

# ThinkStation

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

*June 2013 - Version 437*



New ThinkStation Family  
(ThinkStation C30/D30/S30/E31 Tower)

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Lenovo ThinkStation E31 Tower



Lenovo ThinkStation E31 SFF



Lenovo ThinkStation E31 Tower



Lenovo ThinkStation E31 SFF



Lenovo ThinkStation E31 Tower



Lenovo ThinkStation E31 SFF

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

**Processor**  
**Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache)**, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  
**Intel Core i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)**, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  
**Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)**, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)  
**Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)**, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)

**Implementation**  
 One LGA1155 socket

**Memory**  
**32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC**, four 240-pin DIMM sockets;

**Additional memory disclaimers**

- Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs
- Mixing of ECC and non-ECC memory is not supported

**Graphics**  
*Some: Intel HD Graphics in processor, uses main memory, works along with discrete graphics to support multi-display;*  
*Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000*  
*Core i3-2120/2130: Intel HD Graphics 2000*  
*Pentium/Celeron: Intel HD Graphics (connector information please see Rear ports section)*  
*Some: NVIDIA® Quadro® 400, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W*  
*Some: NVIDIA Quadro 600, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W*  
*Some: NVIDIA Quadro 2000, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W*

**Media reader**  
*Media:* 29-in-1 Media card reader, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive

**Disk(s)**  
*250GB/500GB/1TB/2TB/3TB SATA:* SATA 6.0Gb/s, 7200 rpm, 3.5"  
*150GB/300GB/600GB SATA:* SATA 6.0Gb/s, 10000 rpm, 2.5"  
*128GB/180GB/256GB SSD:* Solid State Drive, SATA 6.0Gb/s, 2.5"

**Onboard SATA**  
 Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset

**Onboard SAS**  
 None

**Chipset**  
**Intel C216 Chipset**

**Front ports**  
 Two USB 2.0, microphone (3.5mm), headphone (3.5mm)

**Rear ports**  
 Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector  
 (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors)  
*PS/2 models:* additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable

**IEEE 1394 adptr**  
 No onboard 1394 ports;  
*1394 models:* additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear

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

**Speaker**  
 Internal speaker for business audio

**Ethernet**  
 One onboard gigabit ethernet, Intel 82579

**Security chip**  
 STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant

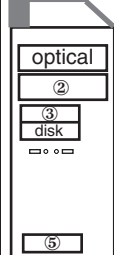
**Keyboard**  
 Preferred Pro USB Keyboard (USB connector), 104-key, black

**Mouse**  
 Optical Wheel Mouse (USB connector), black

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

**Limited Warranty**  
 3-year parts and labor, more Lenovo® services see S-TS sheet

**Tower**



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

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

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

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

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

**Preloaded operating system<sup>20</sup>**

- Windows® 7 Professional 64

**Preloaded applications<sup>5</sup> (only some listed)**

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

**SECURITY**

- Security chip (see information on left)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

**ISV certifications**  
 Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

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

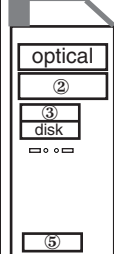
More compatible accessories, please see O-DEM sheet

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

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

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

**Tower**



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

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

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

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

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

**Preloaded operating system<sup>20</sup>**

- Windows® 7 Professional 64
- Preloaded applications<sup>5</sup> (only some listed)**
- Rescue and Recovery®
- Norton® Internet Security (30 days of virus definitions)
- Adobe® Reader®
- Microsoft® Office 2013 preloaded; purchase product key to activate
- Corel® WinDVD® (DVD±RW model(s))
- Ulead® DVD MovieFactory® (DVD±RW model(s))

**SECURITY**

- Security chip (see information on left)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

**ISV certifications**  
 Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

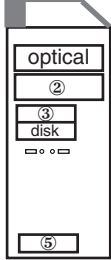
GREENGUARD® certified  
 RoHS-compliant  
 EPEAT™ Gold rating  
 ENERGY STAR 5.2-compliant

More compatible accessories, please see O-DEM sheet

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

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

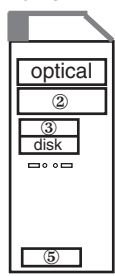
Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p><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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000                      Core i7-3770: Intel HD Graphics 4000                      Core i5-3450/3470/3550: Intel HD Graphics 2500                      Core i3-2120/2130: Intel HD Graphics 2000                      Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autoensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

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

**Tower**



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

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

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

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

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

**Preloaded operating system<sup>20</sup>**  
 Some: Windows® 7 Professional 64  
 Some: Windows 8 Pro 64-bit

**Preloaded applications<sup>5</sup> (only some listed)**

**-Windows 7 models**

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

**-Windows 8 models**

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

**SECURITY**

- Security chip (see information on left)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

More compatible accessories, please see O-DEM sheet

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

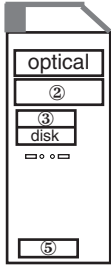
# ThinkStation® E31 Tower (2555) - TopSeller (March 2013)

Personal Systems Reference (PSREF)

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

<sup>1</sup> Model in italics shows that this is a Global Model

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

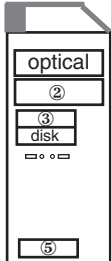
Processor	<b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache),</b> integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) <b>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)	<b>Tower</b>
Implementation	One LGA1155 socket	 <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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets; <ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Additional memory disclaimers		
Graphics	<i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section) <i>Some: NVIDIA® Quadro® 410,</i> PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W <i>Some: NVIDIA Quadro K600,</i> PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	<p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	<b>Intel AMT</b>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	Intel AMT supported on model(s) with Xeon processor
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	<b>Preloaded operating system<sup>20</sup></b> <i>Some:</i> Windows® 7 Professional 64 <i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit <i>Some:</i> Windows 8 Pro 64-bit
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<b>Preloaded applications<sup>5</sup> (only some listed)</b>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	<b>-Windows 7 models</b>
Speaker	Internal speaker for business audio	<ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>
Ethernet	One onboard gigabit ethernet, Intel 82579	<b>-Windows 8 models</b>
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	<ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	<b>SECURITY</b>
Mouse	Optical Wheel Mouse (USB connector), black	<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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	More compatible accessories, please see O-DEM sheet
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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 (DEM5-1) March 2013

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

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

Processor	<b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache),</b> integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) <b>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)	<b>Tower</b>
Implementation	One LGA1155 socket	 <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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: <b>NVIDIA Quadro K2000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-DEM sheet</p>
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector <i>(Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</i> PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

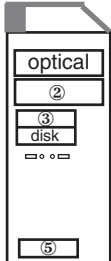
See footnotes for important warranty information  
 US model(s) announced March 19, 2013



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

1 Model in italics shows that this is a Global Model

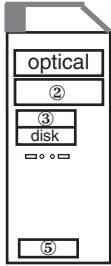
2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<b>Intel® Core™ i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) <b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache),</b> integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)	<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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16                      (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p><b>Intel AMT</b>                      Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b>                      Some: Windows® 7 Professional 64                      Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b>  <b>-Windows 7 models</b>                      • Rescue and Recovery®                      • Norton™ Internet Security (30 days of virus definitions)                      • Adobe® Reader®                      • Microsoft® Office 2013 preloaded; purchase product key to activate                      • Corel® WinDVD® (DVD±RW model(s))                      • Ulead® DVD MovieFactory® (DVD±RW model(s))  <b>-Windows 8 models</b>                      • Evernote®                      • Norton Internet Security (30 days of virus definitions)                      • Norton Studio                      • Skype™                      • Microsoft Office 2013 preloaded; purchase product key to activate                      • Cyberlink Power2Go (DVD±RW model(s))                      • Cyberlink PowerProducer (DVD±RW model(s))</p> <p><b>SECURITY</b>                      • Security chip (see information on left)                      • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)                      • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)                      • Power-on password                      • Administrator password                      • Boot sequence control                      • Boot without keyboard, mouse                      • Serial port I/O control                      • USB port disablement (front or all/individual)                      • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section) Some: <b>NVIDIA® Quadro® 410</b> , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: <b>NVIDIA Quadro K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W Some: <b>NVIDIA Quadro K2000</b> , PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosenesing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

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

Processor	<p><b>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p><b>Intel AMT</b>                      Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b>                      Some: Windows® 7 Professional 64                      Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b>  <b>-Windows 7 models</b>                      • Rescue and Recovery®                      • Norton™ Internet Security (30 days of virus definitions)                      • Adobe® Reader®                      • Microsoft® Office 2013 preloaded; purchase product key to activate                      • Corel® WinDVD® (DVD±RW model(s))                      • Ulead® DVD MovieFactory® (DVD±RW model(s))</p> <p><b>-Windows 8 models</b>                      • Evernote®                      • Norton Internet Security (30 days of virus definitions)                      • Norton Studio                      • Skype™                      • Microsoft Office 2013 preloaded; purchase product key to activate                      • Cyberlink Power2Go (DVD±RW model(s))                      • Cyberlink PowerProducer (DVD±RW model(s))</p> <p><b>SECURITY</b>                      • Security chip (see information on left)                      • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)                      • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)                      • Power-on password                      • Administrator password                      • Boot sequence control                      • Boot without keyboard, mouse                      • Serial port I/O control                      • USB port disablement (front or all/individual)                      • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>NVIDIA® Quadro® 410</b> , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: <b>NVIDIA Quadro K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	
Media reader	Media: 29-in-1 Media card reader on selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

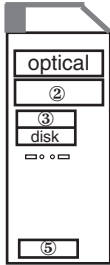
# ThinkStation® E31 Tower (2555) - TopSeller (March 2013) - V

Personal Systems Reference (PSREF)

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

1 Model in *italics* shows that this is a Global Model

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

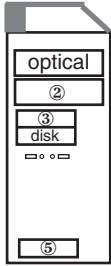
Processor	<p><b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p><i>Some:</i> <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p><i>Some:</i> <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some:</i> <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p><i>Some:</i> <b>NVIDIA Quadro K2000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p><b>Preloaded operating system<sup>20</sup></b></p> <p><i>Some:</i> Windows® 7 Professional 64</p> <p><i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p><i>Some:</i> Windows 8 Pro 64-bit</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Core™ WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Optical	DVD, DVD±RW, or Blu-ray, depending on model	<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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p>More compatible accessories, please see O-DEM sheet</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

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

Processor	<b>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache),</b> integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) <b>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz) <b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)	<b>Tower</b>
Implementation	One LGA1155 socket	 <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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	<b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>NVIDIA® Quadro® K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W Some: <b>NVIDIA Quadro K2000</b> , PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W	Bay 1: 5.25", 1.6" high, access, for optical Bay 2: 5.25", 1.6" high, access, open Bay 3: 3.5", 1" high, access, for media reader Bay 4: 3.5", 1" high, internal, for disk Bay 5: 3.5", 1" high, internal, for disk
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)
Optical	DVD, DVD±RW, or Blu-ray, depending on model	* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	Slot 2: half-length, full-height, PCIe 2.0 x1 Slot 3: half-length, full-height, 32-bit PCI 2.3 Slot 4: half-length, full-height, 32-bit PCI 2.3
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	<b>Intel AMT</b>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	Intel AMT supported on model(s) with Xeon processor
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	<b>Preloaded operating system<sup>20</sup></b> Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<b>Preloaded applications<sup>5</sup> (only some listed)</b>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	<b>-Windows 7 models</b>
Speaker	Internal speaker for business audio	<ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>
Ethernet	One onboard gigabit ethernet, Intel 82579	<b>-Windows 8 models</b>
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	<ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	<b>SECURITY</b>
Mouse	Optical Wheel Mouse (USB connector), black	<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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	More compatible accessories, please see O-DEM sheet
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

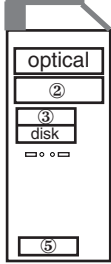
# ThinkStation® E31 Tower (2555) - TopSeller (May 2013)

Personal Systems Reference (PSREF)

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

1 Model in italics shows that this is a Global Model

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

Processor	<p><b>Intel® Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1290V2 processor (4C/8T, 3.7GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 4.1GHz), DDR3 memory controller (up to 1600MHz)</p>	<b>Tower</b>
Implementation	One LGA1155 socket	 <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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: <b>NVIDIA Quadro K2000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Optical	DVD, DVD±RW, or Blu-ray, depending on model	<p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p>
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Core™ WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	<p><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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Onboard SAS	None	More compatible accessories, please see O-DEM sheet
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

**Processor**  
**Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache)**, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  
**Intel Core i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)**, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  
**Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)**, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)  
**Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)**, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)  
**Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)**, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)  
**Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)**, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)

**Tower**



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

**Implementation** One LGA1155 socket

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

**Memory** 32GB max, **UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC**, four 240-pin DIMM sockets;

**Additional memory disclaimers**  
 • Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs  
 • Mixing of ECC and non-ECC memory is not supported

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

**Graphics**  
*Some:* **Intel HD Graphics** in processor, uses main memory, works along with discrete graphics to support multi-display;  
 Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000  
 Core i3-2120/2130: Intel HD Graphics 2000  
 Pentium/Celeron: Intel HD Graphics  
 (connector information please see **Rear ports** section)  
*Some:* **NVIDIA® Quadro® 400**, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W  
*Some:* **NVIDIA Quadro 600**, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W  
*Some:* **NVIDIA Quadro 2000**, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W

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

**Media reader** Media: 29-in-1 Media card reader, internal USB 2.0

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

**Disk(s)** 250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"  
 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"  
 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"

**Preloaded operating system<sup>20</sup>**  
 • Windows® 7 Professional 64

**Onboard SATA** Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset

**Onboard SAS** None

**Preloaded applications<sup>5</sup> (only some listed)**  
 • Rescue and Recovery®  
 • Norton® Internet Security (30 days of virus definitions)  
 • Adobe® Reader®  
 • Microsoft® Office 2013 preloaded; purchase product key to activate  
 • Corel® WinDVD® (DVD±RW model(s))  
 • Ulead® DVD MovieFactory® (DVD±RW model(s))

**Chipset** Intel C216 Chipset

**Front ports** Two USB 2.0, microphone (3.5mm), headphone (3.5mm)

**Rear ports** Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector  
 (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors)

**SECURITY**

PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable

**IEEE 1394 adptr** No onboard 1394 ports;  
 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear

- Security chip (see information on left)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

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

**Speaker** Internal speaker for business audio

**Ethernet** One onboard gigabit ethernet, Intel 82579

**Security chip** STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant

**ISV certifications**  
 Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

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

**Mouse** Optical Wheel Mouse (USB connector), black

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

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

**Limited Warranty** 3-year parts and labor, more Lenovo® services see S-TS sheet

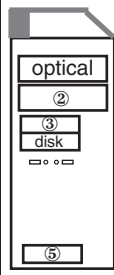
More compatible accessories, please see O-DEM sheet

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

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

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

**Tower**



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

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

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

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

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

**Preloaded operating system<sup>20</sup>**

- Windows® 7 Professional 64

**Preloaded applications<sup>5</sup> (only some listed)**

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

**SECURITY**

- Security chip (see information on left)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

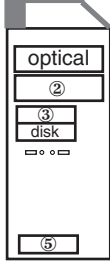
**ISV certifications**  
 Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

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

More compatible accessories, please see O-DEM sheet

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

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

Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500,</p> <p>Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000,</p> <p>Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000</p> <p>Core i7-3770: Intel HD Graphics 4000</p> <p>Core i5-3450/3470/3550: Intel HD Graphics 2500</p> <p>Core i3-3220/3240: Intel HD Graphics 2500</p> <p>Core i3-2120/2130: Intel HD Graphics 2000</p> <p>Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	<p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	<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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	<p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p>
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>

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



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

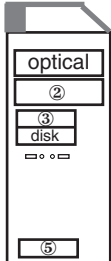
1 Model in italics shows that this is a Global Model  
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Additional memory disclaimers		
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: <b>NVIDIA Quadro K2000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	<p>Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector</p> <p>(Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</p> <p>PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable</p>	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-DEM sheet</p>	

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

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

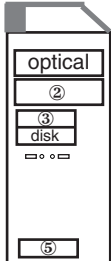
1 Model in italics shows that this is a Global Model  
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	<p><b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p>	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p><i>Some: NVIDIA® Quadro® 410</i>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some: NVIDIA Quadro K600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p><i>Some: NVIDIA Quadro K2000</i>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p><b>Preloaded operating system<sup>20</sup></b></p> <p><i>Some:</i> Windows® 7 Professional 64</p> <p><i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p><i>Some:</i> Windows 8 Pro 64-bit</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Optical	DVD, DVD±RW, or Blu-ray, depending on model	<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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p>More compatible accessories, please see O-DEM sheet</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

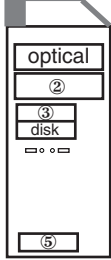
1 Model in italics shows that this is a Global Model  
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  <b>Intel Core i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)  <b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000,                      Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon® E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Additional memory disclaimers		
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)  <i>Some: NVIDIA® Quadro® 410</i>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W  <i>Some: NVIDIA Quadro K600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W  <i>Some: NVIDIA Quadro K2000</i>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"                      2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"                      SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	<p>Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector                      (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)                      PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable</p>	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	<p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating                      ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
	<p><b>Intel AMT</b>                      Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b>  <i>Some: Windows® 7 Professional 64</i>  <i>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</i>  <i>Some: Windows 8 Pro 64-bit</i></p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-DEM sheet</p>	

