Latitude 3380

Owner's Manual

Regulatory Model: P80G
Regulatory Type: P80G001

GUID-5B8DE7B7-879F-45A4-88E0-732155904029

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.

GUID-F1C5ECBB-F43D-449A-9548-0D719858EB9E

2017 - 02

Rev. A00

Contents

Working on your computer

GUID-6678B449-E61B-463B-A9D1-AB5A04B63651

Safety instructions

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

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

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

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance

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

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

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.

GUID-82258B8D-DC8F-4D55-97C8-3CEC2FB560A4

Before working inside your computer

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

CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

4 Disconnect all network cables from the computer.
5 Disconnect your computer and all attached devices from their electrical outlets.
6 Close the display and turn the computer upside-down on a flat work surface.

NOTE: **To avoid damaging the system board, you must remove the main battery before you service the computer.**

7 Remove the base cover.

8 Remove the main battery.

9 Turn the computer top-side up.

10 Open the display.

11 Press and hold the power button for few seconds, to ground the system board.

CAUTION: **To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.**

CAUTION: **Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.**

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

GUID-B70C3BD7-328C-424F-8DF4-80728A0080AB

Turning off your computer — Windows 10

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

1 Click or tap  .

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

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

GUID-44E70DF4-10EF-4B31-835C-0CB24976C844

After working inside your computer

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

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

1 Replace the battery.

2 Replace the base cover.

3 Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.

4 Connect any telephone or network cables to your computer.

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

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

6 Turn on your computer.

Removing and installing components

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

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Recommended tools

The procedures in this document require the following tools:

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

GUID-D2184AA2-4F2B-4F95-B58F-9197558ADEC0

microSD card

GUID-4F7C5566-9E8B-432F-A6A8-F0989B0803D8

Removing microSD card

1 Follow the procedure in Before working inside your computer.
2 Press in on the microSD card to release it from the computer.

3 Remove the microSD card from the computer.

GUID-3E20619A-3B33-43B8-9D8F-FAC3B4D163D4

Installing microSD card

1 Slide the microSD card into its slot until it clicks into place.
2 Follow the procedure in After working inside your computer.

GUID-43363859-09F6-4993-B800-4563D6E44A0F

Base Cover

GUID-8D5011EA-CC31-4667-94FE-07445E2A3274

Removing base cover

1 Follow the procedure in Before working inside your computer.

2 Remove the microSD card

3 To remove the base cover:

a Loosen the M2.5xL8.5 captive screws that secure the base cover to the computer [1].

b Pry the base cover from the edge [2].

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

4 Lift the base cover away from the computer.

GUID-BBBC9F16-05F5-42CF-9282-852587C77E84

Installing base cover

1 Align the base cover with the screw holders on the computer.
2 Press the edges of the cover until it clicks into place.
3 Tighten the M2.5xL8.5 screws to secure the base cover to the computer.
4 Install the microSD card.
5 Follow the procedure in After working inside your computer.

GUID-547AC404-4A28-44E3-95D5-E2C4A57C9892

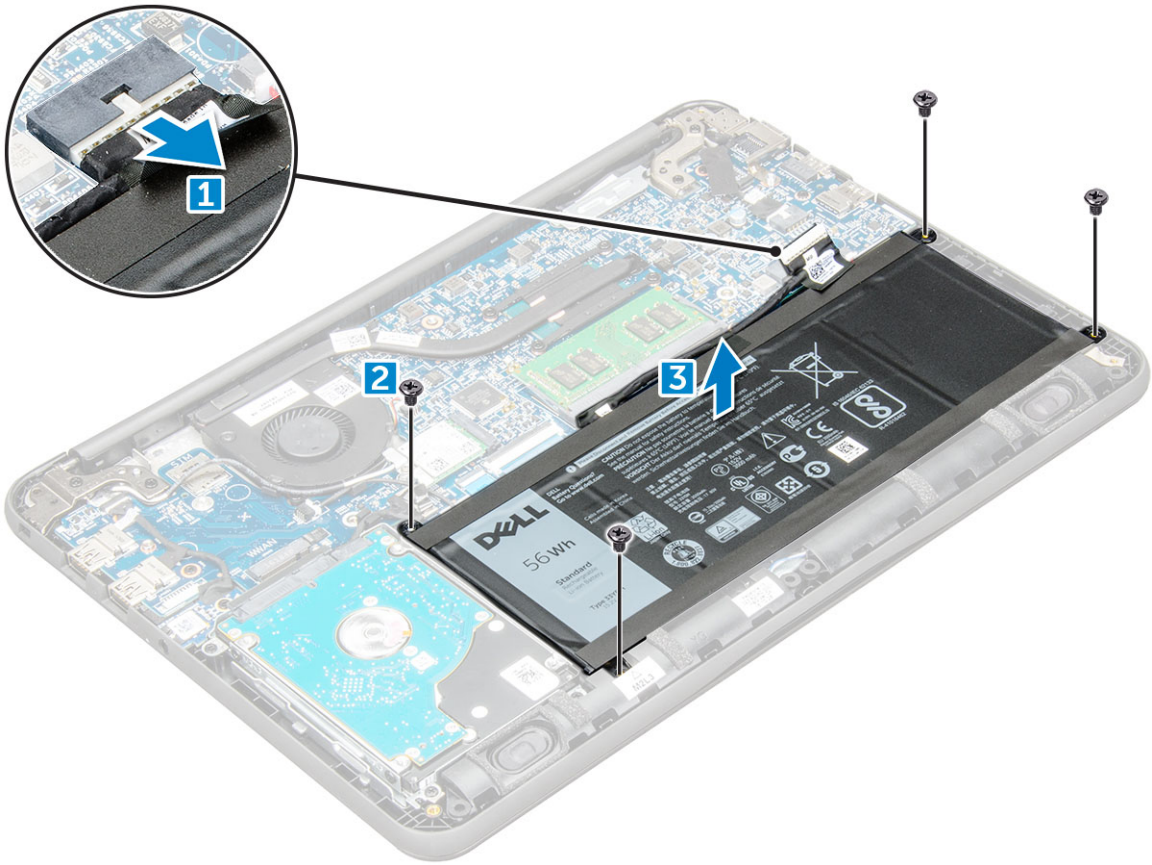
Battery

GUID-1E458DD3-8CEE-46FD-99FD-816643706226

Removing battery

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
3 To remove the battery:
   a Disconnect the battery cable from the connector on the system board [1].
   b Remove the M2.0x3.0 screws that secure the battery to the computer [2].

c Lift the battery away from the computer [3].



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Installing battery

1 Insert the battery into the slot on the computer.
2 Connect the battery cable to the connector on the battery.
3 Tighten the M2.0xL3 screws to secure the battery to the computer.
4 Install the:
   a base cover
   b microSD card
5 Follow the procedure in After working inside your computer.

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Keyboard

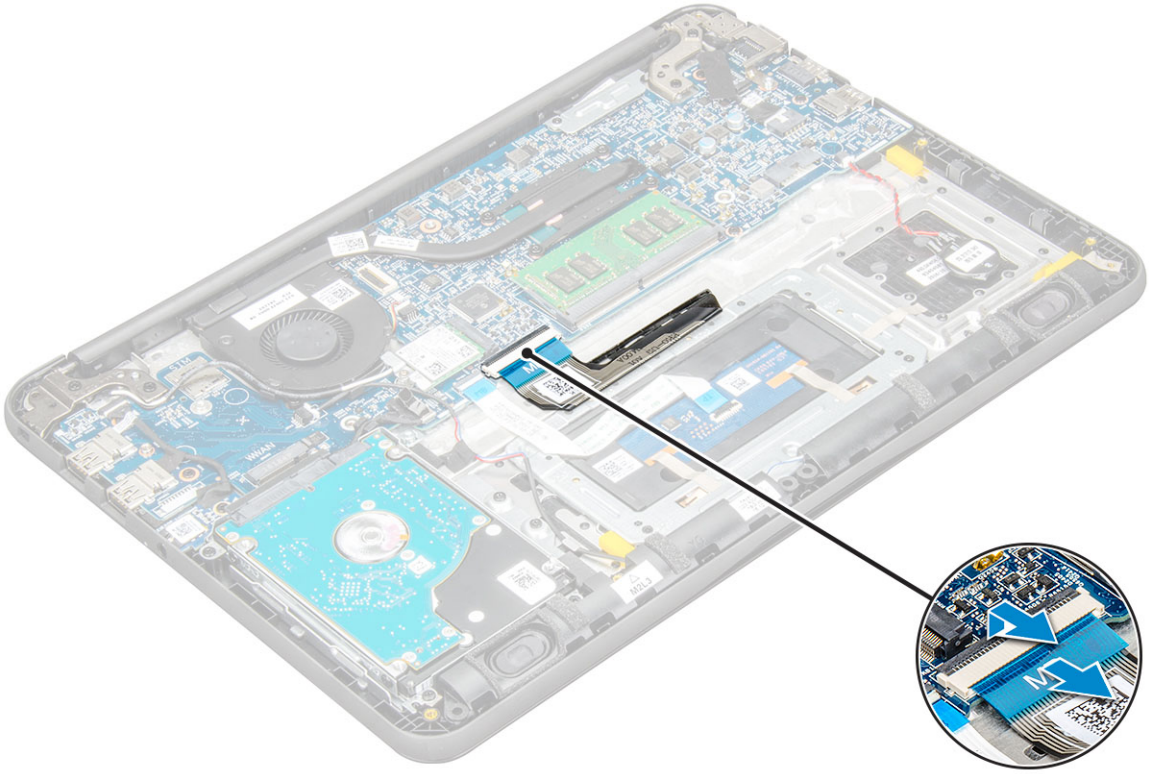
GUID-A0002906-1C4C-4B28-ACD3-C0735B056DF4

Removing keyboard

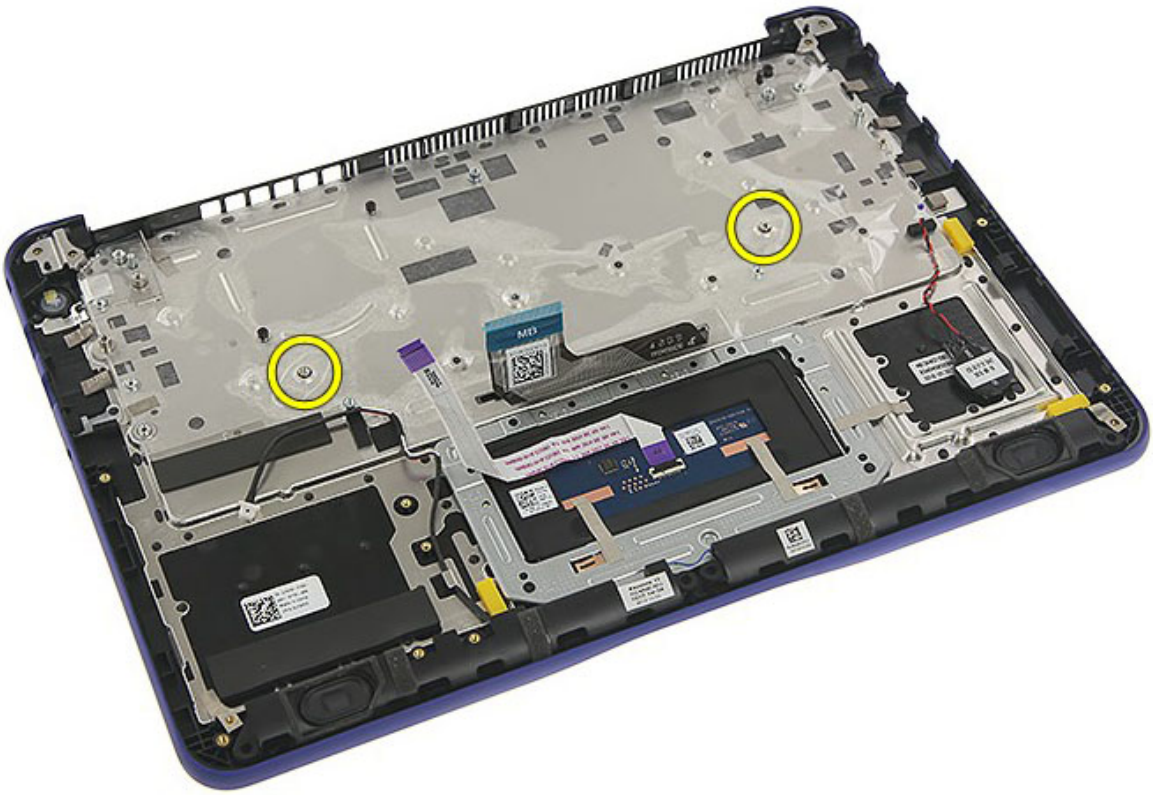
1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card

b base cover
c battery

3 Disconnect the keyboard cable from the system board.



4 Hold the sides of the palm rest securely while pushing into the two release holes using a plastic scribe.



5 Gently pry up the lower edge of the keyboard from the computer.

6 Remove the keyboard away from the computer.

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Installing keyboard

1 Align the keyboard trim with the tabs on the computer and press it until it clicks into place .
2 Connect the keyboard cable on the system board.
3 Install the:
   a battery
   b base cover
   c microSD card
4 Follow the procedure in After working inside your computer.

