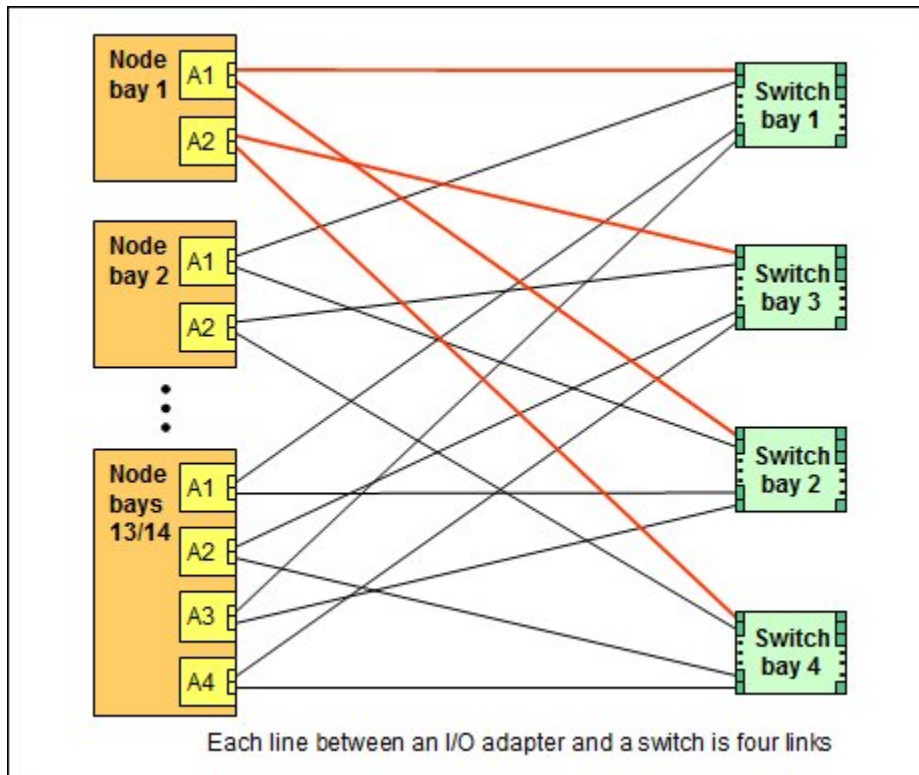


Figure 3. Logical layout of the interconnects between I/O adapters and I/O modules

Operating systems

The following table lists the supported operating systems.

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

Table 5. Operating system support for ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter, 7ZT7A00520

Operating systems	SN550 V2	SN550 (Xeon Gen 2)	SN850 (Xeon Gen 2)	SN550 (Xeon Gen 1)	SN850 (Xeon Gen 1)
Microsoft Windows Server 2012 R2	N	N	N	Y	Y
Microsoft Windows Server 2016	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	Y	Y	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y	Y
Microsoft Windows Server version 1709	N	N	N	Y	Y
Microsoft Windows Server version 1803	N	N	N	Y	N

	SN550 V2	SN550 (Xeon Gen 2)	SN850 (Xeon Gen 2)	SN550 (Xeon Gen 1)	SN850 (Xeon Gen 1)
Operating systems					
Red Hat Enterprise Linux 6.10	N	N	N	Y	Y
Red Hat Enterprise Linux 6.9	N	N	N	Y	Y
Red Hat Enterprise Linux 7.3	N	N	N	Y	Y
Red Hat Enterprise Linux 7.4	N	N	N	Y	Y
Red Hat Enterprise Linux 7.5	N	N	N	Y	Y
Red Hat Enterprise Linux 7.6	N	Y	Y	Y	Y
Red Hat Enterprise Linux 7.7	N	Y	Y	Y	Y
Red Hat Enterprise Linux 7.8	N	Y	Y	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	N	Y	Y	Y	Y
Red Hat Enterprise Linux 8.1	N	Y	Y	Y	Y
Red Hat Enterprise Linux 8.10	Y	N	N	N	N
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.9	Y	Y	Y	N	N
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	Y	Y	Y	N	N
Red Hat Enterprise Linux 9.4	Y	N	N	N	N
Red Hat Enterprise Linux 9.5	Y	N	N	N	N
SUSE Linux Enterprise Server 11 SP4	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP2	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP2 with Xen	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP3	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP3 with Xen	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP4	N	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP4 with Xen	N	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15	N	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1	N	Y	Y	Y	Y

	SN550 V2	SN550 (Xeon Gen 2)	SN850 (Xeon Gen 2)	SN550 (Xeon Gen 1)	SN850 (Xeon Gen 1)
Operating systems					
SUSE Linux Enterprise Server 15 SP1 with Xen	N	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP6	Y	N	N	N	N
SUSE Linux Enterprise Server 15 with Xen	N	Y	Y	Y	Y
Ubuntu 18.04.5 LTS	Y	N	N	N	N
Ubuntu 22.04 LTS	Y	Y	Y	Y	Y
Ubuntu 24.04 LTS	Y ¹	N	N	N	N
VMware vSphere Hypervisor (ESXi) 6.5	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U1	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U2	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5 U3	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U1	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U2	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	N	Y ²	Y	Y ²	Y ²
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U3	Y	Y	Y	Y	Y

¹ Ubuntu24.04 installing on FC HBA card, dmesg show "prli failure" error log

² Need out of box driver to support NPIV feature

Warranty

The adapter carries a one-year limited warranty. When installed in a supported server, the adapter assumes the server's base warranty and any Lenovo Services warranty upgrade.

Physical specifications

The dimensions and weight of the adapters are as follows:

- Width: 100 mm (3.9 in.)
- Depth: 80 mm (3.1 in.)
- Weight: 13 g (0.3 lb)

Shipping dimensions and weight (approximate):

- Height: 58 mm (2.3 in.)
- Width: 229 mm (9.0 in.)
- Depth: 208 mm (8.2 in.)
- Weight: 0.4 kg (0.89 lb)

Operating environment

The adapter is supported in the following environment:

- Temperature:
 - Operating: 0 - 55 °C (32 - 131 °F)
 - Storage: -20 - 70 °C (-4 - 185 °F)
- Relative humidity:
 - Operating: 10 - 90% (non-condensing)
 - Storage: 5 - 95% (non-condensing)

Agency approvals

The adapter conforms to the following regulations:

- AS/NZS CISPR22:2009+A1, Class A
- CSA 22.2, No. 60950-1-07 (2nd Edition)
- EN55022:2010, Class A
- EN55024:2010
- EU (CE Mark)
- FCC Rules, Part 15, Class A
- Industry Canada, ICES-003, Class A
- Japan VCCI, Class A
- Korea KC-RRA, Class A
- TUV EN60950-1:2006+A11+A1+A12 (2nd Edition)
- Taiwan BSMI, Class A
- UL60950-1 (2nd Edition)

Related publications and links

For more information, see the following resources:

- Flex System Information Center (User's Guides for servers and options)
<http://flexsystem.lenovofiles.com/help/index.jsp>
- Marvell home page for Lenovo products
<https://www.marvell.com/lenovo>
- *Flex System Interoperability Guide*
<http://lenovopress.com/fsig>
- *Lenovo Flex System Products and Technology*
<http://lenovopress.com/sg248255>
- ServerProven for Flex System
<http://www.lenovo.com/us/en/serverproven/flexsystem.shtml>

Related product families

Product families related to this document are the following:

- [Blade Storage Adapters](#)

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