Latitude 9330

Service Manual

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DELL Technologies

Notes, cautions, and warnings

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

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

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

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1

Working inside your computer

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that you have read the safety information that shipped with your computer.

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

WARNING: Disconnect your computer from 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 your computer to an electrical outlet.

CAUTION: To avoid damaging the computer, ensure that the work surface is flat, dry, and clean.

CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the contacts.

CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that is shipped with the product or at www.dell.com/regulatory_compliance.

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

CAUTION: When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the ports and the connectors are correctly oriented and aligned.

CAUTION: Press and eject any installed card from the media-card reader.

CAUTION: Exercise caution when handling Lithium-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.

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

Before working inside your computer

Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. For Windows operating system, click **Start** > **Power** > **Shut down**.

   NOTE: If you are using a different operating system, see the documentation of your operating system for shut-down instructions.
3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

5. Remove any media card and optical disk from your computer, if applicable.
6. Enter the service mode, if you are able to power on your computer.

   Service Mode

   Service Mode is used to cut-off power, without disconnecting battery cable from system board prior conducting repairs in the computer.

   CAUTION: If you are unable to turn on the computer to put it into Service Mode or the computer does not support Service Mode then proceed to disconnect the battery cable. To disconnect the battery cable, follow the steps in Removing the battery.

   NOTE: Ensure that your computer is shut down and the AC adapter is disconnected.

   a. Hold **<B>** key on the keyboard and press the power button for 3 seconds or until the Dell logo appears on the screen.
   b. Press any key to continue.
   c. If the AC adapter is not disconnected, a message prompting you to remove the AC adapter appears on the screen. Remove the AC adapter and then press any key to continue the **Service Mode** procedure. The **Service Mode** procedure automatically skips the following step if the **Owner Tag** of the computer is not set up in advance by the user.
   d. When the ready-to-proceed message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
   e. Once the computer shuts down, it has successfully entered Service Mode.

   NOTE: If you are unable to power on your computer or unable to enter service mode skip this process.

Safety precautions

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

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

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

Standby power

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

Unplugging, pressing and holding the power button for 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.

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.

After working inside your computer

About this task

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

Steps

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

   NOTE: To exit service mode, ensure to connect the AC adapter to the power-adapter port on your computer.

5. Press the power button to turn on the computer. Your computer will automatically return to normal functioning mode.

BitLocker

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.

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

2

Removing and installing components

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

Recommended tools

The procedures in this document may require the following tools:

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

Screw list

NOTE: When removing screws from a component, it is recommended to note the screw type, the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.

NOTE: Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.

NOTE: Screw color may vary with the configuration ordered.

Table 1. Screw list

Component	Screw type	Quantity	Screw image
Base cover	Captive	8	
Solid-state drive	M2x2.5	1	
WWAN card	M2x2.5	1	
System fan	M2x2.5	2	
Heat sink	M2x2.5	3	
Display assembly	• M2x2.5 • M2.5x3	• 2 • 4	•  • 
Battery	M2.5x3	5	
Right speakers	M2x2.5	1	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
Left speakers	M2x2.5	1	
WLAN antenna module	• M2x2.5 • M1.6x2.3	• 2 • 3	•  • 
System board	• M2x2.5 • M2x3.5	• 8 • 5	•  • 
Power button	M1.6x2.3	2	
WLAN LTE antenna module	M1.6x2.3	2	
Keyboard	• M1.2x1.3 • M1.2x1.4	• 37 • 1	•  • 

Customer Replaceable Units (CRU) and Field Replaceable Units (FRU) list

Table 2. CRU/FRU list

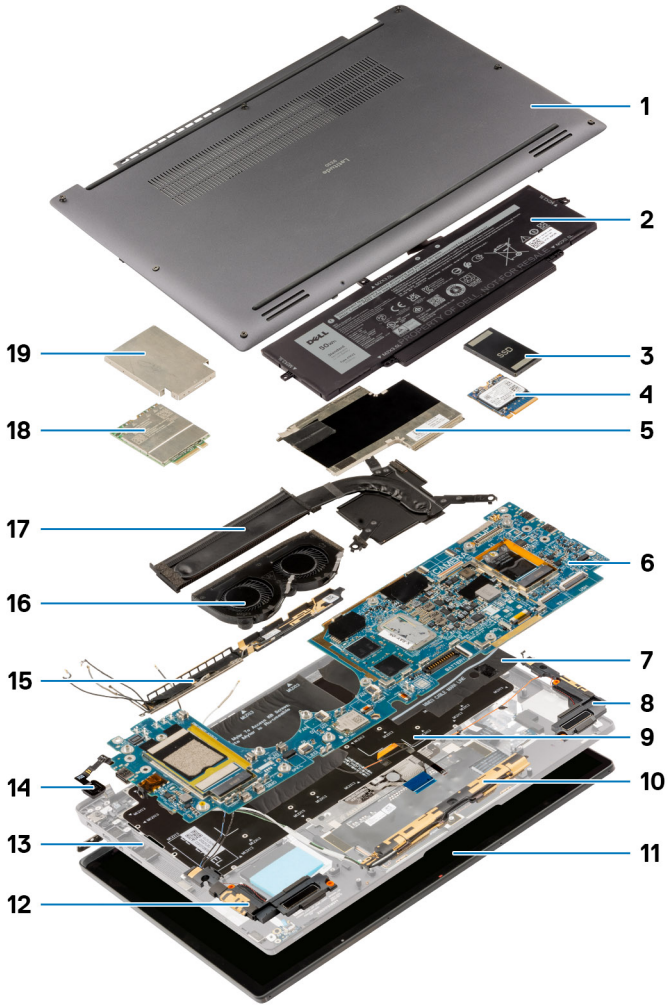
Latitude 9330	CRU component	FRU component
SIM-card tray	✓	✗
Base cover	✓	✗
M.2 solid-state drive	✓	✗
WWAN card	✓	✗
System fan	✓	✗
Heat sink	✗	✓
Display assembly	✗	✓

Table 2. CRU/FRU list (continued)

Latitude 9330	CRU component	FRU component
Battery	✗	✓
Left speaker	✗	✓
Right speaker	✗	✓
WLAN-antenna module	✗	✓
System board	✗	✓
Power button with FPR	✗	✓
Keyboard	✗	✓
Palm-rest assembly	✗	✓

Major components of Latitude 9330

The following image shows the major components of Latitude 9330.



1. Base cover
2. Battery
3. Solid-state drive shield cover
4. Solid-state drive
5. CPU-shielding cover
6. System board
7. Graphite mylar
8. Left speaker
9. Keyboard
10. WLAN-antenna module
11. Display assembly
12. Right speaker
13. Palm-rest assembly
14. Power button with finger-print reader
15. WWAN LTE antenna module
16. System fans
17. Heat sink
18. WWAN card
19. WWAN-card shield cover

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

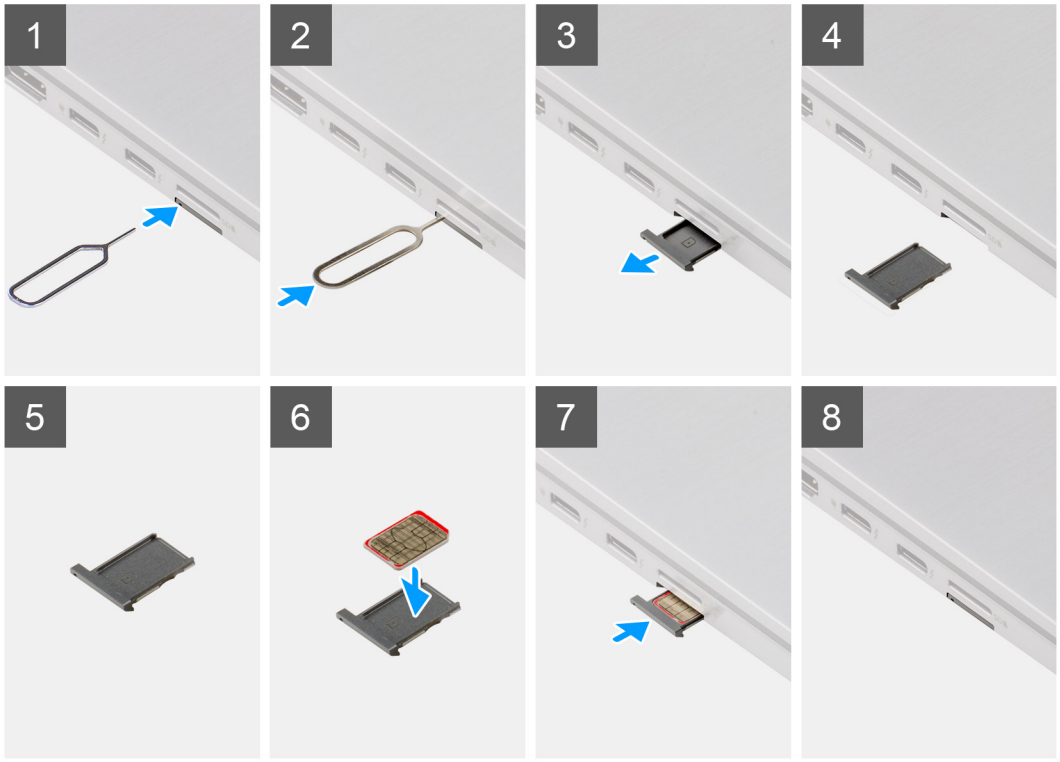
SIM card tray

Removing the SIM-card

About this task

The following images provide a visual representation of the SIM-card removal procedure.





Steps

1. Insert the SIM-card removal pin into the release hole to release the SIM-card tray.
2. Push the pin to disengage the lock, and eject the SIM-card tray.
3. Slide the SIM-card tray out of the slot on the system.
4. Remove the Micro-SIM from the SIM-card tray.
5. Slide the SIM-card tray back into the slot on the system.

Installing the SIM-card tray

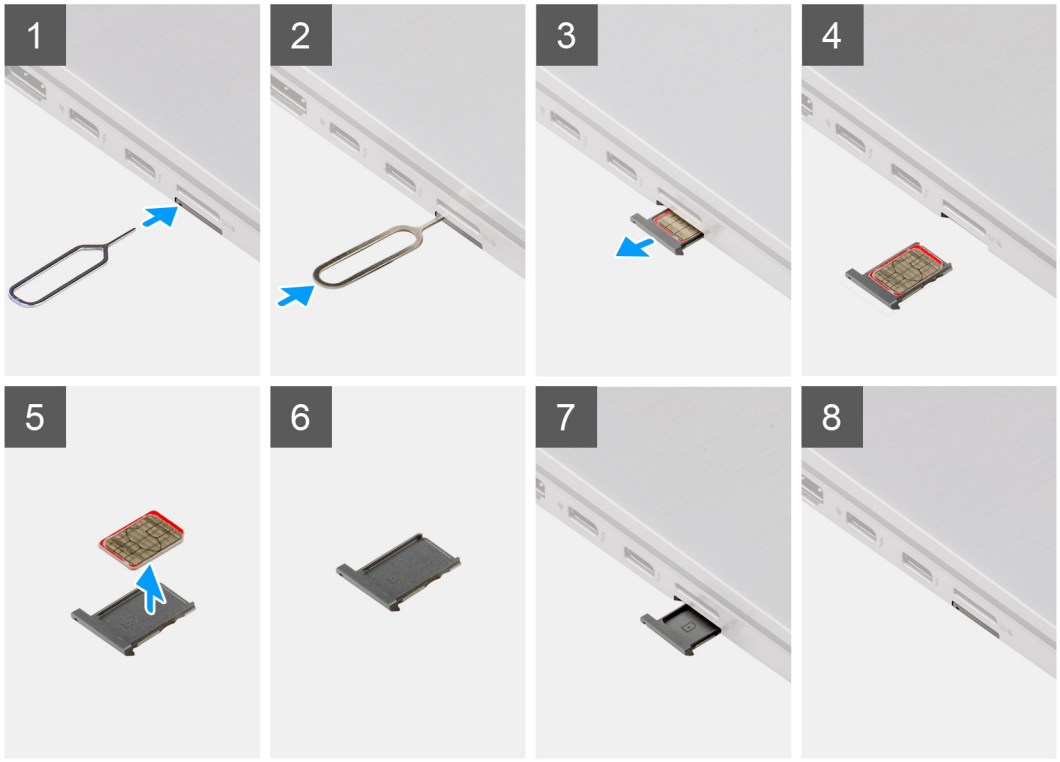
Prerequisites

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

About this task

The following images provide a visual representation of the SIM-card tray installation procedure.





Steps

1. Insert the SIM-card removal pin into the release hole to remove the SIM-card tray.
2. Push the pin to disengage the lock, and eject the SIM-card tray.
3. Slide the SIM-card tray out of the slot on the system.
4. Align and place the Micro-SIM card in the dedicated slot on the SIM-card tray.
5. Slide the SIM-card tray back into the slot on the system.

Base cover

Removing the base cover

Prerequisites

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

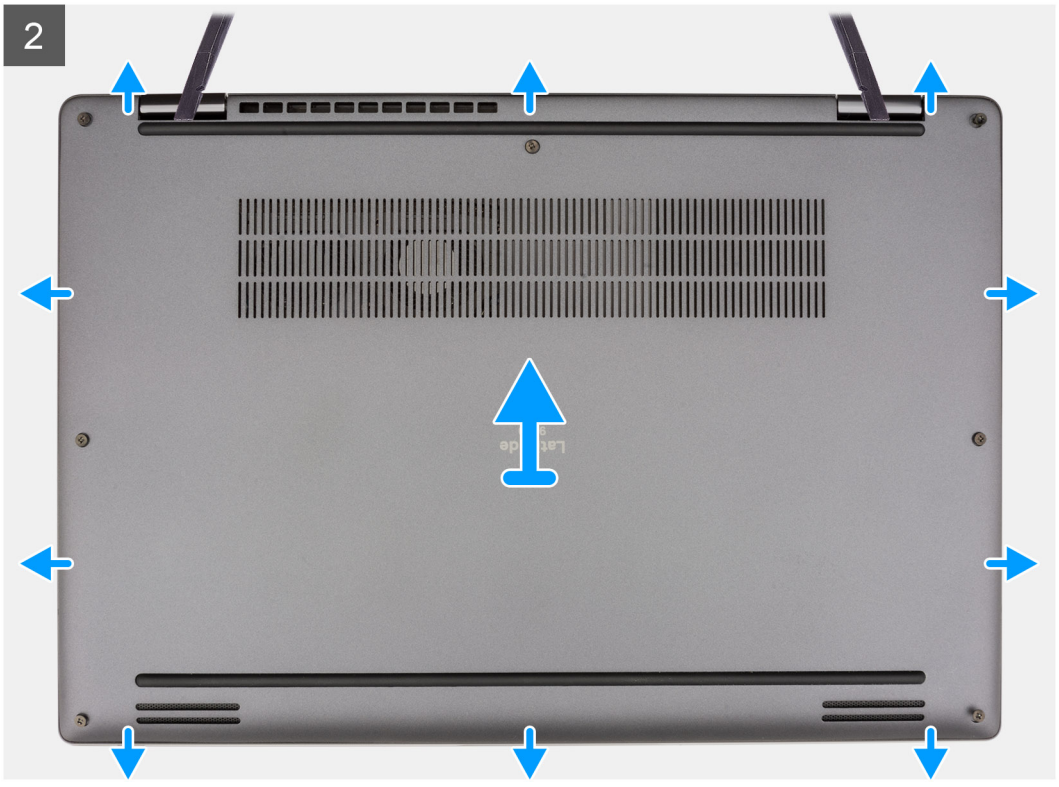
About this task

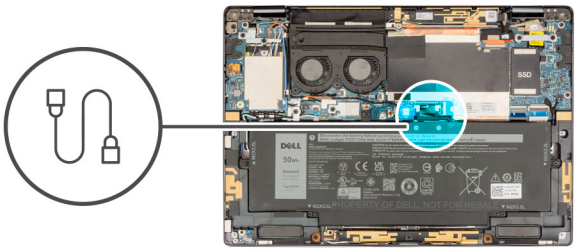
The following images indicate the location of the base cover and provide a visual representation of the removal procedure.

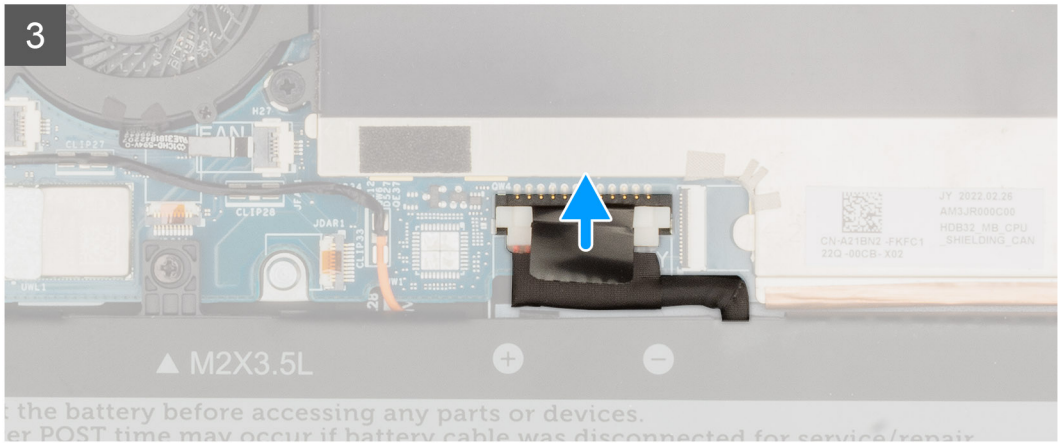


8x











CAUTION: Only use a plastic scribe to disengage and release the clips with the prying motion along the edges of the base cover. Do NOT use your fingers.

Steps

1. Loosen the eight captive screws that secure the base cover to the palm-rest and keyboard assembly.
2. Starting from the U-shaped indents near the hinges, use a plastic scribe to pry the base cover in the direction of the arrows to release the base cover from the palm-rest and keyboard assembly.

   CAUTION: Do not pull on the base cover from the top side immediately after prying it open from the indents. This will cause damage to the base cover. Continue with the steps described below to loosen all the hooks that secure the base cover to the system before removing the base cover.

3. Firmly hold the left side and the right side of the base cover and remove the base cover from the palm-rest and keyboard assembly.
4. Disconnect the battery cable from the system board.

NOTE: Pull the tab on the battery cable in a direct upward motion to disconnect the battery cable.

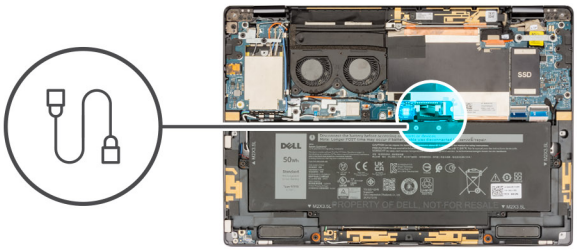
5. Turn your computer over and press the power button for 5 seconds to drain the flea power.