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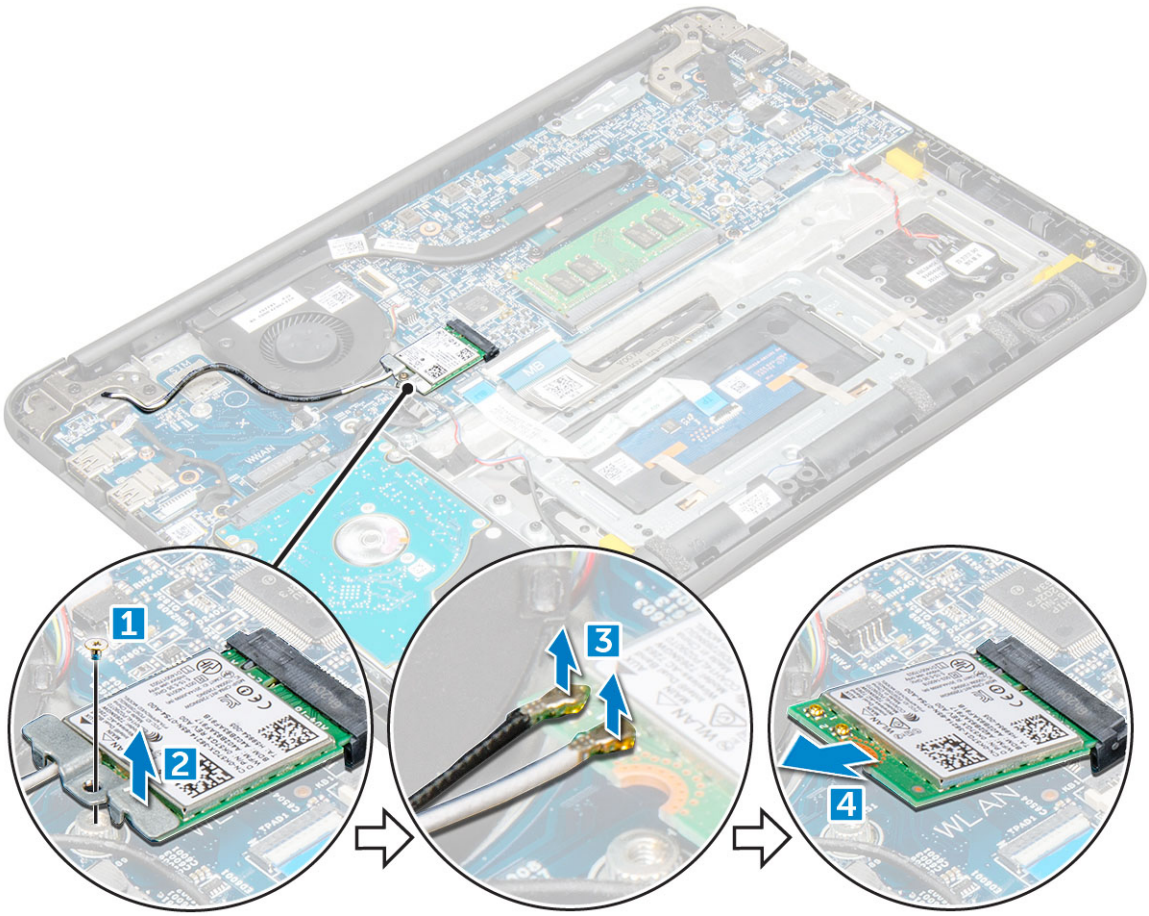
WLAN Card

GUID-23AE27E9-1FD1-435F-8210-E8580716887F

Removing WLAN

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the WLAN:
   a Remove the M2xL3 screw that secures the WLAN metal bracket to the system [1].
   b Lift and remove the metal bracket off the WLAN card [2].
   c Disconnect the two WLAN cables that connect the WLAN card to the antenna [3].
   d Pull out the WLAN card from its connector on the system board [4].



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Installing WLAN card

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

5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

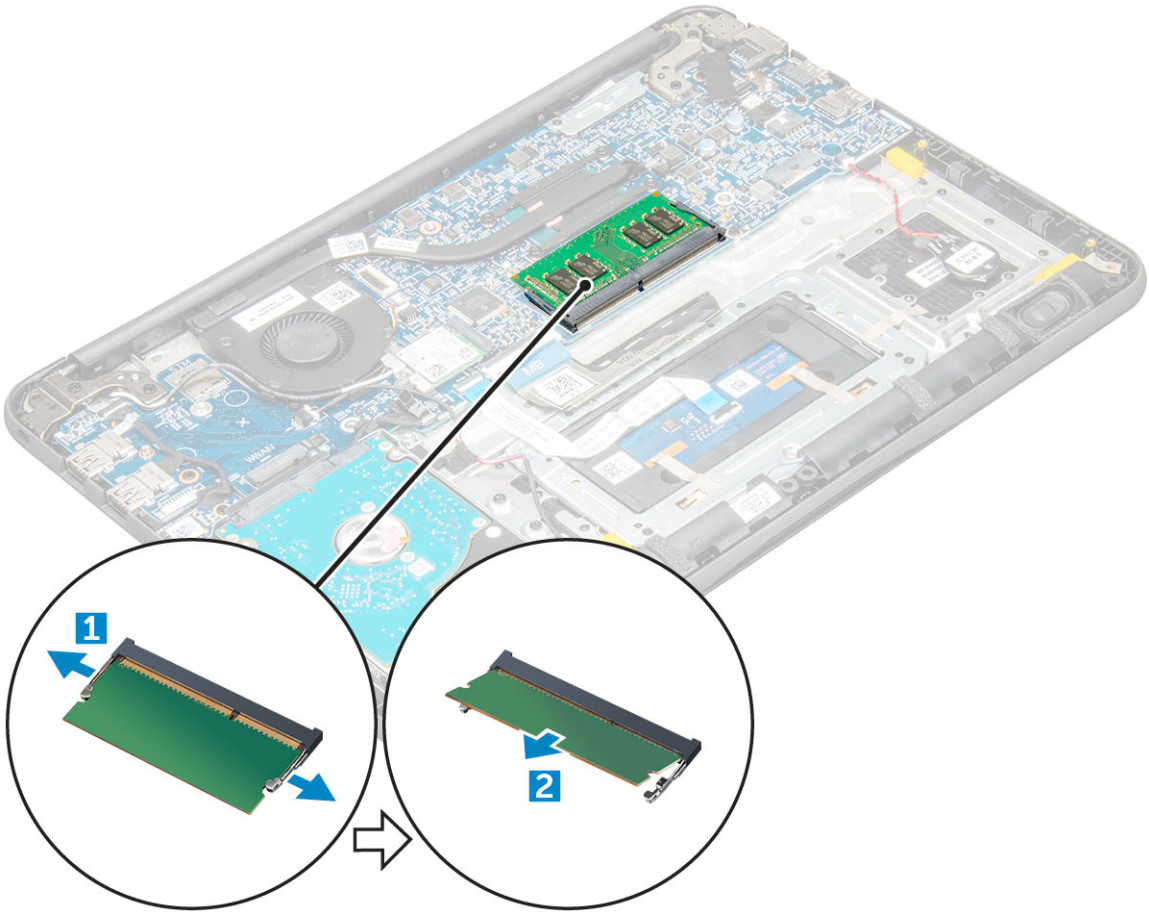
GUID-BB05B5F0-4C12-4A76-B2A7-455E042D4702

Memory Module

GUID-FC82BAF7-4598-42F9-89E5-516735195670

Removing the memory module

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the memory module:
   a Pry apart the memory module latches [1].
   b Lift and remove the memory module from the system board [2].



GUID-B7B9A690-2D6D-404F-8AD3-C8DDE26421EF

Installing the memory module

1 Insert the memory module into its connector on the system board.
2 Gently push the memory module until the latches snap it into place.
3 Install the:
   a battery
   b base cover
   c microSD card
4 Follow the procedure in After working inside your computer.

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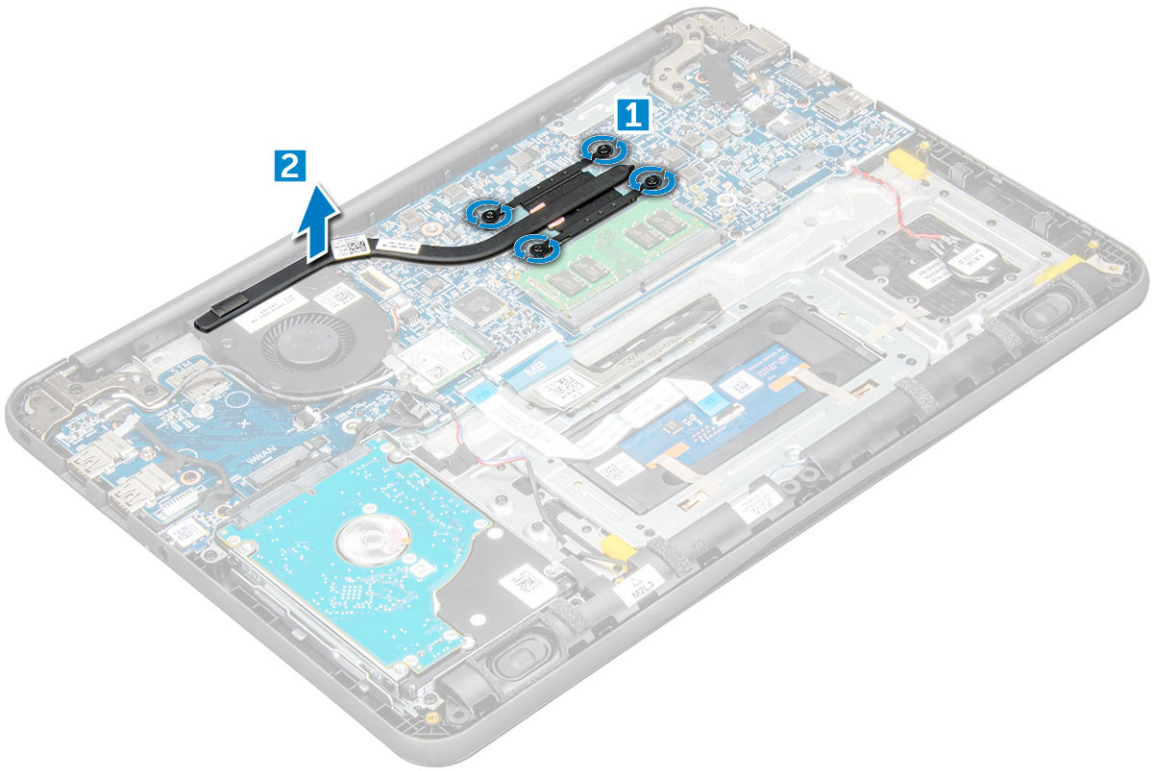
Heat sink

GUID-61697663-463E-4306-B206-8AD53905F587

Removing heat sink

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the heatsink:
   a Remove the M2.5x2.5 screws that secure heat sink to the computer [1].
   b Lift the heat sink away from the computer [2].



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Installing heat sink

1 Insert the heat sink into the slot on the computer.
2 Tighten the M2.5x2.5 screws to secure the heat sink to the computer.
3 Install the:
   a battery
   b base cover
   c microSD card
4 Follow the procedure in After working inside your computer.

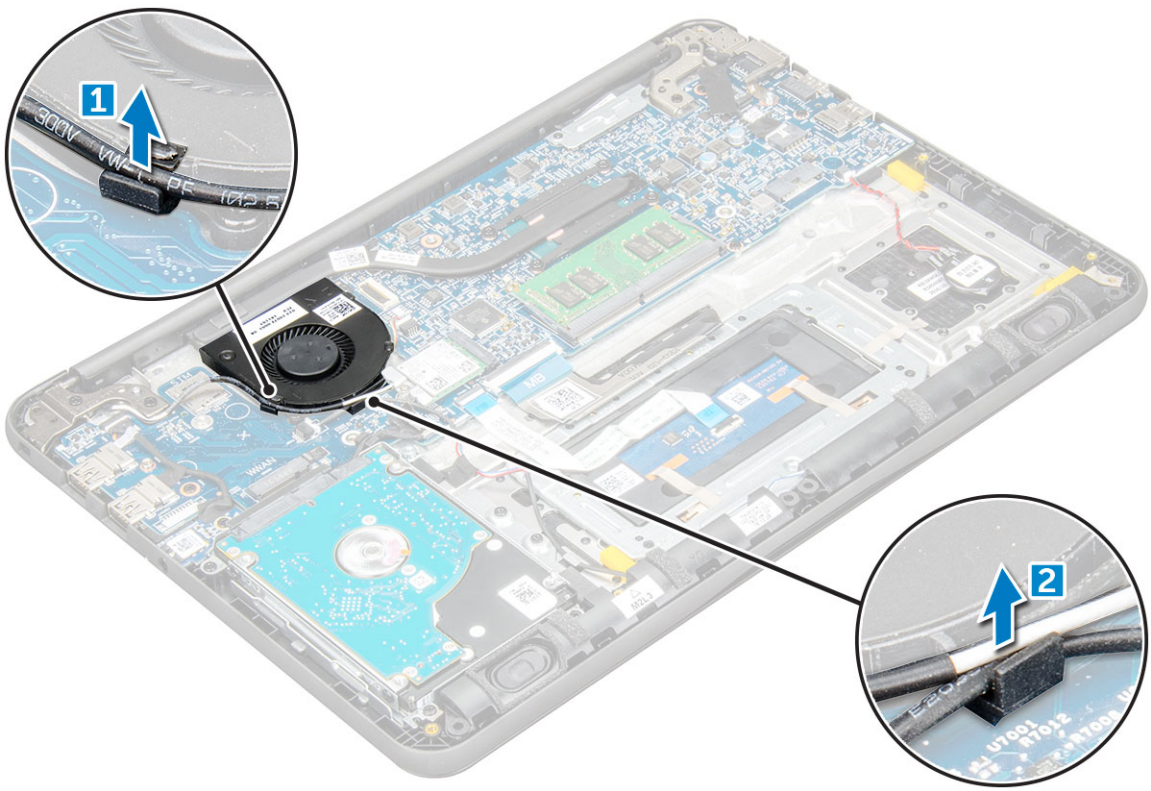
GUID-E0C4909C-8666-4002-A9BF-B689CEB5D894

