

# **Latitude 3480**

## Owner's Manual



## Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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## Product overview

The Dell Latitude 3480 is an affordable commercial-class notebook that delivers relevant business features for Small and Medium Businesses. Target customers are SMB customers with no or limited IT resources who value the Commercial tenets of Security, Reliability and Manageability, and our Latitude Services and Support.

 **NOTE:** The Latitude 3488 model is offered only to customers in China.

### Key Features:

- 14" anti-glare HD or FHD display
- Touchscreen option
- HD Webcam or IR camera (on touch systems) and dual array microphones
- Fingerprint reader option for added security and convenience
- Robust storage options including HDD, Hybrid HDD, and SSD
- Wide range of connectivity options: wired Ethernet, WLAN and Bluetooth
- Multiple OS platforms: Ubuntu, Windows 7, NeoKylin, and Windows 10

# Working on your computer

## Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.

**i** **NOTE:** Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

**i** **NOTE:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance)

**⚠ CAUTION:** Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

**⚠ CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface that is grounded to ground yourself before you touch the computer to perform any disassembly tasks.

**⚠ CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

**⚠ CAUTION:** When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

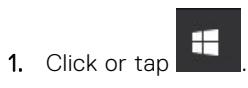
**i** **NOTE:** The color of your computer and certain components may appear differently than shown in this document.

## Turning off your computer — Windows 10

### About this task

**⚠ CAUTION:** To avoid losing data, save and close all open files and exit all open programs before you turn off your computer .

### Steps



1. Click or tap .
2. Click or tap and then click or tap **Shut down**.

 **NOTE:** Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

## Turning off your computer

### About this task

 **CAUTION:** To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

### Steps

1. Turning off your computer (Windows 8.1):
  - a. Using a touch enabled device:
    - a. Swipe in from the right edge of the screen, opening the **Charms** menu and select **Settings**.
    - b. Select  and then select **Shut down**.  
or
    - a. On the **Home** screen, touch  and then select **Shut down**.
  - Using a mouse:
    - a. Point to upper-right corner of the screen and click **Settings**.
    - b. Click  and then select **Shut down**.  
or
    - a. On the **Home** screen, click  and then select **Shut down**.
2. Turning off your computer (Windows 7):
  - a. Click **Start** .
  - b. Click **Shut Down**.
  - or
  - a. Click **Start** .
  - b. Click the arrow in the lower-right corner of the **Start** menu, and then click **Log off**.
3. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

## Before working inside your computer

### Steps

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer.
3. If the computer is connected to a docking device (docked), undock it.
4. Disconnect all network cables from the computer (if available).
-  **CAUTION:** If your computer has an RJ45 port, disconnect the network cable by first unplugging the cable from your computer.
5. Disconnect your computer and all attached devices from their electrical outlets.
6. Open the display.
7. Press and hold the power button for few seconds, to ground the system board.

 **CAUTION:** To guard against electrical shock unplug your computer from the electrical outlet before performing Step # 8.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

8. Remove any installed ExpressCards or Smart Cards from the appropriate slots.

## After working inside your computer

### About this task

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning on your computer.

 **CAUTION:** To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.

### Steps

1. Replace the battery.
2. Replace the base cover.
3. Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
4. Connect any telephone or network cables to your computer.

 **CAUTION:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.

5. Connect your computer and all attached devices to their electrical outlets.
6. Turn on your computer.

# Removing and installing components

This section provides detailed information on how to remove or install the components from your computer.

## Recommended tools

The procedures in this document require the following tools:

- Phillips #0 screwdriver
- Phillips #1 screwdriver
- Plastic scribe

**i** **NOTE:** The #0 screw driver is for screws 0-1 and the #1 screw driver is for screws 2-4

## Screw size list

The following table shows the screw list and the images for different components.

- i** **NOTE:** When removing screws from a component, it is recommended to note the screw type, the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.
- i** **NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surface when replacing a component.
- i** **NOTE:** Screw color may vary with the configuration ordered.

**Table 1. Latitude 3480 screw list**

Component	Screw type	Quantity	Image
Base cover	Captive screws  <b>i</b> <b>NOTE:</b> Screws are part of the base cover.	10	
Battery	M2x3	4	
WLAN card	M2x3	1	
WWAN card	M2x3	1	
Heatsink (UMA)	M2.5x2.5	4	
Heatsink (Discrete)		7	
System fan	M2x3	2	
Hard disk drive (HDD)	M2x3 M3x3	2 4	

**Table 1. Latitude 3480 screw list (continued)**

Component	Screw type	Quantity	Image
			
I/O board	M2.5x5	2	
DC-in port	M2.5x5	3	
Fingerprint reader	M2x3	1	
Touchpad	M2x3	5	
Display assembly	M2x3 M1.6x2	1 3	 
LCD panel	M1.6x2	6	
LCD Hinge	M1.6x2 M2.5x3	2 6	 
System board	M2x3	3	

## SIM tray

### Removing the SIM tray (WWAN models)

#### Steps

1. Follow the procedure [Before working inside your computer](#)

2. Insert the tip of a paperclip into the hole of the SIM tray slot and then pull out and remove the SIM tray [1].



## Installing the SIM tray (WWAN models)

### Steps

1. Align and push the SIM tray back into the SIM tray slot.
2. Follow the procedure in [After working inside your computer](#)

## Base Cover

### Removing the base cover

#### Steps

1. Follow the procedure in [Before working inside your computer](#)
2. Remove the [SIM Tray](#) :
3. To remove the base cover:
  - a. Loosen the M2.5xL8.5 captive screws that secure the base cover to the computer [1].
  - b. Pry the base cover from the edge [2] .

**i | NOTE:** You must use a plastic scribe to pry the base cover from the edge [2].



4. Lift the base cover away from the computer.



## Installing base cover

### Steps

1. Align the base cover with the screw holders on the computer.
2. Press the edges of the cover until it clicks into place.
3. Tighten the M2.5xL8.5 screws to secure the base cover to the computer.
4. Install the:
  - [Installing the SIM tray \(WWAN models\)](#) on page 12
5. Follow the procedure in [After working inside your computer](#)

## Battery

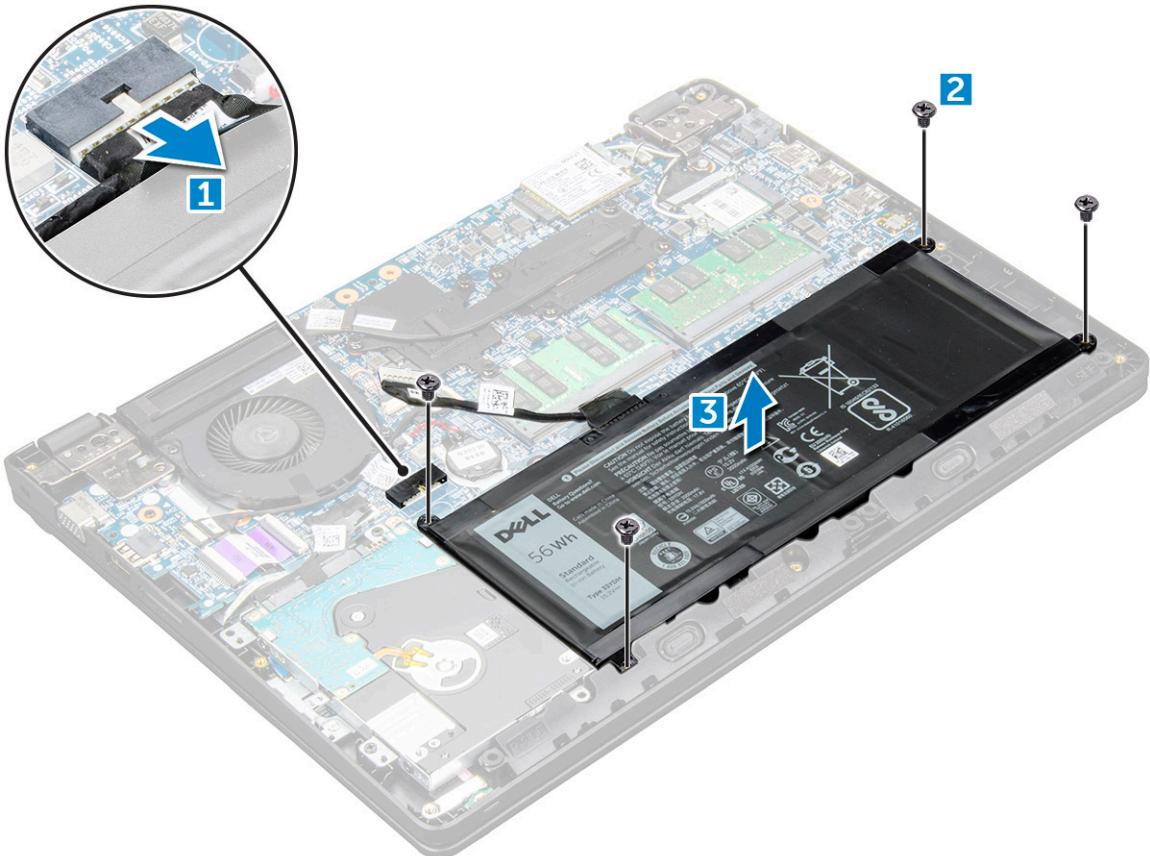
### Lithium-ion battery precautions

-  **CAUTION:**
- Exercise caution when handling Lithium-ion batteries.
  - Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.
  - Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
  - Do not expose the battery to high temperatures, or disassemble battery packs and cells.
  - Do not apply pressure to the surface of the battery.
  - Do not bend the battery.
  - Do not use tools of any kind to pry on or against the battery.
  - Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.
  - If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a Lithium-ion battery can be dangerous. In such an instance, contact for assistance and further instructions.
  - If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See <https://www.dell.com/support>.
  - Always purchase genuine batteries from <https://www.dell.com> or authorized Dell partners and resellers.

## Removing battery

### Steps

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
  - a. [Removing the SIM tray \(WWAN models\)](#) on page 11
  - b. [base cover](#)
3. To remove the battery:
  - a. Disconnect the battery cable from the connector on the system board [1].
  - b. Remove the M2.0x3.0 screws that secure the battery to the computer [2].
  - c. Lift the battery away from the computer [3].



## Installing the battery

### Steps

1. Insert the battery into the slot on the computer.
2. Connect the battery cable to the connector on the battery.
3. Tighten the M2.0xL3 screws to secure the battery to the computer.
4. Install the:
  - a. base cover
  - b. [Installing the SIM tray \(WWAN models\)](#) on page 12
5. Follow the procedure in [After working inside your computer](#).

## Keyboard

### Removing the keyboard

### Steps

1. Follow the procedure in [Before working inside your computer](#)
2. Remove the:
  - a. [Removing the SIM tray \(WWAN models\)](#) on page 11
  - b. [base cover](#)
  - c. [battery](#)
3. Gently pry out the keyboard using a plastic scribe.



4. Pry out the lower edge of the keyboard [1] and flip it over [2].



5. Then, disconnect the backlight connector[1] and the keyboard connector [2].

**i | NOTE:** Disconnect backlight connector only if it is available in the system as it is optional.



6. Remove the keyboard away from the computer.



## Installing the keyboard

### Steps

1. Connect the keyboard cable and the backlight cable (optional) to their respective connectors on the computer.
2. Align the keyboard and gently press until it snaps back into place.
3. Install the:
  - a. [battery](#)
  - b. [base cover](#)
  - c. [Installing the SIM tray \(WWAN models\)](#) on page 12
4. Follow the procedure in [After working inside your computer](#).

