# Latitude 3510

## Service Manual

Regulatory Model: P101F
Regulatory Type: P101F001, P101F001
July 2021
Rev. A03

## Notes, cautions, and warnings

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

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

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

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# 1

# Working on your computer

**Topics:**


- Safety instructions


## Safety instructions

### Prerequisites

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

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

### About this task

**WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage**

**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 at the same time as touching a connector on the back of the computer.**

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

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

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

## Before working inside your computer

### Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. Click **Start** > **Power** > **Shut down**.

   **NOTE:** If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
5. Remove any media card and optical disc from your computer, if applicable.
6. After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

   **CAUTION: Place the computer on a flat, soft, and clean surface to avoid scratches on the display.**

7. Place the computer face down.

# Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

Observe the following safety precautions before you perform any installation or break/fix procedures involving disassembly or reassembly:

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any notebook to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

## Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 20 seconds should discharge residual power in the system board. Remove the battery from notebooks.

## Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done through the use of a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding yourself and the equipment.

# Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

# ESD field service kit

The unmonitored Field Service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

## Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

## ESD protection summary

It is recommended that all field service technicians use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical that technicians keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

# After working inside your computer

**About this task**

**NOTE:** Leaving stray or loose screws inside your computer may severely damage your computer.

**Steps**

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

2

# Disassembly and reassembly

**NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

**Topics:**


- Recommended tools
- Screw List
- Major components of your system
- MicroSD card
- Base cover
- Battery
- Memory modules
- WLAN card
- WWAN card
- Coin-cell battery
- DC-in port
- Solid-state drive
- Hard Drive
- Touchpad
- Speakers
- Fan Assembly
- Heatsink assembly
- System board
- IO Board
- Power button
- Display assembly
- Display bezel
- Display panel
- Camera
- Display (eDP) cable
- Display back cover assembly
- Palm-rest and keyboard assembly


## Recommended tools

The procedures in this document may require the following tools:

- Phillips #0 screwdriver
- Phillips #1 screwdriver
- Plastic scribe-Recommended for field technician

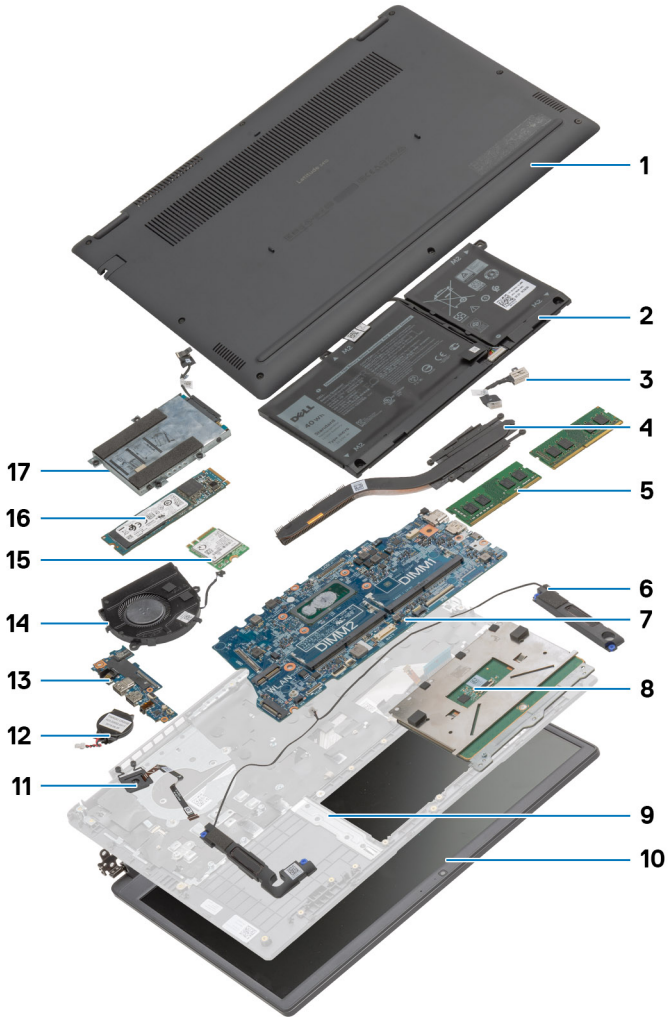
## Screw List

The following table shows the screw list and the images for different components.

### Table 1. Screw Size List

| Component | Screw type | Quantity | Image |
|---|---|---|---|
| Base cover | M2.5x2.5 (captive screws)<br>**NOTE:** Screws are part of the base cover. | 8 |  |
| Battery | M2x3 | 4 |  |
| WLAN | M2x3 | 1 |  |
| WWAN | M2x3 | 1 |  |
| DC-In | M2x3 | 1 |  |
| SSD | M2x3 | 1 |  |
| SSD support bracket | M2x3 | 1 |  |
| Hard Drive | M3x3 | 4 |  |
| Touchpad button board | M2x2 | 7 |  |
| System fan | M2x2 | 2 |  |
| Heatsink - UMA | Captive screws | 4 | |
| Heatsink - Discrete | Captive screws | 7 | |
| System board - UMA | M2x4<br>M2x5 | 2<br>2 |  |
| System board - Discrete | M2x4<br>M2x5 | 2<br>2 |  |
| Power button | M2x3 | 2 |  |
| Display assembly | M2.5x5<br>M2.5x4 | 5<br>1 |  |
| Display Panel | M2.5x2.5<br>M2x2 | 6<br>2 |  |

# Major components of your system




1. Base cover
2. Battery
3. DC-in Port
4. Heatsink
5. Memory Modules
6. Speakers
7. System Board
8. Touchpad
9. Palmrest Assembly
10. Display Assembly
11. Power Button Module
12. Coin-cell Battery
13. IO Board
14. Fan Assembly
15. WLAN Card
16. Solid-state Drive
17. Hard Drive Assembly

**NOTE:** Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

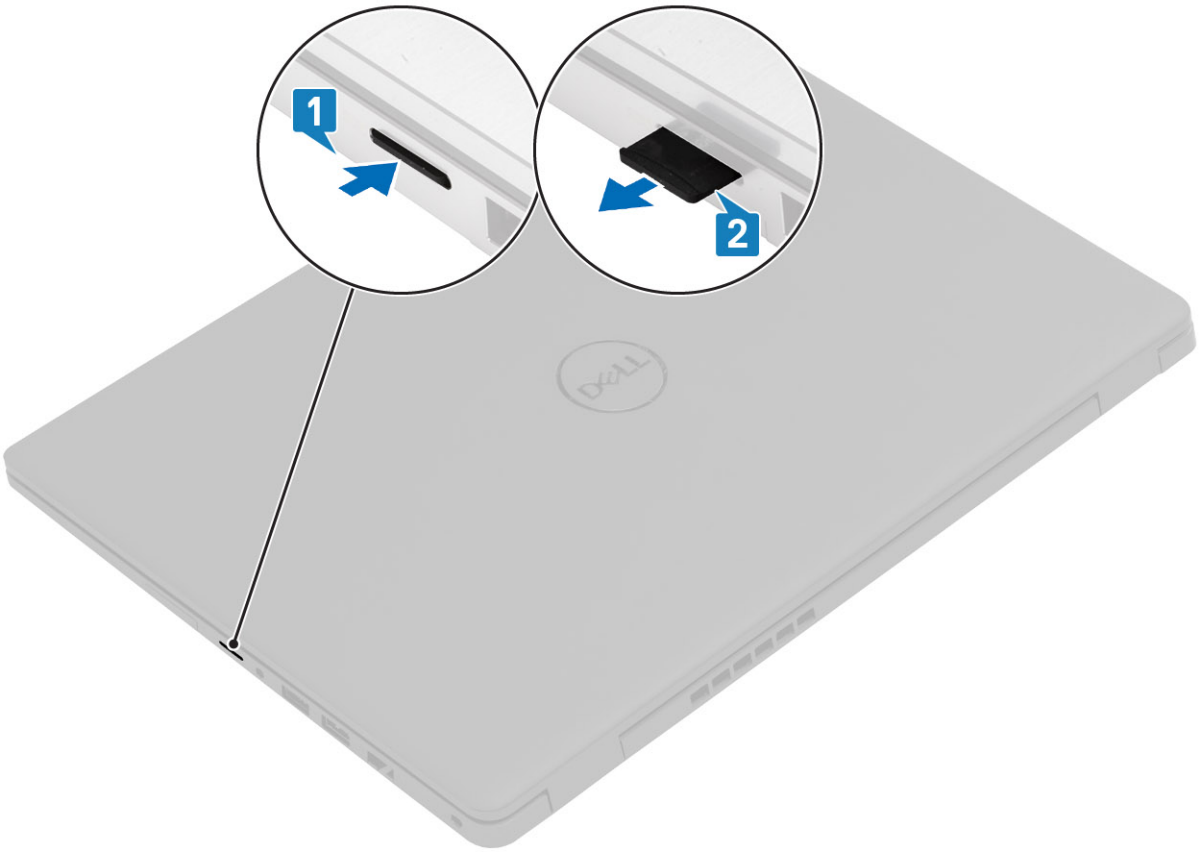
# MicroSD card

## Removing the microSD card

### Prerequisites

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

### About this task

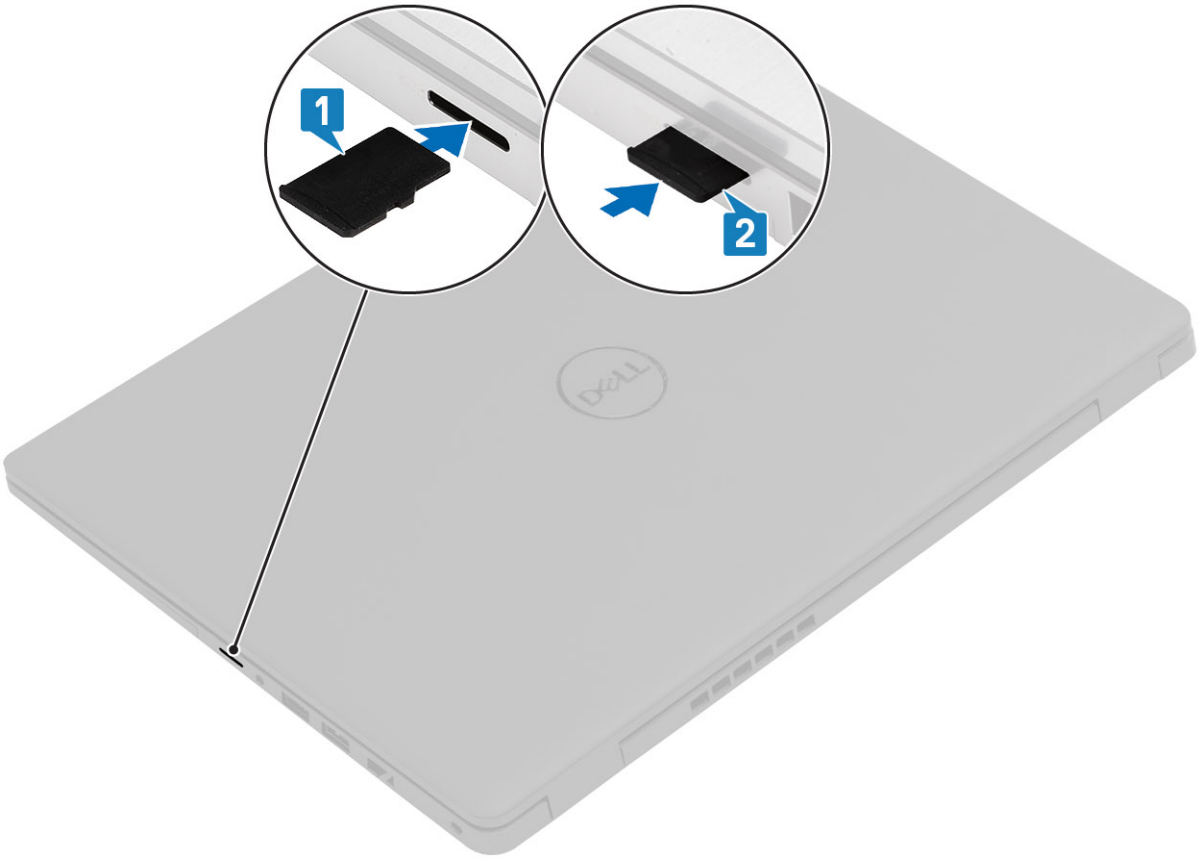



### Steps

1. Push the microSD card to release it from the computer.
2. Slide the microSD card out of the computer.

## Installing the microSD card

### About this task




### Steps

1. Align the microSD card to its slot on the computer.
2. Slide the microSD card into the slot until it clicks into place.

### Next steps

Follow the procedures in After working inside your computer.

# Base cover

## Removing the base cover

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.

### About this task

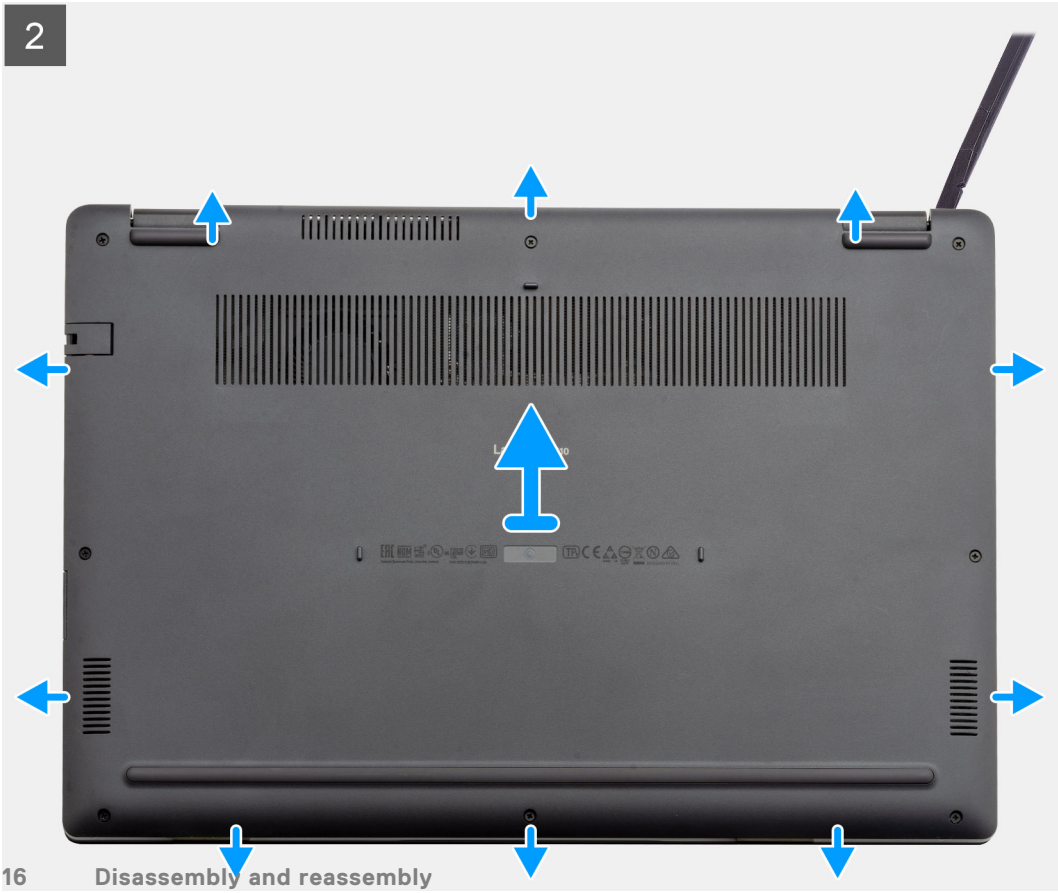


**8x**
M2.5x2.5

1




2



### Steps

1. Loosen the eight (M2.5x2.5) screws that secure the bottom base to the computer.
2. Using a plastic scribe, pry the base cover from the top-right corner and lift the base cover away from the computer.

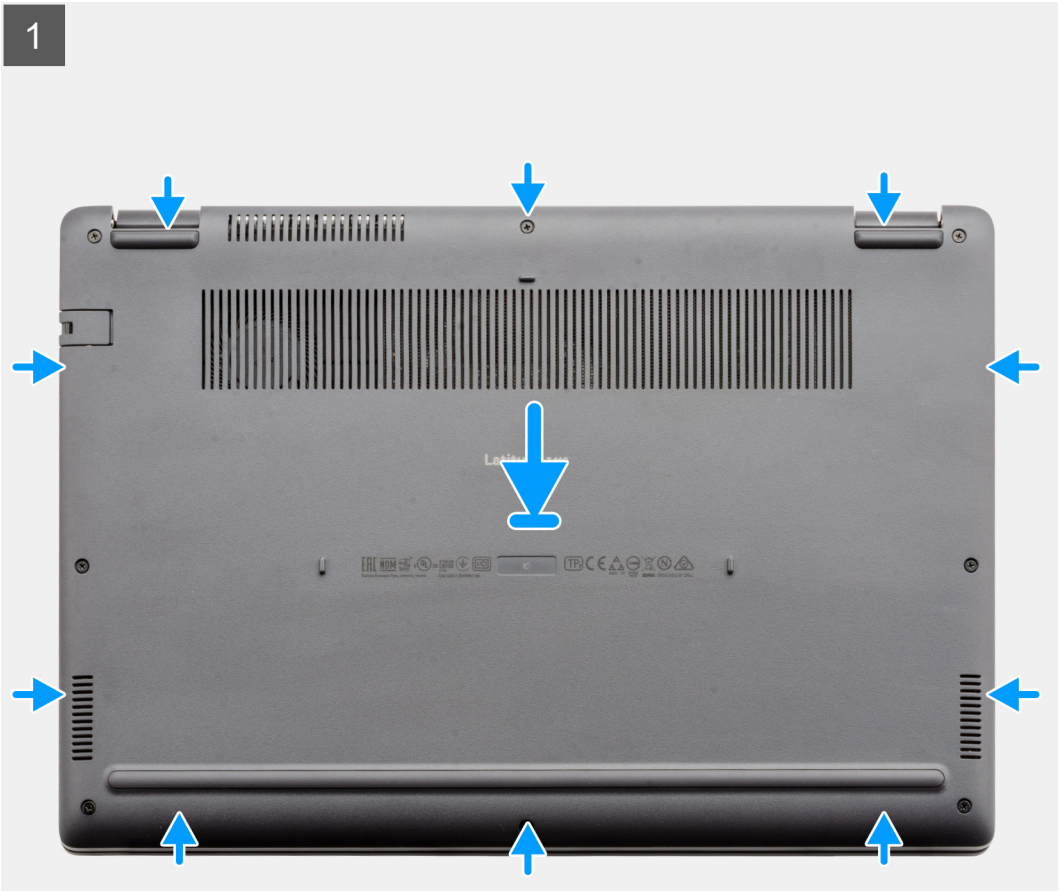
## Installing the base cover

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the base cover and provides a visual representation of the installation procedure.






**8x**
M2.5x2.5



### Steps

1. Align and place the base cover on the computer, press the edges and sides of the base cover until it snaps into place.
2. Tighten the eight (M2.5x2.5) screws to secure the base cover to the computer.

### Next steps

1. Replace the SD Card.
2. Follow the procedure in after working inside your computer.

# Battery

## Lithium-ion battery precautions

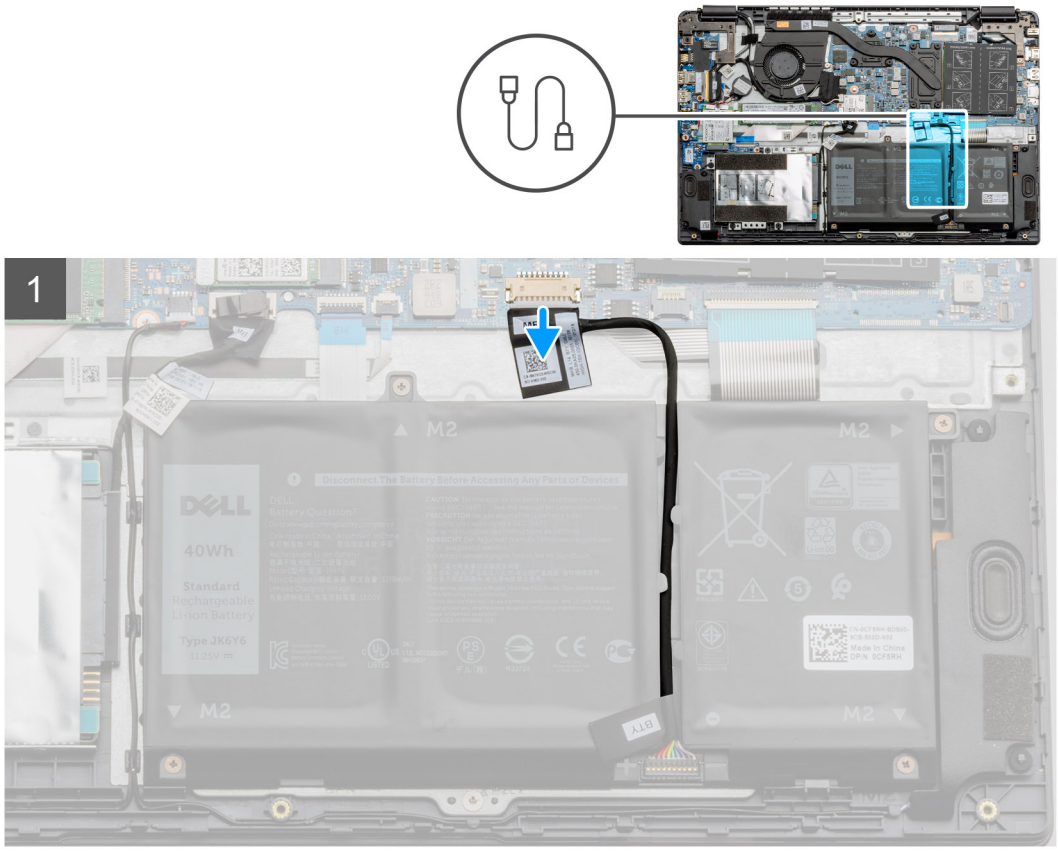
**CAUTION:**

- **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.**

## Disconnecting the battery cable

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the microSD card.
3. Remove the base cover.




### Steps

Use the pull tab to disconnect the battery cable from the connector on the system board.

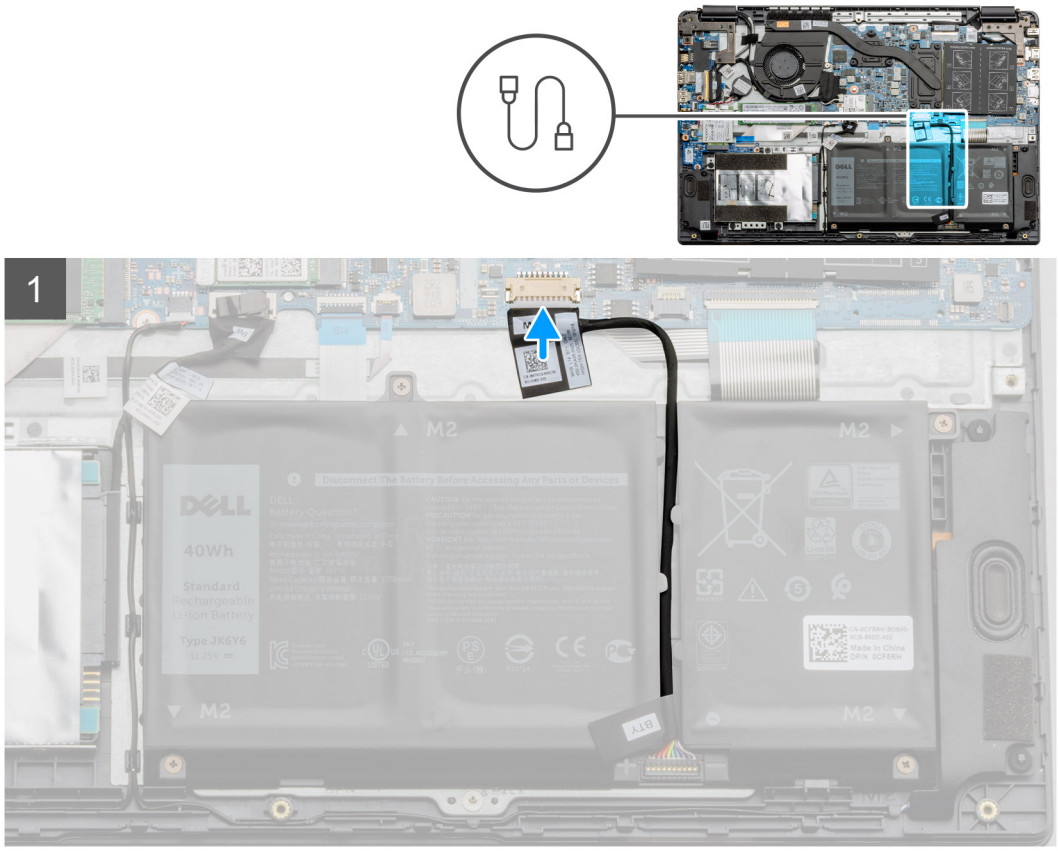
## Reconnecting the battery cable

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the battery cable and provides a visual representation of the installation procedure.




### Steps

Re-connect the battery cable to the connector on the system board.

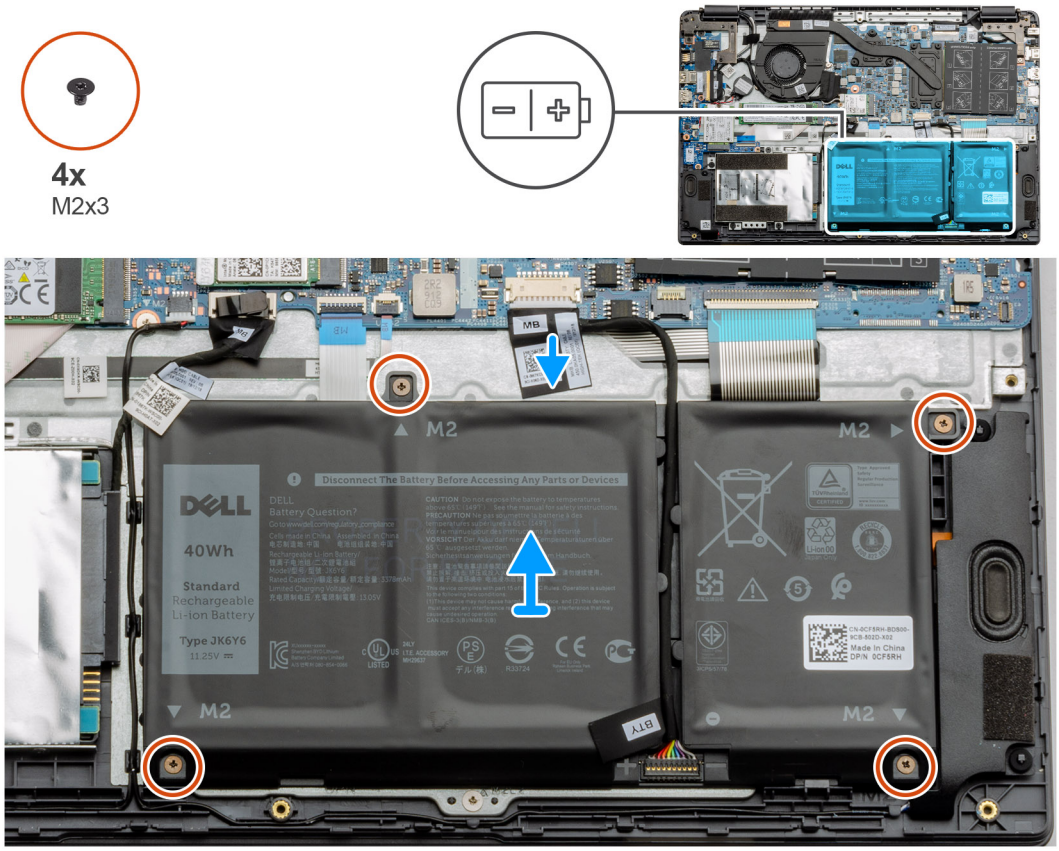
### Next steps

1. Replace the base cover.
2. Replace the SD Card.
3. Follow the procedure in after working inside your computer

## Removing the battery

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the microSD card.
3. Remove the base cover.




### Steps

1. Disconnect the battery cable from the connector on the system board.
2. Remove the four (M2x3) screws that secures the battery to the palm rest assembly.
3. Lift and move the battery away from the computer.

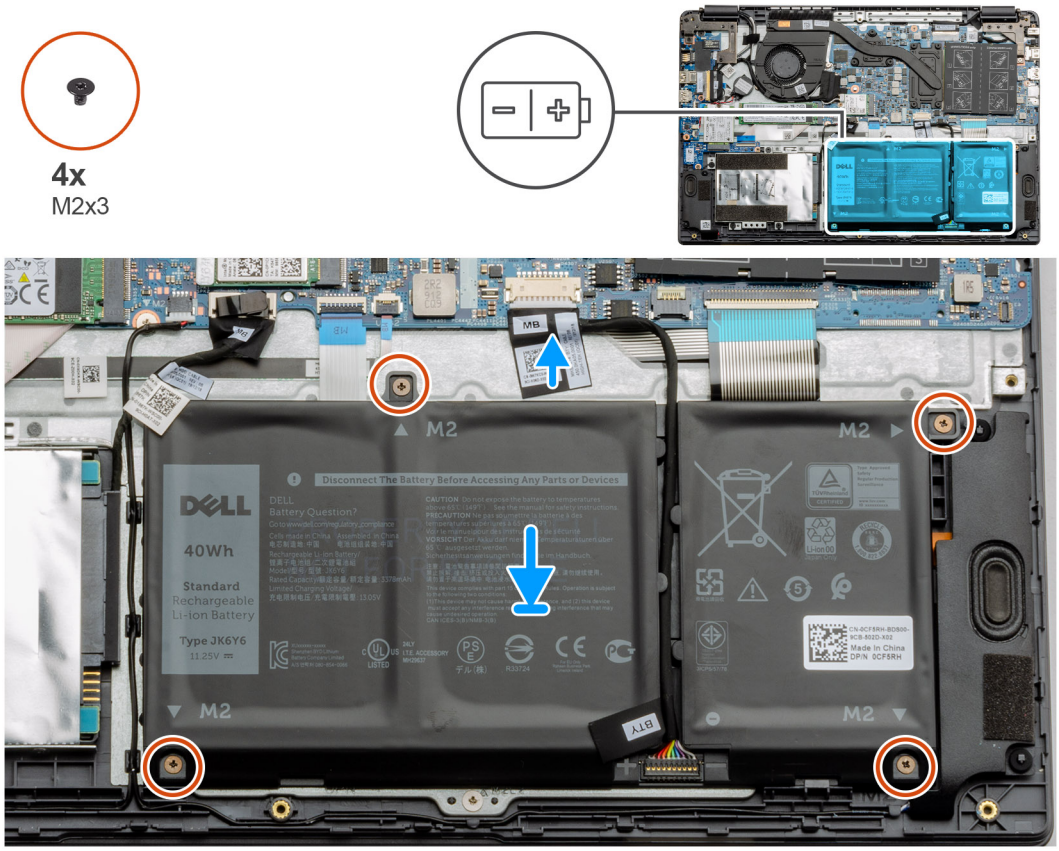
## Installing the battery

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the battery and provides a visual representation of the installation procedure.