System Fan

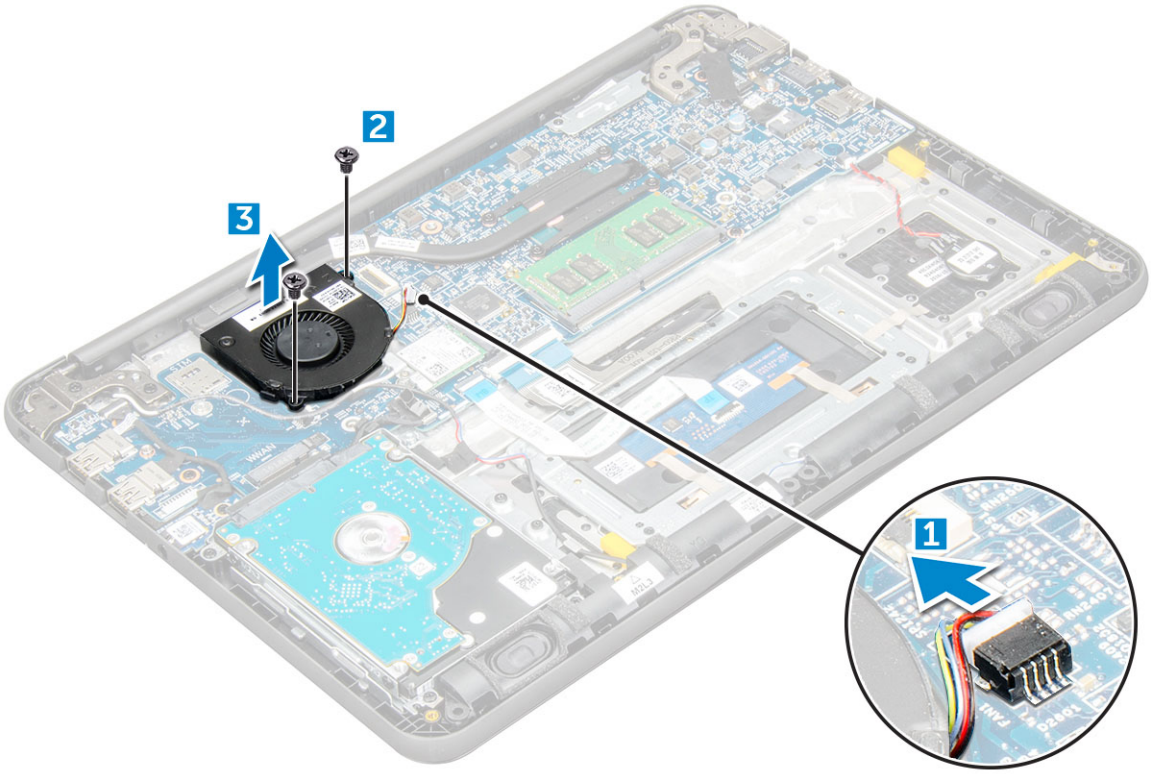
GUID-86B39F80-F11F-46C3-A50A-D21C98A4D952

Removing system fan

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the system fan:
   a Unroute the WLAN cable from the connector on the system board [1].
   b Pry out the cable from its hook [2].



4 Disconnect the system fan connector from the system board [1].
5 Remove the M2xL3 screws that secure the fan to the system board [2].
6 Lift the system fan off the system board [3].



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Installing system fan

1 Place the fan on the system board.
2 Tighten the M2xL3 screws to secure the fan to the system board.
3 Connect the fan cable to the system board.
4 Route the WLAN cable onto its hook on the system board.
5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

GUID-660A5AB7-96FD-4222-860D-0E5F82773032

Hard disk drive (HDD)

GUID-B0519762-2A97-4438-9742-E83A8781A977

Removing hard disk drive (HDD)

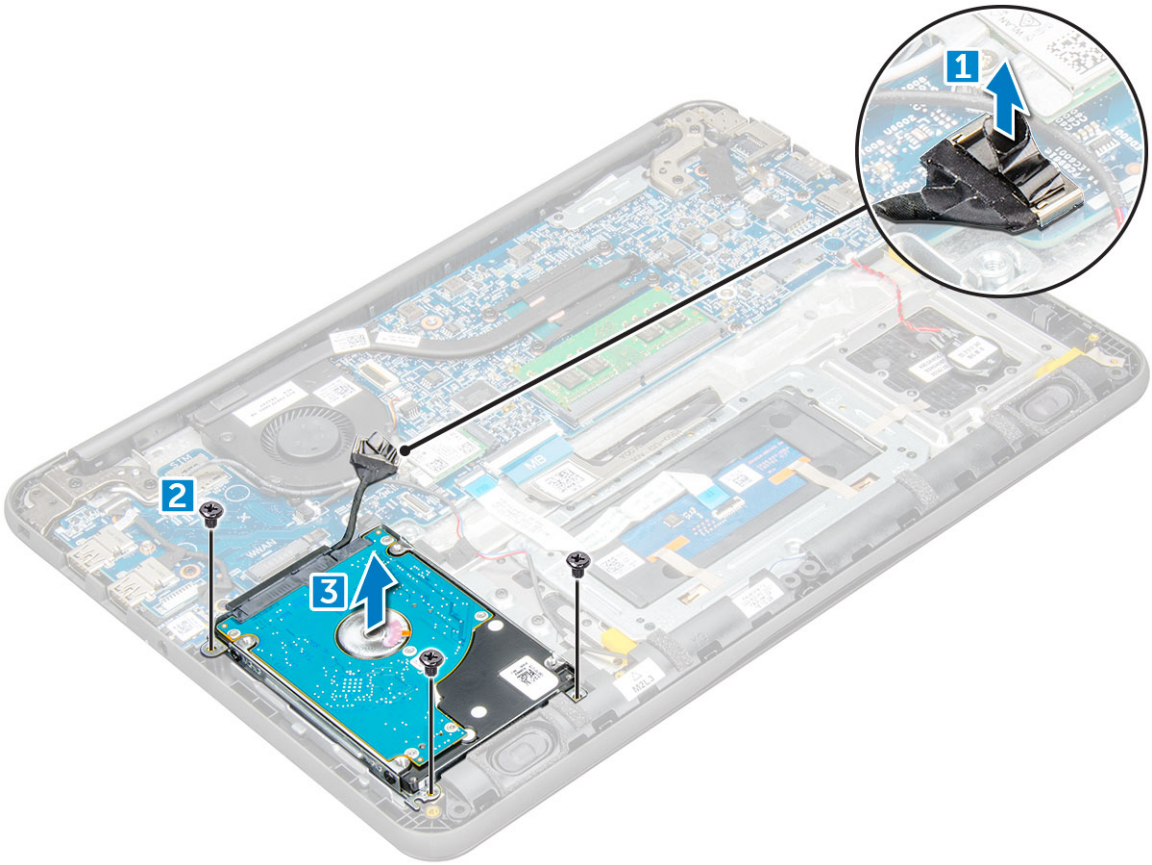
1 Follow the procedure in Before working inside your computer.

2 Remove the:

- a microSD card
- b base cover
- c battery

3 To remove the HDD:

- a Disconnect the HDD cable from the system board [1].
- b Remove the M2xL3 screws that secure the HDD to the palmrest [2].
- c Lift the HDD from the computer [3].



4 Disconnect the HDD cable interposer.

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

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Installing hard disk drive (HDD)

1 Insert the HDD into the connector on the computer.
2 Tighten the M2xL3 screws to secure the HDD to the computer.
3 Connect the HDD cable to the system board.
4 Install the:
   a battery
   b base cover
   c microSD card
5 Follow the procedure in After working inside your computer.

GUID-4E4B1633-D7B6-4FD0-BA3D-09523812437A

DC-In Board

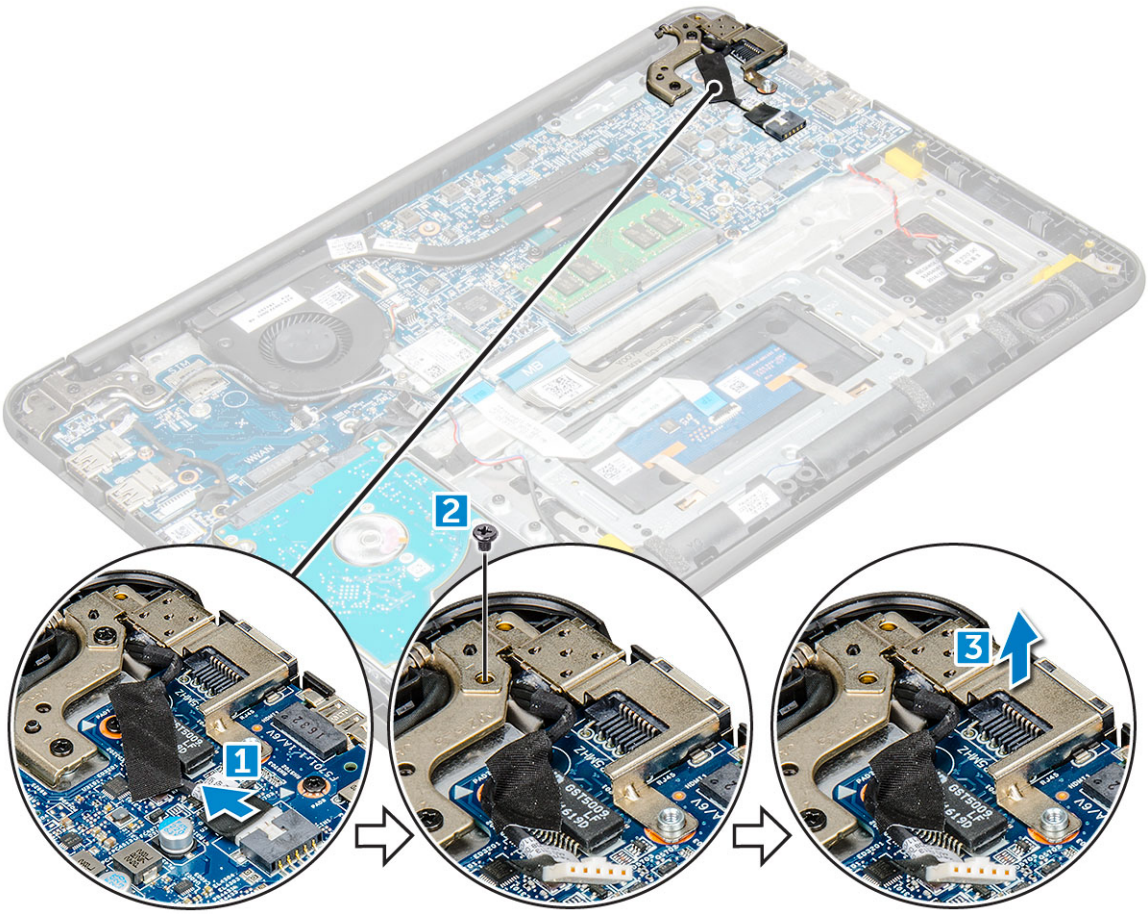
GUID-60E2D87D-7E52-4BD7-8537-B1DE38C22A4D

Removing DC in connector

1 Follow the procedure in Before working inside your computer.

2 Remove the:
   a microSD card
   b base cover
   c battery

3 To remove the DC-in connector:
   a Disconnect the DC-in cable from its connector on the system board [1].
   b Remove the M2.5xL5 screw that secures the DC-in connector to the display hinge [2].
   c Lift and remove the DC-in connector from the system [3].



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Installing DC-in port

1 Place the DC-in port in the computer.
2 Tighten the M2.5xL5 screw of the hinge to secure port.
3 Connect the DC-in cable to the system board.
4 Install the:
   a battery
   b base cover
   c microSD card
5 Follow the procedure in After working inside your computer.

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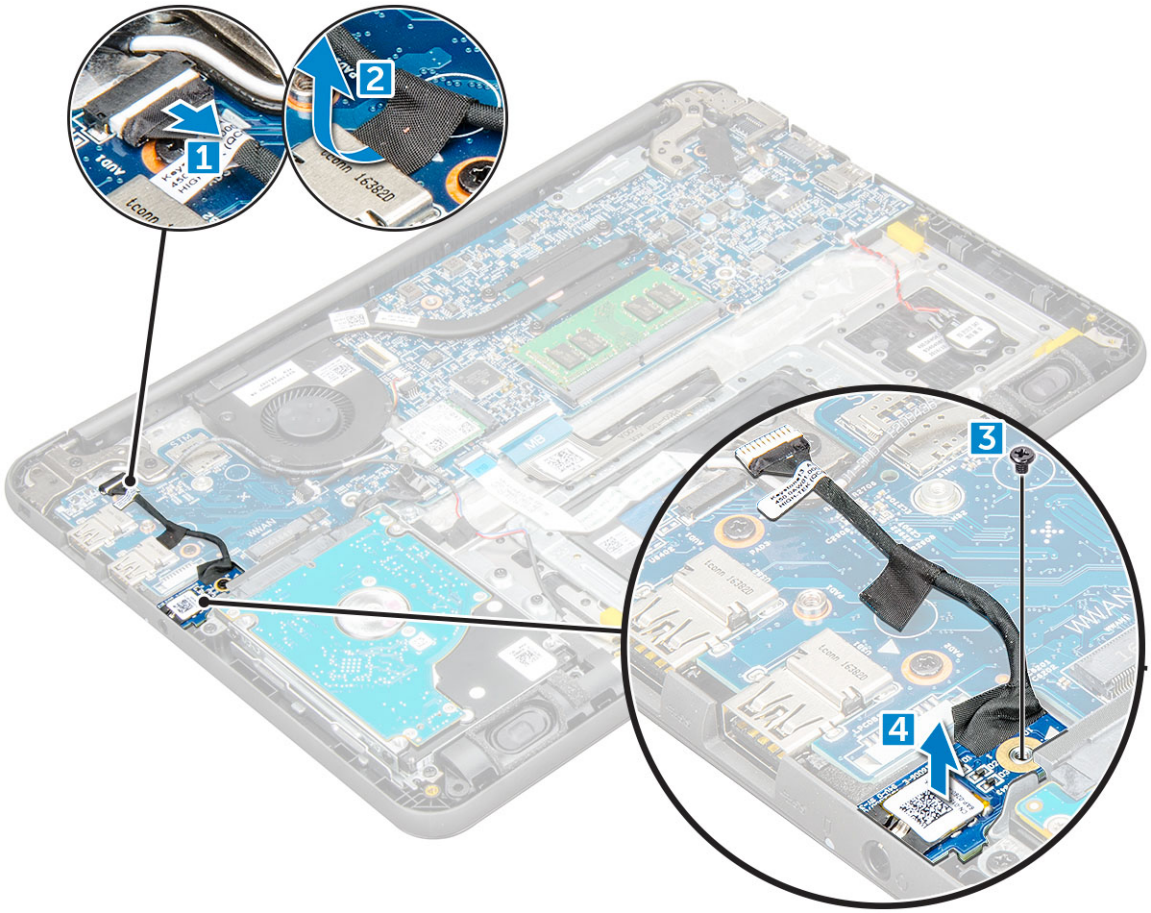
Audio board

GUID-8F2F3600-61C2-4075-8AB9-3B99DDA7BF6D

Removing the audio board

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the audio board:
   a Disconnect the audio board cable from its connector on the system board [1]
   b Lift and peel off the black adhesive tape to remove the cable from the system board [2].
   c Remove the M2xL3 screw that secures the audio board to the system board [3].
   d Lift and remove the audio board from the system [4].



