

Dell Latitude 5480

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.....	8
After working inside your computer.....	8
2 Chassis view.....	9
System front view.....	9
System back view.....	10
System side view.....	10
System side view.....	11
System top view.....	12
3 Removing and installing components.....	13
Recommended tools.....	13
Subscriber Identity Module(SIM) board.....	13
Installing the Subscriber Identification Module (SIM) card.....	13
Removing the Subscriber Identification Module (SIM) card.....	13
Base cover.....	14
Removing base cover.....	14
Installing base cover.....	14
Battery.....	15
Removing battery.....	15
Installing battery.....	15
Solid State Drive (SSD).....	16
Removing optional M.2 Solid State Drive (SSD).....	16
Installing optional M.2 SSD.....	17
Hard drive.....	17
Removing hard drive assembly.....	17
Installing hard drive assembly.....	18
Coin cell battery.....	18
Removing the coin cell battery.....	18
Installing coin cell battery.....	19
WLAN card.....	19
Removing WLAN card.....	19
Installing WLAN card.....	20
Memory module.....	20
Removing memory module.....	20
Installing memory module.....	21
Keyboard.....	21
Removing keyboard trim.....	21
Installing keyboard trim.....	22
Removing keyboard.....	22

Installing keyboard.....	23
Heat sink.....	23
Removing heatsink	23
Installing heat sink	24
System fan.....	24
Removing the system fan.....	24
Installing the system fan.....	25
Power connector port.....	25
Removing power connector port.....	25
Installing power connector port.....	26
Chassis frame.....	26
Removing chassis frame.....	26
Installing chassis frame.....	28
System board.....	28
Removing system board.....	28
Installing system board.....	31
Touchpad panel.....	32
Removing touchpad panel.....	32
Installing touchpad panel.....	32
SmartCard module.....	33
Removing smart card reader board.....	33
Installing smart card reader board.....	34
LED board.....	34
Removing LED board.....	34
Installing LED board.....	35
Speaker.....	35
Removing speaker.....	35
Installing speaker.....	36
Display assembly.....	37
Removing display assembly.....	37
Installing display assembly.....	40
Display bezel.....	41
Removing display bezel.....	41
Installing display bezel.....	41
Display hinge cover.....	42
Removing display hinge cover.....	42
Installing display hinge cover.....	42
Display hinges.....	43
Removing display hinge.....	43
Installing display hinge.....	44
Display panel.....	44
Removing display panel.....	44
Installing display panel.....	46
eDP cable.....	47
Removing eDP cable.....	47
Installing eDP cable.....	47
Camera.....	48



Removing camera.....	48
Installing camera.....	49
Palm rest.....	49
Removing palm rest.....	49
Installing palmrest.....	50
4 Technology and components.....	51
Power adapter.....	51
Processors.....	51
Identifying processors in Windows 10.....	51
Verifying the processor usage in Task Manager.....	51
Verifying the processor usage in Resource Monitor.....	52
Chipsets.....	52
Intel chipset drivers.....	53
Downloading the chipset driver.....	53
Identifying the chipset in Device Manager on Windows 10.....	53
Graphic options.....	54
Intel HD Graphics drivers.....	54
Downloading drivers.....	54
Display options.....	55
Identifying the display adapter.....	55
Changing the screen resolution.....	55
Rotating the display.....	55
Adjusting brightness in Windows 10.....	56
Cleaning the display.....	56
Using touch screen in Windows 10.....	56
Connecting to external display devices.....	57
Realtek ALC3246 Waves MaxxAudio Pro controller.....	57
Downloading the audio driver.....	57
Identifying the audio controller in Windows 10.....	57
Changing the audio settings.....	58
WLAN cards.....	58
Secure Boot screen options.....	58
Hard drive options.....	59
Identifying the hard drive in Windows 10.....	59
Identifying the hard drive in the BIOS.....	59
Camera features.....	59
Identifying the camera in Device Manager on Windows 10.....	59
Starting the camera.....	60
Starting the camera application.....	60
Memory features.....	61
Verifying system memory in Windows 10.....	61
Verifying system memory in system setup (BIOS).....	61
Testing memory using ePSA.....	61
Realtek HD audio drivers.....	62
5 System setup options.....	63



Boot Sequence.....	63
Navigation keys.....	64
System Setup overview.....	64
Accessing System Setup.....	64
General screen options.....	64
System Configuration screen options.....	65
Video screen options.....	67
Security screen options.....	67
Secure Boot screen options.....	69
Intel Software Guard Extensions.....	69
Performance screen options.....	70
Power Management screen options.....	70
POST Behavior screen options.....	72
Virtualization support screen options.....	73
Wireless screen options.....	73
Maintenance screen options.....	74
System Log screen options.....	74
Updating the BIOS	75
System and setup password.....	75
Assigning a system password and setup password.....	75
Deleting or changing an existing system and/or setup password.....	76
6 Technical specifications.....	77
System specifications.....	77
Processor specifications.....	78
Memory specifications.....	78
Storage specifications.....	78
Audio specifications.....	78
Video specifications.....	79
Camera specifications.....	79
Communication specifications.....	79
Port and connector specifications.....	80
Contactless smart card specifications.....	80
Display specifications.....	80
Keyboard specifications.....	81
Touchpad specifications.....	81
Battery specifications.....	82
AC Adapter specifications.....	82
Physical specifications.....	83
Environmental specifications.....	83
7 Diagnostics.....	84
Enhanced Pre-Boot System Assessment (ePSA) diagnostics.....	84
Device status lights.....	85
Battery status lights.....	86
8 Contacting Dell.....	87



Working on your computer

Safety instructions

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

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

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

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

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

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

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

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

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

Before working inside your computer

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

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

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

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

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

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



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

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

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

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

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

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

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

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

- 7 Remove the base cover.
- 8 Remove the main battery.
- 9 Turn the computer top-side up.
- 10 Open the display.
- 11 Press and hold the power button for few seconds, to ground the system board.

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

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

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

Turning off your computer

After working inside your computer

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

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

- 1 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 Replace the battery.
- 4 Replace the base cover.
- 5 Connect your computer and all attached devices to their electrical outlets.
- 6 Turn on your computer.

Chassis view

System front view

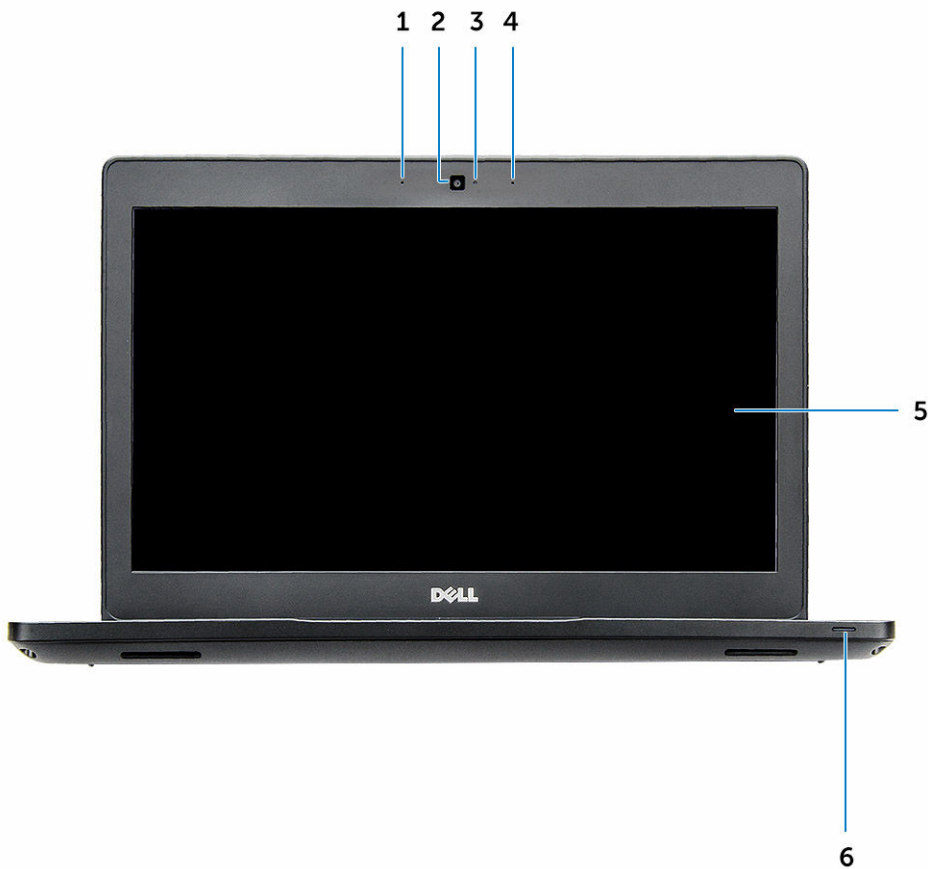


Figure 1. Front view

- 1 Dual array microphone
- 2 Camera
- 3 Camera status light
- 4 Dual array microphone
- 5 Display
- 6 Battery and charge status light

NOTE: Latitude 5480 computer also has an optional IR camera module.



System back view

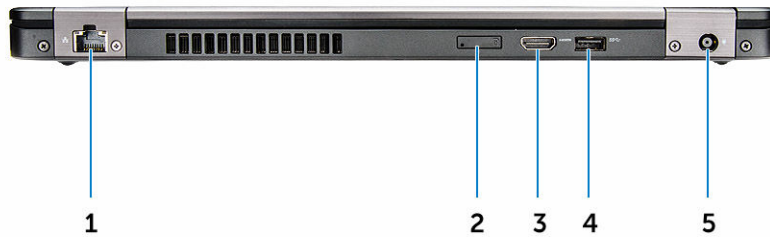


Figure 2. Back view

- 1 Network port
- 2 uSim card slot (optional)
- 3 HDMI port
- 4 USB 3.0 port
- 5 Power connector port

System side view



Figure 3. Left view

- 1 Type-C connector/DisplayPort or USB 3.0/optional Thunderbolt3
- 2 USB 3.0 port
- 3 SD card reader

NOTE: Latitude 5480 computer also has an optional Smart card reader.

System side view

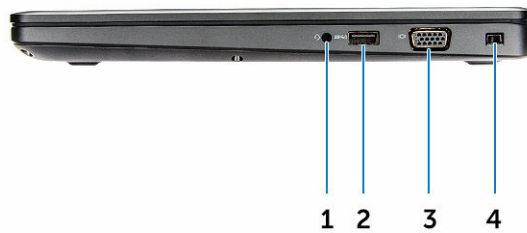


Figure 4. Right view

- 1 Headset/microphone port
- 2 USB 3.0 port with PowerShare
- 3 VGA port
- 4 Noble wedge lock slot

System top view



Figure 5. Top view

- 1 Power button
- 2 Keyboard
- 3 Palm rest
- 4 Touchpad

NOTE: Latitude 5480 computer also has an optional fingerprint reader.

Removing and installing components

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

Recommended tools

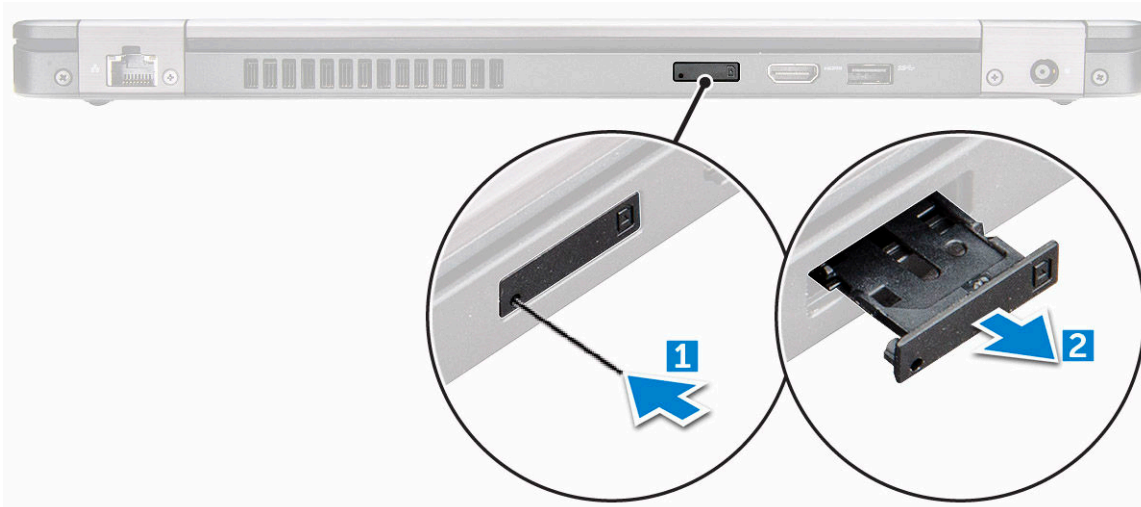
The procedures in this document require the following tools:

- Phillips #0 screwdriver
- Phillips #1 screwdriver
- Small plastic scribe

Subscriber Identity Module(SIM) board

Installing the Subscriber Identification Module (SIM) card

- 1 Follow the procedure in [After working inside your computer.](#)
- 2 Insert a paperclip or a SIM card removal tool into the pinhole [1].
- 3 Pull the SIM card tray to remove it [2].
- 4 Place the SIM card on the SIM card tray.
- 5 Push the SIM card tray into the slot until it clicks into place.



Removing the Subscriber Identification Module (SIM) card

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

- 1 Insert a paperclip or a SIM card removal tool into the pinhole on the SIM card tray.
- 2 Pull the SIM card tray to remove it.
- 3 Remove the SIM card from the SIM card tray.



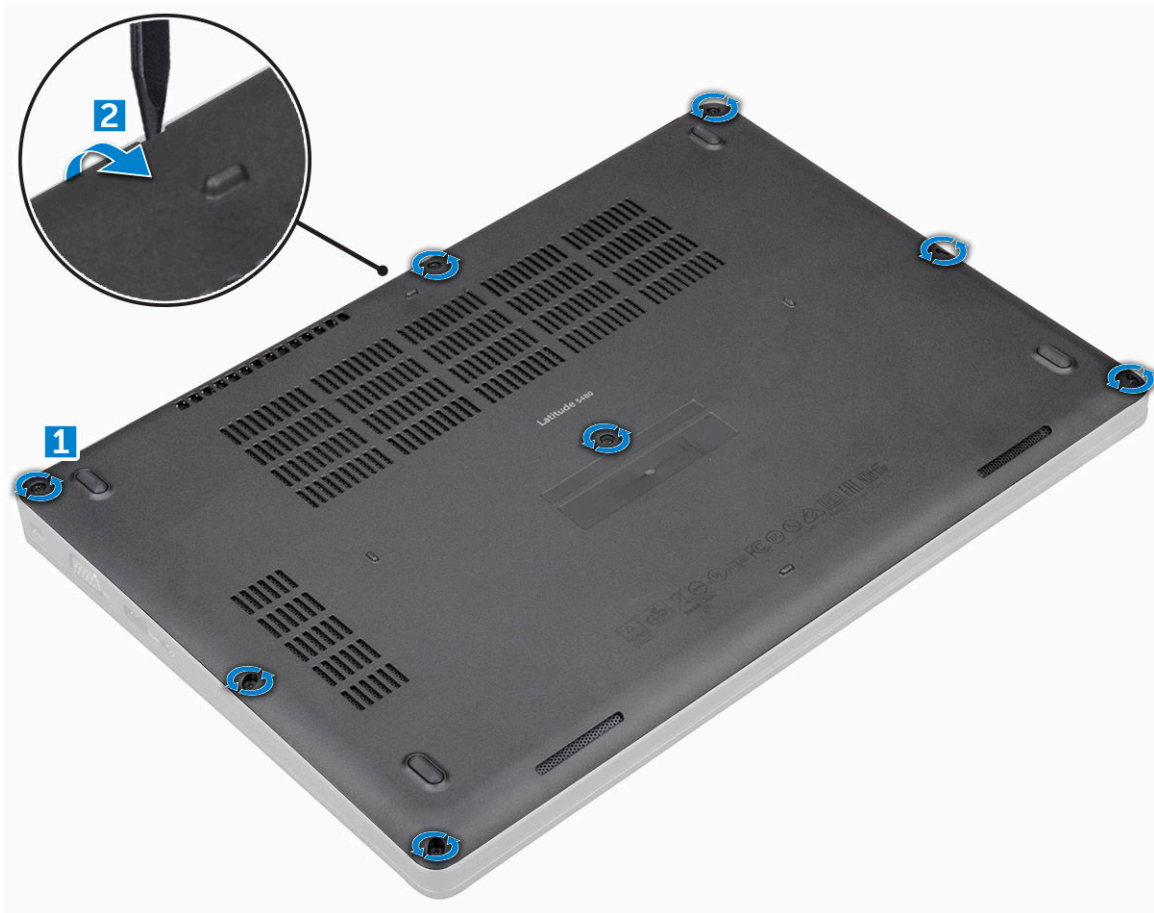
- 4 Push the SIM card tray into the slot until it clicks into place.

Base cover

Removing base cover

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 To remove the base cover:
 - a Loosen the M2.5*6.3 captive screws that secure the base cover to the computer [1].
 - b Pry the base cover from the edge and lift the base cover away from the computer [2].

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



Installing base cover

- 1 Place the base cover to align with the screw holders on the computer.
- 2 Tighten the M2.5 captive screws to secure the base cover to the computer.
- 3 Follow the procedure in [After working inside your computer](#).

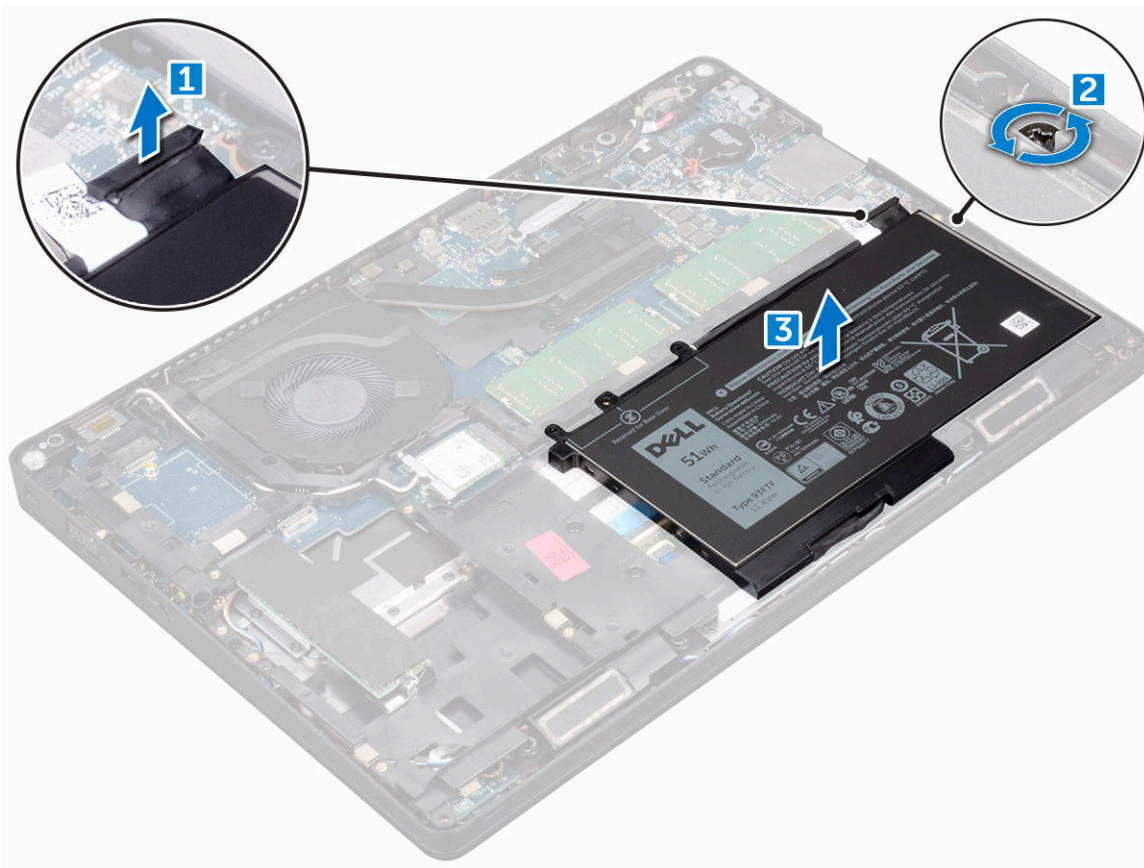
Battery

Removing battery

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the [base cover](#).
- 3 To remove the battery:
 - a Disconnect the battery cable from the connector on the system board [1].
 - b Unroute the battery cable from the routing channels.
 - c Remove the M2*6 captive screw that secures the battery to the computer [2].

 **NOTE: 6-cell battery has 2 screws.**

- d Lift the battery from the computer [3].



Installing battery

- 1 Insert the battery into the slot on the computer.
- 2 Route the battery cable through the routing channels.
- 3 Tighten the M2*6 captive screw to secure the battery to the computer.
- 4 Connect the battery cable to the connector on the system board.
- 5 Install the [base cover](#).
- 6 Follow the procedure in [After working inside your computer](#).



