XPS 13 9300

Service Manual

Regulatory Model: P117G
Regulatory Type: P117G001

Notes, cautions, and warnings

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

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

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

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Contents

1

Working inside your computer

Before working inside your computer

About this task

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

Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. Click **Start** > **Power** > **Shut down**.

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

   CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
5. Remove any media card and optical disc from your computer, if applicable.

Safety instructions

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

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

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

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

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

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

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

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

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

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

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

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

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

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

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

Perform the following steps to prevent ESD damage:

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

ESD field service kit

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

Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.

- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

ESD protection summary

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

Transporting sensitive components

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

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

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

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

After working inside your computer

About this task

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

Steps

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

2

Removing and installing components

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Phillips screwdriver #1
- 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 surface when replacing a component.

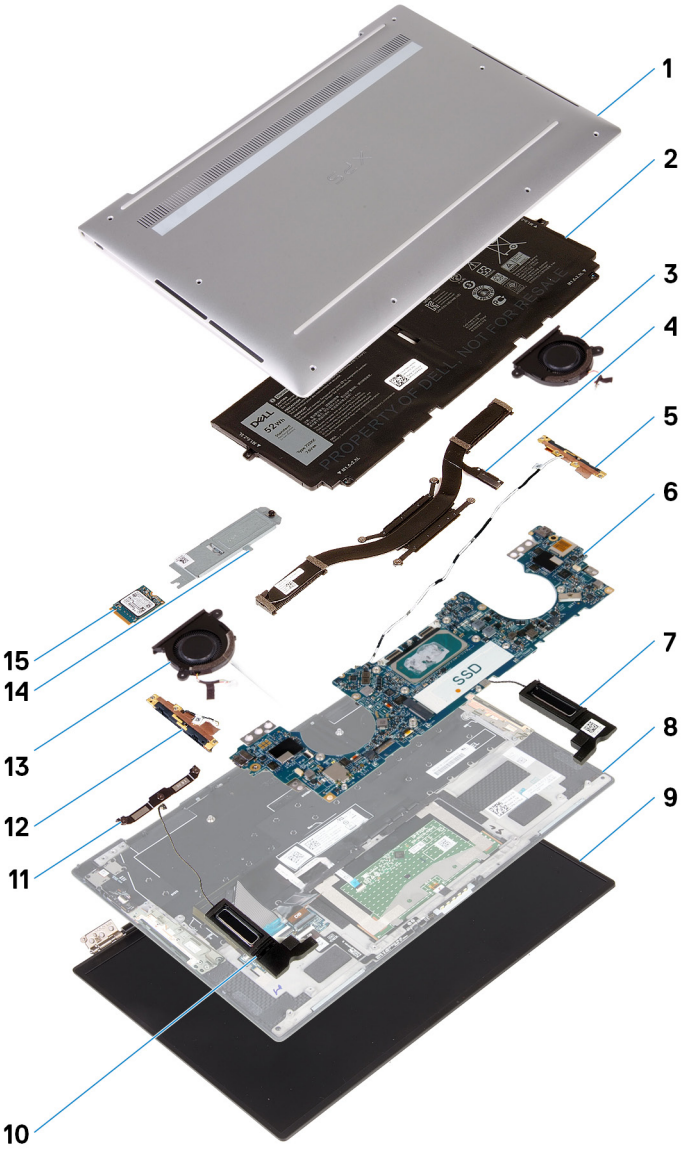
NOTE: Screw color may vary with the configuration ordered.

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2x3, Torx 5	8	
Battery	Palm-rest and keyboard assembly	M1.6x2.5	5	
Solid-state drive bracket	System board	M2x3	1	
Fans	System board	M1.6x2.5	4	
Display-assembly cable holder	System board	M1.2x2	3	
Display-assembly hinges	Palm-rest and keyboard assembly	M2.5x4.5	6	
System board	Palm-rest and keyboard assembly	M1.6x1.5	4	
System board	Palm-rest and keyboard assembly	M1.2x2	3	
System board	Palm-rest and keyboard assembly	M1.4x4	4	

Major components of XPS 13 9300

The following image shows the major components of XPS 13 9300.



1. Base cover
2. Battery
3. Left fan
4. Heat sink
5. Left antenna
6. System board
7. Left speaker
8. Palm-rest and keyboard assembly
9. Display assembly
10. Right speaker
11. Display-cable bracket
12. Right antenna
13. Right fan
14. Solid-state drive shield
15. Solid-state drive

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

Base cover

Removing the base cover

Prerequisites

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

About this task

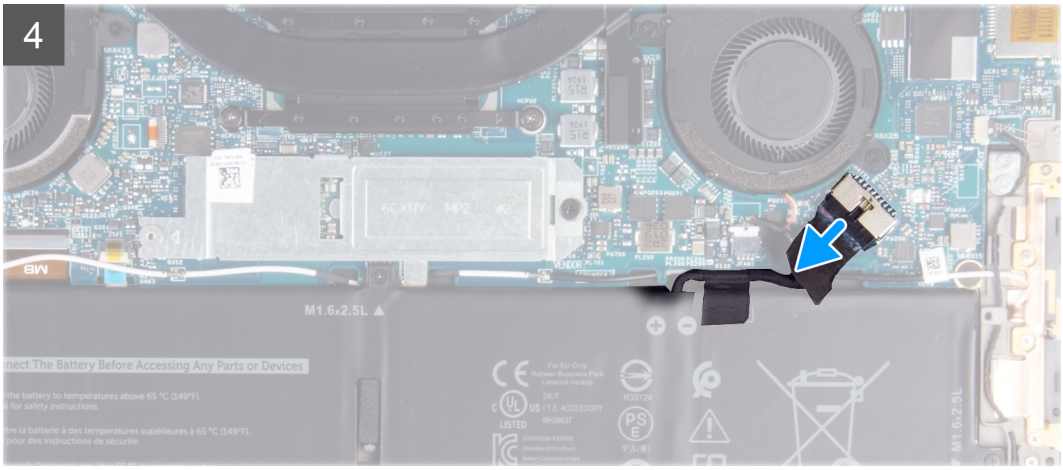
The following images indicate the location of the base cover and provide a visual representation of the removal procedure.

8x
M2x3, Torx 5

1

2

3



Steps

1. Remove the eight screws (M2x3, Torx 5) that secure the base cover to the palm-rest and keyboard assembly.
2. Starting from the bottom-left corner, use a plastic scribe to pry the base cover in the direction of the arrows to release the base cover from the palm-rest and keyboard assembly.

   CAUTION: Do not pull on or pry the base cover from the side where the hinges are; doing so may damage the base cover.
3. Hold both sides of the base cover and rotate the base cover from bottom to top to remove it from the palm-rest and keyboard assembly.

   NOTE: The pins at the bottom of the base cover for grounding the antennas and the audio board are fragile. Place the base cover on a clean surface to avoid damage to the pins.

   NOTE: The following steps are applicable only if you want to further remove any other component from your computer.
4. Using the pull tab, disconnect the battery cable from the system board.
5. Turn your computer over and press the power button for 15 seconds to drain the flea power.

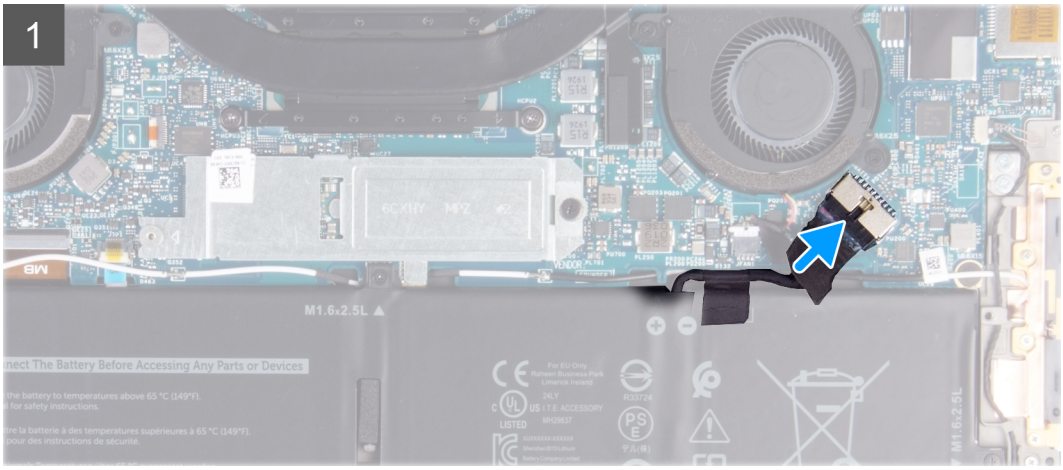
Installing the base cover

Prerequisites

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

About this task

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



2

8x
M2x3, Torx 5

3

Steps

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

3. Replace the eight screws (M2x3, Torx 5) that secure the base cover to the palm-rest and keyboard assembly.

Next steps

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

Battery

Lithium-ion battery precautions

CAUTION:

- **Exercise caution when handling Lithium-ion batteries.**
- **Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**

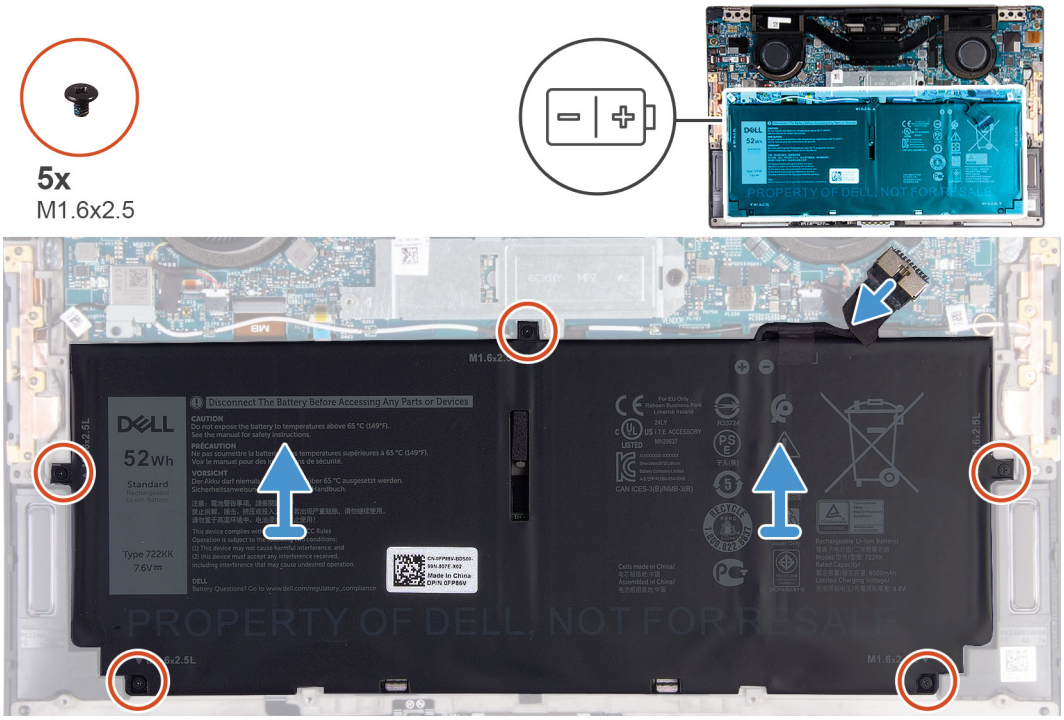
Removing the battery

Prerequisites

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

About this task

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



Steps

1. Remove the five screws (M1.6x2.5) that secure the battery to the palm-rest and keyboard assembly.
2. Disconnect the battery cable from the system board, if applicable.
3. Lift the battery off the palm-rest and keyboard assembly.