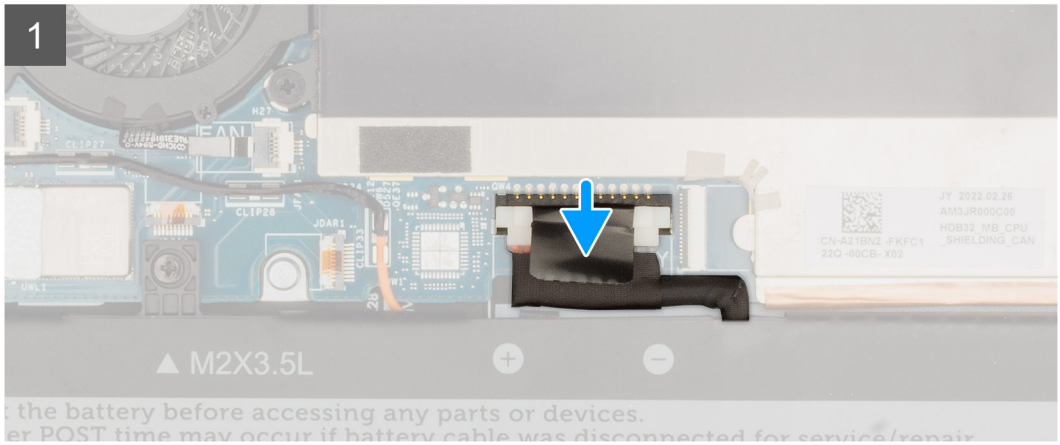
Installing the base cover

Prerequisites

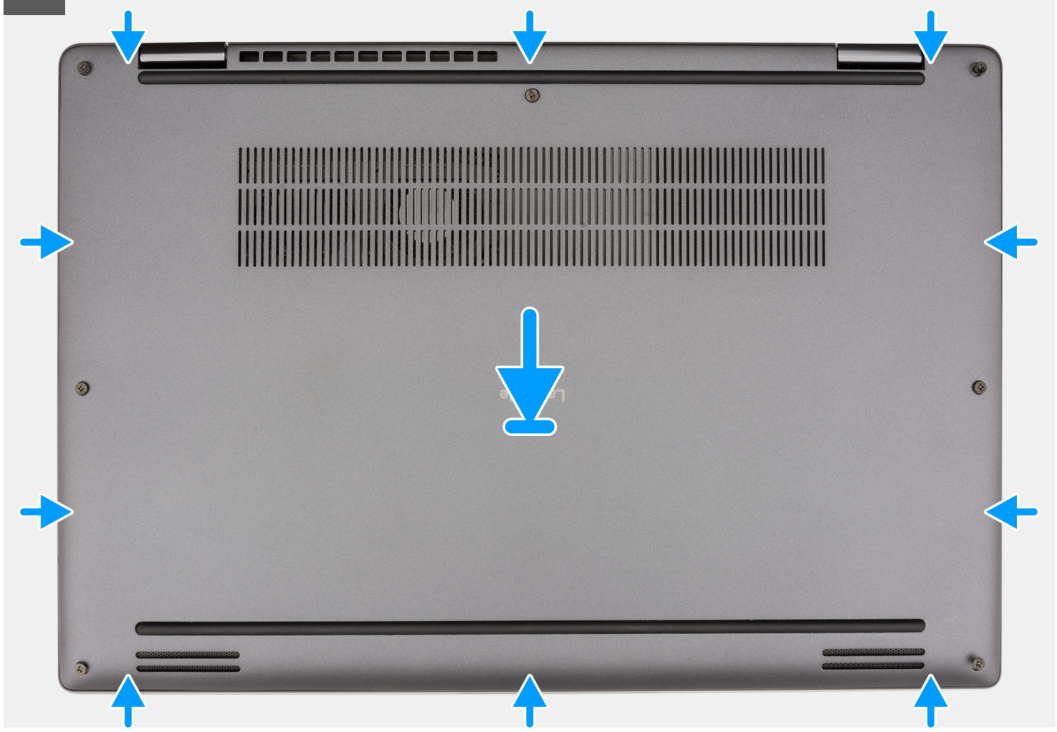
About this task

The following images indicate the location of the base cover and provide a visual representation of the installation procedure.





2





8x

3



Steps

1. Connect the battery cable to the system board.
2. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly, and then snap the base cover into place.

   NOTE: When installing the base cover, press down on the cover near the model name until you hear a click to ensure that the hook on the cover fits securely into the stud on the palm-rest.



3. Tighten the eight captive screws to secure the base cover to the palm-rest and keyboard assembly.

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 completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**

- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen Lithium-ion batteries, see Handling swollen Lithium-ion batteries.**

Removing the battery

Prerequisites

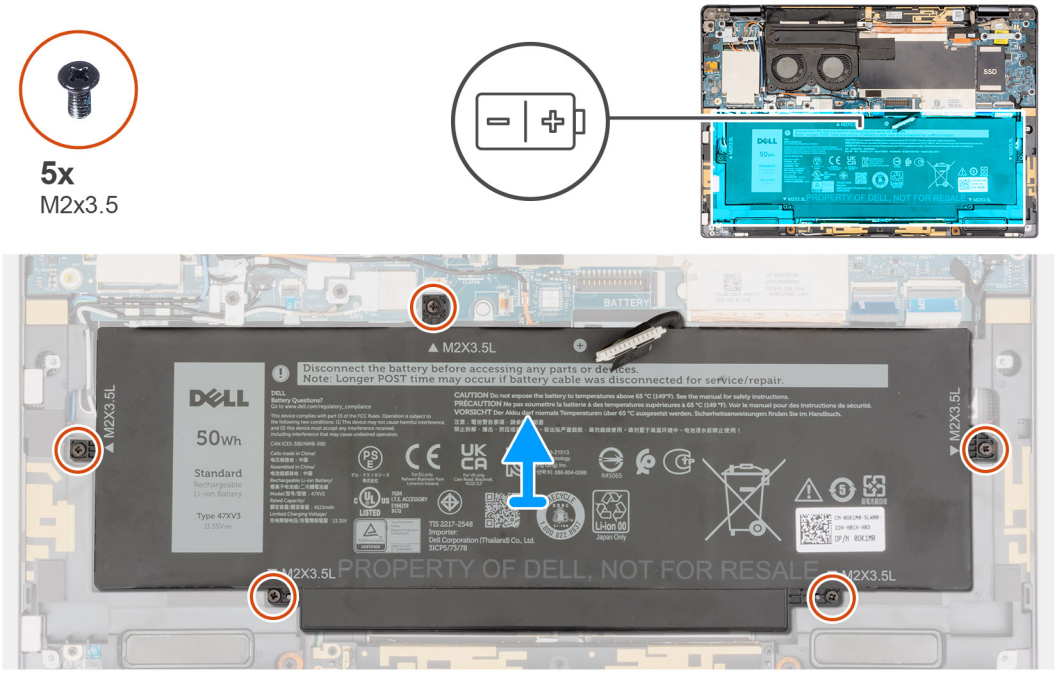
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

NOTE: Disconnecting the battery cable, removing the battery, or draining the flea power clears the CMOS and resets the BIOS settings on your computer.

NOTE: After your computer is reassembled and powered on, it prompts for the Real Time Clock (RTC) reset. When the RTC reset cycle occurs, the computer restarts several times and then an error message is displayed– "Time of day not set". Enter the BIOS when this error appears and set the date and time on your computer to resume normal functionality.

About this task

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



Steps

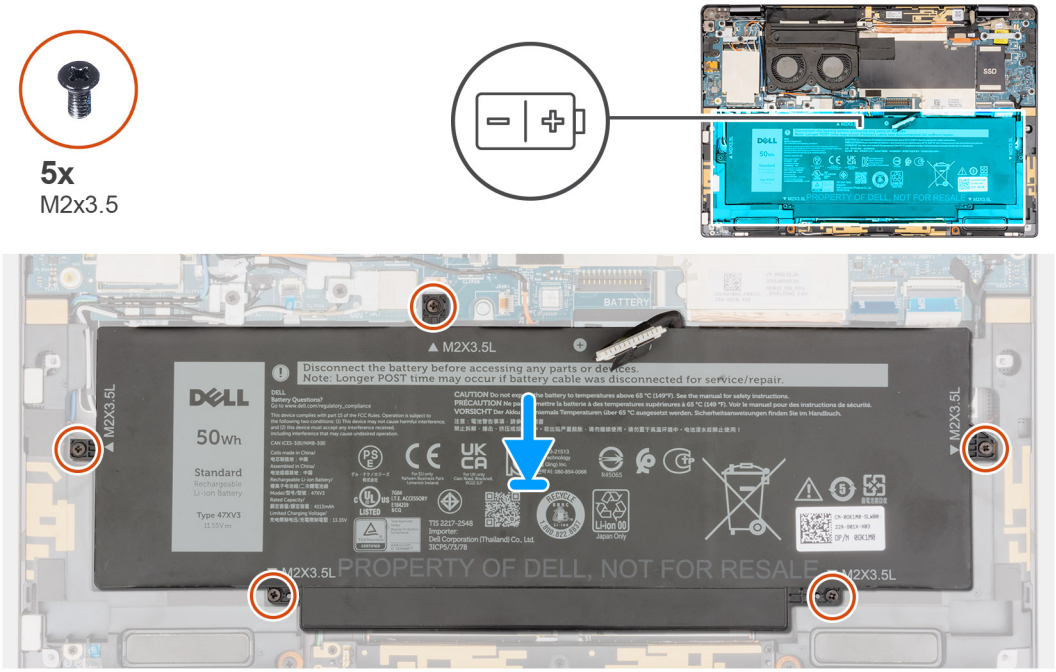
1. Remove the five (M2x3.5) screws that secure the battery to the palm-rest and keyboard assembly.
2. Lift the battery off the palm-rest and keyboard assembly.

Installing the battery

Prerequisites

About this task

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



Steps

1. Align and place the battery on the palm-rest and keyboard assembly.
2. Replace the five (M2x3.5) screws to secure the battery to the palm-rest and keyboard assembly.

Next steps

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

M.2 solid-state drive

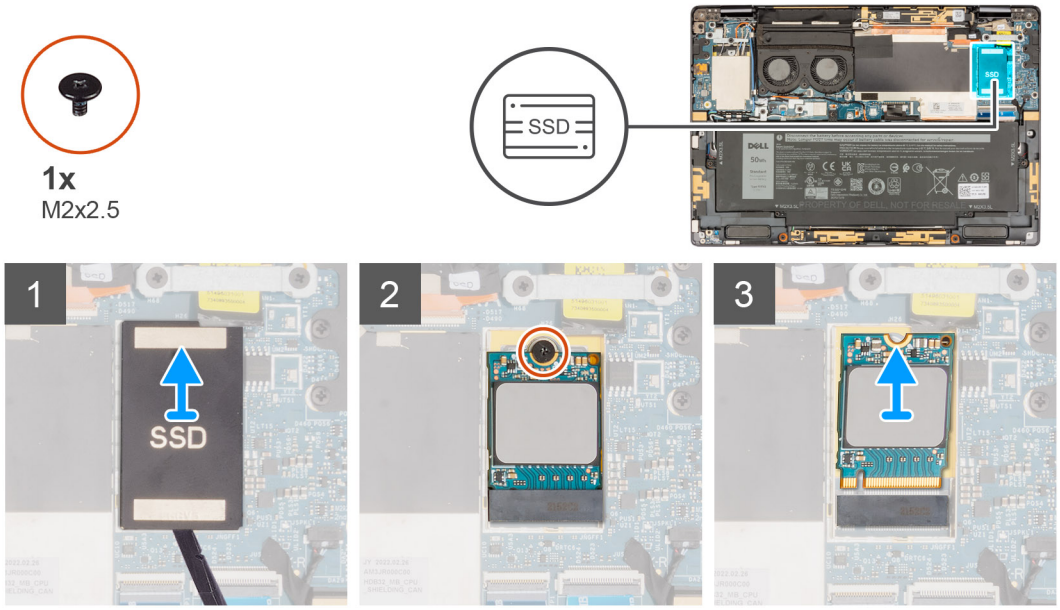
Removing the M.2 2230 solid-state drive

Prerequisites

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

About this task

The following images indicate the location of the M.2 2230 solid-state drive and provide a visual representation of the removal procedure.



Steps

1. Using a plastic scribe, pry open the solid-state drive shielding cover from the recess at the bottom edge of the solid-state drive shielding cover.
2. Lift the solid-state drive shielding cover off the system board.
3. Remove the single (M2x2.5) screw that secures the solid-state drive to the system board.
4. Slide and remove the solid-state drive off the system board.

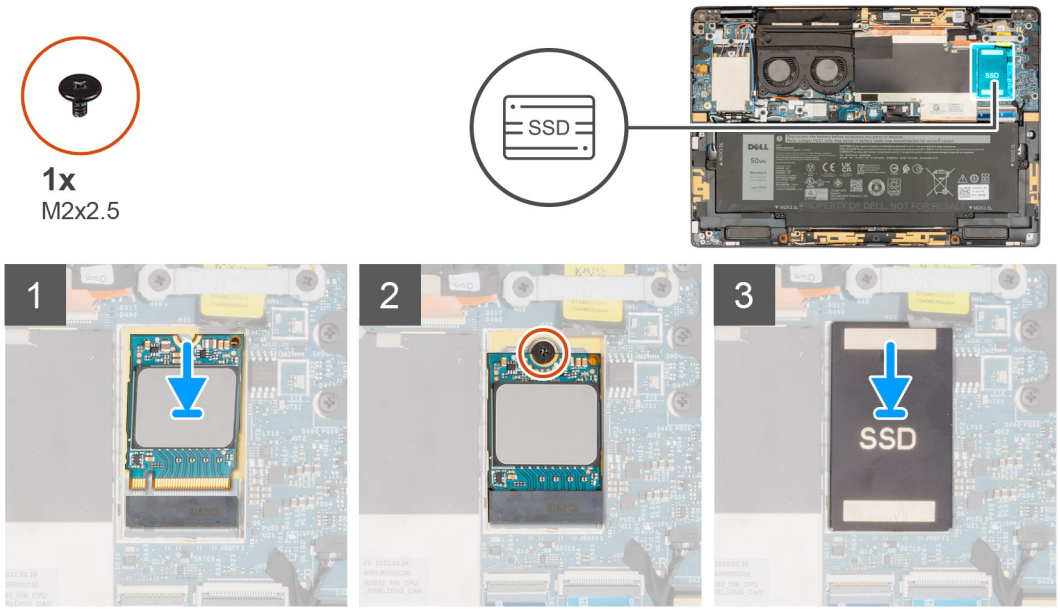
Installing the M.2 2230 solid-state drive

Prerequisites

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

About this task

The following images indicate the location of the M.2 2230 solid-state drive and provide a visual representation of the installation procedure.



Steps

1. Align the notch on the solid-state drive with the tab on the M.2 slot.

   NOTE: When replacing the system board, the thermal pad sticker underneath the solid-state drive must be transferred to the replacement system board.

2. Slide the solid-state drive into the M.2 slot.
3. Replace the single (M2x2.5) screw to secure the solid-state drive to the system board.
4. Using the alignment post, place the solid-state drive shielding cover over the solid-state drive.

Next steps

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

WWAN card

Removing the WWAN card

Prerequisites

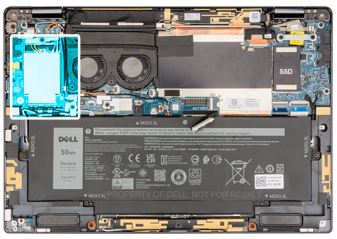
1. Follow the procedure in Before working inside your computer.
2. Remove the SIM card.
3. Remove the base cover.

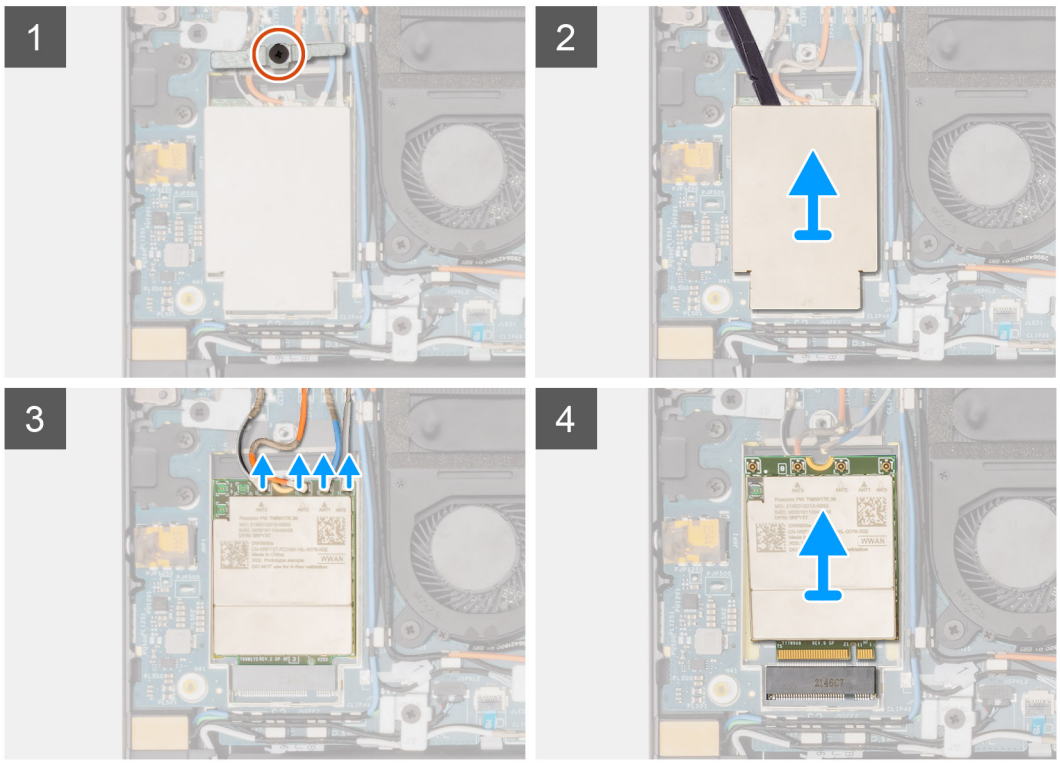
About this task

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



1x
M2x2.5





Steps

1. Remove the single (M2x2.5) screw that secures the WWAN-card bracket to the system board.
2. Lift and remove the WWAN-card bracket from the computer.
3. Using a plastic scribe, pry open the WWAN-card shield cover from the WWAN card.
4. Lift and remove the WWAN-card shield cover from the computer.
5. Disconnect the antenna cables from the connectors on the WWAN card.
6. Slide and remove the WWAN card from the WWAN-card slot.

NOTE: When replacing the system board, the thermal-pad sticker underneath the WWAN card must be transferred to the replacement system board.

NOTE: For systems shipped with a 4G WWAN card, when replacing the system board, the WWAN-card support frame must be transferred to the replacement system board.

Installing the WWAN card

Prerequisites

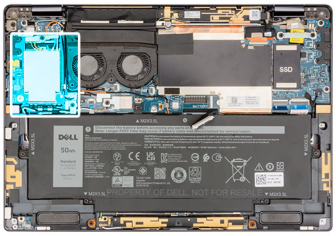
If you are replacing a component, remove the existing component before performing the installation procedure.

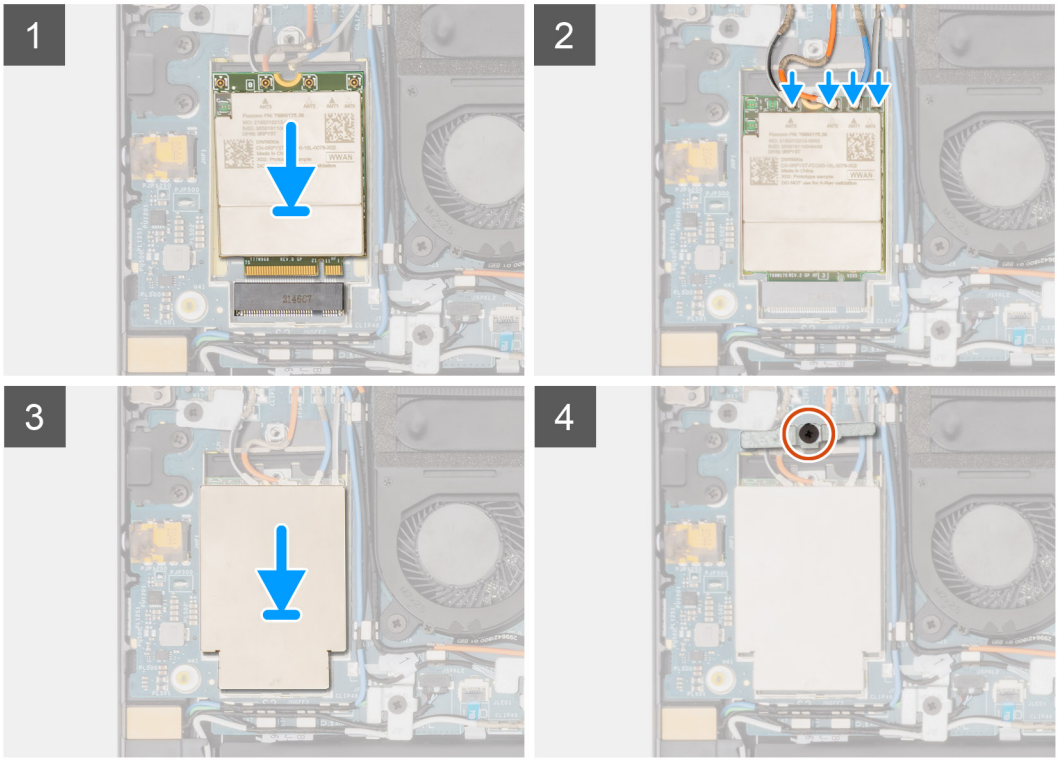
About this task

The following images indicate the location of the WWAN card and provide a visual representation of the installation procedure.