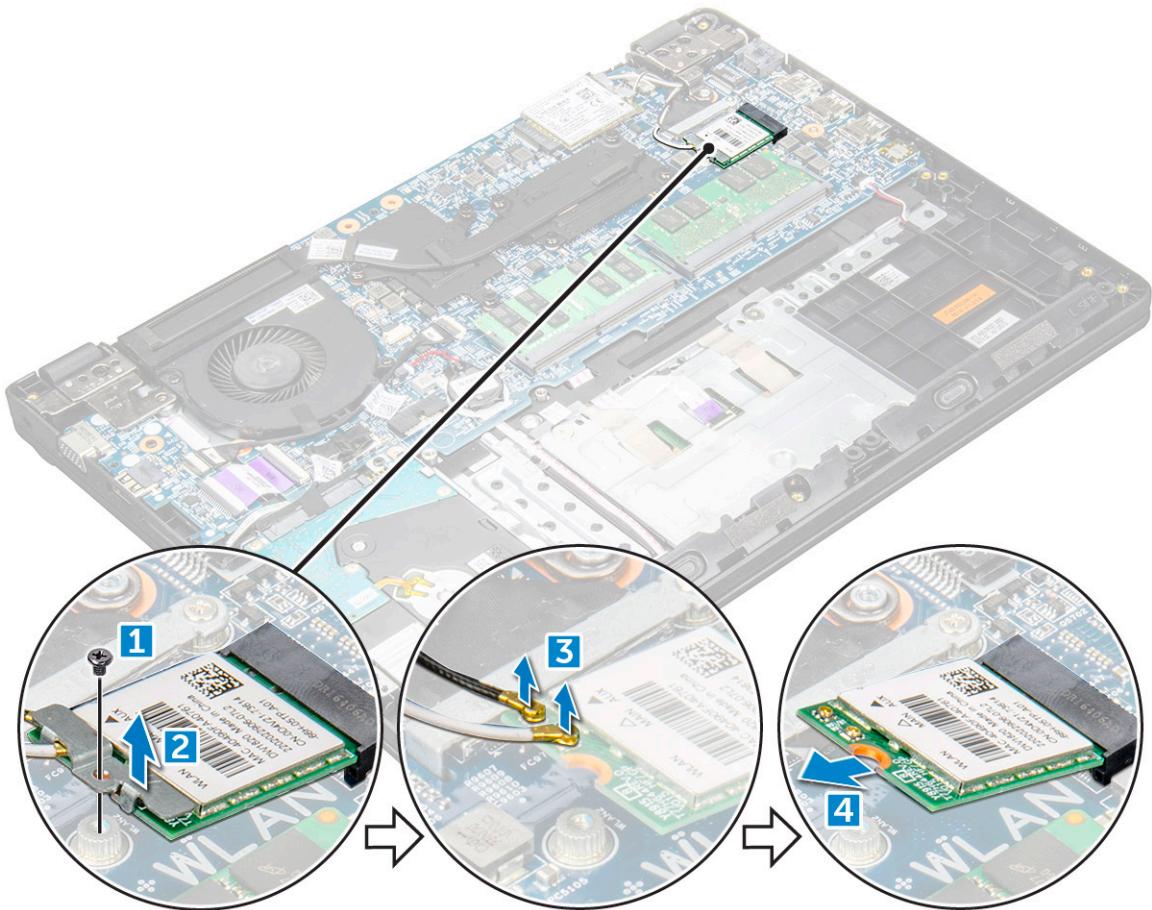
## WLAN Card

### Removing the WLAN card

### Steps

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
  - a. [Removing the SIM tray \(WWAN models\)](#) on page 11
  - b. [base cover](#)
  - c. [battery](#)

3. To remove the WLAN card:
  - a. Remove the M2xL3 screw that secures the WLAN metal bracket to the system [1].
  - b. Lift and remove the metal bracket off the WLAN card [2].
  - c. Disconnect the two WLAN cables that connect the WLAN card to the antenna [3].
  - d. Pull out the WLAN card from its connector on the system board [4].



## Installing the WLAN card

### Steps

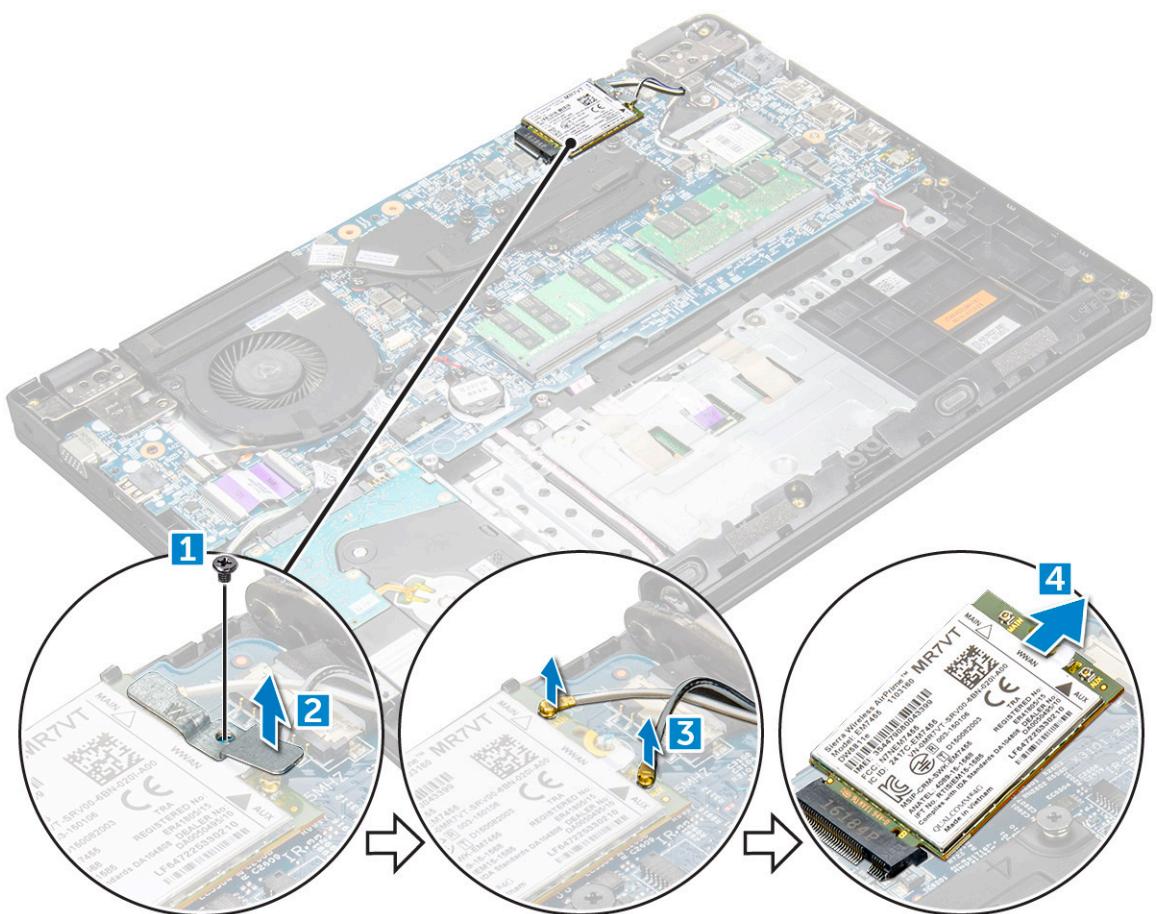
1. Insert the WLAN card into its connector on the system board.
2. Connect the two antenna cables to the WLAN card.
3. Replace the metal bracket on the WLAN.
4. Tighten the M2xL3 screw to secure the WLAN card and bracket to the system board.
5. Install the:
  - a. [battery](#)
  - b. [base cover](#)
  - c. [Installing the SIM tray \(WWAN models\)](#) on page 12
6. Follow the procedure in [After working inside your computer](#)

# WWAN card

## Removing the WWAN card

### Steps

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
  - a. [Removing the SIM tray \(WWAN models\)](#) on page 11
  - b. [base cover](#)
  - c. [battery](#)
3. To remove the WWAN card:
  - a. Remove the M2xL3 screw that secures the WWAN metal bracket to the system [1] and then lift and remove the metal bracket off the WWAN card [2].
  - b. Disconnect the two antenna cables from the WWAN card [3].
  - c. Pull out the WWAN card from its connector on the system board [4].



## Installing the WWAN card

### Steps

1. Insert the WWAN card into its connector on the system board.
2. Connect the two antenna cables to the WWAN card.
3. Replace the metal bracket on the WWAN.
4. Tighten the M2xL3 screw to secure the WWAN card and bracket to the system board.
5. Reconnect the battery.

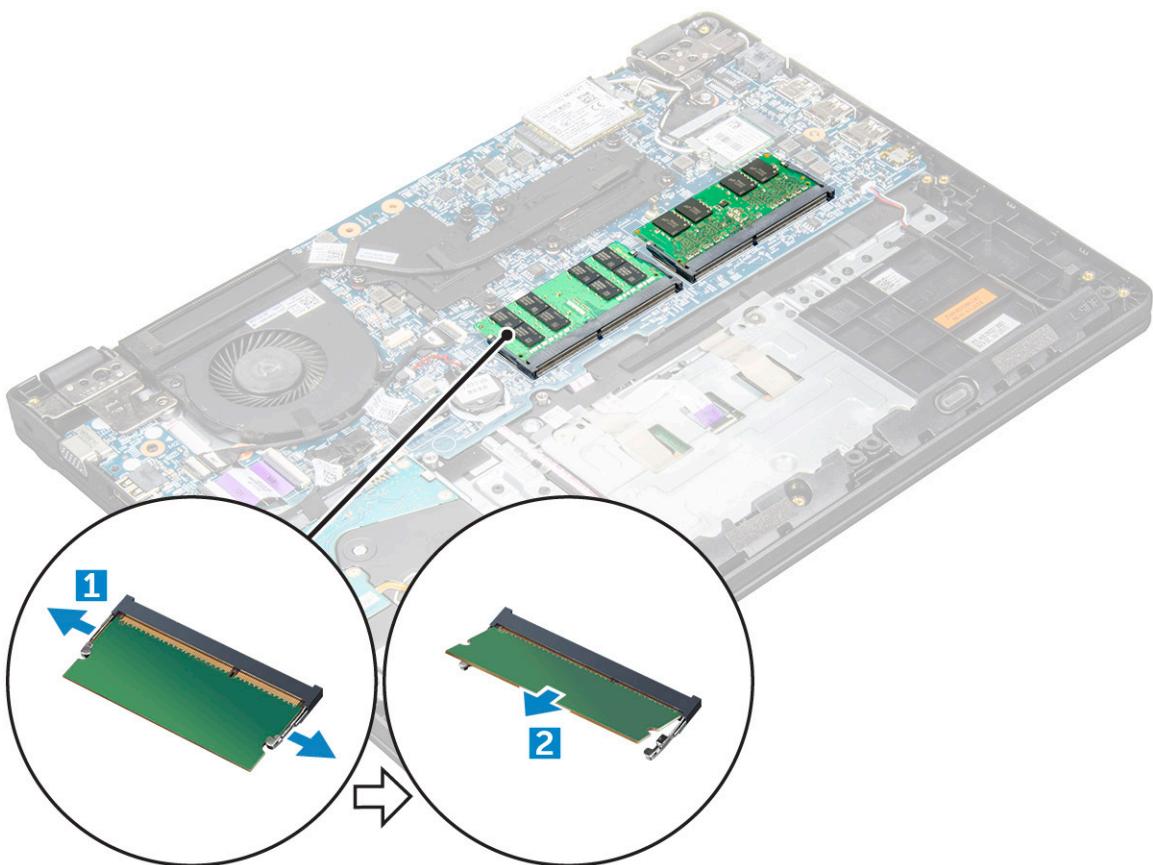
6. Install the:
  - a. [base cover](#)
  - b. [Installing the SIM tray \(WWAN models\)](#) on page 12
7. Follow the procedure in [After working inside your computer](#)

## Memory Module

### Removing the memory module

#### Steps

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
  - a. [Removing the SIM tray \(WWAN models\)](#) on page 11
  - b. [base cover](#)
  - c. [battery](#)
3. To remove the memory module:
  - a. Pry apart the memory module latches [1].
  - b. Lift and remove the memory module from the system board [2].