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

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

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

Processor	<p><b>Intel® Core™ i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)  <b>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p><b>Intel AMT</b>                      Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b>                      Some: Windows® 7 Professional 64                      Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b>  <b>-Windows 7 models</b>                      • Rescue and Recovery®                      • Norton™ Internet Security (30 days of virus definitions)                      • Adobe® Reader®                      • Microsoft® Office 2013 preloaded; purchase product key to activate                      • Corel® WinDVD® (DVD±RW model(s))                      • Ulead® DVD MovieFactory® (DVD±RW model(s))  <b>-Windows 8 models</b>                      • Evernote®                      • Norton Internet Security (30 days of virus definitions)                      • Norton Studio                      • Skype™                      • Microsoft Office 2013 preloaded; purchase product key to activate                      • Cyberlink Power2Go (DVD±RW model(s))                      • Cyberlink PowerProducer (DVD±RW model(s))</p> <p><b>SECURITY</b>                      • Security chip (see information on left)                      • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)                      • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)                      • Power-on password                      • Administrator password                      • Boot sequence control                      • Boot without keyboard, mouse                      • Serial port I/O control                      • USB port disablement (front or all/individual)                      • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p> <p>Some: <b>NVIDIA Quadro K2000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

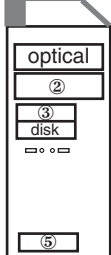
1 Model in italics shows that this is a Global Model  
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical</p> <p>Bay 2: 5.25", 1.6" high, access, open</p> <p>Bay 3: 3.5", 1" high, access, for media reader</p> <p>Bay 4: 3.5", 1" high, internal, for disk</p> <p>Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1</p> <p>Slot 3: half-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K2000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-DEM sheet</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

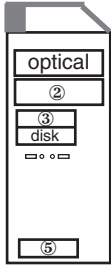
1 Model in italics shows that this is a Global Model  
 2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  <b>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache),</b> integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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	One LGA1155 socket	<p>Bay 1: 5.25", 1.6" high, access, for optical                  Bay 2: 5.25", 1.6" high, access, open                  Bay 3: 3.5", 1" high, access, for media reader                  Bay 4: 3.5", 1" high, internal, for disk                  Bay 5: 3.5", 1" high, internal, for disk</p>
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	<p>Slot 1: half-length, full-height, PCIe* x16                  (75w max, near CPU)                  * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                  Slot 2: half-length, full-height, PCIe 2.0 x1                  Slot 3: half-length, full-height, 32-bit PCI 2.3                  Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	<p><b>Intel AMT</b>                  Intel AMT supported on model(s) with Xeon processor</p>
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)                  Some: <b>NVIDIA® Quadro® 410,</b> PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W                  Some: <b>NVIDIA Quadro K600,</b> PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W                  Some: <b>NVIDIA Quadro K2000,</b> PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W</p>	<p><b>Preloaded operating system<sup>20</sup></b>                  Some: Windows® 7 Professional 64                  Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                  Some: Windows 8 Pro 64-bit</p>
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	<p><b>Preloaded applications<sup>5</sup> (only some listed)</b>  <b>-Windows 7 models</b>                  • Rescue and Recovery®                  • Norton™ Internet Security (30 days of virus definitions)                  • Adobe® Reader®                  • Microsoft® Office 2013 preloaded; purchase product key to activate                  • Corel® WinDVD® (DVD±RW model(s))                  • Ulead® DVD MovieFactory® (DVD±RW model(s))</p>
Optical	DVD, DVD±RW, or Blu-ray, depending on model	<p><b>-Windows 8 models</b>                  • Evernote®                  • Norton Internet Security (30 days of virus definitions)                  • Norton Studio                  • Skype™                  • Microsoft Office 2013 preloaded; purchase product key to activate                  • Cyberlink Power2Go (DVD±RW model(s))                  • Cyberlink PowerProducer (DVD±RW model(s))</p>
Drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"                  2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"                  SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p><b>SECURITY</b>                  • Security chip (see information on left)                  • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)                  • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)                  • Power-on password                  • Administrator password                  • Boot sequence control                  • Boot without keyboard, mouse                  • Serial port I/O control                  • USB port disablement (front or all/individual)                  • Chassis intrusion switch available on selected model(s)</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	<p>More compatible accessories, please see O-DEM sheet</p>
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

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

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

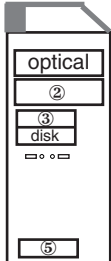
1 Model in italics shows that this is a Global Model  
 2 Win7 Pro64(DG) = Windows 7 Professional 64, preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<b>Intel® Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</b> <b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</b> <b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</b>	<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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p> <p><b>Intel AMT</b>                      Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b>                      Some: Windows® 7 Professional 64                      Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b>  <b>-Windows 7 models</b>                      • Rescue and Recovery®                      • Norton™ Internet Security (30 days of virus definitions)                      • Adobe® Reader®                      • Microsoft® Office 2013 preloaded; purchase product key to activate                      • Corel® WinDVD® (DVD±RW model(s))                      • Ulead® DVD MovieFactory® (DVD±RW model(s))</p> <p><b>-Windows 8 models</b>                      • Evernote®                      • Norton Internet Security (30 days of virus definitions)                      • Norton Studio                      • Skype™                      • Microsoft Office 2013 preloaded; purchase product key to activate                      • Cyberlink Power2Go (DVD±RW model(s))                      • Cyberlink PowerProducer (DVD±RW model(s))</p> <p><b>SECURITY</b>                      • Security chip (see information on left)                      • Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)                      • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)                      • Power-on password                      • Administrator password                      • Boot sequence control                      • Boot without keyboard, mouse                      • Serial port I/O control                      • USB port disablement (front or all/individual)                      • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-DEM sheet</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</b>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>NVIDIA® Quadro® 410</b> , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: <b>NVIDIA Quadro K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	

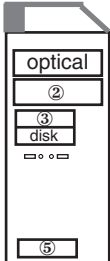
See footnotes for important warranty information  
 US model(s) announced March 19, 2013

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

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

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

**Tower**



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

- Slot 1: half-length, full-height, PCIe\* x 16 (75w max, near CPU)
- \* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models
- Slot 2: half-length, full-height, PCIe 2.0 x1
- Slot 3: half-length, full-height, 32-bit PCI 2.3
- Slot 4: half-length, full-height, 32-bit PCI 2.3

**Intel AMT**

Intel AMT supported on model(s) with Xeon processor

**Preloaded operating system<sup>20</sup>**

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

**Preloaded applications<sup>5</sup> (only some listed)**

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

**SECURITY**

- Security chip (see information on left)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse
- Serial port I/O control
- USB port disablement (front or all/individual)
- Chassis intrusion switch available on selected model(s)

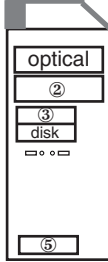
More compatible accessories, please see O-DEM sheet

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



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

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

Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1240V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1270V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1290V2 processor (4C/8T, 3.7GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 4.1GHz), DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Additional memory disclaimers		
Graphics	<p><i>Some:</i> <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;                      Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000                      Core i3-2120/2130: Intel HD Graphics 2000                      Pentium/Celeron: Intel HD Graphics                      (connector information please see <b>Rear ports</b> section)</p> <p><i>Some:</i> <b>NVIDIA® Quadro® 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p><i>Some:</i> <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p><i>Some:</i> <b>NVIDIA Quadro 2000</b>, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>	
Media reader	<i>Media:</i> 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p><b>250GB/500GB/1TB/2TB/3TB SATA:</b> SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p><b>150GB/300GB/600GB SATA:</b> SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p><b>128GB/180GB/256GB SSD:</b> Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579 STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating                      ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-DEM sheet</p>

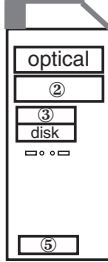
See footnotes for important warranty information  
 US model(s) announced May 15 (18U/21U) or June 26 (11U/12U/13U/14U/15U), 2012

# ThinkStation® E31 Tower (2553) - GMP II

Personal Systems Reference (PSREF)

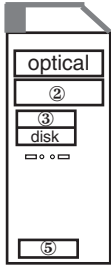
Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	1394 Global	Chassis intrusion switch	PS/2 rear I/O	Win7 preload
2553-16U	Core i7-3770	1600MHz Non-ECC	1x4GB	No	180GB SSD+1TB SATA	Media	DVD±RW	Intel HD 4000	No	Global	Switch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

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

Processor	<p><b>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000                      Core i7-3770: Intel HD Graphics 4000                      Core i5-3450/3470/3550: Intel HD Graphics 2500                      Core i3-2120/2130: Intel HD Graphics 2000                      Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 2000</b>, PCIe x16 adapter, 1GB, two DisplayPort™, one dual-link DVI-I, 62W</p>	
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating                      ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-DEM sheet</p>

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

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 (DEM2-3) July 2012

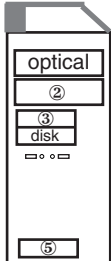
Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Preload OS
2553-A4U	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	No	DVD±RW	Quadro 410	No	Global	Switch	No	Win8 Pro64
Processor	<b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)												
Implementation	One LGA1155 socket												
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;												
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of ECC and non-ECC memory is not supported</li> </ul>												
Graphics	Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; <i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000 <i>Core i7-3770:</i> Intel HD Graphics 4000 <i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500 <i>Core i3-2120/2130:</i> Intel HD Graphics 2000 <i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see <b>Rear ports</b> section) Some: <b>VIDIA® Quadro® 410</b> , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W												
Media reader	Media: 29-in-1 Media card reader, internal USB 2.0												
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"												
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset												
Onboard SAS	None												
Chipset	<b>Intel C216 Chipset</b>												
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)												
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable												
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear												
Audio	High Definition (HD) Audio, Realtek® ALC662 codec												
Speaker	Internal speaker for business audio												
Ethernet	One onboard gigabit ethernet, Intel 82579												
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant												
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black												
Mouse	Optical Wheel Mouse (USB connector), black												
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>												
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet												
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant												
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>												
								<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>27.56 lb (12.5kg) max configuration</li> <li>25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>					
								<b>Intel AMT</b> Intel AMT supported on model(s) with Xeon processor					
								<b>Preloaded operating system<sup>20</sup></b> Some: Windows® 7 Professional 64 Some: Windows 8 Pro 64-bit					
								<b>Preloaded applications<sup>5</sup> (only some listed)</b> <b>-Windows 7 models</b> <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton™ Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <b>-Windows 8 models</b> <ul style="list-style-type: none"> <li>Intel AppUp®</li> <li>Evernote®</li> <li>Norton Internet Security (30 days of virus definitions)</li> <li>Norton Studio</li> <li>Skype™</li> <li>Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>Cyberlink Power2Go (DVD±RW model(s))</li> <li>Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>					
								<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/individual)</li> <li>Chassis intrusion switch available on selected model(s)</li> </ul>					
More compatible accessories, please see O-DEM sheet													

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

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

<sup>1</sup> Model in italics shows that this is a Global Model

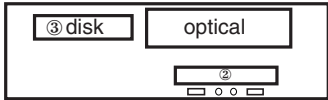
<sup>2</sup> Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<b>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b> , integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz) <b>Intel Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b> , Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)	<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>• 27.56 lb (12.5kg) max configuration</li> <li>• 25-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> <p>Bay 1: 5.25", 1.6" high, access, for optical                      Bay 2: 5.25", 1.6" high, access, open                      Bay 3: 3.5", 1" high, access, for media reader                      Bay 4: 3.5", 1" high, internal, for disk                      Bay 5: 3.5", 1" high, internal, for disk</p> <p>Slot 1: half-length, full-height, PCIe* x16 (75w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: half-length, full-height, PCIe 2.0 x1                      Slot 3: half-length, full-height, 32-bit PCI 2.3                      Slot 4: half-length, full-height, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>NVIDIA® Quadro® K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W Some: <b>NVIDIA Quadro K2000</b> , PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, 51W	
Media reader	29-in-1 Media card reader in selected models, internal USB 2.0	
Optical	DVD, DVD±RW, or Blu-ray, depending on model	
Drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5" SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector <i>(Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)</i> PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	280 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers™ Computing Bronze, 80 PLUS™ Bronze qualified</b>	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
ThinkVantage	Supports ThinkVantage® technologies	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64 Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-DEM sheet</p>

# ThinkStation® E31 SFF (3695) - TopSeller

Personal Systems Reference (PSREF)

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

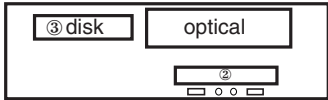
Processor	<p><b>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache),</b> integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Core i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>Raven black color; metal case</li> <li>13.35"W x 15.0"D x 3.93"H</li> <li>339mm W x 381.1mm D x 99.7mm H</li> <li>16.53 lb (7.5kg) max configuration</li> <li>11-liter</li> <li>Toolless top cover removal</li> <li>Toolless disk and optical drive removal</li> <li>Toolless adapter retention</li> <li>Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk            Bay 2: 3.5", 0.5" high, access, for media reader            Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)            * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1            Slot 3: Low Profile, 32-bit PCI 2.3            Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000            Core i3-2120/2130: Intel HD Graphics 2000            Pentium/Celeron: Intel HD Graphics            (connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 400,</b> PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600,</b> PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenosing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton® Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>Security chip (see information on left)</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/individual)</li> <li>Chassis intrusion switch available on selected model(s)</li> </ul> <p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified            RoHS-compliant            EPEAT™ Gold rating            ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

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

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

Personal Systems Reference (PSREF)

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

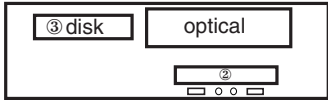
Processor	<p><b>Intel® Core™ i5-3450 processor (4C/4T, 3.1GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.5GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache),</b> integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                      Bay 2: 3.5", 0.5" high, access, for media reader                      Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p><i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000  <i>Core i7-3770:</i> Intel HD Graphics 4000  <i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500  <i>Core i3-2120/2130:</i> Intel HD Graphics 2000  <i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 400,</b> PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600,</b> PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p><b>250GB/500GB/1TB/2TB/3TB SATA:</b> SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p><b>150GB/300GB/600GB SATA:</b> SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p><b>128GB/180GB/256GB SSD:</b> Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579	
Keyboard	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Mouse	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Vertical Stand	Optical Wheel Mouse (USB connector), black	
Power supply	Some: Vertical stand with retractable tongue for vertical orientation 240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating                      ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

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

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

Personal Systems Reference (PSREF)

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

Processor	<p><b>Intel® Core™ i3-2120 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                      Bay 2: 3.5", 0.5" high, access, for media reader                      Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <p>Additional memory disclaimers</p> <ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000                      Core i7-3770: Intel HD Graphics 4000                      Core i5-3450/3470/3550: Intel HD Graphics 2500                      Core i3-2120/2130: Intel HD Graphics 2000                      Pentium/Celeron: Intel HD Graphics</p> <p>(connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Intel AppUp®</li> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>

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

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 (ROC-4-1) November 2012

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

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

Processor	<b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache),</b> integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz) <b>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)	<b>Small Desktop</b> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                      Bay 2: 3.5", 0.5" high, access, for media reader                      Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models                      Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p> <p><b>Preloaded operating system<sup>20</sup></b>                      Some: Windows® 7 Professional 64                      Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b>                      -Windows 7 models                      • Rescue and Recovery®                      • Norton™ Internet Security (30 days of virus definitions)                      • Adobe® Reader®                      • Microsoft® Office 2013 preloaded; purchase product key to activate                      • Corel® WinDVD® (DVD±RW model(s))                      • Ulead® DVD MovieFactory® (DVD±RW model(s))                      -Windows 8 models                      • Evernote®                      • Norton Internet Security (30 days of virus definitions)                      • Norton Studio                      • Skype™                      • Microsoft Office 2013 preloaded; purchase product key to activate                      • Cyberlink Power2Go (DVD±RW model(s))                      • Cyberlink PowerProducer (DVD±RW model(s))</p> <p><b>SECURITY</b>                      • Security chip (see information on left)                      • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)                      • Power-on password                      • Administrator password                      • Boot sequence control                      • Boot without keyboard, mouse                      • Serial port I/O control                      • USB port disablement (front or all/individual)                      • Chassis intrusion switch available on selected model(s)</p> <p>More compatible accessories, please see O-ROC sheet</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section) Some: <b>NVIDIA® Quadro® 410</b> , PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W Some: <b>NVIDIA Quadro K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

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



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

Personal Systems Reference (PSREF)

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

<sup>1</sup> Model in italics shows that this is a Global Model

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

Processor	<p><b>Intel® Core™ i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                      Bay 2: 3.5", 0.5" high, access, for media reader                      Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p><i>Some: NVIDIA® Quadro® 410</i>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some: NVIDIA Quadro K600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adpdr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p><b>Preloaded operating system<sup>20</sup></b></p> <p><i>Some:</i> Windows® 7 Professional 64</p> <p><i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p><i>Some:</i> Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>

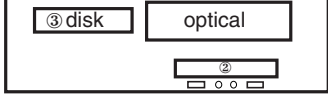
# ThinkStation® E31 SFF (3695) - TopSeller (March 2013) - III

Personal Systems Reference (PSREF)

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

<sup>1</sup> Model in italics shows that this is a Global Model

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

Processor	<p><b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3470 processor (4C/4T, 3.2GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.6GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                  Bay 2: 3.5", 0.5" high, access, for media reader                  Bay 3: 3.5", 1" high, internal, for disk</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                  * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                  Slot 3: Low Profile, 32-bit PCI 2.3                  Slot 4: Low Profile, 32-bit PCI 2.3</p>
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>

