Lenovo ThinkServer RD350 (E5-2600 v3)

Product Guide (withdrawn product)

The Lenovo® ThinkServer® RD350 1U two-socket rack server that blends outstanding flexibility and expandability. It is ideal for customers that require high performance in a space-constrained environment and is an excellent choice for applications such as Infrastructure, web server and hosting, departmental virtualization, and line-of-business applications.

The versatile, 1U ThinkServer RD350 is a two-socket server that features Intel Xeon E5-2600 v3 processors and supports up to 512 GB of DDR4 memory, 12 cores, and 24 threads per socket. With the capability to support mix and match internal hard disk drive (HDD) and solid-state drive (SSD) storage with up to 40 TB of storage, up to six fans, hot-swap redundant power supplies, a dedicated Gigabit Ethernet out-of-band management port, and two integrated Gigabit Ethernet onboard ports, the ThinkServer RD350 provides leading features and capabilities in a highly flexible design.

The following figure shows the ThinkServer RD350.

Figure 1. The ThinkServer RD350

Did you know?

The next-generation ThinkServer RD350 delivers impressive compute power per watt and incorporates energy-smart features for minimized costs and efficient performance. The 80 PLUS Titanium power supply units (PSUs) can deliver 96% efficiency at 50% load.

The RD350 also provides outstanding memory performance that is achieved by supporting two-RDIMMs-per-channel configurations at speeds up to 12% faster than the Intel specification, while still maintaining world-class reliability.

Key features

The RD350 is a versatile 1U two-socket business-critical server that offers improved performance and pay-as-you-grow flexibility along with new features that improve server management capability. This powerful system is designed for your most important business applications and cloud deployments.

Combining balanced performance and flexibility, the RD350 is a great choice for small and medium businesses. It can provide outstanding uptime to keep business-critical applications and cloud deployments running safely. Ease of use and comprehensive systems management tools help make deployment easier. Outstanding reliability, availability, and serviceability (RAS) and high-efficiency design improve your business environment and help save operational costs.

Scalability and performance

The RD350 offers numerous features to boost performance, improve scalability, and reduce costs:

- Improves productivity by offering superior system performances with up to 12-core processors, up to 30 MB of L3 cache, and up to 9.6 GT/s QPI interconnect links.
- Supports up to two processors, 24 cores, and 48 threads maximize the concurrent execution of multi-threaded applications.
- Intelligent and adaptive system performance with energy efficient Intel Turbo Boost Technology allows CPU 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 utilize the hardware for virtualization workloads.
- Intel Advanced Vector Extensions 2.0 (AVX 2.0) enable acceleration of enterprise-class workloads such as databases, enterprise resource planning, and others.
- Up to 2133 MHz memory speeds with two DIMMs per channel running at 2133 MHz to help maximize system performance.
- Up to 1024 GB of memory capacity with 64 GB LRDIMMs.
- The 12 Gbps SAS internal storage connectivity doubles the data transfer rate compared to 6 Gb SAS solutions to maximize performance of storage I/O-intensive applications.
- Flexible and scalable internal storage configurations provide for up to 40TB of storage capacity (four 10TB drives) in a 1U rack form factor.
- The use of solid-state drives (SSDs) instead of or along with traditional spinning drives (HDDs) can significantly improve I/O performance. An SSD can support up to 100 times more I/O operations per second (IOPS) than a typical HDD.
- The server offers up to two PCI Express (PCIe) 3.0 I/O expansion slots.
- With Intel Integrated I/O Technology, the PCI Express 3.0 controller is integrated into the Intel Xeon processor E5 family. This helps to dramatically reduce I/O latency and increase overall system performance.

Availability and serviceability

The RD350 provides many features to simplify serviceability and increase system uptime:

- Tool-less cover removal provides easy access to upgrades and serviceable parts, such as processors, memory DIMMs, and adapter cards.
- The server offers hot-swap drives supporting RAID redundancy for data protection and greater system uptime.
- The server offers redundant hot-swap power supplies and redundant fans to provide availability for

business-critical applications.

- The new diagnostics LCD display panel simplifies servicing, speeds up problem resolution, and helps improve system availability.
- Solid-state drives (SSDs) offer significantly better reliability than traditional mechanical HDDs for greater uptime.
- Built-in ThinkServer System Manager TSM continuously monitors system parameters and triggers alerts to minimize downtime.
- One or three-year customer replaceable unit and onsite limited warranty (depending on model), next business day 9x5. Optional service upgrades are available.

Manageability and security

Powerful systems management features simplify local and remote management of the RD350:

- The server includes ThinkServer Service Module (TSM) to monitor server availability and perform remote management.
- TSM Premium is an optional upgrade key that provides support for ThinkServer Energy Manager (TEM). TEM uses TSM to capture real-time power and temperature data from the server and provides automated controls to lower energy costs.
- Embedded ThinkServer Deployment Manager (TDM) provides a complete set of provisioning capabilities from a single interface, automating many of the tasks associated with server provisioning.
- An optional Trusted Platform Modules (TPM) enables advanced cryptographic functionality such as digital signatures and Windows BitLocker encryption, a Windows data protection feature. The server supports TPM 2.0 or TPM 1.2 depending on the TPM option selected.
- 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, allowing an application to run in its own isolated space, protected from all other software running on a system.

Energy efficiency

The RD350 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to the green environment:

- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Platinum and Titanium certifications.
- Intel Intelligent Power Capability powers individual processor elements on and off as needed, to reduce power draw.
- Low-voltage Intel Xeon processors draw less energy to satisfy the demands of power and thermally constrained data centers and telecommunication environments.
- Low-voltage 1.2 V DDR4 memory DIMMs consume up to 20% less energy compared to 1.35 V DDR3 DIMMs.
- Solid-state drives (SSDs) consume less power than traditional spinning HDDs.
- ThinkServer Energy Manager™ provides advanced data center power notification and management to help achieve lower heat output and reduced cooling needs.

Locations of key components and connectors

The RD350 is available either with 3.5-inch hot-swap drive bays or 2.5-inch hot-swap drive bays. The following figure shows the front of the server.

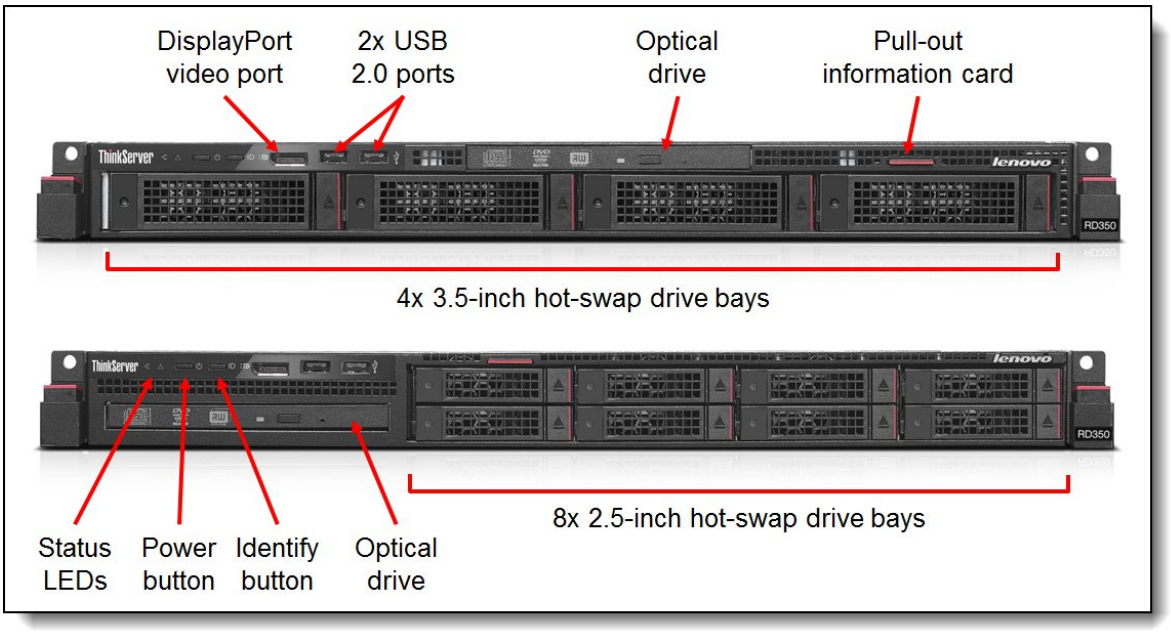

Figure 2. Front view of the ThinkServer RD350 (3.5-inch drive-bay and 2.5-inch drive-bay models)

The following figure shows the rear of the RD350 server.

