

Inspiron 14 5410 2-in-1

Service Manual



Notes, cautions, and warnings

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

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

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

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Working inside your computer

Before working inside your computer

About this task

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


Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. Click **Start** >  **Power** > **Shut down**.
 **NOTE:** If you are using a different operating system, see the documentation of your operating system for shut-down instructions.
3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
 **CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
5. Remove any media card and optical disc from your computer, if applicable.


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 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 [Dell Regulatory Compliance Home Page](#).


 **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 [Dell Regulatory Compliance Home Page](#).

 **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 rechargeable Li-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 differ from what is shown in this document.

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory modules, and system boards. 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 that is 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 that are 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, and so on.

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. Wireless anti-static straps 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 computer 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 computer, or inside an ESD 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 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 bonding-wire of wrist-strap 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 laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops 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 computer 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 computer, 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 to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and 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.


Entering Service Mode

Service Mode allows users to immediately cut off electricity from the computer and conduct repairs without disconnecting the battery cable from the system board.

To enter **Service Mode**:

1. Shut down your computer and disconnect the AC adapter.
2. Hold **** key on the keyboard and press the power button for 3 seconds or until the Dell logo appears on the screen.
3. Press any key to continue.

 **NOTE:** If the power adapter has not been 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.

 **NOTE:** The **Service Mode** procedure automatically skips the following step if the **Owner Tag** of the computer is not set up in advance by the manufacturer.

4. 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.

Once the computer shuts down, you may perform the replacement procedures without disconnecting the battery cable from the system board.

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.
5. Turn on your computer.

Exiting Service Mode

Service Mode allows users to immediately cut off electricity from the computer and conduct repairs without disconnecting the battery cable from the system board.

To exit **Service Mode**:

1. Connect the AC adapter to the power-adapter port on your computer.
2. Press the power button to turn on the computer. Your computer will automatically return to normal functioning mode.

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 screwdrivers #0
- Plastic scribe

Screw list

NOTE: When removing screws from a component, it is recommended to note the screw type, and 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















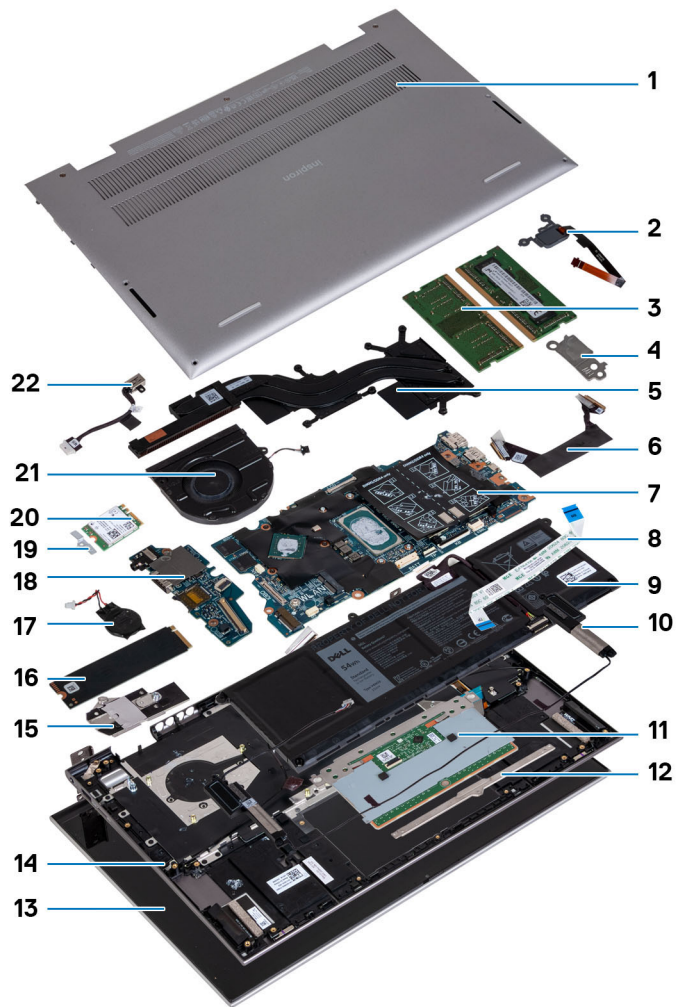
Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2x4	4	
Battery	Palm-rest and keyboard assembly	M2x3	5 (For computers shipped with a 4-cell battery) 3 (For computers shipped with a 3-cell battery)	
Wireless-card bracket	Wireless card and system board	M2x3	1	
Solid-state bracket	System board	M1.6x2.5	1	
2230 solid-state drive	System board	M2x3	1	
Fan	Palm-rest and keyboard assembly	M2x3	2	
Touchpad bracket	Palm-rest and keyboard assembly	M1.6x2	3	
Touchpad	Palm-rest and keyboard assembly	M2x1.8	2	

Table 1. Screw list (continued)

Component	Secured to	Screw type	Quantity	Screw image
I/O board	Palm-rest and keyboard assembly	M2x3	2	
Display hinges	Palm-rest and keyboard assembly	M2.5x3.5	4	
Power button/Power button with fingerprint reader	Palm-rest and keyboard assembly	M1.6X2	2	
Power-adaptor port	Palm-rest and keyboard assembly	2x3	1	
USB Type-C bracket	Palm-rest and keyboard assembly	M2.5x4.5	2	
System board	Palm-rest and keyboard assembly	M2x1.8	2	

Major components of Inspiron 5410 2-in-1

The following image shows the major components of Inspiron 5410 2-in-1.



1. Base cover
2. Power button with optional fingerprint reader
3. Memory modules
4. USB Type-C bracket
5. Heat sink
6. I/O-board cable
7. System board
8. Touchpad cable
9. Battery
10. Speakers
11. Touchpad
12. Touchpad-bracket
13. Display assembly
14. Palm-rest and keyboard assembly
15. Solid-state drive bracket
16. M.2 2280 solid-state drive
17. Coin-cell battery
18. I/O board
19. Wireless-card bracket
20. Wireless card
21. Fan
22. Power-adaptor port

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.

Base cover

Removing the base cover

Prerequisites

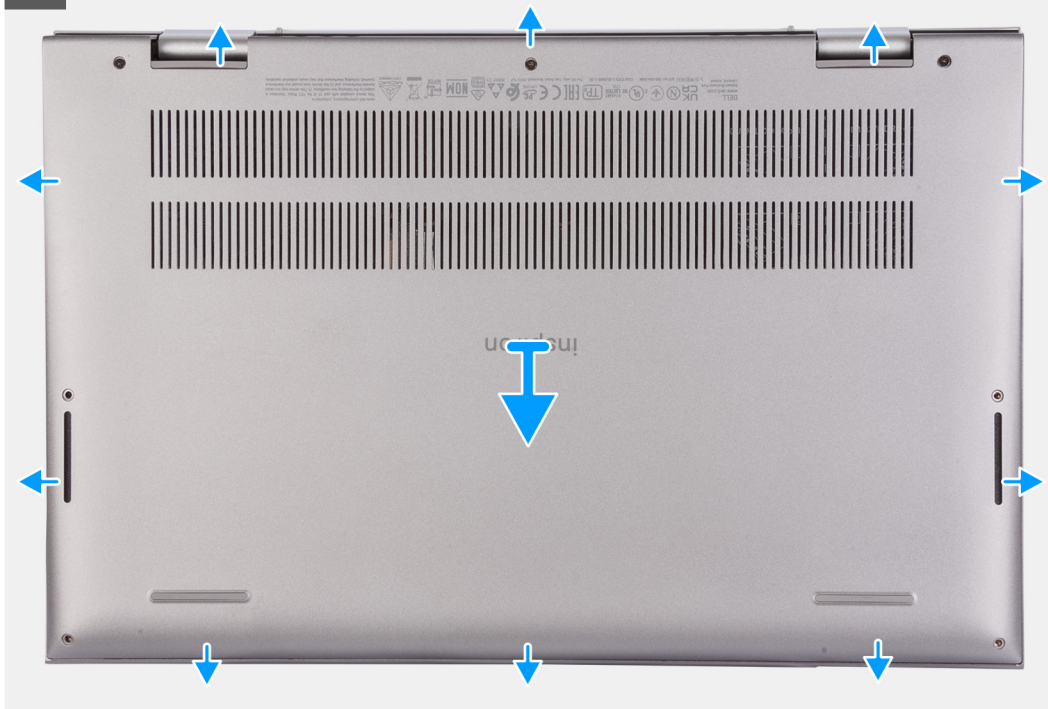
1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).

About this task

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



2



Steps

1. Remove the four screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Loosen the three captive screws that secure the base cover to the palm-rest and keyboard assembly.

NOTE: Upon loosening the three captive screws, the base cover will open up creating a gap between the base cover and the palm-rest assembly.
3. Starting from the top-left corner, pry the base cover to release the base cover from the palm-rest and keyboard assembly.

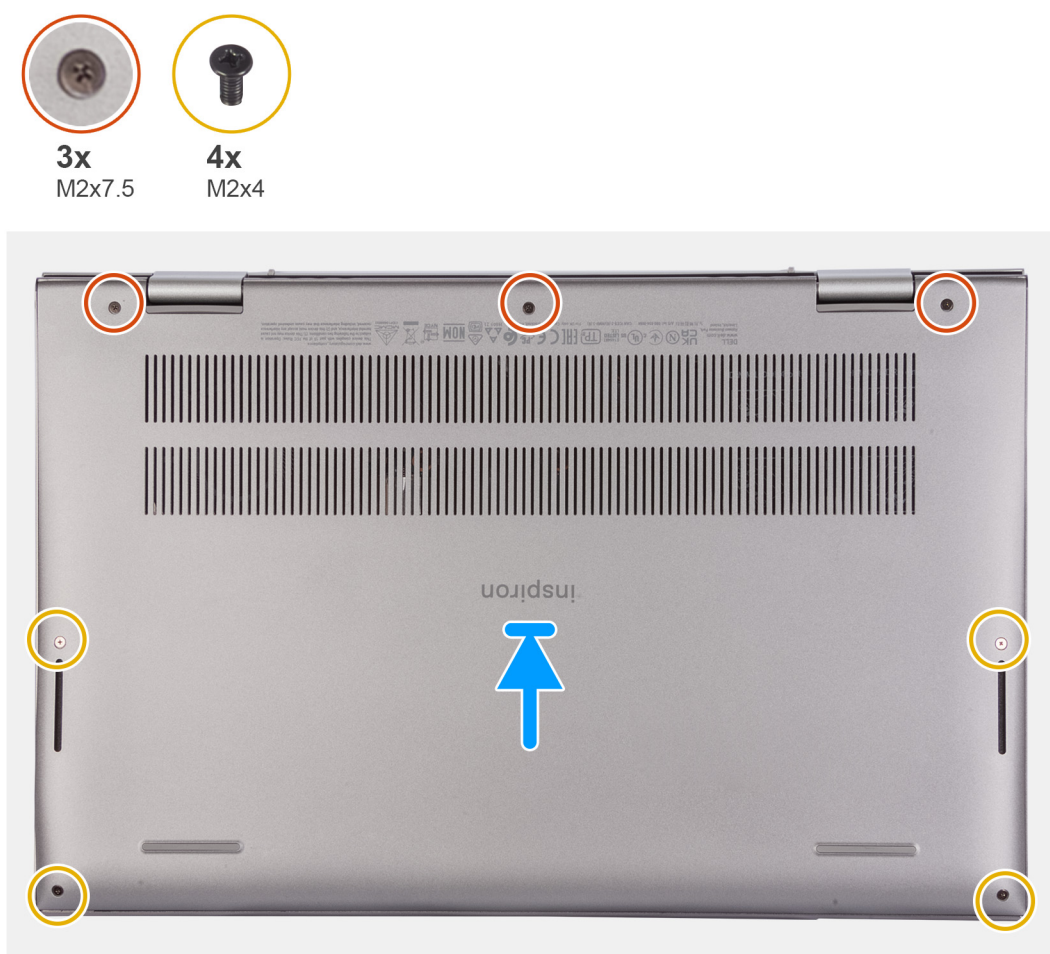
Installing the base cover

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 base cover and provide a visual representation of the installation procedure.



Steps

1. 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.
2. Replace the four screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
3. Tighten the three captive screws that secure the base cover to the palm-rest and keyboard assembly.

Next steps

1. Exit [Service Mode](#).
2. Follow the procedure in [After working inside your computer](#).

Battery

Rechargeable Li-ion battery precautions

⚠ CAUTION:

- Exercise caution when handling rechargeable Li-ion batteries.
- Discharge the battery completely before removing it. Disconnect the AC power adapter from the computer 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 computer 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 rechargeable Li-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See [Contact Support at Dell Support Site](#).
- Always purchase genuine batteries from [Dell Site](#) 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 rechargeable Li-ion batteries, see [Handling swollen rechargeable Li-ion batteries](#).

Removing the 3-cell or 4-cell battery

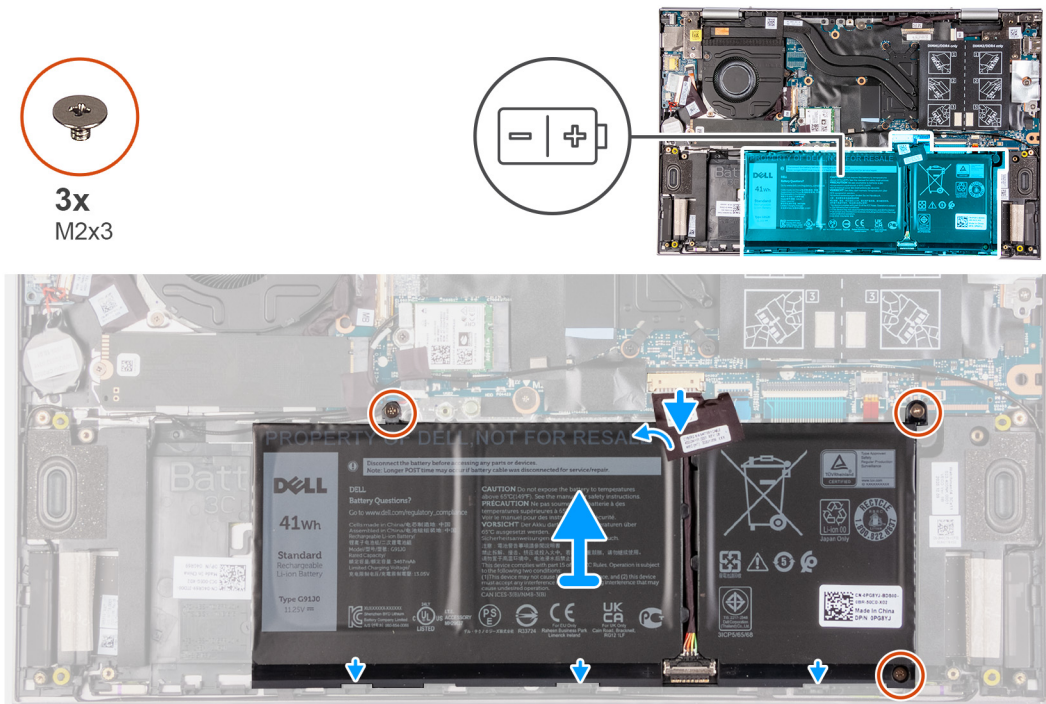
Removing the 3-cell battery

Prerequisites

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

About this task

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



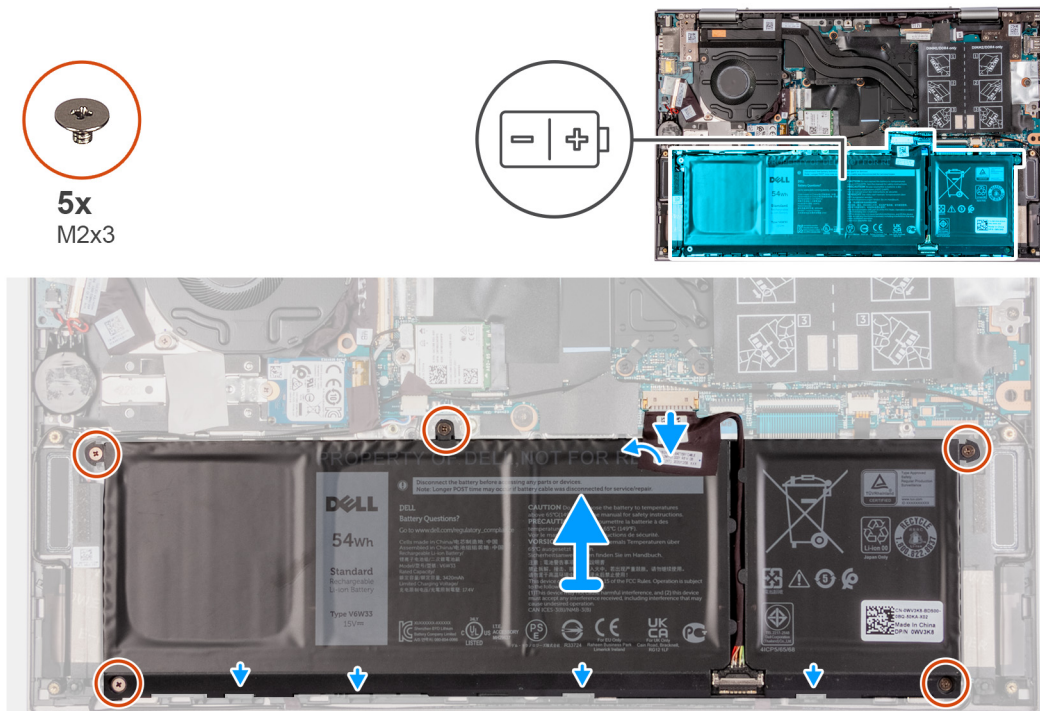
Steps

1. Peel the tape that secures the battery cable to the system board (applicable only if not peeled earlier).
2. Disconnect the battery cable from the system board (applicable only if not disconnected earlier).
3. Remove the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
4. Lift the battery off the palm-rest and keyboard assembly.

Removing the 4-cell battery

About this task

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



Steps

1. Peel the tape that secures the battery cable to the system board (applicable only if not peeled earlier).
2. Disconnect the battery cable from the system board (applicable only if not disconnected earlier).
3. Remove the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
4. Lift the battery off the palm-rest and keyboard assembly.

Installing the 3-cell or 4-cell battery

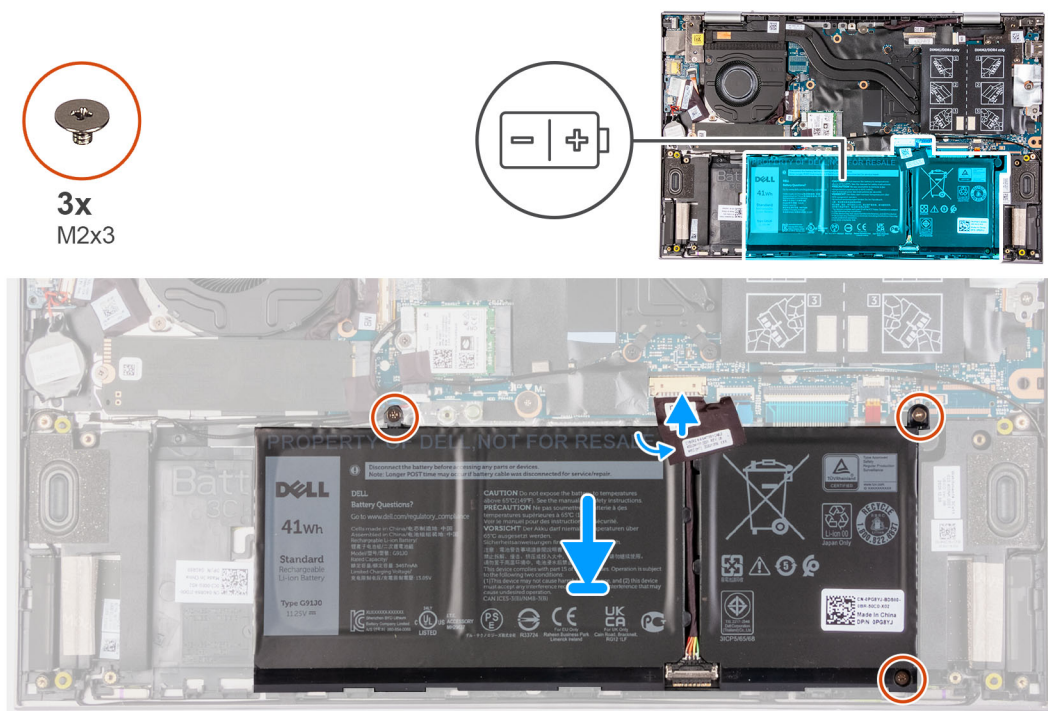
Installing the 3-cell battery

Prerequisites

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

About this task

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



Steps

1. Using the alignment posts, place the battery on the palm-rest and keyboard assembly.
2. Replace the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the system board.
4. Adhere the tape that secures the battery cable to the system board.