### Installing the memory module

#### Steps

1. Insert the memory module into its connector on the system board.
2. Gently push the memory module until the latches snap it into place.
3. Install the:

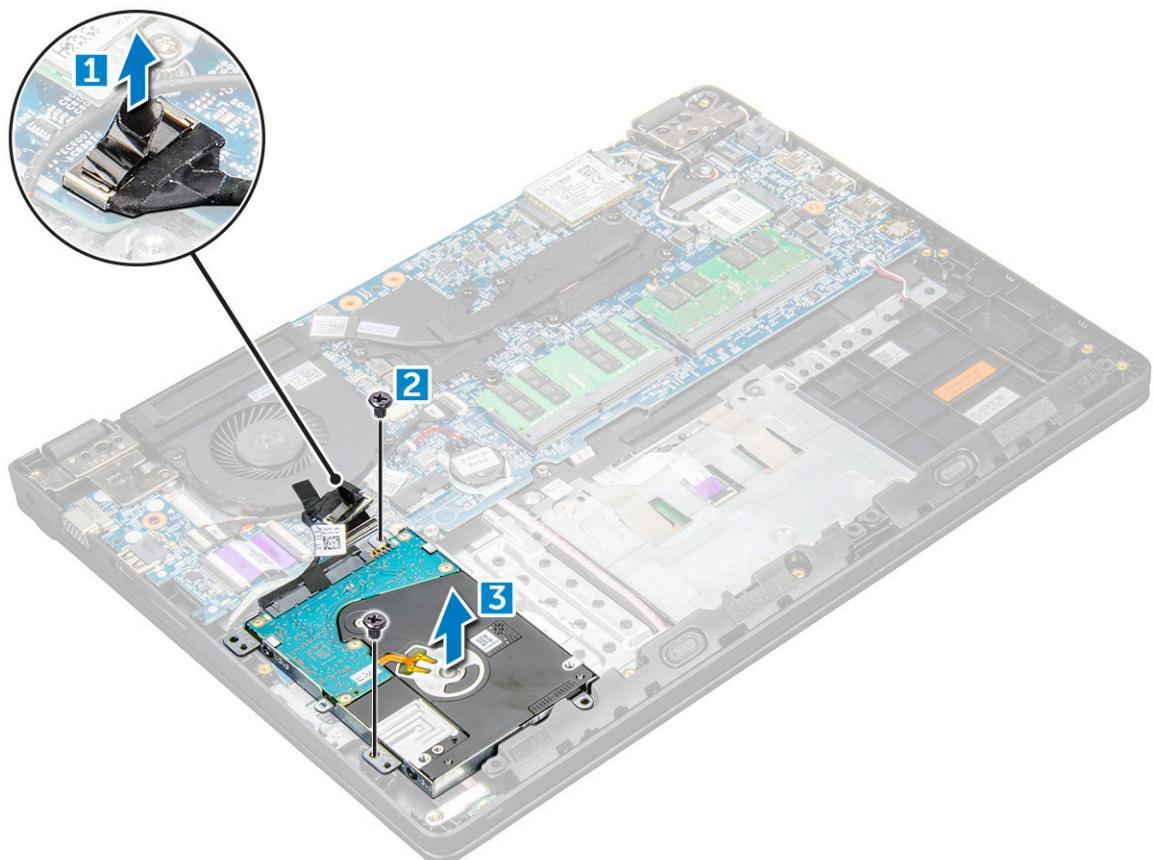
- a. battery
  - b. base cover
  - c. [Installing the SIM tray \(WWAN models\)](#) on page 12
4. Follow the procedure in [After working inside your computer](#).

## Hard disk drive (HDD)

### Removing the hard disk drive (HDD)

#### Steps

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
  - a. [Removing the SIM tray \(WWAN models\)](#) on page 11
  - b. [base cover](#)
  - c. [battery](#)
3. To remove the HDD:
  - a. Disconnect the HDD cable from the system board [1].
  - b. Remove the M2xL3 screws that secure the HDD to the palmrest [2].
  - c. Lift the HDD from the computer [3].



4. Disconnect the HDD cable interposer.



5. Then, remove the M3xL3 screws to detach the metal bracket from the HDD [1].



## Installing the hard disk drive (HDD)

### Steps

1. Tighten the M3xL3 screws that secure the metal bracket to the HDD
2. Connect the HDD cable interposer.
3. Insert the HDD into the connector on the computer.
4. Tighten the M2xL3 screws to secure the HDD to the computer.
5. Connect the HDD cable to the system board.
6. Install the:
  - a. [battery](#)
  - b. [base cover](#)
  - c. [Installing the SIM tray \(WWAN models\)](#) on page 12
7. Follow the procedure in [After working inside your computer](#).

# Technical specifications

 **NOTE:** Offerings may vary by region. For more information regarding the configuration of your computer in:

- Windows 10, click or tap **Start**  > **Settings** > **System** > **About**.

## System specifications

Feature	Specification
<b>Chipset</b>	Intel Skylake and Kabylake (integrated with processor)
<b>DRAM bus width</b>	64-bit
<b>Flash EPROM</b>	SPI 128 Mbits
<b>PCIe bus</b>	100 MHz
<b>External Bus Frequency</b>	PCIe Gen3 (8 GT/s)

## Processor specifications

 **CAUTION:** Before attempting to install Windows 7 or 8, check your processor type. Systems with 7th Generation Intel Core i3/i5/ i7 processors are not eligible for Windows 7/8/8.1 downgrades.

**Table 2. Table showing processor specifications**

Feature	Specification
Types	<p><b>6th Generation Intel Processors</b></p> <ul style="list-style-type: none"> <li>• Intel® Core™ i3-6006U (Dual Core, 2.0GHz, 3M cache,15W)</li> <li>• Intel® Core™ i5-6200U (Dual Core, 2.3GHz, 3M cache, 15W)</li> </ul> <p><b>7th Generation Intel Processors</b></p> <ul style="list-style-type: none"> <li>• Intel® Celeron 3865U (Dual Core, 1.8GHz, 2M cache, 15W)</li> <li>• Intel® Core™ i3-7100U (Dual Core, 2.4GHz, 3M cache,15W )</li> <li>• Intel® Core™ i5-7200U (Dual Core, 2.5GHz, 3M cache,15W)</li> <li>• Intel® Core™ i5-7300U (Dual Core, 2.6GHz, 3M cache,15W)</li> <li>• Intel® Core™ i7-7500U (Dual Core, 2.7GHz, 4M cache,15W)</li> </ul>

# Memory specifications

Feature	Specification
Memory connector	Two SODIMM slots
Memory capacity	16 GB (1 X 4 GB; 1 x 8 GB; 2 x 4 GB; 1 x 16 GB; 2 x 8 GB)
Memory type	DDR4 SDRAM
Speed	2133 MHz
Minimum memory	4 GB
Maximum memory	16 GB

 **NOTE:** The actual memory speed is 2133 MHz, but the label may read as 2400 MHz.

# Hard drive options

This laptop supports :

- 128GB M.2 2280 SSD (via carrier)
- 256GB M.2 2280 SSD (via carrier)
- 32GB M.2 2242 SSD (in WWAN slot)
- 64GB M.2 2242 SSD (via carrier)
- 2.5" 500GB 7200 RPM HDD (7mm)
- 2.5" 1TB 5400 RPM HDD (7mm)
- 2.5" 500GB Hybrid 8GB (7mm)
- 32 GB cache (in WWAN slot)
- Dell Fast Response Free Fall Sensor and HDD Isolation (standard feature)

# Audio specifications

Feature	Specification
Types	High-definition audio
Controller	Realtek ALC3246
Stereo conversion	Stereo conversion: 16/20/24-bit (analog-to-digital and digital-to-analog)
Internal interface	High-definition audio codec
External interface	microphone-in and stereo headphones/speakers universal connector
Speakers	Two
Internal speaker amplifier	<ul style="list-style-type: none"><li>• 2.5 W (RMS) per channel (peak)</li><li>• 2 W (RMS) per channel (average)</li></ul>
Volume controls	Hot keys <ul style="list-style-type: none"><li>• Fn+F2 - Volume Down</li><li>• Fn+F3 - Volume Up</li></ul>

# Video specifications

**Table 3. Table showing video specifications**

Feature	Specification	
Type	Integrated on system board, hardware accelerated	
Controller	<b>UMA :</b> <ul style="list-style-type: none"><li>• Sky Lake: Intel HD Graphics 520</li><li>• Kaby Lake: Intel HD Graphics 610\620</li></ul> <b>Discrete:</b> <ul style="list-style-type: none"><li>• AMD Radeon R5 M430</li></ul>	
External display support	VGA, HDMI 1.4	

# Camera specifications

**i** **NOTE:** There are two camera options available - HD Webcam and Infra-red Camera. The HD Webcam is available with non-touch configuration and Infra-red Camera is available with touch configuration. The Infra-red is the only camera that supports Window Hello.

## Feature—HD Specification

### Webcam

<b>Camera resolution</b>	0.92M Pixels
<b>HD Panel Resolution</b>	1280 x 720 pixels
<b>HD Panel Video Resolution (maximum)</b>	1280 x 720 pixels
<b>Diagonal viewing angle</b>	74°

## Feature— Specification

### Infra-red Camera

<b>Camera resolution</b>	0.3M Pixels
<b>HD Panel Resolution</b>	1280 x 720 pixels
<b>HD Panel Video Resolution (maximum)</b>	640 X 480 pixels

# Communication specifications

## Features Specification

<b>Network adapter</b>	10/100/1000 Mb/s Ethernet (RJ-45)
<b>Wireless</b>	

- Qualcomm QCA9377 802.11ac Dual Band (1x1) Wireless Adapter+ Bluetooth 4.1

<b>Features</b>	<b>Specification</b>
	<ul style="list-style-type: none"> <li>Qualcomm QCA61x4A 802.11ac Dual Band (2x2) Wireless Adapter+ Bluetooth 4.1</li> <li>Intel Dual-Band Wireless-AC 8265 Wi-Fi + BT 4.2 (limited to BT 4.1 by Windows OS) Wireless Card (2x2)</li> </ul>
<b>Mobile Broadband Options</b>	<ul style="list-style-type: none"> <li>Qualcomm Snapdragon X7 LTE-A (DW5811e) for AT&amp;T, Verizon, and Sprint USA (not available with Skylake CPUs or Kabylake CEL CPU)</li> <li>Qualcomm Snapdragon X7 LTE-A (DW5811e) (EMEA/APJ/ROW) (not available with Skylake CPUs or Kabylake CEL CPU)</li> <li>Qualcomm Snapdragon X7 HSPA+ (DW5811e) (China/Indonesia/India) (not available with Skylake CPUs or Kabylake CEL CPU)</li> </ul>

## Ports and connectors specifications

<b>Feature</b>	<b>Specification</b>
<b>Audio</b>	Stereo headset / mic combo
<b>Video</b>	<ul style="list-style-type: none"> <li>One 19-pin HDMI connector</li> <li>one 15-pin VGA connector</li> </ul>
<b>Network adapter</b>	One RJ-45 connector
<b>USB/HDMI/VGA</b>	<ul style="list-style-type: none"> <li>One HDMI</li> <li>One USB 3.1 Gen 1 with PowerShare</li> <li>One USB 3.1 Gen 1</li> <li>One USB 2.0</li> <li>VGA</li> </ul>
<b>Memory card reader</b>	Up to SD 3.0
<b>Micro SIM (uSIM) card</b>	One external (optional)
<b>Docking port</b>	USB docking

