



Lenovo ThinkServer RS160 Product Guide

The Lenovo ThinkServer RS160 is the ideal right-sized, value-priced, single-socket 1U rack solution for small and medium businesses that need optimized performance and flexibility for future growth. With support for a memory capacity of up to 64 GB and internal storage of 16 TB, the RS160 is ideal for small-to medium-sized business, workgroups, distributed locations, and webscale workloads.

The RS160 offers a wide range of processors - from Intel Pentium to Intel Xeon E3-1200 v5. Also, it features integrated NICs and an additional PCIe expansion slot for advanced RAID protection or network scalability.

The ThinkServer Management Module (TMM), also known as Baseboard Management Controller (BMC), which is built into the RS160 offers advanced service-processor control, monitoring, and an alerting function.

The following figure shows the Lenovo ThinkServer RS160.



Figure 1. Lenovo ThinkServer RS160

Did you know?

The RS160 offers enterprise-class management with an integrated ThinkServer Management Module.

The RS160 has just a 16.2-inch (411 mm) deep chassis and supports 4-post and 2-post racks, giving you more flexibility with your business footprint.

The RS160 offers energy efficiency and serviceability features, such as 80 PLUS Gold certified power supplies and sliding rails, that are not typically found in the single-socket value servers.

Key features

The ThinkServer RS160 server is a compact, cost-effective, single-processor 1U rack server that has been optimized to provide enterprise-class features to small-to-medium-sized businesses, retail stores, or distributed enterprises.

Scalability and performance

The RS160 offers numerous features to boost performance, improve scalability, and reduce costs:

- The Intel Xeon processor E3-1200 v5 improves productivity by offering affordable single-socket system performance with 4-core processors with up to 3.7 GHz core speeds and up to 8 MB cache.
- Choice of processors with up to four cores to enable the effective use of multithreaded applications.
- Intelligent and adaptive system performance with Intel Turbo Boost Technology 2.0 allows processor cores to run at maximum speeds during peak workloads by temporarily going beyond processor thermal design power (TDP).
- Intel Hyper-Threading Technology boosts performance for multithreaded applications by enabling simultaneous multithreading within each processor core, up to two threads per core.
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better use the hardware for virtualization workloads.
- Intel Advanced Vector Extensions (AVX) technology significantly improves floating point performance for compute-intensive technical and scientific applications.
- Up to four 2133 MHz DDR4 ECC UDIMMs provide speed, availability, and a capacity of up to 64 GB.
- The server offers PCI Express 3.0 I/O expansion capabilities that increase the theoretical maximum bandwidth by almost 100% (8 GTps per link using 128b/130b encoding) compared to the PCI Express 2.0 (5 GTps per link using 8b/10b encoding).
- With Intel Integrated I/O Technology, the PCI Express 3.0 controller is integrated into the Intel Xeon processor E3-1200 v5 product family. Such integration reduces I/O latency and increases overall system performance.
- Two 3.5-inch or four 2.5-inch non-hot-swap (NHS) drive bays provide sufficient internal storage capacity in a compact 1U form factor.
- The use of solid-state drives (SSDs) instead of, or along with, traditional spinning drives (hard disk drives or HDDs) can significantly improve I/O performance.

Availability and serviceability

The RS160 provides many features to simplify serviceability and increase system uptime:

- The RS160 supports UDIMM memory with ECC protection which provides error correction not available in PC-class "servers" that use parity memory. Avoiding system crashes (and data loss) due to soft memory errors means greater system uptime.
- Tool-less cover removal provides easy access to upgrades and serviceable parts, such as memory and adapter cards.
- A choice of affordable onboard SATA RAID or advanced hardware RAID redundancy offers data protection and greater system uptime.
- The use of SSDs can provide better reliability than the use of traditional HDDs, for greater uptime.
- Built-in ThinkServer Management Module (TMM) continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failure, to minimize downtime.
- One-year or three-year customer-replaceable unit (CRU) and onsite limited warranty with next business day response. Optional service upgrades are available.

Manageability and security

Powerful systems management features simplify local and remote management of the RS160:

- The server includes ThinkServer Management Module to monitor server availability and perform remote management.
- An integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.
- The ThinkServer EasyStartup tool simplifies the process of configuring RAID and installing supported Microsoft Windows and Linux operating systems, VMware hypervisors, and device drivers on a ThinkServer system.
- An optional Trusted Platform Module (TPM) enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Industry-standard Advanced Encryption Standard New Instructions (AES-NI) support improves the speed and strength of encryption.
- Intel Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks. This enables an application to run in its own isolated space, protected from all other software running on a system.

Energy efficiency

The RS160 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to a green environment:

- 80 PLUS Gold-certified power supply enables greater energy savings while providing flexibility to meet your business needs.
- The ThinkServer Power Planner tool provides information about the power consumption and electric current calculation for the different configurations of servers and other devices, which helps plan deployment of servers and devices in an efficient way.
- Intel Intelligent Power Technology powers individual processor elements on and off as needed, to reduce power draw.
- The use of SSDs can help lower power consumption compared to traditional spinning 2.5-inch HDDs.

Components and connectors

The following figure shows the front of the RS160.

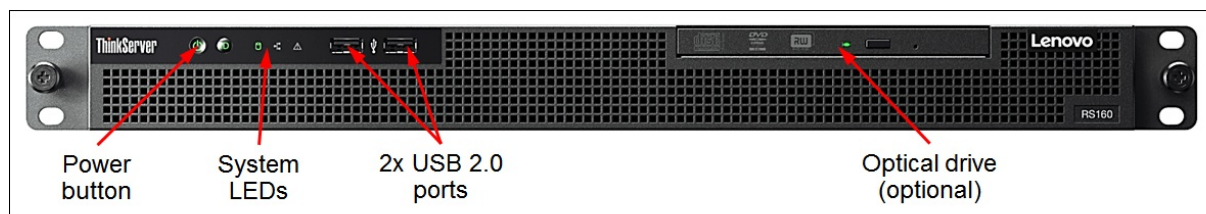


Figure 2. RS160 front view

The following figure shows the rear of the RS160.

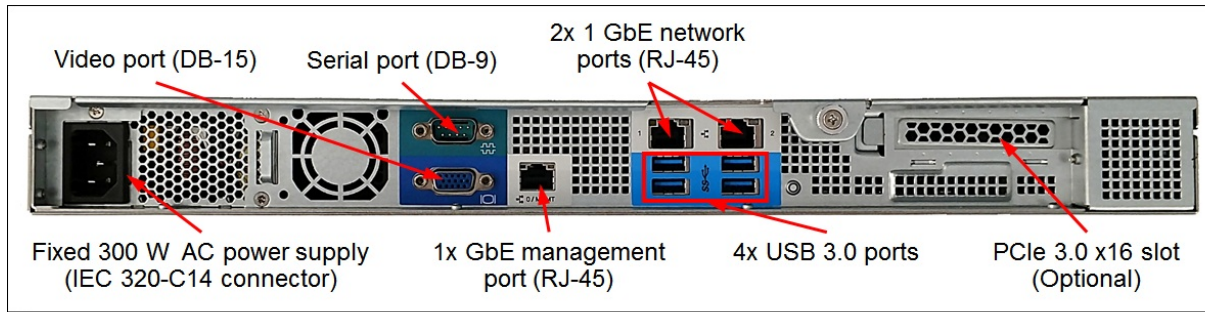


Figure 3. RS160 rear view

The following figure shows the internal components of the RS160.

