

ThinkStation

*Personal Systems Reference
Lenovo® ThinkStation® Workstations
2008 to 2013 - withdrawn*

January 2014 - Version 449



ThinkStation S10 (left)
ThinkStation D10 (right)

lenovo.com



Lenovo ThinkStation E20
with Intel HD Graphics



Lenovo ThinkStation E20
with ThinkVision® L2440p (4420HB2)



Lenovo ThinkStation E20



Lenovo ThinkStation E20



Lenovo ThinkStation Graphics Card Option
NVIDIA® Quadro® NVS 295 (45K1669)



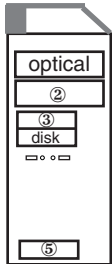
Lenovo ThinkStation Graphics Card Option
NVIDIA Quadro NVS 450 (57Y4398)

ThinkStation® E20 (4222) - TopSeller (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	1394 adptr	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
4222-35U	4x5	G6950	2.80	2	1x2GB	1333MHz	No	1x250GB ²	3.5"	No	DVD±RW	No	FX380	ES50	Pro64	No	Feb 10
4222-36U	4x5	i3-530	2.93	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	FX380	ES50	Pro64	No	Feb 10
4222-37U	4x5	i5-650	3.20	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	FX580	ES50	Pro64	No	Feb 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**
- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	<p>Intel Pentium® Processor G6950 with dual-core, Intel 64, Virtualization Technology, integrated 1066MHz dual-channel DDR3 memory controller, and 3MB cache or Intel Core™ i3 Processor i3-530 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or Intel Core i5 Processor i5-650 with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology, Virtualization Technology, TXT, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache</p> <p>Processor in LGA1156 socket, up to one processor</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button 	
Memory	<p>2GB or 4GB std, 8GB max*, UDIMM, PC3-10600 1333MHz DDR3**, Non-ECC***, four 240-pin DIMM sockets</p> <p>* Maximum memory is 16GB for ECC models and 8GB for Non-ECC models</p> <p>** System automatically clocks down for processors with 1066MHz DDR3 memory controller</p> <p>*** ECC and non-ECC DIMMs cannot be mixed</p>	<p>Bay ① 5.25", 1.6" high, access, std optical</p> <p>Bay ② 5.25", 1.6" high, access, open</p> <p>Bay ③ 3.5", 1" high, access, media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p>	
Graphics	<p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 580, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I***, 40W</p> <p>*** Only two display connectors are active at a time</p>	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>	
Media reader	25-in-1 media reader, internal USB 2.0		
SATA disk(s)	250GB or 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Intel 82578DM		
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo		
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified		
Cooling	4 fans (power supply, CPU, rear, front)		
Rack mount	Rack shelf support		
Preloaded operating system²⁰			
- Genuine Windows® 7 Professional 64			
Preloaded applications⁵ (only some listed)			
• Rescue and Recovery™			
• ThinkVantage Toolbox			
• Norton™ Internet Security (30 days of virus definitions)			
• Adobe® Reader®			
• Adobe Flash® Player			
• Microsoft Office 2010 preloaded; purchase product key to activate			
• Corel DVD MovieFactory® (DVD±RW)			
Accessories			
1GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4389		
2GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4390		
250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015		
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990		
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
Blu-ray™ Burner SATA 1.5Gb/s	45K1675		
NVIDIA Quadro 256MB NVS 295	45K1669		
NVIDIA Quadro 512MB NVS 450	57Y4398		
More accessories on O-Cad sheet			
Other accessories at lenovo.com/accessories			
SECURITY			
• 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			
• Administrator password			
• Boot sequence control			
• Boot without keyboard, mouse			
• Serial port I/O control			
• USB port disablement (front or all)			
Supports ThinkVantage® technologies			
GREENGUARD® certified			
RoHS-compliant			
ENERGY STAR® 5.0-compliant			
EPEAT™ Gold rating			
LIMITED WARRANTY¹			
↔ 3-year parts and labor			
↔ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)			
↔ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty			
• Onsite service upgrade options (in eligible locations)⁷			
• Post warranty maintenance services			
↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378			

See footnotes for important warranty information
 US models announced January 19, 2010
 US models withdrawn effective October 2010 or February, August 2011

ThinkStation® E20 (4222) - TopSeller (Windows 7) - Aug 2010 - withdrawn *Personal Systems Reference (PSREF)*

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
4222-66U	4x5	i3-530	2.93	2	1x2GB	1333MHz	No	1x250GB ²	3.5"	No	DVD±RW	No	Intel HD	ES50	Pro64	No	Aug 10
4222-67U	4x5	i3-540	3.06	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	FX580	ES50	Pro64	No	Aug 10
4222-68U	4x5	i5-650	3.20	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	FX1800	ES50	Pro64	No	Aug 10
4222-69U	4x5	i5-660	3.33	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	Intel HD	ES50	Pro64	No	Aug 10

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- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

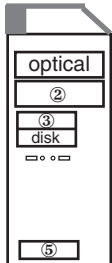
Processor	Intel Core™ i3 Processor i3-530 or i3-540 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or Intel Core i5 Processor i5-650 or i5-660 with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology, Virtualization Technology, TXT, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache	Total <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button 	
Implementation	Processor in LGA1156 socket, up to one processor		
Memory	2GB or 4GB std, 8GB max, UDIMM, PC3-10600 1333MHz DDR3, Non-ECC , four 240-pin DIMM sockets	Bay ① 5.25", 1.6" high, access, std optical Bay ② 5.25", 1.6" high, access, open Bay ③ 3.5", 1" high, access, open (media reader) Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk	
Graphics	Some: Intel HD Graphics in processor, one analog VGA DB-15 connector and one DisplayPort™ connector on rear, supports dual independent display Some: NVIDIA® Quadro® FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I*, 40W Some: NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I*, 59W * Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3	
Media reader	None	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 	
SATA disk(s)	250GB or 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	Supports ThinkVantage® technologies	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O	GREENGUARD® certified RoHS-compliant ENERGY STAR® 5.0-compliant EPEAT™ Gold rating	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) <i>Intel HD model(s):</i> one analog VGA DB-15 connector, one DisplayPort connector	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Intel 82578DM		
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo		
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified		
Cooling	4 fans (power supply, CPU, rear, front)		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	1GB PC3-10600 DDR3 Non-ECC UDIMM 57Y4389		
	2GB PC3-10600 DDR3 Non-ECC UDIMM 57Y4390		
	250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015		
	500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990		
	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918		
	Blu-ray™ Burner SATA 1.5Gb/s 45K1675		
	NVIDIA Quadro 256MB NVS 295 45K1669		
	NVIDIA Quadro 512MB NVS 450 57Y4398		
	More accessories on O-CAD sheet		
	Other accessories at lenovo.com/accessories		

See footnotes for important warranty information
 US models announced August 3, 2010
 US models withdrawn effective October 2010 or January, February, August 2011

ThinkStation® E20 (4222) - TopSeller (Windows 7) - Oct 2010 - withdrawn Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
4222-81U	4x5	i5-650	3.20	2	1x2GB	1333MHz	No	1x250GB ²	3.5"	No	DVD±RW	Media	Intel HD	ES50	Pro64	No	Oct 10

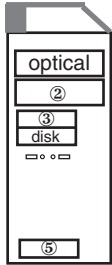
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- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Intel Core™ i5 Processor i5-650 with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology, Virtualization Technology, TXT, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache	Tower	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button 																
Implementation	Processor in LGA1156 socket, up to one processor																		
Memory	2GB std, 8GB max, UDIMM, PC3-10600 1333MHz DDR3, Non-ECC , four 240-pin DIMM sockets	Bay ① 5.25", 1.6" high, access,	std optical																
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector and one DisplayPort™ connector on rear, supports dual independent display	Bay ② 5.25", 1.6" high, access,	open																
Media reader	25-in-1 media reader, internal USB 2.0	Bay ③ 3.5", 1" high, access,	media reader																
SATA disk(s)	250GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	Bay ④ 3.5", 1" high, internal,	std disk																
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	Bay ⑤ 3.5", 1" high, internal,	opt disk																
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals	Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)																	
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O	Slot 2: half-length, full-height, PCIe 2.0 x1																	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	Slot 3: half-length, full-height, 32-bit PCI 2.3																	
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 connector, one DisplayPort connector	Slot 4: half-length, full-height, 32-bit PCI 2.3																	
IEEE 1394 adptr	None	SECURITY																	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 																	
Speaker	Internal speaker for business audio	Supports ThinkVantage® technologies																	
Ethernet	One gigabit ethernet on planar, Intel 82578DM	GREENGUARD® certified																	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	RoHS-compliant																	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo	ENERGY STAR® 5.0-compliant																	
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo	EPEAT™ Gold rating																	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	LIMITED WARRANTY¹																	
Cooling	4 fans (power supply, CPU, rear, front)	<ul style="list-style-type: none"> ⇒ 3-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 																	
Rack mount	Rack shelf support	Other accessories at lenovo.com/accessories																	
Preloaded operating system²⁰																			
- Genuine Windows® 7 Professional 64																			
Preloaded applications⁵ (only some listed)																			
<ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft Office 2010 preloaded; purchase product key to activate • Corel DVD MovieFactory® (DVD±RW) 		<table border="0"> <tbody> <tr> <td>1GB PC3-10600 DDR3 Non-ECC UDIMM</td> <td>57Y4389</td> </tr> <tr> <td>2GB PC3-10600 DDR3 Non-ECC UDIMM</td> <td>57Y4390</td> </tr> <tr> <td>250GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>41N3015</td> </tr> <tr> <td>500GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>43R1990</td> </tr> <tr> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>NVIDIA Quadro 256MB NVS 295</td> <td>45K1669</td> </tr> <tr> <td>NVIDIA Quadro 512MB NVS 450</td> <td>57Y4398</td> </tr> </tbody> </table>		1GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4389	2GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4390	250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	NVIDIA Quadro 256MB NVS 295	45K1669	NVIDIA Quadro 512MB NVS 450	57Y4398
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See footnotes for important warranty information
 US model announced October 12, 2010
 US model withdrawn effective August 2011

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4222-93U	4x5	i3-550	3.20	2	2x2GB	1333MHz	No	1x500GB ²	3.5"	No	DVD±RW	Media	FX380	ES50	Pro64	No	Nov 10
4222-94U	4x5	i3-550	3.20	2	1x2GB	1333MHz	No	1x250GB	3.5"	No	DVD±RW	Media	Intel HD	ES50	Pro64	No	Nov 10
4222-95U	4x5	i3-550	3.20	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	Media	600	ES50	Pro64	No	Nov 10
4222-96U	4x5	i5-650	3.20	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	Media	600	ES50	Pro64	No	Nov 10
4222-97U	4x5	i5-650	3.20	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	Media	2000	ES50	Pro64	No	Nov 10

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- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

<p>Processor</p> <p>Intel Core™ i3 Processor i3-550 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or</p> <p>Intel Core i5 Processor i5-650 with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology, Virtualization Technology, TXT, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache</p> <p>Implementation Processor in LGA1156 socket, up to one processor</p> <p>Memory 2GB or 4GB std, 8GB max, UDIMM, PC3-10600 1333MHz DDR3, Non-ECC, four 240-pin DIMM sockets</p> <p>Graphics</p> <p><i>Some:</i> Intel HD Graphics in processor, one analog VGA DB-15 connector and one DisplayPort™ connector on rear, supports dual independent display</p> <p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I*, 62W</p> <p>* Only two display connectors are active at a time</p> <p>Media reader 25-in-1 media reader, internal USB 2.0</p> <p>SATA disk(s) 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p>SATA DVD±RW Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive</p> <p>SATA controller Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals</p> <p>Chipset Intel 3450 Chipset, Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O</p> <p>Front ports Two USB 2.0, microphone (3.5mm), headphone (3.5mm)</p> <p>Rear ports Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)</p> <p><i>Intel HD model(s):</i> one analog VGA DB-15 connector, one DisplayPort connector</p> <p>IEEE 1394 adptr None</p> <p>Audio High Definition (HD) Audio, Realtek® ALC662 codec</p> <p>Speaker Internal speaker for business audio</p> <p>Ethernet One gigabit ethernet on planar, Intel 82578DM</p> <p>Security chip STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant</p> <p>Keyboard Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo</p> <p>Mouse Optical Wheel Mouse (USB connector), black, Lenovo logo</p> <p>Power supply 280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified</p> <p>Cooling 4 fans (power supply, CPU, rear, front)</p> <p>Rack mount Rack shelf support</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button  <p>Bay ① 5.25", 1.6" high, access, std optical</p> <p>Bay ② 5.25", 1.6" high, access, open</p> <p>Bay ③ 3.5", 1" high, access, media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) <p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>ENERGY STAR® 5.0-compliant</p> <p>EPEAT™ Gold rating</p>	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 														
<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> - Genuine Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft Office 2010 preloaded; purchase product key to activate • Corel DVD MovieFactory® (DVD±RW) 	<p>Accessories</p> <table border="0"> <tr> <td>1GB PC3-10600 DDR3 Non-ECC UDIMM</td> <td>57Y4389</td> </tr> <tr> <td>2GB PC3-10600 DDR3 Non-ECC UDIMM</td> <td>57Y4390</td> </tr> <tr> <td>250GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>41N3015</td> </tr> <tr> <td>500GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>43R1990</td> </tr> <tr> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>NVIDIA Quadro 256MB NVS 295</td> <td>45K1669</td> </tr> <tr> <td>NVIDIA Quadro 512MB NVS 450</td> <td>57Y4398</td> </tr> </table> <p>More accessories on O-CAD sheet</p> <p>Other accessories at lenovo.com/accessories</p>	1GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4389	2GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4390	250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	NVIDIA Quadro 256MB NVS 295	45K1669	NVIDIA Quadro 512MB NVS 450	57Y4398
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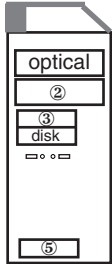
See footnotes for important warranty information
 US models announced November 2, 2010
 US models withdrawn effective August 2011

ThinkStation® E20 (4220) - Windows 7 - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	1394 adptr	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global (G) GMP (P)	Avail date
4220-34U	4x5	i3-530	2.93	2	2x2GB	1333MHz		1x500GB ²	3.5"	No	DVD±RW	No	FX380	ES50	Pro64	No	Feb 10
4220-35U	4x5	G6950	2.80	2	1x2GB	1333MHz		1x500GB	3.5"	No	DVD±RW	No	FX380	ES50	Pro64	No	Feb 10
4220-36U	4x5	X3430	2.40	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	No	FX580	ES50	Pro64	No	Feb 10
4220-37U	4x5	X3440	2.53	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	No	FX1800	ES50	Pro64	No	Feb 10

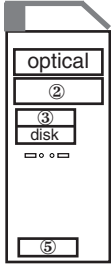
- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	<p>Intel Pentium® Processor G6950 with dual-core, Intel 64, Virtualization Technology, integrated 1066MHz dual-channel DDR3 memory controller, and 3MB cache or Intel Core™ i3 Processor i3-530 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or Intel Xeon® Processor X3430 with quad-core, Intel 64, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache or Intel Xeon Processor X3440 with quad-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Soft touch front icons • Recessed power button 	
Implementation	Processor in LGA1156 socket, up to one processor	<p>Bay ① 5.25", 1.6" high, access, std optical</p> <p>Bay ② 5.25", 1.6" high, access, open</p> <p>Bay ③ 3.5", 1" high, access, media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p>	
Memory	<p>2GB or 4GB std, PC3-10600 1333MHz DDR3*, UDIMM, four 240-pin DIMM sockets</p> <p>34U/35U: 8GB max**, Non-ECC***</p> <p>36U/37U: 16GB max, ECC</p> <p>* System automatically clocks down for processors with 1066MHz DDR3 memory controller</p> <p>** Max memory is 16GB for ECC models and 8GB for Non-ECC models</p> <p>*** ECC and non-ECC DIMMs cannot be mixed</p>	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>	
Graphics	<p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 580, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I***, 40W</p> <p><i>Some:</i> NVIDIA® Quadro® FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W</p> <p>*** Only two display connectors are active at a time</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 	
Media reader	25-in-1 media reader, internal USB 2.0	<p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>ENERGY STAR® 5.0-compliant</p> <p>EPEAT™ Gold rating</p>	
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Intel 82578DM		
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo		
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified		
Cooling	4 fans (power supply, CPU, rear, front)		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 Non-ECC UDIMM 57Y4390		
Preloaded applications⁵ (only some listed)	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138		
• Rescue and Recovery™	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918		
• Microsoft Office 2010 preloaded; purchase product key to activate	More accessories on O-CAD sheet		
	Other accessories at lenovo.com/accessories		

See footnotes for important warranty information
 US models announced January 19, 2010
 US models withdrawn effective October 2010 or February, August 2011

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
4220-82U	4x5	X3440	2.53	4	2x2GB	1333MHz	ECC	1x500GB ²	3.5"	No	DVD±RW	Media	FX580	ES50	Pro64	Global	Aug 10
4220-83U	4x5	X3440	2.53	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	FX1800	ES50	Pro64	Global	Aug 10
4220-84U	4x5	X3470	2.93	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	FX1800	ES50	Pro64	Global	Aug 10
4220-85U	4x5	i5-650	3.20	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	FX580	ES50	Pro64	Global	Aug 10
4220-86U	4x5	i5-650	3.20	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	FX1800	ES50	Pro64	Global	Aug 10
4220-87U	4x5	i5-670	3.46	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	FX1800	ES50	Pro64	Global	Aug 10
4220-88U	4x5	i5-650	3.20	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	Intel HD	ES50	Pro64	Global	Aug 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

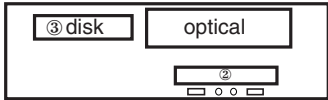
Processor	Intel Core™ i5 Processor i5-650 or i5-670 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or Intel Xeon® Processor X3440 or X3470 with quad-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache	Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support • Recessed power button 
Implementation	Processor in LGA1156 socket, up to one processor	
Memory	4GB std, 16GB max, PC3-10600 1333MHz DDR3* , UDIMM, ECC four 240-pin DIMM sockets	Bay ① 5.25", 1.6" high, access, std optical Bay ② 5.25", 1.6" high, access, open Bay ③ 3.5", 1" high, access, media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk
Graphics	Some: Intel HD Graphics in processor, one analog VGA DB-15 connector and one DisplayPort connector on rear, supports dual independent display Some: NVIDIA® Quadro® FX 580 , PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I*, 40W Some: NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I*, 59W *** Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Media reader	25-in-1 media reader, internal USB 2.0	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all)
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals	
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O	Supports ThinkVantage® technologies
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	GREENGUARD® certified RoHS-compliant ENERGY STAR® 5.0-compliant EPEAT™ Gold rating
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) <i>Intel HD model(s):</i> one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	None	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82578DM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo	
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Rack mount	Rack shelf support	
Preloaded operating system²⁰	Accessories	
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM 43R2033	
	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138	
	250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015	
	500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990	
	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918	
	Blu-ray™ Burner SATA 1.5Gb/s 45K1675	
	NVIDIA Quadro 256MB NVS 295 45K1669	
	NVIDIA Quadro 512MB NVS 450 57Y4398	
	More accessories on O-CAD sheet	
	Other accessories at lenovo.com/accessories	
Preloaded applications⁵ (only some listed)		
• Rescue and Recovery™		
• ThinkVantage Toolbox		
• Norton™ Internet Security (30 days of virus definitions)		
• Adobe® Reader®		
• Adobe Flash® Player		
• Microsoft Office 2010 preloaded; purchase product key to activate		
• Corel® Burn.Now™ (DVD±RW)		
• Corel DVD MovieFactory® (DVD±RW)		

See footnotes for important warranty information
 US models announced August 3, 2010
 US models withdrawn effective January, February, or August 2011

ThinkStation® E31 SFF (3695) - TopSeller (August 2012) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand
3695-N9U	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	Slim DVD±RW	No	Intel HD 2000	No	No	Switch	No	Stand
3695-NAU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	Slim DVD±RW	No	Quadro 400	No	No	Switch	No	Stand
3695-NBU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	Media	Slim DVD±RW	No	Quadro 600	No	No	Switch	No	Stand

Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</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 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>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i7-3770: Intel HD Graphics 4000 Core i5-3450/3470/3550: Intel HD Graphics 2500 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD±RW, SATA, slim	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Genuine Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

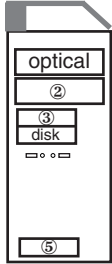
See footnotes for important warranty information
 US model(s) announced August 14, 2012
 US models withdrawn effective October 2012

ThinkStation® E20 (4220) - Windows 7 (October 2010) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR	Win7 preload	Global	Avail date
4220-91U	4x5	i5-680	3.60	2	2x2GB	1333MHz	ECC	1x500GB ²	3.5"	No	DVD±RW	Media	Intel HD	ES50	Pro64	None	Oct 10

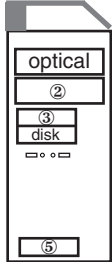
- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Intel Core™ i5 Processor i5-680 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache		Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support • Recessed power button 
Implementation	Processor in LGA1156 socket, up to one processor		
Memory	4GB std, 16GB max, PC3-10600 1333MHz DDR3, UDIMM, ECC, four 240-pin DIMM sockets		
Graphics	Intel HD Graphics in processor, one analog VGA DB-15 connector and one DisplayPort™ connector on rear, supports dual independent display		
Media reader	25-in-1 media reader, internal USB 2.0		
SATA disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel 3450 Chipset, Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
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 connector, one DisplayPort connector		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Intel 82578DM		
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo		
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified		
Cooling	4 fans (power supply, CPU, rear, front)		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	
	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	
	250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	
	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	
	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	
	NVIDIA Quadro 256MB NVS 295	45K1669	
	NVIDIA Quadro 512MB NVS 450	57Y4398	
	More accessories on O-CAD sheet		
	Other accessories at lenovo.com/accessories		
Preloaded applications⁵ (only some listed)			
• Rescue and Recovery™			
• ThinkVantage Toolbox			
• Norton™ Internet Security (30 days of virus definitions)			
• Adobe® Reader®			
• Adobe Flash® Player			
• Microsoft Office 2010 preloaded; purchase product key to activate			
• Corel® Burn.Now™ (DVD±RW)			
• Corel DVD MovieFactory® (DVD±RW)			
	Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3		
	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 		
	Supports ThinkVantage® technologies		
	GREENGUARD® certified RoHS-compliant ENERGY STAR® 5.0-compliant EPEAT™ Gold rating		
	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇨ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 		

See footnotes for important warranty information
US model announced October 12, 2010
US model withdrawn effective August 2011

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
4220-A3U 4x5		i3-550	3.20	2	2x2GB	1333MHz	ECC	1x500GB ²	3.5"	No	DVD±RW	Media	FX380	ES50	Pro64		Nov 10
4220-A4U 4x5		X3430	2.40	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	600	ES50	Pro64		Nov 10
4220-A5U 4x5		X3440	2.53	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	2000	ES50	Pro64	Global	Nov 10
4220-A6U 4x5		X3440	2.53	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	600	ES50	Pro64	Global	Nov 10
4220-A7U 4x5		X3470	2.93	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	2000	ES50	Pro64	Global	Nov 10
4220-A8U 4x5		i5-650	3.20	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	600	ES50	Pro64	Global	Nov 10
4220-A9U 4x5		i5-650	3.20	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	2000	ES50	Pro64	Global	Nov 10
4220-B1U 4x5		i5-670	3.46	2	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	Media	2000	ES50	Pro64	Global	Nov 10

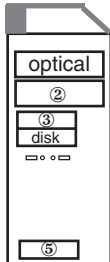
- These models have a 3-year limited warranty¹
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel Core™ i3 Processor i3-550 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, 4MB cache or</p> <p>Intel Core i5 Processor i5-650 or i5-670 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or</p> <p>Intel Xeon® Processor X3430 with quad-core, Intel 64, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache or</p> <p>Intel Xeon Processor X3440 or X3470 with quad-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache</p> <p>Processor in LGA1156 socket, up to one processor</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support • Recessed power button 	
Implementation	Processor in LGA1156 socket, up to one processor	<p>Bay ① 5.25", 1.6" high, access, std optical</p> <p>Bay ② 5.25", 1.6" high, access, open</p> <p>Bay ③ 3.5", 1" high, access, media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p>	
Memory	4GB std, 16GB max, PC3-10600 1333MHz DDR3, UDIMM, ECC four 240-pin DIMM sockets	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>	
Graphics	<p>Some: NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I*, 62W</p> <p>* Only two display connectors are active at a time</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 	
Media reader	25-in-1 media reader, internal USB 2.0	<p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>ENERGY STAR® 5.0-compliant</p> <p>EPEAT™ Gold rating</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ➤ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ➤ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Intel 82578DM		
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo		
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified		
Cooling	4 fans (power supply, CPU, rear, front)		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM 43R2033		
	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138		
	250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015		
	500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990		
	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918		
	Blu-ray™ Burner SATA 1.5Gb/s 45K1675		
	NVIDIA Quadro 256MB NVS 295 45K1669		
	NVIDIA Quadro 512MB NVS 450 57Y4398		
	More accessories on O-CAD sheet		
	Other accessories at lenovo.com/accessories		
Preloaded applications⁵ (only some listed)			
• Rescue and Recovery™			
• ThinkVantage Toolbox			
• Norton™ Internet Security (30 days of virus definitions)			
• Adobe® Reader®			
• Adobe Flash® Player			
• Microsoft Office 2010 preloaded; purchase product key to activate			
• Corel® Burn.Now™ (DVD±RW)			
• Corel DVD MovieFactory® (DVD±RW)			

See footnotes for important warranty information
 US models announced November 2, 2010
 US models withdrawn effective January or August 2011

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	1394 adptr	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global (G) GMP (P)	Avail date
4215-11U	4x5	i5-660	3.33	2	2x2GB	1333MHz	ECC	1x500GB ²	3.5"	No	DVD±RW	1394	FX1800	ES50	Pro64	G P	Feb 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **This small and medium business (SMB) model is part of the US TopSeller™ Program**
- **This model is part of the Global Models Plus (GMP) program with limited onsite service³ 3-year limited warranty**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Intel Core™ i5 Processor i5-660 with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology, Virtualization Technology, TXT, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache	Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button 
Implementation	Processor in LGA1156 socket, up to one processor	
Memory	4GB std, 16GB max*, UDIMM, PC3-10600 1333MHz DDR3, ECC** , four 240-pin DIMM sockets * Max memory is 16GB for ECC models and 8GB for Non-ECC models ** ECC and non-ECC DIMMs cannot be mixed	Bay ① 5.25", 1.6" high, access, std optical Bay ② 5.25", 1.6" high, access, open Bay ③ 3.5", 1" high, access, open (media reader) Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk
Graphics	NVIDIA® Quadro® FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort™, one dual-link DVI-I**, 59W ** Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Media reader	None	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all)
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals	
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMC® SCH5147 Super I/O	Supports ThinkVantage® technologies
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	GREENGUARD® certified RoHS-compliant ENERGY STAR® 5.0-compliant
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports in rear	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82578DM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo	
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Rack mount	Rack shelf support	
Preloaded operating system²⁰	Accessories	
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM 43R2033	
	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138	
Preloaded applications⁵ (only some listed)	250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015	
• Rescue and Recovery™	500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990	
• ThinkVantage Toolbox	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918	
• Norton™ Internet Security (30 days of virus definitions)	Blu-ray™ Burner SATA 1.5Gb/s 45K1675	
• Adobe® Reader®	NVIDIA Quadro 256MB NVS 295 45K1669	
• Adobe Flash® Player	NVIDIA Quadro 512MB NVS 450 57Y4398	
• Microsoft Office 2010 preloaded; purchase product key to activate	NVIDIA Quadro 256MB FX 380 45K1670	
• Corel® Burn.Now™ (DVD±RW)	More accessories on O-CAD sheet	
• Corel DVD MovieFactory® (DVD±RW)	Other accessories at lenovo.com/accessories	

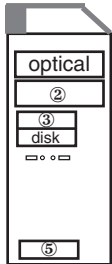
See footnotes for important warranty information
 US model announced January 19, 2010
 US model withdrawn effective February 2011

ThinkStation® E20 (4220) - Windows XP - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	SATA optical	1394 adptr	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Global	Avail date
4220-65U	4x5	X3450	2.66	4	1x2GB	1333MHz	ECC	1x500GB ²	3.5"	No	DVD±RW	1394	FX580	ES50	XP Pro	No	May 10
4220-66U	4x5	i5-650	3.20	2	1x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	1394	FX380	ES50	XP Pro	No	May 10
4220-67U	4x5	i5-670	3.46	2	1x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	1394	FX1800	ES50	XP Pro	No	May 10

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- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These models have a 3-year limited warranty¹**

Processor	<p>Intel Core™ i5 Processor i5-650 or i5-670 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or</p> <p>Intel Xeon® Processor X3450 with quad-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support • Recessed power button 																				
Implementation	Processor in LGA1156 socket, up to one processor																					
Memory	2GB std, 16GB max, PC3-10600 1333MHz DDR3, UDIMM, ECC four 240-pin DIMM sockets	<p>Bay ① 5.25", 1.6" high, access, std optical</p> <p>Bay ② 5.25", 1.6" high, access, open</p> <p>Bay ③ 3.5", 1" high, access, open (media reader)</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p>																				
Graphics	<p><i>Some:</i> NVIDIA® Quadro® FX 380, PCI Express® (PCIe) x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 580, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I*, 40W</p> <p><i>Some:</i> NVIDIA® Quadro® FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I*, 59W</p> <p>* Only two display connectors are active at a time</p>	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>																				
Media reader	None	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 																				
SATA disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"																					
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<p>Supports ThinkVantage® technologies</p>																				
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals																					
Chipset	Intel 3450 Chipset, Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>ENERGY STAR® 5.0-compliant</p>																				
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)																					
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 																				
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear																					
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	<p>Other accessories at lenovo.com/accessories</p>																				
Speaker	Internal speaker for business audio																					
Ethernet	One gigabit ethernet on planar, Intel 82578DM	<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> - Genuine Windows® XP Professional 32-bit (preinstalled via downgrade rights in Windows 7 Professional 64-bit) <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2007 Trial (60-day) • Corel® Burn.Now™ (DVD±RW) • Corel DVD MovieFactory® (DVD±RW) 																				
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant																					
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo	<p>Accessories</p> <table border="1"> <tr> <td>2GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2033</td> </tr> <tr> <td>4GB PC3-10600 DDR3 ECC UDIMM</td> <td>57Y4138</td> </tr> <tr> <td>250GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>41N3015</td> </tr> <tr> <td>500GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>43R1990</td> </tr> <tr> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>NVIDIA Quadro 256MB NVS 295</td> <td>45K1669</td> </tr> <tr> <td>NVIDIA Quadro 512MB NVS 450</td> <td>57Y4398</td> </tr> <tr> <td>NVIDIA Quadro 256MB FX 380</td> <td>45K1670</td> </tr> <tr> <td>NVIDIA Quadro 512MB FX 580</td> <td>45K1671</td> </tr> </table>	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	NVIDIA Quadro 256MB NVS 295	45K1669	NVIDIA Quadro 512MB NVS 450	57Y4398	NVIDIA Quadro 256MB FX 380	45K1670	NVIDIA Quadro 512MB FX 580	45K1671
2GB PC3-10600 DDR3 ECC UDIMM	43R2033																					
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Blu-ray™ Burner SATA 1.5Gb/s	45K1675																					
NVIDIA Quadro 256MB NVS 295	45K1669																					
NVIDIA Quadro 512MB NVS 450	57Y4398																					
NVIDIA Quadro 256MB FX 380	45K1670																					
NVIDIA Quadro 512MB FX 580	45K1671																					
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo																					
Power supply	280 watts with variable speed fan, autosenesing, 85% PSU, 80 PLUS® Bronze qualified																					
Cooling	4 fans (power supply, CPU, rear, front)																					
Rack mount	Rack shelf support																					

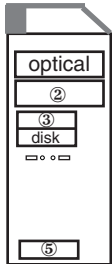
See footnotes for important warranty information
 US models announced May 4, 2010
 US models withdrawn effective October 2010

ThinkStation® E20 (4222) - TopSeller (Windows XP) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	ECC memory	Disk(s)	Disk size	Pre-conf RAID	Diskette or Media reader	1394 adptr	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Global	Avail date
4222-56U	4x5	G6950	2.80	2	1x2GB	1333MHz	No	1x250GB ²	3.5"	No	Media	No	FX380	ES50	XP Pro	No	Mar 10
4222-65U	4x5	i5-650	3.20	2	1x2GB	1333MHz	No	1x250GB	3.5"	No		No		ES50	XP Pro	No	Jun 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**
- **These models have a 3-year limited warranty¹**

Processor	Intel Pentium® Processor G6950 with dual-core, Intel 64, Virtualization Technology, integrated 1066MHz dual-channel DDR3 memory controller, and 3MB cache or Intel Core™ i5 Processor i5-650 with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache	Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 32-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button 
Implementation	Processor in LGA1156 socket, up to one processor	
Memory	2GB std, 8GB max*, UDIMM, PC3-10600 1333MHz DDR3** , Non-ECC*** , four 240-pin DIMM sockets * Maximum memory is 16GB for ECC models and 8GB for Non-ECC models ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** ECC and non-ECC DIMMs cannot be mixed	Bay ① 5.25", 1.6" high, access, std optical Bay ② 5.25", 1.6" high, access, open Bay ③ 3.5", 1" high, access, std or opt media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk
Graphics	<i>Some:</i> NVIDIA® Quadro® FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W	Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Media reader	<i>Some:</i> 25-in-1 media reader, internal USB 2.0	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all)
SATA disk(s)	250GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in chipset, RAID 0, 1 support, two SATA connectors for disks, two SATA connectors for opticals	
Chipset	Intel 3450 Chipset , Platform Controller Hub (PCH) for PCI, ethernet, and USB, SMSC® SCH5147 Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Six USB 2.0, serial (9-pin), ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82578DM	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black, Lenovo® logo	
Mouse	Optical Wheel Mouse (USB connector), black, Lenovo logo	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
Cooling	4 fans (power supply, CPU, rear, front)	
Rack mount	Rack shelf support	
Preloaded operating system²⁰	Accessories	Supports ThinkVantage® technologies
- Genuine Windows® XP Professional 32-bit (preinstalled via downgrade rights in Windows 7 Professional 64-bit)	1GB PC3-10600 DDR3 Non-ECC UDIMM 57Y4389 2GB PC3-10600 DDR3 Non-ECC UDIMM 57Y4390 250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015 500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 NVIDIA Quadro 256MB NVS 295 45K1669 NVIDIA Quadro 512MB NVS 450 57Y4398 NVIDIA Quadro 256MB FX 380 45K1670 NVIDIA Quadro 512MB FX 580 45K1671	GREENGUARD® certified RoHS-compliant ENERGY STAR® 5.0-compliant
Preloaded applications⁵ (only some listed)	More accessories on O-CAD sheet Other accessories at lenovo.com/accessories	LIMITED WARRANTY¹
• Rescue and Recovery™		⇒ 3-year parts and labor
• ThinkVantage Toolbox		⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)
• Norton™ Internet Security 2009 (30 days of virus definitions)		⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty
• Adobe® Reader®		• Onsite service upgrade options (in eligible locations)⁷
• Adobe Flash® Player		• Post warranty maintenance services
• Microsoft® Office 2007 Trial (60-day)		⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378
• Corel® Burn.Now™ (DVD±RW)		
• Corel DVD MovieFactory® (DVD±RW)		

See footnotes for important warranty information
US models announced March 23 or June 15, 2010
US models withdrawn effective September 2010

Partial list of accessories supported on ThinkStation E20

Memory⁶³

1GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4389	ann 01/12/10
1GB PC3-10600 DDR3 Non-ECC (25-Pack)	57Y4419	ann 01/12/10
2GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4390	ann 01/12/10
2GB PC3-10600 DDR3 Non-ECC (25-Pack)	57Y4420	ann 01/12/10
2GB PC3-10600 DDR3 ECC UDIMM	43R2033	ann 03/31/09
4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	ann 08/04/09

⁶³ Mixing of ECC and non-ECC DIMMs is not supported

More information on memory and processor configuration, operation and limitation, please visit:

www.lenovo.com/support/thinkstationaccessories

Optical

DVD-ROM DL SATA1.5Gb/s 16X-48X Max ⁴	41N5618	ann 09/26/06
Super Multi-Burner DL DVD±RW SATA1.5Gb/s	41N5620	ann 09/26/06
Blu-ray™ Burner SATA1.5Gb/s	45K1675	ann 03/31/09

Storage

250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	ann 01/24/06
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	ann 11/06/07
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	ann 08/19/08
300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2031	ann 03/31/09

Removable storage

USB 2.0 Portable 320GB Hard Disk	45K1689	ann 03/17/09
USB 2.0 Portable 500GB Hard Disk	45K1690	ann 05/26/09
USB 2.0 Portable Secure 320GB Hard Disk	43R2019	ann 11/18/08
Lenovo® Slim USB Portable DVD Burner	0A33988	ann 06/14/11

Keyboard

Preferred Pro USB Keyboard	73P5220	ann 06/21/05
Enhanced Performance USB Keyboard	73P2620	ann 03/23/04
Lenovo USB Fingerprint Keyboard	73P4730	ann 02/22/05
Lenovo USB Smartcard Keyboard	51J0155	ann 03/24/09
UltraSlim Wireless Keyboard and Mouse ⁵²	57Y4700	ann 09/15/09

More information at www.lenovo.com/support/keyboards

Mouse

Lenovo Optical Mouse (USB)	06P4069	ann 05/21/03
Lenovo ScrollPoint® Mouse (USB, Optical)	31P7405	ann 08/27/02
Lenovo Laser Mouse (USB)	41U3074	ann 01/23/07
Lenovo Wireless Laser Mouse - Black ⁵²	45K1696	ann 11/25/08
Lenovo Wireless Laser Mouse - Red/Black ⁵²	51J0198	ann 11/25/08

⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at www.lenovo.com/support/mice

Monitors

Lenovo D186 Wide 18.5" Monitor	2580AB1	ann 01/12/10
ThinkVision® L1711p 17" Monitor	5047HB2	ann 10/20/09
ThinkVision L1900p 19" Monitor	4431HE1	ann 11/11/08
ThinkVision L1951p Wide 19" Monitor	2448HB6	ann 10/20/09
ThinkVision L2250p Wide 22" Monitor	2572HB6	ann 10/20/09
ThinkVision L2251p Wide 22" Monitor	2572HD6	ann 10/20/09
ThinkVision L2251x Wide 22" Monitor	2578HB6	ann 10/20/09
ThinkVision L2321x Wide 23" Monitor	4014HB6	ann 06/10/10
ThinkVision L2440p Wide 24" Monitor	4420HB2	ann 09/17/08

More information at www.lenovo.com/support/monitors

Monitor accessories⁴⁶

ThinkVision USB Soundbar	40Y7616	ann 08/23/05
ThinkVision Soundbar	45K1263	ann 09/16/08
Kensington® MicroSaver® Cable Lock	73P2582	ann 12/29/03
Kensington Twin Head Cable Lock	45K1620	ann 09/30/08

⁴⁶ Compatible on selected Lenovo and ThinkVision monitors.

More information at www.lenovo.com/support/monitoraccessories

Graphics

DisplayPort to Single-link DVI-D Cable ⁵⁰	45J7915	ann 08/05/08
NVIDIA® Quadro® 256MB NVS 295	45K1669	ann 04/21/09
NVIDIA Quadro 512MB NVS 300 DMS59 ⁶⁵	0A36528	ann 04/26/11
NVIDIA Quadro 512MB NVS 450	57Y4398	ann 01/19/10
NVIDIA Quadro 512MB 400	0A36535	ann 06/28/11
NVIDIA Quadro 1GB 600	0A36183	ann 10/26/10
NVIDIA Quadro 1GB 2000	57Y4479	ann 10/26/10

⁵⁰ Attaches to selected DisplayPort graphics cards.

⁶⁵ Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.

More information at www.lenovo.com/support/graphiccards

Security

Kensington MicroSaver Cable Lock	73P2582	ann 12/29/03
Kensington Twin Head Cable Lock	45K1620	ann 09/30/08
Lenovo Security Cable Lock	57Y4303	ann 08/24/10
USB Gemplus GemPC Smart Card Reader	41N3040	ann 02/21/06

For more information on accessories:

www.lenovo.com/accessories

Purchase Lenovo accessories

www.lenovo.com/support/accessories

Product specifications on Lenovo Support

www.lenovo.com/accessoriesguide

Option Compatibility Matrix (OCM) and accessory brochures

www.lenovoquickpick.com

An Options Compatibility Configurator for Lenovo systems



Lenovo ThinkStation E30
with Intel HD Graphics



Lenovo ThinkStation E30
with ThinkVision® L2440p (4420HB2)



Lenovo ThinkStation E30



Lenovo ThinkStation E30
with toolless removable side cover



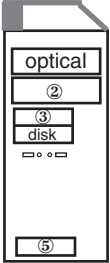
Lenovo ThinkStation E30



Lenovo ThinkStation Graphics Card Option
NVIDIA Quadro NVS 450 (57Y4398)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7824-C4U	4x5	Core i3-2130	3.4 2C/4T	1x2GB	No	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64

- True workstation-level performance at incredibly low price point
- High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support
- This small and medium business (SMB) model is part of the US TopSeller™ Program
- This system is Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open (optical) Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets; ECC model(s): 32GB max Non-ECC model(s): 16GB max	
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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	Intel HD Graphics in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports section</i>)	
Media reader	25-in-1 media reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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, microphone (3.5mm), headphone (3.5mm),	
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) Intel HD models: one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	
	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-VEN sheet</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↪ More Lenovo services are available on S-TS sheet 	

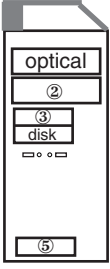
See footnotes for important warranty information
 US model announced December 13, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® E30 (7783) - Discrete Graphics (December 2011)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Chassis Intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7783-B5U	4x5	Core i3-2130	3.4 2C/4T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	None	None	None	Intel HD	No	Pro 64

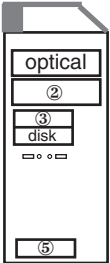
- True workstation-level performance at incredibly low price point
- High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support
- This system is Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)	Tower  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	
Memory	UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets; <i>ECC model(s):</i> 32GB max <i>Non-ECC model(s):</i> 16GB max	
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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	Intel HD Graphics in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports section</i>)	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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, microphone (3.5mm), headphone (3.5mm),	Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open (optical) Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) <i>Intel HD models:</i> one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	None	Intel AMT Intel AMT supported on model(s) with Xeon processor
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected model(s)
Speaker	Internal speaker for business audio	ISV certifications Please visit www.lenovo.com/support/ISV
Ethernet	One gigabit ethernet on planar, Intel 82579	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	More compatible accessories, please see O-VEN sheet
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↪ More Lenovo services are available on S-TS sheet
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	

See footnotes for important warranty information
 US model announced December 13, 2011
 US model(s) withdrawn effective October 2012

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7824-B2U	4x5	Core i5-2400	3.1 4C/4T	1x2GB	None	1x250GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64
7824-B3U	4x5	Core i5-2400	3.1 4C/4T	1x2GB	None	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 400	No	Pro 64
7824-B4U	4x5	Core i7-2600	3.4 4C/8T	1x2GB	None	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64
7824-B5U	4x5	Core i7-2600	3.4 4C/8T	1x4GB	None	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	No	Pro 64

- True workstation-level performance at incredibly low price point
- High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support
- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Core™ i5-2400 processor (4C/4T, 3.1GHz, 6MB Cache), integrated Intel HD Graphics 2000, Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i7-2600 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 2000, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	
Memory	<p>UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p><i>ECC model(s):</i> 32GB max</p> <p><i>Non-ECC model(s):</i> 16GB max</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open (optical)</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports section</i>)</p> <p><i>Some: NVIDIA® Quadro® 400</i>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 32W</p> <p><i>Some: NVIDIA Quadro 600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	25-in-1 media reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Disk(s)	250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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>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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected 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, microphone (3.5mm), headphone (3.5mm),	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	None	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	<p>More compatible accessories, please see O-VEN sheet</p>
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↔ More Lenovo services are available on S-TS sheet
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	<p>See footnotes for important warranty information</p>
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	<p>US models announced October 4, 2011</p> <p>US model(s) withdrawn effective October 2012</p>
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	

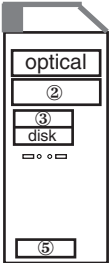
See footnotes for important warranty information
 US models announced October 4, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® E30 (7783) - Discrete Graphics (October 2011)

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Chassis Intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7783-93U	4x5	Core i5-2400	3.1 4C/4T	1x4GB	No	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	None	Pro 64
7783-94U	4x5	Core i5-2400	3.1 4C/4T	1x4GB	No	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 400	None	Pro 64
7783-95U	4x5	Core i5-2400	3.1 4C/4T	1x4GB	No	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	None	Pro 64
7783-96U	4x5	Core i7-2600	3.4 4C/8T	1x4GB	No	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	None	Pro 64
7783-97U	4x5	Core i7-2600	3.4 4C/8T	1x4GB	No	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 2000D	None	Pro 64

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- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	<p>Intel® Core™ i5-2400 processor (4C/4T, 3.1GHz, 6MB Cache), integrated Intel HD Graphics 2000, Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i7-2600 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 2000, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	
Memory	<p>UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p><i>ECC model(s):</i> 32GB max</p> <p><i>Non-ECC model(s):</i> 16GB max</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open (optical)</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports section</i>)</p> <p><i>Some: NVIDIA® Quadro® 400</i>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p><i>Some: NVIDIA Quadro 600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some: NVIDIA Quadro 2000D</i>, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W</p>	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	25-in-1 media reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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>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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected 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, microphone (3.5mm), headphone (3.5mm),	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	None	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	<p>More compatible accessories, please see O-VEN sheet</p>
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↔ More Lenovo services are available on S-TS sheet
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	

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 US models announced October 4, 2011
 US model(s) withdrawn effective October 2012

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Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7824-94U	4x5	Core i3-2100	3.1 2C/4T	1x2GB	None	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 400	No	Pro 64
7824-95U	4x5	Xeon E3-1220	3.1 4C/4T	1x4GB	None	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 400	No	Pro 64

- True workstation-level performance at incredibly low price point
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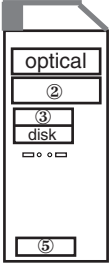
Processor	Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Intel Xeon® E3-1220 processor (4C/4T, 3.1GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.4GHz), DDR3 memory controller (up to 1333MHz) One LGA1155 socket	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open (optical) Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p>Intel AMT Intel AMT supported on model(s) with Xeon processor</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected model(s) <p>ISV certifications Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-VEN sheet</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↪ More Lenovo services are available on S-TS sheet
Implementation	One LGA1155 socket	
Memory	UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets; ECC model(s): 32GB max Non-ECC model(s): 16GB max	
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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W	
Media reader	25-in-1 media reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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, microphone (3.5mm), headphone (3.5mm),	
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash™ Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	

See footnotes for important warranty information
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US model(s) withdrawn effective October 2012

ThinkStation® E30 (7783) - Discrete Graphics (May 2011) - withdrawn Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / GHz	Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Chassis intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7783-88U	4x5	Core i3-2100	3.1	2C/4T	1x2GB	ECC	1x500GB SATA	No	DVD±RW	None	None	None	Quadro 400		Pro 64
7783-89U	4x5	Xeon E3-1220	3.1	4C/4T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	None	None	None	Quadro 400		Pro 64
7783-91U	4x5	Xeon E3-1230	3.2	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	None	None	None	Quadro 400		Pro 64
7783-92U	4x5	Xeon E3-1230	3.2	4C/8T	4x2GB	ECC	1x500GB SATA	No	DVD±RW	None	None	None	Quadro 600	Global	Pro 64

- True workstation-level performance at incredibly low price point
- High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache) , integrated Intel HD Graphics 2000, 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) One LGA1155 socket	Tower  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open (optical) Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets; ECC model(s): 32GB max Non-ECC model(s): 16GB max	
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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	Some: Intel HD Graphics in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports section</i>) Some: NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W Some: NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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, microphone (3.5mm), headphone (3.5mm),	
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	
	<p style="text-align: center;">Intel AMT</p> Intel AMT supported on model(s) with Xeon processor	
	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected model(s) 	
	<p style="text-align: center;">ISV certifications</p> Please visit www.lenovo.com/support/ISV	
	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating	
	More compatible accessories, please see O-VEN sheet	
	<p style="text-align: center;">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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↪ More Lenovo services are available on S-TS sheet 	

See footnotes for important warranty information
 US models announced May 17, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® E30 (7824) - TopSeller (Discrete Graphics) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / GHz	Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Chassis intrusion switch	1394 adptr	Graphics adapter(s)	Win7 Global preload
7824-55U	4x5	Xeon E3-1220	3.1	4C/4T	1x4GB		1x500GB SATA		DVD±RW	Media			Quadro 600	No Pro 64
7824-56U	4x5	Xeon E3-1230	3.2	4C/8T	1x4GB	ECC	1x500GB SATA		DVD±RW	Media			Quadro 600	No Pro 64
7824-57U	4x5	Xeon E3-1240	3.3	4C/8T	1x4GB	ECC	1x500GB SATA		DVD±RW	Media			Quadro 2000	No Pro 64
7824-81U	4x5	Xeon E3-1280	3.5	4C/8T	2x2GB	ECC	160GB SSD+1TB SATA		DVD±RW	Media			Quadro 2000	No Pro 64
7824-98U	4x5	Xeon E3-1240	3.3	4C/8T	2x2GB	ECC	2x150GB SATA	0	DVD±RW	Media	Switch	1394	Quadro 600	No Pro 64
7824-99U	4x5	Xeon E3-1245	3.3	4C/8T	4x2GB	ECC	160GB SSD		DVD±RW	Media	Switch	1394	Quadro 2000	No Pro 64

- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor
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 E3-1245 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), integrated Intel HD Graphics P3000, DDR3 memory controller (up to 1333MHz)
Intel Xeon E3-1280 processor (4C/8T, 3.5GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1333MHz)

Implementation
 One LGA1155 socket

Memory
UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;
ECC model(s): 32GB max
Non-ECC model(s): 16GB max

Additional memory disclaimers

- Actual memory operating speed is the lowest installed speed, dependent on processor memory controller speed and installed memory speed
- ECC and non-ECC DIMMs cannot be mixed

Graphics
Some: **NVIDIA® Quadro® 600**, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W
Some: **NVIDIA Quadro 2000**, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W

Media reader
 25-in-1 media reader, internal USB 2.0

Optical
 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive

Disk(s)
Some: 500GB or 1TB, SATA 3.0Gb/s, 7200 rpm, 3.5"
Some: 150GB, SATA 6.0Gb/s, 10000 rpm, 2.5"
Some: 160GB Solid State Drive (SSD), SATA 3.0Gb/s, 1.8"

Disk 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, microphone (3.5mm), headphone (3.5mm),

Rear ports
 Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)

IEEE 1394 adptr
Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear

Audio
 High Definition (HD) Audio, Realtek® ALC662 codec

Speaker
 Internal speaker for business audio

Ethernet
 One gigabit ethernet on planar, Intel 82579

Security chip
 STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant

Keyboard
 Preferred Pro USB Keyboard (USB connector), 104-key, black

Mouse
 Optical Wheel Mouse (USB connector), black

Power supply
 280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified

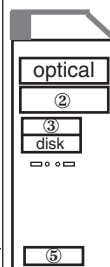
ThinkVantage®
 Supports ThinkVantage technologies

