ThinkServer

Personal Systems Reference
Lenovo ThinkServer Servers

December 2008 - Version 349

lenovo.com

Lenovo ThinkServer TS100
with 400W non-redundant power supply

Lenovo ThinkServer TS100
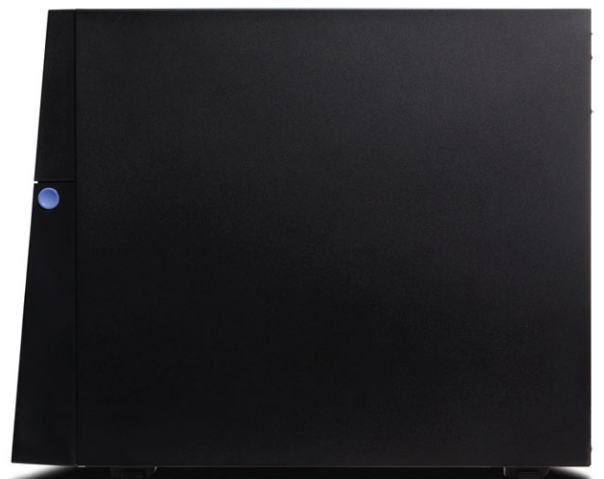with simple-swap disks

Lenovo ThinkServer TS100
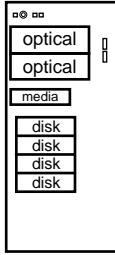with 430W redundant power supply

Lenovo ThinkServer TS100

Lenovo ThinkServer TS100

Lenovo ThinkServer TS100

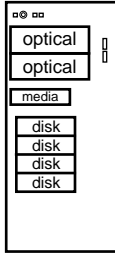| Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	SATA optical	Power supply	Limited warranty[1]	Workhorse Global	Avail date
TS100	6432-17U	4x7	E7200	2.53	2	1 x 1GB	None	3.5"	4 x Simple-swap	SATA	1064E	DVD	400W	1-year	No	Sep 08

- *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
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; *Non-italics:* 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); *Maximum resolution:* 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[8] 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

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

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

Bay ① 5.25", 1.6" high, external, standard optical
Bay ② 5.25", 1.6" high, external, optional optical
Bay ③ 3.5", 1" high, external, open
Bay ④ 3.5", 1" high, internal, optional SATA disk
Bay ⑤ 3.5", 1" high, internal, optional SATA disk
Bay ⑥ 3.5", 1" high, internal, optional SATA disk
Bay ⑦ 3.5", 1" high, internal, optional SATA disk

Slot 1: full-length, full-height, PCIe x8
Slot 2: full-length, full-height, PCIe x1 (x4 mechanical)
Slot 3: full-length, full-height, 64-bit PCI-X (not enabled)
Slot 4: full-length, full-height, 32-bit PCI 2.2
Slot 5: half-length, full-height, 32-bit PCI 2.2

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 Warranty[1]

⇨ **1-year parts and labor**
⇨ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 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 day[14] toll-free support during the warranty period[1] via 800-426-7378**

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]	Workhorse 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
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; *Non-italics:* 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); *Maximum resolution:* 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, *13U SATA:* 4 simple-swap connectors on 3.5" disk backplate *15U SATA/SAS:* 4 hot-swap connectors on 3.5" disk backplane
SATA RAID cont	LSI™ 1064E, SATA 3.0 Gb/s, RAID8 0, 1 support, Mini PCI Express® adapter
SAS disk(s)	None
SAS connectors	*15U SATA/SAS:* 4 hot-swap connectors on 3.5" disk backplane
SAS RAID cont	*15U:* LSI MR10i, SATA 3.0 Gb/s, SAS 3.0 Gb/s, RAID8 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	*Some:* One 400 watts, one maximum, non-redundant, variable speed fan, non-hot-swap, universal *Some:* Two 430 watts, two maximum, redundant with two, variable speed fan, hot-swap, universal
Cooling	Three fans (processor, rear, disks)