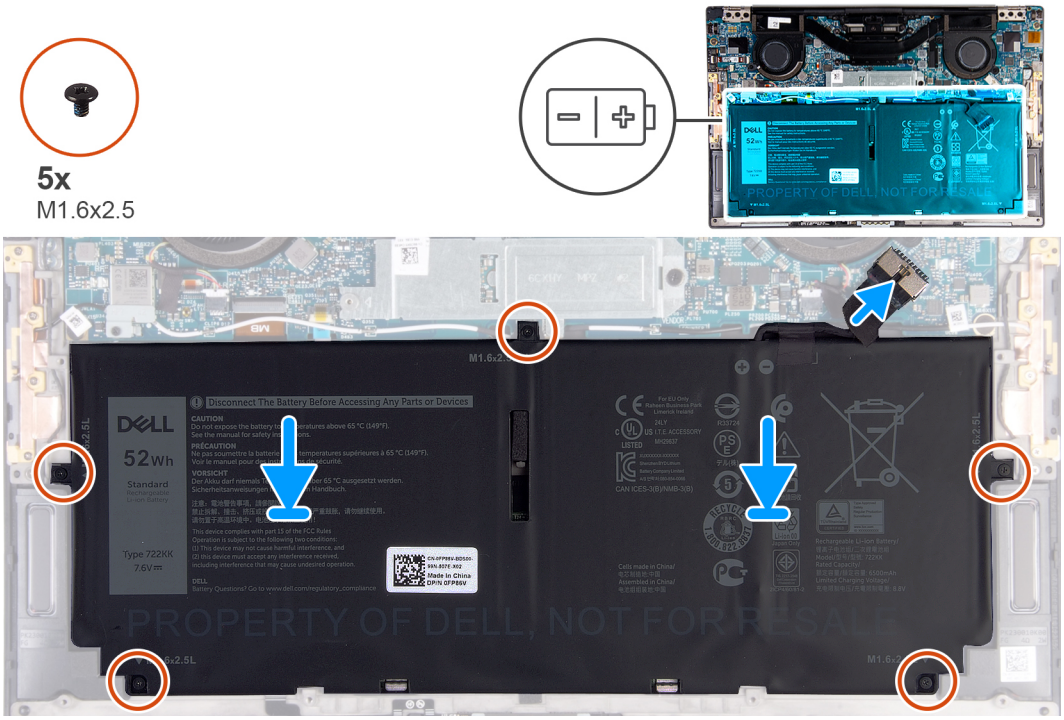
Installing the battery

Prerequisites

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

About this task

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



Steps

1. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
2. Replace the five screws (M1.6x2.5) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the system board.

Next steps

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

Solid-state drive

Removing the solid-state drive

Prerequisites

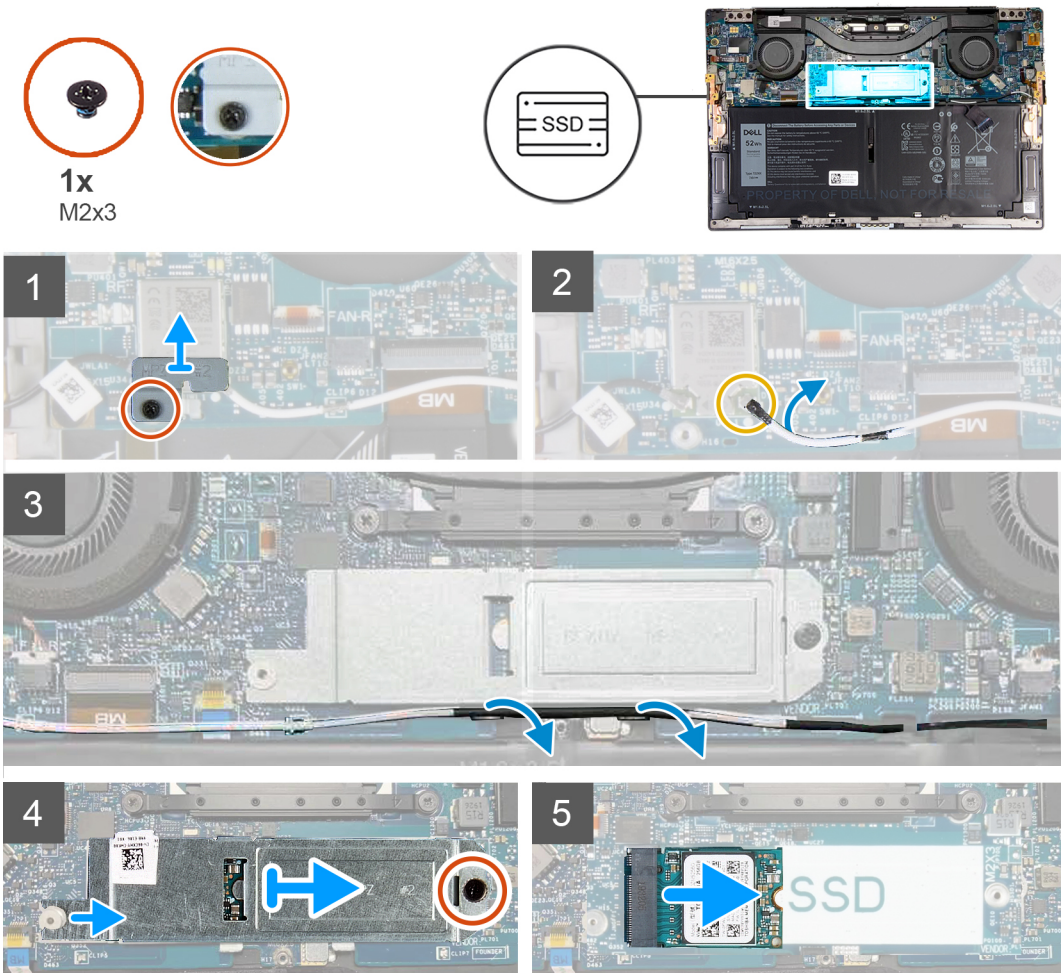
1. Follow the procedure in Before working inside your computer.

   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.
2. Remove the base cover.

About this task

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



Steps

1. Loosen the captive screw that secures the wireless-card bracket to the system board.
2. Lift the wireless-card bracket off the system board.
3. Using a plastic scribe, disconnect the left antenna cable from the wireless card.
4. Note the routing of the left antenna cable.
5. Starting from the wireless card, remove each antenna cable from the routing guides, toward the respective antennas.
6. Remove the screw (M2x3) that secures the solid-state drive shield and the solid-state drive to the system board.
7. Slide the solid-state drive shield from the alignment post and lift the solid-state drive shield off the system board.
8. Slide and remove the solid-state drive from the solid-state drive slot.

NOTE: The size of the solid-state drive shield is specific to the size of the solid-state drive that is shipped with your computer. The solid-state drive shield cannot be used for a different-sized solid-state drive.

Installing the solid-state drive

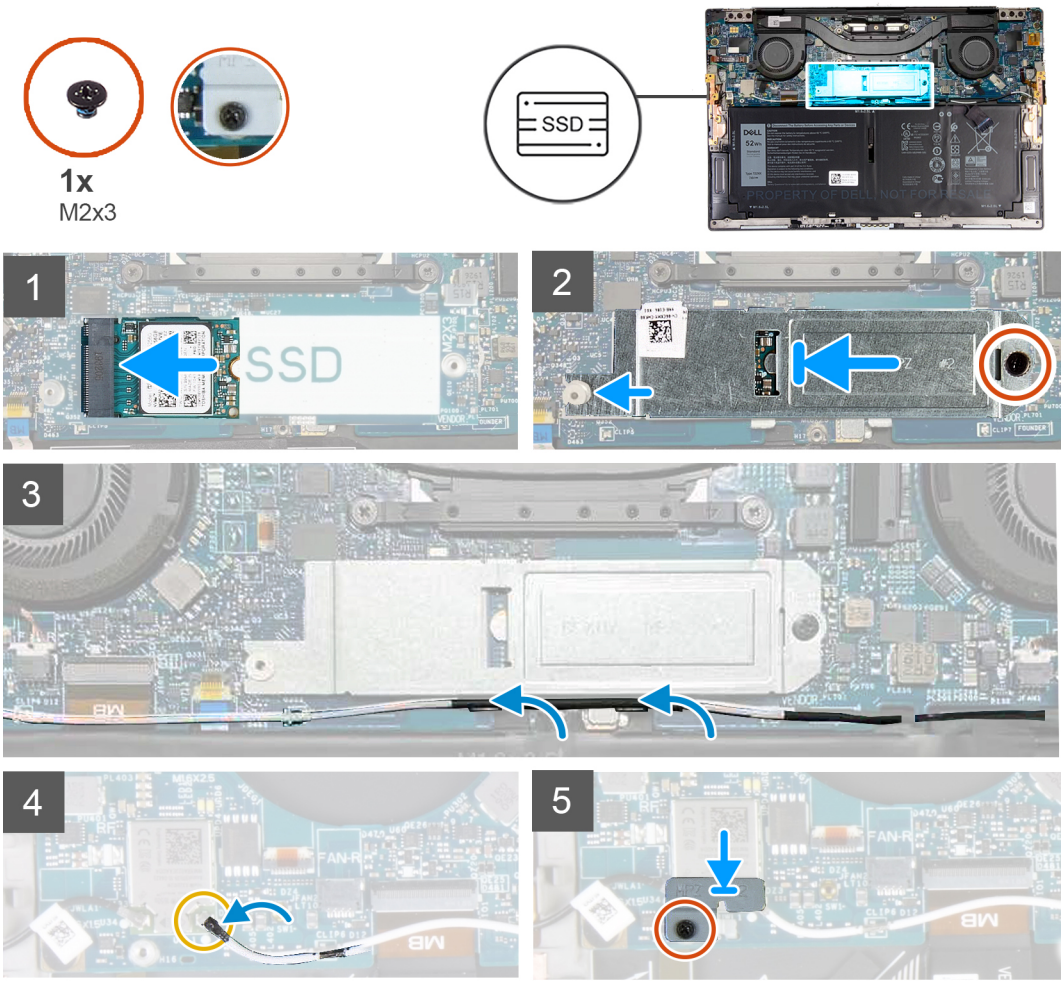
Prerequisites

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

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

About this task

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



Steps

1. Align the notch on the solid-state drive with the tab on the solid-state drive slot.
2. Gently slide the solid-state drive into the solid-state drive slot.
3. Align the solid-state drive shield with the alignment post, and align the screw hole on the solid-state drive shield with the screw hole on the system board.

   NOTE: The size of the solid-state drive shield is specific to the size of the solid-state drive that is shipped with your computer. The solid-state drive shield cannot be used for a different-sized solid-state drive.
4. Replace the screw (M2x3) that secures the solid-state drive shield and the solid-state drive to the system board.
5. Route the left antenna cable through the routing guides on the system board toward the wireless card.
6. Connect the left antenna cable to the wireless card.
7. Align the screw hole on the wireless-card bracket with the screw hole on the system board.

   NOTE: Ensure that tab on the wireless-card bracket is inserted into the slot in the system board.
8. Tighten the captive screw that secures the wireless-card bracket to the system board.

