

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/

LaptopVANG.com



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