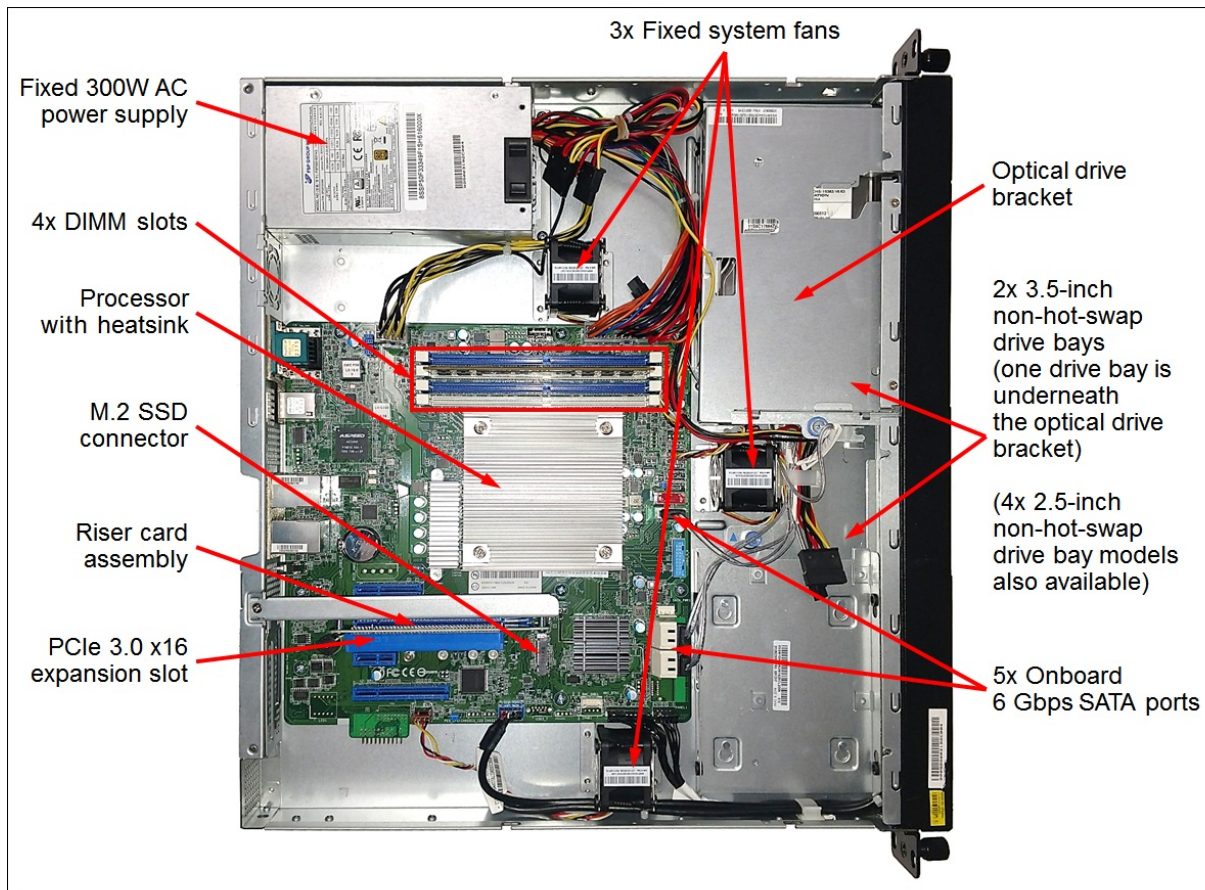


Figure 4. RS160 internal view

System specifications

The following table lists the system specifications.

Table 1. System specifications

Components	Specification
Form factor	1U rack-mount
Processor	One processor: <ul style="list-style-type: none"> • Intel Xeon processor E3-1200 v5 product family with four cores up to 3.7 GHz, 8 MB cache, and up to 2133 MHz memory speed; or • Intel Core i3 processor 6100/6300 product families with two cores up to 3.9 GHz, up to 4 MB cache, and 2133 MHz memory speed; or • Intel Pentium processor G4400/G4500 product families with two cores up to 3.6 GHz, 3 MB cache, and up to 2133 MHz memory speed.
Chipset	Intel C232.
Memory	Four DIMM sockets. Support for ECC UDIMMs. DIMM speeds up to 2133 MHz.
Memory capacity	Up to 64 GB with four 16 GB UDIMMs.
Memory protection	Error-correcting code (ECC) memory.
Drive bays	<ul style="list-style-type: none"> • 2x 3.5-inch non-hot-swap SAS/SATA drive bays; or • 4x 2.5-inch non-hot-swap SAS/SATA drive bays One internal M.2 SSD connector.
Drive types	3.5-inch non-hot-swap drives: <ul style="list-style-type: none"> • 6 Gbps Nearline (NL) SATA HDDs up to 8 TB 2.5-inch non-hot-swap drives: <ul style="list-style-type: none"> • 12 Gbps SAS HDDs up to 1.2 TB • 6 Gbps NL SATA HDDs up to 2 TB • 6 Gbps SATA SSDs up to 480 GB Internal M.2 SSDs: <ul style="list-style-type: none"> • 32 GB Intermix of SAS and NL SATA HDDs and SSDs is supported within a system, but not within a RAID array.
Storage capacity	3.5-inch non-hot-swap drives: <ul style="list-style-type: none"> • Up to 16 TB with 2x 8 TB NL SATA HDDs 2.5-inch non-hot-swap drives: <ul style="list-style-type: none"> • Up to 8 TB with 4x 2 TB NL SATA HDDs • Up to 4.8 TB with 4x 1.2 TB SAS HDDs • Up to 1.72 TB with 4x 480 GB SATA SSDs
Storage controller	<ul style="list-style-type: none"> • Non-RAID with the integrated SATA controller. • RAID 0, 1, 10, and 5 with RAID 121i. • RAID 0, 1, 10 with RAID 520i. Optional RAID 5 upgrade. • RAID 0, 1, 10, 5 with RAID 720i.
Optical drive bays	One. Support for DVD-ROM or DVD-RW.
Backup drive bays	None.
Network interfaces	<ul style="list-style-type: none"> • Two integrated GbE (10/100/1000 Mbps) RJ-45 ports (Intel I210). • One GbE (10/100/1000 Mbps) RJ-45 port for systems management.
I/O expansion slots	Up to one PCIe 3.0 x16 (x16 wired) low-profile slot with an optional riser card.

Components	Specification
Ports	<ul style="list-style-type: none"> • Front: 2x USB 2.0 ports. • Rear: 4x USB 3.0 ports, 1x DB-15 VGA port, and 1x DB-9 serial port.
Cooling	Three fixed system fans.
Power supply	One fixed 300 W AC (100 - 240 V) power supply (80 PLUS Gold).
Hot-swap parts	None.
Systems management	UEFI, system LEDs, ThinkServer Management Module (TMM) (also known as Baseboard Management Controller [BMC]; based on ASPEED AST2400) with remote presence (graphics, keyboard and mouse, virtual media), ThinkServer EasyStartup, and ThinkServer Power Planner.
Security features	Power-on password, administrator's password. Optional Trusted Platform Module (TPM) version 1.2 or 2.0.
Video	Graphics with 16 MB memory integrated into the ThinkServer Management Module. Maximum resolution is 1920x1200 at 60 Hz.
Operating systems	Microsoft Windows Server 2012, 2012 R2, and 2016; Red Hat Enterprise Linux (RHEL) Server 6 and 7; SUSE Linux Enterprise Server (SLES) 11 and 12; VMware vSphere (ESXi) 6.0.
Warranty	One-year or three-year (model dependent) customer-replaceable unit (CRU) and on-site limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades (country-specific) are available through Lenovo Services offerings: 4-hour or 2-hour response time, warranty extension up to 5 years, Priority Technical Support, YourDrive YourData, and Enterprise Software Support.
Dimensions	Height: 43 mm (1.7 in.), width: 439 mm (17.3 in.), depth: 411 mm (16.2 in.)
Weight	Minimum: 6.2 kg (13.7 lb); maximum: 7.6 kg (16.8 lb)

Models

RS160 server models are country-specific; that is, each country may define their own server models, and not all server models are available in every country.

