Lenovo Storage N4610
Product Guide (withdrawn product)

With the introduction of the Lenovo® Storage N4610 offering, clients can now get an optimized unified storage solution that precisely matches their specific needs. Built on proven Lenovo ThinkServer® platform and preinstalled with Microsoft® Windows® Storage Server 2012 R2, the N4610 delivers enterprise-class storage management technology in an affordable and reliable all-in-one, 2U rack-mount solution. It is a great choice for your business, regardless of whether you are a first-time user of network-attached storage (NAS) or you are deploying advanced storage solutions.

The following figure shows the Lenovo Storage N4610.

Figure 1. Lenovo Storage N4610

The N4610, which is a unified storage platform that is based on ThinkServer and Windows Storage Server 2012 R2 innovations, offers the flexible choice of storage protocols (iSCSI, SMB, CIFS, and NFS) and can provide required performance levels for the most demanding server applications while significantly lowering deployment and support costs.

The N4610 features up to 96 TB of internal storage capacity (raw) in a dense 2U rack form-factor, a Lenovo AnyRAID™ advanced RAID controller, Lenovo AnyFabric™ 4x Gigabit Ethernet (1 GbE,) or 2x 10 Gigabit Ethernet (10 GbE) network ports (model-dependent). More network connectivity options also are available (2· port and 4-port 1 GbE with RJ-45 connectors and 2-port 10 GbE with SFP+ or RJ-45 connectors) and I/O scalability with up to eight PCIe 3.0 slots.

Did you know?

The N4610 can be scaled up to 480 TB of storage with the optional Lenovo Storage E1000 Series Drive Enclosures (up to four units are supported).

Unlike Windows Server 2012 R2, Windows Storage Server 2012 R2 does not require client access licenses and provides a virtually unlimited number of supported clients for storage sharing purposes.

Windows Storage Server 2012 R2 provides flexible support for Microsoft and ISV anti-virus and backup applications.

Key features

The N4610 offers storage-rich capabilities with internal storage and external scale-up storage expansion. It can perform file serving tasks hosting SMB and NFS file shares for Windows, Linux, and Mac based clients, SMB file shares for server applications (SQL over SMB and Hyper-V over SMB), and iSCSI storage targets for the server applications that require block I/O. Client and server applications can use cost-efficient Ethernet LAN infrastructure (Gigabit Ethernet, 10 GbE, or mixed).

Data Deduplication service can be enabled on the N4610 to allow the most efficient use of the storage space (especially for software distribution packages, image repositories, and archives because they often are characterized by high data redundancy and infrequent changes). Optionally, if the storage server is at the central office and is a part of the distributed environment, more services (such as DFS replication) can be enabled to synchronize the content between the central and remote locations for the purpose of centralized backup operations (from the remote to the central location) and software delivery (from the central to the remote location).

The following figure shows an N4610 unified storage server solution.

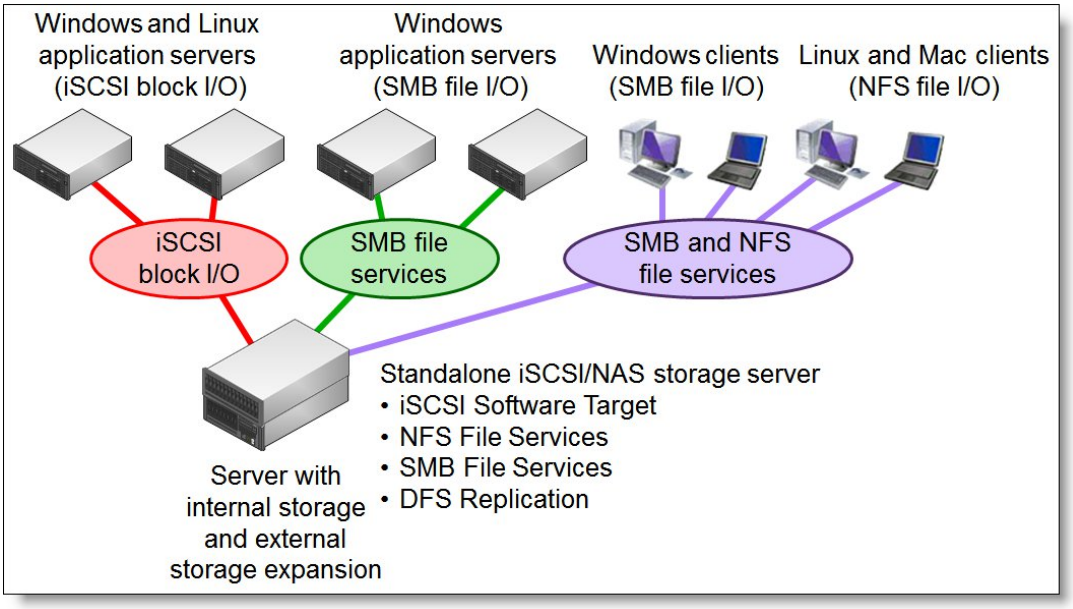

Figure 2. N4610 unified storage server solution

With enhanced storage manageability features, the N4610 reduces the time spent on IT administration, helping your business to perform the following tasks:

- Consolidate file-sharing resources on Windows Storage Server even in mixed, heterogeneous computing environments
- Speed access to data across your entire network infrastructure, while improving control of files and compliance via a single management interface
- Make the most of simplicity, ease of use, and low-cost scalability to use your organization’s current IT skills to efficiently support a growing user base

The N4610 that is running Windows Storage Server 2012 R2 includes the following features and benefits:

- An affordable and reliable unified network-attached and block-level storage solution with the following features:
  - Reliable storage servers that are built on the proven Lenovo ThinkServer hardware platform.
  - Drive trays that are common with ThinkServer servers.
  - A common set of ThinkServer memory, storage, and network connectivity options.
  - Advanced hardware-based RAID configurations for protecting critical data.
- A dedicated and optimized file and print server. Windows Storage Server 2012 R2 has all function unrelated to file serving removed (while keeping essential infrastructure services for easier deployments), which helps increase reliability and lower the overhead on the server's processor.
- Flexible installation and deployment:
  - Flexible configuration options enable customers to finely tune their storage server hardware to meet cost and performance needs.
  - The storage servers can be configured remotely via Windows Server Manager, which makes them ideal for branch office, department, and store deployments.
- Easy integration into your existing IT infrastructures:
  - Integrates easily into Active Directory environments.
  - You can use your existing backup tools and antivirus software on Windows Storage Server to protect your investments.
  - Files can be shared across heterogeneous file system environments and different operating system platforms through the integration of SMB and NFS protocols.
  - Compatible with existing Ethernet infrastructure.
- Easy to use and manage:
  - Factory-integrated, pre-configured, and delivered to the clients with Microsoft Windows Storage Server 2012 R2 preinstalled.
  - All storage tools are integrated into a single interface of Windows Server Manager.
  - Centralized administration and unified user experience in managing stand-alone storage servers.
- Lower total cost of ownership (TCO):
  - Lenovo storage servers are a cost-effective storage consolidation solution in a network environment and enable centralization of storage and storage management.
  - No extra licenses are required for users, which can help to significantly reduce Client Access License costs.
- Fast data recovery:
  - Built-in data “Snapshot” technology. Volume Shadow Copy Services (VSS) provides enhanced data protection through high-fidelity backups, rapid data restores, and data transport.
  - By using the VSS for Server Message Block (SMB) File Shares feature, deleted or corrupted files can be restored within minutes, instead of hours.

