

## Lenovo Storage D1212 and D1224 Drive Enclosures

### Product Guide

The Lenovo Storage D1212 and D1224 Disk Expansion Enclosures offer 12 Gbps SAS direct-attached storage expansion capabilities that are designed to provide simplicity, speed, scalability, security, and high availability for small to large businesses. The D1212 and D1224 deliver enterprise-class storage technology in a cost-effective solution with flexible drive configurations and RAID or JBOD (non-RAID) host connectivity.

The D1212 and D1224 expansion units are designed for a wide range of workloads, including big data and analytics, video surveillance, media streaming, private clouds, file and print serving, e-mail and collaboration, and databases. They also well-suited for software defined storage (SDS) and Windows Server solutions with Storage Spaces.

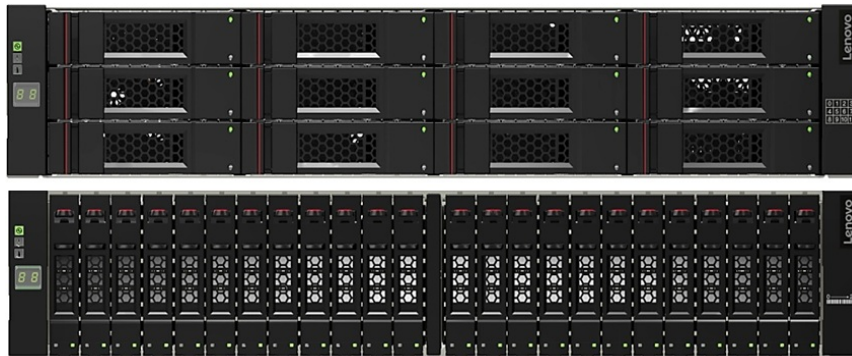


Figure 1. Lenovo Storage D1212 and D1224 Disk Expansion Enclosures

### Did you know?

The D1212 and D1224 expansion enclosures offer flexible drive configurations with the choice of 2.5-inch and 3.5-inch drive form factors, 10K or 15K rpm SAS and 7.2K rpm NL SAS hard disk drives (HDDs) and self-encrypting drives (SEDs), and SAS solid-state drives (SSDs).

With support for daisy chaining, the D1212 can be scaled up to 1.72 PB for capacity-optimized configurations with HDDs, and the D1224 can be scaled up to 192 drives for performance-optimized configurations.

The D1212 and D1224 expansion units support 12 Gbps SAS connectivity, which doubles the data transfer rate compared to 6 Gb SAS solutions to maximize performance of storage I/O-intensive applications.

## Key features

Key features and benefits provided by the D1212 and D1224 storage expansion enclosures include:

- Versatile, scalable storage expansion with dual Environmental service Module (ESM) configurations for high availability and performance
- Flexible host connectivity to match diverse client needs for direct attach storage with support for 12 Gb SAS RAID adapters for advanced data protection or 12 Gb SAS Host Bus Adapter (HBA) for maximum JBOD performance
- 12 Gb SAS drive-side connectivity with support for 12x 3.5-inch large form factor (LFF) drives in the D1212 enclosure or 24x 2.5-inch small form factor (SFF) drives in the D1224 enclosure
- Scalability of up to 96 LFF or 192 SFF drives per RAID adapter or HBA with the attachment of up to eight D1212 or D1224 daisy-chained expansion enclosures, or a combination of both, to satisfy growing needs for storage capacity and performance
- Flexibility in storing data on high performance SAS SSDs, performance-optimized enterprise SAS HDDs, or capacity-optimized enterprise NL SAS HDDs; mixing and matching drive types and form factors on a single RAID adapter or HBA to perfectly meet performance and capacity requirements for various workloads
- Self-encrypting drives with a supported RAID adapter allow clients to secure their sensitive data and to comply with various security regulations when required
- Support multiple host attachments and SAS zoning for storage partitioning

The D1212 and D1224 are designed to support the complete range of data storage requirements, from highly utilized applications to high-capacity, low usage applications.

The following 3.5-inch SAS drives are supported by the D1212:

- High performance SSDs (10 drive writes per day [DWD]): 400 GB
- Mainstream SSDs (3 DWD): 800 GB
- High-capacity, archival-class nearline HDDs: 2 TB, 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, 14 TB, and 16 TB 7.2K rpm
- High-capacity, archival-class nearline self-encrypting HDDs: 4 TB 7.2K rpm

The following 2.5-inch SAS drives are supported by the D1224:

- Capacity optimized SSDs (1 DWD): 3.84 TB and 7.68 TB
- Mainstream SSDs (3 DWD): 800 GB and 1.6 TB
- High performance SSDs (10 DWD): 400 GB, 800 GB, and 1.6 TB
- Performance-optimized, enterprise class HDDs
  - 300 GB, 600 GB, and 900 GB 15K rpm
  - 600 GB, 1.2 TB, 1.8 TB, and 2.4 TB 10K rpm
- Performance-optimized, enterprise class self-encrypting HDDs: 1.2 TB 10K rpm
- High-capacity, archival-class nearline HDDs: 1 TB and 2 TB 7.2K rpm

Additional drives and expansion units are designed to be dynamically added with virtually no downtime (operating system dependent), helping to quickly and seamlessly respond to growing capacity demands.

The D1212 and D1224 expansion enclosures are designed to offer high levels of system and data availability with the following technologies:

- Dual ESMs provide redundant paths from a supported RAID controller to the drives in the enclosures for I/O load balancing and failover
- Dual-port drives (both HDDs and SSDs) with automatic drive failure detection and RAID rebuild with global hot spares with a supported RAID adapter
- Redundant hardware, including host ports, ESMs, and power and cooling modules (PCMs)
- Hot-swappable and customer replaceable components, including ESMs, PCMs, and drives

## Components and connectors

The following figure shows the front of the D1212 drive expansion enclosure.

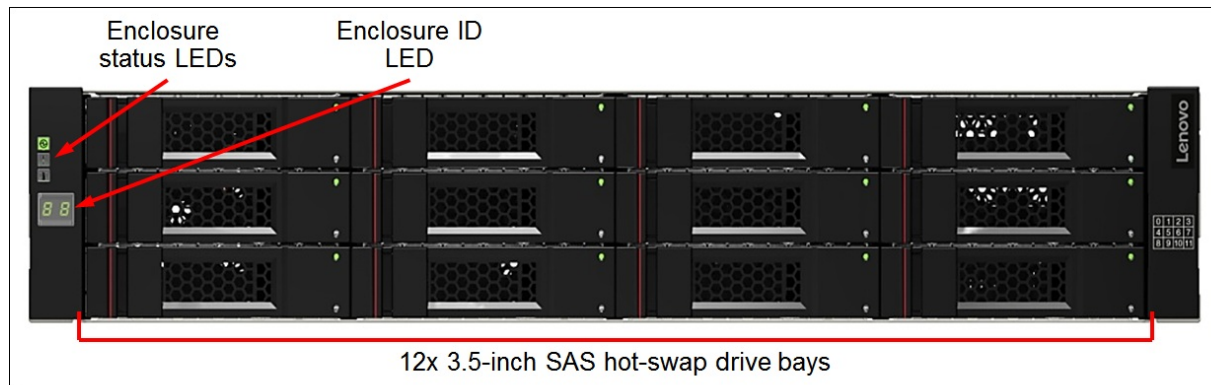


Figure 2. Front view of the D1212 drive enclosure

The following figure shows the front of the D1224 drive expansion enclosure.