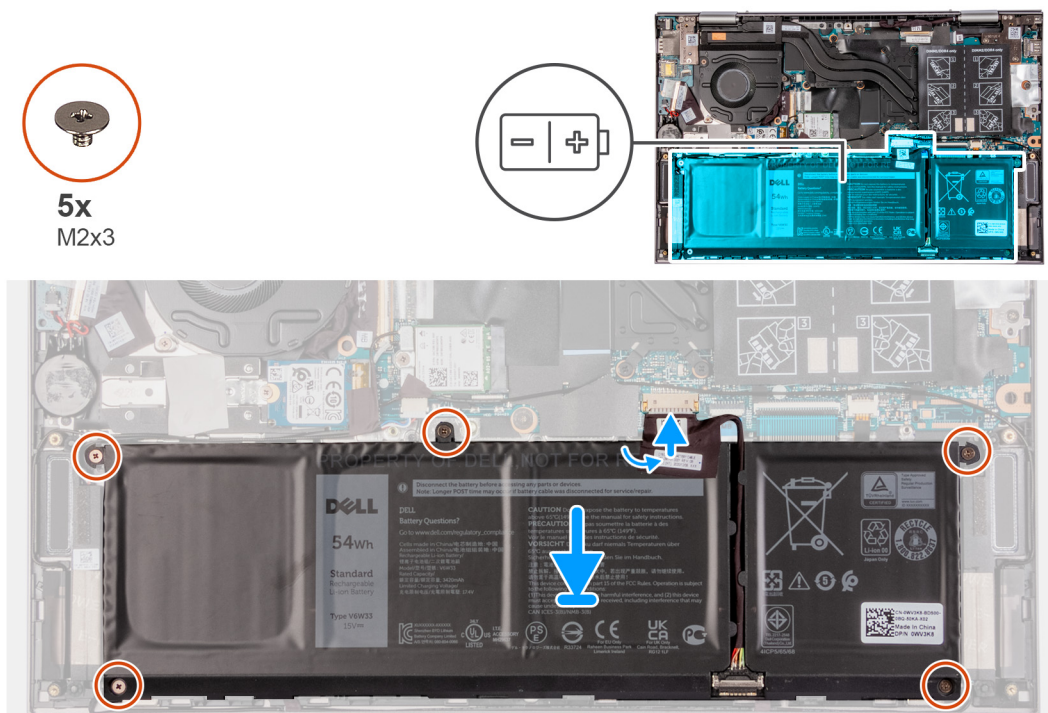
Installing the 4-cell battery

Prerequisites

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

About this task

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



Steps

1. Using the alignment posts, place the battery on the palm-rest and keyboard assembly.
2. Replace the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the system board.
4. Adhere the tape that secures the battery cable to the system board.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).

Coin-cell battery

Removing the coin-cell battery

Prerequisites

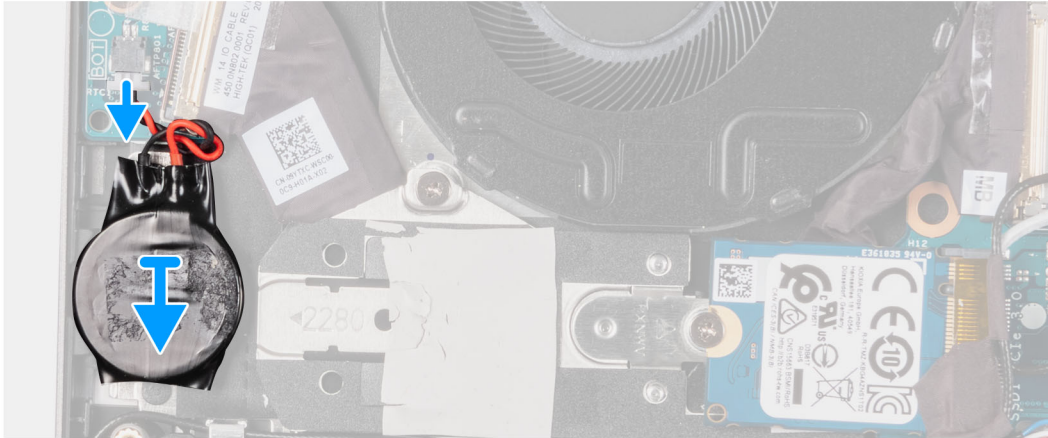
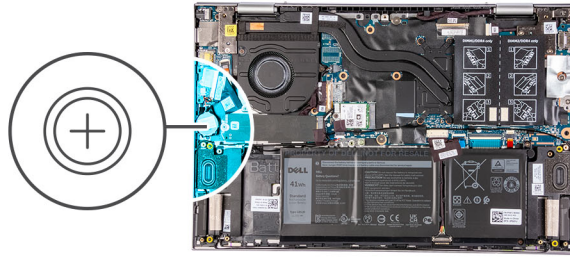
1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).

NOTE: Removing the I/O-board cable is equivalent to removing the coin-cell battery. It resets the BIOS setup program's settings to default. It is recommended that you note the BIOS setup program's settings before removing the coin-cell battery.

3. Remove the [base cover](#).

About this task

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



Steps

1. Disconnect the coin-cell battery from the I/O board.
2. Peel the coin-cell battery and lift it off the slot on the palm-rest and keyboard assembly.

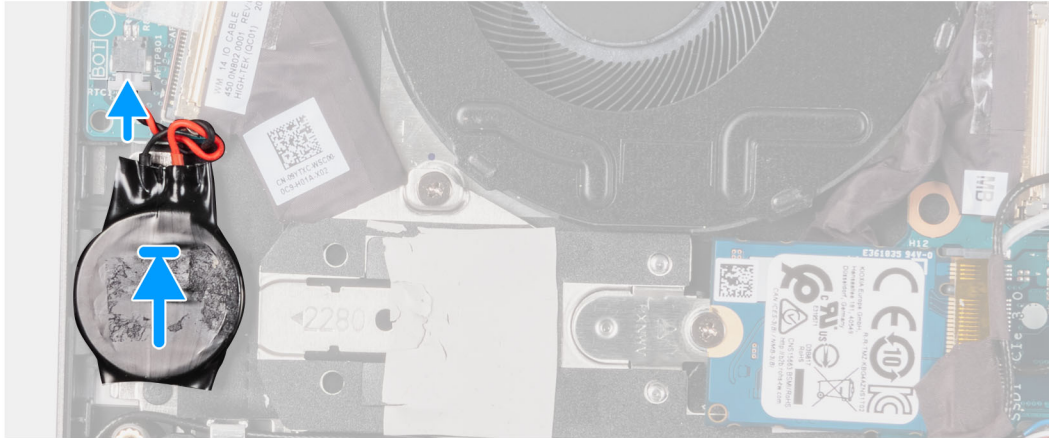
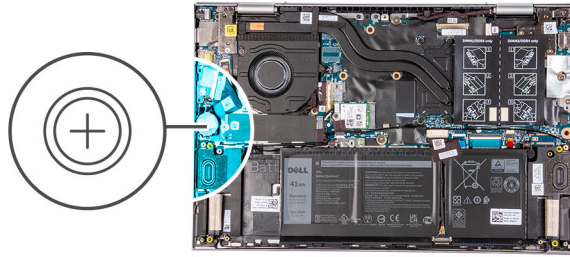
Installing the coin-cell battery

Prerequisites

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

About this task

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



Steps

1. Adhere the coin-cell battery to the slot on the palm-rest and keyboard assembly.
2. Connect the coin-cell battery cable to the I/O board.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

Memory module

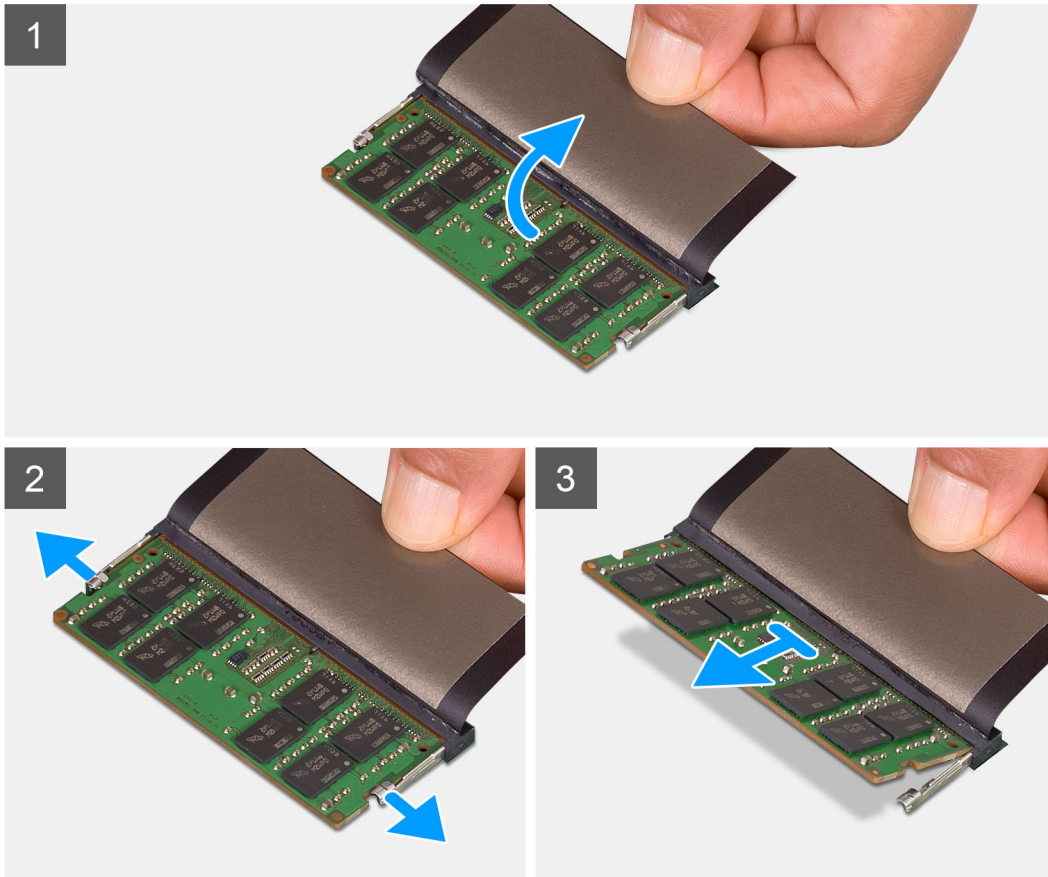
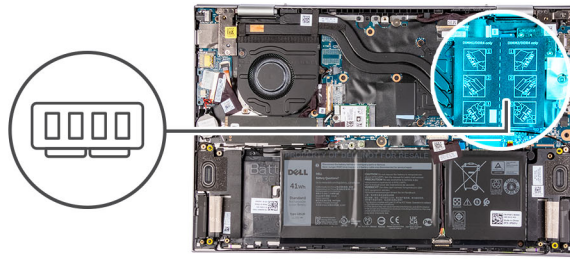
Removing the memory module

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

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



Steps

1. Lift the flap to access the memory module.
2. Use your fingertips to carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops up.
3. Slide and remove the memory module from the memory-module slot.

NOTE: Repeat step 2 to step 3 to remove any other memory modules installed in your computer.

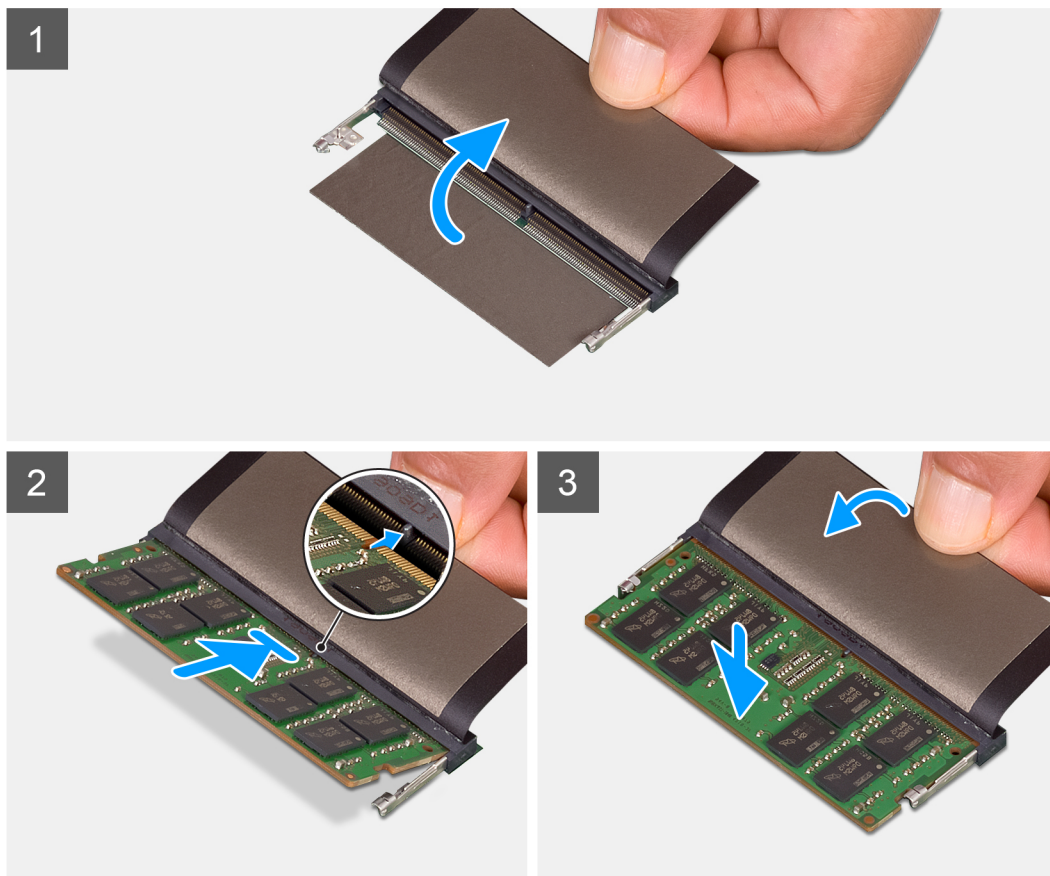
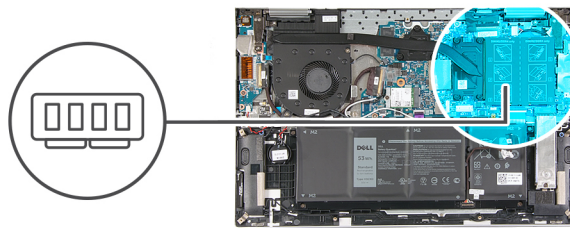
Installing the memory module

Prerequisites

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

About this task

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



Steps

1. Lift the flap to access the memory-module slot.
2. Align the notch on the memory module with the tab on the memory-module slot.
3. Slide the memory module firmly at an angle, into the memory-module slot.
4. Press the memory module down until it clicks into place.

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

NOTE: Repeat step 2 to step 4 to install any other memory modules in your computer.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

Wireless card

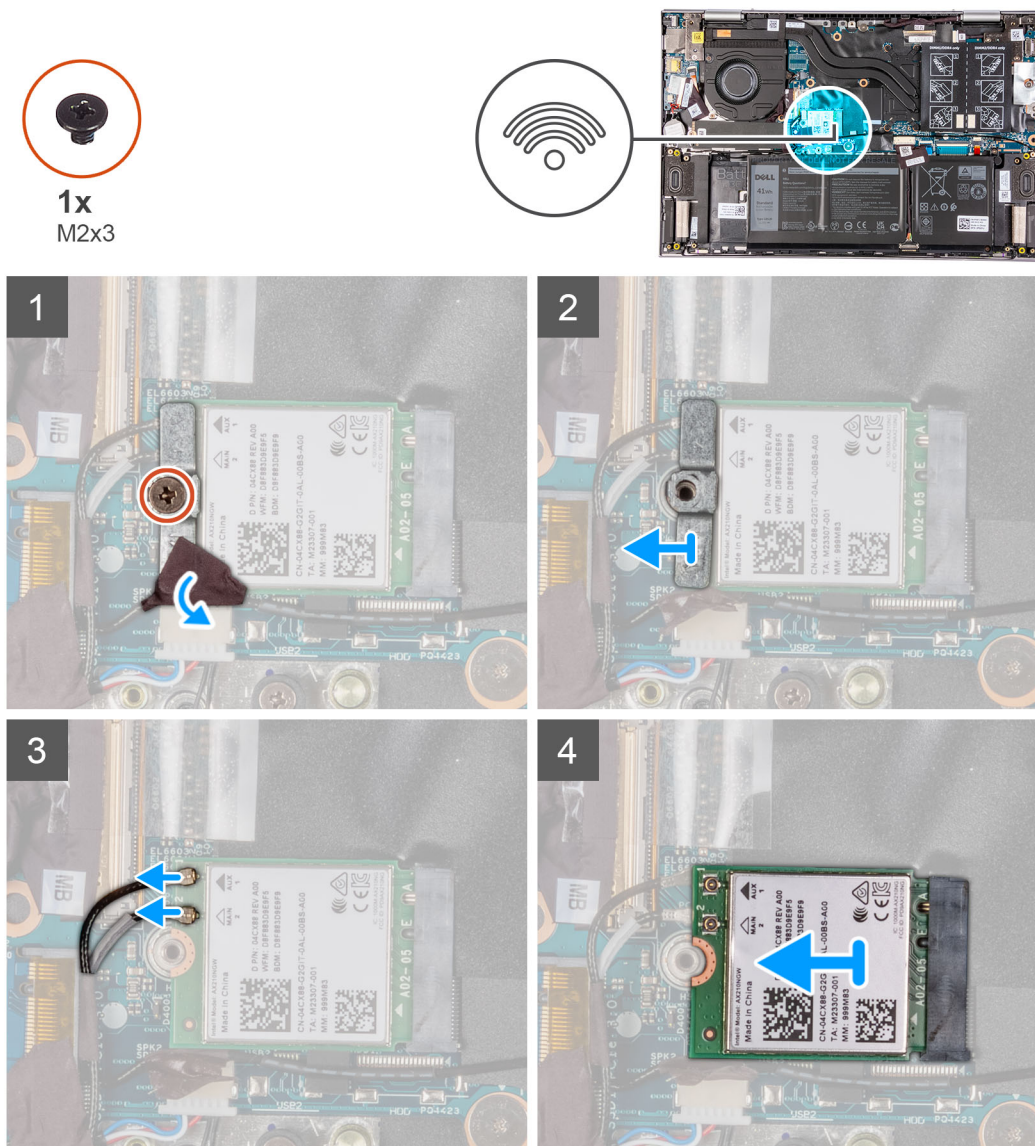
Removing the wireless card

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

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



Steps

1. Peel the tape that secures the antenna cable to the wireless-card bracket.
2. Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card and system board.
3. Remove the wireless-card bracket from the wireless card.
4. Disconnect the antenna cables from the wireless card.

