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Summary of Changes

This section describes the technical changes made in this edition. This edition might also include minor corrections and editorial changes which are not identified.

October 9, 2019 - Version 549

Additions in this update

► New product(s)
None

► New model(s)
None

► Others
ThinkPad X390 Yoga - Spec updated

Withdrawals in this update

► Withdrawn product(s)
None
## ThinkPad X1 Tablet (3rd Gen) Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8250U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>LPDDR3-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8550U</td>
<td>4</td>
<td>8</td>
<td>1.7 GHz</td>
<td>3.6 GHz</td>
<td>6MB</td>
<td></td>
<td></td>
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<tr>
<td>i7-8550U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
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<td>i7-8650U</td>
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<td>8</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graphics
- Intel UHD Graphics 620 in processor
- Supports external digital monitor via USB Type-C

### Chipset
- Intel SoC (System on Chip) platform

### Memory
- 8GB or 16GB / 2133MHz LPDDR3, soldered to system board, no sockets

### Display
- 13.0" (330mm) QHD+ (3000x2000), glossy, LED backlight, IPS, anti-fingerprint display with Corning® Gorilla® Glass, WideView (160° viewing), 400 nits, 3:2 aspect ratio, 1200:1 contrast ratio
- Capacitive touch panel, supports ten-finger gesture
- Lenovo Pen Pro or Lenovo Active Pen (ThinkPad Pen Pro)
- Opening angle up to 160°

### Storage
- One of the following, configurable by model:
  - M.2 2280 SSD / SATA 6.0Gb/s
  - M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- None

### Optical Storage extension
- One MicroSD card reader, in the combo slot with nano-SIM card, support USH-I, microSDHC, microSDXC

### Ethernet
- None

### WWAN (optional)
- Integrated Mobile Broadband 4G LTE-A, Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)
- Nano-SIM card slot, in the combo slot with micro-SD card reader

### Dimensions
- Tablet only: 11.97" x 8.9" x 0.35"; 304.1mm x 226mm x 8.9mm
- Tablet + keyboard: 11.97" x 8.9" x 0.57"; 304.1mm x 226mm x 14.4mm

### Weight
- Tablet only: starting at 1.96 lb / 0.89kg
- Tablet + keyboard: starting at 2.8 lb / 1.27kg

### Case color
- Black

### Case material
- Magnesium/Aluminum

### Smart card reader
- None

### Ports
- Two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one Pogo keyboard connector, one Pen holder slot, headphone / microphone combo jack, combo slot of nano-SIM card (WWAN models) and micro-SD card reader

### Environment
- EPEAT™ Silver, GREENGUARD, Low Halogen, RoHS

### System Mgt (optional)
- Intel vPro Technology
- Discrete TPM 2.0 TCG Certified
- Kensington lock slot

### Security
- Security chip
- System Mgt (optional)
- Intel vPro Technology
- Fingerprint reader (optional)
- Touch style fingerprint reader
- NFC (optional)
- Near Field Communication (mutually exclusive with IR camera)

### Security
- Security chip
- System Mgt (optional)
- Intel vPro Technology
- Fingerprint reader (optional)
- Touch style fingerprint reader
- NFC (optional)
- Near Field Communication (mutually exclusive with IR camera)

### Battery
- Integrated Li-Ion 42Wh battery
- MobileMark® 2014: 9.5 hrs
- *Battery life varies significantly with settings, usage, & other factors

### AC adapter
- 45W or 65W USB Type-C AC adapter

### Ports
- Two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one Pogo keyboard connector, one Pen holder slot, headphone / microphone combo jack, combo slot of nano-SIM card (WWAN models) and microSD card reader

### AC adapter
- 45W or 65W USB Type-C AC adapter

### Headphone / microphone combo jack
- One Pogo keyboard connector, one Pen holder slot

### G-sensor
- 3D gyrometer
- 3D accelerometer
- Ambient Light Sensor
- 45W or 65W USB Type-C AC adapter

### Front camera
- 2.0-megapixel, fixed focus
- Rear camera: 8.0-megapixel, auto focus

### Camera
- Front camera: 2.0-megapixel, fixed focus
- Rear camera: 8.0-megapixel, auto focus

### IR Camera
- Optional: IR camera, fixed focus (mutually exclusive with NFC)

### Audio support
- Realtek® ALC3278 codec / stereo speakers, 1W x 2 / dual array microphones, combo audio/microphone jack

