

## Lenovo ThinkSystem DE4000H Hybrid Storage Array

### Product Guide (withdrawn product)

Lenovo ThinkSystem DE4000H is a scalable, hybrid entry-level storage system that is designed to provide performance, simplicity, capacity, security, and high availability for medium to large businesses. It delivers enterprise-class storage management capabilities with a wide choice of host connectivity options, flexible drive configurations, and enhanced data management features. The ThinkSystem DE4000H is a perfect fit for a wide range of enterprise workloads, including big data and analytics, video surveillance, technical computing, backup and recovery, and other storage I/O-intensive applications.

ThinkSystem DE4000H models are available in a 2U rack form-factor with 24 small form-factor (2.5-inch SFF) drives (2U24 SFF), 12 large form-factor (3.5-inch LFF) drives (2U12 LFF), or a 4U rack form-factor with 60 LFF drives (4U60 LFF) and include two controllers, each with 8 GB or 32 GB memory for a system total of 16 GB or 64 GB. Host interface cards provide 12 Gb SAS, 10/25 Gb iSCSI, or 8/16/32 Gb FC connections.

The ThinkSystem DE4000H Storage Array scales up to 192 drives with the attachment of Lenovo ThinkSystem DE120S 2U12, DE240S 2U24 SFF, and DE600S 4U60 LFF Expansion Enclosures. It also offers flexible drive configurations with the choice of 2.5-inch (SFF) and 3.5-inch (LFF) form factors, 10 K rpm SAS and 7.2 K rpm NL SAS hard disk drives (HDDs), and SAS solid-state drives (SSDs).

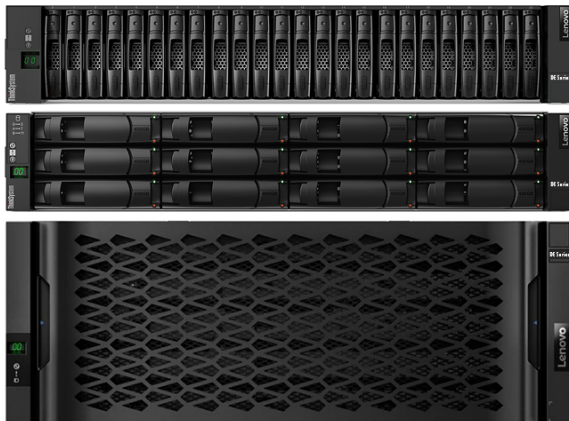


Figure 1. Lenovo ThinkSystem DE4000H 2U24 SFF (top), 2U12 LFF (middle), and 4U60 LFF (bottom)

### Did you know?

The ThinkSystem DE4000H scales up to 3 PB of raw storage capacity, and it offers block storage connectivity with support for 1/10 Gb iSCSI or 4/8/16 Gb FC, and 12 Gb SAS, 10/25 Gb iSCSI, or 8/16/32 Gb FC.

## Key features

The ThinkSystem DE4000H offers the following key features and benefits:

- Scalable entry-level hybrid storage with dual active/active controller configurations with 8 GB or 32 GB system memory per controller for high availability and performance.
- Improved performance and data protection with Dynamic Disk Pools (DDP) technology, as well as support for traditional RAID 0, 1, 3, 5, 6, and 10.
- Flexible host connectivity to match diverse client needs with support for 1/10 Gb iSCSI or 4/8/16 Gb FC, and 12 Gb SAS, 10/25 Gb iSCSI, or 8/16/32 Gb FC connectivity.
- 12 Gb SAS drive-side connectivity with support for up to 24x 2.5-inch small form factor (SFF) drives in the 2U24 SFF enclosures, up to 12x 3.5-inch large form factor (LFF) drives in the 2U12 LFF enclosures, or up to 60x 3.5-inch LFF drives in the 4U60 LFF enclosures.
- Scalability to up to 192 SFF or LFF drives with the attachment of the ThinkSystem DE240S 2U24 SFF, DE120S 2U12 LFF, or DE600S 4U60 LFF expansion enclosures to satisfy growing needs for storage capacity and performance.
- Rich set of standard storage management functions available at no extra cost, including Dynamic Disk Pools, SSD read cache, snapshots, volume copy, thin provisioning, and encryption (requires optional FIPS drives).
- Optional licensed functions, including higher number of snapshots for greater scalability and synchronous or asynchronous mirroring for continuous data availability.
- Intuitive, web-based GUI for easy system setup and management.
- Designed for 99.9999% 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 DE4000H supports the complete range of data storage requirements, from highly used applications to high-capacity, low usage applications.

The following drives are supported in the 2U24 SFF enclosures:

- Capacity-optimized SSDs (1 drive write per day [DWD]): 3.84 TB, 7.68 TB, and 15.36 TB  
High performance SSDs (3 DWD): 800 GB, 1.6 TB, and 3.2 TB
- Performance-optimized, enterprise class HDDs: 1.2 TB and 1.8 TB 10K rpm  
High performance self-encrypting FIPS SSDs (3 DWD): 1.6 TB
- Performance-optimized, enterprise class self-encrypting FIPS HDDs: 1.8 TB 10K rpm

The following drives are supported in the 2U12 LFF enclosures:

- High-capacity, archival-class nearline HDDs: 4 TB, 8 TB, 10 TB, 12 TB, and 16 TB 7.2K rpm  
High-performance SSDs (3 DWD; 2.5" drive in a 3.5" drive tray): 800 GB
- High-capacity, archival-class nearline self-encrypting FIPS HDDs: 6 TB and 10 TB 7.2K rpm  
High performance self-encrypting FIPS SSDs (3 DWD; 2.5" drive in a 3.5" drive tray): 1.6 TB

The following drives are supported in the 4U60 LFF enclosures:

- High-capacity, archival-class nearline HDDs: 4 TB, 8 TB, 10 TB, 12 TB, and 16 TB 7.2K rpm  
High-performance SSDs (3 DWD; 2.5" drive in a 3.5" drive tray): 800 GB, 1.6 TB, and 3.2 TB
- High-capacity, archival-class nearline self-encrypting FIPS HDDs: 10 TB 7.2K rpm  
High performance self-encrypting FIPS SSDs (3 DWD; 2.5" drive in a 3.5" drive tray): 1.6 TB

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.

Up to three ThinkSystem DE240S 2U24 SFF, or up to three ThinkSystem DE600S 4U60 LFF, or up to seven

ThinkSystem DE120S 2U12 LFF, or a combination of the ThinkSystem DE240S, DE120S, and DE600S expansion enclosures for a total of up to 192 drives per system (including controller and expansion enclosures) are supported by a single ThinkSystem DE4000H system.

Customers can intermix 2U24 SFF, 2U12 LFF, and 4U60 LFF expansion enclosures behind a 2U24 SFF, 2U12 LFF, or 4U60 LFF controller enclosure. This configuration delivers the added flexibility to mix 3.5-inch and 2.5-inch drives within a single system (but not within the 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 ThinkSystem DE4000H 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 ThinkSystem DE4000H and DE240S 2U SFF enclosures.

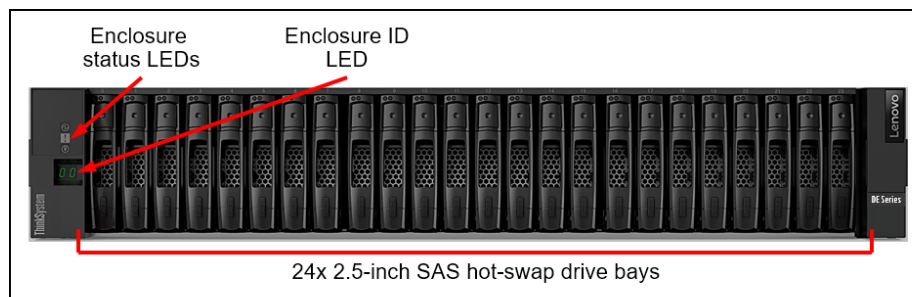


Figure 2. ThinkSystem DE4000H and DE240S 2U SFF enclosures front view

The front of the ThinkSystem DE4000H and DE240S 2U SFF enclosures 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 DE4000H and DE120S 2U LFF enclosures.

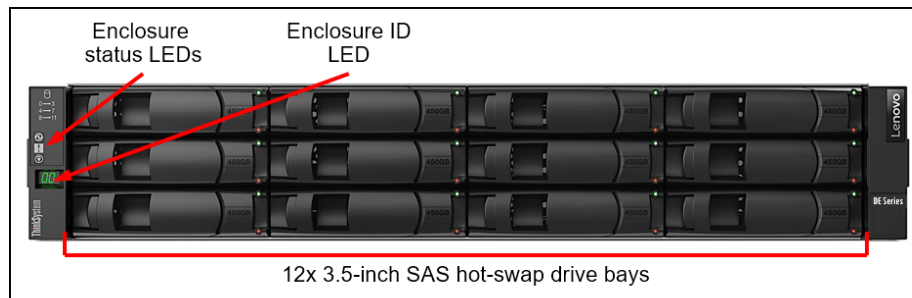


Figure 3. ThinkSystem DE4000H and DE120S 2U LFF enclosures front view

The front of the ThinkSystem DE4000H and DE120S 2U LFF enclosures 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 DE4000H 2U controller enclosure.

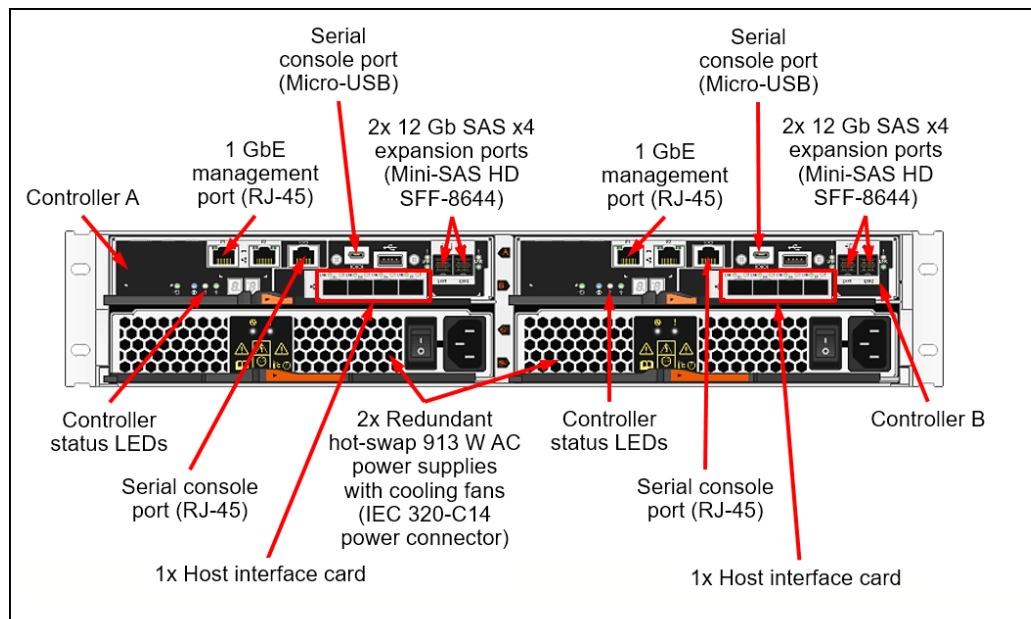


Figure 4. ThinkSystem DE4000H 2U controller enclosure rear view

The rear of the ThinkSystem DE4000H 2U controller enclosure includes the following components:

- Two redundant hot-swap controllers, each with the following ports:
  - One slot for a host interface card  
**Note:** The DE4000H Gen2 controllers no longer offers base ports
  - Two 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644) for connections to the expansion enclosures.
  - One RJ-45 10/100/1000 Mb Ethernet port for out-of-band management.  
**Note:** The Ethernet port (P2) next to the GbE management port is not available for use.
  - Two serial console ports (RJ-45 and Micro-USB) for another means to configure the system.
  - One USB Type A port (reserved for factory use)
- Two redundant hot-swap 913 W (100 - 240 V) AC power supplies (IEC 320-C14 power connector) with integrated cooling fans.

The following figure shows the rear of the ThinkSystem DE240S or DE120S 2U expansion enclosure.

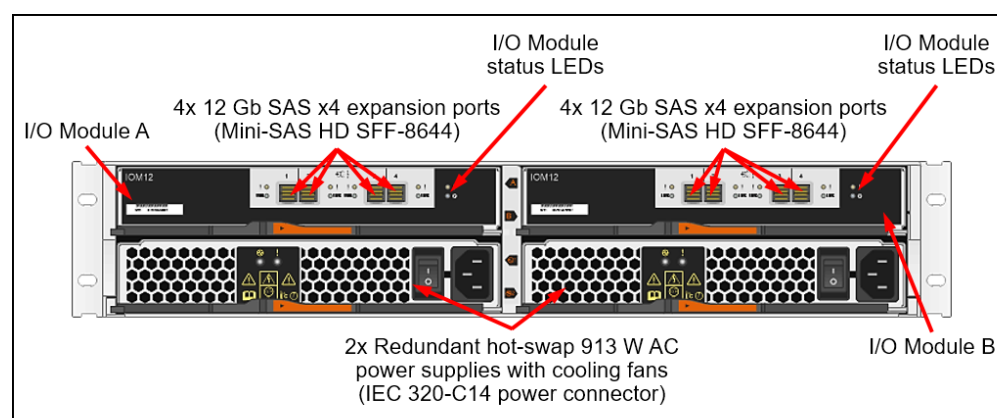


Figure 5. ThinkSystem DE240S or DE120S 2U expansion enclosure rear view

The rear of the ThinkSystem DE240S or DE120S 2U 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 913 W (100 - 240 V) AC power supplies (IEC 320-C14 power connector) with integrated cooling fans.

The following figure shows the front of the ThinkSystem DE4000H and DE600S 4U LFF enclosures without the front bezel.

