Dell Latitude 5411

Service Manual

Regulatory Model: P98G
Regulatory Type: P98G008

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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Contents

1

Working on your computer

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

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.

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

Before working inside your computer

About this task

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

Steps

1. Ensure that you follow the Safety Instruction.
2. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
3. Turn off your computer.
4. Disconnect all network cables from the computer.

   CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
5. Disconnect your computer and all attached devices from their electrical outlets.

6. Press and hold the power button while the computer is unplugged to ground the system board.

NOTE: 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.

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 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 15 seconds should discharge residual power in the system board.

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

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

Steps

1. Connect any telephone or network cables to your computer.

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

2. Connect your computer and all attached devices to their electrical outlets.
3. Turn on your computer.
4. If required, verify that the computer works correctly by running **ePSA diagnostics**.

2

Disassembly and reassembly

Recommended tools

The procedures in this document require the following tools:

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

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

Screw List

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

Table 1. Screw Size List

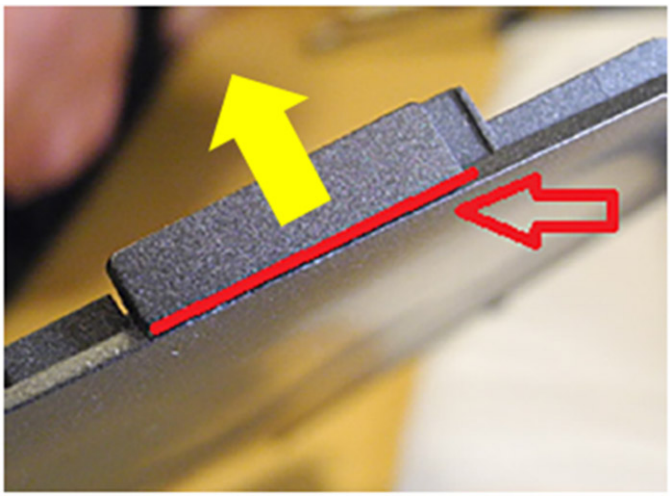
Component	Screw type	Quantity	Image
Base cover	M2.5x6 (captive screws) M2.5X8 (captive screws) **NOTE: Screws are part of the base cover.**	5 3	
Battery	M2x6 (captive screw)	1	
WLAN	M2x3	1	
WWAN	M2x3	1	
DC-In	M2x5	2	
SSD	M2x3	1	
HDD assembly	M3x3	4	
HDD bracket	M2X2.7	4	
Inner frame	M2x5 M2x3	6 6	
Smart card reader	M2x3	3	

Component	Screw type	Quantity	Image
Touchpad button board	M2x3	2	
LED board	M2x3	1	
Heatsink - UMA Heatsink - Discrete	M2x3 M2x3	4 screws holding heatsink assembly to the system board, 2 screws holding fan assembly to the system board, 1 screw holding fan to the heatsink. 6 screws holding heatsink assembly to the system board, 2 screws holding fan assy to the system board, 1 screw holding fan to the heatsink.	
System board	M2x3	2	
Keyboard	M2x2.5	18	
Keyboard support bracket	M2x2	6	
Power button with fingerprint reader	M2x2	2	
Display assembly	· M2x3 · M2.5x5	· 2 · 4	
Display panel	M2.5x3	2	
Hinge caps	M2x3	2	
Display Hinges	M2.5x3	4	

SIM cover

For models shipped without the WWAN card and antennae:

1. Remove the base cover from the system.
2. The recess point is the area between the dummy card and system chassis.



3. Pry upwards from the recess point to release the SIM dummy card.

Base cover

Removing the base cover

Prerequisites

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

NOTE: Remove the SIM cover

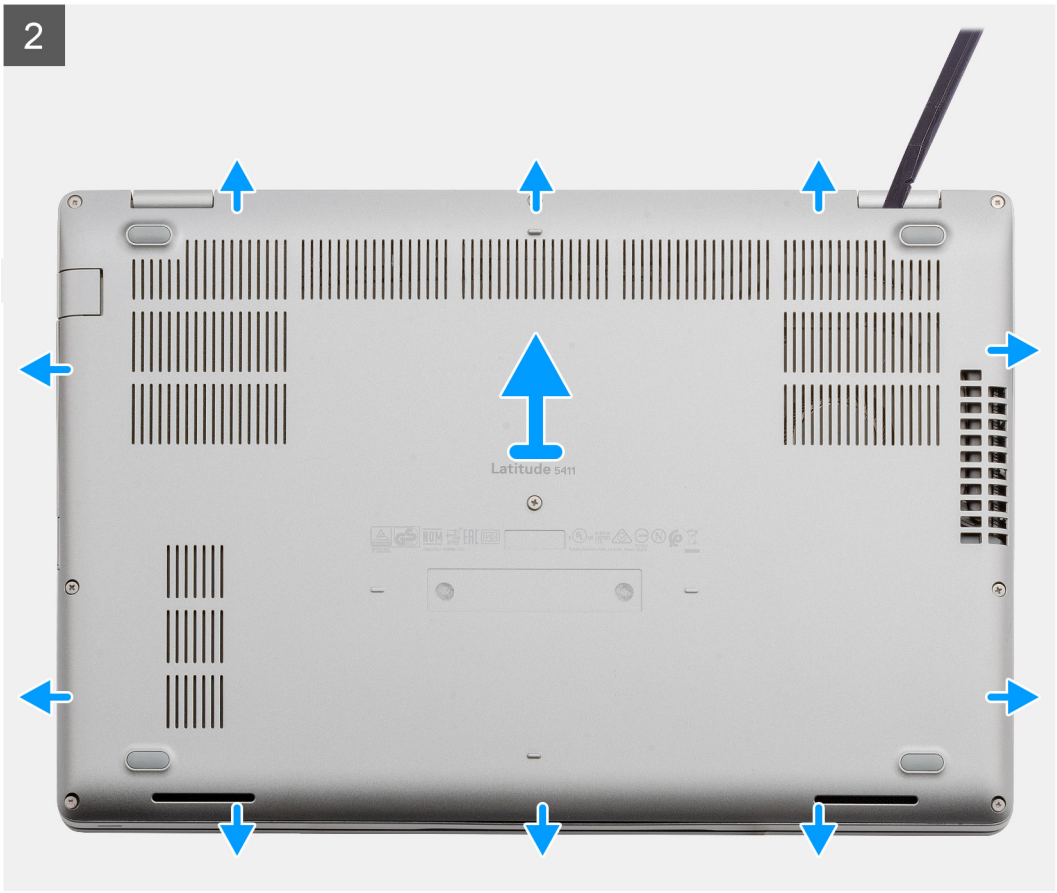
About this task

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

5x
M2.5x6

3x
M2.5x8

1



Steps

1. Remove the five (M2.5x6) and three (M2.5x8) captive screws that secure the base cover to the computer.
2. Pry the base cover starting from the right hinge and work your way around.
3. Lift the base cover away from the computer.

Installing the base cover

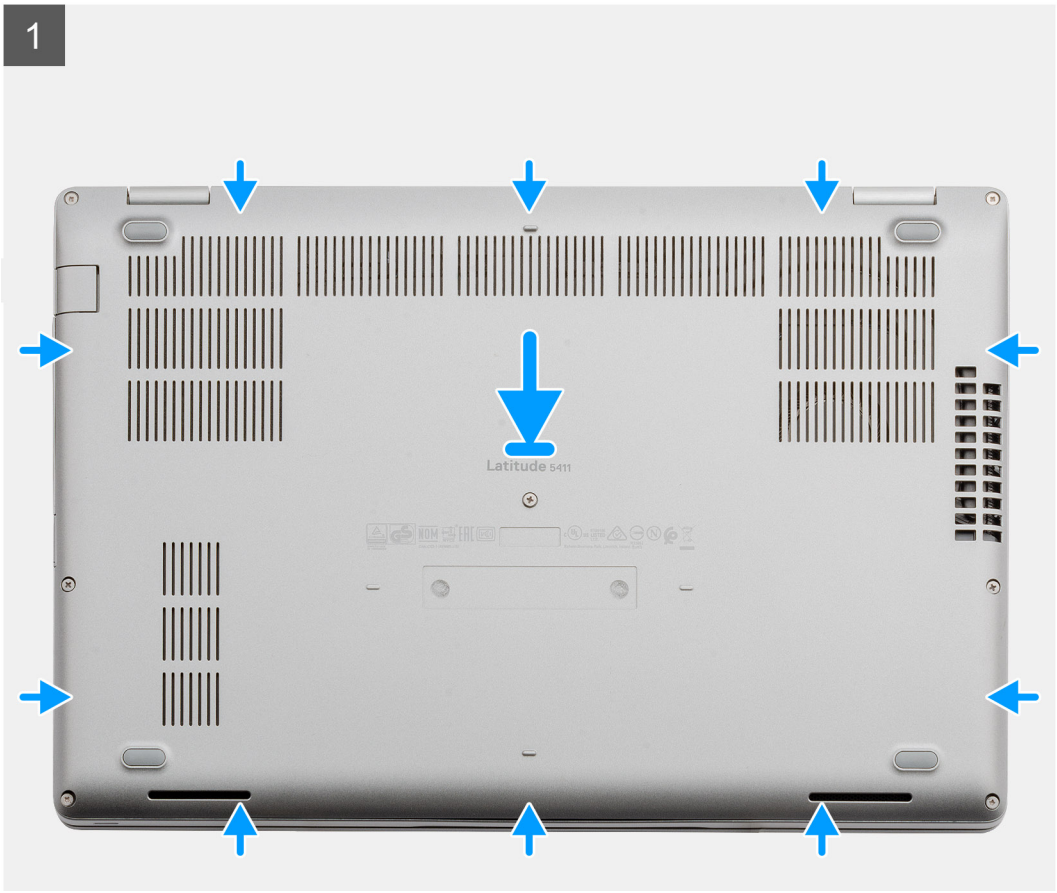
Prerequisites

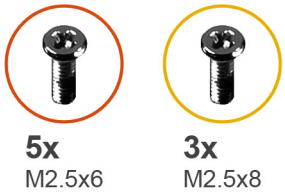
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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

1





Steps

1. Place the base cover on the palmrest and keyboard assembly, and snap the base cover into place.
2. Install the five (M2.5x6) and three (M2.5x8) captive screws to secure the base cover to the computer.

Next steps

1. 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 as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.**
- **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.**

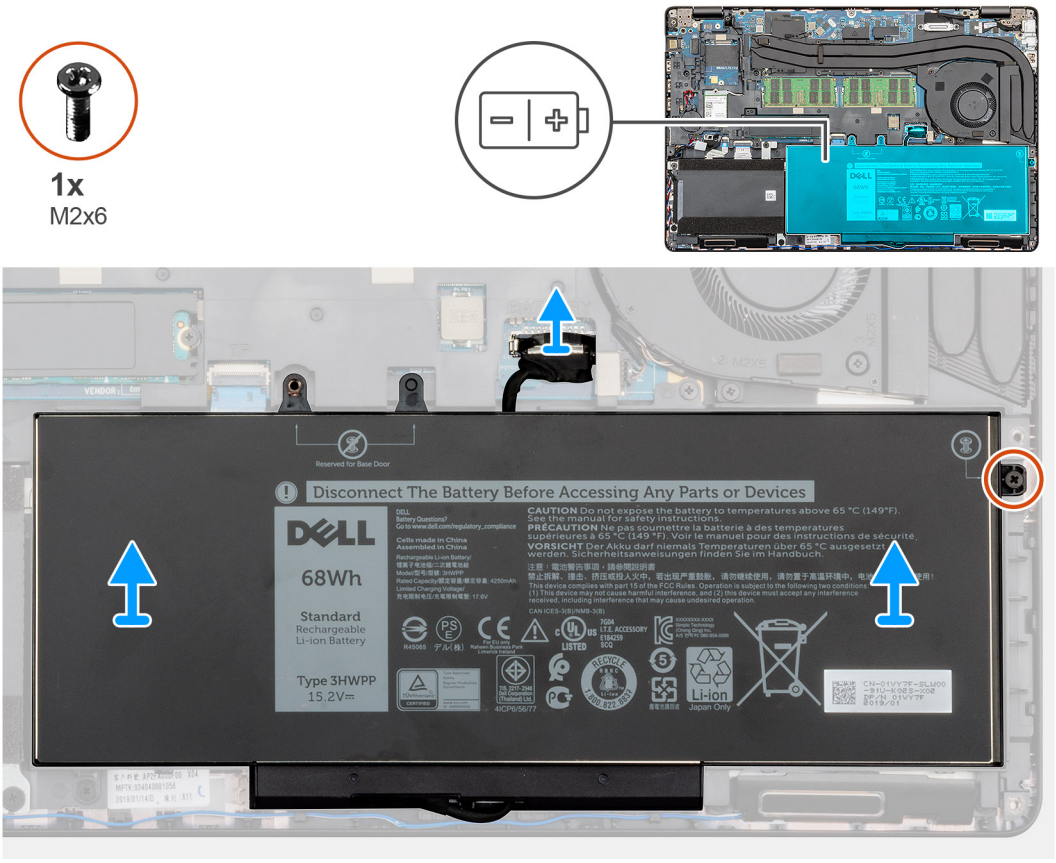
Removing the battery

Prerequisites

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

About this task

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



Steps

1. Disconnect the battery cable from the system board.
2. Remove the single (M2x6) captive screw that secures the battery to the palmrest.
3. Lift the battery away from the computer.

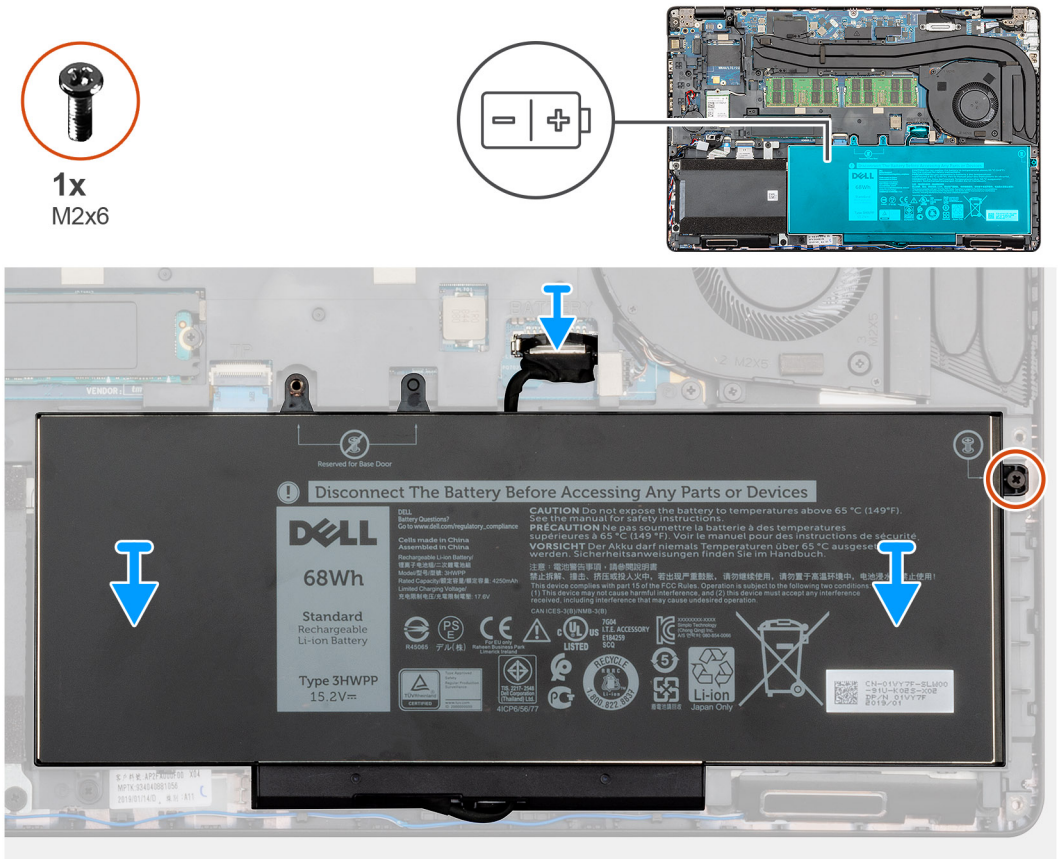
Installing the battery

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. Place the battery on the palmrest and align the screw holes on the battery with the screw holes on the palmrest.
2. Install the single (M2x6) captive screw to secure the battery to the palmrest.
3. Connect the battery cable to the connector on the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

WLAN card

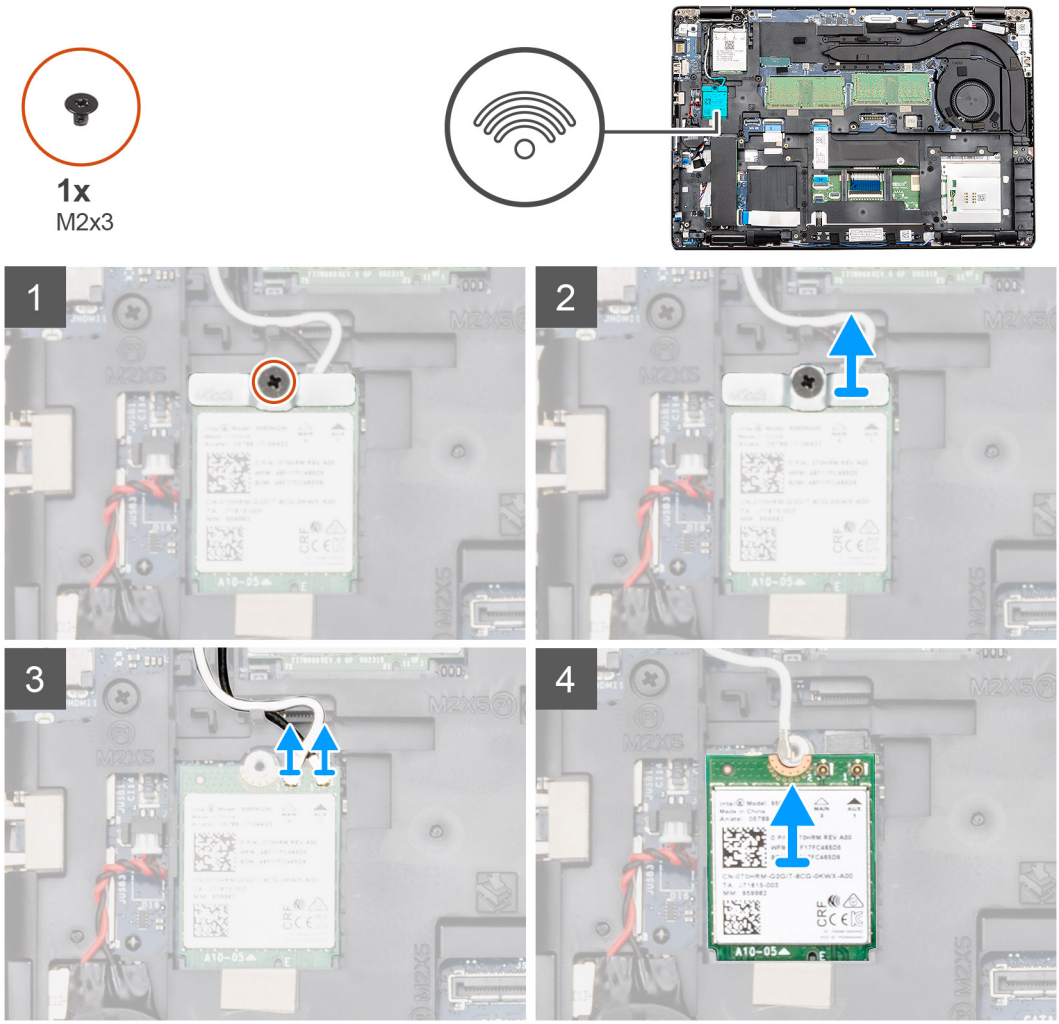
Removing the WLAN card

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. 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 WLAN bracket to the computer.
2. Remove the WLAN bracket from the computer.
3. Disconnect the WLAN antenna cables from the WLAN module.
4. Remove the WLAN card out of the computer.

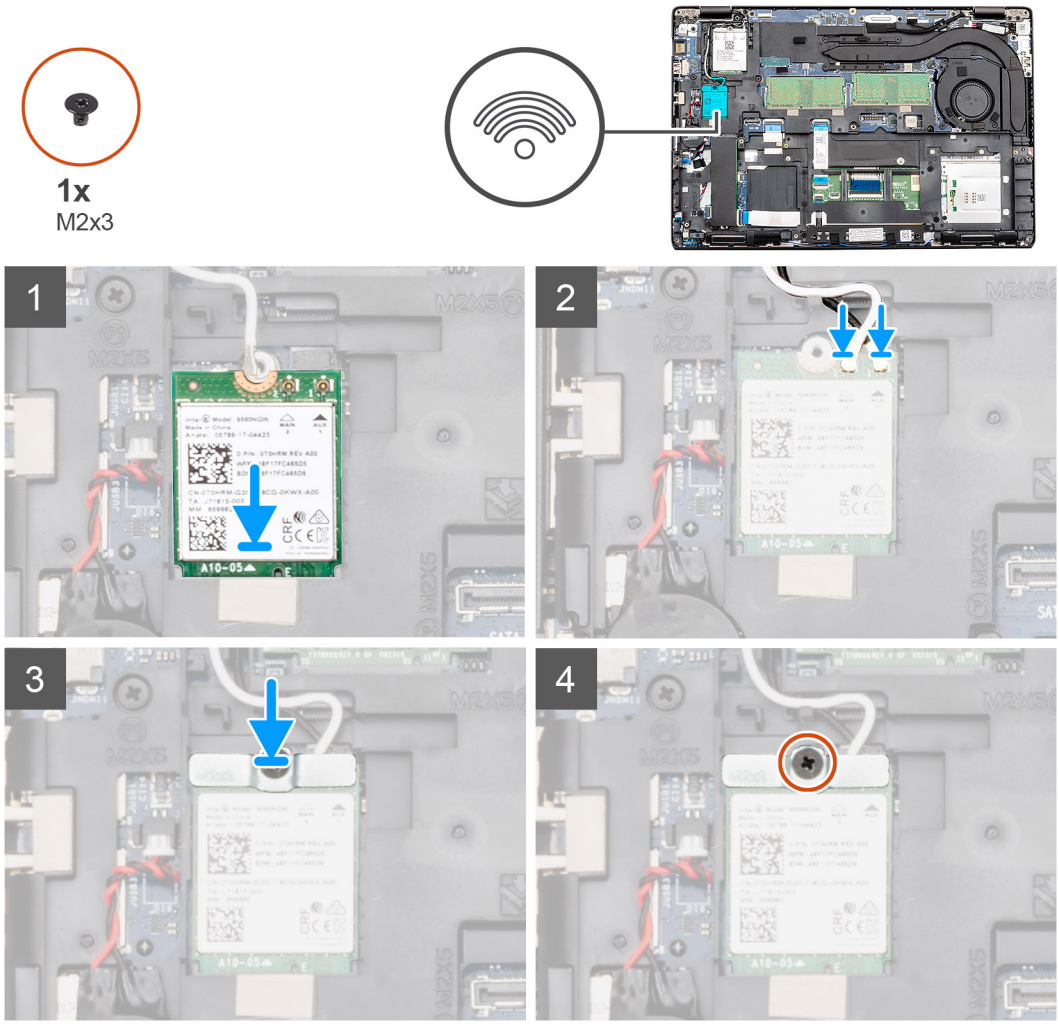
Installing the WLAN card

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. Locate the WLAN card slot on your computer.
2. Slide the WLAN card into the slot on the system board.
3. Connect the WLAN antenna cables to the WLAN module.
4. Place the WLAN card bracket on the WLAN card and replace the single (M2x3) screw to secure the bracket to the computer.

Next steps

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

WWAN card

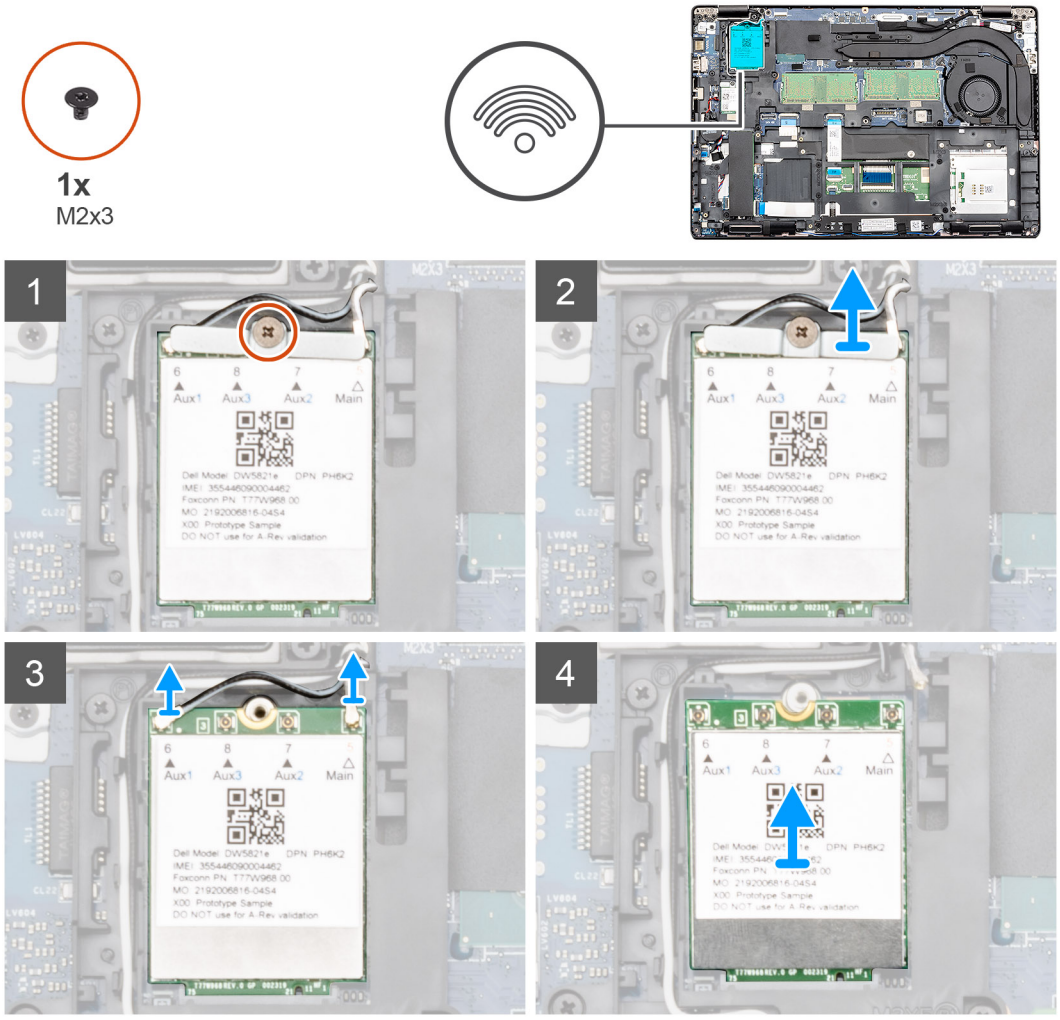
Removing the WWAN card

Prerequisites

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

About this task

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



Steps

1. Remove the single (M2x3) screw that secures the WWAN card bracket to the computer.
2. Remove the WWAN card bracket from the computer.
3. Disconnect the WWAN antenna cables from the WWAN module.
4. Remove the WWAN card out of the computer.

