PSREF

Product Specifications Reference

ThinkStation

ThinkStation

Lenovo

Contents

Summary of Changes

This section describes the technical changes made in this edition.
This edition might also include minor corrections and editorial changes which are not identified.

November 24, 2021 - Version 586
Additions in this update

►**New product(s)**
None

►**Spec updated**
ThinkStation P340 Tiny
ThinkStation P348 Tower
ThinkStation P350 Tower
ThinkStation P350 SFF

Withdrawals in this update

►**Withdrawn product(s)**
None

OVERVIEW
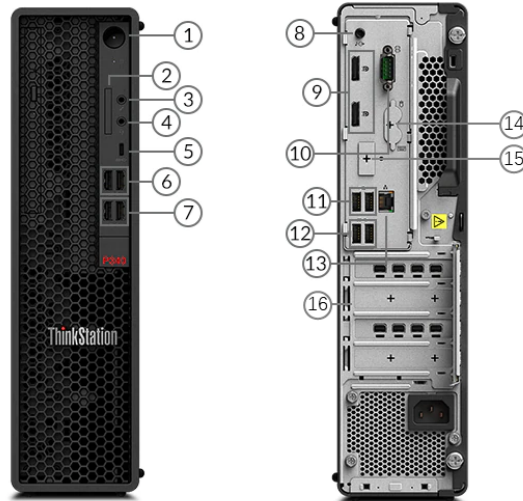
1. Power button	9. 2x DisplayPort
2. Card reader *	10. Serial
3. Microphone (3.5mm)	11. 2x USB 2.0
4. Headphone / microphone combo jack (3.5mm)	12. 2x USB 3.2 Gen 1
5. USB-C 3.2 Gen 1	13. Ethernet (RJ-45)
6. 2x USB 3.2 Gen 1	14. 2x PS/2 ports (keyboard / mouse) *
7. 2x USB 3.2 Gen 2	15. Video port (DisplayPort, HDMI, or USB-C) *
8. Line-out (3.5mm)	16. Optional ports on expansion cards *

Notes:
• Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one Intel® Core™ i3 / i5 / i7 / i9 or Intel Xeon® Processor

Processor[**]

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Core i3-10100	4	8	3.6GHz	4.3GHz	6MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10300	4	8	3.7GHz	4.4GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10320	4	8	3.8GHz	4.6GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10400	6	12	2.9GHz	4.3GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10500	6	12	3.1GHz	4.5GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10600	6	12	3.3GHz	4.8GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i7-10700	8	16	2.9GHz	4.8GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i9-10900	10	20	2.8GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Xeon W-1250	6	12	3.3GHz	4.7GHz	12MB	DDR4-2666	Intel UHD Graphics P630
Xeon W-1270	8	16	3.4GHz	5.0GHz	16MB	DDR4-2933	Intel UHD Graphics P630
Xeon W-1290	10	20	3.2GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics P630

Processor Sockets

1x FCLGA1200

Operating System

Operating System[**]

- Windows® 10 Pro 64
- Windows 10 Pro 64 for Workstations
- Windows 10 Home 64
- Ubuntu Linux LTS
- No operating system

Graphics

Integrated Graphics[**]

- Intel UHD Graphics 630
- Intel UHD Graphics P630

Discrete Graphics Support

Supports up to two NVIDIA® Quadro® P1000

Discrete Graphics Offering[***]

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P400	2GB GDDR5	30W	3x miniDP 1.4	None
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel W480 chipset

Memory

Max Memory[1]

Up to 128GB DDR4-2933

Memory Type**

- DDR4-2933 UDIMM ECC
- DDR4-2933 UDIMM non-ECC

Memory Slots

Four DDR4 UDIMM slots, dual-channel capable

Memory Protection

ECC on models with ECC DIMMs and Xeon processor

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 1x 3.5″ SATA HDD / 2x 2.5″ SATA HDD / SSD + 4x M.2 PCIe SSD
- 3.5″ HDD up to 4TB
- 2.5″ SATA HDD up to 1TB each
- 2.5″ SATA SSD up to 1TB each
- M.2 SSD up to 2TB each
- Optional Intel Optane™ Memory

Storage Type***

Disk Type	Interface	RPM	Offering
2.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB FIPS
2.5″ SATA SSD	SATA 6Gb/s	-	512GB / 1TB
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
Onboard Intel RST PCIe RAID	Standard	PCIe NVMe	0/1	None
Onboard Intel RST SATA RAID	Standard	SATA 6.0Gb/s	0/1	None

Removable Storage

Optical Support

Optional one 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC623 codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
310W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
380W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Mini-tower (8.2L)

Dimensions (WxDxH)

Models	Dimensions
All models	92.5 x 309.7 x 339.5 mm (3.6 x 9.3 x 13.4 inches)

Weight

Models	Weight
All models	5.65 kg (12.46 lbs, maximum configuration)

Bays

- 1x 2.5″ disk bay (optional, comes with disk or Storage Bay Upgrade Kit)
- 1x 3.5″ disk bay (optional, comes with disk or Storage Bay Upgrade Kit)

M.2 Slots

Up to 4x M.2 SSD:
• 2 via onboard slots
• 2 via Single M.2 to PCIe adapter

Expansion Slots

- One PCIe 3.0 x16
- One PCIe 3.0 x16 (x4 lanes)
- One PCIe 3.0 x1

Expansion Slots Offering

Slot 1: PCIe 3.0 x16, low profile, links to CPU
Slot 2: PCIe 3.0 x1, low profile, links to PCH
Slot 3: PCIe 3.0 x16 (negotiable link width x4), low profile, links to PCH

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

- Intel Wi-Fi® 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, M.2 Card
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x USB-C 3.2 Gen 1
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

Rear Ports[2]

- 2x USB 2.0
- 2x USB 3.2 Gen 1
- 2x DisplayPort™
- 1x serial (9-pin)
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

Optional Rear Ports***

- 2x USB 2.0
- 2x USB 3.2 Gen 1 (via 2-port USB expansion card, PCIe x1)
- 2x USB-C 3.2 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt™
- 1x video (DisplayPort, HDMI®, or USB-C)
- 1x serial
- 4x serial (via 4-port serial expansion card, PCIe x1)
- 1x parallel
- 2x PS/2

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

- (Optional) Cable lock
- (Optional) E-lock
- Kensington® Security Slot

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management**

- Intel vPro Technology, DASH
- Standard Manageability

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty

3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- (Optional) EPEAT™ Gold
- (Optional) EPEAT Silver
- ENERGY STAR® 8.0
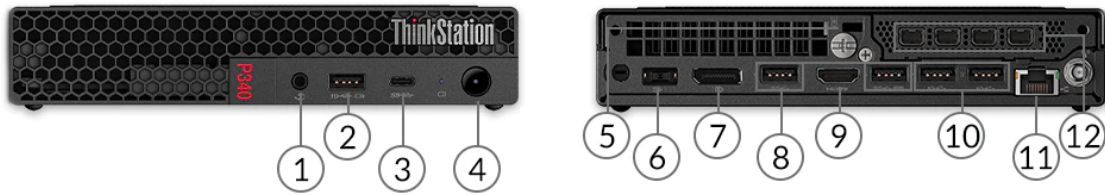- RoHS compliant

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.

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OVERVIEW

1. Headphone / microphone combo jack (3.5mm)	7. DisplayPort
2. USB 3.2 Gen 2 (Always On and fast charge)	8. 2x USB 3.2 Gen 1
3. USB-C 3.2 Gen 1	9. HDMI
4. Power button	10. 2x USB 3.2 Gen 2
5. Kensington Security Slot	11. Ethernet (RJ-45)
6. Power connector	12. 4x MiniDP *

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one Intel® Core™ i3 / i5 / i7 / i9 Processor

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Core i3-10100	4	8	3.6GHz	4.3GHz	6MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10100T	4	8	3.0GHz	3.8GHz	6MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10300	4	8	3.7GHz	4.4GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10300T	4	8	3.0GHz	3.9GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10320	4	8	3.8GHz	4.6GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10400	6	12	2.9GHz	4.3GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10400T	6	12	2.0GHz	3.6GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10500	6	12	3.1GHz	4.5GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10500T	6	12	2.3GHz	3.8GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10600	6	12	3.3GHz	4.8GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10600T	6	12	2.4GHz	4.0GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i7-10700	8	16	2.9GHz	4.8GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i7-10700T	8	16	2.0GHz	4.5GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i9-10900	10	20	2.8GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Core i9-10900T	10	20	1.9GHz	4.6GHz	20MB	DDR4-2933	Intel UHD Graphics 630

Processor Sockets

1x FCLGA1200

Operating System

Operating System**

- Windows® 10 Pro 64
- Windows 10 Home 64
- Windows 11 Pro 64
- Windows 11 Home 64
- Ubuntu Linux LTS
- No operating system

Graphics

Integrated Graphics

Intel UHD Graphics 630

Discrete Graphics Support

Supports one optional discrete graphics card

Discrete Graphics Offering**

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro® P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel Q470 chipset

Memory

Max Memory[1]

Up to 64GB DDR4-2933

Memory Type

DDR4-2933 non-ECC

Memory Slots

Two DDR4 SO-DIMM slots, dual-channel capable

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to two drives, 2x M.2 PCIe SSD
• M.2 SSD up to 2TB each

Storage Type

Disk Type	Interface	RPM	Offering
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB

Removable Storage

Optical Support

Optional one 9.0mm optical drive via optical drive kit, DVD-ROM or DVD±RW

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC233 codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
170W	Adapter	89%	100V - 240V
230W	Adapter	89%	100V - 240V

DESIGN

Mechanical

Form Factor

Tiny (1L)

Dimensions (WxDxH)

Models	Dimensions
All models	37 x 182.9 x 179 mm (1.5 x 7.2 x 7.0 inches)

Weight

Models	Weight
All models	1.4 kg (3 lbs, maximum configuration)

Bays

No bays

M.2 Slots

Up to 2x M.2 SSD via onboard slots

Expansion Slots

One PCIe 3.0 x16 or x4 slot, low-profile, via riser card

Expansion Slots Offering

One PCIe slot via specific riser card:
PCIe 3.0 x16 (negotiable link width x8) and low profile for discrete graphics card
PCIe 3.0 x4 and low profile for ethernet adapter and Thunderbolt™ adapter

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®[**]

- Realtek RTL8822CE, 802.11ac Dual Band 2x2 Wi-Fi® + Bluetooth 5.0, M.2 card
- Intel Wireless-AC 9560, 802.11ac Dual Band 2x2 Wi-Fi + Bluetooth 5.1, M.2 card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 1x USB 3.2 Gen 2 (Always On and fast charge)
- 1x USB-C 3.2 Gen 1
- 1x headphone / microphone combo jack (3.5mm)

Rear Ports[2]

- 2x USB 3.2 Gen 1 (one supports Smart Power On)
- 2x USB 3.2 Gen 2
- 1x HDMI®
- 1x DisplayPort™
- 1x Ethernet (RJ-45)

Optional Rear Ports[***]

- 2x USB 3.2 Gen 1
- 1x Thunderbolt
- Optional port 1 (one of VGA / 2nd DisplayPort / 2nd HDMI / serial / USB-C 3.2 Gen 1 with DisplayPort function)
- Optional port 2 (serial)

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

Kensington® Security Slot

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management**

- Intel vPro with Intel AMT 14.0 (vPro-enable processor and WiFi needed)
- Standard Manageability

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty

3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Silver
- ENERGY STAR® 8.0
- RoHS compliant

Other Certifications

Mil-Spec Test

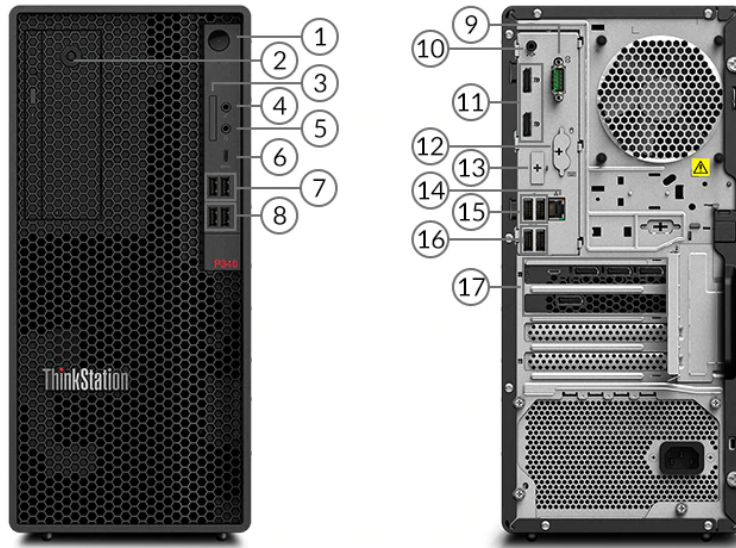MIL-STD-810G military test passed

ISV Certifications

ISV Certifications

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OVERVIEW

1.	Power button	10. Line-out (3.5mm)
2.	Optical drive *	11. 2x DisplayPort
3.	Card reader	12. 2x PS/2 ports (keyboard / mouse) *
4.	Microphone (3.5mm)	13. Video port (DisplayPort, HDMI, or USB-C) *
5.	Headphone / microphone combo jack (3.5mm)	14. Ethernet (RJ-45)
6.	USB-C 3.2 Gen 1	15. 2x USB 2.0
7.	2x USB 3.2 Gen 1	16. 2x USB 3.2 Gen 1
8.	2x USB 3.2 Gen 2	17. Optional ports on expansion cards *
9.	Serial	

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one Intel® Core™ i3 / i5 / i7 / i9 or Intel Xeon® Processor

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
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Core i3-10300	4	8	3.7GHz	4.4GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10320	4	8	3.8GHz	4.6GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10400	6	12	2.9GHz	4.3GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10500	6	12	3.1GHz	4.5GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10600	6	12	3.3GHz	4.8GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10600K	6	12	4.1GHz	4.8GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i7-10700	8	16	2.9GHz	4.8GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i7-10700K	8	16	3.8GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i9-10900	10	20	2.8GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Core i9-10900K	10	20	3.7GHz	5.3GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Xeon W-1250	6	12	3.3GHz	4.7GHz	12MB	DDR4-2666	Intel UHD Graphics P630
Xeon W-1250P	6	12	4.1GHz	4.8GHz	12MB	DDR4-2666	Intel UHD Graphics P630
Xeon W-1270	8	16	3.4GHz	5.0GHz	16MB	DDR4-2933	Intel UHD Graphics P630
Xeon W-1270P	8	16	3.8GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics P630
Xeon W-1290	10	20	3.2GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics P630
Xeon W-1290P	10	20	3.7GHz	5.3GHz	20MB	DDR4-2933	Intel UHD Graphics P630