1x
M2x2.5





Steps

1. Align the notch on the WWAN card with the tab on the WWAN-card slot.

   NOTE: If the thermal pad underneath the WWAN card is detached from the system board, adhere it back to the system board.

2. Slide the WWAN card at an angle into the WWAN-card slot.
3. Connect the antenna cables to the connectors on the WWAN card.
4. Align and place the WWAN-card shielding cover on the system board and WWAN card.
5. Push down on the WWAN card with the WWAN-card bracket and replace the single (M2x2.5) screw.

Next steps

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

Fan

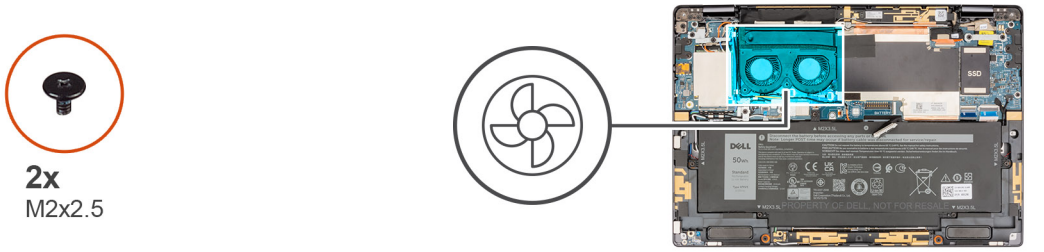
Removing the system fan

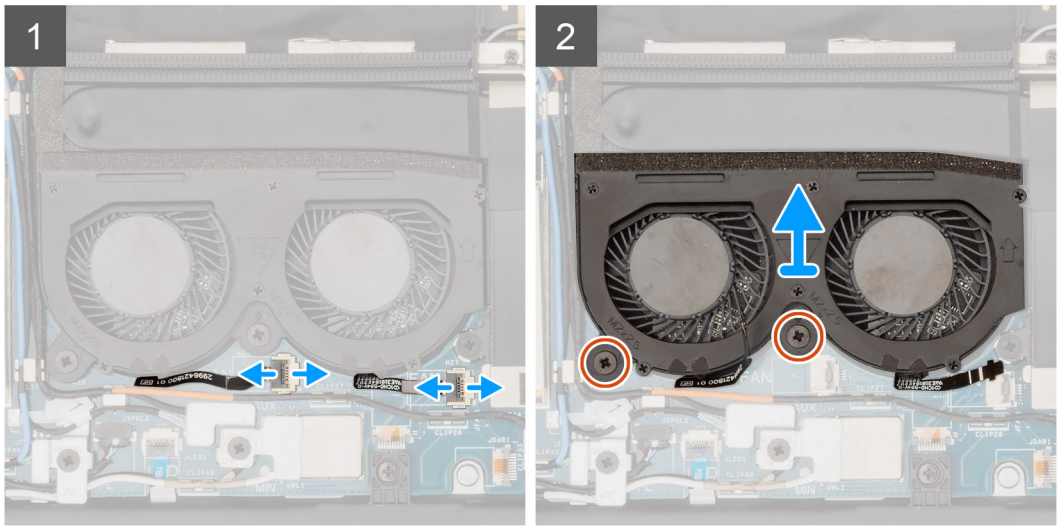
Prerequisites

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

About this task

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





Steps

1. Disconnect the left-fan FPC from the connector on the system board.
2. Disconnect the right-fan FPC from the connector on the system board.
3. Remove the two (M2x2.5) screws that secure the fan to the system board.
4. Lift the fan off the computer.

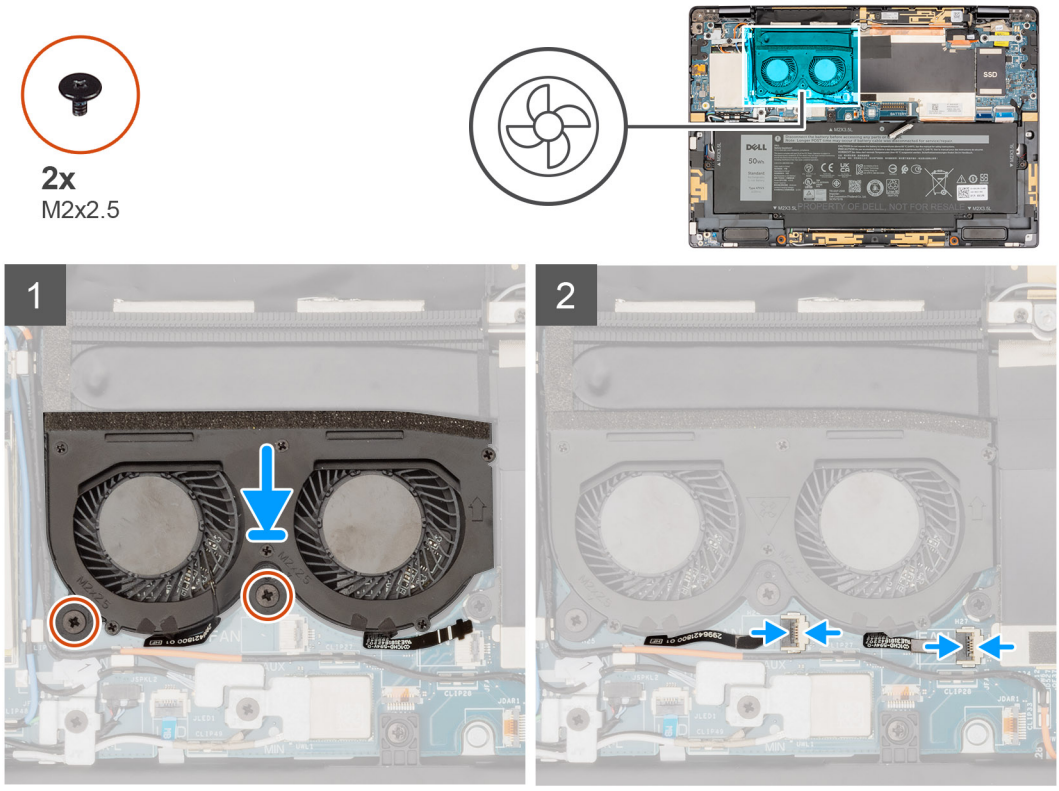
Installing the system fan

Prerequisites

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

About this task

The following images indicate the location of the system fan and provide a visual representation of the installation procedure.



Steps

1. Align and place the system fan onto the palm-rest and keyboard assembly.
2. Replace the two (M2x2.5) screws that secure the fan to the system board.
3. Connect the left-fan FPC to the connector on the system board.
4. Connect the right-fan FPC to the connector on the system board.

Next steps

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

Heat sink

Removing the heat sink

Prerequisites

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

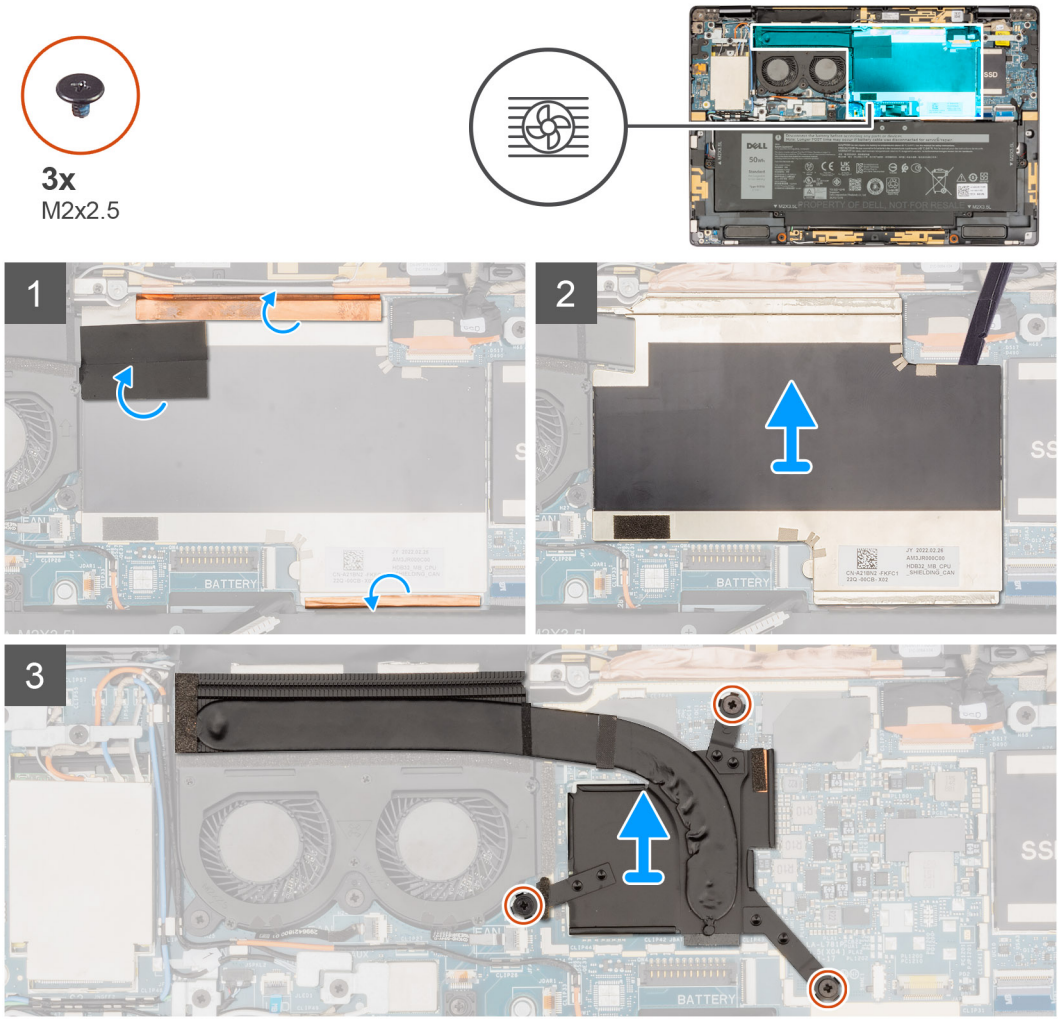
   CAUTION: Do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

   NOTE: The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

   NOTE: Systems configured without a WWAN card will not have the CPU-shielding cover.
2. Remove the SIM card.
3. Remove the base cover.

About this task

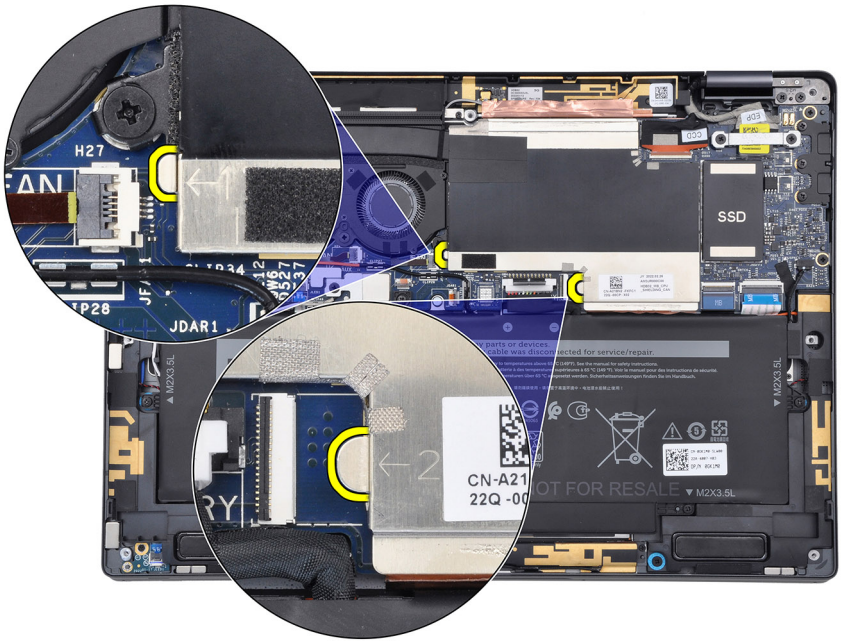
The following images indicate the location of the heat sink and provide a visual representation of the removal procedure.



Steps

1. Peel back the tape covering the orange WWAN-antenna cable(AUX3) from the bottom side of the CPU-shielding cover.
2. Peel back the foil from the top and bottom side of the CPU-shielding cover.

   NOTE: After peeling back the foil sheet from the top and bottom side of the shielding cover, pry open the cover using the tabs located at its left and bottom corner to remove the cover from the system.



3. Pry open the CPU-shielding cover from the top-left corner.
4. Remove the CPU-shielding cover from the computer.
5. Loosen the three (M2x2.5) screws in reverse sequential order (3 > 2 > 1) as indicated by the numbers on the heat sink.
6. Lift the heat sink off the system board.

Installing the heat sink

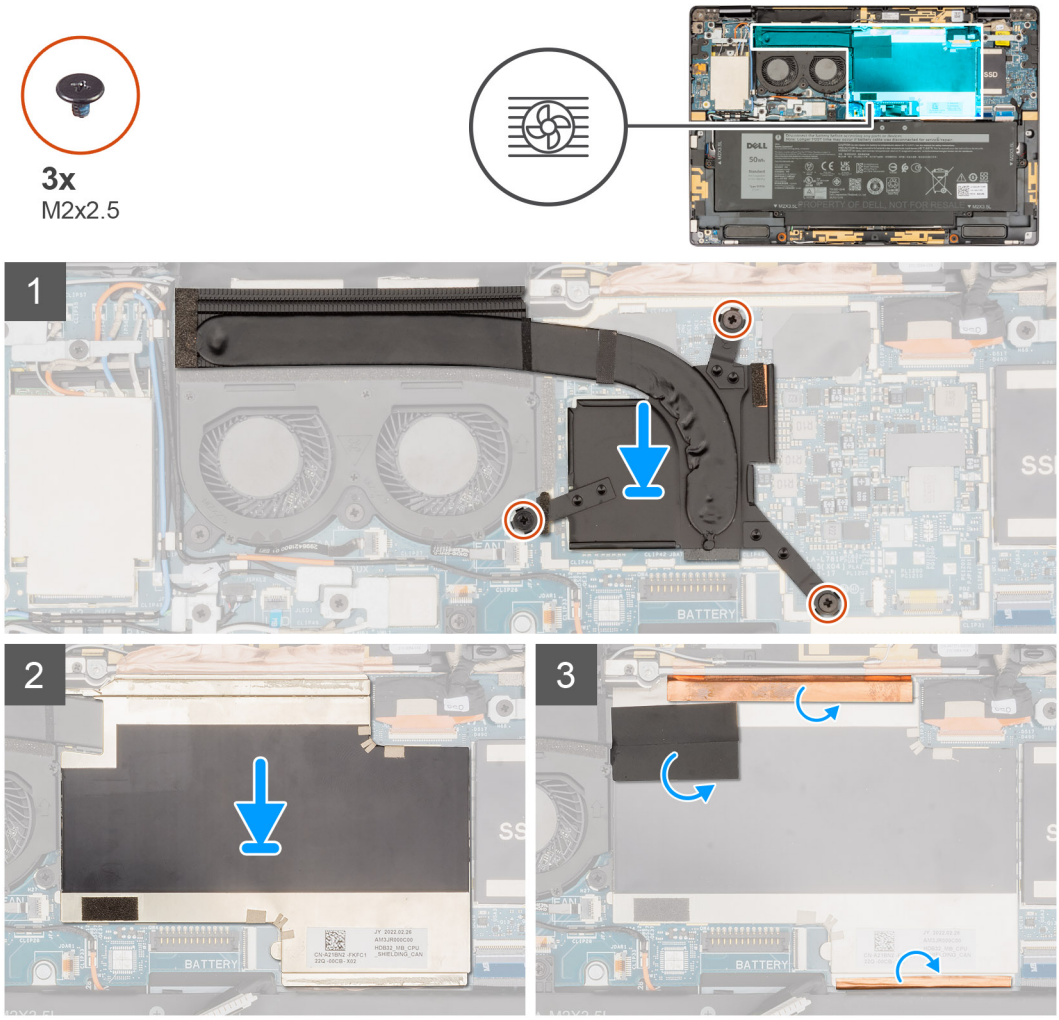
Prerequisites

CAUTION: Incorrect alignment of the heat sink can damage the system board and the processor.

NOTE: If either the system board or the heat sink is replaced, use the thermal pad or thermal paste provided in the kit to ensure that there is thermal conductivity.

About this task

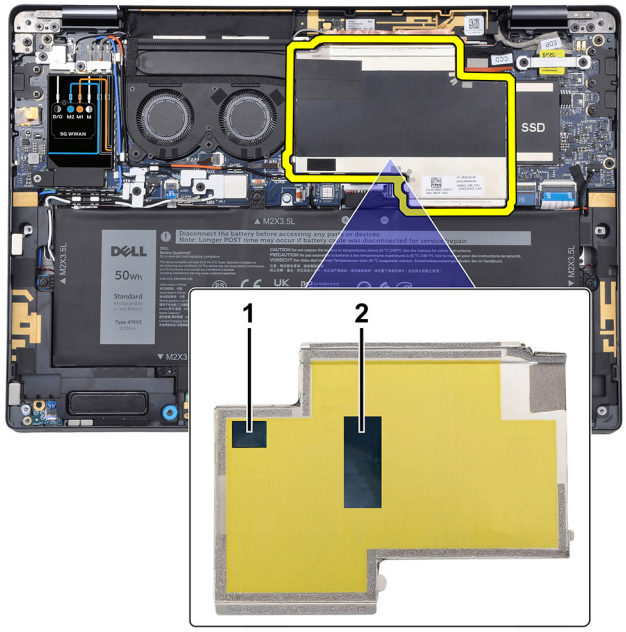
The following images indicate the location of the heat sink and provide a visual representation of the installation procedure.



Steps

1. Align the screw holes on the heat sink with the screw holes on the system board and place the heat sink on the system board.
2. In sequential order (1 > 2 > 3), as indicated by the numbers on the heat sink, tighten the three (M2x2.5) screws to secure the heat sink to the system board.
3. Place the CPU-shielding cover over the CPU.

NOTE: When installing the heatsink shielding cover, make sure that the two thermal pads are firmly attached on the underside of the cover. If any of the two thermal pads gets detached, adhere it back to the cover.



4. Replace the foil from the top and bottom side of the CPU-shielding cover.
5. Replace the tape and cover the orange WWAN-antenna cable(AUX3) at the bottom side of the CPU-shielding cover.

Next steps

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

Display assembly

Removing the display assembly

Prerequisites

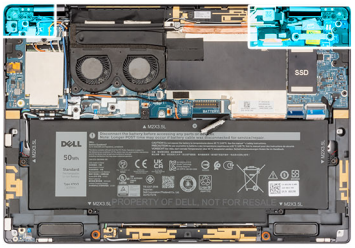
1. Follow the procedure in Before working inside your computer.
2. Remove the SIM card.
3. Remove the base cover.