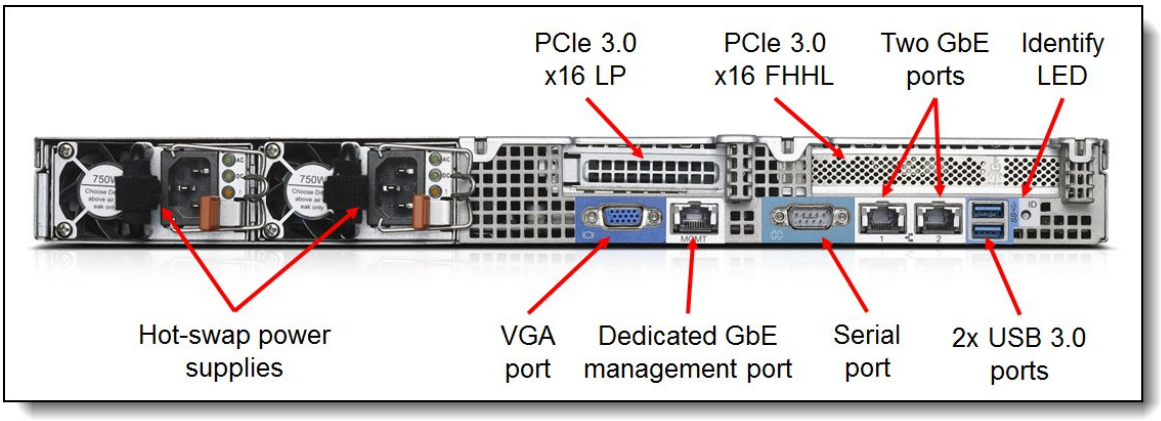

Figure 3. Rear view of the ThinkServer RD350

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

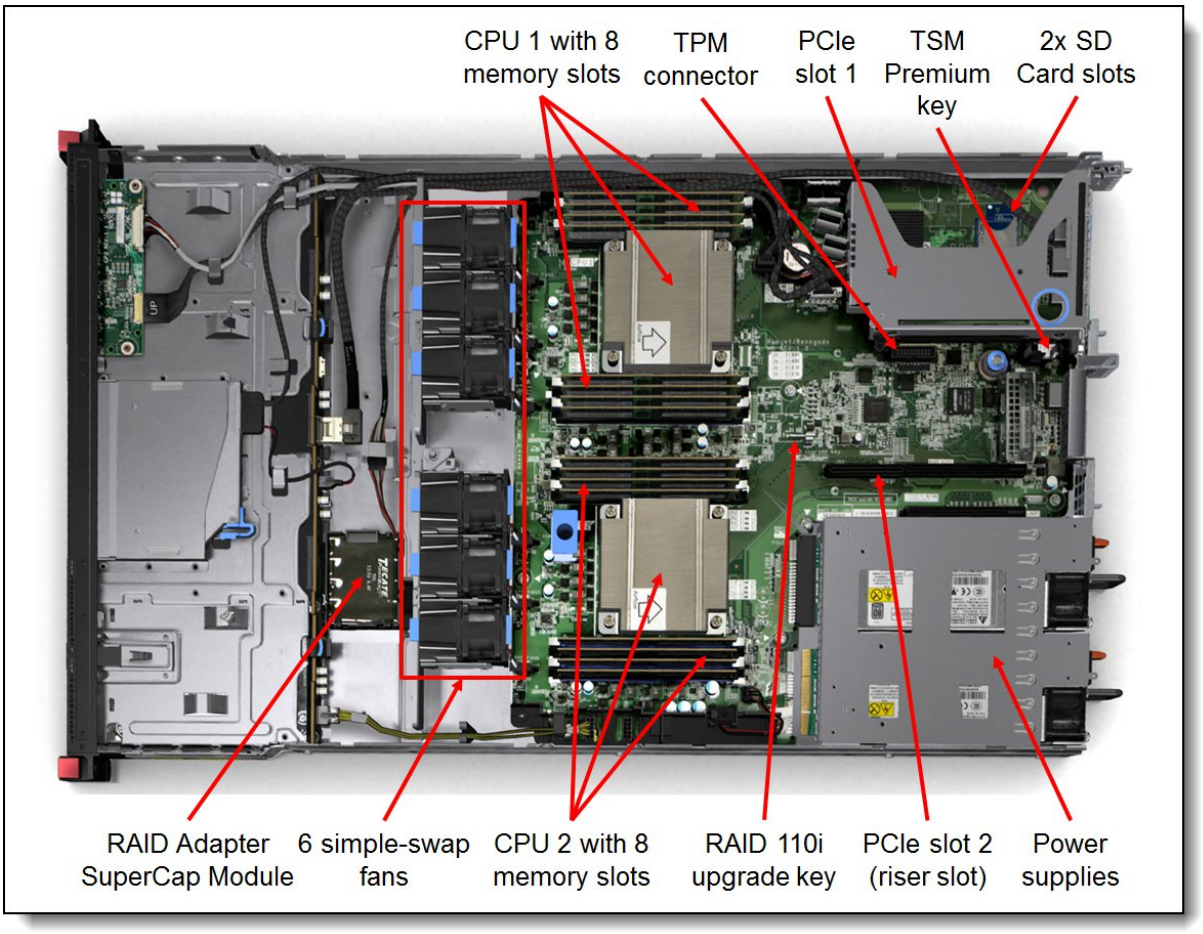

Figure 4. Inside view of the ThinkServer RD350

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine type	70D6, 70D7, 70D8, and 70D9
Form factor	1U Rack.
Processor	Up to two Intel Xeon E5-2600 v3 Series CPUs, with up to 105 W SKUs and up to 12 cores per CPU
Chipset	Intel C610
Memory	Up to 16 DDR4 DIMM sockets (8 DIMMs per processor). RDIMMs and Load Reduced (LR)-DIMMs are supported. Memory types cannot be intermixed. Memory speed up to 2133 MHz
Memory maximums	• With RDIMMs: Up to 512 GB with 16x 32 GB RDIMMs and two processors • With LRDIMMs: Up to 1024 GB with 16x 64 GB LRDIMMs and two processors
Memory protection	ECC, Patrol Scrubbing, Demand Scrubbing, Sparing, Mirroring, and Lockstep Mode
Disk drive bays	Up to 8x 2.5" hot-swap SAS/SATA HDDs, or up to 4x 3.5" hot-swap SAS/SATA HDDs

Components	Specification
Maximum internal storage	Up to 9.6 TB with 8x 1.2 TB 2.5" SAS HDDs, or up to 48 TB with 4x 12 TB 3.5" NL SAS/SATA HDDs. Intermix of SAS/SATA is supported.
Storage controller	Embedded RAID110i JBOD 6 GB SATA RAID 0/1/10 with optional RAID 5 via an upgrade key installed on the system board Optional advanced RAID adapter installs in PCIe slot 1: • RAID500 6 Gb SAS & SATA RAID JBPD/0/1/10 w/ optional RAID 5 and 50 • RAID710 6 Gb SAS & SATA RAID 0/1/5/6/10/50/60 w/ 1 GB cache and optional CacheVault / CacheCade / FastPath
Optical drive bays	One optional slimline drive, standard in some models. Support for DVD-ROM or Multiburner.
Tape drive bays	None.
Network interfaces	Two integrated RJ-45 Gigabit Ethernet 1000BASE-T ports (Intel i210) for the operating system, Port 1 can be configured as shared with with systems management. Dedicated Gigabit Ethernet port for systems management
PCI Expansion slots	Up to two slots, depending on the riser cards installed. The slots are as follows: • Slot 1: PCIe 3.0 x16 half-length full-height • Slot 2: PCIe 3.0 x16 half-length low-profile (requires the second processor to be installed)
Ports	• Front: 2x USB 2.0 and 1x DisplayPort video. Optional DisplayPort to VGA dongle, part number 4X90F92980 • Rear: 2x USB 3.0, 1x DB-15 VGA video, 1x RJ-45 systems management, 2x RJ-45 GbE network ports, 1x DB-9 serial port • Internal: 2x SD Card slots (supporting SDHC cards; for embedded hypervisor)
Cooling	Up to 6 simple-swap (non-hot-swap) redundant fans: • With 1 processor: 4 fans (3 + 1 redundant) • With 2 procesosrs: 6 fans (5 + 1 redundant)
Power supply	Up to two redundant hot-swap 450W, 550 W, or 750 W High Efficiency Platinum AC power supplies (all 110-240V), or 750 W High Efficiency Titanium AC power supply (220-240V)
Hot-swap parts	Hard drives and power supplies
Systems management	Unified Extensible Firmware Interface (UEFI), Onboard Aspeed AST2400 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC). Supports ThinkServer management software: • ThinkServer System Manager (TSM) • ThinkServer System Manager Premium (adds iKVM remote control and remove media) • ThinkServer Deployment Manager • ThinkServer Energy Manager (activated with TSM Premium) • Partner Pack for Microsoft System Center Operations Manager • Partner Pack for VMware vCenter
Security features	Power-on and administrator password. Optional Trusted Platform Module (TPM) 2.0 or 1.2. Chassis intrusion switch standard on some models, not available on others.

Components	Specification
Video	Onboard Aspeed AST2400 with 16MB memory, one DisplayPort on front, one VGA on rear. Maximum resolution: 1920x1200@60Hz
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi, Citrix XenServer. See the Operating system support section for specifics.
Limited warranty	One or three-year limited onsite service with 9x5/Next Business Day
Service and support	Optional service upgrades are available through Lenovo Services
Dimensions	Height: 43 mm (1.7 in), width: 482 mm (19 in), depth: 782 mm (30.8 in)
Weight	Minimum configuration: 13 kg (28.7 lb), maximum: 19.1 kg (42.1 lb)

Standard models - US & Canada

The following table lists the models of the RD350 available in USA and Canada.

All models in this table have:

- No chassis intrusion switch
- Slides rail kit
- 3 year on-site warranty

Table 2. Models for USA and Canada

Model	Processor	Memory	RAID	Drives	NIC	I/O slots std/max	Optical	Power supply	TPM key	TSM key
Models with 4x 3.5-inch hot-swap drive bays										
70D6001YUX	1x E5-2603 v3 1.60 GHz	1x 4GB	RAID 110i	Open	2x GbE	0 / 2	DVD R/W	1x 550W	Std	Opt
70D60020UX	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D60021UX	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D60023UX	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D60024UX	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D60025UX	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D60026UX	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D60035UX	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	1 TB*	2x GbE	1 / 2	DVD R/W	2x 750W	Std	Std
70D70002UX	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
Models with 8x 2.5-inch hot-swap drive bays										
70D8001TUX	1x E5-2603 v3 1.60 GHz	1x 4GB	RAID 110i	Open	2x GbE	0 / 2	DVD R/W	1x 550W	Std	Opt
70D8001UUX	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D8001VUX	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D8001WUX	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D8001XUX	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D8001YUX	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D80020UX	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D80021UX	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D90002UX	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Opt	Opt

* Standard drive is 1 TB 6Gb SATA 7200 RPM HDD

Refer to the Standard specifications section for information about standard features of the server.

Standard models - EMEA

The following table lists the models of the RD350 available in countries in Europe, Middle East and Africa (EMEA).

All models in this table have:

- Chassis intrusion switch standard
- Slides rail kit
- 1 year or 3 year on-site warranty as indicated

Table 3. Models for EMEA

Model	Processor	Memory	RAID	Drives	NIC	I/O slots (sth/max)	Optical	Power supply	W'ty	TPM key	TSM key
Models with 4x 3.5-inch hot-swap drive bays											
70D60000EA	1x E5-2609 v3 1.90 GHz	1x 4GB	RAID 110i+R5	Open	2xGbE	1 / 2	DVD R/W	1x450W	3 Yr	Std	Std
70D60001EA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	2x450W	3 Yr	Std	Std
70D60002EA	1x E5-2650 v3 2.30 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	2x450W	3 Yr	Std	Std
70D60007EA	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D60008EA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D60009EA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000AEA	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000BEA	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000CEA	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000DEA	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000EEA	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000FEA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000GEA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000HEA	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000JEA	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000KEA	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000LEA	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D6000MEA	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000NEA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000PEA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std

Model	Processor	Memory	RAID	Drives	NIC	I/O slots (sth/max)	Optical	Power supply	W'ty	TPM key	TSM key
70D6000QEA	1x E5-2603 v3 1.60 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000REA	1x E5-2609 v3 1.90 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000SEA	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000TEA	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000UEA	2x E5-2640 v3 2.60 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	2 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000VEA	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D6000WEA	2x E5-2650 v3 2.30 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	2 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D60036EA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x450W	3 Yr	Opt	Opt
Models with 8x 2.5-inch hot-swap drive bays											
70D80000EA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x550W	3 Yr	Std	Std
70D80001EA	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x550W	3 Yr	Std	Std
70D80003EA	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D80004EA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D80005EA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D80006EA	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D80007EA	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D80008EA	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D80009EA	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000AEA	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000BEA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000CEA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000DEA	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000EEA	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000FEA	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000GEA	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 500	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Opt
70D8000HEA	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std

Model	Processor	Memory	RAID	Drives	NIC	I/O slots (sth/max)	Optical	Power supply	W'ty	TPM key	TSM key
70D8000JEA	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000KEA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000LEA	1x E5-2603 v3 1.60 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000MEA	1x E5-2609 v3 1.90 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000NEA	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000PEA	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000QEA	2x E5-2640 v3 2.60 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	2 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000REA	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	1 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D8000SEA	2x E5-2650 v3 2.30 GHz	1x 8GB	RAID 710+CV	Open	2xGbE	2 / 2	DVD R/W	1x750W	1 Yr	Opt	Std
70D80022EA	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2xGbE	1 / 2	DVD R/W	2x450W	3 Yr	Opt	Opt

Refer to the Standard specifications section for information about standard features of the server.

Standard models - China

The following table lists the models of the RD350 available in countries in China.

All models in this table have:

- Chassis intrusion switch standard on some models as indicated
- Static rail kit on some models as indicated
- Basic 3Lx3 warranty

Table 4. Models for China

Model	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TCM key	TSM key	Rail kit	Intrusion switch
Models with 4x 3.5-inch hot-swap drive bays												
70D6 0005CN	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	2TB HDD SATA	2x GbE	1 / 2	DVD ROM	1x 550W	Opt	Opt	Static	None
70D6 0006CN	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	2TB HDD SATA	2x GbE	1 / 2	DVD ROM	1x 550W	Opt	Opt	Static	None
70D7 0003CN	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 710+CV	240GB SSD SATA	6x GbE*	2 / 2†	DVD R/W	2x 450W	Std	Std	Opt	Std
Models with 8x 2.5-inch hot-swap drive bays												
70D8 0002CN	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 500	300GB HDD SAS 10K	2x GbE	1 / 2	DVD ROM	1x 550W	Opt	Opt	Static	None

* Includes ThinkServer I350-T4 PCIe 1Gb 4 Port Base-T Ethernet Adapter by Intel
† Includes PCIe 3.0 x8 riser in slot 2

Refer to the Standard specifications section for information about standard features of the server.

Standard models - Japan

The following table lists the models of the RD350 available in countries in Japan.

