PERFORMANCE

Processor

Processor Family

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

Processor

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

Operating System

Operating System

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

Graphics

Graphics

Graphics	Type	Memory	Key Features
NVIDIA® Quadro® RTX 3000	Discrete	6GB GDDR6	DirectX® 12
NVIDIA Quadro RTX 4000 Max-Q	Discrete	8GB GDDR6	DirectX 12
NVIDIA Quadro RTX 5000 Max-Q	Discrete	16GB GDDR6	DirectX 12
NVIDIA Quadro T1000	Discrete	4GB GDDR5	DirectX 12
NVIDIA Quadro T2000	Discrete	4GB GDDR5	DirectX 12

Monitor Support

Monitor Support

Supports up to 5 independent displays via native display and 4 external monitors; supports external monitors via HDMI® (up to 4K@60Hz), USB-C (up to 4K@60Hz) or Thunderbolt™ (up to 5K@60Hz)

Chipset

Chipset

Intel CM246 chipset

Memory

Memory Type

- DDR4-2666 ECC (8GB / 16GB / 32GB available)
- DDR4-2666 non-ECC (8GB / 16GB / 32GB available)

Memory Slots

Four DDR4 SO-DIMM slots, dual-channel capable

Memory Protection

ECC on models with ECC DIMMs and Xeon processor

Max Memory[1]

Up to 128GB

Notes:

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

Storage

Storage Support

Up to three drives, 1x 2.5″ HDD + 2x M.2 2280 SSD or 3x M.2 2280 SSD
• 2.5″ HDD up to 2TB
• M.2 2280 SSD up to 2TB each

RAID

RAID 0/1/5 support

Storage Type

Disk Type	Interface	RPM	Security
2.5″ SATA HDD	SATA 6Gb/s	7.2K	-
2.5″ SATA HDD	SATA 6Gb/s	5.4K	-
M.2 2280 SSD	PCIe NVMe, PCIe 3.0 x4	-	-
M.2 2280 SSD	PCIe NVMe, PCIe 3.0 x4	-	Opal2

Removable Storage

Optical

None

Card Reader

4-in-1 card reader (SD, SDHC, SDXC, MMC)

Multi-Media

Audio Chip

High Definition (HD) Audio, Synaptic® CX11880 codec

Speakers

Stereo speakers, 2W x2, Dolby® Atmos®

Microphone

• Dual array microphone, far-field
• No microphone

Camera

• 720p, with ThinkShutter, fixed focus
• IR & 720p, with ThinkShutter, fixed focus
• No camera

Battery

Battery

Integrated Li-Polymer 90Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

Max Battery Life[1]

MobileMark® 2014: 8 hr (discrete mode) or 13 hr (hybrid mode)

Notes:

1. All battery life claims are approximate maximum and based on results using the MobileMark 2014, MobileMark 2018, and/or JEITA 2.0 battery-life benchmark tests. Actual battery life will vary and depends on many factors such as product configuration and usage, software use, wireless functionality, power management settings, and screen brightness. The maximum capacity of the battery will decrease with time and use.

Power Adapter

Power Adapter

• 170W slim tip AC adapter
• 230W slim tip AC adapter

DESIGN

Display

Display[2]

Size	Resolution	Touch	Type	Brightness	Surface	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle	Key Features
15.6″	FHD (1920x1080)	None	IPS	500 nits	Anti-glare	16:9	1200:1	72%	160°	Dolby Vision™, HDR
15.6″	FHD (1920x1080)	None	IPS	300 nits	Anti-glare	16:9	700:1	72%	160°	-
15.6″	UHD (3840x2160)	None	IPS	500 nits	Anti-glare	16:9	1200:1	100%	170°	Dolby Vision, HDR
15.6″	UHD (3840x2160)	Multi-touch	OLED	SDR 400nit, HDR 500nit (peak)	Anti-reflection Anti-smudge	16:9	100000:1	100% DCI-P3	170°	Dolby Vision, HDR