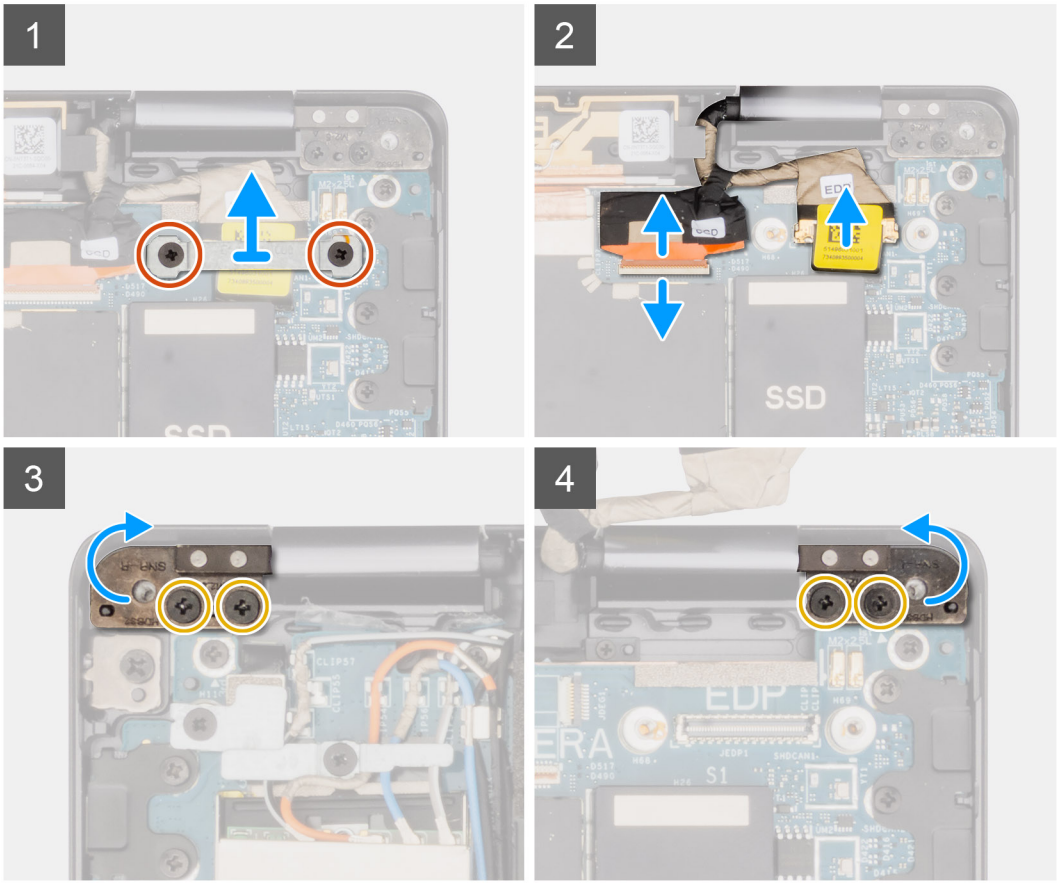
About this task

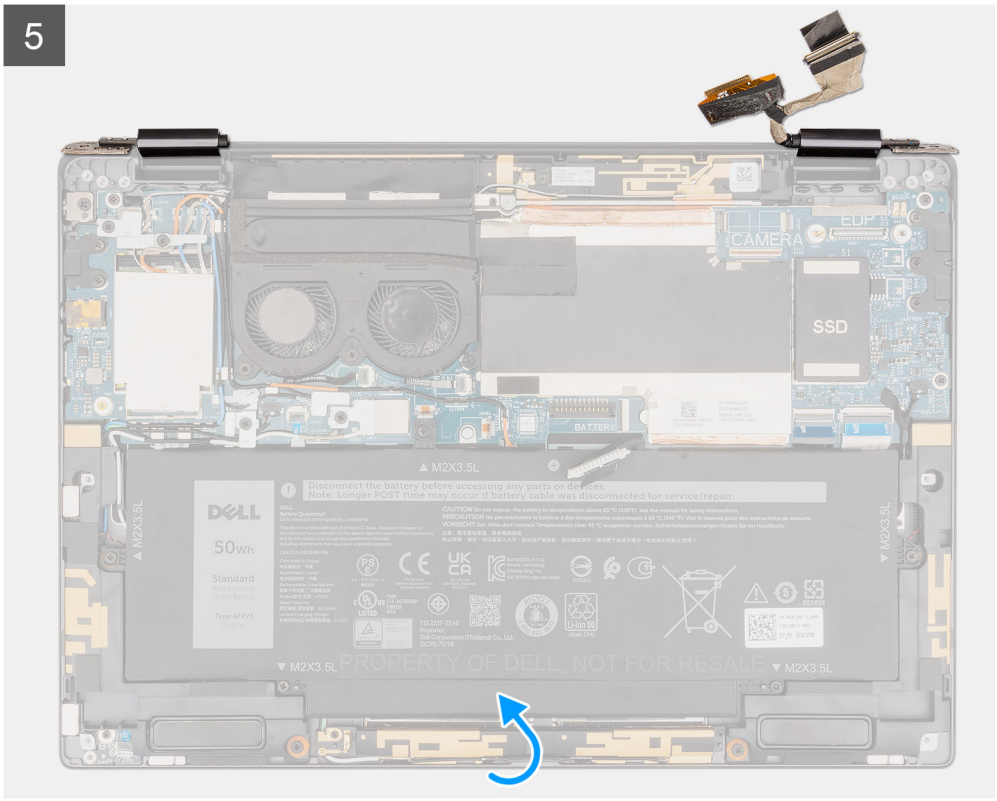
The following images indicate the location of the display assembly and provide a visual representation of the removal procedure.

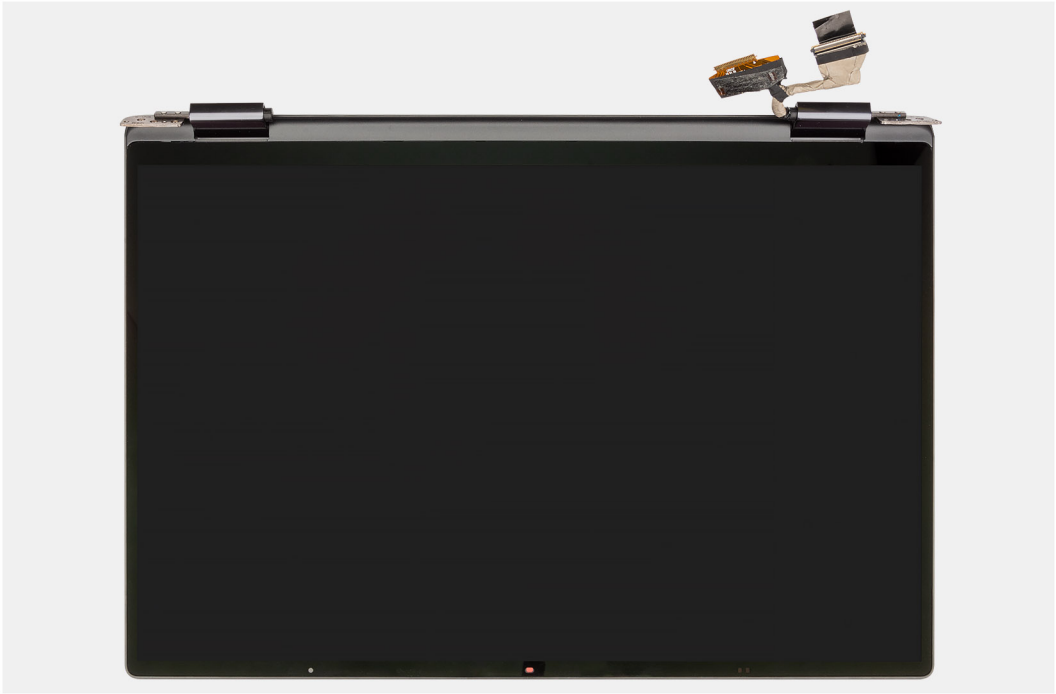
NOTE: The display assembly is a Hinge-Up Design (HUD) assembly and cannot be further disassembled once it is removed from the chassis. If any components on the display assembly are malfunctioning and must be replaced, replace the entire touch-display assembly.


2x
M2x2.5
4x
M2.5x3




1
2
SSD
3
4
EDP





Steps

1. Remove the two (M2x2.5) screws that secure the display-cable bracket and remove the display-cable bracket from the computer.
2. Peel back the camera cable from the system board and disconnect the camera cable.
3. Using the pull tab, disconnect the display cable and camera cable from the connector on the system board.
4. Remove the display and camera cables from the routing guides on the palm-rest and keyboard assembly.
5. Remove the two (M2.5x3) screws from the left hinge and fold back the left hinge.

NOTE: Press the edges of the laptop near the hinges, and fold back the hinges in the upward direction.

6. Remove the two (M2.5x3) screws from the right hinge and fold back the right hinge.
7. Open the system chassis to 45 degrees, and slide the system put from the display assembly.

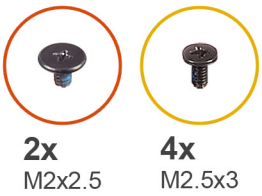
Installing the display assembly

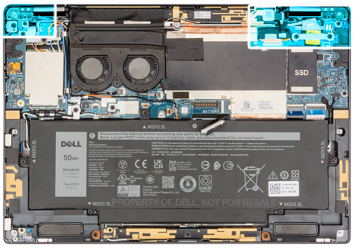
Prerequisites

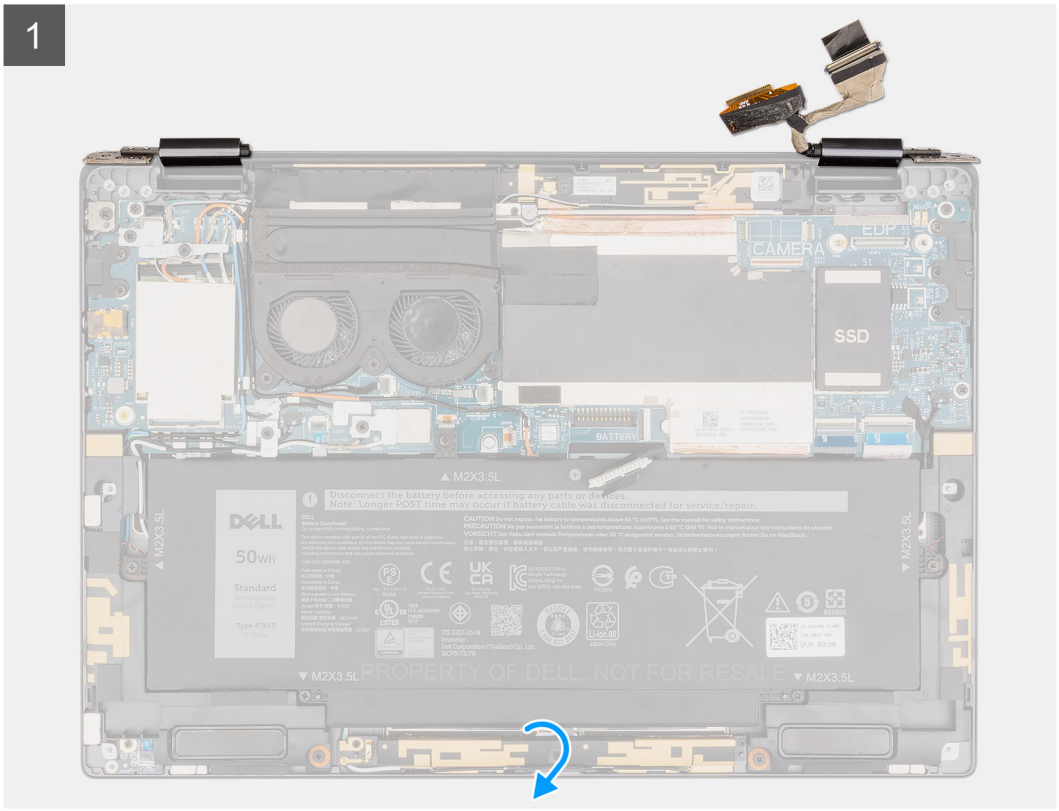
If you are replacing a component, remove the existing component before performing the installation procedure.

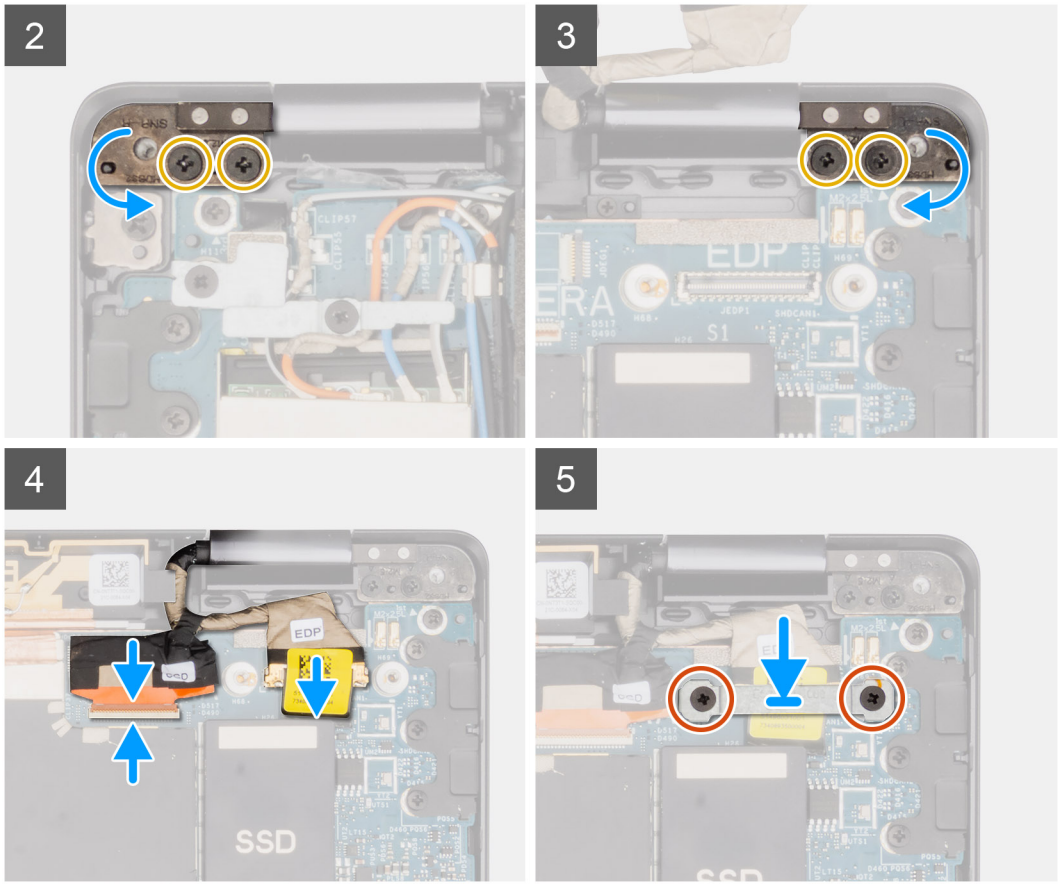
About this task

The following images indicate the location of the display assembly and provide a visual representation of the installation procedure.









Steps

1. Align and place the system chassis under the hinges of the display assembly.
2. Fold back the left and right hinges.
3. Install the four (M2.5x3) screws to secure the display hinges to the palm-rest and keyboard assembly.
4. Route the display and camera cable thought the routing guide on the palm-rest and keyboard assembly.
5. Connect the display cable to the system board.
6. Connect and adhere the camera cable to the system board.
7. Place the display-cable bracket over the display-cable connector and install the two (M2x2.5) screws to secure it to the system board.

Next steps

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

Speakers

Removing the left speaker

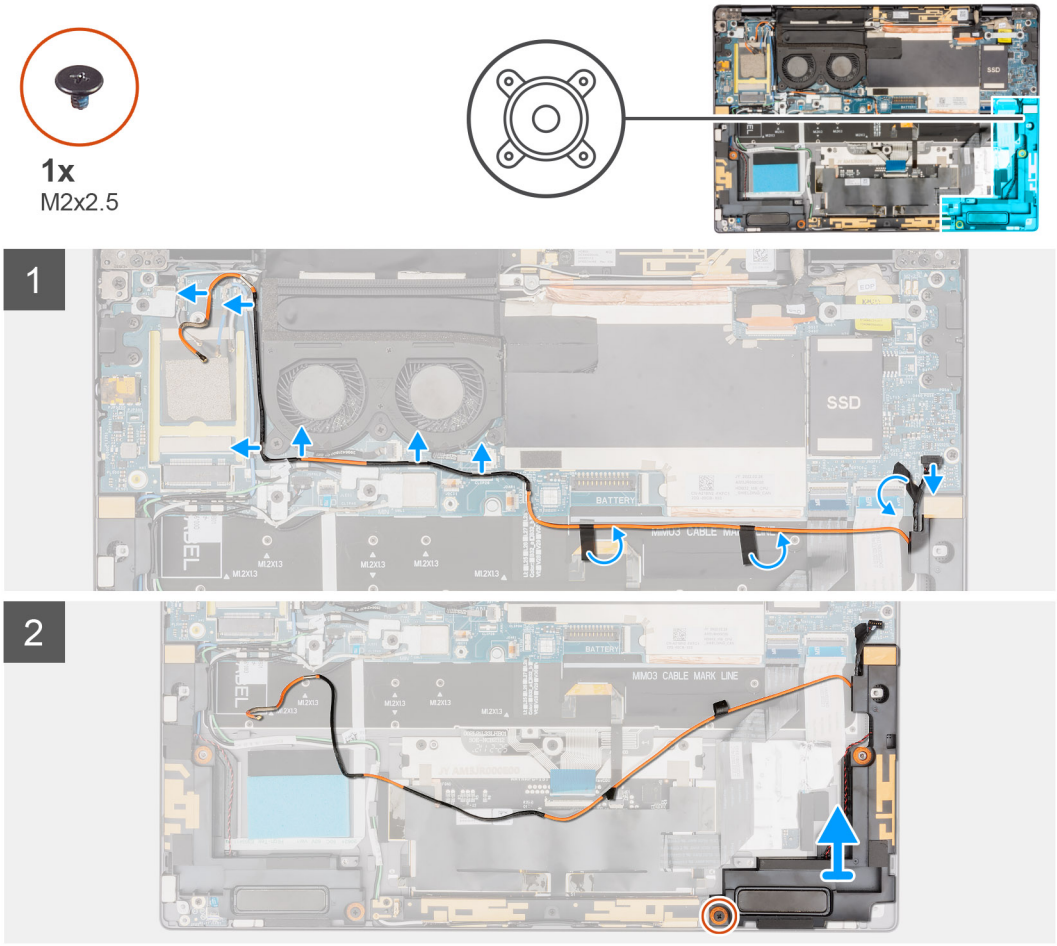
Prerequisites

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

5. Remove the battery.

About this task

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



Steps

1. Disconnect the speaker cable from the connector on the system board.
2. Peel back the adhesive tape that secures the orange WWAN-antenna cable(AUX3) to the system board.
3. Remove the orange WWAN-antenna cable from the routing guides along the system board.
4. Remove the single (M2x2.5) screw from the speaker and lift the left speaker from the computer.

