PSREF

Product Specifications Reference
for ThinkStation and ThinkPad P Series

Version 569
Last updated: December 2020

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Summary of Changes

November 11, 2020 - Version 569

- Add Core i7-10710U and i7-10810U on ThinkPad P14s Gen 1 and ThinkPad P15s Gen 1

November 11, 2020 - Version 568

- Add new product ThinkPad P14s Gen 1 AMD
- Update weight on ThinkStation P330 Tower Gen 2 / P330 SFF Gen 2 / P340 Tower Gen 2 / P340 SFF Gen 2 / P720 / P920 Platform specifications
- Add missing information on ThinkStation P520c / P520 (300GB / 600GB SAS HDD) and ThinkStation P720 (DDR4-2933 RIMM) Platform specifications
- Add 8GB DDR4-3200 RDIMM on ThinkStation P620 Platform specifications
- Add Ubuntu Linux LTS and Fedora Linux support on ThinkPad P1 Gen 3 Platform specifications
- Add "Optional" to Lenovo USB-C to Ethernet Adapter on ThinkPad P1 Gen 3 Platform specifications

October 21, 2020 - Version 567

- Remove pad lock support from ThinkStation P520c / P520 / P620 / P720 / P920 Platform specifications
- Update Energy Star 8.0 on ThinkStation P330 Tower Gen 2 / P330 SFF Gen 2 / P330 Tiny / P520c / P520 / P620 / P720 / P920 Platform specifications
- Update Energy Star 8.0 on ThinkPad P73 / P53 / P53s / P43s Platform specifications
- Update NVIDIA GeForce RTX 2070 SUPER / RTX 2080 SUPER on ThinkPad T15g Gen 1 model configurations
- Correct ECC memory speed to DDR4-2933 on ThinkPad P17 Gen 1 model configurations

September 30, 2020 - Version 566

- Add 16GB Optane Memory on ThinkStation P340 Tower / P340 SFF Platform specifications
- Add WWAN ready on ThinkPad P15v Platform specifications
- Update Graphics description on ThinkPad P1 Gen 3 Platform specifications
- Add footnote for PCIe 4.0 SSD on both ThinkStation P620 Platform specifications and MTM configuration
- Remove ThinkPad P1, ThinkPad P51, ThinkPad P52, ThinkPad P52, ThinkPad P72 from PSREF alive product list and move to withdrawn products list

September 9, 2020 - Version 565

- Add new product ThinkStation P620
- Update EPEAT Silver on following products' platform specifications:

ThinkStation P330 Tower Gen 2 / P330 SFF Gen 2 / P340 Tower / P340 SFF / P340 Tiny

- Add 2x USB-A 3.2 Gen 1 optional ports on to ThinkStation P340 Tiny platform specifications
- Update power adapter value on some ThinkStation P340 Tiny models
- Add new product ThinkPad T15g
- Update ThinkPad P15v Battery life data (MobileMark 2018)
- Update EPEAT Gold on following products' platform specifications:

ThinkPad P1 Gen 2 / ThinkPad P1 Gen 3 / ThinkPad P14s Gen 1 / ThinkPad P15 Gen 1 /

ThinkPad P15s Gen 1 / ThinkPad P15v Gen 1 / ThinkPad P17 Gen 1 / ThinkPad P43s /

ThinkPad P53 / ThinkPad P73

August 19, 2020 - Version 564

- Add new product: ThinkPad P1 Gen 3, ThinkPad P15v Gen 1
- Update EPEAT Gold on ThinkStation P340 Tiny Platform Specifications
- Add UHD panel on ThinkPad P15s Gen 1 Platform specifications
- Combine ThinkPad P series and ThinkStation PSREF

July 29, 202 - Version 563

- Add new processors for ThinkStation P340 Tower / SFF

June 17, 2020 - Version 561

- New ThinkStation P340 Tower / SFF annouced on June 9, 2020
- Add 625W / 1000W PSU, RTX 2070 Super, RTX 2080 Super, NVlink support

May 27, 2020 - Version 560

- New ThinkStation P340 Tiny annouced on May 21, 2020

May 6, 2020 - Version 559

- Update vPro information on ThinkStation P330 Tower Gen 2 / SFF Gen 2

April 15, 2020 - Version 558

- Update weight data on ThinkStation P330 Tower Gen 2
- Add new product ThinkStation P920 Rack

March 25, 2020 - Version 557

- Add Core i5-8700K, Geforce GTX 1660 Ti, RTX 2070, RTX 2080 on ThinkStation P330 Tower Gen 2

March 4, 2020 - Version 556

- Add Core i5-9400F on ThinkStation P330 Tower Gen 2 and ThinkStation P330 SFF Gen 2

December 31, 2019 - Version 553

- Add Xeon W-2200 series Processor and DDR4-2933 memory on ThinkStation P520c and P520

December 11, 2019 - Version 552

- Add Xeon Gold 6226 and 6244 on ThinkStation P920 and P720

August 7, 2019 - Version 546

- Update processor information on Thinktation P330 Tiny

July 17, 2019 - Version 545

- Update EPEAT rating to Silver on most ThinkStation

June 26, 2019 - Version 544

- Add ThinkStation P330 Tower Gen 2/P330 SFF Gen 2 CPU Async update

May 15, 2019 - Version 542

- New ThinkStation P330 Tower Gen 2/P330 SFF Gen 2 announced on April 2019
- Update ThinkStation P920/P720/P520 specifications, add Quadro RTX 8000, DDR4-2933, Xeon Scalable Gen 2

March 13, 2019 - Version 539

- Add Intel vPro information on ThinkStation P330 Tower/P330 SFF/P520c/P520/P720/P920

February 20, 2019 - Version 538

- New ThinkStation P330 Tower models announced on February 2019
- Update ThinkStation P920/P720/P520/P520c specifications, add Quadro RTX4000/5000/6000

August 22, 2018 - Version 529

- New ThinkStation P330 Tower/SFF/Tiny models announced on August 2018
- Update ThinkStation P920/P720 specifications, update flex bay and graphics adapter section

August 1, 2018 - Version 528

- New product ThinkStation P330 Tower/SFF/Tiny announced on July 2018
- Update ThinkStation P920/P720/P520/P520c, add Refresh 2.0 information
- Remove all MTM PNs from PDF version

June 20, 2018 - Version 526

- New ThinkStation P320 Tower models announced on June 2018
- Update ThinkStation P720 and P920 models, remove EOL models for US
- Update Windows 10 Pro 64 for Workstations for some ThinkStation P720/P920 models

May 30, 2018 - Version 525

- Added ThinkStation P720/P920 EMEA May 2018 models

April 18, 2018 - Version 523

- New ThinkStation P320 Tower/ P320 SFF/P520c/P520/P720/P920 models announced on April 2018

March 28, 2018 - Version 522

- New ThinkStation P320 Tower/ P320 SFF/P520c/P520/P920 announced on March 2018

March 7, 2018 - Version 521

- New ThinkStation P320 Tower/ P320 SFF/P720/P920 announced on February 2018

January 30, 2018 - Version 519

- New ThinkStation P520c and P520 announced on January 2018
- New ThinkStation P320 Tower/P320 SFF announced on January 2018

December 20, 2017 - Version 517

- New ThinkStation P920 models announced on December 2017
- Add Optional Ports on ThinkStation P320 Tiny

September 29, 2017 - Version 513

- New ThinkStation P920 and P720 announced on September 2017
- New ThinkStation P320 Tower/P320 SFF/P410/P510/P710/P910 announced on September 2017

September 12, 2017 - Version 512

- New ThinkStation P320 Tower and P320 SFF models announced on August 2017

August 23, 2017 - Version 511

- New ThinkStation P320 Tiny models announced on August 2017

August 2, 2017 - Version 510

- New ThinkStation P320 Tiny/P320 Tower/ P320 SFF/P410/P510 models announced on July 2017

June 21, 2017 - Version 508

- New ThinkStation P320 Tiny announced on June 2017

May 26, 2017 - Version 507

- Add ThinkStation P410/P510/P710/P910 Refresh 3.0 Wave 1 models and update platform specifications

April 19, 2017 - Version 505

- New ThinkStation P320 Tower announced on April 2017
- New ThinkStation P320 SFF announced on April 2017

March 29, 2017 - Version 504

- Added ThinkStation P310 Tower and SFF models announced on March 2017
- Added ThinkStation P410 models announced on March 2017

January 25, 2017 - Version 501

- Update quantity of PCIe SSD adapter in ThinkStation P510/P910

January 4, 2017 - Version 500

- Added ThinkStation P310 models announced on December 2016

December 14, 2016 - Version 499

- Added ThinkStation P410/P510/P710/P910 EMEA models
- Added 1TB M.2 PCIe SSD, Quadro P5000, Quadro P6000 support on ThinkStation P510/P710/P910
- Added Quadro P5000 support on ThinkStation P410
- Added 6TB 7.2K SATA6Gbs HDD support on ThinkStation P410/P510/P710/P910
- Added ThinkStation P410/P510/P710/P910 models announced on December 2016

November 23, 2016 - Version 498

- Removed ThinkStation P500/P900 due to EOL
- Added ThinkStation P310 Tower and SFF models announced on November 2016

October 12, 2016 - Version 496

- Removed flash option on ThinkStation P510/P710/P910
- Added ThinkStation P310/P410/P510/P710/P910 models announced on September 2016

August 3, 2016 - Version 493

- Removed ThinkStation P500/P700/P900 Windows 7 DG from Win8.1 U.S. models
- Added keyboard and mouse features on all ThinkStation

July 13, 2016 - Version 492

- Added ThinkStation P500, P700, and P900 Windows 10 downgrade to Windows 7 models
- Updated Maximum configuration weight of ThinkStation P410
- Added ThinkStation P710 and P910 models announced on on July 2016

- Added "Maximum drives in 3.5" bay" feature on ThinkStation P500/P510/P700/P710/P900/P910

June 22, 2016 - Version 491

- Added new product ThinkStation P410/P510
- Added NVIDIA Quadro M2000 on ThinkStation P310 Tower
- Added keyboard and mouse information on ThinkStation P710/P910
- Added internal USB information on ThinkStation P710/P910

June 2, 2016 - Version 490

- Added ThinkStation P710/P910 US models
- Updated ThinkStation P710/P910 processor information

May 19, 2016 - Version 489

- Added NVIDIA Quadro M2000 on compatible product
- Updated maximum weight on ThinkStation P710
- Removed 30AT000BUS

April 27, 2016 - Version 488

- Added ThinkStation P710 and P910 models for EMEA, announced on April 2016
- Updated Energy star information on ThinkStation P500/P700/P710/P900/P910

April 6, 2016 - Version 487

- New ThinkStation P710 and P910, announced April 5, 2016 (specification only)

March 23, 2016 - Version 486

- Added processors specifications for P310/P500/P700/P900
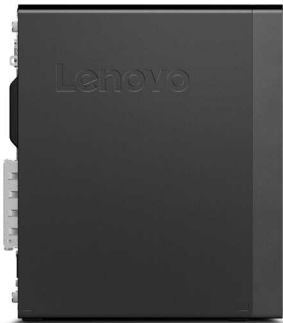
February 24, 2016 - Version 485

- Added ThinkStation P310 and P700 models for US, announced on February 2016
- Added ThinkStation P700 and P900 models for EMEA, announced on February 2016

December 9, 2015 - Version 482

- New ThinkStation P310 Tower and SFF, announced November 24, 2015

November 18, 2015 - Version 481

- Combines ThinkStation PSREF United States version and Western Europe version.
- Extends the supported GEO into Europe, Middle East and Africa.
- Covers all TopSeller and Relationship models for US and all focus models for EMEA
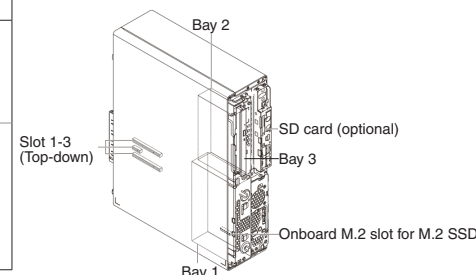
ThinkStation P330 SFF Gen 2 (30D1 and 30D2) Platform Specifications

Components	Specification
Form factor	8.4L mini-tower
Dimensions	Height: 343.5 mm (13.5 in). Width: 92.5 mm (3.6 in). Depth: 305.6 mm (12 in)
Weight	Maximum configuration: 16.76 lb (7.6kg)

Processor — Supports one of the following processor:

Processor		
Xeon E-2278G	8C/16T/3.4GHz/16MB/80W/DDR4-2666	(260W PSU needed)
Xeon E-2276G	6C/12T/3.8GHz/12MB/80W/DDR4-2666	
Xeon E-2274G	4C/8T/4.0GHz/8MB/83W/DDR4-2666	
Xeon E-2246G	6C/12T/3.6GHz/12MB/80W/DDR4-2666	
Xeon E-2244G	4C/8T/3.8GHz/8MB/71W/DDR4-2666	
Xeon E-2236	6C/12T/3.4GHz/12MB/80W/DDR4-2666	
Xeon E-2234	4C/8T/3.6GHz/8MB/71W/DDR4-2666	
Xeon E-2226G	6C/6T/3.4GHz/12MB/80W/DDR4-2666	
Xeon E-2224G	4C/4T/3.5GHz/8MB/71W/DDR4-2666	
Xeon E-2224	4C/4T/3.4GHz/8MB/71W/DDR4-2666	
Xeon E-2174G	4C/8T/3.8GHz/8MB/71W/DDR4-2666	
Core i9-9900	8C/16T/3.1GHz/16MB/65W/DDR4-2666	
Core i7-9700	8C/8T/3.0GHz/12MB/65W/DDR4-2666	
Core i7-8700	6C/12T/3.2GHz/12MB/65W/DDR4-2666	
Core i5-9600	6C/6T/3.1GHz/9MB/65W/DDR4-2666	
Core i5-9500	6C/6T/3.0GHz/9MB/65W/DDR4-2666	
Core i5-9400F	6C/6T/2.9GHz/9MB/65W/DDR4-2666	
Core i5-9400	6C/6T/2.9GHz/9MB/65W/DDR4-2666	
Core i5-8500	6C/6T/3.0GHz/9MB/65W/DDR4-2666	
Core i3-9300	4C/4T/3.7GHz/8MB/62W/DDR4-2400	
Core i3-9100	4C/4T/3.6GHz/6MB/65W/DDR4-2400	
Core i3-8300	4C/4T/3.7GHz/8MB/62W/DDR4-2400	
Core i3-8100	4C/4T/3.6GHz/6MB/65W/DDR4-2400	
Pentium Gold G5620	2C/4T/4.0GHz/4MB/54W/DDR4-2400	

Components	Specification
Chipset	Intel C246 Chipset
Memory Sockets	4 DIMM sockets with 2 channels
Memory Types	8GB/16GB DDR4-2666 UDIMM ECC or 4GB/8GB/16GB/32GB DDR4-2666 UDIMM non-ECC
Memory Capacity	64GB with 4 x 16GB for UDIMM ECC or 128GB with 4 x 32GB UDIMM non-ECC
Memory Protection	ECC on models with UDIMM ECC memeory

Expansion slots — Three PCIe 3.0 slots as following:

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

Components	Specification
Processor graphics	Integrated Intel UHD Graphics P630 in -G suffix Xeon processors, or Intel UHD Graphics 630 in Core i5 or i3 processors. Works along with discrete graphics to support multi-display, enables three rear display connectors (2 DP standard, 1 DP or HDMI optional)

Discrete graphics card — Up to two PCIe 3.0 x16 slots for discrete graphics adapter (Slot 1 and 3). Supports the following graphics adapters:

Adapter	Cores	Memory	Power	Connectors	Max qty
Quadro P400	256	2GB GDDR5	30W	3x miniDP	2
Quadro P620	512	2GB GDDR5	40W	4x miniDP	2
Quadro P1000	640	4GB GDDR5	47W	4x miniDP	2

Storage Controller

Storage Controller	Type	Interface	Disk Type	RAID
Onboard Intel RST SATA RAID	Std	SATA 6Gb/s	HDD or SSD	0/1
Onboard Intel RST PCIe RAID	Std	PCIe NVMe	M.2 PCIe SSD	0/1

Notes: M.2 SSD support is limited, please see Storage bay section for more information

Storage Support

Disk Type	Interface	RPM	Offering	Max Qty
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB	1
2.5" SATA HDD	SATA 6Gb/s	7.2K	500GB FIPS	2
2.5" SATA SSD	SATA 6Gb/s		256GB/512GB/1TB	2
Optane Memory	PCIe NVMe		32GB	1, used with HDD/SSD
M.2 PCIe SSD	PCIe NVMe		256GB/512GB/1TB	3

Components	Specification
Storage bay	Up to 3 bays with two disk bays and one slim optical bay:

Bay 1	Primary 3.5" SATA bay	
Bay 2	2.5" SATA bay (Optional)	
Bay 3	9mm Slim ODD bay	
M.2	3x M.2 SSD (1 onboard. 2 via PCIe to M.2 adapter) *Notes: Support 1x M.2 SSD at present, 3x M.2 SSD support is pending availability*	

Components	Specification
M.2 slot for Wi-Fi and Bluetooth	One dedicated onboard M.2 slot for optional Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps
Media reader	Optional 7-in-1 card reader on most models
Network interfaces	One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, E-lock, cable lock, Kensington lock, and pad lock
Intel vPro	Supports Intel vPro on Xeon and selected Core i7 or i5 models. vPro also requires Wireless-AC 9560 if Wi-Fi is needed
Intel AMT	Intel Active Management Technology 12 on Xeon and selected Core i7 or i5 models. Intel Standard Manageability on other models
Base warranty	US models comes with 3-year limited onsite service with 9x5/NBD. 1 or 3-year limited onsite service with 9x5/NBD in EMEA or other GEOs
HD Audio	Intel HD Audio interface with Realtek ALC233 Codec
Front ports	2x USB 3.1 Gen 1 Type A. 2x USB 3.1 Gen 2 Type A. 1x USB 3.1 Gen 1 Type-C. 1x Mic-in. 1x Combo jack
Rear ports	2x USB 3.1 Gen 1 Type A. 2x USB 2.0 Type-A. 1x RJ-45. 1x COM. 2x DP. 1x Audio line-out *Notes: DP needs Core, Pentium, or -G suffix Xeon processor*
Optional rear ports	Supports the following via cable: 1x COM. 1x Parallel. 2x PS/2. 1x DP or 1x HDMI. 2x USB 2.0 Supports the following via PCIe adapter: 4x COM. 2x USB 3.1 Type-C. 2x USB 3.1 Gen 1. 1x Thunderbolt. *Notes: DP or HDMI needs Core, Pentium, or -G suffix Xeon processor*
Temperature	Operating: 50 °F to 95 °F (10 °C to 35 °C) Non operating (no package): 14 °F to 140 °F (-10 °C to 60 °C) Non operating (with package): -40 °F to 140 °F (-40 °C to 60 °C)
Altitude	Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft)
Humidity	Operating: 30%~90%, non-condensing Storage (with package): 20%~90%, non-condensing
Environmental certification	RoHS-compliant. GREENGUARD. EPEAT Silver rating and ENERGY STAR 8 qualified
Power supply	Supports one 210W or 260W power supply. 210W is 100V - 240V, 85% PSU, Climate Savers Computing Bronze and 80 PLUS Bronze qualified. 260W is 100V - 240V, 92% PSU, Climate Savers Computing Platinum and 80 PLUS Platinum qualified
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

Bay 2
SD card (optional)
Slot 1-3 (Top-down)
Bay 3
Onboard M.2 slot for M.2 SSD
Bay 1

ThinkStation P330 Tiny Platform Specifications - I of II

Components	Specification
Form factor	1L. Optional VESA mount bracket kit, supports VESA 75mm and 100mm. Optional floor stand for vertical orientation. Optional tool-less chassis open. Optional dust filter
Dimensions	Height: 179 mm (7.0 in). Width: 37 mm (1.5 in). Depth: 183 mm (7.2 in)
Weight	Maximum configuration: 2.9 lb (1.3kg)
Recommended monitors	Lenovo recommends ThinkVision P series monitors for best display performance and productivity

