Dell Latitude 3390 2-in-1

Owner's Manual

Regulatory Model: P69G
Regulatory Type: P69G001

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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1

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 the reverse order.

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.

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

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.

Before working inside your computer

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that you follow the Safety instructions.
2. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
3. Turn off your computer.
4. Disconnect all the network cables from the computer.

   CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
5. Disconnect your computer and all attached devices from the electrical outlets.
6. Press and hold the power button while the computer is unplugged to ground the system board.

   NOTE: 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.

Turning off your computer

After working inside your computer

After you complete any replacement procedure, ensure that 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. Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
2. 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.
3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.

2

Removing and installing components

Screw size list

Table 1. Latitude 3390 2-in-1 screw size list

Component	M2x3	M2x2 (Big head)	M2x2	M2.5x5	M2.5x6	M2.5x2.5 (Big head)	M2.5xL1.4	M2x3.5
Battery	4							
Power and volume buttons board	1							
WLAN card	1							
Power connector port	1							
Type-C metal bracket	1							
SSD card	1							
HDD					2			
System fan	2							
System board		3						
Keyboard shield		14						
Base cover					9			
Display hinges				4				
I/O board								2
Touchpad board and Touchpad metal bracket			8					
Keyboard							15	
Sensor board						1		

Base cover

Removing the base cover

1. Follow the procedure in Before working inside your computer.
2. Close the display and turn the laptop over.
3. Remove the M2.5 x 6 screws (9) that secure the base cover to the laptop.

NOTE: Two screws near the front edge of the system have to be removed at an angle before lifting the base cover.



4. Using a plastic scribe, pry the base cover from the edges of the laptop chassis [1].

NOTE: Pry the edges clockwise, starting from the lower left side of the air vent.



5. Lift the base cover away from the laptop [2].

Installing the base cover

1. Align the edges of the base cover with the laptop and press until it clicks into place.
2. Tighten the screws to secure the base cover to the laptop.
3. Follow the procedure in After working inside your computer.

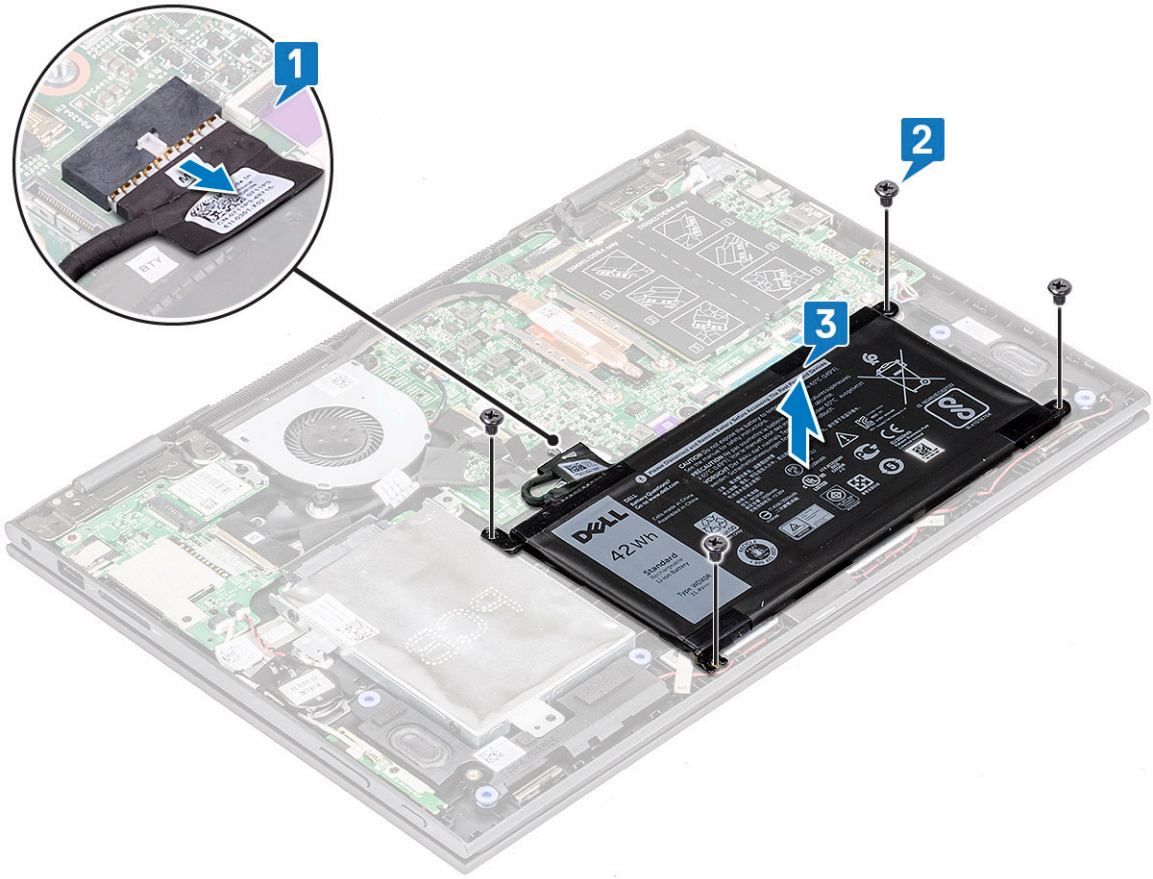
Battery

Removing the battery

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. To remove the battery:
   a) Disconnect the battery cable from the connector on the system board [1].

      NOTE: Ensure to pull the battery cable from the connector by the head of the connector label, to avoid damage to the PIN.

   b) Remove the M2x3 screws (4) that secure the battery to the laptop [2].
   c) Lift the battery away from the laptop [3].



Installing the battery

1. Insert the battery into the slot on the laptop.
2. Tighten the M2x3 screws (4) to secure the battery to the laptop.
3. Connect the battery cable to the connector on the system board
4. Install the base cover.

5. Follow the procedure in After working inside your computer.

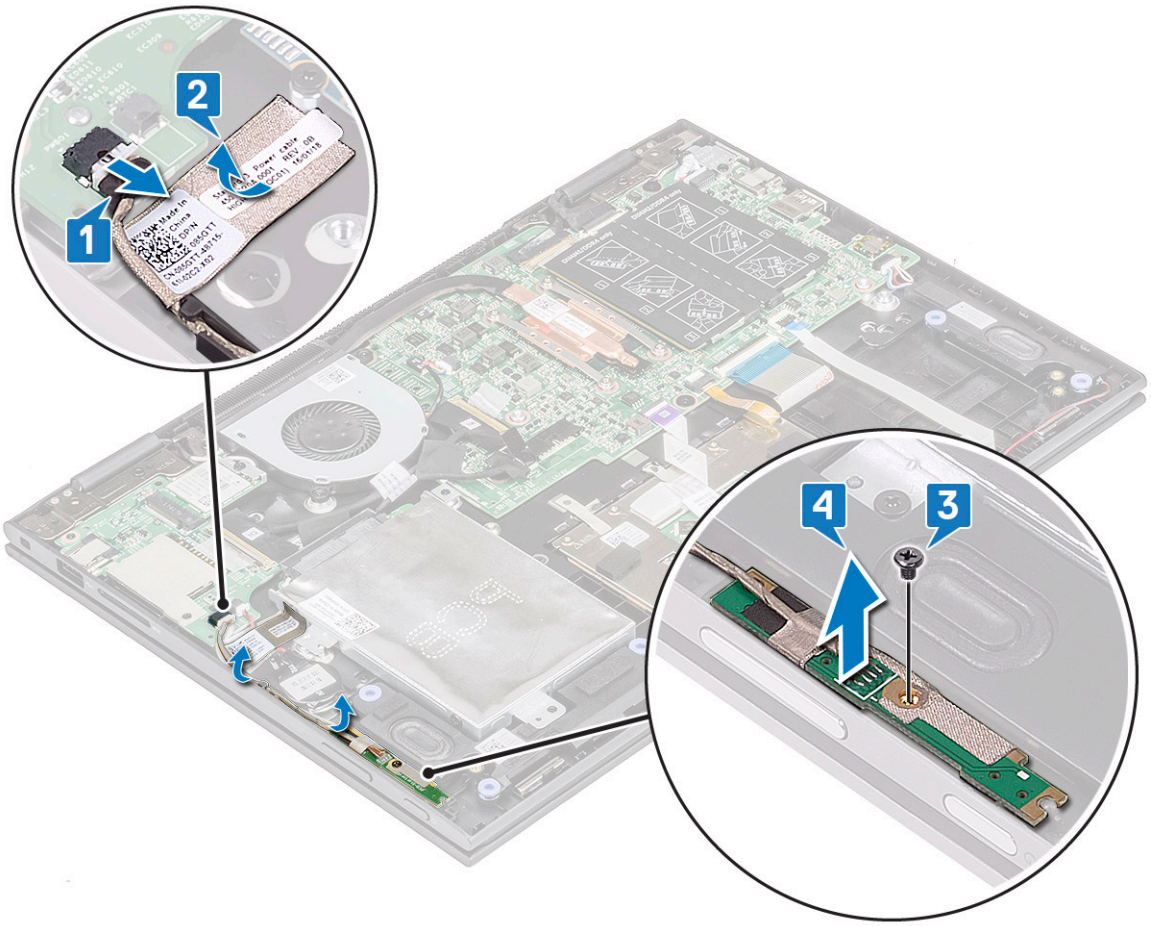
Power and volume control board

Removing the power and volume control board

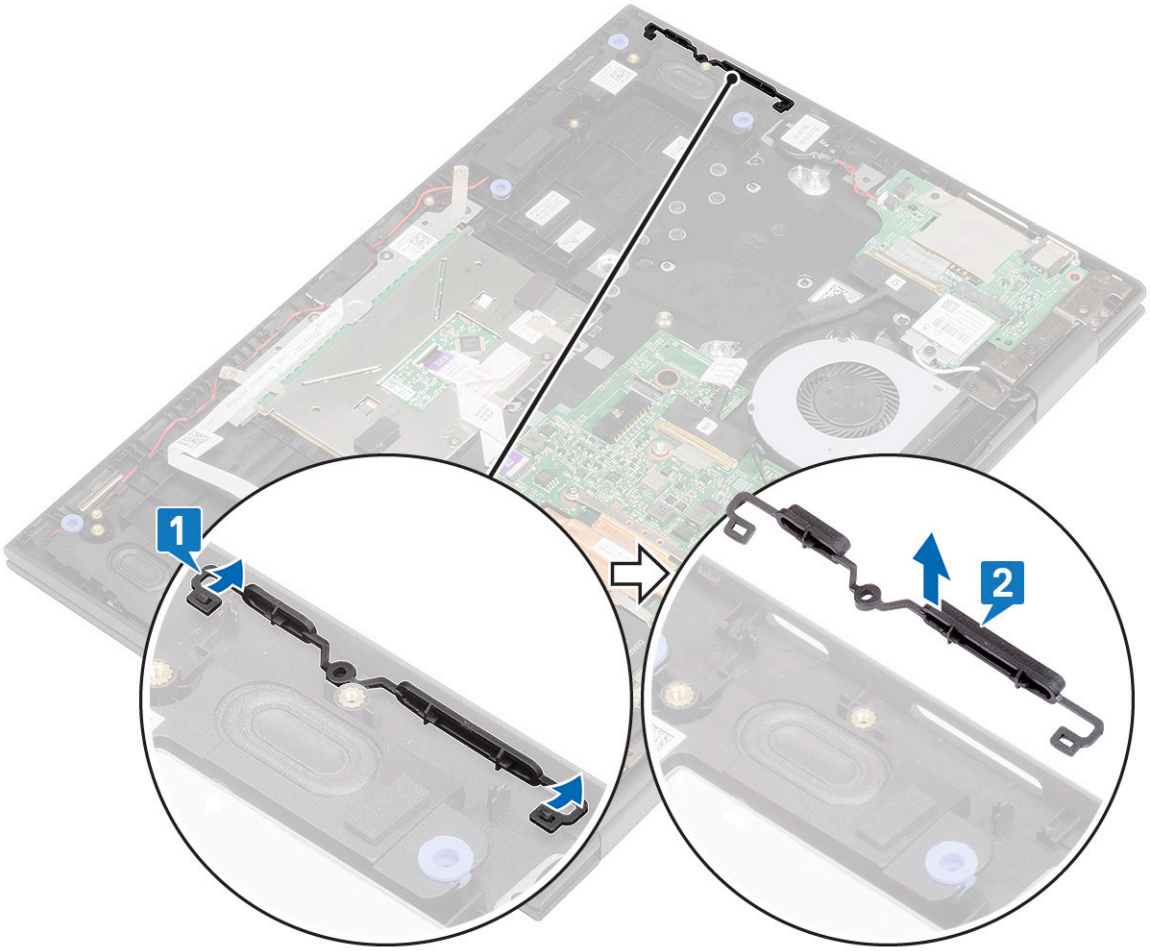
1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) coin cell battery
3. To remove the power and volume control board:
   a) Disconnect the power cable from the connector on the system board [1].

      CAUTION: Ensure that you remove the coin cell battery connector on the system board, to avoid damage to the battery cable.

   b) Peel the adhesive tape [2].
   c) Release the volume control board cable from the routing clips .
   d) Remove the M2x3 screw (1) that secures the power and volume control board to the laptop [3].
   e) Remove the plastic power button from the chassis.
   f) Lift the power and volume control board away from the laptop [4].



4. To remove the power button:
   a) Undo the power button from the retention hooks on the palmrest [1].
   b) Lift and remove the power button from the palmrest assembly [2].



Installing the power and volume control board

1. Place the power and volume control board on the laptop chassis.

   NOTE: Place the power and volume control board into the two plastic placeholders which secures the board to the system chassis.
2. Tighten the M2x3 screw (1) to secure the power and volume control board to the laptop.
3. Route the cables through the cable routing clips.
4. Connect the power and volume control board to the connector on the system board.
5. Affix the adhesive tape to secure it.
6. Install the:
   a) coin cell battery
   b) battery
   c) base cover
7. Follow the procedure in After working inside your computer.

Hard disk drive (HDD)

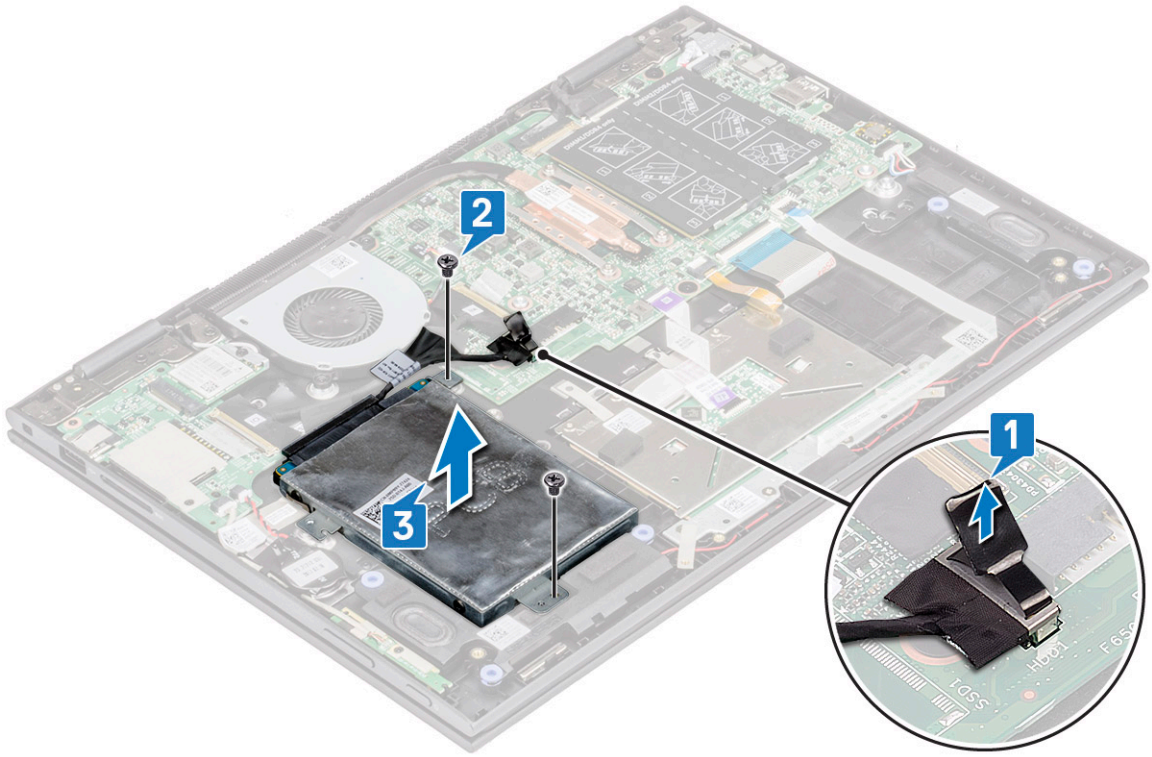
Removing the HDD

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 HHD cable from the connector on the system board [1].

      NOTE: Ensure to pull the HDD cable by the plastic handle to avoid damage to the connector and cable.

   b) Release the cable adhesive tape that secures the cable to the system board.
   c) Remove the M2.5x6 screw (2) that secures the HDD on the laptop system board [2].
   d) Lift the HDD from the system board [3].



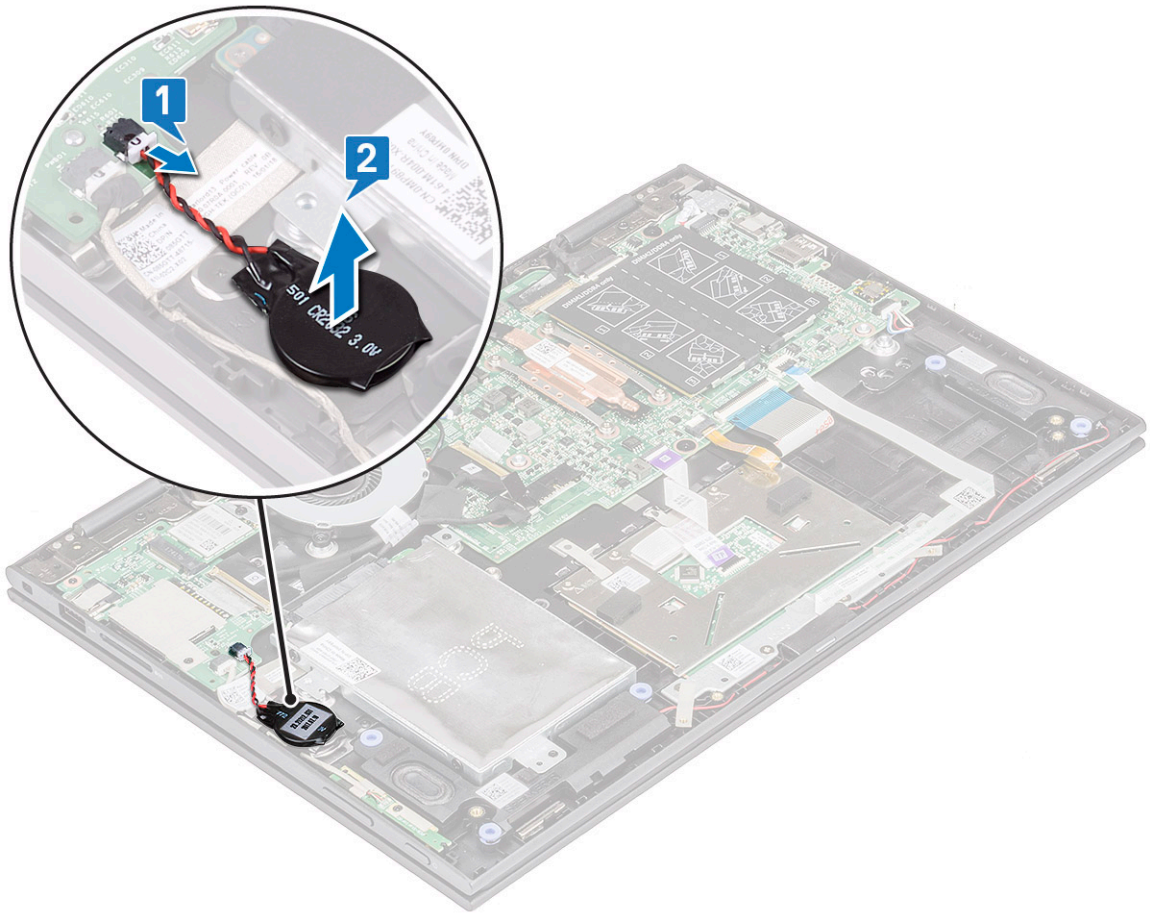
Installing the HDD

1. Place the HDD on the hard disk placeholder.
2. Press the adhesive tape to secure the HDD cable.
3. Connect the HDD cable head to the connector on the system board.
4. Tighten the M2.5x6 screw (2) to secure the HDD to the laptop chassis.
5. Install the:
   a) battery
   b) base cover
6. Follow the procedure in After working inside your computer.