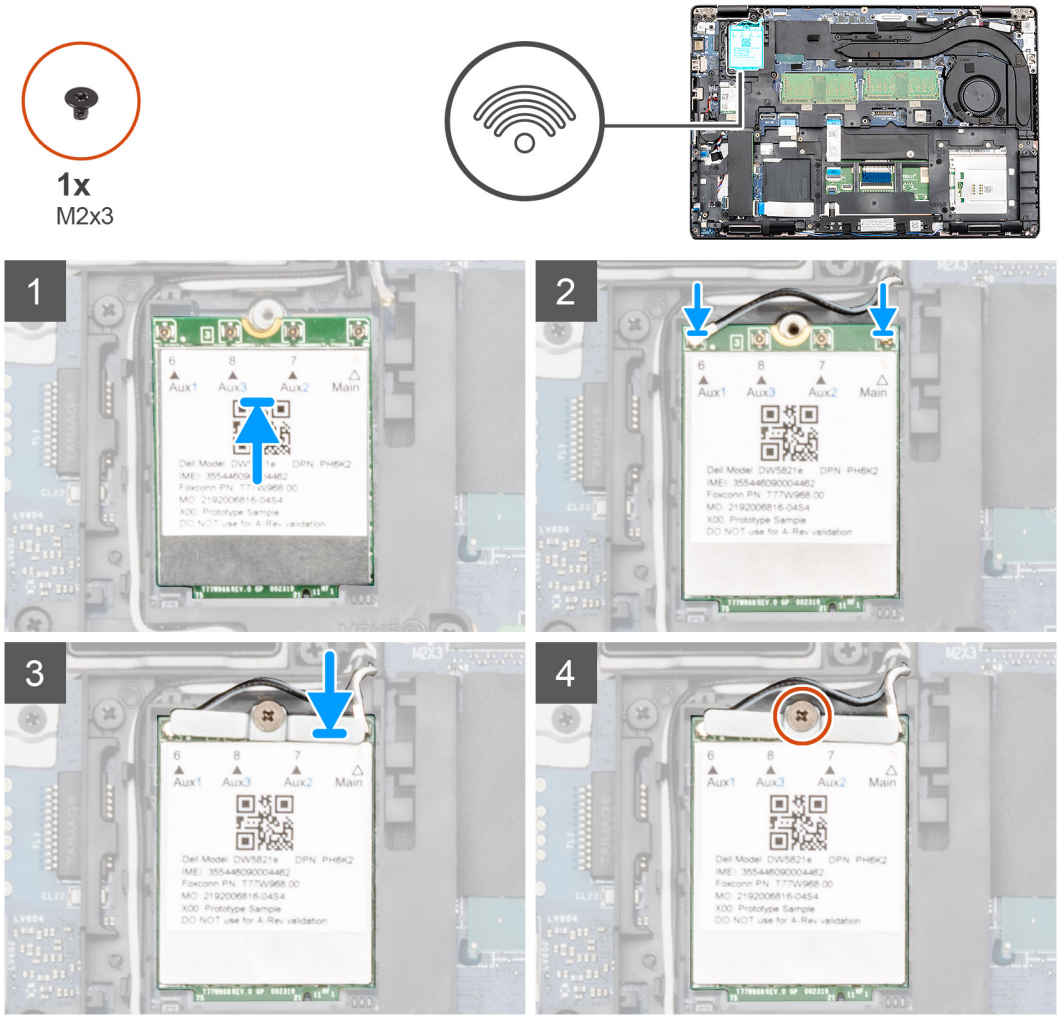
Installing the WWAN card

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. Locate the WWAN card slot on your computer.
2. Slide the WWAN card into the slot on the system board.
3. Connect the WWAN antenna cables to the WWAN module.
4. Place the WWAN card bracket on the WWAN card and replace the single (M2x3) screw to secure the bracket to the computer.

Next steps

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

Memory modules

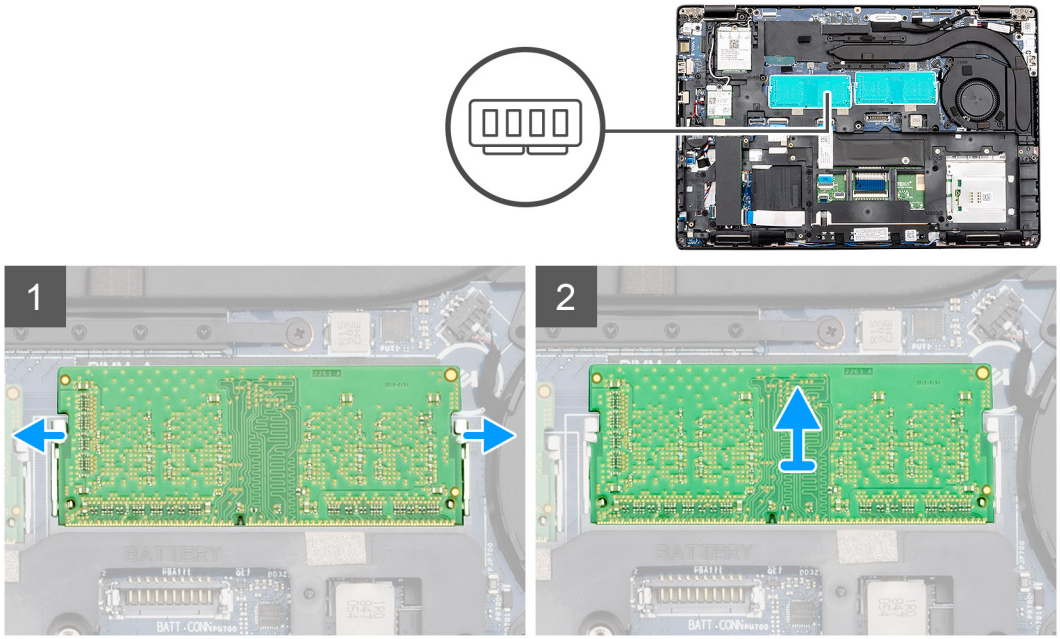
Removing the memory module

Prerequisites

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

About this task

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



Steps

1. Using your finger tips gently pry the retention clips away from the memory module until the memory module pops up.
2. Slide and remove the memory module from the memory module slot on the system board.

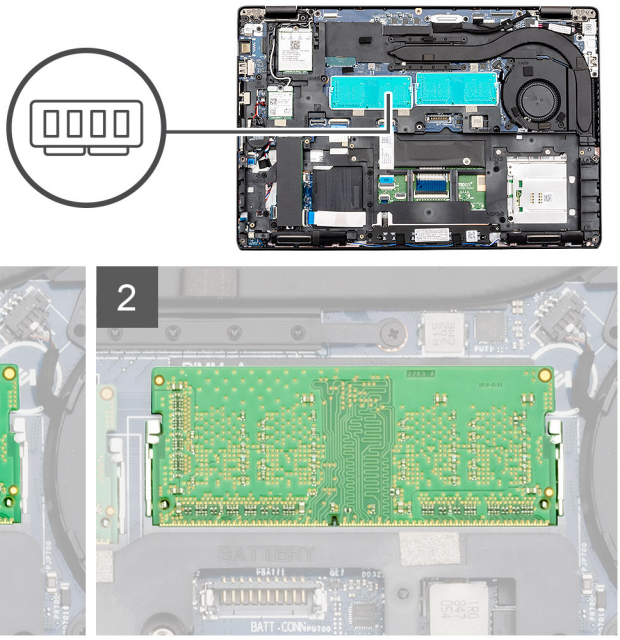
Installing the memory module

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. Align the notch on the memory module with the tab on the memory module slot.
2. Slide the memory module firmly into the slot at an angle.
3. 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. Follow the procedure in After working inside your computer.

Solid-state drive

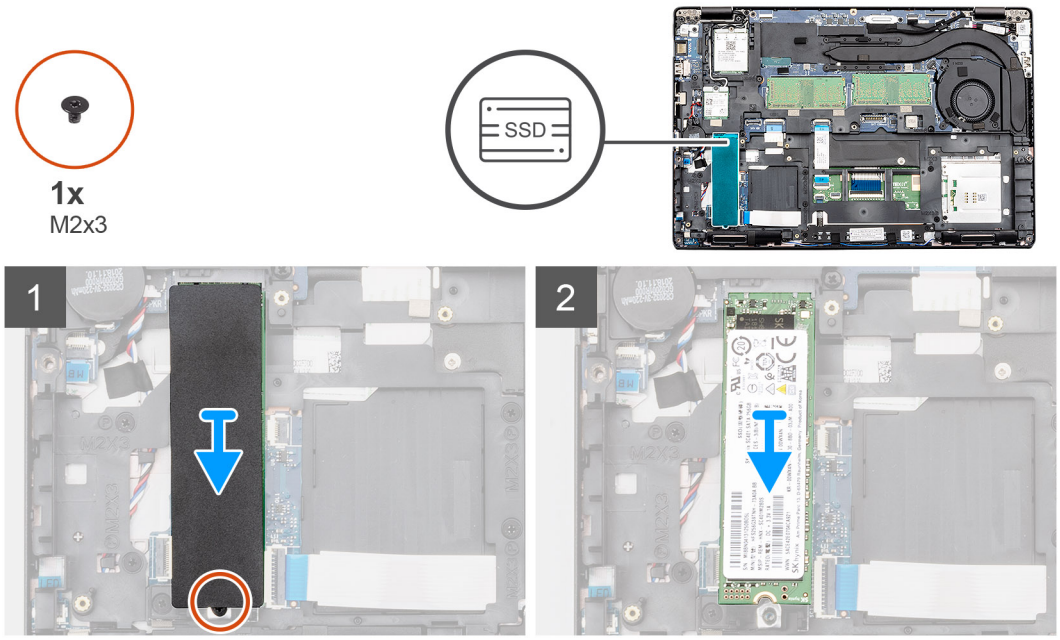
Removing the M.2 2280 SATA SSD

Prerequisites

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

About this task

The figure indicates the location of the SATA M.2 2280 SSD and provides a visual representation of the removal procedure.



Steps

1. Locate the SSD on your computer.
2. Remove the thermal tape from the SSD module.
3. Remove the single (M2x3) screw that secure the SSD module to the computer.
4. Slide the SSD module out from the computer.

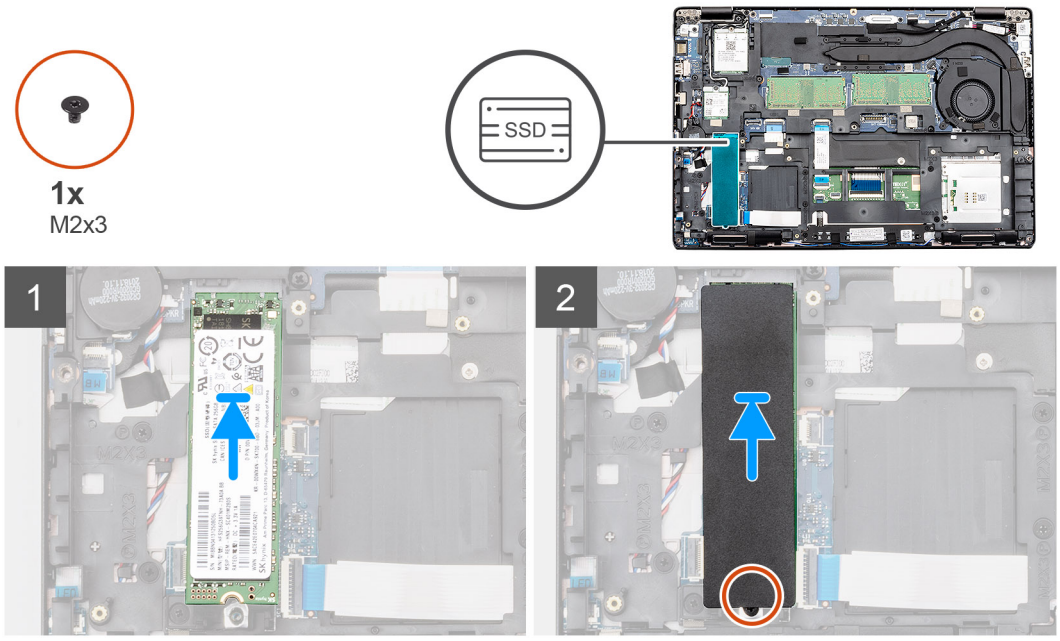
Installing the SATA M.2 2280 SSD

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 SATA M.2 2280 SSD and provides a visual representation of the installation procedure.



Steps

1. Locate the SSD slot on your computer.
2. Slide the SSD into the slot.
3. Place the SSD thermal tape over the SSD module.
4. Replace the single (M2x3) screw to secure the SSD module to the computer.

Next steps

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

Inner frame

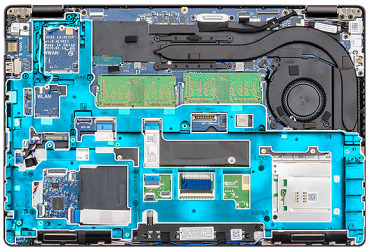
Removing the inner frame

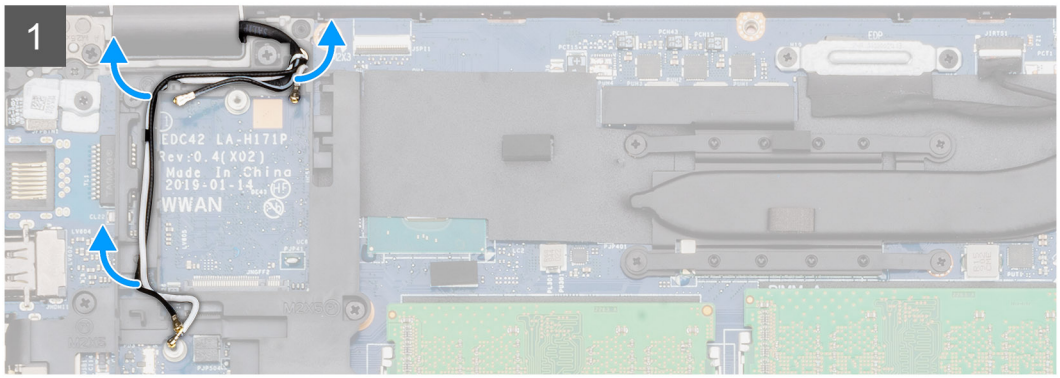
Prerequisites

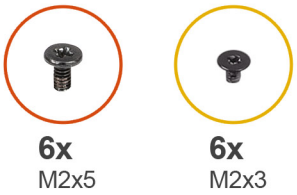
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the WLAN card.
6. Remove the WWAN card.

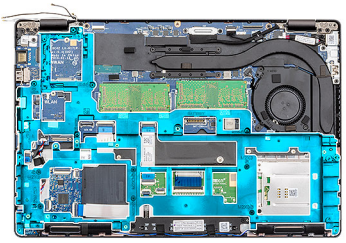
About this task

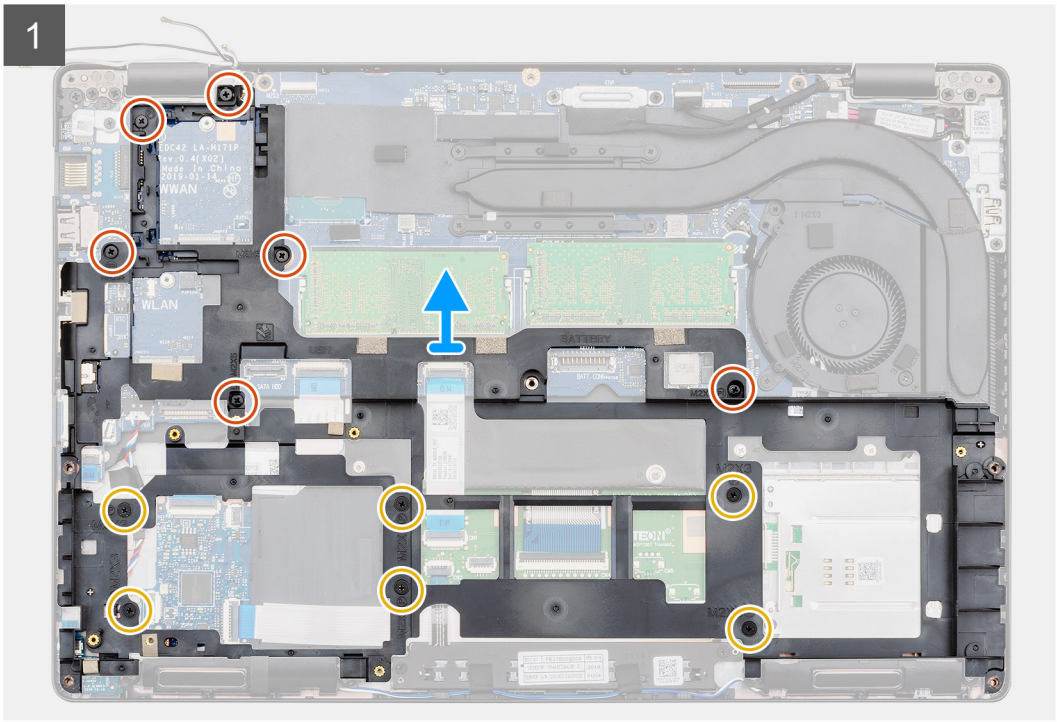
The figure indicates the location of the inner frame and provides a visual representation of the removal procedure.











Steps

1. Unroute the WWAN and WLAN antenna cables from the routing clips.
2. Peel the coin-cell battery from the inner frame.
3. Remove the six (M2x5) and six (M2x3) screws that secure the inner frame to the computer.
4. Lift the inner frame out of the computer.

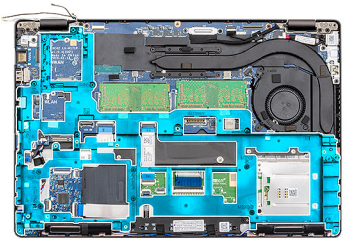
Installing the inner frame

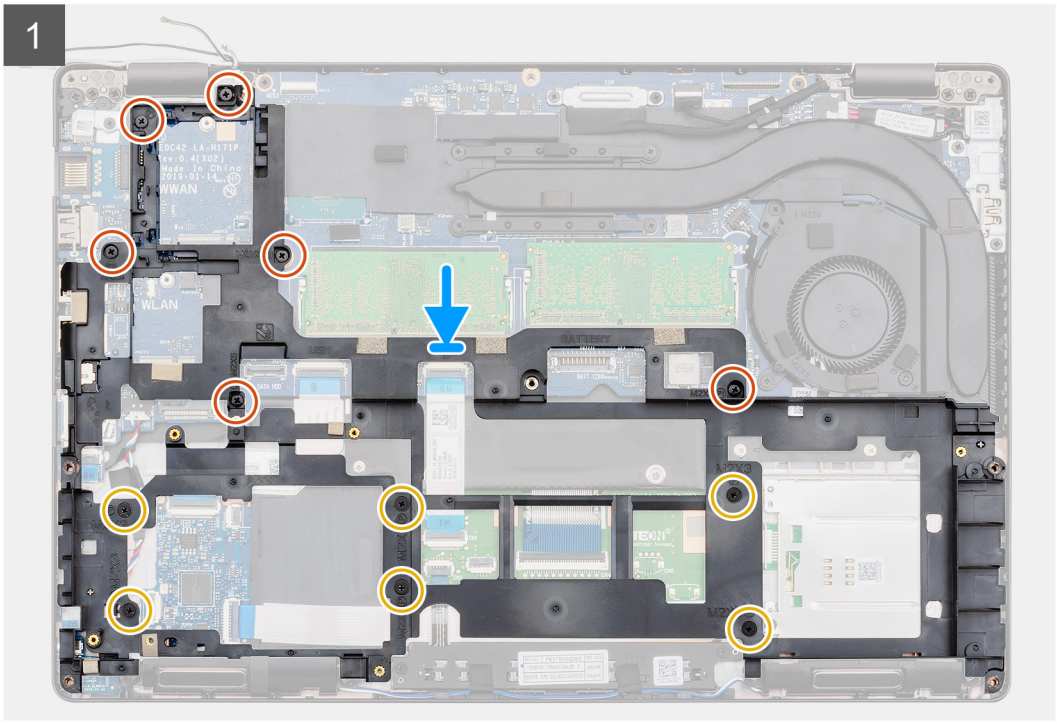
Prerequisites

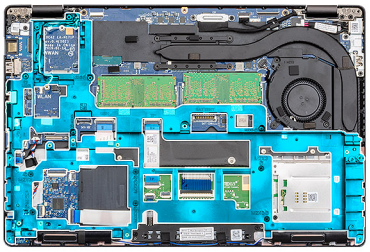
If you are replacing a component, remove the existing component before performing the installation procedure.

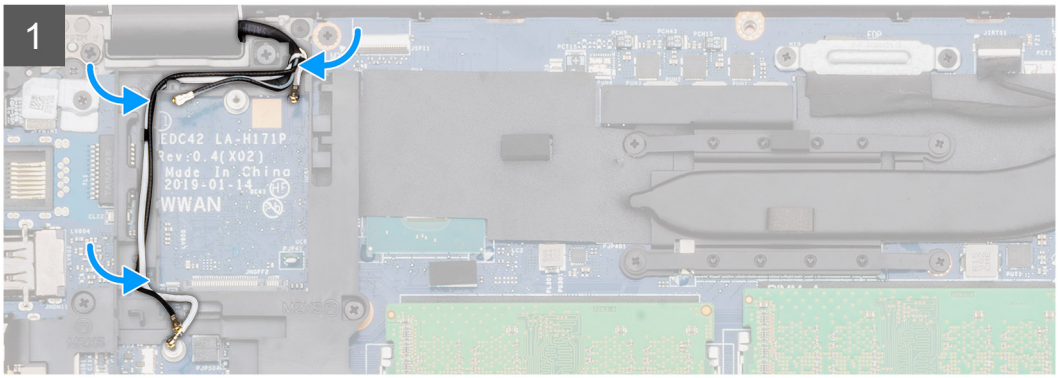
About this task

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









Steps

1. Align and place the inner frame into the slot on your computer.
2. Replace the six (M2x5) and six (M2x3) screws to secure the inner frame to the computer.
3. Route the WWAN and WLAN antenna cables through the retention clips on the frame.

4. Adhere the coin-cell battery to the inner frame.

Next steps

1. Install the WLAN card.
2. Install the WWAN card.
3. Install the 2280 SATA SSD.
4. Install the battery.
5. Install the base cover.
6. Follow the procedure in After working inside your computer.

Hard disk drive

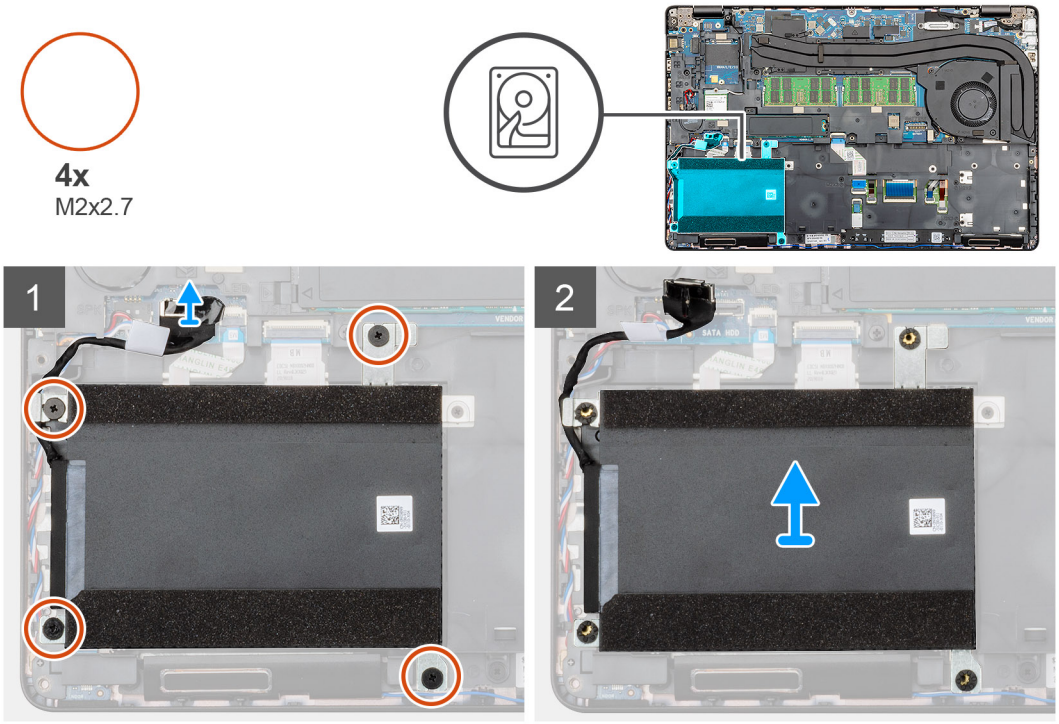
Removing the Hard drive

Prerequisites

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

About this task

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



Steps

1. Locate the HDD on your computer.
2. Disconnect the HDD cable from the system board.
3. Remove the four (M2x2.7) screws that secure the HDD to the system board.
4. Remove the HDD from the computer.

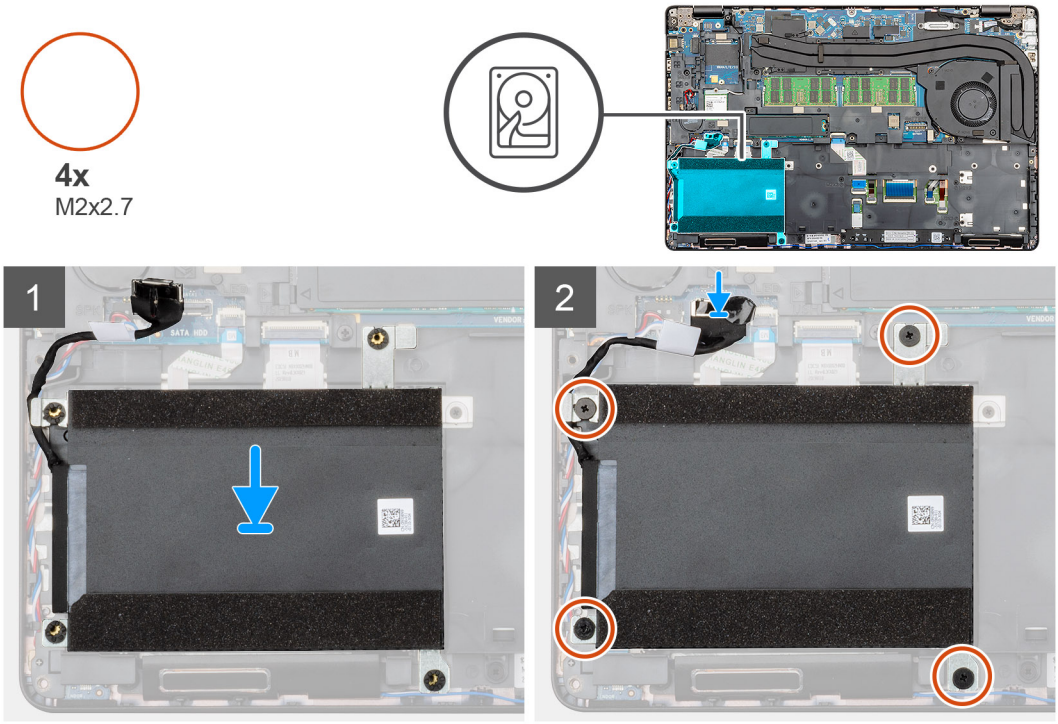
Installing the Hard drive

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 HDD and provides a visual representation of the installation procedure.



Steps

1. Locate the system board slot on your computer.
2. Align and install the HDD into the computer
3. Install the four (M2x2.7) screws that secure the HDD to the computer.
4. Connect the HDD cable on to the connector on the system board.

