



Personal Systems Reference Lenovo® ThinkServer™ Servers

February 2009 - Version 352



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Lenovo ThinkServer TS100
with 400W non-redundant power supply



Lenovo ThinkServer TS100
with simple-swap disks



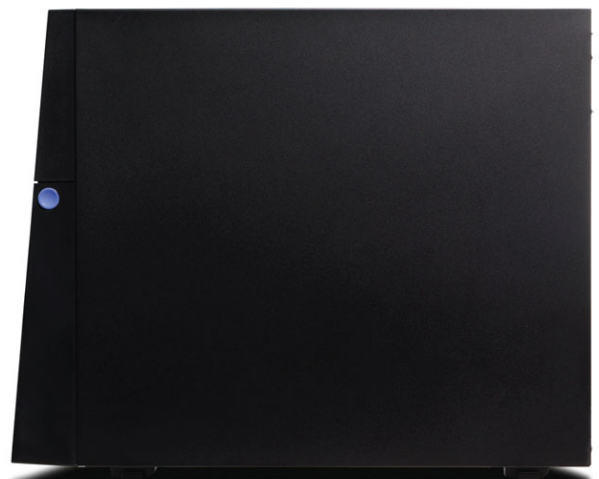
Lenovo ThinkServer TS100
with 430W redundant power supply



Lenovo ThinkServer TS100



Lenovo ThinkServer TS100



Lenovo ThinkServer TS100

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	SATA optical	Power supply	Limited warranty ¹	Workhorse Global	Avail date
TS100	6432-17U	4x7	E7200	2.53	2	1 x 1GB	None	3.5"	4 x Simple-swap	SATA	1064E	DVD	400W	1-year	No	Sep 08

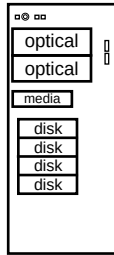
- **T = Tower, S = Single processor**
- **High performance server with rock solid technology and proven hardware design**
- **Easy to use with ThinkServer EasyStartup, EasyUpdate, and EasyManage software**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**

Processor	One Intel® Core™ 2 Duo Processor E7200 with dual-core, one maximum, 1066MHz system bus, and 3MB L2 cache	Tower • Business black color; metal case • 8.5"W x 21.25"D x 17.25"H • 216mm W x 540mm D x 438mm H • 56 lb (25.2kg) max configuration • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support optical optical media disk disk disk disk											
Implementation	Processor uses FC-LGA8 package, one LGA775 socket												
Memory	1GB std, 8GB max, PC2-6400 800MHz DDR2, ECC, dual-channel capable, four 184-pin DIMM sockets; <i>Non-italics</i> : standard memory in one socket; three sockets available												
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.2, 64MB, external monitor port (VGA DB-15); <i>Maximum resolution</i> : 1024x768@85Hz												
Diskette	None (use USB port)												
SATA DVD	DVD-ROM, SATA 1.5Gb/s, uses ICH9R												
SATA disk(s)	None												
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R, not used by disks												
SATA connectors	Six SATA connectors on planar, four simple-swap connectors on 3.5" disk backplate												
SATA RAID cont	LSI™ 1064E, SATA 3.0 Gb/s, RAID® 0, 1 support, Mini PCI Express® adapter												
SAS disk	Not supported												
SAS connectors	Not supported												
SAS controller	Not supported												
Chipset	Intel 3210 Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 10 support, SMSC® SCH5027D Super I/O												
Front ports	Two USB 2.0												
Rear ports	Four USB 2.0, two serial (9-pin), parallel, ethernet (RJ-45), monitor (VGA DB-15)												
Diagnostics	Diagnostic LEDs (system-error LED on front cover; error LEDs for fans, disks, memory, processor, PCI slots, power supply)												
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant												
Audio	None												
Speaker	Internal speaker												
Ethernet	Gigabit ethernet on planar, Broadcom® BCM5722, PCIe x1												
Keyboard	None (use USB port)												
Mouse	None (use USB port)												
Power supply	One 400 watts, one maximum, non-redundant, variable speed fan, non-hot-swap, universal												
Cooling	Three fans (processor, rear, disks)												
Accessories <table><tr><td>1GB PC2-6400 DDR2 ECC UDIMM</td><td>45J6188</td></tr><tr><td>2GB PC2-6400 DDR2 ECC UDIMM</td><td>45J6189</td></tr><tr><td>160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6195</td></tr><tr><td>250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6196</td></tr><tr><td>500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6197</td></tr><tr><td>750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6198</td></tr></table> Other accessories at lenovo.com/accessories		1GB PC2-6400 DDR2 ECC UDIMM	45J6188	2GB PC2-6400 DDR2 ECC UDIMM	45J6189	160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6195	250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6196	500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6197	750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6198
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750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6198												
ThinkPlus Priority Support, 90-day Trial													
RoHS-compliant													
Limited Warranty¹ ⇒ 1-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378													

See footnotes for important warranty information
US models announced September 30, 2008

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	SATA optical	Power supply(s)	Limited Warranty ¹	Global	Avail date
TS100	6434-13U	4x7	E3110	3.00	2	2 x 1GB	None	3.5"	4 x Simple-swap	SATA	1064E	DVD	400W	3-year	No	Sep 08
TS100	6434-15U	4x7	X3360	2.83	4	2 x 2GB	None	3.5"	4 x Hot-swap	SATA/SAS ⁴	MR10i	DVD	2 x 430W	3-year	No	Sep 08

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Processor	One Intel® Xeon® Processor E3110 with dual-core , one maximum, 1333MHz system bus, and 6MB L2 cache or One Intel Xeon Processor X3360 with quad-core , one maximum, 1333MHz system bus, and 12MB L2 cache			Tower • Business black color; metal case • 8.5"W x 21.25"D x 17.25"H • 216mm W x 540mm D x 438mm H • 56 lb (25.2kg) max configuration • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 
Implementation	Processor uses FC-LGA8 package, one LGA775 socket			
Memory	2GB or 4GB std, 8GB max, PC2-6400 800MHz DDR2, ECC , dual-channel capable, four 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two sockets; two sockets available			
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.2, 64MB, external monitor port (VGA DB-15); <i>Maximum resolution</i> : 1024x768@85Hz			
Diskette	None (use USB port)			
SATA DVD	DVD-ROM, SATA 1.5Gb/s, uses ICH9R			
SATA disk(s)	None			
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R, not used by disks			
SATA connectors	Six SATA connectors on planar, <i>13U</i> SATA: 4 simple-swap connectors on 3.5" disk backplane <i>15U</i> SATA/SAS: 4 hot-swap connectors on 3.5" disk backplane			
SATA RAID cont	LSI™ 1064E, SATA 3.0 Gb/s, RAID® 0, 1 support, Mini PCI Express® adapter			
SAS disk(s)	None			
SAS connectors	<i>15U</i> SATA/SAS: 4 hot-swap connectors on 3.5" disk backplane			
SAS RAID cont	<i>15U</i> : LSI MR10i, SATA 3.0 Gb/s, SAS 3.0 Gb/s, RAID® 0, 1, 5, 6, 10, 50, 60 support, Mini PCI Express adapter			
Chipset	Intel 3210 Chipset , Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 10 support, SMSC® SCH5027D Super I/O			
Front ports	Two USB 2.0			
Rear ports	Four USB 2.0, two serial (9-pin), parallel, ethernet (RJ-45), monitor (VGA DB-15)			
Diagnostics	Diagnostic LEDs (system-error LED on front cover; error LEDs for fans, disks, memory, processor, PCI slots, power supply)			
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant			
Audio	None			
Speaker	Internal speaker			
Ethernet	Gigabit ethernet on planar, Broadcom® BCM5722, PCIe x1			
Keyboard	None (use USB port)			
Mouse	None (use USB port)			
Power supply	<i>Some</i> : One 400 watts, one maximum, non-redundant, variable speed fan, non-hot-swap, universal <i>Some</i> : Two 430 watts, two maximum, redundant with two, variable speed fan, hot-swap, universal			
Cooling	Three fans (processor, rear, disks)			
Accessories				
1GB PC2-6400 DDR2 ECC UDIMM		45J6188		
2GB PC2-6400 DDR2 ECC UDIMM		45J6189		
160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6195		
250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6196		
500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6197		
750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6198		
160GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6200		
250GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6201		
500GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6202		
750GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6203		
1TB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)		45J6204		
146GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm)		45J6211		
300GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm)		45J6212		
Other accessories at lenovo.com/accessories				
Security • Side cover lock (ships with two identical keys) - prohibits removal of front panel and disks • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)				
Software management tools • ThinkServer EasyStartup • ThinkServer EasyUpdate • ThinkServer EasyManage				
ThinkPlus Priority Support, 90-day Trial				
RoHS-compliant				
Limited Warranty¹ ⇒ 3-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378				

