

# ThinkStation.

## *Personal Systems Reference Lenovo® ThinkStation® Workstations*

*February 2010 - Version 371*



ThinkStation E20 (left)  
ThinkStation S20 (middle)  
ThinkStation D20 (right)

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# ThinkStation.



Lenovo ThinkStation E20



Lenovo ThinkStation E20  
with ThinkVision® L2440p (4420HB2)



Lenovo ThinkStation E20



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



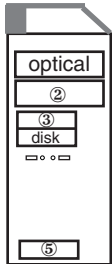
Lenovo ThinkStation Graphics Card Option  
NVIDIA Quadro FX 380 (45K1670)



Lenovo ThinkStation Graphics Card Option  
NVIDIA Quadro FX 580 (45K1671)

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 <sup>2</sup>	3.5"	No	DVD±RW	No	FX380	Pending	Pro64	No	Feb 10
4222-36U	4x5	i3-530	2.93	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	FX380	Pending	Pro64	No	Feb 10
4222-37U	4x5	i5-650	3.20	2	2x2GB	1333MHz	No	1x500GB	3.5"	No	DVD±RW	No	FX580	Pending	Pro64	No	Feb 10

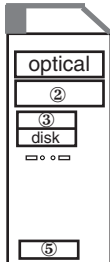
- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **True workstation-level performance at incredibly low price point**
- **High Reliability with Independent Software Vendors (ISV) certified applications and ECC memory support**
- **These small and medium business (SMB) models are part of the US TopSeller™ Program**
- **These models have a 3-year limited warranty<sup>1</sup>**

Processor	<p><b>Intel Pentium® Processor G6950</b> with dual-core, Intel 64, Virtualization Technology, integrated 1066MHz dual-channel DDR3 memory controller, and 3MB cache or <b>Intel Core™ i3 Processor i3-530</b> with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or <b>Intel Core i5 Processor i5-650</b> with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology (up to 3.46GHz at max turbo mode), 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><b>Tower</b></p> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 17.0"D x 16.7"H (with handle)</li> <li>• 175mm W x 431mm D x 425mm H</li> <li>• 24.7 lb (11.2kg) max configuration</li> <li>• 32-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Recessed power button</li> </ul>																							
Memory	<p><b>2GB</b> or <b>4GB</b> std, 8GB max*, <b>UDIMM, PC3-10600 1333MHz DDR3**</b>, <b>Non-ECC***</b>, 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> <b>NVIDIA® Quadro® FX 380</b>, PCI Express® (PCIe) x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> <b>NVIDIA Quadro FX 580</b>, 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)	<b>250GB</b> or <b>500GB</b> , 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	<b>Intel 3450 Chipset</b> , Platform Controller Hub (PCH) for PCI, ethernet, and USB, <b>SMSC® SCH5147 Super I/O</b>																								
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																								
<b>Preloaded operating system<sup>20</sup></b>	- Genuine Windows® 7 Professional 64																								
<b>Preloaded applications<sup>5</sup></b> (only some listed)	<ul style="list-style-type: none"> <li>• Rescue and Recovery™</li> <li>• ThinkVantage Toolbox</li> <li>• Norton™ Internet Security 2009 (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Adobe Flash® Player</li> <li>• Microsoft® Office 2007 Trial (60-day)</li> <li>• Corel® Burn.Now™ (DVD±RW)</li> <li>• Corel DVD MovieFactory® (DVD±RW)</li> </ul>	<p><b>Accessories</b></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>160GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>09N4254</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> <p>More accessories on O-CAD sheet</p> <p>Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a></p>	1GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4389	2GB PC3-10600 DDR3 Non-ECC UDIMM	57Y4390	160GB SATA 3.0Gb/s Disk (7200 rpm)	09N4254	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	
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		<p>Supports ThinkVantage® technologies</p>																							
		<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>Pending: ENERGY STAR® 5.0-compliant</p>																							
		<p><b>LIMITED WARRANTY<sup>1</sup></b></p> <ul style="list-style-type: none"> <li>⇒ 3-year parts and labor</li> <li>⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>⇒ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></li> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> <li>⇒ 24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>																							

See footnotes for important warranty information  
US models announced January 19, 2010

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 <sup>2</sup>	3.5"	No	DVD±RW	No	FX380	Pending	Pro64	No	Feb 10
4220-35U	4x5	G6950	2.80	2	1x2GB	1333MHz		1x500GB	3.5"	No	DVD±RW	No	FX380	Pending	Pro64	No	Feb 10
4220-36U	4x5	X3430	2.40	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	No	FX580	Pending	Pro64	No	Feb 10
4220-37U	4x5	X3440	2.53	4	2x2GB	1333MHz	ECC	1x500GB	3.5"	No	DVD±RW	No	FX1800	Pending	Pro64	No	Feb 10

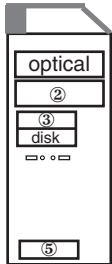
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Processor	<p><b>Intel Pentium® Processor G6950</b> with dual-core, Intel 64, Virtualization Technology, integrated 1066MHz dual-channel DDR3 memory controller, and 3MB cache or <b>Intel Core™ i3 Processor i3-530</b> with dual-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache or <b>Intel Xeon® Processor X3430</b> with quad-core, Intel 64, Virtualization Technology, TXT, Turbo Boost Technology (up to 2.80GHz at max turbo mode), integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor X3440</b> with quad-core, Intel 64, Hyper-Threading Technology, Virtualization Technology, TXT, Turbo Boost Technology (up to 2.93GHz at max turbo mode), integrated 1333MHz dual-channel DDR3 memory controller, and 8MB cache</p>	<p><b>Tower</b></p> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 17.0"D x 16.7"H (with handle)</li> <li>• 175mm W x 431mm D x 425mm H</li> <li>• 24.7 lb (11.2kg) max configuration</li> <li>• 32-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> <li>• Recessed power button</li> </ul>	
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><b>2GB or 4GB</b> std, <b>PC3-10600 1333MHz DDR3*, UDIMM</b>, four 240-pin DIMM sockets</p> <p><i>34U/35U:</i> 8GB max**, <b>Non-ECC***</b></p> <p><i>36U/37U:</i> 16GB max, <b>ECC</b></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> <b>NVIDIA® Quadro® FX 380</b>, PCI Express® (PCIe) x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p><i>Some:</i> <b>NVIDIA Quadro FX 580</b>, PCIe x16 adapter, 512MB, two DisplayPort™, one dual-link DVI-I***, 40W</p> <p><i>Some:</i> <b>NVIDIA® Quadro® FX 1800</b>, 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><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>	
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>Pending: ENERGY STAR® 5.0-compliant</p>	
SATA disk(s)	<b>500GB</b> , SATA 3.0Gb/s, 7200 rpm, 3.5"		
SATA DVD±RW	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<p><b>LIMITED WARRANTY<sup>1</sup></b></p> <ul style="list-style-type: none"> <li>➤ <b>3-year parts and labor</b></li> <li>➤ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b></li> <li>➤ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b></li> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> <li>➤ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b></li> </ul>	
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	<b>Intel 3450 Chipset</b> , Platform Controller Hub (PCH) for PCI, ethernet, and USB, <b>SMSC® SCH5147</b> 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		
<b>Preloaded operating system<sup>20</sup></b>	<p>- Genuine Windows® 7 Professional 64</p>	<p><b>Accessories</b></p> <p>2GB PC3-10600 DDR3 Non-ECC UDIMM 57Y4390</p> <p>4GB PC3-10600 DDR3 ECC UDIMM 57Y4138</p> <p>1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918</p> <p>More accessories on O-CAD sheet</p> <p>Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a></p>	

See footnotes for important warranty information  
US models announced January 19, 2010

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 <sup>2</sup>	3.5"	No	DVD±RW	1394	FX1800	Pending	Pro64	G P	Feb 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**
- **This small and medium business (SMB) models is part of the US TopSeller™ Program**
- **This model is part of the Global Models Plus (GMP) program with limited onsite service<sup>3</sup> 3-year limited warranty**

