ThinkStation

Product Specifications Reference Lenovo® ThinkStation® Workstations 2013 to present - withdrawn

December 2013 - Version 447
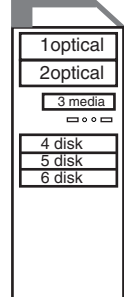

ThinkStation Family
(ThinkStation E32 SFF/E32 Tower/D30/S30/C30)

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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	**Intel® Xeon® E5-1603 processor (4C/4T, 2.8GHz, 10MB)**, 4-channel capable DDR3 memory controller (up to 1066MHz) **Intel Xeon E5-1620 processor (4C/8T, 3.6GHz, 10MB)**, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz) **Intel Xeon E5-1650 processor (6C/12T, 3.2GHz, 12MB)**, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz) **Intel Xeon E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz) **Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz)
Implementation	One LGA2011 socket, supports up to one processor
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 4-channel capable, eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *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*
Graphics	Supports up to NVIDIA® Quadro® 5000 (see accessories sheet O-FOR) *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 2000D**, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W *Some:* **NVIDIA Quadro 4000**, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W
Media reader Optical Hard drive(s)	*Media:* 25-in-1 Media card reader, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive *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
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 *SATA:* **Three** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 chipset *SAS:* **Three** SATA/SAS⁴ 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® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	**Intel C602 Chipset**
Front ports Rear ports IEEE 1394 adptr	Two USB 2.0, microphone (3.5mm), headphone (3.5mm) 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) No onboard 1394 ports; *1394 models:* additional FireWire PCIe adapter, 1394a-2000, 400Mbps, two 6-pin ports on rear
Audio Speaker Ethernet Security chip	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio One onboard gigabit ethernet, Intel 82579 STMicroelectronics ST19WP18 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard Mouse Power supply	Preferred Pro USB Keyboard (USB connector), 104-key, black Optical Wheel Mouse (USB connector), black 610 watts with 120mm bottom-mounted variable speed fan, universal, **Climate Savers® Computing Gold**, **80 PLUS® Gold** 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

```
1 optical
2 optical
3 media
4 disk
5 disk
6 disk
```

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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

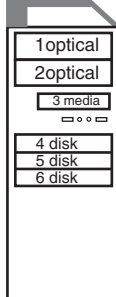Please visit www.lenovo.com/support/ISV

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
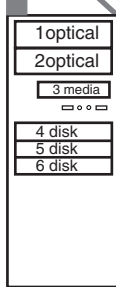US model(s) withdrawn effective December 3, 2013

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(FOR1-1) December 2013

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	**Intel® Xeon® E5-1603 processor (4C/4T, 2.8GHz, 10MB)**, 4-channel capable DDR3 memory controller (up to 1066MHz) **Intel Xeon E5-1650 processor (6C/12T, 3.2GHz, 12MB)**, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz) **Intel Xeon E5-1660 processor (6C/12T, 3.3GHz, 15MB)**, Turbo Boost 2.0 (up to 3.9GHz), 4-channel DDR3 memory controller (up to 1600MHz) **Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel capable DDR3 memory controller (up to 1066MHz)
Implementation	One LGA2011 socket, supports up to one processor
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 4-channel capable, eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *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*
Graphics	Supports up to NVIDIA® Quadro® 5000 (see accessories sheet O-FOR) *Some:* **NVIDIA Quadro 400**, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W *Some:* **NVIDIA Quadro 2000D**, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W *Some:* **NVIDIA Quadro 4000**, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W
Media reader Optical Hard drive(s)	*Media:* 25-in-1 Media card reader, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive *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
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 *SATA:* **Three** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 chipset *SAS:* **Three** SATA/SAS[4] 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® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	**Intel C602 Chipset**
Front ports Rear ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm) 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 Speaker Ethernet Security chip	High Definition (HD) Audio, Realtek® ALC662 codec Internal speaker for business audio One onboard gigabit ethernet, Intel 82579 STMicroelectronics ST19WP18 Trusted Platform Module (TPM), TCG 1.2-compliant
Keyboard Mouse Power supply	Preferred Pro USB Keyboard (USB connector), 104-key, black Optical Wheel Mouse (USB connector), black 610 watts with 120mm bottom-mounted variable speed fan, universal, **Climate Savers® Computing Gold**, **80 PLUS® Gold** 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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