Supports one of the following:

Processor Number	Cores	Threads	Base Frequency	Cache	TDP	Memory Types	Processor Graphics
Core i9-9900T	8	16	2.1GHz	16MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i7-9700T	8	8	2.0GHz	12MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i7-9700	8	8	3.0GHz	12MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i5-9600T	6	6	2.3GHz	9MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i5-9600	6	6	3.1GHz	9MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i5-9500T	6	6	2.2GHz	9MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i5-9500	6	6	3.0GHz	9MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i5-9400T	6	6	1.8GHz	9MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i5-9400	6	6	2.9GHz	9MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i3-9320	4	4	3.7GHz	8MB	62W	DDR4-2400	Intel UHD Graphics 630
Core i3-9300T	4	4	3.2GHz	8MB	35W	DDR4-2400	Intel UHD Graphics 630
Core i3-9300	4	4	3.7GHz	8MB	62W	DDR4-2400	Intel UHD Graphics 630
Core i3-9100T	4	4	3.1GHz	6MB	35W	DDR4-2400	Intel UHD Graphics 630
Core i3-9100	4	4	3.6GHz	6MB	65W	DDR4-2400	Intel UHD Graphics 630
Core i7-8700T	6	12	2.4GHz	12MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i7-8700	6	12	3.2GHz	12MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i5-8600T	6	6	2.3GHz	9MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i5-8600	6	6	3.1GHz	9MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i5-8500T	6	6	2.1GHz	9MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i5-8500	6	6	3.0GHz	9MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i5-8400T	6	6	1.7GHz	9MB	35W	DDR4-2666	Intel UHD Graphics 630
Core i5-8400	6	6	2.8GHz	9MB	65W	DDR4-2666	Intel UHD Graphics 630
Core i3-8300T	4	4	3.2GHz	8MB	35W	DDR4-2400	Intel UHD Graphics 630
Core i3-8300	4	4	3.7GHz	8MB	62W	DDR4-2400	Intel UHD Graphics 630
Core i3-8100T	4	4	3.1GHz	6MB	35W	DDR4-2400	Intel UHD Graphics 630
Core i3-8100	4	4	3.6GHz	6MB	65W	DDR4-2400	Intel UHD Graphics 630

Components	Specification
Chipset	Intel Q370 Chipset
Memory	2 DIMM sockets. DDR4-2666. SoDIMM. Non-ECC
Memory Capacity	64GB (2x 32GB)

Components	Specification
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 i350-T4 adapter and quad COM ports adapter
Graphics	65W or 62W processor models supports processor graphics only. 35W processor models come with processor graphics plus a discrete graphics adapter
Graphics - Processor graphics	Integrated Intel UHD Graphics 630. Works along with discrete graphics to support multi-display

Graphics - Discrete graphics card	One of the following discrete graphics cards on 35W processor models:				
	Adapter	Cores	Memory	Power	Connectors
	Quadro P620	512	2GB GDDR5	40W	4x miniDP
	Quadro P1000	640	4GB GDDR5	47W	4x miniDP

Components	Specification
Storage controllers	Integrated Intel SATA AHCI controller in chipset, 6Gbps SATA, one onboard SATA port for 2.5" HDD
Internal storage bay	Up to one 2.5" HDD on models without discrete graphics card
Disks	2.5" HDD supports up to 2TB, SATA 6Gbps, 5.4K; or 1TB SATA 6Gbps, 7.2K
M.2 slot for SSD	Two onboard M.2 slots for M.2 SSD
M.2 SSD	M.2 2280 SSD supports up to 1TB each, optional Opal. M.2 2242 SSD supports up to 512GB each
Optane memory	Up to one 16GB Optane memory per system. Optane memory must work with a 2.5" HDD
M.2 slot for Wi-Fi and Bluetooth	One dedicated M.2 2230 slot for optional Wi-Fi card, supports one of the following: Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps. Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps. *Note: Wi-Fi card, or specific functions of Wi-Fi- card may not be supported in some countries*
Wi-Fi antenna	Optional Tiny 2.4GHz/5GHz SMA antenna kit
Optical	Optional one 9.0mm optical drive via optical drive kit, DVD-ROM or DVD±RW. VESA mount is required
Media reader	None. Using USB adapter
Network interfaces	One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional Intel i350-T4 for 4x GbE ports, using PCIe slot
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Chassis intrusion switch. Optional Kensington lock
Intel vPro Technology	Supports vPro on models with the following processors: Core i7-8700T, Core i7-8700, Core i5-8600T, Core i5-8600, Core i5-8500T, Core i5-8500. vPro also requires Wireless-AC 9560 if Wi-Fi is needed
Systems management	Intel Active Management Technology 12 on vPro models, Intel Standard Manageability on other models
Base warranty	US models comes with 3-year limited onsite service with 9x5/NBD. 1 or 3-year limited onsite service with 9x5/NBD in EMEA or other GEOs
HD Audio	Intel HD Audio interface with Realtek ALC233 Codec
Front standard ports	1x USB 3.1 Gen 1 Type A (charging). 1x USB 3.1 Gen 1 Type-C. 1x Mic-in. 1x Combo jack
Rear standard ports	2x USB 3.1 Gen 2 Type A. 2x USB 3.1 Gen 1 Type-A. 1x RJ-45. 1x DP. 1x HDMI
Optional rear ports - via punch out cable	Up to two optional rear ports via punch out cable. Port 1 supports one of the following: 1x USB 3.1 Gen 1 Type-C, also supports DP function. 1x COM. 1x VGA. 1x DP. 1x HDMI. Port 2 supports one COM

Components	Specification
Optional rear ports - via PCIe adapter	Supports one of the following: 4x miniDP with Quadro P620 or P1000, 35W processor models only 2x USB 3.1 Gen 1. 4x RJ-45 GbE with Intel I350-T4. 4x COM *Note: Punch out cable and PCIe adapter are mutually exclusive*
Temperature	Operating: 50 °F to 95 °F (10 °C to 35 °C) Non operating (with package): -40 °F to 140 °F (-40 °C to 60 °C)
Altitude	Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft)
Humidity	Operating: 20%~80%, non-condensing Storage (with package): 20%~90%, non-condensing
MIL-SPEC	Certified
Environmental certification	RoHS-compliant. GREENGUARD. EPEAT Silver rating and ENERGY STAR 8 qualified
Power supply	Supports one 135W power adaper, 100V - 240V, 88% PSU
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Components	Specification			
Form factor	18L Tower			
Dimensions	Height: 376 mm (14.8 in). Width: 165 mm (6.5 in). Depth: 328 mm (12.9 in)			
Weight	Maximum configuration: 21.61 lb (9.8kg)			
Processor	Supports one of the following processors:			
	Xeon E-2286G	6C/12T/4.0GHz/12MB/95W/DDR4-2666	400W PSU needed	
	Xeon E-2278G	8C/16T/3.4GHz/16MB/80W/DDR4-2666	400W PSU needed	
	Xeon E-2276G	6C/12T/3.8GHz/12MB/80W/DDR4-2666		
	Xeon E-2274G	4C/8T/4.0GHz/8MB/83W/DDR4-2666		
	Xeon E-2246G	6C/12T/3.6GHz/12MB/80W/DDR4-2666		
	Xeon E-2244G	4C/8T/3.8GHz/8MB/71W/DDR4-2666		
	Xeon E-2236	6C/12T/3.4GHz/12MB/80W/DDR4-2666		
	Xeon E-2234	4C/8T/3.6GHz/8MB/71W/DDR4-2666		
	Xeon E-2226G	6C/6T/3.4GHz/12MB/80W/DDR4-2666		
	Xeon E-2224G	4C/4T/3.5GHz/8MB/71W/DDR4-2666		
	Xeon E-2224	4C/4T/3.4GHz/8MB/71W/DDR4-2666		
	Xeon E-2186G	6C/12T/3.8GHz/12MB/95W/DDR4-2666	400W PSU needed	
	Xeon E-2174G	4C/8T/3.8GHz/8MB/71W/DDR4-2666		
	Core i9-9900K	8C/16T/3.6GHz/16MB/95W/DDR4-2666	400W PSU needed	
	Core i9-9900	8C/16T/3.1GHz/16MB/65W/DDR4-2666		
	Core i7-9700K	8C/8T/3.6GHz/12MB/95W/DDR4-2666	400W PSU needed	
	Core i7-9700	8C/8T/3.0GHz/12MB/65W/DDR4-2666		
	Core i7-8700K	6C/12T/3.7GHz/12MB/95W/DDR4-2666		
	Core i7-8700	6C/12T/3.2GHz/12MB/65W/DDR4-2666		
	Core i5-9600K	6C/6T/3.7GHz/9MB/95W/DDR4-2666	400W PSU needed	
	Core i5-9600	6C/6T/3.1GHz/9MB/65W/DDR4-2666		
	Core i5-9500	6C/6T/3.0GHz/9MB/65W/DDR4-2666		
	Core i5-9400F	6C/6T/2.9GHz/9MB/65W/DDR4-2666		
	Core i5-9400	6C/6T/2.9GHz/9MB/65W/DDR4-2666		
	Core i5-8500	6C/6T/3.0GHz/9MB/65W/DDR4-2666		
	Core i3-9300	4C/4T/3.7GHz/8MB/62W/DDR4-2400		
	Core i3-9100	4C/4T/3.6GHz/6MB/65W/DDR4-2400		
	Core i3-8300	4C/4T/3.7GHz/8MB/62W/DDR4-2400		
	Core i3-8100	4C/4T/3.6GHz/6MB/65W/DDR4-2400		
Chipset	Intel C246 Chipset			
Memory Sockets	4 DIMM sockets with 2 channels			
Memory Types	8GB/16GB DDR4-2666 UDIMM ECC or 4GB/8GB/16GB/32GB DDR4-2666 UDIMM non-ECC			
Memory Capacity	64GB with 4 x 16GB for UDIMM ECC or 128GB with 4 x 32GB UDIMM non-ECC			
Memory Protection	ECC on models with UDIMM ECC memeory			
Expansion slots	Three PCIe 3.0 slots as following:			
	Slot 1	PCIe 3.0 x16, full height, half 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, half length, links to PCH		
Processor graphics	Integrated Intel UHD Graphics P630 in -G suffix Xeon processors, or Intel UHD Graphics 630 in Core i7, i5, i3, or Pentium processors. Works along with discrete graphics to support multi-display, enables three rear display connectors (2 DP standard, 1 DP or HDMI optional)			

Components	Specification				
Discrete Graphics Offering	Up to two PCIe 3.0 x16 slots for discrete graphics card (Slot 1 and 3). Supports the following graphics adapters:				

Graphics	Memory	Power	Connector	Max Qty
Quadro P400	2GB GDDR5	30W	3x miniDP	2
Quadro P620	2GB GDDR5	40W	4x miniDP	2
Quadro P1000	4GB GDDR5	50W	4x miniDP	2
Quadro P2000	5GB GDDR5	75W	4x DP	2
Quadro P2200	5GB GDDR5X	75W	4x DP	2
Quadro P4000	8GB GDDR5	105W	4x DP	1
Quadro P5000	16GB GDDR5X	180W	DVI-D DL + 4x DP	1
Quadro RTX 4000	8GB GDDR6	160W	3x DP, 1x VirtualLink	1

Note: 2x Quadro P2000, Quadro P4000, Quadro P5000 or Quadro RTX 4000 needs 400W PSU

Storage Controller	Type	Interface	Disk Type	RAID
Onboard Intel RST SATA RAID	Std	SATA 6Gb/s	HDD or SSD	0/1/10/5
Onboard Intel RST PCIe RAID	Std	PCIe NVMe	M.2 PCIe SSD	0/1

Disk Type	Interface	RPM	Offering	Max Qty
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB	3
2.5" SATA HDD	SATA 6Gb/s	7.2K	500GB FIPS	4
2.5" SATA SSD	SATA 6Gb/s		256GB/512GB/1TB	4
Optane Memory	PCIe NVMe		32GB	1, used with HDD/SSD
M.2 PCIe SSD	PCIe NVMe		256GB/512GB/1TB	3

Components	Specification
Storage Bays	Up to five bays with four disk bays plus one slim optical bay, supports up to 3x 3.5" HDD plus 1x 2.5" SSD, or 4x 2.5" HDD/SSD
	Bay 1 Primary disk bay, 3.5" or 2.5"
	Bay 2 2.5" SATA bay, cannot be available when 2nd Quadro P2000 is used
	Bay 3 Secondary disk bay, 3.5" or 2.5"
	Bay 4 5.25" Flex bay, supports one of the following: • Flex module for optional front eSATA/Thunderbolt/IEEE1394 • 3rd disk bay, 3.5" or 2.5", removable, via Front Access Storage Enclosure, using SATA 4 connector as eSATA mode • 3rd disk bay, 3.5" or 2.5", via 5.25" to 3.5" HDD Kit
	Bay 5 9mm Slim ODD bay
	M.2 3x M.2 SSD (1 onboard. 2 via PCIe to M.2 adapter)
Media reader	Optional 7-in-1 card reader on most models
Network interfaces	One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available
WLAN + Bluetooth	One dedicated onboard M.2 slot for optional Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, E-lock, cable lock, Kensington lock, and pad lock
Intel vPro	Supports Intel vPro on Xeon and selected Core i7 or i5 models. vPro also requires Wireless-AC 9560 if Wi-Fi is needed
Intel AMT	Intel Active Management Technology 12 on Xeon and selected Core i7 or i5 models. Intel Standard Manageability on other models
Base warranty	US models comes with 3-year limited onsite service with 9x5/NBD. 1 or 3-year limited onsite service with 9x5/NBD in EMEA or other GEOs
HD Audio	Intel HD Audio interface with Realtek ALC233 Codec

Components	Specification
Front ports	2x USB 3.1 Gen 1 Type A. 2x USB 3.1 Gen 2 Type A. 1x USB 3.1 Gen 1 Type-C. 1x Mic-in. 1x Combo jack
Rear ports	2x USB 3.1 Gen 1 Type A. 2x USB 2.0 Type-A. 1x RJ-45. 1x COM. 2x DP. 1x Audio line-out *Notes: DP needs Core, Pentium, or -G suffix Xeon processor*
Optional front ports (on flex module)	2x Thunderbolt (USB Type-C), one of two ports supports video-out. 1x eSATA. 1x IEEE1394
Optional rear ports	Supports the following via cable: 1x COM. 1x Parallel. 2x PS/2. 1x DP or 1x HDMI. 2x USB 2.0 Supports the following via PCIe adapter: 4x COM. 2x USB 3.1 Type-C. 2x USB 3.1 Gen 1. 1x Thunderbolt. *Notes: DP or HDMI needs Core, Pentium, or -G suffix Xeon processor*
Temperature	Operating: 50 °F to 95 °F (10 °C to 35 °C) Non operating (no package): 14 °F to 140 °F (-10 °C to 60 °C) Non operating (with package): -40 °F to 140 °F (-40 °C to 60 °C)
Altitude	Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft)
Humidity	Operating: 30%~90%, non-condensing Storage (with package): 20%~90%, non-condensing
Environmental certification	RoHS-compliant. GREENGUARD. EPEAT Silver rating and ENERGY STAR 8 qualified
Power supply	Supports one 250W or 400W power supply, 100V - 240V, 92% PSU. Climate Savers Computing Platinum and 80 PLUS Platinum qualified. 400W PSU supports one 6+2-pin aux power connector.
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

ThinkStation P340 SFF Platform Specifications

Components	Specification
Form factor	8.2L
Dimensions	Height: 339.5 mm (13.4 in). Width: 92.5 mm (3.6 in). Depth: 309.7 mm (9.3 in)
Weight	Maximum configuration: 12.46 lb (5.65 kg)
Processor Sockets	1x FCLGA1200
Processor Support	Up to one Xeon, Core i9, i7, i5, or i3 processor

Processor	Processor Number	Cores	Threads	Base Frequency	Cache	TDP	Memory Types	ECC	Processor Graphics	vPro
	Xeon W-1290	10	20	3.2GHz	20MB	80W	DDR4-2933	Yes	UHD P630	Yes
	Xeon W-1270	8	16	3.4GHz	16MB	80W	DDR4-2933	Yes	UHD P630	Yes
	Xeon W-1250	6	12	3.3GHz	12MB	80W	DDR4-2666	Yes	UHD P630	Yes
	Core i9-10900	10	20	2.8GHz	20MB	65W	DDR4-2933	No	UHD 630	Yes
	Core i7-10700	8	16	2.9GHz	16MB	65W	DDR4-2933	No	UHD 630	Yes
	Core i5-10600	6	12	3.3GHz	12MB	65W	DDR4-2666	No	UHD 630	Yes
	Core i5-10500	6	12	3.1GHz	12MB	65W	DDR4-2666	No	UHD 630	Yes
	Core i5-10400	6	12	2.9GHz	12MB	65W	DDR4-2666	No	UHD 630	No
	Core i3-10320	4	8	3.8GHz	8MB	65W	DDR4-2666	No	UHD 630	No
	Core i3-10300	4	8	3.7GHz	8MB	65W	DDR4-2666	No	UHD 630	No
	Core i3-10100	4	8	3.6GHz	6MB	65W	DDR4-2666	No	UHD 630	No

Components	Specification
Chipset	Intel W480 Chipset
Memory Sockets	4 DIMM sockets with 2 channels
Memory Types	8GB/16GB/32GB DDR4-2933 UDIMM ECC, or 4GB/8GB/16GB/32GB DDR4-2933 UDIMM non-ECC
Memory Capacity	128GB
Memory Protection	ECC. ECC memory and ECC-enable CPU are needed

Expansion slots	Three PCIe 3.0 slots as following:
	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

Processor graphics	Integrated Intel UHD Graphics P630 in Xeon processors, or Intel UHD Graphics 630 in Core processors. Works along with discrete graphics to support multi-display, enables three rear display connectors (2 DP standard, 1 video port optional (Video port can be DP, HDMI, or USB-C)

Discrete Graphics Offering	Graphics	Memory	Power	Connector	Max Qty
	Quadro P400	2GB GDDR5	30W	3x miniDP	2
	Quadro P620	2GB GDDR5	40W	4x miniDP	2
	Quadro P1000	4GB GDDR5	50W	4x miniDP	2

Storage Controller	Storage Controller	Type	Interface	Disk Type	RAID
	Onboard Intel RST SATA RAID	Std	SATA 6Gb/s	HDD or SSD	0/1
	Onboard Intel RST PCIe RAID	Std	PCIe NVMe	M.2 PCIe SSD	0/1

Storage Support	Disk Type	Interface	RPM	Offering	Max Qty
	3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB/6TB	1
	2.5" SATA HDD	SATA 6Gb/s	7.2K	1TB FIPS	2
	2.5" SATA SSD	SATA 6Gb/s	-	512GB/1TB	2
	M.2 PCIe SSD	PCIe NVMe	-	256GB/512GB/1TB/2TB	4
	Optane Memory	PCIe NVMe	-	16GB	1

Storage Bays	
Bay 1	First 3.5" disk bay
Bay 2	First 2.5" SATA bay
Bay 3	9mm Slim ODD bay
Bay 4	Media reader
M.2	4x M.2 SSD (2 onboard. 2 via PCIe to M.2 adapter)

