Dell Latitude 5480

Owner's Manual

D∆LL Technologies

Notes, cautions, and warnings

(i) **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.**

Contents

Working on your computer

Topics:

Safety instructions

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

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

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

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

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

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

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

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

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

Before working inside your computer

Steps

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

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

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

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

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

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

After working inside your computer

About this task

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

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

Steps

1. Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
2. Connect any telephone or network cables to your computer.

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

3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.

Turning off your computer

Turning off your — Windows

About this task

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

Steps

1. Click or tap ⊞ .

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

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

Turning off your computer — Windows 7

About this task

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

Steps

1. Click **Start**.
2. Click **Shut Down**.

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

Chassis view

Topics:

System front view
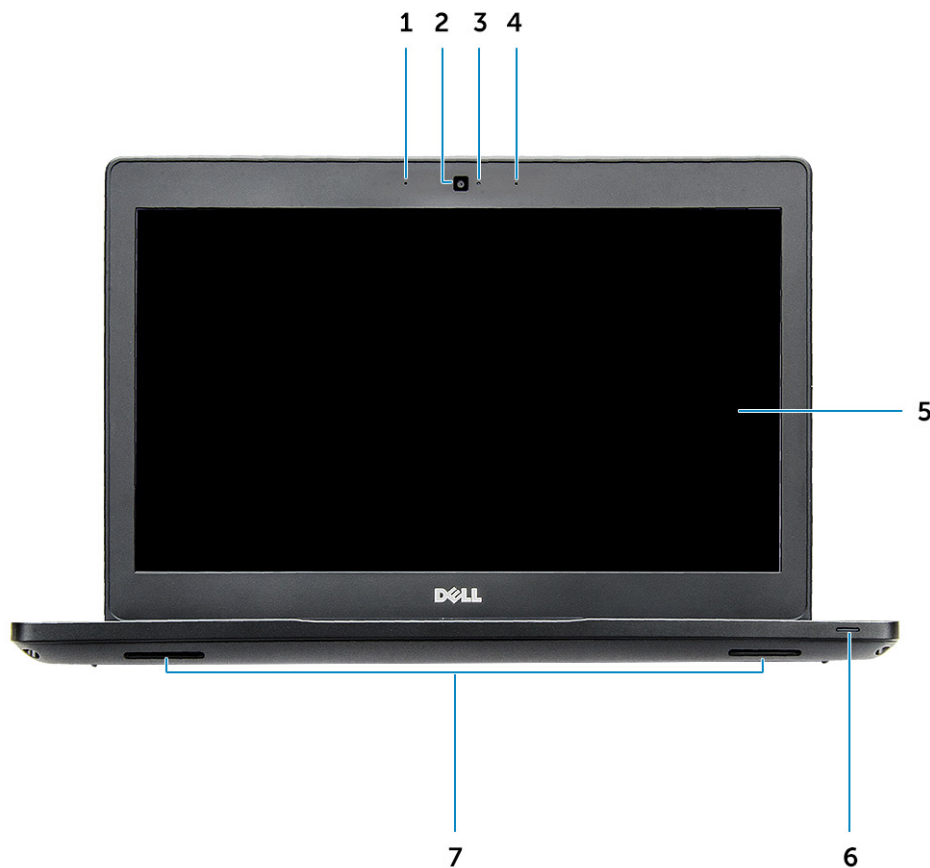
Figure 1. Front view

1. Dual array microphone
2. Camera
3. Camera status light
4. Dual array microphone

5. Display
6. Battery and charge status light
7. Speaker

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

System back view
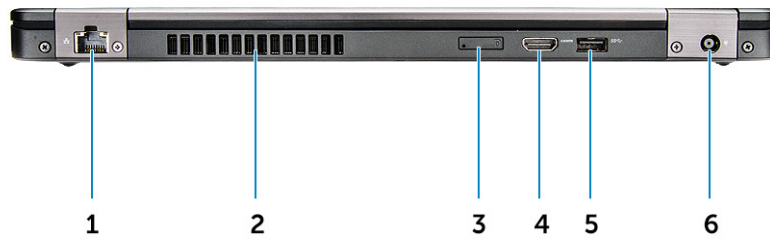
Figure 2. Back view

1. Network port
2. Fan vent
3. microSim card slot (optional)
4. HDMI port
5. USB 3.1 Gen 1 port
6. Power connector port

System side view(left)

Figure 3. Left view

1. Type-C connector/DisplayPort or USB 3.1 Gen 1/optional Thunderbolt3
2. USB 3.1 Gen 1 port
3. SD card reader

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

System side view(Right)
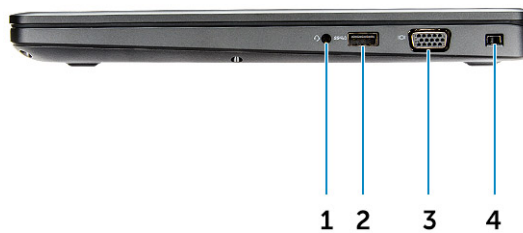
Figure 4. Right view

1. Headset/microphone port
2. USB 3.1 Gen 1 port with PowerShare
3. VGA port
4. Noble wedge lock slot

System top view

Figure 5. Top view

1. Power button/Power status LED
2. Keyboard
3. Palm rest
4. Touchpad

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

Bottom view
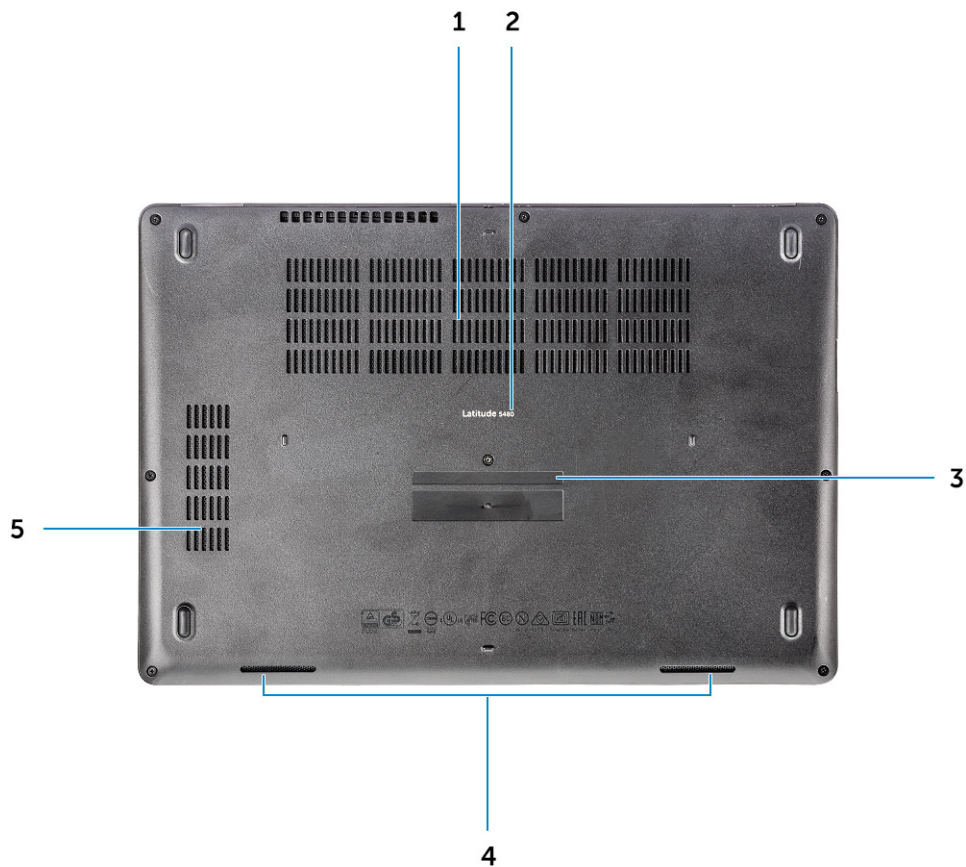
1. Fan vents
3. Service tag
5. Fan vent

2. Model name
4. Speaker

Hot key combination

Some keys on your keyboard have two icons on them. These keys can be used to type alternate characters or to perform secondary functions. To type the alternate character, press Shift and the desired key. To perform secondary functions, press **Fn** and the desired key.

The following table shows the features hot key combination:

Table 1. Hot key combination

Features	Function
Fn+F1	Mute audio
Fn+F2	Decrease volume
Fn+F3	Increase volume
Fn+F4	Microphone Mute
Fn+F5	NUM Lock
Fn+F6	Scroll Lock

Table 1. Hot key combination (continued)

Features	Function
Fn+F8	Switch to external display
Fn+F9	Search
Fn+F10 (optional)	Increase keyboard backlight brightness
Fn+F11	Decrease brightness
Fn+F12	Increase brightness
Fn+Esc	Toggle Fn-key lock
Fn+PrntScr	Turn off/on wireless
Fn+Insert	Sleep
Fn+Right arrow key	End
Fn+Left arrow	Home

(i) **NOTE:** You can define the behavior of the shortcut keys by pressing **Fn+Esc** or by changing Function Key Behavior in BIOS setup program.

Disassembly and reassembly

Topics:

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 card

1. Insert Subscriber Identification Module (SIM) card removal tool or a paperclip into the pinhole [1].
2. Pull the SIM card tray to remove it [2].
3. Place the SIM on the SIM card tray.

4. Push the SIM card tray into the slot until it clicks into place.
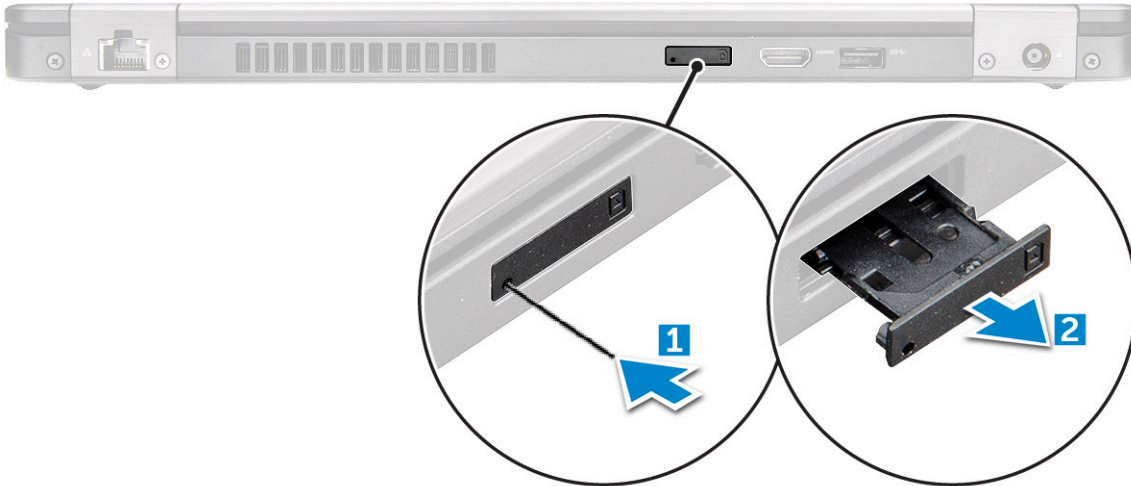
Removing the Subscriber Identification Module card

⚠ **CAUTION: Removing the Subscriber Identification Module (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

Steps

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.
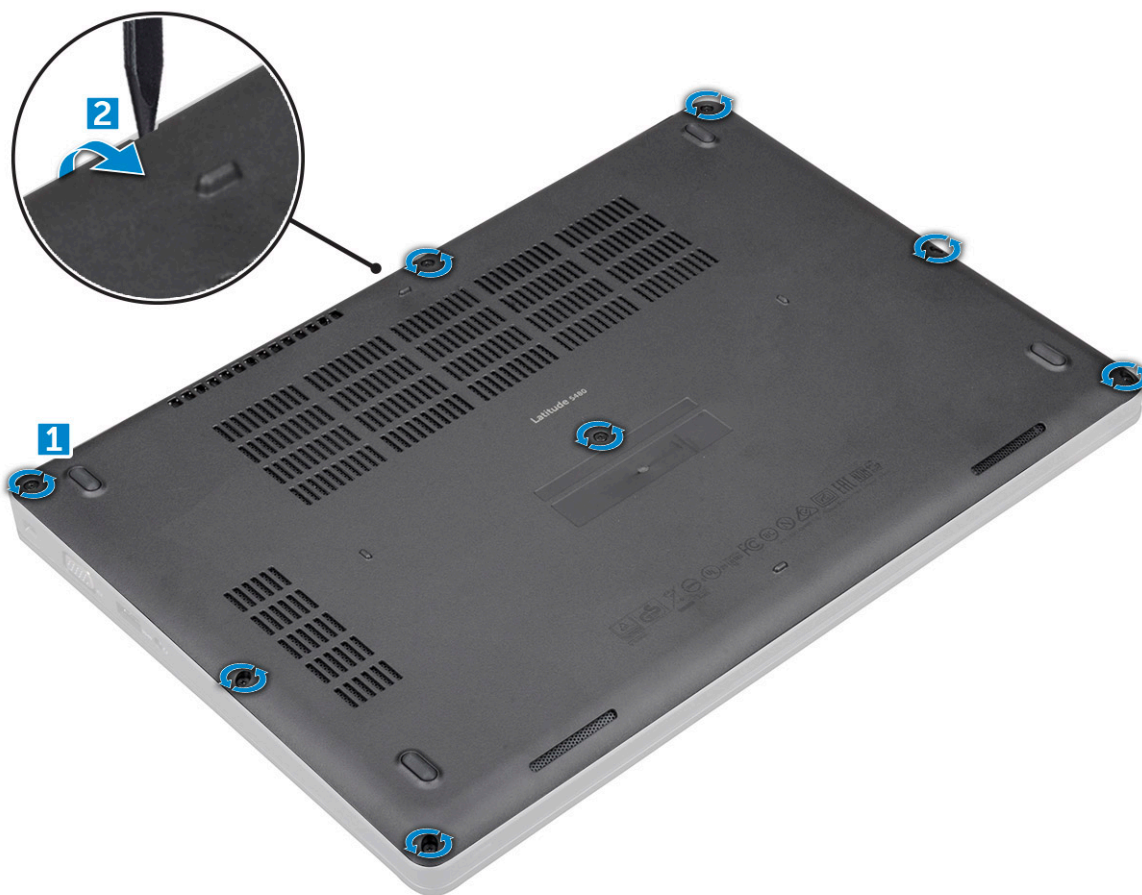
Installing base cover

Steps

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

Lithium-ion battery precautions

⚠️ **CAUTION:**

- **Exercise caution when handling Lithium-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**

- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen Lithium-ion batteries, see Handling swollen Lithium-ion batteries.**

Removing battery

About this task

Steps

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. Remove the M2*6 captive screw that secures the battery to the computer [2].

      (i) **NOTE:** The number of screws will vary depending on the type of battery installed.

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

      (i) **NOTE:** Discharge the battery as much as possible before removing from the system. This can be done by disconnecting the A/C adapter from the system (while the system is turned on) to allow the system to drain the battery.

   d. Unroute the cable from the routing channel [1] and remove the cable from the battery.
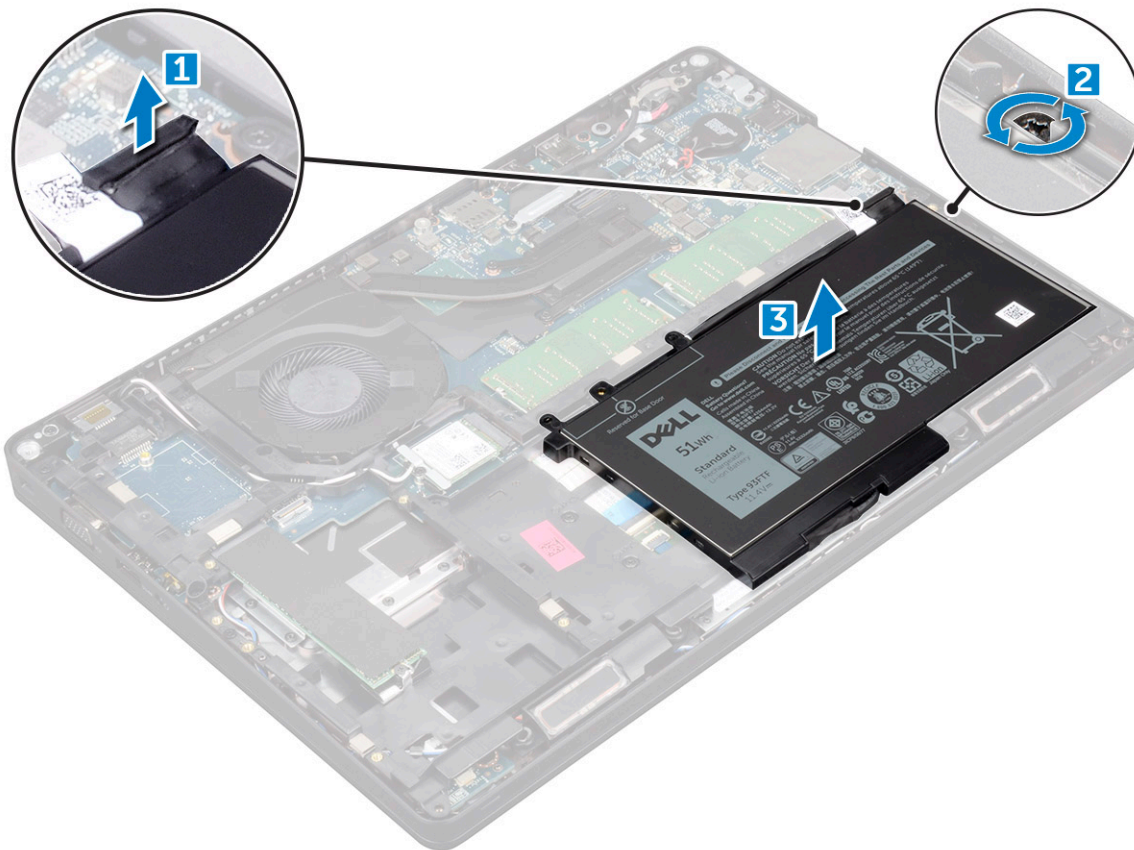
Installing battery

Steps

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

Removing optional M.2 Solid State Drive (SSD)

Steps

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. Peel the adhesive Mylar shield that secures the SSD card [1].

   (i) **NOTE:** Need to be removed carefully in order to be reused on the replacement SSD.

b. Remove the M2*3 screw that secures the SSD to the computer [2].

c. Slide and lift the SSD from the computer [3].
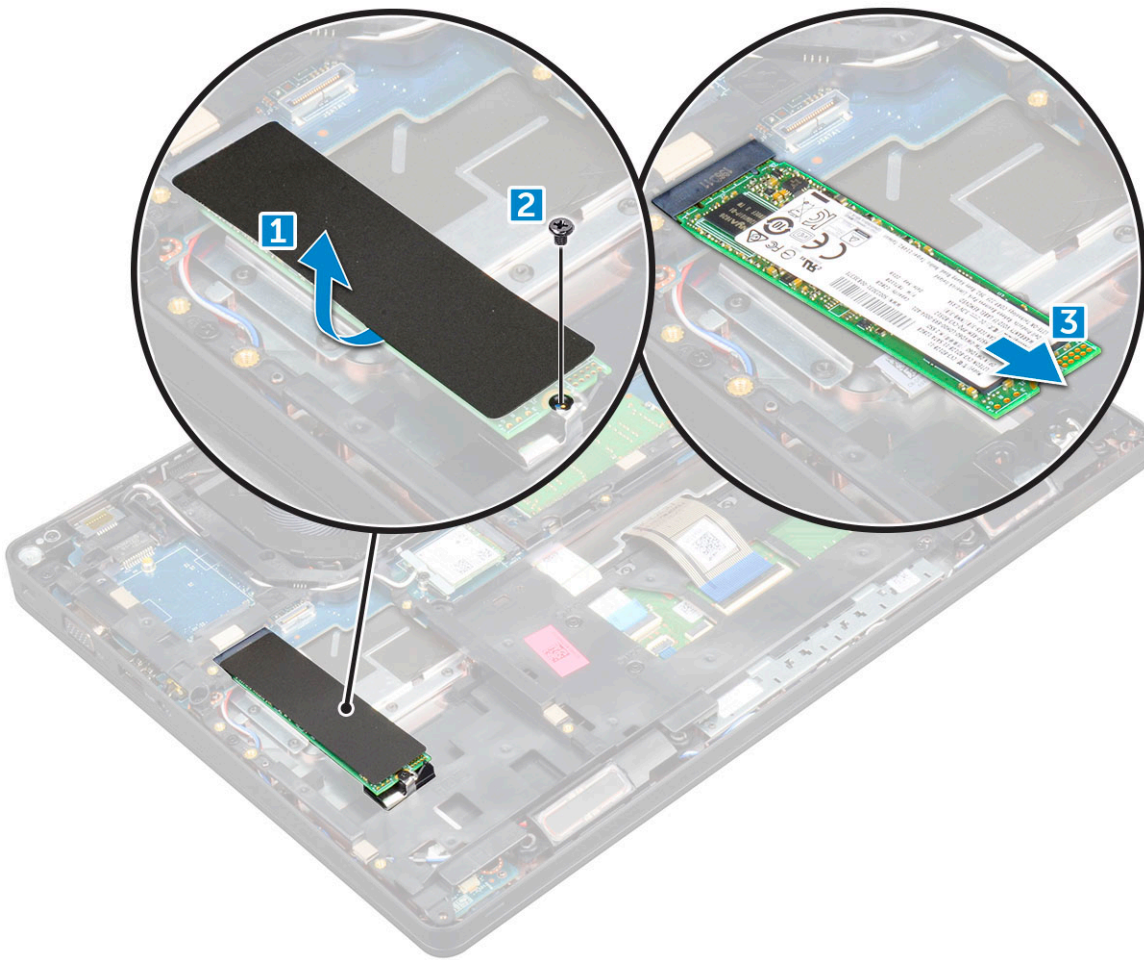
4. To remove the SSD frame:

a. Remove the M2*3 screw that secures the SSD frame to the computer [1].

b. Lift the SSD frame away from the computer [2].

