

XPS 13 9305

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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Before working inside your computer

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

Before you begin

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

Safety instructions

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

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

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

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

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

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

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

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

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

 **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.

After working inside your computer

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

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

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

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Torx #5 (T5) screwdriver
- Plastic scribe

Screw list

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

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

NOTE: Screw color may vary with the configuration ordered.

Table 1. Screw list

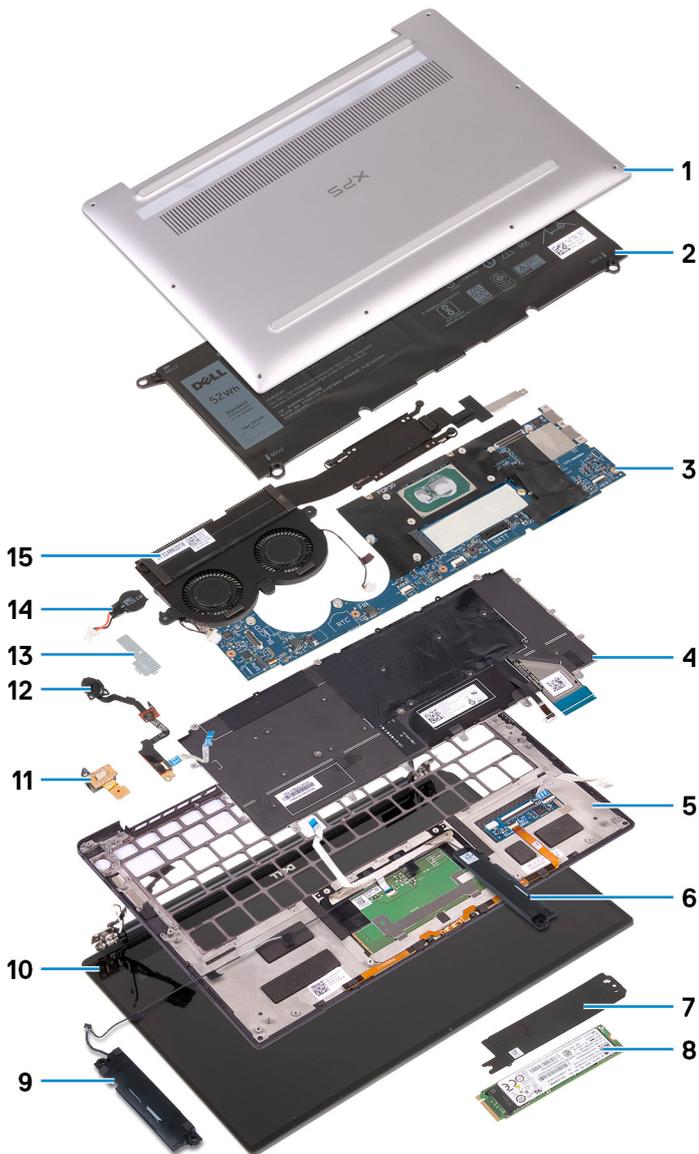
Component	Secured to	Screw type	Quantity	Screw image
Keyboard	Palm-rest assembly	M1.6x1.5	29	
Fingerprint-reader board	Palm-rest assembly	M1.6x1.5	1	
Power button	Palm-rest assembly	M1.4x1.7	2	
System board	Palm-rest assembly	M1.6x2.5	10	
Fans	System board	M1.6x3L	2	
Speakers	Palm-rest assembly	M2x2	4	
Heat sink	System board	M2x3	4	
Headset port	Palm-rest assembly	M1.6x3	1	
Display assembly	Palm-rest assembly	M2.5x4	4	
Wireless antenna and camera cable bracket	System board	M1.6x3L	1	

Table 1. Screw list (continued)

Component	Secured to	Screw type	Quantity	Screw image
Display cable bracket	System board	M1.6x2.5	2	
Solid-state drive shield and solid-state drive	System board	M2x3L	1	
Battery	Palm-rest assembly	M2x2	4	
Battery	Palm-rest assembly	M1.6x4	1	
Base cover	Palm-rest assembly	M2x3, Torx	8	

Major components of XPS 13 9305

The following image shows the major components of XPS 13 9305.



1. Base cover
2. Battery
3. System board
4. Keyboard
5. Palm-rest assembly
6. Right speaker
7. Solid-state drive shield
8. Solid-state drive
9. Left speaker
10. Display assembly
11. Headset port
12. Power button with fingerprint reader
13. Camera-cable bracket
14. Coin-cell battery
15. Heat-sink assembly

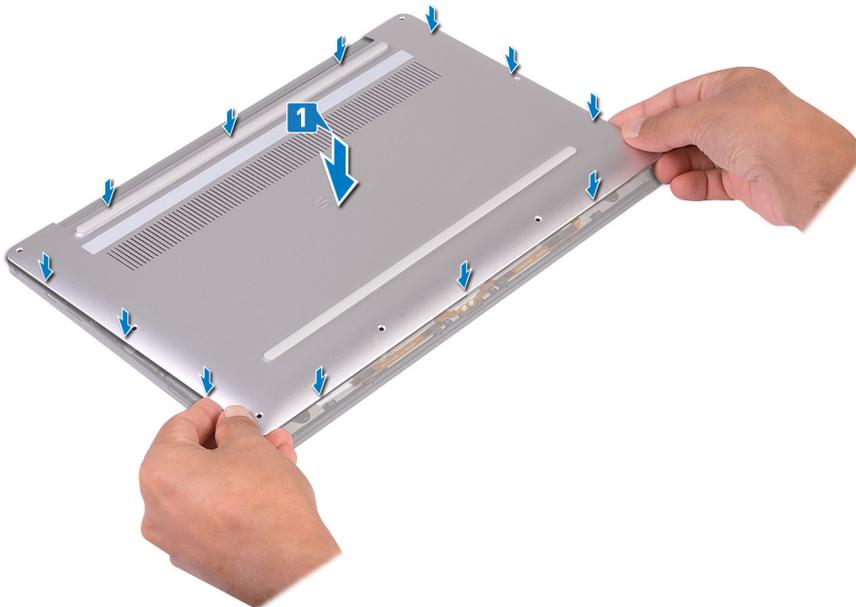
 **NOTE:** Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

Replacing the base cover

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Align the screw holes on the base cover with the screw holes on the palm-rest assembly and slide in the base cover into place.



2. Replace the eight screws (M2x3, Torx) that secure the base cover to the palm-rest assembly.



Removing the base cover

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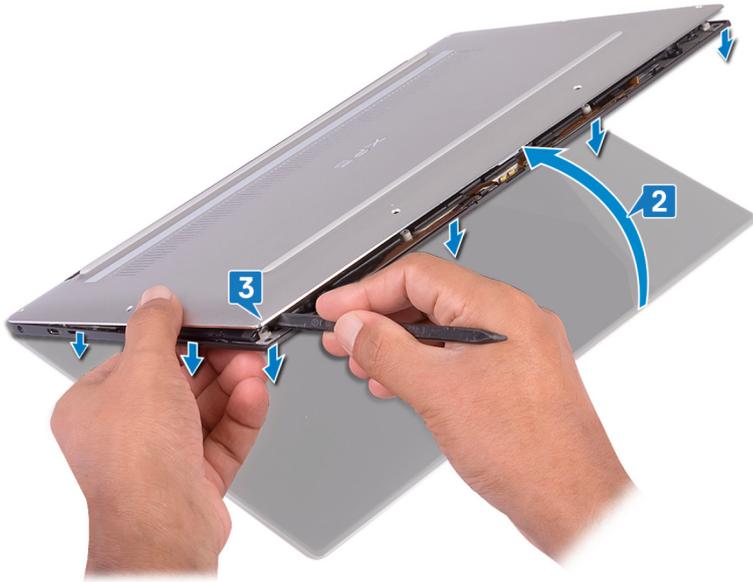
Procedure

CAUTION: To avoid causing damage to the computer, do not pry the base cover from the rear near the hinges.

1. Remove the eight screws (M2x3, Torx) that secure the base cover to the palm-rest assembly.



2. With the computer face-down, open the computer at an angle.
3. Using a plastic scribe, pry the base cover from the palm-rest assembly starting from the front left and right corner.



4. Moving the base cover from left to right, release the clips securing the base cover to the palm-rest assembly.
5. Lift the base cover from the palm-rest assembly.



Removing the battery

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Lithium-ion battery precautions

CAUTION:

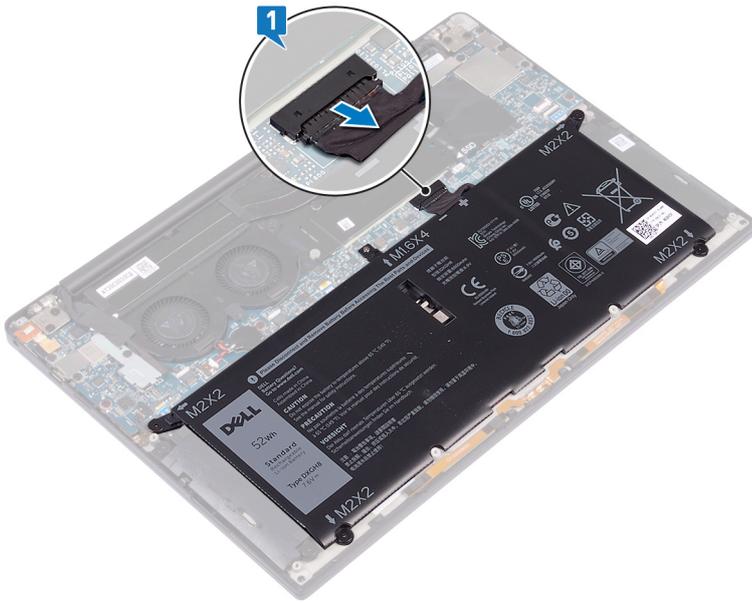
- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is 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.

Prerequisites

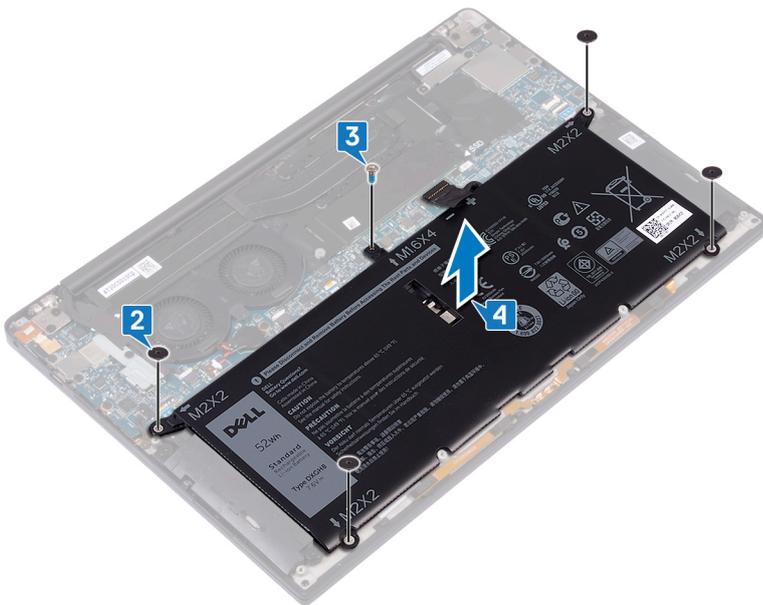
Remove the [base cover](#).

Procedure

1. Ensure that the battery cable is disconnected from the system board.



2. Remove the four screws (M2x2) that secure the battery to the palm-rest assembly.
3. Remove the screw (M1.6x4) that secures the battery to the palm-rest assembly.
4. Lift the battery off the palm-rest assembly.



5. Turn the computer over, open the display, and press the power button for about 5 seconds to ground the computer.

Replacing the battery

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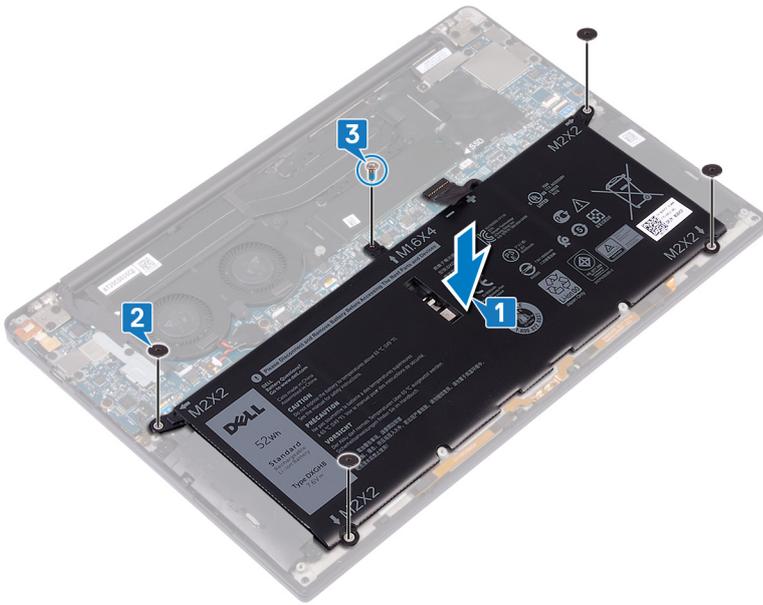
Lithium-ion battery precautions

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.