Next steps

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

Heatsink assembly—UMA

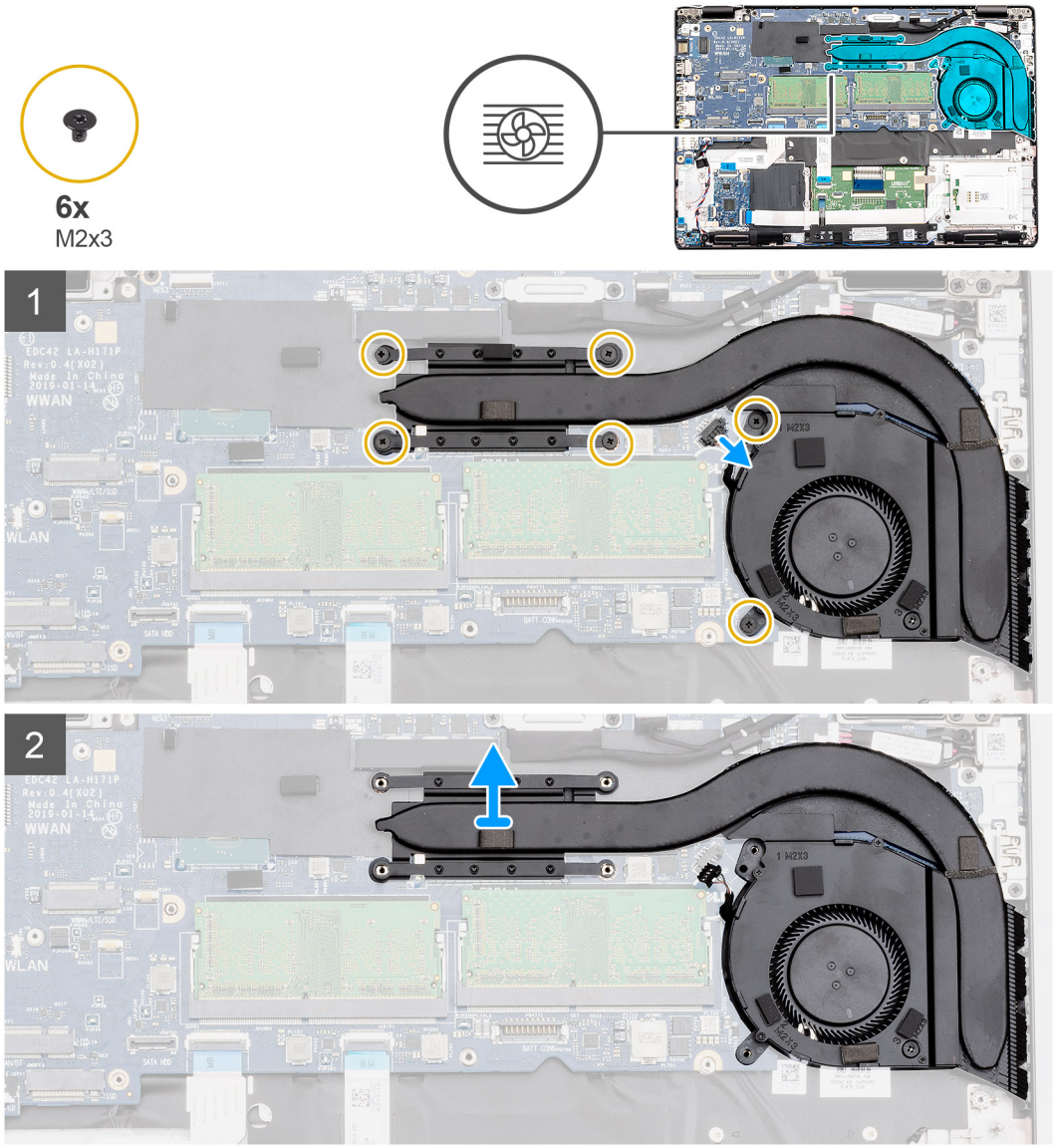
Removing the heatsink assembly-UMA

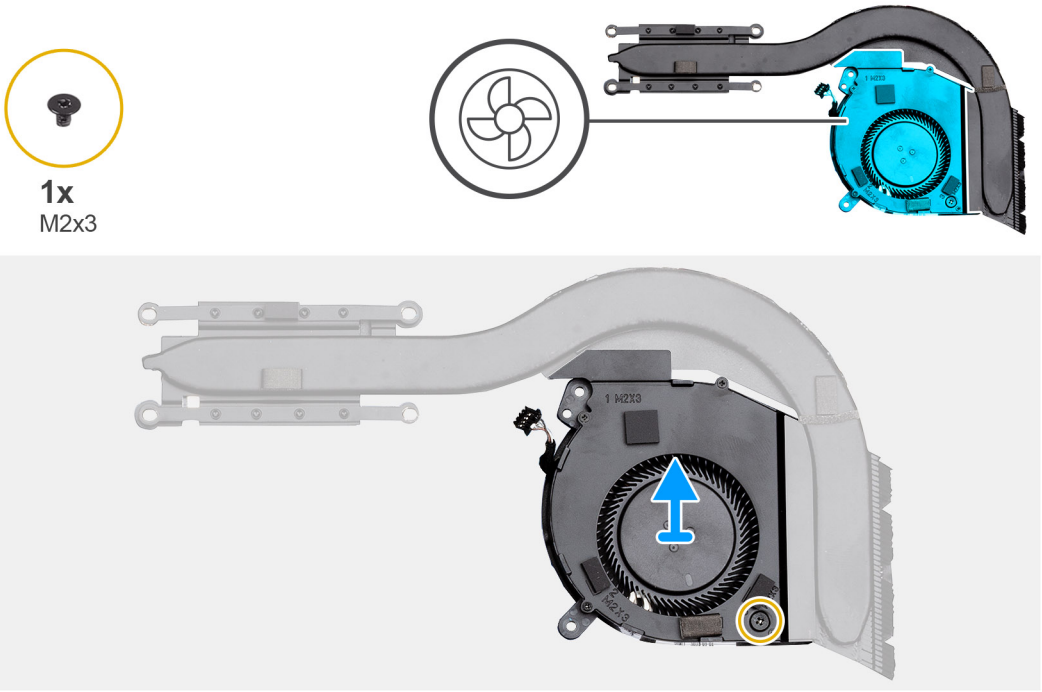
Prerequisites

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

About this task

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





Steps

1. Locate the heatsink assembly on your computer.
2. Remove the six (M2x3) screws that secure the heatsink assembly to the computer.

   NOTE: Remove the screws as per the callout on the heatsink module.
3. Disconnect the heatsink fan cable from the system board.
4. Lift the heatsink assembly out of the computer.
5. Remove the single (M2x3) screw that secures the heatsink fan to the heatsink.
6. Lift the heatsink fan away from the heatsink.

Installing the heatsink assembly-UMA

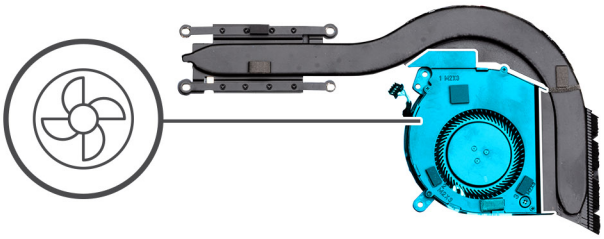
Prerequisites

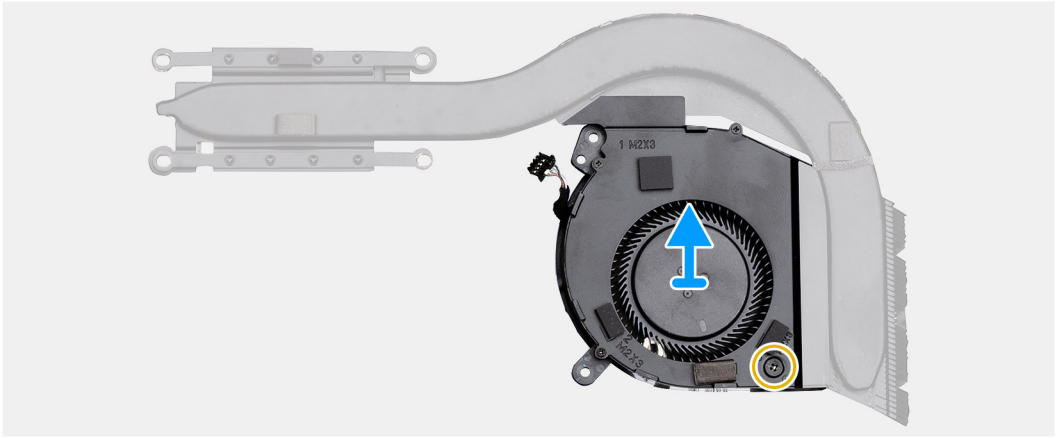
If you are replacing a component, remove the existing component before performing the installation procedure.

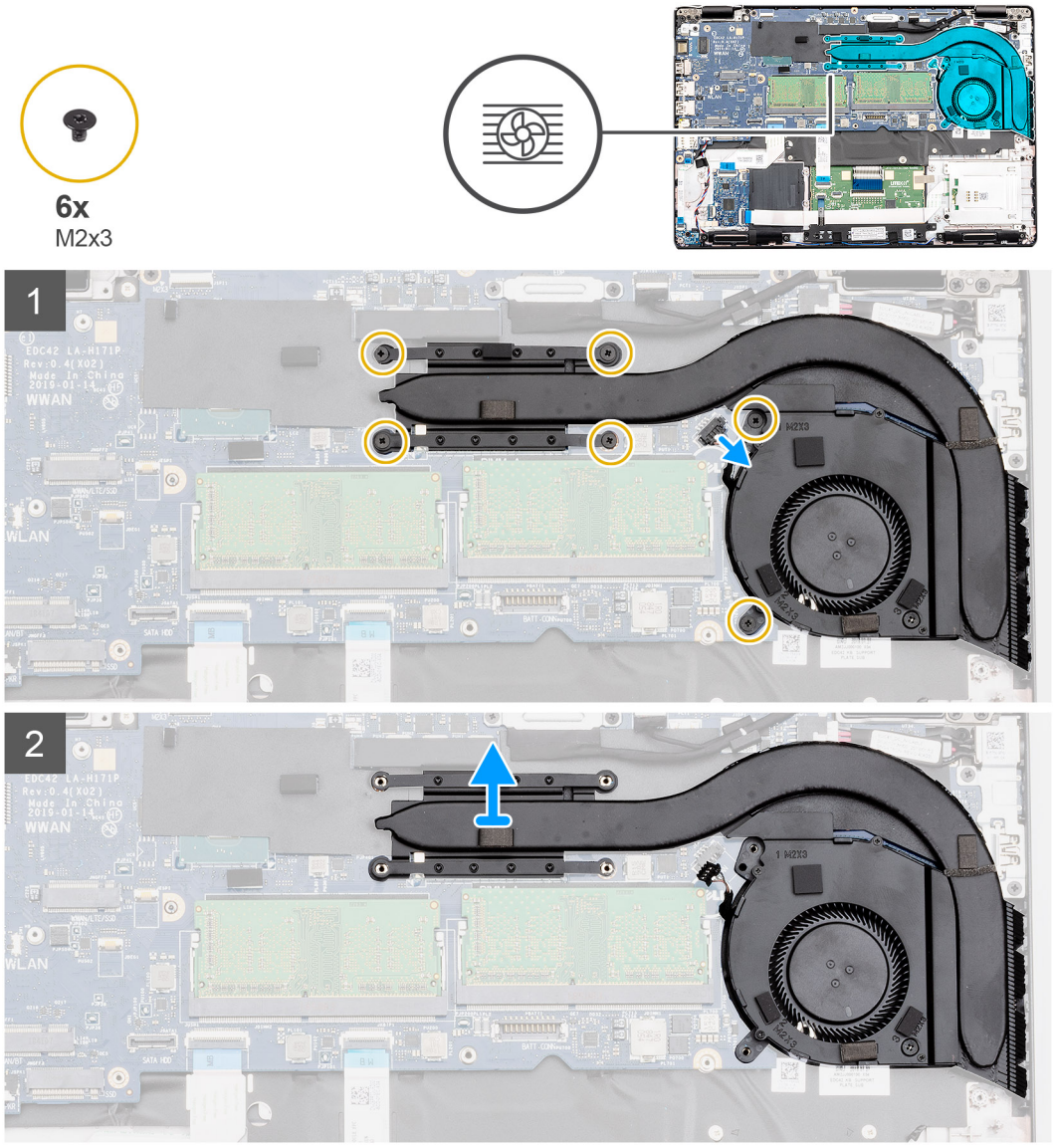
About this task

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

1x
M2x3







Steps

1. Align the screw hole on the heatsink with the screw hole on the heatsink fan.
2. Replace the single (M2x3) screw to secure the heatsink fan to the heatsink.
3. Locate the heatsink assembly slot on your computer.
4. Align and place the heatsink assembly into the slot of your computer.
5. Replace the six (M2x3) screws to secure the heatsink assembly to the system board.

   NOTE: Install the screws as per the callout on the heatsink.
6. Connect the heatsink fan cable to the connector on the system board.

Next steps

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

Heatsink assembly-discrete

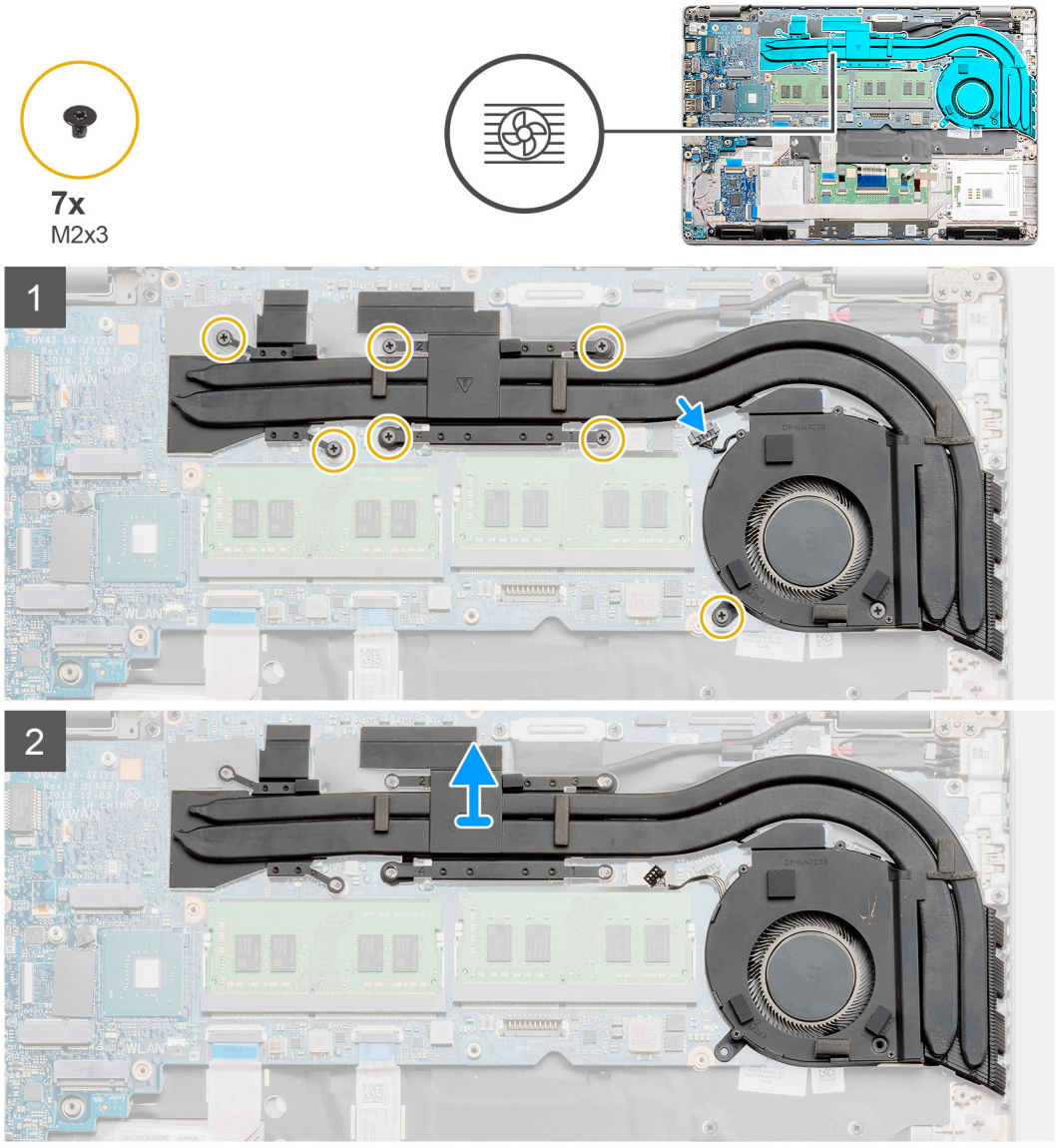
Removing the heatsink assembly-discrete

Prerequisites

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

About this task

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



Steps

1. Locate the heatsink on your computer.
2. Disconnect the fan cable from the connector on the system board.
3. Remove the seven (M2x3) screws that secure the heatsink assembly to the system board.

NOTE: Remove the screws in the order of the callout numbers [1, 2, 3, 4, 5, 6, 7] as indicated on the heatsink.

4. Lift the heatsink assembly out of the computer.
5. Remove the single (M2x3) screw that secures the heatsink fan to the heatsink.
6. Lift the heatsink fan away from the heatsink.

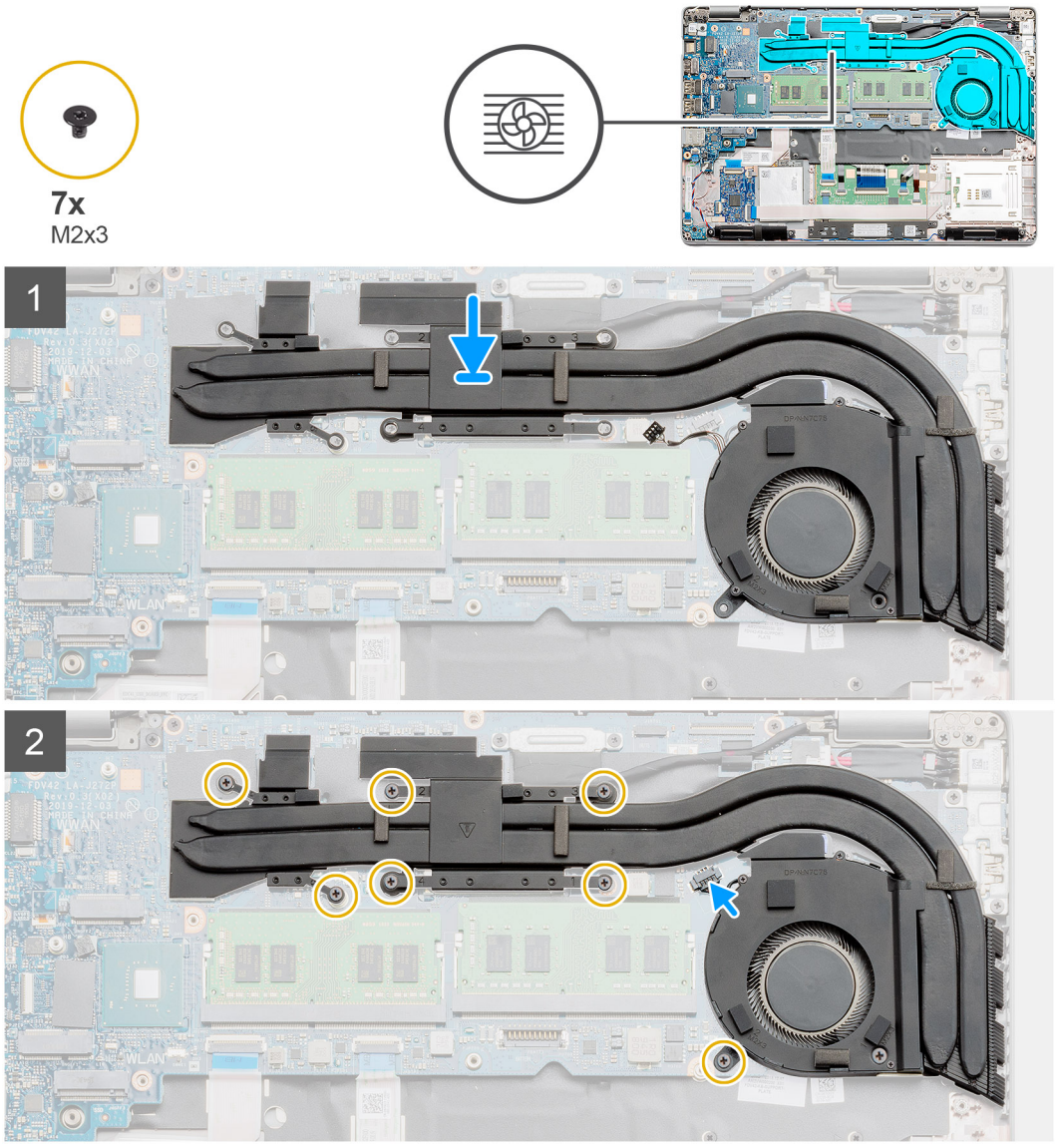
Installing the heatsink assembly-discrete

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. Align the screw hole on the heatsink with the screw hole on the heatsink fan.
2. Replace the single (M2x3) screw to secure the heatsink fan to the heatsink.
3. Locate the heatsink assembly slot on your computer.

4. Align and place the heatsink assembly into the slot.
5. Replace the seven (M2x3) screws to secure the heatsink assembly to the system board.
6. Connect the heatsink fan cable to the connector on the system board.

Next steps

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

DC-in port

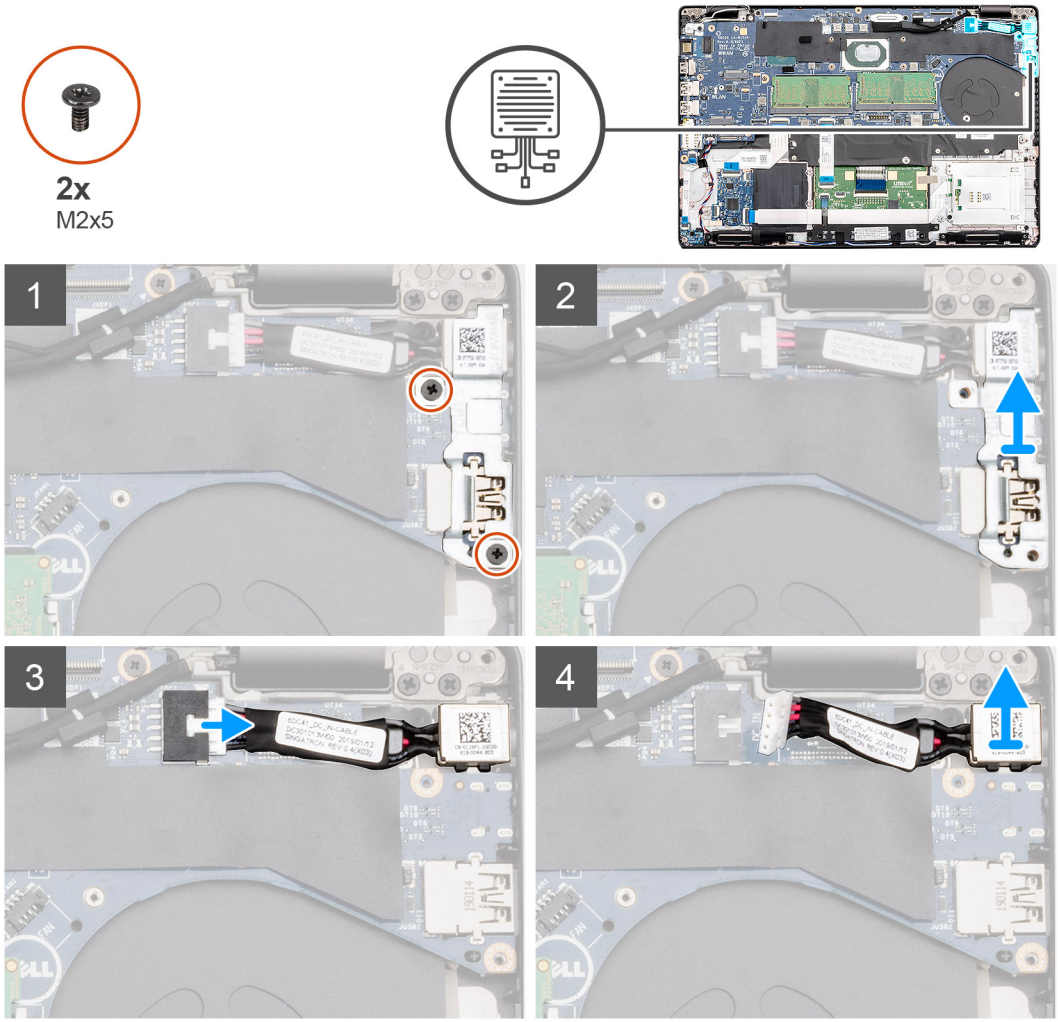
Removing the DC-in

Prerequisites

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

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.
2. Remove the two (M2x5) that secure the DC-in metal bracket.
3. Lift the DC-in metal bracket from the computer.
4. Disconnect the DC-in cable from the connector on the system board.
5. Remove the DC-in port from the computer.

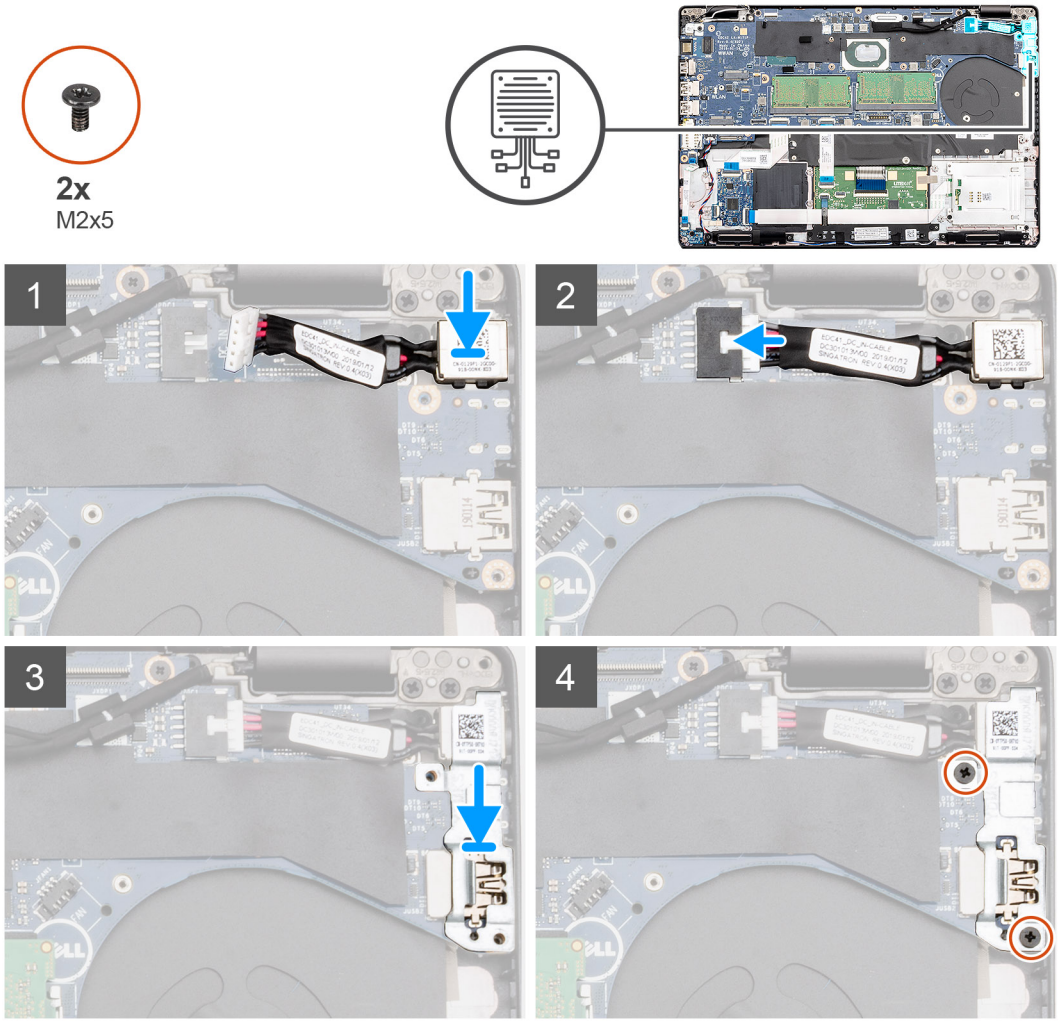
Installing the DC-in

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 and provides a visual representation of the installation procedure.



Steps

1. Locate the DC-in slot on your computer.
2. Insert the DC-in port into the slot on your computer.
3. Connect the DC-in cable to the connector on the system board.
4. Place the DC-in metal bracket on the DC-in port.
5. Replace the two screws (M2x5) that secure the DC-in metal bracket to the system board.

Next steps

1. Install the heatsink-discrete.
2. Install the battery.
3. Install the base cover.
4. Follow the procedure in After working inside your computer.

