

Latitude 5289 2-in-1

Owner's Manual



Notes, cautions, and warnings

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

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

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

© 2017 Dell Inc. or its subsidiaries. All rights reserved. Dell, EMC, and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners.

1 Working on your computer	7
Safety instructions	7
Before working inside your computer	7
Turning off your computer — Windows 10	8
After working inside your computer	8
2 Removing and installing components	9
Screw size list	9
Recommended tools	9
Micro Secure Digital (SD) Card	9
Removing the Micro Secure Digital (SD) Card	10
Installing the Micro Secure Digital (SD) Card	10
Subscriber Identity Module (SIM) Card	10
Removing the micro SIM card or the micro SIM card tray	10
Base cover	10
Removing the base cover	10
Installing the base cover	11
Battery	11
Removing the battery	11
Installing battery	12
PCIe Solid State Drive (SSD)	12
Removing the NVMe SSD card	12
Installing the NVMe SSD	13
WLAN card	13
Removing the WLAN card	13
Installing the WLAN card	14
WWAN card	15
Removing the WWAN card	15
Installing the WWAN card	15
Power board	15
Removing the power board	15
Installing the power board	16
Speaker	16
Removing the speaker module	16
Installing the speaker module	18
Fingerprint Board	18
Removing the fingerprint reader board	18
Installing the fingerprint reader board	19
LED Board	19
Removing the LED board	20
Installing the LED board	20
Smart Card Cage	21
Removing the smart card cage	21

Installing the smart card cage.....	22
Heat Sink.....	22
Removing heat sink assembly.....	22
Installing heat sink assembly.....	23
Display Assembly.....	23
Removing the display assembly.....	23
Installing the display assembly.....	26
Removing dummy SIM card tray.....	26
System Board.....	27
Removing system board.....	27
Installing system board.....	30
Real time clock (RTC).....	30
Removing the real time clock (RTC).....	31
Installing real time clock (RTC).....	31
Keyboard.....	32
Removing keyboard assembly.....	32
Removing keyboard from the keyboard tray.....	33
Installing keyboard to the keyboard tray.....	34
Installing keyboard assembly.....	34
Display Panel.....	35
Removing the display panel.....	35
Installing the display panel.....	37
G-sensor board.....	37
Removing the G-sensor board.....	37
Installing the G-sensor board	38
Camera.....	38
Removing the camera.....	38
Installing the camera.....	39
Palmrest.....	39
Replacing palm rest	40

3 Technology and components.....42

Power adapter.....	42
Processors.....	42
Identifying processors in Windows 10.....	42
Verifying processor usage in task manager.....	43
Verifying processor usage in resource monitor.....	43
Chipset.....	44
Identifying chipset in device manager on Windows 10.....	44
Memory features.....	45
Verifying system memory in setup.....	45
Verifying system memory	45
Testing memory using ePSA.....	46
Display.....	46
Display options.....	46
Identifying display adapter.....	46
Changing the screen resolution.....	46



Connecting to external display devices.....	47
Camera features.....	47
Identifying the camera in Device Manager on Windows 10.....	47
Starting the camera (Windows 7, 8.1 and 10).....	47
Starting the camera application.....	48
Hard drive.....	49
Storage options.....	49
Identifying the storage device in the BIOS.....	49
Identifying storage device in Windows 10.....	49
USB features.....	49
USB 3.0/USB 3.1 Gen 1 (SuperSpeed USB).....	49
Speed.....	50
Applications.....	51
Compatibility.....	51
HDMI 1.4.....	51
HDMI 1.4 Features.....	52
Advantages of HDMI.....	52
4 System specifications.....	53
System specifications.....	53
Processor specifications.....	53
Memory specifications.....	54
Video specifications.....	54
Display specifications.....	54
Audio specifications.....	54
Storage options.....	55
Communication specifications.....	55
Near field communication (NFC) specifications.....	55
Fingerprint reader specifications.....	55
Ports and connector specifications.....	56
Touchpad specifications.....	56
Camera specifications.....	56
IR camera specifications.....	56
Display specifications.....	57
AC adapter specifications.....	57
Battery specifications.....	58
Physical specifications.....	59
Environmental specifications.....	59
5 System setup.....	61
Boot menu.....	61
Navigation keys.....	62
System setup options.....	62
General screen options.....	62
System Configuration screen options.....	63
Video screen options.....	65
Security screen options.....	65



Secure Boot screen options.....	67
Intel software guard extensions screen options.....	67
Performance screen options.....	68
Power management screen options.....	68
POST behavior screen options.....	70
Manageability.....	71
Virtualization support screen options.....	71
Wireless screen options.....	72
Maintenance screen options.....	72
System logs screen options.....	73
Updating the BIOS in Windows	73
System and setup password.....	73
Assigning a system password and setup password.....	74
Deleting or changing an existing system and/or setup password.....	74
6 Troubleshooting.....	75
Enhanced Pre-Boot System Assessment (ePSA) diagnostics.....	75
Running the ePSA diagnostics.....	75
Diagnostic LED.....	75
7 Contacting Dell.....	77



Working on your computer

Safety instructions

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

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

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

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

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

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

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

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

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

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.
- 4 Disconnect all network cables from the computer (if available).

⚠ CAUTION: If your computer has an RJ45 port, disconnect the network cable by first unplugging the cable from your computer.

- 5 Disconnect your computer and all attached devices from their electrical outlets.
- 6 Open the display.
- 7 Press and hold the power button for few seconds, to ground the system board.

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

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



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

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.

After working inside your computer

After you complete any replacement procedure, ensure that you connect 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.

Removing and installing components

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

Screw size list

Table 1. Latitude 5289 - Screw size list

Component	M2.5 x 5	M2.0 x 2	M2.0 x 3	M2.0 x 4L	M 2.0 x 1.7	M 2.2.0 x 2.0
Back cover	8 (captive screw)					
Battery				4		
Heat sink			4			
System fan			1			1
WWAN card			1			
WLAN card			1			
Power connector port			2			
EDP bracket					2	
Touchpad buttons			2			
Fingerprint reader			1			
Smart card reader cage						1
LED board			2			
Keyboard support plate			13			
Keyboard		6				
System board			6			
SSD bracket			2 (captive screws)			

Recommended tools

The procedures in this document require the following tools:

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

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

Micro Secure Digital (SD) Card



Removing the Micro Secure Digital (SD) Card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Press in on the Micro SD card to release it from the computer.
- 3 Slide the Micro SD card out of the computer.

Installing the Micro Secure Digital (SD) Card

- 1 Slide the Micro SD into the slot until it clicks into place.
- 2 Follow the procedures in [After working inside your computer](#).

Subscriber Identity Module (SIM) Card

Removing the micro SIM card or the micro SIM card tray

CAUTION: Removing the micro SIM card when the computer is on may cause data loss or damage the card. Ensure that your computer is turned off or the network connections are disabled.

NOTE: Micro SIM card tray is available only for systems that are shipped with WWAN card.

- 1 Insert a paperclip or a micro SIM card removal tool into the pinhole on the micro SIM card tray.
- 2 Use a scribe to pull the micro SIM card tray.
- 3 If a micro SIM card is available, remove the micro SIM card from the micro SIM card tray.

Base cover

Removing the base cover

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Loosen the M2.5 x 5.0 captive screws that secure the base cover to the computer.



- 3 Use a plastic scribe to pry the base cover starting from the hinges at the top edge of the base cover and lift it from the computer.

NOTE: The recesses are located near the hinges at the rear side of the computer.



Installing the base cover

- 1 Align the base cover tabs to the slots on the edges of the computer.
- 2 Press the edges of the cover until it clicks into place.
- 3 Tighten the M2.5 x 5.0 captive screws to secure the base cover to the computer.
- 4 Follow the procedure in [After working inside your computer](#).

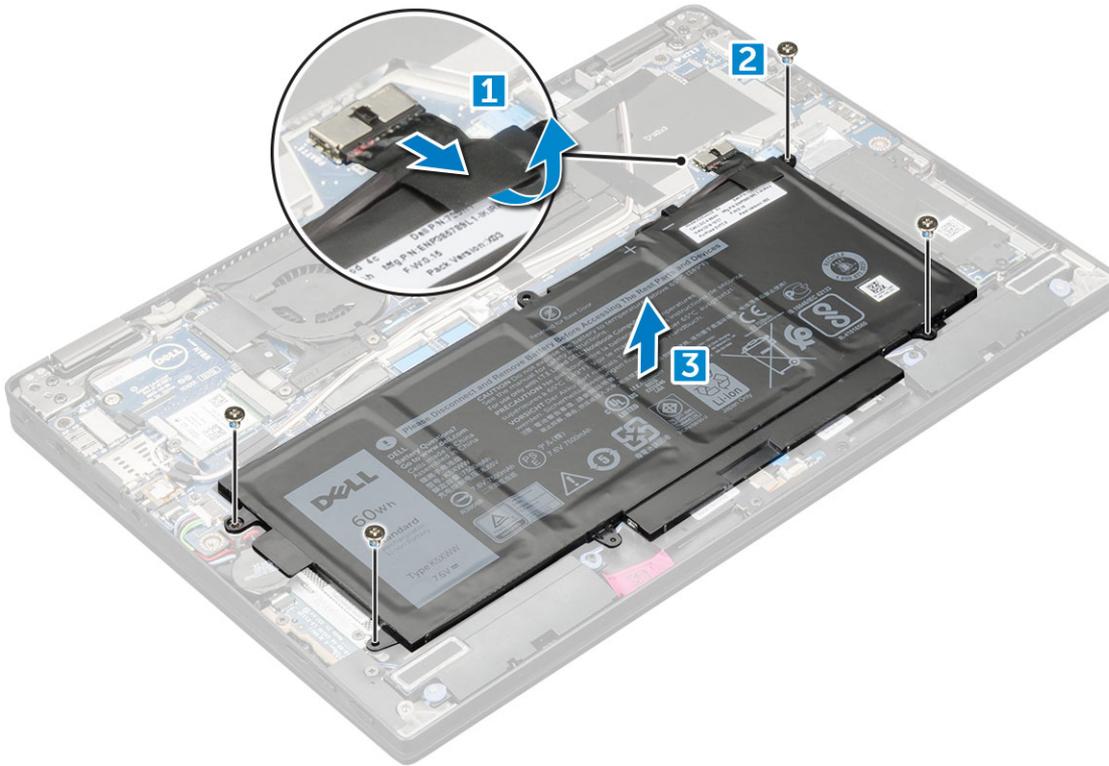
Battery

Removing the battery

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



- b [base cover](#)
- 3 To remove the battery:
 - a Lift the ribbon and disconnect the battery cable from the connector on the system board [1].
 - b Remove the M2.0 x 4L screws that secure the battery to the computer [2].
 - c Lift the battery from the computer [3].



Installing battery

- 1 Insert the battery into the slot on the computer.
- 2 Connect the battery cable to the connector on the system board.
- 3 Replace the M 2 x 4L screws to secure the battery to the computer.
- 4 Install the:
 - a [base cover](#)
 - b [SD card](#)
- 5 Follow the procedure in [After working inside your computer](#).

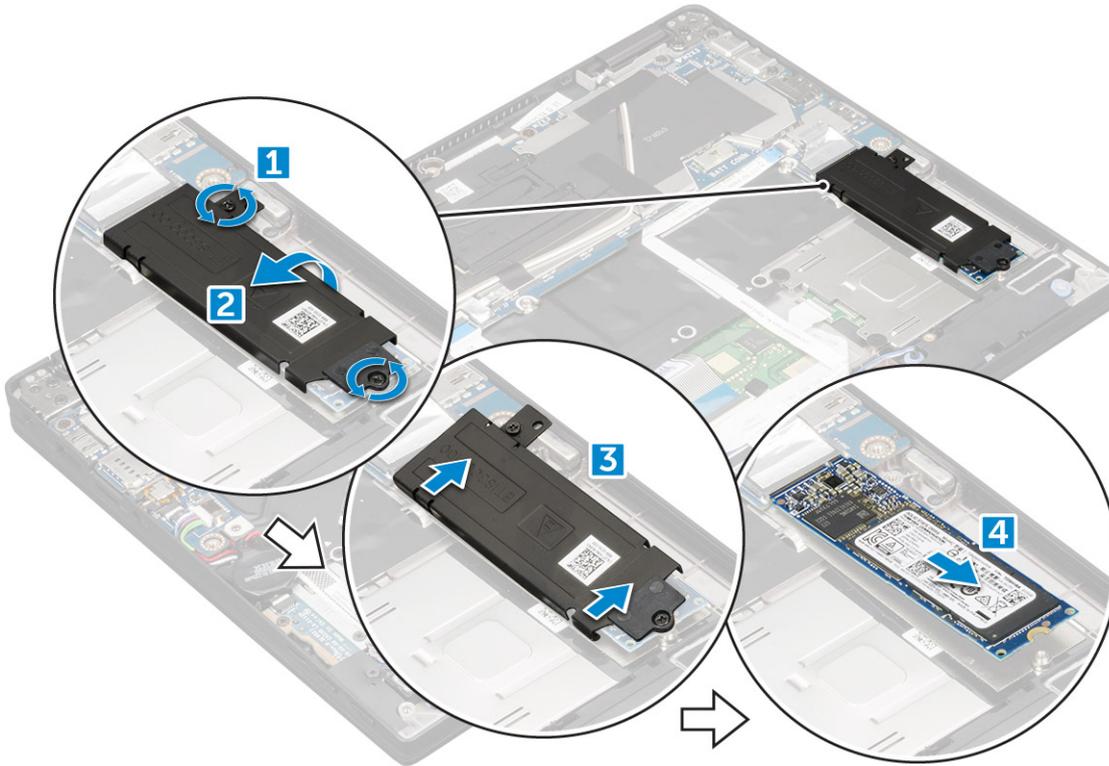
PCIe Solid State Drive (SSD)

Removing the NVMe SSD card

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

NOTE: You need not remove the battery, instead you can disconnect the battery cable from the system board.

- 3 To remove the NVMe SSD card:
 - a Remove the M2.0 x 3.0 screws that secure SSD thermal bracket and lift the thermal bracket [1].
 - b Slide the thermal bracket from the SSD card [2].
 - c Slide and remove the SSD card from the slot on the computer [3].



Installing the NVMe SSD

- 1 Insert the NVMe SSD card into the connector.
- 2 Install the thermal bracket over the SSD card.
- 3 Replace the M2.0 x 3.0 screws to secure the SSD thermal bracket.
- 4 Install the:
 - a battery

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover
 - c MicroSD card
- 5 Follow the procedure in [After working inside your computer](#).

WLAN card

Removing the WLAN card

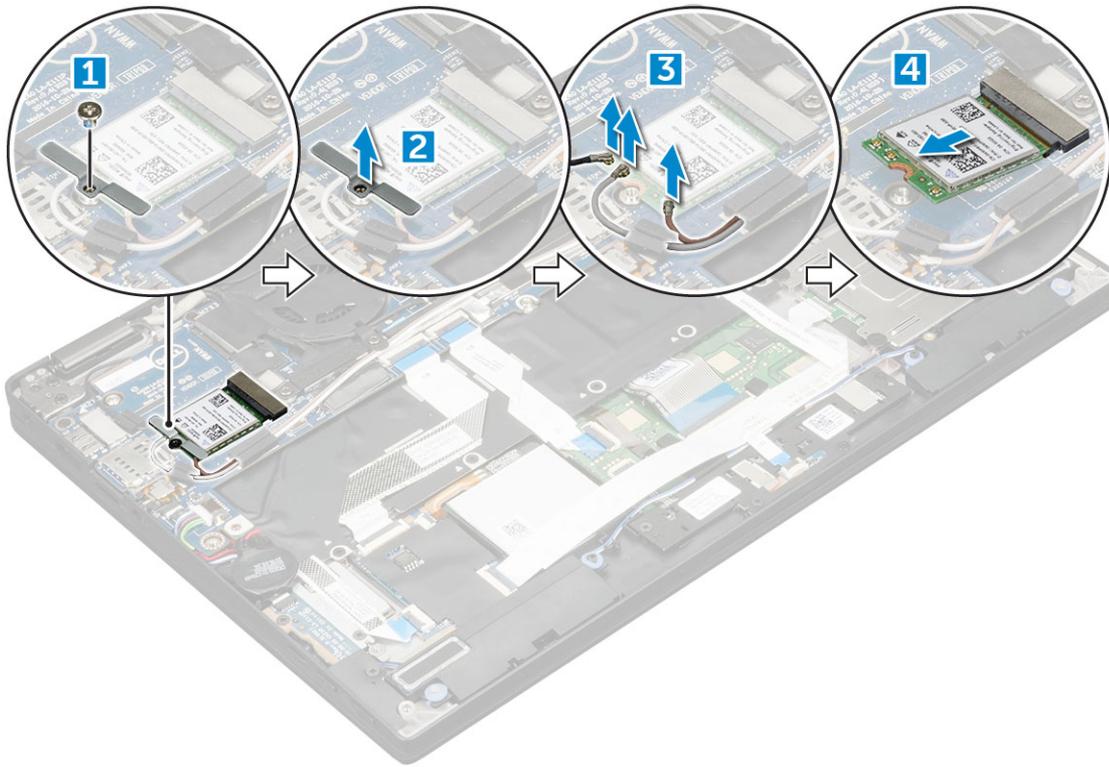
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove:
 - a MicroSD card



- b base cover
- c battery

NOTE: You need not remove battery, instead you can disconnect the battery cable from the system board.