### Pogo keyboard
- Magnetic attached thin keyboard, with TrackPoint® pointing device and buttonless Mylar surface touchpad, multi-touch, backlit

### Keyboard color
- Black

### Webcam
- Optional:
  - Rear camera: 8.0-megapixel, fixed focus
  - IR camera: fixed focus (mutually exclusive with NFC)

### Optional:
- Mobile Broadband 4G LTE-A, Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)

### GPS (optional)
- 3D gyrometer
- 3D accelerometer
- Ambient Light Sensor
- 45W or 65W USB Type-C AC adapter

### GPS function
- Integrated into WWAN module

### Limited warranty
- One of the following, configurable by model:
  - Windows® 10 Pro 64
  - Windows 10 Home 64

### Additional features
- Power button, volume control button, reset switch
- Control buttons
- Power button, volume control button, reset switch
- Optional: Thin Keyboard or USB-C Dock
- Dock

### Monitor cable
- USB-C to RJ45: Lenovo USB-C to Ethernet Adapter
- USB-C to VGA: Lenovo USB-C to VGA Plus Power Adapter
- USB-C to HDMI: Lenovo USB-C to HDMI Plus Power Adapter

### Bundled Accy (optional)
- Lenovo USB-C to Ethernet Adapter
- Lenovo USB-C to VGA Plus Power Adapter
- Lenovo USB-C to HDMI Plus Power Adapter

### Control buttons
- Power button, volume control button, reset switch
- Control buttons

### Ports
- Two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one Pogo keyboard connector, one Pen holder slot, headphone / microphone combo jack, combo slot of nano-SIM card (WWAN models) and microSD card reader

### Display
- 13.0" (330mm) QHD+ (3000x2000), glossy, LED backlight, IPS, anti-fingerprint display with Corning® Gorilla® Glass, WideView (160° viewing), 400 nits, 3:2 aspect ratio, 1200:1 contrast ratio
- Capacitive touch panel, supports ten-finger gesture
- Lenovo Pen Pro or Lenovo Active Pen (ThinkPad Pen Pro)
- Opening angle up to 160°

### Storage
- One of the following, configurable by model:
  - M.2 2280 SSD / SATA 6.0Gb/s
  - M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- None

### Optical Storage extension
- One MicroSD card reader, in the combo slot with nano-SIM card, support USH-I, microSDHC, microSDXC

### Ethernet
- None

### WWAN (optional)
- Integrated Mobile Broadband 4G LTE-A, Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)
- Nano-SIM card slot, in the combo slot with micro-SD card reader

### Dimensions
- Tablet only: 11.97" x 8.9" x 0.35"; 304.1mm x 226mm x 8.9mm
- Tablet + keyboard: 11.97" x 8.9" x 0.57"; 304.1mm x 226mm x 14.4mm

### Weight
- Tablet only: starting at 1.96 lb / 0.89kg
- Tablet + keyboard: starting at 2.8 lb / 1.27kg

### Case color
- Black

### Case material
- Magnesium/Aluminum

### Smart card reader
- None

### Ports
- Two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one Pogo keyboard connector, one Pen holder slot, headphone / microphone combo jack, combo slot of nano-SIM card (WWAN models) and microSD card reader

### Limited warranty
- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-year battery depot repair service
  - 3-year/1-year battery limited onsite service

### Mil-Spec test
- MIL-STD-810G military testing

### Environmental
- EPEAT™ Silver, GREENGUARD, Low Halogen, RoHS

### Lenovo
- July 2019
ThinkPad L380 Yoga Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Processor Graphics</th>
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</thead>
<tbody>
<tr>
<td>i3-7020U</td>
<td>2</td>
<td>4</td>
<td>2.3 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>Intel HD Graphics 620</td>
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<tr>
<td>i5-7200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>Intel HD Graphics 620</td>
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</tbody>
</table>

**8th Generation Intel® Core™ i3 / i5 Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Processor Graphics</th>
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</thead>
<tbody>
<tr>
<td>i3-8130U</td>
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<td>4</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
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<tr>
<td>i5-8250U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8350U</td>
<td>4</td>
<td>8</td>
<td>1.7 GHz</td>
<td>3.6 GHz</td>
<td>6MB</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8550U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

**Chipset**

Intel SoC (System on Chip) platform

**Memory**

Up to 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

* System clocks down for processors with lower memory controller

**Display**

13.3" (338mm) FHD (1920x1080), glossy, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle

**Multi-touch (opt)**

Capacitive-type multi-touch, AR (anti-reflection), supports 10-finger gesture

**Hinge**

Yoga hinge, 360 degree

**Converter-mode**

Pen

ThinkPad Pen Pro, active pen for multi-touch display, on-board garage

**Storage**

One of the following, configurable by model:

- M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32GB/s (e.g. xxxGB SSD M.2 PCIe NVMe)

**Optane Memory**

None

**Optical**

None

**Ethernet**

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable Gen 2

**WLAN + Bluetooth™**

Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

* Wireless cards supports BT4.2 but is limited to BT4.1 by Windows OS

**WWAN**

None

**SIM card**

None

**Graphics**

Intel HD Graphics 620 or Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays:

Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

**Chipset**

Intel SoC (System on Chip) platform

**Memory**

Up to 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

* System clocks down for processors with lower memory controller

**Display**

13.3" (338mm) FHD (1920x1080), glossy, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle

**Multi-touch (opt)**

Capacitive-type multi-touch, AR (anti-reflection), supports 10-finger gesture

**Hinge**

Yoga hinge, 360 degree

**Converter-mode**

Pen

ThinkPad Pen Pro, active pen for multi-touch display, on-board garage

**Storage**

One of the following, configurable by model:

- M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32GB/s (e.g. xxxGB SSD M.2 PCIe NVMe)

**Optane Memory**

None

**Optical**

None

**Ethernet**

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable Gen 2

**WLAN + Bluetooth™**

Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

* Wireless cards supports BT4.2 but is limited to BT4.1 by Windows OS

**WWAN**

None

**SIM card**

None

**Dimensions**

WxDxH: 12.67" x 8.82" x 0.74"; 322mm x 224.2mm x 18.8mm

**Weight**

Starting at 3.44 lb / 1.56 kg

**Case color**

Black or Silver

**Case material**

Display cover: Aluminum

**Bottom**

GFRP

**Smart card reader**

None

**Media reader**

MicroSD card reader

**Ports**

Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet extension connector, headphone / microphone combo jack, microSD card reader, security keyhole

**Monitor cable**

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Camera**

720p: HD720p resolution, low light sensitive, fixed focus

**Audio support**

IR & 720p: IR camera and HD720p camera, fixed focus

**Monitor**

World facing: Rear camera, 5MP resolution, auto focus

**Audio support**

HD Audio, Realtek ALC3287 codec, Dolby® Advance / stereo speakers, 2W x 2 / dual array microphone, headphone / microphone combo jack

**Keyboard**

6-row: multimedia Fn keys, optional LED backlight

**Security**

Power-on password, hard disk password, supervisor password, security keyhole

**Security chip**

Discrete TPM 2.0, TCG Certified

**System Mgt (opt)**

Intel vPro Technology

**Fingerprint reader (optional)**

Touch style fingerprint reader on the keyboard bezel, anti-spoofing technology

**NFC (optional)**

Near Field Communication (mutually exclusive with smart card reader)

**Battery**

Integrated Li-Ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

**Max battery life**

MobileMark® 2014: 12.85 hrs

* Battery life varies significantly with settings, usage, & other factors

**AC adapter**

45W or 65W USB Type-C AC adapter

**Preload**

Windows® 10 Home 64 or Windows 10 Pro 64

**Limited warranty**

One of the following, configurable by model:

- 1-year depot repair service
- 1-year depot with 2-year planar
- Battery depot repair service
- 3-year/1-yr battery limited onsite service

**Mil-Spec test**

MIL-STD-810G military testing

**Environment**

EPEAT® Gold; ENERGY STAR® 6.1; RoHS-compliant

Lenovo

March 2019
## ThinkPad L390 Yoga Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8145U</td>
<td>2</td>
<td>4</td>
<td>2.1 GHz</td>
<td>3.9 GHz</td>
<td>4 MB</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>4.1 GHz</td>
<td>8 MB</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>8 MB</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor;
- supports external digital monitor via HDMI or USB Type-C;
- supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform

### Display

- 13.3" (338mm) FHD (1920x1080), glossy, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 72% gamut, 170° viewing angle
- Capacitive-type multi-touch, AR (anti-reflection), supports 10-finger gesture
- Yoga hinge, 360 degree
- ThinkPad Pen Pro, active pen for multi-touch display, on-board garage