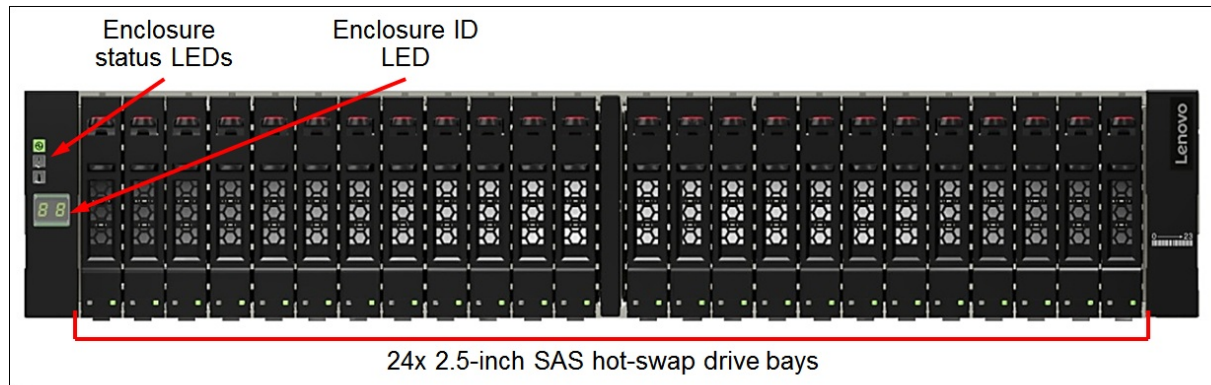


Figure 3. Front view of the D1224 drive enclosure

The following figure shows the rear of the D1212 and D1224 drive enclosures.

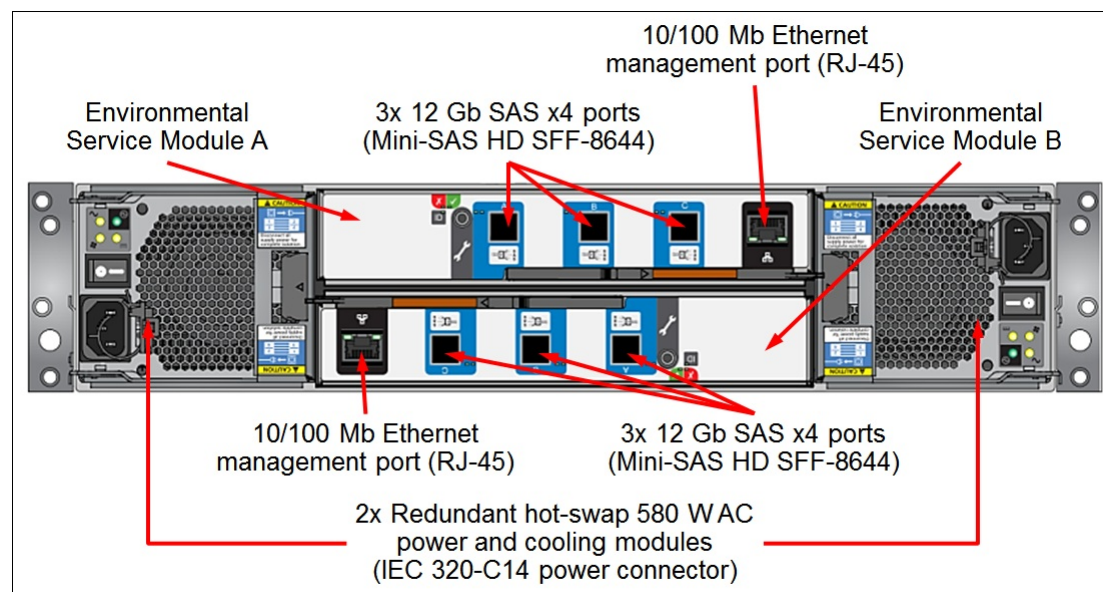


Figure 4. Rear view of the D1212 and D1224 drive enclosures

**Note:** The ESMs (shown in Figure 4) have additional service ports with a specialized connector, and these ports are reserved for use by a Lenovo service technician.

## System specifications

The following table lists the D1212 and D1224 system specifications.

Table 1. System specifications

| Attribute          | Specification                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form factor        | 2U rack mount                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Number of ESMs     | 2                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Expansion ports    | 3x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) ports (A, B, C) per ESM                                                                                                                                                                                                                                                                                                                                                                        |
| Drive bays         | <ul style="list-style-type: none"> <li>D1212: 12 LFF hot-swap drive bays; up to 8x D1212 enclosures can be daisy chained on a supported RAID adapter or HBA for a total of up to 96 LFF drives.</li> <li>D1224: 24 SFF hot-swap drive bays; up to 8x D1224 enclosures can be daisy chained on a supported RAID adapter or HBA for a total of up to 192 SFF drives.</li> </ul> <p>Intermix of SFF and LFF enclosures is supported.</p> |
| Drive technologies | SAS and NL SAS HDDs and SEDs; SAS SSDs. Intermix of HDDs, SEDs, and SSDs is supported within an enclosure, but not within a RAID array.                                                                                                                                                                                                                                                                                               |
| Drive connectivity | Dual-ported 12 Gb SAS drive attachment infrastructure.                                                                                                                                                                                                                                                                                                                                                                                |