5. Slide and remove the wireless card from the wireless-card slot.

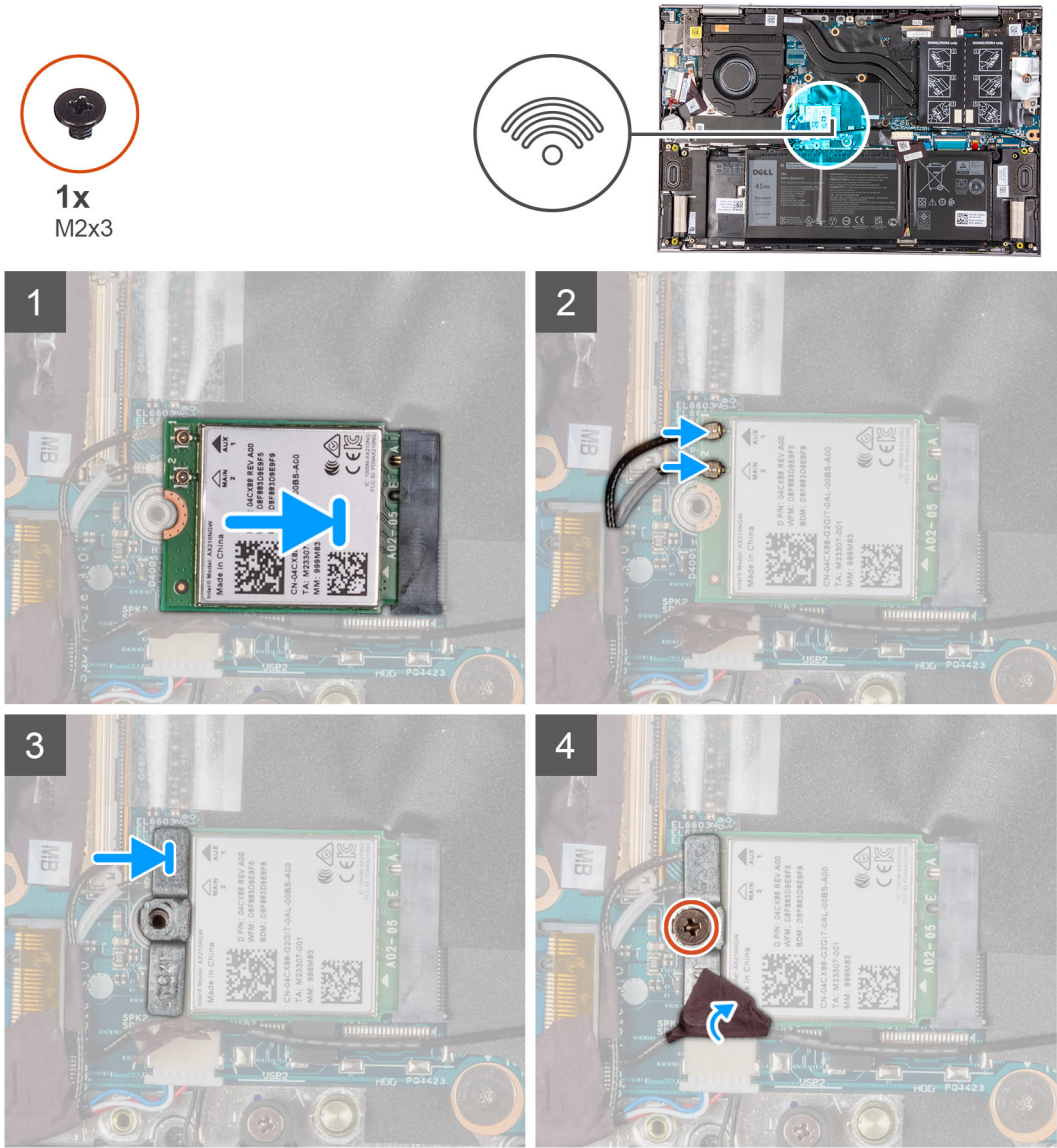
Installing the wireless card

Prerequisites

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

About this task

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



Steps

1. Connect the antenna cables to the wireless card.

The following table provides the antenna-cable color scheme for the wireless card that is supported by your computer.

Table 2. Antenna-cable color scheme

Connector on the wireless card	Antenna-cable color	Silkscreen marking	
Main	White	MAIN	△ (white triangle)

Table 2. Antenna-cable color scheme (continued)

Connector on the wireless card	Antenna-cable color	Silkscreen marking	
Auxiliary	Black	AUX	▲ (black triangle)

2. Align the notch on the wireless card with the tab on the wireless-card slot and insert the wireless card at an angle into the wireless-card slot.
3. Align the screw hole on the wireless-card bracket with the screw hole on the wireless card and palm-rest and keyboard assembly.
4. Replace the screw (M2x3) that secures the wireless-card bracket to the wireless card and system board.
5. Adhere the tape that secures the antenna cable to the wireless-card bracket.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

Solid-state drive

Removing the M.2 2280 solid-state drive

Prerequisites

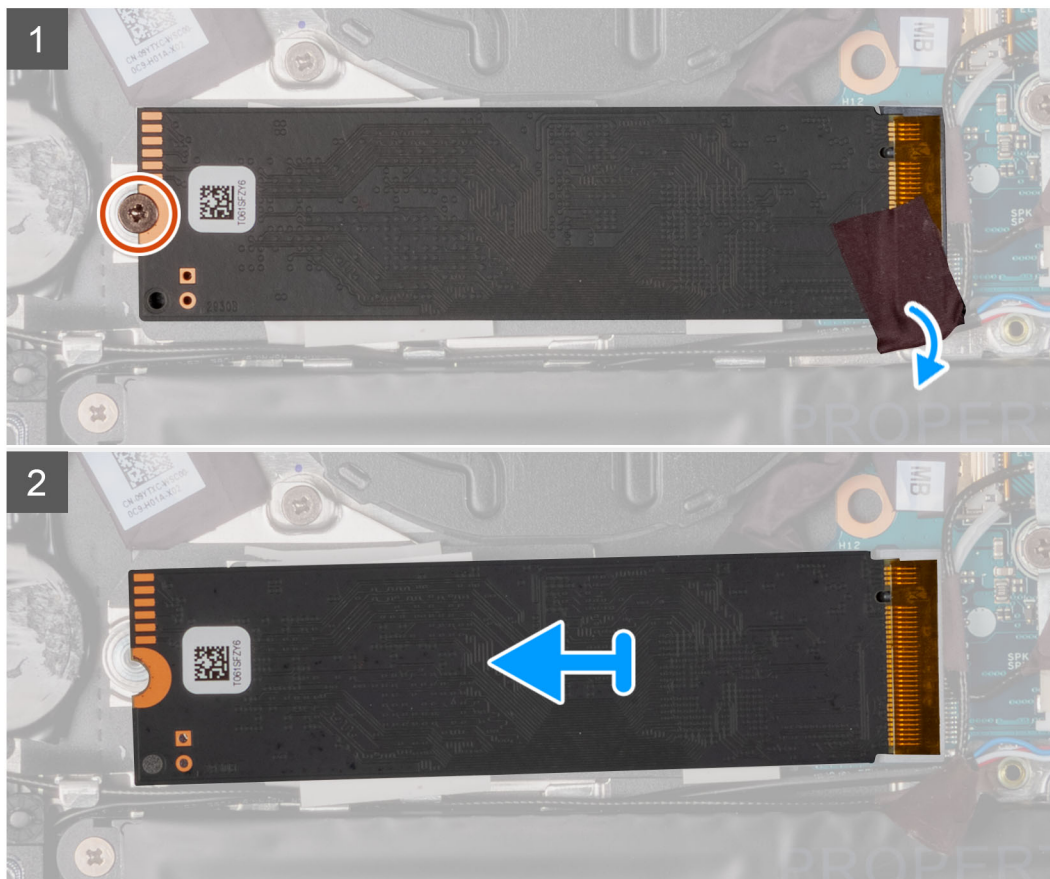
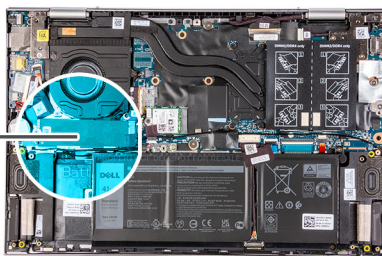
1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

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



1x
M2x3



Steps

1. Peel the tape that secures the antenna cable to the solid-state drive.
2. Remove the screw (M2x3) that secures the solid-state drive to the palm-rest and keyboard assembly.
3. Slide and remove the solid-state drive from the solid-state drive slot.

Installing the M.2 2280 solid-state drive

Prerequisites

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

About this task

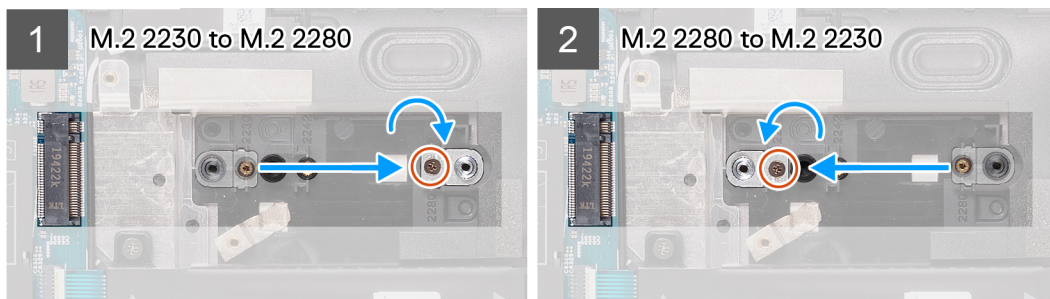
This computer supports two solid-state drive form factors.

- M.2 2230
- M.2 2280

If you are replacing the M.2 2280 solid-state drive with an M.2 2230 solid-state drive, the following images indicate where to install the solid-state drive bracket based on the form factor.



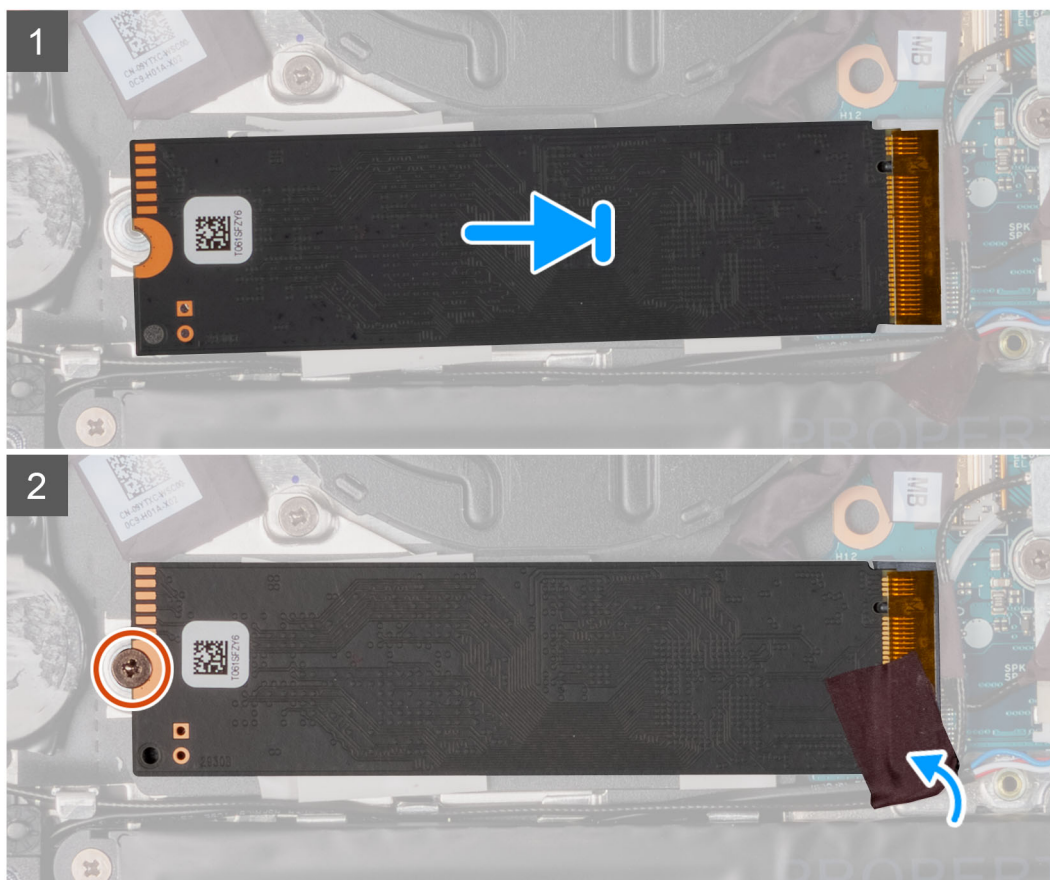
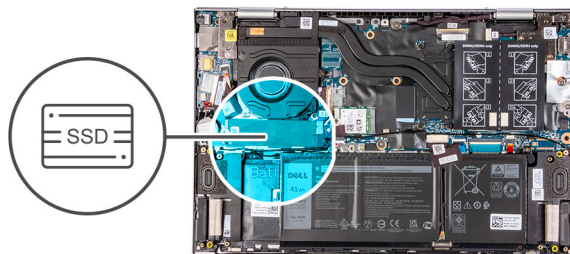
1x
M1.6x2.5



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



1x
M2x3



NOTE: Perform step 1 to step 4 if you are replacing the M.2 2230 solid-state drive with an M.2 2280 solid-state drive.

Steps

1. Remove the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
2. Turn the solid-state drive bracket at an angle of 180 degrees.
3. Insert the solid-state drive bracket into the other solid-state drive bracket slot on the palm-rest and keyboard assembly.
4. Replace the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
5. Align the notch on the solid-state drive with the tab on the solid-state drive slot.
6. Slide the solid-state drive firmly into the solid-state drive slot at an angle.
7. Replace the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
8. Adhere the tape that secures the antenna cable to the palm-rest and solid-state drive.

Next steps

1. Install the [base cover](#).
2. Exit [Service Mode](#).
3. Follow the procedure in [After working inside your computer](#).

Removing the M.2 2230 solid-state drive

Prerequisites

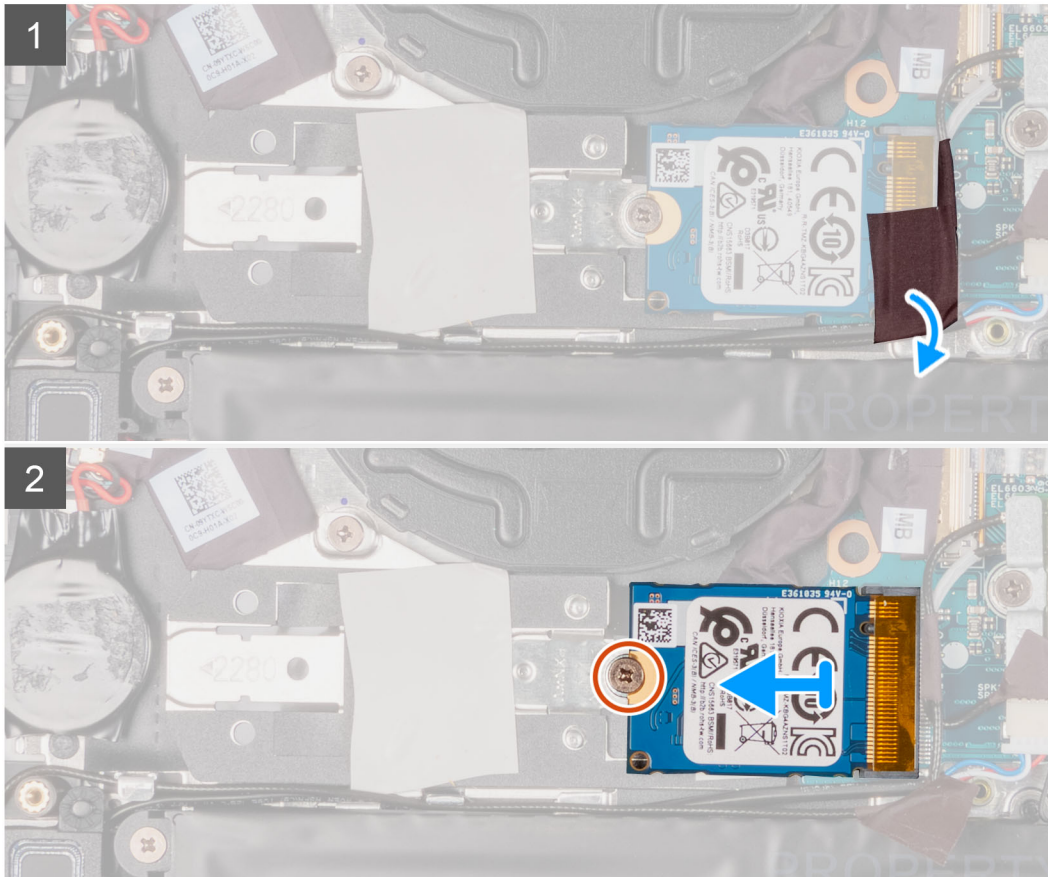
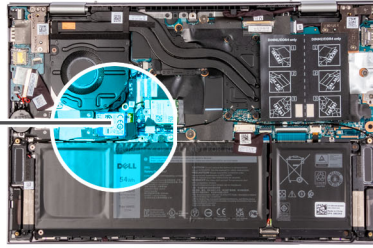
1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

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



1x
M2x3



Steps

1. Peel the tape that secures the antenna cable to the solid-state drive.
2. Lift the solid-state drive thermal bracket off the palm-rest and keyboard assembly.
3. Remove the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
4. Slide and remove the solid-state drive from the solid-state drive slot.

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

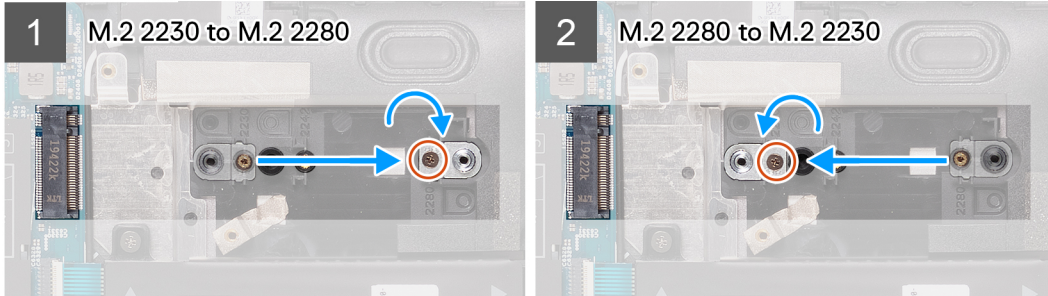
This computer supports two solid-state drive form factors.

- M.2 2230
- M.2 2280

If you are replacing the M.2 2230 solid-state drive with an M.2 2280 solid-state drive, the following images indicate where to install the solid-state drive bracket based on the form factor.