Processor Sockets

1x FCLGA1200

Operating System

Operating System**

- Windows® 10 Pro 64
- Windows 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- No operating system

Graphics

Integrated Graphics**

- Intel UHD Graphics 630
- Intel UHD Graphics P630

Discrete Graphics Support

Supports up to one NVIDIA® Quadro® RTX 5000 or two NVIDIA Quadro P2200, 500W PSU is needed

Discrete Graphics Offering***[1]

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P400	2GB GDDR5	30W	3x miniDP 1.4	None
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None
Quadro P2200	5GB GDDR5	75W	4x DP 1.4	None
Quadro RTX 4000	8GB GDDR6	160W	3x DP 1.4, 1x VirtualLink	None

| Quadro RTX 5000 | 16GB GDDR6 | 265W | 4x DP 1.4, 1x VirtualLink | None |

Notes:

1. NVIDIA Quadro RTX 5000 supports manufacture configure only, none standalone option is available

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel W480 chipset

Memory

Max Memory[1]

Up to 128GB DDR4-2933

Memory Type**

- DDR4-2933 UDIMM ECC
- DDR4-2933 UDIMM non-ECC

Memory Slots

Four DDR4 UDIMM slots, dual-channel capable

Memory Protection

ECC on models with ECC DIMMs and Xeon processor

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 2x 3.5″ SATA HDD / 4x 2.5″ SATA HDD / SSD + 4x M.2 PCIe SSD
- 3.5″ HDD up to 4TB each
- 2.5″ SATA HDD up to 1TB each
- 2.5″ SATA SSD up to 1TB each
- M.2 PCIe SSD up to 2TB each
- Optional Intel Optane™ Memory

Storage Type***

Disk Type	Interface	RPM	Offering
2.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB FIPS
2.5″ SATA SSD	SATA 6Gb/s	-	512GB / 1TB
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB
Intel Optane Memory	PCIe NVMe	-	-

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
Onboard Intel RST PCIe RAID	Standard	PCIe NVMe	0/1	None
Onboard Intel RSTe SATA RAID	Standard	SATA 6.0Gb/s	0/1/10/5	None

Removable Storage

Optical Support

Optional one 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC623 codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
300W	Fixed	90%	100V - 240V, 80 PLUS Gold qualified
500W	Fixed	92%	100V - 240V, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (17L)

Dimensions (WxDxH)

Models	Dimensions
All models	170 x 315.35 x 376 mm (6.7 x 12.4 x 14.8 inches)

Weight

Models	Weight
All models	9.38 kg (20.68 lbs, maximum configuration)

Bays

- 1x 3.5″ disk bay (standard)
- 2x 2.5″ disk bay (optional, comes with disk or optional upgrade kit)
- 1x 3.5″ disk bay (optional, via flex bay)

M.2 Slots

Up to 4x M.2 SSD:
• 2 via onboard slots
• 2 via Single M.2 to PCIe adapter

Expansion Slots

- One PCIe 3.0 x16
- One PCIe 3.0 x16 (x4 lanes)
- One PCIe 3.0 x1

Expansion Slots Offering

Slot 1: PCIe 3.0 x16, full height, full length, links to CPU
Slot 2: PCIe 3.0 x1, full height, full length, links to PCH
Slot 3: PCIe 3.0 x16 (negotiable link width x4), full height, full length, links to PCH

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®**

- Mediatek Wi-Fi® 6 MT7921, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, M.2 Card

- No WLAN and Bluetooth

Ports[1]

Front Ports

- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x USB-C 3.2 Gen 1
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

Rear Ports[2]

- 2x USB 2.0
- 2x USB 3.2 Gen 1
- 2x DisplayPort™
- 1x serial (9-pin)
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

Optional Rear Ports***

- 2x USB 2.0
- 2x USB 3.2 Gen 1 (via 2-port USB expansion card, PCIe x1)
- 2x USB-C 3.2 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt™
- 1x video (DisplayPort, HDMI®, or USB-C)
- 1x serial
- 4x serial (via 4-port serial expansion card, PCIe x1)
- 1x parallel
- 2x PS/2

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

- (Optional) Cable lock
- (Optional) E-lock
- Kensington® Security Slot
- Padlock Loop

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management**
- Intel vPro with Intel AMT 14.0 (vPro-enable processor and WiFi needed)
- Standard Manageability

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty**
- 1-year limited onsite service
- 2-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature
- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude
- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity
- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications
- (Optional) EPEAT™ Gold
- (Optional) EPEAT Silver
- ENERGY STAR® 8.0
- RoHS compliant

ISV Certifications

ISV Certifications

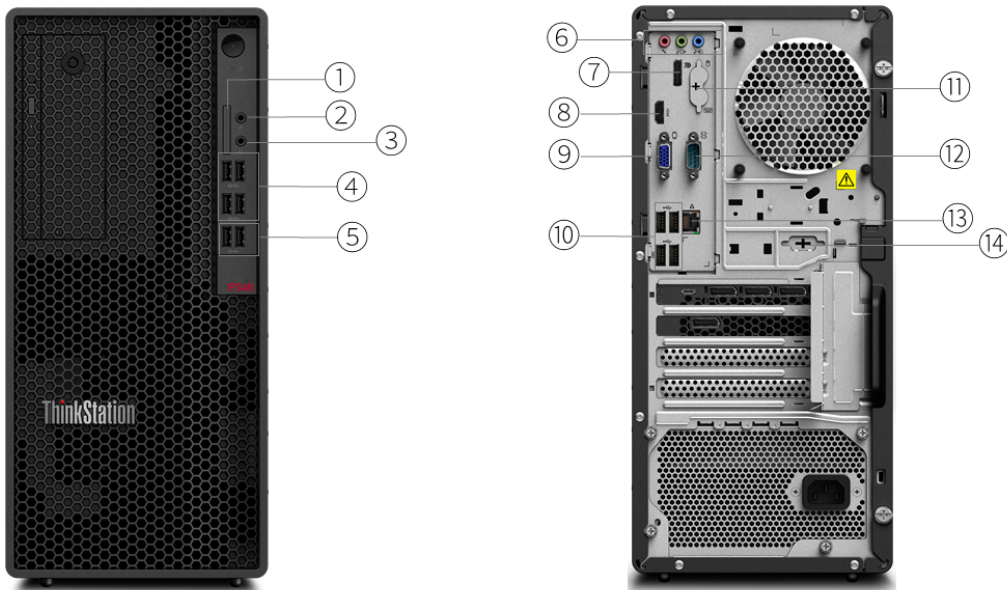Please visit www.thinkworkstations.com/isv-certifications/

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OVERVIEW

1.	SD card reader *	8.	HDMI
2.	Microphone (3.5mm)	9.	VGA
3.	Headphone (3.5mm)	10.	4x USB 2.0
4.	4x USB 3.2 Gen 1	11.	2x PS/2 ports (keyboard / mouse) *
5.	2x USB 3.2 Gen 2	12.	Serial
6.	3x Audio ports (3.5mm)	13.	Ethernet (RJ-45)
7.	DisplayPort	14.	Serial *

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

11th Generation Intel® Core™ i5 / i7 / i9 Processor

Processor[**]

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Core i5-11500	6	12	2.7GHz	4.6GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i5-11600	6	12	2.8GHz	4.8GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i7-11700	8	16	2.5GHz	4.9GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Core i9-11900	8	16	2.5GHz	5.2GHz	16MB	DDR4-3200	Intel UHD Graphics 750

Processor Sockets

1x FCLGA1200

Operating System

Operating System[**]

- Windows® 10 Pro 64
- Windows 10 Home 64
- Ubuntu Linux LTS
- Red Hat Enterprise Linux (certified only)
- No operating system

Graphics

Integrated Graphics

Intel UHD Graphics 750

Discrete Graphics Support

Supports up to one NVIDIA® GeForce® RTX™ 3060, NVIDIA T1000, or AMD Radeon™ Pro WX 3200

Discrete Graphics Offering[***]

Graphics	Memory	Power	Connector	SLI / NVlink
NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
AMD Radeon Pro WX 3200	4GB GDDR5	50W	4x miniDP 1.4	-
NVIDIA GeForce RTX 3060	12GB GDDR6	170W	3x DP 1.4a, 1x HDMI® 2.1	-

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel B560 chipset

Memory

Max Memory[1]

Up to 128GB (4x 32GB UDIMMs) DDR4-3200

Memory Type

DDR4-3200 UDIMM non-ECC

Memory Slots

Four DDR4 UDIMM slots, dual-channel capable

Memory Protection

Non-ECC

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to three drives, 2x 3.5″ SATA HDD + 1x M.2 SSD
• 3.5″ HDD up to 4TB each
• M.2 SSD up to 1TB

Storage Type***

Disk Type	Interface	RPM	Offering	Security
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB	-
M.2 2280 SSD	PCIe NVMe, PCIe 3.0 x4	-	256GB / 512GB / 1TB	Opal

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
Integrated NVMe controller	Standard	PCIe NVMe	-	None
Integrated SATA controller	Standard	SATA 6.0Gb/s	-	None

Removable Storage

Optical Support

Optional one 9.0mm optical drive, DVD-ROM or DVD±RW

Card Reader

• SD card reader
• No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC623-CG codec

Power Supply

Power Supply

Power	Type	Efficiency	Key Features
500W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (17L)

Dimensions (WxDxH)

Models	Dimensions
All models	170 x 315.4 x 376 mm (6.7 x 12.4 x 14.8 inches)

Weight

Models	Weight
All models	8.4 kg (18.5 lbs)

Bays

• 1x 3.5″ disk bay (standard)

- 1x 2.5″ disk bay (optional by 2.5″ HDD cage kit)
- 1x 3.5″ disk bay (optional, comes with disk or 3.5″ HDD cage kit in flex bay)

Flex Bays

1x Flex bay, supports 2nd 3.5″ disk bay and 9.0mm optical

M.2 Slots

Uo to 1x M.2 SSD via onboard slot

Expansion Slots

- One PCIe 4.0 x16
- Two PCIe 3.0 x1

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Realtek RTL8111K, 1x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

- Intel Wi-Fi® 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 4x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x headphone (3.5mm)
- 1x microphone (3.5mm)

Optional Front Ports

None

Rear Ports[2]

- 4x USB 2.0 (one supports Smart Power On)
- 1x VGA
- 1x HDMI
- 1x DisplayPort™
- 1x serial (9-pin)
- 1x Ethernet (RJ-45)
- 1x line-in (3.5mm)
- 1x line-out (3.5mm)
- 1x microphone (3.5mm)

Optional Rear Ports***

- 2x USB 2.0
- 2x USB 3.2 Gen 1 (via 2-port USB expansion card)
- 1x serial
- 4x serial (via 4-port serial expansion card, PCIe x1)
- 1x parallel
- 2x PS/2
- None

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
USB 2.0: 480 Mbit/s;
USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
Thunderbolt™ 3: 40 Gbit/s;
FireWire 400: 400 Mbit/s;
FireWire 800: 800 Mbit/s

2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Firmware TPM 2.0 integrated in chipset

Physical Locks

- (Optional) Cable lock
- (Optional) E-lock
- (Optional) Smart Cable Clip
- Kensington® Security Slot
- Padlock Loop

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management

None

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty**

- 1-year limited onsite service
- 2-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)
- No base warranty

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: 0 m (0 ft) to 3048 m (10,000 ft)
- Storage: 0 m (0 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Gold (on some models)
- ENERGY STAR® 8.0
- ErP Lot 3
- TCO Certified 8.0
- RoHS compliant
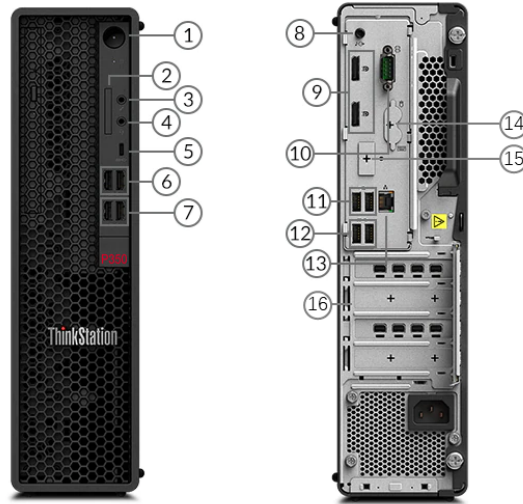
ISV Certifications

ISV Certifications

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OVERVIEW

1.	Power button	9. 2x DisplayPort
2.	Card reader *	10. Serial
3.	Microphone (3.5mm)	11. 2x USB 3.2 Gen 1
4.	Headphone / microphone combo jack (3.5mm)	12. 2x USB 3.2 Gen 1
5.	USB-C 3.2 Gen 2 (data transfer only)	13. Ethernet (RJ-45)
6.	2x USB 3.2 Gen 1	14. 2x PS/2 ports (keyboard / mouse) *
7.	2x USB 3.2 Gen 2	15. Video port (DisplayPort, HDMI, or USB-C) *
8.	Line-out (3.5mm)	16. Optional ports on expansion cards *

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

10th Generation Intel® Core™ i3, 11th Generation Intel Core i5 / i7 / i9, or Intel Xeon® Processor

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Core i3-10105	4	8	3.7GHz	4.4GHz	6MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10305	4	8	3.8GHz	4.5GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10325	4	8	3.9GHz	4.7GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10400	6	12	2.9GHz	4.3GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10500	6	12	3.1GHz	4.5GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-11400	6	12	2.6GHz	4.4GHz	12MB	DDR4-3200	Intel UHD Graphics 730
Core i5-11500	6	12	2.7GHz	4.6GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i5-11600	6	12	2.8GHz	4.8GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i7-10700	8	16	2.9GHz	4.8GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i7-11700	8	16	2.5GHz	4.9GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Core i9-10900	10	20	2.8GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Core i9-11900	8	16	2.5GHz	5.2GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Xeon W-1350	6	12	3.3GHz	5.0GHz	12MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1370	8	16	2.9GHz	5.1GHz	16MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1390	8	16	2.8GHz	5.2GHz	16MB	DDR4-3200	Intel UHD Graphics P750

Processor Sockets

1x FCLGA1200

Operating System

Operating System**

- Windows® 10 Pro 64
- Windows 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- Red Hat Enterprise Linux (certified only)
- No operating system

Graphics

Integrated Graphics**

- Intel UHD Graphics 630
- Intel UHD Graphics 730
- Intel UHD Graphics 750
- Intel UHD Graphics P750

