## OVERVIEW

<table>
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<th>Number</th>
<th>Port or Feature</th>
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<tr>
<td>1</td>
<td>Power connector</td>
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<tr>
<td>2</td>
<td>Thunderbolt 4</td>
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<tr>
<td>3</td>
<td>Thunderbolt 4</td>
</tr>
<tr>
<td>4</td>
<td>HDMI</td>
</tr>
<tr>
<td>5</td>
<td>Headphone (3.5mm)</td>
</tr>
<tr>
<td>6</td>
<td>SD card reader</td>
</tr>
<tr>
<td>7</td>
<td>Nano-SIM card slot</td>
</tr>
<tr>
<td>8</td>
<td>USB 3.2 Gen 1</td>
</tr>
<tr>
<td>9</td>
<td>USB 3.2 Gen 1 (Always On)</td>
</tr>
<tr>
<td>10</td>
<td>Kensington Security Slot</td>
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</tbody>
</table>
PERFORMANCE

Processor

Processor Family
11th Generation Intel® Core™ i7 / i9 or Intel Xeon® 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 i7-11800H</td>
<td>8</td>
<td>16</td>
<td>2.3GHz</td>
<td>4.6GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i7-11850H</td>
<td>8</td>
<td>16</td>
<td>2.5GHz</td>
<td>4.8GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i9-11950H</td>
<td>8</td>
<td>16</td>
<td>2.6GHz</td>
<td>5.0GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Xeon W-11855M</td>
<td>6</td>
<td>12</td>
<td>3.2GHz</td>
<td>4.9GHz</td>
<td>18MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
</tbody>
</table>

Operating System

Operating System

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

Notes:
1. As preloaded OS, Fedora and Ubuntu Linux will be available in October 2021

Graphics

Graphics

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Type</th>
<th>Memory</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel UHD Graphics</td>
<td>Integrated</td>
<td>Shared</td>
<td>DirectX® 12</td>
</tr>
<tr>
<td>NVIDIA® GeForce® RTX™ 3070 Laptop GPU</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>Advanced Optimus, Resizable BAR, Dynamic Boost 2.0, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3080 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6</td>
<td>Advanced Optimus, Resizable BAR, Dynamic Boost 2.0, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A3000 Laptop GPU</td>
<td>Discrete</td>
<td>6GB GDDR6</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A4000 Laptop GPU</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A5000 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA T1200 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A2000 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>DirectX 12</td>
</tr>
</tbody>
</table>

Notes:
1. Vapor Chamber cooling is available only with NV RTX A3000 /A4000 / A5000 and GeForce RTX 3070 / 3080 GPUs

Monitor Support

Monitor Support

Supports up to 4 independent displays via native display and 3 external monitors; supports external monitors via HDMI® (up to 4K@60Hz on NVIDIA T1200 or Intel UHD model, or 8K@60Hz on other discrete graphics model) or Thunderbolt™ (up to 5120x3200@60Hz)

Chipset
Chipset
Intel WM590 chipset

**Memory**

Max Memory\(^1\)
Up to 64GB DDR4-3200

Memory Slots
Two DDR4 SO-DIMM slots, dual-channel capable

Memory Type**
- DDR4-3200 ECC
- DDR4-3200 non-ECC

Memory Protection
ECC on models with ECC DIMMs and Xeon processor

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\(^2\)
Up to two drives, 2x M.2 SSD
- M.2 2280 SSD up to 2TB

Storage Slot\(^2\)
Two M.2 slots
- One M.2 2280 PCIe Gen 3x4 slot, supports M.2 2280 SSD
- One M.2 2280 PCIe Gen 4x4 slot, supports M.2 2280 SSD

Storage Type***

<table>
<thead>
<tr>
<th>Disk Type</th>
<th>Interface</th>
<th>RPM</th>
<th>Offering</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe x4</td>
<td>-</td>
<td>256GB / 512GB / 1TB</td>
<td>Opal2</td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe 4.0 x4 Performance</td>
<td>-</td>
<td>512GB / 1TB / 2TB</td>
<td>Opal2</td>
</tr>
</tbody>
</table>

RAID\(^3\)
RAID 0/1 support (All M.2 SSD drives will work at PCIe Gen 3 in RAID mode)

Notes:
1. Dual storage is only available on models with Intel UHD graphics, NVIDIA T1200, and NVIDIA RTX A2000
2. M.2 PCIe Gen 4 SSD in a M.2 PCIe Gen 3 slot runs at PCIe Gen 3 speeds
3. Opal capability is not available in RAID mode

**Removable Storage**

Optical
None

Card Reader
SD card reader, supports UHS-II SD card

**Multi-Media**

Audio Chip
High Definition (HD) Audio, Realtek® ALC3306 codec

Speakers
Stereo speakers, Dolby® Atmos®

Microphone
- Dual array microphone, far-field
- No microphone

Camera**
ThinkPad P1 Gen 4

- 1080p, with privacy shutter, fixed focus
- IR & 1080p hybrid, with privacy shutter, fixed focus
- No camera

**Battery**

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

Max Battery Life[^1]

- MobileMark® 2018: 10.9 hr
- JEITA 2.0: 13.7 hr

Notes:

1. All battery life claims are approximate maximum and based on results using the MobileMark 2014, MobileMark 2018, JEITA 2.0, continuous 1080p video playback (with 150nits brightness and default volume level) or Google Power Load Test (PLT) 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**[^2]

- 135W slim tip (3-pin) AC adapter
- 170W slim tip (3-pin) AC adapter
- 230W slim tip (3-pin) AC adapter

