

Inspiron 7500 2n1 Black

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 included in this document assumes that you have read the safety information that shipped with your computer.


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

 **NOTE:** Disconnect your computer from all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting your computer to an electrical outlet.

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

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


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

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

 **CAUTION:** When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumb-screws 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.

 **NOTE:** The color of your computer and certain components may appear differently than 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 DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

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 For this reason, some previously approved methods of handling parts are no longer applicable.

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

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

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

Perform the following steps to prevent ESD damage:

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

ESD field service kit

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

Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear

and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.

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

ESD protection summary


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

Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

 **CAUTION:** Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.

1. Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
2. Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
3. Lift with your legs, not your back.
4. Keep the load close. The closer it is to your spine, the less force it exerts on your back.
5. Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
6. Follow the same techniques in reverse to set the load down.

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.

Removing and installing components

Recommended tools

The procedures in this document may require the following tools:

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

Screw list

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

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

NOTE: Screw color may vary with the configuration ordered.

Table 1. Screw list



















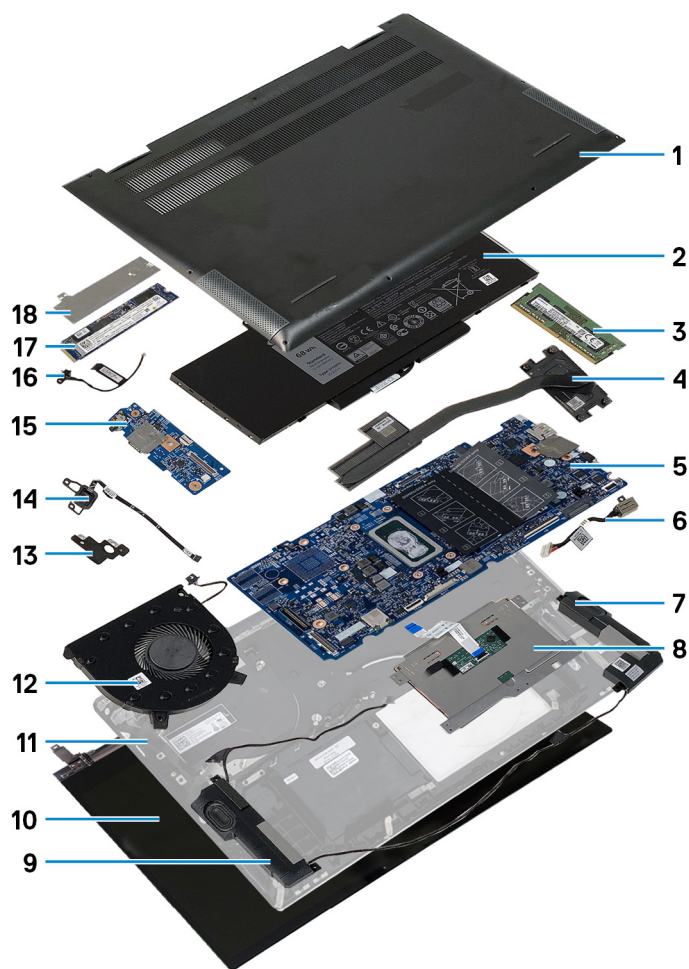
Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2x4	6	
Battery	Palm-rest and keyboard assembly	M2x3	2	
Wireless-card bracket	Wireless card and palm-rest and keyboard assembly	M2x3	1	
Solid-state drive (2230)	Palm-rest and keyboard assembly	M2x3	1	
Solid-state drive thermal bracket (2230)	Palm-rest and keyboard assembly	M2x3	1	
Solid-state drive thermal bracket (2280)	Palm-rest and keyboard assembly	M2x3	2	
Solid-state drive bracket	Palm-rest and keyboard assembly	M1.6x2.5	1	
Touchpad bracket	Palm-rest and keyboard assembly	M2x2	3	

Table 1. Screw list (continued)

Component	Secured to	Screw type	Quantity	Screw image
Touchpad	Palm-rest and keyboard assembly	M2x2	2	
Pen-garage cable	Palm-rest and keyboard assembly	M1.6x2.5	1	
I/O board	Palm-rest and keyboard assembly	M2x3	2	
Fan	Palm-rest and keyboard assembly	M2x2	2	
Display hinges	Palm-rest and keyboard assembly	M2x3.5	4	
Display hinges	Palm-rest and keyboard assembly	M2.5x5	2	
Power-adaptor port	Palm-rest and keyboard assembly	M2x3	1	
Power-button bracket	Palm-rest and keyboard assembly	M1.6x2.5	2	
USB Type-C bracket	System board and palm-rest and keyboard assembly	M2x3	2	
System board	Palm-rest and keyboard assembly	M2x2	2	

Major components of Inspiron 7500 2n1 Black

The following image shows the major components of Inspiron 7500 2n1 Black.



1. Base cover
2. Battery
3. Memory module
4. Heat sink
5. System board
6. Power-adapter port
7. Right speaker
8. Touchpad
9. Left speaker
10. Display assembly
11. Palm-rest and keyboard assembly
12. Fan
13. Power button with fingerprint reader bracket
14. Power button with fingerprint reader
15. I/O board
16. Pen-garage cable
17. Solid-state drive
18. Solid-state drive thermal bracket

i 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

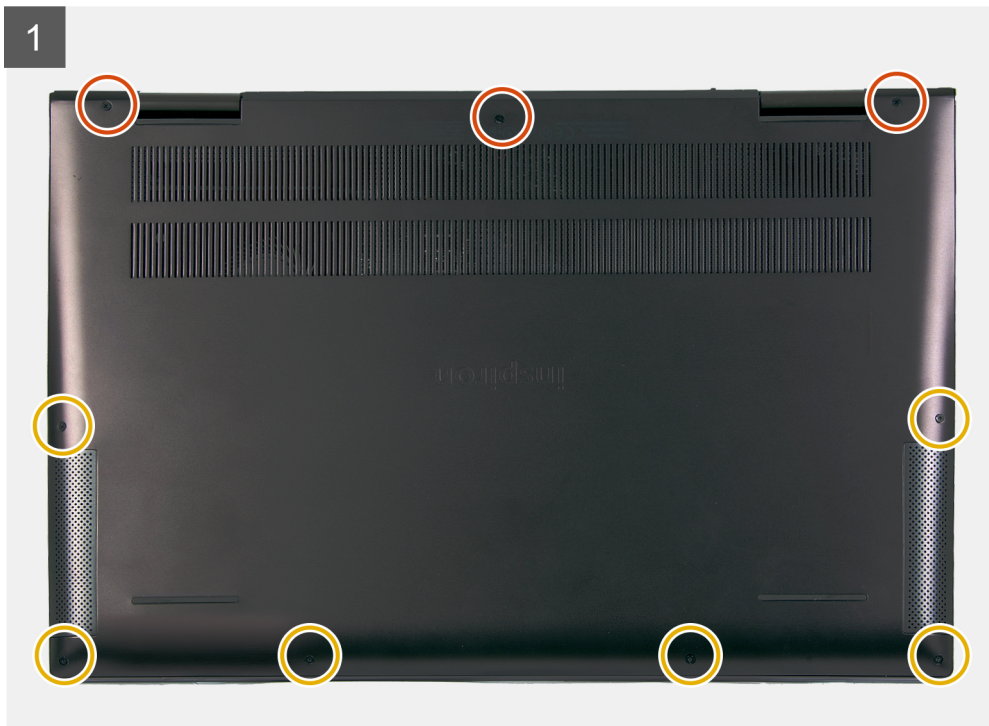
Removing the base cover

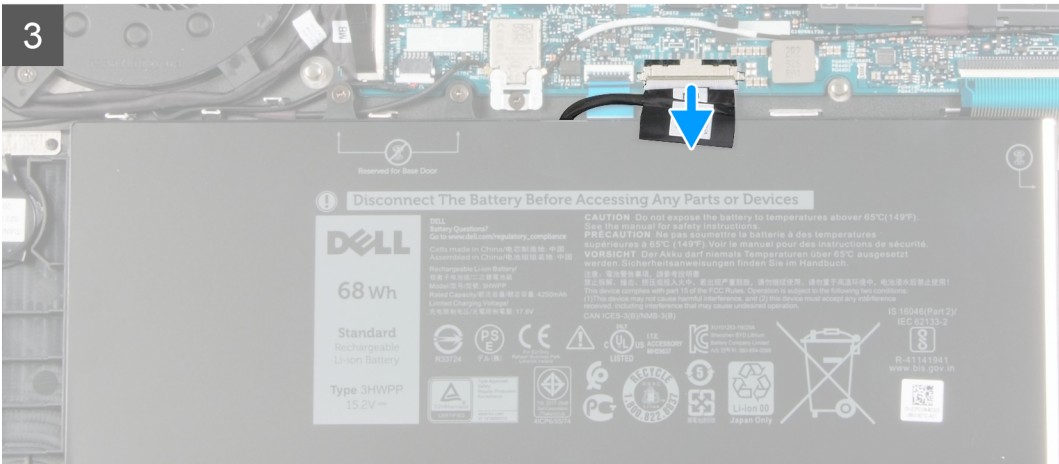
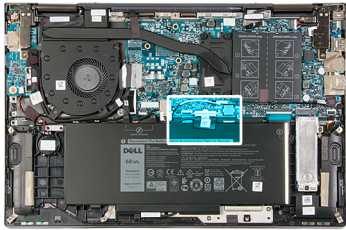
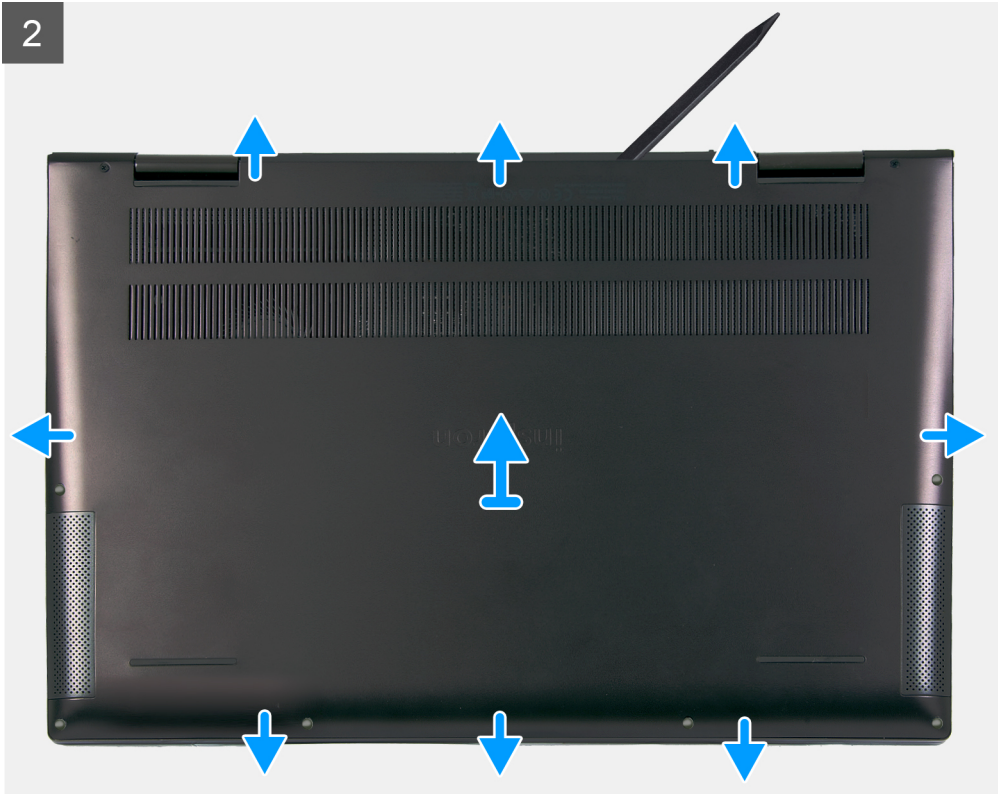
Prerequisites

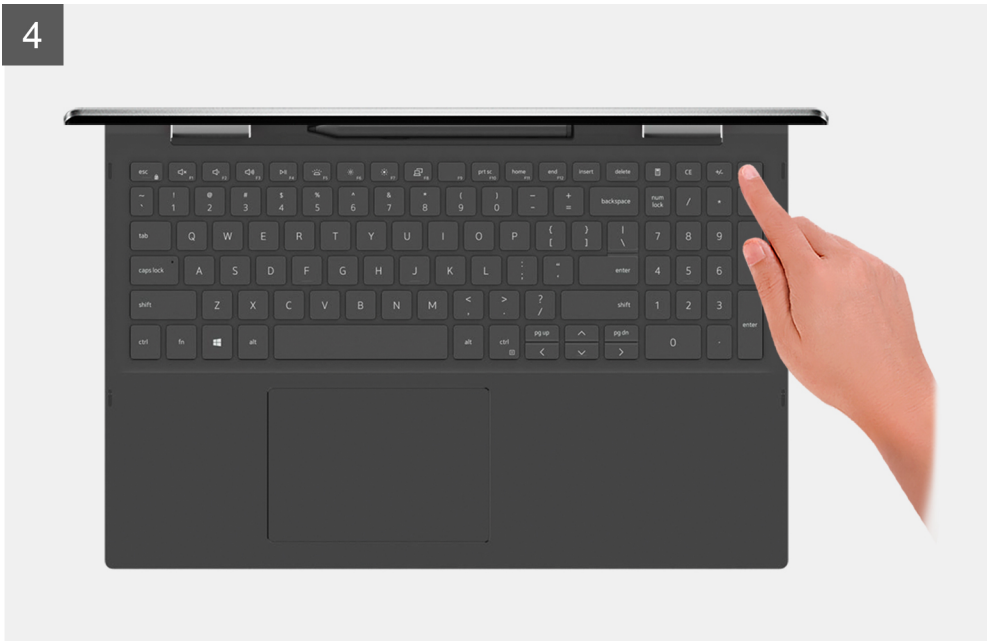
1. Follow the procedure in [Before working inside your computer.](#)

About this task

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







Steps

1. Remove the six 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 pop up creating a gap between the base cover and palm-rest and keyboard assembly.
3. Starting from the top-right corner, use a plastic scribe to pry the base cover to release the base cover from the palm-rest and keyboard assembly.
 - NOTE:** The following step is applicable only if you want to further remove any other component from your computer.
4. Disconnect the battery cable from the system board.
5. Turn your computer over and press the power button for 15 seconds to drain the flea power.

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. Connect the battery cable to the system board.
2. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly, and then snap the base cover into place.
3. Replace the six screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
4. Tighten the three captive screws that secure the base cover to the palm-rest and keyboard assembly.

Next steps

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

Battery

Lithium-ion battery precautions

⚠ CAUTION:

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

- Do not bend the battery.
- Do not use tools of any kind to pry on or against the battery.
- Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.
- If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.
- Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.

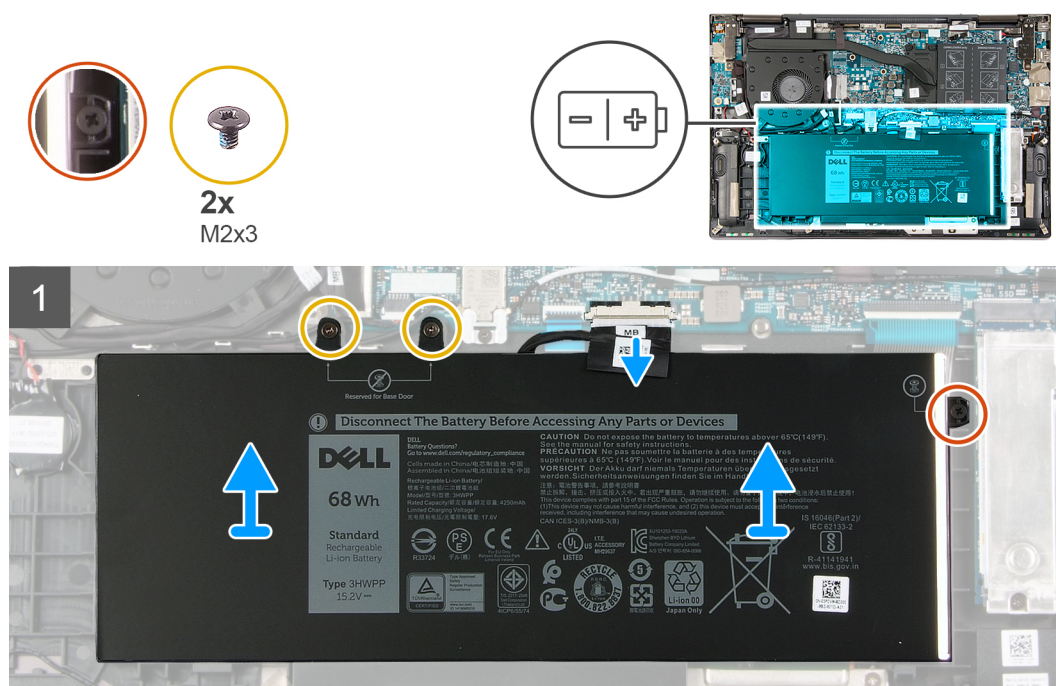
Removing the battery

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. Remove the two screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
2. Loosen the captive screw that secures the battery to the palm-rest and keyboard assembly.
3. Disconnect the battery cable from the system board (applicable only if not disconnected earlier).
4. Lift the battery off the palm-rest and keyboard assembly.

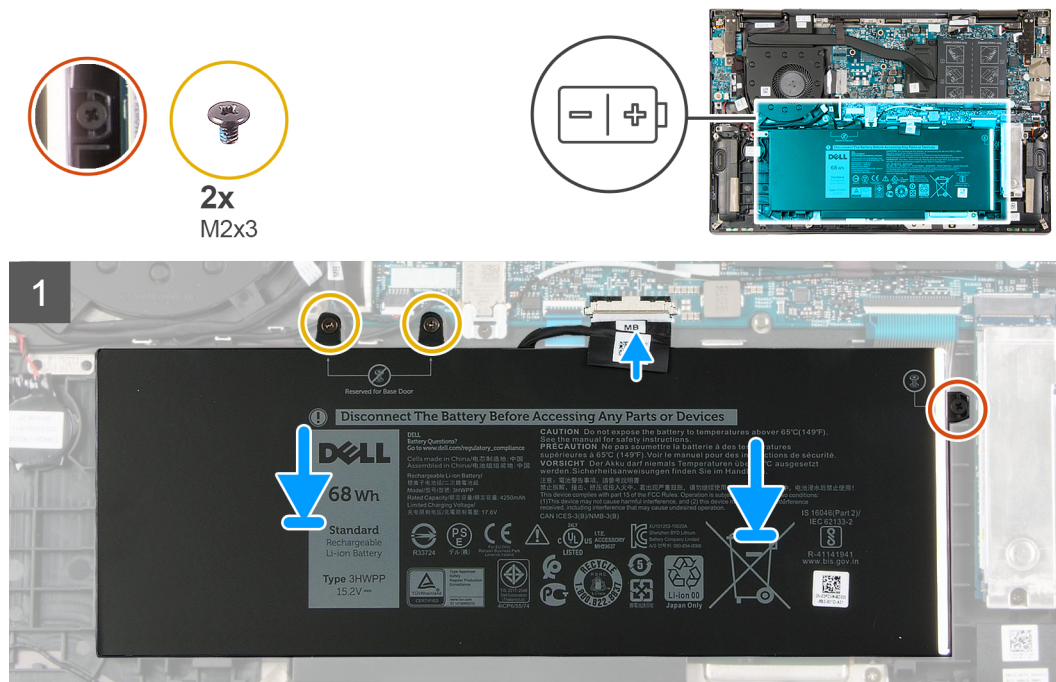
Installing the battery

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 two screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Tighten the captive screw that secures the battery to the palm-rest and keyboard assembly.
4. Connect 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

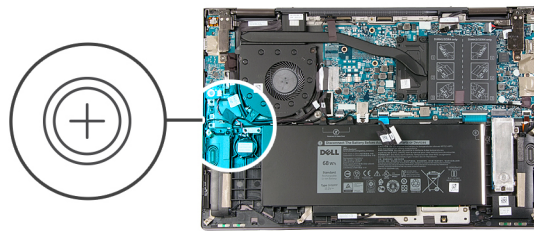
Prerequisites

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

- 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.
2. 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 tape that secures the speaker cable and coin-cell battery cable to the palm-rest and keyboard assembly.
3. Lift the speaker cable, and using a plastic scribe peel the coin-cell battery off the palm-rest and keyboard assembly.