| Attribute              | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drives                 | <p>SFF drives:</p> <ul style="list-style-type: none"> <li>• 3.84 TB and 7.68 TB SAS SSDs (1 DWD)</li> <li>• 800 GB and 1.6 TB SAS SSDs (3 DWD)</li> <li>• 400 GB, 800 GB, and 1.6 TB SAS SSDs (10 DWD)</li> <li>• 300 GB, 600 GB, and 900 GB 15K rpm SAS HDDs</li> <li>• 600 GB, 1.2 TB, 1.8 TB, and 2.4 TB 10K rpm SAS HDDs</li> <li>• 1.2 TB 10K rpm SAS SED HDD</li> <li>• 1 TB and 2 TB 7.2K rpm NL SAS HDDs</li> </ul> <p>LFF drives:</p> <ul style="list-style-type: none"> <li>• 400 GB SAS SSDs (10 DWD) (hybrid tray - 2.5 in. drive in a 3.5-in. tray)</li> <li>• 800 GB SAS SSDs (3 DWD) (hybrid tray - 2.5 in. drive in a 3.5-in. tray)</li> <li>• 2 TB, 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, 14 TB, 16 TB, 18 TB, and 20 TB 7.2K rpm NL SAS HDDs</li> <li>• 4 TB 7.2K rpm NL SAS SED HDD</li> <li>• 24TB 7.2K rpm NL SAS SED HDD</li> </ul> |
| Storage capacity       | <ul style="list-style-type: none"> <li>• D1212: Up to 1.92 PB (96x 20 TB LFF NL SAS HDDs)</li> <li>• D1224: Up to 1.47 PB (192x 7.68 TB SFF SAS SSDs)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Host adapters          | <p>RAID adapters:</p> <ul style="list-style-type: none"> <li>• ThinkSystem RAID 930-8e (8-port 12 Gb SAS, 2x SFF-8644 connectors)</li> <li>• ThinkSystem RAID 940-8e 4GB Flash PCIe Gen4 12Gb (8-port 12 Gb SAS, 2x SFF-8644 connectors)</li> <li>• ServeRAID M5225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> </ul> <p>Host bus adapters (non-RAID):</p> <ul style="list-style-type: none"> <li>• ThinkSystem 430-8e HBA (8-port 12 Gb SAS, 2x SFF-8644 connectors)</li> <li>• ThinkSystem 430-16e HBA (16-port 12 Gb SAS, 4x SFF-8644 connectors)</li> <li>• N2225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> <li>• N2226 (16-port 12 Gbps SAS, 4x SFF-8644 connectors)</li> <li>• ThinkServer 8885e (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> </ul>                                                                        |
| Host operating systems | Microsoft Windows Server 2012 R2, 2016, and 2019; Red Hat Enterprise Linux (RHEL) 6 and 7; SUSE Linux Enterprise Server (SLES) 11, 12, and 15; VMware vSphere 6.0, 6.5, 6.7, and 7.0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Cooling                | Redundant cooling with two fans built into power and cooling modules (PCMs).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Power supply           | Two redundant hot-swap 580 W AC power supplies built into PCMs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Hot-swap parts         | ESMs, drives, PCMs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Management interfaces  | SAS Enclosure Services, 10/100 Mb Ethernet for external management.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Security features      | SAS zoning, self-encrypting drives (SEDs).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Warranty               | Three-year customer-replaceable unit, parts delivered limited warranty with 9x5 next business day response.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Service and support    | Optional warranty service upgrades are available through Lenovo: Technician installed parts, 24x7 coverage, 2-hour or 4-hour response time, 6-hour or 24-hour committed repair, 1-year or 2-year warranty extensions, YourDrive YourData, remote technical support, hardware installation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dimensions             | Height: 88 mm (3.5 in), width: 443 mm (17.4 in), depth: 630 mm (24.8 in)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum weight         | <ul style="list-style-type: none"> <li>• D1212: 26 kg (57.3 lb)</li> <li>• D1224: 24 kg (52.9 lb)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Models

The following table lists the relationship models of the D1212 and D1224 drive enclosures.

Table 2. D1212 and D1224 relationship models

| Description                                                                   | Part number |
|-------------------------------------------------------------------------------|-------------|
| <b>LFF models</b>                                                             |             |
| Lenovo Storage D1212 LFF Chassis, Dual ESM (US English documentation)         | 4587A11*    |
| Lenovo Storage D1212 LFF Chassis, Dual ESM (Simplified Chinese documentation) | 4587A1C^    |
| Lenovo Storage D1212 LFF Chassis, Dual ESM (Japanese documentation)           | 4587A1J**   |
| <b>SFF models</b>                                                             |             |
| Lenovo Storage D1224 SFF Chassis, Dual ESM (US English documentation)         | 4587A31*    |
| Lenovo Storage D1224 SFF Chassis, Dual ESM (Simplified Chinese documentation) | 4587A3C^    |
| Lenovo Storage D1224 SFF Chassis, Dual ESM (Japanese documentation)           | 4587A3J**   |

\* Available worldwide (except China and Japan)

^ Available only in China

\*\* Available only in Japan

The following table lists the TopSeller models of the D1212 and D1224 drive enclosures.

Table 3. D1212 and D1224 TopSeller models

| Description                                                                           | Part number |
|---------------------------------------------------------------------------------------|-------------|
| <b>LFF models - North America (NA) and Europe, Middle East, and Africa (EMEA)</b>     |             |
| Lenovo Storage D1212 LFF Dual ESM Disk Expansion Enclosure (US English documentation) | 4587E11     |
| <b>LFF models - Brazil and Latin America</b>                                          |             |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 2TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EAU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 4TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EBU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 6TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587ECU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 8TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EDU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 2TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EEU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 4TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EFU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 6TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EGU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 8TB 3.5" HDDs, 4x 0.5m SAS cables      | 4587EHU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 2TB 3.5" HDDs, 4x 0.5m SAS cables     | 4587EIU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 4TB 3.5" HDDs, 4x 0.5m SAS cables     | 4587EJU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 6TB 3.5" HDDs, 4x 0.5m SAS cables     | 4587EKU     |
| Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 8TB 3.5" HDDs, 4x 0.5m SAS cables     | 4587ELU     |
| <b>SFF models - North America (NA) and Europe, Middle East, and Africa (EMEA)</b>     |             |
| Lenovo Storage D1224 SFF Dual ESM Disk Expansion Enclosure (US English documentation) | 4587E31     |
| <b>SFF models - Brazil and Latin America</b>                                          |             |
| Lenovo Storage D1224 SFF Chassis, Dual ESM, 9x 1.2TB 10K HDDs, 4x 0.5m SAS cables     | 4587E6U     |
| Lenovo Storage D1224 SFF Chassis, Dual ESM, 18x 1.2TB 10K HDDs, 1x 0.5m SAS cable     | 4587E5U     |

The following table lists the CTO base models of the D1212 and D1224 drive enclosures.

Table 4. D1212 and D1224 CTO base models

| Description                                   | Machine Type-Model | Feature code |
|-----------------------------------------------|--------------------|--------------|
| Lenovo Storage D1224 Disk Expansion Enclosure | 4587-HC2           | AU15         |
| Lenovo Storage D1212 Disk Expansion Enclosure | 4587-HC1           | AU14         |

The D1212 and D1224 drive enclosures include the following items:

- One LFF or SFF chassis with the following components:
  - Dual 3-port environmental service modules
  - Two power and cooling modules
  - Drives (select models; see Table 2 and Table 3 for details)
- Two 1.5m, 10A/100-250V, C13 to IEC 320-C14 rack power cables (models listed in Table 2 and Table 3), or two customer-configured power cables (CTO models)
- External 0.5m 12Gb SAS cables (select models; see Table 2 and Table 3 for details)
- Lenovo Storage 12Gb SAN Rack Mount Kit - Rails 25"-36"
- Documentation package

## Host connectivity

The D1212 and D1224 drive enclosures support dual environmental service module (ESM) configurations. Each ESM has three 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644 connectors) labeled A, B, and C. These ports are used for connections to a supported RAID adapter or HBA installed in a server and for daisy chaining the D1212 and D1224 enclosures between each other.

Port A on each ESM is used for connecting the external SAS ports on the RAID controller or HBA to the enclosure, or for connecting Port C on each ESM in the adjacent enclosure for daisy chaining.

Port B on each ESM is used for connecting the external SAS ports on the RAID controller or HBA to the enclosure. Daisy-chaining does not use Port B for connections between adjacent enclosures.

Port C on each ESM is used for connecting the external SAS ports on the RAID controller or HBA to the enclosure, or for connecting Port A on each ESM in the adjacent enclosure for daisy chaining.

