

ThinkServer™

Personal Systems Reference Lenovo® ThinkServer® Servers 2011 to 2013 - withdrawn

Januray 2014 - Version 449 (Western Europe)



Lenovo ThinkServer 200 Series Family

lenovo.com

ThinkServer™



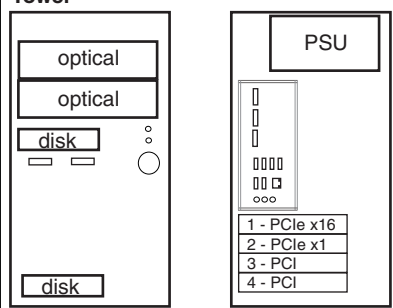
Lenovo® ThinkServer TS130

ThinkServer™ TS130 (1106) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	Disk bays	SATA optical	Graphics adapter(s)	Windows Server preload	Power supply(s)
1106-1GG4x4	Xeon E3-1225	3.1	4C/4T	1x4GB	1333MHz	1x500GB	3.5"		2xDirect Cable	DVD±RW	Intel HD		280W
1106-A1G4x4	Xeon E3-1235	3.2	4C/8T	1x4GB	1333MHz	2x500GB	3.5"	1	2xDirect Cable	DVD±RW	Intel HD		280W
1106-1HG4x4	Xeon E3-1235	3.2	4C/8T	1x4GB	1333MHz	2x250GB	3.5"	1	2xDirect Cable	DVD±RW	Intel HD	2008 Foundations	280W
1106-1EG4x4	Core i3-2120	3.3	2C/4T	1x2GB	1333MHz	1x500GB	3.5"		2xDirect Cable	DVD±RW	Intel HD		280W

- True server-class reliability and performance at desktop price
- These small and medium business (SMB) models are part of the EMEA TopSeller™ Program
- These models have a 3-year limited warranty¹

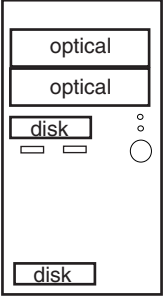
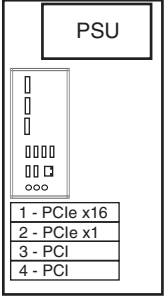
Processor	<p>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® E3-1225 processor (4C/4T, 3.1GHz, 6MB Cache), Turbo Boost 2.0 (up to 3.4GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon E3-1235 processor (4C/8T, 3.2GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p> 
Implementation	Processor in LGA1155 socket, up to one processor	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	250GB or 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	<p>Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical</p> <p>Bay 2 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 3 3.5", 1" high, internal, for disk</p> <p>Bay 4 3.5", 1" high, internal, for disk</p>
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	<p>Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16</p> <p>Slot 2: half-length, full-height, PCI Express 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI</p> <p>Slot 4: half-length, full-height, 32-bit PCI</p>
Front ports	Two USB 2.0	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	<p>Intel AMT</p> <p>Intel AMT 7.0 with KVM support is available on model(s) with Xeon processor</p>
Cooling	4 fans (power supply, CPU, rear, front)	<p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup
<p>Preloaded Operating System</p> <p>Some: Genuine Windows Server® 2008 R2 Foundations</p>		<p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup
<p>Max internal capacity</p> <p>4.0TB with two 2TB 3.5" SATA disks</p>		<p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
<p>Limited Warranty¹</p> <ul style="list-style-type: none"> ↪ 3-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts², during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		<p>ENERGY STAR® Server 1.1-compliant</p> <p>RoHS-compliant</p>

See footnotes for important warranty information
EMEA model(s) announced June 7, 2011

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(G-TAM1-4) June 2011

Type-model	Slot x bay	Processor	Cores / GHz	Threads	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	Disk bays	SATA optical	Graphics adapter(s)	Windows Server preload	Power supply(s)
1106-39G	4x4	Xeon E3-1235	3.2	4C/8T	1x4GB	1333MHz	2x500GB	3.5"	1	2xDirect Cable	DVD±RW	Intel HD 2008	Foundations	280W

- **True server-class reliability and performance at desktop price**
- **This small and medium business (SMB) model is part of the EMEA TopSeller™ Program**
- **This model has a 3-year limited warranty¹**

Processor	Intel® Xeon® E3-1235 processor (4C/8T, 3.2GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Tower  																								
Implementation	Processor in LGA1155 socket, up to one processor																									
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p style="text-align: center;">Disk Bays</p> <table border="0"> <tr> <td>Bay 1</td> <td>5.25", 1.6" high,</td> <td>external,</td> <td>for optical</td> </tr> <tr> <td>Bay 2</td> <td>5.25", 1.6" high,</td> <td>external,</td> <td>open (optical/tape)</td> </tr> <tr> <td>Bay 3</td> <td>3.5", 1" high,</td> <td>internal,</td> <td>for disk</td> </tr> <tr> <td>Bay 4</td> <td>3.5", 1" high,</td> <td>internal,</td> <td>for disk</td> </tr> </table> <p style="text-align: center;">Expansion Slots</p> <table border="0"> <tr> <td>Slot 1:</td> <td>half-length, full-height, PCI Express 2.0 x16</td> </tr> <tr> <td>Slot 2:</td> <td>half-length, full-height, PCI Express 2.0 x1</td> </tr> <tr> <td>Slot 3:</td> <td>half-length, full-height, 32-bit PCI</td> </tr> <tr> <td>Slot 4:</td> <td>half-length, full-height, 32-bit PCI</td> </tr> </table> <p style="text-align: center;">Intel AMT</p> <p>Intel AMT 7.0 with KVM support is available on model(s) with Xeon processor</p> <p style="text-align: center;">Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p style="text-align: center;">Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p style="text-align: center;">Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>	Bay 1	5.25", 1.6" high,	external,	for optical	Bay 2	5.25", 1.6" high,	external,	open (optical/tape)	Bay 3	3.5", 1" high,	internal,	for disk	Bay 4	3.5", 1" high,	internal,	for disk	Slot 1:	half-length, full-height, PCI Express 2.0 x16	Slot 2:	half-length, full-height, PCI Express 2.0 x1	Slot 3:	half-length, full-height, 32-bit PCI	Slot 4:	half-length, full-height, 32-bit PCI
Bay 1	5.25", 1.6" high,		external,	for optical																						
Bay 2	5.25", 1.6" high,		external,	open (optical/tape)																						
Bay 3	3.5", 1" high,		internal,	for disk																						
Bay 4	3.5", 1" high,		internal,	for disk																						
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Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 																									
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector																									
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable																									
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"																									
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																									
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors																									
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)																									
Front ports	Two USB 2.0																									
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort																									
Audio	High Definition (HD) Audio, Realtek ALC662 codec																									
Ethernet	One gigabit ethernet on planar, Intel 82579LM																									
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant																									
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)																									
Keyboard	None (use USB port)																									
Mouse	None (use USB port)																									
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified																									
Cooling	4 fans (power supply, CPU, rear, front)																									
Preloaded Operating System																										
Genuine Windows Server® 2008 R2 Foundations																										
Max internal capacity																										
4.0TB with two 2TB 3.5" SATA disks																										
Limited Warranty¹																										
<ul style="list-style-type: none"> ↪ 3-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 																										

See footnotes for important warranty information
EMEA model(s) announced November 29, 2011

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Power Supply	Ann date (mm/dd/yy)
1106-B4G	Xeon E3-1225V2	1333MHz	1x4GB		2xDirect Cable	3.5"	1x500GB	DVD±RW	Intel HD		280W	09/11/12
1106-B6G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD±RW	Intel HD	2008 Foundations	280W	09/11/12
1106-B7G	Xeon E3-1245V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD±RW	Intel HD		280W	09/11/12
1106-B5G	Core i3-3220	1333MHz	1x4GB		2xDirect Cable	3.5"	1x500GB	DVD±RW	Intel HD		280W	09/25/12

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- These models have a 3-year limited warranty¹

Processor	<p>Intel® Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>
Implementation	Processor in LGA1155 socket, up to one processor	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>• Raven black color; metal case</p> <p>• 6.9"W x 16.0"D x 14.9"H</p> <p>• 175mm W x 407mm D x 377mm H</p> <p>• 24.7 lb (11.2kg) max configuration</p> <p>• 25-liter</p> <p>• Toolless side cover removal</p> <p>• Toolless disk and optical drive removal</p> <p>• Toolless adapter retention</p> <p>• Illuminated front icons</p> <p style="text-align: center;">Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical</p> <p>Bay 2 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 3 3.5", 1" high, internal, for disk</p> <p>Bay 4 3.5", 1" high, internal, for disk</p> <p style="text-align: center;">Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16</p> <p>Slot 2: half-length, full-height, PCI Express 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI</p> <p>Slot 4: half-length, full-height, 32-bit PCI</p> <p style="text-align: center;">Intel AMT</p> <p>Intel AMT is supported on Xeon-model(s)</p> <p style="text-align: center;">Software Management Tools</p> <p>• ThinkServer EasyStartup</p> <p style="text-align: center;">Power-On Hotkey</p> <p>• Setup Utility: F1 at startup</p> <p>• Diagnostic: F2 at startup</p> <p>• Network Boot: F12 at startup</p> <p>• RAID Configuration Utility: Ctrl+I at startup</p> <p style="text-align: center;">Security</p> <p>• Security chip (see information on left)</p> <p>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</p> <p>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</p> <p>• Power-on password</p> <p>• Boot sequence control</p> <p>• Boot without keyboard, mouse, diskette</p> <p>• Serial port I/O control</p> <p>• USB port disablement (front or all)</p> <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	500GB , SATA 6.0Gb/s, 7200 rpm, 3.5"	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s DriveSerial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset,	
SATA controller	RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Front ports	Two USB 2.0	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Preloaded Operating System		
2008 Foundations: Genuine Windows Server® 2008 R2 Foundations		
Max internal capacity		
4.0TB with two 2TB 3.5" SATA disks		
Limited Warranty¹		
<ul style="list-style-type: none"> ↪ 3-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		

See footnotes for important warranty information

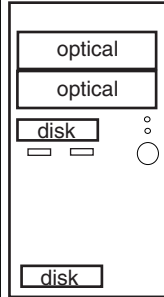
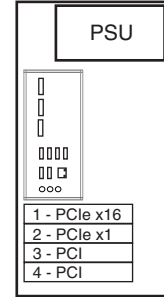
EMEA models announced September 11 or 25, 2012

ThinkServer® TS130 (1106) - TopSeller (February 2013)

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Ann date (mm/dd/yy)
1106-F5G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD±RW	Intel HD	2012 Foundation	02/05/13

- True server-class reliability and performance at desktop price
- Part of the EMEA TopSeller™ Program
- 3-year limited warranty¹

Processor	Intel® Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)	 
Implementation	Processor in LGA1155 socket, up to one processor	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p>Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical Bay 2 5.25", 1.6" high, external, open (optical/tape) Bay 3 3.5", 1" high, internal, for disk Bay 4 3.5", 1" high, internal, for disk</p> <p>Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16 Slot 2: half-length, full-height, PCI Express 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI Slot 4: half-length, full-height, 32-bit PCI</p> <p>Intel AMT</p> <p>Intel AMT is supported on Xeon-model(s)</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	500GB , SATA 6.0Gb/s, 7200 rpm, 3.5"	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s DriveSerial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Front ports	Two USB 2.0	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Preloaded Operating System		
2012 Foundation:	Genuine Windows Server® 2012 Foundation	
Max internal capacity		
4.0TB with two 2TB 3.5" SATA disks		
Limited Warranty¹		
<ul style="list-style-type: none"> ↪ 3-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		

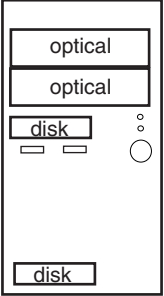
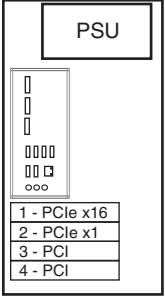
See footnotes for important warranty information
EMEA model announced February 5, 2013

ThinkServer™ TS130 (1105) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	Disk bays	SATA optical	Graphics adapter(s)	Windows Server preload	Power supply(s)
1105-A1G	4x4	Pentium G850	2.9 2C/2T	1x2GB	1333MHz	1x250GB	3.5"		2xDirect Cable	DVD	Intel HD		280W
1105-11G	4x4	Core i3-2100	3.1 2C/4T	1x2GB	1333MHz	2x250GB	3.5"	1	2xDirect Cable	DVD	Intel HD	2008 Foundations	280W

- **True server-class reliability and performance at desktop price**
- **These small and medium business (SMB) models are part of the EMEA TopSeller™ Program**
- **These models have a 1-year limited warranty¹**

Processor	<p>Intel® Pentium® G850 Processor (2C/2T, 2.9GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core™ i3-2100 Processor (2C/4T, 3.1GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p>  
Implementation	Processor in LGA1155 socket, up to one processor	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p>Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical</p> <p>Bay 2 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 3 3.5", 1" high, internal, for disk</p> <p>Bay 4 3.5", 1" high, internal, for disk</p> <p>Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16</p> <p>Slot 2: half-length, full-height, PCI Express 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI</p> <p>Slot 4: half-length, full-height, 32-bit PCI</p> <p>Intel AMT</p> <p>Intel AMT 7.0 with KVM support is available on model(s) with Xeon processor</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant</p> <p>RoHS-compliant</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	250GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Front ports	Two USB 2.0	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Preloaded Operating System		
Some: Genuine Windows Server® 2008 R2 Foundations		
Max internal capacity		
4.0TB with two 2TB 3.5" SATA disks		
Limited Warranty¹		
<ul style="list-style-type: none"> ↪ 1-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		

See footnotes for important warranty information
EMEA model(s) announced June 7, 2011

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(G-TAM1-3) June 2011

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	Disk bays	SATA optical	Graphics adapter(s)	Windows Server preload	Power supply(s)
1105-34G	4x4	Pentium G850	2.9 2C/2T	1x2GB	1333MHz	1x500GB	3.5"		2xDirect Cable	DVD	Intel HD		280W
1105-35G	4x4	Core i3-2100	3.1 2C/4T	1x2GB	1333MHz	2x500GB	3.5"	1	2xDirect Cable	DVD	Intel HD	2008 Foundations	280W
1105-36G	4x4	Xeon E3-1225	3.1 4C/4T	1x4GB	1333MHz	2x500GB	3.5"	1	2xDirect Cable	DVD	Intel HD	2008 Foundations	280W
1105-37G	4x4	Core i3-2120	3.3 2C/4T	1x2GB	1333MHz	1x500GB	3.5"		2xDirect Cable	DVD	Intel HD		280W
1105-38G	4x4	Xeon E3-1275	3.4 4C/8T	1x4GB	1333MHz		3.5"		2xDirect Cable	DVD	Intel HD		280W

- True server-class reliability and performance at desktop price
- These small and medium business (SMB) models are part of the EMEA TopSeller™ Program
- These models have a 1-year limited warranty¹

Processor	<p>Intel® Pentium® G850 Processor (2C/2T, 2.9GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core™ i3-2100 Processor (2C/4T, 3.1GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i3-2120 Processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® E3-1225 processor (4C/4T, 3.1GHz, 6MB Cache), Turbo Boost 2.0 (up to 3.4GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon E3-1275 processor (4C/8T, 3.4GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p>
Implementation	Processor in LGA1155 socket, up to one processor	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p>Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical</p> <p>Bay 2 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 3 3.5", 1" high, internal, for disk</p> <p>Bay 4 3.5", 1" high, internal, for disk</p> <p>Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16</p> <p>Slot 2: half-length, full-height, PCI Express 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI</p> <p>Slot 4: half-length, full-height, 32-bit PCI</p> <p>Intel AMT</p> <p>Intel AMT 7.0 with KVM support is available on model(s) with Xeon processor</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant</p> <p>RoHS-compliant</p>
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	<i>Some:</i> 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Front ports	Two USB 2.0	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Preloaded Operating System		
Some: Genuine Windows Server® 2008 R2 Foundations		
Max internal capacity		
4.0TB with two 2TB 3.5" SATA disks		
Limited Warranty¹		
<ul style="list-style-type: none"> ↪ 1-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts², during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		

See footnotes for important warranty information
EMEA model(s) announced November 29, 2011

ThinkServer™ TS130 (1105) - TopSeller (February 2012)

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Power Supply	Ann date (mm/dd/yy)
1105-42G	E3-1225	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 R2 STD	280W	02/14/12
1105-43G	E3-1225	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	SBS 2011 Essentials	280W	02/28/12
1105-44G	E3-1225	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	SBS 2011	280W	02/28/12

- True server-class reliability and performance at desktop price
- Part of the EMEA TopSeller™ Program
- 1-year limited warranty¹

Processor	<p>Intel® Xeon® E3-1225 processor (4C/4T, 3.1GHz, 6MB Cache), Turbo Boost 2.0 (up to 3.4GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz) Processor in LGA1155 socket, up to one processor</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p>Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical Bay 2 5.25", 1.6" high, external, open (optical/tape) Bay 3 3.5", 1" high, internal, for disk Bay 4 3.5", 1" high, internal, for disk</p> <p>Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16 Slot 2: half-length, full-height, PCI Express 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI Slot 4: half-length, full-height, 32-bit PCI</p> <p>Intel AMT</p> <p>Intel AMT 7.0 is supported on Xeon-model(s)</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>
Implementation	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	
Memory	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Additional memory disclaimers	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	
Graphics	Two 3.5" SATA disk bays, no hot-swap, direct cable 500GB , SATA 6.0Gb/s, 7200 rpm, 3.5" DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	
Disk bays		
SATA disk(s)		
Optical		
SATA controller	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Chipset	Two USB 2.0 Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Front ports	High Definition (HD) Audio, Realtek ALC662 codec	
Rear ports	One gigabit ethernet on planar, Intel 82579LM STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Audio	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Ethernet		
Security chip		
Diagnostics	None (use USB port) None (use USB port)	
Keyboard	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Mouse	4 fans (power supply, CPU, rear, front)	
Power supply		
Cooling		
<p>Preloaded Operating System</p> <p>2008 R2 STD: Genuine Windows Server 2008 R2 Standard SBS 2011 Essentials: Genuine Windows® Small Business Server 2011 Essentials SBS 2011: Genuine Windows Small Business Server 2011 Standard</p>		
<p>Max internal capacity</p> <p>4.0TB with two 2TB 3.5" SATA disks</p>		
<p>Limited Warranty¹</p> <ul style="list-style-type: none"> ↪ 1-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts², during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		

See footnotes for important warranty information
EMEA models announced February 14 or 28, 2012

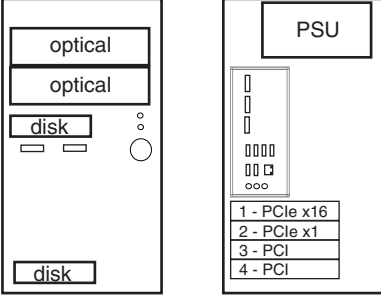
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(G-TAM5-3) March 2012

ThinkServer® TS130 (1105) - TopSeller (May 2012)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	Disk bays	SATA optical	Graphics adapter(s)	Windows Server preload	Power supply(s)
1105-92G	4x4	Core i3-2100	3.1 2C/4T	1x2GB	1333MHz	No	3.5"	No	2xDirect Cable	DVD	Intel HD	None	280W

- True server-class reliability and performance at desktop price
- This small and medium business (SMB) models is part of the EMEA TopSeller™ Program
- This models has a 1-year limited warranty¹