**DESIGN**

**Display**

**Display**[^2]

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Touch</th>
<th>Type</th>
<th>Brightness</th>
<th>Surface</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.0&quot;</td>
<td>WQXGA (2560x1600)</td>
<td>None</td>
<td>IPS</td>
<td>400 nits</td>
<td>Anti-glare</td>
<td>16:10</td>
<td>1200:1</td>
<td>100% sRGB</td>
<td>170°</td>
<td>Low blue light, DC dimming</td>
</tr>
<tr>
<td>16.0&quot;</td>
<td>WQUXGA (3840x2400)</td>
<td>None</td>
<td>IPS</td>
<td>600 nits</td>
<td>Anti-glare</td>
<td>16:10</td>
<td>1500:1</td>
<td>100% Adobe RGB</td>
<td>170°</td>
<td>Low blue light, Dolby Vision™, HDR 400, DC dimming</td>
</tr>
<tr>
<td>16.0&quot;</td>
<td>WQUXGA (3840x2400)</td>
<td>Multi-</td>
<td>IPS</td>
<td>600 nits</td>
<td>Anti-reflection, Anti-smudge</td>
<td>16:10</td>
<td>1500:1</td>
<td>100% Adobe RGB</td>
<td>170°</td>
<td>Low blue light, Dolby Vision, HDR 400, DC dimming</td>
</tr>
</tbody>
</table>

**Color Calibration**

- X-Rite® Pantone® factory color calibration
- No color calibration

**Touchscreen**

- Capacitive-type on-cell multi-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
- No pen (pen sold separately)
• No support (non-touch display doesn't support pen input)

Keyboard
6-row, spill-resistant, multimedia Fn keys with Unified Communications controls

Keyboard Backlight
LED backlight

UltraNav™
3-button TrackPoint® pointing device and glass surface multi-touch touchpad

**Mechanical**

**Dimensions (WxDxH)**

<table>
<thead>
<tr>
<th>Models</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch models</td>
<td>359.5 x 253.8 x 18.2 mm (14.15 x 9.99 x 0.72 inches)</td>
</tr>
<tr>
<td>Non-touch models</td>
<td>359.5 x 253.8 x 17.7 mm (14.15 x 9.99 x 0.7 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>1.81 kg (3.99 lbs)</td>
</tr>
<tr>
<td>Touch models</td>
<td>1.86 kg (4.1 lbs)</td>
</tr>
</tbody>
</table>

**Case Color**
Black

**Case Material**
- 37-degree twill CF Weave (top), Aluminium (bottom)
- CF plate / GFRP hybrid (top), aluminium (bottom)

Notes:
1. The system weight varies depending on configurations

**CONNECTIVITY**

**Network**

**Onboard Ethernet**
- Ethernet support via optional Lenovo USB-C to Ethernet Adapter
- No Ethernet

**WLAN + Bluetooth®**
Intel Wi-Fi® 6E AX210, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2

**WWAN**
- Qualcomm® Snapdragon™ X55 5G Modem M.2 card - RF System with embedded eSIM functionality
- No support

**SIM Card**
- Nano SIM card, Lenovo Connect 24 months, 4G LTE
- No SIM card inbox

**NFC**
No support

Notes:
1. 6GHz Wi-Fi 6E operation is dependent on the support of the operating system, routers/APs/Gateways that support Wi-Fi 6E, and the regional regulatory certifications & spectrum allocation
2. WWAN is only available on models with Intel UHD graphics, NVIDIA T1200, and NVIDIA RTX A2000

**Ports**

**Standard Ports**
- 2x USB 3.2 Gen 1 (one Always On)
- 2x Thunderbolt 4 / USB4™ 40Gbps (support data transfer, Power Delivery 3.0 and DisplayPort™ 1.4a)
- 1x SD card reader
- 1x Headphone / microphone combo jack (3.5mm)

Optional Ports***
- 1x Nano-SIM card slot (WWAN model)
- 1x HDMI 2.0 (model with integrated graphics)
- 1x HDMI 2.0 (model with NVIDIA Ti200 graphics)
- 1x HDMI 2.1 (model with GeForce RTX graphics)
- 1x HDMI 2.1 (model with NVIDIA RTX graphics)

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, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly 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

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
- Firmware TPM 2.0 integrated in chipset
- Disabled (in some regions)

Physical Locks
Kensington® Security Slot (2.5 x 6 mm)

Smart Card Reader
No smart card reader

Fingerprint Reader
Touch style fingerprint reader on power button, match-on-chip

BIOS Security
- Supervisor password
- Power-on password
- NVMe password
- Self-healing BIOS

Other Security
(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
- 1-year limited onsite 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

ENVIRONMENTAL

Operating Environment

Temperature
- Operating: 5°C (41°F) to 35°C (95°F)
- Storage and transportation in original shipping packaging: -20°C (-4°F) to 60°C (140°F)
- Storage without package: 5°C (41°F) to 43°C (109°F)

Humidity
- Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)
- Storage and transportation: 5% to 95% at wet-bulb temperature 27°C (81°F)

Altitude
- Maximum altitude (without pressurization): 3048 m (10,000 ft)

Notes:
1. When you charge the battery, its temperature must be no lower than 10°C (50°F)

ACCESSORIES

Bundled Accessories

- Lenovo USB-C to Ethernet Adapter
- None

CERTIFICATIONS

Green Certifications

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

Other Certifications

- MIL-STD-810H military test passed

ISV Certifications

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

- Feature with "**" means that only one offering listed under the feature is configured on selected models.
- Feature with "***" means that one or more offerings listed under the feature could be configured on selected models.

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