Installing optional M.2 SSD

Steps

1. Insert the SSD clip into the slot on the computer.
2. Replace 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 Mylar shield over the SSD.
5. Install the:
   a. battery
   b. base cover
6. Follow the procedure in After working inside your computer.

Hard drive

Removing hard drive assembly

Steps

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 [1].
b. Remove the screws that secure the hard drive assembly to the computer [2].
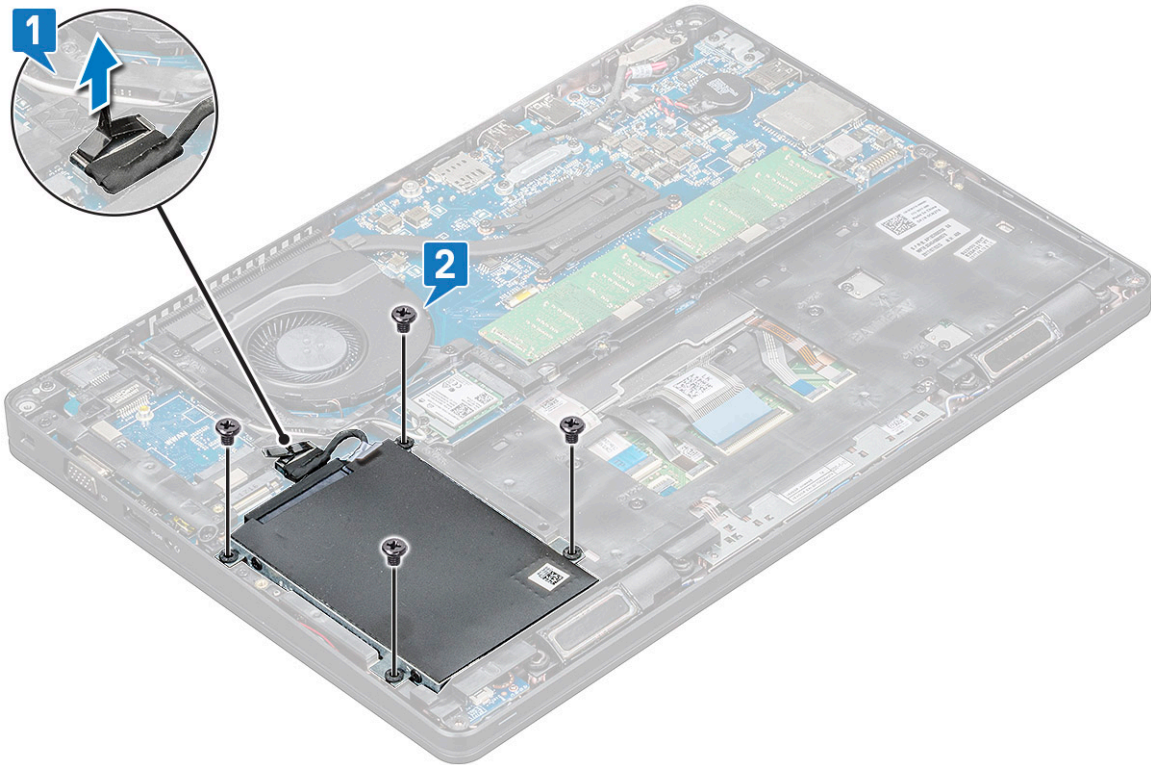
c. Lift the hard drive assembly away from the computer.
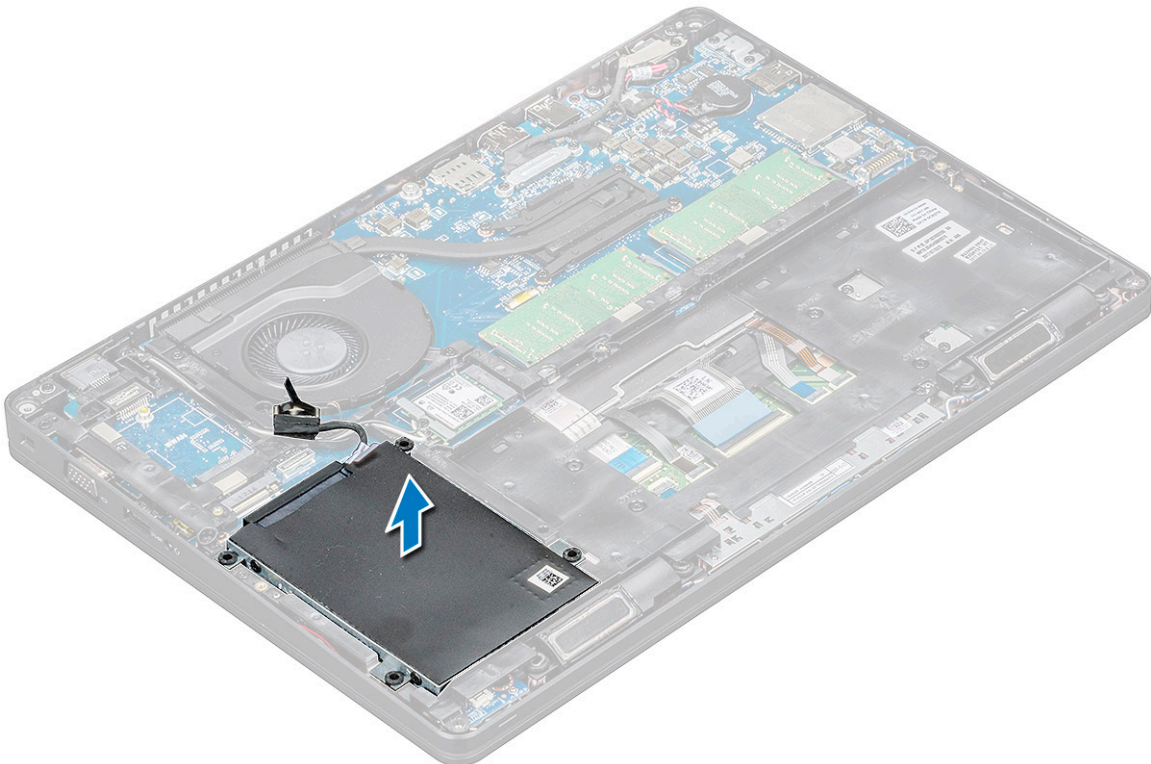
Installing hard drive assembly

Steps

1. Insert the hard drive assembly into the slot on the computer.
2. Replace the screws to secure the hard drive assembly to the computer.
3. Connect the hard drive cable to the connector 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

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover
3. Disconnect the battery
4. 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

Steps

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. connect the battery
4. Install the base cover
5. Follow the procedure in After working inside your computer.

WLAN card

Removing WLAN card

Steps

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].
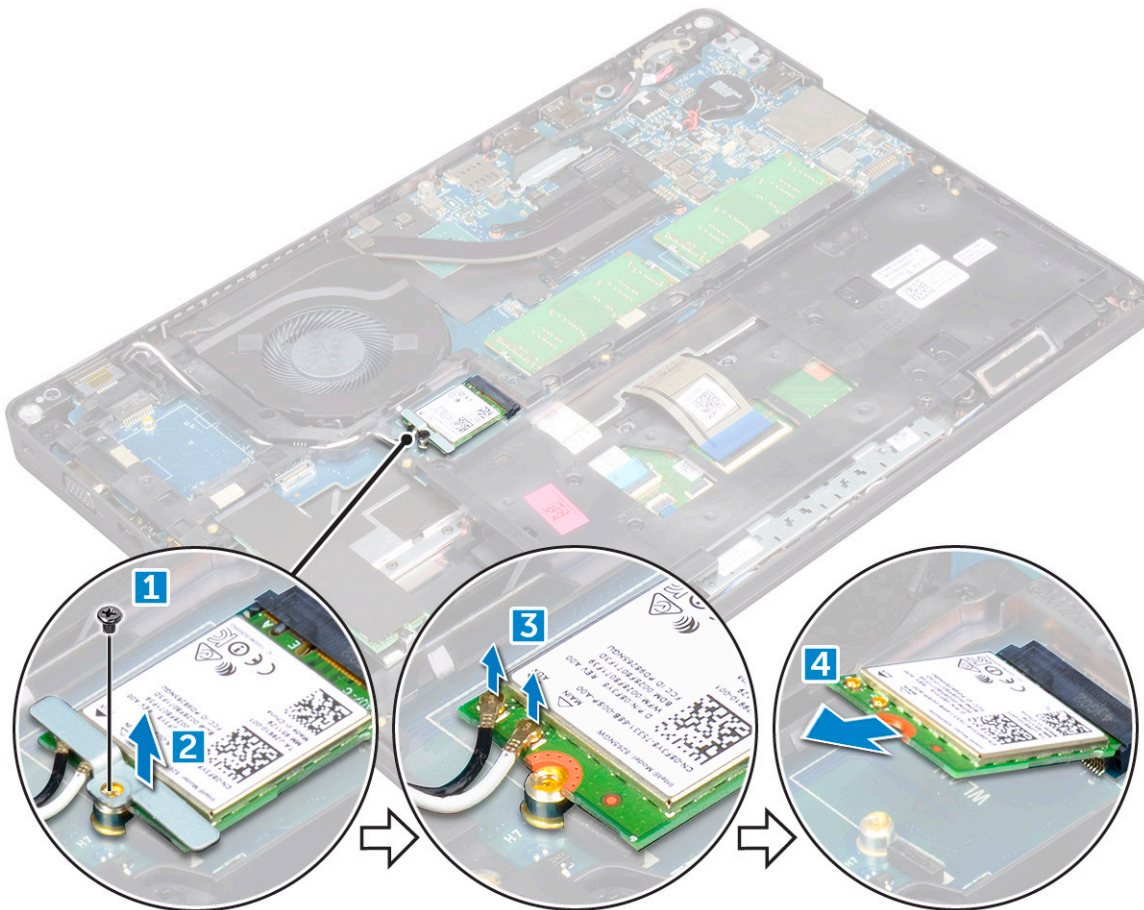
Installing WLAN card

Steps

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

WWAN card – optional

This is optional as the system might not ship with WWAN card.

Removing the WWAN card

Steps

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

3. To remove the WWAN card:
   a. Remove the screw that secures the WWAN card.
   b. Disconnect the WWAN cables from the connectors on the WWAN card.
   c. Unroute the WWAN cables from the routing channel.
   d. Remove the WWAN card from the computer.

Installing the WWAN card

Steps

1. Insert the WWAN card into the slot on the computer.
2. Route the WWAN cables through the routing channel.
3. Connect the WWAN cables to the connectors on the WWAN card.
4. Replace the screw to secure the WWAN card to the computer.
5. Install the:
   a. battery
   b. base cover
6. Follow the procedure in After working inside your computer.

Memory modules
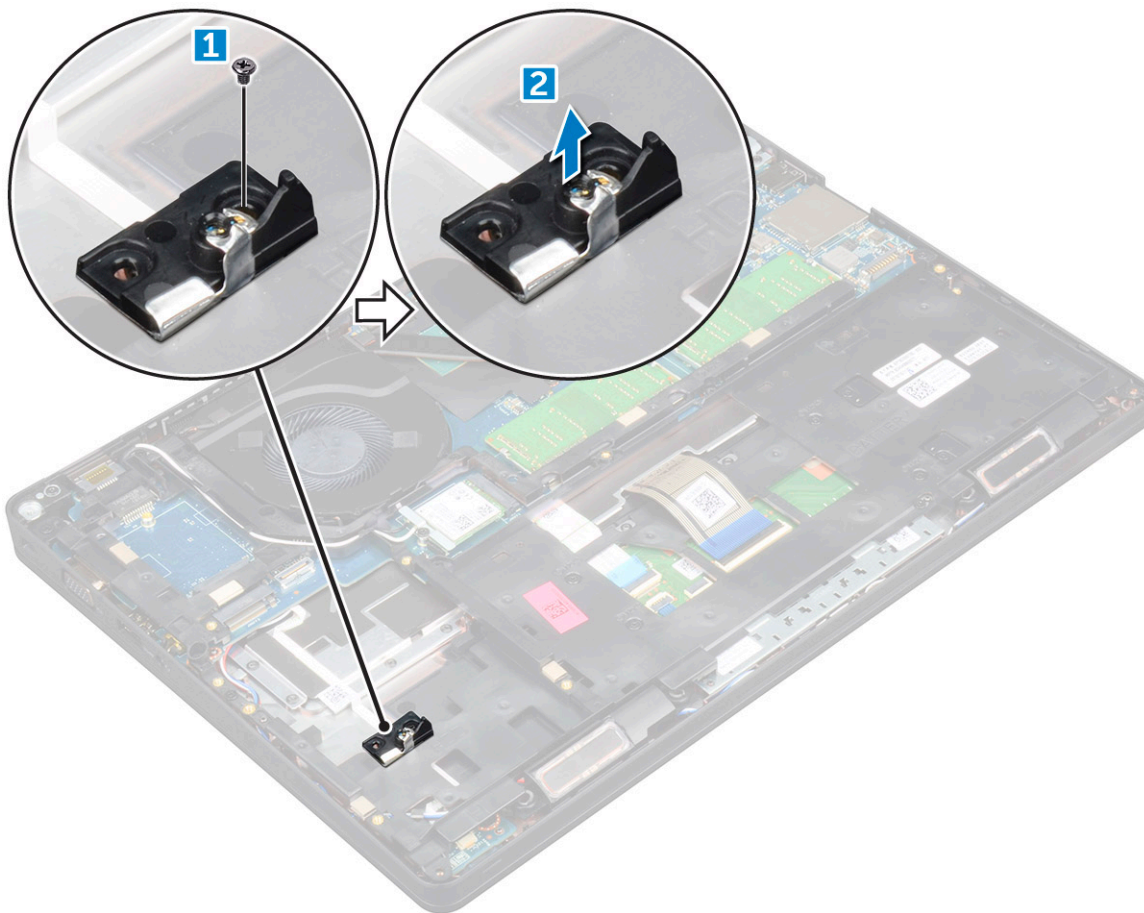
Removing memory module

Steps

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].
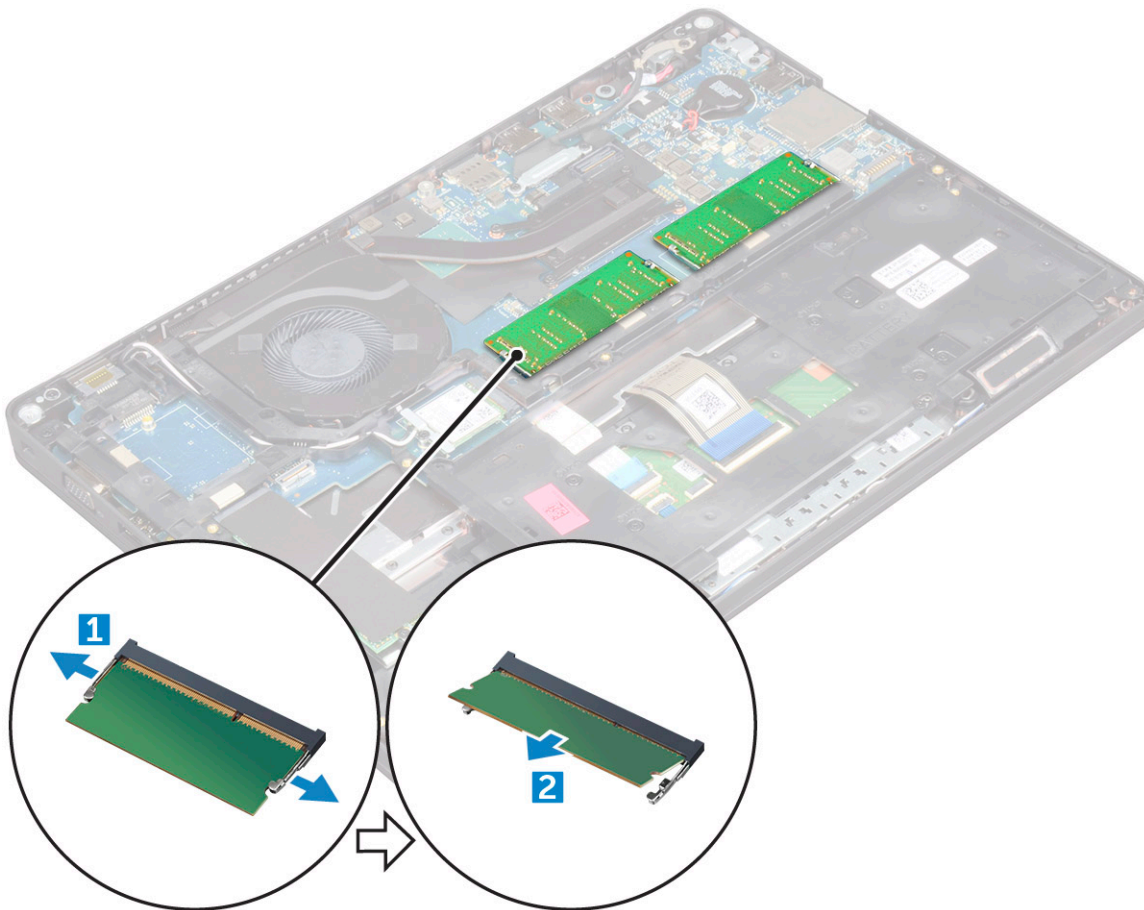
Installing memory module

Steps

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 lattice and Keyboard

Removing keyboard trim

Steps

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].
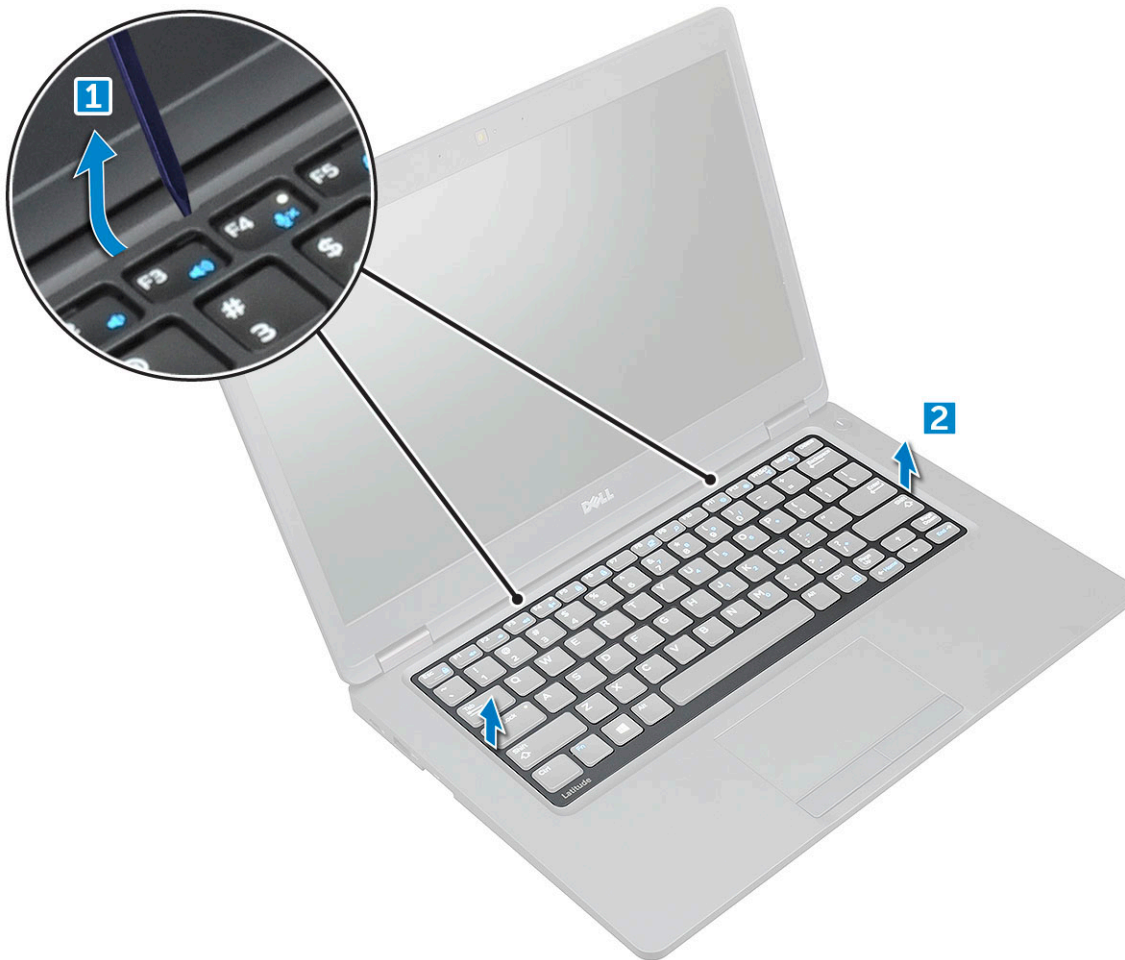
ⓘ **NOTE:** Use a plastic scribe to pry the keyboard trim from the edges.

