ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter
Product Guide

The ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter is a PCIe Gen 4, 64-Gigabit Fibre Channel Host Bus Adapter (HBAs) for Lenovo ThinkSystem servers. This adapter offer industry leading native FC performance with extremely low CPU usage with full hardware offloads. With performance of more than 1 million I/O operations per second (IOPS) per port, these adapters can be used to support all-flash arrays -- 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 64 Gbps performance eliminates potential I/O bottlenecks in today's powerful multiprocessor, multicore servers.
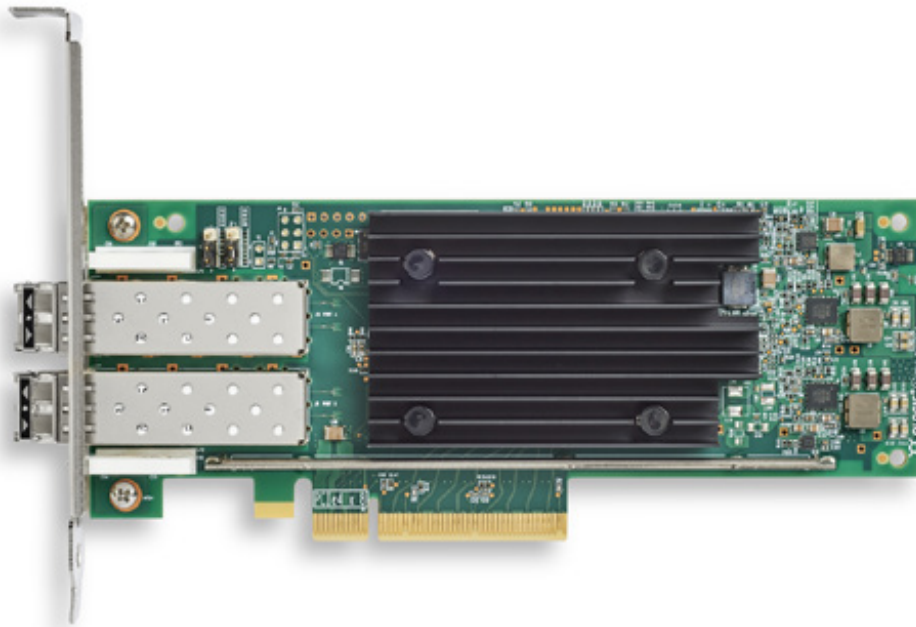

Figure 1. ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter

Did you know?

QLE2872 adapters incorporate a hardware-based Root of Trust that prevents malicious firmware from hijacking the adapters. The QLE2872 RoT enables both integrity and authenticity during adapter firmware updates by both validating firmware embedded signatures with hardware embedded keys to ensure that only validated firmware executes, and protecting firmware updates that are applied over public networks.

Part numbers

The following table lists the ordering information for the ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter.

Table 1. Ordering information

Part number	Feature code	Description
4XC7A96744	C4L3	ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter(Generic FW)

The part numbers for the QLE2872 HBA includes the following items:

- An FC HBA adapter with two 64 Gb FC SW SFP+ transceivers installed
- 3U (full height) and 2U (low-profile) adapter brackets
- Publications flyer

Fiber optic cables

The following table lists the supported cable types and distances.

Table 2. Cable support

Rate	Multimode fibre optic cable support		
	OM2 MMF	OM3 MMF	OM4/OM5 MMF
16GFC	35 meters	100 meters	125 meters
32GFC	20 meters	70 meters	100 meters
64GFC	Not supported	70 meters	100 meters

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

Table 3. 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
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

Key features

The ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter has the following features:

- Hardware Root of Trust ensures SAN Integrity with Cryptographically Secured Firmware
- Universal SAN Congestion Mitigation (USCM) helps pinpoint and prevent SAN Congestion utilizing Fabric Performance Indication Notification (FPIN) technology
- Improve scale out NVMe efficiencies by delivering concurrent support for FCP and FC-NVMe
- Greater than 1 million IOPS and 12,800 MBps (12.5 GBps) throughput of full duplex performance per port (double the IOPS and bandwidth for a 2-port adapter)
- Port isolation design delivers deterministic and scalable performance on each port while improving reliability
- Marvell StorFusion technology accelerates deployment, simplifies diagnostics, enhances reliability, and optimizes performance
- Improve database transactional performance, enable faster business decisions with up to 2x faster data mining, and host more VMs

Technical specifications

The ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter has the following specifications:

Physical specifications:

- QLE2872: Dual-port Fibre Channel adapter
- Low profile PCIe card (6.6 inches × 2.731 inches)

Host bus interface specifications:

- QLE2872: PCIe 4.0 x8

- Host Interrupts: INTx and MSI-X

- Compliance
    - PCIe Base Specification, rev. 4.0
    - PCIe Card Electromechanical Specification, rev. 3.0
    - PCIe Card Electromechanical Specification, rev. 4.0 draft 0.9
    - PCI Bus Power Management Interface Specification, rev. 1.2
    - PCI Hot Plug Specification, rev. 1.1

Fibre Channel specifications:

- Throughput: 12,800MBps full duplex line rate per port

- Logins: Support for 2,048 concurrent logins and 2,048 active exchanges per port

- Port Virtualization: NPIV

- Compliance
    - SCSI Fibre Channel Protocol-4 (FCP-4)
    - Fibre Channel Tape (FC-TAPE) Profile
    - Fibre Channel Generation Services-8 (FC-GS-8)
    - Fibre Channel-Physical Interface-5 (FC-PI-5)
    - Fibre Channel-Physical Interface-6 (FC-PI-6)
    - Fibre Channel-Physical Interface-7 (FC-PI-7)
    - Fibre Channel Link Services 4 (FC-LS-4)
    - Fibre Channel Framing and Signaling-5 (FC-FS-5)
    - Fibre Channel-Non Volatile Memory Express-2 (FC-NVMe-2)

Tools and utilities:

- QConvergeConsole unified management tool (CLI)

- Boot support
    - BIOS
    - Unified Extensible Firmware Interface (UEFI)
    - Forth code (FCode)

- APIs
    - SNIA HBA API V2
    - SMI-S

End-to-end provisioning and management features:

The following features require either a supported Brocade or Cisco switch.