Components	Specification
Media reader	Optional SD reader on most models
Network interfaces	One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201, 2x2, 2.4GHz/5GHz (160MHz channels), WiFi 6, Bluetooth 5
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, E-lock, cable lock, Kensington lock, and pad lock
Intel vPro	Supports Intel vPro on models with vPro-enable processor. vPro also requires AX201 if Wi-Fi function is needed
Intel AMT	Intel Active Management Technology 14 on vPro models, Intel Standard Manageability on other models
Base warranty	Most models comes with 3-year limited onsite service with 9x5/NBD. Other models may have 1 or 2-year limited onsite service
HD Audio	Intel HD Audio interface with Realtek ALC623 Codec
Front ports	2x USB-A 3.2 Gen 1, 2x USB-A 3.2 Gen 2, 1x USB-C 3.2 Gen 1, 1x Mic-in, 1x Combo jack
Rear ports	2x USB-A 3.2 Gen 1, 2x USB-A 2.0, 1x RJ-45, 1x COM, 2x DP, 1x Audio line-out
Optional rear ports	Supports the following via cable: 1x COM, 1x Parallel, 2x PS/2, 1x video (DP, HDMI, or USB-C), 2x USB 2.0, Supports the following via PCIe adapter: 4x COM*, 1x USB-C 3.2 Gen 2, 2x USB-A 3.2 Gen 1*, 1x Thunderbolt Notes: 4x COM and 2x USB-A 3.2 Gen 1 are special bids only.
Temperature	Operating: 50 °F to 95 °F (10 °C to 35 °C) Non operating (no package): 14 °F to 140 °F (-10 °C to 60 °C) Non operating (with package): -40 °F to 140 °F (-40 °C to 60 °C)
Altitude	Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft)
Humidity	Operating: 30%~90%, non-condensing Storage (with package): 20%~90%, non-condensing
Environmental certification	RoHS-compliant, EPEAT Silver rating, and ENERGY STAR 8 qualified
Power supply	Supports one of the following: • 310W, 92% PSU, 100V - 240V, 80 PLUS Platinum qualified • 380W, 92% PSU, 100V - 240V, 80 PLUS Platinum qualified
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact Lenovo workstation PSREF developer

ThinkStation P340 Tiny Platform Specifications

Components	Specification
Form factor	1L. Optional VESA mount bracket kit, supports VESA 75mm and 100mm. Optional floor stand for vertical orientation. Optional tool-less chassis open. Optional dust filter
Dimensions	Height: 179 mm (7.0 in). Width: 37 mm (1.5 in). Depth: 182.9 mm (7.2 in)
Weight	Maximum configuration: 3 lb (1.4kg)

Processor Number	Cores	Threads	Base Frequency	Cache	TDP	Memory Types	vPro
i9-10900T	10	20	1.9GHz	20MB	35W	DDR4-2933	Yes
i9-10900	10	20	2.8GHz	20MB	65W	DDR4-2933	Yes
i7-10700T	8	16	2.0GHz	16MB	35W	DDR4-2933	Yes
i7-10700	8	16	2.9GHz	16MB	65W	DDR4-2933	Yes
i5-10600T	6	12	2.4GHz	12MB	35W	DDR4-2666	Yes
i5-10600	6	12	3.3GHz	12MB	65W	DDR4-2666	Yes
i5-10500T	6	12	2.3GHz	12MB	35W	DDR4-2666	Yes
i5-10500	6	12	3.1GHz	12MB	65W	DDR4-2666	Yes
i5-10400T	6	12	2.0GHz	12MB	35W	DDR4-2666	No
i5-10400	6	12	2.9GHz	12MB	65W	DDR4-2666	No
i3-10320	4	8	3.8GHz	8MB	65W	DDR4-2666	No
i3-10300T	4	8	3.0GHz	8MB	35W	DDR4-2666	No
i3-10300	4	8	3.7GHz	8MB	65W	DDR4-2666	No
i3-10100T	4	8	3.0GHz	6MB	35W	DDR4-2666	No
i3-10100	4	8	3.6GHz	6MB	65W	DDR4-2666	No

Components	Specification
Chipset	Intel Q470 Chipset
Memory Sockets	2 DIMM sockets
Memory Types	4GB/8GB/16GB/32GB DDR4-2933 SoDIMM non-ECC
Memory Capacity	64GB (2x 32GB)
Memory Protection	None
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
Processor graphics	Integrated Intel UHD Graphics 630. Works along with discrete graphics to support multi-display

Discrete Graphics Offering	Graphics	Memory	Power	Connector	Max Qty
	Quadro P620	2GB GDDR5	40W	4x miniDP	1
	Quadro P1000	4GB GDDR5	50W	4x miniDP	1

Components	Specification
Storage Controller	Supports M.2 SSD RAID 0 / 1, for special bids only

Storage Support	Disk Type	Interface	RPM	Offering	Max Qty
	M.2 PCIe SSD	PCIe NVMe	-	256GB/512GB/1TB/2T	2

Components	Specification
Storage Bays	Two M.2 slots for M.2 SSD
Media reader	None
Network interfaces	One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available

Components	Specification
WLAN + Bluetooth	One dedicated M.2 slot for optional Wi-Fi card, supports one of the following: • Intel Wi-Fi 6 AX201, 2x2, 2.4GHz/5GHz (160MHz channels), WiFi 6, Bluetooth 5 • Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5 • Realtek 8822CE, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 5
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Chassis intrusion switch. Kensington slot
Intel vPro	Supports vPro on models with the vPro enable processors vPro also requires Wi-Fi 6 AX201 if WiFi is needed
Systems management	Intel Active Management Technology 14 on vPro models, Intel Standard Manageability on other models
Base warranty	Most models comes with 3-year limited onsite service with 9x5/NBD. Other models may have 1 or 2-year limited onsite service
HD Audio	Intel HD Audio interface with Realtek ALC233 Codec
Optical	Optional one 9.0mm optical drive via optical drive kit, DVD-ROM or DVD±RW.
Front standard ports	1x USB-A 3.2 Gen 2 (charging). 1x USB-C 3.2 Gen 1. 1x Combo jack
Rear standard ports	2x USB-A 3.2 Gen 2, 2x USB-A 3.2 Gen 1 (one supports smart power-on), 1x RJ-45, 1x DP, 1x HDMI, 1x security-lock slot, Wi-Fi antenna slot
Optional rear ports	Reserved area for two optional ports. Ports 1 supports one of the following: • 1x USB-C, also supports DP function • 1x COM • 1x VGA • 1x DP • 1x HDMI Port 2 supports 2nd COM. Also supports optional Thunderbolt or 2x USB-A 3.2 Gen 1
Temperature	Operating: 50 °F to 95 °F (10 °C to 35 °C) Non operating (no package): 14 °F to 140 °F (-10 °C to 60 °C) Non operating (with package): -40 °F to 140 °F (-40 °C to 60 °C)
Altitude	Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft)
Humidity	Operating: 20%~80%, non-condensing Storage (with package): 20%~90%, non-condensing
MIL-SPEC	Certified
Environmental certification	RoHS-compliant. GREENGUARD. EPEAT Silver rating and ENERGY STAR 8 qualified
Power supply	• 170W power adaper, 100V - 240V, 89% PSU • 230W power adaper, 100V - 240V, 89% PSU
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkStation P340 Tower Platform Specifications

Components	Specification
Form factor	17L Tower
Dimensions	Height: 376 mm (14.8 in). Width: 170 mm (6.7 in). Depth: 315.35 mm (12.4 in)
Weight	Maximum configuration: 20.68 lb (9.38 kg)
Processor Sockets	1x FCLGA1200
Processor Support	Up to one Xeon, Core i9, i7, i5, or i3 processor

Processor

Processor Number	Cores	Threads	Base Frequency	Cache	TDP	Memory Types	ECC	Processor Graphics	vPro
Xeon W-1290P	10	20	3.7GHz	20MB	125W	DDR4-2933	Yes	UHD P630	Yes
Xeon W-1290	10	20	3.2GHz	20MB	80W	DDR4-2933	Yes	UHD P630	Yes
Xeon W-1270P	8	16	3.8GHz	16MB	125W	DDR4-2933	Yes	UHD P630	Yes
Xeon W-1270	8	16	3.4GHz	16MB	80W	DDR4-2933	Yes	UHD P630	Yes
Xeon W-1250P	6	12	4.1GHz	12MB	125W	DDR4-2666	Yes	UHD P630	Yes
Xeon W-1250	6	12	3.3GHz	12MB	80W	DDR4-2666	Yes	UHD P630	Yes
Core i9-10900K	10	20	3.7GHz	20MB	125W	DDR4-2933	No	UHD 630	Yes
Core i9-10900	10	20	2.8GHz	20MB	65W	DDR4-2933	No	UHD 630	Yes
Core i7-10700K	8	16	3.8GHz	16MB	125W	DDR4-2933	No	UHD 630	Yes
Core i7-10700	8	16	2.9GHz	16MB	65W	DDR4-2933	No	UHD 630	Yes
Core i5-10600K	6	12	4.1GHz	12MB	125W	DDR4-2666	No	UHD 630	Yes
Core i5-10600	6	12	3.3GHz	12MB	65W	DDR4-2666	No	UHD 630	Yes
Core i5-10500	6	12	3.1GHz	12MB	65W	DDR4-2666	No	UHD 630	Yes
Core i5-10400	6	12	2.9GHz	12MB	65W	DDR4-2666	No	UHD 630	No
Core i3-10320	4	8	3.8GHz	8MB	65W	DDR4-2666	No	UHD 630	No
Core i3-10300	4	8	3.7GHz	8MB	65W	DDR4-2666	No	UHD 630	No
Core i3-10100	4	8	3.6GHz	6MB	65W	DDR4-2666	No	UHD 630	No

Components	Specification
Chipset	Intel W480 Chipset
Memory Sockets	4 DIMM sockets with 2 channels
Memory Types	8GB/16GB/32GB DDR4-2933 UDIMM ECC, or 4GB/8GB/16GB/32GB DDR4-2933 UDIMM non-ECC
Memory Capacity	128GB
Memory Protection	ECC. ECC memory and ECC-enable CPU are needed

Expansion slots

Three PCIe 3.0 slots as following:

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

Processor graphics

Integrated Intel UHD Graphics P630 in Xeon processors, or Intel UHD Graphics 630 in Core processors.
Works along with discrete graphics to support multi-display, enables three rear display connectors (2 DP standard, 1 video port optional (Video port can be DP, HDMI, or USB-C)

Discrete Graphics Offering

Graphics	Memory	Power	Connector	Max Qty
Quadro P400	2GB GDDR5	30W	3x miniDP	2
Quadro P620	2GB GDDR5	40W	4x miniDP	2
Quadro P1000	4GB GDDR5	50W	4x miniDP	2
Quadro P2200	5GB GDDR5X	75W	4x DP	2
Quadro RTX 4000	8GB GDDR6	160W	3x DP, 1x VirtualLink	1
Quadro RTX 5000	16GB GDDR6	265W	4x DP, 1x VirtualLink	1

Notes: RTX 4000/RTX 5000/2x P2200 needs 500W PSU.

Storage Controller

Storage Controller	Type	Interface	Disk Type	RAID
Onboard Intel RST SATA RAID	Std	SATA 6Gb/s	HDD or SSD	0/1/10/5
Onboard Intel RST PCIe RAID	Std	PCIe NVMe	M.2 PCIe SSD	0/1

Notes: RAID 5 and 10 are available on 2.5" HDD/SSD.

Components	Specification

Storage Support

Disk Type	Interface	RPM	Offering	Max Qty
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB/6TB	2
2.5" SATA HDD	SATA 6Gb/s	7.2K	1TB FIPS	4
2.5" SATA SSD	SATA 6Gb/s	-	512GB/1TB	4
M.2 PCIe SSD	PCIe NVMe	-	256GB/512GB/1TB/2TB	4
Optane Memory	PCIe NVMe	-	16GB	1

Storage Bays

Bay 1	First 3.5" disk bay
Bay 2	First 2.5" SATA bay
Bay 3	Secondary 3.5" disk bay
Bay 4	Secondary 2.5" disk bay
Bay 5	9mm Slim ODD bay
Bay 6	Media reader
M.2	4x M.2 SSD (2 onboard. 2 via PCIe to M.2 adapter)

Components	Specification
Media reader	Optional SD reader on most models
Network interfaces	One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201, 2x2, 2.4GHz/5GHz (160MHz channels), WiFi 6, Bluetooth 5
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, E-lock, cable lock, Kensington lock, and pad lock
Intel vPro	Supports Intel vPro on Xeon and selected Core i7 or i5 models. vPro also requires AX201 if Wi-Fi function is needed
Intel AMT	Intel Active Management Technology 14 on vPro models, Intel Standard Manageability on other models
Base warranty	Most models comes with 3-year limited onsite service with 9x5/NBD. Other models may have 1 or 2-year limited onsite service
HD Audio	Intel HD Audio interface with Realtek ALC623 Codec
Front ports	2x USB-A 3.2 Gen 1, 2x USB-A 3.2 Gen 2, 1x USB-C 3.2 Gen 1, 1x Mic-in, 1x Combo jack
Rear ports	2x USB-A 3.2 Gen 1, 2x USB-A 2.0, 1x RJ-45, 1x COM, 2x DP, 1x Audio line-out
Optional rear ports	Supports the following via cable: 1x COM, 1x Parallel, 2x PS/2, 1x video (DP, HDMI, or USB-C), 2x USB 2.0, Supports the following via PCIe adapter: 4x COM*, 1x USB-C 3.2 Gen 2, 2x USB-A 3.2 Gen 1*, 1x Thunderbolt Notes: 4x COM and 2x USB-A 3.2 Gen 1 are special bids only.
Temperature	Operating: 50 °F to 95 °F (10 °C to 35 °C) Non operating (no package): 14 °F to 140 °F (-10 °C to 60 °C) Non operating (with package): -40 °F to 140 °F (-40 °C to 60 °C)
Altitude	Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft)
Humidity	Operating: 30%~90%, non-condensing Storage (with package): 20%~90%, non-condensing
Environmental certification	RoHS-compliant, EPEAT Silver rating, and ENERGY STAR 8 qualified
Power supply	Supports one of the following: • 300W, 90% PSU, 100V - 240V, 80 PLUS Gold qualified • 500W, 92% PSU, 100V - 240V, 80 PLUS Platinum qualified
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact Lenovo workstation PSREF developer

Form factor	33L Tower
Dimensions	165mm/6.5" W x 460mm/18.1" D x 440mm/17.3" H (with feet)
Weight	Maximum configuration: 52.91 lb (24kg)

Processor Support

Processor	# of Cores	# of Threads	Base Frequency	Cache	TDP	Memory Types
Xeon W-2295	18	36	3.0GHz	24.75MB	165W	DDR4-2933
Xeon W-2275	14	28	3.3GHz	19.25MB	165W	DDR4-2933
Xeon W-2265	12	24	3.5GHz	19.25MB	165W	DDR4-2933
Xeon W-2255	10	20	3.7GHz	19.25MB	165W	DDR4-2933
Xeon W-2245	8	16	3.9GHz	16.5MB	155W	DDR4-2933
Xeon W-2235	6	12	3.8GHz	8.25MB	130W	DDR4-2933
Xeon W-2225	4	8	4.1GHz	8.25MB	105W	DDR4-2933
Xeon W-2223	4	8	3.6GHz	8.25MB	120W	DDR4-2666
Xeon W-2195	18	36	2.3GHz	24.75MB	140W	DDR4-2666
Xeon W-2175	14	28	2.5GHz	19MB	140W	DDR4-2666
Xeon W-2155	10	20	3.3GHz	13.75MB	140W	DDR4-2666
Xeon W-2145	8	16	3.7GHz	11MB	140W	DDR4-2666
Xeon W-2135	6	12	3.7GHz	8.25MB	140W	DDR4-2666
Xeon W-2133	6	12	3.6GHz	8.25MB	140W	DDR4-2666
Xeon W-2125	4	8	4.0GHz	8.25MB	120W	DDR4-2666
Xeon W-2123	4	8	3.6GHz	8.25MB	120W	DDR4-2666
Xeon W-2104	4	4	3.2GHz	8.25MB	120W	DDR4-2400
Xeon W-2102	4	4	2.9GHz	8.25MB	120W	DDR4-2400

Processor Sockets	1x FCLGA2066
Chipset	Intel C422 Chipset
Memory Sockets	8 DIMM sockets with 4 channels
Memory Types	DDR4-2666 RDIMM or DDR4-2933 RDIMM
Memory Capacity	512GB with 8 x 64GB DDR4-2933 RDIMMs
Memory Protection	ECC

Expansion slots

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

Discrete Graphics Offering

Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
NVS 810	4GB DDR3	68W	8xmini DP		2
Quadro P400	2GB GDDR5	30W	3xminiDP		2
Quadro P600	2GB GDDR5	45W	4xminiDP		2
Quadro P620	2GB GDDR5	40W	4xminiDP		2
Quadro P1000	4GB GDDR5	50W	4xminiDP		2
Quadro P2000	5GB GDDR5	75W	4xDP		2
Quadro P4000	8GB GDDR5	120W	4xDP		2
Quadro P5000	16GB GDDR5X	180W	DVI-D DL+4xDP	SLI	2
Quadro P6000	24GB GDDR5X	250W	DVI-D DL+4xDP		1
Quadro RTX 4000	8GB GDDR6	160W	3xDP, 1xVirtualLink		2
Quadro RTX 5000	16GB GDDR6	265W	4xDP, 1xVirtualLink	NVLink	2
Quadro RTX 6000	24GB GDDR6	295W	4xDP, 1xVirtualLink	NVLink	2
Quadro RTX 8000	48GB GDDR6	295W	4xDP, 1xVirtualLink		1
Quadro GP100	16GB HBM2	235W	1xDVI-D DL, 4xDP	NVLink	2
Quadro GV100	32GB HBM2	250W	4xDP		1

Storage Controller

Storage Controller	Type	Interface	RAID	Cache
Onboard Intel RSTe	Std	SATA 6Gb/s	0/1/10/5	
9440-8i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5	
9460-16i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5/6	4GB DDR4, SuperCap
NVMe Basic	Opt	PCIe NVMe	0/1/10	
NVMe Premium	Opt	PCIe NVMe	0/1/10/5	
NVMe for Intel SSD	Opt	PCIe NVMe	0/1/10/5	

Storage Support

Disk Type	Interface	RPM	Offering	Max Qty
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB/6TB	6
2.5" SATA HDD	SATA 6Gb/s	7.2K	500GB/500GB FIPS	6
2.5" SATA SSD	SATA 6Gb/s		256GB/512GB/1TB/2TB	6
2.5" SAS HDD	SAS 12Gb/s	10K	300GB/600GB	4
M.2 PCIe SSD	PCIe NVMe		256GB/512GB/1TB/2TB	9
PCIe AIC SSD	PCIe NVMe		480GB	2 (1 when quad M.2 adapter used)

Storage Bays

Bay Type	Maximum Drives Qty
M.2 slot	9x M.2 SSD (2 onboard, 7 via PCIe to M.2 adapter)
Flex Bay	2 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 • 2x M.2 SSD with 2x Front Removable Drive Enclosures
Disk bay	Up to 4x 3.5" or 2.5" disks with 4 disk bays (2 bays standard, 2 bays optional)

Max Storage	Supports up to 9x M.2 SSD + 6x 3.5" HDD/6x 2.5" SATA disks/4x 2.5" SAS HDD + 1x PCIe AIC SSD. All HDD: 36TB using 6x 3.5" HDD All SSD: 30.48TB using 6x 2.5" SATA SSD, 9x M.2 SSD, and 1x PCIe AIC SSD
Power supply	Supports one of the following: • One fixed 690W, autosensing, 92%, 80 PLUS Platinum qualified • One fixed 900W, autosensing, 92%, 80 PLUS Platinum qualified • One fixed 1000W, autosensing, 92%, 80 PLUS Platinum qualified
Media reader	USB 2.0 9-in-1 card reader on most models. Optional UHS-II 15-in-1 USB 3.1 Gen 1 reader on flex module
Network interfaces	Integrated one gigabit ethernet (Intel i219LM), supports Wake-on-LAN. Optional PCIe ethernet or wireless adapters are available
WLAN + Bluetooth	Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to 1.2 via UEFI setting. Optional access panel lock, Kensington lock
Intel vPro	Intel vPro technology supported. vPro requires Wireless-AC 8265 if Wi-Fi is needed
Intel AMT	Intel Active Management Technology 11
Diagnostic	Front panel warning LED. ThinkStation Diagnostics for Windows. Photo-audio transfer with Lenovo PC Diag-nostics for Android and iOS. Optional front 4-digit diagnostic display on flex module
Base warranty	1 or 3-year limited onsite service with 9x5/NBD
HD Audio	Realtek ALC662 codec
Front ports	4x USB 3.1 Gen 1 (includes one 11W charging), 1x combo audio/microphone jack (3.5mm)
Rear ports	2x USB 2.0, 4x USB 3.1 Gen 1, 1x RJ-45, 3x analog audio ports (line-in, line-out, mic-in), 2x PS/2
Optional ports	Front: • 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports supports video-out • 1x eSATA on flex module • 1x USB Type-C on flex module, USB 3.1 Gen 1 Rear: • 1x COM port • 2x USB Type-C ports via PCIe adapter, USB 3.1 gen 2. One 15W, one 5W Internal: • 1x internal USB 3.1 Gen 1 port