Coin-cell battery

Removing the coin cell battery

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. To remove the coin cell battery:
   a) Disconnect the coin cell battery from the connector on the system board [1].
   b) Pry and lift the coin cell battery to release it from the adhesive on the laptop [2].



Installing the coin cell battery

1. Place the coin cell battery on the laptop.
2. Connect the coin cell battery cable to the connector on the system board.
3. Install the:
   a) battery
   b) base cover
4. Follow the procedure in After working inside your computer.

WLAN card

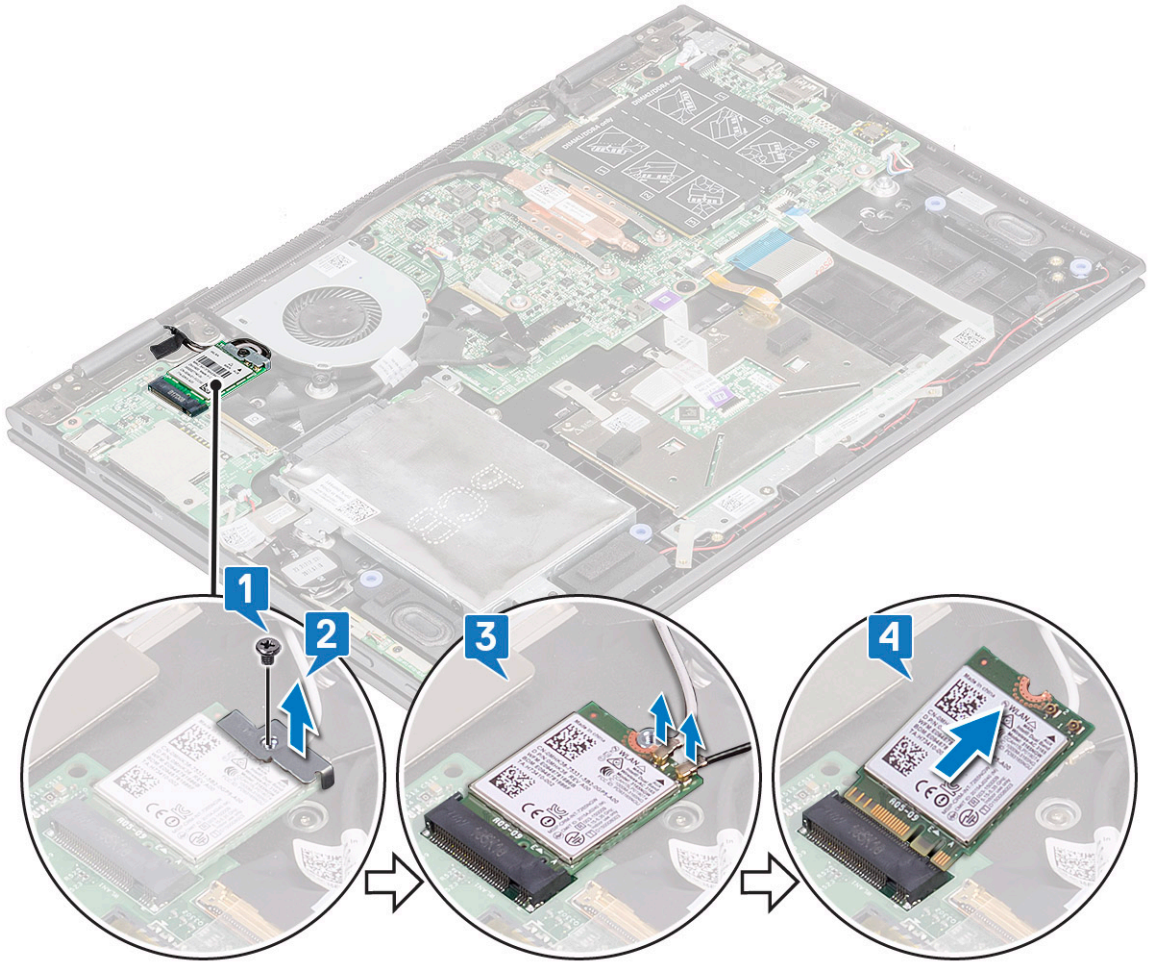
Removing the WLAN card

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. To remove WLAN card:
   a) Remove the M2x3 screw (1) that secures the WLAN card to the laptop [1].
   b) Lift the metal bracket to access the WLAN cables [2].
   c) Disconnect the WLAN cables from the connectors on the WLAN card [3].

      NOTE: Ensure to gently use plastic scribe to disconnect the WLAN cables from the connectors.

   d) Slide the WLAN card away from the connector on the system board [4].

NOTE: **Ensure to lift the WLAN card by an angle NOT more than 35°**



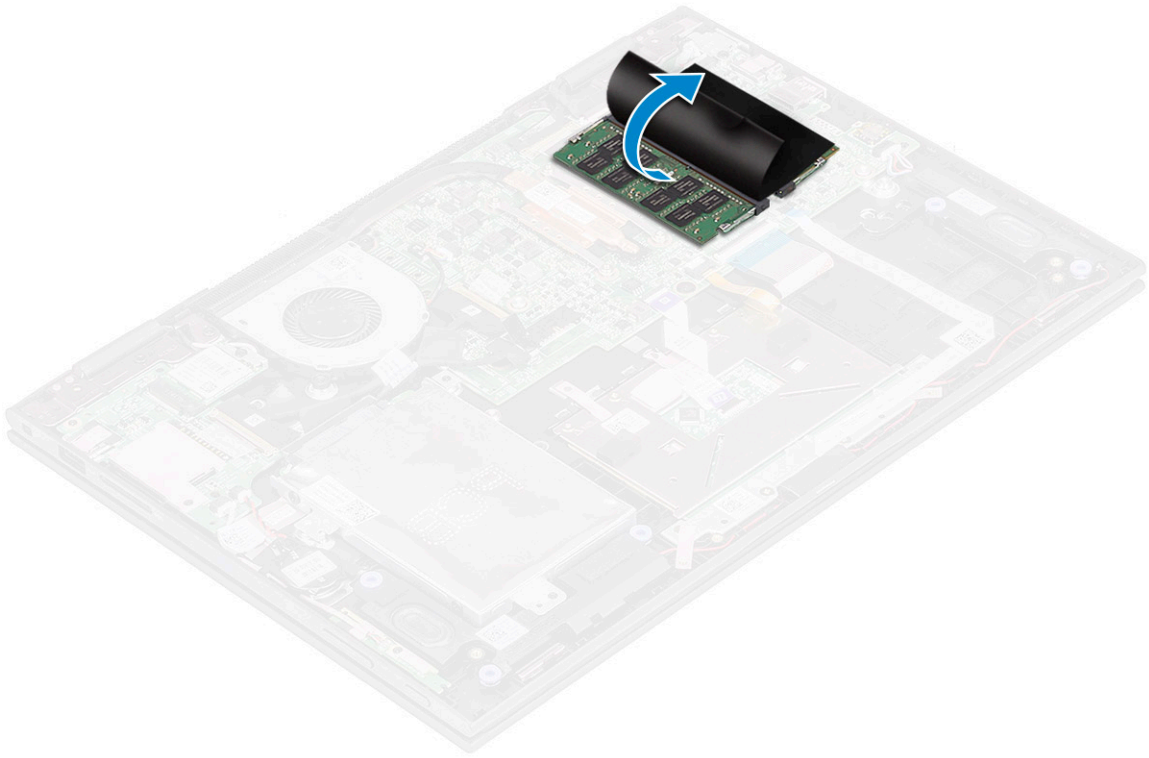
Installing the WLAN

1. Slide and connect the WLAN card to the connector on the system board.
2. Connect the WLAN cables to the connectors on the WLAN card.
3. Place the metal bracket to secure the WLAN cables.
4. Tighten the M2x3 screw (1) to secure the WLAN card to the laptop.
5. Install the:
   a) battery
   b) base cover
6. Follow the procedure in After working inside your computer.

Memory modules

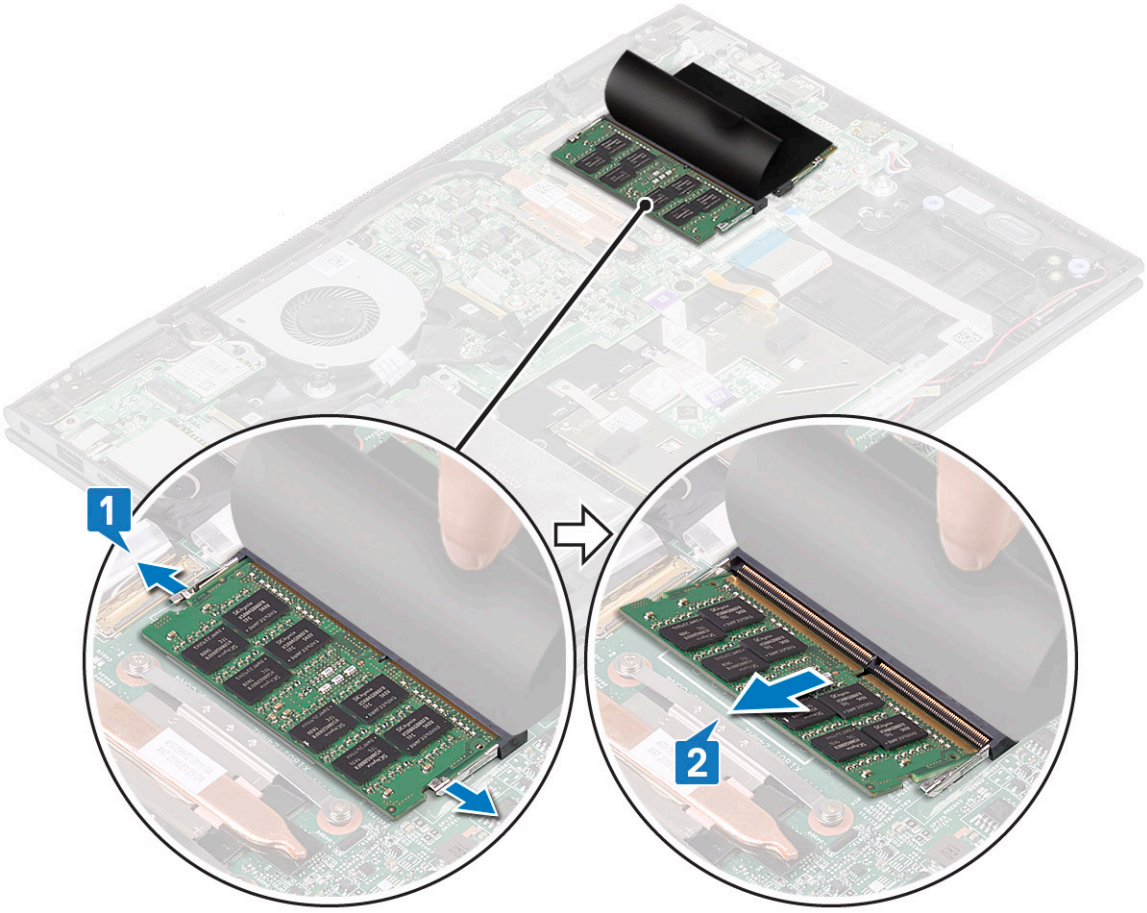
Removing the memory module

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. Peel and hold the label that protects the memory module to the laptop.



4. To remove memory module:
   a) Pull the retention clips away from the memory module until the memory module pops out [1].
   b) Pull the memory module from the memory module socket on the system board [2].

   NOTE: Ensure to lift the memory module card by an angle NOT more than 35°.



5. Repeat steps 3 and 4 to remove the second memory module (if available or shipped with the system).

Installing the memory module

NOTE: Install the second memory module with DRAM chips facing downward.

1. Insert the memory module into the memory module socket until the retention clips secure the memory module.

   NOTE: Ensure to hear a click sound when the memory module is secured.

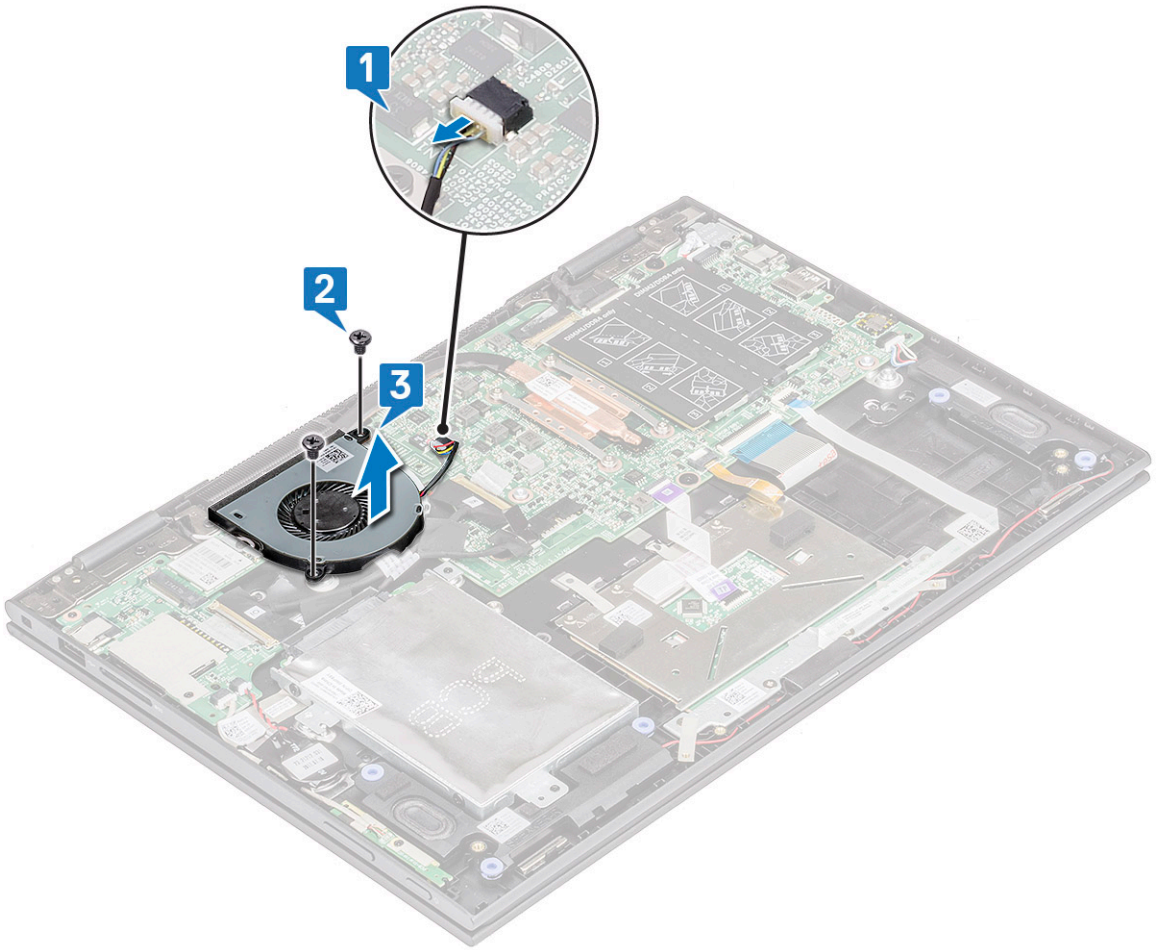
2. Affix the adhesive tape to secure the memory moduleRelease the label that protects the memory module.
3. Install the:
   a) battery
   b) base cover
4. Follow the procedure in After working inside your computer.

System fan

Removing the system fan

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. To remove the system fan:
   a) Disconnect the system fan cable from the connector on the system board [1].

b) Remove the M2x3 screws (2) that secure the system fan to the laptop [2].
c) Lift the system fan away from the laptop [3].



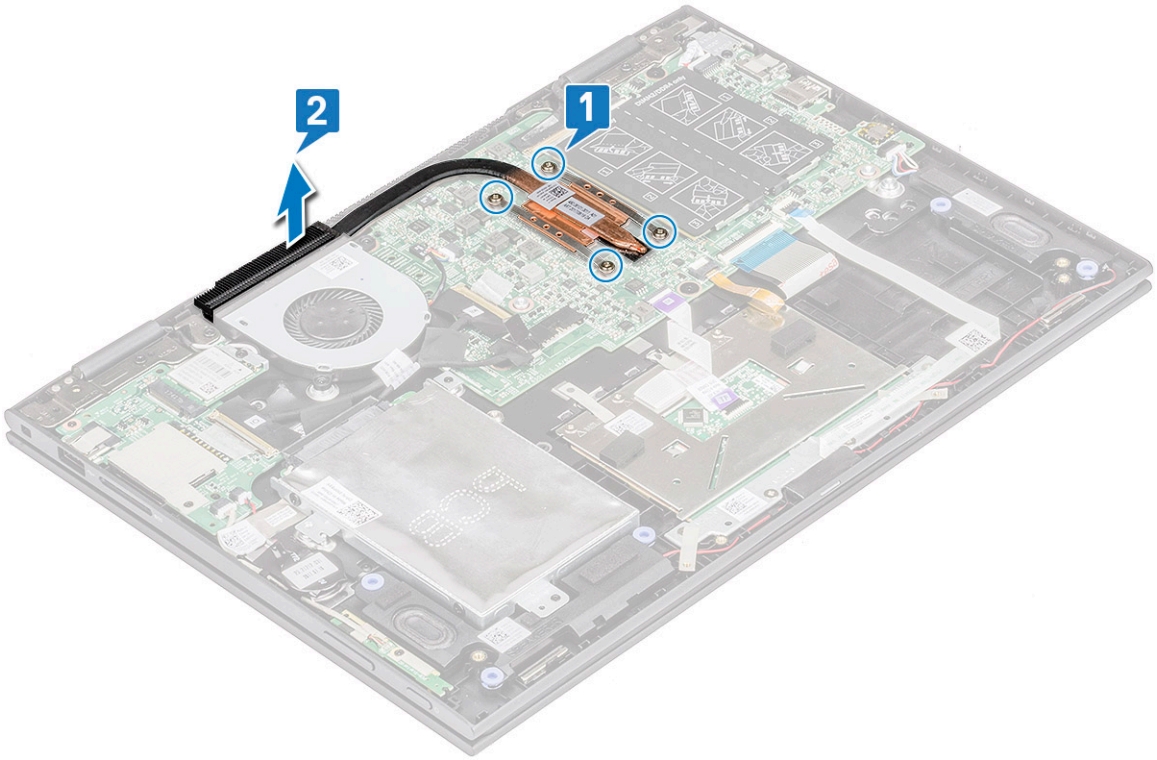
Installing the system fan

1. Place the system fan on the laptop.
2. Tighten the M2x3 screws (2) to secure the system fan to the laptop.
3. Connect the system fan cable to the connector on the system board.
4. Install the:
   a) battery
   b) base cover
5. Follow the procedure in After working inside your computer.