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
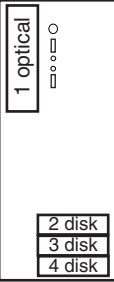US model(s) withdrawn effective December 3, 2013

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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
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	**Intel® Xeon® E5-1620 processor (4C/8T, 3.6GHz, 10MB)**, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz) **Intel Xeon E5-1650 processor (6C/12T, 3.2GHz, 12MB)**, Turbo Boost 2.0 (up to 3.8GHz), 4-channel capable DDR3 memory controller (up to 1600MHz) **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 capable DDR3 memory controller (up to 1333MHz)
Implementation	One LGA2011 socket, supports up to one processor
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 4-channel capable, eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *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*
Graphics	Supports up to NVIDIA® Quadro® 5000 (see accessories sheet O-FOR) *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 Optical Hard drive(s)	*Media:* 25-in-1 Media card reader, internal USB 2.0 Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive *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
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
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Chipset	**Intel C602 Chipset**
Front ports Rear ports	Two USB 2.0, microphone (3.5mm), headphone (3.5mm) 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) *16U:* 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 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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** 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
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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
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* *Adapters >75W use auxiliary power connector(s) from PSU*

SECURITY
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Preloaded applications[5] (only some listed)
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- Corel® WinDVD® (DVD±RW model(s))
- Ulead® DVD MovieFactory® (DVD±RW model(s))

ISV certifications
Please visit 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
US model(s) withdrawn effective December 3, 2013

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(FOR1-3) December 2013

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	**Intel® Xeon® E5-2603 processor** (4C/4T, 1.8GHz, 10MB, **6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* ● *Over four DIMMs requires dual processors* ● *Mixing of RDIMM and UDIMM is not supported*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-ALI) *Some:* **NVIDIA Quadro NVS 300**, PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W *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 2000D**, 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)	*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	**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, 5 support via Intel C602 Chipset
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives *SATA:* **Three** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset *SAS:* **Three** SATA/SAS[4] 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® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet
Intel AMT	Supports Intel Active Management Technology 7

Tower
- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H (without rubber feet)
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1   5.25",1.6" high, external, for optical
Bay 2-4   3.5", 1" high, internal, for disk

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

* 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[20]
- Windows® 7 Professional 64

Preloaded applications[5] (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

GREENGUARD® certified
RoHS-compliant
EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-ALI sheet

See footnotes for important warranty information
US model(s) announced April 3, 2012
US model(s) withdrawn effective December 3, 2013

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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	**Intel® Xeon® E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz) **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)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* ● *Over four DIMMs requires dual processors* ● *Mixing of RDIMM and UDIMM is not supported*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-ALI) *Some:* **NVIDIA Quadro 600**, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W *Some:* **NVIDIA Quadro 2000D**, 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)	*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	**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, 5 support via Intel C602 Chipset
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives *SATA:* **Three** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset *SAS:* **Three** SATA/SAS[4] 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® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet
Intel AMT	Supports Intel Active Management Technology 7

Tower

- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H (without rubber feet)
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1   5.25",1.6" high, external, for optical
Bay 2-4   3.5", 1" high,   internal, for disk

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

*   *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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

GREENGUARD® certified
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EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-ALI sheet
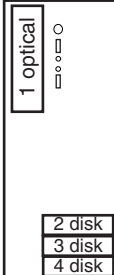
See footnotes for important warranty information
US model(s) announced April 3, 2012
US model(s) withdrawn effective December 3, 2013

