

XPS 13 Convertible

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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Contents

1 Before working inside your computer.....	6
Before you begin	6
Safety instructions.....	6
Recommended tools.....	7
Screw list.....	7
2 After working inside your computer.....	8
3 Removing the base cover.....	9
Procedure.....	9
4 Replacing the base cover.....	11
Procedure.....	11
5 Removing the battery.....	12
Lithium-ion battery precautions.....	12
Prerequisites.....	12
Procedure.....	12
6 Replacing the battery.....	14
Lithium-ion battery precautions.....	14
Procedure.....	14
Post-requisites.....	14
7 Removing the solid-state drive.....	15
Prerequisites.....	15
Procedure.....	15
8 Replacing the solid-state drive.....	16
Procedure.....	16
Post-requisites.....	16
9 Disconnecting the wireless antenna cables.....	17
Prerequisites.....	17
Procedure.....	17
10 Reconnecting the wireless antenna cables.....	18
Procedure.....	18
Post-requisites.....	19
11 Removing the speakers.....	20
Prerequisites.....	20
Procedure.....	20

12 Replacing the speakers.....	21
Procedure.....	21
Post-requisites.....	21
13 Removing the coin-cell battery.....	22
Prerequisites.....	22
Procedure.....	22
14 Replacing the coin-cell battery.....	23
Procedure.....	23
Post-requisites.....	23
15 Removing the touchpad.....	24
Prerequisites.....	24
Procedure.....	24
16 Replacing the touchpad.....	25
Procedure.....	25
Post-requisites.....	25
17 Removing the display assembly.....	26
Prerequisites.....	26
Procedure.....	26
18 Replacing the display assembly.....	28
Procedure.....	28
Post-requisites.....	28
19 Removing the system board.....	29
Prerequisites.....	29
Procedure.....	29
20 Replacing the system board.....	32
Procedure.....	32
Post-requisites.....	32
Entering the Service Tag in the BIOS setup program.....	32
21 Removing the keyboard.....	33
Prerequisites.....	33
Procedure.....	33
22 Replacing the keyboard.....	34
Procedure.....	34
Post-requisites.....	34
23 Removing the palm-rest assembly.....	35
Prerequisites.....	35

Procedure.....	35
24 Replacing the palm-rest assembly.....	36
Procedure.....	36
Post-requisites.....	36
25 System setup.....	37
BIOS overview.....	37
Entering BIOS setup program.....	37
Navigation keys.....	37
Boot Sequence.....	38
System setup options.....	38
26 System and setup password.....	44
Assigning a system setup password.....	44
Deleting or changing an existing system setup password.....	44
Clearing CMOS settings.....	45
Clearing BIOS (System Setup) and System passwords.....	45
27 Troubleshooting.....	46
Enhanced Pre-Boot System Assessment (ePSA) diagnostics.....	46
Running the ePSA diagnostics.....	46
Flashing BIOS (USB key).....	46
Flashing the BIOS.....	46
Backup media and recovery options.....	47
WiFi power cycle.....	47
Flea power release.....	47
System diagnostic lights.....	47
28 Getting help and contacting Dell.....	49

Before working inside your computer

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

Topics:

- Before you begin
- Safety instructions
- Recommended tools
- Screw list

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.

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

 **NOTE:** Disconnect 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 to the electrical outlet.

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

 **CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

 **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 shipped with the product or at www.dell.com/regulatory_compliance.

 **CAUTION:** Before touching anything inside your computer, ground yourself by using a wrist grounding strap or by periodically 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 on its connector or on its pull tab, not on 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 any connector pins. When connecting cables, ensure that the ports and 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.

Recommended tools

The procedures in this document require the following tools:

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

Screw list

Table 1. Screw List

Component	Secured to	Screw type	Quantity
Base cover	Palm-rest assembly	M1.6x4	1
Base cover	Palm-rest assembly	M2x3	8
Battery	Palm-rest assembly	M1.6x4	2
Battery	Palm-rest assembly	M2x3	6
CPU plate	System board	M1.6x2.5	2
Display-cable bracket	System board	M1.6x2.5	2
Display hinges	Palm-rest assembly	M2.5x3.5	6
Fingerprint reader bracket	Palm-rest assembly	M1.6x1.5	1
Hard drive plate	System board	M1.6x2.5	2
Hard-drive (SSD) bracket	Palm-rest assembly	M1.6x3	2
Keyboard	Palm-rest assembly	M2x2	6
Keyboard	Palm-rest assembly	M1.6x1.5	23
Middle bezel	LCD cover	M1.6x3	6
Security-cable slot	Palm-rest assembly	M2x3	2
Speakers	Palm-rest assembly	M2x2	4
System board	Palm-rest assembly	M1.6x3	1
System board	Palm-rest assembly	M1.6x2.5	7
Touch pad	Palm rest	M2x2	2
Wireless card bracket	System board	M1.6x2.5	1

