



Storage Options for ThinkSystem Servers

Reference Information

RAID Controllers & Storage Adapters

Lenovo Storage Adapters provide a new level of reliability & performance for data centers via exceptional Data Center storage redundancy.

- [RAID Controllers](#)
- [SAS Host Bus Adapters](#)
- [NVMe Switch Adapters](#)

RAID Controllers

Redundancy and Protection for Critical Enterprise Data. Lenovo RAID controllers provide reliable data protection and performance with a wide range of RAID solutions covering SMB to Large Enterprise customers.

Additional resources:

- [Lenovo RAID Management Tools and Resources](#)
- [Lenovo RAID Introduction](#)

RAID Controllers for Internal Storage

ThinkSystem RAID 530-8i PCIe 12Gb Adapter

Entry-level 12Gb SAS/SATA internal RAID adapter that offers a cost-effective RAID solution for small to medium business customers. This cacheless adapter supports up to eight drives and RAID levels 0, 1, 10, 5, and 50.

Learn more:

- [Product Guide](#)



ThinkSystem RAID 930-8i 2GB Flash PCIe 12Gb Adapter

Advanced 12Gbps SAS RAID adapter with 2GB of onboard cache and a flash-based backup unit. The adapter offers RAID levels 0, 1, 10, 5, 50, 6, and 60 standard, and supports up to eight drives.

Learn more:

- [Product Guide](#)



ThinkSystem RAID 930-16i 4GB Flash PCIe 12Gb Adapter

Advanced 12Gbps SAS RAID adapter with 4GB of onboard cache and a flash-based backup unit. The adapter offers RAID levels 0, 1, 10, 5, 50, 6, and 60 standard, and supports up to 16 drives.

Learn more:

- [Product Guide](#)



ThinkSystem RAID 930-24i 4GB Flash PCIe 12Gb Adapter

Advanced 12Gbps SAS RAID adapter with 4GB of onboard cache and a flash-based backup unit. The adapter offers RAID levels 0, 1, 10, 5, 50, 6, and 60 standard, and supports up to 24 drives.

Learn more:

- [Product Guide](#)



RAID Controllers for External Storage

ThinkSystem RAID 930-8e 4GB Flash PCIe 12Gb Adapter

High-performance 12Gbps SAS RAID-on-chip (ROC) adapter for connectivity to external disk enclosures. The adapter comes standard with 4GB of cache and supports RAID levels 0, 1, 10, 5, 50, 6 and 60.

Learn more:

- [Product Guide](#)



SAS Host Bus Adapters

High performance SAS host bus adapters provide easy and reliable connectivity to either internal or external storage.

HBAs for Internal Storage

ThinkSystem 430-8i SAS/SATA 12Gb HBA

The Lenovo ThinkSystem 430-8i SAS/SATA 12Gb HBAs is a high performance host bus adapters for internal storage connectivity in ThinkSystem servers. Two internal x4 mini-SAS HD connectors to connect to eight drives.

Learn more:

- [Product Guide](#)



ThinkSystem 430-16i SAS/SATA 12Gb HBA

The Lenovo ThinkSystem 430-16i SAS/SATA 12Gb HBA is a high performance host bus adapters for external storage connectivity in ThinkSystem servers. Four internal x4 mini-SAS HD connectors to connect to 16 drives.

Learn more:

- [Product Guide](#)



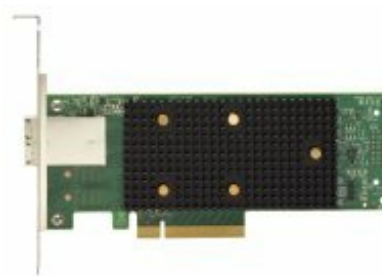
HBAs for External Storage

ThinkSystem 430-8e SAS/SATA 12Gb HBA

High performance host bus adapters for external SAS storage connectivity in ThinkSystem servers. The adapter provides two external x4 mini-SAS HD connectors for a total of eight lanes of 12Gbps SAS.