Accessories

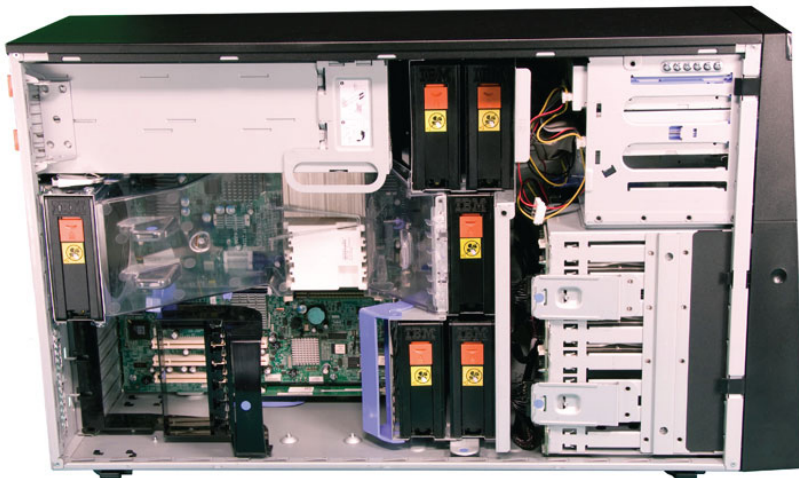|	
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750GB 3.5" Simple-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6198
160GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6200
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146GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm)	45J6211
300GB 3.5" Hot-swap SAS 3.0Gb/s Disk (15000 rpm)	45J6212

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- Toolless adapter retention
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- Rack shelf support

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Bay ⑤ 3.5", 1" high, internal, optional disk
Bay ⑥ 3.5", 1" high, internal, optional disk
Bay ⑦ 3.5", 1" high, internal, optional disk

Slot 1: full-length, full-height, PCIe x8
Slot 2: full-length, full-height, PCIe x1 (x4 mechanical)
Slot 3: full-length, full-height, 64-bit PCI-X (not enabled)
Slot 4: full-length, full-height, 32-bit PCI 2.2
Slot 5: half-length, full-height, 32-bit PCI 2.2

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 Warranty[1]

☞ **3-year parts and labor**
☞ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 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 day[14] toll-free support during the warranty period[1] via 800-426-7378**

Lenovo ThinkServer TD100
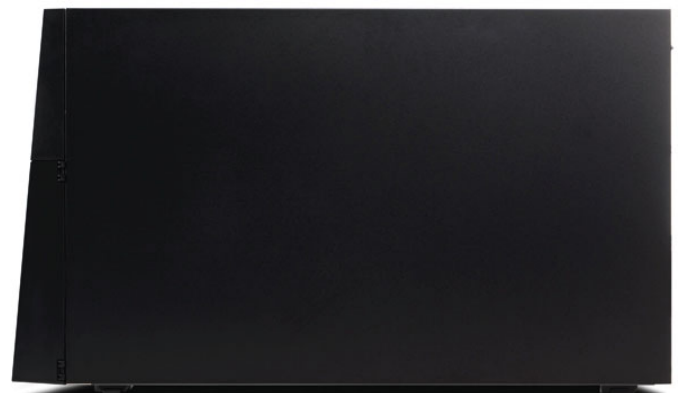

Lenovo ThinkServer TD100x

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)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty[1]	Workhorse 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

- *T = Tower, 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(s)	One **Intel® Xeon® Processor E5405** with **quad-core**, two maximum, 1333MHz system bus, and 12MB L2 cache
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; *Non-italics:* 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); *Maximum resolution:* 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	Adaptec® AIC-9580W, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID[8] 0, 1, 10 support, 8-port, on planar, not used
SAS connectors	None
SATA/SAS RAID controller	RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID[8] 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

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

Other accessories at **lenovo.com**/accessories

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 Warranty[1]

- ⇨ **1-year parts and labor**
- ⇨ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)**
- ⇨ **ThinkPlus™ services available; see lenovo.com/thinkplus/warranty**
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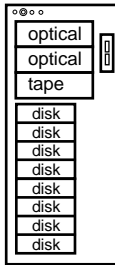| Name	Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty[1]	Workhorse Global	Avail date
TD100	6429-17U	6x11	1 x E5410	2.33	4	2 x 1GB	None	3.5"	8 x Hot-swap	SATA/SAS[4]	RAID-8k	DVD	2 x 835W	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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Processor(s)	One **Intel® Xeon® Processor E5410** or **E5430** with **quad-core**, two maximum, 1333MHz system bus, and 12MB L2 cache
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; *Non-italics:* 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); *Maximum resolution:* 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, RAID8 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, RAID8 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