Next steps

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

Fans

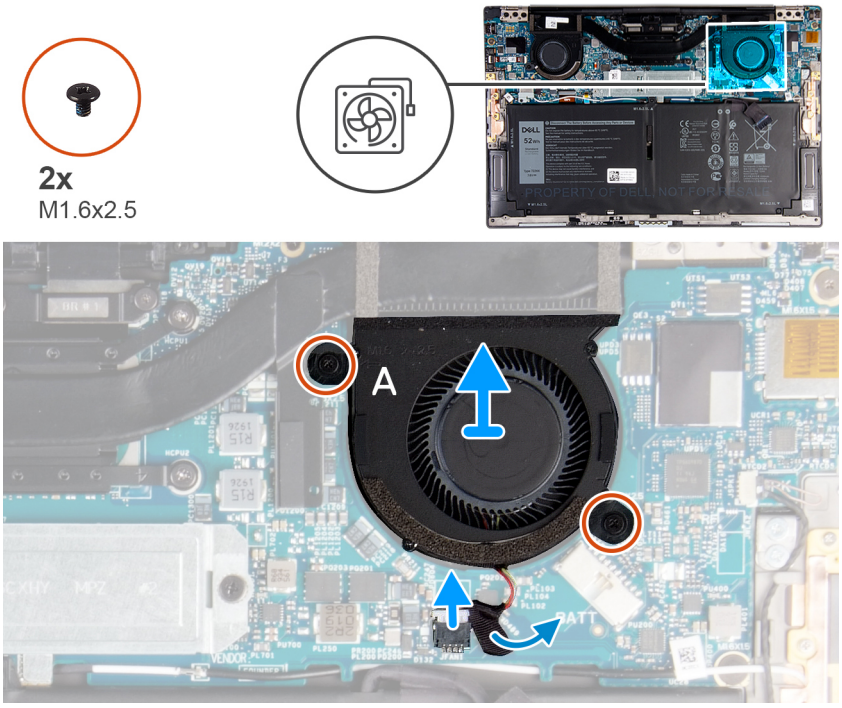
Removing the fans

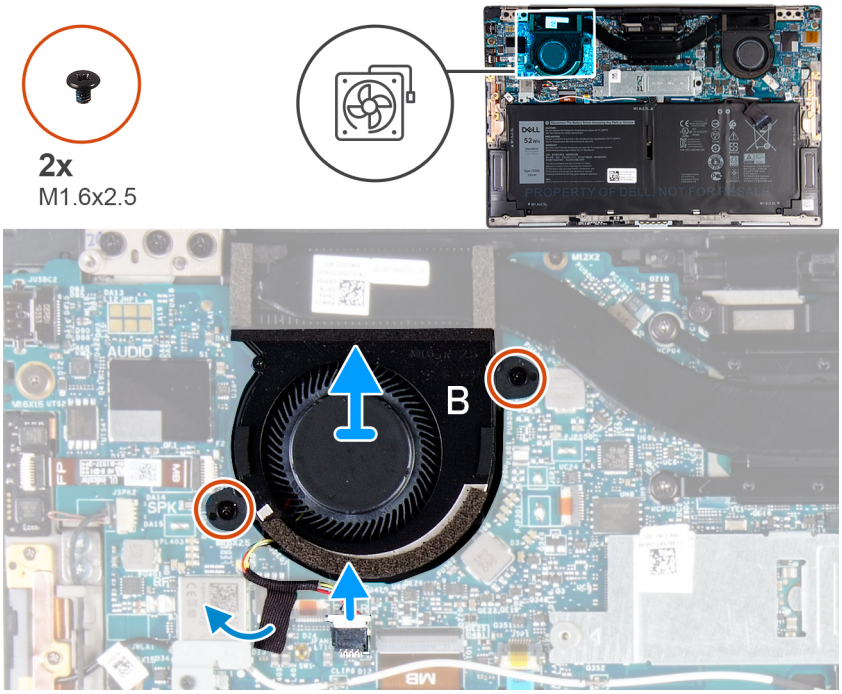
Prerequisites

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

About this task

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





Steps

1. Peel the tape that secures the fan A cable to the system board.
2. Disconnect the fan A cable from the system board.
3. Remove the two screws (M1.6x2.5) that secure fan A to the system board.
4. Lift fan A off the system board.
5. Peel the tape that secures the fan B cable to the system board.
6. Disconnect the fan B cable from the system board.
7. Remove the two screws (M1.6x2.5) that secure fan B to the system board.
8. Lift fan B off the system board.

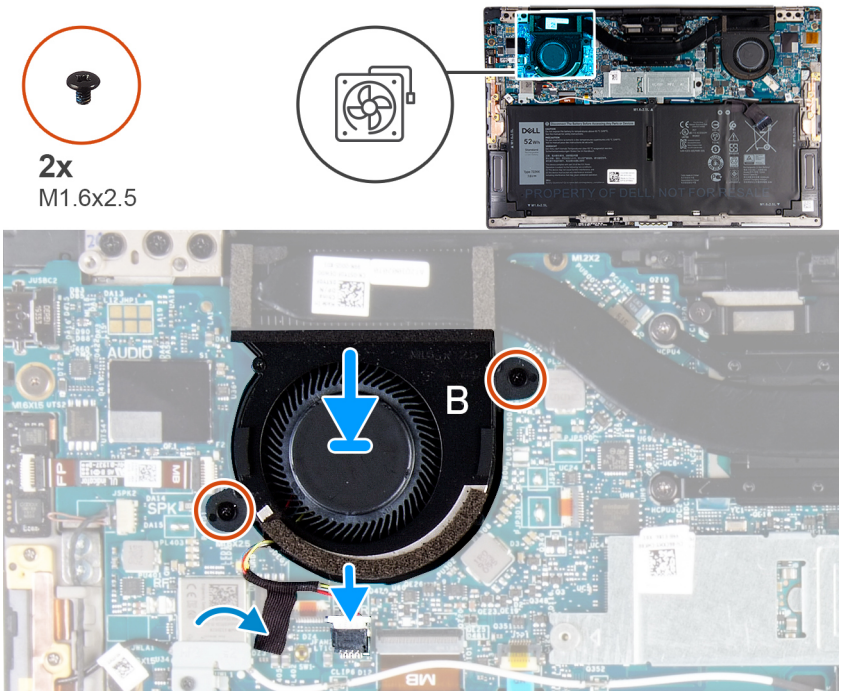
Installing the fans

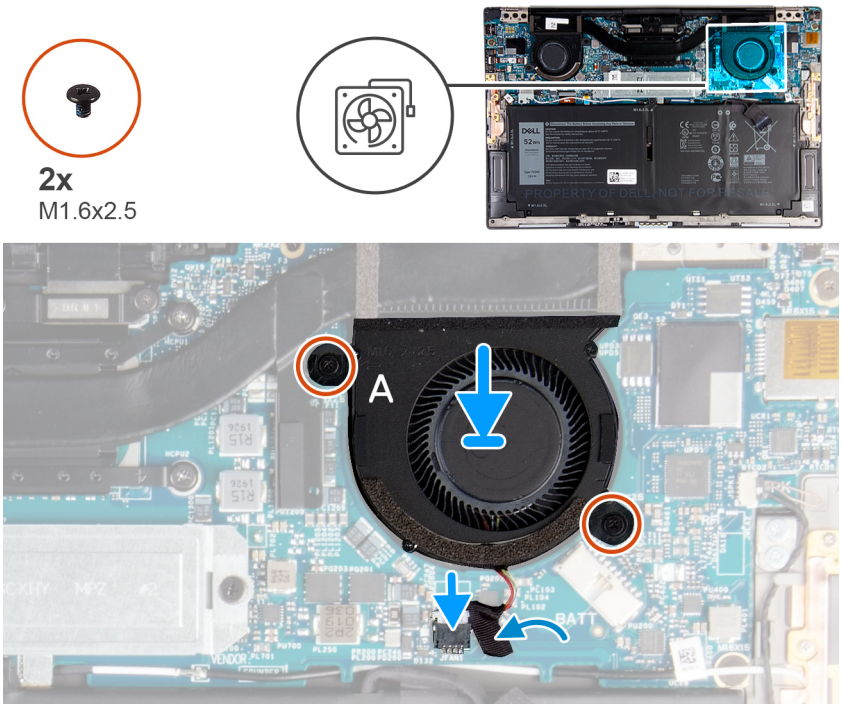
Prerequisites

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

About this task

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





Steps

1. Align the screw holes on fan B with the screw holes on the system board.
2. Replace the two screws (1.6x2.5) that secure fan B to the system board.
3. Connect the fan B cable to the system board.
4. Adhere the tape that secures the fan B cable to the system board.
5. Align the screw holes on fan A with the screw holes on the system board.
6. Replace the two screws (1.6x2.5) that secure fan A to the system board.
7. Connect the fan A cable to the system board.
8. Adhere the tape that secures the fan A cable to the system board.

Next steps

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

Heat sink

Removing the heat sink

Prerequisites

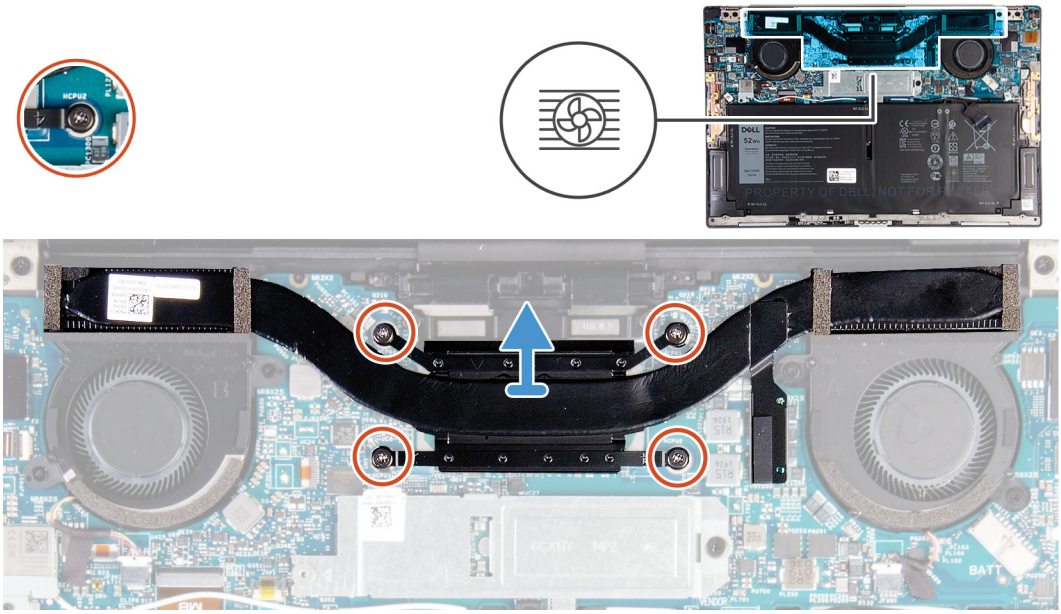
1. Follow the procedure in Before working inside your computer.

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

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

About this task

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



Steps

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

Installing the heat sink

Prerequisites

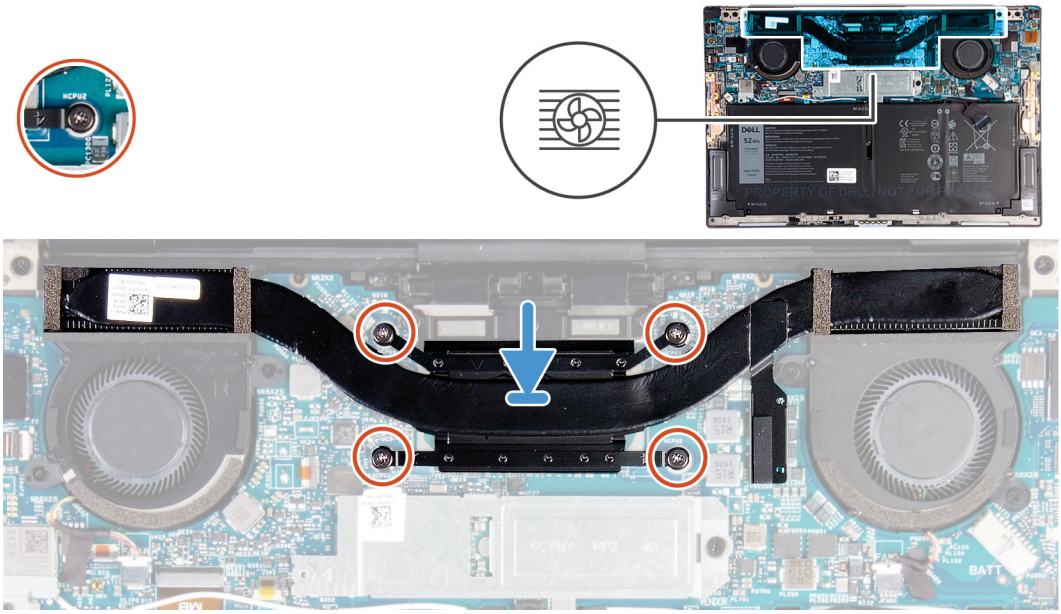
If you are replacing a component, remove the existing component before performing the installation procedure.