### Storage

- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s
  - M.2 (2242) SSD / PCIe NVMe, PCIe 3.0 x 2
  - M.2 (2280) SSD / PCIe NVMe, PCIe 3.0 x 4
  - Intel Optane Memory H10 with Solid State Storage
  - M.2 2280, PCIe NVMe 3.0 x 4
- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxGB SSD M.2 PCIe NVMe)
- None

### Optical

- None

### Ethernet

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable or Lenovo USB-C to Ethernet Adapter

### WLAN

- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

### Bluetooth

- Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN

- None

### Dimensions

- WxDxH: 12.67" x 8.82" x 0.74"; 321.8mm x 224.2mm x 18.8mm

### Weight

- Starting at 3.44 lbs / 1.56 kg

### Case color

- Black or Silver

### Case material

- Display cover: Magnesium / Aluminum
- Bottom: GFPR

### Media reader

- None

### Optical drive

- None

### WAN ports

- USB-C to RJ45:
- Lenovo USB-C to Ethernet Adapter

### Ports

- Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet extension connector, headphone / microphone combo jack, microSD card reader, security keyhole

### Monitor cable

- (optional)
  - USB-C to VGA: Lenovo USB-C to VGA Adapter
  - USB-C to HDMI: Lenovo USB-C to HDMI Adapter
  - USB-C to HDMI + Power Adapter: Lenovo USB-C to HDMI plus Power Adapter
  - USB-C to DP: Lenovo USB-C to DisplayPort Adapter

### Bundled

- None

### Audio support

- HD Audio, Realtek ALC3287 codec, Dolby Audio Premium / stereo speakers, 2W x 2 / dual array microphone, headphone / microphone combo jack

### Keyboard

- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight

### Security

- Power-on password, supervisor password, system management password, hard disk password, security keyhole
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology
- Fingerprint reader
  - Optional: Touch style fingerprint reader on the palm rest
  - (mutually exclusive with World facing camera)

### NFC

- Near Field Communication

### Battery

- Integrated Li-Ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

### Max battery life

- MobileMark 2014: 12.17 hrs

### AC adapter

- 45W or 65W USB Type-C AC adapter

### Preload

- Windows 10 Home 64 or Windows 10 Pro 64

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 1-year depot with 2-year planar
  - 3-year/1-year battery depot repair service
  - 3-year/1-year battery limited onsite service

### Mil-Spec test

- MIL-STD-810G military testing

### Environment

- EPEAT Silver; ENERGY STAR 7.1; RoHS-compliant

---

Lenovo
July 2019
## ThinkPad X1 Yoga (3rd Gen) Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Frequency</th>
<th>Cache Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
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<tr>
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<td>2.6 GHz</td>
<td>3MB</td>
<td>LPDDR3-1866</td>
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<tr>
<td></td>
<td></td>
<td>3.5 GHz</td>
<td></td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

### 8th Generation Intel Core i5 / i7 Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Frequency</th>
<th>Cache Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
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<td>i5-8250U</td>
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<tr>
<td>i5-8550U</td>
<td></td>
<td>1.7 GHz</td>
<td></td>
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<tr>
<td></td>
<td>3.6 GHz</td>
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<td>1.8 GHz</td>
<td>4.0 GHz</td>
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<tr>
<td></td>
<td>3.6 GHz</td>
<td>4.2 GHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graphics

- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor;
- Supports external digital monitor via HDMI or USB Type-C;
- Supports three independent displays;
- Max resolution: 5120x2880@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset Memory

- Intel SoC (System on Chip) platform;
- 8GB or 16GB / 2133MHz LPDDR3 / soldered to systemboard, no sockets

### Display

- 14.0” (355mm) HDR WQHD (2560x1440) with Dolby Vision, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle, IPS

### Multi-touch

- Capacitive-type multi-touch, AR (anti-reflection), AS (anti-smudge), supports 10-finger gesture, reduces overall display brightness by 10%

### Hinge

- Yoga hinge, 360 degree

### Convert-mode

- Laptop, tent, stand, and tablet

### Pen (optional)

- ThinkPad Pen Pro, active pen for multi-touch display, on-board rechargeable

### Storage

- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxG SSD PCIe NVMe)

### Optical

- None

### Ethernet

- Native Intel Ethernet Connection WGI219-LM (vPro)

### Wireless

- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- Bluetooth 4.1, wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN (optional)

- Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card
- Nano-SIM card slot, optional Verizon LTE (US) SIM card

### Dimensions

- 13.11” x 9.02” x 0.67”; 333mm x 229mm x 17.05mm

### Weight

- Starting at 3.08 lb (1.4kg)