For a list of the RS160 Relationship models (Machine Types 70TD and 70TF), contact a Lenovo or Lenovo Business Partner representative in your country.

For a list of the RS160 TopSeller models (Machine Types 70TE and 70TG), contact a Lenovo or Lenovo Business Partner representative in your country or refer to the RS160 PSREF webpage:

http://psref.lenovo.com/Product/ThinkServer_RS160

Product availability: RS160 server models are currently available in North America (NA); Latin America (LA); Europe, Middle East, and Africa (EMEA); and China.

The RS160 server models are shipped with the following items:

- Publication package
- ThinkServer EasyStartup software DVD

Processors

The RS160 server supports one processor. The following table lists the specifications of the processors that are available for the RS160.

Table 2. Processor specifications (Hyper-Threading [HT], Turbo Boost [TB], Virtualization Technology [VT])

Processor model	Core frequency (Base / TB Max)	Cores / Threads	Cache	Max DDR4 frequency	TDP	HT	TB	VT-x	VT-d
Intel Xeon processors									
E3-1220 v5	3 / 3.5 GHz	4 / 4	8 MB	2133 MHz	80 W	No	Yes	Yes	Yes
E3-1230 v5	3.4 / 3.8 GHz	4 / 8	8 MB	2133 MHz	80 W	Yes	Yes	Yes	Yes
E3-1240 v5	3.5 / 3.9 GHz	4 / 8	8 MB	2133 MHz	80 W	Yes	Yes	Yes	Yes
E3-1270 v5	3.6 / 4 GHz	4 / 8	8 MB	2133 MHz	80 W	Yes	Yes	Yes	Yes
E3-1280 v5	3.7 / 4 GHz	4 / 8	8 MB	2133 MHz	80 W	Yes	Yes	Yes	Yes
Intel Core processors									
i3-6100	3.7 GHz	2 / 4	3 MB	2133 MHz	51 W	Yes	No	Yes	Yes
i3-6300	3.8 GHz	2 / 4	4 MB	2133 MHz	51 W	Yes	No	Yes	Yes
i3-6320	3.9 GHz	2 / 4	4 MB	2133 MHz	51 W	Yes	No	Yes	Yes
Intel Pentium processors									
G4400	3.3 GHz	2 / 2	3 MB	2133 MHz	54 W	No	No	Yes	Yes
G4500	3.5 GHz	2 / 2	3 MB	2133 MHz	51 W	No	No	Yes	Yes
G4520	3.6 GHz	2 / 2	3 MB	2133 MHz	51 W	No	No	Yes	Yes

Note: The RS160 does not support Intel HD Graphics integrated into select processors. The server uses graphics integrated into the Baseboard Management Controller.

Memory

Lenovo DDR4 memory is compatibility tested and tuned for optimal ThinkServer performance and throughput. From a service and support standpoint, Lenovo memory automatically assumes the system warranty, and Lenovo provides service and support worldwide.

The RS160 server has four DIMM slots, and it supports DDR4 UDIMMs with ECC memory protection. The processor has two memory channels and supports two DIMMs per channel.

The following rules apply when selecting the memory configuration:

- The RS160 server supports memory configurations with 1, 2, 3, or 4 UDIMMs.
- The RS160 server supports up to 2133 MHz memory speeds for one DIMM per channel and two DIMMs per channel configurations, provided that the processors support this memory speed (see the Processor options table in the Processors section for details).

The following table summarizes memory speeds and capacities that are supported by the RS160 server.

Table 3. RS160 maximum memory speeds and capacities

DIMMs per channel	UDIMM	
	Memory bus speed	Maximum capacity
1 DPC	2133 MHz	32 GB (2x 16 GB)
2 DPC	2133 MHz	64 GB (4x 16 GB)

The following table lists the memory options that are available for the RS160 server.

Table 4. Memory options

Description	Part number	Maximum supported
ThinkServer 8GB 2RX8 PC4-2133-E CL15 DDR4-2133 ECC-UDIMM	4X70G88316	4
ThinkServer 16GB 2RX8 PC4-2133-E CL15 DDR4-2133 ECC-UDIMM	4X70G88317	4

Internal storage

The RS160 server supports the following internal storage configurations:

- Two 3.5-inch large form factor (LFF) SAS/SATA NHS drive bays
- Four 2.5-inch small form factor (SFF) SAS/SATA NHS drive bays

The RS160 server has one optical drive bay for an optional DVD-ROM or DVD-RW drive. The server also supports up to one internal M.2 SSD.

Controllers for internal storage

The following table lists the internal RAID controllers and the additional options that are used for the internal drive storage of the RS160 server.

Table 5. Controllers for internal storage

Description	Part number	Maximum supported
RAID controllers		
ThinkServer RAID 121i Controller	None#	1
ThinkServer RAID 520i PCIe Adapter	4XC0G88840	1
ThinkServer RAID 520i RAID 5 Upgrade	4XC0G88841	1
ThinkServer RAID 720i PCIe Adapter	4XC0G88831	1
ThinkServer RAID 720i 1GB Modular DRAM Upgrade	4XB0F28695	1
ThinkServer RAID 720i 1GB Modular Flash and Supercapacitor Upgrade	4XB0F28696	1
ThinkServer RAID 720i 2GB Modular Flash and Supercapacitor Upgrade	4XB0F28697	1
ThinkServer RAID 720i 4GB Modular Flash and Supercapacitor Upgrade	4XB0F28698	1

RAID 121i is an onboard hardware-assist RAID controller.

The RAID 121i is an onboard RAID controller that does *not* consume a PCIe slot. The RAID 520i and RAID 720i adapters are supported only in the PCIe expansion slot provided by the optional PCIe riser card.

Important: The RAID 121i controller is not supported by virtualization hypervisors, including VMware vSphere (ESXi), Linux KVM, Xen, and Microsoft Hyper-V.

The following table summarizes features of supported internal storage controllers.

Table 6. Internal storage controller features and specifications summary

Feature	RAID 121i	RAID 520i	RAID 720i
Part number	None	4XC0G88840	4XC0G88831
Form factor	Onboard	Low profile	Low profile
Controller chip	Not applicable*	LSI SAS3008	LSI SAS3108
Host interface	Not applicable*	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	6 Gbps SATA	12 Gbps SAS	12 Gbps SAS
Number of internal drive ports	5**	8	8
Internal port connectors	5x L-shape SATA	2x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)
Drive interface	SATA	SAS, SATA	SAS, SATA
Drive type	HDD, SSD	HDD, SSD	HDD, SSD
Non-hot-swap drive support	Yes	Yes	Yes
Optical drive support	Yes	No	No
Maximum number of drives	5**	4	4
RAID levels	0/1/10/5	0/1/10, Optional 5 (4XC0G88841)	0/1/10/5
JBOD mode	Yes	Yes	Yes (without cache)
Cache	None	None	Optional: <ul style="list-style-type: none"> • 1 GB non-backed (4XB0F28695) • 1 GB flash-backed (4XB0F28696) • 2 GB flash-backed (4XB0F28697) • 4 GB flash-backed (4XB0F28698)
Cache protection	None	None	Yes (with flash backup)
FastPath	None	None	Yes (with flash backup)
CacheCade Pro 2.0	None	None	Yes (with flash backup)

* The RAID 121i is a hardware-assist, software RAID feature (Intel Rapid Storage Technology Enterprise [RSTe]) integrated into the Intel C232 Platform Controller Hub (PCH).