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 the base cover

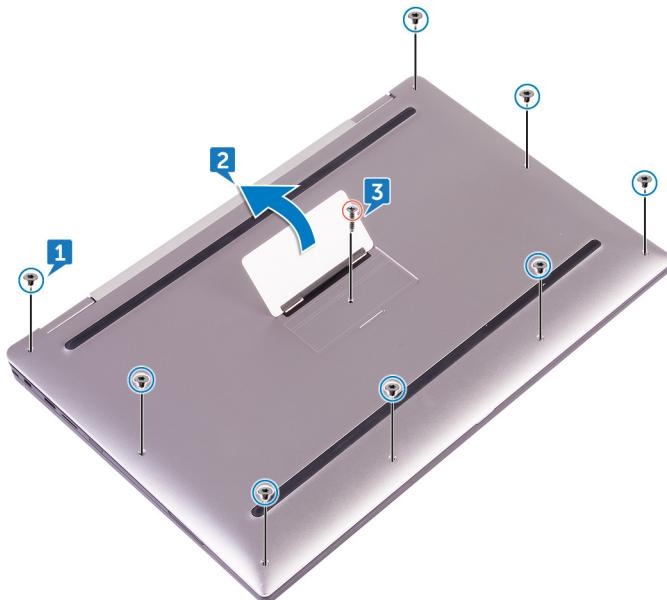
i **NOTE:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices,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

Topics:

- [Procedure](#)

Procedure

1. Remove the eight screws (M2x3) that secure the base cover to the palm-rest assembly.
2. Using your fingertips, open the system badge.
3. Remove the screw (M1.6x4) under the system badge that secures the base cover to the palm-rest assembly.



4. Starting from the front corner of the computer, pry up the base cover using a plastic scribe and lift the base cover off the palm-rest assembly.



Replacing the base cover

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Topics:

- [Procedure](#)

Procedure

1. Align the screw holes on the base cover with the screw holes on the palm-rest assembly and snap the base cover into place.
2. Using your fingertips, open the system badge.
3. Replace the screw (M1.6x4) under the system badge that secures the base cover to the palm-rest assembly.
4. Replace the eight screws (M2x3, Torx) that secure the base cover to the palm-rest assembly.

Removing the battery

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Topics:

- [Lithium-ion battery precautions](#)
- [Prerequisites](#)
- [Procedure](#)

Lithium-ion battery precautions

△ CAUTION:

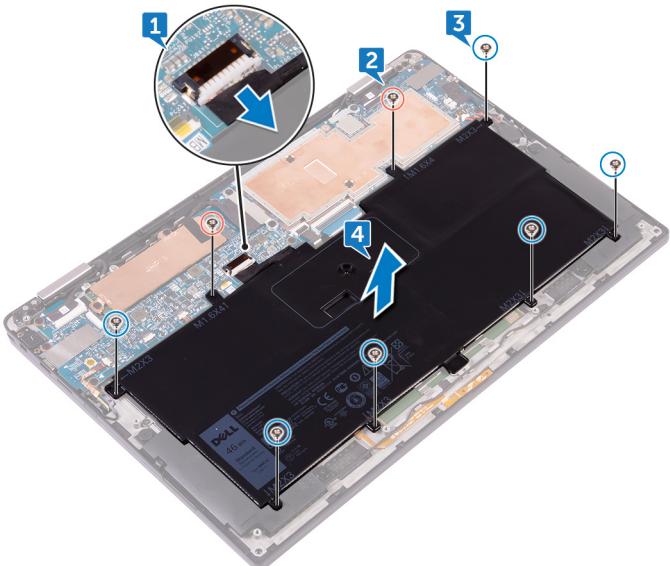
- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.
- Do not crush, drop, mutilate, or penetrate the battery with foreign 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.

Prerequisites

Remove the base cover.

Procedure

1. Disconnect the battery cable from the system board.
2. Remove the two screws (M1.6x4) that secure the battery to the palm-rest assembly.
3. Remove the six screws (M2x3) that secure the battery to the palm-rest assembly.
4. Lift the battery off the palm-rest assembly.



Replacing the battery

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Topics:

- [Lithium-ion battery precautions](#)
- [Procedure](#)
- [Post-requisites](#)

Lithium-ion battery precautions

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- 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 six screws (M2x3) that secure the battery to the palm-rest assembly.
3. Replace the two screws (M1.6x4) that secure the battery to the palm-rest assembly.
4. Connect the battery cable to the system board.

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.