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
160GB 3.5" Hot-swap SATA 3.0Gb/s Disk (7200 rpm)	45J6200
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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

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- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O control
- USB port disablement (all)

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  - **Onsite service upgrade options (in eligible locations)[7]**
  - **Post warranty maintenance services**
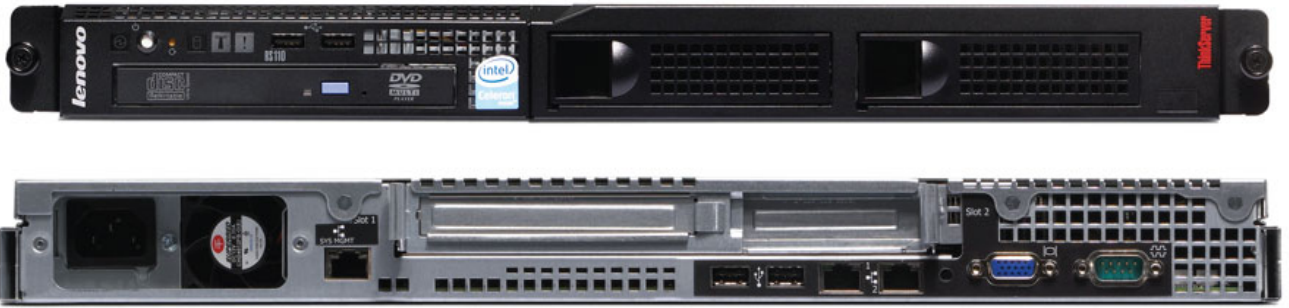- ➭ **24 hour x 7 day[14] toll-free support during the warranty period[1] via 800-426-7378**

ThinkServer™ TD100x (4206) - TopSeller

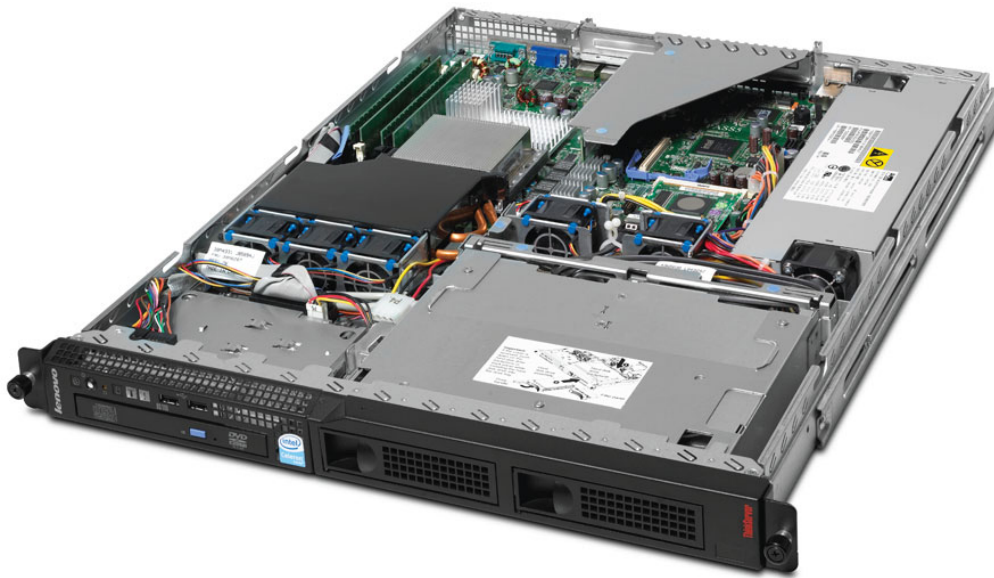| Name	Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty[1]	Workhorse Global	Avail date
TD100x	4206-14U	6x11	1 x X5450	3.00	4	2 x 2GB	None	3.5"	8 x Hot-swap	SATA/SAS[4]	RAID-8k	DVD	2 x 835W	6	3-year	No	Sep 08

- *T = Tower, D = Dual processor support*
- *These small and medium business (SMB) models are part of the US TopSeller™ Program*
- *The TD100x differs from the TD100 because of the following standard features:*
  Easy LED Diagnostic panel, support for up to eight 3.5" hot-swap SAS disks,
  two redundant 835 watt power supplies, six redundant fans