Preload OS
 Genuine Windows® 7 Professional 64

Preloaded applications

- Rescue and Recovery
- Password Manager
- ThinkVantage Toolbox
- Norton™ Internet Security (30 days of virus definitions)
- Adobe Reader®
- Adobe Flash® Player
- Skype™ for Windows
- Microsoft® Office 2010 preloaded; purchase product key to activate
- Corel® WinDVD (for DVD±RW model(s) only)
- Corel Burn.Now™ (for DVD±RW model(s) only)
- Ulead DVD MovieFactory® (for DVD±RW model(s) only)

Tower



- Raven black color; metal case
- 6.9"W x 17.0"D x 16.7"H (with handle)
- 175mm W x 431mm D x 425mm H
- 24.7 lb (11.2kg) max configuration
- 25-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Recessed power button

Bay 1: 5.25", 1.6" high, access, for optical
 Bay 2: 5.25", 1.6" high, access, open (optical)
 Bay 3: 3.5", 1" high, access, for media reader
 Bay 4: 3.5", 1" high, internal, for disk
 Bay 5: 3.5", 1" high, internal, for disk

Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)
 Slot 2: half-length, full-height, PCIe 2.0 x1
 Slot 3: half-length, full-height, 32-bit PCI 2.3
 Slot 4: half-length, full-height, 32-bit PCI 2.3

Intel AMT

Intel AMT supported on model(s) with Xeon processor

SECURITY

- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all)
- Chassis intrusion switch available on selected model(s)

ISV certifications

Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

More compatible accessories, please see O-VEN sheet

LIMITED WARRANTY¹

- ↪ 3-year parts and labor
- ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)
- ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html
- Onsite service upgrade options (in eligible locations)⁷
- Post warranty maintenance services
- ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
- ↪ More Lenovo services are available on S-TS sheet

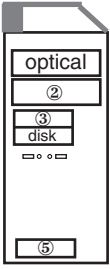
See footnotes for important warranty information
 US models announced April 19, 2011
 US model(s) withdrawn effective August or October 2012

ThinkStation® E30 (7824) - TopSeller (IG) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Chassis intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7824-49U	4x5	Core i3-2100	3.1 2C/4T	1x2GB		1x500GB SATA		DVD±RW	Media		None	Intel HD	No	Pro 64
7824-51U	4x5	Core i3-2120	3.3 2C/4T	1x2GB		1x500GB SATA		DVD±RW	Media		None	Intel HD	No	Pro 64
7824-52U	4x5	Xeon E3-1225	3.1 4C/4T	1x4GB		1x500GB SATA		DVD±RW	Media		None	Intel HD	No	Pro 64
7824-53U	4x5	Xeon E3-1235	3.2 4C/8T	1x4GB		1x500GB SATA		DVD±RW	Media		None	Intel HD	No	Pro 64
7824-54U	4x5	Xeon E3-1245	3.3 4C/8T	1x4GB		1x500GB SATA		DVD±RW	Media		None	Intel HD	No	Pro 64
7824-97U	4x5	Core i3-2100	3.1 2C/4T	2x2GB	ECC	2x250GB SATA	0	DVD		Switch	None	Intel HD	No	Pro 64

- True workstation-level performance at incredibly low price point
- High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support
- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, 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 P3000, 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 P3000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon E3-1245 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), integrated Intel HD Graphics P3000, DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open (optical)</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	<p>UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p><i>ECC model(s):</i> 32GB max</p> <p><i>Non-ECC model(s):</i> 16GB max</p>	<p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	Intel HD Graphics in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports</i> section)	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Media reader	<i>Some:</i> 25-in-1 media reader, internal USB 2.0	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected model(s)
Optical	<i>Some:</i> Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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)	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p>
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	<p>More compatible accessories, please see O-VEN sheet</p>
IEEE 1394 adptr	None	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↪ More Lenovo services are available on S-TS sheet
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader? • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	

See footnotes for important warranty information
 US models announced April 19, 2011
 US model(s) withdrawn effective October 2012

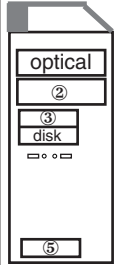
ThinkStation® E30 (7783) - Discrete Graphics - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / GHz	Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7783-35U	4x5	Xeon E3-1220	3.1	4C/4T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro NVS 300	No	Pro 64
7783-36U	4x5	Xeon E3-1220	3.1	4C/4T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	No	Pro 64
7783-37U	4x5	Xeon E3-1230	3.2	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro NVS 300	No	Pro 64
7783-38U	4x5	Xeon E3-1230	3.2	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	No	Pro 64
7783-39U	4x5	Xeon E3-1240	3.3	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	No	Pro 64
7783-41U	4x5	Xeon E3-1240	3.3	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 2000	No	Pro 64
7783-42U	4x5	Xeon E3-1270	3.4	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 600	No	Pro 64
7783-43U	4x5	Xeon E3-1270	3.4	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Quadro 2000	No	Pro 64

Processor	<p>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)</p> <p>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)</p> <p>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)</p> <p>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)</p>
Implementation	One LGA1155 socket
Memory	<p>UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p><i>ECC model(s):</i> 32GB max</p> <p><i>Non-ECC model(s):</i> 16GB max</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 ECC and non-ECC DIMMs cannot be mixed
Graphics	<p><i>Some:</i> NVIDIA® Quadro® NVS 300, PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W</p> <p><i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>
Media reader	25-in-1 media reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"
Disk 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, microphone (3.5mm), headphone (3.5mm),
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)
IEEE 1394 adptr	None
Audio	High Definition (HD) Audio, Realtek® ALC662 codec
Speaker	Internal speaker for business audio
Ethernet	One gigabit ethernet on planar, Intel 82579
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified
ThinkVantage®	Supports ThinkVantage technologies
Preload OS	Genuine Windows® 7 Professional 64
Preloaded applications	<ul style="list-style-type: none"> Rescue and Recovery Password Manager ThinkVantage Toolbox Norton™ Internet Security (30 days of virus definitions) Adobe Reader® Adobe Flash® Player Skype™ for Windows Microsoft® Office 2010 preloaded; purchase product key to activate Corel® WinDVD (for DVD±RW model(s) only) Corel Burn.Now™ (for DVD±RW model(s) only) Ulead DVD MovieFactory® (for DVD±RW model(s) only)

Tower



- Raven black color; metal case
- 6.9"W x 17.0"D x 16.7"H (with handle)
- 175mm W x 431mm D x 425mm H
- 24.7 lb (11.2kg) max configuration
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Recessed power button

Bay 1: 5.25", 1.6" high, access, for optical
 Bay 2: 5.25", 1.6" high, access, open (optical)
 Bay 3: 3.5", 1" high, access, for media reader
 Bay 4: 3.5", 1" high, internal, for disk
 Bay 5: 3.5", 1" high, internal, for disk

Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max)
 Slot 2: half-length, full-height, PCIe 2.0 x1
 Slot 3: half-length, full-height, 32-bit PCI 2.3
 Slot 4: half-length, full-height, 32-bit PCI 2.3

Intel AMT
 Intel AMT supported on model(s) with Xeon processor

SECURITY

- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all)
- Chassis intrusion switch available on selected model(s)

ISV certifications
 Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

More compatible accessories, please see O-VEN sheet

LIMITED WARRANTY¹

- 3-year parts and labor
- Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts², 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)
- Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html
- Onsite service upgrade options (in eligible locations)⁷
- Post warranty maintenance services
- 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
- More Lenovo services are available on S-TS sheet

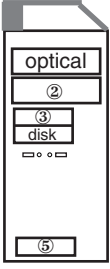
See footnotes for important warranty information
 US models announced April 19, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® E30 (7783) - Integrated Graphics - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor	Cores / GHz	Threads	Memory DIMMs	ECC	Disk(s)	Pre-conf RAID	SATA optical	Media reader	Chassis intrusion switch	1394 adptr	Graphics adapter(s)	Global	Win7 preload
7783-31U	4x5	Core i3-2100	3.1	2C/4T	1x2GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64
7783-32U	4x5	Core i3-2120	3.3	2C/4T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64
7783-33U	4x5	Xeon E3-1225	3.1	4C/4T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64
7783-34U	4x5	Xeon E3-1235	3.2	4C/8T	1x4GB	ECC	1x500GB SATA	No	DVD±RW	Media	None	None	Intel HD	No	Pro 64

- True workstation-level performance at incredibly low price point
- High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Core™ i3-2100 processor (2C/4T, 3.1GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, 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 P3000, 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 P3000, DDR3 memory controller (up to 1333MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 24.7 lb (11.2kg) max configuration • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open (optical) Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe 2.0 x16 (75w max) Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>UDIMM, PC3-10600 1333MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p><i>ECC model(s):</i> 32GB max <i>Non-ECC model(s):</i> 16GB max</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 • ECC and non-ECC DIMMs cannot be mixed 	
Graphics	Intel HD Graphics in processor, uses main memory, one VGA, one DisplayPort™ (see <i>Rear ports</i> section)	
Media reader	25-in-1 media reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk 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, microphone (3.5mm), headphone (3.5mm),	
Rear ports	Six USB 2.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Intel 82579	
Security chip	STMicroelectronics ST19NP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery • Password Manager • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Skype™ for Windows • Microsoft® Office 2010 preloaded; purchase product key to activate • Corel® WinDVD (for DVD±RW model(s) only) • Corel Burn.Now™ (for DVD±RW model(s) only) • Ulead DVD MovieFactory® (for DVD±RW model(s) only) 	
	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-VEN sheet</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ ↔ More Lenovo services are available on S-TS sheet 	

See footnotes for important warranty information
 US models announced April 19, 2011
 US model(s) withdrawn effective October 2012

Partial list of accessories supported on ThinkStation E30

Memory⁶³

2GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4390	ann 01/12/10
2GB PC3-10600 DDR3 Non-ECC (25-Pack)	57Y4420	ann 01/12/10
4GB PC3-10600 DDR3 Non-ECC UDIMM	0A36527	ann 04/18/11
2GB PC3-10600 DDR3 ECC UDIMM	43R2033	ann 03/31/09
4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	ann 08/04/09
8GB PC3-10600 DDR3 ECC UDIMM	0A65718	ann 04/24/12

⁶³ Mixing of ECC and non-ECC DIMMs is not supported

More information on memory and processor configuration, operation and limitation, please visit:

www.lenovo.com/support/thinkstationaccessories

Optical

DVD-ROM DL SATA1.5Gb/s 16X-48X Max ⁴	41N5618	ann 09/26/06
Lenovo® Super Multi-Burner SATA Drive	0A65618	ann 08/23/11
Blu-ray™ Burner SATA1.5Gb/s	45K1675	ann 03/31/09

Storage

250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	ann 01/24/06
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	ann 11/06/07
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	ann 08/19/08
300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2031	ann 03/31/09

Removable storage

USB 2.0 Portable 320GB Hard Disk	45K1689	ann 03/17/09
USB 2.0 Portable 500GB Hard Disk	45K1690	ann 05/26/09
USB 2.0 Portable Secure 320GB Hard Disk	43R2019	ann 11/18/08
Lenovo® Slim USB Portable DVD Burner	0A33988	ann 06/14/11

Keyboard

Preferred Pro USB Keyboard	73P5220	ann 06/21/05
Enhanced Performance USB Keyboard	73P2620	ann 03/23/04
Lenovo USB Fingerprint Keyboard	73P4730	ann 02/22/05
Lenovo USB Smartcard Keyboard	51J0155	ann 03/24/09
UltraSlim Plus Wireless Keyboard and Mouse ⁵²	0A34032	ann 04/05/11

More information at www.lenovo.com/support/keyboards

Mouse

Lenovo Optical Mouse (USB)	06P4069	ann 05/21/03
Lenovo ScrollPoint® Mouse (USB, Optical)	31P7405	ann 08/27/02
Lenovo Laser Mouse (USB)	41U3074	ann 01/23/07
Lenovo Wireless Laser Mouse ⁵²	0A36188	ann 12/20/11

⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at www.lenovo.com/support/mice

Monitors

ThinkVision®:

L1711p 17" (VGA, DVI-D)	5047HB2	ann 10/20/09
LT1952p Wide 19" (VGA, DP, DVI-D) ⁶⁹	2448MB6	ann 09/13/11
L2250p Wide 22" (VGA, DVI-D)	2572HB6	ann 10/20/09
L2251x Wide 22" (VGA, DP)	2578HB6	ann 10/20/09
LT2252p Wide 22" (VGA, DP, DVI-D) ⁶⁹	2572MB6	ann 09/13/11
LT2452p Wide 24" (VGA, DP, DVI-D) ⁶⁹	4420MB2	ann 09/13/11

⁶⁹ DisplayPort cable is not included; use optional

DisplayPort to DisplayPort Monitor Cable (0A36537).

More information at www.lenovo.com/support/monitors

Monitor accessories⁴⁶

Kensington® MicroSaver® Cable Lock	73P2582	ann 12/29/03
Kensington Twin Head Cable Lock	45K1620	ann 09/30/08

⁴⁶ Compatible on selected Lenovo and ThinkVision monitors.

More information at www.lenovo.com/support/monitoraccessories

Graphics

DisplayPort™ to Single-link DVI-D Cable ⁵⁰	45J7915	ann 08/05/08
DisplayPort to DisplayPort Monitor Cable ⁵⁰	0A36537	ann 09/13/11
NVIDIA® Quadro® 256MB NVS 295	45K1669	ann 04/21/09
NVIDIA Quadro 512MB NVS 300 DMS59 ⁶⁵	0A36528	ann 04/26/11
NVIDIA Quadro 512MB NVS 450	57Y4398	ann 01/19/10
NVIDIA Quadro 512MB 400	0A36535	ann 06/28/11
NVIDIA Quadro 1GB 600	0A36183	ann 10/26/10
NVIDIA Quadro 1GB 2000	57Y4479	ann 10/26/10
NVIDIA Quadro 1GB 2000D	0A36541	ann 11/01/11

⁵⁰ Attaches to selected DisplayPort graphics cards.

⁶⁵ Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.

More information at www.lenovo.com/support/graphiccards

Security

Kensington MicroSaver Cable Lock	73P2582	ann 12/29/03
Kensington Twin Head Cable Lock	45K1620	ann 09/30/08
Lenovo Security Cable Lock	57Y4303	ann 08/24/10
USB Gemplus GemPC Smart Card Reader	41N3040	ann 02/21/06

For more information on accessories:

www.lenovo.com/accessories

Purchase Lenovo accessories

www.lenovo.com/support/accessories

Product specifications on Lenovo Support

www.lenovo.com/accessoriesguide

Option Compatibility Matrix (OCM) and accessory brochures

www.lenovoquickpick.com

An Options Compatibility Configurator for Lenovo systems



Lenovo ThinkStation E31 Tower



Lenovo ThinkStation E31 SFF



Lenovo ThinkStation E31 Tower



Lenovo ThinkStation E31 SFF

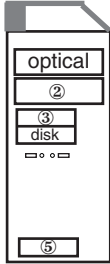


Lenovo ThinkStation E31 Tower



Lenovo ThinkStation E31 SFF

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2555-31U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD 2000	No	No	Switch	No	Pro 64
2555-32U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2555-33U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2555-34U	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2555-35U	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch	No	Pro 64
2555-45U	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2555-46U	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2555-47U	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2555-48U	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch	No	Pro 64

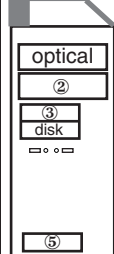
Processor	<p>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® 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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>	
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced May 15, 2012

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2555-36U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	No	Pro 64
2555-37U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2555-38U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2555-39U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2555-41U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch	No	Pro 64
2555-42U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD 4000	No	No	Switch	No	Pro 64
2555-43U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2555-44U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64

Processor	<p>Intel® Core™ i5-3450 processor (4C/4T, 3.1GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>
Implementation	One LGA1155 socket
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000</p> <p>Core i7-3770: Intel HD Graphics 4000</p> <p>Core i5-3450/3470/3550: Intel HD Graphics 2500</p> <p>Core i3-2120/2130: Intel HD Graphics 2000</p> <p>Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset
Onboard SAS	None
Chipset	Intel C216 Chipset
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector
	(Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors)
	PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Realtek® ALC662 codec
Speaker	Internal speaker for business audio
Ethernet	One onboard gigabit ethernet, Intel 82579
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet

Tower



- Raven black color; metal case
- 6.9"W x 17.0"D x 16.7"H (with handle)
- 175mm W x 431mm D x 425mm H
- 27.56 lb (12.5kg) max configuration
- 25-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Recessed power button

Bay 1: 5.25", 1.6" high, access, for optical
 Bay 2: 5.25", 1.6" high, access, open
 Bay 3: 3.5", 1" high, access, for media reader
 Bay 4: 3.5", 1" high, internal, for disk
 Bay 5: 3.5", 1" high, internal, for disk

Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)
 * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models

Slot 2: half-length, full-height, PCIe 2.0 x1
 Slot 3: half-length, full-height, 32-bit PCI 2.3
 Slot 4: half-length, full-height, 32-bit PCI 2.3

Intel AMT
 Intel AMT supported on model(s) with Xeon processor

Preloaded operating system²⁰

- Windows® 7 Professional 64

Preloaded applications⁵ (only some listed)

- Rescue and Recovery®
- Norton® Internet Security (30 days of virus definitions)
- Adobe® Reader®
- Microsoft® Office 2013 preloaded; purchase product key to activate
- Corel® WinDVD® (DVD±RW model(s))
- Ulead® DVD MovieFactory® (DVD±RW model(s))

SECURITY

- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

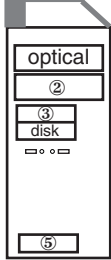
ISV certifications
 Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating
 ENERGY STAR 5.2-compliant

More compatible accessories, please see O-DEM sheet

See footnotes for important warranty information
 US model(s) announced June 5, 2012

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2555-ALU	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Intel HD 2000	No	No	Switch	No	Pro 64
2555-AMU	E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2555-ANU	E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64

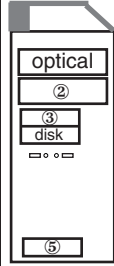
Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p>Intel 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>One LGA1155 socket</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i7-3770: Intel HD Graphics 4000 Core i5-3450/3470/3550: Intel HD Graphics 2500 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, auto-sensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	1394 Global	Chassis intrusion switch	PS/2 rear I/O	Preload OS
2555-APU	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 410	No	No	Switch	No	Win8 Pro64
2555-AQU	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 410	No	No	Switch	No	Win8 Pro64
2555-ASU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 410	No	No	Switch	No	Win8 Pro64
2555-ATU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 410	No	No	Switch	No	Win8 Pro64

Processor	Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz) Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)
Implementation	One LGA1155 socket
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported
Graphics	<p><i>Some:</i> Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i7-3770: Intel HD Graphics 4000 Core i5-3450/3470/3550: Intel HD Graphics 2500 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)</p> <p><i>Some:</i> NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W</p>
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset
Onboard SAS	None
Chipset	Intel C216 Chipset
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Realtek® ALC662 codec
Speaker	Internal speaker for business audio
Ethernet	One onboard gigabit ethernet, Intel 82579
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV

Tower



- Raven black color; metal case
- 6.9"W x 17.0"D x 16.7"H (with handle)
- 175mm W x 431mm D x 425mm H
- 27.56 lb (12.5kg) max configuration
- 25-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Recessed power button

Bay 1: 5.25", 1.6" high, access, for optical
Bay 2: 5.25", 1.6" high, access, open
Bay 3: 3.5", 1" high, access, for media reader
Bay 4: 3.5", 1" high, internal, for disk
Bay 5: 3.5", 1" high, internal, for disk

Slot 1: half-length, full-height, PCIe* x16
(75w max, near CPU)
* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models

Slot 2: half-length, full-height, PCIe 2.0 x1
Slot 3: half-length, full-height, 32-bit PCI 2.3
Slot 4: half-length, full-height, 32-bit PCI 2.3

Intel AMT
Intel AMT supported on model(s) with Xeon processor

Preloaded operating system²⁰
Some: Windows® 7 Professional 64
Some: Windows 8 Pro 64-bit

Preloaded applications⁵ (only some listed)

-Windows 7 models

- Rescue and Recovery®
- Norton™ Internet Security (30 days of virus definitions)
- Adobe® Reader®
- Microsoft® Office 2013 preloaded; purchase product key to activate
- Corel® WinDVD® (DVD±RW model(s))
- Ulead® DVD MovieFactory® (DVD±RW model(s))

-Windows 8 models

- Intel AppUp®
- Evernote®
- Norton Internet Security (30 days of virus definitions)
- Norton Studio
- Skype™
- Microsoft Office 2013 preloaded; purchase product key to activate
- Cyberlink Power2Go (DVD±RW model(s))
- Cyberlink PowerProducer (DVD±RW model(s))

SECURITY

- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

More compatible accessories, please see O-DEM sheet

See footnotes for important warranty information
US model(s) announced October 30, 2012

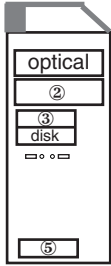
ThinkStation® E31 Tower (2555) - TopSeller (March 2013)

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-DQU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)
2555-DRU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2555-DSU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-DTU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-DUU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2555-DVU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-DWU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

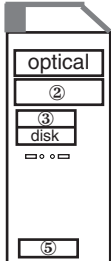
Processor	Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)	Tower  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section) <i>Some: NVIDIA® Quadro® 410,</i> PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W <i>Some: NVIDIA Quadro K600,</i> PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	Intel AMT
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	Intel AMT supported on model(s) with Xeon processor
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	Preloaded operating system²⁰ <i>Some:</i> Windows® 7 Professional 64 <i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit <i>Some:</i> Windows 8 Pro 64-bit Preloaded applications⁵ (only some listed) -Windows 7 models <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) More compatible accessories, please see O-DEM sheet

See footnotes for important warranty information
US model(s) announced March 19, 2013

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Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-DYU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-DZU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2555-E1U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2555-E2U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)
2555-E3U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2555-E4U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-E5U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)

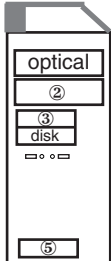
1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)		<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket		
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;		
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 		
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>		
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0		
Optical	DVD, DVD±RW, or Blu-ray, depending on model		
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>		
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset		
Onboard SAS	None		
Chipset	Intel C216 Chipset		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector <i>(Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</i> PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable		
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One onboard gigabit ethernet, Intel 82579		
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant		
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV		
ThinkVantage	Supports ThinkVantage® technologies		
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet		
		<p>Tower</p> <p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-DEM sheet</p>	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-E6U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-E7U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-E8U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2555-E9U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-EAU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 4000	No	No	Switch	Win7 Pro64(DG)
2555-EBU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 4000	No	No	Switch	Win8 Pro64
2555-ECU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64

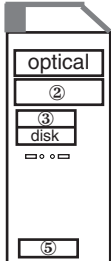
1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	Intel® Core™ i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)	Tower
Implementation	One LGA1155 socket	 <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p><i>Some:</i> Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p><i>Some:</i> NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some:</i> NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p><i>Some:</i> NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	Intel AMT
Optical	DVD, DVD±RW, or Blu-ray, depending on model	Intel AMT supported on model(s) with Xeon processor
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	Preloaded operating system²⁰
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	<p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p>
Onboard SAS	None	Preloaded applications⁵ (only some listed)
Chipset	Intel C216 Chipset	<p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	SECURITY
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	More compatible accessories, please see O-DEM sheet
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579	
Keyboard	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Mouse	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Power supply	Optical Wheel Mouse (USB connector), black	
Eco-Label and environmental certifications	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
ISV certifications	GREENGUARD® certified, RoHS-compliant, EPEAT™ Gold rating, ENERGY STAR 5.2-compliant	
ThinkVantage	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Limited Warranty	Supports ThinkVantage® technologies	
	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-EDU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-EEU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-EFU	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2555-EGU	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-EHU	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-EJU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-EKU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64

1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p>Intel AMT Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed) -Windows 7 models • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))</p> <p>-Windows 8 models • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))</p> <p>SECURITY • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Some: NVIDIA® Quadro® 410 , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: NVIDIA Quadro K600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	
Media reader	Media: 29-in-1 Media card reader on selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

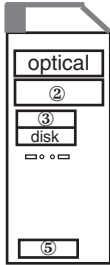
ThinkStation® E31 Tower (2555) - TopSeller (March 2013) - V

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-ELU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2555-EMU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-ENU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)
2555-EPU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2555-EQU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2555-ERU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-ESU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-ETU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64

1 Model in italics shows that this is a Global Model

2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

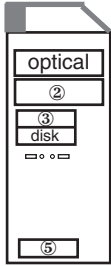
Processor	<p>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), 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 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>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Core™ WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Optical	DVD, DVD±RW, or Blu-ray, depending on model	More compatible accessories, please see O-DEM sheet
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
US model(s) announced March 19, 2013

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(DEM9-1) March 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-EUJ	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-EVU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-EWU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2555-EYU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-EZU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-F1U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-F2U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64

1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) 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)	Tower
Implementation	One LGA1155 socket	 <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Some: NVIDIA® Quadro® K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W	Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)
Optical	DVD, DVD±RW, or Blu-ray, depending on model	* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	Intel AMT
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	Intel AMT supported on model(s) with Xeon processor
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	Preloaded applications⁵ (only some listed)
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	-Windows 7 models
Speaker	Internal speaker for business audio	<ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))
Ethernet	One onboard gigabit ethernet, Intel 82579	-Windows 8 models
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	<ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	SECURITY
Mouse	Optical Wheel Mouse (USB connector), black	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	More compatible accessories, please see O-DEM sheet
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

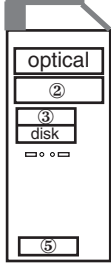
ThinkStation® E31 Tower (2555) - TopSeller (May 2013)

Personal Systems Reference (PSREF)

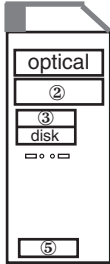
Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2555-F3U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2555-F4U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2555-F5U	Xeon E3-1245V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2555-F6U	Xeon E3-1245V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win7 Pro64(DG)
2555-F7U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2555-F8U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2555-F9U	Xeon E3-1290V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2555-FAU	Xeon E3-1290V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<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 Xeon E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache), Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon E3-1290V2 processor (4C/8T, 3.7GHz, 8MB Cache), Turbo Boost 2.0 (up to 4.1GHz), DDR3 memory controller (up to 1600MHz)</p>	Tower	<ul style="list-style-type: none"> Raven black color; metal case 6.9"W x 17.0"D x 16.7"H (with handle) 175mm W x 431mm D x 425mm H 27.56 lb (12.5kg) max configuration 25-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Recessed power button
Implementation	One LGA1155 socket		
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported 	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p>	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	<p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> Rescue and Recovery® Norton™ Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Core™ WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> Evernote® Norton Internet Security (30 days of virus definitions) Norton Studio Skype™ Microsoft Office 2013 preloaded; purchase product key to activate Cyberlink Power2Go (DVD±RW model(s)) Cyberlink PowerProducer (DVD±RW model(s)) 	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</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 Administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s) 	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	<p>More compatible accessories, please see O-DEM sheet</p>	
Onboard SAS	None		
Chipset	Intel C216 Chipset		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector		
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One onboard gigabit ethernet, Intel 82579		
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>		
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV		
ThinkVantage	Supports ThinkVantage® technologies		
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet		

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2552-15U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch		Pro 64
2552-16U	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD 2000	No	No	Switch		Pro 64
2552-23U	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD P4000	No	No	Switch		Pro 64
2552-24U	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch		Pro 64
2552-25U	Xeon E3-1230V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch		Pro 64
2552-26U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD P4000	No	No	Switch		Pro 64
2552-27U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch		Pro 64
2552-29U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch		Pro 64
2552-31U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD P4000	No	No	Switch		Pro 64
2552-32U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch		Pro 64
2552-33U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	No	Switch		Pro 64
2552-34U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No		PS/2	Pro 64

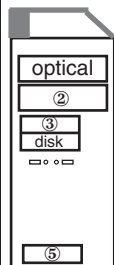
Processor	<p>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® 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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), 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 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>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000</p> <p>Core i3-2120/2130: Intel HD Graphics 2000</p> <p>Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>	<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	<p>More compatible accessories, please see O-DEM sheet</p>
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
US model(s) announced May 15, 2012

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2552-14U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB SATA		DVD±RW	Quadro 600	No	No		PS/2	Pro 64
2552-18U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch		Pro 64
2552-19U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch		Pro 64
2552-21U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	No	Switch		Pro 64
2552-22U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	No	Switch		Pro 64

Processor	<p>Intel® Core™ i5-3450 processor (4C/4T, 3.1GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>
Implementation	One LGA1155 socket
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000</p> <p>Core i7-3770: Intel HD Graphics 4000</p> <p>Core i5-3450/3470/3550: Intel HD Graphics 2500</p> <p>Core i3-2120/2130: Intel HD Graphics 2000</p> <p>Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset
Onboard SAS	None
Chipset	Intel C216 Chipset
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector
	(Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors)
	PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Realtek® ALC662 codec
Speaker	Internal speaker for business audio
Ethernet	One onboard gigabit ethernet, Intel 82579
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	280 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet

Tower



- Raven black color; metal case
- 6.9"W x 17.0"D x 16.7"H (with handle)
- 175mm W x 431mm D x 425mm H
- 27.56 lb (12.5kg) max configuration
- 25-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Recessed power button

Bay 1: 5.25", 1.6" high, access, for optical
 Bay 2: 5.25", 1.6" high, access, open
 Bay 3: 3.5", 1" high, access, for media reader
 Bay 4: 3.5", 1" high, internal, for disk
 Bay 5: 3.5", 1" high, internal, for disk

Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)
 * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models

Slot 2: half-length, full-height, PCIe 2.0 x1
 Slot 3: half-length, full-height, 32-bit PCI 2.3
 Slot 4: half-length, full-height, 32-bit PCI 2.3

Intel AMT
 Intel AMT supported on model(s) with Xeon processor

Preloaded operating system²⁰

- Windows® 7 Professional 64

Preloaded applications⁵ (only some listed)

- Rescue and Recovery®
- Norton® Internet Security (30 days of virus definitions)
- Adobe® Reader®
- Microsoft® Office 2013 preloaded; purchase product key to activate
- Corel® WinDVD® (DVD±RW model(s))
- Ulead® DVD MovieFactory® (DVD±RW model(s))

SECURITY

- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

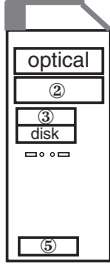
ISV certifications
 Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating
 ENERGY STAR 5.2-compliant

More compatible accessories, please see O-DEM sheet

See footnotes for important warranty information
 US model(s) announced June 5, 2012

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2552-B6U	Core i3-2130	1600MHz ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Intel HD 2000	No	No	Switch	No	Pro 64
2552-B7U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2552-B8U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64
2552-B9U	E3-1230V2	1600MHz ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2552-BAU	E3-1245V2	1600MHz ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 400	No	No	Switch	No	Pro 64
2552-BBU	E3-1275V2	1600MHz ECC	1x4GB	No	1x256GB SSD	Media	DVD±RW	Quadro 600	No	No	Switch	No	Pro 64

Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500,</p> <p>Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000,</p> <p>Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), 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 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>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p><i>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</i></p> <p><i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000</p> <p><i>Core i7-3770:</i> Intel HD Graphics 4000</p> <p><i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500</p> <p><i>Core i3-3220/3240:</i> Intel HD Graphics 2500</p> <p><i>Core i3-2120/2130:</i> Intel HD Graphics 2000</p> <p><i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see Rear ports section)</p> <p><i>Some: NVIDIA® Quadro® 400</i>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p><i>Some: NVIDIA Quadro 600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	<p>More compatible accessories, please see O-DEM sheet</p>
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-CVU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2552-CWU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)
2552-CYU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2552-CZU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)
2552-D1U	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win7 Pro64(DG)
2552-D2U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2552-D3U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)

1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

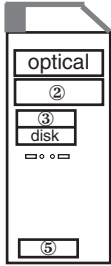
Processor	<p>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Additional memory disclaimers		
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-DEM sheet</p>	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-D4U	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win7 Pro64(DG)
2552-D5U	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win7 Pro64(DG)
2552-D6U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2552-D7U	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD P4000	No	No	Switch	Win7 Pro64(DG)
2552-D8U	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2552-D9U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2552-DAU	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)

1 Model in italics shows that this is a Global Model

2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <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 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>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579	
Keyboard	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Mouse	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Power supply	Optical Wheel Mouse (USB connector), black	
Eco-Label and environmental certifications	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
ISV certifications	GREENGUARD® certified	
ThinkVantage	RoHS-compliant	
Limited Warranty	EPEAT™ Gold rating	
	ENERGY STAR 5.2-compliant	
	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
	Supports ThinkVantage® technologies	
	3-year parts and labor, more Lenovo® services see S-TS sheet	
	More compatible accessories, please see O-DEM sheet	

See footnotes for important warranty information
US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-DBU	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2552-DCU	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Intel HD 2000	No	No	Switch	Win7 Pro64(DG)
2552-DDU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2552-DEU	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x256GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
2552-DFU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2552-DGU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2552-DHU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64

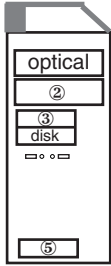
1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</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>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), 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>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Additional memory disclaimers		
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p><i>Some: NVIDIA® Quadro® 410</i>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some: NVIDIA Quadro K600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p><i>Some: NVIDIA Quadro K2000</i>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector <i>(Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</i> PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p><i>Some:</i> Windows® 7 Professional 64</p> <p><i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p><i>Some:</i> Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-DEM sheet</p>	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-DJU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2552-DKU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2552-DLU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-DMU	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-DNU	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-DPU	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2552-DQU	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64

1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p>Intel AMT Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-DRU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD 2500	No	No	Switch	Win8 Pro64
2552-DSU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-DTU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-DUU	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Intel HD P4000	No	No	Switch	Win8 Pro64
2552-DVU	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-DWU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-DYU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64

1 Model in italics shows that this is a Global Model

2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), 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>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-DEM sheet</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-DZU	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-E1U	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-E2U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64
2552-E3U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-E4U	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	Media	DVD±RW	Intel HD 2000	No	No	Switch	Win8 Pro64
2552-E5U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-E6U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64

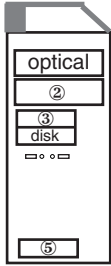
1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) 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) 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>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	<p>Intel AMT Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section) Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W Some: NVIDIA Quadro K2000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p>Preloaded applications⁵ (only some listed) -Windows 7 models • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Core!® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))</p>
Optical	DVD, DVD±RW, or Blu-ray, depending on model	<p>SECURITY • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)</p>
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p>More compatible accessories, please see O-DEM sheet</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-E7U	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-E8U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x180GB SSD	Media	DVD±RW	Quadro 410	No	No	Switch	Win8 Pro64
2552-E9U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x256GB SSD	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64

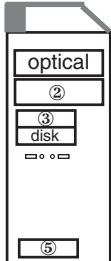
1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64, preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	Intel® Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) 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) 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)	Tower
Implementation	One LGA1155 socket	 <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk
Graphics	Some: NVIDIA® Quadro® 410 , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: NVIDIA Quadro K600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	Intel AMT
Optical	DVD, DVD±RW, or Blu-ray, depending on model	Intel AMT supported on model(s) with Xeon processor
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	Preloaded operating system²⁰
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit
Onboard SAS	None	Preloaded applications⁵ (only some listed)
Chipset	Intel C216 Chipset	-Windows 7 models <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	-Windows 8 models <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	SECURITY
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	More compatible accessories, please see O-DEM sheet
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

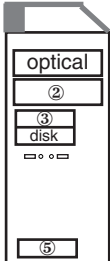
See footnotes for important warranty information
 US model(s) announced March 19, 2013

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
2552-EAU	Xeon E3-1290V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
2552-EBU	Xeon E3-1290V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-ECU	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
2552-EDU	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)

1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	Intel® Xeon® E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache), Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon E3-1290V2 processor (4C/8T, 3.7GHz, 8MB Cache), Turbo Boost 2.0 (up to 4.1GHz), DDR3 memory controller (up to 1600MHz)		<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket		
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;		
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 		
Graphics	NVIDIA® Quadro® K2000 , PCIe x16 adapter, 2GB, two DisplayPort™, one dual-link DVI-I, 51W		
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0		
Optical	DVD, DVD±RW, or Blu-ray, depending on model		
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"		
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset		
Onboard SAS	None		
Chipset	Intel C216 Chipset		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector <i>(Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</i> PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable		
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec		
Speaker	Internal speaker for business audio		
Ethernet	One onboard gigabit ethernet, Intel 82579		
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant		
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV		
ThinkVantage	Supports ThinkVantage® technologies		
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet		

Tower



- Bay 1: 5.25", 1.6" high, access, for optical
- Bay 2: 5.25", 1.6" high, access, open
- Bay 3: 3.5", 1" high, access, for media reader
- Bay 4: 3.5", 1" high, internal, for disk
- Bay 5: 3.5", 1" high, internal, for disk

- Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)
- * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models
- Slot 2: half-length, full-height, PCIe 2.0 x1
- Slot 3: half-length, full-height, 32-bit PCI 2.3
- Slot 4: half-length, full-height, 32-bit PCI 2.3

Intel AMT

Intel AMT supported on model(s) with Xeon processor

Preloaded operating system²⁰

- Some: Windows® 7 Professional 64
- Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit
- Some: Windows 8 Pro 64-bit

Preloaded applications⁵ (only some listed)

- Windows 7 models**
 - Rescue and Recovery®
 - Norton™ Internet Security (30 days of virus definitions)
 - Adobe® Reader®
 - Microsoft® Office 2013 preloaded; purchase product key to activate
 - Corel® WinDVD® (DVD±RW model(s))
 - Ulead® DVD MovieFactory® (DVD±RW model(s))
- Windows 8 models**
 - Evernote®
 - Norton Internet Security (30 days of virus definitions)
 - Norton Studio
 - Skype™
 - Microsoft Office 2013 preloaded; purchase product key to activate
 - Cyberlink Power2Go (DVD±RW model(s))
 - Cyberlink PowerProducer (DVD±RW model(s))

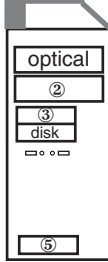
SECURITY

- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

More compatible accessories, please see O-DEM sheet

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2553-11U	Xeon E3-1240V2	1600MHz ECC	2x2GB	No	1x1TB SATA	Media	DVD±RW	Quadro 600	No	Global	Switch	PS/2	Pro 64
2553-12U	Xeon E3-1225V2	1600MHz ECC	2x2GB	No	1x1TB SATA	Media	DVD±RW	Quadro 600	No	Global	Switch	PS/2	Pro 64
2553-13U	Xeon E3-1270V2	1600MHz ECC	2x2GB	No	1x2TB SATA	Media	DVD±RW	Quadro 2000	No	Global	Switch	PS/2	Pro 64
2553-14U	Xeon E3-1275V2	1600MHz ECC	2x2GB	No	1x256GB SSD	Media	DVD±RW	Intel HD P4000	No	Global	Switch	PS/2	Pro 64
2553-15U	Xeon E3-1290V2	1600MHz ECC	2x2GB	No	1x256GB SSD	Media	DVD±RW	Quadro 2000	No	Global	Switch	PS/2	Pro 64
2553-18U	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 400	No	Global	Switch	PS/2	Pro 64
2553-21U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 600	No	Global	Switch	PS/2	Pro 64

- Part of the Global Models Plus (GMP) program with limited onsite service 3-year limited warranty

Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <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 E3-1240V2 processor (4C/8T, 3.4GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.8GHz), 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 Xeon E3-1270V2 processor (4C/8T, 3.5GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.9GHz), 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>Intel Xeon E3-1290V2 processor (4C/8T, 3.7GHz, 8MB Cache), Turbo Boost 2.0 (up to 4.1GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Additional memory disclaimers		
Graphics	<p><i>Some:</i> Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)</p> <p><i>Some:</i> NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p><i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Media reader	<i>Media:</i> 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	<p>Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector</p> <p>(Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors)</p> <p><i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable</p>	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579 STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	<p>More compatible accessories, please see O-DEM sheet</p>

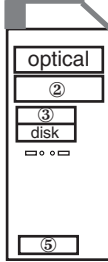
See footnotes for important warranty information
 US model(s) announced May 15 (18U/21U) or June 26 (11U/12U/13U/14U/15U), 2012

ThinkStation® E31 Tower (2553) - GMP II

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	1394 Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2553-16U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	180GB SSD+1TB SATA	Media	DVD±RW	Intel HD 4000	No	Global	Switch		Pro 64
2553-17U	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Intel HD P4000	No	Global	Switch		Pro 64
2553-19U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	Quadro 2000	No	Global	Switch	PS/2	Pro 64

- Part of the Global Models Plus (GMP) program with limited onsite service 3-year limited warranty

Processor	<p>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <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>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000</p> <p>Core i7-3770: Intel HD Graphics 4000</p> <p>Core i5-3450/3470/3550: Intel HD Graphics 2500</p> <p>Core i3-2120/2130: Intel HD Graphics 2000</p> <p>Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 2000, PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I, 62W</p>	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	<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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	<p>More compatible accessories, please see O-DEM sheet</p>
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	

See footnotes for important warranty information
US model(s) announced June 5 (19U) or June 26 (16U/17U), 2012

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(DEM2-3) July 2012

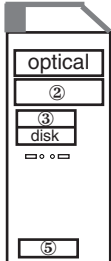
Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Preload OS
2553-A4U	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	No	DVD±RW	Quadro 410	No	Global	Switch	No	Win8 Pro64
Processor	Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Implementation One LGA1155 socket												
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets; Additional memory disclaimers <ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported 												
Graphics	Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; <i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000 <i>Core i7-3770:</i> Intel HD Graphics 4000 <i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500 <i>Core i3-2120/2130:</i> Intel HD Graphics 2000 <i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see Rear ports section) Some: VIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W												
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0												
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"												
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset												
Onboard SAS	None												
Chipset	Intel C216 Chipset												
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)												
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable												
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear												
Audio	High Definition (HD) Audio, Realtek® ALC662 codec												
Speaker	Internal speaker for business audio												
Ethernet	One onboard gigabit ethernet, Intel 82579												
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant												
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black												
Mouse	Optical Wheel Mouse (USB connector), black												
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified												
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet												
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant												
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV												
								Tower <ul style="list-style-type: none"> Raven black color; metal case 6.9"W x 17.0"D x 16.7"H (with handle) 175mm W x 431mm D x 425mm H 27.56 lb (12.5kg) max configuration 25-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p>					
								Intel AMT Intel AMT supported on model(s) with Xeon processor					
								Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 8 Pro 64-bit Preloaded applications⁵ (only some listed) -Windows 7 models <ul style="list-style-type: none"> Rescue and Recovery® Norton™ Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Corel® WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models <ul style="list-style-type: none"> Intel AppUp® Evernote® Norton Internet Security (30 days of virus definitions) Norton Studio Skype™ Microsoft Office 2013 preloaded; purchase product key to activate Cyberlink Power2Go (DVD±RW model(s)) Cyberlink PowerProducer (DVD±RW model(s)) 					
								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 Administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s) 					
More compatible accessories, please see O-DEM sheet													

See footnotes for important warranty information
 US model(s) announced October 30, 2012

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	PS/2 rear I/O	Chassis intrusion switch	Preload OS ²
<i>2553-A7U</i>	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win7 Pro64(DG)
<i>2553-A8U</i>	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K2000	No	No	Switch	Win8 Pro64
<i>2553-A9U</i>	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win7 Pro64(DG)
<i>2553-AAU</i>	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB 3.5" SATA	Media	DVD±RW	Quadro K600	No	No	Switch	Win8 Pro64

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

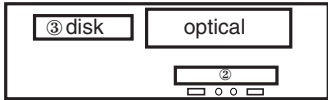
Processor	Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache) , integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache) , Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 17.0"D x 16.7"H (with handle) • 175mm W x 431mm D x 425mm H • 27.56 lb (12.5kg) max configuration • 25-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p>Intel AMT Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed) -Windows 7 models • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))</p> <p>SECURITY • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Some: NVIDIA® Quadro® K600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W Some: NVIDIA Quadro K2000 , PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, Climate Savers™ Computing Bronze, 80 PLUS® Bronze qualified	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

See footnotes for important warranty information
 US model(s) announced March 19, 2013

ThinkStation® E31 SFF (3695) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory Pre-conf DIMMs	RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Win7 preload
3695-G3U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x250GB SATA	Media DVD±RW		No	Intel HD 2000	No	No	No	No	Stand	Pro 64
3695-G4U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW		No	Quadro 400	No	No	No	No	Stand	Pro 64
3695-G5U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW		No	Quadro 600	No	No	No	No	Stand	Pro 64
3695-G6U	Core i3-2130	1600MHz Non-ECC	1x4GB	No	1x1TB SATA	Media DVD±RW		No	Quadro 600	No	No	No	No	Stand	Pro 64
3695-H5U	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x250GB SATA	Media DVD±RW		No	Intel HD P4000	No	No	No	No	Stand	Pro 64
3695-H6U	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW		No	Quadro 400	No	No	No	No	Stand	Pro 64
3695-H7U	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x1TB SATA	Media DVD±RW		No	Quadro 600	No	No	No	No	Stand	Pro 64

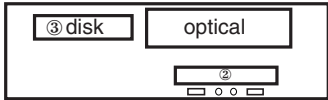
Processor	<p>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® 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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Small Desktop</p>  <ul style="list-style-type: none"> Raven black color; metal case 13.35"W x 15.0"D x 3.93"H 339mm W x 381.1mm D x 99.7mm H 16.53 lb (7.5kg) max configuration 11-liter Toolless top cover removal Toolless disk and optical drive removal Toolless adapter retention Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenosing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> Rescue and Recovery® Norton® Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Corel® WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> Security chip (see information on left) Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) Power-on password Administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

See footnotes for important warranty information
 US model(s) announced May 15, 2012

ThinkStation® E31 SFF (3695) - TopSeller (June 5, 2012)

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory Pre-conf DIMMs	RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Win7 preload
3695-G7U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x250GB SATA	Media DVD±RW		No	Intel HD 2500	No	No	No	No	Stand	Pro 64
3695-G8U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW		No	Quadro 400	No	No	No	No	Stand	Pro 64
3695-G9U	Core i5-3450	1600MHz Non-ECC	1x4GB	No	1x1TB SATA	Media DVD±RW		No	Quadro 600	No	No	No	No	Stand	Pro 64
3695-H1U	Core i5-3550	1600MHz Non-ECC	2x4GB	No	1x500GB SATA	Media DVD±RW		No	Intel HD 2500	No	No	No	No	Stand	Pro 64
3695-H2U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW		No	Intel HD 4000	No	No	No	No	Stand	Pro 64
3695-H3U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW		No	Quadro 400	No	No	No	No	Stand	Pro 64
3695-H4U	Core i7-3770	1600MHz Non-ECC	2x4GB	No	1x1TB SATA	Media DVD±RW		No	Quadro 600	No	No	No	No	Stand	Pro 64

Processor	<p>Intel® Core™ i5-3450 processor (4C/4T, 3.1GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p><i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000 <i>Core i7-3770:</i> Intel HD Graphics 4000 <i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500 <i>Core i3-2120/2130:</i> Intel HD Graphics 2000 <i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579	
Keyboard	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Mouse	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Vertical Stand	Optical Wheel Mouse (USB connector), black	
Power supply	Some: Vertical stand with retractable tongue for vertical orientation	
Limited Warranty	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
	3-year parts and labor, more Lenovo® services see S-TS sheet	
	<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>	

See footnotes for important warranty information
 US model(s) announced June 5, 2012

ThinkStation® E31 SFF (3695) - TopSeller (October 2012)

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory Pre-conf DIMMs	RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Preload OS
3695-P8U	Core i3-2120	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW	No	No	Quadro 410	No	No	Switch	No	Stand	Win8 Pro64
3695-P9U	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW	No	No	Quadro 410	No	No	Switch	No	Stand	Win8 Pro64
3695-PAU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW	No	No	Quadro 410	No	No	Switch	No	Stand	Win8 Pro64
3695-PBU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media DVD±RW	No	No	Quadro 410	No	No	Switch	No	Stand	Win8 Pro64

Processor	<p>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i7-3770: Intel HD Graphics 4000 Core i5-3450/3470/3550: Intel HD Graphics 2500 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)</p> <p>Some: VIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64 Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Intel AppUp® • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>

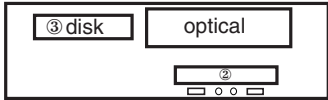
See footnotes for important warranty information
 US model(s) announced October 30, 2012

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 (ROC-4-1) November 2012

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3695-RNU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
3695-RPU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
3695-RQU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
3695-RRU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
3695-RSU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-RTU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-RUU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64
3695-RVU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-RWU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-RYU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)

1 Model in italics shows that this is a Global Model

2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)	Small Desktop  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section) Some: NVIDIA® Quadro® 410 , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: NVIDIA Quadro K600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit Preloaded applications⁵ (only some listed) -Windows 7 models • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	SECURITY • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	More compatible accessories, please see O-ROC sheet
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

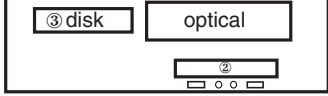
ThinkStation® E31 SFF (3695) - TopSeller (March 2013) - II

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adpdr	Chassis intrusion switch	Vertical stand	Preload OS ²
3695-RZU	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
3695-QAU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro 410	No	Switch	Stand	Win7 Pro64(DG)
3695-QBU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-QCU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
3695-QDU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 4000	No	Switch	Stand	Win7 Pro64(DG)
3695-QEU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-QFU	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD P4000	No	Switch	Stand	Win7 Pro64(DG)
3695-QGU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-QHU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Small Desktop</p>  <ul style="list-style-type: none"> Raven black color; metal case 13.35"W x 15.0"D x 3.93"H 339mm W x 381.1mm D x 99.7mm H 16.53 lb (7.5kg) max configuration 11-liter Toolless top cover removal Toolless disk and optical drive removal Toolless adapter retention Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p><i>Some: NVIDIA® Quadro® 410</i>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some: NVIDIA Quadro K600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adpdr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p>Preloaded operating system²⁰</p> <p><i>Some:</i> Windows® 7 Professional 64 <i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit <i>Some:</i> Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> Rescue and Recovery® Norton™ Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Corel® WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> Evernote® Norton Internet Security (30 days of virus definitions) Norton Studio Skype™ Microsoft Office 2013 preloaded; purchase product key to activate Cyberlink Power2Go (DVD±RW model(s)) Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> Security chip (see information on left) Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) Power-on password Administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>

ThinkStation® E31 SFF (3695) - TopSeller (March 2013) - III

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3695-QJU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-QKU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-QLU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-QMU	Core i5-3470	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
3695-QNU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
3695-QPU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64
3695-QQU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-QRU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 4000	No	Switch	Stand	Win8 Pro64
3695-QSU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<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>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p>	<p>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>

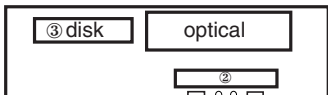
ThinkStation® E31 SFF (3695) - TopSeller (March 2013) - IV