The N4610 uses Windows Storage Server 2012 R2 operating system is based on Windows Server 2012 R2 core technologies and is optimized for providing block- and file-level storage services to the users and server applications. The following components and capabilities are included in Windows Storage Server 2012 R2:

- Storage protocols:
  - iSCSI Software Target offers low-cost shared storage for applications that require block-level access to it.
  - SMB File Services provide network shares for the Windows-based user and server application environments:
    - Microsoft SQL Server supports placement of log and data files onto an SMB network share (SQL over SMB).
    - Microsoft Hyper-V supports placement of virtual machine files onto an SMB network share (Hyper-V over SMB).
  - Network File System (NFS) File Services provide network shares for the Linux- or Mac-based user or Linux-based server application environments. VMware vSphere virtual machine files can be placed onto an NFS network share.
- Availability and performance:
  - Microsoft iSCSI Software Target supports Multipath I/O (MPIO) which allows iSCSI clients to use multiple network paths to a storage server for high availability, fault tolerance, and load balancing purposes.
  - SMB Multichannel allows the use of multiple redundant network paths between application server SMB clients and SMB file shares that are hosted on Windows Storage Servers for better throughput while maintaining network availability.
  - Vendor-independent network teaming allows combining of multiple network interfaces into a single fault-tolerant or load-balancing group for better performance and availability.
  - NTFS in Windows Server 2012 R2 improves availability by performing online corruption scanning, the use of self-healing techniques, and reducing file system repair times.
- Data management:
  - Data Deduplication can help to significantly improve the efficiency of storage space usage.
  - Volume Shadow Copy Service (VSS) for SMB file shares allows backup operations by using the snapshots of remote file shares that are supporting SMB-based server applications (for example, SQL over SMB).
  - DFS Replication provides synchronization capabilities across limited bandwidth network connections in the distributed environments.
  - Microsoft BranchCache® optimizes the use of WAN links by caching the remote data locally based on predefined policies.

Components and connectors

The following figure shows the front of the N4610 storage server.

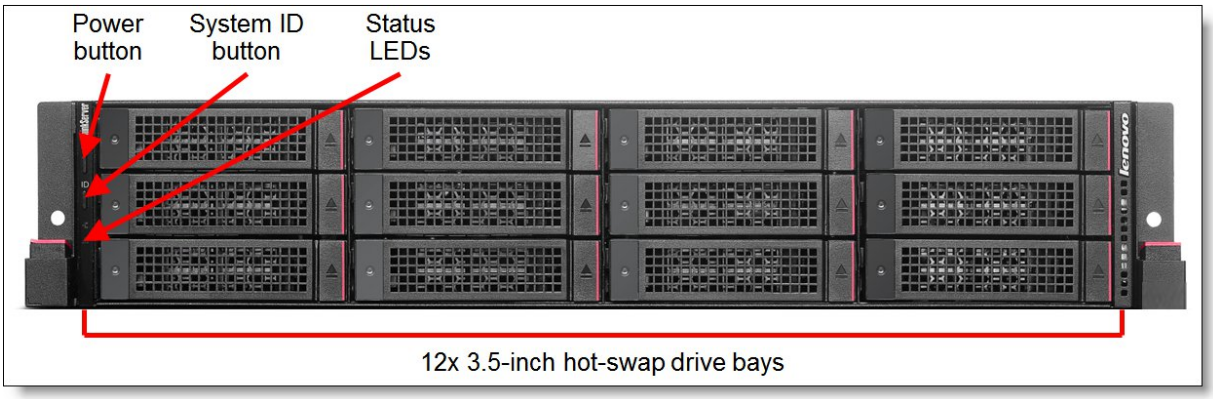

Figure 3. Front view of the N4610

The following figure shows the rear of the N4610 storage server.

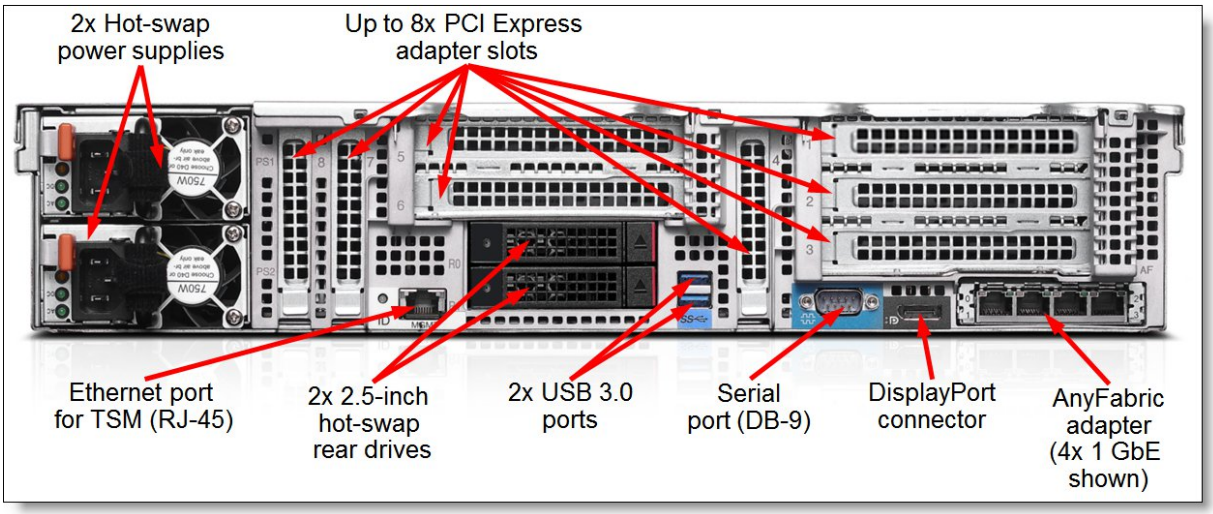

Figure 4. Rear view of the N4610

The following figure shows the locations of key components inside the N4610 storage server.