GUID-C03250A5-6F33-47A6-AC3D-F9CE43752376

Installing the audio board

1 Place the audio board in its place on the computer.
2 Tighten the M2xL3 screw to secure the audio board to the computer.
3 Affix the cable adhesive to the computer.
4 Reconnect the audio board cable to its connector on the system board.
5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

GUID-FB268ABF-3A83-466F-94BF-337591B466AB

Coin cell battery

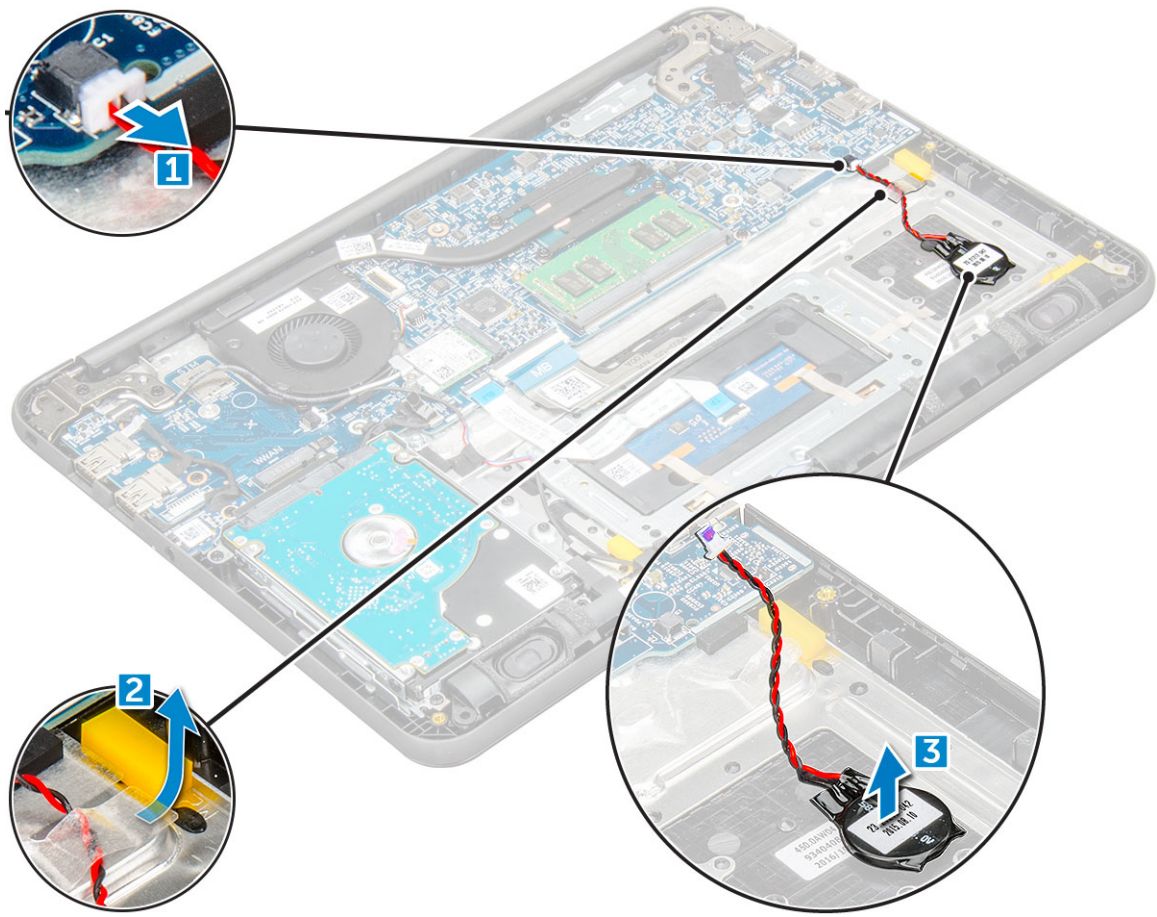
GUID-353E7DFE-61A7-4EF5-8DA0-30BFE51BC0EC

Removing the coin cell battery

1 Follow the procedure in Before working inside your computer.

2 Remove the:
   a microSD card
   b base cover
   c battery

3 To remove the coin cell battery:
   a Disconnect the battery cable from its connector on the system board [1].
   b Lift up the plastic shields that secure the cable to the system and release the cable [2].
   c Lift and remove the coin cell from the system [3].



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Installing coin cell battery

1 Place the coin cell battery into the slot on the system board.
2 Route the battery cable under the plastic shields on the system.
3 Connect the coin cell battery cable to the connector on the system board.
4 Install the:
   a battery
   b base cover
   c microSD card
5 Follow the procedure in After working inside your computer.

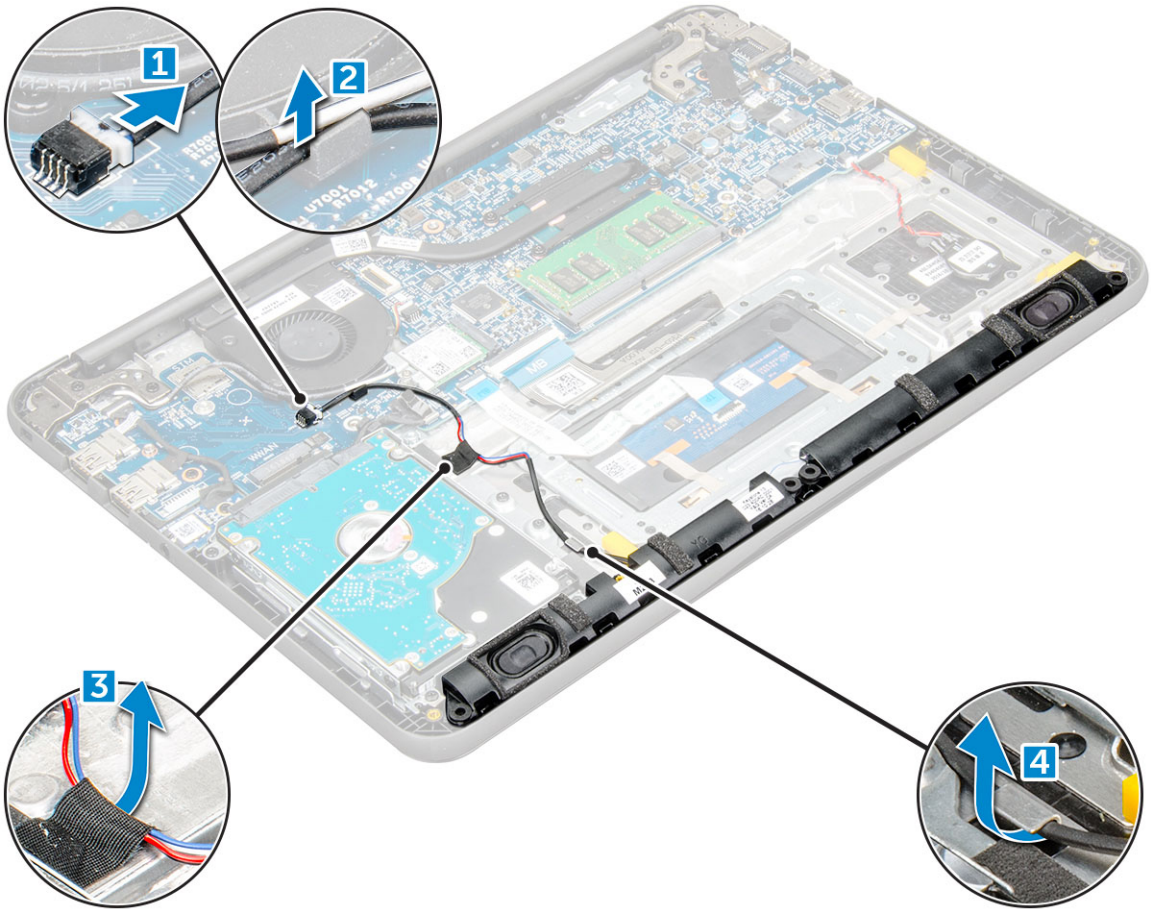
GUID-10FD5B3D-E01D-4CBF-A6C9-DACA82B1214F

Speakers

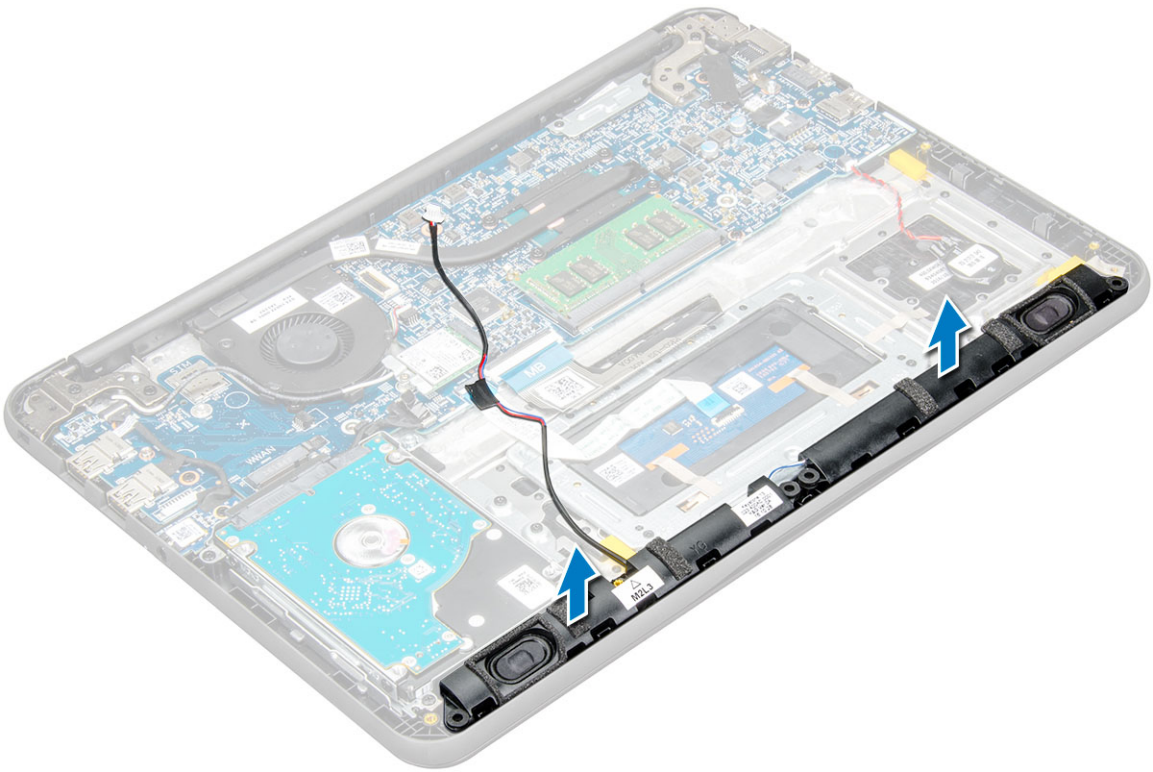
GUID-8B0AEDAF-D651-47A7-BCF7-485215F05B80

Removing speaker

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the speaker:
   a Disconnect the speaker cable from the connector on the system board [1].
   b Lift the speaker cable off from the cable guide [2].
   c Remove the adhesive tape that secures the speaker cable to the computer [3].
   d Unroute the speaker cable from the routing channel [4].



4 Remove the speakers from the computer.



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Installing speakers

1 Place the speakers into the slots on the computer.
2 Route the speaker cable through the routing channel.
3 Affix the adhesive tape to secure the speaker cable to the computer.
4 Connect the speaker cable to the connector on the system board.
5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

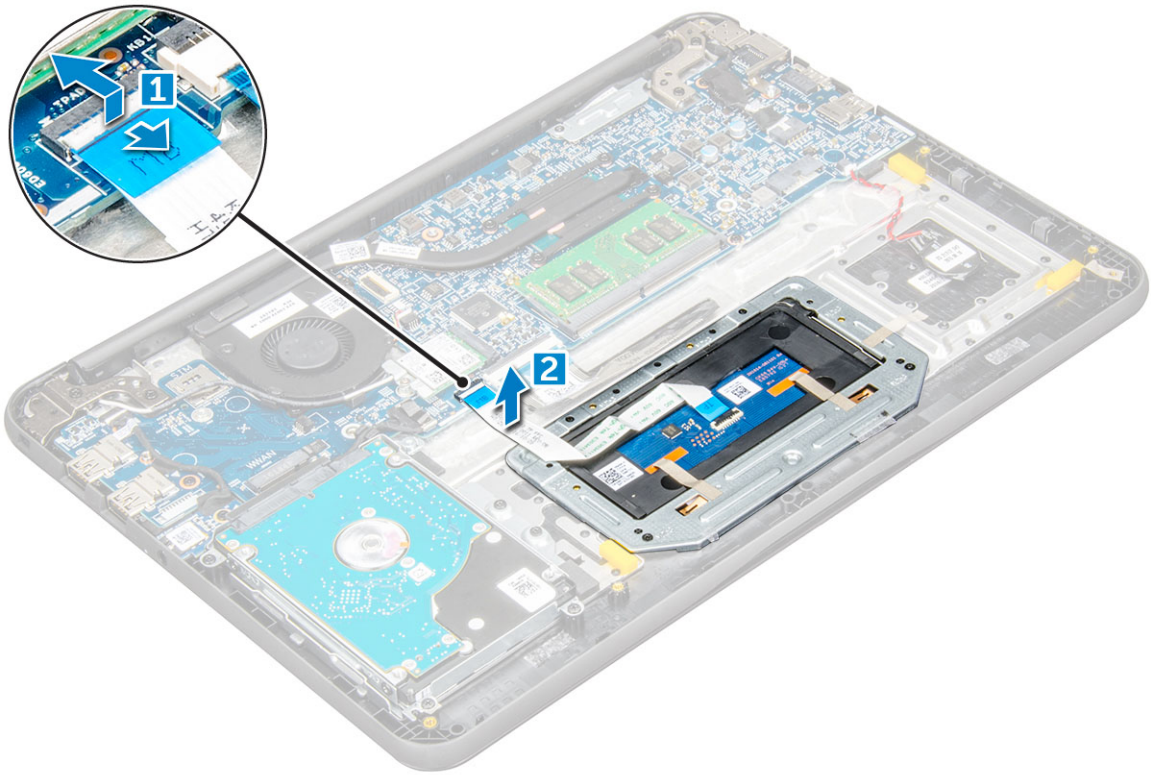
GUID-50067852-EA82-4368-BB9E-AA26BBFAE178