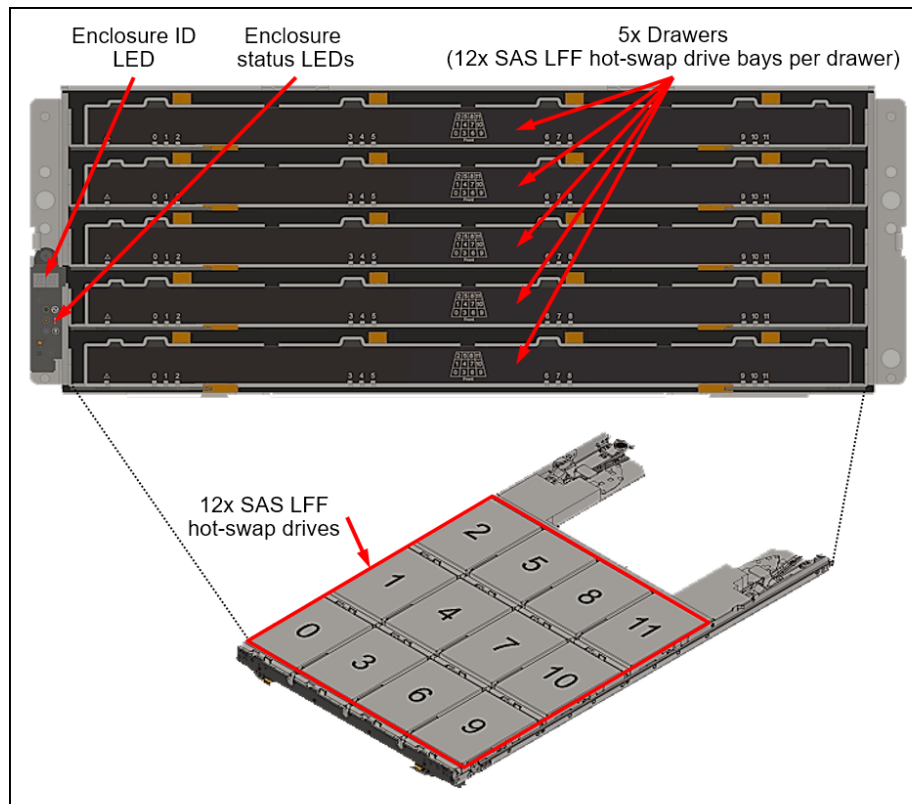


Figure 6. ThinkSystem DE4000H and DE600S 4U LFF enclosures front view (without the front bezel)

The front of the ThinkSystem DE4000H and DE600S 4U LFF enclosures includes the following components:

- Five drawers, each with 12 LFF hot-swap drive bays
- Enclosure ID LED
- Enclosure status LEDs

The following figure shows the rear of the ThinkSystem DE4000H 4U LFF controller enclosure.

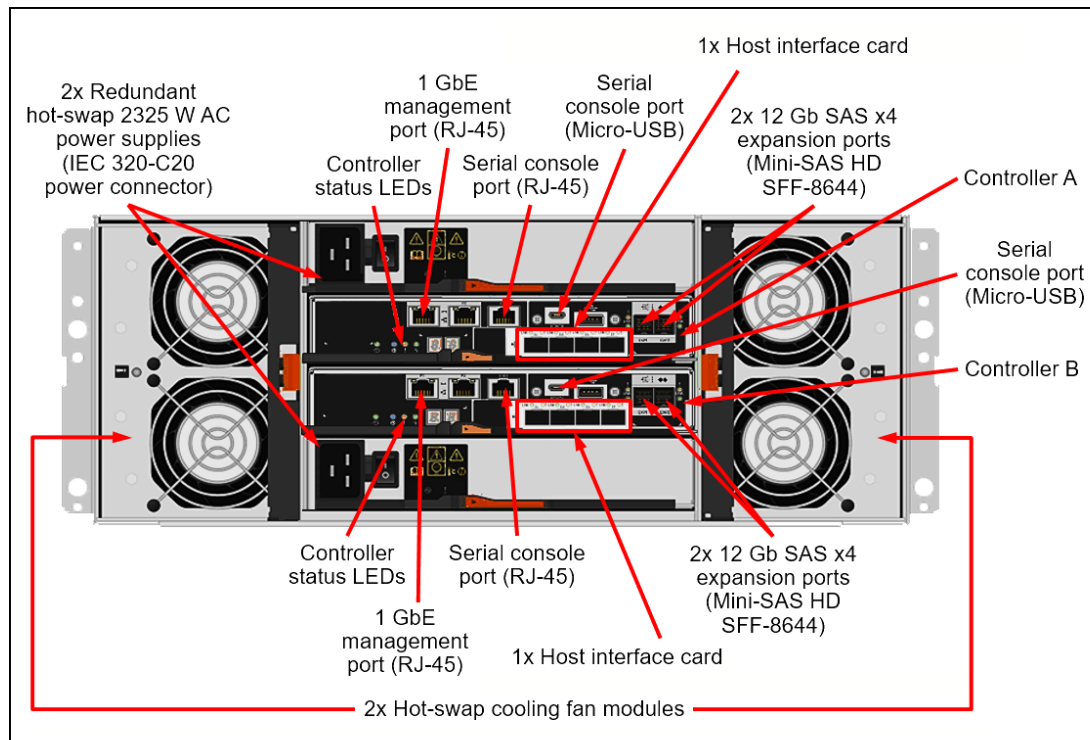


Figure 7. ThinkSystem DE4000H 4U LFF controller enclosure rear view

The rear of the ThinkSystem DE4000H 4U LFF controller enclosure includes the following components:

- Two redundant hot-swap controllers, each with the following ports:
  - One slot for a host interface card
    - Note:** The DE4000H Gen2 controllers no longer offers base ports
  - Two 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644) for connections to the expansion enclosures.
  - One RJ-45 10/100/1000 Mb Ethernet port for out-of-band management.
    - Note:** The Ethernet port (P2) next to the GbE management port is not available for use.
  - Two serial console ports (RJ-45 and Micro-USB) for another means to configure the system.
  - One USB Type A port (reserved for factory use)
- Two redundant hot-swap 2325 W (200 - 240 V) AC 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.

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

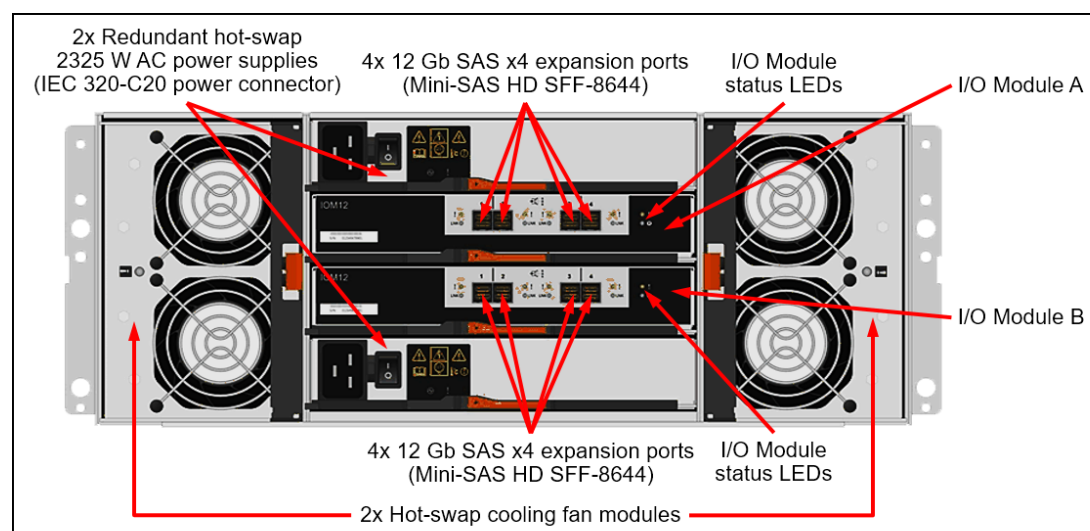


Figure 8. ThinkSystem DE600S 4U LFF expansion enclosure rear view

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 (200 - 240 V) AC 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 DE4000H storage system specifications.

**Note:** The supported hardware options, software features, and interoperability listed in this product guide are based on the software version 11.60. 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 DE4000H that can be found at:

<http://datacentersupport.lenovo.com>

Table 1. ThinkSystem DE4000H system specifications

| Attribute                | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form factor              | <ul style="list-style-type: none"> <li>• DE4000H 2U24 SFF controller enclosure (Machine Type 7Y75): 2U rack mount.</li> <li>• DE4000H 2U12 LFF controller enclosure (Machine Type 7Y74): 2U rack mount.</li> <li>• DE4000H 4U60 LFF controller enclosure (Machine Type 7Y77): 4U rack mount. <ul style="list-style-type: none"> <li>◦ DE240S 2U24 SFF expansion enclosure (Machine Type 7Y68): 2U rack mount.</li> <li>◦ DE120S 2U12 LFF expansion enclosure (Machine Type 7Y63): 2U rack mount.</li> <li>◦ DE600S 4U60 LFF expansion enclosure (Machine Type 7Y69): 4U rack mount.</li> </ul> </li> </ul> |
| Controller configuration | Dual active-active controller configuration with automatic load balancing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| RAID levels              | RAID 0, 1, 3, 5, 6, and 10; Dynamic Disk Pools.<br><b>Note:</b> RAID 3 can be configured only through the CLI.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Controller system memory | 16 GB or 64 GB per system (8 GB or 32 GB per controller). Cache mirroring between the controllers. Flash-backed cache protection (includes battery for destaging to flash).                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Attribute                    | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expansion enclosure support  | <ul style="list-style-type: none"> <li>DE4000H 2U24 SFF controller: 3x DE120S, 3x DE240S or 2x DE600S</li> <li>DE4000H 2U12 LFF controller: 7x DE120S, 3x DE240S or 3x DE600S</li> <li>DE4000H 4U60 LFF controller: 3x DE120S, 3x DE240S or 2x DE600S</li> <li>Expansion enclosures may be mixed up to a maximum of 7 expansion enclosures</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Drive bays                   | <p>DE4000H 2U24 SFF controller:</p> <ul style="list-style-type: none"> <li>With 3x DE120S LFF expansion enclosures: 24 SFF + 36 LFF drive bays: (60 drives)</li> <li>With 3x DE240S SFF expansion enclosures: 24 SFF + 72 SFF drive bays: (96 drives)</li> <li>With 2x DE600S LFF expansion enclosures: 24 SFF + 120 LFF drive bays: (144 drives)</li> </ul> <p>DE4000H 2U12 LFF controller:</p> <ul style="list-style-type: none"> <li>With 7x DE120S LFF expansion enclosures: 12 LFF + 84 LFF drive bays: (96 drives)</li> <li>With 3x DE240S SFF expansion enclosures: 12 LFF + 72 SFF drive bays: (84 drives)</li> <li>With 3x DE600S LFF expansion enclosures: 12 LFF + 180 LFF drive bays: (192 drives)</li> </ul> <p>DE4000H 4U60 LFF controller:</p> <ul style="list-style-type: none"> <li>With 3x DE120S LFF expansion enclosures: 60 LFF + 36 LFF drive bays: (96 drives)</li> <li>With 3x DE240S SFF expansion enclosures: 60 LFF + 72 SFF drive bays: (132 drives)</li> <li>With 2x DE600S LFF expansion enclosures: 60 LFF + 120 LFF drive bays: (180 drives)</li> </ul> <p>Expansion enclosures may be mixed up to a maximum of 7 expansion enclosures</p> |
| Drive technology             | <ul style="list-style-type: none"> <li>12 Gb SAS and NL SAS HDDs and FIPS HDDs, 12 Gb SAS SSDs and FIPS SSDs.</li> <li>Intermix of HDDs and SSDs is supported within a system.</li> <li>Intermix of HDDs and SSDs is <i>not</i> supported within a volume group or disk pool.</li> <li>A maximum of 120 SAS SSDs is supported.</li> <li>Intermix of FIPS drives and non-FIPS drives is supported within a system.</li> <li>Intermix of FIPS drives and non-FIPS drives is <i>not</i> supported within a volume group or disk pool.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Drive expansion connectivity | <ul style="list-style-type: none"> <li>2x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) expansion ports on each of two controllers in the controller enclosure for the attachment of the expansion enclosures.</li> <li>4x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) expansion ports on each of two I/O modules in the expansion enclosure for the attachment to the controller enclosure and daisy chaining of the expansion enclosures.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Drives                       | <p>2U24 SFF drives:</p> <ul style="list-style-type: none"> <li>10K rpm SAS HDDs</li> <li>10K rpm SAS FIPS HDDs</li> <li>SAS SSDs (1 DWD)</li> <li>SAS SSDs (3 DWD)</li> <li>SAS FIPS SSDs (3 DWD)</li> </ul> <p>2U12 LFF drives:</p> <ul style="list-style-type: none"> <li>7.2K rpm NL SAS HDDs</li> <li>7.2K rpm NL SAS FIPS HDDs</li> <li>SAS SSDs (3 DWD)</li> <li>SAS FIPS SSDs (3 DWD)</li> </ul> <p>4U60 LFF drives:</p> <ul style="list-style-type: none"> <li>7.2K rpm NL SAS HDDs</li> <li>7.2K rpm NL SAS FIPS HDDs</li> <li>SAS SSDs (3 DWD)</li> <li>SAS FIPS SSDs (3 DWD)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Storage capacity             | Up to 3.375 PB (192x 18 TB LFF HDDs).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Attribute                  | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Host connectivity          | <p>Base ports (per controller enclosure with two controllers):</p> <ul style="list-style-type: none"> <li>4x 1/10 Gb iSCSI (RJ-45 [1 Gb iSCSI only], DAC, or SW fiber optics [LC]) or 4/8/16 Gb FC (SW fiber optics [LC]) SFP+ host ports (2 ports per controller)</li> </ul> <p>Host connectivity ports provided using host interface cards (HICs) (per controller enclosure with two controllers):</p> <ul style="list-style-type: none"> <li>8x 12 Gb SAS host ports (Mini-SAS HD, SFF-8644) (4 ports per controller)</li> <li>8x 10/25 Gb iSCSI SFP28 host ports (DAC or SW fiber optics [LC]) (4 ports per controller)</li> <li>8x 8/16/32 Gb FC SFP+ host ports (SW fiber optics [LC]) (4 ports per controller)</li> <li>8x 1/10 Gb iSCSI (RJ-45 [1 Gb iSCSI only], DAC, or SW fiber optics [LC]) or 4/8/16 Gb FC (SW fiber optics [LC]) SFP+ host ports (4 ports per controller)</li> <li>4x 1/10 Gb iSCSI RJ-45 host ports (2 ports per controller; 2U12 LFF and 2U24 SFF only)</li> </ul> <p><b>Note:</b> Two host interface cards are required for selection (one per controller). The controllers no longer offers base ports. Host connectivity is provided via the HICs.</p> <ul style="list-style-type: none"> <li>Supported protocols: FC: 32 Gbps, 16 Gbps, 8 Gbps, 4 Gbps</li> </ul> |
| Host operating systems     | Microsoft Windows Server; Red Hat Enterprise Linux (RHEL); SUSE Linux Enterprise Server (SLES); VMware vSphere.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Standard software features | Dynamic Disk Pools, SSD read cache, snapshots (up to 128 targets), volume copy, thin provisioning (DDP only), encryption (requires optional FIPS drives), and data assurance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Optional software features | Snapshots (up to 512 targets), synchronous mirroring, and asynchronous mirroring.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Performance*               | <ul style="list-style-type: none"> <li>Up to 300 000 random read IOPS (4 KB blocks).</li> <li>Up to 109 000 random write IOPS (4 KB blocks).</li> <li>Up to 9.2 GBps sequential read throughput (64 KB blocks).</li> <li>Up to 2.7 GBps sequential write throughput (64 KB blocks).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Configuration maximums**   | <ul style="list-style-type: none"> <li>Maximum storage capacity: 3.07 PB</li> <li>Maximum number of logical volumes: 512</li> <li>Maximum logical volume size: 4 PB</li> <li>Maximum thin-provisioned logical volume size (DDP only): 256 TB</li> <li>Maximum number of drives in a RAID volume group: <ul style="list-style-type: none"> <li>RAID 0, 1/10: 192</li> <li>RAID 3, 5, 6: 30</li> </ul> </li> <li>Maximum number of DDP arrays: 20</li> <li>Maximum number of drives in a DDP array: 192 (11 drives minimum)</li> <li>Maximum SSD read cache size: <ul style="list-style-type: none"> <li>DE4000 8GB Controller: 4 TB SSD read cache</li> <li>DE4000 32GB Controller: 5 TB SSD read cache</li> </ul> </li> <li>Maximum number of hosts: 256</li> <li>Maximum number of snapshots: 512 (requires an optional license)</li> <li>Maximum number of mirroring pairs: 32 (requires an optional license)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                            |
| Cooling                    | Redundant cooling with two cooling modules (4U60 LFF) or with the fans that are built into power supplies (2U24 SFF and 2U12 LFF).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Power supply               | Two redundant hot-swap 913 W (100 - 240 V) (2U24 and 2U12 enclosures) or 2325 W (200 - 240 V) (4U60 enclosures) Platinum AC power supplies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Hot-swap parts             | Controllers, I/O modules, drives, power supplies, cooling modules (4U60 LFF only), and SFP+/SFP28 transceivers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Management ports           | <ul style="list-style-type: none"> <li>1x 1 GbE port (UTP, RJ-45) per controller for out-of-band management.</li> <li>2x Serial console ports (RJ-45 and Micro-USB) for system configuration.</li> <li>In-band management via I/O path.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Management interfaces      | System Manager web-based GUI; SAN Manager standalone GUI; SSH CLI; Serial console CLI; SMI-S Provider; SNMP, email, and syslog alerts; optional Lenovo XClarity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Attribute            | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Security features    | Secure Socket Layer (SSL), Secure Shell (SSH), 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimensions           | <p>2U24 SFF enclosure:</p> <ul style="list-style-type: none"> <li>• Height: 85 mm (3.4 in.)</li> <li>• Width: 449 mm (17.7 in.)</li> <li>• Depth: 553 mm (21.8 in.)</li> </ul> <p>2U12 LFF enclosure:</p> <ul style="list-style-type: none"> <li>• Height: 85 mm (3.4 in.)</li> <li>• Width: 447 mm (17.6 in.)</li> <li>• Depth: 483 mm (19.0 in.)</li> </ul> <p>4U60 LFF enclosure:</p> <ul style="list-style-type: none"> <li>• Height: 174 mm (6.9 in.)</li> <li>• Width: 449 mm (17.7 in.)</li> <li>• Depth: 922 mm (36.3 in.)</li> </ul> |
| Weight               | <ul style="list-style-type: none"> <li>• DE4000H 2U24 SFF controller enclosure (7Y75): 24.59 kg (54.2 lb)</li> <li>• DE4000H 2U12 LFF controller enclosure (7Y74): 28.78 kg (63.4 lb)</li> <li>• DE4000H 4U60 LFF controller enclosure (7Y77): 108.07 kg (238.3 lb)</li> <li>• DE240S 2U24 SFF expansion enclosure (7Y68): 27.44 kg (60.5 lb)</li> <li>• DE120S 2U12 LFF expansion enclosure (7Y63): 27.12 kg (59.8 lb)</li> <li>• DE600S 4U60 LFF expansion enclosure (7Y69): 112.2 kg (247.4 lb)</li> </ul>                                 |