** Up to four ports are used for SATA HDDs or SSDs, and the remaining port is used for an optical drive.

The following table lists supported combinations of the storage controllers and drive types for the RS160 drive bay configurations.

Table 7. Storage controllers, drive types, and internal drive bays

Drive bay configuration	Storage Controller	Drive type			
		SAS HDD	NL SATA HDD	SATA SSD	M.2 SSD
2x 3.5-inch SAS/SATA non-hot-swap	RAID 121i	No	Yes	Yes	No
	RAID 520i	Yes	Yes	Yes	No
	RAID 720i	Yes	Yes	Yes	No
4x 2.5-inch SAS/SATA non-hot-swap	RAID 121i	No	Yes	Yes	No
	RAID 520i	Yes	Yes	Yes	No
	RAID 720	Yes	Yes	Yes	No

Drives for internal storage

The RS160 server supports the drive options that are listed in the following table.

Table 8. Drive options

Description	Part number	Maximum supported
3.5-inch non-hot-swap HDDs - 6 Gbps NL SATA		
ThinkServer 3.5" 1TB 7.2K Enterprise SATA 6Gbps Hard Drive for RS-Series	4XB0K12293	2
ThinkServer 3.5" 2TB 7.2K Enterprise SATA 6Gbps 512e Hard Drive for RS-Series	4XB0K12294	2
ThinkServer 3.5" 4TB 7.2K Enterprise SATA 6Gbps 512e Hard Drive for RS-Series	4XB0K12295	2
ThinkServer 3.5" 6TB 7.2K Enterprise SATA 6Gbps 512e Hard Drive for RS-Series	4XB0K12296	2
ThinkServer 3.5" 8TB 7.2K Enterprise SATA 6Gbps 512e Hard Drive for RS-Series	4XB0K12297	2
2.5-inch non-hot-swap HDDs - 12 Gbps SAS		
ThinkServer 2.5" 300GB 10K Enterprise SAS 12Gbps Hard Drive for RS-Series	4XB0K12303	4
ThinkServer 2.5" 600GB 10K Enterprise SAS 12Gbps Hard Drive for RS-Series	4XB0K12304	4
ThinkServer 2.5" 900GB 10K Enterprise SAS 12Gbps Hard Drive for RS-Series	4XB0K12305	4
ThinkServer 2.5" 1.2TB 10K Enterprise SAS 12Gbps Hard Drive for RS-Series	4XB0K12306	4
2.5-inch non-hot-swap HDDs - 6 Gbps NL SATA		
ThinkServer 2.5" 1TB 7.2K Enterprise SATA 6Gbps Hard Drive for RS-Series	4XB0K12301	4
ThinkServer 2.5" 2TB 7.2K Enterprise SATA 6Gbps Hard Drive for RS-Series	4XB0K12302	4
2.5-inch non-hot-swap SSDs - Enterprise Entry 6 Gbps SATA		
ThinkServer 2.5" 120GB S3510 Enterprise Entry SATA 6Gbps SSD for RS-Series	4XB0K12319	4
ThinkServer 2.5" 240GB S3510 Enterprise Entry SATA 6Gbps SSD for RS-Series	4XB0K12320	4
ThinkServer 2.5" 480GB S3510 Enterprise Entry SATA 6Gbps SSD for RS-Series	4XB0K12321	4
M.2 non-hot-swap SSDs - Value Read-Optimized 6 Gbps SATA		
ThinkServer M.2 32GB Value Read-Optimized SATA 6Gbps Solid State Drive	4XB0K12310	1

Optical drives

The RS160 server supports optical drive options listed in the following table.

Table 9. Optical drives

Description	Part number	Maximum supported
ThinkServer RS160 Slim SATA DVD-RW Optical Disk Drive	4XA0G88613	1
ThinkServer RS160 Slim SATA DVD-ROM Optical Disk Drive	4XA0G88614	1

The Slim SATA DVD-RW Optical Disk Drive supports the following types of media: CD-R, CD-ROM, CD-RW, DVD-R, DVD-R (dual-layer recording), DVD-RAM, DVD-RW, DVD+R, DVD+R (dual-layer recording), and DVD+RW.

The Slim SATA DVD-ROM Optical Disk Drive supports the following types of media: CD-R, CD-ROM, DVD-R, DVD-R (dual-layer recording), DVD+R, DVD+R (dual-layer recording).

I/O expansion

The RS160 server supports one PCIe 3.0 x16 (x16-wired) low profile expansion slot (Refer to Components and connectors for slot location) with an optional PCIe x16 Riser Card installed in the riser slot on the system board. The following adapter types are supported in the PCIe slot:

- [Controllers for internal storage](#)
- [Network adapters](#)
- [SAS adapters for external storage](#)
- [Fibre Channel host bus adapters](#)

The following table lists the riser card option supported by the RS160.

Table 10. Riser cards

Description	Part number	Maximum supported
Lenovo ThinkServer RS160 x16 PCIe Riser Kit	4XC0G88857	1

Network adapters

The RS160 server has two integrated Gigabit Ethernet ports based on the Intel I210 NIC. The integrated GbE ports have the following features:

- 1 Gb Ethernet IEEE 802.3, 802.3u, and 802.3ab PHY specifications compliant
- Integrated PHY for 10/100/1000 Mbps with speed and duplex auto-negotiation
- IEEE 802.3x and 802.3z flow control with software-controllable Rx thresholds and Tx pause frames
- Automatic cross-over detection function (MDI/MDI-X)
- Energy Efficient Ethernet (IEEE 802.3az)
- Wake on LAN
- VLAN tagging (IEEE 802.1Q)
- Class of Service (CoS) priority (IEEE 802.1p) marking
- TCP/UDP, IPv4 checksum offloads (Rx/ Tx/Large-send); extended Tx descriptors
- Receive Side Scaling
- Jumbo Frames (up to 9.5 KB)
- Timing and Synchronization (IEEE 802.1as / IEEE 1588)
- Load balancing and failover teaming support:
 - Adapter fault tolerance (AFT)
 - Switch fault tolerance (SFT)
 - Adaptive load balancing (ALB)
 - Virtual Machine load balancing (VMLB)
 - Link aggregation (static, IEEE 802.3ad)

The following table lists the network adapter options for the RS160 server.

Table 11. Network adapter options

Description	Part number	Maximum supported
ThinkServer I350-T2 PCIe 1Gb 2 Port Base-T Ethernet Adapter by Intel	4XC0F28730	1
ThinkServer I350-T4 PCIe 1Gb 4 Port Base-T Ethernet Adapter by Intel	4XC0F28731	1
ThinkServer X710-DA2 PCIe 10Gb 2 port Ethernet Adapter by Intel	4XC0G88852	1
ThinkServer 10Gb Optical Module by Intel (for the X710-DA2 adapter)	4XC0F28735	2

SAS adapters for external storage

The following table lists the RAID adapter and HBA options that can be used for external storage attachments.