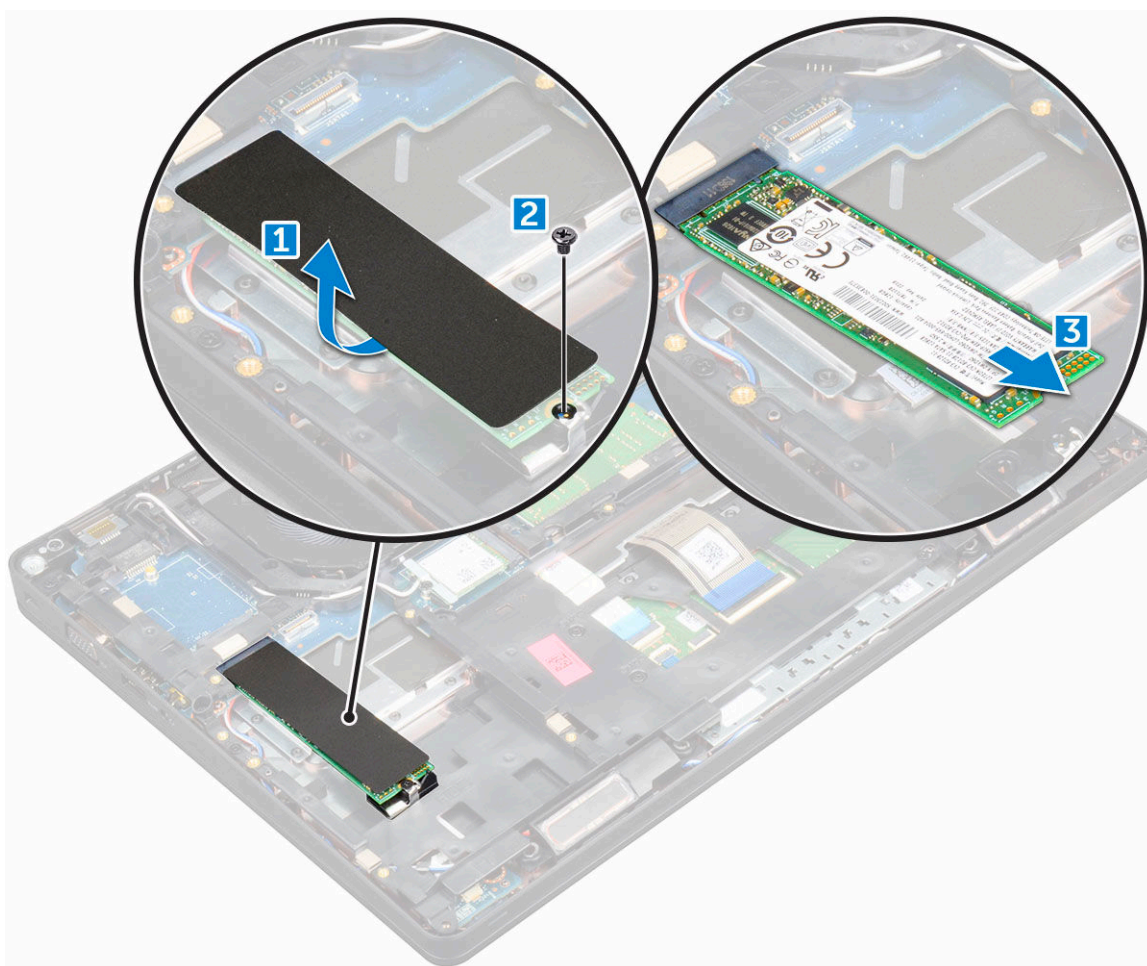
Solid State Drive (SSD)

Removing optional M.2 Solid State Drive (SSD)

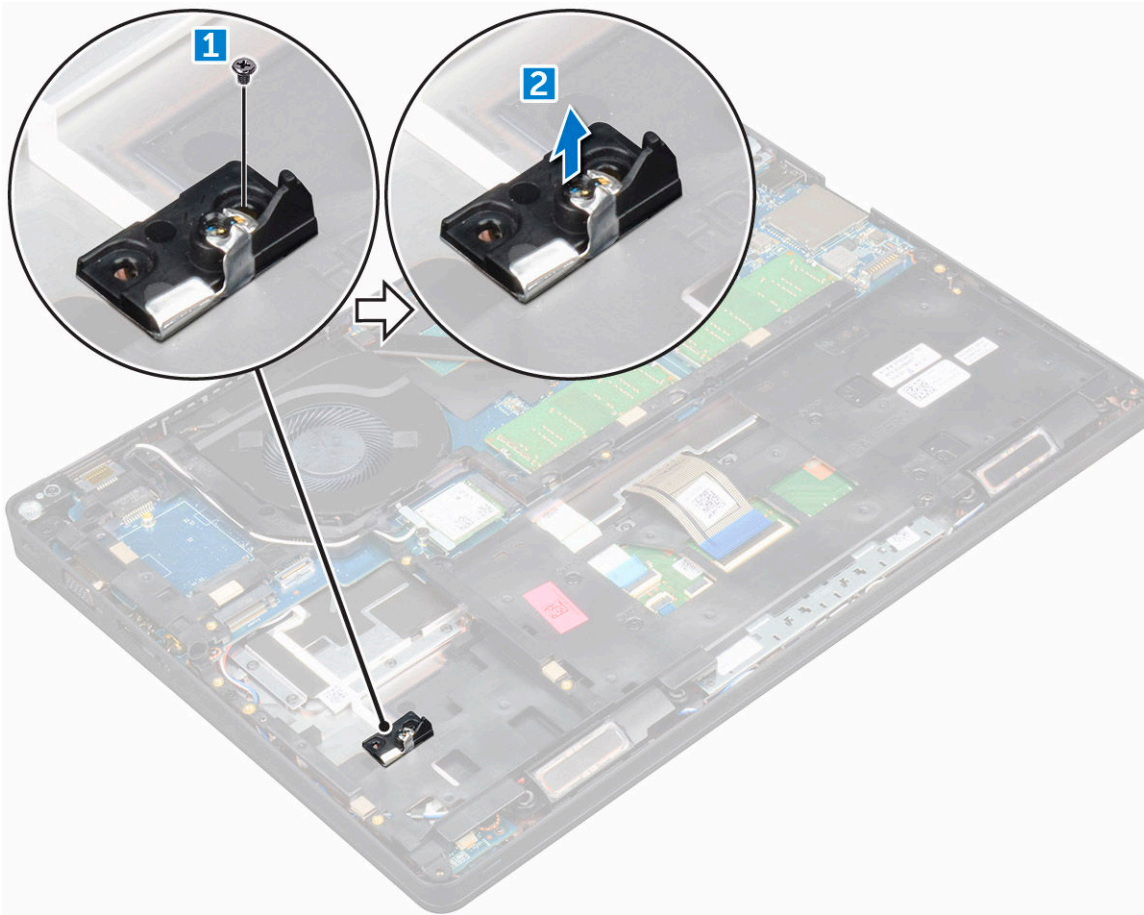
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the SSD card:
 - a Remove the SSD bracket from the SSD card.

NOTE: The SSD bracket is shipped along with the SSD card kit.

- b Peel the adhesive tape that secures the SSD card [1].
- c Remove the M2*3 screw that secures the SSD to the computer [2].
- d Slide and lift the SSD from the computer [3].



- 4 To remove the SSD clip:
 - a Remove the M2*3 screw that secures the SSD clip to the computer [1].
 - b Lift the SSD clip away from the computer [2].



Installing optional M.2 SSD

- 1 Insert the SSD clip into the slot on the computer.
- 2 Tighten the M2*3 screw to secure the SSD clip to the computer.
- 3 Insert the SSD into the connector on the computer.
- 4 Place the SSD bracket over the SSD and tighten the M2*3 screw to secure it to the computer.
- 5 Install the:
 - a [battery](#)
 - b [base cover](#)
- 6 Follow the procedure in [After working inside your computer](#).

Hard drive

Removing hard drive assembly

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the hard drive assembly:
 - a Disconnect the hard drive cable from the connector on the system board.
 - b Remove the screws that secure the hard drive assembly to the computer.



- c Lift the hard drive assembly away from the compute.

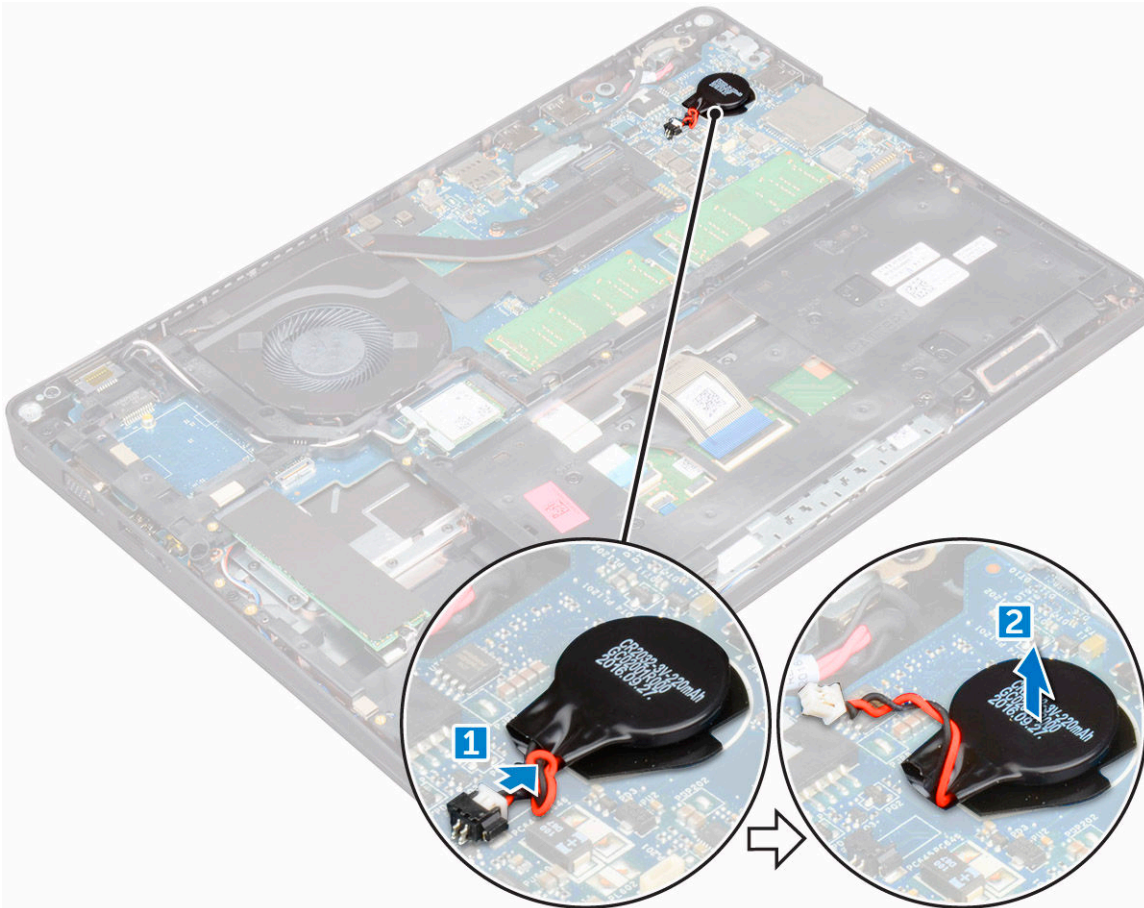
Installing hard drive assembly

- 1 Insert the hard drive assembly into the slot on the computer.
- 2 Tighten the screws to secure the hard drive assembly to the computer.
- 3 Connect the hard drive cable to the connector on the hard drive and on the system board.
- 4 Install the:
 - a battery
 - b base cover
- 5 Follow the procedures in [After working inside your system](#).

Coin cell battery

Removing the coin cell battery

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



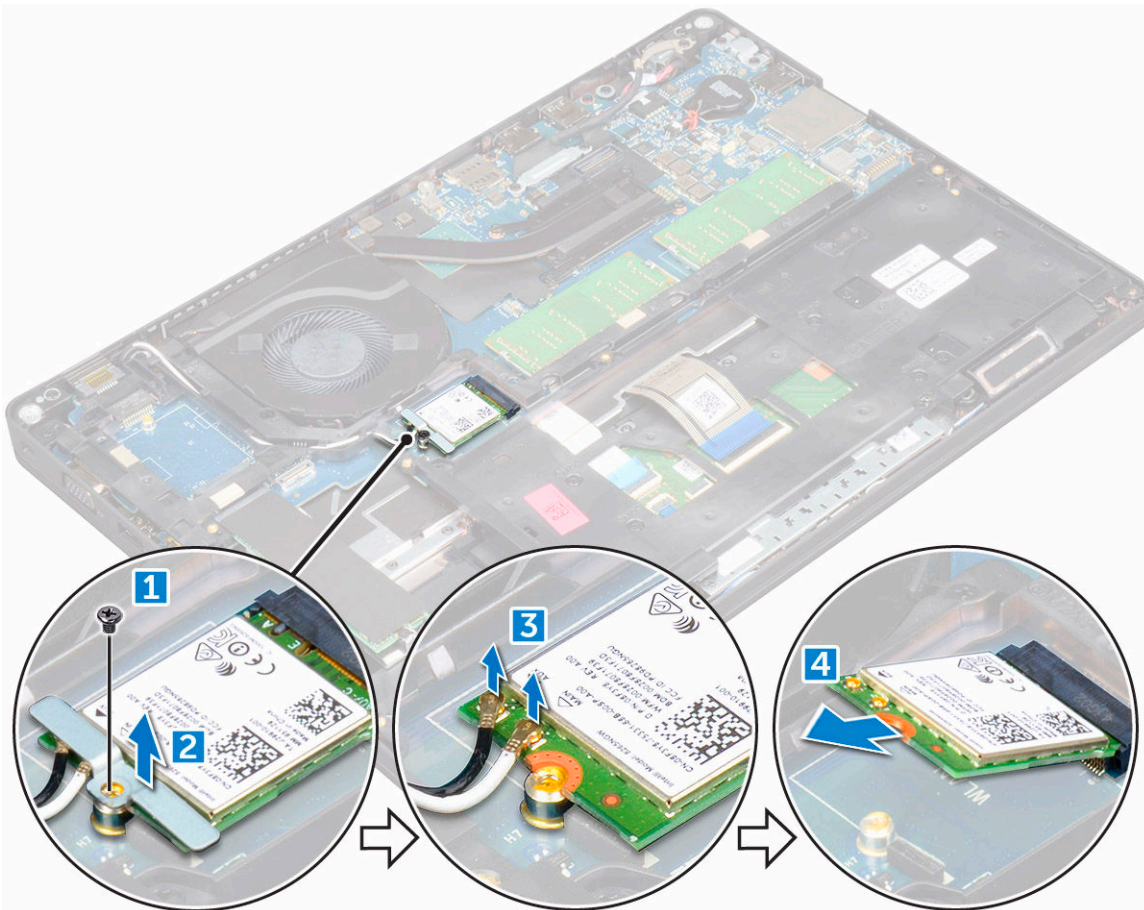
Installing coin cell battery

- 1 Affix the coin cell battery on the system board.
- 2 Connect the coin cell battery cable to the connector on the system board.
- 3 Install the:
 - a battery
 - b base cover
- 4 Follow the procedure in [After working inside your computer](#).

WLAN card

Removing WLAN card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
- 3 To remove the WLAN card:
 - a Remove the M2*3 screw that secures the WLAN card to the computer [1].
 - b Remove the metal bracket that secures the WLAN cables [2].
 - c Disconnect the WLAN cables from the connectors on the WLAN card [3].
 - d Lift the WLAN card away from the connector [4].



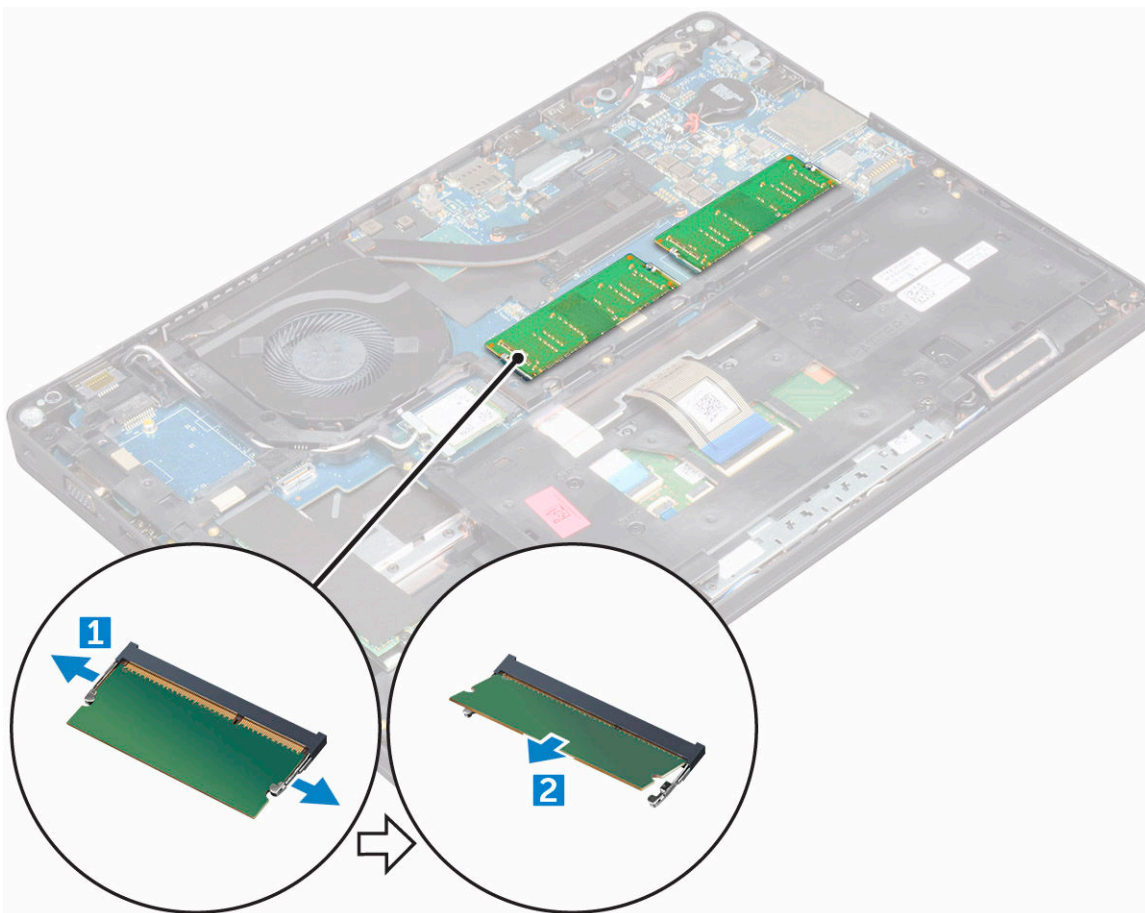
Installing WLAN card

- 1 Insert the WLAN card into the connector on the system board.
- 2 Place the metal bracket to secure the WLAN cables.
- 3 Tighten the M2*3 screw to secure the WLAN card to the computer.
- 4 Connect the WLAN cables to the connectors on the WLAN card.
- 5 Install the:
 - a battery
 - b base cover
- 6 Follow the procedure in [After working inside your computer](#).

Memory module

Removing memory module

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
- 3 To remove the memory module:
 - a Pry the clips securing the memory module until the memory module pops-up [1].
 - b Lift the memory module away from the connector [2].



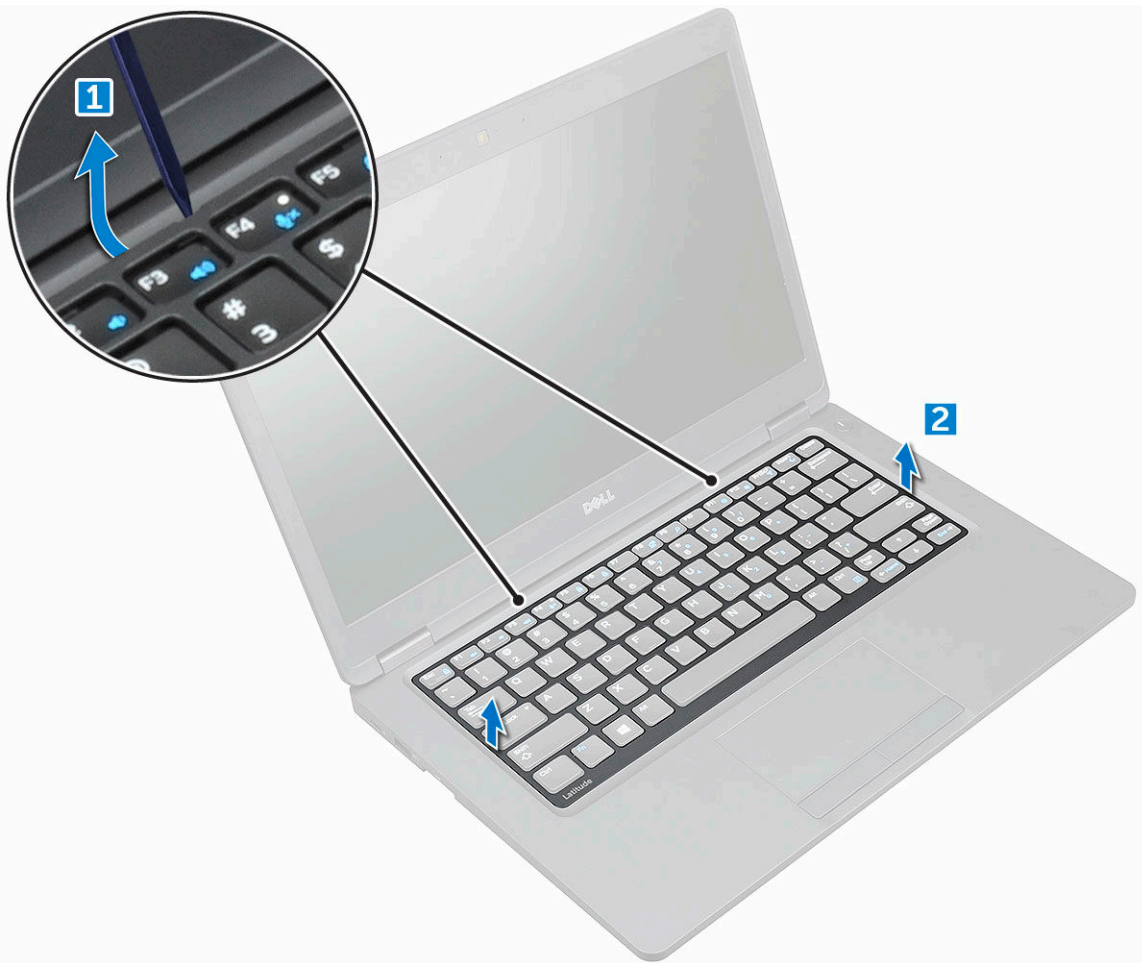
Installing memory module

- 1 Insert the memory module on the memory connector until the clips secure the memory module.
- 2 Install the:
 - a battery
 - b base cover
- 3 Follow the procedure in [After working inside your computer](#).