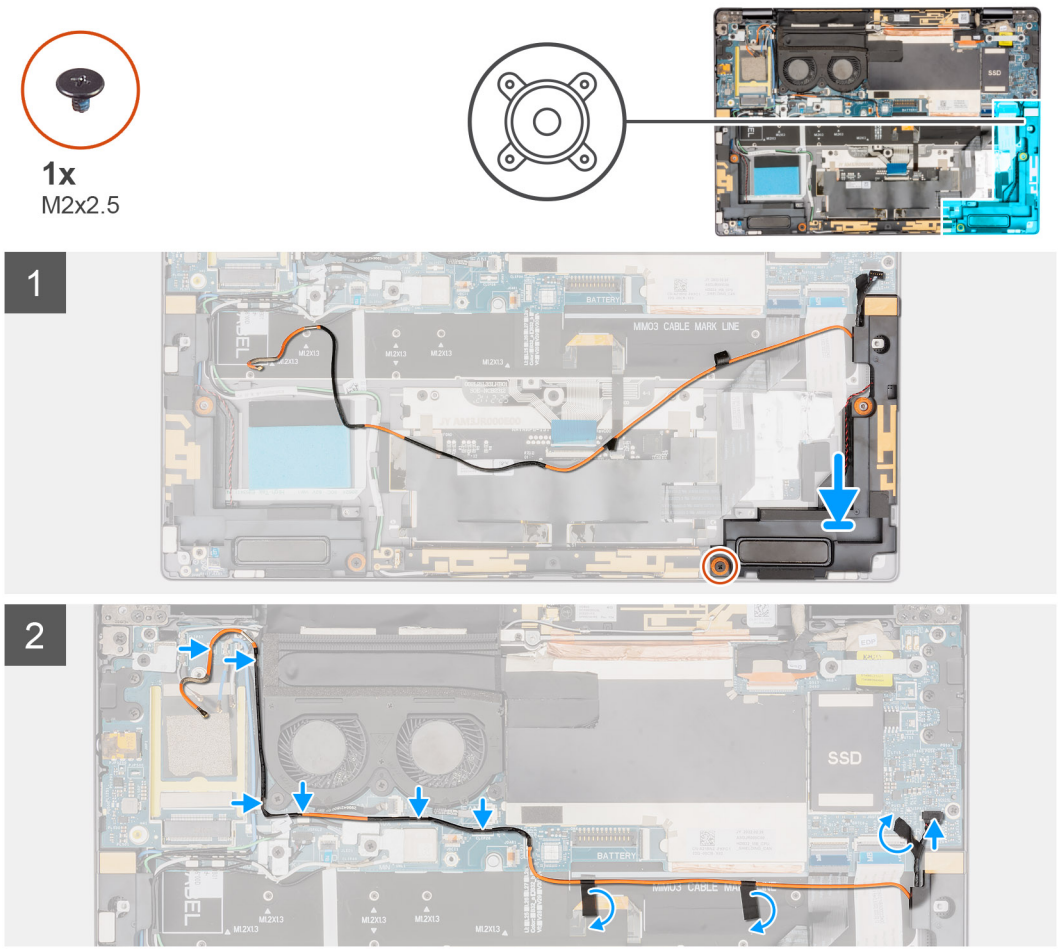
Installing the left speaker

Prerequisites

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

About this task

The following images indicate the location of the left speaker and provide a visual representation of the installation procedure.



Steps

1. Align and place the speakers in the slot on the palm-rest and keyboard assembly.
2. Replace the single (M2x2.5) screw to secure the speakers to the palm-rest and keyboard assembly.
3. Route the orange WWAN-antenna cable(AUX3) through the routing guides on the system board.
4. Adhere the adhesive tape to secure the orange WWAN-antenna cable to the palm-rest and keyboard assembly.
5. Connect the speaker cable to the connector on the system board.

Next steps

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

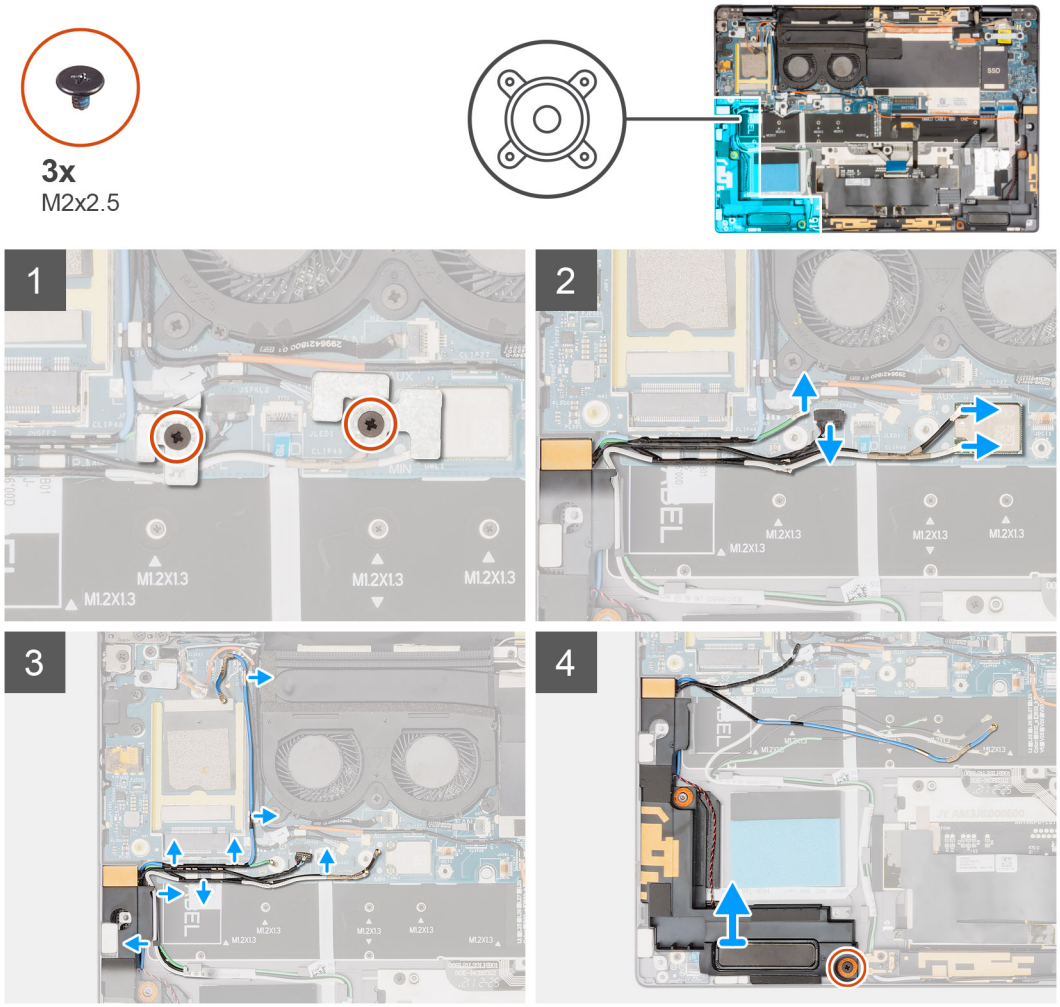
Removing the right speaker

Prerequisites

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

About this task

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



Steps

1. Remove the single (M2x2.5) screw from the P-sensor bracket and remove the P-sensor bracket from the computer.
2. Remove the single (M2x2.5) screw from the WLAN bracket and remove the WLAN bracket from the computer.
3. Disconnect the speaker cable from the connector on the system board.
4. Disconnect the green P-sensor cable, gray P-sensor cable, and the WLAN antenna cables from their connectors on the system board.
5. Remove the speaker, green P-sensor cable, gray P-sensor cable, and the WLAN antenna cables from the routing guides on the system board and the right speaker.
6. Remove the single (M2x2.5) screw that secures the speaker to the palm-rest and keyboard assembly and remove the right speaker from the computer.

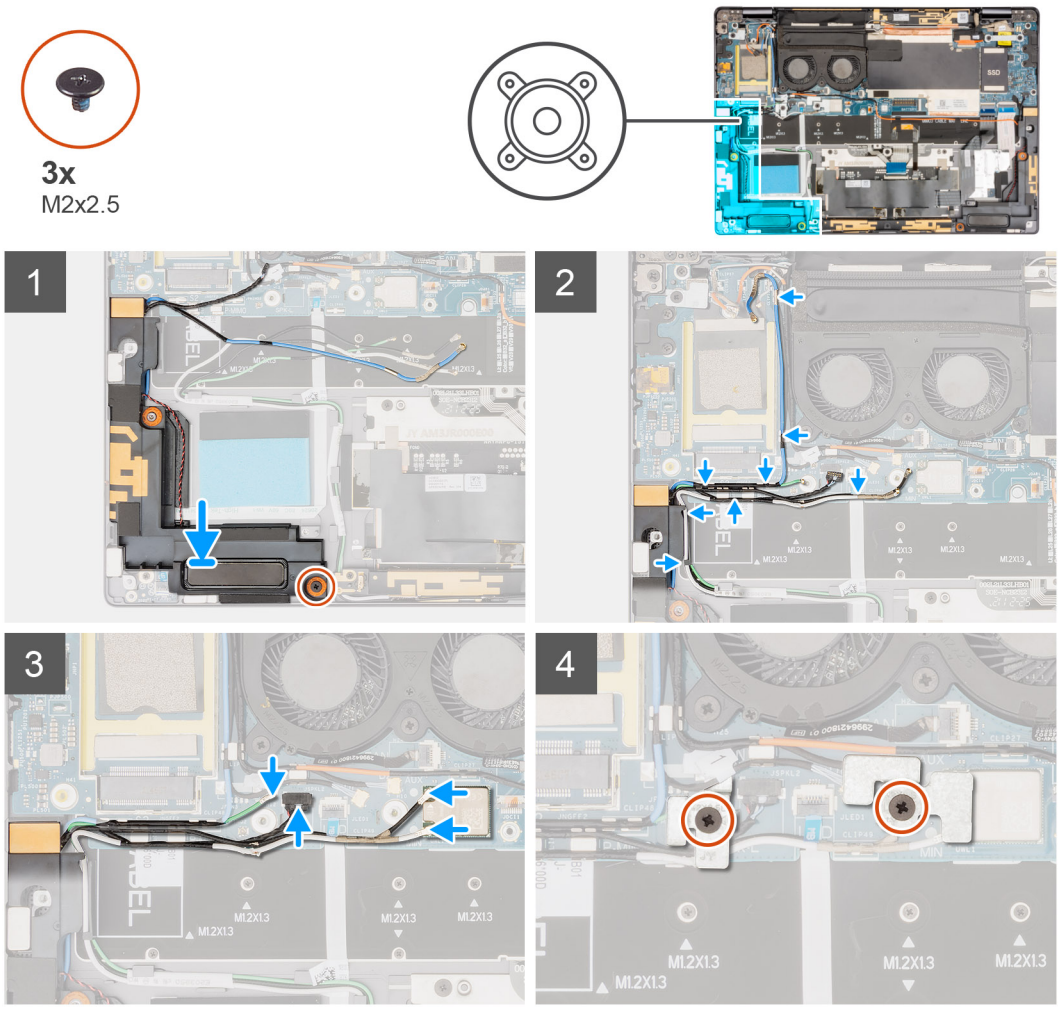
Installing the right speaker

Prerequisites

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

About this task

The following images indicate the location of the right speaker and provide a visual representation of the installation procedure.



Steps

1. Align and place the right speaker in the slot on the palm-rest and keyboard assembly.
2. Replace the single (M2x2.5) screw to secure the right speaker to the palm-rest and keyboard assembly.
3. Route the speaker, green P-sensor cable, gray P-sensor cable, and the WLAN antenna cables through the routing guides on the system board.
4. Connect the speaker, green P-sensor cable, gray P-sensor cable, and the WLAN antenna cables to their connectors on the system board.
5. Place the P-sensor bracket on the system board and replace the single (M2x2.5) screw to secure it in place.
6. Place the WLAN bracket on the system board and replace the single (M2x2.5) screw to secure it in place.
7. Connect the speaker cable to the connector on the system board.

Next steps

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

WLAN-antenna module

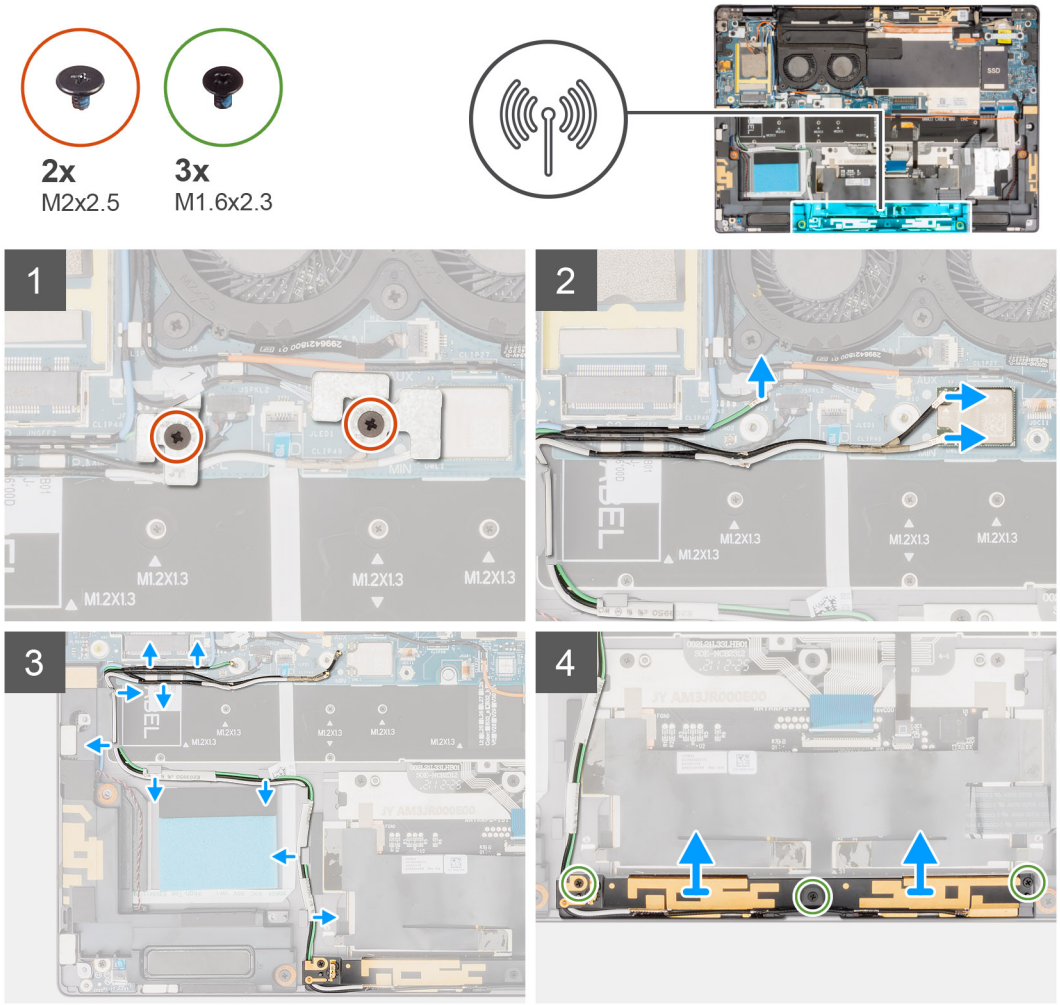
Removing the WLAN-antenna module

Prerequisites

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

About this task

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



Steps

1. Remove the single (M2x2.5) screw from the P-sensor bracket and remove the P-sensor bracket from the computer.
2. Remove the single (M2x2.5) screw from the WLAN bracket and remove the WLAN bracket from the computer.
3. Disconnect the green P-sensor cable, gray P-sensor cable, and the WLAN-antenna cables from their connectors on the system board.
4. Remove the green P-sensor cable, gray P-sensor cable, and the WLAN-antenna cables from the routing guides on the system board and the right speaker.
5. Remove the three (M1.6x2.3) screw that secures the WLAN-antenna module to the palm-rest and keyboard assembly.

6. Lift and remove the WLAN-antenna module with its cables from the computer.

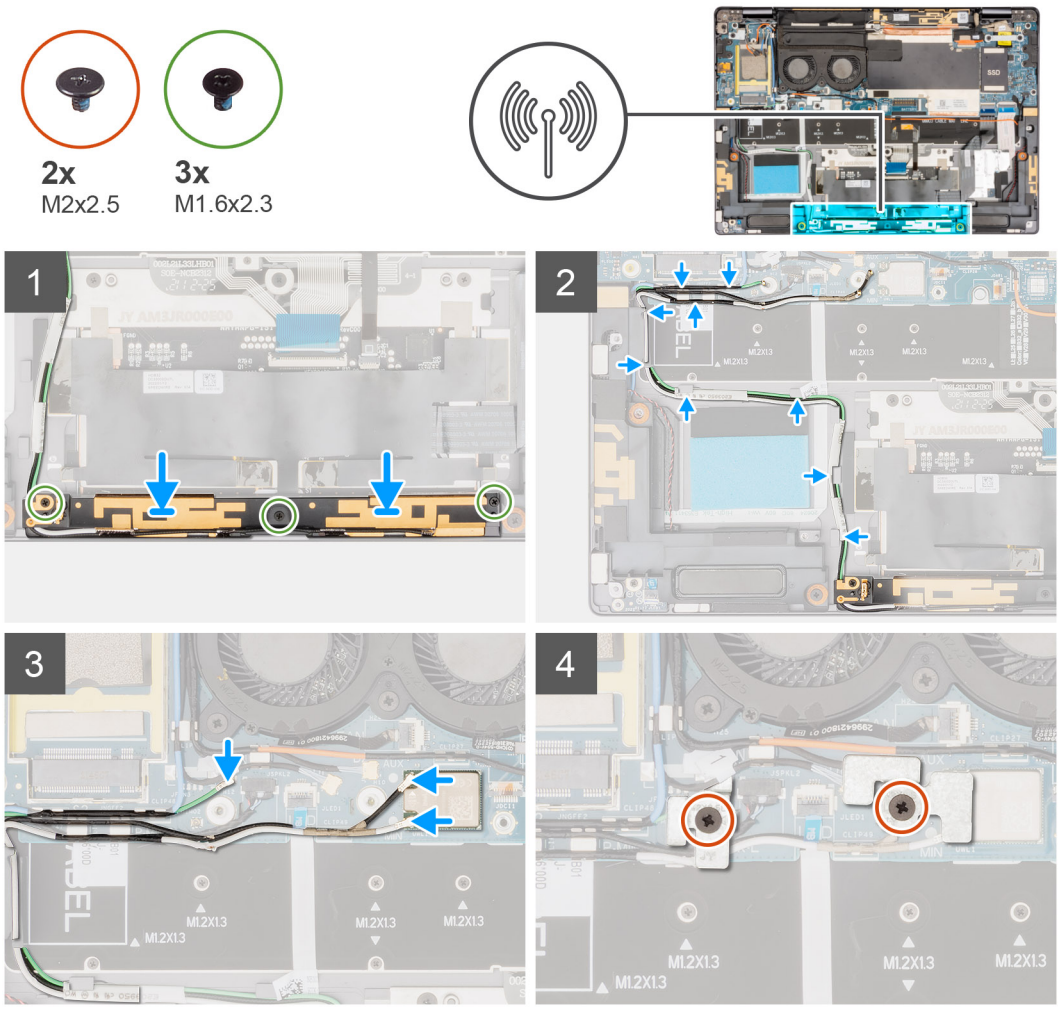
Installing the WLAN-antenna module

Prerequisites

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

About this task

The following images indicate the location of the WLAN-antenna module and provide a visual representation of the installation procedure.



Steps

1. Align and place the WLAN-antenna module in the slot on the palm-rest and keyboard assembly.
2. Replace the three (M1.6x2.3) screws to secure the WLAN-antenna module to the palm-rest and keyboard assembly.
3. Route the green P-sensor cable, gray P-sensor cable, and the WLAN-antenna cables through the routing guides on the system board.
4. Connect the green P-sensor cable, gray P-sensor cable, and the WLAN-antenna cables to their connectors on the system board.
5. Place the P-sensor bracket on the system board and replace the single (M2x2.5) screw to secure it in place.
6. Place the WLAN bracket on the system board and replace the single (M2x2.5) screw to secure it in place.