All models in this table have:

- No Chassis intrusion switch included
- Optional rail kit
- 1 year or 3 year on-site warranty as indicated (W'ty column)

Table 5. Models for Japan

Model	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	W'ty	TPM key	TSM key
Models with 4x 3.5-inch hot-swap drive bays											
70D70006JN	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	0 / 2	Optional	1x 450W	1 Yr	Opt	Opt
Models with 8x 2.5-inch hot-swap drive bays											
70D90004JN	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	0 / 2	Optional	1x 450W	1 Yr	Opt	Opt
70D90005JN	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	Open	2x GbE	0 / 2	Optional	1x 450W	3 Yr	Opt	Opt
70D90006JN	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	Open	2x GbE	0 / 2	Optional	1x 450W	3 Yr	Opt	Opt

Refer to the Standard specifications section for information about standard features of the server.

Standard models - Argentina, Chile, Mexico

The following table lists the models of the RD350 available in Argentina, Chile and Mexico:

All models in this table have:

- Chassis intrusion switch standard
- Slides rail kit
- 3 year on-site warranty

Table 6. Models for Argentina, Chile, Mexico

Model**	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key	SD Card
Models with 4x 3.5-inch hot-swap drive bays											
70D60012xx*	2x E5-2630 v3 2.40GHz	1x 8GB+ 1x16GB	RAID 710+CV	1 TB†	2x GbE	2 / 2	DVD R/W	1x 750W	Std	Std	8GB‡
70D60013xx*	2x E5-2620 v3 2.40GHz	1x 8GB	RAID 710+CV	1 TB†	2x GbE	2 / 2	DVD R/W	1x 750W	Std	Std	8GB‡
70D60014xx	1x E5-2603 v3 1.60GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 450W	Std	Opt	Opt
70D60015xx	1x E5-2603 v3 1.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 450W	Std	Opt	Opt
70D60016xx	1x E5-2609 v3 1.90GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 450W	Std	Opt	Opt
70D60017xx	1x E5-2609 v3 1.90GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 450W	Std	Opt	Opt
70D60018xx	1x E5-2603 v3 1.60GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt

Model**	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key	SD Card
70D60019xx	1x E5-2603 v3 1.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Axx	1x E5-2609 v3 1.90GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Bxx	1x E5-2609 v3 1.90GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Cxx	1x E5-2603 v3 1.60GHz	1x 4GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Dxx	1x E5-2603 v3 1.60GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Exx	1x E5-2609 v3 1.90GHz	1x 4GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Fxx	1x E5-2609 v3 1.90GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Gxx	1x E5-2620 v3 2.40GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Hxx	1x E5-2620 v3 2.40GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Jxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Kxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6001Lxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Mxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Nxx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Pxx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Qxx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Rxx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Sxx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Txx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Uxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Vxx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Wxx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D6001Xxx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D60027xx	1x E5-2623 v3 3.00GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D60028xx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt

Model**	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key	SD Card
70D60029xx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D6002Axx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt	Opt
70D60032xx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D60033xx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
70D60034xx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt	Opt
Models with 8x 2.5-inch hot-swap drive bays											
70D8000Wxx*	2x E5-2630 v3 2.40GHz	1x 8GB+ 1x 16GB	RAID 710+CV	1 TB†	2x GbE	2 / 2	DVD ROM	1x 750W	Std	Std	8GB‡
70D8000Xxx*	2x E5-2620 v3 2.40GHz	1x 8GB	RAID 710+CV	1 TB†	2x GbE	2 / 2	DVD ROM	1x 750W	Std	Std	8GB‡
70D8000Yxx	1x E5-2603 v3 1.60GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 450W	Std	Opt	Opt
70D80010xx	1x E5-2603 v3 1.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 450W	Std	Opt	Opt
70D80011xx	1x E5-2609 v3 1.90GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 450W	Std	Opt	Opt
70D80012xx	1x E5-2609 v3 1.90GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 450W	Std	Opt	Opt
70D80013xx	1x E5-2603 v3 1.60GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D80014xx	1x E5-2603 v3 1.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D80015xx	1x E5-2609 v3 1.90GHz	1x 4GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D80016xx	1x E5-2609 v3 1.90GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D80017xx	1x E5-2603 v3 1.60GHz	1x 4GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D80018xx	1x E5-2603 v3 1.60GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D80019xx	1x E5-2609 v3 1.90GHz	1x 4GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D8001Axx	1x E5-2609 v3 1.90GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D8001Bxx	1x E5-2620 v3 2.40GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D8001Cxx	1x E5-2620 v3 2.40GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D8001Dxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D8001Exx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 550W	Std	Opt	Opt
70D8001Fxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Gxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt

Model**	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key	SD Card
70D8001Hxx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Jxx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Kxx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Lxx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Mxx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 110i	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Nxx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 500	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Pxx	1x E5-2630 v3 2.40GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Qxx	1x E5-2640 v3 2.60GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Rxx	1x E5-2650 v3 2.30GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt
70D8001Sxx	1x E5-2660 v3 2.60GHz	1x 8GB	RAID 710+CV	Open	2x GbE	1 / 2	DVD ROM	1x 750W	Std	Opt	Opt

** xx in the model number as follows: AC=Argentina, CB=Chile, LD=Mexico
* Mexico only
† Models include drive is 1 TB 6Gb SATA 7200 RPM HDD
‡ Models include SD Card module and 1x 8 GB SD Card

Refer to the Standard specifications section for information about standard features of the server.

Standard models - Brazil

The following table lists the models of the RD350 available in Brazil.

All models in this table have:

- Chassis intrusion switch standard on models with 3.5-inch drive bays (not included on models with 2.5-inch drive bays)
- Slides rail kit
- 3 year on-site warranty

Table 7. Models for Brazil

Model	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key
Models with 4x 3.5-inch hot-swap drive bays (all have the chassis intrusion switch standard)										
70D6002BBN	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002CBN	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002DBN	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002EBN	1x E5-2623 v3 3.00 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002FBN	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt

Model	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key
70D6002GBN	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002HBN	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002JBN	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 550W	Std	Opt
70D6002KBN	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt
70D6002LBN	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt
70D6002MBN	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt
70D6002NBN	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	1x 750W	Std	Opt
70D6002PBN	1x E5-2603 v3 1.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002QBN	1x E5-2609 v3 1.90 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002RBN	1x E5-2620 v3 2.40 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002SBN	1x E5-2623 v3 3.00 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002TBN	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002UBN	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002VBN	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002WBN	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 550W	Std	Opt
70D6002XBN	1x E5-2630 v3 2.40 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 750W	Std	Opt
70D6002YBN	1x E5-2640 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 750W	Std	Opt
70D60030BN	1x E5-2650 v3 2.30 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 750W	Std	Opt
70D60031BN	1x E5-2660 v3 2.60 GHz	1x 8GB	RAID 110i	1x 1TB†	2x GbE	1 / 2	DVD R/W	2x 750W	Std	Opt
Models with 8x 2.5-inch hot-swap drive bays (none ship with the chassis intrusion switch)										
70D80023BN	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 500	2x 300GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt
70D80024BN	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 500	1x 600GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt
70D80025BN	1x E5-2640 v3 2.60 GHz	1x 16GB	RAID 500	2x 300GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt
70D80026BN	1x E5-2640 v3 2.60 GHz	1x 16GB	RAID 500	1x 600GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt
70D80027BN	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 710+CV	2x 300GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt
70D80028BN	1x E5-2620 v3 2.40 GHz	1x 16GB	RAID 710+CV	1x 600GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt

Model	Processor	Memory	RAID	Drives	NIC	I/O slots	Optical	Power supply	TPM key	TSM key
70D80029BN	1x E5-2640 v3 2.60 GHz	1x 16GB	RAID 710+CV	2x 300GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt
70D8002ABN	1x E5-2640 v3 2.60 GHz	1x 16GB	RAID 710+CV	1x 600GB‡	2x GbE	1 / 2	DVD R/W	2x 550W	Opt	Opt

† Models include drive is 1 TB 6Gb SATA 7200 RPM HDD
‡ Drive is a 10K SAS drive (300 GB or 600 GB as stated)

Refer to the Standard specifications section for information about standard features of the server.

Processor options

The RD350 supports up to two Intel Xeon E5-2600 v3 series of processors. The following table lists the supported processor options. When two processors are installed, they must be identical.

Table 8. Processor options (TB = Turbo Boost, VT = Virtualization Technology, HT = Hyper-Threading Technology)

Part number	Description	Memory speed	TB	VT	HT
4XG0F28848	Lenovo ThinkServer RD350 Intel Xeon E5-2603 v3 (6C, 85W, 1.6GHz) Processor	1600 MHz	N	Y	N
4XG0F28847	Lenovo ThinkServer RD350 Intel Xeon E5-2609 v3 (6C, 85W, 1.9GHz) Processor	1600 MHz	N	Y	N
4XG0F28846	Lenovo ThinkServer RD350 Intel Xeon E5-2620 v3 (6C, 85W, 2.4GHz) Processor	1866 MHz	Y	Y	Y
4XG0F28863	Lenovo ThinkServer RD350 Intel Xeon E5-2623 v3 (4C, 105W, 3.0GHz) Processor	1866 MHz	Y	Y	Y
4XG0F28845	Lenovo ThinkServer RD350 Intel Xeon E5-2630 v3 (8C, 85W, 2.4GHz) Processor	1866 MHz	Y	Y	Y
4XG0F28850	Lenovo ThinkServer RD350 Intel Xeon E5-2630L v3 (8C, 55W, 1.8GHz) Processor	1866 MHz	Y	Y	Y
4XG0F28844	Lenovo ThinkServer RD350 Intel Xeon E5-2640 v3 (8C, 90W, 2.6GHz) Processor	1866 MHz	Y	Y	Y
4XG0F28843	Lenovo ThinkServer RD350 Intel Xeon E5-2650 v3 (10C, 105W, 2.3GHz) Processor	2133 MHz	Y	Y	Y
4XG0F28849	Lenovo ThinkServer RD350 Intel Xeon E5-2650L v3 (12C, 65W, 1.8GHz) Processor	2133 MHz	Y	Y	Y
4XG0F28842	Lenovo ThinkServer RD350 Intel Xeon E5-2660 v3 (10C, 105W, 2.6GHz) Processor	2133 MHz	Y	Y	Y

Xeon E5-2600 v3 improves on the older generation of processors in the following ways:

- Maximum RD350 core count is increased from 10 to 12 cores per processor from the RD340.
- Single thread count is increased from 20 to 24.
- Maximum last level per-processor cache is increased from 25 MB to 30 MB.
- Intel Quick Path Interconnect speed increases from 8.0 GT/s to 9.6 GT/s.
- Supports DDR4 memory at up to 2133 MT/s.
- Supports Trusted Execution Technology (TX).
- Supports Advanced Encryption Standard Instruction Set.

Memory options

The ThinkServer RD350 supports DDR4 memory. DDR4 memory offers many benefits over older generation DDR3 memory. DDR4 operates at a lower voltage than DDR3L (1.2V vs. 1.5V) and as a result, offers significant power savings. In addition, DDR4 memory has higher memory transfer speeds of up to 2133 MT/s, depending on the memory configuration.

Lenovo offers Registered DIMMs (RDIMM) and Load Reduced DIMMs (LR-DIMM) that use a buffer to reduce memory bus loading, which enables greater memory capacities to be achieved.

The following table lists the DDR4 memory options and ordering information.

2400 MHz memory support: the RD350 with Intel Xeon E5-2600 v3 processors supports both 2133 MHz and 2400 MHz memory options, however the 2400 MHz memory DIMMs will operate at speeds up to 2133 MHz.