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

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

About this task

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



Steps

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

Next steps

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

Display assembly

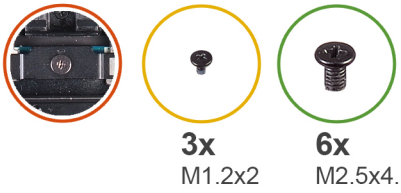
Removing the display assembly

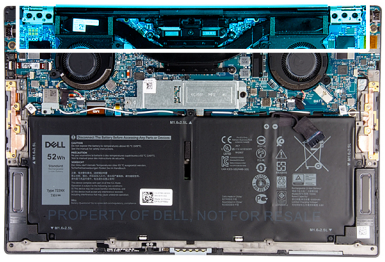
Prerequisites

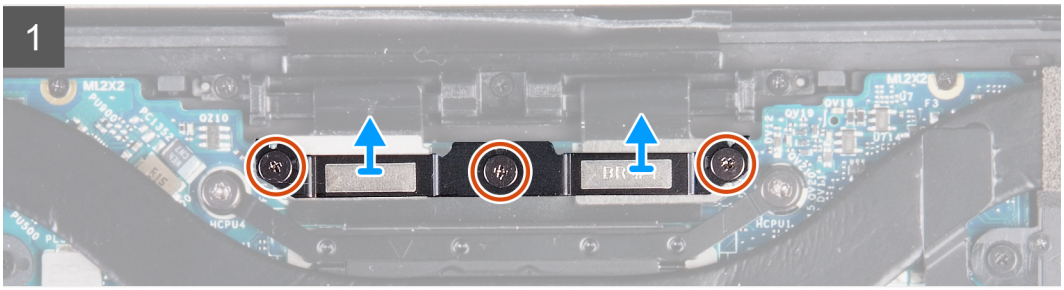
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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


3x
M1.2x2
6x
M2.5x4.5

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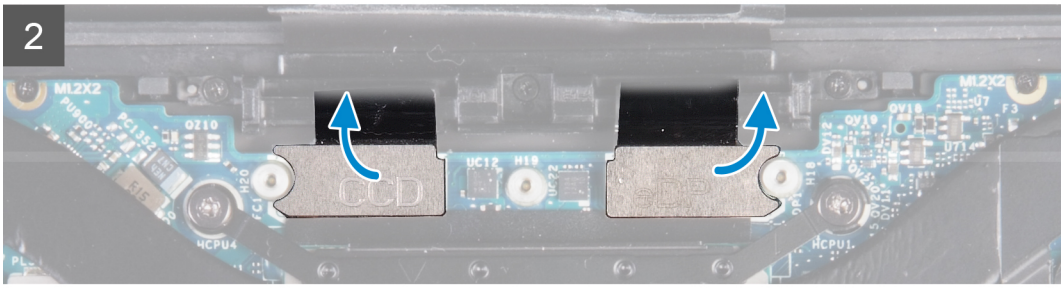
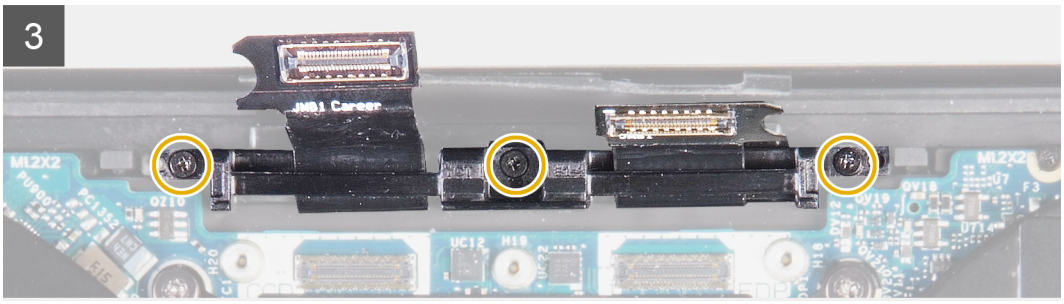
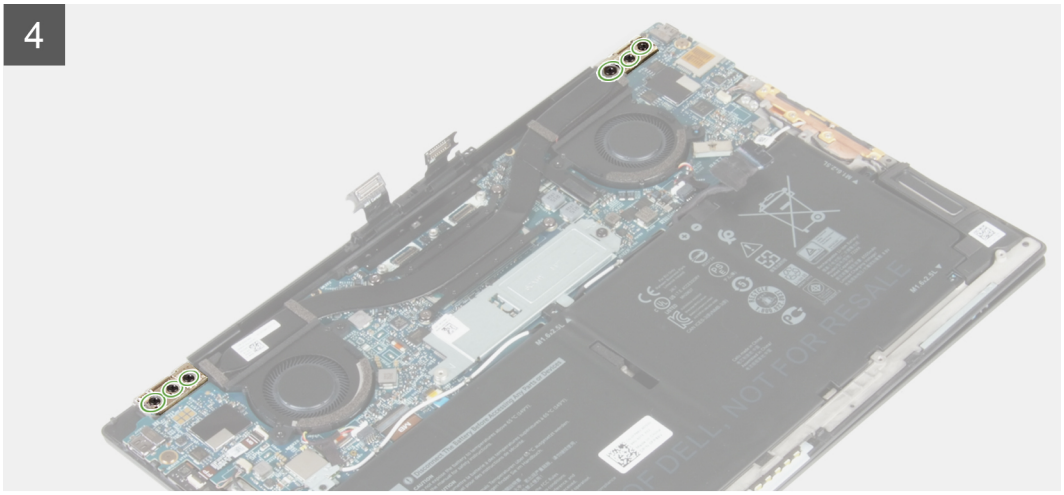
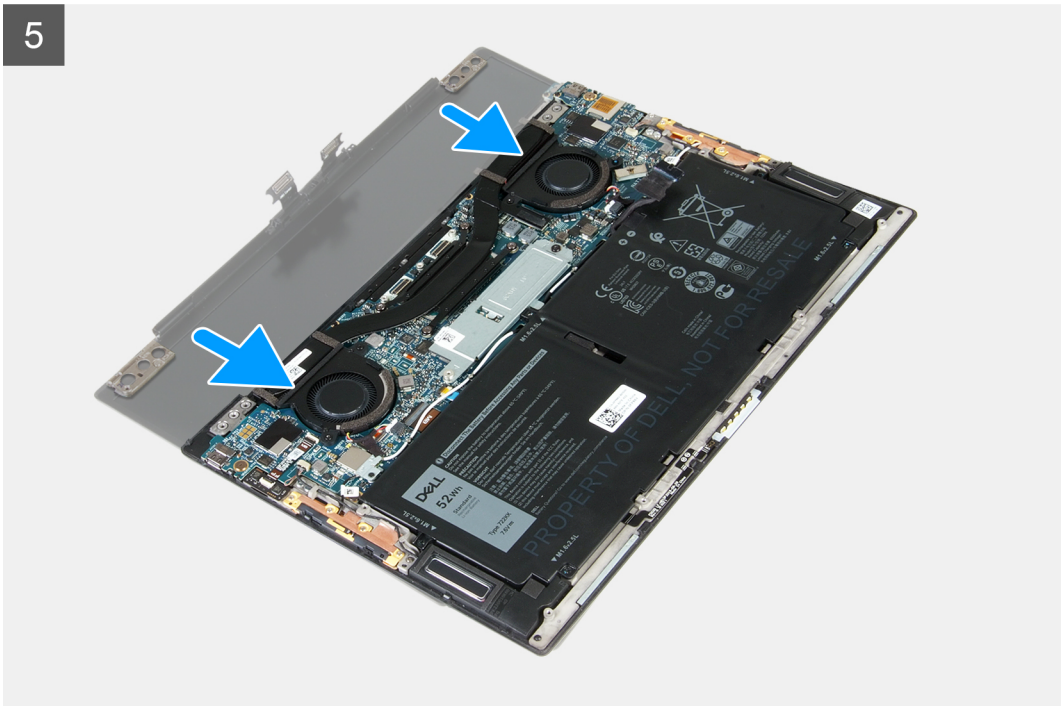

2


3





Steps

1. Loosen the three captive screws that secure the display-assembly cable bracket to the system board.
2. Lift the display-assembly cable bracket off the system board.
3. Disconnect the camera cable and the display cable from the system board.
4. Remove the three screws (M1.2x2) that secure the display-assembly cable holder to the palm-rest and keyboard assembly.
5. Remove the three screws (M2.5x4.5) that secure the left hinge to the system board and the palm-rest and keyboard assembly.
6. Remove the three screws (M2.5x4.5) that secure the right hinge to the system board and the palm-rest and keyboard assembly.
7. Slide the palm-rest and keyboard assembly from the display assembly.
8. After performing all the above steps, you are left with display assembly.

Installing the display assembly

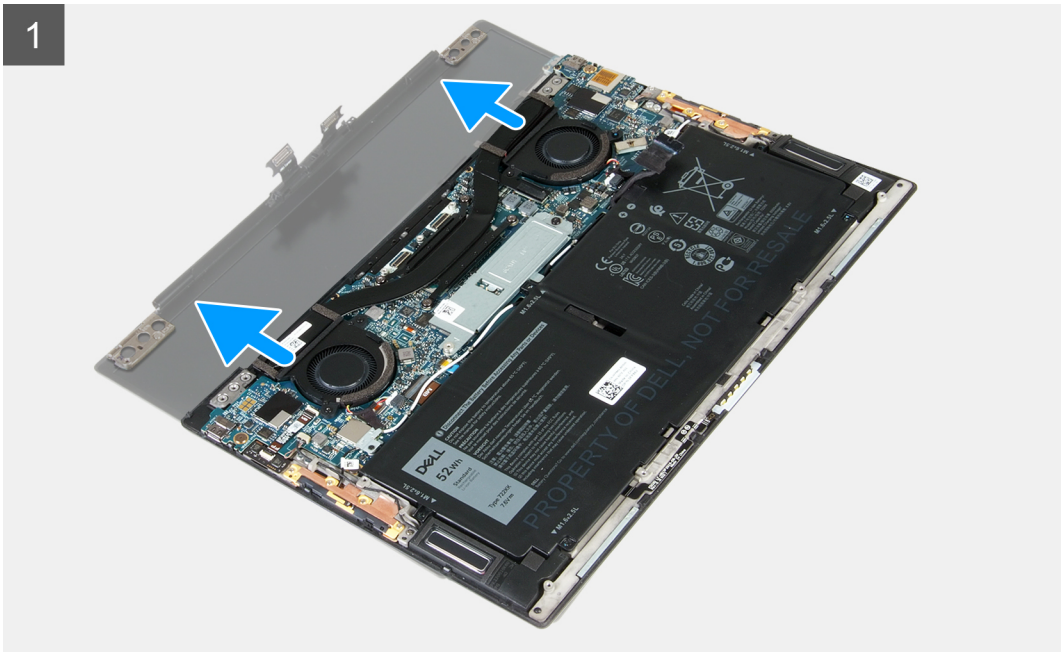
Prerequisites

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

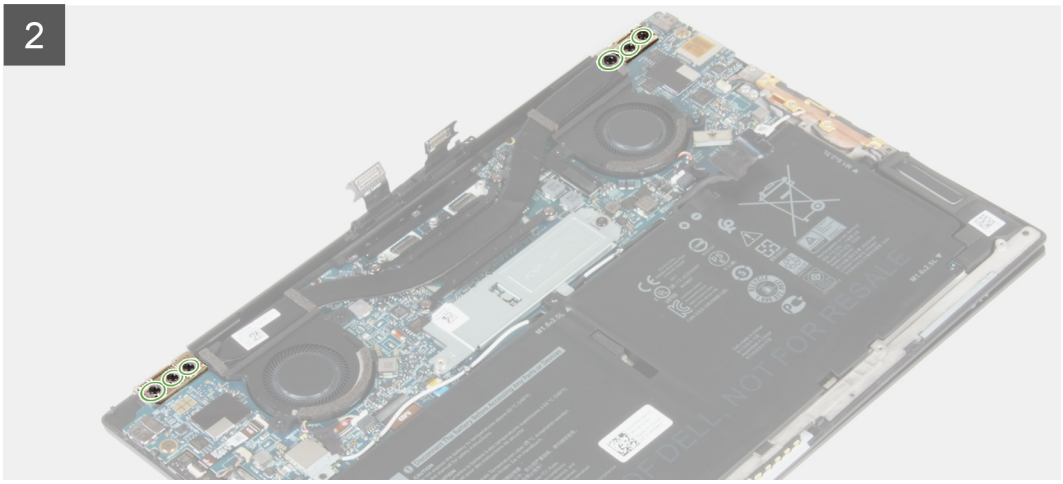
About this task

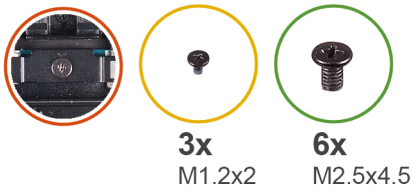
The following images indicate the location of the display assembly and provide a visual representation of the installation procedure.