Processor(s)	One **Intel® Xeon® Processor X5450** with **quad-core**, two maximum, 1333MHz system bus, and 12MB L2 cache
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets
Memory	**4GB** std, 48GB max, **PC2-5300 667MHz DDR2**, **Advanced ECC**, fully buffered, twelve 240-pin DIMM sockets; *Non-italics:* standard memory in two sockets; ten sockets available
Graphics	ATI® RN50 (ES1000), on planar, 32-bit/33MHz PCI 2.3, 16MB, external monitor port (VGA DB-15 rear); *Maximum resolution:* 800x600@85Hz
EIDE controller	Enhanced IDE/ATA 100 controller in Enterprise South Bridge, one connector on planar, single 2-drop IDE cable (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[8] 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[8] 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	Easy LED Diagnostics (operator information panel on left side with error LEDs for fans, disks, RAID, memory, processors, voltage regulator module, PCI slots, power supplies)
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 2, 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

Accessories

Intel® Xeon® Quad-Core Processor X5450	45K1608
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

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
Bay ⑧ 3.5", 1" high, external, optional disk
Bay ⑨ 3.5", 1" high, external, optional disk
Bay ⑩ 3.5", 1" high, external, optional disk
Bay ⑪ 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 Warranty[1]

- �þ **3-year parts and labor**
- �þ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)**
- �þ **ThinkPlus™ services available; see lenovo.com/thinkplus/warranty**
  - **Onsite service upgrade options (in eligible locations)[7]**
  - **Post warranty maintenance services**
- �þ **24 hour x 7 day[14] toll-free support during the warranty period[1] via 800-426-7378**

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

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(TD100X-1) October 2008

ThinkServer

Lenovo ThinkServer RS110

Lenovo ThinkServer RS110

Lenovo ThinkServer RS110

ThinkServer™ RS110 (6436) - TopSeller

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	Disk 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
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; *Non-italics:* 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); *Maximum resolution:* 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[8] 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)
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

Software management tools
- ThinkServer EasyStartup
- ThinkServer EasyUpdate
- ThinkServer EasyManage

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

1U Rack top

- 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)

ThinkPlus Priority Support, 90-day Trial

RoHS-compliant

Limited Warranty[1]
- **1-year parts and labor**
- **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 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 day[14] toll-free support during the warranty period[1] via 800-426-7378**

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

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(RS110-1) October 2008

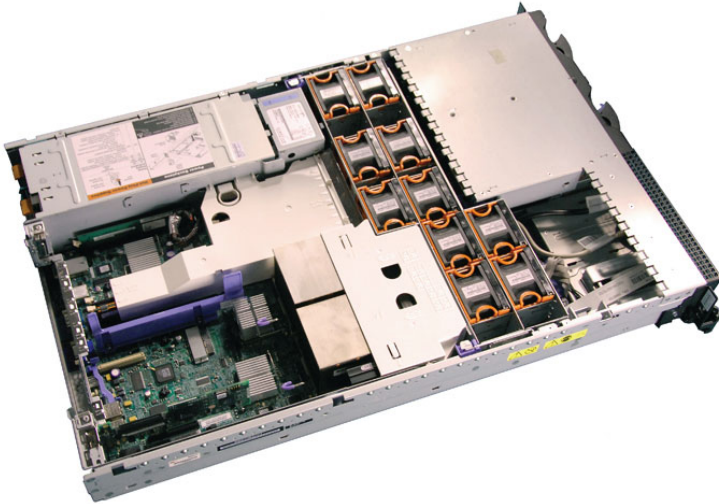| Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply	Fans	Limited warranty[1]	Workhorse Global	Avail date
RS110	6438-13U	2x3	E3110	3.00	2	1 x 2GB	None	3.5"	2 x Simple-swap	SATA	1064E	Combo	350W	5	3-year	No	Sep 08
RS110	6438-15U	2x5	X3360	2.83	2	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; *Non-italics:* 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); *Maximum resolution:* 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[8] 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[8] 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 Warranty[1]

- ➥ **3-year parts and labor**
- ➥ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 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 day[14] toll-free support during the warranty period[1] 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

Some: 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

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, 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)

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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(RS110-2) October 2008

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)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty[1]	Workhorse Global	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