Topics:

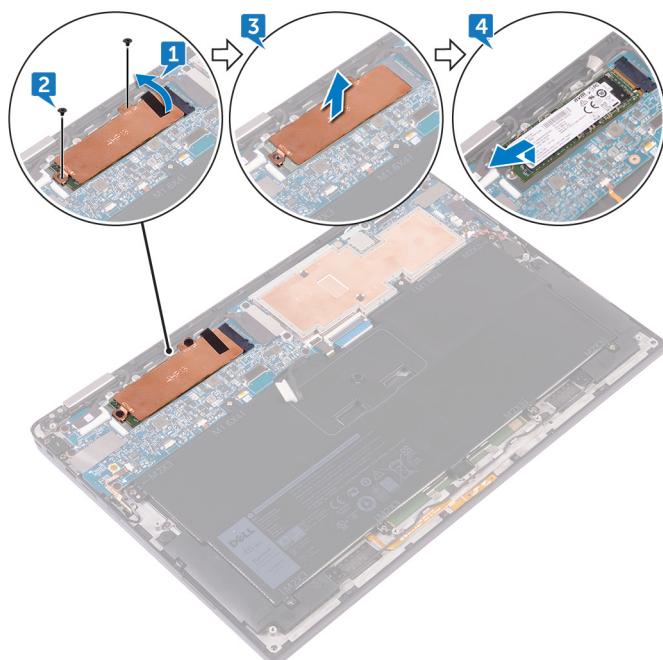
- [Prerequisites](#)
- [Procedure](#)

Prerequisites

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

Procedure

1. Peel off the display cable tape from the hard-drive plate.
2. Remove the two screws (M1.6x2.5) that secure the hard-drive plate to the system board.
3. Remove the hard-drive plate.
4. Slide and remove the solid-state drive from the solid-state drive slot.



Replacing the solid-state drive

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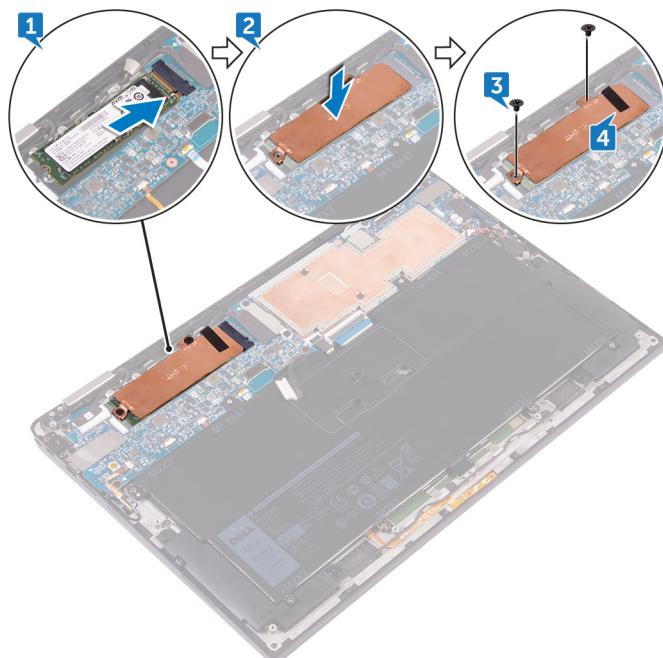
⚠ CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

Topics:

- Procedure
- Post-requisites

Procedure

1. Align the notches on the solid-state drive with the tabs in the solid-state drive slot, slide the solid-state drive at an angle into the solid-state drive slot, then press the other end of the solid-state drive down.
2. Align the screw holes on the hard disk plate with the screw holes on the system board.
3. Replace the two screws (M1.6x2.5) that secure the hard-disk plate to the system board.
4. Adhere the display-cable tape to the hard-disk plate.



Post-requisites

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

Disconnecting the wireless antenna cables

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i **NOTE:** The wireless card is integrated into the system board and can not be removed.

Topics:

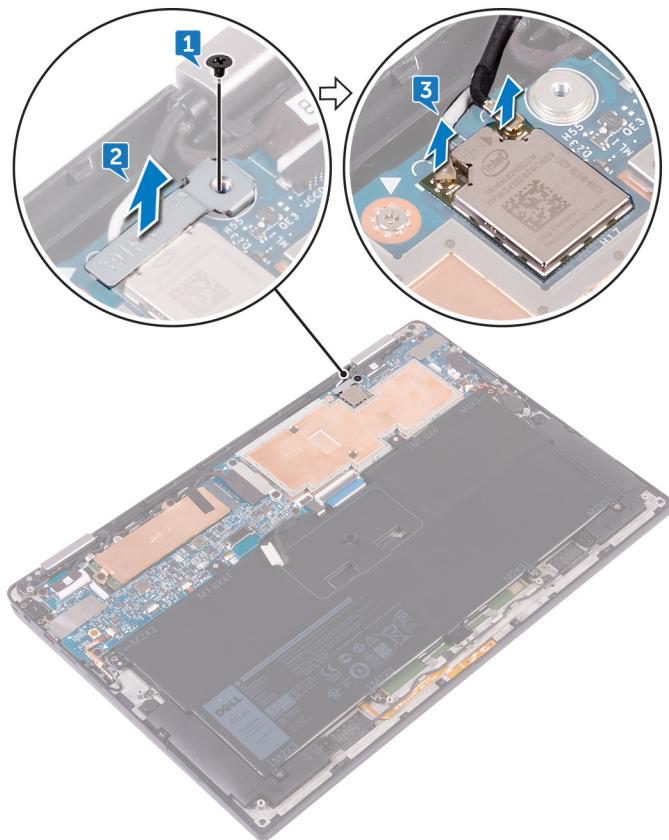
- Prerequisites
- Procedure

Prerequisites

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

Procedure

1. Remove the screw (M1.6x2.5) that secures the wireless-card bracket to the system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.



Reconnecting the wireless antenna cables

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Topics:

- Procedure
- Post-requisites

Procedure

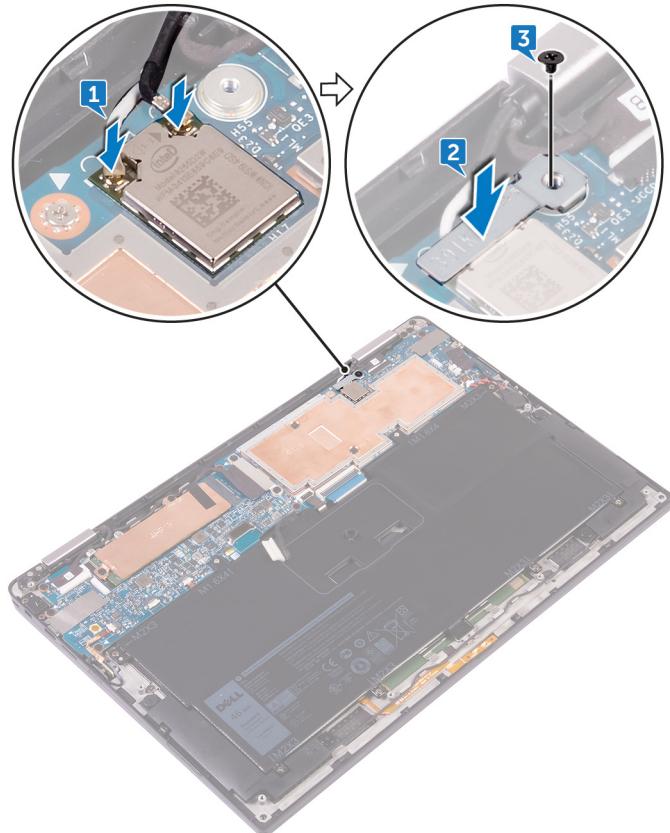
1. Connect the antenna cables to the wireless card.

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

Table 2. Antenna color codes for wireless card connection

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

2. Place the wireless-card bracket on the wireless card.
3. Replace the screw (M1.6x2.5) that secures the wireless-card bracket to the system board.



Post-requisites

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

Removing the speakers

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Topics:

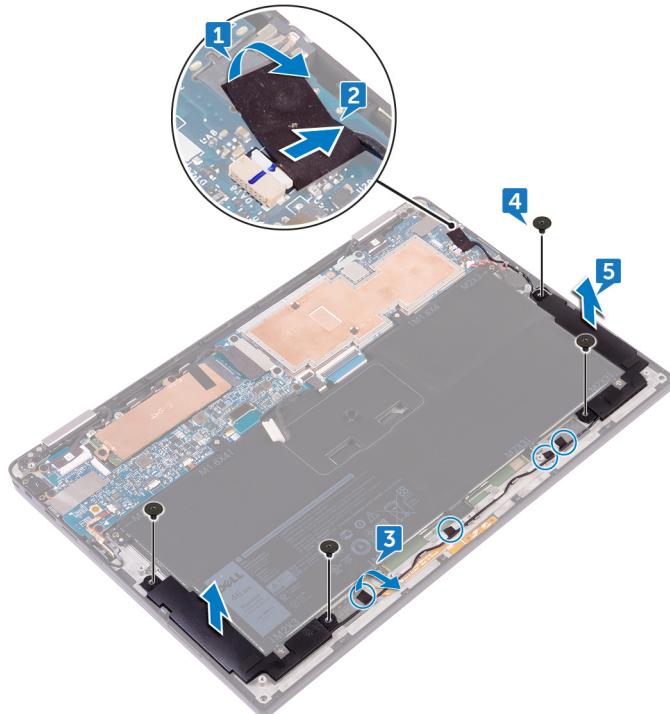
- [Prerequisites](#)
- [Procedure](#)

Prerequisites

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

Procedure

1. Peel off the tape securing the speaker cable to the system board.
2. Disconnect the speaker cable from the system board.
3. Note the speaker-cable routing and peel off the tape that secures the speaker cable to the system board.
4. Remove the four screws (M2x2) that secure the speakers to the palm-rest assembly.
5. Lift the speakers, along with its cables, off the palm-rest assembly.