### Steps

1. Align the tabs on the battery with the slots on the palm rest assembly.
2. Place the battery in the battery bay.
3. Tighten the four (M2x3) screws to secure the battery to the palm rest assembly.
4. Connect the battery cable to the connector on the system board.

### Next steps

1. Replace the base cover.
2. Replace the SD Card.
3. Follow the procedure in after working inside your computer

# Memory modules

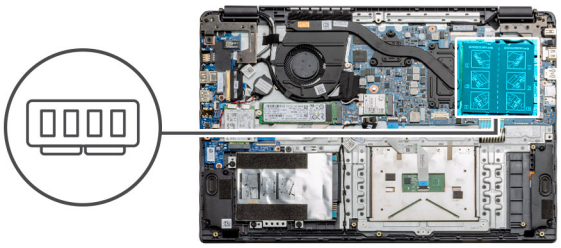
## Removing the memory module

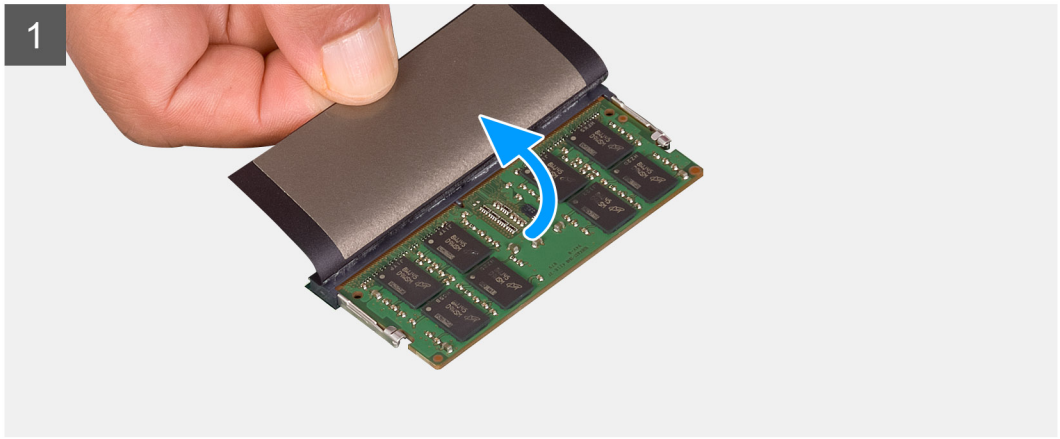
### Prerequisites

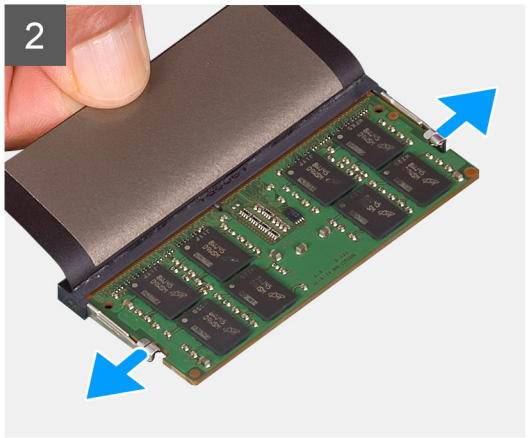
1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Disconnect the battery.

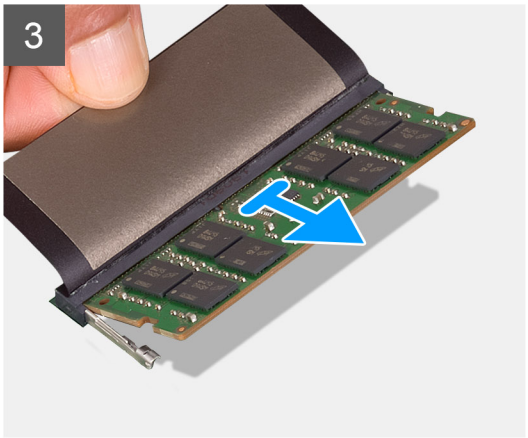
### About this task

The following images indicate the location of the memory module and provide a visual representation of the removal procedure.






### Steps

1. Peel the adhesive cover above the memory module.
2. Pry the clips securing the memory module until the memory module pops-up.
3. Remove the memory module from the memory slot.

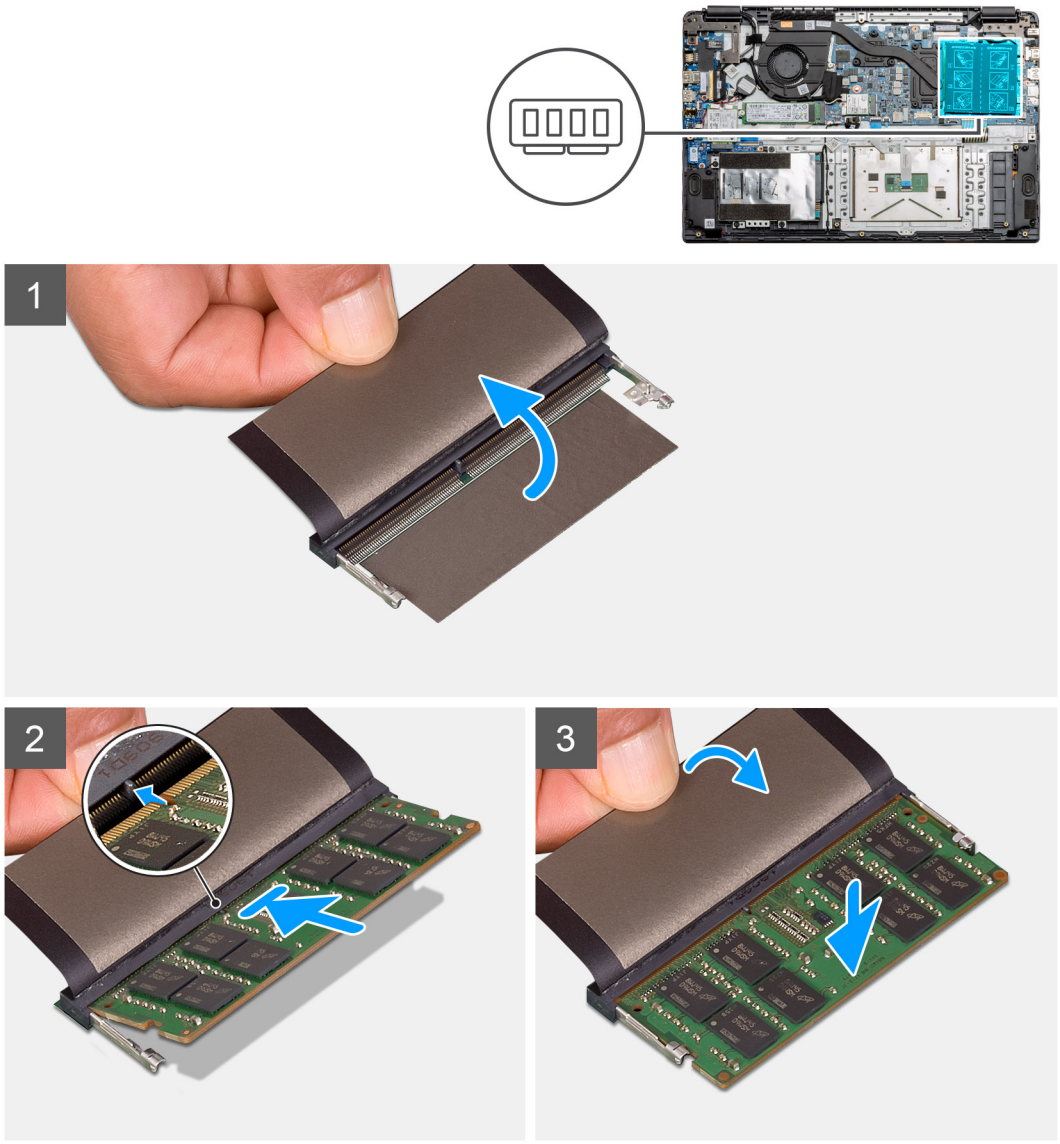
## Installing the memory modules

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the memory module and provides a visual representation of the installation procedure.




### Steps

1. Peel back the adhesive cover from over the memory slot.
2. Align the notch on the memory module with the tab on the memory module slot.
3. Slide the memory module firmly into the slot at an angle.
4. Press the memory module down until it clicks into place.

**NOTE:** If you do not hear the click, remove the memory module and reinstall it.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD Card.
4. Follow the procedure in After working inside your computer.

# WLAN card

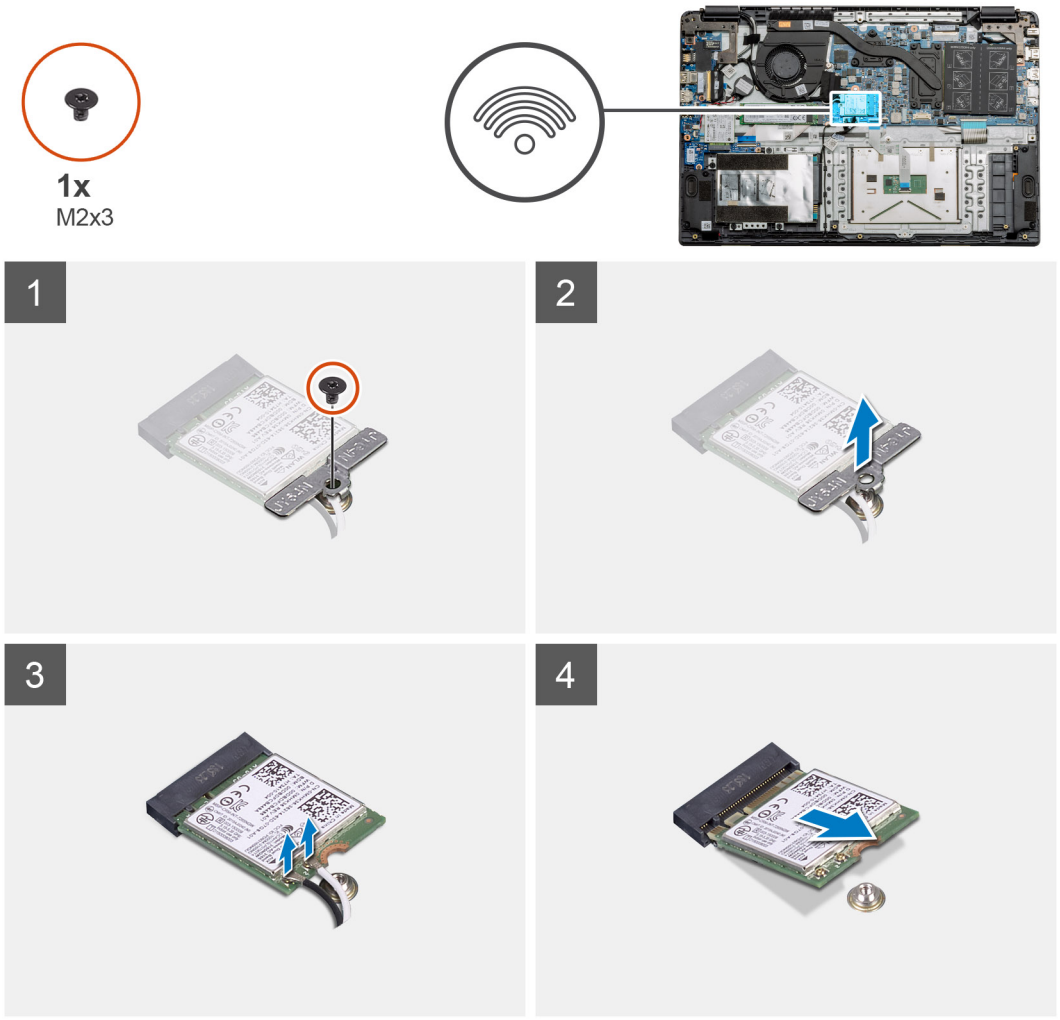
## Removing the WLAN card

### Prerequisites

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

### About this task

The figure indicates the location of the WLAN card and provides a visual representation of the removal procedure.




### Steps

1. Remove the single (M2x3) screw that secures the WLAN bracket to the computer.
2. Remove the WLAN bracket.
3. Disconnect the WLAN antenna cables from the WLAN module.
4. Slide and remove the WLAN card from the WLAN card slot.

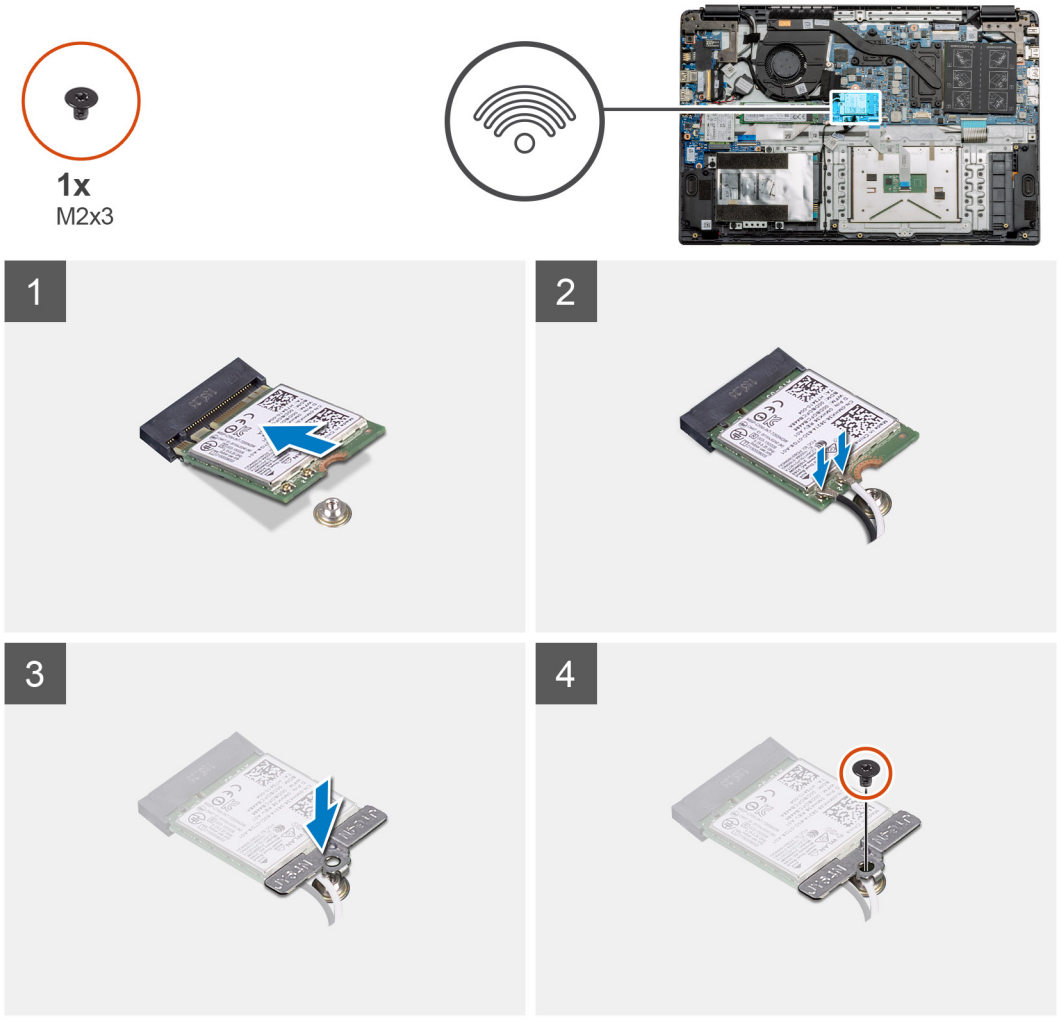
# Installing the WLAN card

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the WLAN card and provides a visual representation of the installation procedure.




### Steps

1. Align the notch on the WLAN card with the tab on the WLAN-card slot and insert the WLAN card at an angle into the WLAN-card slot.
2. Connect the WLAN antenna cables to the WLAN card.
3. Align and place the WLAN-card bracket to secure the WLAN card to the system board.
4. Replace the single (M2x3) screw to secure the WLAN card to the system board.

### Next steps

1. Reconnect the battery cable.
2. Install the base cover.
3. Install the SD Card
4. Follow the procedure in After working inside your computer.

# WWAN card

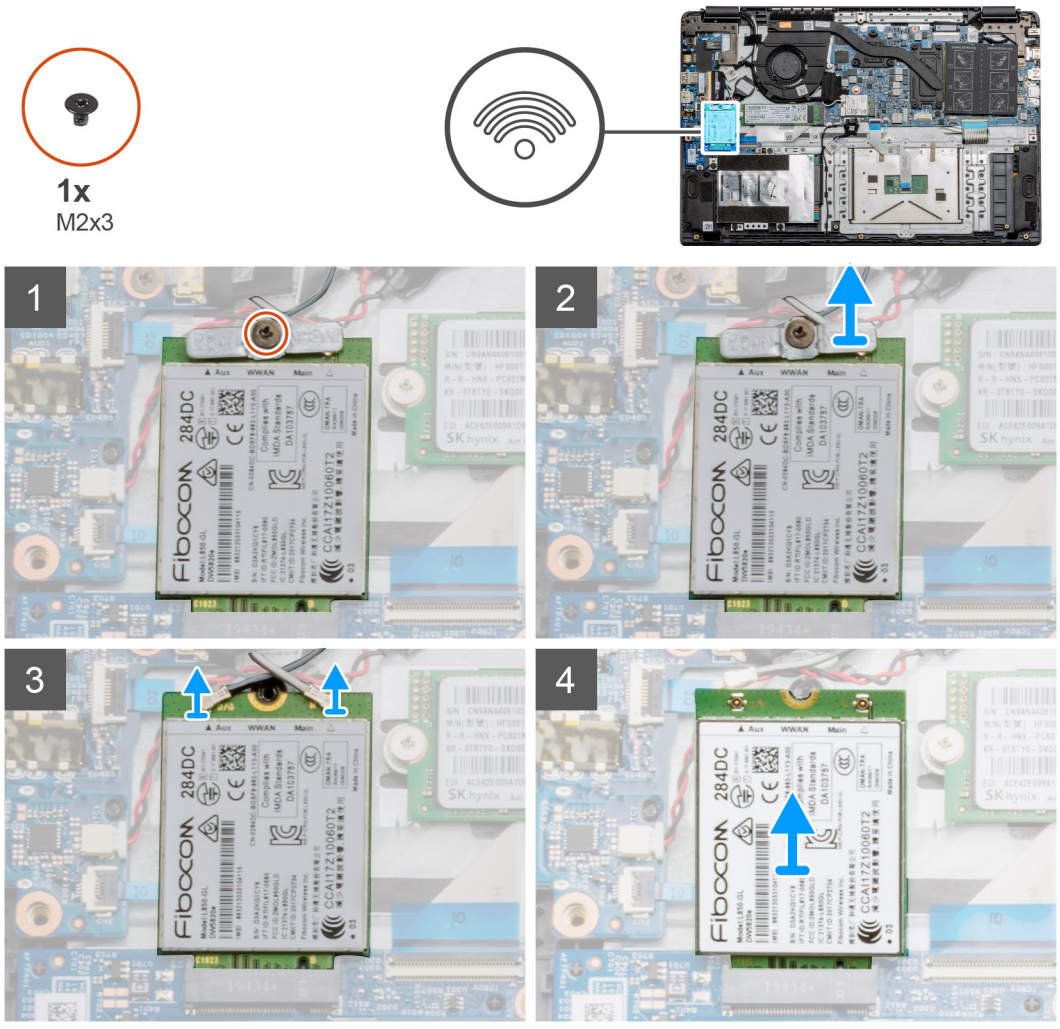
## Removing the WWAN card

### Prerequisites

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

### About this task

The figure indicates the location of the WLAN card and provides a visual representation of the removal procedure.




### Steps

1. Remove the single (M2x3) screw that secures the WWLAN bracket to the computer.
2. Remove the WWAN bracket.
3. Disconnect the WWAN antenna cables from the WWAN module.
4. Slide and remove the WWAN card from the WWAN card slot.

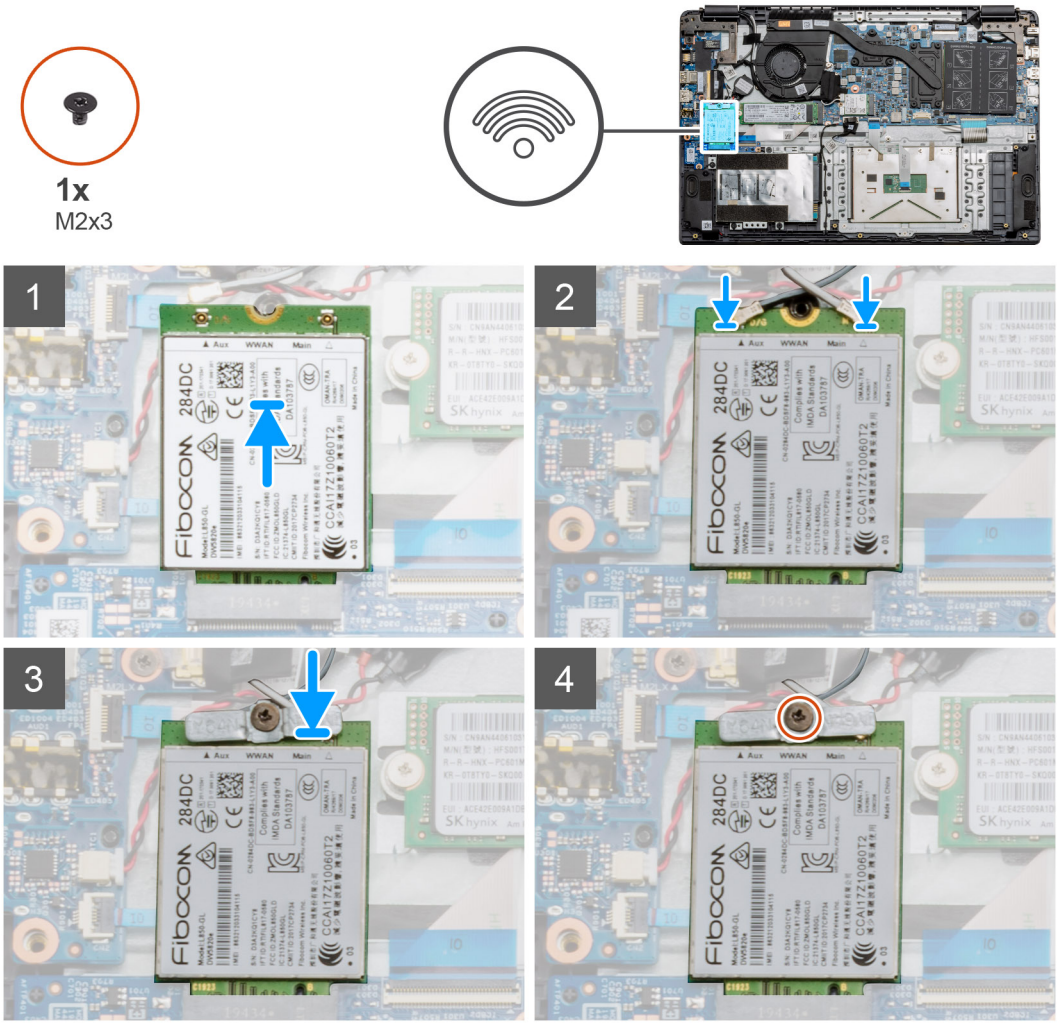
# Installing the WWAN card

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the WWAN card and provides a visual representation of the installation procedure.




### Steps

1. Align the notch on the WWAN card with the tab on the WWAN-card slot and insert the WWAN card at an angle into the WWAN-card slot.
2. Connect the WWAN antenna cables to the WWAN card.
3. Align and place the WWAN-card bracket to secure the WWAN card to the system board.
4. Replace the single (M2x3) screw to secure the WWAN card to the system board.

### Next steps

1. Install the battery cable.
2. Install the base cover.
3. Install the SD card
4. Follow the procedure in After working inside your computer.

# Coin-cell battery

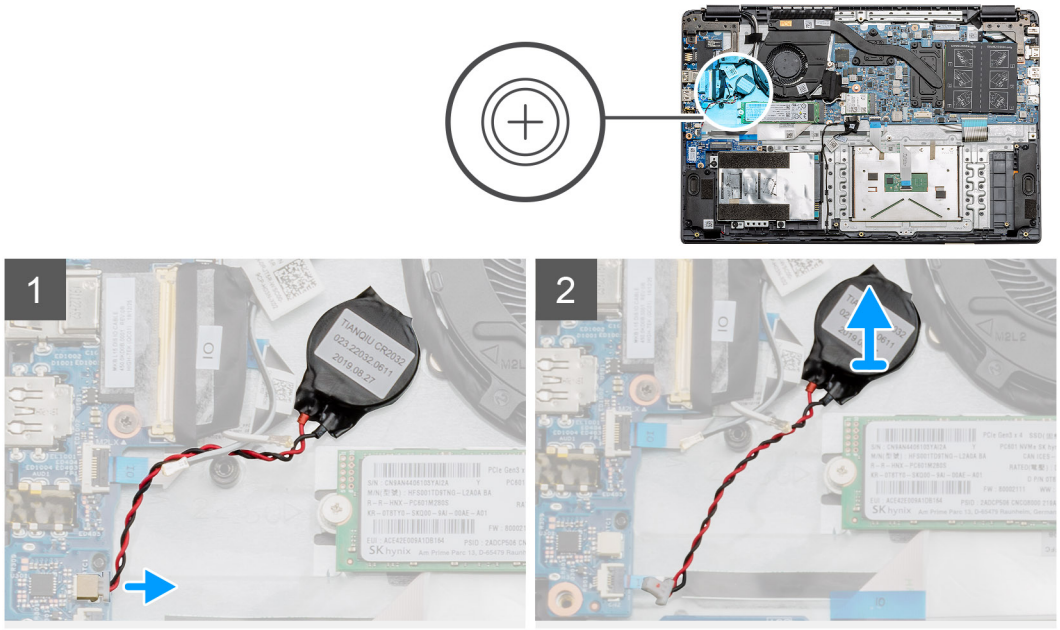
## Removing the coin-cell battery

### Prerequisites

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

### About this task

The figure indicates the location of the coin-cell battery and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the coin-cell battery cable from the system board.
2. Peel the coin-cell battery off the palmrest assembly as the coin-cell is affixed to the board with an adhesive.

**NOTE:** CAUTION: The removal of the coin cell battery will result in an RTC error and will clear all CMOS settings.

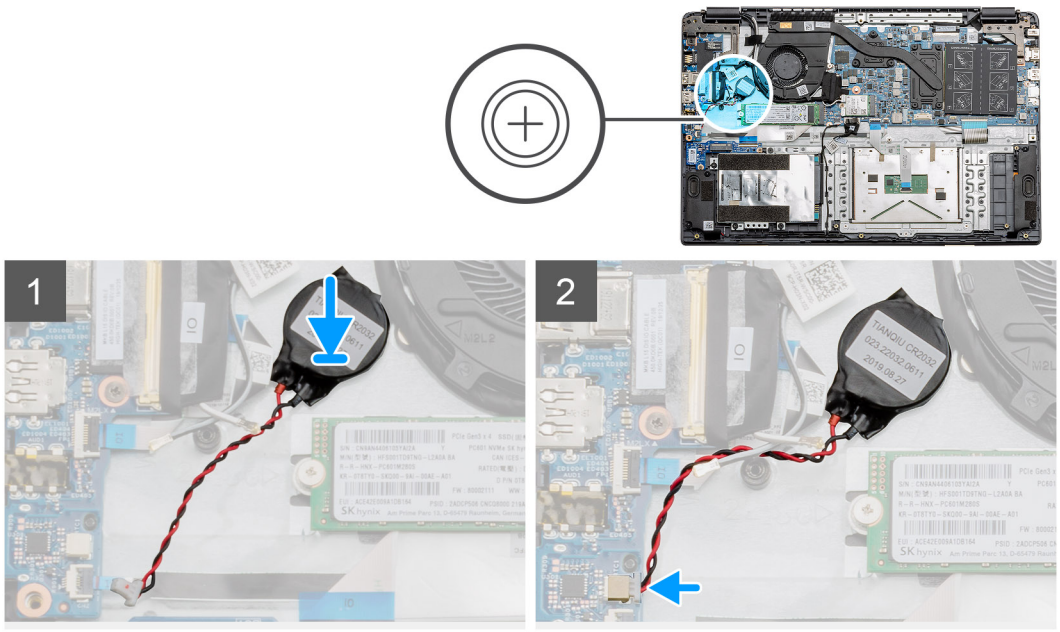
## Installing the coin-cell battery

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the coin-cell and provides a visual representation of the installation procedure.




### Steps

1. Re-adhere the coin-cell battery to the slot on the palmrest assembly.
2. Connect the coin-cell battery cable to the system board.

### Next steps

1. Reconnect the battery cable.
2. Install the base cover.
3. Install the SD card
4. Follow the procedure in After working inside your computer.