\* Estimated performance based on internal measurements.

\*\* For a detailed list of configuration limits and restrictions for a specific version of the software, refer to the Lenovo Data Center Support website:

<http://datacentersupport.lenovo.com>

## Controller enclosures

The following table lists the CTO base models for the ThinkSystem DE4000H.

Table 2. ThinkSystem DE4000H CTO base models

| Machine Type/Model | Base feature | Description                                                                 |
|--------------------|--------------|-----------------------------------------------------------------------------|
| 7Y74CTO2WW         | BEY6         | Lenovo ThinkSystem Storage 2U12 Chassis (with Gen2 controllers and 2x PSUs) |
| 7Y75CTO2WW         | BEY7         | Lenovo ThinkSystem Storage 2U24 Chassis (with Gen2 controllers and 2x PSUs) |
| 7Y77CTO2WW         | BQ9W         | Lenovo ThinkSystem Storage 4U60 Chassis (with Gen2 controllers and 2x PSUs) |
| 7Y74CTO1WW         | BEY6 / B38M  | Lenovo ThinkSystem Storage 2U12 Chassis (with 2x PSUs)                      |
| 7Y75CTO1WW         | BEY7 / B38L  | Lenovo ThinkSystem Storage 2U24 Chassis (with 2x PSUs)                      |
| 7Y77CTO1WW         | BEY8 / B38N  | Lenovo ThinkSystem Storage 4U60 Chassis (with 2x PSUs)                      |

The following table lists the preconfigured models with Gen 2 controllers, available by market.

Table 3. Preconfigured models

| Model                                | Market availability   | Controller      |
|--------------------------------------|-----------------------|-----------------|
| DE4000H - 2U12 - 2x Gen2 controllers |                       |                 |
| 7Y74A00QWW                           | All markets           | 32GB controller |
| 7Y74A00TWW                           | All markets           | 8GB controller  |
| 7Y74A00QBR                           | Brazil                | 32GB controller |
| 7Y74A00UBR                           | Brazil                | 8GB controller  |
| 7Y74A00QJP                           | Japan                 | 32GB controller |
| 7Y74A00XJP                           | Japan                 | 8GB controller  |
| 7Y74A00QLA                           | Latin America markets | 32GB controller |
| 7Y74A00WLA                           | Latin America markets | 8GB controller  |
| 7Y74100ALA                           | Latin America markets | 8GB controller  |
| 7Y741009NA                           | North America markets | 8GB controller  |
| 7Y74A00QCN                           | PRC                   | 32GB controller |
| 7Y74A00VCN                           | PRC                   | 8GB controller  |
| DE4000H - 2U24 - 2x Gen2 controllers |                       |                 |
| 7Y75A00TWW                           | All markets           | 32GB controller |
| 7Y75A00SWW                           | All markets           | 8GB controller  |
| 7Y75A00TBR                           | Brazil                | 32GB controller |
| 7Y75A00SBR                           | Brazil                | 8GB controller  |
| 7Y75A00TJP                           | Japan                 | 32GB controller |
| 7Y75A00SJP                           | Japan                 | 8GB controller  |
| 7Y75A00TLA                           | Latin America markets | 32GB controller |
| 7Y75A00XLA                           | Latin America markets | 32GB controller |
| 7Y75A00SLA                           | Latin America markets | 8GB controller  |
| 7Y75100ALA                           | Latin America markets | 8GB controller  |

| Model                                | Market availability   | Controller                 |
|--------------------------------------|-----------------------|----------------------------|
| 7Y75A00WLA                           | Latin America markets | 8GB controller (topseller) |
| 7Y751009NA                           | North America markets | 8GB controller             |
| 7Y75100BNA                           | North America markets | 32GB controller            |
| 7Y75100CNA                           | North America markets | 32GB controller            |
| 7Y75A00TCN                           | PRC                   | 32GB controller            |
| 7Y75A00SCN                           | PRC                   | 8GB controller             |
| DE4000H - 4U60 - 2x Gen2 controllers |                       |                            |
| 7Y77A00BWW                           | All markets           | 32GB controller            |
| 7Y77A00EWW                           | All markets           | 8GB controller             |
| 7Y77A00AWW                           | All markets           | 8GB controller             |
| 7Y77A00BBR                           | Brazil                | 32GB controller            |
| 7Y77A00EBR                           | Brazil                | 8GB controller             |
| 7Y77A00ABR                           | Brazil                | 8GB controller             |
| 7Y77A00BJP                           | Japan                 | 32GB controller            |
| 7Y77A00EJP                           | Japan                 | 8GB controller             |
| 7Y77A00AJP                           | Japan                 | 8GB controller             |
| 7Y77A00BLA                           | Latin America markets | 32GB controller            |
| 7Y77A00ELA                           | Latin America markets | 8GB controller             |
| 7Y77A00ALA                           | Latin America markets | 8GB controller             |
| 7Y77A00BCN                           | PRC                   | 32GB controller            |
| 7Y77A00ECN                           | PRC                   | 8GB controller             |
| 7Y77A00ACN                           | PRC                   | 8GB controller             |

**Configuration notes:**

- For preconfigured models, two DE4000 controllers (feature code BQ9Z or BQA0) are included in the model configuration.
- For CTO models, two DE4000 controllers (feature code BQ9Z or BQA0) are selected by default in the configurator, and the selection cannot be changed.

The models of the ThinkSystem DE4000H ship with the following items:

- One chassis with the following components:
  - Two controllers
  - Two power supplies
  - Two cooling modules (4U60 LFF only)
  - Two host interface cards
- Rack Mount Kit
- 2 m USB Cable (USB Type A to Micro-USB)
- *Quick Installation Guide*
- *Electronic Publications Flyer*
- Two power cables
  - Relationship and TopSeller models listed in this section:
    - 2U24 SFF, 2U12 LFF: 1.5 m, 10A/100-250V, C13 to IEC 320-C14 rack power cables
    - 4U60 LFF: 2.5 m, 16A/100-240V, C19 to IEC 320-C20 rack power cables
  - CTO models: Customer-configured power cables

**Note:** Some models of the ThinkSystem DE4000H ship with SFP+ transceivers and cables. For models that ship without transceivers and cables, the supported SFP+ transceivers, DAC cables, SAS cables, or RJ-45 UTP cables should be purchased for the system (see [Controllers](#) for details).

## Models with Gen 1 controllers

The following tables list the relationship models of the ThinkSystem DE4000H Hybrid Storage Array with Gen 1 controllers.

Table 4. DE4000H relationship models: EU, Japan and worldwide

| Description                                                                                                                                         | Part number    |            |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|-------------------------|
|                                                                                                                                                     | European Union | Japan      | Other markets worldwide |
| <b>2U24 SFF models</b>                                                                                                                              |                |            |                         |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports)                      | 7Y75A00EEA     | 7Y75A000JP | 7Y75A000WW              |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array SFF (16 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs])  | 7Y75A00FEA     | 7Y75A001JP | 7Y75A001WW              |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs])              | 7Y75A00GEA     | 7Y75A002JP | 7Y75A002WW              |
| <b>2U12 LFF models</b>                                                                                                                              |                |            |                         |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports)                      | 7Y74A00AEA     | 7Y74A000JP | 7Y74A000WW              |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array LFF (16 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs])  | 7Y74A00CEA     | 7Y74A002JP | 7Y74A002WW              |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs])              | 7Y74A00BEA     | 7Y74A001JP | 7Y74A001WW*             |
| <b>4U60 LFF models</b>                                                                                                                              |                |            |                         |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array 4U60 (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports)                     | 7Y77A008EA     | 7Y771000JP | 7Y77A002WW              |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array 4U60 (16 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs]) | 7Y77A006EA     | 7Y771002JP | 7Y77A000WW              |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array 4U60 (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs])             | 7Y77A007EA     | 7Y771001JP | 7Y77A001WW              |

\* This model is withdrawn in the USA and Canada and no longer available

Table 5. DE4000H relationship models: Europe, Middle East, and Africa (EMEA) and Korea

| Description                                                                                                                                        | Part number    |                          |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|------------|
|                                                                                                                                                    | European Union | Non-EU countries in EMEA | Korea      |
| <b>2U24 SFF models</b>                                                                                                                             |                |                          |            |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array SFF (64 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports)                     | 7Y751006EA     | 7Y751001EA               | 7Y751001CN |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array SFF (64 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs]) | 7Y751005EA     | 7Y751002EA               | 7Y751002CN |

| Description                                                                                                                                         | Part number    |                          |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|------------|
|                                                                                                                                                     | European Union | Non-EU countries in EMEA | Korea      |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF (64 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs])              | 7Y751007EA     | 7Y751003EA               | 7Y751004CN |
| 2U12 LFF models                                                                                                                                     |                |                          |            |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array LFF (64 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports)                      | 7Y741006EA     | 7Y741001EA               | 7Y741001CN |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array LFF (64 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs])  | 7Y741005EA     | 7Y741002EA               | 7Y741002CN |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF (64 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs])              | 7Y741004EA     | 7Y741003EA               | 7Y741003CN |
| 4U60 LFF models                                                                                                                                     |                |                          |            |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array 4U60 (64 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports)                     | 7Y771007EA     | 7Y771003EA               | 7Y771003CN |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array 4U60 (64 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs]) | 7Y771008EA     | 7Y771004EA               | 7Y771004CN |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array 4U60 (64 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs])             | 7Y771009EA     | 7Y771005EA               | 7Y771005CN |

The following tables list the TopSeller models of the ThinkSystem DE4000H Hybrid Storage Array.