Table 12. RAID adapter and HBA options for external storage

Description	Part number	Maximum supported
RAID adapters - 12 Gb SAS		
ThinkServer 9380-8e PCIe 12Gb 8 port External SAS RAID Adapter by LSI-Avago (2x external Mini-SAS HD SFF-8644 connectors)	4XC0G88845	1
Options for RAID adapters		
Lenovo ThinkServer CacheVault Data Protection Upgrade II (Required for 4XC0G88845)	4XB0G45761	1
Host bus adapters - 12 Gb SAS		
ThinkServer 9300-8e PCIe 12Gb 8 Port External SAS Adapter by LSI (2x external Mini-SAS HD SFF-8644 connectors)	4XB0F28703	1

The following table summarizes features of supported SAS storage controllers.

Table 13. Storage controller features and specifications summary

Feature	9380-8e	9300-8e
Part number	4XB0F28645	4XB0F28703
Form factor	Low profile	Low profile
Controller chip	LSI SAS3108	LSI SAS3008
Host interface	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	12 Gbps SAS	12 Gbps SAS
Number of external ports	8	8
External port connectors	2x Mini-SAS HD (SFF-8644)	2x Mini-SAS HD (SFF-8644)
Drive interface	SAS, SATA	SAS, SATA
Drive type	HDD, SSD	HDD, SSD
Maximum number of devices	240	1024
RAID levels	0/1/10/5/50/6/60	None
JBOD mode	No	Yes
Cache	1 GB	None
Cache protection	Flash backup required (4XB0G45761)	None
FastPath	Included	None
CacheCade Pro 2.0	None	None

Fibre Channel host bus adapters

The following table lists Fibre Channel host bus adapters (HBAs) supported by the RS160 server.

Table 14. Fibre Channel host bus adapter options

Description	Part number	Maximum supported
PCIe - Advanced 8 Gb FC		
ThinkServer LPe16000B-M8-L PCIe 1-Port 8Gb Fibre Channel HBA by Emulex	4XB0F28652	1

Security

The RS160 server offers optional hardware security modules listed in the following table.

Table 15. Security options

Description	Part number	Maximum supported
Lenovo ThinkServer Gen 5 Trusted Platform Module v1.2 (Worldwide except China)	4XF0G45868	1
Lenovo ThinkServer Trusted Platform Module v2.0 (Worldwide except China)	4XF0G88938	1
Lenovo ThinkServer Gen 5 Trusted Cryptographic Module (China only)	4XF0G45869	1

Power supplies and cables

The RS160 server supports one 300 W AC fixed power supply. The power supply is 80 PLUS Gold certified.

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>

The following table lists rack power cables and country-specific line cords that can be ordered with the RS160.

Table 16. Power cable options

Description	Part number	Maximum supported
Rack power cords		
ThinkServer C13-C14 WW 250V 10A 1.8m Jumper Cord	4X90F92964	1
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	39Y7938	1
Country-specific line cords		
ThinkServer C13-BS_1363A UK 250V 10A 1.8m Power Cord	4X90F92970	1
ThinkServer C13-CE123_50 Italy 250V 10A 1.8m Power Cord	4X90F92975	1
ThinkServer C13-CEE_7.7 Europe 250V 10A 1.8m Power Cord	4X90F92974	1
ThinkServer C13-DK_2.5A Denmark 250V 10A 1.8m Power Cord	4X90F92971	1
ThinkServer C13-GB1002 PRC 250V 10A 1.8m Power Cord	4X90F92981	1
ThinkServer C13-IRAM_2073 LA 250V 10A 1.8m Power Cord	4X90F92977	1
ThinkServer C13-NEMA_5-15P US 125V 10A 1.8m Power Cord	4X90F92965	1
ThinkServer C13-SABS_164 South Africa 250V 6A 1.8m Power Cord	4X90F92978	1
ThinkServer C13-SI_32 Israel 250V 10A 1.8m Power Cord	4X90F92973	1
Japan 10A/100V C13 to JIS C-8302 power cable 2.8m	46M2593	1

Operating systems

The RS160 supports the following operating systems:

- Microsoft (server operating systems)
 - Windows Server 2016 Essentials, Standard, Hyper-V
 - Windows Server 2012 R2 Foundation, Essentials, Standard
 - Windows Server 2012 Foundation, Essentials, Standard
- Red Hat
 - Red Hat Enterprise Linux Server 7.3
 - Red Hat Enterprise Linux Server 7.2
 - Red Hat Enterprise Linux Server 6.8 (x64)
 - Red Hat Enterprise Linux Server 6.7 (x64)
- SUSE
 - SUSE Linux Enterprise Server 12 SP1
 - SUSE Linux Enterprise Server 11 for AMD64/EM64T SP4
- VMware
 - VMware ESXi 6.0 U2
 - VMware ESXi 6.0 U1

Important: VMware ESXi support requires an Intel Xeon E3-1200 v5 processor and a PCIe RAID adapter. The onboard RAID 121i controller is not supported by VMware ESXi.

For the latest information about the specific versions and service levels that are supported and any other prerequisites, see the Operating System Interoperability Guide: <http://lenovopress.com/redposig>.

Systems management

The RS160 server contains ThinkServer Management Module (TMM), 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 TMM lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. As a standard feature, the TMM also provides virtual presence for remote server management capabilities.

The TMM virtual presence 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

The TMM can be accessed through a dedicated 10/100/1000 Mb Ethernet management port, and it provides remote server management through the following industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Embedded Web UI via HTTP/HTTPS
- Simple Network Management Protocol (SNMP) alerts

Lenovo offers the following software tools that can help you set up, use, and maintain the server at no additional cost:

- ThinkServer EasyStartup
The ThinkServer EasyStartup tool simplifies the process of configuring RAID and installing supported Microsoft Windows and Linux operating systems, VMware hypervisors, and device drivers on a ThinkServer system.

Rack installation

The following table lists the rack installation options that are available for the RS160 server.

Table 17. Rack installation options

Description	Part number
ThinkServer 2 Post Rail kit for RS-Series	4XF0F28767
ThinkServer 4 Post Rail kit for RS-Series	4XF0F28772

The following table summarizes the rail kit features and specifications.

Table 18. Rail kit features and specifications summary

Feature	ThinkServer 2 Post Rail Kit for RS-Series	ThinkServer 4 Post Rail Kit for RS-Series
Part number	4XF0F28767	4XF0F28772
Rail type	Ball bearing slide rail with stop latches	Ball bearing slide rail with stop latches
Toolless installation	No	No
CMA support	No	No
In-rack server maintenance	No	No
1U PDU support	Yes	Yes
0U PDU support	Yes	Yes
Rack type	Any 2-post	Lenovo 4-post, IEC standard-compliant
Mounting holes	Square or round (unthreaded)	Square or round (unthreaded)
Mounting flange thickness	2 mm (0.08 in.) – 3.2 mm (0.13 in.)	2 mm (0.08 in.) – 3.2 mm (0.13 in.)
Distance between front and rear mounting flanges	Not applicable	692.9 mm (27.28 in.) – 811.7 mm (31.95 in.)
Rail length*	483.9 mm (19.05 in.)	680 mm (26.77 in.)

* Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Note: Threaded mounting holes are not supported.

