ThinkSystem Vendor Agnostic Mixed Use NVMe SSDs
Product Guide

The ThinkSystem Vendor Agnostic Mixed Use NVMe SSDs are general-purpose yet high-performance drives with a PCIe x4 interface. They are designed for greater performance and endurance in a cost-effective design, and to support a broader set of workloads. Vendor Agnostic SSDs are non-vendor-specific drives which can streamline and simplify the ordering and delivery of SATA SSDs. The drives offered in the Vendor Agnostic SSD program consists of SSDs that are readily available, ensuring the shortest supply lead time.

The drives are enabled with SED encryption to help ensure data security, even when the drive is removed from the server.

Figure 1. ThinkSystem Vendor Agnostic Mixed Use NVMe SSDs

Did you know?

Lenovo Mixed Used SSDs are suitable for mixed read-write and general-purpose data center workloads, however their NVMe PCIe interface means the drives also offer high performance. Overall, these SSDs provide outstanding IOPS/watt and cost/IOPS for enterprise solutions.

Self-encrypting drives (SEDs) provide benefits by encrypting data on-the-fly at the drive level with no performance impact, by providing instant secure erasure thereby making the data no longer readable, and by enabling auto-locking to secure active data if a drive is misplaced or stolen from a system while in use. These features are essential for many businesses, especially those storing customer data.

Part number information

The following table lists the part numbers and feature codes.

Table 1. Ordering part numbers and feature codes

Part number	Feature	Description	SED support
2.5-inch hot-swap drives with PCIe 5.0 interface			
4XB7A93127	C0ZR	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Supported
4XB7A93128	C0ZQ	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Supported
4XB7A93129	C0ZP	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Supported
4XB7A93130	C0ZN	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Supported
2.5-inch hot-swap drives with PCIe 4.0 interface			
4XB7A93896	C18J	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Supported
4XB7A93897	C18H	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Supported
4XB7A93898	C18G	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Supported
4XB7A93899	C18F	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Supported
E3.S 1T hot-swap drives with PCIe 5.0 interface			
4XB7A93136	C1WD	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Supported
4XB7A93137	C1WE	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Supported
4XB7A93138	C1WF	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Supported
4XB7A93139	C1WG	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Supported
15mm trayless (non-hot-swap) drives with PCIe 4.0 interface			
4XB7B09660	CBT9	ThinkSystem 2.5" 15mm VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	Supported
4XB7B09661	CBTA	ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	Supported
4XB7B09662	CBT2	ThinkSystem 2.5" 15mm VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	Supported

The part numbers include the following items:

- One 2.5-inch or EDSFF E3.S 1T solid-state drive
- Hot-swap drives include a ThinkSystem hot-swap tray
- Documentation flyer

Features

The Vendor Agnostic SSDs have the following features:

- High performance SSD for mixed-read/write workloads from industry leading SSD vendors
- PCIe 5.0 x4 or PCIe 4.0 x4 connection for each NVMe drive
- SED drive encryption (TCG Opal or TCG Enterprise)
- Advanced ECC Engine and End-to-End Data Protection
- TLC V-NAND stacks the vertical NAND layers in three dimensions, solving the cell-to-cell interference that causes data corruption in planar NAND.

- Power Loss Protection (PLP) architecture
- Supports Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T).

SSDs have a huge but finite number of program/erase (P/E) cycles, which affect how long they can perform write operations and thus their life expectancy. Mixed Use SSDs have a higher write endurance compared to Read Intensive SSDs. SSD write endurance is typically measured by the number of program/erase cycles that the drive can incur over its lifetime, which is listed as total bytes written (TBW) in the device specification.

The TBW value that is assigned to a solid-state device is the total bytes of written data that a drive can be guaranteed to complete. Reaching this limit does not cause the drive to immediately fail; the TBW simply denotes the maximum number of writes that can be guaranteed. A solid-state device does not fail upon reaching the specified TBW. However, at some point after surpassing the TBW value (and based on manufacturing variance margins), the drive reaches the end-of-life point, at which time the drive goes into read-only mode. Because of such behavior, careful planning must be done to use SSDs in the application environments to ensure that the TBW of the drive is not exceeded before the required life expectancy.

The benefits of drive encryption

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

The following sections describe the benefits in more details.