Discrete Graphics Support[1]

Supports up to one NVIDIA® T1000

Discrete Graphics Offering

Graphics	Memory	Power	Connector	SLI / NVlink
NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
NVIDIA RTX A2000	6GB GDDR6	70W	4x miniDP 1.4a	None

Notes:

1. Dual NVIDIA T400 will be available in August 2021

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel W580 chipset

Memory

Max Memory[1]

Up to 128GB DDR4-3200

Memory Type**

- DDR4-3200 UDIMM non-ECC
- DDR4-3200 UDIMM ECC

Memory Slots

Four DDR4 UDIMM slots, dual-channel capable

Memory Protection

ECC on models with ECC DIMMs and Xeon processor

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support[1]

Up to 1x 3.5″ SATA HDD + 1x 2.5″ SATA HDD + 3x M.2 SSD
• 3.5″ HDD up to 4TB
• 2.5″ HDD up to 1TB
• M.2 SSD up to 2TB each

Storage Type***

Disk Type	Interface	RPM	Offering	Security
2.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 1TB FIPS	-
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB	-
M.2 2280 SSD	PCIe NVMe, PCIe 4.0	-	256GB / 512GB / 1TB / 2TB	Opal

Storage Controllers[2]

Storage Controller	Type	Interface	RAID	Cache
Onboard Intel RST PCIe RAID	Standard	PCIe NVMe	0/1	None
Onboard Intel RST SATA RAID	Standard	SATA 6.0Gb/s	0/1	None

Notes:

1. Model with 10th Core processor supports 2x M.2 SSD
2. Cannot install OS in SATA RAID 1 volume

Removable Storage

Optical Support

Optional one 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC623-CG codec

Power Supply

Power Supply

Power	Type	Efficiency	Key Features
380W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Mini-tower (8.2L)

Dimensions (WxDxH)

Models	Dimensions
All models	92.5 x 309.7 x 339.5 mm (3.6 x 9.3 x 13.4 inches)

Weight

Models	Weight
All models	5.01 kg (11 lbs, maximum configuration)

Bays

- 1x 3.5″ disk bay (standard)
- 1x 2.5″ disk bay (optional, comes with disk)

M.2 Slots[1]

- Up to 2x M.2 SSD on model with 10th Core processor:
  - 1 via onboard slot with M.2 PCIe Gen 3
  - 1 via Single M.2 to PCIe adapter, PCIe Gen 3
- Up to 3x M.2 SSD on models with Xeon or 11th Core processor:
  - 2 via onboard slots with 1x M.2 PCIe Gen 4 and 1x M.2 PCIe Gen 3
  - 1 via Single M.2 to PCIe adapter, PCIe Gen 3

Expansion Slots

- One PCIe 4.0 x16
- One PCIe 3.0 x16 (x4 lanes)
- One PCIe 3.0 x1

Notes:

1. M.2 Gen 4 SSD works at Gen 3 speed on Gen 3 slot

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet***

- Gigabit Ethernet, Bitland BN8E88, 1x RJ-45, PCIe x1
- Gigabit Ethernet, Intel Ethernet Server Adapter I350-T4, 4x RJ-45, PCIe x4
- Gigabit Ethernet, Intel I210-T1, 1x RJ-45, PCIe x1
- Gigabit Ethernet, Intel I350-F2, 2x Fiber, PCIe x4
- Gigabit Ethernet, Intel I350-T2, 2x RJ-45, PCIe x4
- 10GBASE-T Ethernet, Marvell AQtion AQN-107, 1x RJ-45, PCIe x4

WLAN + Bluetooth®**

- Mediatek Wi-Fi® 6 MT7921, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card

- No WLAN and Bluetooth

Ports[1]

Front Ports

- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x USB-C 3.2 Gen 2
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

Rear Ports[2]

- 4x USB 3.2 Gen 1 (one supports Smart Power On)
- 2x DisplayPort™
- 1x serial (9-pin)
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

Optional Rear Ports***

- 1x USB-C (video)
- 2x USB 2.0
- 2x USB 3.2 Gen 1
- 2x USB-C 3.2 Gen 2x2
- 1x HDMI®
- 1x DP
- 1x serial
- 4x serial (via 4-port serial expansion card, PCIe x1)
- 1x parallel
- 2x PS/2
- None

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt™ 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks[1]

- (Optional) Cable lock
- (Optional) E-lock
- Kensington® Security Slot
- Padlock Loop

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

Notes:

1. E-lock is not available in EMEA

MANAGEABILITY

System Management

System Management**

- Intel vPro with Intel AMT 14.0 (vPro-enable processor and WiFi needed)
- Standard Manageability

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty**

- 1-year limited onsite service
- 2-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)
- No base warranty

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 10% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- (Optional) EPEAT™ Gold
- (Optional) EPEAT Silver
- ENERGY STAR® 8.0
- RoHS compliant

ISV Certifications

ISV Certifications

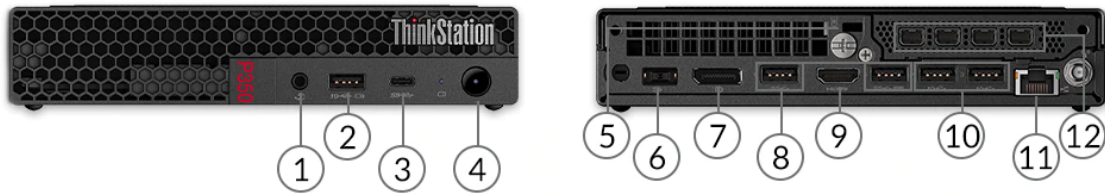Please visit www.thinkworkstations.com/isv-certifications/

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OVERVIEW

1. Headphone / microphone combo jack (3.5mm)	7. DisplayPort
2. USB 3.2 Gen 2 (Always On and fast charge)	8. 2x USB 3.2 Gen 1
3. USB-C 3.2 Gen 2 (data transfer only)	9. HDMI
4. Power button	10. 2x USB 3.2 Gen 2
5. Kensington Security Slot	11. Ethernet (RJ-45)
6. Power connector	12. 4x MiniDP *

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

10th Generation Intel® Core™ i3 or 11th Generation Intel Core i5 / i7 / i9 Processor

Processor Sockets

1x FCLGA1200

Operating System

Operating System[**]

- Windows® 10 Pro 64
- Windows 10 Home 64
- Ubuntu Linux LTS
- Red Hat Enterprise Linux (certified only)
- No operating system

Graphics

Discrete Graphics Support

Supports up to one NVIDIA® T600 or NVIDIA Quadro® P1000 on model with 35W processor

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel Q570 Chipset

Memory

Max Memory[1]

Up to 64GB DDR4-3200

Memory Type

DDR4-3200 non-ECC

Memory Slots

Two DDR4 SO-DIMM slots, dual-channel capable

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to two drives, 2x M.2 SSD
• M.2 SSD up to 2TB each

Storage Type

Disk Type	Interface	RPM	Offering	Security
M.2 2280 SSD	PCIe NVMe, PCIe 4.0	-	256GB / 512GB / 1TB / 2TB	Opal

Removable Storage

Optical Support

Optional one 9.0mm optical drive via optical drive kit, DVD-ROM or DVD±RW

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC233VB codec

DESIGN

Mechanical

Form Factor

Tiny (1L)

Dimensions (WxDxH)

Models	Dimensions
All models	37 x 182.9 x 179 mm (1.5 x 7.2 x 7.0 inches)

Weight

Models	Weight
All models	1.4 kg (3 lbs, maximum configuration)

Bays

No bays

Expansion Slots

One PCIe slot via specific riser card:
PCIe 3.0 x16 (negotiable link width x8) and low profile for discrete graphics card,
PCIe 3.0 x4 and low profile for ethernet adapter and Thunderbolt™ adapter

CONNECTIVITY

Network

Optional Ethernet

Additional Ethernet options via PCIe adapter

Ports[1]

Front Ports

- 1x USB 3.2 Gen 2 (Always On and fast charge)
- 1x USB-C 3.2 Gen 2
- 1x headphone / microphone combo jack (3.5mm)

Rear Ports[2]

- 2x USB 3.2 Gen 1 (one supports Smart Power On)
- 2x USB 3.2 Gen 2
- 1x HDMI®
- 1x DisplayPort™
- 1x Ethernet (RJ-45)

Optional Rear Ports***

- 1x Thunderbolt 4
- Optional port 1 (one of VGA / 2nd DisplayPort / 2nd HDMI / serial / USB-C 3.2 Gen 1 with DisplayPort function)
- Optional port 2 (serial)

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

Kensington® Security Slot

Chassis Intrusion Switch

Chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management**

- Intel vPro with Intel AMT 14.0 (vPro-enable processor and WiFi needed)
- Standard Manageability

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Gold
- ENERGY STAR® 8.0
- RoHS compliant

Other Certifications
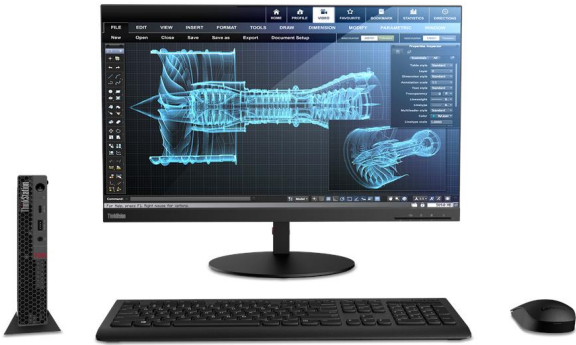
Mil-Spec Test

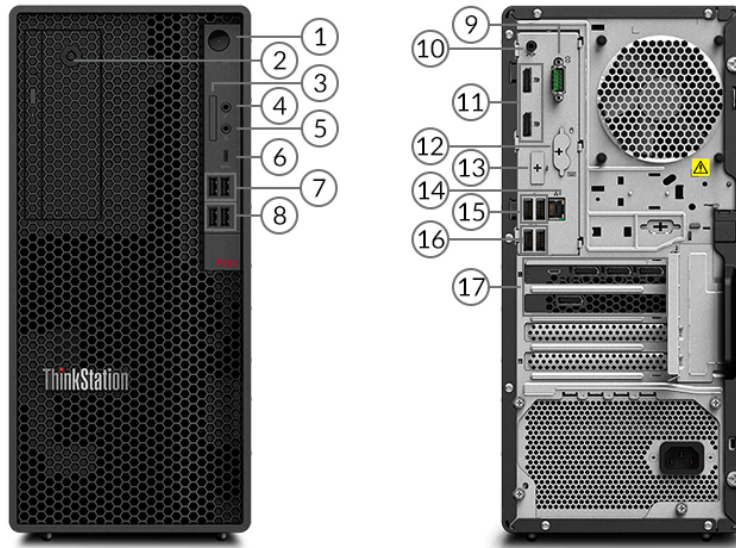MIL-STD-810G military test passed

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.

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OVERVIEW

1.	Power button	10.	Line-out (3.5mm)
2.	Optical drive *	11.	2x DisplayPort
3.	Card reader *	12.	2x PS/2 ports (keyboard / mouse) *
4.	Microphone (3.5mm)	13.	Video port (DisplayPort, HDMI, or USB-C) *
5.	Headphone / microphone combo jack (3.5mm)	14.	Ethernet (RJ-45)
6.	USB-C 3.2 Gen 2 (data transfer only)	15.	2x USB 3.2 Gen 1
7.	2x USB 3.2 Gen 1	16.	2x USB 3.2 Gen 1
8.	2x USB 3.2 Gen 2	17.	Optional ports on expansion cards *
9.	Serial		

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

10th Generation Intel® Core™ i3, 11th Generation Intel Core i5 / i7 / i9, or Intel Xeon® Processor

Processor**[1]

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Core i3-10105	4	8	3.7GHz	4.4GHz	6MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10305	4	8	3.8GHz	4.5GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i3-10325	4	8	3.9GHz	4.7GHz	8MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10400	6	12	2.9GHz	4.3GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-10500	6	12	3.1GHz	4.5GHz	12MB	DDR4-2666	Intel UHD Graphics 630
Core i5-11400	6	12	2.6GHz	4.4GHz	12MB	DDR4-3200	Intel UHD Graphics 730
Core i5-11500	6	12	2.7GHz	4.6GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i5-11600	6	12	2.8GHz	4.8GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i5-11600K	6	12	3.9GHz	4.9GHz	12MB	DDR4-3200	Intel UHD Graphics 750
Core i7-10700	8	16	2.9GHz	4.8GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i7-10700K	8	16	3.8GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics 630
Core i7-11700	8	16	2.5GHz	4.9GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Core i7-11700K	8	16	3.6GHz	5.0GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Core i9-10900	10	20	2.8GHz	5.2GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Core i9-10900K	10	20	3.7GHz	5.3GHz	20MB	DDR4-2933	Intel UHD Graphics 630
Core i9-11900	8	16	2.5GHz	5.2GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Core i9-11900K	8	16	3.5GHz	5.3GHz	16MB	DDR4-3200	Intel UHD Graphics 750
Xeon W-1350	6	12	3.3GHz	5.0GHz	12MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1350P	6	12	4.0GHz	5.1GHz	12MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1370	8	16	2.9GHz	5.1GHz	16MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1370P	8	16	3.6GHz	5.2GHz	16MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1390	8	16	2.8GHz	5.2GHz	16MB	DDR4-3200	Intel UHD Graphics P750
Xeon W-1390P	8	16	3.5GHz	5.3GHz	16MB	DDR4-3200	Intel UHD Graphics P750

Processor Sockets

1x FCLGA1200

Notes:

1. 10th Core i5, i7, and i9 processors are available after August 2021

Operating System

Operating System**

- Windows® 10 Pro 64
- Windows 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- Red Hat Enterprise Linux (certified only)
- No operating system

Graphics

Integrated Graphics**

- Intel UHD Graphics 630
- Intel UHD Graphics 730
- Intel UHD Graphics 750

- Intel UHD Graphics P750

Discrete Graphics Support

Supports up to one NVIDIA® RTX A5000 or two NVIDIA RTX A2000

Discrete Graphics Offering***

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro® P2200	5GB GDDR5	75W	4x DP 1.4	None
NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
NVIDIA RTX A2000	6GB GDDR6	70W	4x miniDP 1.4a	None
NVIDIA RTX A4000	16GB GDDR6 with ECC	140W	4x DP 1.4a	None
NVIDIA RTX A5000	24GB GDDR6 with ECC	230W	4x DP 1.4a	None

Monitor Support

Monitor Support

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel W580 chipset

Memory

Max Memory[1]