Physical specifications

The RS160 has the following dimensions and weight (approximate):

- Height: 43 mm (1.7 in.)
- Width: 439 mm (17.3 in.)
- Depth: 411 mm (16.2 in.)
- Weight:
 - Minimum: 6.2 kg (13.7 lb)
 - Maximum: 7.6 kg (16.8 lb)

Operating environment

The RS160 server is supported in the following environment:

- Air temperature:
 - Operating: 10 °C - 35 °C (50 °F - 95 °F)
 - Storage: -40 °C - +60 °C (-40 °F - +140 °F) in the original shipping package
- Altitude: 0 m - 3,048 m (0 ft - 10,000 ft) in an unpressurized environment
- Humidity:
 - Operating: 8% - 80% (non-condensing)
 - Storage: 10% - 90% (non-condensing)
- Electrical:
 - 100 - 127 (nominal) V AC; 50 Hz or 60 Hz
 - 200 - 240 (nominal) V AC; 50 Hz or 60 Hz
- Noise level:
 - 4.2 bels (operating)
 - 3.7 bels (idle)

Warranty

The RS160 has a one-year or three-year customer-replaceable unit (CRU) and onsite (for field-replaceable units [FRUs] only) limited warranty with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered. Also available are Lenovo Services 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 country-specific. Not all warranty service upgrades are available in every country. For more information about Lenovo warranty service upgrade offerings that are available in your country, visit the Lenovo Quick Pick website:

<http://lenovoquickpick.com>

The following table explains warranty service definitions in more detail.

Table 19. Warranty service definitions

Term	Description
Onsite Service	If a problem with your product cannot be resolved via telephone, a Service Technician will be dispatched to arrive at your location.
Parts Delivered	If a problem with your product cannot be resolved via telephone and a CRU part is required, Lenovo will send a replacement CRU to arrive at your location. If a problem with your product cannot be resolved via telephone and a FRU part is required, a Service Technician will be dispatched to arrive at your location.
Technician Installed Parts	If a problem with your product cannot be resolved via telephone, a Service Technician will be dispatched to arrive at your location.
Hours of coverage	<ul style="list-style-type: none"> • 9x5: 9 hours per day, 5 days per week, during normal business hours, excluding local public and national holidays • 24x7: 24 hours per day, 7 days per week, 365 days per year.
Response time target	2 hours, 4 hours, or Next Business Day: The time period from when the telephone based troubleshooting is completed and logged, to the delivery of the CRU or arrival of a Service Technician and part at the Customer's location for repair.

Term	Description
Committed Repair	6 hours or 24 hours: The time period between the service request registration in Lenovo's call management system and the restoration of the product to conformance with its specification by a Service Technician.

The following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
 - Three, four, or five years of 9x5 or 24x7 service coverage
 - Parts delivered or technician installed parts from next business day to 4 or 2 hours
 - Committed repair service
 - Warranty extension of up to 5 years
 - Post warranty extensions
- Committed Repair Service

Committed Repair Services enhances the level of Warranty Service Upgrade or Post Warranty/Maintenance Service offering associated with the selected systems. Offerings vary and are available in select countries.

 - Priority handling to meet defined time frames to restore the failing machine to good working condition
 - 24x7x6 committed repair: Service performed 24 hours per day, 7 days per week, within 6 hours
 - 24x7x24 committed repair: Service performed 24 hours per day, 7 days per week, within 24 hours
- YourDrive YourData

Lenovo's YourDrive YourData service is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo server. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles with Lenovo warranty upgrades and extensions.
- Hardware Support Preferred Access

Lenovo's Hardware Support Preferred Access 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.
- Enterprise Software Support

Lenovo Enterprise Server Software Support can help you troubleshoot your entire server software stack. Choose support for server operating systems from Microsoft, Red Hat, SUSE, and VMware; Microsoft server applications; or both operating systems and applications. Support staff can help answer troubleshooting and diagnostic questions, address product compatibility and interoperability issues, isolate causes of problems, report defects to software vendors, and more.
- Hardware Installation Services

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

Regulatory compliance

The RS160 server conforms to the following regulations:

- RoHS
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, Class A
- EU Council Directive 2014/30/EU
- European Standard EN55022, Class A
- Korea Class A compliance
- Taiwan Class A compliance
- Japan VCCI, Class A

External drive enclosures

The following table lists the relationship models of the 12 Gbps SAS external drive enclosures that are offered by Lenovo that can be used with the ThinkServer RS160 for storage expansion.

Table 20. D1212 and D1224 relationship models

Description	Part number
LFF models	
D1212 LFF Chassis, Dual 3-port ESMs (US English documentation)	4587A11*
D1212 LFF Chassis, Dual 3-port ESMs (Simplified Chinese documentation)	4587A1C^
D1212 LFF Chassis, Dual 3-port ESMs (Japanese documentation)	4587A1J**
D1212 LFF Chassis, Dual 3-port ESMs, 4x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587D11^^
SFF models	
D1224 SFF Chassis, Dual 3-port ESMs (US English documentation)	4587A31*
D1224 SFF Chassis, Dual 3-port ESMs (Simplified Chinese documentation)	4587A3C^
D1224 SFF Chassis, Dual 3-port ESMs (Japanese documentation)	4587A3J**
D1224 SFF Chassis, Dual 3-port ESMs, 8x 600GB 15K HDDs, 4x 0.5m SAS cables	4587D21^^

* Available worldwide (except China and Japan)

^ Available only in China

** Available only in Japan

^^ Available worldwide (except China)

The following table lists the TopSeller models of the 12 Gbps SAS external drive enclosures that are offered by Lenovo that can be used with the ThinkServer RS160 for storage expansion.

Table 21. D1212 and D1224 TopSeller models

Description	Part number
LFF models - North America (NA) and Europe, Middle East, and Africa (EMEA)	
Lenovo Storage D1212 LFF Dual ESM Disk Expansion Enclosure (US English documentation)	4587E11
LFF models - Brazil and Latin America	
D1212 LFF Chassis, Dual 3-port ESMs, 4x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587EAU
D1212 LFF Chassis, Dual 3-port ESMs, 4x 4TB 3.5" HDDs, 4x 0.5m SAS cables	4587EBU
D1212 LFF Chassis, Dual 3-port ESMs, 4x 6TB 3.5" HDDs, 4x 0.5m SAS cables	4587ECU
D1212 LFF Chassis, Dual 3-port ESMs, 4x 8TB 3.5" HDDs, 4x 0.5m SAS cables	4587EDU

Description	Part number
D1212 LFF Chassis, Dual 3-port ESMs, 8x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587EEU
D1212 LFF Chassis, Dual 3-port ESMs, 8x 4TB 3.5" HDDs, 4x 0.5m SAS cables	4587EFU
D1212 LFF Chassis, Dual 3-port ESMs, 8x 6TB 3.5" HDDs, 4x 0.5m SAS cables	4587EGU
D1212 LFF Chassis, Dual 3-port ESMs, 8x 8TB 3.5" HDDs, 4x 0.5m SAS cables	4587EHU
D1212 LFF Chassis, Dual 3-port ESMs, 12x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587EIU
D1212 LFF Chassis, Dual 3-port ESMs, 12x 4TB 3.5" HDDs, 4x 0.5m SAS cables	4587EJU
D1212 LFF Chassis, Dual 3-port ESMs, 12x 6TB 3.5" HDDs, 4x 0.5m SAS cables	4587EKU
D1212 LFF Chassis, Dual 3-port ESMs, 12x 8TB 3.5" HDDs, 4x 0.5m SAS cables	4587ELU
SFF models - North America (NA) and Europe, Middle East, and Africa (EMEA)	
Lenovo Storage D1224 SFF Dual ESM Disk Expansion Enclosure (US English documentation)	4587E31
SFF models - Brazil and Latin America	
D1224 SFF Chassis, Dual 3-port ESMs, 9x 1.2TB 10K HDDs, 4x 0.5m SAS cables	4587E6U
D1224 SFF Chassis, Dual 3-port ESMs, 9x 1.2TB 10K HDDs, 2x 400GB SSDs, 4x 0.5m SAS cables	4587E2U
D1224 SFF Chassis, Dual 3-port ESMs, 9x 1.2TB 10K HDDs, 4x 400GB SSDs, 4x 0.5m SAS cables	4587E4U
D1224 SFF Chassis, Dual 3-port ESMs, 18x 1.2TB 10K HDDs, 1x 0.5m SAS cable	4587E5U
D1224 SFF Chassis, Dual 3-port ESMs, 18x 1.2TB 10K HDDs, 2x 400GB SSDs, 4x 0.5m SAS cables	4587E1U
D1224 SFF Chassis, Dual 3-port ESMs, 18x 1.2TB 10K HDDs, 4x 400GB SSDs, 4x 0.5m SAS cables	4587E3U

For details about supported drives, adapters, and cables for the Lenovo Storage D1212 and D1224, see the Lenovo Press Product Guide:
<http://lenovopress.com/lp0512>

External storage systems

The following table lists the external storage systems that are offered by Lenovo that can be used in RS160 solutions.