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3695-QTU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-QUU	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD P4000	No	Switch	Stand	Win8 Pro64
3695-QVU	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64
3695-QWU	Xeon E3-1230V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-QYU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	No	Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <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 E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p><i>Some:</i> Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p><i>Some:</i> NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some:</i> NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p>Preloaded operating system²⁰</p> <p><i>Some:</i> Windows® 7 Professional 64</p> <p><i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p><i>Some:</i> Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>

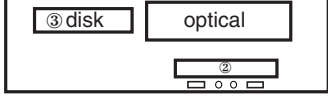
ThinkStation® E31 SFF (3695) - TopSeller (May 2013)

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3695-T2U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3695-T3U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3695-T4U	Xeon E3-1245V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64
3695-T5U	Xeon E3-1245V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro 410	No	Switch	Stand	Win7 Pro64(DG)

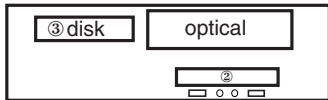
¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	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) Intel Xeon E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache) , Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz)	Small Desktop
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported 	<ul style="list-style-type: none"> Raven black color; metal case 13.35"W x 15.0"D x 3.93"H 339mm W x 381.1mm D x 99.7mm H 16.53 lb (7.5kg) max configuration 11-liter Toolless top cover removal Toolless disk and optical drive removal Toolless adapter retention Recessed power button
Graphics	<p><i>Some:</i> Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p><i>Some:</i> NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 37W</p> <p><i>Some:</i> NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk</p> <p>Bay 2: 3.5", 0.5" high, access, for media reader</p> <p>Bay 3: 3.5", 1" high, internal, for disk</p>
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	Slot 2: Low Profile, PCIe 2.0 x1
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	Slot 3: Low Profile, 32-bit PCI 2.3
Onboard SAS	None	Slot 4: Low Profile, 32-bit PCI 2.3
Chipset	Intel C216 Chipset	Preloaded operating system²⁰
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	<i>Some:</i> Windows® 7 Professional 64
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	<i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<i>Some:</i> Windows 8 Pro 64-bit
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	Preloaded applications⁵ (only some listed)
Speaker	Internal speaker for business audio	-Windows 7 models
Ethernet	One onboard gigabit ethernet, Intel 82579	<ul style="list-style-type: none"> Rescue and Recovery® Norton™ Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Corel® WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s))
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	-Windows 8 models
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	<ul style="list-style-type: none"> Evernote® Norton Internet Security (30 days of virus definitions) Norton Studio Skype™ Microsoft Office 2013 preloaded; purchase product key to activate Cyberlink Power2Go (DVD±RW model(s)) Cyberlink PowerProducer (DVD±RW model(s))
Mouse	Optical Wheel Mouse (USB connector), black	SECURITY
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	<ul style="list-style-type: none"> Security chip (see information on left) Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) Power-on password Administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s)
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	More compatible accessories, please see O-ROC sheet
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

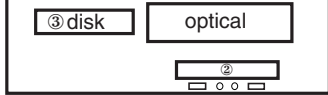
ThinkStation® E31 SFF (3690)

Type-model	Processor	Memory (MHz/ECC)	Memory Pre-conf DIMMs	RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Win7 preload
3690-E6U	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Quadro 400	No	No	No	No	No	Pro 64
3690-E9U	Xeon E3-1230V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Quadro 400	No	No	No	No	No	Pro 64
3690-F1U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Intel HD P4000	No	No	No	No	No	Pro 64
3690-F2U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Quadro 400	No	No	No	No	No	Pro 64
3690-F3U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x1TB SATA	Media	DVD±RW	No	Quadro 600	No	No	No	No	No	Pro 64
3690-F4U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Intel HD P4000	No	No	No	No	No	Pro 64
3690-F5U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Quadro 400	No	No	No	No	No	Pro 64
3690-F6U	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x1TB SATA	Media	DVD±RW	No	Quadro 600	No	No	No	No	No	Pro 64

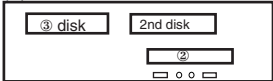
Processor	<p>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Intel Xeon 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 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>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

See footnotes for important warranty information
 US model(s) announced May 15, 2012

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Win7 preload
3690-E7U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Quadro 400	No	No	No	No	No	Pro 64
3690-E8U	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x1TB SATA	Media	DVD±RW	No	Quadro 600	No	No	No	No	No	Pro 64

Processor	Intel® Core™ i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)	Small Desktop 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	<ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p align="center">Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p align="center">Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p align="center">Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p align="center">ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>


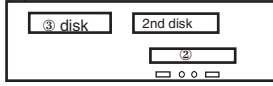
See footnotes for important warranty information
 US model(s) announced June 5, 2012

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand
3690-KQU	Core i3-2130	1600MHz ECC	1x4GB	No	1x128GB SSD	No	Slim DVD±RW	2nd	Intel HD 2000	No	No	Switch	No	Stand
3690-KRU	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 400	No	No	Switch	No	Stand
3690-KSU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 600	No	No	Switch	No	Stand
3690-KTU	Xeon E3-1230V2	1600MHz ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 400	No	No	Switch	No	Stand
3690-KUU	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 400	No	No	Switch	No	Stand
3690-KVU	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x256GB SSD	No	Slim DVD±RW	2nd	Quadro 600	No	No	Switch	No	Stand
3690-KWU	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	No		2nd	Intel HD 2000	No	No	Switch	No	Stand
3690-KYU	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x1TB SATA	No		2nd	Quadro 400	No	No	Switch	No	Stand
3690-KZU	Xeon E3-1230V2	1600MHz ECC	1x4GB	No	1x500GB SATA	No		2nd	Quadro 400	No	No	Switch	No	Stand
3690-J1U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x1TB SATA	No		2nd	Quadro 600	No	No	Switch	No	Stand
Processor	Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) 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) 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)								Small Desktop (1) Optional 1.6" high optical (2) Slim optical + 2nd disk  (3) 2nd disk  Bay 1: 5.25", 1.6" high, supports one of the following: (1) optional 5.25", 1.6" high optical, access (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal) (3) 3.5" 2nd disk drive bay, internal Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models) Bay 3: 3.5", 1" high, internal, for disk drive Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3 • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button					
Implementation	One LGA1155 socket													
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets; • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported													
Additional memory disclaimers	• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported													
Graphics	<i>Some:</i> Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i7-3770: Intel HD Graphics 4000 Core i5-3450/3470/3550: Intel HD Graphics 2500 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section) <i>Some:</i> NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W <i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W													
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0													
Optical	<i>Some:</i> DVD±RW, SATA, slim													
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"													
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)													
Onboard SAS	None													
Chipset	Intel C216 Chipset													
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)													
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) <i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable													
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear													
Audio	High Definition (HD) Audio, Realtek® ALC662 codec													
Speaker	Internal speaker for business audio													
Ethernet	One onboard gigabit ethernet, Intel 82579													
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant								Preloaded operating system²⁰ <i>Some:</i> Windows® 7 Professional 64 <i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit <i>Some:</i> Windows 8 Pro 64-bit Preloaded applications⁵ (only some listed) -Windows 7 models • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models • Norton Internet Security (30 days of virus definitions) • Norton Studio • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))					
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black								SECURITY • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on and administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)					
Mouse	Optical Wheel Mouse (USB connector), black													
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation													
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified								More compatible accessories, please see O-ROC sheet					
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet													
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV													
Intel AMT	Intel AMT supported on model(s) with Xeon processor													

See footnotes for important warranty information
 US model(s) announced August 14, 2012

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3690-QGU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-QHU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3690-QJU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3690-QKU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-QLU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		Media	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-QMU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		Media	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3690-QNU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	2nd		Slim DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)


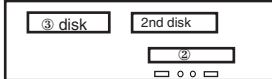
1 Model in italics shows that this is a Global Model
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<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>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), 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 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>Small Desktop</p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p>  <p>(3) 2nd disk</p> 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported 	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p>Bay 1: 5.25", 1.6" high, supports one of the following:</p> <ul style="list-style-type: none"> (1) optional 5.25", 1.6" high optical, access (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal) (3) 3.5" 2nd disk drive bay, internal <p>Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)</p> <p>Bay 3: 3.5", 1" high, internal, for disk drive</p>
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	Slot 2: Low Profile, PCIe 2.0 x1
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	Slot 3: Low Profile, 32-bit PCI 2.3
Onboard SAS	None	Slot 4: Low Profile, 32-bit PCI 2.3
Chipset	Intel C216 Chipset	<ul style="list-style-type: none"> Raven black color; metal case 13.35"W x 15.0"D x 3.93"H 339mm W x 381.1mm D x 99.7mm H 16.53 lb (7.5kg) max configuration 11-liter Toolless top cover removal Toolless disk and optical drive removal Toolless adapter retention Recessed power button
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	<p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p>
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> Rescue and Recovery® Norton™ Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Corel® WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> Norton Internet Security (30 days of virus definitions) Norton Studio Microsoft Office 2013 preloaded; purchase product key to activate Cyberlink Power2Go (DVD±RW model(s)) Cyberlink PowerProducer (DVD±RW model(s))
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	<p>SECURITY</p> <ul style="list-style-type: none"> Security chip (see information on left) Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) Power-on and administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s)
		More compatible accessories, please see O-ROC sheet

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3690-QPU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	2nd	No	Slim DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
3690-QQU	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	2nd	No	Slim DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
3690-QRU	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x128GB SSD	2nd	No	Slim DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
3690-QSU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	2nd	No	Slim DVD±RW	Quadro 410	No	Switch	Stand	Win7 Pro64(DG)
3690-QTU	Core i5-3570	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	2nd	No	Slim DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64
3690-QUU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	2nd	No	Slim DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-QVU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	2nd	No	Slim DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64

1 Model in italics shows that this is a Global Model

2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

<p>Processor</p> <p>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache), integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz) Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache), integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>Implementation One LGA1155 socket</p> <p>Memory 32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs Mixing of ECC and non-ECC memory is not supported <p>Graphics</p> <p><i>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</i> <i>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</i> <i>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</i></p> <p>Media reader Media: 29-in-1 Media card reader, slim, internal USB 2.0</p> <p>Optical DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model</p> <p>SATA drive(s) 3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p> <p>Onboard SATA Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)</p> <p>Onboard SAS None</p> <p>Chipset Intel C216 Chipset</p> <p>Front ports Two USB 2.0, microphone (3.5mm), headphone (3.5mm)</p> <p>Rear ports Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</p> <p>IEEE 1394 adptr No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear</p> <p>Audio High Definition (HD) Audio, Realtek® ALC662 codec</p> <p>Speaker Internal speaker for business audio</p> <p>Ethernet One onboard gigabit ethernet, Intel 82579</p> <p>Security chip STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant</p> <p>Keyboard Preferred Pro USB Keyboard (USB connector), 104-key, black</p> <p>Mouse Optical Wheel Mouse (USB connector), black</p> <p>Vertical Stand <i>Some: Vertical stand with retractable tongue for vertical orientation</i></p> <p>Power supply 240 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</p> <p>Limited Warranty 3-year parts and labor, more Lenovo® services see S-TS sheet</p> <p>Eco-Label and environmental certifications GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>ISV certifications See the latest list of ISV certifications at www.lenovo.com/support/ISV</p> <p>Intel AMT Intel AMT supported on model(s) with Xeon processor</p>	<p>Small Desktop</p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p>  <p>(3) 2nd disk</p>  <p>Bay 1: 5.25", 1.6" high, supports one of the following: (1) optional 5.25", 1.6" high optical, access (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal) (3) 3.5" 2nd disk drive bay, internal</p> <p>Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models) Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1</p> <p>Slot 3: Low Profile, 32-bit PCI 2.3</p> <p>Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> Raven black color; metal case 13.35"W x 15.0"D x 3.93"H 339mm W x 381.1mm D x 99.7mm H 16.53 lb (7.5kg) max configuration 11-liter Toolless top cover removal Toolless disk and optical drive removal Toolless adapter retention Recessed power button <p>Preloaded operating system²⁰</p> <p><i>Some: Windows® 7 Professional 64</i> <i>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</i> <i>Some: Windows 8 Pro 64-bit</i></p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> Rescue and Recovery® Norton™ Internet Security (30 days of virus definitions) Adobe® Reader® Microsoft® Office 2013 preloaded; purchase product key to activate Corel® WinDVD® (DVD±RW model(s)) Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> Norton Internet Security (30 days of virus definitions) Norton Studio Microsoft Office 2013 preloaded; purchase product key to activate Cyberlink Power2Go (DVD±RW model(s)) Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> Security chip (see information on left) Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) Power-on and administrator password Boot sequence control Boot without keyboard, mouse Serial port I/O control USB port disablement (front or all/individual) Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>
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Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3690-QWU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	2nd	No	Slim DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-QYU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	2nd	No	Slim DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3690-QZU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		No		Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-R1U	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		No		Quadro K600	No	Switch	Stand	Win8 Pro64

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<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 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>Small Desktop</p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p> <p>(3) 2nd disk</p> <p>Bay 1: 5.25", 1.6" high, supports one of the following: (1) optional 5.25", 1.6" high optical, access (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal) (3) 3.5" 2nd disk drive bay, internal</p> <p>Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)</p> <p>Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1</p> <p>Slot 3: Low Profile, 32-bit PCI 2.3</p> <p>Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Norton Internet Security (30 days of virus definitions) • Norton Studio • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on and administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	NVIDIA Quadro K600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

See footnotes for important warranty information
US model(s) announced March 19, 2013

ThinkStation® E31 SFF (3690) - May 2013

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
3690-R2U	Xeon E3-1245V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro 410	No	Switch	Stand	Win7 Pro64(DG)
3690-R3U	Xeon E3-1245V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro 410	No	Switch	Stand	Win8 Pro64
3690-R4U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3690-R5U	Xeon E3-1280V2	1600MHz ECC	8GBx1	No	1x1TB 3.5" SATA	No	No	DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)

¹ Model in italics shows that this is a Global Model

² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<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 Xeon E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache), Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p>Small Desktop</p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p> <p>(3) 2nd disk</p> <p>Bay 1: 5.25", 1.6" high, supports one of the following: (1) optional 5.25", 1.6" high optical, access (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal) (3) 3.5" 2nd disk drive bay, internal Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models) Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Preloaded operating system²⁰ Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Norton Internet Security (30 days of virus definitions) • Norton Studio • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on and administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>
Implementation	One LGA1155 socket	
Memory	<p>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Additional memory disclaimers	<p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Graphics	<p>Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)</p> <p>Some: NVIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 37W</p> <p>Some: NVIDIA Quadro K600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

See footnotes for important warranty information
 US model(s) announced May 21, 2013

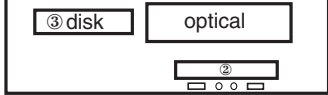
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 (ROC7-2) June 2013

ThinkStation® E31 SFF (3691) - GMP

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Win7 preload
3691-B2U	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	Media	DVD±RW	No	Intel HD 2000	No	Global	No	No	No	Pro 64
3691-B3U	Xeon E3-1225V2	1600MHz ECC	1x4GB	No	1x1TB SATA	Media	DVD±RW	No	Intel HD P4000	No	Global	No	No	No	Pro 64

- Part of the Global Models Plus (GMP) program with limited onsite service 3-year limited warranty

Processor	Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache) , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) 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)	Small Desktop  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Intel HD Graphics in processor, uses main memory, can work along with discrete graphics to support multi-display; Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

See footnotes for important warranty information
US model(s) announced May 15, 2012

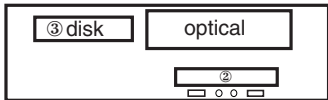
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(ROC1-3) May 2012

ThinkStation® E31 SFF (3691) - GMP (October 2012)

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory Pre-conf DIMMs RAID	Media Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Preload OS
3691-AAU	Core i3-2130	1600MHz ECC	1x4GB No	1x500GB SATA	No	DVD±RW	No	Quadro 410	No Global	Switch	No	Stand	Win8 Pro64

- Part of the Global Models Plus (GMP) program with limited onsite service 3-year limited warranty

Processor	Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)	Small Desktop  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported
Additional memory disclaimers		
Graphics	Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; <i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000 <i>Core i7-3770:</i> Intel HD Graphics 4000 <i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500 <i>Core i3-3220/3240:</i> Intel HD Graphics 2500 <i>Core i3-2120/2130:</i> Intel HD Graphics 2000 <i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see Rear ports section) Some: VIDIA® Quadro® 410, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W	
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	<ul style="list-style-type: none"> Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<i>250GB/500GB/1TB/2TB/3TB SATA:</i> SATA 6.0Gb/s, 7200 rpm, 3.5" <i>150GB/300GB/600GB SATA:</i> SATA 6.0Gb/s, 10000 rpm, 2.5" <i>128GB/180GB/256GB SSD:</i> Solid State Drive, SATA 6.0Gb/s, 2.5"	<ul style="list-style-type: none"> Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	<p align="center">Intel AMT</p> Intel AMT supported on model(s) with Xeon processor
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	<p align="center">Preloaded operating system²⁰</p> Some: Windows® 7 Professional 64 Some: Windows 8 Pro 64-bit <p align="center">Preloaded applications⁵ (only some listed)</p> - Windows 7 models • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) - Windows 8 models • Intel AppUp® • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) <i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	More compatible accessories, please see O-ROC sheet
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	

See footnotes for important warranty information
 US model(s) announced October 30, 2012

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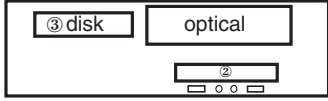
ThinkStation® E31 SFF (3691) - GMP (February 2013)

Personal Systems Reference (PSREF)

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Preload OS
3691-C4U	Xeon E3-1270V2	1600MHz Non-ECC	2x4GB	No	1x180GB SSD	Media	DVD±RW	No	Quadro 600	No	Global	Switch	No	Win7 Pro64
3691-C5U	Xeon E3-1270V2	1600MHz Non-ECC	2x4GB	No	1x180GB SSD	Media	DVD±RW	No	Quadro 410	No	Global	Switch	No	Win7 Pro64(DG)*

- Part of the Global Models Plus (GMP) program with limited onsite service 3-year limited warranty

* Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	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)	Small Desktop 
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;	<ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	<i>Some:</i> NVIDIA® Quadro® 410 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W <i>Some:</i> NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W	Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	Intel AMT Intel AMT supported on model(s) with Xeon processor Preloaded operating system²⁰ <i>Some:</i> Windows® 7 Professional 64 <i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit <i>Some:</i> Windows 8 Pro 64-bit Preloaded applications⁵ (only some listed) -Windows 7 models <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) -Windows 8 models <ul style="list-style-type: none"> • Intel AppUp® • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s))
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	More compatible accessories, please see O-ROC sheet
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) <i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	

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

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(ROC3-3) February 2013

ThinkStation® E31 SFF (3691) - GMP (March 2013)

Personal Systems Reference (PSREF)

Type-model ¹	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS ²
<i>3691-C6U</i>	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
<i>3691-C7U</i>	Core i3-3220	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
<i>3691-C8U</i>	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win8 Pro64
<i>3691-C9U</i>	Core i3-3240	1600MHz Non-ECC	1x4GB	No	1x500GB 3.5"	No	Media	DVD±RW	Intel HD 2500	No	Switch	Stand	Win7 Pro64(DG)
<i>3691-CAU</i>	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Intel HD P4000	No	Switch	Stand	Win7 Pro64(DG)
<i>3691-CBU</i>	Xeon E3-1225V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"	No	Media	DVD±RW	Intel HD P4000	No	Switch	Stand	Win8 Pro64

¹ Model in italics shows that this is a Global Model

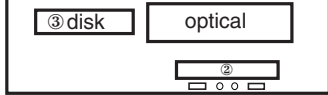
² Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<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>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache), integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <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>Small Desktop</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see Processor section, connector information please see Rear ports section)	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosening, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at www.lenovo.com/support/ISV	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <p>Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p> <p>Preloaded applications⁵ (only some listed)</p> <p>-Windows 7 models</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>-Windows 8 models</p> <ul style="list-style-type: none"> • Evernote® • Norton Internet Security (30 days of virus definitions) • Norton Studio • Skype™ • Microsoft Office 2013 preloaded; purchase product key to activate • Cyberlink Power2Go (DVD±RW model(s)) • Cyberlink PowerProducer (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>More compatible accessories, please see O-ROC sheet</p>

See footnotes for important warranty information
US model(s) announced March 19, 2013

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(ROC4-3) March 2013

Type-model	Processor	Memory (MHz/ECC)	Memory Pre-conf DIMMs	RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand	Win7 preload
3688-B7U	Core i7-3770	1600MHz Non-ECC	2x4GB	No	1x1TB SATA	Media	DVD±RW	No	Quadro 600	No	No	No	No	No	Pro 64

Processor	Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache) , integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)	Small Desktop  <ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button
Implementation	One LGA1155 socket	
Memory	32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC , four 240-pin DIMM sockets;	<ul style="list-style-type: none"> • Raven black color; metal case • 13.35"W x 15.0"D x 3.93"H • 339mm W x 381.1mm D x 99.7mm H • 16.53 lb (7.5kg) max configuration • 11-liter • Toolless top cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Recessed power button <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk Bay 2: 3.5", 0.5" high, access, for media reader Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs • Mixing of ECC and non-ECC memory is not supported 	
Graphics	NVIDIA® Quadro® 600 , PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W	
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<i>250GB/500GB/1TB/2TB/3TB SATA:</i> SATA 6.0Gb/s, 7200 rpm, 3.5" <i>150GB/300GB/600GB SATA:</i> SATA 6.0Gb/s, 10000 rpm, 2.5" <i>128GB/180GB/256GB SSD:</i> Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	Intel C216 Chipset	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) <i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosening, 85% PSU, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Limited Warranty	1-year parts and labor, more Lenovo® services see S-TS sheet	
		<p>Intel AMT</p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> • Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s)) <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

See footnotes for important warranty information
 US model(s) announced June 5, 2012

Partial list of accessories supported on ThinkStation E31 Tower

Memory⁵³	
2GB PC3-12800 DDR3-1600 non-ECC UDIMM ⁵⁴	0A65728
4GB PC3-12800 DDR3-1600 non-ECC UDIMM	0A65729
8GB PC3-12800 DDR3-1600 non-ECC UDIMM	0A65730
2GB PC3-12800 DDR3-1600 ECC UDIMM	0B47376
4GB PC3-12800 DDR3-1600 ECC UDIMM	0B47377
8GB PC3-12800 DDR3-1600 ECC UDIMM	0B47378
2GB PC3-10600 DDR3-1333 ECC UDIMM	43R2033
4GB PC3-10600 DDR3-1333 ECC UDIMM	57Y4138
8GB PC3-10600 DDR3-1333 ECC UDIMM	0A65718

More information on memory and processor configuration, operation and limitation, please visit:

www.lenovo.com/support/thinkstationaccessories

Optical	
DVD-ROM DL SATA1.5Gb/s 16X-48X Max ⁴	41N5618
Lenovo® Super Multi-Burner SATA Drive	0A65618
Blu-ray™ Burner SATA1.5Gb/s	45K1675

Storage and removable storage	
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918
ThinkStation 180GB Solid State Drive	0B47308
USB 2.0 Portable 500GB Hard Disk	45K1690

Keyboard	
Preferred Pro USB Keyboard	73P5220
Enhanced Performance USB Keyboard	73P2620
Lenovo USB Fingerprint Keyboard	73P4730
Lenovo USB Smartcard Keyboard	51J0155
Ultraslim Plus Wireless Keyboard and Mouse ⁵²	0A34032

More information at www.lenovo.com/support/keyboards

Mouse	
Lenovo Optical Mouse (USB)	06P4069
Lenovo ScrollPoint Mouse (USB, Optical)	31P7405
Lenovo Laser Mouse (USB)	41U3074
Lenovo Wireless Laser Mouse ⁵²	0A36188

More information at www.lenovo.com/support/mice

Monitors - ThinkVision®	
L1711p 17" (VGA, DVI-D)	5047HB2
LT1952p Wide 19" (VGA, DP, DVI-D) ⁶⁹	2448MB6
L2250p Wide 22" (VGA, DVI-D)	2572HB6
L2251x Wide 22" (VGA, DP)	2578HB6
LT2252p Wide 22" (VGA, DP, DVI-D) ⁶⁹	2572MB6
LT2452p Wide 24" (VGA, DP, DVI-D) ⁶⁹	4420MB2

More information at www.lenovo.com/support/monitors

Monitor accessories⁴⁶	
Kensington® MicroSaver® Cable Lock	73P2582
Kensington Twin Head Cable Lock	45K1620

More information at www.lenovo.com/support/monitoraccessories

Graphics	
DisplayPort™ to Single-link DVI-D Cable ⁵⁰	45J7915
DisplayPort to DisplayPort Monitor Cable ⁵⁰	0A36537
NVIDIA® NVS™ 300 512MB DMS59 ⁶⁵	0A36528
NVIDIA NVS 310 512MB	0B47074
NVIDIA NVS 510 2GB Graphics Card by Lenovo	0B47077
NVIDIA Quadro 1GB 600	0A36183
NVIDIA Quadro 1GB 2000	57Y4479

More information at www.lenovo.com/support/graphiccards

Security	
Kensington MicroSaver Cable Lock	73P2582
Kensington Twin Head Cable Lock	45K1620
Lenovo Security Cable Lock	57Y4303
USB Gemplus GemPC Smart Card Reader	41N3040

⁴⁶ Compatible on selected Lenovo and ThinkVision monitors.

⁵⁰ Attaches to selected DisplayPort graphics cards.

⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

⁵⁴ Actual memory operating speed depend on processor memory controller speed, installed memory speed, and quantity of memory DIMMs.

⁶⁵ Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.

⁶⁹ DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).

For more information on accessories:

www.lenovo.com/accessories

Purchase Lenovo accessories

www.lenovo.com/support/accessories

Product specifications on Lenovo Support

www.lenovo.com/accessoriesguide

Option Compatibility Matrix (OCM) and accessory brochures

www.lenovoquickpick.com

An Options Compatibility Configurator for Lenovo systems

Partial list of accessories supported on ThinkStation E31 SFF

Memory⁵³ 2GB PC3-12800 DDR3-1600 non-ECC UDIMM ⁵⁴ 0A65728 4GB PC3-12800 DDR3-1600 non-ECC UDIMM 0A65729 8GB PC3-12800 DDR3-1600 non-ECC UDIMM 0A65730 2GB PC3-12800 DDR3-1600 ECC UDIMM 0B47376 4GB PC3-12800 DDR3-1600 ECC UDIMM 0B47377 8GB PC3-12800 DDR3-1600 ECC UDIMM 0B47378 2GB PC3-10600 DDR3-1333 ECC UDIMM 43R2033 4GB PC3-10600 DDR3-1333 ECC UDIMM 57Y4138 8GB PC3-10600 DDR3-1333 ECC UDIMM 0A65718 More information on memory and processor configuration, operation and limitation, please visit: www.lenovo.com/support/thinkstationaccessories		
Optical DVD-ROM DL SATA1.5Gb/s 16X-48X Max ⁴ 41N5618 Lenovo® Super Multi-Burner SATA Drive 0A65618 Blu-ray™ Burner SATA1.5Gb/s 45K1675		
Storage and removable storage Lenovo 500GB 7200 rpm Serial ATA Hard Drive 43R1990 Lenovo 1TB 7200 rpm Serial ATA Hard Drive 45J7918 ThinkStation 180GB Solid State Drive 0B47308		
Keyboard Preferred Pro USB Keyboard 73P5220 Enhanced Performance USB Keyboard 73P2620 Lenovo USB Fingerprint Keyboard 73P4730 Lenovo USB Smartcard Keyboard 51J0155 Ultraslim Plus Wireless Keyboard and Mouse ⁵² 0A34032 More information at www.lenovo.com/support/keyboards		
Mouse Lenovo Optical Mouse (USB) 06P4069 Lenovo ScrollPoint Mouse (USB, Optical) 31P7405 Lenovo Laser Mouse (USB) 41U3074 Lenovo Wireless Laser Mouse ⁵² 0A36188 More information at www.lenovo.com/support/mice		
Monitors - ThinkVision® L1711p 17" (VGA, DVI-D) 5047HB2 LT1952p Wide 19" (VGA, DP, DVI-D) ⁶⁹ 2448MB6 L2250p Wide 22" (VGA, DVI-D) 2572HB6 L2251x Wide 22" (VGA, DP) 2578HB6 LT2252p Wide 22" (VGA, DP, DVI-D) ⁶⁹ 2572MB6 LT2452p Wide 24" (VGA, DP, DVI-D) ⁶⁹ 4420MB2 More information at www.lenovo.com/support/monitors		
Monitor accessories⁴⁶ Kensington® MicroSaver® Cable Lock 73P2582 Kensington Twin Head Cable Lock 45K1620 More information at www.lenovo.com/support/monitoraccessories		
Graphics DisplayPort™ to Single-link DVI-D Cable ⁵⁰ 45J7915 DisplayPort to DisplayPort Monitor Cable ⁵⁰ 0A36537 NVIDIA® NVS™ 310 512MB 0B47074 NVIDIA NVS 510 2GB Graphics Card by Lenovo 0B47077 NVIDIA Quadro 1GB 600 0A36183 More information at www.lenovo.com/support/graphiccards		⁴⁶ Compatible on selected Lenovo and ThinkVision monitors. ⁵⁰ Attaches to selected DisplayPort graphics cards. ⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.
Security Kensington MicroSaver Cable Lock 73P2582 Kensington Twin Head Cable Lock 45K1620 Lenovo Security Cable Lock 57Y4303 USB Gemplus GemPC Smart Card Reader 41N3040		⁵⁴ Actual memory operating speed depend on processor memory controller speed, installed memory speed, and quantity of memory DIMMs. ⁶⁵ Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable. ⁶⁹ DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).
For more information on accessories: www.lenovo.com/accessories Purchase Lenovo accessories www.lenovo.com/support/accessories Product specifications on Lenovo Support www.lenovo.com/accessoriesguide Option Compatibility Matrix (OCM) and accessory brochures www.lenovoquickpick.com An Options Compatibility Configurator for Lenovo systems		



Lenovo ThinkStation C30



Lenovo ThinkStation C30



Lenovo ThinkStation C30



Lenovo ThinkStation C30



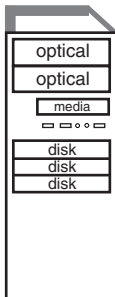
Lenovo ThinkStation C30



Lenovo ThinkStation C30

Name	Type-model	Slot x bay	Processor	GHz	Cores	Mem-ory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptry	Sound adptry	ENERGY STAR 5.0	Vista preload	Workhorse Global	Avail date
S10	6423-26U	5x6	E6750	2.66	2	2GB	1 x 250GB ² SATA		DVD±RW	1 x FX370	1394		None	Bus64	No	Jan 08
S10	6423-27U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6423-28U	5x6	E6850	3.00	2	2GB	1 x 146GB SAS		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6423-29U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700	1394	X-Fi	None	Bus64	No	Jan 08
S10	6423-31U	5x6	Q6600	2.40	4	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700	1394	X-Fi	None	Bus64	No	Jan 08
S10	6423-32U	5x6	Q6700	2.66	4	2GB	2 x 160GB SATA	1	DVD±RW	2 x NVS290			None	Bus64	No	Jan 08

- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering
- These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor	Intel® Core™ 2 Duo Processor E6750 or E6850 with dual-core, 1333MHz system bus, and 4MB L2 cache or Intel Core 2 Quad Processor Q6600 or Q6700 with quad-core, 1066MHz system bus, and 8MB L2 cache Processor uses FC-LGA6 package, one LGA775 socket		Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 16.8"H (without handle) • 175mm W x 483mm D x 426mm H • 36 lb (16.4kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation	Processor uses FC-LGA6 package, one LGA775 socket			
Memory	2GB std, 8GB max, PC3-8500 1066MHZ DDR3, ECC, dual-channel capable, four 240-pin DIMM sockets; <i>Non-italics:</i> standard memory in two sockets; two sockets available		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, std or opt disk Bay ⑥ 3.5", 1" high, internal, std or opt disk	Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe x4 (x16 mechanical) Slot 5: half-length, full-height, 32-bit PCI 2.3
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI-I via DMS-59 dongle, 21W <i>Some:</i> NVIDIA Quadro FX 370, PCIe x16 adapter, 256MB, one single-link and 1 dual-link DVI, dual DVI-I or dual VGA, 25W <i>Some:</i> NVIDIA Quadro FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W			
Media reader	9-in-1 media reader, internal USB 2.0		SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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) • Chassis intrusion switch • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
SATA disk(s)	<i>Some:</i> 160GB or 250GB, SATA 3.0Gb/s, 7200 rpm			
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R			
SATA connectors	Six SATA connectors on planar			
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive			
SAS disk	<i>Some:</i> 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm			
SAS controller	<i>Some:</i> LSI™ LSI SAS3041E-R PCIe x4 adapter, 4-port, 3.0Gb/s, RAID® 0, 1, 1E			
Chipset	Intel X38 Express Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 5 support, SMC® SCH5027D Super I/O			
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		Supports ThinkVantage® technologies RoHS-compliant 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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
Rear ports	Eight USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), five analog audio ports (line-in, microphone-in, front-out, rear-out, center/sub-out), optical S/PDIF digital out <i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear High Definition (HD) Audio, Analog Devices AD1988A codec; <i>Some:</i> Creative Sound Blaster® X-Fi, PCI adapter, high-end sound adapter			
IEEE 1394 adptry	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear			
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec; <i>Some:</i> Creative Sound Blaster® X-Fi, PCI adapter, high-end sound adapter			
Speaker	Internal speaker for business audio			
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5754 and BCM5755, 2 x PCIe x1			
Security chip	Integrated in ethernet controller BCM5755, TCG 1.2-compliant			
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	650 watts with 120mm bottom-mounted variable speed fan, universal			
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])			
Rack mount	Rack shelf support			
Preloaded operating system²⁰	Accessories			
- Microsoft® Windows® Vista® Business Edition (64-bit)	1GB PC3-8500 DDR3 ECC UDIMM	41U5251		
	2GB PC3-8500 DDR3 ECC UDIMM	41U5252		
Preloaded applications⁵	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990		
• Rescue and Recovery™	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991		
• Client Security Solution™	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
• ThinkVantage Productivity Center	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s	41N5620		
• ThinkVantage System Update	USB 2.0 Lenovo Multimedia Headset	40Y8518		
• System Migration Assistant	USB 2.0 Lenovo Webcam	40Y8519		
• Norton Internet Security™ (90 days of virus definitions)	USB 2.0 Ultra Secure Memory Key 8GB	45J5918		
• PC-Doctor™ (diagnostics)	USB 2.0 Portable Secure 320GB Hard Disk	43R2019		
• Adobe® Reader	ThinkVision® L1700p 17" Monitor	9417HE2		
• Microsoft Office 2007 Trial (60-day)	ThinkVision L1940p Wide 19" Monitor	4424HB6		
• Sonic RecordNow and Drive Letter Access (DVD±RW)	ThinkVision L2240p Wide 22" Monitor	4422HB6		
• Corel® WinDVD® (DVD±RW)	ThinkVision L2440x Wide 24" Monitor	4421HB2		
	Wireless Kbd & Opt Wheel Mouse (via USB)	73P4067		
	Laser Tilt Wheel Mouse (USB, PS/2)	41U3074		
	Kensington® Cable Lock from Lenovo	73P2582		
	NVIDIA® Quadro® 512MB FX 570	45J7917		
	NVIDIA Quadro 512MB FX 1700	43R1767		
	NVIDIA Quadro 512MB FX 3700	43R1768		
	NVIDIA Quadro 768MB FX 4600	43R1769		
	Other accessories at lenovo.com/accessories			

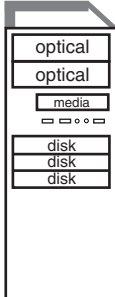
See footnotes for important warranty information
 US models announced December 18, 2007
 US models withdrawn effective June 2009

ThinkStation® S10 (6423) - TopSeller (April 2008) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Mem-ory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Preload	Workhorse Global	Avail date
S10	6423-33U	5x6	E6850	3.00	2	2GB	1 x 250GB ² SATA		DVD±RW	1 x NVS290			None	XP Pro	No	Apr 08
S10	6423-34U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX370			None	XP Pro	No	Apr 08
S10	6423-35U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX1700			None	XP Pro	No	Apr 08
S10	6423-36U	5x6	QX6850	3.00	4	2GB	1 x 250GB SATA		DVD±RW	1 x FX4600			None	XP Pro	No	Apr 08
S10	6423-37U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		BD burner	1 x FX1700			None	XP Pro	No	Apr 08
S10	6423-38U	5x6	QX6850	3.00	4	2GB	1 x 250GB SATA		BD burner	1 x FX4600			None	XP Pro	No	Apr 08
S10	6423-49U	5x6	E6750	2.66	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX370	1394		None	Bus32	No	Apr 08
S10	6423-51U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700			None	Bus32	No	Apr 08
S10	6423-52U	5x6	E6850	3.00	2	2GB	1 x 146GB SAS		DVD±RW	1 x FX1700			None	Bus32	No	Apr 08
S10	6423-53U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700		X-Fi	None	Bus32	No	Apr 08
S10	6423-54U	5x6	Q6600	2.40	4	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700		X-Fi	None	Bus32	No	Apr 08
S10	6423-55U	5x6	Q6700	2.66	4	2GB	2 x 160GB SATA	1	DVD±RW	2 x NVS290			None	Bus32	No	Apr 08

- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering
- These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor	Intel® Core™ 2 Duo Processor E6750 or E6850 with dual-core, 1333MHz system bus, and 4MB L2 cache or Intel Core 2 Quad Processor Q6600 or Q6700 with quad-core, 1066MHz system bus, and 8MB L2 cache or Intel Core 2 Extreme Processor QX6850 with quad-core, 1333MHz system bus, and 8MB L2 cache		Tower	
Implementation	Processor uses FC-LGA6 package, one LGA775 socket		<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 16.8"H (without handle) • 175mm W x 483mm D x 426mm H • 36 lb (16.4kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Memory	2GB std, 8GB max, PC3-8500 1066MHz DDR3, ECC, dual-channel capable, four 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two sockets; two sockets available			
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU Some: NVIDIA® Quadro® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI via DMS-59 with dual DVI-I dongle, 21W Some: NVIDIA Quadro FX 370, PCIe x16 adapter, 256MB, one single-link and 1 dual-link DVI, dual DVI-I or dual VGA, 25W Some: NVIDIA Quadro FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W Some: NVIDIA Quadro FX 4600, PCIe x16 adapter, 768MB, two slot width, 2 dual-link DVI, dual DVI-I or dual VGA, 134W		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, std or opt disk Bay ⑥ 3.5", 1" high, internal, std or opt disk	
Media reader	9-in-1 media reader, internal USB 2.0		Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA disk(s)	Some: 160GB or 250GB, SATA 3.0Gb/s, 7200 rpm		Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R		Slot 3: full-length, full-height, 32-bit PCI 2.3	
SATA connectors	Six SATA connectors on planar		Slot 4: full-length, full-height, PCIe x4 (x16 mechanical)	
SATA DVD±RW	Some: Super Multi-Burner DL DVD±RW SATA 1.5Gb/s		Slot 5: half-length, full-height, 32-bit PCI 2.3	
SATA BD burner	Some: Blu-ray™ Burner / HD-DVD Player SATA 1.5Gb/s			
SAS disk	Some: 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm			
SAS controller	Some: LSI™ LSISAS3041E-R PCIe x4 adapter, 4-port, 3.0Gb/s, RAID® 0, 1, 1E			
Chipset	Intel X38 Express Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 5 support, SMC® SCH5027D Super I/O		Security	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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) • Chassis intrusion switch • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Rear ports	Eight USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), five analog audio ports (line-in, microphone-in, front-out, rear-out, center/sub-out), optical S/PDIF digital out		Supports ThinkVantage® technologies	
IEEE 1394 adptr	Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		RoHS-compliant	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec; Some: Creative Sound Blaster® X-Fi, PCI adapter, high-end sound adapter		Limited Warranty¹	
Speaker	Internal speaker for business audio		<ul style="list-style-type: none"> ↔ 3-year parts and labor ↔ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5754 and BCM5755, 2 x PCIe x1			
Security chip	Integrated in ethernet controller BCM5755, TCG 1.2-compliant			
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	650 watts with 120mm bottom-mounted variable speed fan, universal, 80 PLUS®			
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])			
Rack mount	Rack shelf support			
Preloaded operating system²⁰	Accessories			
- Microsoft® Windows® XP Professional	1GB PC3-8500 DDR3 ECC UDIMM		41U5251	
- Microsoft® Windows® Vista® Business Edition (32-bit)	2GB PC3-8500 DDR3 ECC UDIMM		41U5252	
↔ Vista models: Vista Premium logo	750GB SATA 3.0Gb/s Disk (7200 rpm)		43R1991	
Preloaded applications⁵ (all OSes; only some listed)	1TB SATA 3.0Gb/s Disk (7200 rpm)		45J7918	
• Rescue and Recovery™	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s		41N5620	
• ThinkVantage Productivity Center	USB 2.0 Ultra Secure Memory Key 8GB		45J5918	
• ThinkVantage System Update	USB 2.0 Portable Secure 320GB Hard Disk		43R2019	
• Norton Internet Security™ (90 days of virus definitions)	ThinkVision® L2240p Wide 22" Monitor		4422HB6	
• Sonic RecordNow and Drive Letter Access (DVD±RW)	ThinkVision L2440p Wide 24" Monitor		4420HB2	
• Corel® WinDVD® (DVD±RW)	NVIDIA® Quadro® 512MB FX 1700		43R1767	
	NVIDIA Quadro 512MB FX 3700		43R1768	
	NVIDIA Quadro 768MB FX 4600		43R1769	
	Other accessories at lenovo.com/accessories			

See footnotes for important warranty information
 US models announced April 15, 2008
 US models withdrawn effective June 2009

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ThinkStation® S10 (6423) - TopSeller (August 2008) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Mem-ory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Preload	Workhorse Global	Avail date
S10	6423-56U	5x6	Q9550	2.83	4	2GB	2 x 250GB ² SATA	None	DVD±RW	1 x FX3700		None	None	Bus32	No	Aug 08
S10	6423-57U	5x6	Q9450	2.66	4	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX570		None	None	Bus32	No	Aug 08
S10	6423-58U	5x6	E8200	2.66	2	2GB	1 x 250GB SATA	None	DVD±RW	1 x NVS290	1394	None	None	Bus64	No	Aug 08
S10	6423-59U	5x6	E8400	3.00	2	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX370		None	None	Bus64	No	Aug 08
S10	6423-61U	5x6	E8500	3.16	2	4GB	1 x 146GB SAS	None	DVD±RW	1 x FX1700		None	None	Bus64	No	Aug 08
S10	6423-67U	5x6	Q9450	2.66	4	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX570		None	None	Bus64	No	Aug 08
S10	6423-68U	5x6	Q9450	2.66	4	4GB	1 x 250GB SATA	None	DVD±RW	1 x FX1700		None	None	Bus64	No	Aug 08
S10	6423-69U	5x6	Q9550	2.83	4	4GB	1 x 500GB SATA	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08
S10	6423-72U	5x6	QX9650	3.00	4	4GB	1 x 500GB SATA	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08
S10	6423-H1U	5x6	Q9550	2.83	4	4GB	1 x 500GB SATA	None	DVD±RW	None		None	None	Bus64	No	Sep 08
S10	6423-H2U	5x6	E8400	3.00	2	2GB	1 x 250GB SATA	None	DVD±RW	None		None	None	Bus64	No	Sep 08
S10	6423-H3U	5x6	Q9550	2.83	4	4GB	1 x 146GB SAS	None	DVD±RW	None		None	None	Bus64	No	Sep 08
S10	6423-H4U	5x6	E8400	3.00	2	2GB	1 x 146GB SAS	None	DVD±RW	None		None	None	Bus64	No	Sep 08

• These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor	Intel® Core™ 2 Duo Processor E8200, E8400, or E8500 with dual-core, 1333MHz system bus, and 6MB L2 cache or Intel Core 2 Quad Processor Q9450 or Q9550 with quad-core, 1333MHz system bus, and 12MB L2 cache or Intel Core 2 Extreme Processor QX9650 with quad-core, 1333MHz system bus, and 12MB L2 cache	Tower <ul style="list-style-type: none"> Raven black color; metal case 6.9"W x 19.0"D x 16.8"H (without handle) 175mm W x 483mm D x 426mm H 36 lb (16.4kg) max configuration 31-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Rack shelf support 
Implementation	Processor uses FC-LGA6 package, one LGA775 socket	
Memory	2GB or 4GB std, 8GB max, PC3-8500 1066MHz DDR3, ECC, dual-channel capable, four 240-pin DIMM sockets; <i>Italics:</i> standard memory in four sockets; no sockets available <i>Non-italics:</i> standard memory in two sockets; two sockets available	<ul style="list-style-type: none"> Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, std or opt disk Bay ⑥ 3.5", 1" high, internal, std or opt disk
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76W to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI-I via DMS-59 dongle, 21W <i>Some:</i> NVIDIA Quadro FX 370, PCIe x16 adapter, 256MB, one single-link and 1 dual-link DVI, dual DVI-I or dual VGA, 25W <i>Some:</i> NVIDIA Quadro FX 570, PCIe 2.0 x16 adapter, 256MB, two dual-link DVI, dual DVI-I or dual VGA, 38W <i>Some:</i> NVIDIA Quadro FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W <i>Some:</i> NVIDIA Quadro FX 3700, PCIe 2.0 x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, 78W	<ul style="list-style-type: none"> Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe x4 (x16 mechanical) Slot 5: half-length, full-height, 32-bit PCI 2.3
Media reader	9-in-1 media reader, internal USB 2.0	Security <ul style="list-style-type: none"> Security chip (see information on left) Side cover lock (ships with two identical keys) 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) Chassis intrusion switch Power-on password Administrator password Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (front or all)
SATA disk(s)	<i>Some:</i> 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R	
SATA connectors	Six SATA connectors on planar	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s	
SAS disk	<i>Some:</i> 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm	
SAS controller	<i>Some:</i> LSI™ LSI3041E-R PCIe x4 adapter, 4-port, 3.0Gb/s, RAID® 0, 1, 1E	
Chipset	Intel X38 Express Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 5 support, SMSC® SCH5027D Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)	
Rear ports	Eight USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), five analog audio ports (line-in, microphone-in, front-out, rear-out, center/sub-out), optical S/PDIF digital out	
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec;	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5754 and BCM5755, 2 x PCIe x1	
Security chip	Integrated in ethernet controller BCM5755, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	650 watts with 120mm bottom-mounted variable speed fan, universal	
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI >75W graphics), opt front [SAS])	
Rack mount	Rack shelf support	
Preloaded operating system ²⁰	<ul style="list-style-type: none"> Genuine Windows® Vista® Business 32 Genuine Windows Vista Business 64 Vista Premium logo 	Supports ThinkVantage® technologies RoHS-compliant 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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty Onsite service upgrade options (in eligible locations)⁷ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378
Accessories	<ul style="list-style-type: none"> 1GB PC3-8500 DDR3 ECC UDIMM 41U5251 2GB PC3-8500 DDR3 ECC UDIMM 41U5252 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s 41N5620 USB 2.0 Ultra Secure Memory Key 8GB 45J5918 USB 2.0 Portable Secure 320GB Hard Disk 43R2019 ThinkVision® L2240p Wide 22" Monitor 4422HB6 ThinkVision L2440p Wide 24" Monitor 4420HB2 NVIDIA® Quadro® 512MB FX 1700 43R1767 NVIDIA Quadro 512MB FX 3700 43R1768 NVIDIA Quadro 768MB FX 4600 43R1769 	
Preloaded applications ⁵ (all OSes; only some listed)	<ul style="list-style-type: none"> Rescue and Recovery™ ThinkVantage Productivity Center ThinkVantage System Update Norton Internet Security™ Sonic RecordNow and Drive Letter Access (DVD±RW) Corel® WinDVD® (DVD±RW) 	
Other accessories at lenovo.com/accessories		

See footnotes for important warranty information
 US models announced September 30, 2008 or August 19, 2008
 US models withdrawn effective June 2009

ThinkStation® S10 (6483) - withdrawn

Name	Type-model	Slot x bay	Processor	GHz	Cores	Mem-ory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Vista preload	Workhorse Global	Avail date
S10	6483-22U	5x6	Q6700	2.66	4	2GB	1 x 250GB ² SATA		DVD±RW	1 x FX4600			None	Bus64	No	Jan 08
S10	6483-23U	5x6	E6850	3.00	2	2GB	1 x 146GB SAS		DVD±RW	1 x FX4600			None	Bus64	No	Jan 08
S10	6483-24U	5x6	QX6850	3.00	4	2GB	1 x 146GB SAS		DVD±RW	1 x FX4600	1394	X-Fi	None	Bus64	No	Jan 08
S10	6483-33U	5x6	QX6850	3.00	4	4GB	1 x 146GB SAS		DVD±RW	1 x FX4600	1394	X-Fi	None	Bus64	No	Jan 08
S10	6483-25U	5x6	Q6700	2.66	4	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-26U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-27U	5x6	Q6600	2.40	4	2GB	1 x 146GB SAS		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-29U	5x6	Q6700	2.66	4	4GB	2 x 250GB SATA		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-31U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA	1	DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-32U	5x6	E6850	3.00	2	2GB	3 x 250GB SATA	5	DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-19U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX1700			None	Bus64	No	Jan 08
S10	6483-21U	5x6	QX6800	2.93	4	4GB	2 x 500GB SATA	0	BD burner	2 x FX4600		X-Fi	None	Bus64	No	Jan 08

- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering

Processor	Intel® Core™ 2 Duo Processor E6850 with dual-core, 1333MHz system bus, and 4MB L2 cache or Intel Core 2 Quad Processor Q6600 or Q6700 with quad-core, 1066MHz system bus, and 8MB L2 cache or Intel Core 2 Extreme Processor QX6800 with quad-core, 1066MHz system bus, and 8MB L2 cache or Intel Core 2 Extreme Processor QX6850 with quad-core, 1333MHz system bus, and 8MB L2 cache	Tower	
Implementation	Processor uses FC-LGA6 package, one LGA775 socket	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 16.8"H (without handle) • 175mm W x 483mm D x 426mm H • 36 lb (16.4kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Memory	2GB or 4GB std, 8GB max, PC3-8500 1066MHz DDR3, ECC, dual-channel capable, four 240-pin DIMM sockets; <i>italics:</i> standard memory in four sockets; no sockets available <i>Non-italics:</i> standard memory in two sockets; two sockets available	<ul style="list-style-type: none"> • Bay ① 5.25", 1.6" high, external, std optical • Bay ② 5.25", 1.6" high, external, open • Bay ③ 3.5", 1" high, external, std media reader • Bay ④ 3.5", 1" high, internal, std disk • Bay ⑤ 3.5", 1" high, internal, std or opt disk • Bay ⑥ 3.5", 1" high, internal, std or opt disk 	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some: NVIDIA® Quadro® FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W</i> <i>Some: NVIDIA Quadro FX 4600, PCIe x16 adapter, 768MB, two slot width, 2 dual-link DVI, dual DVI-I or dual VGA, 134W</i>	<ul style="list-style-type: none"> • Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) • Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) • Slot 3: full-length, full-height, 32-bit PCI 2.3 • Slot 4: full-length, full-height, PCIe x4 (x16 mechanical) • Slot 5: half-length, full-height, 32-bit PCI 2.3 	
Media reader	9-in-1 media reader, internal USB 2.0		
SATA disk(s)	<i>Some: 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm</i>		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R		
SATA connectors	Six SATA connectors on planar		
SATA DVD±RW	<i>Some: Super Multi-Burner DL DVD±RW SATA 1.5Gb/s</i>		
SATA BD burner	<i>Some: Blu-ray™ Burner / HD-DVD Player SATA 1.5Gb/s</i>		
SAS disk	<i>Some: 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm</i>		
SAS controller	<i>Some: LSI™ LSISAS3041E-R PCIe x4 adapter, 4-port, 3.0Gb/s, RAID® 0, 1, 1E</i>		
Chipset	Intel X38 Express Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 5 support, SMSC® SCH5027D Super I/O	SECURITY	<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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) • Chassis intrusion switch • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		
Rear ports	Eight USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), five analog audio ports (line-in, microphone-in, front-out, rear-out, center/sub-out), optical S/PDIF digital out		
IEEE 1394 adptr	<i>Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear</i>		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec; <i>Some: Creative Sound Blaster® X-Fi, PCI adapter, high-end sound adapter</i>		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5754 and BCM5755, 2 x PCIe x1		
Security chip	Integrated in ethernet controller BCM5755, TCG 1.2-compliant		
Keyboard	<i>Model 21U:</i> Lenovo USB Fingerprint Keyboard (USB connector), black <i>Others:</i> Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	650 watts with 120mm bottom-mounted variable speed fan, universal		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		