# DC-in port

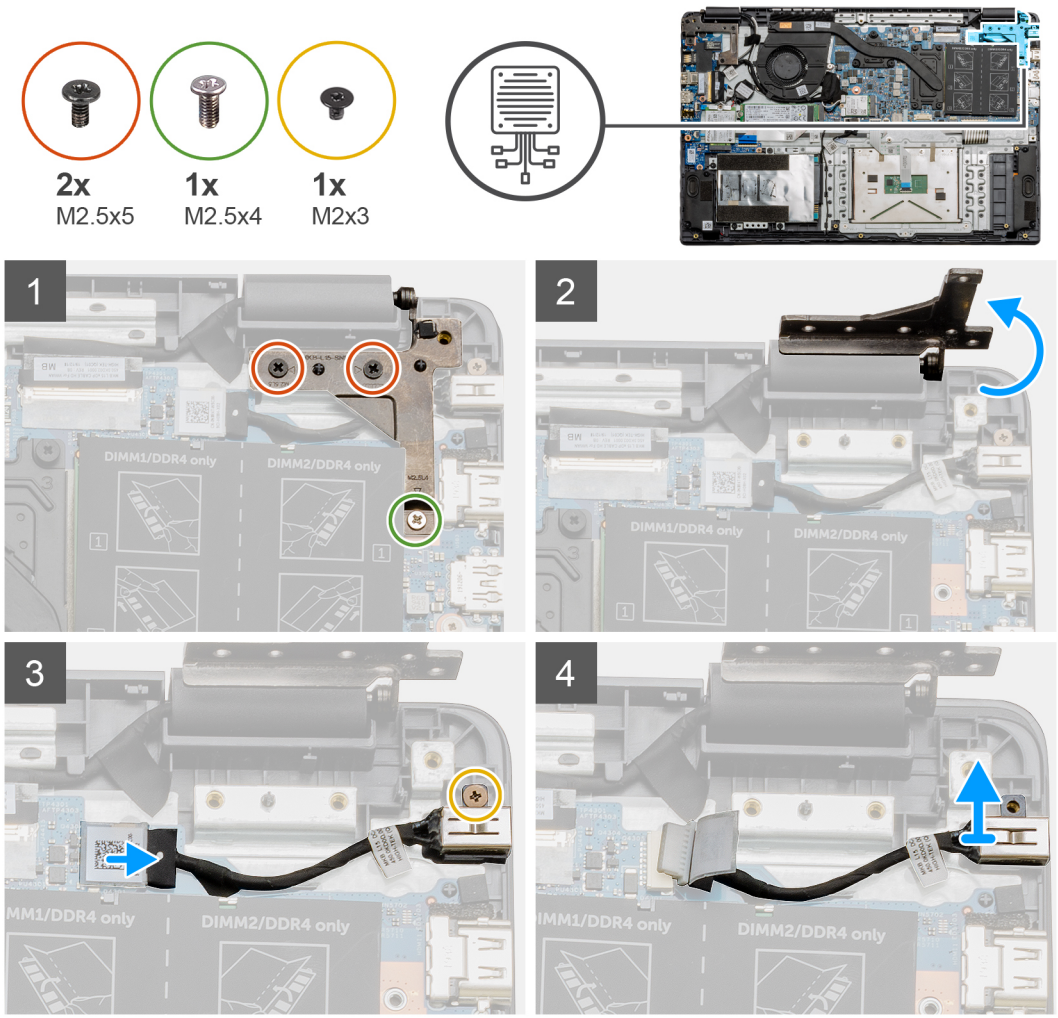
## Removing the DC-in

### Prerequisites

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

### About this task

The figure indicates the location of the DC-in and provides a visual representation of the removal procedure.




### Steps

1. Locate the DC-in port on your computer, remove the two (M2.5x5) and one (M2.5x4) screws from the hinge covering it.
2. Lift the hinge and fold it away from the chassis.
3. Disconnect the DC-in cable from the computer and remove the single (M2x3) screw.
4. Remove the DC-in port from the computer.

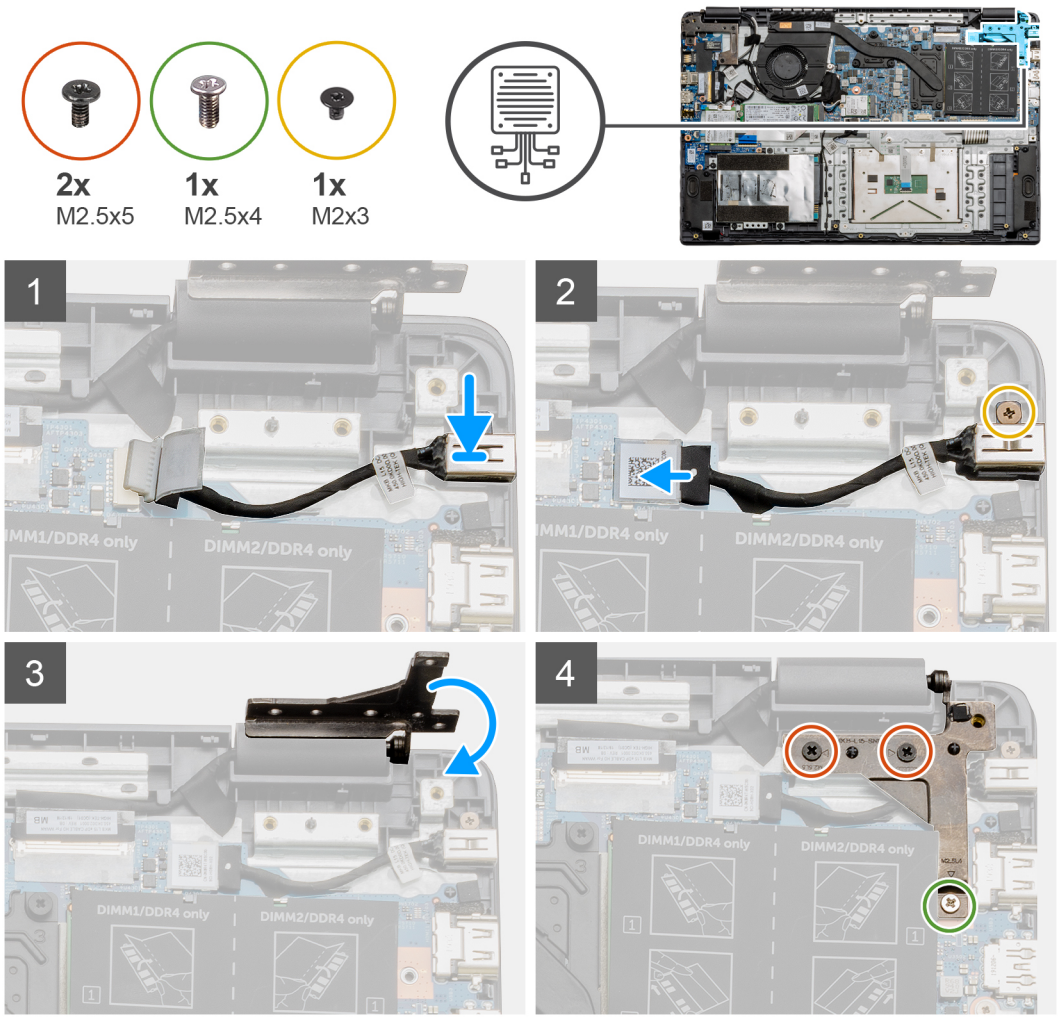
## Installing the DC-in

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the DC-in port and provides a visual representation of the installation procedure.




### Steps

1. Place the DC-in module into the provided slot.
2. Install the (M2x3) screw and connect the DC-in cable to the system board.
3. Fold and align the hinge to the screw holders on the palmrest.
4. Install the two (M2.5x5) and one (M2.5x4) screws to secure the hinge.

### Next steps

1. Reconnect the battery cable.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

# Solid-state drive

## Solid state drive bracket

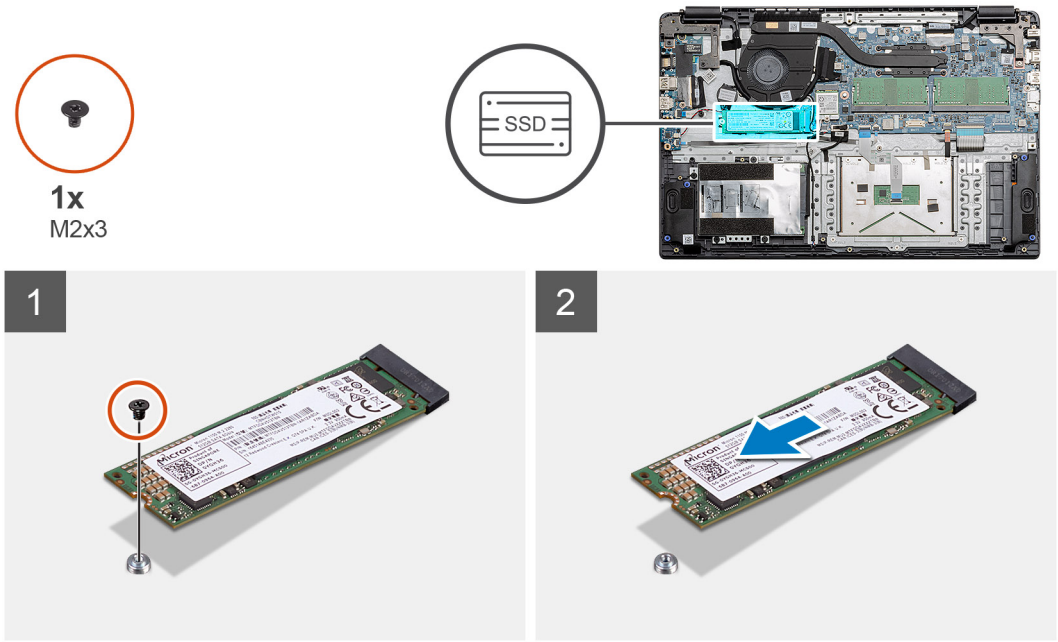
### Removing the M.2 2280 solid-state drive

#### Prerequisites

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

#### About this task

The figure indicates the location of the M.2 2280 solid-state drive and provides a visual representation of the removal procedure.




#### Steps

1. Remove the single (M2x3) screw that secures the solid-state module to the palmrest assembly.
2. Slide the solid-state module out from the M.2 slot.

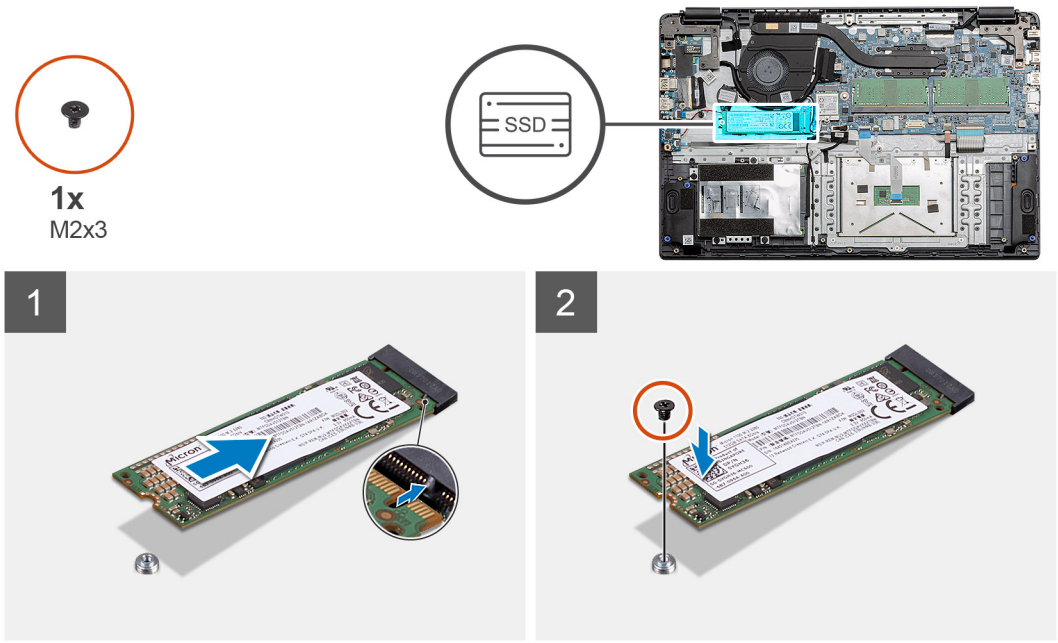
### Installing M.2 2280 solid-state drive

#### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

#### About this task

The figure indicates the location of the M.2 2280 solid-state drive and provides a visual representation of the installation procedure.




### Steps

1. Align and slide the solid-state drive into the slot.
2. Replace the single (M2x3) screw to secure the solid-state drive module to the system.

### Next steps

1. Install the battery cable.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

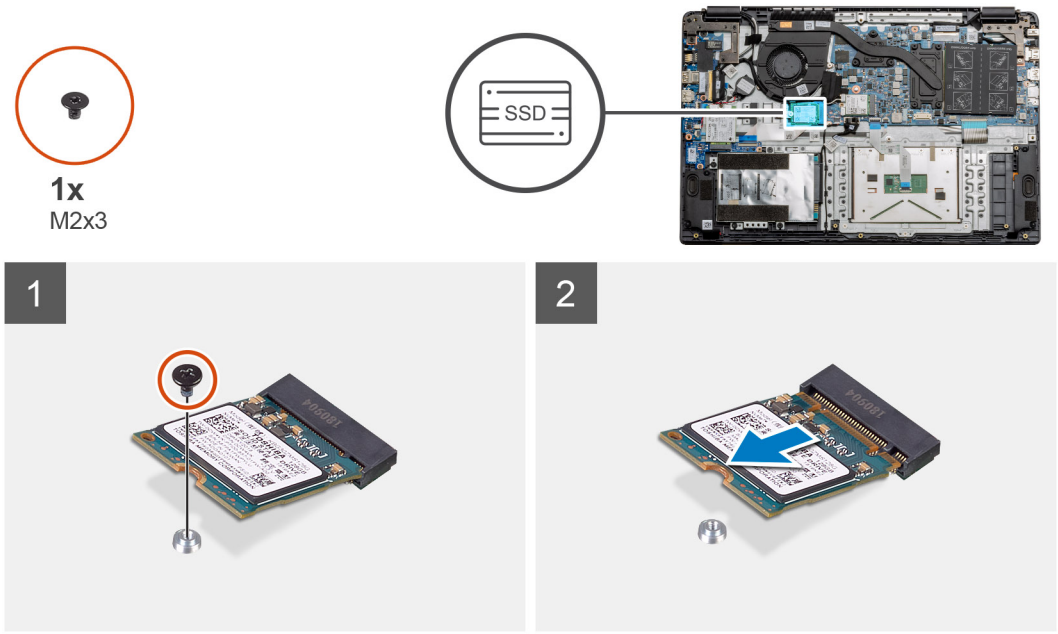
## Removing the M.2 2230 solid-state drive

### Prerequisites

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

### About this task

The figure indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the removal procedure.




### Steps

1. Remove the single (M2x3) screw that secures the solid-state module to the palmrest assembly.
2. Slide the solid-state module out from the M.2 slot.

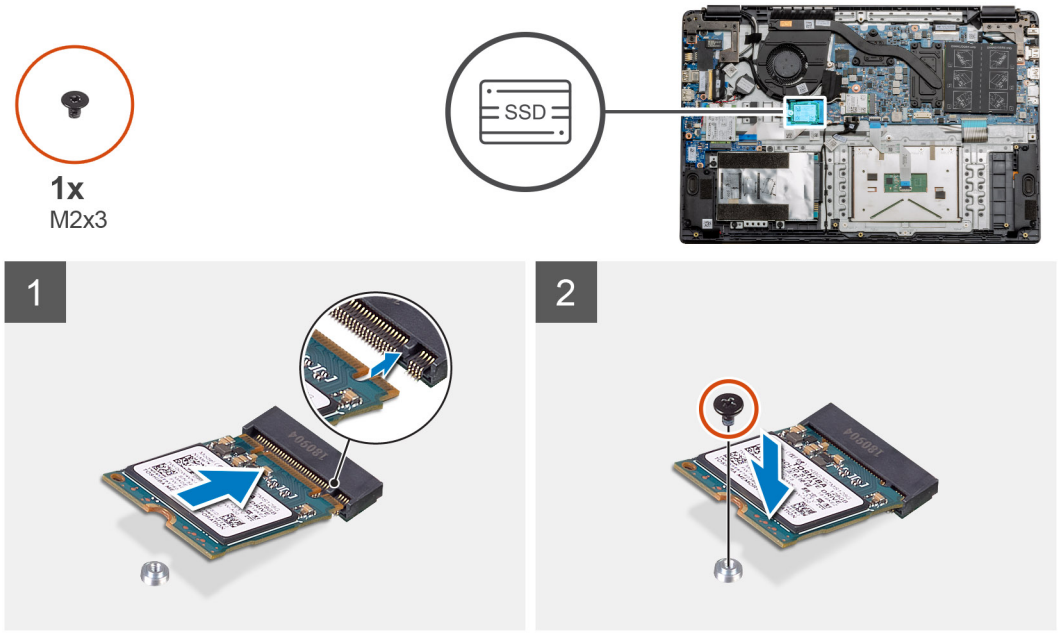
## Installing M.2 2230 solid-state drive

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the installation procedure.



### Steps

1. Align and slide the solid-state drive into the slot.
2. Replace the single (M2x3) screw to secure the solid-state drive module to the palmrest and keyboard assembly.

### Next steps

1. Install the battery cable.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

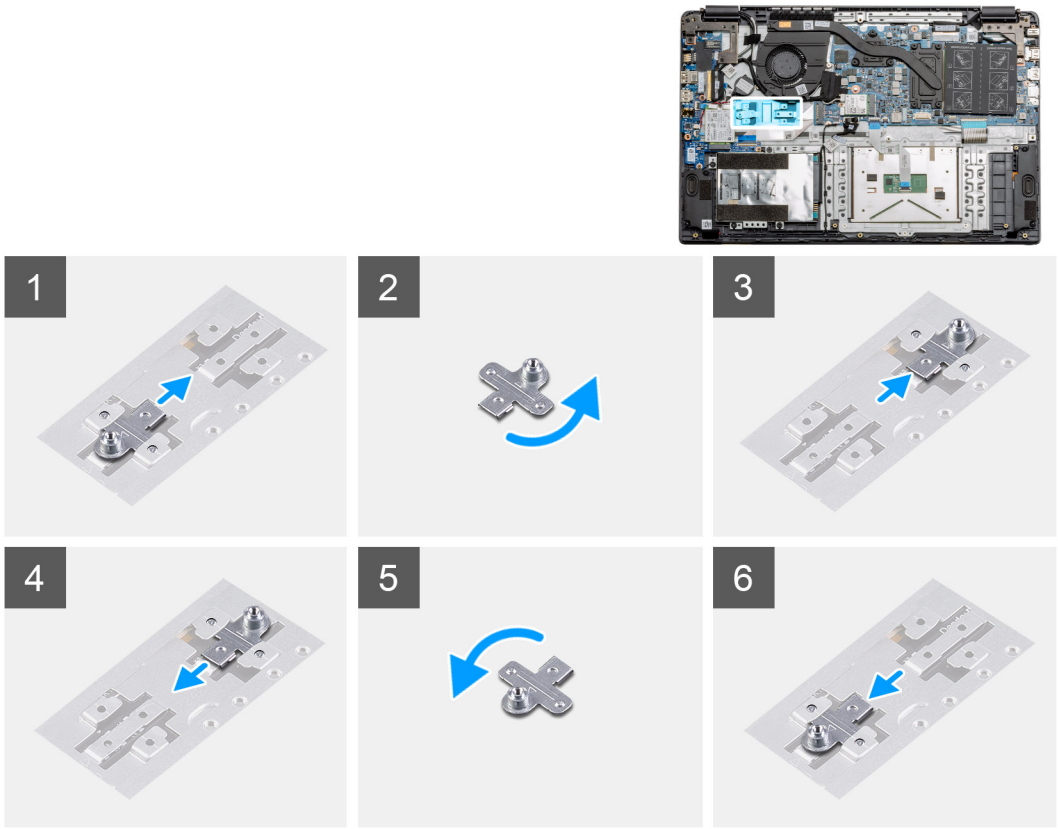
## Installing M.2 solid-state drive bracket

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the M.2 solid-state drive bracket and provides a visual representation of the installation procedure.




### Steps

1. Slide the bracket out of the metal holder.
2. Rotate the bracket so that it faces the opposite side from its original mounting position.
3. Slide the bracket into the metal holder on the opposite end.

### Next steps

1. Install the battery cable.
2. Install the base cover.

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

# Hard Drive

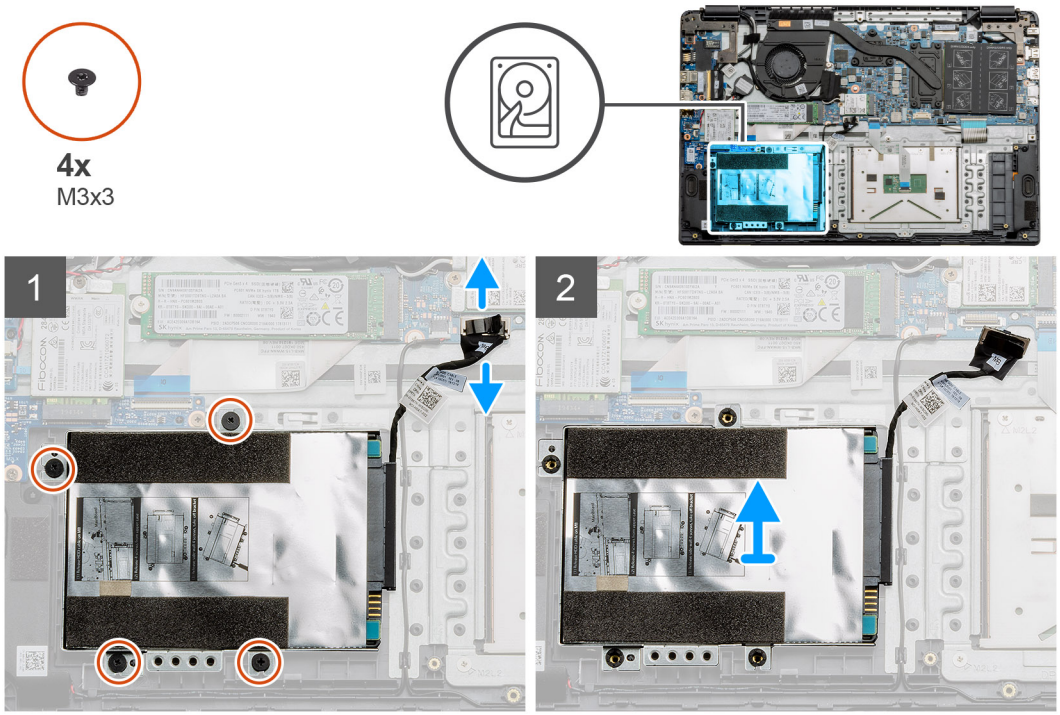
## Removing the Hard Drive

### Prerequisites

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

### About this task

The following images indicate the location of the hard drive and provide a visual representation of the removal procedure.




### Steps

1. Remove the four M3x3 screws and disconnect the hard drive cable from the connector on the system board.
2. Remove the hard drive from the computer.

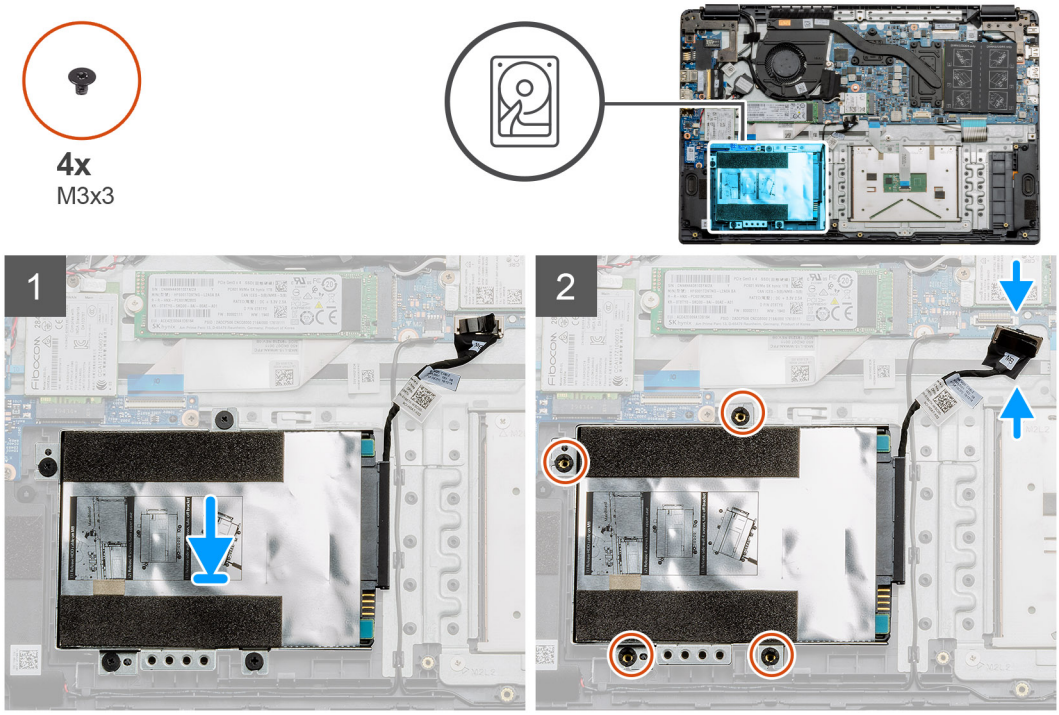
## Installing the Hard Drive

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the Hard Drive and provides a visual representation of the installation procedure.




### Steps

1. Align the screw holes on the hard drive assembly with the mounting points on the palmrest.
2. Replace the four M3x3 screws to secure the hard drive in place and connect the hard drive cable to the connector on the system board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

# Touchpad

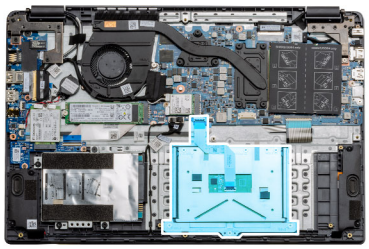
## Removing the touchpad

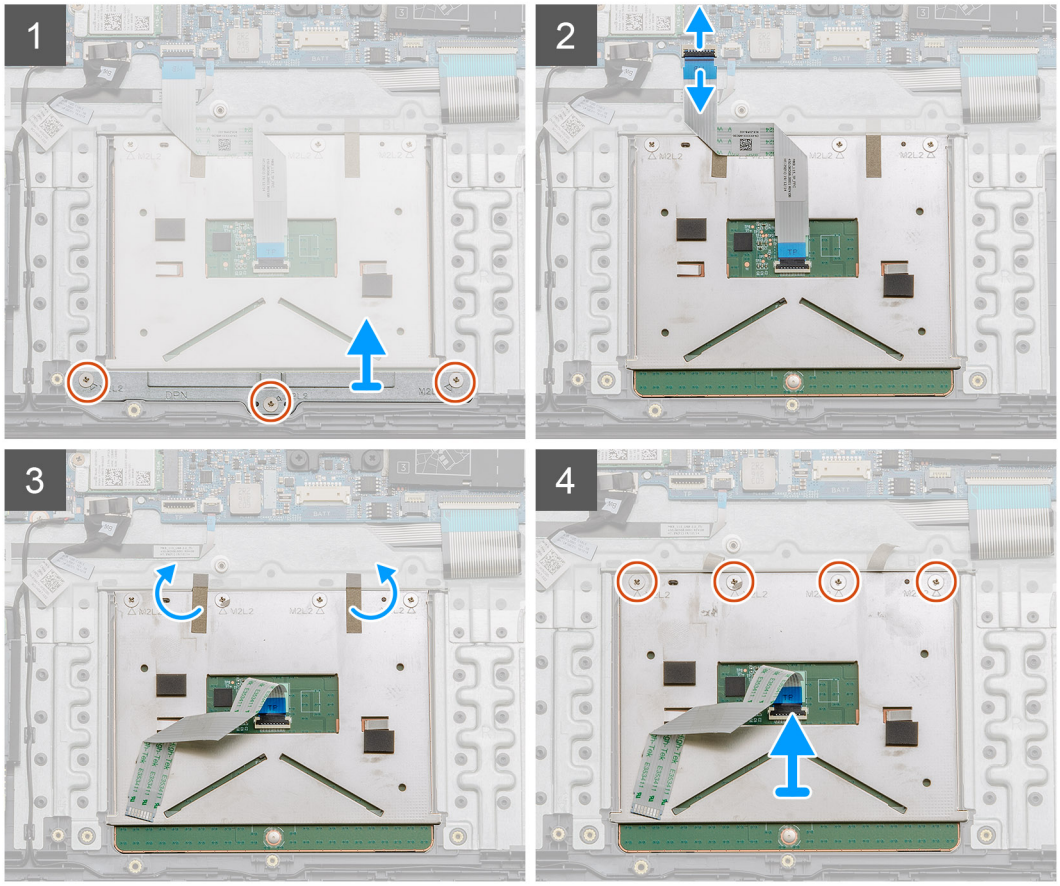
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Remove the battery.

### About this task






### Steps

1. Remove the three (M2x2) screws from the bottom portion of the touchpad.
2. Disconnect the ribbon cable from the system board.
3. Peel away the adhesive straps holding the top portion of the touchpad.
4. Remove the four (M2x2) screws from the top portion of the touchpad and lift the touchpad away from the computer.

## Installing the touchpad

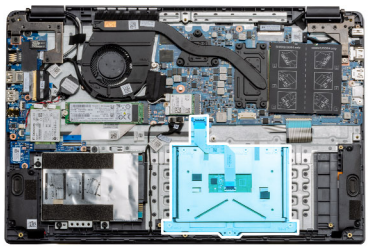
### Prerequisites

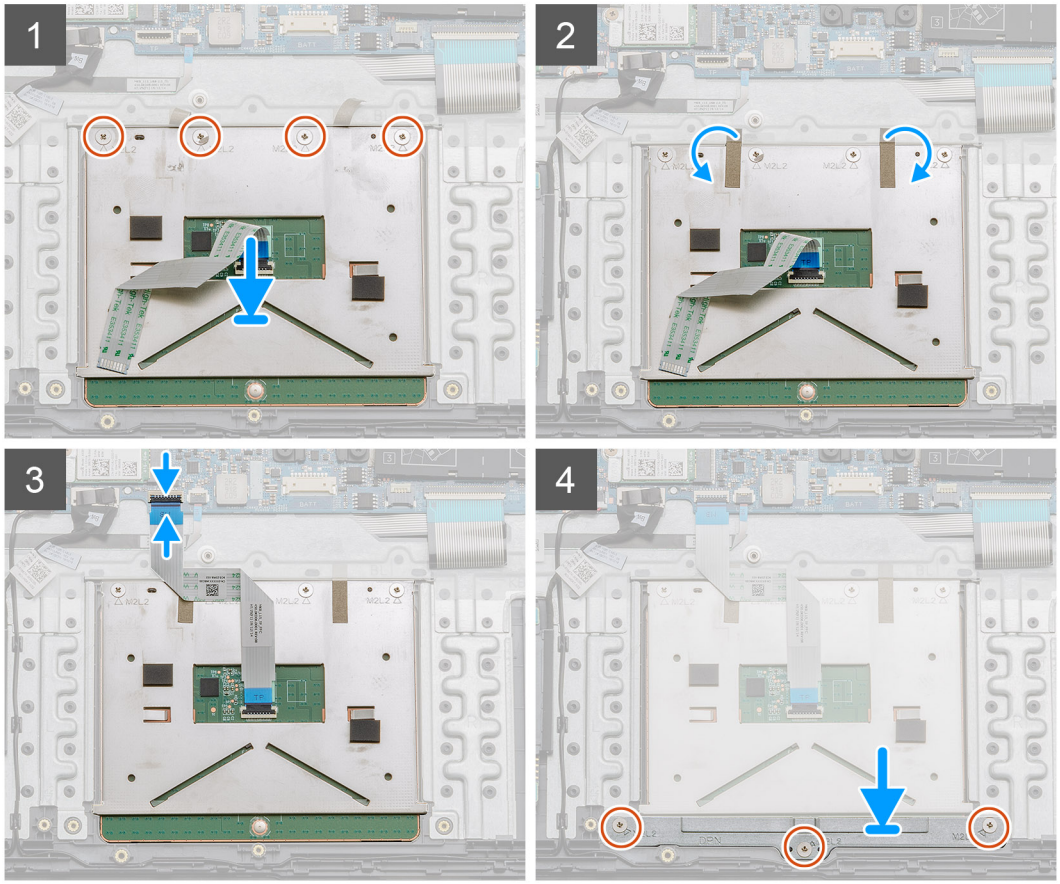
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the touchpad and provides a visual representation of the installation procedure.