Keyboard

Removing keyboard trim

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Pry the keyboard trim from the edges [1] and lift it away from the computer [2].



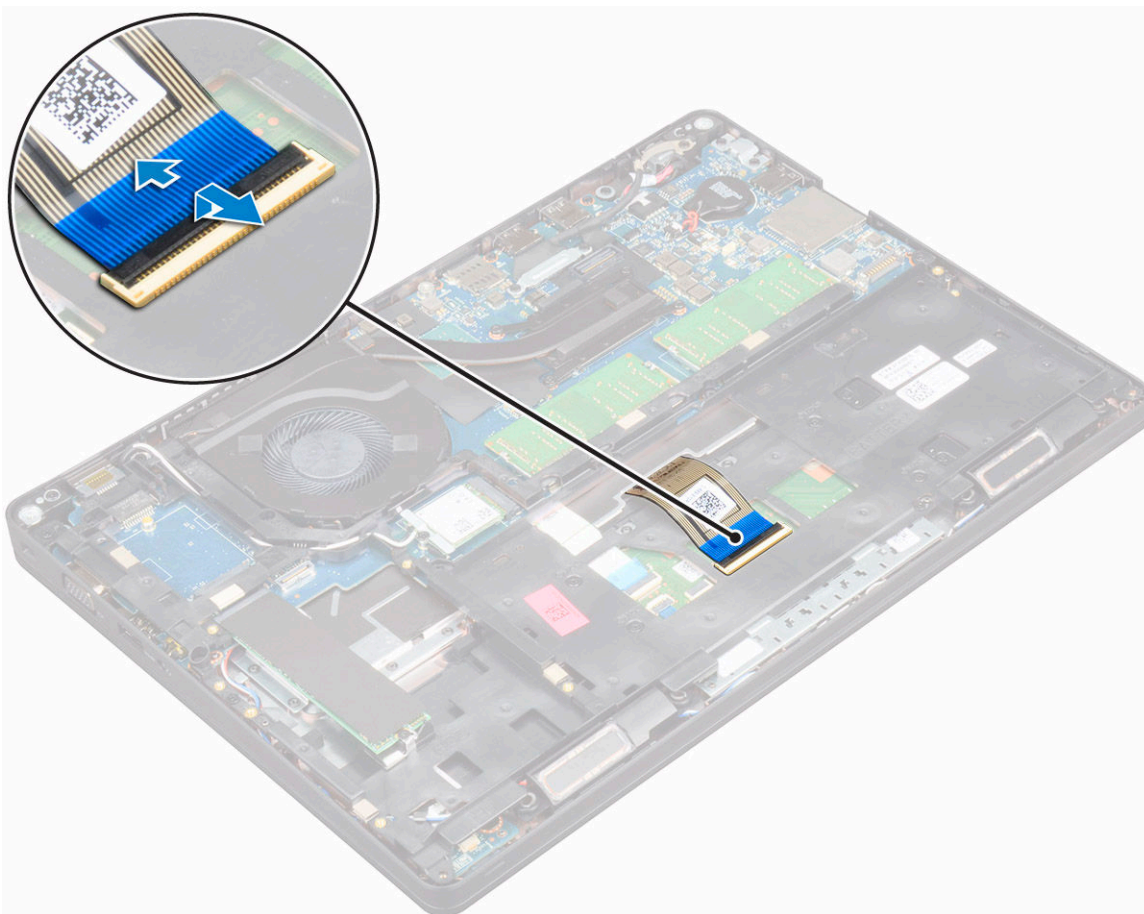
NOTE: You may need a plastic scribe to pry the keyboard trim from the edges.

Installing keyboard trim

- 1 Place the keyboard trim on the keyboard and press on the edges until it clicks in place.
- 2 Follow the procedure in [After working inside your computer](#).

Removing keyboard

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [keyboard trim](#)
- 3 Lift the latch and disconnect the keyboard cable from the connector.



- 4 Turn over the computer and open the display.
- 5 To remove the keyboard:
 - a Remove the M2*2 screws that secure the keyboard to the computer [1].
 - b Pry the keyboard from the edge and lift it away from the computer [2].

⚠ WARNING: Make sure you pull the keyboard cable routed under the computer to avoid any damage to the keyboard cable.



Installing keyboard

- 1 Hold the keyboard and route the keyboard cable through the placeholder.
- 2 Place the keyboard to align with the screw holders on the computer.
- 3 Tighten the M2*2 screws to secure the keyboard to the computer.
- 4 Connect the keyboard cable to the connector.
- 5 Install the:
 - a keyboard trim
 - b battery
 - c base cover
- 6 Follow the procedure in [After working inside your computer](#).

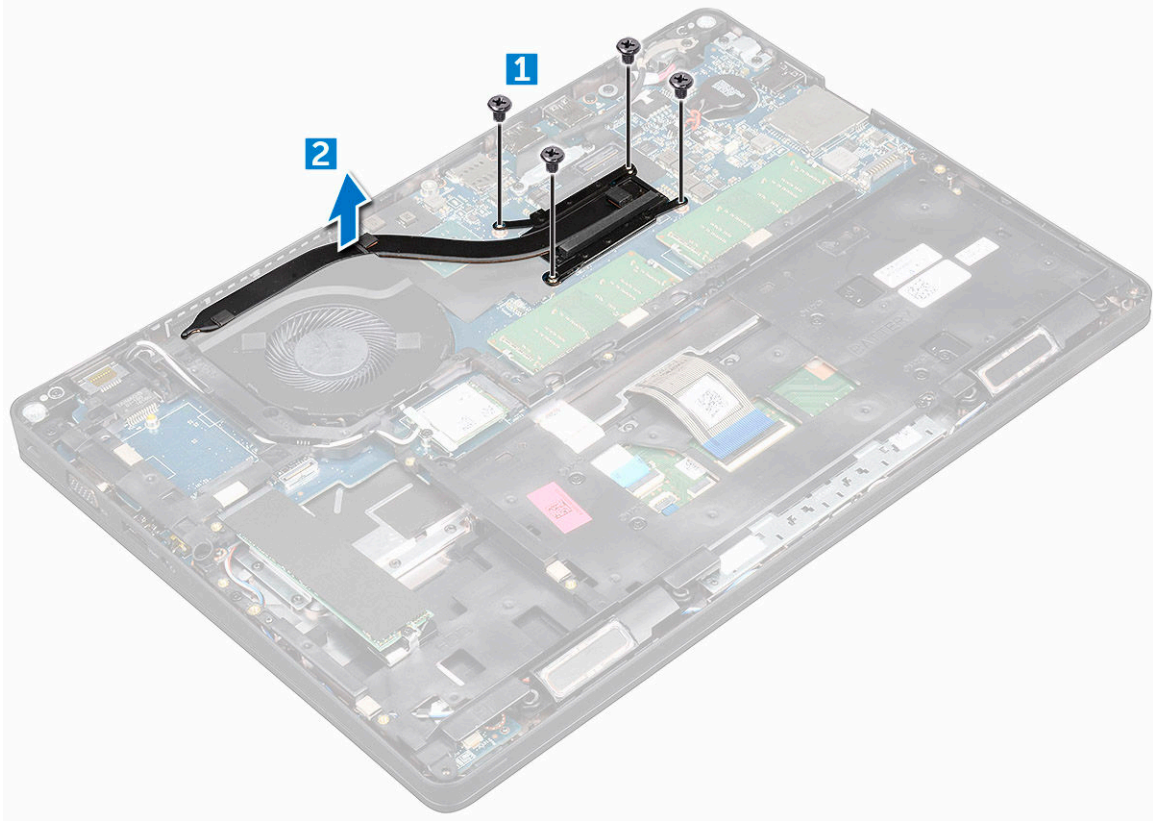
Heat sink

Removing heatsink

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



- 3 To remove the heat sink :
 - a Disconnect the system fan cable from the connector on the system board [1]
 - b Remove the M2*3 screws that secure the heat sink on the system board [2].
 - c Lift the heat sink away from the system board.



Installing heat sink

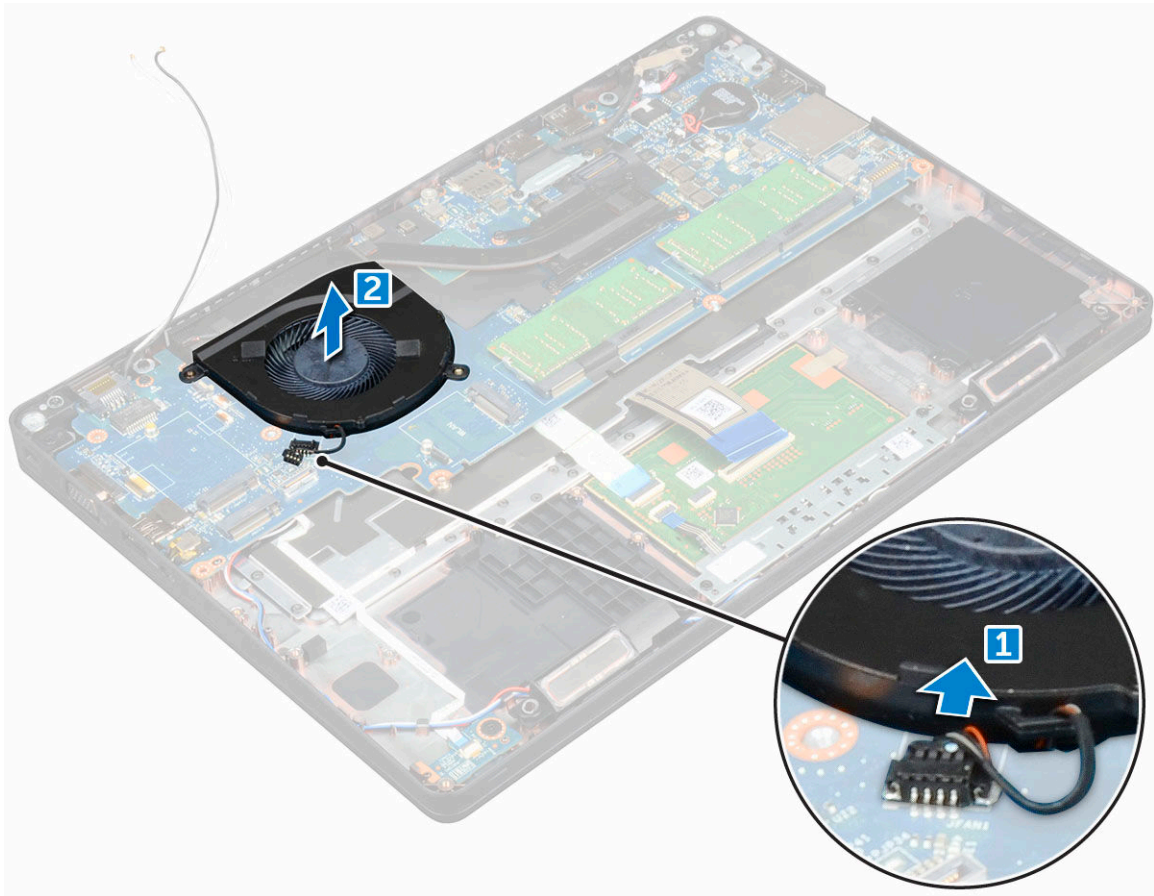
- 1 Place the heat sink on the system board.
- 2 Tighten the M2*3 screws to secure the heat sink to the computer.
- 3 Connect the system fan cable to the connector on the system board.
- 4 Install the:
 - a [battery](#)
 - b [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

System fan

Removing the system fan

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [chassis frame](#)
- 3 To remove the system fan:

- a Disconnect the system fan cable from the connector on the system board [1].
- b Lift the system fan away from the computer [2].



Installing the system fan

- 1 Place the system fan into the slot on the computer.
- 2 Connect the system fan cable to the connector on the system board.
- 3 Install the:
 - a chassis frame
 - b battery
 - c base cover
- 4 Follow the procedure in [After working inside your computer](#).

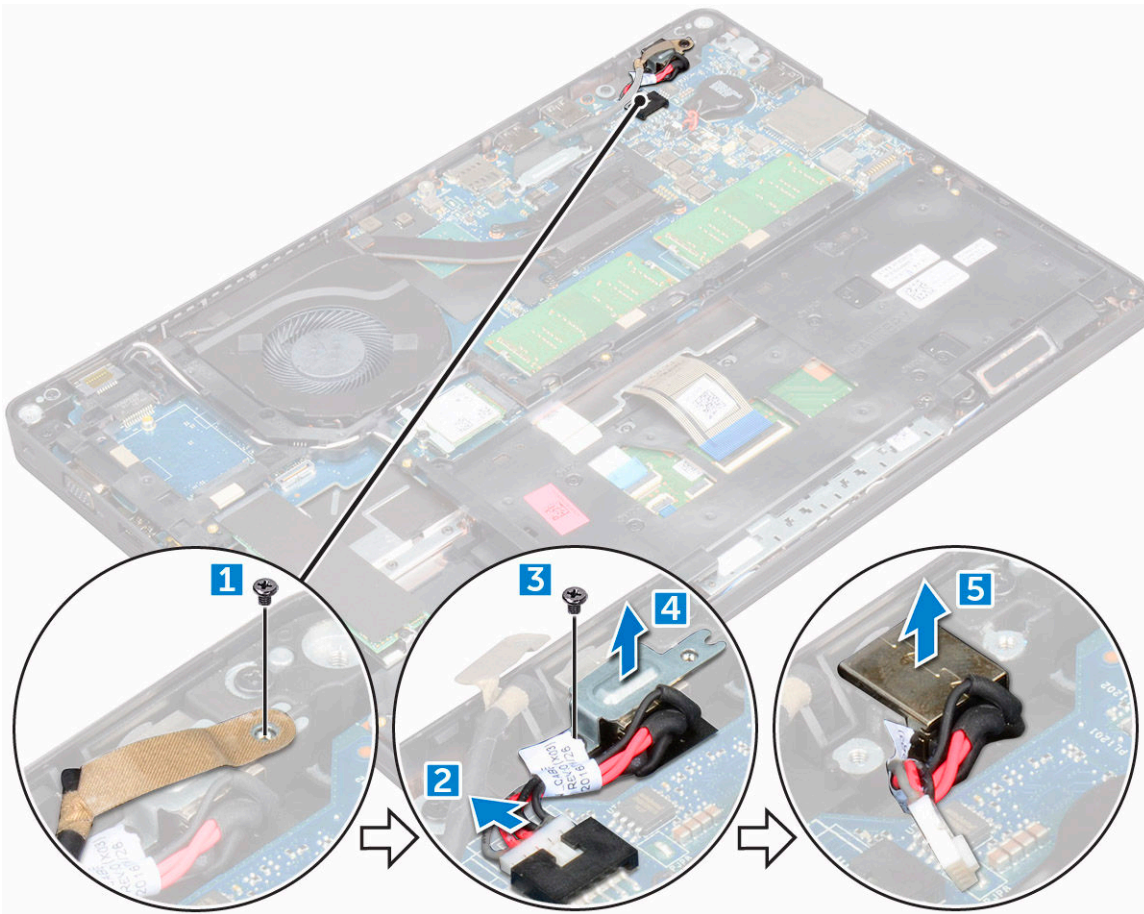
Power connector port

Removing power connector port

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
- 3 To remove the power connector port:
 - a Remove the M2*3 screw that secures the display cable to the computer [1].



- b Disconnect the power connector port cable from the connector on the system board [2].
- c Remove the M2*3 screw to release the metal bracket that secures the power connector port [3].
- d Lift the metal bracket [4].
- e Lift the power connector port away from the computer [5].



Installing power connector port

- 1 Align the power connector port along the grooves on the slot and push it down.
- 2 Place the metal bracket on the power connector port.
- 3 Tighten the M2*3 screw to secure the power connector port to the computer
- 4 Connect the power connector port cable to the connector on the system board.
- 5 Tighten the M2*3 screw to secure the display cable to the computer.
- 6 Install the:
 - a battery
 - b base cover
- 7 Follow the procedure in [After working inside your computer](#).

Chassis frame

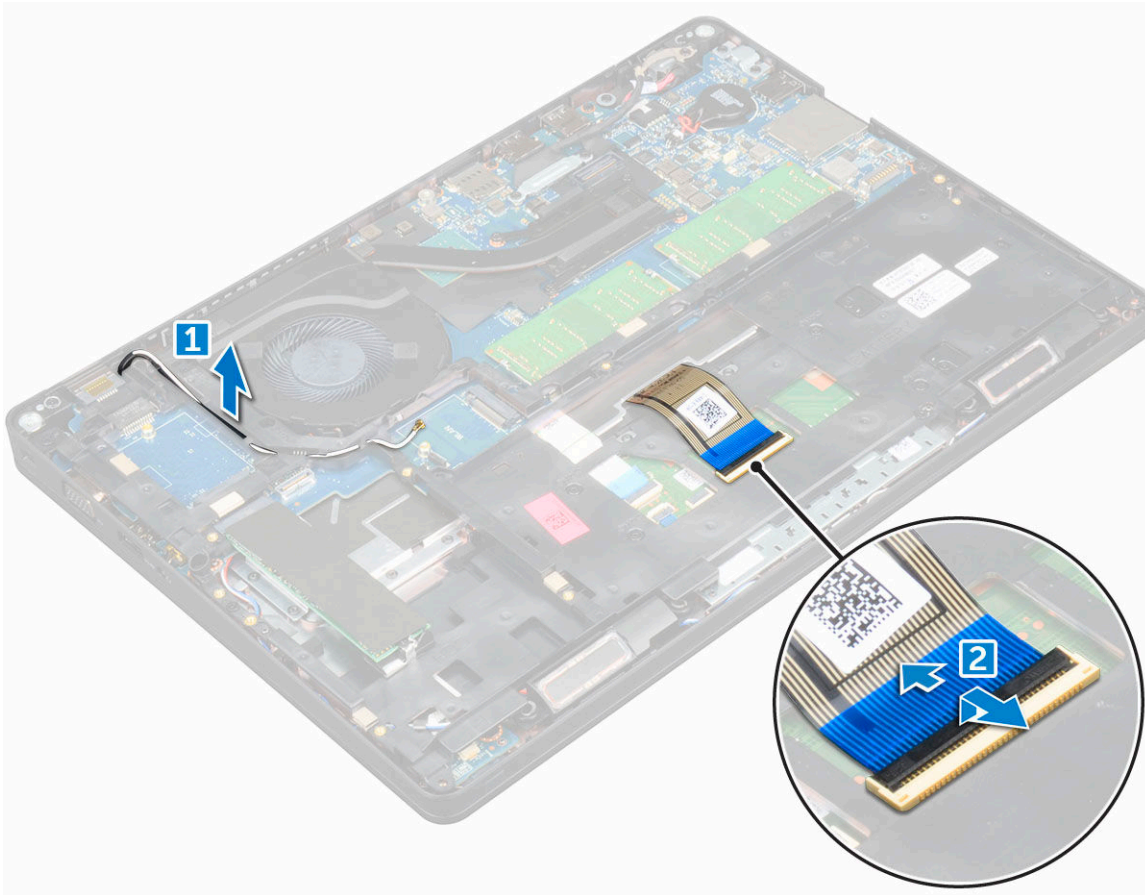
Removing chassis frame

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

- a base cover
- b battery
- c WLAN card
- d SSD card

3 To release the chassis frame:

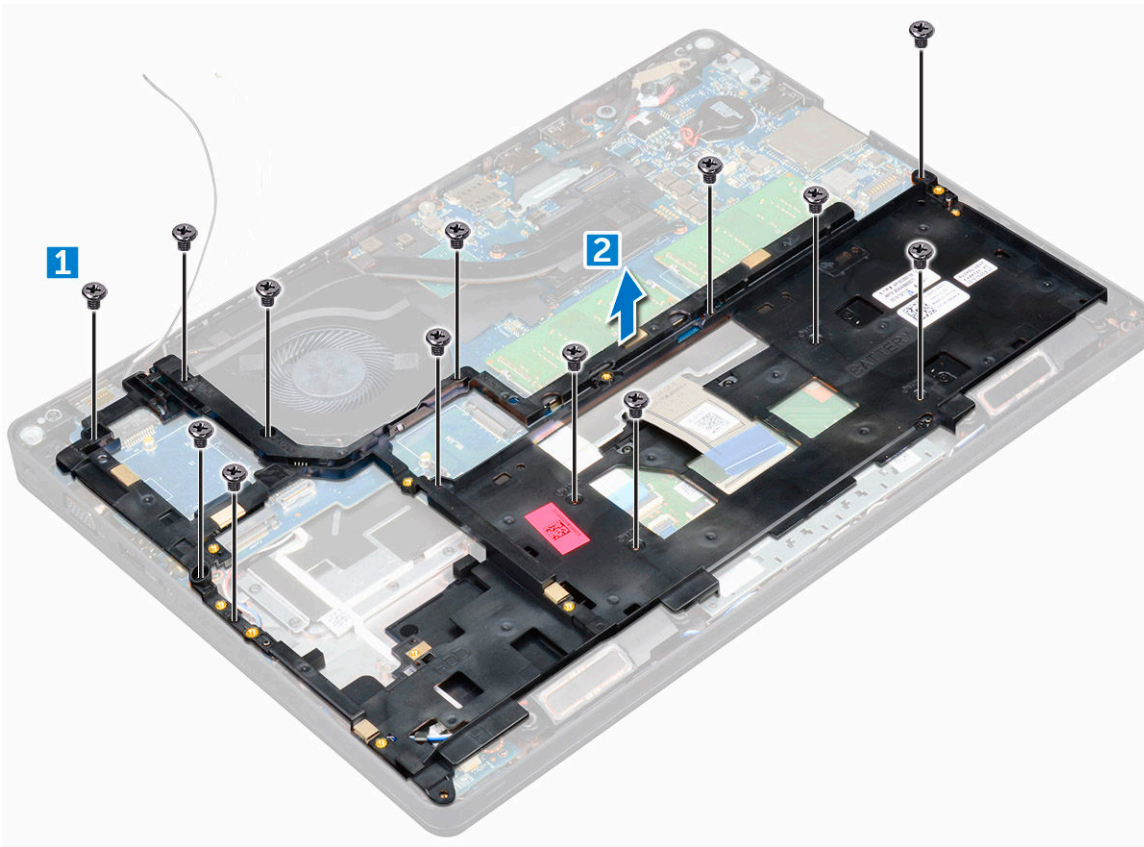
- a Release the WLAN cables from the routing channels [1].
- b Lift the latch and disconnect the keyboard cable from the connector [2].



