Lenovo ThinkSystem DE6500 Storage Array
Product Guide

Lenovo ThinkSystem DE6500 are industry-leading end-to-end NVMe Storage solutions designed to provide high performance, simplicity, capacity, security, and high availability for midrange to high-end block NVMe large segment.

The DE6500 delivers enterprise-class storage management capabilities in performance-optimized systems with a wide choice of host connectivity options, flexible drive configurations, and enhanced data management features. The DE6500 is a perfect fit as a primary growth platform for a wide range of entry enterprise workloads, including database and analytics, backup and recovery, general SMB, low latency, video surveillance, technical computing, and other storage I/O-intensive applications.

DE6500 models are available in a 2U rack form-factor with 24 small form-factor (2.5-inch SFF) NVMe drives and include two controllers, each with 32 GB system memory for a system total of 64 GB. Host interface cards provide 10/25Gb GbE, 64Gb FC, 100GbE for host connections and 12Gb SAS expansions.

The Lenovo DE6500 2U24 SFF enclosure is shown in the following figure.



Figure 1. Lenovo ThinkSystem DE6500 enclosure controller

Did you know?

The DE6500 are the new NVMe offerings under the Lenovo enterprise flash storage systems.

A single DE6500 supports 24 internal NVMe (TLC or QLC) drives, scales up to 96 SSDs or up to 264 HDDs with expansion enclosures.

The DE6500 are entry all-flash and hybrid systems ideal for midsized businesses and remote offices that stream media and run-data analytics.

The DE6500 supports multiple storage connectivity protocols with a choice of Fibre Channel, NVMe over Fibre Channel and Ethernet.

Key features

The ThinkSystem DE6500 offer the following key features and benefits:

- Scalable, high performance mid-range all-flash and hybrid storage with dual active/active controller configurations with 32 GB system memory per controller for high availability and performance.
- Faster application response times with support for NVMe over Fabrics.
- Improved performance and data protection with Dynamic Disk Pools (DDP) technology, as well as support for traditional RAID 0, 1, 5, 6, and 10.
- Flexible storage protocols to match diverse client needs with support for 10/25GbE, 64Gb FC/NVMe-FC, 100Gb host connectivity.
- The dual controller enclosure scales up to 1.47PB (NVMe) (24x 61.44TB).
- SAS expansion connectivity to expand scalability and capacity.
- 12 Gb SAS drive-side connectivity with support for up to 24x 2.5-inch small form factor (SFF) drives in the 2U24 SFF expansion enclosure, up to 12x 3.5-inch large form factor (LFF) drives in the 2U12 LFF expansion enclosure, or up to 60x 3.5-inch LFF drives in the 4U60 LFF expansion enclosure.
- A maximum scalability to up to 120 SSDs SFF drives by attaching up to four ThinkSystem DE240S 2U24 SFF expansion enclosures.
- A maximum scalability to up 264 HDDs by attaching up to four ThinkSystem DE600S 4U60 LFF expansion enclosures to satisfy growing needs.
- Rich set of standard storage management functions available at no extra cost, including Dynamic Disk Pools, snapshots, volume copy and encryption.
- Optional licensed functions, including higher number of drives and snapshots for greater scalability for continuous data availability.
- Intuitive, web-based GUI for easy system setup and management.
- Designed for high availability with redundant hot-swap components, including controllers and I/O Modules, power supplies, cooling modules (4U60 LFF enclosures only), proactive maintenance, and non-disruptive firmware upgrades.

The ThinkSystem DE6500 supports the complete range of data storage requirements, from highly used applications to high-capacity, low usage applications.

The DE6500 2U24 SFF enclosure and expansion enclosures offer a variety of drives. Refer to the drives section for a list of supported drives. All drives are dual-port and hot-swappable.

Customers can intermix 2U24 SFF, 2U12 LFF, and 4U60 LFF expansion enclosures behind a 2U24 SFF controller enclosure. This configuration delivers the added flexibility to mix 3.5-inch and 2.5-inch drives within a single system.

More drives and expansion enclosures are designed to be dynamically added with virtually no downtime, which helps to quickly and seamlessly respond to ever-growing capacity demands.

The ThinkSystem DE6500 offers high levels of system and data availability with the following technologies:

- Dual-active controller modules with automatic load balancing and failover
- Mirrored data cache with flash backup (battery-backed destaging to flash)
- Dual-port SAS HDDs and SSDs with automatic drive failure detection and rebuild with global hot spares
- Redundant, hot-swappable and customer replaceable hardware components, including SFP/SFP+ transceivers, controller and I/O Modules, power supplies, cooling modules (4U60 LFF only), and drives
- Automated path failover support for the data path between the host and the drives with multipathing software
- Non-disruptive controller and drive firmware upgrades

Components and connectors

The following figure shows the front of the DE6500 enclosure.

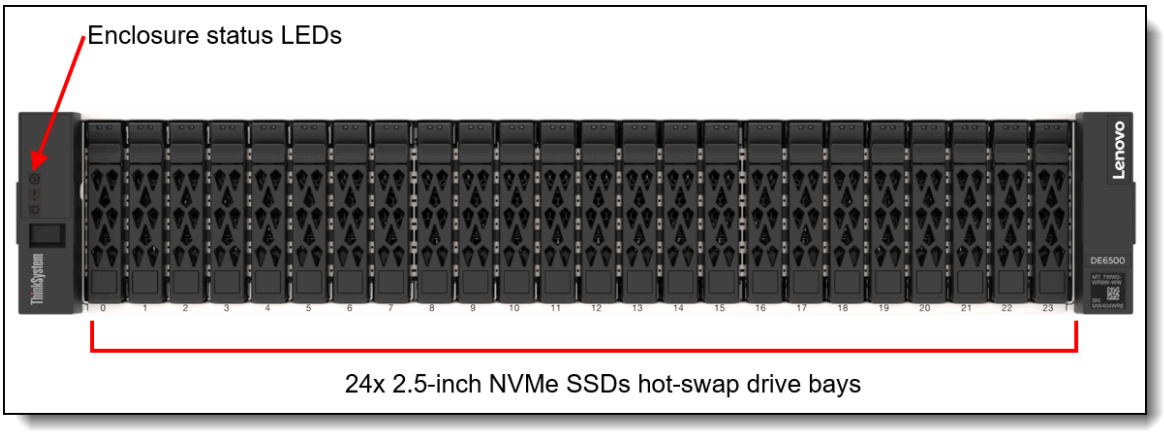


Figure 2. DE6500 enclosure front view.

The following figure shows the rear of one controller for the ThinkSystem DE6500 2U SFF enclosure.

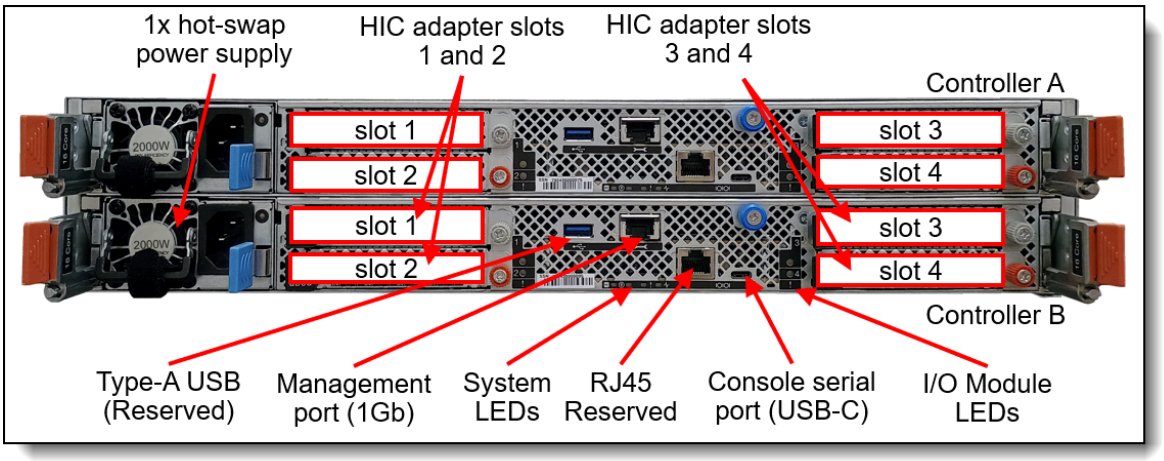


Figure 3. One controller of the ThinkSystem DE6500 2U SFF enclosure rear view

The ThinkSystem DE6500 2U SFF enclosure contains two controllers.

- The following list includes the components of **one controller**:
  - One serial console (USB-C) port.
    Note: The DE6500 controllers no longer offer base ports
  - One management (1GbE) port.
  - One Type-A USB port (not functional).
  - HIC adapter slots:
    - I/O slot 1 and 2
    - I/O slot 3 and 4
- Two redundant Titanium hot-swap 2000W AC (220V) power supplies (IEC 320-C14 power connector).
- PSU and system fans are installed in the controller enclosure (not chassis).

The following figure shows the front of the DE240S 2U SFF expansion enclosure.

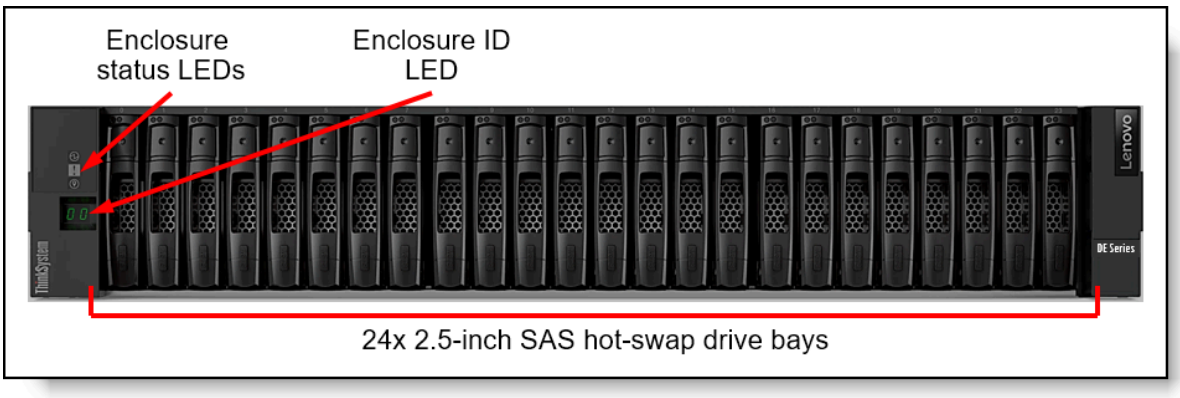


Figure 4. DE240S 2U SFF expansion enclosure front view.

The front of the DE240S 2U SFF expansion enclosure includes the following components:

- 24 SFF hot-swap drive bays
- Enclosure status LEDs
- Enclosure ID LED

The following figure shows the front of the ThinkSystem DE120S 2U LFF expansion enclosure.