- Performance
    - QoS CS_CTL
    - FEC for 64GFC/32GFC/16GFC
    - BB-CR: automatic buffer credit loss detection and recovery
    - FPIN and hardware signaling for Universal SAN Congestion Mitigation

- Diagnostics
    - Diagnostics Port
    - LCB
    - RDP

- Deployment and management
    - FA-WWN
    - F-BLD
    - FC ping

- FC traceroute
- VM-ID
- Fabric device management interface (FDMI) enhancements

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 4. Server support (Part 1 of 4)

Part Number	Description	AMD V3				2S Intel V3/V4						4S 8S Intel V3			Multi Node V3/V4			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)	SR630 V4 (7DG8 / 7DG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4XC7A96744	ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter(Generic FW)	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N

Table 5. Server support (Part 2 of 4)

Part Number	Description	GPU Rich					Edge					Super Computing							1S Intel V2		
		SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SC750 V4 (7DDJ)	SC777 V4 (7DKA)	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)
4XC7A96744	ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter(Generic FW)	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 3 of 4)

| Part Number | Description | 2S Intel V2 | | | AMD V1 | | | | | Dense V2 | | | | 4S V2 | | 8S | 4S V1 | | |
		ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	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)
4XC7A96744	ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. Server support (Part 4 of 4)

| Part Number | Description | 1S Intel V1 | | | | 2S Intel V1 | | | | | | | | Dense V1 | | | |
		ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)	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)
4XC7A96744	ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Support of adapters with generic firmware

One or more of the adapters described in this product guide uses standard vendor firmware (look for "Generic FW" or "Generic" in the adapter names). These adapters are supported in Lenovo servers however there are currently limitations on the use of Lenovo management tools.

Support in Lenovo XClarity management tools for adapters with generic firmware is per the following table.

Tip: Always use firmware that is obtained from Lenovo sources to ensure the firmware is fully tested by Lenovo and is supported. You should not use firmware that is obtained from the vendor web site, unless directed to do so by Lenovo support.

Table 8. Lenovo XClarity management tools support for adapters with generic firmware

Function	Lenovo XClarity Provisioning Manager	Lenovo XClarity OneCLI (out-of-band)	Lenovo XClarity OneCLI (in-band)	Lenovo XClarity Administrator
Adapter configuration	Supported (in-band via UEFI)	Planned for support 3Q/2025	Planned for support 3Q/2025	Planned for support 3Q/2025

Storage systems

Lenovo offers the ThinkSystem DE Series, ThinkSystem DG Series and ThinkSystem DM Series external storage systems for high-performance storage. See the DE Series, DG Series and DM Series product guides for specific controller models, expansion enclosures and configuration options:

- ThinkSystem DE Series Storage
  https://lenovopress.com/storage/thinksystem/de-series#rt=product-guide
- ThinkSystem DM Series Storage
  https://lenovopress.com/storage/thinksystem/dm-series#rt=product-guide
- ThinkSystem DG Series Storage
  https://lenovopress.com/storage/thinksystem/dg-series#rt=product-guide

SAN switches

Lenovo offers the ThinkSystem DB Series of Fibre Channel SAN switches for high-performance storage expansion. See the DB Series product guides for models and configuration options:

- ThinkSystem DB Series SAN Switches:
  https://lenovopress.com/storage/switches/rack#rt=product-guide

Warranty

The QLE2872 adapters carry a one-year limited warranty. When installed in a supported server, the adapters assume the server's base warranty and any Lenovo Services warranty upgrade.

Operating environment

The QLE2872 adapters are supported in the following environment:

- Temperature
  - Operating: 0°C to 55°C (32°F to 131°F)
  - Storage: –20°C to 70°C (–4°F to 158°F)
- Humidity
  - Relative (noncondensing): 10% to 90%
  - Storage: 5% to 95%

Agency approvals

The QLE2872 adapters conform to the following regulations:

Safety approvals:

- US and Canada
  - UL 60950-1
  - CSA C22.2
- Europe
  - TUV EN60950-1
  - TUV IEC 60950-1
  - EN IEC 62368 2nd, 3rd Edition
  - CB Certified

EMI and EMC (Class A) approvals:

- US and Canada
  - FCC Rules, CFR Title 47, Part 15, Subpart Class A
  - Industry Canada, ICES-003: Class A

- Europe
  - EN55032
  - EN55035
  - EN61000-3-2
  - EN61000-3-3
- Japan
  - VCCI: Class A
- New Zealand and Australia
  - AS/NZS: Class A
- Korea
  - KC-RRA Class A
- Taiwan
  - BSMI CNS 13438
- UK
  - UKCA
  - BS DoC

Related publications and links

For more information, see the following resources:

- Lenovo ServerProven
  http://serverproven.lenovo.com
- Marvell product page for QLE2872 HBAs
  https://www.marvell.com/products/fibre-channel-adapters-and-controllers/2870-series.html
- Marvell home page for Lenovo products
  https://www.marvell.com/lenovo

Related product families

Product families related to this document are the following:

- Host Bus Adapters

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