

Latitude 3580

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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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.

⚠ WARNING: 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.

⚠ WARNING: 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

⚠ 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.

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

Turning off your computer — Windows 10

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

- 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

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

- Turning off your computer (Windows 8.1):
 - Using a touch enabled device:
 - Swipe in from the right edge of the screen, opening the **Charms** menu and select **Settings**.
 - Select  and then select **Shut down**.
or
 - On the **Home** screen, touch  and then select **Shut down**.
 - Using a mouse:
 - Point to upper-right corner of the screen and click **Settings**.
 - Click  and then select **Shut down**.
or
 - On the **Home** screen, click  and then select **Shut down**.
- Turning off your computer (Windows 7):
 - Click **Start** .
 - Click **Shut Down**.
or
 - Click **Start** .
 - Click the arrow in the lower-right corner of the **Start** menu, and then click **Log off**.
- 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 — Windows 7

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

- Click **Start**.
- Click **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.

Before working inside your computer

- Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
- Turn off your computer.
- If the computer is connected to a docking device (docked), undock it.
- 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.

- Disconnect your computer and all attached devices from their electrical outlets.
- 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

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.

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

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

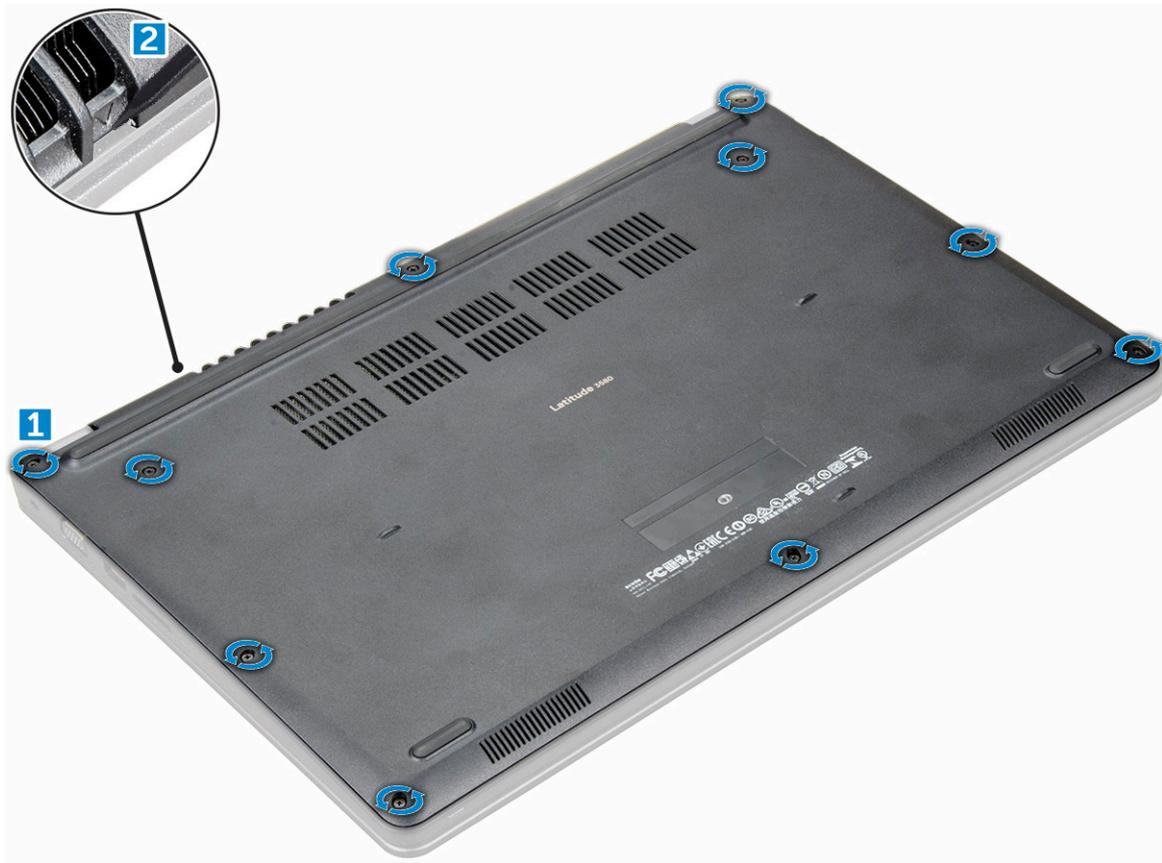
Base Cover

Removing the base cover

- 1 Follow the procedure in [Before working inside your computer](#)
- 2 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].

NOTE: You may need a plastic scribe to pry the base cover from the edge [2].