Heat sink

Removing the heat sink

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. To remove the heat sink:
   a) Loosen the captive screws that secure the heat sink to the laptop[1] .
   b) Lift the heat sink away from the laptop [2].



NOTE: Loosen the captive screws using a diagonal or crisscross pattern as printed on Heatsink. The screws are captive screws and cannot be fully removed.

Installing the heat sink

1. Place the heat sink on the system board.
2. Tighten the captive screws to secure the heat sink to the laptop.

   NOTE: Tighten the screws using a diagonal or crisscross pattern as printed on Heatsink. The screws are captive screws and cannot be fully removed.
3. Install the:
   a) battery
   b) base cover
4. Follow the procedure in After working inside your computer.

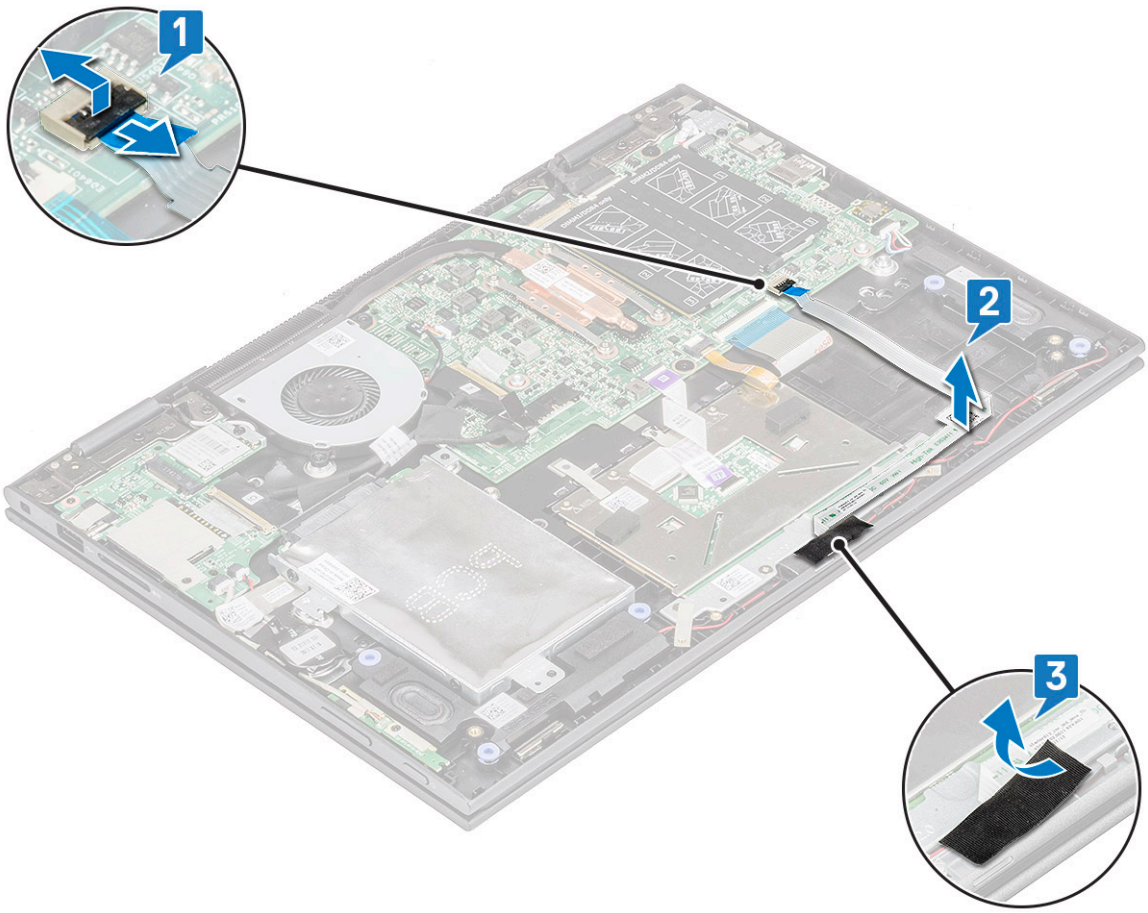
LED board

Removing the LED board

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. To remove the LED board:
   a) Lift the latch and disconnect the LED board cable [1].

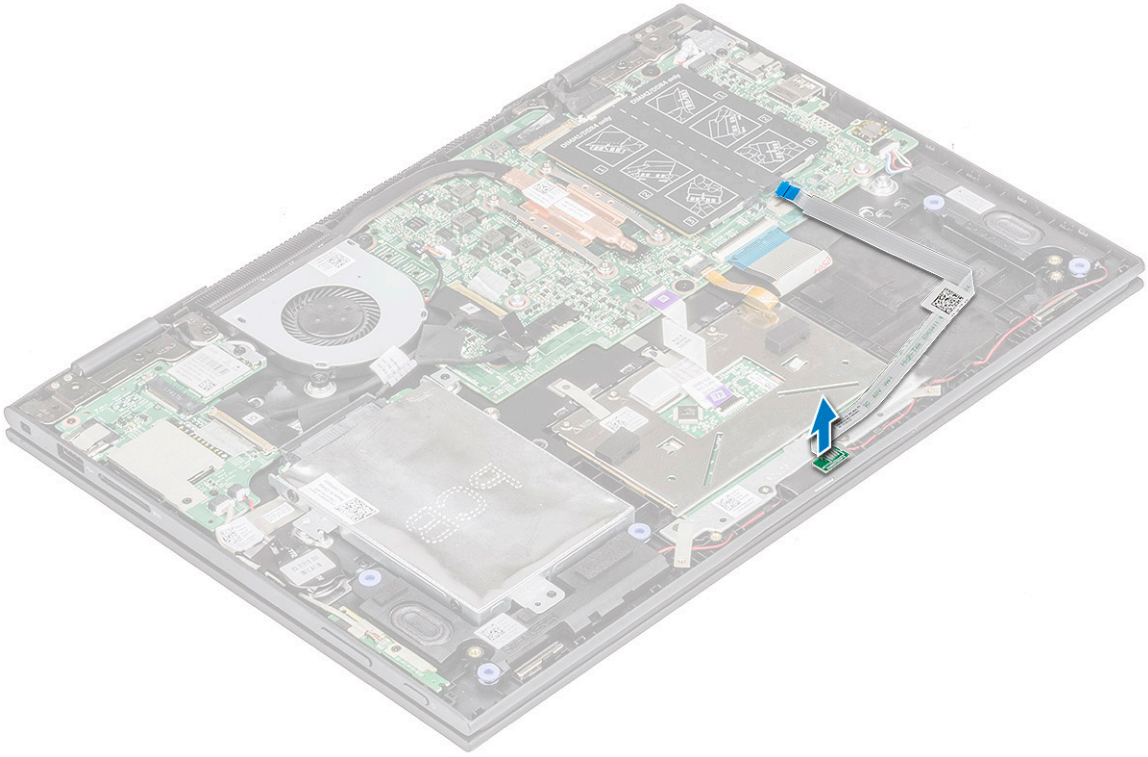
      NOTE: Use a sharp tool or a plastic scribe to gently lift the latch.
   b) Release the LED board cable from the laptop [2].

      NOTE: LED board cable is glued with a adhesive,ensure to peel gently to avoid damage.
   c) Peel the adhesive tape to access the LED board [3].



d) Lift the LED board away from the laptop .

NOTE: The LED board is secured on a cylindrical plastic hook. Ensure to lift the board without a damage to the LED board hole, that secures it on the system board.



Installing the LED board

1. Insert the LED board into the slot on the laptop.

   NOTE: Ensure to align the LED board hole to the cylindrical hook to secure the board on the system board.

2. Affix the adhesive tape to secure the LED board to the laptop.
3. Affix the LED board cable to the adhesive tape on the system board and connect the LED board cable to the connector.Release the latch.
4. Install the:
   a) battery
   b) base cover
5. Follow the procedure in After working inside your computer.

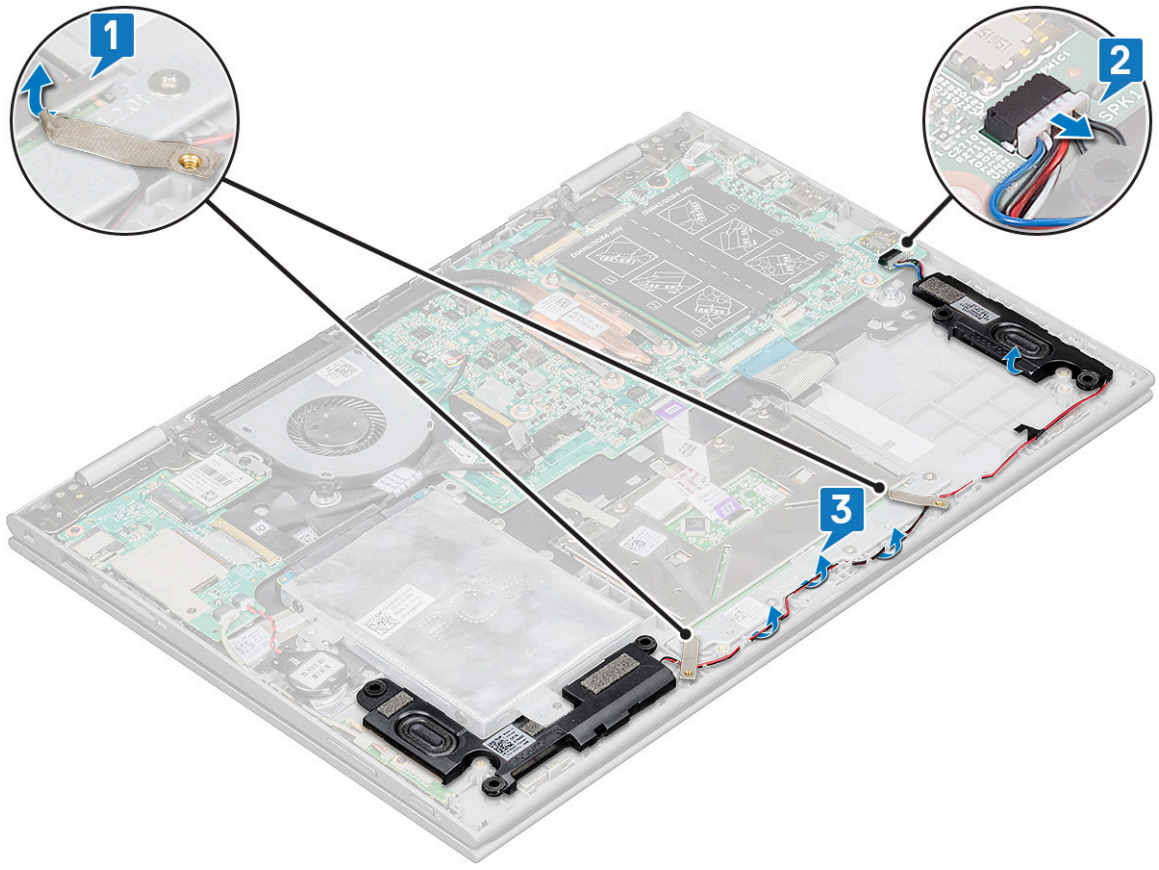
Speaker

Removing the speakers

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) LED board
3. To remove speakers:
   a) Remove the mylar tape that secures the speaker cable on the system board [1].

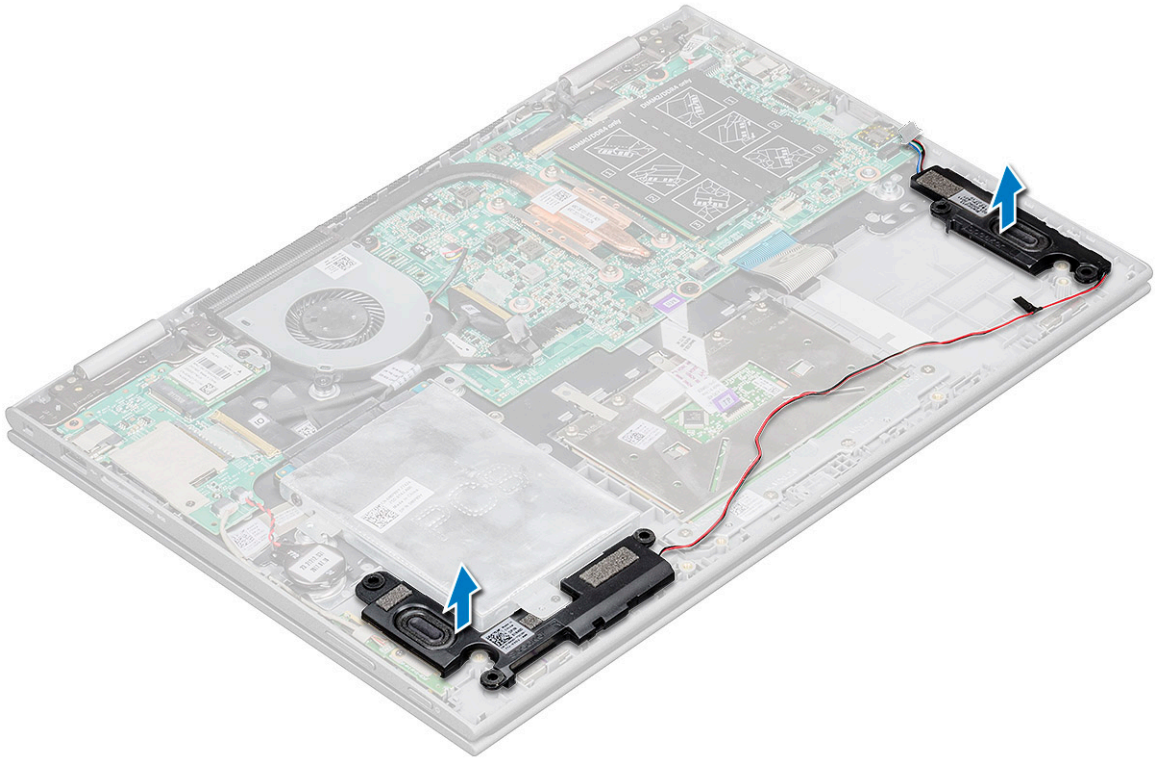
      NOTE: Lift the latch and release the LED board cable from the laptop, before un-routing the speaker cable.

   b) Disconnect the speaker cable from the connector on the system board [2].
   c) Release the speaker cables from the routing clips on the system board [3].



d) Lift the speakers away from the laptop.

.



Installing the speakers

1. Insert the speakers into the slot on the laptop.
2. Route the speaker cable through the cable routing clips.
3. Paste the Mylar tape to secure the speaker cable on the system board.
4. Connect the speaker cable to the connector on the system board.
5. Install the:
   a) LED board
   b) battery
   c) base cover
6. Follow the procedure in After working inside your computer.