The expansion enclosures support single I/O path and dual I/O path connectivity topology. For single I/O path configurations, each port on the adapter can be connected to a separate chain of expansion enclosures by using the ESM A in each connected enclosure. For dual I/O path configurations, each port on the 2-port RAID adapter or HBA is connected to a different ESM chain within the same chain of enclosures. For specific configuration limits, refer to [SAS RAID controllers and HBAs](#).

For SAS RAID controllers, the controller's firmware manages multiple I/O paths from the controller to SAS drives. For SAS HBAs, the host operating system runs multi-pathing software to manage multiple I/O paths.

Up to eight D1212 or D1224 drive enclosures, or a combination of both, can be daisy-chained with support for up to four hosts attached to the chain. Without daisy-chaining, a standalone D1224 drive enclosure can support up to six directly attached hosts. In addition, up to two D1212 and up to two D3284 drive enclosures, or one D1224 and up to two D3284 drive enclosures can be daisy-chained with support for up to two hosts attached to the chain.

The following figures illustrate different host connectivity topologies.

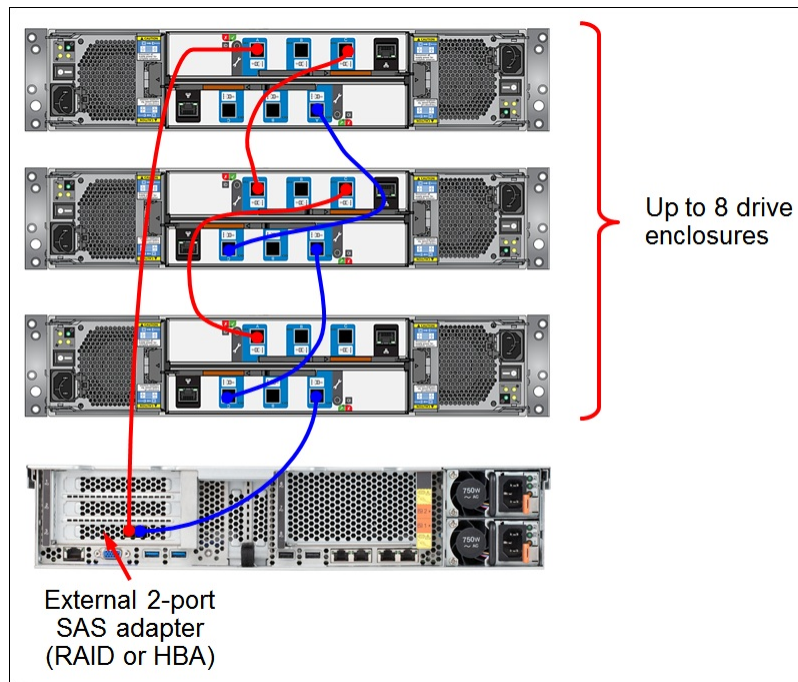


Figure 5. Connectivity topology with one host

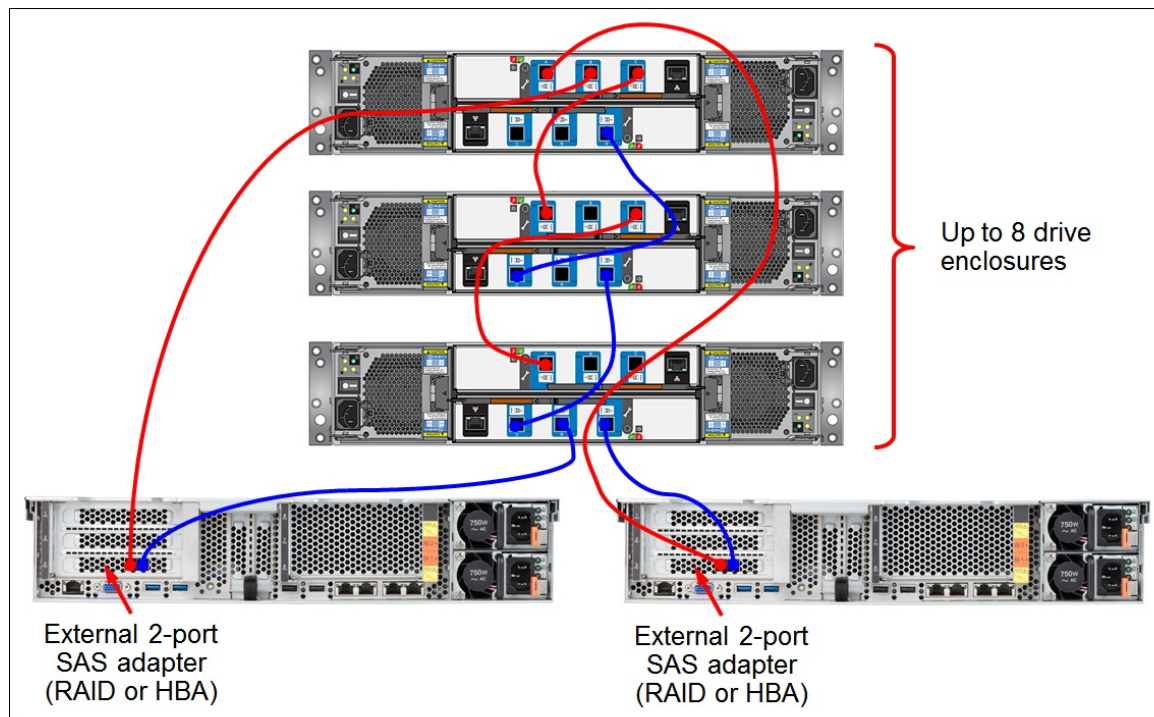


Figure 6. Connectivity topology with two hosts

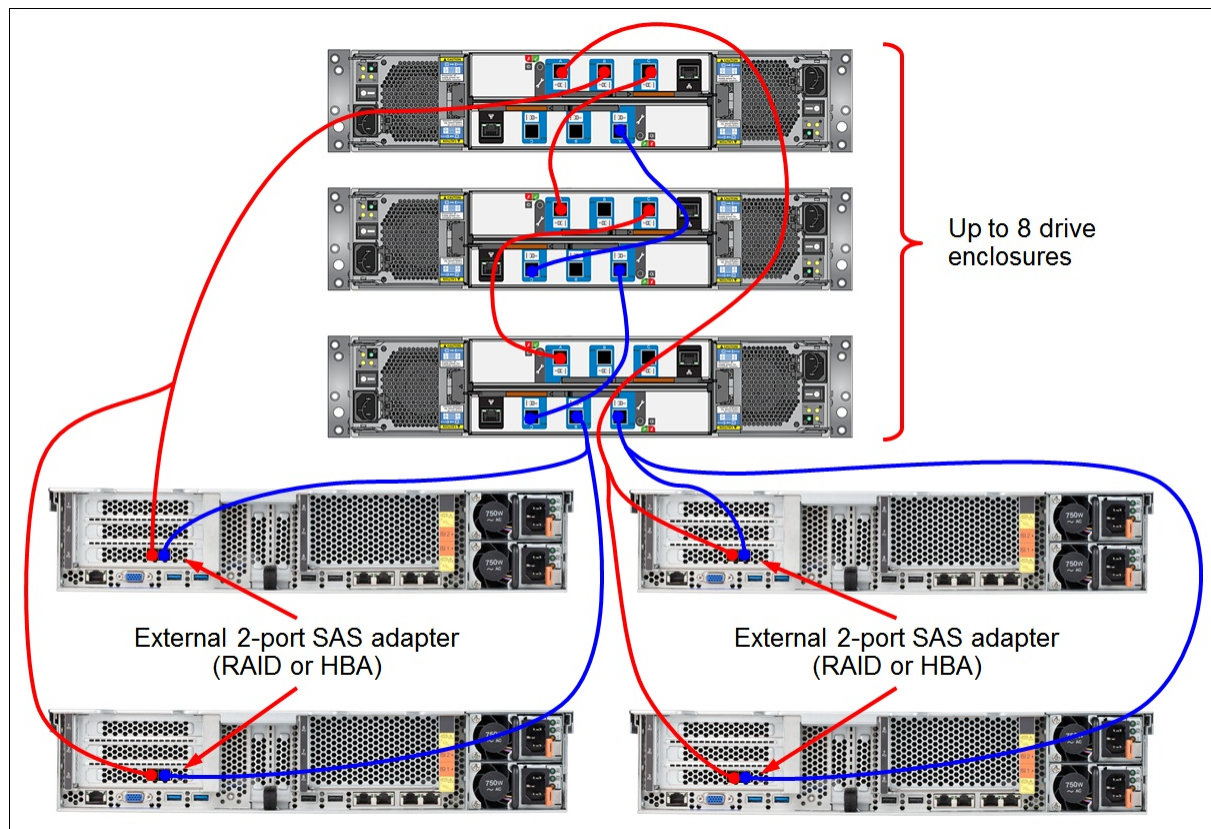


Figure 7. Connectivity topology with four hosts

For topologies with four or more hosts, SAS Y-cables are required to connect the hosts to the drive enclosure. The SAS Y-cable allows two hosts be connected to one SAS port on the ESM. The Y-cables and standard cables are mutually exclusive, that is, either Y-cables or standard cables can be used to connect the hosts to the same drive enclosure, but not both types.

The SAS *zoning* feature of the D1212 and D1224 specifies how multiple hosts access drives in the enclosures. If SAS zoning is disabled, all attached hosts can access all drives in the enclosures, which is typically used in standalone single-host or clustered multi-host environments, where all cluster nodes need access to all drives. If SAS zoning is enabled, each connected host has exclusive access to a predefined set of drives in the same enclosure, and multiple hosts are isolated from each other.

#### Configuration notes:

- Attachment of more than one host to the same enclosure without SAS zoning is supported with HBAs only (RAID controllers are not supported). While all attached hosts are capable of accessing all drives in the enclosures, the clustering software running on the hosts controls which cluster nodes have access to the drives at any given time.
- With SAS zoning enabled, only standalone enclosures without daisy-chaining can be partitioned for multiple host access.
- Expansion ports are not supported when zoning is enabled

The supported zone configurations are shown in the following table.

**Note:** Mode 0 means that zoning is disabled.

Table 5. D1212 and D1224 zoning configurations

| Zoning mode                     | Number of zones | Maximum number of hosts | Zone number | Host ports | Expansion ports | Drive bays      |       |
|---------------------------------|-----------------|-------------------------|-------------|------------|-----------------|-----------------|-------|
|                                 |                 |                         |             |            |                 | D1212           | D1224 |
| Zoning with SAS standard cables |                 |                         |             |            |                 |                 |       |
| Mode 0                          | 1               | 2                       | 1           | A, B       | C               | 0-11            | 0-23  |
| Mode 1                          | 2               | 2                       | 1           | A          | None            | 0-1, 4-5, 8-9   | 0-11  |
|                                 |                 |                         | 2           | B          |                 | 2-3, 6-7, 10-11 | 12-23 |
| Mode 2                          | 3               | 3                       | 1           | A          | None            | 0-3             | 0-7   |
|                                 |                 |                         | 2           | B          |                 | 4-7             | 8-15  |