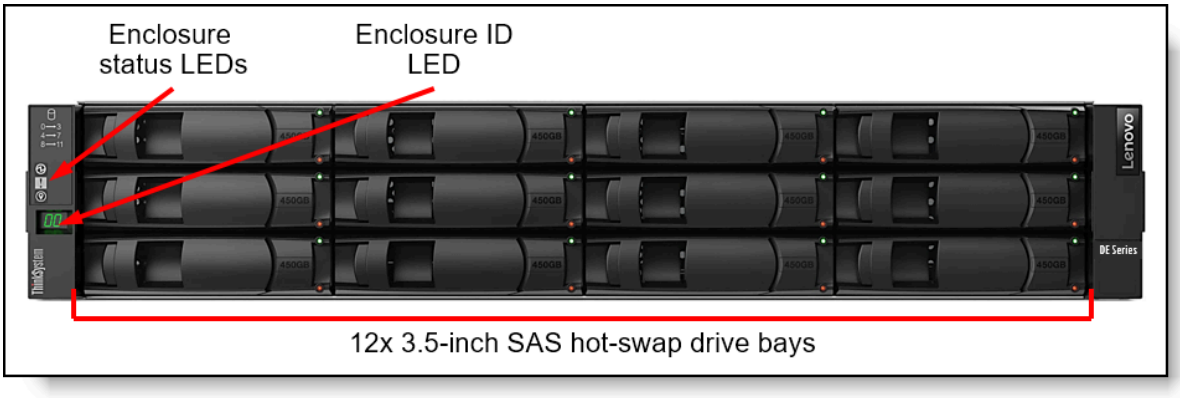


Figure 5. ThinkSystem DE120S 2U LFF expansion enclosure front view.

The front of the ThinkSystem DE120S 2U LFF expansion enclosure includes the following components:

- 12 LFF hot-swap drive bays
- Enclosure status LEDs
- Enclosure ID LED

The following figure shows the rear of the ThinkSystem DE240S and DE120S 2U expansion enclosures.

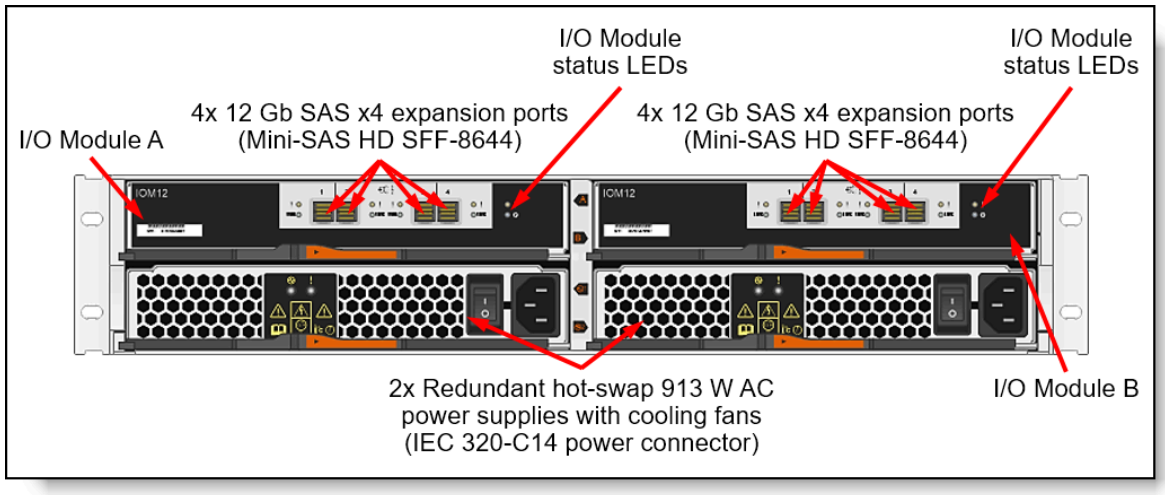


Figure 6. ThinkSystem DE240S and DE120S 2U expansion enclosures rear view

The rear of the ThinkSystem DE240S and DE120S 2U expansion enclosures includes the following components:

- Two redundant hot-swap I/O Modules; each I/O Module provides four 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644) for connections to the controller enclosures and for connecting the expansion enclosures between each other.
- Two redundant hot-swap 913 W AC (100 - 240 V) power supplies (IEC 320-C14 power connector) with integrated cooling fans.

The following figure shows the rear of the ThinkSystem DE600S 4U LFF expansion enclosure.

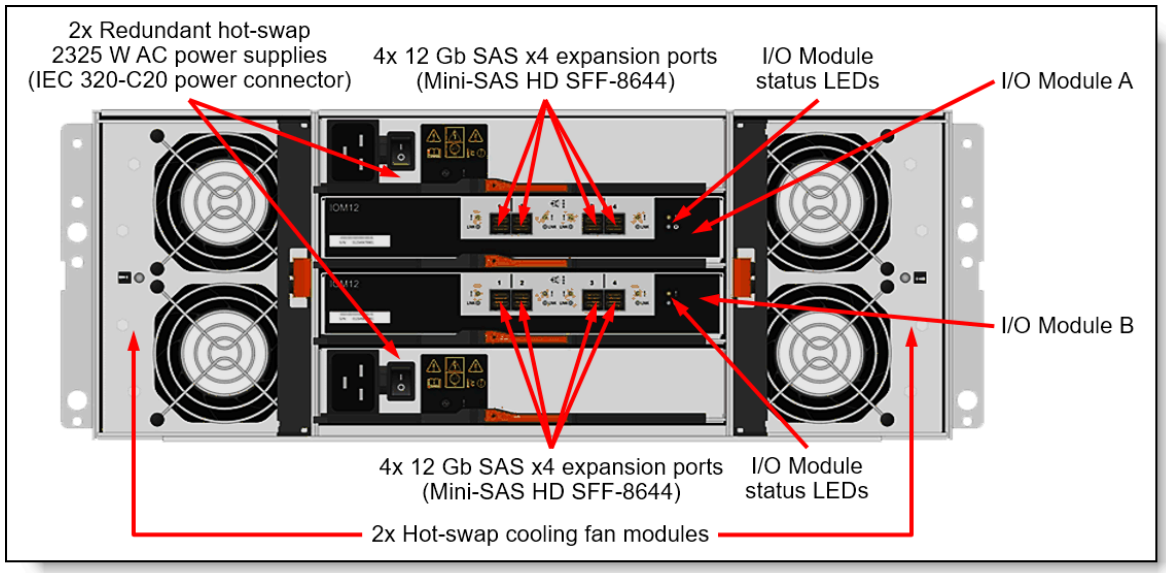


Figure 7. ThinkSystem DE600S 4U LFF expansion enclosure rear view

The rear of the ThinkSystem DE600S 4U LFF expansion enclosure includes the following components:

- Two redundant hot-swap I/O Modules; each I/O Module provides four 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644) for connections to the controller enclosures and for connecting the expansion enclosures between each other.
- Two redundant hot-swap 2325 W AC (200 - 240 V) power supplies (IEC 320-C20 power connector)
- Two hot-swap cooling fan modules; each module has two fans.
  Note: The failed cooling module should be replaced as soon as possible.

System specifications

The following table lists the ThinkSystem DE6500 storage system specifications.

Note: The supported hardware options, software features, and interoperability listed in this product guide are based on the Lenovo SAN OS 12.10. For details about specific software releases that introduced support for certain hardware options and software features, refer to the Release notes of the particular software release for the ThinkSystem DE6500 that can be found at: http://datacentersupport.lenovo.com

Table 1. System specifications

Attribute	**DE6500**
Machine type	Controller enclosure: 7DQE Expansion enclosures: • DE120S: 7Y63 • DE240S: 7Y68 • DE600S: 7Y69
Form factor	Controller enclosure: 2U rack mount Expansion enclosures: • DE120S: 2U rack mount • DE240S: 2U rack mount • DE600S: 4U rack mount
Controller configuration	Dual active-active controller configuration with automatic load balancing.
RAID levels	RAID 0, 1, 5, 6 and 10; Dynamic Disk Pools. • RAID 6, minimum six drives are required (five drives with one hot spare) for system functionality and data storage.
Controller system memory	64 GB per system (32 GB per controller). Cache mirroring between the controllers. Flash-backed cache protection (includes battery for destaging to flash).
Expansion enclosure support	• 8x DE120S • 4x DE240S • 4x DE600S • Expansion enclosures intermix up to a maximum of 4 expansion enclosures

Drive bays	DE6500 storage system:
	• DE6500 2U24 SFF drives
	  ◦ Up to 24 NVMe (TLC or QLC) or 24x SSDs drive bays in main enclosure
	• DE120S Expansion enclosure: 2U12 LFF drives
	  ◦ Drive bays - 12
	• DE240S Expansion enclosure: 2U24 SFF drives
	  ◦ Drive bays - 24
	• DE600S Expansion enclosure: 4U60 LFF drives
	  ◦ Drive bays - 60
	
	See Drives for details.

Attribute	DE6500
Drive technology	Controller enclosure • NVMe only Expansion enclosures: • NL SAS HDDs, 12 Gb SAS SSDs and FIPS SSDs drives are supported. • A maximum of 96 SSDs are supported. • Intermix of drives is supported within a system. • Intermix of FIPS drives and non-FIPS drives is supported within a system. • Intermix of FIPS drives and non-FIPS drives is *not* supported within a volume group or disk pool. • No intermix with NVMe and SAS SSD in volume group or disk pool. • There is no support for expansion to a second enclosure containing NVMe drives.
Drive expansion connectivity	• 8x 12 Gb SAS host ports (Mini-SAS HD, SFF-8644) (4 ports per controller) for expansion scale-up, daisy chaining of the expansion enclosures. • 2x SAS expansion cards are required and must be installed in slot 3 only of the DE6500 controller. One in controller A, one in controller B.
Storage capacity	• Main enclosure (QLC NVMe) (24x 61.44TB QLC) 1.47PB + [4 x DE600S (240x 24TB) 5.76PB] = 7.23PB • Scale up requires installation of a SAS expander card into slot 3 only
Storage protocols	SAN (Block access): FC, iSCSI, NVMe/FC and NVMe/RoCE.

Host connectivity	Host connectivity ports are provided using Host Interface Cards (HICs). A DE6500 enclosure has two controllers.
	• Supported I/O ports are:
	• 16x 10/25Gb iSCSI
	  ◦ 4x 10/25Gb 4 port Ethernet HIC (DAC or SW fiber optics, LC) (2 HICs per controller, supported in slot 1 / slot 2)
	• 16x 64Gb FC, NVMe FC
	  ◦ 4x 64/32Gb 4 Port Fiber Channel Adapter HIC (SW fiber optics, LC) (2 HICs per controller, supported in slot 1 / slot 2)
	• 8x 100Gb NVMe RoCE
	  ◦ 4x 100Gb 2 Port Ethernet HIC (DAC cable or SW fiber optics, MPO) (2 HICs per controller, supported in slot 1 / slot 2)
	
	Note: HICs are not hot-swappable.

Mirroring connectivity	Mirroring connectivity between the two controllers is provided using Host Interface Cards (HICs). A DE6800 enclosure has two controllers. • Supported I/O ports are: • 4x 100Gb RoCE ◦ 2x 100Gb 2 port Ethernet HIC (1 HIC per controller, supported in slot 4
Host operating systems	Microsoft Windows Server, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), VMware vSphere. Reference LSIC for details.
Performance (NVMe drives only)*	• 1,700,000 IOPS. • Up to 41 GBps Sustain Throughput (GBps).