Processor	<b>Intel Core™ i5 Processor i5-660</b> with dual-core, Intel 64, Hyper-Threading Technology, Turbo Boost Technology (up to 3.60GHz at max turbo mode), Virtualization Technology, TXT, integrated 1333MHz dual-channel DDR3 memory controller, and 4MB cache	<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 17.0"D x 16.7"H (with handle)</li> <li>• 175mm W x 431mm D x 425mm H</li> <li>• 24.7 lb (11.2kg) max configuration</li> <li>• 32-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Recessed power button</li> </ul> 
Implementation	Processor in LGA1156 socket, up to one processor	
Memory	<b>4GB std, 16GB max*, UDIMM, PC3-10600 1333MHz DDR3, ECC**</b> , 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	<b>NVIDIA® Quadro® FX 1800</b> , PCI Express® (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	<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>
SATA disk(s)	<b>500GB</b> , 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	<b>Intel 3450 Chipset</b> , 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 Pending: 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	<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>⇒ <b>3-year parts and labor</b></li> <li>⇒ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b></li> <li>⇒ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>⇒ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b></li> </ul>
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	
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>	
- Genuine Windows® 7 Professional 64	1GB PC3-10600 DDR3 ECC UDIMM 43R2032	
	2GB PC3-10600 DDR3 ECC UDIMM 43R2033	
	4GB PC3-10600 DDR3 ECC UDIMM 57Y4138	
	160GB SATA 3.0Gb/s Disk (7200 rpm) 09N4254	
	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	
	More accessories on O-CAD sheet	
	Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>	

See footnotes for important warranty information  
US model announced January 19, 2010

Partial list of accessories supported on ThinkStation E20

**Memory**

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
1GB PC3-10600 DDR3 ECC UDIMM	43R2032	ann 03/31/09
2GB PC3-10600 DDR3 ECC UDIMM	43R2033	ann 03/31/09
4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	ann 08/04/09

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

[www.lenovo.com/support/thinkstationaccessories](http://www.lenovo.com/support/thinkstationaccessories)

**Optical**

DVD-ROM DL SATA1.5Gb/s 16X-48X Max <sup>4</sup>	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**

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
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	ann 08/19/08
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

**Removable storage**

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 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 <sup>52</sup>	57Y4700	ann 09/15/09

More information at [www.lenovo.com/support/keyboards](http://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 <sup>52</sup>	45K1696	ann 11/25/08
Lenovo Wireless Laser Mouse - Red/Black <sup>52</sup>	51J0198	ann 11/25/08

<sup>52</sup> Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at [www.lenovo.com/support/mice](http://www.lenovo.com/support/mice)

**Monitors**

Lenovo D186 Wide 18.5" Monitor	2580AB1	ann 01/12/10
Lenovo L2461x Wide 23.6" Monitor	4015HB1	ann 01/05/10
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 L2440p Wide 24" Monitor	4420HB2	ann 09/17/08

More information at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

**Monitor accessories<sup>46</sup>**

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

<sup>46</sup> Compatible on selected Lenovo and ThinkVision monitors.

More information at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

**Graphics**

DisplayPort to Single-link DVI-D Cable <sup>50</sup>	45J7915	ann 08/05/08
NVIDIA Quadro 256MB NVS 295	45K1669	ann 04/21/09
NVIDIA Quadro 512MB NVS 450	57Y4398	ann 01/19/10
NVIDIA Quadro 256MB FX 380	45K1670	ann 03/31/09
NVIDIA Quadro 512MB FX 580	45K1671	ann 03/31/09

<sup>50</sup> Attaches to selected DisplayPort graphics cards.

More information at [www.lenovo.com/support/graphiccards](http://www.lenovo.com/support/graphiccards)

**Multimedia**

USB 2.0 Lenovo Webcam	40Y8519	ann 08/29/06
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**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

For more information on ThinkStation accessories, please visit:

[www.lenovo.com/support/accessories](http://www.lenovo.com/support/accessories)  
[www.lenovo.com/support/thinkstationaccessories](http://www.lenovo.com/support/thinkstationaccessories)  
[www.lenovo.com/support/security](http://www.lenovo.com/support/security)

Other accessories at [www.lenovo.com/accessories](http://www.lenovo.com/accessories)

Accessories Guide pdf at [www.lenovo.com/accessoriesguide](http://www.lenovo.com/accessoriesguide)

# 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® FX 380 (45K1670)



Lenovo ThinkStation Graphics Card Option  
ATI™ FirePro™ V3700 (51J0509)

# ThinkStation® S20 (4105) - TopSeller

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)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
S20	4105-11U	5x6	W3520	2.66	2 x 1GB	1066MHz	1 x 250GB <sup>2</sup>	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><b>Intel® Xeon® Processor W3520</b> or <b>W3540</b> with <b>quad-core</b>, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor E5504</b> or <b>E5506</b> with <b>quad-core</b>, 4.8GT/s QPI, 800MHz DDR3 memory controller, and 4MB cache or <b>Intel Xeon Processor E5540</b> with <b>quad-core</b>, 5.86GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor W5580</b> with <b>quad-core</b>, 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache</p> <p>Processor uses FC-LGA8 package, one LGA1366 socket</p>	<p><b>Tower</b></p> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul>	
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><b>2GB, 3GB, or 4GB</b> std, 24GB max, <b>UDIMM, PC3-8500 1066MHz DDR3***</b> or <b>PC3-10600 1333MHz DDR3, ECC</b>, 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: full-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 &gt;75W use auxiliary power connector(s) from PSU</p> <p>Some: <b>NVIDIA® Quadro® FX 380</b>, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p>Some: <b>NVIDIA Quadro FX 1800</b>, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-I****, 59W</p> <p>Some: <b>NVIDIA Quadro FX 4800</b>, PCIe x16 adapter, 1.5GB, two slot width, two DisplayPort, one dual-link DVI-I****, 121W</p> <p>Some: <b>ATI™ FirePro™ V3700</b>, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</p> <p>Some: <b>ATI FirePro V5700</b>, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 49W</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: <b>250GB</b> or <b>500GB</b>, SATA 3.0Gb/s, 7200 rpm, 3.5"</p> <p>Some: <b>150GB</b> or <b>300GB</b>, SATA 3.0Gb/s, 10000 rpm, 2.5"</p>		
SATA DVD±RW Disk controller	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive Serial ATA, SATA 3.0Gb/s, integrated in ICH10R, three SATA connectors for disks, two SATA connectors for opticals		
Chipset	<b>Intel X58 Express Chipset</b> , 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		
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		
<b>Preloaded operating system<sup>20</sup></b>	<p>- Some: Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64)</p> <p>- Some: Genuine Windows Vista Business 32</p> <p>- Some: Genuine Windows Vista Business 64</p> <p>⊕ Vista models: Vista Premium logo</p>	<p><b>Accessories</b></p> <p>1GB PC3-8500 DDR3 ECC UDIMM 51J0503</p> <p>2GB PC3-8500 DDR3 ECC UDIMM 51J0504</p> <p>2GB PC3-10600 DDR3 ECC UDIMM 43R2033</p> <p>4GB PC3-10600 DDR3 ECC UDIMM 57Y4138</p> <p>750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991</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>NVIDIA Quadro NVS 290 43R1765</p> <p>NVIDIA Quadro FX 580 45K1671</p> <p>ATI FirePro 1GB V7750 51J0511</p> <p>Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a></p>	<p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul> <p>Supports ThinkVantage® technologies</p> <p>GREENGUARD® certified RoHS-compliant Some: ENERGY STAR® 5.0-compliant EPEAT™ Gold rating (only for ES5.0 models)</p> <p><b>LIMITED WARRANTY<sup>1</sup></b></p> <ul style="list-style-type: none"> <li>⊖ 3-year parts and labor</li> <li>⊖ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>⊖ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></li> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> <li>⊖ 24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>