Next steps

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

System board

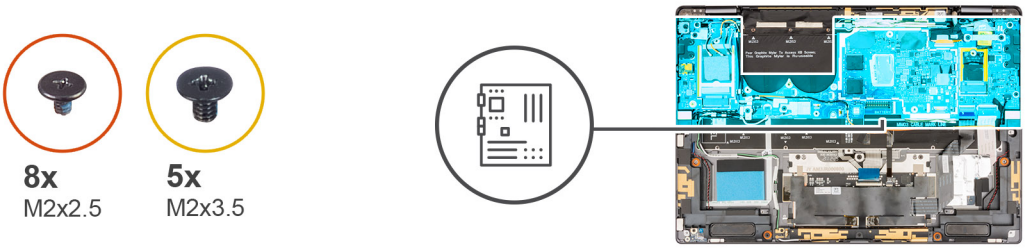
Removing the system board

Prerequisites

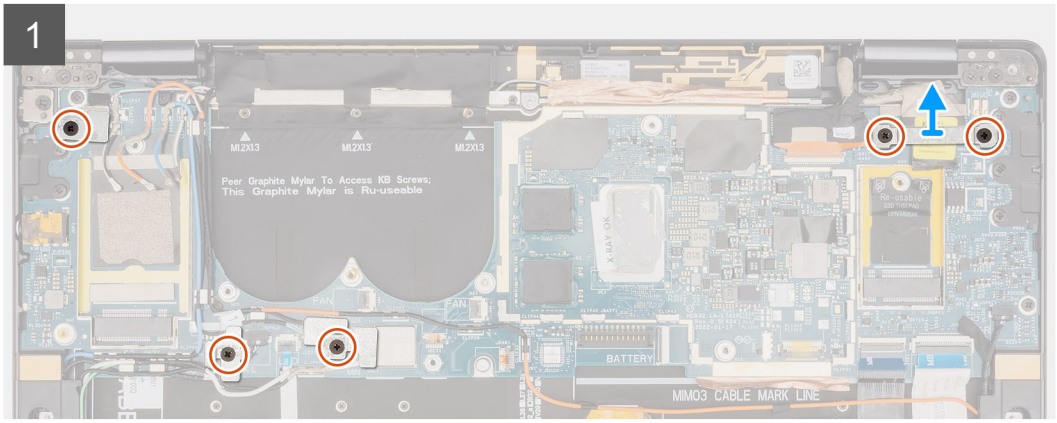
1. Follow the procedure in Before working inside your computer.
2. Remove the SIM card.
3. Remove the base cover.
4. Remove the WWAN card.
5. Remove the battery.
6. Remove the solid-state drive.
7. Remove the heat sink.

About this task

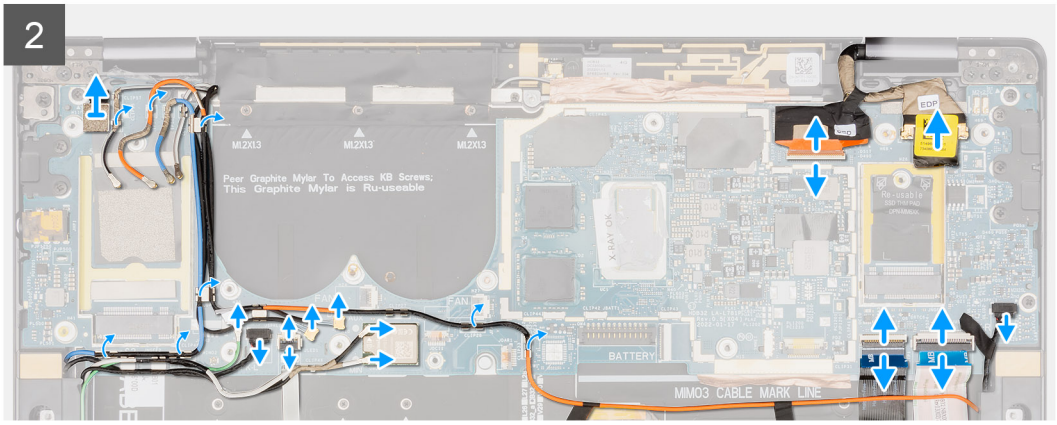
The following images indicate the location of the system board assembly and provide a visual representation of the removal procedure.

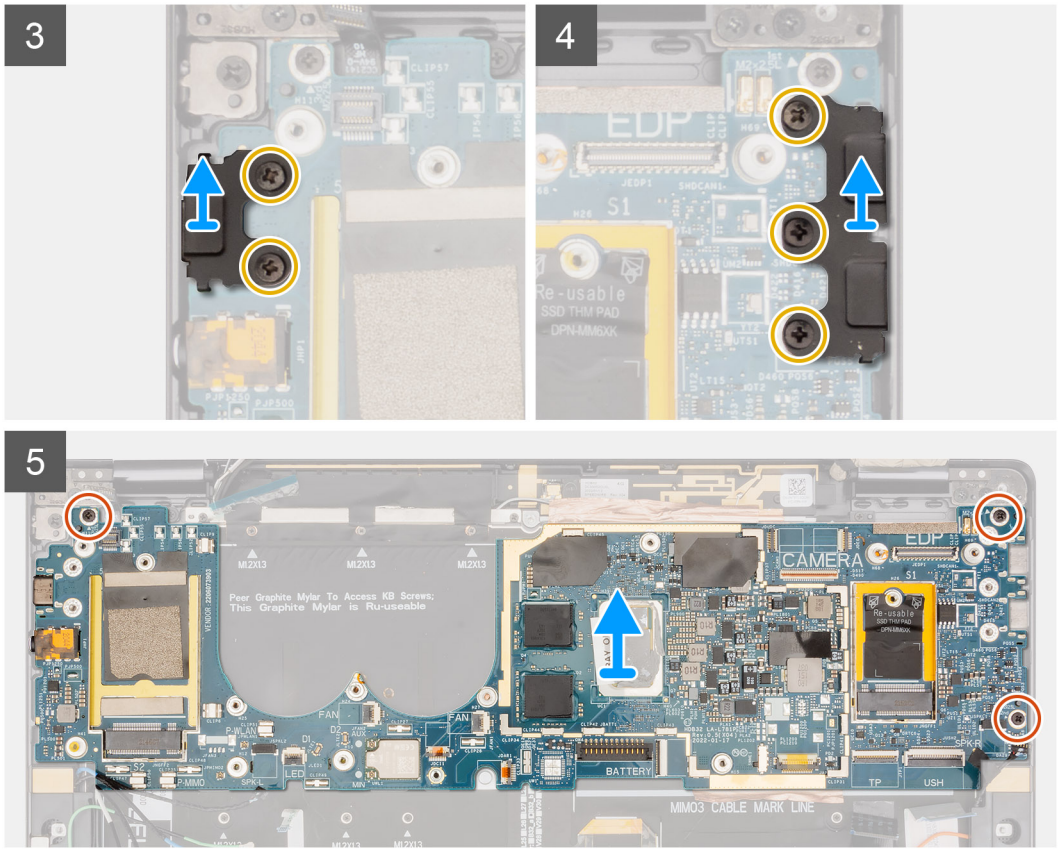

8x
M2x2.5
5x
M2x3.5

1


M1.2X1.3
M1.2X1.3
M1.2X1.3
Peer Graphite Mylar To Access KB Screws; This Graphite Mylar is Ru-useable
X-RAY OK
FAN
FAN
BATTERY
MIMO3 CABLE MARK LINE

2

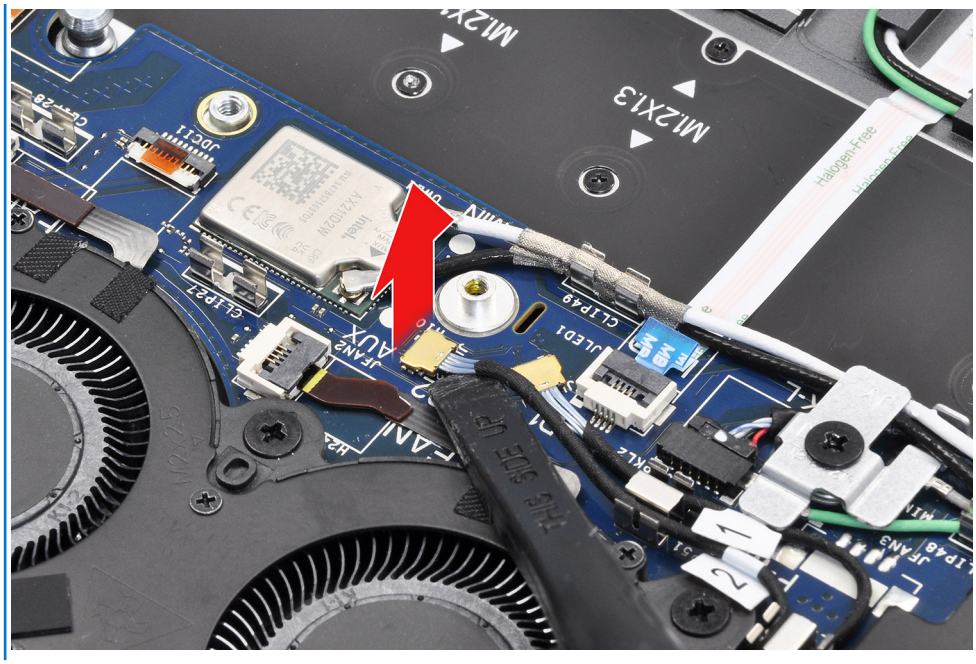

M1.2X1.3
M1.2X1.3
M1.2X1.3
Peer Graphite Mylar To Access KB Screws; This Graphite Mylar is Ru-useable
X-RAY OK
FAN
BATTERY
MIMO3 CABLE MARK LINE
EDP



Steps

1. Remove the two (M2x2.5) screws from the display-cable bracket and remove the display-cable bracket from the computer.
2. Remove the single (M2x2.5) screw from the P-sensor bracket and remove the P-sensor bracket from the computer.
3. Remove the single (M2x2.5) screw from the WLAN bracket and remove the WLAN bracket from the computer.
4. Remove the single (M2x2.5) screw from the fingerprint-reader bracket and remove the fingerprint-reader bracket from the computer.
5. Disconnect the display cable, camera cable, and speaker cable from the connectors on the system board.
6. Disconnect the green P-sensor cable, gray P-sensor cable, WLAN antenna cables, Darwin cables, from their connectors on the system board.

   NOTE: To disconnect the Darwin cables from the system board, insert a plastic scribe under the cables close to the connector heads and carefully pry them up.



7. Remove the fingerprint-reader cable, LED-board FFC, Touch-pad FFC, USH-board FFC from their connectors on the system board.
8. Remove the display cable and camera cable from the routing guides on the palm-rest and keyboard assembly..
9. Remove the green P-sensor cable, gray P-sensor cable, WLAN-antenna cables, Darwin cables, white/gray WWAN-antenna cables, black/gray WWAN-antenna cables, blue WWAN-antenna cable, and orange-WWAN antenna cable from the routing guides on the system board.
10. Remove the two (M2x3.5) screws from the left Type-C bracket and remove the left Type-C bracket from the computer.
11. Remove the three (M2x3.5) screws from the right Type-C bracket and remove the right Type-C bracket from the computer.
12. Remove the two (M2x2.5) screws that secure the system board to the palm-rest and keyboard assembly.
13. Lift and remove the system from the computer.

NOTE: To prevent obstructions while lifting the system board, technicians should clear the area around the system board of cables, FFCs, FPCs, and any adhesive items.

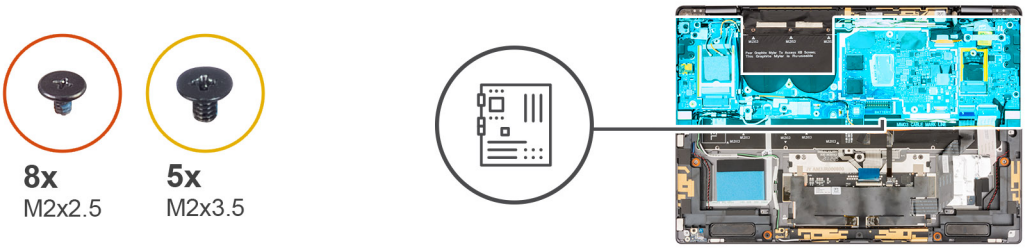
Installing the system board

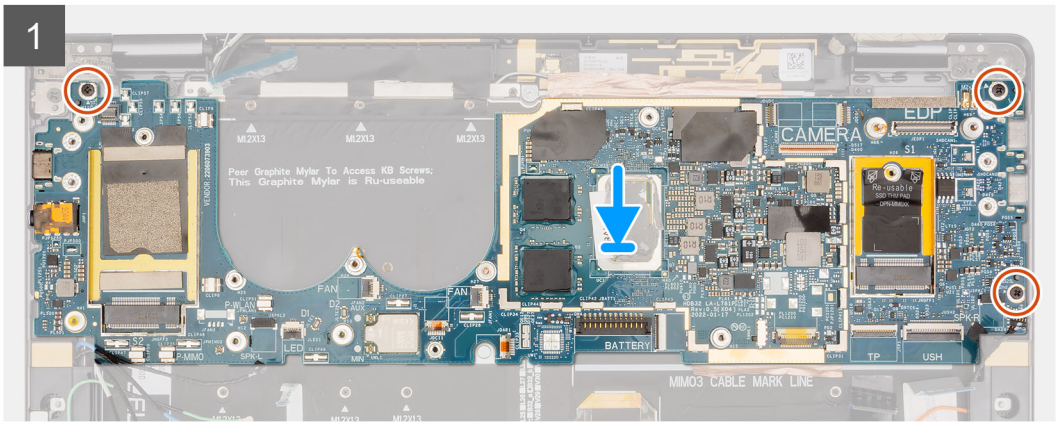
Prerequisites

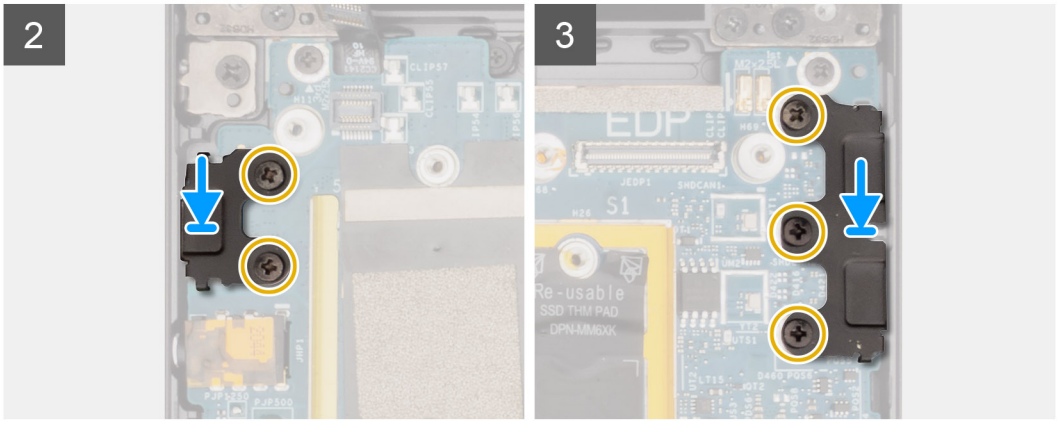
If you are replacing a component, remove the existing component before performing the installation procedure.

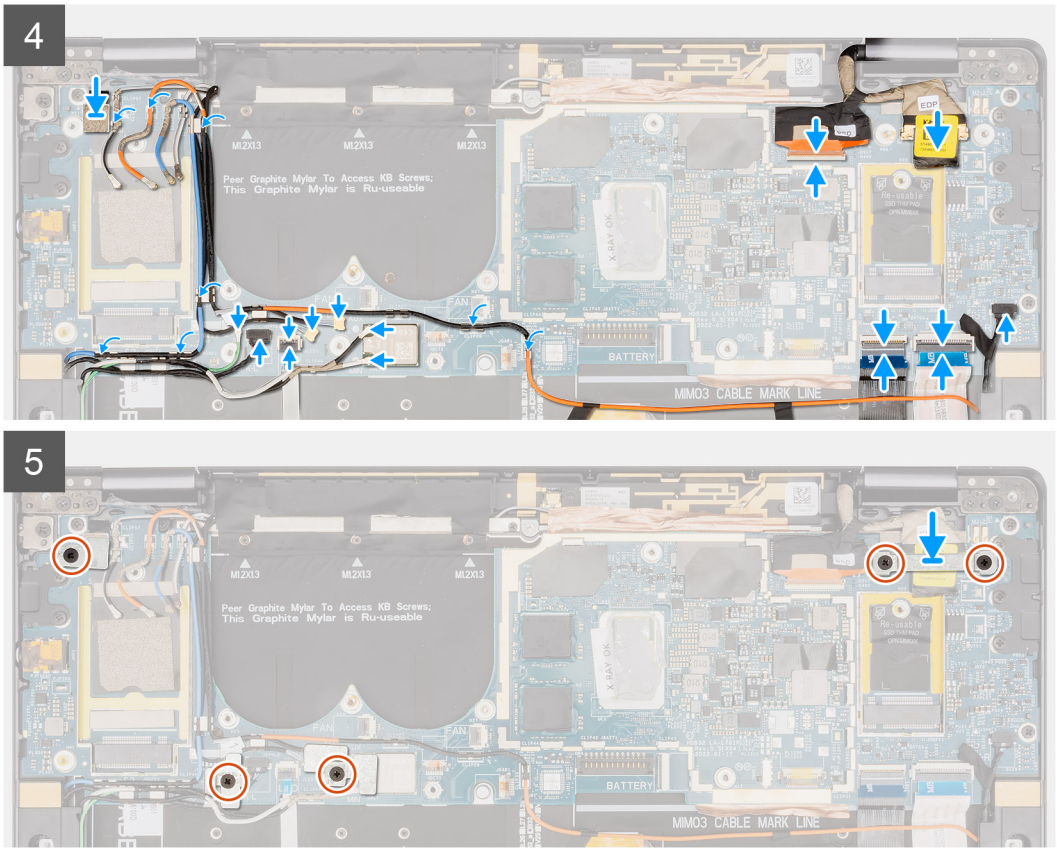
About this task

The following images indicate the location of the system board and provide a visual representation of the installation procedure.


8x
M2x2.5
5x
M2x3.5


1
CAMERA
EDP
BATTERY
MIMO3 CABLE MARK LINE
FAN
TP
USH


2
3
EDP



Steps

1. Align and place the system board on the palm-rest and keyboard assembly.

   NOTE: When replacing the system board, technicians must transfer the following items to the replacement system board:

   - Thermal-pad sticker underneath the WWAN card
   - Thermal-pad sticker underneath the M.2 SSD

2. Replace the three (M2x2.5) screws to secure the system board to the palm-rest and keyboard assembly .
3. Place the right Type-C bracket on the system board and replace the three (M2x3.5) screws to secure it in place.
4. Place the left Type-C bracket on the system board and replace the two (M2x3.5) screws to secure it in place.
5. Route the green P-sensor cable, gray P-sensor cable, WLAN-antenna cables, Darwin cables, white/gray WWAN-antenna cables, black/gray WWAN-antenna cables, blue WWAN-antenna cable, and orange-WWAN antenna cable through the routing guides on the system board.
6. Route the display cable and camera cable through the routing guides on the palm-rest and keyboard assembly.
7. Route the WWAN antenna cable through the routing guides on the system board.
8. Connect the fingerprint-reader cable, LED-board FFC, Touch-pad FFC and USH-board FFC to the connectors on the system board.
9. Connect the green P-sensor cable, gray P-sensor cable, WLAN-antenna cables, Darwin cables to the connectors on the system board.
10. Connect the display cable, camera cable, and speaker cable from the connectors on the system board.
11. Place the fingerprint-reader bracket over the fingerprint reader and replace the single (M2x2.5) screw to secure it in place.
12. Place the WLAN-card bracket over the WLAN card and replace the single (M2x2.5) screw to secure it in place.
13. Place the P-sensor bracket over the P-sensor and replace the single (M2x2.5) screw to secure it in place.
14. Place the display-cable bracket over the display cable and replace the two (M2x2.5) screws to secure it in place.