Attribute	DE6500

Configuration maximums	• Maximum hosts/partitions: 512
	• Maximum volumes per partition: 256
	• Maximum volumes per system: 1024
	• Maximum logical volume: 4PB
	• RAID capacity (dependent on drive capacity):
	  ◦ 30 drives (RAID 5 and RAID 6)
	  ◦ All drives RAID 10
	• Maximum number of drives in a RAID volume group:
	  ◦ 24 NVMe, 240 SAS (RAID 0 and RAID 1)
	  ◦ 24 NVMe, 30 SAS (all other RAID levels)
	• RAID volumes per volume group: 256
	• Disk pools per system: 20
	• Volumes per disk pool: 1024

Cooling	Controller enclosure: Five cooling fans per enclosure controller. DE600S expansion: Redundant cooling with two cooling modules DE120S, DE240S: Fans that are built into power supplies
Power supply	Two redundant hot-swap 2000 W (220 V) 2U24 controller enclosure. Each expansion enclosure also supports 2 power supplies.
Hot-swap parts	Controllers, drives, power supplies and SFP+/SFP28/QSFP28 transceivers.
Management ports	• 1x 1 GbE port (UTP, RJ-45) per controller for out-of-band management. • 1x Serial console port (USB-C) per controller for system configuration.
Management interfaces	System Manager web-based GUI; SAN Manager standalone GUI; SSH CLI for service only; SMcli; SNMP, email, and syslog alerts.
Security features	Secure Socket Layer (SSL), Secure Shell (SSH) for service only, user level security, role-based access control (RBAC), LDAP authentication.
Warranty and support	Three-year customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD) parts delivered. Also available are 9x5 NBD onsite response, 24x7 coverage with 2-hour or 4-hour onsite response, or 6-hour or 24-hour committed repair (select areas), YourDrive YourData, Premier Support, and 1-year or 2-year post-warranty extensions.
Software maintenance	Included in the base warranty and any Lenovo warranty extensions.
Dimension (controller enclosure)	2U24 SFF enclosure: Height: 87 mm, Width: 447 mm, Depth: 543 mm (3.4 x 17.6 x 21.4 inches)
Dimension (expansion enclosure)	• 2U12 LFF enclosure: Height: 85 mm, Width: 447 mm, Depth: 483 mm (3.3 x 17.6 x 19.0 inches) • 2U24 SFF enclosure: Height: 85 mm, Width: 449 mm, Depth: 552 mm (3.3 x 17.7 x 21.8 inches) • 4U60 LFF enclosure: Height: 176 mm, Width: 449 mm, Depth: 922 mm (6.9 x 17.7 x 36.3 inches)
Weight	• DE6500 2U24 SFF controller enclosure (7DQE): 27.25 kg (60.08 lb) • DE120S 2U12 LFF expansion enclosure (7Y63): 27.12 kg (59.8 lb) • DE240S 2U24 SFF expansion enclosure (7Y68): 24.59 kg (54.2 lb) • DE600S 4U60 LFF expansion enclosure (7Y69): 112.2 kg (247.4 lb)

* Estimated performance based on internal measurements

Top Choice

Lenovo offers the “quick-ship” program **Top Choice Express (TCE)** to make it easy for our customers to get quick delivery of our products. With TCE, a Configure-to-Order (CTO) model contains a "best of" subset of components, which allows for customization while maintaining significantly faster lead times than standard CTO.

Top Choice Express (TCE) is the way to get custom configurations as quickly as possible. It allows DCSC configurator users to configure systems in **CTO Mode**, selecting the required hardware components while still benefiting from faster turnaround than traditional CTO. These configurations are built and fully integrated by Lenovo Manufacturing, with simple configuration steps, instant pricing, and quicker delivery.

To see which components are TCE, check the TCE column in the various component tables in this product guide. Green cells mean that the component is enabled for ordering with Top Choice Express in all regions world-wide. Orange cells with the ℹ symbol mean that the component is enable for Top Choice Express in only some regions. Mouse over or tap on the cell to see which regions have it enabled for TCE.

Notes:

- Top Choice Express is for configure-to-order builds only, not for standalone option part numbers.
- Ship dates are estimates only; actual ship times may vary based on platform and component availability, order processing, logistics, and external factors beyond Lenovo’s control. Lenovo is not liable for delays.

Main enclosure

The following table lists the CTO base models for the ThinkSystem DE6500.

Table 2. ThinkSystem DE6500 CTO base models

Machine Type/Model	Base feature	Description	Top Choice Express
7DQECTO1WW	B6W6	Lenovo ThinkSystem DE6500 NVMe 2U24	-

Configuration notes:

- Note: No mixing of host protocols

The models of the ThinkSystem DE6500 ship with the following items:

- One chassis with the following components:
  - Two controllers
  - Two power supplies
  - Two host interface cards
- Rack Mount Kit
- 2 m USB Cable (USB Type A to Micro-USB)
- Two power cables:
  - Relationship models listed in this section:
    - 2U24 SFF: 1.5 m, 10A/100-250V, C13 to IEC 320-C14 rack power cables
  - CTO models: Customer-configured power cables

Note: The preconfigured models of the ThinkSystem DE6500 listed in this section ship without optical transceivers, DAC cables, or SAS cables; they should be purchased for the system (see Controllers for details)

Controllers

The ThinkSystem DE6500 enclosure ships with two controllers, and each controller provides 32 GB system memory for a system total of 64 GB respectively. A *controller* provides interfaces for host connectivity, management, and internal drives, and it runs storage management software.

- Each controller has two bays or I/O slot ports for Host Interface Card (HIC).

The following Host Interface Card (HIC) can be added to the ThinkSystem DE6500 enclosure to support **expansion enclosure** connectivity:

- Lenovo ThinkSystem Storage 12Gb 4 Port SAS Adapter (SAS Shelf), C4AE
    - If HICs are used, two HICs of the same type are required.
        - 1 HIC per controller, supported in slot 3 only

The following HICs can be added to the ThinkSystem DE6500 enclosure to support **host connectivity**:

- Lenovo ThinkSystem Storage 10/25Gb 4 port Ethernet, C4AC
    - 2 HICs per controller, supported in slot 1 / slot 2
- Lenovo ThinkSystem Storage 64/32Gb 4 Port Fiber Channel Adapter, C4A8
    - 2 HICs per controller, supported in slot 1 / slot 2
- Lenovo Lenovo ThinkSystem Storage 100Gb 2 Port Ethernet Crypto, CEMG
    - 2 HICs per controller, supported in slot 1 / slot 2

The following HICs can be added to the ThinkSystem DE6500 enclosure to support **mirroring connectivity** between the two controllers :

- Lenovo ThinkSystem Storage 100Gb 2 port Ethernet, C4AA
    - 1 HIC per controller, supported in slot 4 only

The following table lists the I/O population options for the ThinkSystem DE6500 enclosure.

Table 3. DE6500 I/O slot population

I/O Slot	Per controller	Controller mirroring
Slot 1	Host Interface Card (HIC)	N
Slot 2	Optional HIC	N
Slot 3	Optional SAS HIC	N
Slot 4	Required 100Gb HIC†	Y

† Two mirroring cards only, must be same type and installed in slot 4 (no server access)

Configuration notes:

- Both controllers must have the same system memory: 32 GB.
- Two host interface cards are required for selection in slot 1 (one per controller).
- No mixing of host protocols
- Both controllers must have the same type of the host interface card installed (64/32Gb FC SFP+, 10/25 Gb SFP28, or 100 GbE NVMe/RoCE QSFP28), and both cards must have SFP+/SFP28/QSFP28 media of the same type (either optical transceivers or DAC cables, but not both types).

The following table lists the DE6500 controllers and supported connectivity options.

Table 4. DE6500 controllers and connectivity options

Part number	Feature code	Description	Top Choice Express	Maximum quantity per enclosure
Controllers				

Part number	Feature code	Description	Top Choice Express	Maximum quantity per enclosure
None*	CH0L	Lenovo ThinkSystem DE6500 Controller 32G	-	2
SAS expansion card				
4Y37A97037	C4AE	Lenovo ThinkSystem Storage 12Gb 4 Port SAS Adapter (SAS Shelf)	-	2
Host interface cards**				
4XC7A97035	C4AC	Lenovo ThinkSystem Storage 10/25Gb 4 port Ethernet	-	4
4XC7A97031	C4A8	Lenovo ThinkSystem Storage 64/32Gb 4 Port Fiber Channel Adapter	-	4
4XC7B12411	CEMG	Lenovo ThinkSystem Storage 100Gb 2 Port Ethernet Crypto	-	4
Host interface cards for mirroring only†				
4XC7A97033	C4AA	Lenovo ThinkSystem Storage 100Gb 2 port Ethernet	-	2
Transceiver options				
4TC7A94751	C4K4	Lenovo 25G SR SFP28 Amphenol Ethernet Transceiver	-	16
4TC7A97241	C4AF	Lenovo 64/32G Fiber Channel SFP+ SW Transceiver	-	16
4XF7A14919	B4K9	10G SW Optical iSCSI SFP+ Module 1 pack	-	16
OM4 cables for 16/32 Gb FC and 10/25 Gb iSCSI SW SFP+/SFP28 optical transceivers				
4Z57A10845	B2P9	Lenovo 0.5m LC-LC OM4 MMF Cable	-	16
4Z57A10846	B2PA	Lenovo 1m LC-LC OM4 MMF Cable	-	16
4Z57A10847	B2PB	Lenovo 3m LC-LC OM4 MMF Cable	-	16
4Z57A10848	B2PC	Lenovo 5m LC-LC OM4 MMF Cable	-	16
4Z57A10849	B2PD	Lenovo 10m LC-LC OM4 MMF Cable	-	16
4Z57A10850	B2PE	Lenovo 15m LC-LC OM4 MMF Cable	-	16
4Z57A10851	B2PF	Lenovo 25m LC-LC OM4 MMF Cable	-	16
4Z57A10852	B2PG	Lenovo 30m LC-LC OM4 MMF Cable	-	16
OM3 cables for 16/32 Gb FC and 10/25 Gb iSCSI SW SFP+/SFP28 optical transceivers				
00MN499	ASR5	Lenovo 0.5m LC-LC OM3 MMF Cable	-	16
00MN502	ASR6	Lenovo 1m LC-LC OM3 MMF Cable	-	16
00MN505	ASR7	Lenovo 3m LC-LC OM3 MMF Cable	-	16
00MN508	ASR8	Lenovo 5m LC-LC OM3 MMF Cable	-	16
00MN511	ASR9	Lenovo 10m LC-LC OM3 MMF Cable	-	16
00MN514	ASRA	Lenovo 15m LC-LC OM3 MMF Cable	-	16
00MN517	ASRB	Lenovo 25m LC-LC OM3 MMF Cable	-	16
00MN520	ASRC	Lenovo 30m LC-LC OM3 MMF Cable	-	16
DAC cables for iSCSI HIC ports				
00D6288	A3RG	0.5m Passive DAC SFP+ Cable	-	16
90Y9427	A1PH	1m Passive DAC SFP+ Cable	-	16
00AY764	A51N	1.5m Passive DAC SFP+ Cable	-	16
00AY765	A51P	2m Passive DAC SFP+ Cable	-	16
90Y9430	A1PJ	3m Passive DAC SFP+ Cable	-	16
90Y9433	A1PK	5m Passive DAC SFP+ Cable	-	16
00D6151	A3RH	7m Passive DAC SFP+ Cable	-	16
DAC cables for 25 Gb iSCSI SFP28 HIC ports				
7Z57A03557	AV1W	Lenovo 1m Passive 25G SFP28 DAC Cable	-	16