See footnotes for important warranty information

US models announced March 31, 2009

⊗ US models withdrawn effective March 2010

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(SEV1-1) December 2009

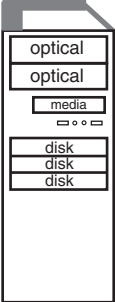


# ThinkStation® S20 (4105) - TopSeller (May 2009)

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 <sup>2</sup>	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	<b>Intel® Xeon® Processor W3503 or W3505</b> with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 4MB cache or <b>Intel Xeon Processor W3520 or W3540</b> with quad-core, 4.8GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor W3570</b> with quad-core, 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache Processor uses FC-LGA8 package, one LGA1366 socket		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul> 
Implementation			
Memory	<b>2GB or 4GB</b> std, 24GB max, <b>UDIMM, PC3-8500 1066MHz DDR3</b> or <b>PC3-10600 1333MHz DDR3, ECC</b> , 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 Some: <b>NVIDIA® Quadro® FX 380</b> , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: <b>NVIDIA Quadro FX 580</b> , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I***, 40W *** Only two display connectors are active at a time		
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<b>500GB</b> , 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	<b>Intel X58 Express Chipset</b> , 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		
Supports ThinkVantage® technologies			
<b>Preloaded operating system<sup>20</sup></b>			
- Some: Genuine Windows® Vista® Business 32 - Some: Genuine Windows Vista Business 64 ◇ Vista Premium logo			
<b>Preloaded applications<sup>5</sup></b> (all OSes; only some listed)			
<ul style="list-style-type: none"> <li>• Rescue and Recovery™</li> <li>• McAfee® VirusScan® Plus (30 days of virus definitions)</li> <li>• Lenovo® System Toolbox</li> <li>• Adobe® Reader</li> <li>• Roxio® Creator® Business Edition (DVD±RW)</li> <li>• Roxio MyDVD® (DVD±RW)</li> <li>• Corel® WinDVD® (DVD±RW)</li> </ul>			
<b>Accessories</b>			
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 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>			
<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>			
GREENGUARD® certified RoHS-compliant Some: ENERGY STAR® 5.0-compliant EPEAT™ Gold rating (only for ES5.0 models)			
<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>⇒ 3-year parts and labor</li> <li>⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>⇒ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>⇒ 24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>			

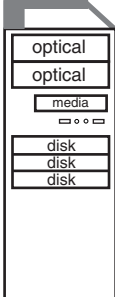
See footnotes for important warranty information  
 US models announced May 5, 2009

⊗ US models withdrawn effective March 2010

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 (SEV1-7) May 2009

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	4105-79U	5x6	W3550	3.06	4	2x2GB	1066MHz	1x500GB <sup>2</sup>	3.5"	DVD±RW	Media	1xFX580	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 warranty<sup>1</sup>**

Processor	<b>Intel Xeon® Processor W3550</b> with <b>quad-core</b> , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul> 
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket		
Memory	<b>4GB</b> std, 24GB max, <b>UDIMM, PC3-8500 1066MHz DDR3, ECC</b> , 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 <b>NVIDIA® Quadro® FX 580</b> , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I***, 40W *** Only two display connectors are active at a time		
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<b>500GB</b> , 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	<b>Intel X58 Express Chipset</b> , 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		
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>		
- 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	
	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	
	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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>		
	<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>		
	Supports ThinkVantage® technologies		
	GREENGUARD® certified RoHS-compliant <i>Pending:</i> ENERGY STAR® 5.0-compliant		
	<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>⇒ 3-year parts and labor</li> <li>⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>⇒ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>⇒ 24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>		

See footnotes for important warranty information  
US model announced August 4, 2009

# ThinkStation® S20 (4105) - TopSeller (Windows 7)

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 adptry	ENERGY STAR 5.0	Win7 preload	Avail date
S20	4105-97U	5x6	W3503	2.40	2x1GB	1333MHz	1x500GB <sup>2</sup>	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

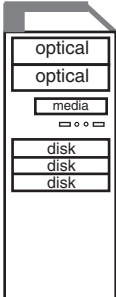
- **Faster, more efficient architecture with the latest Intel® workstation technology**
- **High performance workstation with premium graphics for specialized professionals**
- **Environmentally friendly, cool, and quiet with rock solid engineering**
- **Innovative thermal design with optimized fan placement, 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 warranty<sup>1</sup>**

Processor	<b>Intel Xeon® Processor W3503 or W3505</b> with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 4MB cache or <b>Intel Xeon Processor W3520</b> with quad-core, 4.8GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul> 
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket		
Memory	<b>2GB or 4GB</b> std, 24GB max, <b>UDIMM, PC3-10600 1333MHz DDR3***, ECC</b> , 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 <i>Some: NVIDIA® Quadro® FX 380</i> , PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W <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 **** Only two display connectors are active at a time		
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<b>500GB</b> , 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	<b>Intel X58 Express Chipset</b> , 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 adptry	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		
<b>Preloaded operating system<sup>20</sup></b> - Genuine Windows® 7 Professional 64 <b>Preloaded applications<sup>5</sup></b> (only some listed) <ul style="list-style-type: none"> <li>• Rescue and Recovery™</li> <li>• ThinkVantage System Update</li> <li>• Norton Internet Security™ (30 days of virus definitions)</li> <li>• Adobe® Reader</li> <li>• Microsoft® Office 2007 Trial (60-day)</li> <li>• Roxio® Creator® Business Edition (DVD±RW)</li> <li>• Roxio MyDVD® (DVD±RW)</li> <li>• Corel® WinDVD® (DVD±RW)</li> </ul>			
<b>Accessories</b> <ul style="list-style-type: none"> <li>1GB PC3-8500 DDR3 ECC UDIMM 51J0503</li> <li>2GB PC3-8500 DDR3 ECC UDIMM 51J0504</li> <li>1GB PC3-10600 DDR3 ECC UDIMM 43R2032</li> <li>2GB PC3-10600 DDR3 ECC UDIMM 43R2033</li> <li>4GB PC3-10600 DDR3 ECC UDIMM 57Y4138</li> <li>750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991</li> <li>1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918</li> <li>Blu-ray™ Burner SATA 1.5Gb/s 45K1675</li> <li>ThinkStation Rail Kit 43R1964</li> <li>USB 2.0 Ultra Secure Memory Key 8GB 45J5918</li> <li>ThinkVision® L2440p Wide 24" Monitor 4420HB2</li> <li>NVIDIA Quadro NVS 290 43R1765</li> <li>ATI™ FirePro™ 1GB V7750 51J0511</li> </ul> Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>			
Supports ThinkVantage® technologies			
GREENGUARD® certified RoHS-compliant Pending: ENERGY STAR® 5.0-compliant			
<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>↔ 3-year parts and labor</li> <li>↔ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b></li> <li>↔ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>↔ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b></li> </ul>			

See footnotes for important warranty information  
US models announced October 22, 2009

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(SEV3-2) October 2009

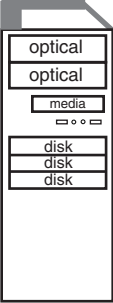
Name	Type-model	Slot x bay	Processor	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0	Preload	Avail date
S20	4157-11U	5x6	W3520	2.66	2 x 1GB	1066MHz	1 x 250GB <sup>2</sup>	3.5"	DVD±RW	Media	1 x FX380		ES50	Bus32	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	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 Processor uses FC-LGA8 package, one LGA1366 socket	<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul> 
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket	
Memory	2GB, 3GB, or 4GB std, 24GB max, UDIMM, PC3-8500 1066MHz DDR3***, ECC, 3-channel capable, six 240-pin DIMM sockets *** System automatically clocks down for processors with 800MHz 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® NVS 290, PCIe x16 adapter, 256MB, two single-link DVI via DMS-59 with dual DVI-I dongle, 21W 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 FX 4800, PCIe x16 adapter, 1.5GB, 2 slot width, two DisplayPort, one dual-link DVI-I****, 121W Some: ATI™ FirePro™ V3700, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: ATI FirePro V5700, PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 49W Some: ATI FirePro V7750, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I****, 76W **** 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, std or 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: full-length, full-height, 32-bit PCI 2.3  ** x16 mechanical
Media reader	20-in-1 media reader, internal USB 2.0	<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>
SATA disk(s)	Some: 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5" Some: 150GB or 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5"	
SATA DVD	Some: DVD-ROM DL SATA 1.5Gb/s 16X-48X Max <sup>4</sup> Drive	
SATA DVD±RW	Some: 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)	Supports ThinkVantage® technologies
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 Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	GREENGUARD® certified RoHS-compliant Some: ENERGY STAR® 5.0-compliant EPEAT™ Gold rating (only for ES5.0 models)
IEEE 1394 adptr	Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>⇒ 3-year parts and labor</li> <li>⇒ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>⇒ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></li> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> <li>⇒ 24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>
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 <sup>20</sup>	<ul style="list-style-type: none"> <li>- Some: Genuine Windows® XP Professional 64-bit (preinstalled via downgrade rights in Windows Vista® Business 64-bit)</li> <li>- Some: Genuine Windows Vista Business 32</li> <li>- Some: Genuine Windows Vista Business 64</li> <li>⊕ Vista models: Vista Premium logo</li> </ul>	<b>Preloaded applications<sup>5</sup></b> (all OSes; only some listed) <ul style="list-style-type: none"> <li>• Rescue and Recovery™</li> <li>• McAfee® VirusScan® Plus (30 days of virus definitions)</li> <li>• Lenovo® System Toolbox</li> <li>• Corel® WinDVD® (DVD±RW)</li> </ul>