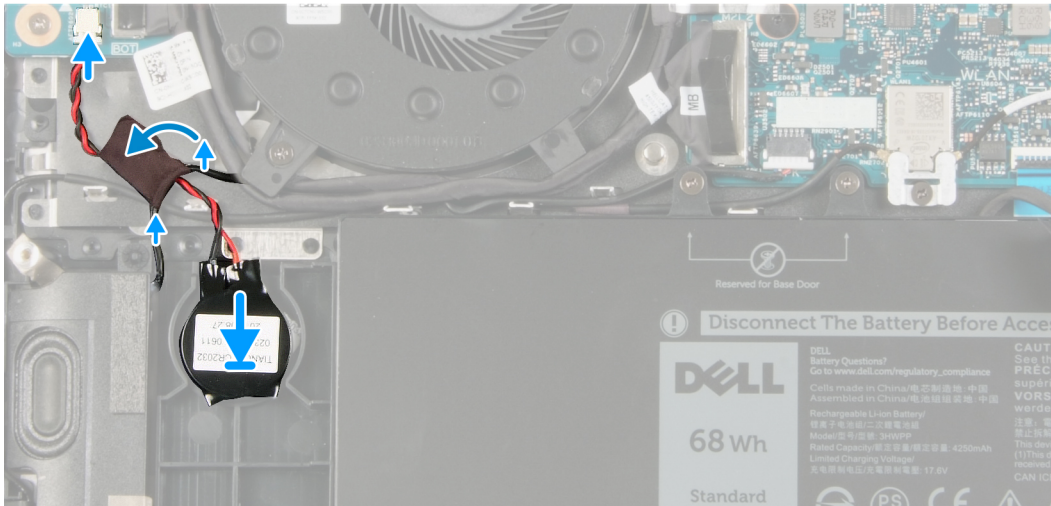
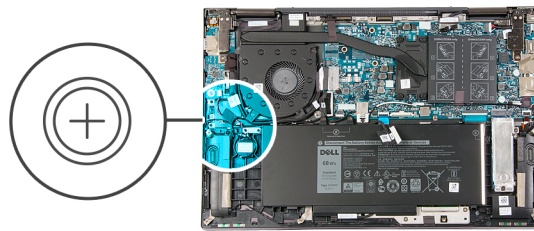
Installing the coin-cell battery

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.
3. Place the speaker cable and adhere the tape that secures the speaker cable and coin-cell battery cable to the palm-rest and keyboard assembly.

Next steps

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

Memory modules

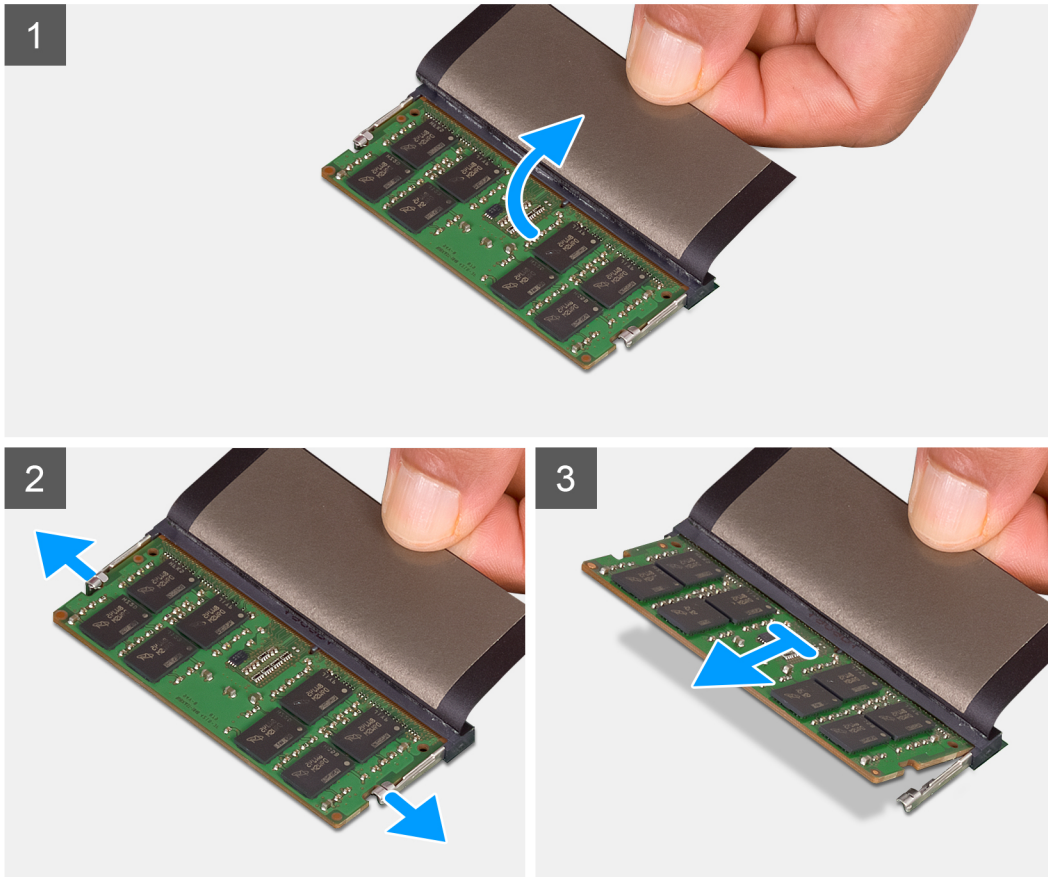
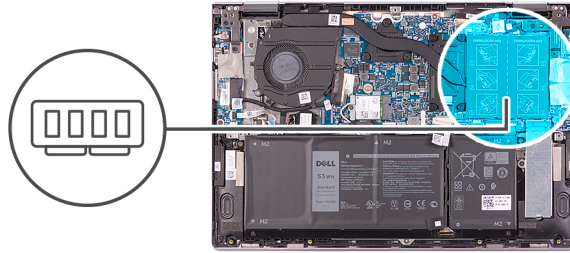
Removing the memory modules

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 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.

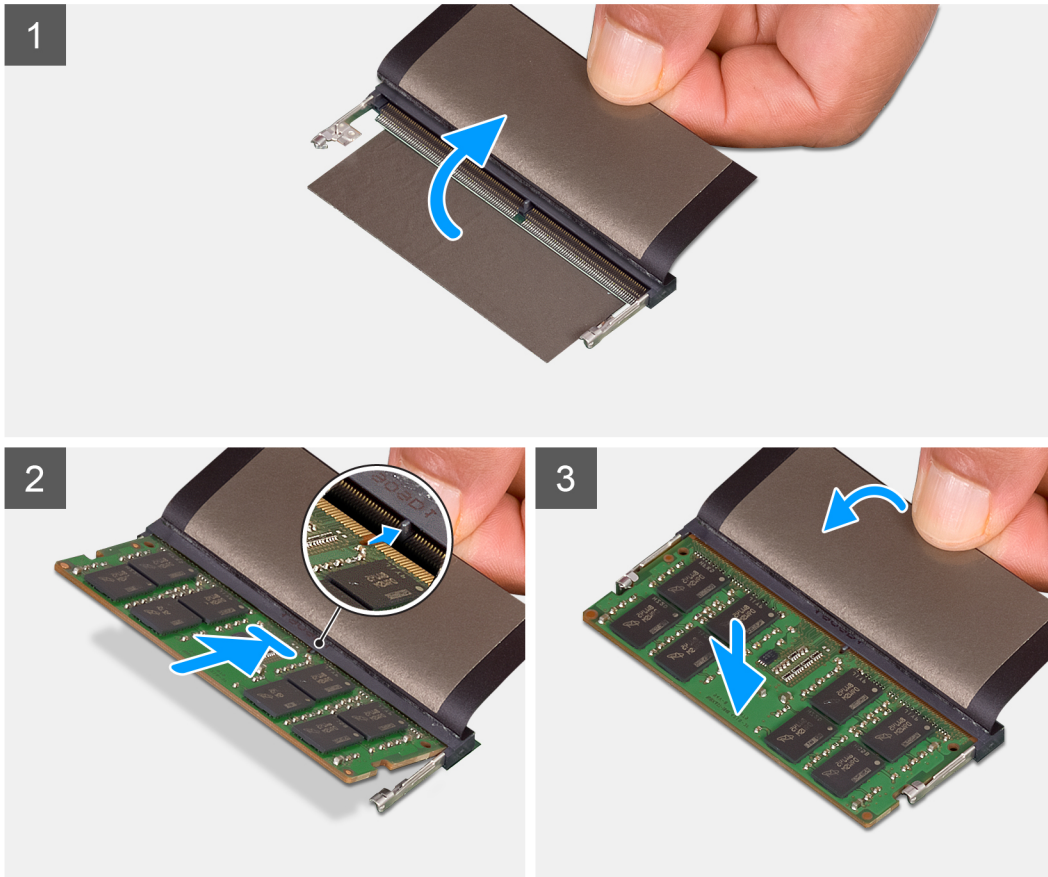
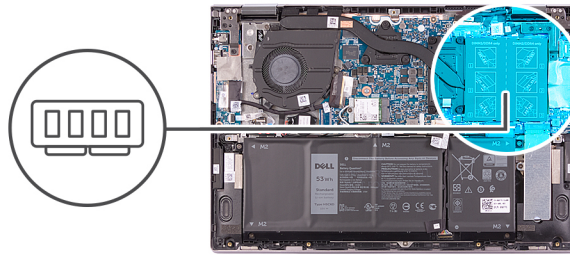
Installing the memory modules

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](#).

Speakers

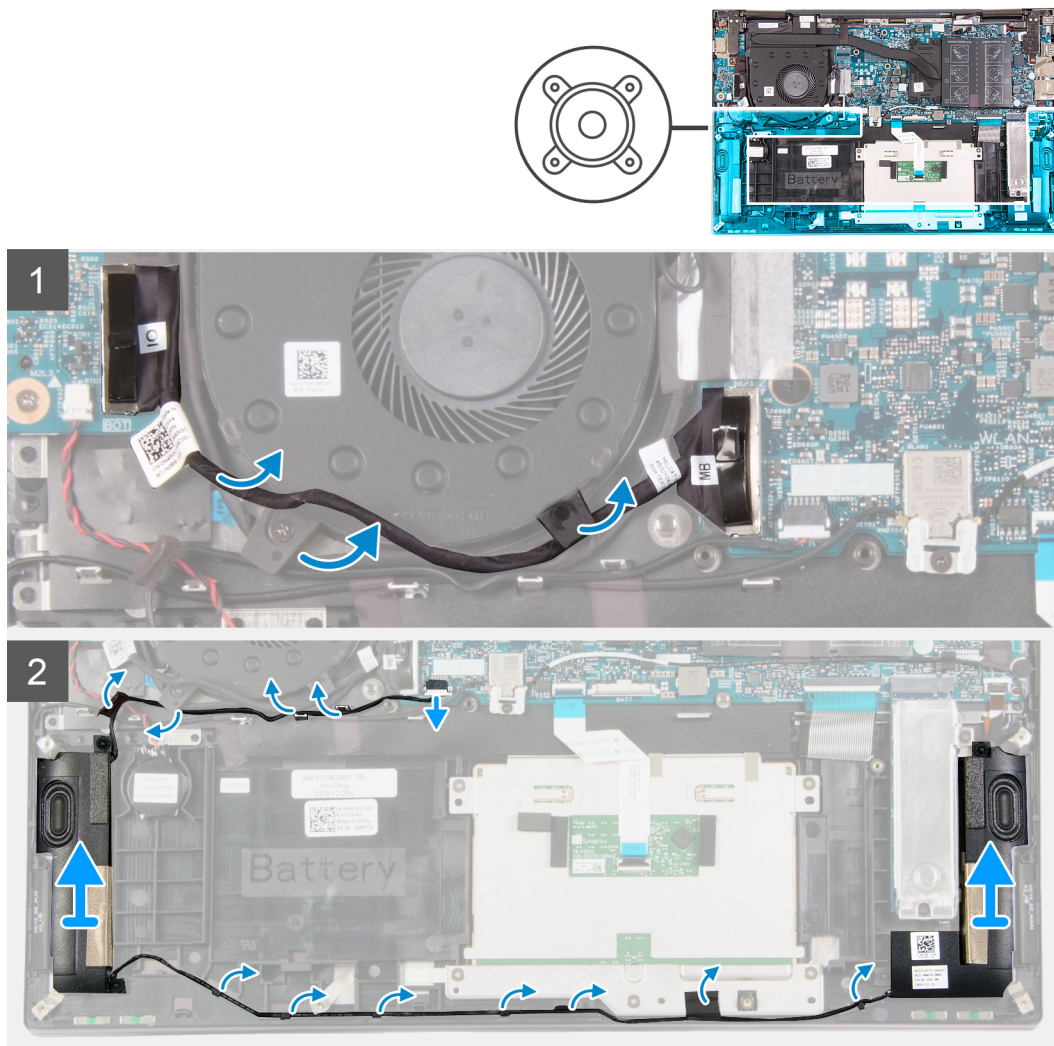
Removing the speakers

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. Remove the I/O-board cable from the routing guides on the fan.
2. Disconnect the speaker cable from the system board.
3. Peel the tape that secures the speaker cable to the palm-rest and keyboard assembly.
4. Remove the speaker cable from the routing guides on the palm-rest and keyboard assembly.
5. Lift both the speakers along with the cables, off the palm-rest and keyboard assembly.

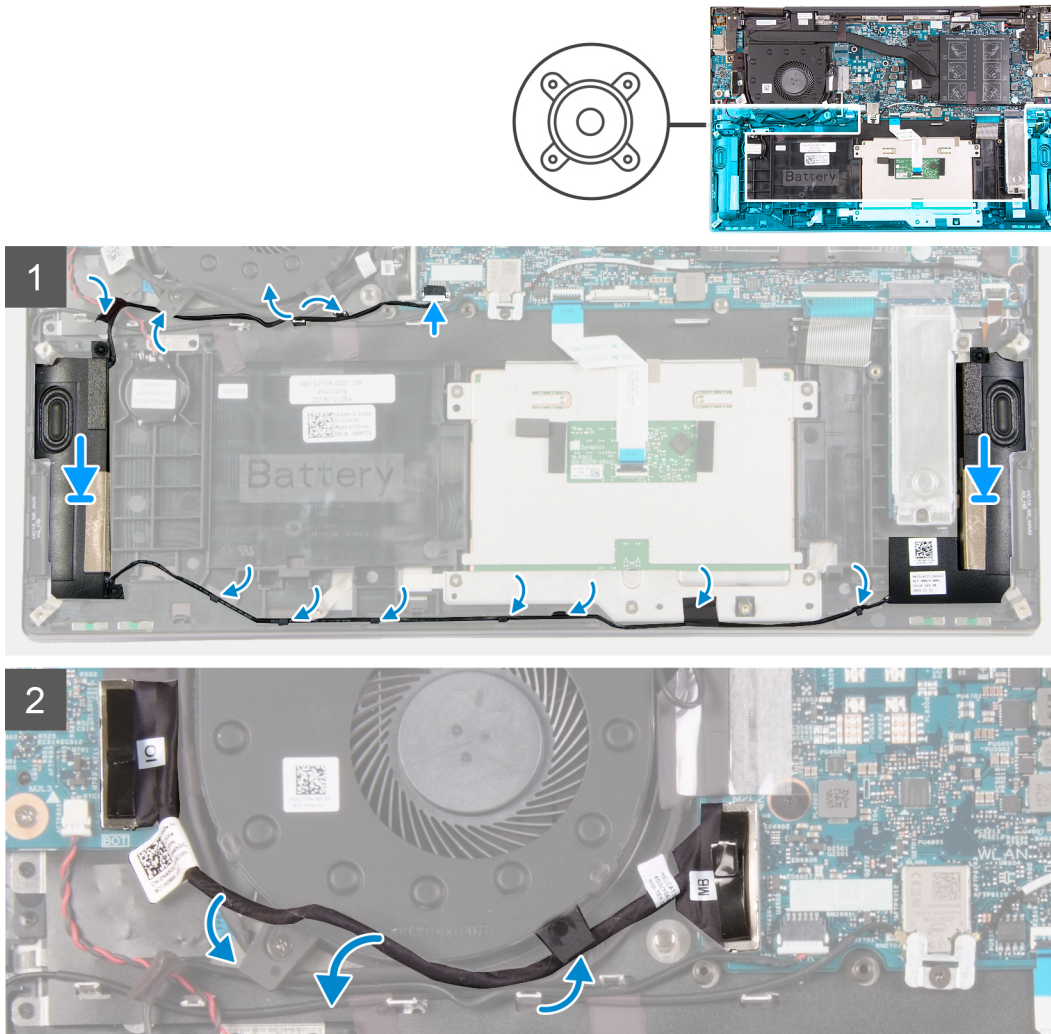
Installing the speakers

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 tape that secures the speaker to the palm-rest and keyboard assembly.
4. Connect the speaker cable to the system board.
5. Route the I/O-board cable through the routing guides on the fan.

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 — for computers with integrated graphics card

Prerequisites

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

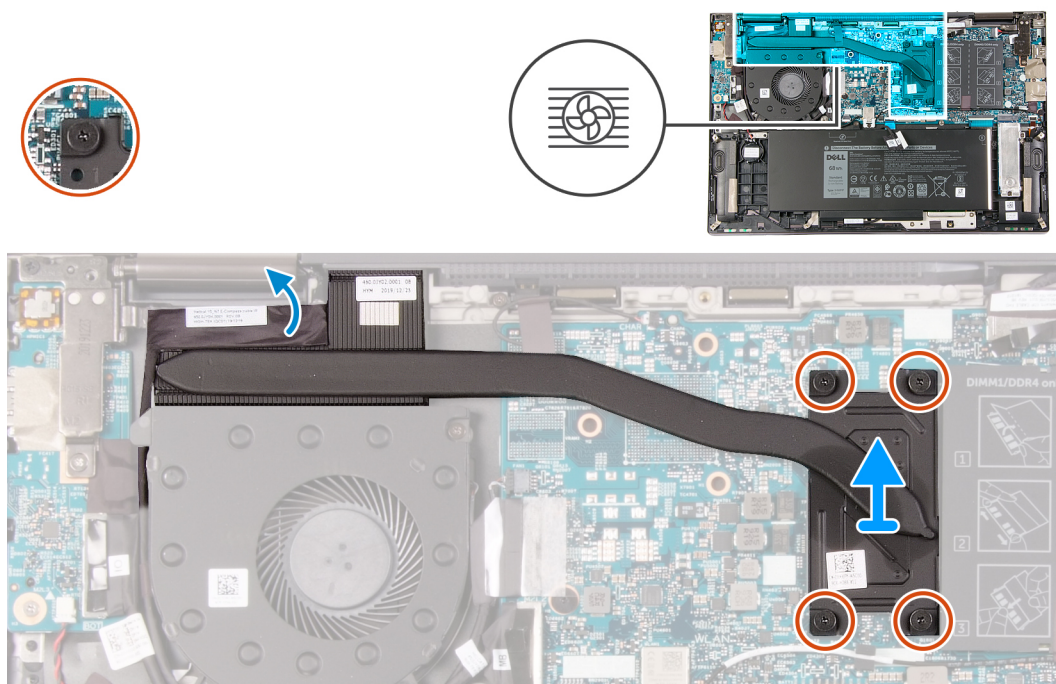
CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

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

2. 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.