### Steps

1. Place the touchpad onto the palmrest, ensure the screw posts align with the ones on the palmrest. Install the four (M2x2) screws to the top of touchpad.
2. Fold back the two adhesive tape strips onto the touchpad.
3. Connect the ribbon cable from the touchpad to the system board.
4. Install the three (M2x2) screws into the screw posts at the bottom of the palmrest

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

# Speakers

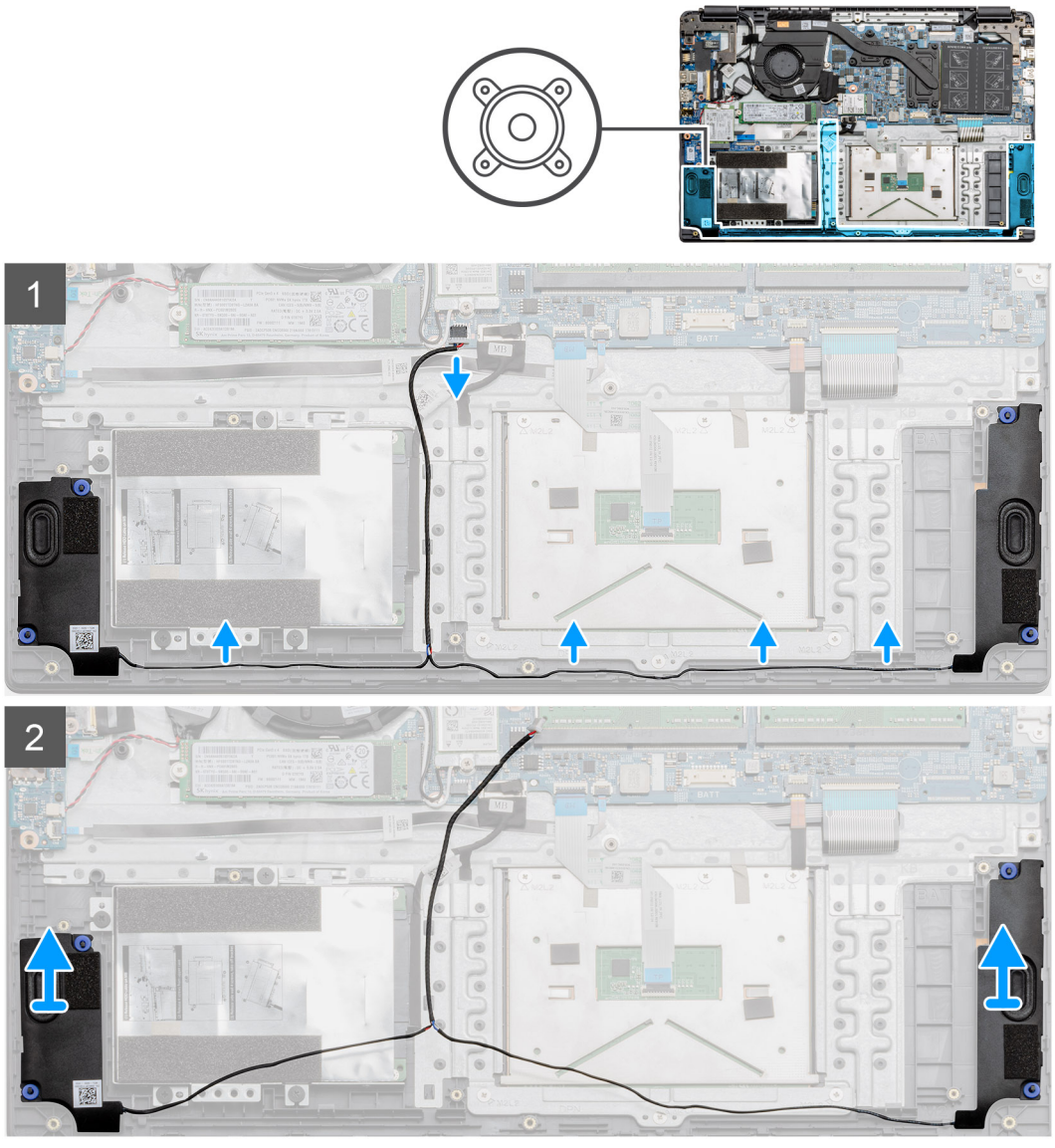
## Removing the speakers

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Remove the battery.

### About this task

The figure indicates the location of the speakers and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the Speaker cable from the connector on the system board and lift the connected cables from the routing points on the lower portion of the palmrest.
2. Ensure the cables are free and lift the speaker modules from both ends of the computer.

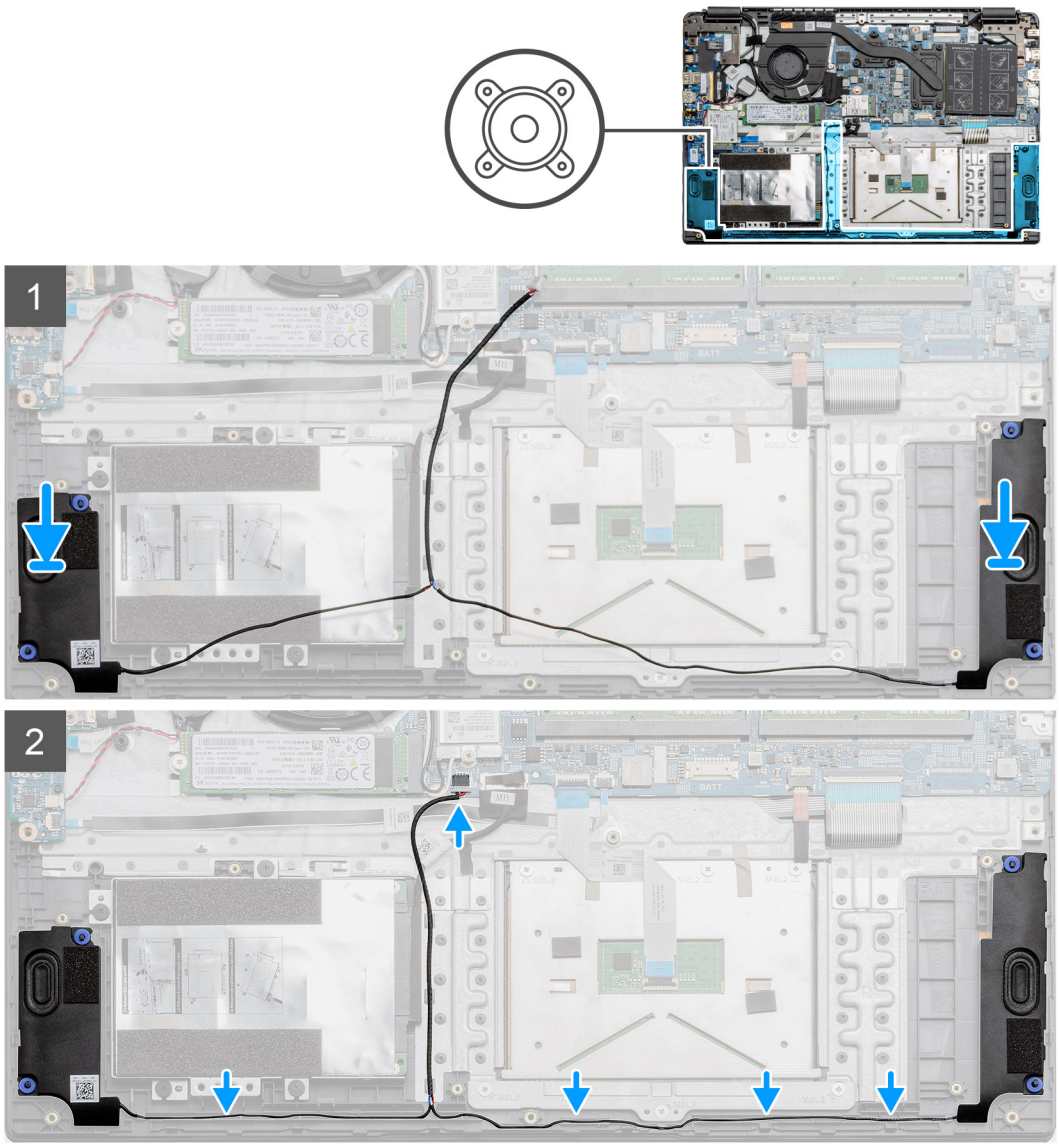
# Installing the speakers

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the speakers and provides a visual representation of the installation procedure.




### Steps

1. Place the speaker assembly onto the mounting points on the bottom base on the computer.
2. Route the cables from both the speaker modules through the routing points at the lower portion of the bottom base. Once secured, connect the speaker's cable connector to the connector on the system board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

# Fan Assembly

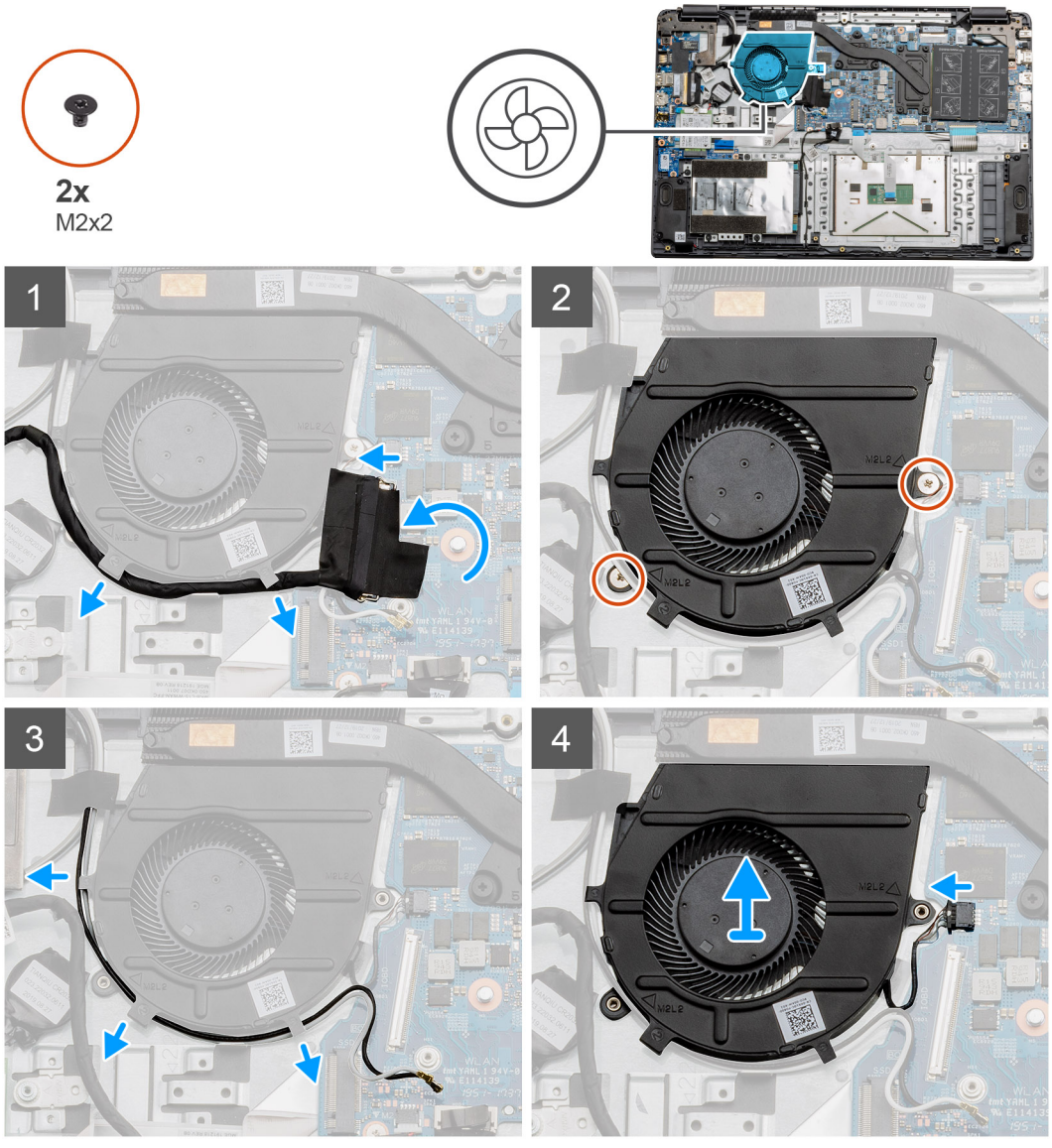
## Removing the Fan Assembly

### Prerequisites

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

### About this task

The figure indicates the location of the fan assembly and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the IO board cable from the connector on the system board and remove the cables from the cable management routes along side the fan assembly.
2. Remove the two (M2x2) screws from the fan assembly.

3. Disconnect the WLAN antenna cables, and remove the cables from the cable management routes along side the fan assembly.
4. Disconnect the fan cable from the system board and lift the fan assembly away from the computer.

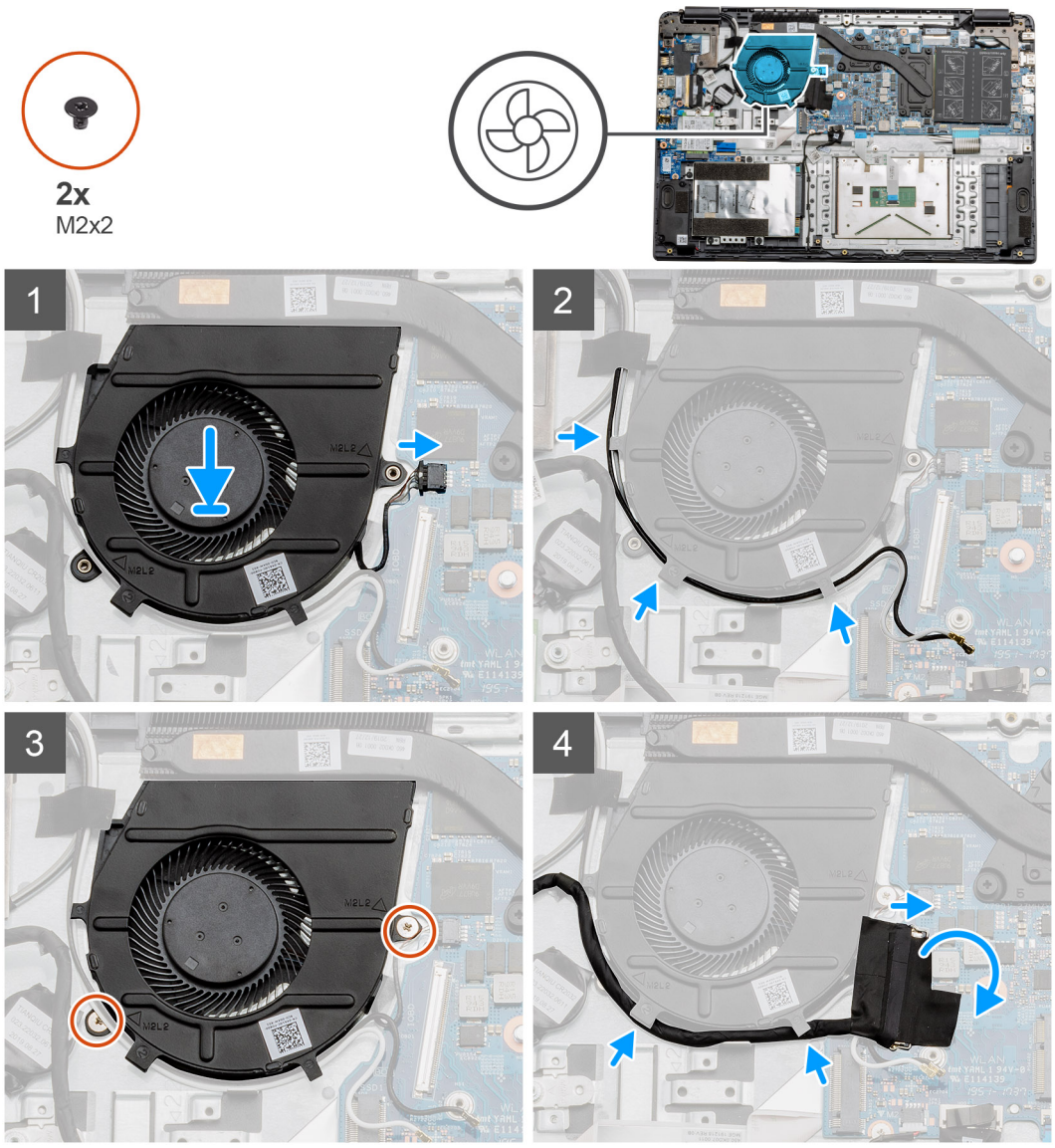
# Installing the Fan Assembly

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the fan assembly and provides a visual representation of the installation procedure.




### Steps

1. Place the fan assembly onto the mounting points on the palmrest and connect the fan cable to the system board.
2. Route the antenna cables along the cable management routes on the fan assembly and connect the cables to the WLAN card.
3. Connect the fan connector to the system board.
4. Route the IO board cable along the cable management route on the fan assembly and connect it to the system board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

# Heatsink assembly

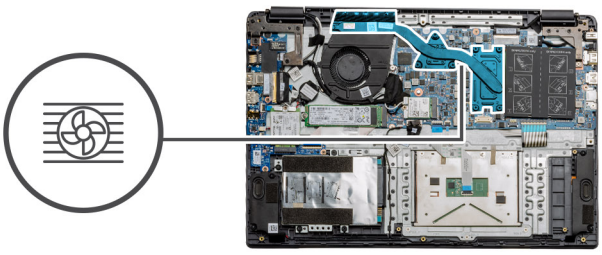
## Removing the Heatsink Assembly - Discrete

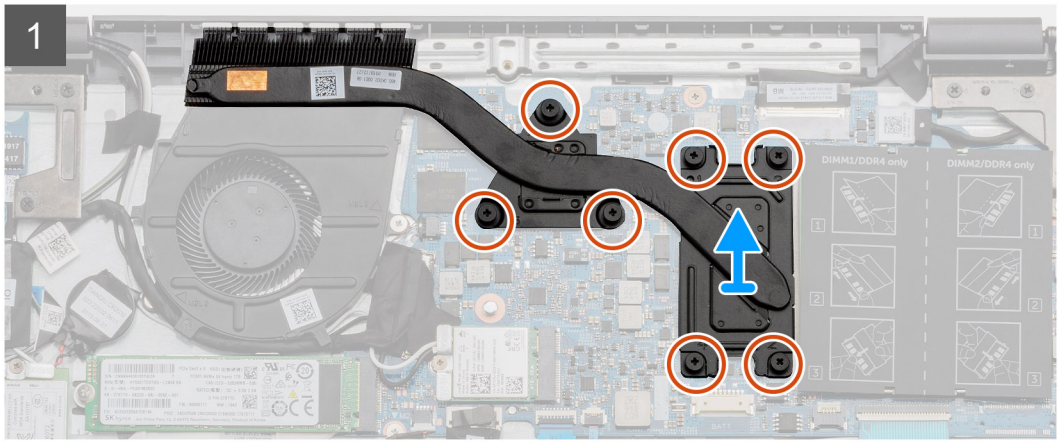
### Prerequisites

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

### About this task

The following images indicate the location of the heatsink and provide a visual representation of the removal procedure.






### Steps

1. Loosen the seven captive screws that secure the heatsink to the system board.
2. Lift the heatsink assembly away from the computer.

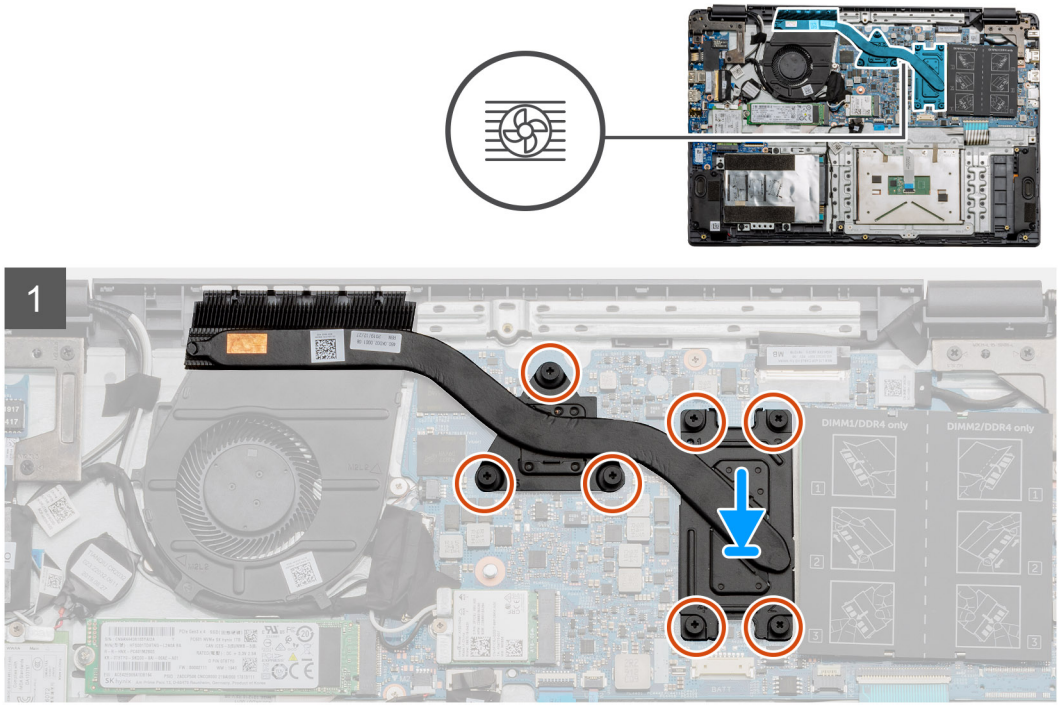
## Installing the Heatsink Assembly - Discrete

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the heatsink and provides a visual representation of the installation procedure.




### Steps

1. Place the heatsink onto the system board ensuring the mounting points on heatsink and system board align.
2. Tighten the seven captive screws to secure the heatsink to the system board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD Card.
4. Follow the procedure in After working inside your computer.

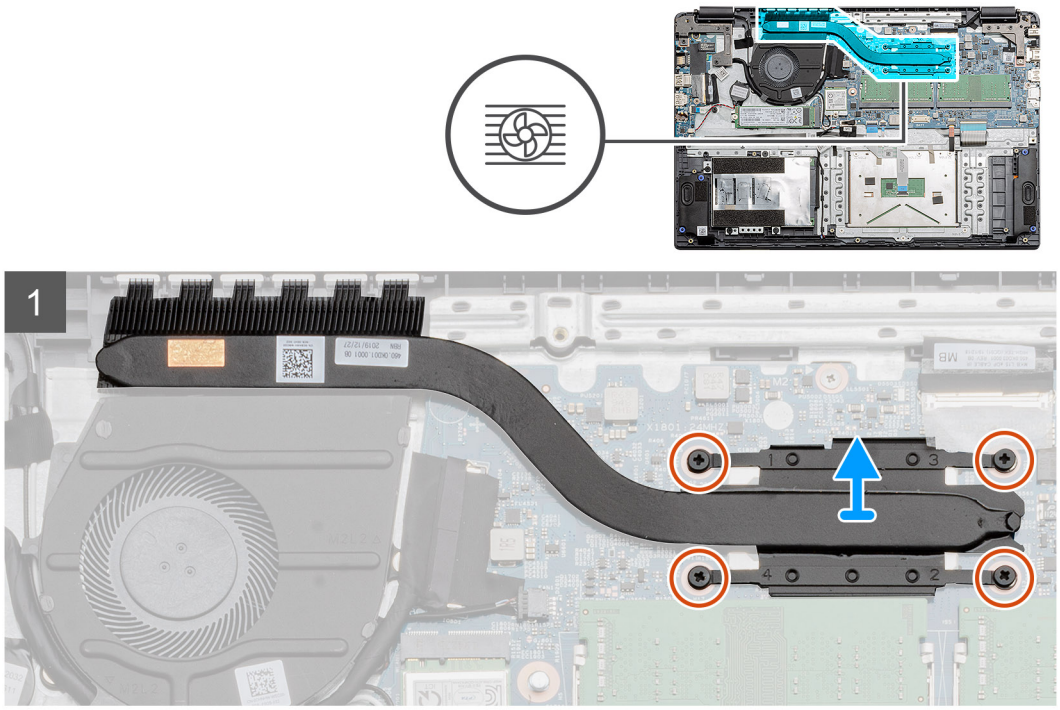
## Removing the Heatsink Assembly - UMA

### Prerequisites

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

### About this task

The following images indicate the location of the heatsink and provide a visual representation of the removal procedure.




### Steps

1. Loosen the four captive screws that secure the heatsink to the system board.
2. Lift the heatsink assembly away from the computer.

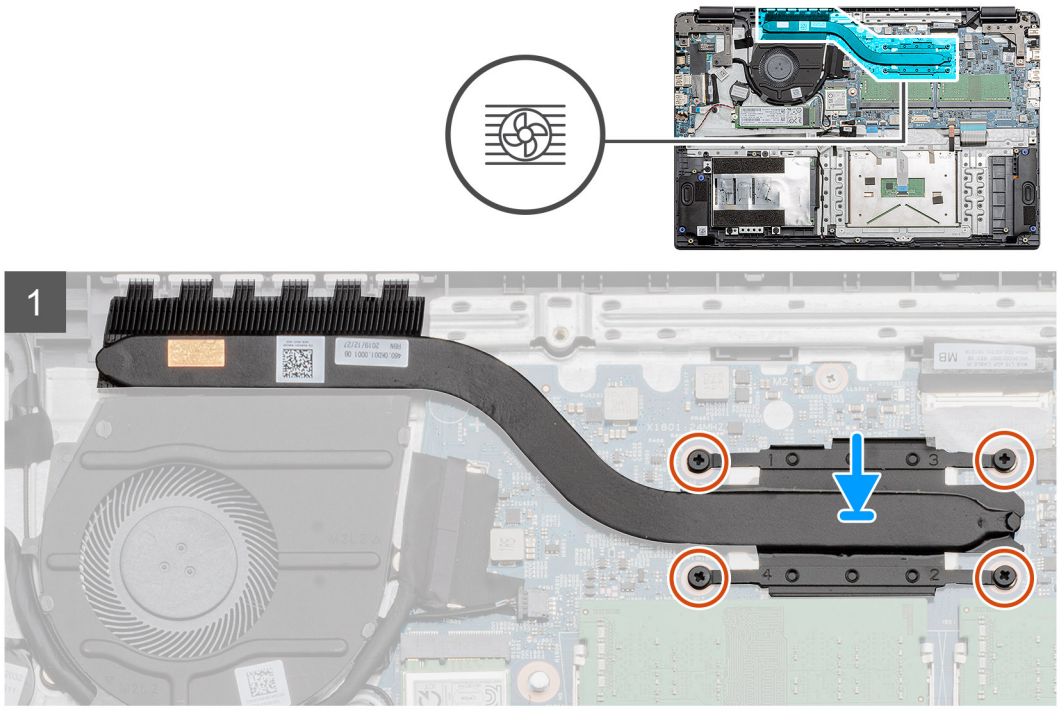
## Installing the Heatsink Assembly - UMA

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the heatsink and provides a visual representation of the installation procedure.




### Steps

1. Place the heatsink onto the system board ensuring the mounting points on heatsink and system board align.
2. Tighten the four captive screws to secure the heatsink to the system board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD Card.
4. Follow the procedure in After working inside your computer.