Replacing the speakers

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Topics:

- [Procedure](#)
- [Post-requisites](#)

Procedure

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

Post-requisites

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

Removing the coin-cell battery

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⚠ 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.

Topics:

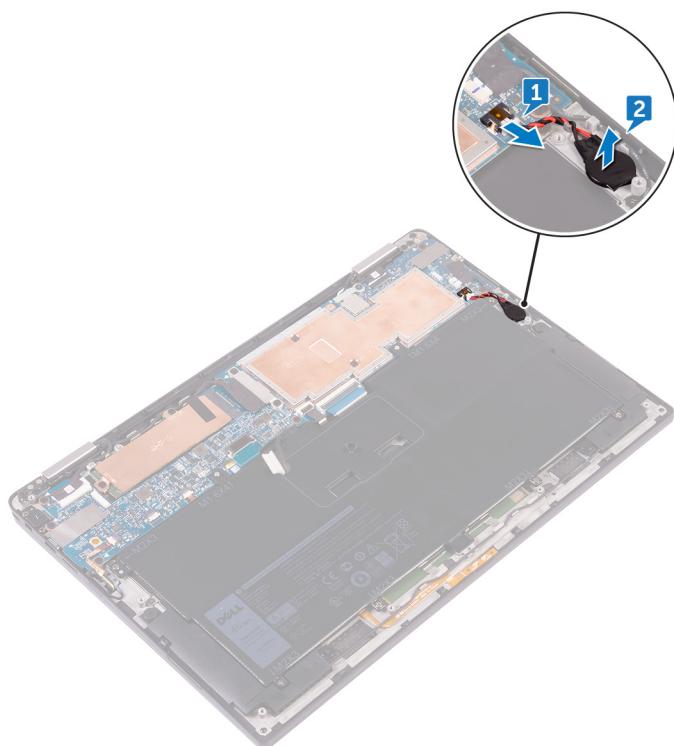
- Prerequisites
- Procedure

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 palm-rest assembly.



Replacing the coin-cell battery

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Topics:

- Procedure
- Post-requisites

Procedure

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

Post-requisites

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

Removing the touchpad

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Topics:

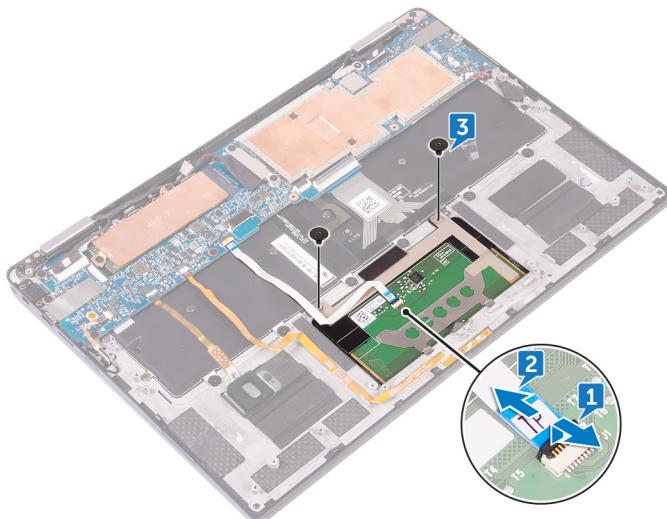
- Prerequisites
- Procedure

Prerequisites

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

Procedure

1. Open the cable latch on the touch pad.
2. Disconnect and remove the cable from the touch pad.
3. Remove the two screws (M2x2) that secure the touch pad to the palm-rest assembly, then lift the touch pad from the inner edge and remove it from the palm-rest assembly.



Replacing the touchpad

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Topics:

- Procedure
- Post-requisites

Procedure

1. Align the screw holes on the touch pad with the screw holes on the palm-rest assembly, then slide the touch pad into the palm-rest assembly at an angle.
2. Replace the two screws (M2x2) that secure the touch pad to the palm-rest assembly.
3. Insert the touch pad cable into the connector on the touch pad, then close the latch to secure the cable.