Up to 128GB DDR4-3200

Memory Type**

- DDR4-3200 UDIMM non-ECC
- DDR4-3200 UDIMM ECC

Memory Slots

Four DDR4 UDIMM slots, dual-channel capable

Memory Protection

ECC on models with ECC DIMMs and Xeon processor

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support[1]

Up to 2x 3.5″ SATA HDD / 4x 2.5″ SATA HDD + 3x M.2 SSD
• 3.5″ HDD up to 4TB each
• 2.5″ HDD up to 1TB each
• M.2 SSD up to 2TB each

Storage Type***

Disk Type	Interface	RPM	Offering	Security
2.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 1TB FIPS	-
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB	-
M.2 2280 SSD	PCIe NVMe, PCIe 4.0	-	256GB / 512GB / 1TB / 2TB	Opal

Storage Controllers[2]

Storage Controller	Type	Interface	RAID	Cache

Onboard Intel RST PCIe RAID	Standard	PCIe NVMe	0/1	None
Onboard Intel RST SATA RAID	Standard	SATA 6.0Gb/s	0/1	None

Notes:
1. Model with Core i3 processor supports 2x M.2 SSD
2. Cannot install OS in SATA RAID 1 volume

Removable Storage

Optical Support

Optional one 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC623-CG codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
500W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
750W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (17L)

Dimensions (WxDxH)

Models	Dimensions
All models	170 x 315.4 x 376 mm (6.7 x 12.4 x 14.8 inches)

Weight

Models	Weight
All models	9.4 kg (20.7 lbs, maximum configuration)

Bays

- 1x 3.5″ disk bay (standard)
- 2x 2.5″ disk bay (optional)
- 1x 3.5″ disk bay (optional)

M.2 Slots[1]

- Up to 2x M.2 SSD on model with 10th Core processor:
  - 1 via onboard slot with M.2 PCIe Gen 3
  - 1 via Single M.2 to PCIe adapter, PCIe Gen 3
- Up to 3x M.2 SSD on models with Xeon or 11th Core processor:
  - 2 via onboard slots with 1x M.2 PCIe Gen 4 and 1x M.2 PCIe Gen 3
  - 1 via Single M.2 to PCIe adapter, PCIe Gen 3

Expansion Slots

- One PCIe 4.0 x16
- One PCIe 3.0 x16 (x4 lanes)
- One PCIe 3.0 x1

Notes:

1. M.2 Gen 4 SSD works at Gen 3 speed on Gen 3 slot

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet***

- Gigabit Ethernet, Bitland BN8E88, 1x RJ-45, PCIe x1
- Gigabit Ethernet, Intel I210-T1, 1x RJ-45, PCIe x1
- Gigabit Ethernet, Intel I350-F2, 2x Fiber, PCIe x4
- Gigabit Ethernet, Intel I350-T2, 2x RJ-45, PCIe x4
- Gigabit Ethernet, Intel I350-T2, 4x RJ-45, PCIe x4
- 10GBASE-T Ethernet, Marvell AQtion AQN-107, 1x RJ-45, PCIe x4
- Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®**

- Mediatek Wi-Fi® 6 MT7921, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x USB-C 3.2 Gen 2
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

Rear Ports[2]

- 4x USB 3.2 Gen 1 (one supports Smart Power On)
- 2x DisplayPort™
- 1x serial (9-pin)
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

Optional Rear Ports***

- 1x USB-C (video)
- 2x USB 2.0
- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 1 (via 2-port USB expansion card)
- 2x USB-C 3.2 Gen 2x2
- 1x HDMI®
- 1x Thunderbolt™
- 1x DP
- 1x serial
- 4x serial (via 4-port serial expansion card, PCIe x1)
- 1x parallel
- 2x PS/2
- None

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
USB 2.0: 480 Mbit/s;
USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
Thunderbolt 3: 40 Gbit/s;
FireWire 400: 400 Mbit/s;
FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks[1]

- (Optional) Cable lock
- (Optional) E-lock
- Kensington® Security Slot
- Padlock Loop

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

Notes:
1. E-lock is not available in EMEA

MANAGEABILITY

System Management

System Management**

- Intel vPro with Intel AMT 14.0 (vPro-enable processor and WiFi needed)
- Standard Manageability

Diagnostic

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty**

- 1-year limited onsite service
- 2-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)
- No base warranty

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 10% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- (Optional) EPEAT™ Gold
- (Optional) EPEAT Silver
- ENERGY STAR® 8.0
- RoHS compliant

Other Certifications

Mil-Spec Test

MIL-STD-810H military test passed
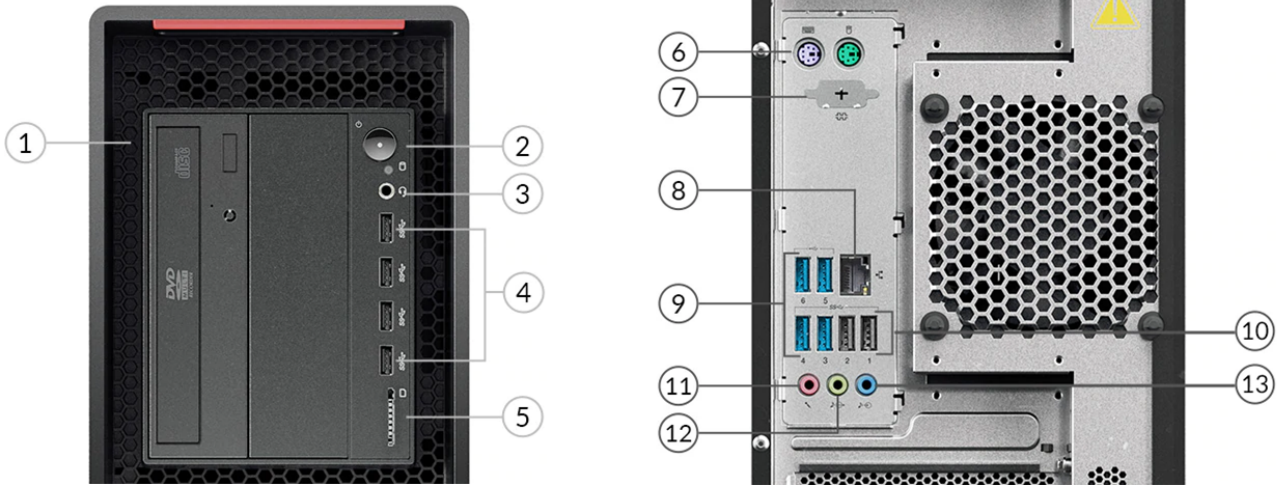
ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

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OVERVIEW

1.	2x Flex bay	8.	Ethernet (RJ-45)
2.	Power button	9.	4x USB 3.1 Gen 1
3.	Headphone / microphone combo jack (3.5mm)	10.	2x USB 2.0
4.	4x USB 3.1 Gen 1	11.	Microphone (3.5mm)
5.	Card reader	12.	Line-out (3.5mm)
6.	2x PS/2 ports (keyboard / mouse)	13.	Line-in (3.5mm)
7.	Serial *		

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one Intel® Xeon® W-2100 / W-2200 Processor

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Xeon W-2102	4	4	2.9GHz	-	8.25MB	DDR4-2400	-
Xeon W-2104	4	4	3.2GHz	-	8.25MB	DDR4-2400	-
Xeon W-2123	4	8	3.6GHz	3.9GHz	8.25MB	DDR4-2666	-
Xeon W-2125	4	8	4.0GHz	4.5GHz	8.25MB	DDR4-2666	-
Xeon W-2133	6	12	3.6GHz	3.9GHz	8.25MB	DDR4-2666	-
Xeon W-2135	6	12	3.7GHz	4.5GHz	8.25MB	DDR4-2666	-
Xeon W-2145	8	16	3.7GHz	4.5GHz	11MB	DDR4-2666	-
Xeon W-2155	10	20	3.3GHz	4.5GHz	13.75MB	DDR4-2666	-
Xeon W-2175	14	28	2.5GHz	4.3GHz	19MB	DDR4-2666	-
Xeon W-2195	18	36	2.3GHz	4.3GHz	24.75MB	DDR4-2666	-
Xeon W-2223	4	8	3.6GHz	3.9GHz	8.25MB	DDR4 2666	-
Xeon W-2225	4	8	4.1GHz	4.6GHz	8.25MB	DDR4 2933	-
Xeon W-2235	6	12	3.8GHz	4.6GHz	8.25MB	DDR4 2933	-
Xeon W-2245	8	16	3.9GHz	4.5GHz	16.5MB	DDR4 2933	-
Xeon W-2255	10	20	3.7GHz	4.5GHz	19.25MB	DDR4 2933	-
Xeon W-2265	12	24	3.5GHz	4.6GHz	19.25MB	DDR4 2933	-
Xeon W-2275	14	28	3.3GHz	4.6GHz	19.25MB	DDR4 2933	-
Xeon W-2295	18	36	3.0GHz	4.6GHz	24.75MB	DDR4 2933	-

Processor Sockets

1x FCLGA2066

Operating System

Operating System**

- Windows® 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- No operating system

Graphics

Discrete Graphics Support

Supports up to one NVIDIA® Quadro® RTX 8000 or two NVIDIA Quadro RTX 6000 with NVLink

Discrete Graphics Offering***

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P400	2GB GDDR5	30W	3x miniDP 1.4	None
Quadro P600	2GB GDDR5	45W	4x miniDP	None
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None
Quadro P2000	5GB GDDR5	75W	4x DP	None
Quadro P2200	5GB GDDR5	75W	4x DP 1.4	None
Quadro P4000	8GB GDDR5	120W	4x DP 1.4	None

Quadro P5000	16GB GDDR5X	180W	1x DVI-D DL, 4x DP 1.4	SLI
NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
Quadro RTX 4000	8GB GDDR6	160W	3x DP 1.4, 1x VirtualLink	None
Quadro RTX 5000	16GB GDDR6	265W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 6000	24GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 8000	48GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	None
NVIDIA RTX A4000	16GB GDDR6 with ECC	140W	4x DP 1.4a	None
NVIDIA RTX A5000	24GB GDDR6 with ECC	230W	4x DP 1.4a	NVLink
NVIDIA RTX A6000	48GB GDDR6 with ECC	300W	4x DP 1.4a	NVLink
Quadro GP100	16GB HBM2	235W	1x DVI-D DL, 4x DP	NVLink
Quadro GV100	32GB HBM2	250W	4x DP 1.4	None

Monitor Support

Monitor Support

Supports multiple displays via discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel C422 chipset

Memory

Max Memory[1]

- Up to 512GB (8x 64GB RDIMMs) DDR4-2933
- Up to 256GB (8x 32GB RDIMMs) DDR4-2666

Memory Type**

- DDR4-2666 RDIMM ECC
- DDR4-2933 RDIMM ECC

Memory Slots

8 DDR4 DIMM slots, 4 channels capable

Memory Protection

ECC

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 6x 3.5″ SATA HDD / 2.5″ SATA HDD / 2.5″ SATA SSD + 9x M.2 PCIe SSD + 1x PCIe AIC SSD
- 3.5″ HDD up to 6TB each
- 2.5″ SATA HDD up to 500GB each
- 2.5″ SATA SSD up to 2TB each
- 2.5″ SAS HDD up to 600GB each
- M.2 PCIe SSD up to 2TB each
- PCIe AIC SSD up to 480GB each

Storage Type***

Disk Type	Interface	RPM	Offering
2.5″ SAS HDD	SAS 12Gb/s	10K	300GB / 600GB
2.5″ SATA HDD	SATA 6Gb/s	7.2K	500GB / 500GB FIPS

2.5" SATA SSD	SATA 6Gb/s	-	256GB / 512GB / 1TB / 2TB
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB / 6TB
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB
PCIe AIC SSD	PCIe NVMe	-	480GB

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
9440-8i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5	None
9460-16i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5/6	4GB DDR4, SuperCap
NVMe Basic	Optional	PCIe NVMe	0/1/10	None
NVMe Premium	Optional	PCIe NVMe	0/1/10/5	None
NVMe for Intel SSD	Optional	PCIe NVMe	0/1/10/5	None
Onboard Intel RSTe SATA RAID	Standard	SATA 6.0Gb/s	0/1/10/5	None

Removable Storage

Optical Support

Up to two HH or 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- 15-in-1 card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC662 codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
690W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
900W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
1000W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (33L)

Dimensions (WxDxH)

Models	Dimensions
All models	165 x 460 x 440 mm (6.5 x 18.1 x 17.3 inches, with feet)

Weight

Models	Weight
All models	24 kg (52.91 lbs, maximum configuration)

Bays

- 2x 3.5" disk bay (standard)
- 4x 3.5" disk bay (optional):
  2 bays come with 3rd disk or Storage Bay Upgrade Kit

2 bays via flex bay

Flex Bays

2x flex bays, supports the following:
• 2x half-height optical drives
• 2x 5.25″ 9.0mm optical drives
• 1x 5.25″ 9.0mm optical drive + 2x 3.5″/2.5″ SATA SSD/HDD
• 1x 3.5″/2.5″ SATA SSD/HDD with Front Access Storage Enclosure
• 1x flex module for the following options:
Tray 1: 9.0mm optical
Tray 2: 15-in-1 USB 3.1 Gen 1 reader, 2x Thunderbolt™, or 4-digit diagnostic display
Port 1 and 2: Front USB 3.1 Gen 1 Type-C or eSATA

M.2 Slots

Up to 9x M.2 SSD:
• 2 via onboard slots
• 4 via Quad M.2 to PCIe adapter
• 3 via Single M.2 to PCIe adapter

Expansion Slots

• One PCI
• Two PCIe 3.0 x4
• One PCIe 3.0 x8
• Two PCIe 3.0 x16

Expansion Slots Offering

Slot 1: PCIe 3.0 x8, full height, full length, 25W, open ended, by CPU
Slot 2: PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU
Slot 3: PCIe 3.0 x4, full height, half length, 25W, open ended, by PCH
Slot 4: PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU
Slot 5: PCI, full height, full length, 25W
Slot 6: PCIe 3.0 x4, full height, half length, 25W, open ended, by PCH

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

• Intel Dual-Band Wireless-AC 8265, 802.11ac Dual-Band 2x2 Wi-Fi® + Bluetooth 4.2
• No WLAN and Bluetooth

Ports[1]

Front Ports

• 1x USB 3.1 Gen 1 (Always On and fast charge)
• 3x USB 3.1 Gen 1
• 1x headphone / microphone combo jack (3.5mm)

Optional Front Ports* **

• 1x eSATA (with flex module)
• 2x Thunderbolt (with flex module, USB-C form, one supports video-out)
• 1x USB-C 3.1 Gen 1 (with flex module)