Table 6. DE4000H TopSeller models: Brazil and Latin America

| Description                                                                                                                                                | Part number   |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
|                                                                                                                                                            | Latin America | Brazil     |
| 2U24 SFF models                                                                                                                                            |               |            |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports, 8x 16 Gb FC HIC ports, 8x 16 Gb SFPs, 8x 5 m LC-LC MMF cables) | 7Y75A005LA    | 7Y75A005BR |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports, 8x 16 Gb FC HIC ports)                                         | Brazil only   | 7Y751000BR |
| 2U12 LFF models                                                                                                                                            |               |            |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports, 8x 16 Gb FC HIC ports, 8x 16 Gb SFPs, 8x 5 m LC-LC MMF cables) | 7Y74A004LA    | 7Y74A004BR |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports, 8x 16 Gb FC HIC ports)                                         | Brazil only   | 7Y741000BR |

Table 7. DE4000H TopSeller models: Europe, Middle East, and Africa (EMEA)

| Description                                                                                                                                         | Part number    |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|
|                                                                                                                                                     | European Union | Non-EU countries in EMEA |
| 2U24 SFF models                                                                                                                                     |                |                          |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports, 2x 800 GB 3DWD SSDs) | 7Y75A00JEA     | 7Y75A008EA               |

| Description                                                                                                                                                             | Part number    |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|
|                                                                                                                                                                         | European Union | Non-EU countries in EMEA |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array SFF (16 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs], 2x 800 GB 3DWD SSDs) | 7Y75A00KEA     | 7Y75A006EA               |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs], 2x 800 GB 3DWD SSDs)             | 7Y75A00LEA     | 7Y75A009EA               |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 32 Gb FC HIC ports [no SFPs], 2x 800 GB 3DWD SSDs)             | 7Y75A00HEA     | 7Y75A007EA               |
| 2U12 LFF models                                                                                                                                                         |                |                          |
| Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 12 Gb SAS HIC ports, 6x 4 TB 7.2K HDDs)                       | 7Y74A00FEA     | 7Y74A008EA               |
| Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array LFF (16 GB memory, 4x 10 Gb iSCSI base ports [no SFPs], 8x 10/25 Gb iSCSI HIC ports [no SFPs], 6x 4 TB 7.2K HDDs)   | 7Y74A00DEA     | 7Y74A006EA               |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 16 Gb FC HIC ports [no SFPs], 6x 4 TB 7.2K HDDs)               | 7Y74A00GEA     | 7Y74A005EA               |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF (16 GB memory, 4x 16 Gb FC base ports [no SFPs], 8x 32 Gb FC HIC ports [no SFPs], 6x 4 TB 7.2K HDDs)               | 7Y74A00EEA     | 7Y74A007EA               |

The following table lists the CTO base models for the ThinkSystem DE4000H.

Table 8. ThinkSystem DE4000H CTO base models

| Description                                            | Machine Type/Model | Feature code   |               |
|--------------------------------------------------------|--------------------|----------------|---------------|
|                                                        |                    | European Union | Other markets |
| Lenovo ThinkSystem Storage 2U24 Chassis (with 2x PSUs) | 7Y75CTO1WW         | BEY7           | B38L          |
| Lenovo ThinkSystem Storage 2U12 Chassis (with 2x PSUs) | 7Y74CTO1WW         | BEY6           | B38M          |
| Lenovo ThinkSystem Storage 4U60 Chassis (with 2x PSUs) | 7Y77CTO1WW         | BEY8           | B38N          |

#### Configuration notes:

- For Relationship and TopSeller models, two DE4000 controllers (feature code B4BB) are included in the model configuration.
- For CTO models, two DE4000 controllers (feature code B4BB) are selected by default in the configurator, and the selection cannot be changed.

The models of the ThinkSystem DE4000H ship with the following items:

- One chassis with the following components:
  - Two controllers
  - Two power supplies
  - Two cooling modules (4U60 LFF only)
  - Two host interface cards
- Rack Mount Kit
- 2 m USB Cable (USB Type A to Micro-USB)
- *Quick Installation Guide*
- *Electronic Publications Flyer*
- Two power cables
  - Relationship and TopSeller models listed in this section:
    - 2U24 SFF, 2U12 LFF: 1.5 m, 10A/100-250V, C13 to IEC 320-C14 rack power cables
    - 4U60 LFF: 2.5 m, 16A/100-240V, C19 to IEC 320-C20 rack power cables
  - CTO models: Customer-configured power cables

**Note:** Some models of the ThinkSystem DE4000H ship with SFP+ transceivers and cables. For models that ship without transceivers and cables, the supported SFP+ transceivers, DAC cables, SAS cables, or RJ-45 UTP cables should be purchased for the system (see [Controllers](#) for details).

## Controllers

The ThinkSystem DE4000H controller enclosures ship with two DE4000 controllers. A *controller* provides interfaces for host connectivity, management, and internal drives, and it runs storage management software. Each DE4000 controller ships with 8 GB or 32 GB memory for a system total of 16 GB or 64 GB.

The ThinkSystem DE4000H controller enclosures ship with four universal ports (two ports per controller) for 1/10 Gb iSCSI or 4/8/16 Gb FC host connectivity.

Each controller has one expansion slot for a host interface card (HIC).

The following host interfaces can be added to the ThinkSystem DE4000H controller enclosures with HICs:

- 8x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) ports (4 ports per HIC) for SAS connectivity
- 8x 10/25 GbE SFP28 ports (4 ports per HIC) for 10/25 Gb iSCSI connectivity (require optical transceivers or DAC cables that should be purchased for the HICs)
- 8x 1/10 Gb iSCSI or 4/8/16 Gb FC SFP+ ports (4 ports per HIC) for iSCSI or FC connectivity (require transceivers or DAC cables [10 Gb iSCSI only] that should be purchased for the HICs)
- 8x 8/16/32 Gb FC SFP+ ports (4 ports per HIC for FC connectivity require optical transceivers that should be purchased for the HICs)
- 4x 1/10 Gb iSCSI RJ-45 ports (2 ports per HIC) for iSCSI connectivity (2U12 LFF and 2U24 SFF controller enclosures only)

Each DE4000 controller also provide two 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644 connectors) for the attachment of the ThinkSystem DE Series expansion units.

### Configuration notes:

- Both controllers must have the same system memory size: 8 GB or 32 GB.
- Two host interface cards are required for selection (one per controller).
- All four SFP+ base ports in the system must have the same connectivity type (either iSCSI or FC, but not both types) and the same type of SFP+ media (either optical transceivers or DAC cables, but not both types).
- Both controllers must have the same type of the host interface card installed (12 Gb SAS SFF-8644, 10 Gb iSCSI / 16 Gb FC SFP+, 10/25 Gb iSCSI SFP28, 32 Gb FC SFP+, or 1/10 Gb iSCSI RJ-45, and both cards must have SFP+/SFP28 media of the same type (either optical transceivers or DAC cables, but not both types).

The following table lists the DE4000H controller and supported connectivity options.

Table 9. DE4000H controller and connectivity options

| Part number                 | Feature code | Description                                      | Maximum quantity per controller enclosure |
|-----------------------------|--------------|--------------------------------------------------|-------------------------------------------|
| <b>Controllers</b>          |              |                                                  |                                           |
| None*                       | BQ9Z         | Lenovo ThinkSystem DE4000 Controller 8GB Gen2    | 2                                         |
| None*                       | BQA0         | Lenovo ThinkSystem DE4000 Controller 32GB Gen2   | 2                                         |
| None*                       | B4BB         | Lenovo ThinkSystem DE4000 Controller 8GB         | 2                                         |
| None*                       | B88D         | Lenovo ThinkSystem DE4000 Controller 32GB        | 2                                         |
| <b>Host interface cards</b> |              |                                                  |                                           |
| 4C57A14367                  | B4B8         | Lenovo ThinkSystem DE4000 HIC, 12Gb SAS, 4 ports | 2                                         |

| Part number                                                                                               | Feature code | Description                                            | Maximum quantity per controller enclosure |
|-----------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------|-------------------------------------------|
| 4C57A14369                                                                                                | B4BA         | Lenovo ThinkSystem DE4000 HIC, 10/25GbE iSCSI, 4 ports | 2                                         |
| 4C57A14366                                                                                                | B4B7         | Lenovo ThinkSystem DE4000 HIC, 16Gb FC/10GbE, 4 ports  | 2                                         |
| 4C57A14368                                                                                                | B4B9         | Lenovo ThinkSystem DE4000 HIC, 32Gb FC, 4 ports        | 2                                         |
| 4C57A14376                                                                                                | B4B1         | Lenovo ThinkSystem DE2000/DE4000 HIC 10GBASE-T 2-Ports | 2                                         |
| SFP+ options for base ports and 10 Gb iSCSI / 16 Gb FC host interface card / 32 Gb FC host interface card |              |                                                        |                                           |
| 4XF7A14917                                                                                                | B4K7         | 1Gb RJ-45 iSCSI SFP+ Module (1-pack)                   | 8                                         |
| 4M17A13527                                                                                                | B4B2         | Lenovo 10Gb iSCSI/16Gb FC Universal SFP+ Module        | 8                                         |
| SFP28 options for 10/25 Gb iSCSI host interface card                                                      |              |                                                        |                                           |
| 4M17A13529                                                                                                | B4B4         | Lenovo 10/25GbE iSCSI SFP28 Module                     | 8                                         |
| SFP+ options for 32 Gb FC host interface card                                                             |              |                                                        |                                           |
| 4M17A13528                                                                                                | B4B3         | Lenovo 32Gb FC SFP+ Transceiver                        | 8                                         |
| OM4 cable options 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                        | 8                                         |
| 4Z57A10846                                                                                                | B2PA         | Lenovo 1m LC-LC OM4 MMF Cable                          | 8                                         |
| 4Z57A10847                                                                                                | B2PB         | Lenovo 3m LC-LC OM4 MMF Cable                          | 8                                         |
| 4Z57A10848                                                                                                | B2PC         | Lenovo 5m LC-LC OM4 MMF Cable                          | 8                                         |
| 4Z57A10849                                                                                                | B2PD         | Lenovo 10m LC-LC OM4 MMF Cable                         | 8                                         |
| 4Z57A10850                                                                                                | B2PE         | Lenovo 15m LC-LC OM4 MMF Cable                         | 8                                         |
| 4Z57A10851                                                                                                | B2PF         | Lenovo 25m LC-LC OM4 MMF Cable                         | 8                                         |
| 4Z57A10852                                                                                                | B2PG         | Lenovo 30m LC-LC OM4 MMF Cable                         | 8                                         |
| OM3 cable options 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                        | 8                                         |
| 00MN502                                                                                                   | ASR6         | Lenovo 1m LC-LC OM3 MMF Cable                          | 8                                         |
| 00MN505                                                                                                   | ASR7         | Lenovo 3m LC-LC OM3 MMF Cable                          | 8                                         |
| 00MN508                                                                                                   | ASR8         | Lenovo 5m LC-LC OM3 MMF Cable                          | 8                                         |
| 00MN511                                                                                                   | ASR9         | Lenovo 10m LC-LC OM3 MMF Cable                         | 8                                         |
| 00MN514                                                                                                   | ASRA         | Lenovo 15m LC-LC OM3 MMF Cable                         | 8                                         |
| 00MN517                                                                                                   | ASRB         | Lenovo 25m LC-LC OM3 MMF Cable                         | 8                                         |
| 00MN520                                                                                                   | ASRC         | Lenovo 30m LC-LC OM3 MMF Cable                         | 8                                         |
| DAC cable options for 10 Gb iSCSI SFP+ host connectivity (base ports and iSCSI HICs)                      |              |                                                        |                                           |
| 00D6288                                                                                                   | A3RG         | 0.5m Passive DAC SFP+ Cable                            | 8                                         |
| 90Y9427                                                                                                   | A1PH         | 1m Passive DAC SFP+ Cable                              | 8                                         |
| 00AY764                                                                                                   | A51N         | 1.5m Passive DAC SFP+ Cable                            | 8                                         |
| 00AY765                                                                                                   | A51P         | 2m Passive DAC SFP+ Cable                              | 8                                         |
| 90Y9430                                                                                                   | A1PJ         | 3m Passive DAC SFP+ Cable                              | 8                                         |
| 90Y9433                                                                                                   | A1PK         | 5m Passive DAC SFP+ Cable                              | 8                                         |
| 00D6151                                                                                                   | A3RH         | 7m Passive DAC SFP+ Cable                              | 8                                         |
| DAC cable options for 25 Gb iSCSI SFP28 host connectivity (iSCSI HICs)                                    |              |                                                        |                                           |
| 7Z57A03557                                                                                                | AV1W         | Lenovo 1m Passive 25G SFP28 DAC Cable                  | 8                                         |
| 7Z57A03558                                                                                                | AV1X         | Lenovo 3m Passive 25G SFP28 DAC Cable                  | 8                                         |

| Part number                                                                           | Feature code | Description                                         | Maximum quantity per controller enclosure |
|---------------------------------------------------------------------------------------|--------------|-----------------------------------------------------|-------------------------------------------|
| SAS host connectivity cables: Mini-SAS HD (controller) to Mini-SAS HD (host)          |              |                                                     |                                           |
| 00YL847                                                                               | AU16         | 0.5m External MiniSAS HD 8644/MiniSAS HD 8644 Cable | 8                                         |
| 00YL848                                                                               | AU17         | 1m External MiniSAS HD 8644/MiniSAS HD 8644 Cable   | 8                                         |
| 00YL849                                                                               | AU18         | 2m External MiniSAS HD 8644/MiniSAS HD 8644 Cable   | 8                                         |
| 00YL850                                                                               | AU19         | 3m External MiniSAS HD 8644/MiniSAS HD 8644 Cable   | 8                                         |
| UTP Category 6 cables for 1/10 Gb iSCSI RJ-45 connectivity and 1 GbE management ports |              |                                                     |                                           |
| 00WE123                                                                               | AVFW         | 0.75m Green Cat6 Cable                              | 6                                         |
| 00WE127                                                                               | AVFX         | 1.0m Green Cat6 Cable                               | 6                                         |
| 00WE131                                                                               | AVFY         | 1.25m Green Cat6 Cable                              | 6                                         |
| 00WE135                                                                               | AVFZ         | 1.5m Green Cat6 Cable                               | 6                                         |
| 00WE139                                                                               | AVG0         | 3m Green Cat6 Cable                                 | 6                                         |
| 90Y3718                                                                               | A1MT         | 10m Green Cat6 Cable                                | 6                                         |
| 90Y3727                                                                               | A1MW         | 25m Green Cat6 Cable                                | 6                                         |

\* Factory-installed only

## Expansion enclosures

The ThinkSystem DE4000H supports attachment of DE120S 2U12 LFF, DE240S 2U24 SFF or DE600S 4U60 LFF expansion enclosures for a total of up to 192 drives per system (including controller and expansion enclosures).