3 Lift the base cover away from the computer.



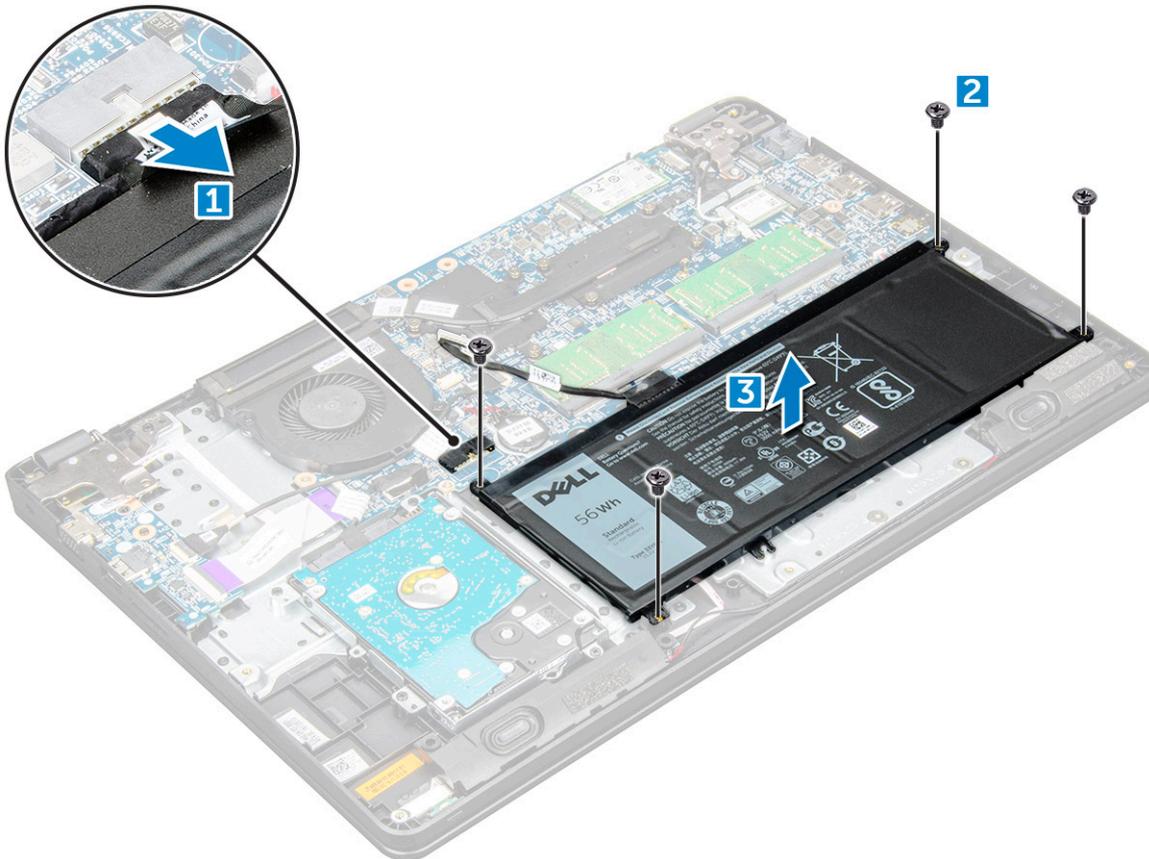
Installing base cover

- 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 Follow the procedure in [After working inside your computer](#)

Battery

Removing the battery

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [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

- 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](#)
- 5 Follow the procedure in [After working inside your computer](#).

Keyboard

Removing the keyboard

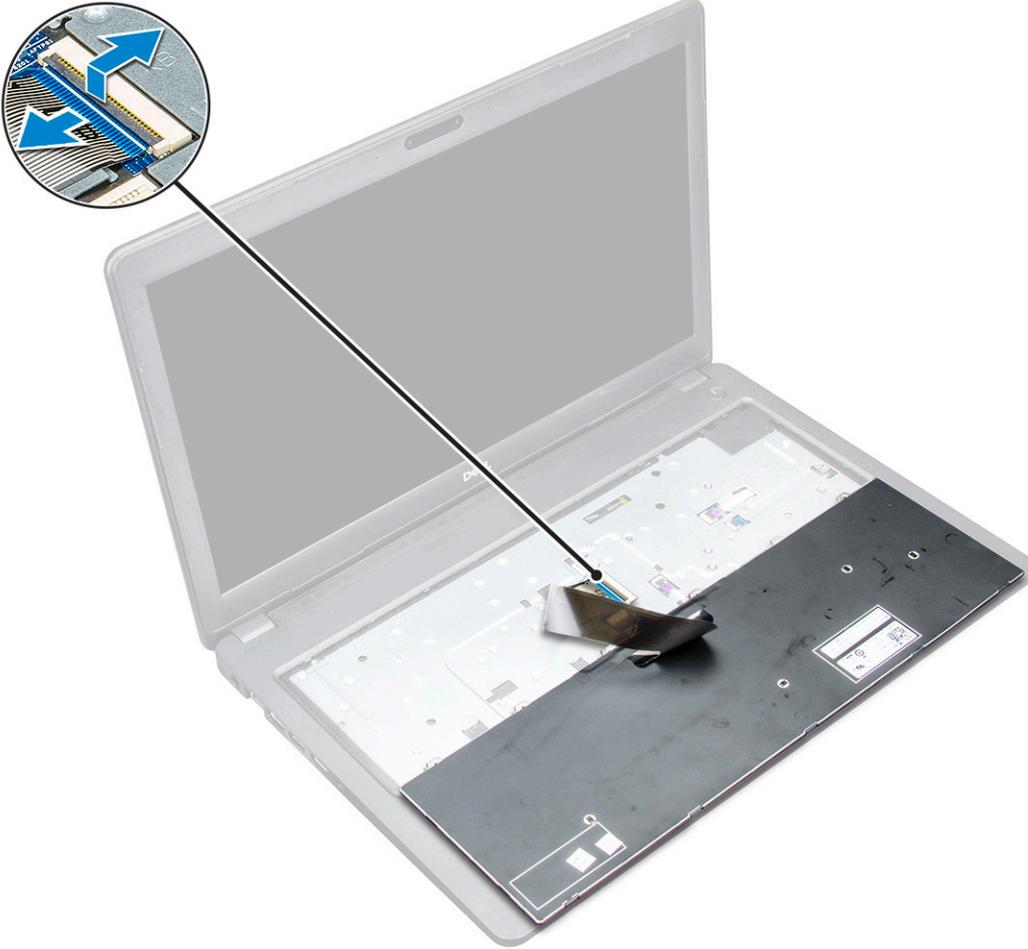
- 1 Follow the procedure in [Before working inside your computer](#)
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
- 3 Gently pry out the keyboard using a plastic scribe.



- 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].



6 Remove the keyboard away from the computer.



Installing the keyboard

- 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
- 4 Follow the procedure in [After working inside your computer](#).