Installing keyboard

Steps

1. Place the keyboard lattice on the keyboard and press along the edges and in between the rows of keys until the lattice clicks in place.
2. Follow the procedure in After working inside your computer.

Removing keyboard

Steps

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.

   ⓘ **NOTE:** There may be different number of cables to disconnect based on the keyboard type.
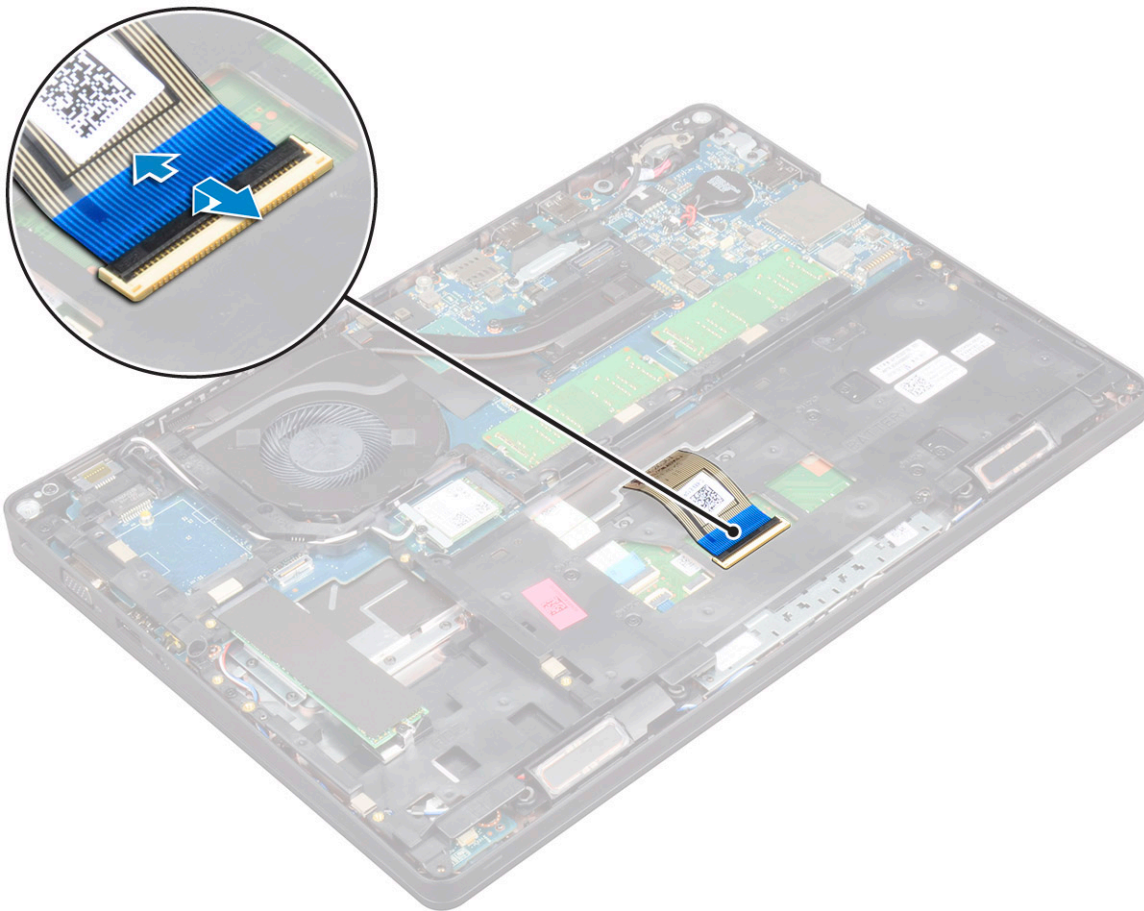
4. Turn over the computer and open the display.
5. To remove the keyboard:
   a. Remove the M2*2 screws that secure the keyboard to the computer [1].
   b. Pry the keyboard from the edge and lift it away from the computer [2].

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

Installing keyboard

Steps

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

Steps

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

b. battery

3. To remove the heat sink:

   ⓘ **NOTE:** This section is for the UMA model only.

   a. Remove the M2*3 screws that secure the heat sink on the system board [1].
   b. Lift the heat sink away from the system board [2].
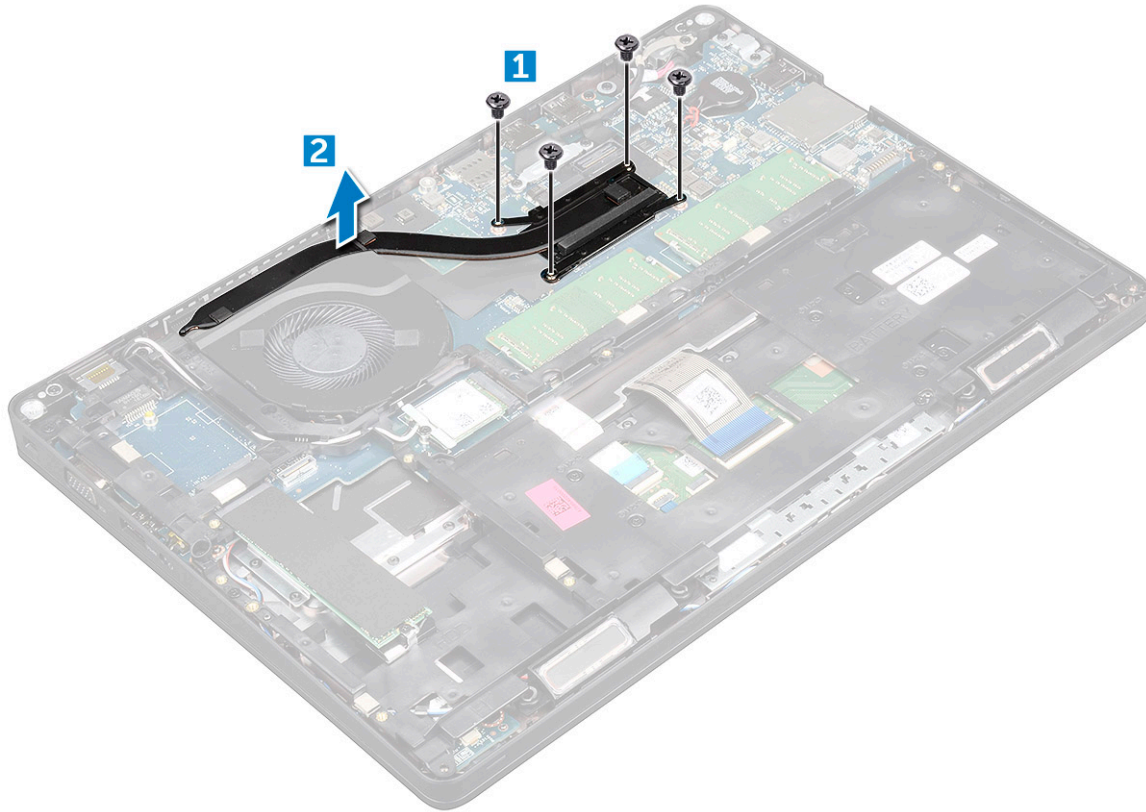
Installing heat sink

Steps

1. ⓘ **NOTE:** This section is for UMA model only.

   Place the heat sink on the system board.
2. Tighten the M2*3 screws to secure the heat sink to the computer.
3. Install the:
   a. battery
   b. base cover
4. Follow the procedure in After working inside your computer.

System fan

Removing the system fan

Steps

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

a. base cover
   b. battery
   c. WWAN card (optional)
   d. hard drive assembly(optional)
   e. chassis frame
3. To remove the system fan:

   (i) **NOTE:** This section is for UMA model only.

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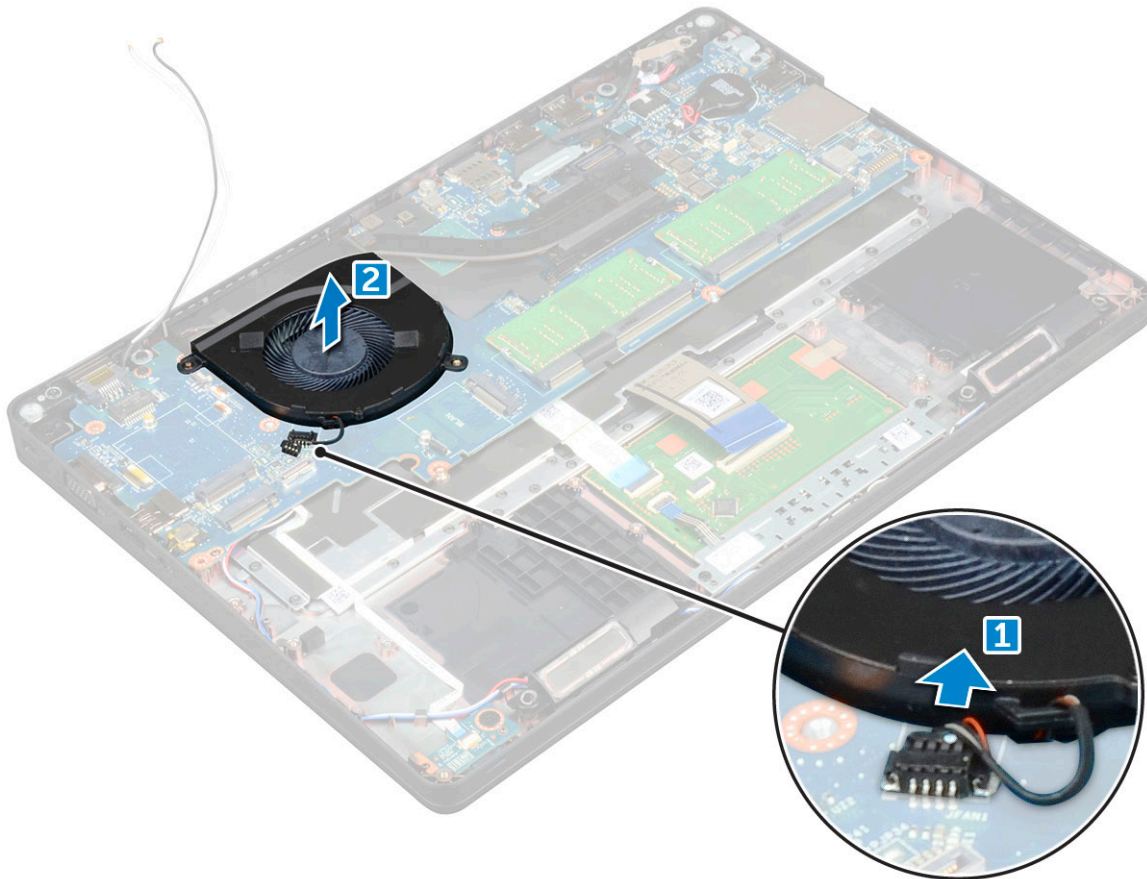
Installing the system fan

Steps

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. WWAN card(optional)
   c. hard drive assembly(optional)
   d. battery
   e. base cover
4. Follow the procedure in After working inside your computer.

Power connector port

Removing power connector port

Steps

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].
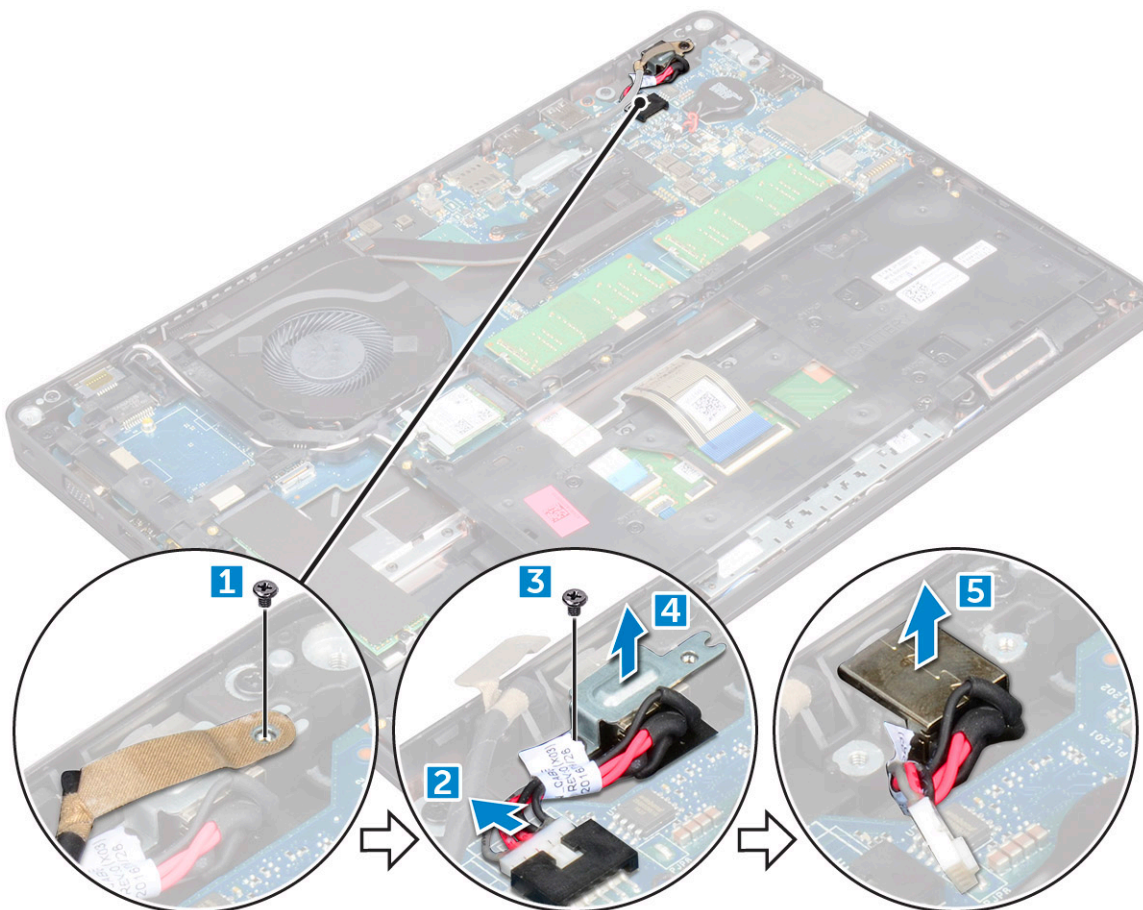
Installing power connector port

Steps

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.

Chasis Frame

Removing chassis frame

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WLAN card
   d. WWAN card (optional)
   e. hard drive assembly(optional)
   f. SSD card
3. To release the chassis frame:
   a. Release the WLAN and WWAN cables from the routing channels [1].
   b. Lift the latch and disconnect the keyboard cable from the connector [2].

   ⓘ **NOTE:** There may be more than one cable to disconnect based on the keyboard type.
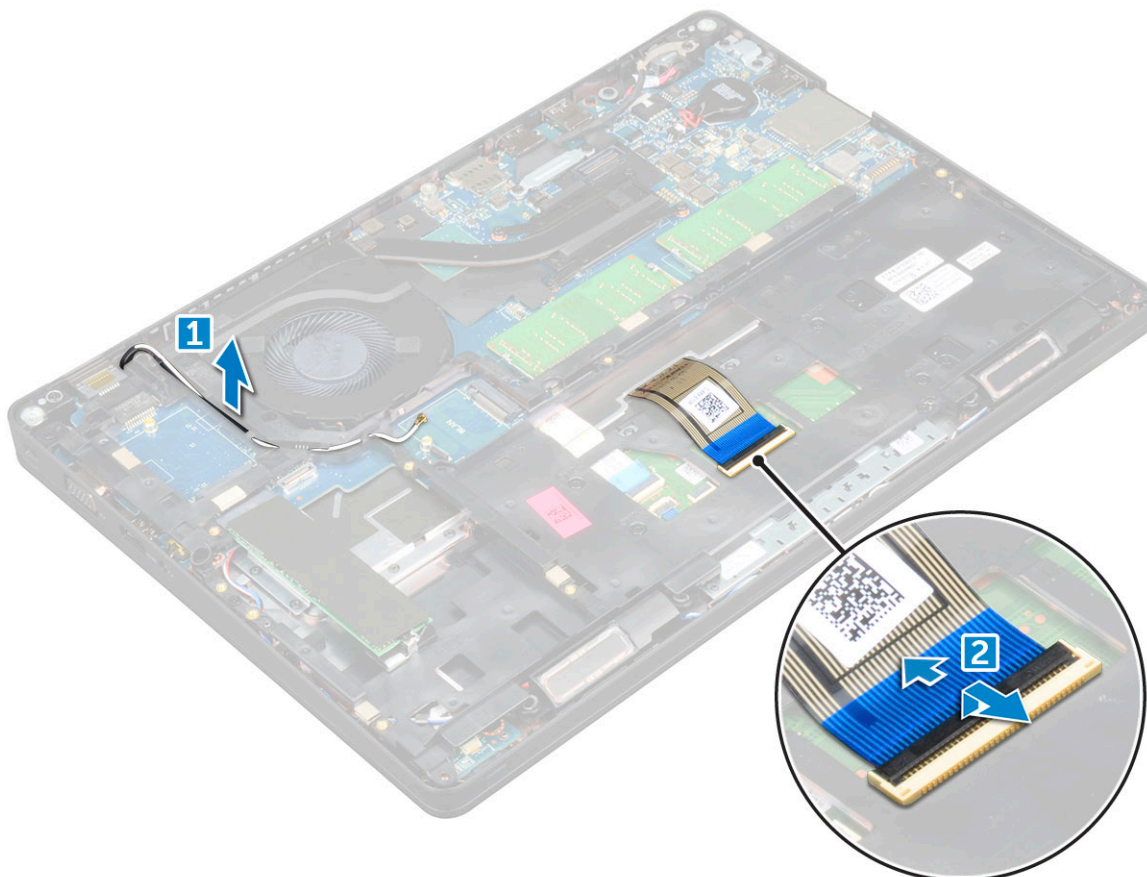
4. To remove the chassis frame:
   a. Remove the M2*2, M2*3, and M2*5 screws that secure the chassis frame to the computer [1].

b. Lift the chassis frame away from the computer [2].