Environmental specification	Temperature - operating	50 °F to 95 °F (10 °C to 35 °C)
	Temperature - storage (no package)	14 °F to 140 °F (-10 °C to 60 °C)
	Temperature - storage (with package)	-40 °F to 140 °F (-40 °C to 60 °C)
	Altitude - operating	(Unpressurized): -50ft-10000ft (-15.2m-3048m)
	Humidity - operating	10%~80%, non-condensing
	Humidity - storage (with package)	10%~90%, non-condensing
Environmental Certifications	RoHS-compliant. GREENGUARD. EPEAT Silver rating. ENERGY STAR 8.0 qualified on selected models	
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/	

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. To support the maximum expandability, 900W power supply may be needed.
3. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

ThinkStation P520c Platform Specifications

Form factor	25L Tower
Dimensions	175mm/6.89" W x 426mm/16.77" D x 376mm/14.8" H (with feet)
Weight	Maximum configuration: 31.97 lb (14.5kg)

Processor Support	Processor	# of Cores	# of Threads	Base Frequency	Cache	TDP	Memory Types
	Xeon W-2245	8	16	3.9GHz	16.5MB	155W	DDR4-2933
	Xeon W-2235	6	12	3.8GHz	8.25MB	130W	DDR4-2933
	Xeon W-2225	4	8	4.1GHz	8.25MB	105W	DDR4-2933
	Xeon W-2223	4	8	3.6GHz	8.25MB	120W	DDR4-2666
	Xeon W-2195	18	36	2.3GHz	24.75MB	140W	DDR4-2666
	Xeon W-2175	14	28	2.5GHz	19MB	140W	DDR4-2666
	Xeon W-2155	10	20	3.3GHz	13.75MB	140W	DDR4-2666
	Xeon W-2145	8	16	3.7GHz	11MB	140W	DDR4-2666
	Xeon W-2135	6	12	3.7GHz	8.25MB	140W	DDR4-2666
	Xeon W-2133	6	12	3.6GHz	8.25MB	140W	DDR4-2666
	Xeon W-2125	4	8	4.0GHz	8.25MB	120W	DDR4-2666
	Xeon W-2123	4	8	3.6GHz	8.25MB	120W	DDR4-2666
	Xeon W-2104	4	4	3.2GHz	8.25MB	120W	DDR4-2400
	Xeon W-2102	4	4	2.9GHz	8.25MB	120W	DDR4-2400

Processor Sockets	1x FCLGA2066
Chipset	Intel C422 Chipset
Memory Sockets	4 DIMM sockets with 4 channels
Memory Types	DDR4-2666 RDIMM or DDR4-2933 RDIMM
Memory Capacity	256GB with 4 x 64GB RDIMMs
Memory Protection	ECC

Expansion slots	Slot 1 (CPU)	PCIe 3.0 x16, full height, full length, 75W,
	Slot 2 (CPU)	PCIe 3.0 x8, full height, full length, 25W, open ended
	Slot 3 (CPU)	PCIe 3.0 x16, full height, full length, 75W
	Slot 4 (PCH)	PCIe 3.0 x4, full height, half length, 25W, open ended

Discrete Graphics Offering	Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
	NVS 810	4GB DDR3	68W	8xmini DP	-	1
	Quadro P400	2GB GDDR5	30W	3xminiDP	-	2
	Quadro P600	2GB GDDR5	45W	4xminiDP	-	2
	Quadro P620	2GB GDDR5	40W	4x miniDP	-	2
	Quadro P1000	4GB GDDR5	50W	4xminiDP	-	2
	Quadro P2000	5GB GDDR5	75W	4xDP	-	2
	Quadro P4000	8GB GDDR5	120W	4xDP	-	2
	Quadro P5000	16GB GDDR5X	180W	DVI-D DL+4xDP	-	1
	Quadro RTX 4000	8GB GDDR6	160W	3xDP, 1xVirtualLink	-	1
	Quadro RTX 5000	16GB GDDR6	265W	4xDP, 1xVirtualLink	-	1

Storage Controller	Storage Controller	Type	Interface	RAID	Cache
	Onboard Intel RSTe	Std	SATA 6Gb/s	0/1/10/5	-
	9440-8i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5	-
	NVMe Basic	Opt	PCIe NVMe	0/1/10	-
	NVMe for Intel SSD	Opt	PCIe NVMe	0/1/10/5	-

Storage Support	Disk Type	Interface	RPM	Offering	Max Qty
	3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB/6TB	4
	2.5" SATA HDD	SATA 6Gb/s	7.2K	500GB/500GB FIPS	4
	2.5" SATA SSD	SATA 6Gb/s		256GB/512GB/1TB/2TB	4
	2.5" SAS HDD	SAS 12Gb/s	10K	300GB/600GB	4
	M.2 PCIe SSD	PCIe NVMe		256GB/512GB/1TB/2TB	5

Storage Bays	Bay Type	Maximum Drives Qty
	M.2 slot	5x M.2 SSD (2 onboard, 3 via PCIe to M.2 adapter)

	Flex Bay	2 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
		 • 2x M.2 SSD with 2x Front Removable Drive Enclosures

	Disk bay	Up to 2x 3.5"/2.5" disks with 2 disk bays

Power supply	One of the following: • One fixed 500W, autosensing, 92%, 80 PLUS Platinum qualified • One fixed 625W, autosensing, 92%, 80 PLUS Platinum qualified
Media reader	USB 2.0 9-in-1 card reader on most models. Optional UHS-II 15-in-1 USB 3.1 Gen 1 reader on flex module
Network interfaces	Integrated one gigabit ethernet (Intel i219LM), supports Wake-on-LAN. Optional PCIe ethernet or wireless adapters are available
WLAN + Bluetooth	Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to 1.2 via UEFI setting. Optional access panel lock, Kensington lock
Intel vPro	Intel vPro technology supported. vPro requires Wireless-AC 8265 if Wi-Fi is needed
Intel AMT	Intel Active Management Technology 11
Diagnostic	ThinkStation Diagnostics for Windows. Optional front 4-digit diagnostic display on flex module
Base warranty	1 or 3-year limited onsite service with 9x5/NBD
HD Audio	Realtek ALC662 codec
Front ports	2x USB 3.1 Gen 1, microphone (3.5mm), headphone (3.5mm)
Rear ports	2x USB 2.0, 4x USB 3.1 Gen 1, 1x RJ-45, 3x analog audio ports (line-in, line-out, mic-in), 2x PS/2
Optional ports	Supports the following optional ports: Front: • 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports supports video-out • 1x eSATA on flex module • 1x USB Type-C on flex module, USB 3.1 Gen 1 Rear: • 1x COM port • 2x USB Type-C ports via PCIe adapter, USB 3.1 gen 2. One 15W, one 5W Internal: • 1x internal USB 3.1 Gen 1 port

Environmental specification	Temperature - operating	50 °F to 95 °F (10 °C to 35 °C)
	Temperature - storage (no package)	14 °F to 140 °F (-10 °C to 60 °C)
	Temperature - storage (with package)	-40 °F to 140 °F (-40 °C to 60 °C)
	Altitude - operating	(Unpressurized): -50ft-10000ft (-15.2m-3048m)
	Humidity - operating	10%~80%, non-condensing
	Humidity - storage (with package)	10%~90%, non-condensing

Environmental Certifications	RoHS-compliant. GREENGUARD. EPEAT Silver rating. ENERGY STAR 8.0 qualified on selected models
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer
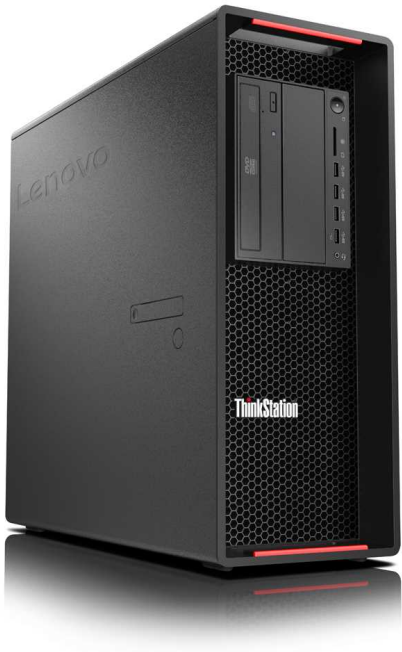
ThinkStation P620 Platform Specifications

Form factor	33L Tower
Dimensions	165mm/6.5" W x 460mm/18.1" D x 446mm/17.6" H (with feet)
Weight	Maximum configuration: 52.91 lb (24kg)

Processor Support	Processor	# of Cores	# of Threads	Base Frequency	Cache	TDP	Memory Types
	AMD Ryzen Threadripper PRO 3995WX	64	128	2.7GHz	256MB L3	280W	DDR4-3200
	AMD Ryzen Threadripper PRO 3975WX	32	64	3.5GHz	128MB L3	280W	DDR4-3200
	AMD Ryzen Threadripper PRO 3955WX	16	32	3.9GHz	64MB L3	280W	DDR4-3200
	AMD Ryzen Threadripper PRO 3945WX	12	24	4.0GHz	64MB L3	280W	DDR4-3200

Processor Sockets	1x Socket sWRX4
Chipset	AMD WRX80
Memory Sockets	8 DIMM sockets with 8 channels
Memory Types	DDR4-3200 RDIMM ECC, 8GB / 16GB / 32GB / 64GB available
Memory Capacity	512GB with 8 x 64GB DDR4-3200 RDIMMs
Memory Protection	ECC

Expansion slots	Slot 1 (CPU)	PCIe 4.0 x16, full height, full length
	Slot 2 (CPU)	PCIe 4.0 x8, full height, full length
	Slot 3 (CPU)	PCIe 4.0 x16, full height, full length
	Slot 4 (CPU)	PCIe 4.0 x16, full height, full length
	Slot 5 (CPU)	PCIe 4.0 x16, full height, full length
	Slot 6 (IOH)	PCIe 4.0 x8, full height, full length

Discrete Graphics Offering	Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
	Quadro P620	2GB GDDR5	40W	4xminiDP	-	4
	Quadro P1000	4GB GDDR5	50W	4xminiDP	-	4
	Quadro P2200	5GB GDDR5	75W	4xDP	-	4
	Quadro RTX 4000	8GB GDDR6	160W	3xDP, 1xVirtualLink	-	4
	Quadro RTX 5000	16GB GDDR6	265W	4xDP, 1xVirtualLink	NVLink	2
	Quadro RTX 6000	24GB GDDR6	295W	4xDP, 1xVirtualLink	NVLink	2
	Quadro RTX 8000	48GB GDDR6	295W	4xDP, 1xVirtualLink	NVLink	2
	Quadro GV100	32GB HBM2	250W	4xDP	NVLink	2

Storage Controller	Storage Controller	Type	Interface	RAID	Cache
	Integrated SATA controller	Std	SATA 6Gb/s	0/1/10/5	-
	Integrated NVMe controller	Std	PCIe NVMe	0/1/10/5	-

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

* M.2 PCIe 4.0 SSD is available later this year

Storage Support	Up to 5x 3.5" SATA HDD: • 4x 3.5" HDD bay • 1x Flex Bay (Front Access Storage Enclosure or 5.25" Slim ODD and HDD cage) Up to 11x M.2 SSD: • 2 via onboard M.2 • 8 via two quad M.2 to PCIe adapter (only supports PCIe 3.0 SSD) • 1 via Single M.2 to PCIe adapter (only supports PCIe 3.0 SSD)
Power supply	One fixed 1000W, autosensing, 92%, 80 PLUS Platinum qualified
Optical	Optional one slim optical, DVD or DVD±RW
Media reader	Optional UHS-II 15-in-1 USB 3.2 Gen 1 reader on flex module
Network interfaces	Integrated one 10GbE ethernet (Marvell AQtion AQN-107). Optional PCIe ethernet or wireless adapters are available
WLAN + Bluetooth	Optional Intel Wireless-AC 9260, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 5.1

Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Chassis intrusion switch. Optional access panel lock, Kensington lock
System Mgmt	AMD Pro Manageability
Diagnostic	Front panel warning LED. Front 4-digit diagnostic. ThinkStation Diagnostics for Windows. Photo-audio transfer with Lenovo PC Diagnostics for Android and iOS.
Base warranty	Most models comes with 3-year limited onsite service with 9x5/NBD
HD Audio	Realtek ALC4050H codec
Front ports	2x USB-A 3.2 Gen 2 (includes one 11W charging), 2x USB-C 3.2 Gen 2 (15W), 1x combo audio / microphone jack (3.5mm)
Rear ports	2x USB-A 2.0, 4x USB-A 3.2 Gen 2, 1x 10GbE RJ-45, 3x analog audio ports (line-in, line-out, mic-in), 2x PS/2
Optional ports	Optional one COM port

Environmental specification	Temperature - operating	50 °F to 95 °F (10 °C to 35 °C)
	Temperature - storage (no package)	14 °F to 140 °F (-10 °C to 60 °C)
	Temperature - storage (with package)	-40 °F to 140 °F (-40 °C to 60 °C)
	Altitude - operating	(Unpressurized): -50ft-10000ft (-15.2m-3048m)
	Humidity - operating	10%~80%, non-condensing
	Humidity - storage (with package)	10%~90%, non-condensing

Environmental Certifications	RoHS-compliant. GREENGUARD. EPEAT Silver rating. ENERGY STAR 8.0 qualified
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note: Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.

Expansion slots

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

900W PSU supports two 6+2-pin aux power connectors.
690W PSU supports one 6+2-pin aux power connector.

Audio ports
Option serial
PS/2
2xUSB 2.0
2xUSB 3.0+GbE
2xUSB 3.0+GbE
Slot 1
Slot 2
Slot 3
Slot 4
Slot 5
Slot 6

Note: All expansion cards are optional

ThinkStation P720 Platform Specifications

Product Specifications Reference (PSREF)

Form factor	36L Tower
Dimensions	175mm/6.89" W x 485mm/19.1" D x 446mm/17.6" H (with feet)
Weight	Maximum configuration: 56.7 lb (25.7kg)
Processor Sockets	2x FCLGA3647
Processor Support	Up to two 165 W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum

Processor	# of Cores	# of Threads	Base Frequency	Cache	TDP	Memory Types
Xeon Gold 6246	12	24	3.3GHz	24.75MB	165W	DDR4-2933
Xeon Gold 6244	8	16	3.6GHz	25MB	150W	DDR4-2933
Xeon Gold 6242	16	32	2.8GHz	22MB	150W	DDR4-2933
Xeon Gold 6238T	22	44	1.9GHz	30MB	125W	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 6226	12	24	2.7GHz	19MB	125W	DDR4-2933
Xeon Gold 5222	4	8	3.8GHz	16.5MB	105W	DDR4-2933
Xeon Gold 5218	16	32	2.3GHz	22MB	125W	DDR4-2666
Xeon Gold 5217	8	16	3.0GHz	11MB	115W	DDR4-2666
Xeon Gold 5215	10	20	2.5GHz	13.75MB	85W	DDR4-2666
Xeon Silver 4216	16	32	2.1GHz	22MB	100W	DDR4-2400
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 4209T	8	16	2.2GHz	11MB	70W	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
Xeon Platinum 8160T	24	48	2.1GHz	33MB	150W	DDR4-2666
Xeon Gold 6146	12	24	3.2GHz	24.75MB	165W	DDR4-2666
Xeon Gold 6142	16	32	2.6GHz	22MB	150W	DDR4-2666
Xeon Gold 6136	12	24	3.0GHz	24.75MB	150W	DDR4-2666
Xeon Gold 6134	8	16	3.2GHz	24.75MB	130W	DDR4-2666
Xeon Gold 6128	6	12	3.4GHz	19.25MB	115W	DDR4-2666
Xeon Gold 5122	4	8	3.6GHz	16.5MB	105W	DDR4-2666
Xeon Gold 5120T	14	28	2.2GHz	19.25MB	105W	DDR4-2400
Xeon Gold 5118	12	24	2.3GHz	16.5MB	105W	DDR4-2400
Xeon Gold 5115	10	20	2.4GHz	13.75MB	85W	DDR4-2400
Xeon Silver 4116	12	24	2.1GHz	16.5MB	85W	DDR4-2400
Xeon Silver 4114T	10	20	2.2GHz	13.75MB	85W	DDR4-2400
Xeon Silver 4114	10	20	2.2GHz	13.75MB	85W	DDR4-2400
Xeon Silver 4112	4	8	2.6GHz	8.25MB	85W	DDR4-2400
Xeon Silver 4110	8	16	2.1GHz	11MB	85W	DDR4-2400
Xeon Silver 4109T	8	16	2.0GHz	11MB	70W	DDR4-2400
Xeon Silver 4108	8	16	1.8GHz	11MB	85W	DDR4-2400

(Processor Offering)

Chipset	Intel C621 Chipset
Memory Sockets	12 DIMM sockets with 12 channels. 6 DIMM sockets with 6 channels per processor
Memory Types	DDR4-2666 RDIMM or DDR4-2933 RDIMM
Memory Capacity	768GB (DDR4-2933 RDIMM) or 384GB (DDR4-2666 RDIMM)
Memory Protection	ECC

Expansion slots

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

Discrete Graphics Offering

Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
NVS 810	4GB DDR3	68W	8xmini DP		2
Quadro P400	2GB GDDR5	30W	3xminiDP		3
Quadro P600	2GB GDDR5	45W	4xminiDP		3
Quadro P620	2GB GDDR5	40W	4xminiDP		3
Quadro P1000	4GB GDDR5	50W	4xminiDP		3
Quadro P2000	5GB GDDR5	75W	4xDP		3
Quadro P4000	8GB GDDR5	120W	4xDP		2
Quadro P5000	16GB GDDR5X	180W	DVI-D DL+4xDP	SLI	2
Quadro P6000	24GB GDDR5X	250W	DVI-D DL+4xDP	SLI	2

Discrete Graphics Offering

Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
Quadro RTX 4000	8GB GDDR6	160W	3xDP, 1xVirtualLink		2
Quadro RTX 5000	16GB GDDR6	265W	4xDP, 1xVirtualLink	NVlink	2
Quadro RTX 6000	24GB GDDR6	295W	4xDP, 1xVirtualLink	NVlink	2
Quadro RTX 8000	48GB GDDR6	295W	4xDP, 1xVirtualLink	NVlink	2
Quadro GP100	16GB HBM2	235W	1xDVI-D DL, 4xDP	NVlink	2
Quadro GV100	32GB HBM2	250W	4xDP	NVlink	2

Storage Controller

Storage Controller	Type	Interface	RAID	Cache
Onboard Intel RSTe	Std	SATA 6Gb/s	0/1/10/5	
9440-8i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5	
9460-16i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5/6	4GB DDR4, SuperCap
NVMe Basic	Opt	PCIe NVMe	0/1/10	
NVMe Premium	Opt	PCIe NVMe	0/1/10/5	
NVMe for Intel SSD	Opt	PCIe NVMe	0/1/10/5	