Touchpad panel

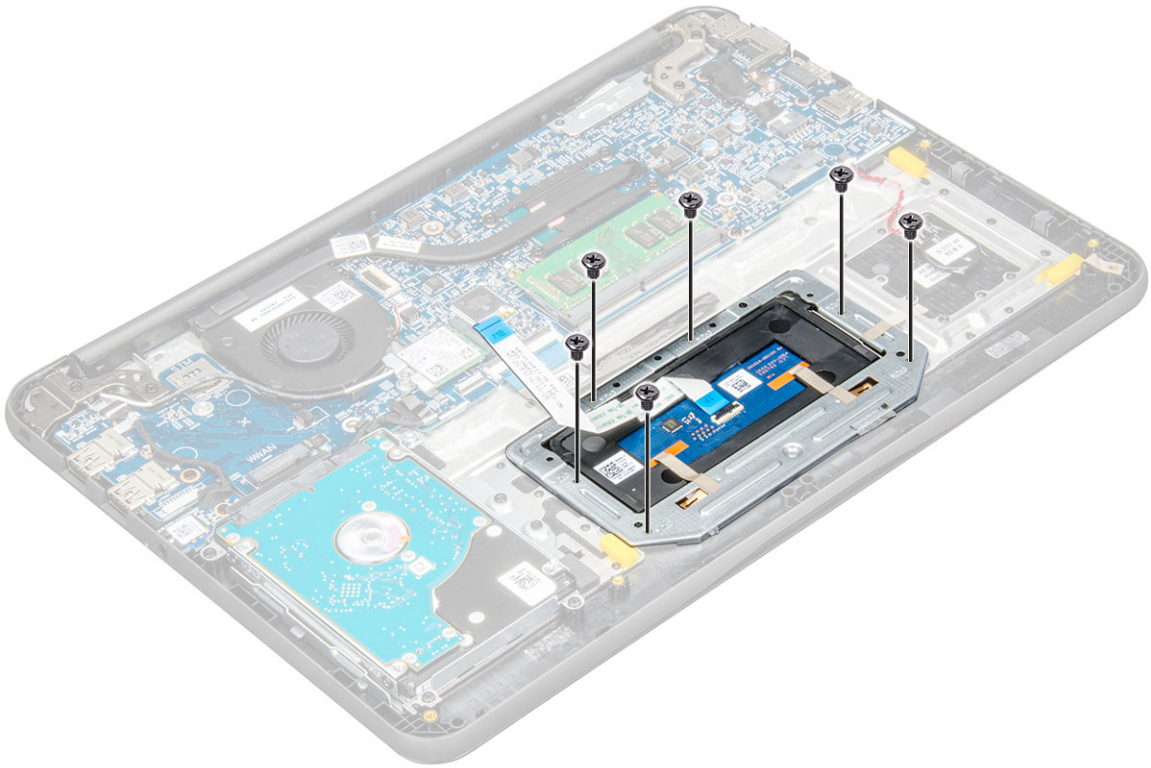
GUID-88A48C17-3E66-4FD5-B9CB-E320B584C934

Removing touchpad

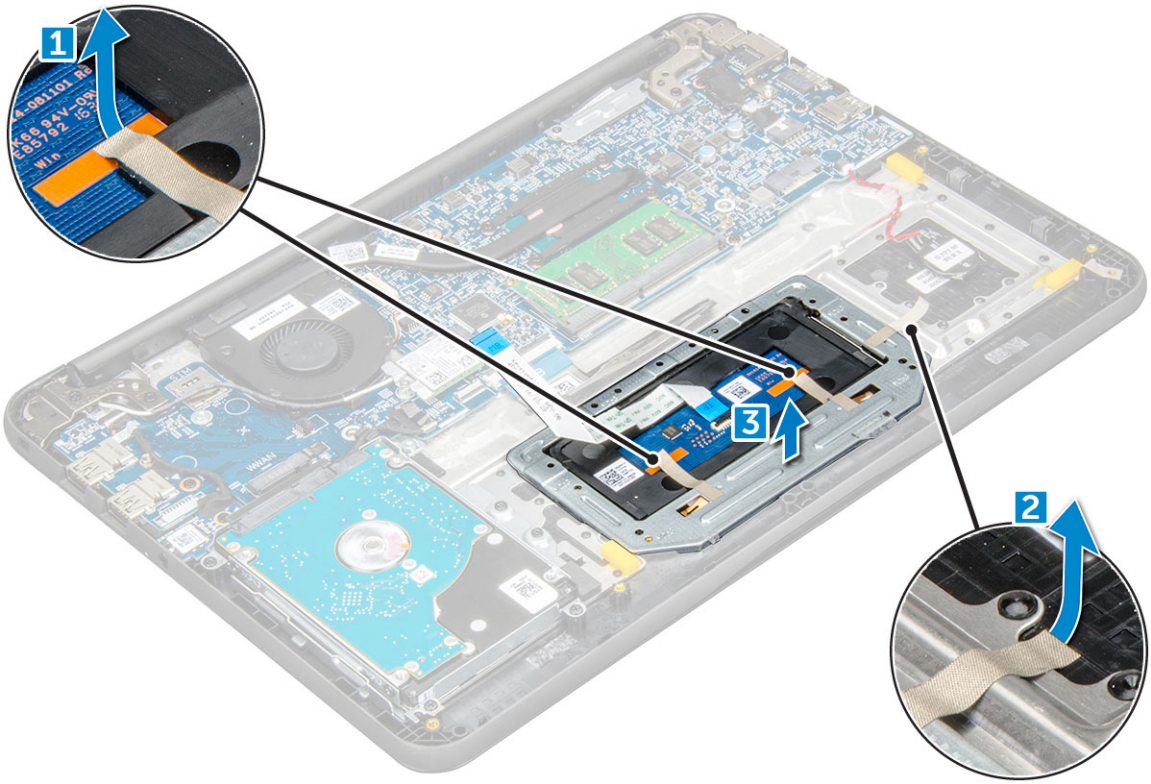
1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove touchpad cable:
   a Lift the latch and disconnect the touchpad cable from the computer [1].
   b Lift the touchpad cable off from the system board [2].



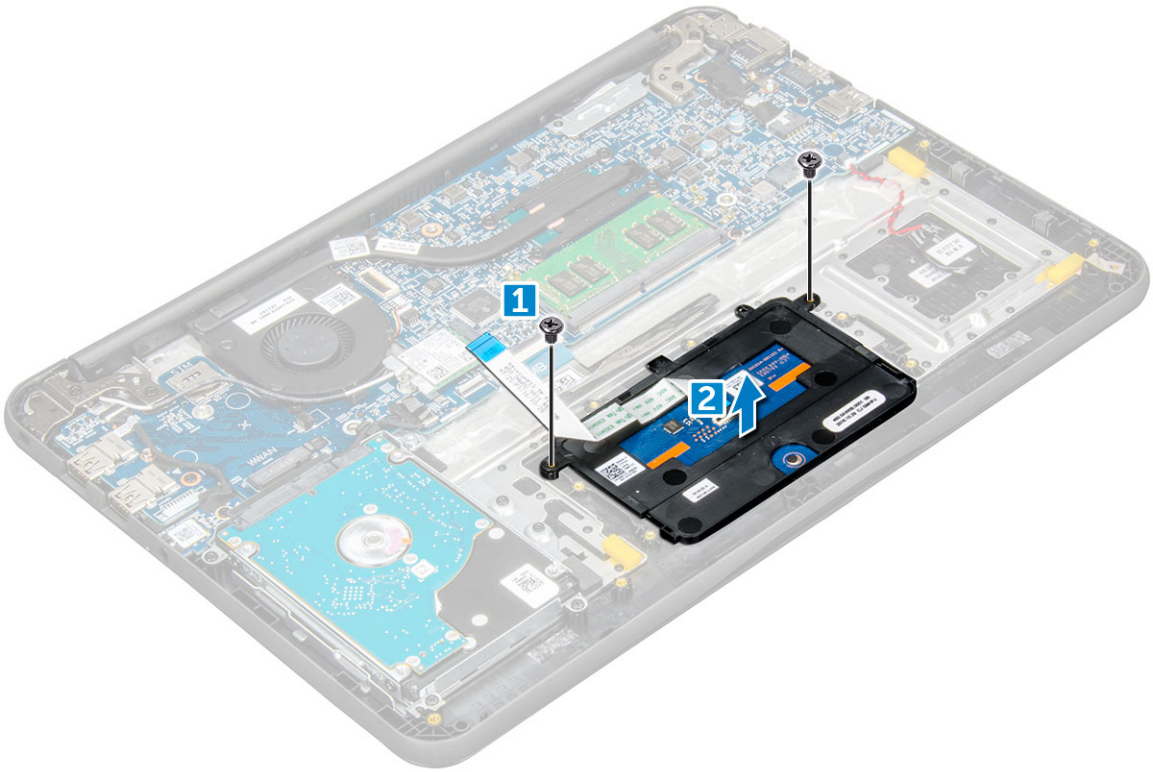
4 Remove the M2xL3 screws that secure the metal bracket to the touchpad on the computer.



5 Peel off the adhesive tapes [1] and [2] and then remove the metal bracket from the system [3].



6 Remove the M2xL3 screws that secure the touchpad to the system [1] and then lift the touchpad from the system [2].



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Installing touchpad

1 Place the touchpad into the slots on the computer.
2 Tighten the M2xL3 screws that secure the touchpad to the system.
3 Affix the adhesive tape that secures the touchpad cable to the touchpad.
4 Place the metal bracket and tighten the M2xL3 screws that secure the metal bracket to the touchpad..
5 Connect the touchpad cable to the connector on the system board.
6 Install the:
   a battery
   b base cover
   c microSD card
7 Follow the procedure in After working inside your computer.

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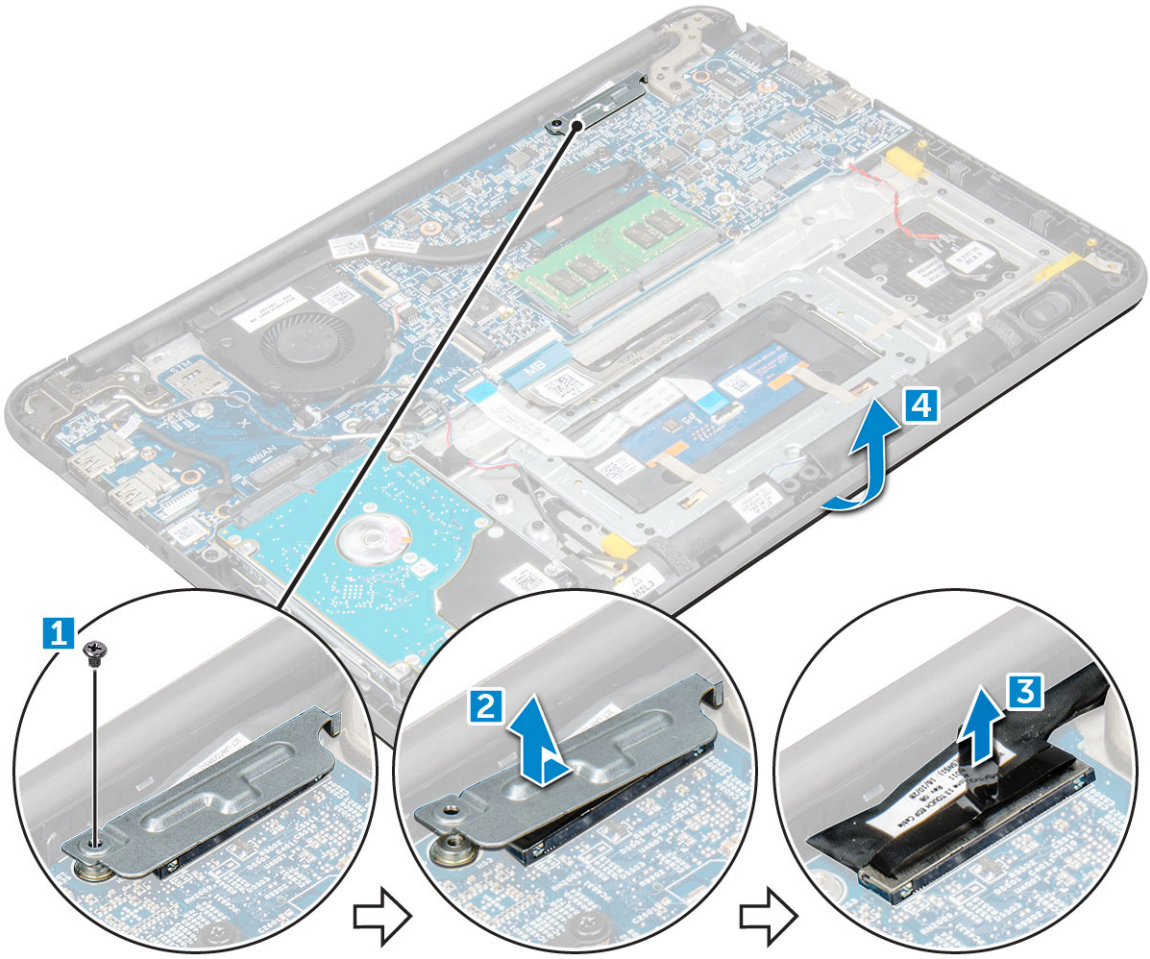
Display assembly

GUID-E5D63A34-4547-4168-972C-E7FFB0FA2C86

Removing the display assembly

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 Remove the screw that secures the metal bracket of the display cable [1] and remove it from the system [2]. Then, remove the cable from the system board [3] and flip over the computer [4].