Procedure

1. Align the screw holes on the battery with the screw holes on the palm-rest assembly.
2. Replace the four screws (M2x2) that secure the battery to the palm-rest assembly.
3. Replace the screw (M1.6x4) that secures the battery to the palm-rest assembly.



Post-requisites

Replace the [base cover](#).

Removing the solid-state drive

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CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

CAUTION: To avoid data loss, do not remove the solid-state drive while the computer is in sleep or on state.

Prerequisites

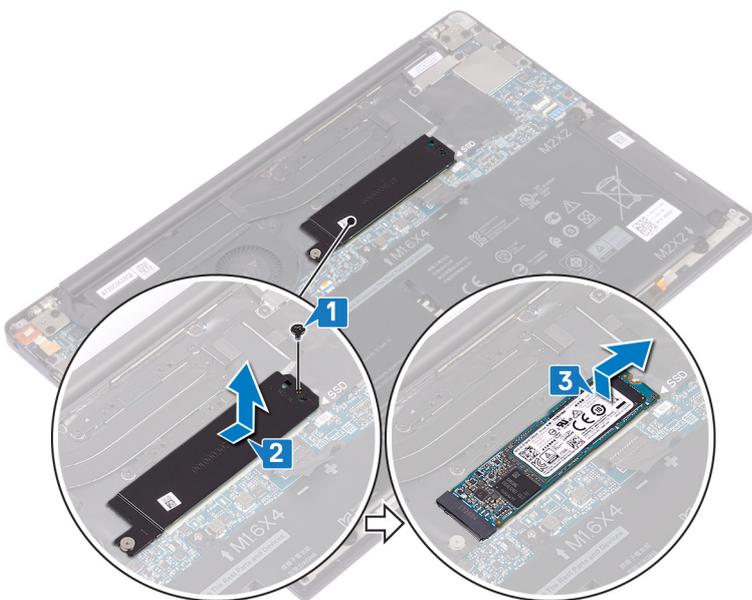
1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure to remove M.2 2280 and M.2 2230 solid-state drives

Procedure to remove M.2 2280 solid-state drive

1. Remove the screw (M2x3) that secures the solid-state drive shield and the solid-state drive to the system board.
2. Slide and remove the solid-state drive shield from the solid state drive slot.
3. Lift the solid-state drive at an angle, then slide and remove the solid-state drive from the solid-state drive slot.

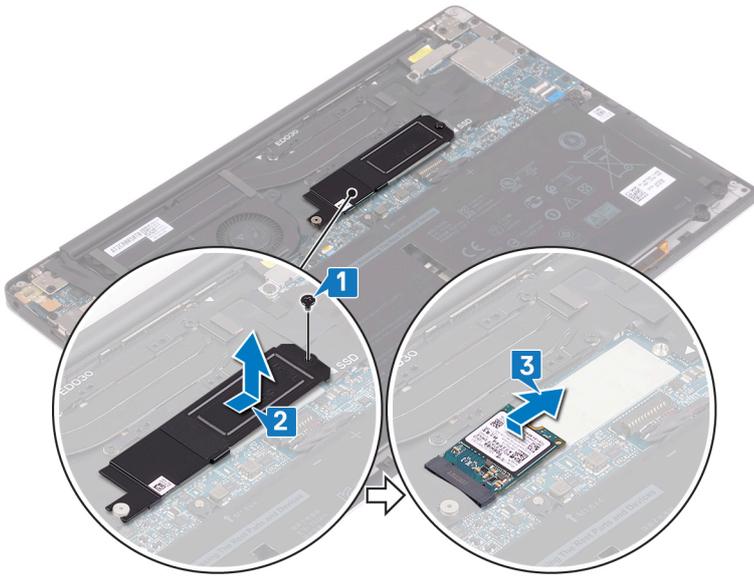
NOTE: The 2280 solid-state drive has a unique thermal plate and cannot be interchanged with the 2230 solid-state drive thermal plate.



Procedure to remove M.2 2230 solid-state drive

1. Remove the screw (M2x3) that secures the solid-state drive shield and the solid-state drive to the system board.
2. Slide and remove the solid-state drive shield from the solid state drive slot.
3. Lift the solid-state drive at an angle, then slide and remove the solid-state drive from the solid-state drive slot.

NOTE: The 2230 solid-state drive has a unique thermal plate and cannot be interchanged with the 2280 solid-state drive thermal plate.



Replacing the solid-state drive

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CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

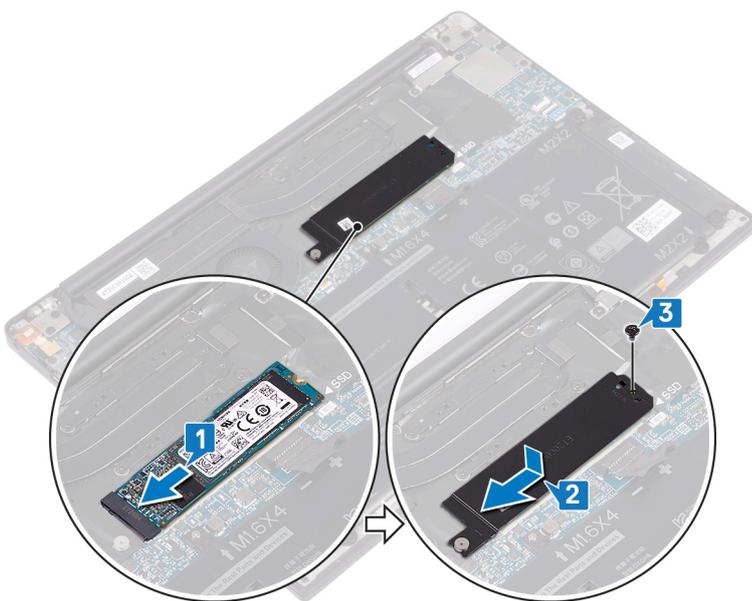
Procedure to replace M.2 2280 and M.2 2230 solid-state drives

Procedure to replace 2280 solid-state drive

1. Align the notches on the solid-state drive with the tabs in the solid-state drive slot, then slide the solid-state drive at an angle into the solid-state drive slot.
2. Slide the solid-state drive shield into the solid-state drive shield slot. Then align the screw hole on the solid-state drive shield and solid-state drive to the screw hold on the system board.

NOTE: The 2280 solid-state drive has a unique thermal plate and cannot be interchanged with the 2380 solid-state drive thermal plate.

3. Replace the screw (M2x3) that secures the solid-state drive to the system board.



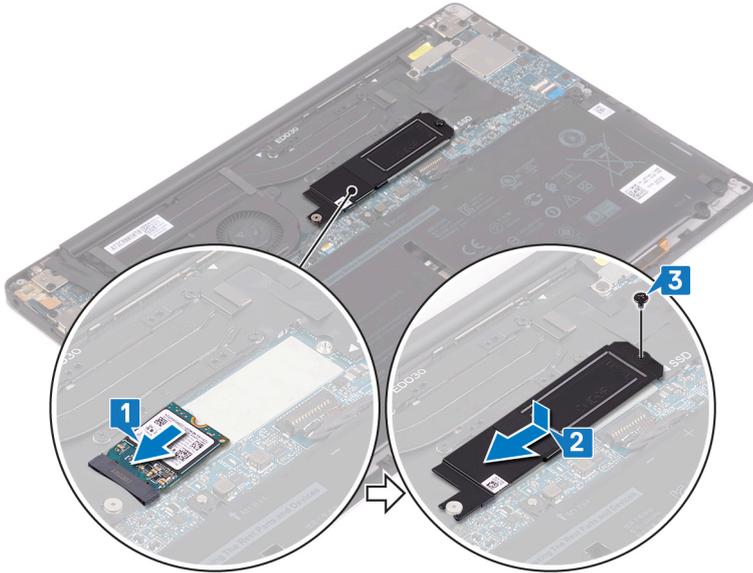
Procedure to replace 2230 solid-state drive

1. Align the notches on the solid-state drive with the tabs in the solid-state drive slot, then slide the solid-state drive at an angle into the solid-state drive slot.

2. Slide the solid-state drive shield into the solid-state drive shield slot. Then align the screw hole on the solid-state drive shield and solid-state drive to the screw hold on the system board.

i **NOTE:** The 2230 solid-state drive has a unique thermal plate and cannot be interchanged with the 2280 solid-state drive thermal plate.

3. Replace the screw (M2x3) that secures the solid-state drive to the system board.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the speakers

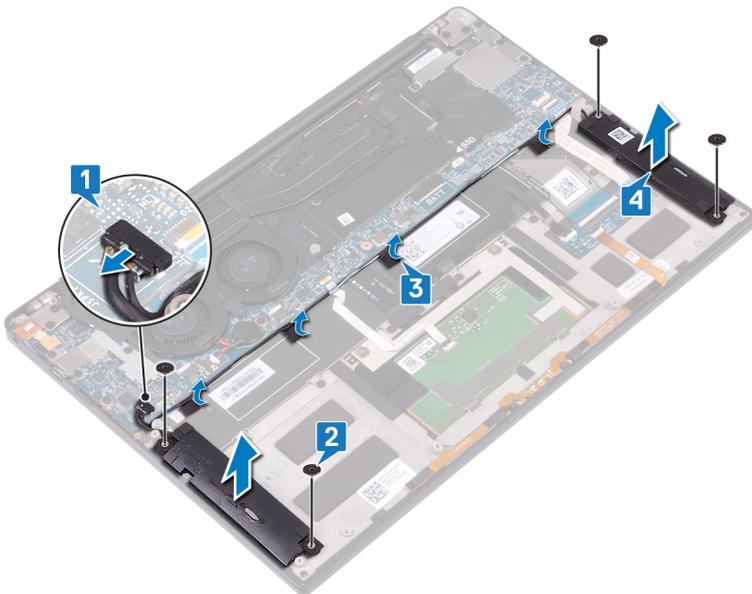
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

1. Disconnect the speaker cable from the system board.
2. Remove the four screws (M2x2) that secure the left and right speakers to the palm-rest assembly.
3. Note the speaker-cable routing and peel off the tapes (4) that secure the speaker cable to the keyboard.
4. Lift the left and right speakers, along with their cables, off the palm-rest assembly.

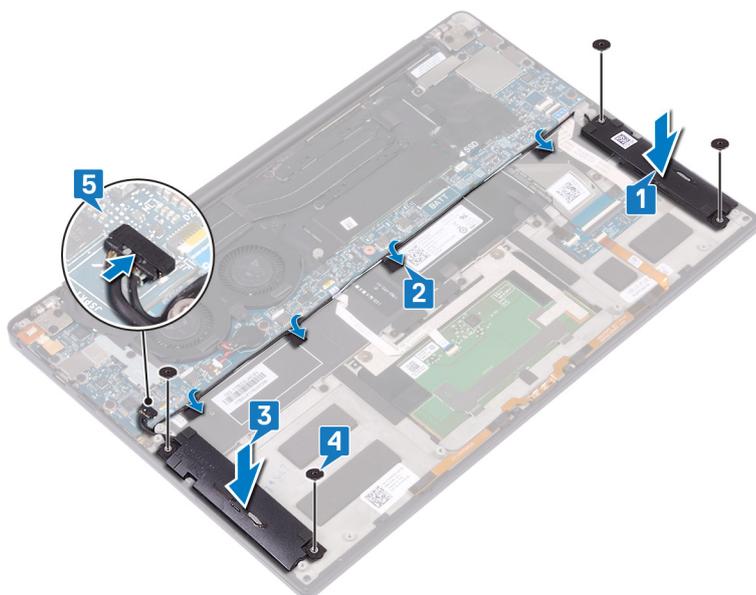


Replacing the speakers

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Procedure

1. Using the alignment posts on the palm-rest assembly, place the left speaker on the palm-rest assembly.
2. Route the speaker cable on the system board and adhere the tape to the system board.
3. Using the alignment posts on the palm-rest assembly, place the right speaker on the palm-rest assembly.
4. Replace the four screws (M2x2) that secure the speakers to the palm-rest assembly.
5. Connect the speaker cable to the system board.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the coin-cell battery

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

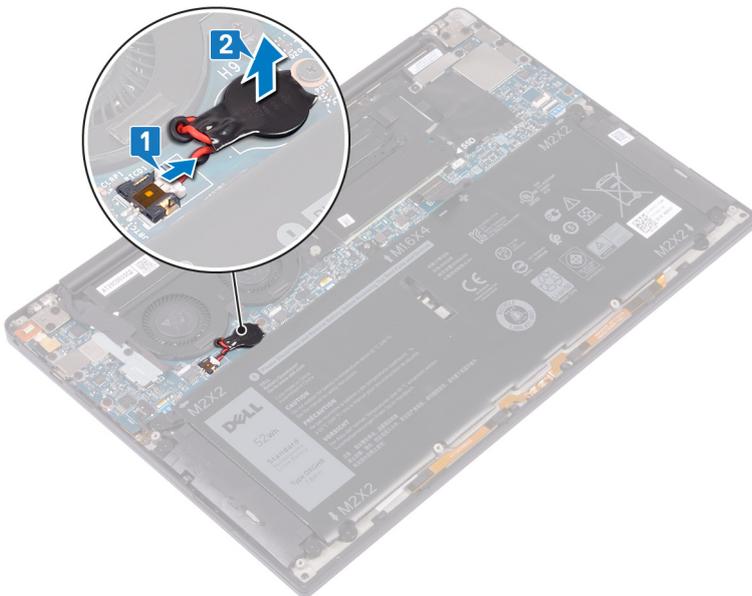
CAUTION: Removing the coin-cell battery resets the BIOS setup program's settings to default. It is recommended that you note the BIOS setup program's settings before removing the coin-cell battery.