Coin-cell battery

Removing the coin-cell battery

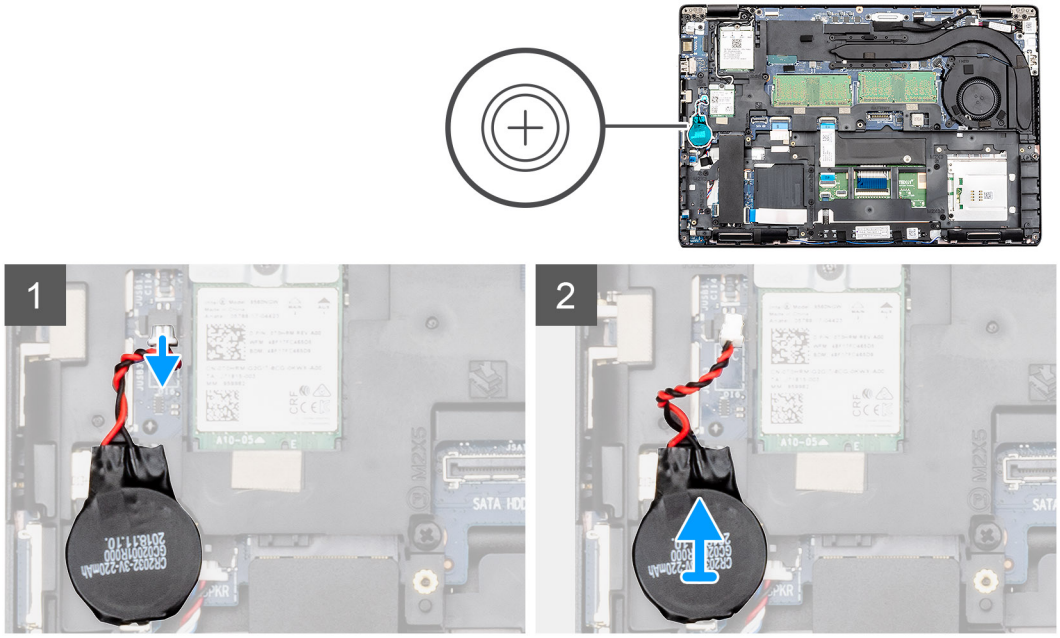
Prerequisites

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

3. Remove the battery.

About this task

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



Steps

1. Locate the coin-cell battery on your computer.
2. Disconnect the coin-cell battery cable from the connector on the system board.
3. Lift the coin-cell battery out of the computer.

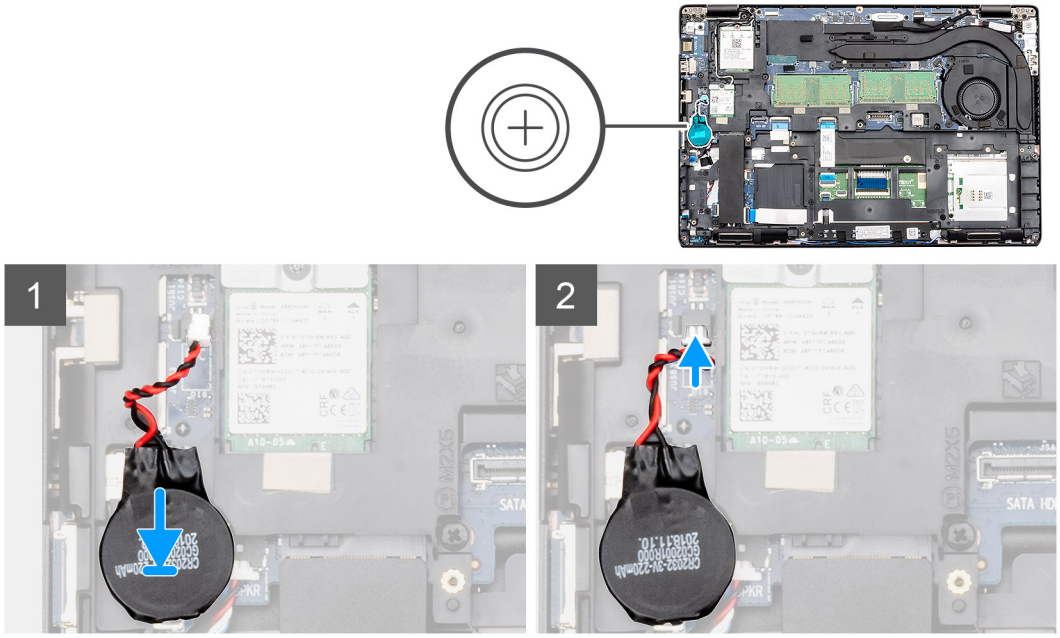
Installing the coin-cell battery

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. Locate the coin-cell battery slot on your computer.
2. Adhere the coin-cell battery on to the slot.
3. Connect the coin-cell cable to the connector on the system board.

Next steps

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

SmartCard reader

Removing the smartcard reader board

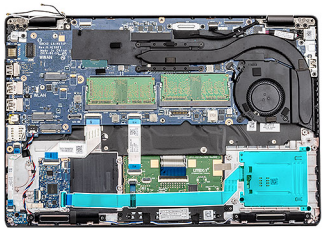
Prerequisites

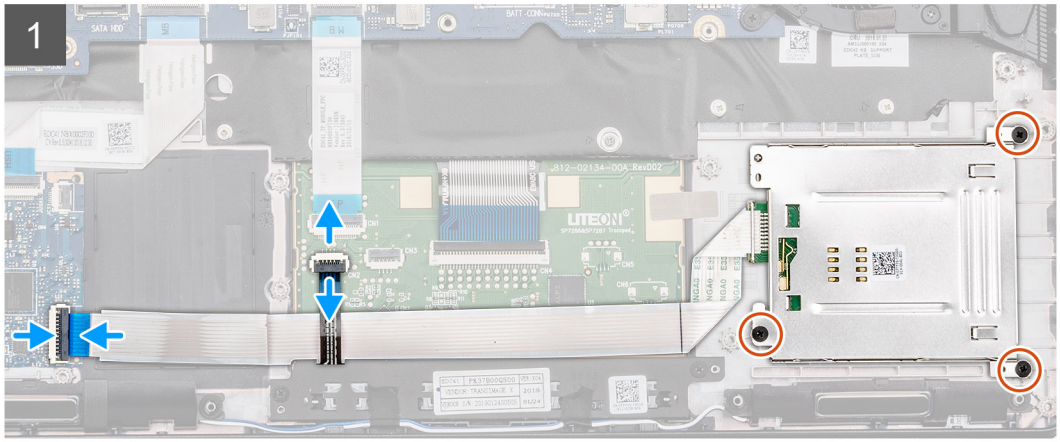
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the WLAN card.
6. Remove the WWAN card.
7. Remove the inner frame.

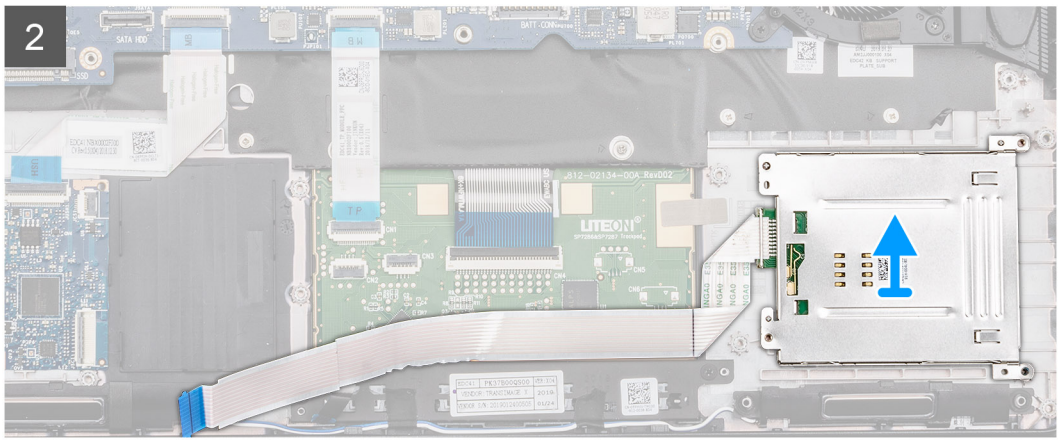
About this task

The figure indicates the location of the smart card reader board and provides a visual representation of the removal procedure.

3x
M2x3







Steps

1. Locate the smartcard reader board on your computer.
2. Open the latch and disconnect the touchpad button board cable from the system board.
3. Open the latch and disconnect the smartcard reader board cable from the system board.
4. Peel the smartcard cable from the palmrest.
5. Remove the three (M2x3) screws that secure the smartcard reader board to the computer.
6. Lift the smartcard reader module out of the computer.

Installing the smartcard reader board

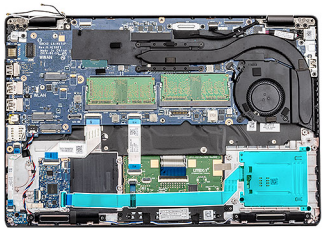
Prerequisites

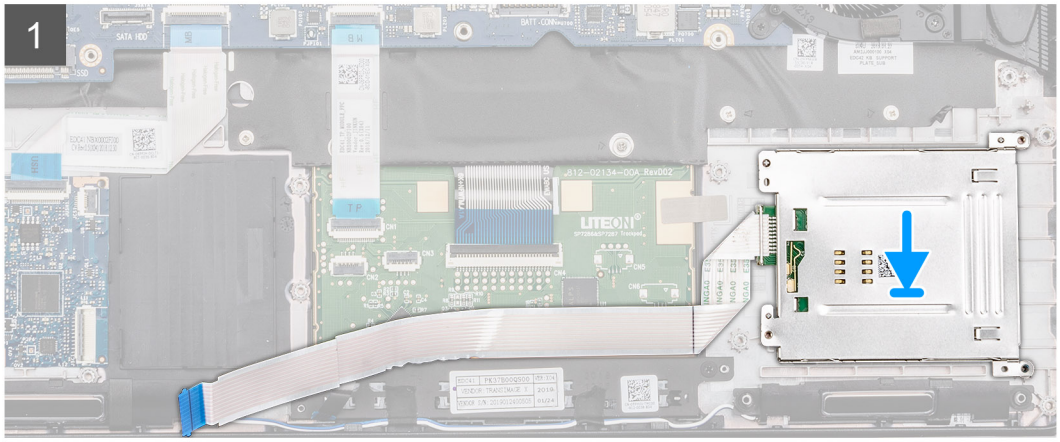
If you are replacing a component, remove the existing component before performing the installation procedure.

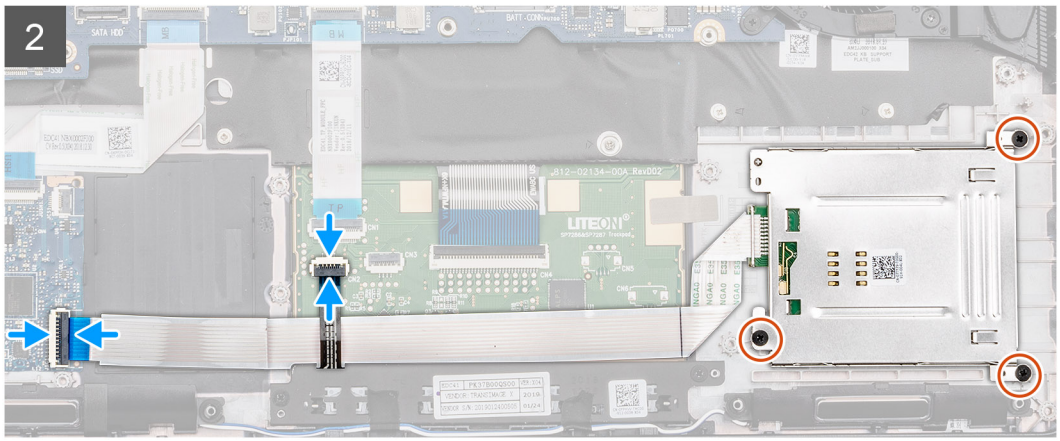
About this task

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

3x
M2x3







Steps

1. Locate the smartcard reader board slot on your computer.
2. Align and place the smartcard reader board into the slot on your computer.
3. Replace the three (M2x3) screws that secure the smartcard reader board to the computer.
4. Adhere the smartcard reader cable to the palmrest and connect the cable to the connector on the system board.
5. Connect the touchpad button board cable to the connector on the system board.

Next steps

1. Install the inner frame.
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the 2280 SATA SSD.
5. Install the battery.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Touchpad buttons

Removing the touchpad button board

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the WLAN card.
6. Remove the WWAN card.
7. Remove the inner frame.

About this task

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

Steps

1. Locate the touchpad buttons board on your computer.
2. Open the latch and disconnect the touchpad button board cable from the connector on the system board.
3. Remove the two (M2x3) screws that secure the touchpad button board to the palmrest.
4. Lift the touchpad button board out of the computer.

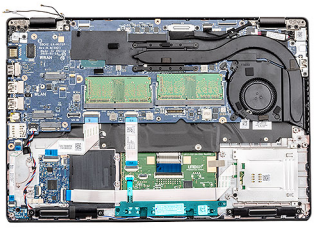
Installing the touchpad button board

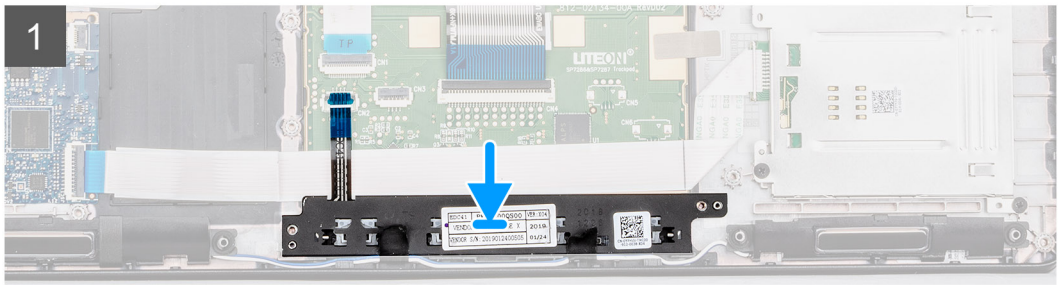
Prerequisites

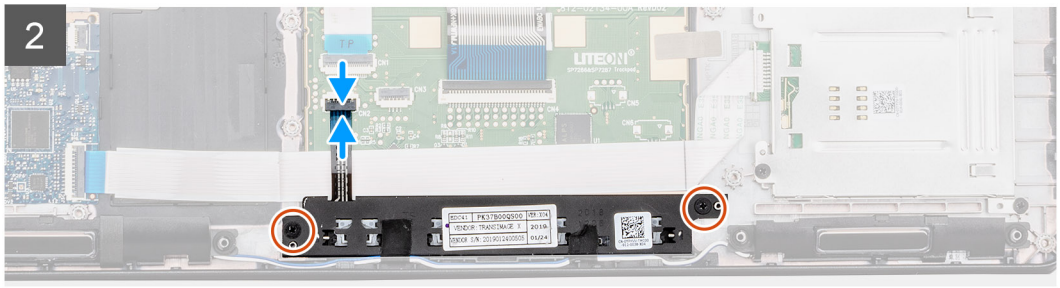
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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







Steps

1. Locate the touchpad button board slot on your computer.
2. Align and place the touchpad button board into the slot on your computer.
3. Replace the two (M2x3) screws to secure the touchpad button board to the plamrest.
4. Connect the touchpad button board cable to the connector on the system board and secure the latch.

Next steps

1. Install the inner frame.
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the 2280 SATA SSD.
5. Install the battery.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Speakers

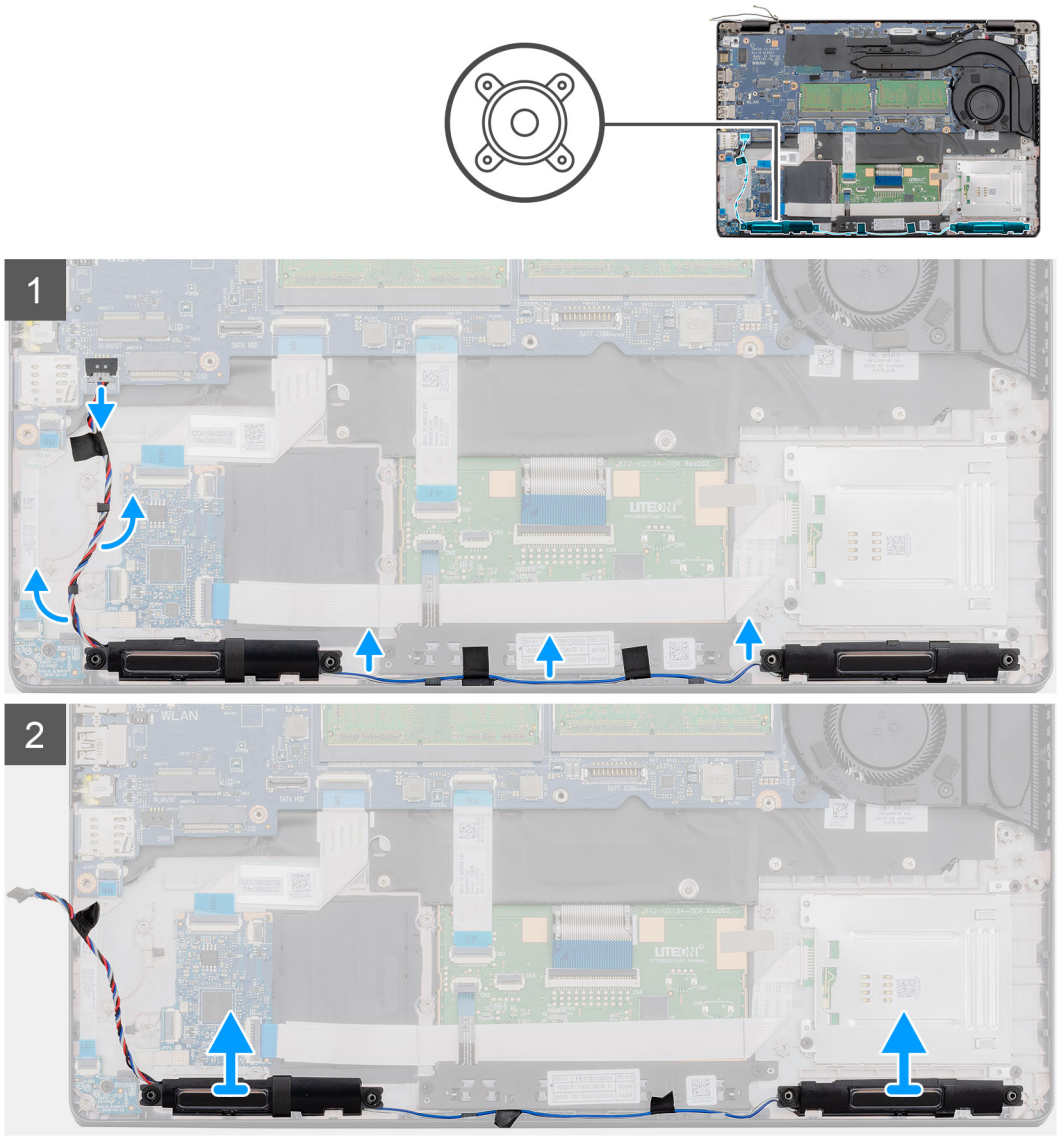
Removing the speakers

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the WLAN card.
6. Remove the WWAN card.
7. Remove the inner frame.
8. Remove the LED board

About this task

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



Steps

1. Locate the speakers on your computer.
2. Disconnect and Unroute the speaker cables from the retention clips on the computer.
3. Lift the speakers out of the computer.

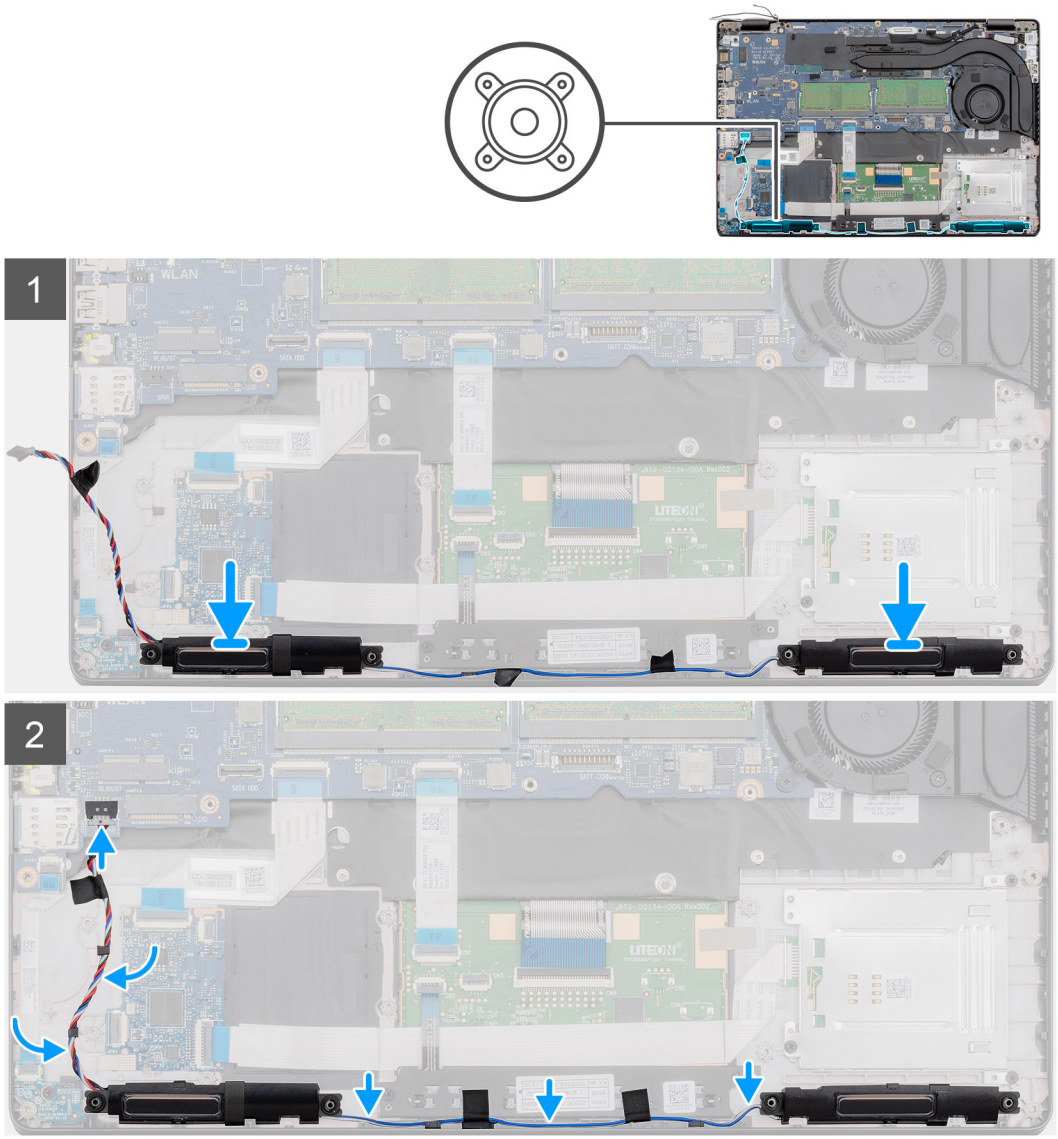
Installing the speakers

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. Locate the speakers slot on your computer.
2. Align and place the speakers in the slot on your computer.
3. Route the speaker cables through the retention clips on your computer.

Next steps

1. Install the LED board.
2. Install the inner frame.
3. Install the WLAN card.
4. Install the WWAN card.
5. Install the 2280 SATA SSD.
6. Install the battery.
7. Install the base cover.
8. Follow the procedure in After working inside your computer.

LED board

Removing the LED board

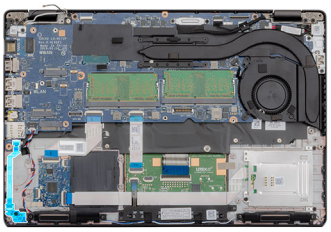
Prerequisites

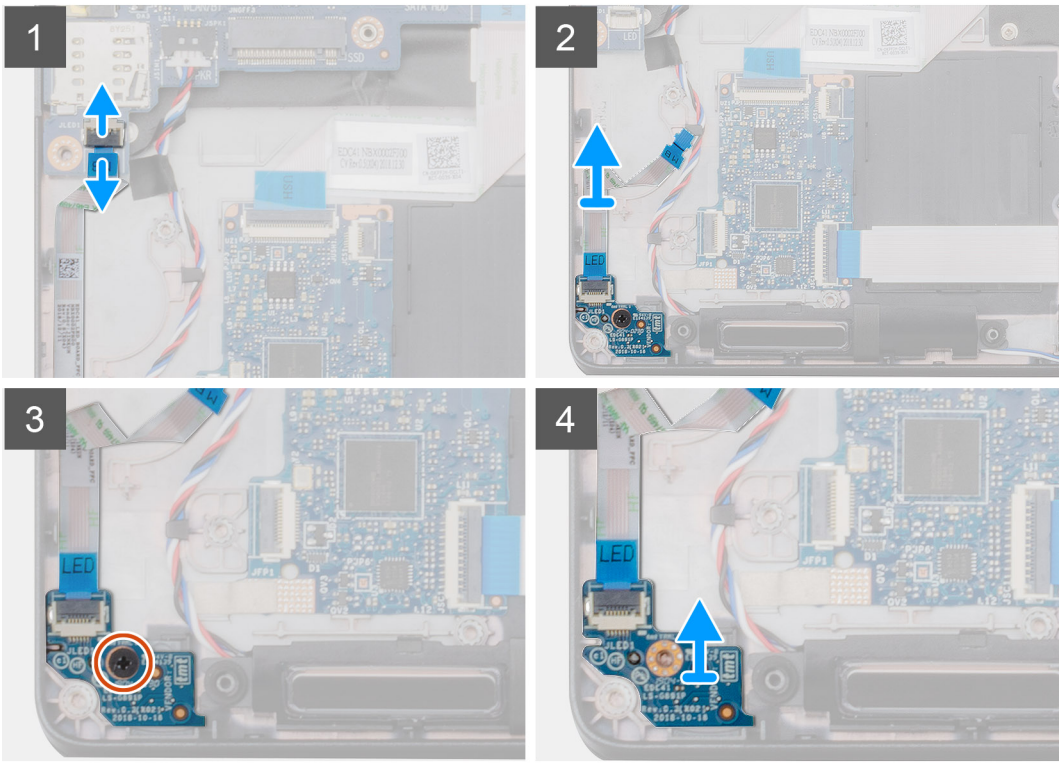
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the WLAN card.
6. Remove the WWAN card.
7. Remove the inner frame.

About this task

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

1x
M2x3





Steps

1. Locate the LED board on your computer.
2. Open the latch and disconnect the LED board cable from the connector on the system board.
3. Peel back the LED board cable.

   NOTE: The LED board cable is secured to the computer by an adhesive strip.
4. Remove the single (M2x3) screw that secures the LED board to the computer.
5. Lift the LED board out of the computer.