See footnotes for important warranty information
US models announced September 30, 2008

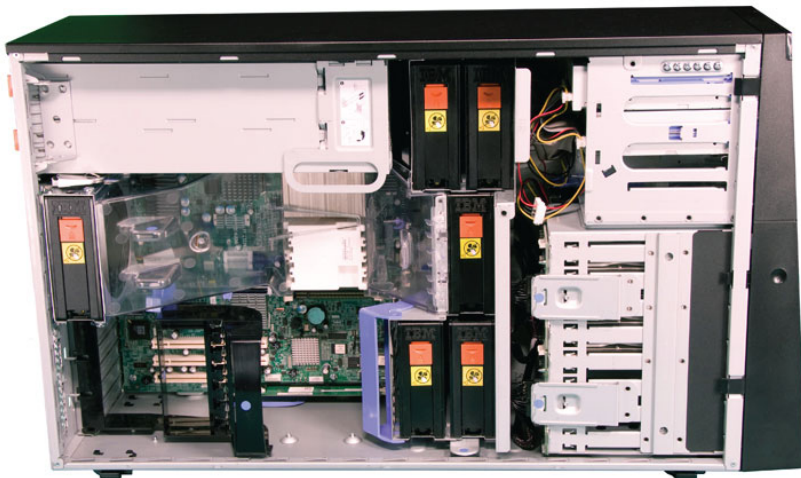
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(TS100-2) October 2008



Lenovo ThinkServer TD100



Lenovo ThinkServer TD100x



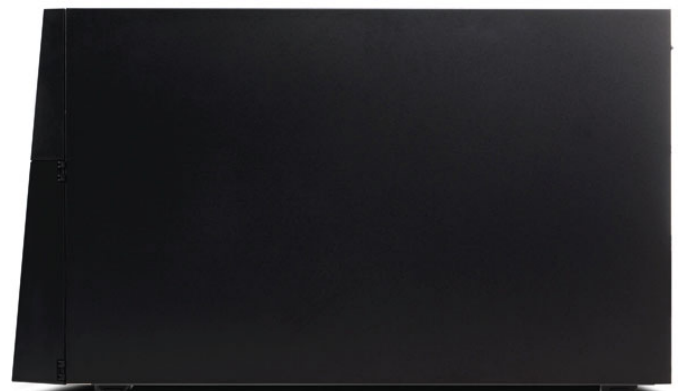
Lenovo ThinkServer TD100
or TD100x



Lenovo ThinkServer TD100
or TD100x



Lenovo ThinkServer TD100x
with Easy LED Diagnostic panel



Lenovo ThinkServer TD100
or TD100x

Name	Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory	Disk(s) size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty ¹	Global	Avail date
TD100	6399-14U	6x7	1 x E5405	2.00	4	2 x 1GB	None 3.5"	4 x Simple-swap	SATA	RAID-8k	DVD	670W	3	1-year	No	Sep 08
TD100	6399-15U	6x7	1 x E5405	2.00	4	2 x 1GB	None 3.5"	4 x Simple-swap	SATA	9580W	DVD	670W	3	1-year	No	Jan 09

- **T = Tower, D = Dual processor support**
- **High performance server with rock solid technology and proven hardware design**
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Processor(s)	One Intel® Xeon® Processor E5405 with quad-core , two maximum, 1333MHz system bus, and 12MB L2 cache	optical optical tape disk disk disk disk Tower • Business black color; metal case • 8.6"W x 29.4"D x 17.3"H • 218mm W x 747mm D x 440mm H • 75 lb (34kg) max configuration • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, optional tape or optical Bay ③ 5.25", 1.6" high, external, optional tape or optical Bay ④ 3.5", 1" high, external, optional disk Bay ⑤ 3.5", 1" high, external, optional disk Bay ⑥ 3.5", 1" high, external, optional disk Bay ⑦ 3.5", 1" high, external, optional disk Slot 1: half-length, full-height, PCIe® x4 (x8 mechanical) Slot 2: full-length, full-height, PCIe x8 Slot 3: full-length, full-height, PCIe x8 Slot 4: full-length, full-height, 64-bit PCI-X Slot 5: full-length, full-height, 64-bit PCI-X Slot 6: half-length, full-height, PCI Security • Side cover lock (ships with two identical keys) - prohibits removal of front panel and disks • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) ThinkPlus Priority Support, 90-day Trial RoHS-compliant Limited Warranty¹ ⇒ 1-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378															
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets																
Memory	2GB std, 32GB max, PC2-5300 667MHz DDR2, Advanced ECC , fully buffered, eight 240-pin DIMM sockets; <i>Non-italics:</i> standard memory in two sockets; six sockets available																
Graphics	ATI® RN50 (ES1000), on planar; 32-bit/33MHz PCI 2.3, 16MB, external monitor port (VGA DB-15 rear); <i>Maximum resolution:</i> 800x600@85Hz																
EIDE controller	Enhanced IDE/ATA 100 controller in Enterprise South Bridge, one connector on planar, single 2-drop IDE cable (for DVD)																
EIDE DVD	DVD-ROM, 1.6" high																
SATA disk(s)	None																
SATA connectors	Four simple-swap connectors on 3.5" disk backplane																
SAS disk(s)	None																
SATA/SAS cont	15U SATA: Adaptec® AIC-9580W, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID® 0, 1, 10 support, 8-port, on planar																
SAS connectors	None																
SATA/SAS RAID controller	14U SATA: RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID® 0, 1, 1e, 5, 6, 10 support, in reserved connector, single cable to backplane																
Chipset	Intel 5000P chipset , Intel 6321ESB-2E I/O Controller Hub, NS PC8374L Super I/O																
Front ports	Two USB 2.0																
Rear ports	Two USB 2.0, two serial (9-pin), parallel, keyboard (PS/2), mouse (PS/2), external monitor (VGA DB-15), ethernet (RJ-45), system management (RJ-45)																
Diagnostics	Diagnostic LEDs (system-error LED on front cover; error LEDs for RAID, memory, processors, PCI slots, voltage regulator module, power supply)																
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant																
Audio	None																
Speaker	Internal speaker																
Ethernet	Gigabit ethernet on planar, Broadcom® BCM5721, PCIe x1, full duplex, Wake on LAN®																
Keyboard	None (use PS/2 or USB port)																
Mouse	None (use PS/2 or USB port)																
Power supply	One 670 watts, one maximum, non-redundant, variable speed fan, non-hot-swap, universal																
Cooling	Three or six fans, six maximum, variable speed, hardware failure protection, hot-swap, six fans required with second redundant power supply																
Software management tools • ThinkServer EasyStartup • ThinkServer EasyUpdate • ThinkServer EasyManage																	
Accessories <table><tr><td>Intel Xeon Quad-Core Processor E5405</td><td>45J6221</td></tr><tr><td>1GB PC2-5300 DDR2 ECC FB-DIMM</td><td>45J6191</td></tr><tr><td>2GB PC2-5300 DDR2 ECC FB-DIMM</td><td>45J6192</td></tr><tr><td>4GB PC2-5300 DDR2 ECC FB-DIMM</td><td>45J6193</td></tr><tr><td>160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6195</td></tr><tr><td>250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6196</td></tr><tr><td>500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6197</td></tr><tr><td>750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)</td><td>45J6198</td></tr></table> Other accessories at lenovo.com/accessories		Intel Xeon Quad-Core Processor E5405	45J6221	1GB PC2-5300 DDR2 ECC FB-DIMM	45J6191	2GB PC2-5300 DDR2 ECC FB-DIMM	45J6192	4GB PC2-5300 DDR2 ECC FB-DIMM	45J6193	160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6195	250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6196	500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6197	750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6198
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See footnotes for important warranty information