- 3 To remove the WLAN card:
 - a Remove the M2.0 x 3.0 screw that secures the metal bracket to the WLAN card [1].
 - b Lift the metal bracket [2].
 - c Disconnect the WLAN cables from the connectors on the WLAN card [3].
 - d Remove the WLAN card from the computer [4].



Installing the WLAN card

- 1 Insert the WLAN card into the connector on the system board.
- 2 Connect the WLAN cables to the connectors on the WLAN card.
- 3 Place the metal bracket and replace the M2.0 x 3.0 screw to secure WLAN card to the computer.
- 4 Install the:
 - a battery

NOTE: If you have not removed the battery then you must connect the battery cable to the system board.

- b base cover
 - c MicroSD card
- 5 Follow the procedure in [After working inside your computer](#).

WWAN card

Removing the WWAN card

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

NOTE: You need not remove the battery, instead you can disconnect the battery cable from the system board.

- 3 To remove the WWAN card:
 - a Remove the M2.0 x 3.0 screw that secures the metal bracket to the WWAN card .
 - b Lift the metal bracket that secures the WWAN card .
 - c Disconnect the WWAN cables from the connectors on the WWAN card
 - d Lift the WWAN card from the computer.

Installing the WWAN card

- 1 Insert the WWAN card into the connector on the system board.
- 2 Connect the WWAN cables to the connectors on the WWAN card.
- 3 Place the metal bracket and replace the M2.0 x 3.0 screw to secure the WLAN card to the computer.
- 4 Install the:
 - a [battery](#)

NOTE: If you have not removed the battery then you must connect the battery cable to the system board.

- b [base cover](#)
 - c [MicroSD card](#)
- 5 Follow the procedure in [After working inside your computer](#).

NOTE: The IMEI number can also be found on the WWAN card.

Power board

Removing the power board

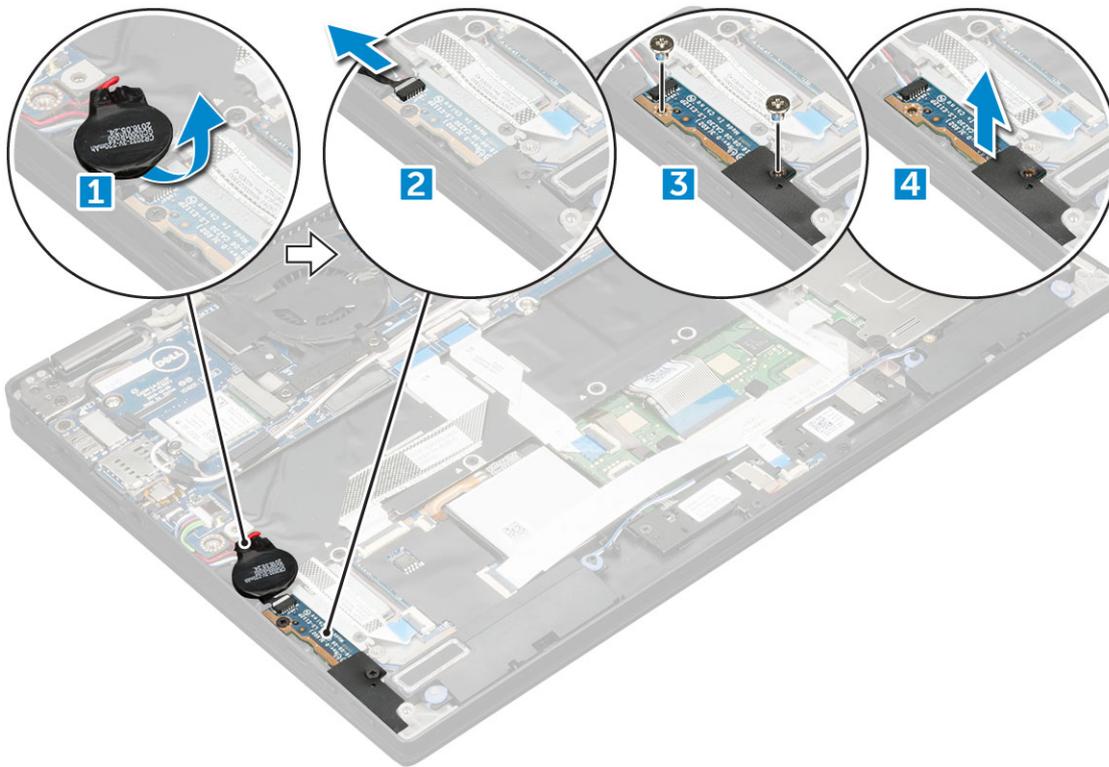
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove:
 - a [MicroSD card](#)
 - b [SIM card tray](#)

NOTE: SIM Card tray is available only if your computer is shipped with a WWAN card.

- c [base cover](#)
 - d [battery](#)
- 3 To remove the power board:
 - a Peel the coin cell battery affixed to the computer [1].
 - b Disconnect the power cable from the system board [2].



- c Remove the M2.0x3.0 screws to release the power board [3].
- d Lift the power board from the computer [4].



Installing the power board

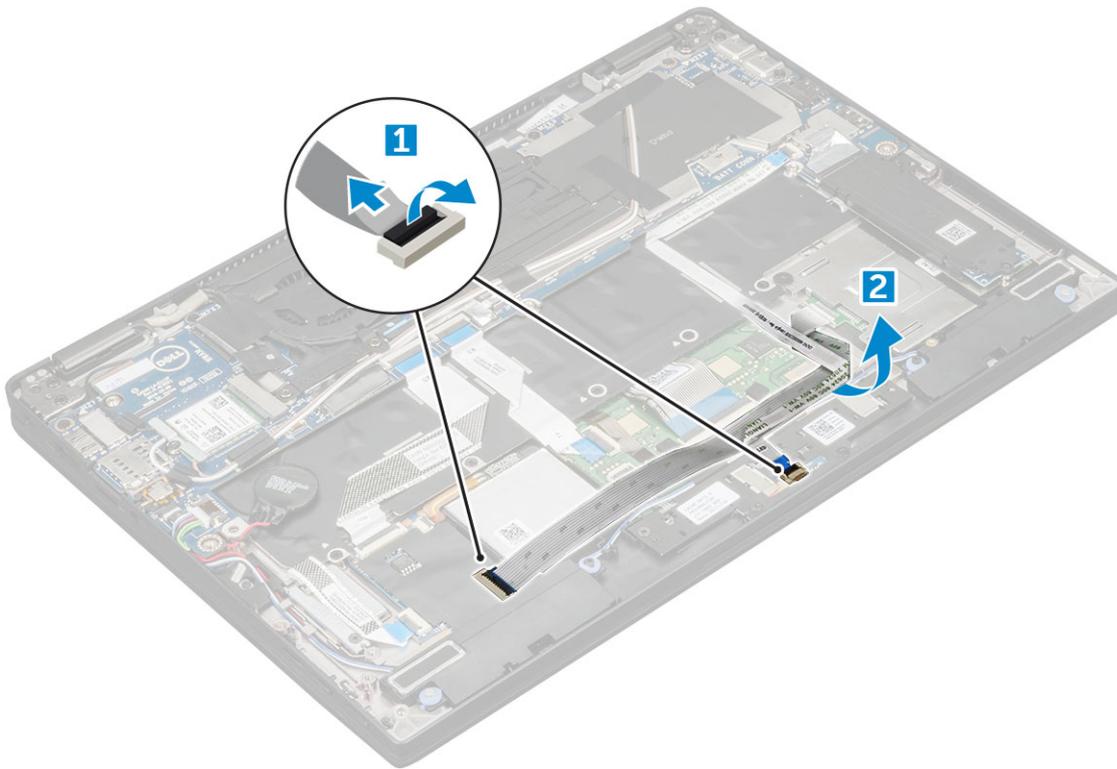
- 1 Insert the power board into the slot.
- 2 Replace the M2.0x3.0 screws to secure the power board to the computer.
- 3 Connect the power board cable to the connector on the system board.
- 4 Affix the coin cell battery in the slot on the computer.
- 5 Install the:
 - a battery
 - b base cover
 - c MicroSD card
- 6 Follow the procedure in [After working inside your computer](#).

Speaker

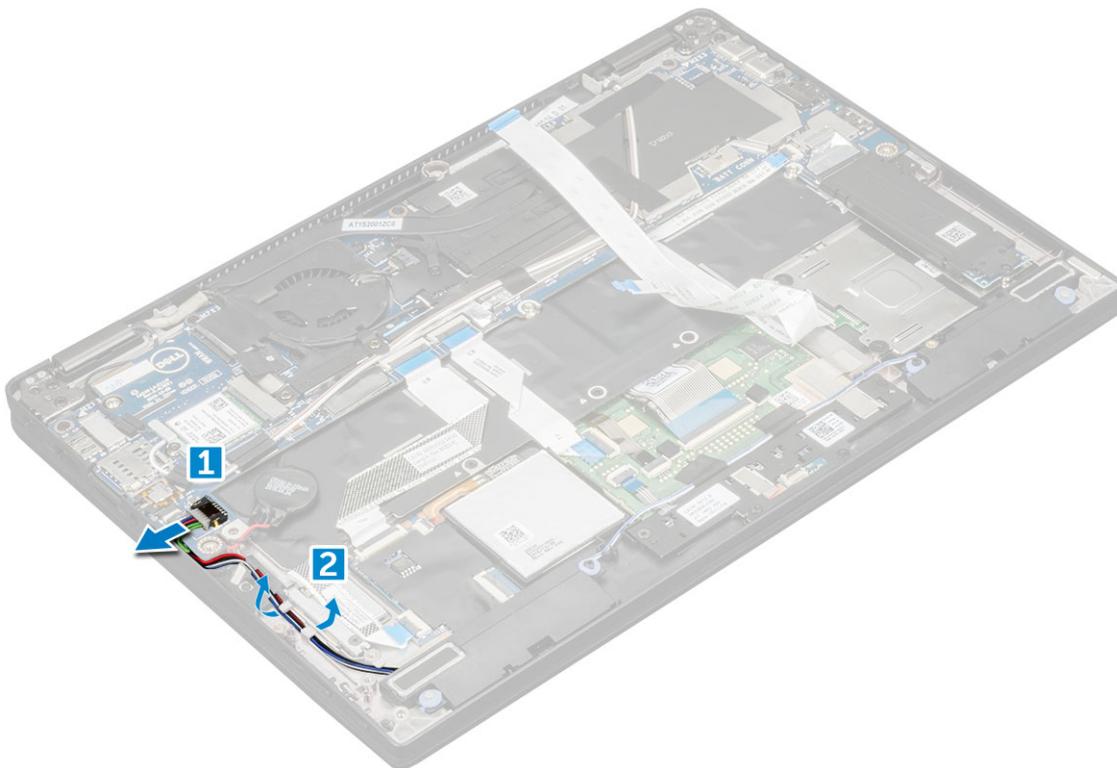
Removing the speaker module

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove:
 - a MicroSD card
 - b base cover
 - c battery
 - d power board
- 3 To disconnect the cables:

- a Disconnect the and fold back the smart card cable [1].
- b Disconnect and fold back the LED board cable [2].



- 4 To release the speaker module:
- a Disconnect the speaker cable from the connector on the system board [1].
 - b Un route the speaker cable by removing the tapes that secure the cable [2].

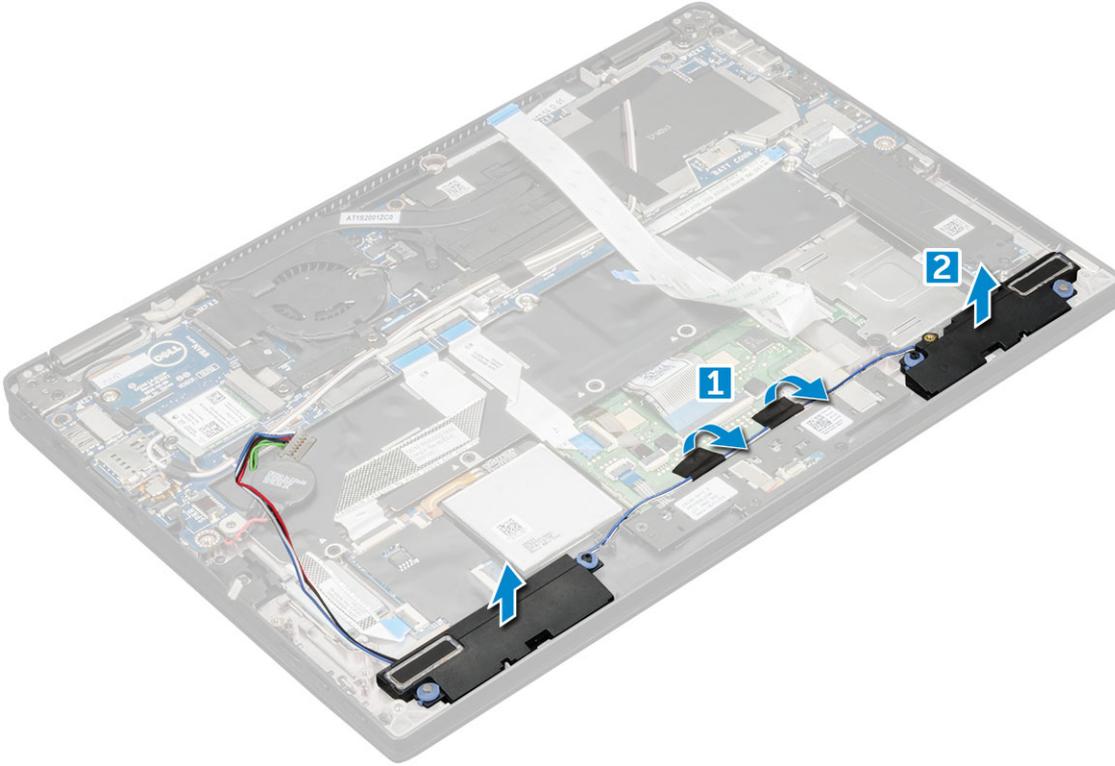


- 5 To remove the speaker module:
- a Un route the speaker cable from the routing clips near the palm rest [1].



- b Lift the speaker module from the computer.

NOTE: You can use a plastic scribe to lift the speaker module from the computer.



Installing the speaker module

- 1 Place the speaker module into the slots on the computer.
- 2 Route the speaker cable through the routing channel and secure it with tapes.
- 3 Connect the speaker cable to the connector on the system board.
- 4 Connect the LED cable to the connector on the palm rest.
- 5 Install the:
 - a power board
 - b battery
 - c base cover
 - d Micro SD
- 6 Follow the procedure in [After working inside your computer](#).

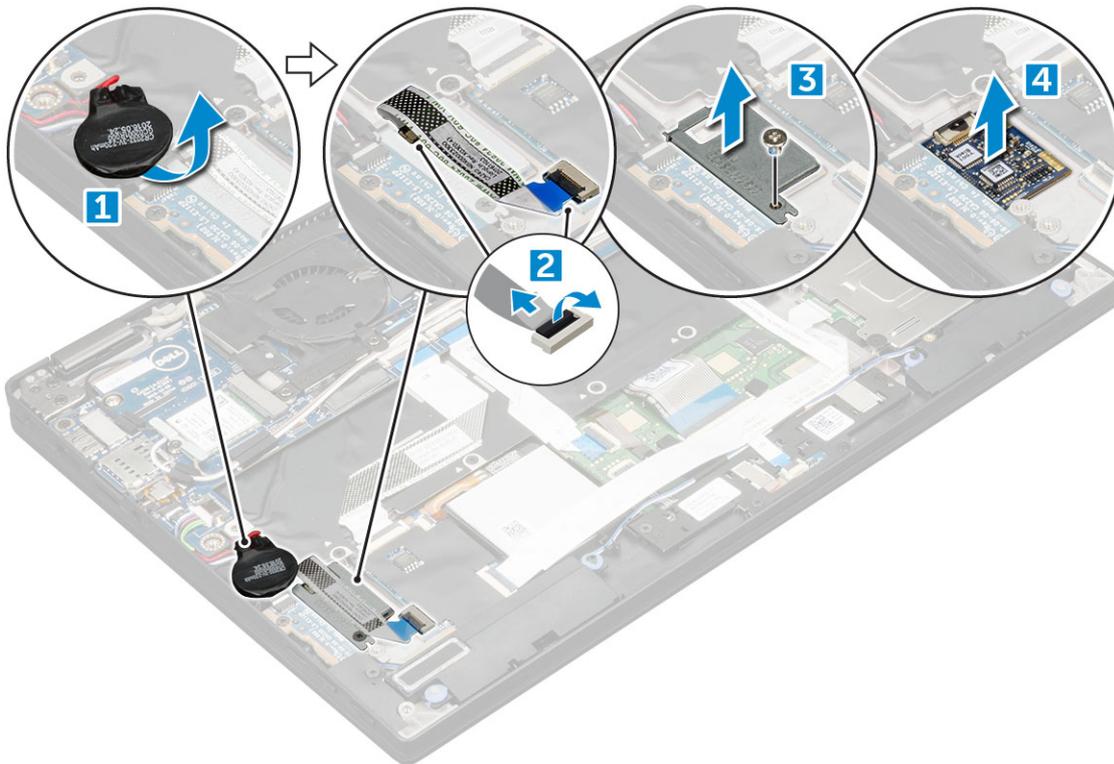
Fingerprint Board

Removing the fingerprint reader board

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

- 3 To remove the fingerprint reader board:
 - a Lift the coin cell battery affixed to the speaker cables [1].
 - b Disconnect the finger print reader cable from the fingerprint reader board and the USH board [2].
 - c Remove the M2 x 3 screw that secures the fingerprint reader bracket [3].
 - d Lift the fingerprint reader bracket from the fingerprint reader board [3].
 - e Lift the fingerprint reader board from the slot on the computer.

