

## ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA Product Guide (withdrawn product)

The ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA is a high performance 24Gb SAS host bus adapter for internal storage connectivity in ThinkSystem servers. It integrates the latest SAS technology and offer 16 lanes of 24 Gbps SAS (SAS4) with a PCIe 4.0 host interface. The adapter has a low-profile PCIe form-factor design with two Slimline x8 (SFF-8654) connectors.

The following figure shows the ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA.

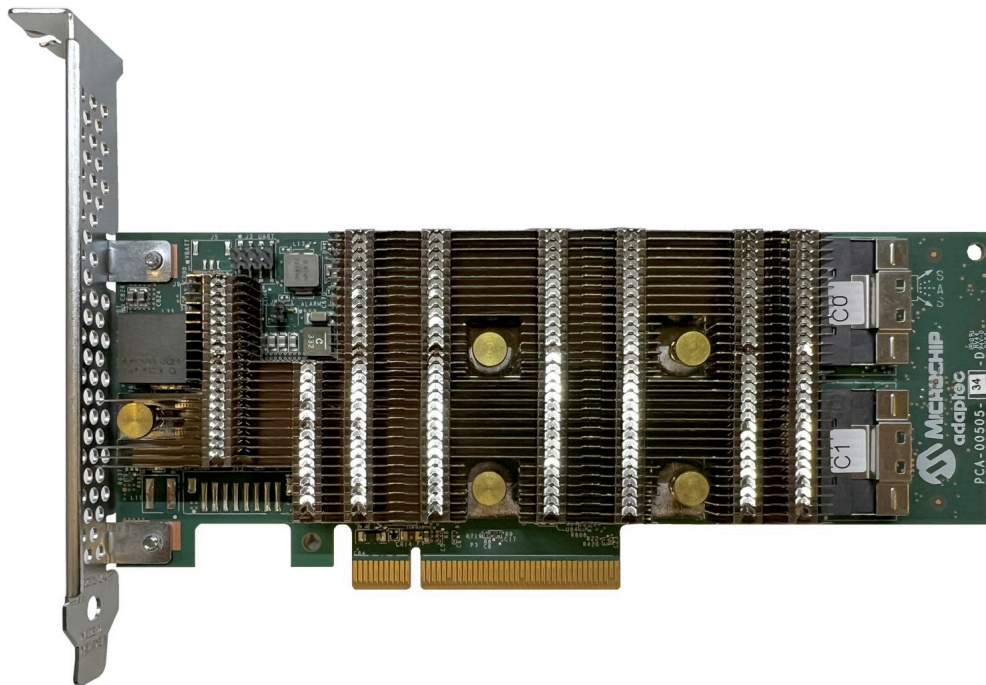


Figure 1. ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA

### Did you know?

When combined with 24Gb SAS drives and drive backplanes, the ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA provides an end-to-end 24Gb SAS storage solution to maximize internal storage performance.

Rigorous testing of the ThinkSystem HBAs by Lenovo through the ServerProven program ensures a high degree of confidence in storage subsystem compatibility and reliability. Providing an additional peace of mind, the controller is covered under Lenovo warranty.

## Part number information

The following table provides the ordering part numbers for the adapters.

**Withdrawn:** The adapter is withdrawn from marketing.

Table 1. Part numbers and feature codes

Part number	Feature code	Description	Adaptec model
4Y37A97938	C6UL	ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA	HBA 1200-16i

The part number includes:

- Host Bus Adapter with 3U full-height bracket attached
- 2U low-profile bracket

## Technical specifications

The 4450-16i has the following features and specifications:

- 24 Gbps SAS/SATA host bus adapter, based on the Adaptec HBA 1200-16i
- PCIe 4.0 x8 host interface
- PCI low-profile, half-length form factor
- Supports connectivity to SAS or SATA drives (no support for NVMe drives)
- 16 internal 24 Gbps SAS/SATA ports:
  - Supporting connectivity to 16 internal drives natively
  - Supports up to 238 SAS/SATA drives via a SAS expander
- Up to 24 Gbps throughput per port
  - Supports 24, 12, 6, or 3 Gbps SAS speeds
  - Supports 6 or 3 Gbps SATA speeds
  - Support for intermixing of drive speeds
- Two internal Slimline x8 connectors (SFF-8654)
- Non-RAID (JBOD mode, known as “raw” or “HBA mode” in Adaptec parlance) support for SAS and SATA HDDs and SSDs (RAID not supported)
- Optimized for SSD performance
- High performance architecture with a queue depth of up to 1014
- Advanced power management support
- Supports 512e, 512n and 4K sector formatted drives
- TLR
- SATA Native Command Queuing (NCQ)
- S.M.A.R.T. support
- Secure Boot and Root of Trust

The specifications of the adapters are listed in the following table.

Table 2. Specifications

<b>Feature</b>	<b>4450-16i</b>
Form factor	PCIe low profile
Controller chip	Adaptec SmartIOC 2200
Adaptec equivalent	Adaptec HBA 1200-16i
Host interface	PCIe 4.0 x8
Port interface	24 Gb SAS
Number of ports	16
Port connectors	2x Slimline x8 (SFF-8654)
Drive interface	SAS, SATA
Drive type	HDD, SSD
Maximum devices	16 (238 with expander)
RAID levels	No RAID
JBOD mode (HBA mode / Raw)	Yes
Cache	No
SED support (pass-through)	Yes

To compare these adapters to others in the ThinkSystem portfolio, see the ThinkSystem RAID Adapter and HBA Reference:

<https://lenovopress.com/lp1288-thinksystem-raid-adapter-and-hba-reference>

## Features

### High-Speed Connectivity

Equipped with a PCIe Gen 4 interface, the 4450-16i provides high-speed connectivity with up to 24 Gbps for SAS-4 devices. This ensures rapid data transfer rates and low latency, making it ideal for data-intensive tasks and high-performance computing environments. The adapter’s advanced architecture supports the latest storage technologies, delivering exceptional throughput and efficiency.

### Advanced Security Features

Security is a top priority for the 4450-16i, which includes features like secure boot, secure updates, and attestation. These security measures help protect the system from unauthorized access and ensure the integrity of the firmware and software. By incorporating robust security protocols, the 4450-16i provides peace of mind for users who need to safeguard sensitive data and maintain compliance with industry standards.

The 4450-16i also offers robust support for Self-Encrypting Drives (SEDs), accommodating SAS and SATA SEDs. The adapter can manage SEDs by providing the necessary credentials to unlock them, ensuring data security. It supports the use of SEDs as boot drives or MaxCache logical drives, offering flexibility in deployment. Additionally, the adapter has the capability to revert secured SEDs to their original factory state, which effectively erases all data on the drives, ensuring that sensitive information is not recoverable. This comprehensive SED support enhances data protection and security for various storage applications.

### Dynamic Power Management

The 4450-16i features dynamic power management, which can save up to 30% power compared to traditional adapters. This energy-efficient design not only reduces operational costs but also minimizes the environmental impact of data centers. By intelligently managing power consumption, the 4450-16i helps maintain optimal performance while conserving energy.

Support for Lenovo system management tools is listed in the following table.

Table 3. Support for key management features

Function	Lenovo XClarity Controller	Lenovo XClarity Provisioning Manager	Lenovo XClarity Essentials OneCLI (out-of-band)	Lenovo XClarity Essentials OneCLI (in-band)	Lenovo XClarity Administrator	Bare Metal Update / Bootable Media Creator
Adapter FRU Inventory Details	Supported	Supported	Supported	Supported	Supported	No support
Disk Inventory Details	Supported	Supported	Supported	Supported	Supported	No support
Firmware Update	Supported	No support	Supported	Supported	Supported	Supported
Monitoring/ Events/ Log Capture	Supported*	Supported	Supported*	Supported	Supported*	No support

\* No capture of controller firmware log

## Server support

The following tables list the ThinkSystem servers that are compatible.