4 Remove the M1.6xL2 screws [1] and lift the display assembly away from the computer [2].

GUID-9B3411DE-F747-4ABA-8419-670247E23789

Installing display assembly

1 Place the display assembly to align with the screw holders on the computer.
2 Tighten the M1.6xL2 screws to secure the display assembly to the computer.
3 Turn over the computer
4 Connect the display cable to the connector.
5 Place the metal bracket over the connector and tighten the screw to secure the display cable to the computer.
6 Install the:
   a battery
   b base cover
   c microSD card
7 Follow the procedure in After working inside your computer

GUID-B0C69775-D580-4622-AF7E-B749C3901A4F

System board

GUID-A75DD46D-69E5-4B8B-A0D8-96CF23D11A66

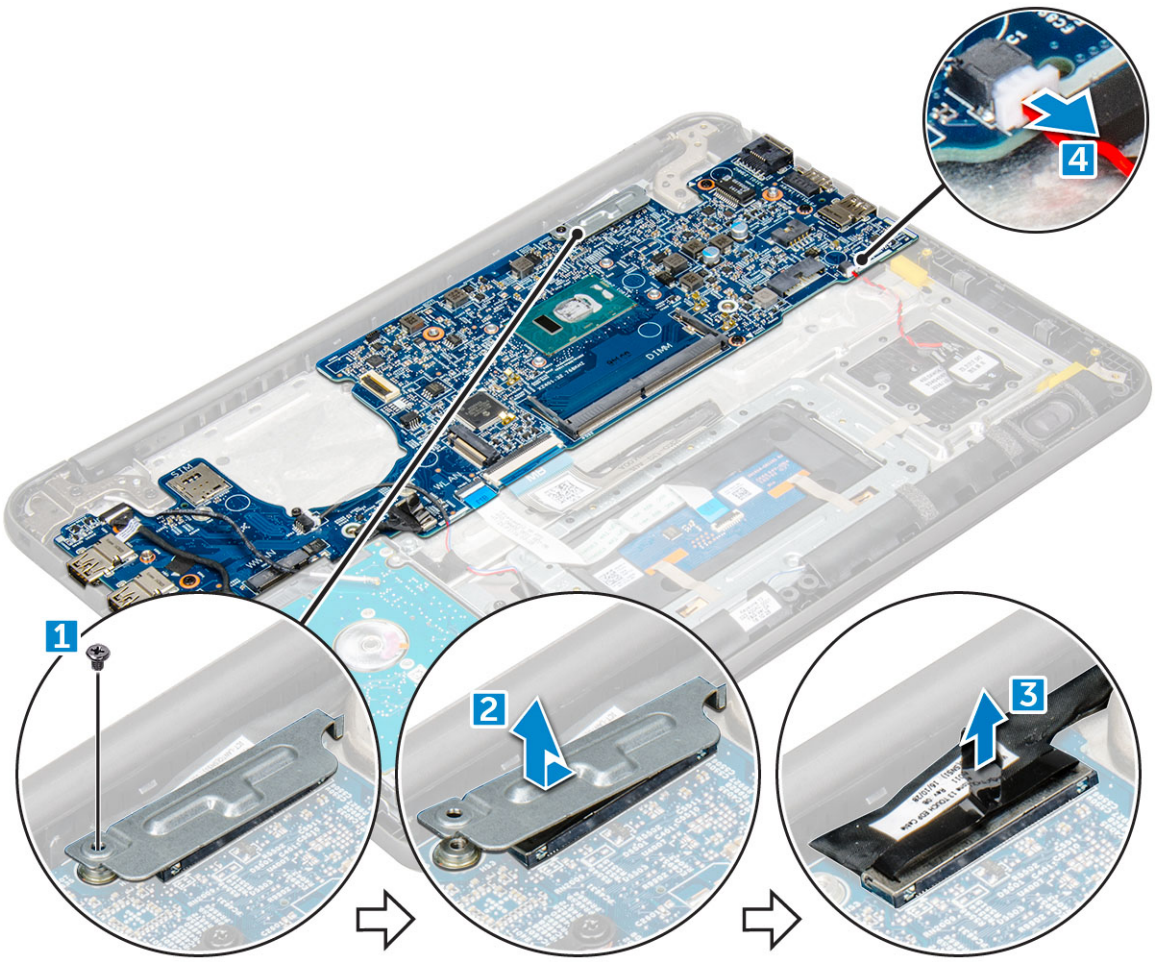
Removing system board

1 Follow the procedure in Before working inside your computer.

2 Remove the:

- a microSD card
- b base cover
- c battery
- d WLAN card
- e memory module
- f heat sink
- g DCin

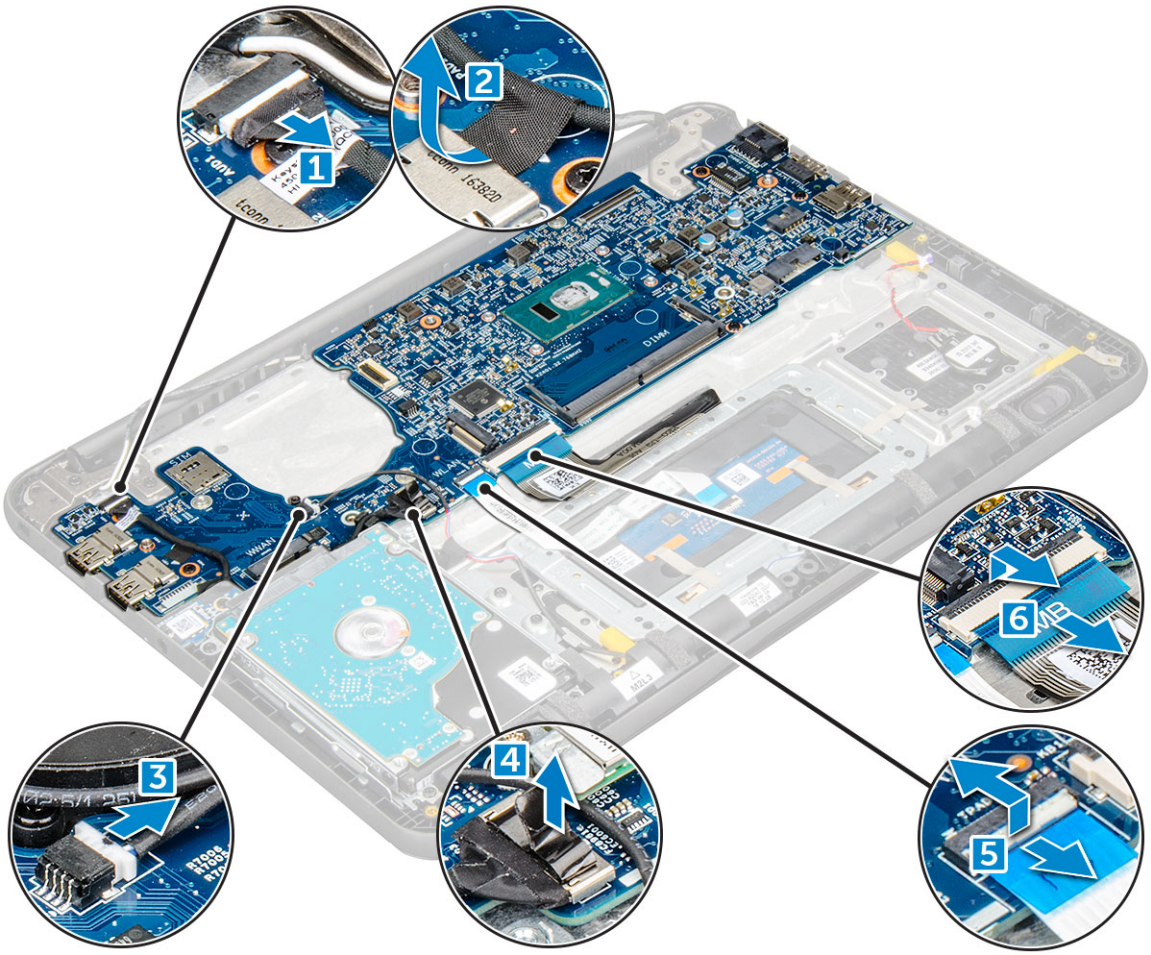
3 Remove the screw that secures the metal bracket of the display cable [1] and remove it from the system [2]. Then, remove the antenna cable from the system board [3] and disconnect the coin cell battery cable from its connector on the system board [4].



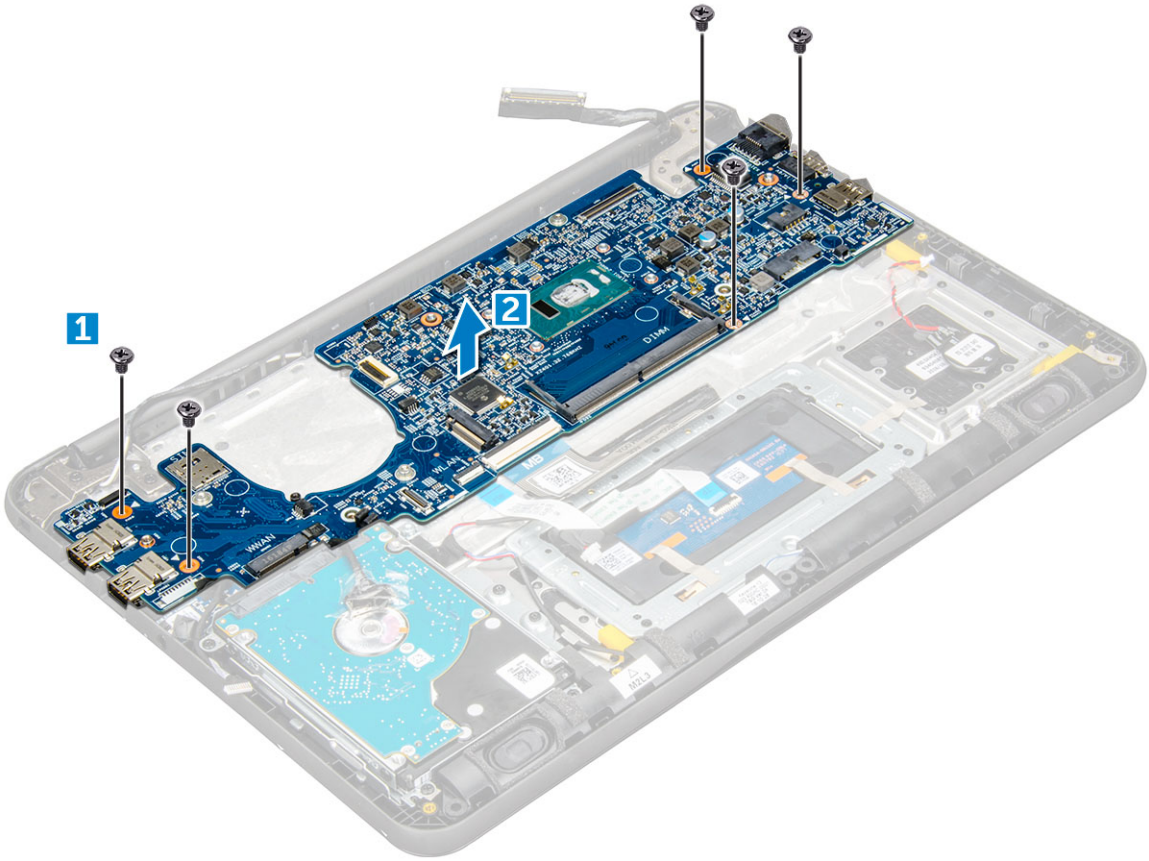
4 Disconnect the following cables and connectors:

- a WLAN cable connector [1]
- b WLAN cable adhesive [2]

c Speaker cable connector [3]
d HDD cable connector [4]
e Touchpad cable connector [5]
f Motherboard cable connector [6]



5 Remove the M2xL3 screws [1] and lift the system board away from the computer [2].



GUID-FFEA0712-FC45-44A3-91D6-1F9F13493066

Installing the system board

1 Align the system board with the screw holders on the computer.
2 Tighten the M2xL3 screws to secure the system board to the computer.
3 Connect the WLAN; WLAN cable adhesive, speaker cable, HDD cable, touchpad cable, and the motherboard cables to their respective connectors.
4 Connect the display cable to the connector.
5 Place the metal bracket over the connector and tighten the M2xL3 screw to secure the display cable to the computer.
6 Install the:
   a DCin
   b heat sink
   c memory module
   d WLAN card
   e battery
   f base cover
   g microSD card
7 Follow the procedure in After working inside your computer.

GUID-E1DA2CD3-D694-4193-9C29-A9256E4C3D69

Palm rest

GUID-56F9E5BF-4066-4CF8-A82E-DE1152A110DD

Removing the palm rest

1 Follow the procedure in Before working inside your computer.

2 Remove the:

a microSD card
b base cover
c battery
d keyboard
e heat sink
f WLAN card
g memory module
h HDD
i DCin
j audio board
k coin cell battery
l speaker
m touchpad
n display assembly
o system board

NOTE: The component you are left with is the palm rest.

3 Install the following components on the new palm rest.

a system board
b display assembly
c toucpad
d speaker
e coin cell battery
f audio board
g DCin
h memory module
i WLAN card
j HDD
k heat sink
l keyboard
m battery
n base cover
o microSD card

4 Follow the procedure in After working inside your computer.

Technology and components

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

Topics:

GUID-F0CF1276-3B9B-483D-A551-1B34FA95FB63

Power adapter

This laptop is shipped with the 65 W power adapter.

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

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

GUID-824D3217-4F80-4A8C-96EE-98F7F16AEB51

Processors

This laptop is shipped with the following processors:

Table 1. Intel Processor List

6th Generation	Intel Core i3-6006U Processor (15W, 3M cache, 2.0GHz)
7th Generation	• Intel Celeron Processor G3865U (15W, 2M cache, 1.60 GHz) • Intel Pentium Processor 4415U (15W, 2M cache, 2.3GHz) • Intel Core i5-7200U Processor (15W, 3M cache, up to 3.1 GHz)

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

GUID-FC27E6BD-F735-4A33-984F-7BBFFCD77079

Identifying processors in Windows 10

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

GUID-6CA33B21-E03F-4C51-B88F-E841041EBB3F

Verifying the processor usage in Task Manager

1 Right-click the laptop.
2 Select **Start Task Manager**.
The **Windows Task Manager** window is displayed.
3 Click the **Performance** tab in the **Windows Task Manager** window.