Steps

1. Peel the tape that secures the touchscreen cable to the heat sink.
2. In reverse sequential order (as indicated on the heat sink), loosen the four captive screws that secure the heat sink to the system board.
3. Lift the heat sink off the system board.

Installing the heat sink — for computers with integrated graphics card

Prerequisites

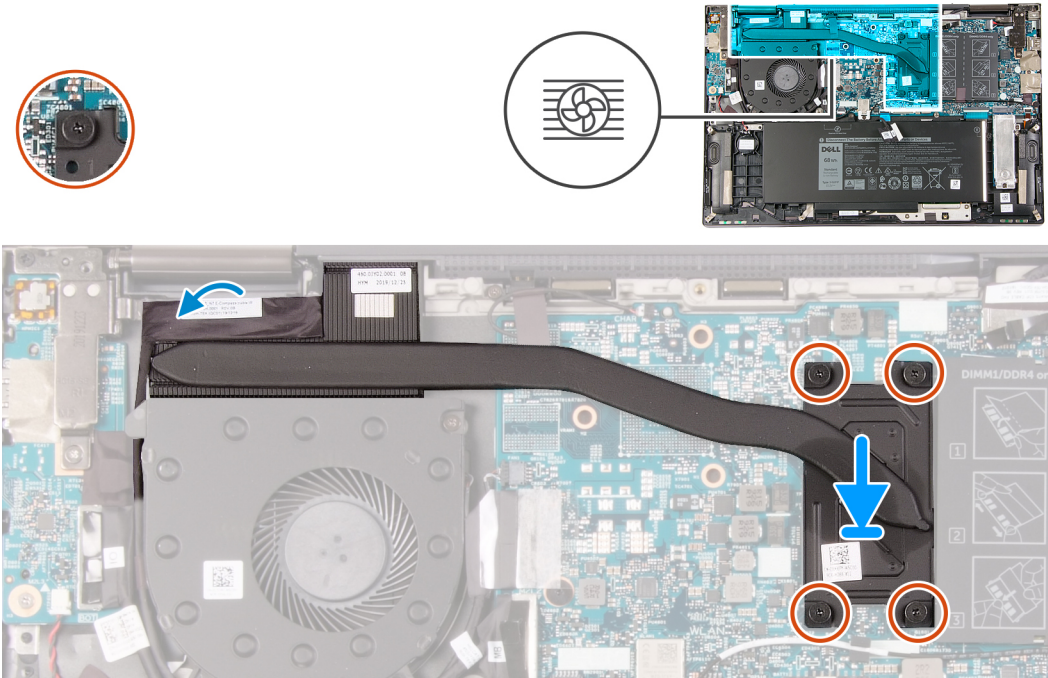
If you are replacing a component, remove the existing component before performing the installation procedure.

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.



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 captive screws that secure the heat sink to the system board.
3. Adhere the tape that secures the touchscreen cable to the heat sink.

Next steps

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

Removing the heat sink — for computers with discrete graphics card

Prerequisites

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

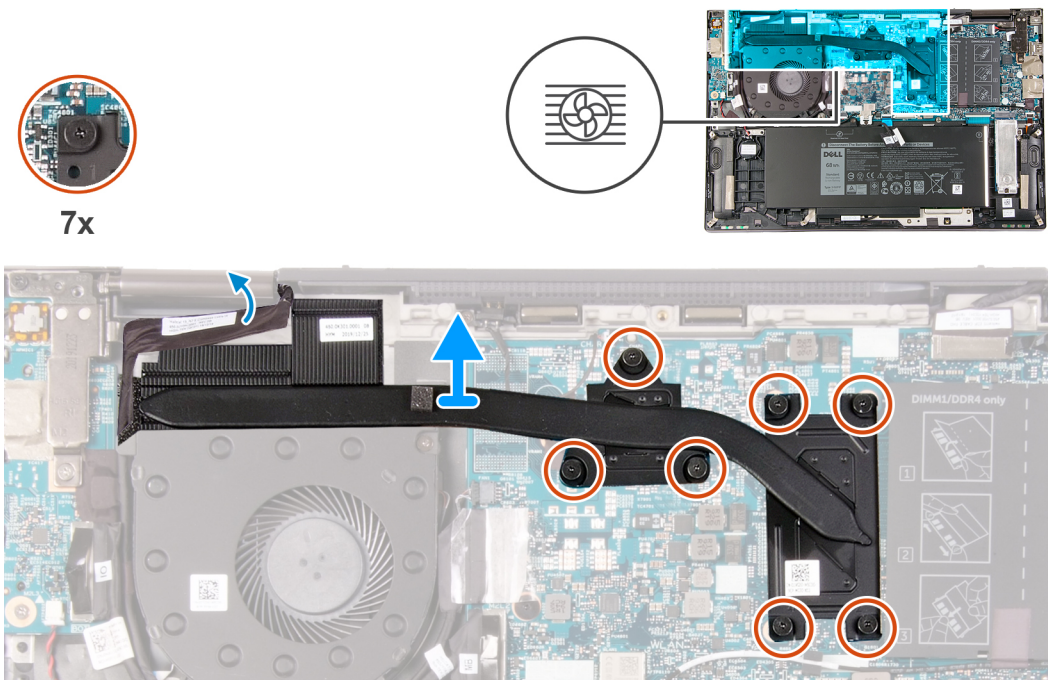
CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

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

2. 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.



Steps

1. Peel the tape that secures the touchscreen cable to the heat sink.
2. In reverse sequential order (as indicated on the heat sink), loosen the seven captive screws that secure the heat sink to the system board.
3. Lift the heat sink off the system board.

Installing the heat sink — for computers with discrete graphics card

Prerequisites

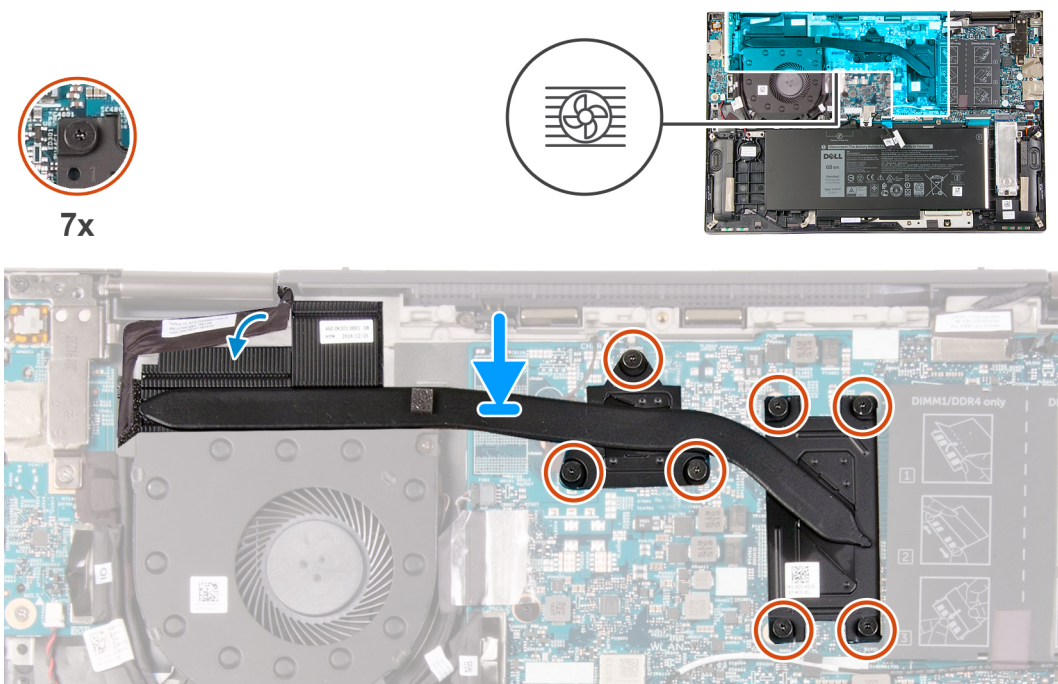
If you are replacing a component, remove the existing component before performing the installation procedure.

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.



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 seven captive screws that secure the heat sink to the system board.
3. Adhere the tape that secures the touchscreen cable to the heat sink.

Next steps

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

Power-adapter port

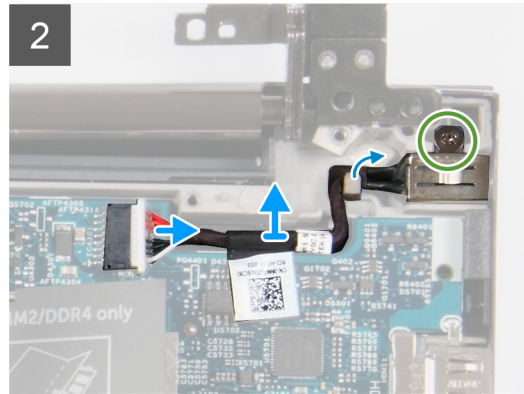
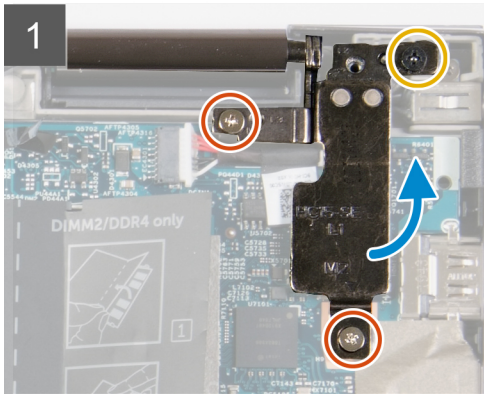
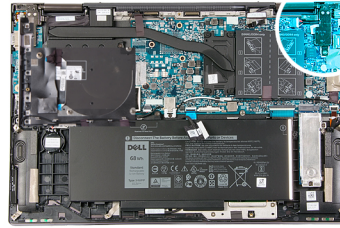
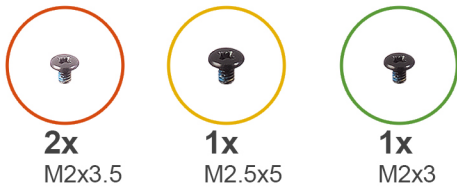
Removing the power-adapter port

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 power-adapter port and provides a visual representation of the removal procedure.



Steps

1. Remove the two screws (M2x3.5) that secure the right display-hinge to the system board and palm-rest and keyboard assembly.
2. Remove the screw (M2.5x5) that secures the right display-hinge to the system board and palm-rest and keyboard assembly.
3. Open the right display hinge at an angle of 90 degrees.
4. Disconnect the power-adapter port cable from the system board.
5. Remove the screw (M2x3) that secures the power-adapter port to the palm-rest and keyboard assembly.
6. Remove the power-adapter port cable from the routing guide on the palm-rest and keyboard assembly.
7. Lift the power-adapter port along with its cable, off the palm-rest and keyboard assembly.

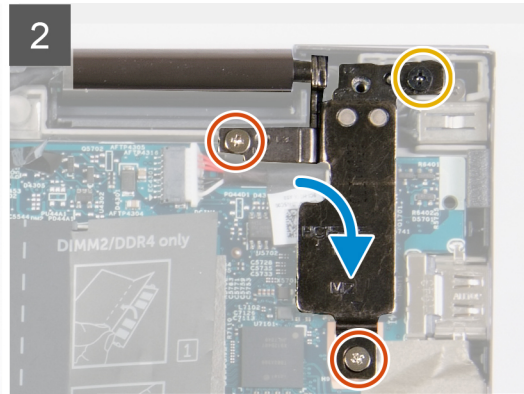
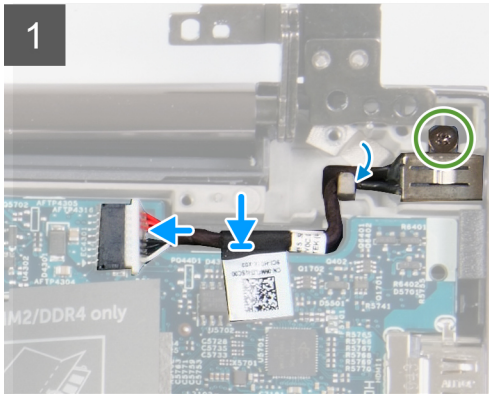
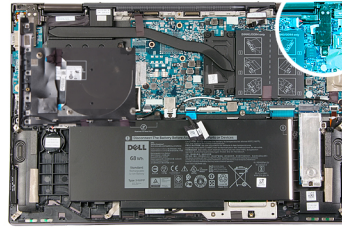
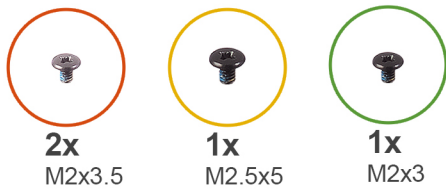
Installing the power-adapter port

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, along with its cable, into the slot on the palm-rest and keyboard assembly.
2. Route the power-adapter port cable through the routing guide on the palm-rest and keyboard assembly.
3. Replace the screw (M2x3) that secures the power-adapter port to the palm-rest and keyboard assembly.
4. Connect the power-adapter port cable to the system board.
5. Close the right display hinge.
6. Replace the two screws (M2x3.5) that secure the right display-hinge to the system board and palm-rest and keyboard assembly.
7. Replace the screw (M2.5x5) that secures the right display-hinge to the system board and palm-rest and keyboard assembly.

Next steps

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

Touchpad

Removing the touchpad

Prerequisites

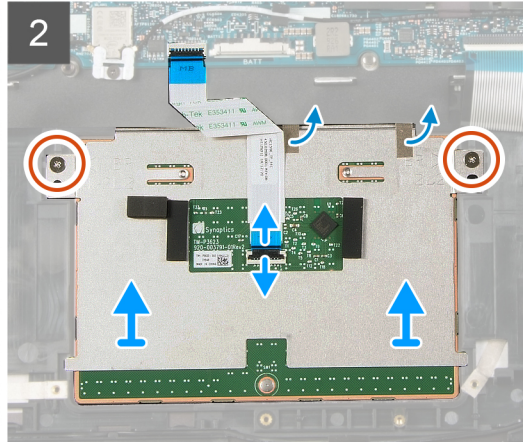
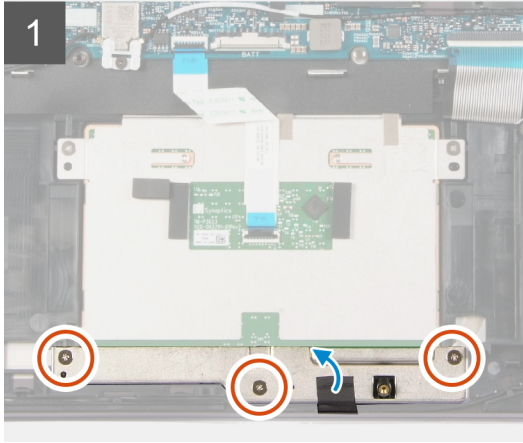
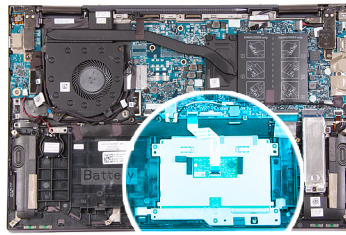
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).

About this task

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



5x
M2x2



Steps

1. Remove the three screws (M2x2) that secure the touchpad bracket to the palm-rest and keyboard assembly.
2. Peel the tape that secures the speaker cable to the touchpad bracket.
3. Open the latch, and disconnect the touchpad cable from the touchpad.
4. Peel the tape that secures the touchpad to the palm-rest and keyboard assembly.
5. Remove the two screws (M2x2) 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

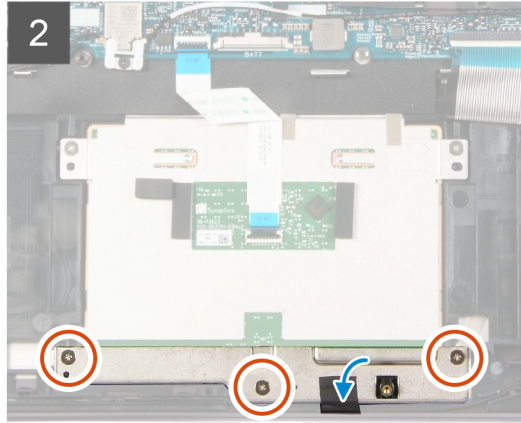
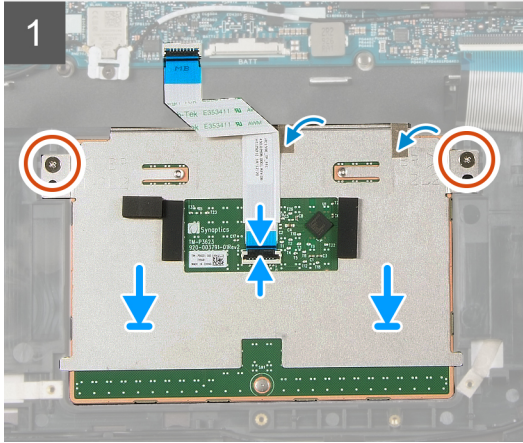
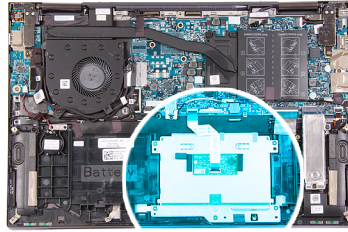
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



5x
M2x2



Steps

1. Slide the touchpad into the slot on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the touchpad to the palm-rest and keyboard assembly.
3. Adhere the tape that secures the touchpad to the palm-rest and keyboard assembly.
4. Slide the touchpad cable into the connector on the touchpad and close the latch to secure the cable.
5. Place the touchpad bracket into the slot on the palm-rest and keyboard assembly.
6. Replace the three screws (M2x2) that secure the touchpad bracket to the palm-rest and keyboard assembly.
7. Adhere the tape that secures the speaker cable to the touchpad bracket.

Next steps

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

Pen-garage cable

Removing the pen-garage cable

Prerequisites

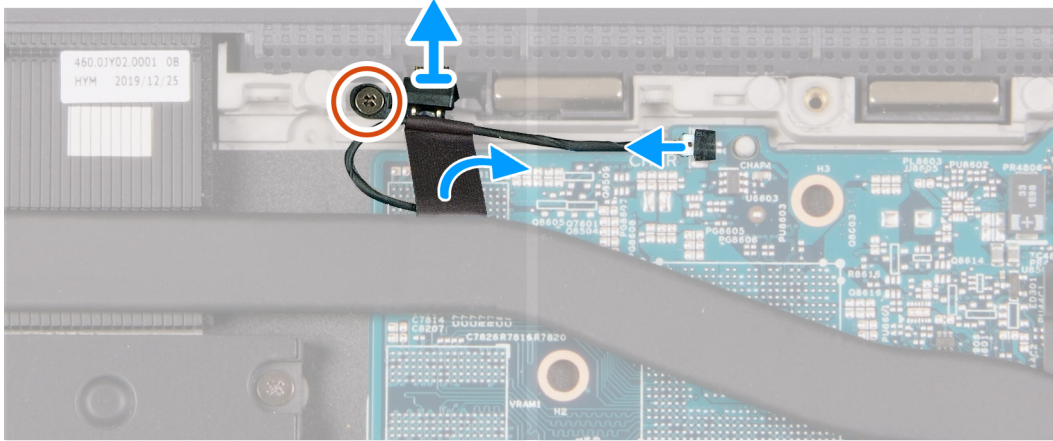
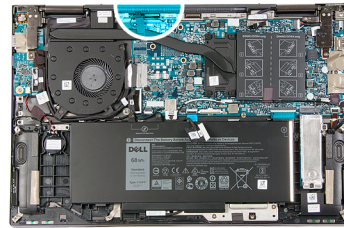
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

About this task

The following image indicates the location of the pen-garage cable and provides a visual representation of the removal procedure.