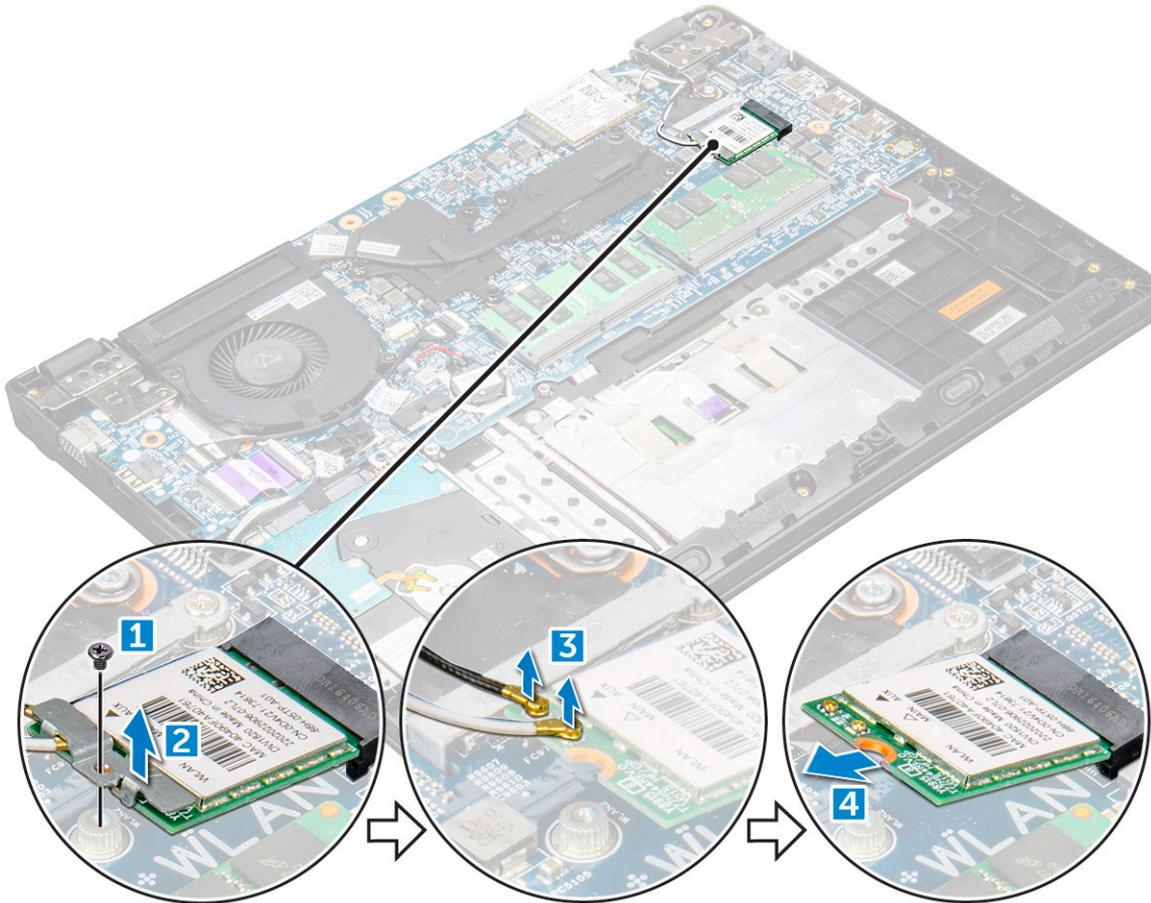
WLAN Card

Removing the WLAN card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b 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

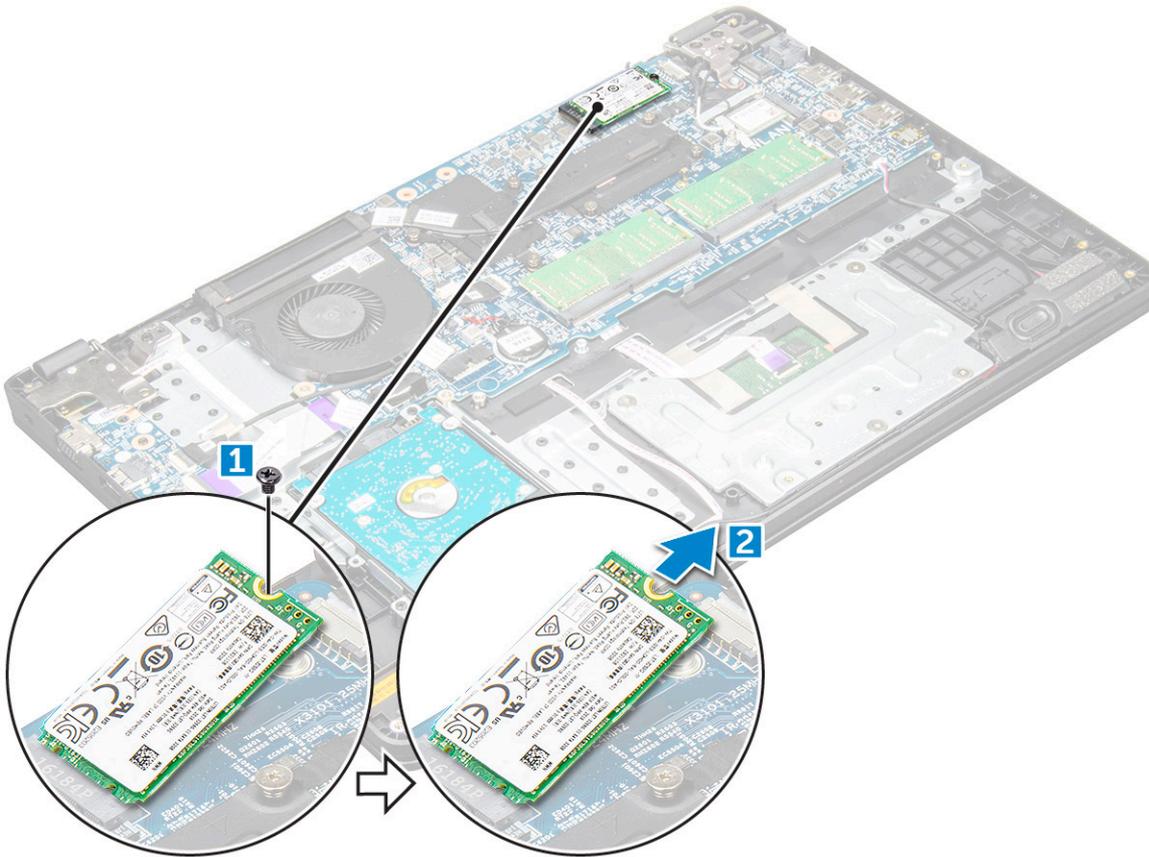
- 1 Insert the WLAN card into its connector on the system board.
- 2 Connect the two antenna cables to the WLAN card.
- 3 Replace the metal bracket on the WLAN.
- 4 Tighten the M2xL3 screw to secure the WLAN card and bracket to the system board.
- 5 Install the:
 - a battery
 - b base cover
- 6 Follow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

WWAN card

Removing the WWAN card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery

- 3 To remove the WWAN card:
 - a Remove the M2xL3 screw that secures the WWAN card to the system board [1] and then left and pull out the WWAN card from its connector [2].