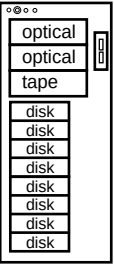
US model announced January 20, 2009; previous model on September 30, 2008

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(TD100-1) January 2009

Name	Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty ¹	Workhorse Global	Avail date
TD100	6429-17U	6x11	1 x E5410	2.33	4	2 x 1GB	None	3.5"	8 x Hot-swap	SATA/SAS ⁴	RAID-8k DVD	2 x 835W	6	3-year	No	Sep 08	
TD100	6429-18U	6x11	1 x E5430	2.66	4	2 x 2GB	None	3.5"	8 x Hot-swap	SATA/SAS ⁴	RAID-8k DVD	2 x 835W	6	3-year	No	Sep 08	

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- **High performance server with rock solid technology and proven hardware design**
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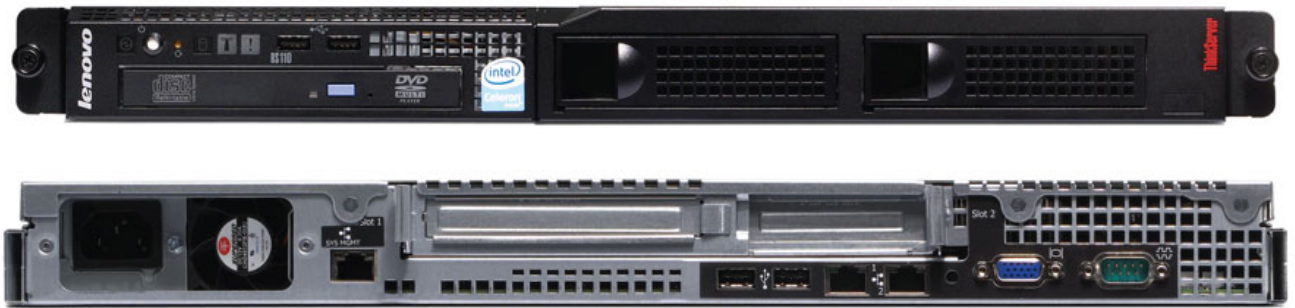
Processor(s)	One Intel® Xeon® Processor E5410 or E5430 with quad-core , two maximum, 1333MHz system bus, and 12MB L2 cache	Tower • Business black color; metal case • 8.6"W x 29.4"D x 17.3"H • 218mm W x 747mm D x 440mm H • 75 lb (34kg) max configuration • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets	
Memory	2GB or 4GB std, 32GB max, PC2-5300 667MHz DDR2, Advanced ECC , fully buffered, eight 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two sockets; six sockets available	
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.3, 16MB, external monitor port (VGA DB-15 rear); <i>Maximum resolution</i> : 800x600@85Hz	
EIDE controller	Enhanced IDE/ATA 100 controller in Enterprise South Bridge, one connector on planar, single 2-drop IDE cable (for DVD)	
EIDE DVD	DVD-ROM, 1.6" high	
SATA disk(s)	None	
SATA connectors	Eight hot-swap connectors on 3.5" disk backplane	
SAS disk(s)	None	
SATA/SAS cont	Adaptec® AIC-9580W, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID® 0, 1, 10 support, 8-port, on planar, not used	
SAS connectors	Eight hot-swap connectors on 3.5" disk backplane	
SATA/SAS RAID controller	RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID® 0, 1, 1e, 5, 6, 10 support, in reserved connector, single cable to backplane	
Chipset	Intel 5000P chipset , Intel 6321ESB-2E I/O Controller Hub, NS PC8374L Super I/O	
Front ports	Two USB 2.0	
Rear ports	Two USB 2.0, two serial (9-pin), parallel, keyboard (PS/2), mouse (PS/2), external monitor (VGA DB-15), ethernet (RJ-45), system management (RJ-45)	
Diagnostics	Diagnostic LEDs (system-error LED on front cover; error LEDs for RAID, memory, processors, PCI slots, voltage regulator module, power supply)	
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant	
Audio	None	
Speaker	Internal speaker	
Ethernet	Gigabit ethernet on planar, Broadcom® BCM5721, PCIe x1, full duplex, Wake on LAN®	
Keyboard	None (use PS/2 or USB port)	
Mouse	None (use PS/2 or USB port)	
Power supply	Two 835 watts, two maximum, redundant with two, variable speed fan, hot-swap, universal, two redundant power supplies require six fans	
Cooling	Six fans, six maximum, variable speed, hardware failure protection, hot-swap, six fans required with second redundant power supply	
Software management tools		
• ThinkServer EasyStartup • ThinkServer EasyUpdate • ThinkServer EasyManage		ThinkPlus Priority Support, 90-day Trial
Accessories		RoHS-compliant
Intel Xeon Quad-Core Processor E5410 45J6185		Limited Warranty¹ ⇒ 3-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378
Intel Xeon Quad-Core Processor E5430 45J6186		
1GB PC2-5300 DDR2 ECC FB-DIMM 45J6191		
2GB PC2-5300 DDR2 ECC FB-DIMM 45J6192		
4GB PC2-5300 DDR2 ECC FB-DIMM 45J6193		
160GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6200		
250GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6201		
500GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6202		
750GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6203		
1TB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6204		
146GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm) 45J6211		
300GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm) 45J6212		
Other accessories at lenovo.com/accessories		

See footnotes for important warranty information
 US models announced September 30, 2008

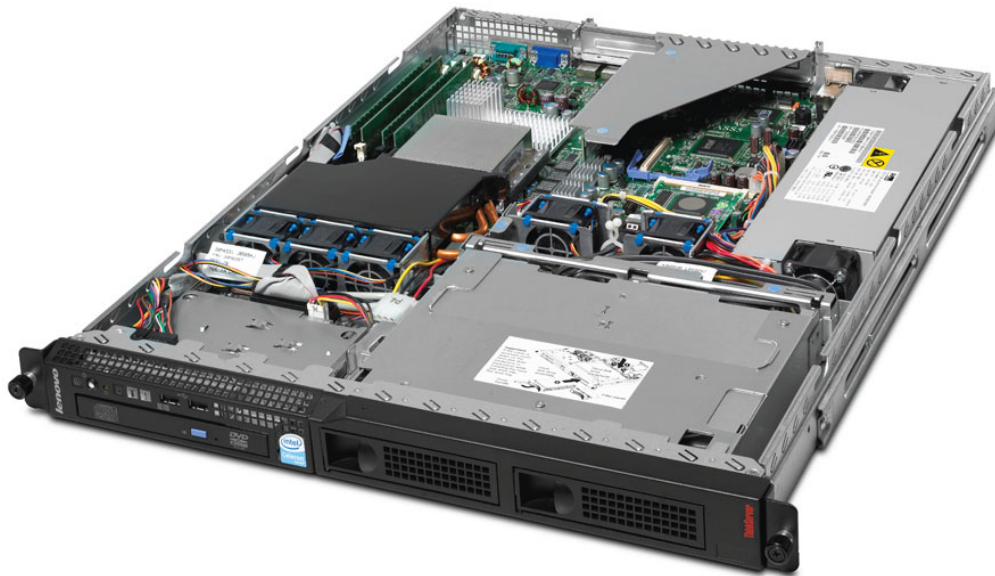
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See footnotes for important warranty information
US models announced September 30, 2008