NOTE: Fingerprint reader board is affixed and you may need a plastic scribe to lift the fingerprint reader board.



Installing the fingerprint reader board

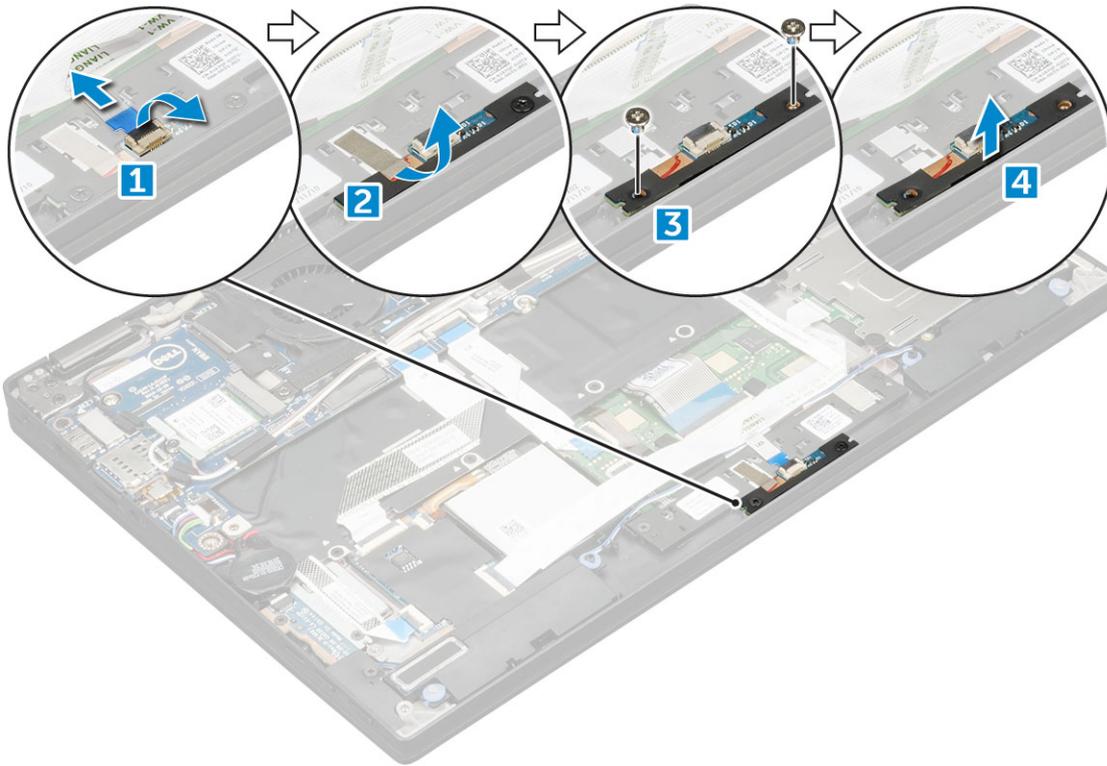
- 1 Install the fingerprint reader board into the slot.
- 2 Place the fingerprint reader bracket on the board.
- 3 Replace the M2 x 3 screw to secure the bracket to the board.
- 4 Connect the fingerprint reader cable to the fingerprint reader board and the USH board.
- 5 Affix the coin cell battery on the speaker cable
- 6 Install the:
 - a battery
 - b base cover
 - c Micro SD
- 7 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:
 - a [Micro SD](#)
 - b [base cover](#)
 - c [battery](#)
- 3 To remove the LED board:
 - a Disconnect the LED board cable from the LED board [1].
 - b Remove the tape that secures the LED board to the touchpad panel [2].
 - c Remove the M2 x 3 screws that secure the LED board [3].
 - d Lift the LED board from the computer [4].



Installing the LED board

- 1 Install the LED board into the slot.
- 2 Replace the M2 x 3 screws to secure the LED board.
- 3 Affix the tape to secure the LED board.
- 4 Connect the LED board cable to the LED board.
- 5 Install the:
 - a [battery](#)
 - b [base cover](#)
 - c [SD card](#)
- 6 Follow the procedure in [After working inside your computer](#).

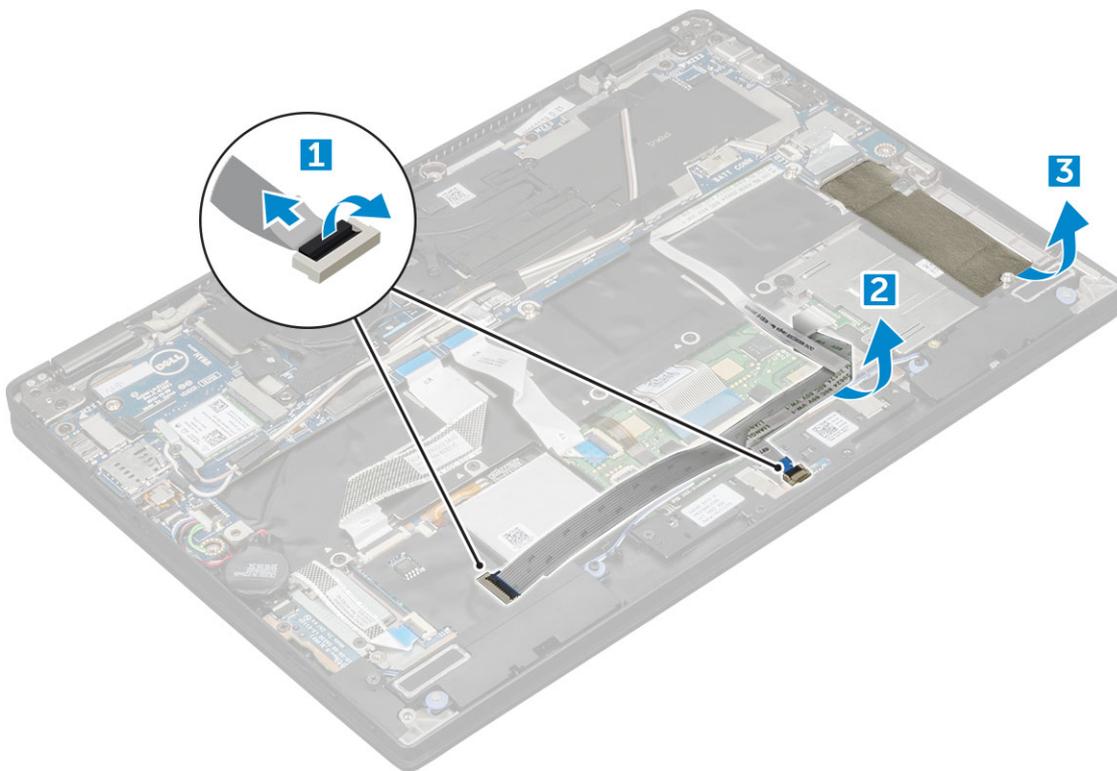
Smart Card Cage

Removing the smart card cage

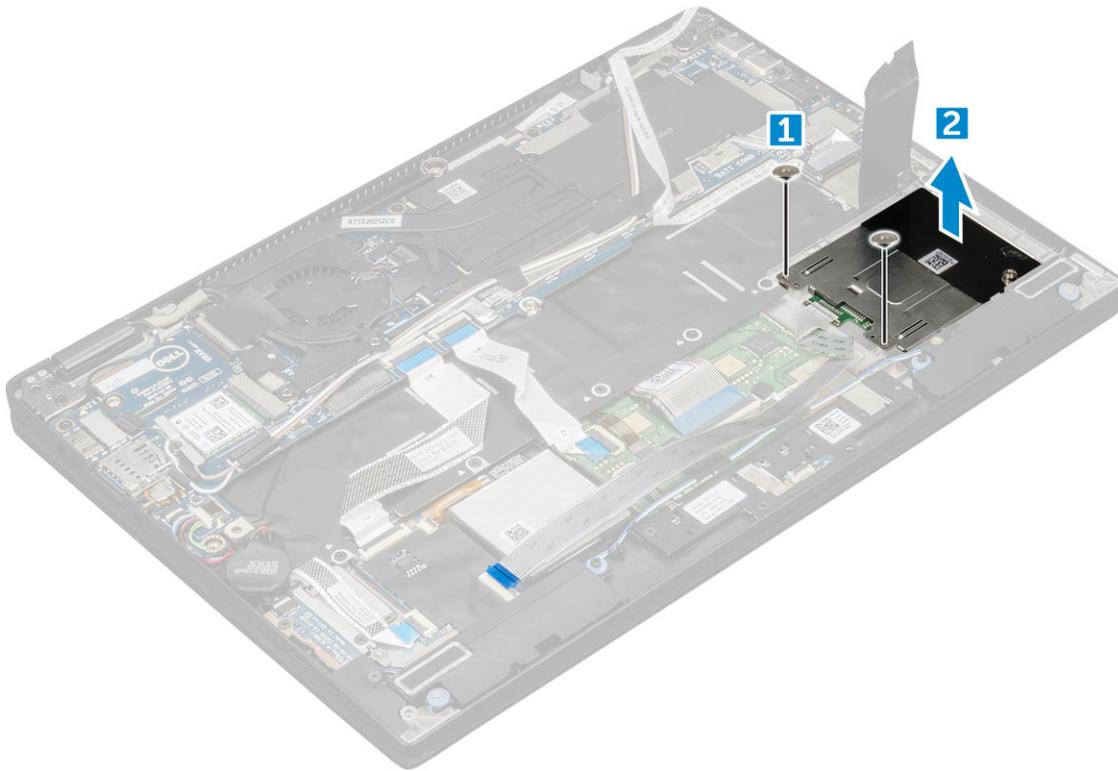
NOTE: Always remove the smart card from the smart card reader.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove:
 - a [Micro SD](#)
 - b [base cover](#)
 - c [battery](#)
 - d [SSD card](#)
- 3 To disconnect the cables:
 - a Disconnect the smart card cable [1] and fold it away from the smart card cage.
 - b Disconnect the LED board cable [2] and fold it away from the smart card cage.
 - c Peel the SSD thermal pad from the SSD slot [3].

NOTE: You may need to apply force to peel off the SSD thermal pad.



- 4 To remove the smart card cage:
 - a Remove the M2.0 x 1.7 screws that secure the smart card cage to the computer [1].
 - b Lift the smart card cage from the computer [2].



Installing the smart card cage

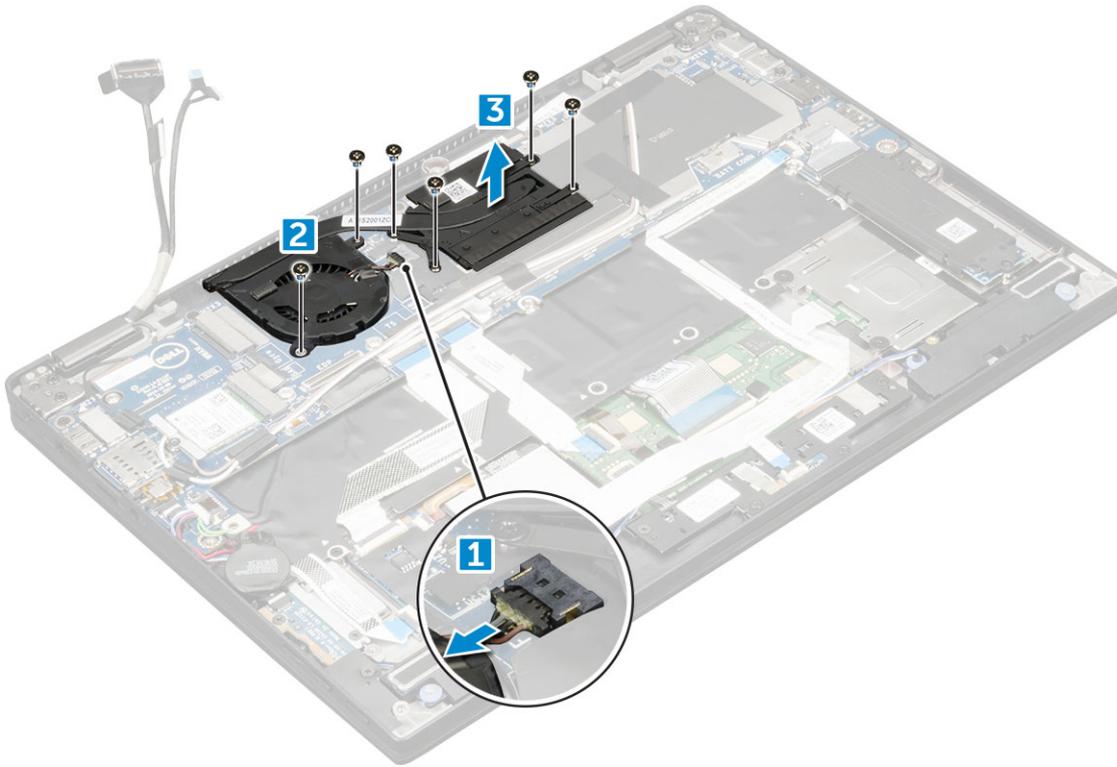
- 1 Slide the smart card cage into the slot to align with the screw holders on the computer.
- 2 Replace the M2.0 x 1.7 screws to secure the smart card cage to the computer.
- 3 Affix the thermal pad in the SSD slot.
- 4 Affix the LED board cable and connect it to the LED board on the computer.
- 5 Affix the smart card cable and connect it to the USH board on the computer .
- 6 Install the:
 - a SSD card
 - b battery
 - c base cover
 - d Micro SD
- 7 Follow the procedure in [After working inside your computer](#).

Heat Sink

Removing heat sink assembly

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a Micro SD
 - b base cover
 - c battery
- 3 To remove the heat sink assembly:
 - a Disconnect the fan cable from the system board [1].

- b Remove the M2.0 x 3.0 screws that secure the fan to the system board.
- c Remove the M2.0 x 3.0 screws that secure the heat sink to the system board [2].
- d Lift the heat sink assembly from the system board.



Installing heat sink assembly

- 1 Align the heat sink assembly with screw holders on the system board.
- 2 Replace the M2.0 x 3.0 screws to secure the heat sink to the system board.

① **NOTE:** Tighten the screws on the system board in the order of the callout numbers [1, 2, 3, 4] as indicated on the heat sink.

- 3 Replace the M2.0 x 3.0 screws to secure the fan to the system board.
- 4 Connect the fan cable to the connector on the system board.
- 5 Install the:
 - a battery
 - b base cover
- 6 Follow the procedure in [After working inside your computer](#).

