Lenovo Storage D3284 External High Density Drive Expansion Enclosure

Product Guide

The Lenovo Storage D3284 High Density Expansion Enclosure offers 12 Gbps SAS direct-attached storage expansion capabilities that are designed to provide density, speed, scalability, security, and high availability for medium to large businesses. The D3284 delivers enterprise-class storage technology in a cost-effective dense solution with flexible drive configurations of up to 84 drives in 5U rack space and RAID or JBOD (non-RAID) host connectivity or Lenovo ThinkSystem DS Series storage area network (SAN) array expansion (EBOD connectivity).

The D3284 expansion unit is designed for a wide range of workloads, including big data and analytics, video surveillance, private and hybrid clouds, file and print serving, and backup and archiving. The D3284 is also well-suited for software defined storage (SDS) and Windows Storage Spaces.



Figure 1. Lenovo Storage D3284 HD Expansion Enclosure

Did you know?

The D3284 expansion enclosures 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.

With support for daisy chaining, the D3284 expansion enclosures can be scaled up to 2.58 PB for capacity-optimized configurations.

The D3284 expansion enclosures allow daisy chaining with D1212 and D1224 expansion enclosures: Up to two D3284 and two D1212 or one D1224 drive enclosures is supported in a single chain.

The D3284 expansion enclosures are universal enclosures that can be used with Lenovo servers as direct attach storage (DAS) or as expansion for the Lenovo ThinkSystem DS4200 and DS6200 storage systems.

Key features

Key features and benefits provided by the D3284 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 6 Gb or 12 Gb SAS RAID adapters for advanced data protection or 6 Gb or 12 Gb SAS Host Bus Adapters (HBAs) for maximum JBOD performance
- Provide expansion capabilities for the ThinkSystem DS4200 and DS6200 storage arrays
- 12 Gb SAS drive-side connectivity and storage density with support for 84x 3.5-inch large form factor (LFF) drives in a 5U rack space
- Scalability of up to 336 drives per HBA with the attachment of up to four D3284 daisy-chained expansion enclosures to satisfy growing needs for storage capacity and performance
- Flexibility in daisy chaining of up to two D3284 and two D1212 or one D1224 drive enclosures
- Flexibility in storing data on high performance SAS SSDs or capacity-optimized enterprise NL SAS HDDs; mixing and matching drive types on a single HBA to perfectly meet performance and capacity requirements for various workloads
- Support multiple host attachments (application-specific)

The D3284 drive enclosures are designed to support a wide range of data storage requirements, from highly utilized applications to high-capacity, low usage applications.

The following SAS drives are supported by the D3284:

- High-capacity, archival-class nearline HDDs: 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, 14 TB, and 16 TB 7.2K rpm
- High performance SSDs (10 drive writes per day [DWD]): 400 GB
- Mainstream SSDs (3 DWD): 800 GB
- Capacity-optimized SSDs (1 DWD): 3.84 TB, and 7.68 TB

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 D3284 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 HBA 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
- Redundant hardware, including host ports, ESMs, power supplies, and cooling fans
- Hot-swappable and customer replaceable components, including ESMs, power supplies, cooling fans, and drives

Components and connectors

The following figures show the front of the D3284 drive expansion enclosure.

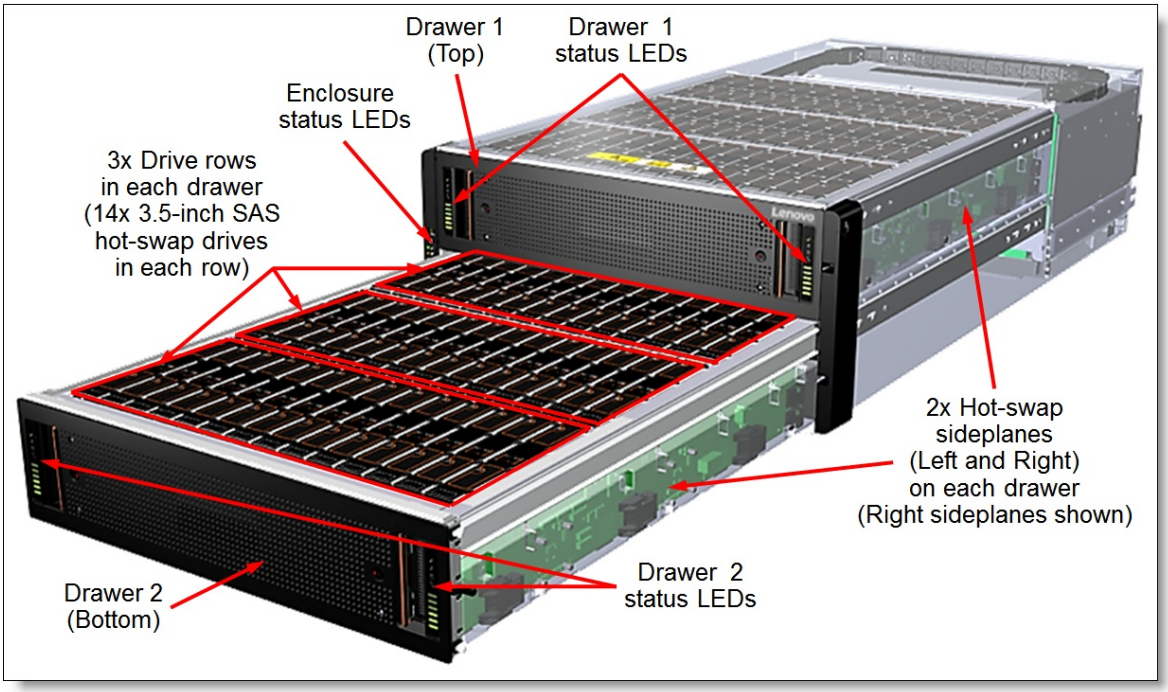


Figure 2. Front view of the D3284 drive enclosure

The following figures show the rear of the D3284 drive expansion enclosure.