## Display specifications

**Table 4. Display Specification**

<b>Feature</b>	<b>14.0– HD Non touch</b>	<b>14.0– FHD Non touch</b>	<b>14.0– HD Touch</b>
Type	HD Anti-glare	FHD Anti-glare	HD Anti-glare
Luminance/Brightness	HD 200nits	FHD 200nits	HD 200nits
Diagonal	14.0 inches	14.0 inches	14.0 inches
Native resolution	HD 1366 x 768	HD 1920 x 1080	HD 1366 x 768
Megapixels	HD 1.05	FHD 2.07	HD 1.05
Contrast Ratio (min)	300:1 for HD	600:1 for HD	300:1 for HD
Refresh rate	60 Hz	60 Hz	60 Hz
Horizontal viewing angle	HD +40/- 40 degrees	FHD +80/- 80 degrees	HD +40/- 40 degrees
Vertical viewing angle	HD +10/-30 degrees	FHD +80/- 80 degrees	HD +10/-30 degrees
Pixel Pitch	HD 0.226 mm	FHD 0.161 mm	HD 0.226 mm

**Table 4. Display Specification (continued)**

<b>Feature</b>	<b>14.0– HD Non touch</b>	<b>14.0– FHD Non touch</b>	<b>14.0– HD Touch</b>
Power Consumption (max)	HD 3.0W	FHD 4.2W	HD 3.0W

## Keyboard specifications

<b>Feature</b>	<b>Specification</b>
----------------	----------------------

- |                       |   |
|-----------------------|---|
| <b>Number of keys</b> | <ul style="list-style-type: none"> <li>United States: 80 keys</li> <li>United Kingdom: 81 keys</li> <li>Europe and Brazil: 82 keys</li> <li>Japan: 84 keys</li> </ul> |
|-----------------------|---|

## Touchpad specifications

<b>Feature</b>	<b>Specification</b>
----------------	----------------------

**Active Area:**

<b>X-axis</b>	99.5mm
<b>Y-axis</b>	53.0mm

## Battery specifications

**Table 5. 42 Whr (3 Cell) Prismatic with ExpressCharge**

<b>Feature</b>	<b>Specification</b>
Type	Li-polymer
Length	184mm (7.24")
Width	97mm (3.82")
Weight	185 g
Height	5.9mm (0.232")
Voltage	11.4VDC
Operating	Charge: 0 °C to 50 °C (32 °F to 122 °F) Discharge: 0 °C to 70 °C (32 °F to 158 °F)
Non-operating	-20 °C to 65 °C (-4 °F to 149 °F)
Coin cell battery	3 V CR2032 lithium coin cell
Life span	300 discharge per charge cycles

**Table 6. 56 Whr (4 Cell) Prismatic with ExpressCharge**

<b>Feature</b>	<b>Specification</b>
Type	Li-polymer
Length	233.06mm (9.170")
Width	90.73mm (3.572")

**Table 6. 56 Whr (4 Cell) Prismatic with ExpressCharge (continued)**

<b>Feature</b>	<b>Specification</b>
Weight	250.00 g
Height	5.9mm (0.232")
Voltage	15.2VDC
Operating	Charge: 0 °C to 50 °C (32 °F to 122 °F) Discharge: 0 °C to 70 °C (32 °F to 158 °F)
Non-operating	-20 °C to 65 °C (-4 °F to 149 °F)
Coin cell battery	3 V CR2032 lithium coin cell
Life span	300 discharge per charge cycles

## AC adapter specifications

<b>Feature</b>	<b>Specification</b>
<b>Type</b>	65 W E4 adapter, 7.4 mm barrel 65 W E5 Rugged adapter, 7.4 mm barrel (available for India only)
<b>Input voltage</b>	100 V AC to 240 V AC
<b>Input current (maximum)</b>	1.6 A / 1.7 A
<b>Input frequency</b>	50 Hz to 60 Hz
<b>Output current</b>	3.34 A
<b>Rated output voltage</b>	19.5 +/- 1.0 V DC
<b>Temperature range (Operating)</b>	0°C to 40°C (32°F to 104°F)
<b>Temperature range (Non-Operating)</b>	-40°C to 70°C (-40°F to 158°F)

## Physical specifications

<b>Feature</b>	<b>Specification</b>
<b>Front height</b>	23.33 mm (0.92 inch)
<b>Back height</b>	23.33 mm (0.91 inch)
<b>Width</b>	337.4 mm (13.3 inch)
<b>Depth</b>	244.0 mm (9.6 inch)
<b>Starting weight</b>	Starts from 3.89 lb / 1.76 kg
	<b>NOTE:</b> System weight and shipping weight is based on a typical configuration and may vary based on the actual configuration.

# Environmental specifications

## Temperature      **Specifications**

<b>Operating</b>	0°C to 35°C (32°F to 95°F)
<b>Storage</b>	-40°C to 65°C (-40°F to 149°F)

## Relative humidity (maximum)      **Specifications**

<b>Operating</b>	10 % to 90 % (non condensing)
<b>Storage</b>	5 % to 95 % (non condensing)

## Altitude (maximum)      **Specifications**

<b>Operating</b>	0 m to 3048 m (0 ft to 10,000 ft)
<b>Non-operating</b>	0 m to 10,668 m (0 ft to 35,000 ft)

**Airborne contaminant level** G1 as defined by ISA-71.04-1985

# Technology and components

This chapter details the technology and components available in the system.

## Power adapter

This laptop is shipped with the 65 Watt or 65 Watt E5 AC Adapter.

**⚠️ WARNING:** When you disconnect the power adapter cable from the laptop, grasp the connector, not the cable itself, and then pull firmly but gently to avoid damaging the cable.

**⚠️ WARNING:** The power adapter works with electrical outlets worldwide. However, power connectors and power strips vary among countries. Using an incompatible cable or improperly connecting the cable to the power strip or electrical outlet may cause fire or equipment damage.

## Processors

This laptop is shipped with the following 6th and 7th Generation Intel processors:

- 6th Generation Intel Processors
  - Intel® Core™ i3-6006U (Dual Core, 3M cache, 2.0GHz, 15W)
  - Intel® Core™ i5-6200U (Dual Core, 3M cache, 2.3GHz, 15W)
- 7th Generation Intel Processors
  - Intel® Celeron 3865U (Dual Core, 2M cache, 1.8GHz, 15W)
  - Intel® Core™ i3-7100U (3M Cache, up to 2.3 GHz)
  - Intel® Core™ i5-7200U (3M Cache, up to 3.1 GHz)
  - Intel® Core™ i5-7300U (3M Cache, up to 3.5 GHz)
  - Intel® Core™ i7-7500U (4M Cache, up to 3.5 GHz)

**(i) NOTE:** The clock speed and performance varies depending on the workload and other variables.

## Identifying processors in Windows 10

### Steps

1. Tap **Search the Web and Windows**.
2. Type **Device Manager**.  
The **Device Manager** window is displayed.
3. Expand **Processors**.

## Identifying processors in Windows 8.1

### Steps

1. Tap **Search the Web and Windows**.
2. Type **Device Manager**.
3. Tap **Processor**.

## Identifying processors in Windows 7

### Steps

1. Click **Start > Control Panel > Device Manager**.
2. Select **Processor**.

## Chipsets

All laptops or notebooks communicate with the CPU through the chipset. This laptop is shipped with the Intel Skylake and Intel Kabylake series chipset.

## Identifying the chipset in Device Manager on Windows 10

### Steps

1. Click inside the **Cortana Search Box** and type **Control Panel** and then click or press **Enter** on the keyboard, for the appropriate search result
2. From the **Control Panel**, select **Device Manager**.
3. Expand **System Devices** and search for the chipset.

## Identifying chipset in Device Manager on Windows 8.1

### Steps

1. Click **Settings**  on the Windows 8.1 Charms Bar.
2. From the **Control Panel**, select **Device Manager**.
3. Expand **System Devices** and search for the chipset.

## Identifying chipset in Device Manager on Windows 7

### Steps

1. Click **Start → Control Panel → Device Manager**.
2. Expand **System Devices** and search for the chipset.

## Display options

## Identifying the display adapter (Windows 7 and Windows 10)

### Steps

1. Start the **Search Charm** and select **Settings**.
2. Type **Device Manager** in the search box, and tap **Device Manager** from the left pane.
3. Expand **Display adapters**.

## Changing the screen resolution (Windows 7, 8.1 and 10)

### Steps

1. Right-click on the desktop and select **Display Settings**.
2. Tap or click **Advanced display settings**.
3. Select the required resolution from the drop-down list and tap **Apply**.

## Adjusting brightness in Windows 10

### About this task

To enable or disable automatic screen brightness adjustment:

### Steps

1. Click open **Settings**  from Start menu on Windows 10.
2. Click **System** → **Display**.
3. Use the **Adjust brightness level** to adjust the brightness manually.

## Adjusting brightness in Windows 8.1

### About this task

To enable or disable automatic screen brightness adjustment:

### Steps

1. Swipe-in from the right edge of the display to access the Charms menu.
2. Tap or click **Settings**  → **Change PC Settings** → **PC and devices** → **Power and sleep**.
3. Use the **Adjust my screen brightness automatically** slider to enable or disable automatic-brightness adjustment.

## Adjusting brightness in Windows 7

### About this task

To enable or disable automatic screen brightness adjustment:

### Steps

1. Click **Start** → **Control Panel** → **Display**.
  2. Use the **Adjust brightness** slider to enable or disable automatic-brightness adjustment.
-  **NOTE:** You can also use the **Brightness level** slider to adjust the brightness manually.

## Connecting to external display devices (Windows 7, 8.1 and 10)

### About this task

Follow these steps to connect your computer to an external display device:

### Steps

1. Ensure that the projector is turned on and plug the projector cable into a video port on your computer.
2. Press the Windows logo+P key.
3. Select one of the following modes:

- PC screen only
- Duplicate
- Extend
- Second Screen only

## DDR4

DDR4 (double data rate fourth generation) memory is a higher-speed successor to the DDR2 and DDR3 technologies and allows up to 512 GB in capacity, compared to the DDR3's maximum of 128 GB per DIMM. DDR4 synchronous dynamic random-access memory is keyed differently from both SDRAM and DDR to prevent the user from installing the wrong type of memory into the system.

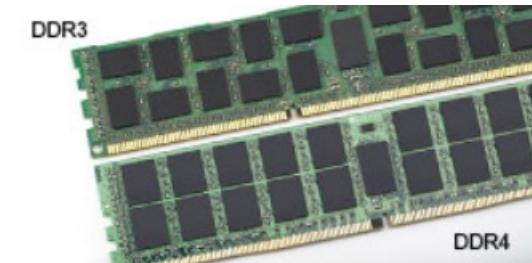
DDR4 needs 20 percent less or just 1.2 volts, compared to DDR3 which requires 1.5 volts of electrical power to operate. DDR4 also supports a new, deep power-down mode that allows the host device to go into standby without needing to refresh its memory. Deep power-down mode is expected to reduce standby power consumption by 40 to 50 percent.

### DDR4 Details

There are subtle differences between DDR3 and DDR4 memory modules, as listed below.

#### Key notch difference

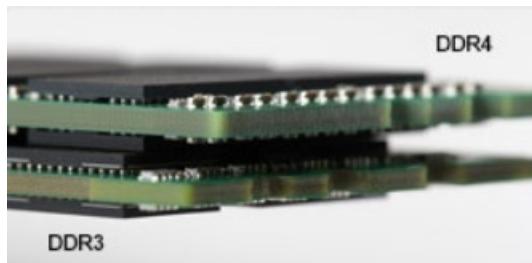
The key notch on a DDR4 module is in a different location from the key notch on a DDR3 module. Both notches are on the insertion edge but the notch location on the DDR4 is slightly different, to prevent the module from being installed into an incompatible board or platform.