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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	**Intel® Xeon® E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz) **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)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* ● *Over four DIMMs requires dual processors* ● *Mixing of RDIMM and UDIMM is not supported*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-ALI) *Some:* **NVIDIA Quadro NVS 300**, PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W *Some:* **NVIDIA Quadro 400**, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W *Some:* **NVIDIA Quadro 600**, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W
Media reader	None
Optical	Super Multi-Burner DL DVD±RW SATA 1.5Gb/s Drive
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	**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, 5 support via Intel C602 Chipset
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives *SATA:* **Three** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset *SAS:* **Three** SATA/SAS[4] 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® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet
Intel AMT	Supports Intel Active Management Technology 7

Tower

- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H (without rubber feet)
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

```
                     ┌──────────────┐
                     │ 1 optical    │
                     ├──────────────┤
                     │ 2 disk       │
                     │ 3 disk       │
                     │ 4 disk       │
                     └──────────────┘
```

Bay 1   5.25",1.6" high, external, for optical
Bay 2-4 3.5", 1" high, internal, for disk

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

* *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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

GREENGUARD® certified
RoHS-compliant
EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-ALI sheet

See footnotes for important warranty information
US model(s) announced April 3, 2012
US model(s) withdrawn effective December 3, 2013

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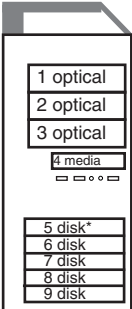| Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS-SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
1095-53U	1xE5-2620	1333MHz UDIMM	1x4GB	No	SATA	No	1x500GB 3.5" 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	**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) **Intel Xeon E5-2630 processor (6C/12T, 2.3GHz, 15MB, 7.2 GT/s QPI x2)**, Turbo Boost 2.0 (up to 2.8GHz), 4-channel DDR3 memory controller (up to 1333MHz)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), eight 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 64GB max (8x8GB) *RDIMM:* up to PC3-12800 1600MHz, 128GB max (8x16GB)
Additional memory disclaimers	● *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* ● *Over four DIMMs requires dual processors* ● *Mixing of RDIMM and UDIMM is not supported*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-ALI) *Some:* **NVIDIA Quadro 2000D**, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W *Some:* **NVIDIA Quadro 4000**, PCIe x16 adapter, 2GB, two DisplayPort™, one dual-link DVI-I, one stereo, 142W
Media reader	None
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	**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, 5 support via Intel C602 Chipset
Onboard SATA/SAS - SCU	Three SATA or SAS Storage Controller Unit (SCU) connectors (blue) for hard drives *SATA:* **Three** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5 support via Intel C602 Chipset *SAS:* **Three** SATA/SAS[4] 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® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty	3-year parts and labor; more Lenovo® services see on S-TS sheet
Intel AMT	Supports Intel Active Management Technology 7

Tower

- Rack-mountable to 3U
- Raven black color; metal case
- 5.1"W x 17.5"D x 16.8"H
- 130mm W x 444mm D x 427mm H (without rubber feet)
- 40.7 lb (18.5kg) max configuration
- 24-liter
- Toolless side cover removal
- Toolless disk and optical drive removal
- Toolless adapter retention
- Illuminated front icons
- Rack shelf support or optional rail kit

Bay 1   5.25",1.6" high, external, for optical
Bay 2-4   3.5", 1" high,   internal,   for disk

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

* *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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

GREENGUARD® certified
RoHS-compliant
EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-ALI sheet

See footnotes for important warranty information
US model(s) announced April 3, 2012
US model(s) withdrawn effective May 2012 or December 3, 2013

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(ALI1-4) December 2013

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	**Intel**® **Xeon**® **E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz) **Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 128GB max (16x8GB) *RDIMM:* up to PC3-12800 1600MHz, 256GB max (16x16GB)
Additional memory disclaimers	• *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* • *Over eight DIMMs requires dual processors* • *Mixing of RDIMM and UDIMM is not supported* • *Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-HOL) *Some:* **NVIDIA Quadro 400**, PCIe x16 adapter, 512MB, one DisplayPort™, one dual-link DVI-I, 32W *Some:* **NVIDIA Quadro 600**, PCIe x16 adapter, 1GB, one DisplayPort, one dual-link DVI-I, 40W
Media reader	*Media:* 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)	*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	**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, 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 *SATAx4:* **Four** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset *SATAx5:* **Five** 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) *SAS:* **Five** SATA/SAS[4] 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	*LSI:* LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers**® **Computing Gold**, **80 PLUS**® **Gold** qualified
Limited Warranty[1]	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[20]
- Windows® 7 Professional 64