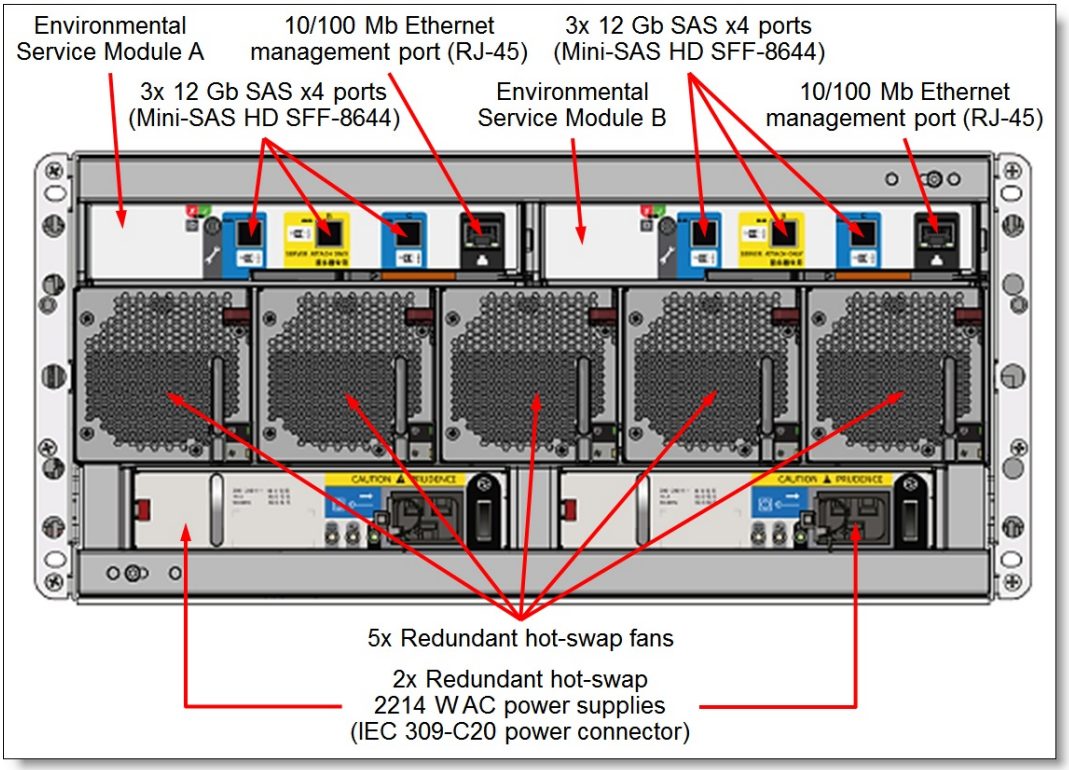


Figure 3. Rear view of the D3284 drive enclosure

Notes:

- The ESMs (shown in the previous figure) have additional service ports with a specialized connector, and these ports are reserved for use by a Lenovo service technician.
- The Ethernet management port on the ESMs is not used in the EBOD mode.

System specifications

The following table lists the D3284 system specifications.

Table 1. System specifications

Attribute	Specification
Form factor	5U 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	84 LFF hot-swap drive bays in two drawers. Each drawer has three drive rows, and each row has 14 drives. Up to 4x D3284 enclosures can be daisy chained on a supported adapter for a total of up to 336 LFF drives.
Drive technologies	NL SAS HDDs and SAS SSDs. Intermix of HDDs and SSDs is supported within an enclosure/drawer, but not within a row.
Drive connectivity	Dual-ported 12 Gb SAS drive attachment infrastructure.
Drives	• 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, 14 TB, and 16 TB 7.2K rpm 12 Gb NL SAS HDDs • 400 GB 12 Gb SAS SSDs (10 DWD) • 800 GB 12 Gb SAS SSDs (3 DWD) • 3.84 TB and 7.68 TB12 Gb SAS SSDs (1 DWD)
Raw storage capacity	Up to 2.58 PB (336x 7.68 TB SAS SSDs).
Host adapters	RAID controllers: • ThinkSystem RAID 930-8e (8-port 12 Gb SAS, 2x SFF-8644 connectors) • M5120 (8-port 6 Gbps SAS, 2x SFF-8088 connectors) • M5225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors) • 9286CV-8e (8-port 6 Gbps SAS, 2x SFF-8088 connectors) • 9380-8e (8-port 12 Gbps SAS, 2x SFF-8644 connectors) Host bus adapters (non-RAID): • ThinkSystem 430-8e HBA (8-port 12 Gb SAS, 2x SFF-8644 connectors) • ThinkSystem 430-16e HBA (16-port 12 Gb SAS, 4x SFF-8644 connectors) • N2125 (8-port 6 Gbps SAS, 2x SFF-8088 connectors) • N2225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors) • N2226 (16-port 12 Gbps SAS, 4x SFF-8644 connectors) • 9300-8e (8-port 12 Gbps SAS, 2x SFF-8644 connectors)
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 ESXi 6.0, 6.5, and 6.7.
Cooling	N+1 redundant cooling with five hot-swap fans.
Power supply	Two redundant hot-swap 2214 W AC power supplies.
Hot-swap parts	ESMs, drives, sideplanes, power supplies, and fans.
Management interfaces	SAS Enclosure Services, 10/100 Mb Ethernet for external management (the Ethernet port is not used in the EBOD mode).
Partitioning	SAS zoning.

Attribute	Specification
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, hardware installation.
Dimensions	Height: 221 mm (8.7 in), width: 447 mm (17.6 in), depth: 933 mm (36.7 in)
Maximum weight	131 kg (288.8 lb)

Models

The following table lists the relationship models of the D3284 drive enclosures.

Table 2. D3284 relationship models

Description	Part number
Lenovo Storage D3284 4TB x 84 HD Expansion Enclosure	641311F
Lenovo Storage D3284 6TB x 84 HD Expansion Enclosure	641312F
Lenovo Storage D3284 8TB x 84 HD Expansion Enclosure	641313F
Lenovo Storage D3284 10TB x 84 HD Expansion Enclosure	641314F

The following table lists the TopSeller models of the D3284 drive enclosures.