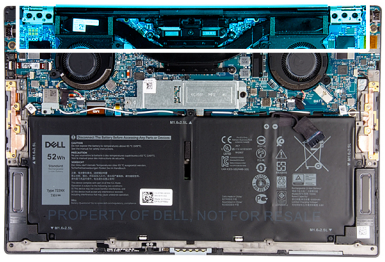
1

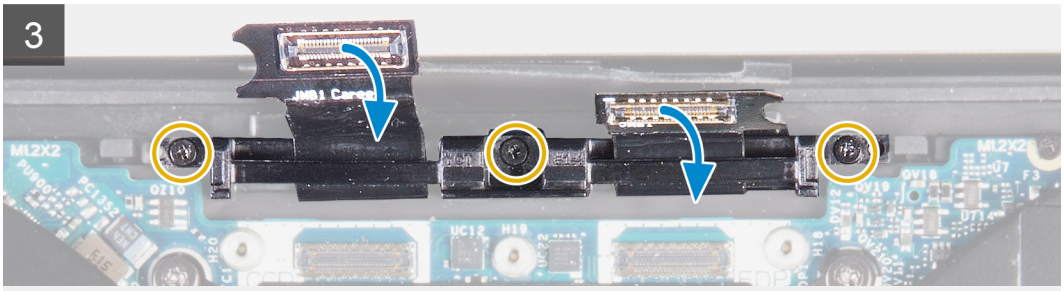


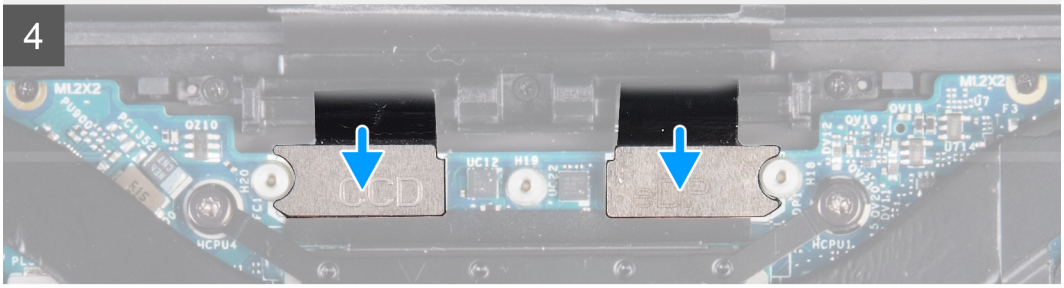
2

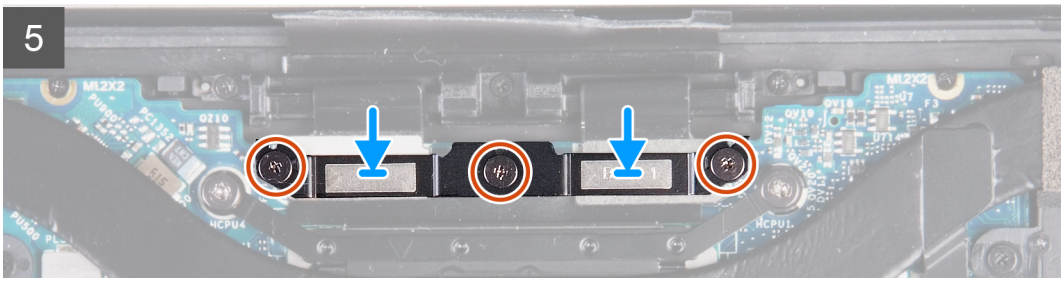












Steps

1. Slide the palm-rest and keyboard assembly under the display-assembly hinges.
2. Align the screw holes on the palm-rest assembly with the screw holes on the display hinges.
3. Replace the three screws (M2.5x4.5) that secure the left hinge to the system board and the palm-rest and keyboard assembly.
4. Replace the three screws (M2.5x4.5) that secure the right hinge to the system board and the palm-rest and keyboard assembly.
5. Align the screw holes on the display-assembly cable holder with the screw holes on the palm-rest and keyboard assembly.
6. Replace the three screws (M1.2x2) that secure the display-assembly cable holder to the palm-rest and keyboard assembly.

   NOTE: Apply gentle torque when tightening the three screws (M1.2x2) to avoid damaging the screw threads.
7. Connect the camera cable and the display cable to the system board.
8. Align the screw holes on the display-assembly bracket with the screw holes on the system board and tighten the three captive screws.

Next steps

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

System board

Removing the system board

Prerequisites

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

   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.
2. Remove the base cover.
3. Remove the battery.
4. Remove the fans.
5. Remove the heat sink.

   NOTE: The system board can be removed or installed together with the heat sink attached. This simplifies the procedure and avoids breaking the thermal bond between the system board and the heat sink.
6. Remove the solid-state drive.
7. Remove the display assembly.

About this task

The following image indicates the connectors on your system board.

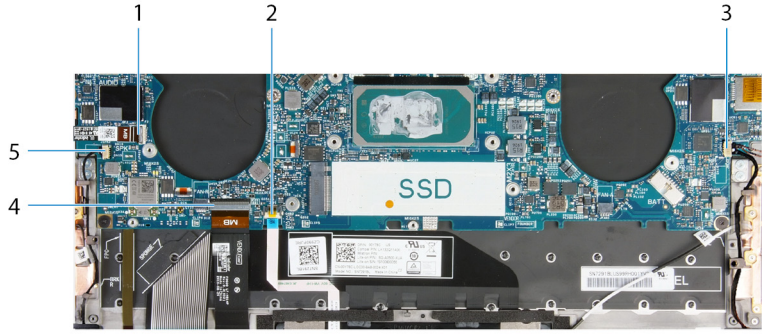
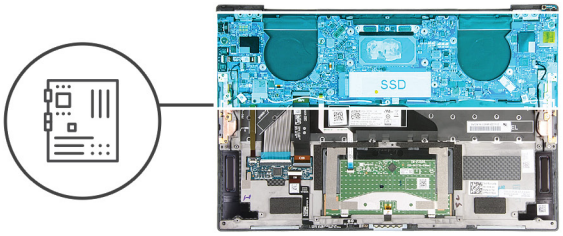
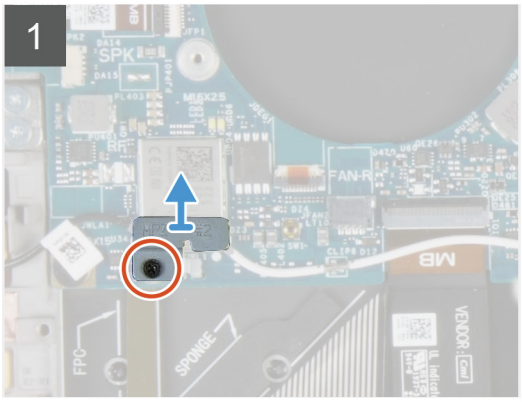


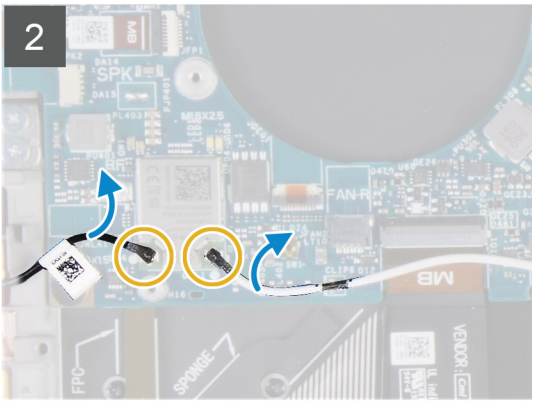
Figure 1. System-board connectors

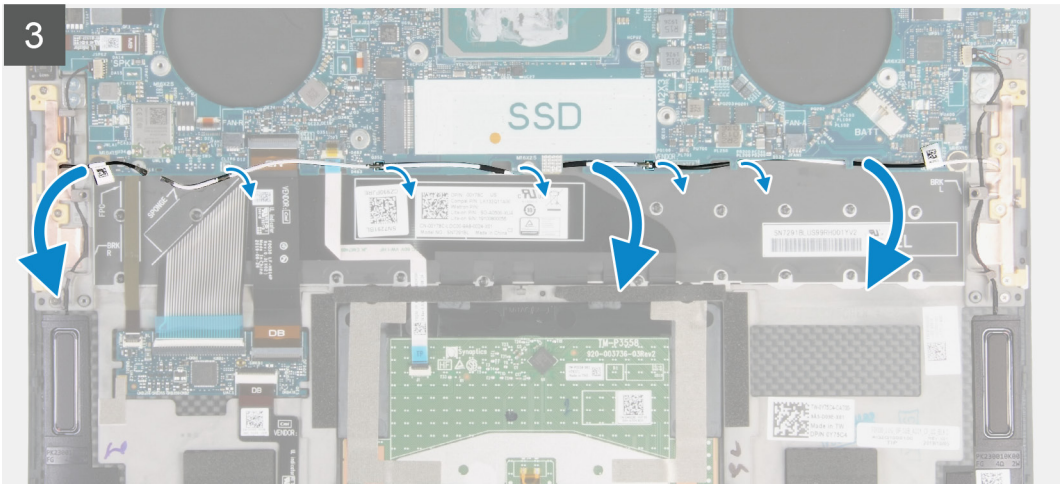
1. Power-button cable
2. Touchpad cable
3. Right speaker cable
4. Keyboard cable
5. Left speaker cable

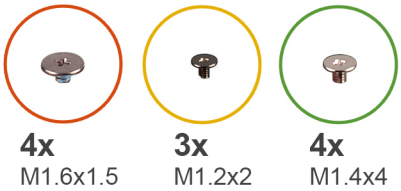
The following images indicate the location of the system board and provide a visual representation of the removal procedure.

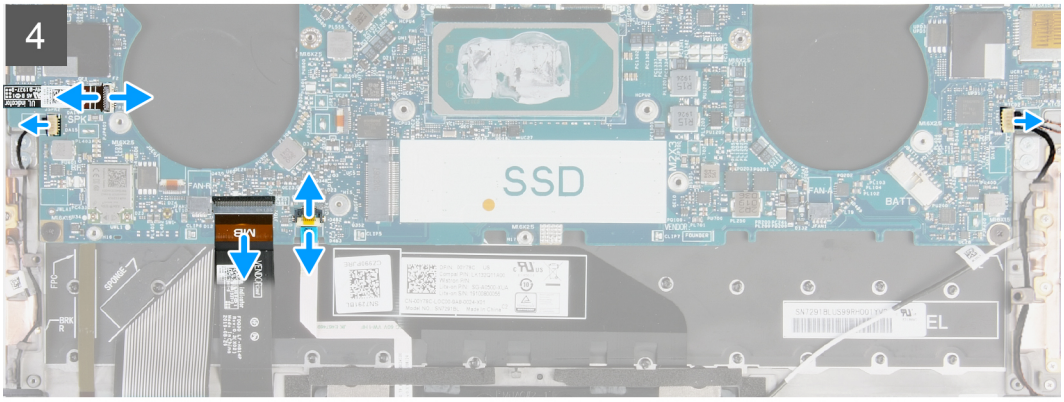

SSD

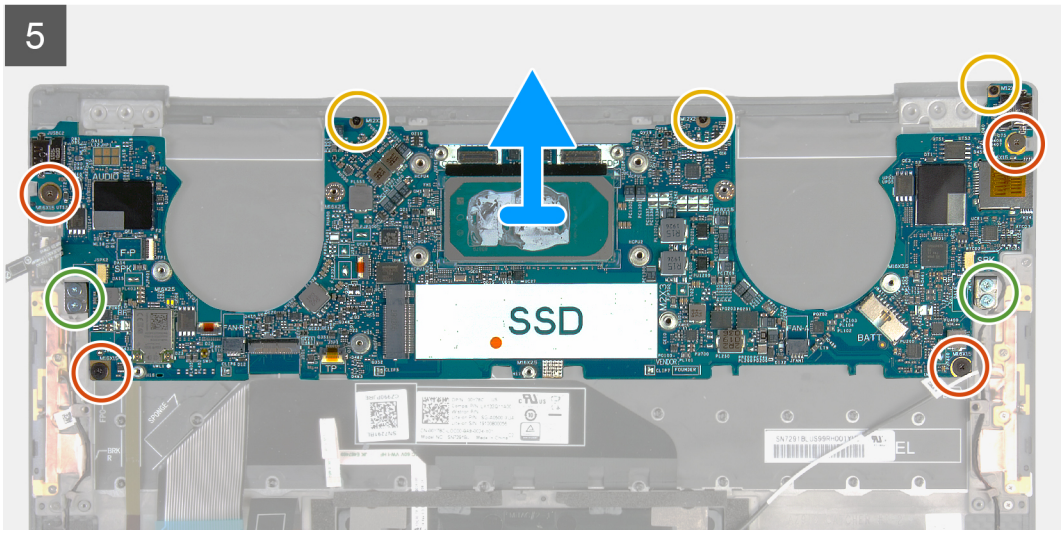

1
SPK
FAN-R
MB
FPC
SPONGE
VENDOR


2
SPK
FAN-R
MB
FPC
SPONGE
VENDOR


3
SSD







Steps

1. Loosen the captive screw that secures the wireless-card bracket to the system board.
2. Lift the wireless-card bracket off the system board.
3. Using a plastic scribe, disconnect the antenna cables from the wireless card.
4. Note the routing of the left and the right antenna cables.
5. Starting from the wireless card, remove each antenna cable from the routing guides, toward their respective antennas.
6. Open the latch, and disconnect the power-button and fingerprint reader cable from the system board.
7. Disconnect the right speaker cable from the system board.
8. Open the latch, and disconnect the keyboard cable from the system board.
9. Open the latch, and disconnect the touchpad cable from the system board.
10. Disconnect the left speaker cable from the system board.
11. Remove the four screws (M1.6x1.5) that secure the system board to the palm-rest and keyboard assembly.
12. Remove the three screws (M1.2x2) that secure the system board to the palm-rest and keyboard assembly.
13. Remove the four screws (M1.4x4) that secure the system board to the palm-rest and keyboard assembly.
14. Lift the system board off the palm-rest and keyboard assembly.