|                                 |                 |                         | 3           | C          |                 | 8-11            | 16-23 |
| Zoning with SAS Y-cables        |                 |                         |             |            |                 |                 |       |
| Mode 3                          | 3               | 3                       | 1           | A.1        | None            | 0-3             | 0-7   |
|                                 |                 |                         | 2           | A.2        |                 | 4-7             | 8-15  |
|                                 |                 |                         | 3           | B.1        |                 | 8-11            | 16-23 |
| Mode 4                          | 4               | 4                       | 1           | A.1        | None            | 0, 4, 8         | 0-5   |
|                                 |                 |                         | 2           | A.2        |                 | 1, 5, 9         | 6-11  |
|                                 |                 |                         | 3           | B.1        |                 | 2, 6, 10        | 12-17 |
|                                 |                 |                         | 4           | B.2        |                 | 3, 7, 11        | 18-23 |
| Mode 5                          | 6               | 6                       | 1           | A.1        | None            | N/A             | 0-3   |
|                                 |                 |                         | 2           | A.2        |                 |                 | 4-7   |
|                                 |                 |                         | 3           | B.1        |                 |                 | 8-11  |
|                                 |                 |                         | 4           | B.2        |                 |                 | 12-15 |
|                                 |                 |                         | 5           | C.1        |                 |                 | 16-19 |
|                                 |                 |                         | 6           | C.2        |                 |                 | 20-23 |

The following table lists ordering information for the SAS cables.

Table 6. SAS cable options

| Description                                                 | Part number | Feature code | Maximum quantity per one D1212 or D1224 |
|-------------------------------------------------------------|-------------|--------------|-----------------------------------------|
| Connectivity cables - Mini-SAS HD Host Adapter to Expansion |             |              |                                         |
| External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable         | 00YL847     | AU16         | 6                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable           | 00YL848     | AU17         | 6                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable           | 00YL849     | AU18         | 6                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable           | 00YL850     | AU19         | 6                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 6M Cable           | 00KH452     | AUJY         | 6                                       |
| Connectivity cables - Expansion to Expansion                |             |              |                                         |
| External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable         | 00YL847     | AU16         | 2                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable           | 00YL848     | AU17         | 2                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable           | 00YL849     | AU18         | 2                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable           | 00YL850     | AU19         | 2                                       |
| External MiniSAS HD 8644/MiniSAS HD 8644 6M Cable           | 00KH452     | AUJY         | 2                                       |

## Drives

The D1212 drive enclosure supports up to 12 LFF hot-swap drives, and the D1224 drive enclosure supports up to 24 SFF hot-swap drives. The following tables list drive options for the D1212 and D1224 drive enclosures.