Table 3. D3284 TopSeller models

Description	Part number
Lenovo Storage D3284 High Density Expansion Enclosure	6413E5F
Lenovo Storage D3284 4TB x 42 HD Expansion Enclosure	6413E1H
Lenovo Storage D3284 4TB x 84 HD Expansion Enclosure	6413E1F
Lenovo Storage D3284 6TB x 42 HD Expansion Enclosure	6413E2H
Lenovo Storage D3284 6TB x 84 HD Expansion Enclosure	6413E2F
Lenovo Storage D3284 8TB x 42 HD Expansion Enclosure	6413E3H
Lenovo Storage D3284 8TB x 84 HD Expansion Enclosure	6413E3F
Lenovo Storage D3284 10TB x 42 HD Expansion Enclosure	6413E4H
Lenovo Storage D3284 10TB x 84 HD Expansion Enclosure	6413E4F

The following table lists the CTO base model of the D3284 drive enclosures.

Table 4. D3284 CTO base model

Description	Machine Type-Model	Feature code
Lenovo Storage D3284 High Density Expansion Enclosure	6413-HC1	AUDV

The D3284 expansion enclosures include the following items:

- One chassis with the following components:
  - Dual 3-port environmental service modules
  - Two drawers
  - Two power supplies
  - Five cooling fans
  - Drives (select models; see Table 2 and Table 3 for details)
- Two 2m, 16A/100-250V, C19 to IEC 320-C20 rack power cables (models listed in Table 2 and Table 3), or two customer-configured power cables (CTO models)
- Lenovo Storage 12Gb High Density Rack Mount Kit - Rails 25"-33"
- Documentation package

Host connectivity

The D3284 drive enclosures support dual environmental service module (ESM) configurations. Each ESM has three universal 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 SAS RAID controller or SAS HBA installed in a server and for daisy chaining the D3284 enclosures between each other or with the D1212 or D1224 enclosures.

Port A on each ESM is used for connecting the host's external SAS ports 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 host's external SAS ports to the enclosure (daisy-chaining does not use Port B). Port C on each ESM is used for connecting the host's external SAS ports 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 to SAS drives. For SAS HBAs, the host operating system runs multi-pathing software to manage multiple I/O paths.