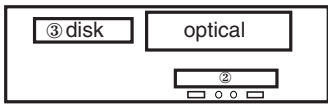
# ThinkStation® E31 SFF (3695) - TopSeller (March 2013) - IV

Personal Systems Reference (PSREF)

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

<sup>1</sup> Model in italics shows that this is a Global Model

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

Processor	<p><b>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                  Bay 2: 3.5", 0.5" high, access, for media reader                  Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                  * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                  Slot 3: Low Profile, 32-bit PCI 2.3                  Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p><i>Some:</i> <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p><i>Some:</i> <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p><i>Some:</i> <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p><b>GREENGUARD®</b> certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p><b>Preloaded operating system<sup>20</sup></b></p> <p><i>Some:</i> Windows® 7 Professional 64</p> <p><i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p><i>Some:</i> Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>

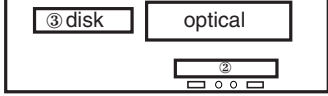
# ThinkStation® E31 SFF (3695) - TopSeller (May 2013)

Personal Systems Reference (PSREF)

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

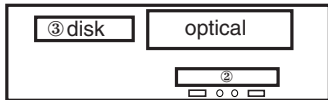
<sup>1</sup> Model in italics shows that this is a Global Model

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

Processor	<b>Intel® Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b> , Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz) <b>Intel Xeon E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache)</b> , Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz)	<b>Small Desktop</b>  <ul style="list-style-type: none"> <li>Raven black color; metal case</li> <li>13.35"W x 15.0"D x 3.93"H</li> <li>339mm W x 381.1mm D x 99.7mm H</li> <li>16.53 lb (7.5kg) max configuration</li> <li>11-liter</li> <li>Toolless top cover removal</li> <li>Toolless disk and optical drive removal</li> <li>Toolless adapter retention</li> <li>Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                      Bay 2: 3.5", 0.5" high, access, for media reader                      Bay 3: 3.5", 1" high, internal, for disk</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	<p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p><i>Some: Intel HD Graphics</i> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p><i>Some: NVIDIA® Quadro® 410</i>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 37W</p> <p><i>Some: NVIDIA Quadro K600</i>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p><b>Preloaded operating system<sup>20</sup></b></p> <p><i>Some: Windows® 7 Professional 64</i>  <i>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</i>  <i>Some: Windows 8 Pro 64-bit</i></p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton™ Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>Evernote®</li> <li>Norton Internet Security (30 days of virus definitions)</li> <li>Norton Studio</li> <li>Skype™</li> <li>Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>Cyberlink Power2Go (DVD±RW model(s))</li> <li>Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	<p>More compatible accessories, please see O-ROC sheet</p>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

# ThinkStation® E31 SFF (3690)

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

Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                  Bay 2: 3.5", 0.5" high, access, for media reader                  Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                  * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models                  Slot 2: Low Profile, PCIe 2.0 x1                  Slot 3: Low Profile, 32-bit PCI 2.3                  Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;</p> <p>Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000                  Core i3-2120/2130: Intel HD Graphics 2000                  Pentium/Celeron: Intel HD Graphics                  (connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	<p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul>
Rear ports	<p>Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector</p> <p>(Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors)</p> <p>PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable</p>	<p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec	
Ethernet	Internal speaker for business audio	
Security chip	One onboard gigabit ethernet, Intel 82579	
Keyboard	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Mouse	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Vertical Stand	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Power supply	Optical Wheel Mouse (USB connector), black	
Limited Warranty	<p>Some: Vertical stand with retractable tongue for vertical orientation</p> <p>240 watts with variable speed fan, autotensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b></p>	<p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                  RoHS-compliant                  EPEAT™ Gold rating                  ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

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

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

Processor	<b>Intel® Core™ i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)	<b>Small Desktop</b> 
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	<ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                      Bay 2: 3.5", 0.5" high, access, for media reader                      Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	Some: <b>NVIDIA® Quadro® 400,</b> PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W Some: <b>NVIDIA Quadro 600,</b> PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<p align="center"><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p align="center"><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p align="center"><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p align="center"><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p align="center"><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating                      ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>

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

Type-model	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	Disk(s)	Media reader	SATA optical	2nd Disk bay	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	PS/2 rear I/O	Vertical stand
3690-KQU	Core i3-2130	1600MHz ECC	1x4GB	No	1x128GB SSD	No	Slim DVD±RW	2nd	Intel HD 2000	No	No	Switch	No	Stand
3690-KRU	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 400	No	No	Switch	No	Stand
3690-KSU	Core i7-3770	1600MHz Non-ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 600	No	No	Switch	No	Stand
3690-KTU	Xeon E3-1230V2	1600MHz ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 400	No	No	Switch	No	Stand
3690-KUU	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x180GB SSD	No	Slim DVD±RW	2nd	Quadro 400	No	No	Switch	No	Stand
3690-KVU	Xeon E3-1275V2	1600MHz ECC	1x4GB	No	1x256GB SSD	No	Slim DVD±RW	2nd	Quadro 600	No	No	Switch	No	Stand
3690-KWU	Core i3-2130	1600MHz ECC	1x4GB	No	1x500GB SATA	No		2nd	Intel HD 2000	No	No	Switch	No	Stand
3690-KYU	Core i5-3550	1600MHz Non-ECC	1x4GB	No	1x1TB SATA	No		2nd	Quadro 400	No	No	Switch	No	Stand
3690-KZU	Xeon E3-1230V2	1600MHz ECC	1x4GB	No	1x500GB SATA	No		2nd	Quadro 400	No	No	Switch	No	Stand
3690-J1U	Xeon E3-1245V2	1600MHz ECC	1x4GB	No	1x1TB SATA	No		2nd	Quadro 600	No	No	Switch	No	Stand
Processor	<p><b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)  <b>Intel Core i5-3550 processor (4C/4T, 3.3GHz, 6MB Cache),</b> integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache),</b> integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon® E3-1230V2 processor (4C/8T, 3.3GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.7GHz), DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p>								<p><b>Small Desktop</b>                      (1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p>  <p>(3) 2nd disk</p>  <p>Bay 1: 5.25", 1.6" high, supports one of the following:                      (1) optional 5.25", 1.6" high optical, access                      (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal)                      (3) 3.5" 2nd disk drive bay, internal                      Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)                      Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                      * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models                      Slot 2: Low Profile, PCIe 2.0 x1                      Slot 3: Low Profile, 32-bit PCI 2.3                      Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> <li>Raven black color; metal case</li> <li>13.35"W x 15.0"D x 3.93"H</li> <li>339mm W x 381.1mm D x 99.7mm H</li> <li>16.53 lb (7.5kg) max configuration</li> <li>11-liter</li> <li>Toolless top cover removal</li> <li>Toolless disk and optical drive removal</li> <li>Toolless adapter retention</li> <li>Recessed power button</li> </ul> <p><b>Preloaded operating system<sup>20</sup></b>                      Some: Windows® 7 Professional 64                      Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                      Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b>  <b>-Windows 7 models</b>                      • Rescue and Recovery®                      • Norton™ Internet Security (30 days of virus definitions)                      • Adobe® Reader®                      • Microsoft® Office 2013 preloaded; purchase product key to activate                      • Corel® WinDVD® (DVD±RW model(s))                      • Ulead® DVD MovieFactory® (DVD±RW model(s))  <b>-Windows 8 models</b>                      • Norton Internet Security (30 days of virus definitions)                      • Norton Studio                      • Microsoft Office 2013 preloaded; purchase product key to activate                      • Cyberlink Power2Go (DVD±RW model(s))                      • Cyberlink PowerProducer (DVD±RW model(s))</p>					
Implementation	One LGA1155 socket													
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;</p> <ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of ECC and non-ECC memory is not supported</li> </ul>													
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of ECC and non-ECC memory is not supported</li> </ul>													
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display;                      Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000                      Core i7-3770: Intel HD Graphics 4000                      Core i5-3450/3470/3550: Intel HD Graphics 2500                      Core i3-2120/2130: Intel HD Graphics 2000                      Pentium/Celeron: Intel HD Graphics                      (connector information please see <b>Rear ports</b> section)                      Some: <b>NVIDIA® Quadro® 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W                      Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>													
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0													
Optical	Some: DVD±RW, SATA, slim													
Disk(s)	<p>250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5"                      150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5"                      128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>													
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)													
Onboard SAS	None													
Chipset	<b>Intel C216 Chipset</b>													
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)													
Rear ports	<p>Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector                      (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors)                      PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable</p>													
IEEE 1394 adptr	<p>No onboard 1394 ports;                      1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear</p>													
Audio Speaker	High Definition (HD) Audio, Realtek® ALC662 codec													
Ethernet	Internal speaker for business audio													
Security chip	One onboard gigabit ethernet, Intel 82579													
Keyboard	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant													
Mouse	Preferred Pro USB Keyboard (USB connector), 104-key, black													
Vertical Stand	Optical Wheel Mouse (USB connector), black													
Power supply	<p>Some: Vertical stand with retractable tongue for vertical orientation                      240 watts with variable speed fan, autosensing, 85% PSU,  <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b></p>													
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet													
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>													
Intel AMT	Intel AMT supported on model(s) with Xeon processor													
									<p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>Security chip (see information on left)</li> <li>Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>Power-on and 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/individual)</li> <li>Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>					

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

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

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


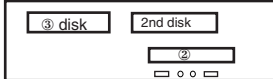
Processor	<p><b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p> <p>(3) 2nd disk</p>
Implementation	One LGA1155 socket	
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	<p>Bay 1: 5.25", 1.6" high, supports one of the following:</p> <ul style="list-style-type: none"> <li>(1) optional 5.25", 1.6" high optical, access</li> <li>(2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal)</li> <li>(3) 3.5" 2nd disk drive bay, internal</li> </ul> <p>Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)</p> <p>Bay 3: 3.5", 1" high, internal, for disk drive</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1</p> <p>Slot 3: Low Profile, 32-bit PCI 2.3</p> <p>Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> <li>Raven black color; metal case</li> <li>13.35"W x 15.0"D x 3.93"H</li> <li>339mm W x 381.1mm D x 99.7mm H</li> <li>16.53 lb (7.5kg) max configuration</li> <li>11-liter</li> <li>Toolless top cover removal</li> <li>Toolless disk and optical drive removal</li> <li>Toolless adapter retention</li> <li>Recessed power button</li> </ul>
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	<p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton™ Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>Norton Internet Security (30 days of virus definitions)</li> <li>Norton Studio</li> <li>Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>Cyberlink Power2Go (DVD±RW model(s))</li> <li>Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	<p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>Security chip (see information on left)</li> <li>Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>Power-on and 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/individual)</li> <li>Chassis intrusion switch available on selected model(s)</li> </ul>
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		More compatible accessories, please see O-ROC sheet



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

1 Model in italics shows that this is a Global Model

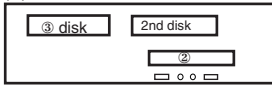
2 Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i5-3570 processor (4C/4T, 3.4GHz, 6MB Cache)</b>, integrated Intel HD Graphics 2500, Turbo Boost 2.0 (up to 3.8GHz), DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p>  <p>(3) 2nd disk</p> 
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b>, four 240-pin DIMM sockets;</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Additional memory disclaimers		
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	<p>Bay 1: 5.25", 1.6" high, supports one of the following:</p> <ul style="list-style-type: none"> <li>(1) optional 5.25", 1.6" high optical, access</li> <li>(2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal)</li> <li>(3) 3.5" 2nd disk drive bay, internal</li> </ul> <p>Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)</p> <p>Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)</p> <p>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1</p> <p>Slot 3: Low Profile, 32-bit PCI 2.3</p> <p>Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul>
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	
		<p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on and 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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>

Type-model <sup>1</sup>	Processor	Memory (MHz/ECC)	Memory DIMMs	Pre-conf RAID	SATA drive(s)	2nd drive bay	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Vertical stand	Preload OS <sup>2</sup>
3690-QWU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	2nd	No	Slim DVD±RW	Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-QYU	Xeon E3-1275V2	1600MHz Non-ECC	1x4GB	No	1x256GB SSD	2nd	No	Slim DVD±RW	Quadro K600	No	Switch	Stand	Win8 Pro64
3690-QZU	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		No		Quadro K600	No	Switch	Stand	Win7 Pro64(DG)
3690-R1U	Xeon E3-1245V2	1600MHz Non-ECC	1x4GB	No	1x1TB 3.5"		No		Quadro K600	No	Switch	Stand	Win8 Pro64

<sup>1</sup> Model in italics shows that this is a Global Model

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

Processor	<p><b>Intel® Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1275V2 processor (4C/8T, 3.5GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.9GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p>  <p>(3) 2nd disk</p>  <p>Bay 1: 5.25", 1.6" high, supports one of the following:                  (1) optional 5.25", 1.6" high optical, access                  (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal)                  (3) 3.5" 2nd disk drive bay, internal</p> <p>Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)</p> <p>Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                  * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</p> <p>Slot 2: Low Profile, PCIe 2.0 x1</p> <p>Slot 3: Low Profile, 32-bit PCI 2.3</p> <p>Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64</p> <p>Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit</p> <p>Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on and 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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>
Implementation	One LGA1155 socket	
Memory	32GB max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<b>NVIDIA Quadro K600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

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

# ThinkStation® E31 SFF (3690) - May 2013

Personal Systems Reference (PSREF)

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

<sup>1</sup> Model in italics shows that this is a Global Model

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

Processor	<p><b>Intel® Xeon® E3-1245V2 processor (4C/8T, 3.4GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 3.8GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E3-1280V2 processor (4C/8T, 3.6GHz, 8MB Cache),</b> Turbo Boost 2.0 (up to 4.0GHz), DDR3 memory controller (up to 1600MHz)</p> <p>One LGA1155 socket</p>	<p><b>Small Desktop</b></p> <p>(1) Optional 1.6" high optical (2) Slim optical + 2nd disk</p> <p>(3) 2nd disk</p> <p>Bay 1: 5.25", 1.6" high, supports one of the following:            (1) optional 5.25", 1.6" high optical, access            (2) 5.25" slim optical (access) and 3.5" 2nd disk drive bay (internal)            (3) 3.5" 2nd disk drive bay, internal            Bay 2: 3.5", 0.5" high, access, for optional media reader (not available on slim optical models)            Bay 3: 3.5", 1" high, internal, for disk drive</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)            * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models            Slot 2: Low Profile, PCIe 2.0 x1            Slot 3: Low Profile, 32-bit PCI 2.3            Slot 4: Low Profile, 32-bit PCI 2.3</p> <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p><b>Preloaded operating system<sup>20</sup></b>            Some: Windows® 7 Professional 64            Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit            Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</li> <li>• Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)</li> <li>• Power-on and 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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>
Implementation	One LGA1155 socket	
Memory	<p><b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Additional memory disclaimers	<p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of ECC and non-ECC memory is not supported</p>	
Graphics	<p>Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)</p> <p>Some: <b>NVIDIA® Quadro® 410</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 37W</p> <p>Some: <b>NVIDIA Quadro K600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 41W</p>	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	<p>3.5": SATA 6.0Gb/s, 7200 rpm, 3.5"</p> <p>2.5": SATA 6.0Gb/s, 10000 rpm, 2.5"</p> <p>SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"</p>	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	<p>GREENGUARD® certified</p> <p>RoHS-compliant</p> <p>EPEAT™ Gold rating</p> <p>ENERGY STAR 5.2-compliant</p>	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
Intel AMT	Intel AMT supported on model(s) with Xeon processor	

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

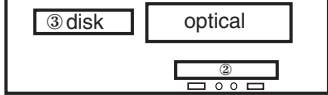
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 (ROC7-2) June 2013

# ThinkStation® E31 SFF (3691) - GMP

Personal Systems Reference (PSREF)

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

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

Processor	<b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache)</b> , integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz) <b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b> , Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)	<b>Small Desktop</b>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<b>Intel HD Graphics</b> in processor, uses main memory, can work along with discrete graphics to support multi-display; Xeon E3-1225V2/1245V2/1275V2: Intel HD Graphics P4000 Core i3-2120/2130: Intel HD Graphics 2000 Pentium/Celeron: Intel HD Graphics (connector information please see <b>Rear ports</b> section)	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosenesing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
		<b>Intel AMT</b> Intel AMT supported on model(s) with Xeon processor  <b>Preloaded operating system<sup>20</sup></b> • Windows® 7 Professional 64  <b>Preloaded applications<sup>5</sup> (only some listed)</b> • Rescue and Recovery® • Norton® Internet Security (30 days of virus definitions) • Adobe® Reader® • Microsoft® Office 2013 preloaded; purchase product key to activate • Corel® WinDVD® (DVD±RW model(s)) • Ulead® DVD MovieFactory® (DVD±RW model(s))
		<b>SECURITY</b> • Security chip (see information on left) • Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal) • Power-on password • Administrator password • Boot sequence control • Boot without keyboard, mouse • Serial port I/O control • USB port disablement (front or all/individual) • Chassis intrusion switch available on selected model(s)
		<b>ISV certifications</b> Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>  GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant  More compatible accessories, please see O-ROC sheet

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

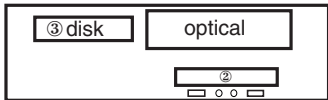
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(ROC1-3) May 2012

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

Personal Systems Reference (PSREF)