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

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 <sup>2</sup>	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

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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**
- **These models have a 3-year limited warranty<sup>1</sup>**

Processor	<b>Intel Xeon® Processor W3550</b> with <b>quad-core</b> , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor W3580</b> with <b>quad-core</b> , 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul> 
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket		
Memory	<b>2GB</b> or <b>4GB</b> std, 24GB max, <b>UDIMM</b> , <b>PC3-8500 1066MHz DDR3</b> or <b>PC3-10600 1333MHz DDR3, ECC</b> , 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 <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		
Media reader	20-in-1 media reader, internal USB 2.0		
SATA disk(s)	<b>500GB</b> , 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	<b>Intel X58 Express Chipset</b> , 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		
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>		
- 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	
	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	
	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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>		
<b>Preloaded applications<sup>5</sup></b> (only some listed)			
• Rescue and Recovery™			
• McAfee® VirusScan® Plus (30 days of virus definitions)			
• Lenovo® System Toolbox			
• Adobe® Reader			
• Corel® WinDVD® (DVD±RW)			
	<b>SECURITY</b>		
	<ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>		
	Supports ThinkVantage® technologies		
	GREENGUARD® certified RoHS-compliant <i>Pending: ENERGY STAR® 5.0-compliant</i>		
	<b>LIMITED WARRANTY<sup>1</sup></b>		
	<ul style="list-style-type: none"> <li>⇒ <b>3-year parts and labor</b></li> <li>⇒ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b></li> <li>⇒ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>⇒ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b></li> </ul>		

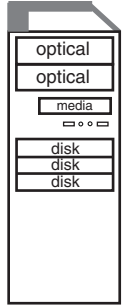
See footnotes for important warranty information  
US models announced August 4, 2009

# ThinkStation® S20 (4157) - Windows 7

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 <sup>2</sup>	3.5"	No	DVD±RW	Media	1xFX380	None	Pending	Pro64	Oct 09
S20	4157-A2U	5x6	W3520	2.66	4	2x2GB	1333MHz	1x500GB	3.5"	No	DVD±RW	Media	1xFX1800	None	Pending	Pro64	Oct 09

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- **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<sup>1</sup>**

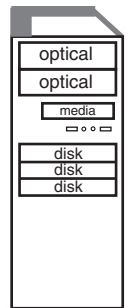
Processor	<b>Intel Xeon® Processor W3503</b> with dual-core, 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 4MB cache or <b>Intel Xeon Processor W3520</b> with quad-core, 4.8GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 19.0"D x 18.8"H (with handle)</li> <li>• 175mm W x 483mm D x 478mm H</li> <li>• 38.5 lb (17.5kg) max configuration</li> <li>• 31-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support</li> </ul> 
Implementation	Processor uses FC-LGA8 package, one LGA1366 socket		
Memory	<b>2GB or 4GB</b> std, 24GB max, <b>UDIMM, PC3-10600 1333MHz DDR3<sup>***</sup>, ECC</b> , 3-channel capable, six 240-pin DIMM sockets <sup>***</sup> 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 <i>Some: <b>NVIDIA® Quadro® FX 380</b>, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W</i> <i>Some: <b>NVIDIA Quadro FX 1800</b>, PCIe x16 adapter, 768MB, two DisplayPort, one dual-link DVI-****, 59W</i> <sup>****</sup> Only two display connectors are active at a time		
Media reader	20-in-1 media reader, internal USB 2.0		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: full-length, full-height, 32-bit PCI 2.3  ** x16 mechanical
SATA disk(s)	<b>500GB</b> , 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	<b>Intel X58 Express Chipset</b> , 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)		<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>
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		
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>		Supports ThinkVantage® technologies
- 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 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>		GREENGUARD® certified RoHS-compliant <i>Pending: ENERGY STAR® 5.0-compliant</i>
<b>Preloaded applications<sup>5</sup></b> (only some listed)			<b>LIMITED WARRANTY<sup>1</sup></b>
• Rescue and Recovery™			⇒ <b>3-year parts and labor</b>
• ThinkVantage System Update			⇒ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b>
• Norton Internet Security™ (30 days of virus definitions)			⇒ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b>
• Adobe® Reader			• <b>Onsite service upgrade options (in eligible locations)<sup>7</sup></b>
• Microsoft® Office 2007 Trial (60-day)			• <b>Post warranty maintenance services</b>
• Roxio® Creator® Business Edition (DVD±RW)			⇒ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b>
• Roxio MyDVD® (DVD±RW)			
• Corel® WinDVD® (DVD±RW)			

See footnotes for important warranty information  
US models announced October 22, 2009

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 <sup>2</sup>	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 warranty<sup>1</sup>*

Processor	<b>Intel Xeon® Processor W3520</b> with <b>quad-core</b> , 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	<b>4GB</b> std, 24GB max, <b>UDIMM</b> , <b>PC3-8500 1066MHz DDR3, ECC</b> , 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 <b>NVIDIA® Quadro® FX 1800</b> , 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)	<b>500GB</b> , 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	<b>Intel X58 Express Chipset</b> , 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																
<b>Preloaded operating system<sup>20</sup></b> - Genuine Windows® 7 Professional 64 <b>Preloaded applications<sup>5</sup></b> (only some listed) • Rescue and Recovery™ • ThinkVantage System Update • Norton Internet Security™ (30 days of virus definitions) • Adobe® Reader • Microsoft® Office 2007 Trial (60-day) • Roxio® Creator® Business Edition (DVD±RW) • Roxio MyDVD® (DVD±RW) • Corel® WinDVD® (DVD±RW)																	
<b>Accessories</b> 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 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>																	
<b>Tower</b> • 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: full-length, full-height, 32-bit PCI 2.3 ** x16 mechanical																	
<b>SECURITY</b> • 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																	
<b>LIMITED WARRANTY<sup>1</sup></b> ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts <sup>3</sup> , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a> • Onsite service upgrade options (in eligible locations) <sup>7</sup> • Post warranty maintenance services ⇨ 24 hour x 7 day <sup>14</sup> toll-free support during the warranty period <sup>1</sup> via 800-426-7378																	



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



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® 1.5GB FX 4800 (45K1674)



Lenovo ThinkStation Graphics Card Option  
ATI™ FirePro™ 1GB V7750 (51J0511)

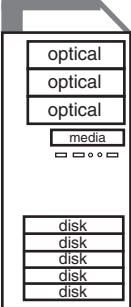


# ThinkStation® D20 (4155) - TopSeller (UDIMM)

Personal Systems Reference (PSREF)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	Disk type	SATA 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, <b>Intel® Xeon® Processor E5502</b> with <b>dual-core</b> , 4.8GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 800MHz DDR3 memory controller, and 4MB cache or <b>Intel Xeon Processor E5506</b> with <b>quad-core</b> , 4.8GT/s QPI, 800MHz DDR3 memory controller, and 4MB cache or <b>Intel Xeon Processor E5540</b> with <b>quad-core</b> , 5.86GT/s QPI, 1066MHz DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor X5560</b> with <b>quad-core</b> , 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache	<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul> 
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets	
Memory	<b>4GB</b> std, 48GB max, <b>UDIMM, PC3-8500 1066MHz DDR3</b> or <b>PC3-10600 1333MHz DDR3, ECC</b> , 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	<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>
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 <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	<b>Intel 5520 Chipset</b> , 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	
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>	
- Genuine Windows® Vista® Business 64	2GB PC3-8500 DDR3 ECC UDIMM	51J0504
◇ Vista Premium logo	2GB PC3-10600 DDR3 ECC UDIMM	43R2033
<b>Preloaded applications<sup>5</sup></b> (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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>	
		<b>LIMITED WARRANTY<sup>1</sup></b> ⇨ 3-year parts and labor ⇨ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts <sup>3</sup> , 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time) ⇨ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a> ⇨ 24x7 <sup>14</sup> toll-free support for warranty issues during the warranty period <sup>1</sup> via 800-426-7378