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

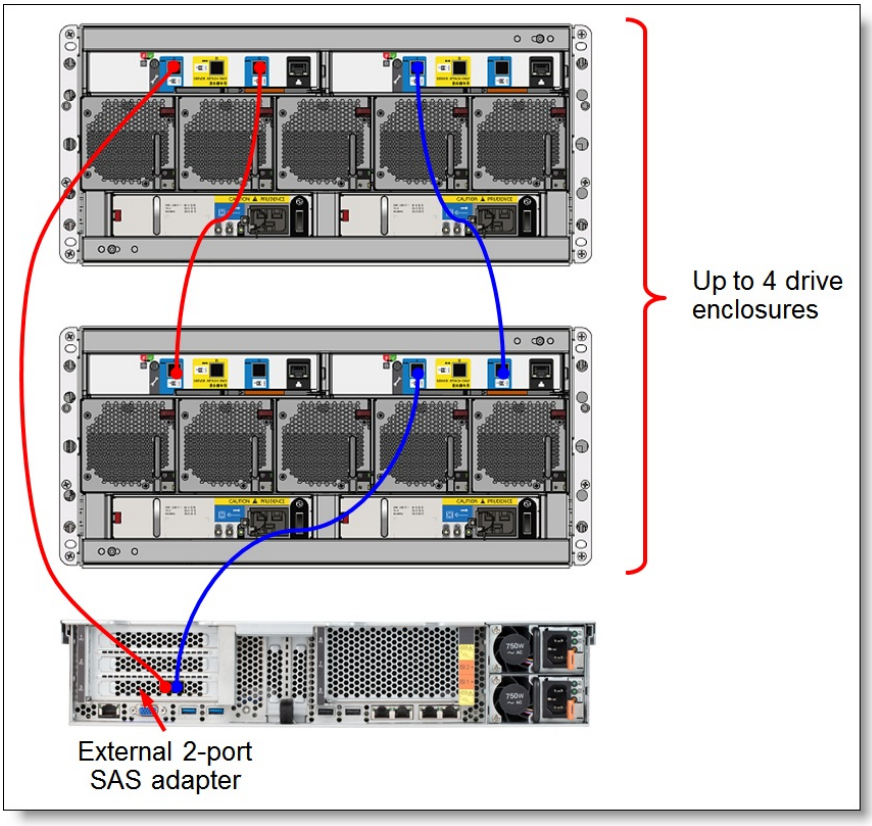


Figure 4. Connectivity topology with one host

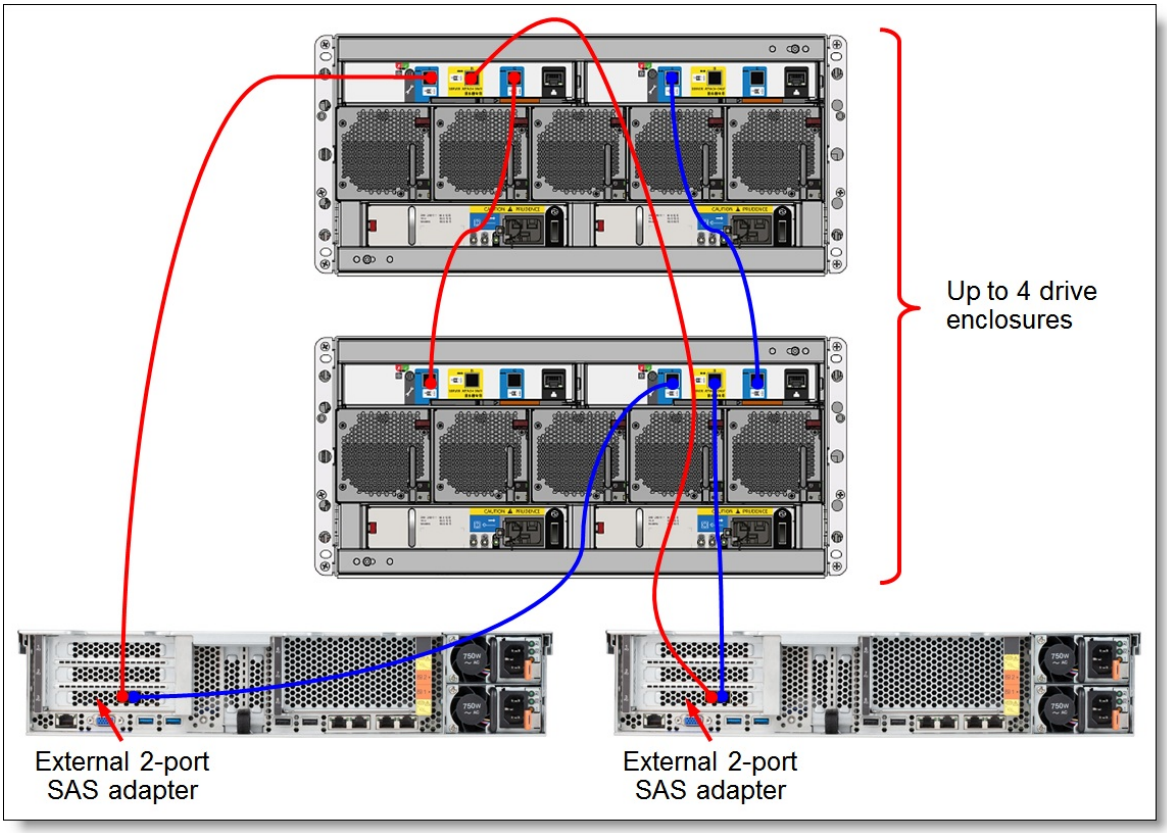


Figure 5. Connectivity topology with two hosts

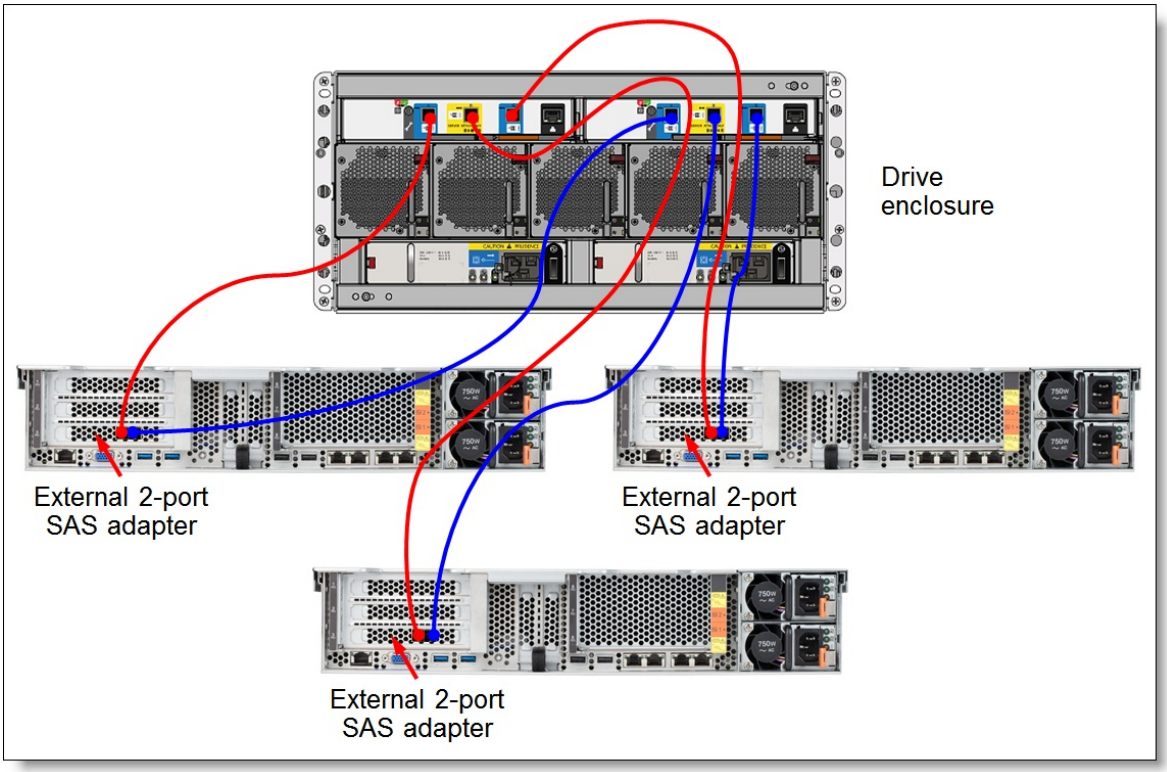


Figure 6. Connectivity topology with three hosts

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 to be connected to one SAS port on the ESM.

The *SAS zoning* feature of the D3284 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 enabled 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.

The supported zone configurations are shown in the following table.

Note: Mode 0 means that zoning is disabled.

Table 5. D3284 zoning configurations

Zoning mode	Number of zones	Maximum number of hosts	Number of drive bays in one zone	Zone number	Host ports	Exp. ports	Drive bays
Zoning with SAS standard cables							
Mode 0	1	2	84	1	A, B	C	0-83
Mode 1	2	2	42	1	A	C	0-6, 14-20, 28-34, 42-48, 56-62, 70-76
				2	B		7-13, 21-27, 35-41, 49-55, 63-69, 77-83
Mode 2	3	3	28	1	A	N/A	0-4, 14-18, 28-31, 42-46, 56-60, 70-73
				2	B		5-9, 19-22, 32-36, 47-51, 61-64, 74-78
				3	C		10-13, 23-27, 37-41, 52-55, 65-69, 79-83
Zoning with SAS Y-cables							
Mode 3	3	3	28	1	A.1	C	0-4, 14-18, 28-31, 42-46, 56-60, 70-73
				2	A.2		5-9, 19-22, 32-36, 47-51, 61-64, 74-78
				3	B.1		10-13, 23-27, 37-41, 52-55, 65-69, 79-83
Mode 4	4	4	21	1	A.1	C	0-3, 14-17, 28-30, 42-45, 56-58, 70-72
				2	A.2		4-6, 18-20, 31-34, 46-48, 59-62, 73-76
				3	B.1		7-10, 21-24, 35-37, 49-52, 63-65, 77-79
				4	B.2		11-13, 25-27, 38-41, 53-55, 66-69, 80-83
Mode 5	6	6	14	1	A.1	N/A	0-2, 14-15, 28-29, 42-44, 56-57, 70-71
				2	A.2		3-4, 16-18, 30-31, 45-46, 58-60, 72-73
				3	B.1		5-6, 19-20, 32-34, 47-48, 61-62, 74-76
				4	B.2		7-9, 21-22, 35-36, 49-51, 63-64, 77-78
				5	C.1		10-11, 23-25, 37-38, 52-53, 65-67, 79-80
				6	C.2		12-13, 26-27, 39-41, 54-55, 68-69, 81-83

The following table lists ordering information for the SAS cables that are supported with the D3284.