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

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

Processor	<b>Intel® Core™ i3-2130 processor (2C/4T, 3.4GHz, 3MB Cache),</b> integrated Intel HD Graphics 2000, DDR3 memory controller (up to 1333MHz)	<b>Small Desktop</b>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>
Additional memory disclaimers		
Graphics	Some: <b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; <i>Xeon E3-1225V2/1245V2/1275V2:</i> Intel HD Graphics P4000 <i>Core i7-3770:</i> Intel HD Graphics 4000 <i>Core i5-3450/3470/3550:</i> Intel HD Graphics 2500 <i>Core i3-3220/3240:</i> Intel HD Graphics 2500 <i>Core i3-2120/2130:</i> Intel HD Graphics 2000 <i>Pentium/Celeron:</i> Intel HD Graphics (connector information please see <b>Rear ports</b> section) Some: <b>NVIDIA® Quadro® 410,</b> PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W	
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	<ul style="list-style-type: none"> <li>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk</li> <li>Bay 2: 3.5", 0.5" high, access, for media reader</li> <li>Bay 3: 3.5", 1" high, internal, for disk</li> </ul>
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	<i>250GB/500GB/1TB/2TB/3TB SATA:</i> SATA 6.0Gb/s, 7200 rpm, 3.5" <i>150GB/300GB/600GB SATA:</i> SATA 6.0Gb/s, 10000 rpm, 2.5" <i>128GB/180GB/256GB SSD:</i> Solid State Drive, SATA 6.0Gb/s, 2.5"	<ul style="list-style-type: none"> <li>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)</li> <li>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models</li> <li>Slot 2: Low Profile, PCIe 2.0 x1</li> <li>Slot 3: Low Profile, 32-bit PCI 2.3</li> <li>Slot 4: Low Profile, 32-bit PCI 2.3</li> </ul>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	<p align="center"><b>Intel AMT</b></p> Intel AMT supported on model(s) with Xeon processor
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	<p align="center"><b>Preloaded operating system<sup>20</sup></b></p> Some: Windows® 7 Professional 64 Some: Windows 8 Pro 64-bit <p align="center"><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> - <b>Windows 7 models</b> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> - <b>Windows 8 models</b> <ul style="list-style-type: none"> <li>• Intel AppUp®</li> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) <i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	<p align="center"><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	More compatible accessories, please see O-ROC sheet
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	

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

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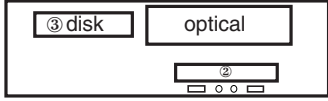
# ThinkStation® E31 SFF (3691) - GMP (February 2013)

Personal Systems Reference (PSREF)

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

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

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

Processor	<b>Intel® Xeon® E3-1270V2 processor (4C/8T, 3.5GHz, 8MB Cache), Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)</b>	<b>Small Desktop</b>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC, four 240-pin DIMM sockets;</b>	<ul style="list-style-type: none"> <li>• Bay 1: 5.25", 1.6" high, access, for optical/2nd disk</li> <li>• Bay 2: 3.5", 0.5" high, access, for media reader</li> <li>• Bay 3: 3.5", 1" high, internal, for disk</li> </ul>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<i>Some:</i> <b>NVIDIA® Quadro® 410</b> , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 38W <i>Some:</i> <b>NVIDIA Quadro 600</b> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W	Slot 1: Low Profile, PCIe* x16 (45w max, near CPU) * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models Slot 2: Low Profile, PCIe 2.0 x1 Slot 3: Low Profile, 32-bit PCI 2.3 Slot 4: Low Profile, 32-bit PCI 2.3
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Disk(s)	250GB/500GB/1TB/2TB/3TB SATA: SATA 6.0Gb/s, 7200 rpm, 3.5" 150GB/300GB/600GB SATA: SATA 6.0Gb/s, 10000 rpm, 2.5" 128GB/180GB/256GB SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	<b>Intel AMT</b> Intel AMT supported on model(s) with Xeon processor  <b>Preloaded operating system<sup>20</sup></b> <i>Some:</i> Windows® 7 Professional 64 <i>Some:</i> Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit <i>Some:</i> Windows 8 Pro 64-bit  <b>Preloaded applications<sup>5</sup> (only some listed)</b> <b>-Windows 7 models</b> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <b>-Windows 8 models</b> <ul style="list-style-type: none"> <li>• Intel AppUp®</li> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul>
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	
Onboard SAS	None	<b>SECURITY</b> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul>
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	More compatible accessories, please see O-ROC sheet
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i3-2120/2130, Pentium, and Celeron processors) PS/2 models: additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosensing, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	

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

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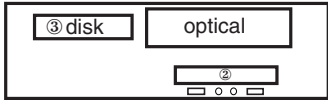
# ThinkStation® E31 SFF (3691) - GMP (March 2013)

Personal Systems Reference (PSREF)

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

<sup>1</sup> Model in italics shows that this is a Global Model

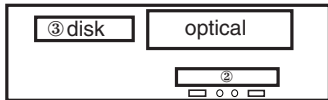
<sup>2</sup> Win7 Pro64(DG) = Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit

Processor	<p><b>Intel® Core™ i3-3220 processor (2C/4T, 3.3GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Core i3-3240 processor (2C/4T, 3.4GHz, 3MB Cache)</b>, integrated Intel HD Graphics 2500, DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon® E3-1225V2 processor (4C/4T, 3.2GHz, 8MB Cache)</b>, Turbo Boost 2.0 (up to 3.6GHz), integrated Intel HD Graphics P4000, DDR3 memory controller (up to 1600MHz)</p>	<p><b>Small Desktop</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul> <p>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk                  Bay 2: 3.5", 0.5" high, access, for media reader                  Bay 3: 3.5", 1" high, internal, for disk</p> <p>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)                  * PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon models                  Slot 2: Low Profile, PCIe 2.0 x1                  Slot 3: Low Profile, 32-bit PCI 2.3                  Slot 4: Low Profile, 32-bit PCI 2.3</p>
Implementation	One LGA1155 socket	
Memory	<b>32GB</b> max, <b>UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC</b> , four 240-pin DIMM sockets;	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>	
Graphics	<b>Intel HD Graphics</b> in processor, uses main memory, works along with discrete graphics to support multi-display; (detailed graphics model name please see <b>Processor</b> section, connector information please see <b>Rear ports</b> section)	
Media reader	Media: 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	DVD, slim DVD, DVD±RW, slim DVD±RW, or Blu-ray, depending on model	
SATA drive(s)	3.5": SATA 6.0Gb/s, 7200 rpm, 3.5" 2.5": SATA 6.0Gb/s, 10000 rpm, 2.5" SSD: Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID can work on models with 2nd drive bay only)	
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort™ are functional when the following processors are used: Xeon E3-12X5V2, Core i7, i5, i3, Pentium, and Celeron processors)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	Some: Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosening, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Eco-Label and environmental certifications	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant	
ISV certifications	See the latest list of ISV certifications at <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
		<p><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p><b>Preloaded operating system<sup>20</sup></b></p> <p>Some: Windows® 7 Professional 64                  Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 8 Pro 64-bit                  Some: Windows 8 Pro 64-bit</p> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <p><b>-Windows 7 models</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton™ Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>-Windows 8 models</b></p> <ul style="list-style-type: none"> <li>• Evernote®</li> <li>• Norton Internet Security (30 days of virus definitions)</li> <li>• Norton Studio</li> <li>• Skype™</li> <li>• Microsoft Office 2013 preloaded; purchase product key to activate</li> <li>• Cyberlink Power2Go (DVD±RW model(s))</li> <li>• Cyberlink PowerProducer (DVD±RW model(s))</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p>More compatible accessories, please see O-ROC sheet</p>

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

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

Processor	<b>Intel® Core™ i7-3770 processor (4C/8T, 3.4GHz, 8MB Cache),</b> integrated Intel HD Graphics 4000, Turbo Boost 2.0 (up to 3.9GHz), DDR3 memory controller (up to 1600MHz)	<b>Small Desktop</b>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 13.35"W x 15.0"D x 3.93"H</li> <li>• 339mm W x 381.1mm D x 99.7mm H</li> <li>• 16.53 lb (7.5kg) max configuration</li> <li>• 11-liter</li> <li>• Toolless top cover removal</li> <li>• Toolless disk and optical drive removal</li> <li>• Toolless adapter retention</li> <li>• Recessed power button</li> </ul>
Implementation	One LGA1155 socket	
Memory	<b>32GB max, UDIMM, PC3-12800 1600MHz DDR3, ECC or non-ECC,</b> four 240-pin DIMM sockets;	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Mixing of ECC and non-ECC memory is not supported</li> </ul>
Additional memory disclaimers		
Graphics	<b>NVIDIA® Quadro® 600,</b> PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W	<ul style="list-style-type: none"> <li>Bay 1: 5.25", 1.6" high, access, for optical/2nd disk</li> <li>Bay 2: 3.5", 0.5" high, access, for media reader</li> <li>Bay 3: 3.5", 1" high, internal, for disk</li> </ul>
Media reader	<i>Media:</i> 29-in-1 Media card reader, slim, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	<ul style="list-style-type: none"> <li>Slot 1: Low Profile, PCIe* x16 (45w max, near CPU)</li> <li>* PCIe 2.0 x16 on Core i3/Pentium/Celeron models, PCIe 3.0 x16 on Xeon/Core i5/Core i7 models</li> <li>Slot 2: Low Profile, PCIe 2.0 x1</li> <li>Slot 3: Low Profile, 32-bit PCI 2.3</li> <li>Slot 4: Low Profile, 32-bit PCI 2.3</li> </ul>
Disk(s)	<i>250GB/500GB/1TB/2TB/3TB SATA:</i> SATA 6.0Gb/s, 7200 rpm, 3.5" <i>150GB/300GB/600GB SATA:</i> SATA 6.0Gb/s, 10000 rpm, 2.5" <i>128GB/180GB/256GB SSD:</i> Solid State Drive, SATA 6.0Gb/s, 2.5"	
Onboard SATA	Two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C216 Chipset (RAID only work on models with 2nd disk bay)	<p align="center"><b>Intel AMT</b></p> <p>Intel AMT supported on model(s) with Xeon processor</p> <p align="center"><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p align="center"><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p align="center"><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>• Security chip (see information on left)</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/individual)</li> <li>• Chassis intrusion switch available on selected model(s)</li> </ul> <p align="center"><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating ENERGY STAR 5.2-compliant</p> <p>More compatible accessories, please see O-ROC sheet</p>
Onboard SAS	None	
Chipset	<b>Intel C216 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Two USB 2.0, four USB 3.0 (blue), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in), one analog VGA DB-15 connector, one DisplayPort connector (Onboard VGA and DisplayPort are functional when the following processors are used: Xeon E3-1225V2/1245V2/1275V2, Core i7-3770, Core i5-3450/3550, Core i3-2120/2130, Pentium, and Celeron processors) <i>PS/2 models:</i> additional PS/2 keyboard and mouse connectors via PS/2 rear I/O cable	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST33ZP24 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Vertical Stand	<i>Some:</i> Vertical stand with retractable tongue for vertical orientation	
Power supply	240 watts with variable speed fan, autosening, 85% PSU, <b>Climate Savers® Computing Bronze, 80 PLUS® Bronze qualified</b>	
Limited Warranty	1-year parts and labor, more Lenovo® services see S-TS sheet	

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



## Partial list of accessories supported on ThinkStation E31 Tower

<b>Memory<sup>53</sup></b>	
2GB PC3-12800 DDR3-1600 non-ECC UDIMM <sup>54</sup>	0A65728
4GB PC3-12800 DDR3-1600 non-ECC UDIMM	0A65729
8GB PC3-12800 DDR3-1600 non-ECC UDIMM	0A65730
2GB PC3-12800 DDR3-1600 ECC UDIMM	0B47376
4GB PC3-12800 DDR3-1600 ECC UDIMM	0B47377
8GB PC3-12800 DDR3-1600 ECC UDIMM	0B47378
2GB PC3-10600 DDR3-1333 ECC UDIMM	43R2033
4GB PC3-10600 DDR3-1333 ECC UDIMM	57Y4138
8GB PC3-10600 DDR3-1333 ECC UDIMM	0A65718

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

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

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

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

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

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

<b>Mouse</b>	
Lenovo Optical Mouse (USB)	06P4069
Lenovo ScrollPoint Mouse (USB, Optical)	31P7405
Lenovo Laser Mouse (USB)	41U3074
Lenovo Wireless Laser Mouse <sup>52</sup>	0A36188

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

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

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

<b>Monitor accessories<sup>46</sup></b>	
Kensington® MicroSaver® Cable Lock	73P2582
Kensington Twin Head Cable Lock	45K1620

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

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

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

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

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

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

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

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

<sup>65</sup> Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.

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

For more information on accessories:

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

Purchase Lenovo accessories

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

Product specifications on Lenovo Support

[www.lenovo.com/accessoriesguide](http://www.lenovo.com/accessoriesguide)

Option Compatibility Matrix (OCM) and accessory brochures

[www.lenovoquickpick.com](http://www.lenovoquickpick.com)

An Options Compatibility Configurator for Lenovo systems

Partial list of accessories supported on ThinkStation E31 SFF

<p><b>Memory</b><sup>53</sup></p> <p>2GB PC3-12800 DDR3-1600 non-ECC UDIMM<sup>54</sup> 0A65728                      4GB PC3-12800 DDR3-1600 non-ECC UDIMM 0A65729                      8GB PC3-12800 DDR3-1600 non-ECC UDIMM 0A65730                      2GB PC3-12800 DDR3-1600 ECC UDIMM 0B47376                      4GB PC3-12800 DDR3-1600 ECC UDIMM 0B47377                      8GB PC3-12800 DDR3-1600 ECC UDIMM 0B47378                      2GB PC3-10600 DDR3-1333 ECC UDIMM 43R2033                      4GB PC3-10600 DDR3-1333 ECC UDIMM 57Y4138                      8GB PC3-10600 DDR3-1333 ECC UDIMM 0A65718</p> <p>More information on memory and processor configuration, operation and limitation, please visit:  <a href="http://www.lenovo.com/support/thinkstationaccessories">www.lenovo.com/support/thinkstationaccessories</a></p>	
<p><b>Optical</b></p> <p>DVD-ROM DL SATA1.5Gb/s 16X-48X Max<sup>4</sup> 41N5618                      Lenovo® Super Multi-Burner SATA Drive 0A65618                      Blu-ray™ Burner SATA1.5Gb/s 45K1675</p>	
<p><b>Storage and removable storage</b></p> <p>Lenovo 500GB 7200 rpm Serial ATA Hard Drive 43R1990                      Lenovo 1TB 7200 rpm Serial ATA Hard Drive 45J7918                      ThinkStation 180GB Solid State Drive 0B47308</p>	
<p><b>Keyboard</b></p> <p>Preferred Pro USB Keyboard 73P5220                      Enhanced Performance USB Keyboard 73P2620                      Lenovo USB Fingerprint Keyboard 73P4730                      Lenovo USB Smartcard Keyboard 51J0155                      Ultraslim Plus Wireless Keyboard and Mouse<sup>52</sup> 0A34032</p> <p>More information at <a href="http://www.lenovo.com/support/keyboards">www.lenovo.com/support/keyboards</a></p>	
<p><b>Mouse</b></p> <p>Lenovo Optical Mouse (USB) 06P4069                      Lenovo ScrollPoint Mouse (USB, Optical) 31P7405                      Lenovo Laser Mouse (USB) 41U3074                      Lenovo Wireless Laser Mouse<sup>52</sup> 0A36188</p> <p>More information at <a href="http://www.lenovo.com/support/mice">www.lenovo.com/support/mice</a></p>	
<p><b>Monitors - ThinkVision®</b></p> <p>L1711p 17" (VGA, DVI-D) 5047HB2                      LT1952p Wide 19" (VGA, DP, DVI-D)<sup>69</sup> 2448MB6                      L2250p Wide 22" (VGA, DVI-D) 2572HB6                      L2251x Wide 22" (VGA, DP) 2578HB6                      LT2252p Wide 22" (VGA, DP, DVI-D)<sup>69</sup> 2572MB6                      LT2452p Wide 24" (VGA, DP, DVI-D)<sup>69</sup> 4420MB2</p> <p>More information at <a href="http://www.lenovo.com/support/monitors">www.lenovo.com/support/monitors</a></p>	
<p><b>Monitor accessories</b><sup>46</sup></p> <p>Kensington® MicroSaver® Cable Lock 73P2582                      Kensington Twin Head Cable Lock 45K1620</p> <p>More information at <a href="http://www.lenovo.com/support/monitoraccessories">www.lenovo.com/support/monitoraccessories</a></p>	
<p><b>Graphics</b></p> <p>DisplayPort™ to Single-link DVI-D Cable<sup>50</sup> 45J7915                      DisplayPort to DisplayPort Monitor Cable<sup>50</sup> 0A36537                      NVIDIA® NVS™ 310 512MB 0B47074                      NVIDIA NVS 510 2GB Graphics Card by Lenovo 0B47077                      NVIDIA Quadro 1GB 600 0A36183</p> <p>More information at <a href="http://www.lenovo.com/support/graphiccards">www.lenovo.com/support/graphiccards</a></p>	<p><sup>46</sup> Compatible on selected Lenovo and ThinkVision monitors.  <sup>50</sup> Attaches to selected DisplayPort graphics cards.  <sup>52</sup> Wireless via 2.4GHz technology using a micro-size USB receiver.</p>
<p><b>Security</b></p> <p>Kensington MicroSaver Cable Lock 73P2582                      Kensington Twin Head Cable Lock 45K1620                      Lenovo Security Cable Lock 57Y4303                      USB Gemplus GemPC Smart Card Reader 41N3040</p>	<p><sup>54</sup> Actual memory operating speed depend on processor memory controller speed, installed memory speed, and quantity of memory DIMMs.  <sup>65</sup> Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.  <sup>69</sup> DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).</p>
<p>For more information on accessories:  <a href="http://www.lenovo.com/accessories">www.lenovo.com/accessories</a>                      Purchase Lenovo accessories</p> <p><a href="http://www.lenovo.com/support/accessories">www.lenovo.com/support/accessories</a>                      Product specifications on Lenovo Support</p> <p><a href="http://www.lenovo.com/accessoriesguide">www.lenovo.com/accessoriesguide</a>                      Option Compatibility Matrix (OCM) and accessory brochures</p> <p><a href="http://www.lenovoquickpick.com">www.lenovoquickpick.com</a>                      An Options Compatibility Configurator for Lenovo systems</p>	