Installing the WWAN card

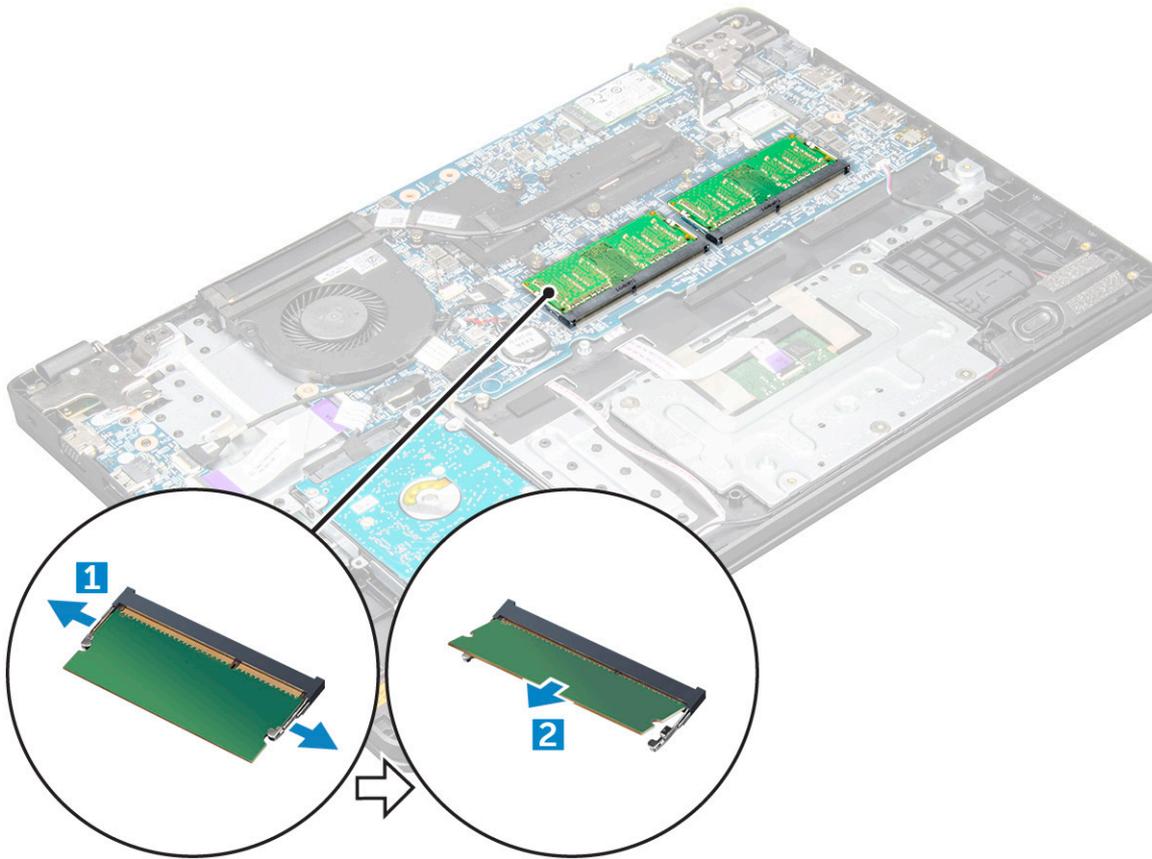
- 1 Insert the WWAN card into its connector on the system board.
- 2 Tighten the M2xL3 screw to secure the WWAN card to the system board.
- 3 Install the:
 - a [battery](#)
 - b [base cover](#)
- 4 Follow the procedure in [After working inside your computer](#)

Memory Module

Removing the memory module

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [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].





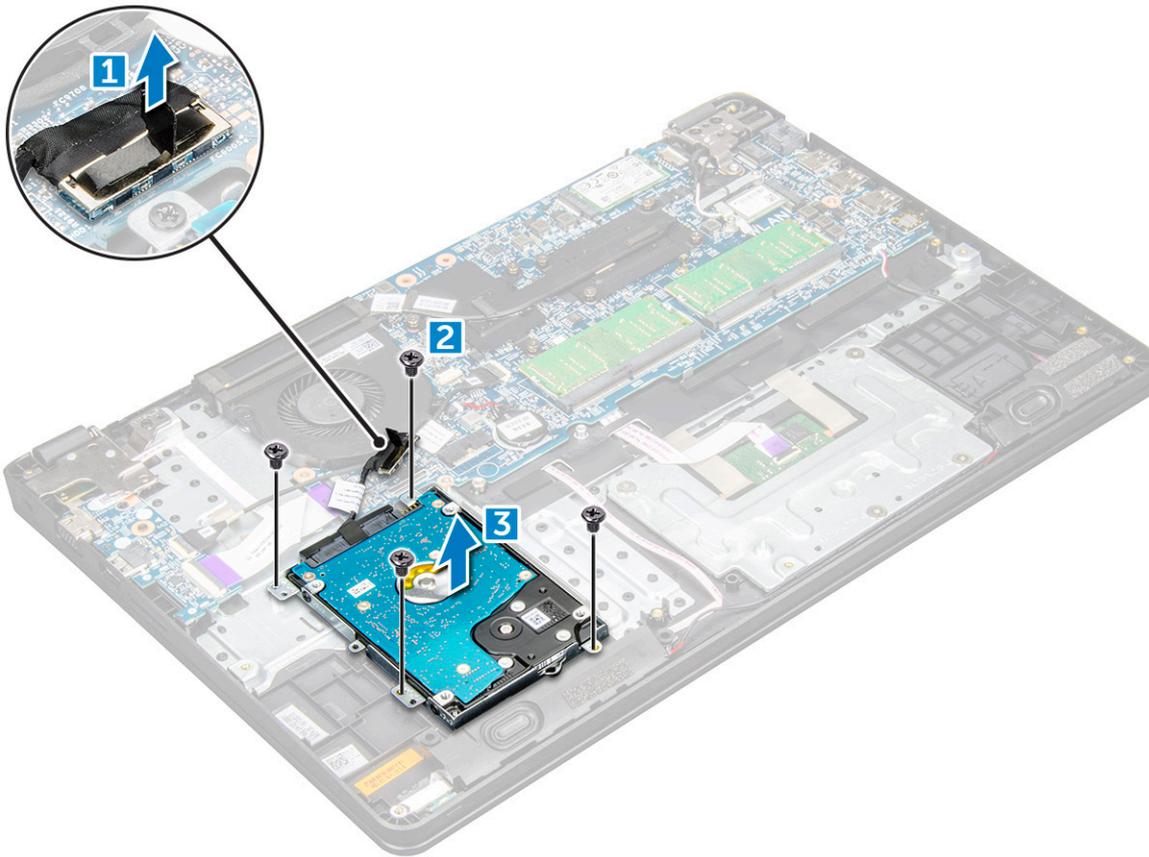
Installing the memory module

- 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
- 4 Follow the procedure in [After working inside your computer](#).