Table 6. SAS cable options

Description	Part number	Feature code	Maximum quantity per one D3284
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
External MiniSAS HD 8644/2xMiniSAS HD 8644 2M Y-Cable	01DC164	AU1A	6
Connectivity cables - Mini-SAS Host Adapter to Expansion			
1m (SFF-8644 to SFF-8088) 6Gbps External mini-SAS cable	00YE313	ATC1	6
2m (SFF-8644 to SFF-8088) 6Gbps External mini-SAS cable	00YE314	ATC2	6
6m (SFF-8644 to SFF-8088) 6Gbps External mini-SAS cable	00YE316	ATC4	6
External MiniSAS HD 8644/2xMiniSAS 8088 2M Y-Cable	01CX831	AUF7	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

Configuration notes:

- 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.
- Each Y-cable must be attached to two hosts.

Storage system connectivity

For storage system expansion (EBOD) connectivity, Port A and Port C on the expansion modules in the D3284 enclosures are used for connections to the ThinkSystem DS4200 or DS6200 storage arrays and for daisy chaining the expansion enclosures between each other.

Note: The D3284 expansion enclosures shipped prior to March 2, 2018 support only JBOD connectivity; EBOD connectivity to the DS Series storage systems is not supported. The D3284 expansion enclosures shipped on or after March 2, 2018 support JBOD and EBOD connectivity.

The expansion port on the first DS4200 or DS6200 controller module is connected to the Port A on the first expansion module in the D3284 enclosure, and the Port C on the first expansion module in the D3284 enclosure is connected to the Port A on the first expansion module in the adjacent D3284 enclosure, and so on.

The expansion port on the second DS4200 or DS6200 controller module is connected to the Port C on the second expansion module in the D3284 enclosure, and the Port A on the second expansion module in the D3284 enclosure is connected to the Port C on the second expansion module in the adjacent D3284 enclosure, and so on.

Up to three D3284 enclosures can be connected to the DS4200 or DS6200 storage system. Intermix of DS Series and D3284 enclosures is not supported.

Note: The Port B on the expansion module is not used.

The EBOD connectivity topology for the D3284 expansion units is shown in the following figure.

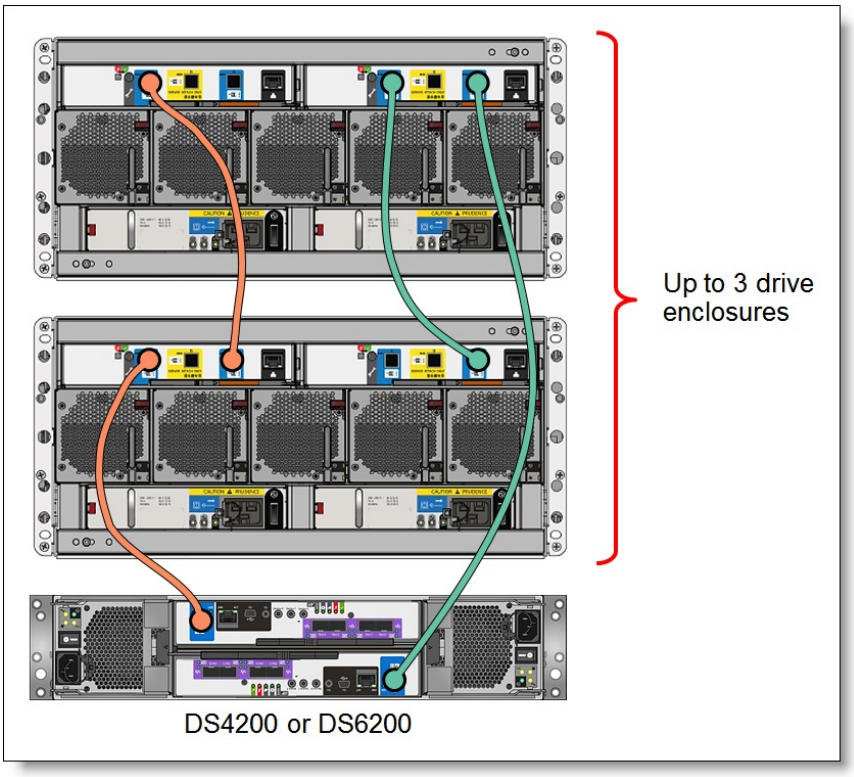


Figure 7. D3284 EBOD connectivity topology

The following table lists ordering information for the supported EBOD connectivity cable options.

Table 7. Cables for EBOD connectivity

Description	Part number	Feature code	Quantity per one expansion unit
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*

* One cable per expansion module; two cables are required per each expansion enclosure.

For more information on the ThinkSystem DS4200 and DS6200 storage arrays, refer to the following Lenovo Press Product Guides:

- Lenovo ThinkSystem DS4200 Storage Array
  http://lenovopress.com/lp0510
- Lenovo ThinkSystem DS6200 Storage Array
  http://lenovopress.com/lp0511

Drives

The D3284 drive enclosure supports up to 84x 3.5-inch hot-swap drives. The supported drive types are NL SAS HDDs and SAS SSDs.