GUID-D3E361F7-1C21-44C3-83E2-664BC7A414BD

Verifying the processor usage in Resource Monitor

1 Right-click the laptop.
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**.

GUID-095A42A5-4A11-4DD1-A361-EF8EFDC1D4AA

Chipsets

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

GUID-50B8253F-945B-4345-AD79-9D9F6C69BFC2

Identifying the chipset in Device Manager on Windows 10

1 Click **All Settings** on the Windows 10 Charms Bar.
2 From the **Control Panel**, select **Device Manager**.
3 Expand **System Devices** and search for the chipset.

GUID-65A26C64-9AAA-4AF8-815B-071FE8F9F512

Intel HD Graphics

This computer is shipped with the Intel HD Graphics graphics chipset.

GUID-B29A64A0-ACF2-44B9-8855-E4EB4FA19AD4

Display options

GUID-DEE189ED-31AF-4ACD-9DE3-83A7AE9AC4A6

Identifying the display adapter

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

GUID-807B2E43-7483-43D7-9D67-16EFAE76DC14

Changing the screen resolution

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

GUID-5B794F65-7D0B-4D55-B114-D72EA65D0CB6

Adjusting brightness in Windows 10

To enable or disable automatic screen brightness adjustment:

1 Right-click **All Settings** → **System** → **Display**.
2 Use the **Adjust my screen brightness automatically** slider to enable or disable automatic-brightness adjustment.

NOTE: You can also use the Brightness level slider to adjust the brightness manually.

GUID-44768CF9-02F5-4B73-B24B-5DE3E73B3F7B

Connecting to external display devices

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

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

- Duplicate
- Extend
- Second Screen only

GUID-6942A0C0-90A0-4824-8F16-BA479DFD6435

DDR4

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

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

DDR4 Details

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

Key notch difference

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

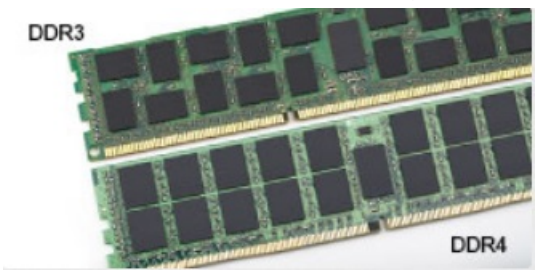


Figure 1. Notch difference

Increased thickness

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

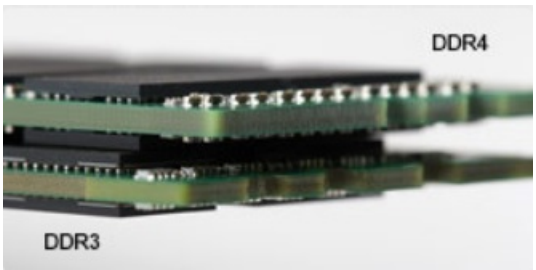


Figure 2. Thickness difference

Curved edge

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

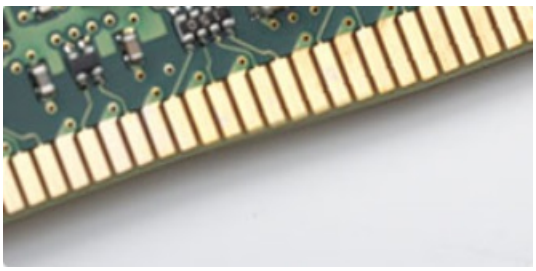


Figure 3. Curved edge

Memory Errors

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

GUID-0C6FE168-C432-4035-A33A-E2194C154D85

Memory features

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

GUID-EEBA8261-DD1A-4F4E-8965-BE41B24BB59A

Verifying system memory in Windows 10

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

GUID-96E6BE2C-DFCB-4164-8960-B6B2700260C1

Verifying system memory in system setup (BIOS)

1 Turn on or restart your laptop.
2 Perform one of 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.
   - Without keyboard — When the **F12 boot selection** menu is displayed, press the Volume Down button to enter BIOS setup. To enter the Boot selection menu, press the Volume Up button.
3 On the left pane, select **Settings** > **General** > **System Information**,
   The memory information is displayed on the right pane.

GUID-3AB9A399-E4ED-4F74-ADE6-25D3745B2C29

Testing memory using ePSA

1 Turn on or restart your laptop.
2 Perform one of the following actions after the Dell logo is displayed:

- With keyboard — Press F2.
- Without keyboard — Press and hold the **Volume Up** button when the Dell logo is displayed on the screen. When the F12 boot selection menu is displayed, select **Diagnostics** from the boot menu, and press Enter.

The PreBoot System Assessment (PSA) starts on your laptop.

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.

GUID-BCB966FA-4401-4855-95C6-C75F4FEA36C3

Graphic options

This laptop is shipped with the following graphics chipset:

- Intel HD Graphics 610

GUID-2FE1F42C-4FCF-4580-9C68-D258E212454D

USB features

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

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

Table 2. USB evolution

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

USB 3.0/USB 3.1 Gen 1 (SuperSpeed USB)

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

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

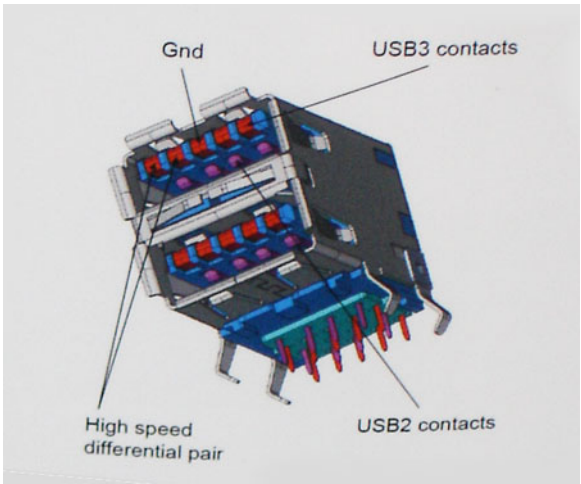
The topics below cover some of the most commonly asked questions regarding USB 3.0/USB 3.1 Gen 1.

Speed

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

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

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



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

Applications

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

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

- External Desktop USB 3.0/USB 3.1 Gen 1 Hard Drives
- Portable USB 3.0/USB 3.1 Gen 1 Hard Drives
- USB 3.0/USB 3.1 Gen 1 Drive Docks & Adapters
- USB 3.0/USB 3.1 Gen 1 Flash Drives & Readers
- USB 3.0/USB 3.1 Gen 1 Solid-state Drives

- USB 3.0/USB 3.1 Gen 1 RAIDs
- Optical Media Drives
- Multimedia Devices
- Networking
- USB 3.0/USB 3.1 Gen 1 Adapter Cards & Hubs

Compatibility

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

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

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

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

GUID-2A576EB1-5CB6-400F-99AA-E3D5AB50BAF7

Hard drive options

This laptop supports :

- 2.5", 7 mm, 128 GB SATA Class 20 Solid State Drive
- 2.5", 7 mm, 256 GB SATA Class 20 Solid State Drive

GUID-3A4C3D4A-CAF6-4C25-97C3-17B63F861333

Identifying the hard drive in Windows 10

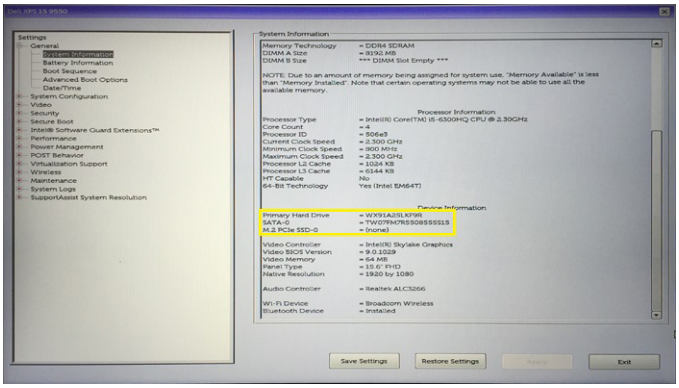
1 Click **All Settings** on the Windows 10 Charms Bar.
2 Click **Control Panel**, select **Device Manager**, and expand **Disk drives**.
The hard drive is listed under **Disk drives**.

GUID-8EDF4132-07F1-438E-A090-D48FE8DF49ED

Identifying the hard drive in the BIOS

1 Turn on or restart your laptop.
2 When the Dell logo appears, perform one of the following actions to enter the BIOS setup program:
- With keyboard — Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.
- Without keyboard — When the **F12 boot selection** menu is displayed, press the Volume Down button to enter BIOS setup. To enter the Boot selection menu, press the Volume Up button.

The hard drive is listed under the **System Information** under the **General** group.



GUID-2FBAF574-4D70-448F-A18A-241F598FA5B0

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
- **FHD 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 Standard 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

GUID-2F2E0170-C02C-4C3D-B90F-671EC5A4428B

Realtek ALC3246

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

GUID-2FC61525-430B-46F7-B10B-15A4BD562192

Camera features

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

GUID-62B1299E-E938-4DD5-9282-181E8875E1FD

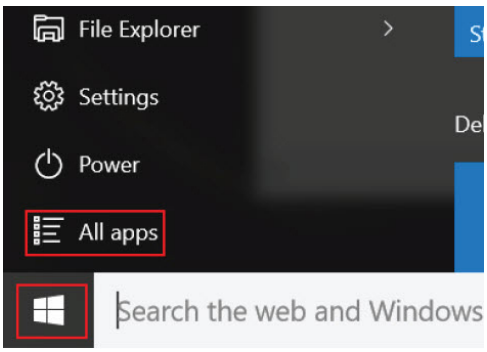
Starting the camera

To start the camera, open an application that uses the camera. For instance, if you tap the Dell webcam central software or 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.

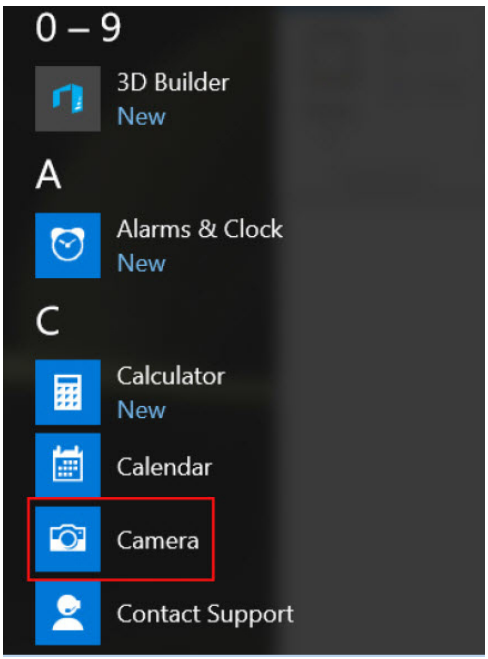
GUID-23DAFF4B-30FA-4A9B-B980-5D9B58F25640

Starting the camera application

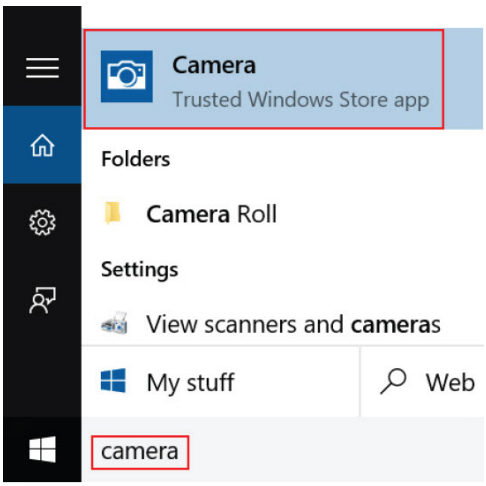
1 Tap or click the **Windows** button and select **All apps**.



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



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



System setup options

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

Topics:

GUID-39EA0288-9174-49B6-ABA2-37C542A11FC5

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.
- Optical Drive (if available)
- Diagnostics

  NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.

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

GUID-7A7EB30A-4A48-422B-AE30-B8DC236A1790

Navigation keys

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

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area. **NOTE: For the standard graphics browser only.**
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
F1	Displays the System Setup help file.

GUID-DB925BAE-A35B-445D-A065-7FDEFA32EA1F

System Setup overview

System Setup allows you to:

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

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

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

GUID-FC869170-7119-4ACE-9C13-5AC2D08EBACA

Accessing System Setup

1 Turn on (or restart) your computer.

2 After the white Dell logo appears, press F2 immediately.

The System Setup page is displayed.

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

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

GUID-6BDF914B-2947-4C4A-9606-8E1FBEAF6BE9

General screen options

This section lists the primary hardware features of your computer.

Option	Description
System Information	This section lists the primary hardware features of your computer. • System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, Express Service Code, the Signed Firmware update—enabled by default • Memory Information: Primary Hard Drive, SATA, Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology • Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, HT Capable, and 64-Bit Technology • Device Information: Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, Bluetooth Device
Battery Information	Displays the battery status health and whether the AC adapter is installed.

Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system.
	• Windows Boot Manager (Default)
	• Boot List Option
	  • Legacy
	  • UEFI (System Default)

Advanced Boot Options	This option allows you the legacy option ROMs to load. By default, the **Enable Legacy Option ROMs** is disabled. Enable Attempt Legacy Boot is enabled by default.
UEFI boot path security	• Always, except internal HDD (Default) • Always • Never
Date/Time	Allows you to change the date and time.

GUID-55BDB57D-9E32-4D44-BFB0-8ADB1C397950

System Configuration screen options

Option	Description
Drives	Allows you to configure the SATA drives on board. • SATA-0 enabled by default • eMMC (System Default)
USB Configuration	This is an optional feature. 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.