Installing the LED board

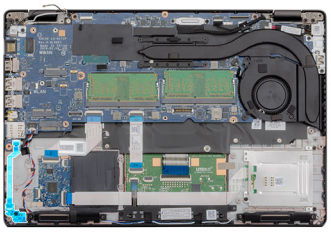
Prerequisites

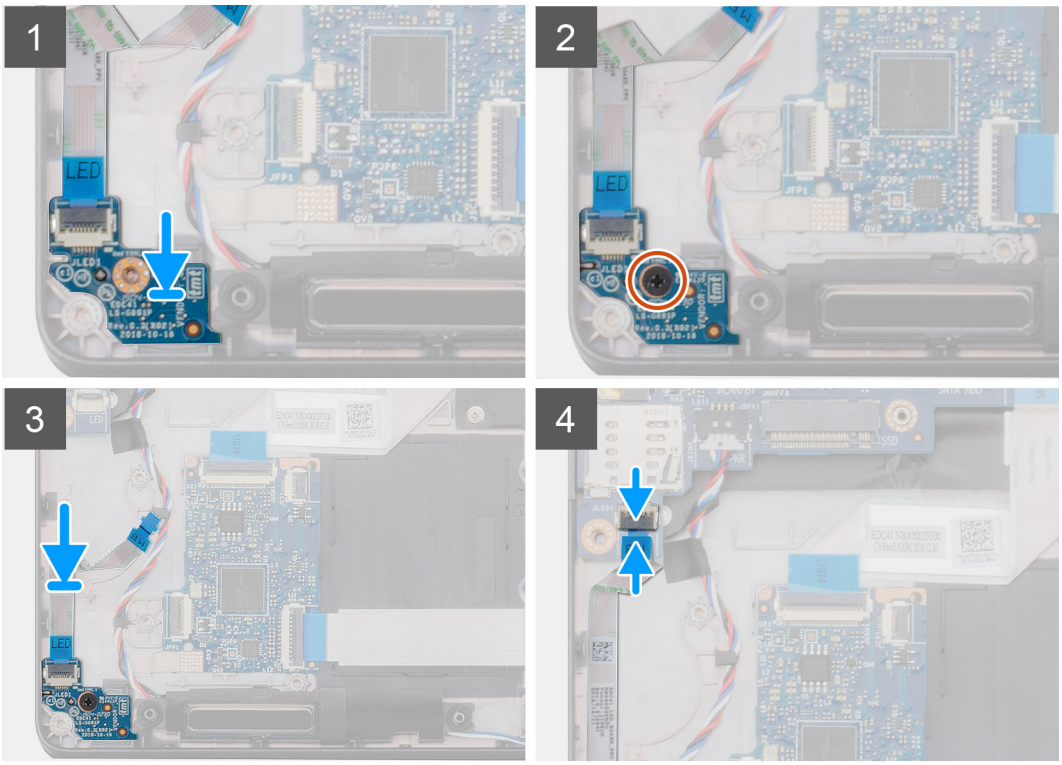
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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

1x
M2x3





Steps

1. Locate the LED board slot on your computer.
2. Align and place the LED board on the slot on your computer.
3. Replace the single (M2x3) screw that secures the LED board to the computer.
4. Adhere the LED board cable to the adhesive strip on the palmrest.
5. Connect the LED board cable to the connector on the system board.

Next steps

1. Install the inner frame
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the 2280 SATA SSD.
5. Install the battery.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Keyboard

Removing the keyboard

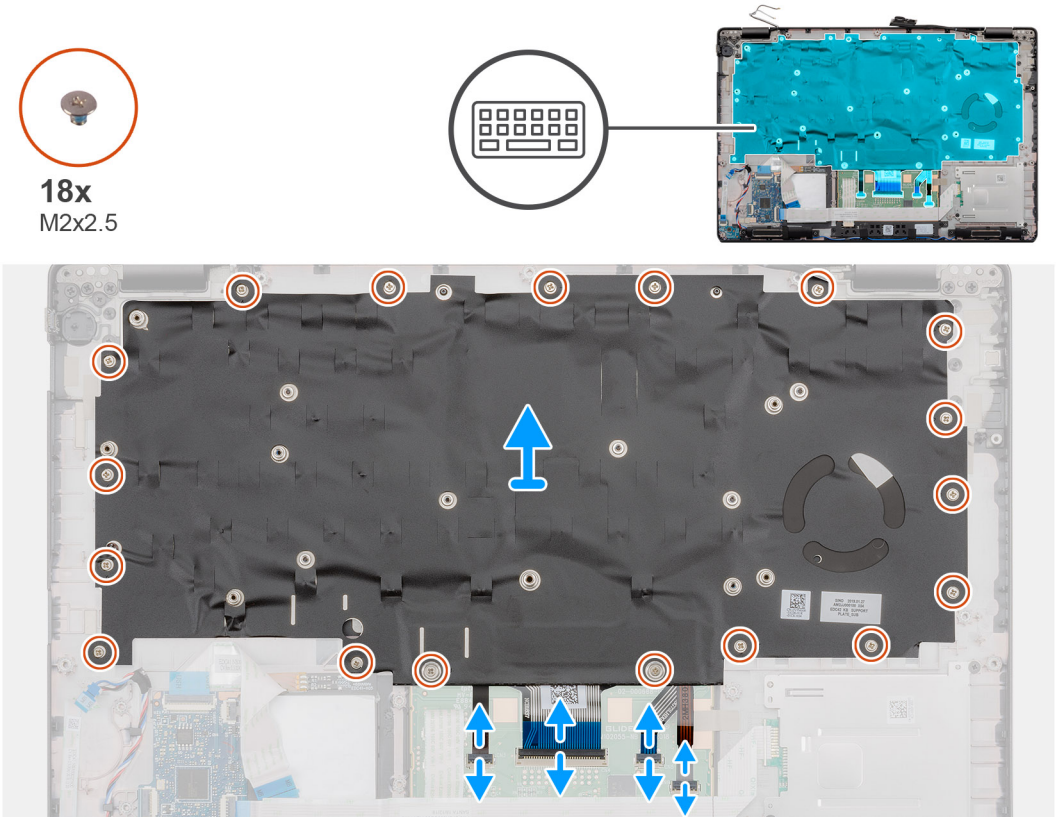
Prerequisites

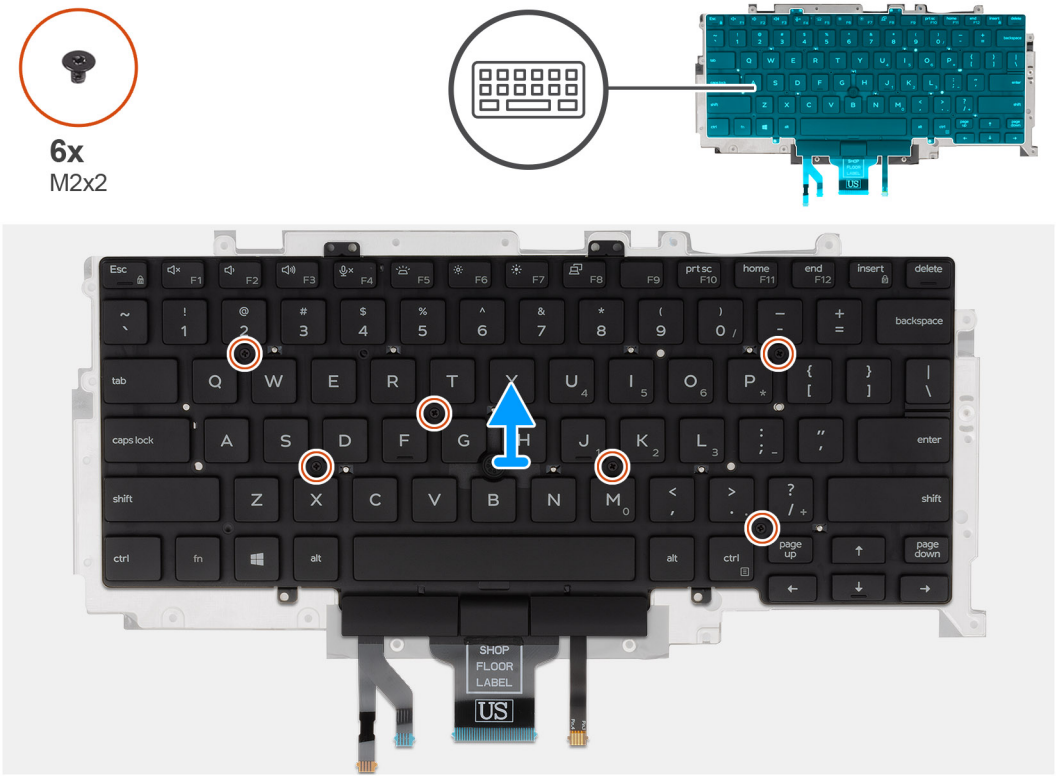
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the memory.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the inner frame.
9. Remove the LED board.
10. Remove the DC-in.
11. Remove the system board.

NOTE: System board can be removed with heatsink attached.

About this task

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





Steps

1. Locate the Keyboard on your computer.
2. Open the latch and disconnect the following cables:
   a) keyboard cable
   b) keyboard backlit cable
   c) touchpad cable
   d) touchpad button board cable
3. Remove the eighteen (M2x2.5) screws that secure the keyboard assembly to the palmrerst.
4. Carefully lift the keyboard assembly from the palmrest.
5. Flip the keyboard assembly.
6. Remove the six (M2x2) screws that secures the keyboard to the keyboard bracket.
7. Remove the keyboard from the keyboard bracket.

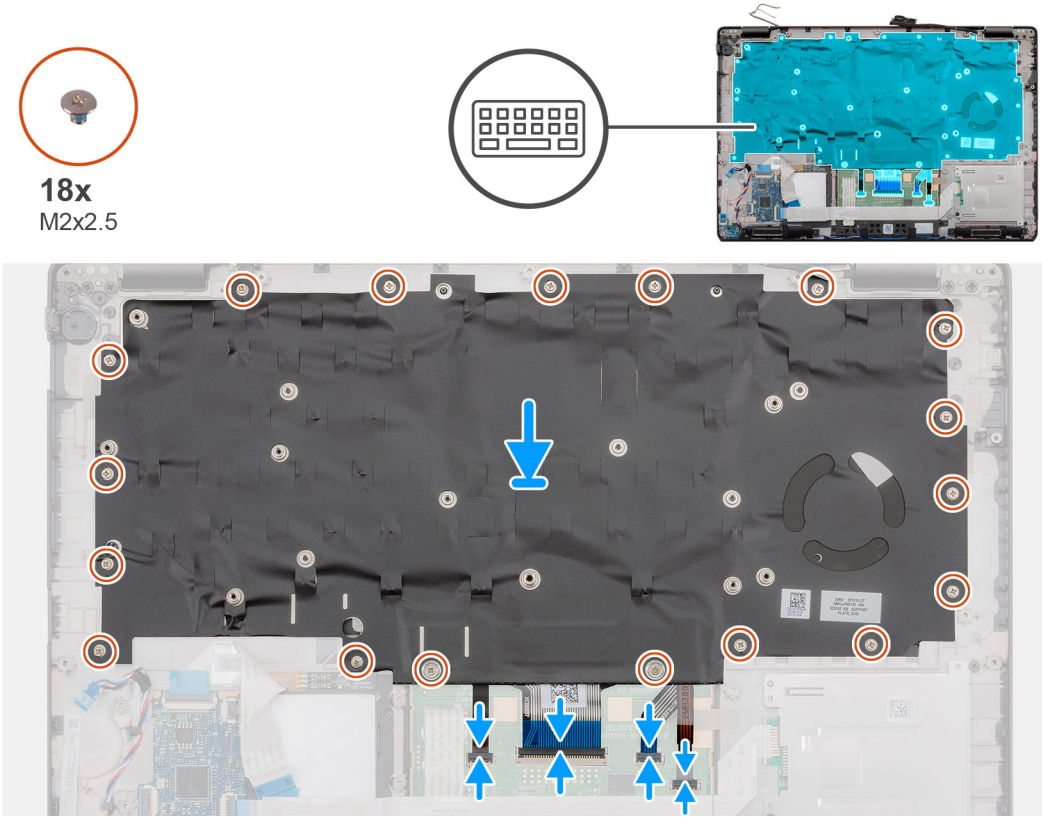
Installing the keyboard

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 keyboard and provides a visual representation of the installation procedure.



Steps

1. Replace the six (M2x2) screws to secure the keyboard to the keyboard bracket.
2. Flip the keyboard assembly and align it to its slot on the palmrest.
3. Press down on the lattice at the snap points, in order to secure the keyboard assembly to the palmrest.

NOTE: The keyboard has multiple snap points on the lattice side which must be pushed down firmly after the keyboard is replaced.

4. Replace the eighteen (M2x2.5) screws that secure the keyboard assembly to the palmrest.
5. Connect the following cables:
   a) keyboard cable
   b) keyboard backlit cable
   c) touchpad cable
   d) touchpad button board cable

Next steps

1. Install the system board.

   NOTE: System board can be installed with heatsink attached.
2. Install the DC-in.
3. Install the LED board.
4. Install the inner frame.
5. Install the memory.
6. Install the WLAN card.
7. Install the WWAN card.
8. Install the 2280 SATA SSD.
9. Install the battery.
10. Install the base cover.
11. Follow the procedure in After working inside your computer.

System board

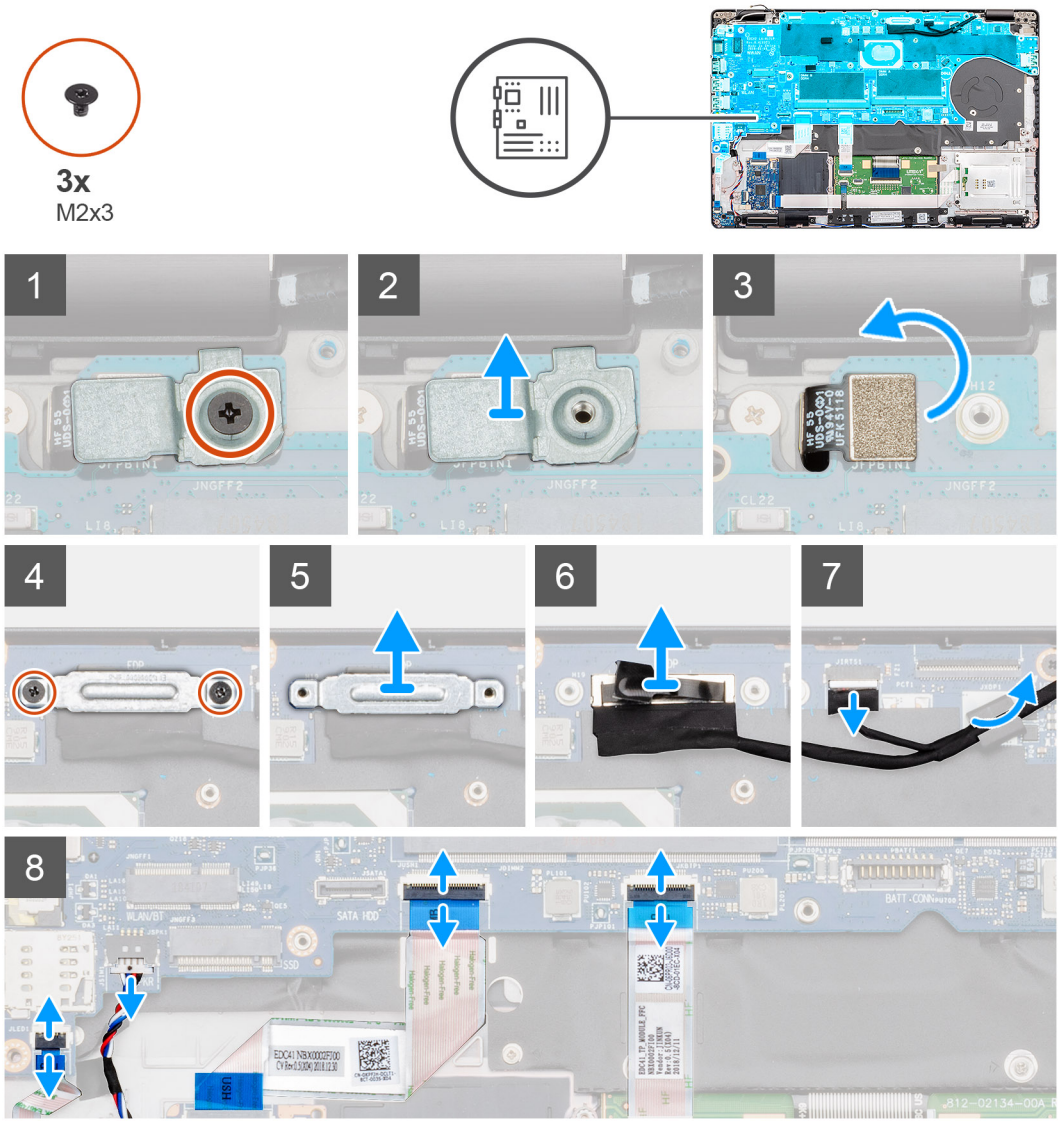
Removing the system board

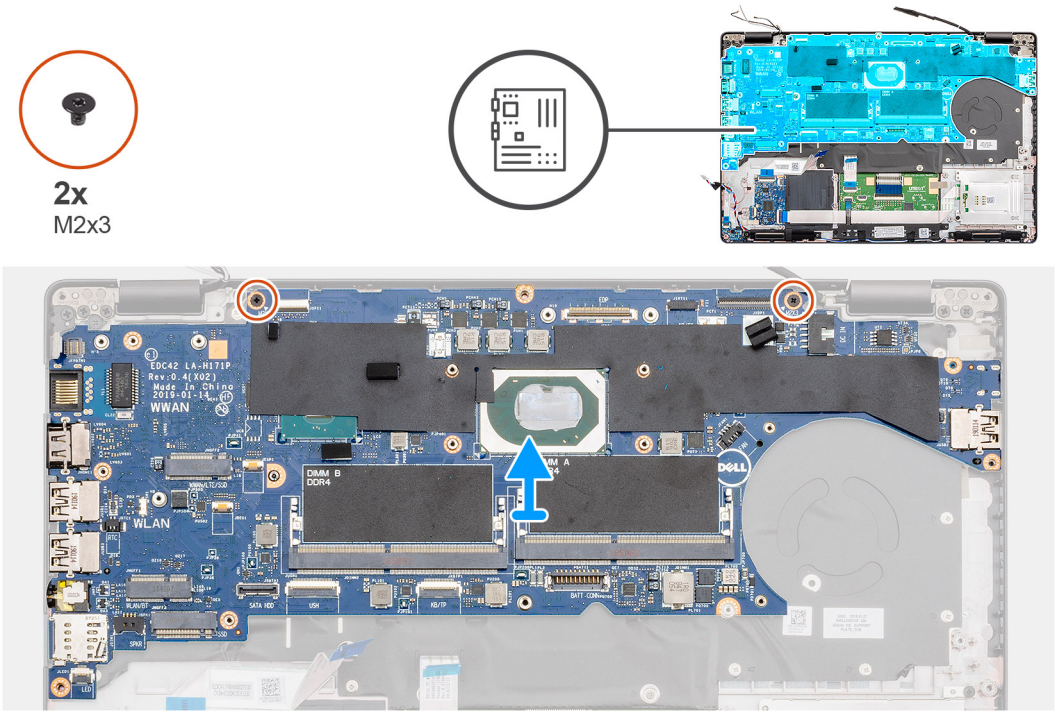
Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the memory.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the inner frame.
9. Remove the LED board.
10. Remove the heatsink-UMA.
11. Remove the DC-in.

About this task

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


3x
M2x3
1
2
3
4
5
6
7
8



Steps

1. Locate the system board on your computer.
2. Remove the single (M2x3) screw that secures the fingerprint reader metal bracket.
3. Remove the fingerprint metal bracket from the computer and flip the fingerprint sensor over.
4. Remove the two (M2x3) screws that secure the display bracket in place.
5. Remove the display bracket out of the computer.
6. Disconnect the display cable from the connector on the system board.
7. Disconnect the following cables:
   a) camera cable
   b) speaker cable
   c) LED board cable
   d) fingerprint reader cable
   e) keyboard cable
8. Remove the two (M2x3) screws that secure the system board to the palmrest and keyboard assembly.
9. Lift the system board off the palm-rest and keyboard assembly.

Installing the system board

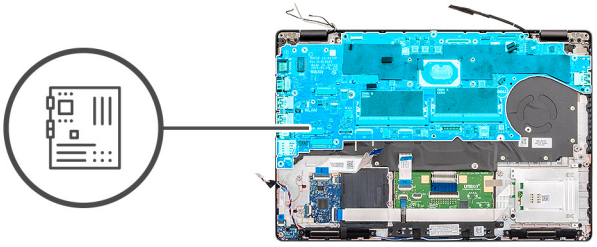
Prerequisites

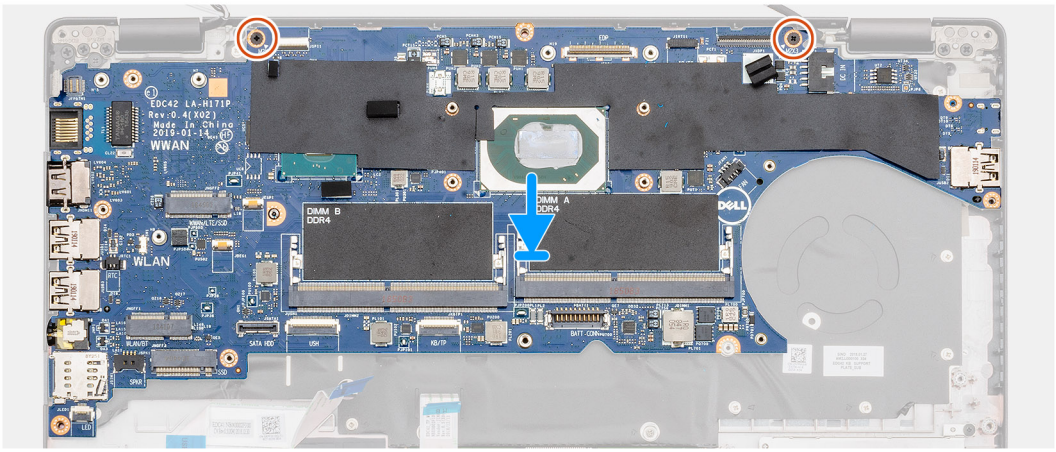
If you are replacing a component, remove the existing component before performing the installation procedure.

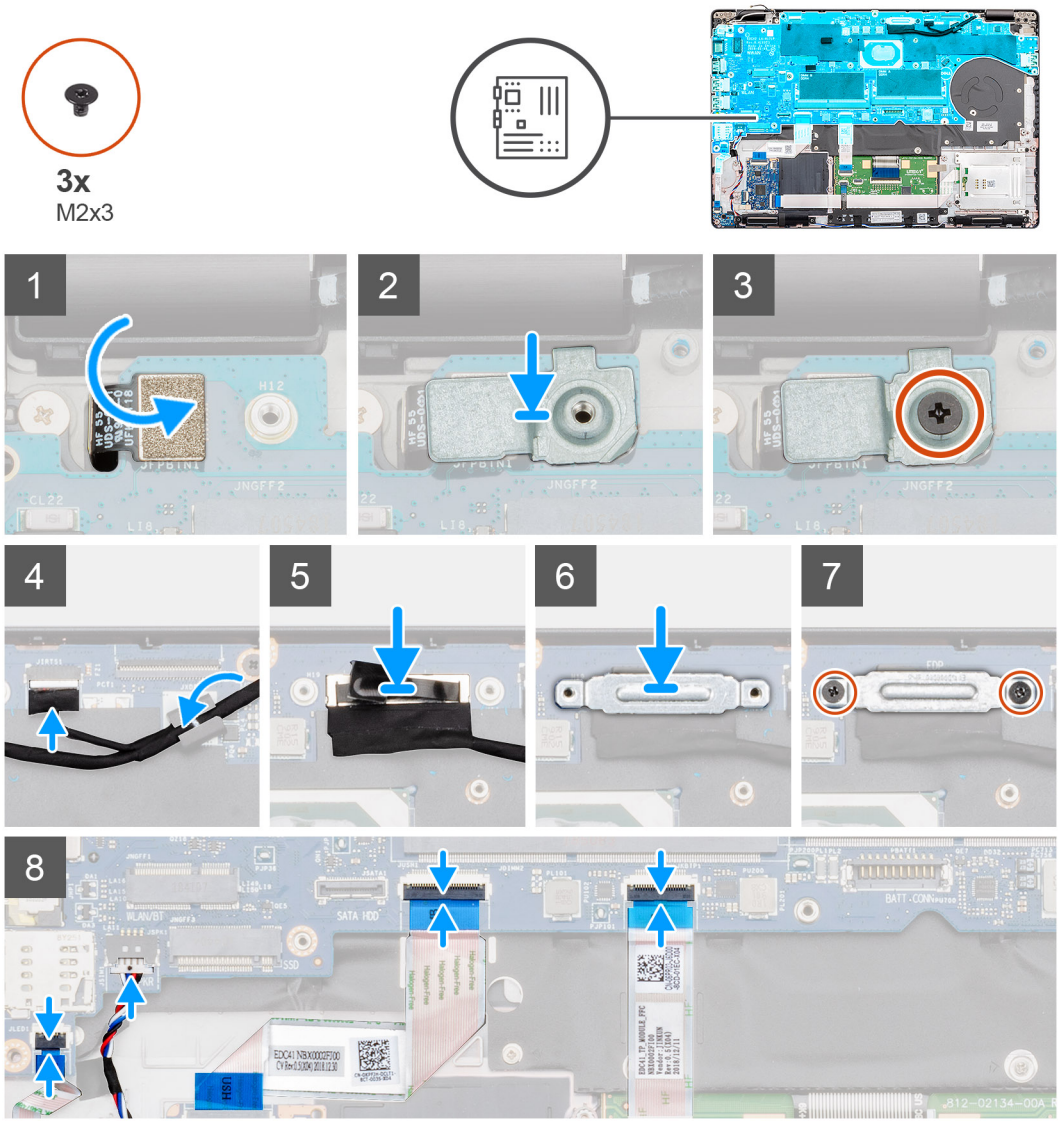
About this task

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

2x
M2x3







Steps

1. Locate the system board slot on your computer.
2. Slide the ports on the system board into the slots on the palmrest and align the screw holes on the system board with the screw holes on the palmrest.
3. Replace the two (M2x3) screws to secure the system board to the palmrest.
4. Align and place the fingerprint reader sensor on to the slot on the computer.
5. Place the finger print reader metal bracket over the fingerprint sensor.
6. Replace the single (M2x3) screw to secure the metal bracket to the computer.
7. Connect the display cable to the connector on the system board.
8. Adhere the tape that secures the display board to the system board.
9. Replace the two (M2x3) screws to secure the display metal bracket to the system board.
10. Connect the following cables:
    a) camera cable
    b) speaker cable
    c) LED board cable
    d) fingerprint reader cable
    e) keyboard cable

Next steps

1. Install the DC-in.
2. Install the heatsink-UMA.
3. Install the LED board.
4. Install the inner frame.
5. Install the memory.
6. Install the WLAN card.
7. Install the WWAN card.
8. Install the 2280 SATA SSD.
9. Install the battery.
10. Install the base cover.
11. Follow the procedure in After working inside your computer.

Power button

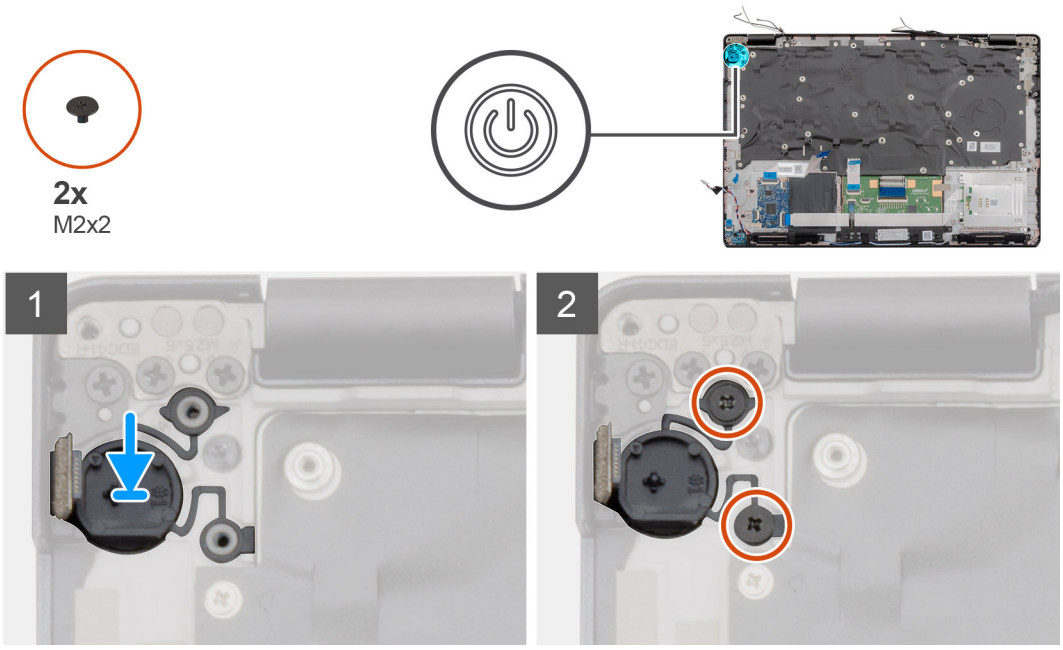
Installing the power button with fingerprint reader

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 with fingerprint and provides a visual representation of the installation procedure.