Next steps

1. Install the heat sink.

2. Install the solid-state drive.
3. Install the battery.
4. Install the WWAN card.
5. Install the base cover.
6. Install the SIM card.
7. Follow the procedure in After working inside your computer.

Power button with fingerprint reader

Removing the power button

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the SIM card.
3. Remove the base cover.
4. Remove the WWAN card.
5. Remove the battery.
6. Remove the heat sink.
7. Remove the system board.

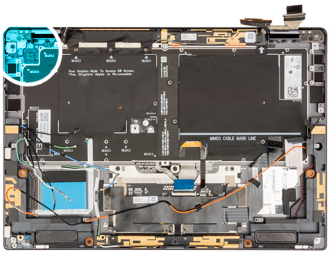
NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

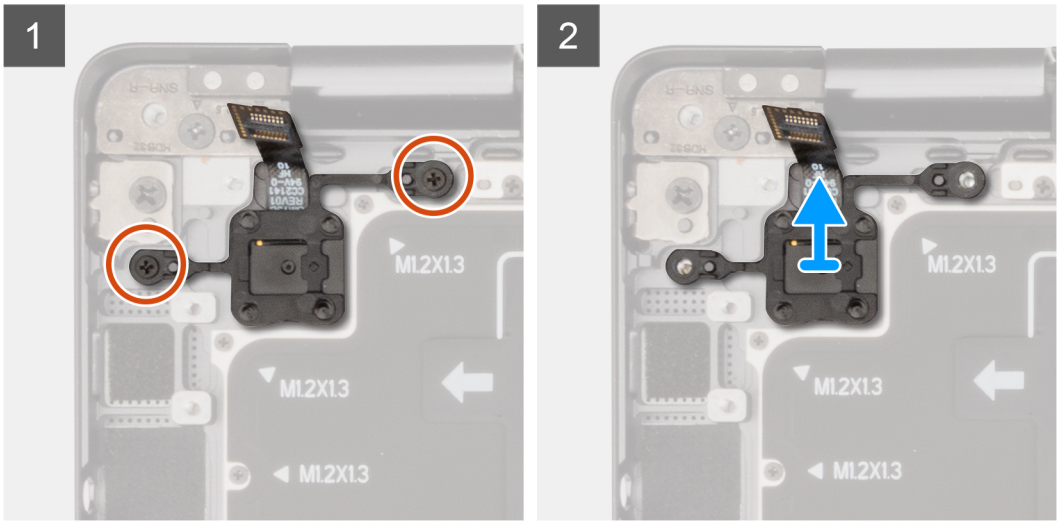
About this task

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



2x
M1.6x2.3





Steps

1. Remove the two (M1.6x2.3) screws that secure the power-button assembly to the palm-rest and keyboard assembly.
2. Remove the power-button assembly from the computer.

Installing the power button

Prerequisites

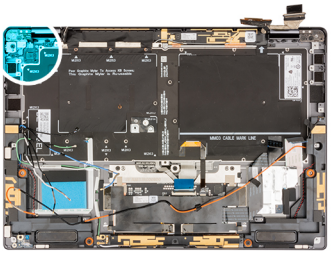
If you are replacing a component, remove the existing component before performing the installation procedure.

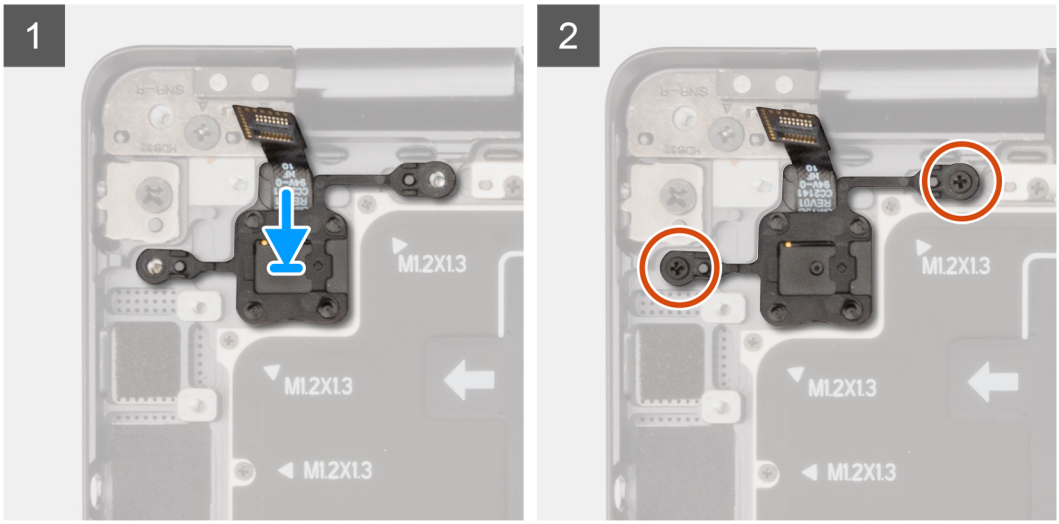
About this task

The following images indicate the location of the power button and provide a visual representation of the installation procedure.



2x
M1.6x2.3





Steps

1. Align and place the power-button assembly on the palm-rest and keyboard assembly.
2. Replace the two (M1.6x2.3) screws to secure the power-button assembly to the palm-rest and keyboard assembly.

Next steps

1. Install the system board.
2. Install the heat sink.
3. Install the battery.
4. Install the WWAN card.
5. Install the base cover.
6. Install the SIM card.
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.

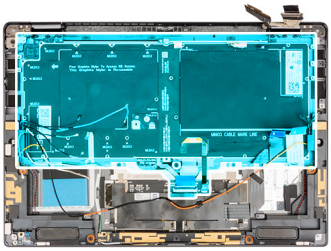
2. Remove the SIM card.
3. Remove the base cover.
4. Remove the WWAN card.
5. Remove the battery.
6. Remove the fan.
7. Remove the heat sink.
8. Remove the system board.

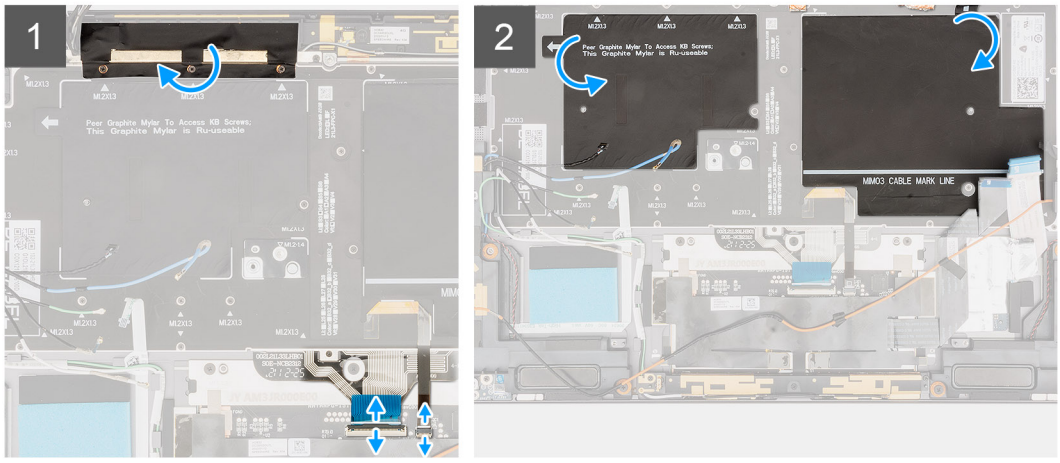
NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

About this task

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







Steps

1. Peel back the foil covering the WWAN LTE antenna module.
2. Disconnect the keyboard FFC from the connector on the touchpad.
3. Peel back the graphite mylar covering the keyboard to access the screws underneath.

NOTE: Do not dispose off the two pieces of graphite mylar. Reuse the two pieces when replacing or reinstalling the keyboard.

4. Remove the thirty-seven (M1.2x1.3) screws and the single (M1.2x1.4) from the keyboard.
5. Lift and remove the keyboard from the palm-rest assembly.

Installing the keyboard

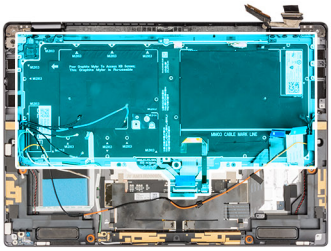
Prerequisites

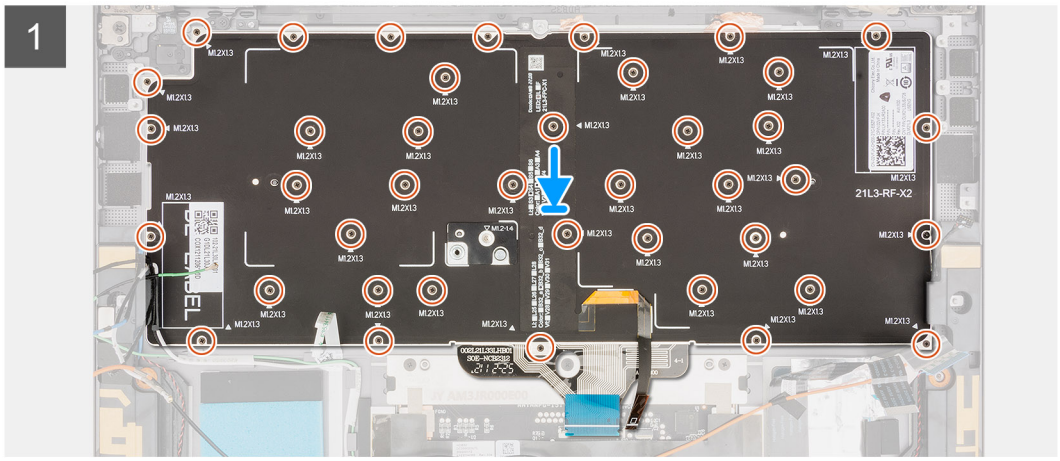
If you are replacing a component, remove the existing component before performing the installation procedure.

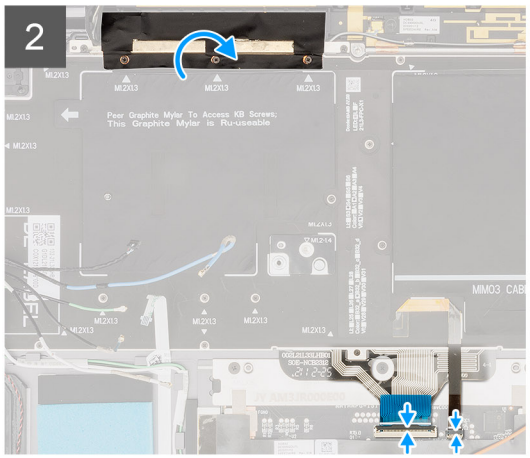
About this task

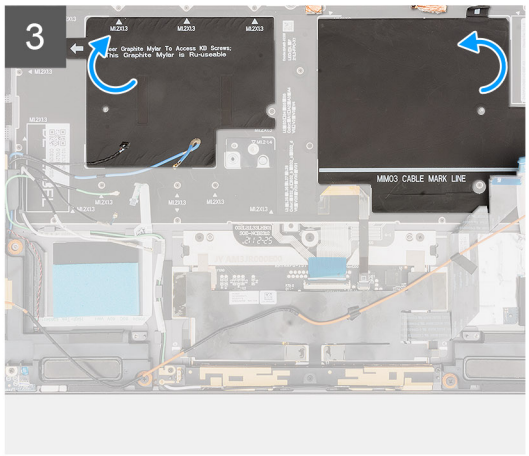
The following images indicate the location of the keyboard and provide a visual representation of the installation procedure.











Steps

1. Align and place the keyboard on the palm-rest assembly.
2. Replace the thirty-seven (M1.2x1.3) screws and the single (M1.2x1.4) to secure the keyboard to the palm-rest assembly.

3. Adhere the adhesive tape to cover the WWAN LTE antenna module.
4. Adhere the graphite mylar to the back of the keyboard.
5. Connect the keyboard FFC to the connector on the touchpad.

Next steps

1. Install the system board.
2. Install the heat sink.
3. Install the fan.
4. Install the battery.
5. Install the WWAN card.
6. Install the base cover.
7. Install the SIM card.
8. Follow the procedure in After working inside your computer.

Palm-rest and keyboard assembly

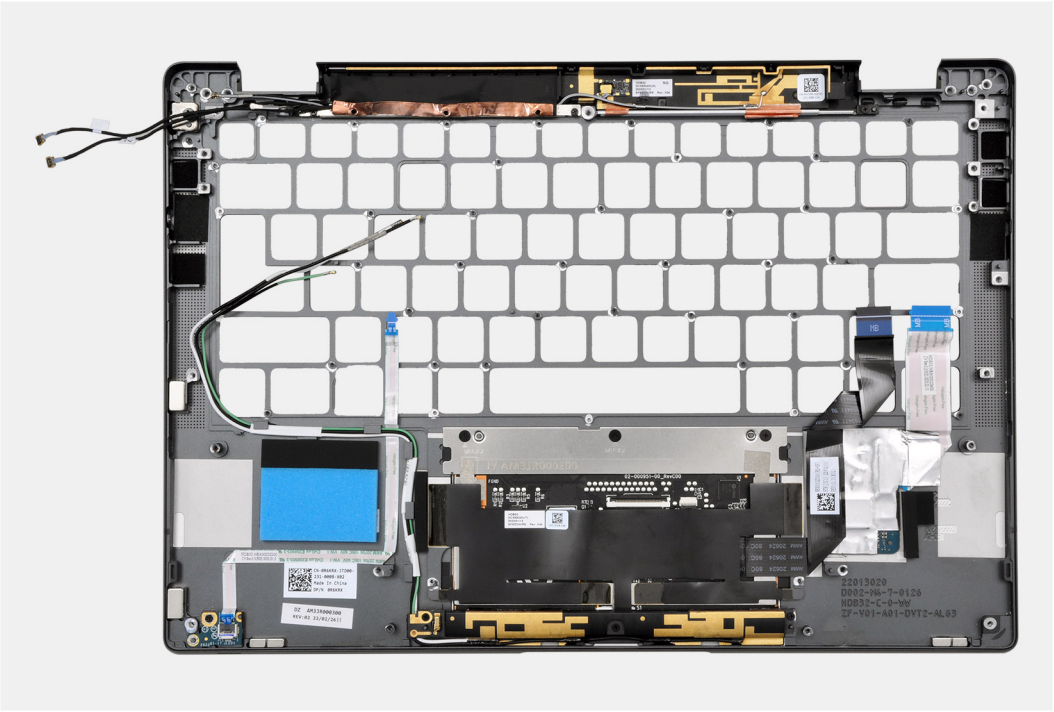
Palm-rest

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the SIM card.
3. Remove the base cover.
4. Remove the solid-state drive.
5. Remove the WWAN card.
6. Remove the display assembly.
7. Remove the battery.
8. Remove the fan.
9. Remove the heat sink.
10. Remove the left speaker.
11. Remove the right speaker.
12. Remove the system board.

    NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.
13. Remove the WLAN-antenna module.
14. Remove the power button.
15. Remove the keyboard.

About this task



Next steps

1. Install the keyboard.
2. Install the power button.
3. Install the WLAN-antenna module.
4. Install the system board.
5. Install the right speaker.
6. Install the left speaker.
7. Install the heat sink.
8. Install the fan.
9. Install the battery.
10. Install the display assembly.
11. Install the WWAN card.
12. Install the solid-state drive.
13. Install the base cover.
14. Install the SIM card.
15. Follow the procedure in After working inside your computer.

Palmrest

Palm-rest

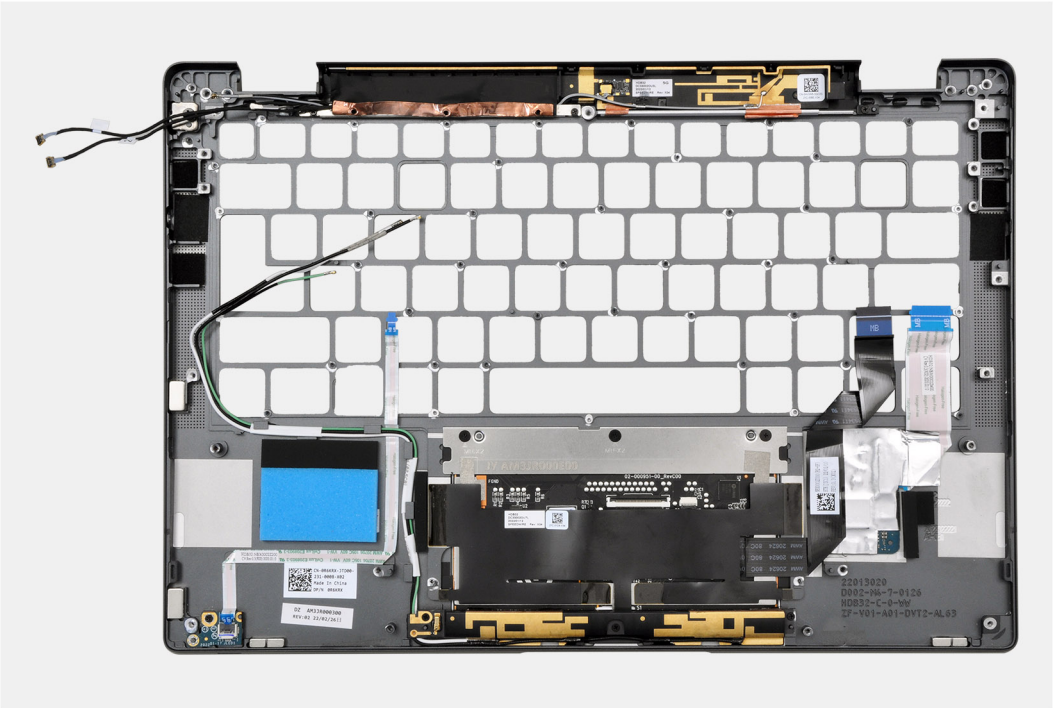
Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the SIM card.
3. Remove the base cover.
4. Remove the solid-state drive.
5. Remove the WWAN card.
6. Remove the display assembly.
7. Remove the battery.

8. Remove the fan.
9. Remove the heat sink.
10. Remove the left speaker.
11. Remove the right speaker.
12. Remove the system board.

    NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.
13. Remove the WLAN-antenna module.
14. Remove the power button.
15. Remove the keyboard.

About this task



Next steps

1. Install the keyboard.
2. Install the power button.
3. Install the WLAN-antenna module.
4. Install the system board.
5. Install the right speaker.
6. Install the left speaker.
7. Install the heat sink.
8. Install the fan.
9. Install the battery.
10. Install the display assembly.
11. Install the WWAN card.
12. Install the solid-state drive.
13. Install the base cover.
14. Install the SIM card.
15. Follow the procedure in After working inside your computer.

3

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ 000123347.

4

BIOS setup

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

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

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

Use the BIOS Setup program for the following purposes:

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

Entering BIOS setup program

About this task

Turn on (or restart) your computer and press F2 immediately.

Navigation keys

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

Table 3. Navigation keys

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

One time boot menu

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

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

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

- Removable Drive (if available)
- STXXXX Drive (if available)

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

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

System setup options

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

Table 4. System setup options—System information menu

Overview for Latitude 9330	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the express service code of the computer.
Ownership Tag	Displays the ownership tag of the computer.
Signed Firmware Update	Displays whether the signed firmware update is enabled. Default: Enabled
Battery	Displays the battery health information.
Primary	Displays the primary battery.
Battery Level	Displays the battery level.
Battery State	Displays the battery state.
Health	Displays the battery health.
AC Adapter	Displays whether an AC adapter is connected. If connected, the AC adapter type.
Battery Life Type	Displays the battery life type.
PROCESSOR	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.
Processor L3 Cache	Displays the processor L3 Cache size.
Microcode Version	Displays the microcode version.