Table 4. Server support (Part 1 of 5)

Part Number	Description	AMD V3				2S Intel V3/V4				Multi Node V3	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)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)
4Y37A97938	ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N

Table 5. Server support (Part 2 of 5)

Part Number	Description	4S 8S Intel V3/V4				GPU Rich				Edge								
		SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SR850 V4 (7DJT / 7DJS)	SR860 V4 (7DJQ / 7DJN)	SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR680a V3 B200 (7DM9)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SR680a V4 (7DMK)	SE100 (7DGR)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)
4Y37A97938	ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 3 of 5)

Part Number	Description	Super Computing						1S Intel V2		2S Intel V2			AMD V1				
		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)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR645 (7D2Y / 7D2X)
4Y37A97938	ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. Server support (Part 4 of 5)

Part Number	Description	Dense V2				4S V2	8S	4S V1		1S Intel V1					
		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)	SR250 (7Y52 / 7Y51)
4Y37A97938	ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 8. Server support (Part 5 of 5)

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)
4Y37A97938	ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA	N	N	N	N	N	N	N	N	N	N	N	N

## Operating system support

The following tables list the supported operating systems for the adapters.

Table 9. Operating system support for ThinkSystem 4450-16i SAS/SATA PCIe Gen4 24Gb HBA, 4Y37A97938

Operating systems	SR645 V3	SR665 V3	SR635 V3	SR650 V3 (4th Gen Xeon)	SR655 V3	SR850 V3	SR860 V3	ST650 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR630 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	ST650 V3 (5th Gen Xeon)
Microsoft Windows Server 2019	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2025	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	N	Y	N	N
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N
Red Hat Enterprise Linux 8.8	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
Red Hat Enterprise Linux 8.10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Red Hat Enterprise Linux 9.4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 10.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 10.1	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	N	Y	N	N
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 16	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 20.04.5 LTS or later with HWE kernel	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N
Ubuntu 20.04 LTS or later with HWE kernel	N	N	N	Y	N	N	N	N	Y	Y	Y	N
Ubuntu 22.04.3 LTS or later with HWE kernel	N	N	N	N	N	N	N	N	Y	N	Y	Y
Ubuntu 22.04.5 LTS or later with HWE kernel	Y	Y	Y	N	Y	N	N	N	N	N	N	N
Ubuntu 22.04 LTS or later with HWE kernel	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
Ubuntu 24.04 LTS or later with HWE kernel	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

	SR645 V3	SR665 V3	SR635 V3	SR650 V3 (4th Gen Xeon)	SR655 V3	SR850 V3	SR860 V3	ST650 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR630 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	ST650 V3 (5th Gen Xeon)
<b>Operating systems</b>												
VMware vSphere Hypervisor (ESXi) 8.0	Y	Y	Y	Y	Y	N	N	N	N	Y	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

## Warranty

The adapters carry a 1-year limited warranty. When installed in a supported ThinkSystem server, the adapters assume the server's base warranty and any warranty service upgrade.

## Physical specification

The 4450-16i has the following dimensions:

- Height: 69 mm (2.7 inches)
- Length: 167 mm (6.6 inches)
- Weight: 180g

## Operating environment

The adapters are supported in the following environment:

- Operating:
  - Temperature: 0°C to 55°C (32°F to 131°F)
  - Relative humidity: 10% to 90% (non-condensing)
  - Altitude: Up to 3,000 meters

## Agency approvals

The 4450-16i has the following agency approvals:

- FCC Part 15 Class A
- Australia/New Zealand (AS/NZS 3548)
- Canada (ICES-003 Class B)
- Europe (EN55032/EN55024)
- Japan VCCI
- Korea KCC
- RoHS compliant
- EN/IEC/UL 60950
- USA (FCC 47 CFR part 15 Subpart B class B)

## Related publications and links

For more information, see the following documents:

- Adaptec product page and user guides:  
<https://storage.microsemi.com/en-us/support/sas/sas/aha-1200-16i/>
- Lenovo ThinkSystem product publications:  
<http://pubs.lenovo.com>
- ServerProven hardware compatibility:  
<https://serverproven.lenovo.com/>
- Lenovo ThinkSystem RAID Adapter and HBA Reference  
<https://lenovopress.com/lp1288-thinksystem-raid-adapter-and-hba-reference>

## Related product families

Product families related to this document are the following:

- [Host Bus Adapters](#)

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