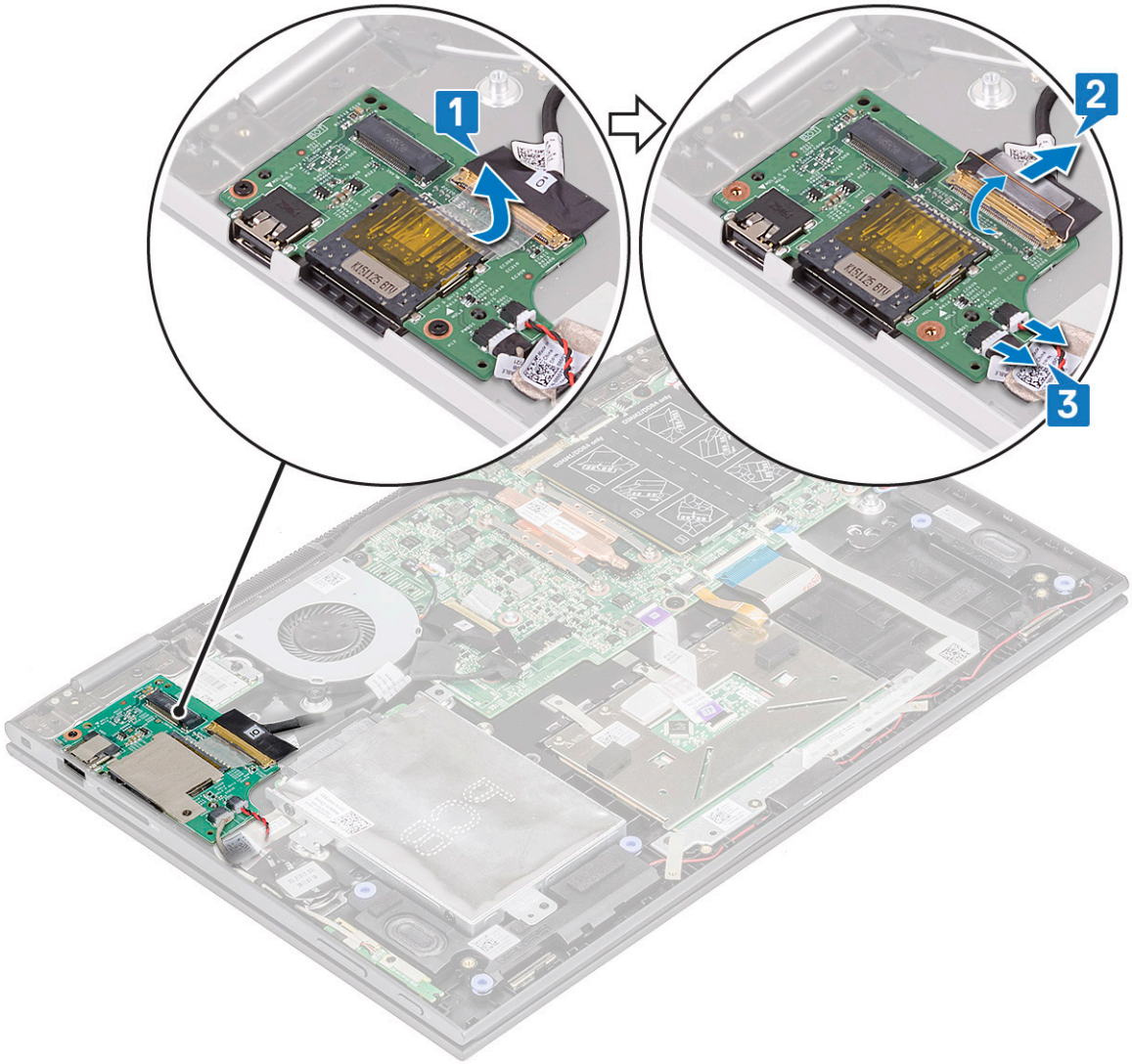
Input-Output board

Removing the Input-Output board

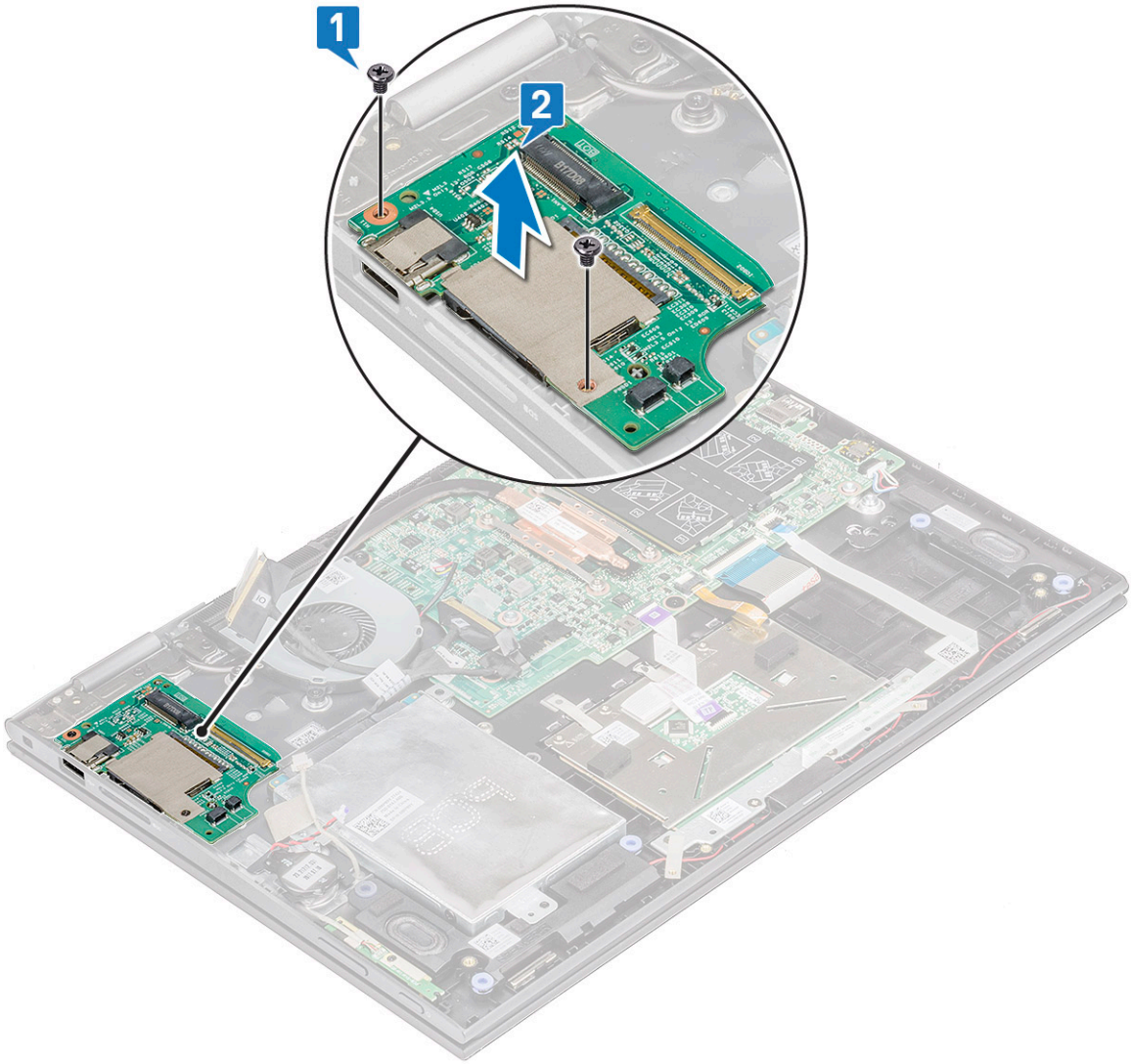
1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
3. To remove the I/O board:
   a) Peel and lift the plastic label of the I/O board cable [1].
   b) Pull the copper lever to disconnect the I/O board cable on the system board [2].

      NOTE: Ensure to pull the copper lever by an angle 15° to 20°, to avoid damage to the connector copper pins.

   c) Disconnect the coin cell battery and power and volume button board cables from the I/O board [3].



d) Remove the M2x3.5 screw (2) that secures the I/O board to the laptop chassis [1].
e) Lift the I/O board from the laptop chassis [2].



Installing the Input-Output board

1. Place the I/O board on the laptop.
2. Tighten the M2x3.5 screws (2) to secure the I/O board to the laptop.
3. Connect the coin cell battery and power and volume button board cables to the connector on the I/O board.
4. Connect the I/O board cable to the connector on the system board.
5. Affix the adhesive tape to secure the I/O board cable and release the copper latch.
6. Install the:
   a) battery
   b) base cover
7. Follow the procedure in After working inside your computer.

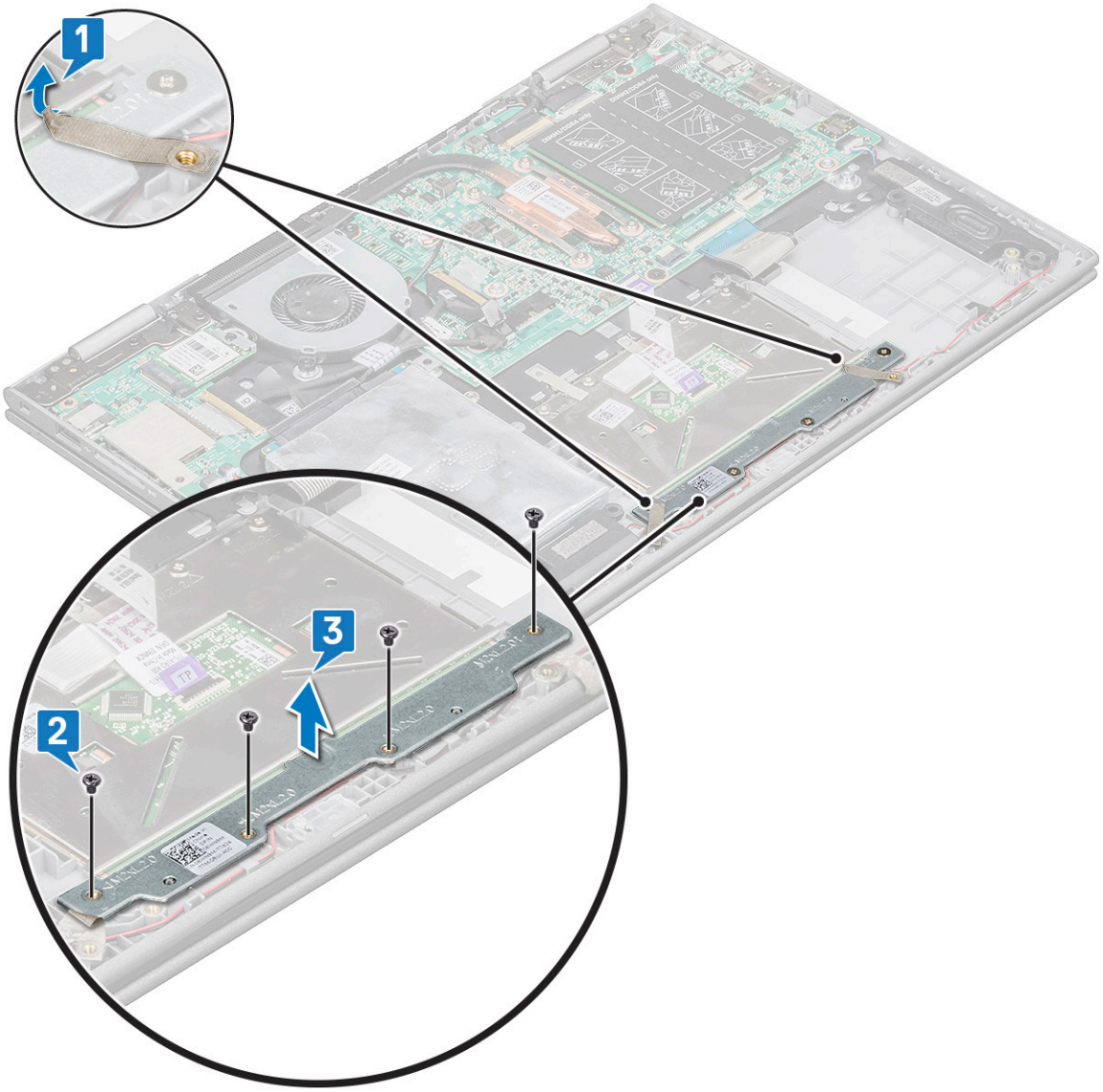
Touchpad

Removing the touchpad

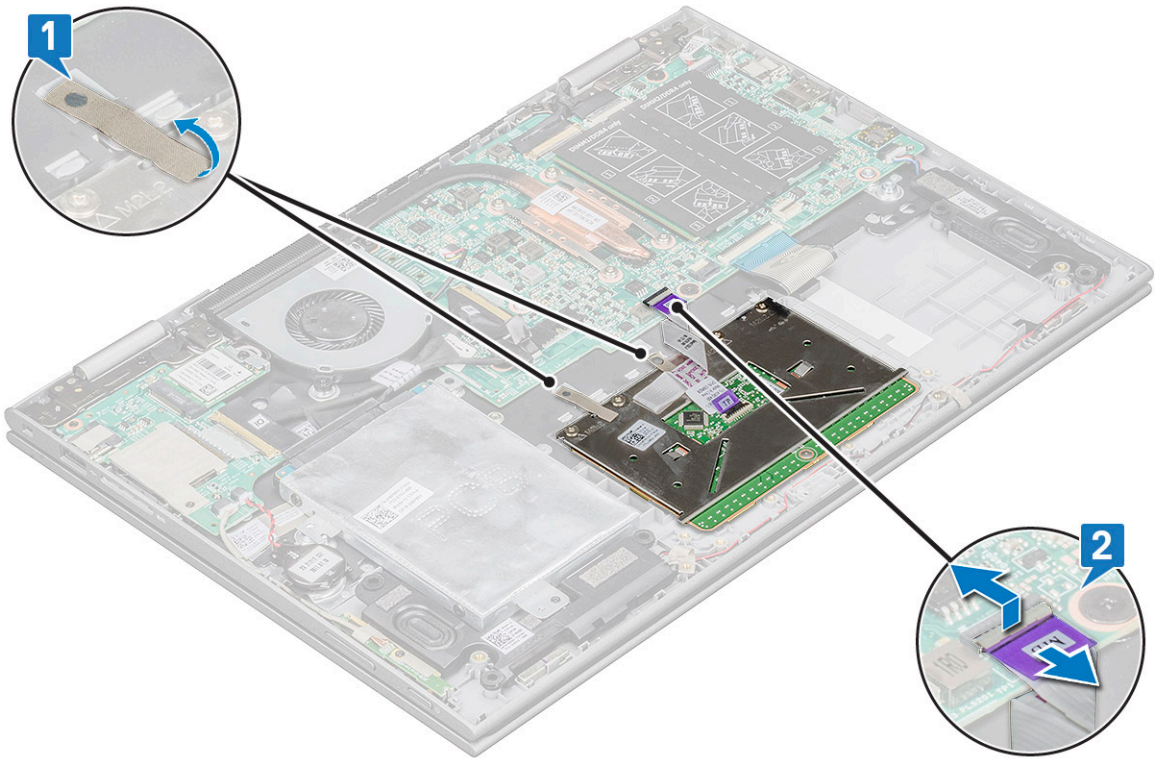
1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover

b) battery

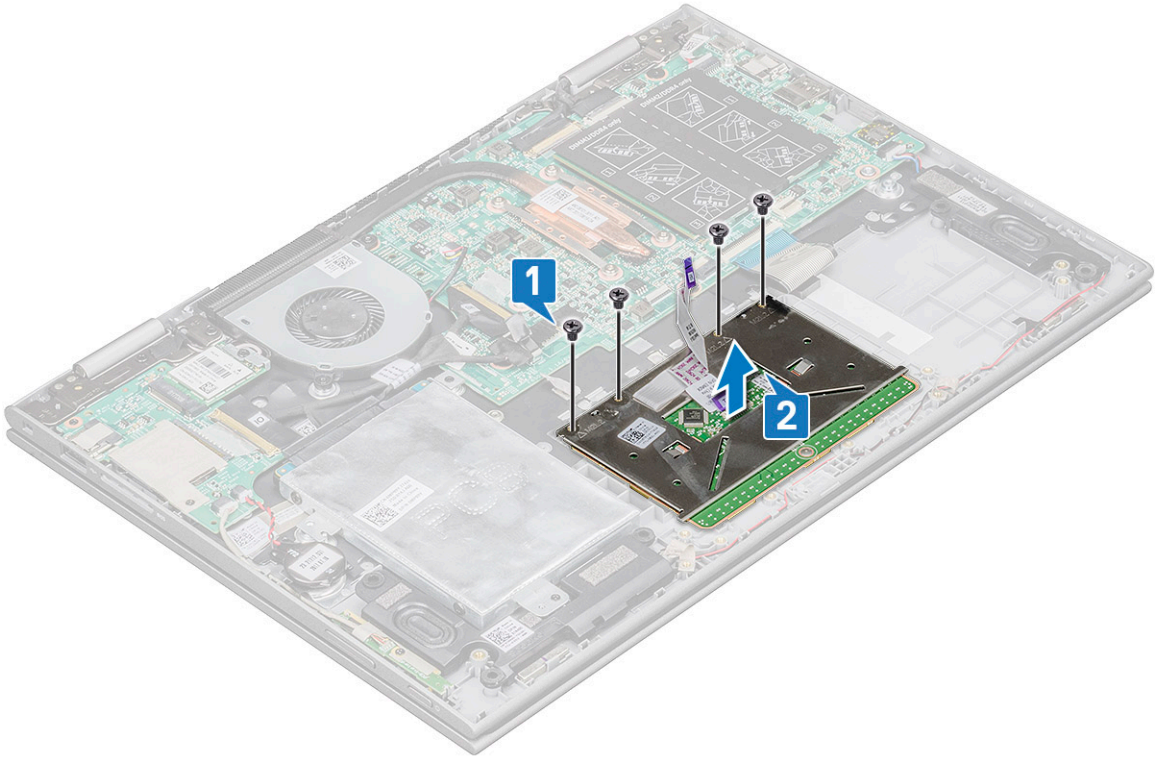
3. To remove the touchpad metal bracket:
   a) Remove the mylar tapes that secures the speaker cable to the laptop [1].
   b) Remove the M2x2 screws (4) that secure the touchpad board to the laptop chassis [2].
   c) Lift the touchpad metal bracket from the laptop chassis [3].



4. To release the touchpad:
   a) Remove the mylar tapes that secure the touchpad bracket to the laptop [1]
   b) Lift the latch and release touchpad cable on the system board [2].
   c) Pull the touchpad cable to release it from adhesive that secure the cable to the laptop.



5. To remove touchpad board:
   a) Remove the M2x2 screws (4) that secure the touchpad to the laptop [1].
   b) Lift the touchpad away from the laptop chassis [2].



Installing the touchpad

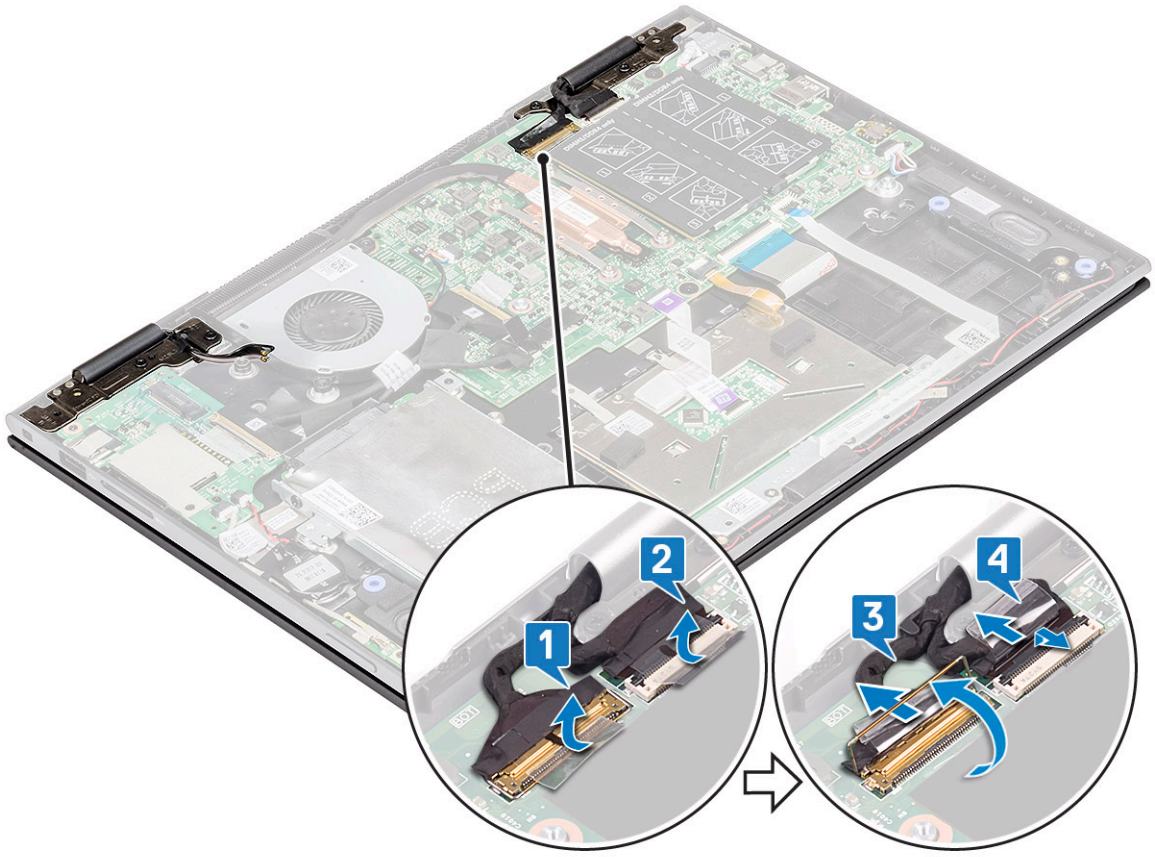
1. Place the touchpad board on the laptop.
2. Tighten the M2x2 screws (4) to secure the touchpad to the laptop.

3. Place the metal tab over the touchpad.
4. Tighten the M2x2 screws (4) to secure the metal tab.
5. Connect the touchpad cable and keyboard daughter board cable to the connectors on the system board.
6. Install the:
   a) battery
   b) base cover
7. Follow the procedure in After working inside your computer.

Display assembly

Removing the display assembly

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) WLAN card
3. To release the display assembly:
   a) Peel the adhesive tapes that secure the display cable and touch screen board cables [1] [2].
   b) Open the latches and disconnect the display and touch screen board cables from the system board [3] [4].



4. Turn the computer over and open the display.
5. To remove display assembly:
   a) Remove the screws that secure the display assembly to the laptop chassis [1].
   b) Lift the display assembly away from the laptop chassis [2].



Installing the display assembly

1. Align the display assembly with the screw holders on the laptop chassis.

2. Tighten the screw to secure the display assembly to the laptop chassis.
3. Close the display and turn the laptop over.
4. Connect the display and touch screen board cables to the connectors on the system board.
5. Affix the adhesive tapes to secure the display and touch screen board cables.
6. Install the:
   a) WLAN card
   b) battery
   c) base cover
7. Follow the procedure in After working inside your computer.