1x
M1.6x2.5



Steps

1. Disconnect the pen-garage cable from the system board.
2. Peel the tape that secures the pen-garage cable to the system board.
3. Remove the screw (M1.6x2.5) that secures the pen-garage cable to the palm-rest and keyboard assembly.
4. Lift the pen-garage cable off the palm-rest and keyboard assembly.

Installing the pen-garage cable

Prerequisites

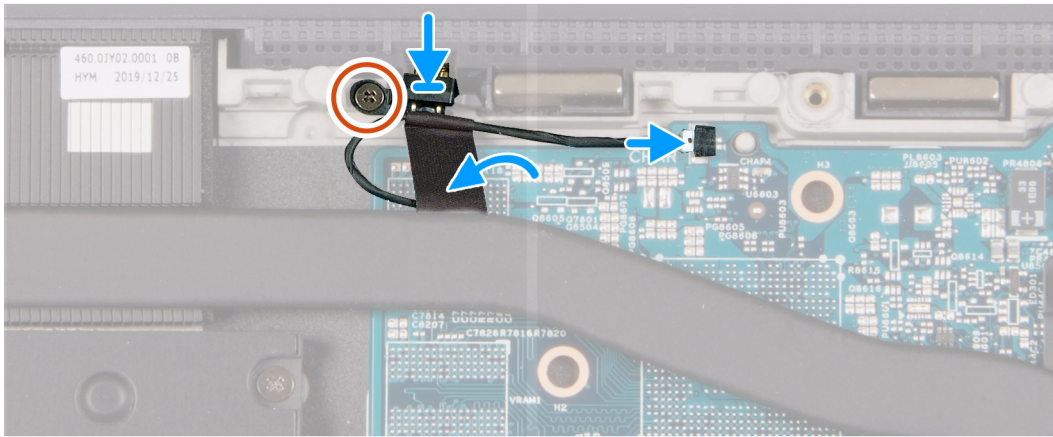
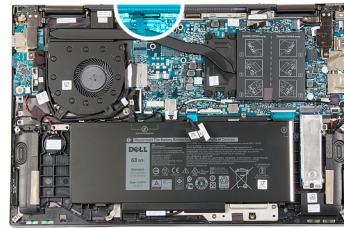
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the pen-garage cable and provides a visual representation of the installation procedure.



1x
M1.6x2.5



Steps

1. Align the screw hole on the pen-garage cable with the screw hole on the palm-rest and keyboard assembly.
2. Replace the screw (M1.6x2.5) that secures the pen-garage cable to the palm-rest and keyboard assembly.
3. Adhere the tape to secure the pen-garage cable to the system board.
4. Connect the pen-garage cable to the system board.

Next steps

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

Solid-state drive

Removing the M.2 2230 solid-state drive

Prerequisites

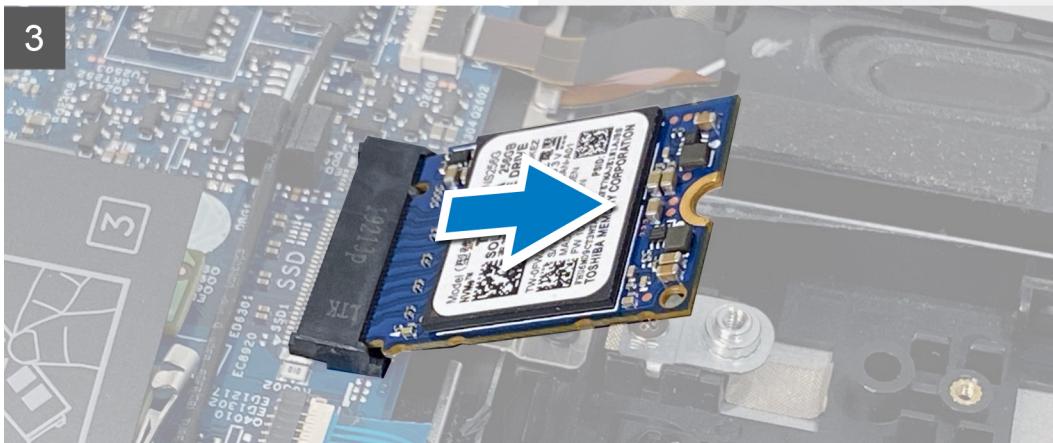
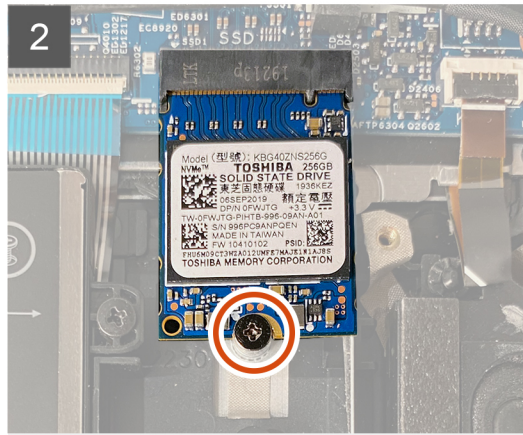
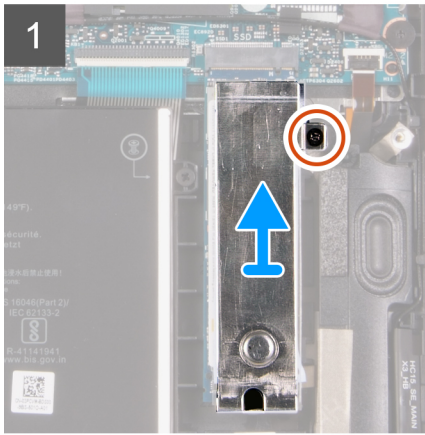
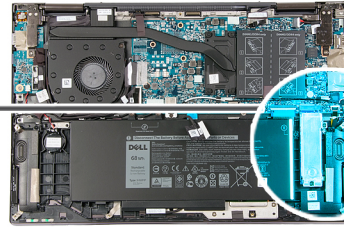
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

About this task

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



2x
M2x3



Steps

1. Remove the screw (M2x3) that secure the solid-state drive thermal bracket to the palm-rest and keyboard assembly.
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

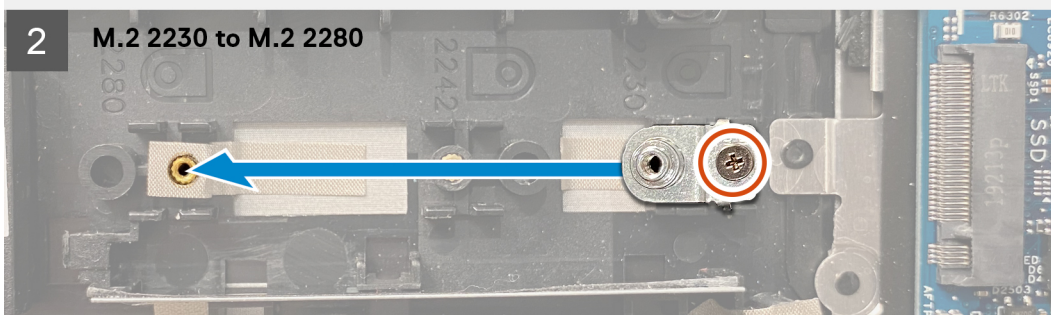
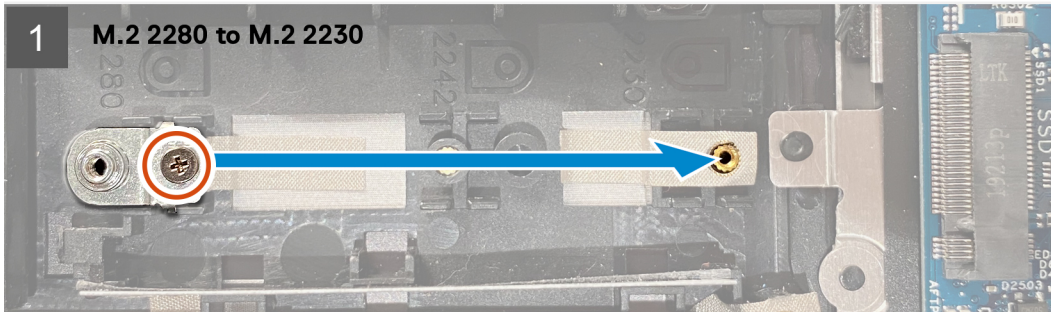
This computer supports two solid-state drive form factors.

- 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 form factor.



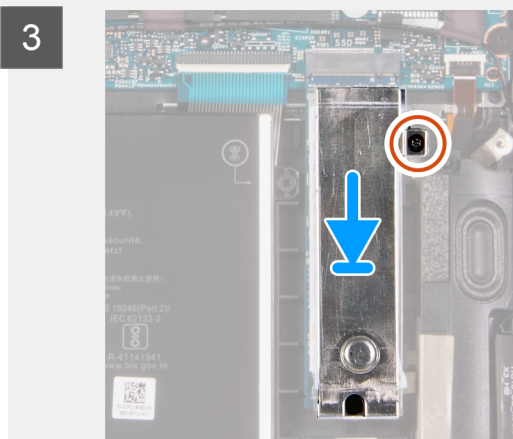
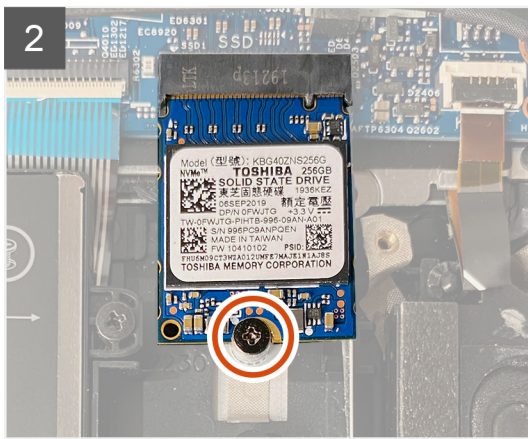
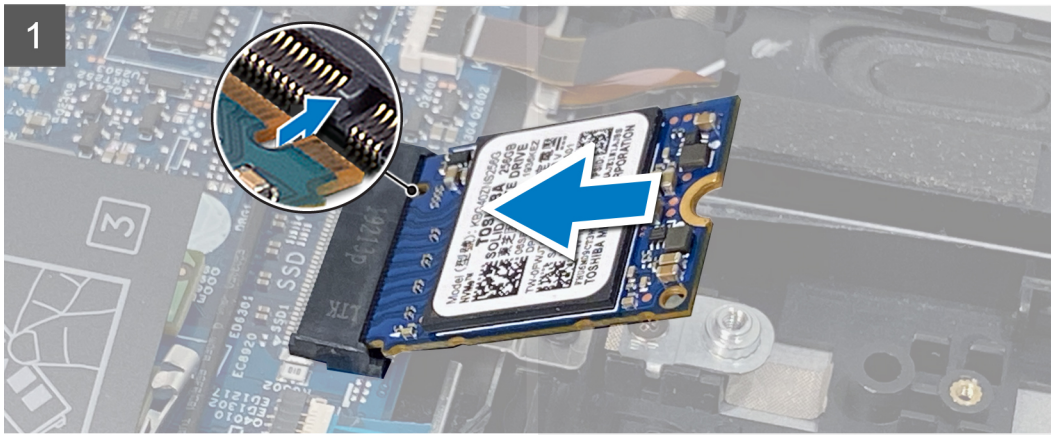
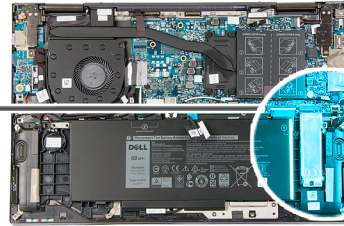
1x
M1.6x2.5



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



2x
M2x3



NOTE: Perform step 1 to step 3 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. Shift the solid-state drive bracket to the other side of the solid-state drive slot.
3. Align the screw hole on the solid-state drive bracket with the screw hole 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. Slide the solid-state drive firmly into the solid-state drive slot at an angle.
6. Replace the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
7. Align the screw hole on the solid-state drive thermal bracket with the screw hole on the palm-rest and keyboard assembly.
8. Replace the screw (M2x3) that secure the solid-state drive thermal bracket to the palm-rest and keyboard assembly.

Next steps

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

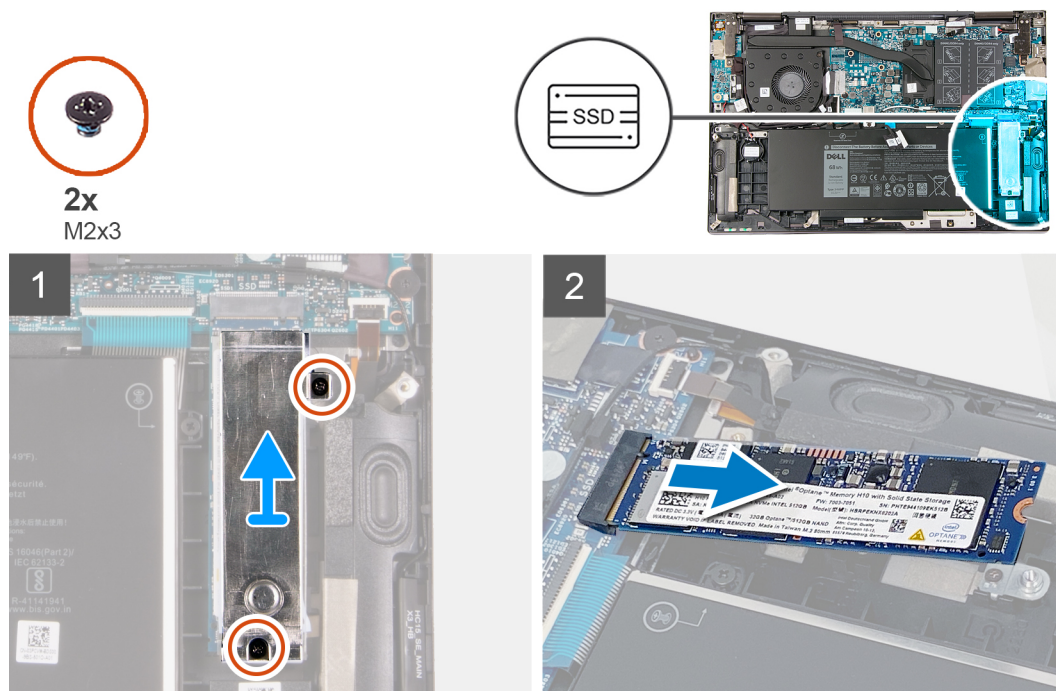
Removing the M.2 2280 solid-state drive

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



Steps

1. Remove the two screws (M2x3) that secure the solid-state drive thermal bracket to the palm-rest and keyboard assembly.
2. Lift the solid-state drive thermal bracket off the solid-state drive.
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

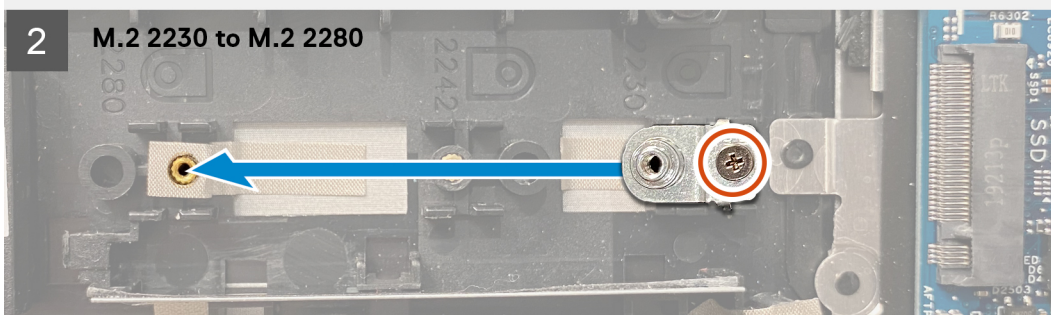
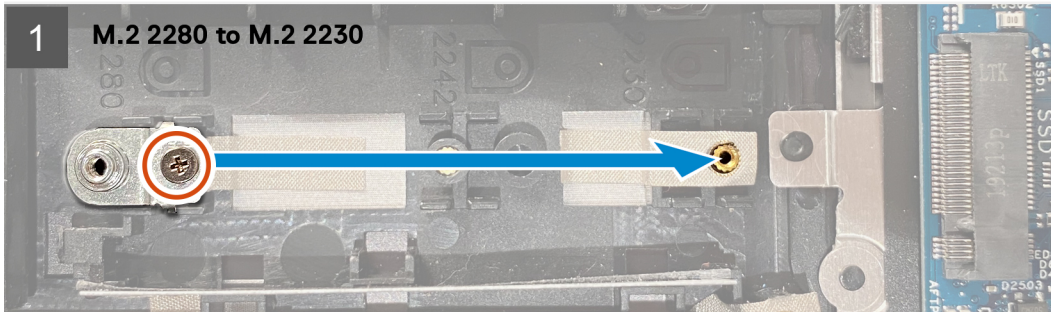
This computer supports two solid-state drive form factors.

- 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 screw mount based on form factor.



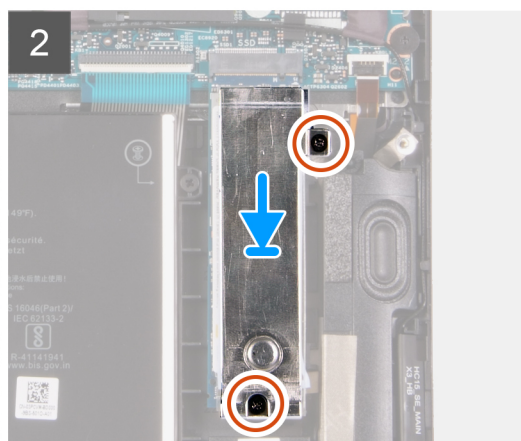
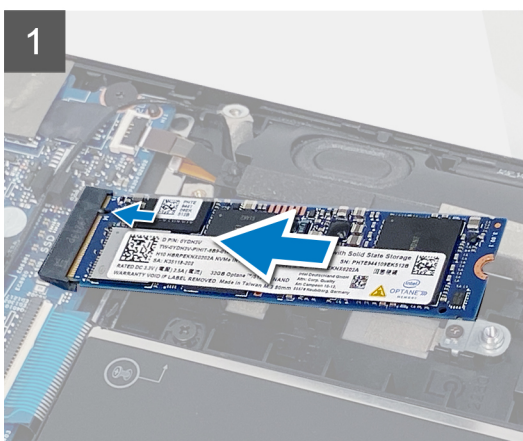
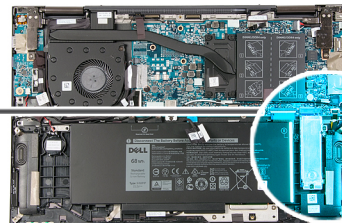
1x
M1.6x2.5



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



2x
M2x3



NOTE: Perform step 1 to step 3 if you are replacing the M.2 2280 solid-state drive with an M.2 2230 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. Shift the solid-state drive bracket to the other side of the solid-state drive slot.

