PERFORMANCE

Processor

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

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

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

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Type</th>
<th>Memory</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA® Quadro® RTX 3000</td>
<td>Discrete</td>
<td>6GB GDDR6</td>
<td>DirectX® 12</td>
</tr>
<tr>
<td>NVIDIA Quadro RTX 4000 Max-Q</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA Quadro RTX 5000 Max-Q</td>
<td>Discrete</td>
<td>16GB GDDR6</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA Quadro T1000</td>
<td>Discrete</td>
<td>4GB GDDR5</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA Quadro T2000</td>
<td>Discrete</td>
<td>4GB GDDR5</td>
<td>DirectX 12</td>
</tr>
</tbody>
</table>

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 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
<table>
<thead>
<tr>
<th>Disk Type</th>
<th>Interface</th>
<th>RPM</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5&quot; SATA HDD</td>
<td>SATA 6Gb/s</td>
<td>5.4K</td>
<td>-</td>
</tr>
<tr>
<td>2.5&quot; SATA HDD</td>
<td>SATA 6Gb/s</td>
<td>7.2K</td>
<td>-</td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe 3.0 x4</td>
<td>-</td>
<td>Opal2</td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe 3.0 x4</td>
<td>-</td>
<td>Opal2</td>
</tr>
</tbody>
</table>

Removable Storage
Optical
Not Support
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
• Not configured
Camera
• 720p, with ThinkShutter, fixed focus
• IR & 720p, with ThinkShutter, fixed focus
• Not configured

Battery
Battery
Integrated Li-Polymer 90Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
Max Battery Life
MobileMark® 2014: 8 hr (discrete mode) or 13 hr (hybrid mode)

Notes:
• All battery life claims are approximate maximum and based on results using the MobileMark 2014 and/or MobileMark 2018 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

Size | Resolution | Touch | Type | Brightness | Surface | Aspect | Contrast | Color | Viewing | Key
---|------------|-------|------|-----------|---------|--------|----------|-------|---------|-----
### ThinkPad P53

<table>
<thead>
<tr>
<th>Model</th>
<th>Display Type</th>
<th>Resolution</th>
<th>Color</th>
<th>Nits</th>
<th>Finish</th>
<th>Ratio</th>
<th>Color</th>
<th>Angle</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.6” FHD</td>
<td>None</td>
<td>IPS</td>
<td>Anti-glare</td>
<td>500</td>
<td>None</td>
<td>16:9</td>
<td>1200:1</td>
<td>72%</td>
<td>160°</td>
</tr>
<tr>
<td>15.6” FHD</td>
<td>None</td>
<td>IPS</td>
<td>Anti-glare</td>
<td>300</td>
<td>None</td>
<td>16:9</td>
<td>700:1</td>
<td>72%</td>
<td>160°</td>
</tr>
<tr>
<td>15.6” UHD</td>
<td>None</td>
<td>IPS</td>
<td>Anti-glare</td>
<td>500</td>
<td>None</td>
<td>16:9</td>
<td>1200:1</td>
<td>100%</td>
<td>170°</td>
</tr>
<tr>
<td>15.6” UHD</td>
<td>Multi-touch</td>
<td>OLED</td>
<td>Anti-reflection Anti-smudge</td>
<td>16:9</td>
<td>100000:1</td>
<td>100% DCI-P3</td>
<td>170°</td>
<td>Dolby Vision, HDR</td>
<td></td>
</tr>
</tbody>
</table>

**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)
- Not configured

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

**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)

<table>
<thead>
<tr>
<th>Models</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-touch models</td>
<td>377.4 x 252.3 x 24.5-29.4 mm (14.86 x 9.93 x 0.96-1.16 inches)</td>
</tr>
<tr>
<td>Touch models</td>
<td>377.4 x 252.3 x 25.8-30.7 mm (14.86 x 9.93 x 1.02-1.21 inches)</td>
</tr>
</tbody>
</table>

**Weight**

<table>
<thead>
<tr>
<th>Models</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-touch models</td>
<td>2.5 kg (5.51 lbs)</td>
</tr>
<tr>
<td>Multi-touch models</td>
<td>2.9 kg (6.4 lbs)</td>
</tr>
</tbody>
</table>

**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
• Not configured

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

SIM Card
• Nano-SIM Card, Verizon LTE (US)
• Not configured

NFC
• Near Field Communication
• Not support

Ports
Standard Ports
• 2x USB 3.1 Gen 1 (one Always On)
• 1x USB-C 3.1 Gen 1 (support data, PD and DP)
• 2x USB-C 3.1 Gen 2 / Thunderbolt 3 (support data, PD and DP)
• 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
• - USB-C Dock is not supported in right-side USB-C port

Optional Ports
• 1x Nano-SIM card slot (WWAN models)
• 1x Smart Card Reader

Monitor Cable
• Lenovo HDMI to VGA Monitor Adapter
• Lenovo USB-C to DisplayPort™ Adapter
• Lenovo USB-C to VGA Adapter
• Not configured

SECURITY & PRIVACY

Security
Security Chip
• Discrete TPM 2.0, TCG certified
• Firmware TPM 2.0 integrated in chipset
• Disabled (in some regions)

Physical Locks
Kensington® Security Slot

Smart Card Reader
• Smart card reader
• Not configured

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

MANAGEABILITY

System Management

- Intel vPro Technology, DASH
- None

SERVICE

Warranty

Base Warranty

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

ACCESSORIES

Bundled Accessories

Not Support

CERTIFICATIONS

Green Certifications

- EPEAT™ Gold
- ENERGY STAR® 8.0
- RoHS

Other Certifications

Mil-Spec Test

MIL-STD-810G military test passed

ISV Certifications

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