Post-requisites

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

Removing the display assembly

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Topics:

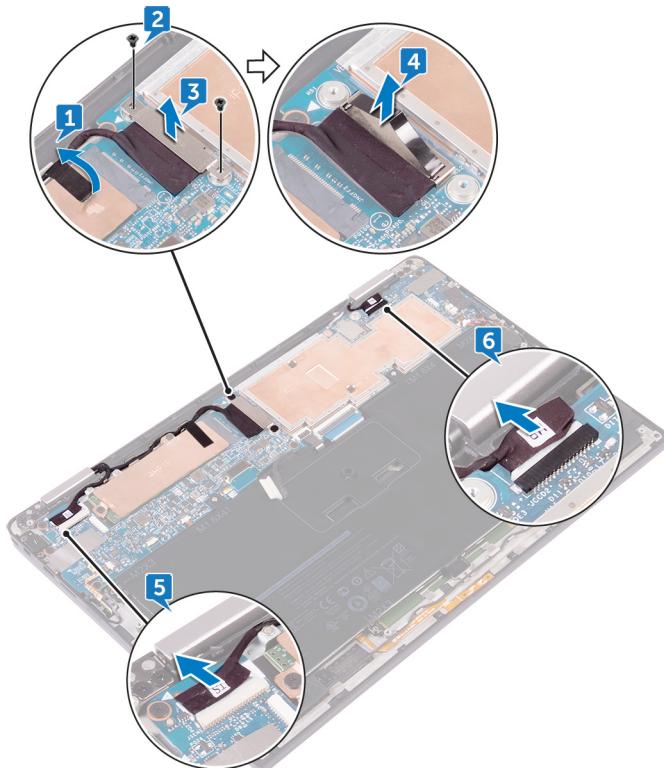
- [Prerequisites](#)
- [Procedure](#)

Prerequisites

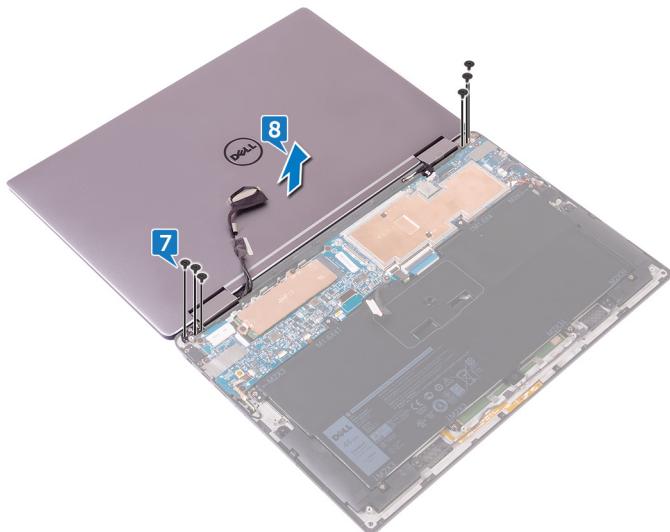
1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Disconnect the [wireless card](#).

Procedure

1. Peel off the tape that secures the display cable to the hard-disk plate.
2. Remove the two screws (M1.6x2.5) securing the display cable bracket to the system board.
3. Lift the display cable bracket off the display cable.
4. Using the pull tab, disconnect the display cable from the system board.
5. Disconnect the touch-screen cable from the system board.
6. Disconnect the camera cable from the system board.



7. Open the palm-rest assembly fully and place the display assembly and palm-rest assembly face down and then remove the six screws (M2.5x3.5) that secure the display hinges to the palm-rest assembly.
- (i) | NOTE: Ensure the surface is flat and free of objects when placing the display assembly face down.**
8. Lift the display assembly off the palm-rest assembly.



Replacing the display assembly

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Topics:

- Procedure
- Post-requisites

Procedure

1. Slide the palm-rest assembly under the display hinges and align the screw holes on the palm-rest assembly with the screw holes on the display hinges.
2. Replace the six screws (M2.5x3.5) that secure the palm-rest assembly to the display hinges.
3. Close the palm-rest assembly.
4. Connect the display cable to the system board.
5. Align the screw holes on the display-cable bracket with the screw holes on the system board.
6. Replace the two screws (M1.6x2.5) that secure the display-cable bracket to the system board.
7. Adhere the display cable tape to the system board.
8. Connect the touch-screen cable and camera cable to the system board.

Post-requisites

1. Reconnect the [wireless card](#).
2. Replace the [battery](#).
3. Replace the [base cover](#).

Removing the system board

- i** **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.
- i** **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.
- i** **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.
- i** **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.