Installing chassis frame

Steps

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.

   (i) **NOTE:** There may be more than one cable to connect based on keyboard types.

4. Route the WLAN and WWAN(optional) cables through the routing channels.
5. Install the:
   a. SSD card
   b. WLAN card
   c. WWAN card(optional)
   d. hard drive assembly(optional)
   e. battery
   f. base cover
6. Follow the procedure in After working inside your system.

System board

Removing system board

Steps

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. WWAN card (optional)
   h. hard drive assembly(optional)
   i. SSD card
   j. memory module
   k. coin cell battery
   l. heatsink
   m. system fan
   n. chassis frame
3. Disconnect the following cables from the system board:
   a. Speaker [1]
   b. LED board [2]
   c. Touchpad [3]
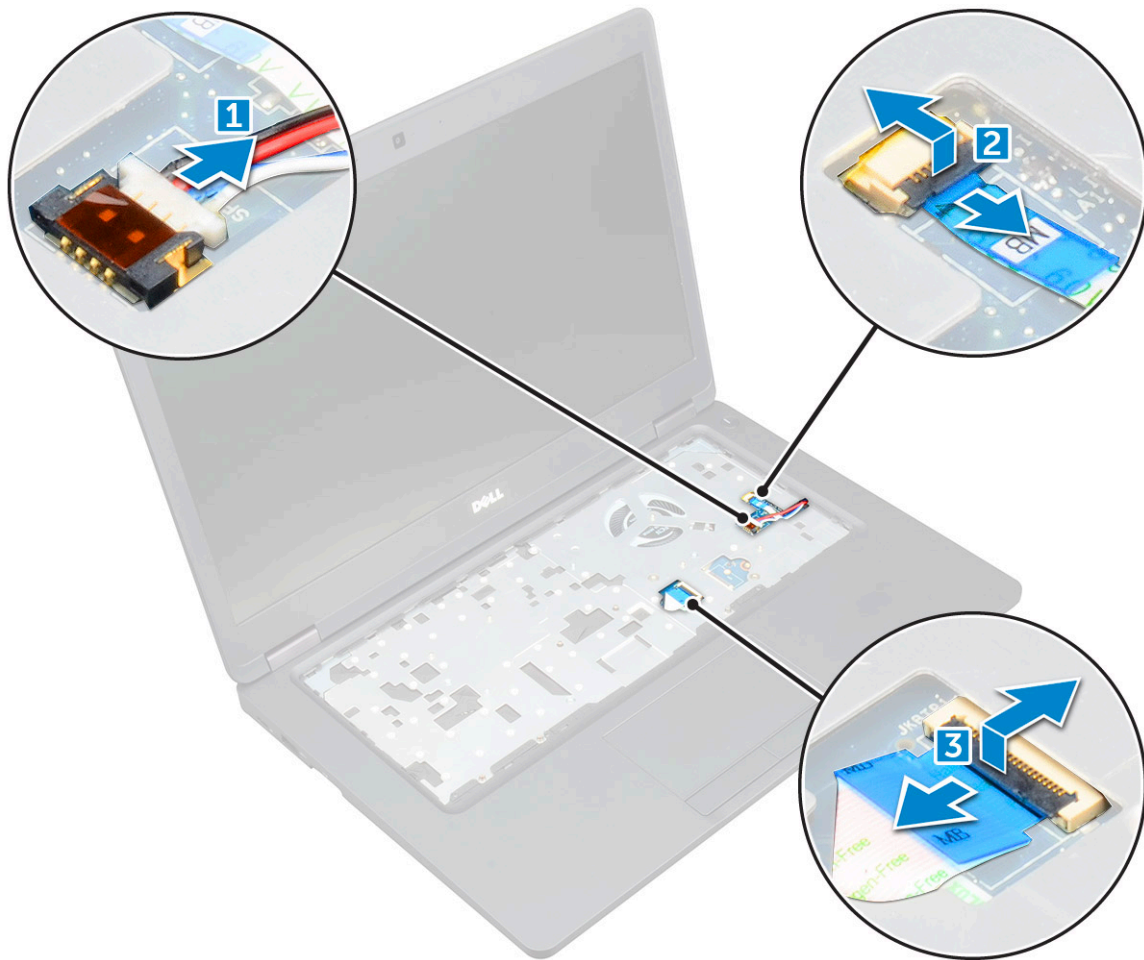
4. To release the system board:

   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].

   > ⓘ **NOTE:** This step is applicable only for IR camera.

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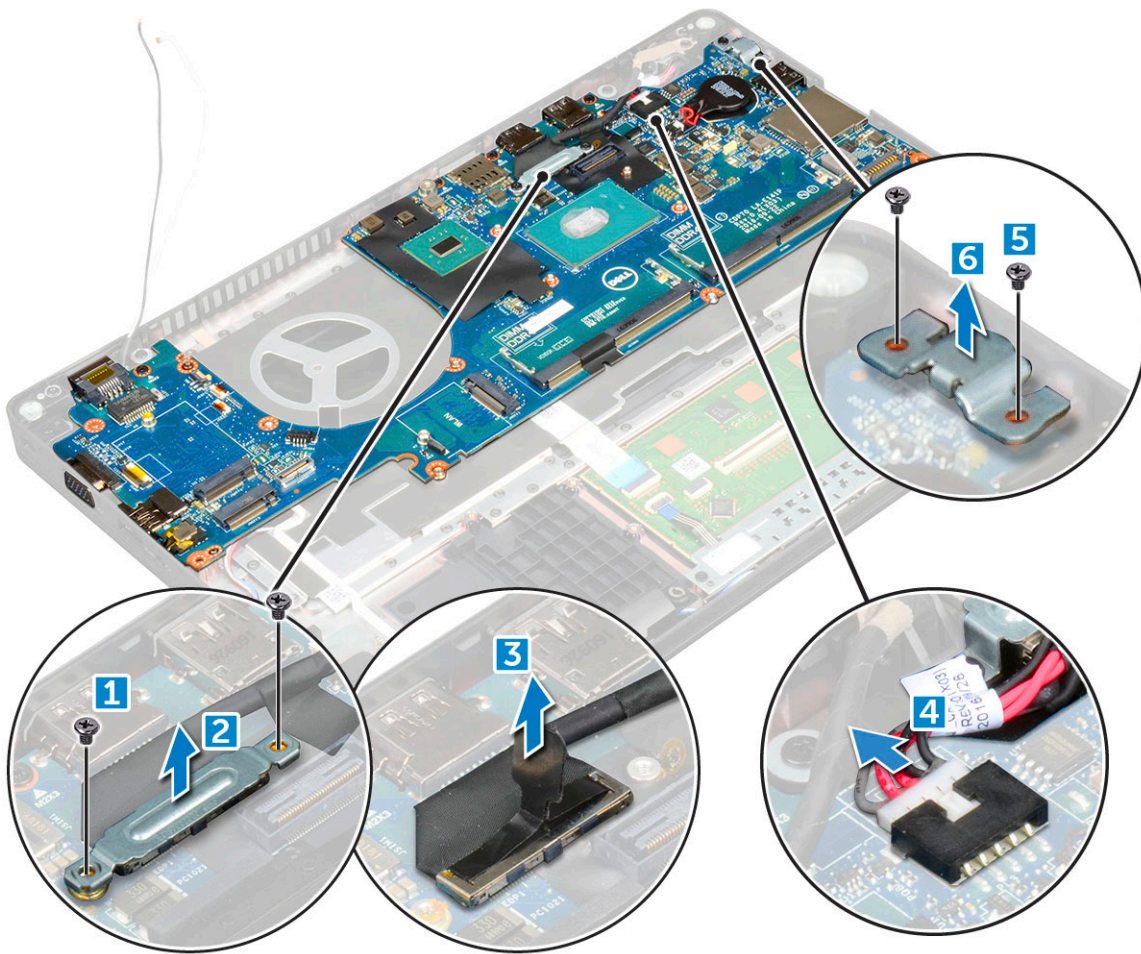
5. To remove the system board:
   a. Remove the M2*2 screws that secure the system board to the computer [1].
   b. Lift the system board away from the computer [2].
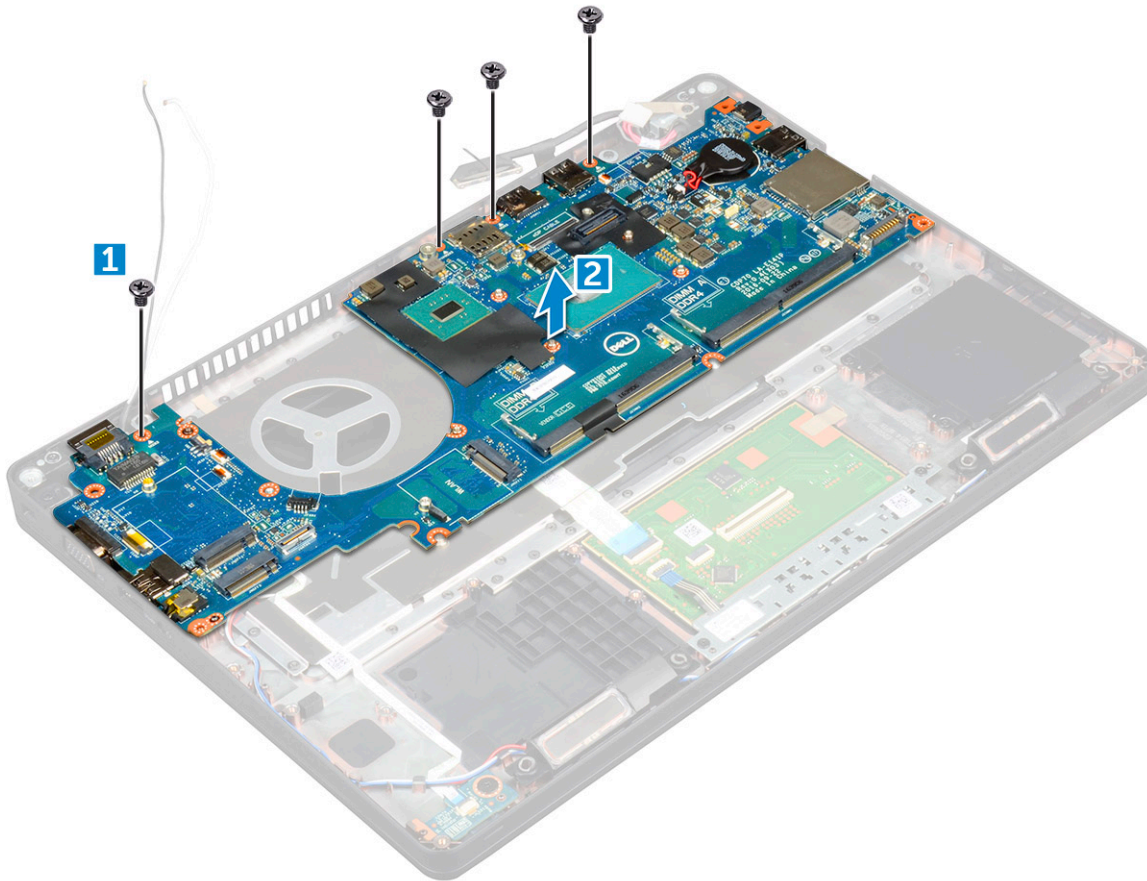
Installing system board

Steps

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. USH board
   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. WWAN card(optional)
    i. hard drive assembly(optional)

j. keyboard
k. keyboard trim
l. battery
m. base cover
n. SIM card

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

SmartCard module

Removing smart card reader board

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WLAN card
   d. WWAN card (optional)
   e. hard drive assembly(optional)
   f. SSD card
   g. 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].
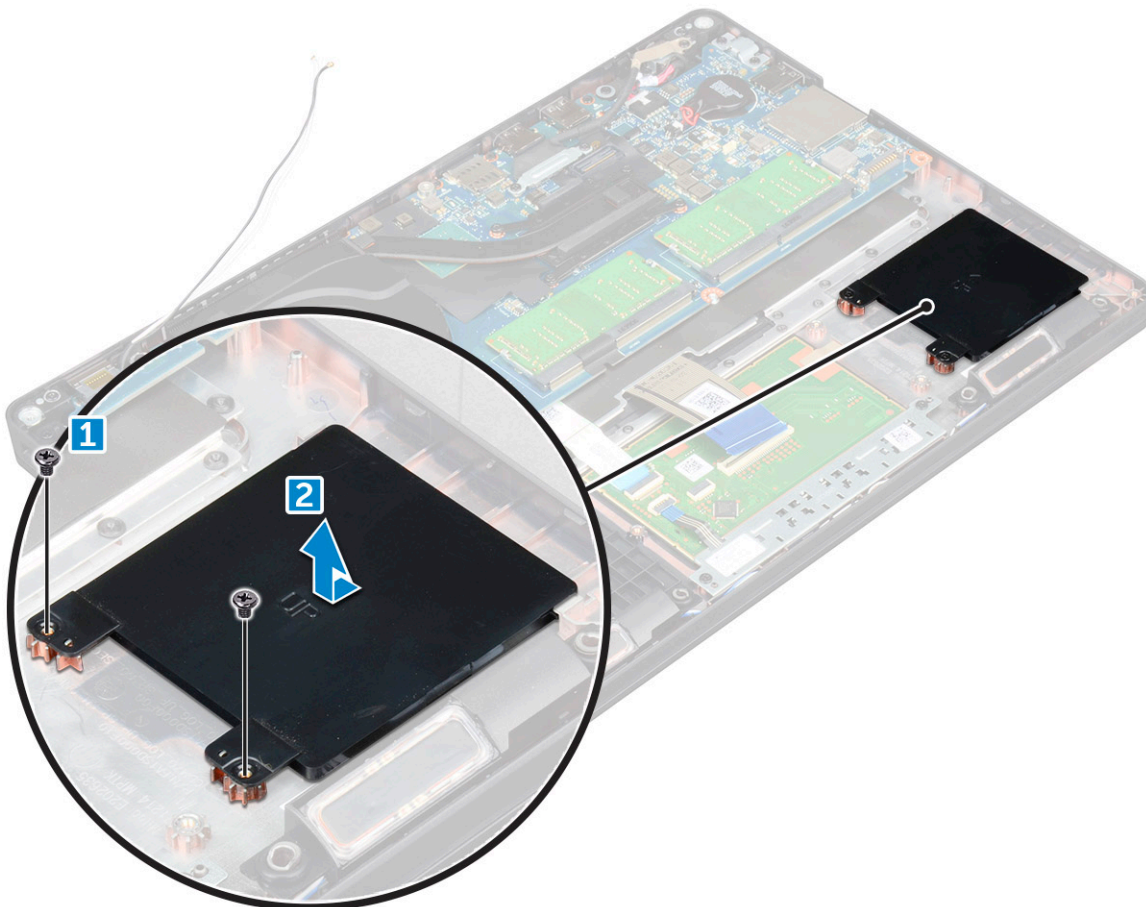
Installing smart card reader board

Steps

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. WWAN card(optional)
    e. hard drive assembly(optional)
    f. battery
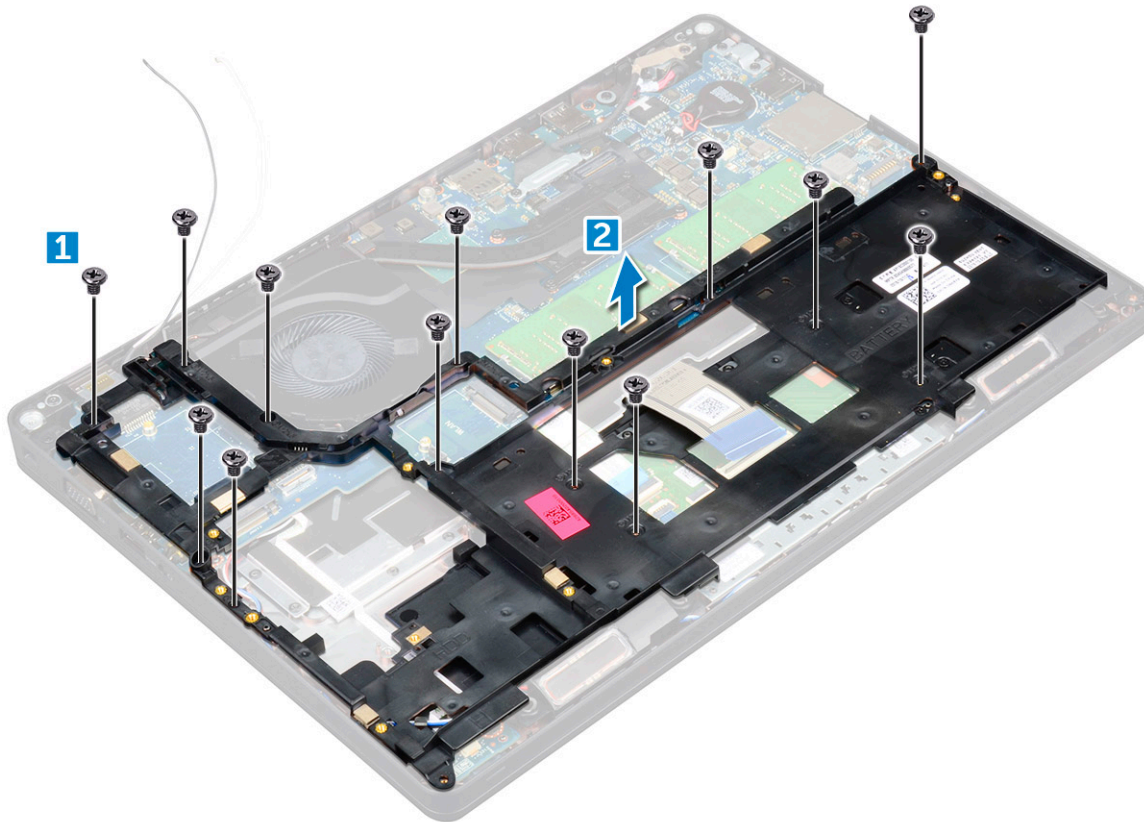   g. base cover
5. Follow the procedure in After working inside your computer.