Steps

1. Locate the power button with fingerprint slot on your computer.
2. Align and place the power button with fingerprint into the slot on your computer.
3. Install the two (M2x2) screws that secure the power button to the palmrest.

Next steps

1. Install the system board.

   NOTE: System board can be installed with heatsink attached.

2. Install the DC-in.
3. Install the LED board.
4. Install the inner frame.
5. Install the memory.
6. Install the WLAN card.
7. Install the WWAN card.
8. Install the 2280 SATA SSD.
9. Install the battery.
10. Install the base cover.
11. Follow the procedure in After working inside your computer.

Removing the power button with fingerprint reader

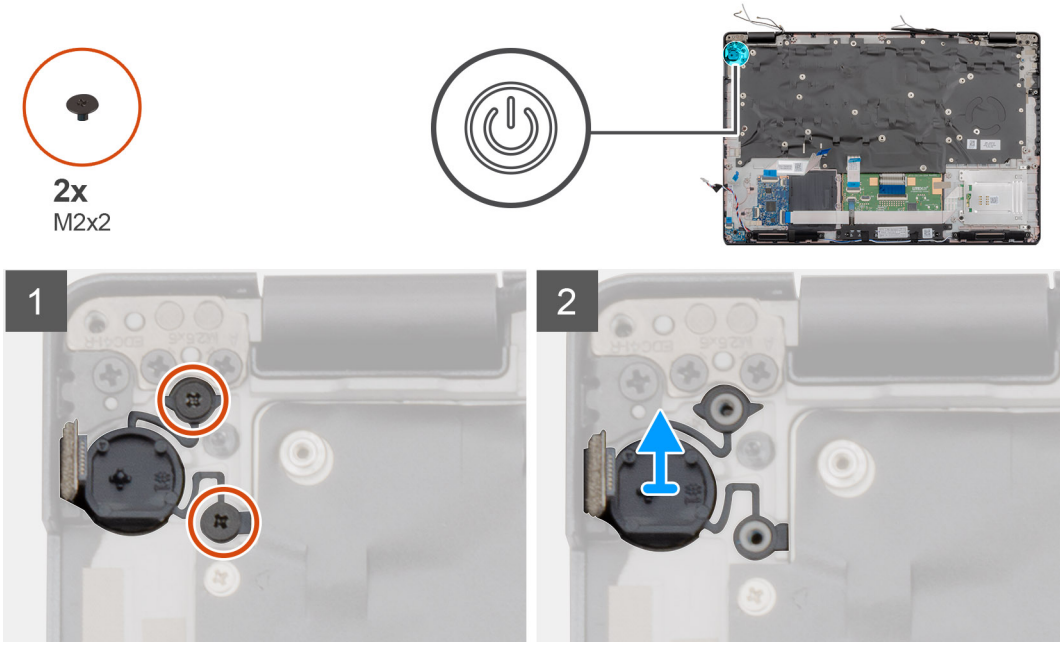
Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the memory.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the inner frame.
9. Remove the LED board.
10. Remove the DC-in.
11. Remove the system board.

NOTE: System board can be removed with heatsink attached.

About this task

The figure indicates the location of the power button with fingerprint reader and provides a visual representation of the removal procedure.



Steps

1. Locate the power button with fingerprint reader on your computer.
2. Remove the two (M2x2) screws that secure the power button to the palmrest.

3. Lift the power button with fingerprint out of the computer.

Hinge caps

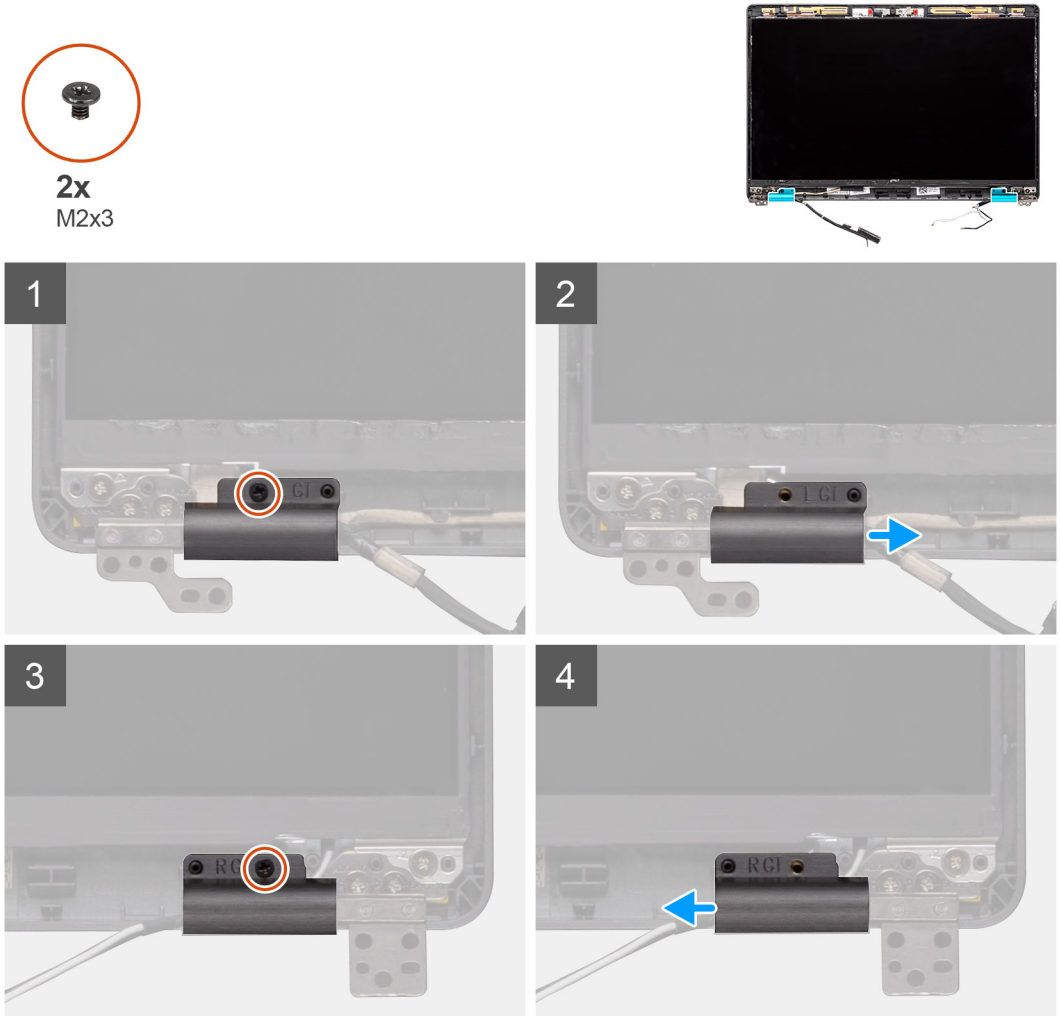
Removing the hinge caps

Prerequisites

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

About this task

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



Steps

1. Locate the hinge cap on the display back cover.
2. Remove the two (M2x3) screws that secure the hinge caps to the chassis.
3. Pinch the hinge caps to release it from the ribs on the display back cover and then slide inwards to remove the hinge caps from the display hinge.

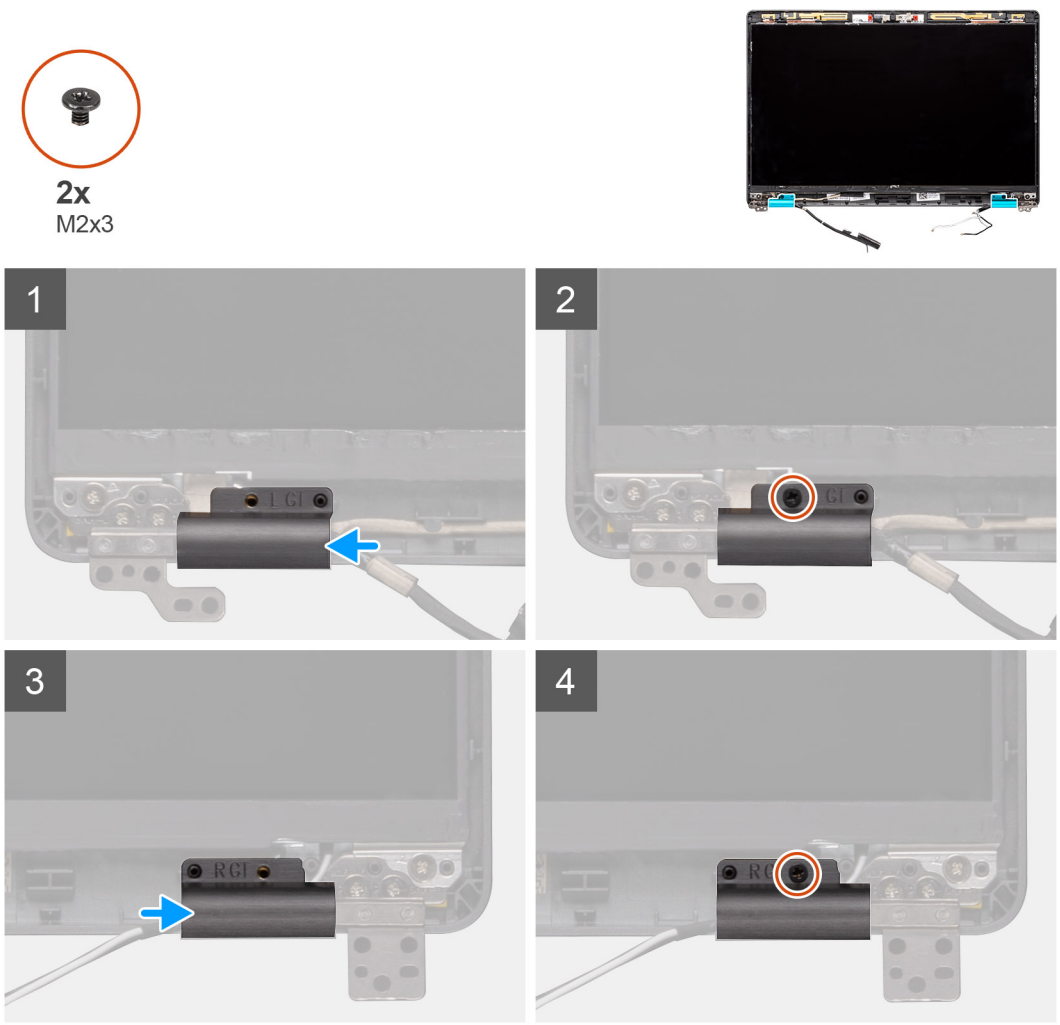
Installing the hinge caps

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 hinge caps and provides a visual representation of the installation procedure.



Steps

1. Place the hinge caps and slide outward on the display hinges.
2. Replace the two (M2x3) screws to secure the hinge caps to the display hinge.

Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the battery.
4. Install the base cover.
5. Follow the procedure in After working inside your computer.

Display back cover assembly

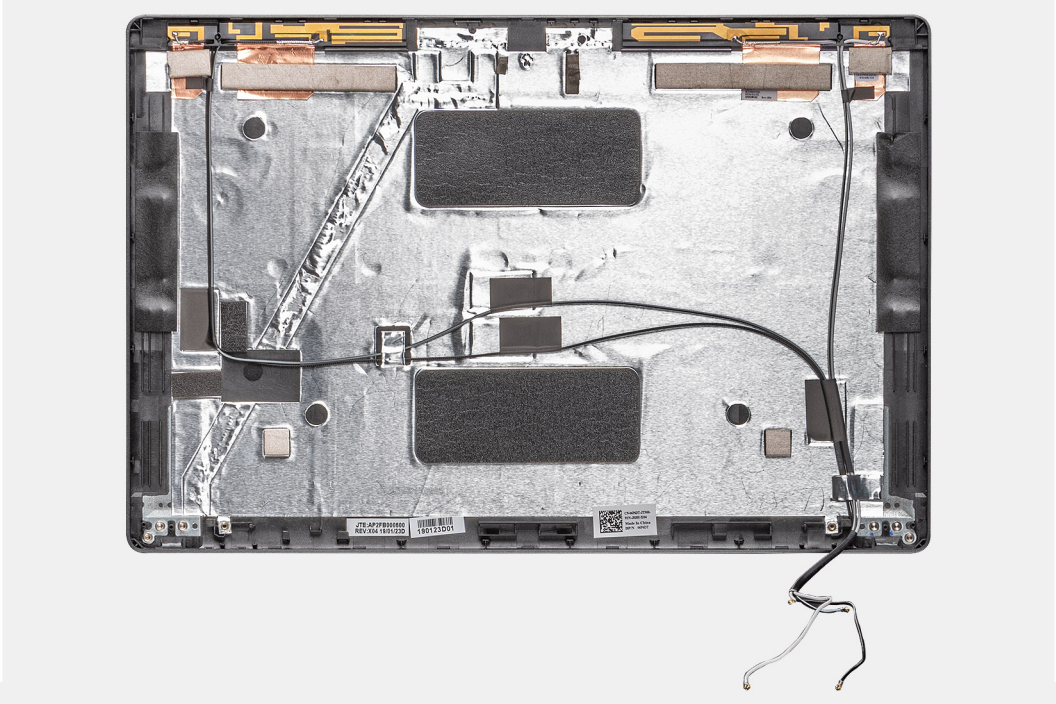
Replacing the display back cover

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the display assembly.
5. Remove the display bezel.
6. Remove the display hinge caps.
7. Remove the display hinges.
8. Remove the display panel.
9. Remove the camera.
10. Remove the display cable.

About this task

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



Next steps

1. Install the display cable.
2. Install the camera.
3. Install the display panel.
4. Install the display hinges.
5. Install the display hinge caps.
6. Install the display bezel.
7. Install the display assembly.
8. Install the battery.
9. Install the base cover.
10. Follow the procedure in After working inside your computer.

Display hinges

Removing display hinge

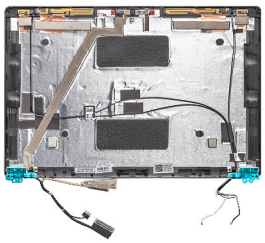
Prerequisites

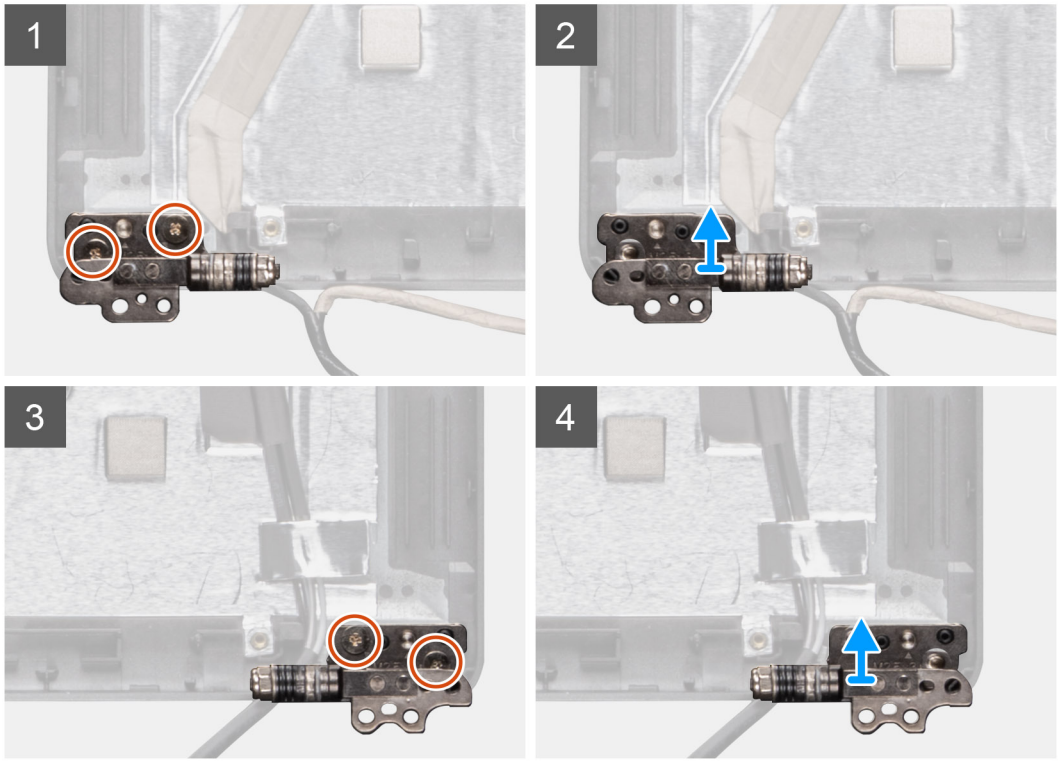
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the display assembly.
5. Remove the display bezel.
6. Remove the display hinge caps.
7. Remove the display panel.

About this task

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

4x
M2.5x3





Steps

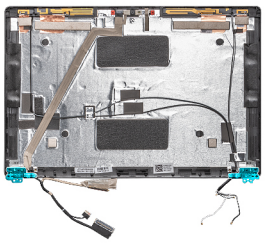
1. Remove the four (M2.5x3) screws that secure the display hinge to the display assembly.
2. Remove the display hinges from the display back cover.

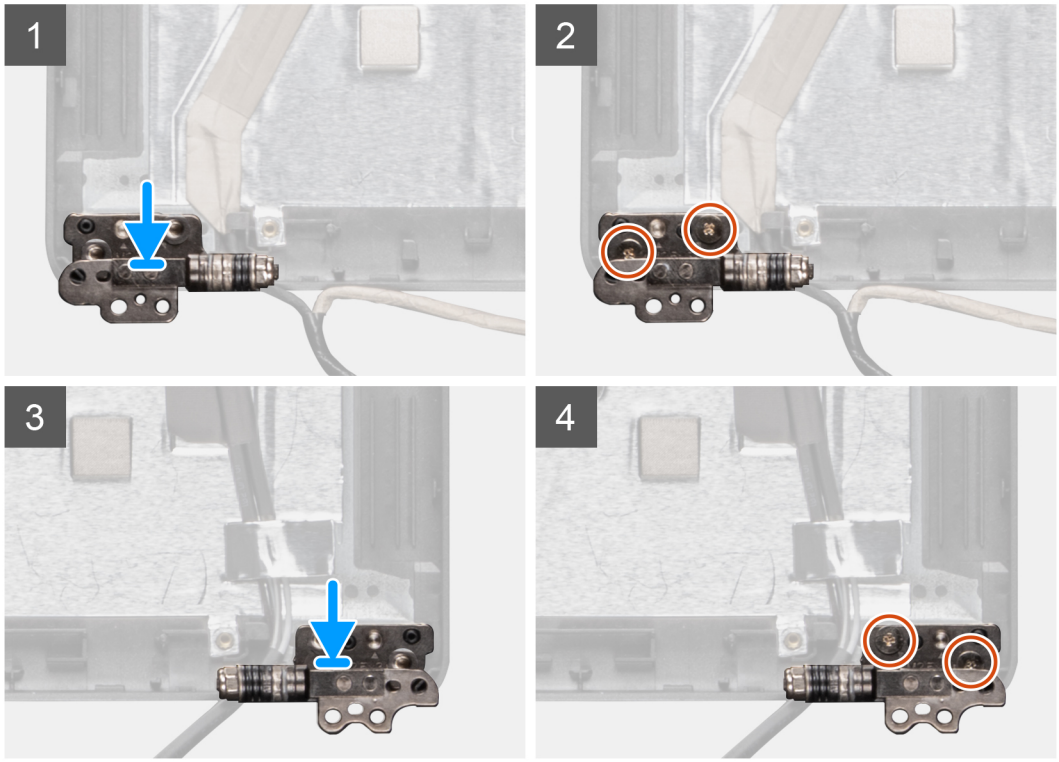
Installing display hinge

About this task

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

4x
M2.5x3





Steps

1. Place the display hinge on the display assembly.
2. Replace the four (M2.5x3) screws to secure the display hinge to the display assembly.

Next steps

1. Install the display panel.
2. Install the display hinge caps.
3. Install the display bezel.
4. Install the display assembly.
5. Install the battery.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Display (eDP) cable

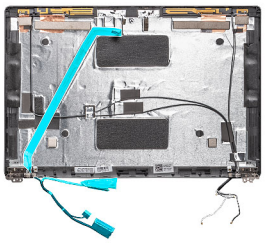
Removing display cable

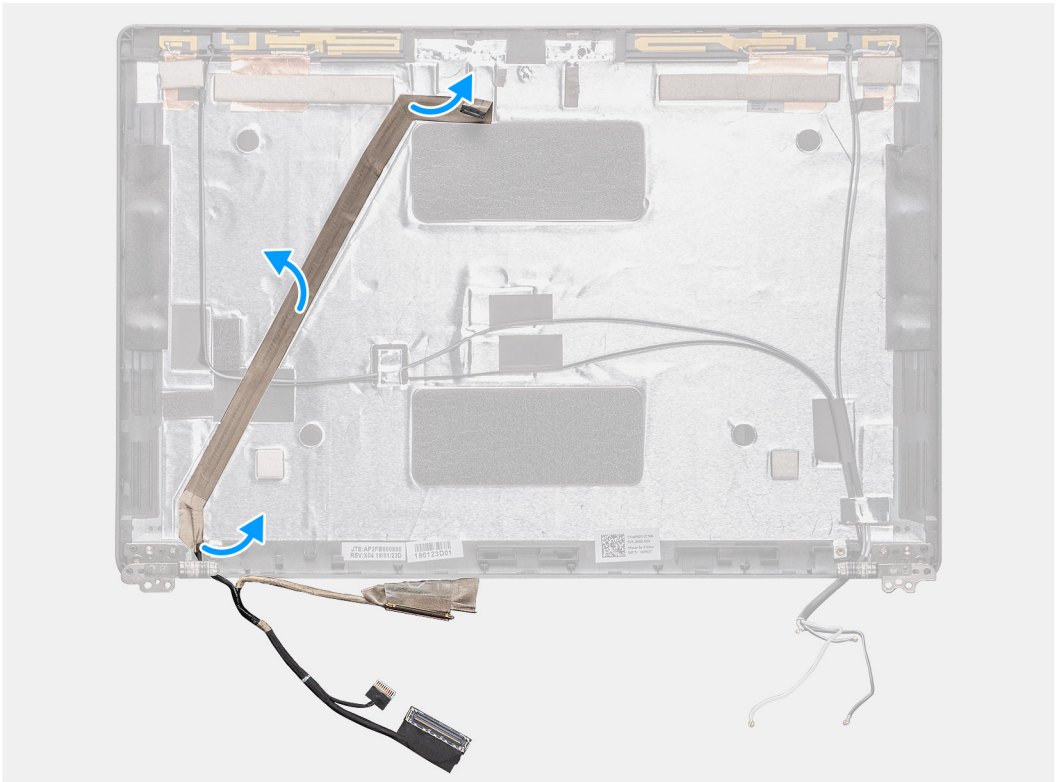
Prerequisites

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

About this task

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





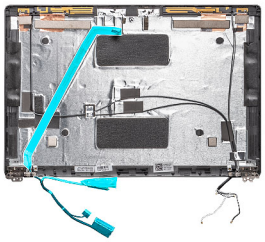
Steps

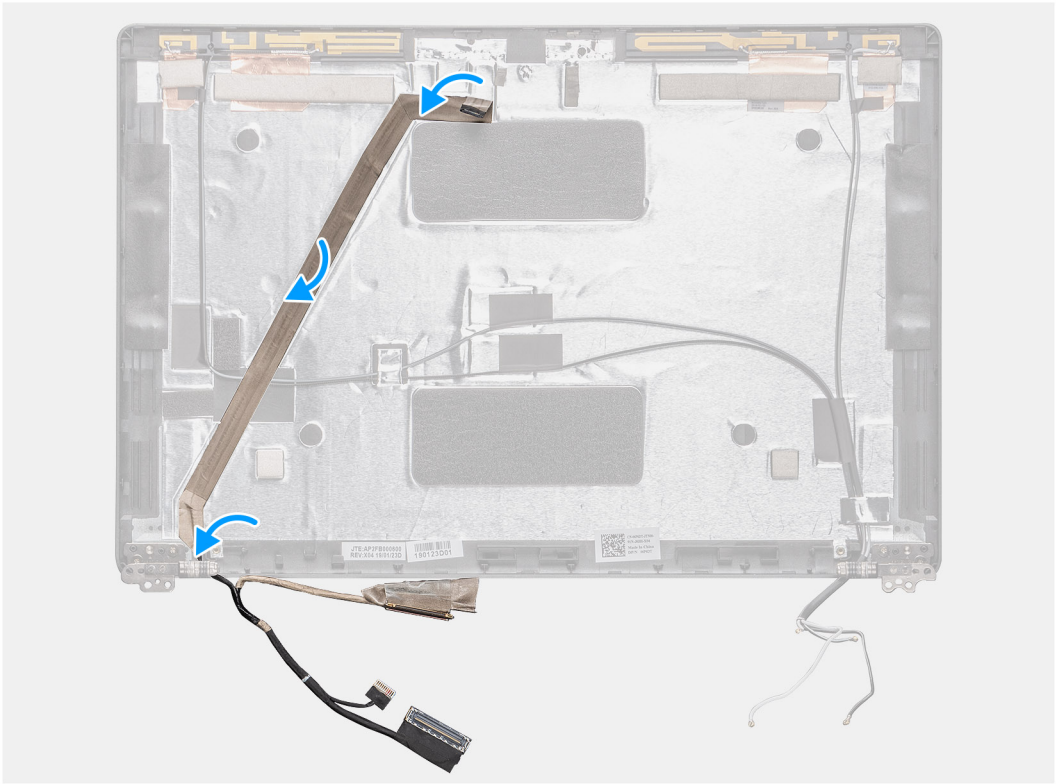
Peel the conductive tape and unroute the display cable to release it from adhesive and lift the display cable from the display back cover.

Installing display cable

About this task

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





Steps

1. Adhere the display cable to the display back cover.
2. Adhere the conductive tape and route the display cable to the display back cover.

Next steps

1. Install the camera.
2. Install the display panel.
3. Install the display hinge caps.
4. Install the display bezel.
5. Install the display assembly.
6. Install the battery.
7. Install the base cover.
8. Follow the procedure in After working inside your computer.

Display panel

Removing the display panel

Prerequisites

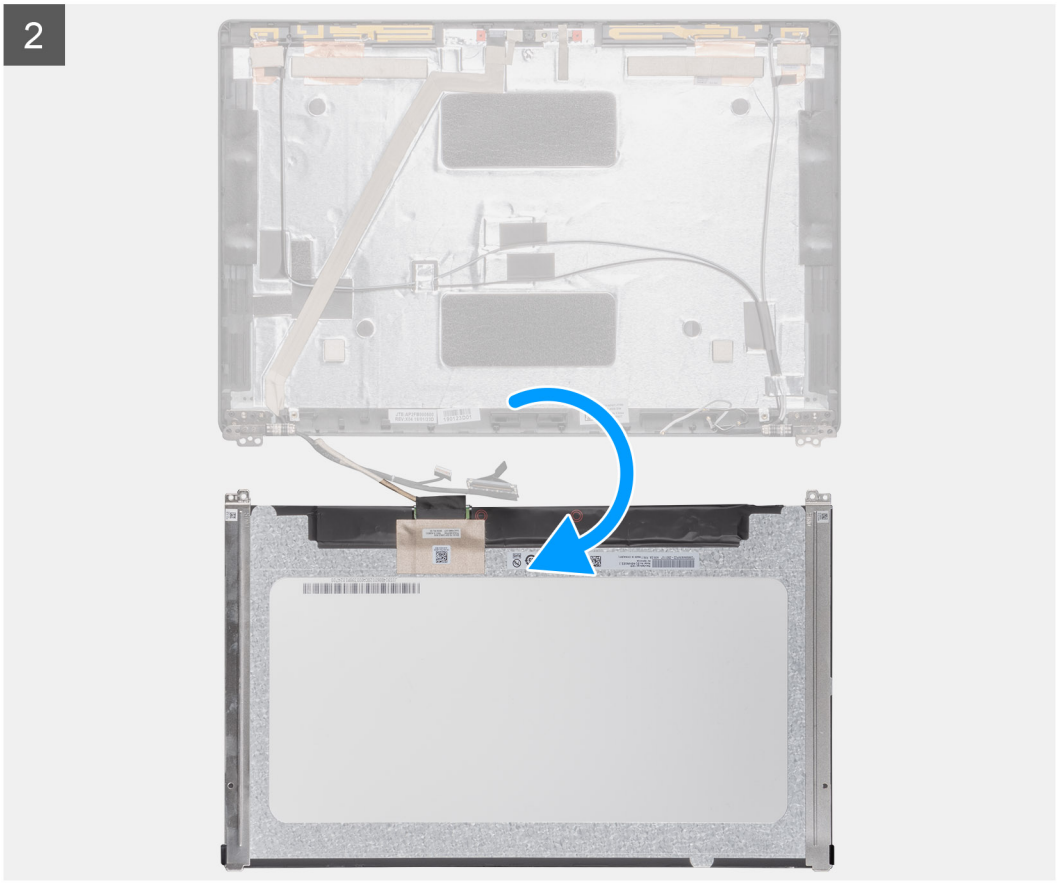
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the display assembly.
5. Remove the display bezel.
6. Remove the display hinge caps.