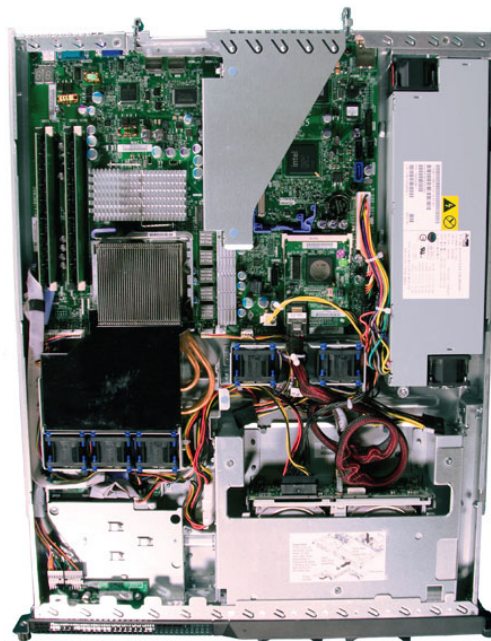
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Lenovo ThinkServer RS110



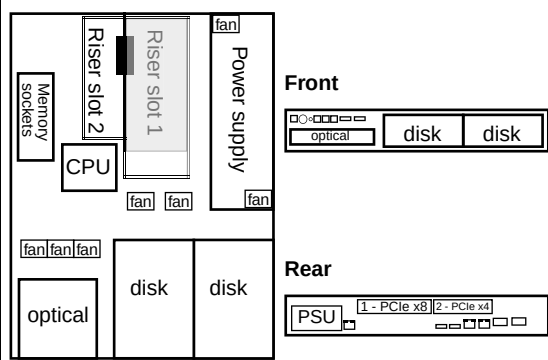
Lenovo ThinkServer RS110



Lenovo ThinkServer RS110

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply	Fans	Limited warranty ¹	Workhorse Global	Avail date
RS110	6436-15U	2x3	E7200	2.53	2	1 x 1GB	None	3.5"	2 x Simple-swap	SATA	1064E	Combo	350W	5	1-year	No	Sep 08

- **R = Rack, S = Single processor**
- **High performance server with rock solid technology and proven hardware design**
- **Easy to use with ThinkServer EasyStartup, EasyUpdate, and EasyManage software**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**

Processor	One Intel® Core™ 2 Duo Processor E7200 with dual-core, one maximum, 1066MHz system bus, and 3MB L2 cache	1U Rack top  Front optical disk disk Rear PSU 1 - PCIe x8 2 - PCIe x4 • Black color front; metal case • 17.3" W x 22" D x 1.75" H • 440mm W x 559mm D x 43mm H • 28 lb (12.7kg) max configuration • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons with system error LED Bay ① 5.25", 0.5" high, external, std optical Bay ② 3.5", 1" high, external, optional disk Bay ③ 3.5", 1" high, external, optional disk PCI Express riser card: Slot 1: 3/4-length, full-height, PCIe x8 Slot 2: half-length, low-profile, PCIe x4 (x8 mechanical) Security • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Implementation	Processor uses FC-LGA8 package, one LGA775 socket	
Memory	1GB std, 8GB max, PC2-6400 800MHz DDR2, ECC , dual-channel capable, four 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in one socket; three sockets available	
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.3, 16MB, external monitor port (VGA DB-15 rear); <i>Maximum resolution</i> : 800x600@85Hz	
EIDE controller	Enhanced IDE controller in Enterprise South Bridge, one connector on planar, single 1-drop IDE cable (for Combo)	
EIDE Combo	DVD-ROM/CD-RW, Ultrabay Enhanced, 12.7mm high	
SATA disk(s)	None	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R, not used by disks	
SATA connectors	Two SATA connectors on planar, two simple-swap connectors on 3.5" disk backplate	
SATA RAID cont	LSI™ 1064E, SATA 3.0Gb/s, RAID® 0, 1 support, Mini PCI Express® adapter	
SAS disk	Not supported	
SAS connectors	Not supported	
SAS RAID cont	Not supported	
Chipset	Intel 3210 Chipset , Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 10 support, SMSC® SCH5027 Super I/O	
Riser card	Contains one PCI Express x4 slot and one PCI Express x8 slot	
Front ports	Two USB 2.0	
Rear ports	Two USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45), system management (RJ-45)	
Diagnostics	Diagnostic LEDs (system-error LED on front cover; error LEDs for fans, disk controller, memory, PCI slots, power)	
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant	
Audio	None	
Speaker	Internal speaker	
Ethernet	Dual gigabit on planar, Broadcom® 5722 (PCIe x1), Broadcom 5703 (PCI 2.2), full duplex, Wake on LAN®	
Keyboard	None (use USB port)	Software management tools • ThinkServer EasyStartup • ThinkServer EasyUpdate • ThinkServer EasyManage
Mouse	None (use USB port)	
Power supply	One 350 watts, one maximum, non-redundant, two variable speed fans, non-hot-swap, universal	
Cooling	Five fans, five maximum, variable speed	
Accessories 1GB PC2-6400 DDR2 ECC UDIMM 45J6188 2GB PC2-6400 DDR2 ECC UDIMM 45J6189 160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6195 250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6196 500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6197 750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6198 Other accessories at lenovo.com/accessories		ThinkPlus Priority Support, 90-day Trial RoHS-compliant Limited Warranty¹ ⇒ 1-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378

See footnotes for important warranty information
US model announced September 30, 2008

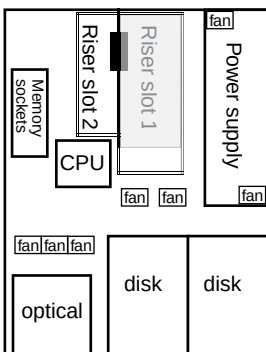
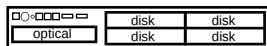
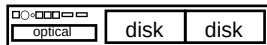
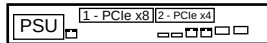
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(RS110-1) October 2008

ThinkServer™ RS110 (6438) - TopSeller

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply	Fans	Limited warranty¹	Workhorse Global	Avail date
RS110	6438-13U	2x3	E3110	3.00	2	1 x 2GB	None	3.5"	2 x Simple-swap	SATA	1064E	Combo	350W	5	3-year	No	Sep 08
RS110	6438-15U	2x5	X3360	2.83	4	2 x 2GB	None	2.5"	4 x Hot-swap	SAS	MR10i	Combo	350W	5	3-year	No	Sep 08

- *R = Rack, S = Single processor*
- *High performance server with rock solid technology and proven hardware design*
- *Easy to use with ThinkServer EasyStartup, EasyUpdate, and EasyManage software*
- *These small and medium business (SMB) models are part of the US TopSeller™ Program*