The following rules apply when selecting the drive configuration:

- The drives must be installed in rows. Each row contains 14 drive bays, and there are six rows in the enclosure (three rows per drawer).
- The drives must be installed in a quantity of 14 per row (all drive bays in the row should be populated).
- Intermixing HDDs and SSDs is supported within the drawer/enclosure and within the first row in the top drawer, but not within other rows.
- If SSDs and HDDs are intermixed in the first row in the top drawer, up to four SSDs can be installed, and the remaining slots must be populated with HDDs; the total quantity of the SSDs and HDDs must be equal to 14:
    - 1x SSD + 13x HDDs
    - 2x SSD + 12x HDDs
    - 3x SSD + 11x HDDs
    - 4x SSD + 10x HDDs
- Intermixing HDDs of various sizes within a row is supported.

The following tables list drive options for the D3284 drive enclosures.

Table 8. Drive options

Description	Part number	Feature code	Maximum quantity per D3284
12 Gbps NL SAS hot-swap HDDs (14-pack)			
Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD (14 pack)	01CX814	AUDS	6
Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD (14 pack)	01CX816	AUDT	6
Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD (14 pack)	01CX820	AUDU	6
Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD (14 pack)	01CX778	AUE4	6
Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD (14 pack)	4XB7A09919	B106	6
Lenovo Storage 14TB 7.2K 3.5" NL-SAS HDD (14 pack)	4XB7A12036	B4T6	6
Lenovo Storage 16TB 7.2K 3.5" NL-SAS HDD (14 pack)	4XB7A62769	BAVM	6
12 Gbps NL SAS hot-swap HDDs (1-pack)			
Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD	01GT910	AUK2	84
Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD	01GT911	AUK1	84
Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD	01GT912	AUK0	84
Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD	01GT913	AUJZ	84
Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD	4XB7A09920	B107	84
Lenovo Storage 14TB 7.2K 3.5" NL-SAS HDD	4XB7A12037	B4T7	84
Lenovo Storage 16TB 7.2K 3.5" NL-SAS HDD	4XB7A62770	BAVN	84
12 Gbps SAS hot-swap SSDs (10 Drive Writes per Day) (1-pack)			
Lenovo Storage 400GB 10DWD SAS SSD (2.5" in 3.5" Hybrid Tray 1200.2)	4XB7A09921	AXDY	84
12 Gbps SAS hot-swap SSDs (3 Drive Writes per Day) (1-pack)			
Lenovo Storage 800GB 3DWD SAS SSD (2.5" in 3.5" Hybrid Tray PM1643a)	4XB7A60800	BAVK	84

Description	Part number	Feature code	Maximum quantity per D3284
12 Gbps SAS hot-swap SSDs (1 Drive Write per Day) (1-pack)			
Lenovo Storage 3.84TB 1DWD SAS SSD (2.5" in 3.5" Hybrid Tray 1200.2)	4XB7A09526	B14A	84
Lenovo Storage 3.84TB 1DWD SAS SSD (2.5" in 3.5" Hybrid Tray PM1633a)	4XB7A09525	B14B	84
Lenovo Storage 7.68TB 1DWD SAS SSD (2.5" in 3.5" Hybrid Tray PM1633a)	4XB7A09524	B149	84

Power supplies and cables

The D3284 expansion enclosures have two redundant 2214 W (200-240 V AC) hot-swap power supplies. Each power supply has an IEC 320-C19 connector.

The models of the D3284 expansion enclosures that are listed in the Models section ship standard with two 2m, 16A/100-250V, C19 to IEC 320-C20 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 D3284).

Table 9. Power cable options

Description	Part number	Feature code
Rack power cables		
2m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable	None*	6292
2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable	39Y7916	6252
Line cords		
4.3m, 16A/208V, C19 to NEMA L6-20P (US) Line Cord	40K9772	6275
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320 C19 Line Cord	00D7192	A2Y3
4.3m, EMEA/AP, IEC 309 32A (3P+N+Gnd) to 3X IEC 320 C19 Line Cord	00D7193	A2Y4
4.3m, A/NZ, (PDL/Clipsal) 32A (3P+N+Gnd) to 3X IEC 320 C19 Line Cord	00D7194	A2Y5

* Two cables are included with the D3284 models listed in the Models section or can be configured for CTO models.

Physical specifications

The D3284 expansion enclosures have the following dimensions and weight (approximate):

- Height: 221 mm (8.7 in.)
- Width: 447 mm (17.6 in.)
- Depth: 933 mm (36.7 in.)
- Weight (Maximum): 131 kg (288.8 lb)

Operating environment

The D3284 expansion enclosures are supported in the following environment:

- Air temperature:
  - Operating: 5 °C to 35 °C (41 °F to 95 °F); maximum temperature decreased by 5 °C above 2134 m (7000 ft)
  - Non-operating: -40 °C to 70 °C (-40 °F to 158 °F)
- Humidity:
  - Operating: 20% to 80% (non-condensing)
  - Non-operating: 5% to 100% (no precipitation)
- Maximum altitude:
  - Operating: 3048 m (10,000 ft)
  - Non-operating: 12192 m (40,000 ft)
- Electrical: 200 to 240 V AC (nominal); 50 Hz to 60 Hz; 7.5 A
- Maximum power load: 2214 W
- Heat output: 7554 BTU/hour
- Noise level: 8.0 bels

Warranty and support

The D3284 expansion enclosures 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 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://lenovolocator.com/

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

- Lenovo Statement of Limited Warranty for Data Center Group (DCG) 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 customer success. Lenovo's goal for customers is to reduce capital outlays, mitigate IT risks, and accelerate time to productivity.

Here is a more in-depth look at what Lenovo can do for their customers:

- **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 customers. For more information, see the ARS page, http://lenovopress.com/lp1266.

- **Assessment Services**
  An assessment helps solve customer IT challenges through an onsite, multi-day session with a Lenovo technology expert. Lenovo performs 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, no matter how large or small, get a better return on their IT investment and overcome challenges in the ever-changing technology landscape.

- **Design Services**
  Professional Services consultants perform infrastructure design and implementation planning to support customer's 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 customer's server, storage, or networking hardware. Working at a time convenient for the customer (business hours or off shift), the technician will unpack and inspect the systems on customer 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 customers to focus on other priorities.