3. Align the screw hole on the solid-state drive bracket with the screw hole 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. Align the screw hole on the solid-state drive thermal bracket with the screw hole on the palm-rest and keyboard assembly.
8. Replace the two screws (M2x3) that secures the solid-state drive thermal bracket to the palm-rest and keyboard assembly.

Next steps

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

Fan

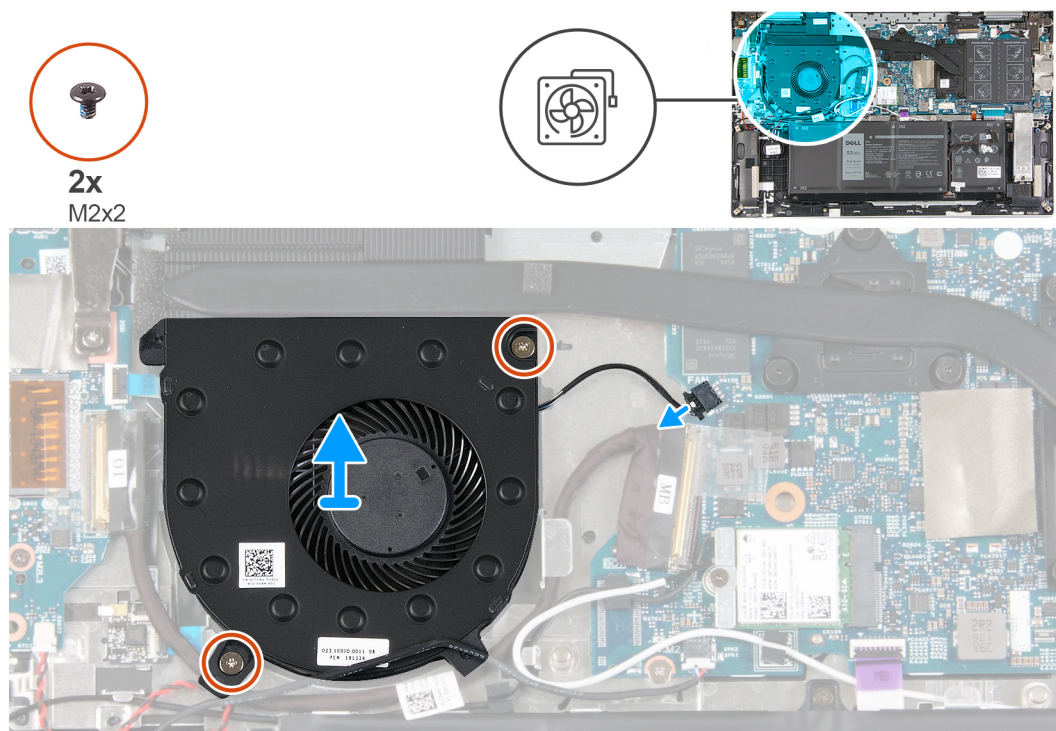
Removing the fan

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. 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 (M2x2) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan off the palm-rest and keyboard assembly.

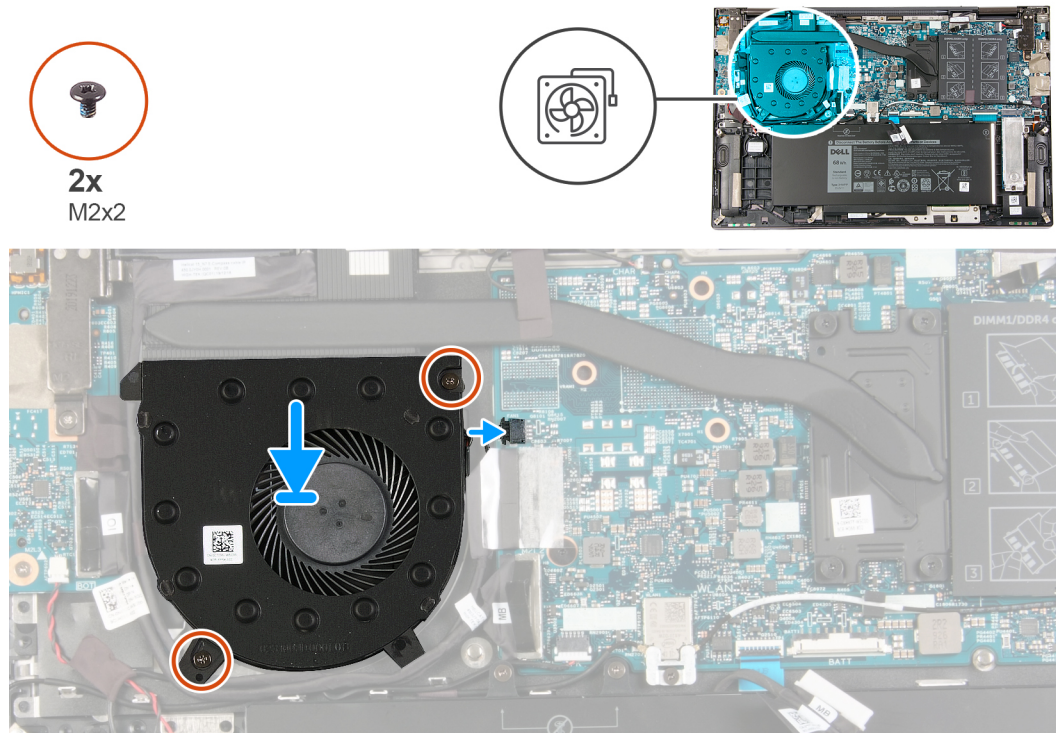
Installing the fan

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.



Steps

1. Using the alignment posts, place the fan on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the system 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](#).

I/O board

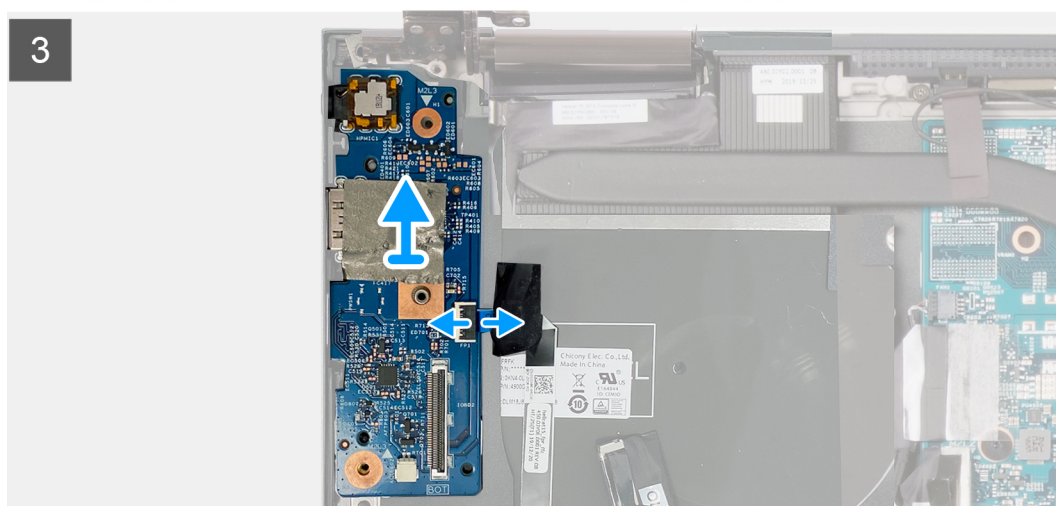
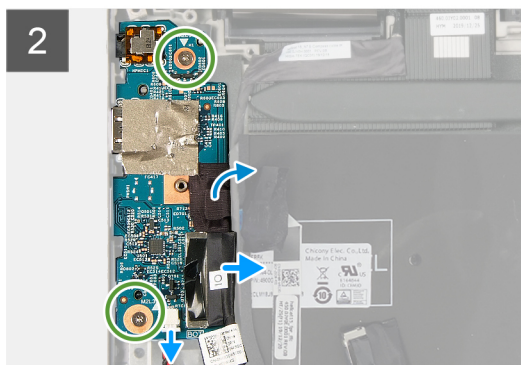
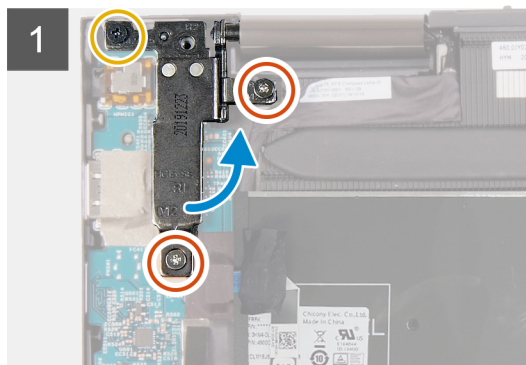
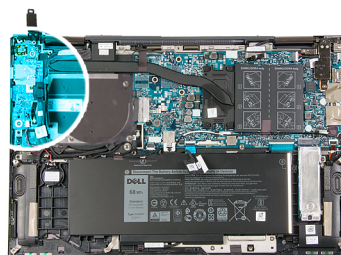
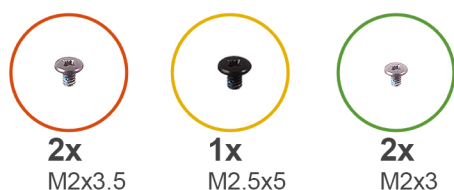
Removing the I/O board

Prerequisites

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

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 (M2x3.5) that secure the left display hinge to the I/O board and palm-rest and keyboard assembly.
2. Remove the screw (M2.5x5) that secures the left display hinge to the palm-rest and keyboard assembly.
3. Open the left display hinge at an angle of 90 degrees.
4. Using the pull tab, disconnect the I/O-board cable from the I/O board.
5. Disconnect the coin-cell battery cable from the I/O board.
6. Peel the tape that secures the fingerprint reader-cable to the I/O board.
7. Remove the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
8. Open the latch, and disconnect the fingerprint reader-cable from the I/O board.
9. Slide and lift the I/O board off the palm-rest and keyboard assembly.

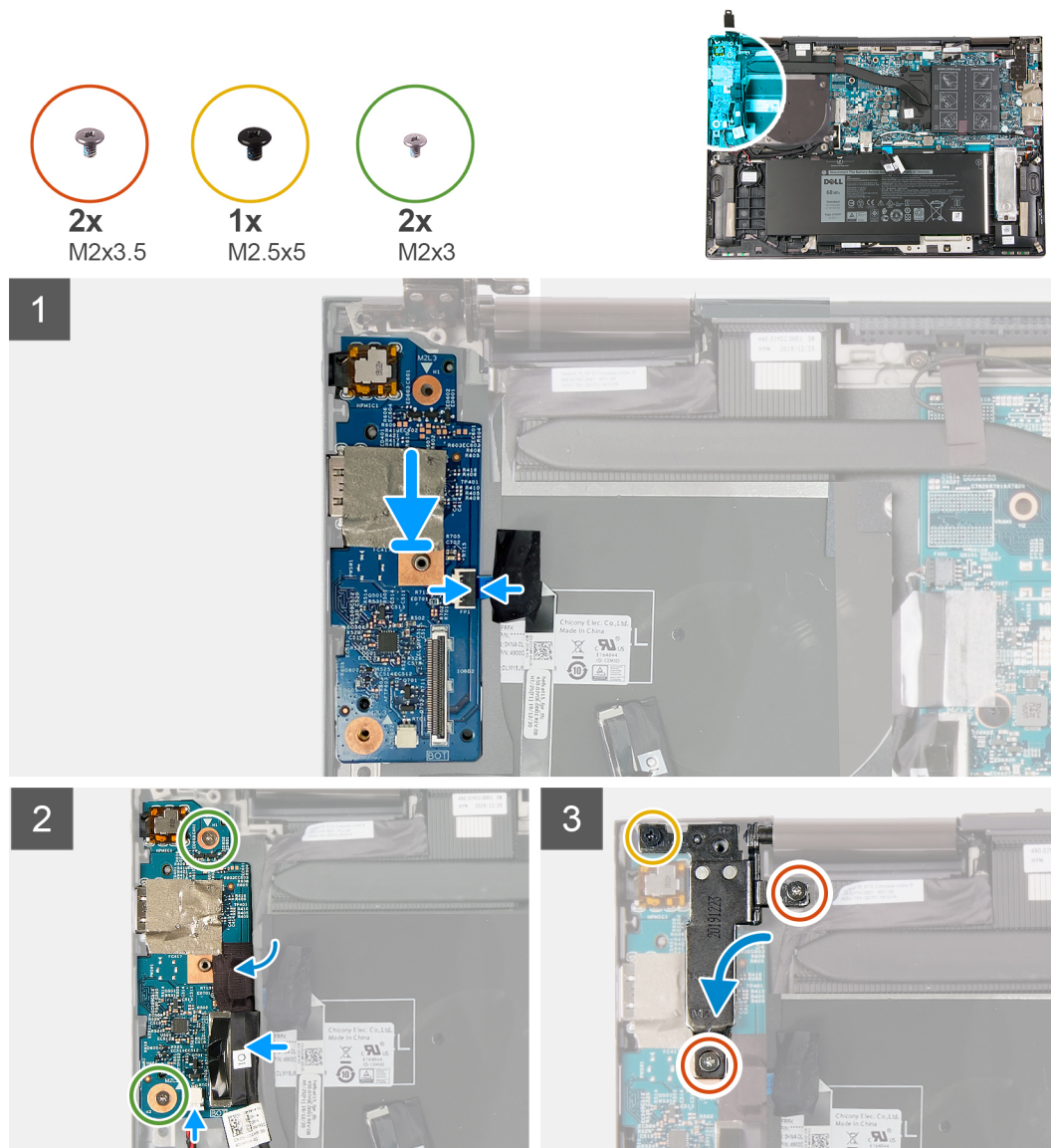
Installing the I/O board

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. Slide 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 I/O board.
6. Connect the coin-cell battery cable to the I/O board.
7. Adhere the tape that secures the fingerprint reader-cable to the I/O board.
8. Close the left display hinge.
9. Replace the two screws (M2x3.5) that secure the left display hinge to the I/O board and palm-rest and keyboard assembly.
10. Replace the screw (M2.5x5) that secures the left display hinge to the palm-rest and keyboard assembly.

Next steps

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

Power-button board

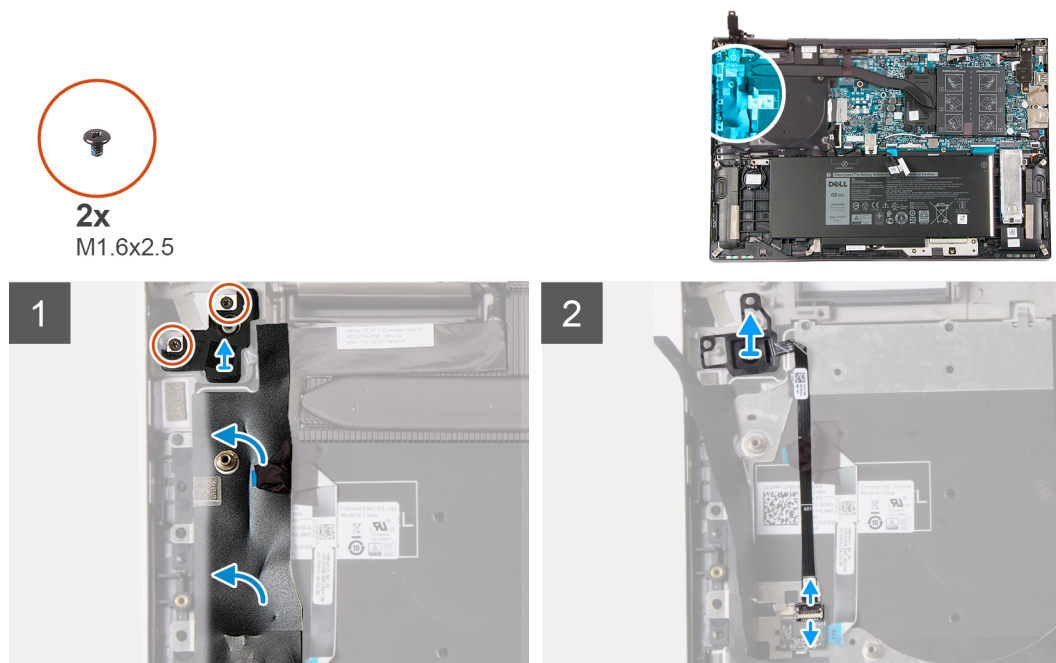
Removing the power-button board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [fan](#).
4. 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.



Steps

1. Remove the two screws (M1.6x2.5) that secure the power-button bracket to the palm-rest and keyboard assembly.
2. Lift the power-button bracket off the palm-rest and keyboard assembly.
3. Lift the flap to access the fingerprint reader-board.
4. Open the latch, and disconnect the power-button board cable from the fingerprint reader-board.
5. Lift the power button board, along with its cable, off the slot on the palm-rest and keyboard assembly.

Installing the power-button board

Prerequisites

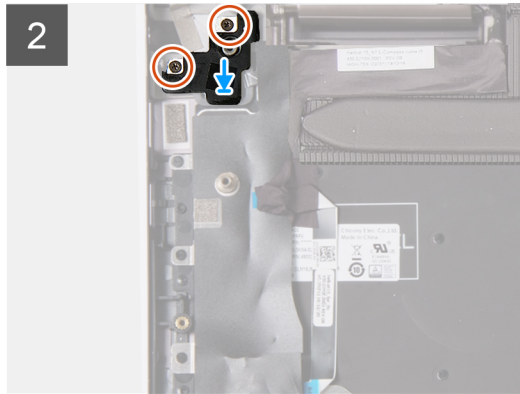
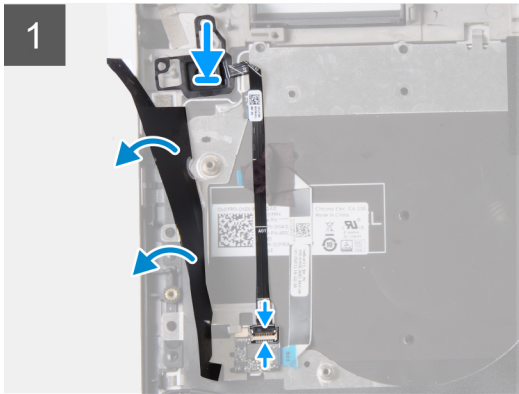
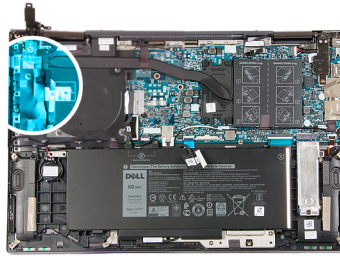
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



2x
M1.6x2.5



Steps

1. Lift the flap to access the fingerprint reader-board.
2. Align and place the power-button board, along with its cable, on the palm-rest and keyboard assembly.
3. Slide the power-button board cable into the connector on the fingerprint reader-board and close the latch to secure the cable.
4. Align the screw holes on the power-button board bracket with the screw holes on the palm-rest and keyboard assembly.
5. Replace the two screws (M1.6x2.5) that secure power-button board bracket to the palm-rest and keyboard assembly.

Next steps

1. Install the [I/O board](#).
2. Install the [fan](#).
3. Install the [base cover](#).
4. Follow the procedure in [After working inside your computer](#).