Storage Support

Disk Type	Interface	RPM	Offering	Max Qty (Blind connection + 9460 used)
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB/6TB	6 (Also supports additional 4x 2.5" SATA SSD/HDD)
2.5" SATA HDD	SATA 6Gb/s	7.2K	500GB/500GB FIPS	10
2.5" SAS HDD	SAS 12Gb/s	10K	300GB/600GB	8
2.5" SATA SSD	SATA 6Gb/s		256GB/512GB/1TB/2TB	10
2.5" PCIe SSD	PCIe NVMe		1.5TB	2
M.2 PCIe SSD	PCIe NVMe		256GB/512GB/1TB/2TB	9
PCIe AIC SSD	PCIe NVMe		480GB	2

Storage Bays

Bay Type	Maximum Drives Qty
M.2 slot	9x M.2 SSD (2 onboard, 7 via PCIe to M.2 adapter)

Flex Bay	2 flex bays. Supports the following:
	• 2x 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 3.1 Gen 1 reader or 2x Thunderbolt
	    Port 1 and 2: Front USB 3.1 Gen 1 Type-C or eSATA
	• 2x M.2 SSD with 2x Front Removable Drive Enclosures

Disk bay	4 disk bays (2 bays standard, 2 bays optional). Supports one of the following configurations: • 4x 3.5" SATA HDD • 4x 3.5" SATA HDD + 4x 2.5" SATA SSD/HDD (Blind connection needed) • 8x 2.5" SATA SSD/HDD or 8x 2.5" SAS HDD (Blind connection needed) • 2x 2.5" PCIe SSD + 2x 3.5"/2.5" disks (Blind connection needed)

Power supply	Supports one of the following: • One fixed 690W, autosensing, 92%, 80 PLUS Platinum qualified • One fixed 900W, autosensing, 92%, 80 PLUS Platinum qualified • One fixed 1000W, autosensing, 92%, 80 PLUS Platinum qualified

Lenovo, June 2020

Media reader	USB 2.0 9-in-1 card reader on most models. Optional UHS-II 15-in-1 USB 3.1 Gen 1 reader on flex module
Network interfaces	Integrated two-port gigabit ethernet (Intel i219LM and i210AT), supports Wake-on-LAN on both two ports. Optional PCIe ethernet are available
WLAN + Bluetooth	Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to 1.2 via UEFI setting. Chassis intrusion switch. Optional access panel lock, Kensington lock
Intel vPro	Intel vPro technology supported. vPro requires Wireless-AC 8265 if Wi-Fi is needed
Intel AMT	Intel Active Management Technology 11
Diagnostic	Front panel warning LED. ThinkSta-tion Diagnostics for Windows. Photo-audio transfer with Lenovo PC Diag-nostics for Android and iOS. Optional front 4-digit diagnostic display on flex module
Base warranty	1 or 3-year limited onsite service with 9x5/NBD
HD Audio	Realtek ALC662 codec
Front ports	4x USB 3.1 Gen 1 (includes one 11W charging), 1x combo audio/microphone jack (3.5mm)
Rear ports	2x USB 2.0, 4x USB 3.1 Gen 1, 2x RJ-45, 3x analog audio ports (line-in, line-out, mic-in), 2x PS/2
Optional ports	Supports the following optional ports: Front: • 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports supports video-out • 1x eSATA on flex module • 1x USB Type-C on flex module, USB 3.1 Gen 1 Rear: • 1x COM port • 2x USB Type-C ports via PCIe adapter, USB 3.1 gen 2. One 15W, one 5W Internal: • 1x internal USB 3.1 Gen 1 port

Environmental specification		
Temperature - operating	50 °F to 95 °F (10 °C to 35 °C)
Temperature - storage (no package)	14 °F to 140 °F (-10 °C to 60 °C)
Temperature - storage (with package)	-40 °F to 140 °F (-40 °C to 60 °C)
Altitude - operating	(Unpressurized): 0-10000ft (0-3048m)
Humidity - operating	10%~80%, non-condensing
Humidity - storage (with package)	10%~90%, non-condensing

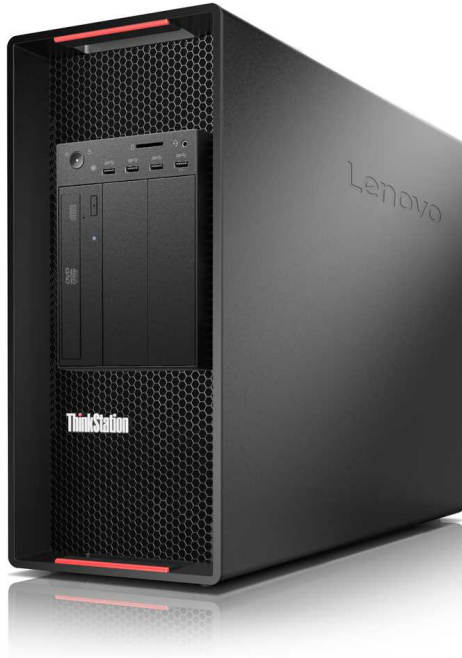|	
Environmental Certifications	RoHS-compliant. GREENGUARD. EPEAT Silver rating. ENERGY STAR 8.0 quali-fied on selected models
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. To support the maximum expandability, 900W power supply may be needed.
3. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

ThinkStation P920 Platform Specifications

Form factor	55L Tower
Dimensions	200mm/7.87" W x 620mm/24.4" D x 446mm/17.56" H (with feet)
Weight	Maximum configuration: 81.6 lb (31kg)
Processor Sockets	2x FCLGA3647
Processor Support	Up to two 205 W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum

Processor Offering	Processor	# of Cores	# of Threads	Base Frequency	Cache	TDP	Memory Types
	Xeon Platinum 8280	28	56	2.7GHz	39MB	205W	DDR4-2933
	Xeon Gold 6254	18	36	3.1GHz	25MB	200W	DDR4-2933
	Xeon Gold 6244	8	16	3.6GHz	25MB	150W	DDR4-2933
	Xeon Gold 6242	16	32	2.8GHz	22MB	150W	DDR4-2933
	Xeon Gold 6238T	22	44	1.9GHz	30MB	125W	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 6226	12	24	2.7GHz	19MB	125W	DDR4-2933
	Xeon Gold 5222	4	8	3.8GHz	16.5MB	105W	DDR4-2933
	Xeon Gold 5218	16	32	2.3GHz	22MB	125W	DDR4-2666
	Xeon Gold 5217	8	16	3.0GHz	11MB	115W	DDR4-2666
	Xeon Gold 5215	10	20	2.5GHz	13.75MB	85W	DDR4-2666
	Xeon Silver 4216	16	32	2.1GHz	22MB	100W	DDR4-2400
	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 4209T	8	16	2.2GHz	11MB	70W	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
	Xeon Platinum 8160T	24	48	2.1GHz	33MB	150W	DDR4-2666
	Xeon Gold 6154	18	36	3.0GHz	24.75MB	200W	DDR4-2666
	Xeon Gold 6142	16	32	2.6GHz	22MB	150W	DDR4-2666
	Xeon Gold 6136	12	24	3.0GHz	24.75MB	150W	DDR4-2666
	Xeon Gold 6134	8	16	3.2GHz	24.75MB	130W	DDR4-2666
	Xeon Gold 6128	6	12	3.4GHz	19.25MB	115W	DDR4-2666
	Xeon Gold 5122	4	8	3.6GHz	16.5MB	105W	DDR4-2666
	Xeon Gold 5120T	14	28	2.2GHz	19.25MB	105W	DDR4-2400
	Xeon Gold 5118	12	24	2.3GHz	16.5MB	105W	DDR4-2400
	Xeon Gold 5115	10	20	2.4GHz	13.75MB	85W	DDR4-2400
	Xeon Silver 4116	12	24	2.1GHz	16.5MB	85W	DDR4-2400
	Xeon Silver 4114T	10	20	2.2GHz	13.75MB	85W	DDR4-2400
	Xeon Silver 4114	10	20	2.2GHz	13.75MB	85W	DDR4-2400
	Xeon Silver 4112	4	8	2.6GHz	8.25MB	85W	DDR4-2400
	Xeon Silver 4110	8	16	2.1GHz	11MB	85W	DDR4-2400
	Xeon Silver 4109T	8	16	2.0GHz	11MB	70W	DDR4-2400
	Xeon Silver 4108	8	16	1.8GHz	11MB	85W	DDR4-2400

Chipset	Intel C621 Chipset
Memory Sockets	16 DIMM sockets with 12 channels. 8 DIMM sockets with 6 channels per processor
Memory Types	DDR4-2666 RDIMM, DDR4-2666 LRDIMM, or DDR4-2933 RDIMM
Memory Capacity	1TB (DDR4-2666 LRDIMM or DDR4-2933 RDIMM) or 512GB (DDR4-2666 RDIMM)
Memory Protection	ECC

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

Discrete Graphics Offering

Graphics	Memory	Power	Connector	SLI / NVlink	Max Qty
NVS 810	4GB DDR3	68W	8xmini DP		2
Quadro P400	2GB GDDR5	30W	3xminiDP		5
Quadro P600	2GB GDDR5	45W	4xminiDP		4
Quadro P620	2GB GDDR5	40W	4xminiDP		4
Quadro P1000	4GB GDDR5	50W	4xminiDP		4
Quadro P2000	5GB GDDR5	75W	4xDP		4
Quadro P4000	8GB GDDR5	120W	4xDP		4
Quadro P5000	16GB GDDR5X	180W	DVI-D DL+4xDP	SLI	3
Quadro P6000	24GB GDDR5X	250W	DVI-D DL+4xDP	SLI	3
Quadro RTX 4000	8GB GDDR6	160W	3xDP, 1xVirtualLink		3
Quadro RTX 5000	16GB GDDR6	265W	4xDP, 1xVirtualLink	NVLink	3
Quadro RTX 6000	24GB GDDR6	295W	4xDP, 1xVirtualLink	NVLink	2
Quadro RTX 8000	48GB GDDR6	295W	4xDP, 1xVirtualLink	NVLink	2
Quadro GP100	16GB HBM2	235W	1xDVI-D DL, 4xDP	NVLink	3
Quadro GV100	32GB HBM2	250W	4xDP	NVLink	3

Storage Controller

Storage Controller	Type	Interface	RAID	Cache
Onboard Intel RSTe	Std	SATA 6Gb/s	0/1/10/5	
9440-8i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5	
9460-16i PCIe	Opt	SAS 12Gb/s, SATA 6Gb/s	0/1/10/5/6	4GB DDR4, SuperCap
NVMe Basic	Opt	PCIe NVMe	0/1/10	
NVMe Premium	Opt	PCIe NVMe	0/1/10/5	
NVMe for Intel SSD	Opt	PCIe NVMe	0/1/10/5	

Storage Support

Disk Type	Interface	RPM	Offering	Max Qty (9460 used)
3.5" SATA HDD	SATA 6Gb/s	7.2K	1TB/2TB/4TB/6TB	6 (Also supports additional 4x 2.5" SATA SSD/HDD)
2.5" SATA HDD	SATA 6Gb/s	7.2K	500GB/500GB FIPS	10
2.5" SAS HDD	SAS 12Gb/s	10K	300GB/600GB	8
2.5" SATA SSD	SATA 6Gb/s		256GB/512GB/1TB/2TB	10
2.5" PCIe SSD	PCIe NVMe		1.5TB	4
M.2 PCIe SSD	PCIe NVMe		256GB/512GB/1TB/2TB	9
PCIe AIC SSD	PCIe NVMe		480GB	2

Storage Bays

Bay Type	Maximum Drives Qty
M.2 slot	9x M.2 SSD (2 onboard, 7 via PCIe to M.2 adapter)

Flex Bay	2x 3.5" or 2.5" disks. 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
	• 3x M.2 SSD with 3x Front Removable Drive Enclosures

Disk bay	8 disk drives with 4 bays (2 bays standard, 2 bays optional). Supports one of the following configurations: • 4x 3.5" SATA HDD • 4x 3.5" SATA HDD + 4x 2.5" SATA SSD/HDD • 8x 2.5" SATA SSD/HDD or 8x 2.5" SAS HDD

ThinkStation P920 Platform Specifications

Max Storage	Supports up to 9x M.2 SSD + 6x 3.5" HDD/10x 2.5" SSD/10x 2.5" HDD + 2x PCIe AIC SSD. All HDD: 36TB using 6x 3.5" HDD All SSD: 38.96TB using 10x 2.5" SATA SSD, 9x M.2 SSD, and 2x PCIe AIC SSD
Power supply	One fixed 1400 watts, autosensing, 92% PSU, 80 PLUS Platinum qualified. Countries with input voltage under 115V, output power limited to 1125 watts
Media reader	USB 2.0 9-in-1 card reader on most models. Optional UHS-II 15-in-1 USB 3.2 Gen 1 reader on flex module
Network interfaces	Integrated two-port gigabit ethernet (Intel i219LM and i210AT), supports Wake-on-LAN on both two ports. Optional PCIe ethernet are available
WLAN + Bluetooth	Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps
Security features	Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to 1.2 via UEFI setting. Chassis intrusion switch. Optional access panel lock, Kensington lock
Intel vPro	Intel vPro technology supported. vPro requires Wireless-AC 8265 if Wi-Fi is needed
Intel AMT	Intel Active Management Technology 11
Diagnostic	Front 4-digit diagnostic display. ThinkStation Diagnostics for Windows. Photo-audio transfer with Lenovo PC Diagnostics for Android and iOS
Base warranty	1 or 3-year limited onsite service with 9x5/NBD
HD Audio	Realtek ALC662 codec
Front ports	4x USB-A 3.2 Gen 1 (includes one 11W charging), 1x combo audio/microphone jack (3.5mm)
Rear ports	2x USB-A 2.0, 4x USB-A 3.2 Gen 1, 2x RJ-45, 3x analog audio ports (line-in, line-out, mic-in), 2x PS/2
Optional ports	Supports the following optional ports: Front: • 2x Thunderbolt ports (USB-C form) on flex module, one of two ports supports video-out • 1x eSATA on flex module • 1x USB-C 3.2 Gen 1 on flex module Rear: • 1x COM port • 2x USB-C 3.2 gen 2 ports via PCIe adapter. One 15W, one 5W Internal: • 1x internal USB-A 3.2 Gen 1 port

Environmental specification	Temperature - operating	50 °F to 95 °F (10 °C to 35 °C)
	Temperature - storage (no package)	14 °F to 140 °F (-10 °C to 60 °C)
	Temperature - storage (with package)	-40 °F to 140 °F (-40 °C to 60 °C)
	Altitude - operating	(Unpressurized): 0-10000ft (0-3048m)
	Humidity - operating	10%~80%, non-condensing
	Humidity - storage (with package)	10%~90%, non-condensing

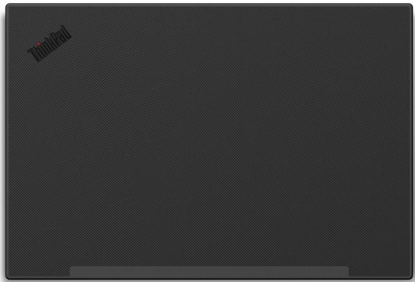|	
Environmental Certifications	RoHS-compliant. GREENGUARD. EPEAT Silver rating. ENERGY STAR 8.0 qualified on selected models
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer (houyf@lenovo.com)

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

ThinkPad P1 (2nd Gen) Platform Specifications

Processor

9th Generation Intel® Core™ i5 / i7 / i9 Processor or Intel Xeon® E Processor

Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
i5-9400H	4	8	2.5 GHz	4.3 GHz	8MB		Intel UHD Graphics 630
i7-9750H	6	12	2.6 GHz	4.5 GHz	12MB	DDR4-2666	
i7-9850H	6	12	2.6 GHz	4.6 GHz	12MB		
i9-9880H	8	16	2.3 GHz	4.8 GHz	16MB		
E-2276M	6	12	2.8 GHz	4.7 GHz	12MB		Intel UHD Graphics P630

Graphics

Intel UHD Graphics 630 in processor only or
Intel UHD Graphics 630 or P630 in processor and
NVIDIA® Quadro® T1000 or T2000, 4GB GDDR5 memory;
supports external digital monitor via HDMI or Thunderbolt™;
Up to 4 displays with 3 external monitors plus system LCD screen.
Max resolution: 5K@60Hz (Thunderbolt); 4K@60Hz (HDMI)

Chipset
Mobile Intel CM246 Chipset

Memory
64GB max / 2666MHz DDR4, ECC or non-ECC (ECC function supported only on Xeon processor), dual-channel capable, two DDR4 SO-DIMM sockets

Display

Size	Resolution	Type	Surface	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
15.6"	FHD (1920x1080)	WVA	Anti-glare	300 nits	16:9	700:1	72% NTSC	170°
15.6"	FHD (1920x1080) Dolby Vision™ HDR	WVA	Anti-glare	500 nits	16:9	1200:1	72% NTSC	170°
15.6"	UHD (3840x2160) Dolby Vision HDR	WVA	Anti-glare	500 nits	16:9	1200:1	100% Adobe	170°
15.6"	UHD (3840x2160) Dolby Vision HDR, Multi-touch	OLED	Anti-reflection / Anti-smudge	SDR 400nit, HDR 500nit (peak)	16:9	100000:1	100% DCI-P3	170°

Multi-touch *(opt)*
Capacitive-type multi-touch, supports 10-finger gesture (UHD OLED only), AR (anti-reflection) / AS (anti-smudge) coating

Pen *(optional)*
Lenovo Pen Pro (special bid only)

Storage
Up to two M.2 SSD, supports single sided M.2 2280 drives only
M.2 2280 SSD / PCIe NVMe 3.0 x 4

RAID *(optional)*
RAID 0/1 support

Optical
None

Ethernet
Native Intel Ethernet Connection I219-V (*Non-vPro*) or I219-LM (*vPro*)) via bundled or optional ThinkPad Ethernet Extension Cable

WLAN *(optional)*
Intel Wi-Fi 6 AX200, Wi-Fi 2x2 802.11ax + Bluetooth 5.1

Bluetooth™ *(opt)*
Bluetooth 5.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter

WWAN
None

SIM card
None

Dimensions
WxDxH (non-touch): 14.24" x 9.67" x 0.72"; 361.8mm x 245.7mm x 18.4mm
WxDxH (multi-touch): 14.24" x 9.67" x 0.74"; 361.8mm x 245.7mm x 18.7mm

Weight
Non-touch model: starting at 3.75 lb / 1.7 kg;
Multi-touch model: starting at 4.0 lb / 1.81 kg

Case color
Black paint (FHD model) or black weave (UHD model)

Case material
Display cover: CFRP/GFRP hybrid;
Bottom: Aluminum alloy

Smart card reader
Optional: Smart card reader

Media reader
SD Card reader (SD, SDHC, SDXC), supports UHS-II SD card

Ports
Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of Power Delivery and DisplayPort),
HDMI 2.0, Ethernet extension connector, headphone / microphone combo jack, optional smart card reader, SD card reader, security keyhole
* Power Delivery only supports power-out for charging peripherals
* Depending on many factors, actual data transfer speed may be lower than theoretical speed

Monitor cable *(optional)*
HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter
USB-C to VGA: Lenovo USB-C to VGA Adapter
USB-C to DP: Lenovo USB-C to DisplayPort Adapter

Bundled Accy
Optional: ThinkPad Ethernet Extension Cable

Camera *(optional)*
One of the following, configurable by model:
• HD720p camera with ThinkShutter camera privacy, fixed focus
• IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus

Audio support
HD Audio, Synaptic® CX11880 codec /
stereo speakers, 2W x 2, Dolby® Audio™ Premium /
optional dual array far-field microphone, headphone / microphone combo jack,
Dolby Atmos® sound system

Keyboard UltraNav™
6-row, spill-resistant, multimedia Fn keys, LED backlight
TrackPoint® pointing device and buttonless glass surface multi-touch touchpad

Security
Power-on password, hard disk password, supervisor password, security keyhole

Security chip
Discrete TPM 2.0, TCG Certified

System Mgt *(opt)*
Intel vPro Technology

Fingerprint reader
Touch style match on chip fingerprint reader on the keyboard bezel

Color calibration
Optional: X-Rite Pantone factory color calibration (UHD model only)

NFC
None

Battery
Integrated Li- Polymer 80Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

Max battery life
MobileMark® 2014: 13.8 hr
 * Battery life varies significantly with hardware configurations, settings, usage, & other factors

AC adapter
135W slim tip AC adapter

Operating system
One of the following, configurable by model:
• Windows® 10 Home 64
• Windows 10 Pro 64
• Windows 10 Pro 64 for Workstations

Limited warranty
One of the following, configurable by model:
• 1-year depot repair service
• 1-year depot with 2-year system board repair service
• 3-year/1-yr battery depot repair service
• 3-year/1-yr battery limited onsite service

Mil-Spec test
MIL-STD-810G military testing

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

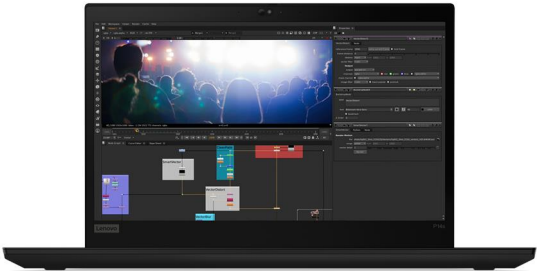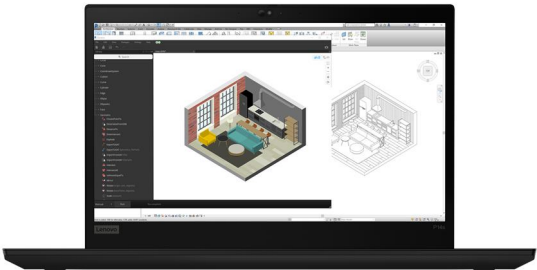Note: The specifications above may not be available in all regions.