Lenovo ThinkStation C30



Lenovo ThinkStation C30



Lenovo ThinkStation C30



Lenovo ThinkStation C30

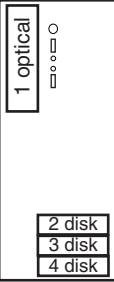


Lenovo ThinkStation C30



Lenovo ThinkStation C30

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	Win7 preload
1097-29U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xNVS 300	No	No	Switch	Pro 64
1097-31U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 400	No	No	Switch	Pro 64
1097-32U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 600	No	No	Switch	Pro 64
1097-36U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 2000D	No	No	Switch	Pro 64

Processor	<b>Intel® Xeon® E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2)</b> , 4-channel DDR3 memory controller (up to 1066MHz)	<p><b>Tower</b></p> <ul style="list-style-type: none"> <li>Rack-mountable to 3U</li> <li>Raven black color; metal case</li> <li>5.1"W x 17.5"D x 16.8"H</li> <li>130mm W x 444mm D x 427mm H (without rubber feet)</li> <li>40.7 lb (18.5kg) max configuration</li> <li>24-liter</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	Two LGA2011 sockets, supports up to two processors	
Memory	<b>UDIMM or RDIMM, ECC, DDR3</b> , 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets <i>UDIMM:</i> up to PC3-10600 1333MHz, 64GB max (8x8GB) <i>RDIMM:</i> up to PC3-12800 1600MHz, 128GB max (8x16GB)	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Over four DIMMs requires dual processors</li> <li>Mixing of RDIMM and UDIMM is not supported</li> </ul>	
Graphics	Supports up to two <b>NVIDIA® Quadro® 5000</b> , <b>NVIDIA SLI®</b> Technology support (see accessory sheet O-ALI) <i>Some: NVIDIA Quadro NVS 300</i> , PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W <i>Some: NVIDIA Quadro 400</i> , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W <i>Some: NVIDIA Quadro 600</i> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W <i>Some: NVIDIA Quadro 2000D</i> , PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<b>3.5" SATA:</b> SATA 6.0Gb/s, 7200 rpm <b>2.5" SATA:</b> SATA 6.0Gb/s, 10000 rpm <b>3.5" SAS/2.5" SAS:</b> SAS 6.0Gb/s, 15000 rpm <b>2.5" SSD:</b> Solid State Drive (SSD), SATA 6.0Gb/s	
Onboard SATA - AHCI	<b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5 support via Intel C602 Chipset	
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <b>SATA:</b> <b>Three</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset <b>SAS:</b> <b>Three</b> SATA/SAS* connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #1)	
Discrete SATA/SAS adapter	<b>9240:</b> LSI® SAS9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support	
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	No onboard 1394 ports; <b>1394 models:</b> additional FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	
		<p align="center"><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 enable/disable</li> <li>USB 2.0 ports enable/disable individually</li> <li>USB 3.0 ports enable/disable concurrently</li> <li>Chassis intrusion switch on selected model(s)</li> </ul> <p align="center"><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>Windows® 7 Professional 64</li> </ul> <p align="center"><b>Preloaded applications<sup>5</sup></b> (only some listed)</p> <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton® Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Adobe Flash® Player</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p align="center"><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified            RoHS-compliant            EPEAT™ Gold rating</p> <p>Supports ThinkVantage® technologies</p> <p>More compatible accessories, please see O-ALI sheet</p>

See footnotes for important warranty information  
 US model(s) announced April 3, 2012

# ThinkStation® C30 (1097) - TopSeller - II

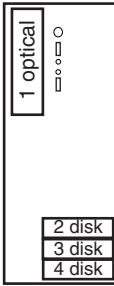
Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	Win7 preload
1097-37U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 600	No	No	Switch	Pro 64
1097-38U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 2000D	No	No	Switch	Pro 64
1097-39U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	No	DVD±RW		No	No	Switch	Pro 64

Processor	<b>Intel® Xeon® E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)</b> , 4-channel DDR3 memory controller (up to 1066MHz) <b>Intel Xeon E5-2620 processor (6C/12T, 2.0GHz, 15MB, 7.2 GT/s QPI x2)</b> , Turbo Boost 2.0 (up to 2.5GHz), 4-channel DDR3 memory controller (up to 1333MHz)							<b>Tower</b> <ul style="list-style-type: none"> <li>Rack-mountable to 3U</li> <li>Raven black color; metal case</li> <li>5.1"W x 17.5"D x 16.8"H</li> <li>130mm W x 444mm D x 427mm H (without rubber feet)</li> <li>40.7 lb (18.5kg) max configuration</li> <li>24-liter</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	Two LGA2011 sockets, supports up to two processors							Bay 1 5.25", 1.6" high, external, for optical Bay 2-4 3.5", 1" high, internal, for disk		
Memory	<b>UDIMM or RDIMM, ECC, DDR3</b> , 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets <i>UDIMM:</i> up to PC3-10600 1333MHz, 64GB max (8x8GB) <i>RDIMM:</i> up to PC3-12800 1600MHz, 128GB max (8x16GB)							Slot 1: half-length, full-height, PCIe 3.0 x16 (near CPU, x4 elec) Slot 2: full-length, full-height, PCIe 3.0 x16* Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 3.0 x16* Slot 5: full-length, full-height, PCIe 2.0 x4 Slot 6: half-length, full-height, 32-bit PCI 2.3		
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Over four DIMMs requires dual processors</li> <li>Mixing of RDIMM and UDIMM is not supported</li> </ul>							* Adapters >75W use auxiliary power connector(s) from PSU		
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-ALI) <i>Some: NVIDIA Quadro 600</i> , PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W <i>Some: NVIDIA Quadro 2000D</i> , PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W							<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 enable/disable</li> <li>USB 2.0 ports enable/disable individually</li> <li>USB 3.0 ports enable/disable concurrently</li> <li>Chassis intrusion switch on selected model(s)</li> </ul>		
Media reader	None							<b>Preloaded operating system<sup>20</sup></b> <ul style="list-style-type: none"> <li>Windows® 7 Professional 64</li> </ul>		
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive							<b>Preloaded applications<sup>5</sup></b> (only some listed) <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton® Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Adobe Flash® Player</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>		
Hard drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 2.5" SATA: SATA 6.0Gb/s, 10000 rpm 3.5" SAS/2.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s							<b>ISV certifications</b> Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>		
Onboard SATA - AHCI	<b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5 support via Intel C602 Chipset							GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating		
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <i>SATA:</i> <b>Three</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset <i>SAS:</i> <b>Three</b> SATA/SAS <sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #1)							Supports ThinkVantage® technologies		
Discrete SATA/SAS adapter	9240: LSI® SAS9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support							More compatible accessories, please see O-ALI sheet		
Chipset	<b>Intel C602 Chipset</b>									
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)									
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)									
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear									
Audio	High Definition (HD) Audio, Realtek® ALC662 codec									
Speaker	Internal speaker for business audio									
Ethernet	One onboard gigabit ethernet, Intel 82579									
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant									
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black									
Mouse	Optical Wheel Mouse (USB connector), black									
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified									
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet									
Intel AMT	Supports Intel Active Management Technology 7									

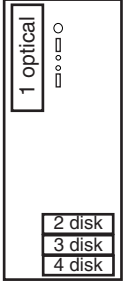
See footnotes for important warranty information  
 US model(s) announced April 3, 2012

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
1095-49U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xNVS 300	No	No	Switch	Pro 64
1095-51U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 400	No	No	Switch	Pro 64
1095-52U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 600	No	No	Switch	Pro 64

Processor	<p><b>Intel® Xeon® E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)</b>, 4-channel DDR3 memory controller (up to 1066MHz)</p> <p><b>Intel Xeon E5-2620 processor (6C/12T, 2.0GHz, 15MB, 7.2 GT/s QPI x2)</b>, Turbo Boost 2.0 (up to 2.5GHz), 4-channel DDR3 memory controller (up to 1333MHz)</p>	<p><b>Tower</b></p> <ul style="list-style-type: none"> <li>• Rack-mountable to 3U</li> <li>• Raven black color; metal case</li> <li>• 5.1"W x 17.5"D x 16.8"H</li> <li>• 130mm W x 444mm D x 427mm H (without rubber feet)</li> <li>• 40.7 lb (18.5kg) max configuration</li> <li>• 24-liter</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	Two LGA2011 sockets, supports up to two processors	
Memory	<p><b>UDIMM</b> or <b>RDIMM, ECC, DDR3</b>, 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets</p> <p><b>UDIMM:</b> up to PC3-10600 1333MHz, 64GB max (8x8GB)</p> <p><b>RDIMM:</b> up to PC3-12800 1600MHz, 128GB max (8x16GB)</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Over four DIMMs requires dual processors</li> <li>• Mixing of RDIMM and UDIMM is not supported</li> </ul>	
Graphics	<p>Supports up to two <b>NVIDIA® Quadro® 5000</b>, <b>NVIDIA SLI®</b> Technology support (see accessory sheet O-ALI)</p> <p>Some: <b>NVIDIA Quadro NVS 300</b>, PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W</p> <p>Some: <b>NVIDIA Quadro 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p>	
Media reader	None	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm</p> <p>3.5" SAS/2.5" SAS: SAS 6.0Gb/s, 15000 rpm</p> <p>2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s</p>	
Onboard SATA - AHCI	<p><b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5 support via Intel C602 Chipset</p>	
Onboard SATA/SAS - SCU	<p>Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives</p> <p><b>SATA:</b> <b>Three</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset</p> <p><b>SAS:</b> <b>Three</b> SATA/SAS<sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #1)</p>	
Discrete SATA/SAS adapter	<p>9240: LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support</p>	
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	<p>No onboard 1394 ports;</p> <p>1394 models: additional FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear</p>	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	
<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 enable/disable</li> <li>• USB 2.0 ports enable/disable individually</li> <li>• USB 3.0 ports enable/disable concurrently</li> <li>• Chassis intrusion switch on selected model(s)</li> </ul>		
<p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup></b> (only some listed)</p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Adobe Flash® Player</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>		
<p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p>		
<p>GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating</p>		
<p>Supports ThinkVantage® technologies</p>		
<p>More compatible accessories, please see O-ALI sheet</p>		

See footnotes for important warranty information  
US model(s) announced April 3, 2012

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
1095-53U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 2000D	No	Global	Switch	Pro 64
1095-54U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 4000	No		Switch	Pro 64
✗ 1095-57U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 4000	No		Switch	Pro 64
1095-59U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	No	DVD±RW	1xQuadro 2000D	No		Switch	Pro 64
1095-61U	1xE5-2630	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	No	DVD±RW	1xQuadro 2000D	No		Switch	Pro 64
1095-62U	1xE5-2630	1333MHz UDIMM	2x4GB	No	SAS	No	1x300GB 2.5" SAS	No	DVD±RW	1xQuadro 4000	No	Global	Switch	Pro 64

Processor	<b>Intel® Xeon® E5-2620 processor (6C/12T, 2.0GHz, 15MB, 7.2 GT/s QPI x2)</b> , Turbo Boost 2.0 (up to 2.5GHz), 4-channel DDR3 memory controller (up to 1333MHz) <b>Intel Xeon E5-2630 processor (6C/12T, 2.3GHz, 15MB, 7.2 GT/s QPI x2)</b> , Turbo Boost 2.0 (up to 2.8GHz), 4-channel DDR3 memory controller (up to 1333MHz)	<b>Tower</b> <ul style="list-style-type: none"> <li>• Rack-mountable to 3U</li> <li>• Raven black color; metal case</li> <li>• 5.1"W x 17.5"D x 16.8"H</li> <li>• 130mm W x 444mm D x 427mm H (without rubber feet)</li> <li>• 40.7 lb (18.5kg) max configuration</li> <li>• 24-liter</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	Two LGA2011 sockets, supports up to two processors	
Memory	<b>UDIMM</b> or <b>RDIMM, ECC, DDR3</b> , 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets <i>UDIMM:</i> up to PC3-10600 1333MHz, 64GB max (8x8GB) <i>RDIMM:</i> up to PC3-12800 1600MHz, 128GB max (8x16GB)	Bay 1 5.25", 1.6" high, external, for optical Bay 2-4 3.5", 1" high, internal, for disk
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Over four DIMMs requires dual processors</li> <li>• Mixing of RDIMM and UDIMM is not supported</li> </ul>	Slot 1: half-length, full-height, PCIe 3.0 x16 (near CPU, x4 elec) Slot 2: full-length, full-height, PCIe 3.0 x16* Slot 3: full-length, full-height, 32-bit PCI 2.3 Slot 4: full-length, full-height, PCIe 3.0 x16* Slot 5: full-length, full-height, PCIe 2.0 x4 Slot 6: half-length, full-height, 32-bit PCI 2.3
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-ALI) <i>Some:</i> NVIDIA Quadro 2000D, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W <i>Some:</i> NVIDIA Quadro 4000, PCIe x16 adapter, 2GB, two DisplayPort™, one dual-link DVI-I, one stereo, 142W	* Adapters >75W use auxiliary power connector(s) from PSU
Media reader	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 enable/disable</li> <li>• USB 2.0 ports enable/disable individually</li> <li>• USB 3.0 ports enable/disable concurrently</li> <li>• Chassis intrusion switch on selected model(s)</li> </ul>
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	3.5" SATA: SATA 6.0Gb/s, 7200 rpm 2.5" SATA: SATA 6.0Gb/s, 10000 rpm 3.5" SAS/2.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s	
Onboard SATA - AHCI	<b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5 support via Intel C602 Chipset	<b>Preloaded operating system</b> <sup>20</sup> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <b>Preloaded applications</b> <sup>5</sup> (only some listed) <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Adobe Flash® Player</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <i>SATA:</i> <b>Three</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset <i>SAS:</i> <b>Three</b> SATA/SAS <sup>†</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #1)	
Discrete SATA/SAS adapter	9240: LSI® SAS9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support	<b>ISV certifications</b> Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCI adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	Supports ThinkVantage® technologies
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	More compatible accessories, please see O-ALI sheet
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	800 watts with 80mm side-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	

See footnotes for important warranty information  
 US model(s) announced April 3, 2012  
 ✗ US model(s) withdrawn effective May 2012