Table 9. Memory Options

Part number	Description	Maximum supported*
2400 MHz memory options		
4X70G88318	Lenovo ThinkServer 8GB DDR4-2400MHz (1Rx4) RDIMM	8 / 16
4X70G88319	Lenovo ThinkServer 16GB DDR4-2400MHz (2Rx4) RDIMM	8 / 16
4X70G88320	Lenovo ThinkServer 32GB DDR4-2400MHz (2Rx4) RDIMM	8 / 16
4X70G88321	Lenovo ThinkServer 64GB DDR4-2400MHz (4Rx4) LRDIMM	8 / 16
2133 MHz memory options		
4X70F28588	Lenovo ThinkServer 4GB DDR4-2133MHz (1Rx8) RDIMM	8 / 16
4X70F28589	Lenovo ThinkServer 8GB DDR4-2133MHz (1Rx4) RDIMM	8 / 16
4X70F28590	Lenovo ThinkServer 16GB DDR4-2133MHz (2Rx4) RDIMM	8 / 16
4X70G88311	Lenovo ThinkServer 32GB DDR4-2133MHz (2Rx4) RDIMM	8 / 16
4X70F28591	Lenovo ThinkServer 32GB DDR4-2133MHz (4Rx4) LRDIMM	8 / 16

* Maximum supported with 1 processor / 2 processors installed

The server supports up to 8 DIMMs when one processor is installed and up to 16 DIMMs when two processors are installed. Each processor has four memory channels, and there are two DIMMs supported per channel. The server supports up to 1024 GB of memory at speeds up to 2133 MHz when fully populated. The actual memory speed in the system is determined as the lowest of the memory speed that is supported by the specific CPU or the maximum operating speeds for the memory configuration that is based on the number of DIMMs per channel.

ThinkServer engineering tested and validated system designs that support memory speeds beyond Intel's original plan, which provides benefits for workloads that require memory speed and density. Lenovo ThinkServer memory is fully supported up to the rated speeds that are listed in the following table.

Table 10. Memory maximums

DIMMs per channel	RDIMM		LR-DIMM	
	Memory bus speed	Maximum capacity	Memory bus speed	Maximum capacity
1 DPC	2133 MHz	256 GB (8x 32 GB)	2133 MHz	512 GB (8x 64 GB)
2 DPC	2133 MHz	512 GB (16x 32 GB)	2133 MHz	1024 GB (16x 64 GB)

Protection against data loss is provided through the following memory RAS features: ECC, Patrol and Demand Scrubbing, Sparing, Mirroring, and Lockstep Mode.

Configuration Guidelines

Memory can be configured to meet various needs and workloads subject to the following general rules:

- Mixing memory type (RDIMM, LRDIMM) is not supported.
- Mixing memory speeds (2400 MHz and 2133 MHz) is supported. 2400 MHz memory will operate at most at 2133 MHz.
- DIMM capacities and rank can be mixed.

When you are populating for the various RAS modes the following rules apply:

- If memory mirroring or lockstep is used, DIMMs must be installed in pairs (minimum of one pair per each CPU), and both DIMMs in a pair must be identical in type, size, and rank.
- If memory sparing is used, one rank of a DIMM in each populated channel is reserved as spare memory; therefore, Single Rank DIMMs cannot be used. DIMMs in a pair must be identical in type, size, and rank.

Memory Optimization

The memory subsystem can be optimized for various factors, including performance, capacity, or power consumption. Refer to the following guidelines when you are selecting memory options:

- Guidelines for maximum memory performance:
  - Use all available memory channels (four per processor, eight total per system).
  - Use identical DIMM populations in size and speed across channels.
  - Populate both processors with equal amounts of memory.
  - Use the same number of ranks that are populated per channel.
  - Have at least two ranks available on each channel.
- Guidelines for lowest memory power consumption:
  - Use fewer, higher capacity DIMMs. For example, a 8x 16 GB DIMM configuration often has lower power requirements than that of a 16x 8 GB DIMM configuration.
  - Populating more DIMMs per channel and the use of less channels (opposite of the previous guidance) reduces overall system power, but at the cost of significant performance reduction.

The following table provides guidelines for selecting memory configurations that are based on performance or capacity. For example, to achieve optimal 2133 MHz performance at a specific capacity, populate up to 16 DIMMs (up to 8 per CPU). To achieve the maximum memory capacity with the highest performance, populate up to 16 sockets with LRDIMMs.

Table 11. Memory Configuration Guidelines

Desired system capacity	Number of processors	Number of DIMMs and size	Number of channels used	Recommended DIMM type	Operating frequency	Comments
4GB	1 CPU	1x 4 GB	1 channel	RDIMM	2133 MHz	Minimum configuration for 1 CPU
8GB	1 CPU	1x 8 GB	1 channel	RDIMM	2133 MHz	Cost optimized
16GB	1 CPU	2x 8 GB	2 channel	RDIMM	2133 MHz	Cost optimized
32GB	1 CPU	8x 4 GB	4 channels	RDIMM	2133 MHz	Best throughput with one CPU
64GB	1 CPU	8x 8 GB	4 channels	RDIMM	2133 MHz	
128GB	1 CPU	8x 1 6GB	4 channels	RDIMM	2133 MHz	
256GB	1 CPU	8x 32 GB	4 channels	RDIMM	2133 MHz	
256GB	1 CPU	8x 32 GB	4 channels	RDIMM LRDIMM	1866 MHz	Highest 1 CPU capacity
32GB	2 CPU	8x 4 GB	4 channels	RDIMM	2133 MHz	Cost optimized
64GB	2 CPU	16x 4 GB	8 channels	RDIMM	2133 MHz	Best throughput with two CPUs
128GB	2 CPU	16x 8 GB	8 channels	RDIMM	2133 MHz	
192GB	2 CPU	8x 8 GB + 8x 16 GB	8 channels	RDIMM	2133 MHz	
256GB	2 CPU	16x 16 GB	8 channels	RDIMM	2133 MHz	
512GB	2 CPU	16x 32 GB	8 channels	RDIMM	2133 MHz	Highest capacity at best throughput & latency
1024 GB	2 CPU	16x 64 GB	8 channels	LRDIMM	2133 MHz	Highest capacity at best throughput & price

Internal storage

The RD350 supports chassis configurations with either 2.5-inch drive bays or 3.5-inch drive bays. The RD350 also supports an optional SD Card module which installs into a dedicated slot on the system board and supports two SDHC cards.

The 2.5-inch chassis supports configurations with up to 8 hot-swap small form factor (2.5-inch) HDDs or SSDs. All 8 bays connected via one 8-drive backplane.

Figure 5. RD350 2.5-inch Drive Bay Chassis supporting 8 hot-swap drives

The 3.5-inch chassis supports configurations with up to 4 hot-swap HDDs or SSDs. All 4 bays connected via one 4-drive backplane.

Figure 6. RD350 3.5-inch Drive Bay Chassis supporting 4 hot-swap drives

Both 2.5-inch drive bay and 3.5-inch drive bay configurations also supports one slim Optical Disk Drive.

Controllers for internal storage

The RD350 supports the internal disk controllers and controller options. For the adapter-based controllers, the adapter is installed in PCIe slot 1.

Table 12. RAID controllers for internal storage

Part number	Description	Maximum supported	Slots supported
Controller			
Embedded	ThinkServer RAID 110i controller	1	-
4XB0G45758	ThinkServer RD350,RD450 RAID 500 PCIe Adapter	1	1
4XB0G45760	ThinkServer RD350,RD450 RAID 710 PCIe Adapter	1	1
4XC0G88834	ThinkServer Gen5 RAID 500 PCIe Adapter	1	1
4XC0G88836	ThinkServer Gen 5 RAID 710 PCIe Adapter	1	1
Upgrades for the ThinkServer RAID 110i controller			
4XB0F28690	ThinkServer RAID 110i RAID 5 Upgrade (hardware key)	1	-
Upgrades for the ThinkServer RAID 500 adapter			
4XB0G45759	ThinkServer RD350,RD450 RAID 500 RAID 5 Upgrade	1	-
4XC0G88835	ThinkServer RAID 500 RAID 5 Upgrade	1	-
Upgrades for the ThinkServer RAID 710 adapter			
4XB0F28701	ThinkServer RAID FastPath Key	1	-
4XB0F28702	ThinkServer RAID CacheCade Pro 2.0 Key	1	-
4XB0G45761	ThinkServer CacheVault Data Protection Upgrade II (SuperCap-based backup unit)	1	-

The ThinkServer RAID 110i has the following specifications:

- Embedded RAID controller (LSI firmware stack) integrated into the Intel C610 PCH chipset
- Supports light workloads with low CPU utilization.
- Supports 6Gbps SATA HDDs and SATA SSDs only (no SAS support)
- RAID 0, 1, 10 standard
- RAID 5 support with optional upgrade key

Notes:

1. RAID support only with 6 drives; remaining 2 drives (if installed) must be configured as single drives (AHCI mode)
2. Hypervisors such as ESXi, Xen, and Hyper-V do not support the RAID 110i

The ThinkServer RAID 500 has the following specifications:

- Based on the LSI MegaRAID SAS 9240-8i
- LSI SAS2008 chipset
- Two Mini-SAS SFF8087 connectors
- PCIe 2.0 x8 host interface
- Supports 6 Gbps SAS & SATA, HDDs & SSDs
- RAID 0, 1, 10
- RAID 5 and 50 with optional upgrade key that mounts on the adapter

The ThinkServer RAID 710 has the following specifications:

- Based on the LSI MegaRAID SAS 9270-8i
- LSI SAS2208 Dual-Core chipset
- Two Mini-SAS SFF8087 connectors
- 1 GB onboard cache
- PCIe 3.0 x8 host interface
- Supports 6 Gbps SAS & SATA, HDDs & SSDs
- RAID 0, 1, 10, 5, 50, 6, 60 standard
- Optional CacheVault flash cache protection module
- Optional FastPath and CacheCade performance upgrades

Internal drive options

The following tables list the hard disk drive and solid-state drive options for the internal disk storage of the server.

Table 13. 2.5-inch hot-swap 12 Gb SAS/SATA HDDs

Part number	Description	Maximum supported
2.5-inch hot-swap HDDs - 12 Gb SAS 10K		
4XB0G88732	ThinkServer Gen 5 2.5" 300GB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	8
4XB0G88734	ThinkServer Gen 5 2.5" 600GB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	8
4XB0G88735	ThinkServer Gen 5 2.5" 900GB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	8
4XB0G88736	ThinkServer Gen 5 2.5" 1.2TB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	8
4XB0G88737	ThinkServer Gen 5 2.5" 1.8TB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	8
2.5-inch hot-swap HDDs - 12 Gb SAS 15K		
4XB0G88739	ThinkServer Gen 5 2.5" 300GB 15K Enterprise SAS 12Gbps Hot Swap Hard Drive	8
4XB0G88765	ThinkServer Gen 5 2.5" 600GB 15K Enterprise SAS 12Gbps Hot Swap Hard Drive	8

Table 14. 2.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Description	Maximum supported
2.5-inch hot-swap HDDs - 6 Gb NL SATA		
4XB0G45721	ThinkServer Gen 5 2.5" 1TB 7.2K Enterprise SATA 6Gbps Hot Swap Hard Drive	8
4XB0G88774	ThinkServer Gen 5 2.5" 2TB 7.2K Enterprise SATA 6Gbps Hot Swap HardDrive	8

Table 15. 2.5-inch hot-swap 12 Gb SAS/SATA SSDs

Part number	Description	Maximum supported
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Mainstream (3-5 DWPD)		
4XB0K12258	ThinkServer 2.5" 400GB PM1635 Enterprise Mainstream 12Gb SAS Hot Swap Solid State Drive	8
4XB0K12259	ThinkServer 2.5" 800GB PM1635 Enterprise Mainstream 12Gb SAS Hot Swap Solid State Drive	8
4XB0K12260	ThinkServer 2.5" 1.6TB PM1635 Enterprise Mainstream 12Gb SAS Hot Swap Solid State Drive	8