Speaker

Removing speaker

Steps

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. WWAN card (optional)
    g. hard drive assembly(optional)
    h. SSD card
    i. memory module
    j. coin cell battery
    k. system fan
    l. heat sink
    m. chassis frame
    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].
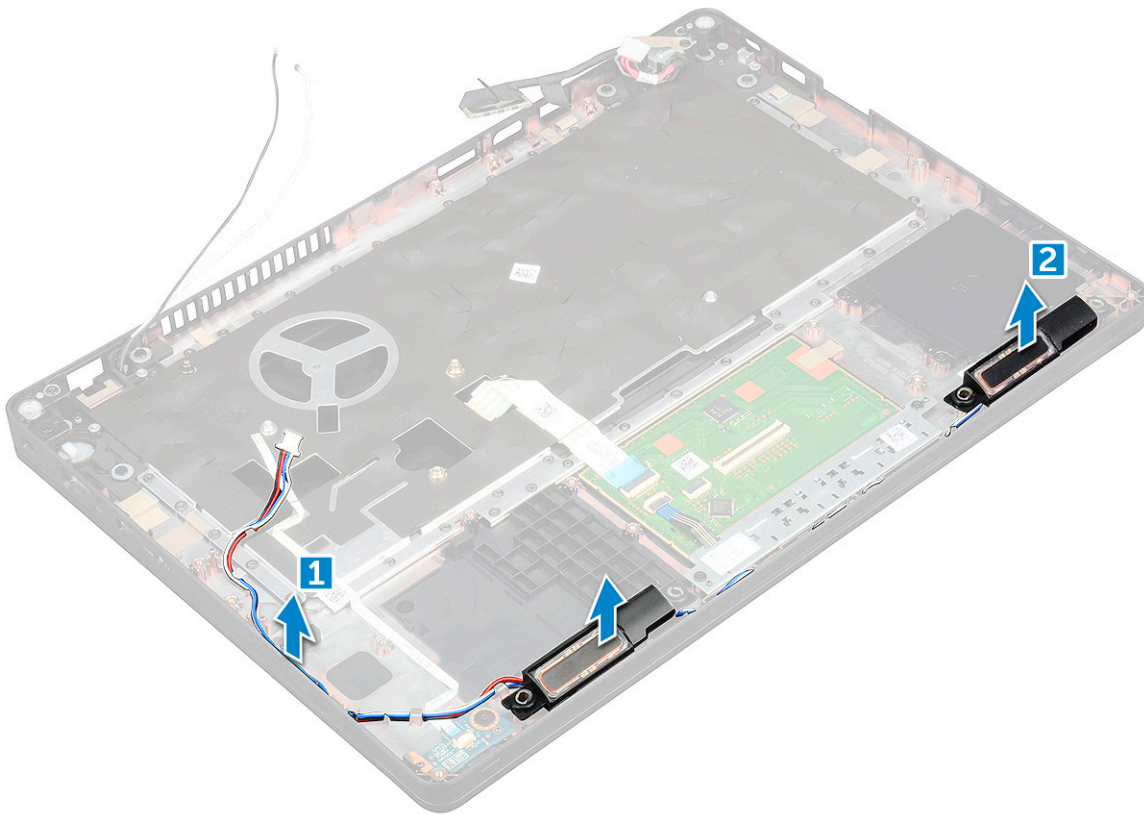
Installing speaker

Steps

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. chassis frame
   c. system fan
   d. heat sink
   e. coin cell battery
   f. memory module
   g. SSD card
   h. hard drive assembly(optional)
   i. WWAN card(optional)
   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

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WLAN card
   d. WWAN card (optional)
   e. hard drive assembly(optional)
   f. display hinge cover
3. To disconnect the display cable:
   a. Release the WLAN and WWAN cables 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].
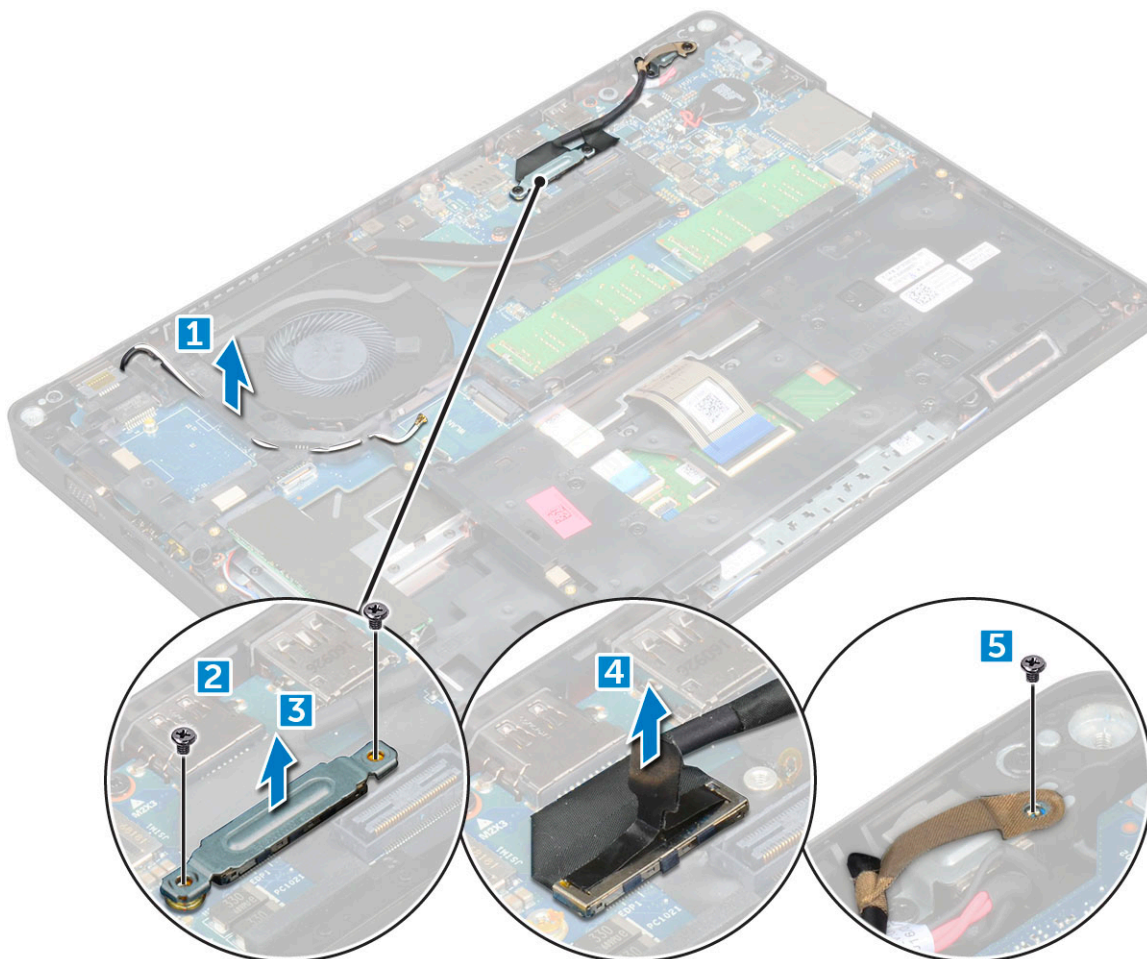
4. To release the display assembly:
   a. Remove the M2*5 screws that secure the display assembly to the computer [1].
   b. Release the WLAN cable, WWAN cable and display cable through the routing channels [2] [3].
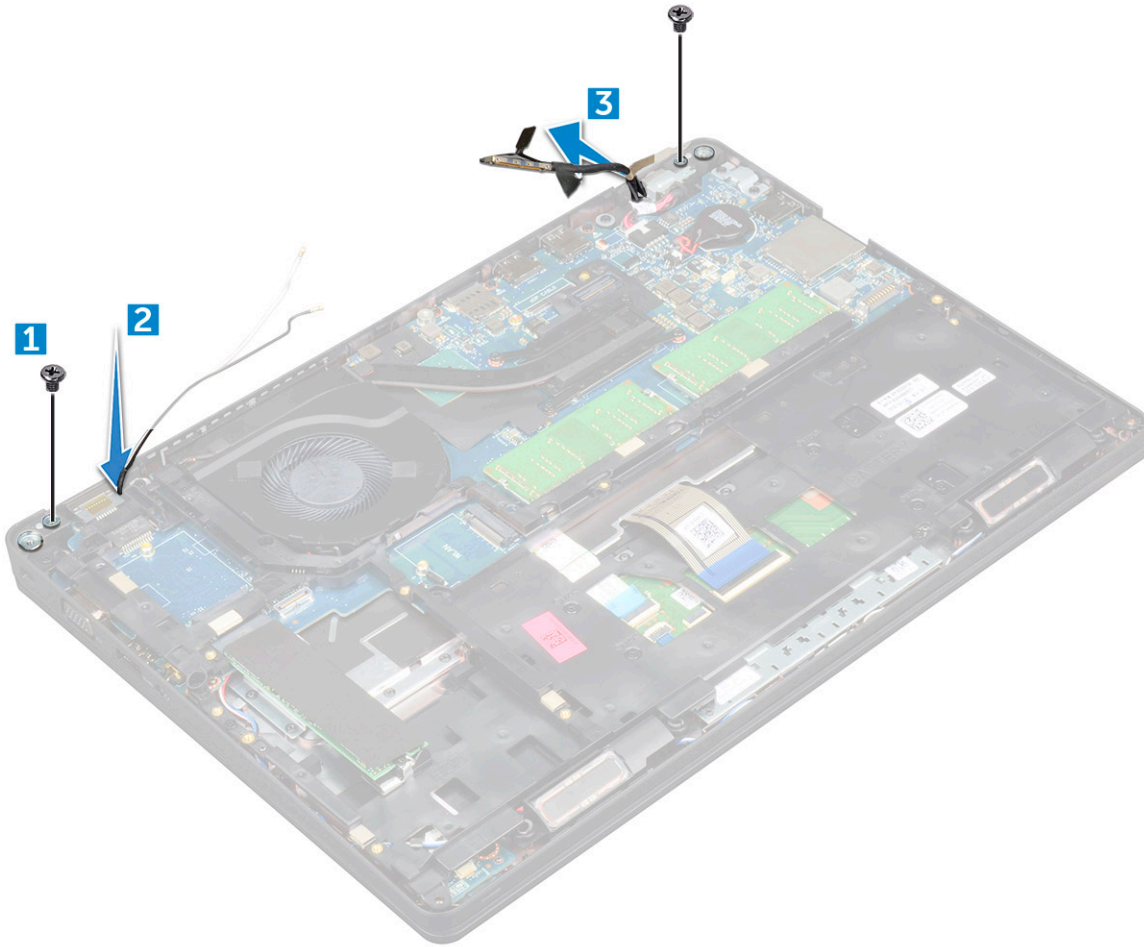
5. Turn over the computer.
6. To remove the display assembly:
   a. Remove the screws that secure the display assembly to the computer [1].
   b. Open the display [2].

c. Lift the display assembly from the computer.

Installing display assembly

Steps

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 and WWAN cables through the routing channels.
8. Install the:
   a. display hinge cover
   b. hard drive assembly(optional)
   c. WLAN card
   d. WWAN card(optional)
   e. battery
   f. base cover
9. Follow the procedure in After working inside your computer.

Display bezel

Removing display bezel

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. display hinge cover
   d. WLAN card
   e. WWAN card (optional)
   f. 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].

   ⚠ **CAUTION: The adhesive used on the LCD bezel to seal it with the LCD itself, makes it hard to remove the bezel as the adhesive is very strong and tends to stay stuck to the LCD portion and can peel the layers up or crack the glass when trying to pry the two items apart.**

Installing display bezel

Steps

1. Place the display bezel on the display assembly.

    ⓘ **NOTE:** Remove the protective covering on the adhesive on the LCD bezel before placing 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. display hinge cover
    c. WWAN card(optional)
    d. WLAN card
    e. battery
    f. base cover
4. Follow the procedure in After working inside your computer.

Display hinge cover

Removing display hinge cover

Steps

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 screw that secures the display hinge cover to the chassis [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

Steps

1. Place the display hinge cover on the display hinge.
2. Tighten the screw to secure the display hinge cover to the display hinge.
3. Repeat step 1 and step 2 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

Steps

1. Follow the procedure in Before working inside your computer.

2. Remove the:
   a. base cover
   b. battery
   c. WWAN card (optional)
   d. WLAN card
   e. display hinge cover
   f. display assembly
   g. 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.
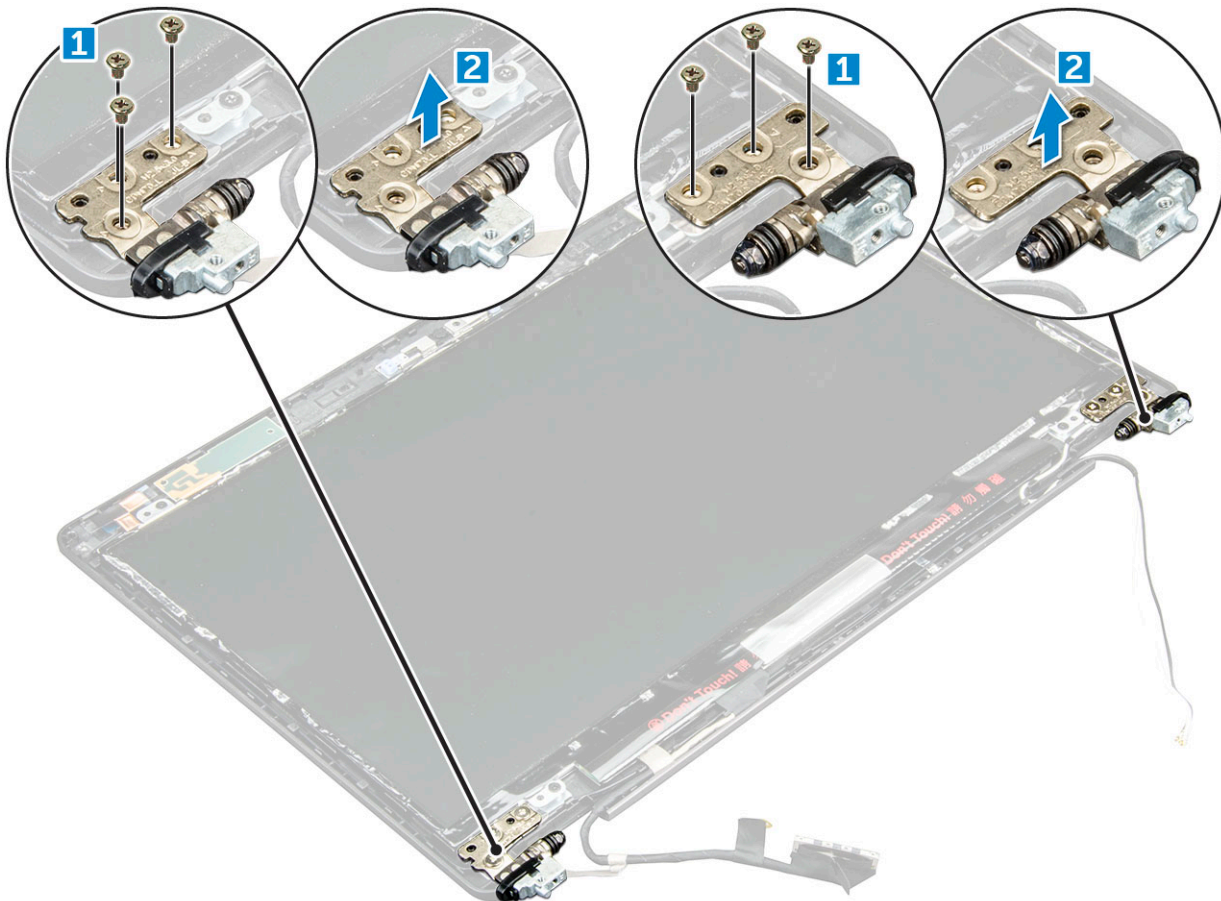
Installing display hinge

Steps

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 1 and step 2 to install the other display hinge.
4. Install the:
   a. display bezel
   b. display assembly
   c. WLAN card
   d. WWAN card(optional)
   e. battery
   f. base cover

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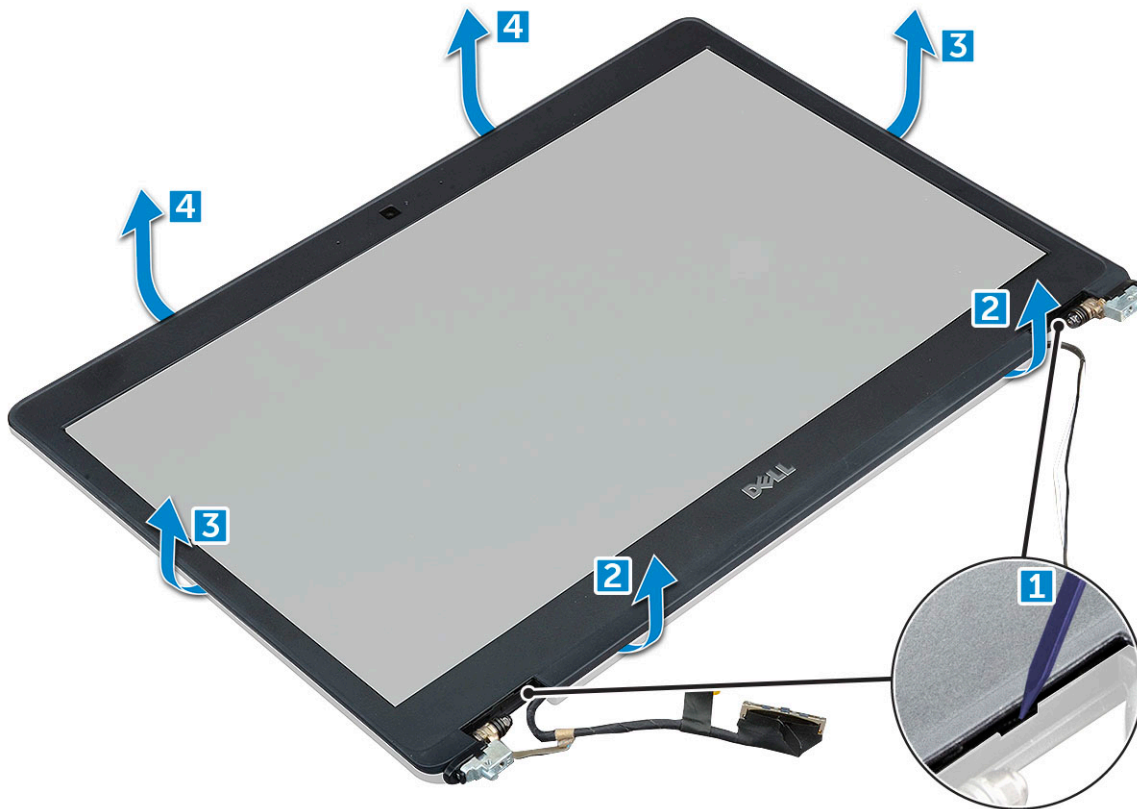
Display panel

Removing display panel

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WWAN card (optional)
   d. WLAN card
   e. display hinge cover
   f. display assembly
   g. 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].
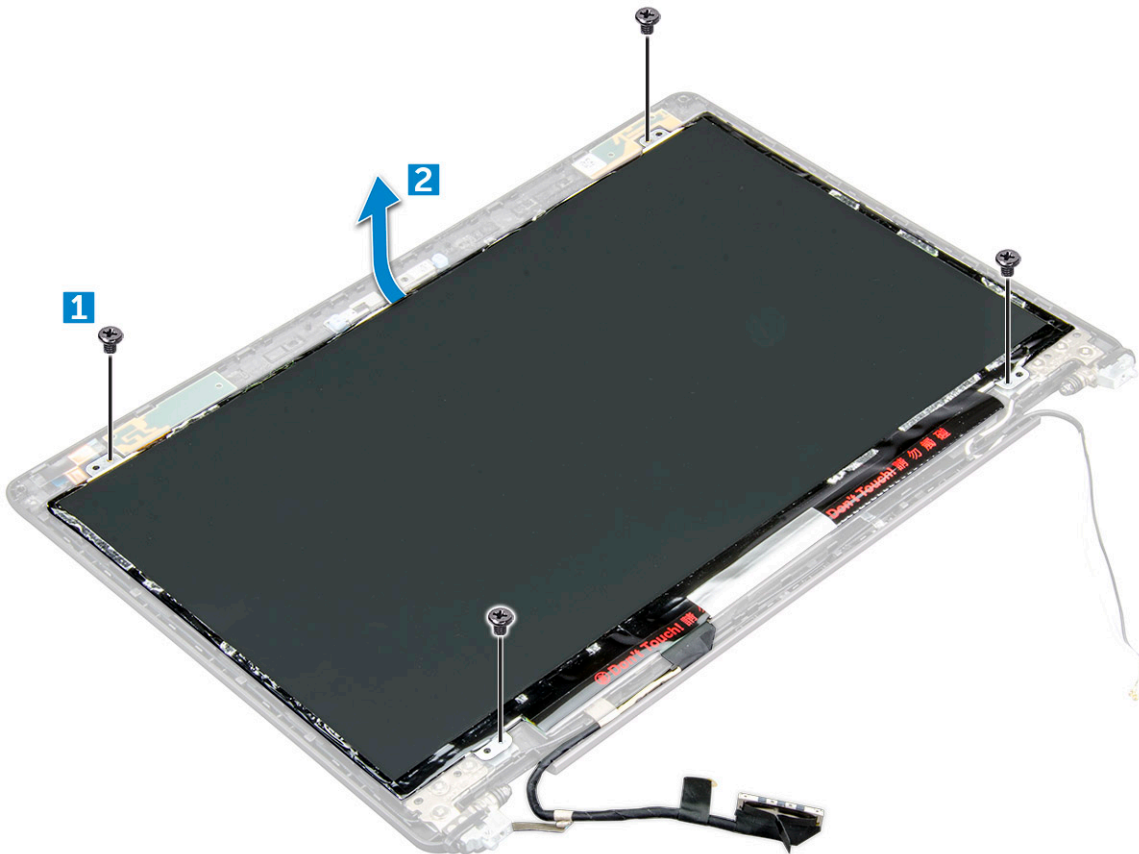
4. To remove the display panel:
   a. Peel the adhesive tape [1].
   b. Lift the blue tape that secures the eDP cable [2].
   c. Lift the latch and disconnect the eDP cable from the connector on the display panel [3] [4].