# System board

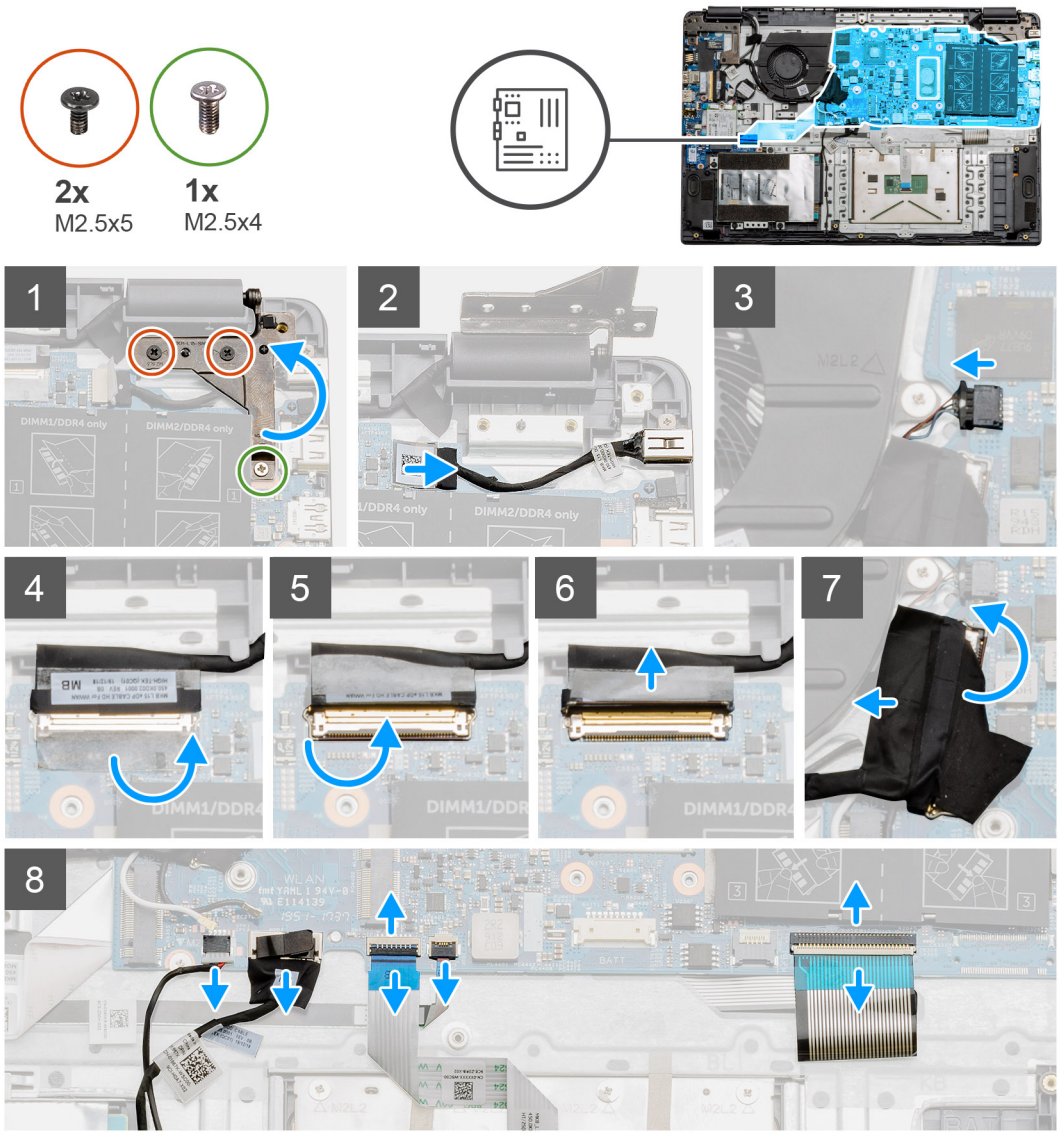
## Removing the system board - Discrete

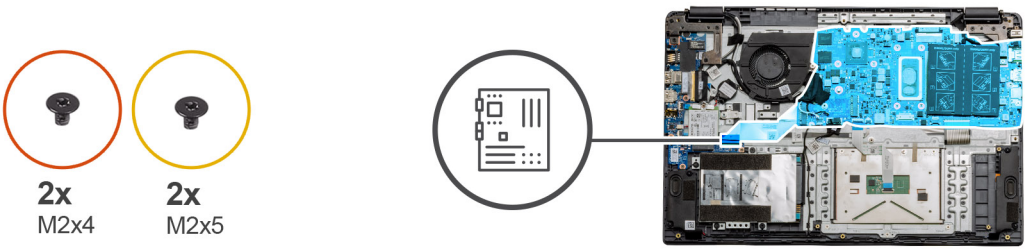
### Prerequisites

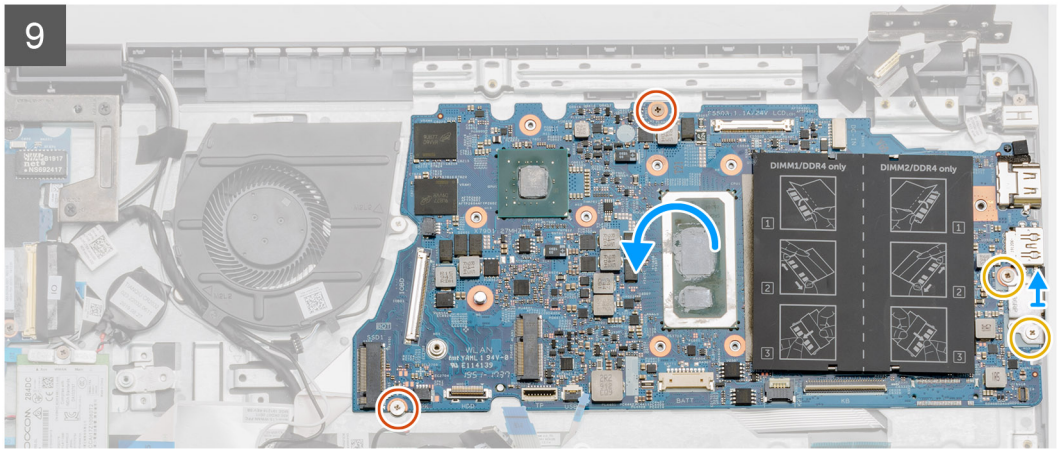
1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Disconnect the battery.
5. Remove the memory modules.
6. Remove the WWAN card.
7. Remove the WLAN card.
8. Remove the solid state drive.
9. Remove the heatsink.

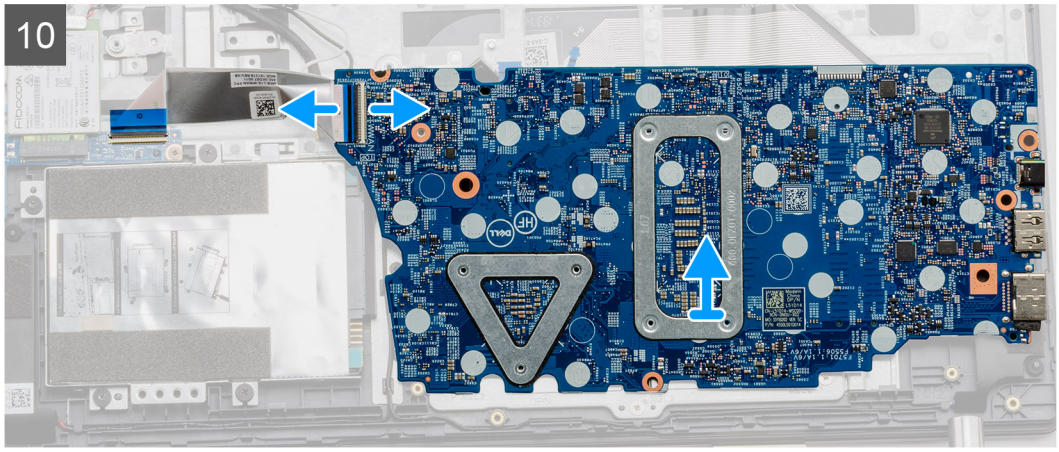
### About this task

The figure indicates the location of the system board and provides a visual representation of the removal procedure.


2x
M2.5x5
1x
M2.5x4
1
2
3
4
5
6
7
8




**Steps**

1. Remove the two (M2.5x5) and the single (M2.5x4) screws from the right hinge.
2. Disconnect the DC-in connector cable from the system board.
3. Disconnect the Fan assembly cable from the system board.
4. Peel back the adhesive tape covering the LCD cable.
5. Lift the latch that locks down the LCD cable onto the system board.
6. Disconnect the LCD cable from the system board.
7. Peel back the adhesive tape from over the IO board connector cable and disconnect the IO boards connector cable.
8. Disconnect the connector cables from the system board in the following order (left - right): Speaker, Touchpad, USB, Battery, Keyboard.

9. Remove the two (M2x4) screws from the system board and the two (M2x5) screws holding the metal shield, then lift the system board away from the chassis.
10. For systems equipped with WWAN card, flip the system over and disconnect the WWAN daughterboard cable from the connector on the system board. Then lift and move the system board away from the computer.

**NOTE:** This cable can only be found on WWAN configured systems.

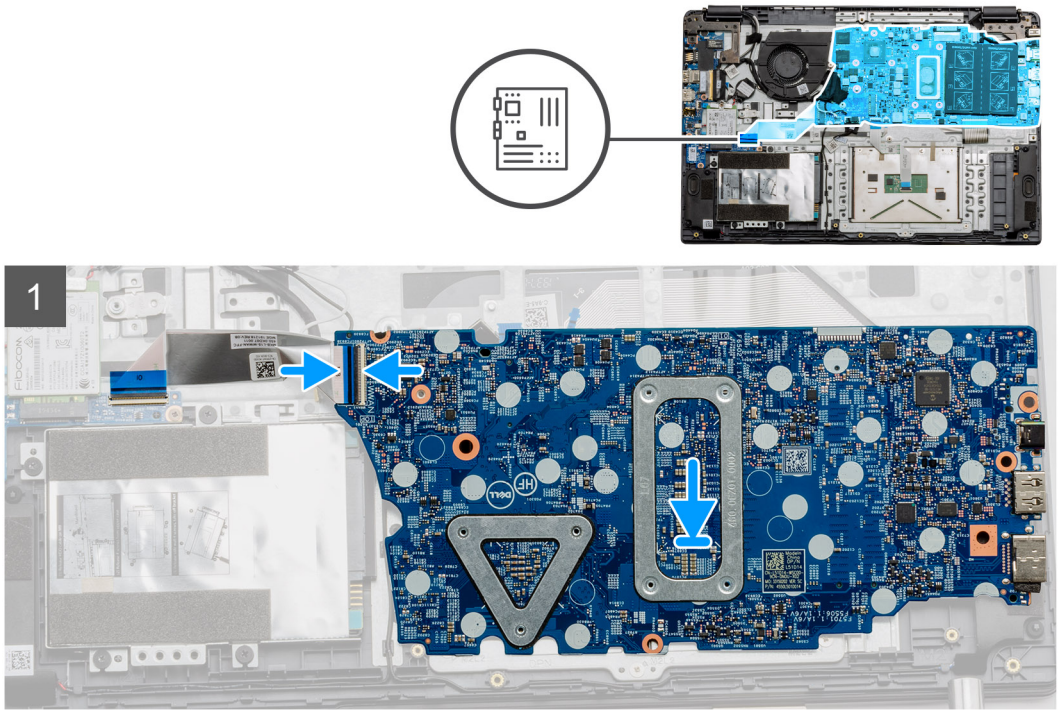
# Installing the system board - Discrete

### Prerequisites

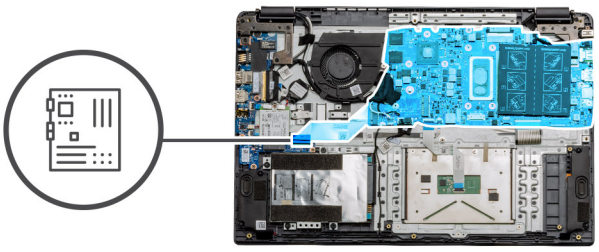
If you are replacing a component, remove the existing component before performing the installation procedure.

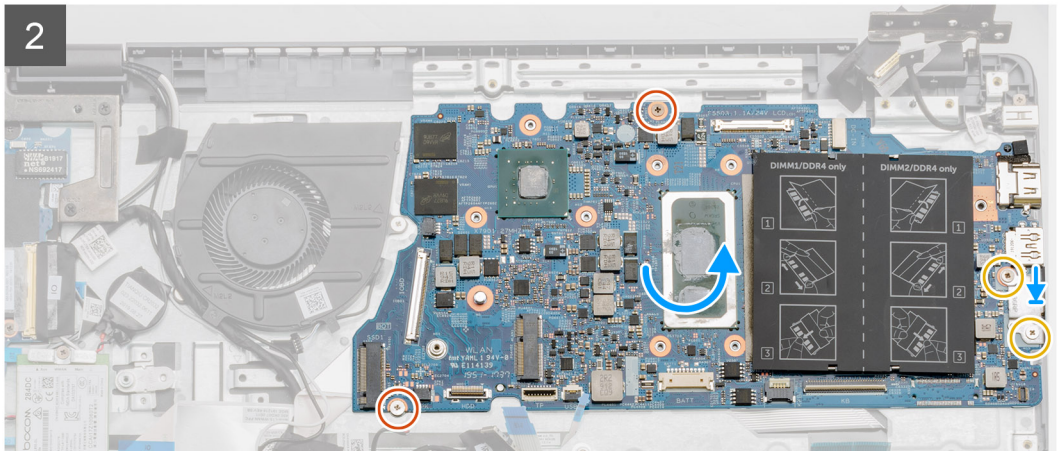
### About this task

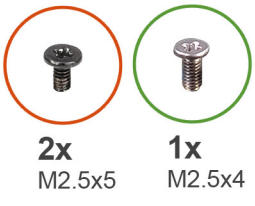
The figure indicates the location of the system board and provides a visual representation of the installation procedure.

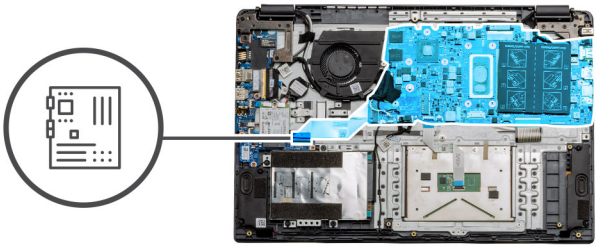


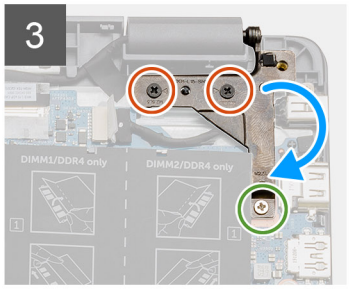

2x
M2x4
2x
M2x5

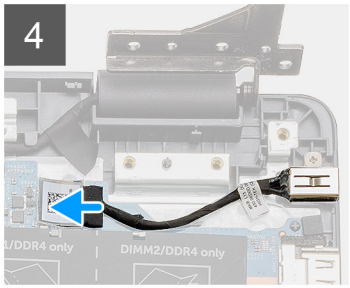


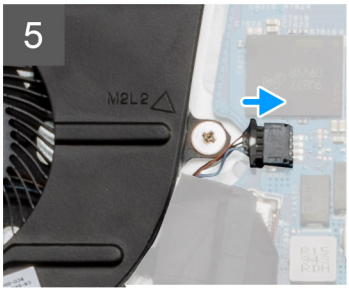

2
DIMM1/DDR4 only
DIMM2/DDR4 only

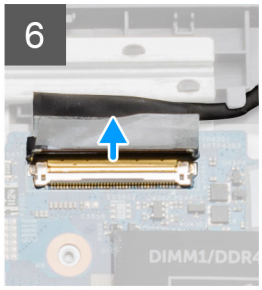

2x
M2.5x5
1x
M2.5x4

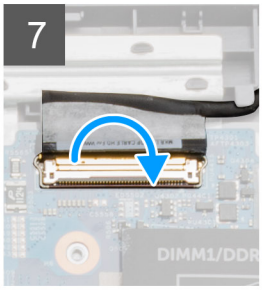



3
DIMM1/DDR4 only
DIMM2/DDR4 only


4
DIMM2/DDR4 only

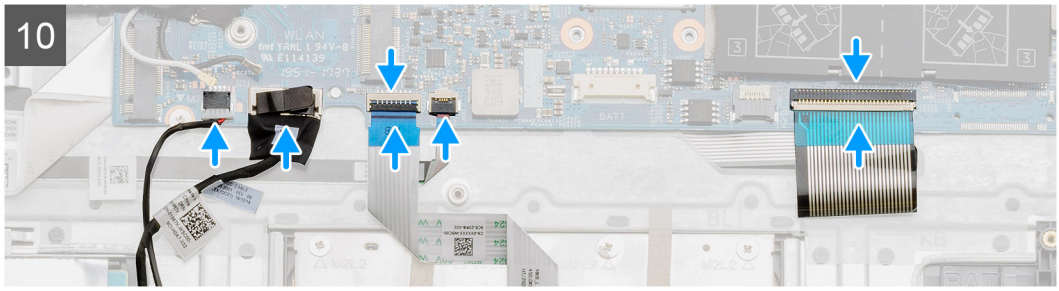

5
M2L2


6
DIMM1/DDR4


7
DIMM1/DDR


8
DIMM1/DDR4


9


10

### Steps

1. For systems equipped with WWAN, hold the system upside down, connect the cable from the WWAN daughterboard to the connector on the system board.
2. Place the system board onto the palmrest, aligning the screw posts from the palmrest. Place the metal shield onto the USB port module and install the two (M2x5) screws. Install the two (M2x4) screws to secure the system board to the palmrest.
3. Fold the right hinge back, install the two (M2.5x5) and one (M2.5x4) to secure the hinge in place.
4. Connect the DC-in port connector back to the system board.
5. Connect the fan connector back to the system board.
6. Connect the LCD cable back to the system board.
7. Fold the LCD connectors latch to secure it in place.
8. Fold back the adhesive tape into the LCD connector.
9. Connect the IO board cable to the system board.
10. Connect the following cables in the following order (left - right): Speaker, Touchpad, USB, Battery, Keyboard.

### Next steps

1. Install the Heatsink.
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the Solid state drive.
5. Install the memory module.
6. Install the battery.
7. Install the base cover.
8. Install the SD Card.
9. Follow the procedure in After working inside your computer.

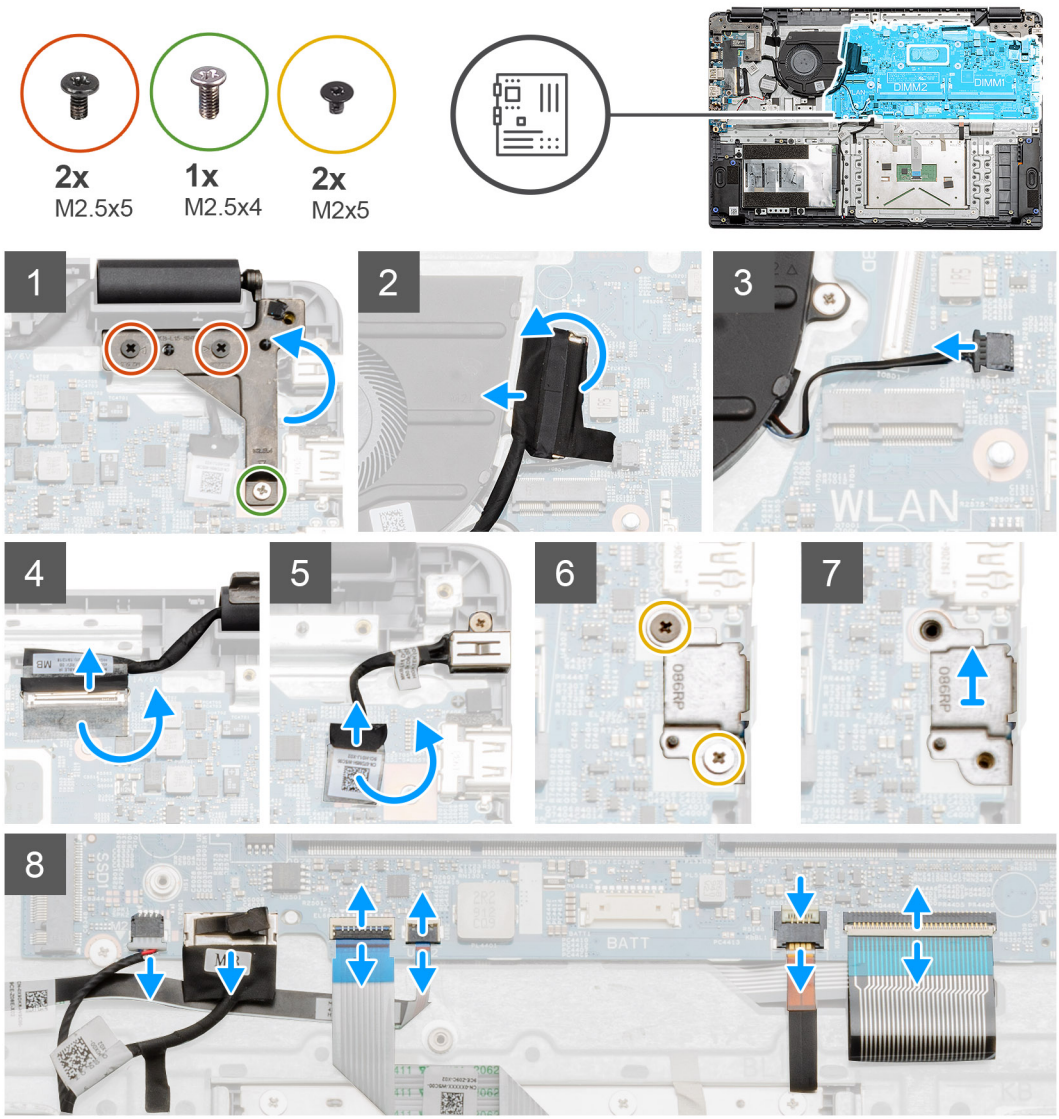
# Removing the system board - UMA

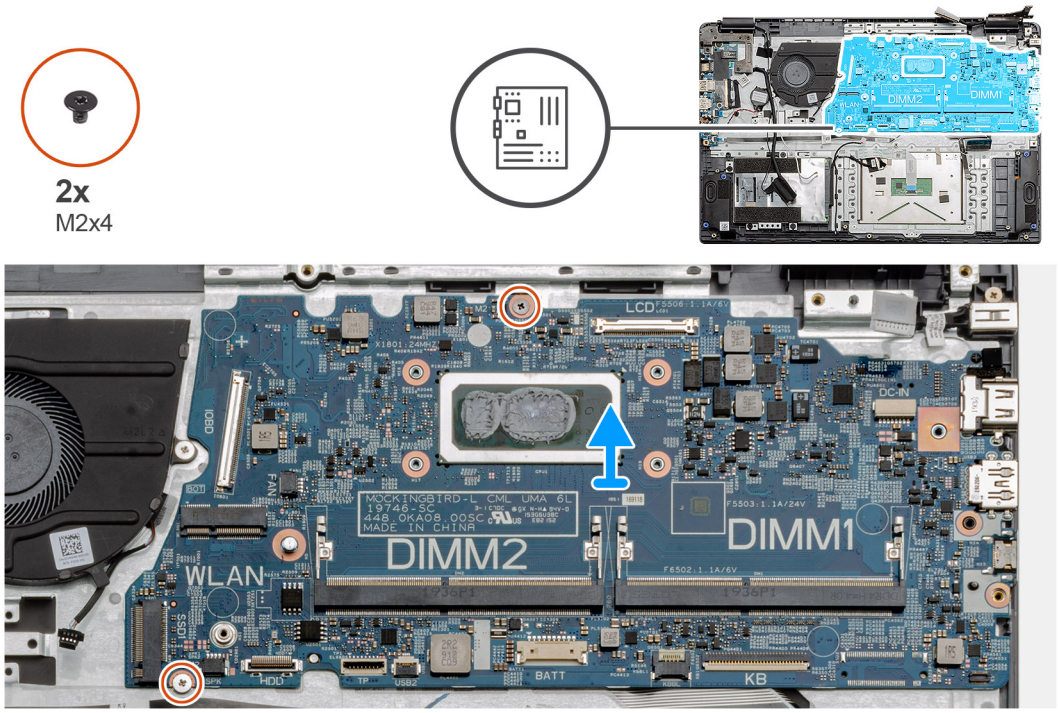
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Disconnect the battery.
5. Remove the memory modules.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the solid state drive.
9. Remove the heatsink.

### About this task

The figure indicates the location of the system board and provides a visual representation of the removal procedure.

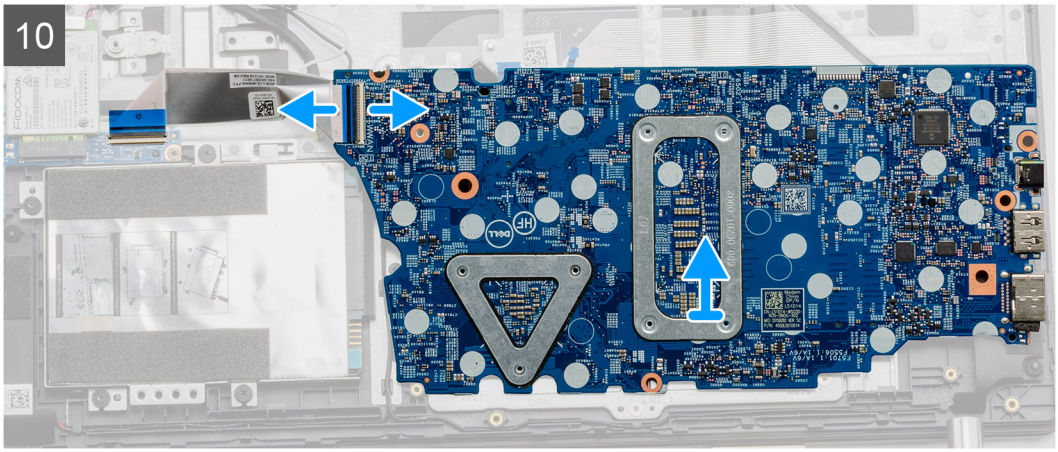

2x
M2.5x5
1x
M2.5x4
2x
M2x5
DIMM2
DIMM1
1
2
3
WLAN
4
5
6
086RP
7
086RP
8
BATT




**Steps**

1. Remove the two (M2.5x5) and the single (M2.5x4) screws from the right hinge.
2. Disconnect the IO board connector cable from the system board.
3. Disconnect the Fan connector cable from the system board.
4. Peel back the adhesive tape from the LCD cable and disconnect the LCD cable from the system board.
5. Peel back the adhesive tape from the DC-in cable connector and disconnect the DC-in cable from the system board.
6. Remove the two (M2x5) screws from the metal shield covering the USB module.
7. Lift and take the metal shield away from the system.
8. Disconnect the connector cables from the system board in the following order (left - right): Speaker, Touchpad, USB, Battery, Keyboard.
9. Remove the two (M2x4) screws from the system board and lift the board away from the computer.

**NOTE:** For systems configured with a WWAN card, an additional cable must be disconnected from under the system board, while flipping the board over.




# Installing the system board - UMA

### Prerequisites

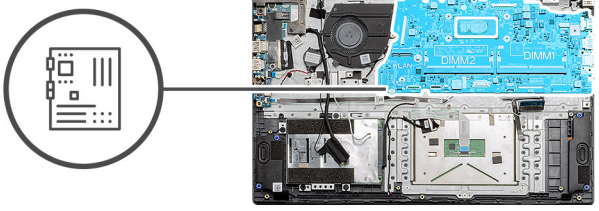
If you are replacing a component, remove the existing component before performing the installation procedure.

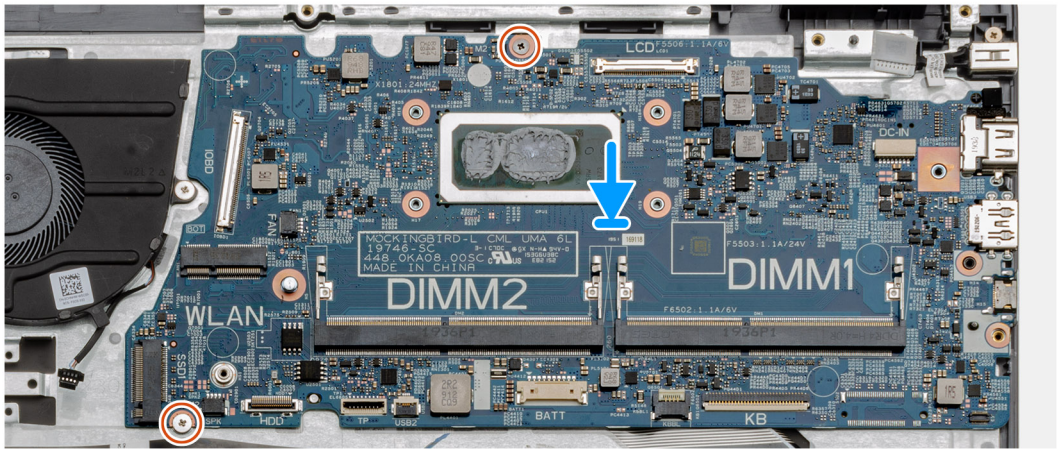
### About this task

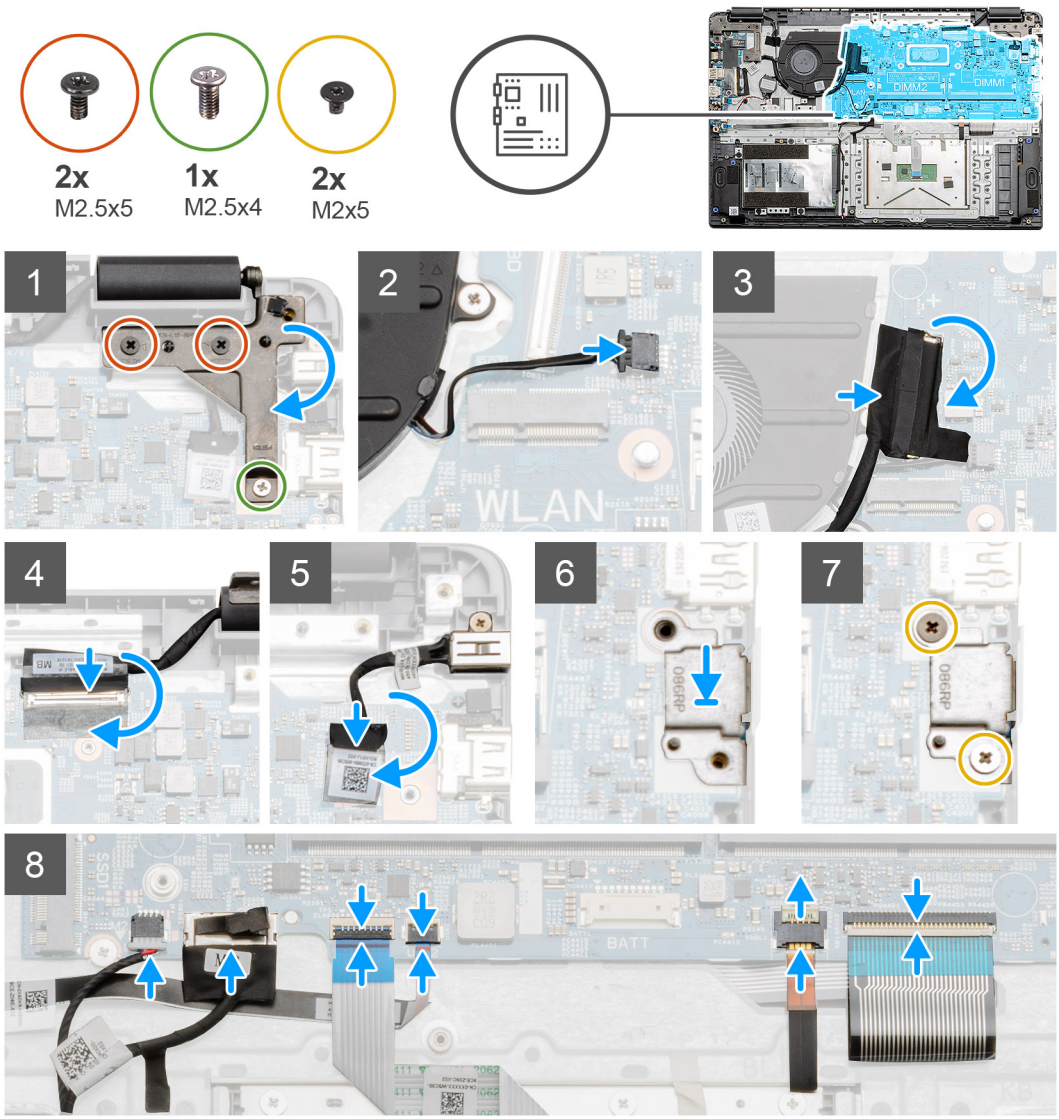
The figure indicates the location of the system board and provides a visual representation of the installation procedure.