**Figure 1. Notch difference**

#### Increased thickness

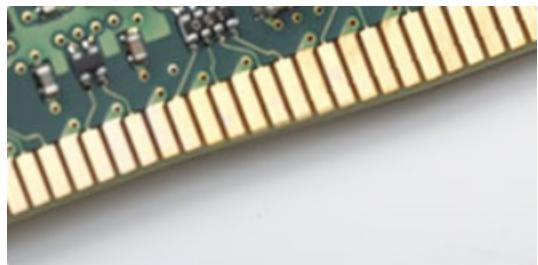
DDR4 modules are slightly thicker than DDR3, to accommodate more signal layers.



**Figure 2. Thickness difference**

#### Curved edge

DDR4 modules feature a curved edge to help with insertion and alleviate stress on the PCB during memory installation.



**Figure 3. Curved edge**

## Memory Errors

Memory errors on the system display the new ON-FLASH-FLASH or ON-FLASH-ON failure code. If all memory fails, the LCD does not turn on. Troubleshoot for possible memory failure by trying known good memory modules in the memory connectors on the bottom of the system or under the keyboard, as in some portable systems.

## Memory features

This laptop supports a minimum memory of 4 GB DDR4 2400 MHz (running at 2133 MHz) and a maximum memory of 16 GB 2400 MHz (running at 2133 MHz).

## Verifying system memory

### Windows 10

1. Tap the **Windows** button and select **All Settings** > **System** .
2. Under **System**, tap **About**.

## Hard drive options

This laptop supports :

- 128GB M.2 2280 SSD (via carrier)
- 256GB M.2 2280 SSD (via carrier)
- 64GB M.2 2242 SSD (via carrier)
- 2.5" 500GB 7200 RPM HDD (7mm)
- 2.5" 1TB 5400 RPM HDD (7mm)
- 2.5" 500GB Hybrid 8GB (7mm)
- 32GB M.2 2242 SSD (in WWAN slot)
- Dell Fast Response Free Fall Sensor and HDD Isolation (standard feature)

## Identifying the hard drive in Windows 10

### Steps

1. Click **All Settings** on the Windows 10 Charms Bar.
2. Click **Control Panel**, select **Device Manager**, and expand **Disk drives**.  
The hard drive is listed under **Disk drives**.

# Identifying the hard drive in Windows 8.1

## Steps

1. Tap or click **Settings**  on the Windows 8.1 Charms Bar.
2. Tap or click **Control Panel**, select **Device Manager**, and expand **Disk drives**.  
The hard drive is listed under Disk drives.

# Identifying the hard drive in Windows 7

## Steps

1. Click **Start > Control Panel > Device Manager**.

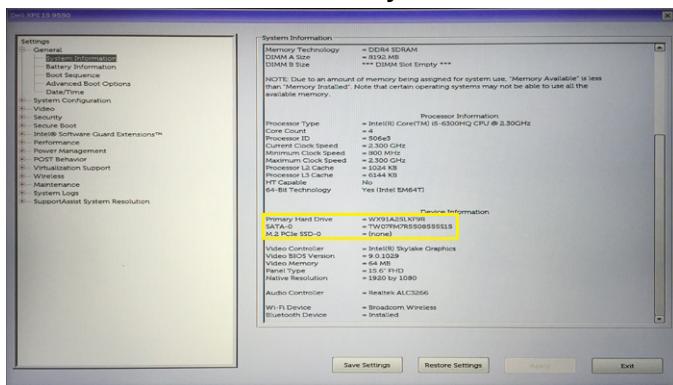
The hard drive is listed under Disk drives.

2. Expand **Disk drives**.

# Identifying the hard drive in the BIOS

## Steps

1. Turn on or restart your system.
2. When the Dell logo appears, perform one of the following actions to enter the BIOS setup program:
  - With keyboard — Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.The hard drive is listed under the **System Information** under the **General** group.



# USB features

The Universal Serial Bus, or well known as USB was introduced to the PC world in 1996 which dramatically simplified the connection between host computer and peripheral devices such as mice and keyboards, external hard drive or optical devices, Bluetooth and many more peripheral devices in the market.

Let's take a quick look on the USB evolution referencing to the table below.

**Table 7. USB evolution**

Type	Data Transfer Rate	Category	Introduction Year
USB 3.0/USB 3.1 Gen 1	5 Gbps	Super Speed	2010
USB 2.0	480 Mbps	High Speed	2000
USB 1.1	12 Mbps	Full Speed	1998
USB 1.0	1.5 Mbps	Low Speed	1996

## USB 3.0/USB 3.1 Gen 1 (SuperSpeed USB)

For years, the USB 2.0 has been firmly entrenched as the de facto interface standard in the PC world with about 6 billion devices sold, and yet the need for more speed grows by ever faster computing hardware and ever greater bandwidth demands. The USB 3.0/USB 3.1 Gen 1 finally has the answer to the consumers' demands with a theoretically 10 times faster than its predecessor. In a nutshell, USB 3.1 Gen 1 features are as follows:

- Higher transfer rates (up to 5 Gbps)
- Increased maximum bus power and increased device current draw to better accommodate power-hungry devices
- New power management features
- Full-duplex data transfers and support for new transfer types
- Backward USB 2.0 compatibility
- New connectors and cable

The topics below cover some of the most commonly asked questions regarding USB 3.0/USB 3.1 Gen 1.

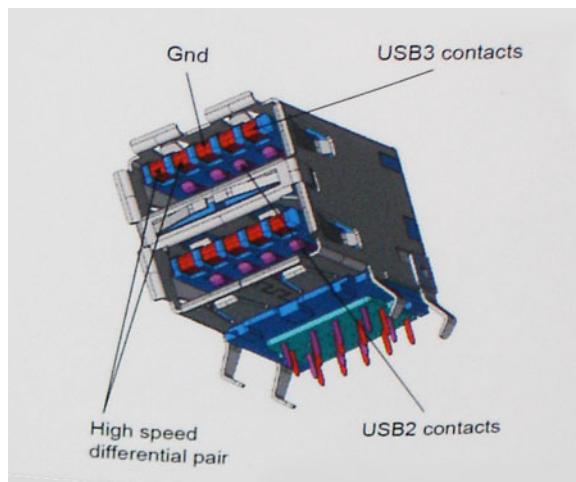


### Speed

Currently, there are 3 speed modes defined by the latest USB 3.0/USB 3.1 Gen 1 specification. They are Super-Speed, Hi-Speed and Full-Speed. The new SuperSpeed mode has a transfer rate of 4.8Gbps. While the specification retains Hi-Speed, and Full-Speed USB mode, commonly known as USB 2.0 and 1.1 respectively, the slower modes still operate at 480Mbps and 12Mbps respectively and are kept to maintain backward compatibility.

USB 3.0/USB 3.1 Gen 1 achieves the much higher performance by the technical changes below:

- An additional physical bus that is added in parallel with the existing USB 2.0 bus (refer to the picture below).
- USB 2.0 previously had four wires (power, ground, and a pair for differential data); USB 3.0/USB 3.1 Gen 1 adds four more for two pairs of differential signals (receive and transmit) for a combined total of eight connections in the connectors and cabling.
- USB 3.0/USB 3.1 Gen 1 utilizes the bidirectional data interface, rather than USB 2.0's half-duplex arrangement. This gives a 10-fold increase in theoretical bandwidth.



With today's ever increasing demands placed on data transfers with high-definition video content, terabyte storage devices, high megapixel count digital cameras etc., USB 2.0 may not be fast enough. Furthermore, no USB 2.0 connection could ever come close to the 480Mbps theoretical maximum throughput, making data transfer at around 320Mbps (40MB/s) — the actual real-world maximum. Similarly, USB 3.0/USB 3.1 Gen 1 connections will never achieve 4.8Gbps. We will likely see a real-world maximum rate of 400MB/s with overheads. At this speed, USB 3.0/USB 3.1 Gen 1 is a 10x improvement over USB 2.0.

## Applications

USB 3.0/USB 3.1 Gen 1 opens up the laneways and provides more headroom for devices to deliver a better overall experience. Where USB video was barely tolerable previously (both from a maximum resolution, latency, and video compression perspective), it's easy to imagine that with 5-10 times the bandwidth available, USB video solutions should work that much better. Single-link DVI requires almost 2Gbps throughput. Where 480Mbps was limiting, 5Gbps is more than promising. With its promised 4.8Gbps speed, the standard will find its way into some products that previously weren't USB territory, like external RAID storage systems.

Listed below are some of the available SuperSpeed USB 3.0/USB 3.1 Gen 1 products:

- External Desktop USB 3.0/USB 3.1 Gen 1 Hard Drives
- Portable USB 3.0/USB 3.1 Gen 1 Hard Drives
- USB 3.0/USB 3.1 Gen 1 Drive Docks & Adapters
- USB 3.0/USB 3.1 Gen 1 Flash Drives & Readers
- USB 3.0/USB 3.1 Gen 1 Solid-state Drives
- USB 3.0/USB 3.1 Gen 1 RAIDs
- Optical Media Drives
- Multimedia Devices
- Networking
- USB 3.0/USB 3.1 Gen 1 Adapter Cards & Hubs

## Compatibility

The good news is that USB 3.0/USB 3.1 Gen 1 has been carefully planned from the start to peacefully co-exist with USB 2.0. First of all, while USB 3.0/USB 3.1 Gen 1 specifies new physical connections and thus new cables to take advantage of the higher speed capability of the new protocol, the connector itself remains the same rectangular shape with the four USB 2.0 contacts in the exact same location as before. Five new connections to carry receive and transmitted data independently are present on USB 3.0/USB 3.1 Gen 1 cables and only come into contact when connected to a proper SuperSpeed USB connection.

Windows 8/10 will be bringing native support for USB 3.1 Gen 1 controllers. This is in contrast to previous versions of Windows, which continue to require separate drivers for USB 3.0/USB 3.1 Gen 1 controllers.

Microsoft announced that Windows 7 would have USB 3.1 Gen 1 support, perhaps not on its immediate release, but in a subsequent Service Pack or update. It is not out of the question to think that following a successful release of USB 3.0/USB 3.1 Gen 1 support in Windows 7, SuperSpeed support would trickle down to Vista. Microsoft has confirmed this by stating that most of their partners share the opinion that Vista should also support USB 3.0/USB 3.1 Gen 1.

Super-Speed support for Windows XP is unknown at this point. Given that XP is a seven-year-old operating system, the likelihood of this happening is remote.

## HDMI 1.4

This topic explains the HDMI 1.4 and its features along with the advantages.

HDMI (High-Definition Multimedia Interface) is an industry-supported, uncompressed, all-digital audio/video interface. HDMI provides an interface between any compatible digital audio/video source, such as a DVD player, or A/V receiver and a compatible digital audio and/or video monitor, such as a digital TV (DTV). The intended applications for HDMI TVs, and DVD players. The primary advantage is cable reduction and content protection provisions. HDMI supports standard, enhanced, or high-definition video, plus multichannel digital audio on a single cable.

 **NOTE:** The HDMI 1.4 will provide 5.1 channel audio support.

## HDMI 1.4 Features

- **HDMI Ethernet Channel** - Adds high-speed networking to an HDMI link, allowing users to take full advantage of their IP-enabled devices without a separate Ethernet cable
- **Audio Return Channel** - Allows an HDMI-connected TV with a built-in tuner to send audio data "upstream" to a surround audio system, eliminating the need for a separate audio cable

- **3D** - Defines input/output protocols for major 3D video formats, paving the way for true 3D gaming and 3D home theater applications
- **Content Type** - Real-time signaling of content types between display and source devices, enabling a TV to optimize picture settings based on content type
- **Additional Color Spaces** - Adds support for additional color models used in digital photography and computer graphics
- **4 K Support** - Enables video resolutions far beyond 1080p, supporting next-generation displays that will rival the Digital Cinema systems used in many commercial movie theaters
- **HDMI Micro Connector** - A new, smaller connector for phones and other portable devices, supporting video resolutions up to 1080p
- **Automotive Connection System** - New cables and connectors for automotive video systems, designed to meet the unique demands of the motoring environment while delivering true HD quality

## Advantages of HDMI

- Quality HDMI transfers uncompressed digital audio and video for the highest, crispest image quality.
- Low-cost HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner
- Audio HDMI supports multiple audio formats from standard stereo to multichannel surround sound
- HDMI combines video and multichannel audio into a single cable, eliminating the cost, complexity, and confusion of multiple cables currently used in A/V systems
- HDMI supports communication between the video source (such as a DVD player) and the DTV, enabling new functionality

## Realtek ALC3246

This laptop is shipped with integrated Realtek ALC3246 controller High Definition audio codec designed for Windows desktops and laptops.