Rear Ports[2]

• 2x USB 2.0
• 4x USB 3.1 Gen 1
• 2x PS/2 ports (keyboard / mouse)
• 1x Ethernet (RJ-45)
• 1x line-in (3.5mm)
• 1x line-out (3.5mm)
• 1x microphone (3.5mm)

Optional Rear Ports***

- 2x USB-C 3.1 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt
- 1x serial

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

- (Optional) Access Panel Lock Kit with Common Key
- (Optional) Access Panel Lock Kit with Unique Key
- Kensington® Security Slot

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management

Intel vPro with Intel AMT 11.0

Diagnostic

Diagnostic

- Photo-audio transfer with Lenovo PC Diagnostics for Android™ and iOS
- ThinkStation® Diagnostics for Windows
- Front 4-digit diagnostic
- Lenovo UEFI Bootable Diagnostics
- None

SERVICE

Warranty

Base Warranty**

- 1-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)

- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Silver
- ENERGY STAR® 8.0 (on model 30BE00B7US)
- GREENGUARD®
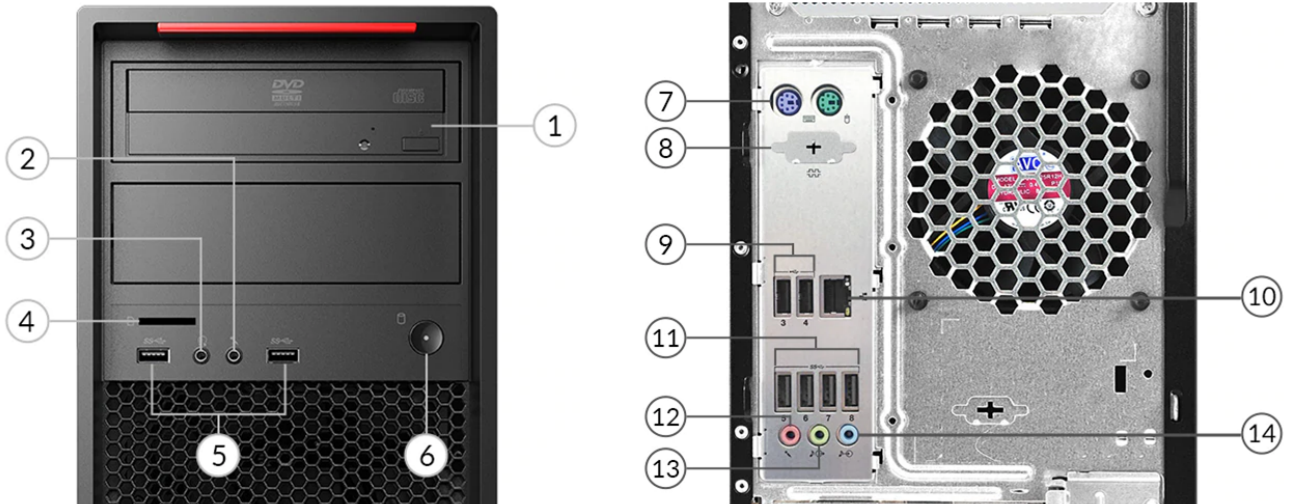- RoHS compliant

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.

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OVERVIEW

1. Optical drive *	8. Serial *
2. Microphone (3.5mm)	9. 2x USB 2.0
3. Headphone (3.5mm)	10. Ethernet (RJ-45)
4. Card reader	11. 4x USB 3.1 Gen 1
5. 2x USB 3.1 Gen 1	12. Microphone (3.5mm)
6. Power button	13. Line-out (3.5mm)
7. 2x PS/2 ports (keyboard / mouse)	14. Line-in (3.5mm)

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one Intel® Xeon® W-2100 / W-2200 Processor

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Xeon W-2102	4	4	2.9GHz	-	8.25MB	DDR4-2400	-
Xeon W-2104	4	4	3.2GHz	-	8.25MB	DDR4-2400	-
Xeon W-2123	4	8	3.6GHz	3.9GHz	8.25MB	DDR4-2666	-
Xeon W-2125	4	8	4.0GHz	4.5GHz	8.25MB	DDR4-2666	-
Xeon W-2133	6	12	3.6GHz	3.9GHz	8.25MB	DDR4-2666	-
Xeon W-2135	6	12	3.7GHz	4.5GHz	8.25MB	DDR4-2666	-
Xeon W-2145	8	16	3.7GHz	4.5GHz	11MB	DDR4-2666	-
Xeon W-2155	10	20	3.3GHz	4.5GHz	13.75MB	DDR4-2666	-
Xeon W-2175	14	28	2.5GHz	4.3GHz	19MB	DDR4-2666	-
Xeon W-2195	18	36	2.3GHz	4.3GHz	24.75MB	DDR4-2666	-
Xeon W-2223	4	8	3.6GHz	3.9GHz	8.25MB	DDR4 2666	-
Xeon W-2225	4	8	4.1GHz	4.6GHz	8.25MB	DDR4 2933	-
Xeon W-2235	6	12	3.8GHz	4.6GHz	8.25MB	DDR4 2933	-
Xeon W-2245	8	16	3.9GHz	4.5GHz	16.5MB	DDR4 2933	-

Processor Sockets

1x FCLGA2066

Operating System

Operating System**

- Windows® 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- No operating system

Graphics

Discrete Graphics Support

Supports up to one NVIDIA® Quadro® RTX 5000 or two NVIDIA Quadro P4000

Discrete Graphics Offering***[1]

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P400	2GB GDDR5	30W	3x miniDP 1.4	None
Quadro P600	2GB GDDR5	45W	4x miniDP	None
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None
Quadro P2000	5GB GDDR5	75W	4x DP	None
Quadro P2200	5GB GDDR5	75W	4x DP 1.4	None
Quadro P4000	8GB GDDR5	120W	4x DP 1.4	None
Quadro P5000	16GB GDDR5X	180W	1x DVI-D DL, 4x DP 1.4	None
NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None

Quadro RTX 4000	8GB GDDR6	160W	3x DP 1.4, 1x VirtualLink	None
Quadro RTX 5000	16GB GDDR6	265W	4x DP 1.4, 1x VirtualLink	None
NVIDIA RTX A4000	16GB GDDR6 with ECC	140W	4x DP 1.4a	None
NVIDIA RTX A5000	24GB GDDR6 with ECC	230W	4x DP 1.4a	None

Notes:

1. NVIDIA Quadro RTX 5000 supports manufacture configure only, none standalone option is available

Monitor Support

Monitor Support

Supports multiple displays via discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel C422 chipset

Memory

Max Memory[1]

- Up to 256GB (4x 64GB RDIMMs) DDR4-2933
- Up to 128GB (4x 32GB DDR4-2666 RDIMMs)

Memory Type**

- DDR4-2666 RDIMM ECC
- DDR4-2933 RDIMM ECC

Memory Slots

4 DDR4 DIMM slots, 4 channels capable

Memory Protection

ECC

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 4x 3.5″ SATA HDD / 2.5″ SATA HDD / 2.5″ SATA SSD + 5x M.2 PCIe SSD
• 3.5″ HDD up to 6TB each
• 2.5″ SATA HDD up to 500GB each
• 2.5″ SATA SSD up to 2TB each
• 2.5″ SAS HDD up to 600GB each
• M.2 SSD up to 2TB each

Storage Type***

Disk Type	Interface	RPM	Offering
2.5″ SAS HDD	SAS 12Gb/s	10K	300GB / 600GB
2.5″ SATA HDD	SATA 6Gb/s	7.2K	500GB / 500GB FIPS
2.5″ SATA SSD	SATA 6Gb/s	-	256GB / 512GB / 1TB / 2TB
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB / 6TB
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
9440-8i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5	None

NVMe Basic	Optional	PCIe NVMe	0/1/10	None
NVMe for Intel SSD	Optional	PCIe NVMe	0/1/10/5	None
Onboard Intel RSTe SATA RAID	Standard	SATA 6.0Gb/s	0/1/10/5	None

Removable Storage

Optical Support

Up to two HH or 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- 15-in-1 card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC662 codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
500W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
625W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (25L)

Dimensions (WxDxH)

Models	Dimensions
All models	175 x 426 x 376 mm (6.89 x 16.77 x 14.8 inches, with feet)

Weight

Models	Weight
All models	14.5 kg (31.96 lbs, maximum configuration)

Bays

- 2x 3.5″ disk bay (standard)
- 2x 3.5″ disk bay (optional, via flex bay)

Flex Bays

2x flex bays, supports the following:
• 2x half-height optical drives
• 2x 5.25″ 9.0mm optical drives
• 1x 5.25″ 9.0mm optical drive + 2x 3.5″/2.5″ SATA SSD/HDD
• 1x 3.5″/2.5″ SATA SSD/HDD with Front Access Storage Enclosure
• 1x flex module for the following options:
Tray 1: 9.0mm optical
Tray 2: 15-in-1 USB 3.1 Gen 1 reader, 2x Thunderbolt™, or 4-digit diagnostic display
Port 1 and 2: Front USB 3.1 Gen 1 Type-C or eSATA

M.2 Slots

Up to 5x M.2 SSD:
• 2 via onboard slots
• 3 via Single M.2 to PCIe adapter

Expansion Slots

- One PCIe 3.0 x4

- One PCIe 3.0 x8
- Two PCIe 3.0 x16

Expansion Slots Offering

Slot 1: PCIe 3.0 x16, full height, full length, 75W, by CPU
Slot 2: PCIe 3.0 x8, full height, full length, 25W, open ended, by CPU
Slot 3: PCIe 3.0 x16, full height, full length, 75W, by CPU,
Slot 4: PCIe 3.0 x4, full height, half length, 25W, open ended, by PCH

CONNECTIVITY

Network

Onboard Ethernet

Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

- Intel Dual-Band Wireless-AC 8265, 802.11ac Dual-Band 2x2 Wi-Fi® + Bluetooth 4.2
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 2x USB 3.1 Gen 1
- 1x headphone (3.5mm)
- 1x microphone (3.5mm)

Optional Front Ports***

- 1x eSATA (with flex module)
- 2x Thunderbolt (with flex module, USB-C form, one supports video-out)
- 1x USB-C 3.1 Gen 1 (with flex module)

Rear Ports[2]

- 2x USB 2.0
- 4x USB 3.1 Gen 1
- 2x PS/2 ports (keyboard / mouse)
- 1x Ethernet (RJ-45)
- 1x line-in (3.5mm)
- 1x line-out (3.5mm)
- 1x microphone (3.5mm)

Optional Rear Ports***

- 2x USB-C 3.1 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt
- 1x serial

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

Kensington® Security Slot

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management

Intel vPro with Intel AMT 11.0

Diagnostic

Diagnostic

- Photo-audio transfer with Lenovo PC Diagnostics for Android™ and iOS
- ThinkStation® Diagnostics for Windows
- Front 4-digit diagnostic
- Lenovo UEFI Bootable Diagnostics
- None

SERVICE

Warranty

Base Warranty**

- 1-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)
- No base warranty

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Silver
- ENERGY STAR® 8.0 (on model 30BX0095US)
- GREENGUARD®
- RoHS compliant

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

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Lenovo

OVERVIEW

1. Power button	7. 3x Audio ports (3.5mm)
2. Headphone / microphone combo jack (3.5mm)	8. Serial *
3. USB 3.2 Gen 2	9. 2x PS/2 ports (keyboard / mouse)
4. USB 3.2 Gen 2	10. 2x USB 2.0
5. USB-C 3.2 Gen 2	11. 4x USB 3.2 Gen 2
6. USB-C 3.2 Gen 2	12. Ethernet (10GbE RJ-45)

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one AMD Ryzen™ Threadripper PRO Processor

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
AMD Ryzen Threadripper PRO 3945WX	12	24	4.0GHz	4.3GHz	6MB L2 / 64MB L3	DDR4-3200	-
AMD Ryzen Threadripper PRO 3955WX	16	32	3.9GHz	4.3GHz	8MB L2 / 64MB L3	DDR4-3200	-
AMD Ryzen Threadripper PRO 3975WX	32	64	3.5GHz	4.2GHz	16MB L2 / 128MB L3	DDR4-3200	-
AMD Ryzen Threadripper PRO 3995WX	64	128	2.7GHz	4.2GHz	32MB L2 / 256MB L3	DDR4-3200	-

Processor Sockets

1x Socket SP3

Operating System

Operating System**

- Windows® 10 Pro 64
- Ubuntu Linux LTS
- No operating system

Graphics

Discrete Graphics Support

Supports up to two NVIDIA® Quadro® RTX 8000 with NVLink

Discrete Graphics Offering***

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None
Quadro P2200	5GB GDDR5	75W	4x DP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
Quadro RTX 4000	8GB GDDR6	160W	3x DP 1.4, 1x VirtualLink	None
Quadro RTX 5000	16GB GDDR6	265W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 6000	24GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 8000	48GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
NVIDIA RTX A4000	16GB GDDR6 with ECC	140W	4x DP 1.4a	None
NVIDIA RTX A5000	24GB GDDR6 with ECC	230W	4x DP 1.4a	None
NVIDIA RTX A6000	48GB GDDR6 with ECC	300W	4x DP 1.4a	None
Quadro GV100	32GB HBM2	250W	4x DP 1.4	NVLink
AMD Radeon™ Pro WX 3200	4GB GDDR5	50W	4x miniDP 1.4	-
AMD Radeon Pro W5500	8GB GDDR6	125W	4x DP 1.4	-
AMD Radeon Pro W5700	8GB GDDR6	205W	5x miniDP 1.4, 1x USB-C	-
AMD Radeon Pro VII	16GB HBM2	250W	6x DP 1.4	-

Monitor Support

Monitor Support

Supports multiple displays via discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

AMD WRX80

Memory

Max Memory[1]

Up to 1TB (8x 128GB DDR4-3200 RDIMMs)

Memory Type

DDR4-3200 RDIMM ECC

Memory Slots

8 DDR4 DIMM slots, 8 channels capable

Memory Protection

ECC

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 5x 3.5″ SATA HDD + 9x M.2 SSD
• 3.5″ HDD up to 4TB each
• M.2 SSD up to 2TB each

Storage Type***

Disk Type	Interface	RPM	Offering
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB
M.2 PCIe SSD	PCIe NVMe, PCIe 3.0	-	256GB / 512GB / 1TB / 2TB
M.2 PCIe SSD	PCIe NVMe, PCIe 4.0	-	256GB / 512GB / 1TB / 2TB