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

1. Disconnect the coin-cell battery cable from the system board.
2. Note the location of the coin-cell battery and pry it off the system board.

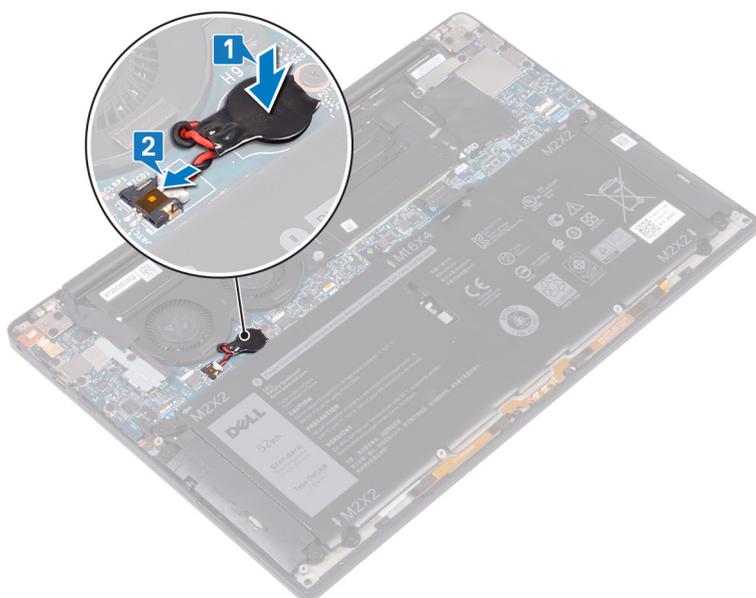


Replacing the coin-cell battery

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Adhere the coin-cell battery to the system board.
2. Connect the coin-cell battery cable to the system board.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the heat sink

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

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

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.

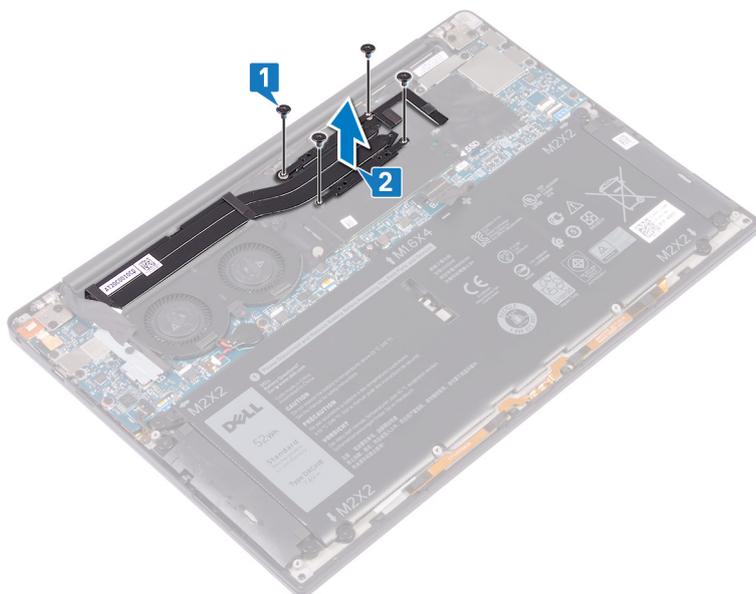
Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

NOTE: The following procedure applies only to computers shipped with Intel Core i3 processor.

1. In reverse-sequential order (as indicated on the heat sink), remove the four screws (M2x3) that secure the heat sink to the system board.
2. Lift the heat sink off the system board.



Replacing the heat sink

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

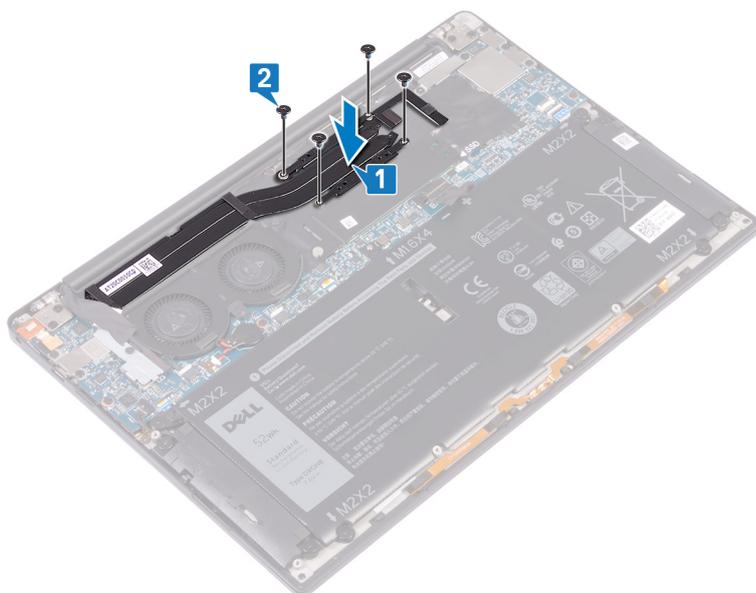
CAUTION: Incorrect alignment of the heat sink can damage the system board and processor.

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.

Procedure

NOTE: The following procedure applies only to computers shipped with Intel Core i3 processor.

1. Align the screw holes on the heat sink with the screw holes on the system board.
2. Replace the four screws (M2x3) that secure the heat sink to the system board in sequential order (as indicated on the heat sink).



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the fans

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

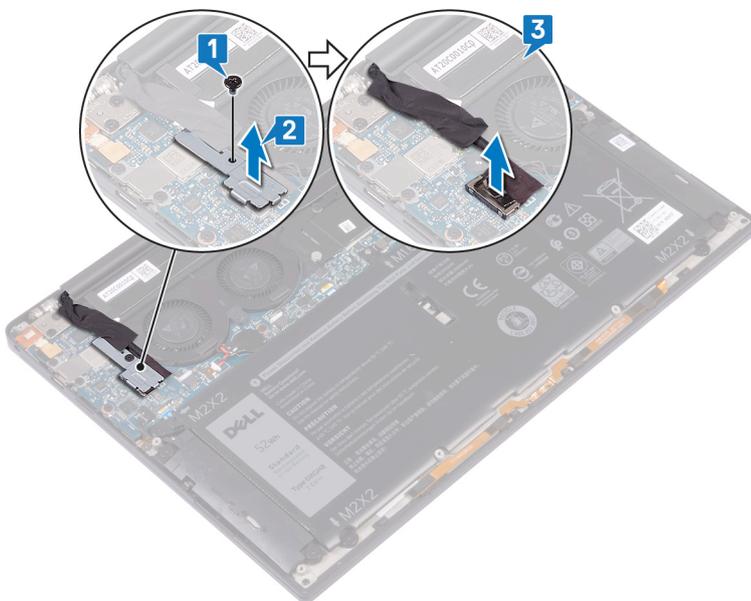
1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

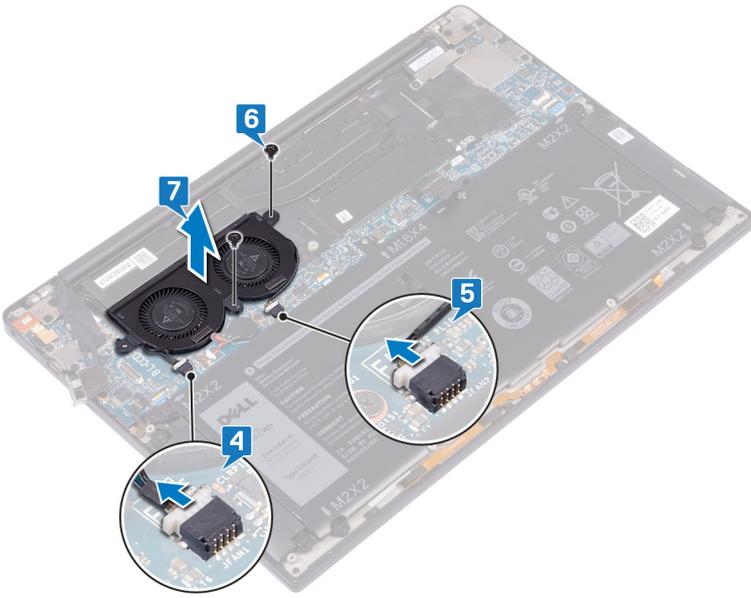
NOTE: The following procedure applies only to computers shipped with Intel Core i3 processor.

NOTE: For computers shipped with Intel Core i5 or i7 processors, see [Removing the heat-sink assembly](#).

1. Remove the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.
2. Lift the wireless antenna and camera-cable bracket from the system board.
3. Disconnect and lift the camera cable from the system board, peeling off the tape securing the camera cable to the fans.



4. Disconnect the right-fan cable from the system board.
5. Disconnect the left-fan cable from the system board.
6. Remove the two screws (M1.6x3) that secure the left and the right fan to the system board.
7. Lift the left and the right fans along with their cables off the system board.



Replacing the fans

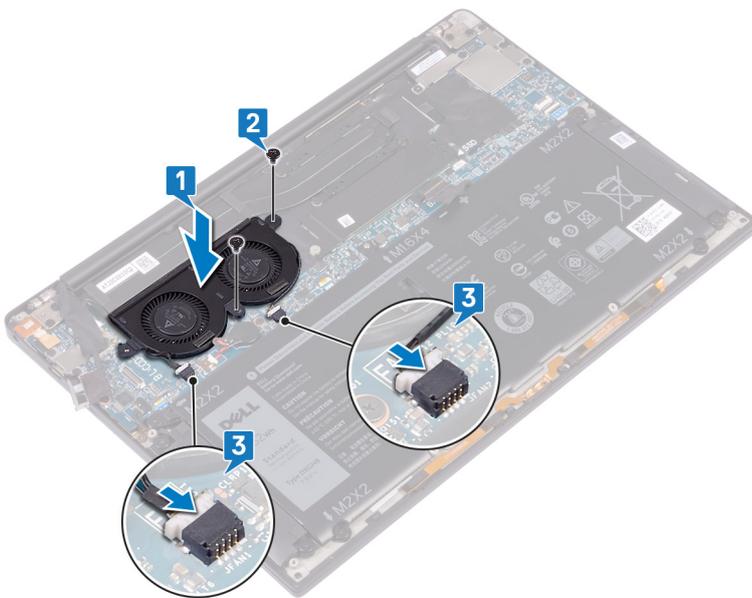
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

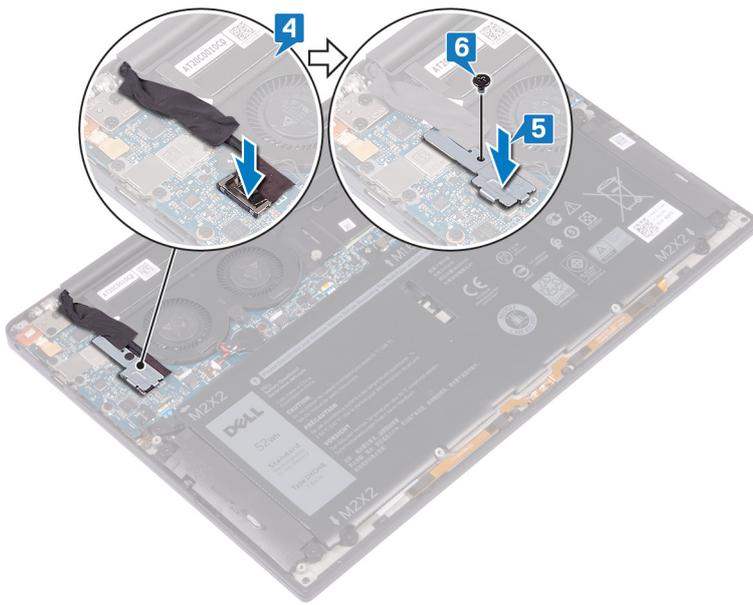
NOTE: The following procedure applies only to computers shipped with Intel Core i3 processor.

NOTE: For computers shipped with Intel Core i5 or i7 processors, see [Replacing the heat-sink assembly](#).

1. Align the screw holes on the left and the right fans with the screw holes on the system board.
2. Replace the two screws (M1.6x3) that secure the left and the right fans to the system board.
3. Connect the left- fan and the right-fan cables to the system board.



4. Connect the camera cable to the system board.
5. Align the screw hole on the wireless antenna and camera-cable bracket to the screw hole on the system board.
6. Replace the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.
7. Adhere the tape that secures the camera cable to the fans.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the heat-sink assembly

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

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

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.