Automatic encryption

It is vital that a company keep its data secure. With the threat of data loss due to physical theft or improper inventory practices, it is important that the data be encrypted. However, challenges with performance, scalability, and complexity have led IT departments to push back against security policies that require the use of encryption. In addition, encryption has been viewed as risky by those unfamiliar with key management, a process for ensuring a company can always decrypt its own data. Self-encrypting drives comprehensively resolve these issues, making encryption both easy and affordable.

When the self-encrypting drive is in normal use, its owner need not maintain authentication keys (otherwise known as credentials or passwords) in order to access the data on the drive. The self-encrypting drive will encrypt data being written to the drive and decrypt data being read from it, all without requiring an authentication key from the owner.

Drive retirement and disposal

When hard drives are retired and moved outside the physically protected data center into the hands of others, the data on those drives is put at significant risk. IT departments retire drives for a variety of reasons, including:

- Returning drives for warranty, repair, or expired lease agreements
- Removal and disposal of drives
- Repurposing drives for other storage duties

Nearly all drives eventually leave the data center and their owner's control. Corporate data resides on such drives, and when most leave the data center, the data they contain is still readable. Even data that has been striped across many drives in a RAID array is vulnerable to data theft because just a typical single stripe in today’s high-capacity arrays is large enough to expose for example, hundreds of names and bank account numbers.

In an effort to avoid data breaches and the ensuing customer notifications required by data privacy laws, companies use different methods to erase the data on retired drives before they leave the premises and potentially fall into the wrong hands. Current retirement practices that are designed to make data unreadable rely on significant human involvement in the process, and are thus subject to both technical and human failure.

The drawbacks of today's drive retirement practices include the following:

- Overwriting drive data is expensive, tying up valuable system resources for days. No notification of completion is generated by the drive, and overwriting won't cover reallocated sectors, leaving that data exposed.
- Methods that include degaussing or physically shredding a drive are expensive. It is difficult to ensure the degauss strength is optimized for the drive type, potentially leaving readable data on the drive. Physically shredding the drive is environmentally hazardous, and neither practice allows the drive to be returned for warranty or expired lease.
- Some companies have concluded the only way to securely retire drives is to keep them in their control, storing them indefinitely in warehouses. But this is not truly secure because a large volume of drives coupled with human involvement inevitably leads to some drives being lost or stolen.
- Professional disposal services is an expensive option and includes the cost of reconciling the services as well as internal reports and auditing. Transporting of the drives also has the potential of putting the data at risk.

Self-encrypting drives eliminate the need to overwrite, destroy, or store retired drives. When the drive is to be retired, it can be cryptographically erased, a process that is nearly instantaneous regardless of the capacity of the drive.

Instant secure erase

The self-encrypting drive provides instant data encryption key destruction via cryptographic erasure. When it is time to retire or repurpose the drive, the owner sends a command to the drive to perform a cryptographic erasure. Cryptographic erasure simply replaces the encryption key inside the encrypted drive, making it impossible to ever decrypt the data encrypted with the deleted key.

Self-encrypting drives reduce IT operating expenses by reducing asset control challenges and disposal costs. Data security with self-encrypting drives helps ensure compliance with privacy regulations without hindering IT efficiency. So called "Safe Harbor" clauses in government regulations allow companies to not have to notify customers of occurrences of data theft if that data was encrypted and therefore unreadable.

Furthermore, self-encrypting drives simplify decommissioning and preserve hardware value for returns and repurposing by:

- Eliminating the need to overwrite or destroy the drive
- Securing warranty returns and expired lease returns
- Enabling drives to be repurposed securely

Auto-locking

Insider theft or misplacement is a growing concern for businesses of all sizes; in addition, managers of branch offices and small businesses without strong physical security face greater vulnerability to external theft. Self-encrypting drives include a feature called auto-lock mode to help secure active data against theft.

Using a self-encrypting drive when auto-lock mode is enabled simply requires securing the drive with an authentication key. When secured in this manner, the drive's data encryption key is locked whenever the drive is powered down. In other words, the moment the self-encrypting drive is switched off or unplugged, it automatically locks down the drive's data.

When the self-encrypting drive is then powered back on, it requires authentication before being able to unlock its encryption key and read any data on the drive, thus protecting against misplacement and theft.

While using self-encrypting drives just for the instant secure erase is an extremely efficient and effective means to help securely retire a drive, using self-encrypting drives in auto-lock mode provides even more advantages. From the moment the drive or system is removed from the data center (with or without authorization), the drive is locked. No advance thought or action is required from the data center administrator to protect the data. This helps prevent a breach should the drive be mishandled and helps secure the data against the threat of insider or outside theft.