Color Calibration

- X-Rite Pantone factory color calibration (UHD display)
- No color calibration

Touchscreen

- On-cell touch, supports 10-point touch
- Non-touch

Notes:
1. California Electronic Waste Recycling Fee
   In California, per state law, Lenovo charges an electronic waste recycling fee on this covered device at the time of sale of the product.
   For more information, go to https://www.calrecycle.ca.gov/Electronics/Consumer
2. For non-OLED display, HDR is only supported under hybrid mode

Input Device

Pen

- Lenovo Pen Pro
- None

Keyboard

6-row, spill-resistant, multimedia Fn keys, numeric keypad

Keyboard Backlight

LED backlight

UltraNav™

3-button TrackPoint® pointing device and 3-button Mylar® surface multi-touch touchpad

Mechanical

Dimensions (WxDxH)

Models	Dimensions
Non-touch models	377.4 x 252.3 x 24.5-29.4 mm (14.86 x 9.93 x 0.96-1.16 inches)
Touch models	377.4 x 252.3 x 25.8-30.7 mm (14.86 x 9.93 x 1.02-1.21 inches)

Weight

Models	Weight
Non-touch models	2.5 kg (5.51 lbs)
Multi-touch models	2.9 kg (6.4 lbs)

Case Color

Black

Case Material

GFRP (top), Magnesium-aluminum (bottom)

CONNECTIVITY

Network

Onboard Ethernet

- Gigabit Ethernet, Intel Ethernet Connection I219-V (non-vPro models)
- Gigabit Ethernet, Intel Ethernet Connection I219-LM (vPro models)

WLAN + Bluetooth™

- Intel Wi-Fi 6 AX200, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, M.2 card
- No WLAN and Bluetooth

WWAN

- Wireless WAN upgradable
- Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
- Not Support

SIM Card

- Nano-SIM Card, Verizon LTE (US)
- No SIM card

NFC

- Near Field Communication
- Not support

Ports[1]

Standard Ports[3]

- 1x USB-C 3.1 Gen 1 (support data transfer, Power Delivery and DisplayPort™)
- 2x USB 3.1 Gen 1 (one Always On)
- 1x Security keyhole
- 2x USB-C 3.1 Gen 2 / Thunderbolt 3 (support data transfer, Power Delivery and DisplayPort)
- 1x HDMI 2.0
- 1x SD card reader
- 1x Ethernet (RJ-45)
- 1x headphone / microphone combo jack (3.5mm)

Optional Ports

- 1x Smart card reader
- 1x Nano-SIM card slot (WWAN models)

Notes:
1. The transfer speed of following ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes and other factors related to system configuration and your operating environment, will be slower than theoretical speed.
   USB 2.0: 480 Mbit/s;
   USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formely USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
   USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formely USB 3.1 Gen 2): 10 Gbit/s;
   USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
   Thunderbolt 3: 40 Gbit/s;
   FireWire 400: 400 Mbit/s;
   FireWire 800: 800 Mbit/s
2. Depending on many factors, actual data transfer speed may be lower than theoretical speed
3. Power Delivery only supports power-out for charging peripherals
   - USB-C Dock is not supported in right-side USB-C port

Monitor Cable

Monitor Cable

- Lenovo HDMI to VGA Monitor Adapter
- Lenovo USB-C to DisplayPort Adapter
- Lenovo USB-C to VGA Adapter
- No monitor cable

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

Kensington® Security Slot

Smart Card Reader

- Smart card reader
- No smart card reader

Fingerprint Reader

Touch style fingerprint reader on palm rest, match-on-chip

BIOS Security

- Power-on password
- Supervisor password
- Hard disk password
- Self-healing BIOS

Other Security

- (Optional) ThinkShutter camera cover
- (Optional) IR camera for Windows Hello

MANAGEABILITY

System Management

System Management

- Intel vPro Technology, DASH
- None

SERVICE

Warranty

Base Warranty

- 1-year depot service
- 1-year depot with 2-year system board service
- 3-year (1-yr battery) depot service
- 3-year (1-yr battery) limited onsite service
- No base warranty

ACCESSORIES

Bundled Accessories

Bundled Accessories

None

CERTIFICATIONS

Green Certifications

Green Certifications

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

Other Certifications

Mil-Spec Test

MIL-STD-810G military test passed

ISV Certifications

ISV Certifications

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