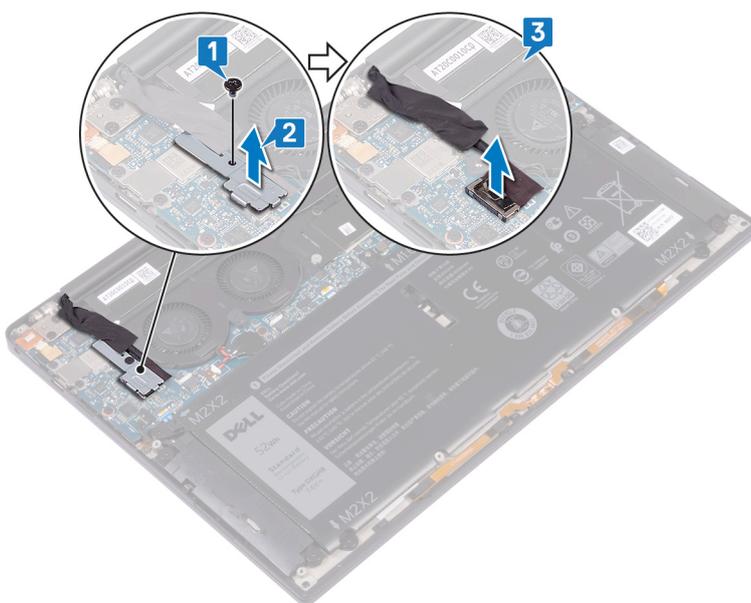
Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

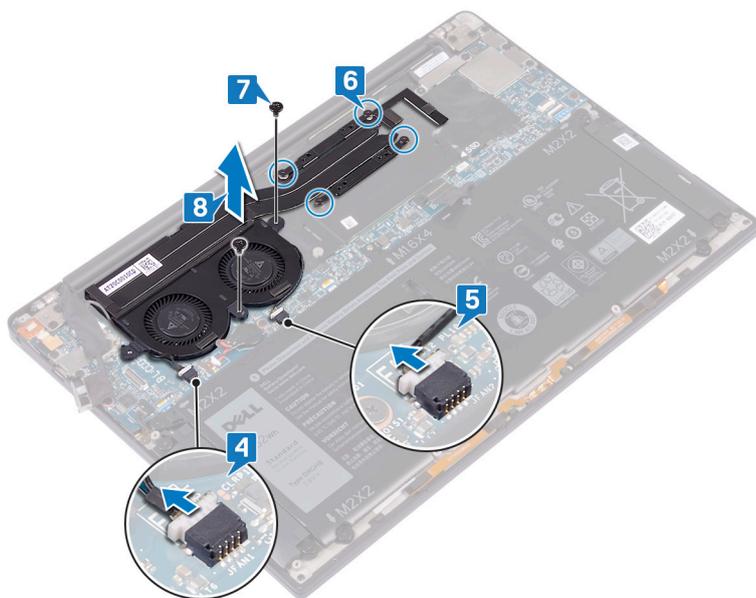
NOTE: The following procedure applies only to computers shipped with Intel Core i5 or Intel Core i7 processor.

1. Remove the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.
2. Lift the wireless antenna and camera-cable bracket from the system board.
3. Disconnect and lift the wireless antenna and camera-cable bracket from the system board, peeling off the tape securing the camera cable to the heat-sink assembly.



4. Disconnect the left-fan cable from the system board.
5. Disconnect the right-fan cable from the system board.
6. In reverse-sequential order (as indicated on the heat sink), remove the four screws (M2x3) that secure the heat-sink assembly to the system board.

7. Remove the two screws (M1.6x3) that secure the heat-sink assembly to the system board.
8. Lift the heat-sink assembly along with the left-fan and the right-fan cable off the system board.



Replacing the heat-sink assembly

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

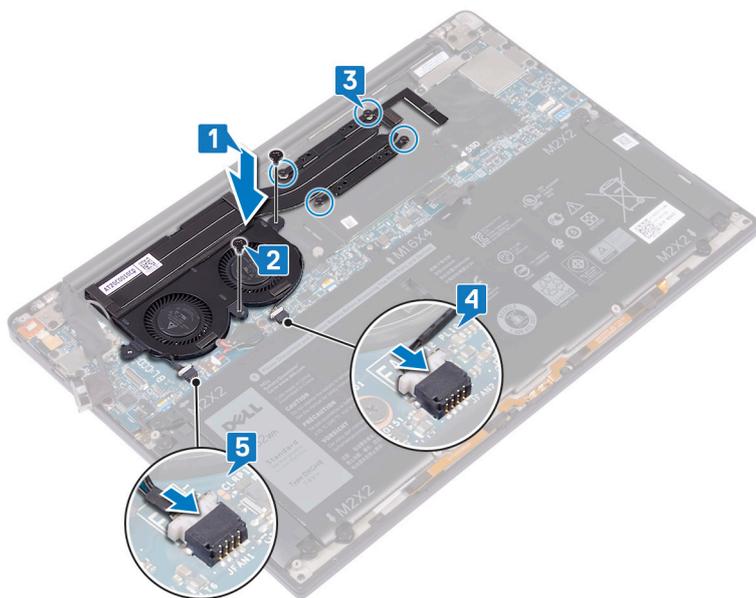
CAUTION: Incorrect alignment of the heat sink can damage the system board and processor.

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

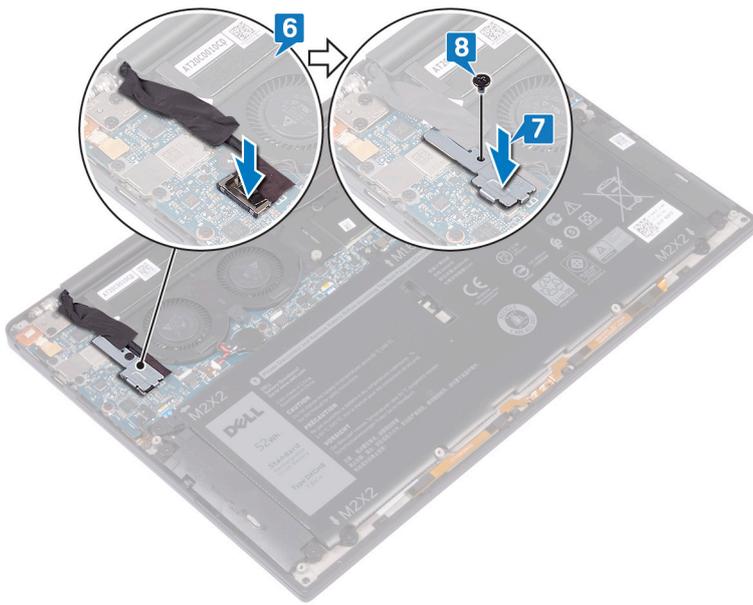
Procedure

NOTE: The following procedure applies only to computers shipped with Intel Core i5 or Intel Core i7 processor.

1. Align the screw holes on the heat-sink assembly with the screw holes on the system board.
2. Replace the two screws (M1.6x3) that secure the heat-sink assembly to the system board.
3. Replace the four screws (M2x3) that secure the heat-sink assembly to the system board in sequential order (as indicated on the heat-sink assembly).
4. Connect the right-fan cable to the system board.
5. Connect the left-fan cable to the system board.



6. Connect the camera cable to the system board.
7. Align the screw hole on the wireless antenna and camera-cable bracket to the screw hole on the system board.
8. Replace the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the display assembly

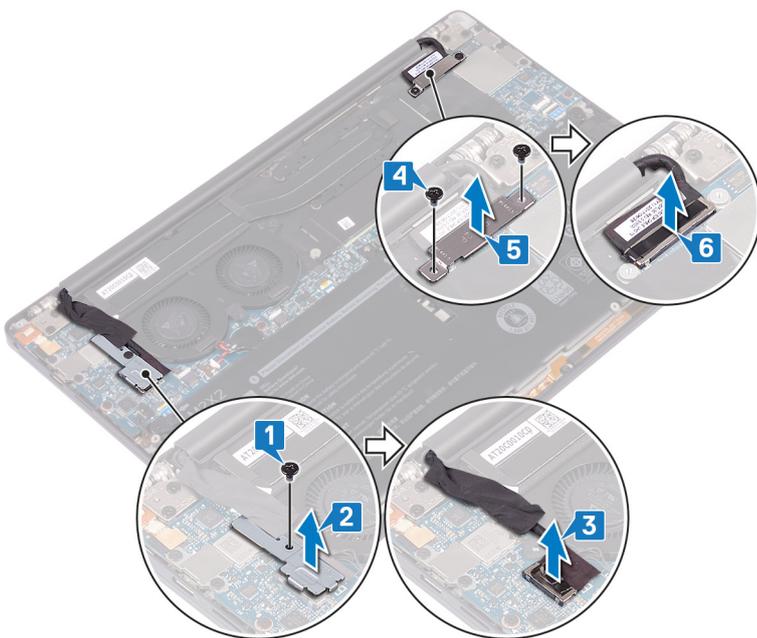
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

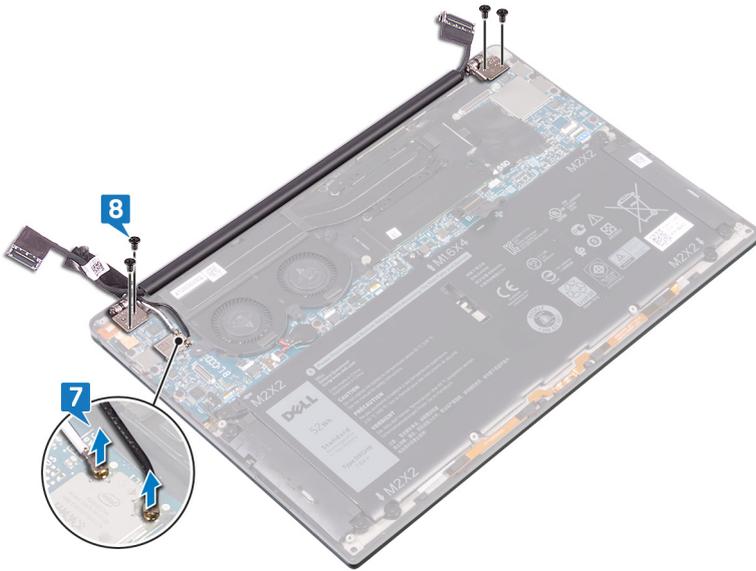
1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

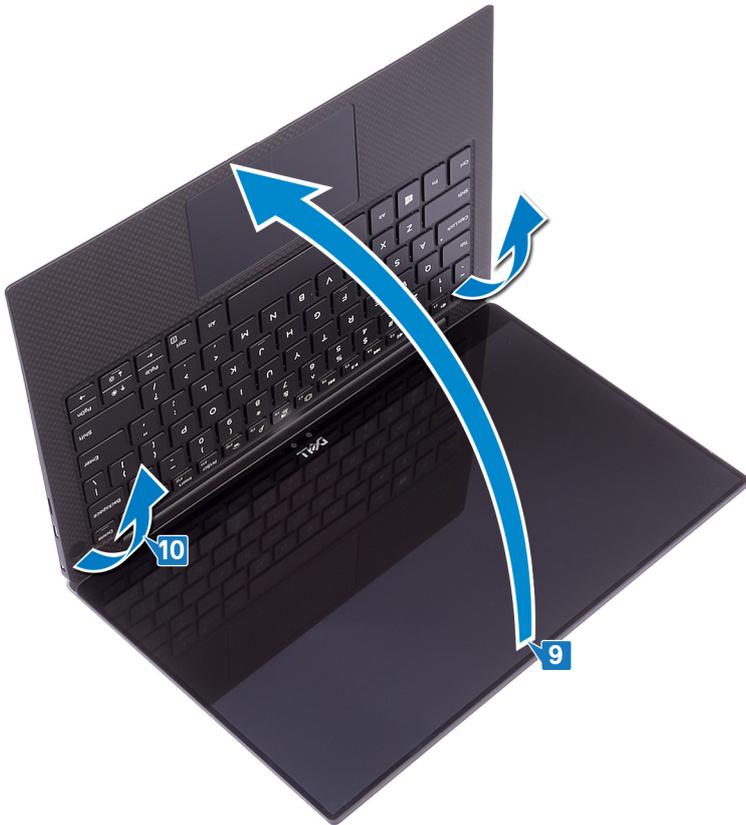
1. Remove the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.
2. Lift the wireless antenna and camera-cable bracket from the system board.
3. Disconnect and lift the camera-cable from the system board, peeling off the tape securing the camera-cable to the fans.
4. Remove the two screws (M1.6x2.5) that secure the display-cable bracket to the system board.
5. Lift the display-cable bracket from the system board.
6. Disconnect the display cable from the system board.



7. Disconnect the antenna cables from the system board.
8. Remove the four screws (M2.5x4) securing the display hinges to the palm-rest assembly.



9. Place the top surface of the computer on a flat and clean surface, then open the computer at a 90 degree angle.
10. Gently slide and lift the display assembly from the palm-rest assembly.