The supported expansion types and quantities are dependent on the controller enclosure type, as listed in the following table.

Table 10. Maximum number of expansion enclosures by DE4000H Controller enclosure type

|                         | DE120S 2U12 LFF<br>Quantity | DE240S 2U24 SFF<br>Quantity | DE600S 4U60 LFF<br>Quantity |
|-------------------------|-----------------------------|-----------------------------|-----------------------------|
| DE4000H 2U24 SFF (7Y75) | 3                           | 3                           | 2                           |
| DE4000H 2U12 LFF (7Y74) | 7                           | 3                           | 3                           |
| DE4000H 4U60 LFF (7Y77) | 3                           | 3                           | 2                           |

Intermix of 2U24 SFF, 2U12 LFF, and 4U60 LFF expansion enclosures behind a 2U24 SFF, 2U12 LFF, or 4U60 LFF controller enclosure is supported. The expansion enclosures can be added to the system non-disruptively.

The following table lists the relationship models of the supported ThinkSystem DE Series expansion enclosures.

Table 11. ThinkSystem DE240S, DE120S, and DE600S relationship models

| Description                                                 | Part number |               |            |                |            |                         |
|-------------------------------------------------------------|-------------|---------------|------------|----------------|------------|-------------------------|
|                                                             | Brazil      | Latin America | China      | European Union | Japan      | Other markets worldwide |
| Lenovo ThinkSystem DE240S 2U24 SFF Expansion Enclosure      | -           | -             | -          | 7Y68A004EA     | 7Y681001JP | 7Y68A000WW              |
| Lenovo ThinkSystem DE120S 2U12 LFF Expansion Enclosure      | -           | -             | -          | 7Y63A003EA     | 7Y631000JP | 7Y63A000WW              |
| Lenovo ThinkSystem DE600S 4U60 LFF Expansion Enclosure      | -           | -             | -          | 7Y69A003EA     | 7Y691000JP | 7Y69A000WW              |
| Lenovo ThinkSystem DE600S 4U60 LFF Expansion Enclosure Gen2 | 7Y69A004BR  | 7Y69A004LA    | 7Y69A004CN | -              | 7Y69A005JP | 7Y69A004WW              |

The following table lists the TopSeller models of the supported ThinkSystem DE Series expansion enclosures.

Table 12. ThinkSystem DE240S and DE120S TopSeller models: Brazil and Latin America

| Description                                                        | Part number   |            |
|--------------------------------------------------------------------|---------------|------------|
|                                                                    | Latin America | Brazil     |
| Lenovo ThinkSystem DE240S 2U24 SFF Expansion Enclosure (TopSeller) | 7Y681002LA    | 7Y681002BR |
| Lenovo ThinkSystem DE120S 2U12 LFF Expansion Enclosure (TopSeller) | 7Y631001LA    | 7Y631001BR |

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

Table 13. ThinkSystem DE240S, DE120S, and DE600S CTO base models

| Description                                            | Machine Type/Model | Feature code   |               |            |
|--------------------------------------------------------|--------------------|----------------|---------------|------------|
|                                                        |                    | European Union | Other markets | World Wide |
| Lenovo ThinkSystem Storage 2U24 Chassis (with 2x PSUs) | 7Y68CTO1WW         | BEY7           | B38L          | -          |
| Lenovo ThinkSystem Storage 2U12 Chassis (with 2x PSUs) | 7Y63CTO1WW         | BEY6           | B38M          | -          |
| Lenovo ThinkSystem Storage 4U60 Chassis (with 2x PSUs) | 7Y69CTO2WW         | -              | -             | BQ9W       |
| Lenovo ThinkSystem Storage 4U60 Chassis (with 2x PSUs) | 7Y69CTO1WW         | BEY8           | B38N          | -          |

### Configuration notes:

- For Relationship and TopSeller models, two I/O expansion modules (feature code B4BS) are included in the model configuration.
- For CTO models, two I/O expansion modules (feature code B4BS) are selected by default in the configurator, and the selection cannot be changed.

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 8 and 9)
- Rack Mount Kit
- *Quick Installation Guide*
- *Electronic Publications Flyer*
- Two power cables:
  - Models listed in Tables 8 and 9:
    - 2U24 SFF, 2U12 LFF: 1.5 m, 10A/100-250V, C13 to C14 rack power cables
    - 4U60 LFF: 2.5 m, 16A/100-240V, C19 to C20 rack power cables
  - CTO models: Customer-configured power cables

**Note:** The Relationship and TopSeller models of the ThinkSystem DE240S, DE120S, and DE600S listed in this section ship with four 1 m SAS cables; additional SAS cables that are listed in this section can be purchased for the system, if needed.

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 DE4000H 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.

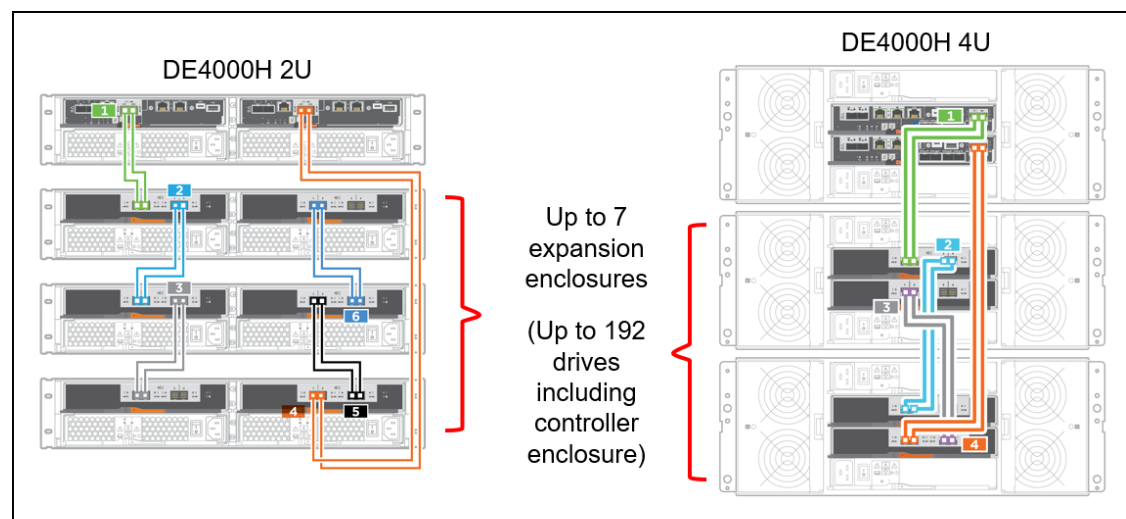


Figure 9. DE Series expansion enclosure connectivity topology

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

Table 14. Expansion unit connectivity options

| Description                                         | Part number | Feature code | Quantity per one expansion enclosure |
|-----------------------------------------------------|-------------|--------------|--------------------------------------|
| External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable | 00YL847     | AU16         | 4                                    |
| External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable   | 00YL848     | AU17         | 4                                    |
| External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable   | 00YL849     | AU18         | 4                                    |
| External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable   | 00YL850     | AU19         | 4                                    |

#### Configuration notes:

- The Relationship and TopSeller models of the ThinkSystem DE240S, DE120S, and DE600S listed in this section ship with four 1 m SAS cables.
- Four 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 2U12 or 2U24 enclosure to an adjacent 4U60 enclosure should be at least 1 meter.

## Drives

The ThinkSystem DE Series 2U24 SFF enclosures support up to 24 SFF hot-swap drives, the 2U12 LFF enclosures support up to 12 LFF hot-swap drives, and the 4U60 LFF enclosures support up to 60 LFF hot-swap drives.

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

The following table lists supported drive options for the 2U24 SFF controller and expansion enclosures.

Table 15. 2U24 SFF drive options

| Part number                                                 | Feature code | Description                                                    | Maximum quantity per 2U24 SFF enclosure |
|-------------------------------------------------------------|--------------|----------------------------------------------------------------|-----------------------------------------|
| 2.5-inch 12 Gbps SAS hot-swap HDDs                          |              |                                                                |                                         |
| 4XB7A14112                                                  | B4BY         | Lenovo ThinkSystem DE Series 1.2TB 10K 2.5" HDD 2U24           | 24                                      |
| 4XB7A14113                                                  | B4BZ         | Lenovo ThinkSystem DE Series 1.8TB 10K 2.5" HDD 2U24           | 24                                      |
| 4XB7A88046                                                  | BW12         | Lenovo ThinkSystem DE Series 2.4TB 10K 2.5" HDD 2U24           | 24                                      |
| 2.5-inch 12 Gbps SAS hot-swap FIPS HDDs (SED HDDs)          |              |                                                                |                                         |
| 4XB7A14114                                                  | B4C0         | Lenovo ThinkSystem DE Series 1.8TB 10K 2.5" HDD SED FIPS 2U24  | 24                                      |
| 4XB7A88048                                                  | BW13         | Lenovo ThinkSystem DE Series 2.4TB 10K 2.5" HDD FIPS 2U24      | 24                                      |
| 2.5-inch 12 Gbps SAS hot-swap SSDs (1 DWPD)                 |              |                                                                |                                         |
| 4XB7A14173                                                  | B4RX         | Lenovo DE Series 3.84TB 1DWD 2.5" SSD 2U24                     | 24                                      |
| 4XB7A14176                                                  | B4RY         | Lenovo DE Series 7.68TB 1DWD 2.5" SSD 2U24                     | 24                                      |
| 4XB7A14110                                                  | B4CD         | Lenovo ThinkSystem DE Series 15.36TB 1DWD 2.5" SSD 2U24        | 24                                      |
| 2.5-inch 12 Gbps SAS hot-swap SSDs (1 DWPD and 3 DWPD)      |              |                                                                |                                         |
| 4XB7A74948                                                  | BKUQ         | Lenovo ThinkSystem DE Series 960GB 1DWD 2.5" SSD 2U24          | 24                                      |
| 4XB7A74951                                                  | BKUT         | Lenovo ThinkSystem DE Series 1.92TB 1DWD 2.5" SSD 2U24         | 24                                      |
| 4XB7A74955                                                  | BKUK         | Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD 2U24         | 24                                      |
| 4XB7A14105                                                  | B4BT         | Lenovo ThinkSystem DE Series 800GB 3DWD 2.5" SSD 2U24          | 24                                      |
| 4XB7A14106                                                  | B4BU         | Lenovo ThinkSystem DE Series 1.6TB 3DWD 2.5" SSD 2U24          | 24                                      |
| 4XB7A14108                                                  | B4BW         | Lenovo ThinkSystem DE Series 3.2TB 3DWD 2.5" SSD 2U24          | 24                                      |
| 2.5-inch 12 Gbps SAS hot-swap FIPS SSDs (SED SSDs) (3 DWPD) |              |                                                                |                                         |
| 4XB7A14107                                                  | B4BV         | Lenovo ThinkSystem DE Series 1.6TB 3DWD 2.5" SSD SED FIPS 2U24 | 24                                      |
| 2.5-inch 12 Gbps SAS hot-swap FIPS SSDs (1 DWPD)            |              |                                                                |                                         |
| 4XB7A88469                                                  | BWCJ         | Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD FIPS 2U24    | 24                                      |

The following table lists supported drive options for the 2U12 LFF controller and expansion enclosures.

Table 16. 2U12 LFF drive options

| Part number                                                                             | Feature code | Description                                                                            | Maximum quantity per 2U12 LFF enclosure |
|-----------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------|-----------------------------------------|
| 3.5-inch 12 Gbps NL SAS hot-swap HDDs                                                   |              |                                                                                        |                                         |
| 4XB7A14099                                                                              | B4C3         | Lenovo ThinkSystem DE Series 4TB 7.2K 3.5" HDD 2U12                                    | 12                                      |
| 4XB7A14101                                                                              | B4C5         | Lenovo ThinkSystem DE Series 8TB 7.2K 3.5" HDD 2U12                                    | 12                                      |
| 4XB7A14102                                                                              | B4C6         | Lenovo ThinkSystem DE Series 10TB 7.2K 3.5" HDD 2U12                                   | 12                                      |
| 4XB7A14104                                                                              | B4C8         | Lenovo ThinkSystem DE Series 12TB 7.2K 3.5" HDD 2U12                                   | 12                                      |
| 4XB7A64875                                                                              | BCVY         | Lenovo ThinkSystem DE Series 16TB 7.2K 3.5" HDD 2U12                                   | 12                                      |
| 4XB7A74942                                                                              | BHDP         | Lenovo ThinkSystem DE Series 18TB 7.2K 3.5" HDD 2U12                                   | 12                                      |
| 4XB7B03838                                                                              | C7XS         | Lenovo ThinkSystem DE Series 24TB 7.2K 3.5" HDD 2U12                                   | 12                                      |
| 4XB7A88027                                                                              | BW1W         | Lenovo ThinkSystem DE Series 22TB 7.2K 3.5" HDD 2U12                                   | 12                                      |
| 3.5-inch 12 Gbps NL SAS hot-swap FIPS HDDs (SED HDDs)                                   |              |                                                                                        |                                         |
| 4XB7A14100                                                                              | B4C4         | Lenovo ThinkSystem DE Series 6TB 7.2K 3.5" HDD SED FIPS 2U12                           | 12                                      |
| 4XB7A14103                                                                              | B4C7         | Lenovo ThinkSystem DE Series 10TB 7.2K 3.5" HDD SED FIPS 2U12                          | 12                                      |
| 3.5-inch 12 Gbps SAS hot-swap SSDs (1 DWPD and 3 DWPD)                                  |              |                                                                                        |                                         |
| 4XB7A14097                                                                              | B4C1         | Lenovo ThinkSystem DE Series 800GB 3DWD 2.5" SSD 2U12 (2.5" drive in a 3.5" tray)      | 12                                      |
| 4XB7A74946                                                                              | BKUN         | Lenovo ThinkSystem DE Series 960GB 1DWD 2.5" SSD 2U12 (2.5" drive in a 3.5" tray)      | 12                                      |
| 4XB7A74947                                                                              | BKUP         | Lenovo ThinkSystem DE Series 1.92TB 1DWD 2.5" SSD 2U12 (2.5" drive in a 3.5" tray)     | 12                                      |
| 4XB7A74954                                                                              | BKUJ         | Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD 2U12 (2.5" drive in a 3.5" tray)     | 12                                      |
| 3.5-inch 12 Gbps SAS hot-swap FIPS SSDs (SED SSDs) (3 DWPD) (2.5" drive in a 3.5" tray) |              |                                                                                        |                                         |
| 4XB7A14098                                                                              | B4C2         | Lenovo ThinkSystem DE Series 1.6TB 3DWD 2.5" SSD FIPS 2U12 (2.5" drive in a 3.5" tray) | 12                                      |
| 3.5-inch 12 Gbps SAS hot-swap FIPS SSDs (1 DWPD) (2.5" drive in a 3.5" tray)            |              |                                                                                        |                                         |
| 4XB7A88469                                                                              | BWCJ         | Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD FIPS 2U24                            | 24                                      |

The following table lists supported drive options for the 4U60 LFF controller and expansion enclosures.