4 To remove the chassis frame:

- a Remove the M2*2, M2*3, and M2*5 screws that secure the chassis frame to the computer [1].
- b Lift the chassis frame away from the computer [2].





Installing chassis frame

- 1 Place the chassis frame on the computer.
- 2 Tighten the M2*2, M2*3, and M2*5 screws to secure the chassis frame to the computer.
- 3 Connect the keyboard cable to the connector.
- 4 Connect the speaker cable to the connector on the system board.
- 5 Route the WLAN cables through the routing channels.
- 6 Install the:
 - a SSD card
 - b WLAN card
 - c battery
 - d base cover
- 7 Follow the procedure in [After working inside your system](#).

System board

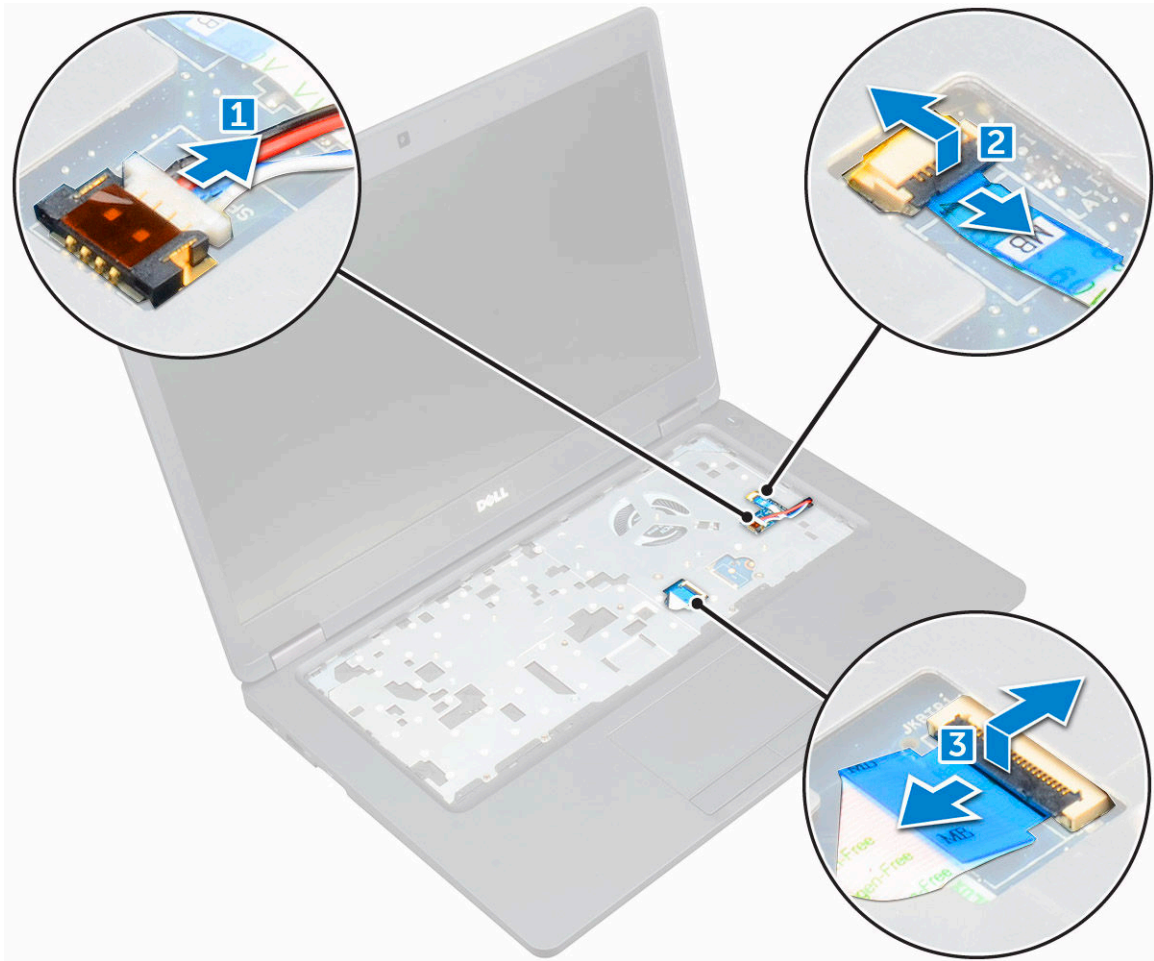
Removing system board

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

- e keyboard
- f WLAN card
- g SSD card
- h memory module
- i coin cell battery
- j heatsink
- k system fan
- l chassis frame

3 Disconnect the following cables from the system board:

- a LED board [1]
- b speaker [2]
- c touchpad [3]



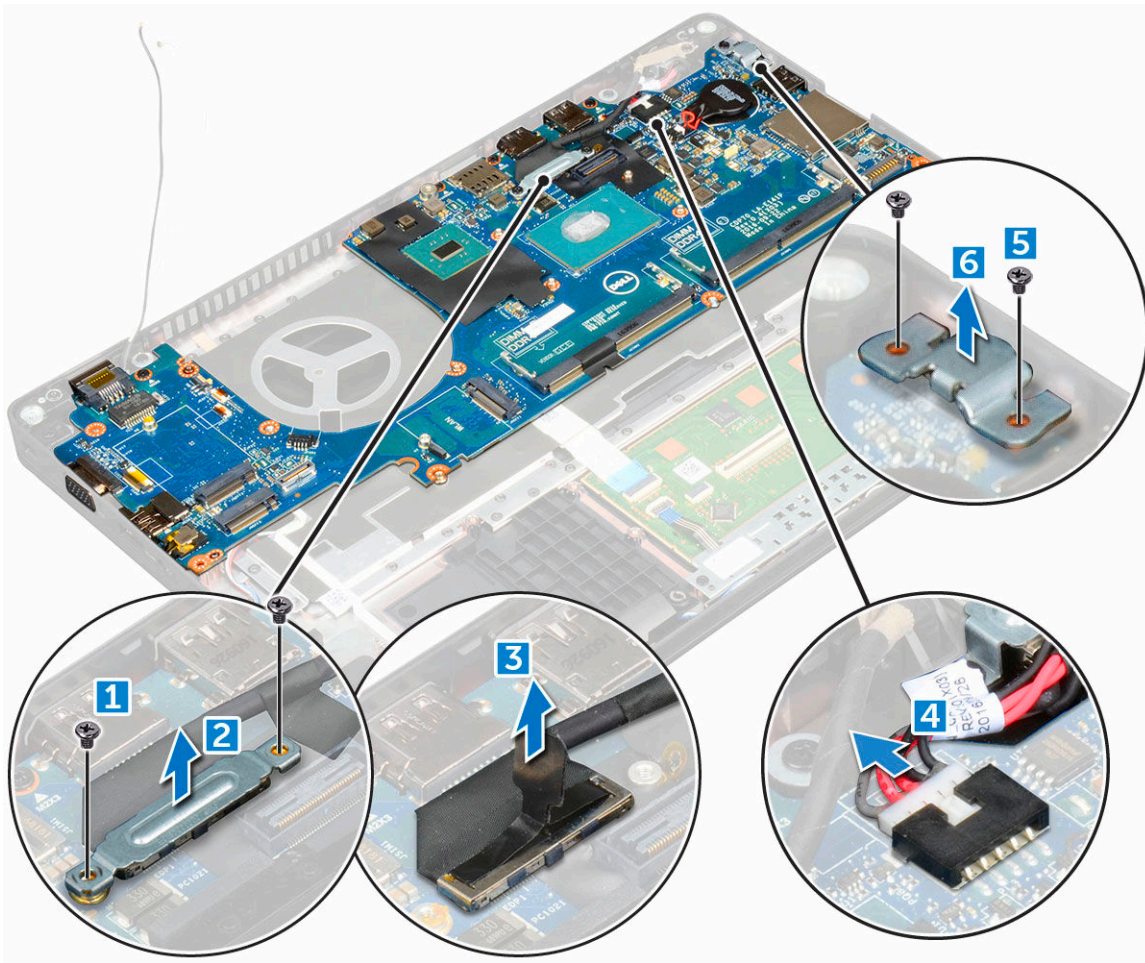
4 To release the system board:

- a Remove the M2*2 screw that secures the display cable [1].
- b Lift the metal bracket that secures the display cable [2].
- c Disconnect the display cable from the connectors on the system board [3].
- d Disconnect the power connector port cable from the connector on the system board [4].
- e Remove the M2*2 screws that secure the metal bracket[5] .

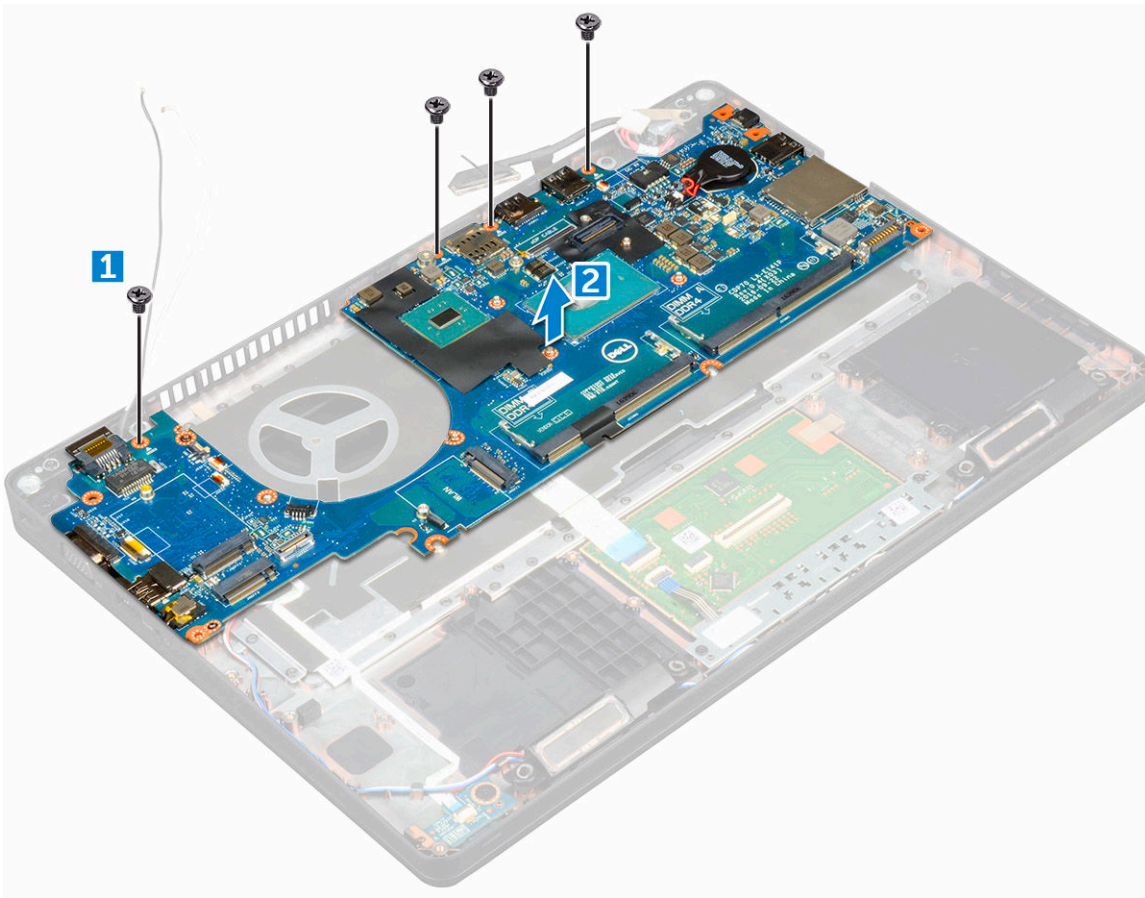
NOTE: The metal bracket secures the DisplayPort over USB Type-C.

- f Lift the metal bracket away from the system board [6].





- 5 To remove the system board:
- a Remove the M2*2 screws that secure the system board to the computer [1].
 - b Lift the system board away from the computer [2].



Installing system board

- 1 Align the system board with the screw holders on the computer.
- 2 Tighten the M2*2 screws to secure the system board to the computer.
- 3 Place the metal bracket to secure the DisplayPort over USB Type-C.
- 4 Tighten the M2*2 screws to secure the metal bracket on the DisplayPort over USB Type-C.
- 5 Connect the power connector port cable to the connector on the system board.
- 6 Connect the display cables to the connectors on the system board.
- 7 Place the metal bracket to secure the display cable.
- 8 Tighten the M2*2 screw to secure the metal bracket.
- 9 Connect the following cables:
 - a touchpad
 - b speaker
 - c LED board
- 10 Install the:
 - a chassis frame
 - b system fan
 - c heat sink
 - d coin cell battery
 - e memory module
 - f SSD card
 - g WLAN card
 - h keyboard trim
 - i keyboard



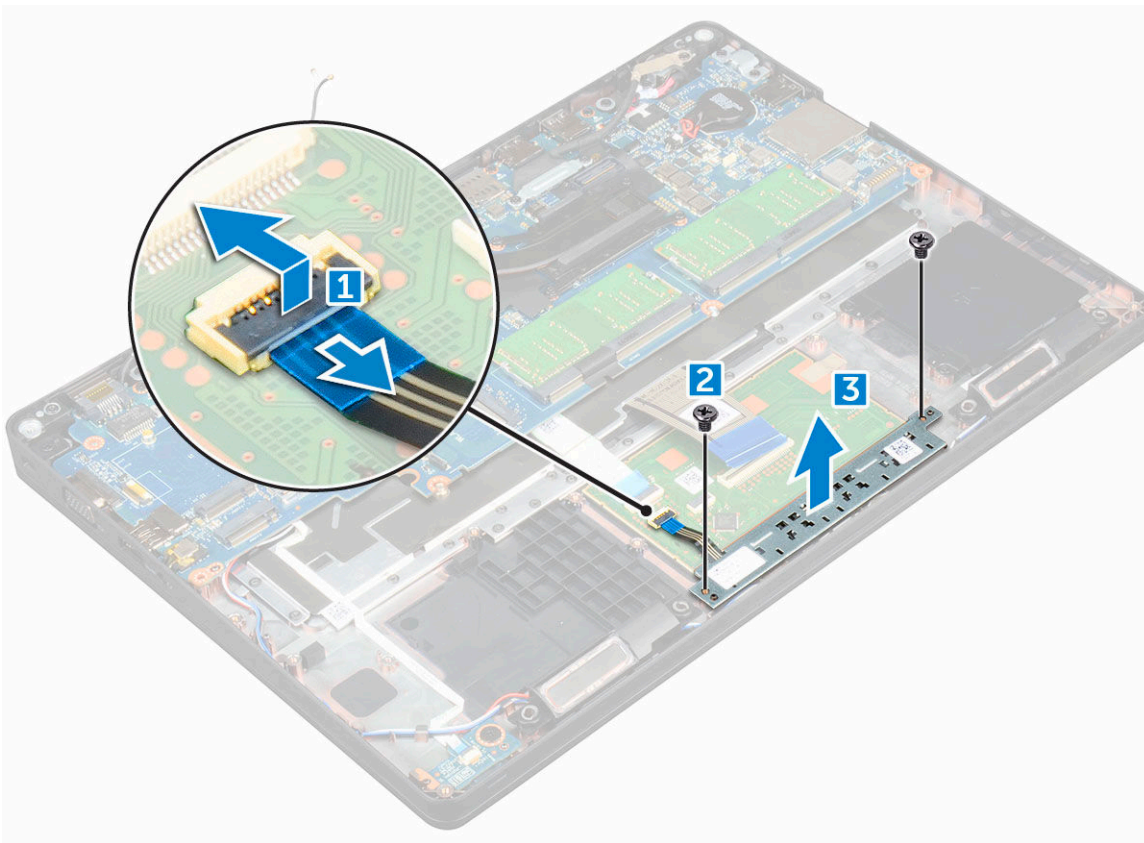
- j battery
- k base cover
- l SIM card

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

Touchpad panel

Removing touchpad panel

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [SSD card](#)
 - e [chassis frame](#)
- 3 To remove the touchpad panel:
 - a Lift the latch and disconnect the touchpad panel cable from the connector [1].
 - b Remove the screws that secure the touchpad panel to the computer [2].
 - c Lift the touchpad panel away from the computer.



Installing touchpad panel

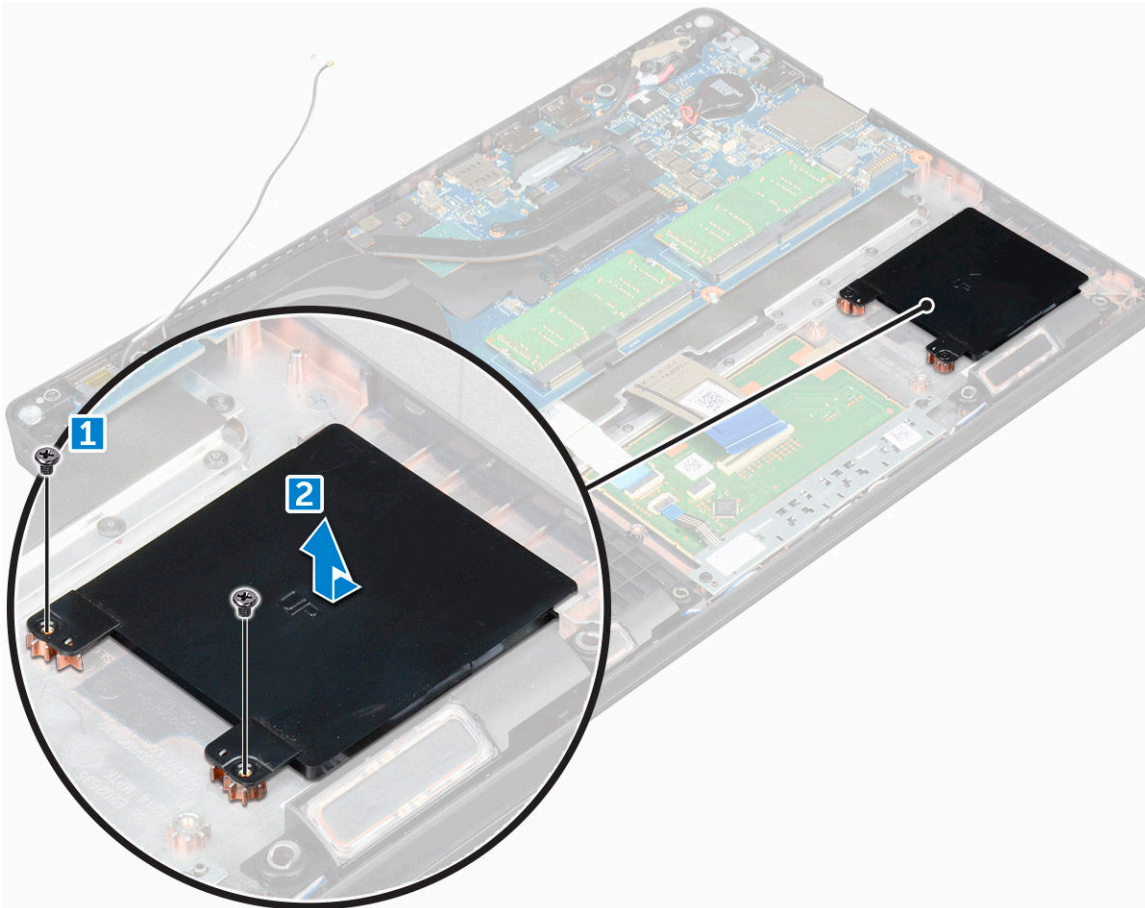
- 1 Align the touchpad panel with the tabs on the computer.
- 2 Tighten the screws to secure the touchpad panel to the computer.

- 3 Connect the touchpad panel cable to the connector.
- 4 Affix the adhesive tapes to secure the speaker cable to the touchpad panel.
- 5 Affix the smart card reader board cable.
- 6 Connect the smart card reader board to the connector.
- 7 Install the:
 - a chassis frame
 - b SSD card
 - c WLAN card
 - d battery
 - e base cover
- 8 Follow the procedure in [After working inside your computer](#).

SmartCard module

Removing smart card reader board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
 - c WLAN card
 - d SSD card
 - e chassis frame
- 3 To remove the smart card reader board:
 - a Remove the screws that secure the smart card reader board to the palmrest [1].
 - b Slide and remove the smart card reader from the slot [2].