See footnotes for important warranty information  
US models announced March 31, 2009

# ThinkStation® D20 (4155) - TopSeller (UDIMM) - May 2009

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	4155-39U	6x9	2 x E5520	2.26	2 x 2GB	1066MHz	1 x 500GB <sup>2</sup>	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, <b>Intel® Xeon® Processor E5520 with quad-core</b> , 5.86GT/s (giga-transfers/second) QPI (QuickPathInterconnect), 1066MHz DDR3 memory controller, and 8MB cache																																																				
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets																																																				
Memory	<b>4GB</b> std, 48GB max, <b>UDIMM, PC3-8500 1066MHz DDR3, ECC</b> , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** Over six DIMMs requires dual processors		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul> <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: full-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 Some: <b>NVIDIA® Quadro® FX 580</b> , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I ***, 40W Some: <b>NVIDIA Quadro FX 1800</b> , 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: <b>500GB</b> , SATA 3.0Gb/s, 7200 rpm, 3.5" Some: <b>300GB</b> , 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 <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480																																																				
Chipset	<b>Intel 5520 Chipset</b> , 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																																																				
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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																																																				
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b> <table border="0"> <tr> <td>- Genuine Windows® Vista® Business 64</td> <td>1GB PC3-8500 DDR3 ECC UDIMM</td> <td>51J0503</td> </tr> <tr> <td>◇ Vista Premium logo</td> <td>2GB PC3-8500 DDR3 ECC UDIMM</td> <td>51J0504</td> </tr> <tr> <td><b>Preloaded applications<sup>5</sup> (only some listed)</b></td> <td>1GB PC3-10600 DDR3 ECC UDIMM</td> <td>43R2032</td> </tr> <tr> <td>• Rescue and Recovery™</td> <td>4GB PC3-10600 DDR3 ECC UDIMM</td> <td>57Y4138</td> </tr> <tr> <td>• McAfee® VirusScan® Plus (30 days of virus definitions)</td> <td>Super Multi-Burner DL DVD±RW SATA 1.5G/s</td> <td>41N5620</td> </tr> <tr> <td>• Lenovo® System Toolbox</td> <td>Blu-ray™ Burner SATA 1.5Gb/s</td> <td>45K1675</td> </tr> <tr> <td>• Adobe® Reader</td> <td>500GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>43R1990</td> </tr> <tr> <td>• Roxio® Creator® Business Edition (DVD±RW)</td> <td>750GB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>43R1991</td> </tr> <tr> <td>• Roxio MyDVD® (DVD±RW)</td> <td>1TB SATA 3.0Gb/s Disk (7200 rpm)</td> <td>45J7918</td> </tr> <tr> <td>• Corel® WinDVD® (DVD±RW)</td> <td>300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"</td> <td>43R2031</td> </tr> <tr> <td></td> <td>ThinkStation Rail Kit</td> <td>43R1964</td> </tr> <tr> <td></td> <td>USB 2.0 Ultra Secure Memory Key 8GB</td> <td>45J5918</td> </tr> <tr> <td></td> <td>ThinkVision® L2440p Wide 24" Monitor</td> <td>4420HB2</td> </tr> <tr> <td></td> <td>ATI™ FirePro™ 1GB V7750</td> <td>51J0511</td> </tr> <tr> <td></td> <td>NVIDIA Quadro 1GB FX 3800</td> <td>45K1673</td> </tr> <tr> <td></td> <td>NVIDIA Quadro 1.5GB FX 4800</td> <td>45K1674</td> </tr> <tr> <td></td> <td>Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a></td> <td></td> </tr> </table>		- Genuine Windows® Vista® Business 64	1GB PC3-8500 DDR3 ECC UDIMM	51J0503	◇ Vista Premium logo	2GB PC3-8500 DDR3 ECC UDIMM	51J0504	<b>Preloaded applications<sup>5</sup> (only some listed)</b>	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)	750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991	• Roxio MyDVD® (DVD±RW)	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	• Corel® WinDVD® (DVD±RW)	300GB SATA 3.0Gb/s Disk (10000 rpm) 2.5"	43R2031		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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>	
- Genuine Windows® Vista® Business 64	1GB PC3-8500 DDR3 ECC UDIMM	51J0503																																																			
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	<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>↔ 3-year parts and labor</li> <li>↔ Customer Replaceable Unit (CRU)</li> <li>↔ parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>↔ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></li> <li>↔ 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>																																																				

See footnotes for important warranty information  
US models announced May 5, 2009

# ThinkStation® D20 (4155) - TopSeller (UDIMM) - August 2009

Personal Systems Reference (PSREF)

Type- Name	model	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk size	SATA 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 <sup>2</sup>	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 warranty<sup>1</sup>**

Processor	Up to two processors, two processors standard, <b>Intel® Xeon® Processor E5540 with quad-core</b> , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		<b>Tower</b>	<ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul>	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets				
Memory	<b>4GB</b> std, 48GB max, <b>UDIMM, PC3-8500 1066MHz DDR3, ECC</b> , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** 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	
Graphics	Two PCI Express® x16 adapters required for quad monitor support, * Adapters >75W use auxiliary power connector(s) from PSU <b>NVIDIA® Quadro® FX 3800</b> , PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I***, 108W *** 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, opt 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)	<b>500GB</b> , 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 <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480		Slot 5: full-length, full-height, PCIe x4 (x16 mechanical)	Slot 6: full-length, full-height, 32-bit PCI 2.3	
Chipset	<b>Intel 5520 Chipset</b> , Intel ICH10, Winbond® W83627DHG-P Super I/O		<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>		
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		<b>GREENGUARD® certified</b> RoHS-compliant Pending: ENERGY STAR® 5.0-compliant		
IEEE 1394 adptr	None		<b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>⇒ <b>3-year parts and labor</b></li> <li>⇒ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b></li> <li>⇒ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>⇒ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b></li> </ul>		
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					
<b>Preloaded operating system<sup>20</sup></b>		<b>Accessories</b>			
- Genuine Windows® Vista® Business 64		1GB PC3-8500 DDR3 ECC UDIMM		51J0503	
◇ Vista Premium logo		2GB PC3-8500 DDR3 ECC UDIMM		51J0504	
<b>Preloaded applications<sup>5</sup> (only some listed)</b>		1GB PC3-10600 DDR3 ECC UDIMM		43R2032	
• Rescue and Recovery™		2GB PC3-10600 DDR3 ECC UDIMM		43R2033	
• McAfee® VirusScan® Plus (30 days of virus definitions)		4GB PC3-10600 DDR3 ECC UDIMM		57Y4138	
• Lenovo® System Toolbox		750GB SATA 3.0Gb/s Disk (7200 rpm)		43R1991	
• Adobe® Reader		1TB SATA 3.0Gb/s Disk (7200 rpm)		45J7918	
• Corel® WinDVD® (DVD±RW)		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 <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>			

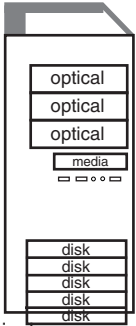
See footnotes for important warranty information  
US model announced August 4, 2009

# ThinkStation® D20 (4155) - TopSeller (UDIMM) - Windows 7

Personal Systems Reference (PSREF)

Type- Name	model	Slot x bay	Processor(s)	GHz	Cores	Memory DIMMs	Memory speed	Disk(s)	Disk Pre-config size	SATA RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR	Win7 preload	Avail date
D20	4155-68U	6x9	1xE5520	2.26	4	2x2GB	1333MHz	1x500GB <sup>2</sup>	SATA 3.5"	No	DVD±RW	Media	1xFX580	No	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 small and medium business (SMB) model is part of the US TopSeller™ Program**
- **This model has a 3-year limited warranty<sup>1</sup>**