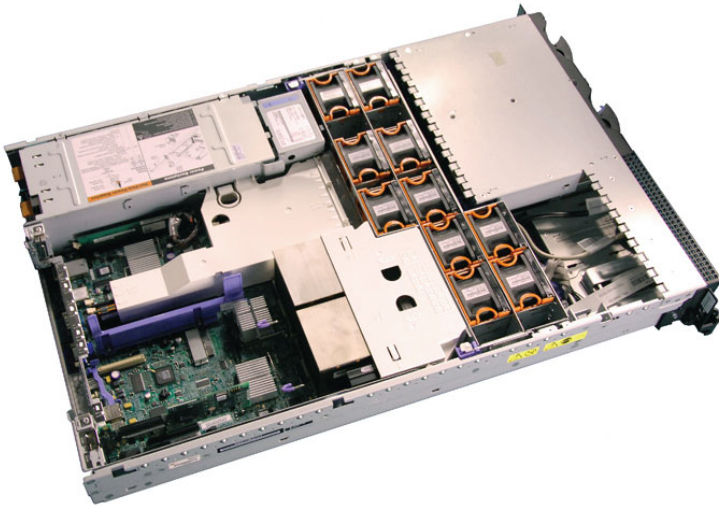
Processor	One Intel® Xeon® Processor E3110 with dual-core , one maximum, 1333MHz system bus, and 6MB L2 cache or One Intel Xeon Processor X3360 with quad-core , one maximum, 1333MHz system bus, and 12MB L2 cache
Implementation	Processor uses FC-LGA8 package, one LGA775 socket
Memory	2GB or 4GB std, 8GB max, PC2-6400 800MHz DDR2, ECC , dual-channel capable, four 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in one or two sockets; three or two sockets available
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.3, 16MB, external monitor port (VGA DB-15 rear); <i>Maximum resolution</i> : 800x600@85Hz
EIDE controller	Enhanced IDE controller in Enterprise South Bridge, one connector on planar, single 1-drop IDE cable (for Combo)
EIDE Combo	DVD-ROM/CD-RW, Ultrabay Enhanced, 12.7mm high
SATA disk(s)	None
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R, not used by disks
SATA connectors	Two SATA connectors on planar, 13U: two simple-swap connectors on 3.5" disk backplate
SATA RAID cont	13U: LSI™ 1064E, SATA 3.0Gb/s, RAID® 0, 1 support, Mini PCI Express® adapter
SAS disk	None
SAS connectors	15U: 4 hot-swap connectors on 2.5" disk backplane
SAS RAID cont	15U: LSI MR10i, SAS 3.0Gb/s, RAID® 0, 1, 5, 6, 10, 50, 60 support, Mini PCI Express adapter
Chipset	Intel 3210 Chipset , Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 10 support, SMSC® SCH5027 Super I/O
Riser card	Contains one PCI Express® x4 slot and one PCI Express x8 slot
Front ports	Two USB 2.0
Rear ports	Two USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45), system management (RJ-45)
Diagnostics	Diagnostic LEDs (system-error LED on front cover; error LEDs for fans, disk controller, memory, PCI slots, power)
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant
Audio	None
Speaker	Internal speaker
Ethernet	Dual gigabit on planar, Broadcom® 5722 (PCIe x1), Broadcom 5703 (PCI 2.2), full duplex, Wake on LAN®
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply	One 350 watts, one maximum, non-redundant, two variable speed fans, non-hot-swap, universal
Cooling	Five fans, five maximum, variable speed
Accessories	
1GB PC2-6400 DDR2 ECC UDIMM	45J6188
2GB PC2-6400 DDR2 ECC UDIMM	45J6189
160GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6195
250GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6196
500GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6197
750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6198
73GB 2.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm)	45J6208
146GB 2.5" Hot-swap SAS 3.0Gb/s Disk (10000 rpm)	45J6207
Other accessories at lenovo.com/accessories	
Limited Warranty¹	
➤ 3-year parts and labor	
➤ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts², 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)	
➤ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty	
• Onsite service upgrade options (in eligible locations) ⁷	
• Post warranty maintenance services	
➤ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378	
1U Rack top	
	
Front on 2.5" disk models	
	
Front on 3.5" disk models	
	
Rear	
	
• Black color front; metal case • 17.3" W x 22" D x 1.75" H • 440mm W x 559mm D x 43mm H • 28 lb (12.7kg) max configuration • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons with system error LED	
<i>Some:</i> 2.5" disk bays:	
Bay ① 5.25", 0.5" high, external, std optical	
Bay ② 2.5", 0.6" high, external, optional disk	
Bay ③ 2.5", 0.6" high, external, optional disk	
Bay ④ 2.5", 0.6" high, external, optional disk	
Bay ⑤ 2.5", 0.6" high, external, optional disk	
<i>Some:</i> 3.5" disk bays:	
Bay ① 5.25", 0.5" high, external, std optical	
Bay ② 3.5", 1" high, external, optional disk	
Bay ③ 3.5", 1" high, external, optional disk	
<i>PCI Express riser card:</i>	
Slot 1: 3/4-length, full-height, PCIe x8	
Slot 2: half-length, low-profile, PCIe x4 (x8 mechanical)	
Security	
• Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)	
Software management tools	
• ThinkServer EasyStartup • ThinkServer EasyUpdate • ThinkServer EasyManage	
ThinkPlus Priority Support, 90-day Trial	
RoHS-compliant	

See footnotes for important warranty information
US models announced September 30, 2008

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Lenovo ThinkServer RD120



Lenovo ThinkServer RD120



Lenovo ThinkServer RD120



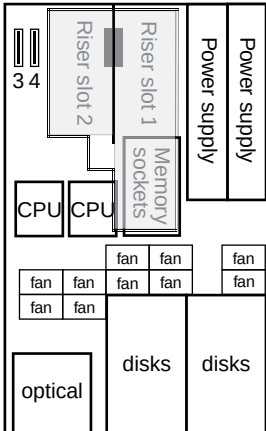
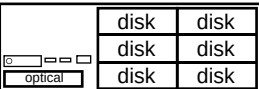
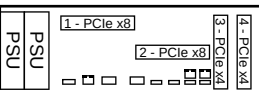
Lenovo ThinkServer RD120



Lenovo ThinkServer RD120

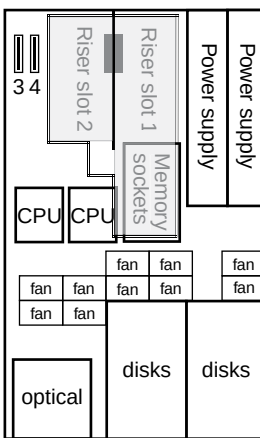
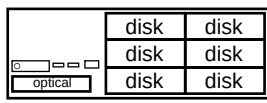
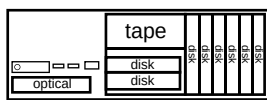
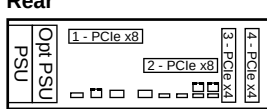
Name	Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory	Disk(s) size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Warranty ¹	Limited Global	Workhorse Avail date
RD120	6445-12U	4x7	1 x E5205	1.86	2	2 x 1GB	None	3.5"	6 x	Hot-swap SATA/SAS ⁴	RAID-8k	Combo 2 x 835W	10	1-year	No	Sep 08
RD120	6445-14U	4x7	1 x E5205	1.86	2	2 x 1GB	None	3.5"	6 x	Hot-swap SATA/SAS ⁴	9580W	Combo 2 x 835W	10	1-year	No	Jan 09

- **R = Rack, D = Dual processor support**
- **High performance server with rock solid technology and proven hardware design**
- **Easy to use with ThinkServer EasyStartup, EasyUpdate, and EasyManage software**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**