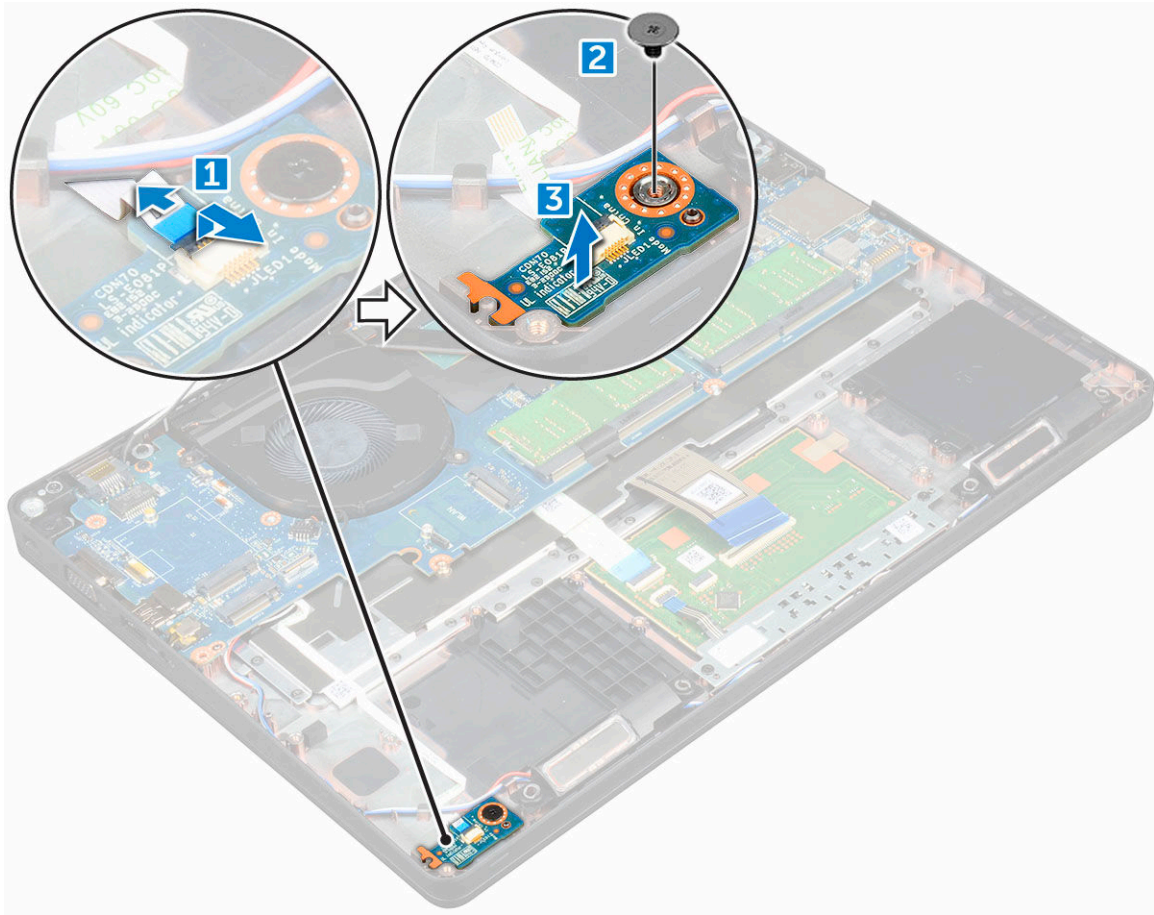
Installing smart card reader board

- 1 Insert the smart card reader board to align with the tabs on the chassis..
- 2 Tighten the screws to secure the smart card reader board to the computer.
- 3 Affix the smart card reader board cable and connect the cable to the connector.
- 4 Install the:
 - a [chassis frame](#)
 - b [SSD card](#)
 - c [WLAN card](#)
 - d [battery](#)
 - e [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

LED board

Removing LED board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [SSD card](#)
 - e [chassis frame](#)
- 3 To remove the LED board:
 - a Lift the latch and disconnect the LED board cable from the connector on the LED board [1].
 - b Remove the M2*3 screw that secures the LED board to the computer [2].
 - c Lift the LED board away from the computer [3].



Installing LED board

- 1 Place the LED board into the slot on the computer.
- 2 Tighten the M2*3 screw to secure the LED board to the computer.
- 3 Connect the LED board cable to the connector on the LED board.
- 4 Install the:
 - a chassis frame
 - b SSD card
 - c WLAN card
 - d battery
 - e base cover
- 5 Follow the procedure in [After working inside your computer](#).

Speaker

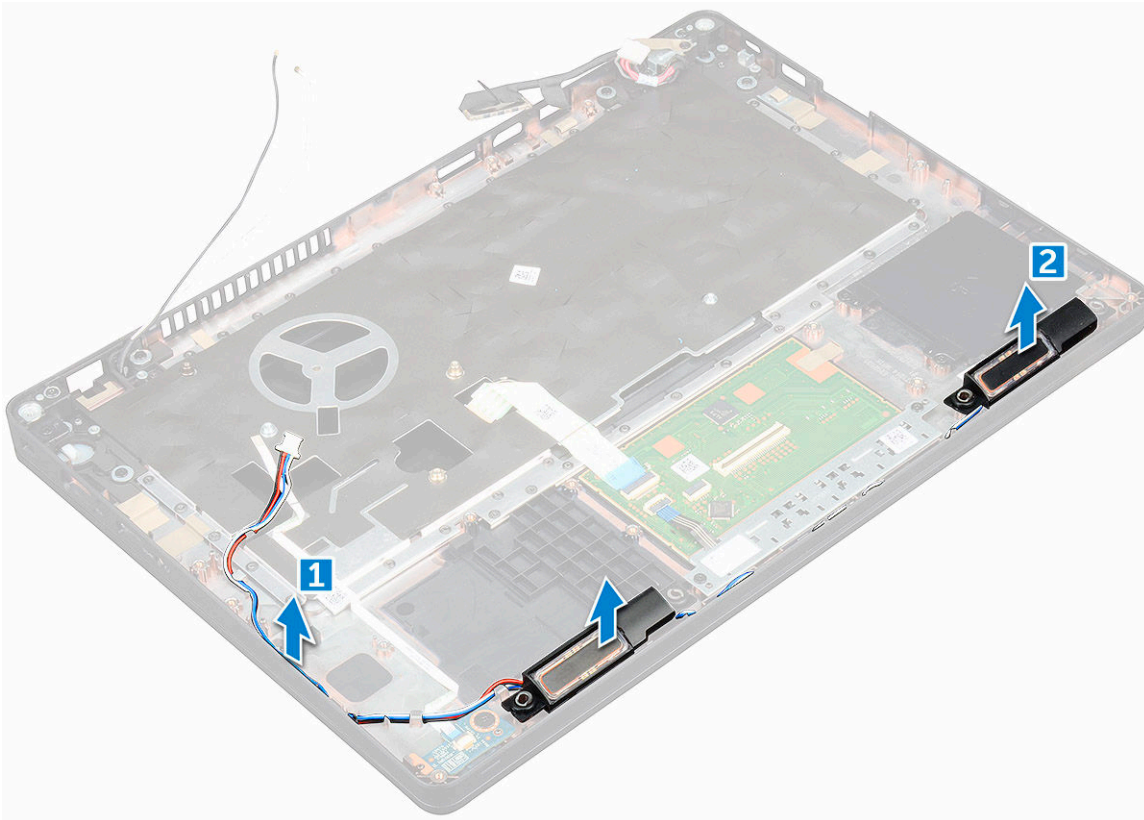
Removing speaker

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



- d keyboard
- e WLAN card
- f SSD card
- g memory module
- h coin cell battery
- i system fan
- j heat sink
- k chassis frame
- l smart card reader
- m LED board
- n system board

- 3 To remove the speakers:
 - a Release the speaker cable through the routing channels [1].
 - b Lift the speaker away from the computer [2].



Installing speaker

- 1 Insert the speaker module aligning it with the nodes on the chassis.
- 2 Route the speaker cable through the routing channels.
- 3 Install the:
 - a system board
 - b smart card reader
 - c LED board
 - d chassis frame
 - e system fan
 - f heat sink
 - g coin cell battery
 - h memory module

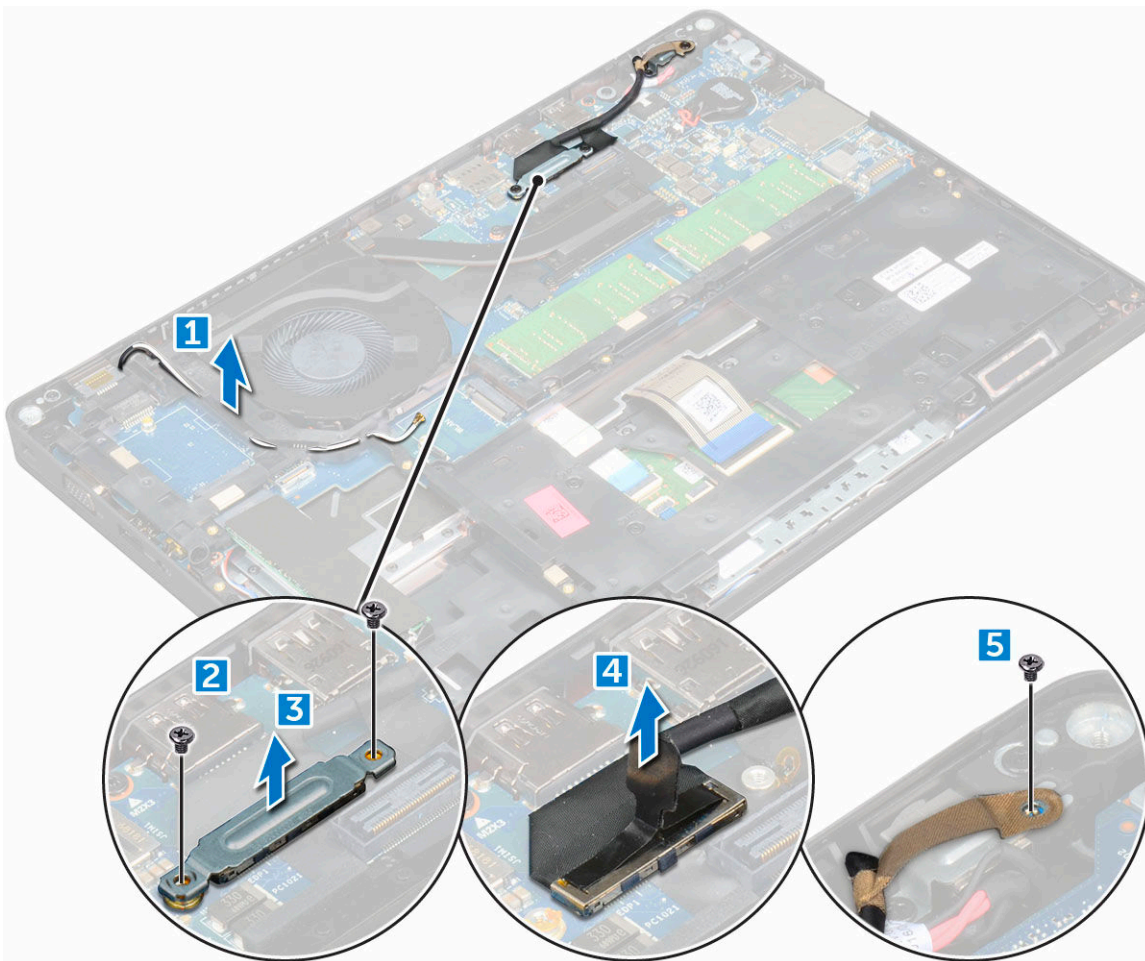
- i SSD card
- j WLAN card
- k keyboard trim
- l keyboard
- m battery
- n base cover

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

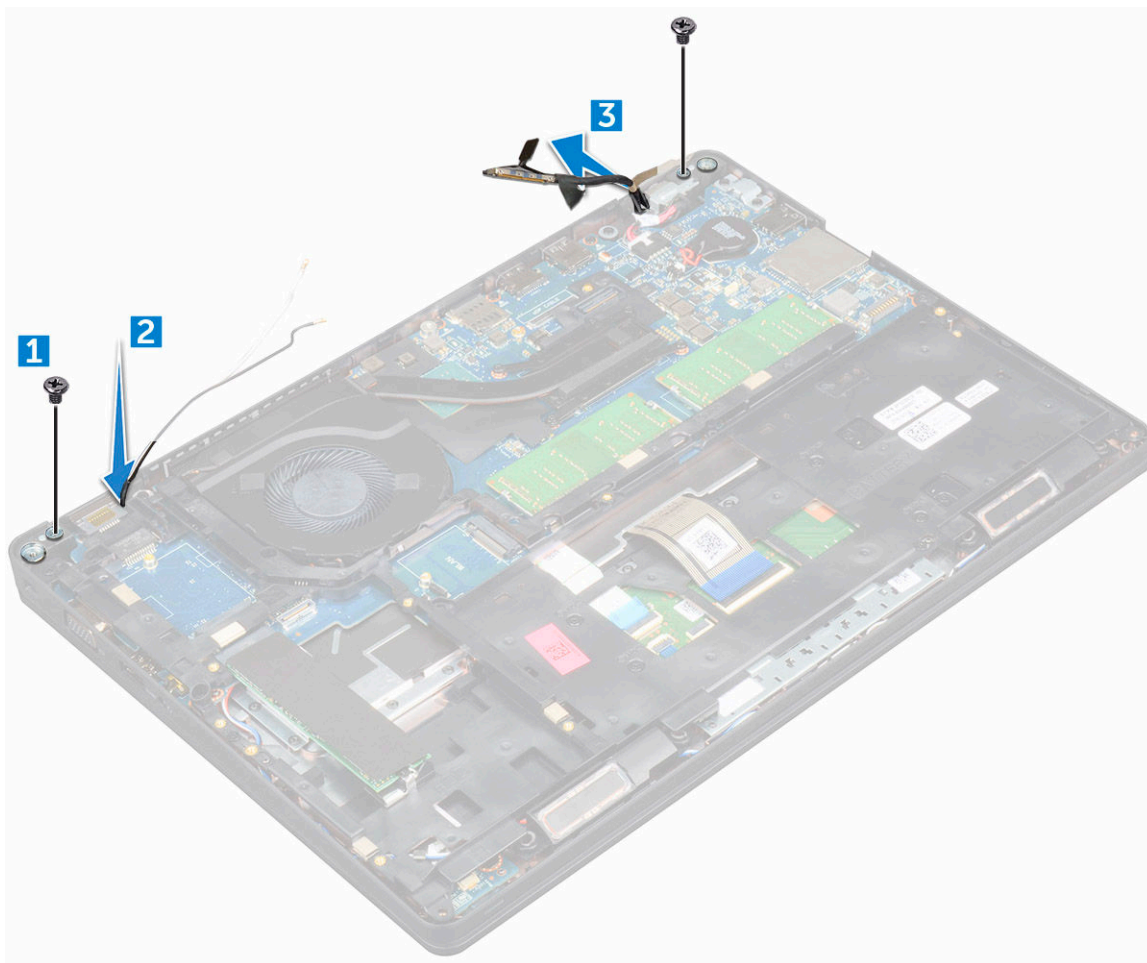
Display assembly

Removing display assembly

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
- 3 To disconnect the display cable:
 - a Release the WLAN cable from the routing channels [1].
 - b Remove the M2*5 screw that secures the display cable bracket to the computer [2].
 - c Remove the display cable bracket that secures the display cable [3].
 - d Disconnect the display cable from the connector on the system board [4].
 - e Remove the screw to release the display cable from the computer [5].



- 4 To release the display assembly:
 - a Remove the M2*5 screws that secure the display assembly to the computer [1].
 - b Release the WLAN cable and display cable through the routing channels [2] [3].



- 5 Turn over the computer.
- 6 To remove the display assembly:
 - a Remove the screws that secure the display assembly to the computer [1].
 - b Open the display [2].



c Lift the display assembly from the computer.



Installing display assembly

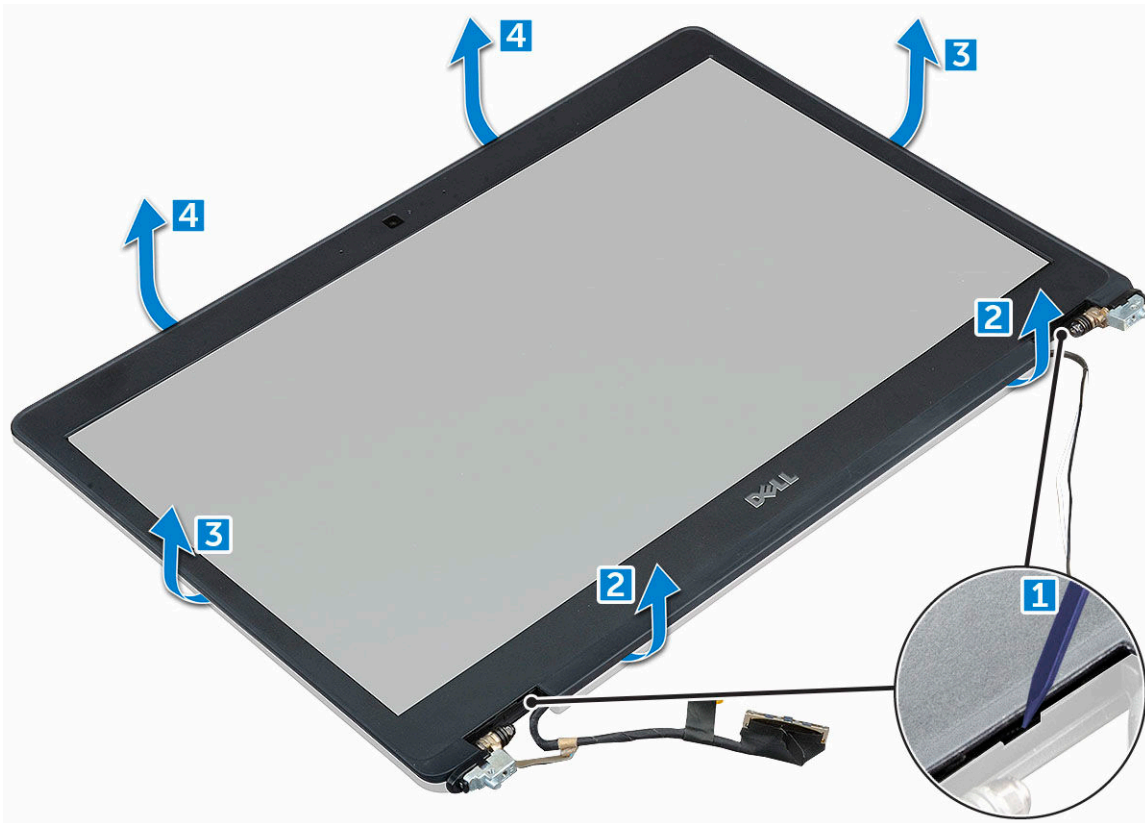
- 1 Place the chassis on the edge of a plane surface.
- 2 Align the display assembly to align with the screw holders on the computer.
- 3 Tighten the M2*5 screws to secure the display assembly to the computer.
- 4 Connect the display cable to the connector on the system board.
- 5 Place the metal bracket to secure the display cable.
- 6 Tighten the M2*5 screws to secure the display cable.
- 7 Route the WLAN cables through the routing channels.
- 8 Install the:
 - a [WLAN card](#)
 - b [battery](#)
 - c [base cover](#)
- 9 Follow the procedure in [After working inside your computer](#).

Display bezel

Removing display bezel

The following procedure is applicable only if your computer is a non-touch computer.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [display assembly](#)
- 3 To remove the display bezel:
 - a Pry the display bezel at the base of the display [1].
 - b Lift the display bezel to release it [2].
 - c Pry the edges on the side of the display to release the display bezel [3, 4].



Installing display bezel

- 1 Place the display bezel on the display assembly.
- 2 Starting from the top corner, press on the display bezel and work around the entire bezel until it clicks on to the display assembly.
- 3 Install the:
 - a [display assembly](#)
 - b [WLAN card](#)
 - c [battery](#)



d [base cover](#)

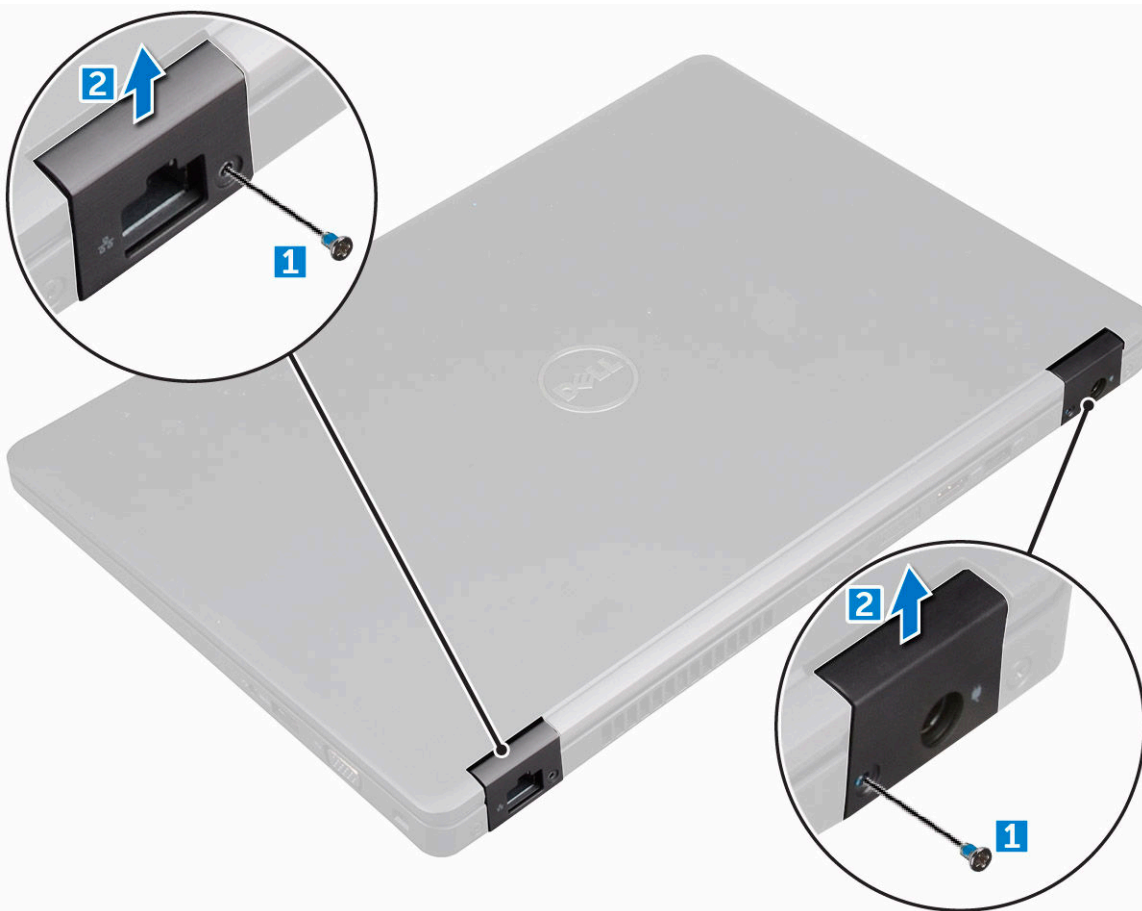
4 Follow the procedure in [After working inside your computer](#).