Partial list of accessories supported on ThinkStation C30		Security	
<b>Processor Heatsink</b>		Kensington MicroSaver Cable Lock	73P2582
Second Processor Heatsink for C30	0A65721	Kensington Twin Head Cable Lock	45K1620
<b>Memory<sup>63</sup></b>		Lenovo Security Cable Lock	57Y4303
2GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	43R2033	USB Gemplus GemPC Smart Card Reader	41N3040
4GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	57Y4138	<b>Rack mount accessories</b>	
8GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	0A65718	ThinkStation C-Series, D-Series Rail Kit	57Y4482
4GB PC3-12800 DDR3 ECC RDIMM <sup>54</sup>	0A65732	<b>Connectivity</b>	
8GB PC3-12800 DDR3 ECC RDIMM <sup>54</sup>	0A65733	10Gbps Ethernet X540-T2 Server Adapter by Intel	0C19497
More information on memory and processor configuration, operation and limitation, please visit: <a href="http://www.lenovo.com/support/thinkstationaccessories">www.lenovo.com/support/thinkstationaccessories</a>			
<b>Optical</b>			
DVD-ROM DL SATA1.5Gb/s 16X-48X Max <sup>4</sup>	41N5618		
Lenovo® Super Multi-Burner SATA Drive	0A65618		
Blu-ray™ Burner SATA1.5Gb/s	45K1675		
<b>Storage and removable storage</b>			
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990		
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
450GB SAS 3.0Gb/s Disk (15000 rpm) <sup>68</sup>	43N3424		
180GB Solid State Drive	0B47308		
<b>Keyboard</b>			
Preferred Pro USB Keyboard	73P5220		
Enhanced Performance USB Keyboard	73P2620		
Lenovo USB Fingerprint Keyboard	73P4730		
Lenovo USB Smartcard Keyboard	51J0155		
Ultraslim Plus Wireless Keyboard and Mouse <sup>52</sup>	0A34032		
More information at <a href="http://www.lenovo.com/support/keyboards">www.lenovo.com/support/keyboards</a>			
<b>Mouse</b>			
Lenovo Optical Mouse (USB)	06P4069		
Lenovo ScrollPoint Mouse (USB, Optical)	31P7405		
Lenovo Laser Mouse (USB)	41U3074		
Lenovo Wireless Laser Mouse <sup>52</sup>	0A36188		
More information at <a href="http://www.lenovo.com/support/mice">www.lenovo.com/support/mice</a>			
<b>Monitors - ThinkVision®</b>			
L1711p 17" (VGA, DVI-D)	5047HB2		
LT1952p Wide 19" (VGA, DP, DVI-D) <sup>69</sup>	2448MB6		
L2250p Wide 22" (VGA, DVI-D)	2572HB6		
L2251x Wide 22" (VGA, DP)	2578HB6		
LT2252p Wide 22" (VGA, DP, DVI-D) <sup>69</sup>	2572MB6		
LT2452p Wide 24" (VGA, DP, DVI-D) <sup>69</sup>	4420MB2		
More information at <a href="http://www.lenovo.com/support/monitors">www.lenovo.com/support/monitors</a>			
<b>Monitor accessories<sup>46</sup></b>			
Kensington® MicroSaver® Cable Lock	73P2582		
Kensington Twin Head Cable Lock	45K1620		
More information at <a href="http://www.lenovo.com/support/monitoraccessories">www.lenovo.com/support/monitoraccessories</a>			
<b>Graphics</b>			
DisplayPort™ to Single-link DVI-D Cable <sup>50</sup>	45J7915	<sup>46</sup> Compatible on selected Lenovo and ThinkVision monitors. <sup>50</sup> Attaches to selected DisplayPort graphics cards. <sup>52</sup> Wireless via 2.4GHz technology using a micro-size USB receiver. <sup>53</sup> Mixing of UDIMM and RDIMM is not supported. <sup>54</sup> Actual memory operating speed depend on processor memory controller speed, installed memory speed, and quantity of memory DIMMs. <sup>65</sup> Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable. <sup>68</sup> ThinkStation C30 needs SAS HDD Enablement Module or LSI SATA/SAS adapter to support SAS hard drive. <sup>69</sup> DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).	
DisplayPort to DisplayPort Monitor Cable <sup>50</sup>	0A36537		
NVIDIA® NVS™ 300 512MB DMS59 <sup>65</sup>	0A36528		
NVIDIA NVS 310 512MB	0B47074		
NVIDIA NVS 510 2GB Graphics Card by Lenovo	0B47077		
NVIDIA Quadro 512MB 410	0B47075		
NVIDIA Quadro 1GB 600	0A36183		
NVIDIA Quadro 1GB 2000	57Y4479		
NVIDIA Quadro 1GB 2000D	0A36541		
NVIDIA Quadro 2GB 4000	57Y4480		
NVIDIA Quadro K600 1GB Graphics Card by Lenovo	0B47394		
NVIDIA Quadro K2000 2GB Graphics Card by Lenovo	0B47392		
NVIDIA Quadro K4000 3GB Graphics Card by Lenovo	0B47393		
NVIDIA Quadro K5000 4GB Graphics Card by Lenovo	0B47081		
More information at <a href="http://www.lenovo.com/support/graphiccards">www.lenovo.com/support/graphiccards</a>			
For more information on accessories: <a href="http://www.lenovo.com/accessories">www.lenovo.com/accessories</a> Purchase Lenovo accessories <a href="http://www.lenovo.com/support/accessories">www.lenovo.com/support/accessories</a> Product specifications on Lenovo Support <a href="http://www.lenovo.com/accessoriesguide">www.lenovo.com/accessoriesguide</a> Option Compatibility Matrix (OCM) and accessory brochures <a href="http://www.lenovoquickpick.com">www.lenovoquickpick.com</a> An Options Compatibility Configurator for Lenovo systems			



# ThinkStation.



Lenovo ThinkStation S30



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Lenovo ThinkStation S30

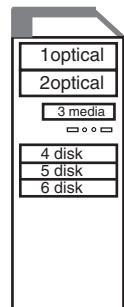


Lenovo ThinkStation S30

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	Win7 preload
0568-46U	E5-1603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media	DVD±RW		No	No	No	Pro 64
0568-47U	E5-1603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 400	No	No	No	Pro 64
0568-48U	E5-2603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 600	No	No	No	Pro 64
0568-49U	E5-2609	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 600	No	No	No	Pro 64
0568-51U	E5-1620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 2000D	No	No	No	Pro 64
0568-53U	E5-1650	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 4000	No	No	No	Pro 64
0568-89U	E5-1650	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	Media	DVD±RW	1xQuadro 2000D	No	No	No	Pro 64
0568-91U	E5-1620	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	Media	DVD±RW	1xQuadro 2000D	No	No	No	Pro 64

Processor	<p><b>Intel® Xeon® E5-1603 processor (4C/4T, 2.8GHz, 10MB)</b>, 4-channel capable DDR3 memory controller (up to 1066MHz)</p> <p><b>Intel Xeon E5-1620 processor (4C/8T, 3.6GHz, 10MB)</b>, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E5-1650 processor (6C/12T, 3.2GHz, 12MB)</b>, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2)</b>, 4-channel DDR3 memory controller (up to 1066MHz)</p> <p><b>Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)</b>, 4-channel DDR3 memory controller (up to 1066MHz)</p>
Implementation	One LGA2011 socket, supports up to one processor
Memory	<p><b>UDIMM or RDIMM, ECC, DDR3</b>, 4-channel capable, eight 240-pin DIMM sockets</p> <p><b>UDIMM:</b> up to PC3-10600 1333MHz, 64GB max (8x8GB)</p> <p><b>RDIMM:</b> up to PC3-12800 1600MHz, 128GB max (8x16GB)</p>
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Mixing of RDIMM and UDIMM is not supported</li> </ul>
Graphics	<p>Supports up to NVIDIA® Quadro® 5000 (see accessories sheet O-FOR)</p> <p>Some: <b>NVIDIA Quadro 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p>Some: <b>NVIDIA Quadro 2000D</b>, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W</p> <p>Some: <b>NVIDIA Quadro 4000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p>
Media reader	Media: 25-in-1 Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm</p> <p>2.5" SAS: SAS 6.0Gb/s, 15000 rpm</p> <p>2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s</p>
Onboard SATA - AHCI	Four SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C602 chipset
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <b>SATA:</b> Three SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 chipset <b>SAS:</b> Three SATA/SAS <sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 chipset and SAS HDD Enablement Module (Upgrade ROM #1)
Discrete SATA/SAS adapter	9240: LSI® SAS9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	<b>Intel C602 Chipset</b>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio	High Definition (HD) Audio, Realtek® ALC662 codec
Speaker	Internal speaker for business audio
Ethernet	One onboard gigabit ethernet, Intel 82579
Security chip	STMicroelectronics ST19WP18 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	610 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet
Intel AMT	Supports Intel Active Management Technology 7

**Tower**



- Raven black color; metal case
- 6.9"W x 18.1"D x 18.8"H (with handle)
- 175mm W x 460mm 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 1-2: 5.25", 1.6" high, external, for optical  
 Bay 3: 3.5", 1" high, external, for media reader  
 Bay 4-6: 3.5", 1" high, internal, for disk

Slot 1: full-length, full-height, PCIe 3.0 x16\* (near CPU)  
 Slot 2: full-length, full-height, PCIe 3.0 x16 (x4 electrical)  
 Slot 3: full-length, full-height, PCIe 3.0 x16\*  
 Slot 4: full-length, full-height, 32-bit PCI 2.3  
 Slot 5: half-length, full-height, PCIe 2.0 x4

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

**SECURITY**

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O enable/disable
- USB 2.0 ports enable/disable individually
- USB 3.0 ports enable/disable concurrently
- Chassis intrusion switch on selected model(s)

**Preloaded operating system<sup>20</sup>**

- Windows® 7 Professional 64

**Preloaded applications<sup>5</sup>** (only some listed)

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

**ISV certifications**

Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

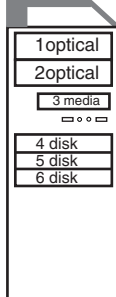
GREENGUARD® certified  
 RoHS-compliant  
 EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-FOR sheet

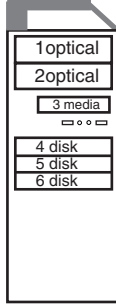
See footnotes for important warranty information  
 US model(s) announced April 3, 2012

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	Win7 preload
0569-56U	E5-1603	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media DVD±RW		1xQuadro 2000D	No	No	No	Pro 64
0569-57U	E5-2609	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media DVD±RW		1xQuadro 400	No	No	No	Pro 64
0569-59U	E5-1650	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media DVD±RW		1xQuadro 2000D	No	No	No	Pro 64
0569-61U	E5-1650	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" SATA	Media DVD±RW		1xQuadro 4000	No	No	No	Pro 64
0569-64U	E5-1650	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	Media DVD±RW		1xQuadro 2000D	No	No	No	Pro 64
0569-65U	E5-1660	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	Media DVD±RW		1xQuadro 4000	No	No	No	Pro 64

Processor	<p><b>Intel® Xeon® E5-1603 processor (4C/4T, 2.8GHz, 10MB)</b>, 4-channel capable DDR3 memory controller (up to 1066MHz)  <b>Intel Xeon E5-1650 processor (6C/12T, 3.2GHz, 12MB)</b>, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon E5-1660 processor (6C/12T, 3.3GHz, 15MB)</b>, Turbo Boost 2.0 (up to 3.9GHz), 4-channel DDR3 memory controller (up to 1600MHz)  <b>Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)</b>, 4-channel capable DDR3 memory controller (up to 1066MHz)</p>	<p><b>Tower</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 18.1"D x 18.8"H (with handle)</li> <li>• 175mm W x 460mm 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> <p>Bay 1-2: 5.25", 1.6" high, external, for optical                      Bay 3: 3.5", 1" high, external, for media reader                      Bay 4-6: 3.5", 1" high, internal, for disk</p> <p>Slot 1: full-length, full-height, PCIe 3.0 x16* (near CPU)                      Slot 2: full-length, full-height, PCIe 3.0 x16 (x4 electrical)                      Slot 3: full-length, full-height, PCIe 3.0 x16*                      Slot 4: full-length, full-height, 32-bit PCI 2.3                      Slot 5: half-length, full-height, PCIe 2.0 x4</p> <p>* Adapters &gt;75W use auxiliary power connector(s) from PSU</p>
Implementation	One LGA2011 socket, supports up to one processor	
Memory	<p><b>UDIMM</b> or <b>RDIMM, ECC, DDR3</b>, 4-channel capable, eight 240-pin DIMM sockets  <i>UDIMM:</i> up to PC3-10600 1333MHz, 64GB max (8x8GB)  <i>RDIMM:</i> up to PC3-12800 1600MHz, 128GB max (8x16GB)</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs                      • Mixing of RDIMM and UDIMM is not supported</p>	
Additional memory disclaimers		
Graphics	<p>Supports up to NVIDIA® Quadro® 5000 (see accessories sheet O-FOR)                      Some: <b>NVIDIA Quadro 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W                      Some: <b>NVIDIA Quadro 2000D</b>, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W                      Some: <b>NVIDIA Quadro 4000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p>	
Media reader	Media: 25-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm                      2.5" SATA: SATA 6.0Gb/s, 10000 rpm                      2.5" SAS: SAS 6.0Gb/s, 15000 rpm                      2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s</p>	
Onboard SATA - AHCI	<p><b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C602 chipset</p>	
Onboard SATA/SAS - SCU	<p>Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives                      SATA: <b>Three</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 chipset                      SAS: <b>Three</b> SATA/SAS<sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 chipset and SAS HDD Enablement Module (Upgrade ROM #1)</p>	
Discrete SATA/SAS adapter	9240: LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support	
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST19WP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	610 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	
<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 enable/disable</li> <li>• USB 2.0 ports enable/disable individually</li> <li>• USB 3.0 ports enable/disable concurrently</li> <li>• Chassis intrusion switch on selected model(s)</li> </ul>		
<p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup></b> (only some listed)</p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Adobe Flash® Player</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul>		
<p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p>		
<p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating</p>		
<p>Supports ThinkVantage® technologies</p>		
<p>More compatible accessories, please see O-FOR sheet</p>		

Type-model	Processor	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Chassis intrusion switch	Win7 preload	
0606-11U	E5-1620	1600MHz RDIMM	2x2GB	No	SATA		1x2TB 3.5" SATA	Media	DVD±RW	1xQuadro 2000		Global	No	Pro 64
0606-12U	E5-1650	1600MHz RDIMM	2x2GB	No	SATA		1x2TB 3.5" SATA	Media	DVD±RW	1xQuadro 2000		Global	No	Pro 64
0606-13U	E5-1650	1600MHz RDIMM	2x4GB	No	SATA		1x2TB 3.5" SATA	Media	DVD±RW	1xQuadro 2000		Global	No	Pro 64
0606-14U	E5-2620	1333MHz UDIMM	1x4GB	No	SATA		1x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 600		Global	No	Pro 64
0606-15U	E5-2620	1333MHz UDIMM	1x4GB	No	SAS		1x300GB 2.5" SAS	Media	DVD±RW	1xQuadro 600		Global	No	Pro 64
0606-16U	E5-1620	1333MHz UDIMM	4x2GB	No	SATA		1x1TB 3.5" SATA	Media	DVD±RW	1xQuadro 2000		Global	No	Pro 64
0606-17U	E5-1620	1333MHz UDIMM	2x4GB	No	SATA	1	2x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 400		Global	No	Pro 64
0606-18U	E5-1620	1333MHz UDIMM	3x4GB	No	SATA	1	2x500GB 3.5" SATA	Media	DVD±RW	1xQuadro 600	1394	Global	No	Pro 64

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

Processor	<p><b>Intel® Xeon® E5-1620 processor (4C/8T, 3.6GHz, 10MB),</b> Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E5-1650 processor (6C/12T, 3.2GHz, 12MB),</b> Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz)</p> <p><b>Intel Xeon E5-2620 processor (6C/12T, 2.0GHz, 15MB, 7.2 GT/s QPI x2),</b> Turbo Boost 2.0 (up to 2.5GHz), 4-channel capable DDR3 memory controller (up to 1333MHz)</p>	<p><b>Tower</b></p>  <ul style="list-style-type: none"> <li>• Raven black color; metal case</li> <li>• 6.9"W x 18.1"D x 18.8"H (with handle)</li> <li>• 175mm W x 460mm 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> <p>Bay 1-2: 5.25", 1.6" high, external, for optical                      Bay 3: 3.5", 1" high, external, for media reader                      Bay 4-6: 3.5", 1" high, internal, for disk</p> <p>Slot 1: full-length, full-height, PCIe 3.0 x16* (near CPU)                      Slot 2: full-length, full-height, PCIe 3.0 x16 (x4 electrical)                      Slot 3: full-length, full-height, PCIe 3.0 x16*                      Slot 4: full-length, full-height, 32-bit PCI 2.3                      Slot 5: half-length, full-height, PCIe 2.0 x4</p> <p>* Adapters &gt;75W use auxiliary power connector(s) from PSU</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 enable/disable</li> <li>• USB 2.0 ports enable/disable individually</li> <li>• USB 3.0 ports enable/disable concurrently</li> <li>• Chassis intrusion switch on selected model(s)</li> </ul> <p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup> (only some listed)</b></p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Adobe Flash® Player</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating</p> <p>Supports ThinkVantage® technologies</p> <p>More compatible accessories, please see O-FOR sheet</p>
Implementation	One LGA2011 socket, supports up to one processor	
Memory	<p><b>UDIMM or RDIMM, ECC, DDR3</b>, 4-channel capable, eight 240-pin DIMM sockets</p> <p><b>UDIMM:</b> up to PC3-10600 1333MHz, 64GB max (8x8GB)</p> <p><b>RDIMM:</b> up to PC3-12800 1600MHz, 128GB max (8x16GB)</p> <p>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</p> <p>• Mixing of RDIMM and UDIMM is not supported</p>	
Additional memory disclaimers		
Graphics	<p>Supports up to NVIDIA® Quadro® 5000 (see accessories sheet O-FOR)</p> <p>Some: <b>NVIDIA Quadro 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</p> <p>Some: <b>NVIDIA Quadro 2000</b>, PCIe x16 adapter, 1GB, two DisplayPort, one dual-link DVI-I, 62W</p>	
Media reader	Media: 25-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm</p> <p>2.5" SAS: SAS 6.0Gb/s, 15000 rpm</p> <p>2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s</p>	
Onboard SATA - AHCI	<p><b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1 support via Intel C602 chipset</p>	
Onboard SATA/SAS - SCU	<p>Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives</p> <p><b>SATA:</b> Three SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 chipset</p> <p><b>SAS:</b> Three SATA/SAS<sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1 support via Intel C602 chipset and SAS HDD Enablement Module (Upgrade ROM #1)</p>	
Discrete SATA/SAS adapter	<p>9240: LSI® SAS9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support</p>	
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	<p>Eight USB 2.0, two USB 3.0 (blue ports), one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)</p> <p>16U: PS/2 keyboard and mouse connectors via PS/2 rear I/O cable</p> <p>No onboard 1394 ports;</p> <p>1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear</p>	
IEEE 1394 adptr		
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	One onboard gigabit ethernet, Intel 82579	
Security chip	STMicroelectronics ST19WP18 Trusted Platform Module (TPM), TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	<p>610 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified</p>	
Limited Warranty	3-year parts and labor, more Lenovo® services see S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	