Preloaded applications[5] (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

GREENGUARD® certified
RoHS-compliant
EPEAT™ Gold rating

Supports ThinkVantage® technologies

More compatible accessories, please see O-HOL sheet

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	**Intel® Xeon® E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz) **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)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 128GB max (16x8GB) *RDIMM:* up to PC3-12800 1600MHz, 256GB max (16x16GB)
Additional memory disclaimers	● *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* ● *Over eight DIMMs requires dual processors* ● *Mixing of RDIMM and UDIMM is not supported* ● *Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-HOL) *Some:* **NVIDIA Quadro 2000D**, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W *Some:* **NVIDIA Quadro 4000**, PCIe x16 adapter, 2GB, two DisplayPort™, one dual-link DVI-I, one stereo, 142W
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)	*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	**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, 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 *SATAx4:* **Four** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset *SATAx5:* **Five** 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) *SAS:* **Five** SATA/SAS[4] 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	*LSI:* LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty[1]	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

1 optical
2 optical
3 optical
4 media
5 disk*
6 disk
7 disk
8 disk
9 disk

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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

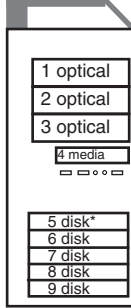Please visit www.lenovo.com/support/ISV

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
US model(s) withdrawn effective December 3, 2013

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(HOL1-2) December 2013

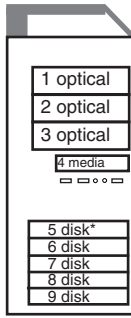| Type-model	Processor(s)	Memory (MHz/type)	Memory DIMMs	Discrete SATA/SAS adapter	Onboard SATA/SAS -SCU	Pre-conf RAID	Hard drive(s)	Media reader	SATA optical	Graphics and GPU Computing	1394 adptr	Global	Chassis intrusion switch	Win7 preload
4223-54U	1xE5-2603	1333MHz UDIMM	1x4GB	No	SATAx4	No	1x500GB 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	**Intel® Xeon® E5-2603 processor (4C/4T, 1.8GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz) **Intel Xeon E5-2609 processor (4C/4T, 2.4GHz, 10MB, 6.4 GT/s QPI x2)**, 4-channel DDR3 memory controller (up to 1066MHz)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 128GB max (16x8GB) *RDIMM:* up to PC3-12800 1600MHz, 256GB max (16x16GB)
Additional memory disclaimers	• *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* • *Over eight DIMMs requires dual processors* • *Mixing of RDIMM and UDIMM is not supported* • *Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-HOL) *Some:* **NVIDIA Quadro NVS 300**, PCIe x16 adapter, 512MB, DMS59 to dual single-link DVI-I, 17.5W *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 2000D**, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W
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)	*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	**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, 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 *SATAx4:* **Four** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset *SATAx5:* **Five** 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) *SAS:* **Five** SATA/SAS[4] 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	*LSI:* LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty[1]	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)
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- 60.6 lb (27.5kg) max configuration
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- Removable handle on top front
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- 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)
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- 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[20]
- Windows® 7 Professional 64

Preloaded applications[5] (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

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
US model(s) withdrawn effective December 3, 2013