Installing the system board

Prerequisites

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

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.

About this task

The following image indicates the connectors on your system board.

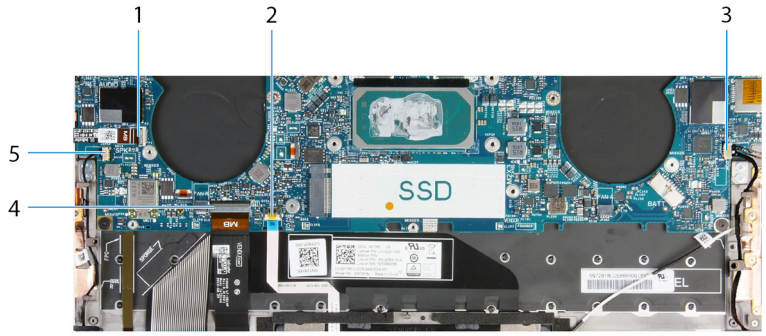


Figure 2. System-board connectors

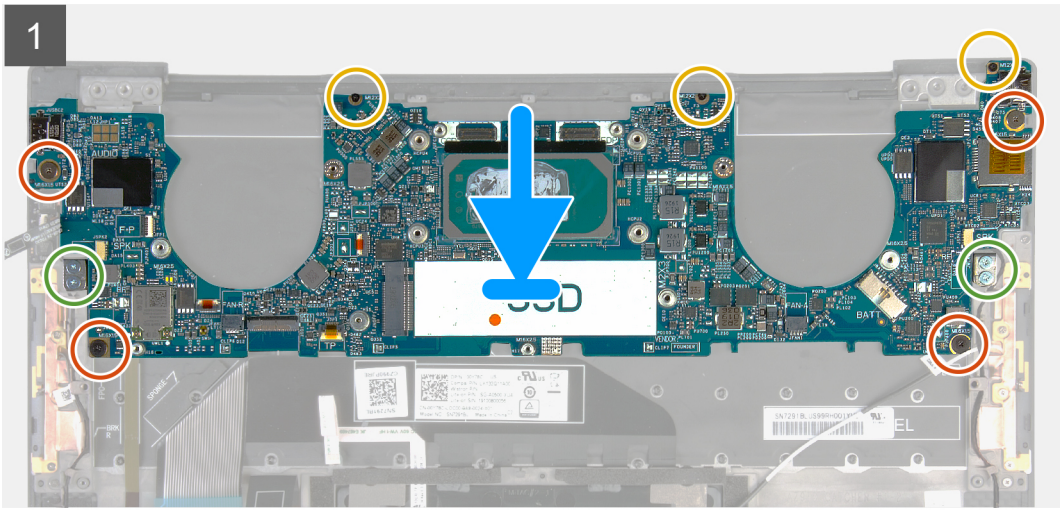
1. Power-button cable
2. Touchpad cable
3. Right speaker cable
4. Keyboard cable
5. Left speaker cable

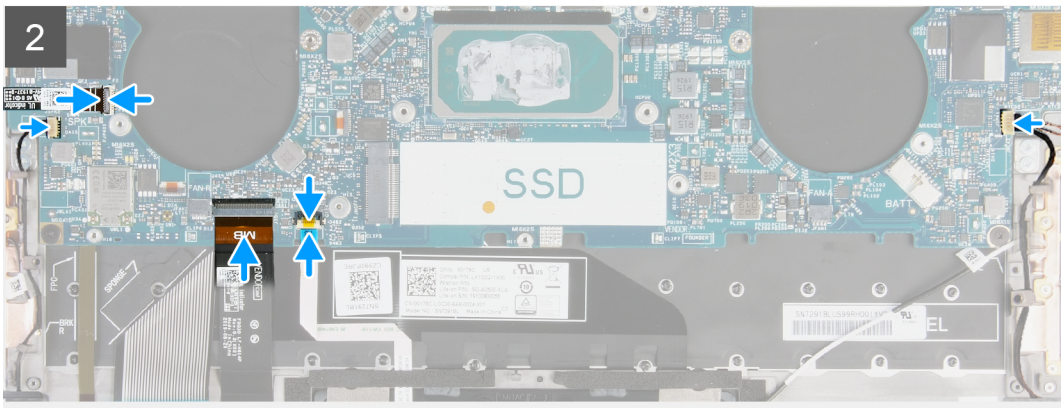
The following images indicate the location of the system board and provide a visual representation of the installation procedure.

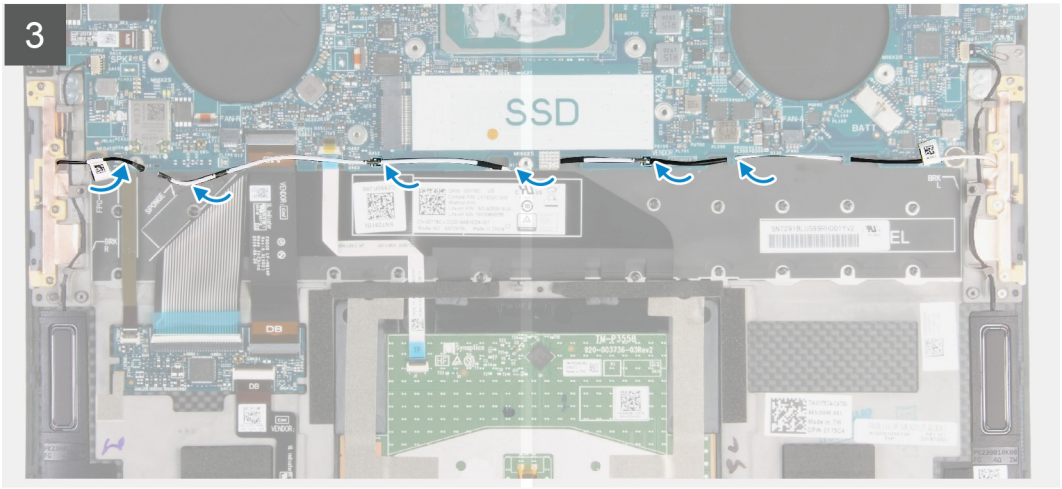
4x
M1.6x1.5

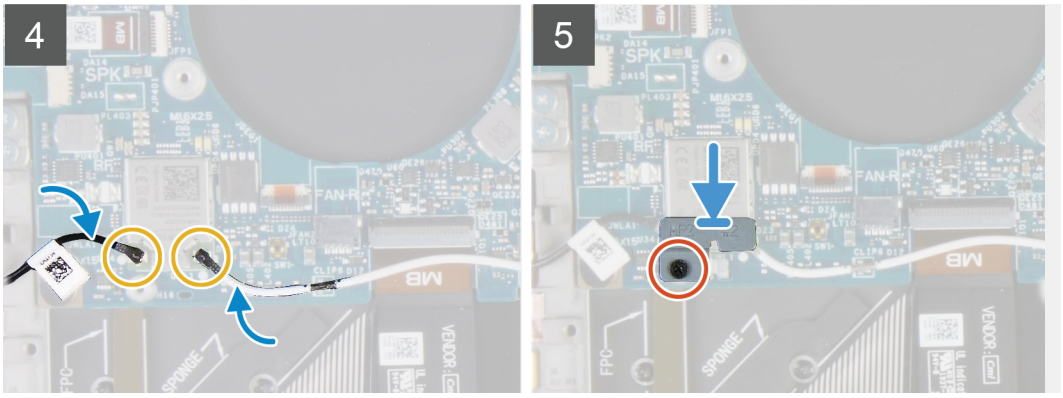
3x
M1.2x2

4x
M1.4x4









Steps

1. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
2. Replace the four screws (M1.2x2) that secure the system board to the palm-rest and keyboard assembly.
3. Replace the three screws (M1.2x2) that secure the system board to the palm-rest and keyboard assembly.
4. Replace the four screws (M1.4x4) that secure the system board to the palm-rest and keyboard assembly.
5. Connect the power-button and fingerprint reader cable to the system board and close the latch to secure the cable.
6. Connect the right speaker cable to the system board.
7. Connect the keyboard cable to the system board and close the latch to secure the cable.
8. Connect the touchpad cable to the system board and close the latch to secure the cable.
9. Connect the left speaker cable to the system board.
10. Route the left and right antenna cables through the routing guides on the palm-rest and keyboard assembly toward the wireless card.
11. Connect the antenna cables to the wireless card.
12. Align the screw hole on the wireless-card bracket with the screw hole on the system board.

    NOTE: Ensure that tab on the wireless-card bracket is inserted into the slot in the system board.
13. Tighten the captive screw that secures the wireless-card bracket to the system board.

Next steps

1. Install the display assembly.
2. Install the solid-state drive.
3. Install the heat sink.

   NOTE: The system board can be removed or installed together with the heat sink attached. This simplifies the procedure and avoids breaking the thermal bond between the system board and the heat sink.
4. Install the fans.
5. Install the battery.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Palm-rest and keyboard assembly

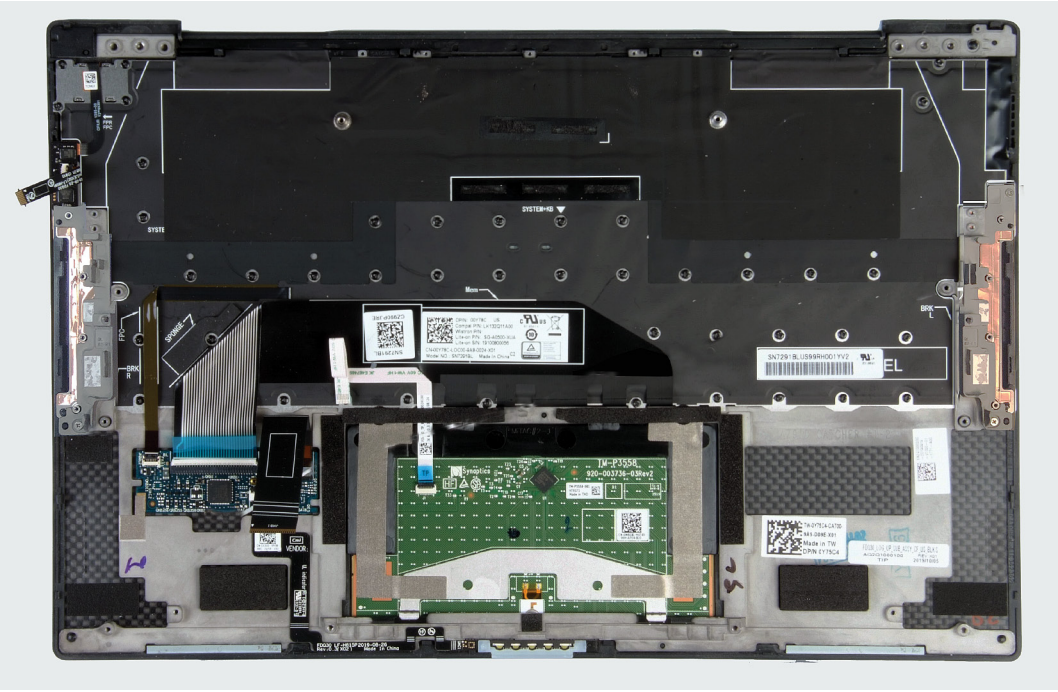
Removing the palm-rest and keyboard assembly

Prerequisites

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

About this task

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



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

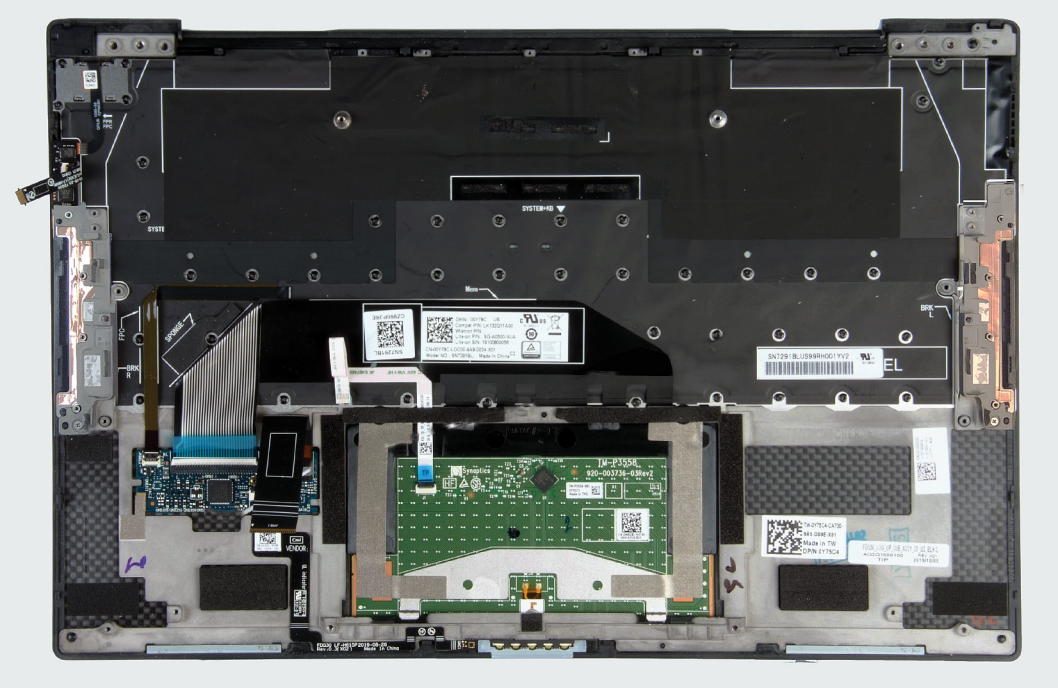
Installing the palm-rest and keyboard assembly

Prerequisites

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

About this task

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



Steps

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

Next steps

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

3

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ SLN128938.