Installing display panel

Steps

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. WWAN card(optional)
   d. WLAN card
   e. display hinge cover
   f. battery
   g. base cover
6. Follow the procedure in After working inside your computer.

Display (eDP) cable

Removing eDP cable

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WLAN card
   d. WWAN card (optional)
   e. display hinge cover
   f. display assembly
   g. display bezel
   h. hinge cover
   i. display panel
3. Disconnect the eDP cable from the camera.
4. Peel the eDP cable from the adhesive to remove it from the display.
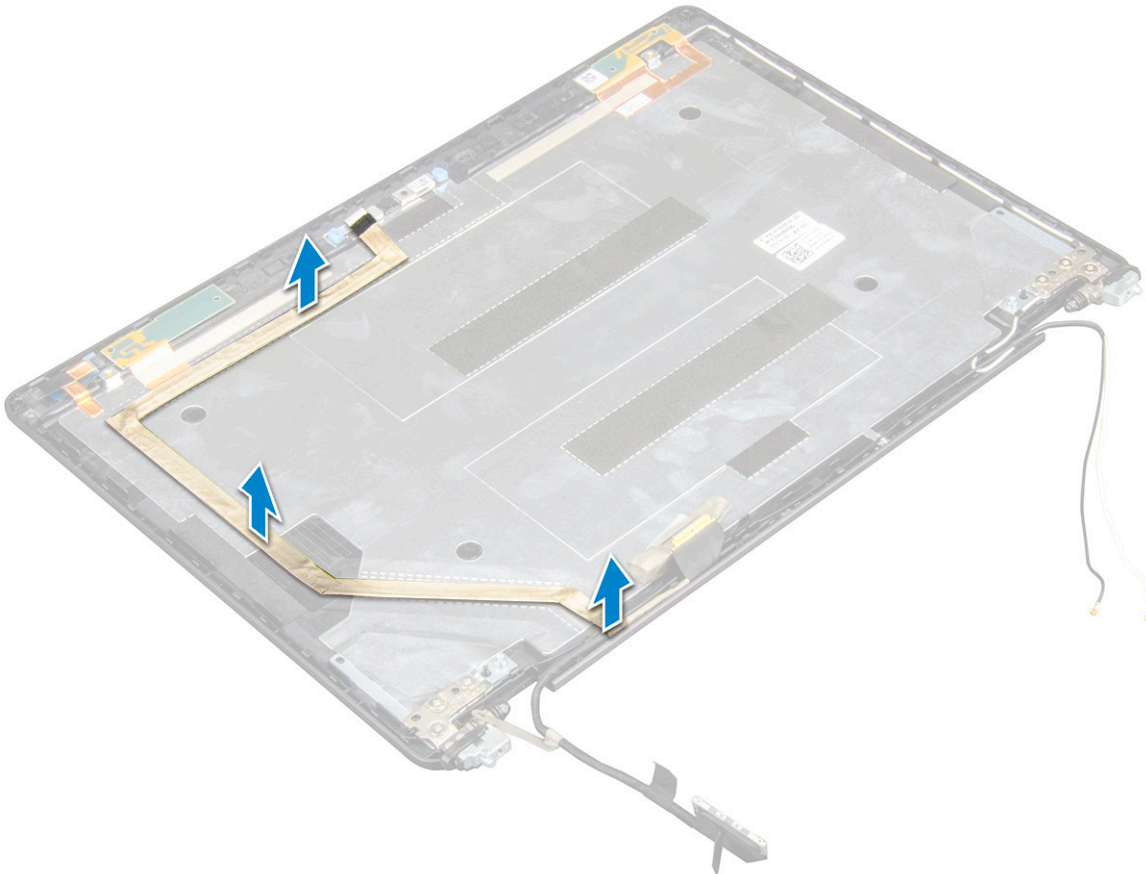
Installing eDP cable

Steps

1. Affix the eDP cable to the display panel and connect to the camera.
2. Install the:
   a. display panel

b. hinge cover
c. display bezel
d. display assembly
e. display hinge cover
f. WLAN card
g. WWAN card(optional)
h. battery
i. base cover

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

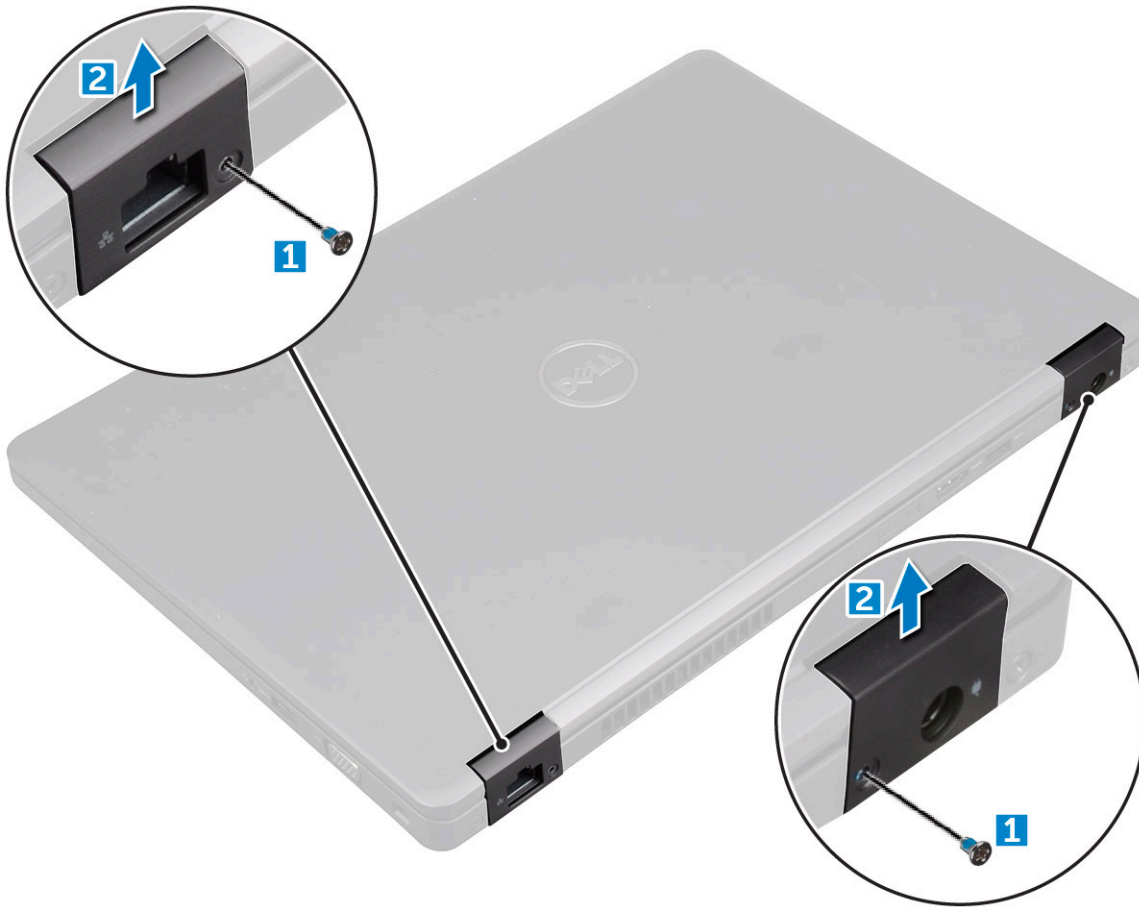# Display back cover

Removing the display back cover assembly

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WLAN
   d. WWAN card (optional)
   e. display hinge cover
   f. display assembly
   g. display bezel
   h. display panel
   i. eDP cable
   j. camera

   The display back cover assembly is the remaining component, after removing all the
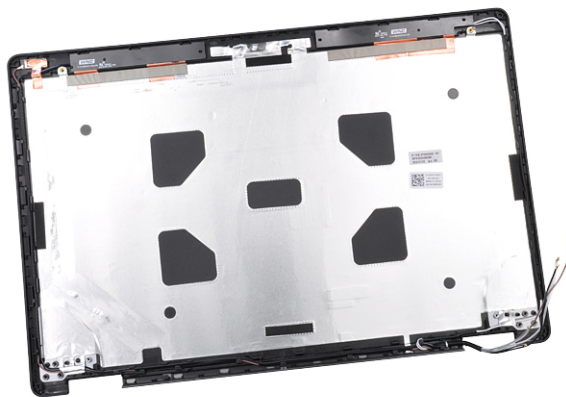
   components.

Installing the display back cover assembly

Steps

1. Place the display back cover assembly on a flat surface.
2. Install the:
   a. camera
   b. eDP cable
   c. display panel

d. display bezel
e. display assembly
f. display hinge cover
g. WWAN card(optional)
h. WLAN
i. battery
j. base cover
3. Follow the procedure in After working inside your computer.

Camera

Removing camera

Steps

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. WWAN card (optional)
   d. WLAN card
   e. display hinge cover
   f. display assembly
   g. display bezel
   h. 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].

   (i) **NOTE:** The following procedure is applicable only if your computer is a non-touch computer.
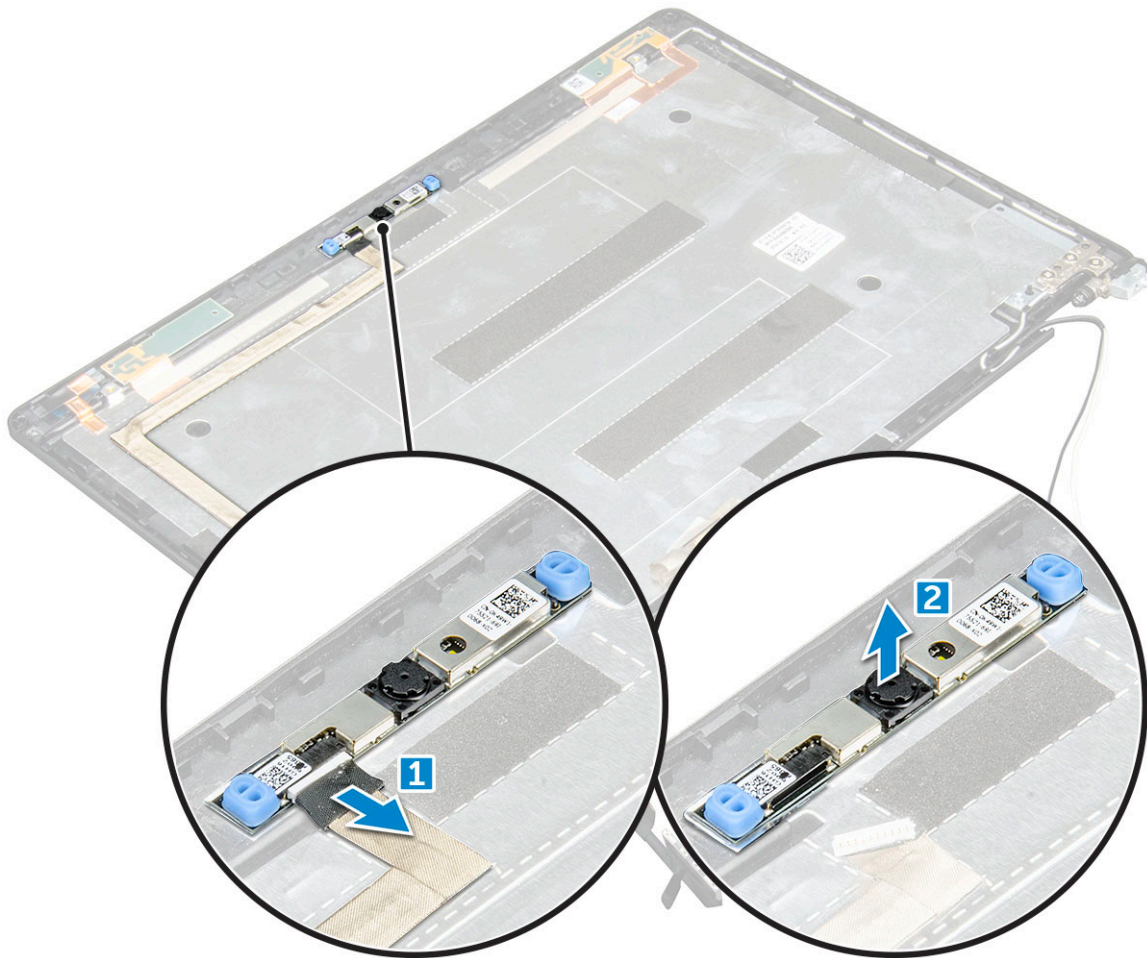
Installing camera

Steps

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. display hinge cover
   e. WWAN card(optional)
   f. WLAN card
   g. battery
   h. base cover
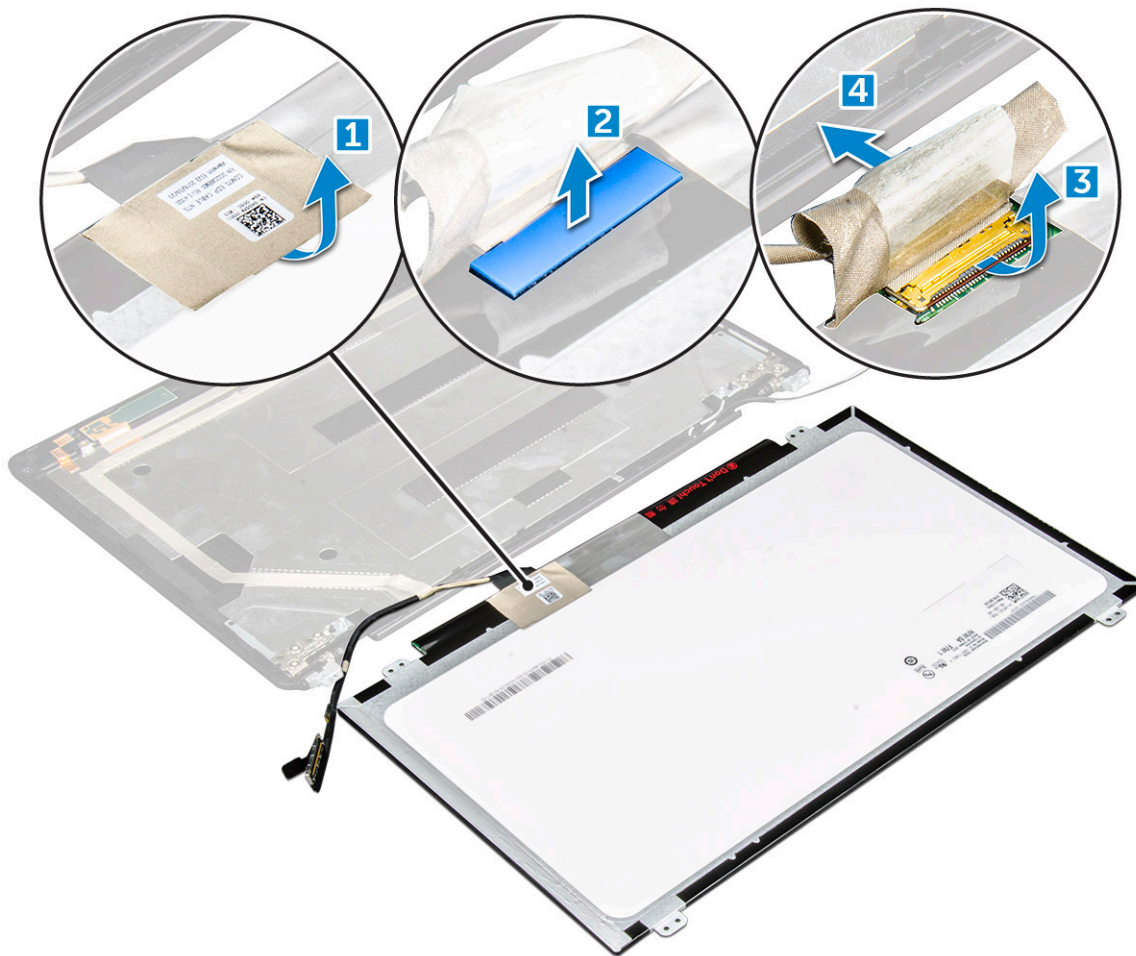4. Follow the procedure in After working inside your computer.

Palm rest

Removing palm rest

Steps

1. Follow the procedure in Before working inside your computer.

2. Remove the:
   a. base cover
   b. battery
   c. display hinge cover
   d. WLAN card
   e. WWAN card (optional)
   f. hard drive assembly(optional)
   g. SSD card
   h. memory module
   i. coin cell battery
   j. system fan
   k. heat sink
   l. display assembly
   m. chassis frame
   n. system board
3. The palm rest is the remaining component after removing all the components.
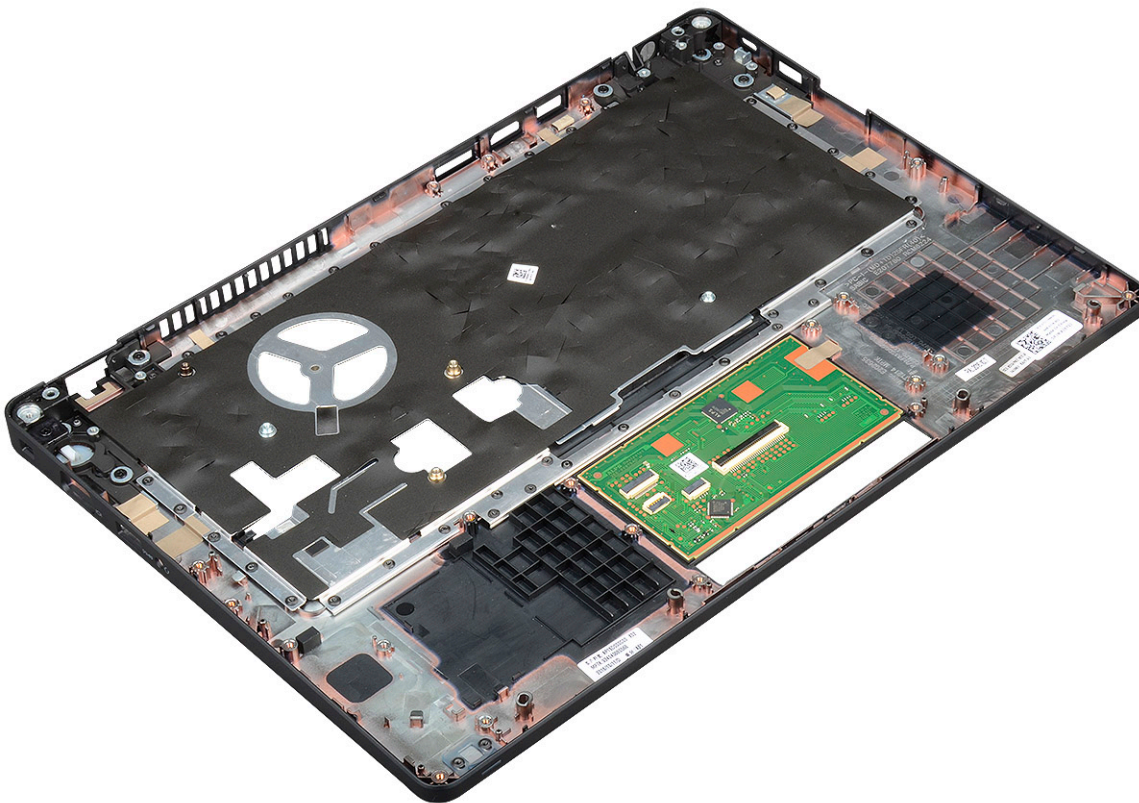
Installing palmrest

Steps

1. Place the palm rest on a flat surface.
2. Install the:
   a. system board
   b. chassis frame
   c. system fan
   d. heat sink
   e. display assembly
   f. hard drive assembly(optional)
   g. coin cell battery

h. memory module
i. SSD card
j. WWAN card(optional)
k. WLAN card
l. hard drive assembly(optional)
m. battery
n. base cover

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

Technology and components

Topics:

Power adapter

This laptop is shipped with 7.4 mm barrel plug on 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

The Latitude 5480 laptop is shipped with the following processors:

- Intel Core i3-7100U (3M Cache, up to 2.4 GHz), Dual Core
- Intel Core i5-7200U (3M Cache, up to 3.1 GHz), Dual Core
- Intel Core i5-7300U (3M Cache, up to 3.5 GHz), vPro, Dual Core
- Intel Core i7-7600U (4M Cache, up to 3.9 GHz), vPro, Dual Core
- Intel Core i5-7300HQ (6M Cache, up to 3.5GHz), Quad Core, 35W CTDP
- Intel Core i5-7440HQ (6M Cache, up to 3.8GHz), Quad Core, 35W CTDP
- Intel Core i7-7820HQ (8M Cache up to 3.9GHz), Quad Core, 35W CTDP
- Intel Core i5-6200U (3M cache up to 2.3GHz), Dual Core
- Intel Core i5-6300U (3M cache up to 2.4GHz), vPro, Dual Core
- Intel Core i7-6600U (4M cache up to 2.6GHz), vPro, Dual Core
- Intel Core i5-6440HQ (6M cache up to 2.6GHz), vPro, Quad Core

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

Skylake processor

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

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

The following table illustrates the performance available on each Skylake suffix.