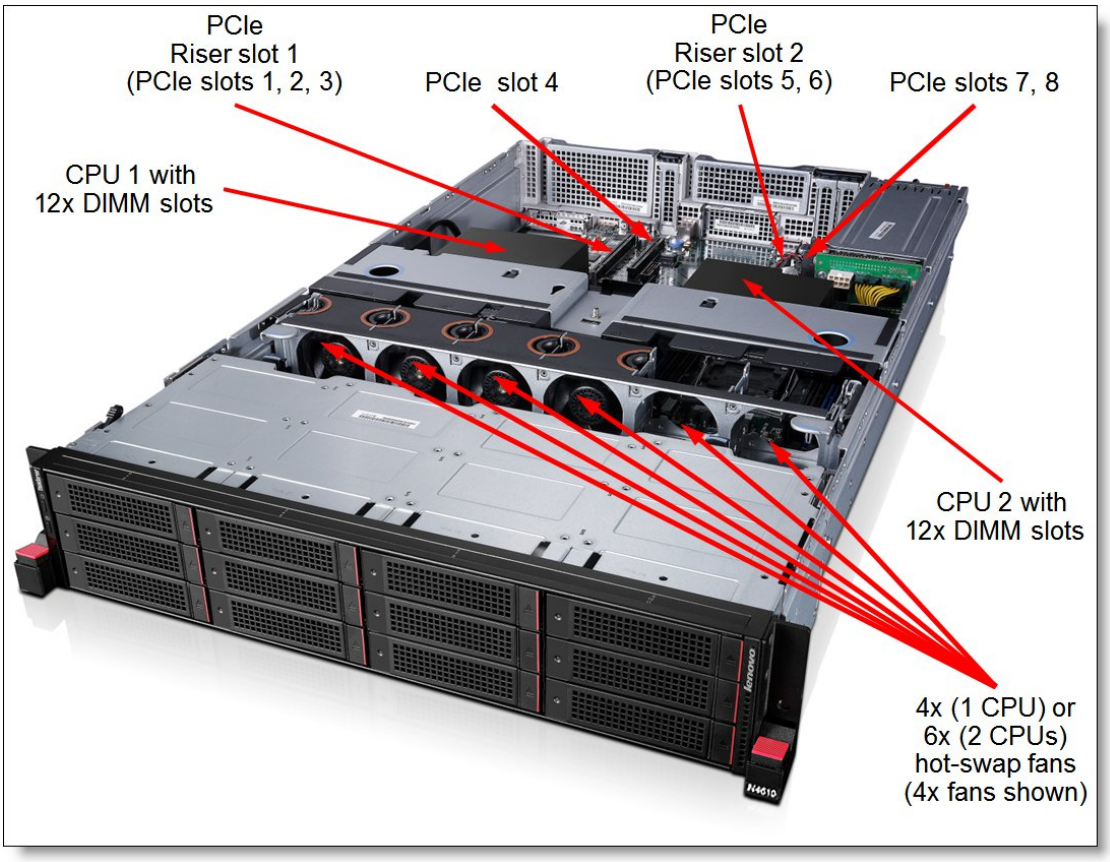

Figure 5. Internal view of the N4610

System specifications

The following table lists the N4610 standard specifications.

Table 1. System specifications

Components	Specification
Form factor	2U Rack.
Processor	Intel Xeon processor E5-2603 v3 (6 cores, 1.6 GHz core speed, 15 MB cache, 1600 MHz memory speed, 85 W thermal design power, 2x 6.4 GT/s QPI links). Up to two processors.
Chipset	Intel C610 Series.
Memory	Up to 24 DIMM sockets (12 DIMMs per processor). Only RDIMMs are supported.
Memory maximums	Up to 192 GB with 24x 8 GB RDIMMs and two processors.
Memory protection	ECC, Lockstep, memory mirroring, patrol scrubbing, and demand scrubbing.
Drive bays	12x 3.5-inch SAS/SATA hot-swap drive bays (front) + 2x 2.5-inch SATA hot-swap drive bays for operating system preload (rear).

Components	Specification
Drive types	• 12 Gbps SAS HDDs up to 1.2 TB • 12 Gbps NL SAS HDDs up to 8 TB • 6 Gbps NL SATA HDDs up to 8 TB • 12 Gbps SAS SSDs up to 800 GB • 6 Gbps SATA SSDs up to 800 GB
Maximum internal storage	Up to 96 TB with 12x 8 TB 3.5-inch HDDs. Intermix of SAS/SATA is supported.
Storage controller	RAID 0, 1, 10, 5, 50, 6, and 60 with 720ix AnyRAID with 1 GB non-backed read-only cache. Optional 1 GB, 2 GB, and 4 GB flash-backed read/write cache upgrades with FastPath feature are available for 720ix.
Optical drive bays	None. Support for an external USB optical drive.
Tape drive bays	None.
Network interfaces	Dual-port 10 GbE SFP+ or quad-port GbE RJ-45 card (model dependent; for more information, see Table 2 and Table 3) that is installed in the AnyFabric slot.
Expansion slots	1x AnyFabric slot (PCIe 3.0 x8). Up to eight PCIe slots. Slots 4, 7, and 8 are the standard slots on the system planar, and the remaining slots depend on the riser cards installed. The slots feature the following configuration: • Slot 1: PCIe 3.0 x8; full-height, half-length • Slot 2: PCIe 3.0 x8; full-height, half-length • Slot 3: PCIe 3.0 x8; full-height, half-length • Slot 4: PCIe 3.0 x8; low profile (vertical slot on system planar) • Slot 5: PCIe 3.0 x8; full-height, half-length • Slot 6: PCIe 3.0 x8; full-height, half-length • Slot 7: PCIe 3.0 x8; low profile (vertical slot on system planar) • Slot 8: PCIe 3.0 x8; low profile (vertical slot on system planar) Slots 4, 5, 6, 7, and 8 require the second processor to be installed.
Ports	Rear: 2x USB 3.0 ports, 1x DisplayPort video port, 1x RJ-45 systems management port, 1x DB-9 serial port; 4x RJ-45 1 GbE or 2x RJ-45 10 GbE or 2x SFP+ 10 GbE depending on the AnyFabric card installed.
Cooling	Four (with one CPU) or six (with two CPUs) N+1 redundant hot-swap fans.
Power supply	Up to two redundant hot-swap 550 W or 750 W Platinum AC power supplies, or 750 W Titanium AC power supplies.
Video	ASPEED AST2400 with 16 MB memory integrated into the ThinkServer System Manager, which is also known as Baseboard Management Controller (BMC). Maximum resolution is 1920x1200 at 60 Hz.
Hot-swap parts	Hard drives, power supplies, and fans.
Systems management	UEFI, ThinkServer System Manager (TSM), status and diagnostic LED indicators. Optional TSM Premium upgrade for remote presence (keyboard, video, mouse, and remote drive) and ThinkServer Energy Manager support.
Security features	Administrator's password. Optional intrusion switch.
Operating system	Microsoft Windows Storage Server 2012 R2
Warranty	Three-year customer-replaceable unit, onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional warranty service upgrades are available through Lenovo: 4-hour or 8-hour response time, 1-year or 2-year warranty extensions, priority technical support, Keep Your Drive.
Dimensions	Height: 87 mm (3.4 in); width: 482 mm (19.0 in); depth: 783 mm (30.8 in)
Weight	Minimum: 16 kg (35.3 lb); maximum: 32 kg (70.1 lb)

The N4610 ships with the following items:

- North America and Latin America:
  - Getting Started Guide
  - Rack Installation Instructions
  - Documentation CD
  - Slide Rail Kit
  - Two 1.8 m line cords
- China:
  - Lenovo Help Manual
  - Warranty Flyer
  - Infrastructure Management Flyer
  - Documentation CD
  - Static Rail Kit (TopSeller models only)
  - Two 1.8 m IEC 320-C13 to C14 rack power cords

Relationship models

The following table (Parts 1 and 2) lists the relationship models of the N4610.

Table 2. Relationship models (Part 1: United States and China)

Part number	Intel Xeon processor (2 maximum)	RAM	RAID	Drive bays	Drives	Any ?Fabric NIC	I/O slots (std / max)	Power supply
United States relationship models								
70G1000LUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SAS 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000MUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000PUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000GUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000HUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000NUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000KUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 12Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G1000JUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
China relationship models								
70G1000ECN*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 550W HS
70G1000FCN*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	2x 10GbE (SFP+)**	0/8	2x 550W HS

† Factory-configured in a RAID 5 array.
§ Factory-configured in a RAID 1 array for operating system preload.
†† Includes one PCIe 3.0 x8/x8/x8 Riser Card that is installed in the riser slot 1.
‡ Factory-configured in a RAID 6 array.
* Includes the intrusion switch.
# No factory-configured RAID array.
** Includes one SW optical transceiver with LC connector.