Table 16. 3.5-inch hot-swap 12 Gb SAS/SATA HDDs

Part number	Description	Maximum supported
3.5-inch hot-swap HDDs - 12 Gb SAS 15K		
4XB0G88740	ThinkServer Gen 5 3.5" 300GB 15K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
4XB0G88746	ThinkServer Gen 5 3.5" 600GB 15K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
3.5-inch hot-swap HDDs - 12 Gb SAS 10K		
4XB0G88733	ThinkServer Gen 5 3.5" 300GB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
4XB0G88761	ThinkServer Gen 5 3.5" 600GB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
4XB0G88762	ThinkServer Gen 5 3.5" 900GB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
4XB0G88763	ThinkServer Gen 5 3.5" 1.2TB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
4XB0G88738	ThinkServer Gen 5 3.5" 1.8TB 10K Enterprise SAS 12Gbps Hot Swap Hard Drive	4
3.5-inch hot-swap HDDs - 12 Gb NL SAS		
4XB0G88730	ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SAS 12Gbps Hot Swap Hard Drive (512e)	4
4XB0G88731	ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SAS 12Gbps Hot Swap Hard Drive (512e)	4
4XB0G88715	ThinkServer Gen 5 3.5" 6TB 7.2K Enterprise SAS 12Gbps HS HDD (512e)	4
4XB0K12254	ThinkServer Gen 5 3.5" 8TB 7.2K Enterprise SAS 12Gbps Hot Swap Hard Drive (512e)	4
4XB0K12312	ThinkServer Gen 5 3.5" 10TB 7.2K Enterprise SAS 12Gbps HS 512e HDD	4
4XB0K12270	ThinkServer Gen5 3.5" 1TB 7.2K Enterprise SAS 12Gbps HS HDD (512n)	4
4XB0K12278	ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SAS 12Gbps HS HDD (512n)	4
4XB0K12279	ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SAS 12Gbps HS HDD (512n)	4

Table 17. 3.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Description	Maximum supported
3.5-inch hot-swap HDDs - 6 Gb NL SATA		
4XB0F28712	ThinkServer Gen 5 3.5" 1TB 7.2K Enterprise SATA 6Gbps Hot Swap Hard Drive	4
4XB0F28713	ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SATA 6Gbps Hot Swap Hard Drive	4
4XB0G45715	ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SATA 6Gbps Hot Swap Hard Drive	4
4XB0G88713	ThinkServer Gen 5 3.5" 6TB 7.2K Enterprise SATA 6Gbps HS HDD	4
4XB0K12255	ThinkServer Gen 5 3.5" 8TB 7.2K Enterprise SATA 6Gbps HS HDD	4
4XB0K12313	ThinkServer Gen 5 3.5" 10TB 7.2K Enterprise SATA 6Gbps HS 512e HDD	4
4XB0N68532	ThinkServer Gen 5 3.5" 12TB 7.2K Enterprise SATA 6Gbps Hot Swap 512e HDD	4

Table 18. 3.5-inch hot-swap 12 Gb SAS/SATA SSDs

Part number	Description	Maximum supported
3.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Mainstream (3-5 DWPD)		
4XB0K12261	ThinkServer 3.5" 400GB PM1635 Enterprise Mainstream 12Gb SAS Hot Swap Solid State Drive	4
4XB0K12262	ThinkServer 3.5" 800GB PM1635 Enterprise Mainstream 12Gb SAS HS SSD	4
4XB0K12263	ThinkServer 3.5" 1.6TB PM1635 Enterprise Mainstream 12Gb SAS Hot Swap Solid State Drive	4

Table 19. 3.5-inch easy-swap 12 Gb SAS/SATA HDDs

Part number	Description	Maximum supported
3.5-inch easy-swap HDDs - 12 Gb NL SAS		
4XB0K12290	ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SAS 12Gbps EasySwap Hard Drive	4
4XB0K12291	ThinkServer Gen 5 3.5" 4TB 7.2K Enterprise SAS 12Gbps EasySwap Hard Drive	4
4XB0K12292	ThinkServer Gen 5 3.5" 6TB 7.2K Enterprise SAS 12Gbps EasySwap Hard Drive	4

Table 20. 3.5-inch easy-swap 6 Gb SAS/SATA HDDs

Part number	Description	Maximum supported
3.5-inch easy-swap HDDs - 6 Gb NL SAS		
4XB0K12286	ThinkServer Gen 5 3.5" 1TB 7.2K Enterprise SAS 6Gbps EasySwap Hard Drive	4
3.5-inch easy-swap HDDs - 6 Gb NL SATA		
4XB0F28708	ThinkServer Gen 5 3.5" 1TB 7.2K Enterprise SATA 6Gbps Easy Swap Hard Drive	4
4XB0F28709	ThinkServer Gen 5 3.5" 2TB 7.2K Enterprise SATA 6Gbps Easy Swap Hard Drive	4
4XB0K12314	ThinkServer Gen 5 3.5" 10TB 7.2K Enterprise SATA 6Gbps EasySwap 512e HDD	4
4XB0N68534	ThinkServer Gen 5 3.5" 12TB 7.2K Enterprise SATA 6Gbps NHS 512e HDD	4

SD Card storage options

The RD350 also supports SD memory cards, which can be used to boot the operating system. The RD350 supports two SD memory cards via an optional module that is connected to USB ports on the system board. SD cards can be configured redundantly by using the operating system. The SD cards are enabled via a USB port from the system board Platform Controller Hub (PCH), and do not require a RAID controller.

Table 21. SD Card options

Part Number	Description
4XF0G88933	ThinkServer SDHC Flash Assembly Module (supports 2 SDHC cards)
4X70F28592	ThinkServer 8GB SD Card
4X70F28593	ThinkServer 32GB SD Card

Internal backup units

The RD350 server does not support internal tape drive options or other internal backup units. However, it can be attached to the external tape drives using SAS or Fibre Channel connectivity

Optical drives

The RD350 server supports the optical drive options listed in the following table.

Table 22. Optical drives

Part number	Description	Maximum supported
4XA0G88616	9.5mm Ultra-Slim SATA DVD RW	1
4XA0G88617	9.5mm Ultra-Slim SATA DVD-ROM	1
4XA0F28609	ThinkServer RD350,RD450 Slim SATA DVD-RW Optical Disk Drive	1
4XA0F28610	ThinkServer RD350,RD450 Slim SATA DVD-ROM Optical Disk Drive	1

I/O expansion options

The RD350 supports up to two PCIe slots, each on a riser card:

- Slot 1: Full height/half length, PCIe 3.0 x16
- Slot 2: Low Profile, PCIe 3.0 x8 or PCIe 3.0 x16 (x16 slot requires the second processor to be installed)

If a RAID adapter is selected, it is installed in slot 1.

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

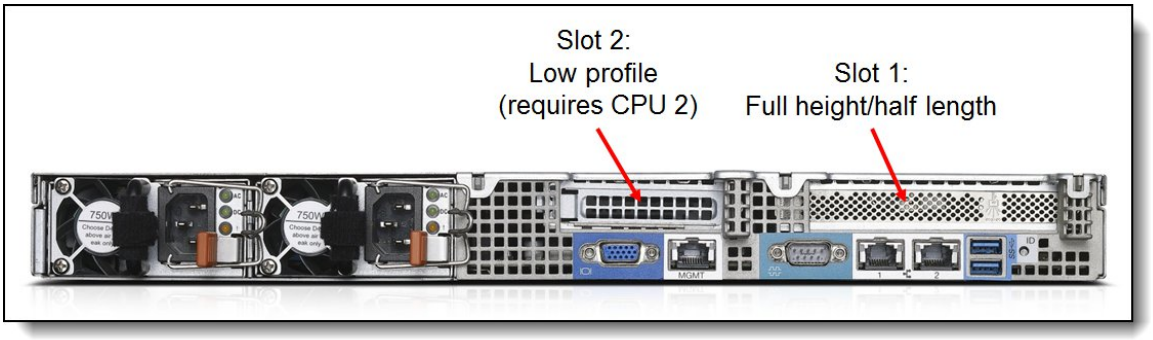

Figure 7. PCIe slot locations

Two riser cards are available for the RD350 as listed in the following table. The x16 riser card can be used in both slot 1 and slot 2 however, when the x16 riser is installed in slot 2, the second processor must be installed. The x8 riser card can be installed in slot 2 without requiring the second processor be installed. The x8 riser offers one PCIe 3.0 x8 slot using a x16 mechanical connector.

Table 23. Riser card option

Part number	Description	Maximum supported
4XF0G45896	ThinkServer RD350 x16 PCIe Riser 1 Kit One PCIe 3.0 x16 slot (x16 mechanical) Can be used in either slot 1 or slot 2, however use in slot 2 requires second CPU	2
4XC0G88823	ThinkServer RD350 x8 PCIe Riser Kit for single CPU One PCIe 3.0 x8 slot (x16 mechanical) For use in slot 2 but does not require second CPU	1

Network adapters

The RD350 supports two integrated Gigabit Ethernet ports controlled by a single integrated network interface controller (NIC):

- Based on the Intel i210 controller
- Two Gigabit Ethernet ports
- NIC Teaming (load balancing and failover)
- Port 1 supports NCSI to enable shared access to the management controller
- Supports Wake-on-LAN (WOL)
- Ethernet features:
  - Compliant with 1 Gb Ethernet IEEE 802.3, 802.3u, and 802.3ab PHY specifications
  - Integrated PHY for 10/100/1000 Mbps for multispeed, full, and half-duplex auto-negotiation
  - Automatic MDI crossover
  - IEEE 802.3x-compliant flow control support
  - IEEE 1588 protocol and 802.1AS time synchronization implementation
  - IEEE802.3az - Energy Efficient Ethernet (EEE)
  - IEEE 802.1q Virtual Local Area Network (VLAN) tagging support
- Stateless offload and performance features:
  - TCP, IP, and User Datagram Protocol (UDP) checksum offload
  - TCP segmentation offload (TCO)
  - Large Send Offload (LSO)
  - Receive Side Scaling (RSS) and Transmit Side Scaling (TSS)
  - Message Signal Interrupt (MSI) and Message Signal Interrupt Extension (MSI-X) support
  - Support for jumbo frames up to 9600 bytes

Note: iSCSI offload and iSCSI boot are not supported

The following table lists additional supported network adapters.

Table 24. Network adapters

Part number	Description	Maximum supported (1 CPU / 2 CPU)
1 Gb Ethernet		
4XC0F28730	ThinkServer I350-T2 PCIe 1Gb 2 Port Base-T Ethernet Adapter by Intel	2 / 2
4XC0F28731	ThinkServer I350-T4 PCIe 1Gb 4 Port Base-T Ethernet Adapter by Intel	2 / 2
10 Gb Ethernet		
4XC0F28732	ThinkServer X540-T2 PCIe 10Gb 2 Port Base-T Ethernet Adapter by Intel	2 / 2
4XC0F28733	ThinkServer X520-SR2 PCIe 10Gb 2 Port SFP+ Ethernet Adapter by Intel	2 / 2
4XC0F28734	ThinkServer X520-DA2 PCIe 10Gb 2 Port SFP+ Ethernet Adapter by Intel	2 / 2
4XC0G88855	ThinkServer X550-T1 PCIe 10Gb 1 Port Base-T Ethernet Adapter by Intel	2 / 2
4XC0G88856	ThinkServer X550-T2 PCIe 10Gb 2 Port Base-T Ethernet Adapter by Intel	2 / 2
4XC0G88852	ThinkServer X710-DA2 PCIe 10Gb 2 port Ethernet Adapter by Intel	2 / 2
4XC0G88854	ThinkServer X710-DA4 PCIe 10Gb 4 port Ethernet Adapter by Intel	2 / 2
4XC0F28735	ThinkServer 10Gb Optical Module by Intel (for Intel SFP+ adapters)	2 per card
4XC0F28736	ThinkServer OCe14102-UX-L PCIe 10Gb 2 Port SFP+ CNA by Emulex	2 / 2
4XC0F28737	ThinkServer 10Gb Optical Module by Emulex (for OCe 14102-UX)	2 per card
4XC0F28724	ThinkServer OCe14102-NX-L PCIe10Gb 2 Port SFP+ Adapter by Emulex	2 / 2
40 Gb Ethernet		
4XC0F28738	ThinkServer OCe14401-UX-L PCIe 40Gb 1 Port QSFP+ CNA by Emulex	2
4XC0F28739	ThinkServer 40Gb Optical Module by Emulex (for OCe14401-UX)	1 per card

For more information, see the list of Product Guides in the Ethernet and IB adapters categories:
https://lenovopress.com/servers/options/ethernet
https://lenovopress.com/servers/options/infiniband

SAS adapters for external storage

The following table lists the supported SAS HBAs and RAID adapters..