Technical specifications

The following table lists the technical specifications for the drives.

Performance and endurance values: The numbers listed in these tables for performance and endurance are the minimums for Vendor Agnostic SSDs.

Table 2. Technical specifications

Feature	1.6 TB drive	3.2 TB drive	6.4 TB drive	12.8 TB drive
Interface	PCIe x4	PCIe x4	PCIe x4	PCIe x4
Capacity	1.6 TB	3.2 TB	6.4 TB	12.8 TB
SED encryption	Yes	Yes	Yes	Yes
Endurance (drive writes per day for 5 years)	3 DWPD	3 DWPD	3 DWPD	3 DWPD
Endurance (total bytes written)	8760 TB	17,520 TB	35,040 TB	70,080 TB
Data reliability (UBER)	< 1 in 10^{17} bits read	< 1 in 10^{17} bits read	< 1 in 10^{17} bits read	< 1 in 10^{17} bits read
MTBF	2,000,000 hours	2,000,000 hours	2,000,000 hours	2,000,000 hours
Shock, non-operating	1,500 G (Max) at 0.5 ms	1,500 G (Max) at 0.5 ms	1,500 G (Max) at 0.5 ms	1,500 G (Max) at 0.5 ms
Vibration, non-operating	2.17 G_{RMS} (5-700 Hz)	2.17 G_{RMS} (5-700 Hz)	2.17 G_{RMS} (5-700 Hz)	2.17 G_{RMS} (5-700 Hz)
Performance data for 2.5-inch PCIe 5.0 drives				
IOPS reads (4 KB blocks)	1,440,000	1,710,000	1,800,000	1,800,000
IOPS writes (4 KB blocks)	270,000	360,000	360,000	360,000
Sequential read rate (128 KB blocks)	10,800 MBps	10,800 MBps	10,800 MBps	10,800 MBps
Sequential write rate (128 KB blocks)	3150 MBps	4950 MBps	4950 MBps	4950 MBps
Performance data for 2.5-inch PCIe 4.0 drives				
IOPS reads (4 KB blocks)	630,000	90,000	90,000	90,000
IOPS writes (4 KB blocks)	180,000	307,000	351,000	337,000
Sequential read rate (128 KB blocks)	4,770 MBps	6,000 MBps	6,100 MBps	6,100 MBps
Sequential write rate (128 KB blocks)	1700 MBps	3250 MBps	3800 MBps	3300 MBps
Performance data for E3.S 1T PCIe 5.0 drives				
IOPS reads (4 KB blocks)	1,440,000	1,710,000	1,800,000	1,800,000
IOPS writes (4 KB blocks)	135,000	225,000	270,000	315,000
Sequential read rate (128 KB blocks)	10,800 MBps	10,800 MBps	10,800 MBps	10,800 MBps
Sequential write rate (128 KB blocks)	3150 MBps	4950 MBps	4950 MBps	4950 MBps

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 3. 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)	SR250 V3 (7DCM / 7DCL)
2.5-inch hot-swap drives with PCIe 5.0 interface																		
4XB7A93127	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N
4XB7A93128	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N
4XB7A93129	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N
4XB7A93130	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N
2.5-inch hot-swap drives with PCIe 4.0 interface																		
4XB7A93896	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	N	N	N	N
4XB7A93897	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	N	N	N	N
4XB7A93898	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	N	N	N	N
4XB7A93899	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	N	N	N	N
E3.S 1T hot-swap drives with PCIe 5.0 interface																		
4XB7A93136	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N
4XB7A93137	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N
4XB7A93138	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N
4XB7A93139	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N
15mm trayless (non-hot-swap) drives with PCIe 4.0 interface																		
4XB7B09660	ThinkSystem 2.5" 15mm VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7B09661	ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7B09662	ThinkSystem 2.5" 15mm VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 4. 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)	SE455 V3 (7DBY)
2.5-inch hot-swap drives with PCIe 5.0 interface																			
4XB7A93127	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	N	Y	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N
4XB7A93128	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	N	Y	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N
4XB7A93129	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	N	Y	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	N
4XB7A93130	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Y	Y	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N
2.5-inch hot-swap drives with PCIe 4.0 interface																			
4XB7A93896	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	Y
4XB7A93897	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	Y
4XB7A93898	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	Y
4XB7A93899	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	Y
E3.S 1T hot-swap drives with PCIe 5.0 interface																			
4XB7A93136	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93137	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93138	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93139	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
15mm trayless (non-hot-swap) drives with PCIe 4.0 interface																			
4XB7B09660	ThinkSystem 2.5" 15mm VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N