Fingerprint reader daughter-board

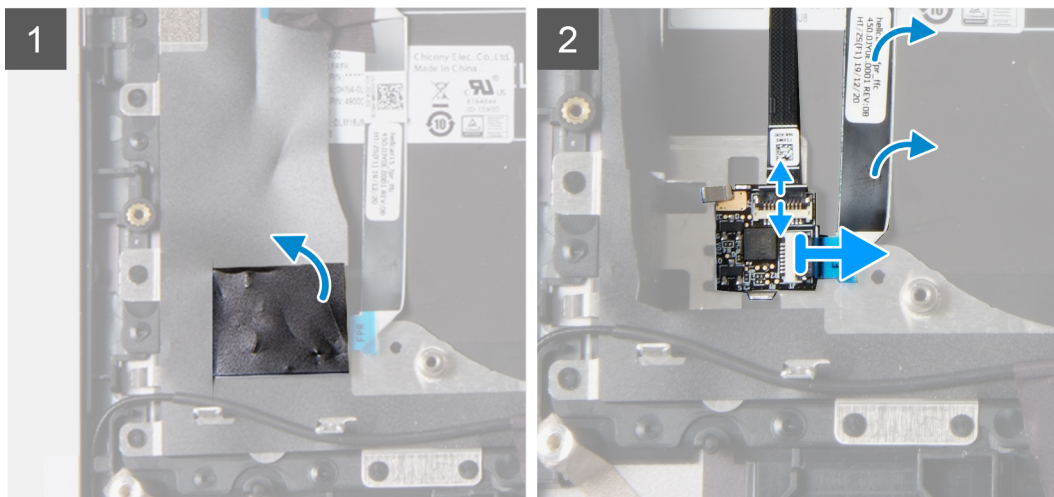
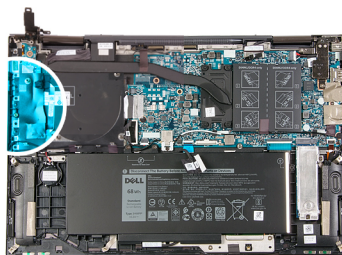
Removing the fingerprint reader daughter-board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [fan](#).
4. Remove the [I/O board](#).

About this task

The following image indicates the location of the fingerprint reader daughter-board and provides a visual representation of the removal procedure.



Steps

1. Lift the flap to access the fingerprint reader-board.
2. Open the latch, and disconnect the power button board-cable from the fingerprint reader-board.
3. Peel the fingerprint reader-board cable from the palm-rest and keyboard assembly.
4. Lift the fingerprint reader daughter-board, along with its cable, off the palm-rest and keyboard assembly.

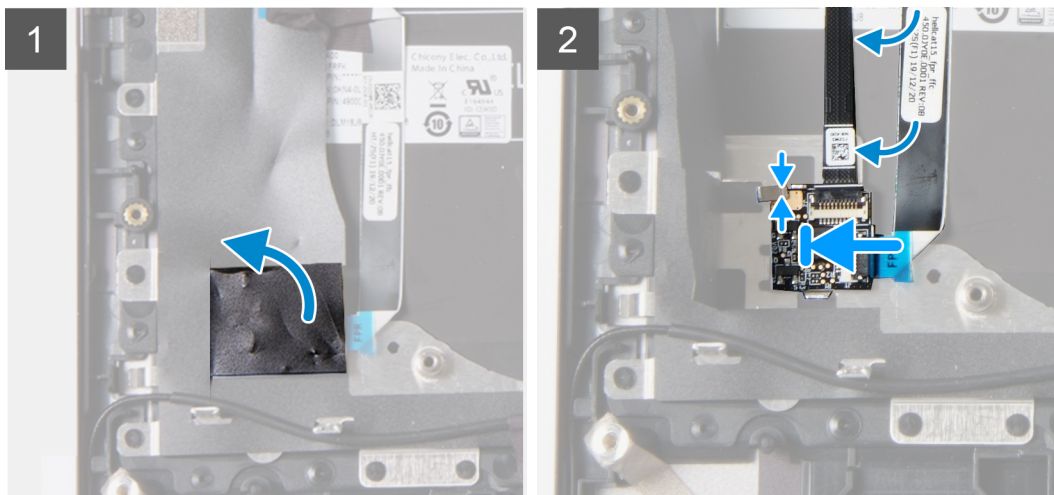
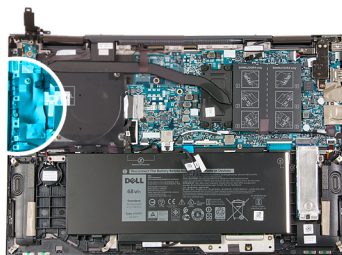
Installing the fingerprint reader daughter-board

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 fingerprint reader daughter-board and provides a visual representation of the installation procedure.



Steps

1. Lift the flap to access the fingerprint reader daughter-board slot.
2. Adhere the fingerprint reader-board cable to the palm-rest and keyboard assembly.
3. Align and place the fingerprint reader board, along with its cable, on the slot of the palm-rest and keyboard assembly.
4. Slide the power button board-cable into the connector on the fingerprint reader-board and close the latch to secure the cable.

Next steps

1. Install the [I/O board](#).
2. Install the [fan](#).
3. Install the [base cover](#).
4. Follow the procedure in [After working inside your computer](#).

Display assembly

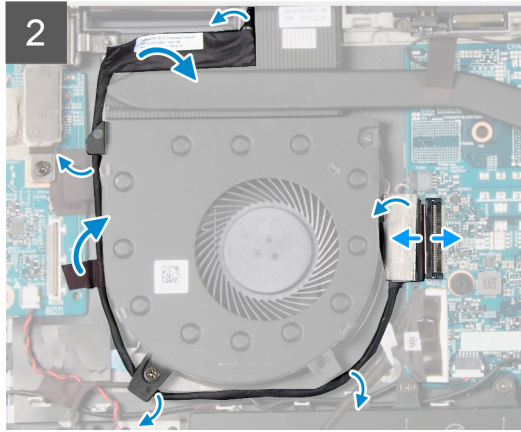
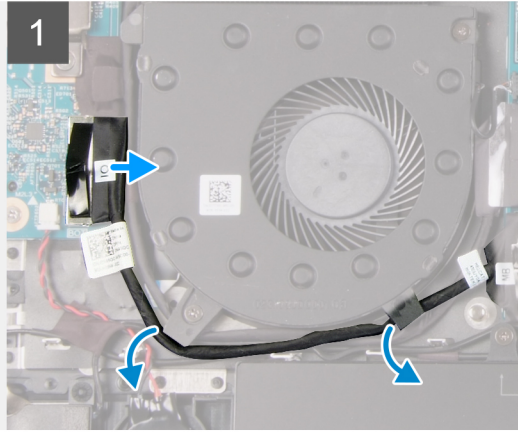
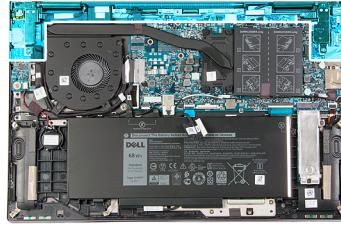
Removing the display assembly

Prerequisites

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

About this task

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





Steps

1. Using the pull tab, disconnect the I/O-board cable from the I/O board.
2. Remove the I/O-board cable from the routing guides on the fan.
3. Open the latch, and disconnect the touchscreen cable from the system board.
4. Peel the tape that secures the touchscreen cable to the heat sink.
5. Remove the touchscreen cable from the routing guides on the fan and palm-rest and keyboard assembly.
6. Open the display at an angle of 90 degrees and place the computer at the edge of a table.
7. Remove the four screws (M2x3.5) that secure the display hinges to the palm-rest and keyboard assembly.
8. Remove the two screws (M2.5x5) that secure the display hinges to the palm-rest and keyboard assembly.
9. Lift 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

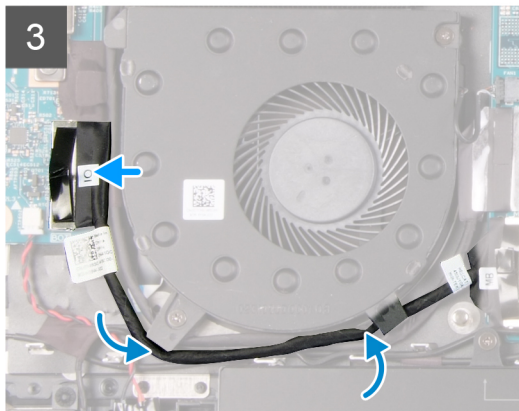
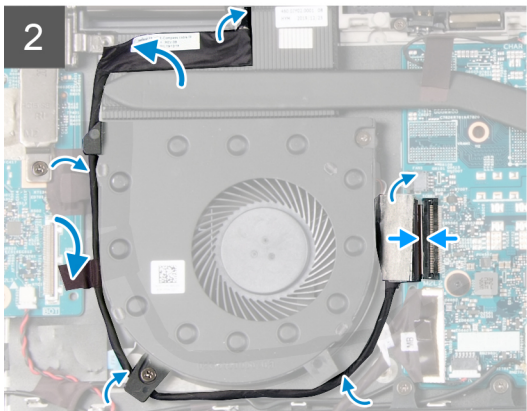
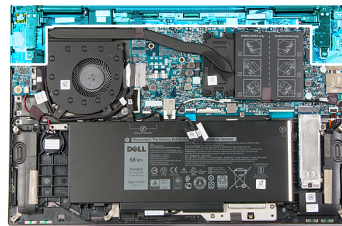
The following image indicates the location of the display assembly and provides a visual representation of the installation procedure.



4x
M2x3.5



2x
M2.5x5



Steps

1. Open the hinges to 90 degrees, and place the display assembly on the palm-rest and keyboard assembly.
2. Replace the four screws (M2x3.5) that secure the display hinges to the palm-rest and keyboard assembly.
3. Replace the two screws (M2.5x5) that secure the display hinges to the palm-rest and keyboard assembly.
4. Close the display, and turn the computer over.
5. Route the display cable through the routing guides on the fan and palm-rest and keyboard assembly.

6. Adhere the tape that secures the touchscreen cable to the palm-rest and keyboard assembly.
7. Slide the touchscreen cable into the connector on the system board and close the latch to secure the cable.
8. Adhere the tape that secures the touchscreen cable to the heat sink.
9. Route the I/O-board cable through the routing guides on the fan.
10. Connect the I/O-board cable to the connector on the I/O board.

Next steps

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

System board

Removing the system board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [coin-cell battery](#).
5. Remove the [memory modules](#).
6. Remove the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), as applicable.
7. Remove the [fan](#).
8. Remove the [heat sink](#) — for computers with discrete graphics card or [heat sink](#) — for computers with integrated graphics card, as applicable.

About this task

The following image indicates the connectors on your system board.

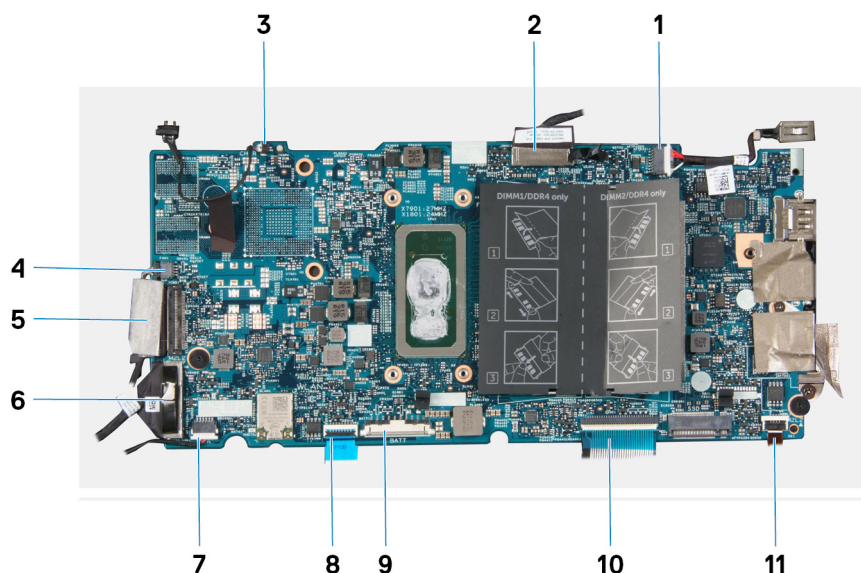
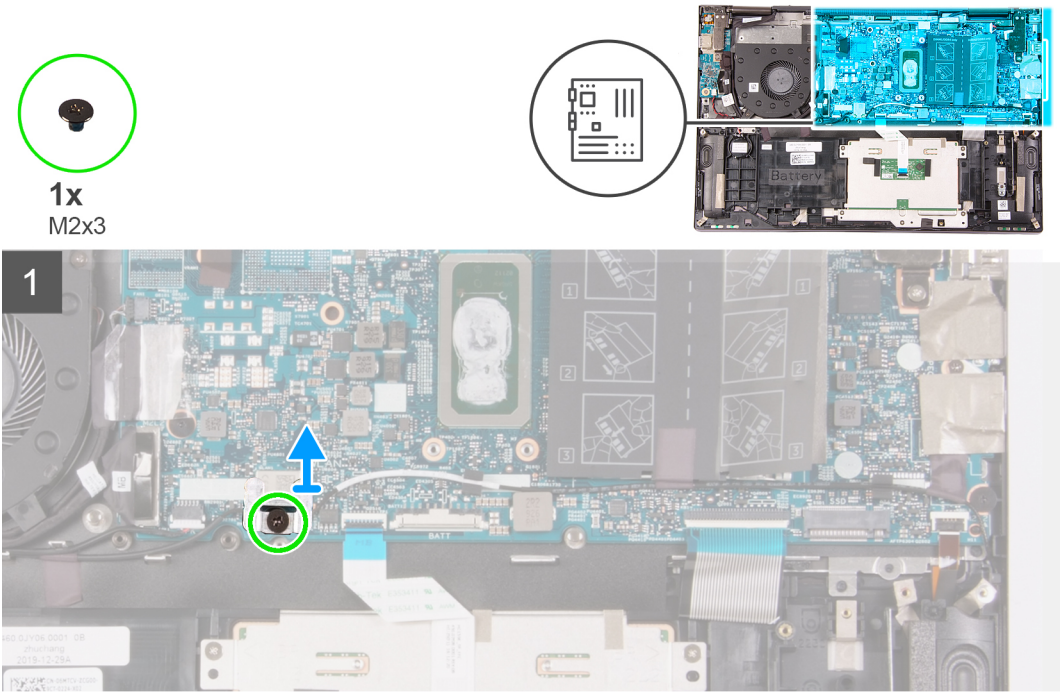
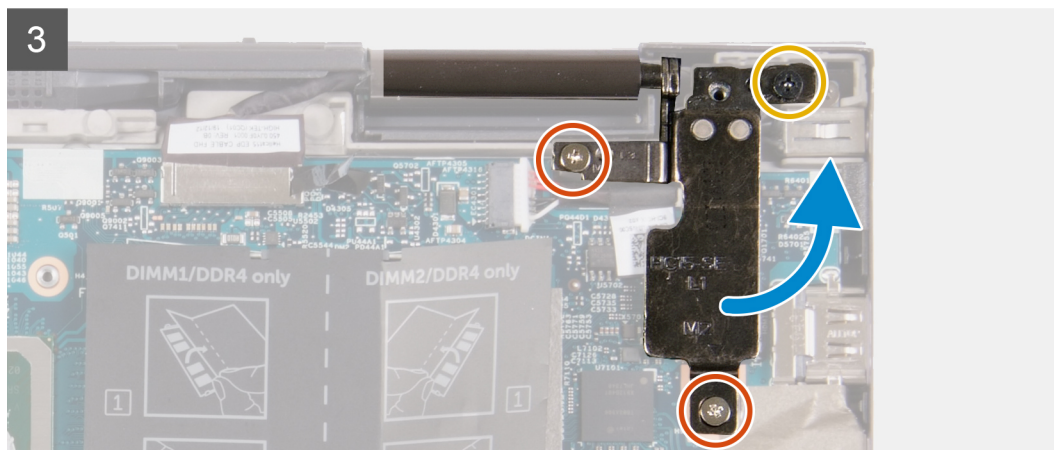
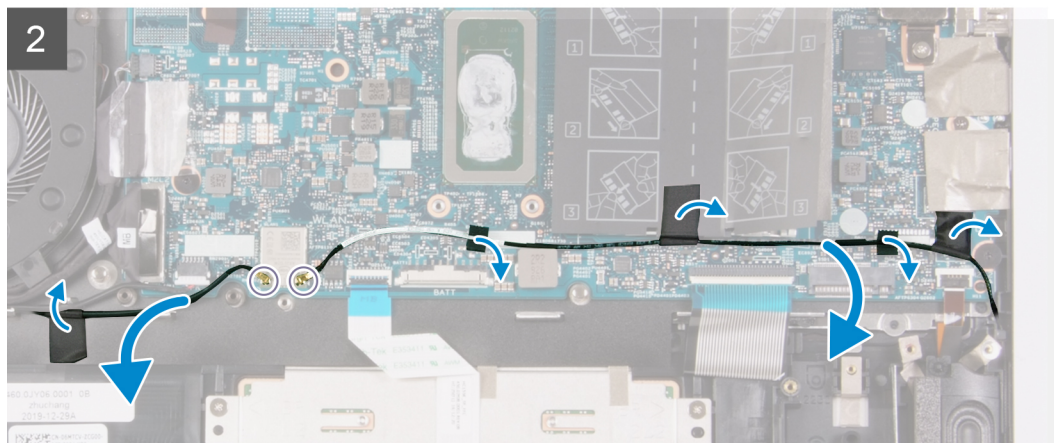
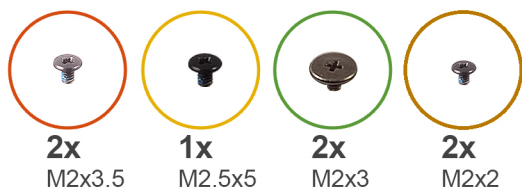