Processor	Up to two processors, one processor standard, <b>Intel Xeon® Processor E5520</b> with <b>quad-core</b> , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache	<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul> 
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets	
Memory	<b>4GB</b> std, 48GB max, <b>UDIMM, PC3-10600 1333MHz DDR3**</b> , 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: full-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 <b>NVIDIA® Quadro® FX 580</b> , PCIe x16 adapter, 512MB, two DisplayPort, one dual-link DVI-I****, 40W **** Only two display connectors are active at a time	
Diskette drive	None	
Media reader	20-in-1 media reader	
SATA disk(s)	<b>500GB</b> , 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 <sup>†</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>‡</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480	
Chipset	<b>Intel 5520 Chipset</b> , 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	<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>
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	
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>	Supports ThinkVantage® technologies
- Genuine Windows® 7 Professional 64	1GB PC3-8500 DDR3 ECC UDIMM 51J0503 2GB PC3-8500 DDR3 ECC UDIMM 51J0504	GREENGUARD® certified RoHS-compliant <i>Pending:</i> ENERGY STAR® 5.0-compliant
<b>Preloaded applications<sup>5</sup></b> (only some listed)	1GB PC3-10600 DDR3 ECC UDIMM 43R2032 2GB PC3-10600 DDR3 ECC UDIMM 43R2033 4GB PC3-10600 DDR3 ECC UDIMM 57Y4138 750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991 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	<b>LIMITED WARRANTY<sup>1</sup></b>
• Rescue and Recovery™	Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>	⇨ <b>3-year parts and labor</b> ⇨ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b> ⇨ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> ⇨ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b>
• ThinkVantage System Update		
• Norton Internet Security™ (30 days of virus definitions)		
• 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 October 22, 2009

Name	Type-model	Slot x bay	Processor(s) GHz	Memory DIMMs	Memory speed	Disk(s)	Disk size	Disk type	Disk RAID	SATA optical	Diskette or Media reader	Graphics adapter(s)	1394 adptr	ENERGY STAR 5.0 Preload	Avail date
ⓧ D20	4158-23U	6x9	2 x X5560	2.80	4 x 2GB	1333MHz	2 x 300GB	2.5" SATA	1	DVD±RW	Media	1 x FX4800		Bus64	Apr 09
D20	4158-24U	6x9	2 x E5540	2.53	2 x 2GB	1066MHz	2 x 147GB	3.5" SAS		DVD±RW	Media	1 x FX1800	ES50	Bus64	Apr 09
D20	4158-25U	6x9	2 x E5506	2.13	4 x 1GB	1066MHz	1 x 147GB	3.5" SAS		DVD±RW	Media	1 x FX1800	1394	Bus64	Apr 09
D20	4158-26U	6x9	1 x X5550	2.66	4 x 1GB	1066MHz	1 x 250GB	3.5" SATA		DVD±RW	Media	1 x FX380		Bus64	Apr 09
D20	4158-27U	6x9	2 x X5550	2.66	4 x 1GB	1333MHz	3 x 300GB	2.5" SATA	5	DVD±RW	Media	1 x FX1800	ES50	Bus64	Apr 09
ⓧ D20	4158-28U	6x9	1 x X5560	2.80	4 x 1GB	1333MHz	1 x 500GB	3.5" SATA		DVD±RW	Media	1 x FX580		Bus64	Apr 09
D20	4158-29U	6x9	2 x E5540	2.53	2 x 2GB	1066MHz	1 x 500GB	3.5" SATA		DVD±RW	Media	1 x FX1800	ES50	Bus64	Apr 09
D20	4158-31U	6x9	1 x X5550	2.66	2 x 2GB	1333MHz	2 x 147GB	3.5" SAS	1	DVD±RW	Media	1 x FX580	1394	Bus64	Apr 09
D20	4158-49U	6x9	2 x E5506	2.13	4 x 1GB	1066MHz	2 x 300GB	2.5" SATA	0	DVD±RW	Media	1 x V5700	ES50	Bus64	Apr 09
D20	4158-51U	6x9	2 x E5540	2.53	4 x 1GB	1066MHz	1 x 500GB	3.5" SATA		DVD±RW	Media	1 x V3700	ES50	Bus64	Apr 09

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 QPI, 1066MHz DDR3 memory controller, and 8MB cache or Intel Xeon Processor X5550 or X5560 with quad-core, 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache	<b>Tower</b>	<ul style="list-style-type: none"> <li>Raven black color; metal case</li> <li>8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>210mm W x 602mm D x 485mm H</li> <li>60 lb (27.1kg) max configuration</li> <li>55-liter</li> <li>Removable handle on top front</li> <li>Toolless side cover removal</li> <li>Toolless disk and optical drive removal</li> <li>Toolless adapter retention</li> <li>Illuminated front icons</li> <li>Rack shelf support or optional rail kit</li> </ul>
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		
Memory	4GB or 8GB std, 48GB max, UDIMM, PC3-8500 1066MHz DDR3 or PC3-10600 1333MHz 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 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 FX 4800, PCIe x16 adapter, 1.5GB, two slot width, 2 DisplayPort, 1 dual-link DVI-I***, 121W Some: ATI™ FirePro™ V3700, PCIe x16 adapter, 256MB, two dual-link DVI-I, 35W Some: ATI FirePro V5700, 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, std or 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)	Some: 250GB or 500GB, SATA 3.0Gb/s, 7200 rpm, 3.5" Some: 300GB, SATA 3.0Gb/s, 10000 rpm, 2.5" Some: 146GB, SAS 3.0Gb/s, 15000 rpm	Slot 3: full-length, full-height, 32-bit PCI 2.3	
SAS disk(s)	Some: 146GB, SAS 3.0Gb/s, 15000 rpm	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	Three SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; five SATA/SAS <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480	Slot 6: full-length, full-height, 32-bit PCI 2.3	
Chipset	Intel 5520 Chipset, Intel ICH10, Winbond® W83627DHG-P Super I/O		<b>SECURITY</b>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		<ul style="list-style-type: none"> <li>Security chip (see information on left)</li> <li>Side cover lock (ships with two identical keys)</li> <li>Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>Power-on password</li> <li>Administrator password</li> <li>Boot sequence control</li> <li>Boot without keyboard, mouse, diskette</li> <li>Serial port I/O control</li> <li>USB port disablement (front or all)</li> </ul>
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	Some: FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear		GREENGUARD® certified
Audio	High Definition (HD) Audio, Analog Devices ADI 1988A codec		RoHS-compliant
Speaker	Internal speaker for business audio		Some: ENERGY STAR® 5.0-compliant
Ethernet	Dual gigabit ethernet on planar, Broadcom® BCM5755 and BCM5754		EPEAT™ Gold rating (only for ES5.0 models)
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		<b>LIMITED WARRANTY<sup>1</sup></b>
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black		<ul style="list-style-type: none"> <li>3-year parts and labor</li> <li>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></li> <li>24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>
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		
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>		
- Genuine Windows® Vista® Business 64	2GB PC3-8500 DDR3 ECC UDIMM	51J0504	
◇ Vista Premium logo	1GB PC3-10600 DDR3 ECC UDIMM	43R2032	
<b>Preloaded applications<sup>5</sup></b> (only some listed)	4GB PC3-10600 DDR3 ECC UDIMM	57Y4138	
• Rescue and Recovery™	1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	
• McAfee® VirusScan® Plus (30 days of virus definitions)	300GB SAS 3.0Gb/s Disk (15000 rpm)	43R1994	
• Lenovo® System Toolbox	450GB SAS 3.0Gb/s Disk (15000 rpm)	43N3424	
	ThinkStation Rail Kit	43R1964	
	ATI FirePro 1GB V7750	51J0511	
	Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>		

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

# ThinkStation® D20 (4158) - RDIMM

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	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, <b>Intel® Xeon® Processor E5540</b> with <b>quad-core</b> , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache or <b>Intel Xeon Processor X5550</b> or <b>X5560</b> with <b>quad-core</b> , 6.4GT/s QPI, 1333MHz DDR3 memory controller, and 8MB cache		<b>Tower</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul>	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets			
Memory	<b>2GB</b> or <b>4GB</b> std, 192GB max (pending 16GB RDIMM availability), <b>RDIMM, PC3-8500 1066MHz DDR3, ECC</b> , registered, 6-channel capable, twelve 240-pin DIMM sockets** ** 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: 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 *** 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: full-length, full-height, 32-bit PCI 2.3	
Diskette drive	None		<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>	
Media reader	20-in-1 media reader			
SATA disk(s)	<i>Some: 250GB</i> or <i>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: 146GB</i> , SAS 3.0Gb/s, 15000 rpm			
SATA DVD±RW	Super Multi-Burner DL DVD±RW, SATA 1.5Gb/s		Supports ThinkVantage® technologies GREENGUARD® certified RoHS-compliant <b>LIMITED WARRANTY<sup>1</sup></b> <ul style="list-style-type: none"> <li>↪ 3-year parts and labor</li> <li>↪ Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</li> <li>↪ ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></li> <li>↪ 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>1</sup> via 800-426-7378</li> </ul>	
Disk controller	3 SATA connectors for opticals, SATA 3.0Gb/s, integrated in ICH10; 5 SATA/SAS <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480			
Chipset	<b>Intel 5520 Chipset</b> , 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: 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			
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			
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>			
- <i>Some:</i> 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 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 300GB SAS 3.0Gb/s Disk (15000 rpm) 43R1994 450GB SAS 3.0Gb/s Disk (15000 rpm) 43N3424 ThinkStation Rail Kit 43R1964 ATI™ FirePro™ 256MB V3700 51J0509 ATI FirePro 512MB V5700 51J0510 ATI FirePro 1GB V7750 51J0511 Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>			