Processor	Intel® Core™ i3-2100 Processor (2C/4T, 3.1GHz, 3MB Cache), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Tower 	
Implementation	Processor in LGA1155 socket, up to one processor		
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons 	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 		
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector		
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable		
SATA disk(s)	None		
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive		
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors		
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)		
Front ports	Two USB 2.0		
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort		
Audio	High Definition (HD) Audio, Realtek ALC662 codec		
Ethernet	One gigabit ethernet on planar, Intel 82579LM		
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant		
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)		
Keyboard	None (use USB port)		
Mouse	None (use USB port)		
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified		
Cooling	4 fans (power supply, CPU, rear, front)		
Max internal capacity		Disk Bays Bay 1 5.25", 1.6" high, external, for optical Bay 2 5.25", 1.6" high, external, open (optical/tape) Bay 3 3.5", 1" high, internal, for disk Bay 4 3.5", 1" high, internal, for disk	
4.0TB with two 2TB 3.5" SATA disks			
Limited Warranty¹		Expansion Slots Slot 1: half-length, full-height, PCI Express 2.0 x16 Slot 2: half-length, full-height, PCI Express 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI Slot 4: half-length, full-height, 32-bit PCI	
<ul style="list-style-type: none"> ↪ 1-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 			
			Intel AMT Intel AMT 7.0 with KVM support is available on model(s) with Xeon processor
			Software Management Tools <ul style="list-style-type: none"> • ThinkServer EasyStartup
		Power-On Hotkey <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup 	
		Security <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
		ENERGY STAR® Server 1.1-compliant RoHS-compliant	

See footnotes for important warranty information
EMEA model(s) announced May 29, 2012

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(G-TAM6-3) June 2012

ThinkServer® TS130 (1105) - TopSeller (August 2012)

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Power Supply	Ann date (mm/dd/yy)
1105-68G	Xeon E3-1225V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"		DVD	Intel HD		280W	08/21/12
1105-69G	Xeon E3-1225V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"	1x500GB	DVD	Intel HD		280W	08/21/12
1105-70G	Xeon E3-1225V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 Foundations	280W	08/21/12
1105-72G	Xeon E3-1225V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	SBS 2011 Essentials	280W	08/21/12
1105-74G	Xeon E3-1225V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 R2 Standard	280W	08/21/12
1105-75G	Xeon E3-1275V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"		DVD	Intel HD		280W	08/21/12

- True server-class reliability and performance at desktop price
- Part of the US TopSeller™ Program
- 1-year limited warranty¹

Processor	<p>Intel® Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>																												
Implementation	Processor in LGA1155 socket, up to one processor																													
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p>Disk Bays</p> <table border="1"> <tr> <td>Bay 1</td> <td>5.25", 1.6" high,</td> <td>external,</td> <td>for optical</td> </tr> <tr> <td>Bay 2</td> <td>5.25", 1.6" high,</td> <td>external,</td> <td>open (optical/tape)</td> </tr> <tr> <td>Bay 3</td> <td>3.5", 1" high,</td> <td>internal,</td> <td>for disk</td> </tr> <tr> <td>Bay 4</td> <td>3.5", 1" high,</td> <td>internal,</td> <td>for disk</td> </tr> </table> <p>Expansion Slots</p> <table border="1"> <tr> <td>Slot 1:</td> <td>half-length, full-height,</td> <td>PCI Express 2.0 x16</td> </tr> <tr> <td>Slot 2:</td> <td>half-length, full-height,</td> <td>PCI Express 2.0 x1</td> </tr> <tr> <td>Slot 3:</td> <td>half-length, full-height,</td> <td>32-bit PCI</td> </tr> <tr> <td>Slot 4:</td> <td>half-length, full-height,</td> <td>32-bit PCI</td> </tr> </table> <p>Intel AMT</p> <p>Intel AMT is supported on Xeon-model(s)</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>	Bay 1	5.25", 1.6" high,	external,	for optical	Bay 2	5.25", 1.6" high,	external,	open (optical/tape)	Bay 3	3.5", 1" high,	internal,	for disk	Bay 4	3.5", 1" high,	internal,	for disk	Slot 1:	half-length, full-height,	PCI Express 2.0 x16	Slot 2:	half-length, full-height,	PCI Express 2.0 x1	Slot 3:	half-length, full-height,	32-bit PCI	Slot 4:	half-length, full-height,	32-bit PCI
Bay 1	5.25", 1.6" high,		external,	for optical																										
Bay 2	5.25", 1.6" high,		external,	open (optical/tape)																										
Bay 3	3.5", 1" high,		internal,	for disk																										
Bay 4	3.5", 1" high,		internal,	for disk																										
Slot 1:	half-length, full-height,		PCI Express 2.0 x16																											
Slot 2:	half-length, full-height,		PCI Express 2.0 x1																											
Slot 3:	half-length, full-height,		32-bit PCI																											
Slot 4:	half-length, full-height,		32-bit PCI																											
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 																													
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector																													
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable																													
SATA disk(s)	Some: 500GB , SATA 6.0Gb/s, 7200 rpm, 3.5"																													
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive																													
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors																													
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)																													
Front ports	Two USB 2.0																													
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort																													
Audio	High Definition (HD) Audio, Realtek ALC662 codec																													
Ethernet	One gigabit ethernet on planar, Intel 82579LM																													
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant																													
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)																													
Keyboard	None (use USB port)																													
Mouse	None (use USB port)																													
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified																													
Cooling	4 fans (power supply, CPU, rear, front)																													
<p>Preloaded Operating System</p> <p>2008 Foundations: Genuine Windows Server® 2008 R2 Foundations</p> <p>2008 R2 Standard: Genuine Windows Server 2008 R2 Standard</p> <p>SBS 2011 Essentials: Genuine Windows® Small Business Server 2011 Essentials</p>																														
<p>Max internal capacity</p> <p>4.0TB with two 2TB 3.5" SATA disks</p>																														
<p>Limited Warranty¹</p> <ul style="list-style-type: none"> ➤ 1-year parts and labor ➤ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ➤ Onsite service upgrade options available (in eligible locations)⁷ ➤ Lenovo Priority Support Package available ➤ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 																														

See footnotes for important warranty information
EMEA models announced August 21, 2012

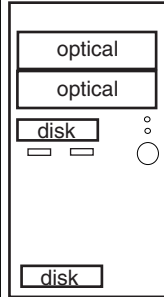
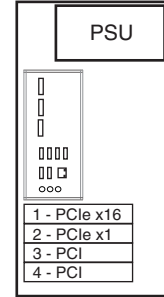
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(G-TAM7-3) September 2012

ThinkServer® TS130 (1105) - TopSeller (September 2012)

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Power Supply	Ann date (mm/dd/yy)
1105-99G	Xeon E3-1225V2	1333MHz	1x4GB	No	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 Foundations	280W	09/11/12
1105-B1G	Core i3-3220	1333MHz	1x4GB	No	2xDirect Cable	3.5"		DVD	Intel HD		280W	09/25/12

- True server-class reliability and performance at desktop price
- Part of the US TopSeller™ Program
- 1-year limited warranty¹

Processor	Intel® Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz) Intel Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache) , integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)	Tower  
Implementation	Processor in LGA1155 socket, up to one processor	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons <p>Disk Bays</p> <p>Bay 1 5.25", 1.6" high, external, for optical Bay 2 5.25", 1.6" high, external, open (optical/tape) Bay 3 3.5", 1" high, internal, for disk Bay 4 3.5", 1" high, internal, for disk</p> <p>Expansion Slots</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x16 Slot 2: half-length, full-height, PCI Express 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI Slot 4: half-length, full-height, 32-bit PCI</p> <p>Intel AMT</p> <p>Intel AMT is supported on Xeon-model(s)</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	Some: 500GB , SATA 6.0Gb/s, 7200 rpm, 3.5"	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Front ports	Two USB 2.0	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Preloaded Operating System		
2008 Foundations: Genuine Windows Server® 2008 R2 Foundations		
Max internal capacity		
4.0TB with two 2TB 3.5" SATA disks		
Limited Warranty¹		
<ul style="list-style-type: none"> ↪ 1-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Onsite service upgrade options available (in eligible locations)⁷ ↪ Lenovo Priority Support Package available ↪ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 		

See footnotes for important warranty information

EMEA model announced September 11 or 25, 2012

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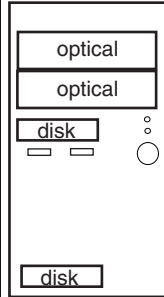
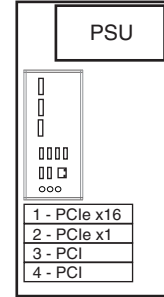
(G-TAM8-3) October 2012

ThinkServer® TS130 (1105) - TopSeller (February 2013)

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Ann date (mm/dd/yy)
1105-F2G	Xeon E3-1225V2	1333MHz	1x4GB		2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2012 Standard	02/05/13
1105-F3G	Xeon E3-1225V2	1333MHz	1x4GB		2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2012 Foundation	02/05/13
1105-H1G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 R2 Foundation	02/19/13
1105-H2G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	SBS 2011 Essentials	02/19/13
1105-H3G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	SBS 2011 Standard	02/19/13
1105-H4G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 R2 Standard	02/19/13
1105-H5G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2008 R2 Foundation	02/19/13
1105-H9G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2012 Foundation	02/19/13
1105-J1G	Xeon E3-1225V2	1333MHz	1x4GB	1	2xDirect Cable	3.5"	2x500GB	DVD	Intel HD	2012 Essentials	02/19/13

- True server-class reliability and performance at desktop price
- Part of the US TopSeller™ Program
- 1-year limited warranty¹

Processor	Intel® Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)	 																
Implementation	Processor in LGA1155 socket, up to one processor																	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons 																
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 																	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	<p>Disk Bays</p> <table border="0"> <tr> <td>Bay 1</td> <td>5.25", 1.6" high, external, for optical</td> </tr> <tr> <td>Bay 2</td> <td>5.25", 1.6" high, external, open (optical/tape)</td> </tr> <tr> <td>Bay 3</td> <td>3.5", 1" high, internal, for disk</td> </tr> <tr> <td>Bay 4</td> <td>3.5", 1" high, internal, for disk</td> </tr> </table> <p>Expansion Slots</p> <table border="0"> <tr> <td>Slot 1:</td> <td>half-length, full-height, PCI Express 2.0 x16</td> </tr> <tr> <td>Slot 2:</td> <td>half-length, full-height, PCI Express 2.0 x1</td> </tr> <tr> <td>Slot 3:</td> <td>half-length, full-height, 32-bit PCI</td> </tr> <tr> <td>Slot 4:</td> <td>half-length, full-height, 32-bit PCI</td> </tr> </table>	Bay 1	5.25", 1.6" high, external, for optical	Bay 2	5.25", 1.6" high, external, open (optical/tape)	Bay 3	3.5", 1" high, internal, for disk	Bay 4	3.5", 1" high, internal, for disk	Slot 1:	half-length, full-height, PCI Express 2.0 x16	Slot 2:	half-length, full-height, PCI Express 2.0 x1	Slot 3:	half-length, full-height, 32-bit PCI	Slot 4:	half-length, full-height, 32-bit PCI
Bay 1	5.25", 1.6" high, external, for optical																	
Bay 2	5.25", 1.6" high, external, open (optical/tape)																	
Bay 3	3.5", 1" high, internal, for disk																	
Bay 4	3.5", 1" high, internal, for disk																	
Slot 1:	half-length, full-height, PCI Express 2.0 x16																	
Slot 2:	half-length, full-height, PCI Express 2.0 x1																	
Slot 3:	half-length, full-height, 32-bit PCI																	
Slot 4:	half-length, full-height, 32-bit PCI																	
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	<p>Intel AMT</p> <p>Intel AMT is supported on Xeon-model(s)</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup <p>Security</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ENERGY STAR® Server 1.1-compliant RoHS-compliant</p>																
SATA disk(s)	500GB , SATA 6.0Gb/s, 7200 rpm, 3.5"																	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	<p>Preloaded Operating System</p> <table border="0"> <tr> <td>2008 R2 Foundations:</td> <td>Genuine Windows Server® 2008 R2 Foundation</td> </tr> <tr> <td>2008 R2 Standard:</td> <td>Genuine Windows Server 2008 R2 Standard</td> </tr> <tr> <td>SBS 2011 Essentials:</td> <td>Genuine Windows® Small Business Server 2011 Essentials</td> </tr> <tr> <td>SBS 2011 Standard:</td> <td>Genuine Windows Small Business Server 2011 Standard</td> </tr> <tr> <td>2012 Foundation:</td> <td>Genuine Windows Server 2012 Foundation</td> </tr> <tr> <td>2012 Essentials:</td> <td>Genuine Windows Server 2012 Essentials</td> </tr> <tr> <td>2012 Standard:</td> <td>Genuine Windows Server 2012 Standard</td> </tr> </table> <p>Max internal capacity</p> <p>4.0TB with two 2TB 3.5" SATA disks</p> <p>Limited Warranty¹</p> <ul style="list-style-type: none"> ➤ 1-year parts and labor ➤ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ➤ Onsite service upgrade options available (in eligible locations)⁷ ➤ Lenovo Priority Support Package available ➤ A-La-Carte Lenovo Services available <ul style="list-style-type: none"> • Online Data Backup • Onsite Hardware Installation • Online Training 	2008 R2 Foundations:	Genuine Windows Server® 2008 R2 Foundation	2008 R2 Standard:	Genuine Windows Server 2008 R2 Standard	SBS 2011 Essentials:	Genuine Windows® Small Business Server 2011 Essentials	SBS 2011 Standard:	Genuine Windows Small Business Server 2011 Standard	2012 Foundation:	Genuine Windows Server 2012 Foundation	2012 Essentials:	Genuine Windows Server 2012 Essentials	2012 Standard:	Genuine Windows Server 2012 Standard		
2008 R2 Foundations:	Genuine Windows Server® 2008 R2 Foundation																	
2008 R2 Standard:	Genuine Windows Server 2008 R2 Standard																	
SBS 2011 Essentials:	Genuine Windows® Small Business Server 2011 Essentials																	
SBS 2011 Standard:	Genuine Windows Small Business Server 2011 Standard																	
2012 Foundation:	Genuine Windows Server 2012 Foundation																	
2012 Essentials:	Genuine Windows Server 2012 Essentials																	
2012 Standard:	Genuine Windows Server 2012 Standard																	
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors																	
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)																	
Front ports	Two USB 2.0																	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort																	
Audio	High Definition (HD) Audio, Realtek ALC662 codec																	
Ethernet	One gigabit ethernet on planar, Intel 82579LM																	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant																	
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)																	
Keyboard	None (use USB port)																	
Mouse	None (use USB port)																	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified																	
Cooling	4 fans (power supply, CPU, rear, front)																	

See footnotes for important warranty information

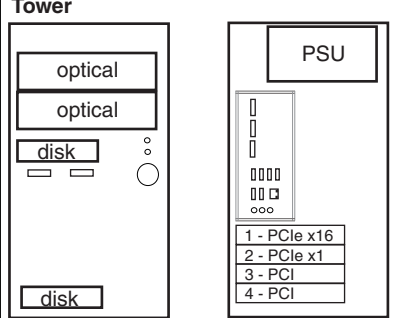
EMEA models announced February 5 or 19, 2013

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(G-TAM9-3) February 2013

Type-model	Processor(s)	Memory speed	Memory DIMMs	Pre-conf RAID	Disk bays	Disk size	Disk(s)	SATA optical	Graphics adapter(s)	Windows Server preload	Power Supply	Ann date (mm/dd/yy)
1100-91G	Xeon E3-1225	1333MHz	1x4GB	No	2xDirect Cable	3.5"	None	DVD	Intel HD	None	280W	05/29/12

- True server-class reliability and performance at desktop price
- 3-year limited warranty¹

Processor	Intel® Xeon® E3-1225 processor (4C/4T, 3.1GHz, 6MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Tower 
Implementation	Processor in LGA1155 socket, up to one processor	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 16.0"D x 14.9"H • 175mm W x 407mm D x 377mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector, one DisplayPort™ connector	Disk Bays Bay 1 5.25", 1.6" high, external, for optical Bay 2 5.25", 1.6" high, external, open (optical/tape) Bay 3 3.5", 1" high, internal, for disk Bay 4 3.5", 1" high, internal, for disk
Disk bays	Two 3.5" SATA disk bays, no hot-swap, direct cable	
SATA disk(s)	None	Expansion Slots Slot 1: half-length, full-height, PCI Express 2.0 x16 Slot 2: half-length, full-height, PCI Express 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI Slot 4: half-length, full-height, 32-bit PCI
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s and SATA 6.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA 6.0Gb/s connectors, two SATA 3.0Gb/s connectors	Intel AMT Intel AMT 7.0 is supported on Xeon-model(s)
Chipset	Intel C206 Chipset , Platform Controller Hub [PCH] (PCI Express® 2.0 x1, ethernet MAC, PCI, and USB)	
Front ports	Two USB 2.0	Software Management Tools <ul style="list-style-type: none"> • ThinkServer EasyStartup
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) one analog VGA DB-15, one DisplayPort	
Audio	High Definition (HD) Audio, Realtek ALC662 codec	Power-On Hotkey <ul style="list-style-type: none"> • Setup Utility: F1 at startup • Diagnostic: F2 at startup • Network Boot: F12 at startup • RAID Configuration Utility: Ctrl+I at startup
Ethernet	One gigabit ethernet on planar, Intel 82579LM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	Security <ul style="list-style-type: none"> • Security chip (see information on left) • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Diagnostics	Two system status LEDs on front panel (disk drive activity, power/sleep)	
Keyboard	None (use USB port)	ENERGY STAR® Server 1.1-compliant RoHS-compliant
Mouse	None (use USB port)	
Power supply	One 280 watts standard, one maximum, autosensing, no hot-swap, no redundancy, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	

Max internal capacity

4.0TB with two 2TB 3.5" SATA disks

Limited Warranty¹

- ↪ 3-year parts and labor
- ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts², during normal country office hours e.g. 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)
- ↪ Onsite service upgrade options available (in eligible locations)⁷
- ↪ Lenovo Priority Support Package available
- ↪ A-La-Carte Lenovo Services available
 - Online Data Backup
 - Onsite Hardware Installation
 - Online Training

See footnotes for important warranty information
 EMEA model(s) announced May 29, 2012



Lenovo ThinkServer TS430
(Four 3.5" Hot-swap and Fixed PSU)

Lenovo ThinkServer TS430
(Redundant PSU)



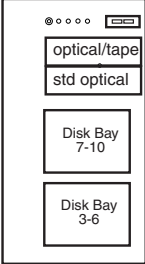
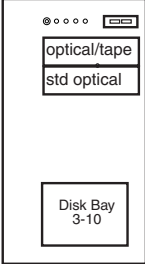
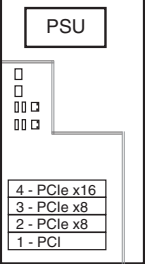
Lenovo ThinkServer TS430

ThinkServer™ TS430 Fixed PSU (0390) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / GHz	Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0390-11G	4x6	Xeon E3-1220	3.1	4C/4T	1x2GB	3.5"	4 x Hot-swap	Intel PCH	SATA	0/1/10	DVD±RW	IPMI	None	TPM	1x Fixed
0390-12G	4x6	Xeon E3-1220	3.1	4C/4T	1x2GB	3.5"	4 x Hot-swap	9240-8i v2	SATA/SAS	0/1/10	DVD±RW	IPMI	None	TPM	1x Fixed
0390-13G	4x6	Core i3-2100	3.1	2C/4T	1x2GB	3.5"	4 x Hot-swap	Intel PCH	SATA	0/1/10	DVD±RW	IPMI	None	TPM	1x Fixed

- **Highly Reliable:** ECC memory and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- 3-year limited warranty¹
- Part of the EMEA TopSeller™ Program