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(HOL1-3) December 2013

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	**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) **Intel Xeon E5-2630 processor (6C/12T, 2.3GHz, 15MB, 7.2 GT/s QPI x2)**, Turbo Boost 2.0 (up to 2.8GHz), 4-channel DDR3 memory controller (up to 1333MHz)
Implementation	Two LGA2011 sockets, supports up to two processors
Memory	**UDIMM** or **RDIMM**, **ECC**, **DDR3**, 8-channel capable (4-channel per processor), sixteen 240-pin DIMM sockets *UDIMM:* up to PC3-10600 1333MHz, 128GB max (16x8GB) *RDIMM:* up to PC3-12800 1600MHz, 256GB max (16x16GB)
Additional memory disclaimers	● *Actual memory operating speed depends on processor memory controller speed, installed memory speed, and quantity of memory DIMMs* ● *Over eight DIMMs requires dual processors* ● *Mixing of RDIMM and UDIMM is not supported* ● *Maximum memory capacity is also limited by operating system (e.g. Windows 7 Professional 64 supports up to 192GB)*
Graphics	Supports up to two NVIDIA® Quadro® 5000, NVIDIA SLI® Technology support (see accessory sheet O-HOL) *Some:* **NVIDIA Quadro 600**, PCIe x16 adapter, 1GB, one DisplayPort™, one dual-link DVI-I, 40W *Some:* **NVIDIA Quadro 2000D**, PCIe x16 adapter, 1GB, two dual-link DVI-I, 62W *Some:* **NVIDIA Quadro 4000**, PCIe x16 adapter, 2GB, two DisplayPort, one dual-link DVI-I, one stereo, 142W
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)	*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	**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, 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 *SATAx4:* **Four** SATA connectors for hard drives, SATA 3.0Gb/s, RAID 0, 1, 5, 10 support via Intel C602 Chipset *SATAx5:* **Five** 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) *SAS:* **Five** SATA/SAS[4] 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	*LSI:* LSI® SAS 9240-8i, PCI Express® bus, SATA 6.0Gb/s, SAS 6.0Gb/s, RAID 0, 1, 5, 10 support
Chipset	**Intel C602 Chipset**
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, **Climate Savers® Computing Gold**, **80 PLUS® Gold** qualified
Limited Warranty[1]	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

```
1 optical
2 optical
3 optical
4 media
5 disk*
6 disk
7 disk
8 disk
9 disk
```

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[20]

- Windows® 7 Professional 64

Preloaded applications[5] (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

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
US model(s) withdrawn effective December 3, 2013

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Availability: All offers subject to availability. Lenovo reserves the right to alter product offerings and specifications at any time, without notice. Lenovo is not responsible for photographic or typographic errors.

Warranty: For a copy of applicable product warranties, go to http://support.lenovo.com/en_US/product-service/warranty-status/WarrantyPolicies.page . Lenovo makes no representation or warranty regarding third party products or services.

[1] **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges.

[2] **Hard drive:** GB = billion bytes, TB = trillion bytes. Accessible capacity is less.

[3] **Systems with limited onsite service** are designed to be repaired during the applicable warranty period primarily with customer-replaceable parts provided by Lenovo. Lenovo will only send a technician onsite to perform a repair if (a) remote telephone diagnosis and/or customer part replacement are unable to resolve the problem, or (b) the part is one of the few designated by Lenovo for onsite replacement. For a list of onsite replaceable parts, contact Lenovo. Support unrelated to a warranty issue may be subject to additional charges.

[4] **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.

[5] **Included software** may differ from its retail version (if available), and may not include user manuals or all program functionality. License agreements may apply.

[7] **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.

[8] **RAID:** Supported RAID levels for a system will vary from the stated capabilities of the RAID controller due to dependencies on the number and capacity of physical disks in the system and on customer requirements for performance, fault tolerance, or data redundancy.
RAID levels and requirements:
- *RAID 0 (striping)* provides increased performance by writing data across multiple drives.
- *RAID 1 (mirroring)* provides fault tolerance by writing the data on two drives.
- *RAID 5 (striping with parity)* uses distributed parity data to provide fault tolerance more efficiently than RAID 1. Requires three or more drives.
- *RAID 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.

[9] **International Warranty Service** is available in any country in which this product is sold and serviced. Service delivery methods and parts availability vary by country, may be different from that in the country of purchase, and are subject to change without notice. Fees and restrictions may apply in some countries.

[14] **Response times may vary.** May exclude some holidays. Telephone support may be subject to additional charges.

[20] **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 and enter your machine type and model number for more information.

ThinkStation.

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Visit **www.lenovo.com/psref** for the latest version of Product Specifications Reference.