See footnotes for important warranty information  
US models announced March 31, 2009

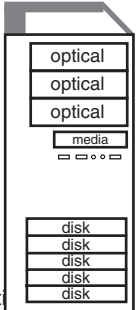
ⓧ US models withdrawn effective January 2010

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

Personal Systems Reference (PSREF)

Type- Name	Slot x model 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 5.0 preload	Avail date		
D20	4158-79U	6x9	2xE5520	2.26	8	2x4GB	1066MHz	2x500GB <sup>2</sup>	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 warranty<sup>1</sup>**

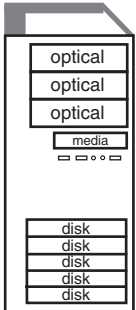
Processor	Up to two processors, two processors standard, <b>Intel Xeon® Processor E5520 with quad-core</b> , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		<b>Tower</b>	
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		<ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul>	
Memory	<b>8GB</b> std, 192GB max (Pending availability of 16GB RDIMM), <b>RDIMM, PC3-8500 1066MHz DDR3, ECC</b> , 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 <b>NVIDIA® Quadro® FX 1800</b> , 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)	<b>500GB</b> , 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 <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480		Slot 6: full-length, full-height, 32-bit PCI 2.3	
Chipset	<b>Intel 5520 Chipset</b> , Intel ICH10, Winbond® W83627DHG-P Super I/O		<b>SECURITY</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm), FireWire 400 (IEEE 1394a)		<ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>	
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		<b>LIMITED WARRANTY<sup>1</sup></b>	
Security chip	Broadcom Trusted Platform Module, TCG 1.2-compliant		<ul style="list-style-type: none"> <li>⇒ <b>3-year parts and labor</b></li> <li>⇒ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b></li> <li>⇒ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b> <ul style="list-style-type: none"> <li>• Onsite service upgrade options (in eligible locations)<sup>7</sup></li> <li>• Post warranty maintenance services</li> </ul> </li> <li>⇒ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b></li> </ul>	
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			
<b>Preloaded operating system<sup>20</sup></b>	<b>Accessories</b>			
- Genuine Windows® 7 Professional 64	2GB PC3-8500 DDR3 ECC RDIMM 43R2035			
	4GB PC3-8500 DDR3 ECC RDIMM 43R2036			
	8GB PC3-8500 DDR3 ECC RDIMM 43R2037			
<b>Preloaded applications<sup>5</sup> (only some listed)</b>	750GB SATA 3.0Gb/s Disk (7200 rpm) 43R1991			
• Rescue and Recovery™	1TB SATA 3.0Gb/s Disk (7200 rpm) 45J7918			
• ThinkVantage System Update	Blu-ray™ Burner SATA 1.5Gb/s 45K1675			
• Norton Internet Security™ (30 days of virus definitions)	ThinkVision® L2440p Wide 24" Monitor 4420HB2			
• Adobe® Reader	NVIDIA Quadro NVS 290 43R1765			
• Microsoft® Office 2007 Trial (60-day)	NVIDIA Quadro FX 580 45K1671			
• Roxio® Creator® Business Edition (DVD±RW)	ATI™ FirePro™ 1GB V7750 51J0511			
• Roxio MyDVD® (DVD±RW)	Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>			
• Corel® WinDVD® (DVD±RW)				

See footnotes for important warranty information  
US model announced October 22, 2009

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(SEV3-4) October 2009

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 <sup>2</sup>	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 warranty<sup>1</sup>**

Processor	Up to two processors, one processor standard, <b>Intel Xeon® Processor E5540</b> with <b>quad-core</b> , 5.86GT/s (giga-transfers/second) QPI (QuickPath Interconnect), 1066MHz DDR3 memory controller, and 8MB cache		<b>Tower</b>		
Implementation	Processor uses FC-LGA8 package, two LGA1366 sockets		<ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 8.3"W x 23.7"D x 19.1"H (with handle)</li> <li>• 210mm W x 602mm D x 485mm H</li> <li>• 60 lb (27.1kg) max configuration</li> <li>• 55-liter</li> <li>• Removable handle on top front</li> <li>• Toolless side cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Illuminated front icons</li> <li>• Rack shelf support or optional rail kit</li> </ul>		
Memory	<b>4GB</b> std, 48GB max, <b>UDIMM, PC3-8500 1066MHz DDR3, ECC</b> , 6-channel capable (3-channel per processor), twelve 240-pin DIMM sockets** ** 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 <b>NVIDIA® Quadro® FX 1800</b> , PCI Express® (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 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	None				
SATA disk(s)	<b>500GB</b> , 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 <sup>4</sup> connectors for disks, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID <sup>5</sup> 0, 1, 5, 10, integrated in Marvell® 88SE6480				
Chipset	<b>Intel 5520 Chipset</b> , 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		<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Side cover lock (ships with two identical keys)</li> <li>• Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on password</li> <li>• Administrator password</li> <li>• Boot sequence control</li> <li>• Boot without keyboard, mouse, diskette</li> <li>• Serial port I/O control</li> <li>• USB port disablement (front or all)</li> </ul>		
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					
<b>Preloaded operating system<sup>20</sup></b>		<b>Accessories</b>			
- Genuine Windows® 7 Professional 64		1GB PC3-8500 DDR3 ECC UDIMM	51J0503		
<b>Preloaded applications<sup>5</sup></b> (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		750GB SATA 3.0Gb/s Disk (7200 rpm)	43R1991		
• Microsoft® Office 2007 Trial (60-day)		1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
• Roxio® Creator® Business Edition (DVD±RW)		Blu-ray™ Burner SATA 1.5Gb/s	45K1675		
• Roxio MyDVD® (DVD±RW)		NVIDIA Quadro NVS 290	43R1765		
• Corel® WinDVD® (DVD±RW)		NVIDIA Quadro FX 580	45K1671		
		ATI™ FirePro™ 1GB V7750	51J0511		
		Other accessories at <a href="http://lenovo.com/accessories">lenovo.com/accessories</a>			
GREENGUARD® certified RoHS-compliant <i>Pending:</i> ENERGY STAR® 5.0-compliant					
<b>LIMITED WARRANTY<sup>1</sup></b>					
⇒ <b>3-year parts and labor</b>					
⇒ <b>Customer Replaceable Unit (CRU) parts only (with limited onsite service for selected parts<sup>3</sup>, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time)</b>					
⇒ <b>ThinkPlus™ services available; see <a href="http://lenovo.com/thinkplus/warranty">http://lenovo.com/thinkplus/warranty</a></b>					
• <b>Onsite service upgrade options (in eligible locations)<sup>7</sup></b>					
• <b>Post warranty maintenance services</b>					
⇒ <b>24 hour x 7 day<sup>14</sup> toll-free support during the warranty period<sup>1</sup> via 800-426-7378</b>					

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



Partial list of accessories supported on ThinkStation S20 and D20

**Processors<sup>55</sup>**

D20:

Intel® Xeon® Quad-Core Processor E5506	57Y4399	ann	10/27/09
Intel Xeon Quad-Core Processor E5520	43R2038	ann	04/21/09
Intel Xeon Quad-Core Processor E5530	43R2039	ann	04/21/09
Intel Xeon Quad-Core Processor E5540	43R2040	ann	04/21/09
Intel Xeon Quad-Core Processor X5550	43R2042	ann	04/21/09
Intel Xeon Quad-Core Processor X5560	43R2043	ann	04/21/09

<sup>55</sup> Additional Processor must match the existing processor

**Memory<sup>53</sup>**

All:

1GB PC3-8500 DDR3 ECC UDIMM	51J0503	ann	03/31/09
2GB PC3-8500 DDR3 ECC UDIMM	51J0504	ann	03/31/09
1GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	43R2032	ann	03/31/09
2GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	43R2033	ann	03/31/09
4GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	57Y4138	ann	08/04/09

D20:

1GB PC3-8500 DDR3 ECC RDIMM	43R2034	ann	04/21/09
2GB PC3-8500 DDR3 ECC RDIMM	43R2035	ann	04/21/09
4GB PC3-8500 DDR3 ECC RDIMM	43R2036	ann	04/21/09
8GB PC3-8500 DDR3 ECC RDIMM	43R2037	ann	04/21/09

<sup>53</sup> Mixing of UDIMM and RDIMM is not support  
<sup>54</sup> 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](http://www.lenovo.com/support/thinkstationaccessories)

**Optical**

DVD-ROM DL SATA1.5Gb/s 16X-48X Max <sup>4</sup>	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**

S20, D20 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
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918	ann	08/19/08
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

S20 preconfigured with SAS disks and the SAS controller,  
 D20 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
450GB SAS 3.0Gb/s Disk (15000 rpm)	43N3424	ann	02/02/10

All:

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 4GB	45J5917	ann	08/26/08
USB 2.0 Ultra Secure Memory Key 8GB	45J5918	ann	08/26/08

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 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

**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 <sup>52</sup>	57Y4700	ann	09/15/09

More information at [www.lenovo.com/support/keyboards](http://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 <sup>52</sup>	45K1696	ann	11/25/08
Lenovo Wireless Laser Mouse - Red/Black <sup>52</sup>	51J0198	ann	11/25/08

<sup>52</sup> Wireless via 2.4GHz technology using a micro-size USB receiver.

More information at [www.lenovo.com/support/mice](http://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](http://www.lenovo.com/thinkvision)

**Monitor accessories<sup>46</sup>**

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

<sup>46</sup> Compatible on selected Lenovo and ThinkVision monitors.

More information at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

**Graphics**

DisplayPort to Single-link DVI-D Cable <sup>50</sup>	45J7915	ann	08/05/08
ATI™ FirePro™ 256MB V3700	51J0509	ann	03/31/09
ATI FirePro 512MB V5700	51J0510	ann	03/31/09
ATI FirePro 1GB V7750	51J0511	ann	03/31/09
NVIDIA® Quadro® 256MB NVS 290	43R1765	ann	12/18/07
NVIDIA Quadro 256MB NVS 295	45K1669	ann	04/21/09
NVIDIA Quadro 512MB NVS 450	57Y4398	ann	01/19/10
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

<sup>50</sup> Attaches to selected DisplayPort graphics cards.

D20:

NVIDIA SLI Connector with FX 4800	55Y8963	ann	03/31/09
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More information at [www.lenovo.com/support/graphiccards](http://www.lenovo.com/support/graphiccards)

**Multimedia**

USB 2.0 Lenovo Webcam	40Y8519	ann	08/29/06
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**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**

D20:

ThinkStation Rail Kit	43R1964	ann	03/11/08
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More information at [www.lenovo.com/support/railkit](http://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](http://www.lenovo.com/support/accessories)  
[www.lenovo.com/support/thinkstationaccessories](http://www.lenovo.com/support/thinkstationaccessories)  
[www.lenovo.com/support/security](http://www.lenovo.com/support/security)

Other accessories at [www.lenovo.com/accessories](http://www.lenovo.com/accessories)

Accessories Guide pdf at [www.lenovo.com/accessoriesguide](http://www.lenovo.com/accessoriesguide)

**Partial list of Lenovo® ThinkPlus Services<sup>7</sup> for ThinkStation workstations**

For more information see:

[http://www.lenovo.com/services\\_warranty/us/en/index.html](http://www.lenovo.com/services_warranty/us/en/index.html)

<p><b><u>ThinkPlus service upgrade options</u></b></p> <p><b><i>ThinkStation workstation with 3-year Onsite warranty</i></b>  <i>LOR = Lenovo Onsite Repair</i></p> <table border="0"> <tr> <td>4-year LOR 9x5 Next Business Day</td> <td style="text-align: right;">43R8983</td> </tr> <tr> <td>5-year LOR 9x5 Next Business Day</td> <td style="text-align: right;">43R8987</td> </tr> </table> <hr/> <p><b><u>ThinkPlus Secure Business</u></b></p> <p><b><i>Lenovo Online Data Backup</i></b></p> <ul style="list-style-type: none"> <li>• Secure offsite data storage</li> <li>• 256-bit Advanced Encryption System</li> <li>• Data recovery or access in case of an unforeseen event</li> <li>• Automatic, remote management</li> <li>• Choose which business critical data to back up</li> </ul> <table border="0"> <tr> <td>1-year Lenovo Online Data Backup - <i>50GB</i></td> <td style="text-align: right;">45K5849</td> </tr> <tr> <td>1-year Lenovo Online Data Backup - <i>Unlimited</i></td> <td style="text-align: right;">45K5870</td> </tr> </table>	4-year LOR 9x5 Next Business Day	43R8983	5-year LOR 9x5 Next Business Day	43R8987	1-year Lenovo Online Data Backup - <i>50GB</i>	45K5849	1-year Lenovo Online Data Backup - <i>Unlimited</i>	45K5870	<p><b><u>ThinkPlus Priority Support for enterprise customers</u></b></p> <ul style="list-style-type: none"> <li>• 9x5 next-business-day response Lenovo Onsite Repair</li> <li>• 24x7 support with priority routing and advanced level technicians</li> </ul> <p><b><i>ThinkStation workstation with 1-year Onsite warranty</i></b></p> <table border="0"> <tr> <td>3-year Priority Support</td> <td style="text-align: right;">45J9080</td> </tr> </table> <p><b><i>ThinkStation workstation with 3-year Onsite warranty</i></b></p> <table border="0"> <tr> <td>3-year Priority Support</td> <td style="text-align: right;">45J9081</td> </tr> <tr> <td>4-year Priority Support</td> <td style="text-align: right;">45J9082</td> </tr> <tr> <td>5-year Priority Support</td> <td style="text-align: right;">45J9083</td> </tr> <tr> <td>3-year Priority Support 4-hour response</td> <td style="text-align: right;">45J9084</td> </tr> <tr> <td>4-year Priority Support 4-hour response</td> <td style="text-align: right;">45J9085</td> </tr> <tr> <td>5-year Priority Support 4-hour response</td> <td style="text-align: right;">45J9086</td> </tr> </table>	3-year Priority Support	45J9080	3-year Priority Support	45J9081	4-year Priority Support	45J9082	5-year Priority Support	45J9083	3-year Priority Support 4-hour response	45J9084	4-year Priority Support 4-hour response	45J9085	5-year Priority Support 4-hour response	45J9086
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4-year Priority Support 4-hour response	45J9085																						
5-year Priority Support 4-hour response	45J9086																						

**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.

- <sup>1</sup> **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges.
- <sup>2</sup> **Hard drive:** GB = billion bytes, TB = trillion bytes. Accessible capacity is less.
- <sup>3</sup> **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.
- <sup>4</sup> **SATA/SAS:** The system configuration supports the installation of either SATA or SAS disks. A configuration including both SATA and SAS disks is not supported.
- <sup>5</sup> **Included software** may differ from its retail version (if available), and may not include user manuals or all program functionality. License agreements may apply.
- <sup>6</sup> **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.

<sup>7</sup> **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.

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

- **RAID 0 (striping)** provides increased performance by writing data across multiple drives.
- **RAID 1 (mirroring)** provides fault tolerance by writing the data on two drives.
- **RAID 5 (striping with parity)** uses distributed parity data to provide fault tolerance more efficiently than RAID 1. Requires three or more drives.
- **RAID 10 (or RAID 1+0)** combines RAID 1 and RAID 0 to create a stripe of mirrors that is fault tolerant while offering increased performance. Requires four drives.

<sup>9</sup> **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.

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

<sup>20</sup> **Operating System:** Level of support varies by operating system. Operating systems not preloaded on the system may not provide full feature functionality. Refer to [lenovo.com/pc/support](http://lenovo.com/pc/support) and enter your machine type and model number for more information.

# ThinkStation

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