Hard disk drive (HDD)

Removing the hard disk drive (HDD)

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b 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)

- 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
- 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**.

Topics:

- System specifications
- Processor specifications
- Memory specifications
- Hard drive options
- Audio specifications
- Video specifications
- Camera specifications
- Communication specifications
- Ports and connectors specifications
- Display specifications
- Keyboard specifications
- Touchpad specifications
- Battery specifications
- AC adapter specifications
- Physical specifications
- Environmental specifications

System specifications

| Feature | Specification |
|------------------------|--|
| Chipset | Intel Skylake and Kabylake (integrated with processor) |
| DRAM bus width | 64-bit |
| Flash EPROM | SPI 128 Mbits |
| PCIe bus | 100 MHz |
| External Bus Frequency | 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 1. Table showing processor specifications

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

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 |



| Feature | Specification |
|----------------------------|---|
| 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"> · 2.5 W (RMS) per channel (peak) · 2 W (RMS) per channel (average) |
| Volume controls | Hot keys |

Video specifications

Table 2. Table showing video specifications

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

Camera specifications

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 Webcam | Specification |
|-------------------------------------|-------------------|
| Camera resolution | 0.92M Pixels |
| HD Panel Resolution | 1280 x 720 pixels |
| HD Panel Video Resolution (maximum) | 1280 x 720 pixels |
| Diagonal viewing angle | 74° |

| Feature—Infra-red Camera | Specification |
|--------------------------|-------------------|
| Camera resolution | 0.3M Pixels |
| HD Panel Resolution | 1280 x 720 pixels |



| | |
|--|----------------------|
| Feature—Infra-red Camera | Specification |
| HD Panel Video Resolution (maximum) | 640 X 480 pixels |

Communication specifications

| Features | Specification |
|---------------------------------|---|
| Network adapter | 10/100/1000 Mb/s Ethernet (RJ-45) |
| Wireless | <ul style="list-style-type: none"> Qualcomm QCA9377 802.11ac Dual Band (1x1) Wireless Adapter+ Bluetooth 4.1 Qualcomm QCA61x4A 802.11ac Dual Band (2x2) Wireless Adapter+ Bluetooth 4.1 Intel Dual-Band Wireless-AC 8265 Wi-Fi + BT 4.2 (limited to BT 4.1 by Windows OS) Wireless Card (2x2) |
| Mobile Broadband Options | <ul style="list-style-type: none"> Qualcomm Snapdragon X7 LTE-A (DW5811e) for AT&T, Verizon, and Sprint USA (not available with Skylake CPUs or Kabylake CEL CPU) Qualcomm Snapdragon X7 LTE-A (DW5811e) (EMEA/APJ/ROW) (not available with Skylake CPUs or Kabylake CEL CPU) Qualcomm Snapdragon X7 HSPA+ (DW5811e) (China/Indonesia/India) (not available with Skylake CPUs or Kabylake CEL CPU) |

Ports and connectors specifications

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

Display specifications

Table 3. Display Specifications

| Feature | 15.6– HD Non touch | 15.6– FHD Non touch | 15.6– HD Non touch |
|--------------------------|------------------------|----------------------|------------------------|
| Type | HD Anti-glare | FHD Anti-glare | HD Anti-glare |
| Luminance/Brightness | HD 200nits | FHD 220nits | HD 200nits |
| Diagonal | 15.6 inches | 15.6 inches | 15.6 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) | 400:1 for HD | 400:1 for HD | 400:1 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 HD +10/- 30 degrees | FHD +80/- 80 degrees | HD HD +10/- 30 degrees |
| Pixel Pitch | HD 0.252 mm | FHD 0.179 mm | HD 0.252 mm |
| Power Consumption (max) | HD 4.0W | FHD 3.7W | HD 4.0W |

Keyboard specifications

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

Touchpad specifications

| Feature | Specification |
|--------------|---------------|
| Active Area: | |
| X-axis | 99.5mm |
| Y-axis | 53.0mm |



Battery specifications

Table 4. 42 Whr (3 Cell) Prismatic with ExpressCharge

| Feature | Specification |
|-------------------|---|
| 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 5. 56 Whr (4 Cell) Prismatic with ExpressCharge

| Feature | Specification |
|-------------------|---|
| Type | Li-polymer |
| Length | 233.06mm (9.170") |
| Width | 90.73mm (3.572") |
| 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

| Feature | Specification |
|----------------------|--|
| Type | 65 W E4 adapter, 7.4 mm barrel 65 W E5 Rugged adapter, 7.4 mm barrel (available for India only) |
| Input voltage | 100 V AC to 240 V AC |



| Feature | Specification |
|-----------------------------------|--------------------------------|
| Input current (maximum) | 1.6 A / 1.7 A |
| Input frequency | 50 Hz to 60 Hz |
| Output current | 3.34 A |
| Rated output voltage | 19.5 +/- 1.0 V DC |
| Temperature range (Operating) | 0°C to 40°C (32°F to 104°F) |
| Temperature range (Non-Operating) | -40°C to 70°C (-40°F to 158°F) |

Physical specifications

| Feature | Specification |
|-----------------|-------------------------------|
| Front height | 0.92 inch / 23.3 mm |
| Width | 14.9 inch / 379.0 mm |
| Depth | 10.0 inches / 255.0 mm |
| Starting weight | Starts from 4.29 lb / 1.95 kg |

NOTE: System weight and shipping weight is based on a typical configuration and may vary based on the actual configuration.