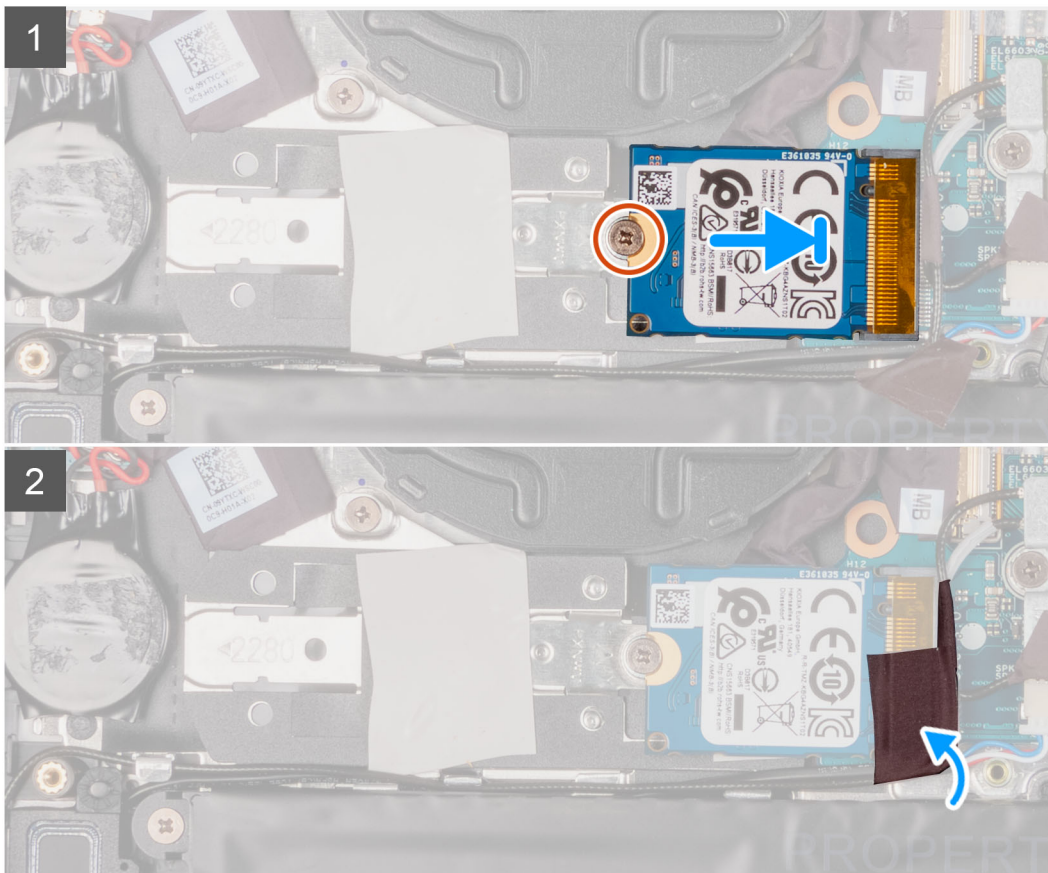
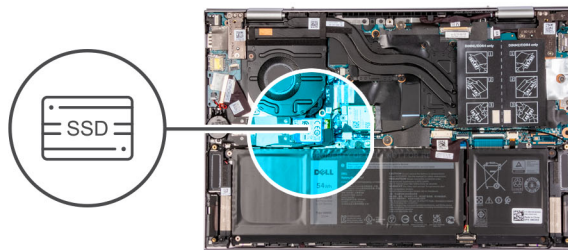
1x
M1.6x2.5



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



1x
M2x3



NOTE: Perform step 1 to step 4 if you are replacing the M.2 2230 solid-state drive with an M.2 2280 solid-state drive.

Steps

1. Remove the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
2. Turn the solid-state drive bracket at an angle of 180 degrees.
3. Insert the solid-state drive bracket into the other solid-state drive bracket slot on the palm-rest and keyboard assembly.
4. Replace the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
5. Align the notch on the solid-state drive with the tab on the solid-state drive slot.
6. Slide the solid-state drive firmly into the solid-state drive slot at an angle.
7. Replace the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
8. Adhere the tape that secures the antenna cable to the solid-state drive.

Next steps

1. Install the [base cover](#).
2. Exit [Service Mode](#).
3. Follow the procedure in [After working inside your computer](#).

Speakers

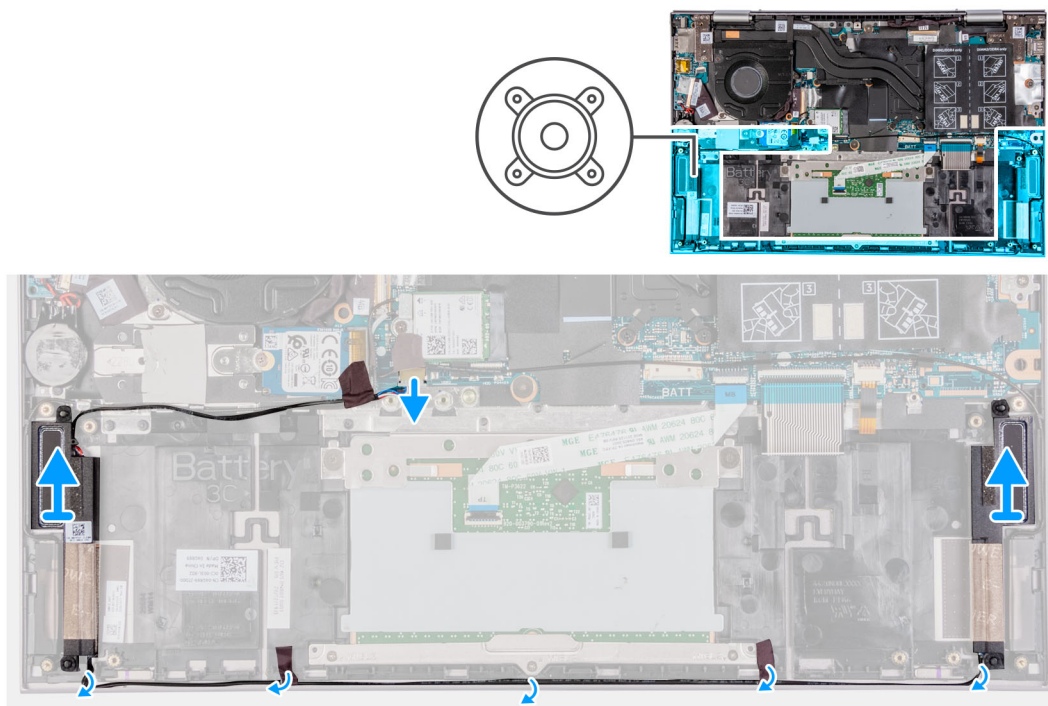
Removing the speakers

Prerequisites

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

About this task

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



Steps

1. Disconnect the speaker cable from the system board.

2. Peel the tapes that secure the speaker cable to the palm-rest and keyboard assembly.
3. Note the speaker cable routing, and remove the speaker cable from the routing guides on the palm-rest and keyboard assembly.
4. Lift the speakers along with the cables, off the palm-rest and keyboard assembly.

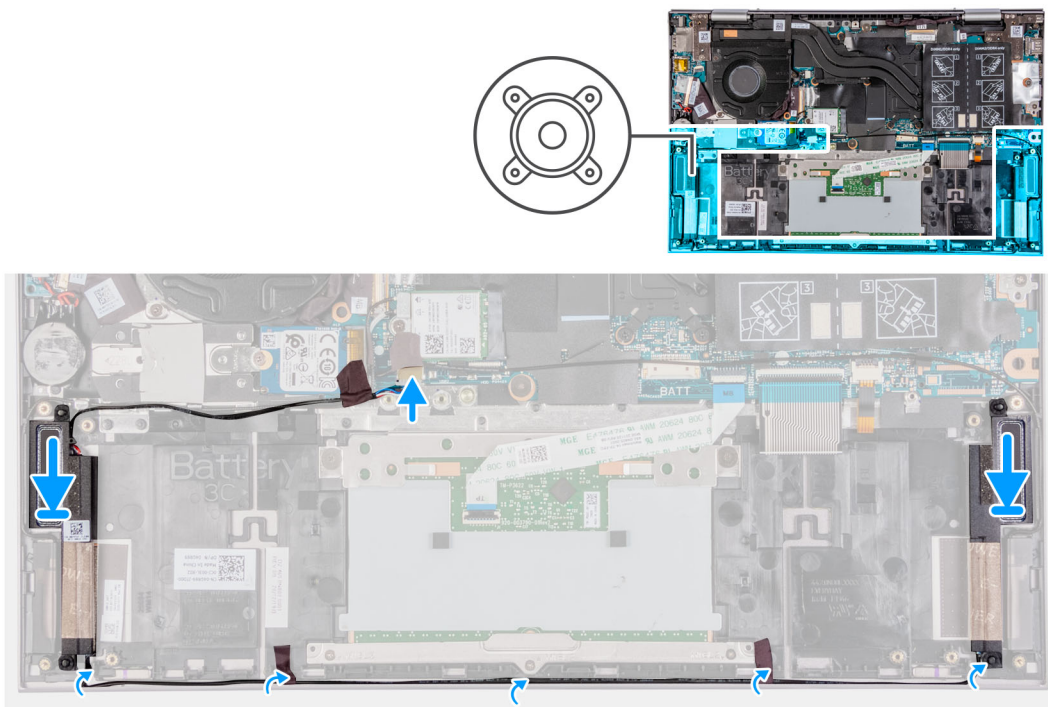
Installing the speakers

Prerequisites

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

About this task

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



Steps

1. Using the alignment posts and rubber grommets, place the speakers on the slots of the palm-rest and keyboard assembly.
2. Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.
3. Adhere the tapes that secure the speaker cable to the palm-rest and keyboard assembly.
4. Connect the speaker cable to the system board.

Next steps


1. Install the [battery](#)
2. Install the [base cover](#).
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:** For maximum cooling of the processor, 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.

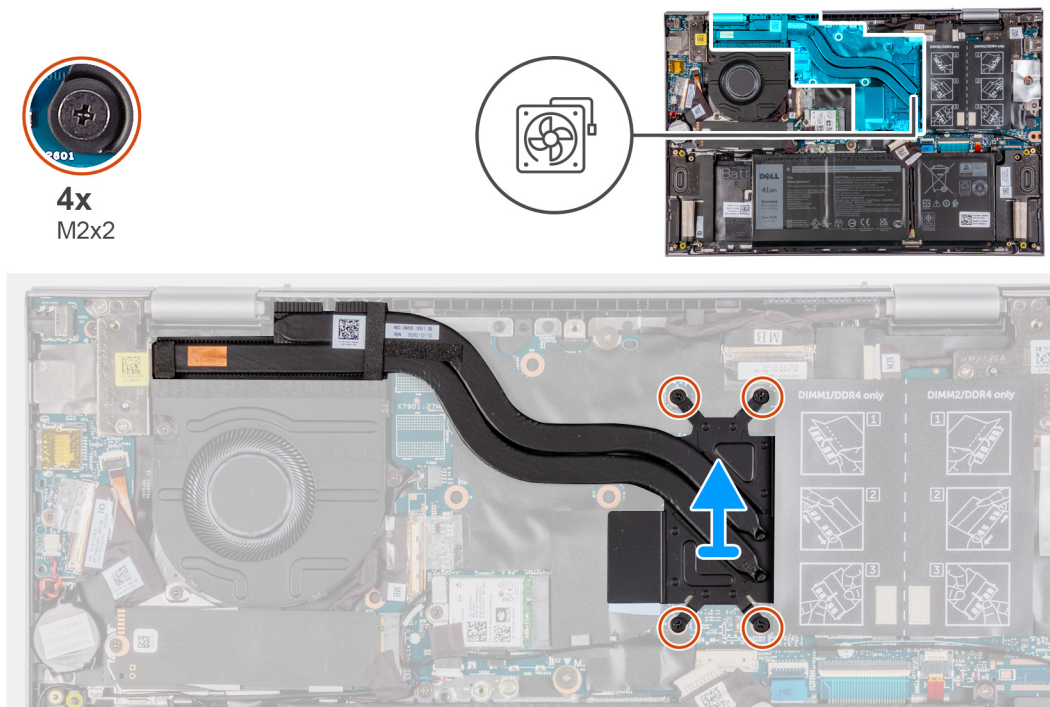
 **NOTE:** The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

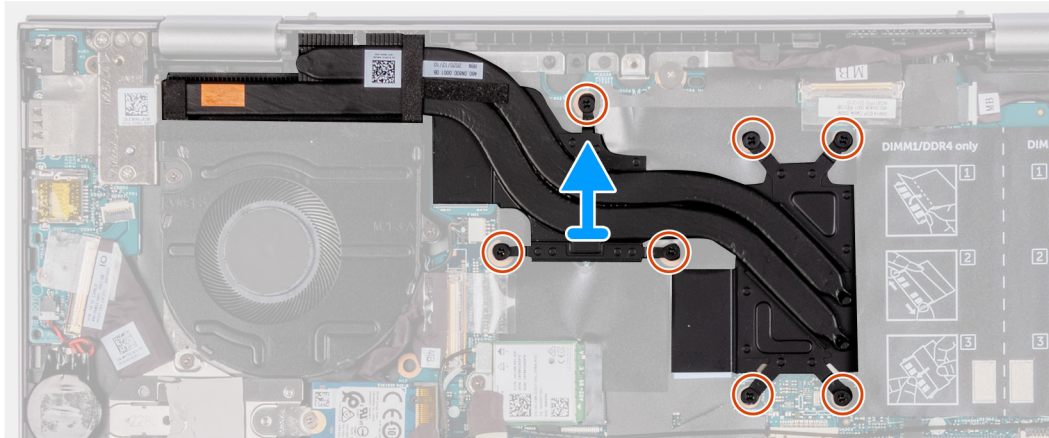
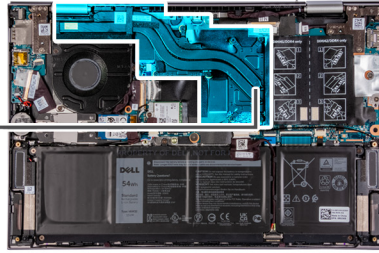
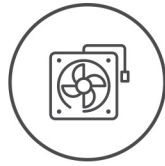
The following image indicates the location of the heat sink and provides a visual representation of the removal procedure.

 **NOTE:** The number of captive screws and the appearance of the heat sink may vary depending on the configuration you ordered.





7x
M2x2



Steps

1. In reverse sequential order (as indicated on the heat sink), loosen the four or seven captive screws that secure the heat sink to the system board.
2. Lift the heat sink off the system board.

Installing the heat sink

Prerequisites

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

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

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

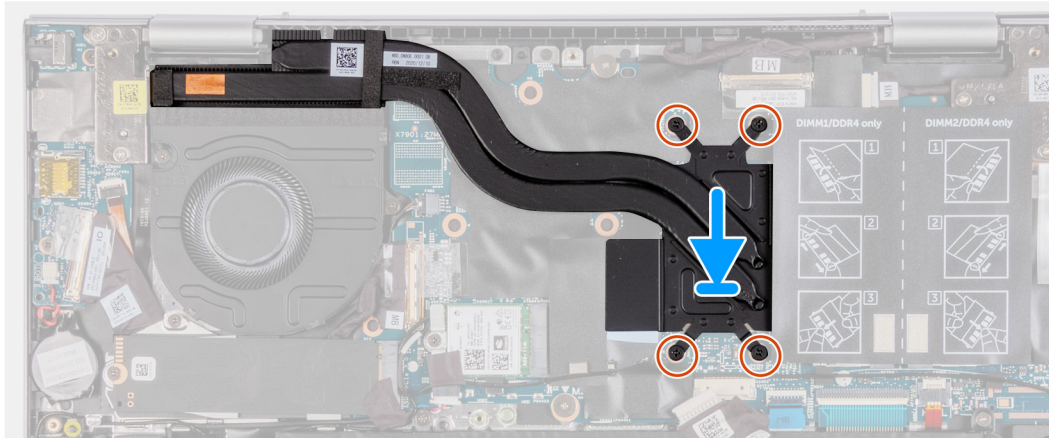
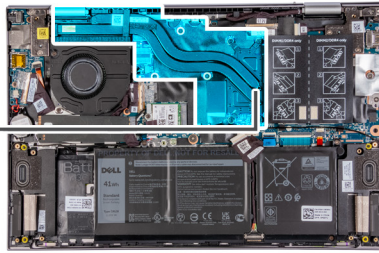
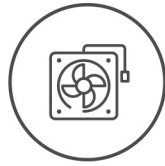
About this task

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

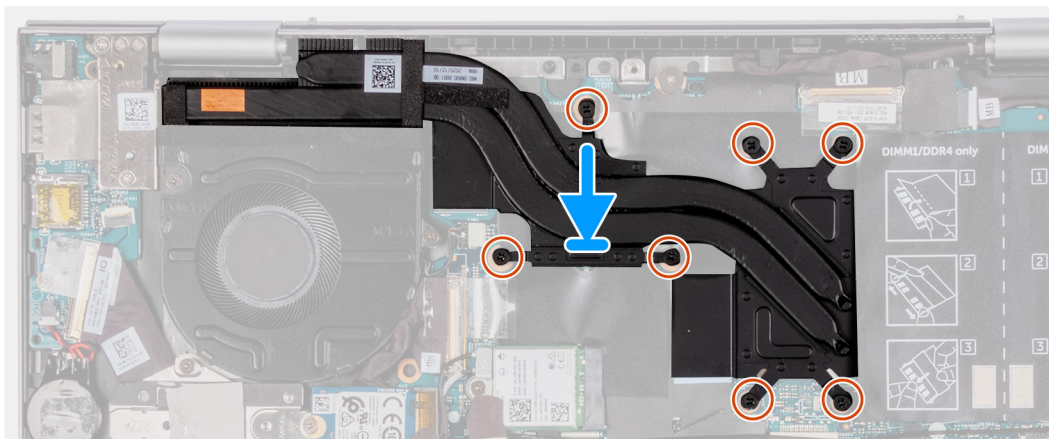
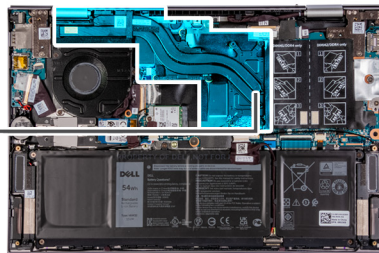
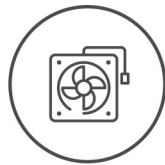
NOTE: The number of captive screws and the appearance of the heat sink may vary depending on the configuration you ordered.