Table 17. 4U60 LFF drive options

| Part number                           | Feature code | Description                                          | Maximum quantity per 4U60 LFF enclosure |
|---------------------------------------|--------------|------------------------------------------------------|-----------------------------------------|
| 3.5-inch 12 Gbps NL SAS hot-swap HDDs |              |                                                      |                                         |
| 4XB7A14124                            | B4GG         | Lenovo ThinkSystem DE Series 4TB 7.2K 3.5" HDD 4U60  | 60                                      |
| 4XB7A14125                            | B4GH         | Lenovo ThinkSystem DE Series 8TB 7.2K 3.5" HDD 4U60  | 60                                      |
| 4XB7A14126                            | B4GJ         | Lenovo ThinkSystem DE Series 10TB 7.2K 3.5" HDD 4U60 | 60                                      |
| 4XB7A14128                            | B4GL         | Lenovo ThinkSystem DE Series 12TB 7.2K 3.5" HDD 4U60 | 60                                      |
| 4XB7A64876                            | BCUC         | Lenovo ThinkSystem DE Series 16TB 7.2K 3.5" HDD 4U60 | 60                                      |

| Part number                                                                             | Feature code | Description                                                                             | Maximum quantity per 4U60 LFF enclosure |
|-----------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------|-----------------------------------------|
| 4XB7A74943                                                                              | BHDQ         | Lenovo ThinkSystem DE Series 18TB 7.2K 3.5" HDD 4U60                                    | 60                                      |
| 4XB7A88038                                                                              | BW1Y         | Lenovo ThinkSystem DE Series 22TB 7.2K 3.5" HDD 4U60                                    | 60                                      |
| 3.5-inch 12 Gbps NL SAS hot-swap FIPS HDDs (SED HDDs)                                   |              |                                                                                         |                                         |
| 4XB7A14127                                                                              | B4GK         | Lenovo ThinkSystem DE Series 10TB 7.2K 3.5" HDD SED FIPS 4U60                           | 60                                      |
| 3.5-inch 12 Gbps SAS hot-swap SSDs (1 DWPD) (2.5" drive in a 3.5" tray)                 |              |                                                                                         |                                         |
| 4XB7A86719                                                                              | BUC8         | Lenovo ThinkSystem DE Series 1.92TB 1DWD SAS SSD 4U60 (2.5" drive in a 3.5" tray)       | 60                                      |
| 3.5-inch 12 Gbps SAS hot-swap SSDs (3 DWPD) (2.5" drive in a 3.5" tray)                 |              |                                                                                         |                                         |
| 4XB7A14115                                                                              | B4G9         | Lenovo ThinkSystem DE Series 800GB 3DWD 2.5" SSD 4U60                                   | 60                                      |
| 4XB7A14116                                                                              | B4GA         | Lenovo ThinkSystem DE Series 1.6TB 3DWD 2.5" SSD 4U60                                   | 60                                      |
| 4XB7A14118                                                                              | B4GC         | Lenovo ThinkSystem DE Series 3.2TB 3DWD 2.5" SSD 4U60                                   | 60                                      |
| 3.5-inch 12 Gbps SAS hot-swap FIPS SSDs (1 DWPD) (2.5" drive in a 3.5" tray)            |              |                                                                                         |                                         |
| 4XB7A88506                                                                              | BWCM         | Lenovo ThinkSystem DE Series 3.84TB 1DWD 2.5" SSD FIPS 4U60 (2.5" drive in a 3.5" tray) | 60                                      |
| 3.5-inch 12 Gbps SAS hot-swap FIPS SSDs (SED SSDs) (3 DWPD) (2.5" drive in a 3.5" tray) |              |                                                                                         |                                         |
| 4XB7A14117                                                                              | B4GB         | Lenovo ThinkSystem DE Series 1.6TB 3DWD 2.5" SSD FIPS 4U60 (2.5" drive in a 3.5" tray)  | 60                                      |

The following table lists supported drive pack options for the 4U60 LFF controller and expansion enclosures.

Table 18. 4U60 LFF drive pack options

| Part number                                                                  | Feature code | Description                                                                                | Maximum quantity per 4U60 LFF enclosure |
|------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|-----------------------------------------|
| 3.5-inch 12 Gbps NL SAS hot-swap HDD packs                                   |              |                                                                                            |                                         |
| 4XB7A14163                                                                   | B4GN         | Lenovo ThinkSystem DE Series 80TB HDD Pack (20x 4TB HDD)                                   | 3                                       |
| 4XB7A14165                                                                   | B4GP         | Lenovo ThinkSystem DE Series 160TB HDD Pack (20x 8TB HDD)                                  | 3                                       |
| 4XB7A14167                                                                   | B4GQ         | Lenovo ThinkSystem DE Series 200TB HDD Pack (20x 10TB HDD)                                 | 3                                       |
| 4XB7A14171                                                                   | B4GS         | Lenovo ThinkSystem DE Series 240TB HDD Pack (20x 12TB HDD)                                 | 3                                       |
| 4XB7A64877                                                                   | BCUD         | Lenovo ThinkSystem DE Series 320TB HDD Pack (20x 16TB HDDs)                                | 3                                       |
| 4XB7A74944                                                                   | BHDR         | Lenovo ThinkSystem DE Series 360TB HDD Pack (20x 18TB HDDs)                                | 3                                       |
| 4XB7A88042                                                                   | BW1K         | Lenovo ThinkSystem DE Series 440TB HDD Pack (20x 22TB)                                     | 3                                       |
| 3.5-inch 12 Gbps NL SAS hot-swap FIPS HDD packs (SED HDD packs)              |              |                                                                                            |                                         |
| 4XB7A14169                                                                   | B4GR         | Lenovo ThinkSystem DE Series 200TB HDD SED FIPS Pack (20x 10TB HDD)                        | 3                                       |
| 3.5-inch 12 Gbps SAS hot-swap SSD packs (1 DWPD) (2.5" drive in a 3.5" tray) |              |                                                                                            |                                         |
| 4XB7A86720                                                                   | BUC9         | Lenovo ThinkSystem DE Series 38.4TB Pack (20x 1.92TB SAS SSDs) (2.5" drive in a 3.5" tray) | 3                                       |
| 3.5-inch 12 Gbps SAS hot-swap SSD packs (3 DWPD) (2.5" drive in a 3.5" tray) |              |                                                                                            |                                         |
| 4XB7A14161                                                                   | B4GM         | Lenovo ThinkSystem DE Series 32TB SSD Pack (20x 1.6TB SSDs) (2.5" drive in a 3.5" tray)    | 3                                       |
| FIPS SSDs                                                                    |              |                                                                                            |                                         |

| Part number | Feature code | Description                                                                                      | Maximum quantity per 4U60 LFF enclosure |
|-------------|--------------|--------------------------------------------------------------------------------------------------|-----------------------------------------|
| 4XB7A88507  | BWCN         | Lenovo ThinkSystem DE Series 76.8TB FIPS Pack (20x 3.84TB FIPS SSDs) (2.5" drive in a 3.5" tray) | 3                                       |

#### Configuration notes:

- For hybrid (HDDs and SSDs) and all flash (SSDs only) storage configurations, a single ThinkSystem DE4000H 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.
- FIPS drives are not available in the following countries:
  - Belarus
  - Kazakhstan
  - People's Republic of China
  - Russia

## Software

The following functions are included with every ThinkSystem DE4000H:

- **RAID levels 0, 1, 3, 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.
- **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.
- **SSD Read Cache:** Helps accelerate performance of read-centric workloads.
- **Thin provisioning:** Optimizes efficiency of Dynamic Disk Pools by allocating storage space based on the minimum space required by each application at any given time, so that applications consume only the space they are actually using, not the total space that has been allocated to them, which allows customers to purchase storage they need today and add more as application requirements grow.
- **Snapshots:** Enables creation of copies of data for backup, parallel processing, testing, and development, and have the copies available almost immediately. Base software supports up to 128 snapshot targets per 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.

The ThinkSystem DE4000H capabilities can be expanded with optional licensed functions. Optional licensed functions include:

- **Snapshots upgrade:** Increase the supported number of snapshot targets to 512.
- **Synchronous mirroring:** Provides storage system-based online, real-time data replication between the storage systems containing primary (local) and secondary (remote) volumes by using synchronous data transfers over Fibre Channel communication links (both storage systems must have licenses for synchronous mirroring).
- **Asynchronous mirroring:** Provides storage system-based data replication between the storage systems containing primary (local) and secondary (remote) volumes by using asynchronous data transfers over iSCSI or Fibre Channel communication links at set intervals (both storage systems must have licenses for asynchronous mirroring).

**Note:** The synchronous and asynchronous mirroring features of the ThinkSystem DE4000H interoperate with other ThinkSystem DE Series storage arrays.

The following table lists the Feature on Demand (FoD) upgrades for the ThinkSystem DE4000H to enable optional software features. Each optional DE4000H function is licensed on a per-system basis and covers both controller enclosure and all attached expansion enclosures.

Table 19. Optional software features

| Description                                       | Part number | Feature code |
|---------------------------------------------------|-------------|--------------|
| Lenovo ThinkSystem DE4000H Snapshot Upgrade 512   | 4ZN7A14708  | B4QL         |
| Lenovo ThinkSystem DE4000 Synchronous Mirroring   | 4ZN7A16002  | B598         |
| Lenovo ThinkSystem DE4000H Asynchronous Mirroring | 4ZN7A14709  | B4QM         |

Software maintenance is included in the ThinkSystem DE4000H 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).

## Management

The DE4000H 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.
- Optional Lenovo XClarity Administrator support for discovery, inventory, and monitoring.

## Power supplies and cables

The ThinkSystem DE Series 2U24 SFF and 2U12 LFF enclosures ship with two redundant hot-swap 913 W (100 - 240 V) Platinum AC power supplies, each with an IEC 320-C14 connector. The Relationship and TopSeller models of the ThinkSystem DE4000H 2U24 SFF and 2U12 LFF, DE240S 2U24 SFF, and DE120S LFF enclosures listed in [Controller enclosures](#) and [Expansion enclosures](#) ship with two 1.5 m, 10A/100-250V, C13 to IEC 320-C14 rack power cables.

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 Relationship models of the ThinkSystem DE4000H 4U60 LFF and DE600S 4U60 LFF enclosures listed in [Controller enclosures](#) and [Expansion enclosures](#) ship with two 2.5 m, 16A/100-240V, C19 to IEC 320-C20 rack power cables.

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 2U24 SFF and 2U12 LFF enclosures (two power cords per enclosure).