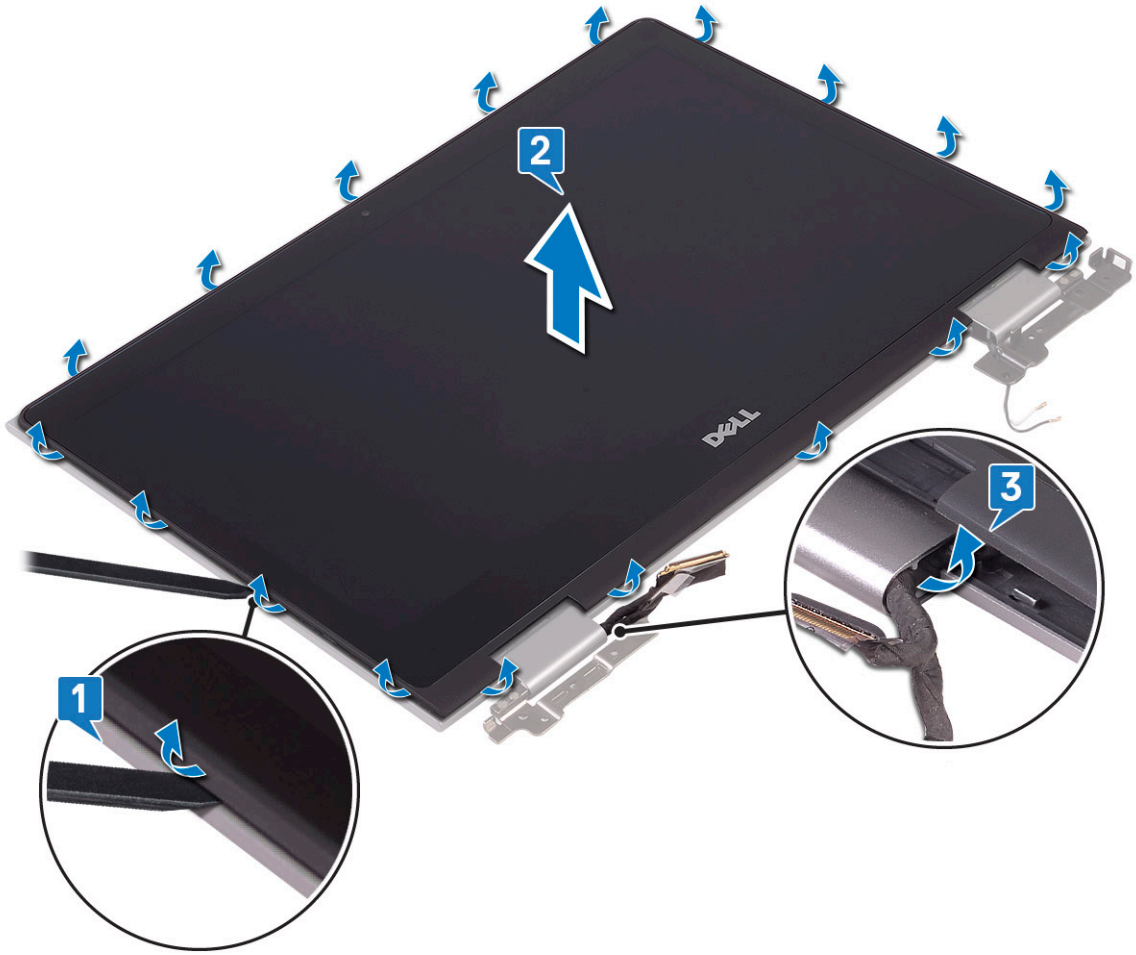
Display cover

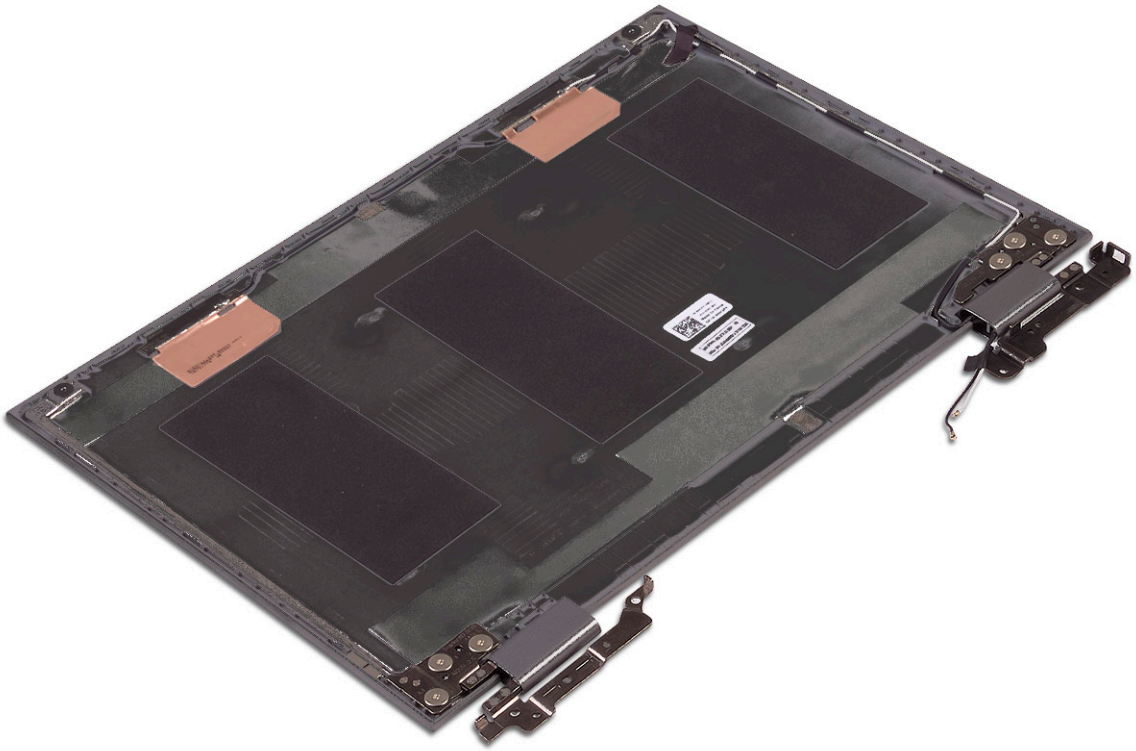
Removing the display cover

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) display assembly
3. To remove the display cover:
   a) Using a plastic scribe, pry the display cover from the edges to release it from the display assembly [1].
   b) Lift the display cover away from the display assembly [2].

      NOTE: Apply pressure uniformly in all sides of the display cover to avoid damaging the clips.

   c) Release the display cable and touch screen board cable from under the display hinge [3].


2
3
1



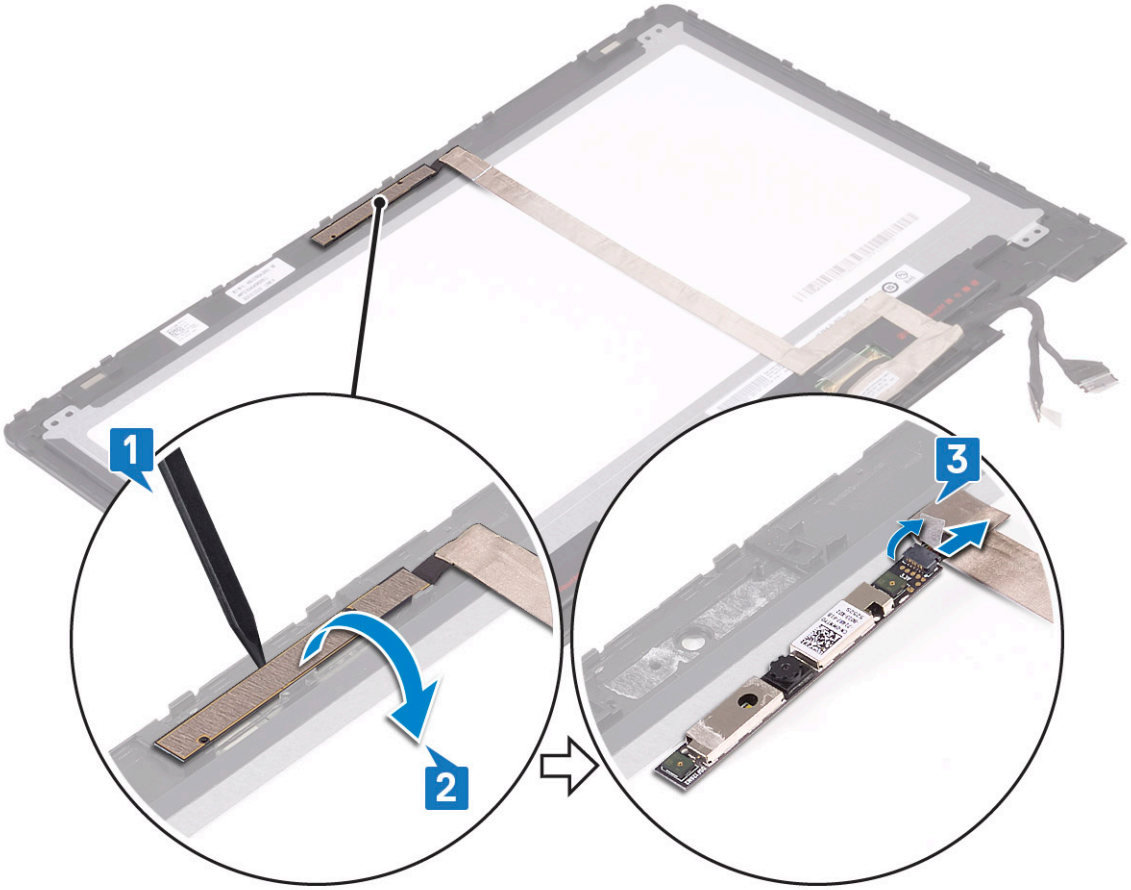
Installing the display cover

1. Route the display cable and touch screen board cable to the display hinge.
2. Place the display cover on the display assembly and press along the edges to secure it.
3. Install the:
   a) display assembly
   b) battery
   c) base cover
4. Follow the procedure in After working inside your computer.

Camera

Removing the camera

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) display assembly
   d) display cover
3. To remove the camera:
   a) Using a plastic scribe, release the camera module from the display panel [1] [2].
   b) Disconnect the camera cable from the camera module [3].



Installing the camera

1. Connect the camera cable to the connector on the camera module.
2. Insert the camera module into the slot on the display panel.
3. Install the:
   a) display cover
   b) display assembly
   c) battery
   d) base cover
4. Follow the procedure in After working inside your computer.

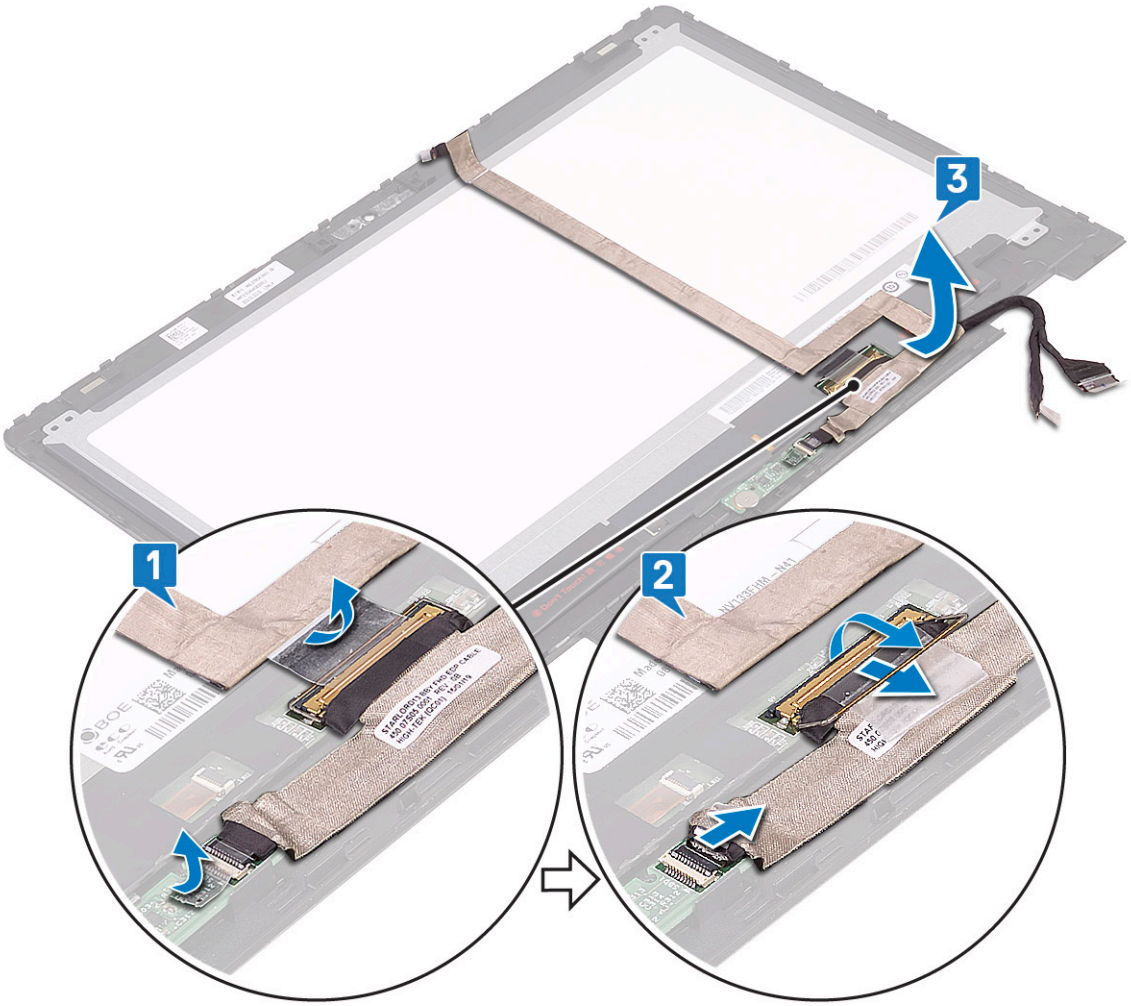
Display (eDP) cable

Removing the display cable

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) display assembly
   d) display cover
3. To remove the display cable:
   a) Peel the adhesive tape and pull the latch to release the cables [1].

      NOTE: Remove the tape cautiously for reuse.

   b) Disconnect the sensor board cable and the display cable from the display panel [2].
   c) Lift the display cable away from the display panel [3].



Installing the display cable

1. Route the display cable through the placeholders on the display panel.
2. Align the display cable along the routing channels on the display panel.
3. Connect the display cable and sensor board cable to the connectors on the display panel.
4. Affix the adhesive tapes to secure the display cable and sensor board cable.
5. Install the:
   a) display cover
   b) display assembly
   c) battery
   d) base cover
6. Follow the procedure in After working inside your computer.

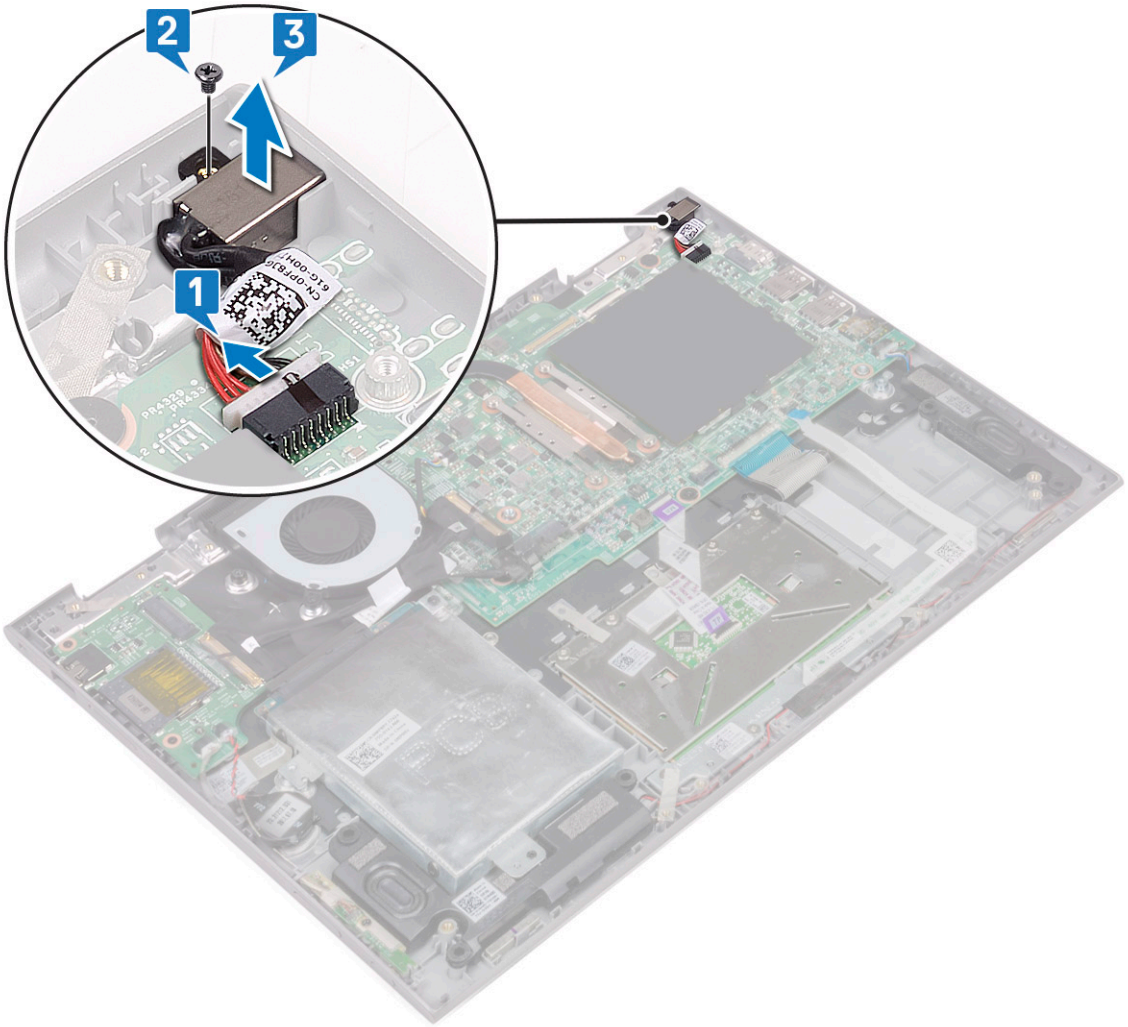
Power connector port

Removing the power connector port

1. Follow the procedure in Before working inside your computer.
2. Remove the:

a) base cover
b) battery

3. To remove the power connector port:
   a) Disconnect the power connector port cable from the connector on the system board [1].
   b) Remove the M2x3 screw (1) that secures the power connector port to the laptop [2].
   c) Lift the power connector port away from the laptop [3].