Table 22. External storage systems

Description	Part number
Lenovo Storage DX8200 Series (NAS, iSCSI connectivity)	
Lenovo Storage DX8200N with 1x N2226 HBA	5128A1x*
Lenovo Storage DX8200N with 2x N2226 HBAs	5128A2x*
Lenovo Storage S Series (SAS, iSCSI, or FC host connectivity)	
Lenovo Storage S2200 LFF Chassis SAS Single Controller, Rack Kit, 9x5NBD	64112B1
Lenovo Storage S2200 LFF Chassis SAS Dual Controller, Rack Kit, 9x5NBD	64112B2
Lenovo Storage S2200 LFF Chassis FC/iSCSI Single Controller, Rack Kit, 9x5NBD	64114B1
Lenovo Storage S2200 LFF Chassis FC/iSCSI Dual Controller, Rack Kit, 9x5NBD	64114B2
Lenovo Storage S2200 SFF Chassis SAS Single Controller, Rack Kit, 9x5NBD	64112B3
Lenovo Storage S2200 SFF Chassis SAS Dual Controller, Rack Kit, 9x5NBD	64112B4
Lenovo Storage S2200 SFF Chassis FC/iSCSI Single Controller, Rack Kit, 9x5NBD	64114B3
Lenovo Storage S2200 SFF Chassis FC/iSCSI Dual Controller, Rack Kit, 9x5NBD	64114B4
Lenovo Storage S3200 LFF Chassis SAS Single Controller, Rack Kit, 9x5NBD	64113B1
Lenovo Storage S3200 LFF Chassis SAS Dual Controller, Rack Kit, 9x5NBD	64113B2
Lenovo Storage S3200 LFF Chassis FC/iSCSI Single Controller, Rack Kit, 9x5NBD	64116B1
Lenovo Storage S3200 LFF Chassis FC/iSCSI Dual Controller, Rack Kit, 9x5NBD	64116B2
Lenovo Storage S3200 SFF Chassis SAS Single Controller, Rack Kit, 9x5NBD	64113B3
Lenovo Storage S3200 SFF Chassis SAS Dual Controller, Rack Kit, 9x5NBD	64113B4
Lenovo Storage S3200 SFF Chassis FC/iSCSI Single Controller, Rack Kit, 9x5NBD	64116B3
Lenovo Storage S3200 SFF Chassis FC/iSCSI Dual Controller, Rack Kit, 9x5NBD	64116B4
Lenovo Storage V Series (SAS, iSCSI, or FC host connectivity)	
Lenovo Storage V3700 V2 LFF Control Enclosure	6535C1D
Lenovo Storage V3700 V2 LFF Control Enclosure (Top Seller)	6535EC1
Lenovo Storage V3700 V2 SFF Control Enclosure	6535C2D
Lenovo Storage V3700 V2 SFF Control Enclosure (Top Seller)	6535EC2
Lenovo Storage V3700 V2 XP LFF Control Enclosure	6535C3D
Lenovo Storage V3700 V2 XP LFF Control Enclosure (Top Seller)	6535EC3
Lenovo Storage V3700 V2 XP SFF Control Enclosure	6535C4D
Lenovo Storage V3700 V2 XP SFF Control Enclosure (Top Seller)	6535EC4
Lenovo Storage V5030 LFF Control Enclosure 3Yr S&S	6536C12
Lenovo Storage V5030 LFF Control Enclosure 5Yr S&S	6536C32
Lenovo Storage V5030 SFF Control Enclosure 3Yr S&S	6536C22
Lenovo Storage V5030 SFF Control Enclosure 5Yr S&S	6536C42
Lenovo Storage V5030F SFF Control Enclosure 3Yr S&S	6536B1F
Lenovo Storage V5030F SFF Control Enclosure 5Yr S&S	6536B2F
IBM Storwize for Lenovo (SAS [except V7000], iSCSI, or FC host connectivity)	
IBM Storwize V3500 3.5-inch Dual Control Storage Controller Unit	6096CU2**

Description	Part number
IBM Storwize V3500 2.5-inch Dual Control Storage Controller Unit	6096CU3**
IBM Storwize V3700 3.5-inch Storage Controller Unit	6099L2C
IBM Storwize V3700 2.5-inch Storage Controller Unit	6099S2C
IBM Storwize V3700 2.5-inch DC Storage Controller Unit	6099T2C
IBM Storwize V5000 LFF Control Enclosure, w/3 Yr S&S	6194L2C†
IBM Storwize V5000 LFF Control Enclosure, w/3 Yr S&S (LA)	6194L2L‡
IBM Storwize V5000 LFF Control Enclosure, w/5 Yr S&S	61941A1†
IBM Storwize V5000 LFF Control Enclosure, w/5 Yr S&S (LA)	61941AL‡
IBM Storwize V5000 SFF Control Enclosure, w/3 Yr S&S	6194S2C†
IBM Storwize V5000 SFF Control Enclosure, w/3 Yr S&S (LA)	6194S2L‡
IBM Storwize V5000 SFF Control Enclosure, w/5 Yr S&S	61941C1†
IBM Storwize V5000 SFF Control Enclosure, w/5 Yr S&S (LA)	61941CL‡
IBM Storwize V7000 2.5-inch Storage Controller Unit, w/3 Yr S&S (Model 524)	6195SC5†
IBM Storwize V7000 2.5-inch Storage Controller Unit, w/3 Yr S&S (LA) (Model 524)	6195SCL‡
IBM Storwize V7000 2.5-inch Storage Controller Unit, w/5 Yr S&S (Model 524)	61951F1†
IBM Storwize V7000 2.5-inch Storage Controller Unit, w/5 Yr S&S (LA) (Model 524)	61951FL‡
IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA (Model HC1 [Gen2+])	6195C32†
IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA, LA (Model HC1 [Gen2+])	6195C3L‡
IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA (Model HC1 [Gen2+])	6195C52†
IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA, LA (Model HC1 [Gen2+])	6195C5L‡

* x represents a geo-specific letter (for example: U = North America, G = EMEA). Ask a Lenovo representative for specifics.

** Available only in China.

† Available worldwide except Latin America.

‡ Available only in Latin America.

For more information, see the list of Product Guides in the following categories:

- Lenovo NAS storage: <http://lenovopress.com/storage/nas>
- Lenovo S Series and V Series storage: <http://lenovopress.com/storage/san/lenovo>
- IBM Storwize for Lenovo storage: <http://lenovopress.com/storage/san/ibm>

External backup units

The following table lists the backup units that are offered by Lenovo that can be used in RS160 solutions.