Table 25. Supported SAS HBAs and RAID adapters

Part number	Description	Maximum supported (1 / 2 CPU)	Slots supported (1 / 2 CPU)
SAS HBAs			
4XB0F28703	ThinkServer 9300-8e PCIe 12Gb 8 Port External SAS Adapter by LSI	2 / 2	1, 2 / 1, 2
4XB0G88714	ThinkServer 8885e PCIe 12Gb SAS Adapter by PMC	1 / 2	1 / 1, 2
RAID controllers for external storage			
4XB0F28699	ThinkServer 9286CV-8e PCIe 6Gb 8 Port External SAS RAID Adapter by LSI	1 / 2	1 / 1, 2
Upgrades for the 9286CV-8e HBA			
4XB0F28701	ThinkServer RAID FastPath Key	1 per card	-
4XB0F28702	ThinkServer RAID CacheCade Pro 2.0 Key	1 per card	-

The following table compares the features of the RAID controllers and HBAs.

Table 25. Features of RAID controllers and SAS HBAs

Feature	9286CV-8e	9300-8e	8885e
Adapter type	RAID controller	SAS HBA	SAS HBA
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 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
Maximum number of expansion units	8	8	8
RAID levels	0/1/10/5/50/6/60	None	None
JBOD mode	No	Yes	Yes
Cache	1 GB	None	1 GB
CacheVault cache protection	Optional (4XB0G45761)	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.

Fibre Channel host bus adapters

The following table lists the supported Fibre Channel HBAs.

Table 26. FC host bus adapters

Part number	Description	Maximum supported (1 / 2 CPU)	Slots supported (1 / 2 CPU)
Fibre Channel - 16 Gb			
4XB0F28705	ThinkServer LPe16002B-M6-L PCIe 16Gb 2 Port Fibre Channel Adapter by Emulex	1 / 2	1 / 1, 2
4XB0F28702	ThinkServer LPe1600B-M6-L PCIe 16Gb 1 port Fibre Channel Adapter by Emulex	2 / 2	1, 2 / 1, 2
4XC0F28745	ThinkServer QLE2672 PCIe 16Gb 2 Port Fibre Channel Adapter by QLogic	1 / 2	1 / 1, 2
Fibre Channel - 8 Gb			
4XB0F28704	ThinkServer LPe16002B-M8-L PCIe 8Gb 2 Port Fibre Channel Adapter by Emulex	1 / 2	1 / 1, 2
4XB0F28701	ThinkServer LPe16000B-M8-L PCIe 8Gb 1 port Fibre Channel Adapter by Emulex	2 / 2	1, 2 / 1, 2
0C19476	ThinkServer LPe1250 Single Port 8Gb Fibre Channel HBA by Emulex	2 / 2	1, 2 / 1, 2

For more information, see the list of Product Guides in the Host bus adapters category:
https://lenovopress.com/servers/options/hba

PCIe Flash Storage adapters

The RD350 currently does not support PCIe Flash Storage adapters.

GPU adapters

The RD350 currently does not support any GPU adapters.

Power supplies

Power supplies that are available for the RD350 are highly efficient with 80 Plus Platinum and Titanium supplies. Several power supply options are available and they can be selected to match the workload and configuration of the server for even greater efficiencies. All power supplies that are used in the RD350 are common across the ThinkServer next-generation server portfolio, which simplifies management across large installations.

Power supplies are auto-sensing and support both 110V and 220V AC power. In China only, the power supplies also support 240V DC. The power supplies feature a line-cord retention mechanism to prevent unintended disconnects.

The server ships with power cords.

The available power supply options for RD350 (including their operating characteristics, efficiency ratings and ordering information) are listed in the following table.

Table 27. Power supply options

Part number	Power rating	80 PLUS rating	Voltage range	Efficiency at rated load - 110V			Efficiency at rated load - 220V		
				20%	50%	100%	20%	50%	100%
4X20G87845	450 W	Platinum	100 - 240 AC	90%	92%	89%	90%	94%	91%
4X20F28579	550 W	Platinum	100-240 AC	90%	92%	89%	89%	94%	91%
4X20F28575	750 W	Platinum	100 - 240 AC	90%	92%	89%	90%	94%	91%
4X20F28576	750 W	Titanium	200 - 240 AC	No support	No support	No support	94%	96%	91%

Use the ThinkServer Power Planner to estimate power usage for a specific configuration: http://support.lenovo.com/us/en/downloads/ds101155

Configuration rules:

- 1 or 2 powers supplies are supported.
- If two power supplies are installed, they must be identical
- If two power supplies are installed, they form a redundant pair
- Both active-active and active-passive forms of redundancy are supported and they are configurable through IPMI (command-line interface)

Each power supply option ships standard with one power cable. Cables can be ordered if needed (see the following table).

Table 28. Power cables

Part number	Description
4X90F92964	ThinkServer C13-C14 WW 250V 10A 1.8m Jumper Cord
4X90F92965	ThinkServer C13-NEMA_5-15P US 125V 10A 1.8m Power Cord
4X90F92966	ThinkServer C13-JIS_C8303 Japan 125V 7A 1.8m Power Cord
4X90F92967	ThinkServer C13-KSC_8305 Korea 250V 7A 1.8m Power Cord
4X90F92968	ThinkServer C13-CNS_690 Taiwan 125V 7A 1.8m Power Cord
4X90F92969	ThinkServer C13-IS_1293 India 250V 6A 1.8m Power Cord
4X90F92970	ThinkServer C13-BS_1363A UK 250V 10A 1.8m Power Cord
4X90F92971	ThinkServer C13-DK_2.5A Denmark 250V 10A 1.8m Power Cord
4X90F92972	ThinkServer C13-SEV_1011 Switzerland 250V 10A 1.8m Power Cord
4X90F92973	ThinkServer C13-SI_32 Israel 250V 10A 1.8m Power Cord
4X90F92974	ThinkServer C13-CEE_7.7 Europe 250V 10A 1.8m Power Cord
4X90F92975	ThinkServer C13-CE123_50 Italy 250V 10A 1.8m Power Cord
4X90F92976	ThinkServer C13-NRB_14136 Brazil 250V 10A 1.8m Power Cord
4X90F92977	ThinkServer C13-IRAM_2073 LA 250V 10A 1.8m Power Cord
4X90F92978	ThinkServer C13-SABS_164 South Africa 250V 6A 1.8m Power Cord
4X90F92979	ThinkServer C13-AS3112_3 ANZ 250V 10A 1.8m Power Cord
4X90F92981	ThinkServer C13-GB 1002 PRC 250v 10A 1.8m Power Cord

Integrated virtualization

The RD350 offers an optional SD Card solution for operating systems. See section " SD Card storage options" for information.

Systems management

A significant factor in the total cost of a server’s ownership is the processes that are used for administering the system hardware, software, and support over the life of the server. Lenovo’s ThinkServer system management offerings are based on industry standards, which enable integration into existing IT environments. Lenovo’s tools emphasize provisioning and operational management, which is a large portion of the system cost. Optional upgrades provide more management capabilities to optimize performance and usage of the servers.

Deployment

Embedded within every Lenovo next-generation ThinkServer system, ThinkServer Deployment Manager is a tools suite that provides a complete set of provisioning capabilities from a single interface. ThinkServer Deployment Manager automates many of the tasks that are associated with server provisioning, including hardware configuration, operating system deployment, device driver (for operating system installation), firmware updates, and server cloning. Because ThinkServer Deployment Manager is integrated into the UEFI pre-boot environment, the tools operate independently of the server and are available regardless of system’s operational state. Formatting a system drive or reinstalling the operating system does not remove the tools, and there are no CDs or DVDs to retrieve or store, which affects user experience or productivity.

Remote Systems Management

ThinkServer System Manager (TSM) is Lenovo's integrated systems management technology is standard on all next-generation ThinkServer systems. TSM operates independently of the server. It provides hardware-based, out-of-band remote access and management to ThinkServer systems, regardless of the server's power state or the condition of the operating system.

TSM is a fully featured management solution that is built on open industry standards that can help reduce related IT expenses by increasing a server administrator's productivity. TSM provides important health and status information to systems administrators. It also enables administrators to remotely perform most functions that otherwise require a visit to the server.

TSM can be used as part of any server systems management infrastructure and is well-suited for customers who are deploying servers in remote branches, limited-access data centers, and where one-on one remote-control capability is required. Lenovo's design advancements address key system management concerns. In particular, TSM is a low-cost solution that supports heterogeneous environments, provides full remote management capability, and supports remote deployment.

TSM offers the following choices in management Ethernet connections that are configurable in BIOS or the TSM:

- Shared:
  - Port zero on any Ethernet AnyFabric mezzanine card is supported
  - VLANs supported to provide separation between in-band network and TSM
  - 10 Mbps maximum TSM bandwidth on 1 GbE mezzanine cards
  - 100 Mbps maximum TSM bandwidth on 10 GbE mezzanine cards
- Dedicated:
  - Uses separate network port
  - Provides complete physical separation between Mezzanine 0 and TSM
  - 1 Gbps maximum TSM bandwidth

TSM provides the following key features:

- Remote server management through the following industry standard interfaces:
  - Secure HTML5 web browser GUI that is suitable for today's mobile devices and tablets
  - IPMI 2.0
  - DCMI 1.0
  - WS-MAN
  - SMASH-CLP
  - SNMP v3 (Gets only)
- A PowerShell CLI provides increased flexibility and scripting capabilities
- Automatic out-of-band notification and alerts from:
  - SNMP Traps
  - SMTP (email)
  - CIM indications
- Configurable via web and PowerShell CLI, IPMI, WS-Man, and SMASH-CLI interfaces

ThinkServer System Manager Premium, which is available as an optional hardware upgrade key, enables the following advanced features:

- A remote console that provides complete remote control of the server. A video viewer enables graphical console, keyboard, and mouse redirection of the server.
- Remote media capability that enables the attachment of local CD-ROMs, DVD-ROMs, USB mass storage devices, ISO images, and IMG images (which are created from local folders) to the remote server.
- Support for power monitoring and management with the separately available ThinkServer Energy Manager tool. Energy Manager is a stand-alone, web-based, power management console that enables you to observe, plan, and manage server power usage to decrease power and cooling needs, which helps to lower your total cost of ownership. Energy Manager uses TSM to capture real-

time power and temperature data from the ThinkServer system, which analyzes the data to optimize server power consumption and workload placement and provides controls to limit the maximum server power that is used.

The following table lists ThinkServer System Manager Premium ordering information.

Table 29. ThinkServer System Manager Premium

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

ThinkServer Energy Manager

Lenovo ThinkServer Energy Manager (TEM) provides power management for servers, which enables server density and data center capacity to be increased through use of power capping.

TEM is an agent-less, web-based console that tracks and analyzes real-time power usage and thermal data for servers and other supported devices in the data center. With this data, administrators can plan and manage server power and cooling. By using built-in intelligence, TEM identifies power usage trends, ideal power settings, and cooling analysis so that you can develop power-saving usage policies that adjust server power caps that are based on server utilization, business conditions, and power usage trends. When a user-defined power or temperature threshold is reached, an alert can be generated to inform you of the event. An emergency feature can automatically help maintain business continuity; when power outages or temperature events occur, TEM can dynamically cap power to shed load and distribute remaining power to servers that are prioritizing business-critical workloads.

With the ability to monitor, analyze, and control the power and cooling of Lenovo and non-Lenovo servers, TEM enables you to take control of power management and reduce operational costs.

A single TEM license is included with all next-generation servers with TSM Premium. Licenses are available for next-generation servers without TSM, selected fourth generation ThinkServer systems, and certain third-party servers via Node License Packs, as shown in the following table. Users of Lenovo Smart Grid can upgrade to TEM at no charge.