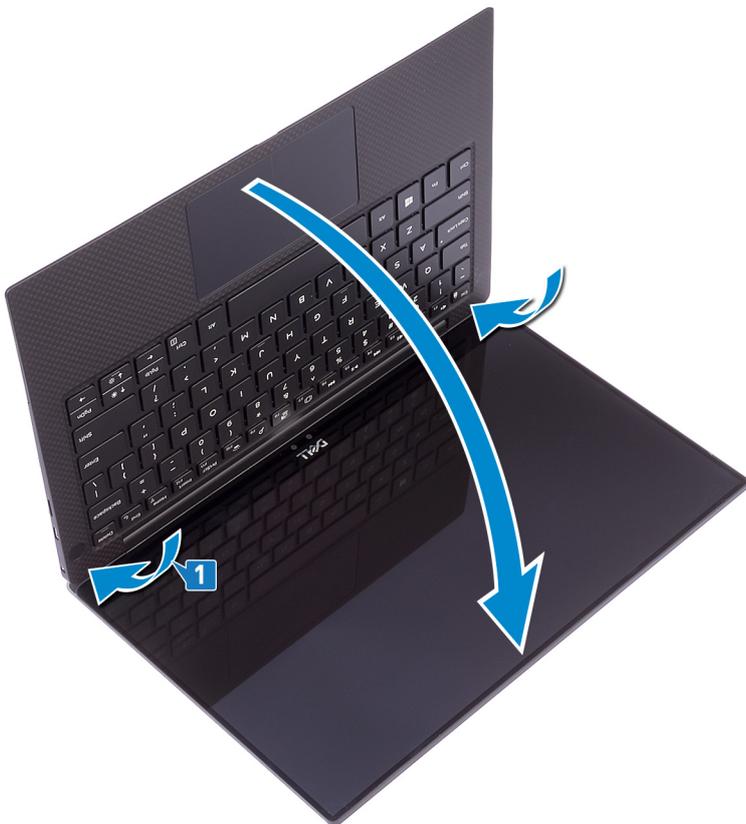


Replacing the display assembly

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

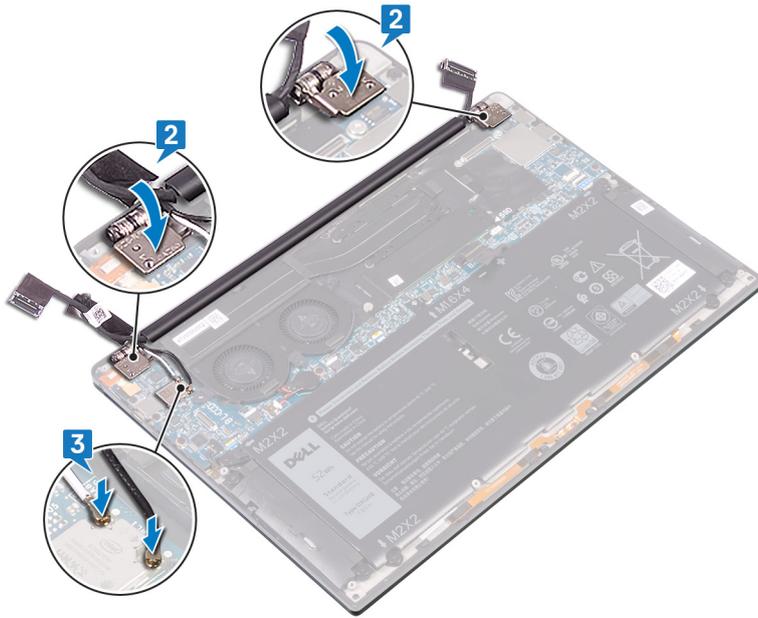
1. Slide the palm-rest assembly under the hinges of the display assembly.



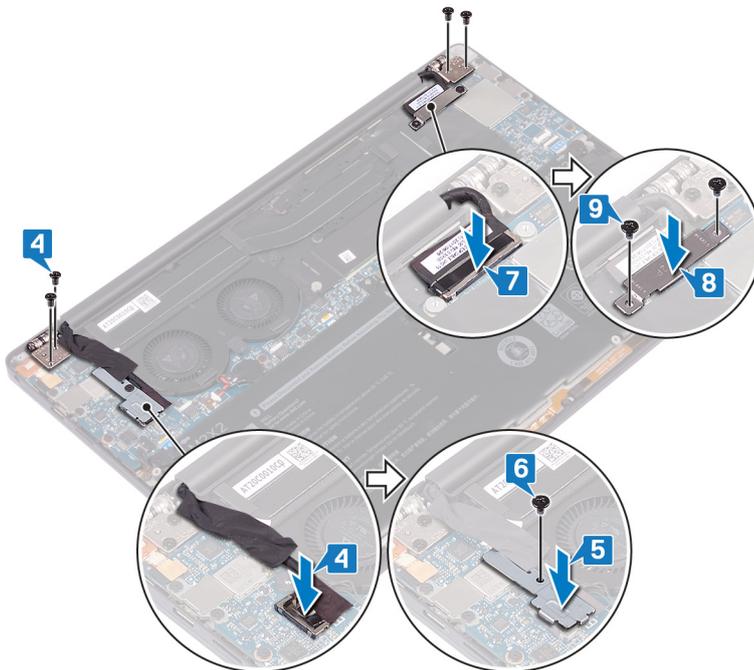
2. Using the alignment posts, press the display hinges down on the palm-rest assembly, aligning the screw holes on the display hinges with the screw holes on the palm-rest assembly.
3. Connect the antenna cables to the system board.
The following table provides the antenna cable color schemes for the 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



4. Replace the four screws (M2.5x4) securing the display hinges to the palm-rest assembly and connect the camera cable to the system board, adhering the tape securing the camera cable to the fans.
5. Align the screw hole on the wireless antenna and camera cable bracket to screw hole on the system board.
6. Replace the screw (M1.6x3) that secures the wireless antenna and camera cable bracket to the system board.
7. Connect the display cable to the system board.
8. Align the screw holes on the display-cable bracket with the screw holes on the system board.
9. Replace the two screws (M1.6x2.5) that secure the display-cable bracket to system board.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the headset port

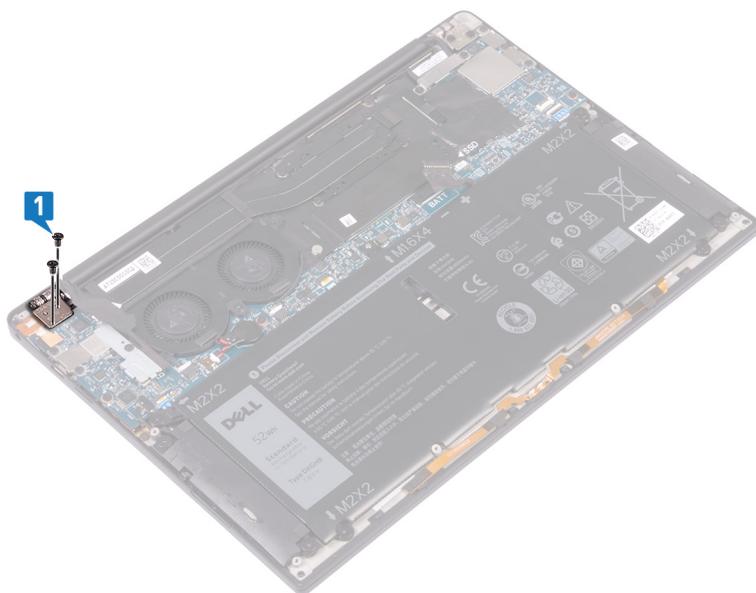
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

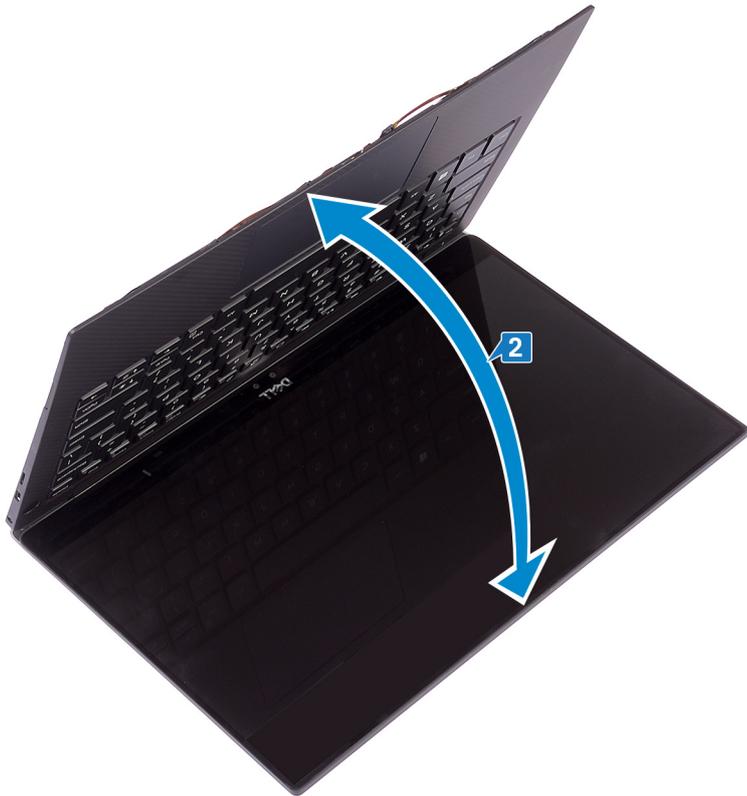
1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

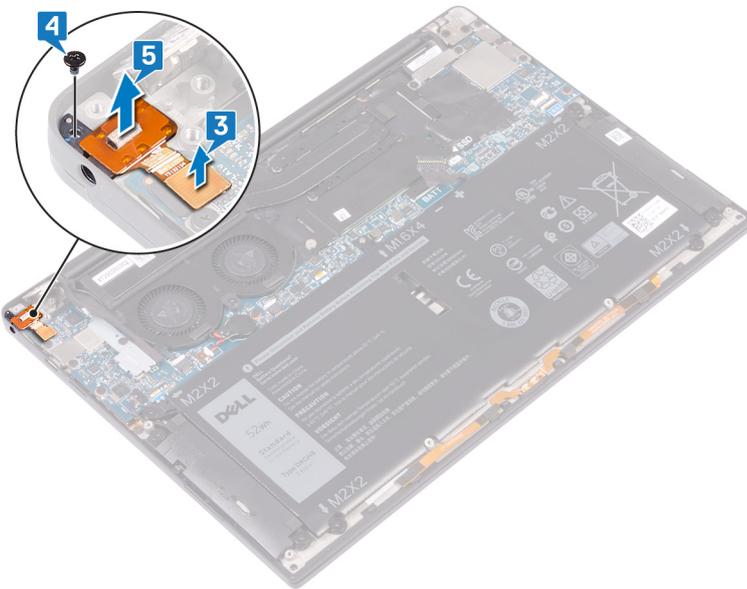
1. Remove the two screws (M2.5x4) that secure the left hinge to the palm-rest assembly.



2. Place the top surface of the computer on a flat and clean surface, then open and close the computer.



3. Disconnect the headset-port cable from the system board.
4. Remove the screw (M1.6x3) that secures the headset port to the palm-rest assembly.
5. Lift the headset port from the system board.

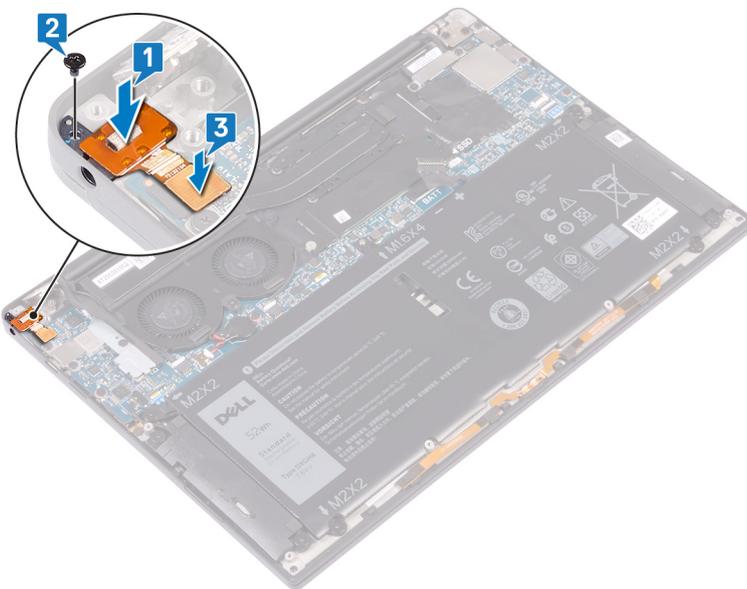


Replacing the headset port

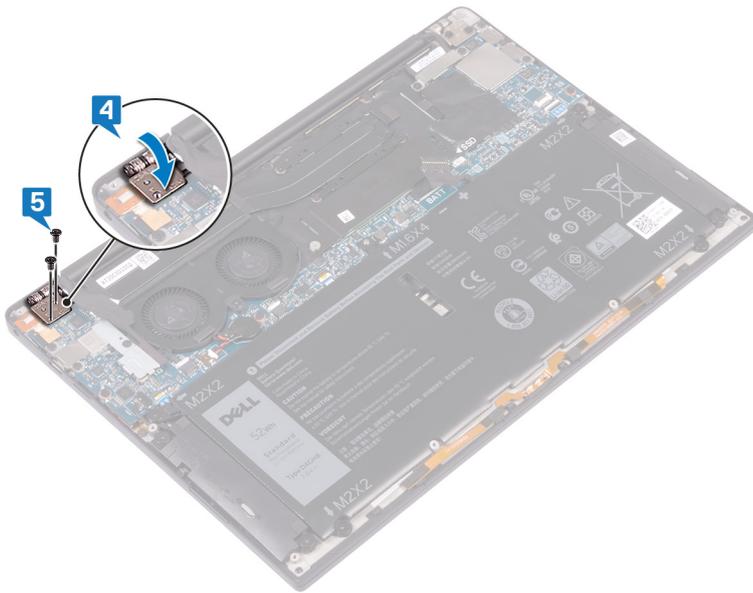
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Place the headset port in its slot on the palm-rest assembly.
2. Replace the screw (M1.6x3) that secures the headset port to the palm-rest assembly
3. Reconnect the headset-port cable to the system board.