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
Integrated NVMe controller	Standard	PCIe NVMe	0/1/10/5	None
Integrated SATA controller	Standard	SATA 6.0Gb/s	0/1/10/5	None

Removable Storage

Optical Support

Optional one 9.0mm optical drive, DVD-ROM or DVD±RW

Card Reader

• 15-in-1 card reader
• No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC4050H codec

Power Supply

Power Supply

Power	Type	Efficiency	Key Features
1000W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (33L)

Dimensions (WxDxH)

Models	Dimensions
All models	165 x 460 x 446 mm (6.5 x 18.1 x 17.6 inches, with feet)

Weight

Models	Weight
All models	24 kg (52.91 lbs, maximum configuration)

Bays

- 2x 3.5″ disk bay (standard)
- 3x 3.5″ disk bay (optional):
  2 bays come with 3rd disk or Storage Bay Upgrade Kit
  1 bay via flex bay

Flex Bays

1x flex bay, supports one of the following:
• Front Access Storage Enclosure
• 5.25″ Slim ODD and HDD cage

M.2 Slots

Up to 11x M.2 SSD:
• 2 via onboard slots
• 8 via Quad M.2 to PCIe adapters (only supports PCIe 3.0 SSD)
• 1 via Single M.2 to PCIe adapter (only supports PCIe 3.0 SSD)

Expansion Slots

- Two PCIe 4.0 x8
- Four PCIe 4.0 x16

Expansion Slots Offering

Slot 1: PCIe 4.0 x16, full height, full length, by CPU
Slot 2: PCIe 4.0 x8, full height, full length, by CPU
Slot 3: PCIe 4.0 x16, full height, full length, by CPU
Slot 4: PCIe 4.0 x16, full height, full length, by CPU
Slot 5: PCIe 4.0 x16, full height, full length, by CPU
Slot 6: PCIe 4.0 x8, full height, full length, by IOH

CONNECTIVITY

Network

Onboard Ethernet

10GbE Ethernet, Marvell AQtion AQN-107, 1x 10GbE RJ-45

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

- Intel® Wireless-AC 9260, 802.11ac Dual Band 2x2 Wi-Fi® + Bluetooth 5.1
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 1x USB 3.2 Gen 2
- 1x USB 3.2 Gen 2 (Always On and fast charge)
- 2x USB-C 3.2 Gen 2
- 1x headphone / microphone combo jack (3.5mm)

Rear Ports[2]

- 2x USB 2.0
- 4x USB 3.2 Gen 2
- 2x PS/2 ports (keyboard / mouse)
- 1x Ethernet (10GbE RJ-45)
- 1x line-in (3.5mm)
- 1x line-out (3.5mm)
- 1x microphone (3.5mm)

Optional Rear Ports***

- 1x Thunderbolt™ 3
- 1x serial

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
USB 2.0: 480 Mbit/s;
USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
Thunderbolt 3: 40 Gbit/s;
FireWire 400: 400 Mbit/s;
FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

- (Optional) Access Panel Lock Kit with Common Key
- (Optional) Access Panel Lock Kit with Unique Key
- Kensington® Security Slot

Chassis Intrusion Switch

Chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management

AMD Pro Manageability

Diagnostic

Diagnostic

- Photo-audio transfer with Lenovo PC Diagnostics for Android™ and iOS
- ThinkStation® Diagnostics for Windows
- Front 4-digit diagnostic
- Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty

3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Silver
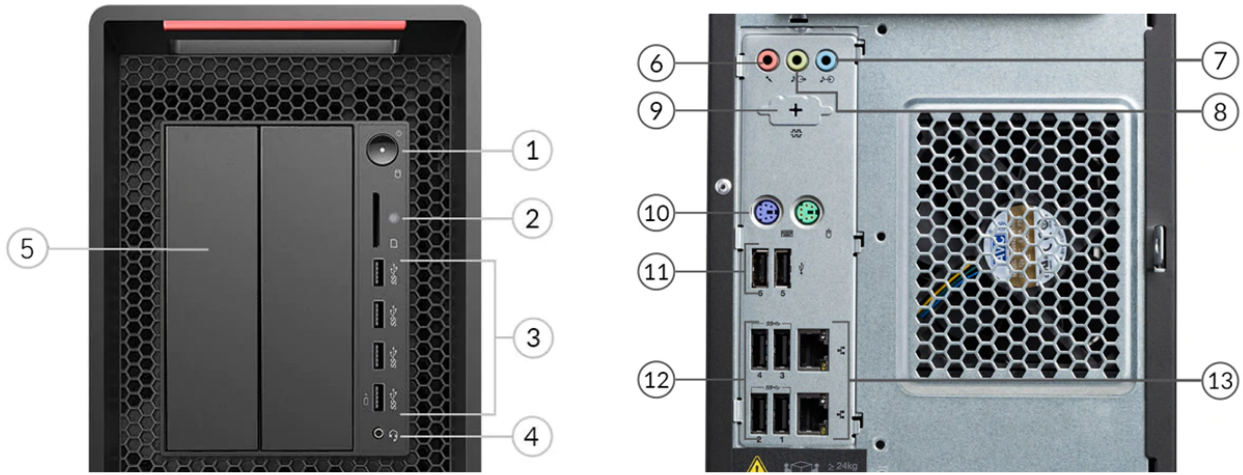- ENERGY STAR® 8.0 (on model 30E00006US)
- GREENGUARD®
- RoHS compliant

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.

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OVERVIEW

1.	Power button	8.	Line-out (3.5mm)
2.	Card reader	9.	Serial *
3.	4x USB 3.1 Gen 1	10.	2x PS/2 ports (keyboard / mouse)
4.	Headphone / microphone combo jack (3.5mm)	11.	2x USB 2.0
5.	2x Flex bay	12.	4x USB 3.1 Gen 1
6.	Microphone (3.5mm)	13.	2x Ethernet (RJ-45)
7.	Line-in (3.5mm)		

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to two 165W Gen 1 or Gen 2 Intel® Xeon® Scalable family processors, Bronze, Silver, Gold, or Platinum

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Xeon Bronze 3104	6	6	1.7GHz	-	8.25MB	DDR4-2133	-
Xeon Bronze 3106	8	8	1.7GHz	-	11MB	DDR4-2133	-
Xeon Bronze 3204	6	6	1.9GHz	1.9GHz	8.25MB	DDR4-2133	-
Xeon Bronze 3206R	8	8	1.9GHz	1.9GHz	11MB	DDR4-2133	-
Xeon Silver 4108	8	16	1.8GHz	3.0GHz	11MB	DDR4-2400	-
Xeon Silver 4109T	8	16	2.0GHz	3.0GHz	11MB	DDR4-2400	-
Xeon Silver 4110	8	16	2.1GHz	3.0GHz	11MB	DDR4-2400	-
Xeon Silver 4112	4	8	2.6GHz	3.0GHz	8.25MB	DDR4-2400	-
Xeon Silver 4114	10	20	2.2GHz	3.0GHz	13.75MB	DDR4-2400	-
Xeon Silver 4114T	10	20	2.2GHz	3.0GHz	13.75MB	DDR4-2400	-
Xeon Silver 4116	12	24	2.1GHz	3.0GHz	16.5MB	DDR4-2400	-
Xeon Silver 4208	8	16	2.1GHz	3.2GHz	11MB	DDR4-2400	-
Xeon Silver 4209T	8	16	2.2GHz	3.2GHz	11MB	DDR4-2400	-
Xeon Silver 4210	10	20	2.2GHz	3.2GHz	13.75MB	DDR4-2400	-
Xeon Silver 4210R	10	20	2.4GHz	3.2GHz	13.75MB	DDR4-2400	-
Xeon Silver 4214	12	24	2.2GHz	3.2GHz	16.5MB	DDR4-2400	-
Xeon Silver 4214R	12	24	2.4GHz	3.5GHz	16.5MB	DDR4-2400	-
Xeon Silver 4215	8	16	2.5GHz	3.5GHz	11MB	DDR4-2400	-
Xeon Silver 4215R	8	16	3.2GHz	4.0GHz	11MB	DDR4-2400	-
Xeon Silver 4216	16	32	2.1GHz	3.2GHz	22MB	DDR4-2400	-
Xeon Gold 5115	10	20	2.4GHz	3.2GHz	13.75MB	DDR4-2400	-
Xeon Gold 5118	12	24	2.3GHz	3.2GHz	16.5MB	DDR4-2400	-
Xeon Gold 5120	14	28	2.2GHz	3.2GHz	19.25MB	DDR4-2400	-
Xeon Gold 5120T	14	28	2.2GHz	3.2GHz	19.25MB	DDR4-2400	-
Xeon Gold 5122	4	8	3.6GHz	3.7GHz	16.5MB	DDR4-2666	-
Xeon Gold 5215	10	20	2.5GHz	3.4GHz	13.75MB	DDR4-2666	-
Xeon Gold 5217	8	16	3.0GHz	3.7GHz	11MB	DDR4-2666	-
Xeon Gold 5218	16	32	2.3GHz	3.9GHz	22MB	DDR4-2666	-
Xeon Gold 5220	18	36	2.2GHz	3.9GHz	24.75MB	DDR4-2666	-
Xeon Gold 5222	4	8	3.8GHz	3.9GHz	16.5MB	DDR4-2933	-
Xeon Gold 6128	6	12	3.4GHz	3.7GHz	19.25MB	DDR4-2666	-
Xeon Gold 6130	16	32	2.1GHz	3.7GHz	22MB	DDR4-2666	-
Xeon Gold 6134	8	16	3.2GHz	3.7GHz	24.75MB	DDR4-2666	-
Xeon Gold 6136	12	24	3.0GHz	3.7GHz	24.75MB	DDR4-2666	-
Xeon Gold 6138	20	40	2.0GHz	3.7GHz	27.5MB	DDR4-2666	-
Xeon Gold 6142	16	32	2.6GHz	3.7GHz	22MB	DDR4-2666	-
Xeon Gold 6146	12	24	3.2GHz	4.2GHz	24.75MB	DDR4-2666	-

Xeon Gold 6148	20	40	2.4GHz	3.7GHz	27.5MB	DDR4-2666	-
Xeon Gold 6226	12	24	2.7GHz	3.7GHz	19.25MB	DDR4-2933	-
Xeon Gold 6226R	16	32	2.9GHz	3.9GHz	22MB	DDR4-2933	-
Xeon Gold 6230	20	40	2.1GHz	3.9GHz	27.5MB	DDR4-2933	-
Xeon Gold 6234	8	16	3.3GHz	4.0GHz	24.75MB	DDR4-2933	-
Xeon Gold 6238T	22	44	1.9GHz	3.7GHz	30.25MB	DDR4-2933	-
Xeon Gold 6240R	24	48	2.4GHz	4.0GHz	35.75MB	DDR4-2933	-
Xeon Gold 6242	16	32	2.8GHz	3.9GHz	22MB	DDR4-2933	-
Xeon Gold 6244	8	16	3.6GHz	4.4GHz	24.75MB	DDR4-2933	-
Xeon Gold 6246	12	24	3.3GHz	4.2GHz	24.75MB	DDR4-2933	-
Xeon Gold 6248	20	40	2.5GHz	3.9GHz	27.5MB	DDR4-2933	-
Xeon Platinum 8160T	24	48	2.1GHz	3.7GHz	33MB	DDR4-2666	-
Xeon W-3223	8	16	3.5GHz	4.0GHz	16.5MB	DDR4-2666	-
Xeon W-3225	8	16	3.7GHz	4.3GHz	16.5MB	DDR4-2666	-

Processor Sockets

2x FCLGA3647

Operating System

Operating System**

- Windows® 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- No operating system

Graphics

Discrete Graphics Support

Supports up to two NVIDIA® Quadro® RTX 8000 with NVLink

Discrete Graphics Offering***

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P400	2GB GDDR5	30W	3x miniDP 1.4	None
Quadro P600	2GB GDDR5	45W	4x miniDP	None
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None
Quadro P2000	5GB GDDR5	75W	4x DP	None
Quadro P2200	5GB GDDR5	75W	4x DP 1.4	None
Quadro P4000	8GB GDDR5	120W	4x DP 1.4	None
Quadro P5000	16GB GDDR5X	180W	1x DVI-D DL, 4x DP 1.4	SLI
Quadro P6000	24GB GDDR5X	250W	1x DVI-D DL, 4x DP 1.4	SLI
NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
Quadro RTX 4000	8GB GDDR6	160W	3x DP 1.4, 1x VirtualLink	None
Quadro RTX 5000	16GB GDDR6	265W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 6000	24GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 8000	48GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
NVIDIA RTX A4000	16GB GDDR6 with ECC	140W	4x DP 1.4a	None
NVIDIA RTX A5000	24GB GDDR6 with ECC	230W	4x DP 1.4a	NVLink

NVIDIA RTX A6000	48GB GDDR6 with ECC	300W	4x DP 1.4a		NVLink
Quadro GP100	16GB HBM2	235W	1x DVI-D DL, 4x DP		NVLink
Quadro GV100	32GB HBM2	250W	4x DP 1.4		NVLink

Monitor Support

Monitor Support

Supports multiple displays via discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel C621 chipset

Memory

Max Memory[1]

Up to 768GB DDR4-2933

Memory Type**

- DDR4-2666 RDIMM ECC
- DDR4-2933 RDIMM ECC

Memory Slots

12 DDR4 DIMM slots, 12 channels capable (6 DIMM slots with 6 channels per processor)

Memory Protection

ECC

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 6x 3.5″ SATA HDD / 10x 2.5″ SATA HDD / 8x 2.5″ SAS HDD / 10x 2.5″ SATA SSD / 4x 2.5″ PCIe SSD + 9x M.2 PCIe SSD + 2x PCIe AIC SSD
• 3.5″ HDD up to 6TB each
• 2.5″ SATA HDD up to 500GB each
• 2.5″ SAS HDD up to 600GB each
• 2.5″ SATA SSD up to 2TB each
• M.2 SSD up to 2TB each
• 2.5″ PCIe SSD up to 1.5TB each
• PCIe AIC SSD up to 480GB each

Storage Type***

Disk Type	Interface	RPM	Offering
2.5″ PCIe SSD	PCIe NVMe	-	1.5TB
2.5″ SAS HDD	SAS 12Gb/s	10K	300GB / 600GB
2.5″ SATA HDD	SATA 6Gb/s	7.2K	500GB / 500GB FIPS
2.5″ SATA SSD	SATA 6Gb/s	-	256GB / 512GB / 1TB / 2TB
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB / 6TB
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB
PCIe AIC SSD	PCIe NVMe	-	480GB

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
9440-8i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5	None