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 																																																																																																				
Implementation	One LGA1155 socket																																																																																																					
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <table border="1"> <tr><td>Bay 1</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>open (optical/tape)</td></tr> <tr><td>Bay 2</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>std optical</td></tr> <tr><td>Bay 3</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 4</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 5</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 6</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> </table> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <table border="1"> <tr><td>Bay 7</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 8</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 9</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 10</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> </table> <p>2.5" disk bay models:</p> <table border="1"> <tr><td>Bay 1</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>open (optical/tape)</td></tr> <tr><td>Bay 2</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>std optical</td></tr> <tr><td>Bay 3</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 4</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 5</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 6</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 7</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 8</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 9</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 10</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> </table> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical</p>	Bay 1	5.25"	1.6" high	external	open (optical/tape)	Bay 2	5.25"	1.6" high	external	std optical	Bay 3	3.5"	1" high	external	for disk	Bay 4	3.5"	1" high	external	for disk	Bay 5	3.5"	1" high	external	for disk	Bay 6	3.5"	1" high	external	for disk	Bay 7	3.5"	1" high	external	for disk	Bay 8	3.5"	1" high	external	for disk	Bay 9	3.5"	1" high	external	for disk	Bay 10	3.5"	1" high	external	for disk	Bay 1	5.25"	1.6" high	external	open (optical/tape)	Bay 2	5.25"	1.6" high	external	std optical	Bay 3	2.5"	0.6" high	external	for disk	Bay 4	2.5"	0.6" high	external	for disk	Bay 5	2.5"	0.6" high	external	for disk	Bay 6	2.5"	0.6" high	external	for disk	Bay 7	2.5"	0.6" high	external	for disk	Bay 8	2.5"	0.6" high	external	for disk	Bay 9	2.5"	0.6" high	external	for disk	Bay 10	2.5"	0.6" high	external	for disk
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Additional memory disclaimers	• Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed																																																																																																					
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz																																																																																																					
Disk bays	<i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays																																																																																																					
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ 0, 1, 10 support <i>9240-8i v2:</i> ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support																																																																																																					
Tape drive	Supports optional tape drive via internal USB 2.0 connector																																																																																																					
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																																																																																																					
Diskette	None (use USB port)																																																																																																					
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)																																																																																																					
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM																																																																																																					
Extender card	None																																																																																																					
Front ports	Two USB 2.0																																																																																																					
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector																																																																																																					
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics																																																																																																					
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions																																																																																																					
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant																																																																																																					
Prerequisites	Monitor, SATA/SAS disk, OS																																																																																																					
Keyboard	None (use USB port)																																																																																																					
Mouse	None (use USB port)																																																																																																					
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified																																																																																																					
Mechanical	Tower, business black color, metal case																																																																																																					
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm																																																																																																					
System weight	61.7 lb (28kg) max configuration																																																																																																					
Tool-less	Side cover removal, disk and optical drive removal, system fan removal																																																																																																					
Rack mount	Rack-mountable to 5U																																																																																																					
Max internal capacity	<i>4 x 3.5" SATA (DC/HS):</i> 8.0TB with four 2TB 3.5" SATA disks <i>8 x 3.5" SATA (HS):</i> 16.0TB with eight 2TB 3.5" SATA disks <i>4 x 3.5" SAS (HS):</i> 2.4TB with four 600GB 3.5" SAS disks <i>8 x 3.5" SAS (HS):</i> 4.8TB with eight 600GB 3.5" SAS disks <i>8 x 2.5" SAS (HS):</i> 4.8TB with eight 600GB 2.5" SAS disks																																																																																																					
Limited warranty	3-year parts and labor																																																																																																					

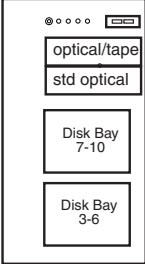
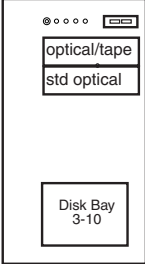
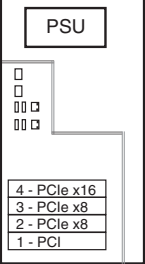
See footnotes for important warranty information
EMEA model(s) announced June 21, 2011

ThinkServer™ TS430 Fixed PSU (0390) - TopSeller (Jan 2012)

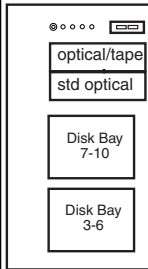
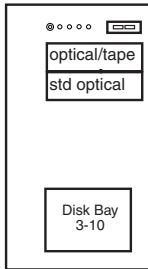
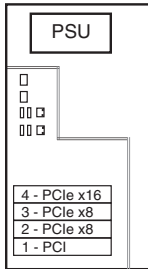
Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	Pre-conf RAID	Disk(s)	System mgmt	Diagnostics (DIT)	TPM	Windows Server preload	Power Supply
0390-14G	4x6	Xeon E3-1220	1x4GB	3.5"	4xHS	Intel PCH	SATA	No	2x500GB SATA	IPMI	None	TPM	SBS 2011	1x Fixed
0390-15G	4x6	Xeon E3-1220	1x4GB	3.5"	4xHS	Intel PCH	SATA	No	2x500GB SATA	IPMI	None	TPM	2008 R2 STD	1x Fixed

- **Highly Reliable:** ECC memory and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- 3-year limited warranty¹
- Part of the US TopSeller™ Program

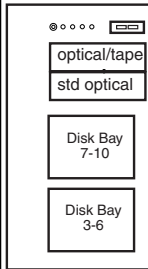
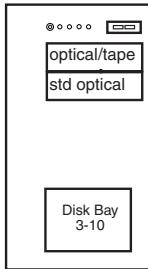
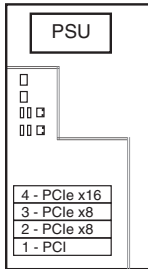
Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	<p>RoHS-compliant</p>
Disk bays	Four 3.5" hot-swap (HS) SATA disk bays	
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support	
Disk (s)	500GB, SATA 6.0Gb/s, 7200 rpm, 3.5"	
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector	
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One fixed 400 watts standard, universal, 80 PLUS [®] Bronze qualified	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Max internal capacity	4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks 8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks 4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks 8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks 8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks	
Limited warranty	3-year parts and labor	
Preload OS	SBS 2011: Genuine Windows [®] Small Business Server 2011 Standard 2008 R2 STD: Genuine Windows Server [®] 2008 R2 Standard	

See footnotes for important warranty information
EMEA model(s) announced January 17, 2012

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System TPM mgmt	Preload OS
0390-16G	Xeon E3-1240V2	1333MHz	UDIMM 1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap		DVD±RW	No	TPM IPMI	
0390-17G	Xeon E3-1220V2	1333MHz	UDIMM 1x4GB	No	500	SATA/SAS	3.5"	4xHot-swap		DVD±RW	No	TPM IPMI	
0390-18G	Core i3-2120	1333MHz	UDIMM 1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap		DVD±RW	No	TPM IPMI	
0390-19G	Xeon E3-1220V2	1333MHz	UDIMM 1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM KVM	SBS 2011
0390-1AG	Xeon E3-1220V2	1333MHz	UDIMM 1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM KVM	2008 R2 STD
Processor	Up to one processor, one processor standard, Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220V2 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz) Intel® Xeon E3-1240V2 processor (4C/8T, 3.4GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)								Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 				
Implementation	One LGA1155 socket												
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets												
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 												
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz								3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk Bay 7-10 are available on Eight 3.5" disk bay models: Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk 2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical				
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays												
Disk controller	Intel PCH: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID® 0, 1, 10 support; RAID 500: ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support Upgrade for 500: Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)												
Disk(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 3.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SAS: SAS 6.0Gb/s, 10000 rpm												
Tape drive	Supports optional tape drive via internal USB 2.0 connector												
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Diskette	None (use USB port)												
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)												
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM												
Extender card	None												
Front ports	Two USB 2.0												
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector												
Intelligent Diagnostics Module (IDM)	IDM model(s): add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category												
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); KVM model(s): add-on KVM card for KVM functions												
Security chip	No onboard TPM chip; TPM model(s): additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant												
Prerequisites	Monitor, SATA/SAS disk, OS												
Keyboard	None (use USB port)												
Mouse	None (use USB port)												
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified												
Mechanical	Tower, business black color, metal case												
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm												
System weight	61.7 lb (28kg) max configuration												
Tool-less	Side cover removal, disk and optical drive removal, system fan removal												
Rack mount	Rack-mountable to 5U												
Limited warranty	3-year parts and labor												
Preloaded Operating System													
2008 R2 STD: Genuine Windows Server 2008 R2 Standard													
SBS 2011: Genuine Windows Small Business Server 2011 Standard													
										RoHS-compliant			
										Software Management Tools • ThinkServer EasyStartup • ThinkServer EasyManage Security • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)			

See footnotes for important warranty information EMEA model(s) announced June 12, 2012

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System mgmt TPM	System mgmt	Preload OS
0390-1CG	Xeon E3-1220	1333MHz	UDIMM 1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM	IPMI	SBS 2011 Standard
0390-1DG	Xeon E3-1220	1333MHz	UDIMM 1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM	IPMI	2008 R2 Standard
0390-1EG	Xeon E3-1220V2	1333MHz	UDIMM 1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM	KVM	SBS 2011 Standard
0390-1FG	Xeon E3-1220V2	1333MHz	UDIMM 1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM	KVM	2008 R2 Standard

Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz) Intel Xeon E3-1220V2 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)	Front - 3.5" disk bay	Front - 2.5" disk bay	Rear
Implementation	One LGA1155 socket			
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets			
Additional memory disclaimers	• Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed			
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz			
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays			
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support; <i>RAID 500:</i> ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Upgrade for 500:</i> Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)			
Disk(s)	<i>3.5" SATA:</i> SATA 6.0Gb/s, 7200 rpm <i>3.5" SAS:</i> SAS 6.0Gb/s, 15000 rpm <i>2.5" SAS:</i> SAS 6.0Gb/s, 10000 rpm			
Tape drive	Supports optional tape drive via internal USB 2.0 connector			
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive			
Diskette	None (use USB port)			
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)			
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM			
Extender card	None			
Front ports	Two USB 2.0			
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector			
Intelligent Diagnostics Module (IDM)	<i>IDM model(s):</i> add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category			
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions			
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant			
Prerequisites	Monitor, SATA/SAS disk, OS			
Keyboard	None (use USB port)			
Mouse	None (use USB port)			
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified			
Mechanical	Tower, business black color, metal case			
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm			
System weight	61.7 lb (28kg) max configuration			
Tool-less	Side cover removal, disk and optical drive removal, system fan removal			
Rack mount	Rack-mountable to 5U			
Limited warranty	3-year parts and labor			
Preloaded Operating System				
<i>2008 R2 Standard:</i> Genuine Windows Server® 2008 R2 Standard				
<i>SBS 2011 Standard:</i> Genuine Windows® Small Business Server 2011 Standard				
		Software Management Tools		
		<ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage 		
		Security		
		<ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 		
		RoHS-compliant		

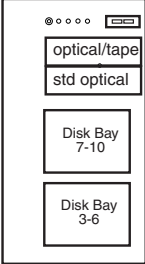
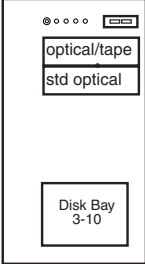
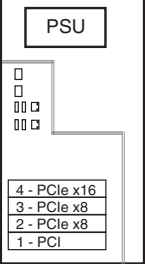
See footnotes for important warranty information
EMEA model(s) announced February 19, 2013

ThinkServer™ TS430 Fixed PSU (0389) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0389-11G	4x6	Core i3-2100	3.1 2C/4T	1x2GB	3.5"	4x Direct Cable	Intel PCH	SATA	0/1/10	DVD	IPMI	None	TPM	1x Fixed

- **Highly Reliable:** ECC memory and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **1-year limited warranty¹**
- **Part of the EMEA TopSeller™ Program**

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	
Disk bays	Four 3.5" SATA disk bays, no hot-swap, direct cable Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ 0, 1, 10 support	
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45), one port is shared with system management), one analog VGA DB-15 connector	
Diagnostics	System status LEDs on front; DIT model(s): add-on Doctor Inside Technology (DIT) module for advanced diagnostics	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); KVM model(s): add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; TPM model(s): additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Max internal capacity	<p>4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks</p> <p>8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks</p> <p>4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks</p> <p>8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks</p> <p>8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks</p>	

Limited warranty 1-year parts and labor

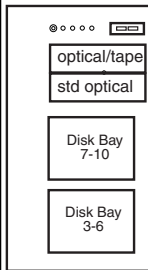
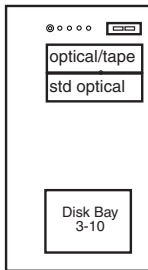
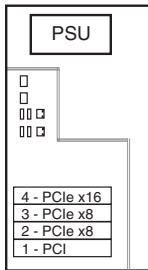
Software Management Tools

- ThinkServer EasyStartup
- ThinkServer EasyManage

Security

- Security chip (selected models, see information on left)
- Administrator password
- User password
- Front panel key lock
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O control
- USB port disablement (all)

RoHS-compliant

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	SATA Disk(s)	Intelligent Diagnostics	System mgmt	Preload OS	PSU	
0389-12G	Core i3-2120	1333MHz UDIMM	1x2GB	No	Intel PCH	SATA	3.5"	4xDirect Cable	No	DVD	TPM	IPMI	No	1xFixed
Processor	Up to one processor, one processor standard, Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)								Front - 3.5" disk bay 		Front - 2.5" disk bay 		Rear 	
Implementation	One LGA1155 socket													
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets													
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 													
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz													
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays								3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk Bay 7-10 are available on		Eight 3.5" disk bay models: Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk			
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ , 1, 10 support; <i>RAID 500:</i> ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Upgrade for 500:</i> Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)								2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk					
Disk(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 3.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SAS: SAS 6.0Gb/s, 10000 rpm								Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)					
Tape drive	Supports optional tape drive via internal USB 2.0 connector													
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive													
Diskette	None (use USB port)													
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)													
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM													
Extender card	None													
Front ports	Two USB 2.0													
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45), one port is shared with system management), one analog VGA DB-15 connector													
Intelligent Diagnostics Module (IDM)	<i>IDM model(s):</i> add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category													
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC);													
Security chip	<i>KVM model(s):</i> add-on KVM card for KVM functions No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant													
Prerequisites	Monitor, SATA/SAS disk, OS													
Keyboard	None (use USB port)													
Mouse	None (use USB port)													
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified													
Mechanical	Tower, business black color, metal case													
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm													
System weight	61.7 lb (28kg) max configuration													
Tool-less	Side cover removal, disk and optical drive removal, system fan removal													
Rack mount	Rack-mountable to 5U													
Limited warranty	1-year parts and labor													
								Software Management Tools						
								<ul style="list-style-type: none"> ThinkServer EasyStartup ThinkServer EasyManage 						
								Security						
								<ul style="list-style-type: none"> Security chip (selected models, see information on left) Administrator password User password Front panel key lock Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (all) 						
								RoHS-compliant						

See footnotes for important warranty information
EMEA model(s) announced June 12, 2012

Type-model	Processor	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System mgmt TPM	Preload OS	PSU
0389-13G	Core i3-3220	1x4GB	No	Intel PCH	SATA	3.5	4xDirect Cable	No	DVD	No	TPM IPMI	No	1 x Fixed

Processor	Up to one processor, one processor standard, Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache) , integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)	Front - 3.5" disk bay		Front - 2.5" disk bay		Rear	
Implementation	One LGA1155 socket						
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p>					
Additional memory disclaimers	• Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed						
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz						
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays						
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ , 1, 10 support; <i>RAID 500:</i> ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Upgrade for 500:</i> Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)						
Disk(s)	<i>3.5" SATA:</i> SATA 6.0Gb/s, 7200 rpm <i>3.5" SAS:</i> SAS 6.0Gb/s, 15000 rpm <i>2.5" SAS:</i> SAS 6.0Gb/s, 10000 rpm						
Tape drive	Supports optional tape drive via internal USB 2.0 connector						
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive						
Diskette	None (use USB port)						
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)						
Ethernet Extender card	Two Gigabit Ethernet ports, Intel 82574L and 82579LM						
Front ports	Two USB 2.0						
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector						
Intelligent Diagnostics Module (IDM)	<i>IDM model(s):</i> add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category						
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions						
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant						
Prerequisites	Monitor, SATA/SAS disk, OS						
Keyboard	None (use USB port)						
Mouse	None (use USB port)						
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified						
Mechanical	Tower, business black color, metal case	Software Management Tools					
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm						
System weight	61.7 lb (28kg) max configuration	Security					
Tool-less	Side cover removal, disk and optical drive removal, system fan removal						
Rack mount	Rack-mountable to 5U	<ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 					
Limited warranty	1-year parts and labor						
		RoHS-compliant					

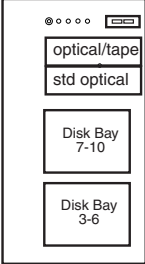
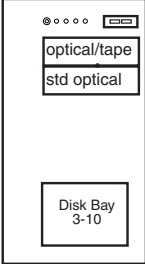
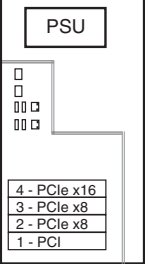
See footnotes for important warranty information
EMEA model(s) announced September 25, 2012

ThinkServer™ TS430 Fixed PSU (0388)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0388-12G 4x10	Core i3-2100	3.1	2C/4T	1x2GB	3.5"	8xHot-swap	9240-8i v2	SATA/SAS	0/1/10	DVD	IPMI	None	TPM	1x Fixed
0388-13G 4x10	Core i3-2100	3.1	2C/4T	1x2GB	2.5"	8xHot-swap	9240-8i v2	SAS	0/1/10	DVD	IPMI	None	TPM	1x Fixed

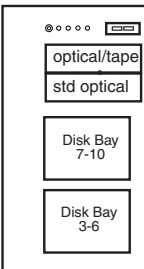
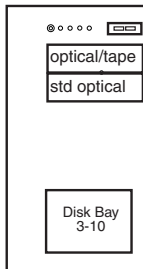
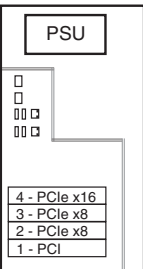
- **Highly Reliable:** ECC memory and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **3-year limited warranty**

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p> <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage <p>Security</p> <ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) <p>RoHS-compliant</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	
Disk bays	<i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SAS disk bays	
Disk controller	ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support	
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector	
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One fixed 400 watts standard, universal, 80 PLUS® Bronze qualified	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Max internal capacity	4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks 8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks 4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks 8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks 8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks	
Limited warranty	3-year parts and labor	

See footnotes for important warranty information
EMEA model(s) announced June 21, 2011

Type-model	Slot x bay	Processor(s)	Cores / Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0388-15G 4x6	Xeon E3-1220	3.1 4C/4T	1x4GB	3.5"	4 x Hot-swap	Intel PCH	SATA	0/1/10	DVD	IPMI	None	TPM	1x Fixed	
0388-16G 4x10	Xeon E3-1220	3.1 4C/4T	1x4GB	3.5"	8 x Hot-swap	9240-8i v2	SATA/SAS	0/1/10	DVD	IPMI	None	TPM	1x Fixed	
0388-17G 4x10	Xeon E3-1220	3.1 4C/4T	1x4GB	2.5"	8 x Hot-swap	9240-8i v2	SAS	0/1/10	DVD	IPMI	None	TPM	1x Fixed	

- **Highly Reliable:** ECC memory and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **3-year limited warranty**

Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay 	Front - 2.5" disk bay 	Rear 
Implementation	One LGA1155 socket			
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk Bay 7-10 are available on Eight 3.5" disk bay models: Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk		
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk		
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical		
Disk bays	<i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SAS disk bays	Software Management Tools <ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage 		
Disk controller	Intel PCH: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support 9240-8i v2: ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support	Security <ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 		
Tape drive	Supports optional tape drive via internal USB 2.0 connector	RoHS-compliant		
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive			
Diskette	None (use USB port)			
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)			
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM			
Extender card	None			
Front ports	Two USB 2.0			
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector			
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics			
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions			
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant			
Prerequisites	Monitor, SATA/SAS disk, OS			
Keyboard	None (use USB port)			
Mouse	None (use USB port)			
Power supply	One fixed 400 watts standard, universal, 80 PLUS [®] Bronze qualified			
Mechanical	Tower, business black color, metal case			
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm			
System weight	61.7 lb (28kg) max configuration			
Tool-less	Side cover removal, disk and optical drive removal, system fan removal			
Rack mount	Rack-mountable to 5U			
Max internal capacity	4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks 8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks 4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks 8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks 8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks			
Limited warranty	3-year parts and labor			

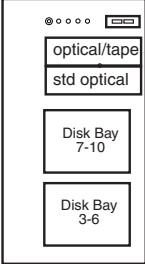
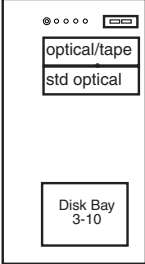
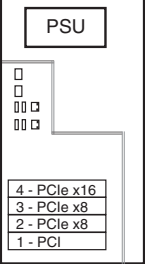
See footnotes for important warranty information
EMEA model(s) announced November 29, 2011

ThinkServer™ TS430 Fixed PSU (0387)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0387-11G	4x6	Core i3-2100	3.1 2C/4T	1x2GB	3.5"	4xDirect Cable	Intel PCH	SATA	0/1/10	DVD	IPMI	None	TPM	1x Fixed
0387-12G	4x6	Core i3-2100	3.1 2C/4T	1x2GB	3.5"	4xHot-swap	Intel PCH	SATA	0/1/10	DVD	IPMI	None	TPM	1x Fixed

- **Highly Reliable:** ECC memory and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **1-year limited warranty¹**

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay 	Front - 2.5" disk bay 	Rear 																																																																																																				
Implementation	One LGA1155 socket																																																																																																							
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <table border="0"> <tr><td>Bay 1</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>open (optical/tape)</td></tr> <tr><td>Bay 2</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>std optical</td></tr> <tr><td>Bay 3</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 4</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 5</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 6</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> </table> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <table border="0"> <tr><td>Bay 7</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 8</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 9</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 10</td><td>3.5"</td><td>1" high</td><td>external</td><td>for disk</td></tr> </table> <p>2.5" disk bay models:</p> <table border="0"> <tr><td>Bay 1</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>open (optical/tape)</td></tr> <tr><td>Bay 2</td><td>5.25"</td><td>1.6" high</td><td>external</td><td>std optical</td></tr> <tr><td>Bay 3</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 4</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 5</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 6</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 7</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 8</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 9</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> <tr><td>Bay 10</td><td>2.5"</td><td>0.6" high</td><td>external</td><td>for disk</td></tr> </table> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical</p>			Bay 1	5.25"	1.6" high	external	open (optical/tape)	Bay 2	5.25"	1.6" high	external	std optical	Bay 3	3.5"	1" high	external	for disk	Bay 4	3.5"	1" high	external	for disk	Bay 5	3.5"	1" high	external	for disk	Bay 6	3.5"	1" high	external	for disk	Bay 7	3.5"	1" high	external	for disk	Bay 8	3.5"	1" high	external	for disk	Bay 9	3.5"	1" high	external	for disk	Bay 10	3.5"	1" high	external	for disk	Bay 1	5.25"	1.6" high	external	open (optical/tape)	Bay 2	5.25"	1.6" high	external	std optical	Bay 3	2.5"	0.6" high	external	for disk	Bay 4	2.5"	0.6" high	external	for disk	Bay 5	2.5"	0.6" high	external	for disk	Bay 6	2.5"	0.6" high	external	for disk	Bay 7	2.5"	0.6" high	external	for disk	Bay 8	2.5"	0.6" high	external	for disk	Bay 9	2.5"	0.6" high	external	for disk	Bay 10	2.5"	0.6" high	external	for disk
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Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz																																																																																																							
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays																																																																																																							
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ , 1, 10 support																																																																																																							
Tape drive	Supports optional tape drive via internal USB 2.0 connector																																																																																																							
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive																																																																																																							
Diskette	None (use USB port)																																																																																																							
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)																																																																																																							
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM																																																																																																							
Extender card	None																																																																																																							
Front ports	Two USB 2.0																																																																																																							
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector																																																																																																							
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics																																																																																																							
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions																																																																																																							
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant																																																																																																							
Prerequisites	Monitor, SATA/SAS disk, OS																																																																																																							
Keyboard	None (use USB port)																																																																																																							
Mouse	None (use USB port)																																																																																																							
Power supply	One fixed 400 watts standard, universal, 80 PLUS [®] Bronze qualified																																																																																																							
Mechanical	Tower, business black color, metal case																																																																																																							
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm																																																																																																							
System weight	61.7 lb (28kg) max configuration																																																																																																							
Tool-less	Side cover removal, disk and optical drive removal, system fan removal																																																																																																							
Rack mount	Rack-mountable to 5U																																																																																																							
Max internal capacity	<table border="0"> <tr><td>4x3.5" SATA (DC/HS):</td><td>8.0TB with four 2TB 3.5" SATA disks</td></tr> <tr><td>8x3.5" SATA (HS):</td><td>16.0TB with eight 2TB 3.5" SATA disks</td></tr> <tr><td>4x3.5" SAS (HS):</td><td>2.4TB with four 600GB 3.5" SAS disks</td></tr> <tr><td>8x3.5" SAS (HS):</td><td>4.8TB with eight 600GB 3.5" SAS disks</td></tr> <tr><td>8x2.5" SAS (HS):</td><td>4.8TB with eight 600GB 2.5" SAS disks</td></tr> </table>	4x3.5" SATA (DC/HS):	8.0TB with four 2TB 3.5" SATA disks	8x3.5" SATA (HS):	16.0TB with eight 2TB 3.5" SATA disks	4x3.5" SAS (HS):	2.4TB with four 600GB 3.5" SAS disks	8x3.5" SAS (HS):	4.8TB with eight 600GB 3.5" SAS disks	8x2.5" SAS (HS):	4.8TB with eight 600GB 2.5" SAS disks																																																																																													
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		RoHS-compliant																																																																																																						

See footnotes for important warranty information
 EMEA model(s) announced June 21, 2011

ThinkServer™ TS430 Redundant PSU (0441) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / GHz	Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0441-11G	4x10	Xeon E3-1220	3.1	4C/4T	1x4GB	3.5"	8x Hot-swap	9240-8i v2	SATA/SAS	0/1/10	DVD±RW	IPMI	None	TPM	1x 450W
0441-12G	4x10	Xeon E3-1240	3.3	4C/8T	1x4GB	2.5"	8x Hot-swap	9240-8i v2	SAS	0/1/10	DVD±RW	KVM	None	TPM	1x 450W
0441-13G	4x6	Core i3-2100	3.1	2C/4T	1x2GB	3.5"	4x Hot-swap	Intel PCH	SATA	0/1/10	DVD±RW	IPMI	None	TPM	1x 450W
0441-14G	4x6	Xeon E3-1230	3.2	4C/8T	1x4GB	3.5"	4x Hot-swap	Intel PCH	SATA	0/1/10	DVD±RW	IPMI	None	TPM	1x 450W
0441-15G	4x10	Xeon E3-1270	3.4	4C/8T	1x4GB	2.5"	8x Hot-swap	9240-8i v2	SAS	0/1/10	DVD±RW	KVM	None	TPM	1x 450W
0441-16G	4x10	Xeon E3-1240	3.3	4C/8T	1x4GB	3.5"	8x Hot-swap	9240-8i v2	SATA/SAS	0/1/10	DVD±RW	KVM	None	TPM	1x 450W

- 3-year limited warranty*
- Part of the EMEA TopSeller™ Program

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz) Intel Xeon E3-1230 processor (4C/8T, 3.2GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1333MHz) Intel Xeon E3-1240 processor (4C/8T, 3.3GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1333MHz) Intel Xeon E3-1270 processor (4C/8T, 3.4GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay	Front - 2.5" disk bay	Rear
Implementation	One LGA1155 socket			
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	3.5" disk bay models:		
Additional memory disclaimers	• Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed	Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk Bay 7-10 are available on Eight 3.5" disk bay models: Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk		
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	2.5" disk bay models:		
Disk bays	<i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SAS disk bays	Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk		
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support <i>9240-8i v2:</i> ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support	Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical		
Tape drive	Supports optional tape drive via internal USB 2.0 connector	Software Management Tools		
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	• ThinkServer EasyStartup • ThinkServer EasyManage		
Diskette	None (use USB port)	Security		
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	• Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)		
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	RoHS-compliant		
Extender card	None			
Front ports	Two USB 2.0			
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector			
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics			
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions			
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant			
Prerequisites	Monitor, SATA/SAS disk, OS			
Keyboard	None (use USB port)			
Mouse	None (use USB port)			
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS® Gold qualified, redundant with two power supplies			
Mechanical	Tower, business black color, metal case			
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm			
System weight	61.7 lb (28kg) max configuration			
Tool-less	Side cover removal, disk and optical drive removal, system fan removal			
Rack mount	Rack-mountable to 5U			
Max internal capacity	<i>4x3.5" SATA (DC/HS):</i> 8.0TB with four 2TB 3.5" SATA disks <i>8x3.5" SATA (HS):</i> 16.0TB with eight 2TB 3.5" SATA disks <i>4x3.5" SAS (HS):</i> 2.4TB with four 600GB 3.5" SAS disks <i>8x3.5" SAS (HS):</i> 4.8TB with eight 600GB 3.5" SAS disks <i>8x2.5" SAS (HS):</i> 4.8TB with eight 600GB 2.5" SAS disks			
Limited warranty	3-year parts and labor			

See footnotes for important warranty information
EMEA model(s) announced August 23, 2011

ThinkServer™ TS430 Redundant PSU (0441) - TopSeller (Nov 2011)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	Pre-conf RAID	Disk(s)	SATA optical	System mgmt	TPM	Power Supply
0441-17G	4x6	Xeon E3-1220	1x4GB	3.5"	4xHot-swap	Intel PCH	SATA	0/1/10	No	2x500GB SATA	DVD±RW	IPMI	TPM	1x 450W
0441-18G	4x6	Core i3-2100	1x2GB	3.5"	4xHot-swap	Intel PCH	SATA	0/1/10	No	2x500GB SATA	DVD±RW	IPMI	TPM	1x 450W
0441-19G	4x10	Xeon E3-1220	1x4GB	3.5"	8xHot-swap	9240-8i v2	SATA/SAS	0/1/10	No	2x300GB SAS	DVD±RW	IPMI	TPM	1x 450W

- **3-year limited warranty***
- **Part of the EMEA TopSeller™ Program**

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay	Front - 2.5" disk bay	Rear
Implementation	One LGA1155 socket			
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	3.5" disk bay models:		
Additional memory disclaimers	• Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed	Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk <i>Bay 7-10 are available on Eight 3.5" disk bay models:</i> Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk		
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	2.5" disk bay models:		
Disk bays	<i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays	Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk		
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support <i>9240-8i v2:</i> ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support	Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical		
Disk(s)	<i>Some:</i> 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5" <i>Some:</i> 300GB , SAS 6.0Gb/s, 15000 rpm, 3.5"	Software Management Tools		
Tape drive	Supports optional tape drive via internal USB 2.0 connector	• ThinkServer EasyStartup • ThinkServer EasyManage		
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	Security		
Diskette	None (use USB port)	• Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)		
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	RoHS-compliant		
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM			
Extender card	None			
Front ports	Two USB 2.0			
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector			
Diagnostics	System status LEDs on front; no Doctor Inside Technology (DIT) module			
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions			
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant			
Prerequisites	Monitor, SATA/SAS disk, OS			
Keyboard	None (use USB port)			
Mouse	None (use USB port)			
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS [®] Gold qualified, redundant with two power supplies			
Mechanical	Tower, business black color, metal case			
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm			
System weight	61.7 lb (28kg) max configuration			
Tool-less	Side cover removal, disk and optical drive removal, system fan removal			
Rack mount	Rack-mountable to 5U			
Max internal capacity	<i>4x3.5" SATA (DC/HS):</i> 8.0TB with four 2TB 3.5" SATA disks <i>8x3.5" SATA (HS):</i> 16.0TB with eight 2TB 3.5" SATA disks <i>4x3.5" SAS (HS):</i> 2.4TB with four 600GB 3.5" SAS disks <i>8x3.5" SAS (HS):</i> 4.8TB with eight 600GB 3.5" SAS disks <i>8x2.5" SAS (HS):</i> 4.8TB with eight 600GB 2.5" SAS disks			
Limited warranty	3-year parts and labor			

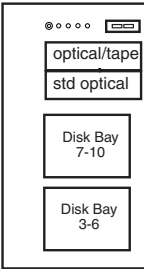
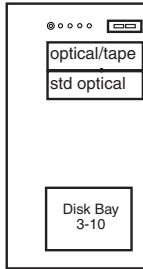
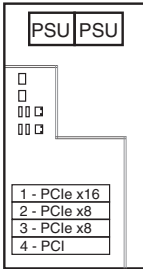
See footnotes for important warranty information
EMEA model(s) announced November 29, 2011

ThinkServer™ TS430 Redundant PSU (0441) - TopSeller (Jan 2012)

Personal Systems Reference (PSREF)

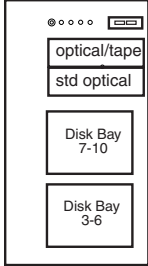
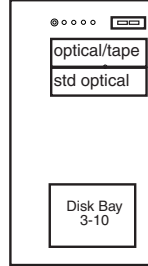
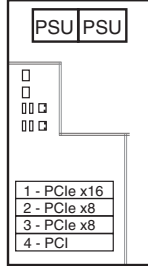
Type-model	Slot x bay	Processor(s)	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	Pre-conf RAID	Disk(s)	System mgmt	Diagnostics (DIT)	TPM	Windows Server preload	Power Supply
0441-1AG	4x6	Xeon E3-1220	1x4GB	3.5"	4xHS	Intel PCH	SATA	No	2x500GB SATA	IPMI	None	TPM	SBS 2011	1x 450W
0441-1BG	4x6	Xeon E3-1220	1x4GB	3.5"	4xHS	Intel PCH	SATA	No	2x500GB SATA	IPMI	None	TPM	2008 R2 STD	1x 450W
0441-1CG	4x6	Xeon E3-1220	1x4GB	3.5"	4xHS	Intel PCH	SATA	No		IPMI	None	TPM		1x 450W

- **Highly Reliable:** redundant PSU, ECC memory, and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **3-year limited warranty***
- **Part of the US TopSeller™ Program**

Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p> <p style="text-align: center;">Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage <p style="text-align: center;">Security</p> <ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) <p>RoHS-compliant</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	
Disk bays	Four 3.5" hot-swap (HS) SATA disk bays	
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ , 1, 10 support	
Disk (s)	<i>Some:</i> 500GB, SATA 6.0Gb/s, 7200 rpm, 3.5"	
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector	
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS® Gold qualified, redundant with two power supplies	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Max internal capacity	<p>4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks</p> <p>8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks</p> <p>4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks</p> <p>8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks</p> <p>8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks</p>	
Limited warranty	3-year parts and labor	
Preload OS	<p><i>SBS 2011:</i> Genuine Windows® Small Business Server 2011 Standard</p> <p><i>2008 R2 STD:</i> Genuine Windows Server® 2008 R2 Standard</p>	

ThinkServer® TS430 Redundant PSU (0441) - TopSeller (June 12, 2012)

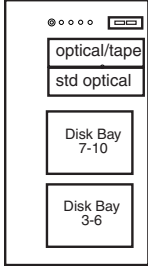
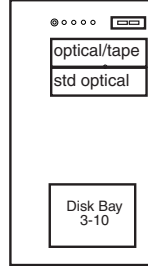
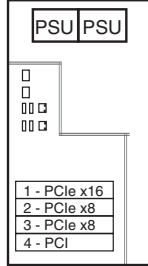
Personal Systems Reference (PSREF)

Type-model	Processor	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System mgmt TPM	Preload OS	PSU	
0441-1DG	Xeon E3-1240V2	1x4GB	No	500	SATA/SAS	2.5"	8xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
0441-1EG	Xeon E3-1240V2	1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
0441-1FG	Xeon E3-1220V2	1x4GB	No	500	SATA/SAS	2.5"	8xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
0441-1GG	Xeon E3-1240V2	1x4GB	No	500	SATA/SAS	3.5"	8xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
0441-1HG	Xeon E3-1270V2	1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
0441-1JG	Xeon E3-1220V2	1x4GB	No	500	SATA/SAS	3.5"	8xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
0441-1KG	Xeon E3-1220V2	1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	IDM	TPM IPMI	SBS 2011	1x450W	
0441-1LG	Xeon E3-1220V2	1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	IDM	TPM IPMI	2008 R2 STD	1x450W	
0441-1MG	Xeon E3-1220V2	1x4GB	No	Intel PCH	SATA	3.5"	4xHot-swap		DVD±RW	IDM	TPM IPMI		1x450W	
Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220V2 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon E3-1240V2 processor (4C/8T, 3.4GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon E3-1270V2 processor (4C/8T, 3.5GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)								Front - 3.5" disk bay		Front - 2.5" disk bay		Rear	
Implementation	One LGA1155 socket													
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets								3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk Bay 7-10 are available on Eight 3.5" disk bay models: Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk 2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk Slot 1 half-length, full-height, 32-bit PCI x16 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical					
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 													
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz													
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays													
Disk controller	Intel PCH: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support; RAID 500: ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support Upgrade for 500: Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)													
Disk(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 3.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SAS: SAS 6.0Gb/s, 10000 rpm													
Tape drive	Supports optional tape drive via internal USB 2.0 connector													
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive													
Diskette	None (use USB port)													
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)													
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM													
Extender card	None													
Front ports	Two USB 2.0													
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector													
Intelligent Diagnostics Module (IDM)	IDM model(s): add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category													
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); KVM model(s): add-on KVM card for KVM functions													
Security chip	No onboard TPM chip; TPM model(s): additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant													
Prerequisites	Monitor, SATA/SAS disk, OS													
Keyboard	None (use USB port)													
Mouse	None (use USB port)													
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS® Gold qualified, redundant with two power supplies								Software Management Tools <ul style="list-style-type: none"> ThinkServer EasyStartup ThinkServer EasyManage 					
Mechanical	Tower, business black color, metal case								Security <ul style="list-style-type: none"> Security chip (selected models, see information on left) Administrator password User password Front panel key lock Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (all) 					
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm													
System weight	61.7 lb (28kg) max configuration													
Tool-less	Side cover removal, disk and optical drive removal, system fan removal													
Rack mount	Rack-mountable to 5U													
Preloaded Operating System														
2008 R2 STD:		Genuine Windows Server 2008 R2 Standard												
SBS 2011:		Genuine Windows Small Business Server 2011 Standard												
RoHS-compliant														

See footnotes for important warranty information
EMEA model(s) announced June 12, 2012

ThinkServer® TS430 Redundant PSU (0441) - TopSeller (September 2012)

Personal Systems Reference (PSREF)