Display Assembly

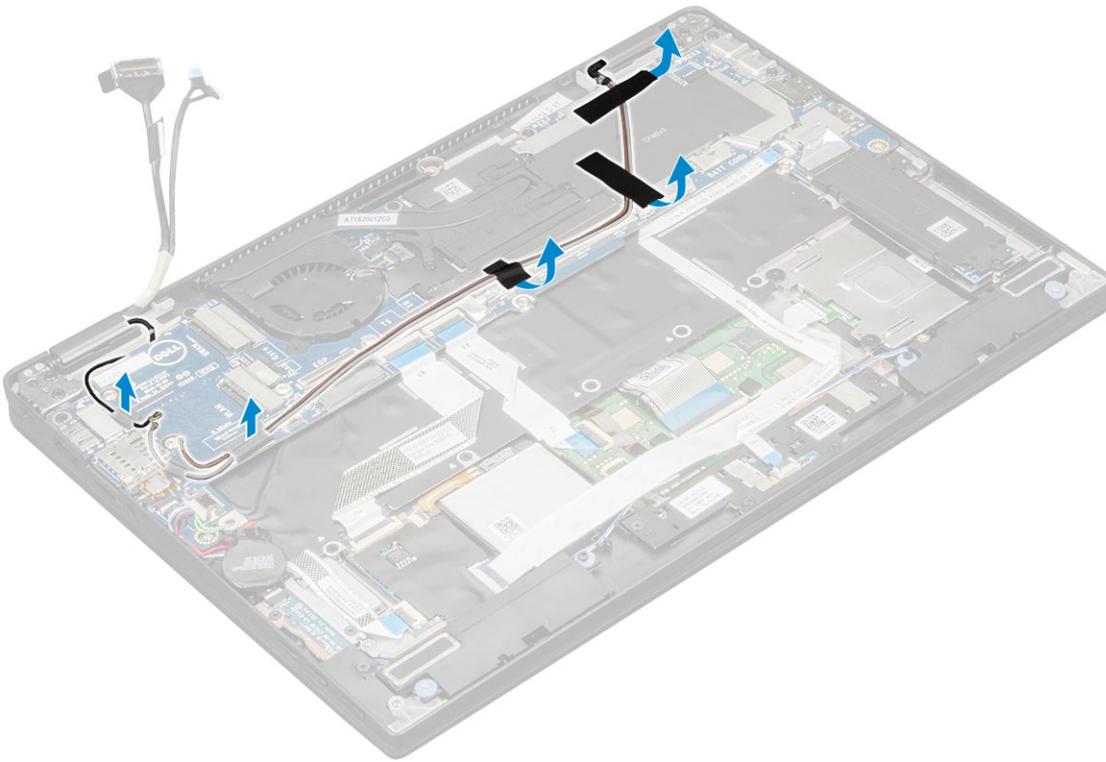
Removing the display assembly

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



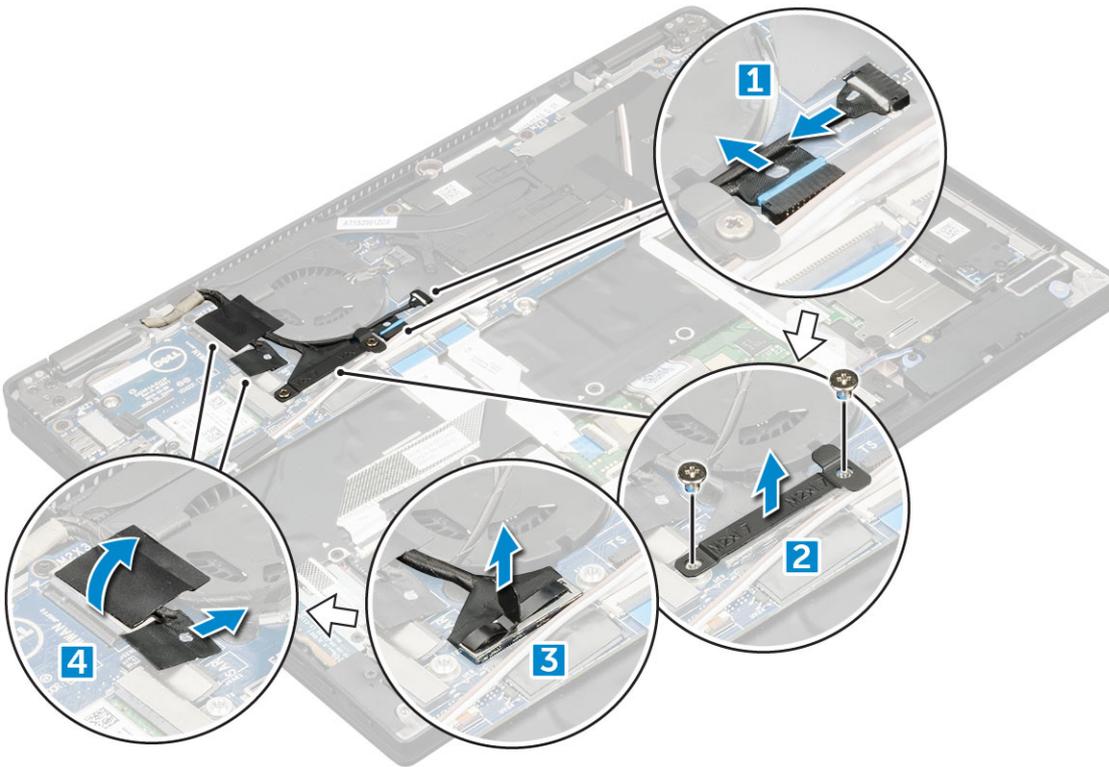
- c battery
- d WLAN card
- e WWAN card

3 Peel the tapes that secure the antenna cables and un route the cables from the routing clips.

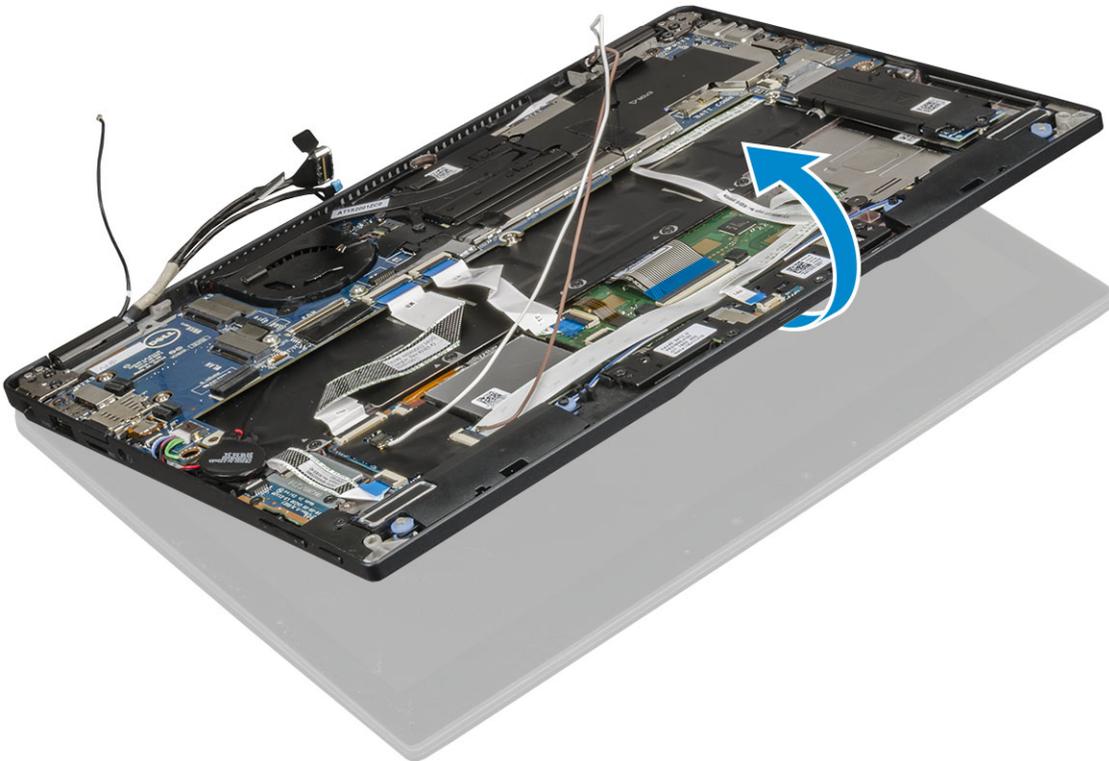


4 Disconnect the :

- a IR camera and touchscreen cable [1].
- b Remove the M 2 x 1.7L screws that secure the eDP bracket and lift it away from the computer [2].
- c Disconnect the eDP cable from the system board [3].
- d Disconnect the G-sensor and eDP cables [4].



5 Lift the base of the computer away from the display assembly.



6 To remove the display assembly:

- a Place the base of the computer with the display assembly at 270 degrees (laptop) or 90 degrees (tablet).

NOTE: If the system is used as a laptop, then display assembly should be at 270 degrees and for a fully closed tablet configuration, the display should be at 90 degrees.

- b Remove the M2.5 x 4.0 screws that secure the display hinge brackets [1].



- c Lift the display assembly away from the computer [2].



Installing the display assembly

- 1 Place the base of the computer on a flat surface.
- 2 Install the display assembly by aligning it with the display hinge screw holders.
- 3 Replace the M2.5 x 4.0 screws to secure the display assembly.
- 4 Close the display assembly and flip the computer.
- 5 Connect the cables:
 - a G-sensor and eDP cable
 - b Place the eDP bracket on the eDP cable and replace the M 2 x 1.7L on the bracket.
 - c IR camera and touch screen cables
- 6 Route the antenna cables through the routing clips
- 7 Affix the tapes to secure the antenna cables to the system board.
- 8 Install the:
 - a [WWAN card](#)
 - b [WLAN card](#)
 - c [battery](#)
 - d [base cover](#)
 - e [Micro SD](#)
- 9 Follow the procedure in [After working inside your computer](#).

Removing dummy SIM card tray

For models shipped with a WWAN card, the SIM card tray must first be removed from the system before removing the system board. To remove the SIM card tray from the system, follow the steps outlined in the disassembly section of the Field Service Manual. For models

shipped with a wireless card only, a dummy SIM card tray must first be removed from the system before removing the system board. The following are the steps for removing the dummy SIM card tray.

- 1 Push the release latch located on the SIM card slot inwards.

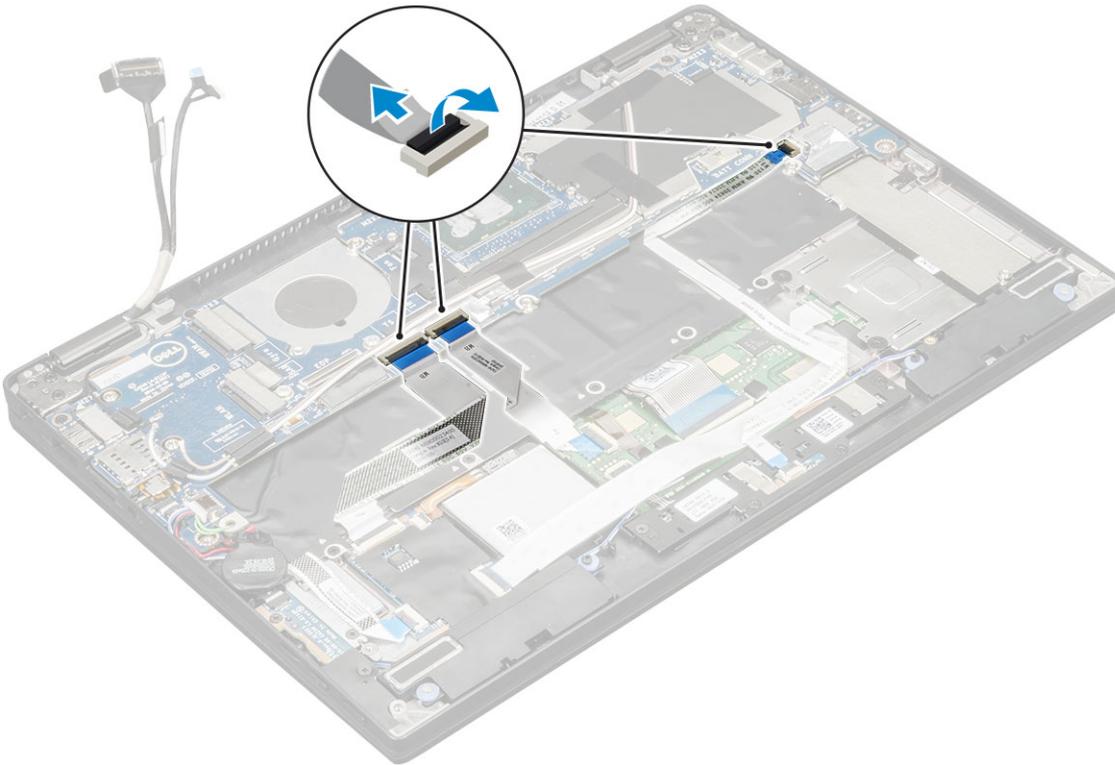


- 2 Slide the dummy SIM card tray out of the system.

System Board

Removing system board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [Micro SD](#)
 - b [SIM card tray](#)
If your system is shipped with a WWAN card, it will have a dummy SIM card tray.
 - c [Dummy SIM tray](#)
 - d [base cover](#)
 - e [battery](#)
 - f [SSD card](#)
 - g [WLAN card](#)
 - h [WWAN card](#)
 - i [Heatsink assembly](#)
- 3 Disconnect the following cables from the system board .
 - a [touchpad cable](#)
 - b [USB cable](#)
 - c [LED board cable](#)

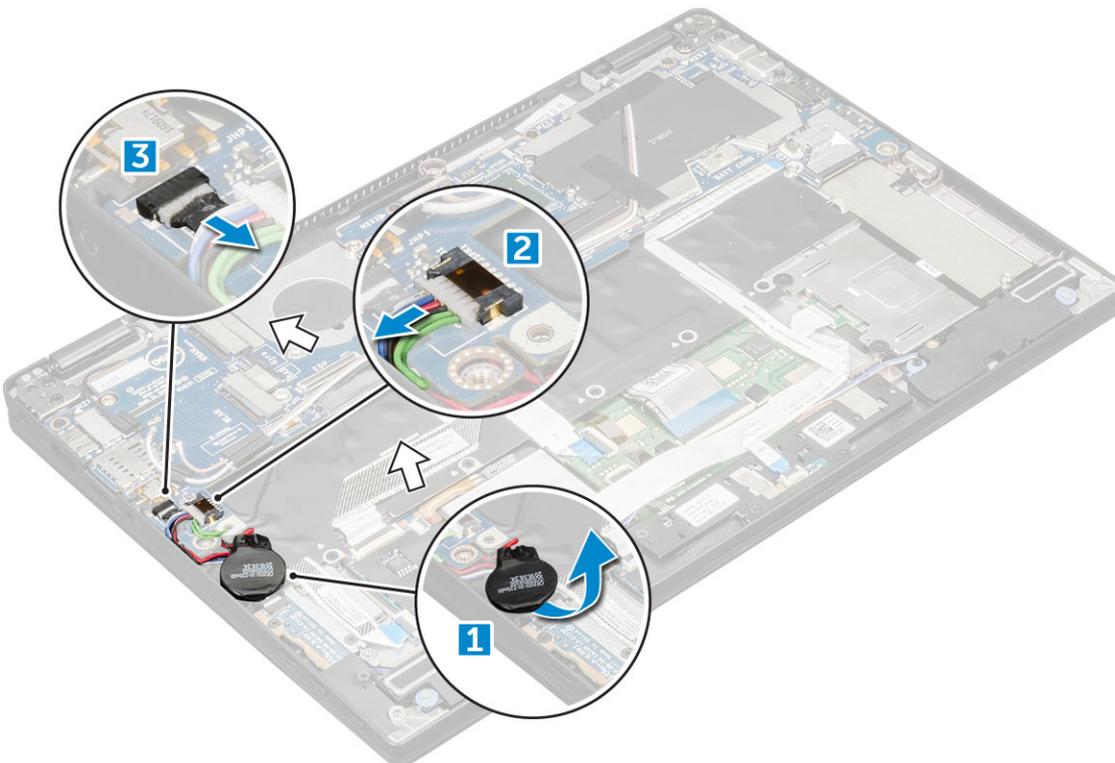


4 Disconnect the eDP cable:

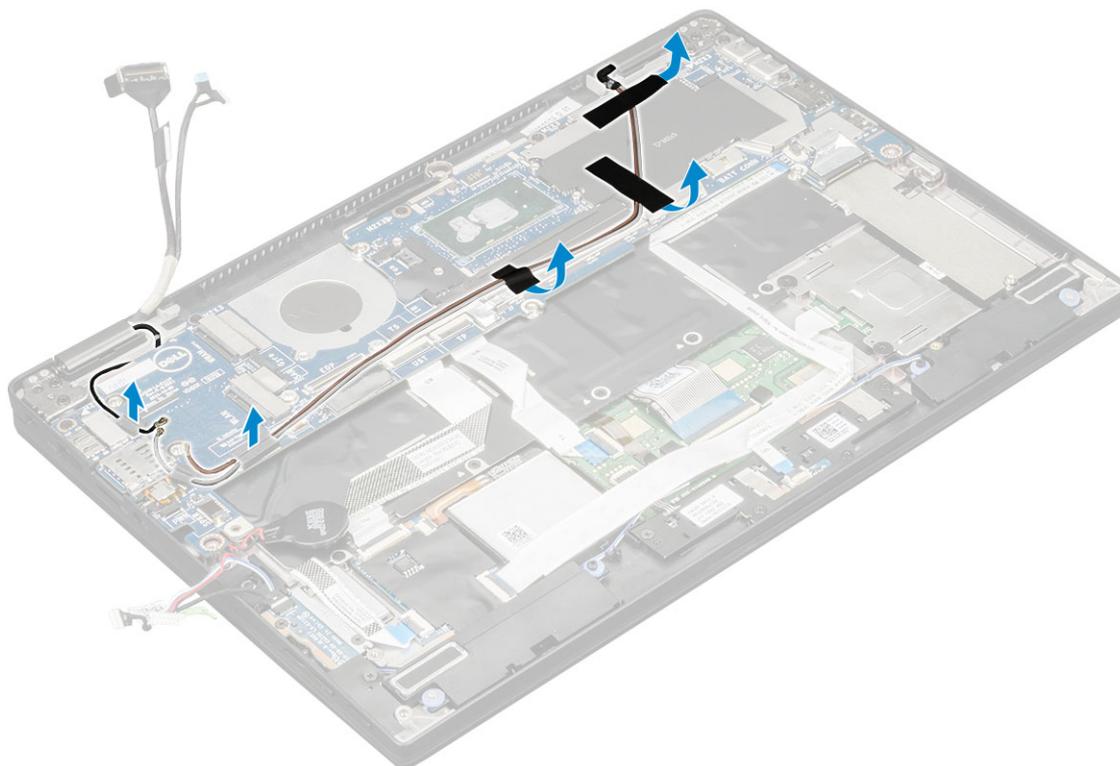
① **NOTE:** To disconnect the eDP cable, remove the M 2 x 1.7L screws that secure the eDP bracket and lift it away from the computer, Disconnect the eDP cable from the system board.