4x
M2x2



7x
M2x2



Steps

1. Align the screw holes on the heat sink with the screw holes on the system board.
2. In sequential order (as indicated on the heat sink), tighten the four or seven captive screws that secure the heat sink to the system board.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

Display assembly

Removing the display assembly

Prerequisites

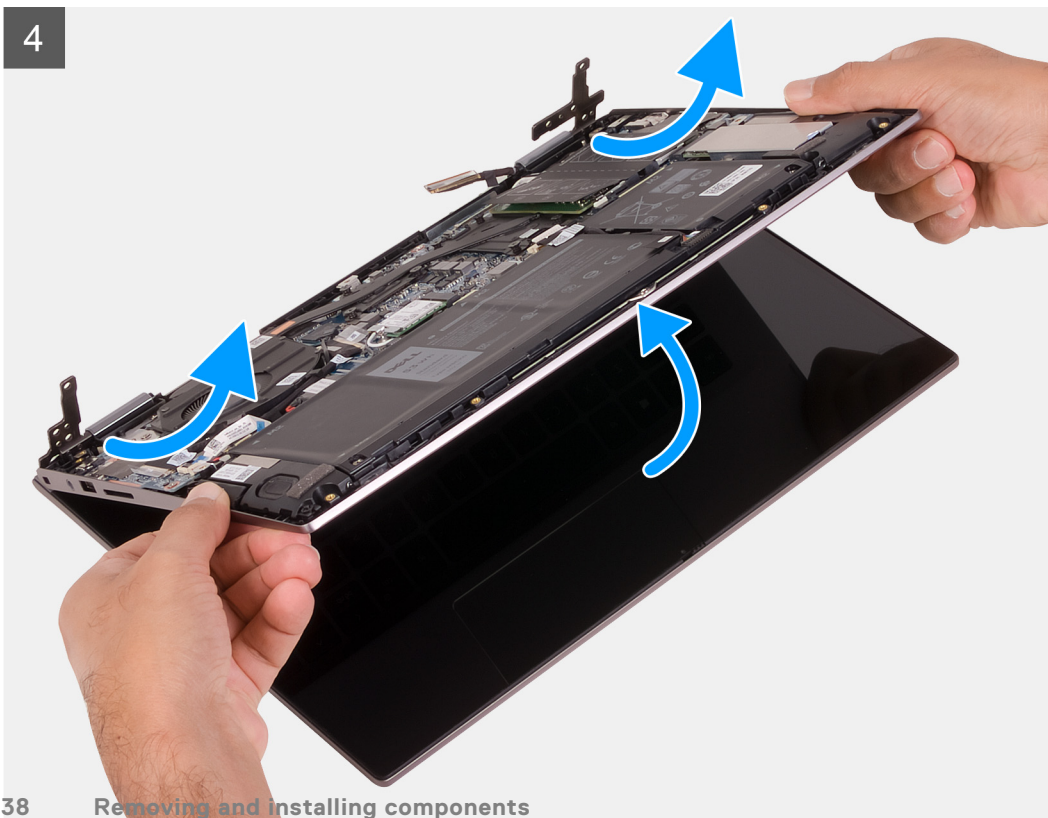
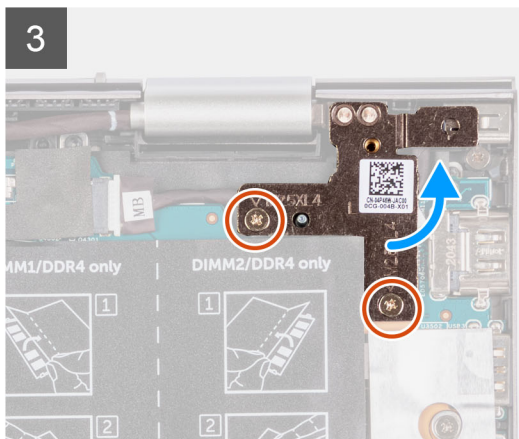
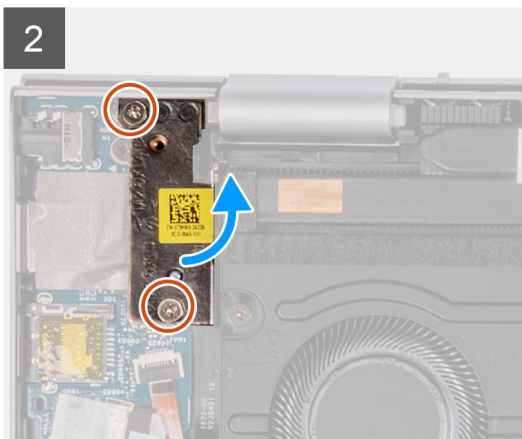
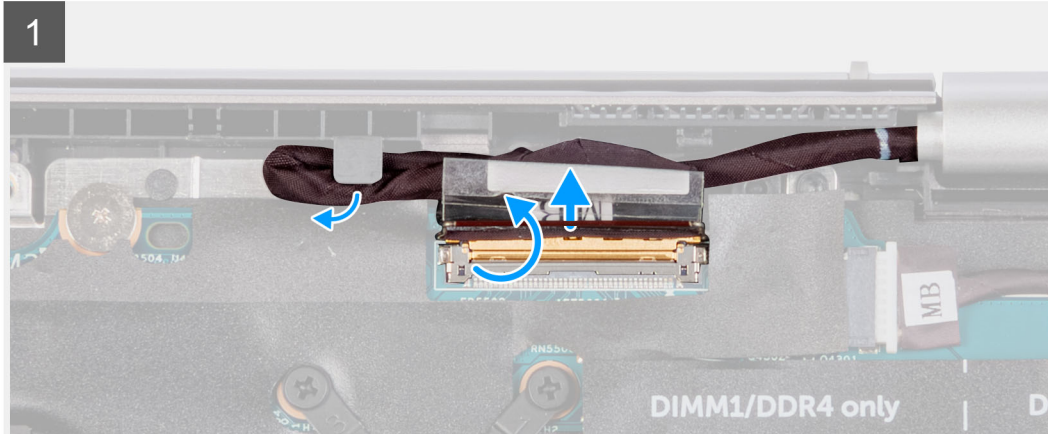
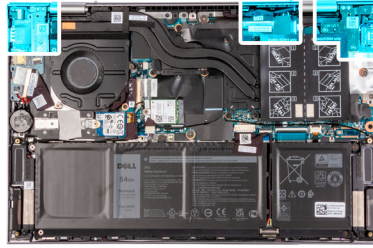
1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

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



4x
M2.5x3.5





Steps

1. Peel the tape that secures the display cable to the system board.
2. Open the latch, and disconnect the display cable from the system board.
3. Remove the display cable from the routing guide on the palm-rest and keyboard assembly.
4. Remove the four screws (M2.5x3.5) that secure the display hinges to the palm-rest and keyboard assembly.
5. Lift at an angle and slide the display assembly off the palm-rest and keyboard assembly.

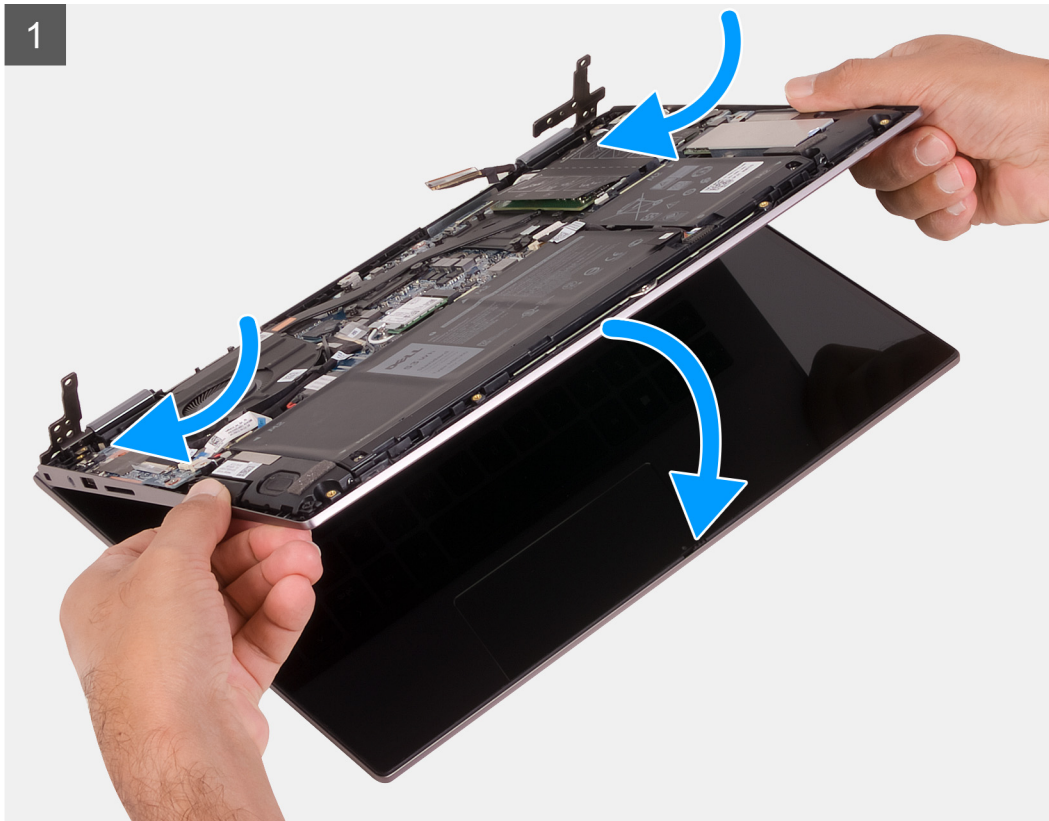
Installing the display assembly

Prerequisites

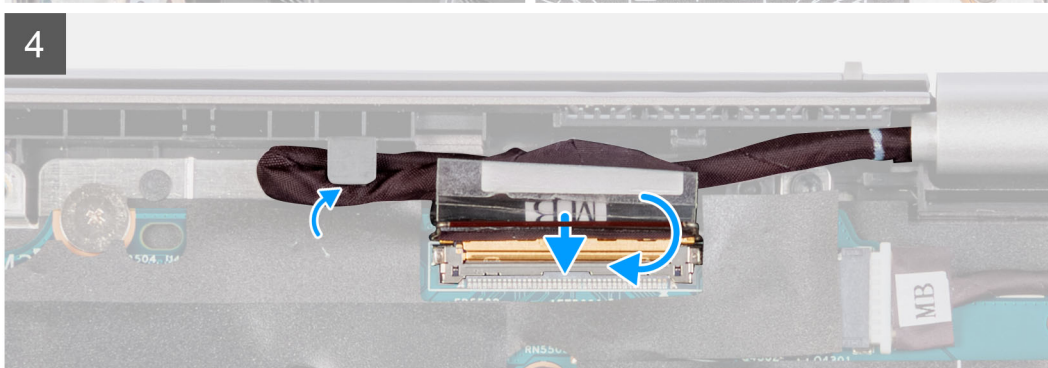
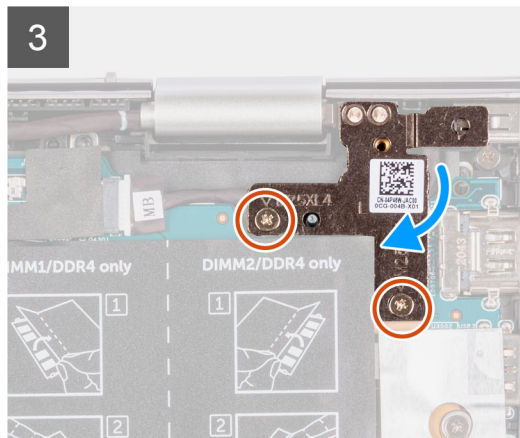
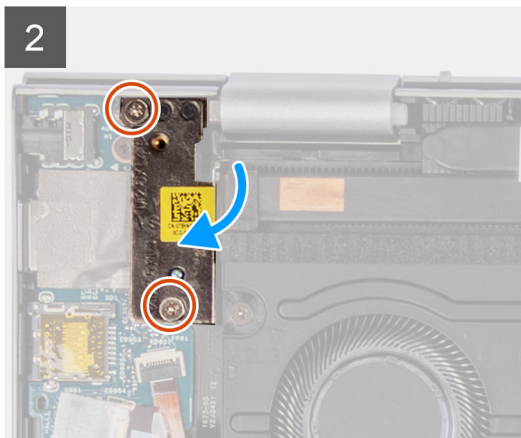
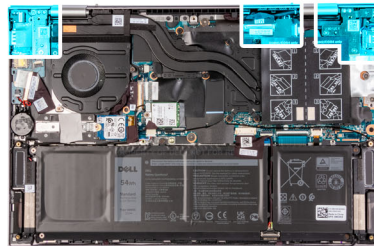
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



4x
M2.5x3.5



Steps

1. Slide the display assembly at an angle, and place the display assembly on the palm-rest and keyboard assembly.
2. Replace the four screws (M2.5x3.5) that secure the display hinges to the palm-rest and keyboard assembly.
3. Route the display cable through the routing guide on the palm-rest and keyboard assembly.
4. Slide the display cable into the connector on the system board and close the latch to secure the cable.
5. Connect the display-cable connector to the system board and close the latch to secure the cable.
6. Adhere the tape that secures the display cable to the system board.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

Power-adapter port

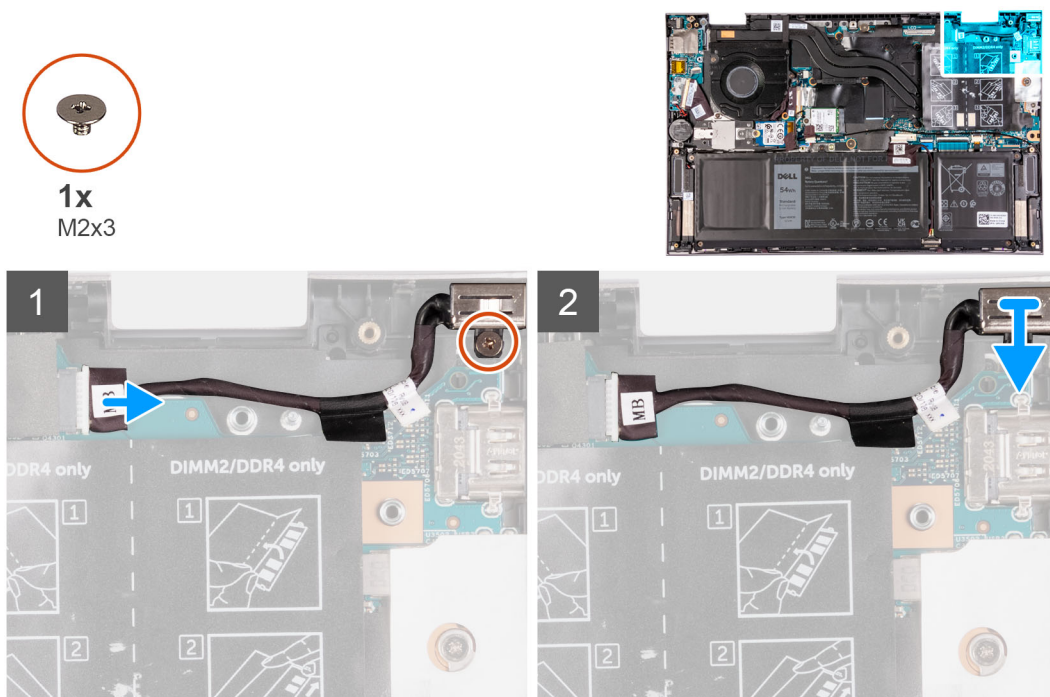
Removing the power-adapter port

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).
4. Remove the [display assembly](#).

About this task

The following image indicates the location of the power-adapter port and provides a visual representation of the removal procedure.



Steps

1. Disconnect the power-adapter port cable from the system board.
2. Peel the tape that secures the power-adapter port cable to the system board.

3. Remove the power-adapter port cable from the routing guide on the palm-rest and keyboard assembly.
4. Remove the screw (M2x3) that secures the power-adapter port to the palm-rest and keyboard assembly.
5. Lift the power-adapter port along with its cable, off the palm-rest and keyboard assembly.

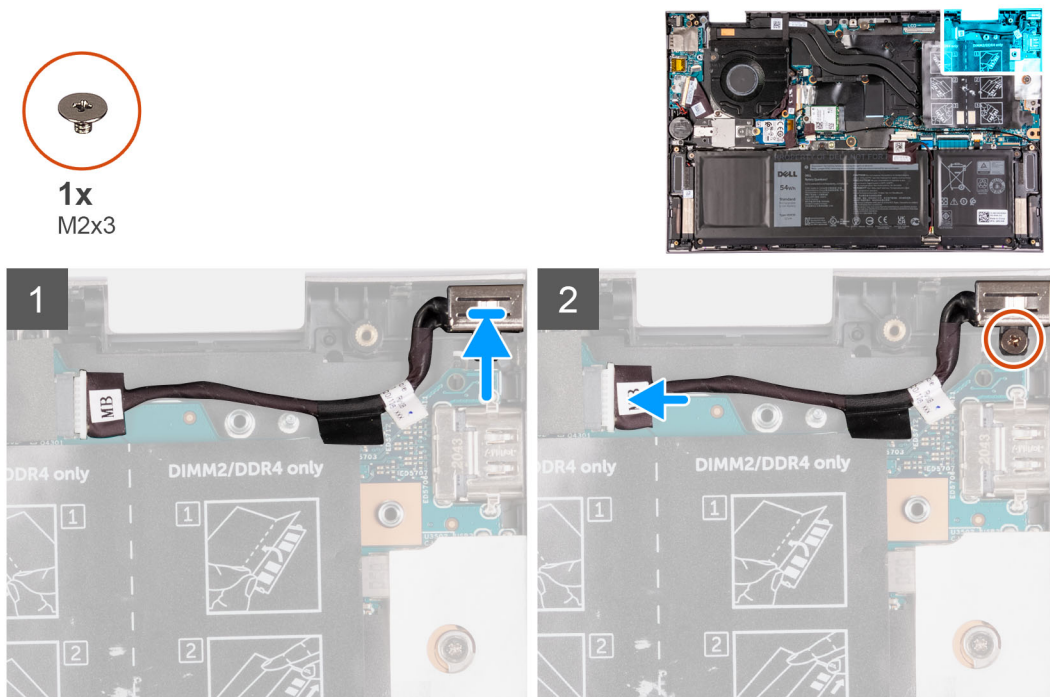
Installing the power-adapter port

Prerequisites

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

About this task

The following image indicates the location of the power-adapter port and provides a visual representation of the installation procedure.



Steps

1. Place the power-adapter port into the slot on the palm-rest and keyboard assembly.
2. Replace the screw (M2x3) that secures the power-adapter port to the palm-rest and keyboard assembly.
3. Route the power-adapter port cable through the routing guide on the palm-rest and keyboard assembly.
4. Adhere the tape that secures the power-adapter port cable to the system board.
5. Connect the power-adapter port cable to the system board.
6. Close the right display-hinge.

Next steps

1. Install the [display assembly](#).
2. Install the [base cover](#).
3. Follow the procedure in [After working inside your computer](#).
4. Exit [Service Mode](#).

Touchpad

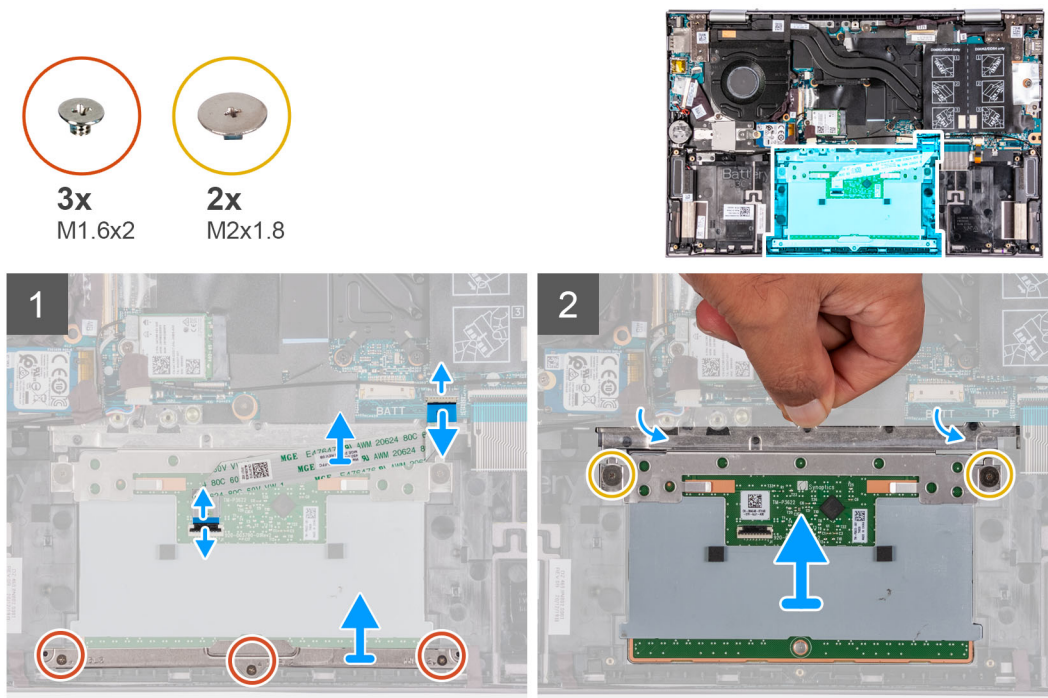
Removing the touchpad

Prerequisites

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

About this task

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



Steps

1. Remove the three screws (M1.6x2) that secure the touchpad bracket to the palm-rest and keyboard assembly.
2. Lift the touchpad bracket off the palm-rest and keyboard assembly.
3. Open the latch, and disconnect the touchpad cable from the touchpad and system board.
4. Place the touchpad cable on a clean surface.
5. Lift the transparent flap and remove the two screws (M2x1.8) that secure the touchpad to the palm-rest and keyboard assembly.
6. Slide and lift the touchpad off the palm-rest and keyboard assembly.