Preloaded operating system²⁰	Accessories	
- Microsoft® Windows® Vista® Business Edition (64-bit)	1GB PC3-8500 DDR3 ECC UDIMM	41U5251
◇ Vista Premium logo	2GB PC3-8500 DDR3 ECC UDIMM	41U5252
Preloaded applications⁵ (only some listed)	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918
• Rescue and Recovery™	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991
• Client Security Solution™	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s	41N5620
• ThinkVantage Fingerprint Software (fingerprint keyboard model)	USB 2.0 Lenovo Webcam	40Y8519
• System Migration Assistant	USB 2.0 Ultra Secure Memory Key 8GB	45J5918
• Norton Internet Security™	USB 2.0 Portable Secure 320GB Hard Disk	43R2019
• PC-Doctor™ (diagnostics)	ThinkVision® L2240p Wide 22" Monitor	4422HB6
• Microsoft Office 2007 Trial (60-day)	ThinkVision L2440x Wide 24" Monitor	4421HB2
• Sonic RecordNow and Drive Letter Access (DVD±RW)	Wireless Kbd & Opt Wheel Mouse (via USB)	73P4067
• Corel® WinDVD® (DVD±RW, Blu-ray)	Laser Tilt Wheel Mouse (USB, PS/2)	41U3074
• Ulead® DVD MovieFactory (Blu-ray)	NVIDIA® Quadro® 512MB FX 570	45J7917
	NVIDIA Quadro 512MB FX 1700	43R1767
	NVIDIA Quadro 512MB FX 3700	43R1768
	Other accessories at lenovo.com/accessories	
		Supports ThinkVantage® technologies
		RoHS-compliant
		LIMITED WARRANTY¹
		⇒ 3-year parts and labor
		⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)
		⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty
		• Onsite service upgrade options (in eligible locations) ⁷
		• Post warranty maintenance services
		⇒ 24 hour x 7 day ¹⁴ toll-free support during the warranty period ¹ via 800-426-7378

See footnotes for important warranty information
 US models announced December 18, 2007
 US models withdrawn effective June 2009

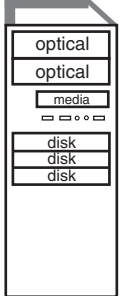
Name	Type-model	Slot x bay	Processor	GHz	Cores	Mem-ory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Preload	Workhorse Global	Avail date
S10	6483-34U	5x6	E6850	3.00	2	2GB	1 x 250GB ² SATA		DVD±RW	1 x NVS290	None	None	None	XP Pro	No	Apr 08
S10	6483-35U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX370	None	None	None	XP Pro	No	Apr 08
S10	6483-36U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-37U	5x6	QX6850	3.00	4	2GB	1 x 250GB SATA		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-38U	5x6	QX6850	3.00	4	2GB	1 x 250GB SATA		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
S10	6483-39U	5x6	E6850	3.00	2	2GB	1 x 146GB SAS		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-41U	5x6	QX6850	3.00	4	2GB	1 x 146GB SAS		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-42U	5x6	QX6850	3.00	4	2GB	1 x 146GB SAS		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
S10	6483-43U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA	1	DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-44U	5x6	QX6850	3.00	4	2GB	2 x 250GB SATA	1	DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-45U	5x6	QX6850	3.00	4	2GB	2 x 250GB SATA	1	DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
S10	6483-46U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		BD burner	1 x FX1700	None	None	None	XP Pro	No	Apr 08
S10	6483-47U	5x6	QX6850	3.00	4	2GB	1 x 250GB SATA		BD burner	1 x FX4600	None	None	None	XP Pro	No	Apr 08
S10	6483-92U	5x6	E6850	3.00	2	2GB	1 x 250GB SATA		DVD±RW	1 x FX1700	None	None	None	Bus32	No	Apr 08
S10	6483-93U	5x6	Q6700	2.66	4	2GB	1 x 250GB SATA		DVD±RW	1 x FX4600	None	None	None	Bus32	No	Apr 08
S10	6483-94U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA		DVD±RW	1 x FX1700	None	None	None	Bus32	No	Apr 08
S10	6483-95U	5x6	E6850	3.00	2	2GB	2 x 250GB SATA	1	DVD±RW	1 x FX1700	None	None	None	Bus32	No	Apr 08
S10	6483-96U	5x6	E6850	3.00	2	2GB	3 x 250GB SATA	5	DVD±RW	1 x FX1700	None	None	None	Bus32	No	Apr 08

- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering

Processor	Intel® Core™ 2 Duo Processor E6850 with dual-core, 1333MHz system bus, and 4MB L2 cache or Intel Core 2 Quad Processor Q6700 with quad-core, 1066MHz system bus, and 8MB L2 cache or Intel Core 2 Extreme Processor QX6850 with quad-core, 1333MHz system bus, and 8MB L2 cache	Tower	
Implementation	Processor uses FC-LGA6 package, one LGA775 socket	<ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 16.8"H (without handle) • 175mm W x 483mm D x 426mm H • 36 lb (16.4kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Memory	2GB std, 8GB max, PC3-8500 1066MHz DDR3, ECC, dual-channel capable, four 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two sockets; two sockets available	<ul style="list-style-type: none"> Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, std or opt disk Bay ⑥ 3.5", 1" high, internal, std or opt disk 	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some: NVIDIA® Quadro® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI-I via DMS-59 dongle, 21W</i> <i>Some: NVIDIA Quadro FX 370, PCIe x16 adapter, 256MB, one single-link and 1 dual-link DVI, dual DVI-I or dual VGA, 25W</i> <i>Some: NVIDIA Quadro FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W</i> <i>Some: NVIDIA Quadro FX 4600, PCIe x16 adapter, 768MB, two slot width, 2 dual-link DVI, dual DVI-I or dual VGA, 134W</i>	<ul style="list-style-type: none"> Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe x4 (x16 mechanical) Slot 5: half-length, full-height, 32-bit PCI 2.3 	
Media reader	9-in-1 media reader, internal USB 2.0		
SATA disk(s)	<i>Some: 250GB, SATA 3.0Gb/s, 7200 rpm</i>		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R		
SATA connectors	Six SATA connectors on planar		
SATA DVD±RW	<i>Some: Super Multi-Burner DL DVD±RW SATA 1.5Gb/s</i>		
SATA BD burner	<i>Some: Blu-ray™ Burner / HD-DVD Player SATA 1.5Gb/s</i>		
SAS disk	<i>Some: 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm</i>		
SAS controller	<i>Some: LSI™ LSISAS3041E-R PCIe x4 adapter, 4-port, 3.0Gb/s, RAID® 0, 1, 1E</i>		
Chipset	Intel X38 Express Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 5 support, SMSC® SCH5027D Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		
Rear ports	Eight USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), five analog audio ports (line-in, microphone-in, front-out, rear-out, center/sub-out), optical S/PDIF digital out		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec;		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5754 and BCM5755, 2 x PCIe x1		
Security chip	Integrated in ethernet controller BCM5755, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	650 watts with 120mm bottom-mounted variable speed fan, universal		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	Accessories		
- Microsoft® Windows® XP Professional	1GB PC3-8500 DDR3 ECC UDIMM	41U5251	
- Microsoft Windows Vista® Business Edition (32-bit)	2GB PC3-8500 DDR3 ECC UDIMM	41U5252	
◇ Vista models: Vista Premium logo	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	
Preloaded applications⁵ (all OSes; only some listed)	USB 2.0 Ultra Secure Memory Key 8GB	45J5918	
• Rescue and Recovery™	USB 2.0 Portable Secure 320GB Hard Disk	43R2019	
• ThinkVantage System Update	ThinkVision® L2440p Wide 24" Monitor	4420HB2	
• Sonic RecordNow and Drive Letter Access (DVD±RW)	NVIDIA® Quadro® 512MB FX 570	45J7917	
• Corel® WinDVD® (DVD±RW, Blu-ray)	NVIDIA Quadro 512MB FX 1700	43R1767	
• Ulead® DVD MovieFactory (Blu-ray)	NVIDIA Quadro 512MB FX 3700	43R1768	
	Other accessories at lenovo.com/accessories		
		Supports ThinkVantage® technologies	
		RoHS-compliant	
		Limited Warranty¹	
		↔ 3-year parts and labor	
		↔ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)	
		↔ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty	
		↔ 24 hour x 7 day ¹⁴ toll-free support during the warranty period ¹	

See footnotes for important warranty information
 US models announced April 15, 2008
 US models withdrawn effective June 2009

Name	Type-model	Slot x bay	Processor	GHz	Cores	Mem-ory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Preload	Workhorse Global	Avail date
S10	6483-A1U	5x6	Q9450	2.66	4	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08
S10	6483-A2U	5x6	Q9450	2.66	4	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX570		None	None	Bus64	No	Aug 08
S10	6483-A3U	5x6	Q9550	2.83	4	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX570		None	None	Bus64	No	Aug 08
S10	6483-A4U	5x6	Q9550	2.83	4	2GB	1 x 250GB SATA	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08
S10	6483-B2U	5x6	Q9450	2.66	4	4GB	1 x 146GB SAS	None	DVD±RW	1 x FX1700	1394	None	None	Bus64	No	Aug 08
S10	6483-B3U	5x6	Q9550	2.83	4	4GB	2 x 250GB SATA	None	DVD±RW	1 x FX1700		None	None	Bus64	No	Aug 08
S10	6483-B4U	5x6	Q9550	2.83	4	4GB	1 x 146GB SAS	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08
S10	6483-B5U	5x6	QX9650	3.00	4	4GB	2 x 250GB SATA	None	DVD±RW	1 x FX1700		None	None	Bus64	No	Aug 08
S10	6483-B8U	5x6	E8200	2.66	2	2GB	1 x 160GB SATA	None	DVD	1 x FX570	1394	None	None	Bus64	No	Aug 08
S10	6483-B9U	5x6	E8200	2.66	2	2GB	1 x 160GB SATA	None	DVD	1 x FX3700	1394	None	None	Bus64	No	Aug 08
S10	6483-C1U	5x6	E8400	3.00	2	2GB	2 x 250GB SATA	None	DVD±RW	1 x FX1700		None	None	Bus64	No	Aug 08
S10	6483-C2U	5x6	E8500	3.16	2	4GB	2 x 250GB SATA	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08
S10	6483-E1U	5x6	QX9650	3.00	4	4GB	2 x 500GB SATA	None	DVD±RW	1 x FX1700		None	None	Bus64	No	Aug 08
S10	6483-E2U	5x6	QX9650	3.00	4	4GB	2 x 500GB SATA	None	DVD±RW	1 x FX3700		None	None	Bus64	No	Aug 08

Processor	Intel® Core™ 2 Duo Processor E8200, E8400, or E8500 with dual-core, 1333MHz system bus, and 6MB L2 cache or Intel Core 2 Quad Processor Q9450 or Q9550 with quad-core, 1333MHz system bus, and 12MB L2 cache or Intel Core 2 Extreme Processor QX9650 with quad-core, 1333MHz system bus, and 12MB L2 cache	Tower <ul style="list-style-type: none"> Raven black color; metal case 6.9"W x 19.0"D x 16.8"H (without handle) 175mm W x 483mm D x 426mm H 36 lb (16.4kg) max configuration 31-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Rack shelf support 
Implementation	Processor uses FC-LGA6 package, one LGA775 socket	
Memory	2GB or 4GB std, 8GB max, PC3-8500 1066MHz DDR3, ECC, dual-channel capable, four 240-pin DIMM sockets; <i>Italics:</i> standard memory in four sockets; no sockets available <i>Non-italics:</i> standard memory in two sockets; two sockets available	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, std or opt disk Bay ⑥ 3.5", 1" high, internal, std or opt disk
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® FX 570, PCIe 2.0 x16 adapter, 256MB, two dual-link DVI, dual DVI-I or dual VGA, 38W <i>Some:</i> NVIDIA Quadro FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W <i>Some:</i> NVIDIA Quadro FX 3700, PCIe 2.0 x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, 78W	Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe x4 (x16 mechanical) Slot 5: half-length, full-height, 32-bit PCI 2.3
Media reader	9-in-1 media reader, internal USB 2.0	Security <ul style="list-style-type: none"> Security chip (see information on left) Side cover lock (ships with two identical keys) 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) Chassis intrusion switch Power-on password Administrator password Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (front or all)
SATA disk(s)	<i>Some:</i> 160GB, 250GB, or 500GB, SATA 3.0Gb/s, 7200 rpm	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH9R	
SATA connectors	Six SATA connectors on planar	
SATA DVD	<i>Some:</i> DVD-ROM DL SATA1.5Gb/s 16X-48X Max ⁴	
SATA DVD±RW	<i>Some:</i> Super Multi-Burner DL DVD±RW SATA 1.5Gb/s	
SAS disk	<i>Some:</i> 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm	
SAS controller	<i>Some:</i> LSI™ LSISAS3041E-R PCIe x4 adapter, 4-port, 3.0Gb/s, RAID® 0, 1, 1E	
Chipset	Intel X38 Express Chipset, Intel I/O Controller Hub 9 RAID (ICH9R) for RAID 0, 1, 5 support, SMSC® SCH5027D Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)	
Rear ports	Eight USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), five analog audio ports (line-in, microphone-in, front-out, rear-out, center/sub-out), optical S/PDIF digital out	
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec;	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5754 and BCM5755, 2 x PCIe x1	
Security chip	Integrated in ethernet controller BCM5755, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	650 watts with 120mm bottom-mounted variable speed fan, universal	
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])	
Rack mount	Rack shelf support	
Preloaded operating system ²⁰	- Genuine Windows® Vista® Business 64 ♦ Vista Premium logo	Supports ThinkVantage® technologies
Preloaded applications ⁵	<ul style="list-style-type: none"> Rescue and Recovery™ Client Security Solution™ ThinkVantage Productivity Center ThinkVantage System Update System Migration Assistant Norton Internet Security™ (90 days of virus definitions) PC-Doctor™ (diagnostics) Adobe® Reader Microsoft® Office 2007 Trial (60-day) Sonic RecordNow and Drive Letter Access (DVD±RW) Corel® WinDVD® (DVD±RW) 	RoHS-compliant
Accessories	1GB PC3-8500 DDR3 ECC UDIMM 41U5251 2GB PC3-8500 DDR3 ECC UDIMM 41U5252 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 146GB SAS 3.0Gb/s Disk (15000 rpm) 43R1993 300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s 41N5620 USB 2.0 Ultra Secure Memory Key 8GB 45J5918 USB 2.0 Portable Secure 320GB Hard Disk 43R2019 ThinkVision® L1940p Wide 19" Monitor 4424HB6 ThinkVision L2240p Wide 22" Monitor 4422HB6 ThinkVision L2440x Wide 24" Monitor 4421HB2 NVIDIA® Quadro® 512MB FX 1700 43R1767 NVIDIA Quadro 512MB FX 3700 43R1768 NVIDIA Quadro 768MB FX 4600 43R1769 Other accessories at lenovo.com/accessories	Limited Warranty¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations) ⁷ ⇨ 24 hour x 7 day ¹⁴ toll-free support during the warranty period ¹ via 800-426-7378

See footnotes for important warranty information
 US models announced August 19, 2008
 US models withdrawn effective June 2009

ThinkStation



Lenovo ThinkStation D10



Lenovo ThinkStation S10 (left)
Lenovo ThinkStation D10 (right)



Lenovo ThinkStation D10



Lenovo ThinkStation D10



ThinkStation Rail Kit (43R1964)



Lenovo ThinkStation D10

ThinkStation® D10 (6427) - TopSeller - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor(s)	GHz	Memory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Preload	Avail date
D10	6427-27U	7x9	1 x E5430	2.66	2 x 1GB	2 x 250GB	SATA	DVD±RW	1 x FX1700	None	None	None	Bus64	Mar 08
D10	6427-28U	7x9	2 x E5430	2.66	4 x 1GB	2 x 250GB	SATA	DVD±RW	1 x FX1700	None	X-Fi	None	Bus64	Mar 08
D10	6427-34U	7x9	2 x E5430	2.66	4 x 1GB	2 x 250GB	SATA	DVD±RW, BD burner	1 x FX4600	None	X-Fi	None	Bus64	Mar 08
D10	6427-29U	7x9	2 x E5440	2.83	2 x 2GB	2 x 146GB	SAS	DVD±RW	1 x FX1700	None	X-Fi	None	Bus64	Mar 08
D10	6427-31U	7x9	2 x E5430	2.66	4 x 1GB	2 x 250GB	SATA	DVD±RW	1 x FX1700	None	None	None	Bus64	Mar 08
D10	6427-32U	7x9	2 x E5430	2.66	2 x 2GB	2 x 146GB	SAS	1 DVD±RW	1 x FX1700	None	None	None	Bus64	Mar 08
D10	6427-33U	7x9	2 x E5430	2.66	2 x 1GB	2 x 250GB	SATA	1 DVD±RW	2 x NVS290	None	None	None	Bus64	Mar 08
D10	6427-73U	7x9	1 x E5430	2.66	2 x 1GB	1 x 250GB	SATA	DVD±RW	1 x FX1700	None	None	None	XP Pro	Apr 08
D10	6427-35U	7x9	1 x E5440	2.83	2 x 1GB	1 x 250GB	SATA	DVD±RW	1 x FX1700	None	None	None	XP Pro	Apr 08
D10	6427-36U	7x9	2 x E5430	2.66	2 x 1GB	1 x 250GB	SATA	DVD±RW	1 x FX4600	None	None	None	XP Pro	Apr 08
D10	6427-37U	7x9	2 x E5440	2.83	2 x 1GB	1 x 250GB	SATA	DVD±RW	1 x FX4600	None	None	None	XP Pro	Apr 08

- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering
- These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor(s)	One or two processors, Intel® Xeon® processor E5430 or E5440 with quad-core, 1333MHz system bus, and 12MB L2 cache	Tower <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 17.1"H (without handle) • 210mm W x 602mm D x 434mm H • 65 lb (29.5kg) max configuration • 49-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets		
Memory	2GB or 4GB std, 64GB max, PC2-5300 667MHz DDR2, ECC, fully buffered, 4-channel capable, eight 240-pin DIMM sockets; <i>Non-italics</i> : standard memory in two or four sockets; six or four sockets available	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std disk Bay ⑦ 3.5", 1" high, internal, std or opt disk Bay ⑧ 3.5", 1" high, internal, std or opt disk Bay ⑨ 3.5", 1" high, internal, opt disk	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some: NVIDIA® Quadro® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI-I via DMS-59 dongle, 21W</i> <i>Some: NVIDIA Quadro FX 1700, PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W</i> <i>Some: NVIDIA Quadro FX 4600, PCIe x16 adapter, 768MB, two slot width, 2 dual-link DVI, dual DVI-I or dual VGA, 134W</i>	Slot 1: half-length, full-height, PCIe x4 (x8 mechanical) Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, PCIe x4 (x8 mechanical) Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, 64-bit PCI-X Slot 6: full-length, full-height, 64-bit PCI-X Slot 7: full-length, full-height, 32-bit PCI 2.3	
Media reader	9-in-1 media reader, internal USB 2.0		
SATA disk(s)	<i>Some: 250GB, SATA 3.0Gb/s, 7200 rpm</i>		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in 6321ESB		
SATA connectors	Five SATA connectors on planar		
SATA DVD±RW	<i>Some: Super Multi-Burner DL DVD±RW SATA 1.5Gb/s</i>		
SATA BD burner	<i>Some: Blu-ray™ Burner / HD-DVD Player SATA 1.5Gb/s</i>		
SAS disk	<i>Some: 146GB, Serial Attached SCSI, 3.0Gb/s, 15000 rpm</i>		
SAS controller	LSI™ LSISAS1068E chipset, 5 connectors, 3.0Gb/s, RAID® 0, 1, 1E		
Chipset	Intel 5400A Chipset, Intel 6321ESB I/O Controller Hub for RAID 0, 1, 5, 10 support, Winbond® W83627EHG Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		
Rear ports	Four USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, side-out, rear-out, center/sub-out), RCA-type coaxial digital in, RCA-type coaxial digital out		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC888 codec; <i>Some: Creative Sound Blaster® X-Fi, PCI adapter, high-end sound adapter</i>		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Intel® 82563EB, proprietary Intel bus		
Security chip	Winbond WPCT200 SafeKeeper™ Trusted Platform Module, TCG 1.2-compliant		SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	1000 watts with 120mm bottom-mounted variable speed fan, universal		
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® XP Professional (preinstalled via downgrade rights in Windows Vista® Business)	2GB PC2-5300 DDR2 ECC FB-DIMM	43R1772	
- Genuine Windows Vista® Business 64	4GB PC2-5300 DDR2 ECC FB-DIMM	43R1773	
◇ Vista models: Vista Premium logo	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	
Preloaded applications⁵ (all OSes; only some listed)	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	
• Rescue and Recovery™	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	
• Client Security Solution™	146GB SAS 3.0Gb/s Disk (15000 rpm)	43R1993	
• System Migration Assistant	300GB SAS 3.0Gb/s Disk (15000 rpm)	43R1994	
• Norton Internet Security™ (90 days of virus definitions)	ThinkStation Rail Kit	43R1964	
• PC-Doctor™ (diagnostics)	USB 2.0 Ultra Secure Memory Key 8GB	45J5918	
• Microsoft® Office 2007 Trial (60-day)	USB 2.0 Portable Secure 320GB Hard Disk	43R2019	
• Sonic RecordNow and Drive Letter Access (DVD±RW)	ThinkVision® L2440p Wide 24" Monitor	4420HB2	
• Corel® WinDVD® (DVD±RW, Blu-ray)	NVIDIA Quadro 512MB FX 570	45J7917	
• Ulead® DVD MovieFactory (Blu-ray)	NVIDIA Quadro 512MB FX 3700	43R1768	
	Other accessories at lenovo.com/accessories		
			Supports ThinkVantage® technologies
			RoHS-compliant
			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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378

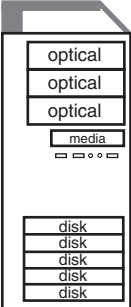
See footnotes for important warranty information
 US models announced March 11 or April 15, 2008
 US models withdrawn effective June 2009 or February 2010

ThinkStation® D10 (6427) - TopSeller (August 2008) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor(s)	GHz	Memory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adpdr	Sound adpdr	ENERGY STAR 5.0	Preload	Avail date
D10	6427-74U	7x9	2 x E5440	2.83	2 x 1GB	1 x 250GB SATA	None	DVD±RW	1 x FX3700	None	None	None	Bus64	Aug 08
D10	6427-88U	7x9	1 x E5450	3.00	2 x 2GB	1 x 146GB SAS	None	DVD±RW	1 x FX3700	None	None	None	Bus64	Aug 08
D10	6427-89U	7x9	2 x E5440	2.83	2 x 1GB	1 x 250GB SATA	None	DVD±RW	1 x FX570	None	None	None	Bus64	Aug 08
D10	6427-91U	7x9	1 x E5450	3.00	2 x 2GB	1 x 146GB SAS	None	DVD±RW	1 x FX570	None	None	None	Bus64	Aug 08
D10	6427-H5U	7x9	1 x E5440	2.83	2 x 2GB	1 x 500GB SATA	None	DVD±RW	None	None	None	None	Bus64	Sep 08
D10	6427-H6U	7x9	1 x E5420	2.50	2 x 2GB	1 x 500GB SATA	None	DVD±RW	None	None	None	None	Bus64	Sep 08
D10	6427-H7U	7x9	1 x E5440	2.83	4 x 2GB	1 x 146GB SAS	None	DVD±RW	None	None	None	None	Bus64	Sep 08
D10	6427-H8U	7x9	1 x E5420	2.50	4 x 2GB	1 x 146GB SAS	None	DVD±RW	None	None	None	None	Bus64	Sep 08

- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**

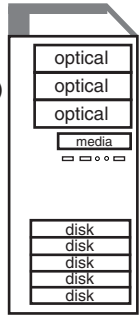
Processor(s)	One or two processors, Intel® Xeon® processor E5420, E5440, or E5450 with quad-core , 1333MHz system bus, and 12MB L2 cache	Tower	
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets		
Memory	2GB, 4GB, or 8GB std, 64GB max, PC2-5300 667MHz DDR2, ECC , fully buffered, 4-channel capable, eight 240-pin DIMM sockets; <i>Non-italics:</i> standard memory in two or four sockets; six or four sockets available	<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 17.1"H (without handle) • 210mm W x 602mm D x 434mm H • 65 lb (29.5kg) max configuration • 49-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76W to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® FX 570 , PCIe 2.0 x16 adapter, 256MB, two dual-link DVI, dual DVI-I or dual VGA, 38W <i>Some:</i> NVIDIA Quadro FX 3700 , PCIe 2.0 x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, 78W	<ul style="list-style-type: none"> Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std disk Bay ⑦ 3.5", 1" high, internal, std or opt disk Bay ⑧ 3.5", 1" high, internal, std or opt disk Bay ⑨ 3.5", 1" high, internal, opt disk 	
Media reader	9-in-1 media reader, internal USB 2.0	Slot 1: half-length, full-height, PCIe x4 (x8 mechanical)	
SATA disk(s)	<i>Some:</i> 250GB or 500GB , SATA 3.0Gb/s, 7200 rpm	Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in 6321ESB	Slot 3: full-length, full-height, PCIe x4 (x8 mechanical)	
SATA connectors	Five SATA connectors on planar	Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s	Slot 5: full-length, full-height, 64-bit PCI-X	
SAS disk	<i>Some:</i> 146GB , Serial Attached SCSI, 3.0Gb/s, 15000 rpm	Slot 6: full-length, full-height, 64-bit PCI-X	
SAS controller	LSI™ LSI1068E chipset, 5 connectors, 3.0Gb/s, RAID® 0, 1, 1E	Slot 7: full-length, full-height, 32-bit PCI 2.3	
Chipset	Intel 5400A Chipset , Intel 6321ESB I/O Controller Hub for RAID 0, 1, 5, 10 support, Winbond® W83627EHG Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		
Rear ports	Four USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, side-out, rear-out, center/sub-out), RCA-type coaxial digital in, RCA-type coaxial digital out		
IEEE 1394 adpdr	None		
Audio	High Definition (HD) Audio, Realtek® ALC888 codec;		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Intel® 82563EB, proprietary Intel bus		
Security chip	Winbond WPCT200 SafeKeeper™ Trusted Platform Module, TCG 1.2-compliant	SECURITY	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Mouse	Optical Wheel Mouse (USB connector), black	Supports ThinkVantage® technologies	
Power supply	1000 watts with 120mm bottom-mounted variable speed fan, universal	RoHS-compliant	
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® Vista® Business 64	2GB PC2-5300 DDR2 ECC FB-DIMM	43R1772	
◇ Vista Premium logo	4GB PC2-5300 DDR2 ECC FB-DIMM	43R1773	
Preloaded applications⁵	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	
• Rescue and Recovery™	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	
• Client Security Solution™	146GB SAS 3.0Gb/s Disk (15000 rpm)	43R1993	
• ThinkVantage Productivity Center	300GB SAS 3.0Gb/s Disk (15000 rpm)	43R1994	
• ThinkVantage System Update	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s	41N5620	
• System Migration Assistant	ThinkStation Rail Kit	43R1964	
• Norton Internet Security™	USB 2.0 Ultra Secure Memory Key 8GB	45J5918	
(90 days of virus definitions)	USB 2.0 Portable Secure 320GB Hard Disk	43R2019	
• PC-Doctor™ (diagnostics)	Lenovo USB Fingerprint Keyboard	73P4730	
• Adobe® Reader	NVIDIA Quadro 512MB FX 570	45J7917	
• Microsoft® Office 2007 Trial (60-day)	NVIDIA Quadro 512MB FX 3700	43R1768	
• Sonic RecordNow and Drive Letter Access (DVD±RW)	Other accessories at lenovo.com/accessories		
• Corel® WinDVD® (DVD±RW)			
		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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378 	

See footnotes for important warranty information
US models announced August 19 or September 30, 2008
US models withdrawn effective February 2010

ThinkStation® D10 (6493) - withdrawn

Name	Type-model	Slot x bay	Processor(s)	GHz	Memory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Vista prelod	Workhorse Global	Availability date
D10	6493-19U	7x9	1 x E5430	2.66	2 x 1GB	2 x 250GB ²	SATA	DVD±RW	1 x FX1700	None	None	None	Bus64	No	Mar 08
D10	6493-21U	7x9	1 x E5440	2.83	2 x 2GB	2 x 146GB	SAS	DVD±RW	1 x FX4600	None	None	None	Bus64	No	Mar 08
D10	6493-22U	7x9	2 x X5460	3.16	2 x 2GB	2 x 146GB	SAS	DVD±RW	1 x FX4600	None	None	None	Bus64	No	Mar 08
D10	6493-23U	7x9	1 x E5430	2.66	4 x 1GB	2 x 250GB	SATA	DVD±RW	1 x FX1700	None	X-Fi	None	Bus64	No	Mar 08
D10	6493-25U	7x9	1 x E5420	2.50	2 x 1GB	2 x 250GB	SATA	DVD±RW	1 x FX1700	None	None	None	Bus64	No	Mar 08
D10	6493-26U	7x9	2 x X5460	3.16	4 x 2GB	2 x 146GB	SAS	1 DVD±RW	1 x FX4600	None	None	None	Bus64	No	Mar 08
D10	6493-33U	7x9	2 x X5460	3.16	8 x 2GB	3 x 146GB	SAS	1E DVD±RW	1 x FX4600	None	None	None	Bus64	No	Mar 08
D10	6493-27U	7x9	2 x X5460	3.16	2 x 1GB	2 x 250GB	SATA	1 DVD±RW	2 x NVS290	None	None	None	Bus64	No	Mar 08
D10	6493-31U	7x9	2 x E5440	2.83	2 x 2GB	2 x 146GB	SAS	1 DVD±RW	1 x FX4600	None	X-Fi	None	Bus64	No	Mar 08
D10	6493-32U	7x9	2 x E5440	2.83	2 x 2GB	3 x 146GB	SAS	1E DVD±RW	1 x FX4600	None	X-Fi	None	Bus64	No	Mar 08
D10	6493-17U	7x9	2 x E5405	2.00	4 x 1GB	2 x 500GB	SATA	DVD±RW	1 x FX1700	None	None	None	Bus64	No	Mar 08
D10	6493-18U	7x9	2 x E5440	2.83	8 x 2GB	4 x 146GB	SAS	0 BD burner	2 x FX4600	None	X-Fi	None	Bus64	No	Mar 08

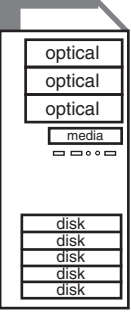
- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering

Processor	One or two processors, Intel® Xeon® processor E5405, E5420, E5430, E5440, or X5460 with quad-core , 1333MHz system bus, and 12MB L2 cache	Tower	
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets		
Memory	2GB, 4GB, 8GB or 16GB std, 64GB max, PC2-5300 667MHz DDR2, ECC , fully buffered, 4-channel capable, eight 240-pin DIMM sockets; <i>Italics:</i> standard memory in eight sockets; no sockets available; <i>Non-italics:</i> standard memory in two or four sockets; six or four sockets available	<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 17.1"H (without handle) • 210mm W x 602mm D x 434mm H • 65 lb (29.5kg) max configuration • 49-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® NVS 290 , PCIe x16 adapter, 256MB, two single-link DVI-I via DMS-59 dongle, 21W <i>Some:</i> NVIDIA Quadro FX 1700 , PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W <i>Some:</i> NVIDIA Quadro FX 4600 , PCIe x16 adapter, 768MB, two slot width, 2 dual-link DVI, dual DVI-I or dual VGA, 134W	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 5.25", 1.6" high, external, open</p> <p>Bay ④ 3.5", 1" high, external, std media reader</p> <p>Bay ⑤ 3.5", 1" high, internal, std disk</p> <p>Bay ⑥ 3.5", 1" high, internal, std disk</p> <p>Bay ⑦ 3.5", 1" high, internal, std or opt disk</p> <p>Bay ⑧ 3.5", 1" high, internal, std or opt disk</p> <p>Bay ⑨ 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x4 (x8 mechanical)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 3: full-length, full-height, PCIe x4 (x8 mechanical)</p> <p>Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 5: full-length, full-height, 64-bit PCI-X</p> <p>Slot 6: full-length, full-height, 64-bit PCI-X</p> <p>Slot 7: full-length, full-height, 32-bit PCI 2.3</p>	
Media reader	9-in-1 media reader, internal USB 2.0		
SATA disk(s)	<i>Some:</i> 250GB or 500GB , SATA 3.0Gb/s, 7200 rpm		
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in 6321ESB		
SATA connectors	Five SATA connectors on planar		
SATA DVD±RW	<i>Some:</i> Super Multi-Burner DL DVD±RW SATA 1.5Gb/s		
SATA BD burner	<i>Some:</i> Blu-ray™ Burner, SATA 1.5Gb/s HD-DVD Player		
SAS disk	<i>Some:</i> 146GB , Serial Attached SCSI, 3.0Gb/s, 15000 rpm		
SAS controller	LSI™ LSI5A1068E chipset, 5 connectors, 3.0Gb/s, RAID [®] 0, 1, 1E		
Chipset	Intel 5400A Chipset , Intel 6321ESB I/O Controller Hub for RAID 0, 1, 5, 10 support, Winbond® W83627EHG Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		
Rear ports	Four USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, side-out, rear-out, center/sub-out), RCA-type coaxial digital in, RCA-type coaxial digital out		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Realtek® ALC888 codec; <i>Some:</i> Creative Sound Blaster® X-Fi, PCI adapter, high-end sound adapter		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Intel® 82563EB, proprietary Intel bus		
Security chip	Winbond WPCT200 SafeKeeper™ Trusted Platform Module, TCG 1.2-compliant		
Keyboard	<i>Model 18U:</i> Lenovo USB Fingerprint Keyboard (USB connector), black Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	1000 watts with 120mm bottom-mounted variable speed fan, universal		
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	- Genuine Windows® Vista® Business 64 ◇ Vista Premium logo		
Preloaded applications⁵ (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage System Update • ThinkVantage Fingerprint Software (fingerprint keyboard model) • Norton Internet Security™ (90 days of virus definitions) • PC-Doctor™ (diagnostics) • Microsoft® Office 2007 Trial (60-day) • Sonic RecordNow and Drive Letter Access (DVD±RW) • Corel® WinDVD® (DVD±RW, Blu-ray) • Ulead® DVD MovieFactory (Blu-ray) 		
Accessories	<ul style="list-style-type: none"> 2GB PC2-5300 DDR2 ECC FB-DIMM 43R1772 4GB PC2-5300 DDR2 ECC FB-DIMM 43R1773 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 146GB SAS 3.0Gb/s Disk (15000 rpm) 43R1993 300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994 ThinkStation Rail Kit 43R1964 USB 2.0 Ultra Secure Memory Key 8GB 45J5918 USB 2.0 Portable Secure 320GB Hard Disk 43R2019 ThinkVision® L2440p Wide 24" Monitor 4420HB2 NVIDIA Quadro 512MB FX 3700 43R1768 Other accessories at lenovo.com/accessories 		
			<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
			Supports ThinkVantage® technologies
			RoHS-compliant
			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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378

See footnotes for important warranty information
 US models announced March 11, 2008
 US models withdrawn effective June 2009 or February 2010

Name	Type-model	Slot x bay	Processor(s)	GHz	Memory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adptr	Sound adptr	ENERGY STAR 5.0	Vista preload	Workhorse Global	Avail date
D10	6493-34U	7x9	1 x E5430	2.66	2 x 1GB	1 x 250GB ² SATA		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
D10	6493-39U	7x9	1 x E5430	2.66	2 x 1GB	1 x 146GB SAS		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
D10	6493-35U	7x9	1 x E5450	3.00	2 x 1GB	1 x 250GB SATA		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
D10	6493-41U	7x9	1 x E5450	3.00	2 x 1GB	1 x 146GB SAS		DVD±RW	1 x FX1700	None	None	None	XP Pro	No	Apr 08
D10	6493-36U	7x9	1 x X5460	3.16	2 x 1GB	2 x 250GB SATA		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-42U	7x9	1 x X5460	3.16	2 x 1GB	2 x 146GB SAS		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-45U	7x9	1 x X5460	3.16	2 x 1GB	4 x 250GB SATA	5	DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-37U	7x9	2 x E5450	3.00	2 x 1GB	2 x 250GB SATA		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-43U	7x9	2 x E5450	3.00	2 x 1GB	2 x 146GB SAS		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-46U	7x9	2 x E5450	3.00	2 x 1GB	4 x 250GB SATA	5	DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-38U	7x9	2 x X5460	3.16	2 x 1GB	2 x 250GB SATA		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-44U	7x9	2 x X5460	3.16	2 x 1GB	2 x 146GB SAS		DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08
D10	6493-47U	7x9	2 x X5460	3.16	2 x 1GB	4 x 250GB SATA	5	DVD±RW	1 x FX4600	None	None	None	XP Pro	No	Apr 08

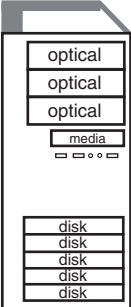
- High performance workstation with premium graphics for specialized professionals
- Environmentally friendly, cool, and quiet with rock solid engineering

Processor	One or two processors, Intel® Xeon® processor E5430, E5450, or X5460 with quad-core, 1333MHz system bus, and 12MB L2 cache	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 17.1"H (without handle) • 210mm W x 602mm D x 434mm H • 65 lb (29.5kg) max configuration • 49-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets	
Memory	2GB std, 64GB max, PC2-5300 667MHz DDR2, ECC , fully buffered, 4-channel capable, eight 240-pin DIMM sockets; <i>Non-italics:</i> standard memory in two sockets; six sockets available	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® FX 1700 , PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W <i>Some:</i> NVIDIA Quadro FX 4600 , PCIe x16 adapter, 768MB, two slot width, 2 dual-link DVI, dual DVI-I or dual VGA, 134W	
Media reader	9-in-1 media reader, internal USB 2.0	
SATA disk(s)	<i>Some:</i> 250GB , SATA 3.0Gb/s, 7200 rpm	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in 6321ESB	
SATA connectors	Five SATA connectors on planar	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
SATA Blu-ray	None	
SAS disk	<i>Some:</i> 146GB , Serial Attached SCSI, 3.0Gb/s, 15000 rpm	
SAS controller	LSI™ LSI5AS1068E chipset, 5 connectors, 3.0Gb/s, RAID® 0, 1, 1E	
Chipset	Intel 5400A Chipset , Intel 6321ESB I/O Controller Hub for RAID 0, 1, 5, 10 support, Winbond® W83627EHG Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)	
Rear ports	Four USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, side-out, rear-out, center/sub-out), RCA-type coaxial digital in, RCA-type coaxial digital out	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Realtek® ALC888 codec;	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Intel® 82563EB, proprietary Intel bus	
Security chip	Winbond WPCT200 SafeKeeper™ Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1000 watts with 120mm bottom-mounted variable speed fan, universal	
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)	
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	
Preloaded operating system²⁰	Accessories	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 5.25", 1.6" high, external, open</p> <p>Bay ④ 3.5", 1" high, external, std media reader</p> <p>Bay ⑤ 3.5", 1" high, internal, std disk</p> <p>Bay ⑥ 3.5", 1" high, internal, std disk</p> <p>Bay ⑦ 3.5", 1" high, internal, std or opt disk</p> <p>Bay ⑧ 3.5", 1" high, internal, std or opt disk</p> <p>Bay ⑨ 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x4 (x8 mechanical)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 3: full-length, full-height, PCIe x4 (x8 mechanical)</p> <p>Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 5: full-length, full-height, 64-bit PCI-X</p> <p>Slot 6: full-length, full-height, 64-bit PCI-X</p> <p>Slot 7: full-length, full-height, 32-bit PCI 2.3</p> <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>Supports ThinkVantage® technologies</p> <p>RoHS-compliant</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378
- Genuine Windows® XP Professional (preinstalled via downgrade rights in Windows Vista® Business)	2GB PC2-5300 DDR2 ECC FB-DIMM 43R1772	
Preloaded applications⁵	4GB PC2-5300 DDR2 ECC FB-DIMM 43R1773	
• Rescue and Recovery™	750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991	
• Client Security Solution™	146GB SAS 3.0Gb/s Disk (15000 rpm) 43R1993	
• ThinkVantage Productivity Center	300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994	
• System Migration Assistant	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s 41N5620	
• Norton Internet Security™ (90 days of virus definitions)	ThinkStation Rail Kit 43R1964	
• PC-Doctor™ (diagnostics)	USB 2.0 Ultra Secure Memory Key 8GB 45J5918	
• Windows Live™ Toolbar	USB 2.0 Portable Secure 320GB Hard Disk 43R2019	
• Sonic RecordNow and Drive Letter Access (DVD±RW)	Kensington Microsaver Cable Lock 73P2582	
• Corel® WinDVD® (DVD±RW)	Lenovo USB Fingerprint Keyboard 73P4730	
	NVIDIA Quadro 512MB FX 570 45J7917	
	NVIDIA Quadro 512MB FX 3700 43R1768	
	Other accessories at lenovo.com/accessories	

See footnotes for important warranty information
 US models announced April 22, 2008
 US models withdrawn effective February 2010

Name	Type-model	Slot x bay	Processor(s)	GHz	Memory	Disk(s)	RAID	SATA optical	Graphics adapter(s)	1394 adpdr	Sound adpdr	ENERGY STAR 5.0	Preload	Avail date
D10	6493-73U	7x9	2 x E5450	3.00	4 x 1GB	2 x 250GB	SATA	None	DVD±RW	1 x FX3700	None	None	None	Bus64 Aug 08
D10	6493-A2U	7x9	2 x E5450	3.00	4 x 1GB	2 x 250GB	SATA	None	DVD±RW	1 x FX1700	None	None	None	Bus64 Aug 08

- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**

Processor(s)	Two processors, Intel® Xeon® processor E5450 with quad-core , 1333MHz system bus, and 12MB L2 cache		Tower	
Implementation	Processor uses FC-LGA6 package, two LGA771 sockets			
Memory	4GB std, 64GB max, PC2-5300 667MHz DDR2 , ECC , fully buffered, 4-channel capable, eight 240-pin DIMM sockets; <i>Non-italics:</i> standard memory in two or four sockets; six or four sockets available		<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 17.1"H (without handle) • 210mm W x 602mm D x 434mm H • 65 lb (29.5kg) max configuration • 49-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * 76 to 150W adapters use auxiliary power connector from PSU <i>Some:</i> NVIDIA® Quadro® FX 1700 , PCIe x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, HDTV out, 42W <i>Some:</i> NVIDIA Quadro FX 3700 , PCIe 2.0 x16 adapter, 512MB, two dual-link DVI, dual DVI-I or dual VGA, 78W			
Media reader	9-in-1 media reader, internal USB 2.0			
SATA disk(s)	250GB , SATA 3.0Gb/s, 7200 rpm			
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in 6321ESB			
SATA connectors	Five SATA connectors on planar			
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s			
SAS disk	None			
SAS controller	LSI™ LSISAS1068E chipset, 5 connectors, 3.0Gb/s, RAID® 0, 1, 1E			
Chipset	Intel 5400A Chipset , Intel 6321ESB I/O Controller Hub for RAID 0, 1, 5, 10 support, Winbond® W83627EHG Super I/O			
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394)		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std disk Bay ⑦ 3.5", 1" high, internal, std or opt disk Bay ⑧ 3.5", 1" high, internal, std or opt disk Bay ⑨ 3.5", 1" high, internal, opt disk	
Rear ports	Four USB 2.0, serial (9-pin), keyboard (PS/2), mouse (PS/2), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, side-out, rear-out, center/sub-out), RCA-type coaxial digital in, RCA-type coaxial digital out		Slot 1: half-length, full-height, PCIe x4 (x8 mechanical) Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, PCIe x4 (x8 mechanical) Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, 64-bit PCI-X Slot 6: full-length, full-height, 64-bit PCI-X Slot 7: full-length, full-height, 32-bit PCI 2.3	
IEEE 1394 adpdr	None		<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>Supports ThinkVantage® technologies</p> <p>RoHS-compliant</p> <p align="center">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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378 	
Audio	High Definition (HD) Audio, Realtek® ALC888 codec;			
Speaker	Internal speaker for business audio			
Ethernet	Dual gigabit ethernet on planar, Intel® 82563EB, proprietary Intel bus			
Security chip	Winbond WPCT200 SafeKeeper™ Trusted Platform Module, TCG 1.2-compliant			
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	1000 watts with 120mm bottom-mounted variable speed fan, universal			
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)			
Rack mount	Rack shelf support or optional sliding rack mount rail kit support			
Preloaded operating system²⁰	Accessories			
- Genuine Windows® Vista® Business 64	2GB PC2-5300 DDR2 ECC FB-DIMM 43R1772			
◇ Vista Premium logo	4GB PC2-5300 DDR2 ECC FB-DIMM 43R1773			
Preloaded applications⁵	500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990			
• Rescue and Recovery™	750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991			
• Client Security Solution™	146GB SAS 3.0Gb/s Disk (15000 rpm) 43R1993			
• ThinkVantage Productivity Center	300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994			
• ThinkVantage System Update	Super Multi-Burner DL DVD±RW SATA1.5Gb/s 41N5620			
• System Migration Assistant	ThinkStation Rail Kit 43R1964			
• Norton Internet Security™ (90 days of virus definitions)	USB 2.0 Ultra Secure Memory Key 8GB 45J5918			
• PC-Doctor™ (diagnostics)	USB 2.0 Portable Secure 320GB Hard Disk 43R2019			
• Adobe® Reader	ThinkVision® L2440p Wide 24" Monitor 4420HB2			
• Microsoft® Office 2007 Trial (60-day)	Lenovo USB Fingerprint Keyboard 73P4730			
• Sonic RecordNow and Drive Letter Access (DVD±RW)	NVIDIA Quadro 512MB FX 570 45J7917			
• Corel® WinDVD® (DVD±RW)	Other accessories at lenovo.com/accessories			

See footnotes for important warranty information
 US models announced August 19, 2008
 US models withdrawn effective February 2010

Partial list of accessories supported on ThinkStation D10

Memory

1GB PC2-5300 DDR2 ECC FB-DIMM	43R1771	ann	03/11/08
2GB PC2-5300 DDR2 ECC FB-DIMM	43R1772	ann	03/11/08
4GB PC2-5300 DDR2 ECC FB-DIMM	43R1773	ann	03/11/08

Optical

DVD-ROM DL SATA1.5Gb/s 16X-48X Max ⁴	41N5618	ann	09/26/06
Super Multi-Burner DL DVD±RW SATA1.5Gb/s	41N5620	ann	09/26/06
Blu-ray™ Burner SATA1.5Gb/s	45K1675	ann	03/31/09

Storage and removable storage

D10 preconfigured with SATA disks:

160GB SATA 3.0Gb/s Disk (7200 rpm)	09N4254	ann	05/19/03
250GB SATA 3.0Gb/s Disk (7200 rpm)	41N3015	ann	01/24/06
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	ann	11/06/07
750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	ann	12/18/07
150GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2030	ann	03/31/09
300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2031	ann	03/31/09

D10 preconfigured with SAS disks:

146GB SAS 3.0Gb/s Disk (15000 rpm)	43R1993	ann	03/11/08
300GB SAS 3.0Gb/s Disk (15000 rpm)	43R1994	ann	03/11/08

USB 2.0 Essential Memory Key 8GB	45J7905	ann	07/15/08
USB 2.0 Essential Memory Key 32GB	45K1258	ann	10/28/08
USB 2.0 Ultra Secure Memory Key 2GB	45J5916	ann	08/26/08
USB 2.0 Ultra Secure Memory Key 4GB	45J5917	ann	08/26/08
USB 2.0 Ultra Secure Memory Key 8GB	45J5918	ann	08/26/08

USB 2.0 Portable 320GB Hard Disk	45K1689	ann	03/17/09
USB 2.0 Portable 500GB Hard Disk	45K1690	ann	05/26/09
USB 2.0 Portable Secure 160GB Hard Disk	43R2018	ann	11/18/08
USB 2.0 Portable Secure 320GB Hard Disk	43R2019	ann	11/18/08
USB 2.0 Super Multi-Burner Drive	41N5565	ann	01/23/07
Lenovo® USB Portable DVD Burner	43N3264	ann	01/05/10

Keyboard

Preferred Pro USB Keyboard	73P5220	ann	06/21/05
Enhanced Performance USB Keyboard	73P2620	ann	03/23/04
Lenovo® USB Fingerprint Keyboard	73P4730	ann	02/22/05
Lenovo USB Smartcard Keyboard	51J0155	ann	03/24/09
UltraSlim Wireless Keyboard and Mouse ⁵²	57Y4700	ann	09/15/09

⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at www.lenovo.com/support/keyboards

Mouse

Lenovo Optical Mouse (USB)	06P4069	ann	05/21/03
Lenovo ScrollPoint® Mouse (USB, Optical)	31P7405	ann	08/27/02
Lenovo Laser Mouse (USB)	41U3074	ann	01/23/07
Lenovo Wireless Laser Mouse - Black ⁵²	45K1696	ann	11/25/08
Lenovo Wireless Laser Mouse - Red/Black ⁵²	51J0198	ann	11/25/08

⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at www.lenovo.com/support/mice

Monitors

ThinkVision® L1711p 17" Monitor	5047HB2	ann	10/20/09
ThinkVision L1900p 19" Monitor	4431HE1	ann	11/11/08
ThinkVision L1951p Wide 19" Monitor	2448HB6	ann	10/20/09
ThinkVision L2250p Wide 22" Monitor	2572HB6	ann	10/20/09
ThinkVision L2251p Wide 22" Monitor	2572HD6	ann	10/20/09
ThinkVision L2251x Wide 22" Monitor	2578HB6	ann	10/20/09
ThinkVision L2440p Wide 24" Monitor	4420HB2	ann	09/17/08

More information at www.lenovo.com/thinkvision

Monitor accessories⁴⁶

ThinkVision USB Soundbar	40Y7616	ann	08/23/05
ThinkVision Soundbar	45K1263	ann	09/16/08
Kensington® MicroSaver® Cable Lock	73P2582	ann	12/29/03
Kensington Twin Head Cable Lock	45K1620	ann	09/30/08
Radial Arm	19K4464	ann	05/05/00

⁴⁶ Compatible on selected Lenovo and ThinkVision monitors.