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)	SE455 V3 (7DBY)
4XB7B09661	ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
4XB7B09662	ThinkSystem 2.5" 15mm VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N

Table 5. 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)	SR665 (7D2W / 7D2V)
2.5-inch hot-swap drives with PCIe 5.0 interface																		
4XB7A93127	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93128	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93129	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93130	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2.5-inch hot-swap drives with PCIe 4.0 interface																		
4XB7A93896	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Y	Y
4XB7A93897	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Y	Y
4XB7A93898	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Y	Y
4XB7A93899	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Y	Y
E3.S 1T hot-swap drives with PCIe 5.0 interface																		
4XB7A93136	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93137	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93138	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93139	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
15mm trayless (non-hot-swap) drives with PCIe 4.0 interface																		
4XB7B09660	ThinkSystem 2.5" 15mm VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N
4XB7B09661	ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N
4XB7B09662	ThinkSystem 2.5" 15mm VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N

Table 6. 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)
2.5-inch hot-swap drives with PCIe 5.0 interface															
4XB7A93127	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93128	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93129	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93130	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2.5-inch hot-swap drives with PCIe 4.0 interface															
4XB7A93896	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N
4XB7A93897	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N
4XB7A93898	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N
4XB7A93899	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N
E3.S 1T hot-swap drives with PCIe 5.0 interface															
4XB7A93136	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93137	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93138	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93139	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N	N	N
15mm trayless (non-hot-swap) drives with PCIe 4.0 interface															
4XB7B09660	ThinkSystem 2.5" 15mm VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7B09661	ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XB7B09662	ThinkSystem 2.5" 15mm VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. 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)
2.5-inch hot-swap drives with PCIe 5.0 interface													
4XB7A93127	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93128	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93129	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93130	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
2.5-inch hot-swap drives with PCIe 4.0 interface													
4XB7A93896	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93897	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93898	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93899	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	N	N	N	N	N	N	N	N	N	N	N	N
E3.S 1T hot-swap drives with PCIe 5.0 interface													
4XB7A93136	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93137	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93138	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N
4XB7A93139	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	N	N	N	N	N	N	N	N	N	N	N	N
15mm trayless (non-hot-swap) drives with PCIe 4.0 interface													
4XB7B09660	ThinkSystem 2.5" 15mm VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7B09661	ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N
4XB7B09662	ThinkSystem 2.5" 15mm VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD	N	N	N	N	N	N	N	N	N	N	N	N

Operating system support

The Vendor Agnostic SSDs support the operating systems listed in the following tables:

- 2.5-inch hot-swap drives with PCIe 5.0 interface
- 2.5-inch hot-swap drives with PCIe 4.0 interface
- E3.S 1T hot-swap drives
- Trayless drives

Tip: These tables are automatically generated based on data from Lenovo ServerProven.

2.5-inch hot-swap drives with PCIe 5.0 interface

The following table lists the OS support for 2.5-inch hot-swap drives with PCIe 5.0 interface.

Table 8. Operating system support for ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD, 4XB7A93128

Operating systems	SR630 V4	SR650 V4/SR650a V4	SD530 V3	SD535 V3	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR675 V3	SR850 V3	SR860 V3
Microsoft Windows 10	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	N
Microsoft Windows 11	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
Microsoft Windows Server 2019	N	N	N	N	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	Y	Y	Y
Microsoft Windows Server 2025	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.9	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 8.10	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.2	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y
Red Hat Enterprise Linux 9.4	Y	Y	Y	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	Y	Y	Y
Red Hat Enterprise Linux 9.6	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 10.0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	N	N	Y	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	Y	Y	Y

Operating systems	SR630 V4	SR650 V4/SR650a V4	SD530 V3	SD535 V3	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR675 V3	SR850 V3	SR860 V3
SUSE Linux Enterprise Server 15 SP7	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 20.04.5 LTS	N	N	N	Y	N	N	Y	Y	N	N	Y	Y	Y	Y	Y
Ubuntu 20.04 LTS	N	N	N	N	Y	Y	N	N	Y	Y	N	N	N	N	N
Ubuntu 22.04.3 LTS	N	N	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N
Ubuntu 22.04.5 LTS	Y	Y	N	Y	N	N	N	Y	N	N	N	Y	Y	N	N
Ubuntu 22.04 LTS	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Ubuntu 24.04 LTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U1	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	N	N	Y	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	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

2.5-inch hot-swap drives with PCIe 4.0 interface

The following table lists the OS support for 2.5-inch hot-swap drives with PCIe 4.0 interface.