9460-16i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5/6	4GB DDR4, SuperCap
NVMe Basic	Optional	PCIe NVMe	0/1/10	None
NVMe Premium	Optional	PCIe NVMe	0/1/10/5	None
NVMe for Intel SSD	Optional	PCIe NVMe	0/1/10/5	None
Onboard Intel RSTe SATA RAID	Standard	SATA 6.0Gb/s	0/1/10/5	None

Removable Storage

Optical Support

Up to two HH or 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

Card Reader

- SD card reader
- 15-in-1 card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC662 codec

Power Supply

Power Supply**

Power	Type	Efficiency	Key Features
690W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
900W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified
1000W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified

DESIGN

Mechanical

Form Factor

Tower (36L)

Dimensions (WxDxH)

Models	Dimensions
All models	175 x 485 x 446 mm (6.89 x 19.1 x 17.6 inches, with feet)

Weight

Models	Weight
All models	25.7 kg (56.7 lbs, maximum configuration)

Bays[1]

- 2x 3.5″ disk bay (standard)
- 4x 3.5″ disk bay (optional):
  2 bays come with 3rd disk or Storage Bay Upgrade Kit
  2 bays via flex bay

Flex Bays

2x flex bays, supports the following:
• 2x half-height optical drives
• 2x 5.25″ 9.0mm optical drives
• 1x 5.25″ 9.0mm optical drive + 2x 3.5″/2.5″ SATA SSD/HDD
• 1x 3.5″/2.5″ SATA SSD/HDD with Front Access Storage Enclosure
• 1x flex module for the following options:
Tray 1: 9.0mm optical
Tray 2: 15-in-1 USB 3.1 Gen 1 reader, 2x Thunderbolt™, or 4-digit diagnostic display
Port 1 and 2: Front USB 3.1 Gen 1 Type-C or eSATA

M.2 Slots

Up to 9x M.2 SSD:
• 2 via onboard slots
• 4 via Quad M.2 to PCIe adapter
• 3 via Single M.2 to PCIe adapter

Expansion Slots

- One PCI
- One PCIe 3.0 x4
- One PCIe 3.0 x8
- Three PCIe 3.0 x16 (2nd CPU needed)

Expansion Slots Offering

Slot 1: PCIe 3.0 x16, full height, full length, 75W, by CPU2
Slot 2: PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU1
Slot 3: PCIe 3.0 x8, full height, full length, 25W, open ended, by CPU1
Slot 4: PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU1
Slot 5: PCI, full height, full length, 25W
Slot 6: PCIe 3.0 x4, full height, half length, 25W, open ended, by PCH

Notes:

1. 4x 3.5″ bay can also support up to 8x 2.5″ SSD / HDD with 2 disks per bay. Additional 9440-8i or 9460-16i PCIe adapter and other parts are needed.

CONNECTIVITY

Network

Onboard Ethernet

Two gigabit Ethernet, Intel Ethernet Connection I219-LM and I210-AT, 2x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

- Intel Dual-Band Wireless-AC 8265, 802.11ac Dual-Band 2x2 Wi-Fi® + Bluetooth 4.2
- No WLAN and Bluetooth

Ports[1]

Front Ports

- 1x USB 3.1 Gen 1 (Always On and fast charge)
- 3x USB 3.1 Gen 1
- 1x headphone / microphone combo jack (3.5mm)

Optional Front Ports***

- 1x eSATA (with flex module)
- 2x Thunderbolt (with flex module, USB-C form, one supports video-out)
- 1x USB-C 3.1 Gen 1 (with flex module)

Rear Ports[2]

- 2x USB 2.0
- 4x USB 3.1 Gen 1
- 2x PS/2 ports (keyboard / mouse)
- 2x Ethernet (RJ-45)
- 1x line-in (3.5mm)
- 1x line-out (3.5mm)
- 1x microphone (3.5mm)

Optional Rear Ports***

- 2x USB-C 3.1 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt
- 1x serial

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file

attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
USB 2.0: 480 Mbit/s;
USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
Thunderbolt 3: 40 Gbit/s;
FireWire 400: 400 Mbit/s;
FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

- (Optional) Access Panel Lock Kit with Common Key
- (Optional) Access Panel Lock Kit with Unique Key
- Kensington® Security Slot

Chassis Intrusion Switch

Chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management

Intel vPro with Intel AMT 11.0

Diagnostic

Diagnostic

- Photo-audio transfer with Lenovo PC Diagnostics for Android™ and iOS
- ThinkStation® Diagnostics for Windows
- Front 4-digit diagnostic
- Lenovo UEFI Bootable Diagnostics
- None

SERVICE

Warranty

Base Warranty**

- 1-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Silver
- ENERGY STAR® 8.0 (on model 30BA00EQUS)
- GREENGUARD®
- RoHS compliant

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

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Lenovo
PSREF
Product Specifications
Reference

OVERVIEW

1.	Power button	8.	Audio line-out (3.5mm)
2.	Card reader	9.	Serial *
3.	Headphone / microphone combo jack (3.5mm)	10.	2x PS/2 ports (keyboard / mouse)
4.	4x USB 3.2 Gen 1	11.	2x USB 2.0
5.	3x Flex bay	12.	4x USB 3.2 Gen 1
6.	Microphone (3.5mm)	13.	2x Ethernet (RJ-45)
7.	Audio line-in (3.5mm)		

Notes:
- Ports with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to two 205W Gen 1 or Gen 2 Intel® Xeon® Scalable family processors, Bronze, Silver, Gold, or Platinum

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics
Xeon Bronze 3104	6	6	1.7GHz	-	8.25MB	DDR4-2133	-
Xeon Bronze 3106	8	8	1.7GHz	-	11MB	DDR4-2133	-
Xeon Bronze 3204	6	6	1.9GHz	1.9GHz	8.25MB	DDR4-2133	-
Xeon Bronze 3206R	8	8	1.9GHz	1.9GHz	11MB	DDR4-2133	-
Xeon Silver 4108	8	16	1.8GHz	3.0GHz	11MB	DDR4-2400	-
Xeon Silver 4109T	8	16	2.0GHz	3.0GHz	11MB	DDR4-2400	-
Xeon Silver 4110	8	16	2.1GHz	3.0GHz	11MB	DDR4-2400	-
Xeon Silver 4112	4	8	2.6GHz	3.0GHz	8.25MB	DDR4-2400	-
Xeon Silver 4114	10	20	2.2GHz	3.0GHz	13.75MB	DDR4-2400	-
Xeon Silver 4114T	10	20	2.2GHz	3.0GHz	13.75MB	DDR4-2400	-
Xeon Silver 4116	12	24	2.1GHz	3.0GHz	16.5MB	DDR4-2400	-
Xeon Silver 4208	8	16	2.1GHz	3.2GHz	11MB	DDR4-2400	-
Xeon Silver 4209T	8	16	2.2GHz	3.2GHz	11MB	DDR4-2400	-
Xeon Silver 4210	10	20	2.2GHz	3.2GHz	13.75MB	DDR4-2400	-
Xeon Silver 4210R	10	20	2.4GHz	3.2GHz	13.75MB	DDR4-2400	-
Xeon Silver 4214	12	24	2.2GHz	3.2GHz	16.5MB	DDR4-2400	-
Xeon Silver 4214R	12	24	2.4GHz	3.5GHz	16.5MB	DDR4-2400	-
Xeon Silver 4215	8	16	2.5GHz	3.5GHz	11MB	DDR4-2400	-
Xeon Silver 4215R	8	16	3.2GHz	4.0GHz	11MB	DDR4-2400	-
Xeon Silver 4216	16	32	2.1GHz	3.2GHz	22MB	DDR4-2400	-
Xeon Gold 5115	10	20	2.4GHz	3.2GHz	13.75MB	DDR4-2400	-
Xeon Gold 5118	12	24	2.3GHz	3.2GHz	16.5MB	DDR4-2400	-
Xeon Gold 5120	14	28	2.2GHz	3.2GHz	19.25MB	DDR4-2400	-
Xeon Gold 5120T	14	28	2.2GHz	3.2GHz	19.25MB	DDR4-2400	-
Xeon Gold 5122	4	8	3.6GHz	3.7GHz	16.5MB	DDR4-2666	-
Xeon Gold 5215	10	20	2.5GHz	3.4GHz	13.75MB	DDR4-2666	-
Xeon Gold 5217	8	16	3.0GHz	3.7GHz	11MB	DDR4-2666	-
Xeon Gold 5218	16	32	2.3GHz	3.9GHz	22MB	DDR4-2666	-
Xeon Gold 5220	18	36	2.2GHz	3.9GHz	24.75MB	DDR4-2666	-
Xeon Gold 5222	4	8	3.8GHz	3.9GHz	16.5MB	DDR4-2933	-
Xeon Gold 6128	6	12	3.4GHz	3.7GHz	19.25MB	DDR4-2666	-
Xeon Gold 6130	16	32	2.1GHz	3.7GHz	22MB	DDR4-2666	-
Xeon Gold 6134	8	16	3.2GHz	3.7GHz	24.75MB	DDR4-2666	-
Xeon Gold 6136	12	24	3.0GHz	3.7GHz	24.75MB	DDR4-2666	-
Xeon Gold 6138	20	40	2.0GHz	3.7GHz	27.5MB	DDR4-2666	-
Xeon Gold 6142	16	32	2.6GHz	3.7GHz	22MB	DDR4-2666	-
Xeon Gold 6146	12	24	3.2GHz	4.2GHz	24.75MB	DDR4-2666	-

Xeon Gold 6148	20	40	2.4GHz	3.7GHz	27.5MB	DDR4-2666	-
Xeon Gold 6154	18	36	3.0GHz	3.7GHz	24.75MB	DDR4-2666	-
Xeon Gold 6226	12	24	2.7GHz	3.7GHz	19.25MB	DDR4-2933	-
Xeon Gold 6226R	16	32	2.9GHz	3.9GHz	22MB	DDR4-2933	-
Xeon Gold 6230	20	40	2.1GHz	3.9GHz	27.5MB	DDR4-2933	-
Xeon Gold 6234	8	16	3.3GHz	4.0GHz	24.75MB	DDR4-2933	-
Xeon Gold 6238T	22	44	1.9GHz	3.7GHz	30.25MB	DDR4-2933	-
Xeon Gold 6240R	24	48	2.4GHz	4.0GHz	35.75MB	DDR4-2933	-
Xeon Gold 6242	16	32	2.8GHz	3.9GHz	22MB	DDR4-2933	-
Xeon Gold 6244	8	16	3.6GHz	4.4GHz	24.75MB	DDR4-2933	-
Xeon Gold 6246	12	24	3.3GHz	4.2GHz	24.75MB	DDR4-2933	-
Xeon Gold 6248	20	40	2.5GHz	3.9GHz	27.5MB	DDR4-2933	-
Xeon Gold 6254	18	36	3.1GHz	4.0GHz	24.75MB	DDR4-2933	-
Xeon Gold 6258R	28	56	2.7GHz	4.0GHz	38.5MB	DDR4-2933	-
Xeon Platinum 8160T	24	48	2.1GHz	3.7GHz	33MB	DDR4-2666	-
Xeon Platinum 8180	28	56	2.5GHz	3.8GHz	38.5MB	DDR4-2666	-
Xeon Platinum 8280	28	56	2.7GHz	4.0GHz	38.5MB	DDR4-2933	-
Xeon W-3223	8	16	3.5GHz	4.0GHz	16.5MB	DDR4-2666	-
Xeon W-3225	8	16	3.7GHz	4.3GHz	16.5MB	DDR4-2666	-
Xeon W-3235	12	24	3.3GHz	4.4GHz	19.25MB	DDR4-2933	-
Xeon W-3245	16	32	3.2GHz	4.4GHz	22MB	DDR4-2933	-
Xeon W-3265	24	48	2.7GHz	4.4GHz	33MB	DDR4-2933	-
Xeon W-3275	28	56	2.5GHz	4.4GHz	38.5MB	DDR4-2933	-

Processor Sockets

2x FCLGA3647

Operating System

Operating System**

- Windows® 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- No operating system

Graphics

Discrete Graphics Support

Supports up to two NVIDIA® Quadro® RTX 8000 with NVLink

Discrete Graphics Offering***

Graphics	Memory	Power	Connector	SLI / NVlink
Quadro P400	2GB GDDR5	30W	3x miniDP 1.4	None
Quadro P600	2GB GDDR5	45W	4x miniDP	None
Quadro P620	2GB GDDR5	40W	4x miniDP 1.4	None
Quadro P1000	4GB GDDR5	50W	4x miniDP 1.4	None
Quadro P2000	5GB GDDR5	75W	4x DP	None
Quadro P2200	5GB GDDR5	75W	4x DP 1.4	None
Quadro P4000	8GB GDDR5	120W	4x DP 1.4	None
Quadro P5000	16GB GDDR5X	180W	1x DVI-D DL, 4x DP 1.4	SLI
Quadro P6000	24GB GDDR5X	250W	1x DVI-D DL, 4x DP 1.4	SLI

NVIDIA T400	2GB GDDR6	40W	3x miniDP 1.4	None
NVIDIA T600	4GB GDDR6	40W	4x miniDP 1.4	None
NVIDIA T1000	4GB GDDR6	50W	4x miniDP 1.4	None
Quadro RTX 4000	8GB GDDR6	160W	3x DP 1.4, 1x VirtualLink	None
Quadro RTX 5000	16GB GDDR6	265W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 6000	24GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
Quadro RTX 8000	48GB GDDR6	295W	4x DP 1.4, 1x VirtualLink	NVLink
NVIDIA RTX A4000	16GB GDDR6 with ECC	140W	4x DP 1.4a	None
NVIDIA RTX A5000	24GB GDDR6 with ECC	230W	4x DP 1.4a	NVLink
NVIDIA RTX A6000	48GB GDDR6 with ECC	300W	4x DP 1.4a	NVLink
Quadro GP100	16GB HBM2	235W	1x DVI-D DL, 4x DP	NVLink
Quadro GV100	32GB HBM2	250W	4x DP 1.4	NVLink

Monitor Support

Monitor Support

Supports multiple displays via discrete graphics, the number of maximum monitors supported depends on the graphic card in use

Chipset

Chipset

Intel C621 chipset

Memory

Max Memory[1]

Up to 1TB DDR4-2933

Memory Type**

- DDR4-2666 LRDIMM ECC
- DDR4-2666 RDIMM ECC
- DDR4-2933 RDIMM ECC

Memory Slots

16 DDR4 DIMM slots, 12 channels capable (8 DIMM slots with 6 channels per processor)

Memory Protection

ECC

Notes:

1. The max memory is based on the test results with current Lenovo® memory offerings. The system may support more memory as the technology develops.