Part number	Feature code	Description	Top Choice Express	Maximum quantity per enclosure
7Z57A03558	AV1X	Lenovo 3m Passive 25G SFP28 DAC Cable	-	16
7Z57A03559	AV1Y	Lenovo 5m Passive 25G SFP28 DAC Cable	-	16
DAC cables for 100 Gb NVMe/RoCE QSFP28 HIC ports				
7Z57A03561	AV1Z	Lenovo 1m Passive 100G QSFP28 DAC Cable	-	10
7Z57A03562	AV20	Lenovo 3m Passive 100G QSFP28 DAC Cable	-	8
7Z57A03563	AV21	Lenovo 5m Passive 100G QSFP28 DAC Cable	-	8
SAS host connectivity cables: Mini-SAS HD (controller) to Mini-SAS HD (host)				
00YL847	AU16	External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable	-	8
00YL848	AU17	External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable	-	8
00YL849	AU18	External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable	-	8
00YL850	AU19	External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	-	8
1 GbE management ports				
00WE123	AVFW	0.75m Green Cat6 Cable	-	2
00WE127	AVFX	1.0m Green Cat6 Cable	-	2
00WE131	AVFY	1.25m Green Cat6 Cable	-	2
00WE135	AVFZ	1.5m Green Cat6 Cable	-	2
00WE139	AVG0	3m Green Cat6 Cable	-	2
90Y3718	A1MT	10m Green Cat6 Cable	-	2
90Y3727	A1MW	25m Green Cat6 Cable	-	2

* Factory-installed only.
** Require optical transceivers or DAC cables that should be purchased for the HICs.
† Two mirroring cards only, must be same type and installed in slot 4 (no server access)

Expansion enclosures

In the base configuration, the ThinkSystem DE6500 supports attachment of expansions:

- 4x DE600S 4U60 LFF, or 4x DE240S 2U24 SFF, or 8x DE120S 2U12 LFF.
- These expansions can be mixed up to the aforementioned maximums.
    - See Drives for details.

The following table lists the CTO base models for the ThinkSystem DE Series expansion enclosures.

Table 5. ThinkSystem DE120S, DE240S and DE600S CTO base models

Machine Type/Model	Description	Feature code			
		Top Choice Express	European Union	Other markets	Top Choice Express
7Y63CTO1WW	Lenovo ThinkSystem DE 120S 2U12 LFF Expansion Enclosure	BEY6	TCE	B38M	TCE
7Y68CTO1WW	Lenovo ThinkSystem DE 240S 2U24 SFF Expansion Enclosure	BEY7	TCE	B38L	TCE
7Y69CTO2WW	Lenovo ThinkSystem DE600S 4U60 LFF Expansion Enclosure Gen 2	BQ9W	-	BQ9W	-

Configuration notes:

- For CTO models, two I/O expansion modules are selected by default in the configurator, and the selection cannot be changed
  - DE 120S / DE 240S - feature code B4BS
  - DE600S - feature code BQ9X

The models of the ThinkSystem DE240S, DE120S, and DE600S ship with the following items:

- One chassis with the following components:
  - Two I/O Modules
  - Two power supplies
  - Two cooling modules (4U60 LFF only)
- Four 1 m MiniSAS HD 8644/MiniSAS HD 8644 cables (Models listed in Tables 6 and 7)
- Rack Mount Kit
- *Quick Installation Guide*
- *Electronic Publications Flyer*
- Two power cables:
  - CTO models: Customer-configured power cables

Each ThinkSystem DE Series expansion enclosure ships with two SAS I/O expansion modules. Each *I/O expansion module* provides four external 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644 connectors labelled Port 1-4) that are used for connections to the ThinkSystem DE6500 and for daisy chaining the expansion enclosures between each other.

Two expansion ports on the Controller A are connected to the Ports 1 and 2 on the I/O Module A in the first expansion enclosure in the chain, and the Ports 3 and 4 on the I/O Module A in the first expansion enclosure are connected to the Ports 1 and 2 on the I/O Module A in the adjacent expansion enclosure, and so on.

Two expansion ports on the Controller B are connected to the Ports 1 and 2 on the I/O Module B in the last expansion enclosure in the chain, and the Ports 3 and 4 on the I/O Module B in the expansion enclosure are connected to the Ports 1 and 2 on the I/O Module B in the adjacent expansion enclosure, and so on.

The connectivity topology for the DE Series expansion enclosures is shown in the following figure.

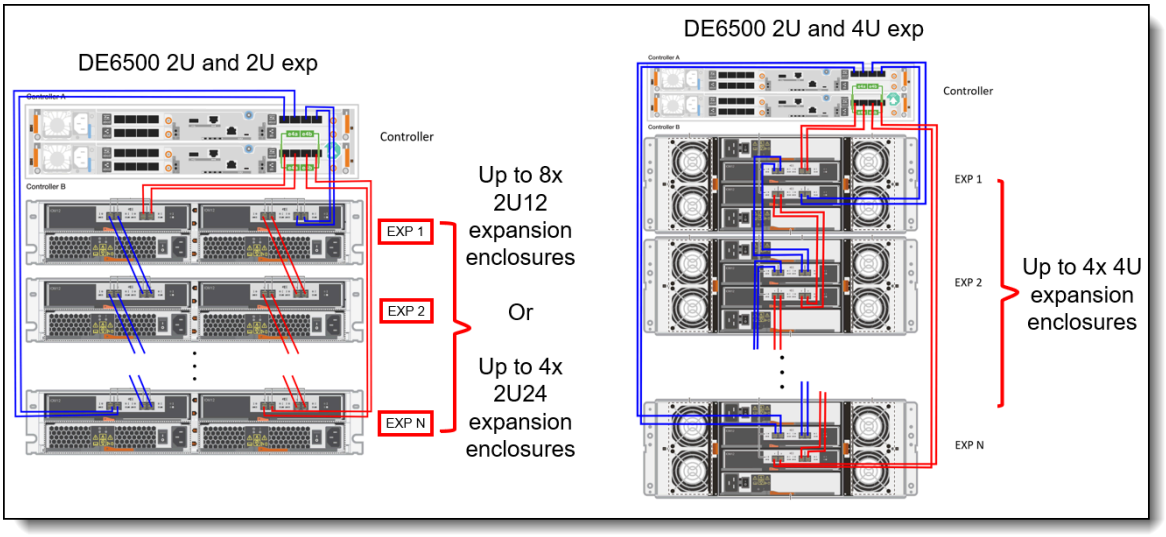


Figure 8. ThinkSystem DE6500 expansion enclosure connectivity topology

The following table lists ordering information for the supported expansion enclosure connectivity options.

Table 6. Expansion unit connectivity options

Part number	Feature code	Description	Top Choice Express	Quantity per one expansion enclosure
SAS connectivity cables				
00YL847	AU16	External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable	-	8
00YL848	AU17	External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable	-	8
00YL849	AU18	External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable	-	8
00YL850	AU19	External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	-	8

Configuration notes:

- Eight SAS cables are needed per each expansion enclosure (two SAS cables per I/O Module) for connections to the controller enclosure and for daisy chaining of the expansion enclosures.
- The length of the SAS cables that connect a 2U24 or 2U12 enclosure to an adjacent 4U60 enclosure should be at least 1 meter.

Drives

All drives are dual-port and hot-swappable. Drives of the same form factor can be intermixed within the appropriate enclosure, which provides the flexibility to address performance and capacity needs within a single enclosure.

More drives and expansion enclosures are designed to be dynamically added with virtually no downtime, which helps to quickly and seamlessly respond to ever-growing capacity demands.

The following lists the specifications for drives in the DE6500 storage system.

Maximum drives:

- SSDs: 120 (1x DE6500 enclosure NVMe + 4x DE240S SAS SSD)

- SSDs and HDDs: 264 (1x DE6500 enclosure NVMe + 4x DE600S SAS SSD or HDD)

The following tables list the drive options for internal storage for each base enclosure and expansions. The Lenovo ThinkSystem DE6500 enclosure:

- ThinkSystem DE6500 NVMe 2U24

ThinkSystem Expansion enclosures:

- ThinkSystem DE120S 2U12 Exp
- ThinkSystem DE240S 2U24 Exp
- Thinksystem DE600S 4U60 Exp v2

Table 7. 7DQECTO1WW - Lenovo ThinkSystem DE6500 NVMe 2U24

Part number	Feature code	Description	Top Choice Express	Max Qty
SFF drive options				
4XB7B15453	CH0K	Lenovo ThinkSystem DE 3.84TB TLC 2.5" NVMe SED	-	24
4XB7B15457	CH0F	Lenovo ThinkSystem DE 7.68TB TLC 2.5" NVMe SED	-	24
4XB7B15459	CH0D	Lenovo ThinkSystem DE 15.36TB TLC 2.5" NVMe SED	-	24
4XB7B15461	CH09	Lenovo ThinkSystem DE 30.72TB QLC 2.5" NVMe SED	-	24
4XB7B15463	CH07	Lenovo ThinkSystem DE 61.44TB QLC 2.5" NVMe SED	-	24

Table 8. 7Y63CTO1WW - ThinkSystem DE120S 2U12 Expansion

Part number	Feature code	Description	Top Choice Express	Max Qty
LFF drive options				
4XB7A88501	BWCI	Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD FIPS 2U12 (2.5" drive in a 3.5" tray)	Not TCE	12
4XB7B15111	CGH2	Lenovo ThinkSystem DE Series 18TB 7.2K 3.5" HDD 2U12	Not TCE	12
4XB7B03838	C7XS	Lenovo ThinkSystem DE Series 24TB 7.2K 3.5" HDD 2U12	TCE	12

Table 9. 7Y68CTO1WW - ThinkSystem DE240S 2U24 Expansion

Part number	Feature code	Description	Top Choice Express	Max Qty
SFF drive options				
4XB7A88469	BWCJ	Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD FIPS 2U24	Not TCE	24
4XB7A88466	BW2B	Lenovo ThinkSystem DE Series 15.36TB 1DWD 2.5" SSD SED 2U24	Not TCE	24

Table 10. 7Y69CTO2WW - Thinksystem DE600S 4U60 Expansion v2

Part number	Feature code	Description	Top Choice Express	Max Qty
LFF drive HDD options				
4XB7B15112	CGH3	Lenovo ThinkSystem DE Series 18TB 7.2K 3.5" HDD 4U60	-	60
4XB7B03894	C7XT	Lenovo ThinkSystem DE Series 24TB 7.2K 3.5" HDD 4U60	-	60
LFF drive Additional options				

Part number	Feature code	Description	Top Choice Express	Max Qty
4XB7A88506	BWCM	Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD FIPS 4U60 (2.5" drive in a 3.5" tray)	-	60

Shipping requirement: 2U12 and 2U24 enclosures can be shipped with all drive bays populated, however the 4U60 enclosures must be shipped with drives removed.

Configuration notes:

- For hybrid (HDDs and SSDs) and all flash (SSDs only) storage configurations, a single ThinkSystem DE6500 storage system can support a maximum of 120 SSDs.
- A minimum of 20 drives is required for each 4U60 LFF enclosure (the front row of each drawer must be populated with four drives).
- Intermix of FIPS drives and non-FIPS drives is supported within the system.