Learn more:

- [Product Guide](#)

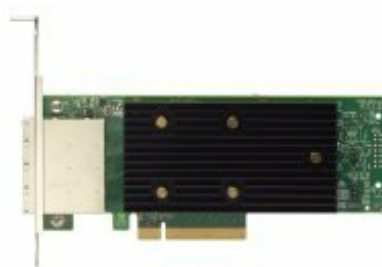


ThinkSystem 430-16e SAS/SATA 12Gb HBA

High performance host bus adapters for external SAS storage connectivity in ThinkSystem servers. The adapter provides four external x4 mini-SAS HD connectors for a total of 16 lanes of 12Gbps SAS.

Learn more:

- [Product Guide](#)



NVMe Switch Adapter

Adapters to enable the use of PCIe NVMe drives in ThinkSystem servers.

ThinkSystem 1610-4P NVMe Switch Adapter

A high performance PCIe 3.0 switch based on the Broadcom PEX9733 chipset with a PCIe 3.0 x8 host interface. On supported ThinkSystem servers, the adapter provides four PCIe x4 connections supporting four NVMe drives. Four Mini-SAS HD x4 (SFF-8643) internal connectors.



Solid State Storage Drives & Adapters

Next generation solid-state technology engineered for balanced performance & endurance in a cost efficient design.

- [SAS and SATA Solid State Drives](#)
- [Self-encrypting Solid State Drives](#)
- [M.2 Drives and Adapters](#)
- [NVMe Solid State Drives](#)
- [NVMe Solid State Storage Adapters](#)

For more information:

- [Lenovo SSD summary](#)

SAS and SATA Solid State Drives

Cost efficient with optimal performance. Delivering performance, endurance, and power efficiency in a cost-efficient design.

Enterprise Entry SAS and SATA SSDs

Optimized for read-intensive workloads with an endurance of less than 3 DWPD.

Intel S4500 Entry SATA 6Gb SSDs

Intel drives using 3D NAND TLC Flash Memory technology with a 6Gbps SATA interface to provide an affordable solution with industry leading performance.

Learn more:

- [Product guide](#)



Intel S3520 Entry SATA 6Gb SSDs

Intel drives optimized for read-intensive applications such as boot, web servers, lower data rate operational databases and analytics. SATA 6Gbps interface to provide an affordable solution with industry leading performance. Available in capacities up to 1.6TB.

Learn more:

- [Product guide](#)



5100 Entry SATA 6Gb SSDs

Micron drives that provide an affordable solution for read-intensive applications such as boot, web servers, lower data rate operational databases and analytics.

Learn more:

- [Product guide](#)



PM863a Entry SATA 6Gb SSDs

Samsung drives suitable for general-purpose and read-intensive workloads. Engineered for greater performance and endurance in a cost-effective design. Available in capacities from 240GB to 1.92TB.

Learn more:

- [Product guide](#)



Enterprise Mainstream SAS and SATA SSDs

Optimized for mixed-intensive application workloads with an endurance of 3-5 DWPD.

Intel S4600 Mainstream SATA 6Gb SSDs

Advanced Intel data center SSDs optimized for mixed read-write performance, endurance and strong data protection. Excellent choice as cache in transactional application and high-speed storage for enterprise databases.

Learn more:

- [Product guide](#)



5100 Mainstream SATA 6Gb SSDs

Micron drives that offer an affordable solution for mixed read-write applications such as cache in transactional application and high-speed storage for enterprise databases. Available in a broad selection of sizes, from 240GB to 3.84TB.

Learn more:

- [Product guide](#)



PM1635a Mainstream SAS 12Gb SSDs

Samsung drives with an advanced SAS 12Gbps interface. Mainstream server SSD suitable for mixed read-write-intensive workloads. Available in capacities up to 1.6TB.

Learn more:

- [Product guide](#)



Enterprise Performance SAS SSDs

Optimized for write-intensive application workloads with an endurance of 10+ DWPD.