Display hinge cover

Removing display hinge cover

The following procedure is applicable only if your computer is a non-touch computer.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the display hinge cover:
 - a Remove the cosmetic screw that secures the display hinge cover to the display assembly [1].
 - b Lift the display hinge cover away from the display hinge [2].
 - c Repeat step a and step b to remove the other display hinge cover.



Installing display hinge cover

- 1 Place the display hinge cover on the display hinge.
- 2 Tighten the cosmetic screw to secure the display hinge cover to the display hinge.
- 3 Repeat step a and step b to install the other display hinge cover.

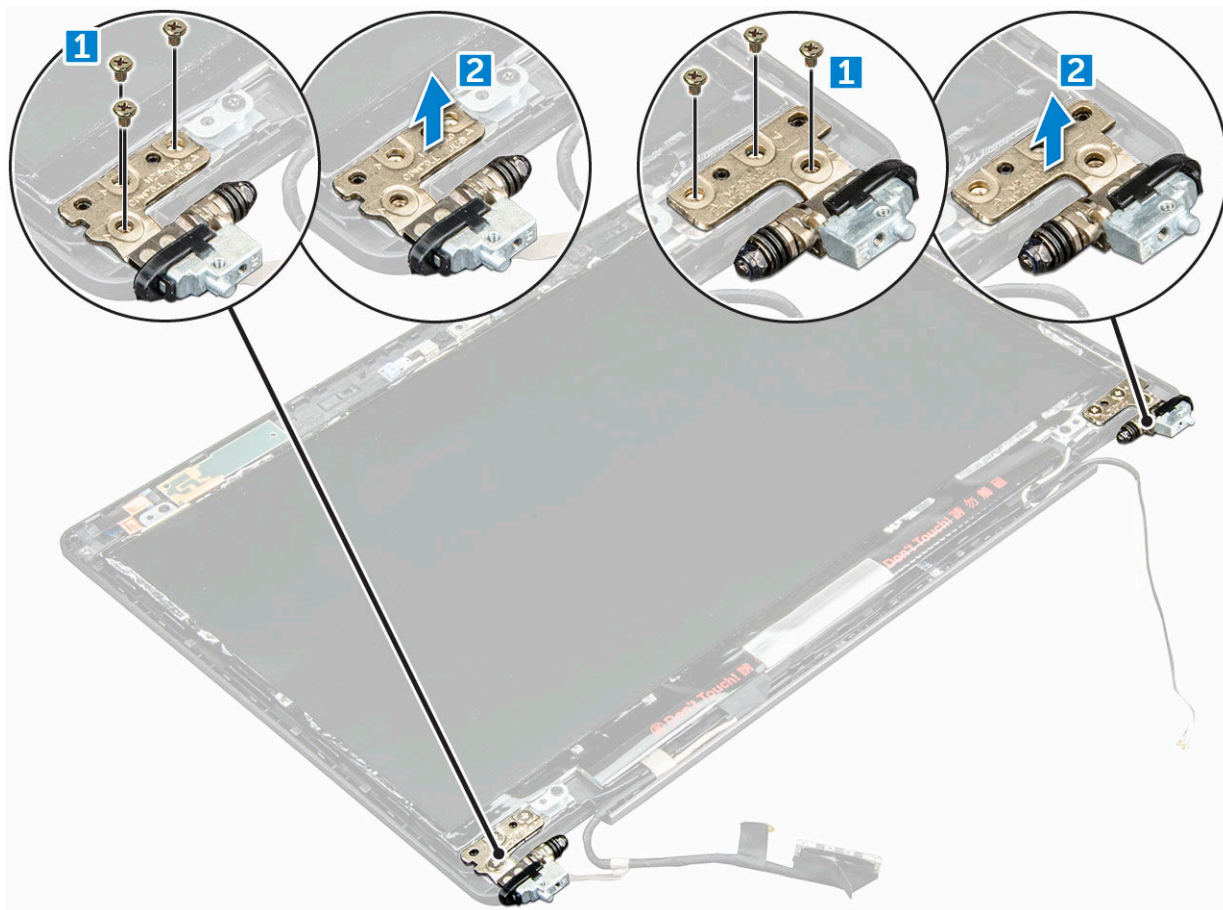
- 4 Install the:
 - a battery
 - b base cover
- 5 Follow the procedure in [After working inside your computer.](#)

Display hinges

Removing display hinge

The following procedure is applicable only if your computer is a non-touch computer.

- 1 Follow the procedure in [Before working inside your computer.](#)
- 2 Remove the:
 - a base cover
 - b battery
 - c WLAN card
 - d display assembly
 - e display bezel
- 3 To remove the display hinge:
 - a Remove the M2.5*3 screws that secure the display hinge to the display assembly [1].
 - b Lift the display hinge away from the display assembly [2].
 - c Repeat step a and step b to remove the other display hinge.



Installing display hinge

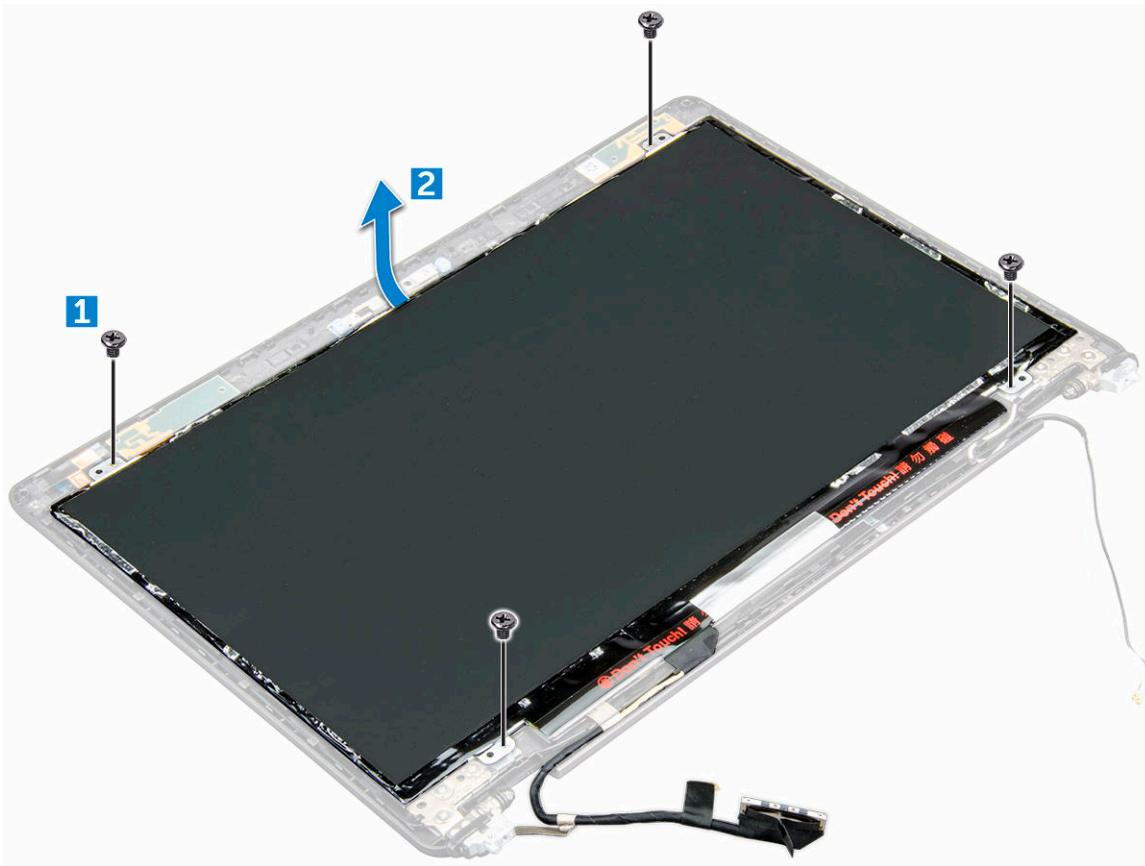
- 1 Place the display hinge on the display assembly.
- 2 Tighten the M2.5*3 screws to secure the display hinge to the display assembly.
- 3 Repeat step a and step b to install the other display hinge.
- 4 Install the:
 - a [display bezel](#)
 - b [display assembly](#)
 - c [WLAN card](#)
 - d [battery](#)
 - e [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

Display panel

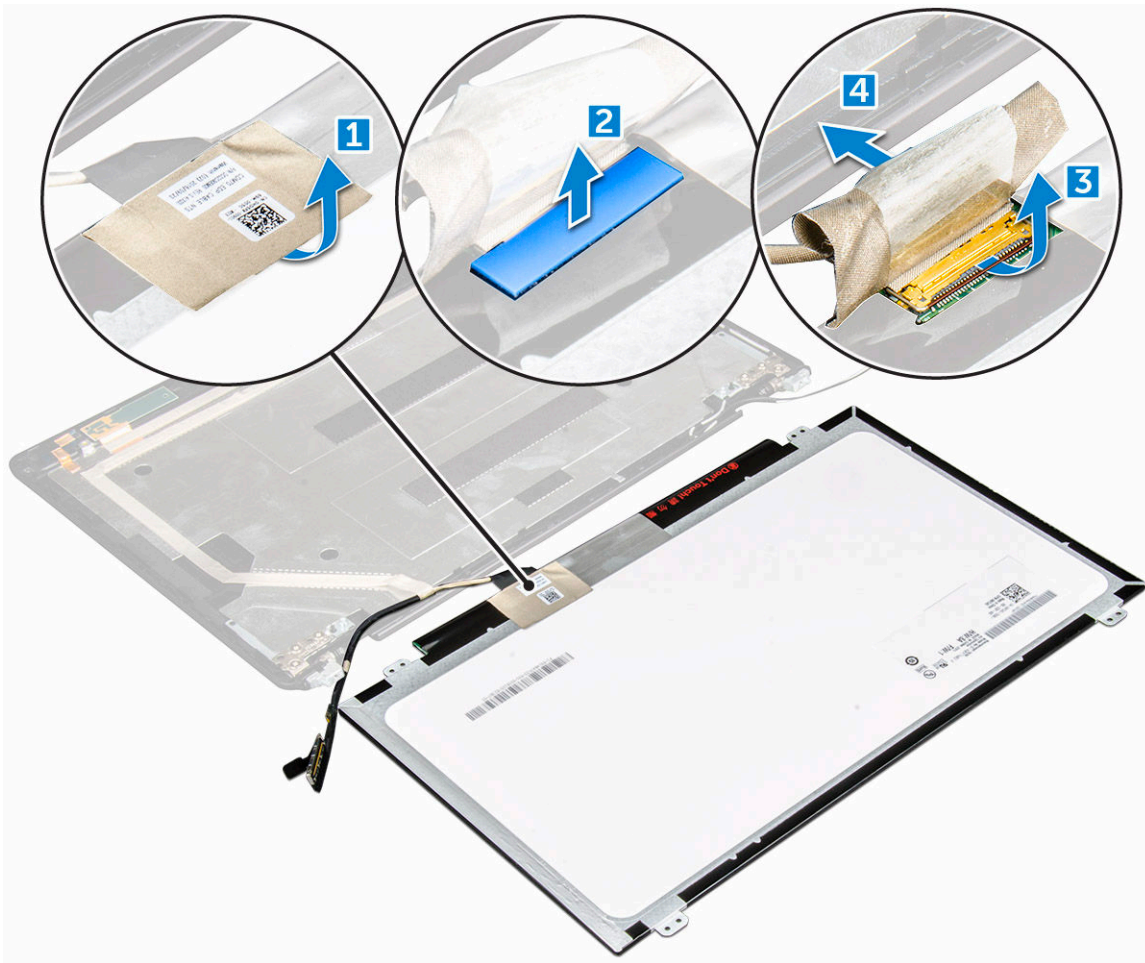
Removing display panel

The following procedure is applicable only if your computer is a non-touch computer.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [display assembly](#)
 - e [display bezel](#)
- 3 Remove the M2*3 screws that secure the display panel to the display assembly [1] and lift to turn over the display panel to access the eDP cable [2].



- 4 To remove the display panel:
 - a Peel the adhesive tape [1].
 - b Lift the blue tape that secures the eDP cable [2].
 - c Lift the latch and disconnect the eDP cable from the connector on the display panel [3] [4].



Installing display panel

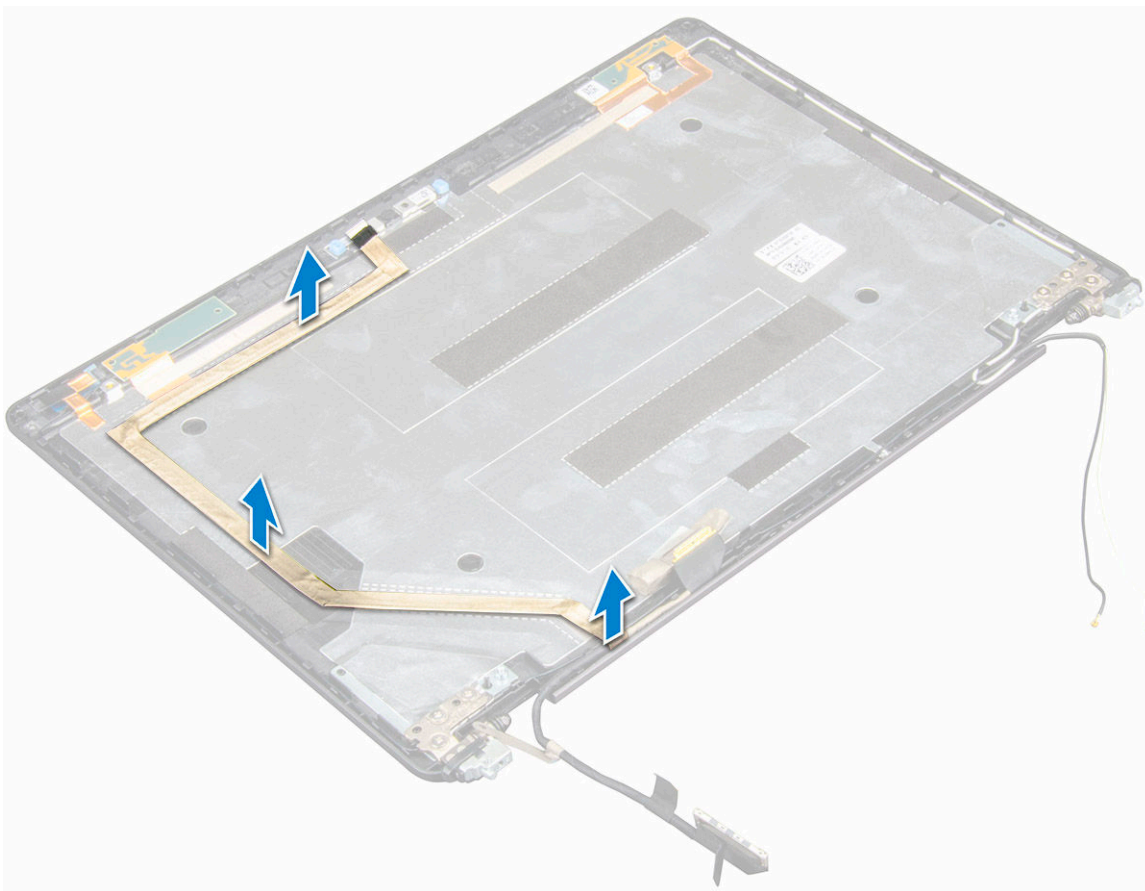
- 1 Connect the eDP cable to the connector and affix the blue tape.
- 2 Affix the adhesive tape to secure the eDP cable.
- 3 Replace the display panel to align with the screw holders on the display assembly.
- 4 Tighten the M2*3 screws to secure the display panel to the display assembly.
- 5 Install the:
 - a display bezel
 - b display assembly
 - c WLAN card
 - d battery
 - e base cover
- 6 Follow the procedure in [After working inside your computer](#).

eDP cable

Removing eDP cable

The following procedure is applicable only if your computer is a non-touch computer.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [display assembly](#)
 - e [display bezel](#)
 - f [display panel](#)
- 3 Peel the eDP cable from the adhesive to remove it from the display.



Installing eDP cable

- 1 Affix the eDP cable on the display panel.
- 2 Install the:
 - a [display panel](#)
 - b [display bezel](#)
 - c [display assembly](#)



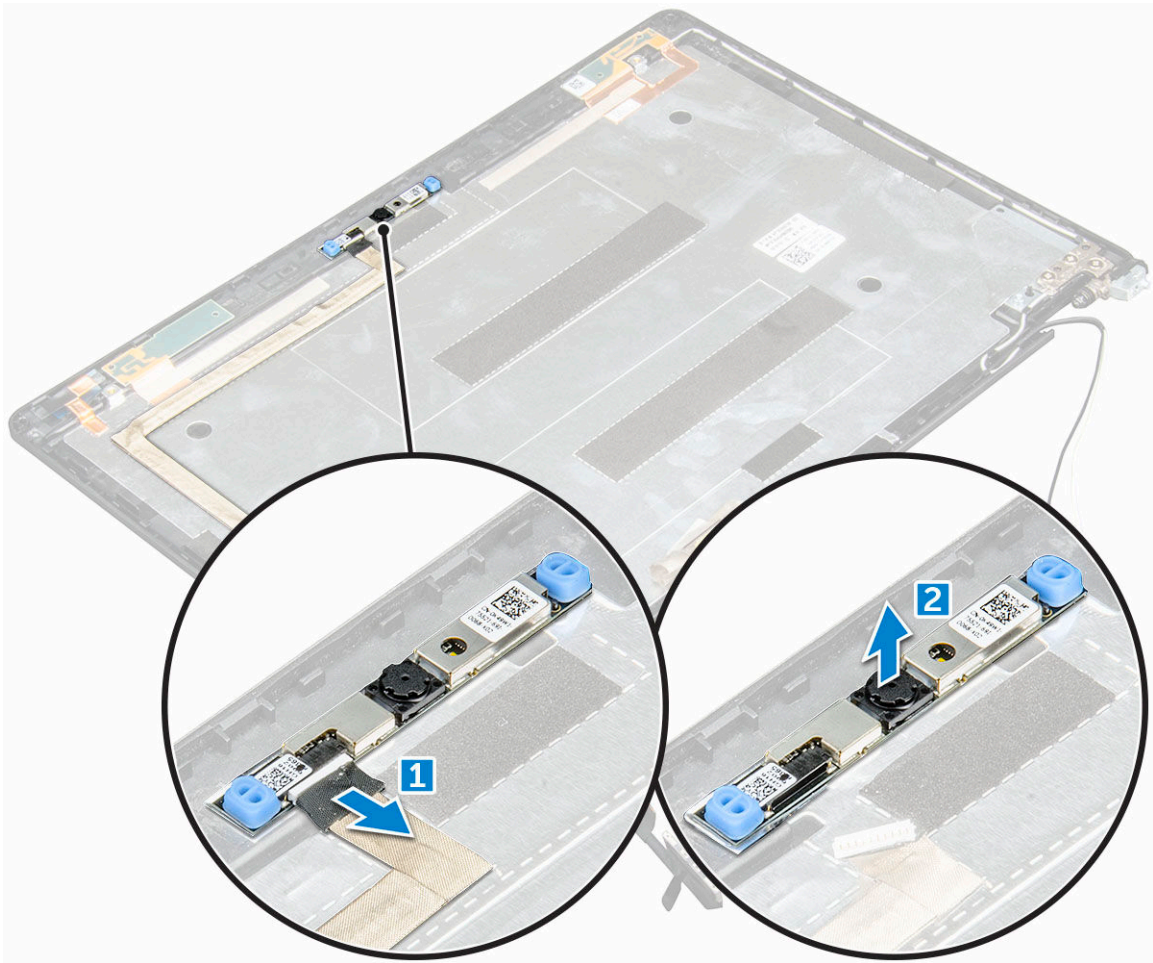
- d WLAN card
- e battery
- f base cover

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

Camera

Removing camera

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
 - c WLAN card
 - d display assembly
 - e display bezel
 - f display panel
- 3 To remove the camera:
 - a Disconnect the camera cable from the connector [1].
 - b Lift the camera away from the display [2].



Installing camera

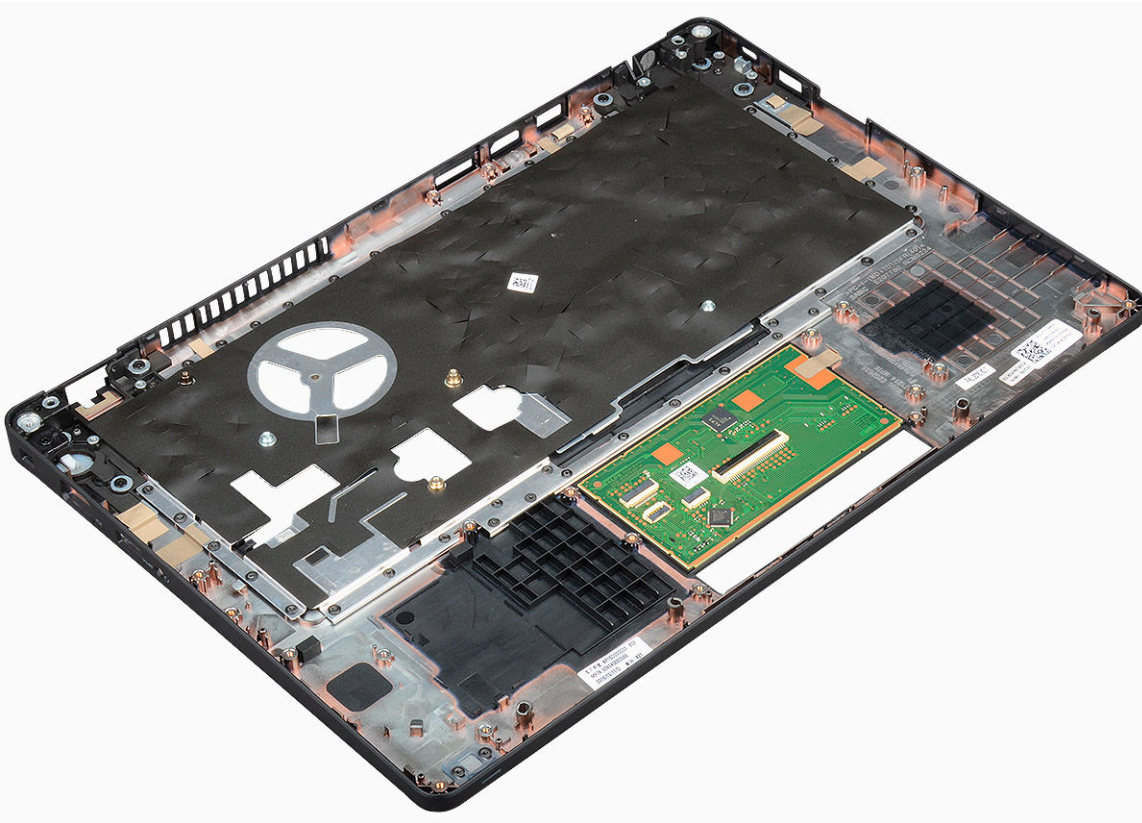
- 1 Insert the camera into the slot on the display assembly.
- 2 Connect the camera cable to the connector.
- 3 Install the:
 - a display panel
 - b display bezel
 - c display assembly
 - d WLAN card
 - e battery
 - f base cover
- 4 Follow the procedure in [After working inside your computer](#).