### Case color

- Black or silver

### Case material

- Carbon-Fiber and Glass-Fiber hybrid; Bottom: magnesium-PPS hybrid

### Smart card reader

- None

### Media reader

- MicroSD card reader, supports UHS-II

### Ports

- Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 2 / Thunderbolt 3, HDMI 1.4, Ethernet extension connector, nano-SIM card slot (WWAN models), headphone / microphone combo jack, microSD card reader
- Depending on many factors, actual data transfer speed may be lower than theoretical speed

### WiGig dock

- None

### Monitor cable (optional)

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

### Camera (optional)

- One of the following, configurable by model:
  - 720p: HD720p camera with ThinkShutter camera privacy, fixed focus
  - IR & 720p: IR camera and HD720p camera, fixed focus
  - WWAN models and HDR panel models can not support IR camera

### Audio support

- HD Audio, Reatek® ALC3286 codec, Dolby® Audio™ Premium / stereo speakers, 1W x 2 / dual array microphone, headphone / microphone combo jack

### Keyboard UltraNav™

- 6-row wave keyboard (rise & fall), spill-resistant, multimedia Fn keys, LED backlight
- TrackPoint® pointing device and 3+2 buttons multi-touch clickpad

### Security

- Power-on password, hard disk password, supervisor password, security keyhole

### Security chip

- Discrete TPM 2.0 2C G Certified

### System Mgt (opt)

- Intel vPro Technology

### Fingerprint reader

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

### NFC (optional)

- Near Field Communication

### Battery

- Integrated Li-Ion 54Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

### Max battery life

- MobileMark® 2014: 15.4 hrs
- Battery life varies significantly with settings, usage, & other factors

### AC adapter

- 45W or 65W USB Type-C AC adapter

### Preload

- Windows® 10 Pro 64

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 1-year depot with 2-year planar
  - 3-year/1-yr battery depot repair service

### Mil-Spec test

- MIL-STD-810G military testing

### Environment

- EPEAT™ Silver; ENERGY STAR™; RoHS-compliant

Lenovo
July 2019
# ThinkPad X1 Yoga (4th Gen) Platform Specifications

## Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
<td>6MB</td>
<td>LPDDR3-2133</td>
<td>Intel UHD Graphics 620</td>
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<tr>
<td>i5-8565U</td>
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<tr>
<td>i5-8565U</td>
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<td>i7-8565U</td>
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<td></td>
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<td>i7-10710U</td>
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<td>12</td>
<td>1.9 GHz</td>
<td>4.7 GHz</td>
<td>8MB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Graphics

Intel UHD Graphics 620 or Intel UHD Graphics in processor; supports external digital monitor via HDMI or USB Type-C/Thunderbolt; supports three independent displays; Max resolution: 5120x2880@60Hz (USB Type-C);  4096x2160@24Hz (HDMI)

## Chipset

Intel SoC (System on Chip) platform

## Memory

8GB or 16GB / 2133MHz LPDDR3 / soldered to systemboard, no sockets

## Display

- **Size**: FHD (1920x1080)
- **Resolution**: IPS Glossy
- **Brightness**: 380 nits
- **Aspect Ratio**: 16:9
- **Contrast Ratio**: 800:1
- **Color Gamut**: 72%
- **Viewing Angle**: 170°

## Multi-touch Pen

- Capacitive-type multi-touch, AR (anti-reflection), AS (anti-smudge)
- Supports 10-finger gesture
- Active pen for multi-touch display, on-board rechargeable

## Storage

- One of the following, configurable by model:
  - M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
  - Intel Optane™ Memory H10 with Solid State Storage, M.2 2280, PCIe NVMe 3.0 x 4
- None

## Ethernet

Native Intel Ethernet Connection I1219-LM (vPro) or I1219-V (Non-vPro) via bundled or optional ThinkPad Ethernet Extension Adapter Gen 2

## WLAN

Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

## Bluetooth

Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

## WWAN (optional)

- One of the following, configurable by model:
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 2x2, M.2 card

## SIM card (opt)

- Nano-SIM card, optional Verizon LTE (US) SIM card

## Camera

- **Camera (optional)**: One of the following, configurable by model:
  - HD720p camera with ThinkShutter camera privacy, fixed focus
  - HD Audio, Realtek® ALC1012L codec, Stereo speakers, 2W x 2, 0.8W x 2, Dolby® Audio™ Atmos / 4 array 360-degree far-field microphones, headphone / microphone combo jack