Table 9. Operating system support for ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD, 4XB7A93897 (Part 1 of 2)

Operating systems	SE350 V2	SE450	SE455 V3	SD535 V3	SD550 V3	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR675 V3	SR850 V3	SR860 V3
Microsoft Windows Server 2016	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Microsoft Windows Server 2019	Y	Y	Y	N	N	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	Y	Y	Y	Y
Microsoft Windows Server 2025	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.6	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 7.7	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 7.8	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 7.9	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Operating systems	SE350 V2	SE450	SE455 V3	SD535 V3	SD550 V3	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR675 V3	SR850 V3	SR860 V3
Red Hat Enterprise Linux 8.1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 8.2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 8.3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 8.4	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 8.5	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red Hat Enterprise Linux 8.6	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	N	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.9	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	N	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.4	Y	Y	Y	Y	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	Y	Y	Y	Y
Red Hat Enterprise Linux 9.6	Y	Y	Y	Y	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	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 12 SP5 with Xen	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP1 with Xen	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP2 with Xen	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP3 with Xen	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5 with Xen	Y	Y	Y	Y	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	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 7.0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Operating systems	SE350 V2	SE450	SE455 V3	SD535 V3	SD550 V3	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR675 V3	SR850 V3	SR860 V3
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 7.0 U2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	N	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	N	Y	Y	Y	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	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 10. Operating system support for ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD, 4XB7A93897 (Part 2 of 2)

Operating systems	SR630 V2	SR650 V2	SR670 V2	SR850 V2	SR860 V2	ST650 V2	SR645	SR665
Microsoft Windows Server 2016	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2025	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7.6	N	N	N	N	N	N	Y	Y
Red Hat Enterprise Linux 7.7	N	N	N	N	N	N	Y	Y
Red Hat Enterprise Linux 7.8	N	N	N	N	N	N	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.1	N	N	N	N	N	N	Y	Y
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.9	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.10	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y	Y	Y	Y	Y

Operating systems	SR630 V2	SR650 V2	SR670 V2	SR850 V2	SR860 V2	ST650 V2	SR645	SR665
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.4	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.5	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.6	Y	Y	Y	N	N	Y	Y	Y
Red Hat Enterprise Linux 10.0	Y	Y	Y	N	N	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP1	N	N	N	N	N	N	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	N	N	N	N	N	N	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5 with Xen	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP6	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP7	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7 U3	Y	Y	Y	N	N	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0	N	N	N	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U1	N	N	N	Y	Y	N	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U3	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y	Y	N	N	Y	Y	Y

E3.S 1T hot-swap drives

The following table lists the OS support for E3.S 1T hot-swap drives.

Table 11. Operating system support for ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2, 4XB7A93137

Operating systems	SR630 V4	SR650 V4/SR650a V4
Microsoft Windows Server 2022	Y	Y
Microsoft Windows Server 2025	Y	Y
Red Hat Enterprise Linux 9.4	Y	Y
Red Hat Enterprise Linux 9.5	Y	Y
SUSE Linux Enterprise Server 15 SP6	Y	Y
Ubuntu 22.04.5 LTS	Y	Y
Ubuntu 24.04 LTS	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0 U3	Y	Y
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y

Trayless drives

The following table lists the OS support for trayless drives.

Table 12. Operating system support for ThinkSystem 2.5" 15mm VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 Trayless SSD, 4XB7B09661