Software

The following functions are included with every ThinkSystem DE6500:

- **RAID levels 0, 1, 5, 6, and 10**: Provide the flexibility to choose the level of performance and data protection required.
- **Dynamic Disk Pools (DDP) technology**: Helps improve performance and availability with significantly faster rebuild time and reduced exposure to multiple drive failures by allowing data and built-in spare capacity to be distributed across all physical drives in the storage pool.
    - Staring from SAN OS 12.10, high-density 30TB/60TB NVMe SSDs can coexist with lower-capacity NVMe SSDs in the base shelf; configurations using 30TB/60TB drives automatically create a DDP pool, and pools with 20 or more drives use 16+2 stripes to reduce RAID 6 parity overhead from 20% to 11.1%.
    - Two smaller pools of at least 12 drives each can also be configured through SMcli or REST API; high-density SSDs have lower write bandwidth than lower-capacity NVMe SSDs, and all NVMe drives use a 32K block size versus 128K for SAS.
    - For standard DDP configuration, eleven drives minimum, no dedicated hot spare needed.
- **All Flash Array (AFA) capability**: Meets the demand for higher speed storage and provide higher IOPS and bandwidth with lower power usage and total cost of ownership than hybrid or HDD-based solutions.
- **Snapshots**: Enables creation of copies of data for backup, parallel processing, testing, and development, and have the copies available almost immediately (up to 1024 snapshot targets per DE6500 system).
- **Encryption:** Provides encryption for data at rest for enhanced data security with the optional FIPS 140-2 Level 2 drives and embedded key management (AES-256) or an external key management server.
- **Automatic load balancing:** Provides automated I/O workload balancing of I/O traffic from the hosts across both controllers.
- **Data assurance:** Ensures industry-standard T10-PI end-to-end data integrity in the storage system (from the host ports to the drives).
- **Dynamic volume and capacity expansion:** Allows the capacity of a volume to be expanded by adding new physical drives or making use of unused space on existing drives.

Software maintenance is included in the ThinkSystem DE6500 base warranty and optional warranty extensions, which provides 3-year software support with the option to extend it up to 5 years in 1-year or 2-year increments (see Warranty and support for details).

For more information about software features, see the Data Storage Documentation web site: https://datacentersupport.lenovo.com/us/en/storagepubs/

Management

The DE6500 supports the following management interfaces:

- ThinkSystem System Manager, a web-based interface via HTTPS for single-system management, that runs on the storage system itself and requires only a supported browser, so there is no need for a separate console or plug-in. For more information, see the System Manager Online Help.
- ThinkSystem SAN Manager, a host-installed GUI-based application, for centralized management of multiple storage systems. For more information, see the SAN Manager Online Help.
- ThinkSystem DE Series Storage Plugin for vCenter. For more information, see the DE Series vCenter Plugin Online Help.
- Command line interface (CLI) via SSH or through serial console. For more information, see the CLI Online Help.
- Syslog, SNMP, and e-mail notifications.

The following table lists the SAN Manager asynchronous and synchronous supported features

Table 11. Asynchronous and Synchronous features

DE Series	Async (iSCSI)	Async (FC)	Sync (FC)
ThinkSystem DE6500	No	No	No

Power supplies and cables

The ThinkSystem DE Series 2U24 SFF and 2U12 LFF enclosures ship with two redundant hot-swap 913W (200 - 240V) Platinum AC power supplies, each with an IEC 320-C14 connector:

The ThinkSystem DE Series 4U60 LFF enclosures ship with two redundant hot-swap 2325 W (200 - 240 V) Platinum AC power supplies, each with an IEC 320-C20 connector.

The CTO models require the selection of two power cables.

The following table lists the rack power cable and line cord options that can be ordered for the DE Series 2U12 LFF and the DE Series 2U24 SFF enclosures (two power cords per enclosure).

Table 12. 7Y63CTO1WW & 7Y68CTO1WW - Power cables for DE Series 2U12 LFF and 2U24 SFF aenclosures

Part number	Feature code	Description	Top Choice Express
Rack power cables			
00Y3043	A4VP	1.0m, 10A/100-250V, C13 to C14 Jumper Cord	TCE
4L67A08367	B0N5	1.0m, 10A/13A, 100-250V, C13 to C14 Jumper Cord	TCE
39Y7937	6201	1.5m, 10A/100-250V, C13 to C14 Jumper Cord	TCE
4L67A08368	B0N6	1.5m, 10A/13A, 100-250V, C13 to C14 Jumper Cord	TCE
4L67A08365	B0N4	2.0m, 10A/100-250V, C13 to C14 Jumper Cord	TCE
4L67A08369	6570	2.0m, 10A/13A, 100-250V, C13 to C14 Jumper Cord	TCE
4L67A08366	6311	2.8m, 10A/100-250V, C13 to C14 Jumper Cord	TCE
4L67A08370	6400	2.8m, 10A/13A, 100-250V, C13 to C14 Jumper Cord	TCE
39Y7938	6204	2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	TCE
39Y7932	6263	4.3m, 10A/100-250V, C13 to C14 Jumper Cord	TCE

Part number	Feature code	Description	Top Choice Express
4L67A08371	6583	4.3m, 10A/13A, 100-250V, C13 to C14 Jumper Cord	TCE
Line cords			
39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord	TCE
81Y2384	6492	4.3m,10A/250V, C13/IRAM 2073 (Argentina) Line Cord	Not TCE
39Y7924	6211	Australia/NZ 10A line C13 to SAA-AS C112 (2.8M)	TCE
81Y2383	6574	4.3m,10A/250V, C13/AS/NZS 3112/2000 (Australia) Line Cord	TCE
69Y1988	6532	2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord	TCE
81Y2387	6404	4.3m,10A/250V, C13/NBR 14136 (Brazil) Line Cord	TCE
39Y7928	6210	2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord	Not TCE
81Y2378	6580	4.3m,10A/250V, C13/GB2099.1 (China) Line Cord	Not TCE
39Y7918	6213	Line cord - 2.8m, 10A/250V, C13 to DK2-5a (Denmark)	Not TCE
81Y2382	6575	4.3m,10A/250V, C13/SB107-2-DI (Denmark) Line Cord	Not TCE
39Y7917	6212	European 10A line C13 to CEE 7/7 (2.8M)	TCE
81Y2376	6572	4.3m,10A/230V, C13 to CEE7-VII (Europe) Line Cord	Not TCE
39Y7927	6269	2.8m, 6A Line C13 to Fig 68 (India) Line Cord	TCE
81Y2386	6567	4.3m, 10A/250V, C13 to IS 6538 (India) Line Cord	TCE
39Y7920	6218	Israel 10A line C13 to SI 32 (2.8M)	TCE
81Y2381	6579	4.3m,10A/250V, C13/SI 32 (Israel) Line Cord	Not TCE
39Y7921	6217	Italy 10A line C13 to CEE 7/7 (2.8M)	TCE
81Y2380	6493	4.3m,10A/250V, C13/CEI 23-16 (IT) Line cord	TCE
46M2593	A1RE	Japan 12A/125V C13 to JIS C-8303 2.8m line cord	TCE
39Y7926	6335	4.3m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord	TCE
4L67A08362	6495	4.3m, 12A/200V, C13 to JIS C-8303 (Japan) Line Cord	Not TCE
39Y7925	6219	Korea 7A line C13 to KETI 15A/250V (2.8M)	TCE
81Y2385	6494	4.3m, 12A/250V C13/KSC 8305 (Korea) Line Cord	Not TCE
39Y7922	6214	South Africa 10A line C13 to SABS 164/1 (2.8M)	TCE
81Y2379	6576	4.3m,10A/250V, C13/SANS 164-1 (South Africa) Line Cord	Not TCE
39Y7919	6216	Switzerland 10A line C13 to SEV 1011 (2.8M)	TCE
81Y2390	6578	4.3m,10A/250V, C13/SEV 1011 (Switzerland)Line Cord	Not TCE
23R7158	6386	Line cord - 2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan)	TCE
81Y2375	6317	Taiwan 10A/250V C13/CNS 10917 2.8m line cord	TCE
81Y2374	6402	2.8m, 13A/125V, C13 to CNS 60799 (Taiwan) Line Cord	TCE
4L67A08363	AX8B	4.3m, 10A/125V, C13 to CNS 10917 (Taiwan) Line Cord	TCE
81Y2389	6531	4.3m, 10A/250V, C13/CNS 10917 (Taiwan) Line Cord	TCE
81Y2388	6530	Taiwan 13A/125V C13/CNS 10917 4.3m line cord	TCE
39Y7923	6215	United Kingdom 10A line C13 to BS 1363 (2.8M)	TCE
81Y2377	6577	4.3m,10A/230V, C13 to BS 1363/A (UK) Line Cord	TCE
90Y3016	6313	2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord	TCE
46M2592	A1RF	10A/250V C13 to NEMA 6-15P 2.8m line cord	TCE
00WH545	6401	2.8m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord	TCE
4L67A08359	6370	4.3M, 10A/125V, C13 to NEMA 5-15P (US) Line Cord	TCE

Part number	Feature code	Description	Top Choice Express
4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord	TCE
4L67A08360	AX8A	4.3m, 13A/125V, C13 to NEMA 5-15P (US) Line Cord	TCE

The following table lists the rack power cable and line cord options that can be ordered for the DE Series 4U60 LFF enclosures (two power cords per enclosure).

Table 13. 7Y69CTO2WW - Power cables for DE Series 4U60 enclosures

Part number	Feature code	Description	Top Choice Express
Rack power cables			
4L67A86680	B4L2	2.0m, 16A/100-250V, C19 to C20 Jumper Cord	-
39Y7916	6252	2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable	-
Line cords			
40K9777	6276	4.3m, 16A/250V, C19 to IRAM 2073 (Argentina) Line Cord	-
40K9773	6284	4.3m, 15A/250V, C19 to AS/NZS 3112 (Aus/NZ) Line Cord	-
40K9775	6277	4.3m, 16A/250V, C19 to NBR 14136 (Brazil) Line Cord	-
40K9774	6288	4.3m, 15A/220V, C19 to GB 2099.1 (China) Line Cord	-
40K9769	6283	C19 4.3 meter Line Cord - Dmk/Swiss	-
40K9766	6279	4.3m, 16A/250V, C19 to CEE 7/7 (Europe) Line Cord	-
40K9776	6285	4.3m, 16A/250V, C19 to IS 6538 (India) Line Cord	-
40K9771	6282	C19 4.3 meter Line Cord - Israel	-
40K9768	6281	4.3m, 16A/250V, C19 to CEI 23-16 (Italy) Line Cord	-
41Y9233	6291	Japan 15A/200V C19/JIS C-8303 4.3m line cord	-
41Y9231	6289	4.3m, 16A/220V, C19 to KSC 8305 (S. Korea) Line Cord	-
40K9770	6280	C19 4.3 meter Line Cord - S Africa	-
40K9767	6278	4.3m, 13A/250V, C19 to BS 1363/A (UK) Line Cord	-
00D7197	A1NV	4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord	-
40K9772	6275	4.3m, 18A/250V, C19 to NEMA L6-20P (US) Line Cord	-

Rack installation

The individually shipped ThinkSystem DE Series 2U12 enclosures come with the ThinkSystem Storage Rack Mount Kit 2U12, and the individually shipped ThinkSystem DE Series 2U24 and 4U60 enclosures come with the ThinkSystem Storage Rack Mount Kit 2U24/4U60. These rack mount kits are listed in the following table.