Table 2. Relationship models (Part 2: Latin America)

Part number	Intel Xeon processor (2 maximum)	RAM	RAID	Drive bays	Drives (RAID level)	Any ?Fabric NIC	I/O slots (std / max)	Power supply
Argentina (xx = AR), Brazil (xx = BR), Chile (xx = CL), Venezuela (xx = LD) relationship models								
70G10003xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10000xx*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10004xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10001xx*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10005xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 12Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10002xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
Colombia relationship models								
70G10009LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10000LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G1000ALD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10001LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G1000BLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 12Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G10008LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
Mexico relationship models								
70G1000CLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6 b SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G1000DLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS

‡ Factory-configured in a RAID 6 array.
§ Factory-configured in a RAID 1 array for operating system preload.
* Not available in Venezuela.

TopSeller models

The following table (Parts 1 and 2) lists the TopSeller™ models of the N4610.

Table 3. TopSeller models (Part 1: United States and China)

Part number	Intel Xeon processor (2 maximum)	RAM	RAID	Drive bays	Drives	Any Fabric NIC	I/O slots (std / max)	Power supply
United States TopSeller models								
70G0001SUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SAS 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001PUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS

Part number	Intel Xeon processor (2 maximum)	RAM	RAID	Drive bays	Drives	Any Fabric NIC	I/O slots (std / max)	Power supply
70G0001MUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001NUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 6TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001QUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001RUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001TUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 3TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001UUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001VUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SAS 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001WUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001XUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 5TB 6Gb SATA 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G0001YUS	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 3TB 6Gb SAS 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G00020US	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 6TB 12Gb SAS 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G00021US	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5-" HS	12x 2TB 6Gb SATA 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G00022US	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 12Gb SAS 3.5"‡ 2x 500GB6 Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G00023US	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SAS 3.5"† 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G00024US	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SAS 3.5"‡ 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
70G00029US	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	3/8††	2x 750W HS
China TopSeller models								
70G0001HCN*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 550W HS
70G0001JCN*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 550W HS
70G0001KCN*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	2x 10GbE (SFP+)**	0/8	2x 550W HS
70G0001LCN*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	2x 10GbE (SFP+)**	0/8	2x 550W HS

† Factory-configured in a RAID 5 array.
§ Factory-configured in a RAID 1 array for operating system preload.
†† Includes one PCIe 3.0 x8/x8/x8 Riser Card that is installed in the riser slot 1.
‡ Factory-configured in a RAID 6 array.
* Includes the intrusion switch.
# No factory-configured RAID array.
** Includes one SW optical transceiver with LC connector.

Table 3. TopSeller models (Part 2: Latin America)

Part number	Intel Xeon processor (2 maximum)	RAM	RAID	Drive bays	Drives	Any Fabric NIC	I/O slots (std / max)	Power supply
Colombia TopSeller models								
70G0001ELD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0001FLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0001GLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 3TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00019LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0001ALD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 6TB 12Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0001BLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0001CLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00013LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00014LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 5TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0001DLD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 12Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00015LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
Argentina (xx = AR), Brazil (xx = BR), Chile (xx = CL), Mexico (xx = LD) TopSeller models								
70G00009xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0000Axx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00000xx*	1x E5-2603 v3	2x 4GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0000Bxx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 3TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00001xx*	1x E5-2603 v3	2x 4GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 3TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0000Cxx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00002xx*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00003xx*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 5TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0000Dxx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 6TB 12Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00004xx*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	8x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00005xx*	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	8x 5TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0000Exx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 2TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS

Part number	Intel Xeon processor (2 maximum)	RAM	RAID	Drive bays	Drives	Any Fabric NIC	I/O slots (std / max)	Power supply
70G0000Fxx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00006xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00007xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 5TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G0000Gxx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 12Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00008xx	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	12x 6TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
Peru TopSeller models								
70G00011LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	8x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00012LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	8x 5TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
Venezuela TopSeller models								
70G00016LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 1TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00017LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 2TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00018LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	4x 3TB 6Gb SAS 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00004LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	8x 4TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS
70G00005LD	1x E5-2603 v3	1x 8GB	720ix 1GB Cache	12x 3.5" HS 2x 2.5" HS	8x 5TB 6Gb SATA 3.5"# 2x 500GB 6Gb SATA 2.5"§	4x GbE (RJ-45)	0/8	2x 750W HS

§ Factory-configured in a RAID 1 array for operating system preload.
* Not available in Mexico.
# No factory-configured RAID array.

Processors

The N4610 supports up to two processors. Standard models ship with one Intel® Xeon® processor E5-2603 v3. The second processor can be ordered if required (see the following table). The second processor option includes two extra cooling fans.

Table 4. Processor options

Description	Part number
Lenovo ThinkServer RD650 Intel Xeon E5-2603 v3 (6C, 85W, 1.6GHz) Processor	4XG0F28821

Memory

The N4610 supports up to 192 GB of DDR4 memory. The storage server supports up to 12 DIMMs when one processor is installed and up to 24 DIMMs when two processors are installed. Each processor has four memory channels and there are three DIMMs per channel.

The following rules apply when the memory configuration is selected:

- The storage server supports RDIMMs only.
- The maximum quantity of RDIMMs that can be installed in the storage server depends on the number of processors.
- All RDIMMs in the storage server operate at the same 1600 MHz speed, which is the maximum memory speed that is supported by the Intel Xeon E5-2603 v3 processor.

The following memory protection technologies are supported:

- ECC
- Lockstep
- Memory mirroring
- Patrol scrubbing
- Demand scrubbing

If lockstep or memory mirroring is used, RDIMMs must be installed in pairs (a minimum of one pair per each processor), and both RDIMMs in a pair must be identical in type and size. Lockstep and memory mirroring modes are mutually exclusive. Only one operational memory mode can be enabled on a storage server, and it is a system-wide setting.

The following table lists available memory options for the N4610.

Table 5. Memory options

Description	Part number	Maximum supported*
Lenovo ThinkServer 4GB DDR4-2133MHz (1Rx8) RDIMM	4X70F28588	12 / 24
Lenovo ThinkServer 8GB DDR4-2133MHz (1Rx4) RDIMM	4X70F28589	12 / 24

* The maximum quantity shown is with one processor / two processors.

Internal storage

The N4610 storage server supports up to 12x 3.5-inch SAS or SATA hot-swap drives (HDDs or SSDs) on the front and two 2.5-inch SATA hot-swap drives on the rear. For relationship and TopSeller models of the N4610, the rear drives are configured in a RAID 1 array, which contains Windows Storage Server 2012 R2 preload.