4

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

Steps

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

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 2. Navigation keys

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

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F2 immediately.

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

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

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

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

  NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.

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

System setup options

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

Table 3. System setup options—System information menu

Overview	
XPS 13 9300	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the express service code of the computer.
Ownership Tag	Displays the ownership tag of the computer.
Signed Firmware Update	Displays whether the signed firmware update is enabled. Default: Enabled
Battery	Displays the battery health information.
Primary	Displays the primary battery.
Battery Level	Displays the battery level.
Battery State	Displays the battery state.
Health	Displays the battery health.
AC Adapter	Displays whether an AC adapter is connected. If connected, the AC adapter type.
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.

Overview	
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 4. System setup options—Boot options menu

Boot options	
Boot Mode	
Boot Mode: UEFI only	Displays the boot mode of this computer.
Enable Boot Devices	Enables or disables Windows Boot Manager and UEFI Hard Drive. By default, Windows Boot Manager is selected By default, UEFI Hard Drive is selected
Boot Sequence	Displays the boot sequence.
Advanced Boot Options	
Enable UEFI Network Stack	Enables or disables UEFI Network Stack. Default: ON
UEFI Boot Path Security	Enables or disables the system to prompt the user to enter the Admin password when booting a UEFI boot path from the F12 boot menu. Default: Always Except Internal HDD

Table 5. System setup options—System Configuration menu

System Configuration	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between 12-hour and 24-hour clock. Changes to the time take effect immediately.
Storage Interface	
Port Enablement	Enables the selected onboard drives.

	Default: ON
SATA Operation	Configures operating mode of the integrated SATA hard drive controller. Default: RAID On. SATA is configured to support RAID (Intel Rapid Restore Technology).
Drive Information	Displays the information of various onboard drives.
Enable SMART Reporting	Enables or disables Self-Monitoring, Analysis, and Reporting Technology (SMART). Default: OFF
Enable Audio	Enables or disables all integrated audio controller. Default: ON
Enable Microphone	Enables or disables microphone. By default, Enable Microphone is selected.
Enable Internal Speaker	Enables or disables internal speaker. By default, Enable Internal Speaker is selected.
USB Configuration	Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, Enable USB Boot Support is selected. By default, Enable External USB Ports is selected.
Thunderbolt Adapter Configuration	
Enable Thunderbolt Technology Support	Enables or disables Thunderbolt Technology Support. Default: ON
Enable Thunderbolt Boot Support	Enables or disables Thunderbolt Boot Support. Default: OFF
EnableThunderbolt (and PCIe behind TBT) pre-boot modules	Enables or disables to allow or disallow PCIe devices to be connected through a Thunderbolt adapter during pre-boot. Default: OFF
Miscellaneous Devices	Enables or disables various onboard devices.
Enable Camera	Enables or disables the camera. By default, Enable Camera is selected.
Touchscreen	Enables or disables the touchscreen. By default, Touchscreen is selected.
Enable Fingerprint Reader Device	Enables or disables the Fingerprint Reader Device. By default, Enable Fingerprint Reader Device is selected.
Enable MediaCard	Enables to switch all media cards On/Off or set the media card to read-only state. By default, Enable Secure Digital (SD) Card is selected.
Keyboard Illumination	Configures the operating mode of the keyboard illumination feature. Default: Bright. Enable the keyboard illumination feature at 100% brightness level.
Keyboard Backlight Timeout on AC	Configures the timeout value for the keyboard when an AC adapter is connected to the computer. The keyboard backlight timeout value is only effect when the backlight is enabled. Default: 10 seconds

System Configuration	
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 6. System setup options—Video menu

Video	
LCD Brightness	
Brightness on battery power	Sets the screen brightness when the computer is running on battery power. Default: 50
Brightness on AC power	Sets the screen brightness when the computer is running on AC power. Default: 100

Table 7. System setup options—Security menu

Security	
Enable Admin Setup Lockout	Enables or disables the user from entering BIOS Setup when an Admin Password is set. Default: OFF
Password Bypass	Bypass the System (Boot) Password and the internal hard drive password prompts during a system restart. Default: Disabled
Enable Non-Admin Password Changes	Enables or disables the user to change the system and hard drive password without the need for admin password. Default: ON
Non-Admin Setup Changes	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages. Default: ON
Absolute	Enables, disables or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. Default: Enabled
TPM 2.0 Security On	Select whether or not the Trusted Platform Model (TPM) is visible to the OS. Default: ON
PPI Bypass for Enable Commands	Enables or disables the OS to skip BIOS Physical Presence Interface (PPI) user prompts when issuing TPM PPI enabled and activate commands. Default: OFF
PPI Bypass for Disable Commands	Enables or disables The OS to skip BIOS PPI user prompts when issuing TPM PPI Disable and Deactivate commands. Default: OFF
PPI Bypass for Clear Commands	Enables or disables the operating system to skip BIOS Physical Presence Interface (PPI) user prompts when issuing the Clear command. Default: OFF
Attestation Enable	Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for signature operations. Default: ON

Security	
Key Storage Enable	Enables to control whether the TPM Endorsement Hierarchy is available to the OS. Disabling this setting restricts the ability to use the TPM for storing owner data. Default: ON
SHA-256	Enables or disables the BIOS and the TPM to use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot. Default: ON
Clear	Enables or disables the computer to clear the PTT owner information, and returns the PTT to the default state. Default: OFF
TPM State	Enables or disables the TPM. This is the normal operating state for the TPM when you want to use its complete array of capabilities. Default: Enabled
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.**
Intel SGX	Enables or disables the Intel Software Guard Extensions (SGX) to provide a secured environment for running code/storing sensitive information. Default: Software Control

Table 8. System setup options—Passwords menu

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

Table 9. System setup options—Secure Boot menu

Secure Boot	
Enable Secure Boot	Enables or disables the computer to boos using only validated boot software. Default: ON

Secure Boot	
	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.
Secure Boot Mode	Selects the Secure Boot operation mode. Default: Deployed Mode **NOTE: Deployed Mode should be selected for normal operation of Secure Boot.**

Table 10. System setup options—Expert Key Management menu

Expert Key Management	
Enable Custom Mode	Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified. Default: OFF
Custom Mode Key Management	Selects the custom values for expert key management. Default: PK

Table 11. System setup options—Performance menu

Performance	
Multi-Core Support	
Active Cores	Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores. Default: All Cores
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables or disables the Intel SpeedStep Technology to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. Default: ON
Enable C-State Control	Enables or disables the CPU's ability to enter and exit low-power states. Default: ON
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enabled or disabled the Intel TurboBoost mode of the processor. If enabled, the Intel TurboBoost driver increases the performance of the CPU or graphics processor. Default: ON
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enabled or disabled the Intel Hyper-Threading mode of the processor. If enabled, the Intel Hyper-Threading increases the efficiency of the processor resources when multiple threads run on each core. Default: ON

Table 12. System setup options—Power Management menu

Power Management	
Wake on AC	Enables the computer to turn on and go to boot when AC power is supplied to the computer. Default: OFF
Wake on Dell USB-C Dock	Enables connecting a Dell USB-C Dock to wake the computer from Standby.

Power Management	
	Default: ON
Auto On Time	Enables the computer to automatically power on for defined days and times. Default: Disabled. The system will not automatically power up.
Block Sleep	Blocks the computer from entering Sleep (S3) mode in the operating system. Default: OFF **NOTE: If enabled, the computer will not go to sleep, Intel Rapid Start will be disabled automatically, and the operating system power option will be blank if it was set to Sleep.**
Battery Charge Configuration	Enables the computer to run on battery during power usage hours. Use the below options to prevent AC power usage between certain times of each day. Default: Adaptive. Battery settings are adaptively optimized based on your typical battery usage pattern.
Enable Advanced Battery Charge Configuration	Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day. Default: OFF
Peak Shift	Enables the computer to run on battery during peak power usage hours. Default: OFF
Wireless Radio Control	
Control WLAN radio	Enables to sense the connection of the computer to a wired network and subsequently disable the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are re-enabled. Default: OFF
Wake on LAN	Enables or disables the computer to turn on by a special LAN signal. Default: Disabled
Intel Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. Setting this option to enable allows the operating system to select the appropriate processor performance automatically. Default: ON
Lid Switch	
Power On Lid Open	Enables the computer to power up from the off state whenever the lid is opened. Default: ON

Table 13. System setup options—Wireless menu

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

Table 14. System setup options—POST Behavior menu

POST Behavior	
Numlock Enable	
Enable Numlock	Enables or disables Numlock when the computer boots.

POST Behavior	
	Default: ON
Fn Lock	Enables or disables the Fn lock mode. Default: ON
Lock Mode	Default: Lock Mode Secondary. Lock Mode Secondary = If this option is selected, the F1-F12 keys scan the code for their secondary functions.
Warnings and Errors	Selects an action on encountering a warning or error during boot. Default: Prompt on Warnings and Errors. Stop, prompt, and wait for user input when warnings or errors are detected. **NOTE: Errors deemed critical to the operation of the computer hardware will always halt the computer.**
Enable Adapter Warnings	Enables or disables the computer to display adapter warning messages when adapters with too little power capacity are detected. Default: ON
Enable Dock Warning Messages	Enables or disables dock warning messages. Default: ON
Fastboot	Configures the speed of the UEFI boot process. Default: Thorough. Performs complete hardware and configuration initialization during boot.
Extend BIOS POST Time	Configures the BIOS POST (Power-On Self-Test) load time. Default: 0 seconds
Full Screen Logo	Enabled or disabled the computer to display full screen logo if the image match screen resolution. Default: OFF
Mouse/Touchpad	Defines how the computer handles mouse and touchpad input. Default: Touchpad and PS/2 Mouse. Leave the integrated touchpad enabled when an external PS/2 mouse is present.
Sign of Life	
Early Logo Display	Display Logo Sign of Life. Default: ON
Early Keyboard Backlight	Keyboard Backlight Sign of Life. Default: ON
MAC Address Pass-Through	Replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the computer. Default: System Unique MAC Address.

Table 15. System setup options—Virtualization menu

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

Table 16. System setup options—Maintenance menu

Maintenance	
Asset Tag	
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.
Service Tag	Displays the Service Tag of the computer.
BIOS Recovery from Hard Drive	Enables the computer to recover from a bad BIOS image, as long as the Boot Block portion is intact and functioning. Default: ON **NOTE: BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.**
BIOS Auto-Recovery	Enables the computer to automatically recover the BIOS without user actions. This feature requires BIOS Recovery from Hard Drive to be set to Enabled. Default: OFF
Start Data Wipe	**CAUTION: This Secure Wipe Operation deletes information in a way that it cannot be reconstructed.** If enabled, the BIOS will queue up a data wipe cycle for storage devices that are connected to the motherboard on the next reboot. Default: OFF
Allow BIOS Downgrade	Controls flashing of the system firmware to previous revisions. Default: ON

Table 17. System setup options—System Logs menu

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

Table 18. System setup options—SupportAssist menu

SupportAssist	
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool. Default: 2.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist operating system Recovery tool in the even of certain system errors. Default: ON

SupportAssist	
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

Updating the BIOS in Windows

Prerequisites

It is recommended to update your BIOS (System Setup), when you replace the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet.