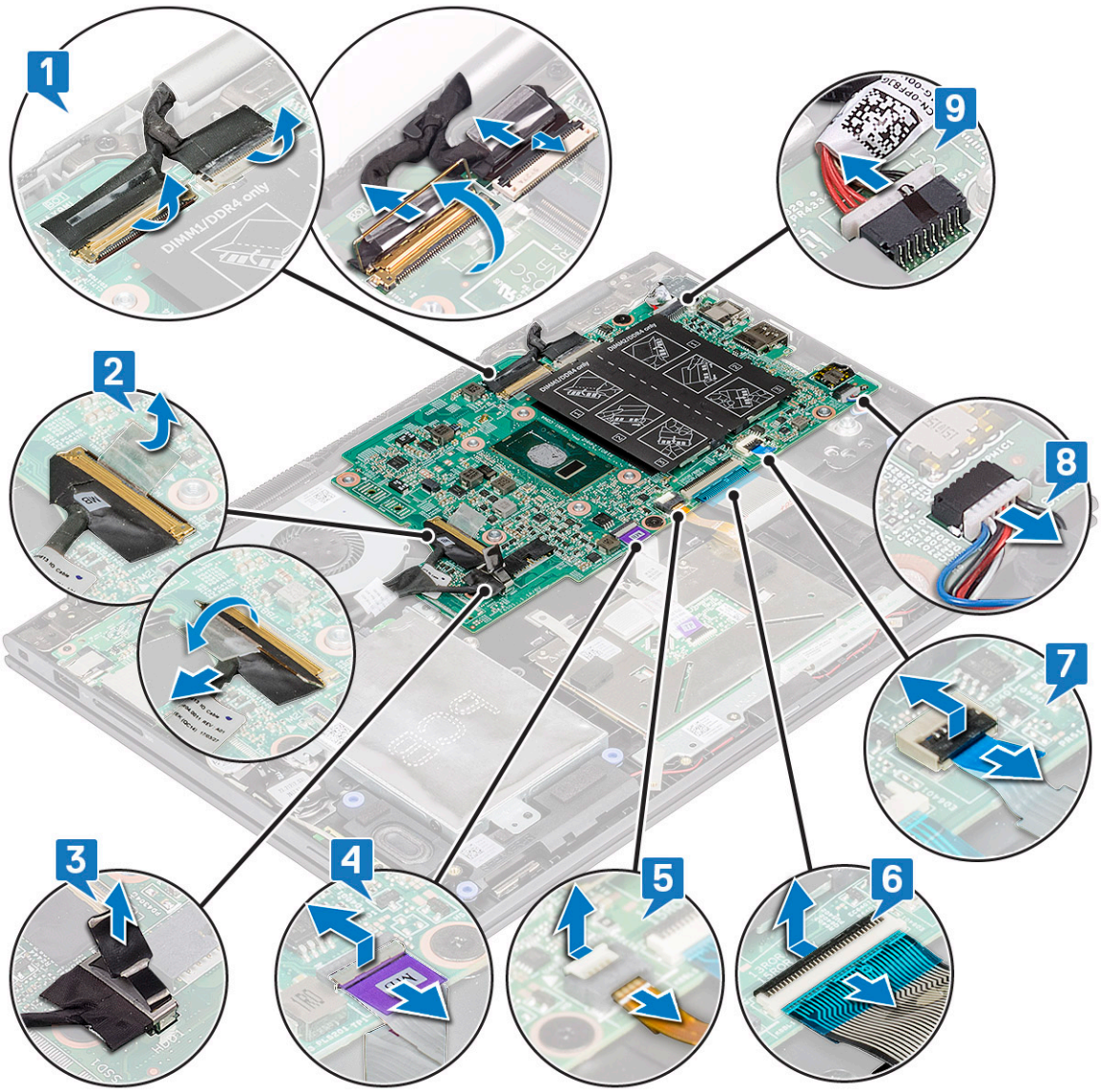
Installing the power connector port

1. Insert the power connector port into the slot on the laptop.
2. Tighten the M2x3 screw (1) to secure the power connector port to the laptop.
3. Connect the power connector port cable to the connector on the system board.
4. Install the:
   a) battery
   b) base cover
5. Follow the procedure in After working inside your computer.

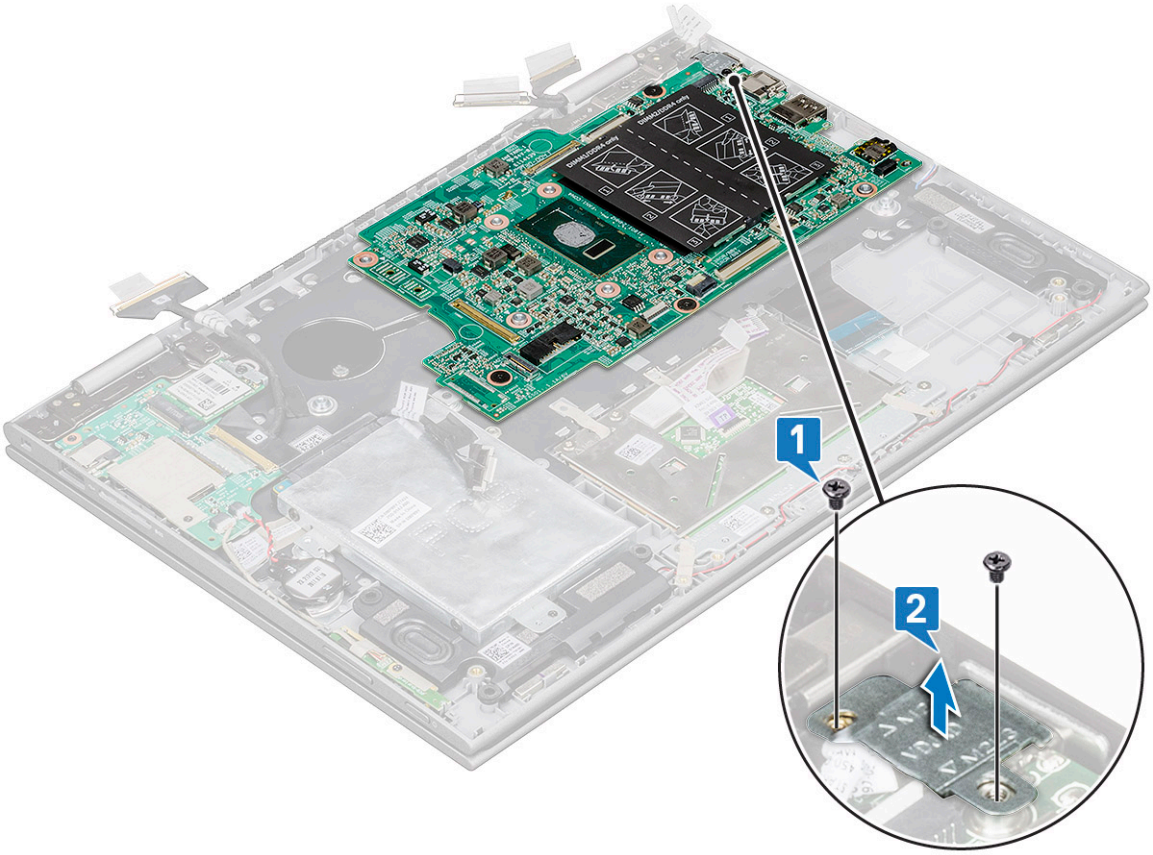
System board

Removing the system board

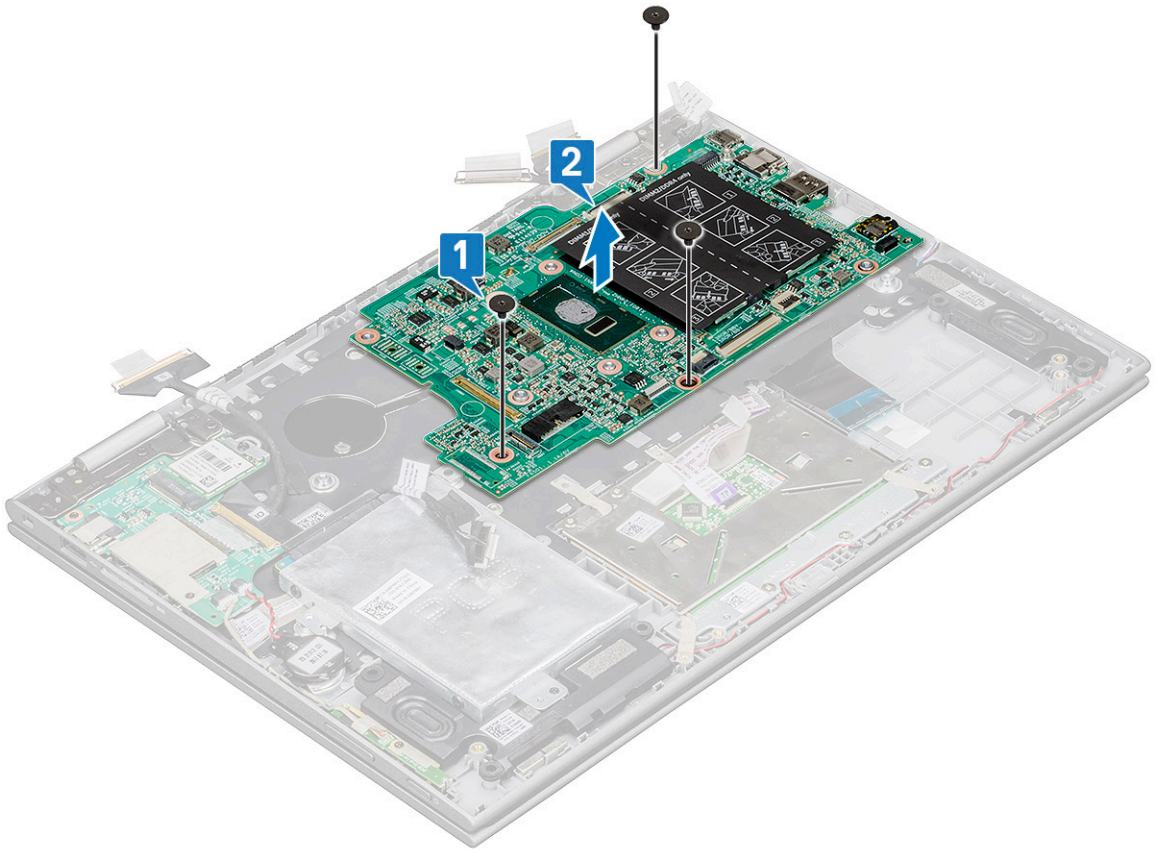
1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) hard disk
   d) memory module
   e) coin cell battery
   f) WLAN card
   g) system fan
   h) heat sink
3. To disconnect the following cables from the system board:
   a) Lift the latch and disconnect the touch screen cable and display cable [1].
   b) Pull the plastic label and release the I/O board cable on the system board [2].
   c) Pull the label to disconnect the HDD cable on the system board [3]
   d) Lift the latch and release the touchpad cable [4].
   e) Disconnect the keyboard back lid cable [5].
   f) Lift the latch and release the keyboard cable [6].
   g) Lift the latch and release the LED cable [7]
   h) Disconnect the speaker cable on the system board [8].
   i) Disconnect the power connector port cable on the system board [9].



j) Remove the metal bracket screws (2) that secures the USB Type-C to the system board [1].
k) Lift the metal bracket from the system board [2].



4. To remove the system board:
   a) Remove the screws (3) that secure the system board to the laptop [1].
   b) Lift the system board away from the laptop[2].



Installing the system board

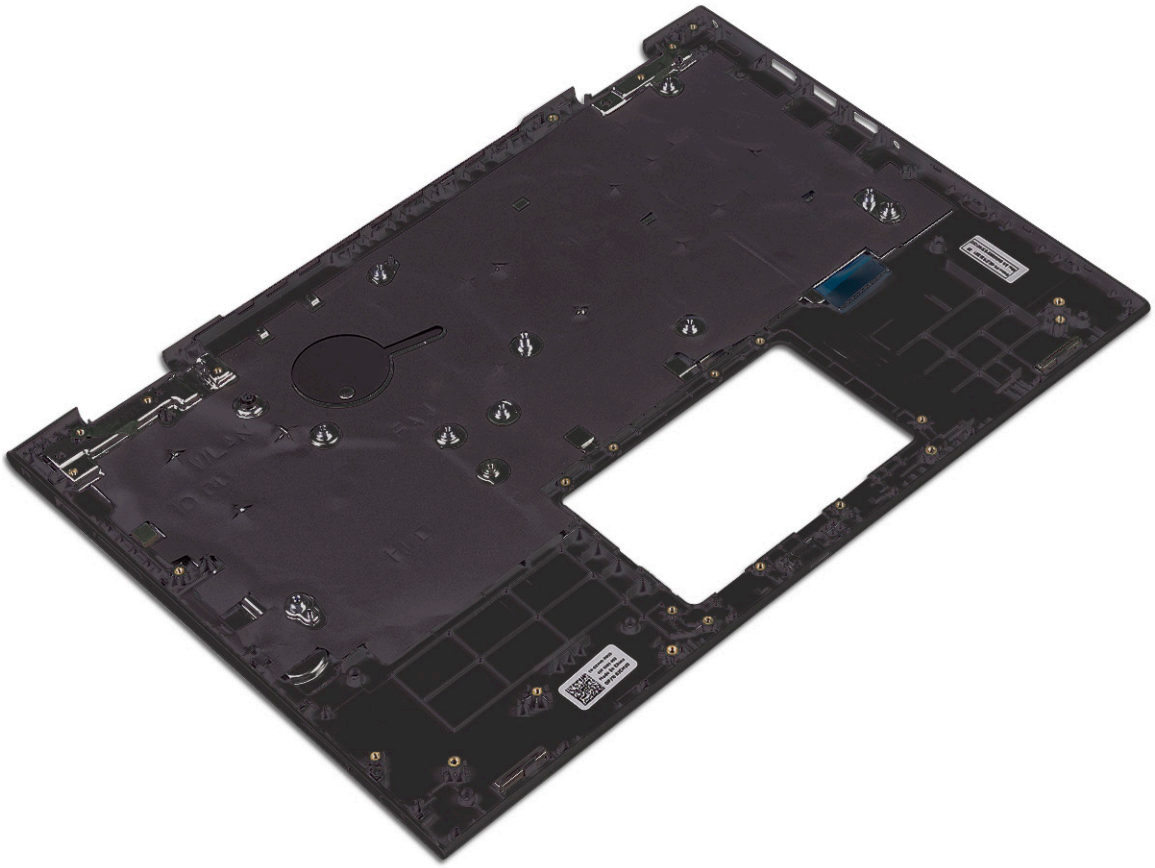
1. Place the system board on the laptop.
2. Tighten the screws to secure the system board to the laptop.
3. Connect the following cables to the connectors on the system board:
   a) display cable
   b) keyboard cable
   c) touch pad cable
   d) power connector port
   e) HDD cable
   f) speaker cable
   g) LED cable
   h) keyboard back lid cable
   i) I/O board cable
4. Place the metal bracket and affix the screws (2) that secures the USB Type-C to the system board.
5. Affix the adhesive tapes to secure the I/O board, display, and touch screen cables.
6. Install the:
   a) heat sink
   b) system fan
   c) WLAN card
   d) coin cell battery
   e) memory module
   f) hard disk
   g) battery
   h) base cover
7. Follow the procedure in After working inside your computer.

Palm rest

Removing the palmrest

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a) base cover
   b) battery
   c) WLAN card
   d) power and volume control board
   e) memory module
   f) hard disk
   g) coin cell battery
   h) system fan
   i) touchpad
   j) heat sink
   k) I/O board
   l) LED board
   m) power connector port
   n) display assembly
   o) speakers
   p) system board

The palmrest is the last component, after removing all the components.



Installing the palmrest

1. Place the palmrest on a flat surface.
2. Install the:
   a) system board
   b) speakers
   c) display assembly
   d) power connector port
   e) I/O board
   f) LED board
   g) heat sink
   h) touchpad
   i) system fan
   j) coin cell battery
   k) hard disk
   l) WLAN card
   m) memory module
   n) power and volume control board
   o) battery
   p) base cover
3. Follow the procedure in After working inside your computer.

3

Technology and components

Power adapter

This laptop is shipped with the 45 W power adapter. This adapter uses an E4 connector.

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 processors:

- Intel Pentium-4405U
- Intel Core i3-6100U
- Intel Core i5-6200U
- Intel Core i5-6300U

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

Skylake processor

Intel Skylake is the successor to the Intel® Broadwell processor. It is a microarchitecture redesign using an already existing process technology and it will be branded as Intel 6th Gen Core. Like Broadwell, Skylake is available in four variants with suffixes SKL-Y, SKL-H, and SKL-U.

The Skylake also includes Core i7, i5, i3, Pentium and Celeron processors.

Processor performance features

The following table illustrates the performance available on each Skylake.

Table 2. Performance features

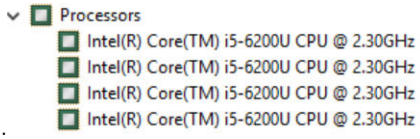
Feature	Feature description	SKL-Y	SKL-U	SKL-H
General Features	Cores	Dual Core	Dual Core	Dual Core
	CPU/Memory/Graphic Overclocking	No	No	Yes
	Intel Extreme Tuning Utility	No	No	Yes
	Intel Hyper-Threading Technology	Yes	Yes	Yes
	Intel Smart Cache Technology with last level cache (LLC) sharing between Processor and GFx cores	Yes	Yes	Yes

Feature	Feature description	SKL-Y	SKL-U	SKL-H
	Intel Smart Sound Technology	Yes	Yes	Yes
	Intel Turbo Boost Technology 2.0	Yes	Yes	Yes
	Last Level Cache (LLC)	Up to 4M	Up to 4M	Up to 4M
	Voltage Optimizer	Yes	TBD	TBD
Display	3 Independent Display Support	Yes	Yes	Yes
	HDMI 2.0 Display @60Hz	3840x2160	3840x2160	3840x2160
	DP/eDP Display @60Hz	3840x2160	4096x2304	4096x2304
	eDP 1.3, support for MPO, NV12	Yes	Yes	Yes
Media	Intel Built-In Visuals	Yes	Yes	Yes
Compute	OpenCL 2.0	Yes	No	yes
Platform Hardware	14nm process	Yes	Yes	Yes
	16PCIe Graphic lanes (configurable as 1x16 or 2x8 or 1x8+2x4)	No	No	Yes
	PCIe Gen3.0 support	No	No	Yes
	Switchable graphics (muxless solution)	No	Yes	Yes
Memory	Memory Type	• LPDDR3 • DDR3L	• LPDDR3 • DDR3L • DDR4	• LPDDR3 • DDR3L • DDR4
	Connector / Memory Down	Memory down	SODIMM	SODIMM
	Speed	• 1866MT/s for LPDDR3 • 1600MT/s for DDR3L	• 1866MT/s for LPDDR3 • 1600MT/s for DDR3L • 2133MT/s for DDR4	• 1866MT/s for LPDDR3 • 1600MT/s for DDR3L • 2133MT/s for DDR4
	Max Capacity	• LPDDR3–16 GB • DDR3L-4 GB	• DDR3L-16 GB • LPDDR3–16 GB • DDR4=32 GB	• DDR3L-16 GB • LPDDR3–16 GB • DDR4=32 GB
OS Support	Windows 10 (64-bit)	Yes	Yes	Yes
	Windows 7 (64-bit / 32bit)	Yes	Yes	Yes
	Windows 8.1 (64-bit)	Yes	Yes	Yes
	Linux (kernel and associated modules)	Yes	Yes	Yes
	Chrome	Yes	Yes	No
	Android	No	No	No

Identifying processors in Windows 10

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

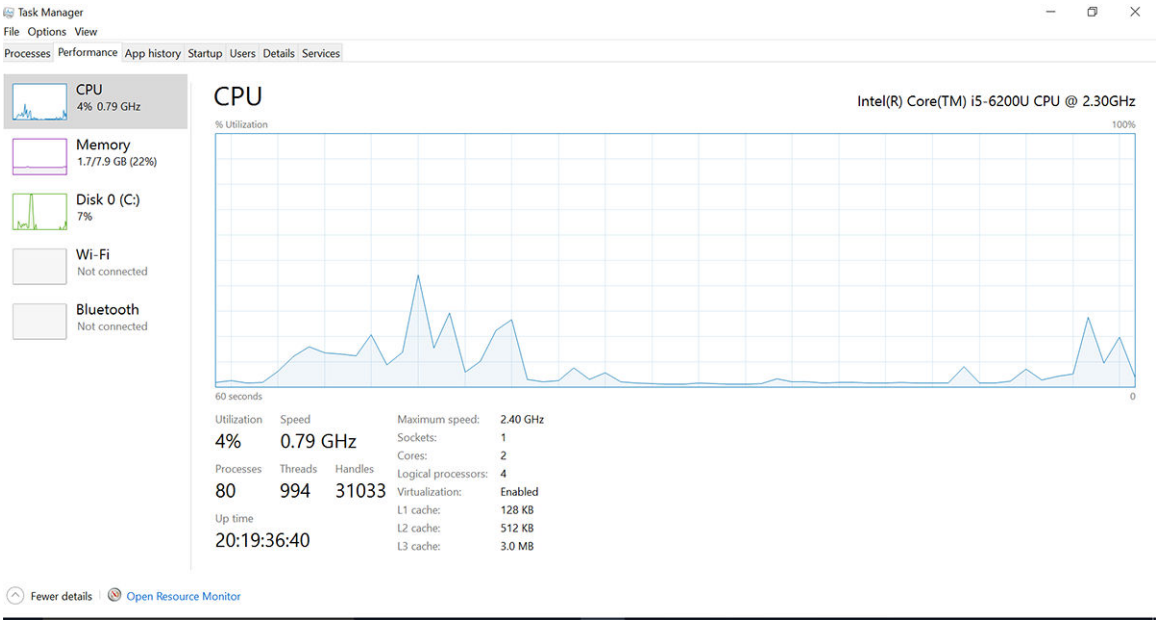
3. Tap **Processor**.