Both front and rear drives are connected to the Lenovo ThinkServer RAID 720ix AnyRAID Adapter with Expander that comes standard with the N4610. The RAID 720ix controller has the following specifications:

- Eight internal 12 Gbps SAS/SATA ports (support for 12, 6, or 3 Gbps SAS speeds and 6 or 3 Gbps SATA speeds)
- Up to 12 Gbps throughput per port
- Supports connections to 12x 3.5-inch SAS and SATA HDDs and SSDs on the front and 2x 2.5-inch SATA HDDs or SSDs on the rear with the integrated SAS Expander
- Supports RAID 0, 1, 10, 5, 50, 6, and 60
- Supports optional 1 GB non-backed read-only cache upgrade or 1 GB, 2 GB, or 4 GB flash-backed cache upgrades (1 GB non-backed read-only cache comes standard with the relationship and TopSeller models that are listed in this product guide)
- Supports FastPath and CacheCade Pro 2.0 when a flash backup upgrade is installed
- PCIe 3.0 x8 host interface
- Based on the LSI SAS3108 12 Gbps ROC controller

The following table lists upgrade options for the RAID 720ix AnyRAID Adapter.

Table 6. RAID 720ix AnyRAID upgrade options

Description	Part number	Maximum supported
Lenovo ThinkServer RAID 720i 1GB Modular DRAM Upgrade	4XB0F28695	1
Lenovo ThinkServer RAID 720i 1GB Modular Flash and Supercapacitor Upgrade	4XB0F28696	1
Lenovo ThinkServer RAID 720i 2GB Modular Flash and Supercapacitor Upgrade	4XB0F28697	1
Lenovo ThinkServer RAID 720i 4GB Modular Flash and Supercapacitor Upgrade	4XB0F28698	1

The following table lists available internal drive options for the N4610.

Table 7. Internal drive options

Description	Part number	Maximum supported
3.5-inch hot-swap HDDs (2.5-inch HDDs in 3.5-inch drive trays) - 12 Gbps SAS		
ThinkServer Gen 5 2.5" 300GB 10K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88733	12
ThinkServer Gen 5 2.5" 300GB 15K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88740	12
ThinkServer Gen 5 2.5" 450GB 15K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88744	12
ThinkServer Gen 5 2.5" 600GB 10K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88761	12
ThinkServer Gen 5 2.5" 600GB 15K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88746	12
ThinkServer Gen 5 2.5" 900GB 10K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88762	12
ThinkServer Gen 5 2.5" 1.2TB 10K Enterprise SAS 12Gbps HS HDD in 3.5" tray	4XB0G88763	12
3.5-inch hot-swap HDDs (2.5-inch HDDs in 3.5-inch drive trays) - 6 Gbps SAS		
ThinkServer Gen 5 2.5" 300GB 10K Enterprise SAS 6Gbps HS HDD in 3.5" tray	4XB0G88728	12
ThinkServer Gen 5 2.5" 600GB 10K Enterprise SAS 6Gbps HS HDD in 3.5" tray	4XB0G88729	12
ThinkServer Gen 5 2.5" 900GB 10K Enterprise SAS 6Gbps HS HDD in 3.5" tray	4XB0G88742	12
ThinkServer Gen 5 2.5" 1.2TB 10K Enterprise SAS 6Gbps HS HDD in 3.5" tray	4XB0G88745	12
3.5-inch hot-swap HDDs - 12 Gbps NL SAS		
ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SAS 12Gbps Hot Swap HDD	4XB0G88730	12
ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SAS 12Gbps Hot Swap HDD	4XB0G88731	12
ThinkServer Gen 5 3.5" 6TB 7.2K Enterprise SAS 12Gbps Hot Swap HDD	4XB0G88715	12
ThinkServer Gen 5 3.5" 8TB 7.2K Enterprise SAS 12Gbps Hot Swap HDD	4XB0K12254	12
3.5-inch hot-swap HDDs - 6 Gbps NL SAS		
ThinkServer Gen 5 3.5" 1TB 7.2K Enterprise SAS 6Gbps Hot Swap HDD	4XB0G45716	12
ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SAS 6Gbps Hot Swap HDD	4XB0G45717	12
ThinkServer Gen 5 3.5" 3TB 7.2K Enterprise SAS 6Gbps Hot Swap HDD	4XB0G45718	12
ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SAS 6Gbps Hot Swap HDD	4XB0G45719	12
3.5-inch hot-swap HDDs - 6 Gbps NL SATA		
ThinkServer Gen 5 3.5" 1TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0F28712	12
ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0F28713	12
ThinkServer Gen 5 3.5" 3TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0F28714	12
ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0G45715	12

Description	Part number	Maximum supported
ThinkServer Gen 5 3.5" 5TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0G88712	12
ThinkServer Gen 5 3.5" 6TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0G88713	12
ThinkServer Gen 5 3.5" 8TB 7.2K Enterprise SATA 6Gbps Hot Swap HDD	4XB0K12255	12
3.5-inch hot-swap SSDs - Enterprise Performance 12 Gbps SAS		
ThinkServer Gen 5 3.5" 200GB Enterprise Performance SAS 12Gbps Hot Swap SSD	4XB0G45733	12
ThinkServer Gen 5 3.5" 400GB Enterprise Performance SAS 12Gbps Hot Swap SSD	4XB0G45734	12
ThinkServer Gen 5 3.5" 800GB Enterprise Performance SAS 12Gbps Hot Swap SSD	4XB0G45735	12
3.5-inch hot-swap SSDs - Value 6 Gbps SATA		
ThinkServer Gen 5 3.5" 120GB Value Read-Optimized SATA 6Gbps Hot Swap SSD	4XB0G45742	12
ThinkServer Gen 5 3.5" 240GB Value Read-Optimized SATA 6Gbps Hot Swap SSD	4XB0G45743	12
ThinkServer Gen 5 3.5" 300GB Value Read-Optimized SATA 6Gbps Hot Swap SSD	4XB0G45744	12
ThinkServer Gen 5 3.5" 480GB Value Read-Optimized SATA 6Gbps Hot Swap SSD	4XB0G45745	12
ThinkServer Gen 5 3.5" 600GB Value Read-Optimized SATA 6Gbps Hot Swap SSD	4XB0G45746	12
ThinkServer Gen 5 3.5" 800GB Value Read-Optimized SATA 6Gbps Hot Swap SSD	4XB0G45747	12
2.5-inch hot-swap HDDs (rear drives for Windows Storage Server preload) - 6 Gbps SATA		
Lenovo ThinkServer Gen 5 2.5" 500GB 7.2K Enterprise SATA 6Gbps HS HDD	4XB0G45720	2
Lenovo ThinkServer Gen 5 2.5" 1TB 7.2K Enterprise SATA 6Gbps HS HDD	4XB0G45721	2
2.5-inch hot-swap SSDs (rear drives for Windows Storage Server preload) - Value SATA 6 Gbps		
Lenovo ThinkServer Gen 5 2.5" 120GB Value Read-Optimized SATA 6Gbps HS SSD	4XB0G45736	2
Lenovo ThinkServer Gen 5 2.5" 240GB Value Read-Optimized SATA 6Gbps HS SSD	4XB0G45737	2
Lenovo ThinkServer Gen 5 2.5" 300GB Value Read-Optimized SATA 6Gbps HS SSD	4XB0G45738	2
Lenovo ThinkServer Gen 5 2.5" 480GB Value Read-Optimized SATA 6Gbps HS SSD	4XB0G45739	2
Lenovo ThinkServer Gen 5 2.5" 600GB Value Read-Optimized SATA 6Gbps HS SSD	4XB0G45740	2
Lenovo ThinkServer Gen 5 2.5" 800GB Value Read-Optimized SATA 6Gbps HS SSD	4XB0G45741	2

Optical drives

The N4610 storage server does not support an internal optical drive; an external USB optical drive can be included in the order, if required (see the following table).