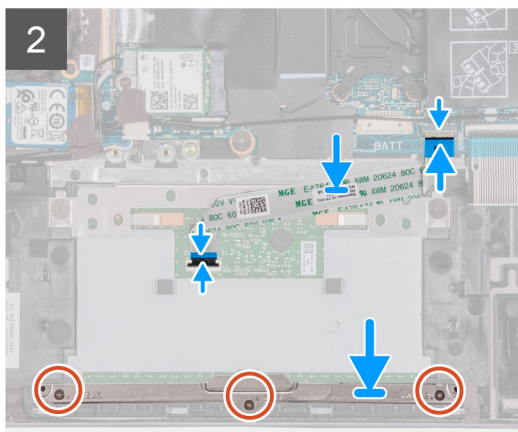
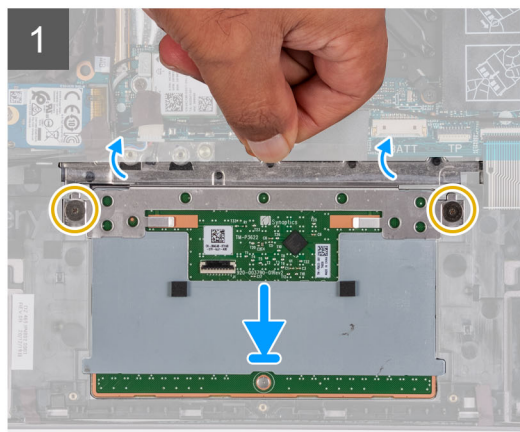
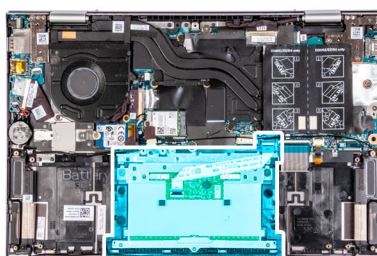
Installing the touchpad

Prerequisites

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

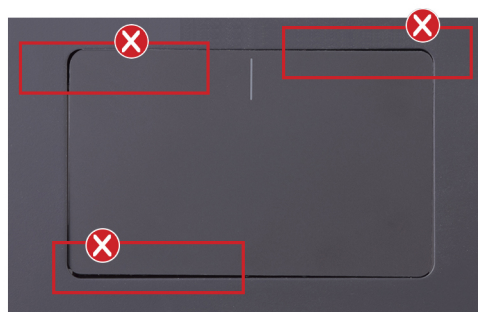
About this task

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



Steps

1. Lift the transparent flap and slide the touchpad into the slot on the palm-rest and keyboard assembly.
 2. Lift the transparent flap and replace the two screws (M2x1.8) that secure the touchpad to the palm-rest and keyboard assembly.
- i NOTE:** Ensure that the touchpad is aligned with the guides available on the palm-rest and keyboard assembly, and the gap on either sides of the touchpad is equal.
- i NOTE:** The following image shows the proper alignment of touchpad on your computer.



3. Slide the touchpad cable into the connector on the touchpad and system board and close the latch to secure the cable.
4. Place the touchpad bracket into the slot on the palm-rest and keyboard assembly.
5. Replace the three screws (M1.6x2) that secure the touchpad bracket to the palm-rest and keyboard assembly.

Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Follow the procedure in [After working inside your computer](#).

Fan

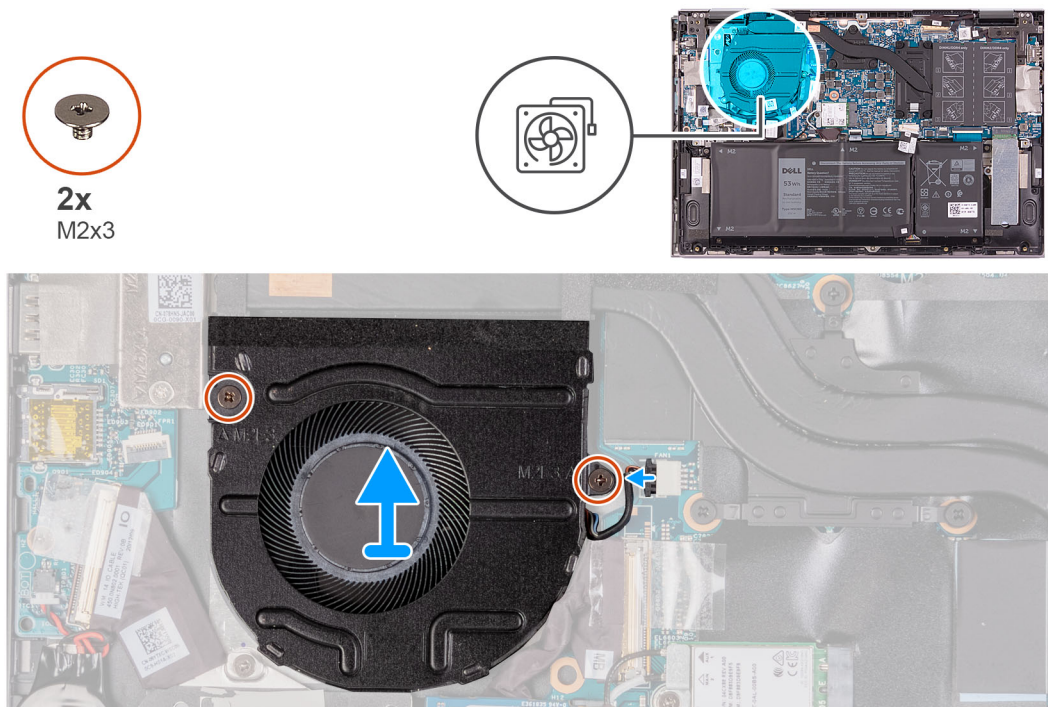
Removing the fan

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

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



Steps

1. Disconnect the fan cable from the system board.
2. Remove the two screws (M2x3) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan off the palm-rest and keyboard assembly.

Installing the fan

Prerequisites

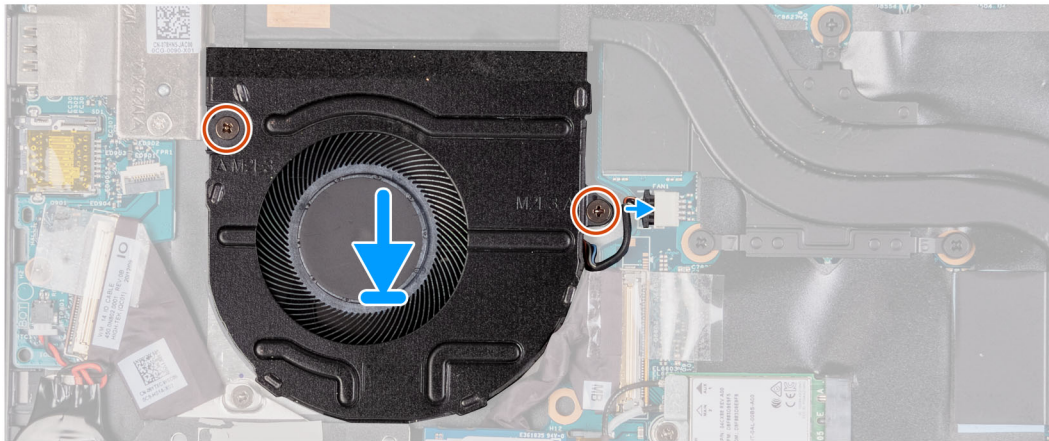
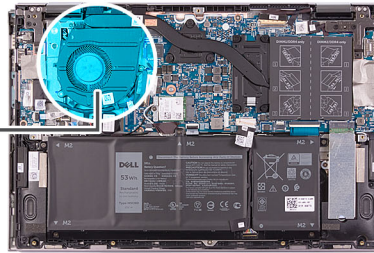
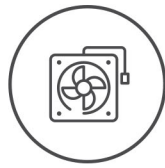
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



2x
M2x3



Steps

1. Using the alignment posts, place the fan on the palm-rest and keyboard assembly.
2. Remove the two screws (M2x3) that secure the fan to the palm-rest and keyboard assembly.
3. Connect the fan cable to the system board.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

I/O board

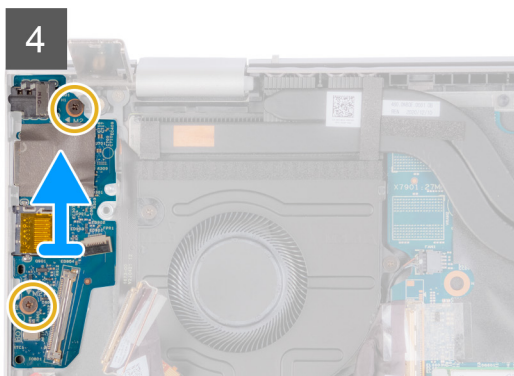
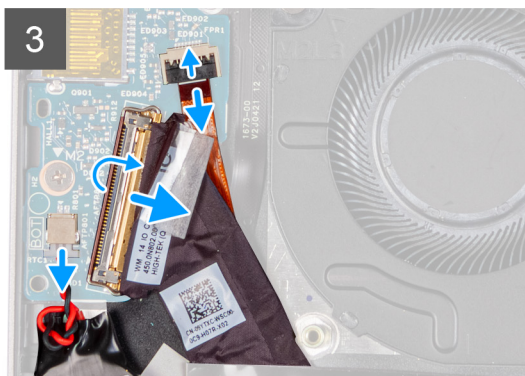
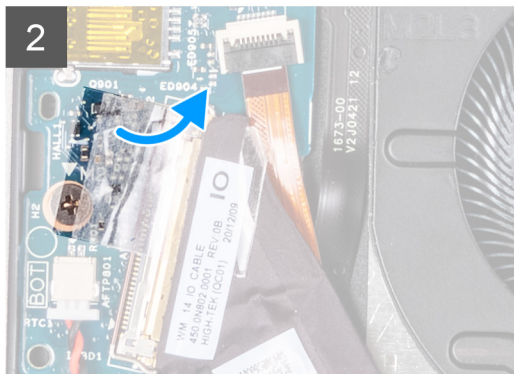
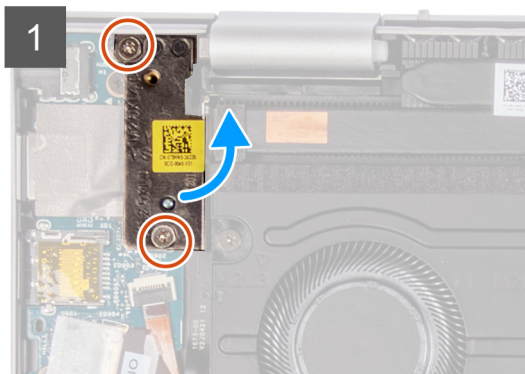
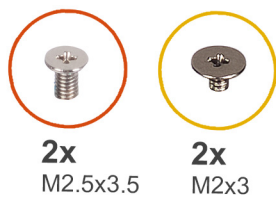
Removing the I/O board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).

About this task

The following image indicates the location of the I/O-board and provides a visual representation of the removal procedure.



Steps

1. Remove the two screws (M2.5x3.5) that secure the right display hinge to the I/O board and palm-rest and keyboard assembly.
2. Open the right display hinge at an angle of 90 degrees.
3. Peel the tape that secures the I/O-board cable to the I/O board.
4. Open the latch, and disconnect the I/O-board cable from the I/O board.
5. Open the latch, and disconnect the fingerprint reader-cable from the I/O board.
6. Disconnect the coin-cell battery cable from the I/O board.
7. Remove the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
8. Slide and lift the I/O board off the palm-rest and keyboard assembly.

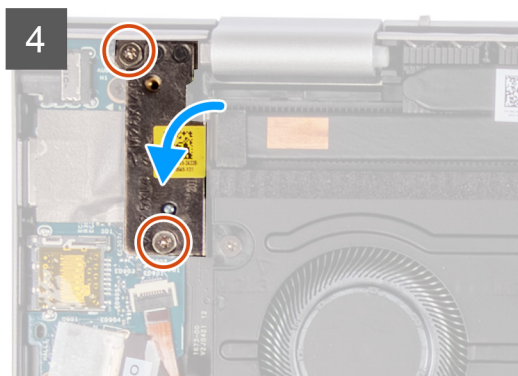
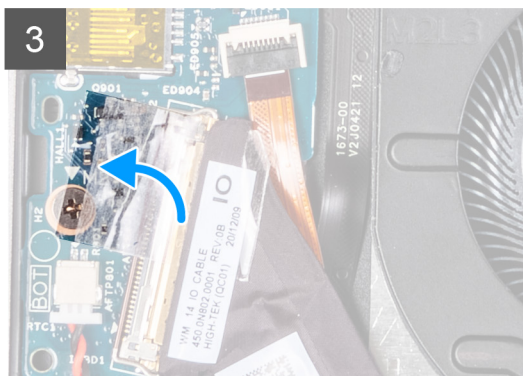
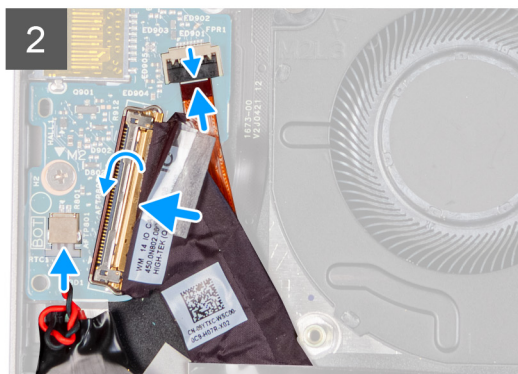
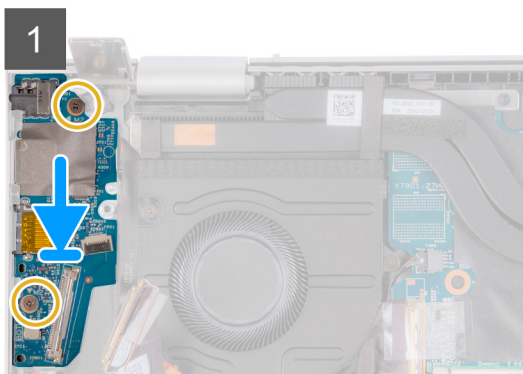
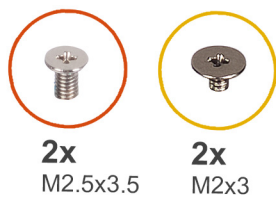
Installing the I/O board

Prerequisites

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

About this task

The following image indicates the location of the I/O board and provides a visual representation of the installation procedure.



Steps

1. Place the I/O board into the slots on the palm-rest and keyboard assembly.
2. Align the screw hole on the I/O board with the screw hole on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
4. Slide the fingerprint reader-cable into the connector on the I/O board and close the latch to secure the cable.
5. Connect the I/O-board cable to the connector on the I/O board and close the latch to secure the cable.
6. Adhere the tape that secures the I/O-board cable to the I/O board.
7. Connect the coin-cell battery cable to the I/O board.
8. Close the right display hinge.
9. Replace the screw (M2.5x3.5) that secures the right display hinge to the I/O board and palm-rest and keyboard assembly.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Exit [Service Mode](#).

Power button

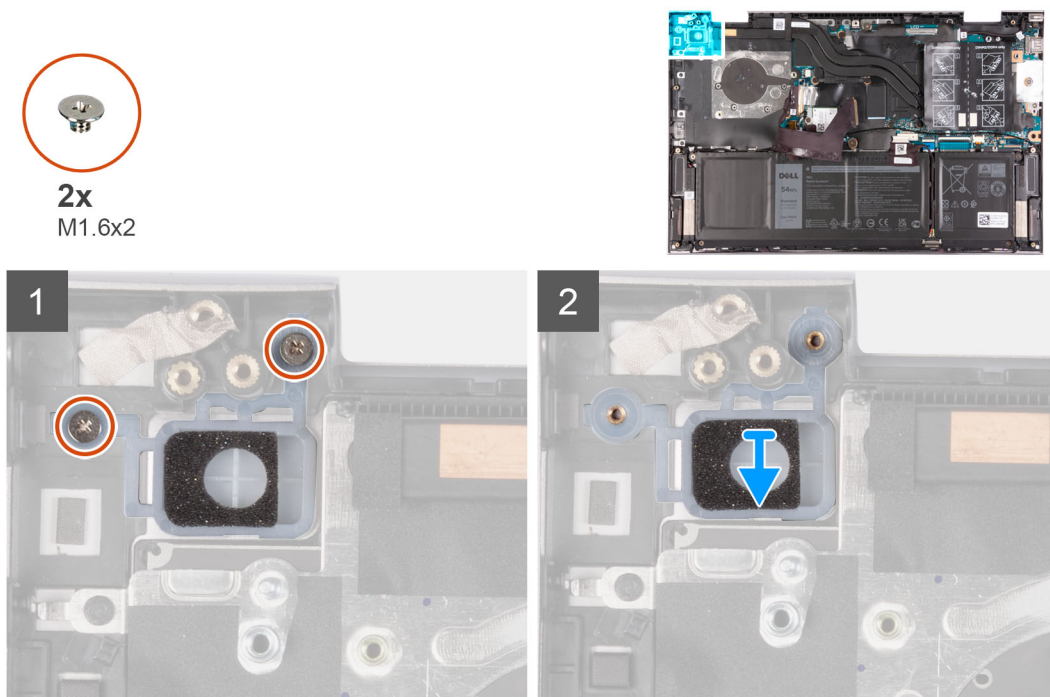
Removing the power button

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).
4. Remove the [fan](#).
5. Remove the [display assembly](#).
6. Remove the [I/O board](#).

About this task

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



Steps

1. Remove the two screws (M1.6x2) that secure the power button to the palm-rest and keyboard assembly.
2. Lift the power button off the slot on the palm-rest and keyboard assembly.

Installing the power button

Prerequisites

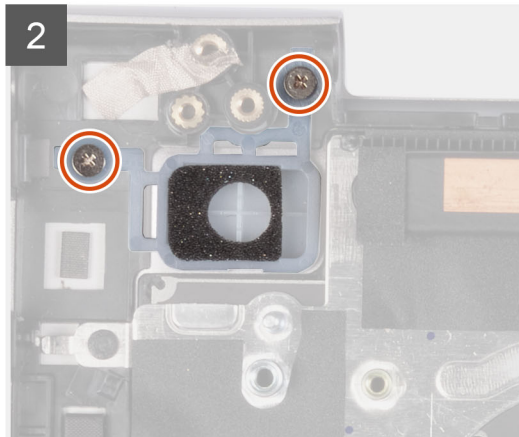
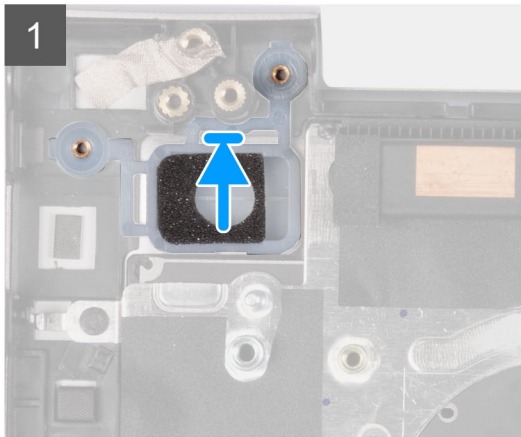
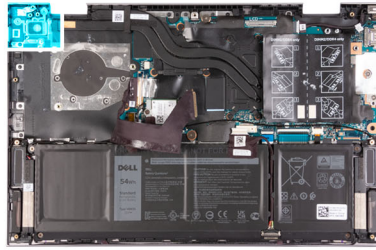
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



2x
M1.6x2



Steps

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

Next steps

1. Install the [I/O board](#).
2. Install the [display assembly](#).
3. Install the [fan](#).
4. Install the [base cover](#).
5. Follow the procedure in [After working inside your computer](#).
6. Exit [Service Mode](#).