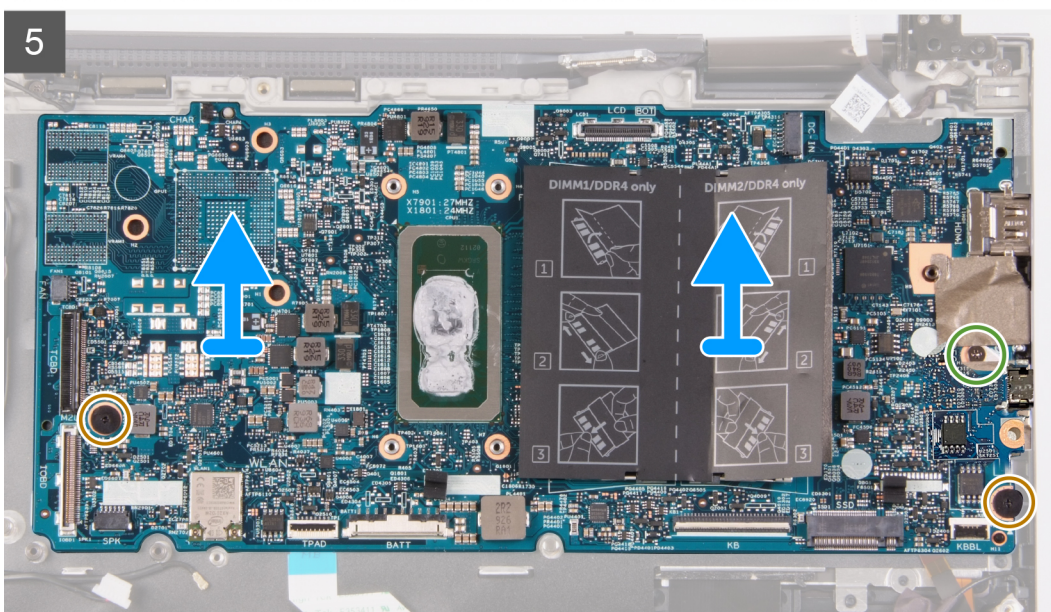
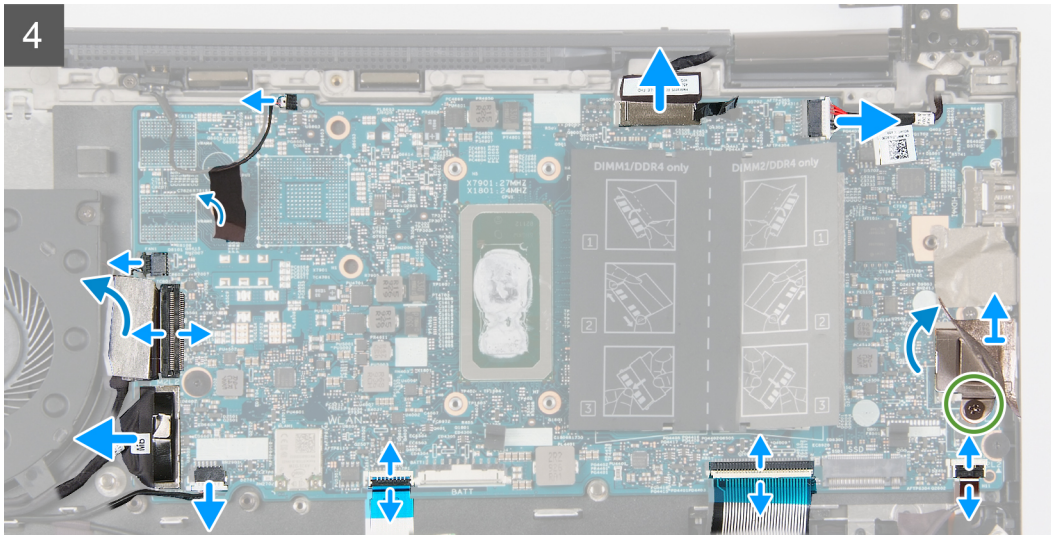
Figure 1. System-board connectors

- | | |
|-----------------------------|--------------------|
| 1. Power-adaptor port cable | 2. Display cable |
| 3. Pen-garage cable | 4. Fan cable |
| 5. Touchscreen cable | 6. I/O board cable |
| 7. Speaker cable | 8. Touchpad cable |
| 9. Battery cable | 10. Keyboard cable |
| 11. Keyboard backlit cable | |

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







Steps

1. Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card and palm-rest and keyboard assembly.
2. Remove the wireless-card bracket from the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Peel the tape that secures the antenna cables to the system board and lift the antenna cables off the system board and palm-rest and keyboard assembly.
5. Remove the two screws (M2x3.5) that secures the right display hinge to the system board and palm-rest and keyboard assembly.
6. Remove the screw (M2.5x5) that secures the right display hinge to the system board and palm-rest and keyboard assembly.
7. Open the hinge at an angle of 90 degrees.
8. Peel the tape that secures the pen-garage cable to the system board.
9. Disconnect the pen-garage cable from the system board.
10. Disconnect the fan cable from the system board.
11. Peel the tape that secures the touchscreen cable to the palm-rest and keyboard assembly.
12. Open the latch, and disconnect the touchscreen cable from the system board.
13. Using the pull tab, disconnect the I/O cable from the system board.
14. Disconnect the speaker cable from the system board.
15. Open the latch, and disconnect the touchpad cable from the system board.

16. Open the latch, and disconnect the keyboard cable from the system board.
17. Open the latch, and disconnect the keyboard backlit cable from the system board.
18. Lift the flap to access the USB Type-C port.
19. Remove the two screws (M2x3) that secures the USB Type-C bracket to the system board and palm-rest and keyboard assembly.
20. Disconnect the power-adaptor port cable from the system board.
21. Using the pull tab, disconnect the display cable from the system board.
22. Remove the two screws (M2x2) that secures the system board to 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.

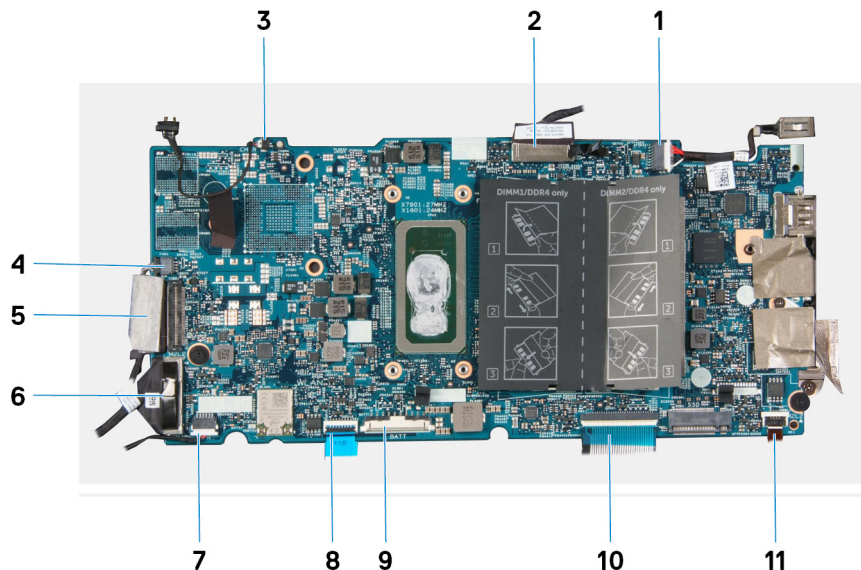
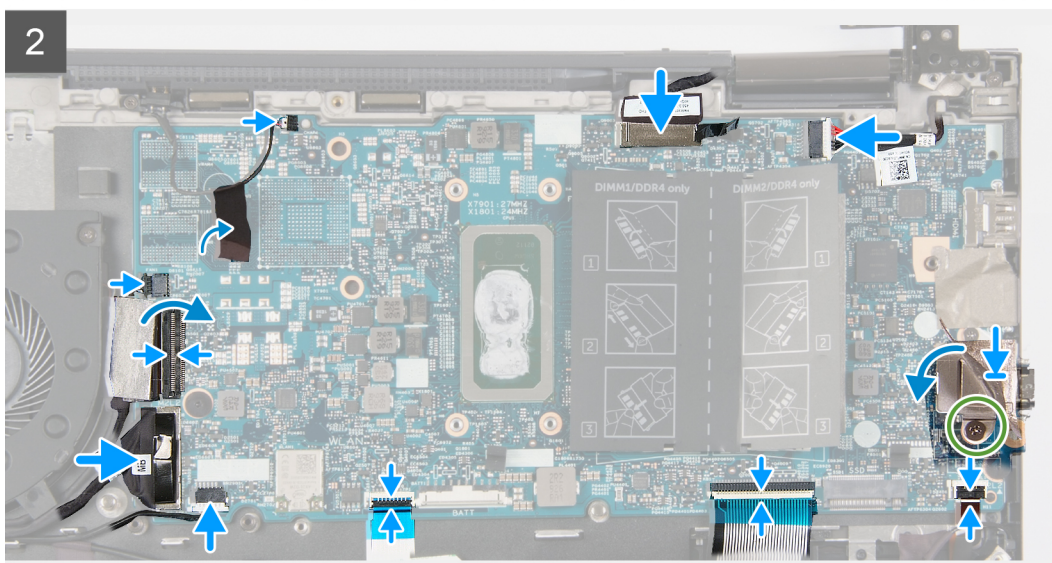
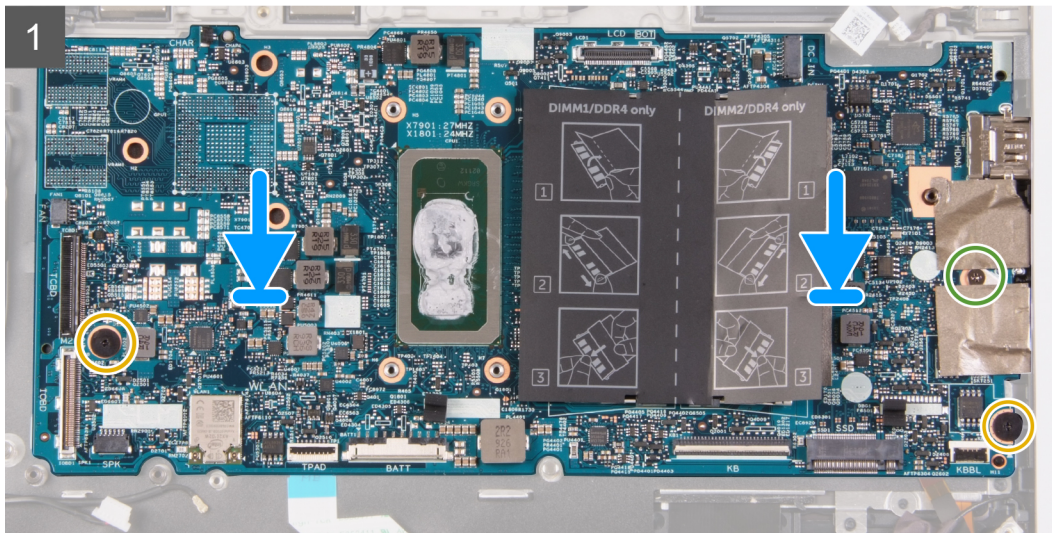
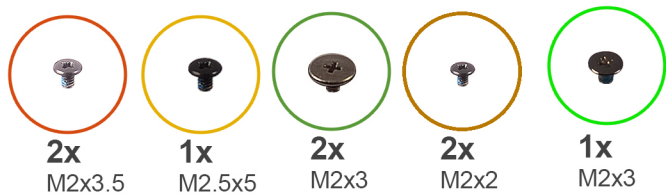
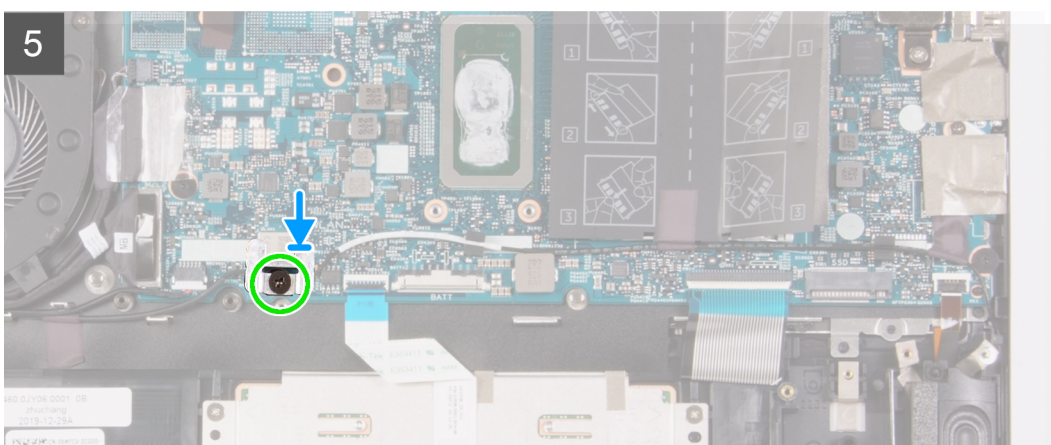
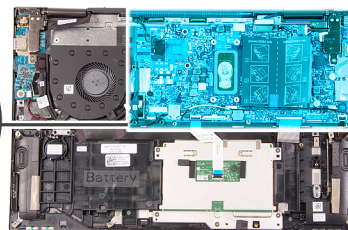
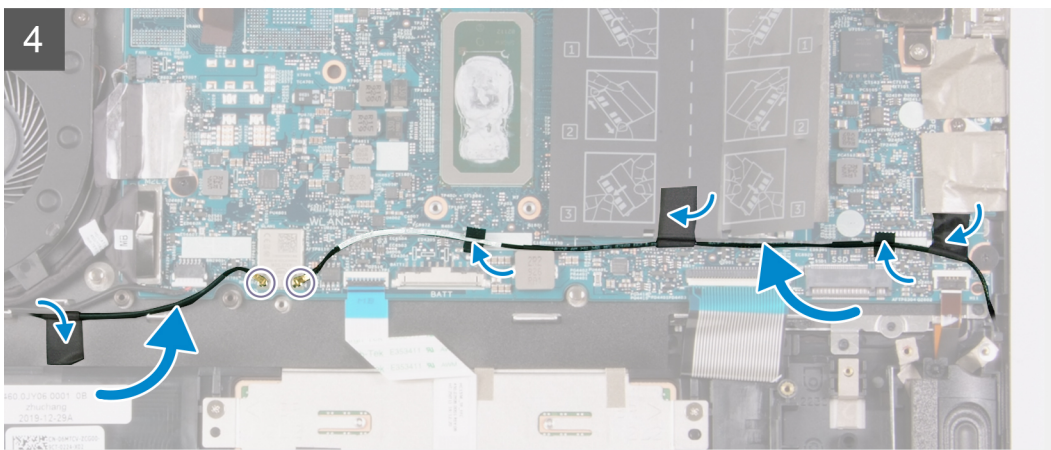
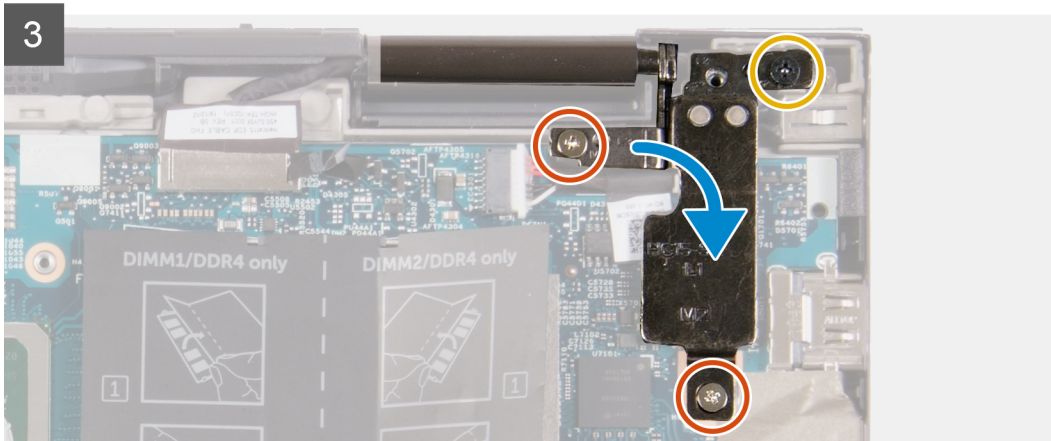


Figure 2. System-board connectors

- | | |
|-----------------------------|--------------------|
| 1. Power-adaptor port cable | 2. Display cable |
| 3. Pen-garage cable | 4. Fan cable |
| 5. Touchscreen cable | 6. I/O board cable |
| 7. Speaker cable | 8. Touchpad cable |
| 9. Battery cable | 10. Keyboard cable |
| 11. Keyboard backlit cable | |

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





Steps

1. Align and place the system board on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secures the system board to the palm-rest and keyboard assembly.
3. Connect the display cable on to the connector on the system board.

4. Connect the power-adaptor cable on to the connector on the system board.
5. Lift the flap to access the USB Type-C port.
6. Align the screw holes on the USB Type-C port bracket with the screw holes on the system board and palm-rest and keyboard assembly.
7. Replace the two screws (M2x3) that secure the USB Type-C port bracket to the system board and palm-rest and keyboard assembly.
8. Connect the keyboard backlit cable to the system board and close the latch to secure the cable.
9. Connect the keyboard cable to the system board and close the latch to secure the cable.
10. Connect the touchpad cable to the system board and close the latch to secure the cable.
11. Connect the speaker cable to the system board.
12. Connect the I/O cable to the system board.
13. Connect the touchscreen cable to the system board and close the latch to secure the cable.
14. Adhere the tape that secures the touchscreen cable to the palm-rest and keyboard assembly.
15. Connect the fan cable on to the connector on the system board.
16. Connect the pen-garage cable on to the connector on the system board.
17. Adhere the tape that secures the pen-garage cable to the system board.
18. Close the display hinge.
19. Replace the two screws (M2x3.5) that secures the right display hinge to the system board and palm-rest and keyboard assembly.
20. Replace the screw (M2.5x5) that secures the right display hinge to the system board and palm-rest and keyboard assembly.
21. Adhere the tape that secures the antenna cables to the system board and route the antenna cables on the system board and palm-rest and keyboard assembly.
22. Connect the antenna cables to the wireless card on the system board.

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

Table 2. Antenna-cable color scheme

Connectors on the wireless card	Antenna-cable color
Main (white triangle)	White
Auxiliary (black triangle)	Black

23. Align the screw hole on the wireless-card bracket with the screw hole on the wireless card and palm-rest and keyboard assembly.
24. Replace the screw (M2x3) that secures the wireless-card bracket to the wireless card and palm-rest and keyboard assembly.

Next steps

1. Install the [heat sink — for computers with discrete graphics card](#) or [heat sink — for computers with integrated graphics card](#), as applicable.
2. Install the [fan](#).
3. Install the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), as applicable.
4. Install the [memory modules](#).
5. Install the [coin-cell battery](#).
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

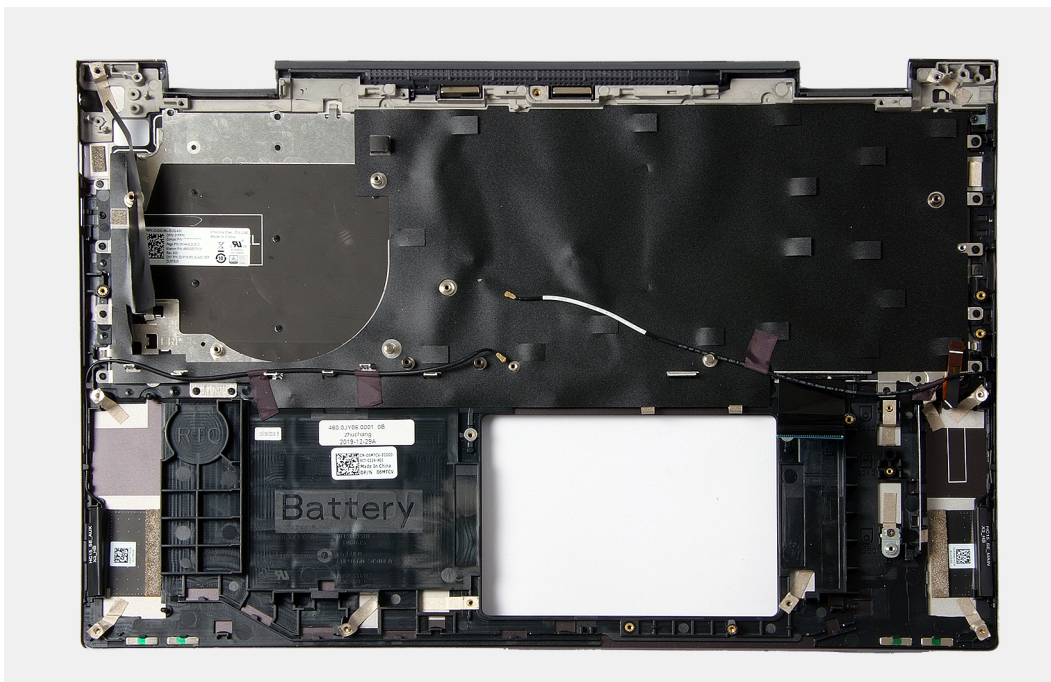
1. Follow the procedure in [Before working inside your computer](#).