Table 23. External backup unit options

Description	Part number
External RDX unit	
ThinkServer External RDX Tape Drive	4XF0G88929
RDX cartridges	
ThinkServer 1TB 3Gbps RDX Cartridge	4XB0F28660
ThinkServer 2TB SATA 3Gbps RDX Cartridge	4XB0G88711
External SAS tape backup drives	
IBM TS2250 Tape Drive Model H5S	6160S5E
IBM TS2260 Tape Drive Model H6S	6160S6E
IBM TS2270 Tape Drive Model H7S	6160S7E
External SAS tape backup autoloaders	
IBM TS2900 Tape Autoloader w/LTO5 HH SAS	6171S5R
IBM TS2900 Tape Autoloader w/LTO6 HH SAS	6171S6R
IBM TS2900 Tape Autoloader w/LTO7 HH SAS	6171S7R
External tape backup libraries	
IBM TS3100 Tape Library Model L2U	61732UL
IBM TS3200 Tape Library Model L4U	61734UL
Fibre Channel tape backup drives for TS3100 and TS3200 Tape Libraries	
6173 LTO Ultrium 5 Fibre Channel Drive	00NA107
6173 LTO Ultrium 5 Half High Fibre Drive Sled	00NA113
6173 LTO Ultrium 6 Fibre Channel Drive	00NA115
6173 LTO Ultrium 6 Half High Fibre Drive Sled	00NA119
6173 LTO Ultrium 7 Fibre Channel Drive	00WF765
6173 LTO Ultrium 7 Half High Fibre Drive Sled	00WF769
SAS tape backup drives for TS3100 and TS3200 Tape Libraries	
6173 LTO Ultrium 5 SAS Drive Sled	00NA109
6173 LTO Ultrium 5 Half High SAS Drive Sled	00NA111
6173 LTO Ultrium 6 Half High SAS Drive Sled	00NA117
6173 LTO Ultrium 7 Half High SAS Drive Sled	00WF767

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

<http://lenovopress.com/servers/options/backup>

Ethernet LAN switches

The following table lists the top-of-rack Ethernet switches that are offered by Lenovo that can be used in RS160 solutions.

Table 24. Ethernet LAN switches

Description	Part number
1 Gb Ethernet switches	
Juniper EX2300-C PoE Switch	7165H1X
Juniper EX2300-24p PoE Switch	7165H2X
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX
Lenovo RackSwitch G8052 (Rear to Front)	7159G52
10 Gb Ethernet 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 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 RS160 solutions.

Table 25. 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>

KVM switches and consoles

The following table lists the console switches and monitor kits that are available from Lenovo that can be used in RS160 solutions.

Table 26. KVM switch and console options

Description	Part number
Consoles	
1U 18.5" Standard Console (without keyboard)	17238BX
Console keyboards	
Lenovo UltraNav Keyboard USB - US Eng	00MW310
Keyboard w/ Int. Pointing Device USB - Arabic 253 RoHS v2	46W6713
Keyboard w/ Int. Pointing Device USB - Belg/UK 120 RoHS v2	46W6714
Keyboard w/ Int. Pointing Device USB - Chinese/US 467 RoHS v2	46W6715
Keyboard w/ Int. Pointing Device USB - Czech 489 RoHS v2	46W6716
Keyboard w/ Int. Pointing Device USB - Danish 159 RoHS v2	46W6717
Keyboard w/ Int. Pointing Device USB - Dutch 143 RoHS v2	46W6718
Keyboard w/ Int. Pointing Device USB - French 189 RoHS v2	46W6719
Keyboard w/ Int. Pointing Device USB - Fr/Canada 445 RoHS v2	46W6720
Keyboard w/ Int. Pointing Device USB - German 129 RoHS v2	46W6721
Keyboard w/ Int. Pointing Device USB - Greek 219 RoHS v2	46W6722
Keyboard w/ Int. Pointing Device USB - Hebrew 212 RoHS v2	46W6723
Keyboard w/ Int. Pointing Device USB - Hungarian 208 RoHS v2	46W6724
Keyboard w/ Int. Pointing Device USB - Italian 141 RoHS v2	46W6725
Keyboard w/ Int. Pointing Device USB - Japanese 194 RoHS v2	46W6726
Keyboard w/ Int. Pointing Device USB - Korean 413 RoHS v2	46W6727
Keyboard w/ Int. Pointing Device USB - LA Span 171 RoHS v2	46W6728
Keyboard w/ Int. Pointing Device USB - Norwegian 155 RoHS v2	46W6729
Keyboard w/ Int. Pointing Device USB - Polish 214 RoHS v2	46W6730
Keyboard w/ Int. Pointing Device USB - Portugese 163 RoHS v2	46W6731
Keyboard w/ Int. Pointing Device USB - Russian 441 RoHS v2	46W6732
Keyboard w/ Int. Pointing Device USB - Slovak 245 RoHS v2	46W6733
Keyboard w/ Int. Pointing Device USB - Spanish 172 RoHS v2	46W6734
Keyboard w/ Int. Pointing Device USB - Swed/Finn 153 RoHS v2	46W6735
Keyboard w/ Int. Pointing Device USB - Swiss F/G 150 RoHS v2	46W6736
Keyboard w/ Int. Pointing Device USB - Thai 191 RoHS v2	46W6737
Keyboard w/ Int. Pointing Device USB - Turkish 179 RoHS v2	46W6738
Keyboard w/ Int. Pointing Device USB - UK Eng 166 RoHS v2	46W6739
Keyboard w/ Int. Pointing Device USB - US Euro 103P RoHS v2	46W6740
Keyboard w/ Int. Pointing Device USB - Slovenian 234 RoHS v2	46W6741
Console switches	
Global 4x2x32 Console Manager (GCM32)	1754D2X
Global 2x2x16 Console Manager (GCM16)	1754D1X
Local 2x16 Console Manager (LCM16)	1754A2X

Description	Part number
Local 1x8 Console Manager (LCM8)	1754A1X
Console cables	
Single Cable USB Conversion Option (UCO)	43V6147
USB Conversion Option (4 Pack UCO)	39M2895
Virtual Media Conversion Option Gen2 (VCO2)	46M5383
Serial Conversion Option (SCO)	46M5382

For more information, see the list of Product Guides in the KVM Switches and Consoles category:
<http://lenovopress.com/servers/options/kvm>

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo that can be used in RS160 solutions.

Table 27. 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
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
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

Description	Part number
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
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 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 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 RS160 solutions.

Table 28. 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 Power infrastructure category:
<http://lenovopress.com/servers/options/ups>

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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.lenovofs.com>

Related publications and links

For more information, see these resources:

- ThinkServer RS160 product page
<http://shop.lenovo.com/us/en/systems/servers/racks/thinkserver/rs160>
- ThinkServer RS160 PSREF page
http://psref.lenovo.com/Product/ThinkServer_RS160
- ThinkServer RS160 documentation
<http://support.lenovo.com/us/en/products/servers/thinkserver-rack-servers/thinkserver-RS160?tabName=Documentation>
- Lenovo Support for ThinkServer RS160
<http://support.lenovo.com/us/en/products/servers/thinkserver-rack-servers/thinkserver-rs160>
- Lenovo Quick Pick for ThinkServer RS160
<http://www.lenovoquickpick.com/usa/system/thinkserver/rs-series/rs160>
- ThinkServer Power Planner
<http://support.lenovo.com/us/en/downloads/ds101155>

Related product families

Product families related to this document are the following:

- [1-Socket Rack Servers](#)

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