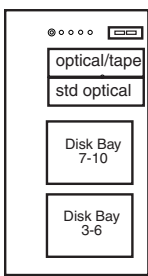
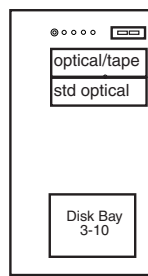
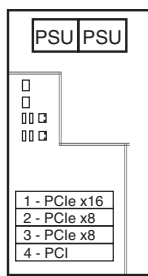
Type-model	Processor	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System TPM mgmt	Preload OS	PSU
0441-1NG	Xeon E3-1230	2x4GB	No	Intel PCH	SATA	3.5	4xHot-swap	2x500GB SATA	DVD±RW	No	TPM IPMI	No	2x450W
Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1230 processor (4C/8T, 3.2GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1333MHz)								Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 				
Implementation	One LGA1155 socket												
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets												
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 												
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz												
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays								3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk <i>Bay 7-10 are available on Eight 3.5" disk bay models:</i> Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk 2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical				
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support; <i>RAID 500:</i> ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Upgrade for 500:</i> Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)												
Disk(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 3.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SAS: SAS 6.0Gb/s, 10000 rpm												
Tape drive	Supports optional tape drive via internal USB 2.0 connector												
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Diskette	None (use USB port)												
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)												
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM												
Extender card	None												
Front ports	Two USB 2.0												
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector												
Intelligent Diagnostics Module (IDM)	<i>IDM model(s):</i> add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category												
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions												
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant												
Prerequisites	Monitor, SATA/SAS disk, OS												
Keyboard	None (use USB port)												
Mouse	None (use USB port)												
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS® Gold qualified, redundant with two power supplies												
Mechanical	Tower, business black color, metal case								Software Management Tools				
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm								<ul style="list-style-type: none"> ThinkServer EasyStartup ThinkServer EasyManage 				
System weight	61.7 lb (28kg) max configuration								Security				
Tool-less	Side cover removal, disk and optical drive removal, system fan removal								<ul style="list-style-type: none"> Security chip (selected models, see information on left) Administrator password User password Front panel key lock Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (all) 				
Rack mount	Rack-mountable to 5U								3-year parts and labor				
									RoHS-compliant				

See footnotes for important warranty information
EMEA model(s) announced September 18, 2012

ThinkServer® TS430 Redundant PSU (0441) - TopSeller (February 2013)

Personal Systems Reference (PSREF)

Type-model	Processor	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System TPM mgmt	Preload OS	PSU qty
0441-1TG	Xeon E3-1220	1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW		TPM	IPMI SBS 2011 Standard	1
0441-1UG	Xeon E3-1220	1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW		TPM	IPMI Server 2008 R2 Standard	1
0441-1VG	Xeon E3-1220V2	1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	IDM	TPM	IPMI SBS 2011 Standard	1
0441-1WG	Xeon E3-1220V2	1x4GB	1	Intel PCH	SATA	3.5"	4xHot-swap	2x500GB SATA	DVD±RW	IDM	TPM	IPMI Server 2008 R2 Standard	1

Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz) Intel Xeon E3-1220V2 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)	Front - 3.5" disk bay	Front - 2.5" disk bay	Rear
Implementation	One LGA1155 socket			
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p>Bay 7-10 are available on Eight 3.5" disk bay models:</p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p>		
Additional memory disclaimers	• Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed	<p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p>		
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	<p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage 		
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays	<p>Security</p> <ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 		
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support; <i>RAID 500:</i> ThinkServer RAID 500 adapter (LSI [®] SAS 9240-8i), PCI Express [®] bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Upgrade for 500:</i> Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)	<p>3-year parts and labor</p>		
Disk(s)	<i>3.5" SATA:</i> SATA 6.0Gb/s, 7200 rpm <i>3.5" SAS:</i> SAS 6.0Gb/s, 15000 rpm <i>2.5" SAS:</i> SAS 6.0Gb/s, 10000 rpm	<p>RoHS-compliant</p>		
Tape drive	Supports optional tape drive via internal USB 2.0 connector			
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive			
Diskette	None (use USB port)			
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)			
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM			
Extender card	None			
Front ports	Two USB 2.0			
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector			
Intelligent Diagnostics Module (IDM)	<i>IDM model(s):</i> add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category			
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions			
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant			
Prerequisites	Monitor, SATA/SAS disk, OS			
Keyboard	None (use USB port)			
Mouse	None (use USB port)			
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS [®] Gold qualified, redundant with two power supplies			
Mechanical	Tower, business black color, metal case			
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm			
System weight	61.7 lb (28kg) max configuration			
Tool-less	Side cover removal, disk and optical drive removal, system fan removal			
Rack mount	Rack-mountable to 5U			
Preloaded Operating System				
<i>2008 R2 Standard:</i>	Genuine Windows Server [®] 2008 R2 Standard			
<i>SBS 2011 Standard:</i>	Genuine Windows [®] Small Business Server 2011 Standard			

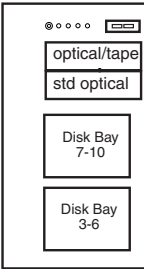
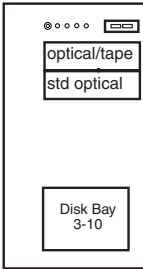
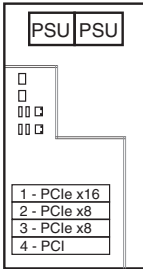
See footnotes for important warranty information
EMEA model(s) announced February 19, 2013

ThinkServer™ TS430 Redundant PSU (0393) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0393-11G	4x6	Core i3-2100	3.1 2C/4T	1x2GB	3.5"	4xHot-swap	Intel PCH	SATA	0/1/10	DVD±RW	IPMI	None	TPM	1x 450W
0393-12G	4x6	Xeon E3-1220	3.1 4C/4T	1x4GB	3.5"	4xHot-swap	Intel PCH	SATA	0/1/10	DVD±RW	IPMI	None	TPM	1x 450W

- **Highly Reliable:** redundant PSU, ECC memory, and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **1-year limited warranty**
- **Part of the EMEA TopSeller™ Program**

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Front - 3.5" disk bay</p>  </div> <div style="text-align: center;"> <p>Front - 2.5" disk bay</p>  </div> <div style="text-align: center;"> <p>Rear</p>  </div> </div> <p>3.5" disk bay models:</p> <table border="0"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>open (optical/tape)</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> </table> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <table border="0"> <tr><td>Bay 7</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 8</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 9</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 10</td><td>3.5", 1" high,</td><td>external,</td><td>for disk</td></tr> </table> <p>2.5" disk bay models:</p> <table border="0"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>open (optical/tape)</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 3</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 4</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 5</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 6</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 7</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 8</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 9</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> <tr><td>Bay 10</td><td>2.5", 0.6" high,</td><td>external,</td><td>for disk</td></tr> </table> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical</p>	Bay 1	5.25", 1.6" high,	external,	open (optical/tape)	Bay 2	5.25", 1.6" high,	external,	std optical	Bay 3	3.5", 1" high,	external,	for disk	Bay 4	3.5", 1" high,	external,	for disk	Bay 5	3.5", 1" high,	external,	for disk	Bay 6	3.5", 1" high,	external,	for disk	Bay 7	3.5", 1" high,	external,	for disk	Bay 8	3.5", 1" high,	external,	for disk	Bay 9	3.5", 1" high,	external,	for disk	Bay 10	3.5", 1" high,	external,	for disk	Bay 1	5.25", 1.6" high,	external,	open (optical/tape)	Bay 2	5.25", 1.6" high,	external,	std optical	Bay 3	2.5", 0.6" high,	external,	for disk	Bay 4	2.5", 0.6" high,	external,	for disk	Bay 5	2.5", 0.6" high,	external,	for disk	Bay 6	2.5", 0.6" high,	external,	for disk	Bay 7	2.5", 0.6" high,	external,	for disk	Bay 8	2.5", 0.6" high,	external,	for disk	Bay 9	2.5", 0.6" high,	external,	for disk	Bay 10	2.5", 0.6" high,	external,	for disk
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Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets																																																																																	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 																																																																																	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz																																																																																	
Disk bays	Four 3.5" hot-swap (HS) SATA disk bays																																																																																	
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ , 0, 1, 10 support																																																																																	
Tape drive	Supports optional tape drive via internal USB 2.0 connector																																																																																	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																																																																																	
Diskette	None (use USB port)																																																																																	
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Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics																																																																																	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions																																																																																	
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant																																																																																	
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System weight	61.7 lb (28kg) max configuration																																																																																	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal																																																																																	
Rack mount	Rack-mountable to 5U																																																																																	
Max internal capacity	4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks 8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks 4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks 8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks 8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks																																																																																	
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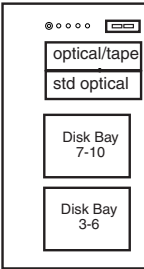
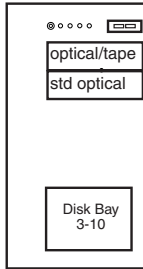
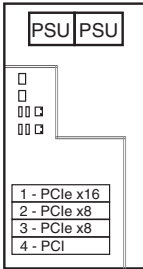
See footnotes for important warranty information
 EMEA model(s) announced August 23, 2011

ThinkServer™ TS430 Redundant PSU (0393) - TopSeller (Nov 2011)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0393-13G	4x10	Core i3-2100	3.1 2C/4T	1x2GB	2.5"	8xHot-swap	9240-8i v2	SAS	0/1/10	DVD±RW	IPMI	None	TPM	1x 450W

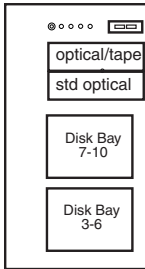
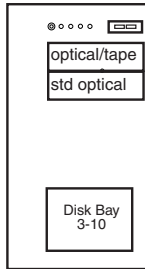
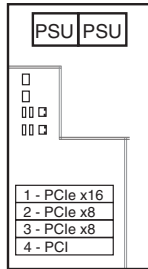
- **Highly Reliable:** redundant PSU, ECC memory, and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **1-year limited warranty**
- **Part of the EMEA TopSeller™ Program**

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics, DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p><i>Bay 7-10 are available on Eight 3.5" disk bay models:</i></p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	
Disk bays	Eight 2.5" hot-swap (HS) SAS disk bays	
Disk controller	ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID ⁰ 0, 1, 10 support	
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector	
Diagnostics	System status LEDs on front; <i>DIT model(s):</i> add-on Doctor Inside Technology (DIT) module for advanced diagnostics	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS [®] Gold qualified, redundant with two power supplies	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Max internal capacity	4 x 3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks 8 x 3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks 4 x 3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks 8 x 3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks 8 x 2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks	
Limited warranty	1-year parts and labor	
		<p align="center">Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage
		<p align="center">Security</p> <ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)
		RoHS-compliant

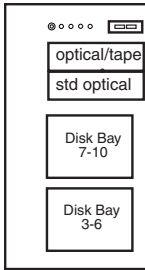
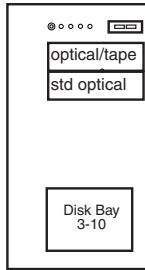
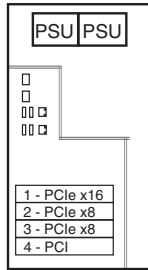
See footnotes for important warranty information
EMEA model(s) announced November 29, 2011

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(G-TOR2-6) December 2011

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	SATA Disk(s)	optical	Intelligent Diagnostics	System TPM	Preload OS	PSU	
0393-14G	Core i3-2120	1333MHz	UDIMM	1x2GB	No	Intel PCH	SATA	3.5" 4xHot-swap	No	DVD±RW	No	TPM	IPMI	No	1x450W
0393-15G	Xeon E3-1220V2	1333MHz	UDIMM	1x4GB	No	Intel PCH	SATA	3.5" 4xHot-swap	No	DVD±RW	No	TPM	IPMI	No	1x450W

Processor	Up to one processor, one processor standard, Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220V2 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)	  
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	<p>3.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 3.5", 1" high, external, for disk</p> <p>Bay 4 3.5", 1" high, external, for disk</p> <p>Bay 5 3.5", 1" high, external, for disk</p> <p>Bay 6 3.5", 1" high, external, for disk</p> <p>Bay 7-10 are available on Eight 3.5" disk bay models:</p> <p>Bay 7 3.5", 1" high, external, for disk</p> <p>Bay 8 3.5", 1" high, external, for disk</p> <p>Bay 9 3.5", 1" high, external, for disk</p> <p>Bay 10 3.5", 1" high, external, for disk</p> <p>2.5" disk bay models:</p> <p>Bay 1 5.25", 1.6" high, external, open (optical/tape)</p> <p>Bay 2 5.25", 1.6" high, external, std optical</p> <p>Bay 3 2.5", 0.6" high, external, for disk</p> <p>Bay 4 2.5", 0.6" high, external, for disk</p> <p>Bay 5 2.5", 0.6" high, external, for disk</p> <p>Bay 6 2.5", 0.6" high, external, for disk</p> <p>Bay 7 2.5", 0.6" high, external, for disk</p> <p>Bay 8 2.5", 0.6" high, external, for disk</p> <p>Bay 9 2.5", 0.6" high, external, for disk</p> <p>Bay 10 2.5", 0.6" high, external, for disk</p> <p>Slot 1 half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 2 half-length, full-height, PCI Express 2.0 x8*</p> <p>Slot 3 half-length, full-height, PCI Express 2.0 x8</p> <p>Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU)</p> <p>* x4 electrical</p> <p>** x8 electrical</p>
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	<p>Security</p> <ul style="list-style-type: none"> Security chip (selected models, see information on left) Administrator password User password Front panel key lock Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (all)
Disk bays	<p><i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable</p> <p><i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays</p> <p><i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays</p> <p><i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays</p> <p><i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays</p>	
Disk controller	<p>Intel PCH: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID[®] 0, 1, 10 support;</p> <p>RAID 500: ThinkServer RAID 500 adapter (LSI[®] SAS 9240-8i), PCI Express[®] bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support</p> <p>Upgrade for 500: Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)</p>	
Disk(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm</p> <p>3.5" SAS: SAS 6.0Gb/s, 15000 rpm</p> <p>2.5" SAS: SAS 6.0Gb/s, 10000 rpm</p>	
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector	
Intelligent Diagnostics Module (IDM)	IDM model(s): add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); KVM model(s): add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; TPM model(s): additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS [®] Gold qualified, redundant with two power supplies	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Limited warranty	1-year parts and labor	

See footnotes for important warranty information
EMEA model(s) announced June 12, 2012

Type-model	Processor	Memory DIMMs	Pre-conf RAID	Disk controller	Disk type	Disk size	Disk bays	Disk(s)	SATA optical	Intelligent Diagnostics	System mgmt TPM	Preload OS	PSU
0393-16G	Core i3-3220	1x4GB	No	Intel PCH	SATA	3.5	4xHot-swap	No	DVD±RW	No	TPM IPMI	No	1x450W
Processor	Up to one processor, one processor standard, Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache) , integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)								Front - 3.5" disk bay 				
Implementation	One LGA1155 socket								Front - 2.5" disk bay 				
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets								Rear 				
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 												
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz												
Disk bays	<i>Some:</i> Four 3.5" SATA disk bays, no hot-swap, direct cable <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Four 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SATA/SAS disk bays								3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk <i>Bay 7-10 are available on Eight 3.5" disk bay models:</i> Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk				
Disk controller	<i>Intel PCH:</i> Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support; <i>RAID 500:</i> ThinkServer RAID 500 adapter (LSI® SAS 9240-8i), PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Upgrade for 500:</i> Additional upgrade key for RAID 500 adapter, add RAID 5, 50 support (RAID 50 is available on eight disk bays model only)								2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk				
Disk(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 3.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SAS: SAS 6.0Gb/s, 10000 rpm								Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical				
Tape drive	Supports optional tape drive via internal USB 2.0 connector												
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Diskette	None (use USB port)												
Chipset	Intel C202 Chipset , Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)												
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM												
Extender card	None												
Front ports	Two USB 2.0												
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45, one port is shared with system management), one analog VGA DB-15 connector												
Intelligent Diagnostics Module (IDM)	<i>IDM model(s):</i> add-on Intelligent Diagnostics Module for advanced diagnostics, IDM LED lights indicate failing component category												
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); <i>KVM model(s):</i> add-on KVM card for KVM functions												
Security chip	No onboard TPM chip; <i>TPM model(s):</i> additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant												
Prerequisites	Monitor, SATA/SAS disk, OS												
Keyboard	None (use USB port)												
Mouse	None (use USB port)												
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS® Gold qualified, redundant with two power supplies												
Mechanical	Tower, business black color, metal case								Software Management Tools <ul style="list-style-type: none"> ThinkServer EasyStartup ThinkServer EasyManage 				
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm												
System weight	61.7 lb (28kg) max configuration								Security <ul style="list-style-type: none"> Security chip (selected models, see information on left) Administrator password User password Front panel key lock Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (all) 				
Tool-less	Side cover removal, disk and optical drive removal, system fan removal												
Rack mount	Rack-mountable to 5U								RoHS-compliant				
Limited warranty	1-year parts and labor												

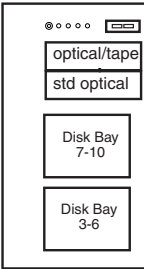
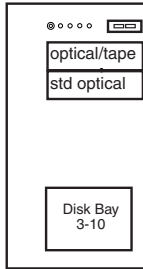
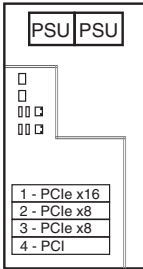
See footnotes for important warranty information
 EMEA model(s) announced September 25, 2012

ThinkServer™ TS430 Redundant PSU (0392)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Cores / GHz	Threads	Memory DIMMs	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	SATA optical	System mgmt	Diagnostics (DIT)	TPM	Power Supply
0392-16G	4x6	Xeon E3-1220	3.1	4C/4T	1x4GB	3.5"	4xHot-swap	Intel PCH	SATA	0/1/10	DVD	IPMI	None	TPM	1x 450W
0392-17G	4x10	Xeon E3-1220	3.1	4C/4T	1x4GB	3.5"	8xHot-swap	9240-8i v2	SATA/SAS	0/1/10	DVD	IPMI	None	TPM	1x 450W
0392-18G	4x10	Xeon E3-1220	3.1	4C/4T	1x4GB	2.5"	8xHot-swap	9240-8i v2	SAS	0/1/10	DVD	IPMI	None	TPM	1x 450W

- **Highly Reliable:** redundant PSU, ECC memory, and enterprise-class SAS & SATA choices
- **Highly Manageable:** enhanced remote manageability with IPMI 2.0 BMC & optional KVM
- **Room to Grow:** highly modular hot-swap SATA/SAS design – supports up to 8 hard drives (selected models)
- **3-year limited warranty¹**