5 To release the cables:

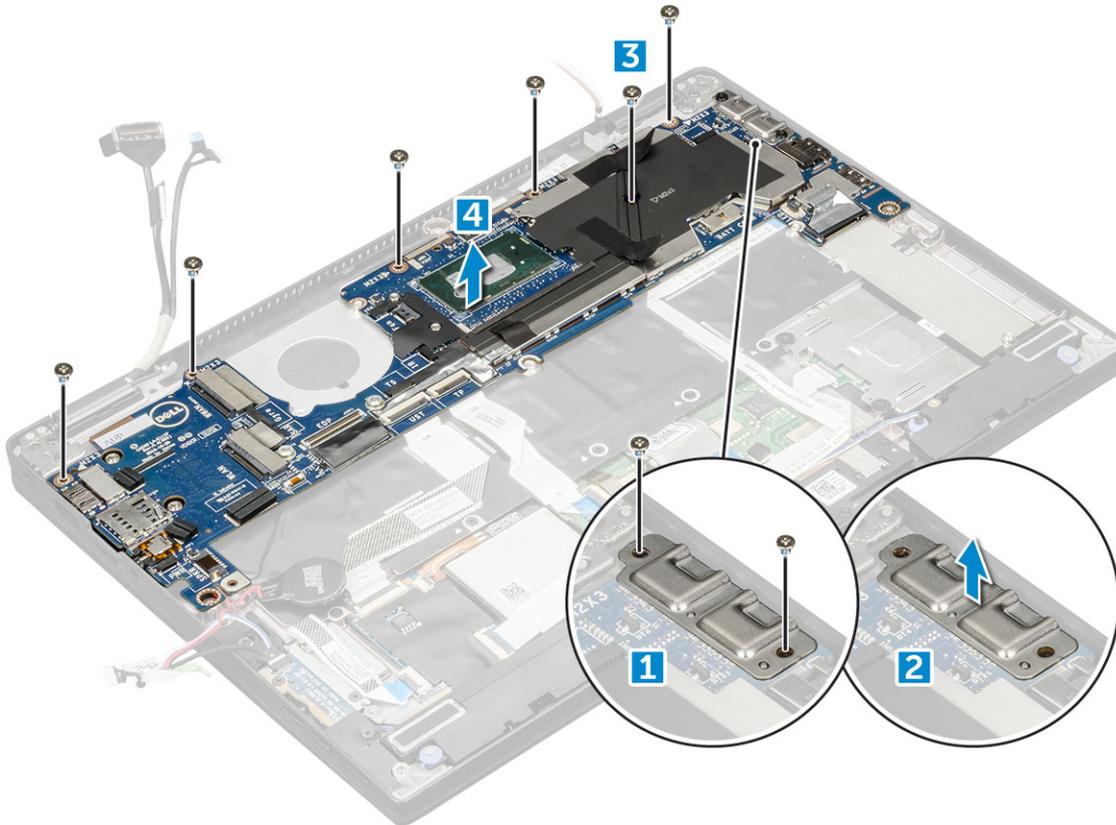
- a Flip the coin cell battery to reveal the speaker cable [1].
- b Disconnect the speaker cable from the system board [2].
- c Disconnect the power board cable from the system board [3].



- 6 Peel the tapes that secure antenna cables and un route the cables from the routing clips.



- 7 To remove the system board:
- Remove the M2.0 x 4L screws on the USB Type-C bracket [1].
 - Lift the USB Type-C bracket from the Type-C module [2].
 - Remove the M2.0 x 3.0 screws that secure the system board to the computer [3].
 - Lift the system board away from the computer [4].



Installing system board

- 1 Align the system board with the screw holders on the computer.
- 2 Replace the M2.0 x 3.0 screws to secure the system board to the computer.
- 3 Place the USB Type-C bracket on the Type-C module.
- 4 Replace the M 2.0 x 4L screws to secure the USB Type-C bracket to the Type-C module.
- 5 Route the antenna cable through the routing clips and affix the tapes to secure the antenna cables.
- 6 Connect the power board and the speaker cable to the system board.
- 7 Affix the coin cell battery on the speaker cable.
- 8 Connect the USH board, Touchpad board and LED board cables to the system board.
- 1 **NOTE:** If your computer has a WWAN card, then SIM card tray installation is a requirement.
- 9 Install the:
 - a heatsink module
 - b WWAN card
 - c WLAN card
 - d SSD card
 - e battery
 - f base cover
 - g SIM card tray
 - h Micro SD
- 10 Follow the procedure in [After working inside your computer](#).

Real time clock (RTC)

Removing the real time clock (RTC)

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

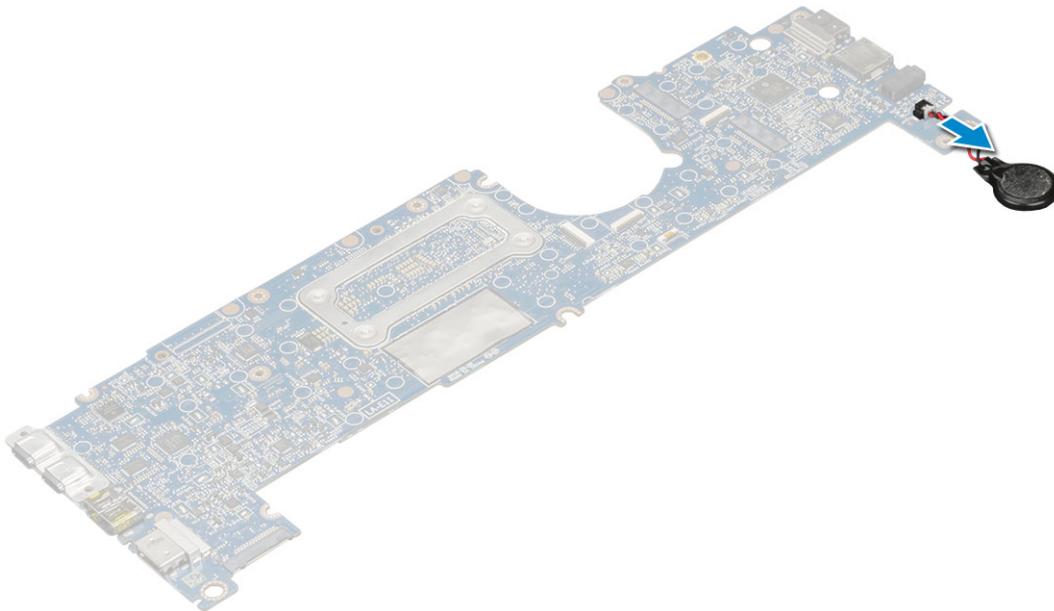
- a micro SD card
- b SIM card tray

NOTE: SIM Card tray is available only if your computer is shipped with a WWAN card.

- c base cover
- d battery
- e SSD card
- f WLAN card
- g WWAN card
- h heat sink assembly
- i system board

NOTE: RTC is located on the system board and hence system board removal is a requirement.

- 3 Disconnect the RTC cable to release it from the system board.



Installing real time clock (RTC)

- 1 Connect the coin cell battery cable to the system board.
- 2 Install:

- a system board
- b heat sink module
- c WWAN card
- d WLAN card
- e SSD card
- f battery
- g base cover
- h Micro SD
- i SIM card tray



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

RTC is located on the system board and hence system board must be installed after the installation of the RTC.

Keyboard

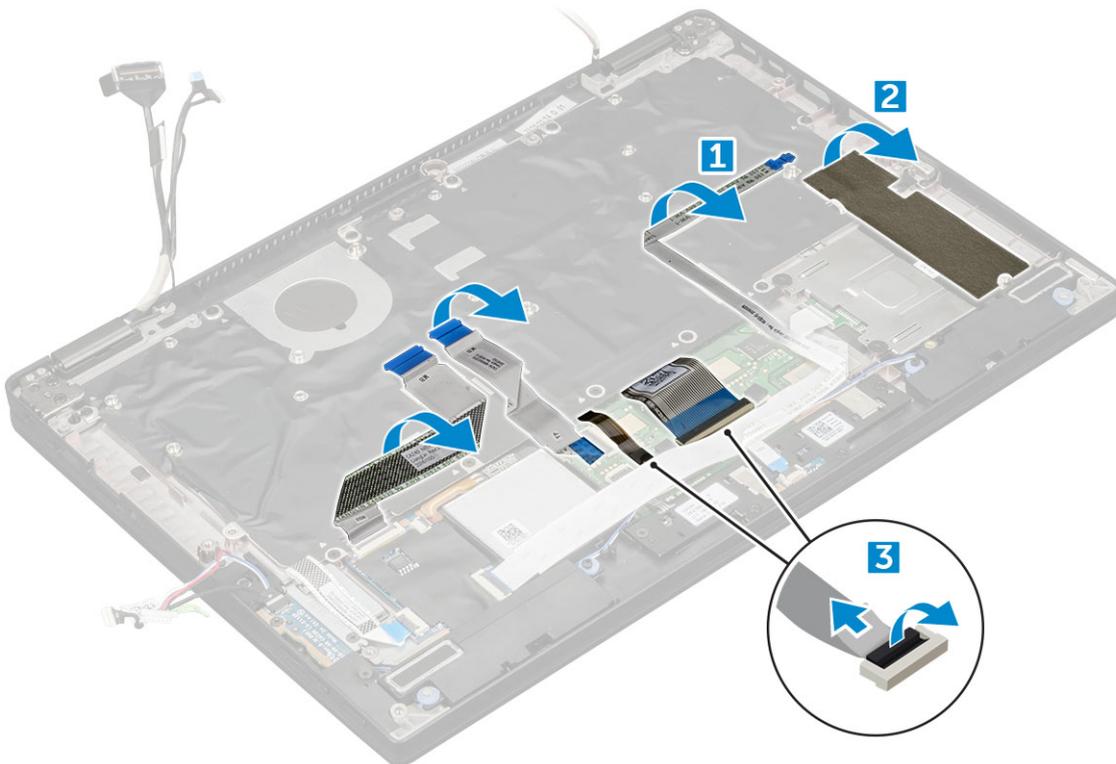
Removing keyboard assembly

NOTE: The keyboard and the keyboard tray together are called the keyboard assembly.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [Micro SD](#)
 - b [SIM card tray](#)

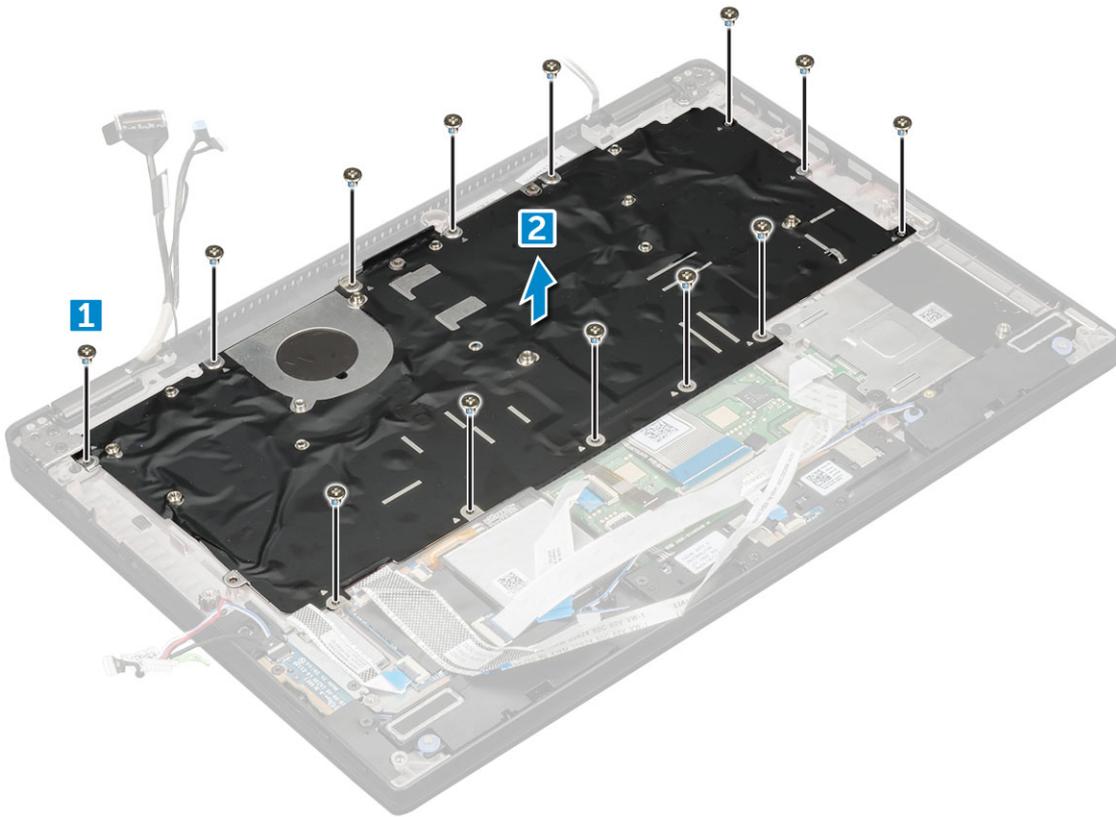
NOTE: SIM Card tray is available only if your computer is shipped with a WWAN card.

- c [base cover](#)
 - d [battery](#)
 - e [SSD card](#)
 - f [WLAN card](#)
 - g [WWAN card](#)
 - h [Heatsink assembly](#)
 - i [system board](#)
- 3 Peel and disconnect the cables:
 - a [LED board cable](#) [1]
 - b [SSD thermal pad](#) [2]
 - c [keyboard and backlit keyboard cables](#) [3]



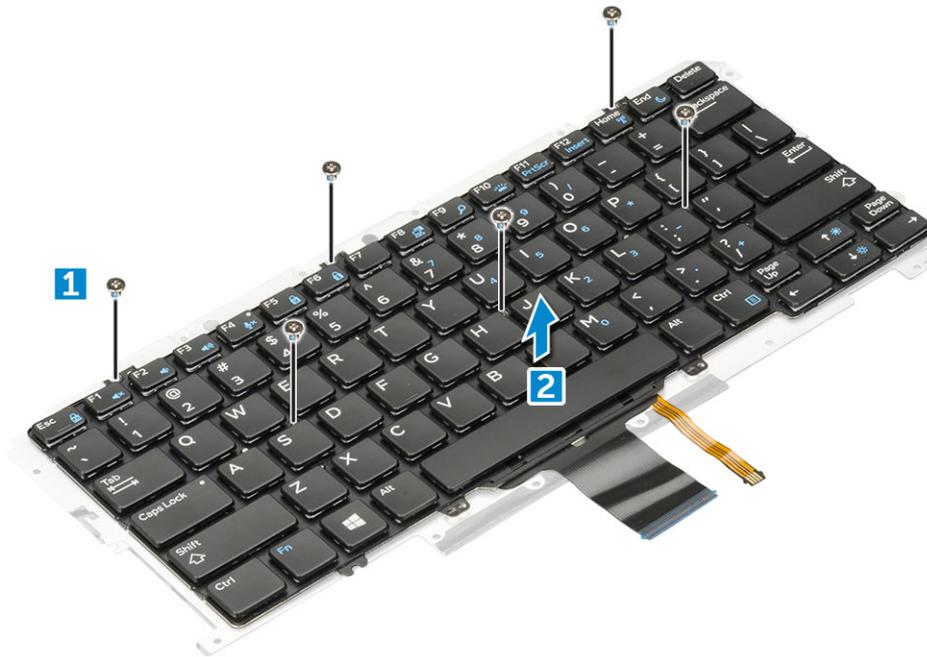
- 4 To remove the keyboard:
 - a Remove the M2.0 x 3.0 screws that secure the keyboard to the chassis [1].

- b Lift the keyboard from the chassis [2].



Removing keyboard from the keyboard tray

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the [keyboard](#)
- 3 Remove the keyboard from the keyboard support tray:
 - a Remove the M2.0 x 2.0 screws that secure the keyboard to the keyboard assembly [1].
 - b Lift the keyboard away from the keyboard support tray [2].



Installing keyboard to the keyboard tray

- 1 Align the keyboard with the screw holders on the keyboard tray.
- 2 Tighten the M2.0 x 2.0 screws to secure the keyboard to the keyboard tray.
- 3 Install the [keyboard](#).

Installing keyboard assembly

① **NOTE:** The keyboard and the keyboard tray together are called the keyboard assembly.

- 1 Align the keyboard assembly with the screw holders on the chassis.
- 2 Replace the M2.0 x 3.0 screws that secure the keyboard to the chassis.
- 3 Affix and connect the keyboard and the backlit keyboard cables to the keyboard.
- 4 Affix the LED board cable on the keyboard.
- 5 Affix the SSD thermal pad on the SSD module.

① **NOTE:** If your computer has a WWAN card, then SIM card tray installation is a requirement.

- 6 Install the:
 - a [system board](#)
 - b [heatsink module](#)
 - c [WWAN card](#)
 - d [WLAN card](#)
 - e [SSD card](#)
 - f [battery](#)
 - g [base cover](#)
 - h [Micro SD](#)
 - i [SIM card tray](#)
- 7 Follow the procedure in [After working inside your computer](#).

Display Panel

Removing the display panel

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [Micro SD](#)
 - b [base cover](#)
 - c [battery](#)
 - d [WLAN card](#)
 - e [WWAN card](#)
 - f [display assembly](#)
- 3 To release the display panel:
 - a Pry the display panel from the display hinges [1].
 - b Push the display hinges from the recesses at the bottom edge [2].
 - c Work your way around the edges to release the display panel [3,4].

