

# ThinkSystem QLogic Single and Dual Port 32Gb Fibre Channel Adapters

## Product Guide

The QLogic 32 Gb Fibre Channel (FC) 1-port and 2-port Host Bus Adapters (HBAs) are Generation 6 (Gen 6) FC adapters for Lenovo ThinkSystem servers. These adapters are based on Cavium technology and offer industry leading native FC performance with extremely low CPU usage with full hardware offloads. With performance of up to 1.3 million I/O operations per second (IOPS), these adapters can be used to support all-flash arrays (AFAs) -- Fibre Channel storage systems comprised completely of high-speed solid-state drives.

Powerful management tools automate and simplify SAN provisioning to help reduce cost and complexity, while the unmatched 32 Gbps performance eliminates potential I/O bottlenecks in today's powerful multiprocessor, multicore servers.

The QLogic 2-port 32 Gb Fibre Channel HBA is shown in the following figure.

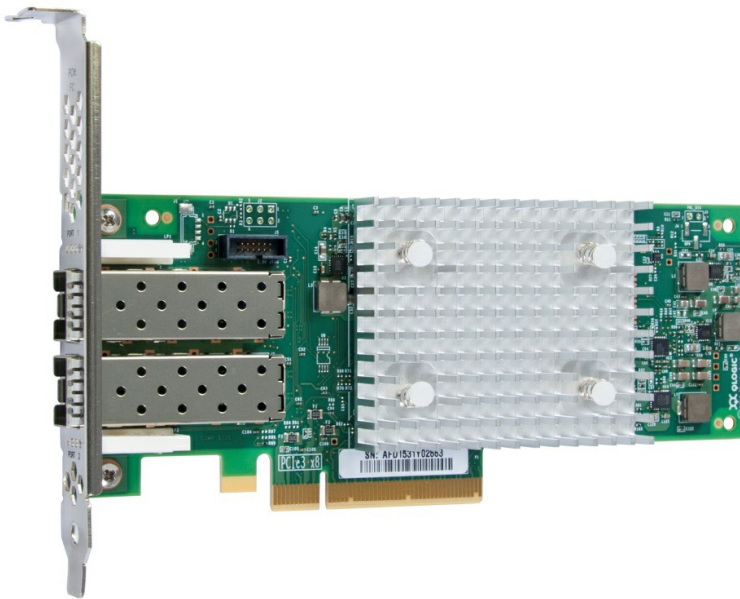


Figure 1. ThinkSystem QLogic QLE2742 PCIe 32Gb 2-Port SFP+ Fibre Channel Adapter (shown without the included 32 Gb transceivers)

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

## Part numbers

The following table lists the ordering information for the QLogic 32Gb Fibre Channel HBAs.

Table 1. Part numbers and feature codes

Part number	Feature code	Description
7ZT7A00516	AUNS	ThinkSystem QLogic QLE2740 PCIe 32Gb 1-Port SFP+ Fibre Channel Adapter
7ZT7A00518	AUNU	ThinkSystem QLogic QLE2742 PCIe 32Gb 2-Port SFP+ Fibre Channel Adapter

The part numbers for the QLogic 32Gb Fibre Channel HBAs include the following items:

- An FC HBA adapter with one or two 32 Gb FC SW SFP+ transceivers installed
- 3U (full height) and 2U (low-profile) adapter brackets
- Publications package

The QLogic 1-port 32 Gb Fibre Channel HBA is shown in the following figure.