Palm rest

Removing palm rest

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
 - c WLAN card
 - d SSD card
 - e memory module
 - f coin cell battery
 - g system fan
 - h heat sink
 - i display assembly
 - j chassis frame
 - k smart card reader
 - l LED board
 - m system board
- 3 The palm rest is the remaining component after removing all the components.





Installing palmrest

- 1 Place the palm rest on a flat surface.
- 2 Install the:
 - a system board
 - b smart card reader
 - c LED board
 - d chassis frame
 - e system fan
 - f heat sink
 - g display assembly
 - h coin cell battery
 - i memory module
 - j SSD card
 - k WLAN card
 - l battery
 - m base cover
- 3 Follow the procedure in [After working inside your computer](#).

Technology and components

Power adapter

This laptop is shipped with 65 W or 90 W power adapter.

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

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

Processors

This laptop is shipped with the following processors:

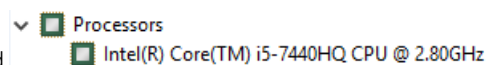
- Intel Core i3-7100U
- Intel Core i5-7200U
- Intel Core i5-7300U
- Intel Core i7-7600U
- Intel Core i5-7300HQ
- Intel Core i5-7440HQ
- Intel Core i7-7820HQ

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

Identifying processors in Windows 10

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

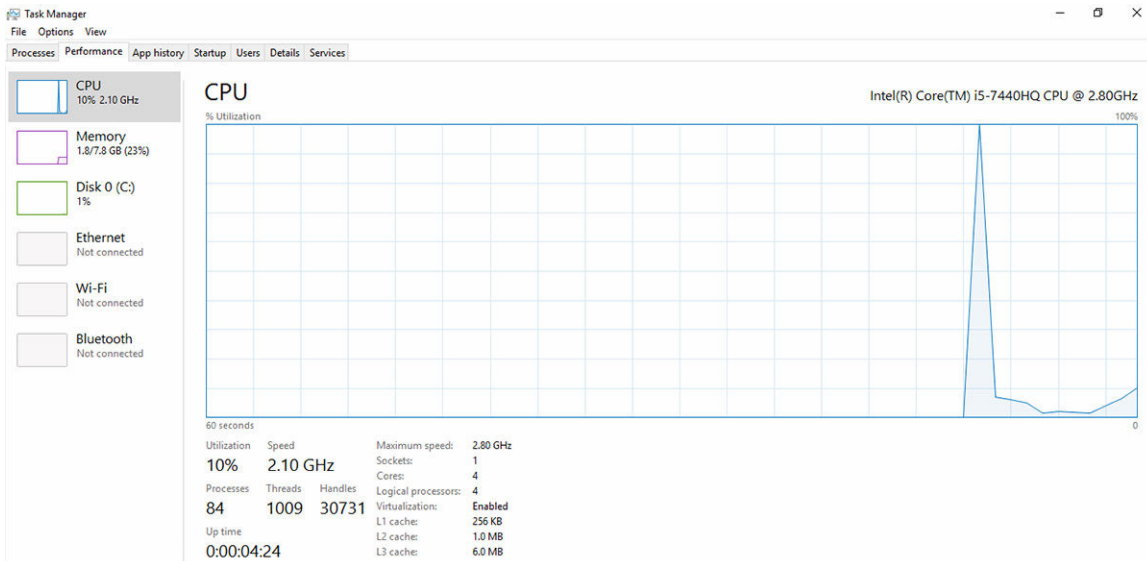
The processor information is displayed.



Verifying the processor usage in Task Manager

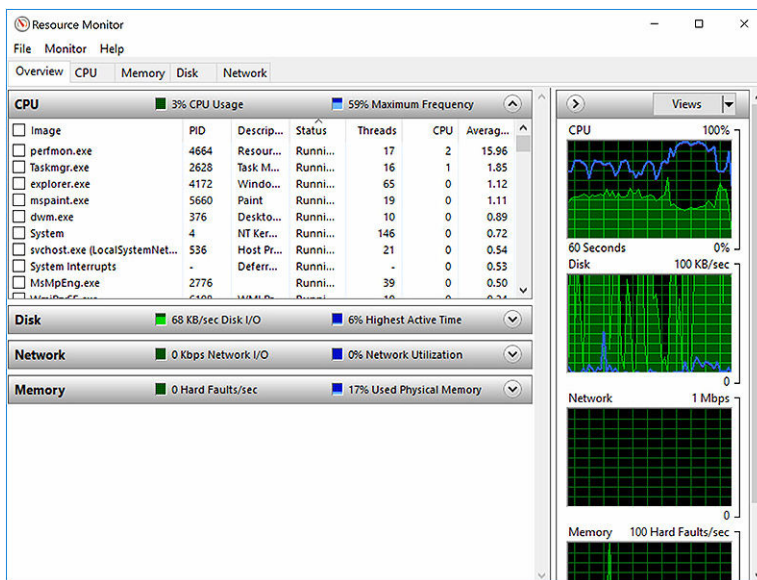
- 1 Press and hold the taskbar.
- 2 Select **Start Task Manager**.
The **Windows Task Manager** window is displayed.
- 3 Click the **Performance** tab in the **Windows Task Manager** window.

The processor performance details are displayed.



Verifying the processor usage in Resource Monitor

- 1 Press and hold the taskbar.
- 2 Select **Start Task Manager**.
The **Windows Task Manager** window is displayed.
- 3 Click the **Performance** tab in the **Windows Task Manager** window.
The processor performance details are displayed.
- 4 Click **Open Resource Monitor**.



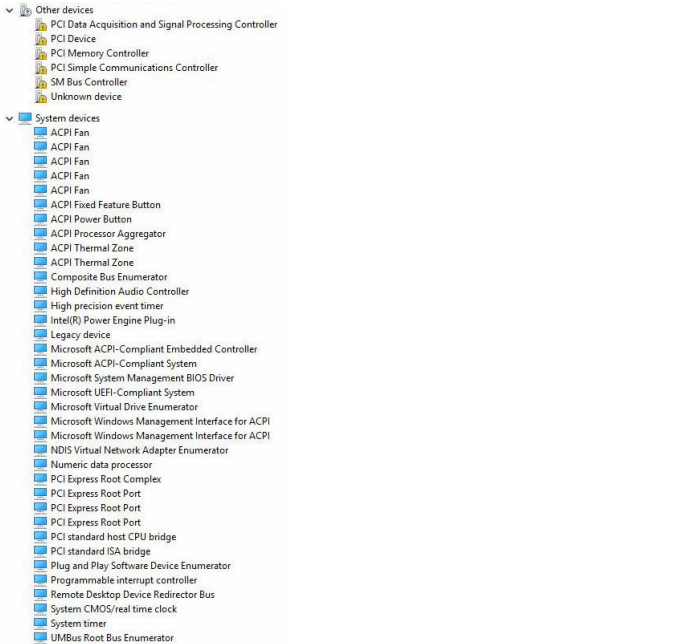
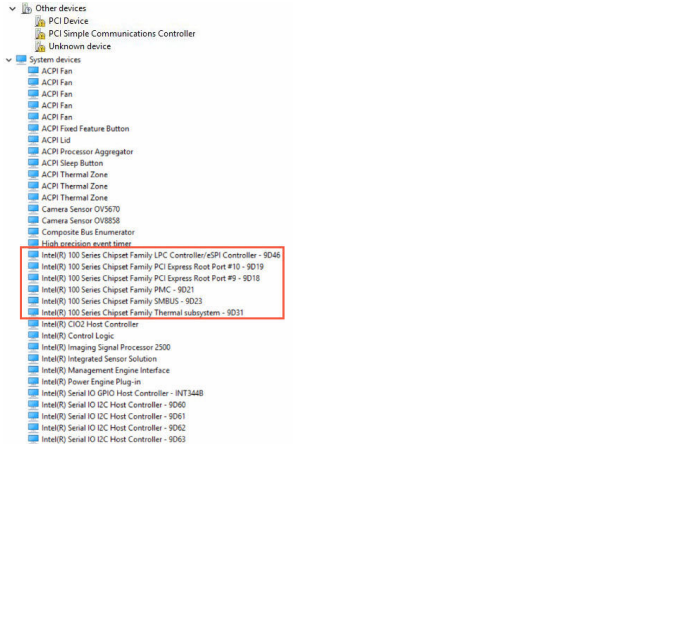
Chipsets

All laptops or notebook communicate with the CPU through the chipset. This laptop is shipped with the Intel 100 Series chipset .

Intel chipset drivers

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

Table 1. Intel chipset drivers

Before installation	After installation
	


Downloading the chipset driver

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

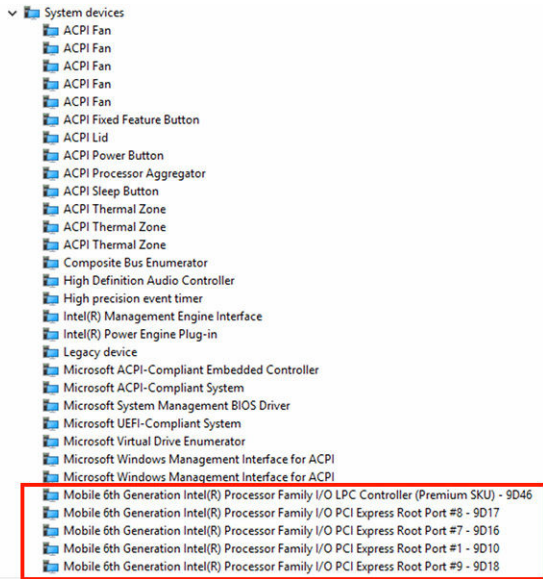
NOTE: If you do not have the Service Tag, use the autodetect feature or manually browse for your laptop model.

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

Identifying the chipset in Device Manager on Windows 10

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





Graphic options

This laptop is shipped with the following graphics chipset options:

- Intel HD Graphics 620
- Intel HD Graphics 630
- NVIDIA GeForce 930MX 64 Bit
- NVIDIA GeForce 940MX 64 Bit

Intel HD Graphics drivers

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

Table 2. Intel HD Graphics drivers

Before installation	After installation
<ul style="list-style-type: none"> Display adapters <ul style="list-style-type: none"> Microsoft Basic Display Adapter Sound, video and game controllers <ul style="list-style-type: none"> High Definition Audio Device High Definition Audio Device 	<ul style="list-style-type: none"> Display adapters <ul style="list-style-type: none"> Intel(R) HD Graphics 630

Downloading drivers

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

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

- 4 Click **Drivers and Downloads**.
- 5 Select the operating system installed on your laptop.
- 6 Scroll down the page and select the graphic driver to install.



- 7 Click **Download File** to download the graphic driver for your laptop.
- 8 After the download is complete, navigate to the folder where you saved the graphic driver file.
- 9 Double-click the graphic driver file icon and follow the instructions on the screen.

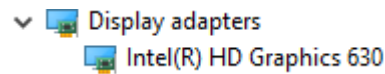
Display options

This laptop has the following display options:

- 14.0-inch HD Anti-glare (1366 x 768)
- 14.0-inch FHD Anti-glare (1920 x 1080)
- 14.0-inch FHD Touch (1920 x 1080)

Identifying the display adapter

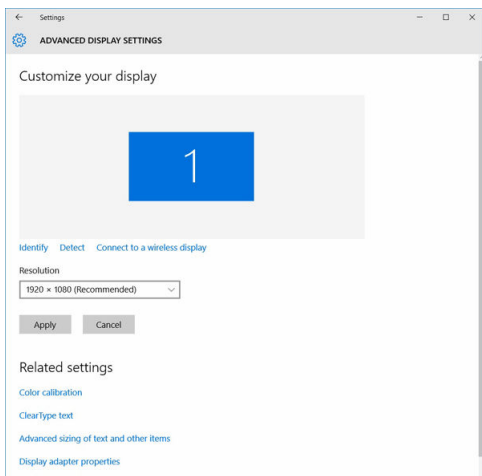
- 1 Start the **Search Charm** and select **Settings**.
- 2 Type `Device Manager` in the search box and tap **Device Manager** from the left pane.
- 3 Expand **Display adapters**.



The display adapters are displayed.

Changing the screen resolution

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



Rotating the display

- 1 Press and hold on the desktop screen.
A sub menu is displayed.
- 2 Select **Graphic Options > Rotation** and choose one of the following:




- Rotate to Normal
- Rotate to 90 Degrees
- Rotate to 180 Degrees
- Rotate to 270 Degrees

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

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

Adjusting brightness in Windows 10

To enable or disable automatic screen brightness adjustment:

- 1 Swipe-in from the right edge of the display to access the Action Center.
- 2 Tap or click **All Settings**  > **System** > **Display**.
- 3 Use the **Adjust my screen brightness automatically** slider to enable or disable automatic-brightness adjustment.

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

Cleaning the display

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

NOTE: Never spray any cleaning solutions directly on the screen; spray it to the cleaning cloth.

- 4 Gently wipe the screen in a circular motion. Do not press hard on the cloth.

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

NOTE: Do not leave any liquid on the screen.

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

Using touch screen in Windows 10

Follow these steps to enable or disable the touch screen:

- 1 Go to the Charms Bar and tap **All Settings** .
- 2 Tap **Control Panel**.
- 3 Tap **Pen and Input Devices** in the **Control Panel**.
- 4 Tap the **Touch** tab.
- 5 Select **Use your finger as an input device** to enable the touch screen. Clear the box to disable the touch screen.

Connecting to external display devices

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

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

① | **NOTE:** For more information, see the document that shipped with your display device.

Realtek ALC3246 Waves MaxxAudio Pro controller

This laptop is shipped with integrated Realtek ALC3246-CG Waves MaxxAudio Pro controller. It is a High Definition audio codec designed for Windows desktop and laptops.

Downloading the audio driver

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

① | **NOTE:** If you do not have the Service Tag, use the autodetect feature or manually browse for your laptop model.

- 4 Click **Drivers and Downloads**.
- 5 Select the operating system installed on your laptop.
- 6 Scroll down the page and expand **Audio**.
- 7 Select the audio driver.
- 8 Click **Download File** to download the latest version of the audio driver for your laptop.
- 9 After the download is complete, navigate to the folder where you saved the audio driver file.
- 10 Double-click the audio driver file icon and follow the instructions on the screen.

Identifying the audio controller in Windows 10


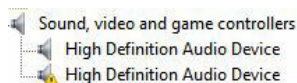
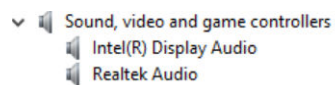
- 1 Swipe from the right edge to access the **Search Charm** and select **All Settings** .
- 2 Type `Device Manager` in the search box and select **Device Manager** from the left pane.
- 3 Expand **Sound, video and game controllers**.
The audio controller is displayed.

Table 3. Identifying the audio controller in Windows 10

Before installation



After installation



Changing the audio settings

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

WLAN cards

This laptop supports the following options:

- Qualcomm QCA61x4A
- QCA 2x2 AC with Bluetooth (non vPro)
- Intel 8265 without Bluetooth
- 2x2 AC without Bluetooth (vPro capable)-FED
- Intel 8265
- 2x2 AC with Bluetooth (vPro capable)

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

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



Hard drive options

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

Identifying the hard drive in Windows 10

- 1 Tap or click **All Settings**  on the Windows 10 Charms Bar.
- 2 Tap or click **Control Panel**, select **Device Manager**, and expand **Disk drives**.

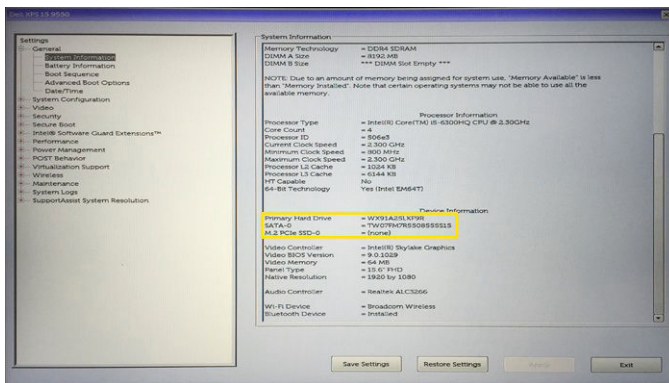


The hard drive is listed under **Disk drives**.

Identifying the hard drive in the BIOS

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

Hard drive is listed under the **System Information** under the **General** group.



Camera features

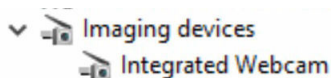
This laptop is shipped with front-facing camera with the image resolution of 1280 x 720 (maximum).

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

 **NOTE:** The laptop is also shipped with no camera option.

Identifying the camera in Device Manager on Windows 10

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

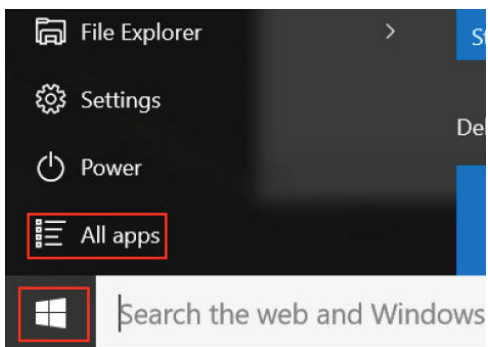


Starting the camera

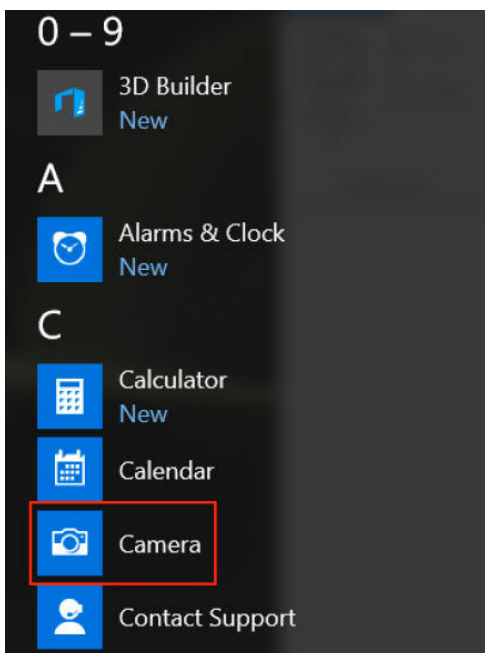
To start the camera, open an application that uses the camera. For instance, if you tap the Dell webcam central software or the Skype software that is shipped with the laptop, the camera turns on. Similarly, if you are chatting on the internet and the application requests to access the webcam, the webcam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

Starting the camera application

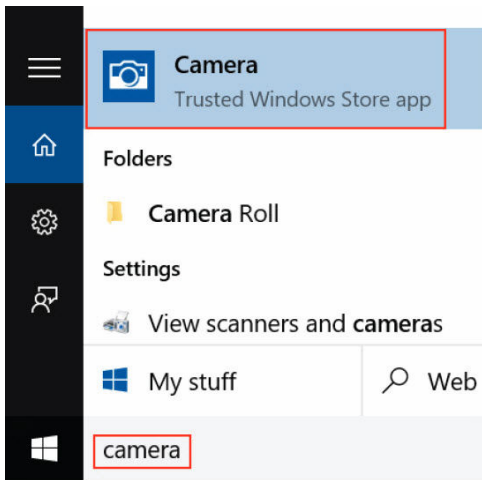
- 1 Tap or click the **Windows** button and select **All apps**.



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



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




Memory features

This laptop supports a minimum memory of :

- 4 GB and a maximum of 32 GB DDR4 memory, up to 2133 MHz (dual core).
- 4 GB and a maximum of 32 GB DDR4 memory, up to 2400 MHz (quad core).

Verifying system memory in Windows 10

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

Verifying system memory in system setup (BIOS)

- 1 Turn on or restart your laptop.
- 2 Perform one of the following actions after the Dell logo is displayed:
 - With keyboard — Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.
 - Without keyboard — When the **F12 boot selection** menu is displayed, press the Volume Down button to enter BIOS setup. To enter the Boot selection menu, press the Volume Up button.
- 3 On the left pane, select **Settings > General > System Information**.
The memory information is displayed on the right pane.

Testing memory using ePSA

- 1 Turn on or restart your laptop.
- 2 Perform one of the following actions after the Dell logo is displayed:
 - With keyboard — Press F2.
 - Without keyboard — Press and hold the **Volume Up** button when the Dell logo is displayed on the screen. When the F12 boot selection menu is displayed, select **Diagnostics** from the boot menu, and press Enter.