Table 30. ThinkServer System Manager Premium

Part number	Description	Maximum supported
4L40E51621	Lenovo ThinkServer Energy Manager Node License	1 node
4L40E51622	Lenovo ThinkServer Energy Manager Node License Pack	5 nodes
4L40E51623	Lenovo ThinkServer Energy Manager Node License Pack	50 nodes

ThinkServer Partner Pack for VMware vCenter

The Lenovo Partner Pack for vSphere vCenter Server provides detailed system information about Lenovo ThinkServer hosts in a VMware virtualized environment, including extended inventory and status information about processors, memory, fans, temperature sensors, and more. It also enables actions, such as starting a remote console or the Think Server Management Module (TMM) interface.

The Partner Pack integrates into vCenter by using the open plug-in architecture and allows “one pane of glass” management for the virtualized environment, so administrators can continue to use familiar tools.

Unlike options from other server providers, the Lenovo Partner Pack integrates into vCenter and does not require the installation of extra consoles or software.

ThinkServer Partner Pack for Microsoft System Center Operations Manager

Microsoft System Center Operations Manager (SCOM) is part of the Microsoft Systems Center suite and provides the operational management functions, such as health monitoring, performance data collection, and administrator-initiated or automated actions.

Implemented as a Management Pack for SCOM, the Partner Pack is integrated into SCOM by using the native Management Pack interface, which allows IT administrators to manage ThinkServer systems by using familiar tools and “one pane of glass” management.

The Lenovo Partner Pack for SCOM automatically discovers and provides detailed system information about the Lenovo ThinkServer managed servers, including component inventory and component and sensor status. The Partner Pack also enables actions, such as restarting or powering off the ThinkServer, accessing the Remote Desktop Console via RDP, and accessing the TMM interface.

The Partner Pack uses “In-Band” management to manage ThinkServer systems that are running Microsoft Windows Operating Systems with the System Center Agent installed.

Unlike options from other server providers, the Lenovo Partner Pack integrates into SCOM and does not require the installation of extra consoles or software.

Operating system support

The server supports the following operating systems:

- Citrix XenServer 6.5
- Citrix XenServer 6.5.1
- Microsoft Windows SBS 2011 Essentials
- Microsoft Windows SBS 2011 Premium Add-on
- Microsoft Windows SBS 2011 Standard
- Microsoft Windows Server 2008 R2 x64 with SP1
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Microsoft Windows Server, version 1709
- Red Hat Enterprise Linux 6.10 x64
- Red Hat Enterprise Linux 6.5 32-bit
- Red Hat Enterprise Linux 6.5 x64
- Red Hat Enterprise Linux 6.6 32-bit
- Red Hat Enterprise Linux 6.6 x64
- Red Hat Enterprise Linux 6.7 32-bit
- Red Hat Enterprise Linux 6.7 x64
- Red Hat Enterprise Linux 6.8 32-bit
- Red Hat Enterprise Linux 6.8 x64
- Red Hat Enterprise Linux 7.0
- Red Hat Enterprise Linux 7.1
- Red Hat Enterprise Linux 7.2
- Red Hat Enterprise Linux 7.3
- Red Hat Enterprise Linux 7.4
- Red Hat Enterprise Linux 7.5
- Red Hat Enterprise Linux 7.6
- Red Hat Enterprise Linux 7.7
- Red Hat Enterprise Linux 7.8
- Red Hat Enterprise Linux 7.9
- SUSE Linux Enterprise Server 11 x64 SP3
- SUSE Linux Enterprise Server 11 x64 SP4
- SUSE Linux Enterprise Server 11 x86 SP3
- SUSE Linux Enterprise Server 11 x86 SP4
- SUSE Linux Enterprise Server 12
- SUSE Linux Enterprise Server 12 SP1

- SUSE Linux Enterprise Server 12 SP2
- SUSE Linux Enterprise Server 12 SP3
- SUSE Linux Enterprise Server 12 SP4
- SUSE Linux Enterprise Server 12 Xen SP2
- SUSE Linux Enterprise Server 12 Xen SP3
- SUSE Linux Enterprise Server 12 Xen SP4
- VMware ESXi 5.1
- VMware ESXi 5.5 U2
- VMware ESXi 5.5 U3
- VMware ESXi 6.0
- VMware ESXi 6.0 U1
- VMware ESXi 6.0 U2
- VMware ESXi 6.0 U3
- VMware ESXi 6.5
- VMware ESXi 6.5 U1
- VMware ESXi 6.5 U2
- VMware ESXi 6.5 U3

Note: The use of embeded RAID (RAID 110i) is not supported by virtualization hypervisors, including VMware ESXi, Linux KVM, Xen, and Microsoft Hyper-V. AHCI mode (non-RAID) of the controller does support hypervisors, however.

For a complete list of supported, certified and tested operating systems, plus additional details and links to relevant web sites, see the Operating System Interoperability Guide:
https://lenovopress.com/osig#servers=rd350-e5-v3

Security

The RD350 supports the following security features.

Trusted Platform Module (TPM)

The RD350 provides an optional Trusted Platform Module (TPM) to securely store the passwords, certificates, and encryption keys that might be used to authenticate the platform. TPM is a hardware- based system security feature that supports Trusted Computing Group (TCG) 2.0 or 1.2 depending on the option selected. TPM supports Windows BitLocker Drive encryption, which is a Windows data protection feature. BitLocker uses the TPM to protect user data and to ensure that a Windows server was not tampered with.

The Trusted Platform Module ordering information is listed in the following table.

The table also lists the Trusted Cryptographic Module (TCM) which is the equivalent v1.2 component for use in China.

Table 31. Trusted Platform Module ordering information

Part number	Description	Maximum supported
4XF0G88938	Lenovo ThinkServer Trusted Platform Module v2.0	1
4XF0G45868	ThinkServer Trusted Platform Module (v1.2) (not for use in China)	1
4XF0G45869	ThinkServer Gen 5 Trusted Cryptographic Module (China only)	1

Chassis intrusion switch

The intrusion switch informs you that the server cover is not properly installed or closed by creating an event in the system event log (SEL). The following figure shows where the switch is installed.

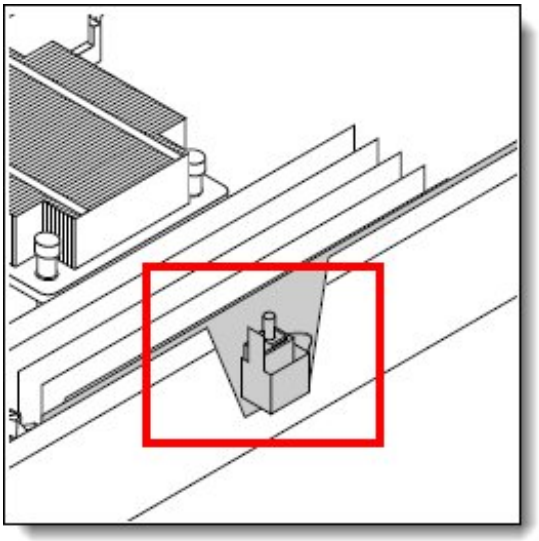

Figure 8. Chassis intrusion switch

Some models include the chassis switch and cable, as listed in the Standard Models sections of this document. For custom configurations, the SBB part number can be selected.

Table 32. Trusted Platform Module ordering information

Part number	Description	Maximum supported
SBB 0G16685	Chassis Intrusion Cable for RD350	1

Rack installation

The RD350 supports sliding and static rails as listed in the following table. The rail systems are designed for toolless support, which enables ease of installation.

Table 33. Rack instllation options

Part number	Description
4XF0G45871	4-Post Slide Rail Kit
4XF0G45873	4-Post Static Rail Kit
4XF0G45874	Cable Management Arm
4XF0G45876	Cable Management Bar

For keyboards and KVM console switches, see the KVM console options section.

The supported rail kits have the following specifications.

Table 34. Rail kit specifications

Option name	Lenovo ThinkServer Gen 5 1U 4-Post Slide Rail Kit	Lenovo ThinkServer Gen 5 4-Post Static Rail Kit
Option part number	4XF0G45871	4XF0G45873
Supported servers	RD350 RD550	RD350 RD450 RD550 RD650
Rail type	Ball bearing slide rail (with stop latches), toolless installation	Friction rail
Supported rack type	Four-post Lenovo standard rack, complying with the International Electrotechnical Commission (IEC) standard	Four-post Lenovo standard rack, complying with the IEC standard
Service on rack	Yes	No
Cable management arm (CMA) or cable management bracket (CMB) support	CMA	CMB
1U PDU support	Yes	Yes
0U PDU support	Limited support*	Limited support*
Supported mounting holes (square)	Unthread square hole: 9.5 mm x 9.5 mm (0.37 inches x 0.37 inches)	Unthread square hole: 9.5 mm x 9.5 mm (0.37 inches x 0.37 inches)
Supported mounting holes (round)	Unthread round hole: 7.1 mm (0.28 inches) in diameter	Unthread round hole: 7.1 mm (0.28 inches) in diameter
Thickness of mounting flanges	2 mm to 3.18 mm (0.08 to 0.125 inches)	2 mm to 3.18 mm (0.08 to 0.125 inches)
Distance between the front and rear mounting flanges	460 to 900 mm (18.11 to 35.43 inches)	610 to 900 mm (24 to 35.43 inches)
Rail length (measured when mounted on the rack, starting from the front surface of the front mounting flange to the rear most point of the rail)	840 mm (33.07 inches)	728.1 mm (28.66 inches)

* Notes on 0U PDU support:

- If you want to install the rail kit (option part number: 4XF0G45871, 4XF0G45872, or 4XF0G45873) and a 0U PDU into the same rack, the rack must meet the following height and depth requirements:

    - 42U or higher
    - At least 1200-mm (47.24-inch) deep if a CMA or CMB is to be installed
- For best performance, it is recommended that you install the rail kit (option part number: 4XF0G45871, 4XF0G45872, or 4XF0G45873) into a rack with a distance of 719 mm (28.3 inches) between the front and rear mounting flanges.

Physical, thermal and acoustic specifications

Dimensions and weight (approximate):

- Height: 43 mm (1.7 in)
- Width: 482 mm (19 in)
- Depth: 782 mm (30.8 in)
- Weight:
    - Minimum configuration: 13 kg (28.7 lb)
    - Maximum configuration: 19.1 kg (42.1 lb)

Thermal specifications are as follows:

- Operating ambient temperature: 10°C - 35°C (50°F - 95°F)
- Transit ambient temperature: -40°C - +70°C (-40°F - 158°F)
- Operating Humidity: 20 % - 80 % RH, non-condensing
- Transit humidity: 8 % - 90 % RH, non-condensing
- Operating altitude: 0 - 3048 m (0 - 10,000 ft)
- Transit altitude: 7620 m (25,000 ft)

Noise levels:

- Minimum configuration:
    - LWAd: 3.6 bels (Idle)/3.7 bels (Operating)
    - m: 24.4 dB (Idle)/24.7 dB (Operating)
- Maximum configuration:
    - LWAd: 5.4 bels (Idle)/5.4 bels (Operating)
    - m: 39.4 dB (Idle)/39.4 dB (Operating)

Warranty options

The server has a three-year or one-year warranty (model dependent) with 24x7 standard call center support and 9x5 next business day onsite coverage. Lenovo offers services warranty maintenance upgrades and post-warranty maintenance agreements with a well-defined scope of services, including service hours, response time, and length of service coverage.

The Lenovo QuickPick tool helps locate compatible accessories and services and warranty information. Services offered may vary by geographic location. Access the tool via the following URL: http://lenovoquickpick.com

The following table explains warranty service definitions in more detail.

Table 35. Warranty service definitions

Term	Description
On-site service	A service technician will go to the client's location for equipment service.
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 8:00 am - 5:00 pm in the client's local time zone, Monday-Friday, excluding Lenovo holidays. For example, if a customer reports an incident at 3:00 pm on Friday, the technician will arrive by 10:00 am the following Monday.
9x5 next business day	A service technician is scheduled to arrive at the client's location on the business day after remote problem determination is completed. Lenovo provides service 8:00 am - 5:00 pm in the client's local time zone, Monday - Friday, excluding Lenovo holidays. Calls received after 4:00 pm local time require an extra business day for service dispatch.