Storage

Storage Support

Up to 6x 3.5″ SATA HDD / 10x 2.5″ SATA HDD / 8x 2.5″ SAS HDD / 10x 2.5″ SATA SSD / 4x 2.5″ PCIe SSD + 9x M.2 PCIe SSD + 2x PCIe AIC SSD
• 3.5″ HDD up to 6TB each
• 2.5″ SATA HDD up to 500GB each
• 2.5″ SAS HDD up to 600GB each
• 2.5″ SATA SSD up to 2TB each
• M.2 SSD up to 2TB each
• 2.5″ PCIe SSD up to 1.5TB each
• PCIe AIC SSD up to 480GB each

Storage Type***

Disk Type	Interface	RPM	Offering
2.5″ PCIe SSD	PCIe NVMe	-	1.5TB

2.5″ SAS HDD	SAS 12Gb/s	10K	300GB / 600GB
2.5″ SATA HDD	SATA 6Gb/s	7.2K	500GB / 500GB FIPS
2.5″ SATA SSD	SATA 6Gb/s	-	256GB / 512GB / 1TB / 2TB
3.5″ SATA HDD	SATA 6Gb/s	7.2K	1TB / 2TB / 4TB / 6TB
M.2 PCIe SSD	PCIe NVMe	-	256GB / 512GB / 1TB / 2TB
PCIe AIC SSD	PCIe NVMe	-	480GB

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
9440-8i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5	None
9460-16i PCIe	Optional	SAS 12.0Gb/s, SATA 6.0Gb/s	0/1/10/5/6	4GB DDR4, SuperCap
NVMe Basic	Optional	PCIe NVMe	0/1/10	None
NVMe Premium	Optional	PCIe NVMe	0/1/10/5	None
NVMe for Intel SSD	Optional	PCIe NVMe	0/1/10/5	None
Onboard Intel RSTe SATA RAID	Standard	SATA 6.0Gb/s	0/1/10/5	None

Removable Storage

Optical Support

Up to three HH or two 9.0mm optical drives, DVD-ROM, DVD±RW, or Blu-ray

Card Reader

- SD card reader
- 15-in-1 card reader
- No card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC662 codec

Power Supply

Power Supply

Power	Type	Efficiency	Key Features
1400W	Fixed	92%	Autosensing, 80 PLUS Platinum qualified. Countries with input voltage under 115V, output power limited to 1125 watts

DESIGN

Mechanical

Form Factor

Tower (55L)

Dimensions (WxDxH)

Models	Dimensions
All models	200 x 620 x 446 mm (7.87 x 24.4 x 17.56 inches, with feet)

Weight

Models	Weight
All models	37 kg (81.6 lbs, maximum configuration)

Bays[1]

- 2x 3.5″ disk bay (standard)
- 4x 3.5″ disk bay (optional):

2 bays come with 3rd disk or Storage Bay Upgrade Kit
2 bays via flex bay

Flex Bays

3x flex bay, supports the following:
• 3x half-height optical drives
• 2x 5.25″ 9.0mm optical drives
• 1x 5.25″ 9.0mm optical drive + 1x 3.5″/2.5″ SATA SSD/HDD
• 1x 3.5″/2.5″ SATA SSD/HDD with Front Access Storage Enclosure
• 1x flex module for the following options:
Tray 1: 9.0mm optical
Tray 2: 15-in-1 USB 3.2 Gen 1 reader or 2x Thunderbolt™
Port 1 and 2: Front USB 3.2 Gen 1 Type-C or eSATA

M.2 Slots

Up to 9x M.2 SSD:
• 2 via onboard slots
• 4 via Quad M.2 to PCIe adapter
• 3 via Single M.2 to PCIe adapter

Expansion Slots

• Three PCIe 3.0 x4
• Five PCIe 3.0 x16 (2nd CPU needed)

Expansion Slots Offering

Slot 1 (CPU1) PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU1
Slot 2 (CPU1) PCIe 3.0 x4, full height, full length, 25W, open ended, by CPU1
Slot 3 (CPU1) PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU1
Slot 4 (CPU1) PCIe 3.0 x4, full height, full length, 25W, open ended, by CPU1
Slot 5 (PCH) PCIe 3.0 x4, full height, half length, 25W, open ended, by PCH
Slot 6 (CPU2) PCIe 3.0 x16, full height, half length, 75W, by CPU2
Slot 7 (CPU2) PCIe 3.0 x16, full height, full length, 75W, double-width, by CPU2
Slot 8 (CPU2) PCIe 3.0 x16, full height, full length, 75W, by CPU2

Notes:

1. 4x 3.5″ bay can also support up to 8x 2.5″ SSD / HDD with 2 disks per bay. Additional 9440-8i or 9460-16i PCIe adapter and other parts are needed

CONNECTIVITY

Network

Onboard Ethernet

Two gigabit Ethernet, Intel Ethernet Connection I219-LM and I210-AT, 2x RJ45, supports Wake-on-LAN

Optional Ethernet

Additional Ethernet options via PCIe adapter

WLAN + Bluetooth®

• Intel Dual-Band Wireless-AC 8265, 802.11ac Dual-Band 2x2 Wi-Fi® + Bluetooth 4.2
• No WLAN and Bluetooth

Ports[1]

Front Ports

• 1x USB 3.1 Gen 1 (Always On and fast charge)
• 3x USB 3.1 Gen 1
• 1x headphone / microphone combo jack (3.5mm)

Optional Front Ports***

• 1x eSATA (with flex module)
• 2x Thunderbolt (with flex module, USB-C form, one supports video-out)
• 1x USB-C 3.1 Gen 1 (with flex module)

Rear Ports[2]

• 2x USB 2.0
• 4x USB 3.1 Gen 1

- 2x PS/2 ports (keyboard / mouse)
- 2x Ethernet (RJ-45)
- 1x line-in (3.5mm)
- 1x line-out (3.5mm)
- 1x microphone (3.5mm)

Optional Rear Ports***

- 2x USB-C 3.1 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt
- 1x serial

Notes:

1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

- (Optional) Access Panel Lock Kit with Common Key
- (Optional) Access Panel Lock Kit with Unique Key
- Kensington® Security Slot

Chassis Intrusion Switch

Chassis intrusion switch

BIOS Security

- Administrator password
- Power-on password

MANAGEABILITY

System Management

System Management

Intel vPro with Intel AMT 11.0

Diagnostic

Diagnostic

- Photo-audio transfer with Lenovo PC Diagnostics for Android™ and iOS
- ThinkStation® Diagnostics for Windows
- Front 4-digit diagnostic
- Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty

- 1-year limited onsite service
- 3-year limited onsite service with 9x5 NBD (for most models)

ENVIRONMENTAL

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications

- EPEAT™ Silver
- ENERGY STAR® 8.0 (on model 30BC003WUS)
- GREENGUARD®
- RoHS compliant

ISV Certifications

ISV Certifications

Please visit www.thinkworkstations.com/isv-certifications/

- Feature with ** means that only one offering listed under the feature is configured on selected models.

- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.

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- The specifications on this page may not be available in all regions, and may be changed or updated without notice.

ThinkStation P920 Rack Platform Specifications

Form factor	2U rack
Dimensions	Height: 87 mm (3.4 in). Width: 445 mm (17.5 in). Depth: 720 mm (28.3 in)
Weight	Maximum configuration: 70.54 lb (32 kg)
Processor Sockets	2x FCLGA3647
Processor Support	Up to two Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, or Gold

Processor Offering

Processor	# of Cores	# of Threads	Base Frequency	Cache	TDP	Memory Types
Xeon Gold 6252	24	48	2.1GHz	35.75MB	150W	DDR4-2933
Xeon Gold 6234	8	16	3.3GHz	25MB	130W	DDR4-2933
Xeon Gold 6230	20	40	2.1GHz	28MB	125W	DDR4-2933
Xeon Gold 5218	16	32	2.3GHz	22MB	125W	DDR4-2666
Xeon Gold 5215	10	20	2.5GHz	13.75MB	85W	DDR4-2666
Xeon Silver 4215	8	16	2.5GHz	11MB	85W	DDR4-2400
Xeon Silver 4214	12	24	2.2GHz	17MB	85W	DDR4-2400
Xeon Silver 4210	10	20	2.2GHz	14MB	85W	DDR4-2400
Xeon Silver 4208	8	16	2.1GHz	11MB	85W	DDR4-2400
Xeon Bronze 3204	6	6	1.9GHz	8.25MB	85W	DDR4-2133

Chipset	Intel C624 Platform Controller Hub
Memory Sockets	24 DIMM sockets with 12 channels. 12 DIMM sockets with 6 channels per processor
Memory Types	DDR4-2933 RDIMM, 8GB/16GB/32GB available
Memory Capacity	768GB with 24x 32GB DDR4-2933 RDIMM
Memory protection	ECC, memory mirroring, and memory sparing

Expansion slots

Slot 1 (riser card 1)	Full height, half length, double-wide
Slot 2	Not present, for double-wide card in slot 1
Slot 3 (riser card 1)	PCIe 3.0 x16 (x8 lanes). Full height, half length
Slot 4 (onboard)	PCIe 3.0 x8, low profile
Slot 5 (riser card 2)	PCIe 3.0 x16, full height, half length, requires 2nd CPU
Slot 6 (riser card 2)	PCIe 3.0 x16, full height, half length, requires 2nd CPU
Slot 7 (onboard)	PCIe 3.0 x8 (dedicated to an internal storage controller)

Integrated Graphics	Integrated Matrox G200 in XClarity Controller

Discrete Graphics Offering

Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
Quadro P620	2GB GDDR5	40W	4xminiDP		3
Quadro RTX 4000	8GB GDDR6	160W	3xDP, 1xVirtualLink		3
Quadro RTX 5000	16GB GDDR6	265W	4xDP, 1xVirtualLink		2
T4	16GB GDDR6	70W	-		5
V100	16GB/32GB HBM2	250W	-		2

Storage Controller

Storage Controller	Type	Interface	RAID	Cache
530-8i	Optional	12Gbps SAS	0/1/10/5/50	-

Storage Support

Disk Type	Interface	RPM	Offering	Max Qty
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/4TB/6TB/8TB/10TB/12TB/14TB	8
3.5" SATA SSD	SATA 6Gb/s	7.2K	240GB/480GB/960GB/1.92TB/3.84TB	8
M.2 SATA SSD	SATA 6Gb/s		480GB	2

Storage Bays

Bay Type	Maximum Drives Qty
M.2	2x M.2 SATA SSD non-hot swap
Disk bay	8x 3.5" SATA/SAS hot-swap disk bays

Power supply	Up to two redundant hot-swap 1100W or 1600W 80 PLUS Platinum qualified AC power supplies. 100V - 240V
Media reader	None
Network interfaces	One dedicated management port. One LOM slot for customized LOM with up to four RJ-45 10GbE ports. Wake-on-LAN and NC-SI are available on Port 0 of LOM
WLAN + Bluetooth	None
Security features	Power-on and admin password. Trusted Platform Module, TCG 1.2 compliant, upgrade to 2.0 via UEFI setting. Optional lockable security bezel
Systems management	XClarity Controller Standard. Energy Manager. XClarity Administrator. Lenovo Capacity Planner. Provisioning Manager. Essentials

Diagnostic	Light Path Diagnostics
Base warranty	3-year limited onsite service with 9x5/NBD

Warranty upgrades

5WS7A72784	Foundation Service - 3Yr Next Business Day Response
5WS7A72785	Foundation Service - 4Yr Next Business Day Response
5WS7A72786	Foundation Service - 5Yr Next Business Day Response
5PS7A72787	Essential Service - 3Yr 24x7 4Hr Response + YourDrive YourData
5PS7A72788	Essential Service - 4Yr 24x7 4Hr Response + YourDrive YourData
5PS7A72789	Essential Service - 5Yr 24x7 4Hr Response + YourDrive YourData

HD Audio	None
Front ports	One XClarity Controller USB connector, one USB 3.0, one optional VGA
Rear ports	One VGA, two USB 3.0, one XClarity Controller network connector
Operating system	Microsoft Windows Server 2016 and 2019. Red Hat Enterprise Linux (RHEL) 7 and 8. SUSE Linux Enterprise Server (SLES) 12 and 15. VMware vSphere (ESXi) 6.5 and 6.7.

Environmental specification

Supports ASHRAE A4 with limitations.

Temperature - operating	A4: 5°C to 45°C (41°F to 113°F) A3: 5°C to 40°C (41°F to 104°F) A2: 10°C to 35°C (50°F to 95°F)
Temperature - non operating (no package)	-10°C to 60°C (14°F to 140°F)
Temperature - non operating (with package)	-40°C to 70°C (-40°F to 158°F)
Altitude - operating	(Unpressurized): 0-10000ft (0-3048m)
Humidity - operating, non-condensing	A4: 8%~90%. A3:8%~85%. A2:8%~80%
Humidity - storage (with package), non-condensing	8%~90%

Models should meet the following requirements to support A3 and A4:
• NVMe drives not installed
• PCIe flash adapter not installed
• Graphic processing unit (GPU) not installed
• Must have redundant PSU
• Processors with TDP more than or equal to 150-watt not installed

Environmental Certifications	Energy Star Server 2.1 certified. More environmental information please see: www.lenovo.com/social_responsibility/us/en/environment/
ISV certifications	Certifications from NVIDIA Quadro ISV Certified

Options

4XB7A62801	Intel S4510 3.5" 240G SSD OPT
4XB7A62802	Intel S4510 3.5" 480G SSD OPT
4XB7A62803	Intel S4510 3.5" 960G SSD OPT
4XB7A62804	Intel S4510 3.5" 1.92T SSD OPT
4XB7A62805	Intel S4510 3.5" 3.84T SSD OPT
4XB7A62806	4TB7.2K 6GSATA 3.5G4HS HDD OPT
4XB7A62807	6TB7.2K 6GSATA512e 3.5G4HS OPT
4XB7A62808	8TB7.2K 6GSATA512e 3.5G4HS OPT
4XB7A62809	10T7.2K 6GSATA512e 3.5G4HS OPT
4XB7A62810	3.5" 12TB 7.2K SATA 512e HDD
4XB7A62811	14T 3.5" 7.2 SATA HDD OPT
4ZC7A62797	8GB 1RX8 PC4-2933R 8Gb 1.2V
4ZC7A62798	16GB 1RX4 PC4-2933R 8Gb 1.2V
4ZC7A62799	16GB 2RX8 PC4-2933R 8Gb 1.2V
4ZC7A62800	32GB 2RX4 PC4-2933R 8Gb 1.2V