Operating systems	SE450	SD650 V3	SD650 V3 (5th Gen Xeon)	SD650-N V3 (4th Gen Xeon)	SD650-N V3 (5th Gen Xeon)	SD665 V3	SD665-N V3
Microsoft Windows Server 2019	Y	N	N	N	N	N	N
Microsoft Windows Server 2022	Y	N	N	N	N	N	N
Microsoft Windows Server 2025	Y	N	N	N	N	N	N
Red Hat Enterprise Linux 7.9	Y	N	N	N	N	N	N
Red Hat Enterprise Linux 8.4	Y	N	N	N	N	N	N
Red Hat Enterprise Linux 8.5	Y	N	N	N	N	N	N
Red Hat Enterprise Linux 8.6	Y	Y	N	N	N	Y	Y
Red Hat Enterprise Linux 8.10	Y	Y	Y	N	N	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	N	N	N	Y	Y
Red Hat Enterprise Linux 9.1	Y	N	N	N	N	N	N
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.3	Y	N	N	N	N	Y	N
Red Hat Enterprise Linux 9.4	Y	Y	Y	N	N	Y	Y
Red Hat Enterprise Linux 9.5	Y	N	N	N	N	N	N
Red Hat Enterprise Linux 9.6	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 10.0	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y	N	N	N	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP6	Y	Y	Y	N	N	Y	Y
SUSE Linux Enterprise Server 15 SP7	Y	Y	Y	Y	Y	Y	Y
Ubuntu 20.04.5 LTS	Y	N	N	N	N	Y	Y
Ubuntu 22.04.3 LTS	N	N	Y	Y	Y	N	N
Ubuntu 22.04.5 LTS	N	N	N	N	N	Y	Y
Ubuntu 22.04 LTS	Y	Y	N	N	N	Y	Y
VMware vSphere Hypervisor (ESXi) 8.0	Y	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U3	Y	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 9.0	Y	N	N	N	N	N	N

IBM SKLM Key Management support

To effectively manage a large deployment of SEDs in Lenovo servers, IBM Security Key Lifecycle Manager (SKLM) offers a centralized key management solution. Certain Lenovo servers support Features on Demand (FoD) license upgrades that enable SKLM support.

The following table lists the part numbers and feature codes to enable SKLM support in the management processor of the server.

Table 13. FoD upgrades for SKLM support

Part number	Feature code	Description
Security Key Lifecycle Manager - FoD (United States, Canada, Asia Pacific, and Japan)		
00D9998	A5U1	SKLM for System x/ThinkSystem w/SEDs - FoD per Install w/1Yr S&S
00D9999	AS6C	SKLM for System x/ThinkSystem w/SEDs - FoD per Install w/3Yr S&S
Security Key Lifecycle Manager - FoD (Latin America, Europe, Middle East, and Africa)		
00FP648	A5U1	SKLM for System x/ThinkSystem w/SEDs - FoD per Install w/1Yr S&S
00FP649	AS6C	SKLM for System x/ThinkSystem w/SEDs - FoD per Install w/3Yr S&S

The IBM Security Key Lifecycle Manager software is available from Lenovo using the ordering information listed in the following table.

Table 14. IBM Security Key Lifecycle Manager licenses

Part number	Description
7S0A007FWW	IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription & Support 12 Months
7S0A007HWW	IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A007KWW	IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A007MWW	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A007PWW	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months

Warranty

The ThinkSystem Vendor Agnostic Mixed Use NVMe SSDs carry a one-year, customer-replaceable unit (CRU) limited warranty. When the SSDs are installed in a supported server, these drives assume the system’s base warranty and any warranty upgrades.

Solid State Memory cells have an intrinsic, finite number of program/erase cycles that each cell can incur. As a result, each solid state device has a maximum amount of program/erase cycles to which it can be subjected. The warranty for Lenovo solid state drives (SSDs) is limited to drives that have not reached the maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the SSD product. A drive that reaches this limit may fail to operate according to its Specifications.

Physical specifications

The Vendor Agnostic SSDs have the following dimensions (without the hot-swap tray):

- Height: 7 mm (0.3 in.) or 15mm (0.59 in.)
- Width: 70 mm (2.8 in.)
- Depth: 100 mm (4.0 in.)

Operating environment

The Vendor Agnostic SSDs are supported in the following environment:

- Temperature:
  - Operating: 0 to 70 °C (32 to 158 °F)
  - Non-operating: -40 °C to 85 °C (-40 to 185 °F)
- Relative humidity: 5 to 95% (noncondensing)
- Maximum altitude: 3,050 m (10,000 ft)

Agency approvals

The Vendor Agnostic SSDs conform to the following regulations:

- UL
- TUV
- FCC
- CE Mark
- C-Tick Mark
- BSMI (Taiwan)
- KCC (Korea EMI)

Related publications and links

For more information, see the following documents:

- Lenovo ThinkSystem SSD Portfolio comparison: https://lenovopress.com/lp1261-lenovo-thinksystem-ssd-portfolio

Related product families

Product families related to this document are the following:

- Drives

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