Environmental specifications

| Temperature | Specifications |
|-------------|--------------------------------|
| Operating | 0°C to 35°C (32°F to 95°F) |
| Storage | -40°C to 65°C (-40°F to 149°F) |

| Relative humidity (maximum) | Specifications |
|-----------------------------|-------------------------------|
| Operating | 10 % to 90 % (non condensing) |
| Storage | 5 % to 95 % (non condensing) |

| Altitude (maximum) | Specifications |
|--------------------|-------------------------------------|
| Operating | 0 m to 3048 m (0 ft to 10,000 ft) |
| Non-operating | 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.

Topics:

- [Power adapter](#)
- [Processors](#)
- [Chipsets](#)
- [Display options](#)
- [Memory features](#)
- [Hard drive options](#)
- [USB features](#)
- [HDMI 1.4](#)
- [Realtek ALC3246](#)
- [Camera features](#)

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)

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

Verifying the processor usage in Task Manager

- 1 **Ctrl+Alt+Del.**
- 2 Select **Start Task Manager.**
The **Windows Task Manager** window is displayed.
- 3 Click the **Performance** tab in the **Windows Task Manager** window.

Verifying the processor usage in Resource Monitor

- 1 **Ctrl+Alt+Del.**
- 2 Select **Start Task Manager.**
The **Windows Task Manager** window is displayed.
- 3 Click the **Performance** tab in the **Windows Task Manager** window.
The processor performance details are displayed.
- 4 Click **Open Resource Monitor.**

Identifying processors in Windows 10

- 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

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

Identifying processors in Windows 7

- 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

- 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

- 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

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

Intel HD Graphics

This computer is shipped with the following list of Intel HD Graphics chipsets.

- 1 Intel Core i3-6606U Intel HD graphics 520
- 2 Intel Celeron 3865U Intel HD graphics 610
- 3 Intel Pentium 4415U Intel HD graphics 610
- 4 Intel Core i5-7200U Intel HD graphics 620

Display options

Identifying the display adapter (Windows 7 and Windows 10)

- 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)

- 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

To enable or disable automatic screen brightness adjustment:

- 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

To enable or disable automatic screen brightness adjustment:

- 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

To enable or disable automatic screen brightness adjustment:

- 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)

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

- 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.

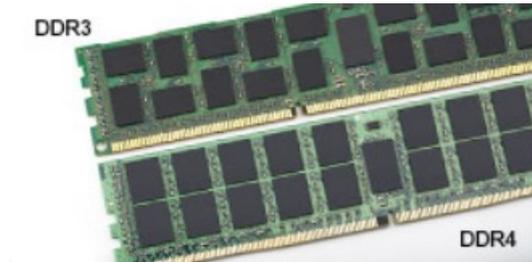


Figure 1. Notch difference

Increased thickness

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

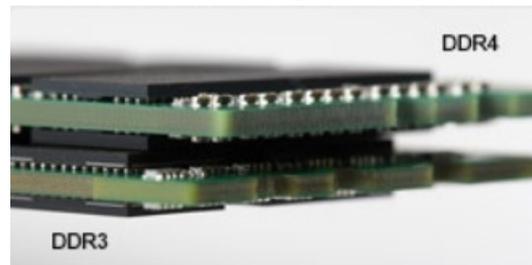


Figure 2. Thickness difference

Curved edge

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

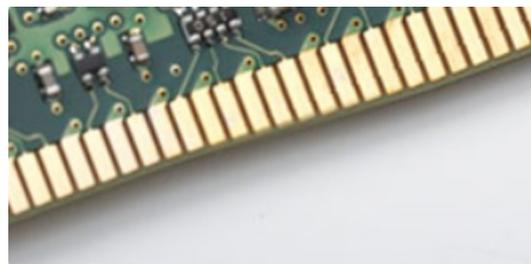


Figure 3. Curved edge

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**.

Windows 8.1

- 1 From your desktop, start the **Charms Bar**.
- 2 Select **Control Panel** and then select **System**.

Windows 7

- Click **Start** → **Control Panel** → **System**.

Verifying system memory in system setup (BIOS)

- 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.

Testing memory using ePSA

- 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.

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

- 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

- 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.

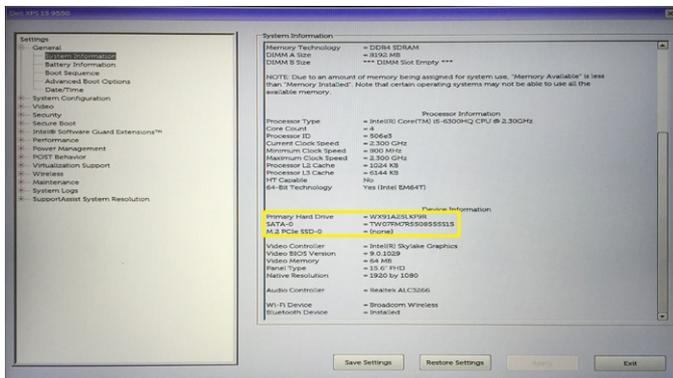
Identifying the hard drive in Windows 7

- 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

- 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 6. 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

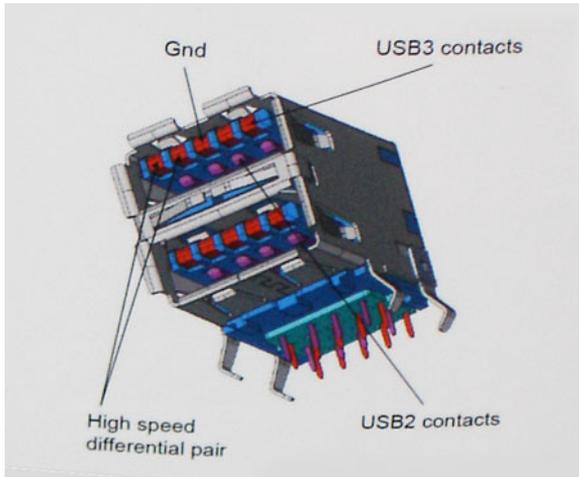
Currently, there are 3 speed modes defined by the latest USB 3.0/USB 3.1 Gen 1 specification. They are Super-Speed, Hi-Speed and Full-Speed. The new SuperSpeed mode has a transfer rate of 4.8Gbps. While the specification retains Hi-Speed, and Full-Speed USB mode, commonly known as USB 2.0 and 1.1 respectively, 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

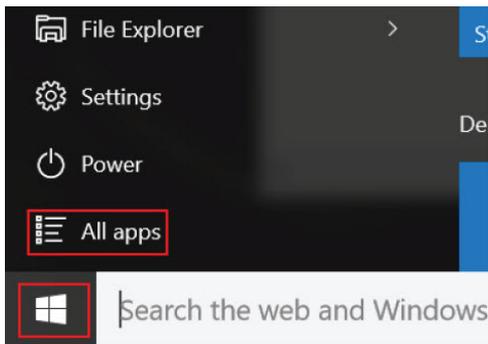
This laptop is shipped with the image resolution of 1280 x 720 (maximum).