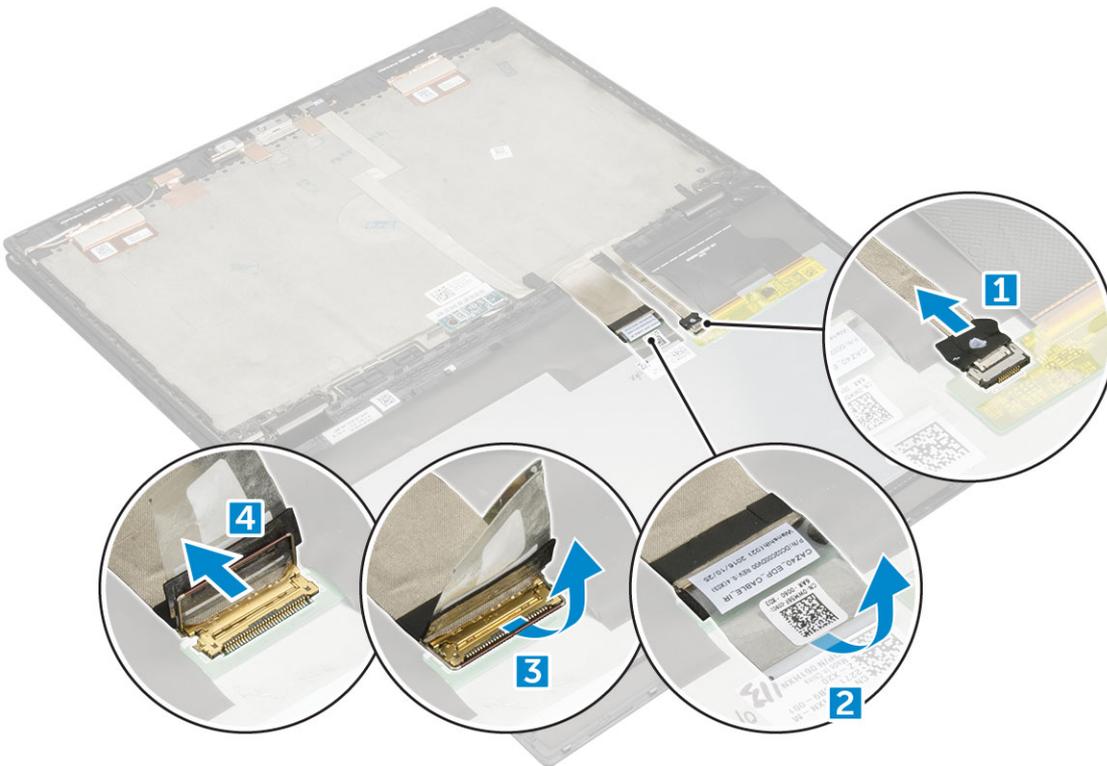


- 4 Flip the display panel.





- 5 Disconnect the cables:
- a G-sensor cable [1].
 - b Peel the tape that secures the display cable [2].
 - c Lift the metal tab that secures the display cable [3].
 - d Disconnect the display cable from the display panel.



Installing the display panel

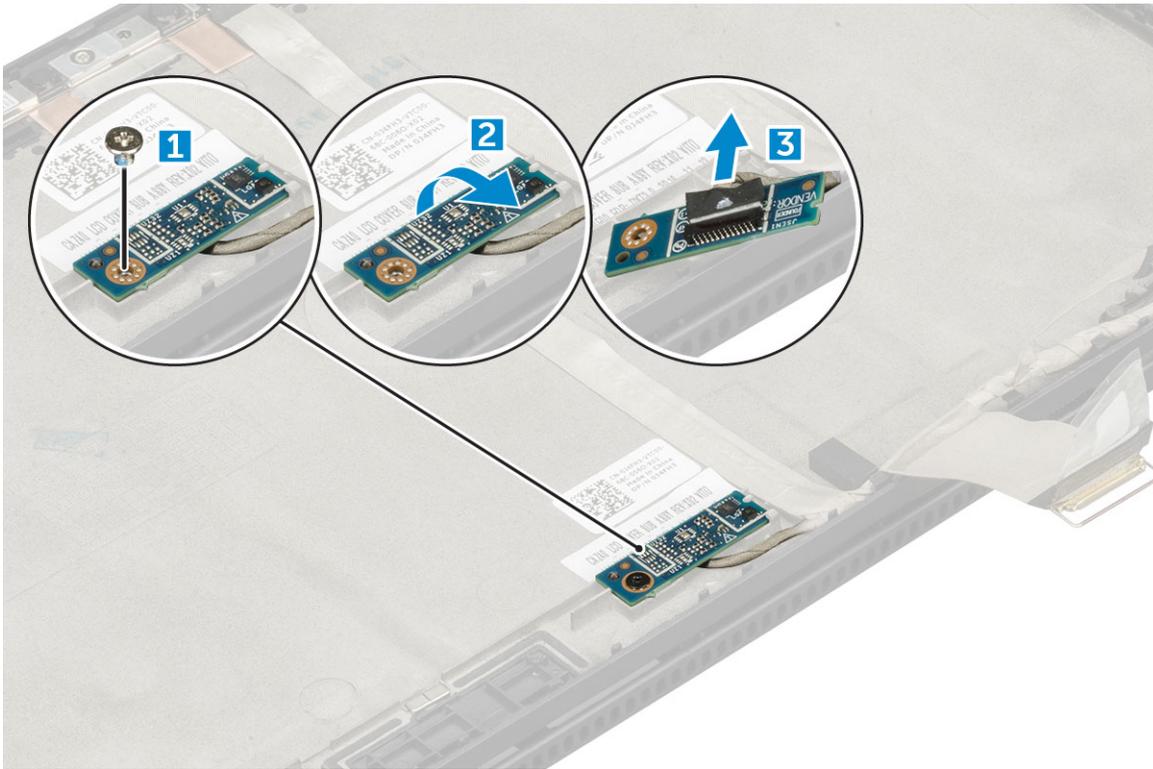
- 1 Place the display panel near the left over portion of the display cover .
- 2 Connect the display cable from the display cover to the display panel.
- 3 Affix the tape to secure the display cable on the display panel.
- 4 Connect the G-sensor cable to the connector on the display panel.
- 5 Flip the display panel on the display cover.
- 6 Press the edges to secure the display panel to the display assembly.
- 7 Install the:
 - a WLAN card
 - b WWAN card
 - c battery
 - d base cover
 - e Micro SD
- 8 Follow the procedure in [After working inside your computer](#).

G-sensor board

Removing the G-sensor board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a Micro SD
 - b base cover
 - c battery
 - d WLAN card
 - e WWAN card
 - f display assembly
 - g display panel
- 3 To remove the G-sensor board:
 - a Remove the M2.0 x 3.0 screw that secures the G-sensor board to the display cover [1].
 - b Flip the G-sensor board to reveal the display cable [2].
 - c Disconnect the display cable from the G-sensor board [3].





Installing the G-sensor board

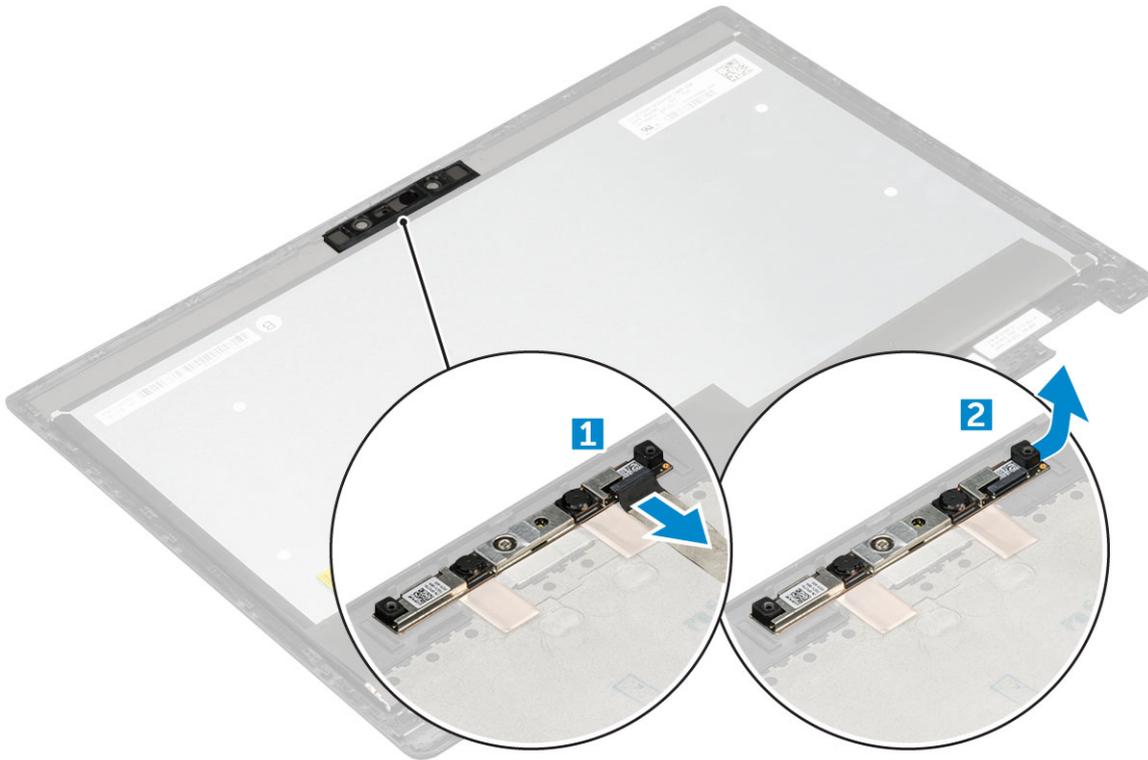
- 1 Place the G-sensor board on the display cover.
- 2 Connect the display cable to the G-sensor board.
- 3 Flip the G-sensor board to align with the screw holder on the display cover.
- 4 Replace the M2.0 x 3.0 screw to secure the G-sensor board to the display cover.
- 5 Install the:
 - a [display panel](#)
 - b [WLAN card](#)
 - c [WWAN card](#)
 - d [battery](#)
 - e [base cover](#)
 - f [Micro SD](#)
- 6 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 [Micro SD](#)
 - b [base cover](#)
 - c [battery](#)
 - d [WLAN card](#)

- e [WWAN card](#)
 - f [display assembly](#)
 - g [display panel](#)
- 3 To remove the camera:
- a Disconnect the camera cable from the camera module [1].
 - b Peel the camera module to lift it away from the display cover [2].



Installing the camera

- 1 Insert the camera module in the slot on the display cover.
- 2 Affix the camera module to secure the module to the display cover.
- 3 Connect the camera cable to the connector on the camera module.
- 4 Install the:
 - a [display panel](#)
 - b [display assembly](#)
 - c [WLAN card](#)
 - d [WWAN card](#)
 - e [battery](#)
 - f [base cover](#)
 - g [Micro SD](#)
- 5 Follow the procedure in [After working inside your computer](#).

Palmrest



Replacing palm rest

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
 - c SSD module
 - d WLAN card
 - e WWAN card
 - f power board
 - g heat sink assembly
 - h RTC
 - i LED board
 - j speaker
 - k smart card cage
 - l display assembly
 - m system board
 - n keyboard



The component you are left with is the palmrest.

- 3 Replace the palmrest.
- 4 Install the:
 - a keyboard assembly
 - b system board
 - c display assembly
 - d smart card cage
 - e speaker
 - f LED board
 - g RTC

- h heat sink
- i power board
- j WLAN card
- k WWAN card
- l PCIe SSD
- m battery
- n base cover

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



Technology and components

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

Topics:

- Power adapter
- Processors
- Chipset
- Memory features
- Display
- Camera features
- Hard drive
- USB features
- HDMI 1.4

Power adapter

This laptop is shipped with 45W or 65W power adapters.

⚠ 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

Latitude 5289 is shipped with any of the following processors:

- Intel Core i3-7100U processor (3M Cache, 3.90 GHz)
- Intel Core i5-7200U processor (3M Cache, up to 3.10 GHz)
- Intel Core i5-7300U processor (3M Cache, up to 3.50 GHz)
- Intel Core i7-7600U processor (4M Cache, up to 3.90 GHz)

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

Identifying processors in Windows 10

- 1 Type **Device Manager** in **Ask me anything** field.
The **Device Manager** window is displayed.
- 2 Click **Processor**.
The processor information is displayed.

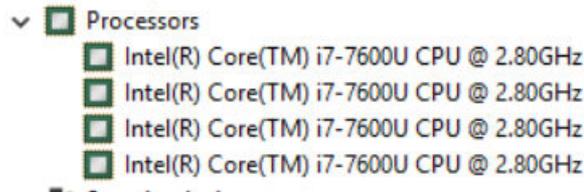
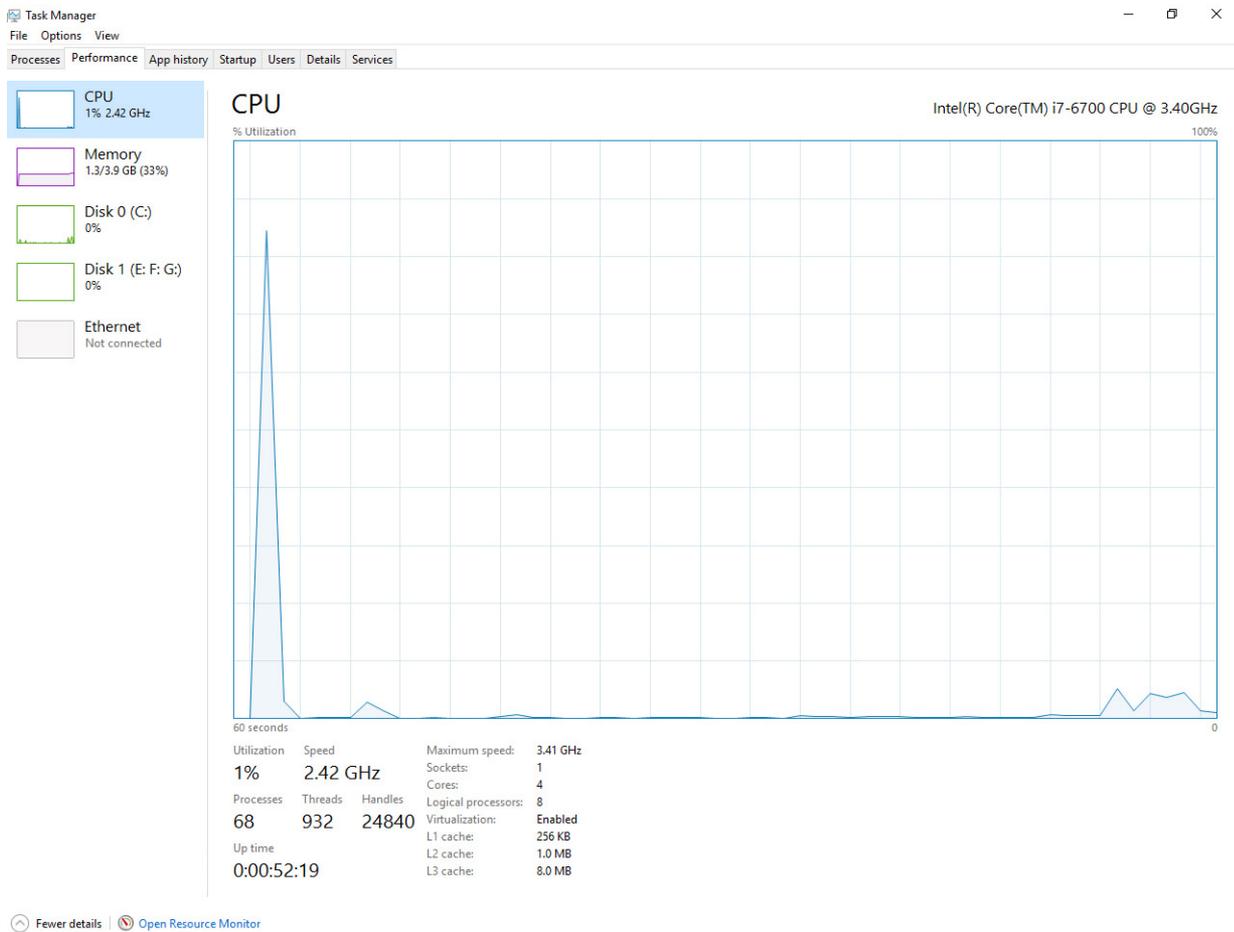


Figure 1. Processor

Verifying processor usage in task manager

- 1 Right click on the taskbar. Select **Task Manager**
- 2 You can also access the task manager by clicking **CTRL+ALT+DEL** keys.
The **Windows Task Manager** window is displayed.
- 3 Click the **Performance** tab in the **Windows Task Manager** window.