Processor	One Intel® Xeon® Processor E5205 with dual-core , two maximum, 1066MHz system bus, and 6MB L2 cache	2U Rack top  Front  Rear  • Black color front; metal case • 17.5"W x 27.8"D x 3.36"H • 443.6mm W x 705mm D x 85.4mm H • 65 lb (29.5kg) max configuration • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons with pull-out Easy LED Diagnostics panel Bay ① 5.25", 0.5" high, external, std optical Bay ② 3.5", 1" high, external, optional disk Bay ③ 3.5", 1" high, external, opt disk (opt 1.6" tape) Bay ④ 3.5", 1" high, external, opt disk (used by tape) Bay ⑤ 3.5", 1" high, external, optional disk Bay ⑥ 3.5", 1" high, external, optional disk Bay ⑦ 3.5", 1" high, external, optional disk Slot 1: full-length, full-height, PCIe x8 (<i>on riser card</i>) Slot 2: half-length, full-height, PCIe x8 (<i>on riser card</i>) Slot 3: half-length, low-profile, PCIe x4 (x8 mechanical) Slot 4: half-length, low-profile, PCIe x4 (x8 mechanical)
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets	
Memory	2GB std, 48GB max, PC2-5300 667MHz DDR2, Advanced ECC , fully buffered, 4-channel capable, twelve 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two sockets; ten sockets available	
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.3, 16MB, external monitor port (two VGA DB-15 front and rear); <i>Maximum resolution</i> : 800x600@85Hz	
EIDE controller	Enhanced IDE controller in Enterprise South Bridge, one connector on planar, single 1-drop IDE cable (for Combo)	
EIDE Combo	DVD-ROM/CD-RW, Ultrabay Enhanced, 12.7mm high	
SATA disk(s)	None	
SATA connectors	Six hot-swap connectors on 3.5" disk backplane	
SAS disk(s)	None	
SATA/SAS ⁴ cont	14U SATA/SAS : Adaptec® AIC-9580W, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID [®] 0, 1, 10 support, 8-port, on planar	
SAS connectors	Six hot-swap connectors on 3.5" disk backplane	
SATA/SAS RAID controller	12U SATA/SAS : RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID [®] 0, 1, 1e, 5, 6, 10 support, in reserved connector, single cable to backplane	
Chipset	Intel 5000P chipset , Intel 6321ESB-2E I/O Controller Hub, NS PC8742XVUL Super I/O	
Riser card	Contains two PCI Express® x8 slots	
Front ports	Two USB 2.0, external monitor (VGA DB-15)	
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45), system management (RJ-45), external SAS	
Diagnostics	Easy LED Diagnostics (pull-out operator information panel with information LED and system-error LED; error LEDs for fans, disks, RAID, memory, processors, voltage regulator module, riser card, PCI slots, power supplies)	
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant	
Audio	None	
Speaker	Internal speaker	
Ethernet	Dual gigabit on planar, two Broadcom® 5708, PCIe x1, full duplex, Wake on LAN®, TCP/IP Offload Engine (TOE), Alert Standard Format 2.0	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	Two 835 watts, two maximum, redundant with 2, variable speed fan, hot-swap, universal, two redundant power supplies require ten fans	
Cooling	Ten fans, ten maximum, variable speed, hardware failure protection, hot-swap, ten fans required with second redundant power supply	
Accessories		
Intel Xeon Quad-Core Processor E5205 45J6180		
1GB PC2-5300 DDR2 ECC FB-DIMM 45J6191		
2GB PC2-5300 DDR2 ECC FB-DIMM 45J6192		
4GB PC2-5300 DDR2 ECC FB-DIMM 45J6193		
500GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6202		
750GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6203		
1TB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6204		
146GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm) 45J6211		
300GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm) 45J6212		
Other accessories at lenovo.com/accessories		
Limited Warranty¹		
↪ 1-year parts and labor		
↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)		
↪ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty		
• Onsite service upgrade options (in eligible locations)⁷		
• Post warranty maintenance services		
↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378		
Security		
• Power-on password		
• Administrator password		
• Boot sequence control		
• Boot without keyboard, mouse, diskette		
• Serial port I/O control		
• USB port disablement (front or all)		
Software management tools		
• ThinkServer EasyStartup		
• ThinkServer EasyUpdate		
• ThinkServer EasyManage		
ThinkPlus Priority Support, 90-day Trial		
RoHS-compliant		

See footnotes for important warranty information

US model announced January 20, 2009; previous model on September 30, 2008

Name	Type-model	Slot bay	Proc-essor(s)	GHz	Cores	Memory	Disk(s)	size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	warranty ¹	Global	Avail date	
RD120	6447-18U	4x7	1 x E5410	2.33	4	2 x 1GB	None	3.5"	6 x Hot-swap	SATA/SAS ⁴	RAID-8k	Combo	2 x 835W	10	3-year	No	Sep 08	
RD120	6447-21U	4x7	1 x E5430	2.66	4	2 x 2GB	None	3.5"	6 x Hot-swap	SATA/SAS ⁴	RAID-8k	Combo	2 x 835W	10	3-year	No	Sep 08	
RD120	6447-23U	4x10	2 x E5450	3.00	4	2 x 2GB	None	2.5"	8 x Hot-swap	SAS	RAID-8k	Combo	2 x 835W	10	3-year	No	Sep 08	
• R = Rack, D = Dual processor support • High performance server with rock solid technology and proven hardware design • Easy to use with ThinkServer EasyStartup, EasyUpdate, and EasyManage software • These small and medium business (SMB) models are part of the US TopSeller™ Program																		
Processor	One or two Intel® Xeon® Processor E5410, E5430, or E5450 with quad-core , two maximum, 1333MHz bus, and 12MB L2 cache										2U Rack top  Front on 3.5" disk models  Front on 2.5" disk models  Rear  • Black color front; metal case • 17.5"W x 27.8"D x 3.36"H • 443.6mm W x 705mm D x 85.4mm H • 65 lb (29.5kg) max configuration • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons with pull-out Easy LED Diagnostics panel Some: 2.5" disk bays: Bay ① 5.25", 0.5" high, external, std optical Bay ② 3.5", 1.6" high, external, optional tape Bay ③ 2.5", 0.6" high, external, optional disk Bay ④ 2.5", 0.6" high, external, optional disk Bay ⑤ 2.5", 0.6" high, external, optional disk Bay ⑥ 2.5", 0.6" high, external, optional disk Bay ⑦ 2.5", 0.6" high, external, optional disk Bay ⑧ 2.5", 0.6" high, external, optional disk Bay ⑨ 2.5", 0.6" high, external, optional disk Bay ⑩ 2.5", 0.6" high, external, optional disk Some: 3.5" disk bays: Bay ① 5.25", 0.5" high, external, std optical Bay ② 3.5", 1" high, external, optional disk Bay ③ 3.5", 1" high, external, opt disk (opt 1.6" tape) Bay ④ 3.5", 1" high, external, opt disk (used by tape) Bay ⑤ 3.5", 1" high, external, optional disk Bay ⑥ 3.5", 1" high, external, optional disk Bay ⑦ 3.5", 1" high, external, optional disk Slot 1: full-length, full-height, PCIe x8 (on riser card) Slot 2: half-length, full-height, PCIe x8 (on riser card) Slot 3: half-length, low-profile, PCIe x4 (x8 mechanical) Slot 4: half-length, low-profile, PCIe x4 (x8 mechanical)							
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets																	
Memory	2GB or 4GB std, 48GB max, PC2-5300 667MHz DDR2, Advanced ECC , fully buffered, 4-channel capable, twelve 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two sockets; ten sockets available																	
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.3, 16MB, external monitor port (two VGA DB-15 front and rear); <i>Maximum resolution</i> : 800x600@85Hz																	
EIDE controller	Enhanced IDE controller in Enterprise South Bridge, one connector on planar, single 1-drop IDE cable (for DVD)																	
EIDE Combo	DVD-ROM/CD-RW, Ultrabay Enhanced, 12.7mm high																	
SATA disk(s)	None																	
SATA connectors	18U/21U : six hot-swap connectors on 3.5" disk backplane																	
SAS disk(s)	None																	
SATA/SAS ⁴ cont	Adaptec® AIC-9580W, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID® 0, 1, 10 support, 8-port, on planar, not used																	
SAS connectors	18U/21U : six hot-swap connectors on 3.5" disk backplane																	
SATA/SAS RAID controller	23U : eight hot-swap connectors on 2.5" disk backplane RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID® 0, 1, 1e, 5, 6, 10 support, in reserved connector, single cable to backplane																	
Chipset	Intel 5000P chipset , Intel 6321ESB-2E I/O Controller Hub, NS PC8742XVUL Super I/O																	
Riser card	Contains two PCI Express® x8 slots																	
Front ports	Two USB 2.0, external monitor (VGA DB-15)																	
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45), system management (RJ-45), external SAS																	
Diagnostics	Easy LED Diagnostics (pull-out operator information panel with information LED and system-error LED; error LEDs for fans, disks, RAID, memory, processors, voltage regulator module, riser card, PCI slots, power supplies)																	
Systems mgmt	System management utility, baseboard management controller, IPMI 2.0-compliant																	
Audio	None																	
Speaker	Internal speaker																	
Ethernet	Dual gigabit on planar, two Broadcom® 5708, PCIe x1, full duplex, Wake on LAN®, TCP/IP Offload Engine (TOE), Alert Standard Format 2.0																	
Keyboard	None (use USB port)																	
Mouse	None (use USB port)																	
Power supply	Two 835 watts, two maximum, redundant with 2, variable speed fan, hot-swap, universal, two redundant power supplies require ten fans																	
Cooling	Ten fans, ten maximum, variable speed, hardware failure protection, hot-swap, ten fans required with second redundant power supply																	
Accessories Intel Xeon Quad-Core Processor E5410 45J6185 Intel Xeon Quad-Core Processor E5430 45J6186 1GB PC2-5300 DDR2 ECC FB-DIMM 45J6191 2GB PC2-5300 DDR2 ECC FB-DIMM 45J6192 4GB PC2-5300 DDR2 ECC FB-DIMM 45J6193 750GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6203 1TB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm) 45J6204 146GB 2.5" Hot-swap SAS 3.0Gb/s Disk (10000 rpm) 45J6207 146GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm) 45J6211 300GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm) 45J6212 Other accessories at lenovo.com/accessories																		
Software management tools • ThinkServer EasyStartup • ThinkServer EasyUpdate • ThinkServer EasyManage																		
Limited Warranty¹ ➤ 3-year parts and labor ➤ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ➤ ThinkPlus™ services available; see lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations) ⁷ • Post warranty maintenance services ➤ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378																		
Security • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)																		
ThinkPlus Priority Support, 90-day Trial																		
RoHS-compliant																		