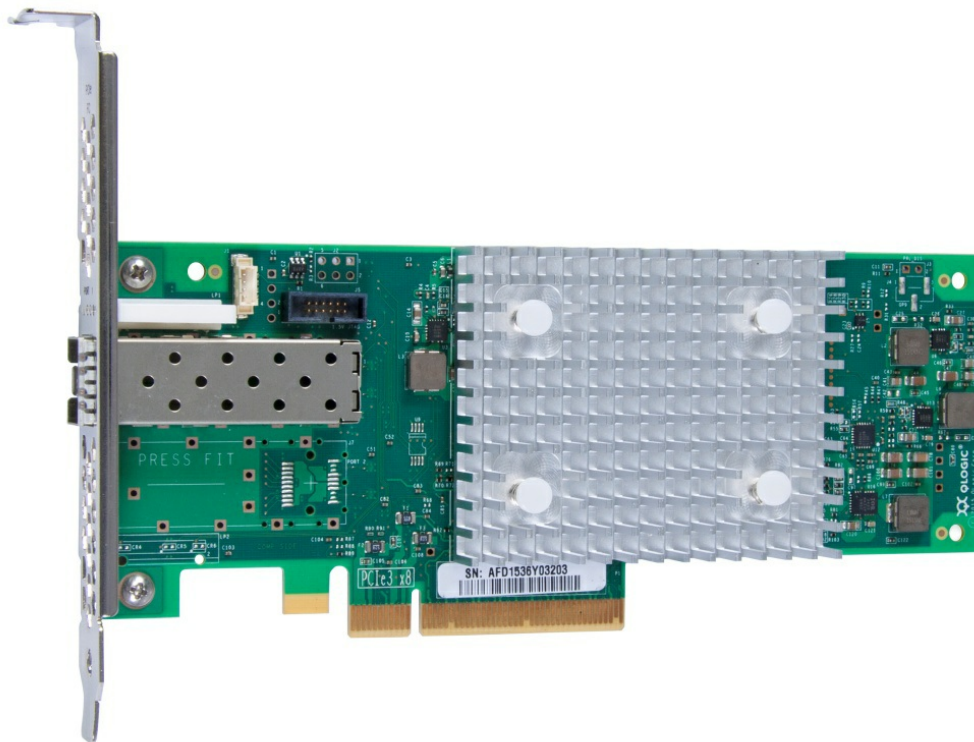


Figure 2. ThinkSystem QLogic QLE2740 PCIe 32Gb 1-Port SFP+ Fibre Channel Adapter (shown without the included 32 Gb transceiver)

## Fiber optic cables

The following table lists the fiber optic cables that are available from Lenovo.

Table 2. Fiber optic cables

Part number	Feature code	Description
LC-LC OM3 MMF Fiber Optic Cables		
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

## Key features

The QLogic 32Gb Fibre Channel HBAs have the following features:

- Maximum performance with up to 650K input/output operations per second (IOPS) per port (1.3 million IOPS in a dual-port adapter) 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.
- Link cable beacon (LCB) enables administrators to visually identify both ends of a physical link by flashing HBA's LEDs, simplifying identification of the connection peers within server racks without tracing the cable.
- 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 32 Gb, 16 Gb and 8 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.
- Reduce the number of cards, cables, and PCIe slots required.
- Exceptional performance per watt and price/performance ratios.
- Backward compatibility with existing 8Gb FC and 16Gb 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.

The following table compares features of QLogic FC adapters available for ThinkSystem servers.

Table 3. QLogic 32 Gb and Enhanced 16 Gb FC HBAs feature comparison

Feature	32Gb FC	Enhanced 16 Gb FC
Part numbers	7ZT7A00516 7ZT7A00518	01CV750 01CV760
Host interface	PCIe 3.0 x8	PCIe 3.0 x8
IOPS performance (dual port)	1.3 M IOPS	1.3 M IOPS
SFP+ transceiver	32 Gb	16 Gb
32 Gbps speed support	Yes	No
16 Gbps speed support	Yes	Yes
8 Gbps speed support	Yes	Yes
4 Gbps speed support	No	Yes
ClearLink support	Yes	Yes
Concurrent logins	2,048	2,048
Active exchanges	2,048	2,048

## Technical specifications

The QLogic 32Gb Fibre Channel HBAs have the following specifications:

- Based on the QLogic QLE2740 (single port) and QLE2742 (dual port) adapters
- Host interface: PCIe 3.0 x8
- Ports: Single-port and dual-port SFP+ based adapters
- Link speed: Support for 32 Gb, 16 Gb and 8 Gb link speeds, which are automatically negotiated
- Data rate: 28.05 (3200 MBps), 14.025 Gbps (1600 MBps), and 8.5 Gbps (800 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-6, FC-PI-5, FC-GS-2, FC-GS-3, SCSI-FCP, FCP-2, FC-TAPE
- Topology: Point-to-point and switched fabric
- Hot-pluggable 32 Gbps Fibre Channel SFP+ short wave optical transceivers (850 nm) with LC connectors (included with the adapters). Note: Other transceivers are not supported.

- Distance support:
  - Operating at 32 Gbps:
    - Up to 20 m on 50/125 µm OM2 Multi-Mode Fiber (MMF)
    - Up to 70 m on 50/125 µm OM3 MMF
    - Up to 100 m on 50/125 µm OM4 MMF
  - Operating at 16 Gbps:
    - Up to 35 m on 50/125 µm OM2 Multi-Mode Fiber (MMF)
    - Up to 100 m on 50/125 µm OM3 MMF
    - Up to 125 m on 50/125 µm OM4 MMF
  - Operating at 8 Gbps:
    - Up to 21 m on 62.5/125 µm OM1 MMF
    - Up to 50 m on 50/125 µm OM2 MMF
    - Up to 150 m on 50/125 µm OM3 MMF
    - Up to 190 m on 50/125 µm OM4 MMF
- 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 following table lists the ThinkSystem servers that are compatible.