## Camera features

This laptop is shipped with the image resolution of 1280 x 720 (maximum).

## Starting the camera (Windwos 7, 8.1 and 10)

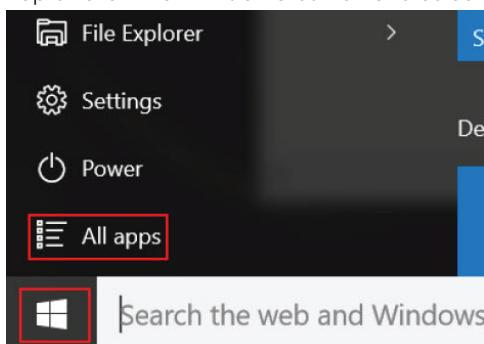
### About this task

To start the camera, open an application that uses the camera. For instance, if you tap the Skype software that is shipped with the laptop, the camera turns on. Similarly, if you are chatting on the internet and the application requests to access the webcam, the webcam turns on.

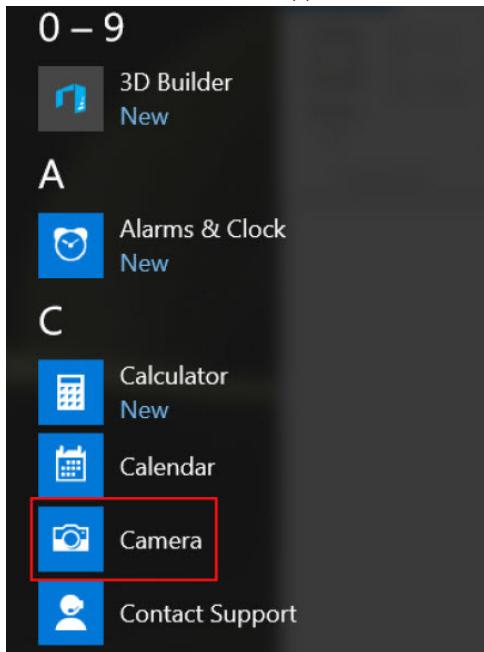
## Starting the camera application

### Steps

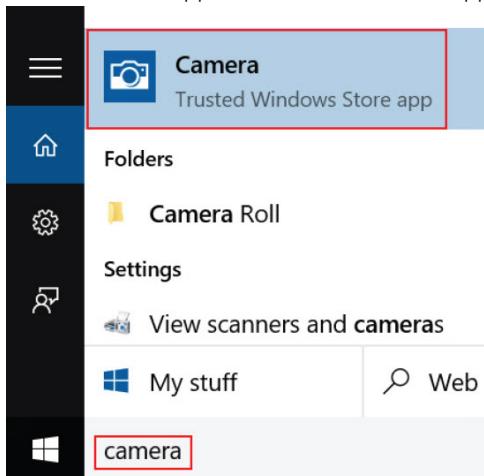
1. Tap or click the **Windows** button and select **All apps**.



2. Select **Camera** from the apps list.



3. If the **Camera** App is not available in the apps list, search for it.



# System setup options

**i|NOTE:** Depending on the computer and its installed devices, the items listed in this section may or may not appear.

## Boot Sequence

Boot Sequence allows you to bypass the System Setup-defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive
- i|NOTE:** XXX denotes the SATA drive number.
- Optical Drive (if available)
- Diagnostics
- i|NOTE:** Choosing **Diagnostics**, will display the **ePSA diagnostics** screen.

The boot sequence screen also displays the option to access the System Setup screen.

## Navigation keys

**i|NOTE:** For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Keys	Navigation
<b>Up arrow</b>	Moves to the previous field.
<b>Down arrow</b>	Moves to the next field.
<b>Enter</b>	Selects a value in the selected field (if applicable) or follow the link in the field.
<b>Spacebar</b>	Expands or collapses a drop-down list, if applicable.
<b>Tab</b>	Moves to the next focus area.
	<b>i NOTE:</b> For the standard graphics browser only.
<b>Esc</b>	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

## System Setup overview

System Setup allows you to:

- Change the system configuration information after you add, change, or remove any hardware in your computer.
- Set or change a user-selectable option such as the user password.
- Read the current amount of memory or set the type of hard drive installed.

Before you use System Setup, it is recommended that you write down the System Setup screen information for future reference.

 **CAUTION:** Unless you are an expert computer user, do not change the settings for this program. Certain changes can cause your computer to work incorrectly.

## Accessing System Setup

### Steps

1. Turn on (or restart) your computer.
2. After the white Dell logo appears, press F2 immediately.

The System Setup page is displayed.

 **NOTE:** If you wait too long and the operating system logo appears, wait until you see the desktop. Then, shut down or restart your computer and try again.

 **NOTE:** After the Dell logo appears, you can also press F12 and then select **BIOS setup**.

## General screen options

This section lists the primary hardware features of your computer.

Option	Description
<b>System Information</b>	This section lists the primary hardware features of your computer. <ul style="list-style-type: none"><li>• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, Express Service Code, the Signed Firmware update—enabled by default</li><li>• Memory Information: Primary Hard Drive, SATA, Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology</li><li>• Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, HT Capable, and 64-Bit Technology</li><li>• Device Information: Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, Bluetooth Device</li></ul>
<b>Battery Information</b>	Displays the battery status health and whether the AC adapter is installed.
<b>Boot Sequence</b>	Allows you to change the order in which the computer attempts to find an operating system. <ul style="list-style-type: none"><li>• Windows Boot Manager ( Default)</li><li>• Boot List Option<ul style="list-style-type: none"><li>◦ Legacy</li><li>◦ UEFI (System Default)</li></ul></li></ul>
<b>Advanced Boot Options</b>	This option allows you the legacy option ROMs to load. By default, the <b>Enable Legacy Option ROMs</b> is disabled. Enable Attempt Legacy Boot is enabled by default.
<b>UEFI boot path security</b>	<ul style="list-style-type: none"><li>• Always, except internal HDD ( Default)</li><li>• Always</li><li>• Never</li></ul>
<b>Date/Time</b>	Allows you to change the date and time.

## System Configuration screen options

Option	Description
<b>Integrated NIC</b>	Controls the on-board LAN controller. <ul style="list-style-type: none"><li>• Enabled w/PXE by default</li></ul>
<b>SATA Operation</b>	Allows you to configure the operating mode of the integrated SATA hard drive controller.

<b>Option</b>	<b>Description</b>
<b>Drives</b>	<ul style="list-style-type: none"> <li>• RAID On — default</li> </ul> <p>Allows you to configure the SATA drives on board.</p> <ul style="list-style-type: none"> <li>• SATA-0 enabled by default</li> <li>• eMMC (System Default)</li> </ul>
<b>SMART Reporting</b>	Controls whether hard drive errors for integrated drivers are reported during system startup. <ul style="list-style-type: none"> <li>• Disabled — default</li> </ul>
<b>USB Configuration</b>	<p>This is an optional feature.</p> <p>This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices—HDD, memory key, floppy.</p> <p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p> <p>The options are:</p> <ul style="list-style-type: none"> <li>• Enable Boot Support—enabled by default</li> <li>• Enable External USB Port—enabled by default</li> </ul> <p><b>(i) NOTE:</b> USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p>
<b>USB PowerShare</b>	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port. This option is disabled by default.
<b>Audio</b>	This field enables or disables the integrated audio controller. By default, the <b>Enable Audio</b> option is selected. The options are: <ul style="list-style-type: none"> <li>• Enable Microphone—by default enable</li> <li>• Enable Internal Speaker—(default enable)</li> </ul>
<b>Touchscreen</b>	Controls whether the touchscreen is enabled or disabled. <ul style="list-style-type: none"> <li>• Enabled — default</li> </ul>
<b>Unobtrusive Mode</b>	When enabled, pressing Fn+F7 will turn off all light and sound emissions from the system. <ul style="list-style-type: none"> <li>• Disabled — default</li> </ul>
<b>Miscellaneous Devices</b>	Allows you to enable or disable the following devices: <ul style="list-style-type: none"> <li>• Camera (default enable)</li> <li>• Secure Digital (SD) card—enabled</li> <li>• Secure Digital (SD) card read-only-mode</li> <li>• Hard drive Free Fall Protection — enabled</li> <li>• Secure Digital (SD) Boot — enabled</li> </ul>

## Video screen options

<b>Option</b>	<b>Description</b>
<b>LCD Brightness</b>	Allows you to set the display brightness depending up on the power source—On Battery and On AC. The LCD brightness is independent for battery and AC adapter. It can be set using the slider.

## Security screen options

<b>Option</b>	<b>Description</b>
<b>Admin Password</b>	Allows you to set, change, or delete the administrator (admin) password. <p><b>(i) NOTE:</b> You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password and the hard drive password.</p>

Option	Description
	<b>i   NOTE:</b> Successful password changes take effect immediately.
<b>System Password</b>	Default setting: Not set
<b>Internal HDD-0 Password</b>	Allows you to set, change, or delete the system password.
	<b>i   NOTE:</b> Successful password changes take effect immediately.
	Default setting: Not set
<b>Internal HDD-0 Password</b>	Allows you to set, change, or delete the administrator password.
	<b>i   NOTE:</b> Successful password changes take effect immediately.
	Default setting: Not set
<b>Strong Password</b>	Allows you to enforce the option to always set strong passwords.
	Default Setting: Enable Strong Password is not selected.
	<b>i   NOTE:</b> If Strong Password is enabled, the Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least eight characters long.
<b>Password Configuration</b>	Allows you to specify the minimum and max password lengths of the Administrator and System passwords.
	<ul style="list-style-type: none"> <li>• min-4—by default, if you want to change you can increase the number.</li> <li>• max-32—you can decrease the number.</li> </ul>
<b>Password Bypass</b>	Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:
	<ul style="list-style-type: none"> <li>• Disabled —enabled by default</li> <li>• Reboot bypass</li> </ul>
<b>Password Change</b>	Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.
	Default setting: <b>Allow Non-Admin Password Changes</b> is selected.
<b>Non-Admin Setup Changes</b>	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled, the setup options are locked by the admin password.
	Option "allow wireless switch changes" is not selected by default.
<b>UEFI Capsule Firmware Updates</b>	Allows you to enable or disable. This option controls whether this system allows BIOS updated via UEFI capsule update packages. The options are:
	<ul style="list-style-type: none"> <li>• Enable UEFI Capsule Firmware—enabled by default</li> </ul>
<b>TPM 2.0 Security</b>	Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:
	<ul style="list-style-type: none"> <li>• TPM On—enabled by default</li> <li>• Clear</li> <li>• PPI Bypass for Enable Commands—enabled by default</li> <li>• PPI Bypass for Disabled Commands</li> <li>• Attestation enable—enabled by default</li> <li>• Key storage enable—enabled by default</li> <li>• SHA-256—enabled by default</li> <li>• Disabled</li> <li>• Enabled—enabled by default</li> </ul>
	<b>i   NOTE:</b> To upgrade or downgrade TPM 2.0, download the TPM wrapper tool—software.
<b>Computrace</b>	Allows you to activate or disable the optional Computrace software. The options are:
	<ul style="list-style-type: none"> <li>• Deactivate</li> <li>• Disable</li> <li>• Activate—enabled by default</li> </ul>

Option	Description
	<p><b>(i) NOTE:</b> The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed.</p>
<b>CPU XD Support</b>	Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support—enabled by default
<b>Admin Setup Lockout</b>	Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: This option is enabled
<b>Master password lockout</b>	This option is not enabled by default