Table 14. 4-post rack mount kits

Description	Feature code	Quantity
Lenovo ThinkSystem Storage Rack Mount Kit 2U12	B38X	1

When the ThinkSystem DE Series enclosures are factory-integrated and shipped installed in a rack cabinet, the rack mount kits that support Ship-in-Rack (SIR) capabilities are derived by the configurator. The SIR-capable rack mount kits are listed in the following table.

Table 15. 4-post SIR rack mount kits

Description	Feature code	Quantity
Lenovo ThinkSystem Storage Rack Mount Kit 2U12	B38X	1
Lenovo ThinkSystem Storage SIR Rack Mount Kit (for 2U24 enclosures)	B6TH	1
DE 4U Adjustable Rail Kit (SIR)	B742	1

The following table summarizes the rack mount kit features and specifications.

Table 16. Rack mount kit features and specifications summary

	Screw-in fixed rail with adjustable depth			
Attribute	**2U12**	**2U24/4U60**	**2U24 SIR**	**4U SIR**
Feature code	B38X	B38Y	B6TH	B742
Enclosure support	DE120S	DE6500 2U DE240S DE600S‡	DE6500 2U DE240S	DE600S‡
Rail type	Fixed (static) with adjustable depth	Fixed (static) with adjustable depth	Fixed (static) with adjustable depth	Fixed (static) with adjustable depth
Tool-less installation	No	No	No	No
In-rack maintenance	Yes*	Yes*	Yes*	Yes*
Ship-in-rack (SIR) support	Yes	No	Yes	Yes
1U PDU support	Yes	Yes	Yes	Yes
0U PDU support	Limited**	Limited**	Limited**	Limited**
Rack type	IBM or Lenovo 4-post, IEC standard-compliant	IBM or Lenovo 4-post, IEC standard-compliant	IBM or Lenovo 4-post, IEC standard-compliant	IBM or Lenovo 4-post, IEC standard-compliant
Mounting holes	Square or round	Square or round	Square or round	Square or round
Mounting flange thickness	2 mm (0.08 in.) – 3.3 mm (0.13 in.)	2 mm (0.08 in.) – 3.3 mm (0.13 in.)	2 mm (0.08 in.) – 3.3 mm (0.13 in.)	2 mm (0.08 in.) – 3.3 mm (0.13 in.)
Distance between front and rear mounting flanges^	605 mm (23.8 in.) – 812.8 mm (32 in.)	605 mm (23.8 in.) – 812.8 mm (32 in.)	605 mm (23.8 in.) – 812.8 mm (32 in.)	605 mm (23.8 in.) – 812.8 mm (32 in.)

‡ The rack cabinet must be at least 1100 mm (43.31 in.) deep for 4U60 enclosures.
* The majority of the enclosure components can be serviced from the front or rear of the enclosure, which does not require the removal of the enclosure from the rack cabinet.
** If a 0U PDU is used, the rack cabinet must be at least 1000 mm (39.37 in.) deep for 2U12 and 2U24 enclosures, or at least 1200 mm (47.24 in.) deep for 4U60 enclosures.
^ Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Physical specifications

The DE6500 2U24 SFF enclosure:

- Height: 87 mm (3.4 in.)
- Width: 447 mm (17.6 in.)
- Depth: 543 mm (21.4 in.)

The ThinkSystem DE Series 2U12 LFF enclosures have the following dimensions:

- Height: 87 mm (3.4 in.)
- Width: 447 mm (17.6 in.)
- Depth: 536 mm (21.1 in.)

The ThinkSystem DE Series 2U24 SFF enclosures have the following dimensions:

- Height: 85 mm (3.3 in.)
- Width: 447 mm (17.6 in.)
- Depth: 511 mm (20.1 in.)

The ThinkSystem DE Series 4U60 LFF enclosures have the following dimensions:

- Height: 175 mm (6.9 in.)
- Width: 449 mm (17.7 in.)
- Depth: 922 mm (36.3 in.)

Weights of enclosures (fully configured):

- DE6500 2U24 SFF controller enclosure (7DQE): 27.25 kg (60.08 lb)
- DE120S 2U12 LFF expansion enclosure (7Y63): 27.12 kg (59.8 lb)
- DE240S 2U24 SFF expansion enclosure (7Y68): 24.59 kg (54.2 lb)
- DE600S 4U60 LFF expansion enclosure (7Y69): 112.2 kg (247.4 lb)

Operating environment

The ThinkSystem DE Series 2U24 SFF and 4U60 LFF enclosures are supported in the following environment:

- Air temperature:
  - DE6500:
    - Operating: 10 to 35 °C (50 to 95 °F)
    - Non-operating (storage/transit): -40 to 70 °C (-40 to 158 °F)
    - Maximum altitude: 3048 m (10,000 ft)
  - DE120S/ DE240S:
    - Operating: 10 to 40 °C (50 to 104 °F)
    - Non-operating: -40 to 70 °C (-40 to 158 °F)
    - Maximum altitude: 3048 m (10,000 ft)
  - DE600S:
    - Operating: 5 to 40 °C (41 to 104 °F)
    - Non-operating: -40 to 70 °C (-40 to 158 °F)
    - Maximum altitude: 3048 m (10,000 ft)
- Relative humidity:
  - Operating: 20 to 85% (non-condensing)
  - Non-operating (storage): 5 to 95% (non-condensing)
  - Non-operating (transit): 10 to 90% (non-condensing)
- Electrical power:
  - 200 to 240 V AC (nominal); 50 Hz / 60 Hz
- Acoustical noise emission:

- DE6500: 8.1 Bels (Sound Power), 68.1 dBA (Sound Pressure)
- DE120S: 6.4 Bels (Sound Power)
- DE240S: 6.7 Bels (Sound Power), 51 dBA (Sound Pressure)
- DE600S: 7.2 Bels (Sound Power), 72 dBA (Sound Pressure)

The following table lists the maximum enclosure power load, inlet current, and heat output based on the source voltage.

Table 17. Enclosure power load, inlet current, and heat output

Enclosure	Source voltage (nominal)	Maximum power load	Current per inlet	Heat output
DE6500 2U24 SFF	200 - 220 V AC	2000 W	9.61 A	4952.87 BTU/hour
DE240S 2U24 SFF	200 - 240 V AC	382 W	2.02 A	1304 BTU/hour
DE120S 2U12 LFF	200 - 240 V AC	300 W	1.58 A	1024 BTU/hour
DE600S 4U60 LFF	200 - 240 V AC	1446 W	7.62 A	4934 BTU/hour

Warranty and support

The ThinkSystem DE Series enclosures have a three-year customer-replaceable unit (CRU) and onsite limited (for field-replaceable units [FRUs] only) warranty with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Lenovo’s additional support services provide a sophisticated, unified support structure for a customers' data center, with an experience consistently ranked number one in customer satisfaction worldwide.

The following Lenovo support services are available:

- **Premier Support** provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following capabilities:
  - Direct technician-to-technician access through a dedicated phone line.
  - 24x7x365 remote support.
  - Single point of contact service.
  - End-to-end case management.
  - 3rd Party collaborative software support.
  - Online case tools and live chat support.
  - On-demand remote system analysis.
- **Warranty Upgrades (Preconfigured Support)** are available to meet the on-site response time targets that match the criticality of customers' systems:
  - 3, 4, or 5 years of service coverage.
  - 1-year or 2-year post-warranty extensions.
  - **Foundation Service:** 9x5 service coverage with next business day onsite response, with optional YourDrive YourData.
  - **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select regions), with optional YourDrive YourData.
  - **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select regions), with optional YourDrive YourData.

- **Managed Services**
  Lenovo Managed Services provide continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of a customers' data center using state of the art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

  Quarterly reviews check error logs, verify firmware and operating system device driver levels, and software as needed. Lenovo will also maintain records of latest patches, critical updates, and firmware levels, to ensure customers' systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**
  A Lenovo Technical Account Manager helps customers optimize operations of their data centers based on a deep understanding of customers' business. Customers gain direct access to a Lenovo TAM, who serves as their single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. Also, a TAM helps proactively make service recommendations and manage service relationship with Lenovo to make certain that customer's needs are met.

- **YourDrive YourData**
  Lenovo's YourDrive YourData service is a multi-drive retention offering that ensures that customers' data is always under their control, regardless of the number of drives that are installed in their Lenovo system. In the unlikely event of a drive failure, customers retain possession of their drive while Lenovo replaces the failed drive part. Customer's data stays safely on customer premises, in their hands. The YourDrive YourData service can be purchased in convenient bundles with Foundation, Essential, or Advanced Service upgrades and extensions.

- **Health Check**
  Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that customers' systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Some regions might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific region. Local service teams can assist in explaining region-specific terms when needed. Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spare parts.

Lenovo support services are region-specific. Not all support services are available in every region. For information about Lenovo support services that are available in a specific region, refer to the following resources:

- Service part numbers in Data Center Solution Configurator (DCSC):
  http://dcsc.lenovo.com/#/services
- Lenovo Services Availability Locator
  https://lenovolocator.com/

For service definitions, region-specific details, and service limitations, refer to the following documents:

- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) Servers and System Storage
  http://pcsupport.lenovo.com/us/en/solutions/ht503310
- Lenovo Data Center Services Agreement
  http://support.lenovo.com/us/en/solutions/ht116628

Services

Lenovo Infrastructure Services empower you at every stage of your IT lifecycle. From expert advisory and strategic planning to seamless deployment and ongoing support, we ensure your infrastructure is built for success. Our comprehensive services accelerate time to value, minimize downtime, and free your IT staff to focus on driving innovation and business growth.

Note: Some service options may not be available in all markets or regions. For more information, go to https://lenovolocator.com/. For information about Lenovo service upgrade offerings that are available in your region, contact your local Lenovo sales representative or business partner.

In this section:

- Lenovo Advisory Services
- Lenovo Implementation Services
- Infrastructure Deployment Services
- Lenovo Support Services
- Lenovo Managed Services
- Lenovo Sustainability Services

Lenovo Advisory Services

Lenovo Advisory Services simplify the planning process, enabling customers to build future-proofed strategies in as little as six weeks. Consultants provide guidance on projects including VM migration, storage, backup and recovery, and cost management to accelerate time to value, improve cost efficiency, and build a flexibly scalable foundation.

- **Assessment Services**

  An Assessment helps solve your IT challenges through an onsite, multi-day session with a Lenovo technology expert. We perform a tools-based assessment which provides a comprehensive and thorough review of a company's environment and technology systems. In addition to the technology-based functional requirements, the consultant also discusses and records the non-functional business requirements, challenges, and constraints. Assessments help organizations like yours, no matter how large or small, get a better return on your IT investment and overcome challenges in the ever-changing technology landscape.

Lenovo Implementation Services

Optimize your IT operations by shifting labor-intensive functions to Lenovo's skilled technicians for seamless on-site or remote deployment, configuration, and migration. Enjoy peace of mind, faster time to value, and comprehensive knowledge sharing with your IT staff, backed by our best-practice methodology.

Infrastructure Configuration Services

- **Factory Integrated Services**

  A suite of value-added offerings provided during the manufacturing phase of a server or storage system that reduces time to value. These services aim at improving your hardware deployment experience and enhance the quality of a standard configuration before it arrives at your facility.

Infrastructure Deployment Services

Lenovo Infrastructure Deployment Services help you move from hardware delivery toward production with the planning, installation, configuration, integration, validation, documentation, and operational handoff support your project requires. Choose from clearly defined Premier Deploy for Infrastructure options, Specialized Deployment Services, or Hardware Installation Services based on your platform, project complexity, internal IT capabilities, and desired level of assurance.