ThinkPad P1 Gen 3 Platform Specifications

Processor	Supports one 10th Xeon W, Core i9, i7, or i5 processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Xeon W-10855M	6	12	2.8GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i9-10885H	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10875H	8	16	2.3GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10850H	6	12	2.7GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10750H	6	12	2.6GHz	5.0GHz	12MB	DDR4-2933	Intel UHD Graphics

Chipset	Intel WM490 Chipset
Memory Type	SO-DIMM. DDR4-3200 for non-ECC, DDR4-2933 for ECC. Both ECC and non-ECC memory operate at DDR4-2933. 8GB/16GB/32GB available for both ECC and non-ECC
Memory Sockets	2 DIMM sockets
Memory Protection	ECC on models with ECC DIMMs and Xeon processor
Max Memory	64GB
Graphics	Intel UHD Graphics in processor, also supports one of the following optional discrete graphics: • NVIDIA Quadro T1000 with Max-Q Design, 4GB GDDR6 memory • NVIDIA Quadro T2000 with Max-Q Design, 4GB GDDR6 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	15.6"	FHD (1920x1080)	WVA	Anti-glare	-	300 nits	16:9	700:1	72% NTSC	170°
	15.6"	FHD (1920x1080) Dolby Vision HDR	WVA	Anti-glare	-	500 nits	16:9	800:1	72% NTSC	170°
	15.6"	UHD (3840x2160) Dolby Vision HDR	WVA	Anti-glare	-	600 nits	16:9	1400:1	100% Adobe	178°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 500 True Black	OLED	Anti-reflection / Anti-smudge	multi-touch	400 nits, 540 nits (peak)	16:9	100000:1	100% DCI-P3	170°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	Touch enable on selected UHD OLED models, supports 10-finger gesture
Pen	Optional Lenovo Pen Pro
Storage	Up to two M.2 2280 SSD, PCIe NVMe, 256GB / 512GB / 1TB / 2TB each
RAID	RAID 0 / 1 support
Optical	None
Ethernet	Optional Lenovo USB-C to Ethernet Adapter
NFC	None
WLAN + Bluetooth	Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 2x2, M.2 card
SIM card	Optional Nano-SIM card slot
Dimensions	Width: 361.8 mm (14.24 in). Depth: 245.7 mm (9.67 in). Thickness for non-touch models: 18.4 mm (0.72 in) Thickness for touch models: 18.7 mm (0.74 in)
Weight	Starting at 1.7 kg (3.75 lb, FHD non-touch) / 1.8 kg (3.97 lb, OLED touch)

Case color	Woven Carbon Fiber Finish (standard on OLED models, optional on UHD WVA models) or black
Case material	*Display cover:* Carbon Fiber (Black or woven pattern) + PC + PPS Hybrid *Bottom:* Aluminum + PC / ABS
Media reader	SD card reader
Standard Ports	2x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 2x USB-A 3.2 Gen 1 (one Always-on), 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x SD card reader, 1x security keyhole
Optional Ports	One optional Nano-SIM card slot on right
Monitor support	Up to 4 displays with 3 external monitors plus system LCD screen. External monitors supported via 2x Thunderbolt and 1x HDMI. HDMI supports up to 4K@60Hz. Two Thunderbolt support up to 5K@60Hz each
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • Hybrid IR camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3286 codec
Speaker	Stereo speakers, Dolby ATMOS Speaker System
Microphone	Optional dual far-field microphone
Keyboard	6-row, spill-resistant, LED backlight, multimedia Fn keys with Unified Communications controls.
UltraNav	3-button TrackPoint pointing device and 2-button glass surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	None
Fingerprint reader	Touch style match on chip fingerprint reader on the palm rest
Battery	Integrated Li-Polymer 80Wh battery. Supports Rapid Charge (charge up to 80% in 1hr) with 135W AC adapter
Max battery life	MobileMark 2014: 15.9 hr. MobileMark 2018: 12 hr ** Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	One of the following: • 135W slim AC adapter • 170W slim AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Pro 64 for Workstations • Windows 10 Government Edition 64 • Ubuntu Linux LTS • Fedora Linux
Base Warranty	Optional warranty plans as following: • Non-warranty (special bids only) • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P14s Gen 1 (AMD) Platform Specifications

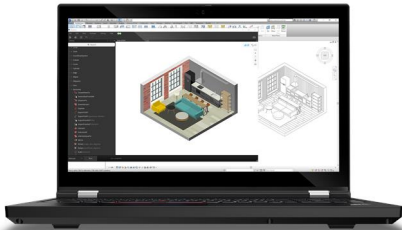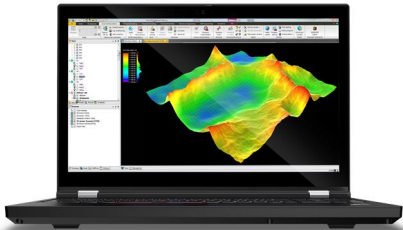| Processor	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Ryzen 7 PRO 4750U	8	16	1.7GHz	4.1GHz	4MB L2 / 8MB L3	DDR4-3200	AMD Radeon Graphics

Chipset	Integrated SoC (System on Chip) platform
Memory Type	DDR4-3200. 8GB/16GB/32GB DDR4-3200 SO-DIMM non-ECC for DIMM socket, 8GB/16GB DDR4-3200 non-ECC for soldered DIMM.
Memory Sockets	1 DIMM socket plus 1 soldered DIMM, dual-channel capable
Memory Protection	None
Max Memory	48GB with one 32GB SO-DIMM plus one 16GB soldered DIMM
Graphics	AMD Radeon Graphics in processor, up to 2GB dedicated video memory, allocated from system memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	14.0"	FHD (1920x1080)	IPS	Anti-glare	-	250 nits	16:9	700:1	45%	170°
	14.0"	FHD (1920x1080)	IPS	Anti-glare	multi-touch	300 nits	16:9	700:1	45%	170°
	14.0"	FHD (1920x1080) Low Power	IPS	Anti-glare	-	400 nits	16:9	800:1	72%	170°
	14.0"	FHD (1920x1080) ThinkPad Privacy Guard	IPS	Anti-glare	multi-touch	500 nits	16:9	1000:1	72%	170°

Color Calibration	None
Touchscreen	Optional on-cell touch on selected FHD models, supports 10-finger gesture
Pen	None
Storage	Up to one M.2 SSD as following, 1TB max: • M.2 2280 PCIe NVMe, PCIe 3.0 x4, 256GB / 512GB / 1TB • M.2 2242 PCIe NVMe, PCIe 3.0 x2, 128GB, for special bids
Optical	None
Ethernet	Realtek RTL8111EPV Gigabit Ethernet connection
NFC	None
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX200, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
SIM card	Optional Nano-SIM card slot
Dimensions	Width: 329 mm (12.95 in). Depth: 227 mm (8.94 in). Thickness: 17.9 mm (0.7 inches)
Weight	Starting at 3.22 lb (1.46kg)
Case color	Black
Case material	Display cover: PPS / 50% GF; Bottom: PA / 50% GF

Media reader	MicroSD card reader
Standard Ports	On left: 2x USB-C (USB 3.2 Gen 2, PD, DP), 1x side docking connector, 1x USB-A 3.2 Gen 1, 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x microSD card reader On right: 1x security keyhole, 1x RJ-45, 1x USB-A 3.2 Gen 1 (Always On)
Optional Ports	One optional smart card reader on right, one optional Nano-SIM card slot on rear
Monitor support	Up to 4 displays with 3 external monitors plus system LCD screen. External monitors supported via two USB-C and HDMI. 5120x2880@60Hz on USB-C, 3840x2160@60Hz on HDMI
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters, up to two
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3287 codec
Speaker	Stereo speakers, 2W x 2, Dolby Audio Speaker System
Microphone	Optional dual array near-field microphone
Keyboard	6-row, spill-resistant, multimedia Fn keys with Unified Communications controls. Optional LED backlight
UltraNav	TrackPoint pointing device and Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified
System mgmt	AMD Pro Manageability
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Optional
Battery	Integrated Li-Polymer 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W AC adapter
Max battery life	MobileMark 2014: 13.25 hr. MobileMark 2018: 10.5 hr. *Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	• 45W USB-C AC adapter • 65W USB-C AC adapter • 65W USB-C slim AC adapte
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Ubuntu Linux LTS
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P14s Gen 1 (Intel) Platform Specifications

Processor	Supports one 10th Core i7 and i5 -U suffix processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	i7-10810U	6	12	1.1GHz	4.9GHz	12MB	DDR4-2666	Intel UHD Graphics
	i7-10710U	6	12	1.1GHz	4.7GHz	12MB	DDR4-2666	Intel UHD Graphics
	i7-10610U	4	8	1.8GHz	4.9GHz	8MB	DDR4-2666	Intel UHD Graphics
	i7-10510U	4	8	1.8GHz	4.9GHz	8MB	DDR4-2666	Intel UHD Graphics
	i5-10310U	4	8	1.7GHz	4.4GHz	6MB	DDR4-2666	Intel UHD Graphics
	i5-10210U	4	8	1.6GHz	4.2GHz	6MB	DDR4-2666	Intel UHD Graphics

Chipset	Intel SoC (System on Chip) platform
Memory Type	DDR4-3200, operates at DDR4-2666. 8GB/16GB/32GB DDR4-3200 SO-DIMM non-ECC for DIMM socket, 8GB/16GB DDR4-3200 non-ECC for soldered DIMM
Memory Sockets	1 DIMM socket plus 1 soldered DIMM, dual-channel capable
Memory Protection	None
Max Memory	48GB with one 32GB SO-DIMM plus one 16GB soldered DIMM
Graphics	Intel UHD Graphics in processor and NVIDIA Quadro P520, 2GB GDDR5 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	14.0"	FHD (1920x1080)	WVA	Anti-glare	-	250 nits	16:9	700:1	45%	170°
	14.0"	FHD (1920x1080)	WVA	Anti-glare	multi-touch	300 nits	16:9	700:1	45%	170°
	14.0"	FHD (1920x1080) Low Power	WVA	Anti-glare	-	400 nits	16:9	800:1	72%	170°
	14.0"	FHD (1920x1080) ThinkPad Privacy Guard	WVA	Anti-glare	multi-touch	500 nits	16:9	1000:1	72%	170°
	14.0"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Glossy	-	500 nits	16:9	1500:1	100% Adobe	170°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	Optional on-cell touch on selected FHD models, supports 10-finger gesture
Pen	None
Storage	Up to one M.2 SSD as following, 2TB max: • M.2 2280 PCIe NVMe, PCIe 3.0 x4, 256GB / 512GB / 1TB / 2TB • M.2 2242 PCIe NVMe, PCIe 3.0 x2, 128GB, for special bids • M.2 2280 512GB SSD + 32 GB Optane, PCIe NVMe 3.0 x 4, for special bids
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	Optional
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card • Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 4x4, M.2 card
SIM card	Optional Nano-SIM card slot
Dimensions	Width: 329 mm (12.95 in). Depth: 227 mm (8.94 in). Thickness: 17.9 mm (0.7 inches)

Weight	Starting at 3.24 lb (1.47kg)
Case color	Black
Case material	*Display cover:* PPS / 50% GF; *Bottom:* PA / 50% GF
Media reader	MicroSD card reader
Standard Ports	On left: 1x USB-C (USB 3.2 Gen 1, PD, DP), 1x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 1x side docking connector, 1x USB-A 3.2 Gen 1, 1x HDMI 1.4b, 1x headphone / microphone combo jack, 1x microSD card reader On right: 1x security keyhole, 1x RJ-45, 1x USB-A 3.2 Gen 1 (Always On)
Optional Ports	One optional smart card reader on right, one optional Nano-SIM card slot on rear
Monitor support	Up to 3 displays with 2 external monitors plus system LCD screen. External monitors supported via USB-C, Thunderbolt, and HDMI. 4096x2304 @60Hz on USB-C and Thunderbolt, 4096x2160 @24Hz on HDMI
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters, up to two
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3287 codec
Speaker	Stereo speakers, 2W x 2, Dolby Audio Speaker System
Microphone	Optional dual array near-field microphone
Keyboard	6-row, spill-resistant, multimedia Fn keys with Unified Communications controls. LED backlight on most models, non LED backlight is for special bids
UltraNav	TrackPoint pointing device and Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Optional
Battery	Integrated Li-Polymer 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W AC adapter
Max battery life	MobileMark 2014: 15.1 hr. MobileMark 2018: 10.96 hr. *Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	65W or 65W slim USB-C AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Government Edition 64 for special bids • Ubuntu Linux LTS
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P15 Gen 1 Platform Specifications

Processor	Supports one 10th Xeon W, Core i9, i7, or i5 processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Xeon W-10885M	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Xeon W-10855M	6	12	2.8GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i9-10980HK	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i9-10885H	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10875H	8	16	2.3GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10850H	6	12	2.7GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10750H	6	12	2.6GHz	5.0GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i5-10400H	4	8	2.6GHz	4.6GHz	8MB	DDR4-2933	Intel UHD Graphics

Chipset	Intel WM490 Chipset
Memory Type	SO-DIMM. DDR4-3200 for non-ECC, DDR4-2933 for ECC. Operates at DDR4-2933. 8GB/16GB/32GB available for both ECC and non-ECC
Memory Sockets	4 DIMM sockets
Memory Protection	ECC on models with ECC DIMMs and Xeon processor
Max Memory	128GB
Graphics	Support one of the following discrete graphics: • NVIDIA Quadro T1000, 4GB GDDR6 memory • NVIDIA Quadro T2000, 4GB GDDR6 memory • NVIDIA Quadro RTX 3000, 6GB GDDR6 memory • NVIDIA Quadro RTX 4000 with Max-Q Design, 8GB GDDR6 memory • NVIDIA Quadro RTX 5000 with Max-Q Design, 16GB GDDR6 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	15.6"	FHD (1920x1080)	WVA	Anti-glare	-	300 nits	16:9	700:1	72% NTSC	160°
	15.6"	FHD (1920x1080) Dolby Vision, HDR 400	WVA	Anti-glare	-	500 nits	16:9	1200:1	72% NTSC	160°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Anti-glare	-	600 nits	16:9	1400:1	100% Adobe	178°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 400	OLED	Anti-reflection / Anti-smudge	multi-touch	SDR 400nit, HDR 500nit (peak)	16:9	100000:1	100% DCI-P3	170°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	Touch enable on selected UHD OLED models, supports 10-finger gesture
Pen	Optional Lenovo Pen Pro
Storage	Up to two M.2 2280 SSD, PCIe NVMe, 256GB / 512GB / 1TB / 2TB each
RAID	RAID 0 / 1 support
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	None
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 4x4, M.2 card *Note: WWAN cannot be supported on UHD WVA models*

SIM card	Optional Nano-SIM card slot
Dimensions	Width: 375.4 mm (14.78 in). Depth: 252.3 mm (9.93 in). Thickness for non-touch models: 24.5 ~ 31.45 mm (0.96 ~ 1.24 in) Thickness for touch models: 25.25 ~ 32.2mm (0.99 ~ 1.27 in)
Weight	Starting at 2.74 kg (6.05 lb, FHD)
Case color	Black
Case material	*Display cover:* GFRP 50% (PPS695 + GF 50%). *Bottom:* PPS + GF
Media reader	SD card reader
Standard Ports	1x USB-C (USB 3.2 Gen 1, PD, DP), 2x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 2x USB-A 3.2 Gen 1 (one Always-on), 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x SD card reader, 1x security keyhole, 1x RJ-45
Optional Ports	One optional smart card reader on right, one optional Nano-SIM card slot on left
Monitor support	Up to 5 displays with 4 external monitors plus system LCD screen. External monitors supported via 1x USB-C, 2x Thunderbolt, and 1x HDMI. USB-C and HDMI support up to 4K@60Hz. With Thunderbolt, one supports up to 5K@60Hz and one supports up to 4K@60Hz
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • Hybrid IR camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3286 codec
Speaker	Stereo speakers, Dolby Atmos sound system
Microphone	Optional dual array far-field microphone
Keyboard	6-row, spill-resistant, LED backlight, numeric keypad, multimedia Fn keys with Unified Communications controls.
UltraNav	3-button TrackPoint pointing device and 2-button Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Touch style match on chip fingerprint reader on the palm rest
Battery	Integrated Li-Polymer 94Wh battery. Supports Rapid Charge (charge up to 80% in 1hr) with 230W AC adapter
Max battery life	MobileMark 2014: 16.4 hr. MobileMark 2018: 10.3 hr ** Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	One of the following: • 230W slim AC adapter • 170W slim AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Pro 64 for Workstations • Ubuntu Linux LTS • Fedora Linux
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P15s Gen 1 Platform Specifications

Processor — Supports one 10th Core i7 and i5 -U suffix processor as following:

Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
i7-10810U	6	12	1.1GHz	4.9GHz	12MB	DDR4-2666	Intel UHD Graphics
i7-10710U	6	12	1.1GHz	4.7GHz	12MB	DDR4-2666	Intel UHD Graphics
i7-10610U	4	8	1.8GHz	4.9GHz	8MB	DDR4-2666	Intel UHD Graphics
i7-10510U	4	8	1.8GHz	4.9GHz	8MB	DDR4-2666	Intel UHD Graphics
i5-10310U	4	8	1.7GHz	4.4GHz	6MB	DDR4-2666	Intel UHD Graphics
i5-10210U	4	8	1.6GHz	4.2GHz	6MB	DDR4-2666	Intel UHD Graphics

Chipset	Intel SoC (System on Chip) platform
Memory Type	DDR4-3200, operates at DDR4-2666. 8GB/16GB/32GB DDR4-3200 SO-DIMM non-ECC for DIMM sockets, 8GB/16GB DDR4-3200 non-ECC for soldered DIMM
Memory Sockets	1 DIMM socket plus 1 soldered DIMM, dual-channel capable
Memory Protection	None
Max Memory	48GB with one 32GB SO-DIMM plus one 16GB soldered DIMM
Graphics	Intel UHD Graphics in processor and NVIDIA Quadro P520, 2GB GDDR5 memory