## Secure Boot screen options

Option	Description
<b>Secure Boot Enable</b>	This option enables or disables the <b>Secure Boot</b> feature. <ul style="list-style-type: none"> <li>• Disabled (Default)</li> <li>• Enabled</li> </ul>
<b>Expert Key Management</b>	Allows you to manipulate the security key databases only if the system is in Custom Mode. The <b>Enable Custom Mode</b> option is disabled by default. The options are: <ul style="list-style-type: none"> <li>• PK—enabled by default</li> <li>• KEK</li> <li>• db</li> <li>• dbx</li> </ul> If you enable the <b>Custom Mode</b> , the relevant options for <b>PK, KEK, db, and dbx</b> appear. The options are: <ul style="list-style-type: none"> <li>• <b>Save to File</b>—Saves the key to a user-selected file</li> <li>• <b>Replace from File</b>—Replaces the current key with a key from a user-selected file</li> <li>• <b>Append from File</b>—Adds a key to the current database from a user-selected file</li> <li>• <b>Delete</b>—Deletes the selected key</li> <li>• <b>Reset All Keys</b>—Resets to default setting</li> <li>• <b>Delete All Keys</b>—Deletes all the keys</li> </ul>
	<p><b>(i) NOTE:</b> If you disable the <b>Custom Mode</b>, all the changes made are erased and the keys restore to default settings.</p>

## Performance screen options

Option	Description
<b>Multi-Core Support</b>	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. This option is enabled by default. Allows you to enable or disable multi-core support for the processor. The installed processor supports two cores. If you enable Multi-Core Support, two cores are enabled. If you disable Multi-Core Support, one core is enabled. <ul style="list-style-type: none"> <li>• Enable Multi-Core Support</li> </ul> Default setting: The option is enabled.
<b>Intel SpeedStep</b>	Allows you to enable or disable the Intel SpeedStep feature. <ul style="list-style-type: none"> <li>• Enable Intel SpeedStep</li> </ul> Default setting: The option is enabled.
<b>C-States Control</b>	Allows you to enable or disable the additional processor sleep states. <ul style="list-style-type: none"> <li>• C states</li> </ul>

Option	Description
	<p>Default setting: The option is enabled.</p>
<b>Intel TurboBoost</b>	<p>Allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> <li>Enable Intel TurboBoost</li> </ul> <p>Default setting: The option is enabled.</p>
<b>HyperThread Control</b>	<p>Enables or disables HyperThreading in the processor.</p> <ul style="list-style-type: none"> <li>Enabled — default</li> </ul>

## Power management screen options

Option	Description
<b>AC Behavior</b>	<p>Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected.</p> <p>Default setting: Wake on AC is not selected.</p>
<b>Auto On Time</b>	<p>Allows you to set the time at which the computer must turn on automatically. The options are:</p> <ul style="list-style-type: none"> <li>Disabled</li> <li>Every Day</li> <li>Weekdays</li> <li>Select Days</li> </ul> <p>Default setting: Disabled</p>
<b>USB Wake Support</b>	<p>Allows you to enable USB devices to wake the system from Standby.</p> <p><b>(i) NOTE:</b> This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.</p> <ul style="list-style-type: none"> <li>Enable USB Wake Support</li> <li>Wake on Dell USB-C dock</li> </ul> <p>Default setting: The option is disabled.</p>
<b>Wake on WLAN</b>	<p>Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.</p> <ul style="list-style-type: none"> <li>Disabled</li> <li>WLAN</li> </ul> <p>Default setting: Disabled</p>
<b>Block Sleep</b>	<p>This option lets you block entering to sleep (S3 state) in operating system environment.</p> <p>Block Sleep (S3 state)</p> <p>Default setting: This option is disabled</p>
<b>Peak Shift</b>	<p>This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached.</p> <ul style="list-style-type: none"> <li>Enable peak shift</li> <li>Set battery threshold (15% to 100%) - 15 % (enabled by default)</li> </ul>
<b>Advanced Battery Charge Configuration</b>	<p>This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques during the nonwork hours to improve the battery health.</p> <p>Disabled</p> <p>Default setting: Disabled</p>

<b>Option</b>	<b>Description</b>
<b>Primary Battery Charge Configuration</b>	<p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> <li>• Adaptive—enabled by default</li> <li>• Standard—Fully charges your battery at a standard rate.</li> <li>• ExpressCharge—The battery charges over a shorter time using Dell's fast charging technology. This option is enabled by default.</li> <li>• Primarily AC use</li> <li>• Custom</li> </ul> <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p><b>(i) NOTE:</b> All charging mode may not be available for all the batteries. To enable this option, disable the <b>Advanced Battery Charge Configuration</b> option.</p>

## POST behavior screen options

<b>Option</b>	<b>Description</b>
<b>Adapter Warnings</b>	<p>Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters.</p> <p>Default setting: Enable Adapter Warnings</p>
<b>Fn Key Emulation</b>	<p>Allows you to use the &lt;Scroll Lock&gt; key on an external PS/2 keyboard the same way you use the &lt;Fn&gt; key on the computer's internal keyboard.</p> <ul style="list-style-type: none"> <li>• Enabled — default</li> </ul>
<b>Fn Lock Options</b>	<p>Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are:</p> <ul style="list-style-type: none"> <li>• Lock Mode Disable/Standard—enabled by default</li> <li>• Lock Mode Enable</li> </ul>
<b>Fastboot</b>	<p>Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:</p> <ul style="list-style-type: none"> <li>• Minimal—enabled by default</li> <li>• Thorough</li> <li>• Auto</li> </ul>
<b>Extended BIOS POST Time</b>	<p>Allows you to create an extra preboot delay. The options are:</p> <ul style="list-style-type: none"> <li>• 0 seconds—enabled by default.</li> <li>• 5 seconds</li> <li>• 10 seconds</li> </ul>
<b>Full Screen Logo</b>	<ul style="list-style-type: none"> <li>• Enable Full Screen Logo—not enabled</li> </ul>
<b>Warnings and Errors</b>	<p>This option causes the boot process to only pause when warnings or errors are detected, rather than stop, prompt, and wait for user input.</p> <ul style="list-style-type: none"> <li>• Prompt on Warnings and Errors — enabled (default)</li> </ul>

## Wireless screen options

<b>Option</b>	<b>Description</b>
<b>Wireless Switch</b>	<p>This setting determines which wireless devices can be controlled by the Wireless Switch.</p> <ul style="list-style-type: none"> <li>• WWAN — enabled by default</li> <li>• WLAN — enabled by default</li> <li>• Bluetooth — enabled by default</li> </ul>
<b>Wireless Device Enable</b>	<p>Allows you to enable or disable the internal wireless devices.</p> <ul style="list-style-type: none"> <li>• WLAN — enabled by default</li> </ul>

<b>Option</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>Bluetooth</li> </ul> <p>All the options are enabled by default.</p>

## Maintenance screen options

<b>Option</b>	<b>Description</b>
<b>Service Tag</b>	Displays the Service Tag of your computer.
<b>Asset Tag</b>	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
<b>BIOS Downgrade</b>	This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default.
<b>Data Wipe</b>	This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: <ul style="list-style-type: none"> <li>Internal SATA HDD/SSD</li> <li>Internal M.2 SATA SSD</li> <li>Internal M.2 PCIe SSD</li> <li>Internal eMMC</li> </ul>
<b>BIOS Recovery</b>	This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. <ul style="list-style-type: none"> <li>BIOS Recovery from Hard Drive—enabled by default</li> <li>BIOS Auto-Recovery</li> <li>Always perform integrity check—disabled by default</li> </ul>

## System logs screen options

<b>Option</b>	<b>Description</b>
<b>BIOS Events</b>	Allows you to view and clear the System Setup (BIOS) POST events.
<b>Thermal Events</b>	Allows you to view and clear the System Setup (Thermal) events.
<b>Power Events</b>	Allows you to view and clear the System Setup (Power) events.

## SupportAssist system resolution

<b>Option</b>	<b>Description</b>
<b>Auto OS Recovery Threshold</b>	The Auto OS Recovery Threshold setup option controls the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. <ul style="list-style-type: none"> <li>OFF</li> <li>1</li> <li>2 (default)</li> <li>3</li> </ul>

## Real Time Clock (RTC) reset

The Real Time Clock (RTC) reset function allows you or your service technician to recover late model Dell Latitude and Precision systems from select No POST/No Boot/No Power situations.

You can initiate the RTC reset on the system from a power off state and is connected to AC power. Press and hold the power button for **twenty-five (25) seconds**. The system RTC Reset occurs after you release the power button.

**i** **NOTE:** If AC power is removed from the system during the process or the power button is held longer than 40 seconds, the RTC Reset process is aborted.

The RTC reset will reset the BIOS to Defaults, un-provision Intel vPro, and reset the system date and time.

The following items are not affected by the RTC reset:

- Service Tag
- Asset Tag
- Ownership Tag
- Admin Password
- System Password
- HDD Password
- Key Databases
- System Logs

These items may or may not reset based on your custom BIOS setting selections:

- The Boot List
- Enable Legacy OROMs
- Secure Boot Enable
- Allow BIOS Downgrade

## Verifying system memory in system setup (BIOS)

### Steps

1. Turn on or restart your system.
2. Perform the following actions after the Dell logo is displayed
  - With keyboard — Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.
3. On the left pane, select **Settings > General > System Information**.  
The memory information is displayed on the right pane.

## Updating the BIOS in Windows

### Prerequisites

It is recommended to update your BIOS (System Setup), on replacing the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet

### About this task

**i** **NOTE:** If BitLocker is enabled, it must be suspended prior to updating the system BIOS, and then re-enabled after the BIOS update is completed.

### Steps

1. Restart the computer.
2. Go to **Dell.com/support**.
  - Enter the **Service Tag** or **Express Service Code** and click **Submit**.
  - Click **Detect Product** and follow the instructions on screen,
3. If you are unable to detect or find the Service Tag, click the **Choose from all products**.
4. Choose the **Products** category from the list.

 **NOTE:** Choose the appropriate category to reach the product page

5. Select your computer model and the **Product Support** page of your computer appears.
6. Click **Get drivers** and click **Drivers and Downloads**.  
The Drivers and Downloads section opens.
7. Click **Find it myself**.
8. Click **BIOS** to view the BIOS versions.
9. Identify the latest BIOS file and click **Download**.
10. Select your preferred download method in the **Please select your download method below** window, click **Download File**.  
The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.  
Follow the instructions on the screen.

#### Next steps

 **NOTE:** It is recommended not to update the BIOS version for more than 3 revisions. For example: If you want to update the BIOS from 1.0 to 7.0, then install version 4.0 first and then install version 7.0.

## Updating BIOS on systems with bitlocker enabled

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, please see Knowledge Article: <http://www.dell.com/support/article/us/en/19/SLN153694/updating-bios-on-systems-with-bitlocker-enabled?lang=EN>

## Updating your system BIOS using a USB flash drive

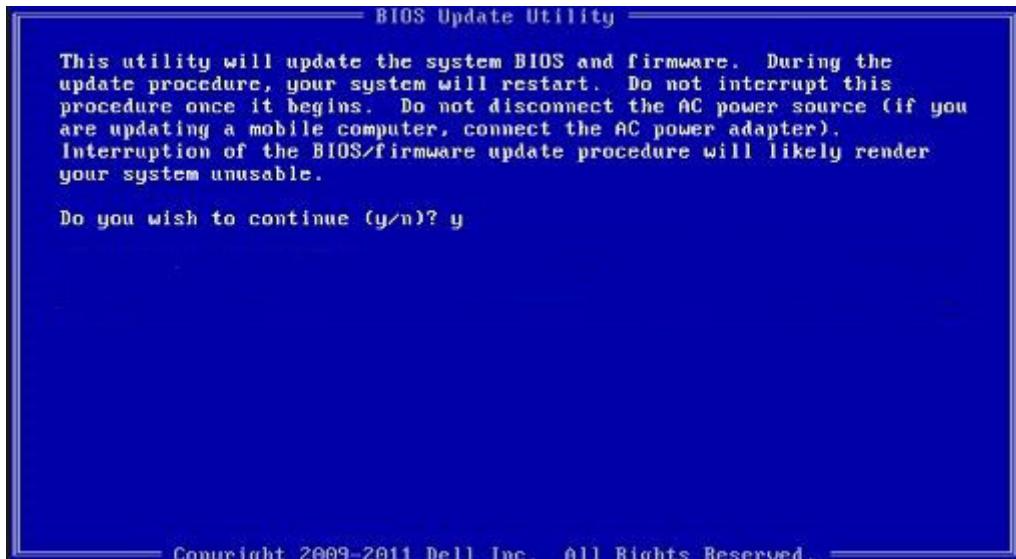
#### About this task

If the system cannot load into Windows but there is still a need to update the BIOS, download the BIOS file using another system and save it to a bootable USB Flash Drive.