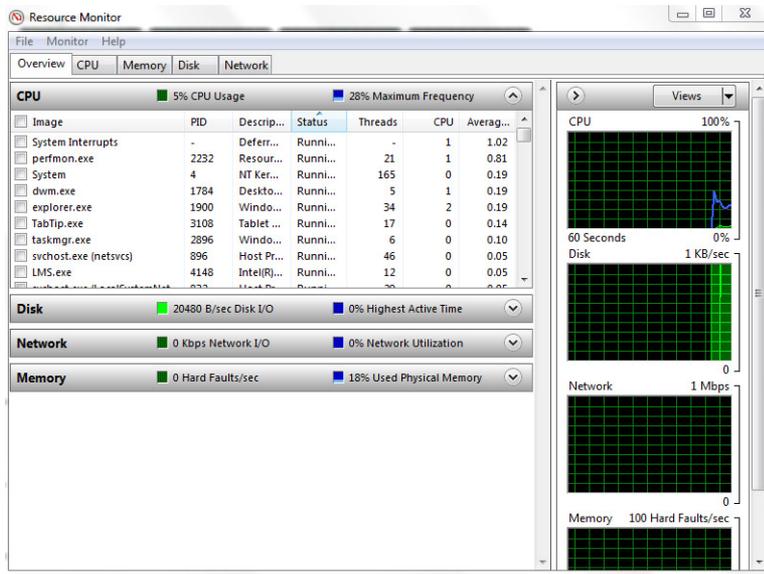


Verifying processor usage in resource monitor

- 1 Right click the on tablet.
- 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**.



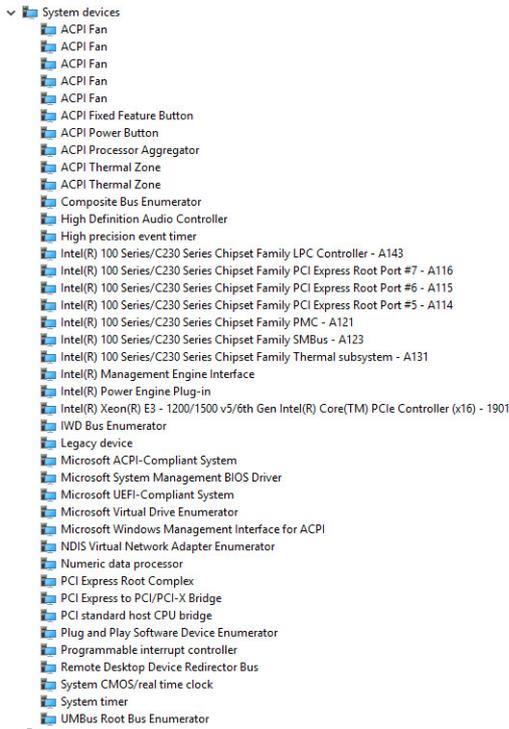
Chipset

The chipset is integrated on the processor.

Identifying chipset in device manager on Windows 10

NOTE: The Chipset information displayed is a generic image and may be different from what is displayed.

- 1 Type **Device Manager** in the **Ask me anything** field.
Device Manager window appears.
- 2 Expand **System Devices** and search for the chipset.



Memory features

Memory is integrated on the system board and it cannot be replaced as a module. Latitude 5289 supports the following memory configurations:

- 16 G 1866 MHz LPDDR3
- 4 G 1866 MHz LPDDR3
- 8 G 1866 MHz LPDDR3

Verifying system memory in setup

- 1 Turn on or restart your notebook.
- 2 When the Dell logo appears, press F2.
Entering BIOS setup message appears.
- 3 On the left pane, select **Settings > General > System Information**.
The memory information is displayed on the right pane.

Verifying system memory

Windows 10

- 1 Click the **Windows** button and select **All Settings**  **> System** .
- 2 Under **System**, click **About**.



Testing memory using ePSA

- 1 Turn on or restart your computer.
- 2 Press F12 or press Fn+PWR to invoke the ePSA diagnostics.
The PreBoot System Assessment (PSA) starts on your computer.

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

If the memory test results in 25 or less errors, or then the RMT basic feature automatically fixes the issues. The test will indicate a pass result since the defect(s) have been removed. If the memory test results in 56-50 errors, the RMT basic feature masks the defective memory blocks and results in pass with no memory replacement requirement. If the memory test results in more than 50 errors, then the test is stalled and the result indicates that memory module replacement is required.

Display

Display section details on identifying the display adapter from the display manager along with steps on how change the screen resolution. It also contains information about connecting multiple monitors.

Display options

This laptop is shipped with 12.5-inch FHD Touch with Corning Gorilla Glass 4 (1920 x 1080) display.

Identifying display adapter

- 1 Type **Device manager** in the **Ask me anything** field.
The **Display Manager** window is displayed.
- 2 Expand the **Display adapters**.
The display adapter information is displayed.

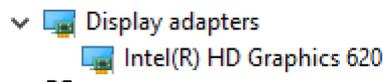
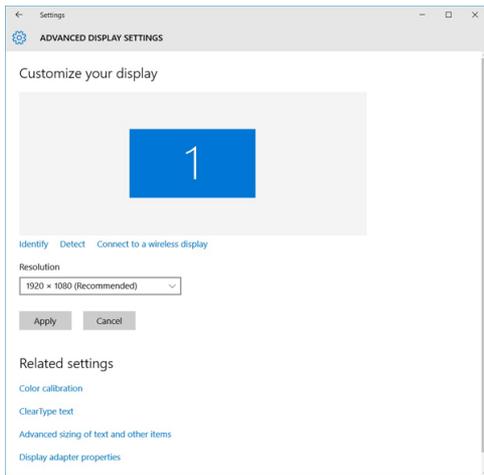


Figure 2. display adapter

Changing the screen resolution

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



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

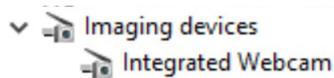
 **NOTE:** For more information, see the document that is shipped with your display device.

Camera features

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

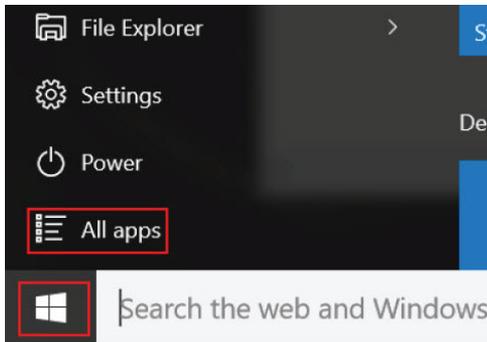


Starting the camera (Windows 7, 8.1 and 10)

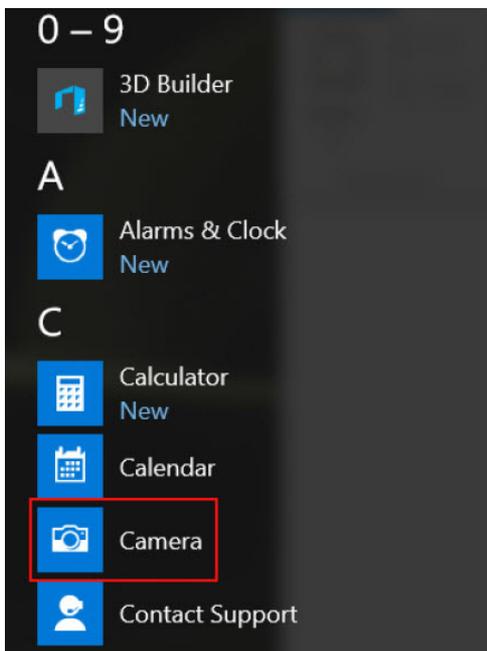
To start the camera, open an application that uses the camera. For instance, if you tap the Skype software that is shipped with the laptop, the camera turns on. Similarly, if you are chatting on the internet and the application requests to access the webcam, the webcam turns on.

Starting the camera application

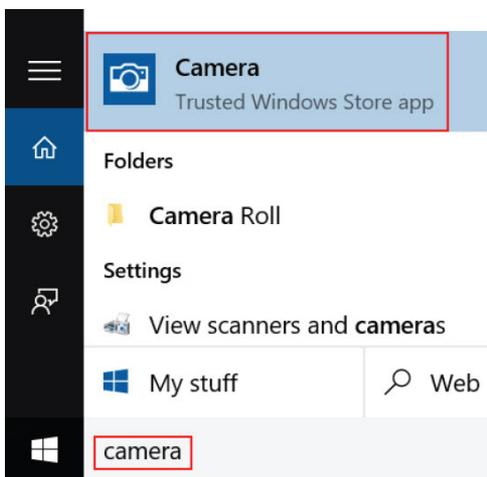
- 1 Tap or click the **Windows** button and select **All apps**.



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



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



Hard drive

This section explains how to identify the hard drive type installed in the system.

Storage options

This laptop supports M.2 SATA SSD and M.2 PCIe NVMe SSDs.

Identifying the storage device 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:
 - Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.

Storage device (HDD or SSD type) is listed under the **System Information** under the **General** group.

Identifying storage device in Windows 10

- 1 Type **Device Manager** in **I'm Cortana, Ask me anything** field.
The **Device Manager** window is displayed.
- 2 Click **Disk Drives**.
The storage devices installed in the system are displayed.

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.

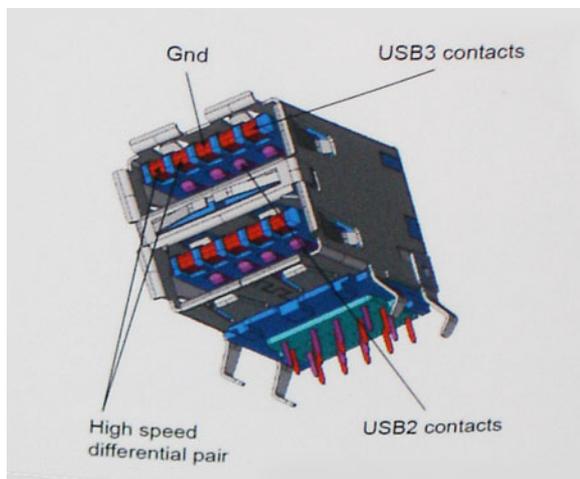


Speed

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.

HDMI 1.4

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

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

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



HDMI 1.4 Features

- **HDMI Ethernet Channel** - Adds high-speed networking to an HDMI link, allowing users to take full advantage of their IP-enabled devices without a separate Ethernet cable
- **Audio Return Channel** - Allows an HDMI-connected TV with a built-in tuner to send audio data "upstream" to a surround audio system, eliminating the need for a separate audio cable
- **3D** - Defines input/output protocols for major 3D video formats, paving the way for true 3D gaming and 3D home theater applications
- **Content Type** - Real-time signaling of content types between display and source devices, enabling a TV to optimize picture settings based on content type
- **Additional Color Spaces** - Adds support for additional color models used in digital photography and computer graphics
- **4 K Support** - Enables video resolutions far beyond 1080p, supporting next-generation displays that will rival the Digital Cinema systems used in many commercial movie theaters
- **HDMI Micro Connector** - A new, smaller connector for phones and other portable devices, supporting video resolutions up to 1080p
- **Automotive Connection System** - New cables and connectors for automotive video systems, designed to meet the unique demands of the motoring environment while delivering true HD quality

Advantages of HDMI

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

System specifications

NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

Topics:

- [System specifications](#)
- [Processor specifications](#)
- [Memory specifications](#)
- [Video specifications](#)
- [Display specifications](#)
- [Audio specifications](#)
- [Storage options](#)
- [Communication specifications](#)
- [Near field communication \(NFC\) specifications](#)
- [Fingerprint reader specifications](#)
- [Ports and connector specifications](#)
- [Touchpad specifications](#)
- [Camera specifications](#)
- [IR camera specifications](#)
- [Display specifications](#)
- [AC adapter specifications](#)
- [Battery specifications](#)
- [Physical specifications](#)
- [Environmental specifications](#)

System specifications

Feature	Specification
Chipset	Integrated in the processor
DRAM bus width	64-bit
Flash EPROM	SPI 128 Mbits
PCIe bus	100 MHz

Processor specifications

Feature	Specification
Types	<ul style="list-style-type: none"> • 7th generation Intel Core i3-7100U Processor (up to 2.4GHz, 3M cache, 15W) • 7th generation Intel Core i5-7200U Processor (up to 3.1GHz, 3M cache, 15W)



Feature	Specification
	<ul style="list-style-type: none"> 7th generation Intel Core i5-7300U Processor (up to 3.5GHz, 3M cache, 15W), vPro 7th generation Intel Core i7-7600U Processor (up to 3.9GHz, 4M cache, 15W), vPro

Memory specifications

Feature	Specification
Memory capacity	up to 16 GB (on board)
Memory type	LPDDR3 SDRAM—1866 MHz

Video specifications

Feature	Specification
Type	Integrated on system board
Unified Memory Architecture controller	Intel HD Graphics 620
External display support	<ul style="list-style-type: none"> On system – eDP (internal display), HDMI 1.4, Type-C port Optional – Type-C port with VGA, Type-C port with DVI

Display specifications

Feature	Specification
Type	12.5–inch Touch with corning gorilla glass 4, active pen support, anti-reflective and anti-smudge
Luminance	255 nits (typical)
Diagonal	317.5 mm (12.5 inches)
Native resolution	1920x1080
Refresh rate	60 Hz
Maximum viewing angles—horizontal	80/-80 degrees
Maximum viewing angles—vertical	80/-80 degrees
Pixel pitch	FHD 0.144 mm

Audio specifications

Feature	Specification
Types	Four-channel high-definition audio
Controller	Waves MaxxAudio Pro
Stereo conversion	16/20/24-bit—analog-to-digital and digital-to-analog
Internal interface	High-definition audio

Feature	Specification
External interface	Microphone-in, stereo headphones, and universal audio jack
Speakers	Two
Internal speaker amplifier	2 W (RMS) per channel
Volume controls	Volume control buttons and Hot keys

Storage options

Feature	Specification
Storage options	<ul style="list-style-type: none"> · M.2 128 GB/256 GB/360 GB SATA SSD · M.2 256 GB/512 GB/1 TB PCIe NVMe SSD · M.2 256 GB/512 GB PCIe NVMe SED · M.2 128 GB/256 GB secondary PCIe SSD (in WWAN slot)

Communication specifications

Features	Specification
Wireless	Internal wireless local area network (WLAN), wireless wide area network (WWAN), WiGig <ul style="list-style-type: none"> · Bluetooth 4.1 LE · Bluetooth 4.2 (Intel)- HW ready, SW depends on OS, Windows 10 supports up to 4.1

Near field communication (NFC) specifications

Feature	Specification
Type	Broadcom BCM58102 NFC controller
NFC Standard	ISO/IEC 18092, ISO/IEC 21481, ISO/IEC 14443 Type A and B ¹ , Japanese Industrial Standard (JIS) (X) 6319-4, and ISO/IEC 15693 standards
Support NFC Card	NFC Forum Type1 / Type 2 / Type 3 / Type 4 ; ISO/IEC 14443-4 stands-based PICC; ISO/IEC 15693 stands-based VICC ; ISO/IEC 18000-3 ; Koviio
Temperature (operating)	0° to 70° C
Humidity	<85% under operation (at operating temperature)

Fingerprint reader specifications

Feature	Specification
Sensor technology	Active thermal
Sensor resolution	385 dpi
Sensor size	11.9 mm x 11.9 mm
Sensor pixel size	180x180 pixels



Ports and connector specifications

Feature	Specification
Audio	<ul style="list-style-type: none">· Universal audio jack· Volume buttons
Video	HDMI 1.4
USB	<ul style="list-style-type: none">· One USB 3.1 Gen 1· One USB 3.1 Gen 1 with PowerShare· Two USB 3.1 Gen 1 with Type-C
Memory card reader	Micro SD 4.0
Universal Subscriber Identity Module (uSIM) card-WWAN	One
Docking port	USB Type-C docking
Express Card	None

Touchpad specifications

Feature	Specification
Active area	<ul style="list-style-type: none">· X-axis - 90.5 mm (3.56 inches)· Y-axis - 50.0 mm (1.97 inches)
Multi-touch	Configurable single finger and multi-finger gestures

Camera specifications

Feature	Specification
Type	HD fixed focus
Sensor type	CMOS sensor technology
Imaging rate	Up to 30 frames per second
Video Resolution	1280 x 720 pixels

IR camera specifications

Feature	Specification
Type	VGA IR camera
Sensor type	CMOS sensor
Resolution: Motion Video	Win Hello Recognition
Imaging Rate	up to 15- fps



Display specifications

Feature	Specification
Type	12.5-inch Touch with corning gorilla glass 4, active pen support, anti-reflective and anti-smudge
Luminance	255 nits (typical)
Diagonal	317.5 mm (12.5 inches)
Native resolution	1920x1080
Refresh rate	60 Hz
Maximum viewing angles—horizontal	80/-80 degrees
Maximum viewing angles—vertical	80/-80 degrees
Pixel pitch	FHD 0.144 mm

AC adapter specifications

Feature	Specification
Type	45 W, 65 W, 90 W with USB Type-C
Input voltage	100 V AC to 240 V AC
Input current—maximum	1.3 A/1.5 A/1.7 A
Input frequency	50 Hz to 60 Hz
Output current—45 W	<ul style="list-style-type: none">• 20V/2.25A (Continuous)• 5.0V/2A (Continuous)
Output current—65 W	<ul style="list-style-type: none">• 20V/3.25A (Continuous)• 15V/3A (Continuous)• 9V/3A (Continuous)• 5V/3A (Continuous)
Output current—90 W	<ul style="list-style-type: none">• 20V/4.5A (Continuous)• 15V/3A (Continuous)• 9V/3A (Continuous)• 5V/3A(Continuous)
Rated output voltage—45 W	20 V DC/5 V DC
Rated output voltage—65 W and 90 W	20 V DC/15 V DC/9 V DC/5 V DC
Weight	<ul style="list-style-type: none">• 45 W—0.17 kg (0.37 lb)• 65 W —0.216 kg (0.476 lb)