Removing the power button with fingerprint reader

Prerequisites

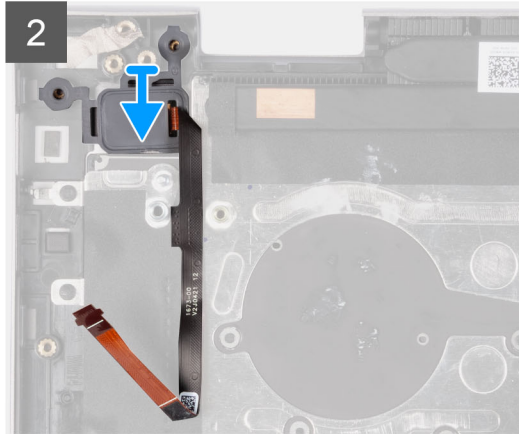
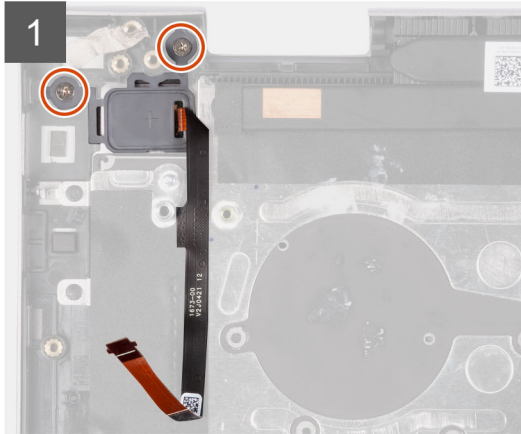
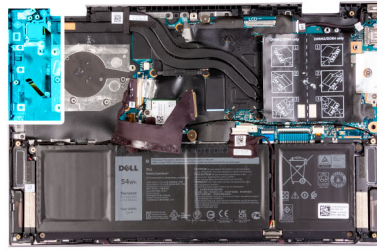
1. Follow the procedure in [Before working inside your computer](#).
2. Enter [Service Mode](#).
3. Remove the [base cover](#).
4. Remove the [fan](#).
5. Remove the [display assembly](#).
6. Remove the [I/O board](#).

About this task

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



2x
M1.6x2



Steps

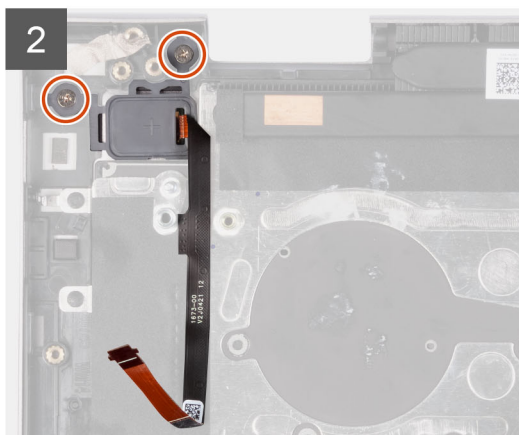
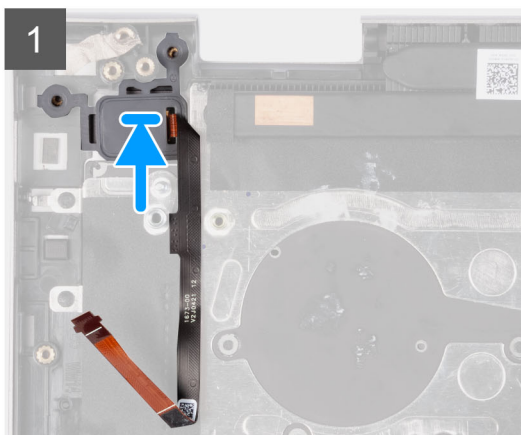
1. Remove the two screws (M1.6x2) that secure the power button to the palm-rest and keyboard assembly.
2. Lift the power button, along with the fingerprint-reader cable, off the slot on the palm-rest and keyboard assembly.

Installing the power button with fingerprint reader

Prerequisites



2x
M1.6x2



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

About this task

The following image indicates the location of the power button with fingerprint reader and provides a visual representation of the installation procedure.

Steps

1. Align and place the power button, along with the fingerprint-reader cable, on the slot of the palm-rest and keyboard assembly.
2. Align the screw holes on the power button with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M1.6x2) that secure power button to the palm-rest and keyboard assembly.

Next steps

1. Install the [I/O board](#).
2. Install the [display assembly](#).
3. Install the [fan](#).
4. Install the [base cover](#).
5. Follow the procedure in [After working inside your computer](#).
6. Exit [Service Mode](#).

System board

Removing the system board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [memory modules](#).
5. Remove the [wireless card](#).
6. Remove the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), whichever applicable.
7. Remove the [heat sink](#).
8. Remove the [fan](#).

About this task

The following image indicates the connectors on your system board.

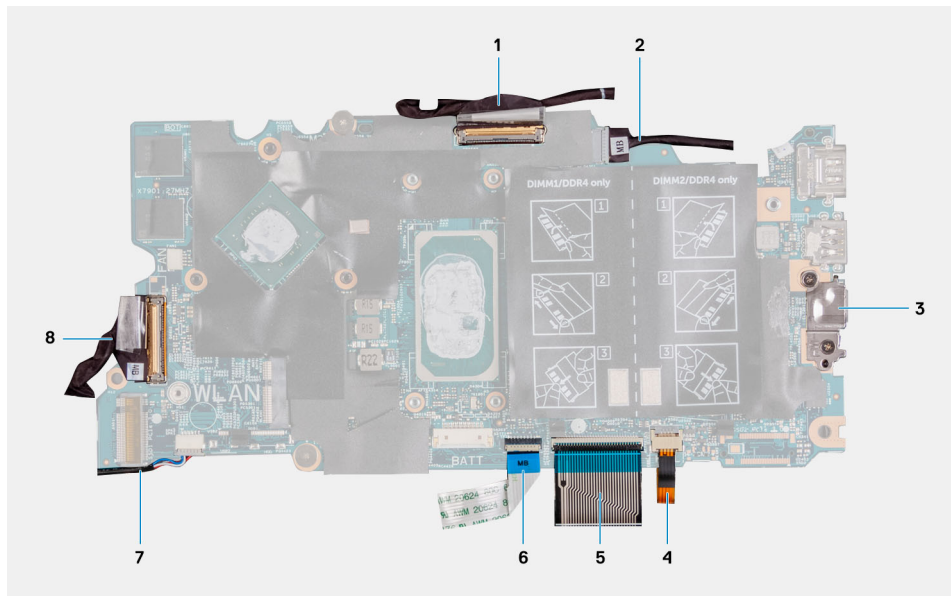


Figure 1. System-board connectors

- | | |
|----------------------------|--|
| 1. Display cable | 2. Power-adaptor port cable (optional) |
| 3. USB Type-C port bracket | 4. Keyboard-backlight cable |
| 5. Keyboard cable | 6. Touchpad cable |
| 7. Speaker cable | 8. I/O-board cable |

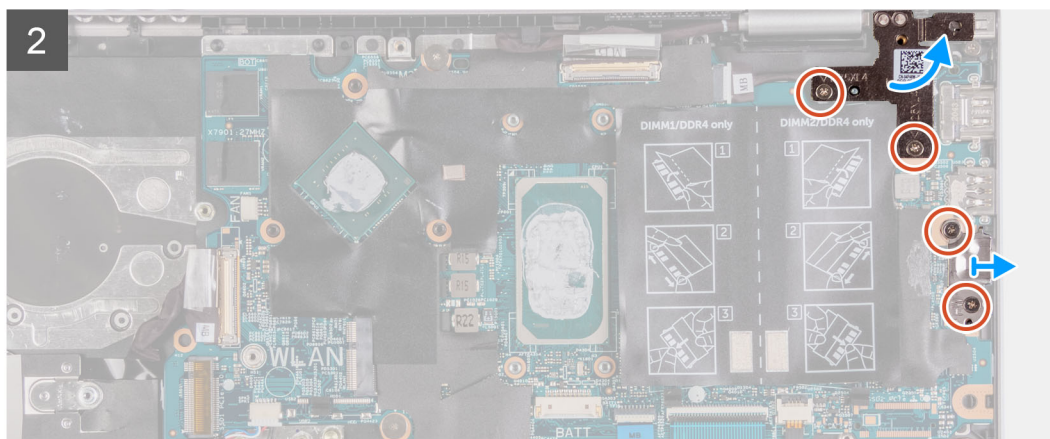
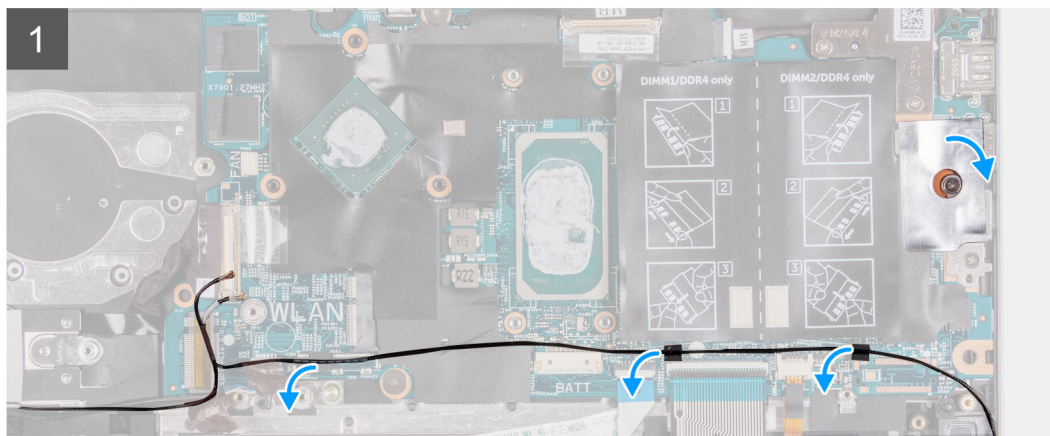
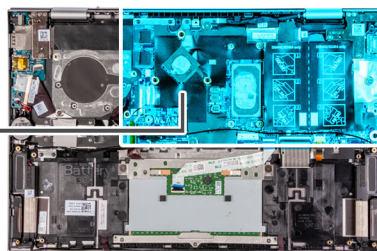
The following image indicates the location of the system board and provides a visual representation of the removal procedure.

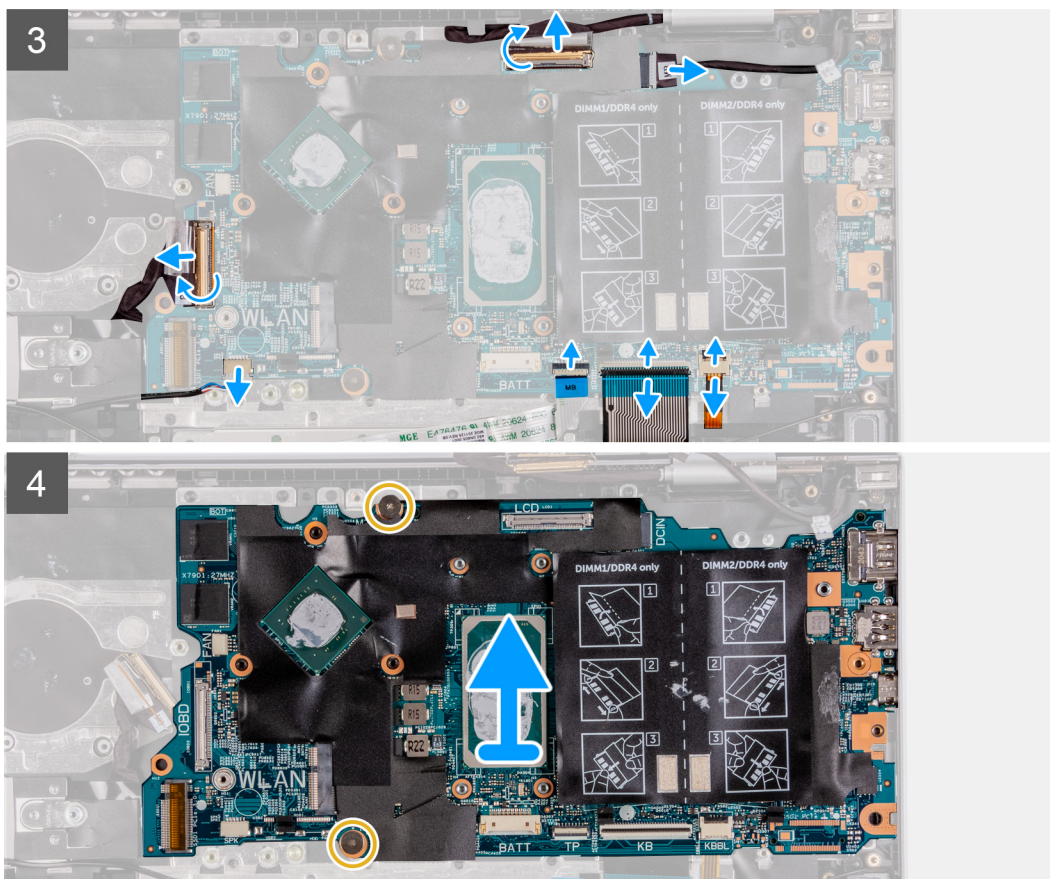


4x
M2.5x3.5



2x
M2x1.8





Steps

1. Peel the tape that secures the USB Type-C port bracket to the system board.
2. Remove the antenna cables from the routing guides on the system board.
3. Remove the two screws (M2.5x3.5) that secure the left display hinge to the system board and palm-rest and keyboard assembly.
4. Open the hinge at an angle of 90 degrees.
5. Remove the two screws (M2.5x3.5) that secure the USB Type-C bracket to the system board and palm-rest and keyboard assembly.
6. Lift the USB Type-C port bracket off the system board and palm-rest and keyboard assembly.
7. Peel the tape that secures the display cable to the system board.
8. Open the latch, and disconnect the display cable from the system board.
9. Disconnect the power-adaptor port cable from the system board.
10. Open the latch, and disconnect the keyboard-backlight cable from the system board.
11. Open the latch, and disconnect the keyboard cable from the system board.
12. Open the latch, and disconnect the touchpad cable from the system board.
13. Disconnect the speaker cable from the system board.
14. Peel the tape that secures the I/O-board cable to the system board.
15. Open the latch, and disconnect the I/O-board cable from the system board.
16. Remove the two screws (M2x1.8) that secures the system board to the palm-rest and keyboard assembly.
17. Lift the system board off the palm-rest and keyboard assembly.

Installing the system board

Prerequisites

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

About this task

The following image indicates the connectors on your system board.

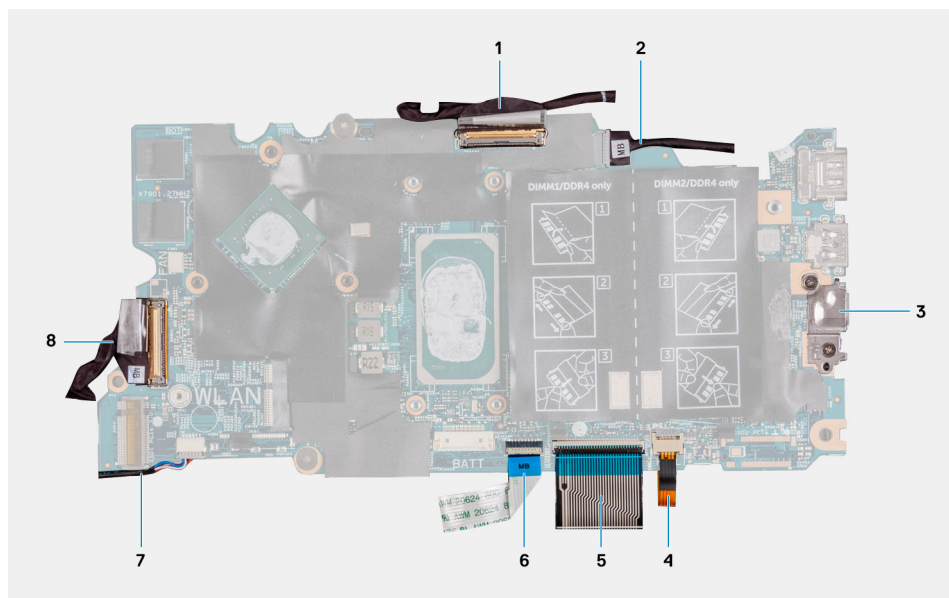


Figure 2. System-board connectors

- | | |
|----------------------------|--|
| 1. Display cable | 2. Power-adaptor port cable (optional) |
| 3. USB Type-C port bracket | 4. Keyboard-backlight cable |
| 5. Keyboard cable | 6. Touchpad cable |
| 7. Speaker cable | 8. I/O-board cable |

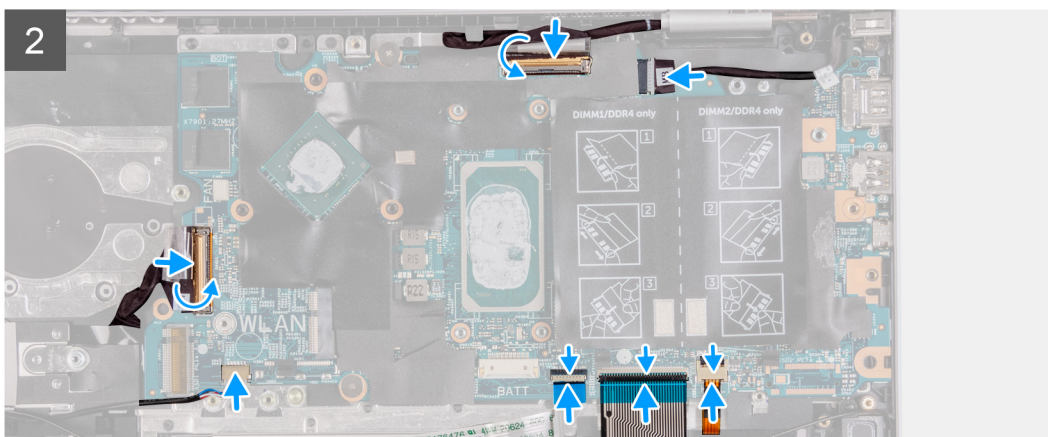
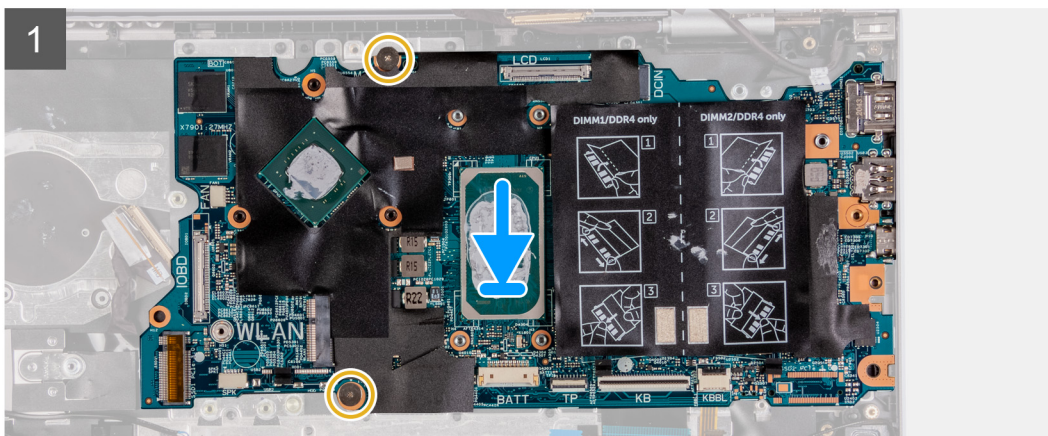
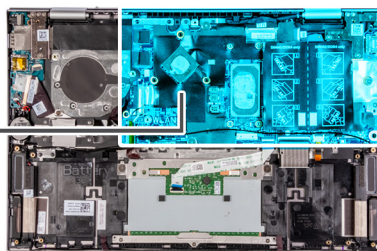
The following image indicates the location of the system board and provides a visual representation of the installation procedure.