More information at www.lenovo.com/support/monitoraccessories

Graphics

DisplayPort to Single-link DVI-D Cable ⁵⁰	45J7915	ann	08/05/08
NVIDIA® Quadro® 256MB NVS 290	43R1765	ann	12/18/07
NVIDIA Quadro 256MB FX 380	45K1670	ann	03/31/09
NVIDIA Quadro 512MB FX 580	45K1671	ann	03/31/09
NVIDIA Quadro 768MB FX 1800	45K1672	ann	03/31/09
NVIDIA Quadro 1GB FX 3800	45K1673	ann	04/21/09
NVIDIA Quadro 1.5GB FX 4800	45K1674	ann	03/31/09

⁵⁰ Attaches to selected DisplayPort graphics cards.

More information at www.lenovo.com/support/graphiccards

Multimedia

USB 2.0 Lenovo Multimedia Headset	40Y8518	ann	06/27/06
USB 2.0 Lenovo Webcam	40Y8519	ann	08/29/06

Security

Kensington MicroSaver Cable Lock	73P2582	ann	12/29/03
Kensington Twin Head Cable Lock	45K1620	ann	09/30/08
USB Gemplus GemPC Smart Card Reader	41N3040	ann	02/21/06

Rack mount accessories

ThinkStation Rail Kit	43R1964	ann	03/11/08
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More information at www.lenovo.com/support/railkit

Medialess License Key (MLK)

Microsoft® Office 2007 Basic, English	43R1528	ann	01/31/07
Microsoft Office 2007 Small Business, Engl	43R1534	ann	01/31/07
Microsoft Office 2007 Professional, English	43R1531	ann	01/31/07

For more information on ThinkStation accessories, please visit:

- www.lenovo.com/support/accessories
- www.lenovo.com/support/thinkstationaccessories
- www.lenovo.com/support/security

Other accessories at www.lenovo.com/accessories

Accessories Guide pdf at www.lenovo.com/accessoriesguide



Lenovo ThinkStation C20 (left)
Lenovo ThinkStation C20x (right)



Lenovo ThinkStation C20x



Lenovo ThinkStation C20/C20x Stack



Lenovo ThinkStation Graphics Card Option
NVIDIA® Quadro® NVS 450 (57Y4398)



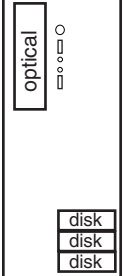
Multi-monitor Display with Optional Lenovo ThinkVision Monitor and Dual NVIDIA Quadro NVS 450
(Both Lenovo ThinkStation C20/C20x)

ThinkStation® C20 (4265) - TopSeller (Windows XP) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Memory DIMMs	Memory type	Disk(s)	Disk size	Pre-conf RAID	Chassis intr switch	Graphics adapter(s)	ENERGY STAR 5.0	Global	Preload	Avail date
4265-13U	6x4	1 x E5507	2.26	3 x 1GB	UDIMM	1x500GB ² SATA	3.5"	No	Switch	None	Pending	Global	XP Pro64	Jun 10

- **High performance workstation with smallest-possible form factor**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **This small and medium business (SMB) model is part of the US TopSeller™ Program**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5507 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache		Tower <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Two LGA1366 sockets		
Memory	3GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3** , ECC , 6-channel capable, six 240-pin DIMM sockets*** ** System automatically clocks down for processors with 800MHz DDR3 memory controller *** Over three DIMMs requires dual processors		
Graphics	None		
Diskette drive	None		
Media reader	None		
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID ⁰ 0, 1, 5 support		
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified		
Cooling	Five fans standard (power supply, first processor, one on front, two on rear)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® XP Professional 32-bit (preinstalled via downgrade rights in Windows 7 Professional 64-bit)	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	
	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	
	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	
Preloaded applications⁵ (only some listed)	ThinkVision® L2440p Wide 24" Monitor	4420HB2	
• Rescue and Recovery™	ATI™ FirePro™ 1GB V7750	51J0511	
• ThinkVantage Toolbox	More accessories on O-MAD sheet		
• McAfee® VirusScan® Plus (30 days of virus definitions)	Other accessories at lenovo.com/accessories		
• Adobe® Reader®			
• Microsoft® Office 2007 Trial (60-day)			
• Roxio® Creator® Business Edition (DVD±RW)			
• Roxio MyDVD® (DVD±RW)			
• Corel® WinDVD® (DVD±RW)			
Supports ThinkVantage® technologies			
GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0 -compliant			
LIMITED WARRANTY¹			
↪ 3-year parts and labor			
↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)			
↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty			
↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378			

See footnotes for important warranty information
US model announced June 15, 2010
US model withdrawn effective September 2010

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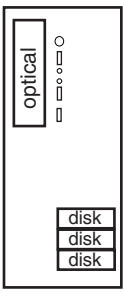
ThinkStation® C20 (4262) - Windows 7 - withdrawn

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Memory type	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Avail date		
4262-14U	6x4	2 x X5667	3.06	3.46	6 x 2GB	UDIMM	2x128GB ²	SSD	1.8"	0	DVD±RW	None	2 x NVS450	None	Pro 64	Jun 10	
<ul style="list-style-type: none"> • High performance workstation with smallest-possible form factor • Environmentally friendly, cool, and quiet with rock solid engineering • This system is Microsoft® Office 2010 Product Key Ready (O10PKR) 																	
Processor(s)	Up to two processors, two processors standard, Intel® Xeon® Processor X5667 with quad-core , 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache										Tower						
Implementation	Two LGA1366 sockets										<ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 						
Memory	12GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, six 240-pin DIMM sockets** ** Over three DIMMs requires dual processors										<ul style="list-style-type: none"> • Bay ① 5.25", 1.6" high, external, std optical • Bay ② 3.5", 1" high, internal, std disk • Bay ③ 3.5", 1" high, internal, std disk • Bay ④ 3.5", 1" high, internal, opt disk 						
Graphics	NVIDIA® Quadro® NVS 450 , PCIe x16 adapter, 512MB, four DisplayPort, 35W										<ul style="list-style-type: none"> • Slot 1: half-length, full-height, PCIe x1 • Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) • Slot 3: full-length, full-height, 32-bit PCI 2.3 • Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) • Slot 5: full-length, full-height, PCIe x16 (x4 electrical) • Slot 6: half-length, full-height, 32-bit PCI 2.3 						
Diskette drive Media reader SATA disk(s) SATA DVD±RW Disk controller	None None 128GB Solid State Drive (SSD), SATA 3.0Gb/s, 1.8" Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID ⁰ 0, 1, 5 support										<ul style="list-style-type: none"> • * Adapters >75W use auxiliary power connector(s) from PSU 						
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O										<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) 						
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)																
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in																
IEEE 1394 adptr	None																
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec																
Speaker	Internal speaker for business audio																
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755																
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant																
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black																
Mouse	Optical Wheel Mouse (USB connector), black																
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified																
Cooling	Five fans standard (power supply, first processor, one on front, two on rear) <i>Dual processors model(s):</i> One additional processor fan for second processor																
Rack mount	Rack shelf support or optional sliding rack mount rail kit support																
Preloaded operating system²⁰		Accessories															
- Genuine Windows® 7 Professional 64		2GB PC3-10600 DDR3 ECC UDIMM				43R2033				4GB PC3-10600 DDR3 ECC UDIMM				57Y4138			
Preloaded applications⁵ (only some listed)		Blu-ray™ Burner SATA 1.5Gb/s				45K1675				ThinkVision® L2440p Wide 24" Monitor				4420HB2			
• Rescue and Recovery™		More accessories on O-MAD sheet															
• ThinkVantage Toolbox		Other accessories at lenovo.com/accessories															
• Norton™ Internet Security (30 days of virus definitions)																	
• Adobe® Reader®																	
• Adobe Flash® Player																	
• Microsoft Office 2010 preloaded; purchase product key to activate																	
• Roxio® Creator® Business Edition (DVD±RW)																	
• Roxio MyDVD® (DVD±RW)																	
• Corel® WinDVD® (DVD±RW)																	
Supports ThinkVantage® technologies																	
GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating																	
LIMITED WARRANTY¹																	
↪ 1-year parts and labor																	
↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)																	
↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty																	
↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378																	

See footnotes for important warranty information
US model announced June 15, 2010
US model withdrawn effective May 2011

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	1394 adptr	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4272-52U	6x4	1xE5620	2.40	4	2x2GB	1x450GB SAS	No	None	DVD±RW	Switch	None	No	Pro 64	07/19/11

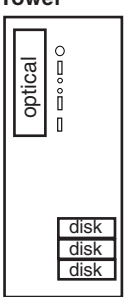
- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- Part of the US TopSeller™ Program
- Microsoft Office 2010 Product Key Ready (O10PKR)

<p>Processor(s) 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</p> <p>Implementation Two LGA1366 sockets, supports up to two processors</p> <p>Memory 96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC, 6-channel capable, twelve 240-pin DIMM sockets</p> <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 • Over six DIMMs requires dual processors </p> <p>Graphics None</p> <p>Media reader None</p> <p>Optical Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive</p> <p>Hard drive(s) 450GB, SAS 3.0Gb/s, 15000 rpm, 3.5"</p> <p>Disk Controller 3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS⁺ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, integrated in Marvell® 88SE6480</p> <p>Chipset Intel 5520 Chipset, Intel ICH10, Winbond® W83627DHG-P Super I/O</p> <p>Front ports Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)</p> <p>Rear ports Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in</p> <p>IEEE 1394 adptr None</p> <p>Audio High Definition (HD) Audio, Analog Devices AD1988A codec</p> <p>Speaker Internal speaker for business audio</p> <p>Ethernet Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754</p> <p>Security chip Broadcom Trusted Platform Module, TCG 1.2-compliant</p> <p>Keyboard Preferred Pro USB Keyboard (USB connector), 104-key, black</p> <p>Mouse Optical Wheel Mouse (USB connector), black</p> <p>Power supply 800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified</p> <p>ThinkVantage® Supports ThinkVantage technologies</p> <p>Limited Warranty 3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)</p> <p>Preload OS Genuine Windows® 7 Professional 64</p> <p>Preloaded applications <ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) </p>	<p>Tower</p>  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 3.5", 1" high, internal, std disk Bay 3: 3.5", 1" high, internal, opt disk Bay 4: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p> <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-MAD sheet</p>
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See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	1394 adptr	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4269-87U	6x4	1xE5620	2.40	4	2x2GB	1x450GB SAS	No	No	DVD±RW	Switch	1xQuadro 400	Global	Pro 64	07/19/11
4269-88U	6x4	1xX5660	2.80	6	2x2GB	1x450GB SAS	No	No	DVD±RW	Switch			Pro 64	07/19/11
4269-89U	6x4	1xX5660	2.80	6	2x2GB	1x450GB SAS	No	No	DVD±RW	Switch	1xQuadro 4000		Pro 64	07/19/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	<p>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</p> <p>Intel Xeon Processor X5660 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 3.5", 1" high, internal, std disk Bay 3: 3.5", 1" high, internal, opt disk Bay 4: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p>
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, twelve 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 • Over six DIMMs requires dual processors 	
Graphics	<p>Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p>	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	450GB, SAS 3.0Gb/s, 15000 rpm, 3.5"	
Disk Controller	3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 		
<p align="center">ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>		
<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>		
<p>More compatible accessories, please see O-MAD sheet</p>		

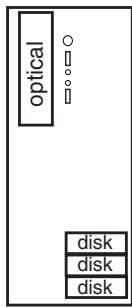
See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® C20 (4265) - TopSeller (Windows 7) - July 2011

Personal Systems Reference(PEREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4265-2EU	6x4	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xQuadro 2000	No	Pro 64	07/19/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- Part of the US TopSeller™ Program
- Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	Intel® Xeon® Processor X5650 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	Tower  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, six 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 • Over three DIMMs requires dual processors 	
Graphics	NVIDIA® Quadro® 2000 , PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I, 62W	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk Controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID 0, 1, 5 support	Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 3.5", 1" high, internal, std disk Bay 3: 3.5", 1" high, internal, opt disk Bay 4: 3.5", 1" high, internal, opt disk
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O	Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	* Adapters >75W use auxiliary power connector(s) from PSU
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s)
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
		ISV certifications Please visit www.lenovo.com/support/ISV GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating More compatible accessories, please see O-MAD sheet

See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

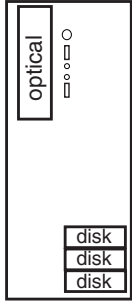
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 (MAD4-2) October 2012

ThinkStation® C20 (4263) - UDIMM (Windows 7) - July 2011

Personal Systems Reference(PEREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4263-B7U	6x4	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	Switch		Global	Pro 64	07/19/11
4263-B8U	6x4	1xX5660	2.80	6	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xQuadro 600	Global	Pro 64	07/19/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	<p>Intel® Xeon® Processor X5650 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5660 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 3.5", 1" high, internal, std disk Bay 3: 3.5", 1" high, internal, opt disk Bay 4: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p>
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, six 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 • Over three DIMMs requires dual processors 	
Graphics	<i>Some:</i> NVIDIA® Quadro® 600 , PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk Controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID 0, 1, 5 support	
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
		<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s)
		<p align="center">ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
		<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>
		More compatible accessories, please see O-MAD sheet

See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

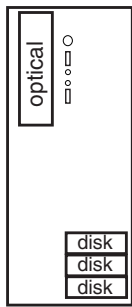
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 (MAD4-1) October 2012

ThinkStation® C20 (4265) - TopSeller (Windows 7) - April 2011

Personal Systems Reference(PEREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4265-1MU	6x4	1xE5603	1.6	4	2x2GB	1x500GB SATA	No	DVD±RW	None	1xQuadro 400	No	Pro 64	04/26/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- This small and medium business (SMB) model is part of the US TopSeller™ Program
- This system is Microsoft Office 2010 Product Key Ready (O10PKR)

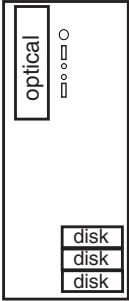
Processor(s)	Intel® Xeon® Processor E5603 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache	Tower  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 3.5", 1" high, internal, std disk Bay 3: 3.5", 1" high, internal, opt disk Bay 4: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p>
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, six 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 • Over three DIMMs requires dual processors 	
Graphics	NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk Controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID 0, 1, 5 support	
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
		<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s)
		<p align="center">ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
		<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>
		More compatible accessories, please see O-MAD sheet

See footnotes for important warranty information
 US model announced April 26, 2011
 US model(s) withdrawn effective October 2012

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 (MAD3-2) October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4263-B3U	6x4	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	None	1xQuadro 400	No	Pro 64	04/26/11
4263-B4U	6x4	1xE5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	None	1xQuadro 400	No	Pro 64	04/26/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	<p>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</p> <p>Intel Xeon Processor X5650 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 3.5", 1" high, internal, std disk Bay 3: 3.5", 1" high, internal, opt disk Bay 4: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p>
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, six 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 • Over three DIMMs requires dual processors 	
Graphics	NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
Disk Controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID 0, 1, 5 support	
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 		
<p align="center">ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>		
<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>		
<p>More compatible accessories, please see O-MAD sheet</p>		

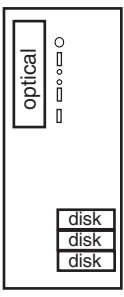
See footnotes for important warranty information
 US models announced April 26, 2011
 US model(s) withdrawn effective October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	1394 adptr	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4272-43U	6x4	1xE5645	2.40	6	2x2GB	1x300GB SAS	No	1394	DVD±RW	Switch	1x2000	No	Pro 64	02/15/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- This small and medium business (SMB) model is part of the US TopSeller™ Program
- This system is Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	Intel® Xeon® Processor E5645 with six-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache
Implementation	Two LGA1366 sockets, supports up to two processors
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, twelve 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 • Over six DIMMs requires dual processors
Graphics	NVIDIA® Quadro® 2000 , PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I, 62W
Media reader	None
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	300GB, SAS 3.0Gb/s, 15000 rpm, 3.5"
Disk Controller	3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, integrated in Marvell® 88SE6480
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec
Speaker	Internal speaker for business audio
Ethernet	Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified
ThinkVantage®	Supports ThinkVantage technologies
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)
Preload OS	Genuine Windows® 7 Professional 64
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only)

Tower



- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1: 5.25", 1.6" high, external, std optical
 Bay 2: 3.5", 1" high, internal, std disk
 Bay 3: 3.5", 1" high, internal, opt disk
 Bay 4: 3.5", 1" high, internal, opt disk

Slot 1: half-length, full-height, PCIe x1
 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 3: full-length, full-height, 32-bit PCI 2.3
 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 5: full-length, full-height, PCIe x16 (x4 electrical)
 Slot 6: half-length, full-height, 32-bit PCI 2.3

* Adapters >75W use auxiliary power connector(s) from PSU

- SECURITY**
- Security chip (see information on left)
 - Side cover lock (ships with two identical keys)
 - Padlock loop (in rear for opt padlock)
 - Security slot (in rear for optional Kensington® Microsaver® cable)
 - Power-on password
 - Administrator password
 - Boot sequence control
 - Boot without keyboard, mouse
 - USB port disablement (front or all)
 - Chassis intrusion switch on selected model(s)

ISV certifications
 Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

More compatible accessories, please see O-MAD sheet

See footnotes for important warranty information
 US model announced February 15, 2011
 US model(s) withdrawn effective October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	1394 adptr	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4269-72U	6x4	1xX5687	3.6	4	2x2GB	1x300GB SAS	No	No	DVD±RW	Switch		No	Pro 64	02/15/11
4269-73U	6x4	1xX5647	2.93	4	2x2GB	1x300GB SAS	No	No	DVD±RW	Switch	1x600	No	Pro 64	02/15/11
4269-74U	6x4	1xX5647	2.93	4	2x2GB	1x300GB SAS	No	No	DVD±RW	Switch	1x2000	No	Pro 64	02/15/11
4269-75U	6x4	1xX5607	2.26	4	2x2GB	1x300GB SAS	No	No	DVD±RW	Switch	1x2000	No	Pro 64	02/15/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	<p>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</p> <p>Intel Xeon Processor X5647 with quad-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5687 with quad-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>
Implementation	Two LGA1366 sockets, supports up to two processors
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, twelve 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 • Over six DIMMs requires dual processors
Graphics	<p><i>Some:</i> NVIDIA® Quadro® 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>
Media reader	None
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	300GB, SAS 3.0Gb/s, 15000 rpm, 3.5"
Disk Controller	3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, integrated in Marvell® 88SE6480
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in
IEEE 1394 adptr	None
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec
Speaker	Internal speaker for business audio
Ethernet	Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified

Tower

- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1: 5.25", 1.6" high, external, std optical
 Bay 2: 3.5", 1" high, internal, std disk
 Bay 3: 3.5", 1" high, internal, opt disk
 Bay 4: 3.5", 1" high, internal, opt disk

Slot 1: half-length, full-height, PCIe x1
 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 3: full-length, full-height, 32-bit PCI 2.3
 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 5: full-length, full-height, PCIe x16 (x4 electrical)
 Slot 6: half-length, full-height, 32-bit PCI 2.3

* Adapters >75W use auxiliary power connector(s) from PSU

ThinkVantage®	Supports ThinkVantage technologies
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)
Preload OS	Genuine Windows® 7 Professional 64
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only)

SECURITY

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- Padlock loop (in rear for padlock)
- Security slot (in rear for optional Kensington® Microsaver® cable)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- USB port disablement (front or all)
- Chassis intrusion switch on selected model(s)

ISV certifications

Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

More compatible accessories, please see O-MAD sheet

See footnotes for important warranty information
 US models announced February 15, 2011
 US model(s) withdrawn effective August or October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4265-97U	6x4	1xE5603	1.6	4	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xQuadro FX380	No	Pro 64	02/15/11
4265-98U	6x4	1xE5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xQuadro 600	No	Pro 64	02/15/11
4265-99U	6x4	1xE5645	2.40	6	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xNVS 450	No	Pro 64	02/15/11

- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	<p>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</p> <p>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</p> <p>Intel Xeon Processor E5645 with six-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit
Implementation	Two LGA1366 sockets, supports up to two processors	<p>Bay 1: 5.25", 1.6" high, external, std optical</p> <p>Bay 2: 3.5", 1" high, internal, std disk</p> <p>Bay 3: 3.5", 1" high, internal, opt disk</p> <p>Bay 4: 3.5", 1" high, internal, opt disk</p>
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, six 240-pin DIMM sockets	<p>Slot 1: half-length, full-height, PCIe x1</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 3: full-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 5: full-length, full-height, PCIe x16 (x4 electrical)</p> <p>Slot 6: half-length, full-height, 32-bit PCI 2.3</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 • Over three DIMMs requires dual processors 	<p>* Adapters >75W use auxiliary power connector(s) from PSU</p>
Graphics	<p>Some: NVIDIA® Quadro® NVS 450, PCIe x16 adapter, 512MB, four DisplayPort™, 35W</p> <p>Some: NVIDIA Quadro FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p>Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s)
Media reader	None	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p>
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	<p>More compatible accessories, please see O-MAD sheet</p>
Disk Controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID 0, 1, 5 support	
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	

See footnotes for important warranty information
 US models announced February 15, 2011
 US model(s) withdrawn effective June 2011 or October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Announce date (mm/dd/yy)
4263-A2U	6x4	1xE5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xFX380	No	Pro 64	02/15/11
4263-A3U	6x4	1xE5645	2.40	6	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1x2000	No	Pro 64	02/15/11
4263-A4U	6x4	1xE5645	2.40	6	2x2GB	1x500GB SATA	No	DVD±RW	Switch	1xNVS 450	No	Pro 64	02/15/11

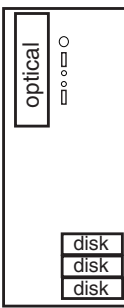
- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor(s)	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 Intel Xeon Processor E5645 with six-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache
Implementation	Two LGA1366 sockets, supports up to two processors
Memory	48GB max, UDIMM, PC3-10600 1333MHZ DDR3, ECC , 6-channel capable, six 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 • Over three DIMMs requires dual processors
Graphics	<i>Some:</i> NVIDIA® Quadro® NVS 450 , PCIe x16 adapter, 512MB, four DisplayPort™, 35W <i>Some:</i> NVIDIA Quadro FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W <i>Some:</i> NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W
Media reader	None
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"
Disk Controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID 0, 1, 5 support
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in
IEEE 1394 adptr	None
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec
Speaker	Internal speaker for business audio
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified

ThinkVantage®	Supports ThinkVantage technologies
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)

Preload OS	Genuine Windows® 7 Professional 64
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only)

Tower



- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1: 5.25", 1.6" high, external, std optical
 Bay 2: 3.5", 1" high, internal, std disk
 Bay 3: 3.5", 1" high, internal, opt disk
 Bay 4: 3.5", 1" high, internal, opt disk

Slot 1: half-length, full-height, PCIe x1
 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 3: full-length, full-height, 32-bit PCI 2.3
 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 5: full-length, full-height, PCIe x16 (x4 electrical)
 Slot 6: half-length, full-height, 32-bit PCI 2.3

* Adapters >75W use auxiliary power connector(s) from PSU

SECURITY
<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s)

ISV certifications
 Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

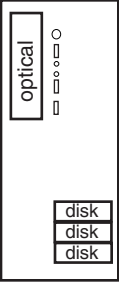
More compatible accessories, please see O-MAD sheet

ThinkStation® C20x (4272) - TopSeller (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Memory type	Disk(s)	Disk size	Pre-conf RAID	1394 adptr	Chassis intr switch	Graphics adapter(s)	Win7 preload	Global	Avail date
4272-35U	6x4	1 x E5630	2.53	2.80	2 x 2GB	UDIMM	1x300GB ² SAS	3.5"	No	1394	None	1 x FX1800	Pro 64		Jun 10
4272-41U	6x4	1 x E5630	2.53	2.80	2 x 2GB	UDIMM	1x300GB SAS	3.5"	No		None	1 x 2000	Pro 64	Global	Nov 10
4272-42U	6x4	1 x X5650	2.66	3.06	3 x 2GB	UDIMM	1x300GB SAS	3.5"	No		None	1 x 2000	Pro 64		Nov 10

- **High performance workstation with smallest-possible form factor**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5630 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 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	Tower <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Two LGA1366 sockets	
Memory	4GB or 6GB std, 96GB max, UDIMM, PC3-10600 1333MHz DDR3** , ECC , 6-channel capable, twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors	
Graphics	<i>Some:</i> NVIDIA® Quadro® FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W <i>Some:</i> NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W **** Only two display connectors are active at a time	
Diskette drive	None	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 3.5", 1" high, internal, std disk</p> <p>Bay ③ 3.5", 1" high, internal, opt disk</p> <p>Bay ④ 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 3: full-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 5: full-length, full-height, PCIe x16 (x4 electrical)</p> <p>Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p> <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Media reader	None	
SATA disk(s)	300GB , SAS 3.0Gb/s, 15000 rpm, 3.5"	
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	
Disk controller	3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
Cooling	Five fans standard (power supply, first processor, one on front, two on rear)	
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	
Preloaded operating system²⁰	Accessories	
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM	43R2033
Preloaded applications⁵ (only some listed)	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138
• Rescue and Recovery™	Blu-ray™ Burner SATA 1.5Gb/s	45K1675
• ThinkVantage Toolbox	ThinkVision® L2440p Wide 24" Monitor	4420HB2
• Norton™ Internet Security (30 days of virus definitions)	More accessories on O-MAD sheet	
• Adobe® Reader®	Other accessories at lenovo.com/accessories	
• Adobe Flash® Player		
• Microsoft Office 2010 preloaded; purchase product key to activate		
• Roxio MyDVD® (DVD±RW)		
• Corel® WinDVD® (DVD±RW)		

See footnotes for important warranty information
US models announced November 2, 2010; previous model on June 15, 2010
US models withdrawn effective February 2011, May 2011, or October 2012

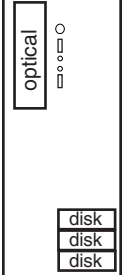
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(MAD1-9) October 2012

ThinkStation® C20 (4265) - TopSeller (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Memory type	Disk(s)	Disk size	Pre-conf RAID	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Avail date
4265-46U	6x4	1 x E5620	2.40	2.66	2 x 2GB	UDIMM	1x500GB ² SATA	3.5"	No	Switch	1 x Quadro FX580		Pro 64	Jun 10
4265-54U	6x4	1 x E5620	2.40	2.66	2 x 2GB	UDIMM	1x300GB SATA	2.5"	No		1 x Quadro FX1800		Pro 64	Jun 10
4265-55U	6x4	1 x E5503	2.00		2 x 2GB	UDIMM	1x500GB SATA	3.5"	No		1 x Quadro FX380		Pro 64	Jun 10
4265-72U	6x4	1 x E5507	2.26		2 x 2GB	UDIMM	1x500GB SATA	3.5"	No		1 x Quadro FX580		Pro 64	Jun 10
4265-92U	6x4	1 x E5620	2.40	2.66	2 x 2GB	UDIMM	1x500GB SATA	3.5"	No		1 x Quadro 600		Pro 64	Nov10
4265-93U	6x4	1 x E5620	2.40	2.66	2 x 2GB	UDIMM	1x300GB SATA	2.5"	No		1 x Quadro 2000		Pro 64	Nov10
4265-94U	6x4	1 x E5507	2.26		2 x 2GB	UDIMM	1x500GB SATA	3.5"	No		1 x Quadro 600	Global	Pro 64	Nov10
4265-95U	6x4	1 x E5640	2.66	2.93	2 x 2GB	UDIMM	1x500GB SATA	3.5"	No		1 x Quadro NVS450		Pro 64	Nov10

- High performance workstation with smallest-possible form factor
- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor(s)	Up to two processors, one processor standard, Intel® Xeon® Processor E5503 with dual-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5507 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5620 or E5640 with quad-core , 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 12MB cache	Tower <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 								
Implementation	Two LGA1366 sockets									
Memory	4GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3**, ECC , 6-channel capable, six 240-pin DIMM sockets*** ** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller *** Over three DIMMs requires dual processors	Bay ① 5.25", 1.6" high, external, std optical Bay ② 3.5", 1" high, internal, std disk Bay ③ 3.5", 1" high, internal, opt disk Bay ④ 3.5", 1" high, internal, opt disk								
Graphics	Some: NVIDIA® Quadro® NVS 450 , PCIe x16 adapter, 512MB, four DisplayPort™, 35W Some: NVIDIA Quadro FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: NVIDIA Quadro FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W Some: NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W Some: NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W Some: NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W **** Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3 * Adapters >75W use auxiliary power connector(s) from PSU								
Diskette drive	None	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Some: Chassis intrusion switch 								
Media reader	None									
SATA disk(s)	Some: 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5" Some: 300GB , SATA 3.0Gb/s, 10000 rpm, 2.5" Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s									
SATA DVD±RW	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID [®] 0, 1, 5 support									
Disk controller										
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O									
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm),									
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in									
IEEE 1394 adptr	None									
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec									
Speaker	Internal speaker for business audio									
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755									
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant									
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	ISV certifications Please visit www.lenovo.com/support/ISV								
Mouse	Optical Wheel Mouse (USB connector), black									
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	Supports ThinkVantage® technologies								
Cooling	Five fans standard (power supply, first processor, one on front, two on rear)	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating								
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 								
Preloaded operating system²⁰	- Genuine Windows® 7 Professional 64	Accessories <table border="0"> <tr> <td>2GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2033</td> </tr> <tr> <td>4GB PC3-10600 DDR3 ECC UDIMM</td> <td>57Y4138</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>ThinkVision® L2440p Wide 24" Monitor</td> <td>4420HB2</td> </tr> </table> More accessories on O-MAD sheet Other accessories at lenovo.com/accessories	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	ThinkVision® L2440p Wide 24" Monitor	4420HB2
2GB PC3-10600 DDR3 ECC UDIMM	43R2033									
4GB PC3-10600 DDR3 ECC UDIMM	57Y4138									
Blu-ray™ Burner SATA 1.5Gb/s	45K1675									
ThinkVision® L2440p Wide 24" Monitor	4420HB2									
Preloaded applications⁵ (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery™ • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Corel® WinDVD® (DVD±RW) 									

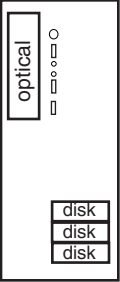
See footnotes for important warranty information
 US models announced November 2, 2010; previous models on June 15, 2010
 US models withdrawn effective February 2011, May 2011, or October 2012

ThinkStation® C20x (4269) - UDIMM (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Disk(s)	Disk size	Pre-conf RAID	1394 adptr	SATA optical	Chassis intr switch	Graphics adapter(s)	Global	Avail date
4269-11U	6x4	1 x E5640	2.66	2.93	2 x 2GB	1x300GB ² SAS	3.5"	No	1394	DVD±RW		1 x Quadro FX1800		Jun 10
4269-12U	6x4	1 x E5507	2.26		2 x 2GB	1x300GB SAS	3.5"	No	1394	DVD±RW		1 x Quadro FX1800		Jun 10
4269-13U	6x4	1 x X5650	2.66	3.06	2 x 2GB	1x300GB SAS	3.5"	No	1394	DVD±RW		1 x Quadro FX580		Jun 10
4269-17U	6x4	2 x X5667	3.06	3.46	6 x 2GB	1x450GB SAS	3.5"	No		DVD±RW	Switch		Global	Jun 10
4269-19U	6x4	2 x X5677	3.46	3.73	6 x 2GB	1x300GB SAS	3.5"	No		DVD±RW	Switch		Global	Jun 10
4269-21U	6x4	2 x X5650	2.66	3.06	6 x 2GB	1x300GB SAS	3.5"	No		DVD±RW	Switch		Global	Jun 10
4269-22U	6x4	2 x E5640	2.66	2.93	6 x 2GB	1x300GB SAS	3.5"	No		DVD±RW	Switch		Global	Jun 10
4269-68U	6x4	1 x E5640	2.66	2.93	2 x 2GB	1x300GB SAS	3.5"	No		DVD±RW		1 x Quadro 2000		Nov10
4269-69U	6x4	1 x E5507	2.26		2 x 2GB	1x300GB SAS	3.5"	No		DVD±RW		1 x Quadro 2000		Nov10
4269-71U	6x4	1 x X5650	2.66	3.06	2 x 2GB	1x300GB SAS	3.5"	No		DVD±RW		1 x Quadro 600		Nov10

• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5507 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5640 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 X5667 or X5677 with quad-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost 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	Tower	
Implementation	Two LGA1366 sockets	<ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay ① 5.25", 1.6" high, external, std optical Bay ② 3.5", 1" high, internal, std disk Bay ③ 3.5", 1" high, internal, opt disk Bay ④ 3.5", 1" high, internal, opt disk</p>	
Memory	4GB or 12GB std, 96GB max, UDIMM, PC3-10600 1333MHz DDR3**, ECC , 6-channel capable, twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors	<p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p>	
Graphics	<p><i>Some:</i> NVIDIA® Quadro® FX 580, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I****, 40W</p> <p><i>Some:</i> NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p><i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W</p> <p>**** Only two display connectors are active at a time</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) • <i>Some:</i> Chassis intrusion switch 	
Diskette drive	None	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 	
Media reader	None		
SATA disk(s)	300GB or 450GB , SAS 3.0Gb/s, 15000 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		
Disk controller	3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, integrated in Marvell® 88SE6480		
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified		
Cooling	Five fans standard (power supply, first processor, one on front, two on rear) <i>Dual processors model(s):</i> One additional processor fan for second processor		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Preloaded applications⁵ (only some listed)		
- Genuine Windows® 7 Professional 64	• Microsoft Office 2010 preloaded; purchase product key to activate		

See footnotes for important warranty information

US models announced November 2, 2010; previous models on June 15, 2010
 US models withdrawn effective February 2011, May 2011, or October 2012

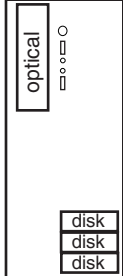
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ThinkStation® C20 (4263) - RDIMM (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Chassis intr switch	Graphics adapter(s)	Global	Win7 preload	Avail date
4263-61U	6x4	1 x E5620	2.40	2.66	2 x 2GB	1x150GB ²	SATA 2.5"	No	DVD±RW	Switch		Global	Pro 64	Jun 10
4263-63U	6x4	1 x X5650	2.66	3.06	1 x 4GB	1x150GB	SATA 2.5"	No	DVD±RW	Switch		Global	Pro 64	Jun 10
4263-71U	6x4	2 x E5620	2.40	2.66	6 x 2GB	1x250GB	SATA 3.5"	No	DVD	Switch	2xQuadro NVS295	Global	Pro 64	Jun 10

- **High performance workstation with smallest-possible form factor**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor(s)	Up to two processors, one or two processors 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 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		Tower <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Two LGA1366 sockets		
Memory	4GB or 12GB std, 96GB max (Pending availability of 16GB RDIMM), RDIMM, PC3-10600 1333MHz DDR3**, ECC , 6-channel capable, six 240-pin DIMM sockets*** ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over three DIMMs requires dual processors		
Graphics	<i>Some:</i> NVIDIA® Quadro® NVS 295 , PCIe x16 adapter, 256MB, two DisplayPort, 23W		
Diskette drive	None		SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch ISV certifications Please visit www.lenovo.com/support/ISV Supports ThinkVantage® technologies GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating LIMITED WARRANTY¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ⇨ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Media reader	None		
SATA disk(s)	<i>Some:</i> 250GB , SATA 3.0Gb/s, 7200 rpm, 3.5" <i>Some:</i> 150GB , SATA 3.0Gb/s, 10000 rpm, 2.5"		
SATA DVD	<i>Some:</i> DVD-ROM DL SATA 1.5Gb/s 16-48X Max ⁴ Drive		
SATA DVD±RW	<i>Some:</i> Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID ⁵ 0, 1, 5 support		
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm),		
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified		
Cooling	Five fans standard (power supply, first processor, one on front, two on rear) <i>Dual processors model(s):</i> One additional processor fan for second processor <i>4GB RDIMM model(s):</i> One additional memory fan for single processor model(s), Two additional memory fans for dual processors model(s)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC RDIMM	57Y4425	
Preloaded applications⁵ (only some listed)	4GB PC3-10600 DDR3 ECC RDIMM	57Y4426	
• Rescue and Recovery™	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	
• Norton™ Internet Security (30 days of virus definitions)	ThinkVision® L2440p Wide 24" Monitor	4420HB2	
• Microsoft Office 2010 preloaded; purchase product key to activate	More accessories on O-MAD sheet		
• Roxio® Creator® Business Edition (DVD±RW)	Other accessories at lenovo.com/accessories		
• Corel® WinDVD® (DVD±RW)			

See footnotes for important warranty information
 US models announced June 15, 2010
 US model(s) withdrawn effective October 2012

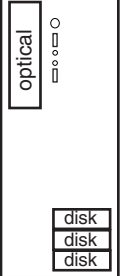
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ThinkStation® C20 (4263) - UDIMM (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Chassis intr switch	Graphics adapter(s)	Global	Win7 preload	Avail date
4263-12U 6x4	1 x	E5507	2.26		3 x 2GB	1x500GB ² SATA	3.5"	No	DVD±RW	Switch		Global	Pro 64	Jun 10
4263-22U 6x4	2 x	E5640	2.66	2.93	6 x 1GB	1x300GB SATA	2.5"	No	DVD±RW	Switch	1 x Quadro NVS450	Global	Pro 64	Jun 10
4263-23U 6x4	2 x	E5620	2.40	2.66	6 x 1GB	1x150GB SATA	2.5"	No	DVD	Switch	1 x Quadro NVS295	Global	Pro 64	Jun 10
4263-67U 6x4	1 x	X5650	2.66	3.06	2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro FX380		Pro 64	Jun 10
4263-72U 6x4	2 x	X5650	2.66	3.06	6 x 2GB	1x150GB SATA	2.5"	No	DVD	Switch	1 x Quadro NVS295	Global	Pro 64	Jun 10
4263-79U 6x4	1 x	E5507	2.26		2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro FX380		Pro 64	Jun 10
4263-81U 6x4	1 x	E5620	2.40	2.66	2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro FX580		Pro 64	Jun 10
4263-82U 6x4	1 x	E5630	2.53	2.80	2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro FX1800		Pro 64	Jun 10
4263-97U 6x4	1 x	E5620	2.40	2.66	2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro 600	Global	Pro 64	Nov 10
4263-98U 6x4	1 x	E5630	2.53	2.80	2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro 2000	Global	Pro 64	Nov 10
4263-99U 6x4	1 x	E5640	2.66	2.93	2 x 2GB	1x500GB SATA	3.5"	No	DVD±RW		1 x Quadro NVS450		Pro 64	Nov 10
4263-A1U 6x4	1 x	E5507	2.26		2 x 2GB	1x160GB SSD	1.8"	No	DVD±RW		2 x Quadro NVS295		Pro 64	Nov 10

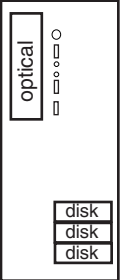
- High performance workstation with smallest-possible form factor
- Environmentally friendly, cool, and quiet with rock solid engineering
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5507 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5620, E5630, or E5640 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 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	Tower <ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Two LGA1366 sockets	
Memory	4GB, 6GB, or 12GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3**, ECC , 6-channel capable, six 240-pin DIMM sockets*** ** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller *** Over three DIMMs requires dual processors	Bay ① 5.25", 1.6" high, external, std optical Bay ② 3.5", 1" high, internal, std disk Bay ③ 3.5", 1" high, internal, opt disk Bay ④ 3.5", 1" high, internal, opt disk
Graphics	Some: NVIDIA® Quadro® NVS 295 , PCIe x16 adapter, 256MB, two DisplayPort™, 23W Some: NVIDIA Quadro NVS 450 , PCIe x16 adapter, 512MB, four DisplayPort, 35W Some: NVIDIA Quadro FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: NVIDIA Quadro FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W Some: NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W Some: NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W Some: NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W **** Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3 * Adapters >75W use auxiliary power connector(s) from PSU
Diskette drive	None	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Some: Chassis intrusion switch
Media reader	None	
SATA disk(s)	Some: 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5" Some: 150GB or 300GB , SATA 3.0Gb/s, 10000 rpm, 2.5" Some: 160GB Solid State Drive (SSD), SATA 3.0Gb/s, 1.8" Some: DVD-ROM DL SATA 1.5Gb/s 16-48X Max ⁴ Drive Some: Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	ISV certifications Please visit www.lenovo.com/support/ISV
SATA DVD	Some: DVD-ROM DL SATA 1.5Gb/s 16-48X Max ⁴ Drive	
SATA DVD±RW	Some: Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, one SATA connector for optical, RAID ⁵ 0, 1, 5 support	
Chipset	Intel 5520 Chipset , Intel ICH10R, Winbond® W83627DHG-P Super I/O	Supports ThinkVantage® technologies
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm),	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating
Rear ports	Eight USB 2.0, eSATA, one ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified	
Cooling	Five fans standard (power supply, first processor, one on front, two on rear) <i>Dual processors model(s):</i> One additional processor fan for second processor	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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	

See footnotes for important warranty information
 US models announced November 2, 2010; previous models on June 15, 2010
 US models withdrawn effective February, May, June, September 2011 or October 2012

Type-model	Slot x bay	Processor(s)	GHz	Max Turbo GHz	Memory DIMMs	Memory type	Disk(s)	Disk size	Pre-conf RAID	SATA optical	1394 adptr	Graphics adapter(s)	Win7 preload	Avail date
4266-11U	6x4	2 x X5680	3.33	3.60	12 x 2GB	RDIMM	2x128GB ² SSD	1.8"	0	Blu-ray	1394	1 x NVS450 + Tesla	Pro 64	Jun 10

- **High performance workstation with smallest-possible form factor**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor(s)	Up to two processors, two processors standard, Intel® Xeon® Processor X5680 with six-core , 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	Tower	
Implementation	Two LGA1366 sockets		
Memory	24GB std, 192GB max (Pending availability of 16GB RDIMM), RDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable, twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors	<ul style="list-style-type: none"> • Rack-mountable to 3U • Raven black color; metal case • 5.1"W x 17.5"D x 16.8"H • 130mm W x 444mm D x 427mm H • 40.7 lb (18.5kg) max configuration • 24-liter • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Graphics	NVIDIA® Quadro® NVS 450 , PCIe x16 adapter, 512MB, four DisplayPort, 35W	Bay ① 5.25", 1.6" high, external, std optical Bay ② 3.5", 1" high, internal, std disk Bay ③ 3.5", 1" high, internal, std disk Bay ④ 3.5", 1" high, internal, opt disk	
GPU Computing	NVIDIA Tesla™ C1060 , PCIe x16 adapter, 4GB, IEEE 754 single-precision and double-precision floating point, 188W	Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x16 (x4 electrical) Slot 6: half-length, full-height, 32-bit PCI 2.3 * Adapters >75W use auxiliary power connector(s) from PSU	
Diskette drive	None	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all) 	
Media reader	None		
SATA disk(s)	128GB Solid State Drive (SSD), SATA 3.0Gb/s, 1.8"		
SATA DVD±RW	Blu-ray™ Burner, SATA 1.5Gb/s		
Disk controller	3 SATA connectors for optical, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, integrated in Marvell® 88SE6480		
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	Two gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, Climate Savers® Computing Gold, 80 PLUS® Gold qualified		
Cooling	Five fans standard (power supply, first processor, one on front, two on rear) <i>Dual processors model(s):</i> One additional processor fan for second processor		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Accessories	Supports ThinkVantage® technologies GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating LIMITED WARRANTY¹ ⇨ 1-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378	
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC RDIMM 57Y4425		
Preloaded applications⁵ (only some listed)	4GB PC3-10600 DDR3 ECC RDIMM 57Y4426		
• Rescue and Recovery™	Blu-ray™ Burner SATA 1.5Gb/s 45K1675		
• ThinkVantage Toolbox	ThinkVision® L2440p Wide 24" Monitor 420HB2		
• Norton™ Internet Security (30 days of virus definitions)	More accessories on O-MAD sheet		
• Adobe® Reader®	Other accessories at lenovo.com/accessories		
• Adobe Flash® Player			
• Microsoft Office 2010 preloaded; purchase product key to activate			
• Roxio MyDVD® (Blu-ray)			
• Corel® WinDVD® (Blu-ray)			
• Ulead® DVD MovieFactory® (Blu-ray)			

See footnotes for important warranty information
 US model announced June 15, 2010
 US model withdrawn effective May 2011

Partial list of accessories supported on ThinkStation C20 and C20x

Heatsink⁶²

- Second Processor Heatsink for C20/C20x 0A65720 *ann 01/10/12*
- ⁶² The heatsink is used for second processor (to be provided by customer from business partner, not for Lenovo processor options)
- The heatsink supports Intel Xeon processor (LGA1366)
- Please follow heatsink installation instruction on <http://www.lenovo.com/support/thinkstationd20/heat-sink-instructions>

Memory⁵³

- 2GB PC3-10600 DDR3 ECC UDIMM⁵⁴ 43R2033 *ann 03/31/09*
- 4GB PC3-10600 DDR3 ECC UDIMM⁵⁴ 57Y4138 *ann 08/04/09*
- 8GB PC3-10600 DDR3 ECC UDIMM⁵⁴ 0A65718 *ann 04/24/12*
- 2GB PC3-10600 DDR3 ECC RDIMM⁵⁴ 57Y4425 *ann 04/13/10*
- 4GB PC3-10600 DDR3 ECC RDIMM⁵⁴ 57Y4426 *ann 04/13/10*
- 8GB PC3-10600 DDR3 ECC RDIMM⁵⁴ 57Y4427 *ann 04/13/10*

⁵³ Mixing of UDIMM and RDIMM is not supported
⁵⁴ Actual memory operating speed is the lowest installed speed, dependent on processor memory bus speed and PC3-8500 / PC3-10600 installed configuration

More information on memory and processor configuration, operation and limitation, please visit:

www.lenovo.com/support/thinkstationaccessories

Optical

- DVD-ROM DL SATA1.5Gb/s 16X-48X Max⁴ 41N5618 *ann 09/26/06*
- Lenovo® Super Multi-Burner SATA Drive 0A65618 *ann 08/23/11*
- Blu-ray™ Burner SATA1.5Gb/s 45K1675 *ann 03/31/09*

Storage and removable storage

- C20, C20x preconfigured with SATA disks:*
- 250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015 *ann 01/24/06*
- 500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990 *ann 11/06/07*
- 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 *ann 08/19/08*
- 300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2031 *ann 03/31/09*

- C20x preconfigured with SAS disks:*
- 450GB SAS 3.0Gb/s Disk (15000 rpm) 43N3424 *ann 02/02/10*

- All:*
- USB 2.0 Portable 320GB Hard Disk 45K1689 *ann 03/17/09*
- USB 2.0 Portable 500GB Hard Disk 45K1690 *ann 05/26/09*
- USB 2.0 Portable Secure 320GB Hard Disk 43R2019 *ann 11/18/08*

Keyboard

- Preferred Pro USB Keyboard 73P5220 *ann 06/21/05*
- Enhanced Performance USB Keyboard 73P2620 *ann 03/23/04*
- Lenovo USB Fingerprint Keyboard 73P4730 *ann 02/22/05*
- Lenovo USB Smartcard Keyboard 51J0155 *ann 03/24/09*
- Ultraslim Plus Wireless Keyboard and Mouse⁵² 0A34032 *ann 04/05/11*

More information at www.lenovo.com/support/keyboards

Mouse

- Lenovo Optical Mouse (USB) 06P4069 *ann 05/21/03*
 - Lenovo ScrollPoint® Mouse (USB, Optical) 31P7405 *ann 08/27/02*
 - Lenovo Laser Mouse (USB) 41U3074 *ann 01/23/07*
 - Lenovo Wireless Laser Mouse⁵² 0A36188 *ann 12/20/11*
- ⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at www.lenovo.com/support/mice

Monitors

- ThinkVision®:*
- L1711p 17" (VGA, DVI-D) 5047HB2 *ann 10/20/09*
- LT1952p Wide 19" (VGA, DP, DVI-D)⁶⁹ 2448MB6 *ann 09/13/11*
- L2250p Wide 22" (VGA, DVI-D) 2572HB6 *ann 10/20/09*
- L2251x Wide 22" (VGA, DP) 2578HB6 *ann 10/20/09*
- LT2252p Wide 22" (VGA, DP, DVI-D)⁶⁹ 2572MB6 *ann 09/13/11*
- LT2452p Wide 24" (VGA, DP, DVI-D)⁶⁹ 4420MB2 *ann 09/13/11*

⁶⁹ DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).

More information at www.lenovo.com/support/monitors

Monitor accessories⁴⁶

- Kensington® MicroSaver® Cable Lock 73P2582 *ann 12/29/03*
 - Kensington Twin Head Cable Lock 45K1620 *ann 09/30/08*
- ⁴⁶ Compatible on selected Lenovo and ThinkVision monitors.

More information at www.lenovo.com/support/monitoraccessories

Graphics

- DisplayPort™ to Single-link DVI-D Cable⁵⁰ 45J7915 *ann 08/05/08*
- DisplayPort to DisplayPort Monitor Cable⁵⁰ 0A36537 *ann 09/13/11*
- NVIDIA® Quadro® 256MB NVS 295 45K1669 *ann 04/21/09*
- NVIDIA Quadro 512MB NVS 300 DMS59⁶⁵ 0A36528 *ann 04/26/11*
- NVIDIA Quadro 512MB NVS 450 57Y4398 *ann 01/19/10*
- NVIDIA Quadro 512MB 400 0A36535 *ann 06/28/11*
- NVIDIA Quadro 1GB 600 0A36183 *ann 10/26/10*
- NVIDIA Quadro 1GB 2000 57Y4479 *ann 10/26/10*
- NVIDIA Quadro 1GB 2000D 0A36541 *ann 11/01/11*
- NVIDIA Quadro 2GB 4000 57Y4480 *ann 10/26/10*
- NVIDIA Quadro 2.5GB 5000 57Y4481 *ann 10/26/10*
- NVIDIA SLI Connector⁶⁰ 55Y8963 *ann 03/31/09*

⁵⁰ Attaches to selected DisplayPort graphics cards.
⁶⁰ Compatible to Quadro 5000.
⁶⁵ Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.

More information at www.lenovo.com/support/graphiccards

Security

- Kensington MicroSaver Cable Lock 73P2582 *ann 12/29/03*
- Kensington Twin Head Cable Lock 45K1620 *ann 09/30/08*
- Lenovo Security Cable Lock 57Y4303 *ann 08/24/10*
- USB Gemplus GemPC Smart Card Reader 41N3040 *ann 02/21/06*

Rack mount accessories

- ThinkStation C-Series, D-Series Rail Kit 57Y4482 *ann 09/14/10*

For more information on accessories:

www.lenovo.com/accessories

Purchase Lenovo accessories

www.lenovo.com/support/accessories

Product specifications on Lenovo Support

www.lenovo.com/accessoriesguide

Option Compatibility Matrix (OCM) and accessory brochures

www.lenovoquickpick.com

An Options Compatibility Configurator for Lenovo systems

Memory Speed Table for ThinkStation C20x

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)		PC3-8500 UDIMM (1GB, 2GB)	PC3-10600 RDIMM (2GB, 4GB, 8GB)		PC3-8500 RDIMM (1GB, 2GB, 4GB)	PC3-8500 RDIMM (8GB)	
	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6
Amount of DIMMs installed per CPU bank								
CPU Model	Actual Memory Speed							
Intel® Xeon® E5603	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5606	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5607	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5645	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5649	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5647	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5672	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5675	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5687	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5690	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz

For more information on ThinkStation D20 processor and memory accessories, please visit:

www.lenovo.com/support/accessories
www.lenovo.com/support/thinkstationaccessories

Memory Loading Notes on ThinkStation C20x

System memory speed on ThinkStation C20x will be determined by a number of factors, including the microprocessor model and the type, speed, size (capacity), and number of DIMMs installed. Refer to the following table for information on the supported system memory speed for your ThinkStation model.