Feature	Specification
	<ul style="list-style-type: none"> 90 W—0.291 kg (0.641 lb)
Dimensions—45 W	<ul style="list-style-type: none"> Height—22 mm (0.87 inch) Width—55 mm (2.17 inches) Depth—87 mm (3.42 inches)
Dimensions—65 W	<ul style="list-style-type: none"> Height—99 mm (3.90 inches) Width—66 mm (2.60 inches) Depth—22 mm (0.87 inch)
Dimensions—90W	<ul style="list-style-type: none"> Height-130 mm (5.12 inches) Width-66 mm (2.60 inches) Depth-22 mm (0.87 inch)
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)

Battery specifications

Feature	Specification
Type	<ul style="list-style-type: none"> 45 WHr Polymer Battery with ExpressCharge 60 WHr Polymer Battery with ExpressCharge 60 WHr Long Life Cycle Polymer Battery

45 WHr Polymer Battery with ExpressCharge :

Length	238 mm (9.37 inches)
Width	97.2 mm (3.82 inches)
Height	4.7 mm (0.19 inch)
Weight	220 g (0.48 lb)
Voltage	11.4 VDC
Life span	300 discharge per charge cycles

60 WHr Polymer Battery with ExpressCharge:

Length	238 mm (9.37 inches)
Width	95.9 mm (3.78 inch)
Height	5.7 mm (0.22 inch)
Weight	270 g (0.6 lb)

Feature	Specification
Voltage	7.6 VDC
Life span	300 discharge per charge cycles

60 WHr Long Life Cycle Polymer Battery:

Length	238 mm (9.37 inches)
Width	95.9 mm (3.78 inch)
Height	5.7 mm (0.22 inch)
Weight	270 g (0.6 lb)
Voltage	7.6 VDC
Life span	300 discharge per charge cycles
Temperature range	
Operating	<ul style="list-style-type: none"> Charge: 0°C to 50°C (32°F to 122°F) Discharge: 0°C to 70°C (32°F to 158°F)
Non-operating	- 20°C to 65°C (- 4°F to 149°F)
Coin cell battery	3 V CR2032 lithium coin cell

Physical specifications

Feature	Specification
Front height	0.47 inches (12.03 mm)
Back height	0.73 inches (18.45 mm)
Width	12.00 inches (304.8 mm)
Depth	8.26 inches (210.0 mm)
Weight	2.97 lb (1.34 kg)

Environmental specifications

Temperature	Specifications
Operating	0°C to 60°C (32°F to 140°F)
Storage	-40 °C to 65 °C (-40 °F to 149 °F)
Relative humidity	Specifications
—maximum	
Operating	20 % to 80 % (non-condensing)
Storage	5% to 95% (non-condensing)



Altitude— maximum	Specifications
Operating	0 m to 3048 m (0 to 10,000 ft) 0° to 40°C (32° to 104°F)
Non-operating	0 m to 10668 m (0 to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ISA S71.04–1985



System setup

System setup enables you to manage your notebook hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

- [Boot menu](#)
- [Navigation keys](#)
- [System setup options](#)
- [General screen options](#)
- [System Configuration screen options](#)
- [Video screen options](#)
- [Security screen options](#)
- [Secure Boot screen options](#)
- [Intel software guard extensions screen options](#)
- [Performance screen options](#)
- [Power management screen options](#)
- [POST behavior screen options](#)
- [Manageability](#)
- [Virtualization support screen options](#)
- [Wireless screen options](#)
- [Maintenance screen options](#)
- [System logs screen options](#)
- [Updating the BIOS in Windows](#)
- [System and setup password](#)

Boot menu

Press <F12> when the Dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system. Diagnostics and BIOS Setup options are also included in this menu. The devices listed on the boot menu depend on the bootable devices in the system. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the system. Using the boot menu does not make any changes to the boot order stored in the BIOS.

The options are:

- Legacy Boot:
 - Internal HDD
 - Onboard NIC



- USB optical drive (if available)
- UEFI Boot:
 - Windows Boot Manager
- Other Options:
 - BIOS Setup
 - BIOS Flash Update
 - Diagnostics
 - Change Boot Mode Settings

Navigation keys

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

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

NOTE: For the standard graphics browser only.

Esc Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

System setup options

NOTE: Depending on the notebook 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	<p>This section lists the primary hardware features of your computer.</p> <ul style="list-style-type: none"> • System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, Express Service Code, the Signed Firmware update—enabled by default • Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM ASize, DIMM B Size, • 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: Displays M.2 SATA, M.2 PCIe SSD-0, LOM MAC Address, Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, WiGig Device, Cellular Device, Bluetooth Device
Battery Information	Displays the battery status health and whether the AC adapter is installed.
Boot Sequence	<p>Allows you to change the order in which the computer attempts to find an operating system.</p> <ul style="list-style-type: none"> • Diskette Drive

Option	Description
	<ul style="list-style-type: none"> · Internal HDD · USB Storage Device · CD/DVD/CD-RW Drive · Onboard NIC
Boot sequence options	<ul style="list-style-type: none"> · Windows boot manager · WindowsIns
Boot list options	<ul style="list-style-type: none"> · Legacy · UEFI—selected by 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 disabled by default.
UEFI boot path security	<ul style="list-style-type: none"> · Always, except internal HDD · Always · Never
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: <ul style="list-style-type: none"> · Disabled · AHCI · RAID On: 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: <ul style="list-style-type: none"> · SATA-0 · M.2 PCI-e SSD-0 · SATA-2
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. <ul style="list-style-type: none"> · Enable SMART Reporting
USB Configuration	This is an optional feature. <p>This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices—HDD, memory key, floppy.</p> <p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p>



Option	Description
	<p>The options are:</p> <ul style="list-style-type: none"> • Enable Boot Support—enabled by default • Enable the Thunderbolt ports • Always Allow dell docks—enabled by default • Enable External USB Port—enabled by default • Enable Thunderbolt Boot Support • Enable Thunderbolt (and PCIE behind TBT) Preboot • Security level-No security • Security level-User configuration • Security level-Secure connect • Security level- Display port only <p> NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p>
USB PowerShare	<p>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</p>
Audio	<p>This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected. The options are:</p> <ul style="list-style-type: none"> • Enable Microphone—enabled by default • Enable Internal Speaker—enabled by default
Keyboard Illumination	<p>This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are:</p> <ul style="list-style-type: none"> • Disabled • Dim (50%) • Bright—enabled by default
Keyboard Backlight Timeout on AC	<p>The Keyboard Backlight Timeout dims out with AC option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are:</p> <ul style="list-style-type: none"> • 5 sec • 10 sec—enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Keyboard Backlight Timeout on Battery	<p>The Keyboard Backlight Timeout dims out with the Battery option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are:</p> <ul style="list-style-type: none"> • 5 sec • 10 sec—enabled by default • 15 sec • 30 sec



Option	Description
	<ul style="list-style-type: none"> · 1 min · 5 min · 15 min · Never
Keyboard Backlight with AC	The Keyboard Backlight with AC option does not affect the main keyboard illumination feature. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. This option is enabled by default.
Keyboard Backlight Timeout on AC	The Keyboard Backlight Timeout dims out with AC option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are: <ul style="list-style-type: none"> · 5 sec · 10 sec—enabled by default · 15 sec · 30 sec · 1 min · 5 min · 15 min · Never
Touchscreen	It controls whether the screen is enabled or disabled. This option is enabled by default.
Unobtrusive Mode	This option, when enabled, pressing Fn+F7 turns off all light and sound emissions in the system. To resume normal operation, press Fn+F7 again. This option is disabled by default.
Miscellaneous Devices	Allows you to enable or disable the following devices: <ul style="list-style-type: none"> · Enable Camera—enabled by default · Secure Digital (SD) card—enabled by default · Secure Digital (SD) card boot · Secure Digital (SD) card read-only-mode

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.

Security screen options

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password. <ul style="list-style-type: none"> 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.



Option	Description
	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
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 8 characters long.
Password Configuration	Allows you to specify the minimum and max password lengths of the Administrator and System passwords.
	<ul style="list-style-type: none"> <li data-bbox="331 642 1082 674">· min-4—by default, if you want to change you can increase the number <li data-bbox="331 678 1082 703">· 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:
	<ul style="list-style-type: none"> <li data-bbox="331 831 520 863">· Disabled <li data-bbox="331 867 520 892">· 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.
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	This option controls whether the system allows BIOS updates using UEFI capsule update packages. This option is enabled by default
TPM 2.0 Security	Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:
	<ul style="list-style-type: none"> <li data-bbox="331 1419 924 1451">· TPM On—enabled by default <li data-bbox="331 1455 924 1486">· Clear <li data-bbox="331 1491 924 1522">· PPI Bypass for Enable Commands—enabled by default <li data-bbox="331 1526 924 1558">· PPI Bypass for Disabled Commands <li data-bbox="331 1562 924 1593">· Attestation enable—enabled by default <li data-bbox="331 1598 924 1629">· Key storage enable—enabled by default <li data-bbox="331 1633 924 1665">· SHA-256—enabled by default <li data-bbox="331 1669 924 1701">· Disabled <li data-bbox="331 1705 924 1745">· Enabled—enabled by default
	 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:

Option	Description
	<ul style="list-style-type: none"> · Deactivate · Disable · Activate—enabled by default <p> NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes are allowed</p>
CPU XD Support	<p>Allows you to enable the Execute Disable mode of the processor.</p> <p>Enable CPU XD Support—enabled by default</p>
OROM Keyboard Access	<p>Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are:</p> <ul style="list-style-type: none"> · Enabled—enabled by default · One Time Enable · Disable <p>Default setting: Enable</p>
Admin Setup Lockout	<p>Allows you to prevent users from entering Setup when an Administrator password is set.</p> <p>Default Setting: This option is enabled</p>
Master password lockout	<p>This option is not enabled by default</p>

Secure Boot screen options

Option	Description
Secure Boot Enable	<p>This option enables or disables the Secure Boot feature.</p> <ul style="list-style-type: none"> · Disabled · Enabled <p>Default setting: Enabled</p>

Intel software guard extensions screen options

Option	Description
Intel SGX Enable	<p>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:</p> <ul style="list-style-type: none"> · Disabled · Enabled · Software controlled <p>Default setting: Software controlled</p>
Enclave Memory Size	<p>This option allows you to set the SGX Enclave Reserve Memory Size. The options are:</p> <ul style="list-style-type: none"> · 32 MB · 64 MB



Option	Description
	<ul style="list-style-type: none"> 128 MB—enabled by default

Performance screen options

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

Power management screen options

Option	Description
AC Behavior	<p>Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected.</p> <p>Default setting: Wake on AC is not selected.</p>
Auto On Time	<p>Allows you to set the time at which the computer must turn on automatically. The options are:</p> <ul style="list-style-type: none"> Disabled Every Day Weekdays Select Days



Option	Description
USB Wake Support	Allows you to enable USB devices to wake the system from Standby. <div data-bbox="339 268 1398 359" style="border-left: 1px solid black; padding-left: 10px;"> <p>NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.</p> </div> <ul style="list-style-type: none"> · Enable USB Wake Support · Wake on Dell USB-C dock <p>Default setting: The option is disabled.</p>
Wireless Radio Control	Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection. <ul style="list-style-type: none"> · Control WLAN Radio · Control WWAN Radio <p>Default setting: The options are disabled.</p>
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. <ul style="list-style-type: none"> · Disabled · LAN Only · WLAN Only · LAN or WLAN <p>Default setting: Disabled</p>
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. <ul style="list-style-type: none"> · 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: <ul style="list-style-type: none"> · Adaptive—enabled by default · Standard—Fully charges your battery at a standard rate. · ExpressCharge—The battery charges over a shorter time using Dell’s fast charging technology This option is enabled by default.



Option	Description
	<ul style="list-style-type: none"> · Primarily AC use · Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p>i NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p>
Sleep mode	<ul style="list-style-type: none"> · OS Automatic selection—enabled by default · Force S3
Type-C connector power	<ul style="list-style-type: none"> · 7.5 Watts · 15 Watts—enabled by default

POST behavior screen options

Option	Description
Adapter Warnings	<p>Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters.</p> <p>Default setting: Enable Adapter Warnings</p>
Keypad (Embedded)	<p>Allows you to choose one of two methods to enable the keypad that is embedded in the internal keyboard.</p> <ul style="list-style-type: none"> · Fn Key Only—default. · By Numlock <p>i NOTE: When setup is running, this option has no effect. Setup works in Fn Key Only mode.</p>
Mouse/Touchpad	<p>Allows you to define how the system handles mouse and touch pad input. The options are:</p> <ul style="list-style-type: none"> · Serial Mouse · PS2 Mouse · Touchpad/PS-2 Mouse: This option is enabled by default.
Numlock Enable	<p>Allows you to enable the Numlock option when the computer boots.</p> <p>Enable Network. This option is enabled by default.</p>
Fn Key Emulation	<p>Allows you to set the option where the Scroll Lock key is used to simulate the Fn key feature.</p> <p>Enable Fn Key Emulation (default)</p>
Fn Lock Options	<p>Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are:</p> <ul style="list-style-type: none"> · Lock Mode Disable/Standard—enabled by default · Lock Mode Enable/Secondary
MEBx Hotkey	<p>Allows you to specify whether the MEBx Hotkey function should enable, during the system boot.</p>



Option	Description
	Default Setting: Enable MEBx Hotkey
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: <ul style="list-style-type: none"> Minimal Thorough—enabled by default Auto
Extended BIOS POST Time	Allows you to create an extra preboot delay. The options are: <ul style="list-style-type: none"> 0 seconds—enabled by default. 5 seconds 10 seconds
Security audit	<ul style="list-style-type: none"> Disable display of security audit display—not enabled
Full Screen Log	<ul style="list-style-type: none"> Enable Full Screen Logo—not enabled
Warnings and errors	<ul style="list-style-type: none"> Prompt on warnings and errors—enabled by default Continue on warnings Continue on warnings and errors

Manageability

Option	Description
USB provision	Enable USB provision is not selected by default
MEBX Hotkey — enabled by default	Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. <ul style="list-style-type: none"> Disabled Enabled Default setting: Disabled

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.



Option	Description
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 the 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: <ul style="list-style-type: none"> · WWAN · GPS (on WWAN Module) · WLAN/WiGig · Bluetooth All the options are enabled by default. <p>NOTE: For WLAN and WiGig enable or disable controls are tied together and they cannot be enabled or disabled independently.</p>
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. <ul style="list-style-type: none"> · WWAN/GPS · WLAN/WiGig · Bluetooth All the options are enabled by default.

NOTE: IMEI number for WWAN can be found on the outer box or the WWAN card.

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: <ul style="list-style-type: none"> · 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. <ul style="list-style-type: none"> · BIOS Recovery from Hard Drive—enabled by default

Option	Description
	<ul style="list-style-type: none"> Always perform integrity check—disabled by default

System logs screen options

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

Updating the BIOS in Windows

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

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

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

NOTE: Choose the appropriate category to reach the product page

- Select your computer model and the **Product Support** page of your computer appears.
- Click **Get drivers** and click **Drivers and Downloads**.
The Drivers and Downloads section opens.
- Click **Find it myself**.
- Click **BIOS** to view the BIOS versions.
- Identify the latest BIOS file and click **Download**.
- Select your preferred download method in the **Please select your download method below** window, click **Download File**.
The **File Download** window appears.
- Click **Save** to save the file on your computer.
- 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.

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 is disabled.

Assigning a system password and setup password

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

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

- 1 In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
- 2 Select **System Password** and create a password in the **Enter the new password** field.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (:), ([), (\), (]), (^).
- 3 Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
- 4 Press Esc and a message prompts you to save the changes.
- 5 Press Y to save the changes.
The computer reboots.

Deleting or changing an existing system and/or setup password

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.

Troubleshooting

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

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

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

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

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

Running the ePSA diagnostics

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

Diagnostic LED

This section details the diagnostic features of the battery LED in a notebook.

Instead of beep codes errors are indicated via the bicolor Battery Charge LED. A specific blink pattern is followed by flashing a pattern of flashes in amber, followed by white. The pattern then repeats.

ℹ NOTE: The diagnostic pattern will consist of a two digit number being represented by a first group of LED blinks (1 through 9) in amber, followed by a 1.5 second pause with the LED off, and then a second group of LED blinks (1 through 9) in white. This is then followed by a three second pause, with the LED off, before repeating over again. Each LED blink takes 0.5 seconds.



The system will not shutdown when displaying the Diagnostic Error Codes. Diagnostic Error Codes will always supersede any other use of the LED. For instance, on Notebooks, battery codes for Low Battery or Battery Failure situations will not be displayed when Diagnostic Error Codes are being displayed:

Table 3. LED pattern

Blinking pattern		Problem Description	Suggested Resolution
Amber	White		
2	1	processor	processor failure
2	2	system board, BIOS ROM	system board, covers BIOS corruption or ROM error
2	3	memory	no memory/no RAM detected
2	4	memory	memory failure/RAM failure
2	5	memory	invalid memory installed
2	6	system board; chipset	system board/ chipset error
2	7	display	display failure
3	1	RTC power failure	coin-cell battery failure
3	2	PCI/Video	PCI/Video card/chip failure
3	3	BIOS recovery 1	recovery image not found
3	4	BIOS recovery 2	recovery image found but invalid



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.