Option	Description
	The options are: • Enable Boot Support—enabled by default • Enable External USB Port—enabled by default **NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.**
USB PowerShare	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port. This option is disabled by default.
Audio	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—(default enable)
Debug Memory Frequency Configuration	Allows you to enable or disable the following devices: • Memory Frequency 1866 • Memory Frequency 1600 (default enable)
Miscellaneous Devices	Allows you to enable or disable the following devices: • Front-Facing Webcam (default enable) • World-Facing Camera (default enable) • Secure Digital (SD) card—enabled • Secure Digital (SD) card boot • Secure Digital (SD) card read-only-mode

GUID-4787E0CC-8484-4DE5-A6B0-5C8950649407

Video screen options

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

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

GUID-BCECE6E3-FDA3-4FA8-9D02-FDD3DB8BD382

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

Option	Description
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-0 Password	Allows you to set, change, or delete the administrator password. **NOTE: Successful password changes take effect immediately.** 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, the Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least eight characters long.**
Password Configuration	Allows you to specify the minimum and max password lengths of the Administrator and System passwords. • min-4—by default, if you want to change you can increase the number. • max-32—you can decrease the number.
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 —enabled by default • Reboot bypass
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.
Non-Admin Setup Changes	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled, the setup options are locked by the admin password. Option "allow wireless switch changes" is not selected by default.
UEFI Capsule Firmware Updates	Allows you to enable or disable. This option controls whether this system allows BIOS updated via UEFI capsule update packages. The options are: • Enable UEFI Capsule Firmware—enabled by default
TPM 2.0 Security	Allows you to enable the Trusted Platform Module (TPM) during POST. The options are: • TPM On—enabled by default • Clear • PPI Bypass for Enable Commands—enabled by default • PPI Bypass for Disabled Commands • Attestation enable—enabled by default • Key storage enable—enabled by default • SHA-256—enabled by default • Disabled • Enabled—enabled by default

Option	Description
	NOTE: To upgrade or downgrade TPM 2.0, download the TPM wrapper tool—software.
Computrace	Allows you to activate or disable the optional Computrace software The options are: • Deactivate • Disable • Activate—enabled by default **NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed.**
CPU XD Support	Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support—enabled by default
Admin Setup Lockout	Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: This option is enabled
Master password lockout	This option is not enabled by default

GUID-6C5FC040-7865-4711-9302-B782E44C81E7

Secure Boot screen options

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. • Disabled (Default) • Enabled
Expert Key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: • PK—enabled by default • 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 are erased and the keys restore to default settings.**

GUID-4E622412-B908-43D5-8A0B-80EA5DB1F4A9

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.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. • Enable Intel TurboBoost Default setting: The option is enabled.

GUID-3CE45D3B-75D6-4FF3-9B72-08A0122689D2

Power management screen options

Option	Description
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. Default setting: Wake on AC is not selected.
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.

Option	Description
	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 • Wake on Dell USB-C dock Default setting: The option is disabled.
Wake on WLAN	Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal. • Disabled • WLAN Default setting: Disabled
Block Sleep	This option lets you block entering to sleep (S3 state) in operating system environment. Block Sleep (S3 state) Default setting: This option is disabled
Peak Shift	This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached. • Enable peak shift • Set battery threshold (15% to 100%) - 15 % (enabled by default)
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques during the nonwork hours to improve the battery health. Disabled Default setting: Disabled
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are: • Adaptive—enabled by default • Standard—Fully charges your battery at a standard rate. • ExpressCharge—The battery charges over a shorter time using Dell's fast charging technology This option is enabled by default. • Primarily AC use • Custom 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.**
Sleep mode	• OS Automatic selection • Force S3—enabled by default

GUID-C80631C3-0C52-47E4-AFEE-D623473228E5

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
Numlock Enable	Allows you to enable the Numlock option when the computer boots. Enable Network. 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: • Lock Mode Disable/Standard—enabled by default • Lock Mode Enable
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: • Minimal—enabled by default • Thorough • Auto
Extended BIOS POST Time	Allows you to create an extra preboot delay. The options are: • 0 seconds—enabled by default. • 5 seconds • 10 seconds
Full Screen Log	• Enable Full Screen Logo—not enabled

GUID-7800F959-584D-4DC5-B44F-1542B0D42B11

Wireless screen options

Option	Description
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. • WLAN — enabled by default • Bluetooth All the options are enabled by default.

GUID-BE4B8900-DD06-40D1-853A-FC4C717EF0FD

Maintenance screen options

Option	Description
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: • Internal SATA HDD/SSD • Internal M.2 SATA SDD • Internal M.2 PCIe SSD • Internal eMMC
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 • BIOS Auto-Recovery • Always perform integrity check—disabled by default

GUID-107A6C87-653F-48BD-8296-1835D16B4E09

System logs screen options

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

GUID-2FA5A7AA-0C87-4AD7-BEBB-1D1E8C922647

SupportAssist system resolution

Option	Description
Auto OS Recovery Threshold	The Auto OS Recovery Threshold setup option controls the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. • OFF • 1 • 2 (default) • 3

GUID-39A4D20E-3382-4BBB-8017-A2044689C2C8

Updating the BIOS

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

1 Restart the computer.
2 Go to **Dell.com/support**.
3 Enter the **Service Tag** or **Express Service Code** and click **Submit**.

NOTE: To locate the Service Tag, click Where is my Service Tag?

NOTE: If you cannot find your Service Tag, click Detect My Product. Proceed with the instructions on screen.

4 If you are unable to locate or find the Service Tag, click the Product Category of your computer.
5 Choose the **Product Type** from the list.
6 Select your computer model and the **Product Support** page of your computer appears.
7 Click **Get drivers** and click **View All Drivers**.
The Drivers and Downloads page opens.
8 On the Drivers and Downloads screen, under the **Operating System** drop-down list, select **BIOS**.
9 Identify the latest BIOS file and click **Download File**.
You can also analyze which drivers need an update. To do this for your product, click **Analyze System for Updates** and follow the instructions on the screen.
10 Select your preferred download method in the **Please select your download method below** window, click **Download File**.
The **File Download** window appears.
11 Click **Save** to save the file on your computer.
12 Click **Run** to install the updated BIOS settings on your computer.
Follow the instructions on the screen.

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

GUID-859887F0-B1B4-4530-855E-100D4FDE930A

System and setup password

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

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

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

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

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

GUID-D91DBF33-F0AB-477E-A22D-D6CD2D066BBE

Assigning a system password and setup password

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

NOTE: If the password jumper is disabled, the existing System Password and Setup Password are deleted and you need not provide the system password to log on to the computer.

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 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.

GUID-5D52F643-EE78-4538-9D89-34BDFB68E9F1

Deleting or changing an existing system and/or setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.
To enter the System Setup, press F2 immediately after a power-on or reboot.

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 promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.

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

Technical specifications

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

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

Topics:

GUID-17B8E78E-1A60-488A-B560-1B7207FB5146

System specifications

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

GUID-51CBE9CD-DC64-475A-9120-19EF261DD91F

Processor specifications

Feature	Specification
Types	**6th Generation** • Intel Core i3-6006U Processor (15W, 3M cache, 2.0GHz) **7th Generation** • Intel Celeron Processor G3865U (15W, 2M cache, 1.60 GHz) • Intel Pentium Processor 4415U (15W, 2M cache, 2.3GHz) • Intel Core i5-7200U Processor (15W, 3M cache, up to 3.1 GHz)

GUID-FE7F9E51-33F4-4A26-B57F-7FE6FD8977C4

Memory specifications

Feature	Specification
Memory connector	One SODIMM slot
Memory capacity	8 GB
Memory type	DDR4 SDRAM
Speed	2133 MHz
Minimum memory	4 GB
Maximum memory	8 GB

GUID-BB3D126E-6DC8-409F-BAED-BB16D5856528

Storage specifications

Drive Type	Capacity
500 GB 2.5 HDD 7200 RPM	500 GB
SSD Capacity	128 GB and 256 GB
Drive Type	128 GB/256 GB SSD 2.5” 7 mm SATA Class 20

GUID-52F611A6-AE71-4E89-8788-A5C47323916A

Audio specifications

Feature	Specification
Types	High-definition audio
Controller	Realtek ALC3246
Stereo conversion	Stereo conversion: 16/20/24-bit (analog-to-digital and digital-to-analog)

Feature	Specification
Internal interface	High-definition audio codec
External interface	microphone-in and stereo headphones/speakers universal connector
Speakers	Two
Internal speaker amplifier	2 W (RMS) per channel
Volume controls	Hot keys

GUID-1418F79F-5A5F-40FD-9801-7542BAAF8B48

Video specifications

Feature	Specification
Type	Integrated on system board, hardware accelerated
Graphic card	• Intel HD Graphics
Data bus	Integrated video
External display support	19-pin HDMI connector

GUID-FDAB300A-DE9E-466A-8D46-D63FCBA1D474

Camera specifications

NOTE: Windows Hello face authentication enabled.

Feature	Specification
Camera resolution	1.00 megapixels
HD Panel Resolution	1280 x 720 pixels
HD Panel Video Resolution (maximum)	1280 x 720 pixels
Diagonal viewing angle	74°

GUID-2D30AAD8-01AC-4C1A-85DA-FF6A9C8DA226

Communication specifications

Features	Specification
Network adapter	10/100/1000 Mb/s Ethernet (RJ-45)
Wireless	• Intel Dual Band Wireless-AC 7265 802.11AC 2x2 Wi-Fi + BT 4.2 LE M.2 Wireless Card • Qualcomm QCA61x4A 802.11ac Dual Band (2x2) Wireless Adapter + Bluetooth 4.1 LE M.2 Wireless Card

GUID-E2B3BF8B-F714-4ADE-9FCE-D2590625DFE0

Port and connector specifications

Feature	Specification
Audio	Stereo headset / mic combo
Video	One 19-pin HDMI connector
Network adapter	One RJ-45 connector
USB	• One HDMI • One USB 3.0 with PowerShare • Two USB 3.0 • One microSD card
Memory card reader	Up to SD 3.0
Micro SIM (uSIM) card	One external (optional)
Docking port	Docking has two options: • Dell D3100 USB 3.0 Dock • Dell D1000 Dual Video USB 3.0 Docking Station

GUID-0BD72F29-5B3E-45F7-8EED-71A128097FDB

Display specifications

Feature	Specification
Type	• 13.3” HD 16:9 (1366 X 768) Anti Glare, non touch • 13.3” HD 16:9 (1366 x 768) Touch with Corning® Gorilla® Glass NBT
Diagonal	13.3 inches
Maximum resolution	1366 x 768
Maximum brightness	200 nits
Refresh rate	60 Hz
Maximum viewing angles (horizontal)	HD +40/- 40 degrees
Maximum viewing angles (vertical)	HD +10/-30 degrees
Pixel pitch	0.2148 mm

GUID-D64ACE87-9852-4C45-AA7C-B43C4D9645A2

Keyboard specifications

Feature	Specification
Number of keys	• United States: 82 keys • United Kingdom: 83 keys • Europe and Brazil: 84 keys • Japan: 86 keys

GUID-75CE755C-57BD-4254-BDB1-96DE4BE17F85

Touchpad specifications

Feature	Specification
X/Y Resolution	1952, 3220
Active Area:	
X-axis	102.40 mm (4.03 inches)
Y-axis	62.40 mm (2.45 inches)
Multi-touch	Supports five fingers

GUID-1C4DC45A-6A68-4769-B830-E00E58F1C572

Battery specifications

Feature	Specification
Types	• 56 Whr (4 cell) Prismatic with ExpressCharge • 56 Whr (4 cell) Long lifecycle Prismatic Battery
Length	184 mm (7.24 inches)
Width	97 mm (3.82 inches)
Height	5.9 mm (0.232 inch)
Weight	185.00 g
Voltage	11.4 V DC
Life span	300 discharge per charge cycles
Temperature range	
Operating	• Charge: 0°C to 50°C (32°F to 122°F) • Discharge: 0°C to 70°C (32°F to 158°F) • Operating: 0°C to 35°C (32°F to 95°F)
Non-operating	- 40°C to 65°C (- 40°F to 149°F)
Coin cell battery	3 V CR2032 lithium coin cell

GUID-4EE0C6FA-7597-45F2-97C6-E0EAF7750222

AC adapter specifications

Feature	Specification
Type	• E4 65 W - 65 Watt AC Adapter • E5 65 W Rugged (India only) • E4 65 W HF (BFR/PVC Free) • Dell Portable Power Companion (12000 mAh) PW7015M (Power Companion 45 W (Dura Ace)) • Dell Portable Power Companion (18000 mAh) PW7015L (Power Companion 65 W (Tesla))
Input voltage	100 V AC to 240 V AC
Input current (maximum)	2.5 A / 1.7 A
Input frequency	50 Hz to 60 Hz
Output current	3.34 A
Rated output voltage	19.5 +/– 1.0 V DC
Temperature range (Operating)	0°C to 40°C (32°F to 104°F)
Temperature range (Non-Operating)	–40°C to 70°C (–40°F to 158°F)

GUID-B507DD54-DD86-4961-909B-C629E3ED9ED9

Physical specifications

Feature	Specification
Front height	231.8 mm (9.126 inches)
Width	332.90 mm (13.106 inches)
Starting weight	3.63 lb (1.648 kg)

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

GUID-002D840C-8767-425A-9689-C2B74405EF81

Environmental specifications

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

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

Altitude (maximum)	Specifications
Operating	0 m to 3048 m (0 ft to 10,000 ft)
Non-operating	0 m to 10,668 m (0 ft to 35,000 ft)
Airborne contaminant level	G1 as defined by ISA-71.04–1985

Troubleshooting

GUID-8D55A66D-C835-4685-B13C-A5E9659C765D

Real Time Clock (RTC) reset

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

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

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

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

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

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

GUID-3A3576E1-EF1B-46DB-906F-9A07B70DACE5

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

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

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)

- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

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

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.

GUID-5FC0D943-B848-4BDC-9A26-78A5E88FDA45

Running the ePSA diagnostics

1 Power-on the computer.
2 As the computer boots, press the F12 key as the Dell logo appears.
3 On the boot menu screen, select the **Diagnostics** option.
The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
4 To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
5 Select the device from the left pane and click **Run Tests**.
6 If there are any issues, error codes are displayed.
Note the error code and contact Dell.

Contacting Dell

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

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

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