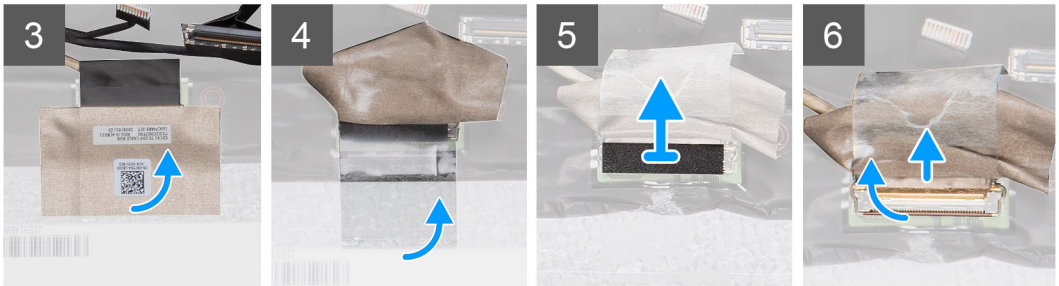
About this task

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

2x
M2.5x3

1





Steps

1. Locate the display panel on the display back cover assembly.

2. Remove the two (M2.5x3) screws that secure the display panel to the display assembly.
3. Lift to turn over the display panel to access the display cable.
4. Peel the conductive tape on the display cable connector.

   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.
5. Lift the latch and disconnect the display cable from the connector on the display panel.

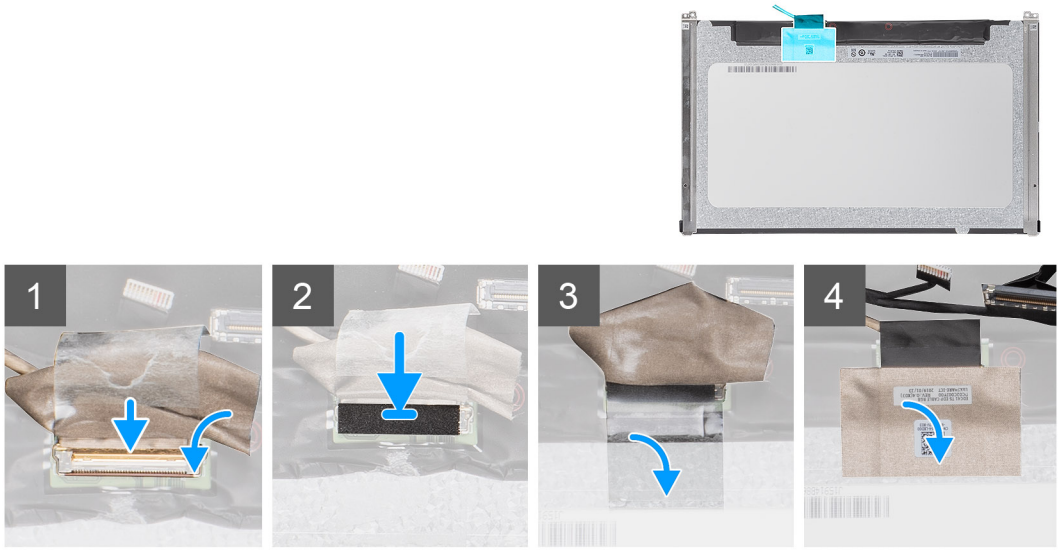
Installing the display panel

Prerequisites

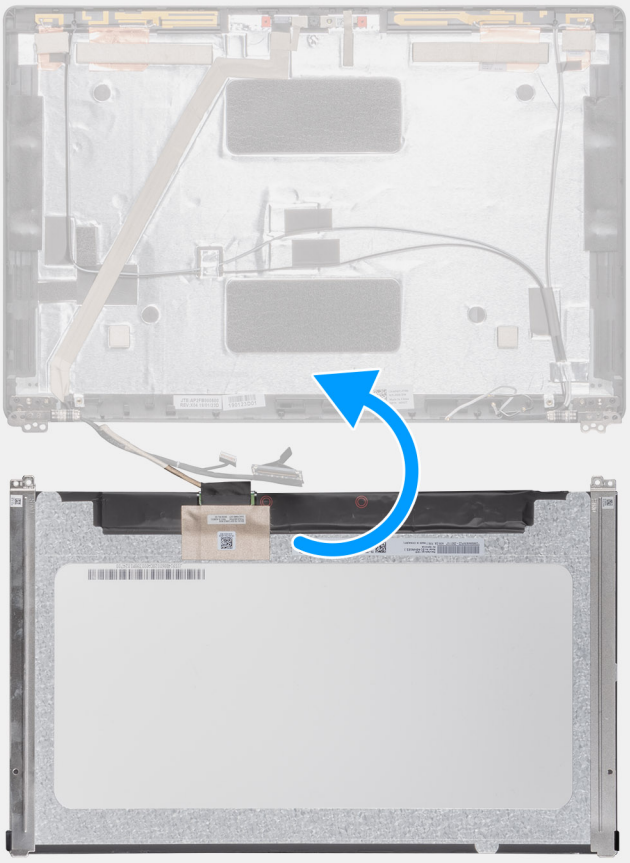
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



5



2x
M2.5x3

Steps

1. Connect the display cable to the connector and close the latch.
2. Adhere the adhesive strip to secure the display cable connector.
3. Turn back and place the display panel over the display back cover.
4. Replace the two (M2.5x3) screws that secure the display panel to the display assembly.

Next steps

1. Install the display hinge caps.
2. Install the display bezel.
3. Install the display assembly.
4. Install the battery.
5. Install the base cover.
6. Follow the procedure in After working inside your computer.

Display bezel

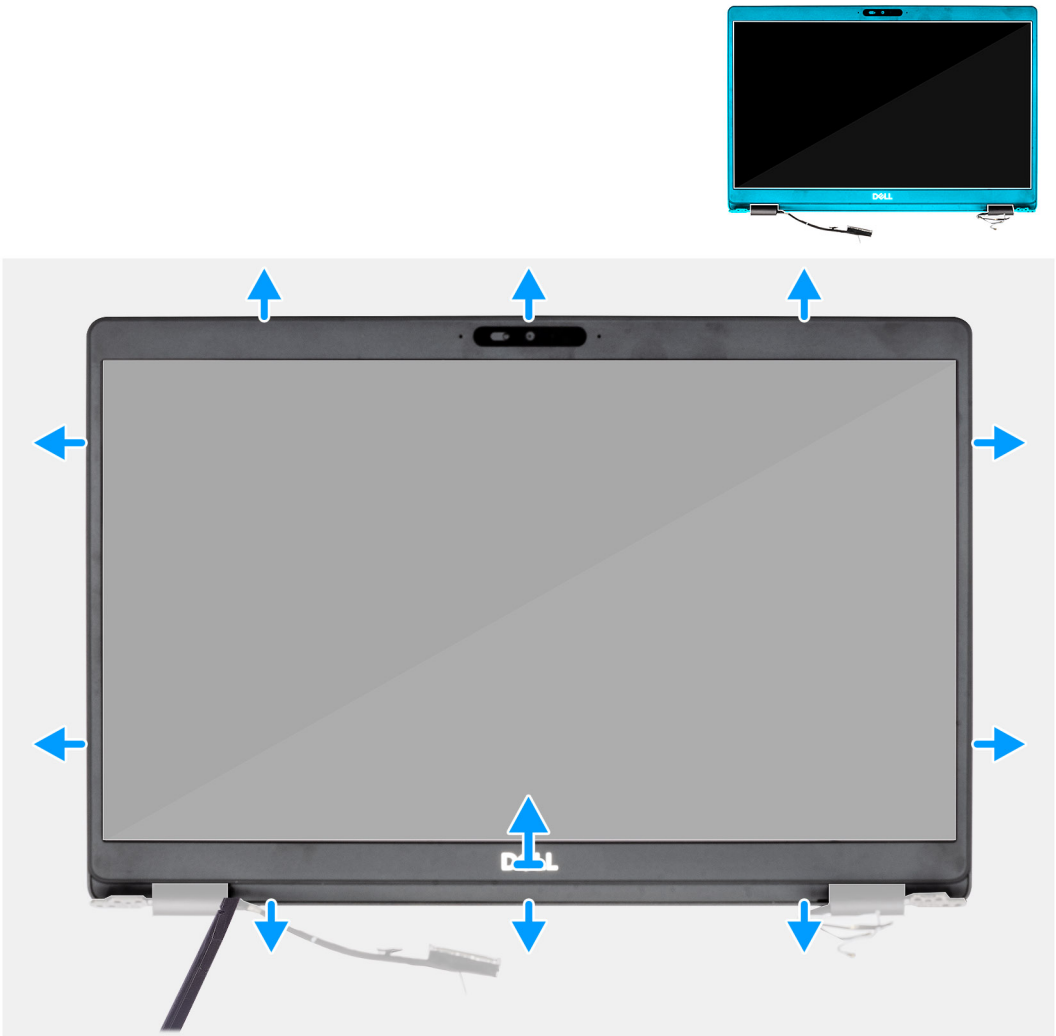
Removing the display bezel

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the WLAN card.
5. Remove the WWAN card.
6. Remove the display assembly.

About this task

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



Steps

1. Use a plastic scribe to pry open the bottom edge of the display bezel beginning from the recesses near the hinges.
2. Work your way around the edges of the display bezel to release it from the display back cover.
3. Remove the display bezel off the display back cover.

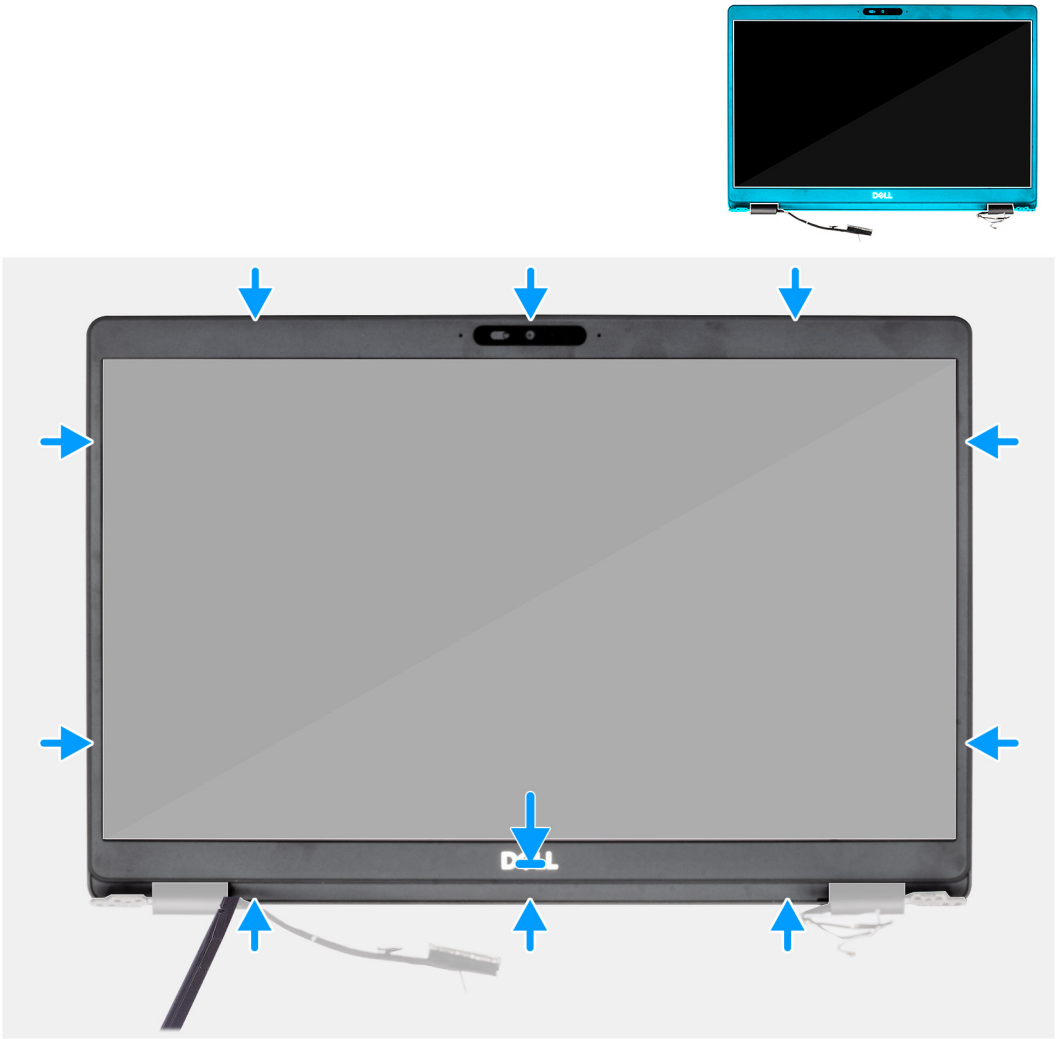
Installing the display bezel

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 display bezel and provides a visual representation of the installation procedure.



Steps

Align the display bezel with the display back-cover and antenna assembly, and gently snap the display bezel into place.

Next steps

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

Display assembly

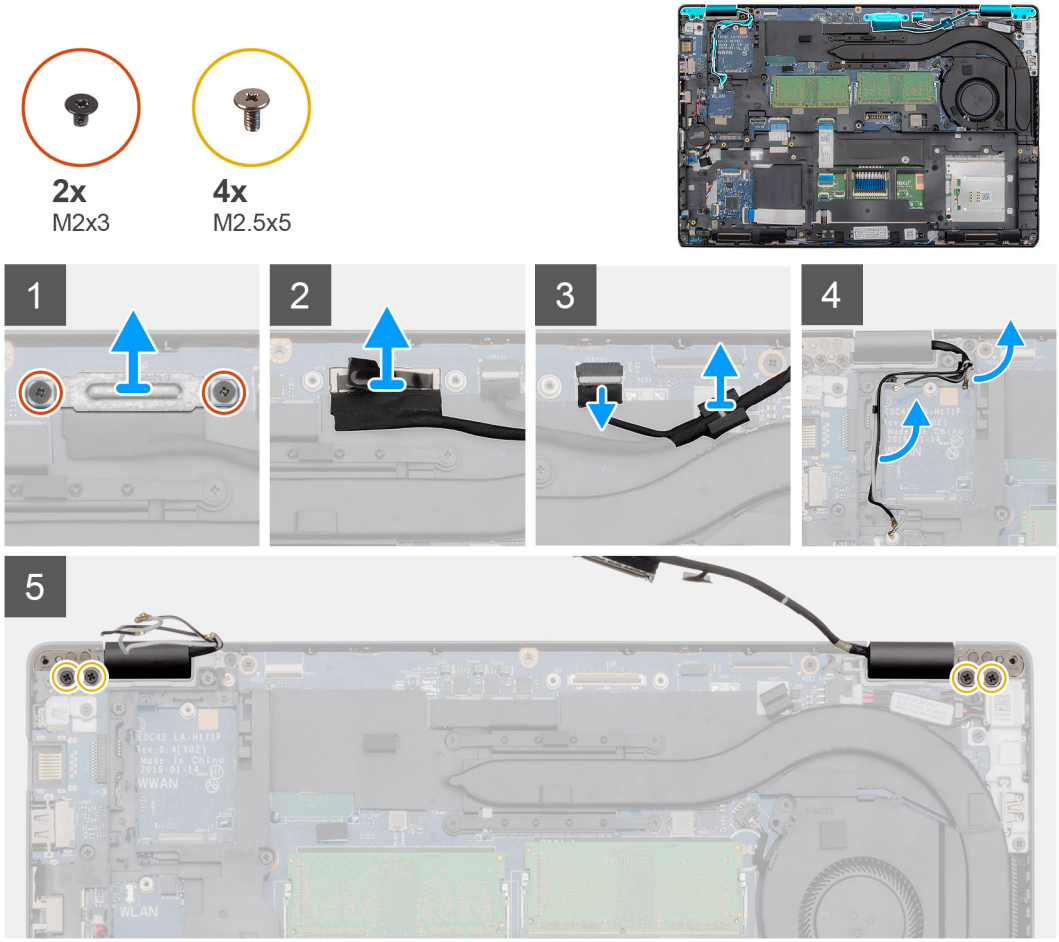
Removing the display assembly

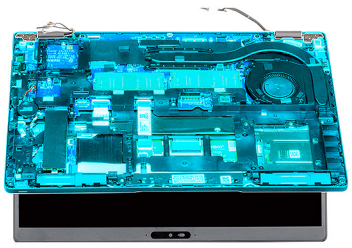
Prerequisites

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

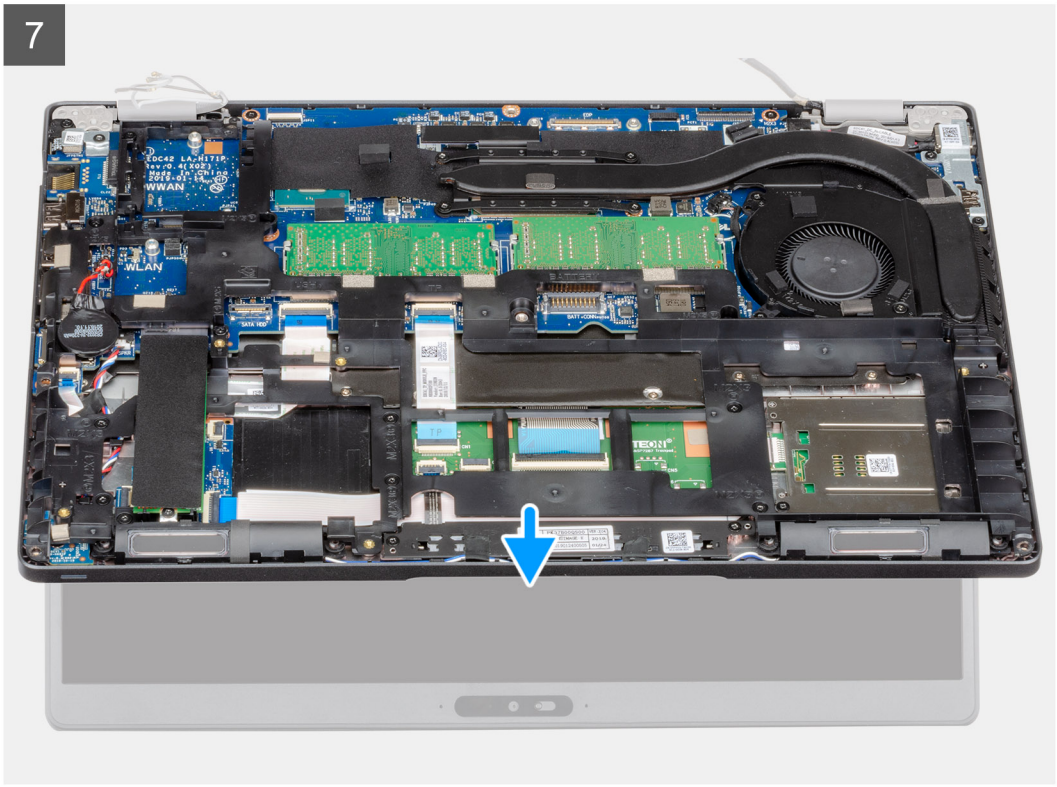
About this task

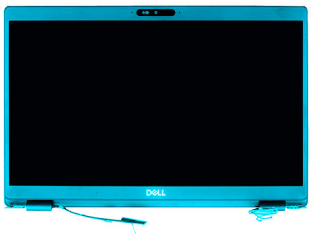
The figure indicates the location of the display assembly and provides a visual representation of the removal procedure.





7





Steps

1. Remove the two (M2x3) screws that secure the EDP metal bracket to the computer.
2. Peel the tape that secures the display cable to the system board.
3. Open the latch and disconnect the display cable from the system board.
4. Disconnect the touchscreen cable from the connector on the system board.
5. Unroute the WLAN and WWAN cables from the retention clips.
6. Remove the four (M2.5x5) screws that secure the display hinges to the chassis of your computer.
7. Open the display hinges at an angle of 90 degrees and slightly open the display.
8. Remove the palm-rest and keyboard assembly off the display assembly.

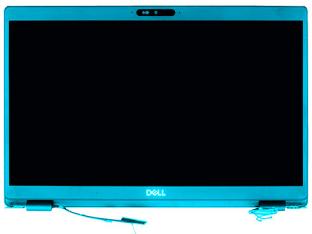
Installing the display assembly

Prerequisites

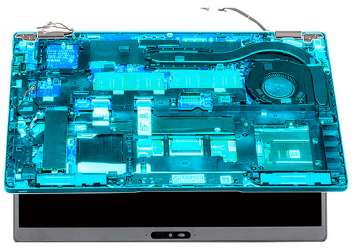
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

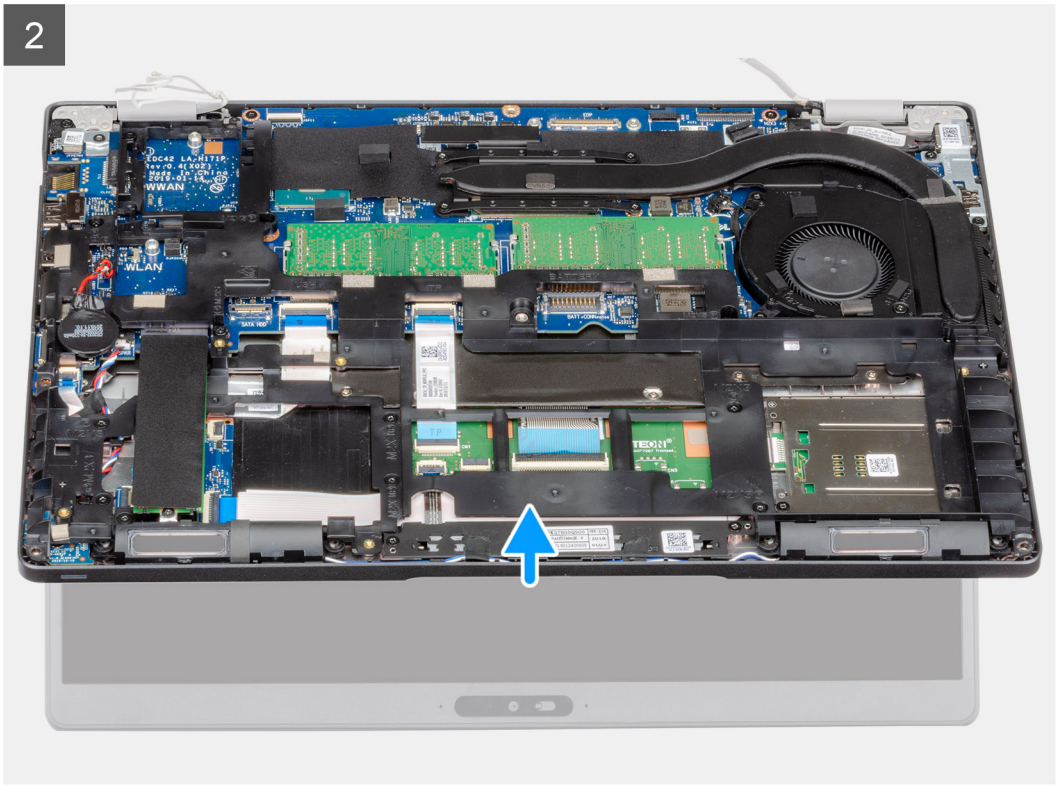
The figure indicates the location of the component and provides a visual representation of the installation procedure.

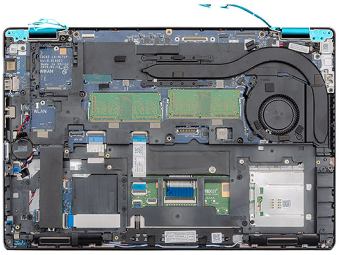


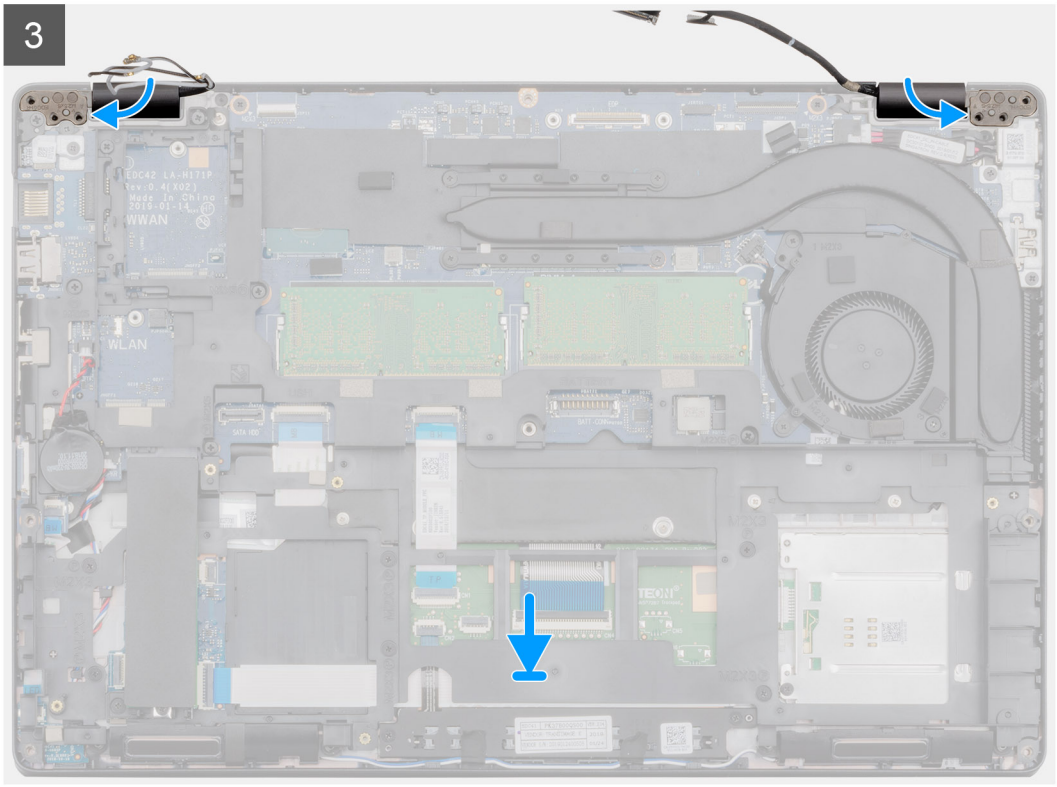

1

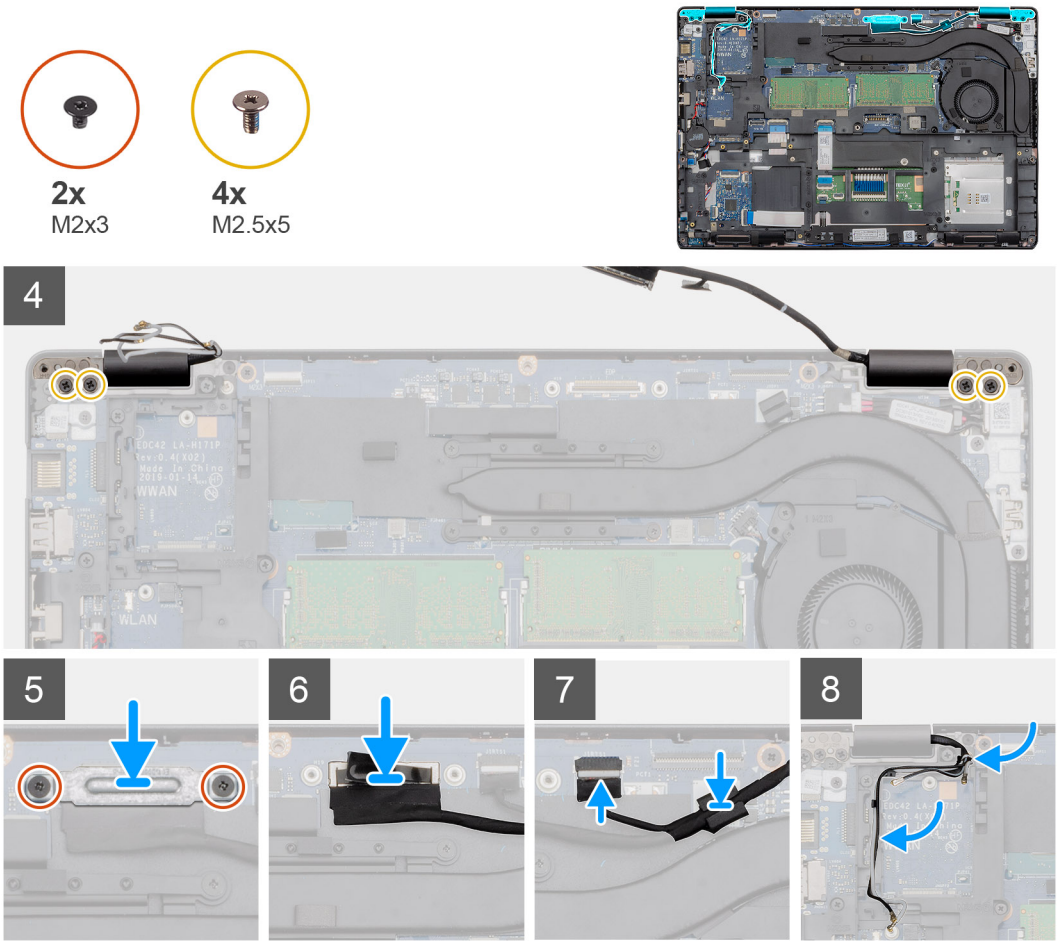


2






3
WWAN
WLAN



Steps

1. Place the display assembly on a clean and flat surface.
2. Align and place the palmrest 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 display cable metal bracket on the display cable connector.
6. Replace the two (M2x3) screw to secure the display cable metal bracket to the system board.
7. Connect the touchscreen cable to the connector on the system board.
8. Replace the four (M2.5x5) screws that secure the display hinge to the chassis of the computer.
9. Route the WWAN cable and the WLAN cable through the retention clips provided.