Table 4. ThinkSystem server support

Part number	Description	2S Rack & Tower						4S Rack			Dense/ Blade		
		ST550 (7X09/7X10)	SR530 (7X07/7X08)	SR550 (7X03/7X04)	SR570 (7Y02/7Y03)	SR590 (7X98/7X99)	SR630 (7X01/7X02)	SR650 (7X05/7X06)	SR850 (7X18/7X19)	SR860 (7X69/7X70)	SR950 (7X11/12/13)	SD530 (7X21)	SN550 (7X16)
7ZT7A00516	ThinkSystem QLogic QLE2740 PCIe 32Gb 1-Port SFP+ Fibre Channel Adapter	N	N	N	N	N	Y	Y	Y	Y	Y	N	N
7ZT7A00518	ThinkSystem QLogic QLE2742 PCIe 32Gb 2-Port SFP+ Fibre Channel Adapter	N	N	N	N	N	Y	Y	Y	Y	Y	N	N

## Operating system support

The QLogic 32Gb Fibre Channel HBAs support the following operating systems:

- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Red Hat Enterprise Linux 6 Server x64 Edition
- Red Hat Enterprise Linux 7
- SUSE Linux Enterprise Server 11 for AMD64/EM64T
- SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T
- SUSE Linux Enterprise Server 12
- SUSE Linux Enterprise Server 12 with XEN
- VMware ESXi 6.5

## SAN switches

The following table lists the FC SAN switches that are currently offered by Lenovo that can be used with the QLogic 32Gb Fibre Channel HBAs in Lenovo FC SAN solutions.

Table 5. FC SAN switches

Part number	Description
Rack-mount switches - 32 Gb FC	
6559D3Y	Lenovo ThinkSystem DB610S, 8 ports activated, 1 PS, Rail Kit
6415G11	Lenovo ThinkSystem DB620S, 24 Ports Activated, 24x 32Gb SWL SFPs, 2 PS, Rail Kit
6415G2A	Lenovo ThinkSystem DB620S, 48 Ports Activated, 48x 32Gb SWL SFPs, 2 PS, Rail Kit
6684B2A	Lenovo ThinkSystem DB400D 32Gb FC Director, up to 192 ports, 8U, Enterprise SW
6682B1A	Lenovo ThinkSystem DB800D 32Gb FC Director, up to 384 ports, 14U, Enterprise SW
Rack-mount switches - 16 Gb FC	
3873AR5	Lenovo B6505, 12 ports activated w/ 16Gb SWL SFPs, 1 PS, Rail Kit
3873BR3	Lenovo B6510, 24 ports activated w/ 16Gb SWL SFPs, 2 PS, Rail Kit
Rack-mount switches - 8 Gb FC	
3873AR3	Lenovo B300, 8 ports activated w/ 8Gb SWL SFPs, 1 PS, Rail Kit
3873AR4	Lenovo B6505, 12 ports activated w/ 8Gb SWL SFPs, 1 PS, Rail Kit
3873BR2	Lenovo B6510, 24 ports activated w/ 8Gb SWL SFPs, 2 PS, Rail Kit

For more information, see the list of Product Guides in the Rack-mount SAN switches category:  
<http://lenovopress.com/storage/switches/rack>

## Warranty

The adapters carry a one-year limited warranty. When installed in a supported server, the adapters assume the servers's base warranty and any Lenovo Services warranty upgrade.

## Physical specifications

The adapters have the following dimensions (approximate):

- Low profile form factor card
- 168 mm x 69 mm (6.60 in. x 2.7 in.)
- Standard (3U) and low-profile (2U) brackets included

## Operating environment

The adapters are 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 adapters conform 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:

- Lenovo ThinkSystem networking options product web page  
<https://lenovopress.com/lp0765-networking-options-for-thinksystem-servers>
- Lenovo support  
<http://datacentersupport.lenovo.com>
- Lenovo ServerProven  
<http://www.lenovo.com/us/en/serverproven>
- QLogic home page for Lenovo products  
<http://www.qlogic.com/go/lenovo>

## Related product families

Product families related to this document are the following:

- [Host Bus Adapters](#)

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