 **NOTE:** You will need to use a bootable USB Flash drive. Please refer to the following article for further details: <http://www.dell.com/support/article/us/en/19/SLN143196/how-to-create-a-bootable-usb-flash-drive-using-dell-diagnostic-deployment-package--dddp--?lang=EN>

#### Steps

1. Download the BIOS update .EXE file to another system.
2. Copy the file e.g. O9010A12.EXE onto the bootable USB Flash drive.
3. Insert the USB Flash drive into the system that requires the BIOS update.
4. Restart the system and press F12 when the Dell Splash logo appears to display the One Time Boot Menu.
5. Using arrow keys, select **USB Storage Device** and press Return.
6. The system will boot to a Diag C:\> prompt.
7. Run the file by typing the full filename e.g. O9010A12.exe and press Return.
8. The BIOS Update Utility will load, follow the instructions on screen.



**Figure 4. DOS BIOS Update Screen**

## Updating the Dell BIOS in Linux and Ubuntu environments

If you wish to update the system BIOS in a Linux environment such as Ubuntu, then you can get some help by following the link below: <http://www.dell.com/support/article/us/en/19/SLN171755/updating-the-dell-bios-in-linux-and-ubuntu-environments?lang=EN>

## System and setup password

You can create a system password and a setup password to secure your computer.

Password type	Description
---------------	-------------

**System password** Password that you must enter to log on to your system.

**Setup password** Password that you must enter to access and make changes to the BIOS settings of your computer.

**CAUTION:** The password features provide a basic level of security for the data on your computer.

**CAUTION:** Anyone can access the data stored on your computer if it is not locked and left unattended.

**NOTE:** Your computer is shipped with the system and setup password feature disabled.

## Assigning a system password and setup password

### Prerequisites

You can assign a new **System Password** only when the status is in **Not Set**.

### About this task

To enter the system setup, press F2 immediately after a power-on or re-boot.

### Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.

The **Security** screen is displayed.

2. Select **System Password** and create a password in the **Enter the new password** field.

Use the following guidelines to assign the system password:

- A password can have up to 32 characters.
- The password can contain the numbers 0 through 9.
- Only lower case letters are valid, upper case letters are not allowed.
- Only the following special characters are allowed: space, ("), (+), (.), (-), (.), (/), (;), ([], (\[]), (\]), (\`).

3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.

4. Press Esc and a message prompts you to save the changes.

5. Press Y to save the changes.

The computer reboots.

## Deleting or changing an existing system and/or setup password

### Prerequisites

Ensure that the **Password Status** is **Unlocked** (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is **Locked**.

### About this task

To enter the System Setup, press F2 immediately after a power-on or reboot.

### Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.

The **System Security** screen is displayed.

2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.

3. Select **System Password**, alter or delete the existing system password and press Enter or Tab.

4. Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

**(i) NOTE:** If you change the System and/or Setup password, re-enter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

5. Press Esc and a message prompts you to save the changes.

6. Press Y to save the changes and exit from System Setup.

The computer reboots.

# Software

This section provides information about the operating system, commands, and bundled software for the Dell Latitude 3480/3580.

## Supported operating systems

The following list shows the supported operating systems:

**Table 8. Supported operating systems**

Supported operating systems	Operating System Description
<b>Microsoft Windows 10</b>	<ul style="list-style-type: none"> <li>Microsoft Windows 10 Pro (32/64 bit)</li> <li>Microsoft Windows 10 Home (32/64 bit)</li> </ul>
<b>Microsoft Windows 7/8.1</b>	Windows 7 32/64 bit; Windows 8.1 64 bit (China only)
<b>Ubuntu/Neokylin</b>	Yes
<b>OS Media Support</b>	<ul style="list-style-type: none"> <li>Dell.com/support to download eligible Windows OS</li> <li>USB media available for upsell</li> </ul>

## Downloading drivers

### Steps

- Turn on the laptop.
- Go to [Dell.com/support](#).
- Click **Product Support**, enter the Service Tag of your laptop, and then click **Submit**.

**(i) NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your laptop model.

- Click **Drivers and Downloads**.
- Select the operating system installed on your laptop.
- Scroll down the page and select the driver to install.
- Click **Download File** to download the driver for your laptop.
- After the download is complete, navigate to the folder where you saved the driver file.
- Double-click the driver file icon and follow the instructions on the screen.

## Downloading the chipset driver

### Steps

- Turn on the laptop.
- Go to [Dell.com/support](#).
- Click **Product Support**, enter the Service Tag of your laptop, and then click **Submit**.

**(i) NOTE:** If you do not have the Service Tag, use the autodetect feature or manually browse for your computer model.

- Click **Drivers and Downloads**.
- Select the operating system installed in your laptop.

6. Scroll down the page, expand **Chipset**, and select your chipset driver.
7. Click **Download File** to download the latest version of the chipset driver for your laptop.
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the chipset driver file icon and follow the instructions on the screen.

## Intel chipset drivers

Verify if the Intel chipset drivers are already installed in the laptop.

**Table 9. Intel chipset drivers**

Before installation	After installation
<ul style="list-style-type: none"> <li>✓ Other devices           <ul style="list-style-type: none"> <li>NB-2024-U</li> <li>PCI Data Acquisition and Signal Processing Controller</li> <li>PCI Data Acquisition and Signal Processing Controller</li> <li>PCI Memory Controller</li> <li>PCI Simple Communications Controller</li> <li>SM Bus Controller</li> <li>Unknown device</li> <li>Unknown device</li> <li>Unknown device</li> <li>Unknown device</li> <li>Unknown device</li> <li>Video Controller</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ System devices           <ul style="list-style-type: none"> <li>ACPI Fixed Feature Button</li> <li>ACPI Lid</li> <li>ACPI Power Button</li> <li>ACPI Processor Aggregator</li> <li>ACPI Sleep Button</li> <li>ACPI Thermal Zone</li> <li>Composite Bus Enumerator</li> <li>High Definition Audio Controller</li> <li>High precision event timer</li> <li>Intel(R) Power Engine Plug-in</li> <li>Intel(R) Serial IO I2C Host Controller - 9D60</li> <li>Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 5904</li> <li>Legacy device</li> <li>Microsoft ACPI-Compliant Embedded Controller</li> <li>Microsoft ACPI-Compliant System</li> <li>Microsoft System Management BIOS Driver</li> <li>Microsoft UEFI-Compliant System</li> <li>Microsoft Virtual Drive Enumerator</li> <li>Microsoft Windows Management Interface for ACPI</li> <li>Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #5 - 9D14</li> <li>Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #1 - 9D10</li> <li>Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #6 - 9D15</li> <li>Mobile 6th/7th Generation Intel(R) Processor Family I/O PMC - 9D21</li> <li>Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23</li> <li>Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31</li> <li>Mobile 7th Generation Intel(R) Processor Family I/O LPC Controller (U with iHDPC2.2 Premium) - 9D4E</li> <li>NDIS Virtual Network Adapter Enumerator</li> <li>PCI Express Root Complex</li> <li>Plug and Play Software Device Enumerator</li> <li>Programmable interrupt controller</li> <li>Remote Desktop Device Redirector Bus</li> <li>System CMOS/real time clock</li> <li>System timer</li> <li>UMBus Root Bus Enumerator</li> </ul> </li> </ul>

## Intel HD Graphics drivers

Verify if the Intel HD Graphics drivers are already installed in the laptop.

**Table 10. Intel HD Graphics drivers**

Before installation	After installation
<ul style="list-style-type: none"> <li>✓ Display adapters           <ul style="list-style-type: none"> <li>Microsoft Basic Display Adapter</li> </ul> </li> <li>✓ Sound, video and game controllers           <ul style="list-style-type: none"> <li>High Definition Audio Device</li> <li>High Definition Audio Device</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Display adapters           <ul style="list-style-type: none"> <li>Intel(R) HD Graphics 610 .</li> </ul> </li> </ul>

## AMD graphics

For models with discrete graphics, verify if the AMD Graphics driver is already installed in the system, by referring to the illustration below.

**Table 11. AMD graphics**

Before installation	After installation
▼  Display adapters Intel(R) HD Graphics 620	▼  Display adapters Intel(R) HD Graphics 620 Radeon (TM) R5 M430

## IR camera

For models with an IR camera, verify if the IR Camera driver is already installed in the system, by referring to the illustration below. There is no visible change in this entry.

**Table 12. IR camera**

Before installation	After installation
▼  Imaging devices Integrated Webcam Integrated Webcam	▼  Imaging devices Integrated Webcam Integrated Webcam

## NEXT Biometrics Fingerprint Reader

For models with a fingerprint reader, verify if the NEXT Biometrics fingerprint reader driver is already installed in the system, by referring to the illustration below.

**Table 13. NEXT Biometrics Fingerprint Reader**

Before installation	After installation
▼  Other devices NB-2024-U	▼  Biometric devices NEXT Biometrics NB-2024-U

# Troubleshooting

## Enhanced Pre-Boot System Assessment (ePSA) diagnostics

### About this task

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

 **CAUTION:** Use the system diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

 **NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

## Running the ePSA diagnostics

### Steps

1. Power-on the computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.  
The **Enhanced Pre-boot System Assessment** window is displayed.
4. Click the arrow key at the bottom left corner.  
Diagnostics front page is displayed.
5. Press the arrow in the lower-right corner to go to the page listing.  
The items detected are listed.
6. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
7. Select the device from the left pane and click **Run Tests**.
8. If there are any issues, error codes are displayed.  
Note the error code and validation number and contact Dell.

## Testing memory using ePSA

### Steps

1. Turn on or restart your system.
  2. Perform one of the following actions after the Dell logo is displayed:
    - With keyboard — Press **F12**.
- The PreBoot System Assessment (PSA) starts on your system.

 **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Turn off the laptop and try again.

## Real Time Clock (RTC) reset

The Real Time Clock (RTC) reset function allows you or the service technician to recover the recently launched model Dell Latitude and Precision systems from select **No POST/No Boot/No Power** situations. You can initiate the RTC reset on the system from a power off state only if it is connected to AC power. Press and hold the power button for 25 seconds. The system RTC reset occurs after you release the power button.

 **NOTE:** If AC power is disconnected from the system during the process or the power button is held longer than 40 seconds, the RTC reset process is aborted.

The RTC reset will reset the BIOS to Defaults, un-provision Intel vPro and reset the system date and time. The following items are unaffected by the RTC reset:

- Service Tag
- Asset Tag
- Ownership Tag
- Admin Password
- System Password
- HDD Password
- Key Databases
- System Logs

The following items may or may not reset based on your custom BIOS setting selections:

- The Boot List
- Enable Legacy OROMs
- Secure Boot Enable
- Allow BIOS Downgrade

# Contacting Dell

## Prerequisites

 **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

## About this task

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

## Steps

1. Go to **Dell.com/support**.
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.