Display

Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
15.6"	FHD (1920x1080)	WVA	Anti-glare	-	250 nits	16:9	800:1	45%	170°
15.6"	FHD (1920x1080)	WVA	Anti-glare	multi-touch	300 nits	16:9	800:1	45%	170°
15.6"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Anti-glare	-	600 nits	16:9	1400:1	100% Adobe	170°

Color Calibration	Factory Color Calibration on UHD models
Touchscreen	Optional on-cell touch on selected FHD models, supports 10-finger gesture
Pen	None
Storage	Up to one M.2 SSD as following, 2TB max: • M.2 2280 PCIe NVMe, PCIe 3.0 x 4, 256GB / 512GB / 1TB / 2TB • M.2 2242 PCIe NVMe, PCIe 3.0 x 2, 128GB, for special bids • M.2 2280 512GB SSD + 32 GB Optane, PCIe NVMe 3.0 x 4, for special bids
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	Optional
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card • Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 4x4, M.2 card
SIM card	Optional Nano-SIM card slot
Dimensions	Width: 365.8 mm (14.4 in). Depth: 248 mm (9.76 in). Thickness: 19.1 mm (0.75 inches)
Weight	Starting at 3.86 lb (1.75kg)
Case color	Black

Case material	*Display cover:* PPS / 50% GF; *Bottom:* PA / 50% GF
Media reader	MicroSD card reader
Standard Ports	On left: 1x USB-C (USB 3.2 Gen 1, PD, DP), 1x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 1x side docking connector, 1x USB-A 3.2 Gen 1, 1x HDMI 1.4b, 1x headphone / microphone combo jack, 1x microSD card reader On right: 1x security keyhole, 1x RJ-45, 1x USB-A 3.2 Gen 1 (Always On)
Optional Ports	One optional smart card reader on right, one optional nano-SIM card slot on rear
Monitor support	Up to 3 displays with 2 external monitors plus system LCD screen. Two external monitors supported via USB-C, Thunderbolt, and HDMI. 4096x2304 @60Hz on USB-C and Thunderbolt, 4096x2160 @24Hz on HDMI
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters, up to two
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3287 codec
Speaker	Stereo speakers, 2W x 2, Dolby Audio Speaker System
Microphone	Optional dual array near-field microphone
Keyboard	6-row, spill-resistant, multimedia Fn keys with Unified Communications controls, numeric keypad. LED backlight on most models, non LED backlight is for special bids
UltraNav	TrackPoint pointing device and Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Optional
Battery	Integrated Li-Polymer 57Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W AC adapter
Max battery life	MobileMark 2014: 16.5 hr. MobileMark 2018: 10.48 hr. ** Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	65W or 65W slim USB-C AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Government Edition 64 for special bids • Ubuntu Linux LTS
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P15v Gen 1 Platform Specifications

Processor	Supports one 10th Xeon W, Core i7, or i5 processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Xeon W-10855M	6	12	2.8GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10875H	8	16	2.3GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10850H	6	12	2.7GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10750H	6	12	2.6GHz	5.0GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i5-10300H	4	8	2.5GHz	4.5GHz	8MB	DDR4-2933	Intel UHD Graphics

Chipset	Intel WM490 Chipset
Memory Type	SO-DIMM. DDR4-3200 non-ECC or DDR4-2933 ECC. Operates at DDR4-2933. 8GB/16GB/32GB available for both ECC and non-ECC
Memory Sockets	2 DIMM sockets
Memory Protection	ECC on models with ECC DIMMs and Xeon processor
Max Memory	64GB
Graphics	Intel UHD Graphics in processor, also supports optional NVIDIA Quadro P620, 4GB GDDR5 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	15.6"	FHD (1920x1080)	WVA	Anti-glare	-	250 nits	16:9	700:1	45% NTSC	170°
	15.6"	FHD (1920x1080)	WVA	Anti-glare	multi-touch	300 nits	16:9	800:1	45% NTSC	170°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Anti-glare	-	600 nits	16:9	1400:1	100% Adobe	178°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	Touch enable on selected FHD models, supports 10-finger gesture
Pen	None
Storage	Up to two M.2 2280 SSD, PCIe NVMe, 256GB / 512GB / 1TB / 2TB each
RAID	RAID 0 / 1 support
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	None
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, MIMO 2x2, M.2 card
SIM card	Optional Nano-SIM card slot
Dimensions	Width: 366.5 mm (14.43 in). Depth: 250 mm (9.84 in). Thickness: 24.2 mm (0.95 in)
Weight	Starting at 2.07 kg (4.57 lb, UHD)

Case color	Black
Case material	*Display cover:* PC / ABS *Bottom:* PC / ABS
Media reader	SD card reader
Standard Ports	1x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 2x USB-A 3.2 Gen 1 (one Always-on), 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x SD card reader, 1x security keyhole, 1x RJ-45
Optional Ports	One optional smart card reader on left, one optional Nano-SIM card slot on rear
Monitor support	Up to 3 displays with 2 external monitors plus system LCD screen. External monitors supported via Thunderbolt and HDMI. HDMI supports up to 4K@60Hz. Thunderbolt supports up to 5K@60Hz
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • Hybrid IR camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3287 codec
Speaker	Stereo speakers with Dolby Audio support
Microphone	Optional dual array near-field microphone
Keyboard	6-row, spill-resistant, numeric keypad, multimedia Fn keys with Unified Communications controls, optional LED backlight
UltraNav	3-button TrackPoint pointing device and 2-button Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Touch style match on chip fingerprint reader on the palm rest
Battery	Integrated Li-Polymer 68Wh battery. Supports Rapid Charge (charge up to 80% in 1hr) with 135W AC adapter
Max battery life	MobileMark 2014: 10 hr. MobileMark 2018: 7.2 hr ** Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	135W slim AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Pro 64 for Workstations • Ubuntu Linux LTS
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P15v Gen 1 Platform Specifications

Processor	Supports one 10th Xeon W, Core i7, or i5 processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Xeon W-10855M	6	12	2.8GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10875H	8	16	2.3GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10850H	6	12	2.7GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10750H	6	12	2.6GHz	5.0GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i5-10300H	4	8	2.5GHz	4.5GHz	8MB	DDR4-2933	Intel UHD Graphics

Chipset	Intel WM490 Chipset
Memory Type	SO-DIMM. DDR4-3200 non-ECC or DDR4-2933 ECC. Operates at DDR4-2933. 8GB/16GB/32GB available for both ECC and non-ECC
Memory Sockets	2 DIMM sockets
Memory Protection	ECC on models with ECC DIMMs and Xeon processor
Max Memory	64GB
Graphics	Intel UHD Graphics in processor plus optional NVIDIA Quadro P620, 4GB GDDR5 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	15.6"	FHD (1920x1080)	WVA	Anti-glare	-	250 nits	16:9	700:1	45% NTSC	170°
	15.6"	FHD (1920x1080)	WVA	Anti-glare	multi-touch	300 nits	16:9	800:1	45% NTSC	170°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Anti-glare	-	600 nits	16:9	1400:1	100% Adobe	178°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	Touch enable on selected FHD models, supports 10-finger gesture
Pen	None
Storage	Up to two M.2 2280 SSD, PCIe NVMe, 256GB / 512GB / 1TB / 2TB each
RAID	RAID 0 / 1 support
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	None
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, MIMO 2x2, M.2 card
SIM card	Optional Nano-SIM card slot
Dimensions	Width: 366.5 mm (14.43 in). Depth: 250 mm (9.84 in). Thickness: 24.2 mm (0.95 in)
Weight	Starting at 2.07 kg (4.57 lb, UHD)

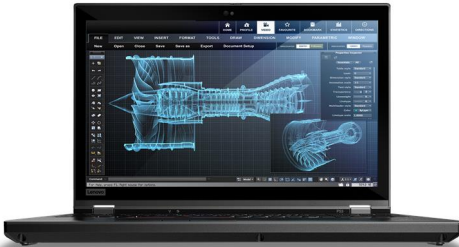|	
Case color	Black
Case material	*Display cover:* PC / ABS *Bottom:* PC / ABS
Media reader	SD card reader
Standard Ports	1x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 2x USB-A 3.2 Gen 1 (one Always-on), 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x SD card reader, 1x security keyhole, 1x RJ-45
Optional Ports	One optional smart card reader on left, one optional Nano-SIM card slot on rear
Monitor support	Up to 3 displays with 2 external monitors plus system LCD screen. External monitors supported via Thunderbolt and HDMI. HDMI supports up to 4K@60Hz. Thunderbolt supports up to 5K@60Hz
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • Hybrid IR camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3287 codec
Speaker	Stereo speakers with Dolby Audio support
Microphone	Optional dual array near-field microphone
Keyboard	6-row, spill-resistant, numeric keypad, multimedia Fn keys with Unified Communications controls, optional LED backlight
UltraNav	3-button TrackPoint pointing device and 2-button Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Touch style match on chip fingerprint reader on the palm rest
Battery	Integrated Li-Polymer 68Wh battery. Supports Rapid Charge (charge up to 80% in 1hr) with 135W AC adapter
Max battery life	MobileMark 2014: 10 hr. MobileMark 2018: 7.2 hr ** Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	135W slim AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Pro 64 for Workstations • Ubuntu Linux LTS
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

ThinkPad P17 Gen 1 Platform Specifications

Puct Specifications Reference (PSREF)*

Processor	Supports one 10th Xeon W, Core i9, i7, or i5 processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Xeon W-10885M	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Xeon W-10855M	6	12	2.8GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i9-10980HK	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i9-10885H	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10875H	8	16	2.3GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10850H	6	12	2.7GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10750H	6	12	2.6GHz	5.0GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i5-10400H	4	8	2.6GHz	4.6GHz	8MB	DDR4-2933	Intel UHD Graphics

Chipset	Intel WM490 Chipset
Memory Type	SO-DIMM. DDR4-3200 for non-ECC, DDR4-2933 for ECC. ECC and non-ECC operate at DDR4-2933. 8GB/16GB/32GB available for both ECC and non-ECC
Memory Sockets	4 DIMM sockets
Memory Protection	ECC on models with ECC DIMMs and Xeon processor
Max Memory	128GB
Graphics	Support one of the following discrete graphics: • NVIDIA Quadro T1000, 4GB GDDR6 memory • NVIDIA Quadro T2000, 4GB GDDR6 memory • NVIDIA Quadro RTX 3000, 6GB GDDR6 memory • NVIDIA Quadro RTX 4000 with Max-Q Design, 8GB GDDR6 memory • NVIDIA Quadro RTX 5000 with Max-Q Design, 16GB GDDR6 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	17.3"	FHD (1920x1080)	WVA	Anti-glare	-	300 nits	16:9	700:1	72% NTSC	160°
	17.3"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Anti-glare	-	500 nits	16:9	1500:1	100% Adobe	178°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	None
Pen	None
Storage	Up to two M.2 2280 SSD, PCIe NVMe, 256GB / 512GB / 1TB / 2TB each
RAID	RAID 0 / 1 support
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	None
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 4x4, M.2 card
SIM card	Optional Nano-SIM card slot

Dimensions	Width: 415.44 mm (16.36 in). Depth: 280.81 mm (11.06 in). Thickness: 25.11~ 33.25 mm (0.99 ~ 1.31 in)
Weight	Starting at 3.5 kg (7.7 lb, FHD)
Case color	Black
Case material	*Display cover:* GFRP 50% (PPS695 + GF 50%). *Bottom:* PPS + GF
Media reader	SD card reader
Standard Ports	1x USB-C (USB 3.2 Gen 1, PD, DP), 2x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 3x USB-A 3.2 Gen 1 (one Always-on), 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x SD card reader, 1x security keyhole, 1x RJ-45
Optional Ports	One optional smart card reader on right, one optional Nano-SIM card slot on left
Monitor support	Up to 5 displays with 4 external monitors plus system LCD screen. External monitors supported via 1x USB-C, 2x Thunderbolt, and 1x HDMI. USB-C and HDMI support up to 4K@60Hz. With Thunderbolt, one supports up to 5K@60Hz and one supports up to 4K@60Hz
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters
Bundled Accy	None
Camera	Optional Hybrid IR camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3286 codec
Speaker	Stereo speakers, Dolby Atmos sound system
Microphone	Optional dual array far-field microphone
Keyboard	6-row, spill-resistant, LED backlight, numeric keypad, multimedia Fn keys with Unified Communications controls
UltraNav	3-button TrackPoint pointing device and 2-button Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Touch style match on chip fingerprint reader on the palm rest
Battery	Integrated Li-Polymer 94Wh battery. Supports Rapid Charge (charge up to 80% in 1hr) with 230W AC adapter
Max battery life	MobileMark 2014: 14.6 hr. MobileMark 2018: 9.75 hr. * Battery life varies significantly with hardware configurations, settings, usage, & other factors
Power Adapter	One of the following: • 230W slim AC adapter • 170W slim AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Pro 64 for Workstations • Ubuntu Linux LTS
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	Please visit www.thinkworkstations.com/isv-certifications/

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ThinkPad P43s Platform Specifications

Processor	8th Generation Intel® Core™ i7 Processor						
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	i5-8365U			1.6 GHz	4.1 GHz	6MB		
	i7-8565U	4	8	1.8 GHz	4.6 GHz	8MB	DDR4-2400	Intel UHD Graphics
	i7-8665U			1.9 GHz	4.8 GHz	8MB		

Graphics	Intel UHD Graphics in processor and NVIDIA Quadro® P520, 2GB GDDR5 memory; supports external digital monitor via HDMI or USB Type-C; Up to 3 displays with 2 external monitors plus system LCD screen. Max resolution: 3840x2160@60Hz (USB-C); 3840x2160@30Hz (HDMI)
Chipset	Intel SoC (System on Chip) platform
Memory	48GB max / 2400MHz DDR4, dual-channel capable, 8GB or 16GB memory soldered to systemboard, one DDR4 SO-DIMM socket * Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation*

Display										
	Size	Resolution	Type	Surface	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle	
	14.0"	FHD (1920x1080)	WVA	Anti-glare	250 nits (non-touch) 300 nits (multi-touch)	16:9	700:1	45%	170°	
	14.0"	FHD (1920x1080) Low Power	WVA	Anti-glare	400 nits	16:9	800:1	72%	170°	
	14.0"	FHD (1920x1080) ThinkPad Privacy Guard	WVA	Anti-glare	400 nits	16:9	1000:1	72%	170°	
	14.0"	WQHD (2560x1440) Dolby Vision™ HDR	WVA	Glossy	500 nits	16:9	1500:1	100% Adobe	170°	

Multi-touch *(opt)*	On-cell touch, supports 10-finger gesture (FHD only)
Pen	None
Storage	*Supports single sided M.2 2280 drives only* • M.2 2280 SSD / SATA 6.0Gb/s • M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4 • M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2 • Intel Optane™ Memory H10 with Solid State Storage, M.2 2280, PCIe NVMe 3.0 x 4
Optical	None
Ethernet	*Non-vPro model:* Intel Ethernet Connection I219-V (Jacksonville) *vPro model:* Intel Ethernet Connection I219-LM (Jacksonville)
WLAN **Bluetooth™**	Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0 Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter
WWAN *(optional)*	*One of the following, configurable by model:* • Wireless WAN upgradable (special bid only in EMEA) • Integrated Mobile Broadband 4G LTE, Fibocom L830-EB, M.2 card (EMEA only) • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card * For non-WWAN model, it means the model is NOT WWAN upgradable*
SIM card *(opt)*	Nano-SIM card slot, optional Verizon LTE (US) SIM card

Dimensions Weight	WxDxH: 12.95" x 8.94" x 0.70"; 329mm x 227mm x 17.9mm			
	Models	FHD	FHD Low Power	WQHD
	Weight	3.43 lb / 1.55 kg	3.28 lb / 1.49 kg	3.24 lb / 1.47 kg

Case color	Black
Case material	*Display cover:* PPS / 50% GF; *Bottom:* PA / 50% GF
Smart card reader	*Optional:* Smart card reader
Media reader	MicroSD card reader
Ports	Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet (RJ-45), nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, microSD card reader, side docking connector, security keyhole * Depending on many factors, actual data transfer speed may be lower than theoretical speed*
Monitor cable *(optional)*	*HDMI to VGA:* Lenovo HDMI to VGA Monitor Adapter *USB-C to VGA:* Lenovo USB-C to VGA Adapter *USB-C to HDMI:* Lenovo USB-C to HDMI Adapter *USB-C to DP:* Lenovo USB-C to DisplayPort Adapter
Bundled Accy	None
Camera *(optional)*	*One of the following, configurable by model:* • HD720p camera with ThinkShutter camera privacy, fixed focus • IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio support	HD Audio, Realtek® ALC3287 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / optional dual array far-field microphone, headphone / microphone combo jack
Keyboard **UltraNav™**	6-row, spill-resistant, multimedia Fn keys, LED backlight TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad
Security	Power-on password, hard disk password, supervisor password, security keyhole
Security chip	Discrete TPM 2.0, TCG Certified
System Mgt *(opt)*	Intel vPro Technology
Fingerprint reader	*Optional:* Touch style match on chip fingerprint reader on the palm rest
NFC *(optional)*	Near Field Communication
Battery **Max battery life**	Integrated Li- Polymer 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr) *MobileMark® 2014:* 14.7 hr * * Battery life varies significantly with hardware configurations, settings, usage, & other factors*
AC adapter	65W or 65W slim USB Type-C AC adapter
Operating system	Windows® 10 Home 64 or Windows 10 Pro 64
Limited warranty	*One of the following, configurable by model:* • 1-year depot repair service • 3-year/1-yr battery depot repair service • 3-year/1-yr battery limited onsite service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT™ Gold; ENERGY STAR® 8.0; RoHS-compliant

Note: The specifications above may not be available in all regions.