Table 8. Optical drive options

Description	Part number	Maximum supported
ThinkPad UltraSlim USB DVD Burner	4XA0E97775	1

I/O expansion

The N4610 supports an AnyFabric slot and up to eight PCIe slots: three PCIe slots on the system planar and up to five PCIe slots with riser cards that are installed into two riser sockets on the system planar (one riser socket supports installation of one riser card). The following slot form factors are available:

- Slot 1: PCIe 3.0 x8; full-height, half-length
- Slot 2: PCIe 3.0 x8; full-height, half-length
- Slot 3: PCIe 3.0 x8; full-height, half-length
- Slot 4: PCIe 3.0 x8; low profile (vertical slot on system planar)
- Slot 5: PCIe 3.0 x8; full-height, half-length
- Slot 6: PCIe 3.0 x8; full-height, half-length
- Slot 7: PCIe 3.0 x8; low profile (vertical slot on system planar)
- Slot 8: PCIe 3.0 x8; low profile (vertical slot on system planar)

Note: Slots 4, 5, 6, 7, and 8 require the second processor to be installed. If only one processor is installed and there are no riser cards installed, only the AnyFabric slot can be used.

The locations of the expansion slots are shown in the following figure.

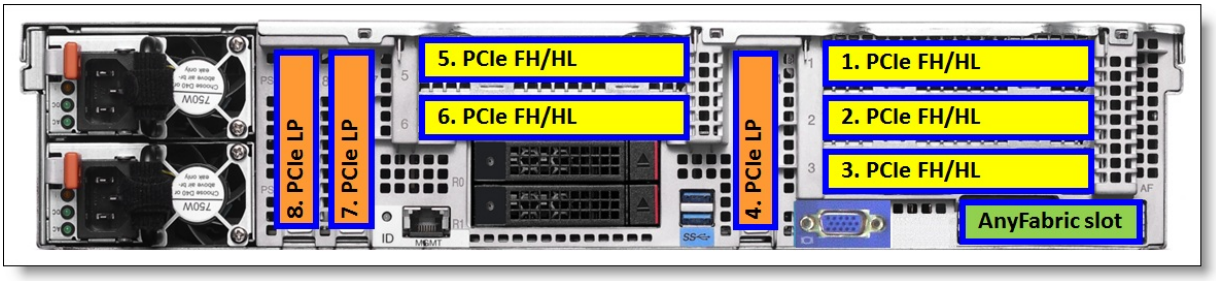

Figure 6. Slot locations

Riser 1 supplies slots 1, 2, and 3, and Riser 2 supplies slots 5 and 6. Some relationship and TopSeller models include one PCIe 3.0 x8/x8/x8 riser card that is installed in the riser slot 1 (for more information, see Table 2 and Table 3).

The slots that are available for use depend on the number of riser cards that are installed and whether the second processor is installed, as shown in the following table.

Table 9. Slots available for use and supported riser card combinations

Riser Card 1	Riser Card 2	Slots available for use
One processor		
None	None	AnyFabric
PCIe x8	None	AnyFabric, 1, 2, 3
Two processors		
None	None	AnyFabric, 4, 7, 8
PCIe x8	None	AnyFabric, 1, 2, 3, 4, 7, 8
PCIe x8	PCIe x8	AnyFabric, 1, 2, 3, 4, 5, 6, 7, 8

The following table lists the available PCIe riser card option.

Table 10. Riser card option

Description	Part number	Maximum supported
Lenovo ThinkServer 2U x8/x8/x8 PCIe Riser Kit	4XF0G45881	2

Network adapters

The N4610 supports an AnyFabric slot for integrated NIC solution. This slot supports AnyFabric adapters with two 10 Gb ports or four Gigabit Ethernet ports and supports direct connectivity to the TSM service processor for out-of-band systems management. Relationship and TopSeller models come standard with one AnyFabric adapter (model dependent). For custom or Special Bid models, one AnyFabric adapter must be selected. The following table lists the supported network adapters.

Table 11. Network adapter options

Description	Part number	Maximum supported*
AnyFabric adapters		
Lenovo ThinkServer I350-T4 AnyFabric 1Gb 4 Port Base-T Ethernet Adapter by Intel	4XC0F28740	1
Lenovo ThinkServer X540-T2 AnyFabric 10Gb 2 Port Base-T Ethernet Adapter by Intel	4XC0F28741	1
Lenovo ThinkServer X520-DA2 AnyFabric 10Gb 2 Port SFP+ Ethernet Adapter by Intel	4XC0F28742	1**
PCIe adapters		
Lenovo ThinkServer I350-T2 PCIe 1Gb 2 Port Base-T Ethernet Adapter by Intel	4XC0F28730	3 / 8
Lenovo ThinkServer I350-T4 PCIe 1Gb 4 Port Base-T Ethernet Adapter by Intel	4XC0F28731	3 / 8
Lenovo ThinkServer X540-T2 PCIe 10Gb 2 Port Base-T Ethernet Adapter by Intel	4XC0F28732	3 / 8
Lenovo ThinkServer X520-SR2 PCIe 10Gb 2 Port SFP+ Ethernet Adapter by Intel	4XC0F28733	3 / 8***
Lenovo ThinkServer X520-DA2 PCIe 10Gb 2 Port SFP+ Ethernet Adapter by Intel	4XC0F28734	3 / 8**

* The maximum quantity shown is with one processor / two processors.
** Requires a supported SFP+ Direct Attach Copper (DAC) cable or Lenovo ThinkServer 10Gb Optical Module by Intel (part number 4XC0F28735). Up to two cables or modules supported per adapter.
*** Includes two 10Gb SR SFP+ transceivers.

SAS adapters for external storage

The following table lists SAS RAID controllers and HBAs for external SAS attachments that are supported by the N4610 storage server.

Table 12. SAS RAID controllers and HBAs for external storage

Description	Part number	Maximum supported*
External RAID adapters		
Lenovo ThinkServer 9286CV-8e PCIe 6Gb 8 Port External SAS RAID Adapter by LSI	4XB0F28699	1
Lenovo ThinkServer RAID CacheCade Pro 2.0 Key (for 9286CV-8e)	4XB0F28702	1
External SAS HBAs		
Lenovo ThinkServer 9300-8e PCIe 12Gb 8 Port External SAS Adapter by LSI	4XB0F28703	3 / 8
Lenovo ThinkServer 8885e PCIe 12Gb 8 Port External SAS Adapter by PMC	4XB0G88727	2 / 5**

* The maximum quantity shown is with one processor / two processors.
** Not supported in slots 3, 4, and 7.

The following table summarizes features of supported external SAS controllers and HBAs.

Table 13. External SAS adapter features and specifications summary

Feature	9286CV-8e	9300-8e	8885e*
Part number	4XB0F28699	4XB0F28703	4XB0G88727
Form factor	Low profile	Low profile	Low profile
Controller chip	LSI SAS2208	LSI SAS3008	PMC PM8063
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	6 Gbps SAS	12 Gbps SAS	12 Gbps SAS
Number of external SAS ports	8	8	8
External port connectors	2x Mini-SAS (SFF-8088)	2x Mini-SAS HD (SFF-8644)	2x Mini-SAS HD (SFF-8644)
Drive interface	SAS, SATA	SAS, SATA	SAS, SATA
Drive type	HDD, SSD	HDD, SSD	HDD, SSD
Maximum number of devices	240	1024	256
RAID levels	0/1/10/5/50/6/60	None	None
JBOD mode	No	Yes	Yes
Cache	1 GB	None	1 GB
Cache protection	CacheVault flash backup (included)	None	None
FastPath	Included	None	None
CacheCade Pro 2.0	Optional (4XB0F28702)	None	None

* In addition to eight external ports, the ThinkServer 8885e adapter has eight internal ports that are not used with the N4610.