Next steps

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

Camera

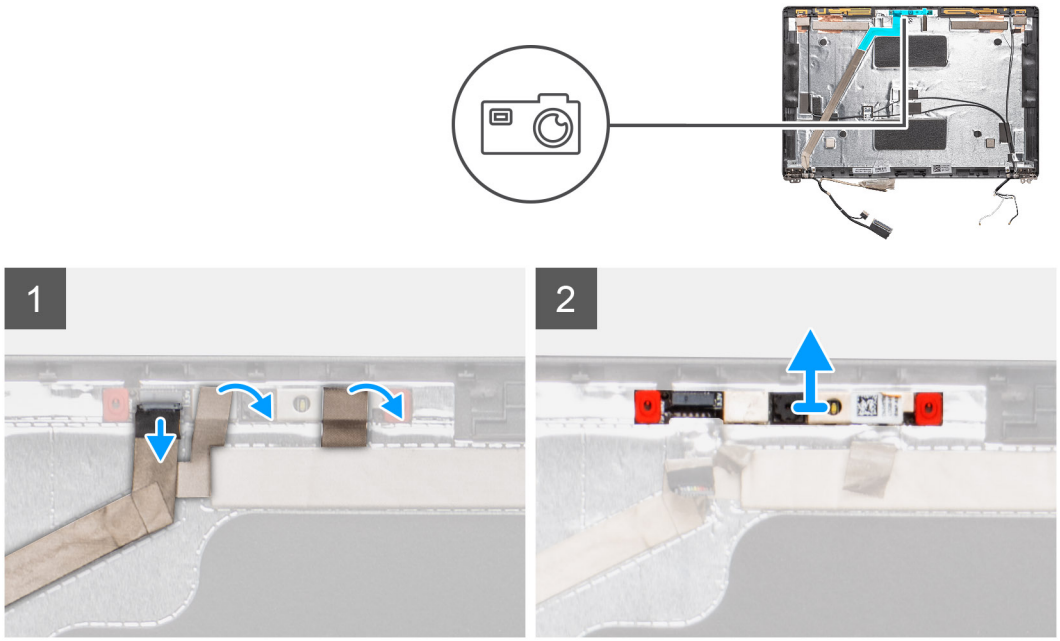
Removing camera

Prerequisites

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

About this task

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



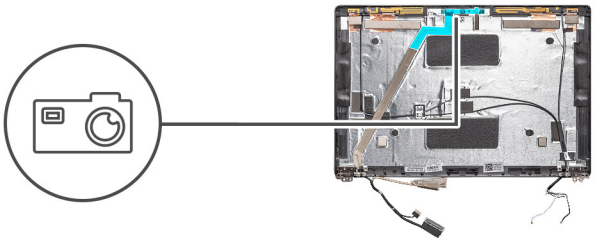
Steps

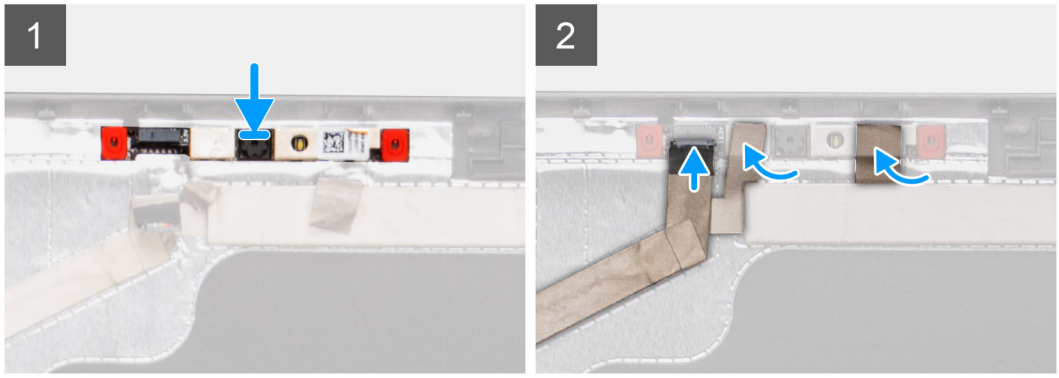
1. Peel the two conductive tape that secures the camera in place.
2. Disconnect the camera cable from the connector on the camera module .
3. Carefully pry and lift the camera module from the display back cover.

Installing camera

About this task

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





Steps

1. Insert the camera into the slot on the display back cover .
2. Connect the camera cable to the connector and adhere the adhesive tape above the camera connector.
3. Affix the two conductive tape above the camera module.

Next steps

1. Install the display panel.
2. Install the display hinge caps.
3. Install the display bezel.
4. Install the display assembly.
5. Install the battery.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Palmrest assembly

Replacing the palmrest assembly

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the 2280 SATA SSD.
5. Remove the memory.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the inner frame.
9. Remove the LED board.
10. Remove the DC-in.
11. Remove the system board.

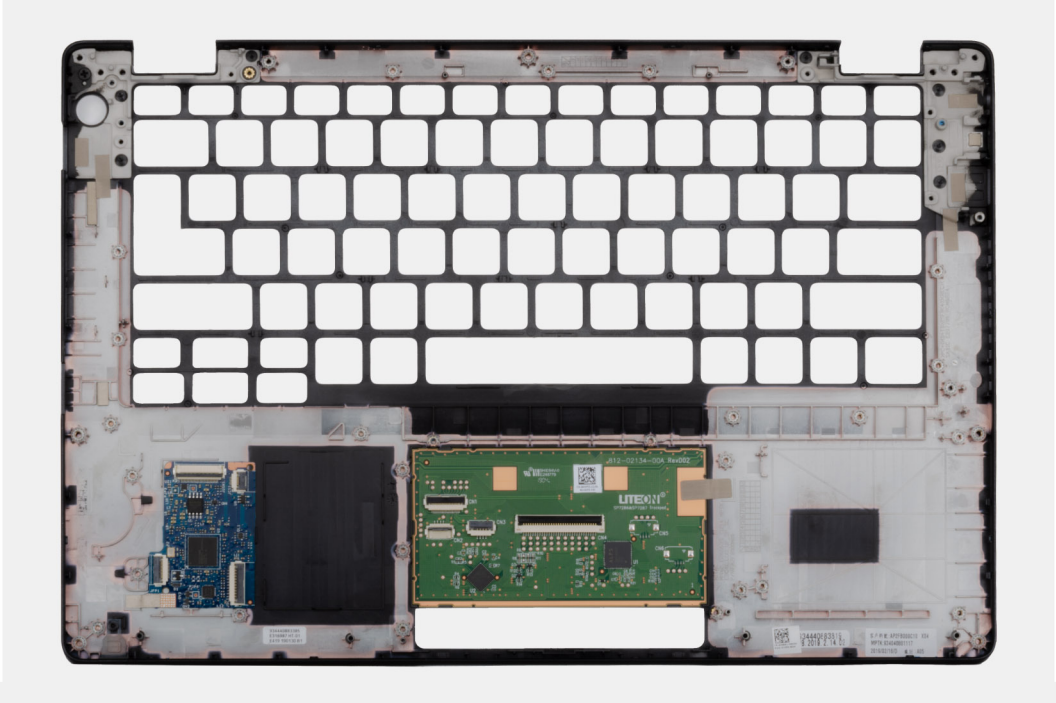
NOTE: System board can be removed with heatsink attached.

12. Remove the keyboard.
13. Remove the smart card reader.
14. Remove the display assembly.

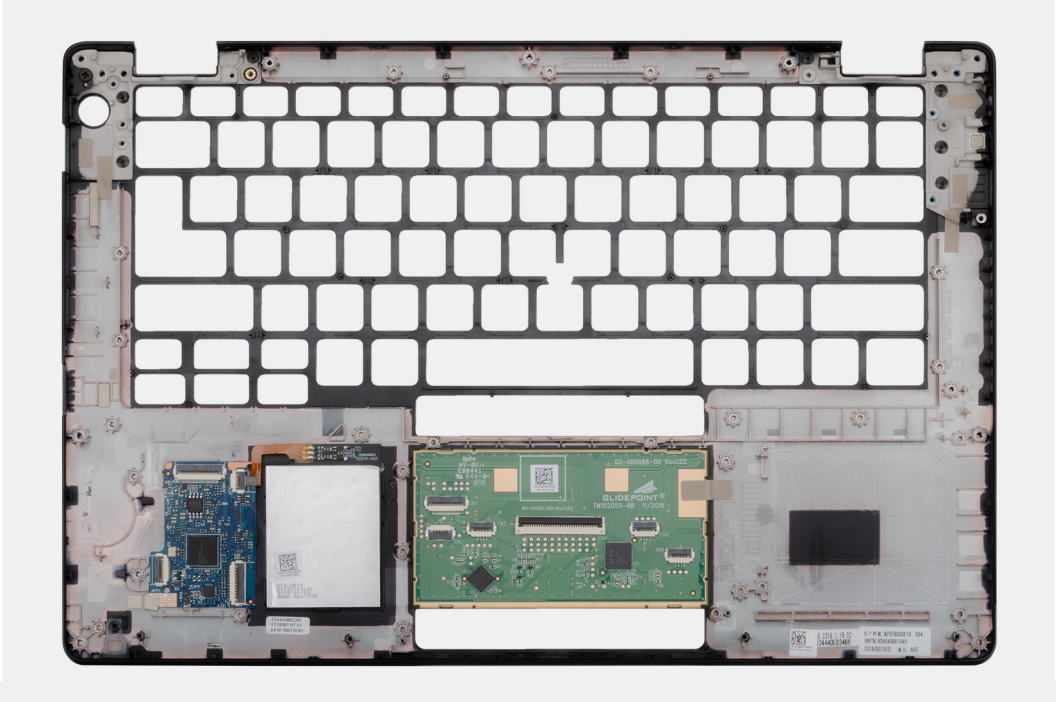
About this task

After performing the preceding steps, you are left with the palmrest.

Palmrest without contactless smart card reader:



Palmrest with contactless smart card reader:



Next steps

1. Install the display assembly.

2. Install the smart card reader.
3. Install the keyboard.
4. Install the system board.

   NOTE: System board can be installed with heatsink attached.
5. Install the DC-in.
6. Install the LED board.
7. Install the inner frame.
8. Install the memory.
9. Install the WLAN card.
10. Install the WWAN card.
11. Install the 2280 SATA SSD.
12. Install the battery.
13. Install the base cover.
14. Follow the procedure in After working inside your computer.

3

System 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: 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:

Boot menu

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

The options are:

- UEFI Boot:
  - Windows Boot Manager
- Other Options:
  - BIOS Setup
  - BIOS Flash Update
  - Diagnostics
  - Change Boot Mode Settings

Navigation keys

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

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

Keys	Navigation
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.

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive

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

  NOTE: Choosing Diagnostics, displays the ePSA diagnostics screen.

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

System setup options

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

General options

Table 2. General

Option	Description
System Information	Displays the following information: • System Information: Displays **BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date,** and the **Express Service Code**. • Memory Information: Displays **Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, Memory Technology, DIMM A size, and DIMM B size** • Processor Information: Displays **Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable,** and **64-Bit Technology.** • Device Information: Displays **Primary HDD, M.2 PCIe SSD-0, LOM MAC Address, Video Controller, Video BIOS Version, Video Memory, Panel type, Native Resolution, Audio Controller, Wi-Fi Device, and Bluetooth Device.**
Battery Information	Displays the battery status health and whether the AC adapter is installed.
Boot Sequence	Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list.
UEFI Boot Path Security	This option controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu. • Always, Except Internal HDD—Default • Always, Except Internal HDD&PXE • Always • Never

Option	Description
Date/Time	Allows you to set the date and time settings. Changes to the system date and time take effect immediately.

.

System information

Table 3. System Configuration

Option	Description
Integrated NIC	Allows you to configure the on-board LAN controller. • Disabled = The internal LAN is off and not visible to the operating system. • Enabled = The internal LAN is enabled. • Enabled w/PXE = The internal LAN is enabled (with PXE boot) (selected by default)
SATA Operation	Allows you to configure the operating mode of the integrated hard drive controller. • Disabled = The SATA controllers are hidden • AHCI = SATA is configured for AHCI mode • RAID ON = SATA is configured to support RAID mode (selected by default)
Drives	Allows you to enable or disable the various drives on-board: • SATA-2 (enabled by default) • M.2 PCIe SSD-0 (enabled by default)
Smart Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. The **Enable Smart Reporting option** is disabled by default.
USB Configuration	Allows you to enable or disable the integrated USB controller for: • Enable USB Boot Support • Enable External USB Port All the options are enabled by default.
Thunderbolt Adapter Configuration	This section allows Thunderbolt Adapter Configuration. • Thunderbolt-is enabled by default • Enable Thunderbolt Boot Support-is disabled • No security-is disabled • User configuration-enabled by default • Secure connect-is disabled • Display port and USB Only-is disabled
USB PowerShare	This option configures the USB PowerShare feature behavior. • Enable USB PowerShare - disabled by default This feature is intended to allow users to power or charge external devices, such as phones and portable music players, using the stored system battery power through the USN PowerShare port on the notebook, while the notebook is in a sleep state.
Audio	Allows you to enable or disable the integrated audio controller. The option **Enable Audio** is selected by default. • Enable Microphone • Enable Internal Speaker Both the options are selected by default.
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are:

Option	Description
	• Disabled • Dim • Bright-enabled by default
Keyboard Backlight Timeout on AC	The Keyboard Backlight Timeout dims out with AC option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are: • 5 sec • 10 sec-enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Keyboard Backlight Timeout on Battery	The Keyboard Backlight Timeout dims out with the Battery option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are: • 5 sec • 10 sec-enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Unobtrusive Mode	• Enable Unobtrusive Mode (disabled by default) When enabled pressing Fn+Shift+B will turn off all light and sound emissions in the system. Press Fn+Shift+B to resume normal operation.
Miscellaneous Devices	Allows you to enable or disable the following devices: • Enable Camera (enabled by default) • Enable Hard Drive Free Fall Protection(enabled by default) • Enable Secure Digital (SD) Card (enabled by default) • Secure Digital (SD) Card Boot • Secure Digital (SD) Card Read-Only Mode
MAC Address Pass-Through	• System Unique MAC Address (disabled by default) • Integrated NIC 1 MAC Address • Disabled The feature replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the system. The default option is to use the Passthrough MAC address.

Video

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

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

Security

Table 4. Security

Option	Description
Admin Password	Allows you to set, change, and delete the admin password.
System Password	Allows you to set, change, and delete the system password.
Internal HDD-2 Password	This option lets you set, change, or delete the password on the system's internal hard disk drive (HDD).
Strong Password	This option lets you enable or disable strong passwords for the system.
Password Configuration	Allows you to control the minimum and maximum number of characters allowed for a administrative password and the system password. The range of characters is between 4 and 32.
Password Bypass	This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart. • Disabled — Always prompt for the system and internal HDD password when they are set. This option is enabled by default. • Reboot Bypass — Bypass the password prompts on Restarts (warm boots). **NOTE: The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present.**
Password Change	This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set. **Allow Non-Admin Password Changes** - This option is enabled by default.
UEFI Capsule Firmware Updates	This option controls whether this system allows BIOS updates via UEFI capsule update packages. This option is selected by default. Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS)
TPM 2.0 Security	Allows you to control whether the Trusted Platform Module (TPM) is visible to the operating system. • TPM On (default) • Clear • PPI Bypass for Enable Commands • PPI Bypass for Disable Commands • PPI Bypass for Clear Commands • Attestation Enable (default) • Key Storage Enable (default) • SHA-256 (default) Choose any one option: • Disabled • Enabled (default)
Absolute	This field lets you Enable, Disable or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. • Enabled - This option is selected by default. • Disabled • Permanently Disabled
OROM Keyboard Access	This option determines whether users are able to enter Option ROM configuration screen via hotkeys during boot. • Enabled (default) • Disabled • One Time Enable

Option	Description
Admin Setup Lockout	Allows you to prevent users from entering Setup when Admin password is set. This option is not set by default.
Master Password Lockout	Allows you to disable master password support Hard Disk passwords need to be cleared before the settings can be changed. This option is not set by default.
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protections. This option is not set by default.

Secure boot

Table 5. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable Secure Boot feature · Secure Boot Enable Option is not selected.
Secure Boot Mode	Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. · Deployed Mode (default) · Audit Mode
Expert key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: · PK (default) · KEK · db · dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: · **Save to File**- Saves the key to a user-selected file · **Replace from File**- Replaces the current key with a key from a user-selected file · **Append from File**- Adds a key to the current database from a user-selected file · **Delete**- Deletes the selected key · **Reset All Keys**- Resets to default setting · **Delete All Key**s- Deletes all the keys **NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.**

Intel Software Guard Extensions

Table 6. Intel Software Guard Extensions

Option	Description
Intel SGX Enable	This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. Click one of the following options: · **Disabled** · **Enabled** · **Software controlled—Default**

Option	Description
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory Size** Click one of the following options: · **32 MB** · **64 MB** · **128 MB**—Default

Performance

Table 7. Performance

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. · **All**—Default · **1** · **2** · **3**
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of processor. · **Enable Intel SpeedStep** This option is set by default.
C-States Control	Allows you to enable or disable the additional processor sleep states. · **C states** This option is set by default.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. · **Enable Intel TurboBoost** This option is set by default.
Hyper-Thread Control	Allows you to enable or disable the HyperThreading in the processor. · **Disabled** · **Enabled**—Default

Power management

Option	Description
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. Default setting: Wake on AC is not selected.
Enable Intel Speed Shift Technology	· Enable Intel Speed Shift Technology Default setting: Enabled
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: · Disabled

Option	Description
	• Every Day • Weekdays • Select Days Default setting: Disabled
USB Wake Support	Allows you to enable USB devices to wake the system from Standby. **NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.** • Enable USB Wake Support
Wireless Radio Control	If Enabled, this feature will sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN and/ or WWAN). • Control WLAN radio - is disabled
Wake on LAN	Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal. • Disabled • LAN Only • LAN with PXE Boot Default setting: Disabled
Block Sleep	This option lets you to block entering to sleep in OS environment. When enabled system won't go to sleep. Block Sleep - is disabled
Peak Shift	This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached. • Enable peak shift—is disabled • Set battery threshold (15% to 100%) - 15 % (enabled by default)
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non work hours to improve the battery health. Enable Advanced Battery Charge Mode- is disabled
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are: • Adaptive—enabled by default • Standard—Fully charges your battery at a standard rate. • ExpressCharge—The battery charges over a shorter time using Dell's fast charging technology. • Primarily AC use • Custom If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop. **NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.**

POST behavior

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. Default setting: Enable Adapter Warnings
Numlock Enable	Allows you to enable the Numlock option when the computer boots. Enable Network. This option is enabled by default.

Option	Description
Fn Lock Options	Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are: • Fn Lock—enabled by default • Lock Mode Disable/Standard—enabled by default • Lock Mode Enable/Secondary
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: • Minimal • Thorough—enabled by default • Auto
Extended BIOS POST Time	Allows you to create an extra preboot delay. The options are: • 0 seconds—enabled by default. • 5 seconds • 10 seconds
Full Screen Log	• Enable Full Screen Logo—not enabled
Warnings and errors	• Prompt on warnings and errors—enabled by default • Continue on warnings • Continue on warnings and errors

Manageability

Option	Description
Intel AMT Capability	Allows you to provision AMT and MEBx Hotkey function is enabled, during the system boot. • Disabled • Enabled - by default • Restrict MEBx Access
USB Provision	When enabled Intel AMT can be provisioned using the local provisioning file via a USB storage device. • Enable USB Provision - disabled by default
MEBX Hotkey	Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. • Enable MEBx hotkey—enabled by default

Virtualization support

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

Wireless

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

Maintenance screen

Option	Description
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: • Internal SATA HDD/SSD • Internal M.2 SATA SDD • Internal M.2 PCIe SSD • Internal eMMC
BIOS Recovery	This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. • BIOS Recovery from Hard Drive—enabled by default • Always perform integrity check—disabled by default
First Power On Date	This option lets you set Ownership date. • Set Ownership Date—disabled by default

System logs

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

Updating the BIOS in Windows

Prerequisites

It is recommended to update your BIOS (System Setup) when you replace the system board or if an update is available.

About this task

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

Steps

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

   NOTE: Choose the appropriate category to reach the product page.
5. Select your computer model and the **Product Support** page of your computer appears.
6. Click **Get drivers** and click **Drivers and Downloads**.
   The Drivers and Downloads section opens.
7. Click **Find it myself**.
8. Click **BIOS** to view the BIOS versions.
9. Identify the latest BIOS file and click **Download**.
10. Select your preferred download method in the **Please select your download method below** window, click **Download File**.
    The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.
    Follow the instructions on the screen.

Updating BIOS on systems with BitLocker enabled

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 reinstall. For more information about this subject, see Knowledge Article: Updating the BIOS on Dell Systems With BitLocker Enabled

Updating your system BIOS using a USB flash drive

About this task

If the system cannot load into Windows, but there is still a need to update the BIOS, download the BIOS file using another system and save it to a bootable USB Flash Drive.

NOTE: You will need to use a bootable USB flash drive. Please refer to the following article for further details How to Create a Bootable USB Flash Drive using Dell Diagnostic Deployment Package (DDDP)

Steps

1. Download the BIOS update .EXE file to another system.
2. Copy the file e.g. O9010A12.EXE onto the bootable USB flash drive.
3. Insert the USB flash drive into the system that requires the BIOS update.
4. Restart the system and press F12 when the Dell splash logo appears to display the One Time Boot Menu.
5. Using arrow keys, select **USB Storage Device** and click **Enter**.
6. The system will boot to a Diag C:\> prompt.
7. Run the file by typing the full filename, for example, O9010A12.exe and press **Enter**.
8. The BIOS Update Utility will load. Follow the instructions on screen.

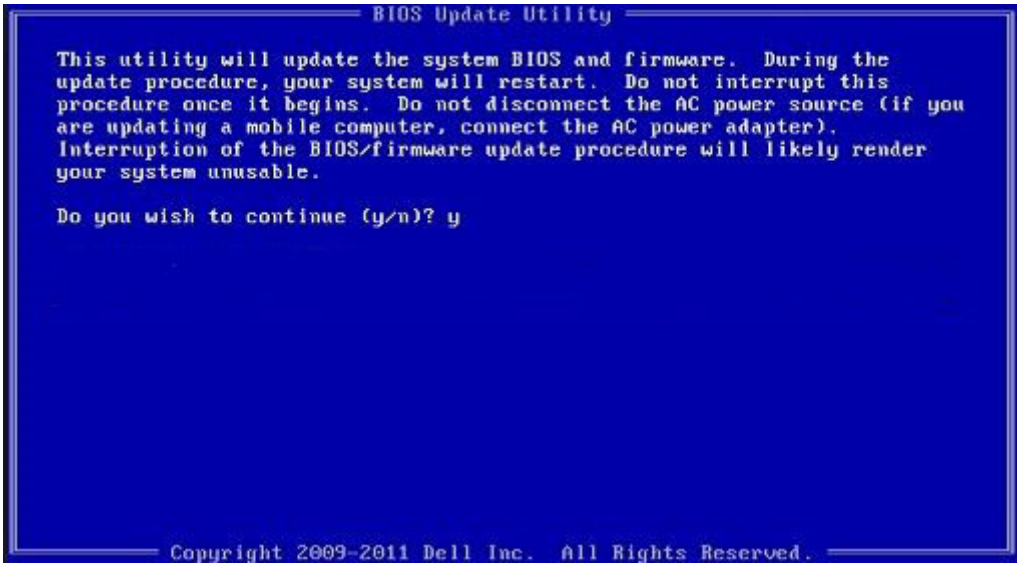


Figure 1. DOS BIOS Update Screen

System and setup password

Table 8. System and setup password

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

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

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

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

NOTE: System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

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

About this task

To enter the system setup, press 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 lower case letters are valid, upper case letters are not allowed.

- Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press **Esc** and a message prompts you to save the changes.
5. Press **Y** to save the changes.
   The computer reboots.

Deleting or changing an existing system setup password

Prerequisites

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

About this task

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

Steps

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

   NOTE: If you change the System and/or Setup password, re enter the new password when prompted. If you delete the System and Setup password, confirm the deletion when prompted.
5. Press **Esc** and a message prompts you to save the changes.
6. Press **Y** to save the changes and exit from System Setup.
   The computer restarts.

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Troubleshooting

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

About this task

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

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

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

Running the ePSA diagnostics

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

Battery-status light

Indicates the power and battery-charge status.

Solid white — Power adapter is connected and the battery has more than 5 percent charge.

Amber — Computer is running on battery and the battery has less than 5 percent charge.

Off

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

The power and battery-status light blinks amber along with beep codes indicating 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.

Table 9. LED codes

Diagnostic light codes	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
2,8	LCD power rail failure. Replace system board
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

Camera status light: Indicates whether the camera is in use.

- Solid white — Camera is in use.
- Off — Camera is not in use.

Caps Lock status light: Indicates whether Caps Lock is enabled or disabled.

- Solid white — Caps Lock enabled.
- Off — Caps Lock disabled.

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.

5

Getting help

Topics:

- Contacting Dell

Contacting Dell

Prerequisites

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

About this task

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

Steps

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