Processor	Up to one processor, one processor standard, Intel® Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)	Front - 3.5" disk bay  Front - 2.5" disk bay  Rear 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , four 240-pin DIMM sockets	3.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 3.5", 1" high, external, for disk Bay 4 3.5", 1" high, external, for disk Bay 5 3.5", 1" high, external, for disk Bay 6 3.5", 1" high, external, for disk Bay 7-10 are available on Eight 3.5" disk bay models: Bay 7 3.5", 1" high, external, for disk Bay 8 3.5", 1" high, external, for disk Bay 9 3.5", 1" high, external, for disk Bay 10 3.5", 1" high, external, for disk 2.5" disk bay models: Bay 1 5.25", 1.6" high, external, open (optical/tape) Bay 2 5.25", 1.6" high, external, std optical Bay 3 2.5", 0.6" high, external, for disk Bay 4 2.5", 0.6" high, external, for disk Bay 5 2.5", 0.6" high, external, for disk Bay 6 2.5", 0.6" high, external, for disk Bay 7 2.5", 0.6" high, external, for disk Bay 8 2.5", 0.6" high, external, for disk Bay 9 2.5", 0.6" high, external, for disk Bay 10 2.5", 0.6" high, external, for disk Slot 1 half-length, full-height, 32-bit PCI 2.3 Slot 2 half-length, full-height, PCI Express 2.0 x8* Slot 3 half-length, full-height, PCI Express 2.0 x8 Slot 4 half-length, full-height, PCI Express 2.0 x16** (near CPU) * x4 electrical ** x8 electrical
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed 	
Graphics	Onboard Aspeed AST2150 graphics/management processor, one VGA DB-15 on rear; Maximum resolution: 1600x1200@60Hz	
Disk bays	<i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Eight 3.5" hot-swap (HS) SATA/SAS disk bays <i>Some:</i> Eight 2.5" hot-swap (HS) SAS disk bays Intel PCH: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 10 support 9240-8i v2: ThinkServer RAID 9240-8i v2 RAID adapter, PCIe bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support	
Disk controller		
Tape drive	Supports optional tape drive via internal USB 2.0 connector	
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	
Diskette	None (use USB port)	
Chipset	Intel C202 Chipset, Platform Controller Hub [PCH] (Slot 1-2, ethernet MAC, and USB)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82579LM	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, one serial (9-pin), two ethernet (RJ-45), one port is shared with system management), one analog VGA DB-15 connector	
Diagnostics	System status LEDs on front; DIT model(s): add-on Doctor Inside Technology (DIT) module for advanced diagnostics	
Systems mgmt	Onboard Aspeed AST2150 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC); KVM model(s): add-on KVM card for KVM functions	
Security chip	No onboard TPM chip; TPM model(s): additional Nuvoton WPCT210 add-on card for TPM function, TCG 1.2-compliant	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply	One or two 450 watts standard, two maximum, rear access, hot-swap, 80 PLUS [®] Gold qualified, redundant with two power supplies	
Mechanical	Tower, business black color, metal case	
Dimension	W x H x D = 7.68"/195mm x 16.9"/430mm x 23.4"/595mm	
System weight	61.7 lb (28kg) max configuration	
Tool-less	Side cover removal, disk and optical drive removal, system fan removal	
Rack mount	Rack-mountable to 5U	
Max internal capacity	4x3.5" SATA (DC/HS): 8.0TB with four 2TB 3.5" SATA disks 8x3.5" SATA (HS): 16.0TB with eight 2TB 3.5" SATA disks 4x3.5" SAS (HS): 2.4TB with four 600GB 3.5" SAS disks 8x3.5" SAS (HS): 4.8TB with eight 600GB 3.5" SAS disks 8x2.5" SAS (HS): 4.8TB with eight 600GB 2.5" SAS disks	
Limited warranty	3-year parts and labor	
		Software Management Tools <ul style="list-style-type: none"> • ThinkServer EasyStartup • ThinkServer EasyManage
		Security <ul style="list-style-type: none"> • Security chip (selected models, see information on left) • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)
		RoHS-compliant

See footnotes for important warranty information
EMEA model(s) announced November 29, 2011

ThinkServer™



Lenovo ThinkServer TD230



Lenovo ThinkServer TD230



Lenovo ThinkServer TD230 (Direct Cable)

ThinkServer TD230 (1029) - TopSeller - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Ann date (mm/dd/yy)
TD230	1029-13G	5x6	1x E5620	2.40	4	1x 4GB	1333MHz	3.5" 4x	Hot-swap	9240-8i(v2)+Upgrade	SATA/SAS ⁴	0/1/5/10	KVM	07/27/10
TD230	1029-14G	5x6	1x X5650	2.66	6	1x 4GB	1333MHz	3.5" 4x	Hot-swap	9240-8i(v2)+Upgrade	SATA/SAS	0/1/5/10	KVM	10/12/10

- **These models have a 3-year limited warranty¹**
- **Flexible and green tower computing at value price point**
- **These small and medium business (SMB) models are part of the EMEA TopSeller™ Program**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5620 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 12MB cache Intel Xeon Processor X5650 with six-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px;"> <p>Front</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>Rear</p> </div> </div>
Implementation	Two LGA1366 sockets	
Memory	4GB std, 32GB max (16GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors	<ul style="list-style-type: none"> • Tower mechanical • Business black color; metal case • 8.3"W x 20.1"D x 18.5"H • 210mm W x 510mm D x 470mm H • 57.6 lb (26.2kg) max configuration • Toolless side cover removal • Toolless disk and optical drive removal <p>Bay 1 5.25", 1.6" high, external, std optical Bay 2 5.25", 1.6" high, external, optional optical Bay 3 3.5", 1" high, external, optional disk 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</p> <p>Slot 1: half-length, full-height, PCI Express 2.0 x8 Slot 2: half-length, full-height, PCI Express 2.0 x8 Slot 3: half-length, full-height, PCI Express 2.0 x8*** Slot 4: half-length, full-height, 32-bit PCI 2.3 Slot 5: half-length, full-height, PCI Express x4 *** x4 electrical</p>
Graphics	Onboard ServerEngines™ Pilot II graphics/management controller, one VGA DB-15 on rear, 32MB; <i>Maximum resolution: 1600x1200@52Hz</i>	
Disk bays	Four 3.5" HS SATA/SAS disk bays	
Disk controller	ThinkServer SAS 9240-8i v2, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support; additional upgrade key for 9240-8i v2, add RAID 5 support	
Optical	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	
Diskette	None (use USB port)	
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82567	
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right) and links to 82574L; enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, slots 4-5, onboard SATA controller, and links to 82567	
Extender card	None	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)	
Internal ports	One USB 2.0 connector for optional tape drive	
Diagnostics	System status LEDs on front, Diagnostic LEDs on rear and board	
Systems mgmt	Onboard ServerEngines Pilot II graphics/management controller <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC) <i>KVM model(s):</i> IPMI functions PLUS KVM, ThinkServer Remote Management Module 3, supports one additional ethernet port	
Prerequisites	Monitor, SATA/SAS disk, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply(s)	One fixed 625 watts standard, universal, 80 PLUS® Bronze qualified	
Cooling	Five fans std (power supply, two front, one rear, first processor), one optional processor fan for second processor	
		<p style="text-align: center;">Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F2 at startup • Network Boot: F12 at startup • ICH10R RAID: Ctrl+E at startup • 9420-8i RAID: Ctrl+H at startup
		<p style="text-align: center;">Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup
		<p style="text-align: center;">Security</p> <ul style="list-style-type: none"> • Administrator password • User password • Front panel key lock • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)
		RoHS-compliant
Max memory capacity		
32GB with eight 4GB PC3-10600 DDR3 RDIMMs		
Max internal capacity		
3.5" SATA HS: 8.0TB with four 2TB 3.5" SATA disks		
3.5" SAS HS: 2.4TB with four 600GB 3.5" SAS disks		

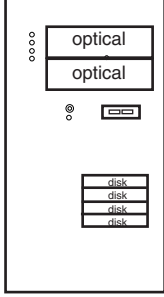
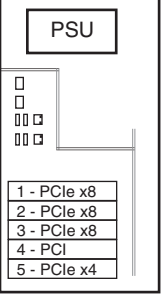
See footnotes for important warranty information
 EMEA models announced July 27 or October 12, 2010
 EMEA models withdrawn effective June 2013

ThinkServer TD230 (1029) - TopSeller (March 2011) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Disk(s)	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Ann date (mm/dd/yy)
TD230	1029-15G	5x7	1xE5603	1.60	4	1x2GB	None	3.5"	5xDirect Cable	ICH10R	SATA	0/1/10	IPMI	03/01/11
TD230	1029-16G	5x7	1xE5606	2.13	4	1x2GB	None	3.5"	5xDirect Cable	ICH10R	SATA	0/1/10	IPMI	03/01/11
TD230	1029-17G	5x6	1xE5606	2.13	4	1x2GB	None	3.5"	4x Hot-swap	ICH10R	SATA	0/1/10	IPMI	03/01/11
TD230	1029-18G	5x6	1xE5607	2.26	4	1x4GB	None	3.5"	4x Hot-swap	ICH10R	SATA	0/1/10	IPMI	03/01/11
TD230	1029-1AG	5x6	1xE5645	2.40	6	1x4GB	None	3.5"	4x Hot-swap	ICH10R	SATA	0/1/10	IPMI	03/01/11
TD230	1029-19G	5x6	1xE5620	2.40	4	1x4GB	None	3.5"	4x Hot-swap	9240-8i(v2)+Upgrade	SATA/SAS ⁴	0/1/5/10	KVM	03/15/11
TD230	1029-1BG	5x6	1xE5645	2.40	6	1x4GB	None	3.5"	4x Hot-swap	9240-8i(v2)+Upgrade	SATA/SAS	0/1/5/10	KVM	03/15/11

- These models have a 3-year limited warranty¹
- These small and medium business (SMB) models are part of the EMEA TopSeller™ Program

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5606 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5607 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5620 with quad-core , 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor E5645 with six-core , 5.86GT/s QPI, Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache	Front - (Hot-swap)	Rear																																																				
Implementation	Two LGA1366 sockets																																																						
Memory	2GB or 4GB std, 32GB max (16GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors	<ul style="list-style-type: none"> • Tower mechanical • Business black color; metal case • 8.3"W x 20.1"H • 210mm W x 510mm D x 470mm H • 57.6 lb (26.2kg) max configuration • Toolless side cover removal • Toolless optical drive removal 																																																					
Graphics	Onboard ServerEngines™ Pilot II graphics/management controller, one VGA DB-15 on rear, 32MB; <i>Maximum resolution: 1600x1200@52Hz</i>	<p>Hot-swap model(s):</p> <table border="1"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>optional optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> </table> <p>Direct cable model(s):</p> <table border="1"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>optional optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 7</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> </table> <p>Slot 1: half-length, full-height, PCI Express 2.0 x8 Slot 2: half-length, full-height, PCI Express 2.0 x8 Slot 3: half-length, full-height, PCI Express 2.0 x8*** Slot 4: half-length, full-height, 32-bit PCI 2.3 Slot 5: half-length, full-height, PCI Express x4 *** x4 electrical</p>		Bay 1	5.25", 1.6" high,	external,	std optical	Bay 2	5.25", 1.6" high,	external,	optional optical	Bay 3	3.5", 1" high,	external,	optional disk	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 1	5.25", 1.6" high,	external,	std optical	Bay 2	5.25", 1.6" high,	external,	optional optical	Bay 3	3.5", 1" high,	external,	optional disk	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
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Bay 7	3.5", 1" high,	external,	optional disk																																																				
Disk bays	<i>Some:</i> Five 3.5" SATA disk bays, no hot-swap, direct cable (DC)																																																						
Disk controller	<i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays <i>Some:</i> Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, RAID ⁰ 0, 1, 10 support <i>Some:</i> ThinkServer SAS 9240-8i v2, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>Some:</i> Additional upgrade key for 9240-8i v2, add RAID 5 support <i>DC Model(s):</i> Six SATA connectors for opticals and disks																																																						
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																																																						
Diskette	None (use USB port)																																																						
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82567																																																						
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right) and links to 82574L, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, slots 4-5, onboard SATA controller, and links to 82567																																																						
Extender card	None																																																						
Front ports	Two USB 2.0																																																						
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)																																																						
Internal ports	One USB 2.0 connector for optional tape drive																																																						
Diagnostics	System status LEDs on front, Diagnostic LEDs on rear																																																						
Systems mgmt	Onboard ServerEngines Pilot II graphics/management controller <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC) <i>KVM model(s):</i> IPMI functions PLUS KVM, ThinkServer Remote Management Module 3, supports one additional ethernet port	<p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F2 at startup • Network Boot: F12 at startup • ICH10R RAID: Ctrl+E at startup 																																																					
Prerequisites	Monitor, disk, OS	<p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup 																																																					
Keyboard	None (use USB port)	<p>Security</p> <ul style="list-style-type: none"> • Administrator password • User password • Front panel lock out • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 																																																					
Mouse	None (use USB port)																																																						
Power supply(s)	One fixed 625 watts standard, universal, 80 PLUS® Bronze qualified																																																						
Cooling	Five fans std (power supply, two front, one rear, first processor), one optional processor fan for second processor																																																						
		RoHS-compliant																																																					

See footnotes for important warranty information
 EMEA models announced March 1 or 15, 2011
 EMEA models withdrawn effective June 2013

ThinkServer TD230 (1027) - TopSeller (March 2011) - withdrawn

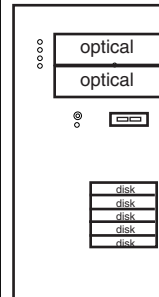
Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Disk(s)	Disk size	Disk bays	Disk Controller	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
TD230	1027-13G	5x7	1xE5603	1.60	4	1x2GB	None	3.5"	5xDirect Cable	ICH10R	SATA	DVD	0/1/10	IPMI	2xGb	03/01/11

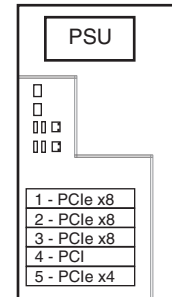
- **This model has a 1-year limited warranty¹**
- **Flexible and green tower computing at value price point**
- **This small and medium business (SMB) model is part of the EMEA TopSeller™ Program**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB std, 32GB max (16GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard ServerEngines™ Pilot II graphics/management controller, one VGA DB-15 on rear, 32MB; <i>Maximum resolution: 1600x1200@52Hz</i>
Disk bays	Five 3.5" SATA disk bays, no hot-swap, direct cable (DC)
Disk controller	Six SATA connectors for opticals and disks, Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁹ 0, 1, 10 support
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82567
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right) and links to 82574L, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, slots 4-5, onboard SATA controller, and links to 82567
Extender card	None
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal ports	One USB 2.0 connector for optional tape drive
Diagnostics	System status LEDs on front, Diagnostic LEDs on rear
Systems mgmt	Onboard ServerEngines Pilot II graphics/management controller, IPMI 2.0-compliant baseboard management controller (BMC)
Prerequisites	Monitor, SATA/SAS disk, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One fixed 625 watts standard, universal, 80 PLUS® Bronze qualified
Cooling	Five fans std (power supply, two front, one rear, first processor), one optional processor fan for second processor

Front



Rear



- Tower mechanical
- Business black color; metal case
- 8.3"W x 20.1"D x 18.5"H
- 210mm W x 510mm D x 470mm H
- 57.6 lb (26.2kg) max configuration
- Toolless side cover removal
- Toolless disk and optical drive removal

Bay 1	5.25", 1.6" high, external, std optical
Bay 2	5.25", 1.6" high, external, optional optical
Bay 3	3.5", 1" high, external, optional disk
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, PCI Express 2.0 x8
 - Slot 2: half-length, full-height, PCI Express 2.0 x8
 - Slot 3: half-length, full-height, PCI Express 2.0 x8***
 - Slot 4: half-length, full-height, 32-bit PCI 2.3
 - Slot 5: half-length, full-height, PCI Express x4
- *** x4 electrical

Power-On Hotkey

- Setup Utility: F2 at startup
- Network Boot: F12 at startup
- ICH10R RAID: Ctrl+E at startup

Software Management Tools

- ThinkServer EasyStartup

Security

- Administrator password
- User password
- Front panel lock out
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O control
- USB port disablement (all)

RoHS-compliant

Max memory capacity

32GB with eight 4GB PC3-10600 DDR3 RDIMMs

Max internal capacity

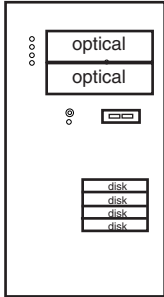
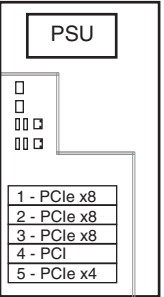
10.0TB with five 2TB 3.5" SATA disks

See footnotes for important warranty information
EMEA model announced March 1, 2011
EMEA models withdrawn effective June 2013

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(G-NEL2-2) June 2013

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Disk(s)	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
TD230	1039-13G	5 x 7	1 x E5603	1.60	4	1 x 2GB	None	3.5"	5 x Direct Cable	ICH10R	SATA	0/1/10	IPMI	2 x Gb	03/01/11
TD230	1039-14G	5 x 6	1 x E5603	1.60	4	1 x 2GB	None	3.5"	4 x Hot-swap	ICH10R	SATA	0/1/10	IPMI	2 x Gb	03/01/11

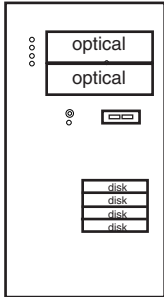
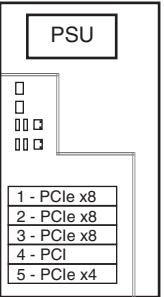
- **These models have a 1-year limited warranty¹**
- **Flexible and green tower computing at value price point**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache	Front - (Hot-swap) 	Rear 																																																			
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Memory	2GB std, 32GB max (16GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors	<ul style="list-style-type: none"> • Tower mechanical • Business black color; metal case • 8.3"W x 20.1"D x 18.5"H • 210mm W x 510mm D x 470mm H • 57.6 lb (26.2kg) max configuration • Toolless side cover removal • Toolless optical drive removal <p>Hot-swap model(s):</p> <table border="1"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>optional optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> </table> <p>Direct cable model(s):</p> <table border="1"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>optional optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 7</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> </table> <p>Slot 1: half-length, full-height, PCI Express 2.0 x8 Slot 2: half-length, full-height, PCI Express 2.0 x8 Slot 3: half-length, full-height, PCI Express 2.0 x8*** Slot 4: half-length, full-height, 32-bit PCI 2.3 Slot 5: half-length, full-height, PCI Express x4 *** x4 electrical</p> <p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F2 at startup • Network Boot: F12 at startup • ICH10R RAID: Ctrl+E at startup <p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p>Security</p> <ul style="list-style-type: none"> • Administrator password • User password • Front panel lock out • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) <p>RoHS-compliant</p>	Bay 1	5.25", 1.6" high,	external,	std optical	Bay 2	5.25", 1.6" high,	external,	optional optical	Bay 3	3.5", 1" high,	external,	optional disk	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 1	5.25", 1.6" high,	external,	std optical	Bay 2	5.25", 1.6" high,	external,	optional optical	Bay 3	3.5", 1" high,	external,	optional disk	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
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Disk bays	<i>Some:</i> Five 3.5" SATA disk bays, no hot-swap, direct cable (DC) <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays																																																					
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, RAID [®] 0, 1, 10 support <i>DC Model(s):</i> Six SATA connectors for opticals and disks																																																					
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive																																																					
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Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right) and links to 82574L, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, slots 4-5, onboard SATA controller, and links to 82567																																																					
Extender card	None																																																					
Front ports	Two USB 2.0																																																					
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)																																																					
Internal ports	One USB 2.0 connector for optional tape drive																																																					
Diagnostics	System status LEDs on front, Diagnostic LEDs on rear																																																					
Systems mgmt	Onboard ServerEngines Pilot II graphics/management controller, IPMI 2.0-compliant baseboard management controller (BMC)																																																					
Prerequisites	Monitor, disk, OS																																																					
Keyboard	None (use USB port)																																																					
Mouse	None (use USB port)																																																					
Power supply(s)	One fixed 625 watts standard, universal, 80 PLUS [®] Bronze qualified																																																					
Cooling	Five fans std (power supply, two front, one rear, first processor), one optional processor fan for second processor																																																					
Max memory capacity																																																						
32GB with eight 4GB PC3-10600 DDR3 RDIMMs																																																						
Max internal capacity																																																						
3.5" SATA HS: 8.0TB with four 2TB 3.5" SATA disks 3.5" SATA DC: 10.0TB with five 2TB 3.5" SATA disks																																																						

See footnotes for important warranty information
 EMEA models announced March 1, 2011
 EMEA models withdrawn effective June 2013

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Disk(s)	Disk size	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
TD230	1040-14G	5x7	1xE5603	1.60	4	1x2GB	None	3.5"	5xDirect Cable	ICH10R	SATA	0/1/10	IPMI	2xGb	03/01/11
TD230	1040-15G	5x6	1xE5603	1.60	4	1x2GB	None	3.5"	4x Hot-swap	ICH10R	SATA	0/1/10	IPMI	2xGb	03/01/11
TD230	1040-16G	5x6	1xE5603	1.60	4	1x2GB	None	3.5"	4x Hot-swap	9240-8i(v2)	SATA/SAS ⁴	0/1/10	IPMI	2xGb	03/15/11

- *These models have a 3-year limited warranty¹*
- *Flexible and green tower computing at value price point*