Power supplies

The N4610 storage server supports up to two redundant power supplies. Relationship and TopSeller models come with two 550 W or 750 W Platinum AC power supplies (model dependent). The following table lists the power supplies.

Table 14. Power supplies

Description	Part number	Maximum supported
Lenovo ThinkServer Gen 5 550W Platinum Hot Swap Power Supply	4X20F28579	2
Lenovo ThinkServer Gen 5 750W Platinum Hot Swap Power Supply	4X20F28575	2
Lenovo ThinkServer Gen 5 750W Titanium Hot Swap Power Supply	4X20F28576	2

The following power supply rules apply:

- A minimum of one power supply and a maximum of two power supplies are needed per system.
- If two power supplies are installed, the power supplies must be identical.

Important: It is highly recommended to validate system configuration for specific power requirements by using the latest version of the ThinkServer Power Planner, which is available at this website: http://support.lenovo.com/us/en/downloads/ds101155

Completing this validation ensures that the correct power supply is chosen for optimal performance.

Systems management

The storage server contains ThinkServer System Manager (TSM), which provides advanced service-processor control, monitoring, and an alerting function. If an environmental condition exceeds a threshold or if a system component fails, the TSM lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. Optionally, the TSM also provides a virtual presence capability for remote storage server management capabilities.

The TSM provides remote storage server management through the following industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3
- Data Center Management Interface (DCMI) Version 1.0
- Web browser

The optional TSM Premium is required for enabling remote presence and energy monitoring and management. The TSM Premium feature provides the following functions:

- Remotely viewing video with graphics resolutions up to 1920x1200 at 60 Hz with up to 24 bits per pixel colors
- Remotely accessing the system by using the keyboard and mouse from a remote client
- Mapping the CD or DVD drive, diskette drive, and USB flash drive on a remote client, and mapping ISO and diskette image files as virtual drives that are available for use by the system
- Enabling support for Lenovo ThinkServer Energy Manager for power monitoring and management

The following table lists the Premium management option.

Table 15. Premium management option

Description	Part number	Maximum supported
Lenovo ThinkServer System Manager Premium	4XF0G45867	1

Rack installation

Relationship and TopSeller models of the N4610 listed in this product guide ship without cable management arms. Also, China relationship models ship without a rack-mount kit. The following table lists rack-mount options that are available for the N4610.

Table 16. Rack-mount options

Description	Part number	Maximum supported
Lenovo ThinkServer Gen 5 2U 4-Post Slide Rail Kit	4XF0G45872	1
Lenovo ThinkServer Gen 5 4-Post Static Rail Kit	4XF0G45873	1
Lenovo ThinkServer Gen 5 2U Cable Management Arm	4XF0G45875	1*
Lenovo ThinkServer Gen 5 Cable Management Bar	4XF0G45876	1**

* Optional for the 2U 4-Post Slide Rail Kit (4XF0G45872).
** Optional for the 4-Post Static Rail Kit (4XF0G45873).

Physical specifications

The N4610 storage server has the following dimensions and weight (approximate):

- Height: 87 mm (3.4 in.)
- Width: 482 mm (19.0 in.)
- Depth: 783 mm (30.8 in.)
- Weight:
    - Minimum configuration: 16 kg (35.3 lb)
    - Maximum configuration: 32 kg (70.1 lb)

Operating environment

The N4610 storage server is supported in the following environment:

- Air temperature:
    - Operating: 5 °C - 45 °C (41 °F - 113 °F); for altitudes above 900 m (2,953 ft), decrease the maximum ambient temperature as follows:
    - By 1 °C for every 300-m (984-ft) increase in altitude for up to 35 °C (95 °F) temperature range
    - By 1 °C for every 175-m (574-ft) increase in altitude for 35 °C to 40 °C (95 °F to 104 °F) temperature range
    - By 1 °C for every 125-m (410-ft) increase in altitude for 50 °C to 45 °C (104 °F to 1113 °F) temperature range
- Maximum altitude: 3,048 m (10,000 ft)
- Storage: -40 °C - +60 °C (-40 °F - 140 °F)
- Humidity:
    - Operating: 8% - 90% (non-condensing)
    - Storage: 8% - 90% (non-condensing)
- Electrical:
    - 100 - 127 (nominal) V AC; 50 Hz - 60 Hz
    - 200 - 240 (nominal) V AC; 50 Hz - 60 Hz
- Noise level:
    - 6.1 bels (operating)
    - 5.7 bels (idle)

Warranty

The N4610 has a three-year onsite warranty with 9x5/next business day (NBD) terms. Lenovo offers the service upgrades through warranty maintenance upgrades and post-warranty maintenance agreements with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are region-specific; that is, each region might have its own service types, service levels, response times, and terms and conditions. Not all covered types of warranty service upgrades might be available in a particular region. For more information about Lenovo warranty service upgrade offerings that are available in your region, see following the Lenovo Quick Pick website: http://www.lenovoquickpick.com/

The following table lists the warranty service options.

Table 17. Warranty service definitions

Term	Description
Onsite repair	A service technician comes to the server's location for equipment repair.
24x7x4 hour	A service technician is scheduled to arrive at the client’s location within four hours after remote problem determination is completed. Lenovo provides service around the clock, every day, including Lenovo holidays.
24x7x8 hour	A service technician is scheduled to arrive at the client’s location within eight hours after remote problem determination is completed. Lenovo provides service around the clock, every day, including Lenovo holidays.
9x5x4 hour	A service technician is scheduled to arrive at the client’s location within four business hours after remote problem determination is completed. Lenovo provides service from 8:00 a.m. - 5:00 p.m. in the client's local time zone, Monday - Friday, excluding Lenovo holidays.
9x5 next business day	A service technician is scheduled to arrive at the client’s location on the business day after Lenovo receives your call, following remote problem determination. Lenovo provides service from 8:00 a.m. - 5:00 p.m. in the client's local time zone, Monday - Friday, excluding Lenovo holidays. Calls received after 4:00pm local time require an extra business day for service dispatch. Next business day service is not guaranteed.

The following types of Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
  - Three, four, or five years of 9x5 or 24x7 service coverage
  - Onsite repair from next business day to 8 or 4 hours
  - One or two years of warranty extension
- Priority technical support
  Lenovo’s Priority Support Offering enhances our award-winning call center support to provide top priority queue assignment to specialized Lenovo technicians. Priority support accelerates call center troubleshooting to get your problems resolved quickly, and includes other value added support for Lenovo provided software tools. Priority support can be purchased stand-alone to match the base warranty of your system or in convenient bundles with our same-day response services.
- Keep Your Drive Multi-Drive
  Lenovo’s ThinkServer Keep Your Drive Multi-Drive service is a multi-drive hard drive retention offering that ensures your data is always under your control, regardless of the number of hard drives that are installed in your ThinkServer system. In the unlikely event of a hard drive failure, you retain possession of your hard drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. Keep Your Drive Multi-Drive can be purchased stand-alone to match the base warranty of your system or in convenient bundles with our same-day response services.