2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [coin-cell battery](#).
5. Remove the [memory modules](#).
6. Remove the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), as applicable.
7. Remove the [fan](#).
8. Remove the [I/O board](#).
9. Remove the [speakers](#).
10. Remove the [heat sink](#) — for computers with discrete graphics card or [heat sink](#) — for computers with integrated graphics card, as applicable.
11. Remove the [touchpad](#).
12. Remove the [power-adapter port](#).
13. Remove the [power-button board](#).
14. Remove the [fingerprint reader daughter-board](#).
15. Remove the [display assembly](#).
16. Remove the [pen-garage cable](#).
17. Remove the [system board](#).

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

About this task

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.

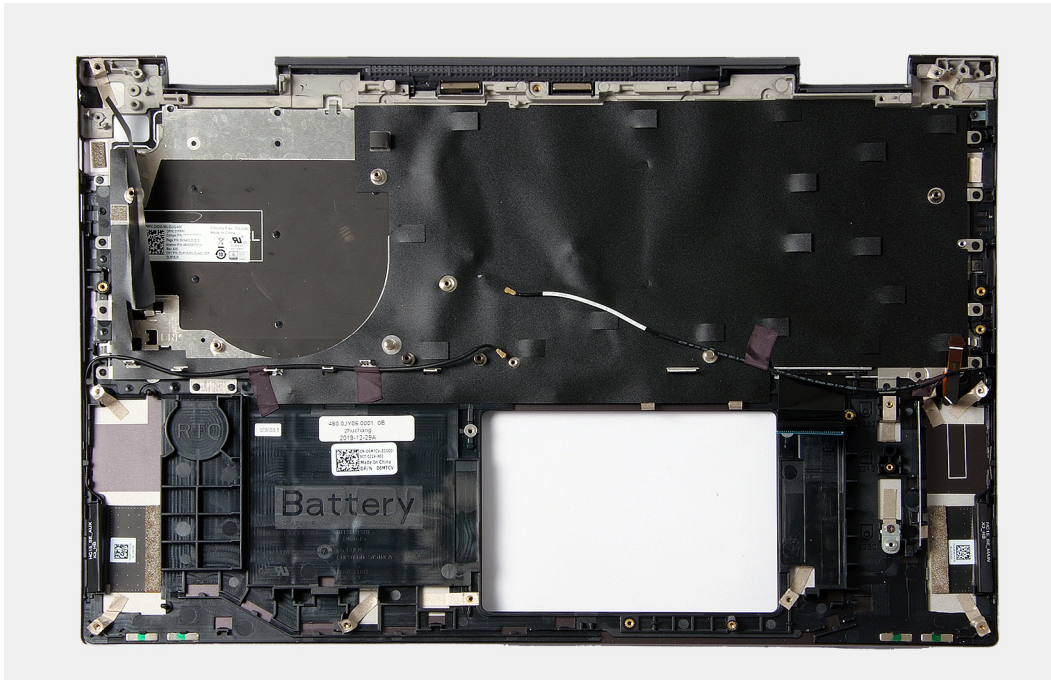
Installing the palm-rest and keyboard assembly

Prerequisites

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

About this task

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 [pen-garage cable](#).
3. Install the [display assembly](#).
4. Install the [fingerprint reader daughter-board](#).
5. Install the [power-button board](#).
6. Install the [touchpad](#).
7. Install the [power-adapter port](#).
8. Install the [fan](#).
9. Install the [heat sink](#) — for computers with discrete graphics card or [heat sink](#) — for computers with integrated graphics [card](#), as applicable.
10. Install the [speakers](#).
11. Install the [I/O board](#).
12. Install the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), as applicable.
13. Install the [memory modules](#).
14. Install the [coin-cell battery](#).
15. Install the [battery](#).
16. Install the [base cover](#).
17. 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 Based article, Drivers and Downloads FAQ [SLN128938](#).

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

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

Use the BIOS Setup program for the following purposes:

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

Entering BIOS setup program

About this task

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

Navigation keys



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

Table 3. Navigation keys

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


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.

One time boot menu

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

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

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

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

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

System setup options


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

Table 4. System setup options—System information menu

Overview		
Inspiron 7500 2n1		
BIOS Version		Displays the BIOS version number.
Service Tag		Displays the Service Tag of the computer.
Asset Tag		Displays the Asset Tag of the computer.
Manufacture Date		Displays the manufacture date of the computer.
Ownership Date		Displays the ownership date of the computer.
Express Service Code		Displays the express service code of the computer.
Ownership Tag		Displays the ownership tag of the computer.
Signed Firmware Update		Displays whether the signed firmware update is enabled.
		Default: Enabled
Battery		
Primary		Displays the primary battery.
Battery Level		Displays the battery level.

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

Overview	
Battery State	Displays the battery state.
Health	Displays the battery health.
AC Adapter	Displays whether an AC adapter is connected. If connected, the AC adapter type.
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.

Table 5. System setup options—Boot Configuration menu

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

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

Boot Configuration	
	By default, UEFI Hard Drive is selected
Secure Boot	Enables secure boot using only validated boot software.
Enable Secure Boot	
Secure Boot Mode	
Advanced Boot Options	
Enable UEFI Network Stack	Enables or disables UEFI Network Stack. Default: ON
UEFI Boot Path Security	Enables or disables the system to prompt the user to enter the Admin password when booting a UEFI boot path from the F12 boot menu. Default: Always Except Internal HDD

Table 6. System setup options—System Configuration menu

System Configuration	
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.
Storage Interface	
Port Enablement	Enables the selected onboard drives. Default: ON
SATA Operation	Configures operating mode of the integrated SATA hard drive controller. Default: RAID On. SATA is configured to support RAID (Intel Rapid Restore Technology).
Drive Information	Displays the information of various onboard drives.
Enable SMART Reporting	Enables or disables Self-Monitoring, Analysis, and Reporting Technology (SMART). Default: OFF
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	Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, Enable USB Boot Support is selected. By default, Enable External USB Ports is selected.
Thunderbolt Adapter Configuration	

Table 6. System setup options—System Configuration menu (continued)

System Configuration	
Enable Thunderbolt Technology Support	Enables or disables Thunderbolt Technology Support. Default: ON
Enable Thunderbolt Boot Support	Enables or disables Thunderbolt Boot Support. Default: OFF
EnableThunderbolt (and PCIe behind TBT) pre-boot modules	Enables or disables to allow or disallow PCIe devices to be connected through a Thunderbolt adapter during pre-boot. Default: OFF
Miscellaneous Devices	Enables or disables various onboard devices.
Enable Camera	Enables or disables the camera. By default, Enable Camera is selected.
Touchscreen	Enables or disables the touchscreen. By default, Touchscreen is selected.
Enable Fingerprint Reader Device	Enables or disables the Fingerprint Reader Device. By default, Enable Fingerprint Reader Device is selected.
Enable MediaCard	Enables to switch all media cards On/Off or set the media card to read-only state. By default, Enable Secure Digital (SD) Card is selected.
Keyboard Illumination	Configures the operating mode of the keyboard illumination feature. Default: Bright. Enable the keyboard illumination feature at 100% brightness level.
Keyboard Backlight Timeout on AC	Configures the timeout value for the keyboard when an AC adapter is connected to the computer. The keyboard backlight timeout value is only effect when the backlight is enabled. Default: 10 seconds
Keyboard Backlight Timeout on Battery	Configures the timeout value for the keyboard when the computer is running on battery. The keyboard backlight timeout value is only effect when the backlight is enabled. Default: 10 seconds

Table 7. System setup options—Video menu

Video	
LCD 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

Table 8. System setup options—Security menu

Security	
Enable Admin Setup Lockout	Enables or disables the user from entering BIOS Setup when an Admin Password is set. Default: OFF

Table 8. System setup options—Security menu (continued)

Security	
Password Bypass	<p>Bypass the System (Boot) Password and the internal hard drive password prompts during a system restart.</p> <p>Default: Disabled</p>
Enable Non-Admin Password Changes	<p>Enables or disables the user to change the system and hard drive password without the need for admin password.</p> <p>Default: ON</p>
Non-Admin Setup Changes	
Enable UEFI Capsule Firmware Updates	<p>Enables or disables BIOS updates through UEFI capsule update packages.</p> <p>Default: ON</p>
Absolute	<p>Enables, disables or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software.</p> <p>Default: Enabled</p>
TPM 2.0 Security On	<p>Select whether or not the Trusted Platform Model (TPM) is visible to the OS.</p> <p>Default: ON</p>
PPI Bypass for Enable Commands	<p>Enables or disables the OS to skip BIOS Physical Presence Interface (PPI) user prompts when issuing TPM PPI enabled and activate commands.</p> <p>Default: OFF</p>
PPI Bypass for Disable Commands	<p>Enables or disables The OS to skip BIOS PPI user prompts when issuing TPM PPI Disable and Deactivate commands.</p> <p>Default: OFF</p>
PPI Bypass for Clear Commands	<p>Enables or disables the operating system to skip BIOS Physical Presence Interface (PPI) user prompts when issuing the Clear command.</p> <p>Default: OFF</p>
Attestation Enable	<p>Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for signature operations.</p> <p>Default: ON</p>
Key Storage Enable	<p>Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for storing owner data.</p> <p>Default: ON</p>
SHA-256	<p>Enables or disables the BIOS and the TPM to use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot.</p> <p>Default: ON</p>
Clear	<p>Enables or disables the computer to clear the PTT owner information, and returns the PTT to the default state.</p> <p>Default: OFF</p>
TPM State	<p>Enables or disables the TPM. This is the normal operating state for the TPM when you want to use its complete array of capabilities.</p> <p>Default: Enabled</p>
SMM Security Mitigation	<p>Enables or disables additional UEFI SMM Security Mitigation protections.</p> <p>Default: OFF</p>

Table 8. System setup options—Security menu (continued)

Security	
Intel SGX	<p>NOTE: This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.</p> <p>Enables or disables the Intel Software Guard Extensions (SGX) to provide a secured environment for running code/storing sensitive information.</p> <p>Default: Software Control</p>

Table 9. System setup options—Passwords menu

Passwords	
Enable Strong Passwords	<p>Enables or disables strong passwords.</p> <p>Default: OFF</p>
Password Configuration	
Admin Password Min	<p>Specify the minimum number of characters allowed for Admin password.</p> <p>Default: 4</p>
Admin Password Max	<p>Specify the maximum number of characters allowed for Admin password.</p> <p>Default: 32</p>
System Password Min	<p>Specify the minimum number of characters allowed for System password.</p> <p>Default: 4</p>
System Password Max	<p>Specify the maximum number of characters allowed for System password.</p> <p>Default: 32</p>
Admin Password	<p>Sets, Changes, or deletes the administrator (admin) password (sometimes called the "setup" password).</p>
System Password	<p>Sets, Changes, or deletes the system password.</p>
Enable Master Password Lockout	<p>Enables or disables the master password support.</p> <p>Default: OFF</p>

Table 10. System setup options—Secure Boot menu

Secure Boot	
Enable Secure Boot	<p>Enables or disables the computer to boots using only validated boot software.</p> <p>Default: ON</p> <p>NOTE: For Secure Boot to be enabled, the computer needs to be in UEFI boot mode and the Enable Legacy Option ROMs option needs to be turned off.</p>
Secure Boot Mode	<p>Selects the Secure Boot operation mode.</p> <p>Default: Deployed Mode</p> <p>NOTE: Deployed Mode should be selected for normal operation of Secure Boot.</p>

Table 11. System setup options—Expert Key Management menu

Expert Key Management	
Enable Custom Mode	<p>Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified.</p> <p>Default: OFF</p>

Table 11. System setup options—Expert Key Management menu (continued)

Expert Key Management	
Custom Mode Key Management	Selects the custom values for expert key management. Default: PK

Table 12. System setup options—Performance menu

Performance	
Multi-Core Support	
Active Cores	Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores. Default: All Cores
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables or disables the Intel SpeedStep Technology to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. Default: ON
Enable C-State Control	
	Enables or disables the CPU's ability to enter and exit low-power states. 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 13. System setup options—Power Management menu

Power Management	
Wake on AC	
	Enables the computer to turn on and go to boot when AC power is supplied to the computer. Default: OFF
Wake on Dell USB-C Dock	
	Enables connecting a Dell USB-C Dock to wake the computer from Standby. Default: ON
Auto On Time	
	Enables the computer to automatically power on for defined days and times. Default: Disabled. The system will not automatically power up.
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.
Battery Charge 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.

Table 13. System setup options—Power Management menu (continued)

Power Management	
	Default: Adaptive. Battery settings are adaptively optimized based on your typical battery usage pattern.
Enable Advanced Battery Charge Configuration	Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day. Default: OFF
Peak Shift	Enables the computer to run on battery during peak power usage hours. Default: OFF
Wireless Radio Control	
Control WLAN radio	Enables to sense the connection of the computer to a wired network and subsequently disable the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are re-enabled. Default: OFF
Wake on LAN	Enables or disables the computer to turn on by a special LAN signal. Default: Disabled
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
Lid Switch	
Power On Lid Open	Enables the computer to power up from the off state whenever the lid is opened. Default: ON

Table 14. System setup options—Wireless menu

Wireless	
Wireless Device Enable	Enable or disable internal WLAN/Bluetooth devices. By default, WLAN is selected. By default, Bluetooth is selected.

Table 15. System setup options—POST Behavior menu

POST Behavior	
Numlock Enable	
Enable Numlock	Enables or disables Numlock when the computer boots. Default: ON
Fn Lock	Enables or disables the Fn lock mode. Default: ON
Lock Mode	Default: Lock Mode Secondary. Lock Mode Secondary = If this option is selected, the F1-F12 keys scan the code for their secondary functions.
Warnings and Errors	Selects an action on encountering a warning or error during boot. Default: Prompt on Warnings and Errors. Stop, prompt, and wait for user input when warnings or errors are detected.

Table 15. System setup options—POST Behavior menu (continued)


POST Behavior	
	 NOTE: Errors deemed critical to the operation of the computer hardware will always halt the computer.
Enable Adapter Warnings	<p>Enables or disables the computer to display adapter warning messages when adapters with too little power capacity are detected.</p> <p>Default: ON</p>
Enable Dock Warning Messages	<p>Enables or disables 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>
Full Screen Logo	<p>Enabled or disabled the computer to display full screen logo if the image match screen resolution.</p> <p>Default: OFF</p>
Mouse/Touchpad	<p>Defines how the computer handles mouse and touchpad input.</p> <p>Default: Touchpad and PS/2 Mouse. Leave the integrated touchpad enabled when an external PS/2 mouse is present.</p>
Sign of Life	
Early Logo Display	<p>Display Logo Sign of Life.</p> <p>Default: ON</p>
Early Keyboard Backlight	<p>Keyboard Backlight Sign of Life.</p> <p>Default: ON</p>
MAC Address Pass-Through	<p>Replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the computer.</p> <p>Default: System Unique MAC Address.</p>

Table 16. System setup options—Virtualization menu

Virtualization	
Intel Virtualization Technology	<p>Enables the computer to run a virtual machine monitor (VMM).</p> <p>Default: ON</p>
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 17. System setup options—Maintenance menu

Maintenance	
Asset Tag	
Asset Tag	<p>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.</p>
Service Tag	<p>Displays the Service Tag of the computer.</p>

Table 17. System setup options—Maintenance menu (continued)



Maintenance	
BIOS Recovery from Hard Drive	<p>Enables the computer to recover from a bad BIOS image, as long as the Boot Block portion is intact and functioning.</p> <p>Default: ON</p> <p> 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.</p>
BIOS Auto-Recovery	<p>Enables the computer to automatically recover the BIOS without user actions. This feature requires BIOS Recovery from Hard Drive to be set to Enabled.</p> <p>Default: OFF</p>
Start Data Wipe	<p> CAUTION: This Secure Wipe Operation deletes information in a way that it cannot be reconstructed.</p> <p>If enabled, the BIOS will queue up a data wipe cycle for storage devices that are connected to the motherboard on the next reboot.</p> <p>Default: OFF</p>
Allow BIOS Downgrade	<p>Controls flashing of the system firmware to previous revisions.</p> <p>Default: ON</p>

Table 18. System setup options—System Logs menu

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

Table 19. System setup options—SupportAssist menu

SupportAssist	
Dell Auto OS Recovery Threshold	<p>Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool.</p> <p>Default: 2.</p>
SupportAssist OS Recovery	<p>Enables or disables the boot flow for SupportAssist operating system Recovery tool in the even of certain system errors.</p> <p>Default: ON</p>
BIOSConnect	<p>Enables or disables cloud Service OS recover if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto OS Recovery Threshold setup option.</p> <p>Default: ON</p>


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

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


Troubleshooting

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](#).

System diagnostic lights

When static, the power and battery-charge status light indicates the power mode that your computer is in. When blinking in different patterns, the power and battery-charge status light indicates the respective issues that your computer is encountering.

Static power and battery-charge status light

The following table lists the status of your computer based on the power and battery-charge status light.

Table 20. Power and battery-charge status light

Power and battery-charge status light	Status of computer
Solid white	<ul style="list-style-type: none"> • The power adapter is connected and the battery is fully charged. • The power adapter is connected and the battery has more than five percent charge.
Amber	The computer is running on battery and the battery has less than five percent charge.
Off	The computer is in sleep state, hibernation, or turned off.

Blinking power and battery-charge status light

The power and battery-status light blinks alternately between amber and off to indicate issues that your computer is encountering.

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

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

Table 21. LED codes

Diagnostic light codes	Problem description
2,1	Processor failure
2,2	System board: BIOS or ROM (Read-Only Memory) failure
2,3	No memory or RAM (Random-Access Memory) detected
2,4	Memory or RAM (Random-Access Memory) failure
2,5	Invalid memory installed
2,6	System-board or chipset error
2,7	Display failure
2,8	LCD power rail failure.
3,1	CMOS battery failure
3,2	PCI, video card/chip failure
3,3	Recovery image not found
3,4	Recovery image found but invalid
3,5	Power-rail failure
3,6	System BIOS Flash incomplete
3,7	Management Engine (ME) error

Recovering the operating system

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

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows 10 operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

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

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/support.

Flashing the BIOS


About this task

You may need to flash (update) the BIOS when an update is available or when you replace the system board.

Follow these steps to flash the BIOS:

Steps

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

 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.

4. Click **Drivers & downloads > Find drivers**.
5. Select the operating system installed on your computer.
6. Scroll down the page and expand **BIOS**.
7. Click **Download** to download the latest version of the BIOS for your computer.
8. After the download is complete, navigate to the folder where you saved the BIOS update file.
9. Double-click the BIOS update file icon and follow the instructions on the screen.

Flashing BIOS (USB key)

Steps

1. Follow the procedure from step 1 to step 7 in "[Flashing the BIOS](#)" to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information see the knowledge base article [000145519](#) at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** when the Dell logo is displayed on the screen.
6. Boot to the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
8. The **BIOS Update Utility** appears. Follow the instructions on the screen to complete the BIOS update.


Backup media and recovery options

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

WiFi power cycle

About this task

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

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

Steps

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


Flea power release

About this task

Flea power is the residual static electricity that remains on the computer even after it has been powered off and the battery has been disconnected from the system board. The following procedure provides the instructions on how to release the flea power:

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. Install the [base cover](#).
5. Turn on your computer.

Getting help and contacting Dell

Self-help resources


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


Table 22. Self-help resources

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

Contacting Dell

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

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

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