Table 2. Skylake specifications

Processor number	Cache	No. of cores/ No. of threads	Power	Memory type	Graphics
Intel Core i5-6200U (Dual Core, 2.3GHz, 15W)	3 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i5-6300U (Dual Core, 2.4GHz, 15W)-vPro	3 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i7-6600U (Dual Core, 2.6GHz, 15W)-vPro	4 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i5-6440HQ (Quad Core, 2.6GHz, cTDP 35W) -vPro	6 MB	4/4	35 W	DDR4-2133	Intel HD graphics 630

Kaby Lake — 7th Generation Intel Core processors

The 7th Gen Intel Core processor (Kaby Lake) family is the successor of 6th generation processors (Sky Lake). It's main features include:

- Intel 14nm Manufacturing Process Technology
- Intel Turbo Boost Technology
- Intel Hyper Threading Technology
- Intel Built-in Visuals
  - Intel HD graphics - exceptional videos, editing smallest details in the videos
  - Intel Quick Sync Video - excellent video conferencing capability, quick video editing and authoring
  - Intel Clear Video HD - visual quality and color fidelity enhancements for HD playback and immersing web browsing
- Integrated memory controller
- Optional Intel vPro technology (on i5/i7) with Active Management Technology 11.6
- Intel Rapid Storage Technology

Table 3. Kaby lake specifications

Processor number	Clock Speed	Cache	No. of cores/ No. of threads	Power	Memory type	Graphics
Intel Core i3-7100U (3M Cache, up to 2.4 GHz), Dual Core	2.4 GHz	3 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i5-7200U (3M Cache, up to 3.1 GHz), Dual Core	2.5 GHz	3 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i5-7300U (3M Cache, up to 3.5 GHz),vPro, Dual Core	2.6 GHz	3 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i7-7600U (4M Cache, up to 3.9 GHz), vPro, Dual Core	2.8 GHz	4 MB	2/4	15 W	DDR4-2133	Intel HD graphics 620
Intel Core i5-7300HQ (6M Cache, up to 3.5GHz), Quad Core, 35W CTDP	2.5 GHz	6 MB	4/4	35 W	DDR4-2133; DDR4-2400	Intel HD Graphics 630
Intel Core i5-7440HQ (6M Cache, up to 3.8GHz), Quad Core, 35W CTDP	2.8 GHz	6 MB	4/4	35 W	DDR4-2133; DDR4-2400	Intel HD Graphics 630
Intel Core i7-7820HQ (8M Cache up to 3.9GHz), Quad Core, 35W CTDP	2.9 GHz	8 MB	4/4	35 W	DDR4-2133; DDR4-2400	Intel HD Graphics 630

Identifying processors in Windows 10

Steps

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

The processor information is displayed.
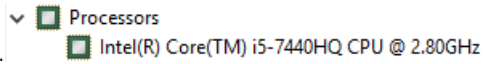
Verifying the processor usage in Task Manager

Steps

1. Right Click on the taskbar.
2. Select **Start Task Manager**.
   The **Windows Task Manager** window is displayed.
3. Click the **Performance** tab in the **Windows Task Manager** window.
   The processor performance details are
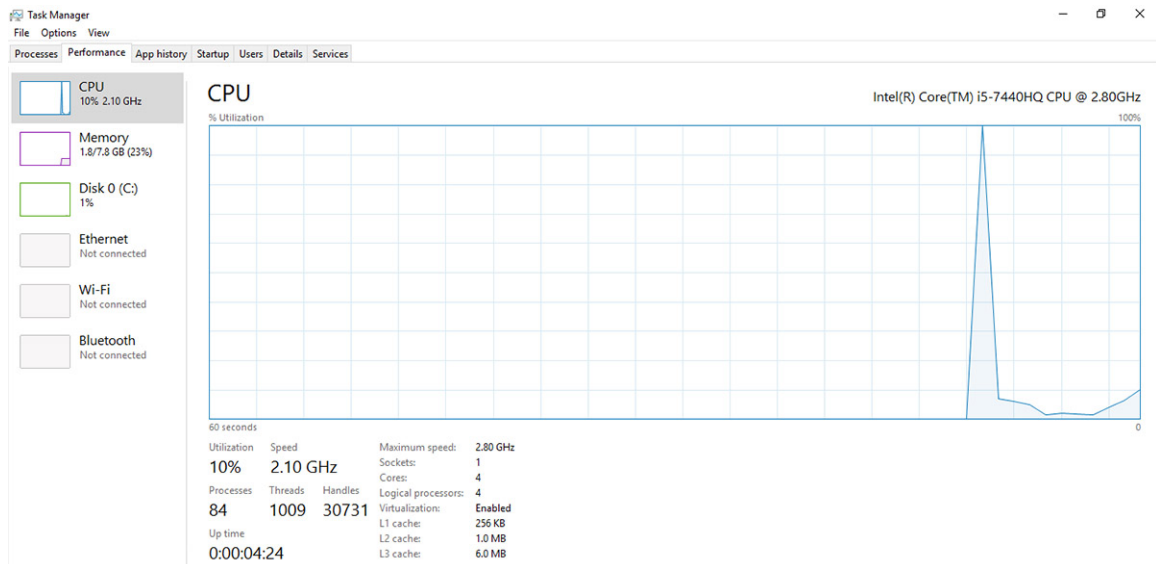
displayed.

Verifying the processor usage in Resource Monitor

Steps

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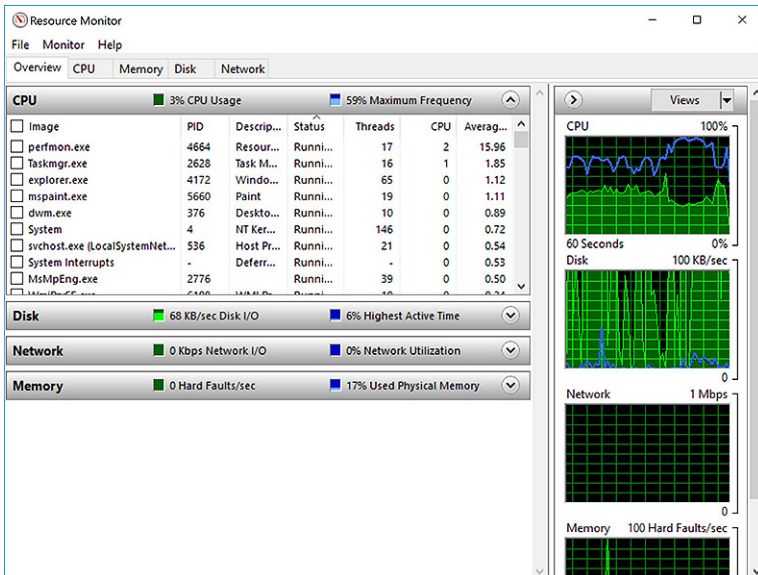
Chipsets

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

Intel chipset drivers

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

Table 4. Intel chipset drivers

Before installation	After installation

Downloading the chipset driver

Steps

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**.

   (i) **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

Steps

1. Right click the **Start Menu**.
2. Select **Device Manager**.
3. Expand **System Devices** and search for the chipset.
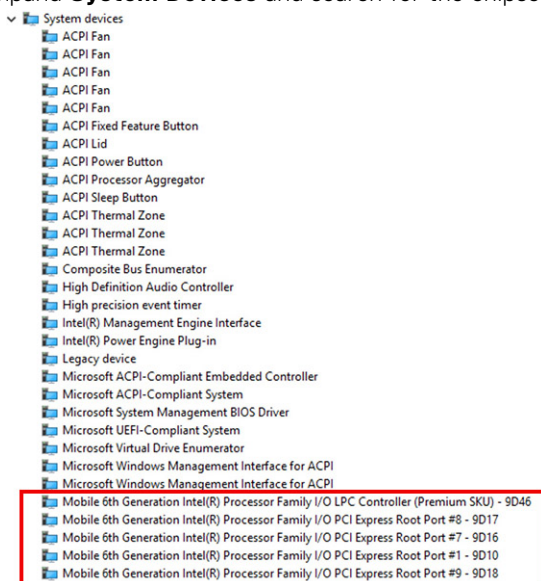
Graphic options
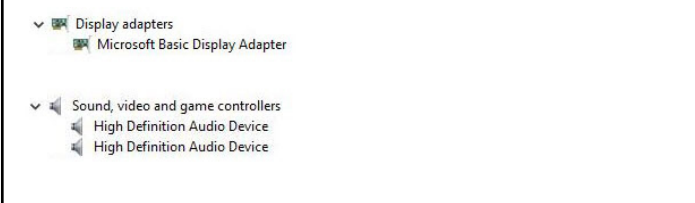
This laptop is shipped with the following graphics chipset options:

- Intel HD Graphics 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 5. Intel HD Graphics drivers

Before installation	After installation
Display adapters 　Microsoft Basic Display Adapter Sound, video and game controllers 　High Definition Audio Device 　High Definition Audio Device	⌄ 🖥 Display adapters 　　🖥 Intel(R) HD Graphics 630 ⌄ 🖥 Display adapters 　　🖥 Intel(R) HD Graphics 630

Downloading Windows drivers

Steps

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

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

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

Display options

This laptop has the following display options:
- 14.0-inch HD Anti-glare (!366 x 768)
- 14.0-inch FHD Anti-glare (1920 x 1080)
- 14.0-inch FHD Touch (1920 x 1080)

Identifying the display adapter

Steps

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

   ⌄ 🖥 Display adapters
　　🖥 Intel(R) HD Graphics 630
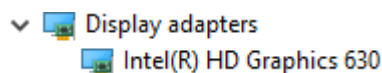
   The display adapters are displayed.

Changing the screen resolution

Steps

1. Right click on the desktop and select **Display Settings**.
2. Tap or click **Display settings**.
   The Setting window is displayed.
3. Scroll down and select **Advanced Display Settings**.
   The Advanced Display Setting is displayed.

4. Select the required resolution from the drop-down list and tap **Apply**.
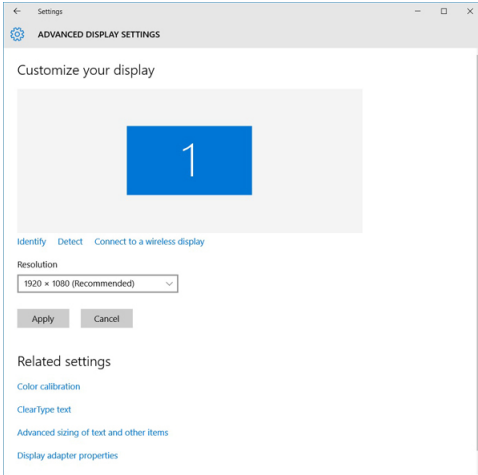
Rotating the display

Steps

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

Next steps

ⓘ **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

About this task

To enable or disable automatic screen brightness adjustment:

Steps

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

Steps

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

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

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

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

   ⓘ **NOTE:** Do not leave any liquid on the screen.

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

Using touch screen in Windows 10

About this task

Follow these steps to enable or disable the touch screen:

Steps

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

Connecting to external display devices

About this task

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

Steps

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

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

Realtek 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

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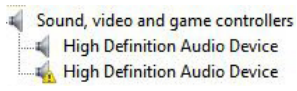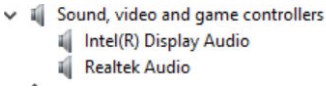
1. Turn on the laptop.
2. Go to **www.Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your laptop and click **Submit**.

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

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

Identifying the audio controller in Windows 10

Steps

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

Table 6. Identifying the audio controller in Windows 10

Before installation	After installation
Sound, video and game controllers 　High Definition Audio Device 　High Definition Audio Device	Sound, video and game controllers 　Intel(R) Display Audio 　Realtek Audio

Changing the audio settings

Steps

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	This option enables or disables the **Secure Boot** feature. ● Disabled ● Enabled Default setting: Enabled.
Expert Key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: ● PK ● KEK ● db ● dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: ● **Save to File**—Saves the key to a user-selected file ● **Replace from File**—Replaces the current key with a key from a user-selected file ● **Append from File**—Adds a key to the current database from a user-selected file ● **Delete**—Deletes the selected key ● **Reset All Keys**—Resets to default setting ● **Delete All Keys**—Deletes all the keys ⓘ **NOTE:** If you disable the **Custom Mode**, all the changes made will be erased and the keys will restore to default settings.

Hard drive options

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

Identifying the hard drive in Windows 10

Steps

1. Right click on Start menu
2. Select **Device Manager** , and expand **Disk drives**.

        ˇ ▭ Disk drives

            ▬ LITEON L8H-128V2G-11 M.2 2280 128GB

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

Identifying the hard drive in the BIOS

Steps

1. Turn on or restart your system.
2. When the Dell logo appears, perform the following action to enter the BIOS setup program:
   ● With keyboard — Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.

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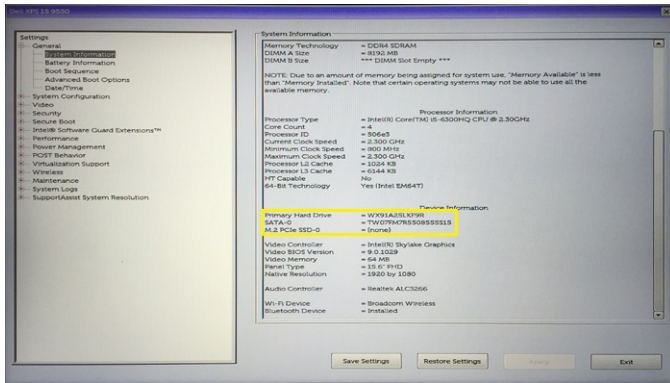
Camera features

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

Steps

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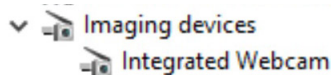
Starting the camera

About this task

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

Starting the camera application

Steps

1. Tap or click the **Windows** button and select **All apps**.
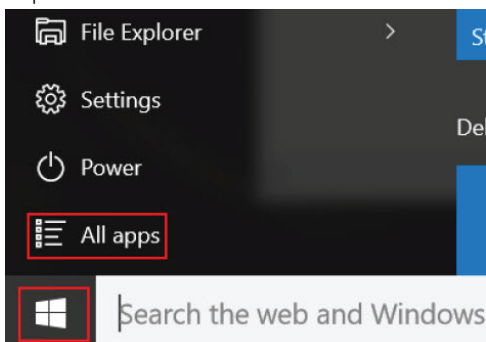
2. Select **Camera** from the apps list.
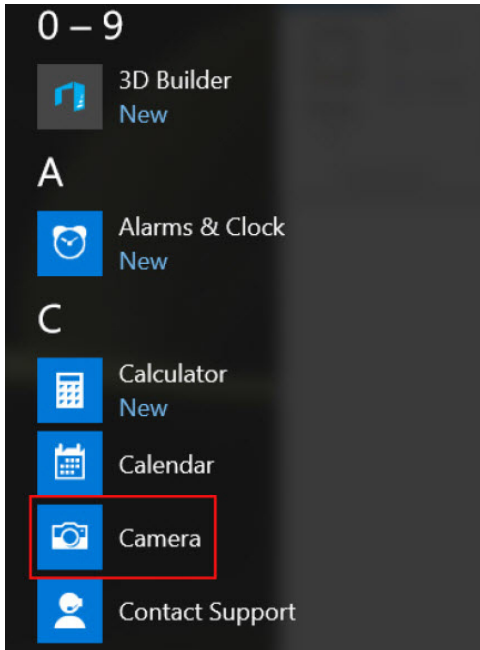
3. If the **Camera** App is not available in the apps list, search for it.
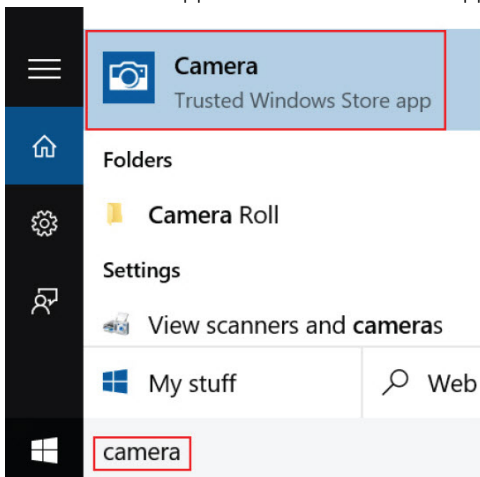
Memory features

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).

(i) **NOTE:** The memory module in the Dual Core processor will have 2400 MHz printed, but it performs at 2133 MHz.

Verifying system memory in Windows 10

Steps

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

Verifying system memory in system setup BIOS

Steps

1. Turn on or restart your system.
2. Perform the following actions after the Dell logo is displayed
   - With keyboard — Tap F2 until the Entering BIOS setup message appears. To enter the Boot selection menu, tap F12.
3. On the left pane, select **Settings** > **General** > **System Information**,
   The memory information is displayed on the right pane.

Testing memory using ePSA

Steps

1. Turn on or restart your computer.
2. Press F12 or press Fn+PWR to invoke the ePSA diagnostics.
   The PreBoot System Assessment (PSA) starts on your computer.
   > ⓘ **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the login screen/ desktop screen. Turn off the computer and try again.

Results

If the memory test results in 25 or less errors, then the RMT basic feature automatically fixes the issues. The test will indicate a pass result since the defect(s) have been removed. If the memory test results in 26 - 50 errors, the RMT basic feature masks the defective memory blocks and results in pass with no memory replacement requirement. If the memory test results in more than 50 errors, then the test is stalled and the result indicates that memory module replacement is required.

Realtek HD audio drivers

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

Table 7. Realtek HD audio drivers

Before installation	After installation

∨ 🔊 Audio inputs and outputs
   🎤 Microphone (High Definition Audio Device)
   🔊 Speakers (High Definition Audio Device)
 ∨ 🔊 Sound, video and game controllers
   🔊 High Definition Audio Device
   🔊 Intel(R) Display Audio	

Thunderbolt over USB Type-C

Thunderbolt is a hardware interface that combines data, video, audio, and power in a single connection. Thunderbolt combines PCI Express (PCIe) and DisplayPort (DP) into one serial signal, and additionally provides DC power, all in one cable. Thunderbolt 1 and Thunderbolt 2 use the same connector [1] as miniDP (DisplayPort) to connect to peripherals, while Thunderbolt 3 uses a USB Type-C connector [2].
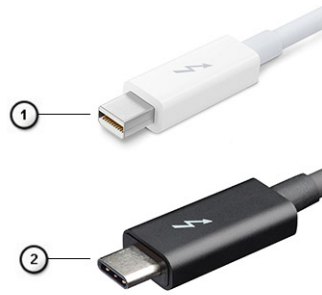
Figure 6. Thunderbolt 1 and Thunderbolt 3

1. Thunderbolt 1 and Thunderbolt 2 (using a miniDP connector)
2. Thunderbolt 3 (using a USB Type-C connector)

Thunderbolt 3 over USB Type-C

Thunderbolt 3 brings Thunderbolt to USB Type-C at speeds up to 40 Gbps, creating one compact port that does it all - delivering the fastest, most versatile connection to any dock, display or data device like an external hard drive. Thunderbolt 3 uses a USB Type-C connector/port to connect to supported peripherals.