- *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
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; *Non-italics:* 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); *Maximum resolution:* 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	Adaptec® AIC-9580W, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID[8] 0, 1, 10 support, 8-port, on planar, not used
SAS connectors	Six hot-swap connectors on 3.5" disk backplane
SATA/SAS RAID controller	RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID[8] 0, 1, 5, 10, 50, 60 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

2U Rack top

- 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 *(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)

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

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)

Limited Warranty[1]

➥ **1-year parts and labor**
➥ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 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 day[14] toll-free support during the warranty period[1] via 800-426-7378**

Software management tools

- ThinkServer EasyStartup
- ThinkServer EasyUpdate
- ThinkServer EasyManage

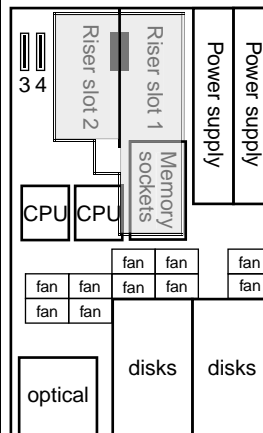ThinkPlus Priority Support, 90-day Trial

RoHS-compliant

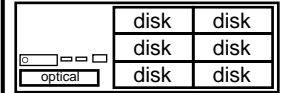| Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory	Disk(s)	Disk size	Disk connection	Disk type	RAID controller	EIDE optical	Power supply(s)	Fans	Limited warranty[1]	Workhorse Global	Avail date
RD120	6447-18U	4x7	1 x E5410	2.33	4	2 x 1GB	None	3.5"	6 x Hot-swap	SATA/SAS[4]	RAID-8k	Combo	2 x 835W	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*

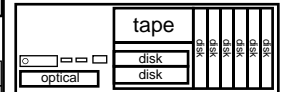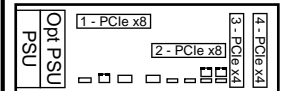|	
Processor	One or two **Intel® Xeon® Processor E5410**, **E5430**, or **E5450** with **quad-core**, two maximum, 1333MHz bus, and 12MB L2 cache
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets
Memory	**2GB** or **4GB** std, 48GB max, **PC2-5300 667MHz DDR2**, **Advanced ECC**, fully buffered, 4-channel capable, twelve 240-pin DIMM sockets; *Non-italics:* 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); *Maximum resolution:* 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, RAID8 0, 1, 10 support, 8-port, on planar, not used
SAS connectors	*18U/21U:* six hot-swap connectors on 3.5" disk backplane *23U:* eight hot-swap connectors on 2.5" disk backplane
SATA/SAS RAID controller	RAID-8k Adapter, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID8 0, 1, 5, 10, 50, 60 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	

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)

Software management tools

- ThinkServer EasyStartup - ThinkServer EasyUpdate - ThinkServer EasyManage

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)

Limited Warranty[1]

☞ **3-year parts and labor**
☞ **Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts[3], 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 day[14] toll-free support during the warranty period[1] via 800-426-7378**

ThinkPlus Priority Support, 90-day Trial

RoHS-compliant

ThinkServer™ Accessories

Partial list of accessories supported on Lenovo® ThinkServer

ThinkServer Ready accessories are available through Lenovo Business Partners. Locate a Business Partner near you at:
http://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 **http://www.lenovo.com/accessories**

Operating Systems

Microsoft® Windows®

English language

Server 2008 Standard ROK	54Y6100
Server 2008 Enterprise ROK	54Y6110
Server 2008 Datacenter (64-bit) ROK	84979HE
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 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 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

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 options[7]

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

TS100 with 3-year warranty
3-year LOR 9x5 4 hour response	45K4059

TD100 with 1-year warranty
3-year LOR 9x5 Next Business Day	45K4062
3-year LOR 9x5 4 hour response	45K4063

TD100 with 3-year warranty
3-year LOR 9x5 4 hour response	45K4066

RS110 with 1-year warranty
3-year LOR, 9x5 Next Business Day	45K4069
3-year LOR, 4 hour response	45K4070

RS110 with 3-year warranty
3-year LOR, 4 hour response	45K4073

RD120 with 1-year warranty
3-year LOR 9x5 Next Business Day	45K5305
3-year LOR 9x5 4 hour response	45K5306

RD120 with 3-year warranty
3-year LOR 9x5 4 hour response	45K4076

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 reponse 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

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

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™