For more information, consult our Lenovo Infrastructure Deployment Services Catalog.

- **Premier Deploy for Infrastructure**

  Clearly defined deployment options for eligible ThinkSystem servers, ThinkSystem storage arrays, and ThinkAgile solutions.

  Table 18. Premier Deploy for Infrastructure

	Standard Deploy	Premier Deploy	Premier Deploy Plus
Choose when:	You need straightforward physical hardware installation and customer acceptance.	You need operating system installation and/or system configuration, integration and validation.	You need extended post-deployment assurance and visibility after implementation.
You gain:	An installed, accepted, and documented hardware foundation.	A validated, integrated environment ready to move into production.	Added assurance as your team transitions into ongoing operations.

  For more information, see the Premier Deploy for Infrastructure 1-pager.

- **Specialized Deployment Services**

  Focused deployment expertise for specific technologies or project requirements when Premier Deploy for Infrastructure is not supported or is not the right fit for your project. Services can support ThinkSystem storage arrays, ThinkAgile solutions, HPC, liquid cooling, and private cloud environments through activities such as readiness planning, configuration, integration, validation, documentation, knowledge transfer, and operational handoff, as applicable. Availability and scope vary by platform, project requirements, geography, and service scope.

- **Hardware Installation Services**

  Expert physical installation for eligible hardware outside the Premier Deploy for Infrastructure scope, or for projects that require installation only.

- **Hardware Installation Plus**

  Extends Hardware Installation Services with:

  - RAID configuration
  - Supported operating system installation
  - Driver-level verification

Lenovo Support Services

In addition to response time options for hardware parts, repairs, and labor, Lenovo offers a wide array of additional support services to ensure your business is positioned for success and longevity. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

- **Premier Support for Infrastructure**

  Helps you build business resilience with expert-led support, responsive issue resolution, and coordinated troubleshooting across supported Lenovo server and storage environments. Direct access to Lenovo expertise and accountable end-to-end case ownership help reduce disruption and simplify ongoing infrastructure operations.

- **Premier Support Plus for Infrastructure**

  Gain all the benefits of Premier Support for Infrastructure, with proactive and predictive support capabilities, designated account oversight, preventative maintenance guidance, and Keep Your Drive to help identify potential issues earlier, plan service more effectively, and maintain control of sensitive data.

- **Committed Service Repair (CSR)**

  Our commitment to ensuring the fastest, most seamless resolution times for mission-critical systems that require immediate attention to ensure minimal downtime and risk for your business. This service is only available for machines under the Premier 4-Hour Response SLA.

- **Multivendor Support Services (MVS)**

  Your single point of accountability for resolution support across a vast range of leading Server, Storage, and Networking OEMs, allowing you to manage all your supported infrastructure devices seamlessly from a single source.

- **Keep Your Drive (KYD)**

  Protect sensitive data and maintain compliance with corporate retention and disposal policies to ensure your data is always under your control, regardless of the number of drives that are installed in your Lenovo server.

- **Technical Account Manager (TAM)**

  Your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time, ensuring smooth operations and optimized performance as your business grows.

- **Enterprise Software Support (ESS)**

  Gain comprehensive, single-source, and global support for a wide range of server operating systems and Microsoft server applications.

For more information, consult our Lenovo Operational Support Services for Data Centers Services Brochure.

Lenovo Managed Services

Achieve peak efficiency, high security, and minimal disruption with Lenovo's always-on Managed Services. Our real-time monitoring, 24x7 incident response, and problem resolution ensure your infrastructure operates seamlessly. With quarterly health checks for ongoing optimization and innovation, Lenovo's remote active monitoring boosts end-user experience and productivity by keeping your data center's hardware performing at its best.

- **Managed Services**

  Lenovo Managed Services provides continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of your data center using state-of-the-art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

  Quarterly reviews check error logs, verify firmware & OS device driver levels, and software as needed. We'll also maintain records of the latest patches, critical updates, and firmware levels, to ensure your systems are providing business value through optimized performance.

Lenovo Sustainability Services

Lenovo Sustainability Services helps you address sustainability priorities across the IT lifecycle, from offsetting emissions associated with device purchases and extending equipment life to securely managing assets at end of life. Together, these services support more circular IT practices while helping you protect data, manage costs, and recover value from technology investments.

- **Asset Recovery Services**

  Lenovo Asset Recovery Services (ARS) provides a secure, seamless solution for managing end-of-life IT assets, ensuring data is safely sanitized while contributing to a more circular IT lifecycle. By maximizing the reuse or responsible recycling of devices, ARS helps businesses meet sustainability goals while recovering potential value from their retired equipment. For more information, see the Simplify IT Asset Recovery page.

- **CO2 Offset Services**

  Lenovo's CO2 Offset Services offer a simple and transparent way for businesses to take tangible action on their IT footprint. By integrating CO2 offsets directly into device purchases, customers can easily support verified climate projects and track their contributions, making meaningful progress toward their sustainability goals without added complexity.

- **Lenovo Certified Refurbished**

  Lenovo Certified Refurbished offers a cost-effective way to support IT circularity without compromising on quality and performance. Each device undergoes rigorous testing and certification, ensuring reliable performance and extending its lifecycle. With Lenovo's trusted certification, you gain peace of mind while making a more sustainable IT choice.

Regulatory compliance

The ThinkSystem DE Series enclosures conform to the following regulations:

- United States: FCC Part 15, Class A; UL 60950-1 and 62368-1
- Canada: ICES-003, Class A; CAN/CSA-C22.2 60950-1 and 62368-1
- Argentina: IEC60950-1
- Mexico NOM
- European Union: CE Mark (EN55032 Class A, EN55024, IEC/EN60950-1 and 62368-1); ROHS Directive 2011/65/EU
- Russia, Kazakhstan, Belarus: EAC
- China: CCC GB 4943.1, GB 17625.1, GB 9254 Class A; CELP; CECP
- India: BIS
- Japan: VCCI, Class A
- Taiwan: BSMI CNS 13438, Class A; CNS 14336-1
- Korea KN32/35, Class A
- Australia/New Zealand: AS/NZS CISPR 22 Class A

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The ThinkSystem DE6500 Hybrid Storage Array supports attachment to Lenovo ThinkSystem hosts by using iSCSI, Fibre Channel, NVMe over Fibre Channel (NVMe/FC) or NVMe over RoCE (RDMA over Converged Ethernet) (NVMe/RoCE) storage connectivity protocols.

For end-to-end storage configuration support, refer to the Lenovo Storage Interoperation Center (LSIC): https://datacentersupport.lenovo.com/us/en/lsic

Use the LSIC to select the known components of your configuration and then get a list all other supported combinations, with details about supported hardware, firmware, operating systems, and drivers, plus any additional configuration notes. View results on screen or export them to Excel.

Fibre Channel 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#rt=product-guide

Lenovo Financial Services

Why wait to obtain the technology you need now? No payments for 90 days and predictable, low monthly payments make it easy to budget for your Lenovo solution.

- **Flexible**

  Our in-depth knowledge of the products, services and various market segments allows us to offer greater flexibility in structures, documentation and end of lease options.

- **100% Solution Financing**

  Financing your entire solution including hardware, software, and services, ensures more predictability in your project planning with fixed, manageable payments and low monthly payments.

- **Device as a Service (DaaS)**

  Leverage latest technology to advance your business. Customized solutions aligned to your needs. Flexibility to add equipment to support growth. Protect your technology with Lenovo's Premier Support service.

- **24/7 Asset management**

  Manage your financed solutions with electronic access to your lease documents, payment histories, invoices and asset information.

- **Fair Market Value (FMV) and $1 Purchase Option Leases**

  Maximize your purchasing power with our lowest cost option. An FMV lease offers lower monthly payments than loans or lease-to-own financing. Think of an FMV lease as a rental. You have the flexibility at the end of the lease term to return the equipment, continue leasing it, or purchase it for the fair market value. In a $1 Out Purchase Option lease, you own the equipment. It is a good option when you are confident you will use the equipment for an extended period beyond the finance term. Both lease types have merits depending on your needs. We can help you determine which option will best meet your technological and budgetary goals.

Ask your Lenovo Financial Services representative about this promotion and how to submit a credit application. For the majority of credit applicants, we have enough information to deliver an instant decision and send a notification within minutes.

Seller training courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

1. **VTT: Navigating SAP's ERP Transformation - Positioning Lenovo Infrastructure for Growth**
   2026-10-07 | 49 minutes | Employees and Partners

   SAP customers are entering a critical phase of ERP modernization as they transition from legacy SAP ECC environments to SAP S/4HANA and increasingly adopt cloud and hybrid cloud operating models. Join Graeme Trevayne, Lenovo ISG SAP Alliance Director, and Catherine Maina, Lenovo Sr. Product Manager for understanding why the technical and business implications of this shift is essential for designing the right infrastructure solutions and helping customers make informed decisions throughout their transformation journey.
   This webinar provides an overview of SAP's ERP and cloud strategy, the current state of customer migration to SAP S/4HANA, and the expected impact on traditional SAP infrastructure investments. Attendees will gain insight into the market outlook for Lenovo's SAP business and learn how Lenovo is adapting its portfolio and go-to-market approach to maximize revenue and profitability during this transition period.
   The session will cover Lenovo's SAP-certified infrastructure solutions for both traditional SAP ECC and modern SAP S/4HANA deployments, including sizing, performance, scalability, and modernization considerations. You will also learn how to position ThinkSystem servers as the foundation for mission-critical SAP workloads while incorporating ThinkAgile VX as a strategic platform for virtualization, infrastructure consolidation, operational simplification, and hybrid cloud readiness.
   In addition, the webinar will explore emerging growth opportunities across the SAP ecosystem, including SAP migration projects, infrastructure refreshes, private cloud initiatives, data and analytics platforms, AI-enabled business processes, and managed services opportunities. Attendees will leave with practical technical positioning guidance, solution-selling strategies, and customer conversation frameworks that align Lenovo solutions with evolving SAP customer requirements.
   Webinar Objectives
   • Explain SAP's ERP modernization strategy and cloud transformation roadmap.
   • Describe the current progress and adoption trends of SAP S/4HANA migrations.
   • Understand the outlook for traditional Lenovo SAP infrastructure opportunities.
   • Articulate Lenovo's strategy for maintaining growth and profitability during the SAP transition.
   • Differentiate Lenovo solutions supporting SAP ECC and SAP S/4HANA environments.
   • Position ThinkSystem servers for performance, reliability, scalability, and SAP-certified deployments.
   • Position ThinkAgile VX alongside ThinkSystem to support virtualization, infrastructure modernization, and hybrid cloud architectures.
   • Identify new business opportunities within the evolving SAP ecosystem.

   Tags: SAP, SAP EcoSystem, Cloud, Large Memory, Database

   Published: 2026-10-07
   Length: 49 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: DVCLD237

2. **Partner Technical Webinar - Storage Battlecards and TCE Update**
   2026-08-18 | 35 minutes | Employees and Partners

   Storage Battlecards, Storage Promotion and TCE Updates

   Published: 2026-08-18
   Length: 35 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: AUG1426
3. **Data Storage Solutions Primer**
   2026-07-30 | 45 minutes | Employees Only

   This course is part of the Lenovo ISG (Infrastructure Solutions Group) Primer Series - a learning program designed to help Client Managers build foundational knowledge, strengthen customer conversations, and recognize opportunities with greater confidence.