Starting the camera (Windows 7, 8.1 and 10)

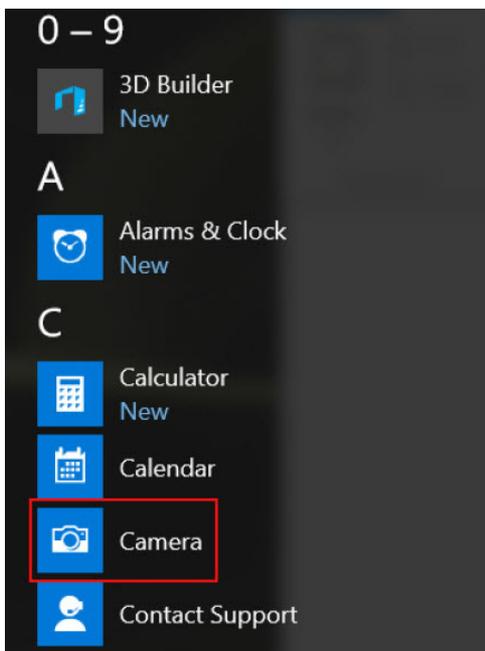
To start the camera, open an application that uses the camera. For instance, if you tap the Skype software that is shipped with the laptop, the camera turns on. Similarly, if you are chatting on the internet and the application requests to access the webcam, the webcam turns on.

Starting the camera application

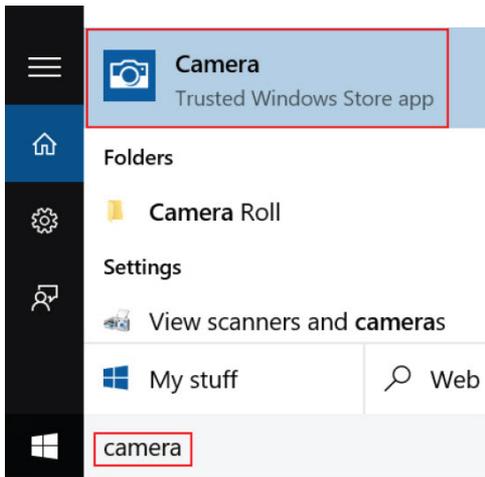
- 1 Tap or click the **Windows** button and select **All apps**.



- 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

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

Topics:

- [Boot Sequence](#)
- [Navigation keys](#)
- [System Setup overview](#)
- [Accessing System Setup](#)
- [General screen options](#)
- [System Configuration screen options](#)
- [Video screen options](#)
- [Security screen options](#)
- [Secure Boot screen options](#)
- [Performance screen options](#)
- [Power management screen options](#)
- [POST behavior screen options](#)
- [Wireless screen options](#)
- [Maintenance screen options](#)
- [System logs screen options](#)
- [SupportAssist system resolution](#)
- [Updating the BIOS in Windows](#)
- [Updating your system BIOS using a USB flash drive](#)
- [System and setup password](#)

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

NOTE: XXX denotes the SATA drive number.

- Optical Drive (if available)
- Diagnostics

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

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 |
|------------|--|
| Up arrow | Moves to the previous field. |
| Down arrow | Moves to the next field. |
| Enter | Selects a value in the selected field (if applicable) or follow the link in the field. |
| Spacebar | Expands or collapses a drop-down list, if applicable. |
| Tab | Moves to the next focus area. |

NOTE: For the standard graphics browser only.

Esc 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

- 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 |
|---------------------------|---|
| System Information | This section lists the primary hardware features of your computer. <ul style="list-style-type: none">• 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• Memory Information: Primary Hard Drive, SATA, Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology |



| | |
|--------------------------------|--|
| Option | Description |
| | <ul style="list-style-type: none"> 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 Device Information: Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, Bluetooth Device |
| Battery Information | Displays the battery status health and whether the AC adapter is installed. |
| Boot Sequence | Allows you to change the order in which the computer attempts to find an operating system. <ul style="list-style-type: none"> Windows Boot Manager (Default) Boot List Option <ul style="list-style-type: none"> Legacy UEFI (System Default) |
| Advanced Boot Options | This option allows you the legacy option ROMs to load. By default, the Enable Legacy Option ROMs is disabled. Enable Attempt Legacy Boot is enabled by default. |
| UEFI boot path security | <ul style="list-style-type: none"> Always, except internal HDD (Default) Always Never |
| Date/Time | Allows you to change the date and time. |

System Configuration screen options

| Option | Description |
|--------------------------|---|
| Integrated NIC | Controls the on-board LAN controller. <ul style="list-style-type: none"> Enabled w/PXe by default |
| SATA Operation | Allows you to configure the operating mode of the integrated SATA hard drive controller. <ul style="list-style-type: none"> RAID On — default |
| Drives | Allows you to configure the SATA drives on board. <ul style="list-style-type: none"> SATA-0 enabled by default eMMC (System Default) |
| SMART Reporting | Controls whether hard drive errors for integrated drivers are reported during system startup. <ul style="list-style-type: none"> Disabled — default |
| USB Configuration | <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"> Enable Boot Support—enabled by default |

| Option | Description |
|------------------------------|---|
| | <ul style="list-style-type: none"> Enable External USB Port—enabled by default <p>NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p> |
| USB PowerShare | 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. |
| Audio | <p>This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected. The options are:</p> <ul style="list-style-type: none"> Enable Microphone—by default enable Enable Internal Speaker—(default enable) |
| Touchscreen | <p>Controls whether the touchscreen is enabled or disabled.</p> <ul style="list-style-type: none"> Enabled — default |
| Unobtrusive Mode | <p>When enabled, pressing Fn+F7 will turn off all light and sound emissions from the system.</p> <ul style="list-style-type: none"> Disabled — default |
| Miscellaneous Devices | <p>Allows you to enable or disable the following devices:</p> <ul style="list-style-type: none"> Camera (default enable) Secure Digital (SD) card—enabled Secure Digital (SD) card read-only-mode Hard drive Free Fall Protection — enabled Secure Digital (SD) Boot — enabled |