4. Using the alignment posts, press the right display hinge down to the palm-rest assembly aligning the screw holes on the display hinge to the screw holes on the palm-rest assembly.
5. Replace the two screws (M2.5x4) that secure the left hinge to the palm-rest assembly.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the fans

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

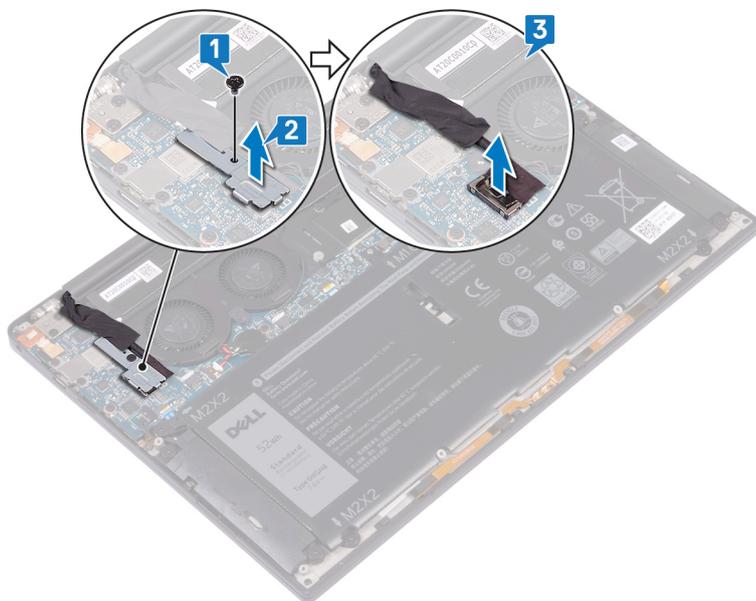
1. Remove the [base cover](#).
2. Remove the [battery](#).

Procedure

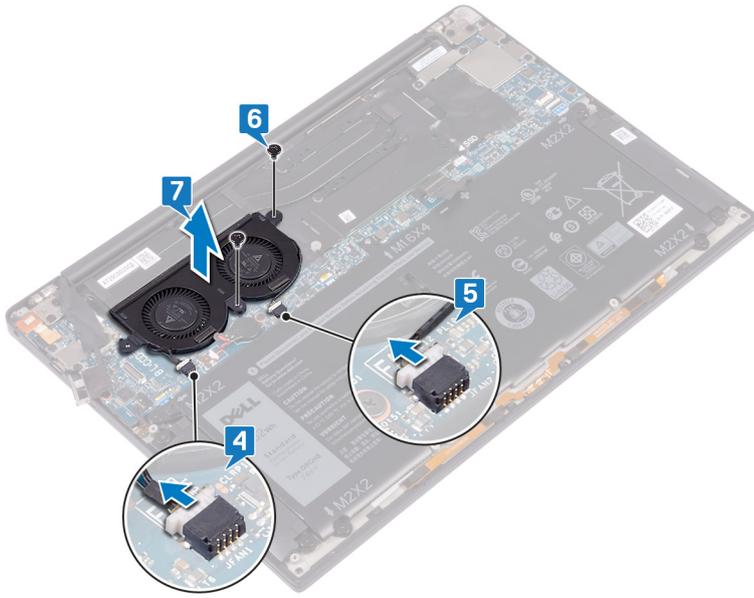
NOTE: The following procedure applies only to computers shipped with Intel Core i3 processor.

NOTE: For computers shipped with Intel Core i5 or i7 processors, see [Removing the heat-sink assembly](#).

1. Remove the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.
2. Lift the wireless antenna and camera-cable bracket from the system board.
3. Disconnect and lift the camera cable from the system board, peeling off the tape securing the camera cable to the fans.



4. Disconnect the right-fan cable from the system board.
5. Disconnect the left-fan cable from the system board.
6. Remove the two screws (M1.6x3) that secure the left and the right fan to the system board.
7. Lift the left and the right fans along with their cables off the system board.



Replacing the fans

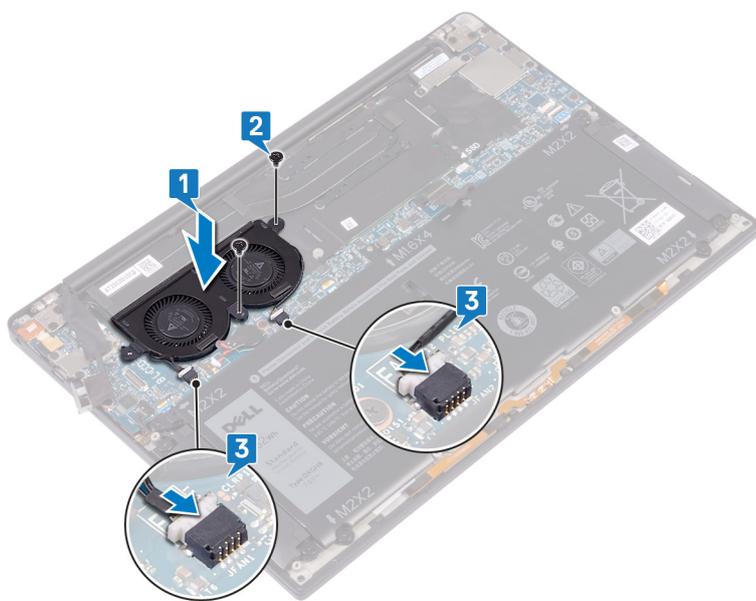
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

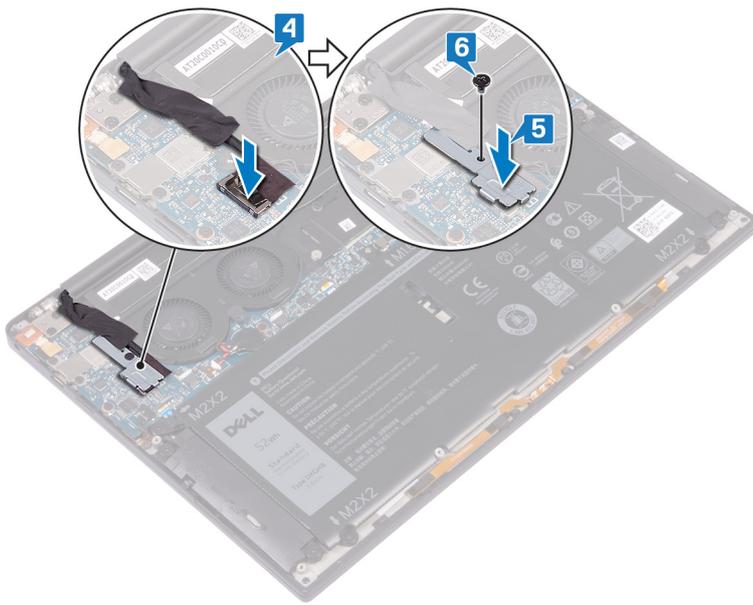
NOTE: The following procedure applies only to computers shipped with Intel Core i3 processor.

NOTE: For computers shipped with Intel Core i5 or i7 processors, see [Replacing the heat-sink assembly](#).

1. Align the screw holes on the left and the right fans with the screw holes on the system board.
2. Replace the two screws (M1.6x3) that secure the left and the right fans to the system board.
3. Connect the left- fan and the right-fan cables to the system board.



4. Connect the camera cable to the system board.
5. Align the screw hole on the wireless antenna and camera-cable bracket to the screw hole on the system board.
6. Replace the screw (M1.6x3) that secures the wireless antenna and camera-cable bracket to the system board.
7. Adhere the tape that secures the camera cable to the fans.



Post-requisites

1. Replace the [battery](#).
2. Replace the [base cover](#).

Removing the system board

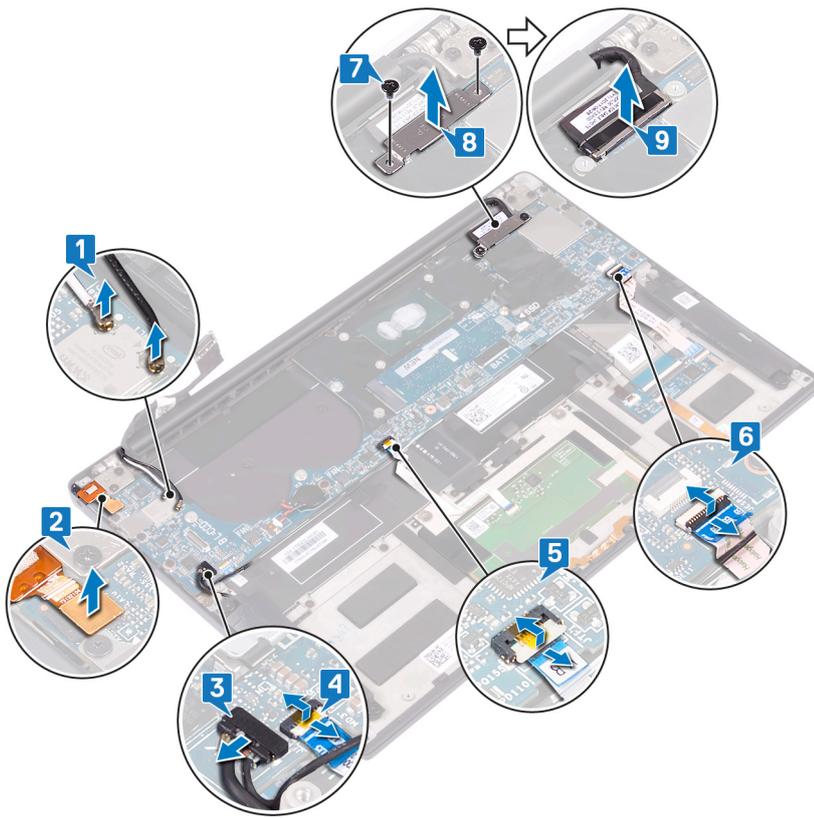
- NOTE:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.
- NOTE:** Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.
- NOTE:** Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.
- NOTE:** Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.

Prerequisites

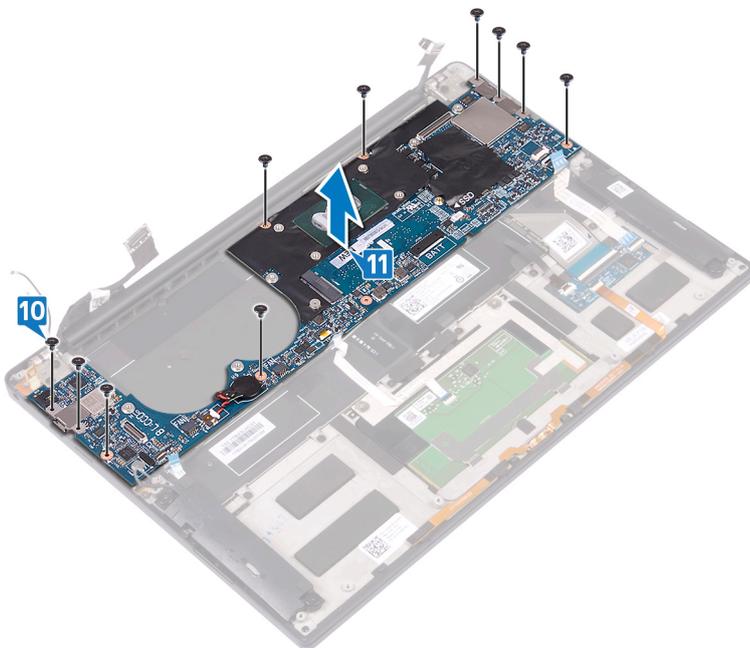
1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [solid-state drive](#).
4. Remove the [heat sink](#) or [heat-sink assembly](#).
5. Remove the [fans](#).

Procedure

1. Disconnect the antenna cables from the system board.
2. Disconnect the headset-port cable from the system board.
3. Disconnect the speaker cable from the system board.
4. Open the latch and disconnect the fingerprint-reader cable from the system board. Skip this step if the power button does not have the fingerprint reader.
5. Open the latch and disconnect the touchpad cable from the system board.
6. Open the latch and disconnect the keyboard-controller cable from the system board.
7. Remove the two screws (M1.6x2.5) that secure the display-cable bracket to the system board.
8. Lift the display-cable bracket from the system board.
9. Using the pull tab, disconnect the display cable from the system board.



10. Remove the 10 screws (M1.6x2.5) securing the system board to the palm-rest assembly.
11. Lift the system board from the palm-rest assembly.