Partial list of accessories supported on ThinkStation S30		Security	
<b>Memory<sup>53</sup></b>		Kensington MicroSaver Cable Lock	73P2582
2GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	43R2033	Kensington Twin Head Cable Lock	45K1620
4GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	57Y4138	Lenovo Security Cable Lock	57Y4303
8GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	0A65718	USB Gemplus GemPC Smart Card Reader	41N3040
4GB PC3-12800 DDR3 ECC RDIMM <sup>54</sup>	0A65732	<b>Connectivity</b>	
8GB PC3-12800 DDR3 ECC RDIMM <sup>54</sup>	0A65733	10Gbps Ethernet X540-T2 Server Adapter by Intel	0C19497
More information on memory and processor configuration, operation and limitation, please visit: <a href="http://www.lenovo.com/support/thinkstationaccessories">www.lenovo.com/support/thinkstationaccessories</a>			
<b>Optical</b>			
DVD-ROM DL SATA1.5Gb/s 16X-48X Max <sup>4</sup>	41N5618		
Lenovo® Super Multi-Burner SATA Drive	0A65618		
Blu-ray™ Burner SATA1.5Gb/s	45K1675		
<b>Storage and removable storage</b>			
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990		
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
450GB SAS 3.0Gb/s Disk (15000 rpm) <sup>68</sup>	43N3424		
180GB Solid State Drive	0B47308		
<b>Keyboard</b>			
Preferred Pro USB Keyboard	73P5220		
Enhanced Performance USB Keyboard	73P2620		
Lenovo USB Fingerprint Keyboard	73P4730		
Lenovo USB Smartcard Keyboard	51J0155		
Ultraslim Plus Wireless Keyboard and Mouse <sup>52</sup>	0A34032		
More information at <a href="http://www.lenovo.com/support/keyboards">www.lenovo.com/support/keyboards</a>			
<b>Mouse</b>			
Lenovo Optical Mouse (USB)	06P4069		
Lenovo ScrollPoint Mouse (USB, Optical)	31P7405		
Lenovo Laser Mouse (USB)	41U3074		
Lenovo Wireless Laser Mouse <sup>52</sup>	0A36188		
More information at <a href="http://www.lenovo.com/support/mice">www.lenovo.com/support/mice</a>			
<b>Monitors - ThinkVision®</b>			
L1711p 17" (VGA, DVI-D)	5047HB2		
LT1952p Wide 19" (VGA, DP, DVI-D) <sup>69</sup>	2448MB6		
L2250p Wide 22" (VGA, DVI-D)	2572HB6		
L2251x Wide 22" (VGA, DP)	2578HB6		
LT2252p Wide 22" (VGA, DP, DVI-D) <sup>69</sup>	2572MB6		
LT2452p Wide 24" (VGA, DP, DVI-D) <sup>69</sup>	4420MB2		
More information at <a href="http://www.lenovo.com/support/monitors">www.lenovo.com/support/monitors</a>			
<b>Monitor accessories<sup>46</sup></b>			
Kensington® MicroSaver® Cable Lock	73P2582		
Kensington Twin Head Cable Lock	45K1620		
More information at <a href="http://www.lenovo.com/support/monitoraccessories">www.lenovo.com/support/monitoraccessories</a>			
<b>Graphics</b>			
DisplayPort™ to Single-link DVI-D Cable <sup>50</sup>	45J7915		
DisplayPort to DisplayPort Monitor Cable <sup>50</sup>	0A36537		
NVIDIA® NVS™ 300 512MB DMS59 <sup>65</sup>	0A36528		
NVIDIA NVS 310 512MB	0B47074		
NVIDIA NVS 510 2GB Graphics Card by Lenovo	0B47077		
NVIDIA Quadro 512MB 410	0B47075		
NVIDIA Quadro 1GB 600	0A36183		
NVIDIA Quadro 1GB 2000	57Y4479		
NVIDIA Quadro 1GB 2000D	0A36541		
NVIDIA Quadro 2GB 4000	57Y4480		
NVIDIA Quadro K600 1GB Graphics Card by Lenovo	0B47394		
NVIDIA Quadro K2000 2GB Graphics Card by Lenovo	0B47392		
NVIDIA Quadro K4000 3GB Graphics Card by Lenovo	0B47393		
NVIDIA Quadro K5000 4GB Graphics Card by Lenovo	0B47081		
More information at <a href="http://www.lenovo.com/support/graphiccards">www.lenovo.com/support/graphiccards</a>			
		<sup>46</sup> Compatible on selected Lenovo and ThinkVision monitors.	
		<sup>50</sup> Attaches to selected DisplayPort graphics cards.	
		<sup>52</sup> Wireless via 2.4GHz technology using a micro-size USB receiver.	
		<sup>53</sup> Mixing of UDIMM and RDIMM is not supported.	
		<sup>54</sup> Actual memory operating speed depend on processor memory controller speed, installed memory speed, and quantity of memory DIMMs.	
		<sup>65</sup> Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.	
		<sup>69</sup> DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).	
		For more information on accessories: <a href="http://www.lenovo.com/accessories">www.lenovo.com/accessories</a> Purchase Lenovo accessories	
		<a href="http://www.lenovo.com/support/accessories">www.lenovo.com/support/accessories</a> Product specifications on Lenovo Support	
		<a href="http://www.lenovo.com/accessoriesguide">www.lenovo.com/accessoriesguide</a> Option Compatibility Matrix (OCM) and accessory brochures	
		<a href="http://www.lenovoquickpick.com">www.lenovoquickpick.com</a> An Options Compatibility Configurator for Lenovo systems	

# ThinkStation.



Lenovo ThinkStation D30



Lenovo ThinkStation D30



Lenovo ThinkStation D30



Lenovo ThinkStation D30



Lenovo ThinkStation D30



Lenovo ThinkStation D30

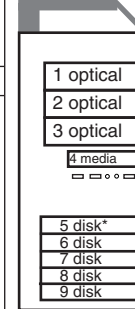
# ThinkStation® D30 (4229) - TopSeller

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
4229-32U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 400	1394	No	Switch	Pro 64	
4229-33U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 600	1394	No	Switch	Pro 64	
4229-34U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 600	1394	No	Switch	Pro 64	

Processor	<b>Intel® Xeon® E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2)</b> , 4-channel DDR3 memory controller (up to 1066MHz) <b>Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)</b> , 4-channel DDR3 memory controller (up to 1066MHz)												
Implementation	Two LGA2011 sockets, supports up to two processors												
Memory	<b>UDIMM or RDIMM, ECC, DDR3</b> , 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets <b>UDIMM:</b> up to PC3-10600 1333MHz, 128GB max (16x8GB) <b>RDIMM:</b> up to PC3-12800 1600MHz, 256GB max (16x16GB)												
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Over eight DIMMs requires dual processors</li> <li>Mixing of RDIMM and UDIMM is not supported</li> <li>Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)</li> </ul>												
Graphics	Supports up to two <b>NVIDIA® Quadro® 5000</b> , NVIDIA SLI® Technology support (see accessory sheet O-HOL) <i>Some: <b>NVIDIA Quadro 400</b>, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W</i> <i>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W</i>												
Media reader	Media: 25-in-1 Media card reader, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive												
Optical	3.5" SATA: SATA 6.0Gb/s, 7200 rpm												
Hard drive(s)	2.5" SATA: SATA 6.0Gb/s, 10000 rpm 3.5" SAS/2.5" SAS: SAS 6.0Gb/s, 15000 rpm 2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s												
Onboard SATA - AHCI	<b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5, 10 support via Intel C602 Chipset												
Onboard SATA/SAS - SCU	Supports up to five SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <b>SATAx4: Four</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset <b>SATAx5: Five</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset and SATA HDD Enablement Module (Upgrade ROM #9) <b>SAS: Five</b> SATA/SAS <sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 10 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #5)												
Discrete SATA/SAS adapter	<b>LSI: LSI® SAS 9240-8i</b> , PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support												
Chipset	<b>Intel C602 Chipset</b>												
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)												
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), two ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)												
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, one 6-pin port on rear, one 6-pin port on front</i>												
Audio	High Definition (HD) Audio, Realtek® ALC662 codec												
Speaker	Internal speaker for business audio												
Ethernet	Dual onboard gigabit ethernet, Intel 82579 and 82574												
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant												
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black												
Mouse	Optical Wheel Mouse (USB connector), black												
Power supply	1120 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified												
Limited Warranty <sup>1</sup>	3-year parts and labor; more Lenovo® services see on S-TS sheet												
Intel AMT	Supports Intel Active Management Technology 7												

## Tower



- Raven black color; metal case
- 8.3"W x 23.7"D x 19.1"H (with handle)
- 210mm W x 602mm D x 485mm H
- 60.6 lb (27.5kg) max configuration
- 55-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1-3: 5.25", 1.6" high, external, for optical  
 Bay 4: 3.5", 1" high, external, for media reader  
 Bay 5-9: 3.5", 1" high, internal, for disk\*

\* Bay 5 is available on models with the SATA or SAS Hard Disk Drive enablement module installed.

Slot 1: half-length, full-height, PCIe 3.0 x16 (x4 elec, near CPU)  
 Slot 2: full-length, full-height, PCIe 3.0 x16\*\*  
 Slot 3: full-length, full-height, 32-bit PCI 2.3  
 Slot 4: full-length, full-height, PCIe 3.0 x16\*\*  
 Slot 5: full-length, full-height, PCIe 2.0 x4  
 Slot 6: half-length, full-height, 32-bit PCI 2.3

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

## SECURITY

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O enable/disable
- USB 2.0 ports enable/disable individually
- USB 3.0 ports enable/disable concurrently
- Chassis intrusion switch on selected model(s)

## Preloaded operating system<sup>20</sup>

- Windows® 7 Professional 64
- Preloaded applications<sup>5</sup>** (only some listed)
  - Rescue and Recovery®
  - Norton® Internet Security (30 days of virus definitions)
  - Adobe® Reader®
  - Adobe Flash® Player
  - Microsoft® Office 2013 preloaded; purchase product key to activate
  - Corel® WinDVD® (DVD±RW model(s))
  - Ulead® DVD MovieFactory® (DVD±RW model(s))

## ISV certifications

Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

GREENGUARD® certified  
 RoHS-compliant  
 EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-HOL sheet

# ThinkStation® D30 (4229) - TopSeller - II

Personal Systems Reference (PSREF)

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
4229-35U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 2000D	1394	No	Switch	Pro 64	
4229-37U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 4000	1394	No	Switch	Pro 64	
4229-38U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	Media DVD±RW	1xQuadro 4000	1394	No	Switch	Pro 64	

Processor	<b>Intel® Xeon® E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2), 4-channel DDR3 memory controller (up to 1066MHz)</b> <b>Intel Xeon E5-2620 processor (6C/12T, 2.0GHz, 15MB, 7.2 GT/s QPI x2), Turbo Boost 2.0 (up to 2.5GHz), 4-channel DDR3 memory controller (up to 1333MHz)</b>
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	<b>UDIMM or RDIMM, ECC, DDR3</b> , 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets <i>UDIMM:</i> up to PC3-10600 1333MHz, 128GB max (16x8GB) <i>RDIMM:</i> up to PC3-12800 1600MHz, 256GB max (16x16GB)
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Over eight DIMMs requires dual processors</li> <li>Mixing of RDIMM and UDIMM is not supported</li> <li>Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)</li> </ul>
Graphics	Supports up to two <b>NVIDIA® Quadro® 5000</b> , <b>NVIDIA SLI® Technology support</b> (see accessory sheet O-HOL) <i>Some: NVIDIA Quadro 2000D</i> , PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W <i>Some: NVIDIA Quadro 4000</i> , PCIe x16 adapter, 2GB, two DisplayPort™, one dual-link DVI-I, one stereo, 142W
Media reader	<i>Media:</i> 25-in-1 Media card reader, internal USB 2.0
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
Hard drive(s)	<b>3.5" SATA:</b> SATA 6.0Gb/s, 7200 rpm <b>2.5" SATA:</b> SATA 6.0Gb/s, 10000 rpm <b>3.5" SAS/2.5" SAS:</b> SAS 6.0Gb/s, 15000 rpm <b>2.5" SSD:</b> Solid State Drive (SSD), SATA 6.0Gb/s
Onboard SATA - AHCI	<b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5, 10 support via Intel C602 Chipset
Onboard SATA/SAS - SCU	Supports up to five SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <b>SATAx4:</b> <b>Four</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset <b>SATAx5:</b> <b>Five</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset and SATA HDD Enablement Module (Upgrade ROM #9) <b>SAS:</b> <b>Five</b> SATA/SAS <sup>4</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 10 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #5)
Discrete SATA/SAS adapter	<i>LSI:</i> LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support
Chipset	<b>Intel C602 Chipset</b>
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), two ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, one 6-pin port on rear, one 6-pin port on front
Audio	High Definition (HD) Audio, Realtek® ALC662 codec
Speaker	Internal speaker for business audio
Ethernet	Dual onboard gigabit ethernet, Intel 82579 and 82574
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black
Mouse	Optical Wheel Mouse (USB connector), black
Power supply	1120 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified
Limited Warranty <sup>1</sup>	3-year parts and labor; more Lenovo® services see on S-TS sheet
Intel AMT	Supports Intel Active Management Technology 7

**Tower**

- Raven black color; metal case
- 8.3"W x 23.7"D x 19.1"H (with handle)
- 210mm W x 602mm D x 485mm H
- 60.6 lb (27.5kg) max configuration
- 55-liter
- Removable handle on top front
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1-3: 5.25", 1.6" high, external, for optical  
 Bay 4: 3.5", 1" high, external, for media reader  
 Bay 5-9: 3.5", 1" high, internal, for disk\*

\* Bay 5 is available on models with the SATA or SAS Hard Disk Drive enablement module installed.

Slot 1: half-length, full-height, PCIe 3.0 x16 (x4 elec, near CPU)  
 Slot 2: full-length, full-height, PCIe 3.0 x16\*\*  
 Slot 3: full-length, full-height, 32-bit PCI 2.3  
 Slot 4: full-length, full-height, PCIe 3.0 x16\*\*  
 Slot 5: full-length, full-height, PCIe 2.0 x4  
 Slot 6: half-length, full-height, 32-bit PCI 2.3

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

**SECURITY**

- Security chip (see information on left)
- Side cover lock (ships with two identical keys)
- Padlock loop (in rear for opt padlock; padlock prohibits side cover removal)
- Security slot (in rear for optional Kensington® Microsaver® cable; prohibits side cover removal)
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard, mouse, diskette
- Serial port I/O enable/disable
- USB 2.0 ports enable/disable individually
- USB 3.0 ports enable/disable concurrently
- Chassis intrusion switch on selected model(s)

**Preloaded operating system<sup>20</sup>**

- Windows® 7 Professional 64

**Preloaded applications<sup>5</sup>** (only some listed)

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

**ISV certifications**

Please visit [www.lenovo.com/support/ISV](http://www.lenovo.com/support/ISV)

GREENGUARD® certified  
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Supports ThinkVantage® technologies

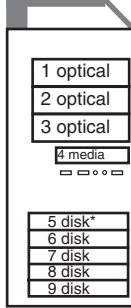
More compatible accessories, please see O-HOL sheet

See footnotes for important warranty information  
US model(s) announced April 3, 2012



Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
4223-54U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xNVS 300	1394	No	Switch	Pro 64	
4223-55U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 400	1394	No	Switch	Pro 64	
4223-56U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 400	1394	No	Switch	Pro 64	
4223-57U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 600	1394	No	Switch	Pro 64	
4223-58U	1xE5-2609	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 2000D	1394	No	Switch	Pro 64	

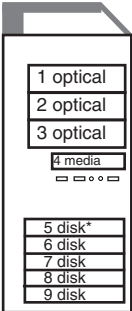
Processor	<b>Intel® Xeon® E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2), 4-channel DDR3 memory controller (up to 1066MHz)</b> <b>Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2), 4-channel DDR3 memory controller (up to 1066MHz)</b>	<b>Tower</b>  <ul style="list-style-type: 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>60.6 lb (27.5kg) 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	Two LGA2011 sockets, supports up to two processors	
Memory	<b>UDIMM or RDIMM, ECC, DDR3</b> , 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets <i>UDIMM:</i> up to PC3-10600 1333MHz, 128GB max (16x8GB) <i>RDIMM:</i> up to PC3-12800 1600MHz, 256GB max (16x16GB)	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>Over eight DIMMs requires dual processors</li> <li>Mixing of RDIMM and UDIMM is not supported</li> <li>Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)</li> </ul>	
Graphics	Supports up to two <b>NVIDIA® Quadro® 5000</b> , <b>NVIDIA SLI®</b> Technology support (see accessory sheet O-HOL) <i>Some: NVIDIA Quadro NVS 300</i> , PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W <i>Some: NVIDIA Quadro 400</i> , PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W <i>Some: NVIDIA Quadro 600</i> , PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W <i>Some: NVIDIA Quadro 2000D</i> , PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W	<p>Bay 1-3: 5.25", 1.6" high, external, for optical</p> <p>Bay 4: 3.5", 1" high, external, for media reader</p> <p>Bay 5-9: 3.5", 1" high, internal, for disk*</p> <p>* Bay 5 is available on models with the SATA or SAS Hard Disk Drive enablement module installed.</p> <p>Slot 1: half-length, full-height, PCIe 3.0 x16 (x4 elec, near CPU)</p> <p>Slot 2: full-length, full-height, PCIe 3.0 x16**</p> <p>Slot 3: full-length, full-height, 32-bit PCI 2.3</p> <p>Slot 4: full-length, full-height, PCIe 3.0 x16**</p> <p>Slot 5: full-length, full-height, PCIe 2.0 x4</p> <p>Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>** Adapters &gt;75W use auxiliary power connector(s) from PSU</p>
Media reader	<i>Media:</i> 25-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm</p> <p>3.5" SAS/2.5" SAS: SAS 6.0Gb/s, 15000 rpm</p> <p>2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s</p>	
Onboard SATA - AHCI	<b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5, 10 support via Intel C602 Chipset	
Onboard SATA/SAS - SCU	Supports up to five SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives <b>SATAx4:</b> <b>Four</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset <b>SATAx5:</b> <b>Five</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset and SATA HDD Enablement Module (Upgrade ROM #9) <b>SAS:</b> <b>Five</b> SATA/SAS <sup>1</sup> connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 10 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #5)	
Discrete SATA/SAS adapter	<i>LSI:</i> LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support	
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), two ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	No onboard 1394 ports; <i>1394 models:</i> additional FireWire PCIe adapter, 1394a-2000, 400Mbps, one 6-pin port on rear, one 6-pin port on front	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Dual onboard speaker for business audio	
Ethernet	Dual onboard gigabit ethernet, Intel 82579 and 82574	
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1120 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified	
Limited Warranty <sup>1</sup>	3-year parts and labor; more Lenovo® services see on S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	