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache	Front - (Hot-swap) 	Rear 																												
Implementation	Two LGA1366 sockets																														
Memory	2GB std, 32GB max (16GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors	<ul style="list-style-type: none"> • Tower mechanical • Business black color; metal case • 8.3"W x 20.1"D x 18.5"H • 210mm W x 510mm D x 470mm H • 57.6 lb (26.2kg) max configuration • Toolless side cover removal • Toolless optical drive removal 																													
Graphics	Onboard ServerEngines™ Pilot II graphics/management controller, one VGA DB-15 on rear, 32MB; <i>Maximum resolution: 1600x1200@52Hz</i>	<p><i>Hot-swap model(s):</i></p> <table border="0"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>optional optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> </table>		Bay 1	5.25", 1.6" high,	external,	std optical	Bay 2	5.25", 1.6" high,	external,	optional optical	Bay 3	3.5", 1" high,	external,	optional disk	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 1	5.25", 1.6" high,	external,	std optical																												
Bay 2	5.25", 1.6" high,	external,	optional optical																												
Bay 3	3.5", 1" high,	external,	optional disk																												
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																												
Disk bays	<i>Some:</i> Five 3.5" SATA disk bays, no hot-swap, direct cable (DC) <i>Some:</i> Four 3.5" hot-swap (HS) SATA disk bays	<p><i>Direct cable model(s):</i></p> <table border="0"> <tr><td>Bay 1</td><td>5.25", 1.6" high,</td><td>external,</td><td>std optical</td></tr> <tr><td>Bay 2</td><td>5.25", 1.6" high,</td><td>external,</td><td>optional optical</td></tr> <tr><td>Bay 3</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 4</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 5</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 6</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> <tr><td>Bay 7</td><td>3.5", 1" high,</td><td>external,</td><td>optional disk</td></tr> </table>		Bay 1	5.25", 1.6" high,	external,	std optical	Bay 2	5.25", 1.6" high,	external,	optional optical	Bay 3	3.5", 1" high,	external,	optional disk	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 1	5.25", 1.6" high,	external,	std optical																												
Bay 2	5.25", 1.6" high,	external,	optional optical																												
Bay 3	3.5", 1" high,	external,	optional disk																												
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																												
Disk controller	<i>Some:</i> Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, RAID ⁸ 0, 1, 10 support <i>Some:</i> ThinkServer SAS 9240-8i v2, PCI Express [®] bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 10 support <i>DC Model(s):</i> Six SATA connectors for opticals and disks	<p>Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: F2 at startup • Network Boot: F12 at startup • ICH10R RAID: Ctrl+E at startup • LSI 9420-8i RAID: Ctrl+H at startup 																													
Optical	DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive	<p>Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup 																													
Diskette	None (use USB port)	<p>Security</p> <ul style="list-style-type: none"> • Administrator password • User password • Front panel lock out • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 																													
Ethernet	Two Gigabit Ethernet ports, Intel 82574L and 82567	<p>RoHS-compliant</p>																													
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right) and links to 82574L, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, slots 4-5, onboard SATA controller, and links to 82567																														
Extender card	None																														
Front ports	Two USB 2.0																														
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)																														
Internal ports	One USB 2.0 connector for optional tape drive																														
Diagnostics	System status LEDs on front, Diagnostic LEDs on rear																														
Systems mgmt	Onboard ServerEngines Pilot II graphics/management controller, IPMI 2.0-compliant baseboard management controller (BMC)																														
Prerequisites	Monitor, disk, OS																														
Keyboard	None (use USB port)																														
Mouse	None (use USB port)																														
Power supply(s)	One fixed 625 watts standard, universal, 80 PLUS [®] Bronze qualified																														
Cooling	Five fans std (power supply, two front, one rear, first processor), one optional processor fan for second processor																														
Max memory capacity																															
32GB with eight 4GB PC3-10600 DDR3 RDIMMs																															
Max internal capacity																															
3.5" SATA HS: 8.0TB with four 2TB 3.5" SATA disks																															
3.5" SATA DC: 10.0TB with five 2TB 3.5" SATA disks																															

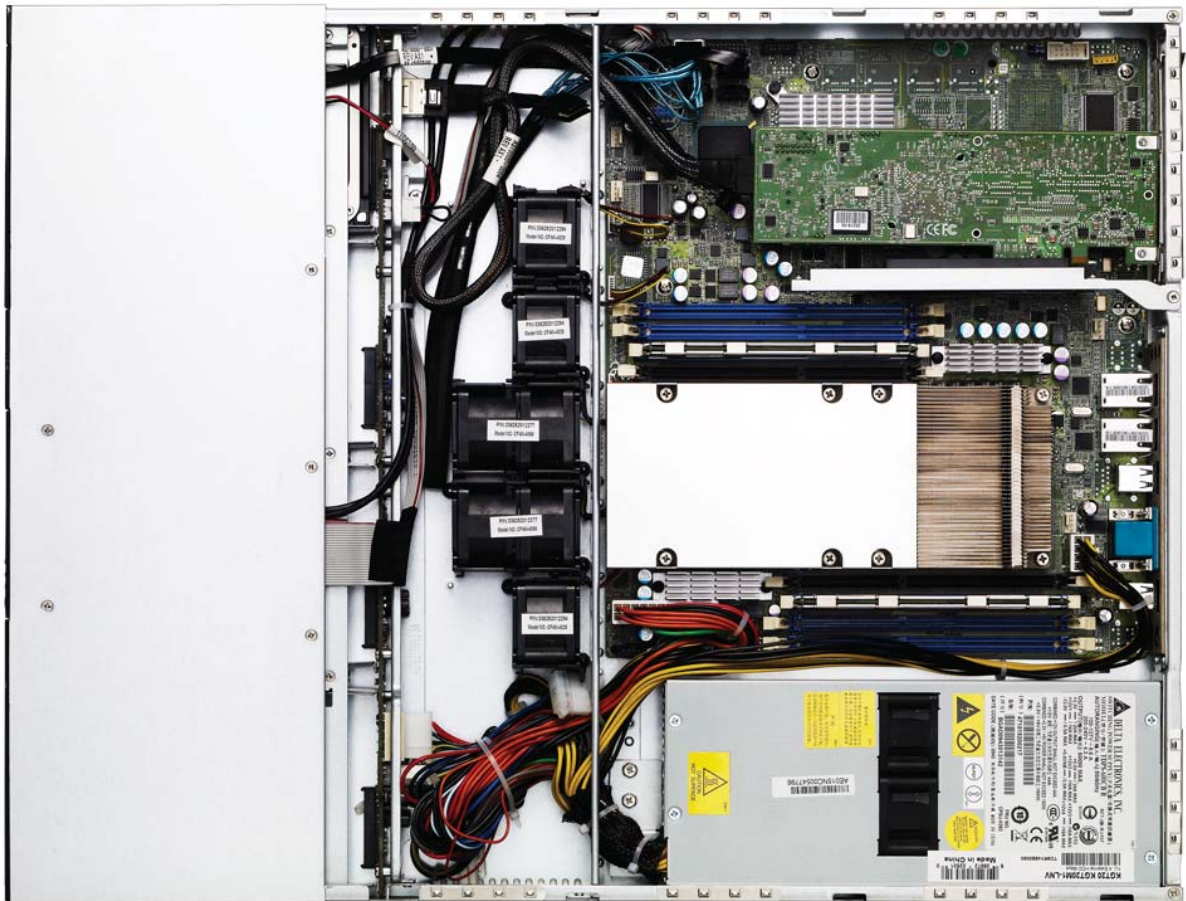
See footnotes for important warranty information
 EMEA models announced March 1 and 15, 2011
 EMEA models withdrawn effective June 2013



Lenovo ThinkServer RD230



Lenovo ThinkServer RD230



Lenovo ThinkServer RD230

ThinkServer RD230 (4011) - TopSeller (March 2011) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk size	RAID Battery	Disk bays	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
RD230	4011-16G	1x5	1xE5603	1.60	4	1x4GB	1333MHz	3.5"		4xHot-swap	SATA	DVD±RW	0/1/5/10	IPMI	2xGb	03/01/11
RD230	4011-17G	1x5	1xE5606	2.13	4	1x4GB	1333MHz	3.5"		4xHot-swap	SATA	DVD±RW	0/1/5/10	IPMI	2xGb	03/01/11
RD230	4011-18G	1x5	1xE5607	2.26	4	1x4GB	1333MHz	3.5"		4xHot-swap	SATA	DVD±RW	0/1/5/10	KVM	2xGb	03/01/11
RD230	4011-19G	1x5	1xE5620	2.40	4	1x4GB	1333MHz	3.5"		4xHot-swap	SATA	DVD±RW	0/1/5/10	KVM	2xGb	03/01/11
RD230	4011-1BG	1x5	1xE5645	2.40	6	1x8GB	1333MHz	3.5"	Battery	4xHot-swap	SATA/SAS ⁴	DVD±RW	0/1/5/6/10	KVM	2xGb	03/01/11
RD230	4011-1CG	1x5	2xX5650	2.66	12	2x8GB	1333MHz	3.5"	Battery	4xHot-swap	SATA/SAS	DVD±RW	0/1/5/6/10	KVM	2xGb	03/01/11
RD230	4011-1DG	1x5	1xE5645	2.40	6	1x4GB	1333MHz	3.5"		4xHot-swap	SATA	DVD±RW	0/1/5/10	KVM	2xGb	03/01/11

- These models have a 3-year limited warranty¹
- These small and medium business (SMB) models are part of the EMEA TopSeller™ Program

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5603 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5606 with quad-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5607 with quad-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5620 with quad-core, 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor E5645 with six-core, 5.86GT/s QPI, Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor X5650 with six-core, 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache
Implementation	Two LGA1366 sockets
Memory	4GB, 8GB, or 16GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring, eight 240-pin DIMM sockets** * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; Maximum resolution: 1600x1200@60Hz
Disk bays	16G/17G/18G/19G/1DG: Four 3.5" hot-swap (HS) SATA disk bays 1BG/1CG: Four 3.5" hot-swap (HS) SATA/SAS disk bays
Disk controller	16G/17G/18G/19G/1DG: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ 0, 1, 5, 10 support 1BG/1CG: ThinkServer 8708EM2 SAS RAID Controller, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 6, 10 support, Battery backed cache integrated
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset, Intel I/O Hub (IOH) for PCI Express slot (see right), enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, onboard SATA controller
Riser card	(See Right) One PCI Express 2.0 x16 slot standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor IPMI model(s): IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub KVM model(s): IPMI functions PLUS KVM supported, 24bit high quality video compression
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 600 watts standard, one maximum, variable speed fan, auto-sensing, no redundancy
Cooling	Five fans standard, five maximum, variable speed

1U Rack top

Front

Rear

- 1U Mechanical; rack-mount only
- Black color front; metal case
- 17.2"W x 22.4"D x 1.72"H
- 436mm W x 568mm D x 43.6mm H
- 37.7 lb (17kg) max configuration
- Toolless top cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention

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
Bay 4	3.5"	1" high	external	optional disk
Bay 5	3.5"	1" high	external	optional disk

Slot 1: half-length, full-height, PCI Express 2.0 x16

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- Onboard SATA RAID: Ctrl+I at startup
- Add-on SATA/SAS RAID: Ctrl+H at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

See footnotes for important warranty information
EMEA models announced March 1, 2011
EMEA models withdrawn effective June 2013

ThinkServer RD230 (1043) - March 2011 - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor(s)	GHz Cores	Memory DIMMs	Memory speed	Disk size	RAID Battery	Disk bays	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
RD230	1043-12G	1x5	1xE5603	1.60 4	1x2GB	1333MHz	3.5"	None	4xHot-swap	SATA	DVD±RW	0/1/5/10	IPMI	2xGb	03/01/11

- **This model has a 1-year limited warranty¹**
- **High performance, advanced RAID, and remote management supported at value price point**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets** * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	Four 3.5" hot-swap (HS) SATA disk bays
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID [®] 0, 1, 5, 10 support
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slot (see right), enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, onboard SATA controller
Riser card	(See Right) One PCI Express 2.0 x16 slot standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 600 watts standard, one maximum, variable speed fan, auto-sensing, no redundancy
Cooling	Five fans standard, five maximum, variable speed

1U Rack top

Front

Rear

- 1U Mechanical; rack-mount only
- Black color front; metal case
- 17.2"W x 22.4"D x 1.72"H
- 436mm W x 568mm D x 43.6mm H
- 37.7 lb (17kg) max configuration
- Toolless top cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention

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
Bay 4	3.5", 1" high, external, optional disk
Bay 5	3.5", 1" high, external, optional disk

Slot 1: half-length, full-height, PCI Express 2.0 x16

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- Onboard SATA RAID: Ctrl+I at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

Max memory capacity
64GB with eight 8GB RDIMMs
Max internal capacity
8.0TB with four 2TB 3.5" SATA disks

See footnotes for important warranty information
 EMEA model announced March 1, 2011
 EMEA models withdrawn effective June 2013

ThinkServer RD230 (1044) - March 2011 - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz Cores	Memory DIMMs	Memory speed	Disk size	RAID Battery	Disk bays	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
RD230	1044-16G	1x5 1x5	E5603	1.60 4	1x2GB	1333MHz	3.5"	None	4xHot-swap	SATA	DVD±RW	0/1/5/10	IPMI	2xGb	03/01/11

- **This model has a 3-year limited warranty¹**
- **High performance, advanced RAID, and remote management supported at value price point**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets** * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	Four 3.5" hot-swap (HS) SATA disk bays
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ 0, 1, 5, 10 support
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slot (see right), enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, onboard SATA controller
Riser card	(See Right) One PCI Express 2.0 x16 slot standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 600 watts standard, one maximum, variable speed fan, auto-sensing, no redundancy
Cooling	Five fans standard, five maximum, variable speed

1U Rack top

Front

Rear

- 1U Mechanical; rack-mount only
- Black color front; metal case
- 17.2"W x 22.4"D x 1.72"H
- 436mm W x 568mm D x 43.6mm H
- 37.7 lb (17kg) max configuration
- Toolless top cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention

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
Bay 4	3.5"	1" high	external	optional disk
Bay 5	3.5"	1" high	external	optional disk

Slot 1: half-length, full-height, PCI Express 2.0 x16

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- Onboard SATA RAID: Ctrl+I at startup
- Add-on SATA/SAS RAID: Ctrl+H at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

Max memory capacity
64GB with eight 8GB RDIMMs
Max internal capacity
3.5" SATA HS: 8.0TB with four 2TB 3.5" SATA disks
3.5" SAS HS: 2.4TB with four 600GB 3.5" SAS disks

See footnotes for important warranty information
 EMEA model announced March 1, 2011
 EMEA models withdrawn effective June 2013

ThinkServer RD230 (1043) - May 2011 - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk size	RAID Battery	Disk bays	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
RD230	1043-13G	1x5	1xE5603	1.60	4	1x2GB	1333MHz	3.5"	None	4xHot-swap	SATA/SAS ⁴ DVD±RW	0/1/1E	IPMI	2xGb	05/31/11	
RD230	1043-14G	1x5	1xE5603	1.60	4	1x2GB	1333MHz	3.5"	None	4xHot-swap	SATA/SAS DVD±RW	0/1/1E	KVM	2xGb	05/31/11	

- **These models have a 1-year limited warranty¹**
- **High performance, advanced RAID, and remote management supported at value price point**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets** * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	Four 3.5" hot-swap (HS) SATA/SAS disk bays
Disk controller	LSI™ LSiSAS1068E, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁰ 0, 1, 1E support
Optical Diskette	UltraSlim Enhanced DVD±RW
Ethernet	None (use USB port)
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slot (see right), enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, onboard SATA controller
Riser card	(See Right) One PCI Express 2.0 x16 slot standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub <i>KVM model(s):</i> IPMI functions PLUS KVM supported, 24bit high quality video compression
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 600 watts standard, one maximum, variable speed fan, auto-sensing, no redundancy
Cooling	Five fans standard, five maximum, variable speed

1U Rack top

Front

Rear

- 1U Mechanical; rack-mount only
- Black color front; metal case
- 17.2"W x 22.4"D x 1.72"H
- 436mm W x 568mm D x 43.6mm H
- 37.7 lb (17kg) max configuration
- Toolless top cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention

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
Bay 4	3.5", 1" high,	external,	optional disk
Bay 5	3.5", 1" high,	external,	optional disk

Slot 1: half-length, full-height, PCI Express 2.0 x16

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- 1068E RAID: Ctrl+E at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

Max memory capacity

64GB with eight 8GB RDIMMs

Max internal capacity

3.5" SATA HS: 8.0TB with four 2TB 3.5" SATA disks
3.5" SAS HS: 2.4TB with four 600GB 3.5" SAS disks

See footnotes for important warranty information
EMEA models announced May 31, 2011
EMEA models withdrawn effective June 2013

ThinkServer RD230 (1044) - May 2011 -withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk size	RAID Battery	Disk bays	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
RD230	1044-18G	1x5	1xE5603	1.60	4	1x2GB	1333MHz	3.5"	None	4xHot-swap	SATA/SAS ⁴	DVD±RW	0/1/1E	IPMI	2xGb	05/31/11
RD230	1044-19G	1x5	1xE5603	1.60	4	1x2GB	1333MHz	3.5"	None	4xHot-swap	SATA/SAS	DVD±RW	0/1/1E	KVM	2xGb	05/31/11

- **These models have a 3-year limited warranty¹**
- **High performance, advanced RAID, and remote management supported at value price point**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets** * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	Four 3.5" hot-swap (HS) SATA/SAS disk bays
Disk controller	LSI™ LSISAS1068E, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁰ , 1, 1E support
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slot (see right), enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, onboard SATA controller
Riser card	(See Right) One PCI Express 2.0 x16 slot standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor IPMI model(s): IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub KVM model(s): IPMI functions PLUS KVM supported, 24bit high quality video compression
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 600 watts standard, one maximum, variable speed fan, auto-sensing, no redundancy
Cooling	Five fans standard, five maximum, variable speed

1U Rack top

Front

Rear

- 1U Mechanical; rack-mount only
- Black color front; metal case
- 17.2"W x 22.4"D x 1.72"H
- 436mm W x 568mm D x 43.6mm H
- 37.7 lb (17kg) max configuration
- Toolless top cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention

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
Bay 4	3.5", 1" high, external, optional disk
Bay 5	3.5", 1" high, external, optional disk

Slot 1: half-length, full-height, PCI Express 2.0 x16

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- 1068E RAID: Ctrl+E at startup
- Add-on SATA/SAS RAID: Ctrl+H at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

Max memory capacity	
64GB with eight 8GB RDIMMs	
Max internal capacity	
3.5" SATA HS:	8.0TB with four 2TB 3.5" SATA disks
3.5" SAS HS:	2.4TB with four 600GB 3.5" SAS disks

See footnotes for important warranty information
EMEA models announced May 31, 2011
EMEA models withdrawn effective June 2013

ThinkServer RD230 (4011) - TopSeller (November 2011) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk size	RAID Battery	Disk bays	Disk type	SATA optical	RAID Int	System mgmt	Ethernet	Ann date (mm/dd/yy)
RD230	4011-1EG	1x5	1xE5607	2.26	4	1x4GB	1333MHz	3.5"	None	4xHot-swap	SATA/SAS ⁴	DVD±RW	0/1/5/6/10	KVM	2xGb	11/08/11
RD230	4011-1FG	1x5	1xE5607	2.26	4	1x4GB	1333MHz	3.5"	None	4xHot-swap	SATA	DVD±RW	0/1/5/10	KVM	2xGb	11/08/11
RD230	4011-1GG	1x5	1xE5620	2.40	4	1x4GB	1333MHz	3.5"	None	4xHot-swap	SATA/SAS	DVD±RW	0/1/5/6/10	KVM	2xGb	11/08/11

- **These models have a 3-year limited warranty¹**
- **These small and medium business (SMB) models are part of the EMEA TopSeller™ Program**