4x
M2.5x3.5



2x
M2x1.8





Steps

1. Align and place the system board on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x1.8) that secure the system board to the palm-rest and keyboard assembly.
3. Connect the display cable to the connector on the system board and close the latch to secure the cable.
4. Adhere the tape that secures the display cable to the system board.
5. Connect the power-adaptor port cable to the connector on the system board.
6. Connect the keyboard-backlight cable into the connector on the system board and close the latch to secure the cable.
7. Connect the keyboard cable to the connector on the system board and close the latch to secure the cable.
8. Connect the touchpad cable to the connector on the system board and close the latch to secure the cable.
9. Connect the speaker cable to the system board.
10. Connect the I/O-board cable to the connector on the system board and close the latch to secure the cable.
11. Adhere the tape that secures the I/O-board cable to the system board.
12. Close the left display hinge.
13. Replace the two screws (M2.5x3.5) that secure the left display hinge to the system board and palm-rest and keyboard assembly.
14. Align the screw holes on the USB Type-C port bracket with the screw holes on the system board.
15. Replace the two screws (M2.5x3.5) that secure the USB Type-C port bracket to the system board.
16. Adhere the tape that secures the USB Type-C port bracket to the system board.
17. Route the antenna cables through the routing guides on the system board.

Next steps

1. Install the [fan](#).
2. Install the [heat sink](#).
3. Install the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), whichever applicable.
4. Install the [wireless card](#).
5. Install the [memory modules](#).


6. Install the [battery](#).
7. Install the [base cover](#).
8. Follow the procedure in [After working inside your computer](#).

Palm-rest and keyboard assembly

Removing the palm-rest and keyboard assembly

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [coin-cell battery](#).
5. Remove the [memory modules](#).
6. Remove the [wireless card](#).
7. Remove the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), whichever applicable.
8. Remove the [I/O board](#).
9. Remove the [speakers](#).
10. Remove the [heat sink](#).
11. Remove the [fan](#).
12. Remove the [touchpad](#).
13. Remove the [power-adaptor port](#).
14. Remove the [power button](#) or [power button with fingerprint reader](#).
15. Remove the [display assembly](#).
16. Remove the [system board](#).

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

About this task

 **NOTE:** The wireless-antenna cable and wireless antenna are part of the palm-rest and keyboard assembly.

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



Steps

After performing the steps in the pre-requisites, you are left with the palm-rest and keyboard assembly.

Installing the palm-rest and keyboard assembly

Prerequisites

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

About this task

NOTE: The wireless-antenna cable and wireless antenna are part of the palm-rest and keyboard assembly.

The following image indicates the location of the palm-rest and keyboard assembly and provides a visual representation of the installation procedure.



Steps

Place the palm-rest and keyboard assembly on a clean and flat surface.


Next steps


1. Install the [system board](#).
2. Install the [display assembly](#).
3. Install the [power button](#) or [power button with fingerprint reader](#).
4. Install the [touchpad](#).
5. Install the [power-adaptor port](#).
6. Install the [fan](#).
7. Install the [heat sink](#).
8. Install the [speakers](#).
9. Install the [I/O board](#).
10. Install the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), whichever applicable.
11. Install the [wireless card](#).
12. Install the [memory modules](#).
13. Install the [coin-cell battery](#).
14. Install the [battery](#).
15. Install the [base cover](#).
16. Follow the procedure in [After working inside your computer](#).

Drivers and downloads

When troubleshooting, downloading, or installing drivers, it is recommended that you read the Dell Knowledge Base article Drivers and Downloads FAQs [000123347](#).

System setup

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

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

Use the BIOS Setup program for the following purposes:

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

BIOS overview

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

Entering BIOS Setup program

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

Boot sequence

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

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


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

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

F12 One Time Boot menu

To enter the One Time Boot menu, turn on your computer, and then press F12 immediately.

 **NOTE:** It is recommended to shut down the computer, if it is on.

The F12 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 System Setup.

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		
Inspiron 5410 2-in-1		
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.

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

Overview	
	Default: Enabled
BATTERY	Displays the battery health information.
AC Adapter	Displays whether an AC adapter is connected. If connected, the AC adapter 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.
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_SLOT1	Displays the memory configuration of DIMM SLOT1.
DIMM_SLOT2	Displays the memory configuration of DIMM SLOT2.
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.
dGPU Video Controller	Displays the discrete graphics controller.

Table 5. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of this computer.
Boot Sequence	Enables or disables Windows Boot Manager and UEFI Hard Drive.

Table 5. System setup options—Boot Configuration menu (continued)

Boot Configuration	
	By default, Windows Boot Manager is selected
	By default, UEFI Hard Drive is selected
Secure Boot	
Enable Secure Boot	Enables secure boot using only validated boot software.
Secure Boot Mode	Displays the secure boot mode
Expert Key Management	
Enable Custom Mode	Allows the PK, KEK, db, and dbx security key databases to be modified.
Custom Mode Key Management	Allows for selection of key database.

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 Configuration	
Enable External USB Ports	Enables or disables all external USB ports in an OS environment. By default, Enable External USB Ports is selected.
Enable USB Boot Support	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.
Disable USB4 PCIE Tunneling	
Disable USB4 PCIE Tunneling	Disables USB 4 PCIE Tunneling Default: OFF
Video/Power only on Type-C Ports	Limits Type-C port functionality to Video or Power only Default: OFF

Table 7. System setup options—Storage menu

Storage		
SATA/NVMe Operation		
SATA/NVMe Operation		Sets the operating mode of the integrated storage device controller. Default: RAID On
Storage Interface		
Port Enablement		Enables or disables the onboard drives. Default: ON
SMART Reporting		
Enable SMART Reporting		Enables or disables Self-Monitoring, Analysis, and Reporting Technology (SMART). Default: OFF
Drive Information		Displays the information of various onboard drives.

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
Touchscreen		
Touchscreen		Enables or disables the touchscreen. Default: ON
EcoPower		Enable EcoPower - Increases the battery life by reducing the display brightness when appropriate. Default: On
Full Screen Logo		When turned on, the full screen logo is displayed if the image matches the screen resolution. Default: OFF

Table 9. System setup options—Connection menu

Connection		
Wireless Device Enable		
WLAN		Enable or disable internal WLAN devices. By default, WLAN is selected.
Bluetooth		Enable or disable internal Bluetooth devices. By default, Bluetooth is selected.
Enable UEFI Network Stack		
Enable UEFI Network Stack		Enables or disables UEFI networking protocols, if they are installed and available. Default: ON

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

Connection	
HTTP(s) Boot Feature	
	When the Certificate is uploaded, connects to HTTPs Boot server.

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. Default: Adaptive. Battery settings are adaptively optimized based on your typical battery usage pattern.
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
Thermal Management	Enables the cooling fan and processor heat management to adjust system performance, noise, and temperature. Default: Optimized. Standard settings for cooling fan and processor heat management. This setting is a balance of performance, noise, and temperature.
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	Enable or disable 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	
Intel Platform Trust Technology	
Intel Platform Trust Technology On	Enable or disable the Intel Platform Trust Technology (PPT) feature in the OS. Default: ON

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


Security	
PPI Bypass for Clear Commands	Enables or disables the Trusted Platform Model (TPM) Physical Presence Interface (PPI). When enabled, the OS will skip BIOS Physical Presence Interface (PPI) user prompts when issuing the Clear command. Default: OFF
Clear	Enables or disables the computer to clear the PTT owner information, and returns the PTT to the default state. Default: OFF
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	When enabled, the BIOS will schedule a data wipe cycle for all storage devices connected to the system board on the next reboot. Default: OFF
Absolute	Enables, disables or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. Default: Enabled
UEFI Boot Path Security	Determines if 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. Default: Always Except Internal HDD.

Table 12. System setup options—Passwords menu

Passwords	
Admin Password	Enables you to set, change, or delete the administrator (admin) password. The admin password enables several security features
System Password	Enables you to set, change, or delete the system password.
NVMe SSD0	Enables you to set, change, or delete the NVMe SSD0 password.
Password Configuration	
Upper Case Letter	Enforces password restriction that the password must contain at least one upper case letter. Default: OFF
Lower Case Letter	Enforces password restriction that the password must contain at least one lower case letter. Default: OFF
Digit	Enforces password restriction that the password must contain at least one digit. Default: OFF
Special Character	Enforces password restriction that the password must contain at least one special character. Default: OFF
Minimum Characters	Controls the minimum number of characters allowed for password. Default: 04

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


Passwords	
Password Bypass	Bypass the System (Boot) Password and the internal hard drive password prompts during a system restart. Default: Disabled
Password Changes	
Enable Non-Admin Password Changes	Enables or disables the user to change the system and hard drive password without the need for admin password. Default: ON
Admin Setup Lockout	
Enable Admin Setup Lockout	Enables or disables the user from entering BIOS Setup when an Admin Password is set. Default: OFF
Master Password Lockout	
Enable Master Password Lockout	Enables or disables master password support. Default: OFF  NOTE: Hard drive passwords must be cleared before the setting can be changed.
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Controls access to the Physical Security ID (PSID) revert of NVMe hard-drives from the Dell Security Manager prompt. Default: OFF

Table 13. System setup options—Update, Recovery menu


Wireless	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages. Default: ON
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	Enables or disables the boot flow for SupportAssist OS Recovery tool, in the event of certain system error. Default: ON
BIOSConnect	Enables or disables cloud Service OS recovery if the main OS fails to boot within the number of failures equal or greater than the value specified by Dell Auto OS Recovery Threshold, and local Service does not boot, or is not installed.

Table 13. System setup options—Update,Recovery menu (continued)

Wireless	
	Default: ON
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool. Default: 2.

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	
Wake on AC	Enables or disables basic checks when AC power is applied to the device. The checks include determining how the AC Recovery option is set. The system will boot up if Wake on AC is enabled, the system will power off, if Wake on AC is disabled. Default: OFF
Auto On Time	Controls automatic powering up of system for defined days and times. Default: Disabled

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	
	Enables or disables the Fn lock mode. Default: ON
Lock Mode	Controls operation of function keys F1-F12. Default: Lock Mode Secondary
Keyboard Illumination	
	Enables the user to change the keyboard illumination settings. Default: Bright
Keyboard Backlight Timeout on AC	
	Enables the user to define the timeout value for the keyboard backlight when an AC adapter is plugged into the system. Default: 1 minute
Keyboard Backlight Timeout on Battery	
	Enables the user to define the timeout value for the keyboard backlight when the system is operating only on battery power. Default: 1 minute

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.

Table 16. System setup options—Pre-boot Behavior menu (continued)


Pre-boot Behavior	
Warnings and Errors	<p>Default: ON</p> <p>Selects an action on encountering a warning or error during boot.</p> <p>Default: Prompt on Warnings and Errors. Stop, prompt, and wait for user input when warnings or errors are detected.</p> <p> NOTE: Errors deemed critical to the operation of the computer hardware will always halt the computer.</p>
USB-C Warnings	<p>Specify the maximum number of characters allowed for Admin password.</p> <p>Default: 32</p>
Enable Dock Warning Messages	<p>Enable or disable dock warning messages.</p> <p>Default: ON</p>
Fastboot	<p>Configures the speed of the UEFI boot process.</p> <p>Default: Thorough. Performs complete hardware and configuration initialization during boot.</p>
Extend BIOS POST Time	<p>Configures the BIOS POST (Power-On Self-Test) load time.</p> <p>Default: 0 seconds</p>

Table 17. System setup options—Virtualization Support menu

Virtualization	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	<p>Enables the computer to run a virtual machine monitor (VMM).</p> <p>Default: ON</p>
VT for Direct I/O	
Enable Intel VT for Direct I/O	<p>Enables 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.</p> <p>Default: ON</p>

Table 18. System setup options—Performance menu

Performance	
Multi-Core Support	
Active Cores	<p>Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores.</p> <p>Default: All Cores</p>
Intel SpeedStep	
Enable Intel SpeedStep Technology	<p>Enables or disables the Intel SpeedStep Technology to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production.</p> <p>Default: ON</p>
C-States Control	
Enable C-State Control	<p>Enables or disables the CPU's ability to enter and exit low-power states.</p> <p>Default: ON</p>
Enable Adaptive C-States for Discrete Graphics	<p>Allows to dynamically detect high usage of discrete graphics and adjust system parameters for higher performance during that time period.</p>

Table 18. System setup options—Performance menu (continued)

Performance		
		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

Table 19. System setup options—System Logs menu

System Logs		
BIOS Event Log		
Clear Bios Event Log	Select keep or clear BIOS events. Default: Keep	
Thermal Event Log		
Clear Thermal Event Log	Select keep or clear Thermal events. Default: Keep	
Power Event Log		
Clear POWER Event Log	Select keep or clear Power events. Default: Keep	


System and setup password

Table 20. System and setup password

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

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

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

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

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

Assigning a System Setup password

Prerequisites

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

About this task

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

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is visible.
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 to 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 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 F2 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
2. In the **System Security** screen, verify that the 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. 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. Turn off your computer.
2. Remove the [base cover](#).


 **NOTE:** The battery must be disconnected from the system board (see step 4 in [Removing the base cover](#)).

3. Press and hold the power button for 15 seconds to drain the flea power.
4. Before you turn on your computer, follow the steps in [Installing the base cover](#).
5. Turn on your computer.

Clearing BIOS (System Setup) and System passwords

About this task


To clear the computer or BIOS passwords, contact Dell technical support as described at [Contact Support](#). For more information, go to [Dell Support Site](#).

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

Updating the BIOS

Updating the BIOS in Windows

Steps

1. Go to [Dell Support Site](#).
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 about how to update the system BIOS, search in the Knowledge Base Resource at [Dell Support Site](#).

Updating the BIOS using the USB drive in Windows

Steps

1. Follow the procedure from step 1 to step 6 in [Updating the BIOS in Windows](#) to download the latest BIOS Setup program file.
2. Create a bootable USB drive. For more information, search the Knowledge Base Resource at [Dell Support Site](#).
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

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 the 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 an 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.

Troubleshooting

Handling swollen rechargeable Li-ion batteries

Like most laptops, Dell laptops use Lithium-ion batteries. One type of Lithium-ion battery is the rechargeable Li-ion battery. Rechargeable Li-ion 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 rechargeable Li-ion battery technology is the potential for swelling of the battery cells.

A 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 rechargeable Li-ion batteries are as follows:

- Exercise caution when handling rechargeable Li-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 turn 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 [Dell Support Site](#) 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 [Dell Site](#) or otherwise directly from Dell.


Rechargeable Li-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information about 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 [Dell Support Site](#).

SupportAssist diagnostics

About this task

The SupportAssist diagnostics (previously known as ePSA diagnostics) performs a complete check of your hardware. The SupportAssist diagnostics is embedded in the BIOS and is launched by it internally. The SupportAssist diagnostics provides a set of options for particular devices or device groups. It allows 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 and provide extra information about the failed device(s)
- View status messages that indicate if the tests are completed successfully
- View error messages that indicate if problems were encountered during the test

 **NOTE:** Some tests are meant for specific devices and require user interaction. Ensure that you are present in front of the computer when the diagnostic tests are performed.

For more information, see [SupportAssist Pre-Boot System Performance Check](#).

Locate the Service Tag or Express Service Code of your Dell computer

Your Dell computer is uniquely identified with a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, we recommend entering the Service Tag or Express Service Code at [Dell Support Site](#).
For more information about how to find the Service Tag for your computer, see [Instructions on how to find your Service Tag or Serial Number](#).

System diagnostic lights

Battery-status light

Indicates the power and battery-charge status.

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

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

Off

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

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

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

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

Table 21. LED codes

Diagnostic light codes (Amber, white)	Problem description
1,1	TPM detection failure
1,2	Unrecoverable SPI flash failure
1,3	Short in hinge cable tripped OCP1
1,4	Short in hinge cable tripped OCP2
1,5	EC unable to program i-Fuse
1,6	EC internal failure
2,1	Processor failure
2,2	System board: BIOS or Read-Only Memory (ROM) failure
2,3	No memory or Random-Access Memory (RAM) detected
2,4	Memory or Random-Access Memory (RAM) failure
2,5	Invalid memory installed
2,6	System-board or chipset error
2,7	Display failure - SBIOS message

Table 21. LED codes (continued)

Diagnostic light codes (Amber, white)	Problem description
2,8	Display failure - EC detection of power rail failure
3,1	CMOS battery failure
3,2	PCI, video card/chip failure
3,3	BIOS recovery image not found
3,4	Recovery image found but invalid
3,5	Power-rail failure
3,6	System BIOS Flash incomplete
3,7	Management Engine (ME) error
4,1	Battery charging failure

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

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

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

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

Built-in self-test (BIST)

About this task

There are three different types of BIST to check the performance of display, power rail, and system board. These tests are important to evaluate if an LCD or system board needs a replacement.

1. M-BIST: M-BIST is the system board built-in self-test diagnostics tool that improves the diagnostics accuracy of system board embedded controller (EC) failures. M-BIST must be manually initiated before POST and can also run on a dead system .
2. L-BIST: L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST.
3. LCD-BIST: LCD BIST is an enhanced diagnostic test that is introduced through Preboot System Assessment (PSA) on legacy systems.

Table 22. Functions

	M-BIST	L-BIST
Purpose	Evaluates the health condition of the system board.	Checks if the system board is supplying power to the LCD by performing an LCD Power Rail test.
Trigger	Press the <M> key and the power button.	Integrated into the single LED error code diagnostics. Automatically initiated during POST.
Indicator of fault	Battery LED light with Solid Amber	Battery LED error code of [2,8] blinks Amber x2, then pause, then blinks White x8.
Repair instruction	Indicates a problem with the system board.	Indicates a problem with the system board.

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 stand-alone tool that is preinstalled in all Dell computers that are installed with the 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 [Serviceability Tools at the Dell Support Site](#). Click **SupportAssist** and then, click **SupportAssist OS Recovery**.


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 the Windows operating system on your Dell computer. 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 turn on or boot into the operating system.

Perform the following steps to drain the residual flea power:

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.

3. Remove the base cover.
4. Remove the battery.



CAUTION: The battery is a Field Replaceable Unit (FRU) and the removal/installation is intended for authorized service technicians only.

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 [Dell Support Site](#).

Getting help and contacting Dell Technologies

Self-help resources

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


Table 23. Self-help resources

Self-help resources	Resource location
Information about Dell Technologies products and services	Dell Site
My Dell app	
Tips	
Contact Support	In Windows search, type <code>Contact Support</code> , and press Enter.
Online help for operating system	Windows Support Site
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	<p>Your Dell Technologies computer is uniquely identified using a Service Tag or Express Service Code. To view relevant support resources for your Dell Technologies computer, enter the Service Tag or Express Service Code at Dell Support Site.</p> <p>For more information about how to find the Service Tag for your computer, see Instructions on how to find your Service Tag or Serial Number.</p>
Dell Technologies knowledge base articles	<ol style="list-style-type: none"> 1. Go to Dell Support Site. 2. On the menu bar at the top of the Support page, select Support > Support Library. 3. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell Technologies

To contact Dell Technologies for sales, technical support, or customer service issues, see [Contact Support at Dell Support Site](#).

 **NOTE:** Availability of the services may vary depending on the country or region, and product.

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