Topics:

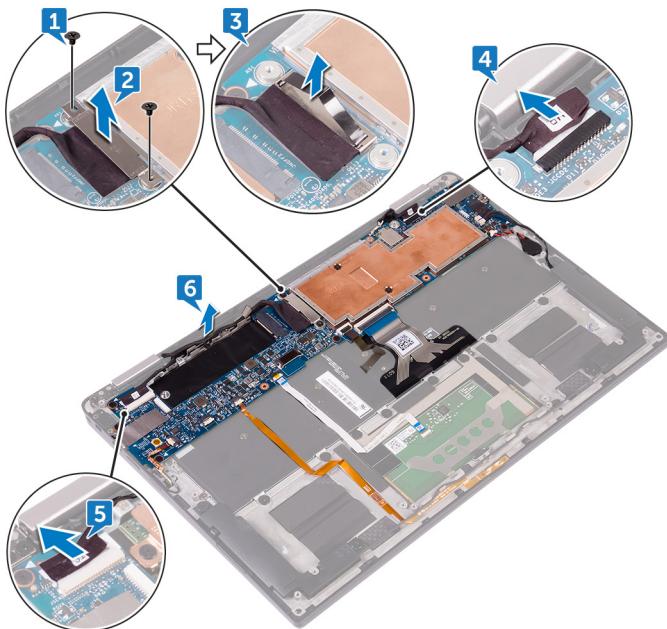
- Prerequisites
- Procedure

Prerequisites

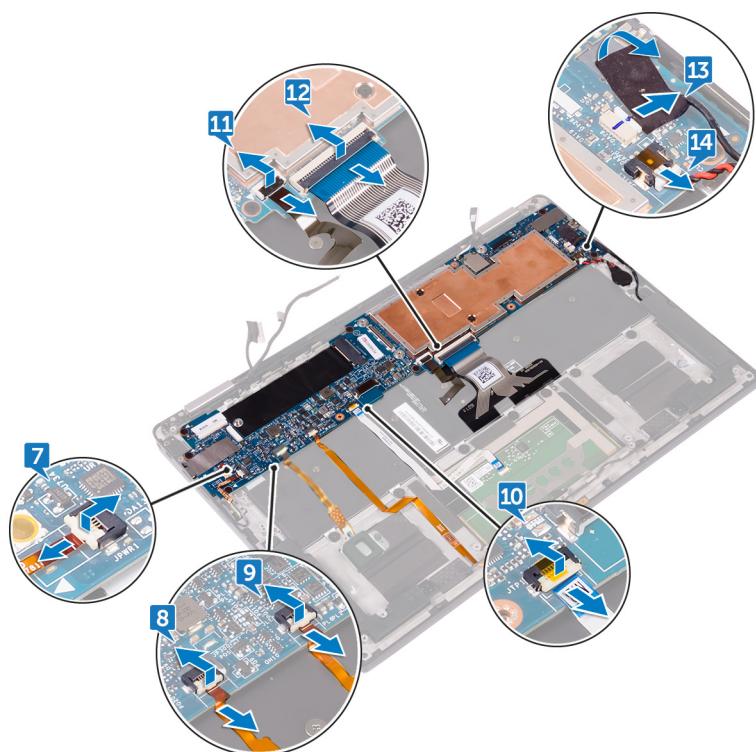
1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [solid-state drive](#).
4. Disconnect the [wireless card](#).

Procedure

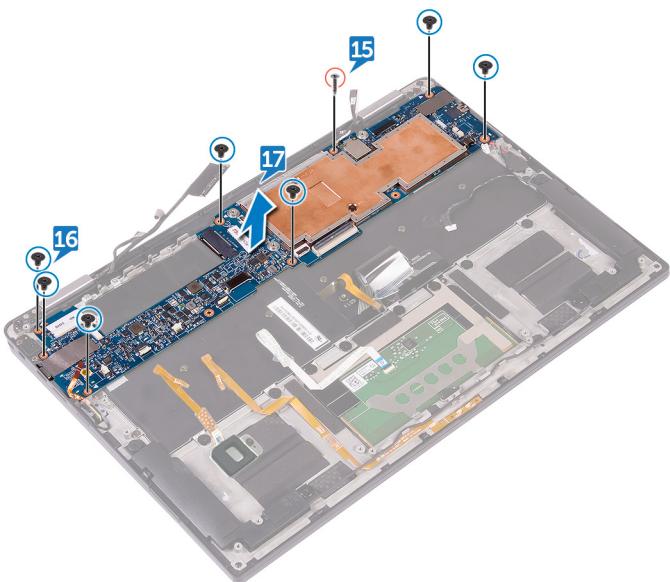
1. Remove the two screws (M1.6x2.5) that secure the display-cable bracket to the system board.
2. Lift the display-cable bracket off the display cable.
3. Using the pull tab, disconnect the display cable from the system board.
4. Disconnect the camera cable from the system board.
5. Disconnect the touch-screen cable from the system board.
6. Move the display cable to the side to facilitate system board removal.



