

## 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

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

### Graphics

Graphics	Type	Memory	Key Features
NVIDIA® Quadro® P620	Discrete	4GB GDDR5	DirectX® 12
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 T2000	Discrete	4GB GDDR5	DirectX 12

### 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

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

Up to 128GB

#### Notes:

- 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

- 2.5" HDD up to 2TB
- M.2 2280 SSD up to 2TB each

#### RAID

RAID 0/1 support

#### Storage Type

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

## Removable Storage

#### Optical

None

#### Card Reader

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

## 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

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

## Battery

#### Battery

Integrated Li-Polymer 99Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

#### Max Battery Life

MobileMark® 2014: 17.2 hr

#### Notes:

- 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

- 170W slim tip AC adapter
- 230W slim tip AC adapter

## DESIGN

## Display

#### Display

Size	Resolution	Touch	Type	Brightness	Surface	Aspect Ratio	Contrast Ratio	Color Gamut	Viewing Angle	Key Features
17.3"	FHD (1920x1080)	None	IPS	300 nits	Anti-glare	16:9	700:1	72% NTSC	160°	-
17.3"	UHD (3840x2160)	None	IPS	400 nits	Anti-glare	16:9	1000:1	100%	170°	Dolby Vision™, HDR

**Notes:**

- 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>

**Color Calibration**

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

**Touchscreen**

Non-touch

**Input Device****Pen**

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)**

416 x 281 x 25.9-31 mm (16.38 x 11.06 x 1.02-1.22 inches)

**Weight**

3.4 kg (7.5 lbs)

**Case Color**

Black

**Case Material**

GFRP + PPS (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™**

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

**WWAN**

Not Support

**SIM Card**

No SIM card

**NFC**

- Near Field Communication

- Not support

## Ports

### Standard Ports

- 3x USB 3.1 Gen 1 (one Always On)
- 1x USB-C 3.1 Gen 1 (support data transfer, Power Delivery and DisplayPort™)
- 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)
- 1x Security keyhole

### Notes:

- Depending on many factors, actual data transfer speed may be lower than theoretical speed
- Power Delivery only supports power-out for charging peripherals

### Optional Ports

1x Smart card reader

## Monitor Cable

- Lenovo HDMI to VGA Monitor Adapter
- Lenovo USB-C to DisplayPort Adapter
- Lenovo USB-C to VGA Adapter

## 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) IR camera for Windows Hello

## MANAGEABILITY

### 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

## ACCESSORIES

### Bundled Accessories

None

## CERTIFICATIONS

### Green Certifications

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

### Other Certifications

#### Mil-Spec Test

MIL-STD-810G military test passed

### ISV Certifications

Please visit [www.thinkworkstations.com/isv-certifications/](http://www.thinkworkstations.com/isv-certifications/)