Regulatory compliance

The N4610 storage server conforms to the following regulations:

- Energy Star V2.0
- FCC class A: USA FCC 47 CFR Part 15-Subpart B; ANSI C63.4
- ICES class A: Canada ICES-003 Issue 5
- CB
- UL/cTUVus
- Germany GS
- Russia EAC
- Argentina AR-S
- Mexico NOM
- EU CE: EN55022; EN55024; EN61000-3-2;EN61000-3-3;
- International: CISPR22; CISPR 24
- Brazil (voluntary)
- China CCC: GB 9254
- CECP
- CELP

External drive enclosures

The N4610 supports attachment to up to four Lenovo Storage E1012 or E1024 Drive Enclosures that are listed in the following table.

Table 18. External drive enclosures

Description	Part number
Lenovo Storage E1012 LFF Disk Expansion Single SAS IO Module, Rail Kit, 9x5 NBD	64111B1
Lenovo Storage E1012 LFF Disk Expansion Dual SAS IO Module, Rail Kit, 9x5 NBD	64111B2
Lenovo Storage E1024 SFF Disk Expansion Single SAS IO Module, Rail Kit, 9x5 NBD	64111B3
Lenovo Storage E1024 SFF Disk Expansion Dual SAS IO Module, Rail Kit, 9x5 NBD	64111B4

For details about supported drives and cables for the Lenovo Storage E1012 and E1024, see the Lenovo Press Product Guide:
http://lenovopress.com/lp0043

Top-of-rack Ethernet Switches

The following table lists the top-of-rack Ethernet switches that are offered by Lenovo that can be used in N4610 storage solutions.

Table 19. Top-of-rack switches

Description	Part number
1 Gb Ethernet top-of-rack switches	
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX
Lenovo RackSwitch G8052 (Rear to Front)	7159G52
10 Gb Ethernet top-of-rack switches	
Lenovo RackSwitch G8124E (Rear to Front)	7159BR6
Lenovo RackSwitch G8264 (Rear to Front)	7159G64
Lenovo RackSwitch G8264CS (Rear to Front)	7159DRX
Lenovo RackSwitch G8272 (Rear to Front)	7159CRW
Lenovo RackSwitch G8296 (Rear to Front)	7159GR6
40 Gb Ethernet top-of-rack switches	
Lenovo RackSwitch G8332 (Rear to Front)	7159BRX

For more information, see the list of Product Guides in the Top-of-rack switches category:
http://lenovopress.com/servers/options/switches

Rack cabinets

The following table lists the rack cabinets that are offered by Lenovo that can be used in N4610 solutions.

Table 20. Rack cabinets

Description	Part number
11U Rack Office Enablement Kit	201886X
25U S2 Standard Rack	93072RX
25U Static S2 Standard Rack	93072PX
42U S2 Standard Rack	93074RX
42U 1100mm Enterprise V2 Dynamic Rack	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack	93634EX
42U 1200mm Deep Dynamic Rack	93604PX
42U 1200mm Deep Static Rack	93614PX
42U Enterprise Rack	93084PX
42U Enterprise Expansion Rack	93084EX

For more information, see the list of Product Guides in the Rack cabinets category:
http://lenovopress.com/servers/options/racks

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo that can be used in N4610 solutions.

Table 21. Power distribution units

Description	Part number
0U Basic PDUs	
0U 12 C19/12 C13 32A 3 Phase PDU with IEC 309 3P+N+Gnd line cord	46M4143
Switched and Monitored PDUs	
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4003
1U 12 C13 Switched and Monitored DPI PDU (without line cord)	46M4004
1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4005
0U 24 C13 Switched and Monitored 30A PDU with NEMA L6-30P line cord	46M4116
0U 12 C19/12 C13 Switched and Monitored 32A 3 Phase PDU with IEC 309 3P+N+Gnd cord	46M4137
0U 12 C19/12 C13 Switched and Monitored 50A 3 Phase PDU with CS8365L 3P+Gnd cord	46M4134
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
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
DPI C13 Enterprise PDU+ (without line cord)	39M2816
DPI Single Phase C13 Enterprise PDU (without line cord)	39Y8941
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
DPI Single Phase C19 Enterprise PDU (without line cord)	39Y8948
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/125V Front-end PDU with NEMA L5-30P line cord	39Y8938
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
Universal PDUs (7x IEC 320 C13 outlets)	
DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord)	00YE443
DPI Universal Rack PDU with US LV and HV line cords	39Y8951
DPI Universal Rack PDU with CEE7-VII Europe line cord	39Y8952
DPI Universal Rack PDU with Denmark line cord	39Y8953
DPI Universal Rack PDU with Israel line cord	39Y8954
DPI Universal Rack PDU with Italy line cord	39Y8955
DPI Universal Rack PDU with South Africa line cord	39Y8956
DPI Universal Rack PDU with UK line cord	39Y8957
DPI Universal Rack PDU with AS/NZ line cord	39Y8958
DPI Universal Rack PDU with China line cord	39Y8959

Description	Part number
DPI Universal Rack PDU (Argentina)	39Y8962
DPI Universal Rack PDU (Brazil)	39Y8960
DPI Universal Rack PDU (India)	39Y8961
NEMA PDUs (6x NEMA 5-15R outlets)	
DPI 100-127V PDU with Fixed NEMA L5-15P line cord	39Y8905
Line cords for PDUs that ship without a line cord	
DPI 32a Line Cord (IEC 309 3P+N+G)	40K9611
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612
DPI 63a Cord (IEC 309 P+N+G)	40K9613
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 60a Cord (IEC 309 2P+G)	40K9615
DPI Australian/NZ 3112 Line Cord	40K9617

For more information, see the list of Product Guides in the Power Distribution Units category:
http://lenovopress.com/servers/options/pdu

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo that can be used in N4610 solutions.

Table 22. Uninterruptible power supply units

Description	Part number
RT1.5kVA 2U Rack or Tower UPS (100-125VAC)	55941AX
RT1.5kVA 2U Rack or Tower UPS (200-240VAC)	55941KX
RT2.2kVA 2U Rack or Tower UPS (100-125VAC)	55942AX
RT2.2kVA 2U Rack or Tower UPS (200-240VAC)	55942KX
RT3kVA 2U Rack or Tower UPS (100-125VAC)	55943AX
RT3kVA 2U Rack or Tower UPS (200-240VAC)	55943KX
RT5kVA 3U Rack or Tower UPS (200-240VAC)	55945KX
RT6kVA 3U Rack or Tower UPS (200-240VAC)	55946KX
RT8kVA 6U Rack or Tower UPS (200-240VAC)	55948KX
RT11kVA 6U Rack or Tower UPS (200-240VAC)	55949KX
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)	55948PX
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)	55949PX

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

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Related publications and links

For more information, see the following resources:

- Lenovo Storage N4610 product page: http://shop.lenovo.com/us/en/systems/storage/nas/lenovostorage/n4610/
- Lenovo Quick Pick: http://www.lenovoquickpick.com
- Lenovo Storage N4610 support: http://support.lenovo.com/us/en/products/servers/lenovo-storage/lenovo-storage-n4610

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This document, TIPS1264, was created or updated on January 13, 2017.

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