## Audio support

6-row, spill-resistant, multimedia Fn keys, LED backlight

## Keyboard

TrackPoint® pointing device and buttonless Glass surface multi-touch touchpad

## Security

- Power-on password, supervisor password, system management password, hard disk password
- Discrete TPM 2.0 TCG Certified
- Optional: Intel vPro Technology
- Optional: Near Field Communication

## Battery

- Integrated Li-Ion 51Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter
- MobileMark® 2014: 18.1 hrs
- Optional: Battery life varies significantly with settings, usage, & other factors

## AC adapter

- 45W or 65W USB Type-C AC adapter

## G-sensor

3D accelerometer

## Gyroscope

3D gyrometer

## GPS

GPS function is integrated into WWAN module

## Preload

- One of the following, configurable by model:
  - Windows® 10 Pro 64
  - Windows 10 Home 64

## Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 1-year depot with 2-year planar
  - 3-year/1-yr battery depot repair service

## Mil-Spec test

MIL-STD-810G military testing

## Environment

EPEAT Gold, ENERGY STAR® 7.1; RoHS-compliant
### ThinkPad X380 Yoga Platform Specifications

**Product Specifications Reference (PSREF)**

**Lenovo**

**March 2019**

<table>
<thead>
<tr>
<th>Processor</th>
<th>8th Generation Intel® Core™ i3 / i5 / i7 Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>3-8130U</td>
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<tr>
<td></td>
<td>5-8250U</td>
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<td></td>
<td>5-8350U</td>
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<tr>
<td></td>
<td>7-8550U</td>
</tr>
<tr>
<td></td>
<td>7-8650U</td>
</tr>
</tbody>
</table>

**Graphics**
- Intel UHD Graphics 620 in processor only; supports external digital monitor via HDMI or USB Type-C;
- Supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

**Chipset Memory**
- Intel SoC (System on Chip) platform
- 8GB or 16GB / 2400MHz DDR4 / soldered to systemboard, no sockets
- * System clocks down for processors with lower memory controller

**Display**
- 13.3” (337.8mm) FHD (1920x1080), LED backlight, IPS
- 300 nits, 16:9 aspect ratio, 170° viewing angle

**Multi-touch**
- Capacitive-type multi-touch, AR (anti-reflection), AS (anti-smudge), supports 10-finger gesture

**Hinge Convert-mode Pen**
- Yoga hinge, 360 degree
- Laptop, tent, stand, yoga and tablet
- ThinkPad Pen Pro, active pen for multi-touch display, on-board rechargeable

**Storage**
- Some: M.2 SSD / SATA 6.0Gb/s (e.g. xxxG SSD)
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxG SSD PCIe NVMe)
- None

**Optical Optane Memory**
- None

**Ethernet**
- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)
- Via optional ThinkPad Ethernet Extension Cable

**WLAN**
- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS
- Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WWAN (optional)**
- Integrated Mobile Broadband 4G LTE, Intel XMM™ 7626 (Fibocom L830-EB), M.2 card (EMEA only)

**SIM card (opt)**
- Nano-SIM card slot

**Dimensions**
- WxDxH: 12.34” x 8.75” x 0.72”
- Weight: Starting at 3.17 lb (1.43kg)

**Case color**
- Black or silver

**Case Material**
- Carbon-Fiber Hybrid

**Smart card reader**
- Optional: Smart card reader (mutually exclusive with NFC)

**Media reader**
- One microSD card slot (microSD, microSDHC, microSDXC), UHS-I
- Two USB 3.1 Gen 1 (one Always On), Ethernet extension connector, one USB 3.1 Type-C Gen 2 / Thunderbolt 3, HDMI 1.4b, microSD card reader, nano-SIM card slot (WWAN models), headphone / microphone combo jack
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

**WiGig dock**
- None

**Monitor cable (optional)**
- USB-C to VGA: Lenovo USB-C to VGA Plus Power Adapter
- USB-C to DP: Lenovo USB-C to DisplayPort Adapter
- HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter

**Camera**
- One of the following, configurable by model: 720p: HD720p camera, fixed focus

**Audio support**
- HD Audio, Conexant® CX11771 codec / stereo speakers, 2W x 2 / dual array microphone, headphone / microphone combo jack

**Keyboard**
- 6-row, spill-resistant, multimedia Fn keys, LED backlight
- UltraNav™ TrackPoint® pointing device and 3+2 buttons Mylar surface multi-touch click pad