   By the end of this course, you will be able to:

   - Understand how storage connects to modern IT and business outcomes
   - Explain the importance of storage in data-centric environments
   - Identify opportunities and align storage solutions to customer needs

   Last Update: July 30, 2026

   Published: 2026-07-30
   Length: 45 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DSTOO104
4. **Guide d'étude pour l'examen de certification technique Lenovo Data Center**
   2026-07-13 | 10 minutes | Employees and Partners

   Ce guide contient des informations pour aider les candidats à se préparer et à s'inscrire aux examens pratiques et de certification Data Center Technical.

   Tags: Data Center

   Published: 2026-07-13
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-322C-SG-FR

5. **Guide d'étude pour l'examen de certification des ventes de Lenovo Data Center**
   2026-07-13 | 10 minutes | Employees and Partners

   Ce guide contient des informations destinées à aider les candidats à se préparer et à s'inscrire aux examens pratiques et de certification en vente de centres de données.

   Tags: Cloud

   Published: 2026-07-13
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-122C-SG-FR
6. **Lenovoデータセンターセールス認定試験学習ガイド**
   2026-07-13 | 10 minutes | Employees and Partners

   このガイドには、データセンターセールスの実技試験および認定試験の準備と登録に役立つ情報が含まれています。

   Tags: Data Center

   Published: 2026-07-13
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-122C-SG-AJP
7. **Lenovoデータセンター技術認定試験学習ガイド（LENU-322C-SG-AJP)**
   2026-07-13 | 10 minutes | Employees and Partners

   このガイドには、受験者がLenovoデータセンター技術実技試験および認定試験の準備と登録を行う際に役立つ情報が含まれています。

   Tags: Data Center

   Published: 2026-07-13
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-322C-SG-AJP

8. **Partner Technical Webinar - Storage 101**
   2026-04-30 | 60 minutes | Employees and Partners

   In this 60 minute replay, Dan Beins, Lenovo Storage Architect, took us “back to basics” with a Storage Portfolio Overview 101.

   Published: 2026-04-30
   Length: 60 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: APR2426

9. **Family Portfolio: Storage**
   2026-02-13 | 50 minutes | Employees and Partners

   This course covers the Lenovo storage portfolio, from tape drives used for backups and archiving all the way through high-performance storage systems. After completing this course about the Storage family, the learner will be able to identify products and features within the family, describe the features of this Product Family, and recognize when a specific product should be selected.

   Tags: Storage, ThinkSystem

   Published: 2026-02-13
   Length: 50 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: SXSW1201r18

10. **How to Order DM and DE Services Through DCSC**
    2025-08-28 | 35 minutes | Employees and Partners

    The goal of this training is to provide Lenovo sellers and business partners with an overview of the available services for ThinkSystem DM and DE.

    Learning Objectives:

    - Review what is included in each service
    - Describe the benefits of each service
    - Demonstrate how to order
    - Discover where to go for more details

    Tags: Services

    Published: 2025-08-28
    Length: 35 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DSVC134r4

11. **ThinkSystem DE Series Portfolio Overview**
    2025-06-20 | 30 minutes | Employees and Partners

    This course builds on the Data Storage Solutions Overview (DSTOO102) course by introducing you to the DE Series Portfolio. After completing this course, you will be able to position the Lenovo ThinkSystem DE Series products and features based on the needs of your customers, correlate the Lenovo ThinkSystem DE Series Portfolio with Lenovo's comprehensive Data Management Portfolio, and use the qualifying questions to identify customer needs during conversations.

    Tags: Data Management, Storage, ThinkSystem

    Published: 2025-06-20
    Length: 30 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DDEO101

12. **Data Storage Solutions Overview**
    2025-06-18 | 25 minutes | Employees and Partners

    After completing this course you will be able to:
    1. Know more about the data management trends and challenges
    2. Understand the data storage solutions portfolio
    3. Find out how data drives business value

    Tags: Storage

    Published: 2025-06-18
    Length: 25 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DSTOO102

13. **Lenovo Data Center Product Portfolio**
    2025-06-11 | 20 minutes | Employees and Partners

    This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

    Course objectives:
    1.Identify product types within each data center family
    2.Describe the features of the product family or category
    3.Recognize when a specific product should be selected

    Tags: Advanced DataCenter, DataCenter Products, Server, ThinkAgile, ThinkEdge, ThinkSystem

    Published: 2025-06-11
    Length: 20 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: SXXW1110r8

14. **ThinkSystem DM and DE Series Technical Overview**
    2024-10-15 | 30 minutes | Employees and Partners

    This course provides a technical overview of the ThinkSystem DM and DE series products. Course DDMO101 – Lenovo ThinkSystem DM & DE Series Overview is recommended prior to this course. By the end of this course, you should be able to:
    - Describe the Lenovo portfolio for the DM and DE storage systems
    - Explain features of the DM series ONTAP software
    - Explain features of the ThinkSystem SAN Manager

    Tags: Data Management, Storage

    Published: 2024-10-15
    Length: 30 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DDMT100r2

15. **VTT Data Management How to sell storage - April 2024**
    2024-04-10 | 60 minutes | Employees and Partners

    In this course, you will know:

    - Why do we sell storage?
    - What are the basics you need to get an opportunity rolling?
    - Why Lenovo for Storage?
    - What is happening in the market today?
    - How to determine traction?

    Tags: Data Management, Storage

    Published: 2024-04-10
    Length: 60 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DVDS209

16. **Lenovo Data Backup and Recovery Solution Overview**
    2024-03-25 | 40 minutes | Employees and Partners

    The goal of this course is to give Lenovo sellers and business partners an overview of the Data Backup and Recovery solution. This course includes general information about backup, archive, disaster, nomenclature and key terms for back and recovery, and Lenovo features and alliance partners software.

    Tags: Data Management

    Published: 2024-03-25
    Length: 40 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DSOLO200

17. **Positioning ThinkSystem DE Series**
    2024-02-01 | 12 minutes | Employees and Partners

    This course provides details on how to position DE series storage systems. Course DDMO101 – Lenovo ThinkSystem DM & DE Series Overview is a prerequisite.

    This course focuses on enabling you to:
    • Describe the features and business value of DE Series products
    • Identify customer problems that DE Series products can solve
    • Position the appropriate DE Series product for each customer

    Tags: Storage, ThinkSystem

    Published: 2024-02-01
    Length: 12 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DDET200r2

18. **Using VEEAM with ThinkSystem DE Series**
    2023-10-03 | 10 minutes | Employees and Partners

    In this course you will learn about VEEAM Availability Suite for ThinkSystem DE Series. By the end of this course, you will identify the advantages of using Veeam Availability Suite and Lenovo DE Series, describe the Veeam Cloud Connect Backup with Lenovo DE Series, and explain how to use Veeam's capabilities to provide deduplication and Compression with DE Series. Last updated on September, 29th, 2023.

    Tags: ThinkSystem

    Published: 2023-10-03
    Length: 10 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: DSTOO200

19. **Assessment for Lenovo ThinkSystem DM and DE Series Technical Overview 100**
2023-10-02 | 30 minutes | Partners Only

This is the online assessment for the virtual-live course Lenovo ThinkSystem DM and DE Series Technical Overview 100 (DDMT100).

Your objective for this assessment is to complete the 15-question quiz with the minimum passing score of 80%.

Tags: Technical Sales

Published: 2023-10-02
Length: 30 minutes

Start the training:
Partner link: Lenovo 360 Learning Center

Course code: DDMT101

20. **ThinkSystem DE Series: SSD Cache**
2023-09-28 | 15 minutes | Employees and Partners

This course describes the SSD Cache feature and how SSD Cache helps to optimize read operations. Course DDET202 ThinkSystem DE Series: Storage System Configuration is a prerequisite.

Upon completion of this training, you will be able to:
• Describe the SSD Cache feature
• Explain how SSD Cache helps you optimize solid-state disk (SSD) read cache in a DE Series storage system

Tags: Data Management, Storage, Technical Sales, ThinkSystem

Published: 2023-09-28
Length: 15 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: DDET203

21. **ThinkSystem DE Series: Storage System Configuration**
2023-09-28 | 23 minutes | Employees and Partners

This course describes the differences between the Volume Groups and Dynamic Disk Pools technologies, as well as the benefits and tradeoffs of using each. Course DDET201 ThinkSystem DE Series: Hardware Specifications is a prerequisite.

Upon completion of this training, you will be able to:
• Distinguish volume groups from dynamic disk pools
• Determine when to use volume groups and when to use Dynamic Disk Pools (DDP) technology
• Describe DDP technology and its benefits
• Describe volume groups and their benefits
• Explain how the thin-provisioning feature provides value

Tags: Data Management, Storage, Technical Sales, ThinkSystem

Published: 2023-09-28
Length: 23 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: DDET202

22. **ThinkSystem DE Series: Technical Overview Assessment 200**
2023-09-28 | 10 minutes | Employees and Partners

This document contains assessment questions that focus on ThinkSystem DE Series technology. The questions are based on the Lenovo ThinkSystem DE Series Technical Overview curriculum.

Tags: Sales, Storage, Technical Sales, ThinkSystem

Published: 2023-09-28
Length: 10 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: DDET207

23. **VEEAM Solutions Sales Training**
2023-09-27 | 20 minutes | Employees and Partners

In this course you will learn about Hyper-availability for the Always-On Enterprise.

By the end of this training, you should be able to:

Identify and explain the core products and solutions offered by Veeam.
Explain the key benefits and value propositions of integrating Veeam solutions with Lenovo products.

Tags: Sales

Published: 2023-09-27
Length: 20 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: DSTOO100

24. **ThinkSystem DE Series: Disaster Recovery**
2023-09-21 | 28 minutes | Employees and Partners

This course describes technologies for disaster recovery and how DE series features can contribute in substantial ways to any disaster-recovery plan for storage.

Tags: ThinkSystem

Published: 2023-09-21
Length: 28 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: DDET204

25. **Selling ThinkSystem DE Series**
2022-09-15 | 15 minutes | Employees and Partners

This course discusses common selling scenarios that describe where and how to sell Thinksystem DE series storage systems.
This course focuses on enabling you to:
•Discuss storage configurations and the advantages of each configuration
•Review use cases to identify what customers need from storage systems
•Suggest storage configurations that meet customer needs

Tags: Sales, Storage, Technical Sales, ThinkSystem

Published: 2022-09-15
Length: 15 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: DDET206r2

Related publications and links

For more information, see the following resources:

- Lenovo SAN Storage product page
  https://www.lenovo.com/us/en/c/data-center/storage/storage-area-network
- ThinkSystem DE Hybrid Storage interactive 3D Tour
  https://lenovopress.com/lp0957-thinksystem-de-hybrid-interactive-3d-tour
- ThinkSystem DE Storage datasheet
  https://lenovopress.lenovo.com/datasheet/ds0212-lenovo-thinksystem-de-series
- Lenovo Data Center Solution Configurator
  http://dcsc.lenovo.com
- Lenovo Data Center Support
  http://datacentersupport.lenovo.com
- Lenovo ThinkSystem DE6500 Product Page
  https://www.lenovo.com/us/en/p/servers-storage/storage/storage-area-network/de-series-storage-arrays/thinksystem-de6500-storage-array/len22ts0049

Related product families

Product families related to this document are the following:

- DE Series Storage
- Lenovo SAN Storage

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