**2x**
M2x4



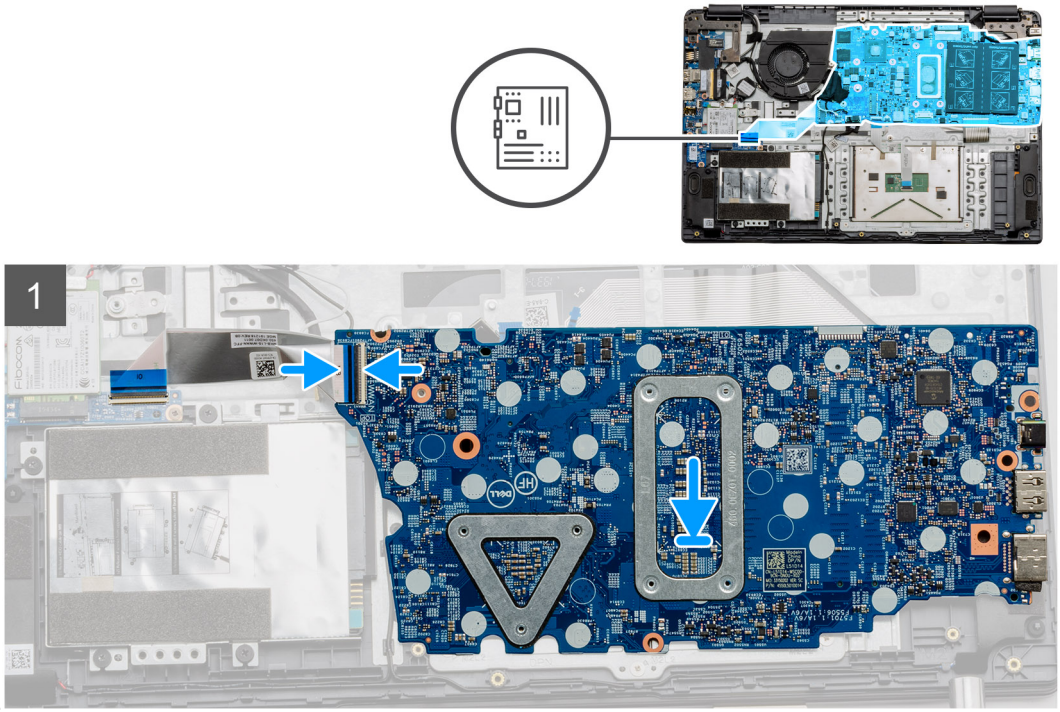






### Steps

1. Place the system board onto the palmrest, aligning the screw posts to the mounting points on the palmrest. Install the two (M2x4) screws to secure the system board to the palmrest.

**NOTE:** For systems configured with a WWAN card, you must connect the cable from WWAN daughterboard to the connector on the systemboard.




2. Fold the right hinge back, install the two (M2.5x5) and one (M2.5x4) to secure the hinge in place.
3. Connect the fan connector back to the system board.
4. Connect the IO board cable to the system board.
5. Connect the LCD cable back to the system board and fold the adhesive tape back onto the LCD connector.
6. Connect the DC-in port connector back to the system board and fold the adhesive tape back onto the DC-in connector.
7. Place the metal shield onto the USB port module.
8. Install the two (M2x5) screws to secure the metal shield.
9. Connect the following cables in the following order (left - right): Speaker, Touchpad, USB, Battery, Keyboard.

### Next steps

1. Install the Heatsink.
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the Solid state drive.
5. Install the memory module.
6. Install the battery.
7. Install the base cover.
8. Install the SD Card.
9. Follow the procedure in After working inside your computer.

# IO Board

## Removing the IO Board

### Prerequisites

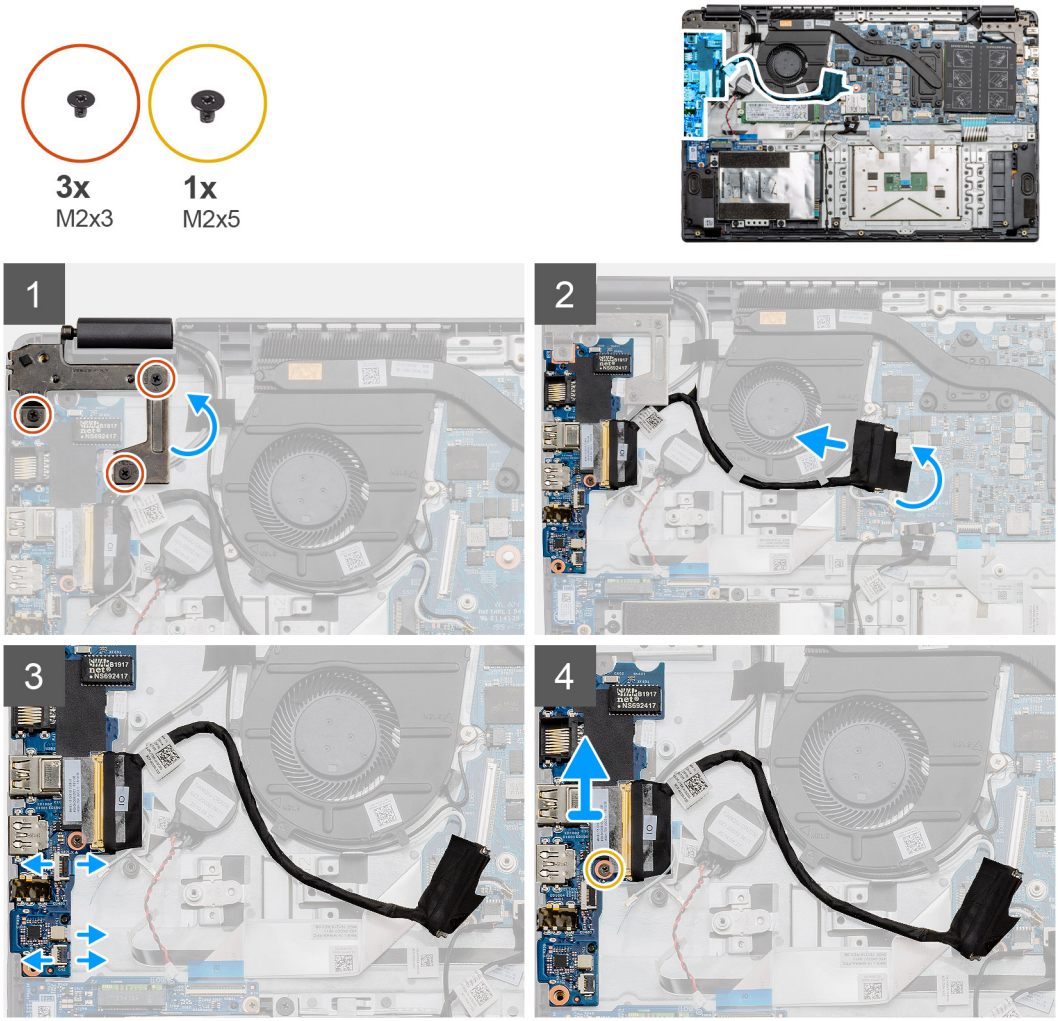
1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.

4. Disconnect the battery.
5. Remove the WLAN card.
6. Remove the WWAN card.

**NOTE:** Hall Sensor is a part of the IO board and the entire IO board needs to be replaced if the Hall Sensor is faulty.

### About this task

The following images indicate the location of the memory module and provide a visual representation of the removal procedure.




### Steps

1. Remove the three (M2x3) screws from the left hinge and lift the hinge up.
2. Peel back the adhesive tape covering the IO board connector cable and disconnect it from the system board.
3. Disconnect the cable connectors from the IO board in the following order (left - right): USB data cable, Coin-cell battery cable, Audio FFC cable.
4. Remove the single (M2x5) screw that is holding the IO board in place and lift the module away from the computer.

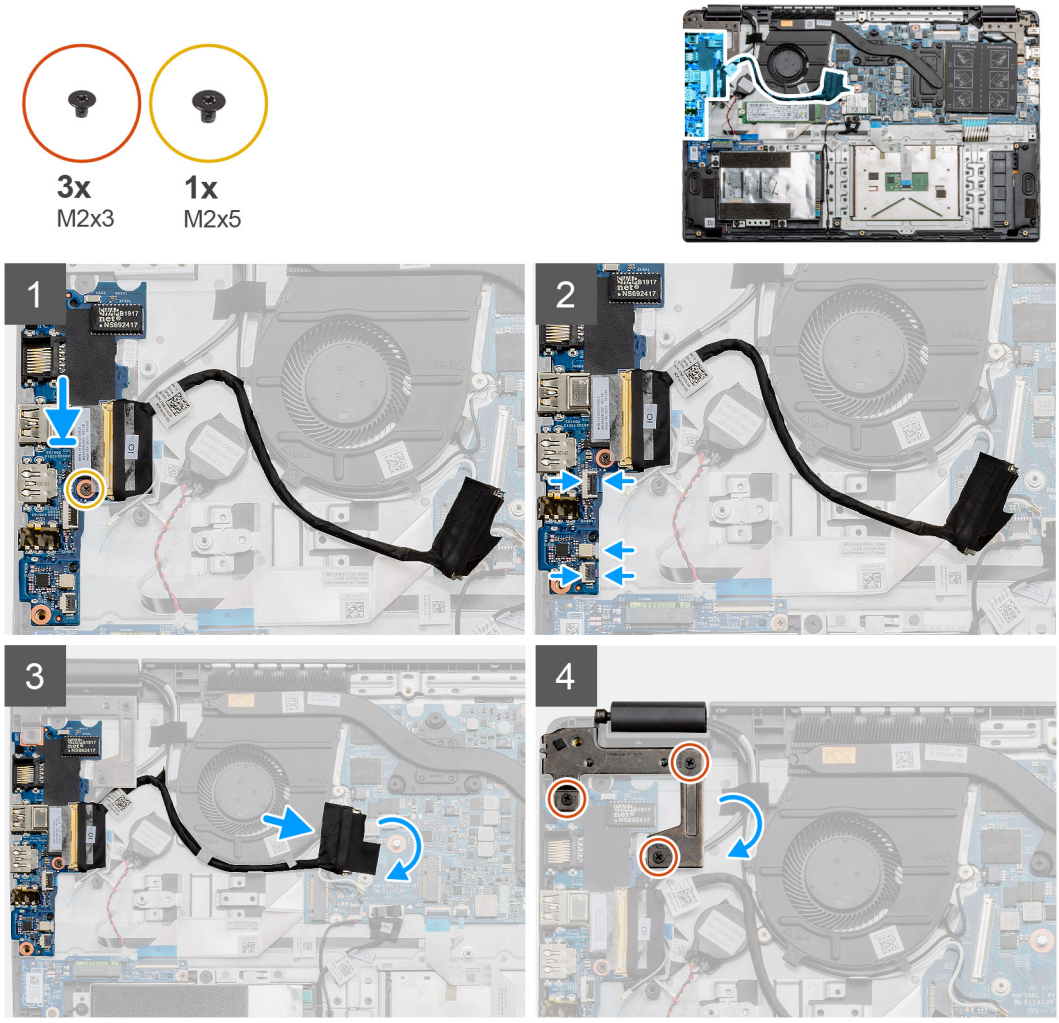
# Installing the IO Board

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the IO board and provides a visual representation of the installation procedure.




### Steps

1. Place the IO board onto the mounting points on the palmrest and secure it using the single (M2x5) screw.
2. Connect the three cable connectors to the connectors on lower right side of the IO board. Using a single (M2x3) screw, install the WWAN card and secure it in place.
3. Route the IO Board connector cable through the routing points under the fan assembly and connect the cable to the connector on the system board. Fold the adhesive tape back onto the IO Board connector on the system board.
4. Using the three (M2x3) screws, close and secure the left hinge to the palmrest.

### Next steps

1. Install the WLAN card.
2. Install the WWAN card.
3. Install the battery.
4. Install the base cover.
5. Install the SD Card.
6. Follow the procedure in After working inside your computer.

# Power button

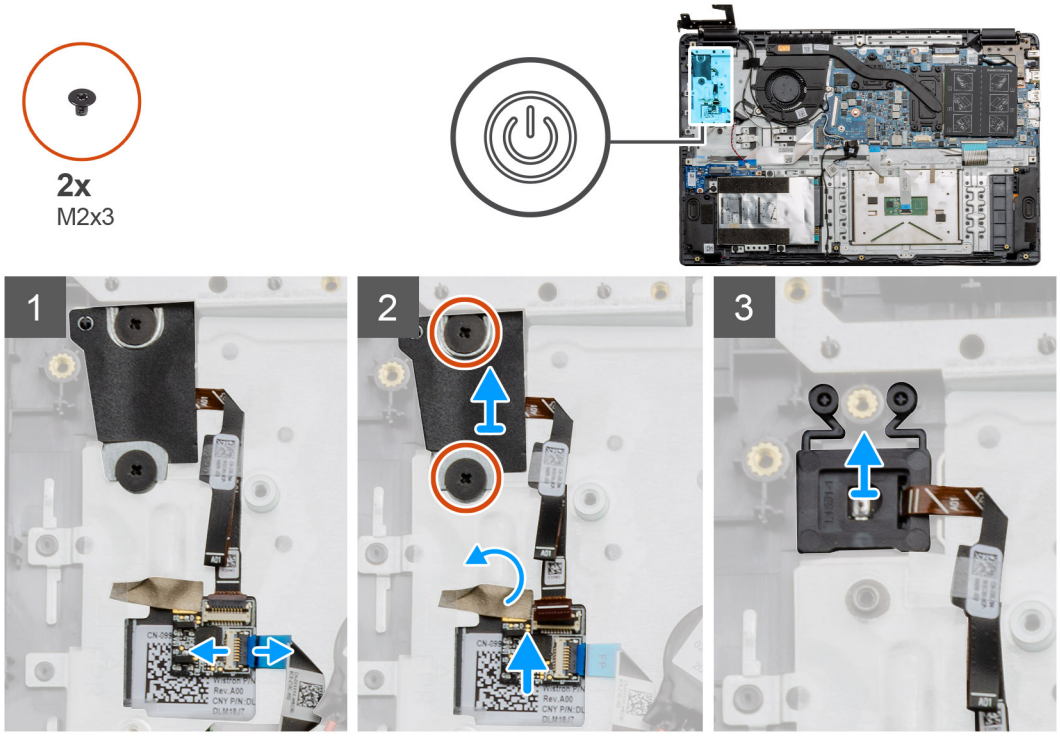
## Removing the Power Button

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Disconnect the battery.
5. Remove the IO board.
6. Remove the solid state drive.

### About this task

The figure indicates the location of the Power Button and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the system board cable from the connector on the power button daughterboard.
2. Remove the two (M2x3) screws that secure the shield over the power button module and peel back the adhesive tape from over the power button daughterboard.
3. Lift the Power Button module away from the computer.

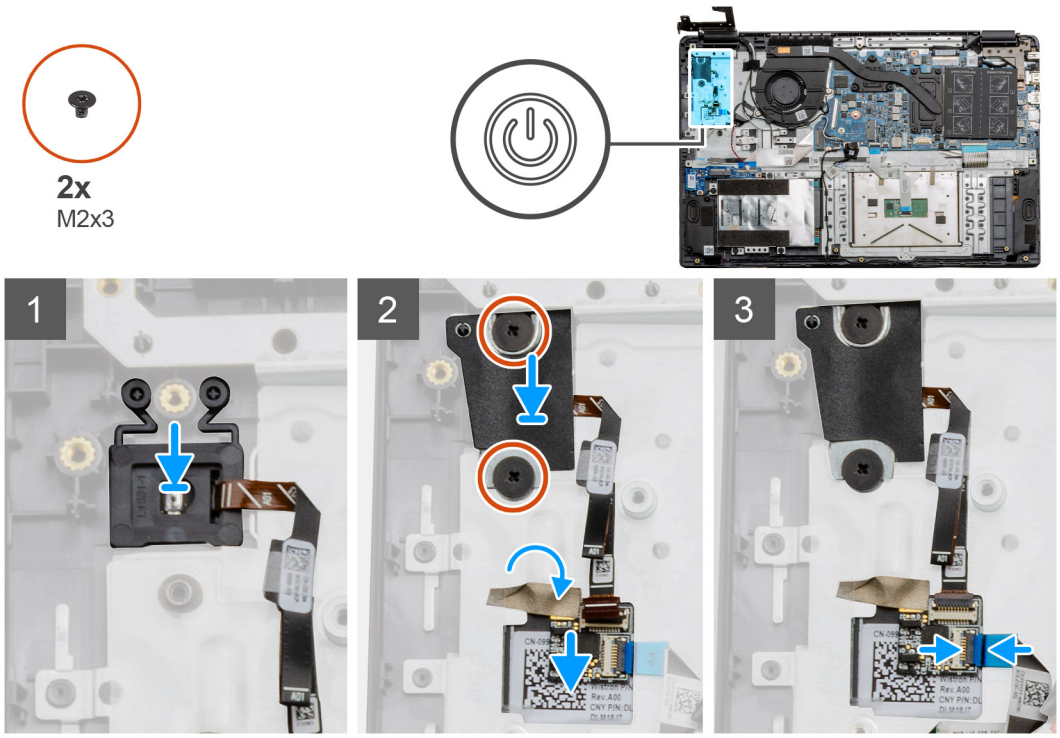
## Installing the Power Button

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The figure indicates the location of the power button and provides a visual representation of the installation procedure.




### Steps

1. Place the Power Button module onto the mounting points on the palmrest.
2. Place the shield on top of the power button module and install the two (M2x3) screws to secure the shield onto the power button. Place the power button daughterboard on the palmrest..
3. Connect the cable connector from the system board to the connector on the power button daughterboard.

### Next steps

1. Install the WWAN card.
2. Install the Solid state drive.
3. Install the IO board.
4. Install the battery.
5. Install the base cover.
6. Install the SD Card.
7. Follow the procedure in After working inside your computer.

# Display assembly

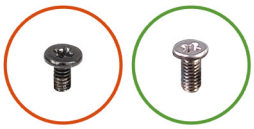
## Removing the Display Assembly

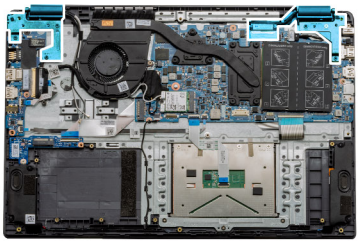
### Prerequisites

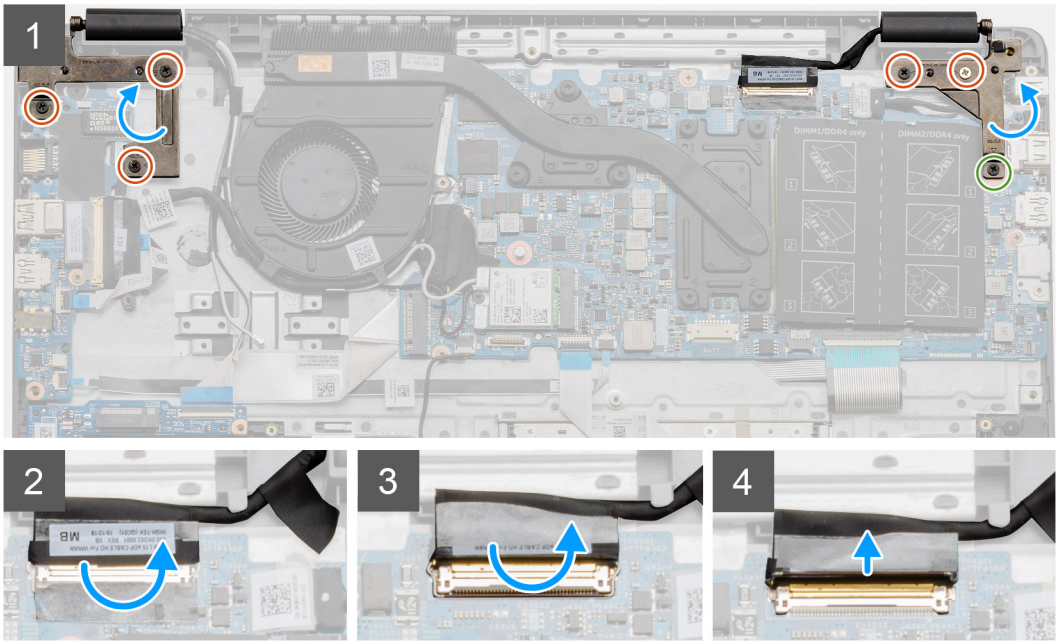
1. Follow the procedure in before working inside your computer.
2. Remove the SD Card.
3. Remove the base cover.
4. Disconnect the battery.

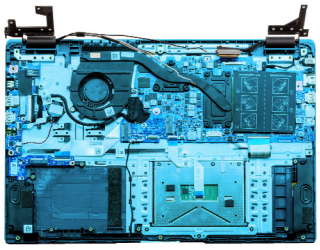
### About this task

The figure indicates the location of the LCD Assembly and provides a visual representation of the removal procedure.

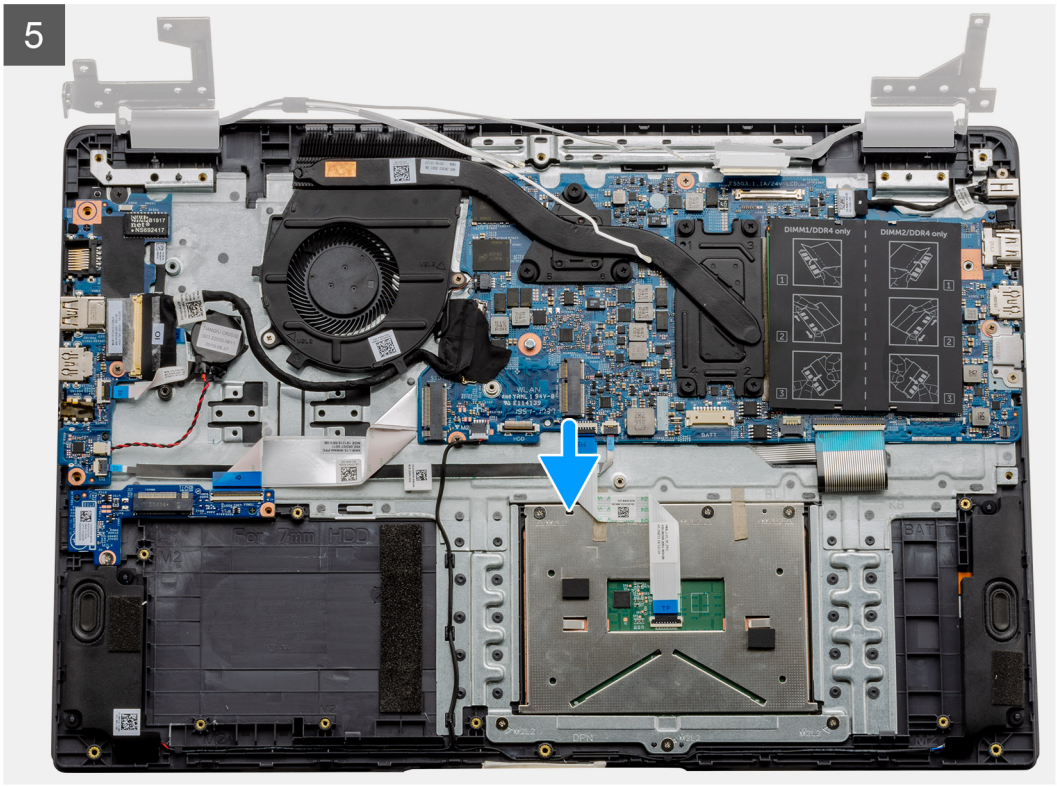

5x
M2.5x5
1x
M2.5x4




1
2
3
4



5








### Steps

1. Remove the five M2.5x5 screws from both the hinges followed by the single M2.5x4 from the right hinge. Lift and fold the hinges backwards.
2. Peel back the adhesive tape covering the LCD cable.
3. Fold the adhesive tape away from the LCD cable.
4. Remove the LCD cable and lift it away from the computer.
5. Move the system away from the LCD assembly.

## Installing the Display Assembly

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

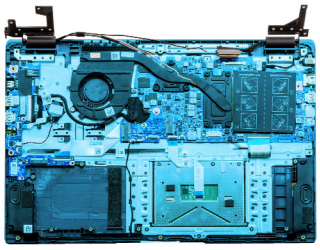
### About this task

The figure indicates the location of the LCD Assembly and provides a visual representation of the installation procedure.

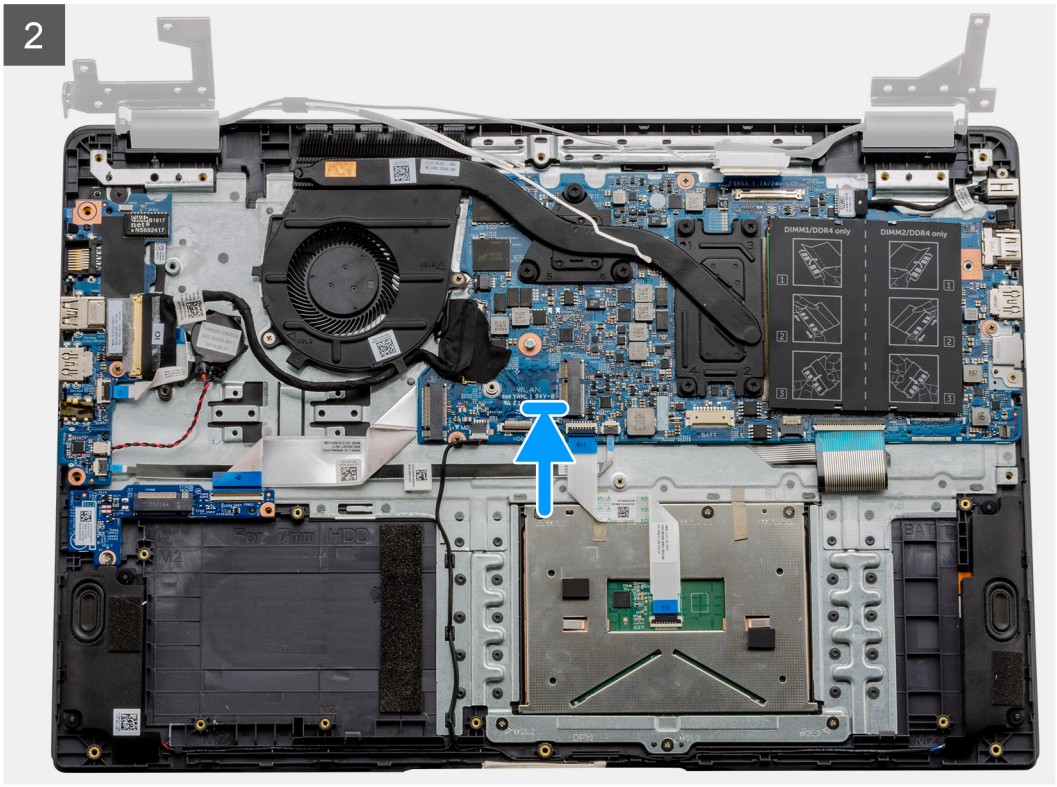


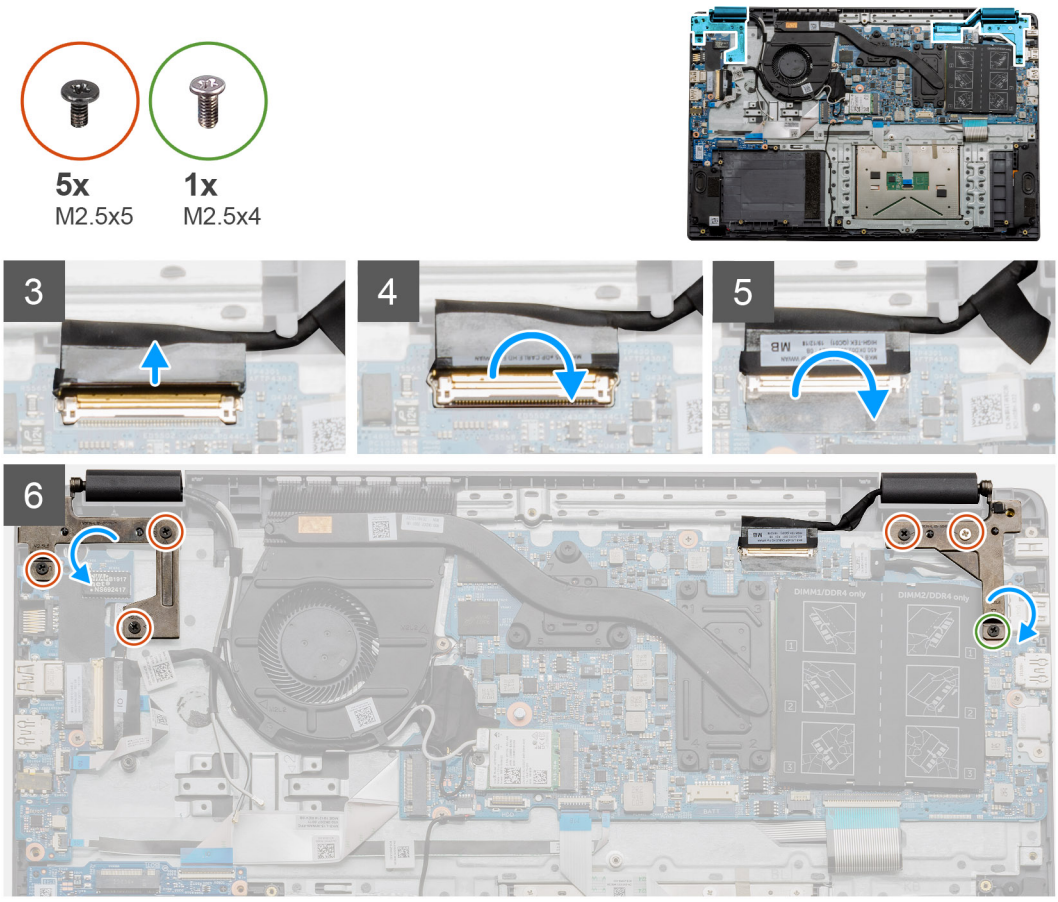
1





2






### Steps

1. Place the display assembly on a clean and flat surface.
2. Align and place the palmrest and keyboard assembly on the display assembly.
3. Using the alignment posts, close the display hinges.
4. Connect the display cable to the system board and adhere the tape to secure the display cable.
5. Place the EDP metal bracket on the display cable connector.
6. Install the six (M2.5x5) screws that secure the display hinges to the chassis of your computer.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in After working inside your computer.