Table 7. LFF drive options (D1212)

| Part number                        | Feature code | Description                                                                          | Maximum quantity per one D1212 |
|------------------------------------|--------------|--------------------------------------------------------------------------------------|--------------------------------|
| 3.5-inch NL SAS hot-swap HDDs      |              |                                                                                      |                                |
| 00YH993                            | AU1F         | Lenovo Storage 2TB 7.2K 3.5" NL-SAS HDD                                              | 12                             |
| 01DC487                            | AU1D         | Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD                                              | 12                             |
| 00YG668                            | AU1C         | Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD                                              | 12                             |
| 00YG663                            | AU1B         | Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD                                              | 12                             |
| 01DC626                            | AU3S         | Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD                                             | 12                             |
| 4XB7A09100                         | B102         | Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD                                             | 12                             |
| 4XB7A12038                         | B4T8         | Lenovo Storage 14TB 7.2K 3.5" NL-SAS HDD                                             | 12                             |
| 4XB7A62771                         | BAVL         | Lenovo Storage 16TB 7.2K 3.5" NL-SAS HDD                                             | 12                             |
| 4XB7A77021                         | BKCW         | Lenovo Storage 18TB 7.2K 3.5" NL-SAS HDD                                             | 12                             |
| 4XB7A83368                         | BQUS         | Lenovo Storage 20TB 7.2K 3.5" LFF SAS HDD                                            | 12                             |
| 3.5-inch NL SAS hot-swap SEDs      |              |                                                                                      |                                |
| 00YG673                            | AU1E         | Lenovo Storage 4TB 7.2K 3.5" NL-SAS SED HDD                                          | 12                             |
| 4XB7A95708                         | C340         | Lenovo Storage D1212 24TB SED 7.2K 3.5" NL-SAS HDD                                   | 12                             |
| 3.5-inch SAS hot-swap SSDs (1 DWD) |              |                                                                                      |                                |
| 4XB7A87780                         | BVPK         | Lenovo Storage 2.5" 15.36TB 1DWD SAS SSD (2.5" in 3.5" Hybrid Tray PM1653) for D1212 | 12                             |
| 3.5-inch SAS hot-swap SSDs (3 DWD) |              |                                                                                      |                                |
| 4XB7A60799                         | BAVJ         | Lenovo Storage 800GB 3DWD SAS SSD (2.5" in 3.5" Hybrid Tray)                         | 12                             |

Table 8. SFF drive options (D1224)

| Part number                         | Feature code | Description                                        | Maximum quantity per one D1224 |
|-------------------------------------|--------------|----------------------------------------------------|--------------------------------|
| 2.5-inch SAS hot-swap HDDs          |              |                                                    |                                |
| 01DC197                             | AU1J         | Lenovo Storage 300GB 15K 2.5" SAS HDD              | 24                             |
| 01DC427                             | AU1Q         | Lenovo Storage 600GB 10K 2.5" SAS HDD              | 24                             |
| 01DC192                             | AU1H         | Lenovo Storage 600GB 15K 2.5" SAS HDD              | 24                             |
| 01KP040                             | AVP5         | Lenovo Storage 900GB 15K 2.5" SAS HDD              | 24                             |
| 01DC407                             | AU1L         | Lenovo Storage 1.2TB 10K 2.5" SAS HDD              | 24                             |
| 01DC402                             | AU1K         | Lenovo Storage 1.8TB 10K 2.5" SAS HDD              | 24                             |
| 4XB7A09101                          | B103         | Lenovo Storage 2.4TB 10K 2.5" SAS HDD              | 24                             |
| 2.5-inch SAS hot-swap SED HDDs      |              |                                                    |                                |
| 01DC412                             | AU1M         | Lenovo Storage 1.2TB 10K 2.5" SAS SED HDD          | 24                             |
| 2.5-inch NL SAS hot-swap HDDs       |              |                                                    |                                |
| 01DC442                             | AU1S         | Lenovo Storage 1TB 7.2K 2.5" NL-SAS HDD            | 24                             |
| 01DC437                             | AU1R         | Lenovo Storage 2TB 7.2K 2.5" NL-SAS HDD            | 24                             |
| 2.5-inch SAS hot-swap SSDs (1 DWD)  |              |                                                    |                                |
| 01KP065                             | AVPA         | Lenovo Storage 3.84TB 1DWD 2.5" SAS SSD            | 24                             |
| 01KP060                             | AVP9         | Lenovo Storage 7.68TB 1DWD 2.5" SAS SSD            | 24                             |
| 4XB7A87548                          | BV2T         | Lenovo Storage 2.5" 15.36TB 1DWD SAS SSD for D1224 | 24                             |
| 2.5-inch SAS hot-swap SSDs (3 DWD)  |              |                                                    |                                |
| 01DC477                             | AU1U         | Lenovo Storage 800GB 3DWD 2.5" SAS SSD             | 24                             |
| 01DC472                             | AU1T         | Lenovo Storage 1.6TB 3DWD 2.5" SAS SSD             | 24                             |
| 2.5-inch SAS hot-swap SSDs (10 DWD) |              |                                                    |                                |
| 01DC447                             | AUDG         | Lenovo Storage 1.6TB 10DWD 2.5" SAS SSD            | 24                             |

## Power supplies and cables

The Lenovo Storage D1212 and D1224 Disk Expansion Enclosures support up to two redundant hot-swap power supplies. In the Lenovo configurators power supplies are automatically derived and not individually configurable.

- The D1212 and D1224 power supply supports AutoSensing of the input power: 110v ( low-voltage ) or 230v (high-voltage )
- The power supply unit (PSU) version within our D1212 / D1224 Disk Expansion Enclosures come with "80PLUS Platinum (230V/115V) Hot-Swap Power Supply"

The D1212 and D1224 ship standard with two 1.5m, 10A/100-250V, C13 to IEC 320-C14 rack power cables. Other power cable options are also available, and the part numbers and feature codes to order the power cables are listed in the following table (two power cables are required per each D1212 and D1224).

Table 9. Power cable options

| Part number       | Feature code | Description                                                    |
|-------------------|--------------|----------------------------------------------------------------|
| Rack power cables |              |                                                                |
| 47C2487           | A3SS         | 1.2m, 10A/100-250V, 2 Short C13s to Short C14 Rack Power Cable |
| 47C2491           | A3SW         | 1.2m, 16A/100-250V, 2 Short C13s to Short C20 Rack Power Cable |
| 39Y7937           | 6201         | 1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable        |
| 47C2488           | A3ST         | 2.5m, 10A/100-250V, 2 Long C13s to Short C14 Rack Power Cable  |
| 47C2492           | A3SX         | 2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable  |
| 47C2489           | A3SU         | 2.8m, 10A/100-250V, 2 Short C13s to Long C14 Rack Power Cable  |
| None*             | 6311         | 2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable        |
| 39Y7938           | 6204         | 2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable        |
| 47C2493           | A3SY         | 2.8m, 16A/100-250V, 2 Short C13s to Long C20 Rack Power Cable  |
| 47C2490           | A3SV         | 4.1m, 10A/100-250V, 2 Long C13s to Long C14 Rack Power Cable   |
| 47C2494           | A3SZ         | 4.1m, 16A/100-250V, 2 Long C13s to Long C20 Rack Power Cable   |
| 39Y7932           | 6263         | 4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable        |
| Line cords        |              |                                                                |
| 39Y7931           | 6207         | 10A/125V C13 to NEMA 5-15P 4.3m line cord                      |
| 46M2592           | A1RF         | 10A/250V C13 to NEMA 6-15P 2.8m line cord                      |
| 39Y7930           | 6222         | Argentina 10A/250V C13 to IRAM 2073 2.8m line cord             |
| 39Y7924           | 6211         | Australia/NZ 10A/250V C13 to AS/NZ 3112 2.8m line cord         |
| 69Y1988           | 6532         | Brazil 10A/250V C13 to NBR 14136 2.8m line cord                |
| 39Y7928           | 6210         | China 10A/250V C13 to GB 2099.1 2.8m line cord                 |
| 39Y7918           | 6213         | Denmark 10A/250V C13 to DK2-5a 2.8m line cord                  |
| 39Y7917           | 6212         | European 10A/230V C13 to CEE7-VII 2.8m line cord               |
| 39Y7927           | 6269         | India 10A/250V C13 to IS 6538 2.8m line cord                   |
| 39Y7920           | 6218         | Israel 10A/250V C13 to SI 32 2.8m line cord                    |
| 39Y7921           | 6217         | Italy 10A/250V C13 to CEI 23-16 2.8m line cord                 |
| 46M2593           | A1RE         | Japan 12A/125V C13 to JIS C-8303 2.8m line cord                |
| 39Y7925           | 6219         | Korea 12A/250V C13 to KETI 2.8m line cord                      |
| 39Y7922           | 6214         | South Africa 10A/250V C13 to SABS 164 2.8m line cord           |
| 39Y7919           | 6216         | Switzerland 10A/250V C13 to SEV 1011-S24507 2.8m line cord     |
| 00CG267           | 6402         | Taiwan 15A/125V C13/CNS 10917 2.8m line cord                   |
| 39Y7923           | 6215         | United Kingdom 10A/250V C13 to BS 1363/A 2.8m line cord        |