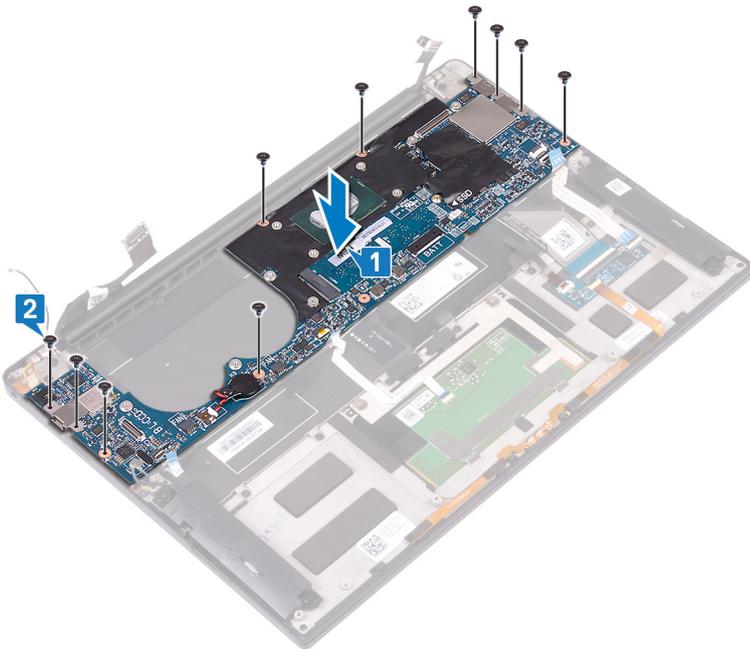


Replacing the system board

- NOTE:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.
- NOTE:** Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.
- NOTE:** Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

Procedure

1. Using the alignment posts, place the system board on the palm-rest assembly and align the screw holes on the system board with the screw holes on the palm-rest assembly.
2. Replace the 10 screws (M1.6x2.5) that secure the system board to the palm-rest assembly.



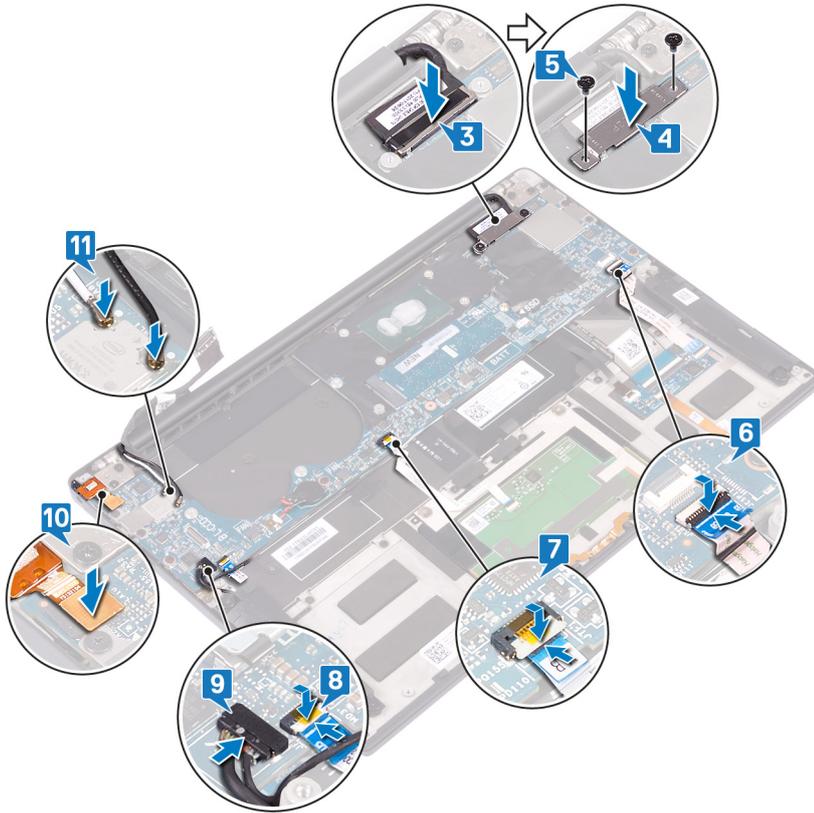
3. Connect the display cable to the system board.
4. Align and place the display cable bracket on the system board.
5. Replace the two screws (M1.6x2.5) that secure the display cable bracket to the system board.
6. Connect the keyboard-controller cable to the system board and close the latch to secure the cable.
7. Connect the touchpad cable to the system board and close the latch to secure the cable.
8. Connect the fingerprint-reader cable to the system board and close the latch to secure the cable. Skip this step if the power button does not have the fingerprint reader.
9. Connect the speaker cable to the system board.
10. Connect the headset-port cable to the system board.

11. Connect the antenna cables to the system board.

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

Table 3. Antenna-cable color scheme

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



Post-requisites

1. Replace the fans.
2. Replace the heat sink or heat-sink assembly.
3. Replace the solid-state drive.
4. Replace the battery.
5. Replace the base cover.

Entering the Service Tag in the BIOS setup program

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed to enter the BIOS setup program.
3. Navigate to the **Main** tab and enter the Service Tag in the **Service Tag Input** field.

NOTE: Service tag is the alphanumeric identifier located at the back side of your computer.

Removing the power button with fingerprint reader

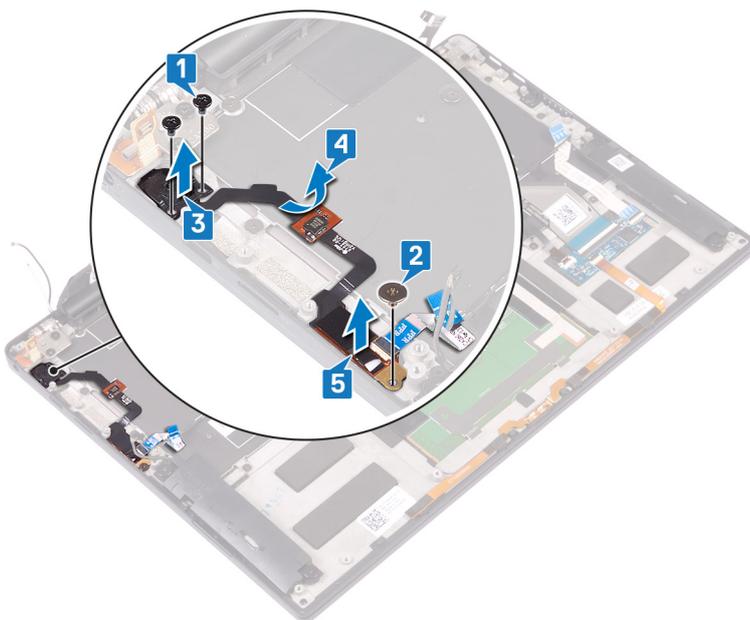
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [solid-state drive](#).
4. Remove the [fans](#).
5. Remove the [system board](#).

Procedure

1. Remove the two screws (M1.4x1.7) that secure the power button to the palm-rest assembly.
2. Remove the screw (M1.6x1.5) that secures the fingerprint-reader board to the palm-rest assembly.
3. Lift the power button from the palm-rest assembly.
4. Peel and lift the power button cable from the keyboard.
5. Lift the fingerprint-reader board from the palm-rest assembly.

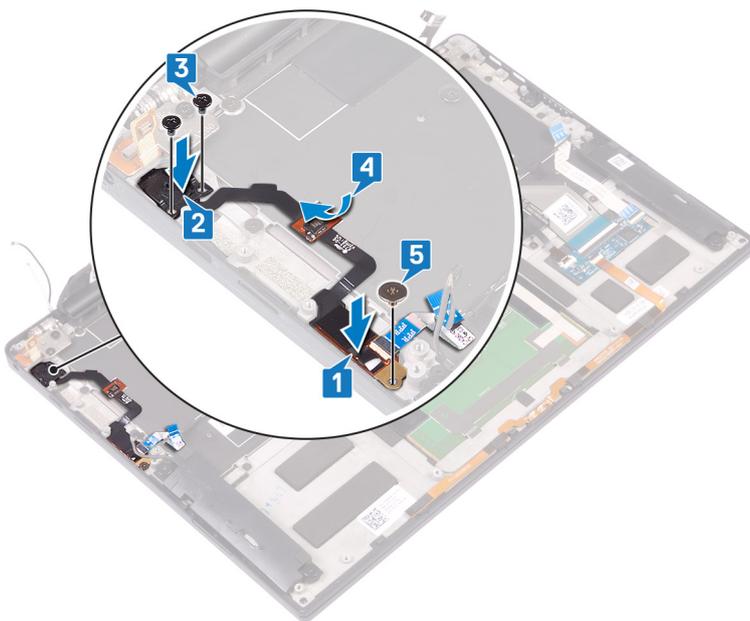


Replacing the power button with fingerprint reader

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Place the fingerprint-reader board into its slot on the palm-rest assembly.
2. Place the power button into its slot on the palm-rest assembly.
3. Pressing down on the power button, replace the two screws (M1.4x1.7) that secure the power button to the palm-rest assembly.
4. Adhere the power button cable to the keyboard.
5. Replace the screw (M1.6x1.5) that secures the fingerprint-reader board to the palm-rest assembly.



Post-requisites

1. Replace the [system board](#).
2. Replace the [fans](#).
3. Replace the [solid-state drive](#).
4. Replace the [battery](#).
5. Replace the [base cover](#).

Removing the keyboard

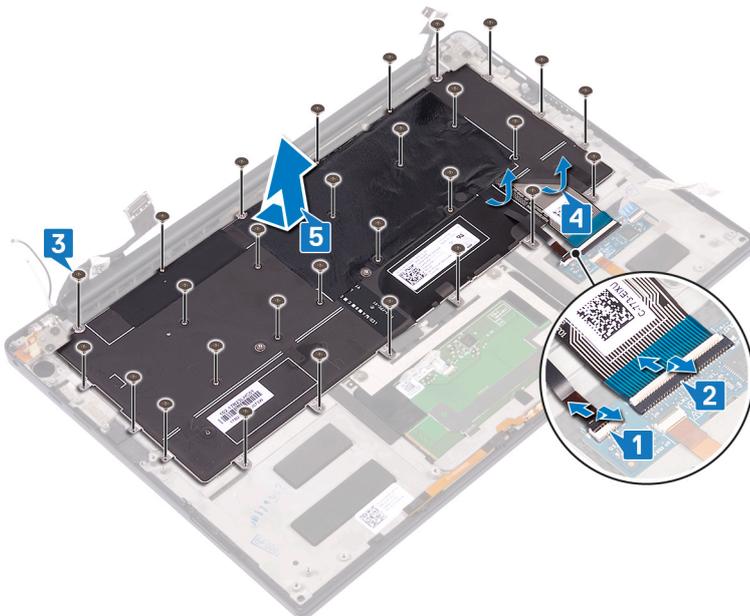
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [solid-state drive](#).
4. Remove the [fans](#).
5. Remove the [system board](#).
6. Remove the [power button with fingerprint reader](#).

Procedure

1. Open the latch and disconnect the keyboard-backlight cable from the keyboard-controller board.
2. Open the latch and disconnect the keyboard-controller board cable from the keyboard-controller board.
3. Remove the 29 screws (M1.6x1.5) that secure the keyboard to the palm-rest assembly.
4. Peel the keyboard-backlight cable and the keyboard-controller board cable to the keyboard.
5. Slide the keyboard out from under the hinges off the palm-rest assembly.

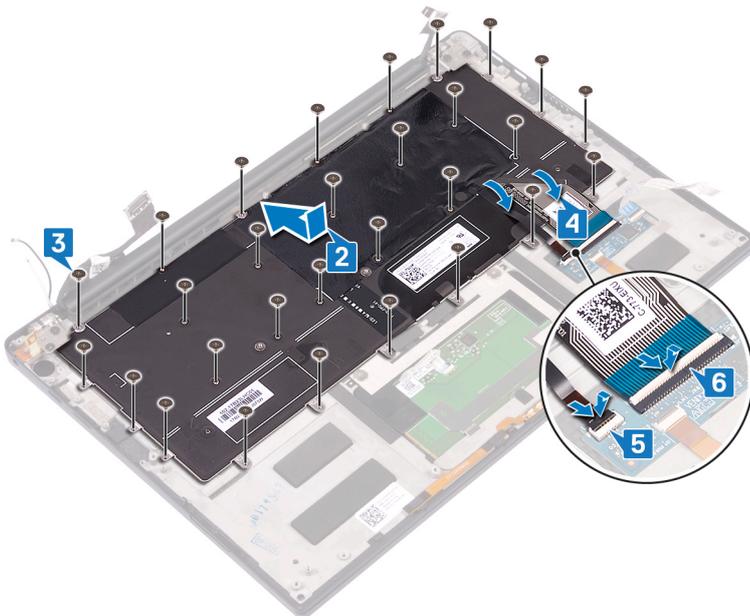


Replacing the keyboard

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Adhere the thermal pad and foil sticker that is shipped with the keyboard onto the replacement keyboard.
2. Align the screw holes on the keyboard with the screw holes on the palm-rest assembly and slide the keyboard under the display hinges into the palm rest assembly.
3. Replace the 29 screws (M1.6x1.5) that secure the keyboard to the palm-rest assembly.
4. Adhere the keyboard-backlight cable and the keyboard-controller board cable to the keyboard.
5. Slide the keyboard-backlight cable into the keyboard-controls board and close the latch to secure the cable.
6. Slide the keyboard-controls board cable into the keyboard-controls board and close the latch to secure the cable.



Post-requisites

1. Replace the [power button with fingerprint reader](#).
2. Replace the [system board](#).
3. Replace the [fans](#).
4. Replace the [solid-state drive](#).
5. Replace the [battery](#).
6. Replace the [base cover](#).

Removing the palm-rest assembly

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [speakers](#).
4. Remove the [display assembly](#).
5. Remove the [headset port](#).
6. Remove the [fans](#).
7. Remove the [system board](#).
8. Remove the [power button with fingerprint reader](#).
9. Remove the [keyboard](#).