About this task

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

Steps

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

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

Updating BIOS on systems with BitLocker enabled

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694

Updating your system BIOS using a USB flash drive

About this task

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

NOTE: You will need to use a bootable USB Flash drive. Please refer to the following article for further details: https://www.dell.com/support/article/sln143196/

Steps

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

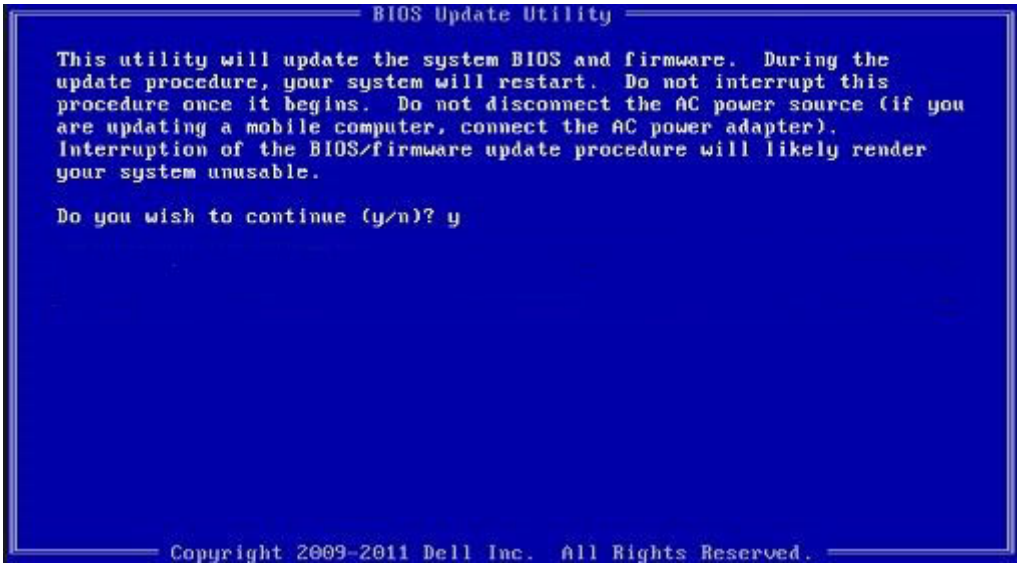


Figure 3. DOS BIOS Update Screen

Updating the Dell BIOS in Linux and Ubuntu environments

If you want to update the system BIOS in a Linux environment such as Ubuntu, see https://www.dell.com/support/article/sln171755/.

Flashing the BIOS from the F12 One-Time boot menu

Updating your system BIOS using a BIOS update .exe file copied to a FAT32 USB key and booting from the F12 one time boot menu.

About this task

BIOS Update

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

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

NOTE: Only systems with BIOS Flash Update option in the F12 One-Time Boot Menu can use this function.

Updating from the One-Time Boot Menu

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

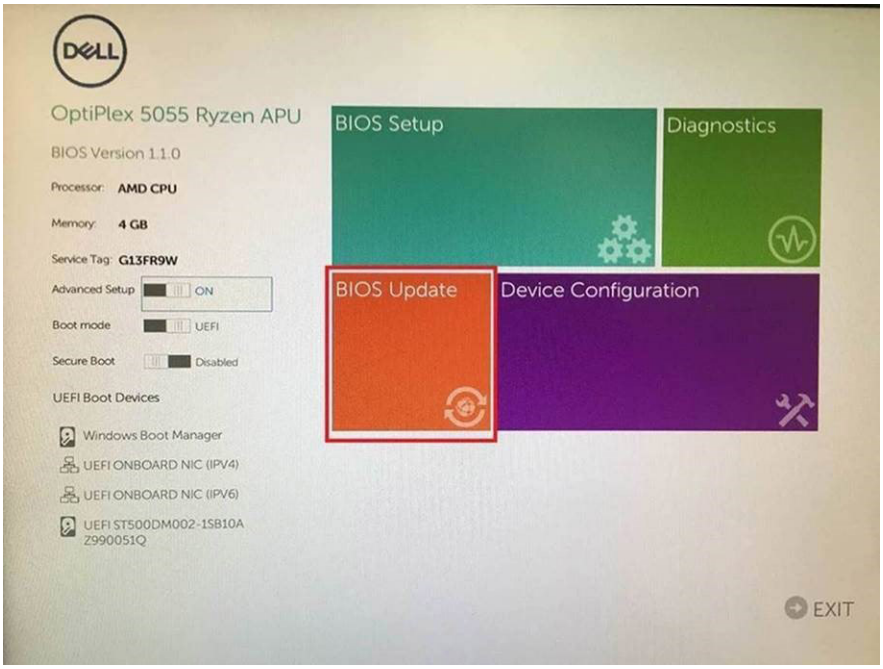
- USB key formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB key
- AC power adapter connected to the system
- Functional system battery to flash the BIOS

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

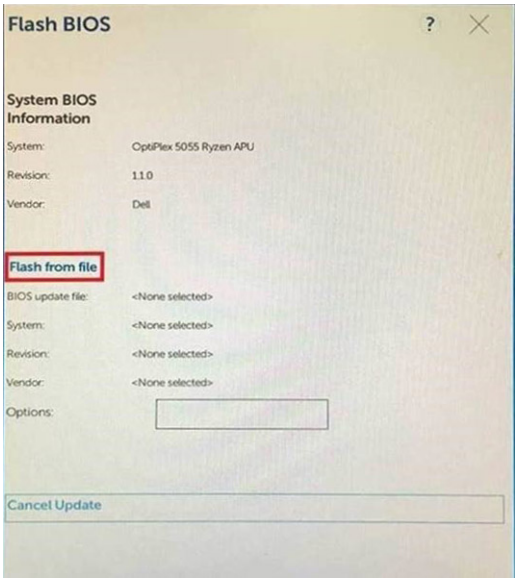
CAUTION: Do not power off the system during the BIOS update process. Powering off the system could make the system fail to boot.

Steps

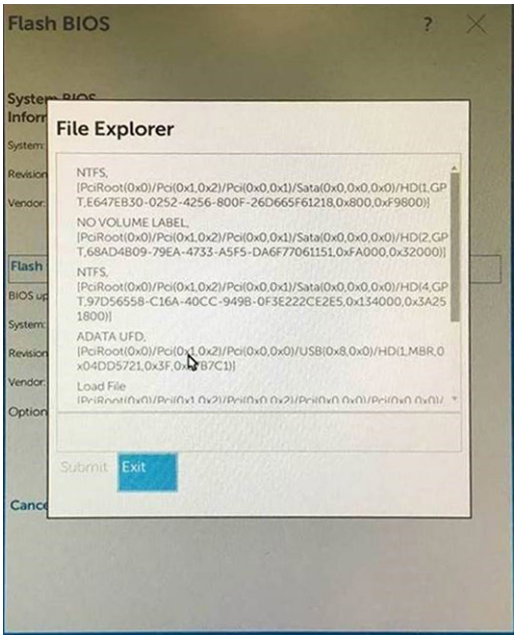
1. From a power off state, insert the USB key where you copied the flash into a USB port of the system .
2. Power on the system and press the F12 key to access the One-Time Boot Menu, Highlight BIOS Update using the mouse or arrow keys then press **Enter**.



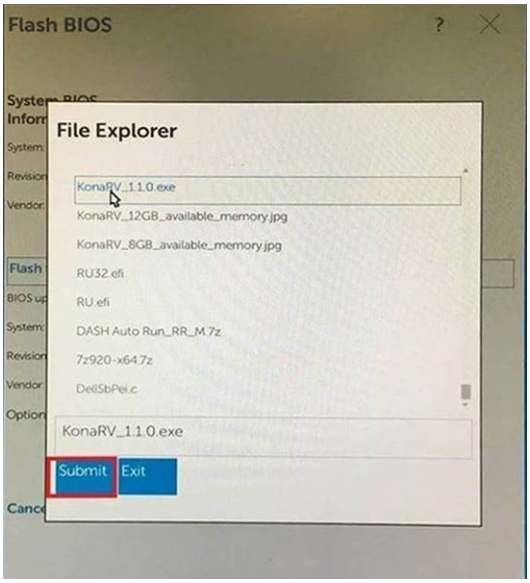
3. The Bios flash menu will open then click the **Flash from file**.



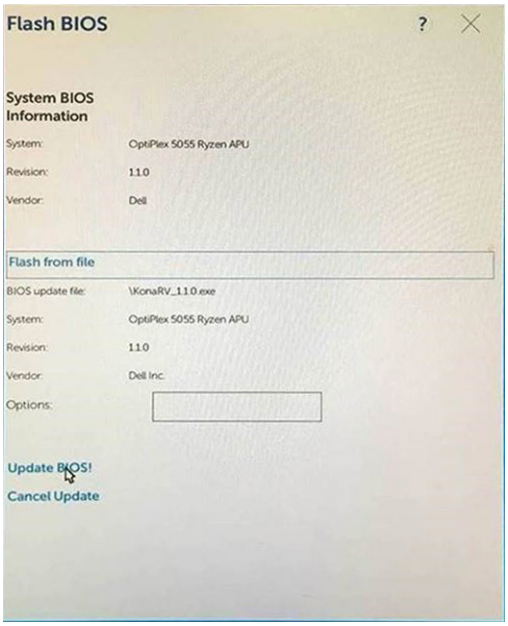
4. Select external USB device



5. Once the file is selected, Double click the flash target file, then press submit .



6. Click the **Update BIOS** then system will reboot to flash the BIOS.



7. Once complete, the system will reboot and the BIOS update process is completed.

System and setup password

Table 19. System and setup password

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

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

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

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

NOTE: System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

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

About this task

To enter the system setup, press F2F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - The password can contain the numbers 0 through 9.

- Only lower case letters are valid, upper case letters are not valid.
- Only the following special characters are valid: Space, ("), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

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

Deleting or changing an existing system setup password

Prerequisites

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

About this task

To enter the System Setup, press F2F12 immediately after a power-on or reboot.

Steps

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

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

Clearing CMOS settings

About this task

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

Steps

1. Turn off your computer.
2. Remove the base cover.

   NOTE: The battery must be disconnected from the system board (see Step 4 in Removing the base cover).
3. Press and hold the power button for 15 seconds to drain the flea power.
4. Before you turn on your computer, follow the steps in Installing the base cover.
5. Turn on your computer.

Clearing BIOS (System Setup) and System passwords

About this task

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

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

5

Troubleshooting

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.

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

About this task

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

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

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

Running the ePSA diagnostics

Steps

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

System diagnostic lights

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

Static power and battery-charge status light

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

Table 20. Power and battery-charge status light

Power and battery-charge status light	Status of computer
Solid white	• The power adapter is connected and the battery is fully charged. • The power adapter is connected and the battery has more than 5 percent charge.
Amber	The computer is running on battery and the battery has less than 5 percent charge.
Off	The computer is in sleep state, hibernation, or turned off.

Blinking power and battery-charge status light

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

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

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

Table 21. LED codes

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

Flea power release

About this task

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

Steps

1. Turn off your computer.
2. Remove the base cover.

   NOTE: The battery must be disconnected from the system board (see Step 4 in Removing the base cover).
3. Press and hold the power button for 15 seconds to drain the flea power.
4. Install the base cover.
5. Turn on your computer.

WiFi power cycle

About this task

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

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

Steps

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

6

Getting help and contacting Dell

Self-help resources

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

Table 22. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell	
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on.	www.dell.com/support
Dell knowledge base articles for a variety of computer concerns.	1. Go to www.dell.com/support. 2. Type the subject or keyword in the **Search** box. 3. Click **Search** to retrieve the related articles.
Learn and know the following information about your product: · Product specifications · Operating system · Setting up and using your product · Data backup · Troubleshooting and diagnostics · Factory and system restore · BIOS information	See *Me and My Dell* at www.dell.com/support/manuals. To locate the *Me and My Dell* relevant to your product, identify your product through one of the following: · Select **Detect Product**. · Locate your product through the drop-down menu under **View Products**. · Enter the **Service Tag number** or **Product ID** in the search bar.

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 on your purchase invoice, packing slip, bill, or Dell product catalog.