Video screen options

| Option | Description |
|-----------------------|---|
| LCD Brightness | 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

| Option | Description |
|------------------------|---|
| Admin Password | <p>Allows you to set, change, or delete the administrator (admin) password.</p> <p>NOTE: 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> <p>NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p> |
| System Password | <p>Allows you to set, change, or delete the system password.</p> <p>NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p> |



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

| Option | Description |
|--------------------------------|--|
| | <ul style="list-style-type: none"> · Disable · Activate—enabled by default <p>NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed.</p> |
| CPU XD Support | Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support—enabled by default |
| Admin Setup Lockout | Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: This option is enabled |
| Master password lockout | This option is not enabled by default |

Secure Boot screen options

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

Performance screen options

| Option | Description |
|---------------------------|---|
| Multi-Core Support | 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. |



| Option | Description |
|----------------------------|---|
| | <ul style="list-style-type: none"> · Enable Multi-Core Support <p>Default setting: The option is enabled.</p> |
| Intel SpeedStep | <p>Allows you to enable or disable the Intel SpeedStep feature.</p> <ul style="list-style-type: none"> · Enable Intel SpeedStep <p>Default setting: The option is enabled.</p> |
| C-States Control | <p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> · C states <p>Default setting: The option is enabled.</p> |
| Intel TurboBoost | <p>Allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> · Enable Intel TurboBoost <p>Default setting: The option is enabled.</p> |
| HyperThread Control | <p>Enables or disables HyperThreading in the processor.</p> <ul style="list-style-type: none"> · Enabled — default |

Power management screen options

| Option | Description |
|-------------------------|---|
| AC Behavior | <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> |
| Auto On Time | <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"> · Disabled · Every Day · Weekdays · Select Days <p>Default setting: Disabled</p> |
| USB Wake Support | <p>Allows you to enable USB devices to wake the system from Standby.</p> <p>NOTE: 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"> · Enable USB Wake Support · Wake on Dell USB-C dock <p>Default setting: The option is disabled.</p> |
| Wake on WLAN | <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> |

| | |
|--|---|
| Option | <p>Description</p> <ul style="list-style-type: none"> · Disabled · WLAN <p>Default setting: Disabled</p> |
| Block Sleep | <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> |
| Peak Shift | <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"> · Enable peak shift · Set battery threshold (15% to 100%) - 15 % (enabled by default) |
| Advanced Battery Charge Configuration | <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> |
| Primary Battery Charge Configuration | <p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> · Adaptive—enabled by default · Standard—Fully charges your battery at a standard rate. · ExpressCharge—The battery charges over a shorter time using Dell's fast charging technology This option is enabled by default. · Primarily AC use · Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p> NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p> |

POST behavior screen options

| Option | Description |
|-------------------------|--|
| Adapter Warnings | <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> |
| Fn Key Emulation | <p>Allows you to use the <Scroll Lock> key on an external PS/2 keyboard the same way you use the <Fn> key on the computer's internal keyboard.</p> <ul style="list-style-type: none"> · Enabled — default |
| Fn Lock Options | <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"> · Lock Mode Disable/Standard—enabled by default |



| Option | Description |
|--------------------------------|---|
| | <ul style="list-style-type: none"> Lock Mode Enable |
| Fastboot | <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"> Minimal—enabled by default Thorough Auto |
| Extended BIOS POST Time | <p>Allows you to create an extra preboot delay. The options are:</p> <ul style="list-style-type: none"> 0 seconds—enabled by default. 5 seconds 10 seconds |
| Full Screen Logo | <ul style="list-style-type: none"> Enable Full Screen Logo—not enabled |
| Warnings and Errors | <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"> Prompt on Warnings and Errors — enabled (default) |

Wireless screen options

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

Maintenance screen options

| Option | Description |
|-----------------------|---|
| Service Tag | Displays the Service Tag of your computer. |
| Asset Tag | Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default. |
| BIOS Downgrade | This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default. |
| Data Wipe | <p>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:</p> <ul style="list-style-type: none"> Internal SATA HDD/SSD |

| Option | Description |
|----------------------|--|
| | <ul style="list-style-type: none"> Internal M.2 SATA SDD Internal M.2 PCIe SSD Internal eMMC |
| BIOS Recovery | <p>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.</p> <ul style="list-style-type: none"> BIOS Recovery from Hard Drive—enabled by default BIOS Auto-Recovery Always perform integrity check—disabled by default |

System logs screen options

| Option | Description |
|-----------------------|---|
| BIOS Events | Allows you to view and clear the System Setup (BIOS) POST events. |
| Thermal Events | Allows you to view and clear the System Setup (Thermal) events. |
| Power Events | Allows you to view and clear the System Setup (Power) events. |

SupportAssist system resolution

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

Updating the BIOS in Windows

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

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.

- Restart the computer.
- 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,
- If you are unable to detect or find the Service Tag, click the **Choose from all products**.
- Choose the **Products** category from the list.

NOTE: Choose the appropriate category to reach the product page

- Select your computer model and the **Product Support** page of your computer appears.
- Click **Get drivers** and click **Drivers and Downloads**.
The Drivers and Downloads section opens.
- 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.

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 your system BIOS using a USB flash drive

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>

- 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

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

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

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

- In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
- 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, ("), (+), (,), (-), (.), (/), (:), ([), (\), (]), (^).
- Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
- Press Esc and a message prompts you to save the changes.
- Press Y to save the changes.
The computer reboots.

Deleting or changing an existing system and/or setup password

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

- In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
- In the **System Security** screen, verify that **Password Status** is **Unlocked**.
- Select **System Password**, alter or delete the existing system password and press Enter or Tab.
- Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

NOTE: If you change the System and/or Setup password, re-enter the new password when promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.

- Press Esc and a message prompts you to save the changes.
- Press Y to save the changes and exit from System Setup.
The computer reboots.



Troubleshooting

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

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.

ℹ 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

- 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.

Contacting Dell

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.

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:

- 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.