Procedure

After performing all the pre-requisites, we are left with the palm-rest assembly.



Replacing the palm-rest assembly

NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

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



Post-requisites

1. Replace the [keyboard](#).
2. Replace the [power button with fingerprint reader](#).
3. Replace the [system board](#).
4. Replace the [fans](#).
5. Replace the [headset port](#).
6. Replace the [display assembly](#).
7. Replace the [speakers](#).
8. Replace the [battery](#).
9. Replace the [base cover](#).

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

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 4. 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)
- **i** **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 F2 immediately.

i **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)
- **i** **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

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

Table 5. System setup options—Overview menu

Overview	
XPS 13 9305	
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.
Battery State	Displays the battery state.

Table 5. System setup options—Overview menu (continued)

Overview	
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.
DEVICES	
Panel Type	Displays the Panel Type of the computer.
Video Controller	Displays the integrate graphics information of the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the Wi-Fi device installed in the computer.
Native Resolution	Displays the native resolution of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays whether a Bluetooth device is installed in the computer.
Pass Through MAC Address	Displays the MAC address of the video pass-through.

Table 6. System setup options—Boot Configuration menu

Boot Configuration	
Boot Mode: UEFI only	Displays the boot mode of this computer.
Boot Sequence	Displays the boot sequence.
Secure Digital (SD) Card Boot	Enables or disables boot from Secure Digital card. By default, Enable Secure Digital (SD) Card Boot is selected.
Secure Boot	

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

Boot Configuration	
Enable Secure Boot	<p>Enables or disables the computer to boot using only validated boot software.</p> <p>Default: OFF</p> <p>i 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>i NOTE: Deployed Mode should be selected for normal operation of Secure Boot.</p>
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>
Custom Mode Key Management	<p>Selects the custom values for expert key management.</p> <p>Default: PK</p>

Table 7. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	<p>Sets the computer date in MM/DD/YYYY format. Changes to the date take effect immediately.</p>
Time	<p>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.</p>
Thunderbolt Adapter Configuration	
	<p>Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive.</p> <p>By default, Enable External USB Ports is selected.</p> <p>By default, Enable USB Boot Support is selected.</p>
Enable Thunderbolt Boot Support	<p>Enables or disables Thunderbolt Boot Support.</p> <p>Default: OFF</p>
Enable Thunderbolt (and PCIe behind TBT) pre-boot modules	<p>Enables or disables to allow or disallow PCIe devices to be connected through a Thunderbolt adapter during pre-boot.</p> <p>Default: OFF</p>
Camera	
Enable Camera	<p>Enables or disables the camera.</p> <p>By default, Enable Camera is selected.</p>
Audio	
Enable Audio	<p>Enables or disables all integrated audio controller.</p> <p>Default: ON</p>
Enable Microphone	<p>Enables or disables microphone.</p> <p>By default, Enable Microphone is selected.</p>

Table 7. System setup options—Integrated Devices menu (continued)

Integrated Devices	
Enable Internal Speaker	Enables or disables internal speaker. By default, Enable Internal Speaker is selected.
USB configuration	
Enable USB Boot Support	Enable or disable booting from USB mass storage devices such as external hard drive, optical drive, and USB drive.
Enable External USB Ports	Enable or disable booting from USB mass storage devices connected to external USB port.

Table 8. System setup options—Storage menu

Storage	
SATA/	
SATA	Configure operating mode of the integrated SATA hard drive controller. Default: Disabled
Storage Interface	
M.2 PCIe SSD	Enables or disables the M.2 PCIe SSD. Default: ON
Drive Information	
M.2 PCIe SSD	Enables or disables the M.2 PCIe SSD. Default: ON
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.

Table 9. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Sets the screen brightness when the computer is running on battery power. Default: 50
Brightness on AC power	Sets the screen brightness when the computer is running on AC power. Default: 100
Touchscreen	
Touchscreen	Enables or disables the touchscreen. Default: ON
Full Screen Logo	
Full Screen Logo	Enabled or disabled the computer to display full screen logo if the image match screen resolution. Default: OFF

Table 10. System setup options—Connection menu

Connection	
Wireless Device Enable	Enable or disable internal WLAN/Bluetooth devices. By default, WLAN is selected. By default, Bluetooth is selected.
Enable UEFI Network Stack	
Enable UEFI Network Stack	Enables or disables UEFI Network Stack. Default: ON

Table 11. System setup options—Power menu

Power	
Battery Configuration	
Battery Configuration	Enables the computer to run on battery during power usage hours. Use the below options to prevent AC power usage between certain times of each day. Default: Adaptive. Battery settings are adaptively optimized based on your typical battery usage pattern.
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day. Default: OFF
Peak Shift	
Enable Peak Shift	Enables the computer to run on battery during peak power usage hours. Default: OFF
Thermal Management	
Thermal Management	Adjusts system performance, noise, and temperature. Default: Optimized. Standard setting for balance of performance, noise, and temperature.
USB Wake Support	
Wake on Dell USB-C Dock	Enables connecting a Dell USB-C Dock to wake the computer from Standby. Default: ON
Block Sleep	
Block Sleep	Blocks the computer from entering Sleep (S3) mode in the operating system. Default: OFF i NOTE: If enabled, the computer will not go to sleep, Intel Rapid Start will be disabled automatically, and the operating system power option will be blank if it was set to Sleep.
Lid Switch	
Enable Lid Switch	Enables or disables the lid switch.
Power On Lid Open	Enables the computer to power up from the off state whenever the lid is opened. Default: ON

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

Power	
Intel Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. Setting this option to enable allows the operating system to select the appropriate processor performance automatically. Default: ON

Table 12. System setup options—Security menu

Security	
TPM 2.0 Security On	
PPI Bypass for Enable Commands	Enables or disables the OS to skip BIOS Physical Presence Interface (PPI) user prompts when issuing TPM PPI enabled and activate commands. Default: OFF
PPI Bypass for Disable Commands	Enables or disables The OS to skip BIOS PPI user prompts when issuing TPM PPI Disable and Deactivate commands. Default: OFF
TPM 2.0 Security On	Select whether or not the Trusted Platform Model (TPM) is visible to the OS. Default: ON
Attestation Enable	Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for signature operations. Default: ON
Key Storage Enable	Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for storing owner data. Default: ON
SHA-256	Enables or disables the BIOS and the TPM to use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot. Default: ON
Clear	Enables or disables the computer to clear the PTT owner information, and returns the PTT to the default state. Default: OFF
PPI Bypass for Clear Commands	Enables or disables the operating system to skip BIOS Physical Presence Interface (PPI) user prompts when issuing the Clear command. Default: OFF
TPM State	Enables or disables the TPM. This is the normal operating state for the TPM when you want to use its complete array of capabilities. Default: Enabled
SMM Security Mitigation	
SMM Security Mitigation	Enables or disables additional UEFI SMM Security Mitigation protections. Default: OFF  NOTE: This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.
Data Wipe on Next Boot	

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

Security	
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>
Absolute	
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>
UEFI Boot Path Security	
UEFI Boot Path Security	<p>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.</p> <p>Default: Always Except Internal HDD</p>

Table 13. System setup options—Passwords menu

Passwords	
Admin Password	Sets, Changes, or deletes the administrator (admin) password (sometimes called the "setup" password).
System Password	Sets, Changes, or deletes the system password.
Password Configuration	
Upper Case Letter	<p>Enables or disables the requirement for at least one upper case letter.</p> <p>Default: OFF</p>
Lower Case Letter	<p>Enables or disables the requirement for at least one lower case letter.</p> <p>Default: OFF</p>
Digit	<p>Enables or disables the requirement for at least one digit number.</p> <p>Default: OFF</p>
Special Character	<p>Enables or disables the requirement for at least one special character.</p> <p>Default: OFF</p>
Minimum Characters	<p>Specify the minimum number of characters allowed for the password.</p> <p>Default: 4</p>
Password Bypass	
Password Bypass	<p>Bypass the System (Boot) Password and the internal hard drive password prompts during a system restart.</p> <p>Default: Disabled</p>
Password Changes	
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>
Admin Setup Lockout	

Table 13. System setup options—Passwords menu (continued)

Passwords	
Enable Admin Setup Lockout	Enables or disables the user from entering BIOS Setup when an Admin Password is set. Default: OFF
Master Password Lockout	
Enable Master Password Lockout	Enables or disables the master password support. Default: OFF

Table 14. System setup options—Update, Recovery menu

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

Table 15. System setup options—System Management menu

System Management	
Service Tag	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	

Table 15. System setup options—System Management menu (continued)

System Management	
Asset Tag	Creates a system Asset Tag that can be used by an IT administrator to uniquely identify a particular system. Once set in BIOS, the Asset Tag cannot be changed.
AC Behavior	
Wake on AC	Enables the computer to turn on and go to boot when AC power is supplied to the computer. Default: OFF
Wake on LAN	
Wake on LAN	Enables or disables the computer to turn on by a special LAN signal. Default: Disabled
Auto On Time	
Auto On Time	Enables the computer to automatically power on for defined days and times. Default: Disabled. The system will not automatically power up.

Table 16. System setup options—Keyboard menu

Keyboard	
Fn Lock Options	
Fn Lock Options	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.
Keyboard Illumination	
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	
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	
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 17. System setup options—Pre-boot Behavior menu

Pre-boot Behavior	
Adapter Warnings	
Enable Dock Warning Messages	Enables or disables dock warning messages. Default: ON
Warnings and Errors	
Warnings and Errors	Selects an action on encountering a warning or error during boot.

Table 17. System setup options—Pre-boot Behavior menu (continued)

Pre-boot Behavior	
	<p>Default: Prompt on Warnings and Errors. Stop, prompt, and wait for user input when warnings or errors are detected.</p> <p> NOTE: Errors deemed critical to the operation of the computer hardware will always halt the computer.</p>
USB-C Warnings	
Enable Dock Warning Messages	<p>Enables or disables dock warning messages.</p> <p>Default: ON</p>
Fastboot	
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	
Extend BIOS POST Time	<p>Configures the BIOS POST (Power-On Self-Test) load time.</p> <p>Default: 0 seconds</p>
MAC Address Pass-Through	
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>
Mouse/Touchpad	
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>

Table 18. System setup options—Virtualization menu

Virtualization	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	<p>Enables the computer to run a virtual machine monitor (VMM).</p> <p>Default: ON</p>
VT for Direct I/O	
Enable Intel VT for Direct I/O	<p>Enables the computer to perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O.</p> <p>Default: ON</p>

Table 19. System setup options—Performance menu

Performance	
Multi-Core Support	
Active Cores	<p>Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores.</p> <p>Default: All Cores</p>
Intel SpeedStep	

Table 19. System setup options—Performance menu (continued)

Performance	
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 20. System setup options—System Logs menu

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

Clearing CMOS settings

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

1. Remove the [base cover](#).
2. Disconnect the battery cable from the system board.
3. Remove the [coin-cell battery](#).
4. Wait for one minute.
5. Replace the [coin-cell battery](#).
6. Connect the battery cable to the system board.
7. Replace the [base cover](#).

Clearing BIOS (System Setup) and System passwords

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

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

Power and battery-status light

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

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

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

Off:

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

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

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

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

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

Table 21. Diagnostic-light LED codes

Diagnostic light codes (Amber,White)	Problem description	Recommended solutions
2,1	Processor failure	Replace the system board.
2,2	System board: BIOS or ROM (Read-Only Memory) failure	Flash latest BIOS version. If problem persists, replace the system board.
2,3	No memory or RAM (Random-Access Memory) detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.

Table 21. Diagnostic-light LED codes (continued)

Diagnostic light codes (Amber, White)	Problem description	Recommended solutions
2,4	Memory or RAM (Random-Access Memory) failure	Reset and swap memory modules among the slots. If problem persists, replace the memory module.
2,5	Invalid memory installed	Reset and swap memory modules among the slots. If problem persists, replace the memory module.
2,6	System-board or chipset error	Flash latest BIOS version. If problem persists, replace the system board.
2,7	Display failure - SBIOS message	Flash latest BIOS version. If problem persists, replace the system board.
3,1	Coin-cell battery failure	Reset the CMOS battery connection. If problem persists, replace the RTC battery.
3,2	PCI, video card/chip failure	Replace the system board.
3,3	Recovery image not found	Flash latest BIOS version. If problem persists, replace the system board.
3,4	Recovery image found but invalid	Flash latest BIOS version. If problem persists, replace the system board.
3,5	Power-rail failure	EC ran into power sequencing failure. If problem persists, replace the system board.
3,6	System BIOS Flash incomplete	Flash corruption detected by SBIOS. If problem persists, replace the system board.
3,7	Management Engine (ME) error	Timeout waiting on ME to reply to HECI message. If problem persists, replace the system board.

Recovering the operating system

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

Dell SupportAssist OS Recovery is a 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

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:

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 **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

4. Click **Drivers & downloads > Find it myself**.
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)

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 [SLN143196](#) 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](#).

Drain residual flea power (perform hard reset)

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

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

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

To drain residual flea power (perform a hard reset)

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

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

WiFi power cycle

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.

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.

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 app	
Tips	
Contact Support	In Windows search, type <code>Contact Support</code> , and press Enter.
Online help for operating system	www.dell.com/support/windows
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support . 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.