**Security chip**
- Security chip
- Security (optional)

**Fingerprint reader**
- Optional: Touch style match on chip fingerprint reader on the palm rest

**Battery**
- Li-Ion 51Wh battery
- MobileMark® 2014: 13.6 hrs

**AC adapter**
- 45W or 65W AC adapter (slim tip), 45W or 65W USB Type-C AC adapter

**Light sensor**
- Ambient Light Sensor
- 3D accelerometer and 3D magnetometer
- 3D compass
- 3D gyrometer

**G-sensor/ eCompass**
- None

**Operating system**
- Windows 10 Pro 64
- Windows 10 Home 64

**Preload**
- Some: Windows® 10 Home 64
- Some: Windows 10 Pro 64

**Limited warranty**
- One of the following, configurable by model:
  - 1-year depot repair service
  - 1-year depot with 2-year planar
  - 3-year/1-yr battery depot repair service

**Mil-Spec test**
- MIL-STD-810G military testing

**Environment**
- EPEAT® Gold; ENERGY STAR®; RoHS-compliant

**Lenovo**

**March 2019**
## ThinkPad X390 Yoga Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Number</th>
<th>Processor</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8265U</td>
<td>8th Gen Intel® Core™ i5 / i7 Processor</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>4.8 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8635U</td>
<td>8th Gen Intel® Core™ i5 / i7 Processor</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>4.8 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>8th Gen Intel® Core™ i5 / i7 Processor</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8665U</td>
<td>8th Gen Intel® Core™ i5 / i7 Processor</td>
<td>4</td>
<td>8</td>
<td>1.9 GHz</td>
<td>4.8 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor only.
- Supports external digital monitor via HDMI or USB Type-C.
- Supports three independent displays.
- Max resolution: 4096x2304 @60Hz (USB Type-C); 4096x2160@24Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 8GB or 16GB / 2400MHz DDR4 / soldered to systemboard, no sockets
- Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation

### Display

- 13.3” (337.8mm) FHD (1920x1080), LED backlight, IPS, Glossy, 270 nits, 16:9 aspect ratio, 800:1 contrast ratio, Color Gamut 72%, 170° viewing angle, capative-type multi-touch, AR (anti-reflection), AS (anti-smudge)
- Supports 10-finger gesture

### Storage

- M.2 2280 SSD / SATA 6.0Gb/s
- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
- M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2
- Intel Optane Memory H10 with Solid State Storage, M.2 2280, PCIe NVMe 3.0 x 4

### Optical

- Optional: Intel Optane Memory H10

### Ethernet

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)
- via bundled or optional ThinkPad Ethernet Extension Adapter Gen 2

### WLAN

- One of the following, configurable by model:
  - Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0
  - Intel Wi-Fi 6 AX200, Wi-Fi 2x2 802.11ax + Bluetooth 5.0
- Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN (optional)

- One of the following, configurable by model:
  - Integrated Mobile Broadband 4G LTE, Fibcom L830-EB, M.2 card (EAME only)
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
  - For non-WWAN model, it means the model is NOT WWAN upgradable

### Dimensions

<table>
<thead>
<tr>
<th>Weight</th>
<th>WxDxH: 12.22” x 8.62” x 0.63”; 310.4mm x 219mm x 15.95mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case color</td>
<td>Black or silver (Silver is not available in EMA)</td>
</tr>
<tr>
<td>Case Material</td>
<td>Display cover: Carbon-Fiber Hybrid</td>
</tr>
<tr>
<td>Bottom: Carbon-Fiber Hybrid</td>
<td></td>
</tr>
</tbody>
</table>

### Ports

- Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and Display Port), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet extension connector.
- Combo slot of nano-SIM card (WWAN models) and microSD card reader, headphone / microphone combo jack, optional smart card reader, side docking connector, security keyhole
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

### Monitor cable (optional)

- USB-C to HDMI: Lenovo USB-C to HDMI Adapter
- USB-C to VGA: Lenovo USB-C to VGA Adapter
- USB-C to DP: Lenovo USB-C to DisplayPort Adapter

### Bundled Accy

- Optional: ThinkPad Ethernet Extension Adapter Gen 2

### Camera

- One of the following, configurable by model:
  - HD720p camera, with ThinkShutter camera privacy, fixed focus
  - IR camera and HD720p camera, with ThinkShutter camera privacy, fixed focus

### Audio support

- HD Audio, Realtek ALC3287 codec / stereo speakers, 2W x 2, Dolby Audio Premium / dual array microphone, headphone / microphone combo jack