Table 20. Power cables for DE Series 2U24 SFF and 2U12 LFF enclosures

| Description                                                        | Part number | Feature code |
|--------------------------------------------------------------------|-------------|--------------|
| Rack power cables                                                  |             |              |
| 1.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 00Y3043     | A4VP         |
| 1.0m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 4L67A08367  | B0N5         |
| 1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 39Y7937     | 6201         |
| 1.5m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 4L67A08368  | B0N6         |
| 2.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 4L67A08365  | B0N4         |
| 2.0m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable       | 4L67A08369  | 6570         |
| 2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 4L67A08366  | 6311         |
| 2.8m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable       | 4L67A08370  | 6400         |
| 2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable            | 39Y7938     | 6204         |
| 4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable            | 39Y7932     | 6263         |
| 4.3m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable       | 4L67A08371  | 6583         |
| Line cords                                                         |             |              |
| Argentina 2.8m, 10A/250V, C13 to IRAM 2073 Line Cord               | 39Y7930     | 6222         |
| Argentina 4.3m, 10A/250V, C13 to IRAM 2073 Line Cord               | 81Y2384     | 6492         |
| Australia/New Zealand 2.8m, 10A/250V, C13 to AS/NZS 3112 Line Cord | 39Y7924     | 6211         |
| Australia/New Zealand 4.3m, 10A/250V, C13 to AS/NZS 3112 Line Cord | 81Y2383     | 6574         |
| Brazil 2.8m, 10A/250V, C13 to NBR 14136 Line Cord                  | 69Y1988     | 6532         |
| Brazil 4.3m, 10A/250V, C13 to NBR14136 Line Cord                   | 81Y2387     | 6404         |
| China 2.8m, 10A/250V, C13 to GB 2099.1 Line Cord                   | 39Y7928     | 6210         |
| China 4.3m, 10A/250V, C13 to GB 2099.1 Line Cord                   | 81Y2378     | 6580         |
| Denmark 2.8m, 10A/250V, C13 to DK2-5a Line Cord                    | 39Y7918     | 6213         |
| Denmark 4.3m, 10A/250V, C13 to DK2-5a Line Cord                    | 81Y2382     | 6575         |
| Europe 2.8m, 10A/250V, C13 to CEE7-VII Line Cord                   | 39Y7917     | 6212         |
| Europe 4.3m, 10A/250V, C13 to CEE7-VII Line Cord                   | 81Y2376     | 6572         |
| India 2.8m, 10A/250V, C13 to IS 6538 Line Cord                     | 39Y7927     | 6269         |
| India 4.3m, 10A/250V, C13 to IS 6538 Line Cord                     | 81Y2386     | 6567         |

| Description                                                  | Part number | Feature code |
|--------------------------------------------------------------|-------------|--------------|
| Israel 2.8m, 10A/250V, C13 to SI 32 Line Cord                | 39Y7920     | 6218         |
| Israel 4.3m, 10A/250V, C13 to SI 32 Line Cord                | 81Y2381     | 6579         |
| Italy 2.8m, 10A/250V, C13 to CEI 23-16 Line Cord             | 39Y7921     | 6217         |
| Italy 4.3m, 10A/250V, C13 to CEI 23-16 Line Cord             | 81Y2380     | 6493         |
| Japan 2.8m, 12A/125V, C13 to JIS C-8303 Line cord            | 46M2593     | A1RE         |
| Japan 2.8m, 12A/250V, C13 to JIS C-8303 Line Cord            | 4L67A08357  | 6533         |
| Japan 4.3m, 12A/125V, C13 to JIS C-8303 Line Cord            | 39Y7926     | 6335         |
| Japan 4.3m, 12A/250V, C13 to JIS C-8303 Line Cord            | 4L67A08362  | 6495         |
| Korea 2.8m, 12A/250V, C13 to KS C8305 Line Cord              | 39Y7925     | 6219         |
| Korea 4.3m, 12A/250V, C13 to KS C8305 Line Cord              | 81Y2385     | 6494         |
| South Africa 2.8m, 10A/250V, C13 to SABS 164 Line Cord       | 39Y7922     | 6214         |
| South Africa 4.3m, 10A/250V, C13 to SABS 164 Line Cord       | 81Y2379     | 6576         |
| Switzerland 2.8m, 10A/250V, C13 to SEV 1011-S24507 Line Cord | 39Y7919     | 6216         |
| Switzerland 4.3m, 10A/250V, C13 to SEV 1011-S24507 Line Cord | 81Y2390     | 6578         |
| Taiwan 2.8m, 10A/125V, C13 to CNS 10917-3 Line Cord          | 23R7158     | 6386         |
| Taiwan 2.8m, 10A/250V, C13 to CNS 10917-3 Line Cord          | 81Y2375     | 6317         |
| Taiwan 2.8m, 15A/125V, C13 to CNS 10917-3 Line Cord          | 81Y2374     | 6402         |
| Taiwan 4.3m, 10A/125V, C13 to CNS 10917-3 Line Cord          | 4L67A08363  | AX8B         |
| Taiwan 4.3m, 10A/250V, C13 to CNS 10917-3 Line Cord          | 81Y2389     | 6531         |
| Taiwan 4.3m, 15A/125V, C13 to CNS 10917-3 Line Cord          | 81Y2388     | 6530         |
| United Kingdom 2.8m, 10A/250V, C13 to BS 1363/A Line Cord    | 39Y7923     | 6215         |
| United Kingdom 4.3m, 10A/250V, C13 to BS 1363/A Line Cord    | 81Y2377     | 6577         |
| United States 2.8m, 10A/125V, C13 to NEMA 5-15P Line Cord    | 90Y3016     | 6313         |
| United States 2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord    | 46M2592     | A1RF         |
| United States 2.8m, 13A/125V, C13 to NEMA 5-15P Line Cord    | 00WH545     | 6401         |
| United States 4.3m, 10A/125V, C13 to NEMA 5-15P Line Cord    | 4L67A08359  | 6370         |
| United States 4.3m, 10A/250V, C13 to NEMA 6-15P Line Cord    | 4L67A08361  | 6373         |
| United States 4.3m, 13A/125V, C13 to NEMA 5-15P Line Cord    | 4L67A08360  | AX8A         |

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 21. Power cables for DE Series 4U60 enclosures

| Description                                                        | Part number | Feature code |
|--------------------------------------------------------------------|-------------|--------------|
| Rack power cables                                                  |             |              |
| 2.0m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable            | None*       | B4L2         |
| 2.5m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable            | 39Y7916     | 6252         |
| Line cords                                                         |             |              |
| Argentina 4.3m, 16A/250V, C19 to IRAM 2073 Line Cord               | 40K9777     | 6276         |
| Australia/New Zealand 4.3m, 15A/250V, C19 to AS/NZS 3112 Line Cord | 40K9773     | 6284         |
| Brazil 4.3m, 16A/250V, C19 to NBR 14136 Line Cord                  | 40K9775     | 6277         |
| China 4.3m, 16A/250V, C19 to GB2099.1 Line Cord                    | 40K9774     | 6288         |
| Denmark/Switzerland 4.3m, 16A/250V, C19 to IEC 309 P+N+G Line Cord | 40K9769     | 6283         |

| Description                                                | Part number | Feature code |
|------------------------------------------------------------|-------------|--------------|
| Europe 4.3m, 16A/250V, C19 to CEE7-VII Line Cord           | 40K9766     | 6279         |
| India 4.3m, 16A/250V, C19 to IS6538 Line Cord              | 40K9776     | 6285         |
| Israel 4.3m, 16A/250V, C19 to SI 32 Line Cord              | 40K9771     | 6282         |
| Italy 4.3m, 16A/250V, C19 to CEI 23-16 Line Cord           | 40K9768     | 6281         |
| Japan 4.3m, 15A/200V, C19 to JIS C-8303 Line Cord          | 41Y9233     | 6291         |
| Korea 4.3m, 15A/250V, C19 to KSC 8305 Line Cord            | 41Y9231     | 6289         |
| South Africa 4.3m, 16A/250V, C19 to SABS 164 Line Cord     | 40K9770     | 6280         |
| Switzerland 4.3m, 16A/250V, C19 to SEV 1011 Line Cord      | 81Y2391     | 6549         |
| Taiwan 4.3m, 16A/250V, C19 to CNS 10917-3 Line Cord        | 41Y9230     | 6287         |
| United Kingdom 4.3m, 13A/250V, C19 to BS 1363/A Line Cord  | 40K9767     | 6278         |
| United States 4.3m, 15A/250V, C19 to NEMA 6-15P Line Cord  | 00D7197     | A1NV         |
| United States 4.3m, 18A/250V, C19 to NEMA L6-20P Line Cord | 40K9772     | 6275         |

\* CTO only.

## 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 22. 4-post rack mount kits

| Description                                         | Feature code | Quantity |
|-----------------------------------------------------|--------------|----------|
| Lenovo ThinkSystem Storage Rack Mount Kit 2U12      | B38X         | 1        |
| Lenovo ThinkSystem Storage Rack Mount Kit 2U24/4U60 | B38Y         | 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 23. 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        |
| DM/DE 4U Adjustable Rail Kit (SIR)                                  | B742         | 1        |

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

Table 24. Rack mount kit features and specifications summary

| Attribute                                         | Screw-in fixed rail with adjustable depth    |                                                    |                                              |                                              |
|---------------------------------------------------|----------------------------------------------|----------------------------------------------------|----------------------------------------------|----------------------------------------------|
|                                                   | 2U12                                         | 2U24/4U60                                          | 2U24 SIR                                     | 4U SIR                                       |
| Feature code                                      | B38X                                         | B38Y                                               | B6TH                                         | B742                                         |
| Enclosure support                                 | DE4000H 2U LFF<br>DE120S                     | DE4000H 2U SFF<br>DE4000H 4U‡<br>DE240S<br>DE600S‡ | DE4000H 2U SFF<br>DE240S                     | DE4000H 4U‡<br>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 ThinkSystem DE Series 2U24 SFF enclosures have the following dimensions:

- Height: 85 mm (3.4 in.)
- Width: 449 mm (17.7 in.)
- Depth: 553 mm (21.8 in.)

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

- Height: 85 mm (3.4 in.)
- Width: 447 mm (17.6 in.)
- Depth: 483 mm (19.0 in.)

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

- Height: 174 mm (6.9 in.)
- Width: 449 mm (17.7 in.)
- Depth: 922 mm (36.3 in.)

Weights (fully configured):

- DE4000H 2U24 SFF controller enclosure (7Y75): 24.59 kg (54.2 lb)
- DE4000H 2U12 LFF controller enclosure (7Y74): 28.78 kg (63.4 lb)
- DE4000H 4U60 LFF controller enclosure (7Y77): 108.07 kg (238.3 lb)
- DE240S 2U24 SFF expansion enclosure (7Y68): 27.44 kg (60.5 lb)
- DE120S 2U12 LFF expansion enclosure (7Y63): 27.12 kg (59.8 lb)
- DE600S 4U60 LFF expansion enclosure (7Y69): 112.2 kg (247.4 lb)

## Operating environment

The ThinkSystem DE Series 2U24 SFF, 2U12 LFF, and 4U60 LFF enclosures are supported in the following environment:

- Air temperature:
  - Operating:
    - DE4000H and DE240S 2U24 SFF: 5 °C - 45 °C (41 °F - 113 °F)
    - DE4000H and DE120S 2U12 LFF: 10 °C - 40 °C (50 °F - 104 °F)
    - DE4000H and DE600S 4U60 LFF: 10 °C - 40 °C (50 °F - 104 °F)
  - Non-operating: -10 °C - +50 °C (14 °F - 122 °F)
  - Maximum altitude: 3050 m (10,000 ft)
- Relative humidity:
  - Operating: 8% - 90% (non-condensing)
  - Non-operating: 10% - 90% (non-condensing)
- Electrical power:
  - 100 to 127 V AC (nominal); 50 Hz / 60 Hz (except 4U60 LFF enclosures)
  - 200 to 240 V AC (nominal); 50 Hz / 60 Hz
- Acoustical noise emission:
  - DE4000H 2U24 SFF and DE120S 2U12 LFF: 6.8 bels
  - DE4000H 2U12 LFF and DE240S 2U24 SFF: 6.6 bels
  - DE4000H and DE600S 4U60 SFF: 7.2 bels

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

Table 25. Enclosure power load, inlet current, and heat output

| Enclosure        | Source voltage (nominal) | Maximum power load | Current per inlet | Heat output   |
|------------------|--------------------------|--------------------|-------------------|---------------|
| DE4000H 2U24 SFF | 100 - 127 V AC           | 667 W              | 7.03 A            | 2276 BTU/hour |
|                  | 200 - 240 V AC           | 578 W              | 3.05 A            | 1973 BTU/hour |
| DE4000H 2U12 LFF | 100 - 127 V AC           | 570 W              | 6 A               | 1945 BTU/hour |
|                  | 200 - 240 V AC           | 508 W              | 2.68 A            | 1734 BTU/hour |
| DE4000H 4U60 LFF | 200 - 240 V AC           | 1512 W             | 7.96 A            | 5159 BTU/hour |
| DE240S 2U24 SFF  | 100 - 127 V AC           | 389 W              | 4.1 A             | 1328 BTU/hour |
|                  | 200 - 240 V AC           | 382 W              | 2.02 A            | 1304 BTU/hour |
| DE120S 2U12 LFF  | 100 - 127 V AC           | 306 W              | 3.3 A             | 1045 BTU/hour |
|                  | 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 customer's 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 customer's 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 customer's 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 customer's 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 customer's 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 customer's 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 customer 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://lenovocator.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 Data Center 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://lenovocator.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 Plan & Design Services](#)
- [Lenovo Deployment, Migration, and Configuration 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.

- **Design Services**

Professional Services consultants perform infrastructure design and implementation planning to support your strategy. The high-level architectures provided by the assessment service are turned into low level designs and wiring diagrams, which are reviewed and approved prior to implementation. The implementation plan will demonstrate an outcome-based proposal to provide business capabilities through infrastructure with a risk-mitigated project plan.

### Lenovo Plan & Design Services

Unlock faster time to market with our tailored, strategic design workshops to align solution approaches with your business goals and technical requirements. Leverage our deep solution expertise and end-to-end delivery partnership to meet your goals efficiently and effectively.

### Lenovo Deployment, Migration, and Configuration 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.

- **Deployment Services for Storage and ThinkAgile**

A comprehensive range of remote and onsite options tailored specifically for your business needs to ensure your storage and ThinkAgile hardware are fully operational from the start.

- **Hardware Installation Services**

A full-range, comprehensive setup for your hardware, including unpacking, inspecting, and positioning components to ensure your equipment is operational and error-free for the most seamless and efficient installation experience, so you can quickly benefit from your investments.

- **DM/DG File Migration Services**

Take the burden of file migration from your IT's shoulders. Our experts will align your requirements and business objectives to the migration plans while coordinating with your team to plan and safely execute the data migration to your storage platforms.

- **DM/DG/DE Health Check Services**

Our experts perform proactive checks of your Firmware and system health to ensure your machines are operating at peak and optimal efficiency to maximize up-time, avoid system failures, ensure the security of IT solutions and simplify maintenance.

- **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.

## **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 Data Centers**

Your direct line to the solution that promises the best, most comprehensive level of support to help you fully unlock the potential of your data center.

- **Premier Support Plus (PSP) for Servers 24x7 4-Hour Response**

Helping customers reduce unplanned downtime by moving from reactive support to proactive and preventative care

- **Premier Enhanced Storage Support (PESS)**

Gain all the benefits of Premier Support for Data Centers, adding dedicated storage specialists and resources to elevate your storage support experience to the next level.

- **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 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 the brochure [Lenovo Operational Support Services for Data Centers](#).

## **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.

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 latest patches, critical updates, and firmware levels, to ensure you systems are providing business value through optimized performance.

## **Lenovo Sustainability Services**

- **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 [Asset Recovery Services offering 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 DE4000H Hybrid Storage Array supports attachment to Lenovo ThinkSystem, System x, and Flex System hosts by using SAS, iSCSI, or Fibre Channel storage connectivity protocols.

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

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>

## Rack cabinets

The following table lists the supported rack cabinets.