The processor information is displayed.

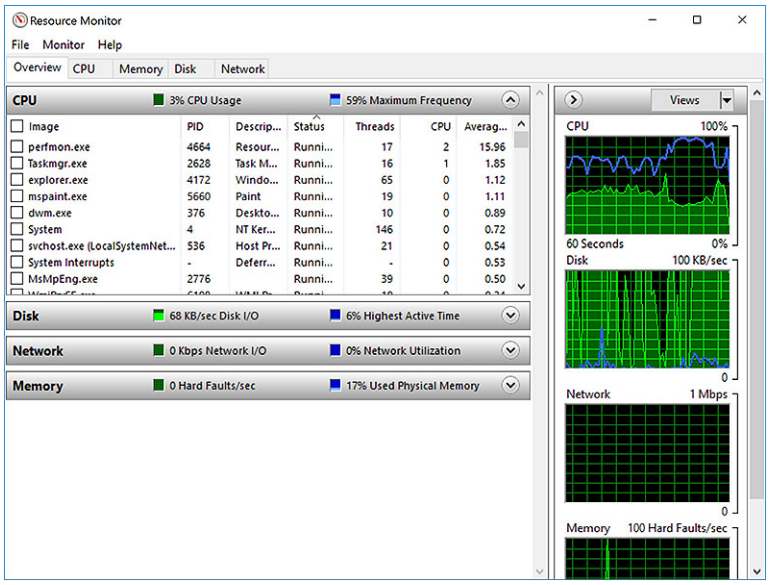
Verifying the processor usage in Task Manager

1. Right Click on the taskbar.
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.



Verifying the processor usage in Resource Monitor

1. Right Click on the taskbar.
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**.



Downloading the chipset driver

1. Turn on the laptop.
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your laptop, and then click **Submit**.

   NOTE: If you do not have the Service Tag, use the autodetect feature or manually browse for your laptop model.
4. Click **Drivers and Downloads**.
5. Select the operating system installed on 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.

Chipsets

All laptops or notebook communicate with the CPU through the chipset. This laptop is shipped with the Intel Mobile CM238 .

Identifying the chipset in Device Manager on Windows 10

1. Right click the **Start Menu**.
2. Select **Device Manager**.
3. Expand **System Devices** and search for the chipset.



Graphic options

This laptop is shipped with the following graphics chipset options:

- Intel HD Graphics 510 – Intel Pentium
- Intel HD Graphics 520 – Intel Core i3/i5

Downloading drivers

1. Turn on the laptop.
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your laptop, and then click **Submit**.

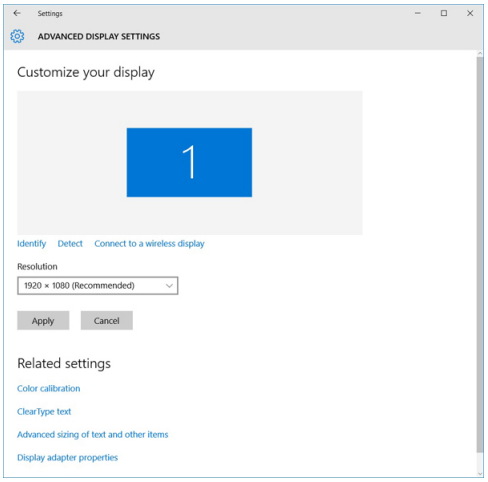
   NOTE: If you do not have the Service Tag, use the auto detect feature or manually browse for your laptop model.
4. Click **Drivers and Downloads**.
5. Select the operating system installed on your laptop.
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your laptop.
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the driver file icon and follow the instructions on the screen.

Identifying the display adapter

1. Right Click the Start menu.
2. Select Device Manager.
3. Expand **Display adapters**.
   The display adapters are displayed.

Changing the screen resolution

1. Right click on the desktop and select **Display Settings**.
2. Tap or click **Display settings**.
   The Setting window is displayed.
3. Scroll down and select **Advanced Display Settings**.
   The Advanced Display Setting is displayed.
4. Select the required resolution from the drop-down list and tap **Apply**.



Rotating the display

1. Right click on the desktop.
   A sub menu is displayed.
2. Select **Graphic Options** > **Rotation** and choose one of the following:
   - Rotate to Normal
   - Rotate to 90 Degrees
   - Rotate to 180 Degrees
   - Rotate to 270 Degrees

NOTE: The Display can also be rotated using the following key combinations:

- **Ctrl + Alt + Up arrow key (Rotate to normal)**
- **Right arrow key (Rotate 90 degrees)**
- **Down arrow key (Rotate 180 degrees)**
- **Left arrow key (Rotate 270 degrees)**

Display options

This laptop has 13.30– inch FHD with 1920 x 1080 resolution (maximum).

Adjusting brightness in Windows 10

To enable or disable automatic screen brightness adjustment:

1. Swipe-in from the right edge of the display to access the Action Center.
2. Tap or click **All Settings** > **System** > **Display**.
3. Use the **Brightness level** slider to adjust the brightness manually.

Cleaning the display

1. Check for any smudges or areas that must be cleaned.
2. Use a microfiber cloth to remove any obvious dust and gently brush off any dust particles.
3. Proper cleaning kits should be used to clean and keep your display in a crisp clear pristine condition.

   NOTE: Never spray any cleaning solutions directly on the screen; spray it to the cleaning cloth.
4. Gently wipe the screen in a circular motion. Do not press hard on the cloth.

   NOTE: Do not press hard or touch the screen with your fingers or you may leave oily prints and smears.

NOTE: Do not leave any liquid on the screen.

5. Remove all excess moisture as it may damage your screen.
6. Let the display dry thoroughly before you turn it on.
7. For stains that are hard to remove, repeat this procedure till the display is clean.

Using touch screen in Windows 10

Follow these steps to enable or disable the touch screen:

1. Right click on the Start menu.
2. Select **Control Panel**.
3. Tap **Pen and Input Devices** in the **Control Panel**.
4. Tap the **Touch** tab.
5. Select **Use your finger as an input device** to enable the touch screen. Clear the box to disable the touch screen.

Connecting to external display devices

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

1. Ensure that the external display device is turned on and plug the external display device cable into a video port on your laptop.
2. Press the Windows logo+P key.
3. Select one of the following modes:
   - PC screen only
   - Duplicate
   - Extend
   - Second Screen only

NOTE: For more information, see the document that shipped with your display device.

Realtek ALC3253 Waves MaxxAudio Pro controller

This laptop is shipped with integrated Realtek ALC3253–CG Waves MaxxAudio Pro controller. It is a High Definition audio codec designed for Windows desktop and laptops.

Downloading the audio driver

1. Turn on the laptop.
2. Go to **www.Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your laptop and click **Submit**.

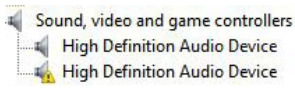
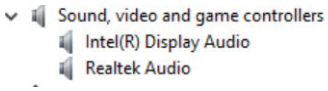
   NOTE: If you do not have the Service Tag, use the autodetect feature or manually browse for your laptop model.
4. Click **Drivers and Downloads**.
5. Select the operating system installed on your laptop.
6. Scroll down the page and expand **Audio**.
7. Select the audio driver.
8. Click **Download File** to download the latest version of the audio driver for your laptop.
9. After the download is complete, navigate to the folder where you saved the audio driver file.
10. Double-click the audio driver file icon and follow the instructions on the screen.

Identifying the audio controller in Windows 10

1. Swipe from the right edge to access the **Action center** and select **All Settings**.
2. Type `Device Manager` in the search box and select **Device Manager** from the left pane.

3. Expand **Sound, video and game controllers**.
   The audio controller is displayed.

Table 3. Identifying the audio controller in Windows 10

Before installation	After installation
	

Changing the audio settings

1. Tap or touch the **Search the web and Windows** and type `Dell Audio`.
2. Start the Dell Audio utility from the left pane.

WLAN cards

This laptop supports the Intel Dual Band Wireless AC 7265 card

NOTE: Qualcomm xxxxxx (for example: QCA61x4A) is a product of Qualcomm Technologies, Inc

Secure Boot screen options

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. • Disabled • Enabled Default setting: 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: • PK • KEK • db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **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 **NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.**

Hard drive options

This laptop supports HDD, M.2 SATA SSD, and M.2 PCIe NVMe.

Identifying the hard drive in Windows 10

1. Right click on Start menu

2. Select**Device Manager** , and expand **Disk drives**.

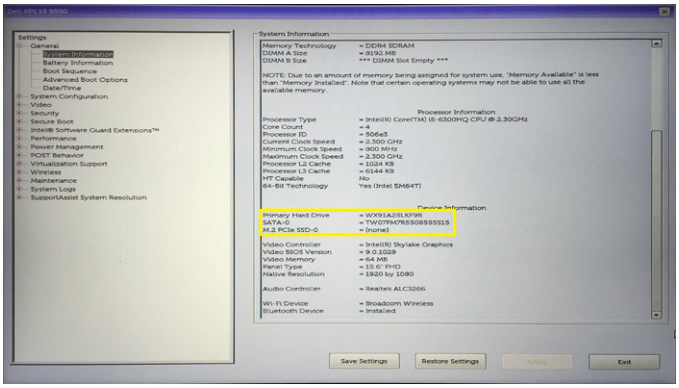
   The hard drive is listed under **Disk drives**.



Identifying the hard drive in the BIOS

1. Turn on or restart your system.
2. When the Dell logo appears, perform the following action 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

Universal Serial Bus, or USB, was introduced in 1996. It dramatically simplified the connection between host computers and peripheral devices like mice, keyboards, external drivers, and printers.

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

Table 4. USB evolution

Type	Data Transfer Rate	Category	Introduction Year
USB 2.0	480 Mbps	High Speed	2000
USB 3.0/USB 3.1 Gen 1	5 Gbps	Super Speed	2010
USB 3.1 Gen 2	10 Gbps	Super Speed	2013

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

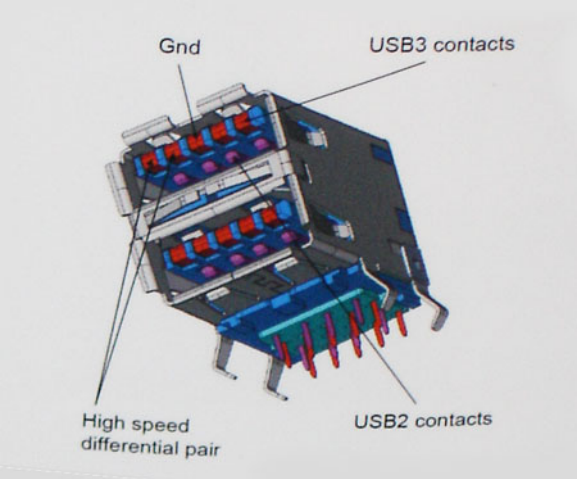
The topics below cover some of the most commonly asked questions regarding USB 3.0/USB 3.1 Gen 1.

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.

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
- **4K 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

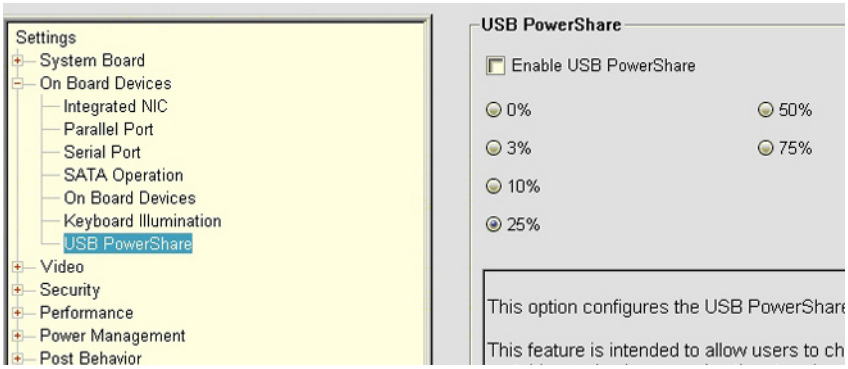
- Quality HDMI transfers uncompressed digital audio and video for the highest, crispest image quality.
- Low -cost HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner
- Audio HDMI supports multiple audio 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

USB Powershare

USB PowerShare is a feature which allows for external USB devices (i.e. cellular phones, portable music players, etc.) to charge using the portable system's battery.

Only the USB connector with a **SS+USB+Battery**-->  icon, can be used.

This functionality is enabled in the system setup under the **On Board Devices** heading. You can select how much of the battery's charge can be used as well (pictured below). If you set the USB PowerShare to 25%, the external device is allowed to charge until the battery reaches 25% of full capacity (e.g. 75% of the portable's battery charge is used up).



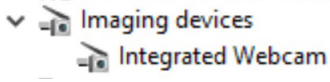
Camera features

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

NOTE: The camera is at the top center of the display.

Identifying the camera in Device Manager on Windows 10

1. In the **Search** box, type `device manager`, and tap to start it.
2. Under **Device Manager**, expand **Imaging devices**.

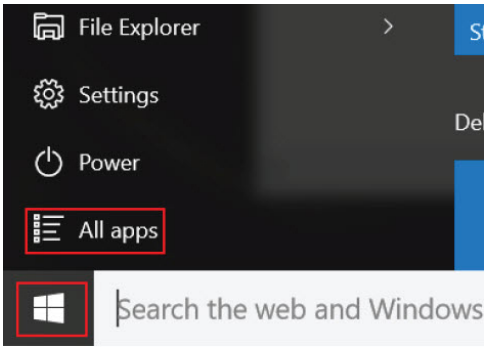


Starting the camera

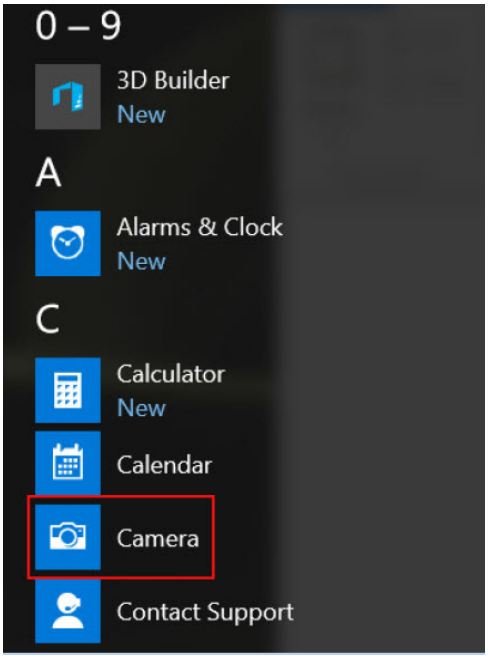
To start the camera, open an application that uses the camera. For instance, if you tap the Skype software that is shipped with the laptop, the camera turns on. Similarly, if you are chatting on the internet and the application requests to access the webcam, the webcam turns on.

Starting the camera application

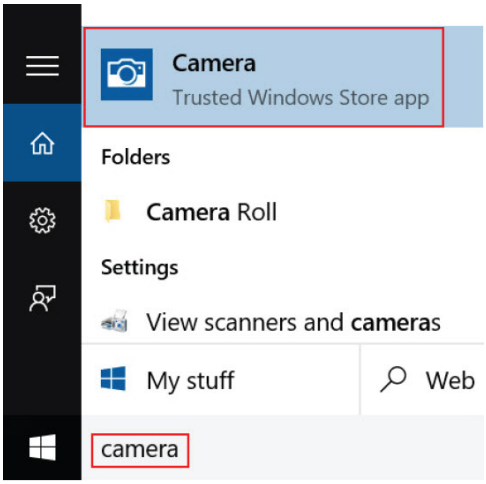
1. Tap or click the **Windows** button and select **All apps**.



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



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



Memory features

This laptop supports 4–16 GB DDR4 SODIMM memory, up to 2133 MHz.

Verifying system memory in Windows 10

1. Click on the start menu and select **Settings** > **System.**
2. Under **System**, tap **About**.

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.