See footnotes for important warranty information
 US models announced September 30, 2008

Partial list of accessories supported on Lenovo® ThinkServer

ThinkServer Ready accessories are available through Lenovo Business Partners. Locate a Business Partner near you at: bplocator.lenovo.com

Storage

USB Portable Diskette Drive 05K9276 ann 06/05/00

Keyboard

Preferred Pro USB Keyboard 73P5220 ann 06/21/05
USB Travel Keyboard with UltraNav 31P9490 ann 04/27/04

Mouse

Optical Wheel Mouse (USB) 06P4069 ann 05/21/03

Monitors

ThinkVision® L151 15" LCD Monitor 9165AC6 ann 10/23/07
ThinkVision L171p 17" LCD Monitor 9227AD1 ann 10/31/06
ThinkVision L193p 19" LCD Monitor 4431HB2 ann 10/23/07

Other accessories at www.lenovo.com/thinkserver/options

Operating Systems**Microsoft® Windows®***English language*

Server 2008 Standard ROK	54Y6100
Server 2008 Enterprise ROK	54Y6110
Server 2008 Datacenter (64-bit) ROK	84979HE
Essential Business Server 2008 Standard ROK	84978IE
Essential Business Server 2008 Premium ROK	84978JE
Small Business Server 2008 Standard ROK	84978EE
Small Business Server 2008 Premium ROK	84978FE
Small Business Server 2003 R2, Standard Edition ROK	54Y6119
Small Business Server 2003 R2, Premium Edition ROK	54Y6128
Server 2003 R2, 32-bit Enterprise Edition ROK	55Y7017
Server 2003 R2, Enterprise x64 Edition ROK	55Y7027
Server 2003 R2, Standard Edition ROK	55Y7000
Server 2003 R2, Standard x64 Edition, ROK	55Y7010

French language

Server 2008 Standard ROK	54Y6103
Server 2008 Enterprise ROK	54Y6112
Server 2008 Datacenter (64-bit) ROK	84979HF
Small Business Server 2008 Standard ROK	84978EF
Small Business Server 2008 Premium ROK	84978FF
Small Business Server 2003 R2, Standard Edition ROK	54Y6121
Small Business Server 2003 R2, Premium Edition ROK	54Y6130
Server 2003 R2, 32-bit Enterprise Edition ROK	55Y7021
Server 2003 R2, Enterprise x64 Edition ROK	55Y7033
Server 2003 R2, Standard Edition ROK	55Y7006
Server 2003 R2, Standard x64 Edition, ROK	55Y7016

Spanish language

Server 2008 Standard ROK	54Y6108
Server 2008 Enterprise ROK	54Y6117
Server 2008 Datacenter (64-bit) ROK	84979HS
Small Business Server 2008 Standard ROK	84978ES
Small Business Server 2008 Premium ROK	84978FS
Small Business Server 2003 R2, Standard Edition ROK	54Y6126
Small Business Server 2003 R2, Premium Edition ROK	54Y6135
Server 2003 R2, 32-bit Enterprise Edition ROK	55Y7025
Server 2003 R2, Enterprise x64 Edition ROK	55Y7030
Server 2003 R2, Standard Edition ROK	55Y7005
Server 2003 R2, Standard x64 Edition, ROK	55Y7013

Microsoft Windows Client Access License(s)*Multi-Language*

Server 2008 1 user	849781A
Server 2008 5 user	849785A
Server 2008 Terminal Services 5 user	849785B
Small Business Server 2008 Standard 1 user	849781C
Small Business Server 2008 Standard 5 user	849785C
Small Business Server 2008 Premium 1 user	849781D
Small Business Server 2008 Premium 5 user	849785D
Essential Business Server 2008 Standard 5 user	849785E
Essential Business Server 2008 Standard 20 user	849782E
Essential Business Server 2008 Premium 5 user	849785F
Essential Business Server 2008 Premium 20 user	849782F

Novell® Server Software - SLES for Lenovo*SLES = SUSE® Linux™ Enterprise Server*

1-year SLES plus 1-year Standard support	55Y7037
1-year SLES plus 1-year Priority support	55Y7038
3-year SLES plus 3-year Standard support	55Y7039
3-year SLES plus 3-year Priority support	55Y7040

Partial list of Lenovo® ThinkPlus Services for ThinkServer™

For more information see:

http://www.lenovo.com/services_warranty/us/en/index.html**Training classes**

- The basics on components, diagnostics, troubleshooting, and managing Lenovo servers, delivered in interactive online format

Online Training, Understanding Lenovo Servers	45K4080
Online Training, Understanding Systems Management	45K4081
Installation, ThinkServer Hardware Only	45K4082

ThinkPlus service upgrade options⁷*LOR = Lenovo Onsite Repair***TS100 with 1-year warranty**

3-year LOR 9x5 Next Business Day	45K4055
3-year LOR 9x5 4 hour response	45K4056
4-year LOR 9x5 Next Business Day	51J0723
4-year LOR 9x5 4 hour response	51J0724
5-year LOR 9x5 Next Business Day	51J0725
5-year LOR 9x5 4 hour response	51J0726

TS100 with 3-year warranty

3-year LOR 9x5 4 hour response	45K4059
4-year LOR 9x5 Next Business Day	51J0727
4-year LOR 9x5 4 hour response	51J0728
5-year LOR 9x5 Next Business Day	51J0729
5-year LOR 9x5 4 hour response	51J0730

TD100 with 1-year warranty

3-year LOR 9x5 Next Business Day	45K4062
3-year LOR 9x5 4 hour response	45K4063
4-year LOR 9x5 Next Business Day	51J0731
4-year LOR 9x5 4 hour response	51J0732
5-year LOR 9x5 Next Business Day	51J0733
5-year LOR 9x5 4 hour response	51J0734

TD100 with 3-year warranty

3-year LOR 9x5 4 hour response	45K4066
4-year LOR 9x5 Next Business Day	51J0735
4-year LOR 9x5 4 hour response	51J0736
5-year LOR 9x5 Next Business Day	51J0737
5-year LOR 9x5 4 hour response	51J0738