Table 26. Rack cabinets (D)

| Model      | Description                                                    |
|------------|----------------------------------------------------------------|
| 7D6DA007WW | ThinkSystem 42U Onyx Primary Heavy Duty Rack Cabinet (1200mm)  |
| 7D6DA008WW | ThinkSystem 42U Pearl Primary Heavy Duty Rack Cabinet (1200mm) |
| 7D6EA009WW | ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm)  |
| 7D6EA00AWW | ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm) |
| 93074RX    | 42U Standard Rack (1000mm)                                     |
| 93604PX    | 42U 1200mm Deep Dynamic Rack                                   |
| 93604EX    | 42U 1200mm Deep Dynamic Expansion Rack                         |
| 93614PX    | 42U 1200mm Deep Static Rack                                    |
| 93614EX    | 42U 1200mm Deep Static Expansion Rack                          |
| 93634PX    | 42U 1100mm Dynamic Rack                                        |
| 93634EX    | 42U 1100mm Dynamic Expansion Rack                              |
| 93084PX    | 42U Enterprise Rack                                            |
| 93084EX    | 42U Enterprise Expansion Rack                                  |

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from:

<https://lenovopress.com/lp1287-lenovo-rack-cabinet-reference>

For more information, see the list of Product Guides in the Rack cabinets category:

<https://lenovopress.com/servers/options/racks>

## Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo.

Table 27. Power distribution units

| Part number                           | Feature code | Description                                                | ANZ | ASEAN | Brazil | EET | MEA | RUCIS | WE | HTK | INDIA | JAPAN | LA | NA | PRC |
|---------------------------------------|--------------|------------------------------------------------------------|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| <b>0U Basic PDUs</b>                  |              |                                                            |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 4PU7A93176                            | C0DA         | 0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU                  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | Y  | Y   |
| 4PU7A93177                            | C0D9         | 0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 00YJ776                               | ATZY         | 0U 36 C13/6 C19 24A 1 Phase PDU                            | N   | Y     | Y      | N   | N   | N     | N  | N   | N     | Y     | Y  | Y  | N   |
| 00YJ779                               | ATZX         | 0U 21 C13/12 C19 48A 3 Phase PDU                           | N   | N     | Y      | N   | N   | N     | Y  | N   | N     | Y     | Y  | Y  | N   |
| 00YJ777                               | ATZZ         | 0U 36 C13/6 C19 32A 1 Phase PDU                            | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | N  | Y  | Y   |
| 00YJ778                               | AU00         | 0U 21 C13/12 C19 32A 3 Phase PDU                           | Y   | Y     | N      | Y   | Y   | Y     | Y  | Y   | Y     | N     | N  | Y  | Y   |
| <b>0U Switched and Monitored PDUs</b> |              |                                                            |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 4PU7B08148                            | CD15         | 0U 3 C13 and 18 C19 Monitored 48A 3 Phase WYE PDU          | N   | N     | N      | N   | N   | N     | N  | N   | N     | N     | N  | Y  | N   |

| Part number                           | Feature code | Description                                                                   | ANZ | ASEAN | Brazil | EET | MEA | RUCIS | WE | HTK | INDIA | JAPAN | LA | NA | PRC |
|---------------------------------------|--------------|-------------------------------------------------------------------------------|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| 4PU7B08149                            | CD16         | 0U 3 C13 and 18 C19 Monitored 63A 3 Phase WYE PDU                             | N   | N     | N      | Y   | N   | N     | Y  | Y   | N     | N     | N  | N  | N   |
| 4PU7A93181                            | C0D5         | 0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 60A 3 Phase Delta PDU | N   | Y     | N      | N   | Y   | N     | N  | Y   | N     | Y     | N  | Y  | N   |
| 4PU7A93178                            | C0D8         | 0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU                    | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | Y  | Y   |
| 4PU7A93182                            | C0CS         | 0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU   | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A93180                            | C0D6         | 0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU   | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A93179                            | C0D7         | 0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 30A 1 Phase PDU       | N   | Y     | N      | N   | N   | N     | N  | Y   | N     | Y     | Y  | Y  | N   |
| 00YJ783                               | AU04         | 0U 12 C13/12 C19 Switched and Monitored 48A 3 Phase PDU                       | N   | N     | Y      | N   | N   | N     | Y  | N   | N     | Y     | Y  | Y  | N   |
| 00YJ781                               | AU03         | 0U 20 C13/4 C19 Switched and Monitored 24A 1 Phase PDU                        | N   | N     | Y      | N   | Y   | N     | Y  | N   | N     | Y     | Y  | Y  | N   |
| 00YJ782                               | AU02         | 0U 18 C13/6 C19 Switched and Monitored 32A 3 Phase PDU                        | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | N  | Y   |
| 00YJ780                               | AU01         | 0U 20 C13/4 C19 Switched and Monitored 32A 1 Phase PDU                        | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | N  | Y   |
| <b>1U Basic PDUs</b>                  |              |                                                                               |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 4PU7B12339                            | CE6L         | 1U Basic 16A 1 Phase PDU                                                      | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | Y  | Y   |
| <b>1U Switched and Monitored PDUs</b> |              |                                                                               |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 4PU7A90808                            | C0D4         | 1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL                    | N   | N     | N      | N   | N   | N     | N  | Y   | N     | Y     | Y  | Y  | N   |
| 4PU7A81117                            | BNDV         | 1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL                     | N   | N     | N      | N   | N   | N     | N  | N   | N     | N     | N  | Y  | N   |
| 4PU7A90809                            | C0DE         | 1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 CE                     | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | N  | Y   |
| 4PU7A81118                            | BNDW         | 1U 18 C19/C13 switched and monitored 48A 3P WYE PDU – CE                      | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | N  | Y   |
| 4PU7A90810                            | C0DD         | 1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2                      | N   | N     | N      | N   | N   | N     | N  | Y   | N     | Y     | Y  | Y  | N   |
| 4PU7A77467                            | BLC4         | 1U 18 C19/C13 Switched and Monitored 80A 3P Delta PDU                         | N   | N     | N      | N   | N   | N     | N  | N   | N     | Y     | N  | Y  | N   |
| 4PU7A90811                            | C0DC         | 1U 12 C19/C13 Switched and monitored 32A 3P WYE PDU V2                        | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A77468                            | BLC5         | 1U 12 C19/C13 switched and monitored 32A 3P WYE PDU                           | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A90812                            | C0DB         | 1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2                      | N   | N     | Y      | N   | N   | N     | N  | Y   | N     | Y     | Y  | Y  | N   |
| 4PU7A77469                            | BLC6         | 1U 12 C19/C13 switched and monitored 60A 3P Delta PDU                         | N   | N     | N      | N   | N   | N     | N  | N   | N     | N     | N  | Y  | N   |
| 46M4002                               | 5896         | 1U 9 C19/3 C13 Switched and Monitored DPI PDU                                 | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 46M4004                               | 5894         | 1U 12 C13 Switched and Monitored DPI PDU                                      | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 46M4003                               | 5897         | 1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU                         | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |

| Part number                                                 | Feature code | Description                                                         | ANZ | ASEAN | Brazil | EET | MEA | RUCIS | WE | HTK | INDIA | JAPAN | LA | NA | PRC |
|-------------------------------------------------------------|--------------|---------------------------------------------------------------------|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| 46M4005                                                     | 5895         | 1U 12 C13 Switched and Monitored 60A 3 Phase PDU                    | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| <b>1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)</b>     |              |                                                                     |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 39M2816                                                     | 6030         | DPI C13 PDU+                                                        | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8941                                                     | 6010         | Enterprise C13 PDU                                                  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| <b>1U C19 Enterprise PDUs (6x IEC 320 C19 outlets)</b>      |              |                                                                     |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 39Y8948                                                     | 6060         | Enterprise C19 PDU                                                  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8923                                                     | 6061         | Enterprise C19 3 phase PDU (60a)                                    | N   | N     | Y      | N   | N   | N     | Y  | N   | N     | N     | Y  | Y  | N   |
| <b>1U Front-end PDUs (3x IEC 320 C19 outlets)</b>           |              |                                                                     |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 39Y8938                                                     | 6002         | DPI 30amp/125V Front-end PDU with NEMA L5-30P                       | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8939                                                     | 6003         | DPI 30amp/250V Front-end PDU with NEMA L6-30P                       | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8934                                                     | 6005         | DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd                    | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8940                                                     | 6004         | DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd connector          | Y   | N     | Y      | Y   | Y   | Y     | Y  | N   | N     | Y     | Y  | Y  | N   |
| 39Y8935                                                     | 6006         | DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd connector          | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| <b>1U NEMA PDUs (6x NEMA 5-15R outlets)</b>                 |              |                                                                     |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 39Y8905                                                     | 5900         | DPI 100-127v PDU with Fixed Nema L5-15P line cord                   | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| <b>Line cords for 1U PDUs that ship without a line cord</b> |              |                                                                     |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 40K9611                                                     | 6504         | 4.3m, 32A/380-415V, EPDU/IEC 309 3P+N+G 3ph wye (non-US) Line Cord  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 40K9612                                                     | 6502         | 4.3m, 32A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord            | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 40K9613                                                     | 6503         | 4.3m, 63A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord            | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 40K9614                                                     | 6500         | 4.3m, 30A/208V, EPDU to NEMA L6-30P (US) Line Cord                  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 40K9615                                                     | 6501         | 4.3m, 60A/208V, EPDU to IEC 309 2P+G (US) Line Cord                 | N   | N     | Y      | N   | N   | N     | Y  | N   | N     | Y     | Y  | Y  | N   |
| 40K9617                                                     | 6505         | 4.3m, 32A/230V, Souriau UTG to AS/NZS 3112 (Aus/NZ) Line Cord       | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 40K9618                                                     | 6506         | 4.3m, 32A/250V, Souriau UTG Female to KSC 8305 (S. Korea) Line Cord | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |

For more information, see the Lenovo Press documents in the PDU category:

<https://lenovopress.com/servers/options/pdu>

## Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo.

Table 28. Uninterruptible power supply units

| Part number                                  | Description                                                                                    |
|----------------------------------------------|------------------------------------------------------------------------------------------------|
| Rack-mounted or tower UPS units - 100-125VAC |                                                                                                |
| 7DD5A001WW                                   | RT1.5kVA 2U Rack or Tower UPS-G2 (100-125VAC)                                                  |
| 55941AX                                      | RT1.5kVA 2U Rack or Tower UPS (100-125VAC)                                                     |
| 55942AX                                      | RT2.2kVA 2U Rack or Tower UPS (100-125VAC)                                                     |
| 7DD5A003WW                                   | RT3kVA 2U Rack or Tower UPS-G2 (100-125VAC)                                                    |
| 55943AX                                      | RT3kVA 2U Rack or Tower UPS (100-125VAC)                                                       |
| Rack-mounted or tower UPS units - 200-240VAC |                                                                                                |
| 7DD5A002WW                                   | RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)                                                  |
| 55941KX                                      | RT1.5kVA 2U Rack or Tower UPS (200-240VAC)                                                     |
| 55942KX                                      | RT2.2kVA 2U Rack or Tower UPS (200-240VAC)                                                     |
| 7DD5A005WW                                   | RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)                                                    |
| 55943KX                                      | RT3kVA 2U Rack or Tower UPS (200-240VAC)                                                       |
| 7DD5A007WW                                   | RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)                                                    |
| 55945KX                                      | RT5kVA 3U Rack or Tower UPS (200-240VAC)                                                       |
| 7DD5A008WW                                   | RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)                                                    |
| 55946KX                                      | RT6kVA 3U Rack or Tower UPS (200-240VAC)                                                       |
| 55948KX                                      | RT8kVA 6U Rack or Tower UPS (200-240VAC)                                                       |
| 7DD5A00AWW                                   | RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)                                                   |
| 55949KX                                      | RT11kVA 6U Rack or Tower UPS (200-240VAC)                                                      |
| 55943KT†                                     | ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)    |
| 55943LT†                                     | ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) |
| 55946KT†                                     | ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)          |
| 5594XKT†                                     | ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)         |
| Rack-mounted or tower UPS units - 380-415VAC |                                                                                                |
| 55948PX                                      | RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)                                             |
| 55949PX                                      | RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)                                            |

† Only available in China and the Asia Pacific market.

For more information, see the list of Product Guides in the UPS category:

<https://lenovopress.com/servers/options/ups>

## 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. 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](mailto:Grow@Lenovo)

Course code: DSTOO104

### 2. 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](mailto:Grow@Lenovo)

Partner link: [Lenovo 360 Learning Center](#)

Course code: LENU-322C-SG-FR

### 3. 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

### 4. 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

### 5. 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

#### 6. **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

#### 7. **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

#### 8. **Lenovo ThinkSystem DE Series Technical Positioning**

2025-11-18 | 15 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:

- Position the DE Series within Lenovo’s storage portfolio
- Match models to specific customer requirements
- Understand DE Series architecture and management tools

Tags: Storage Management, Storage Systems, Storage Technology

Published: 2025-11-18

Length: 15 minutes

**Start the training:**

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo 360 Learning Center](#)

Course code: DDEP201

#### 9. **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](mailto:Grow@Lenovo)

Partner link: [Lenovo 360 Learning Center](#)

Course code: DSVC134r4

#### 10. **Partner Technical Webinar - Commvault**

2025-08-11 | 60 minutes | Employees and Partners

In this 60-minute replay, Commvault provided an in-depth look into Hyperscale X, Bundles, IntelliSnap and licensing.

Tags: Data Management

Published: 2025-08-11

Length: 60 minutes

**Start the training:**

Employee link: [Grow@Lenovo](mailto:Grow@Lenovo)

Partner link: [Lenovo 360 Learning Center](#)

Course code: AUG0825

## 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](mailto:Grow@Lenovo)

Partner link: [Lenovo 360 Learning Center](#)

Course code: DVDAT209

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](mailto: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](mailto: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](mailto: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](mailto: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 Hybrid Storage datasheet  
<https://lenovopress.com/ds0049-lenovo-thinksystem-de-series-hybrid-array>
- Lenovo Data Center Solution Configurator  
<http://dcsc.lenovo.com>
- Lenovo Data Center Support  
<http://datacentersupport.lenovo.com>

## Related product families

Product families related to this document are the following:

- [DE Series Storage](#)
- [Lenovo SAN Storage](#)

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