# Display bezel

## Removing display bezel

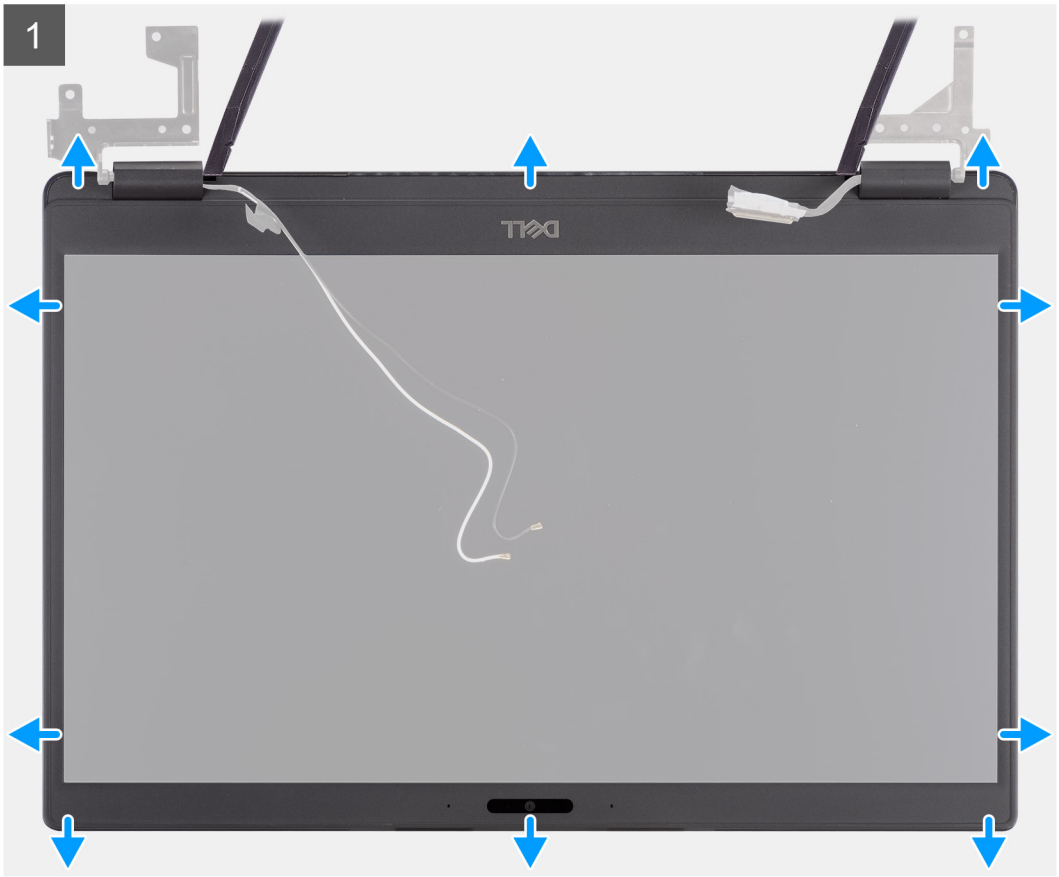
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.

5. Remove the display assembly.

### About this task

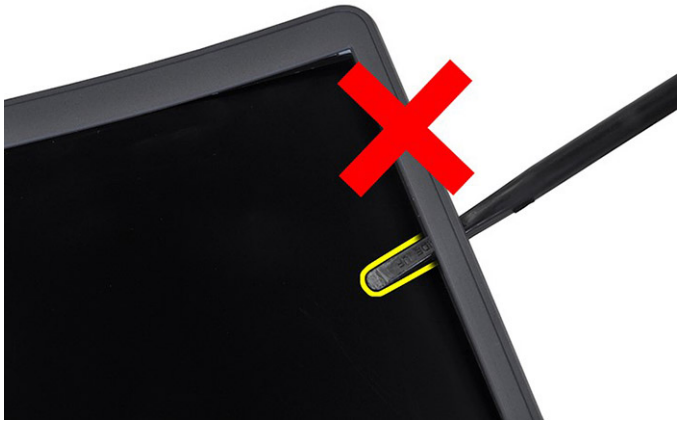





### Steps

1. Use a plastic scribe to carefully pry open the recesses near the left and right hinges on the bottom edge of the display bezel.
2. Carefully pry open the inside edge of the display bezel and then pry open the inside edge of the left and right sides of the display bezel.

**CAUTION: When prying open the display bezel, ensure to pry along the outside edge of the display bezel using your hands or plastic scribes. Using a screw driver or other sharp objects may damage the display panel.**

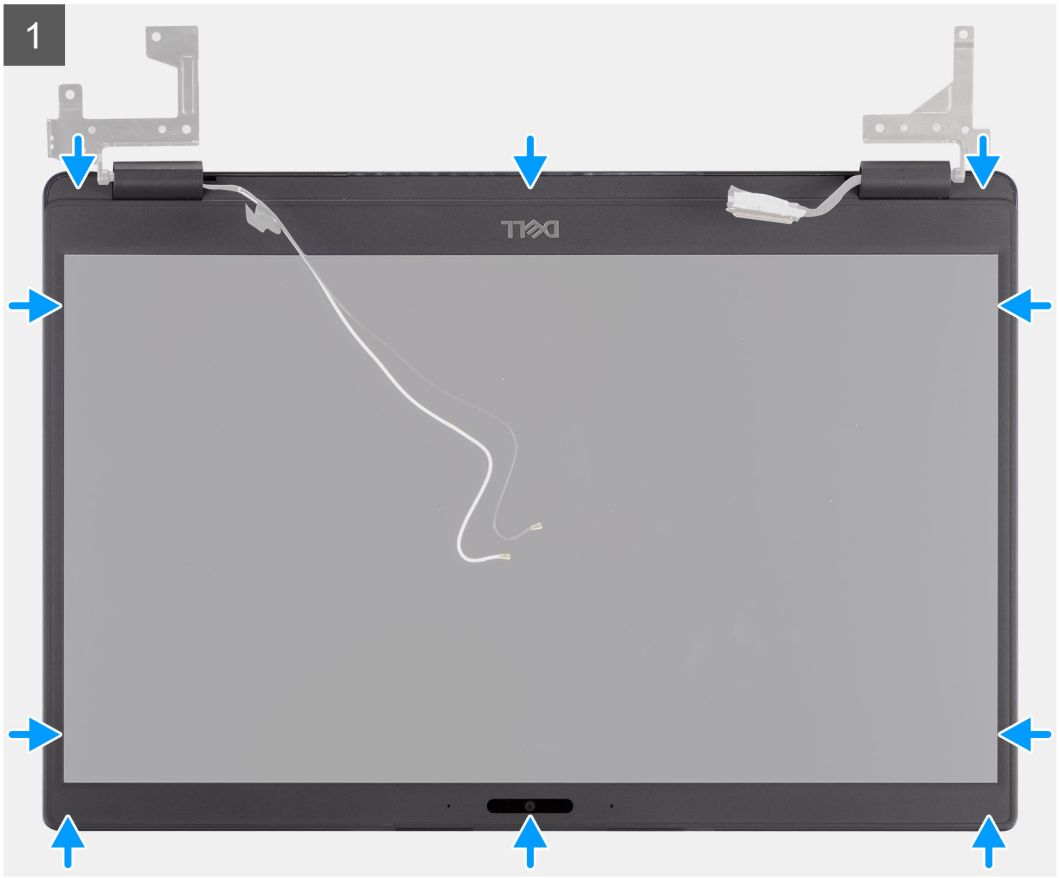


3. Lift the display bezel from the display assembly.

# Installing the display bezel

### About this task






### Steps

Align the display bezel with the display assembly, and then gently snap the display bezel into place.

### Next steps

1. Replace the display assembly.
2. Replace the battery.
3. Replace the base cover.
4. Replace the SD card.
5. Follow the procedure in after working inside your computer.

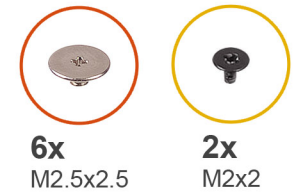
# Display panel

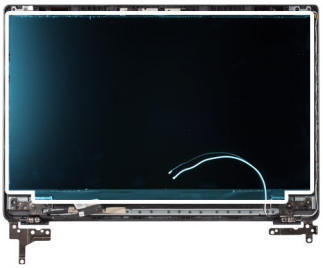
## Removing display panel

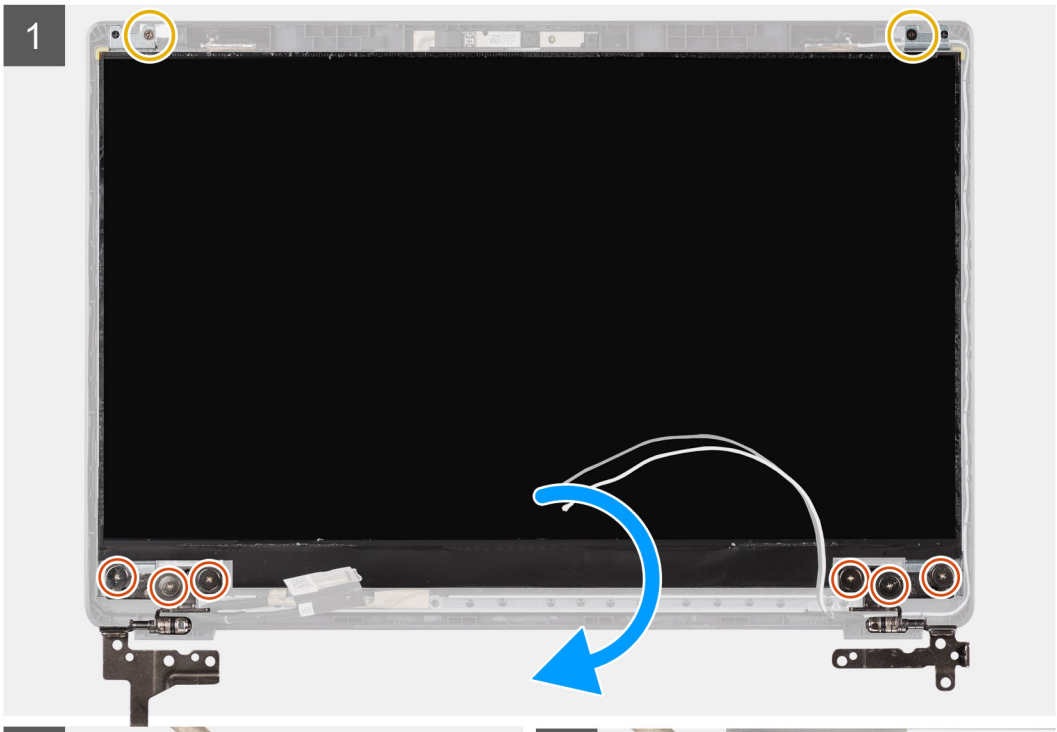
### Prerequisites

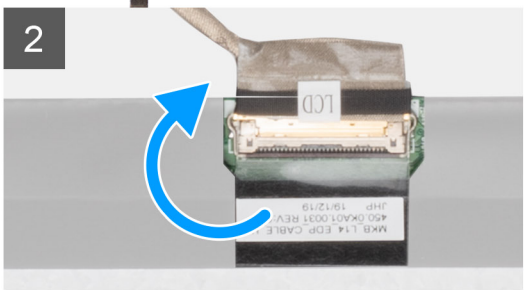
1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the display assembly.
6. Remove the display bezel.

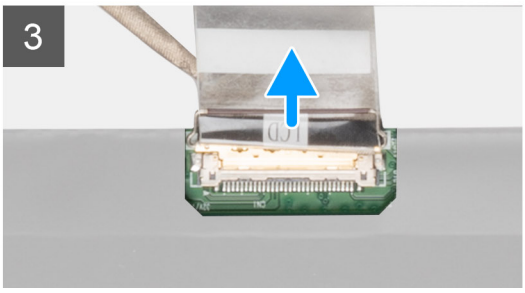
### About this task





### Steps

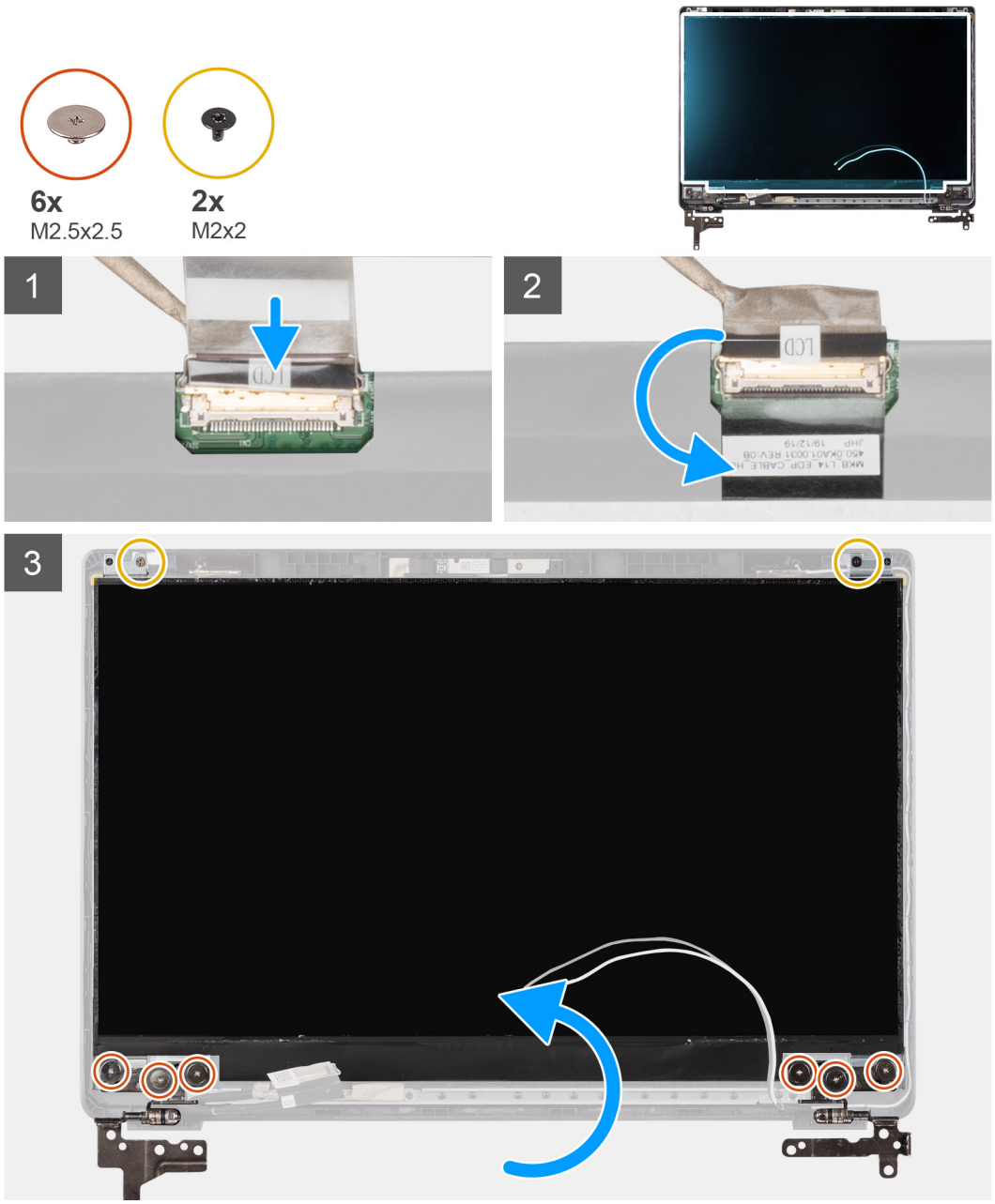
1. Remove the six (M2.5x2.5) and two (M2x2) screws that secure the display panel to the display back cover and place to display forward to access the EDP cable at the back.

   **NOTE:** Do not pull and release the Stretch (SR) Tapes from the display panel. There is no need to separate the brackets from the display panel.

2. Peel off the adhesive tape from over the EDP connector and lift the latch.
3. Disconnect the EDP cable connector from the display panel and lift it away from the display back cover.

## Installing display panel

### About this task




### Steps

1. Connect the EDP cable to the connector on the back of the display panel.

2. Lock the latch securing the EDP cable to the connector and reapply the adhesive tape over the connector.
3. Place the display panel screen-side up onto the display back cover. Replace the six (M2.5x2.5) and two (M2x2) screws to secure the display panel to the display assembly.

### Next steps

1. Replace the display bezel.
2. Replace the display assembly.
3. Replace the battery.
4. Replace the base cover.
5. Replace the SD card.
6. Follow the procedure in after working inside your computer.

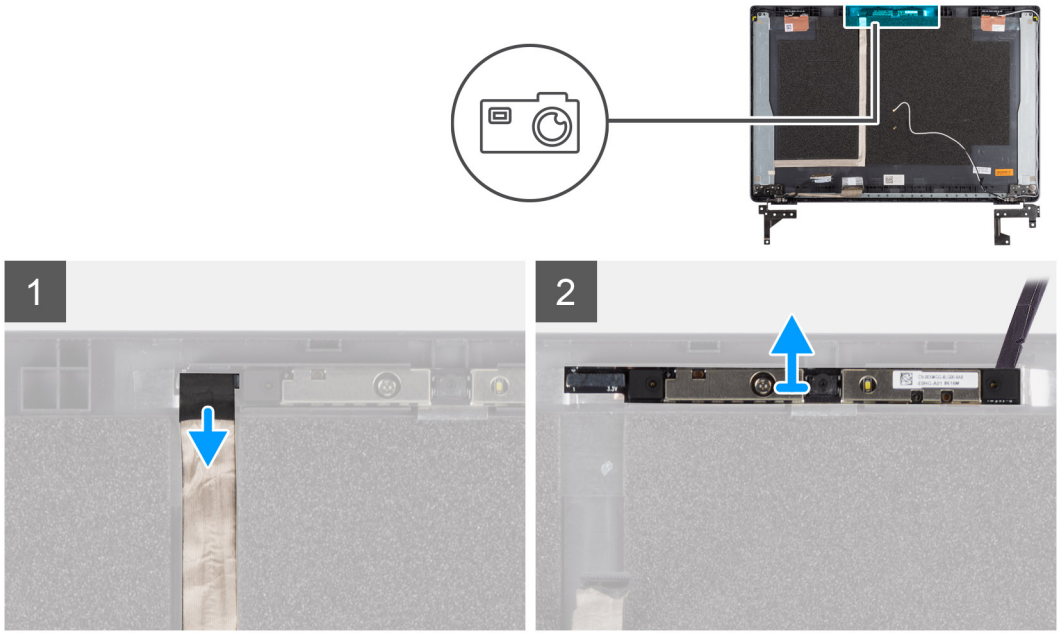
# Camera

## Removing camera

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display panel.

### About this task

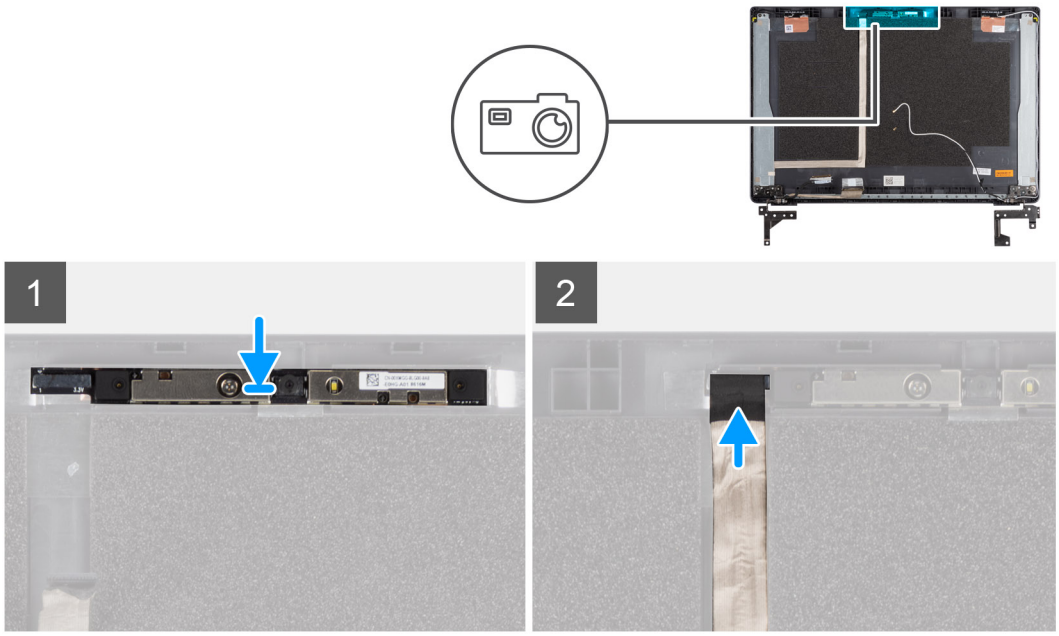



### Steps

1. Disconnect the camera cable from the connector on the camera module.
2. Carefully pry and lift the camera module from the display back cover.

# Installing camera

### About this task




### Steps

1. Insert the camera into the slot on the display back cover .
2. Connect the camera cable to the connector on the camera module.

### Next steps

1. Replace the display panel.
2. Replace the display bezel.
3. Replace the display assembly.
4. Replace the battery.
5. Replace the base cover.
6. Replace the SD card.
7. Follow the procedure in after working inside your computer.

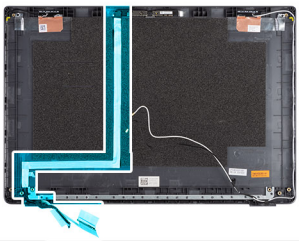
# Display (eDP) cable

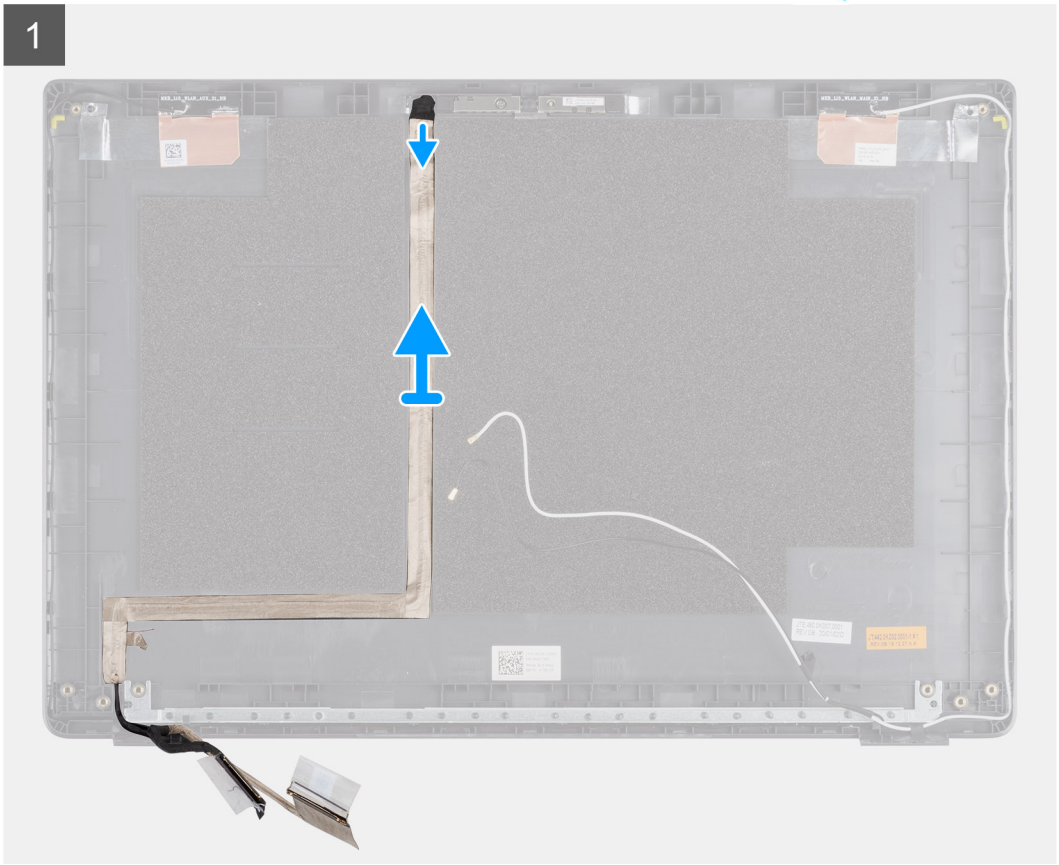
## Removing display cable

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display panel.
8. Remove the camera.

### About this task



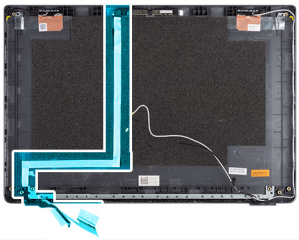


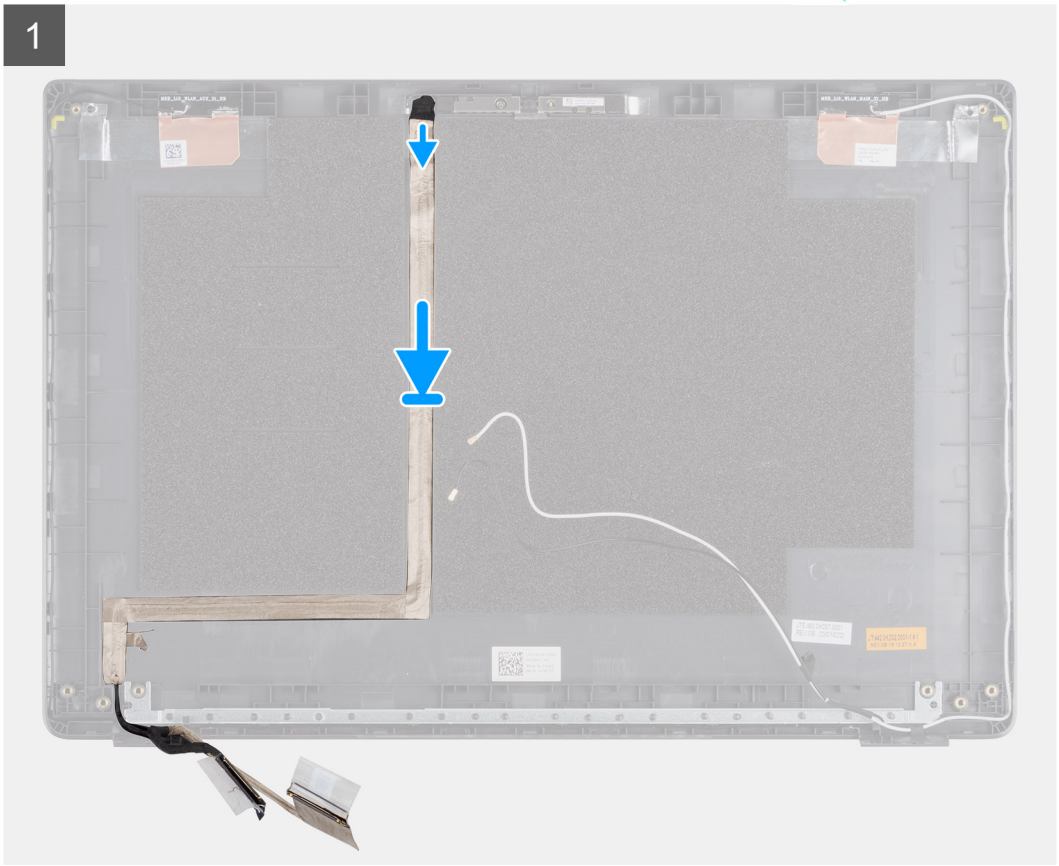

### Steps

Peel the display cable to release it from its adhesive side and lift the display cable from the display back cover.

# Installing display cable

### About this task






### Steps

Align and readhere the display cable to the display back cover.

### Next steps

1. Replace the camera.
2. Replace the display panel.
3. Replace the display bezel.
4. Replace the display assembly.
5. Replace the battery.
6. Replace the base cover.
7. Replace the SD card.
8. Follow the procedure in after working inside your computer.

# Display back cover assembly

## Replacing the display back cover

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display panel.
8. Remove the camera.
9. Remove the display cable.

### About this task



After performing the preceding steps, you are left with the display back cover.

### Next steps

1. Replace the display cable.
2. Replace the camera.
3. Replace the display panel.
4. Replace the display bezel.
5. Replace the display assembly.
6. Replace the battery.
7. Replace the base cover.
8. Replace the SD card.
9. Follow the procedure in after working inside your computer.

# Palm-rest and keyboard assembly

## Removing the palm-rest and keyboard assembly

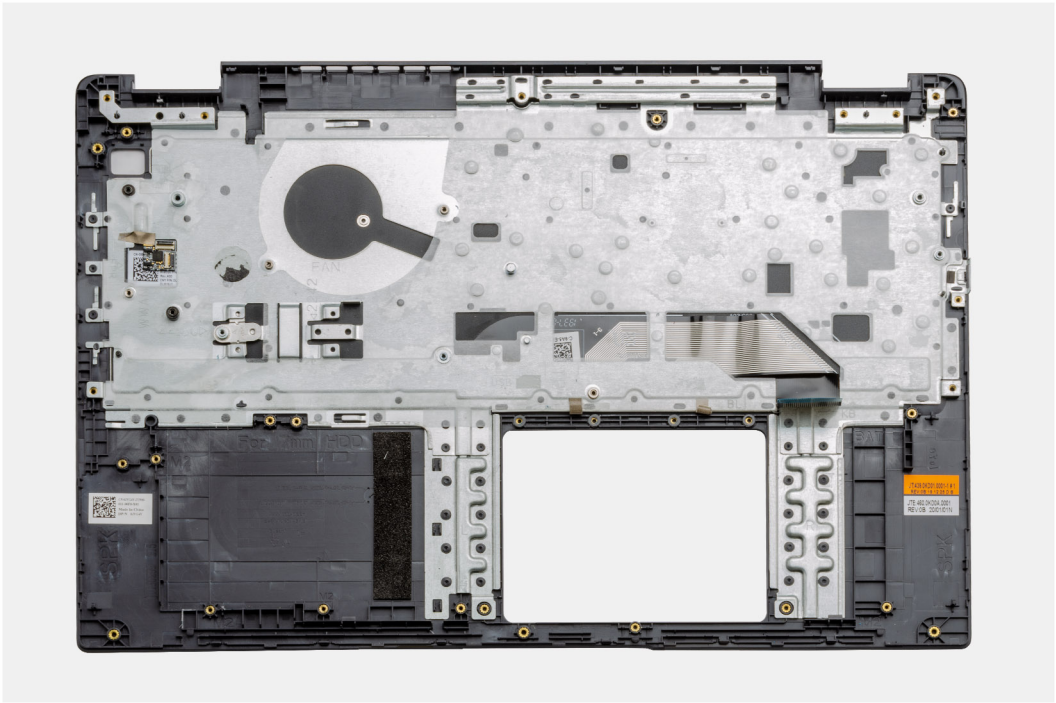
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the WLAN card.
6. Remove the WWAN card.
7. Remove the coin-cell battery.
8. Remove the memory modules.
9. Remove the DC-in.
10. Remove the solid state drive.
11. Remove the hard drive.
12. Remove the touchpad.
13. Remove the speakers.
14. Remove the heatsink.
15. Remove the system board.