## Physical specifications

The D1212 and D1224 have the following dimensions and weight (approximate):

- Height: 88 mm (3.5 in.)
- Width: 443 mm (17.4 in.)
- Depth: 630 mm (24.8 in.)
- Maximum weight
  - D1212: 26 kg (57.3 lb)
  - D1224: 24 kg (52.9 lb)

## Operating environment

The D1212 and D1224 are supported in the following environment:

- Air temperature:
  - Operating: 5 °C to 40 °C (41 °F to 104 °F)
  - Storage: -40 °C to +60 °C (-40 °F to 140 °F)
  - Maximum altitude: 3,045 m (10,000 ft)
- Humidity:
  - Operating: 20% to 80% (non-condensing)
  - Storage: 5% to 100% (no precipitation)
- Electrical:
  - 100 to 127 (nominal) V AC; 50 Hz to 60 Hz; 6.11 A
  - 200 to 240 (nominal) V AC; 50 Hz to 60 Hz; 3.05 A
- BTU output: 1979 BTU/hr (580 W)
- Noise level: 6.5 bels

## Warranty and support

The D1212 and D1224 have a three-year customer-replaceable unit (CRU) 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 additional 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 your 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 server. 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 Services is a dedicated partner to your success. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

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

Here's a more in-depth look at what we can do for you:

- **Asset Recovery Services**

Asset Recovery Services (ARS) helps customers recover the maximum value from their end-of-life equipment in a cost-effective and secure way. On top of simplifying the transition from old to new equipment, ARS mitigates environmental and data security risks associated with data center equipment disposal. Lenovo ARS is a cash-back solution for equipment based on its remaining market value, yielding maximum value from aging assets and lowering total cost of ownership for your customers. For more information, see the ARS page, <https://lenovopress.com/lp1266-reduce-e-waste-and-grow-your-bottom-line-with-lenovo-ars>.

- **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.

- **Basic Hardware Installation**

Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities.

- **Deployment Services**

When investing in new IT infrastructures, you need to ensure your business will see quick time to value with little to no disruption. Lenovo deployments are designed by development and engineering teams who know our Products & Solutions better than anyone else, and our technicians own the process from delivery to completion. Lenovo will conduct remote preparation and planning, configure & integrate systems, validate systems, verify and update appliance firmware, train on administrative tasks, and provide post-deployment documentation. Customer's IT teams leverage our skills to enable IT staff to transform with higher level roles and tasks.

- **Integration, Migration, and Expansion Services**

Move existing physical & virtual workloads easily, or determine technical requirements to support increased workloads while maximizing performance. Includes tuning, validation, and documenting ongoing run processes. Leverage migration assessment planning documents to perform necessary migrations.

## **Regulatory compliance**

The D1212 and D1224 drive enclosures conform to the following regulations:

- BSMI CNS 13438, Class A; CNS 14336 (Taiwan)
- CCC GB 4943.1, GB 17625.1, GB 9254 Class A (China)
- CE Mark (European Union)
- CISPR 22, Class A
- EAC (Russia)
- EN55022, Class A
- EN55024
- FCC Part 15, Class A (United States)
- ICES-003/NMB-03, Class A (Canada)
- IEC/EN60950-1
- KC Mark (Korea)
- NOM-019 (Mexico)
- Reduction of Hazardous Substances (ROHS)
- UL/CSA IEC 60950-1
- VCCI, Class A (Japan)
- BIS (India)

## **Interoperability**

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The Lenovo Storage D1212 and D1224 support attachment to hosts that support the RAID controllers and HBAs listed in the [SAS RAID controllers and HBAs](#) section.

**Important:** Information that is provided in these sections is for order reference purposes only.

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

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.

## **SAS RAID controllers and HBAs**

The D1212 and D1224 enclosures support the RAID adapters and HBAs listed in the following table.

Table 10. RAID controllers and HBAs

| Part number          | Description                                                      | Maximum quantity of enclosures per adapter |                 |
|----------------------|------------------------------------------------------------------|--------------------------------------------|-----------------|
|                      |                                                                  | Dual I/O path                              | Single I/O path |
| ThinkSystem adapters |                                                                  |                                            |                 |
| 4Y37A78836           | ThinkSystem RAID 940-8e 4GB Flash PCIe Gen4 12Gb                 | 8/4*                                       | 8               |
| 7Y37A01090           | ThinkSystem 430-8e SAS/SATA 12Gb HBA                             | 8**                                        | 8               |
| 7Y37A01091           | ThinkSystem 430-16e SAS/SATA 12Gb HBA                            | 8**                                        | 8               |
| 4Y37A09724           | ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA                  | 8**                                        | 8               |
| System x adapters    |                                                                  |                                            |                 |
| 00AE938              | ServeRAID M5225-2GB SAS/SATA Controller                          | 8/4*                                       | 8               |
| 00AE912              | N2225 SAS/SATA HBA                                               | 8**                                        | 8               |
| 00AE916              | N2226 SAS/SATA HBA                                               | 8**                                        | 8               |
| ThinkServer adapters |                                                                  |                                            |                 |
| 4XB0F28703           | ThinkServer 9300-8e PCIe 12Gb 8-port External SAS Adapter by LSI | 8                                          | 8               |
| 4XB0G88727           | ThinkServer 8885e PCIe 12Gb 8-port External SAS Adapter by PMC   | 1                                          | 1               |

\*The maximum quantity of D1212/D1224 enclosures

\*\* The maximum enclosure quantity is based on the dual HBA environment

## Rack cabinets

The following table lists the supported rack cabinets.