### Keyboard

- 6-row, spill-resistant, multimedia Fn keys, LED backlight

### UltraNav™

- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

### Security

- Power-on password, supervisor password, system management password, hard disk password, security keyhole
- Security chip
  - Security chip
  - System Mgt (opt) / Intel vPro Technology
- Fingerprint reader
  - Touch style match on chip fingerprint reader on the palm rest
  - NFC (optional) / Near Field Communication

### Battery

- Integrated Li-ion 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

### Max battery life

- MobileMark® 2014: 14.5 hrs
- * Battery life varies significantly with settings, usage, & other factors

### AC adapter

- 45W or 65W USB Type-C AC adapter

### Light sensor

- None

### G-sensor

- 3D accelerometer

### Gyroscope

- 3D gyrometer

### Preload

- Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 1-year depot with 2-year planar
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

### Mil-Spec test

- MIL-STD-810G military testing

### Environment

- EPEAT® Silver; ENERGY STAR® 7.1; RoHS-compliant

### Lenovo

July 2019
ThinkPad Yoga 11e (5th Gen) Platform Specifications

Product Specifications Reference (PSREF)

Processor
7th Generation Intel® Core™ m / i5 Processor, Intel Celeron processor, or Intel Pentium® Silver processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Burst Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Processor Graphics</th>
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</thead>
<tbody>
<tr>
<td>m3-7Y30</td>
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<td>Intel UHD Graphics 600</td>
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<td>Pen N5000</td>
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<td>Intel UHD Graphics 605</td>
</tr>
</tbody>
</table>

Graphics
Intel HD Graphics 615, Intel UHD Graphics 600 or 605 in processor, supports external digital monitor via HDMI or USB Type-C; supports dual independent display; Max resolution: 3840x2160@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

Chipset
Intel SoC (System on Chip) platform

Memory
4GB or 8GB / 1866MHz LPDDR3 or 2400MHz DDR4 / soldered to systemboard, no sockets

Display
11.6” (295mm) HD (1366x768), anti-glare, LED backlight, IPS 250 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle

MultiTouch
Capacitive-type multi-touch, support 10 fingers

Hinge
Yoga hinge, 360 degree

Convertible mode
Laptop, tent, stand and tablet

Pen
Optional: ThinkPad Pen Pro, batteries required, on-board garage

Storage
eMMC flash memory on board or M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s

Optical
None

Ethernet
Realtek RTL8111GUS-CG Gigabit Network Connection

WLAN
One of the following, configurable by model:
- Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- Bluetooth wireless, integrated in Wi-Fi + Bluetooth combo adapter

Bluetooth™

WWAN
None

Dimensions
WxDxH: 11.81” x 8.27” x 0.89”; 300mm x 210mm x 22.5mm

Weight
From 3.4 lb (1.54kg)

Case color
Black

Case material
Display cover: PC/ABS+GF; Bottom: PC/ABS plastic

Media reader
MicroSD card reader

Ports
Two USB 3.1 Gen 1, one USB 3.1 Type-C Gen 1, HDMI1.4, Ethernet (RJ-45), headphone / microphone combo jack, microSD card reader, security keyhole

Control buttons
Power button, volume control button

Camera
One of the following, configurable by model:
- HD Audio, Realtek ALC3287 codec Dolby Audio / stereo speakers, 2W x 2 / monaural microphone, headphone / microphone combo jack

Audio support

Keyboard
6-row, multimedia Fn keys

UltraNav™
Two buttons click pad below keyboard, multi-touch

Security
Power-on password, hard disk password, supervisor password, security keyhole

Security chip
Discrete TPM 2.0, TCG Certified

Fingerprint reader
None

Battery
Integrated Li-Ion 42Wh battery

Max battery life
MobileMark® 2014: 12 hrs

* Battery life varies significantly with settings, usage, & other factors

AC adapter
45W or 65W slim tip AC adapter or USB Type-C AC adapter

Preload
Some: Windows® 10 Home 64

Limited warranty
One of the following, configurable by model:
- 1-year depot repair service
- 3-year depot repair service

Mil-Spec test
MIL-STD-810G military testing

Environment
EPEAT® Gold; ENERGY STAR® 6.1; RoHS-compliant

Lenovo
March 2019
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Battery life: Battery life (and recharge times) will vary based on many factors including screen brightness, applications, features, power management, battery conditioning, and other customer preferences.


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