Table 4. System setup options—System information menu (continued)

Overview for Latitude 9330	
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
MEMORY	
Memory Installed	Displays the total computer memory installed.
Memory Available	Displays the total computer memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.
DIMM SLOT 1	Displays the memory card installed in slot 1
DIMM SLOT 2	Displays the memory card installed in slot 2
DEVICES	
Panel Type	Displays the Panel Type of the computer.
Video Controller	Displays the integrate graphics information of the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the Wi-Fi device installed in the computer.
Native Resolution	Displays the native resolution of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays whether a Bluetooth device is installed in the computer.
Pass Through MAC Address	Displays the MAC address of the video pass-through.
Cellular Device	Displays if a SIM card is installed on the computer.

Table 5. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode	Displays the boot mode of this computer.
Boot Sequence	Displays the boot sequence.
Secure Boot	
Enable Secure Boot	Enables or disables checking of boot software (including firmware drivers and the operating system).
Enable Microsoft UEFI CA	Enables or disables UEFI CA will include the UEFI CA in the BIOS UEFI Secure Boot DB.
Secure Boot Mode	Modifies the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. By default, Deployed Mode is selected.
Expert Key Management	
Enable Custom Mode	Enables or disables custom mode to allow keys in the PK, KEK, db, and dbx security key databases to be modified. Default: OFF

Table 6. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between 12-hour and 24-hour clock. Changes to the time take effect immediately.
Camera	
Enable Camera	Enables or disables the camera. By default, Enable Camera is selected.
Audio	
Enable Audio	Enables or disables all integrated audio controller. Default: ON
Enable Microphone	Enables or disables microphone. By default, Enable Microphone is selected.
Enable Internal Speaker	Enables or disables internal speaker. By default, Enable Internal Speaker is selected.
USB/Thunderbolt Configuration	Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, Enable USB Boot Support is selected. By default, Enable External USB Ports is selected.
Enable Thunderbolt Technology Support	Enables or disables the Thunderbolt Technology feature and associated ports and adapters. Default: ON
Enable Thunderbolt Boot Support	Enables or disables Thunderbolt adapter features during pre-boot. Default: OFF
Enable Thunderbolt (and PCIe behind TBT) pre-boot modules	Enables or disables the setting that allows PCIe devices that are connected via a Thunderbolt adapter. Default: OFF
Disable USB PCIE Tunneling	Enables or disables Disable USB PCIE Tunneling
Video/Power only ion Type-C Ports	Limits type-C functionality to video or power only.
Thunderbolt Security level	Sets the Thunderbolt adapter security level within the operating system. By default, User Authorization is selected.
Type-C Dock Override	Enable or disable dock to provide data stream with external ports disabled.
Type C Dock Audio	Enable or disable audio usage on dock
Type C Dock Lan	Enable or disable LAN usage on dock
Miscellaneous Devices	
Enable Fingerprint Reader Device	Enables or disables the Fingerprint Reader Device. By default, Enable Fingerprint Reader Device is selected.
Enable Fingerprint Reader Single Sign On	Enables or disables the Fingerprint Reader Single Sign On capability. By default, Enable Fingerprint Reader Single Sign On is selected.

Table 7. System setup options—Storage menu

Storage	
SATA Operation	Configures operating mode of the integrated SATA hard drive controller. Default: RAID On. SATA is configured to support RAID (Intel Rapid Restore Technology).
Storage Interface	
Port Enablement	Enables the selected onboard drives. • SATA-4 Default: ON • M.2 PCIe SSD-0 Default: ON • M.2 PCIe SSD-1 Default: ON
Drive Information	Displays the information of various onboard drives.
Enable SMART Reporting	Enables or disables Self-Monitoring, Analysis, and Reporting Technology (SMART). Default: OFF

Table 8. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Sets the screen brightness when the computer is running on battery power. Default: 50
Brightness on AC power	Sets the screen brightness when the computer is running on AC power. Default: 100
Touch Screen	Enables or disables the touch screen for the OS. **NOTE:** The touch screen will always work in the BIOS setup irrespective of this setting.
Full Screen Logo	Enabled or disabled the computer to display full screen logo if the image match screen resolution. Default: OFF

Table 9. System setup options—Connection menu

Connection	
Wireless Device Enable	Enable or disable internal WLAN/Bluetooth devices. By default, WLAN is selected. By default, Bluetooth is selected.
Enable UEFI Network Stack	
Enable UEFI Network Stack	When enabled, UEFI networking protocols are installed and available, allowing pre-OS and early OS networking features to use any enabled NICs. This may be used without PXE turned on. Default: ON
Wireless Radio Control	

Table 9. System setup options—Connection menu (continued)

Connection	
Control WLAN radio	Enables to sense the connection of the computer to a wired network and subsequently disable the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are re-enabled. Default: OFF
Dynamic Wireless Transmit Power	Enable to disable improved WLAN performance within regulatory validated guideline.
HTTP(S) Boot Failure	Enable or disable platform HTTP(s) Boot capabilities

Table 10. System setup options—Power menu

Power	
Battery Configuration	Enables the computer to run on battery during power usage hours. Use the below options to prevent AC power usage between certain times of each day. By default Adaptive is selected.
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day. Default: OFF
Peak Shift	Enables the computer to run on battery during peak power usage hours. Default: OFF
Thermal Management	Sets cooling fan and processor heat management to adjust system performance, noise, and temperature. By default, Optimized is selected.
USB Wake Support	
Wake on Dell USB-C Dock	Enables connecting a Dell USB-C Dock to wake the computer from Standby. Default: ON
Block Sleep	Blocks the computer from entering Sleep (S3) mode in the operating system. Default: OFF **NOTE:** If enabled, the computer will not go to sleep, Intel Rapid Start will be disabled automatically, and the operating system power option will be blank if it was set to Sleep.
Lid Switch	
Enable Lid Switch	Enables or disables the lid switch. Default: ON
Power On Lid Open	Enables the computer to power up from the off state whenever the lid is opened. Default: ON
Intel Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. Setting this option to enable allows the operating system to select the appropriate processor performance automatically. Default: ON

Table 11. System setup options—Security menu

Security	
TPM 2.0 Security On	Select whether or not the Trusted Platform Model (TPM) is visible to the OS. Default: ON
PPI Bypass for Enable Commands	Enables or disables the OS to skip BIOS Physical Presence Interface (PPI) user prompts when issuing TPM PPI enabled and activate commands. Default: OFF
PPI Bypass for Disable Commands	Enables or disables The OS to skip BIOS PPI user prompts when issuing TPM PPI Disable and Deactivate commands. Default: OFF
PPI Bypass for Clear Commands	Enables or disables the operating system to skip BIOS Physical Presence Interface (PPI) user prompts when issuing the Clear command. Default: OFF
Attestation Enable	Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for signature operations. Default: ON
Key Storage Enable	Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for storing owner data. Default: ON
SHA-256	Enables or disables the BIOS and the TPM to use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot. Default: ON
Clear	Enables or disables the computer to clear the PTT owner information, and returns the PTT to the default state. Default: OFF
TPM State	Enables or disables the TPM. This is the normal operating state for the TPM when you want to use its complete array of capabilities. Default: Enabled
Intel Total Memory Encryption	Enable or disable TME to protect memory, by encrypting it, from physical attacks.
Chassis Intrusion	Enable or disable Chassis Intrusion sensor.
Clear Intrusion Warning	Locks boot untill warning is cleared.
Intel Software Guard Extensions	
Intel SGX	Enables or disables the Intel Software Guard Extensions (SGX) to provide a secured environment for running code/storing sensitive information. By default, Software Control is selected.
SMM Security Mitigation	
SMM Security Mitigation	Enables or disables additional UEFI SMM Security Mitigation protections. Default: OFF **NOTE:** This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.
Data Wipe on Next Boot	

Table 11. System setup options—Security menu (continued)

Security	
Start Data Wipe	When enabled, the BIOS will queue up a data wipe cycle for storage device(s) connected to the motherboard on the next reboot. Default: OFF
Absolute	
Absolute	Enables, disables or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. By default, Enable Absolute is selected.
UEFI Boot Path Security	
UEFI Boot Path Security	Controls whether the system will prompt the user to enter the admin password (if set) when booting to a UEFI boot path device from the F12 boot menu. By default, Always Except Internal HDD is selected.
SafeShutter	Enable or disable software controlled camera cover open/close activity.
Firmware Device Tamper Detection	Enable or disable firmware tamper detection technology.

Table 12. System setup options—Passwords menu

Passwords	
Admin Password	Sets, changes, or deletes the administrator password (sometimes called the "setup password"). The administrator password enables several security features.
Password Configuration	
Upper Case Letter	When enabled, password must contain at least one upper case letter. Default: OFF
Upper Case Letter	When enabled, password must contain at least one lower case letter. Default: OFF
Digit	When enabled, password must contain at least one digit number. Default: OFF
Special Character	When enabled, password must contain at least one special character. Default: OFF
Minimum Characters	Sets the minimum number of characters allowed for passwords. Default: 04
Password Bypass	
Password Bypass	When enabled, the system and the hard drive passwords are prompted when the computer is powered on from the Off state. By default, Disabled is selected.
Password Changes	
Enable Non-Admin Password Changes	When On, users can change the system and the hard drive password without the need for administrator password. Default: ON
Admin Setup Lockout	
Enable Admin Setup Lockout	Enables or disables the user from entering BIOS Setup when an administrator password is set. Default: OFF

Table 12. System setup options—Passwords menu (continued)

Passwords	
Master Password Lockout	
Enable Master Password Lockout	Enables or disables the master password support. Default: OFF
Allow Non-Admin PSID Revert	Enable or disable the option to control access to the physical security ID(PSID) revert of NVMe drives from Dell Security Manager.

Table 13. System setup options—Update Recovery menu

Update Recovery	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Controls whether this computer allows BIOS updates via EUFI capsule update packages. Default: ON
BIOS Recovery from Hard Drive	
BIOS Recovery from Hard Drive	Enables the computer to recover from a bad BIOS image, as long as the Boot Block portion is intact and functioning. Default: ON **NOTE:** BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.
BIOS Downgrade	
Allow BIOS Downgrade	Controls flashing of the system firmware to previous revisions. Default: ON
SupportAssist OS Recovery	
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool in the event of certain system errors. Default: ON
BIOSConnect	
BIOSConnect	Enables or disables cloud Service OS recover if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto OS Recovery Threshold setup option. Default: ON
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool. By default, 2 is selected.

Table 14. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a system Asset Tag that can be used by an IT administrator to uniquely identify a particular system. Once set in BIOS, the Asset Tag cannot be changed.
AC Behavior	

Table 14. System setup options—System Management menu (continued)

System Management	
Wake on AC	Enables the computer to turn on and go to boot when AC power is supplied to the computer. Default: OFF
Wake on LAN/WLAN	
Wake on LAN/WLAN	Enables or disables the computer to turn on by a special LAN/WLAN signal. By default, Disabled is selected.
Intel AMT	Enable or disable auto-power on when you set certain days and times.
Diagnostics	Enable or disable scheduled onboard diagnostics on subsequent boots.
Power-on Self Test Automatic Recovery	Enable or disable the feature where the system tries to auto-recover the computer if unresponsive before POST process.

Table 15. System setup options—Keyboard menu

Keyboard	
Numlock Enable	
Enable Numlock	Enables or disables Numlock when the computer boots. Default: ON
Fn Lock Options	
Fn Lock Options	Enables or disables the Fn lock option. Default: ON
Lock Mode	Default: Lock Mode Secondary. Lock Mode Secondary = If this option is selected, the F1-F12 keys scan the code for their secondary functions.
Keyboard Illumination	
Keyboard Illumination	Configures the operating mode of the keyboard illumination feature. By default, Bright is selected.
Keyboard Backlight Timeout on AC	
Keyboard Backlight Timeout on AC	Configures the timeout value for the keyboard when an AC adapter is connected to the computer. The keyboard backlight timeout value is only effect when the backlight is enabled. By default, 1 minute is selected.
Keyboard Backlight Timeout on Battery	
Keyboard Backlight Timeout on Battery	Configures the timeout value for the keyboard when the computer is running on battery. The keyboard backlight timeout value is only effect when the backlight is enabled. By default, 1 minute is selected.
OROM Keyboard Access	Enables or disables the option to enter Option ROM configuration screens via hotkeys during boot. By default, Enabled is selected.
OROM Keyboard Access	

Table 16. System setup options—Pre-Boot Behavior menu

Pre-Boot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enables or disables the computer to display adapter warning messages when adapters with too little power capacity are detected. Default: ON
Warnings and Errors	
Warnings and Errors	Selects an action on encountering a warning or error during boot. By default, Prompt on Warnings and Errors is selected. **NOTE:** Errors deemed critical to the operation of the computer hardware will always halt the computer.
USB-C Warnings	
Enable Dock Warning Messages	Enables or disables dock warning messages. Default: ON
Fastboot	
Fastboot	Configures the speed of the UEFI boot process. By default, Thorough is selected.
Extend BIOS POST Time	
Extend BIOS POST Time	Configures the BIOS POST (Power-On Self-Test) load time. By default, 0 seconds is selected.
MAC Address Pass-Through	
MAC Address Pass-Through	Replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the computer. By default, System Unique MAC Address is selected.
Sign of Life	
Early Logo Display	Displays Logo Sign of Life. Default: ON
Collaboration Touchpad	Enable or disable collaboration touchpad.

Table 17. System setup options—Virtualization menu

Virtualization	
Intel Virtualization Technology	
Intel Virtualization Technology	Enables or disables the computer to run a virtual machine monitor (VMM). Default: ON
VT for Direct I/O	
Enable Intel VT for Direct I/O	Enables or disables the computer to perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. Default: ON
Intel Trusted Execution Technology (TXT)	This option specifies whether a measured Visrtual Machine (MVMM) can utilize the additional hardware capabilities provided by TXT.
DMA Protection	Enable or disable BIOS support for Pre-boot and Kernel DMA protections.

Table 18. System setup options—Performance menu

Performance	
Multi-Core Support	
Active Cores	Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores. By default, All Cores is selected.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables or disables the Intel SpeedStep Technology to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. Default: ON
C-States Control	
Enable C-State Control	Enables or disables the CPU's ability to enter and exit low-power states. Default: ON
Enable Adaptive C-States for Discrete Graphics	Allows the computer to dynamically detect high usage of a discrete graphics and adjust the computer parameters for higher performance during that time period. Default: ON
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enabled or disabled the Intel TurboBoost mode of the processor. If enabled, the Intel TurboBoost driver increases the performance of the CPU or graphics processor. Default: ON
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enabled or disabled the Intel Hyper-Threading mode of the processor. If enabled, the Intel Hyper-Threading increases the efficiency of the processor resources when multiple threads run on each core. Default: ON
Dynamic Tuning:Machine Learning	
Enable Dynamic Tuning:Machine Learning	Enables or disables OS capability to enhance dynamic power tuning capabilities based on detected workloads. Default: OFF

Table 19. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear Bios Event Log	Select keep or clear BIOS events. By default, Keep is selected.
Thermal Event Log	
Clear Thermal Event Log	Select keep or clear Thermal events. By default, Keep is selected.
Power Event Log	
Clear POWER Event Log	Select keep or clear Power events. By default, Keep is selected.

Updating the BIOS

Updating the BIOS in Windows

About this task

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

Steps

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

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

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

Updating the BIOS in Linux and Ubuntu

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

Updating the BIOS using the USB drive in Windows

About this task

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

Steps

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

Updating the BIOS from the F12 One-Time boot menu

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

About this task

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

BIOS Update

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

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

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

Updating from the One-Time boot menu

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

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

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

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

Steps

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

System and setup password

Table 20. System and setup password

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

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

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

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

NOTE: System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

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

About this task

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

Steps

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

Deleting or changing an existing system setup password

Prerequisites

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

About this task

To enter the System Setup, press F12 immediately after a power-on or reboot.

Steps

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

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

Clearing CMOS settings

About this task

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

Steps

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

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.

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

5

Troubleshooting

Handling swollen Lithium-ion batteries

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

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

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

The guidelines for handling and replacing Lithium-ion batteries are as follows:

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

Lithium-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, search Dell Laptop Battery in the Knowledge Base Resource at www.dell.com/support.

Dell SupportAssist Pre-boot System Performance Check diagnostics

About this task

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

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results

- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

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

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

Running the SupportAssist Pre-Boot System Performance Check

Steps

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

Built-in self-test (BIST)

M-BIST

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

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

How to run M-BIST

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

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

Table 21. LED error codes

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

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

LCD Power rail test (L-BIST)

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

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

How to invoke L-BIST Test:

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

LCD Built-in Self Test (BIST)

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

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

How to invoke LCD BIST Test

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

NOTE: Dell SupportAssist Pre-boot diagnostics upon launch, initiates an LCD BIST first, expecting a user intervention confirm functionality of the LCD.

System-diagnostic lights

This section lists the system-diagnostic lights of your Latitude 9330.

Table 22. System-diagnostic lights

Blinking pattern		Problem description	Suggested resolution
Amber	**White**		
1	1	TPM detection failure	Replace the system board.
1	2	Unrecoverable SPI Flash Failure	Replace the system board.
1	5	EC unable to program i-Fuse	Replace the system board.

Table 22. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	White		
1	6	Generic catch-all for ungraceful EC code flow errors	Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button for 3~5 seconds.
2	1	CPU failure	• Run the Dell Support Assist/Dell Diagnostics tool. • If problem persists, replace the system board.
2	2	System board failure (included BIOS corruption or ROM error)	• Flash latest BIOS version • If problem persists, replace the system board.
2	3	No memory/RAM detected	• Confirm that the memory module is installed properly. • If problem persists, replace the memory module.
2	4	Memory/RAM failure	• Reset and swap memory modules among the slots. • If problem persists, replace the memory module.
2	5	Invalid memory installed	• Reset and swap memory modules among the slots. • If problem persists, replace the memory module.
2	6	System board/Chipset Error	Replace the system board.
2	7	LCD failure (SBIOS message)	Replace the LCD module.
2	8	LCD failure (EC detection of power rail failure)	Replace the system board.
3	1	CMOS battery failure	• Reset the main battery connection. • If problem persists, replace the main battery.
3	2	PCI or Video card/chip failure	Replace the system board.
3	3	BIOS Recovery image not found	• Flash latest BIOS version • If problem persists, replace the system board.
3	4	BIOS Recovery image found but invalid	• Flash latest BIOS version • If problem persists, replace the system board.
3	5	Power rail failure	Replace the system board.
3	6	Flash corruption detected by SBIOS.	• Press power button for over 25 seconds to do

Table 22. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	**White**		
			RTC reset. If problem persists, replace the system board. • Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button 3~5 seconds to ensure all power are drained. • Run "BIOS recovery from USB", and the instructions are in the website Dell support. • If problem persists, replace the system board.
3	7	Timeout waiting on ME to reply to HECI message.	Replace the system board.

NOTE: Blinking 3-3-3 LEDs on Lock LED (Caps-Lock or Nums-Lock), Power button LED (without Fingerprint reader), and Diagnostic LED indicates failure to provide input during LCD panel test on Dell SupportAssist Pre-boot System Performance Check diagnostics.

Recovering the operating system

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

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

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

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

Real-Time Clock (RTC Reset)

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

Start the RTC reset with the system powered off and connected to AC power. Press and hold the power button for

thirty (30) seconds

. The system RTC Reset occurs after you release the power button.

Backup media and recovery options

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

WiFi power cycle

About this task

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

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

Steps

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

Drain residual flea power (perform hard reset)

About this task

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

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

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

To drain residual flea power (perform a hard reset)

Steps

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

NOTE: For more information about performing a hard reset, search in the Knowledge Base Resource at www.dell.com/support.

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Getting help and contacting Dell

Self-help resources

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

Table 23. Self-help resources

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

Contacting Dell

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

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

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