- ThinkStation C20x has twelve memory slots; divided into two sets of 6-DIMM memory slots
- Memory controller is integrated in processor
- ThinkStation C20x has 2 processor slots, each processor control six DIMMs
- Over six DIMMs requires dual processor
- ThinkStation C20x supports UDIMM and RDIMM, mixing of UDIMM and RDIMM is not supported

Memory Speed Table for ThinkStation C20x

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)		PC3-8500 UDIMM (1GB, 2GB)	PC3-10600 RDIMM (2GB, 4GB, 8GB)		PC3-8500 RDIMM (1GB, 2GB, 4GB)	PC3-8500 RDIMM (8GB)	
	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6
CPU Model	Actual Memory Speed							
Intel® Xeon® E5502	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5503	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5504	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5506	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5507	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5520	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5530	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5540	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5620	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5630	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5640	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5550	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5560	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5570	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5650	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5660	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5667	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5670	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5677	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5680	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon W5580	1333MHz	1066MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon W5590	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz

For more information on ThinkStation C20x processor and memory accessories, please visit:

- www.lenovo.com/support/accessories
- www.lenovo.com/support/thinkstationaccessories

Memory Speed Table for ThinkStation C20

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)	PC3-8500 UDIMM (1GB, 2GB, 4GB)	PC3-10600 RDIMM (1GB, 2GB, 4GB, 8GB)	PC3-8500 RDIMM (1GB, 2GB, 4GB)	PC3-8500 RDIMM (8GB, 16GB)
Amount of DIMMs installed per CPU bank	1 to 3	1 to 3	1 to 3	1 to 3	1 to 3
CPU Model	Actual Memory Speed				
Intel® Xeon® E5603	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5606	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5607	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5645	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon E5649	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5672	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5675	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz

For more information on ThinkStation C20 processor and memory accessories, please visit:

www.lenovo.com/support/accessories
www.lenovo.com/support/thinkstationaccessories

Memory Loading Notes on ThinkStation C20

System memory speed on ThinkStation C20 will be determined by a number of factors, including the microprocessor model and the type, speed, size (capacity), and number of DIMMs installed. Refer to the following table for information on the supported system memory speed for your ThinkStation model.

- ThinkStation C20 has six memory slots; divided into two sets of 3-DIMM memory slots
- Memory controller is integrated in processor
- ThinkStation C20 has 2 processor slots, each processor control three DIMMs
- Over three DIMMs requires dual processor
- ThinkStation C20 supports UDIMM and RDIMM, mixing of UDIMM and RDIMM is not supported

Memory Speed Table for ThinkStation C20

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)	PC3-8500 UDIMM (1GB, 2GB, 4GB)	PC3-10600 RDIMM (1GB, 2GB, 4GB, 8GB)	PC3-8500 RDIMM (1GB, 2GB, 4GB)	PC3-8500 RDIMM (8GB, 16GB)
Amount of DIMMs installed per CPU bank	1 to 3	1 to 3	1 to 3	1 to 3	1 to 3
CPU Model	Actual Memory Speed				
Intel® Xeon® E5502	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5503	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5504	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5506	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5507	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5520	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5530	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5540	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5620	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5630	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon E5640	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz
Intel Xeon X5550	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5560	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5570	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5650	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5660	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5667	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5670	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5677	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon X5680	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon W5580	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz
Intel Xeon W5590	1333MHz	1066MHz	1333MHz	1066MHz	1066MHz

For more information on ThinkStation C20 processor and memory accessories, please visit:

www.lenovo.com/support/accessories
www.lenovo.com/support/thinkstationaccessories

ThinkStation.



Lenovo ThinkStation S20



Lenovo ThinkStation S20



Lenovo ThinkStation S20



Lenovo ThinkStation S20 (left)
Lenovo ThinkStation D20 (right)



Lenovo ThinkStation Graphics Card Option
NVIDIA® Quadro® 2GB 4000 (57Y4480)*



Lenovo ThinkStation Graphics Card Option
NVIDIA Quadro 2.5GB 5000 (57Y4481)

* NVIDIA Quadro 2GB 4000 (57Y4480) option packaging contains one 3D stereo bracket



Lenovo ThinkStation D20



Lenovo ThinkStation S20 (left)
Lenovo ThinkStation D20 (right)



Lenovo ThinkStation D20



Lenovo ThinkStation D20
with Lenovo ThinkVision L2440 Monitor



Lenovo ThinkStation Graphics Card Option
NVIDIA® Quadro® 2GB 4000 (57Y4480)*



Lenovo ThinkStation Graphics Card Option
NVIDIA Quadro 2.5GB 5000 (57Y4481)

* NVIDIA Quadro 2GB 4000 (57Y4480) option packaging contains one 3D stereo bracket

Name	Type-model	Slot x bay	Processor	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
S20	4105-11U	5x6	W3520	2.66	2 x 1GB	1066MHz	1 x 250GB	3.5"		DVD±RW	Media	1 x FX380		ES50	Bus32	Mar 09
S20	4105-12U	5x6	E5504	2.00	2 x 1GB	1066MHz	1 x 500GB	3.5"		DVD±RW	Media	1 x FX1800	1394		Bus32	Mar 09
S20	4105-13U	5x6	E5506	2.13	2 x 2GB	1066MHz	1 x 500GB	3.5"		DVD±RW	Media	1 x FX1800	1394	ES50	Bus64	Mar 09
S20	4105-14U	5x6	E5540	2.53	2 x 2GB	1066MHz	2 x 500GB	3.5"	0	DVD±RW	Media	1 x FX4800		ES50	Bus64	Mar 09
S20	4105-15U	5x6	E5506	2.13	2 x 1GB	1066MHz	1 x 150GB	2.5"		DVD±RW	Media	1 x FX1800	1394	ES50	Bus32	Mar 09
S20	4105-16U	5x6	W5580	3.20	2 x 2GB	1333MHz	2 x 300GB	2.5"	0	DVD±RW	Media	1 x FX4800		ES50	Bus64	Mar 09
S20	4105-38U	5x6	E5540	2.53	4 x 1GB	1066MHz	1 x 250GB	3.5"		DVD±RW	Media	1 x V5700			Bus64	Mar 09
S20	4105-39U	5x6	W3540	2.93	2 x 1GB	1066MHz	1 x 250GB	3.5"		DVD±RW	Media	1 x V3700			Bus32	Mar 09
S20	4105-41U	5x6	E5506	2.13	3 x 1GB	1066MHz	1 x 250GB	3.5"		DVD±RW	Media	1 x FX1800		ES50	Pro64	Mar 09

• These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor	<p>Intel® Xeon® Processor W3520 or W3540 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology (up to 2.93GHz at max turbo mode), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5504 or E5506 with quad-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5540 with quad-core, 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor W5580 with quad-core, 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, 1333MHz DDR3 memory controller, and 8MB cache</p> <p>Processor uses FC-LGA8 package, one LGA1366 socket</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, std or opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>	
Memory	<p>2GB, 3GB, or 4GB std, 24GB max, UDIMM, PC3-8500 1066MHz DDR3*** or PC3-10600 1333MHz DDR3, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz DDR3 memory controller</p>	<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p><i>Some:</i> NVIDIA Quadro FX 4800, PCIe x16 adapter, 1.5GB, two slot width, two DisplayPort, one dual-link DVI-I****, 121W</p> <p><i>Some:</i> ATI™ FirePro™ V3700, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> ATI FirePro V5700, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 49W</p> <p>**** Only two display connectors are active at a time</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<p><i>Some:</i> 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p><i>Some:</i> 150GB or 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</p>		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> - <i>Some:</i> Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64) - <i>Some:</i> Genuine Windows Vista Business 32 - <i>Some:</i> Genuine Windows Vista Business 64 ✦ <i>Vista models:</i> Vista Premium logo 		<p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified RoHS-compliant <i>Some:</i> ENERGY STAR® 5.0-compliant EPEAT™ Gold rating (only for ES5.0 models)</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	

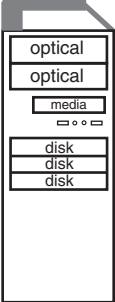
See footnotes for important warranty information
US models announced March 31, 2009
US models withdrawn effective March, April, or September 2010

ThinkStation® S20 (4105) - TopSeller (May 2009) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Avail date
S20	4105-54U	5x6	W3503	2.40	2 x 1GB	1066MHz	1 x 500GB ²	3.5"	None	DVD±RW	Media	1 x FX380		Bus32	May 09
S20	4105-55U	5x6	W3505	2.53	2 x 1GB	1066MHz	1 x 500GB	3.5"	None	DVD±RW	Media	1 x FX580		Bus32	May 09
S20	4105-56U	5x6	W3520	2.66	2 x 2GB	1066MHz	1 x 500GB	3.5"	None	DVD±RW	Media	1 x FX380	ES50	Bus64	May 09
S20	4105-57U	5x6	W3540	2.93	2 x 2GB	1066MHz	1 x 500GB	3.5"	None	DVD±RW	Media	1 x FX580		Bus64	May 09
S20	4105-58U	5x6	W3570	3.20	2 x 2GB	1333MHz	1 x 500GB	3.5"	None	DVD±RW	Media	1 x FX580		Bus64	May 09

• These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor	Intel® Xeon® Processor W3503 or W3505 with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor W3520 or W3540 with quad-core, 4.8GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor W3570 with quad-core, 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache Processor uses FC-LGA8 package, one LGA1366 socket		Tower <ul style="list-style-type: none"> Raven black color; metal case 6.9"W x 19.0"D x 18.8"H (with handle) 175mm W x 483mm D x 478mm H 38.5 lb (17.5kg) max configuration 31-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Rack shelf support 	
Implementation				
Memory	2GB or 4GB std, 24GB max, UDIMM, PC3-8500 1066MHz DDR3 or PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 240-pin DIMM sockets		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk Bay ⑥ 3.5", 1" high, internal, opt disk	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU Some: NVIDIA® Quadro® FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: NVIDIA Quadro FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I***, 40W *** Only two display connectors are active at a time		Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: full-length, full-height, 32-bit PCI 2.3 ** x16 mechanical	
Media reader	20-in-1 media reader, internal USB 2.0			
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"			
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive			
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals			
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O			
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		SECURITY <ul style="list-style-type: none"> Security chip (see information on left) Side cover lock (ships with two identical keys) 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 Administrator password Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (front or all) 	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in			
IEEE 1394 adptr	None			
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec			
Speaker	Internal speaker for business audio			
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755			
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant			
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified			
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])			
Rack mount	Rack shelf support			
Supports ThinkVantage® technologies				
Preloaded operating system²⁰ - Some: Genuine Windows® Vista® Business 32 - Some: Genuine Windows Vista Business 64 ♦ Vista Premium logo		Accessories 1GB PC3-8500 DDR3 ECC UDIMM 51J0503 2GB PC3-8500 DDR3 ECC UDIMM 51J0504 1GB PC3-10600 DDR3 ECC UDIMM 43R2032 2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 ThinkStation Rail Kit 43R1964 USB 2.0 Ultra Secure Memory Key 8GB 45J5918 ThinkVision® L2440p Wide 24" Monitor 4420HB2 NVIDIA Quadro NVS 290 43R1765 NVIDIA Quadro FX 580 45K1671 ATI™ FirePro™ 1GB V7750 51J0511 Other accessories at lenovo.com/accessories	GREENGUARD® certified RoHS-compliant Some: ENERGY STAR® 5.0-compliant EPEAT™ Gold rating (only for ES5.0 models)	
Preloaded applications⁵ (all OSes; only some listed) <ul style="list-style-type: none"> Rescue and Recovery™ McAfee® VirusScan® Plus (30 days of virus definitions) Lenovo® System Toolbox Adobe® Reader Roxio® Creator® Business Edition (DVD±RW) Roxio MyDVD® (DVD±RW) Corel® WinDVD® (DVD±RW) 			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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> Onsite service upgrade options (in eligible locations)⁷ Post warranty maintenance services 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	

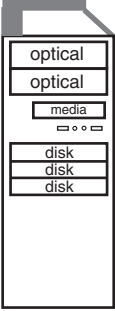
See footnotes for important warranty information
 US models announced May 5, 2009
 US models withdrawn effective March 2010 or April 2010

ThinkStation® S20 (4105) - TopSeller (Windows XP) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Avail date
S20	4105-F6U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xFX380	Pending	XP Pro	Mar 10
S20	4105-F7U	5x6	W3530	2.80	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	Pending	XP Pro	Mar 10
S20	4105-J3U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	Pending	XP Pro	Mar 10
S20	4105-J4U	5x6	W3503	2.40	2	2x1GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	Pending	XP Pro	Mar 10
S20	4105-L1U	5x6	W3530	2.80	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW			Pending	XP Pro	Jun 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**
- **These models have a 3-year limited warranty¹**

Processor	<p>Intel Xeon® Processor W3503 with dual-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 W3530 with quad-core, 4.8GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology (up to 3.06GHz at max turbo mode), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5507 with quad-core, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache</p> <p>Processor uses FC-LGA8 package, one LGA1366 socket</p>		<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation				
Memory	<p>2GB or 4GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller</p>		<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>	
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some: NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</i></p> <p><i>Some: NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</i></p> <p>**** Only two display connectors are active at a time</p>		<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Media reader	<p><i>Some:</i> 20-in-1 media reader, internal USB 2.0</p>			
SATA disk(s)	<p>500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p>			
SATA DVD±RW	<p>Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive</p>			
Disk controller	<p>Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals</p>			
Chipset	<p>Intel X58 Express Chipset, Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O</p>			
Front ports	<p>Two USB 2.0, microphone (3.5mm), headphone (3.5mm)</p>			
Rear ports	<p>Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in</p>			
IEEE 1394 adptr	<p>None</p>			
Audio	<p>High Definition (HD) Audio, Analog Devices AD1988A codec</p>			
Speaker	<p>Internal speaker for business audio</p>			
Ethernet	<p>One gigabit ethernet on planar, Broadcom® BCM5755</p>			
Security chip	<p>Broadcom Trusted Platform Module, TCG 1.2-compliant</p>			<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Keyboard	<p>Preferred Pro USB Keyboard (USB connector), 104-key, black</p>			
Mouse	<p>Optical Wheel Mouse (USB connector), black</p>			
Power supply	<p>625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</p>			<p>Supports ThinkVantage® technologies</p>
Cooling	<p>3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])</p>			<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>Pending: ENERGY STAR® 5.0-compliant</p>
Rack mount	<p>Rack shelf support</p>			
Preloaded operating system²⁰	<p>Accessories</p>			
- Genuine Windows® XP Professional 32-bit ***** (preinstalled via downgrade rights in Windows 7 Professional 64-bit)	2GB PC3-10600 DDR3 ECC UDIMM	43R2033		
	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138		
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
	Blu-ray™ Burner SATA 1.5Gb/s	45K1675		
	ThinkVision® L2440p Wide 24" Monitor	4420HB2		
	ATI™ FirePro™ 1GB V7750	51J0511		
***** Only 3GB of memory can be addressable by a 32-bit operating system limitation	Other accessories at lenovo.com/accessories			
				<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378

See footnotes for important warranty information
 US models announced March 16 or June 15, 2010
 US models withdrawn effective September 2010

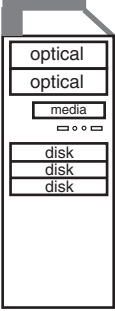
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 (SEV4-2) October 2010

ThinkStation® S20 (4105) - TopSeller (Windows XP) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Avail date
S20	4105-F6U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xFX380	Pending	XP Pro	Mar 10
S20	4105-F7U	5x6	W3530	2.80	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	Pending	XP Pro	Mar 10
S20	4105-J3U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	Pending	XP Pro	Mar 10
S20	4105-J4U	5x6	W3503	2.40	2	2x1GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	Pending	XP Pro	Mar 10
S20	4105-L1U	5x6	W3530	2.80	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW			Pending	XP Pro	Jun 10

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

Processor	<p>Intel Xeon® Processor W3503 with dual-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 W3530 with quad-core, 4.8GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology (up to 3.06GHz at max turbo mode), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5507 with quad-core, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache</p> <p>Processor uses FC-LGA8 package, one LGA1366 socket</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 													
Implementation															
Memory	<p>2GB or 4GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller</p>	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>													
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some: NVIDIA® Quadro® FX 380</i>, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some: NVIDIA Quadro FX 1800</i>, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p>**** Only two display connectors are active at a time</p>	<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>													
Media reader	<p><i>Some:</i> 20-in-1 media reader, internal USB 2.0</p>														
SATA disk(s)	<p>500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p>														
SATA DVD±RW	<p>Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive</p>														
Disk controller	<p>Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals</p>														
Chipset	<p>Intel X58 Express Chipset, Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O</p>														
Front ports	<p>Two USB 2.0, microphone (3.5mm), headphone (3.5mm)</p>														
Rear ports	<p>Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in</p>														
IEEE 1394 adptr	<p>None</p>														
Audio	<p>High Definition (HD) Audio, Analog Devices AD1988A codec</p>														
Speaker	<p>Internal speaker for business audio</p>														
Ethernet	<p>One gigabit ethernet on planar, Broadcom® BCM5755</p>														
Security chip	<p>Broadcom Trusted Platform Module, TCG 1.2-compliant</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 													
Keyboard	<p>Preferred Pro USB Keyboard (USB connector), 104-key, black</p>														
Mouse	<p>Optical Wheel Mouse (USB connector), black</p>														
Power supply	<p>625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</p>														
Cooling	<p>3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])</p>														
Rack mount	<p>Rack shelf support</p>														
Preloaded operating system²⁰	<p>- Genuine Windows® XP Professional 32-bit ***** (preinstalled via downgrade rights in Windows 7 Professional 64-bit)</p> <p>***** Only 3GB of memory can be addressable by a 32-bit operating system limitation</p>	<p>Accessories</p> <table border="0"> <tr> <td>2GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2033</td> </tr> <tr> <td>4GB PC3-10600 DDR3 ECC UDIMM</td> <td>57Y4138</td> </tr> <tr> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>ThinkVision® L2440p Wide 24" Monitor</td> <td>4420HB2</td> </tr> <tr> <td>ATI™ FirePro™ 1GB V7750</td> <td>51J0511</td> </tr> </table> <p>Other accessories at lenovo.com/accessories</p>	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	ThinkVision® L2440p Wide 24" Monitor	4420HB2	ATI™ FirePro™ 1GB V7750	51J0511	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378
2GB PC3-10600 DDR3 ECC UDIMM	43R2033														
4GB PC3-10600 DDR3 ECC UDIMM	57Y4138														
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918														
Blu-ray™ Burner SATA 1.5Gb/s	45K1675														
ThinkVision® L2440p Wide 24" Monitor	4420HB2														
ATI™ FirePro™ 1GB V7750	51J0511														

See footnotes for important warranty information

US model announced June 15, 2010; previous models on March 16, 2010

US model withdrawn effective September 2010

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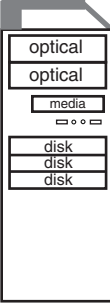
(SEV4-2) October 2010

ThinkStation® S20 (4157) - Windows 7 - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Win7 preload	Avail date
S20	4157-A1U	5x6	W3503	2.40	2	2x1GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xFX380		Pending	Pro64	Oct 09
S20	4157-A2U	5x6	W3520	2.66	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800		Pending	Pro64	Oct 09
S20	4157-F1U	5x6	W3530	2.80	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX580		Pending	Pro64	Jun 10
S20	4157-D7U	5x6	E5507	2.26	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xV3700		Pending	Pro64	Mar 10
S20	4157-D8U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	1394	Pending	Pro64	Mar 10
S20	4157-D9U	5x6	W3530	2.80	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	1394	Pending	Pro64	Mar 10
S20	4157-E1U	5x6	W3530	2.80	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX580	1394	Pending	Pro64	Mar 10
S20	4157-K6U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380		Pending	Pro64	Oct 10
S20	4157-K9U	5x6	W3680	3.33	6	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x4000		Pending	Pro64	Oct 10
S20	4157-K4U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x2000		Pending	Pro64	Oct 10
S20	4157-K5U	5x6	E5503	2.00	2	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x2000		Pending	Pro64	Oct 10

• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Xeon® Processor W3503 with dual-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 W3520 or W3530 with quad-core, 4.8GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor W3680 with six-core, 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor E5503 with dual-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5507 with quad-core, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache</p> <p>One LGA1366 socket</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation	One LGA1366 socket	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>	
Memory	<p>2GB or 4GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller</p>	<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 580, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I****, 40W</p> <p><i>Some:</i> NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W</p> <p><i>Some:</i> NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I****, one stereo, 142W</p> <p><i>Some:</i> ATI™ FirePro™ V3700, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p>**** Only two display connectors are active at a time</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Media reader	20-in-1 media reader, internal USB 2.0	<p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>Pending: ENERGY STAR® 5.0-compliant</p> <p>EPEAT™ Gold rating</p>	
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
Preloaded operating system²⁰		Preloaded applications⁵ (only some listed)	
- Genuine Windows® 7 Professional 64		• Microsoft Office 2010 preloaded; purchase product key to activate	

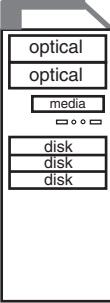
See footnotes for important warranty information

US models announced October 22, 2009 or March 16, June 15, October 12, October 26, 2010
US models withdrawn effective August, October, December 2010 or February, May, June 2011

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Name	Type-model	Slot x bay	Processor GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
S20	4157-79U	5x6	W3550	3.06	4	1x2GB	1066MHz	1x500GB ²	3.5"		DVD±RW Media	1xFX1800	None	Pending	Bus64	Aug 09
S20	4157-81U	5x6	W3550	3.06	4	2x2GB	1066MHz	1x500GB	3.5"		DVD±RW Media	1xFX3800	None	Pending	Bus64	Aug 09
S20	4157-82U	5x6	W3580	3.33	4	2x2GB	1333MHz	1x500GB	3.5"		DVD±RW Media	1xFX3800	None	Pending	Bus64	Aug 09

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **These models have a 3-year limited warranty¹**

Processor	Intel Xeon® Processor W3550 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor W3580 with quad-core , 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache		Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket		
Memory	2GB or 4GB std, 24GB max, UDIMM , PC3-8500 1066MHz DDR3 or PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 240-pin DIMM sockets		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk Bay ⑥ 3.5", 1" high, internal, opt disk
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some: NVIDIA® Quadro® FX 1800</i> , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W <i>Some: NVIDIA Quadro FX 3800</i> , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I***, 108W *** Only two display connectors are active at a time		Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: full-length, full-height, 32-bit PCI 2.3 ** x16 mechanical
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
Preloaded operating system²⁰			
- Genuine Windows® Vista® Business 64			
◇ Vista Premium logo			
Preloaded applications⁵ (only some listed)			
<ul style="list-style-type: none"> • Rescue and Recovery™ • McAfee® VirusScan® Plus (30 days of virus definitions) • Lenovo® System Toolbox • Adobe® Reader • Corel® WinDVD® (DVD±RW) 			Accessories <ul style="list-style-type: none"> 1GB PC3-8500 DDR3 ECC UDIMM 51J0503 2GB PC3-8500 DDR3 ECC UDIMM 51J0504 1GB PC3-10600 DDR3 ECC UDIMM 43R2032 2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 ThinkVision® L2440p Wide 24" Monitor 4420HB2 NVIDIA Quadro NVS 290 43R1765 NVIDIA Quadro FX 580 45K1671 ATI™ FirePro™ 1GB V7750 51J0511 Other accessories at lenovo.com/accessories
			Supports ThinkVantage® technologies
			GREENGUARD® certified RoHS-compliant <i>Pending: ENERGY STAR® 5.0-compliant</i>
			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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378

See footnotes for important warranty information
 US models announced August 4, 2009
 US models withdrawn effective April 2010

ThinkStation® S20 (4157) - withdrawn

Name	Type-model	Slot x bay	Processor	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
S20	4157-11U	5x6	W3520	2.66	2 x 1GB	1066MHz	1 x 250GB ²	3.5"	DVD±RW	Media	1 x FX380		ES50	Bus32	Mar 09
S20	4157-12U	5x6	W3520	2.66	2 x 1GB	1066MHz	1 x 500GB	3.5"	DVD±RW	Media	1 x FX580			Bus32	Mar 09
S20	4157-13U	5x6	E5502	1.86	2 x 2GB	1066MHz	2 x 150GB	2.5"	1 DVD±RW	Media	1 x FX1800	1394		Bus64	Mar 09
S20	4157-14U	5x6	E5506	2.13	2 x 1GB	1066MHz	2 x 250GB	3.5"	DVD±RW	Media	1 x FX380	1394	ES50	Bus32	Mar 09
S20	4157-15U	5x6	E5506	2.13	2 x 1GB	1066MHz	1 x 250GB	3.5"	DVD±RW	Media	1 x NVS290	1394		Bus32	Mar 09
S20	4157-16U	5x6	E5506	2.13	2 x 2GB	1066MHz	2 x 500GB	3.5"	0 DVD±RW	Media	1 x FX4800		ES50	Bus64	Mar 09
S20	4157-48U	5x6	W3540	2.93	2 x 1GB	1066MHz	1 x 250GB	3.5"	DVD	Media	1 x V3700			Bus32	Mar 09
S20	4157-49U	5x6	E5506	2.13	4 x 1GB	1066MHz	1 x 250GB	3.5"	DVD	Media	1 x V5700			Bus64	Mar 09
S20	4157-51U	5x6	E5540	2.53	4 x 1GB	1066MHz	2 x 300GB	2.5"	0 DVD±RW	Media	1 x V7750			Bus64	Mar 09
S20	4157-52U	5x6	E5506	2.13	3 x 1GB	1066MHz	1 x 250GB	3.5"	DVD±RW	Media	1 x FX1800			Pro64	Mar 09

Processor	<p>Intel® Xeon® Processor W3520 or W3540 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5502 with dual-core, 4.8GT/s QPI, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5506 with quad-core, 4.8GT/s QPI, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5540 with quad-core, 5.86GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache</p> <p>Processor uses FC-LGA8 package, one LGA1366 socket</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket		
Memory	<p>2GB, 3GB, or 4GB std, 24GB max, UDIMM, PC3-8500 1066MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz DDR3 memory controller</p>		
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some:</i> NVIDIA® Quadro® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI via DMS-59 with dual DVI-I dongle, 21W</p> <p><i>Some:</i> NVIDIA Quadro FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 580, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W</p> <p><i>Some:</i> NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p><i>Some:</i> NVIDIA Quadro FX 4800, PCIe x16 adapter, 1.5GB, 2 slot width, two DisplayPort, one dual-link DVI-I****, 121W</p> <p><i>Some:</i> ATI™ FirePro™ V3700, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> ATI FirePro V5700, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 49W</p> <p><i>Some:</i> ATI FirePro V7750, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 76W</p> <p>**** Only two display connectors are active at a time</p>	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, std or opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<p><i>Some:</i> 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p><i>Some:</i> 150GB or 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</p>		
SATA DVD	<i>Some:</i> DVD-ROM DL SATA 1.5Gb/s 16X-48X Max ⁴ Drive		
SATA DVD±RW	<i>Some:</i> Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in	Supports ThinkVantage® technologies	
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
Preloaded operating system ²⁰	<ul style="list-style-type: none"> - <i>Some:</i> Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64-bit) - <i>Some:</i> Genuine Windows Vista Business 32 - <i>Some:</i> Genuine Windows Vista Business 64 ✦ <i>Vista models:</i> Vista Premium logo 	<p>Preloaded applications⁵ (all OSes; only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery™ • McAfee® VirusScan® Plus (30 days of virus definitions) • Lenovo® System Toolbox • Corel® WinDVD® (DVD±RW) 	
		<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator 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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	

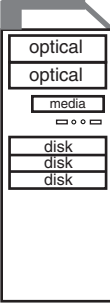
See footnotes for important warranty information
 US models announced March 31, 2009
 US models withdrawn effective January, April, or October 2010

ThinkStation® S20 (4157) - Windows XP (May 2010) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
S20	4157-E3U	5x6	E5640	2.66	4	2x2GB	1333MHz	1x300GB ²	2.5"	No	DVD±RW	Media	1xV7750	1394	Pending	XP Pro	May 10
S20	4157-E4U	5x6	W3550	3.06	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	1394	Pending	XP Pro	May 10
S20	4157-E5U	5x6	W3680	3.33	6	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX3800	1394	Pending	XP Pro	May 10
S20	4157-E7U	5x6	E5503	2.00	2	2x2GB	1333MHz	1x150GB	2.5"	No	DVD±RW	Media	1xFX1800	1394	Pending	XP Pro	May 10
S20	4157-E8U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380		Pending	XP Pro	May 10
S20	4157-E9U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xV5700	1394	Pending	XP Pro	May 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **These models have a 3-year limited warranty¹**

Processor	<p>Intel Xeon® Processor W3550 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache or</p> <p>Intel Xeon Processor W3680 with six-core, 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache or</p> <p>Intel Xeon Processor E5503 with dual-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or</p> <p>Intel Xeon Processor E5507 with quad-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or</p> <p>Intel Xeon Processor E5640 with quad-core, 5.86GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, 1066MHz DDR3 memory controller, and 12MB cache</p> <p>Processor uses FC-LGA8 package, one LGA1366 socket</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>	
Memory	<p>4GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller</p>	<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p><i>Some:</i> NVIDIA Quadro FX 3800, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 108W</p> <p><i>Some:</i> ATI™ FirePro™ V5700, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 49W</p> <p><i>Some:</i> ATI FirePro V7750, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 76W</p> <p>**** Only two display connectors are active at a time</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Media reader	20-in-1 media reader, internal USB 2.0	<p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>Pending: ENERGY STAR® 5.0-compliant</p>	
SATA disk(s)	<p><i>Some:</i> 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p><i>Some:</i> 150GB or 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</p>		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> - Genuine Windows® XP Professional 32-bit***** (preinstalled via downgrade rights in Windows 7 Professional 64-bit) <p>***** Only 3GB of memory can be addressable by a 32-bit operating system limitation</p>			

See footnotes for important warranty information
 US models announced May 4, 2010
 US models withdrawn effective October 2010

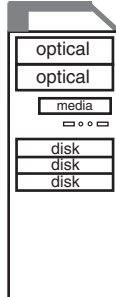
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 (SEV-5-1) October 2010

ThinkStation® S20 (4157) - Global (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
S20	4157-B1U	5x6	W3520	2.66	4	2x2GB	1066MHz	1x500GB ²	3.5"	No	DVD±RW	No	1xFX1800	Pending	Pro64	Global	Jan 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Intel Xeon® Processor W3520 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache																																							
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket																																							
Memory	4GB std, 24GB max, UDIMM , PC3-8500 1066MHz DDR3, ECC , 3-channel capable, six 240-pin DIMM sockets																																							
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCI Express® (PCIe) x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W *** Only two display connectors are active at a time																																							
Media reader	None																																							
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"																																							
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																																							
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals																																							
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O																																							
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)																																							
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in																																							
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Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black																																							
Mouse	Optical Wheel Mouse (USB connector), black																																							
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified																																							
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])																																							
Rack mount	Rack shelf support																																							
Preloaded operating system²⁰ - Genuine Windows® 7 Professional 64																																								
Preloaded applications⁵ (only some listed) <ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage System Update • Norton Internet Security™ (30 days of virus definitions) • Adobe® Reader • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Roxio MyDVD® (DVD±RW) • Corel® WinDVD® (DVD±RW) 																																								
Accessories <table border="0"> <tr> <td>1GB PC3-8500 DDR3 ECC UDIMM</td> <td>51J0503</td> </tr> <tr> <td>2GB PC3-8500 DDR3 ECC UDIMM</td> <td>51J0504</td> </tr> <tr> <td>1GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2032</td> </tr> <tr> <td>2GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2033</td> </tr> <tr> <td>4GB PC3-10600 DDR3 ECC UDIMM</td> <td>57Y4138</td> </tr> <tr> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>ThinkVision® L2440p Wide 24" Monitor</td> <td>4420HB2</td> </tr> <tr> <td>NVIDIA Quadro NVS 290</td> <td>43R1765</td> </tr> <tr> <td>NVIDIA Quadro FX 580</td> <td>45K1671</td> </tr> <tr> <td>ATI™ FirePro™ 1GB V7750</td> <td>51J0511</td> </tr> </table> Other accessories at lenovo.com/accessories																	1GB PC3-8500 DDR3 ECC UDIMM	51J0503	2GB PC3-8500 DDR3 ECC UDIMM	51J0504	1GB PC3-10600 DDR3 ECC UDIMM	43R2032	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	ThinkVision® L2440p Wide 24" Monitor	4420HB2	NVIDIA Quadro NVS 290	43R1765	NVIDIA Quadro FX 580	45K1671	ATI™ FirePro™ 1GB V7750	51J0511		
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2GB PC3-8500 DDR3 ECC UDIMM	51J0504																																							
1GB PC3-10600 DDR3 ECC UDIMM	43R2032																																							
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Bay ①	5.25", 1.6" high,	external,	std optical																																					
Bay ②	5.25", 1.6" high,	external,	open																																					
Bay ③	3.5", 1" high,	external,	std media reader																																					
Bay ④	3.5", 1" high,	internal,	std disk																																					
Bay ⑤	3.5", 1" high,	internal,	opt disk																																					
Bay ⑥	3.5", 1" high,	internal,	opt disk																																					
SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 																																								
Supports ThinkVantage® technologies																																								
GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0-compliant																																								
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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 																																								

See footnotes for important warranty information
 US model announced January 12, 2010
 US model withdrawn effective August 2010

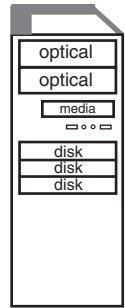
ThinkStation® S20 (4157) - Global (Windows XP) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Global	Avail date
S20	4157-E6U	5x6	W3530	2.80	4	2x2GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xFX1800	Pending	XP Pro	Global	May 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**

Processor	Intel Xeon® Processor W3530 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache																
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket																
Memory	4GB std, 24GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC , 3-channel capable, six 240-pin DIMM sockets *** System automatically clocks down for processors with 1066MHz DDR3 memory controller																
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCI Express® (PCIe) x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W **** Only two display connectors are active at a time																
Media reader	20-in-1 media reader, internal USB 2.0																
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"																
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals																
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O																
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)																
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear High Definition (HD) Audio, Analog Devices AD1988A codec Internal speaker for business audio One gigabit ethernet on planar, Broadcom® BCM5755 Broadcom Trusted Platform Module, TCG 1.2-compliant																
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear																
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec																
Speaker	Internal speaker for business audio																
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755																
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant																
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black																
Mouse	Optical Wheel Mouse (USB connector), black																
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified																
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])																
Rack mount	Rack shelf support																
	Preloaded operating system²⁰ - Genuine Windows® XP Professional 32-bit***** (preinstalled via downgrade rights in Windows 7 Professional 64-bit) ***** Only 3GB of memory can be addressable by a 32-bit operating system limitation Preloaded applications⁵ (all OSEs; only some listed) • Rescue and Recovery™ • McAfee® VirusScan® Plus (30 days of virus definitions) • Lenovo System Toolbox • Adobe® Reader • Microsoft Office 2007 Trial (60-day) • Roxio® Creator® Business Edition (DVD±RW) • Roxio MyDVD® (DVD±RW) • Corel® WinDVD® (DVD±RW)																
	Accessories 2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 ThinkVision® L2440p Wide 24" Monitor 4420HB2 NVIDIA Quadro NVS 290 43R1765 NVIDIA Quadro FX 580 45K1671 ATI™ FirePro™ 1GB V7750 51J0511 Other accessories at lenovo.com/accessories																
	Tower • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk Bay ⑥ 3.5", 1" high, internal, opt disk Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3 ** x16 mechanical																
	SECURITY • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)																
	Supports ThinkVantage® technologies																
	GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0-compliant																
	LIMITED WARRANTY¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations) ⁷ • Post warranty maintenance services ⇨ 24 hour x 7 day ¹⁴ toll-free support during the warranty period ¹ via 800-426-7378																



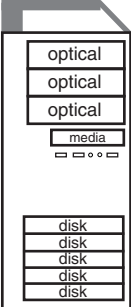
See footnotes for important warranty information
 US model announced May 4, 2010
 US model withdrawn effective October 2010

ThinkStation® D20 (4155) - TopSeller (UDIMM) - withdrawn

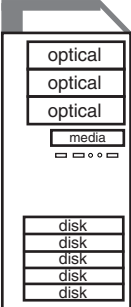
Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	Disk type	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Pre-load	Avail date
D20	4155-28U	6x9	2 x E5540	2.53	4 x 1GB	1066MHz	1 x 500GB	3.5"	SATA		DVD±RW	Media 1 x V5700		ES50	Bus64	Apr 09
D20	4155-29U	6x9	2 x E5502	1.86	4 x 1GB	1066MHz	1 x 250GB	3.5"	SATA		DVD±RW	Media 1 x FX580			Bus64	Apr 09
D20	4155-31U	6x9	2 x X5560	2.80	4 x 1GB	1333MHz	2 x 300GB	2.5"	SATA	1	DVD±RW	Media 1 x FX1800			Bus64	Apr 09
D20	4155-32U	6x9	1 x E5506	2.13	4 x 1GB	1066MHz	1 x 250GB, 1 x 500GB	3.5"	SATA		DVD±RW	Media 1 x FX1800			Bus64	Apr 09
D20	4155-33U	6x9	1 x E5540	2.53	4 x 1GB	1066MHz	2 x 300GB	3.5"	SAS	0	DVD±RW	Media 1 x FX4800			Bus64	Apr 09
D20	4155-34U	6x9	1 x E5540	2.53	4 x 1GB	1066MHz	1 x 500GB	3.5"	SATA		DVD±RW	Media 1 x FX580			Bus64	Apr 09

- High performance workstation with premium graphics for specialized professionals
- These small and medium business (SMB) models are part of the US TopSeller™ Program

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5502 with dual-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5506 with quad-core , 4.8GT/s QPI, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5540 with quad-core , 5.86GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor X5560 with quad-core , 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache	Tower <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets	
Memory	4GB std, 48GB max, UDIMM, PC3-8500 1066MHz DDR3 or PC3-10600 1333MHz DDR3, ECC , 6-channel capable, twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some: NVIDIA® Quadro® FX 580</i> , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I***, 40W <i>Some: NVIDIA Quadro FX 1800</i> , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W <i>Some: NVIDIA Quadro FX 4800</i> , PCIe x16 adapter, 1.5GB, two slot width, 2 DisplayPort, 1 dual-link DVI-I***, 121W <i>Some: ATI™ FirePro™ V5700</i> , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I***, 49W *** Only two display connectors are active at a time	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std or opt disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: full-length, full-height, 32-bit PCI 2.3
Diskette drive	None	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Media reader	20-in-1 media reader	
SATA disk(s)	<i>Some: 250GB or 500GB</i> , SATA 3.0Gb/s, 7200 rpm, 3.5" <i>Some: 300GB</i> , SATA 3.0Gb/s, 10000 rpm, 2.5"	
SAS disk(s)	<i>Some: 300GB</i> , SAS 3.0Gb/s, 15000 rpm	
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	
Disk controller	Three SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; five SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices ADI 1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	Supports ThinkVantage® technologies
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	GREENGUARD® certified RoHS-compliant <i>Some: ENERGY STAR® 5.0-compliant</i> EPEAT™ Gold rating (only for ES5.0 models)
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)	
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	
Preloaded operating system²⁰	Accessories	
- Genuine Windows® Vista® Business 64	2GB PC3-8500 DDR3 ECC UDIMM	51J0504
◇ Vista Premium logo	2GB PC3-10600 DDR3 ECC UDIMM	43R2033
Preloaded applications⁵ (only some listed)	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138
• Rescue and Recovery™	Blu-ray™ Burner SATA 1.5Gb/s	45K1675
• McAfee® VirusScan® Plus (30 days of virus definitions)	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918
• Lenovo® System Toolbox	150GB SATA 3.0Gb/s Disk (10000 rpm)	43R2030
• Corel® WinDVD® (DVD±RW)	300GB SAS 3.0Gb/s Disk (15000 rpm)	43R1994
	450GB SAS 3.0Gb/s Disk (15000 rpm)	43N3424
	ThinkStation Rail Kit	43R1964
	ATI FirePro 1GB V7750	51J0511
	NVIDIA Quadro 1.5GB FX 4800	45K1674
	Other accessories at lenovo.com/accessories	
		LIMITED WARRANTY¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ⇨ 24x7 ¹⁴ toll-free support for warranty issues during the warranty period ¹ via 800-426-7378

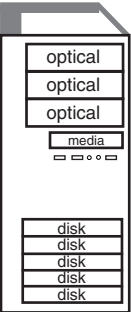
See footnotes for important warranty information
 US models announced March 31, 2009
 US models withdrawn effective April 2010

Name	Type-model	Slot x bay	Processor(s) GHz	Memory	Disk(s)	Disk size	Disk type	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Avail date	
D20	4155-27U	6x9	2 x E5540	2.53	4 x 1GB	2 x 300GB	2.5"	SATA	1	DVD±RW	Media	1 x FX4800	None	Pro64	Apr 09
<ul style="list-style-type: none"> • High performance workstation with premium graphics for specialized professionals • Environmentally friendly, cool, and quiet with rock solid engineering • This small and medium business (SMB) model is part of the US TopSeller™ Program 															
Processor(s)	Up to two processors, two processors standard, Intel® Xeon® Processor E5540 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache										Tower <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 				
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets														
Memory	4GB std, 192GB max (pending 16GB RDIMM availability), RDIMM, PC3-8500 1066MHz DDR3, ECC , 6-channel capable, twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors														
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 4800 , PCIe x16 adapter, 1.5GB, two slot width, two DisplayPort, one dual-link DVI***, 121W *** Only two display connectors are active at a time														
Diskette drive	None (use optional USB diskette)														
Media reader	20-in-1 media reader														
SATA disk(s)	300GB , SATA 3.0Gb/s, 10000 rpm, 2.5"														
SAS disk(s)	None														
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s														
Disk controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480														
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O														
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)														
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in														
IEEE 1394 adptr	None														
Audio	High Definition (HD) Audio, Analog Devices ADI 1988A codec														
Speaker	Internal speaker for business audio														
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754														
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant														
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black														
Mouse	Optical Wheel Mouse (USB connector), black														
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified														
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)														
Rack mount	Rack shelf support or optional sliding rack mount rail kit support														
Preloaded operating system²⁰			Accessories												
- Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64-bit)			2GB PC3-8500 DDR3 ECC RDIMM 43R2035 4GB PC3-8500 DDR3 ECC RDIMM 43R2036 8GB PC3-8500 DDR3 ECC RDIMM 43R2037												
Preloaded applications⁵ (only some listed)			Blu-ray™ Burner SATA 1.5Gb/s 45K1675 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 150GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2030 300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2031 146GB SAS 3.0Gb/s Disk (15000 rpm) 43R1993 300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994 ThinkStation Rail Kit 43R1964 USB 2.0 Ultra Secure Memory Key 8GB 45J5918 ThinkVision® L2440p Wide 24" Monitor 4420HB2 ATI™ FirePro™ 512MB V5700 51J0509 ATI FirePro 1GB V7750 51J0511												
• Rescue and Recovery™			Other accessories at lenovo.com/accessories												
• McAfee® VirusScan® Plus (30 days of virus definitions)															
• Lenovo® System Toolbox															
• Adobe® Reader															
• Microsoft® Office 2007 Trial (60-day)															
• Roxio® Creator® Business Edition (DVD±RW)															
• Roxio MyDVD® (DVD±RW)															
• Corel® WinDVD® (DVD±RW)															
SECURITY															
<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 															
Supports ThinkVantage® technologies															
GREENGUARD® certified RoHS-compliant															
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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378 															

See footnotes for important warranty information
 US model announced March 31, 2009
 US model withdrawn effective February 2010

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	Disk type	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Pre-load	Avail date
D20	4155-39U	6x9	2 x E5520	2.26	2 x 2GB	1066MHz	1 x 500GB ²	3.5"	SATA	None	DVD±RW	Media 1 x FX580	None	Bus64	May 09	
D20	4155-41U	6x9	2 x E5520	2.26	2 x 2GB	1066MHz	1 x 300GB	2.5"	SATA	None	DVD±RW	Media 1 x FX1800	None	Bus64	May 09	

- High performance workstation with premium graphics for specialized professionals
- These small and medium business (SMB) models are part of the US TopSeller™ Program

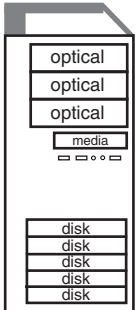
Processor(s)	Up to two processors, two processors standard, Intel® Xeon® Processor E5520 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPathInterconnect), 1066MHz DDR3 memory controller, and 8MB cache	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets	
Memory	4GB std, 48GB max, UDIMM, PC3-8500 1066MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU Some: NVIDIA® Quadro® FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I ***, 40W Some: NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I ***, 59W *** Only two display connectors are active at a time	
Diskette drive	None	
Media reader	20-in-1 media reader	
SATA disk(s)	Some: 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5" Some: 300GB , SATA 3.0Gb/s, 10000 rpm, 2.5"	
SAS disk(s)	None	
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	None	
Audio	High Definition (HD) Audio, Analog Devices ADI 1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)	
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	
Preloaded operating system²⁰	Accessories	
- Genuine Windows® Vista® Business 64	1GB PC3-8500 DDR3 ECC UDIMM 51J0503	
◇ Vista Premium logo	2GB PC3-8500 DDR3 ECC UDIMM 51J0504	
Preloaded applications⁵ (only some listed)	1GB PC3-10600 DDR3 ECC UDIMM 43R2032	
• Rescue and Recovery™	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138	
• McAfee® VirusScan® Plus (30 days of virus definitions)	Super Multi-Burner DL DVD±RW SATA 1.5G/s 41N5620	
• Lenovo® System Toolbox	Blu-ray™ Burner SATA 1.5Gb/s 45K1675	
• Adobe® Reader	500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990	
• Roxio® Creator® Business Edition (DVD±RW)	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918	
• Roxio MyDVD® (DVD±RW)	300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2031	
• Corel® WinDVD® (DVD±RW)	ThinkStation Rail Kit 43R1964	
	USB 2.0 Ultra Secure Memory Key 8GB 45J5918	
	ThinkVision® L2440p Wide 24" Monitor 4420HB2	
	ATI™ FirePro™ 1GB V7750 51J0511	
	NVIDIA Quadro 1GB FX 3800 45K1673	
	NVIDIA Quadro 1.5GB FX 4800 45K1674	
	Other accessories at lenovo.com/accessories	
	Supports ThinkVantage® technologies	
	GREENGUARD® certified RoHS-compliant	
	LIMITED WARRANTY¹	
	↔ 3-year parts and labor	
	↔ Customer Replaceable Unit (CRU)	
	parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)	
	↔ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty	
	↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378	

See footnotes for important warranty information
US models announced May 5, 2009
US models withdrawn effective April 2010

ThinkStation® D20 (4155) - TopSeller (UDIMM) - August 2009 - withdrawn Personal Systems Reference (PSREF)

Type- Name	model	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
D20	4155-47U	6x9	2xE5540	2.53	8	2x2GB	1066MHz	1x500GB ²	SATA	3.5"	DVD±RW	Media	1xFX3800	None	Pending	Bus64	Aug 09

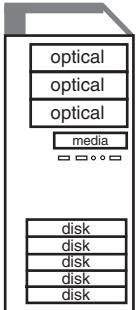
- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This small and medium business (SMB) model is part of the US TopSeller™ Program**
- **This model has a 3-year limited warranty¹**

Processor	Up to two processors, two processors standard, Intel® Xeon® Processor E5540 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		Tower <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		
Memory	4GB std, 48GB max, UDIMM, PC3-8500 1066MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors		
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 3800 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I***, 108W *** Only two display connectors are active at a time		
Diskette drive	None		
Media reader	20-in-1 media reader		
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SAS disk(s)	None		
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480		
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Supports ThinkVantage® technologies			
Preloaded operating system²⁰	Accessories		
- Genuine Windows® Vista® Business 64	1GB PC3-8500 DDR3 ECC UDIMM	51J0503	
◇ Vista Premium logo	2GB PC3-8500 DDR3 ECC UDIMM	51J0504	
	1GB PC3-10600 DDR3 ECC UDIMM	43R2032	
	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	
	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	
	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	
	ThinkVision® L2440p Wide 24" Monitor	4420HB2	
	NVIDIA Quadro NVS 290	43R1765	
	NVIDIA Quadro FX 580	45K1671	
	ATI™ FirePro™ 1GB V7750	51J0511	
	Other accessories at lenovo.com/accessories		
Preloaded applications⁵ (only some listed)			
• Rescue and Recovery™			
• McAfee® VirusScan® Plus (30 days of virus definitions)			
• Lenovo® System Toolbox			
• Adobe® Reader			
• Corel® WinDVD® (DVD±RW)			
SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 			
GREENGUARD® certified RoHS-compliant <i>Pending:</i> ENERGY STAR® 5.0-compliant			
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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 			

See footnotes for important warranty information
 US model announced August 4, 2009
 US model withdrawn effective April 2010