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














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



Realtek HD audio drivers

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

Table 4. Realtek HD audio drivers

Before installation	After installation
<ul style="list-style-type: none">▼  Audio inputs and outputs<ul style="list-style-type: none"> Microphone (High Definition Audio Device) Speakers (High Definition Audio Device)▼  Sound, video and game controllers<ul style="list-style-type: none"> High Definition Audio Device Intel(R) Display Audio	<ul style="list-style-type: none">▼  Audio inputs and outputs<ul style="list-style-type: none"> Microphone Array (Realtek High Definition Audio(SST)) Speakers / Headphones (Realtek High Definition Audio(SST))▼  Sound, video and game controllers<ul style="list-style-type: none"> Intel(R) AIUStream Camera 2500 Intel(R) Display Audio Realtek High Definition Audio(SST)



System setup options

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

Topics:

- [Boot Sequence](#)
- [Navigation keys](#)
- [System Setup overview](#)
- [Accessing System Setup](#)
- [General screen options](#)
- [System Configuration screen options](#)
- [Video screen options](#)
- [Security screen options](#)
- [Secure Boot screen options](#)
- [Intel Software Guard Extensions](#)
- [Performance screen options](#)
- [Power Management screen options](#)
- [POST Behavior screen options](#)
- [Virtualization support screen options](#)
- [Wireless screen options](#)
- [Maintenance screen options](#)
- [System Log screen options](#)
- [Updating the BIOS](#)
- [System and setup password](#)

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive

NOTE: XXX denotes the SATA drive number.

- Optical Drive
- Diagnostics

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

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



Navigation keys

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

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

NOTE: For the standard graphics browser only.

Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
F1	Displays the System Setup help file.

System Setup overview

System Setup allows you to:

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

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

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

Accessing System Setup

- 1 Turn on (or restart) your computer.
- 2 After the white Dell logo appears, press F2 immediately.
The System Setup page is displayed.

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

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

General screen options

This section lists the primary hardware features of your computer.

Option	Description
System Information	This section lists the primary hardware features of your computer.


- System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code.

Option	Description
	<ul style="list-style-type: none"> · Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, 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 Primary Hard Drive, M.2 SATA2, M.2 SATA, M.2 PCIe SSD-0, LOM 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 and the type of AC adapter connected to the computer.
Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system. <ul style="list-style-type: none"> · Diskette Drive · Internal HDD · USB Storage Device · CD/DVD/CD-RW Drive · Onboard NIC
Advanced Boot Options	This option allows you the legacy option ROMs to load. By default, the Enable Legacy Option ROMs is disabled.
UEFI Booth Path Security	This options controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu. <ul style="list-style-type: none"> · Always, Except Internal HDD · Always · Never: This option is enabled by default.
Date/Time	Allows you to change the date and time.

System Configuration screen options

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. The options are: <ul style="list-style-type: none"> · Disabled · Enabled · Enabled w/PXE: This option is enabled by default.
Parallel Port	Allows you to configure the parallel port on the docking station. The options are: <ul style="list-style-type: none"> · Disabled · AT: This option is enabled by default. · PS2 · ECP
Serial Port	Allows you to configure the integrated serial port. The options are: <ul style="list-style-type: none"> · Disabled · COM1: This option is enabled by default. · COM2 · COM3



Option	Description
SATA Operation	<ul style="list-style-type: none"> · COM4 <p>Allows you to configure the internal SATA hard-drive controller. The options are:</p> <ul style="list-style-type: none"> · Disabled · AHCI · RAID On: This option is enabled by default.
Drives	<p>Allows you to configure the SATA drives on board. All drives are enabled by default. The options are:</p> <ul style="list-style-type: none"> · SATA-0 · SATA-2 · SATA-4 · M.2 PCI-e SSD-0
SMART Reporting	<p>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.</p> <ul style="list-style-type: none"> · Enable SMART Reporting
USB Configuration	<p>This is an optional feature.</p> <p>This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy).</p> <p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p> <p>The options are:</p> <ul style="list-style-type: none"> · Enable USB Boot Support: This option is enabled by default. · Enable External USB Port: This option is enabled by default.
<p> NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p>	
USB Thunderbolt	<p>This is an optional feature.</p> <p>This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy).</p> <p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p> <p>The options are:</p> <ul style="list-style-type: none"> · Enable USB Boot Support: This option is enabled by default. · Enable External USB Port: This option is enabled by default. · Enable Thunderbolt Port: This option is enabled by default. · Enable Thunderbolt Boot Support. This is an optional feature. · Always Allows Dell Docks. This is an optional feature. · Enables Thunderbolt (and PCIe behind TBT) Pre-boot



Option	Description
USB PowerShare	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port.
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: This option is enabled by default. • Enable Hard Drive Free Fall Protection: This option is enabled by default. • Enable Secure Digital (SD) Card: This option is 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).

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

Security screen options

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password. <p>NOTE: You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password and the hard drive password.</p> <p>NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
System Password	Allows you to set, change or delete the system password. <p>NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
M.2 SATA SSD Password	Allows you to set, change, or delete the M.2 SATA SSD password. <p>NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
Strong Password	Allows you to enforce the option to always set strong passwords. <p>Default Setting: Enable Strong Password is not selected.</p> <p>NOTE: If Strong Password is enabled, Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.</p>
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.



Option	Description
Password Bypass	<p>Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:</p> <ul style="list-style-type: none"> · Disabled · Reboot bypass <p>Default setting: Disabled</p>
Password Change	<p>Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.</p> <p>Default setting: Allow Non-Admin Password Changes is selected.</p>
Non-Admin Setup Changes	<p>Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password.</p>
UEFI Capsule Firmware Updates	<p>Allows you to control whether this system allows BIOS updates via UEFI capsule update packages.</p> <ul style="list-style-type: none"> · Enable UEFI Capsule Firmware Updates <p>Default setting: Enabled</p>
TPM 2.0 Security	<p>Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:</p> <ul style="list-style-type: none"> · TPM On: This option is enabled by default. · Clear · PPI Bypass for Enabled Commands: This option is enabled by default. · Attestation Enable: This option is enabled by default. · Key Storage Enable: This option is enabled by default. · PPI Bypass for Disabled Commands · SHA-256: This option is enabled by default. · Disabled · Enabled <p> NOTE: To upgrade or downgrade TPM1.2/2.0, download the TPM wrapper tool (software).</p>
Computrace	<p>Allows you to activate or disable the optional Computrace software. The options are:</p> <ul style="list-style-type: none"> · Deactivate · Disable · Activate <p> NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed</p> <p>Default setting: Deactivate</p>
CPU XD Support	<p>Allows you to enable the Execute Disable mode of the processor.</p> <p>Enable CPU XD Support</p> <p>Default setting: Enabled</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>



Option	Description
	<ul style="list-style-type: none"> · Enable · One Time Enable · Disable <p>Default setting: Enabled</p>
Admin Setup Lockout	<p>Allows you to prevent users from entering Setup when an Administrator password is set.</p> <p>Default Setting: Disabled</p>
Master Password Lockout	<p>Allows you to disable master password support. Hard disk password need to be cleared before the setting can be changed</p> <ul style="list-style-type: none"> · Enable Master Password Lockout <p>Default setting: Disabled</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>
Expert Key Management	<p>Allows you to manipulate the security key databases only if the system is in Custom Mode. The Enable Custom Mode option is disabled by default. The options are:</p> <ul style="list-style-type: none"> · PK · KEK · db · dbx <p>If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:</p> <ul style="list-style-type: none"> · Save to File—Saves the key to a user-selected file · Replace from File—Replaces the current key with a key from a user-selected file · Append from File—Adds a key to the current database from a user-selected file · Delete—Deletes the selected key · Reset All Keys—Resets to default setting · Delete All Keys—Deletes all the keys <p>NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.</p>

Intel Software Guard Extensions

Option	Description
Intel SGX Enable	<p>This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:</p>



Option	Description
	<ul style="list-style-type: none"> · Disabled · Enabled <p>Default setting: Disabled</p>
Enclave Memory Size	<p>This option sets SGX Enclave Reserve Memory Size. The option are:</p> <ul style="list-style-type: none"> · 32 MB · 64 MB · 128 MB

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.</p> <ul style="list-style-type: none"> · All: This option is selected by default. · 1 · 2 · 3
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>
Wake on Dell USB-C Dock.	<p>Allows you to wake on Dell USB-C dock.</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



Option	<p>Description</p> <ul style="list-style-type: none"> · Every Day · Weekdays · Select Days <p>Default setting: Disabled</p>
USB Wake Support	<p>Allows you to enable USB devices to wake the system from Standby.</p> <p>i NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.</p> <ul style="list-style-type: none"> · Enable USB Wake Support · Wake on Dell USB-C Dock: This option is enabled by default.
Wireless Radio Control	<p>Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection.</p> <ul style="list-style-type: none"> · Control WLAN Radio · Control WWAN Radio <p>Default setting: The option is disabled.</p>
Wake on LAN/WLAN	<p>Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.</p> <ul style="list-style-type: none"> · Disabled · LAN Only · WLAN Only · LAN or WLAN <p>Default setting: Disabled</p>
Block Sleep	<p>This option lets you block entering to sleep (S3 state) in operating system environment.</p> <p>Block Sleep (S3 state)</p> <p>Default setting: This option is disabled</p>
Peak Shift	<p>This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached.</p>
Advanced Battery Charge Configuration	<p>This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health.</p> <p>Disabled</p> <p>Default setting: Disabled</p>
Primary Battery Charge Configuration	<p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> · Adaptive · Standard — Fully charges your battery at a standard rate. · ExpressCharge — The battery charges over a shorter period of time using Dell's fast charging technology. This option is enabled by default. · Primarily AC use



Option	Description
	<ul style="list-style-type: none"> · Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p>NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p>
Sleep Mode	<p>This option is used to select which sleep mode will be used by operating system.</p> <ul style="list-style-type: none"> · OS Automatic Selection · Force S3: This option is enabled by default.
Type-C Connector Power	<p>This option lets you set the maximum power that can be drawn from the Type-C connector.</p> <ul style="list-style-type: none"> · 7.5 Watts: This option is enabled by default. · 15 Watts

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: This option is enabled by default. · By Numlock <p>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"> · Fn Lock. This option is selected by default. · Lock Mode Disable/Standard · Lock Mode Enable/Secondary
Fastboot	<p>Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:</p>



Option	Description
	<ul style="list-style-type: none"> Minimal Thorough (default) Auto
Extended BIOS POST Time	<p>Allows you to create an additional preboot delay. The options are:</p> <ul style="list-style-type: none"> 0 seconds. This option is enabled by default. 5 seconds 10 seconds
Full Screen Logo	<p>This option will display full screen logo if your image match screen resolution</p> <ul style="list-style-type: none"> Enable Full Screen Logo
Warnings and Error	<p>This option will cause the boot process to only pause when warnings or errors are detected.</p> <ul style="list-style-type: none"> Prompt on Warnings and Errors This option is enabled by default. Continue on Warnings Continue on Warnings and Errors

 **NOTE: Error deemed critical to the operation of the system hardware will always halt the system.**


Virtualization support screen options

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

Wireless screen options

Option	Description
Wireless Switch	<p>Allows to set the wireless devices that can be controlled by the wireless switch. The options are:</p> <ul style="list-style-type: none"> WWAN GPS (on WWAN Module) WLAN/WiGig Bluetooth <p>All the options are enabled by default.</p>



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

Maintenance screen options

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

System Log screen options

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

Updating the BIOS

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

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

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

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

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

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

System and setup password

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

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

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

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

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

Assigning a system password and setup password

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

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



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

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

Deleting or changing an existing system and/or setup password

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



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

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

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

Technical specifications

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

- Windows 10, click or tap **Start**  > **Settings** > **System** > **About**.
- Windows 8.1 and Windows 8, from the charms sidebar, click or tap **Settings** > **Change PC settings**. In the **PC Settings** window, select **PC and devices** > **PC Info**.
- Windows 7, click **Start** , right-click **My Computer**, and then select **Properties**.

Topics:

- System specifications
- Processor specifications
- Memory specifications
- Storage specifications
- Audio specifications
- Video specifications
- Camera specifications
- Communication specifications
- Port and connector specifications
- Contactless smart card specifications
- Display specifications
- Keyboard specifications
- Touchpad specifications
- Battery specifications
- AC Adapter specifications
- Physical specifications
- Environmental specifications

System specifications


Feature	Specification
Chipset	<ul style="list-style-type: none"> Intel 7th Generation processors Intel Dual Core processors Intel Quad Core processors
DRAM bus width	64-bit
Flash EPROM	SPI 128 Mbits
PCIe bus	100 MHz
External Bus Frequency	PCIe Gen3 (8 GT/s)



Processor specifications

Feature	Specification
Types	7th Generation Intel Core i3 series or i5 series or i7 series processors
L3 cache	
i3 series	3 MB
i5 series	<ul style="list-style-type: none">• Dual core - 3 MB• Quad core - 6 MB
i7 series	<ul style="list-style-type: none">• Dual core - 4 MB• Quad core (vPro) - 8 MB

Memory specifications

Feature	Specification
Memory connector	Two SODIMM slots
Memory capacity per slot	4 GB, 8 GB, and 16 GB
Memory type	DDR4
Speed	<ul style="list-style-type: none">• 2133 MHz• 2400 MHz
	<p> NOTE: The memory module in the Dual Core processor will have 2400 MHz printed, but it performs at 2133 MHz.</p>
Minimum memory	4 GB
Maximum memory	32 GB

Storage specifications

Feature	Specification
HDD	Up to 1 TB
SSD M.2 SATA / PCIe	Up to 512 GB

Audio specifications

Feature	Specification
Types	High-definition audio
Controller	Realtek ALC3246
Stereo conversion	Digital audio-out through HDMI — up to 7.1 compressed and uncompressed audio



Feature	Specification
Internal interface	High-definition audio codec
External interface	Stereo headset/mic combo
Speakers	Two
Internal speaker amplifier	2 W (RMS) per channel
Volume controls	Hot keys

Video specifications

Feature	Specification
Type	Integrated on system board, hardware accelerated
UMA controller	<ul style="list-style-type: none"> Intel HD Graphics 620 Intel HD Graphics 630
Data bus	Integrated video
External display support	<ul style="list-style-type: none"> 19-pin HDMI connector 15-pin VGA connector

Camera specifications

Feature	Specification
Camera resolution	0.92 megapixels
HD Panel Resolution	1280 x 720 pixels
FHD Panel Resolution	1280 x 720 pixels
HD Panel Video Resolution (maximum)	1280 x 720 pixels
FHD Panel Video Resolution (maximum)	1280 x 720 pixels
Diagonal viewing angle	74°

Communication specifications

Features	Specification
Network adapter	10/100/1000 Mb/s Ethernet (RJ-45)
Wireless	Internal wireless local area network (WLAN), wireless wide area network (WWAN), wireless gigabit (WiGig).

NOTE: WWAN and WiGig are optional.



Port and connector specifications

Feature	Specification
Audio	Stereo headset/mic combo
Video	<ul style="list-style-type: none">· One 19-pin HDMI connector· 15 pin VGA connector
Network adapter	One RJ-45 connector
USB	Three USB 3.0 ports (One USB 3.0 with PowerShare)
Memory card reader	SD 4.0
SmartCard reader	Optional
Micro SIM (uSIM) card	One external (optional)
Docking port	DisplayPort over USB Type-C Optional Thunderbolt 3

Contactless smart card specifications

Feature	Specification
Supported Smart Cards/Technologies	BTO with USH

Display specifications

Feature	Specification
Type	<ul style="list-style-type: none">· HD Anti-glare· FHD Anti-glare· FHD Touch
Height	205.6 mm (8.09 inches)
Width	320.9 mm (12.63 inches)
Diagonal	355.6 mm (14 inches)
Active area (X/Y)	
HD Anit-glare:	
Maximum resolution	1366 x 768
Maximum brightness	200 nits
Refresh rate	60 Hz
Maximum viewing angles (horizontal)	+/- 40 degrees



Feature	Specification
Maximum viewing angles (vertical)	+10/-30 degrees
Pixel pitch	0.226 mm (0.009 inches)
FHD Anti-glare:	
Maximum resolution	1920 x 1080
Maximum brightness	220 nits
Refresh rate	60 Hz
Maximum viewing angles (horizontal)	+/- 80 degrees
Maximum viewing angles (vertical)	+/- 80 degrees
Pixel pitch	0.161 mm (0.006 inches)
FHD Touch:	
Maximum resolution	1920 x 1080
Maximum brightness	220 nits
Refresh rate	60 Hz
Maximum viewing angles (horizontal)	+/- 80 degrees
Maximum viewing angles (vertical)	+/- 80 degrees
Pixel pitch	0.161 mm (0.006 inches)

Keyboard specifications

Feature	Specification
Number of keys	<ul style="list-style-type: none"> · United States: 82 keys · United Kingdom: 83 keys · Japan: 86 keys · Brazil: 84 keys

Touchpad specifications

Feature	Specification
Active Area:	
X-axis	99.50 mm
Y-axis	53.00 mm



Battery specifications

Feature	Specification	
Type	<ul style="list-style-type: none">· 42 WHr· 51 WHr· 68 WHr	
Depth	42 WHr	181 mm (7.126 inches)
	51 WHr	181 mm (7.126 inches)
	68 WHr	233 mm (9.17 inches)
Height	42 WHr	7.05 mm (0.28 inch)
	51 WHr	7.05 mm (0.28 inch)
	68 WHr	7.05 mm (0.28 inch)
Width	42 WHr	95.9 mm (3.78 inches)
	51 WHr	95.9 mm (3.78 inches)
	68 WHr	95.9 mm (3.78 inches)
Weight	42 WHr	210 g (0.52 lb)
	51 WHr	250 g (0.55 lb)
	68 WHr	340 g (0.74 lb)
Voltage	42 WHr	11.4 VDC
	51 WHr	11.4 VDC
	68 WHr	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· Discharge: 0°C to 70°C· Operating: 0°C to 35°C (32°F to 95°F)	
Non-operating	- 20°C to 65°C (- 4°F to 149°F)	
Coin cell battery	3 V CR2032 lithium coin cell	

AC Adapter specifications

Feature	Specification
Type	65 W and 90 W



Feature	Specification	
Input voltage	100 V AC to 240 V AC	
Input current (maximum)	65 W	1.7 A
	90 W	1.6 A
Input frequency	50 Hz to 60 Hz	
Output current	65 W	3.34 A
	90 W	4.62 A
Rated output voltage	19.5 V DC	
Temperature range (Operating)	0°C to 40°C (32°F to 104°F)	
Temperature range (Non-Operating)	-40°C to 70°C (-40°F to 158°F)	

Physical specifications

Feature	Specification
Front height	22.45 mm (0.90 inch)
Back height	22.45 mm (0.90 inch)
Width	333.4 mm (13.1 inches)
Depth	228.9 mm (9.0 inches)
Starting weight	3.52 lb (1.60 Kg)

Environmental specifications

Temperature	Specifications
Operating	0°C to 35°C (32°F to 95°F)
Storage	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	Specifications
Operating	10 % to 90 % (non condensing)
Storage	5 % to 95 % (non condensing)
Altitude (maximum)	Specifications
Operating	0 m to 3048 m (0 ft to 10,000 ft)
Non-operating	0 m to 10,668 m (0 ft to 35,000 ft)
Airborne contaminant level	G1 as defined by ISA-71.04-1985



Diagnostics

If you experience a problem with your computer, run the ePSA diagnostics before contacting Dell for technical assistance. The purpose of running diagnostics is to test your computer's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Topics:

- [Enhanced Pre-Boot System Assessment \(ePSA\) diagnostics](#)
- [Device status lights](#)
- [Battery status lights](#)

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

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

- 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.

You can launch the ePSA diagnostics in two ways:

- 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 displays, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
- 4 If you wish to run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
- 5 Select the device from the left pane and click **Run Tests**
- 6 If there are any issues, error codes are displayed.
Note the error code and contact Dell.

OR

- 1 Shutdown the computer.
- 2 Press and hold the fn key, while pressing the power button, and then release both.

The **Enhanced Pre-boot System Assessment** window displays, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.

- 3 On the boot menu screen, select the **Diagnostics** option.

The **Enhanced Pre-boot System Assessment** window displays, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.

- 4 If you wish to run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.




- 5 Select the device from the left pane and click **Run Tests**

- 6 If there are any issues, error codes are displayed.

Note the error code and contact Dell.

Device status lights

Table 5. Device status lights

Icon	Name	Description
	Power status light	Turns on when you turn on the computer and blinks when the computer is in a power management mode.
	Hard drive status light	Turns on when the computer reads or writes data.
	Battery charge indicator	Turns on steadily or blinks to indicate battery charge status.

The device status LEDs are usually located either on the top or left side of the keyboard. They display the storage, battery and wireless devices connectivity and activity. Apart from that they can be useful as a diagnostic tool when there's a possible failure to the system.

NOTE: The position of the power status light may vary depending on the system.

The following table lists how to read the LED codes when possible errors occur.

Table 6. Battery charge LED indicator

Amber blinking pattern	Problem description	Suggested resolution
2,1	CPU	CPU failure
2,2	System board: BIOS ROM	System board, covers BIOS corruption or ROM error
2,3	Memory	No memory/RAM detected
2,4	Memory	Memory/RAM failure
2,5	Memory	Invalid memory installed
2,6	System board: Chipset	System board/Chipset error
2,7	LCD	Replace the system board
3,1	RTC Power Failure	CMOS battery failure
3,2	PCI/Video	PCI or video card/chip failure
3,3	BIOS Recovery 1	Recovery image not found
3,4	BIOS Recovery 2	Recovery image found but invalid

The blinking patterns will consist of 2 set of numbers being represented by (First Group: Amber blinks, Second Group: White blinks)



NOTE:

- 1 First Group: The LED blinks 1 to 9 times followed by a brief pause with LED off at the interval of 1.5 seconds.(This is in Amber color)
- 2 Second Group: The LED blinks 1 to 9 times, that would be then followed by a longer pause before the next cycle starts again at the interval of 1.5 seconds.(This is in White color)

For Example: No Memory detected (2,3), Battery LED blinks two times of amber color followed by a pause, and then blinks three times of white color. The Battery LED will pause for 3 seconds before the next cycle repeat itself again.

Battery status lights

If the computer is connected to an electrical outlet, the battery light operates as follows:

Alternately blinking amber light and white light	An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop.
Alternately blinking amber light with steady white light	Temporary battery failure with AC adapter present.
Constantly blinking amber light	Fatal battery failure with AC adapter present.
Light off	Battery in full charge mode with AC adapter present.
White light on	Battery in charge mode with AC adapter present.

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.