ThinkPad P53 Platform Specifications

Processor	9th Generation Intel® Core™ i5 / i7 / i9 Processor or Intel Xeon® E Processor

Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
i5-9400H	4	8	2.5 GHz	4.3 GHz	8MB	DDR4-2666	Intel UHD Graphics 630
i7-9750H	6	12	2.6 GHz	4.5 GHz	12MB		
i7-9850H	6	12	2.6 GHz	4.6 GHz	12MB		
i9-9880H	8	16	2.3 GHz	4.8 GHz	16MB		
E-2276M	6	12	2.8 GHz	4.7 GHz	12MB		Intel UHD Graphics P630

Graphics
Intel UHD Graphics 630 or P630 in processor and
NVIDIA® Quadro® T1000 (4GB GDDR5), T2000 (4GB GDDR5),
RTX 3000 (6GB GDDR6, VR ready), RTX 4000 (8GB GDDR6, VR ready), or
RTX 5000 (16GB GDDR6, VR ready);
supports external digital monitor via HDMI or Thunderbolt™;
Up to 5 displays with 4 external monitors plus system LCD screen.
Max resolution: 5K@60Hz (Thunderbolt); 4K@60Hz (USB-C or HDMI)

Chipset
Mobile Intel CM246 Chipset
Memory
128GB max / 2666MHz DDR4 (ECC function supported only on Xeon processor),
dual-channel capable, four DDR4 SO-DIMM sockets

Display

Size	Resolution	Type	Surface	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
15.6"	FHD (1920x1080)	WVA	Anti-glare	300 nits	16:9	700:1	72%	160°
15.6"	FHD (1920x1080) Dolby Vision™ HDR	WVA	Anti-glare	500 nits	16:9	1200:1	72%	160°
15.6"	UHD (3840x2160) Dolby Vision HDR	WVA	Anti-glare	500 nits	16:9	1200:1	100%	170°
15.6"	UHD (3840x2160) Dolby Vision HDR, Multi-touch	OLED	Anti-reflection / Anti-smudge	SDR 400nit, HDR 500nit (peak)	16:9	100000:1	100% DCI-P3	170°

Multi-touch (opt)
Capacitive-type multi-touch, supports 10-finger gesture (UHD only),
anti-reflection (AR), anti-smudge (AS) coating
Pen (optional)
Lenovo Pen Pro (special bid only)

Storage
Up to 3 drives (3x M.2 SSD or 1x HDD + 2x M.2 SSD),
supports single sided M.2 2280 drives only
• HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
• M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
* HDD is only available for T1000 and T2000 graphics model

Optane™ memory *Optional:* Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2
RAID (optional) RAID 0/1/5 support
Optical None

Ethernet
Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)
vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

WLAN (optional) Intel Wi-Fi 6 AX200, Wi-Fi 2x2 802.11ax + Bluetooth 5.1
Bluetooth™ (opt) Bluetooth 5.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter

WWAN (optional) *One of the following, configurable by model:*
• Wireless WAN upgradable (special bid only in EMEA)
• Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
* For non-WWAN model, it means the model is NOT WWAN upgradable
SIM card (opt) Nano-SIM card slot, optional Verizon LTE (US) SIM card

Dimensions
WxDxH (non-touch): 14.86" x 9.93" x 0.96-1.16";
377.4mm x 252.3mm x 24.5-29.4mm
WxDxH (multi-touch): 14.86" x 9.93" x 1.02-1.21";
377.4mm x 252.3mm x 25.8-30.7mm
Weight
Non-touch model: starting at 5.51 lb / 2.5 kg;
Multi-touch model: starting at 6.4 lb / 2.9 kg
Case color Black
Case material
Display cover: Glass-Fiber Reinforced Plastic;
Bottom: Magnesium/Aluminum

Smart card reader *Optional:* Smart card reader
ExpressCard None
Media reader 4-in-1 reader (MMC, SD, SDHC, SDXC), supports UHS-II SD card
Ports
Two USB 3.1 Gen 1 (one Always On),
one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort),
two USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP),
HDMI 2.0, Ethernet (RJ-45), nano-SIM card slot (WWAN models),
headphone / microphone combo jack, optional smart card reader,
4-in-1 reader (MMC, SD, SDHC, SDXC), security keyhole
* Power Delivery only supports power-out for charging peripherals
* USB-C Dock is not supported in right-side USB-C port
* Depending on many factors, actual data transfer speed may be lower than theoretical speed

Monitor cable (optional)
HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter
USB-C to VGA: Lenovo USB-C to VGA Adapter
USB-C to DP: Lenovo USB-C to DisplayPort Adapter
Bundled Accy None

Camera (optional) *One of the following, configurable by model:*
• HD720p camera with ThinkShutter camera privacy, fixed focus
• IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio support
HD Audio, Synaptic® CX11880 codec / stereo speakers, 2W x 2 /
optional dual array far-field microphone, headphone / microphone combo jack,
Dolby Atmos® sound system

Keyboard 6-row, spill-resistant, multimedia Fn keys, numeric keypad, LED backlight
UltraNav™ 3-button TrackPoint® pointing device and
3-button Mylar surface multi-touch touchpad

Security Power-on password, hard disk password, supervisor password, security keyhole
Security chip Discrete TPM 2.0, TCG Certified
vPro (optional) Intel vPro Technology
Fingerprint reader Touch style match on chip fingerprint reader on the palm rest
Color calibration *Optional:* X-Rite Pantone factory color calibration (UHD model only)
NFC (optional) Near Field Communication

Battery Integrated Li- Polymer 90Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
Max battery life *Discrete mode:* 8 hr; *Hybrid mode:* 13 hr
(MobileMark® 2014) ** Battery life varies significantly with hardware configurations, settings, usage, & other factors*
AC adapter 170W or 230W slim tip AC adapter

Operating system *One of the following, configurable by model:*
• Windows® 10 Home 64
• Windows 10 Pro 64
• Windows 10 Pro 64 for Workstations

Limited warranty *One of the following, configurable by model:*
• 1-year depot repair service
• 3-year/1-yr battery depot repair service
• 3-year/1-yr battery limited onsite service

Mil-Spec test MIL-STD-810G military testing

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

Note: The specifications above may not be available in all regions.

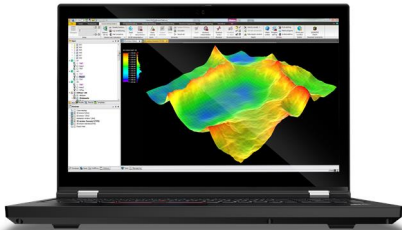# ThinkPad P53s Platform Specifications

Processor	8th Generation Intel® Core™ i7 Processor							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	i5-8365U			1.6 GHz	4.1 GHz	6MB		
	i7-8565U	4	8	1.8 GHz	4.6 GHz	8MB	DDR4-2400	Intel UHD Graphics
	i7-8665U			1.9 GHz	4.8 GHz	8MB		

Graphics	Intel UHD Graphics in processor and NVIDIA Quadro® P520, 2GB GDDR5 memory; supports external digital monitor via HDMI or USB Type-C; supports 3 independent displays with 2 external monitors plus system LCD screen. Max resolution: 3840x2160@60Hz (USB-C); 3840x2160@30Hz (HDMI)
Chipset Memory	Intel SoC (System on Chip) platform 48GB max / 2400MHz DDR4, dual-channel capable, 8GB or 16GB memory soldered to systemboard, one DDR4 SO-DIMM socket ** Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation*

Display									
	Size	Resolution	Type	Surface	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	15.6"	FHD (1920x1080)	WVA	Anti-glare	250 nits	16:9	700:1	45%	170°
	15.6"	UHD (3840x2160) Dolby Vision™ HDR	WVA	Anti-glare	500 nits	16:9	1200:1	100% Adobe	170°

Multi-touch *(opt)*	On-cell touch, supports 10-finger gesture (FHD only)
Pen	None
Storage	*Supports single sided M.2 2280 drives only* • M.2 2280 SSD / SATA 6.0Gb/s • M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4 • M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2 • Intel Optane™ Memory H10 with Solid State Storage, M.2 2280, PCIe NVMe 3.0 x 4
Optical	None
Ethernet	*Non-vPro model:* Intel Ethernet Connection I219-V (Jacksonville) *vPro model:* Intel Ethernet Connection I219-LM (Jacksonville)
WLAN Bluetooth™	Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0 Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter
WWAN *(optional)*	*One of the following, configurable by model:* • Wireless WAN upgradable (special bid only in EMEA) • Integrated Mobile Broadband 4G LTE, Fibocom L830-EB, M.2 card (EMEA only) • Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card ** For non-WWAN model, it means the model is NOT WWAN upgradable*
SIM card *(opt)*	Nano-SIM card slot, optional Verizon LTE (US) SIM card

Dimensions Weight Case color Case material	*WxDxH:* 14.40" x 9.76" x 0.75"; 365.8mm x 248mm x 19.1mm starting at 3.87 lb / 1.75 kg Black *Display cover:* PPS / 50% GF; *Bottom:* PA / 50% GF
Smart card reader	*Optional:* Smart card reader
Media reader	MicroSD card reader
Ports	Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet (RJ-45), nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, microSD card reader, side docking connector, security keyhole ** Depending on many factors, actual data transfer speed may be lower than theoretical speed*
Monitor cable *(optional)*	*HDMI to VGA:* Lenovo HDMI to VGA Monitor Adapter *USB-C to VGA:* Lenovo USB-C to VGA Adapter *USB-C to DP:* Lenovo USB-C to DisplayPort Adapter
Bundled Accy	None
Camera *(optional)*	*One of the following, configurable by model:* • HD720p camera with ThinkShutter camera privacy, fixed focus • IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio support	HD Audio, Realtek® ALC3287 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / optional dual array far-field microphone, headphone / microphone combo jack
Keyboard UltraNav™	6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad
Security Security chip System Mgt *(opt)*	Power-on password, hard disk password, supervisor password, security keyhole Discrete TPM 2.0, TCG Certified Intel vPro Technology
Fingerprint reader	*Optional:* Touch style match on chip fingerprint reader on the palm rest
NFC *(optional)*	Near Field Communication
Battery Max battery life	Integrated Li- Polymer 57Wh battery, supports Rapid Charge (charge up to 80% in 1hr) *MobileMark® 2014:* 15 hr (FHD model) / 10 hr (UHD model)
AC adapter	** Battery life varies significantly with hardware configurations, settings, usage, & other factors* 65W USB Type-C AC adapter
Operating system	Windows® 10 Home 64 or Windows 10 Pro 64
Limited warranty	*One of the following, configurable by model:* • 1-year depot repair service • 3-year/1-yr battery depot repair service • 3-year/1-yr battery limited onsite service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT™ Gold; ENERGY STAR® 8.0; RoHS-compliant

Note: The specifications above may not be available in all regions.

ThinkPad P73 Platform Specifications

Processor	9th Generation Intel® Core™ i5 / i7 / i9 Processor or Intel Xeon® E Processor

Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
i5-9400H	4	8	2.5 GHz	4.3 GHz	8MB	DDR4-2666	Intel UHD Graphics 630
i7-9750H	6	12	2.6 GHz	4.5 GHz	12MB		
i7-9850H	6	12	2.6 GHz	4.6 GHz	12MB		
i9-9880H	8	16	2.3 GHz	4.8 GHz	16MB		
E-2276M	6	12	2.8 GHz	4.7 GHz	12MB		Intel UHD Graphics P630

Graphics
Intel UHD Graphics 630 or P630 in processor and
NVIDIA Quadro® P620 (4GB GDDR5), T2000 (4GB GDDR5),
RTX 3000 (6GB GDDR6, VR ready), RTX 4000 Max-Q (8GB GDDR6, VR ready),
or RTX 5000 Max-Q (16GB GDDR6, VR ready);
Up to 5 displays with 4 external monitors plus system LCD screen. External monitors supported via USB-C, Thunderbolt, and HDMI
Max resolution: 5K@60Hz (Thunderbolt); 4K@60Hz (USB-C or HDMI)

Chipset Mobile Intel CM246 Chipset
Memory 128GB max / 2666MHz DDR4 (ECC function supported only on Xeon processor), dual-channel capable, four DDR4 SO-DIMM sockets

Display

Size	Resolution	Type	Surface	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
17.3"	FHD (1920x1080)	WVA	Anti-glare	300 nits	16:9	700:1	72%	160°
17.3"	UHD (3840x2160) Dolby Vision™ HDR	WVA	Anti-glare	400 nits	16:9	1000:1	100%	170°

Multi-touch None
Pen None

Storage *Up to 3 drives (two M.2 SSD and one HDD), supports single sided M.2 2280 drives only*
• HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
• M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4

Optane™ memory *Optional:* Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2
RAID *(optional)* RAID 0/1 support
Optical None

Ethernet *Non-vPro model:* Intel Ethernet Connection I219-V (Jacksonville)
vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

WLAN *(optional)* Intel Wi-Fi 6 AX200, Wi-Fi 2x2 802.11ax + Bluetooth 5.1
Bluetooth™ *(opt)* Bluetooth 5.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter

WWAN None
SIM card None

Dimensions *WxDxH:* 16.38" x 11.06" x 1.02-1.22"; 416mm x 281mm x 25.9-31mm
Weight Starting at 7.5 lb (3.4kg)
Case color Black
Case material *Display cover:* GFRP + PPS;
Bottom: Magnesium/Aluminum

Smart card reader *Optional:* Smart card reader
ExpressCard None
Media reader 4-in-1 reader (MMC, SD, SDHC, SDXC), supports UHS-II SD card
Ports Three USB 3.1 Gen 1 (one Always On),
one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort),
two USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP),
HDMI 2.0, Ethernet (RJ-45), headphone / microphone combo jack,
optional smart card reader, 4-in-1 reader (MMC, SD, SDHC, SDXC),
security keyhole
* Power Delivery only supports power-out for charging peripherals
* Depending on many factors, actual data transfer speed may be lower than theoretical speed

Monitor cable *(optional)*
HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter
USB-C to VGA: Lenovo USB-C to VGA Adapter
USB-C to DP: Lenovo USB-C to DisplayPort Adapter

Bundled Accy None

Camera *(optional)* IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
Audio support HD Audio, Synaptic® CX11880 codec / stereo speakers, 2W x 2 /
dual array far-field microphone, headphone / microphone combo jack,
Dolby Atmos® sound system

Keyboard 6-row, spill-resistant, multimedia Fn keys, numeric keypad, LED backlight
UltraNav™ 3-button TrackPoint® pointing device and
3-button Mylar surface multi-touch touchpad

Security Power-on password, hard disk password, supervisor password, security keyhole
Security chip Discrete TPM 2.0, TCG Certified
vPro *(optional)* Intel vPro Technology
Fingerprint reader Touch style match on chip fingerprint reader on the palm rest
Color calibration *Optional:* X-Rite Pantone factory color calibration (UHD model only)
NFC *(optional)* Near Field Communication

Battery Integrated Li- Polymer 99Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
Max battery life *MobileMark® 2014:* 17.2 hr
* Battery life varies significantly with hardware configurations, settings, usage, & other factors
AC adapter 170W or 230W slim tip AC adapter

Operating system *One of the following, configurable by model:*
• Windows® 10 Home 64
• Windows 10 Pro 64
• Windows 10 Pro 64 for Workstations

Limited warranty *One of the following, configurable by model:*
• 1-year depot repair service
• 3-year/1-yr battery depot repair service
• 3-year/1-yr battery limited onsite service

Mil-Spec test MIL-STD-810G military testing

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

Note: The specifications above may not be available in all regions.

ThinkPad T15g Gen 1 Platform Specifications

Processor	Supports one 10th Xeon W, Core i9, i7, or i5 processor as following:							
	Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Types	Processor Graphics
	Xeon W-10885M	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Xeon W-10855M	6	12	2.8GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i9-10980HK	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i9-10885H	8	16	2.4GHz	5.3GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10875H	8	16	2.3GHz	5.1GHz	16MB	DDR4-2933	Intel UHD Graphics
	Core i7-10850H	6	12	2.7GHz	5.1GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i7-10750H	6	12	2.6GHz	5.0GHz	12MB	DDR4-2933	Intel UHD Graphics
	Core i5-10400H	4	8	2.6GHz	4.6GHz	8MB	DDR4-2933	Intel UHD Graphics

Chipset	Intel WM490 Chipset
Memory Type	SO-DIMM. DDR4-3200 non-ECC or DDR4-2933 ECC. Both ECC and non-ECC operate at DDR4-2933. 8GB/16GB/32GB available for both ECC and non-ECC
Memory Sockets	4 DIMM sockets
Memory Protection	ECC on models with ECC DIMMs and Xeon processor
Max Memory	128GB
Graphics	Support one of the following discrete graphics: • NVIDIA GeForce RTX 2070 SUPER with Max-Q Design, 8GB GDDR6 memory • NVIDIA GeForce RTX 2080 SUPER with Max-Q Design, 8GB GDDR6 memory

Display	Size	Resolution	Type	Surface	Touch	Brightness	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle
	15.6"	FHD (1920x1080)	WVA	Anti-glare	-	300 nits	16:9	700:1	72% NTSC	160°
	15.6"	FHD (1920x1080) Dolby Vision, HDR 400	WVA	Anti-glare	-	500 nits	16:9	1200:1	72% NTSC	160°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 400	WVA	Anti-glare	-	600 nits	16:9	1400:1	100% Adobe	178°
	15.6"	UHD (3840x2160) Dolby Vision, HDR 400	OLED	Anti-reflection / Anti-smudge	multi-touch	SDR 400nit, HDR 500nit (peak)	16:9	100000:1	100% DCI-P3	170°

Color Calibration	Factory Color Calibration on UHD panels
Touchscreen	Touch enable on selected UHD OLED models, supports 10-finger gesture
Pen	Optional Lenovo Pen Pro
Storage	Up to two M.2 2280 SSD, PCIe NVMe, 256GB / 512GB / 1TB / 2TB each
RAID	RAID 0 / 1 support
Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
NFC	None
WLAN + Bluetooth	Optional Intel Wi-Fi 6 AX201 on most models, Wi-Fi 2x2 802.11ax + Bluetooth 5.1. Bluetooth 5.1 requires the latest version of Windows 10 (version 2004 or above)
WWAN	One of the following, configurable by model: • No WWAN card and non upgradable • Integrated Mobile Broadband Upgradable, No WWAN Card, WWAN Antenna Only • Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 4x4, M.2 card *Note: WWAN cannot be supported on UHD WVA models*

SIM card	Optional Nano-SIM card slot
Dimensions	Width: 375.4 mm (14.78 in). Depth: 252.3 mm (9.93 in). Thickness for non-touch models: 24.5 ~ 31.45 mm (0.96 ~ 1.24 in) Thickness for touch models: 25.25 ~ 32.2mm (0.99 ~ 1.27 in)
Weight	Starting at 2.74 kg (6.05 lb, FHD)
Case color	Black
Case material	*Display cover:* GFRP 50% (PPS695 + GF 50%). *Bottom:* PPS + GF
Media reader	SD card reader
Standard Ports	1x USB-C (USB 3.2 Gen 1, PD, DP), 2x Thunderbolt (USB-C form, Thunderbolt 3, USB 3.2 Gen 2, PD, DP), 2x USB-A 3.2 Gen 1 (one Always-on), 1x HDMI 2.0, 1x headphone / microphone combo jack, 1x SD card reader, 1x security keyhole, 1x RJ-45
Optional Ports	One optional smart card reader on right, one optional Nano-SIM card slot on left
Monitor support	Up to 5 displays with 4 external monitors plus system LCD screen. External monitors supported via 1x USB-C, 2x Thunderbolt, and 1x HDMI. USB-C and HDMI support up to 4K@60Hz. With Thunderbolt, one supports up to 5K@60Hz and one supports up to 4K@60Hz
Monitor cable	Optional HDMI to VGA, USB-C to DP, or USB-C to VGA adapters
Bundled Accy	None
Camera	Supports one optional camera as following: • HD720p camera with ThinkShutter camera privacy, fixed focus • Hybrid IR camera with ThinkShutter camera privacy, fixed focus
Audio chip	Realtek ALC3286 codec
Speaker	Stereo speakers, Dolby Atmos sound system
Microphone	Optional dual array far-field microphone
Keyboard	6-row, spill-resistant, LED backlight, numeric keypad, multimedia Fn keys with Unified Communications controls.
UltraNav	3-button TrackPoint pointing device and 2-button Mylar surface multi-touch touchpad
Password	Power-on password, hard disk password, supervisor password
Security chip	Discrete TPM 2.0, TCG Certified, may be disabled in some regions
System mgmt	Optional Intel vPro Technology supported on vPro enable models
Security locks	Security keyhole for optional Kensington lock
Smart card reader	Optional
Fingerprint reader	Touch style match on chip fingerprint reader on the palm rest
Battery	Integrated Li-Polymer 94Wh battery. Supports Rapid Charge (charge up to 80% in 1hr) with 230W AC adapter
Max battery life	MobileMark 2014: 16.4 hr. MobileMark 2018: 10.3 hr *Battery life varies significantly with hardware configurations, settings, usage, & other factors*
Power Adapter	One of the following: • 230W slim AC adapter • 170W slim AC adapter
Operating system	Supports one optional preloaded operating system as following: • Windows 10 Home 64 • Windows 10 Pro 64 • Windows 10 Pro 64 for Workstations • Ubuntu Linux LTS • Fedora Linux
Base Warranty	Optional warranty plans as following: • 1-year depot repair service • 3-year depot repair service • 1-year + 2-year depot repair service • 1-year limited onsite service • 3-year limited onsite service • 1-year + 2-year limited onsite service • 1-year depot with 2-year system board repair service
Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	None

ThinkPad T15g Gen 1 Platform Specifications

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Optical	None
Ethernet	One onboard GbE port via integrated gigabit ethernet, Intel i219LM for vPro models or i219V for non-vPro models
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Mil-Spec test	MIL-STD-810G military testing
Environment	EPEAT Gold. ENERGY STAR 8.0. RoHS-compliant
ISV certifications	None