4

System specifications

Keyboard specifications

Feature	Specification
Number of keys	• United States: 80 keys • United Kingdom: 81 keys • Japan: 84 keys
Size	• X= 19.05 mm key pitch • Y= 18.05 mm key pitch

Display specifications

Feature	Specification
Type	Touch FHD AG
Height	165.38 mm (6.51 inches)
Width	293.77 mm (11.56 inches)
Diagonal	337.82 mm (13.30 inches)
Maximum resolution	1920 X 1080
Maximum brightness	220 nits
Refresh rate	60 Hz
Maximum viewing angles (horizontal)	80/80
Maximum viewing angles (vertical)	80/80
Pixel pitch	0.153 mm (0.006 inches)

Port and connector specifications

Feature	Specification
Audio	Stereo headset/mic combo
Video	• One HDMI 1.4 • DisplayPort over USB Type-C
USB	• One USB Type C • One USB 3.1 Gen 1-Type A with PowerShare • One USB 2.0 **NOTE: USB Type-C port does not support the WD15 USB Type C Dock.**

Feature	Specification
M.2 card	2230 x1 for the WLAN+ Bluetooth

Communication specifications

Features	Specification
Wireless	• Qualcomm QCA61x4A 802.11ac Dual Band (2x2) Wireless Adapter • Bluetooth 4.1

Camera specifications

Feature	Specification
Resolution	• Image: Up to 1280 X 720 (0.92MP) • Video: Up to 1280 X 720 (0.92MP)
Imaging rate	Up to 30 frames per second

Video specifications

Feature	Specification
Type	Integrated on system board, hardware accelerated
Controller	• Intel HD Graphics 520 • Intel HD Graphics 610 • Intel HD Graphics 620 • Intel UHD Graphics 620
Data bus	Internal PCIe
External display support	• One HDMI 1.4 • On System: eDP (internal), HDMI, DP over USB TYPE-C

Storage specifications

Feature	Specification
SSD M.2 2280 SATA/PCIe/NVMe	• Up to 128 GB • up to 256 GB • up to 512 GB
HDD	• Up to 500 GB 7200RPM • up to 1TB HDD 5400RPM (1TB SMR)

Audio specifications

Feature	Specification
Types	High-definition audio
Controller	Realtek ALC3253 with Waves MaxxAudio pro
Stereo conversion	24-bit (analog-to-digital and digital-to-analog)

Feature	Specification
Internal interface	High-definition audio codec
External interface	microphone-in and stereo headphones/headsets/speakers universal connector
Speakers	Power / Peak Power : 2X2Wrms/2X2.5Wpeak
Internal speaker amplifier	2 watt per channel
Volume controls	Media control shortcut keys and also hot-key keyboard button

Memory specifications

Feature	Specification
Memory connector	Two SODIMM slots
Memory capacity	4 GB and 16 GB
Memory type	DDR4
Speed	• 2133 MHz (6th Gen and 7th Gen Intel core processors) • 2400 MHz (8th Gen Intel core processors)
Minimum memory	4 GB
Maximum memory	16 GB (2 * 8 GB)

Processor specifications

Feature	Specification
Types	• 7th Generation Intel core i3 processor • 8th Generation Intel core i5 processors • Intel Pentium 4415U • Intel Core i3-6006U
Chipset	Integrated on the system board

System specifications

Feature	Specification
Chipset	Intel 7th and 8th Generation processors
DRAM bus width	64-bit
Flash EPROM	SPI 128 Mbits
PCIe bus	100 MHz
External Bus Frequency	PCIe Gen3 (8 GT/s)

Touchpad specifications

Feature	Specification
Resolution	• Horizontal – 1228 dpi • Vertical – 748 dpi

Feature	Specification
Size	• Width: 105mm • Height: 65mm

Battery specifications

Feature	Specification
Type	3-cell smart lithium-ion (42 WHr)
Depth	181 mm (7.126 inches)
Height	7.05 mm (0.28 inch)
Width	95.9 mm (3.78 inches)
Weight	210g (0.463 lb)
Voltage	11.40 V DC
Life span	300 discharge per charge cycles
Temperature range	
Operating	0 °C to 50 °C (32 °F to 122 °F)
Non-operating	-20 °C to 65 °C (-4 °F to 149 °F)
Coin cell battery	CR-2032

Physical specifications

Feature	Specification
Height	• Front – 19.5 mm (0.77 inch) • Back – 20.4 mm (0.80 inch)
Width	324 mm (12.76 inch)
Depth	224.8 mm (8.85 inch)
Weight	3.47 lb (1.57kg)

AC Adapter specifications

Feature	Specification
Type	45 W
Input voltage	100 V AC to 240 V AC
Input current (maximum)	1.3 A
Input frequency	50 Hz to 60 Hz
Output current	2.31 A (continuous)
Rated output voltage	19.5 +/– 1.0 V DC
Temperature range (Operating)	0°C to 40°C (32°F to 104°F)

Feature	Specification
Temperature range (Non-Operating)	–40°C to 70°C (–40°F to 158°F)

5

System Setup

Topics:

- System setup options
- Boot Sequence
- Navigation keys
- Updating the BIOS in Windows
- System and setup password

System setup options

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

General screen options

This section lists the primary hardware features of your computer.

Option	Description
System Information	• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code. **NOTE: Signed Firmware update is enabled** • Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size. By default DIMM B slot is empty. • Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit technology. • Device Information: SATA-0, SATA-1, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, WiFi Device, Bluetooth Device.
Battery Information	Displays the battery status and the type of AC adapter connected to the computer.
Boot Sequence	**Boot Sequence**: Allows you to change the order in which the computer attempts to find an operating system. The options are: • Windows Boot Manager By default, the options is checked. **Boot List Options**: Allows you to change the boot list option: • Legacy • UEFI (The option is enabled by default)
Advanced Boot Options	Allows you the legacy option ROMs to load. The options are: • **Enable Legacy Option ROMs**(The option is enabled by default) • **Enable UEFI Network Stack** • **Enable Attempt Legacy Boot**
BootUEFI Boot Path SecurityOptions	Allows you to control whether or not the system will prompt to the user to enter the Admin password, when a user selects a UEFI boot path from the F12 boot Menu. • **Always, Except Internal HDD**(The option is enabled by default)

Option	Description
	• **Always** • **Never** **NOTE: These options have no relevance if the Admin password is not set BIOS settings.**
Date/Time	Allows you to change the date and time.

System Configuration screen options

Option	Description
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: • Disabled • AHCI: This option is enabled by default.
Drives	Allows you to configure the SATA drives on board. All drives are enabled by default. The options are: • SATA-0 • SATA-1
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default. • Enable SMART Reporting
USB Configuration	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). If USB port is enabled, device attached to this port is enabled and available for OS. If USB port is disabled, the OS cannot see any device attached to this port. The options are: • Enable USB Boot Support (by default enable) • Enable External USB Port (by default enable)
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.
Audio	This field enables or disables the integrated audio controller. By default, the **Enable Audio** option is selected. The options are: • Enable Microphone (by default enable) • Enable Internal Speaker (by default enable)
Miscellaneous Devices	Allows you to enable or disable the following devices: • Enable Camera (enabled by default) • Enable Secure Digital (SD) card (enabled by default) **NOTE: All devices are enabled by default.**

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).

NOTE: The video setting will be visible only when a video card is installed into the system.

Security screen options

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password. **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.** **NOTE: Successful password changes take effect immediately.** Default setting: Not set
System Password	Allows you to set, change or delete the system password. **NOTE: Successful password changes take effect immediately.** Default setting: Not set
Internal HDD-1 Password	Allows you to set, change or delete the system's internal hard drive's password. Default setting: Not set
Strong Password	Allows you to enforce the option to always set strong passwords. Default Setting: Enable Strong Password is not selected. **NOTE: If Strong Password is enabled, Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.**
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Password Bypass	Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are: • Disabled • Reboot bypass Default setting: Disabled
Password Change	Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set. Default setting: **Allow Non-Admin Password Changes** is selected.
UEFI Capsule Firmware Updates	Allows you to control whether the system allows BIOS updates through UEFI capsule update packages. Default setting: **Enable UEFI Capsule Firmware Updates** is selected.
PTT Security	Allows you to control whether the Platform Trust Technology (PTT) feature is visible to the operating system. The options are: • PTT On • Clear Default setting: **PTT On** is selected. **NOTE: Disabling this option does not change any settings made to the PTT, delete, or change any information or keys stored in the PTT. Changes made to this setting take effect immediately.**
Computrace	Allows you to activate or disable the optional Computrace software The options are: • Deactivate • Disable • Activate **NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed** Default setting: Deactivate

Option	Description
CPU XD Support	Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support (default)
Admin Setup Lockout	Allows you to prevent users from entering the setup when an Administrator password is set. Default Setting: **Enable Admin Setup Lockout** is not selected.

Secure Boot screen options

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. • Disabled • Enabled Default setting: 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: • PK • KEK • db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **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 **NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.**

Intel Software Guard Extensions screen options

Option	Description
Intel SGX Enable	This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are: • Disabled • Enabled Default setting: Disabled
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory Size**. The options are: • 32 MB • 64 MB • 128 MB

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. • Enable Multi Core Support Default setting: The option is enabled.
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep feature. • Enable Intel SpeedStep Default setting: The option is enabled.
C-States Control	Allows you to enable or disable the additional processor sleep states. • C states Default setting: The option is enabled.
Hyper-Thread Control	Allows you to enable or disable the Hyper-Threading in the processor. • Disabled • Enabled Default setting: Enabled.

Power Management screen options

Option	Description
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: • Disabled • Every Day • Weekdays • Select Days Default setting: Disabled
USB Wake Support	Allows you to enable USB devices to wake the system from Standby. **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.** • Enable USB Wake Support Default setting: The option is disabled.
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are: • Adaptive • Standard — Fully charges your battery at a standard rate. • ExpressCharge — The battery charges over a shorter period of time using Dell's fast charging technology. This option is enabled by default. • Primarily AC use • Custom If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop. **NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.**

POST Behavior screen options

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. Default setting: Enable Adapter Warnings
Mouse/Touchpad	Allows you to define how the system handles mouse and touch pad input. The options are: • Serial Mouse • PS2 Mouse • Touchpad/PS-2 Mouse: This option is enabled by default.
Fn Lock Options	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: • Fn Lock. This option is selected by default. • Lock Mode Disable/Standard • Lock Mode Enable/Secondary
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: • Minimal • Thorough (default) • Auto

Virtualization support screen options

Option	Description
Virtualization	Allows you to enable or disable the Intel Virtualization Technology. Enable Intel Virtualization Technology (default).
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O. Enable VT for Direct I/O - enabled by default.
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. The TPM Virtualization Technology, and Virtualization technology for direct I/O must be enabled to use this feature. Trusted Execution - disabled by default.

Wireless screen options

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are: • WLAN • Bluetooth All the options are enabled by default.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. • WLAN • Bluetooth All the options are enabled by default.

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.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. The following is list of devices affected: • Internal HDD • Internal SDD • Internal mSATA • Internal eMMC **WARNING: Selecting this option results in permanent data loss and this action cannot be reversed.**
BIOS Recovery	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. • BIOS Recovery from Hard Drive (enabled by default)

System Log 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.

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)
- SATA Hard 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.
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.

Updating the BIOS in Windows

It is recommended to update your BIOS (System Setup), when you replace 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.

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 **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.

System and setup password

Table 5. System and setup password

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.

You can create a system password and a setup password to secure 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: System and setup password feature is disabled.

Assigning a system setup password

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

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

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin 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 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.

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.

   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 reboot.

6

Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

Topics:

- Supported operating systems
- Downloading drivers

Supported operating systems

Table 6. Operating systems

Windows	• Microsoft Windows 10 Pro 64 bit • Microsoft Windows 10 Home 64 bit
Other	N/A
OS media support	• Dell.com/support to download eligible Windows OS • USB media available as upsell

Downloading drivers

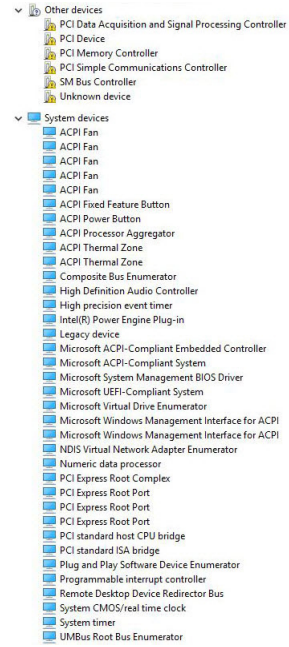
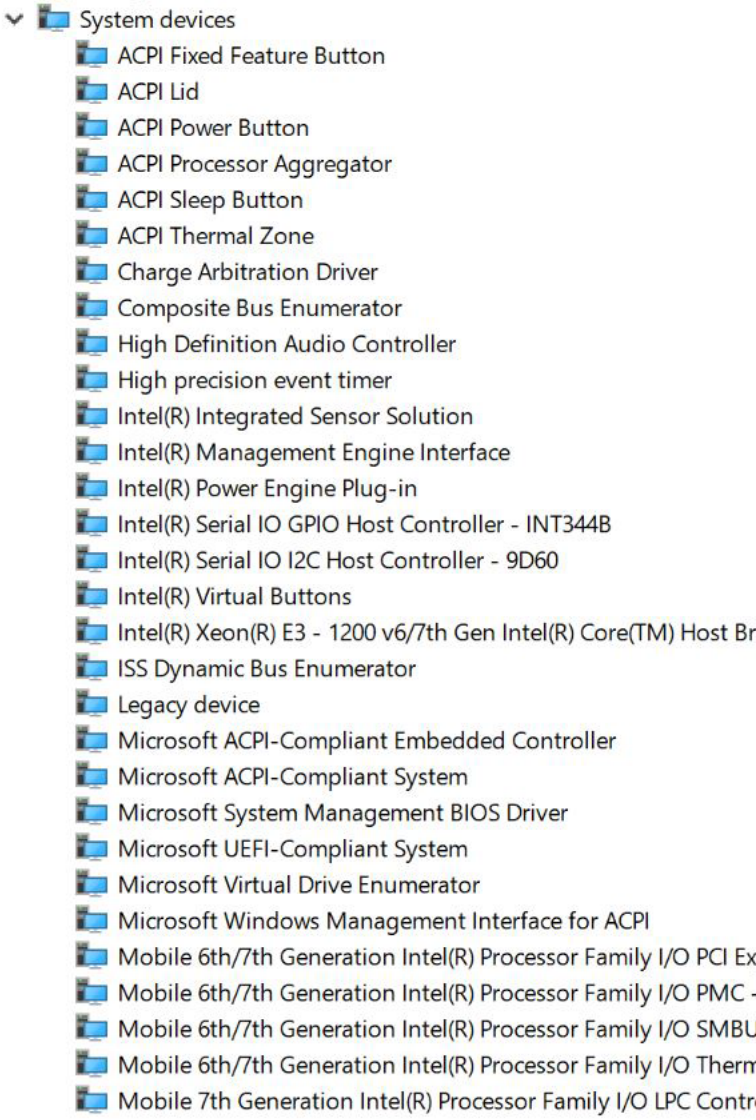
1. Turn on the notebook.
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your notebook, and then click **Submit**.

   NOTE: If you do not have the Service Tag, use the auto detect feature or manually browse for your notebook model.
4. Click **Drivers and Downloads**.
5. Select the operating system installed on your notebook.
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your notebook.
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the 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.

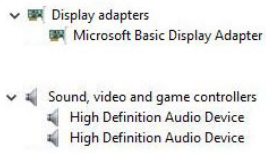
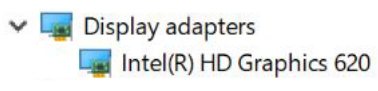
Table 7. Intel chipset drivers

Before installation	After installation
	

Intel HD Graphics drivers

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

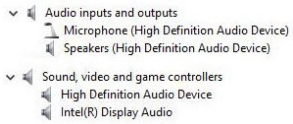
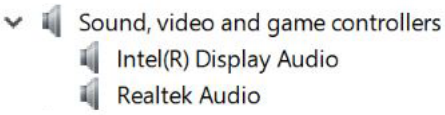
Table 8. Intel HD Graphics drivers

Before installation	After installation
	

Realtek HD audio drivers

Verify if the Realtek audio drivers are already installed in the laptop.

Table 9. Realtek HD audio drivers

Before installation	After installation
	

Network drivers

Install the WLAN and Bluetooth drivers from the Dell support site.

Verify if the Network drivers are already installed in the laptop.



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Troubleshooting

Table 10. Troubleshooting

Issue	Suggested Troubleshooting Steps
Battery Charging	The battery should be charged while the system is off for faster charge time. Users may notice longer charge times when the system is turned on and running graphics-intensive applications. **CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.**
No POST	When a user starts the notebook, the first thing that the BIOS does is to perform the Power-On Self-Test (POST). The POST is a built-in diagnostic program that checks the hardware to make sure that everything is present and functioning properly, before the BIOS begins the actual boot. If the system does not perform a Power-On Self-Test, there are various things that you can look for: 1. Check that the system has a power light. 2. If the system has no power light, make sure that it is plugged into AC power. 3. Remove the battery. Make sure that the power is turned off and the system is unplugged. 4. Remove all CRUs from the system and reconnect the AC adapter to the system and try again. 5. Run the ePSA diagnostics.
Video	If the LCD on the system does not show any display or has other problems, here are some basic steps that you can perform: 1. If the LCD is not displaying video or the video is garbled, run the ePSA diagnostics. 2. If the LCD is not displaying any video, connect an external monitor to eliminate a no-POST problem. A good image on the external monitor eliminates a video card problem or a POST problem. 3. Connect an external monitor, when possible, for all LCD-related problems to help eliminate a possible software or video card problem. 4. If the LCD has dim video, adjust the brightness or connect an AC adapter to eliminate a power management conservation setting in the BIOS. 5. If the LCD has lines on the screen, check the system during POST and system setup, to determine if the lines are present in all modes of operation. Run the ePSA diagnostics. 6. If the LCD has color problems, run the ePSA diagnostics. 7. If the LCD has burned-out pixels, verify that the LCD is still within LCD standard guidelines. For Dell internal users only, click here.
BIOS	If users have problems while using the notebook, the problems may be related to BIOS settings configured incorrectly in BIOS/System Setup. Check the System Setup pages to verify the settings on each page. Try resetting BIOS to default settings by pressing Alt+F.
Touchpad and Keyboard	To troubleshoot touchpad and keyboard-related problems, you can perform the following steps: 1. Attach an external mouse or keyboard to check for peripheral functionality. 2. Run the ePSA diagnostics.
Integrated NIC	If the system is not able to identify any network after connecting the network cable to the network port, try the following troubleshooting steps: 1. Make sure that the network driver has been installed and is working properly. 2. Check System Setup to make sure that the NIC is enabled. 3. Try reseating the cable. 4. Try a known good cable, if one is available. 5. If a known good system is available, check if that system is connecting to the network.

Issue	Suggested Troubleshooting Steps
	6. Run the ePSA diagnostics on the network port. **NOTE: If the integrated network hardware solution is defective or nonfunctional, replace the system board.**
VGA	No additional drivers or updates are needed for VGA functionality. When troubleshooting an external monitor, keep these tips in mind: • Check both ends of the cable for a snug connection into the laptop and into the external monitor. • Adjust the contrast and brightness controls on the external monitor. • Make sure that the notebook is not set to internal display only. • Swap with a known good cable. • Try with a known good external monitor. Check the external device's documentation for any additional steps required for functionality. **NOTE: If the VGA hardware port is defective or nonfunctional, replace the system board.**

Topics:

- Enhanced Pre-Boot System Assessment — ePSA diagnostics
- System diagnostic lights

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:

The ePSA diagnostics can be initiated by the FN+PWR buttons while powering on the computer.

- 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

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.

System diagnostic lights

Power and battery-status light/ hard-drive activity light: Indicates the battery-charge status or the hard-drive activity.

NOTE: Press Fn+H to toggle this light between power and battery-status light and hard-drive activity light.

Hard-drive activity light

Turns on when the computer reads from or writes to the hard drive.

Power and battery-status light

Indicates the power and battery-charge status.

Solid white – Power adapter is connected and the battery has more than 5 percent charge.

Amber – Computer is running on battery and the battery has less than 5 percent charge.

Off

- Power adapter is connected and the battery is fully charged.
- Computer is running on battery and the battery has more than 5 percent charge.

- Computer is in sleep state, hibernation, or turned off.

The power and battery-status light blinks amber along with beep codes indicating failures.

For example, the power and battery-status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off indicating no memory module or RAM is detected.

The following table shows different light patterns, what they indicate, and the suggested solutions.

Table 11. System light problems and possible solutions

Light Pattern	Problem description	Suggested solution
2,1	CPU failure	Replace the system board.
2,2	System board: BIOS and ROM failure	Flash latest BIOS version. If problem persists, replace the system board.
2,3	No memory module or RAM detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2,4	Memory module or RAM failure	Replace the memory module.
2,5	Invalid memory module installed	Replace the memory module.
2,6	System board or chipset error	Replace the system board.
2,7	LCD failure	Replace the LCD.
3,1	CMOS battery failure	Replace the CMOS battery.
3,2	PCI or video card or chip failure	Replace the CMOS battery.
3,3	Recovery image not found	Reimage the system.
3,4	Recovery image found but invalid	Reimage the system.

The computer may emit a series of beeps during start-up if the errors or problems cannot be displayed. The repetitive beep codes help the user troubleshoot problems with the computer.

Camera status light: Indicates whether the camera is in use.

- Solid white – Camera is in use.
- Off – Camera is not in use.

Caps Lock status light: Indicates whether Caps Lock is enabled or disabled.

- Solid white – Caps Lock enabled.
- Off – Caps Lock disabled.

8

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.