Table 11. Rack cabinets

| 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) |
| 93604PX    | 42U 1200mm Deep Dynamic Rack                                   |
| 93614PX    | 42U 1200mm Deep Static Rack                                    |
| 93634PX    | 42U 1100mm Dynamic Rack                                        |
| 93634EX    | 42U 1100mm Dynamic Expansion Rack                              |
| 93074RX    | 42U Standard Rack (1000mm)                                     |

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 12. 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                            | C0QH         | 0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU v2                                                   | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | Y  | Y   |
| 4PU7A93169                            | 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                            | C0QJ         | 0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU v2                                  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A93170                            | 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     | N     | 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   |
| <b>0U Switched and Monitored PDUs</b> |              |                                                                                                |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 4PU7A93181                            | C0QN         | 0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU v2 (60A derated) | N   | Y     | N      | N   | N   | N     | N  | Y   | N     | Y     | N  | Y  | N   |
| 4PU7A93174                            | C0D5         | 0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU (60A derated)    | N   | Y     | N      | Y   | N   | N     | Y  | Y   | N     | N     | N  | Y  | N   |
| 4PU7A93178                            | C0QK         | 0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU v2                                  | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | Y  | Y   |
| 4PU7A93171                            | 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                            | C0QP         | 0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU v2                 | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A93175                            | 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     | N     | Y  | Y  | Y   |
| 4PU7A93180                            | C0QM         | 0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU v2                 | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 4PU7A93173                            | 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     | N     | Y  | Y  | Y   |
| 4PU7A93179                            | C0QL         | 0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU v2 (30A derated)       | N   | Y     | N      | N   | N   | N     | N  | Y   | N     | Y     | N  | Y  | N   |
| 4PU7A93172                            | C0D7         | 0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU(30A derated)           | N   | Y     | N      | Y   | N   | N     | Y  | Y   | N     | N     | N  | 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   |
| <b>1U Switched and Monitored PDUs</b> |              |                                                                                                |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 4PU7A90808                            | C0D4         | 1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL                                     | 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 |
|-----------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| 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          | N   | N     | N      | N   | N   | Y     | Y  | N   | N     | N     | N  | N  | N   |
| 4PU7A81118                                                                        | BNDW         | 1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - CE           | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | N     | Y  | N  | Y   |
| 4PU7A90810                                                                        | C0DD         | 1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2           | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 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             | N   | N     | N      | N   | N   | Y     | Y  | N   | N     | N     | N  | N  | N   |
| 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     | N      | N   | N   | N     | N  | N   | N     | Y     | N  | N  | 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   |
| <b>1U Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)</b> |              |                                                                    |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 71763NU                                                                           | 6051         | Ultra Density Enterprise C19/C13 PDU 60A/208V/3PH                  | N   | N     | Y      | N   | N   | N     | N  | N   | N     | Y     | Y  | Y  | N   |
| 71762NX                                                                           | 6091         | Ultra Density Enterprise C19/C13 PDU Module                        | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| <b>1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)</b>                           |              |                                                                    |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 39Y8941                                                                           | 6010         | DPI C13 Enterprise PDU Module (WW)                                 | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| <b>1U Front-end PDUs (3x IEC 320 C19 outlets)</b>                                 |              |                                                                    |     |       |        |     |     |       |    |     |       |       |    |    |     |
| 39Y8938                                                                           | 6002         | DPI Single-phase 30A/120V Front-end PDU (US)                       | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8939                                                                           | 6003         | DPI Single-phase 30A/208V Front-end PDU (US)                       | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8934                                                                           | 6005         | DPI Single-phase 32A/230V Front-end PDU (International)            | Y   | Y     | Y      | Y   | Y   | Y     | Y  | Y   | Y     | Y     | Y  | Y  | Y   |
| 39Y8940                                                                           | 6004         | DPI Single-phase 60A/208V Front-end PDU (US)                       | Y   | N     | Y      | Y   | Y   | Y     | Y  | N   | N     | Y     | Y  | Y  | N   |
| 39Y8935                                                                           | 6006         | DPI Single-phase 63A/230V Front-end PDU (International)            | 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 NEMA PDU                                              | 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   |

| Part number | Feature code | Description                                                         | ANZ | ASEAN | Brazil | EET | MEA | RUCIS | WE | HTK | INDIA | JAPAN | LA | NA | PRC |
|-------------|--------------|---------------------------------------------------------------------|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| 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 Female to AS/NZ 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 13. 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) |
| 7DD5A003WW                                   | RT3kVA 2U Rack or Tower UPS-G2 (100-125VAC)   |
| Rack-mounted or tower UPS units - 200-240VAC |                                               |
| 7DD5A002WW                                   | RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC) |
| 7DD5A005WW                                   | RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)   |
| 7DD5A007WW                                   | RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)   |
| 7DD5A008WW                                   | RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)   |
| 7DD5A00AWW                                   | RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)  |

† 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

Lenovo Financial Services reinforces Lenovo's commitment to deliver pioneering products and services that are recognized for their quality, excellence, and trustworthiness. Lenovo Financial Services offers financing solutions and services that complement your technology solution anywhere in the world.

We are dedicated to delivering a positive finance experience for customers like you who want to maximize your purchase power by obtaining the technology you need today, protect against technology obsolescence, and preserve your capital for other uses.

We work with businesses, non-profit organizations, governments and educational institutions to finance their entire technology solution. We focus on making it easy to do business with us. Our highly experienced team of finance professionals operates in a work culture that emphasizes the importance of providing outstanding customer service. Our systems, processes and flexible policies support our goal of providing customers with a positive experience.

We finance your entire solution. Unlike others, we allow you to bundle everything you need from hardware and software to service contracts, installation costs, training fees, and sales tax. If you decide weeks or months later to add to your solution, we can consolidate everything into a single invoice.

Our Premier Client services provide large accounts with special handling services to ensure these complex transactions are serviced properly. As a premier client, you have a dedicated finance specialist who manages your account through its life, from first invoice through asset return or purchase. This specialist develops an in-depth understanding of your invoice and payment requirements. For you, this dedication provides a high-quality, easy, and positive financing experience.

For your region-specific offers, please ask your Lenovo sales representative or your technology provider about the use of Lenovo Financial Services. For more information, see the following Lenovo website:

<https://www.lenovo.com/us/en/landingpage/lenovo-financial-services/>

## Related publications and links

For more information, see the following documents:

- Lenovo Storage product page  
<https://www.lenovo.com/us/en/data-center/storage/>
- Lenovo Data Center Solution Configurator  
<http://dcsc.lenovo.com>
- Lenovo Storage support  
<http://support.lenovo.com/us/en/products/servers/lenovo-storage>
- Lenovo Storage D1224 Drive Enclosure for SAP HANA Product Guide  
<http://lenovopress.com/lp0590>

## Related product families

Product families related to this document are the following:

- [Direct-Attached Storage](#)

## Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.  
8001 Development Drive  
Morrisville, NC 27560  
U.S.A.  
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

© Copyright Lenovo 2024. All rights reserved.

This document, LP0512, was created or updated on June 25, 2024.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:  
<https://lenovopress.lenovo.com/LP0512>
- Send your comments in an e-mail to:  
[comments@lenovopress.com](mailto:comments@lenovopress.com)

This document is available online at <https://lenovopress.lenovo.com/LP0512>.

## Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at <https://www.lenovo.com/us/en/legal/copytrade/>.

The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo®

System x®

ThinkServer®

ThinkSystem®

The following terms are trademarks of other companies:

Linux® is the trademark of Linus Torvalds in the U.S. and other countries.

Microsoft®, Excel®, Windows Server®, and Windows® are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.