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5607 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5620 with quad-core , 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 12MB cache
Implementation	Two LGA1366 sockets
Memory	4GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets** * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	1FG: Four 3.5" hot-swap (HS) SATA disk bays 1EG/1GG: Four 3.5" hot-swap (HS) SATA/SAS disk bays
Disk controller	1FG: Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID ⁰ 0, 1, 5, 10 support 1EG/1GG: ThinkServer RAID 700 adapter, PCI Express [®] bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 6, 10 support,
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slot (see right), enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB, onboard SATA controller
Riser card	(See Right) One PCI Express 2.0 x16 slot standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor IPMI model(s): IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub KVM model(s): IPMI functions PLUS KVM supported, 24bit high quality video compression
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 600 watts standard, one maximum, variable speed fan, auto-sensing, no redundancy
Cooling	Five fans standard, five maximum, variable speed

1U Rack top

Front

Rear

- 1U Mechanical; rack-mount only
- Black color front; metal case
- 17.2"W x 22.4"D x 1.72"H
- 436mm W x 568mm D x 43.6mm H
- 37.7 lb (17kg) max configuration
- Toolless top cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention

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
Bay 4	3.5"	1" high	external	optional disk
Bay 5	3.5"	1" high	external	optional disk

Slot 1: half-length, full-height, PCI Express 2.0 x16

Max memory capacity	
64GB with eight 8GB RDIMMs	
Max internal capacity	
3.5" SATA HS:	8.0TB with four 2TB 3.5" SATA disks
3.5" SAS HS:	2.4TB with four 600GB 3.5" SAS disks

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- Onboard SATA RAID: Ctrl+I at startup
- Add-on SATA/SAS RAID: Ctrl+H at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

See footnotes for important warranty information
EMEA models announced November 8, 2011
EMEA models withdrawn effective June 2013



Lenovo ThinkServer RD240



Lenovo ThinkServer RD240



Lenovo ThinkServer RD240

ThinkServer RD240 (1046) - TopSeller (March 2011) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz Cores	Memory DIMMs	Disk size	RAID Battery	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Power supply(s)	Ethernet	Ann date (mm/dd/yy)
RD240	1046-17G	3x9	1xE5603	1.60	4	1x4GB	3.5"	8xHot-swap	1068E	SATA/SAS ⁴	0/1/1E	IPMI	1x750W	2xGb	03/01/11
RD240	1046-18G	3x9	1xE5606	2.13	4	1x4GB	3.5"	8xHot-swap	1068E	SATA/SAS	0/1/1E	IPMI	1x750W	2xGb	03/01/11
RD240	1046-19G	3x9	1xE5607	2.26	4	1x4GB	3.5"	8xHot-swap	8708EM2	SATA/SAS	Multi*	KVM	1x750W	2xGb	03/01/11
RD240	1046-1AG	3x9	1xE5620	2.40	4	1x4GB	3.5"	8xHot-swap	8708EM2	SATA/SAS	Multi	KVM	1x750W	2xGb	03/01/11
RD240	1046-1BG	3x9	1xE5645	2.40	6	1x4GB	3.5"	8xHot-swap	1068E	SATA/SAS	0/1/1E	KVM	1x750W	2xGb	03/01/11
RD240	1046-1CG	3x9	1xE5645	2.40	6	1x8GB	3.5" Battery	8xHot-swap	8708EM2	SATA/SAS	Multi	KVM	2x750W	2xGb	03/01/11
RD240	1046-1DG	3x9	2xX5650	2.66	12	2x8GB	3.5" Battery	8xHot-swap	8708EM2	SATA/SAS	Multi	KVM	2x750W	2xGb	03/01/11

- These models have a 3-year limited warranty¹
- These small and medium business (SMB) models are part of the EMEA TopSeller™ Program

*Multi = RAID 0/1/5/6/10/50/60

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5606 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5607 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5620 with quad-core , 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor E5645 with six-core , 5.86GT/s QPI, Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor X5650 with six-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>2U Rack top</p> </div> <div style="width: 45%;"> <p>Front</p> <p>Rear</p> </div> </div>
Implementation	Two LGA1366 sockets	<ul style="list-style-type: none"> • 2U Mechanical • Designed for EIA-310 standard 19-inch rack only • Black color front; metal case • 19"W x 27.6"D x 3.44"H • 483mm W x 700mm D x 87.5mm H • 66.6 lb (30kg) max configuration • Toolless top cover removal • Toolless disk and removal • Toolless adapter retention <p>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 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</p> <p>Slot 1: full-length, full-height, PCI Express 2.0 x8 Slot 2: full-length, full-height, PCI Express 2.0 x8**** Slot 3: half-length, full-height, PCI Express 2.0 x8**** **** x4 electrical</p> <p style="text-align: center;">Virtualization</p> <p>Virtualization ready, VMWare Ready™ certified</p> <p style="text-align: center;">Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: DEL at startup • Network Boot: F12 at startup • 1068E RAID: Ctrl+C at startup • 8708EM2 RAID: Ctrl+H at startup <p style="text-align: center;">Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup <p style="text-align: center;">Security</p> <ul style="list-style-type: none"> • Administrator password • User password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) <p>RoHS-compliant</p>
Memory	4GB, 8GB, or 16GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3**, ECC, Memory Mirroring , eight 240-pin DIMM sockets***, ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over four DIMMs requires dual processors	
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>	
Disk bays	Eight 3.5" hot-swap (HS) SATA/SAS disk bays	
Disk controller	<i>Some:</i> LSI™ LSI SAS1068E, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁰ , 1, 1E support <i>Some:</i> ThinkServer 8708EM2 SAS RAID Controller, PCI Express bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 6, 10, 50, 60 support <i>Some:</i> Battery backed cache integrated	
Optical	UltraSlim Enhanced DVD±RW	
Diskette	None (use USB port)	
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers	
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right), links to LSI SAS1068E, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB	
Riser card	(See Right) One PCI Express 2.0 x8, two PCI Express 2.0 x8 (x4 electrical) slots standard	
Front ports	Two USB 2.0	
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)	
Internal port	One USB 2.0 connector	
Diagnostics	Diagnostic and system status LEDs on front panel	
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub <i>KVM model(s):</i> IPMI functions PLUS KVM supported, 24bit high quality video compression	
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS	
Keyboard	None (use USB port)	
Mouse	None (use USB port)	
Power supply(s)	One or two 750 watts standard, two maximum, variable speed fan, auto-sensing, redundant with two power supplies	
Cooling	Four fans standard, four maximum, variable speed	

See footnotes for important warranty information
 EMEA models announced March 1, 2011
 EMEA models withdrawn effective June 2013

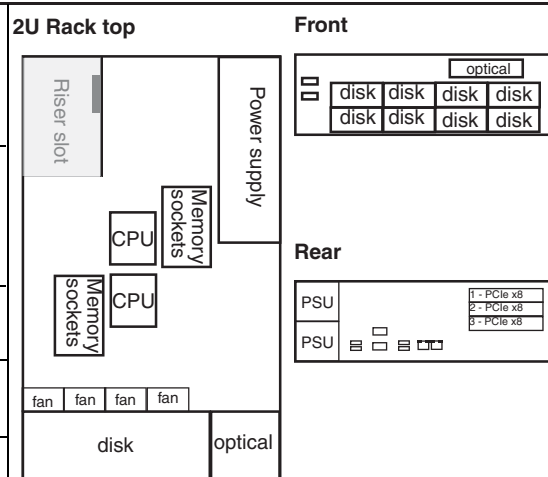
ThinkServer RD240 (1048) - March 2011 - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz Cores	Memory DIMMs	Disk size	RAID Battery	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Power supply(s)	Ethernet	Ann date (mm/dd/yy)
RD240	1048-14G	3x9	1xE5603	1.60 4	1x2GB	3.5"	None	8xHot-swap	1068E	SATA/SAS ⁴	0/1/1E	IPMI	1x750W	2xGb	03/01/11

• *These models have a 3-year limited warranty¹*

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	Eight 3.5" hot-swap (HS) SATA/SAS disk bays
Disk controller	LSI™ LSI SAS1068E, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁹ 0, 1, 1E support
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right), links to LSI SAS1068E, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB
Riser card	(See Right) One PCI Express 2.0 x8, two PCI Express 2.0 x8 (x4 electrical) slots standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub <i>KVM model(s):</i> IPMI functions PLUS KVM supported, 24bit high quality video compression
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 750 watts standard, two maximum, variable speed fan, auto-sensing, redundant with two power supplies
Cooling	Four fans standard, four maximum, variable speed



- 2U Mechanical
- Designed for EIA-310 standard 19-inch rack only
- Black color front; metal case
- 19"W x 27.6"D x 3.44"H
- 483mm W x 700mm D x 87.5mm H
- 66.6 lb (30kg) max configuration
- Toolless top cover removal
- Toolless disk removal
- Toolless adapter retention

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
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

Slot 1: full-length, full-height, PCI Express 2.0 x8
 Slot 2: full-length, full-height, PCI Express 2.0 x8***
 Slot 3: half-length, full-height, PCI Express 2.0 x8***
 *** x4 electrical

Virtualization

Virtualization ready, VMWare Ready™ certified

Power-On Hotkey

- Setup Utility: DEL at startup
- Network Boot: F12 at startup
- 1068E RAID: Ctrl+C at startup
- 8708ELP RAID: Ctrl+H at startup

Software Management Tools

- ThinkServer EasyStartup

Security

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

RoHS-compliant

Max memory capacity
64GB with eight 8GB PC3-10600 DDR3 RDIMMs
Max internal capacity
3.5" SATA HS: 16.0TB with eight 2TB HS SATA disks
3.5" SAS HS: 4.8TB with eight 600GB HS SAS disks

See footnotes for important warranty information
 EMEA model announced March 1, 2011
 EMEA models withdrawn effective June 2013

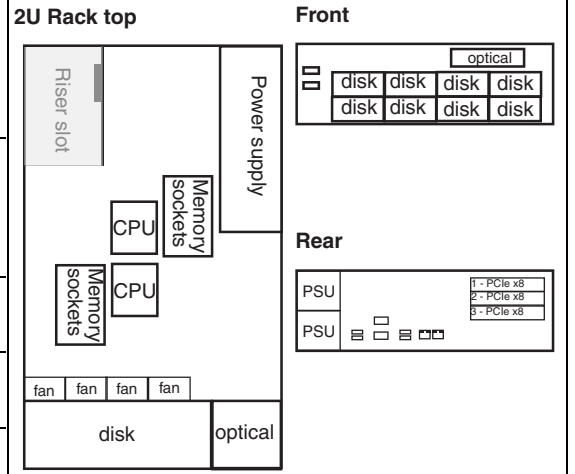
ThinkServer RD240 (1047) - March 2011 - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Disk size	RAID Battery	Disk bays	Disk Controller	Disk type	RAID Int	System mgmt	Power supply(s)	Ethernet	Ann date (mm/dd/yy)
RD240	1047-12G	3x9	1xE5603	1.60	4	1x2GB	3.5"	None	8xHot-swap	1068E	SATA/SAS ⁴	0/1/1E	IPMI	1x750W	2xGb	03/01/11

- **This model has a 1-year limited warranty¹**
- **High performance, scalability, and remote management supported at value price point**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache
Implementation	Two LGA1366 sockets
Memory	2GB , 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3*, ECC, Memory Mirroring , eight 240-pin DIMM sockets**, * System automatically clocks down for processors with 1066MHz DDR3 memory controller ** Over four DIMMs requires dual processors
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>
Disk bays	Eight 3.5" hot-swap (HS) SATA/SAS disk bays
Disk controller	LSI™ LSI SAS1068E, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁸ 0, 1, 1E support
Optical	UltraSlim Enhanced DVD±RW
Diskette	None (use USB port)
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right), links to LSI SAS1068E, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB
Riser card	(See Right) One PCI Express 2.0 x8, two PCI Express 2.0 x8 (x4 electrical) slots standard
Front ports	Two USB 2.0
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)
Internal port	One USB 2.0 connector
Diagnostics	Diagnostic and system status LEDs on front panel
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS
Keyboard	None (use USB port)
Mouse	None (use USB port)
Power supply(s)	One 750 watts standard, two maximum, variable speed fan, auto-sensing, redundant with two power supplies
Cooling	Four fans standard, four maximum, variable speed



- 2U Mechanical
- Designed for EIA-310 standard 19-inch rack only
- Black color front; metal case
- 19"W x 27.6"D x 3.44"H
- 483mm W x 700mm D x 87.5mm H
- 66.6 lb (30kg) max configuration
- Toolless top cover removal
- Toolless disk removal
- Toolless adapter retention

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
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

Slot 1: full-length, full-height, PCI Express 2.0 x8
 Slot 2: full-length, full-height, PCI Express 2.0 x8***
 Slot 3: half-length, full-height, PCI Express 2.0 x8***
 *** x4 electrical

<p align="center">Virtualization</p> <p>Virtualization ready, VMWare Ready™ certified</p>
<p align="center">Power-On Hotkey</p> <ul style="list-style-type: none"> • Setup Utility: DEL at startup • Network Boot: F12 at startup • LSI 1068E RAID: Ctrl+C at startup
<p align="center">Software Management Tools</p> <ul style="list-style-type: none"> • ThinkServer EasyStartup
<p align="center">Security</p> <ul style="list-style-type: none"> • Administrator password • User password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all)
<p>RoHS-compliant</p>

<p>Max memory capacity</p> <p>64GB with eight 8GB PC3-10600 DDR3 RDIMMs</p>
<p>Max internal capacity</p> <p>3.5" SATA HS: 16.0TB with eight 2TB HS SATA disks 3.5" SAS HS: 4.8TB with eight 600GB HS SAS disks</p>

See footnotes for important warranty information
 EMEA model announced March 1, 2011
 EMEA models withdrawn effective June 2013

ThinkServer RD240 (1046) - TopSeller (Nov 2011) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Processor(s)	GHz	Cores	Memory DIMMs	Disk size	RAID Battery	Disk bays	Disk Controller	Disk(s)	Disk type	RAID Int	System mgmt	Power supply(s)	Ethernet	Ann date (mm/dd/yy)
1046-A1G	1 x E5645	2.40	6	1 x 8GB	3.5"		8 x Hot-swap	RAID 700		SATA/SAS ⁴	Multi*	KVM	2 x 750W	2 x Gb	11/08/11
1046-A2G	1 x E5606	2.13	4	1 x 4GB	3.5"		8 x Hot-swap	1068E		SATA/SAS	0/1/1E	KVM	1 x 750W	2 x Gb	11/08/11
1046-A3G	1 x E5607	2.26	4	1 x 4GB	3.5"		8 x Hot-swap	1068E	2x300GB SAS	SATA/SAS	0/1/1E	KVM	1 x 750W	2 x Gb	11/08/11
1046-A4G	1 x E5645	2.40	6	1 x 8GB	3.5"	Battery	8 x Hot-swap	RAID 700	2x300GB SAS	SATA/SAS	Multi	KVM	1 x 750W	2 x Gb	11/08/11

- These models have a 3-year limited warranty¹
- These small and medium business (SMB) models are part of the EMEA TopSeller™ Program

*Multi = RAID 0/1/5/6/10/50/60

Processor(s)	Up to two processors, one processors standard, Intel® Xeon® Processor E5606 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5607 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5645 with six-core , 5.86GT/s QPI, Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache	2U Rack top	
Implementation	Two LGA1366 sockets	Front	
Memory	4GB, 8GB std, 64GB max (32GB per processor), RDIMM, PC3-10600 1333MHz DDR3** , ECC, Memory Mirroring , eight 240-pin DIMM sockets***, ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over four DIMMs requires dual processors	Rear	
Graphics	Onboard Aspeed AST2050 graphics/management processor, one VGA DB-15 on rear, 8MB; <i>Maximum resolution: 1600x1200@60Hz</i>		
Disk bays	Eight 3.5" hot-swap (HS) SATA/SAS disk bays	<ul style="list-style-type: none"> • 2U Mechanical • Designed for EIA-310 standard 19-inch rack only • Black color front; metal case • 19"W x 27.6"D x 3.44"H • 483mm W x 700mm D x 87.5mm H • 66.6 lb (30kg) max configuration • Toolless top cover removal • Toolless disk and removal • Toolless adapter retention 	
Disk controller	<i>Some:</i> LSI™ LSI SAS1068E, PCI Express® bus, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁰ , 1, 1E support <i>Some:</i> ThinkServer RAID 700 adapter, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 6, 10, 50, 60 support, <i>Some:</i> Battery backed cache integrated	<ul style="list-style-type: none"> 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 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 	
Optical	UltraSlim Enhanced DVD±RW	<ul style="list-style-type: none"> Slot 1: full-length, full-height, PCI Express 2.0 x8 Slot 2: full-length, full-height, PCI Express 2.0 x8**** Slot 3: half-length, full-height, PCI Express 2.0 x8**** **** x4 electrical 	
Diskette	None (use USB port)	Virtualization	
Ethernet	Two Gigabit Ethernet ports, dual Intel 82574L controllers	Virtualization ready, VMWare Ready™ certified	
Chipset	Intel 5500 Chipset , Intel I/O Hub (IOH) for PCI Express slots 1-3 (see right), links to LSI SAS1068E, enterprise south bridge interface (ESI) to Intel I/O Controller Hub 10 RAID (ICH10R) for USB	Power-On Hotkey	
Riser card	(See Right) One PCI Express 2.0 x8, two PCI Express 2.0 x8 (x4 electrical) slots standard	<ul style="list-style-type: none"> • Setup Utility: DEL at startup • Network Boot: F12 at startup • 1068E RAID: Ctrl+C at startup • RAID 700 RAID: Ctrl+H at startup 	
Front ports	Two USB 2.0	Software Management Tools	
Rear ports	Four USB 2.0, external monitor (VGA DB-15), serial (9-pin), two ethernet (RJ-45)	<ul style="list-style-type: none"> • ThinkServer EasyStartup 	
Internal port	One USB 2.0 connector	Security	
Diagnostics	Diagnostic and system status LEDs on front panel	<ul style="list-style-type: none"> • Administrator password • User password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (all) 	
Systems mgmt	Onboard Aspeed AST2050 graphics/management processor <i>IPMI model(s):</i> IPMI 2.0-compliant baseboard management controller (BMC), storage over IP, remote platform flash, BIOS update, USB 2.0 virtual hub <i>KVM model(s):</i> IPMI functions PLUS KVM supported, 24bit high quality video compression	RoHS-compliant	
Prerequisites	Monitor, keyboard, mouse, SATA/SAS disk, rack, OS		
Keyboard	None (use USB port)		
Mouse	None (use USB port)		
Power supply(s)	One or two 750 watts standard, two maximum, variable speed fan, auto-sensing, redundant with two power supplies		
Cooling	Four fans standard, four maximum, variable speed		
Max memory capacity			
64GB with eight 8GB PC3-10600 DDR3 RDIMMs			
Max internal capacity			
3.5" SATA HS: 16.0TB with eight 2TB HS SATA disks			
3.5" SAS HS: 4.8TB with eight 600GB HS SAS disks			

See footnotes for important warranty information
EMEA models announced November 8, 2011
EMEA models withdrawn effective June 2013

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- 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.
- ¹⁰ **Modem speeds:** Public network download speeds are limited to 53Kbps. Upload speeds are limited to 48Kbps for V.92 modems. Actual speeds depend on many factors and are often less than the maximum possible. V.92 functions and speeds require compatible phone line and server equipment. Check with your telephone and ISP service providers for availability.
- ¹¹ **For combination drives,** maximum speeds only are given in the following order: CD read, CD write, CD re-write, DVD read.
- ¹⁴ **Response times may vary.** May exclude some holidays. Telephone support may be subject to additional charges.
- ¹⁵ **Update Connector** is available at no charge to registered customers during the limited warranty period. Line charges may apply.
- ¹⁶ **Embedded Security Subsystem** works with optional VPN software.