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

- **Integration, Migration, and Expansion Services**
  Integration, Migration, and Expansion Services allow to move existing physical and virtual workloads easily, or to determine technical requirements to support increased workloads while maximizing performance. These services include tuning, validation, and documenting ongoing run processes, and they leverage migration assessment planning documents to perform necessary migrations.

Some service options may not be available in every country. For more information about Lenovo service offerings that are available in a specific country or area, contact a local Lenovo sales representative or business partner.

Regulatory compliance

The D3284 expansion 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
- MSIP (Korea)
- NOM-019 (Mexico)
- RCM (Australia)
- Reduction of Hazardous Substances (ROHS)
- UL/CSA IEC 60950-1
- VCCI, Class B (Japan)

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The Lenovo Storage D3284 supports attachment to Lenovo ThinkSystem, System x, and ThinkServer hosts that support the RAID controllers and HBAs listed in the SAS RAID controllers and HBAs section.

For end-to-end storage configuration support, refer to the Lenovo Storage D3284 Interoperability Matrix: http://datacentersupport.lenovo.com/us/en/products/storage/lenovo-storage/d3284/6413/documentation/userguide

The following sections list adapters, servers, and operating systems supported by Lenovo that can be used with the Lenovo Storage D3284:

- RAID controllers and HBAs
- Operating systems

Important: Information that is provided in these sections is for order reference purposes only. Not all possible combinations might be supported. End-to-end storage configuration support *must* be verified through the Lenovo Storage D3284 Interoperability Matrix.

SAS RAID controllers and HBAs

The D3284 expansion enclosures are supported with the RAID adapters and HBAs that are listed in the following table.

Table 10. RAID controllers and HBAs

Description	Part number	Maximum quantity of D3284 per adapter	
		Single I/O path	Dual I/O path
ThinkSystem RAID controllers			
ThinkSystem RAID 930-8e 4GB Flash PCIe 12Gb Adapter	7Y37A01087	2	1
ThinkSystem HBAs			
ThinkSystem 430-8e SAS/SATA 12Gb HBA	7Y37A01090	3	1
ThinkSystem 430-16e SAS/SATA 12Gb HBA	7Y37A01091	3	1
System x RAID controllers			
ServeRAID M5120 SAS/SATA Controller (6 Gbps SAS)	81Y4478	2	1
ServeRAID M5225-2GB SAS/SATA Controller (12 Gbps SAS)	00AE938	2	1
System x HBAs			
N2125 SAS/SATA HBA (6 Gbps SAS)	46C9010	4	4
N2225 SAS/SATA HBA (12 Gbps SAS)	00AE912	4	4
N2226 SAS/SATA HBA (12 Gbps SAS)	00AE916	4	4
ThinkServer RAID controllers			
ThinkServer 9286CV-8e PCIe 6Gb 8 Port External SAS RAID Adapter by LSI	4XB0F28699	2	1
ThinkServer 9380-8e PCIe 12Gb 8 port External SAS RAID Adapter by LSI	4XC0G88845	2	1
ThinkServer HBAs			
ThinkServer 9300-8e PCIe 12Gb 8-port External SAS Adapter by LSI	4XB0F28703	4	4

The following tables summarize features of supported adapters.

Table 11. RAID controller features and specifications summary

Feature	M5120	M5225-2GB	9286CV-8e	9380-8e	930-8e
Form factor	Low profile	Low profile	Low profile	Low profile	Low profile
SAS controller chip	SAS2208	SAS3108	SAS2208	SAS3108	SAS3508
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	6 Gb SAS	12 Gb SAS	6 Gb SAS	12 Gb SAS	12 Gb SAS
Number of ports	8	8	8	8	8
Connector type	SFF-8088 x4	SFF-8644 x4	SFF-8088 x4	SFF-8644 x4	SFF-8644 x4
Number of connectors	2	2	2	2	2
Drive interface	SAS	SAS	SAS	SAS	SAS
Drive type	HDD, SSD	HDD, SSD	HDD, SSD	HDD, SSD	HDD, SSD
Number of devices	240	240	240	240	240*

Feature	M5120	M5225-2GB	9286CV-8e	9380-8e	930-8e
RAID levels	0/1/10/5/50; Optional 6/60 (81Y4546)	0/1/10/5/50; Optional 6/60 (47C8706)	0/1/10/5/ 50/6/60	0/1/10/5/ 50/6/60	0/1/10/5/ 50/6/60
JBOD mode	No	No	No	No	Yes
Cache	Required: 512 MB no backup (81Y4484); or 512 MB battery backup (81Y4484 + 81Y4508); or 512 MB flash backup (81Y4487); or 1 GB flash backup (81Y4559); or 2 GB flash backup (47C8670)	2 GB flash backup (included)	1 GB flash backup (included)	1 GB; flash backup required (4XB0G45761)	4 GB flash backup (included)
SSD I/O acceleration (FastPath)	Optional (90Y4273)	Optional (47C8710)	Yes	Yes	Yes
SSD caching (CacheCade Pro 2.0)	Optional (90Y4318)	Optional (47C8712)	Optional (4XB0F28702)	No	No

* The support for 240 devices requires the firmware version 5.030 or newer and the activation of the profile 12 on the RAID 930-8e controller via UEFI or StorCLI. By default, the profile 10 is activated on the controller, which provides support for up to 64 devices.