HUSMM32 Performance SAS 12Gb SSDs

HGST Ultrastar drives are an excellent choice for applications demanding high write performance, such as High Performance Computing (HPC), High Definition Imaging and Video (HDIV), high data rate analytics and databases, large-scale virtualization, and video on demand content delivery.

Learn more:

- [Product guide](#)



Enterprise Capacity SAS SSDs

High capacity SSD for the maximum storage with the performance of solid-state drives.

PM1633a Capacity SAS 12Gb SSDs

Samsung drives ideal for high-capacity enterprise applications, with drive capacities up to 15.36TB. Designed for dense storage and with a 12Gb SAS interface, these drives have the capacity and performance needed for large-scale read-intensive applications.

Learn more:

- [Product guide](#)



Self-encrypting Solid State Drives

Self-encrypting drives (SEDs) provide benefits in three main ways:

- By encrypting data on-the-fly at the drive level with no performance impact
- By providing instant secure erasure (cryptographic erasure, thereby making the data no longer readable)
- By enabling auto-locking to secure active data if a drive is misplaced or stolen from a system while in use

Enterprise Performance SAS SSDs

Optimized for write-intensive application workloads with an endurance of 10+ DWPD.

HUSMM32 Enterprise Performance 12G SAS FIPS SED SSDs

HGST drives suitable for write-intensive workloads. These high-performance self-encrypting drives (SEDs) adhere to the Federal Information Processing Standard 140-2 (FIPS 140-2) cryptographic standard. Available in capacities up to 1.6TB.

Learn more:

- [Product Guide](#)



M.2 Drives and Adapters

M.2 is a solid-state drive (SSD) form factor primarily used as an operating system boot solution. Lenovo ThinkSystem servers support M.2 drives with the addition of a supported M.2 adapter.

ThinkSystem M.2 Drives and M.2 Adapters

ThinkSystem servers come standard with a dedicated slot supporting an M.2 adapter, supporting one or two M.2 solid-state drives. This solution allows customers to boot from an M.2 drive for an efficient and high-speed storage interface.

Learn more:

- [Product guide](#)
- [Lenovo Engineer video](#)



NVMe Solid State Drives

Ultra Low Latency & High Performance.

Designed to utilize the high bandwidth of PCIe 3.0 in four lanes, and bring high performance, low latency, and consistently amazing performance to I/O-intensive storage workloads.

Enterprise Entry NVMe SSDs

Optimized for read-intensive workloads with an endurance of less than 3 DWPD.

Intel P4500 Entry NVMe PCIe 3.0 x4 SSDs

General-purpose yet high-performance low-latency drives with a PCIe 3.0 x4 interface. Available in capacities up to 4 TB.

Learn more:

- [Product guide](#)



PM963 NVMe Enterprise Entry PCIe SSDs

Samsung drives suitable for read-intensive and general-purpose data center workloads. Available in capacities of 1.92TB and 3.84TB.

Learn more:

- [Product guide](#)



Enterprise Mainstream NVMe SSDs

Optimized for mixed-intensive application workloads with an endurance of 3-5 DWPD.

Intel P4600 Mainstream NVMe PCIe 3.0 x4 SSDs

Advanced data center SSDs optimized for mixed read-write performance, endurance, and strong data protection for Lenovo servers. Available in capacities of 1.6TB and 3.2TB.

Learn more:

- [Product guide](#)



PX04PMB Mainstream NVMe PCIe SSDs

Toshiba advanced data center SSDs optimized for mixed read-write performance, endurance, and strong data protection for Lenovo servers. Available in capacities of 960GB and 1.92TB.

Learn more:

- [Product guide](#)



Enterprise Performance NVMe SSDs

Optimized for write-intensive application workloads with an endurance of 10+ DWPD.

Intel P4800X Performance NVMe PCIe SSD

The ultimate in high performance solid state drives with ultra-low latency, very high bandwidth, and an endurance of 30 drive writes per day, making this drive an excellent choice for write-intensive high-performance workloads.