The following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
  - Three, four, or five years of 9x5 or 24x7 service coverage
  - Onsite response time from next business day to 4 hour same-day
  - Warranty extension of up to 5 years
  - Post warranty extensions offered in 1-year increments
- 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 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 Lenovo server. 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 covers multiple drives and multiple failures with one service offering at one value price. This service 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 server conforms to the following regulations:

- Energy Star 2.0 (excluding the 450W power supply unit)
- 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
- Green Guard

External drive enclosures

The server supports attachment to external drive enclosures using a RAID controller with external ports or a SAS host bus adapter. Adapters supported by the server are listed in the SAS adapters for external storage section.

The following table lists the 6 Gbps SAS external drive enclosures that are offered by Lenovo that can be used with the server for storage expansion.

Table 36. E1012 and E1024 external drive enclosure models

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

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

The following table lists the 12 Gbps SAS external drive enclosures offered by Lenovo that can be used with the server for storage expansion.

Note: Information provided in this section is for ordering reference purposes only. For the operating system and adapter support details, refer to the interoperability matrix for a particular storage enclosure that can be found on the Lenovo Data Center Support web site:
http://datacentersupport.lenovo.com

Table 37. External drive enclosures

Description	Part number		
	Worldwide	Japan	PRC
Lenovo Storage D1212 LFF Disk Expansion with Dual SAS IO Modules	4587A11	4587A1J	4587A1C
Lenovo Storage D1224 SFF Disk Expansion with Dual SAS IO Modules	4587A31	4587A3J	4587A3C
Lenovo Storage D3284 4TB x 84 HD Expansion Enclosure	641311F		
Lenovo Storage D3284 6TB x 84 HD Expansion Enclosure	641312F		
Lenovo Storage D3284 8TB x 84 HD Expansion Enclosure	641313F		
Lenovo Storage D3284 10TB x 84 HD Expansion Enclosure	641314F		

For details about supported drives, adapters, and cables, see the following Lenovo Press Product Guides:

- Lenovo Storage D1212 and D1224
  http://lenovopress.com/lp0512
- Lenovo Storage D3284
  http://lenovopress.com/lp0513

External storage systems

Lenovo offers the ThinkSystem DE Series and ThinkSystem DM Series external storage systems for high-performance storage. See the DE Series and DM Series product guides for specific controller models, expansion enclosures and configuration options:

- ThinkSystem DE Series Storage
  https://lenovopress.com/storage/thinksystem/de-series#rt=product-guide
- ThinkSystem DM Series Storage
  https://lenovopress.com/storage/thinksystem/dm-series#rt=product-guide

External backup units

The following table lists the external backup options that are offered by Lenovo.

Table 38. External backup options

Part number	Description
External RDX USB drives	
4T27A10725	ThinkSystem RDX External USB 3.0 Dock
External SAS tape backup drives	
6160S6E	IBM TS2260 Tape Drive Model H6S
6160S7E	IBM TS2270 Tape Drive Model H7S
6160S8E	IBM TS2280 Tape Drive Model H8S
External SAS tape backup autoloaders	
6171S5R	IBM TS2900 Tape Autoloader w/LTO5 HH SAS
6171S6R	IBM TS2900 Tape Autoloader w/LTO6 HH SAS
6171S7R	IBM TS2900 Tape Autoloader w/LTO7 HH SAS
External tape backup libraries	
6741A1F	IBM TS4300 3U Tape Library-Base Unit
6741A3F	IBM TS4300 3U Tape Library-Expansion Unit
Full High 8 Gb Fibre Channel for TS4300	
01KP954	LTO 8 FH Fibre Channel Drive
01KP938	LTO 7 FH Fibre Channel Drive
01KP935	LTO 6 FH Fibre Channel Drive
Half High 8 Gb Fibre Channel for TS4300	
01KP952	LTO 8 HH Fibre Channel Drive
01KP936	LTO 7 HH Fibre Channel Drive
01KP933	LTO 6 HH Fibre Channel Drive
Half High 6 Gb SAS for TS4300	
01KP953	LTO 8 HH SAS Drive
01KP937	LTO 7 HH SAS Drive
01KP934	LTO 6 HH SAS Drive

For more information, see the list of Product Guides in the Backup units category:
https://lenovopress.com/servers/options/backup

Fibre Channel SAN switches

Lenovo offers the ThinkSystem DB Series of Fibre Channel SAN switches and directors for high-performance storage expansion. See the DB Series product guides for models and configuration options:

- ThinkSystem DB Series SAN Switches and Directors:
  https://lenovopress.com/storage/switches/rack#rt=product-guide

Uninterruptible power supply units

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

Table 39. Uninterruptible power supply units

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

† Only available in China and countries in the Asia Pacific region.

For more information, see the list of Product Guides in the UPS category:
https://lenovopress.com/servers/options/ups

Power distribution units

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

Table 40. Power distribution units

Part number	Description
0U Basic PDUs	
00YJ776	0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord
00YJ777	0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord
00YJ778	0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord
00YJ779	0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord
Switched and Monitored PDUs	
00YJ780	0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord
00YJ781	0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord
00YJ782	0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord

Part number	Description
00YJ783	0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord
46M4002*	1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)
46M4003*	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
46M4004*	1U 12 C13 Switched and Monitored DPI PDU (without line cord)
46M4005*	1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
71762NX	Ultra Density Enterprise C19/C13 PDU Module (without line cord)
71763NU	Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
39M2816	DPI C13 Enterprise PDU+ (without line cord)
39Y8941	DPI Single Phase C13 Enterprise PDU (without line cord)
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
39Y8948	DPI Single Phase C19 Enterprise PDU (without line cord)
39Y8923	DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord
Front-end PDUs (3x IEC 320 C19 outlets)	
39Y8938	DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord
39Y8939	DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord
39Y8934	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8940	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8935	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
NEMA PDUs (6x NEMA 5-15R outlets)	
39Y8905	DPI 100-127V PDU with Fixed NEMA L5-15P line cord
Line cords for PDUs that ship without a line cord	
40K9611	DPI 32a Line Cord (IEC 309 3P+N+G)
40K9612	DPI 32a Line Cord (IEC 309 P+N+G)
40K9613	DPI 63a Cord (IEC 309 P+N+G)
40K9614	DPI 30a Line Cord (NEMA L6-30P)
40K9615	DPI 60a Cord (IEC 309 2P+G)
40K9617	DPI Australian/NZ 3112 Line Cord
40K9618	DPI Korean 8305 Line Cord

* Not available in USA and Canada

For more information, see the Lenovo Press documents in the PDU category:
https://lenovopress.com/servers/options/pdu

Rack cabinets

The server supports the rack cabinets listed in the following table.

Table 41. Rack cabinets

Part number	Description
201886X	11U Office Enablement Kit
93072RX	25U Standard Rack
93072PX	25U Static S2 Standard Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93634PX	42U 1100mm Dynamic Rack
93604EX	42U 1200mm Deep Dynamic Expansion Rack
93604PX	42U 1200mm Deep Dynamic Rack
93614EX	42U 1200mm Deep Static Expansion Rack
93614PX	42U 1200mm Deep Static Rack
93084EX	42U Enterprise Expansion Rack
93084PX	42U Enterprise Rack
93074RX	42U Standard Rack
93074XX	42U Standard Rack Extension
93624EX	47U 1200mm Deep Static Expansion Rack
93624PX	47U 1200mm Deep Static Rack
93634BX	PureFlex® System 42U Expansion Rack
93634DX	PureFlex System 42U Expansion Rack
93634AX	PureFlex System 42U Rack
93634CX	PureFlex System 42U Rack

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

KVM console options

The following table lists the supported KVM consoles, keyboards, and KVM switches.

Table 42. Console keyboards

Part number	Description
Consoles	
17238BX	1U 18.5" Standard Console (without keyboard)
Console keyboards	
00MW310	Lenovo UltraNav Keyboard USB - US Eng
46W6713	Keyboard w/ Int. Pointing Device USB - Arabic 253 RoHS v2
46W6714	Keyboard w/ Int. Pointing Device USB - Belg/UK 120 RoHS v2
46W6715	Keyboard w/ Int. Pointing Device USB - Chinese/US 467 RoHS v2
46W6716	Keyboard w/ Int. Pointing Device USB - Czech 489 RoHS v2
46W6717	Keyboard w/ Int. Pointing Device USB - Danish 159 RoHS v2
46W6718	Keyboard w/ Int. Pointing Device USB - Dutch 143 RoHS v2

Part number	Description
46W6719	Keyboard w/ Int. Pointing Device USB - French 189 RoHS v2
46W6720	Keyboard w/ Int. Pointing Device USB - Fr/Canada 445 RoHS v2
46W6721	Keyboard w/ Int. Pointing Device USB - German 129 RoHS v2
46W6722	Keyboard w/ Int. Pointing Device USB - Greek 219 RoHS v2
46W6723	Keyboard w/ Int. Pointing Device USB - Hebrew 212 RoHS v2
46W6724	Keyboard w/ Int. Pointing Device USB - Hungarian 208 RoHS v2
46W6725	Keyboard w/ Int. Pointing Device USB - Italian 141 RoHS v2
46W6726	Keyboard w/ Int. Pointing Device USB - Japanese 194 RoHS v2
46W6727	Keyboard w/ Int. Pointing Device USB - Korean 413 RoHS v2
46W6728	Keyboard w/ Int. Pointing Device USB - LA Span 171 RoHS v2
46W6729	Keyboard w/ Int. Pointing Device USB - Norwegian 155 RoHS v2
46W6730	Keyboard w/ Int. Pointing Device USB - Polish 214 RoHS v2
46W6731	Keyboard w/ Int. Pointing Device USB - Portuguese 163 RoHS v2
46W6732	Keyboard w/ Int. Pointing Device USB - Russian 441 RoHS v2
46W6733	Keyboard w/ Int. Pointing Device USB - Slovak 245 RoHS v2
46W6734	Keyboard w/ Int. Pointing Device USB - Spanish 172 RoHS v2
46W6735	Keyboard w/ Int. Pointing Device USB - Swed/Finn 153 RoHS v2
46W6736	Keyboard w/ Int. Pointing Device USB - Swiss F/G 150 RoHS v2
46W6737	Keyboard w/ Int. Pointing Device USB - Thai 191 RoHS v2
46W6738	Keyboard w/ Int. Pointing Device USB - Turkish 179 RoHS v2
46W6739	Keyboard w/ Int. Pointing Device USB - UK Eng 166 RoHS v2
46W6740	Keyboard w/ Int. Pointing Device USB - US Euro 103P RoHS v2
46W6741	Keyboard w/ Int. Pointing Device USB - Slovenian 234 RoHS v2
Console switches	
1754D2X	Global 4x2x32 Console Manager (GCM32)
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
Console switch cables	
43V6147	Single Cable USB Conversion Option (UCO)
39M2895	USB Conversion Option (4 Pack UCO)
46M5383	Virtual Media Conversion Option Gen2 (VCO2)
46M5382	Serial Conversion Option (SCO)

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

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

Related publications and links

For more information, see these resources:

- ThinkServer RD350 product page
  http://shop.lenovo.com/us/en/systems/servers/racks/thinkserver/rd350/
- ThinkServer RD350 User Guide and Hardware Maintenance Manual
  https://download.lenovo.com/ibmdl/pub/pc/pccbbs/thinkservers/rd350_ug_en.pdf
- Lenovo Quick Pick
  http://www.lenovoquickpick.com/usa/system/thinkserver/rd-series/rd350
- Lenovo Support for the RD350
  http://support.lenovo.com/us/en/products/servers/thinkserver-rack-servers/thinkserver-rd350
- ThinkServer Power Planner
  http://support.lenovo.com/us/en/downloads/ds101155
- Lenovo PSREF - Product Specifications Reference
  http://psref.lenovo.com/Product/121

Related product families

Product families related to this document are the following:

- 2-Socket Rack Servers

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