Table 12. HBA features and specifications summary

Feature	430-8e	430-16e	N2125	N2225	N2226	9300-8e
Form factor	Low profile	Low profile	Low profile	Low profile	Low profile	Low profile
SAS controller chip	SAS3408	SAS3416	SAS2308	SAS3008	SAS3008	SAS3008
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	12 Gb SAS	12 Gb SAS	6 Gb SAS	12 Gb SAS	12 Gb SAS	12 Gb SAS
Number of ports	8	16	8	8	16	8
Connector type	SFF-8644 x4	SFF-8644 x4	SFF-8088 x4	SFF-8644 x4	SFF-8644 x4	SFF-8644 x4
Number of connectors	2	4	2	2	4	2
Drive interface	SAS	SAS	SAS	SAS	SAS	SAS
Drive type	HDD, SSD	HDD, SSD	HDD, SSD	HDD, SSD	HDD, SSD	HDD, SSD
Number of devices	1024	1024	1024	1024	1024	1024
RAID levels	None	None	None	None	None	None
JBOD mode	Yes	Yes	Yes	Yes	Yes	Yes
Cache	None	None	None	None	None	None
Cache protection	None	None	None	None	None	None
SSD I/O acceleration (FastPath)	None	None	None	None	None	None
SSD caching (CacheCade Pro 2.0)	None	None	None	None	None	None

Operating systems

The D3284 expansion enclosures support attachments to Lenovo servers that run the following operating systems:

- Microsoft:
  - Microsoft Windows Server 2019 Storage Spaces Direct (S2D)
  - Microsoft Windows Server 2019 (Hyper-V)
  - Microsoft Windows Server 2016 Storage Spaces Direct (S2D)
  - Microsoft Windows Server 2016 (Hyper-V)
  - Microsoft Windows Server 2012 R2
  - Microsoft Windows Server 2012 R2 (Hyper-V)
- Red Hat:
  - Red Hat Enterprise Linux 7.6
  - Red Hat Enterprise Linux 7.5
  - Red Hat Enterprise Linux 7.4
  - Red Hat Enterprise Linux 6.10 Server x64 Edition
  - Red Hat Enterprise Linux 6.9 Server x64 Edition
  - Red Hat Enterprise Linux 6.8 Server x64 Edition
- SUSE:
  - SUSE Linux Enterprise Server 15
  - SUSE Linux Enterprise Server 12 SP4
  - SUSE Linux Enterprise Server 12 SP3
  - SUSE Linux Enterprise Server 12 SP2
  - SUSE Linux Enterprise Server 11 SP4 for AMD64/EM64T
  - SUSE Linux Enterprise Server 11 SP3 for AMD64/EM64T
  - SUSE Linux Enterprise Server 11 SP2 for AMD64/EM64T
- VMware:
  - VMware vSphere 6.7 (ESXi) Update 1
  - VMware vSphere 6.7 (ESXi)
  - VMware vSphere 6.5 (ESXi) Update 2
  - VMware vSphere 6.5 (ESXi) Update 1
  - VMware vSphere 6.5 (ESXi)
  - VMware vSphere 6.0 (ESXi) Update 3
  - VMware vSphere 6.0 (ESXi) Update 2
  - VMware vSphere 6.0 (ESXi) Update 1
  - VMware vSphere 6.0 (ESXi)

For information about operating system compatibility with Lenovo servers, refer to the Operating System Interoperability Guide: http://lenovopress.com/osig

Rack cabinets

The following table lists the rack cabinets that are currently offered by Lenovo that can be used for mounting the D3284 expansion enclosures and other IT infrastructure building blocks.

Table 13. Rack cabinets

Description	Part number
25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072RX
25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072PX
42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments)	93074RX
42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments)	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments)	93634EX
42U 1200mm Deep Dynamic Rack (6 sidewall compartments)	93604PX
42U 1200mm Deep Static Rack (6 sidewall compartments)	93614PX
42U Enterprise Rack (1105 mm deep; 4 sidewall compartments)	93084PX
42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments)	93084EX

For more information, see the list of Product Guides in the Rack cabinets category:
http://lenovopress.com/servers/options/racks#rt=product-guide

Power distribution units

The following table lists the power distribution units (PDUs) that are currently offered by Lenovo that can be used for distributing electrical power to the D3284 expansion enclosures and other IT infrastructure building blocks mounted in a rack cabinet.

Table 14. Power distribution units

Description	Part number
0U Basic PDUs	
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord	00YJ776
0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord	00YJ777
0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord	00YJ778
0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord	00YJ779
Switched and Monitored PDUs	
0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord	00YJ781
0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord	00YJ780
0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord	00YJ782
0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord	00YJ783
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord	46M4003
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
Ultra Density Enterprise C19/C13 PDU Module (without line cord)	71762NX
Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord	71763NU
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
DPI Single Phase C19 Enterprise PDU (without line cord)	39Y8948

Description	Part number
DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord	39Y8923
Front-end PDUs (3x IEC 320 C19 outlets)	
DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord	39Y8939
DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8934
DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8940
DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8935
Line cords for PDUs that ship without a line cord	
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612
DPI 32a Line Cord (IEC 309 3P+N+G)	40K9611
DPI 60a Cord (IEC 309 2P+G)	40K9615
DPI 63a Cord (IEC 309 P+N+G)	40K9613
DPI Australian/NZ 3112 Line Cord (32A)	40K9617
DPI Korean 8305 Line Cord (30A)	40K9618

For more information, see the list of Product Guides in the PDU category:
http://lenovopress.com/servers/options/pdu#rt=product-guide

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are currently offered by Lenovo that can be used for providing electrical power protection to the D3284 expansion enclosures and other IT infrastructure building blocks.

Table 15. Uninterruptible power supply units

Description	Part number
Worldwide models	
RT2.2kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55942KX
RT3kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55943KX
RT5kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55945KX
RT6kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55946KX
RT8kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55948KX
RT11kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55949KX
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55948PX
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55949PX
ASEAN, HTK, INDIA, and PRC models	
ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)	55943KT
ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)	55943LT

For more information, see the list of Product Guides in the Uninterruptible Power Supply Units category:
http://lenovopress.com/servers/options/ups#rt=product-guide

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:
http://www.lenovo.com/us/en/landingpage/lenovo-financial-services

Related publications and links

For more information, see the following documents:

- Lenovo Storage product page
  http://www.lenovo.com/systems/storage
- 3D Tour for the Lenovo Storage D3284
  https://lenovopress.com/lp0588-lenovo-storage-d3284-3d-tour
- Lenovo Data Center Solution Configurator
  http://dcsc.lenovo.com
- Lenovo Storage D3284 Support
  http://datacentersupport.lenovo.com/us/en/products/storage/lenovo-storage/d3284/6413

Related product families

Product families related to this document are the following:

- Direct-Attached Storage

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