Learn more:

- [Product guide](#)



PX04PMB Performance NVMe PCIe SSDs

Toshiba advanced data center SSDs optimized for write-intensive performance, endurance, and strong data protection for Lenovo servers. Available in capacities of 800GB and 1.6TB.

Learn more:

- [Product guide](#)



NVMe Solid State Storage Adapters

Solid-state storage in the form factor of a PCIe adapter, designed to utilize the high bandwidth of PCIe 3.0 in four lanes. Brings high performance, high bandwidth and low latency to IO intensive storage workloads.

Enterprise Mainstream NVMe PCIe Adapters

Optimized for mixed-intensive application workloads with an endurance of 3-5 DWPD.

PX04PMC NVMe Mainstream Flash Adapters

PCIe Flash Storage Adapters from Toshiba in capacities of 1.92TB and 3.84TB. Optimized for mixed read-write performance, endurance, and strong data protection.

Learn more:

- [Product Guide](#)



Enterprise Performance NVMe PCIe Adapters

Optimized for write-intensive application workloads with an endurance of 10+ DWPD.

Intel P3700 NVMe Enterprise Performance Flash Adapter

High-performance controller which delivers leading performance, low latency, and quality of service. Suitable for write-intensive applications and available in capacities up to 2.0TB.

Learn more:

- [Product Guide](#)



PX04PMC NVMe Performance Flash Adapters

PCIe Flash Storage Adapters from Toshiba in capacities of 1.6TB and 3.2TB. Optimized for write-intensive performance, endurance, and strong data protection.

Learn more:

- [Product Guide](#)



Hard Disk Drives

Industry-Leading Solutions. Enterprise SAS & SATA & self-encrypting (SED) hard disk drives. Industry leading HDD solutions increase data reliability, performance, & security.

Self-Encrypting Drives

Protect data at rest against loss or theft & secure drive retirement, disposal, or repurposing.

Available drives:

- 10K 12Gb SAS SED drives up to 1.2TB
- 7.2K 12Gbps SAS FIPS 140-2 SEDs

Learn more:

- [Lenovo ThinkSystem HDD Summary](#)



SATA Drives

Lowest-cost storage solution for high-capacity enterprise-class servers.

Available drives:

- 6Gb SATA in capacities up to 12TB

Learn more:

- [Lenovo ThinkSystem HDD Summary](#)



SAS Drives

SAS drives provide breadth of data center storage solutions ranging from inexpensive Near Line drives to High Performance 15k drives.

Available drives:

- 15K 12Gb SAS drives in capacities up to 900GB
- 10K 12Gb SAS drives in capacities up to 2.4TB
- 7.2K 12Gb SAS drives in capacities up to 12TB

Learn more:

- [Lenovo ThinkSystem HDD Summary](#)



Backup & Archive Storage

Tape Backup & Automation.

Tape backup & automation solutions can help protect your business with a full complement of tape technologies.

LTO Tape Drives

Delivers greater capacity & performance, further extending the proven reliability & low-cost ownership to effectively meet demanding backup, archival, & regulatory compliance requirements.

LTO Generation 7 Tape Drives

Native storage capacity of 6TB per cartridge (15TB at 2.5:1 compression) and a maximum native data transfer rate of up to 300 Mbps (750 Mbps compressed).

Learn more:

- [Product Guide](#)



LTO Generation 6 Tape Drives

Native storage capacity of 2.5TB per cartridge (6.2TB at 2.5:1 compression) and a maximum native data transfer rate of up to 160 Mbps (400 Mbps compressed).

Learn more:

- [Product Guide](#)



RDX Removable Disk

Removable disks provide fast random access to data & drag-and-drop functionality, as well as the proven portability & durability of tape.

Features high-capacity shock-resistant cartridges with up to 2.0TB capacity, making your storage options extremely flexible.

Learn more:

- [Product Guide](#)



Related product families

Product families related to this document are the following:

- [Drives](#)
- [RAID Adapters](#)
- [Host Bus Adapters](#)
- [PCIe Flash Adapters](#)

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This document, LP0761, was created or updated on December 12, 2017.

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