**NOTE:** The system board can be removed along with the heat sink.

### About this task

The figure indicates the location of the palm-rest and keyboard assembly and provides a visual representation of the removal procedure.



### Steps

Once the required parts are removed, the bare palm-rest and keyboard assembly can be accessed and removed.

### Next steps

1. Install the system board.
2. Install the heatsink.
3. Install the speakers.
4. Install the touchpad.
5. Install the hard drive.
6. Install the solid state drive.
7. Install the DC-in.
8. Install the memory modules.
9. Install the coin-cell battery.
10. Install the WWAN card.
11. Install the WLAN card.
12. Install the battery.
13. Install the base cover.
14. Install the SD card SD card.
1. Follow the procedure in after working inside your computer.

# 3

# Drivers and downloads

When troubleshooting, downloading, or installing drivers, it is recommended that you read the Dell knowledge base article, Drivers and Downloads FAQs .

# 4

# BIOS setup

**CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.**

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

**NOTE:** Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

**Topics:**


- BIOS overview
- Entering BIOS setup program
- Navigation keys
- One time boot menu
- BIOS setup
- Updating the BIOS
- System and setup password
- Clearing CMOS settings
- Clearing BIOS (System Setup) and System passwords


## BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

## Entering BIOS setup program

**Steps**

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

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

## 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.

### Table 2. Navigation keys

| 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.<br>**NOTE:** For the standard graphics browser only. |
| Esc | Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system. |

# 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.

# BIOS setup

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

## Overview

This section provides hardware specification for the system and contains no modifiable settings.

### Table 3. BIOS Overview Page

| Options | Description |
|---|---|
| Series and system model number | This field shows the following information:<br>• BIOS Version - The version of the BIOS installed on the computer.<br>• Service tag - The unique 7 digit hexadecimal identification number for the computer.<br>• Asset tag<br>• Manufacture Date - The date for when the unit was manufactured. |

**Table 3. BIOS Overview Page (continued)**

| Options | Description |
|---|---|
| | • Ownership Date - The date for when the unit's ownership was transferred to the end user.<br>• Express Service Code - An alternative to Service Tag, 11-digit numerical identification number for the computer.<br>• Ownership Tag<br>• Signed Firmware Update - This helps to verify that only Dell Signed and released BIOS can be installed on the computer. |
| Battery | The Battery field provides battery and adapter related information:<br>• Primary battery - This helps identify if the system is running on the primary battery.<br>• Battery level - This gives the percentage of battery backup remaining for the computer.<br>• Battery state - This helps identify if the battery is in charging or active use state.<br>• Health - This helps identify the health of the battery. It would show one of the following states based on the battery life remaining:<br>  ○ Excellent<br>  ○ Good<br>  ○ Fair<br>  ○ Poor<br>• AC Adapter - This helps identify if the charger is plugged in and mentions the wattage of the charger connected. |
| Processor | The Processor field provides information related to the CPU on the computer:<br>• Processor Type - This field mentions the CPU model and generation information.<br>• Maximum Clock Speed - This field mentions the maximum clock speed that the CPU is capable of reaching.<br>• Minimum Clock Speed - This field mentions the minimum clock speed that the CPU is capable of reaching.<br>• Current Clock Speed - This field mentions the clock speed that the CPU is running at currently.<br>• Core Count - This field gives the count of the physical cores on the CPU.<br>• Processor ID<br>• Processor L3 Cache - This field gives mentions the amount of cache storage available on the CPU.<br>• Microcode Version<br>• Intel Hyper-Threading Capable - This field helps identify if the CPU is capable of Hyper-Threading.<br>• 64-bit Technology - This field helps identify the CPU architecture. |
| Memory | The Memory field provides information related to the memory on the computer:<br>• Memory Installed - This field gives the amount of memory installed available on the computer.<br>• Memory Available - This field gives the amount of memory available for use on the computer.<br>• Memory Speed - This field mentions the speed at which the memory runs on the computer. |

### Table 3. BIOS Overview Page (continued)

| Options | Description |
|---|---|
| | • Memory Channel Mode - This field helps us identify if the computer has Dual-Channel memory utilization capability.<br>• DIMM_SLOT 1 - This field shows the capacity of the memory installed in the first DIMM slot.<br>• DIMM_SLOT 2 - This field shows the capacity of the memory installed in the second DIMM slot. |
| Devices | The Devices field provides information related to the memory on the computer:<br>• Panel Type - This field mentions the type of display panel used on the computer.<br>• Video controller - This field mentions the type of video controller used on the computer.<br>• Video Memory - This field gives the capacity of the video memory available for use on the computer.<br>• Wi-Fi Device - This field mentions the type wireless device available for use on the computer.<br>• Native Resolution - This field mentions the native video resolution supported on the computer.<br>• Video BIOS Version - The version of the BIOS installed on the computer.<br>• Audio Controller - This field mentions the type of audio controller used on the computer.<br>• Bluetooth Device - This field mentions the type Bluetooth device available for use on the computer.<br>• LOM MAC Address - This field provides the unique MAC address for the computer.<br>• Pass Through MAC Address - This field provides the MAC address used to override the dock or dongle MAC address every time it's connected to the network. |

## Boot Configuration

This section provides Boot Configuration related details and settings.

### Table 4. Boot Configuration:

| Options | Description |
|---|---|
| Boot Sequence | |
| Boot Mode: UEFI only | This section allows the user to choose the first bootable device that the computer should use to boot the system. It lists all potential bootable devices.<br>• Windows Boot Manager (Enabled by default)<br>• UEFI Boot Drive (Enabled by default)<br>• Add Boot option - Allows the user to manually add a Boot path. |
| Secure Digital(SD) Card Boot | This section contains a toggle switch that allows the user to enable or disable the option to allow the computer to boot from an SD Card. |
| Secure Boot | |
| Enable Secure Boot | This section contains a toggle switch that allows the user to enable or disable Secure Boot. (OFF by default) |

### Table 4. Boot Configuration: (continued)

| Options | Description |
|---|---|
| Secure Boot Mode | This section allows the user to select one of the two Secure Boot options available on the computer:<br>● Deployed Mode - This mode checks the integrity of UEFI drivers and bootloaders before allowing execution. This option allows for full Secure Boot protections (Enabled by default)<br>● Audit Mode - This mode performs a signature check but never does a block execution of all UEFI drivers and bootloaders. This mode is only used when making changes to Secure Boot Keys |
| Expert Key Management | |
| Enable Custom Mode | This section contains a toggle switch that allows the user to enable or disable Custom Mode. This mode allows the PK, KEK, db and dbx security key databases to be manipulated. (OFF by default) |
| Custom Mode Key Management | This section helps the user to select the Key Database to allow modification. The options available are as below:<br>● PK (Selected by default)<br>● KEK<br>● db<br>● dbx |

## Integrated Devices

This section provides Integrated Devices details and settings.

### Table 5. Integrated Devices

| Options | Description |
|---|---|
| Date/Time | |
| Date | This section allows the user to change the date which takes effect immediately. The format used is MM/DD/YYYY |
| Time | This section allows the user to change the time which takes effect immediately. The format used is HH/MM/SS in 24 hour format. The user also has an option to switch between 12-hours or 24-hours clock. |
| Camera | |
| Enable Camera | This section contains a toggle switch that allows the internal webcam (Enabled by default). |
| Audio | |
| Enable Audio | This section contains a toggle switch that allows the user to enable or disable the audio on the computer. It also allows the user to:<br>● Enable Microphone (Enabled by default)<br>● Enable Internal Speakers (Enabled by default) |
| USB Configuration | This section helps the user to make changes to the USB settings on the computer. The options available are as follows: |

### Table 5. Integrated Devices (continued)

| Options | Description |
|---|---|
| | • Enable USB Boot Support - Allows the system to boot from an external USB device (Enabled by default)<br>• Enable External USB Ports - Allows the user to enable or disable the USB ports on the computer (Enabled by default) |
| Miscellaneous Devices | |
| Enable Fingerprint Reader Device | This option allows the user to enable the fingerprint reader on the system (Enabled by default). |

# Storage

This section provides Storage details and settings.

### Table 6. Storage

| Options | Description |
|---|---|
| SATA Operation | |
| SATA Operation | This section allows the user to select the operating mode of the integrated SATA hard drive controller. The following options are available here:<br>• Disabled - SATA controllers are disabled.<br>• AHCI - SATA is configured in AHCI mode.<br>• RAID On - SATA is setup to support RAID (Intel Rapid Storage Technology). (Selected by default) |
| Storage Interface | |
| Port Enablement | This section allows the user to enable or disable the onboard drives on the computer. The following options are available here:<br>• SATA-0 (ON by default)<br>• M.2 PCIe SSD-0 (ON by default) |
| SMART Reporting | |
| Enable SMART Reporting | This section contains a toggle switch that allows the user to enable or disable the S.M.A.R.T(Self-Monitoring, Analysis, and Reporting Technology) option on the system (OFF by default). |
| Drive Information | This section provides information about the connected and active drives on the computer. The following options are available here:<br>• SATA-0<br>  ○ Type<br>  ○ Device<br>• M.2 PCIe SSD-0<br>  ○ Type<br>  ○ Device |
| Enable MediaCard | This section allows the user to switch all media cards On/Off, or enable/disable the media card in read-state only. The options seen are as below<br>• Secure Digital(SD) Card - (Enabled by default) |

### Table 6. Storage (continued)

| Options | Description |
|---|---|
| | • Secure Digital(SD) Card Read-Only Mode |

## Connection

This section provides connection details and settings.

### Table 7. Connection

| Options | Description |
|---|---|
| Wireless Device Enable | This section contains a toggle switch that allows the user to enable or disable WLAN and Bluetooth on the computer. The options are as follows:<br>• WLAN (enabled by default)<br>• Bluetooth (enabled by default) |
| Enable UEFI Network Stack | This section contains a toggle switch that allows the user to enable or disable installation of UEFI networking protocols. (ON by default) |
| Wireless Radio Control | This section contains a toggle switch that allows the user to enable or disable a feature where the system will sense a connection to a wired network and disable the WLAN or WWAN connection. (ON by default) |

## Power

This section provides power details and settings.

### Table 8. Power

| Options | Description |
|---|---|
| Battery configuration | This section provides options to enable different power modes on the computer. The options are as follows:<br>• Adaptive - battery settings are adaptively optimized based on the users typical battery usage patterns (selected by default).<br>• Standard - Fully charge the battery at a standard rate.<br>• ExpressCharge - The battery may be charged over a shorter period using Dell's fast charging technology.<br>• Primarily AC use - The battery lifespan for users who primarily operate their system while plugged in to an external power source.<br>• Custom - Custom select when the battery starts and stops charging.<br>  ○ Custom Charge Start<br>  ○ Custom Charge Stop |
| Advanced Configuration | |
| Enable Advanced Battery Charge Configuration | This feature maximizes battery health while still supporting heavy use during the work day. The section contains a toggle switch that allows the user to enable or disable this feature and set the daily times and work time periods (OFF by default). |

### Table 8. Power (continued)

| Options | Description |
|---|---|
| Peak Shift | This feature allows the computer to run on battery during peak usage hours. The section contains a toggle switch that allows the user to enable or disable this feature and set the Peak Shift Start/End times and Peak Shift Charge Start/End (OFF by default). |
| USB PowerShare | This setting contains a toggle witch which allows the user to enable or disable this feature. It allows for any external USB devices to charge via the designated USB PowerShare port, even when the computer is on sleep mode (ON by default). |
| Thermal Management | This setting allows for cooling fan and processor heat management to adjust system performance, noise and temperature. The options available are as below:<br>• Optimized - Standard setting for cooling fan and processor heat management (selected by default).<br>• Cool - Processor and cooling fan speed are adjusted for a cooler system surface temperature.<br>• Quiet - Processor and cooling fan speed are adjusted to reduce fan noise.<br>• Ultra Performance - Processor and cooling fan speed are increased for more performance. |
| USB Wake Support | |
| Enable USB Wake Support | This section contains a toggle switch to allow the user to enable/disable USB Wake Support. It allows the system to use USB devices like a mouse and keyboard to wake the system from standby mode (OFF by default).<br>**NOTE:** This feature only works if the power adapter is connected to the system. |
| Wake on Dell USB-C Dock | This section contains a toggle switch to allow the user to enable/disable the option to wake on USB-C Dock. This feature allows the system to use a Dell USB-C Dock to wake the system from standby mode (ON by default).<br>**NOTE:** This feature only works if the power adapter is connected to the system. |
| Block Sleep | |
| Block Sleep | This section contains a toggle switch to allow the user to enable/disable the system from entering Sleep(S3) mode in the operating system (OFF by default).<br>**NOTE:** When enabled, it will not allow the system to go to sleep, IRST is disabled and power options in the operating system will be blank. |
| LID Switch | |
| Enable Lid Switch | This section contains a toggle switch to allow the user to enable/disable the system from powering on when the lid is open (ON by default). |
| Power On Lid Open | This section contains a toggle switch to allow the user to enable/disable the system from powering on when the lid is open (ON by default). |

### Table 8. Power (continued)

| Options | Description |
|---|---|
| Intel Speed Shift Technology | |
| Intel Speed Shift Technology | This section contains a toggle switch to allow the user to enable/disable Intel Speed Shift Technology support. This feature enables the operating system to select appropriate processor performance automatically (ON by default). |

## Security

This section provides security details and settings.

### Table 9. Security

| Options | Description |
|---|---|
| TPM 2.0 Security | |
| TPM 2.0 Security On | This section contains a toggle switch to select whether Trusted Platform Module(TPM) is visible to the Operating System(OS). (ON by default) |
| PPI Bypass for Enabled Commands | This section contains a toggle switch which controls the TPM Physical Presence Interface(PPI). When enabled, this setting allows the OS to skip BIOS PPI user prompts when issuing TPM PPI enable and activate commands (OFF by default). |
| PPI Bypass for Disabled Commands | This section contains a toggle switch which controls the TPM Physical Presence Interface(PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing TPM PPI disable and deactivate commands(#2, 4, 7, 9, & 11) (OFF by default). |
| PPI Bypass for Clear Commands | This section contains a toggle switch which controls the TPM Physical Presence Interface(PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing the clear command (OFF by default). |
| Attestation Enable | This section contains toggle switch which lets the user control whether the TPM Endorsement Hierarchy is available to the operating system (OFF by default). |
| Key Storage Enable | This section contains a toggle switch that allows the user to control whether TPM Storage Hierarchy is available to the operating system (ON by default). |
| SHA-256 | This section contains a toggle switch that when enabled, allows the BIOS and the TPM to use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot (ON by default). |
| Clear | This section contains toggle switch which clears the TPM owner information, and returns the TPM to the default state (OFF by default). |
| TPM State | This section allows the user to enable or disable the TPM. this is the normal operating state for the TPM when you want to use its complete arrays of capabilities (enabled by default). |
| Intel Software Guard Extension | |

### Table 9. Security (continued)

| Options | Description |
|---|---|
| Intel SGX | This section allows the user to select the Intel Software Guard Extension Enclave Reserve Memory Size. The options are as follows:<br>● Disabled<br>● Enabled<br>● Software Control (selected by default) |
| SMM Security Mitigation | This section allows the user to enable or disable UEFI SMM security Mitigation protections (ON by default). |
| Data Wipe on Next Boot | |
| Start Data Wipe | This section contains toggle switch which when enabled ensures that the BIOS will queue up a data wipe cycle for storage device(s) connected to the motherboard on the next reboot (OFF by default). |
| Absolute | |
| Absolute | This section lets the user enable, disable or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. The options available are as follows:<br>● Enable Absolute - Enables Absolute Persistence and load the firmware Persistence Module (selected by default)<br>● Disable Absolute - Disables Absolute Persistence. The firmware Persistence Module is not installed.<br>● Permanently Disable Absolute - Permanently disables Absolute Persistence module interface from further use. |
| UEFI Boot Path Security | |
| UEFI Boot Path Security | This section lets the user control whether the system will prompt the user to enter the admin password(if set) when booting to a UEFI booth path device from F12 boot menu. The options available are as below:<br>● Never<br>● Always<br>● Always Except Internal HDD (selected by default)<br>● Always Except Internal HDD&PXE |

# Passwords

This section provides details on password settings.

### Table 10. Passwords

| Options | Description |
|---|---|
| Admin Password | This field allows the user to set, change, or delete the administrator password. |
| System Password | This field allows the user to set, change, or delete the system password. |
| Internal HDD-0 Password | This field allows the user to set, change, or delete the Hard Drive password. |
| Password Configurator | |

### Table 10. Passwords (continued)

| Options | Description |
|---|---|
| Upper Case Letter | Enable or disable reinforced use of upper case letters (OFF by default). |
| Lower Case Letter | Enable or disable reinforced use of lower case letters (OFF by default). |
| Digit | Enable or disable reinforced use of at least one digit (OFF by default). |
| Special Character | Enable or disable reinforced use of at least one special character (OFF by default). |
| Minimum Character | Allows the user to select the number of characters allowed for a password (4 is the default value). |
| Password Bypass | |
| Password Bypass | When enabled, this always prompts for system and internal hard drive passwords when powered on from Off state. Options available are as below:<br>• Disabled (selected by default)<br>• Reboot Bypass |
| Password Changes | |
| Enable Non-Admin Password Changes | This section contains a toggle switch which when on, user can change system and hard drive password without the need for admin password (OFF by default). |
| Password Changes | |
| Enable Non-Admin Password Changes | This section contains a toggle switch which when on, user can change system and hard drive password without the need for admin password (OFF by default). |
| Admin Setup Lockout | |
| Enable Admin Setup Lockout | This section contains a toggle switch which allows the administrator to control how users can or cannot access BIOS setup (OFF by default). |
| Active Password Lockout | |
| Enable Active Password Lockout | This section contains a toggle switch which allows the user to disable active password support (OFF by default). |

## Update Recovery

This section provides details on Update Recovery settings.

### Table 11. Update Recovery

| Options | Description |
|---|---|
| UEFI capsule Firmware Updates | |
| Enable UEFI Capsule Firmware Updates | This field contains a toggle switch which allows the user to enable or disable BIOS updates via UEFI capsule update packages (ON by default). |
| BIOS Recovery from Hard Drive | |

### Table 11. Update Recovery (continued)

| Options | Description |
|---|---|
| BIOS Recovery from Hard Drive | This field contains a toggle switch which allows the user to enable or disable recovery from certain corrupted BIOS conditions from a recovery file on the user's primary hard drive or an external USB key (ON by default). |
| BIOS Downgrade | |
| Allow BIOS Downgrade | This field contains a toggle switch which allows the user to enable or disable flashing of the system firmware to previous revisions. |
| SupportAssist OS Recovery | |
| SupportAssist OS Recovery | This field contains a toggle switch which allows the user to enable or disable the boot flow for SupportAssist OS Recovery tool in the events of certain system errors (ON by default). |
| BIOSConnect | |
| BIOSConnect | This field contains a toggle switch which allows the user to enable or disable BIOSConnect setup to attempt cloud Service OS recovery if the main operating system fails to boot with a set number of failures (ON by default). |
| Dell Auto OS Recovery Threshold | |
| Dell Auto OS Recovery Threshold | This field allows the user to select and number of failed boot attempts by the system before SupportAssist OS Recovery is triggered. The options here are as below:<br>• Off<br>• 1<br>• 2 (selected by default)<br>• 3 |

## System Management

This section provides System Management settings.

### Table 12. System Management

| Options | Description |
|---|---|
| Service Tag | |
| Service Tag | This field provides the unique Service Tag of the computer. |
| Asset Tag | |
| Asset Tag | This field provides the asset tag which is a unique and up to 64-character identification that can be set by the IT administrator. |
| AC Behaviour | |
| Wake on AC | This field contains a toggle switch which allows the user to enable or disable the feature where the system boots when charger is detected (OFF by default). |
| Wake on LAN | |

### Table 12. System Management (continued)

| Options | Description |
|---|---|
| Wake on LAN | This field allows the user to select if and how the system should boot when connected to LAN. The options here are as follows:<br>● Disabled - The system will not boot with any special LAN signals (selected by default).<br>● LAN only - Allows the system to be powered on by a special LAN signal from a network computer.<br>● LAN with PXE Boot - Allows the system to wake-up from S4 or S5 state and boot to PXE. |
| Auto On Time | |
| Auto On Time | This field allows the user to set defined days/time when the sytem can automatically power on. The options here are as follows:<br>● Disabled (selected by default)<br>● Everyday<br>● Weekdays<br>● Select Days |

# Keyboard

This section provides keyboard settings.

### Table 13. Keyboard

| Options | Description |
|---|---|
| Numlock Enable | |
| Enable Numlock | This field contains a toggle switch to enable or disable Numlock function on boot (ON by default). |
| Fn Lock Options | |
| Fn Lock Options | This field contains a toggle switch to change the mode of the function keys (ON by default). The options are as follows:<br>● Lock Mode Standard - Traditional F1-F12 functions<br>● Lock Mode Secondary - Enables secondary functions on the Fn keys (selected by default) |
| Keyboard Illumination | |
| Keyboard Illumination | This field allows the user to set the keyboard illumination settings. The options available are as follows:<br>● Disabled - The keyboard illumination will be off<br>● Dim - Enable the keyboard illumination feature at 50% brightness level<br>● Bright - Enable the keyboard illumination feature at 100% brightness level (selected by default) |
| Keyboard Backlight Timeout on AC | |
| Keyboard Backlight Timeout on AC | This field allows the user to define the timeout value for the backlight when the AC adapter is connected to the computer. The options here are as follows:<br>● 5 seconds<br>● 10 seconds (selected by default) |

### Table 13. Keyboard (continued)

| Options | Description |
|---|---|
| | • 15 seconds<br>• 30 seconds<br>• 1 minute<br>• 5 minutes<br>• 15 minutes<br>• Never |
| Keyboard Backlight Timeout on Battery | |
| Keyboard Backlight Timeout on Battery | This field allows the user to define the timeout value for the backlight when the battery is powering to the computer. The options here are as follows:<br>• 5 seconds<br>• 10 seconds (selected by default)<br>• 15 seconds<br>• 30 seconds<br>• 1 minute<br>• 5 minutes<br>• 15 minutes<br>• Never |

## Pre-boot Behavior

This section provides Pre-boot Behavior details and settings.

### Table 14. Pre-boot Behavior

| Options | Description |
|---|---|
| Adapter Warnings | |
| Enable Adapter Warnings | This field contains a toggle switch to enable or disable warning messages during boot when adapters with low power capacity are detected (enabled by default). |
| Warning and Errors | |
| Warning and Errors | This field allows the user to enable or disable boot process to be paused only when warnings or errors are detected. The options are as follows:<br>• Prompt on Warnings and Errors - Stop, prompt and wait for user input when warnings or errors are detected (selected by default)<br>• Continue on Warnings - Continue when warnings are detected but pause on errors<br>• Continue on Warnings and Errors - Continue when either warnings or errors are detected during POST |
| USB-C Warnings | |
| Enable Dock Warning Messages | This field contains a toggle switch to enable or disable dock warning messages (enabled by default). |
| Fastboot | |
| Fastboot | This field allows the user to configure the speed of the UEFI boot process. The options here are as follows: |

### Table 14. Pre-boot Behavior (continued)

| Options | Description |
|---|---|
| | • Minimal - reduces boot time by skipping certain hardware and configuration initialization during boot (selected by default)<br>• Thorough - Performs complete hardware and configuration initialization during boot<br>• Auto - Allows the BIOS to decide configuration initialization performed during boot |
| Extend BIOS POST Time | |
| Extend BIOS POST Time | This field allows the user to configure the BIOS POST load time. The options are as follows:<br>• 0 seconds (selected by default)<br>• 5 seconds<br>• 10 seconds |
| MAC Address Pass-Through | |
| MAC Address Pass-Through | This field allows the user to configure the MAC address pass-through replacing the external NIC MAC address.:<br>• System Unique MAC Address (selected by default)<br>• Integrated NIC 1 MAC Address<br>• Disabled |

## Virtualization

This section provides details on Virtualization settings.

### Table 15. Virtualization

| Options | Description |
|---|---|
| Intel Virtualization Technology | |
| Enable Intel Virtualization Technology(VT) | This field contains a toggle switch to enable or disable Virtualization to run Virtual machine monitor(VMM) (enabled by default). |
| VT for Direct I/O | |
| Enable Intel VT for Direct I/O | This field allows the user to enable or disable the system from being able to perform VT for Direct I/O (enabled by default). |
| Intel Trusted Execution Technology(TXT) | |
| Enable Intel Trusted Execution Technology(TXT) | This field contains a toggle switch to enable or disable the option to allow a Measured VMM to utilize the additional hardware capabilities provided by Intel TXT (OFF by default). The following must be enabled to configure Intel TXT:<br>• Trusted Platform Module(TPM)<br>• Intel Hyper-Threading<br>• All CPU cores(Multi-Core Support)<br>• Intel Virtualization technology<br>• Intel VT for Direct I/O |

# Performance

This section provides Performance settings.

### Table 16. Performance

| Options | Description |
|---|---|
| Multi-Core Support | |
| Active Cores | This field allows the user to configure the number of active cores on the computer. The options are as follows:<br>● All Cores (selected by default)<br>● 1<br>● 2<br>● 3 |
| Intel SpeedStep | |
| Enable Intel SpeedStep Technology | This field contains a toggle switch to enable or disable Intel SpeedStep Technology which allows the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production (enabled by default). |
| C-States Control | |
| Enable C-States Control | This field contains a toggle switch to enable or disable C-States Control that configures the CPU's ability to enter and exit low power states. When off, it disables all C-States (enabled by default). |
| Intel Turbo Boost Technology | |
| Enable Intel Turbo Boost Technology | This field allows the user to enable or disable Intel Turbo Boost Technology (enabled by default).<br>● Disabled - Does not allow the Intel Turbo Boost Technology driver to increase the performance state of the processor above the standard performance.<br>● Enabled - Allows the Intel Turbo Boost Technology to increase the performance of the CPU or graphics processor. |
| Intel Hyper-Threading Technology | |
| Enable Intel Hyper-Threading Technology | This field allows the user to configure this feature where the processor resources are used more effectively, enabling multiple threads to run on each core (enabled by default). |

# System Logs

This section contains BIOS, Thermal and Power event logs.

### Table 17. System Logs

| Options | Description |
|---|---|
| BIOS Event Log | |
| Clear BIOS Event log | This field contains a toggle switch to Keep or Clear BIOS Event logs. It also lists all saved events(Date, Time, Message) - ("Keep" selected by default). |
| Thermal Event Log | |

**Table 17. System Logs (continued)**

| Options | Description |
|---|---|
| Clear Thermal Event Log | This field contains a toggle switch to Keep or Clear Thermal Event logs. It also lists all saved events(Date, Time, Message) - ("Keep" selected by default). |
| Power Event Log | |
| Clear Power Event Log | This field contains a toggle switch to Keep or Clear Power Event logs. It also lists all saved events(Date, Time, Message) - ("Keep" selected by default). |

# 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 18. System and setup password**

| Password type | Description |
|---|---|
| System password | Password that you must enter to log in 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 that is 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 F2 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.
   - The password can contain the numbers 0 through 9.
   - Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press **Esc** and a message prompts you to save the changes.
5. Press **Y** to save the changes.
   The computer reboots.

## Deleting or changing an existing system setup password

### Prerequisites

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

### 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 **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**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

   **NOTE:** If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

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

**NOTE:** For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

# 5

# Troubleshooting

**Topics:**


- Handling swollen Lithium-ion batteries
- Dell SupportAssist Pre-boot System Performance Check diagnostics
- System-diagnostic lights
- Recovering the operating system
- Real-Time Clock (RTC Reset)
- Updating the BIOS in Windows
- Updating the BIOS using the USB drive in Windows
- Backup media and recovery options
- WiFi power cycle
- Drain residual flea power (perform hard reset)


## 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 SupportAssist Pre-boot System Performance Check diagnostics

**About this task**

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

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

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

For more information, see https://www.dell.com/support/kbdoc/000180971.

## Running the SupportAssist Pre-Boot System Performance Check

**Steps**

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

# System-diagnostic lights

**Power and battery-status light**

The power and battery status light indicates the power and battery status of the computer. These are the power states:

**Solid white:**Power adapter is connected and the battery has more than 5% charge.

**Amber:**Computer is running on battery and the battery has less than 5% charge.

**Off:**

- Power adapter is connected, and the battery is fully charged.
- Computer is running on battery, and the battery has more than 5% charge.
- Computer is in sleep state, hibernation, or turned off.

The power and battery-status light may blink amber or white according to pre-defined "beep codes" indicating various failures.

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

The following table shows different power and battery-status light patterns and associated problems.

**NOTE:** The following diagnostic light codes and recommended solutions are intended for Dell service technicians to troubleshoot problems. You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

### Table 19. Diagnostic-light LED codes

| Diagnostic light codes (Amber,White) | Problem description |
|---|---|
| **2,1** | Processor failure |
| **2,2** | System board: BIOS or ROM (Read-Only Memory) failure |
| **2,3** | No memory or RAM (Random-Access Memory) detected |
| **2,4** | Memory or RAM (Random-Access Memory) failure |
| **2,5** | Invalid memory installed |
| **2,6** | System-board or chipset error |
| **2,7** | Display failure - SBIOS message |
| **3,1** | Coin-cell battery failure |
| **3,2** | PCI, video card/chip failure |
| **3,3** | Recovery image not found |
| **3,4** | Recovery image found but invalid |
| **3,5** | Power-rail failure |
| **3,6** | System BIOS Flash incomplete |
| **3,7** | Management Engine (ME) error |

# 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 10 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/support.

# Real-Time Clock (RTC Reset)

The Real Time Clock (RTC) reset function allows you or the service technician to recover Dell Latitude systems from No POST/No Power/No Boot situations. The legacy jumper enabled RTC reset has been retired on these models.

Start the RTC reset with the system powered off and connected to AC power. Press and hold the power button for thirty (30) seconds. The system RTC Reset occurs after you release the power button.

# Updating the BIOS in Windows

**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 using the USB drive in Windows

**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.

# 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.

# 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:

**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.

**NOTE:** For more information about performing a hard reset, see the knowledge base article SLN85632 at www.dell.com/support.

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# Getting help and contacting Dell

## Self-help resources

You can get information and help on Dell products and services using these self-help resources:

**Table 20. Self-help resources**

| Self-help resources | Resource location |
|---|---|
| Information about Dell products and services | www.dell.com |
| My Dell app | |
| Tips | |
| Contact Support | In Windows search, type `Contact Support`, and press Enter. |
| Online help for operating system | www.dell.com/support/windows |
| Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents. | Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support.<br>For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer. |
| Dell knowledge base articles for a variety of computer concerns | 1. Go to www.dell.com/support.<br>2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**.<br>3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles. |

## Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

**NOTE:** Availability varies by country/region and product, and some services may not be available in your country/region.

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