1. Thunderbolt 3 uses USB Type-C connector and cables - It is compact and reversible
2. Thunderbolt 3 supports speed up to 40 Gbps
3. DisplayPort 1.2 – compatible with existing DisplayPort monitors, devices and cables
4. USB Power Delivery - Up to 130W on supported computers

Key Features of Thunderbolt 3 over USB Type-C

1. Thunderbolt, USB, DisplayPort and power on USB Type-C on a single cable (features vary between different products)
2. USB Type-C connector and cables which are compact and reversible
3. Supports Thunderbolt Networking (*varies between different products)
4. Supports up to 4K displays
5. Up to 40 Gbps

(i) **NOTE:** Data transfer speed may vary between different devices.

Thunderbolt Icons

Table 8. Thunderbolt Iconography Variation

Protocol	USB Type-A	USB Type-C	Notes
Thunderbolt	Not Applicable		mDP or USB Type-C

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

Boot sequence enables 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:** XXXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

    ⓘ **NOTE:** Choosing **Diagnostics**, displays the **SupportAssist** screen.

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

Navigation keys

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

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

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

Steps

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**.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

ⓘ **NOTE:** It is recommended to shutdown the computer if it is on.

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 (if available)

  ⓘ **NOTE:** XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)

- Diagnostics

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

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. - Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM ASize, DIMM B Size, - Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology. - Device Information: Displays 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. - 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 Boot 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. - 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: - 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: - Disabled - AT: This option is enabled by default. - PS2 - ECP
Serial Port	Allows you to configure the integrated serial port. The options are: - Disabled - COM1: This option is enabled by default.

Option	Description
	• COM2 • COM3 • COM4
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: • Disabled • AHCI • RAID On: This option is enabled by default.
Drives	Allows you to configure the SATA drives on board. All drives are enabled by default. The options are: • SATA-0 • SATA-2 • SATA-4 • M.2 PCI-e SSD-0
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default. • Enable SMART Reporting
USB Configuration	This is an optional feature. This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy). If USB port is enabled, device attached to this port is enabled and available for OS. If USB port is disabled, the OS cannot see any device attached to this port. The options are: • Enable USB Boot Support: This option is enabled by default. • Enable External USB Port: This option is enabled by default. (i) **NOTE:** USB keyboard and mouse always work in the BIOS setup irrespective of these settings.
USB Thunderbolt	This is an optional feature. This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy). If USB port is enabled, device attached to this port is enabled and available for OS. If USB port is disabled, the OS cannot see any device attached to this port. The options are: • 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
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: • 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. ⓘ **NOTE:** You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password and the hard drive password. ⓘ **NOTE:** Successful password changes take effect immediately. Default setting: Not set
System Password	Allows you to set, change or delete the system password. ⓘ **NOTE:** Successful password changes take effect immediately. Default setting: Not set
M.2 SATA SSD Password	Allows you to set, change, or delete the M.2 SATA SSD password. ⓘ **NOTE:** Successful password changes take effect immediately. Default setting: Not set
Strong Password	Allows you to enforce the option to always set strong passwords. Default Setting: Enable Strong Password is not selected. ⓘ **NOTE:** If Strong Password is enabled, Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Password Bypass	Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are: ● Disabled ● Reboot bypass Default setting: Disabled
Password Change	Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set. Default setting: **Allow Non-Admin Password Changes** is selected.
Non-Admin Setup Changes	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password.
UEFI Capsule Firmware Updates	Allows yout to control whether this system allows BIOS updates via UEFI capsule update packages. ● Enable UEFI Capsule Firmware Updates Default setting: Enabled
TPM 2.0 Security	Allows you to enable the Trusted Platform Module (TPM) during POST. The options are: ● TPM On: This option is enabled by default. ● Clear

Option	Description
	- 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 ⓘ **NOTE:** To upgrade or downgrade TPM1.2/2.0, download the TPM wrapper tool (software).
Computrace	Allows you to activate or disable the optional Computrace software The options are: - Deactivate - Disable - Activate ⓘ **NOTE:** The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed Default setting: Deactivate
CPU XD Support	Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support Default setting: Enabled
OROM Keyboard Access	Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are: - Enable - One Time Enable - Disable Default setting: Enabled
Admin Setup Lockout	Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: Disabled
Master Password Lockout	Allows you to disable master password support. Hard disk password need to be cleared before the setting can be changed Enable Master Password Lockout Default setting: Disabled

Secure Boot screen options

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. - Disabled - Enabled Default setting: Enabled.
Expert Key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: - PK - KEK - db - dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: **Save to File**—Saves the key to a user-selected file

Option	Description
	• **Replace from File**—Replaces the current key with a key from a user-selected file
	• **Append from File**—Adds a key to the current database from a user-selected file
	• **Delete**—Deletes the selected key
	• **Reset All Keys**—Resets to default setting
	• **Delete All Keys**—Deletes all the keys
	ⓘ **NOTE:** If you disable the **Custom Mode**, all the changes made will be erased and the keys will restore to default settings.

Intel Software Guard Extensions

Option	Description
Intel SGX Enable	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: • Disabled • Enabled Default setting: Disabled
Enclave Memory Size	This option sets SGX Enclave Reserve Memory Size. The option are: • 32 MB • 64 MB • 128 MB

Performance screen options

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. • All: This option is selected by default. • 1 • 2 • 3
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep feature. • Enable Intel SpeedStep Default setting: The option is enabled.
C-States Control	Allows you to enable or disable the additional processor sleep states. • C states Default setting: The option is enabled.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. • Enable Intel TurboBoost Default setting: The option is enabled.
Wake on Dell USB-C Dock.	Allows you to wake on Dell USB-C dock.

Power Management screen options

Option	Description
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. Default setting: Wake on AC is not selected.
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: ● Disabled ● Every Day ● Weekdays ● Select Days Default setting: Disabled
USB Wake Support	Allows you to enable USB devices to wake the system from Standby. ⓘ **NOTE:** This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power. ● Enable USB Wake Support ● Wake on Dell USB-C Dock: This option is enabled by default.
Wireless Radio Control	Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection. ● Control WLAN Radio ● Control WWAN Radio Default setting: The option is disabled.
Wake on LAN/ WLAN	Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal. ● Disabled ● LAN Only ● WLAN Only ● LAN or WLAN Default setting: Disabled
Block Sleep	This option lets you block entering to sleep (S3 state) in operating system environment. Block Sleep (S3 state) Default setting: This option is disabled
Peak Shift	This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached.
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health. Disabled Default setting: Disabled
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are: ● Adaptive ● Standard — Fully charges your battery at a standard rate. ● ExpressCharge — The battery charges over a shorter period of time using Dell's fast charging technology. This option is enabled by default. ● Primarily AC use ● Custom If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.

Option	Description
	(i) **NOTE:** All charging mode may not be available for all the batteries. To enable this option, disable the **Advanced Battery Charge Configuration** option.
Sleep Mode	This option is used to select which sleep mode will be used by operating system. ● OS Automatic Selection ● Force S3: This option is enabled by default.
Type-C Connector Power	This option lets you set the maximum power that can be drawn from the Type-C connector. ● 7.5 Watts: This option is enabled by default. ● 15 Watts

POST Behavior screen options

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. Default setting: Enable Adapter Warnings
Keypad (Embedded)	Allows you to choose one of two methods to enable the keypad that is embedded in the internal keyboard. ● Fn Key Only: This option is enabled by default. ● By Numlock (i) **NOTE:** When setup is running, this option has no effect. Setup works in Fn Key Only mode.
Mouse/Touchpad	Allows you to define how the system handles mouse and touch pad input. The options are: ● Serial Mouse ● PS2 Mouse ● Touchpad/PS-2 Mouse: This option is enabled by default.
Numlock Enable	Allows you to enable the Numlock option when the computer boots. Enable Network. This option is enabled by default.
Fn Key Emulation	Allows you to set the option where the Scroll Lock key is used to simulate the Fn key feature. Enable Fn Key Emulation (default)
Fn Lock Options	Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are: ● Fn Lock. This option is selected by default. ● Lock Mode Disable/Standard ● Lock Mode Enable/Secondary
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: ● Minimal ● Thorough (default) ● Auto
Extended BIOS POST Time	Allows you to create an additional preboot delay. The options are: ● 0 seconds. This option is enabled by default. ● 5 seconds ● 10 seconds
Full Screen Logo	This option will display full screen logo if your image match screen resolution ● Enable Full Screen Logo
Warnings and Error	This option will cause the boot process to only pause when warnings or errors are detected. ● Prompt on Warnings and Errors This option is enabled by default.

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

Wireless screen options

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are: ● WWAN ● GPS (on WWAN Module) ● WLAN/WiGig ● Bluetooth All the options are enabled by default. ⓘ **NOTE:** For WLAN and WiGig enable or disable controls are tied together and they cannot be enabled or disabled independently.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. ● WWAN/GPS ● WLAN/WiGig ● Bluetooth All the options are enabled by default.

Maintenance screen options

Option	Description
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	This controls flashing of the system firmware to previous revisions. ● Allows BIOS Downgrade (enabled by default)

Option	Description
Data Wipe	This field allows users to erase the data securely from all internal storage devices. The following is list of devices affected: ● Internal SATA HDD/SSD ● Internal M.2 SATA SDD ● Internal M.2 PCIe SSD ● Internal eMMC
BIOS Recovery	This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. ● BIOS Recovery from Hard Drive (enabled by default) ● BIOS Auto-Recovery ● Always perform Integrity Check

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

Updating the BIOS in Windows

About this task

⚠️ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694**

Steps

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   ⓘ **NOTE:** If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.

   For more information, see knowledge base article 000124211 at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article 000131486 at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https:// www.dell.com/support/article/sln153694**

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article 000145519 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https:// www.dell.com/support/article/sln153694**

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

ⓘ **NOTE:** Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

⚠ **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

Table 9. System and setup password

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

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

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

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

ⓘ **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

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

About this task

To enter the system setup, press F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.
   - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.

4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system setup password

Prerequisites

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

About this task

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

Steps

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**.

   (i) **NOTE:** If you change the System and/or Setup password, re enter the new password when prompted. If you delete the System and Setup password, confirm the deletion when prompted.

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

Clearing CMOS settings

About this task

⚠ **CAUTION: Clearing CMOS settings will reset the BIOS settings on your computer.**

Steps

1. Remove the base cover.
2. Disconnect the battery cable from the system board.
3. Remove the coin-cell battery.
4. Wait for one minute.
5. Replace the coin-cell battery.
6. Connect the battery cable to the system board.
7. Replace the base cover.

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.
(i) **NOTE:** For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

Technical specifications

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

- Windows 10, click or tap **Start** [icon] > **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** [icon], right-click **My Computer**, and then select **Properties**.

Topics:

System specifications

Feature	Specification
Chipset	• Intel 7th Generation processors • Intel 6th Generation 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

Feature	Specification
	6th Generation Intel Core i5 series or i7 series processors
L3 cache	
i3 series	3 MB
i5 series	● Dual core - 3 MB ● Quad core - 6 MB
i7 series	● Dual core - 4 MB ● Quad core (vPro) - 8 MB

Memory specifications

Feature	Specification
Memory connector	2 SoDIMM slots
Memory capacity per slot	4 GB, 8 GB, and 16 GB
Memory type	DDR4
Speed	● 2133 MHz ● 2400 MHz ⓘ **NOTE:** The memory module in the Dual Core processor will have 2400 MHz printed, but it performs at 2133 MHz.
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
Internal interface	High-definition audio codec
External interface	Stereo headset/mic combo
Speakers	Two

Feature	Specification
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	- Intel HD Graphics 620 - Intel HD Graphics 630
Graphics	Nvidia graphics(optional)
Data bus	Integrated video
External display support	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	74º

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. ⓘ **NOTE:** Intel or Qualcomm (optional)

Port and connector specifications

Feature	Specification
Audio	Stereo headset/mic combo
Video	• One 19-pin HDMI connector • 15 pin VGA connector
Network adapter	One RJ-45 connector
USB	Three USB 3.1 Gen 1 ports (One USB 3.1 Gen 1 with PowerShare)
Memory SD card reader	SD 4.0
SmartCard reader	Optional
Micro SIM (uSIM) card	One external (optional)
DisplayPort over USB Type-C	• DisplayPort over USB Type-C (optional Thunderbolt 3) ⓘ **NOTE:** DisplayPort over USB Type-C Thunderbolt 3 is available in systems with discrete graphics only.
Other docking port	Dell ultraHD docking station - USB 3.1 Gen 1 (D3100)

Contactless smart card specifications

Feature	Specification
Supported Smart Cards/ Technologies	BTO with USH

Display specifications

Feature	Specification
Type	• 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

Feature	Specification
Maximum viewing angles (horizontal)	+/- 40 degrees
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	● United States: 82 keys ● United Kingdom: 83 keys ● Japan: 86 keys ● Brazil: 84 keys

Touchpad specifications

Feature	Specification
Active Area:	

Feature	Specification
X-axis	99.50 mm
Y-axis	53.00 mm

Battery specifications

Feature	Specification	
Type	• 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	• 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	

ⓘ **NOTE:** If system has a 4-cell 68Whr battery it will not have a HDD and must have a SSD.

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
Adapter size	7.4mm	
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:

- Device status lights
- Battery status lights

Device status lights

Table 10. 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.
🔋	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 11. 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. Re-plug battery connector, replace battery if the issue reoccurs.
Alternately blinking amber light with steady white light	Temporary battery failure with AC adapter present. Re-plug battery connector, replace battery if the issue reoccurs.
Constantly blinking amber light	Fatal battery failure with AC adapter present. Fatal battery, replace the battery.
Light off	Battery in full charge mode with AC adapter present.
White light on	Battery in charge mode with AC adapter present.

Troubleshooting

Topics:

Handling swollen Lithium-ion batteries

Like most laptops, Dell laptops use lithium-ion batteries. One type of lithium-ion battery is the lithium-ion polymer battery. Lithium-ion polymer batteries have increased in popularity in recent years and have become standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to lithium-ion polymer battery technology is the potential for swelling of the battery cells.

Swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and should be replaced and disposed of properly. We recommend contacting Dell product support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing Lithium-ion batteries are as follows:
- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery before removing it from the system. To discharge the battery, unplug the AC adapter from the system and operate the system only on battery power. When the system will no longer power on when the power button is pressed, the battery is fully discharged.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell product support at https://www.dell.com/support for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from https://www.dell.com or otherwise directly from Dell.

Lithium-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, see Dell Laptop Battery - Frequently Asked Questions.

Dell Enhanced Pre-Boot System Assessment — ePSA Diagnostic 3.0

You can invoke the ePSA diagnostics by either of the following ways :
- Press the F12 key when the system posts and choose **ePSA or Diagnostics** option on One Time Boot Menu.
- Press and hold Fn(Function key on keyboard) and **Power On** (PWR) the system.

Running the ePSA Diagnostics

About this task

Invoke diagnostics boot by either of the methods that are suggested below:

Steps

1. Power on the computer.
2. As the computer boots, press the F12 key when the Dell logo is displayed.
3. In the boot menu screen, use Up/Down arrow key to select the **Diagnostics** option and then press **Enter**.

   (i) **NOTE:** 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. Press the arrow in the lower-right corner to go to the page listing.
   The detected items are listed and tested.
5. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
6. Select the device from the left pane and click **Run Tests**.
7. If there are any issues, error codes are displayed.
   Note the error code and contact Dell.

   or

8. Shut down the computer.
9. Press and hold the Fn key, while pressing the power button, and then release both.
10. Repeat steps 3–7 above.

Built-in self-test (BIST)

M-BIST

M-BIST (Built In Self-Test) is the system board's built-in self-test diagnostics tool that improves the diagnostics accuracy of system board embedded controller (EC) failures.

(i) **NOTE:** M-BIST can be manually initiated before POST (Power On Self Test).

How to run M-BIST

(i) **NOTE:** M-BIST must be initiated on the system from a power-off state either connected to AC power or with battery only.

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.
2. With both the **M** key and the **power button** held down, the battery indicator LED may exhibit two states:
   a. OFF: No fault detected with the system board
   b. AMBER: Indicates a problem with the system board
3. If there is a failure with the system board, the battery status LED will flash one of the following error codes for 30 seconds:

Table 12. LED error codes

Blinking Pattern		Possible Problem
Amber	White	
2	1	CPU Failure
2	8	LCD Power Rail Failure
1	1	TPM Detection Failure
2	4	Unrecoverable SPI Failure

4. If there is no failure with the system board, the LCD will cycle through the solid color screens described in the LCD-BIST section for 30 seconds and then power off.

LCD Power rail test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (i.e., the L-BIST circuit fails), the battery status LED will flash either an error code [2,8] or an error code [2,7].

(i) **NOTE:** If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

How to invoke L-BIST Test:

1. Press the power button to start the system.
2. If the system does not start up normally, look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace the system board.

LCD Built-in Self Test (BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell laptop or with the video card (GPU) and PC settings.

When you notice screen abnormalities like flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade etc., it is always a good practice to isolate the LCD (screen) by running the Built-In Self Test (BIST).

How to invoke LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold **D** key and **Power on** the laptop to enter LCD built-in self test (BIST) mode. Continue to hold the D key, until the system boots up.
5. The screen will display solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
6. Then it will display the colors white, black and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color or distortion on the screen).
8. At the end of the last solid color (red), the system will shut down.

(i) **NOTE:** Dell SupportAssist Pre-boot diagnostics upon launch, initiates an LCD BIST first, expecting a user intervention confirm functionality of the LCD.
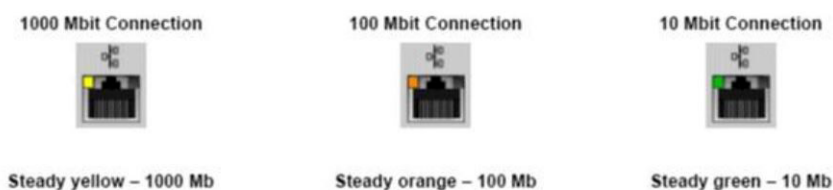
Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell proposes multiple options for recovering Windows operating system on your Dell PC. For more information. see Dell Windows Backup Media and Recovery Options.

LAN status LED

The RJ-45 connector includes two LEDs in the top corners. When the connection is oriented as shown below, the LED in the top-left corner is the link integrity LED and the one in the top-right corner is the network activity LED.

The link integrity LED can display three colors: green, orange, and yellow. These colors indicate the three possible network connection speeds: 10 Mbps, 100 Mbps, and 1000 Mbps, respectively. These LED states are shown in the image below. The network activity LED is always yellow and blinks to indicate passing network traffic.

1000 Mbit Connection — Steady yellow – 1000 Mb
100 Mbit Connection — Steady orange – 100 Mb
10 Mbit Connection — Steady green – 10 Mb

The LAN controller supports two status LEDS. A link LED displays the current transfer rate supported (10, 100, or 1000Mbps), while the activity LED indicates when the card is receiving or transmitting data. The following table illustrates the LEDs' operation.

Table 13. Status LEDs

LED	Status	Description
Activity	Amber	The LAN controller is receiving or transmitting data
	Off	The LAN controller is idle
Link	Green	The LAN controller is operating in 10 Mbps mode
	Orange	The LAN controller is operating in 100 Mbps mode
	Yellow	The LAN controller is operating in 1000 Mbps (Gigabit) mode

Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into their primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Real Time Clock reset

The Real Time Clock (RTC) reset function allows you to recover your Dell system from **No POST/No Boot/No Power** situations. To initiate the RTC reset on the system make sure system is in a power-off state and is connected to power source . Press and hold the power button for 25 seconds and then release the power button. Go to how to reset real time clock.

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

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

- Service Tag
- Asset Tag
- Ownership Tag
- Admin Password
- System Password
- HDD Password
- TPM on and Active
- Key Databases
- System Logs

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

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

WiFi power cycle

About this task

If your computer is unable to access the internet due to WiFi connectivity issues a WiFi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a WiFi power cycle:

> (i) **NOTE:** Some ISPs (Internet Service Providers) provide a modem/router combo device.

Steps

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

Drain residual flea power (perform hard reset)

About this task

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you are requested to drain residual flea power before removing or replacing any components in your computer.

Draining residual flea power, also known as a performing a "hard reset", is also a common troubleshooting step if your computer does not power on or boot into the operating system.

To drain residual flea power (perform a hard reset)

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Remove the base cover.
4. Remove the battery.
5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to your computer.
9. Turn on your computer.

> (i) **NOTE:** For more information about performing a hard reset, see the knowledge base article 000130881 at www.dell.com/support.

9

Contacting Dell

Prerequisites

ⓘ **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.

About this task

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:

Steps

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.