Type-Name	Slot x model	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date	
D20	4158-87U	6x9	1xE5540	2.53	4	2x2GB	1066MHz	1x500GB ²	SATA 3.5"	No	DVD±RW	No	1xFX1800	Pending	Pro64	Global	Jan 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Up to two processors, one processor standard, Intel Xeon® Processor E5540 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		Tower	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Memory	4GB std, 48GB max, UDIMM, PC3-8500 1066MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors		<ul style="list-style-type: none"> • Bay ① 5.25", 1.6" high, external, std optical • Bay ② 5.25", 1.6" high, external, open • Bay ③ 5.25", 1.6" high, external, open • Bay ④ 3.5", 1" high, external, std media reader • Bay ⑤ 3.5", 1" high, internal, std disk • Bay ⑥ 3.5", 1" high, internal, opt disk • Bay ⑦ 3.5", 1" high, internal, opt disk • Bay ⑧ 3.5", 1" high, internal, opt disk • Bay ⑨ 3.5", 1" high, internal, opt disk 	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCI Express® (PCIe) x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W *** Only two display connectors are active at a time		<ul style="list-style-type: none"> • Slot 1: half-length, full-height, PCIe x1 • Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) • Slot 3: full-length, full-height, 32-bit PCI 2.3 • Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) • Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) • Slot 6: half-length, full-height, 32-bit PCI 2.3 	
Diskette drive	None			
Media reader	None			
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"			
SAS disk(s)	None			
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s			
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480			
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O			
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)			
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in			
IEEE 1394 adptr	None			
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec			
Speaker	Internal speaker for business audio			
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754			
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant			
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified			
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)			
Rack mount	Rack shelf support or optional sliding rack mount rail kit support			
Supports ThinkVantage® technologies				
Preloaded operating system²⁰		Accessories		
- Genuine Windows® 7 Professional 64		1GB PC3-8500 DDR3 ECC UDIMM	51J0503	
Preloaded applications⁵ (only some listed)		2GB PC3-8500 DDR3 ECC UDIMM	51J0504	
• Rescue and Recovery™		1GB PC3-10600 DDR3 ECC UDIMM	43R2032	
• ThinkVantage System Update		2GB PC3-10600 DDR3 ECC UDIMM	43R2033	
• Norton Internet Security™ (30 days of virus definitions)		4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	
• Adobe® Reader		1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	
• Microsoft Office 2010 preloaded; purchase product key to activate		Blu-ray™ Burner SATA 1.5Gb/s	45K1675	
• Roxio® Creator® Business Edition (DVD±RW)		NVIDIA Quadro NVS 290	43R1765	
• Roxio MyDVD® (DVD±RW)		NVIDIA Quadro FX 580	45K1671	
• Corel® WinDVD® (DVD±RW)		ATI™ FirePro™ 1GB V7750	51J0511	
		Other accessories at lenovo.com/accessories		
SECURITY				
<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 				
GREENGUARD® certified RoHS-compliant <i>Pending:</i> ENERGY STAR® 5.0-compliant				
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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 				

See footnotes for important warranty information
US model announced January 12, 2010
US model withdrawn effective August 2010

Type-model	Slot x bay	Processor(s)	Base GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Global	Avail date
4158-H2U	6x9	1xE5640	2.66	4	2x2GB	1333MHz	1x500GB ² SATA	3.5"	No	DVD±RW	Media	1x2000	1394	Global	Nov 10
4158-H3U	6x9	1X5680	3.33	6	2x2GB	1333MHz	1x300GB SAS	3.5"	No	DVD±RW	Media	1x5000	1394	Global	Nov 10

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- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Up to two processors, one processors standard, Intel® Xeon® Processor E5640 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 or Intel Xeon Processor X5680 with six-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache		Tower		
Implementation	Two LGA1366 sockets		<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 		
Memory	4GB , 48GB max, UDIMM , PC3-10600 1333MHz DDR3** , ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, opt disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3		
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some: NVIDIA® Quadro® 2000, PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I****, 62W</i> <i>Some: NVIDIA Quadro 5000, PCIe x16 adapter, 2.5GB, two DisplayPort, one dual-link DVI-I****, one stereo, 152W</i> **** Only two display connectors are active at a time				
Diskette drive	None (use USB port)				
Media reader	20-in-1 media reader, internal USB 2.0				
SATA disk(s)	<i>Some: 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</i>				
SAS disk(s)	<i>Some: 300GB, SAS 3.0Gb/s, 15000 rpm, 3.5"</i>				
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s				
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480				
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O				
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)				
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in				
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear				
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec				
Speaker	Internal speaker for business audio				
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754				
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		Supports ThinkVantage® technologies		
Mouse	Optical Wheel Mouse (USB connector), black				
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating		
Cooling	Five fans max (power supply, first processor, second processor, rear, front disk)				
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 		
Preloaded operating system²⁰	Accessories				
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM	43R2033			
	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138			
	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990			
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918			
	Blu-ray™ Burner SATA 1.5Gb/s	45K1675			
	Other accessories at lenovo.com/accessories				

See footnotes for important warranty information
 US models announced November 2, 2010
 US models withdrawn effective May 2011

ThinkStation® D20 (4158) - RDIMM - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor(s) GHz	Memory	Disk(s)	Disk type	Disk type	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date	
D20	4158-21U	6x9	2 x E5506	2.13	4 x 1GB	2 x 147GB	3.5"	SAS	0	DVD±RW	Media	1 x FX1800	1394	None	Bus64	Apr 09
D20	4158-22U	6x9	1 x X5560	2.80	2 x 1GB	1 x 250GB	3.5"	SATA	0	DVD±RW	Media	1 x FX1800		None	Bus32	Apr 09
D20	4158-52U	6x9	2 x E5540	2.53	4 x 1GB	2 x 147GB	3.5"	SAS	0	DVD±RW	Media	1 x FX4800		None	Pro64	Apr 09
D20	4158-53U	6x9	2 x E5540	2.53	4 x 1GB	2 x 300GB	2.5"	SATA	1	DVD±RW	Media	1 x FX4800		None	Pro64	Apr 09

- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**

Processor(s)	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5506 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5540 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor X5560 with quad-core , 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache		Tower		
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 		
Memory	2GB or 4GB std, 192GB max (pending 16GB RDIMM availability), RDIMM, PC3-8500 1066MHz DDR3, ECC , registered, 6-channel capable, twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors		<ul style="list-style-type: none"> • Bay ① 5.25", 1.6" high, external, std optical • Bay ② 5.25", 1.6" high, external, open • Bay ③ 5.25", 1.6" high, external, open • Bay ④ 3.5", 1" high, external, std media reader • Bay ⑤ 3.5", 1" high, internal, std disk • Bay ⑥ 3.5", 1" high, internal, std or opt disk • Bay ⑦ 3.5", 1" high, internal, opt disk • Bay ⑧ 3.5", 1" high, internal, opt disk • Bay ⑨ 3.5", 1" high, internal, opt disk 		
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some: NVIDIA® Quadro® FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W</i> <i>Some: NVIDIA Quadro FX 4800, PCIe x16 adapter, 1.5GB, two slot width, 2 DisplayPort, 1 dual-link DVI-I***, 121W</i> *** Only two display connectors are active at a time		<ul style="list-style-type: none"> Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: full-length, full-height, 32-bit PCI 2.3 		
Diskette drive	None				
Media reader	20-in-1 media reader				
SATA disk(s)	<i>Some: 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</i> <i>Some: 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</i>				
SAS disk(s)	<i>Some: 146GB, SAS 3.0Gb/s, 15000 rpm</i>				
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s				
Disk controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480				
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)				
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in				
IEEE 1394 adptr	<i>Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear</i>				
Audio	High Definition (HD) Audio, Analog Devices ADI 1988A codec				
Speaker	Internal speaker for business audio				
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754				
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant				
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black				
Mouse	Optical Wheel Mouse (USB connector), black				
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		Supports ThinkVantage® technologies		
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		GREENGUARD® certified		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		RoHS-compliant		
Preloaded operating system²⁰	Accessories		LIMITED WARRANTY¹		
- <i>Some: Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64-bit)</i>	2GB PC3-8500 DDR3 ECC RDIMM	43R2035	<ul style="list-style-type: none"> ↪ 3-year parts and labor ↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ via 800-426-7378 		
- <i>Some: Genuine Windows Vista Business 32</i>	4GB PC3-8500 DDR3 ECC RDIMM	43R2036			
- <i>Some: Genuine Windows Vista Business 64</i>	8GB PC3-8500 DDR3 ECC RDIMM	43R2037			
◆ <i>Vista models: Vista Premium logo</i>	Blu-ray™ Burner SATA 1.5Gb/s	45K1675			
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918			
	150GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2030			
	300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2031			
	300GB SAS 3.0Gb/s Disk (15000 rpm)	43R1994			
	450GB SAS 3.0Gb/s Disk (15000 rpm)	43N3424			
	ThinkStation Rail Kit	43R1964			
	Other accessories at lenovo.com/accessories				

See footnotes for important warranty information
 US models announced March 31, 2009
 US models withdrawn effective January 2010 or April 2010

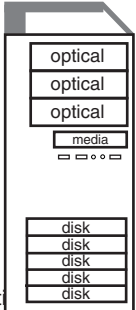
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 (SEV1-6) May 2010

ThinkStation® D20 (4158) - RDIMM (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type- Name	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR	Win7 preload	Avail date	
D20	4158-79U	6x9	2xE5520	2.26	8	2x4GB	1066MHz	2x500GB ²	SATA	3.5"	No	DVD±RW Media	1xFX1800	1394	Pending	Pro64	Oct 09

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Up to two processors, two processors standard, Intel Xeon® Processor E5520 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache	Tower	<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets			
Memory	8GB std, 192GB max (Pending availability of 16GB RDIMM), RDIMM, PC3-8500 1066MHz DDR3, ECC , twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors	Bay ① 5.25", 1.6" high, external, std opt	Bay ② 5.25", 1.6" high, external, open	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W *** Only two display connectors are active at a time	Bay ③ 5.25", 1.6" high, external, open	Bay ④ 3.5", 1" high, external, std media reader	
Diskette drive	None	Bay ⑤ 3.5", 1" high, internal, std disk	Bay ⑥ 3.5", 1" high, internal, std disk	
Media reader	20-in-1 media reader	Bay ⑦ 3.5", 1" high, internal, opt disk	Bay ⑧ 3.5", 1" high, internal, opt disk	
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	Bay ⑨ 3.5", 1" high, internal, opt disk		
SAS disk(s)	None	Slot 1: half-length, full-height, PCIe x1	Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	Slot 3: full-length, full-height, 32-bit PCI 2.3	Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)	
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480	Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)	Slot 6: half-length, full-height, 32-bit PCI 2.3	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	SECURITY		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	Supports ThinkVantage® technologies		
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	GREENGUARD® certified		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	RoHS-compliant		
Speaker	Internal speaker for business audio	<i>Pending</i> : ENERGY STAR® 5.0-compliant		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	LIMITED WARRANTY¹		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	<ul style="list-style-type: none"> ⇒ 3-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty <ul style="list-style-type: none"> • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified			
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)			
Rack mount	Rack shelf support or optional sliding rack mount rail kit support			
Preloaded operating system²⁰	Accessories			
- Genuine Windows® 7 Professional 64	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918			
Preloaded applications⁵ (only some listed)	Blu-ray™ Burner SATA 1.5Gb/s 45K1675			
• Rescue and Recovery™	ThinkVision® L2440p Wide 24" Monitor 4420HB2			
• ThinkVantage System Update	NVIDIA Quadro NVS 290 43R1765			
• Norton Internet Security™ (30 days of virus definitions)	NVIDIA Quadro FX 580 45K1671			
• Adobe® Reader	ATI™ FirePro™ 1GB V7750 51J0511			
• Microsoft Office 2010 preloaded; purchase product key to activate	Other accessories at lenovo.com/accessories			
• Roxio® Creator® Business Edition (DVD±RW)				
• Roxio MyDVD® (DVD±RW)				
• Corel® WinDVD® (DVD±RW)				

See footnotes for important warranty information
 US model announced October 22, 2009
 US model withdrawn effective August 2010

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 (SEV3-4) August 2010

Type-model	Slot x bay	Processor(s)	Base GHz	Max GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Global	Avail date
4158-B2U	6x9	1xE5620	2.40	2.66	4	2x2GB	1333MHz	1x500GB ²	SATA 3.5"	No	DVD±RW	Media	1xFX580	1394		Mar 10
4158-B3U	6x9	1xE5630	2.53	2.80	4	2x2GB	1333MHz	1x500GB	SATA 3.5"	No	DVD±RW	Media	1xFX1800	1394		Mar 10
4158-B4U	6x9	1xE5640	2.66	2.93	4	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1xFX1800	1394		Mar 10
4158-B5U	6x9	1X5650	2.66	3.06	6	2x2GB	1333MHz	1x500GB	SATA 3.5"	No	DVD±RW	Media	1xFX380	1394		Mar 10
4158-B6U	6x9	1X5660	2.80	3.20	6	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1xFX4800	1394		Mar 10
4158-B8U	6x9	1xE5640	2.66	2.93	4	2x2GB	1333MHz	1x500GB	SATA 3.5"	No	DVD±RW	Media	1xFX1800	1394	Global	May 10
4158-B9U	6x9	1X5670	2.93	3.33	6	3x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1xFX4800			Jun 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Up to two processors, one processor standard, Intel Xeon® Processor E5620, E5630, or E5640 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 or Intel Xeon Processor X5650, X5660 or X5670 with six-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	Tower	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Memory	4GB or 6GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3** , ECC, 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, opt disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some:</i> NVIDIA® Quadro® FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W <i>Some:</i> NVIDIA Quadro FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W <i>Some:</i> NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W <i>Some:</i> NVIDIA Quadro FX 4800 , PCIe x16 adapter, 1.5GB, two slot width, two DisplayPort, one dual-link DVI-I****, 121W **** Only two display connectors are active at a time		
Diskette drive	None (use USB port)		
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<i>Some:</i> 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SAS disk(s)	<i>Some:</i> 300GB , SAS 3.0Gb/s, 15000 rpm		
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480		
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 NVIDIA Quadro FX 4800 45K1674 Other accessories at lenovo.com/accessories		
Preloaded applications⁵ (only some listed)			
• Microsoft Office 2010 preloaded; purchase product key to activate			
		SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) Supports ThinkVantage® technologies GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0-compliant 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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ ThinkPlus™ services available; see http://lenovo.com/thinkplus/warranty • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ via 800-426-7378 	

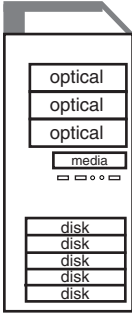
See footnotes for important warranty information
 US models announced on March 16, May 4, or June 15, 2010
 US models withdrawn effective February 2011

ThinkStation® D20 (4158) - Windows 7 (August 2011) -withdrawn

Personal Systems Reference(PEREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4158-N5U	6x9	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	None	No	Pro 64	08/16/11

- Microsoft® Office 2010 Product Key Ready (O10PKR)

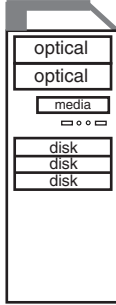
Processor	Intel® Xeon® Processor X5650 with six-core , 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 5.25", 1.6" high, external, open Bay 4: 3.5", 1" high, external, std media reader Bay 5: 3.5", 1" high, internal, std disk Bay 6: 3.5", 1" high, internal, opt disk Bay 7: 3.5", 1" high, internal, opt disk Bay 8: 3.5", 1" high, internal, opt disk Bay 9: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p>
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 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 • Over six DIMMs requires dual processors 	
Graphics	None	
Media reader	Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"	
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;	
SAS controller	5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
		<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch on selected model(s)
		<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>
		<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>
		<p>More compatible accessories, please see O-SEV sheet</p>

See footnotes for important warranty information
 US model(s) announced August 16, 2011
 US model(s) withdrawn effective October 2012

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 (SEV11-3) October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4105-5CU	5x6	W3565	3.20	4	1x4GB	1x500GB SATA	No	DVD±RW	None	Media	None	1xQuadro 600	None	Pro 64	12/13/11
4105-6CU	5x6	W3565	3.20	4	1x4GB	1x450GB SAS	No	DVD±RW	None	Media	None	1xQuadro 2000	None	Pro 64	12/13/11

- These small and medium business (SMB) models are part of the US TopSeller™ Program
- Microsoft Office 2010 Product Key Ready (O10PKR)

<p>Processor Intel® Xeon® Processor W3565 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 8MB cache</p> <p>Implementation One LGA1366 socket</p> <p>Memory 48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <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 </p> <p>Graphics <i>Some:</i> NVIDIA® Quadro® 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W <i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p> <p>Media reader Media card reader, internal USB 2.0</p> <p>Optical Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive</p> <p>Hard drive(s) <i>Some:</i> 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5" <i>Some:</i> 450GB, SAS 3.0Gb/s, 15000 rpm, 3.5"</p> <p>SATA controller Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals</p> <p>SAS controller <i>SAS model(s):</i> Marvell® 88SE6440, PCIe x4 adapter, 4 SATA/SAS⁴ connectors, SATA 3.0Gb/s, SAS 3.0Gb/s</p> <p>Chipset Intel X58 Express Chipset, Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O</p> <p>Front ports Two USB 2.0, microphone (3.5mm), headphone (3.5mm)</p> <p>Rear ports Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in</p> <p>IEEE 1394 adptr None</p> <p>Audio High Definition (HD) Audio, Analog Devices AD1988A codec</p> <p>Speaker Internal speaker for business audio</p> <p>Ethernet One gigabit ethernet on planar, Broadcom® BCM5755</p> <p>Security chip Broadcom Trusted Platform Module, TCG 1.2-compliant</p> <p>Keyboard Preferred Pro USB Keyboard (USB connector), 104-key, black</p> <p>Mouse Optical Wheel Mouse (USB connector), black</p> <p>Power supply 625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</p> <p>ThinkVantage® Supports ThinkVantage technologies</p> <p>Limited Warranty 3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)</p> <p>Preload OS Genuine Windows® 7 Professional 64</p> <p>Preloaded applications <ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) </p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 3.5", 1" high, external, std media reader Bay 4: 3.5", 1" high, internal, std disk Bay 5: 3.5", 1" high, internal, opt disk Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU ** x16 mechanical</p>
	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-SEV sheet</p>

See footnotes for important warranty information
 US model(s) announced December 13, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® D20 (4155) - TopSeller (Windows 7) - July 2011

Personal Systems Reference(PEREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4155-K4U	6x9	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	1xQuadro 600	No	Pro 64	07/19/11

- Part of the US TopSeller™ Program
- Microsoft Office 2010 Product Key Ready (O10PKR)

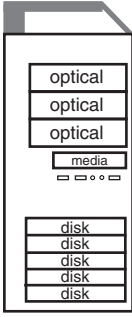
Processor	Intel® Xeon® Processor X5650 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache										Tower <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit
Implementation	Two LGA1366 sockets, supports up to two processors										
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC, 6-channel capable (3-channel per processor), twelve 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 • Over six DIMMs requires dual processors 										
Graphics	NVIDIA® Quadro® 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W										
Media reader	Media card reader, internal USB 2.0										
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive										
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"										
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;										
SAS controller	5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480										
Chipset	Intel 5520 Chipset, Intel ICH10, Winbond® W83627DHG-P Super I/O										
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)										
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in										
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear										
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec										
Speaker	Internal speaker for business audio										
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754										
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant										
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black										
Mouse	Optical Wheel Mouse (USB connector), black										
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified										
ThinkVantage®	Supports ThinkVantage technologies										
Limited Warranty	3-year parts and labor. Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)										
Preload OS	Genuine Windows® 7 Professional 64										
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 										
	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 										
	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>										
	<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>										
	More compatible accessories, please see O-SEV sheet										

See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

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 (SEV10-4) October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4158-N1U	6x9	2xX5687	3.60	8	3x2GB	1x450GB SAS	No	DVD±RW	1394	Media	Switch		Global	Pro 64	07/19/11
4158-N2U	6x9	1xX5660	2.80	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	1xQuadro 4000		Pro 64	07/19/11
4158-N3U	6x9	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	1xQuadro 2000	Global	Pro 64	07/19/11
4158-N4U	6x9	1xX5660	2.80	6	2x2GB	1x450GB SAS	No	DVD±RW	1394	Media	Switch	1xQuadro 4000		Pro 64	07/19/11

• Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Xeon® Processor X5650 with six-core. 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5660 with six-core. 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5687 with quad-core. 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 5.25", 1.6" high, external, open Bay 4: 3.5", 1" high, external, std media reader Bay 5: 3.5", 1" high, internal, std disk Bay 6: 3.5", 1" high, internal, opt disk Bay 7: 3.5", 1" high, internal, opt disk Bay 8: 3.5", 1" high, internal, opt disk Bay 9: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p> <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-SEV sheet</p>
Implementation	Two LGA1366 sockets, supports up to two processors	
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 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 • Over six DIMMs requires dual processors 	
Graphics	<p><i>Some:</i> NVIDIA® Quadro® 2000, PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I, 62W</p> <p><i>Some:</i> NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p>	
Media reader	Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p><i>Some:</i> 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p><i>Some:</i> 450GB, SAS 3.0Gb/s, 15000 rpm, 3.5"</p>	
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;	
SAS controller	5 SATA/SAS ⁺ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	

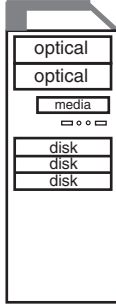
See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

ThinkStation® S20 (4105) - TopSeller (Windows 7) - July 2011

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4105-3AU	5x6	W3503	2.40	2	1x2GB	1x500GB SATA	No	DVD±RW	No	Media	Switch	1xQuadro 600	No	Pro 64	07/19/11

- Part of the US TopSeller™ Program
- Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Xeon® Processor W3503 with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache														
Implementation	One LGA1366 socket														
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 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	NVIDIA® Quadro® 600 , PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W														
Media reader	Media card reader, internal USB 2.0														
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive														
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"														
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals														
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O														
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)														
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in														
IEEE 1394 adptr	None														
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec														
Speaker	Internal speaker for business audio														
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755														
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant														
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black														
Mouse	Optical Wheel Mouse (USB connector), black														
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified														
ThinkVantage®	Supports ThinkVantage technologies														
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)														
Preload OS	Genuine Windows® 7 Professional 64														
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 														
	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 3.5", 1" high, external, std media reader Bay 4: 3.5", 1" high, internal, std disk Bay 5: 3.5", 1" high, internal, opt disk Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU ** x16 mechanical</p> </div> <div style="width: 35%;"> <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-SEV sheet</p> </div> </div>														

See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

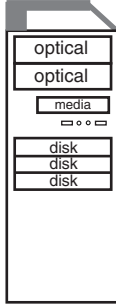
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 (SEV10-2) October 2011

ThinkStation® S20 (4157) - Windows 7 (July 2011) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4157-8BU	5x6	W3565	3.20	4	2x2GB	1x500GB SATA	No	DVD±RW	None	Media	Switch	1xQuadro 400		Pro 64	07/19/11
4157-9BU	5x6	W3565	3.20	4	2x2GB	1x500GB SATA	No	DVD±RW	None	Media	Switch	1xQuadro 600		Pro 64	07/19/11
4157-1CU	5x6	W3565	3.20	4	2x2GB	1x500GB SATA	No	DVD±RW	None	Media	Switch	1xQuadro 2000		Pro 64	07/19/11
4157-2CU	5x6	W3565	3.20	4	3x2GB	1x450GB SAS	No	DVD±RW	None	Media	Switch	1xQuadro 4000	Global	Pro 64	07/19/11

- Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Xeon® Processor W3565 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 8MB cache										
Implementation	One LGA1366 socket										
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 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	<i>Some:</i> NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W <i>Some:</i> NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W <i>Some:</i> NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W <i>Some:</i> NVIDIA Quadro 4000 , PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W										
Media reader	Media card reader, internal USB 2.0										
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive										
Hard drive(s)	<i>Some:</i> 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5" <i>Some:</i> 450GB, SAS 3.0Gb/s, 15000 rpm, 3.5"										
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals										
SAS controller	<i>SAS model(s):</i> Marvell® 88SE6440, PCIe x4 adapter, 4 SATA/SAS ⁺ connectors, SATA 3.0Gb/s, SAS 3.0Gb/s										
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O										
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)										
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in										
IEEE 1394 adptr	None										
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec										
Speaker	Internal speaker for business audio										
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755										
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant										
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black										
Mouse	Optical Wheel Mouse (USB connector), black										
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified										
ThinkVantage®	Supports ThinkVantage technologies										
Limited Warranty	3-year parts and labor. Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)										
Preload OS	Genuine Windows® 7 Professional 64										
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 										
	Tower  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 3.5", 1" high, external, std media reader Bay 4: 3.5", 1" high, internal, std disk Bay 5: 3.5", 1" high, internal, opt disk Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU ** x16 mechanical</p>										
	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 										
	ISV certifications Please visit www.lenovo.com/support/ISV										
	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating										
	More compatible accessories, please see O-SEV sheet										

See footnotes for important warranty information
 US model(s) announced July 19, 2011
 US model(s) withdrawn effective October 2012

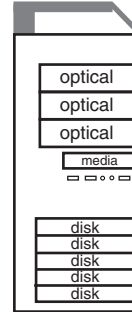
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 (SEV10-1) October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4155-H9U	6x9	1xE5603	1.6	4	1x2GB	1x500GB SATA	No	DVD±RW	1394	Media	None	1xQuadro 400	No	Pro 64	04/26/11

- This small and medium business (SMB) model is part of the US TopSeller™ Program
- This system is Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	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, supports up to two processors
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 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 • Over six DIMMs requires dual processors
Graphics	NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W
Media reader	Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;
SAS controller	5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec
Speaker	Internal speaker for business audio
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified
ThinkVantage®	Supports ThinkVantage technologies
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)
Preload OS	Genuine Windows® 7 Professional 64
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only)

Tower



- Raven black color; metal case
- 8.3"W x 23.7"D x 19.1"H (with handle)
- 210mm W x 602mm D x 485mm H
- 60 lb (27.1kg) max configuration
- 55-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1:	5.25", 1.6" high,	external,	std optical
Bay 2:	5.25", 1.6" high,	external,	open
Bay 3:	5.25", 1.6" high,	external,	open
Bay 4:	3.5", 1" high,	external,	std media reader
Bay 5:	3.5", 1" high,	internal,	std disk
Bay 6:	3.5", 1" high,	internal,	opt disk
Bay 7:	3.5", 1" high,	internal,	opt disk
Bay 8:	3.5", 1" high,	internal,	opt disk
Bay 9:	3.5", 1" high,	internal,	opt disk

- Slot 1: half-length, full-height, PCIe x1
- Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)
- Slot 3: full-length, full-height, 32-bit PCI 2.3
- Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)
- Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)
- Slot 6: half-length, full-height, 32-bit PCI 2.3

* Adapters >75W use auxiliary power connector(s) from PSU

SECURITY

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O control
- USB port disablement (front or all)
- Chassis intrusion switch on selected model(s)

ISV certifications

Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
RoHS-compliant
EPEAT™ Gold rating

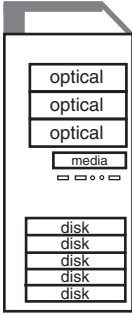
More compatible accessories, please see O-SEV sheet

ThinkStation® D20 (4158) - Windows 7 (April 2011) -withdrawn

Personal Systems Reference(PEREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Win7 Global preload	Ann date (mm/dd/yy)
4158-M3U	6x9	1xX5650	2.66	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	None	1xQuadro 400	No	Pro 64 04/26/11
4158-M4U	6x9	1xE5603	1.60	4	1x2GB	1x500GB SATA	No	DVD±RW	1394	Media	None	1xQuadro NVS 300	No	Pro 64 04/26/11

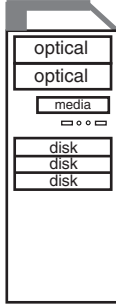
- *Faster, more efficient architecture with the latest Intel workstation technology*
- *High performance workstation with premium graphics for specialized professionals*
- *Environmentally friendly, cool, and quiet with rock solid engineering*
- *Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC*
- *These models have a 3-year limited warranty**
- *These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)*

Processor	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 Intel Xeon Processor X5650 with six-core , 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache											Tower  <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit
Implementation	Two LGA1366 sockets, supports up to two processors											
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 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 • Over six DIMMs requires dual processors 											
Graphics	<i>Some:</i> NVIDIA® Quadro® NVS 300 , PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W <i>Some:</i> NVIDIA Quadro 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W											
Media reader	Media card reader, internal USB 2.0											
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive											
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"											
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;											
SAS controller	5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480											
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O											
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)											
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in											
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear											
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec											
Speaker	Internal speaker for business audio											
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754											
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant											
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black											
Mouse	Optical Wheel Mouse (USB connector), black											
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified											
ThinkVantage®	Supports ThinkVantage technologies											
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)											
Preload OS	Genuine Windows® 7 Professional 64											
Preloaded applications (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 											
	<p>Bay 1: 5.25", 1.6" high, external, std optical</p> <p>Bay 2: 5.25", 1.6" high, external, open</p> <p>Bay 3: 5.25", 1.6" high, external, open</p> <p>Bay 4: 3.5", 1" high, external, std media reader</p> <p>Bay 5: 3.5", 1" high, internal, std disk</p> <p>Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Bay 7: 3.5", 1" high, internal, opt disk</p> <p>Bay 8: 3.5", 1" high, internal, opt disk</p> <p>Bay 9: 3.5", 1" high, internal, opt disk</p>											
	<p>Slot 1: half-length, full-height, PCIe x1</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 3: full-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)</p> <p>Slot 6: half-length, full-height, 32-bit PCI 2.3</p>											
	* Adapters >75W use auxiliary power connector(s) from PSU											
	<p align="center">SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 											
	<p align="center">ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p>											
	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p>											
	More compatible accessories, please see O-SEV sheet											

ThinkStation® S20 (4105) - TopSeller (Windows 7) - April 2011 - withdrawn Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4105-2EU	5x6	E5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	No	Media	None	1xQuadro 400	No	Pro 64	04/26/11
4105-2FU	5x6	W3503	2.40	2	1x2GB	1x500GB SATA	No	DVD±RW	No	Media	None	1xQuadro 400	No	Pro 64	04/26/11

- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Xeon® Processor W3503 with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache Intel® XeonProcessor E5607 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache														
Implementation	One LGA1366 socket														
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 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	NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W														
Media reader	Media card reader, internal USB 2.0														
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive														
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"														
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals														
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O														
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)														
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in														
IEEE 1394 adptr	None														
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec														
Speaker	Internal speaker for business audio														
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755														
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant														
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black														
Mouse	Optical Wheel Mouse (USB connector), black														
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified														
ThinkVantage®	Supports ThinkVantage technologies														
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)														
Preload OS	Genuine Windows® 7 Professional 64														
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 														
Tower															
 <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 															
<p>Bay 1: 5.25", 1.6" high, external, std optical</p> <p>Bay 2: 5.25", 1.6" high, external, open</p> <p>Bay 3: 3.5", 1" high, external, std media reader</p> <p>Bay 4: 3.5", 1" high, internal, std disk</p> <p>Bay 5: 3.5", 1" high, internal, opt disk</p> <p>Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU</p> <p>** x16 mechanical</p>															
SECURITY															
<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 															
ISV certifications															
Please visit www.lenovo.com/support/ISV															
GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating															
More compatible accessories, please see O-SEV sheet															

See footnotes for important warranty information
 US models announced April 26, 2011
 US model(s) withdrawn effective October 2012

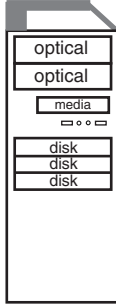
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ThinkStation® S20 (4157) - Windows 7 (April 2011) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Win7 Global preload	Ann date (mm/dd/yy)
4157-7AU	5x6	E5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	None	Media	None	1xQuadro 400	No	Pro 64 04/26/11
4157-8AU	5x6	W3550	3.06	4	1x2GB	1x500GB SATA	No	DVD±RW	None	Media	None	1xQuadro 400	No	Pro 64 04/26/11
4157-9AU	5x6	W3503	2.40	2	1x2GB	1x500GB SATA	No	DVD±RW	None	Media	None	1xQuadro 400	No	Pro 64 04/26/11

- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Xeon® Processor W3503 with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 4MB cache Intel Xeon Processor W3550 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache 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												
Implementation	One LGA1366 socket												
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 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	NVIDIA® Quadro® 400 , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W												
Media reader	Media card reader, internal USB 2.0												
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"												
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals												
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O												
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)												
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in												
IEEE 1394 adptr	None												
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec												
Speaker	Internal speaker for business audio												
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755												
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant												
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black												
Mouse	Optical Wheel Mouse (USB connector), black												
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified												
ThinkVantage®	Supports ThinkVantage technologies												
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)												
Preload OS	Genuine Windows® 7 Professional 64												
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 												
	Tower  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 3.5", 1" high, external, std media reader Bay 4: 3.5", 1" high, internal, std disk Bay 5: 3.5", 1" high, internal, opt disk Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU ** x16 mechanical</p>												
	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) 												
	ISV certifications Please visit www.lenovo.com/support/ISV												
	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating												
	More compatible accessories, please see O-SEV sheet												

See footnotes for important warranty information
 US models announced April 26, 2011
 US model(s) withdrawn effective October 2012

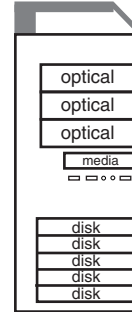
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 (SEV9-1) October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Win7 Global preload	Ann date (mm/dd/yy)
4155-G6U	6x9	1xE5603	1.6	4	1x2GB	1x500GB SATA	No	DVD±RW		Media	Switch	1xFX380	No	Pro 64 02/15/11
4155-G7U	6x9	1xE5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	1x600	No	Pro 64 02/15/11
4155-G8U	6x9	1xE5645	2.4	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	1x2000	No	Pro 64 02/15/11

- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	<p>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</p> <p>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</p> <p>Intel Xeon Processor E5645 with six-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>
Implementation	Two LGA1366 sockets, supports up to two processors
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 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 • Over six DIMMs requires dual processors
Graphics	<p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>
Media reader	Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;
SAS controller	5 SATA/SAS+ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec
Speaker	Internal speaker for business audio
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified

Tower



- Raven black color; metal case
- 8.3"W x 23.7"D x 19.1"H (with handle)
- 210mm W x 602mm D x 485mm H
- 60 lb (27.1kg) max configuration
- 55-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1:	5.25"	1.6" high	external	std optical
Bay 2:	5.25"	1.6" high	external	open
Bay 3:	5.25"	1.6" high	external	open
Bay 4:	3.5"	1" high	external	std media reader
Bay 5:	3.5"	1" high	internal	std disk
Bay 6:	3.5"	1" high	internal	opt disk
Bay 7:	3.5"	1" high	internal	opt disk
Bay 8:	3.5"	1" high	internal	opt disk
Bay 9:	3.5"	1" high	internal	opt disk

Slot 1: half-length, full-height, PCIe x1
 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 3: full-length, full-height, 32-bit PCI 2.3
 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)
 Slot 6: half-length, full-height, 32-bit PCI 2.3

* Adapters >75W use auxiliary power connector(s) from PSU

SECURITY

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O control
- USB port disablement (front or all)
- Chassis intrusion switch on selected model(s)

ISV certifications

Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

More compatible accessories, please see O-SEV sheet

See footnotes for important warranty information
 US models announced February 15, 2011
 US model(s) withdrawn effective June 2011 or October 2012

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Win7 Global preload	Ann date (mm/dd/yy)
4158-J2U	6x9	1xE5603	1.6	4	1x2GB	1x500GB SATA	No	DVD±RW		Media	Switch	1xNVS 295	No	Pro 64 02/15/11
4158-J3U	6x9	1xX5647	2.93	4	2x2GB	1x300GB SATA	No	DVD±RW		Media	Switch		No	Pro 64 02/15/11
4158-J4U	6x9	1xX5687	3.6	4	3x2GB	1x300GB SATA	No	DVD±RW	1394	Media	Switch		No	Pro 64 02/15/11
4158-J5U	6x9	1xX5647	2.93	4	2x2GB	1x300GB SAS	No	DVD±RW		Media	Switch	1x5000	No	Pro 64 02/15/11
4158-J6U	6x9	1xE5607	2.26	4	2x2GB	1x300GB SAS	No	DVD±RW		Media	Switch	1x2000	No	Pro 64 02/15/11
4158-J7U	6x9	1xE5645	2.4	6	2x2GB	1x500GB SATA	No	DVD±RW		Media	Switch	1x2000	No	Pro 64 02/15/11
4158-J8U	6x9	1xX5647	2.93	4	2x2GB	1x300GB SAS	No	DVD±RW		Media	Switch	1x4000	No	Pro 64 02/15/11
4158-J9U	6x9	1xX5647	2.93	4	2x2GB	1x500GB SATA	No	DVD±RW		Media	Switch	1x2000	No	Pro 64 02/15/11
4158-K1U	6x9	1xX5690	3.46	6	3x2GB	1x300GB SAS	No	DVD±RW	1394	Media	Switch	1x5000	No	Pro 64 02/15/11

Processor	<p>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</p> <p>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</p> <p>Intel Xeon Processor E5645 with six-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5647 with quad-core, 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5687 with quad-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p> <p>Intel Xeon Processor X5690 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>
Implementation	Two LGA1366 sockets, supports up to two processors
Memory	96GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 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 Over six DIMMs requires dual processors
Graphics	<p><i>Some:</i> NVIDIA® Quadro® NVS 295, PCIe x16 adapter, 256MB, two DisplayPort™, 23W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p> <p><i>Some:</i> NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p> <p><i>Some:</i> NVIDIA Quadro 5000, PCIe x16 adapter, 2.5GB, two DisplayPort, one dual-link DVI-I, one stereo, 152W</p>
Media reader	Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	<p><i>Some:</i> 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p><i>Some:</i> 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</p> <p><i>Some:</i> 300GB, SAS 3.0Gb/s, 15000 rpm, 3.5"</p>
SATA controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10;
SAS controller	5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 5, 10, integrated in Marvell® 88SE6480
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec
Speaker	Internal speaker for business audio
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified

Tower

- Raven black color; metal case
- 8.3"W x 23.7"D x 19.1"H (with handle)
- 210mm W x 602mm D x 485mm H
- 60 lb (27.1kg) max configuration
- 55-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1: 5.25", 1.6" high, external, std optical
 Bay 2: 5.25", 1.6" high, external, open
 Bay 3: 5.25", 1.6" high, external, open
 Bay 4: 3.5", 1" high, external, std media reader
 Bay 5: 3.5", 1" high, internal, std disk
 Bay 6: 3.5", 1" high, internal, opt disk
 Bay 7: 3.5", 1" high, internal, opt disk
 Bay 8: 3.5", 1" high, internal, opt disk
 Bay 9: 3.5", 1" high, internal, opt disk

Slot 1: half-length, full-height, PCIe x1
 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 3: full-length, full-height, 32-bit PCI 2.3
 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)
 Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)
 Slot 6: half-length, full-height, 32-bit PCI 2.3

* Adapters >75W use auxiliary power connector(s) from PSU

SECURITY

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- 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
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O control
- USB port disablement (front or all)
- Chassis intrusion switch on selected model(s)

ISV certifications

Please visit www.lenovo.com/support/ISV

GREENGUARD® certified
 RoHS-compliant
 EPEAT™ Gold rating

More compatible accessories, please see O-SEV sheet

ThinkVantage®	Supports ThinkVantage technologies
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)
Preload OS	Genuine Windows® 7 Professional 64
Preloaded applications (only some listed)	<ul style="list-style-type: none"> Rescue and Recovery® Microsoft® Office 2010 preloaded; purchase product key to activate Roxio® Creator® Business Edition (DVD±RW model(s) only) Roxio MyDVD® (DVD±RW model(s) only)

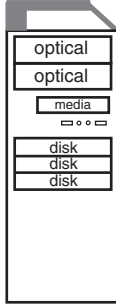
See footnotes for important warranty information
 US models announced February 15, 2011
 US model(s) withdrawn effective August or October 2012

ThinkStation® S20 (4105) - TopSeller (Windows 7) - February 2011

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Global	Win7 preload	Ann date (mm/dd/yy)
4105-1JU	5x6	E5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	No	Media	Switch	1xFX380	No	Pro 64	02/15/11
4105-1KU	5x6	E5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW	No	Media	Switch	1x2000	No	Pro 64	02/15/11

- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

Processor	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														
Implementation	One LGA1366 socket														
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 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	<i>Some:</i> NVIDIA® Quadro FX® 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W <i>Some:</i> NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I, 62W														
Media reader	Media card reader, internal USB 2.0														
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive														
Hard drive(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"														
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals														
SAS controller	None														
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O														
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)														
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in														
IEEE 1394 adptr	None														
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec														
Speaker	Internal speaker for business audio														
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755														
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant														
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black														
Mouse	Optical Wheel Mouse (USB connector), black														
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified														
ThinkVantage®	Supports ThinkVantage technologies														
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)														
Preload OS	Genuine Windows® 7 Professional 64														
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD and DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 														
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 3.5", 1" high, external, std media reader Bay 4: 3.5", 1" high, internal, std disk Bay 5: 3.5", 1" high, internal, opt disk Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU ** x16 mechanical</p> </div> <div style="width: 35%;"> <p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-SEV sheet</p> </div> </div>															

See footnotes for important warranty information
 US models announced February 15, 2011
 US model(s) withdrawn effective June 2011 or October 2012

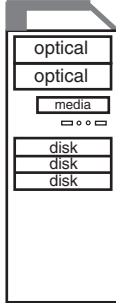
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 (SEV8-2) October 2012

ThinkStation® S20 (4157) - Windows 7 (February 2011) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	GHz	Core	Memory DIMMs	Disk(s)	Pre-conf RAID	SATA optical	1394 adptr	Media reader	Chassis intrusion switch	Graphics adapter(s)	Win7 Global preload	Ann date (mm/dd/yy)
4157-N1U	5x6	E5603	1.6	4	2x2GB	1x500GB SATA	No	DVD±RW		Media	Switch	1x2000	No	Pro 64 02/15/11
4157-N2U	5x6	E5607	2.26	4	2x2GB	1x500GB SATA	No	DVD±RW		Media	Switch	1x600	No	Pro 64 02/15/11
4157-N3U	5x6	W3690	3.46	6	2x2GB	1x500GB SATA	No	DVD±RW	1394	Media	Switch	1x4000	No	Pro 64 02/15/11
4157-N4U	5x6	W3550	3.06	4	2x2GB	1x300GB SAS	No	DVD±RW		Media	Switch		No	Pro 64 02/15/11
4157-N5U	5x6	W3550	3.06	4	2x2GB	1x300GB SAS	No	DVD±RW		Media	Switch	1x2000	No	Pro 64 02/15/11
4157-N6U	5x6	W3690	3.46	6	3x2GB	1x300GB SAS	No	DVD±RW	1394	Media	Switch	1x4000	No	Pro 64 02/15/11

• These systems are Microsoft Office 2010 Product Key Ready (O10PKR)

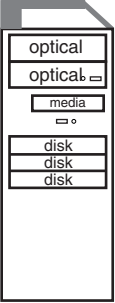
Processor	<p>Intel® Xeon® Processor W3550 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1066MHz DDR3 memory controller, and 8MB cache</p> <p>Intel Xeon Processor W3690 with six-core, 6.4GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 1333MHz DDR3 memory controller, and 12MB cache</p> <p>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</p> <p>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</p>	<p>Tower</p>  <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support <p>Bay 1: 5.25", 1.6" high, external, std optical Bay 2: 5.25", 1.6" high, external, open Bay 3: 3.5", 1" high, external, std media reader Bay 4: 3.5", 1" high, internal, std disk Bay 5: 3.5", 1" high, internal, opt disk Bay 6: 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>* Adapters >75W use auxiliary power connector(s) from PSU ** x16 mechanical</p>
Implementation	One LGA1366 socket	
Memory	48GB max, UDIMM, PC3-10600 1333MHz DDR3, ECC , 3-channel capable, six 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	<p><i>Some:</i> NVIDIA® Quadro® 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p> <p><i>Some:</i> NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p>	
Media reader	Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p><i>Some:</i> 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p><i>Some:</i> 300GB, SAS 3.0Gb/s, 15000 rpm, 3.5"</p>	
SATA controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals	
SAS controller	<i>Some:</i> Marvell® 88SE6440, PCIe x4 adapter, 4 SATA/SAS ⁴ connectors, SATA 3.0Gb/s, SAS 3.0Gb/s (SAS model(s) only)	
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in	
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
ThinkVantage®	Supports ThinkVantage technologies	
Limited Warranty	3-year parts and labor, Customer Replaceable Unit (CRU) parts only (More Lenovo® services are available on S-TS sheet)	
Preload OS	Genuine Windows® 7 Professional 64	
Preloaded applications	<ul style="list-style-type: none"> • Rescue and Recovery® • ThinkVantage System Update • ThinkVantage Toolbox • Norton® Internet Security (30 days of virus definitions) • Microsoft® Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW model(s) only) • Roxio MyDVD® (DVD±RW model(s) only) • Corel® WinDVD® (DVD or DVD±RW model(s) only) • Ulead® DVD MovieFactory® (Blu-ray model(s) only) 	
		<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • Padlock loop (in rear for opt padlock) • Security slot (in rear for optional Kensington® Microsaver® cable) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • USB port disablement (front or all) • Chassis intrusion switch on selected model(s) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <p>More compatible accessories, please see O-SEV sheet</p>

See footnotes for important warranty information
 US models announced February 15, 2011
 US model(s) withdrawn effective October 2012

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 (SEV8-1) October 2012

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Win7 preload	Global	Avail date
S20	4157-M1U	5x6	W3550	3.06	4	2x2GB	1x146GB ² SAS	3.5"	No	DVD±RW	Media	1x2000	None	Pro64	Global	Nov 10
S20	4157-M2U	5x6	W3550	3.06	4	2x2GB	1x146GB SAS	3.5"	No	DVD±RW	Media	1x2000	None	Pro64	Global	Nov 10
S20	4157-M3U	5x6	W3550	3.06	4	2x2GB	1x150GB SATA	2.5"	No	DVD±RW	Media	1x2000	None	Pro64	Global	Nov 10
S20	4157-M4U	5x6	W3550	3.06	4	3x2GB	1x500GB SATA	3.5"	No	DVD±RW	Media	1x600	None	Pro64	Global	Nov 10
S20	4157-M5U	5x6	W3680	3.33	6	3x2GB	1x300GB SAS	3.5"	No	DVD±RW	Media	1x4000	None	Pro64	Global	Nov 10

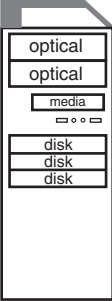
• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Xeon® Processor W3550 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 8MB cache or</p> <p>Intel Xeon Processor W3680 with six-core, 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 													
Implementation	One LGA1366 socket	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>													
Memory	<p>4GB or 6GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 1066MHz DDR3 memory controller</p>	<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>													
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p>Some: NVIDIA® Quadro® 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W</p> <p>Some: NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I****, one stereo, 142W</p> <p>**** Only two display connectors are active at a time</p>														
Media reader	20-in-1 media reader, internal USB 2.0														
SATA disk(s)	<p>Some: 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p>Some: 150GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</p>														
SAS disk(s)	Some: 146GB or 300GB , SAS 3.0Gb/s, 15000 rpm, 3.5"														
SATA DVD±RW Disk controller	<p>Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive</p> <p>Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals</p> <p>SAS model(s): Marvell® 88SE6440, PCIe x4 adapter, 4 SATA/SAS⁴ connectors, SATA 3.0Gb/s, SAS 3.0Gb/s</p>														
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O														
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)														
Rear ports	<p>Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in</p>														
IEEE 1394 adptr	None														
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec														
Speaker	Internal speaker for business audio														
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755														
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant														
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black														
Mouse	Optical Wheel Mouse (USB connector), black														
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified														
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])														
Rack mount	Rack shelf support														
<p>Preloaded operating system²⁰</p> <ul style="list-style-type: none"> - Genuine Windows® 7 Professional 64 <p>Preloaded applications⁵ (only some listed)</p> <ul style="list-style-type: none"> • Rescue and Recovery™ • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Corel® WinDVD® (DVD±RW) 		<p>Accessories</p> <table border="0"> <tr> <td>2GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2033</td> </tr> <tr> <td>4GB PC3-10600 DDR3 ECC UDIMM</td> <td>57Y4138</td> </tr> <tr> <td>500GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>43R1990</td> </tr> <tr> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>ThinkVision® L2440p Wide 24" Monitor</td> <td>4420HB2</td> </tr> </table> <p>Other accessories at lenovo.com/accessories</p>	2GB PC3-10600 DDR3 ECC UDIMM	43R2033	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	Blu-ray™ Burner SATA 1.5Gb/s	45K1675	ThinkVision® L2440p Wide 24" Monitor	4420HB2	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
2GB PC3-10600 DDR3 ECC UDIMM	43R2033														
4GB PC3-10600 DDR3 ECC UDIMM	57Y4138														
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990														
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918														
Blu-ray™ Burner SATA 1.5Gb/s	45K1675														
ThinkVision® L2440p Wide 24" Monitor	4420HB2														

See footnotes for important warranty information
 US models announced November 2, 2010
 US models withdrawn effective December 2010, May 2011, or October 2012

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Win7 preload	Avail date
S20	4157-L8U	5x6	W3550	3.06	4	1x2GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xFX380	No	Pending	Pro64	Nov 10
S20	4157-L9U	5x6	W3550	3.06	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x600	No	Pending	Pro64	Nov 10

- These models have a 3-year limited warranty¹
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Intel® Xeon® W3550 with quad-core, 4.8GT/s(giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 8MB cache										Tower • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support		
Implementation	One LGA1366 socket										Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk Bay ⑥ 3.5", 1" high, internal, opt disk Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3 ** x16 mechanical		
Memory	2GB or 4GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets *** System automatically clocks down for processors with 1066MHz DDR3 memory controller												
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU Some: NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W												
Media reader	20-in-1 media reader, internal USB 2.0												
SATA disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"												
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals												
Chipset	Intel X58 Express Chipset, Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O												
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)										SECURITY • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in												
IEEE 1394 adptr	None												
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec												
Speaker	Internal speaker for business audio												
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Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant												
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black												
Mouse	Optical Wheel Mouse (USB connector), black												
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified												
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])												
Rack mount	Rack shelf support												
Preloaded operating system²⁰	- Genuine Windows® 7 Professional 64					Accessories 2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 ThinkVision® L2440p Wide 24" Monitor 4420HB2 Other accessories at lenovo.com/accessories							
Preloaded applications⁵ (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage System Update • ThinkVantage Toolbox • Norton™ Internet Security (30 days of virus definitions) • Adobe® Reader® • Adobe Flash® Player • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Roxio MyDVD® (DVD±RW) • Corel® WinDVD® (DVD±RW) 												
ISV certifications Please visit www.lenovo.com/support/ISV GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0-compliant EPEAT™ Gold rating													
LIMITED WARRANTY¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations) ⁷ • Post warranty maintenance services ⇨ 24 hour x 7 day ¹⁴ toll-free support during the warranty period ¹													

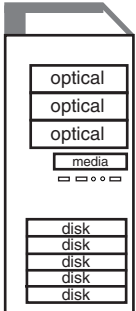
See footnotes for important warranty information
 US models announced November 2, 2010
 US model(s) withdrawn effective June 2011 or October 2012

ThinkStation® D20 (4158) - Global (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type-model	Slot x bay	Processor(s)	Base GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Global	Avail date
4158-D6U	6x9	2xE5620	2.40	8	4x2GB	1333MHz	1x300GB ² SATA	2.5"		DVD±RW	Media		None	Global	Aug 10
4158-D7U	6x9	2xE5620	2.40	8	4x2GB	1333MHz	2x146GB SAS	3.5"	1	DVD±RW	Media		None	Global	Aug 10
4158-D8U	6x9	2xE5620	2.40	8	4x2GB	1333MHz	146GB+300GB SAS	3.5"		DVD±RW	Media	1xFX3800	None	Global	Aug 10
4158-D9U	6x9	2xE5640	2.66	8	4x2GB	1333MHz	1x300GB SATA	2.5"		DVD±RW	Media		None	Global	Aug 10
4158-E1U	6x9	2xX5650	2.66	12	4x2GB	1333MHz	1x300GB SATA	2.5"		DVD±RW	Media	1xFX4800	None	Global	Aug 10
4158-E2U	6x9	2xX5650	2.66	12	4x2GB	1333MHz	1x150GB SATA	2.5"		DVD±RW	Media	1xFX1800	None	Global	Aug 10
4158-E3U	6x9	2xX5660	2.80	12	4x2GB	1333MHz	1x300GB SAS	3.5"		DVD±RW	Media	1xFX4800	None	Global	Aug 10
4158-E4U	6x9	1xX5680	3.33	6	3x2GB	1333MHz	1x300GB SATA	2.5"		DVD±RW	Media	1xFX4800	None	Global	Aug 10
4158-E5U	6x9	1xX5677	3.46	4	3x2GB	1333MHz	1x300GB SATA	2.5"		DVD±RW	Media		None	Global	Aug 10

• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Up to two processors, one or two processors standard, Intel® Xeon® Processor E5620 or E5640 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 or Intel Xeon Processor X5677 with quad-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache or Intel Xeon Processor X5650, X5660, or X5680 with six-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	Tower	
Implementation	Two LGA1366 sockets	<ul style="list-style-type: none"> Raven black color; metal case 8.3"W x 23.7"D x 19.1"H (with handle) 210mm W x 602mm D x 485mm H 60 lb (27.1kg) max configuration 55-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Rack shelf support or optional rail kit 	
Memory	6GB or 8GB std, 96GB max, UDIMM, PC3-10600 1333MHz DDR3**, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std or opt disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some:</i> NVIDIA® Quadro® FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W <i>Some:</i> NVIDIA Quadro FX 3800 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 108W <i>Some:</i> NVIDIA Quadro FX 4800 , PCIe x16 adapter, 1.5GB, two slot width, two DisplayPort, one dual-link DVI-I****, 121W **** Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3	
Diskette drive	None (use USB port)	SECURITY <ul style="list-style-type: none"> Security chip (see information on left) Side cover lock (ships with two identical keys) 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 Administrator password Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (front or all) 	
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<i>Some:</i> 150GB or 300GB , SATA 3.0Gb/s, 10000 rpm, 2.5"	ISV certifications Please visit www.lenovo.com/support/ISV	
SAS disk(s)	<i>Some:</i> 146GB or 300GB , SAS 3.0Gb/s, 15000 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating	
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480		
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	LIMITED WARRANTY¹ ⇒ 3-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	PRELOADED OPERATING SYSTEM²⁰ - Genuine Windows® 7 Professional 64	
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec	PRELOADED APPLICATIONS⁵ (only some listed) • Microsoft Office 2010 preloaded; purchase product key to activate	
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	Keyboard Preferred Pro USB Keyboard (USB connector), 104-key, black Mouse Optical Wheel Mouse (USB connector), black Power supply 1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Cooling	Five fans max (power supply, first processor, second processor, rear, front disk)	Rack mount Rack shelf support or optional sliding rack mount rail kit support	
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		

See footnotes for important warranty information

US models announced August 3, 2010

US models withdrawn effective December 2010, February 2011, May 2011, or October 2012

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ThinkStation® S20 (4157) - Global (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Win7 preload	Global	Avail date
S20	4157-G9U	5x6	W3530	2.80	4	2x2GB	1x146GB ² SAS	3.5"	No	DVD±RW	Media		None	Pro64	Global	Aug 10
S20	4157-H1U	5x6	W3530	2.80	4	2x2GB	1x146GB SAS	3.5"	No	DVD±RW	Media	1xFX1800	None	Pro64	Global	Aug 10
S20	4157-H2U	5x6	W3550	3.06	4	3x2GB	1x146GB SAS	3.5"	No	DVD±RW	Media		None	Pro64	Global	Aug 10
S20	4157-H3U	5x6	W3550	3.06	4	3x2GB	1x146GB SAS	3.5"	No	DVD±RW	Media	1xFX1800	None	Pro64	Global	Aug 10
S20	4157-H4U	5x6	W3680	3.33	6	3x2GB	1x146GB SAS	3.5"	No	DVD±RW	Media	1xFX3800	None	Pro64	Global	Aug 10
S20	4157-H5U	5x6	W3565	3.20	4	3x2GB	1x146GB SAS	3.5"	No	DVD±RW	Media		None	Pro64	Global	Aug 10
S20	4157-H6U	5x6	W3530	2.80	4	2x2GB	1x150GB SATA	2.5"	No	DVD±RW	Media	1xFX1800	None	Pro64	Global	Aug 10
S20	4157-H7U	5x6	W3530	2.80	4	3x2GB	1x500GB SATA	3.5"	No	DVD±RW	Media	1xFX580	None	Pro64	Global	Aug 10
S20	4157-H8U	5x6	W3530	2.80	4	3x2GB	1x500GB SATA	3.5"	No	DVD±RW	Media	1xFX1800	None	Pro64	Global	Aug 10
S20	4157-H9U	5x6	W3550	3.06	4	3x2GB	1x500GB SATA	3.5"	No	DVD±RW	Media	1xFX1800	None	Pro64	Global	Aug 10
S20	4157-J6U	5x6	W3530	2.80	4	2x2GB	1x500GB SATA	3.5"	No	DVD±RW	Media	1x2000	None	Pro64	Global	Oct 10
S20	4157-J7U	5x6	W3550	3.06	4	2x2GB	1x500GB SATA	3.5"	No	DVD±RW	Media	1x2000	None	Pro64	Global	Oct 10

• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Xeon® Processor W3530, W3550, or W3565 with quad-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 8MB cache or</p> <p>Intel Xeon Processor W3680 with six-core, 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache</p>	<p>Tower</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation	One LGA1366 socket		
Memory	<p>4GB or 6GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 1066MHz DDR3 memory controller</p>		
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p>Some: NVIDIA® Quadro® FX 580, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I****, 40W</p> <p>Some: NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p>Some: NVIDIA Quadro FX 3800, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 108W</p> <p>Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W</p> <p>**** Only two display connectors are active at a time</p>	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p> <p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<p>Some: 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p>Some: 150GB, SATA 3.0Gb/s, 10000 rpm, 2.5"</p>		
SAS disk(s)	Some: 146GB, SAS 3.0Gb/s, 15000 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
Disk controller	<p>Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals</p> <p>SAS model(s): Marvell® 88SE6440, PCIe x4 adapter, 4 SATA/SAS⁴ connectors, SATA 3.0Gb/s, SAS 3.0Gb/s</p>		
Chipset	Intel X58 Express Chipset, Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	<p>Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in</p>		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	<p>- Genuine Windows® 7 Professional 64</p>		
Preloaded applications⁵ (only some listed)	<ul style="list-style-type: none"> • Rescue and Recovery™ • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Corel® WinDVD® (DVD±RW) 		
Accessories	<p>2GB PC3-10600 DDR3 ECC UDIMM 43R2033</p> <p>4GB PC3-10600 DDR3 ECC UDIMM 57Y4138</p> <p>500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990</p> <p>1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918</p> <p>Blu-ray™ Burner SATA 1.5Gb/s 45K1675</p> <p>ThinkVision® L2440p Wide 24" Monitor 4420HB2</p> <p>Other accessories at lenovo.com/accessories</p>		
		<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
		<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p>	
		<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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 	

See footnotes for important warranty information
 US models announced October 26, 2010; previous models on August 3, 2010
 US models withdrawn effective December 2010, February 2011, or October 2012

ThinkStation® D20 (4155) - TopSeller (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type- Name	model	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory type	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Win7 preload	Avail date
D20	4155-B6U	6x9	1xE5507	2.26	4	2x1GB	UDIMM	1x500GB ²	SATA 3.5"	No	DVD±RW	Media	1xFX580	1394	Pro64	Mar 10
D20	4155-B7U	6x9	1xE5620	2.40	4	2x2GB	UDIMM	1x500GB	SATA 3.5"	No	DVD±RW	Media	1xFX1800	1394	Pro64	Mar 10
D20	4155-E1U	6x9	1xE5620	2.40	4	2x2GB	RDIMM	1x500GB	SATA 3.5"	No	DVD±RW	Media			Pro64	Sep 10
D20	4155-F1U	6x9	1X5650	2.66	6	2x2GB	UDIMM	1x500GB	SATA 3.5"	No	DVD±RW	Media	1x4000	1394	Pro64	Oct 10
D20	4155-E9U	6x9	1xE5620	2.40	4	2x2GB	UDIMM	1x500GB	SATA 3.5"	No	DVD±RW	Media	1x2000	1394	Pro64	Oct 10
D20	4155-G1U	6x9	1XE5507	2.26	4	2x2GB	UDIMM	1x500GB	SATA 3.5"	No	DVD±RW	Media	1x600	1394	Pro64	Nov 10

- These small and medium business (SMB) models are part of the US TopSeller™ Program
- These models have a 3-year limited warranty¹
- These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Up to two processors, one processor standard, Intel® Xeon® Processor E5507 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect) Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB 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 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	Tower	
Implementation	Two LGA1366 sockets	<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Memory	<i>UDIMM Model (s):</i> 2GB or 4GB std, 96GB max, <i>RDIMM Model (s):</i> 4GB std, 192GB max (pending 16GB RDIMM availability); PC3-10600 1333MHz DDR3**, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, opt disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some:</i> NVIDIA® Quadro® FX 580 , PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I****, 40W <i>Some:</i> NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W <i>Some:</i> NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W <i>Some:</i> NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W <i>Some:</i> NVIDIA Quadro 4000 , PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I****, one stereo, 142W **** Only two display connectors are active at a time	Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3	
Diskette drive	None (use USB port)	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"	ISV certifications Please visit www.lenovo.com/support/ISV GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating	
SAS disk(s)	None		
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	LIMITED WARRANTY¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇨ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹	
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480		
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	<i>Some:</i> FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)		
Rack mount	Rack shelf support or optional sliding rack mount rail kit support		
Preloaded operating system²⁰ - Genuine Windows® 7 Professional 64			

See footnotes for important warranty information
 US models announced October 26 or November 2, 2010; previous models on March 16, September 21, or October 12, 2010
 US models withdrawn effective February 2011, May 2011, or October 2012

Type-model	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	Win7 preload	Avail date
D20 4158-A9U 6x9	1x	E5503	2.00	2	2x1GB	1333MHz	1x500GB ²	SATA 3.5"	No	DVD±RW	Media	1xNVS295	1394	Pro64	Mar 10
D20 4158-B1U 6x9	1x	E5507	2.26	4	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1xFX1800	1394	Pro64	Mar 10
D20 4158-F8U 6x9	1x	E5640	2.66	4	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1x5000	1394	Pro64	Oct 10
D20 4158-F9U 6x9	1x	E5620	2.40	4	2x2GB	1333MHz	1x500GB	SATA 3.5"	No	DVD±RW	Media	1x2000	1394	Pro64	Oct 10
D20 4158-G6U 6x9	1x	E5507	2.26	4	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1x2000	1394	Pro64	Nov 10
D20 4158-G7U 6x9	1x	E5620	2.40	4	2x2GB	1333MHz	1x500GB	SATA 3.5"	No	DVD±RW	Media	1x600	1394	Pro64	Nov 10
D20 4158-G8U 6x9	1x	E5630	2.53	4	2x2GB	1333MHz	1x500GB	SATA 3.5"	No	DVD±RW	Media	1x2000	1394	Pro64	Nov 10
D20 4158-G9U 6x9	1x	E5640	2.66	4	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1x2000	1394	Pro64	Nov 10
D20 4158-H1U 6x9	1x	E5660	2.80	6	2x2GB	1333MHz	1x300GB	SAS 3.5"	No	DVD±RW	Media	1x5000	1394	Pro64	Nov 10

• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	Up to two processors, one processor standard, Intel® Xeon® Processor E5503 with dual-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5507 with quad-core , 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache or Intel Xeon Processor E5620, E5630, or E5640 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 X5660 with six-core , 6.4GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1333MHz DDR3 memory controller, and 12MB cache	Tower	<ul style="list-style-type: none"> Raven black color; metal case 8.3"W x 23.7"D x 19.1"H (with handle) 210mm W x 602mm D x 485mm H 60 lb (27.1kg) max configuration 55-liter Removable handle on top front Toolless side cover removal Toolless disk and optical drive removal Toolless adapter retention Illuminated front icons Rack shelf support or optional rail kit 	
Implementation	Two LGA1366 sockets	<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 5.25", 1.6" high, external, open</p> <p>Bay ④ 3.5", 1" high, external, std media reader</p> <p>Bay ⑤ 3.5", 1" high, internal, std disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑦ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑧ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑨ 3.5", 1" high, internal, opt disk</p>		
Memory	2GB or 4GB std, 96GB max, UDIMM, PC3-10600 1333MHz DDR3**, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets*** ** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller *** Over six DIMMs requires dual processors	<p>Slot 1: half-length, full-height, PCIe x1</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 3: full-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)</p> <p>Slot 6: half-length, full-height, 32-bit PCI 2.3</p>		
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <i>Some:</i> NVIDIA® Quadro® NVS 295 , PCIe x16 adapter, 256MB, two DisplayPort™, 23W <i>Some:</i> NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W <i>Some:</i> NVIDIA Quadro 600 , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W <i>Some:</i> NVIDIA Quadro 2000 , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W <i>Some:</i> NVIDIA Quadro 5000 , PCIe x16 adapter, 2.5GB, two DisplayPort, one dual-link DVI-I****, one stereo, 152W **** Only two display connectors are active at a time	<p>SECURITY</p> <ul style="list-style-type: none"> Security chip (see information on left) Side cover lock (ships with two identical keys) 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 Administrator password Boot sequence control Boot without keyboard, mouse, diskette Serial port I/O control USB port disablement (front or all) 		
Diskette drive	None (use USB port)	<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 		
Media reader	20-in-1 media reader, internal USB 2.0			
SATA disk(s)	<i>Some:</i> 500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"			
SAS disk(s)	<i>Some:</i> 300GB , SAS 3.0Gb/s, 15000 rpm			
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s			
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480			
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O			
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)			
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in			
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear			
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec			
Speaker	Internal speaker for business audio			
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754			
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant			
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified			
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)			
Rack mount	Rack shelf support or optional sliding rack mount rail kit support			

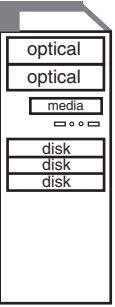
See footnotes for important warranty information
 US models announced October 26 or November 2, 2010; previous models on March 16 or October 12, 2010
 US models withdrawn effective February 2011, May 2011, October 2012

ThinkStation® S20 (4157) - Windows 7 (March 2010)- withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Win7 preload	Avail date
S20	4157-D7U	5x6	E5507	2.26	4	1x2GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xV3700		Pending	Pro64	Mar 10
S20	4157-D8U	5x6	E5507	2.26	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	1394	Pending	Pro64	Mar 10
S20	4157-D9U	5x6	W3530	2.80	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	1394	Pending	Pro64	Mar 10
S20	4157-E1U	5x6	W3530	2.80	4	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX580	1394	Pending	Pro64	Mar 10

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **These models have a 3-year limited warranty¹**
- **These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Intel Xeon® Processor W3530 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology (up to 3.06GHz at max turbo mode), 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5507 with quad-core , Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache Processor uses FC-LGA8 package, one LGA1366 socket		Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation				
Memory	2GB or 4GB std, 24GB max, UDIMM , PC3-10600 1333MHz DDR3^{***} , ECC , 3-channel capable, six 240-pin DIMM sockets *** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller			
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU Some: NVIDIA® Quadro® FX 380 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: NVIDIA Quadro FX 580 , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W Some: NVIDIA Quadro FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W Some: ATI™ FirePro™ V3700 , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W **** Only two display connectors are active at a time		Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 3.5", 1" high, external, std media reader Bay ④ 3.5", 1" high, internal, std disk Bay ⑤ 3.5", 1" high, internal, opt disk Bay ⑥ 3.5", 1" high, internal, opt disk Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 2: full-length, full-height, PCIe 2.0 x4** Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 4: full-length, full-height, PCIe x1 Slot 5: half-length, full-height, 32-bit PCI 2.3 ** x16 mechanical	
Media reader	20-in-1 media reader, internal USB 2.0			
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"			
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive			
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals			
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O			
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)			
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in			
IEEE 1394 adptr	Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear			
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec			
Speaker	Internal speaker for business audio			
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755			
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant			SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all)
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			Supports ThinkVantage® technologies
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified			GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0-compliant
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])			
Rack mount	Rack shelf support			
Preloaded operating system²⁰ - Genuine Windows® 7 Professional 64 Preloaded applications⁵ (only some listed)				
<ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage System Update • Norton Internet Security™ (30 days of virus definitions) • Adobe® Reader® • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Corel® WinDVD® (DVD±RW) 			Accessories 2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 Blu-ray™ Burner SATA 1.5Gb/s 45K1675 ThinkVision® L2440p Wide 24" Monitor 4420HB2 NVIDIA Quadro NVS 290 43R1765 ATI FirePro 1GB V7750 51J0511 Other accessories at lenovo.com/accessories	
				LIMITED WARRANTY¹ ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations) ⁷ • Post warranty maintenance services ⇨ 24 hour x 7 day ¹⁴ toll-free support during the warranty period ¹

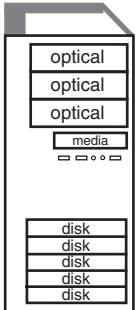
See footnotes for important warranty information
 US models announced March 16, 2010
 US model(s) withdrawn effective October 2012

ThinkStation® D20 (4158) - Global (UDIMM) - Windows 7 - withdrawn

Personal Systems Reference (PSREF)

Type-Name	Slot x model	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date	
D20	4158-87U	6x9	1xE5540	2.53	4	2x2GB	1066MHz	1x500GB ²	SATA 3.5"	No	DVD±RW	No	1xFX1800	Pending	Pro64	Global	Jan 10

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- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Up to two processors, one processor standard, Intel Xeon® Processor E5540 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		Tower		
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 		
Memory	4GB std, 48GB max, UDIMM, PC3-8500 1066MHz DDR3, ECC , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors		<ul style="list-style-type: none"> Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, opt disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk 		
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCI Express® (PCIe) x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W *** Only two display connectors are active at a time		<ul style="list-style-type: none"> Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: half-length, full-height, 32-bit PCI 2.3 		
Diskette drive	None		<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) <p>GREENGUARD® certified RoHS-compliant <i>Pending:</i> ENERGY STAR® 5.0-compliant</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↔ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↔ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 		
Media reader	None				
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"				
SAS disk(s)	None				
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s				
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480				
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O				
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)				
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in				
IEEE 1394 adptr	None				
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec				
Speaker	Internal speaker for business audio				
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754				
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant				
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black				
Mouse	Optical Wheel Mouse (USB connector), black				
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified				
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)				
Rack mount	Rack shelf support or optional sliding rack mount rail kit support				
Supports ThinkVantage® technologies					
Preloaded operating system²⁰	Accessories				
- Genuine Windows® 7 Professional 64	1GB PC3-8500 DDR3 ECC UDIMM	51J0503			
	2GB PC3-8500 DDR3 ECC UDIMM	51J0504			
	1GB PC3-10600 DDR3 ECC UDIMM	43R2032			
	2GB PC3-10600 DDR3 ECC UDIMM	43R2033			
	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138			
	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918			
	Blu-ray™ Burner SATA 1.5Gb/s	45K1675			
	NVIDIA Quadro NVS 290	43R1765			
	NVIDIA Quadro FX 580	45K1671			
	ATI™ FirePro™ 1GB V7750	51J0511			
	Other accessories at lenovo.com/accessories				
Preloaded applications⁵ (only some listed)					
• Rescue and Recovery™					
• ThinkVantage System Update					
• Norton Internet Security™ (30 days of virus definitions)					
• Adobe® Reader					
• Microsoft Office 2010 preloaded; purchase product key to activate					
• Roxio® Creator® Business Edition (DVD±RW)					
• Roxio MyDVD® (DVD±RW)					
• Corel® WinDVD® (DVD±RW)					

See footnotes for important warranty information
US model announced January 12, 2010
US model(s) withdrawn effective October 2012

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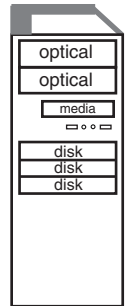
ThinkStation® S20 (4157) - Global (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-conf RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Win7 preload	Global	Avail date
S20	4157-B1U	5x6	W3520	2.66	4	2x2GB	1066MHz	1x500GB ²	3.5"	No	DVD±RW	No	1xFX1800	Pending	Pro64	Global	Jan 10

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- **High performance workstation with premium graphics for specialized professionals**
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- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Intel Xeon® Processor W3520 with quad-core , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache																																							
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket																																							
Memory	4GB std, 24GB max, UDIMM , PC3-8500 1066MHz DDR3, ECC , 3-channel capable, six 240-pin DIMM sockets																																							
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCI Express® (PCIe) x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W *** Only two display connectors are active at a time																																							
Media reader	None																																							
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"																																							
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive																																							
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals																																							
Chipset	Intel X58 Express Chipset , Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O																																							
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)																																							
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in																																							
IEEE 1394 adptr	None																																							
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec																																							
Speaker	Internal speaker for business audio																																							
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755																																							
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant																																							
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black																																							
Mouse	Optical Wheel Mouse (USB connector), black																																							
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified																																							
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])																																							
Rack mount	Rack shelf support																																							
Preloaded operating system²⁰ - Genuine Windows® 7 Professional 64																																								
Preloaded applications⁵ (only some listed) <ul style="list-style-type: none"> • Rescue and Recovery™ • ThinkVantage System Update • Norton Internet Security™ (30 days of virus definitions) • Adobe® Reader • Microsoft Office 2010 preloaded; purchase product key to activate • Roxio® Creator® Business Edition (DVD±RW) • Roxio MyDVD® (DVD±RW) • Corel® WinDVD® (DVD±RW) 																																								
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Tower <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 																																								
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SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 																																								
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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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 																																								



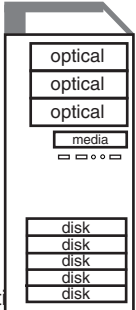
See footnotes for important warranty information
 US model announced January 12, 2010
 US model(s) withdrawn effective October 2012

ThinkStation® D20 (4158) - RDIMM (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Type- Name	Slot x bay model	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR	Win7 preload	Avail date	
D20	4158-79U	6x9	2xE5520	2.26	8	2x4GB	1066MHz	2x500GB ²	SATA	3.5"	No	DVD±RW Media	1xFX1800	1394	Pending	Pro64	Oct 09

- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, for a cooler, quieter, more reliable PC**
- **This model has a 3-year limited warranty¹**
- **This system is Microsoft® Office 2010 Product Key Ready (O10PKR)**

Processor	Up to two processors, two processors standard, Intel Xeon® Processor E5520 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		Tower	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		<ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit 	
Memory	8GB std, 192GB max (Pending availability of 16GB RDIMM), RDIMM, PC3-8500 1066MHz DDR3, ECC , twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors			
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 1800 , PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I***, 59W *** Only two display connectors are active at a time		Bay ① 5.25", 1.6" high, external, std opt Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk	
Diskette drive	None		Slot 1: half-length, full-height, PCIe x1	
Media reader	20-in-1 media reader		Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA disk(s)	500GB , SATA 3.0Gb/s, 7200 rpm, 3.5"		Slot 3: full-length, full-height, 32-bit PCI 2.3	
SAS disk(s)	None		Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max)	
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)	
Disk Controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480		Slot 6: half-length, full-height, 32-bit PCI 2.3	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O		SECURITY	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		<ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in		Supports ThinkVantage® technologies	
IEEE 1394 adptr	FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		GREENGUARD® certified	
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		RoHS-compliant	
Speaker	Internal speaker for business audio		<i>Pending</i> ; ENERGY STAR® 5.0-compliant	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		LIMITED WARRANTY¹	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		<ul style="list-style-type: none"> ⇒ 3-year parts and labor ⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black			
Mouse	Optical Wheel Mouse (USB connector), black			
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified			
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)			
Rack mount	Rack shelf support or optional sliding rack mount rail kit support			
Preloaded operating system²⁰	Accessories			
- Genuine Windows® 7 Professional 64	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918			
	Blu-ray™ Burner SATA 1.5Gb/s 45K1675			
	ThinkVision® L2440p Wide 24" Monitor 4420HB2			
	NVIDIA Quadro NVS 290 43R1765			
	NVIDIA Quadro FX 580 45K1671			
	ATI™ FirePro™ 1GB V7750 51J0511			
	Other accessories at lenovo.com/accessories			
Preloaded applications⁵ (only some listed)				
• Rescue and Recovery™				
• ThinkVantage System Update				
• Norton Internet Security™ (30 days of virus definitions)				
• Adobe® Reader				
• Microsoft Office 2010 preloaded; purchase product key to activate				
• Roxio® Creator® Business Edition (DVD±RW)				
• Roxio MyDVD® (DVD±RW)				
• Corel® WinDVD® (DVD±RW)				

See footnotes for important warranty information
 US model announced October 22, 2009
 US model(s) withdrawn effective October 2012

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 (SEV3-4) October 2012

ThinkStation® S20 (4105) - TopSeller (Windows 7) - withdrawn

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Processor	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	Pre-config RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Win7 preload	Avail date
S20	4105-97U	5x6	W3503	2.40	2x1GB	1333MHz	1x500GB ²	3.5"	No	DVD±RW	Media	1xFX380	No	Pending	Pro64	Oct 09
S20	4105-98U	5x6	W3505	2.53	2x1GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX580	No	Pending	Pro64	Oct 09
S20	4105-99U	5x6	W3520	2.66	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	No	Pending	Pro64	Oct 09
S20	4105-P5U	5x6	E5507	2.26	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX380	No	Pending	Pro64	Oct 10
S20	4105-P6U	5x6	W3550	3.06	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX580	No	Pending	Pro64	Oct 10
S20	4105-P7U	5x6	W3530	2.80	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x2000	No	Pending	Pro64	Oct 10
S20	4105-P3U	5x6	E5507	2.26	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x2000	No	Pending	Pro64	Oct 10
S20	4105-P4U	5x6	W3530	2.80	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x2000	No	Pending	Pro64	Oct 10
S20	4105-R9U	5x6	W3550	3.06	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x2000	No	Pending	Pro64	Nov 10
S20	4105-O1U	5x6	W3550	3.06	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media		No	Pending	Pro64	Nov 10
S20	4105-O2U	5x6	W3505	2.53	1x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x600	No	Pending	Pro64	Nov 10
S20	4105-O3U	5x6	W3550	3.06	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1x600	No	Pending	Pro64	Nov 10

• These systems are Microsoft® Office 2010 Product Key Ready (O10PKR)

Processor	<p>Intel® Xeon® Processor W3503 or W3505 with dual-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 W3520, W3530, or W3550 with quad-core, 4.8GT/s QPI, Intel 64, Hyper-Threading Technology, Virtualization Technology, Turbo Boost Technology, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor E5507 with quad-core, 4.8GT/s QPI, Intel 64, Virtualization Technology, 800MHz DDR3 memory controller, and 4MB cache</p> <p>One LGA1366 socket</p>	<p>Power</p> <ul style="list-style-type: none"> • Raven black color; metal case • 6.9"W x 19.0"D x 18.8"H (with handle) • 175mm W x 483mm D x 478mm H • 38.5 lb (17.5kg) max configuration • 31-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support 	
Implementation		<p>Bay ① 5.25", 1.6" high, external, std optical</p> <p>Bay ② 5.25", 1.6" high, external, open</p> <p>Bay ③ 3.5", 1" high, external, std media reader</p> <p>Bay ④ 3.5", 1" high, internal, std disk</p> <p>Bay ⑤ 3.5", 1" high, internal, opt disk</p> <p>Bay ⑥ 3.5", 1" high, internal, opt disk</p>	
Memory	<p>2GB or 4GB std, 48GB max, UDIMM, PC3-10600 1333MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets</p> <p>*** System automatically clocks down for processors with 800MHz or 1066MHz DDR3 memory controller</p>	<p>Slot 1: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 2: full-length, full-height, PCIe 2.0 x4**</p> <p>Slot 3: full-length, full-height, PCIe 2.0 x16 (75W* max)</p> <p>Slot 4: full-length, full-height, PCIe x1</p> <p>Slot 5: half-length, full-height, 32-bit PCI 2.3</p> <p>** x16 mechanical</p>	
Graphics	<p>Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU</p> <p><i>Some:</i> NVIDIA® Quadro® FX 380, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> NVIDIA Quadro FX 580, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W</p> <p><i>Some:</i> NVIDIA Quadro FX 1800, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p><i>Some:</i> NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some:</i> NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 62W</p> <p>**** Only two display connectors are active at a time</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 	
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	500GB, SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive		
Disk controller	Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	Intel X58 Express Chipset, Intel I/O Controller Hub 10 RAID (ICH10R) for RAID 0, 1, 5 support, Winbond® W83627DHG-P Super I/O		
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)		
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), ethernet (RJ-45), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side-out), Optical SPDIF digital out, Optical SPDIF digital in		
IEEE 1394 adptr	None		
Audio	High Definition (HD) Audio, Analog Devices AD1988A codec		
Speaker	Internal speaker for business audio		
Ethernet	One gigabit ethernet on planar, Broadcom® BCM5755		
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		
Mouse	Optical Wheel Mouse (USB connector), black		
Power supply	625 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified		
Cooling	3 to 5 fans (power supply, CPU, rear, opt front PCI [>75W graphics], opt front [SAS])		
Rack mount	Rack shelf support		
Preloaded operating system²⁰	Accessories		
- Genuine Windows® 7 Professional 64	2GB PC3-10600 DDR3 ECC UDIMM 43R2033		
	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138		
	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918		
	Blu-ray™ Burner SATA 1.5Gb/s 45K1675		
	ThinkVision® L2440p Wide 24" Monitor 4420HB2		
Preloaded applications⁵ (only some listed)	Other accessories at lenovo.com/accessories		
• Rescue and Recovery™			
• Norton Internet Security™ (30 days of virus definitions)			
• Microsoft Office 2010 preloaded; purchase product key to activate			
		<p>ISV certifications</p> <p>Please visit www.lenovo.com/support/ISV</p> <p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>Pending: ENERGY STAR® 5.0-compliant</p> <p>EPEAT™ Gold rating</p> <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 parts³, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ↪ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html • Onsite service upgrade options (in eligible locations)⁷ • Post warranty maintenance services ↪ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹ 	

See footnotes for important warranty information

US models announced October 26 or November 2, 2010; previous models on October 22, 2009 or October 12, 2010

US models withdrawn effective August, December 2010, February, May, June 2011, or October 2012

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(SEV3-2) October 2012

Name	Type-model	Slot x bay	Processor(s) GHz	Memory	Disk(s)	Disk size	Disk type	RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	ENERGY STAR 5.0	Preload	Avail date	
D20	4155-27U	6x9	2 x E5540	2.53	4 x 1GB	2 x 300GB	2.5"	SATA	1	DVD±RW	Media	1 x FX4800	None	Pro64	Apr 09

- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **This small and medium business (SMB) model is part of the US TopSeller™ Program**

Processor(s)	Up to two processors, two processors standard, Intel® Xeon® Processor E5540 with quad-core , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets	
Memory	4GB std, 192GB max (pending 16GB RDIMM availability), RDIMM, PC3-8500 1066MHz DDR3, ECC , 6-channel capable, twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU NVIDIA® Quadro® FX 4800 , PCIe x16 adapter, 1.5GB, two slot width, two DisplayPort, one dual-link DVI***, 121W *** Only two display connectors are active at a time	
Diskette drive	None (use optional USB diskette)	
Media reader	20-in-1 media reader	
SATA disk(s)	300GB , SATA 3.0Gb/s, 10000 rpm, 2.5"	
SAS disk(s)	None	
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s	
Disk controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS ⁴ connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID ⁵ 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	Intel 5520 Chipset , Intel ICH10, Winbond® W83627DHG-P Super I/O	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)	Tower <ul style="list-style-type: none"> • Raven black color; metal case • 8.3"W x 23.7"D x 19.1"H (with handle) • 210mm W x 602mm D x 485mm H • 60 lb (27.1kg) max configuration • 55-liter • Removable handle on top front • Toolless side cover removal • Toolless disk and optical drive removal • Toolless adapter retention • Illuminated front icons • Rack shelf support or optional rail kit
Rear ports	Eight USB 2.0, eSATA, serial (9-pin), two ethernet (RJ-45), FireWire 400 (IEEE 1394a), six analog audio ports (line-in, mic-in, front-out, rear-out, center/sub-out, side out), Optical SPDIF digital out, Optical SPDIF digital in	Bay ① 5.25", 1.6" high, external, std optical Bay ② 5.25", 1.6" high, external, open Bay ③ 5.25", 1.6" high, external, open Bay ④ 3.5", 1" high, external, std media reader Bay ⑤ 3.5", 1" high, internal, std disk Bay ⑥ 3.5", 1" high, internal, std disk Bay ⑦ 3.5", 1" high, internal, opt disk Bay ⑧ 3.5", 1" high, internal, opt disk Bay ⑨ 3.5", 1" high, internal, opt disk Slot 1: half-length, full-height, PCIe x1 Slot 2: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 2.0 x16 (75W* max) Slot 5: full-length, full-height, PCIe x4 (x16 mechanical) Slot 6: full-length, full-height, 32-bit PCI 2.3
IEEE 1394 adptr	None	SECURITY <ul style="list-style-type: none"> • Security chip (see information on left) • Side cover lock (ships with two identical keys) • 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 • Administrator password • Boot sequence control • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) Supports ThinkVantage® technologies GREENGUARD® certified RoHS-compliant 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, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇒ Lenovo services available; see lenovo.com/services_warranty/us/en/lenovo-warranty.html ⇒ 24 hour x 7 day¹⁴ toll-free support during the warranty period¹
Audio	High Definition (HD) Audio, Analog Devices ADI 1988A codec	
Speaker	Internal speaker for business audio	
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1060 watts with 120mm bottom-mounted variable speed fan, universal, Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified	
Cooling	Five fans (power supply, first processor, second processor, rear, front disk)	
Rack mount	Rack shelf support or optional sliding rack mount rail kit support	
Preloaded operating system²⁰	Accessories	
- Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64-bit)	2GB PC3-8500 DDR3 ECC RDIMM 43R2035 4GB PC3-8500 DDR3 ECC RDIMM 43R2036 8GB PC3-8500 DDR3 ECC RDIMM 43R2037	
Preloaded applications⁵ (only some listed)	Blu-ray™ Burner SATA 1.5Gb/s 45K1675 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 150GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2030 300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2031 146GB SAS 3.0Gb/s Disk (15000 rpm) 43R1993 300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994 ThinkStation Rail Kit 43R1964 USB 2.0 Ultra Secure Memory Key 8GB 45J5918 ThinkVision® L2440p Wide 24" Monitor 4420HB2 ATI™ FirePro™ 512MB V5700 51J0509 ATI FirePro 1GB V7750 51J0511	
• Rescue and Recovery™	Other accessories at lenovo.com/accessories	
• McAfee® VirusScan® Plus (30 days of virus definitions)		
• Lenovo® System Toolbox		
• Adobe® Reader		
• Microsoft® Office 2007 Trial (60-day)		
• Roxio® Creator® Business Edition (DVD±RW)		
• Roxio MyDVD® (DVD±RW)		
• Corel® WinDVD® (DVD±RW)		

See footnotes for important warranty information
 US model announced March 31, 2009
 US model(s) withdrawn effective October 2012

Partial list of accessories supported on ThinkStation S20 and D20

Heatsink⁶²

D20:
 Second Processor Heatsink for D20 0A65719 ann 01/10/12
⁶² • The heatsink is used for second processor (to be provided by customer from business partner, not for Lenovo processor options)
 • The heatsink supports Intel Xeon processor (LGA1366)
 • Please follow heatsink installation instruction on <http://www.lenovo.com/support/thinkstationd20/heat-sink-instructions>

Memory⁵³

All:
 2GB PC3-8500 DDR3 ECC UDIMM 51J0504 ann 03/31/09
 2GB PC3-10600 DDR3 ECC UDIMM⁵⁴ 43R2033 ann 03/31/09
 4GB PC3-10600 DDR3 ECC UDIMM⁵⁴ 57Y4138 ann 08/04/09
 8GB PC3-10600 DDR3 ECC UDIMM⁵⁴ 0A65718 ann 04/24/12

D20:
 2GB PC3-10600 DDR3 ECC RDIMM⁵⁴ 57Y4425 ann 04/13/10
 4GB PC3-10600 DDR3 ECC RDIMM⁵⁴ 57Y4426 ann 04/13/10
 8GB PC3-10600 DDR3 ECC RDIMM⁵⁴ 57Y4427 ann 04/13/10

⁵³ Mixing of UDIMM and RDIMM is not supported
⁵⁴ Actual memory operating speed is the lowest installed speed, dependent on processor memory bus speed and PC3-8500 / PC3-10600 installed configuration

More information on memory and processor configuration, operation and limitation, please visit:

www.lenovo.com/support/thinkstationaccessories

Optical

DVD-ROM DL SATA1.5Gb/s 16X-48X Max⁴ 41N5618 ann 09/26/06
 Lenovo® Super Multi-Burner SATA Drive 0A65618 ann 08/23/11
 Blu-ray™ Burner SATA1.5Gb/s 45K1675 ann 03/31/09

Storage and removable storage

S20, D20 preconfigured with SATA disks:
 250GB SATA 3.0Gb/s Disk (7200 rpm) 41N3015 ann 01/24/06
 500GB SATA 3.0Gb/s Disk (7200 rpm) 43R1990 ann 11/06/07
 1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918 ann 08/19/08
 300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5" 43R2031 ann 03/31/09

S20 preconfigured with SAS disks and the SAS controller, D20 preconfigured with SAS disks:
 450GB SAS 3.0Gb/s Disk (15000 rpm) 43N3424 ann 02/02/10

All:
 USB 2.0 Portable 320GB Hard Disk 45K1689 ann 03/17/09
 USB 2.0 Portable 500GB Hard Disk 45K1690 ann 05/26/09
 USB 2.0 Portable Secure 320GB Hard Disk 43R2019 ann 11/18/08

Keyboard

Preferred Pro USB Keyboard 73P5220 ann 06/21/05
 Enhanced Performance USB Keyboard 73P2620 ann 03/23/04
 Lenovo USB Fingerprint Keyboard 73P4730 ann 02/22/05
 Lenovo USB Smartcard Keyboard 51J0155 ann 03/24/09
 Ultralim Plus Wireless Keyboard and Mouse⁵² 0A34032 ann 04/05/11

More information at www.lenovo.com/support/keyboards

Mouse

Lenovo Optical Mouse (USB) 06P4069 ann 05/21/03
 Lenovo ScrollPoint® Mouse (USB, Optical) 31P7405 ann 08/27/02
 Lenovo Laser Mouse (USB) 41U3074 ann 01/23/07
 Lenovo Wireless Laser Mouse⁵² 0A36188 ann 12/20/11
⁵² Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at www.lenovo.com/support/mice

Monitors

ThinkVision®:
 L1711p 17" (VGA, DVI-D) 5047HB2 ann 10/20/09
 LT1952p Wide 19" (VGA, DP, DVI-D)⁶⁹ 2448MB6 ann 09/13/11
 L2250p Wide 22" (VGA, DVI-D) 2572HB6 ann 10/20/09
 L2251x Wide 22" (VGA, DP) 2578HB6 ann 10/20/09
 LT2252p Wide 22" (VGA, DP, DVI-D)⁶⁹ 2572MB6 ann 09/13/11
 LT2452p Wide 24" (VGA, DP, DVI-D)⁶⁹ 4420MB2 ann 09/13/11
⁶⁹ DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).
 More information at www.lenovo.com/support/monitors

Monitor accessories⁴⁶

Kensington® MicroSaver® Cable Lock 73P2582 ann 12/29/03
 Kensington Twin Head Cable Lock 45K1620 ann 09/30/08
⁴⁶ Compatible on selected Lenovo and ThinkVision monitors.

More information at www.lenovo.com/support/monitoraccessories

Graphics

DisplayPort™ to Single-link DVI-D Cable⁵⁰ 45J7915 ann 08/05/08
 DisplayPort to DisplayPort Monitor Cable⁵⁰ 0A36537 ann 09/13/11
 NVIDIA® Quadro® 256MB NVS 295 45K1669 ann 04/21/09
 NVIDIA Quadro 512MB NVS 300 DMS59⁶⁵ 0A36528 ann 04/26/11
 NVIDIA Quadro 512MB NVS 450 57Y4398 ann 01/19/10
 NVIDIA Quadro 512MB 400 0A36535 ann 06/28/11
 NVIDIA Quadro 1GB 600 0A36183 ann 10/26/10
 NVIDIA Quadro 1GB 2000 57Y4479 ann 10/26/10
 NVIDIA Quadro 1GB 2000D 0A36541 ann 11/01/11
 NVIDIA Quadro 2GB 4000 57Y4480 ann 10/26/10
 NVIDIA Quadro 2.5GB 5000 57Y4481 ann 10/26/10
⁵⁰ Attaches to selected DisplayPort graphics cards.
⁶⁵ Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.

D20:
 NVIDIA SLI Connector⁶⁰ 55Y8963 ann 03/31/09
⁶⁰ Compatible to Quadro 5000

More information at www.lenovo.com/support/graphiccards

Security

Kensington MicroSaver Cable Lock 73P2582 ann 12/29/03
 Kensington Twin Head Cable Lock 45K1620 ann 09/30/08
 Lenovo Security Cable Lock 57Y4303 ann 08/24/10

USB Gemplus GemPC Smart Card Reader 41N3040 ann 02/21/06

Rack mount accessories

D20:
 ThinkStation C-Series, D-Series Rail Kit 57Y4482 ann 09/14/10

For more information on accessories:

www.lenovo.com/accessories

Purchase Lenovo accessories

www.lenovo.com/support/accessories

Product specifications on Lenovo Support

www.lenovo.com/accessoriesguide

Option Compatibility Matrix (OCM) and accessory brochures

www.lenovoquickpick.com

An Options Compatibility Configurator for Lenovo systems

Memory Speed Table for ThinkStation D20

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)		PC3-8500 UDIMM (1GB, 2GB)	PC3-10600 RDIMM (2GB, 4GB, 8GB)		PC3-8500 RDIMM (1GB, 2GB, 4GB)	PC3-8500 RDIMM (8GB)	
	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6
Amount of DIMMs installed per CPU bank								
CPU Model	Actual Memory Speed							
Intel® Xeon® E5603	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5606	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5607	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5645	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5649	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5647	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5672	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5675	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5687	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5690	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz

For more information on ThinkStation D20 processor and memory accessories, please visit:

www.lenovo.com/support/accessories
www.lenovo.com/support/thinkstationaccessories

Memory Loading Notes on ThinkStation D20

System memory speed on ThinkStation D20 will be determined by a number of factors, including the microprocessor model and the type, speed, size (capacity), and number of DIMMs installed. Refer to the following table for information on the supported system memory speed for your ThinkStation model.

- ThinkStation D20 has twelve memory slots; divided into two sets of 6-DIMM memory slots
- Memory controller is integrated in processor
- ThinkStation D20 has 2 processor slots, each processor control six DIMMs
- Over six DIMMs requires dual processor
- ThinkStation D20 supports UDIMM and RDIMM, mixing of UDIMM and RDIMM is not supported

Memory Speed Table for ThinkStation D20

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)		PC3-8500 UDIMM (1GB, 2GB)	PC3-10600 RDIMM (2GB, 4GB, 8GB)		PC3-8500 RDIMM (1GB, 2GB, 4GB)	PC3-8500 RDIMM (8GB)	
	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6	1 to 6	1 to 3	4 to 6
CPU Model	Actual Memory Speed							
Intel® Xeon® E5502	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5503	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5504	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5506	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5507	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
Intel Xeon E5520	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5530	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5540	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5620	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5630	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon E5640	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5550	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5560	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5570	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5650	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5660	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5667	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5670	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5677	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon X5680	1333MHz	1333MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon W5580	1333MHz	1066MHz	1066MHz	1333MHz	1333MHz	1066MHz	1066MHz	800MHz
Intel Xeon W5590	1333MHz	1066MHz	1066MHz	1333MHz	1066MHz	1066MHz	1066MHz	800MHz

For more information on ThinkStation D20 processor and memory accessories, please visit:

- www.lenovo.com/support/accessories
- www.lenovo.com/support/thinkstationaccessories

Memory Speed Table for ThinkStation S20

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)		PC3-8500 UDIMM (1GB, 2GB)
	1 to 3	4 to 6	1 to 6
CPU Model	Actual Memory Speed		
Intel® Xeon® E5603	1066MHz	1066MHz	1066MHz
Intel Xeon E5606	1066MHz	1066MHz	1066MHz
Intel Xeon E5607	1066MHz	1066MHz	1066MHz
Intel Xeon E5645	1333MHz	1333MHz	1066MHz
Intel Xeon E5647	1066MHz	1066MHz	1066MHz
Intel Xeon E5649	1333MHz	1333MHz	1066MHz
Intel Xeon X5672	1333MHz	1333MHz	1066MHz
Intel Xeon X5675	1333MHz	1333MHz	1066MHz
Intel Xeon X5687	1333MHz	1333MHz	1066MHz
Intel Xeon X5690	1333MHz	1333MHz	1066MHz
Intel Xeon W3670	1066MHz	1066MHz	1066MHz
Intel Xeon W3690	1333MHz	1333MHz	1066MHz

For more information on ThinkStation S20 processor and memory accessories, please visit:

www.lenovo.com/support/accessories

www.lenovo.com/support/thinkstationaccessories

Memory Loading Notes on ThinkStation S20

System memory speed on ThinkStation D20 will be determined by a number of factors, including the microprocessor model and the type, speed, size (capacity), and number of DIMMs installed. Refer to the following table for information on the supported system memory speed for your ThinkStation model.

- ThinkStation S20 has six memory slots
- Memory controller is integrated in processor
- ThinkStation S20 has one processor slot
- ThinkStation S20 supports UDIMM only

Memory Speed Table for ThinkStation S20

DIMM Type and Speed	PC3-10600 UDIMM (1GB, 2GB, 4GB)		PC3-8500 UDIMM (1GB, 2GB)
	1 to 3	4 to 6	1 to 6
Amount of DIMMs installed			
CPU Model	Actual Memory Speed		
Intel® Xeon® E5502	800MHz	800MHz	800MHz
Intel Xeon E5503	800MHz	800MHz	800MHz
Intel Xeon E5504	800MHz	800MHz	800MHz
Intel Xeon E5506	800MHz	800MHz	800MHz
Intel Xeon E5507	800MHz	800MHz	800MHz
Intel Xeon E5520	1066MHz	1066MHz	1066MHz
Intel Xeon E5530	1066MHz	1066MHz	1066MHz
Intel Xeon E5540	1066MHz	1066MHz	1066MHz
Intel Xeon E5620	1066MHz	1066MHz	1066MHz
Intel Xeon E5630	1066MHz	1066MHz	1066MHz
Intel Xeon E5640	1066MHz	1066MHz	1066MHz
Intel Xeon X5550	1333MHz	1066MHz	1066MHz
Intel Xeon X5560	1333MHz	1066MHz	1066MHz
Intel Xeon X5570	1333MHz	1066MHz	1066MHz
Intel Xeon X5650	1333MHz	1333MHz	1066MHz
Intel Xeon X5660	1333MHz	1333MHz	1066MHz
Intel Xeon X5667	1333MHz	1333MHz	1066MHz
Intel Xeon X5670	1333MHz	1333MHz	1066MHz
Intel Xeon X5677	1333MHz	1333MHz	1066MHz
Intel Xeon X5680	1333MHz	1333MHz	1066MHz
Intel Xeon W3503	1066MHz	1066MHz	1066MHz
Intel Xeon W3505	1066MHz	1066MHz	1066MHz
Intel Xeon W3520	1066MHz	1066MHz	1066MHz
Intel Xeon W3530	1066MHz	1066MHz	1066MHz
Intel Xeon W3540	1066MHz	1066MHz	1066MHz
Intel Xeon W3550	1066MHz	1066MHz	1066MHz
Intel Xeon W3565	1066MHz	1066MHz	1066MHz
Intel Xeon W3570	1333MHz	1066MHz	1066MHz
Intel Xeon W3580	1333MHz	1066MHz	1066MHz
Intel Xeon W3680	1333MHz	1066MHz	1066MHz
Intel Xeon W5580	1333MHz	1066MHz	1066MHz
Intel Xeon W5590	1333MHz	1066MHz	1066MHz

For more information on ThinkStation S20 processor and memory accessories, please visit:

www.lenovo.com/support/accessories
www.lenovo.com/support/thinkstationaccessories

RAID* configuration table for ThinkStation

ThinkStation E20 (2 Disk Bays Maximum)					
Hard Drive Interface	Required Hard Drives	RAID 0	RAID 1	RAID 5	RAID 10
SATA	2	•	•		

ThinkStation C20 (3 Disk Bays Maximum)					
Hard Drive Interface	Required Hard Drives	RAID 0	RAID 1	RAID 5	RAID 10
SATA	2	•	•		
	3	•		•	

ThinkStation C20x (3 Disk Bays Maximum)					
Hard Drive Interface	Required Hard Drives	RAID 0	RAID 1	RAID 5	RAID 10
SATA	2	•	•		
	3	•		•	
SAS	2	•	•		
	3	•		•	

ThinkStation S20 (3 Disk Bays Maximum)					
Hard Drive Interface	Required Hard Drives	RAID 0	RAID 1	RAID 5	RAID 10
SATA	2	•	•		
	3			•	
SAS**	2	•	•		
	3			•	

ThinkStation D20 (5 Disk Bays Maximum)					
Hard Drive Interface	Required Hard Drives	RAID 0	RAID 1	RAID 5	RAID 10
SATA - Primary***	2	•	•		
	3	•		•	
	4	•		•	•
	4 (with spare)****			•	
	5	•		•	
	5 (with spare)				•
SATA - Secondary	2	•	•		
SAS - Primary	2	•	•		
	3	•		•	
	4	•		•	•
	4 (with spare)			•	
	5	•		•	
	5 (with spare)				•
SAS - Secondary	2	•	•		

* For all present ThinkStation, the total capacity in any RAID schemes can't exceed 2.2 TB (due to BIOS limitation).

** ThinkStation S20 does not contain onboard SAS controller, some models contain an additional SAS card (See SEV6-1 or SEV7-2).

*** ThinkStation D20 supports two RAID schemes simultaneously from 5 disk bays.

**** The spare disk is used to recover faulty hard disk from the RAID and cannot be used as a normal hard disk.

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.
- ⁵ **Included software** may differ from its retail version (if available), and may not include user manuals or all program functionality. License agreements may apply.
- ⁶ **Multi-Burner Plus** (part number 73P3305 or 73P3370) is a DVD±RW device that reads and writes to DVD-RAM, DVD-R, DVD-RW, DVD+R, and DVD+RW. It also reads and writes to CD-R and CD-RW media. 73P3370 also writes to DVD+R double layer media.

- ⁶ **Multi-Burner Plus** (part number 73P3305 or 73P3370) is a DVD±RW device that reads and writes to DVD-RAM, DVD-R, DVD-RW, DVD+R, and DVD+RW. It also reads and writes to CD-R and CD-RW media. 73P3370 also writes to DVD+R double layer media.
- 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 **Memory:** For PCs without a separate graphics card, memory supports both system and video. Accessible system memory may be up to 384MB less than the amount stated, depending on video mode.
- ⁹ **International Warranty Service** is available in any country in which this product is sold and serviced. Service delivery methods and parts availability vary by country, may be different from that in the country of purchase, and are subject to change without notice. Fees and restrictions may apply in some countries.

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.