<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 enable/disable</li> <li>USB 2.0 ports enable/disable individually</li> <li>USB 3.0 ports enable/disable concurrently</li> <li>Chassis intrusion switch on selected model(s)</li> </ul>	
<b>Preloaded operating system<sup>20</sup></b>	
<ul style="list-style-type: none"> <li>Windows® 7 Professional 64</li> <li><b>Preloaded applications<sup>5</sup></b> (only some listed) <ul style="list-style-type: none"> <li>Rescue and Recovery®</li> <li>Norton® Internet Security (30 days of virus definitions)</li> <li>Adobe® Reader®</li> <li>Adobe Flash® Player</li> <li>Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>Corel® WinDVD® (DVD±RW model(s))</li> <li>Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> </li> </ul>	
<b>ISV certifications</b>	
Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a>	
GREENGUARD® certified RoHS-compliant EPEAT™ Gold rating	
Supports ThinkVantage® technologies	
More compatible accessories, please see O-HOL sheet	

See footnotes for important warranty information  
US model(s) announced April 3, 2012

Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics adapter(s)	1394 adptr	Global	Chassis intrusion switch	Win7 preload
4223-59U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 2000D	1394 Global	Switch	Pro 64		
4223-61U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 4000	1394	Switch	Pro 64		
4223-62U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 600	1394	Switch	Pro 64		
4223-66U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SAS	No	1x300GB 2.5" SAS	Media DVD±RW	1xQuadro 2000D	1394	Switch	Pro 64		
4223-68U	1xE5-2630	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 3.5" SATA	Media DVD±RW	1xQuadro 2000D	1394	Switch	Pro 64		
4223-69U	1xE5-2630	1333MHz UDIMM	2x4GB	No	SAS	No	1x300GB 2.5" SAS	Media DVD±RW	1xQuadro 4000	1394 Global	Switch	Pro 64		

Processor	<p><b>Intel® Xeon® E5-2620 processor (6C/12T, 2.0GHz, 15MB, 7.2 GT/s QPI x2)</b>, Turbo Boost 2.0 (up to 2.5GHz), 4-channel DDR3 memory controller (up to 1333MHz)</p> <p><b>Intel Xeon E5-2630 processor (6C/12T, 2.3GHz, 15MB, 7.2 GT/s QPI x2)</b>, Turbo Boost 2.0 (up to 2.8GHz), 4-channel DDR3 memory controller (up to 1333MHz)</p>	<p><b>Tower</b></p>  <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>• 60.6 lb (27.5kg) 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 1-3: 5.25", 1.6" high, external, for optical                      Bay 4: 3.5", 1" high, external, for media reader                      Bay 5-9: 3.5", 1" high, internal, for disk*</p> <p>* Bay 5 is available on models with the SATA or SAS Hard Disk Drive enablement module installed.</p> <p>Slot 1: half-length, full-height, PCIe 3.0 x16 (x4 elec, near CPU)                      Slot 2: full-length, full-height, PCIe 3.0 x16**                      Slot 3: full-length, full-height, 32-bit PCI 2.3                      Slot 4: full-length, full-height, PCIe 3.0 x16**                      Slot 5: full-length, full-height, PCIe 2.0 x4                      Slot 6: half-length, full-height, 32-bit PCI 2.3</p> <p>** Adapters &gt;75W use auxiliary power connector(s) from PSU</p>
Implementation	Two LGA2011 sockets, supports up to two processors	
Memory	<p><b>UDIMM or RDIMM, ECC, DDR3</b>, 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets</p> <p><b>UDIMM:</b> up to PC3-10600 1333MHz, 128GB max (16x8GB)</p> <p><b>RDIMM:</b> up to PC3-12800 1600MHz, 256GB max (16x16GB)</p>	
Additional memory disclaimers	<ul style="list-style-type: none"> <li>• Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs</li> <li>• Over eight DIMMs requires dual processors</li> <li>• Mixing of RDIMM and UDIMM is not supported</li> <li>• Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)</li> </ul>	
Graphics	<p>Supports up to two <b>NVIDIA® Quadro® 5000</b>, NVIDIA SLI® Technology support (see accessory sheet O-HOL)</p> <p>Some: <b>NVIDIA Quadro 600</b>, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W</p> <p>Some: <b>NVIDIA Quadro 2000D</b>, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W</p> <p>Some: <b>NVIDIA Quadro 4000</b>, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W</p>	
Media reader	Media: 25-in-1 Media card reader, internal USB 2.0	
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive	
Hard drive(s)	<p>3.5" SATA: SATA 6.0Gb/s, 7200 rpm</p> <p>2.5" SATA: SATA 6.0Gb/s, 10000 rpm</p> <p>3.5" SAS/2.5" SAS: SAS 6.0Gb/s, 15000 rpm</p> <p>2.5" SSD: Solid State Drive (SSD), SATA 6.0Gb/s</p>	
Onboard SATA - AHCI	<p><b>Four</b> SATA Advanced Host Controller Interface (AHCI) connectors for opticals and hard drives, two SATA 6.0Gb/s connectors (red), two SATA 3.0Gb/s connectors (orange), RAID 0, 1, 5, 10 support via Intel C602 Chipset</p>	
Onboard SATA/SAS - SCU	<p>Supports up to five SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives</p> <p><b>SATAx4:</b> <b>Four</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset</p> <p><b>SATAx5:</b> <b>Five</b> SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset and SATA HDD Enablement Module (Upgrade ROM #9)</p> <p><b>SAS:</b> <b>Five</b> SATA/SAS* connectors for hard drives, SATA 3.0Gb/s, SAS 3.0Gb/s, RAID 0, 1, 10 support via Intel C602 Chipset and SAS HDD Enablement Module (Upgrade ROM #5)</p>	
Discrete SATA/SAS adapter	LSI: LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support	
Chipset	<b>Intel C602 Chipset</b>	
Front ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm)	
Rear ports	Eight USB 2.0, two USB 3.0 (blue ports), serial (9-pin), two ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)	
IEEE 1394 adptr	No onboard 1394 ports; 1394 models: additional FireWire PCIe adapter, 1394a-2000, 400Mbps, one 6-pin port on rear, one 6-pin port on front	
Audio	High Definition (HD) Audio, Realtek® ALC662 codec	
Speaker	Internal speaker for business audio	
Ethernet	Dual onboard gigabit ethernet, Intel 82579 and 82574	
Security chip	Nuvoton NPCT421L for TPM function, TCG 1.2-compliant	
Keyboard	Preferred Pro USB Keyboard (USB connector), 104-key, black	
Mouse	Optical Wheel Mouse (USB connector), black	
Power supply	1120 watts with 120mm bottom-mounted variable speed fan, universal, <b>Climate Savers® Computing Gold, 80 PLUS® Gold</b> qualified	
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet	
Intel AMT	Supports Intel Active Management Technology 7	
		<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 enable/disable</li> <li>• USB 2.0 ports enable/disable individually</li> <li>• USB 3.0 ports enable/disable concurrently</li> <li>• Chassis intrusion switch on selected model(s)</li> </ul> <p><b>Preloaded operating system<sup>20</sup></b></p> <ul style="list-style-type: none"> <li>• Windows® 7 Professional 64</li> </ul> <p><b>Preloaded applications<sup>5</sup></b> (only some listed)</p> <ul style="list-style-type: none"> <li>• Rescue and Recovery®</li> <li>• Norton® Internet Security (30 days of virus definitions)</li> <li>• Adobe® Reader®</li> <li>• Adobe Flash® Player</li> <li>• Microsoft® Office 2013 preloaded; purchase product key to activate</li> <li>• Corel® WinDVD® (DVD±RW model(s))</li> <li>• Ulead® DVD MovieFactory® (DVD±RW model(s))</li> </ul> <p><b>ISV certifications</b></p> <p>Please visit <a href="http://www.lenovo.com/support/ISV">www.lenovo.com/support/ISV</a></p> <p>GREENGUARD® certified                      RoHS-compliant                      EPEAT™ Gold rating</p> <p>Supports ThinkVantage® technologies</p> <p>More compatible accessories, please see O-HOL sheet</p>

See footnotes for important warranty information  
 US model(s) announced April 3, 2012

Partial list of accessories supported on ThinkStation D30		Security	
<b>Processor Heatsink</b>		Kensington MicroSaver Cable Lock	73P2582
Second Processor Heatsink for D30	0A65721	Kensington Twin Head Cable Lock	45K1620
<b>Memory<sup>63</sup></b>		Lenovo Security Cable Lock	57Y4303
2GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	43R2033	USB Gemplus GemPC Smart Card Reader	41N3040
4GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	57Y4138	<b>Rack mount accessories</b>	
8GB PC3-10600 DDR3 ECC UDIMM <sup>54</sup>	0A65718	ThinkStation C-Series, D-Series Rail Kit	57Y4482
4GB PC3-12800 DDR3 ECC RDIMM <sup>54</sup>	0A65732	<b>Connectivity</b>	
8GB PC3-12800 DDR3 ECC RDIMM <sup>54</sup>	0A65733	10Gbps Ethernet X540-T2 Server Adapter by Intel	0C19497
More information on memory and processor configuration, operation and limitation, please visit: <a href="http://www.lenovo.com/support/thinkstationaccessories">www.lenovo.com/support/thinkstationaccessories</a>			
<b>Optical</b>			
DVD-ROM DL SATA1.5Gb/s 16X-48X Max <sup>4</sup>	41N5618		
Lenovo® Super Multi-Burner SATA Drive	0A65618		
Blu-ray™ Burner SATA1.5Gb/s	45K1675		
<b>Storage and removable storage</b>			
500GB SATA 3.0Gb/s Disk (7200 rpm)	43R1990		
1TB SATA 3.0Gb/s Disk (7200 rpm)	45J7918		
450GB SAS 3.0Gb/s Disk (15000 rpm) <sup>68</sup>	43N3424		
180GB Solid State Drive	0B47308		
<b>Keyboard</b>			
Preferred Pro USB Keyboard	73P5220		
Enhanced Performance USB Keyboard	73P2620		
Lenovo USB Fingerprint Keyboard	73P4730		
Lenovo USB Smartcard Keyboard	51J0155		
Ultraslim Plus Wireless Keyboard and Mouse <sup>52</sup>	0A34032		
More information at <a href="http://www.lenovo.com/support/keyboards">www.lenovo.com/support/keyboards</a>			
<b>Mouse</b>			
Lenovo Optical Mouse (USB)	06P4069		
Lenovo ScrollPoint Mouse (USB, Optical)	31P7405		
Lenovo Laser Mouse (USB)	41U3074		
Lenovo Wireless Laser Mouse <sup>52</sup>	0A36188		
More information at <a href="http://www.lenovo.com/support/mice">www.lenovo.com/support/mice</a>			
<b>Monitors - ThinkVision®</b>			
L1711p 17" (VGA, DVI-D)	5047HB2		
LT1952p Wide 19" (VGA, DP, DVI-D) <sup>69</sup>	2448MB6		
L2250p Wide 22" (VGA, DVI-D)	2572HB6		
L2251x Wide 22" (VGA, DP)	2578HB6		
LT2252p Wide 22" (VGA, DP, DVI-D) <sup>69</sup>	2572MB6		
LT2452p Wide 24" (VGA, DP, DVI-D) <sup>69</sup>	4420MB2		
More information at <a href="http://www.lenovo.com/support/monitors">www.lenovo.com/support/monitors</a>			
<b>Monitor accessories<sup>46</sup></b>			
Kensington® MicroSaver® Cable Lock	73P2582		
Kensington Twin Head Cable Lock	45K1620		
More information at <a href="http://www.lenovo.com/support/monitoraccessories">www.lenovo.com/support/monitoraccessories</a>			
<b>Graphics</b>			
DisplayPort™ to Single-link DVI-D Cable <sup>50</sup>	45J7915		
DisplayPort to DisplayPort Monitor Cable <sup>50</sup>	0A36537		
NVIDIA® NVS™ 300 512MB DMS59 <sup>65</sup>	0A36528		
NVIDIA NVS 310 512MB	0B47074		
NVIDIA NVS 510 2GB Graphics Card by Lenovo	0B47077		
NVIDIA Quadro 512MB 410	0B47075		
NVIDIA Quadro 1GB 600	0A36183		
NVIDIA Quadro 1GB 2000	57Y4479		
NVIDIA Quadro 1GB 2000D	0A36541		
NVIDIA Quadro 2GB 4000	57Y4480		
NVIDIA Quadro K600 1GB Graphics Card by Lenovo	0B47394		
NVIDIA Quadro K2000 2GB Graphics Card by Lenovo	0B47392		
NVIDIA Quadro K4000 3GB Graphics Card by Lenovo	0B47393		
NVIDIA Quadro K5000 4GB Graphics Card by Lenovo	0B47081		
More information at <a href="http://www.lenovo.com/support/graphiccards">www.lenovo.com/support/graphiccards</a>			
		<sup>46</sup> Compatible on selected Lenovo and ThinkVision monitors.	
		<sup>50</sup> Attaches to selected DisplayPort graphics cards.	
		<sup>52</sup> Wireless via 2.4GHz technology using a micro-size USB receiver.	
		<sup>53</sup> Mixing of UDIMM and RDIMM is not supported.	
		<sup>54</sup> Actual memory operating speed depend on processor memory controller speed, installed memory speed, and quantity of memory DIMMs.	
		<sup>65</sup> Contains DMS59 to dual-DVI cable and DMS59 to dual-VGA cable.	
		<sup>68</sup> ThinkStation D30 needs SAS HDD Enablement Module or LSI SATA/SAS adapter to support SAS hard drive.	
		<sup>69</sup> DisplayPort cable is not included; use optional DisplayPort to DisplayPort Monitor Cable (0A36537).	
		For more information on accessories: <a href="http://www.lenovo.com/accessories">www.lenovo.com/accessories</a> Purchase Lenovo accessories	
		<a href="http://www.lenovo.com/support/accessories">www.lenovo.com/support/accessories</a> Product specifications on Lenovo Support	
		<a href="http://www.lenovo.com/accessoriesguide">www.lenovo.com/accessoriesguide</a> Option Compatibility Matrix (OCM) and accessory brochures	
		<a href="http://www.lenovoquickpick.com">www.lenovoquickpick.com</a> An Options Compatibility Configurator for Lenovo systems	

The TopSeller™ services are designed to make selling the popular services with TopSeller systems faster and easier. Channel partners should always use TopSeller services with TopSeller systems. TopSeller services part numbers typically provide enhanced discounts and incentives for channel partners. The TopSeller service delivered to the customer is identical to the service delivered using a standard service part number. In situations where a desired service is not offered under a TopSeller service part number or the sale requires a special bid process, use available standard service part numbers.

*TopSeller services should always be offered by channel business partners with TopSeller hardware, unless the sale requires special bid pricing or the desired service is not offered as a TopSeller service part.*

For more information see:

<http://www2.partnerinfo.lenovo.com/partners/us/resources/salestoolkit.shtml>

Base Warranty	Upgrade Service Description	Part Number
3YR Onsite	TopSeller Services - 4YR Onsite	04W8713
3YR Onsite	TopSeller Services - 3YR Priority Support	04W8721
3YR Onsite	TopSeller Services - 4YR Priority Support*	04W8722

\* Covered machine must have concurrent warranty coverage.

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

For more information see:

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

<b>Base Warranty</b>	<b>Upgrade Service Description</b>	<b>Part Number</b>
3YR Onsite	4YR Onsite	43R8983
3YR Onsite	5YR Onsite	43R8987
3YR Onsite	3YR Priority Support	45J9081
3YR Onsite	4YR Onsite + 4YR Priority	45J9082
3YR Onsite	5YR Onsite + 5YR Priority	45J9083
3YR Onsite	1YR Post Warranty Onsite	41C9282
3YR Onsite	2YR Post Warranty Onsite	41C9285
3YR Onsite	3YR KYD*	55Y2602

\*KYD = Keep Your Drive (Hard Disk Drive Retention)

**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, go to [http://support.lenovo.com/en\\_US/product-service/warranty-status/WarrantyPolicies.page](http://support.lenovo.com/en_US/product-service/warranty-status/WarrantyPolicies.page). 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. Support unrelated to a warranty issue may be subject to additional charges.
- <sup>4</sup> **SATA/SAS:** The system configuration supports the installation of SATA, SAS, or mixing of SATA and SAS. But mixing of SATA and SAS disks into one RAID array will not be 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>7</sup> **Lenovo 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 Lenovo Warranty Services 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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