RS110 with 1-year warranty

3-year LOR, 9x5 Next Business Day	45K4069
3-year LOR, 4 hour response	45K4070
4-year LOR 9x5 Next Business Day	51J0739
4-year LOR 9x5 4 hour response	51J0740
5-year LOR 9x5 Next Business Day	51J0741
5-year LOR 9x5 4 hour response	51J0742

RS110 with 3-year warranty

3-year LOR, 4 hour response	45K4073
4-year LOR 9x5 Next Business Day	51J0743
4-year LOR 9x5 4 hour response	51J0744
5-year LOR 9x5 Next Business Day	51J0745
5-year LOR 9x5 4 hour response	51J0746

RD120 with 1-year warranty

3-year LOR 9x5 Next Business Day	45K5305
3-year LOR 9x5 4 hour response	45K5306
4-year LOR 9x5 Next Business Day	51J0747
4-year LOR 9x5 4 hour response	51J0748
5-year LOR 9x5 Next Business Day	51J0749
5-year LOR 9x5 4 hour response	51J0750

RD120 with 3-year warranty

3-year LOR 9x5 4 hour response	45K4076
4-year LOR 9x5 Next Business Day	51J0751
4-year LOR 9x5 4 hour response	51J0752
5-year LOR 9x5 Next Business Day	51J0753
5-year LOR 9x5 4 hour response	51J0754

Lenovo Online Data Backup

- Secure offsite data storage
- 256-bit Advanced Encryption System
- Data recovery or access in case of an unforeseen event
- Automatic, remote management
- Choose which business critical data to back up

1-year 25GB Server Lenovo Online Data Backup (US)	45K2115
1-year 50GB Server Lenovo Online Data Backup (US)	45K2116
1-year 100GB Server Lenovo Online Data Backup (US)	45K2117

ThinkPlus Priority Support

- 9x5 Next Business Day response Lenovo Onsite Repair
- 24 x 7 support with priority routing and advanced level technicians

TS100 with 1-year warranty

3-year Priority Support	45K4057
3-year Priority Support 4 hour response	45K4058

TS100 with 3-year warranty

3-year Priority Support	45K4060
3-year Priority Support 4 hour response	45K4061

TD100 with 1-year warranty

3-year Priority Support	45K4064
3-year Priority Support 4 hour response	45K4065

TD100 with 3-year warranty

3-year Priority Support	45K4067
3-year Priority Support 4 hour response	45K4068

RS110 with 1-year warranty

3-year Priority Support	45K4071
3-year Priority Support 4 hour response	45K4072

RS110 with 3-year warranty

3-year Priority Support	45K4074
3-year Priority Support 4 hour response	45K4075

RD120 with 1-year warranty

3-year Priority Support	45K5307
3-year Priority Support 4 hour response	45K5308

RD120 with 3-year warranty

3-year Priority Support	45K4077
3-year Priority Support 4 hour response	45K4078

ThinkPlus Priority Support with Hard Disk Drive Retention

- 9x5 Next Business Day response Lenovo Onsite Repair
- 24x7 support with priority routing and advanced level technicians
- Hard Disk Drive Retention (HDDR) means customer keeps disk

*HDDR = Hard Disk Drive Retention***TS100 with 1-year warranty**

3-year Priority Support with HDDR	45K5441
3-year Priority Support 4 hour response with HDDR	45K5442

TS100 with 3-year warranty

3-year Priority Support with HDDR	45K5443
3-year Priority Support 4 hour response with HDDR	45K5444

TD100 with 1-year warranty

3-year Priority Support with HDDR	45K5445
3-year Priority Support 4 hour response with HDDR	45K5446

TD100 with 3-year warranty

3-year Priority Support with HDDR	45K5447
3-year Priority Support 4 hour response with HDDR	45K5448

RS110 with 1-year warranty

3-year Priority Support with HDDR	45K5449
3-year Priority Support 4 hour response with HDDR	45K5450

RS110 with 3-year warranty

3-year Priority Support with HDDR	45K5451
3-year Priority Support 4 hour response with HDDR	45K5452

RD120 with 1-year warranty

3-year Priority Support with HDDR	45K5453
3-year Priority Support 4 hour response with HDDR	45K5454

RD120 with 3-year warranty

3-year Priority Support with HDDR	45K5455
3-year Priority Support 4 hour response with HDDR	45K5456

ThinkPlus Productivity

- Priority Support
- Online Training, Understanding Lenovo Servers
- One-time hardware installation

3-year ThinkPlus Productivity, TS100 (1-year)	45K4084
3-year ThinkPlus Productivity, TS100 (3-year)	45K4086
3-year ThinkPlus Productivity, TD100 (1-year)	45K4088
3-year ThinkPlus Productivity, TD100 (3-year)	45K4090
3-year ThinkPlus Productivity, RS110 (1-year)	45K4092
3-year ThinkPlus Productivity, RS110 (3-year)	45K4094
3-year ThinkPlus Productivity, RD120 (1-year)	45K5315
3-year ThinkPlus Productivity, RD120 (3-year)	45K4096

Availability: All offers subject to availability. Lenovo reserves the right to alter product offerings and specifications at any time, without notice. Lenovo is not responsible for photographic or typographic errors.

Warranty: For a copy of applicable product warranties, write to: Warranty Information, 500 Park Offices Drive, RTP, NC, 27709, Attn: Dept ZPYA/B600. Lenovo makes no representation or warranty regarding third party products or services.

¹ **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges.

² **Hard drive:** GB = billion bytes, TB = trillion bytes. Accessible capacity is less.

³ **Systems with limited onsite service** are designed to be repaired during the applicable warranty period primarily with customer-replaceable parts provided by Lenovo. Lenovo will only send a technician onsite to perform a repair if (a) remote telephone diagnosis and/or customer part replacement are unable to resolve the problem, or (b) the part is one of the few designated by Lenovo for onsite replacement. For a list of onsite replaceable parts, contact Lenovo. In the United States call 1-800-426-7378. Support unrelated to a warranty issue may be subject to additional charges.

⁴ **SATA/SAS:** The system configuration supports the installation of either SATA or SAS disks. A configuration including both SATA and SAS disks is not supported.

⁷ **ThinkPlus Services:** These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family, or household purposes. Not all machine types and models are covered. Service period begins with the equipment date of purchase. Service must be purchased during the original limited product warranty period. Service levels are response time objectives and are not guarantees. If the machine problem turns out to be a Customer Replaceable Unit (CRU), a part will be express shipped to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. P&L means parts and labor. P/U means pick-up. See ThinkPlus terms and conditions for complete details and restrictions.

⁸ **RAID:** Supported RAID levels for a system will vary from the stated capabilities of the RAID controller due to dependencies on the number and capacity of physical disks in the system and on customer requirements for performance, fault tolerance, or data redundancy.

RAID levels and requirements:

- **RAID 0 (striping)** provides increased performance by writing data across multiple drives.
- **RAID 1 (mirroring)** provides fault tolerance by writing the data on two drives.
- **RAID 5 (striping with parity)** uses distributed parity data to provide fault tolerance more efficiently than RAID 1. Requires three or more drives.
- **RAID 6 (striped set with dual distributed parity)** provides fault tolerance from two drive failures; array continues to operate with up to two failed drives. Requires four drives.
- **RAID 10 (or RAID 1+0)** combines RAID 1 and RAID 0 to create a stripe of mirrors that is fault tolerant while offering increased performance. Requires four drives.
- **RAID 50 (or RAID 5+0)** combines RAID 5 and RAID 0 to create block-level striping with distributed parity improving performance over RAID 5. Requires six drives.
- **RAID 60 (or RAID 6+0)** combines RAID 6 and RAID 0 to create block-level striping with distributed double parity improving performance over RAID 6. Requires eight drives.

¹⁴ **Response times may vary.** May exclude some holidays. Telephone support may be subject to additional charges.

ThinkServer™

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February 2009
svbook.pdf