7. Open the latch and disconnect the power-button cable from the system board.
8. Open the latch and disconnect the fingerprint-reader cable from the system board.
9. Open the latch and disconnect the battery-status light cable from the system board.
10. Open the latch and disconnect the touch-pad cable from the system board.
11. Open the latch and disconnect the keyboard-backlight cable from the system board.
12. Open the latch and disconnect the keyboard-controls board cable from the system board.
13. Peel off the tape that secures the speaker cable to the system board., then disconnect the speaker cable from the system board.
14. Disconnect the coin-cell battery from the system board.



15. Remove the screw (M1.6x3) that secures the system board to the palm-rest assembly.
16. Remove the seven screws (M1.6x2.5) that secure the system board to the palm-rest assembly.
17. Starting from the outer edge, lift the system board at an angle and remove it from under the tabs on the palm-rest assembly.



Replacing the system board

- i** **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.
- i** **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.
- i** **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.

Topics:

- Procedure
- Post-requisites
- Entering the Service Tag in the BIOS setup program

Procedure

1. Slide the system board under the tabs 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 seven screws (M1.6x2.5) that secure the system board to the palm-rest assembly.
3. Replace the screw (M1.6x3) that secures the system board to the palm-rest assembly.
4. Slide the power-button cable, fingerprint-reader cable, battery-status light cable, the touch-pad cable, the keyboard-backlight cable, and the keyboard-controls board cable into the system board and close the latches to secure the cables.
5. Connect the camera cable, the touch-screen cable, the coin-cell battery cable, the speaker cable, and the display cable to the system board.
6. Adhere the tape that secure the speaker cable to the system board.
7. Align the screw holes on the display-cable bracket with the screw holes on the system board.
8. Replace the two screws (M1.6x2.5) that secure the display-cable bracket to the system board.

Post-requisites

1. Reconnect the [wireless card](#).
2. Replace the [solid-state drive](#).
3. Replace the [battery](#).
4. 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.

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

Removing the keyboard

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Topics:

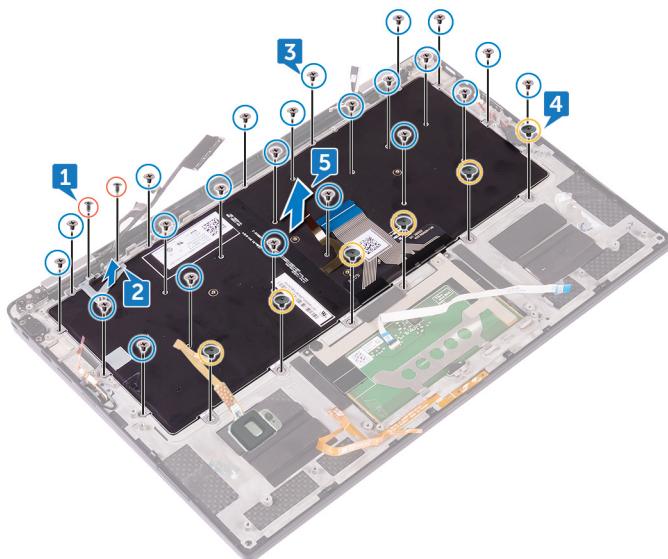
- Prerequisites
- Procedure

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [solid-state drive](#).
4. Disconnect the [wireless card](#).
5. Remove the [speakers](#).
6. Remove the [coin-cell battery](#).
7. Remove the [system board](#).

Procedure

1. Remove the two screws (M1.6x3) that secure the SSD bracket to the palm-rest assembly.
2. Lift the SSD bracket off the keyboard and the palm-rest assembly.
3. Remove the 23 screws (M1.6x1.5) that secure the keyboard to the palm-rest assembly.
4. Remove the six (M2x2) screws that secure the keyboard to the palm-rest assembly.
5. Lift the keyboard off the palm-rest assembly.



Replacing the keyboard

i **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.

Topics:

- [Procedure](#)
- [Post-requisites](#)

Procedure

1. Align the screw holes on the keyboard with the screw holes on the palm-rest assembly.
2. Replace the six (M2x2) screws that secure the keyboard to the palm-rest assembly.
3. Replace the 23 screws (M1.6x1.5) that secure the keyboard to the palm-rest assembly.
4. Align the screw holes on the SSD bracket to the screw holes on the keyboard and the palm-rest assembly.
5. Replace the two screws (M1.6x3) that secure the SSD bracket to the palm-rest assembly.

Post-requisites

1. Replace the [system board](#).
2. Replace the [coin-cell battery](#).
3. Replace the [speakers](#).
4. Reconnect the [wireless card](#).
5. Replace the [solid-state drive](#).
6. Replace the [battery](#).
7. Replace the [base cover](#).

Removing the palm-rest assembly

i **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.

Topics:

- Prerequisites
- Procedure

Prerequisites

1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [solid-state drive](#).
4. Disconnect the [wireless card](#).
5. Remove the [speakers](#).
6. Remove the [coin-cell battery](#).
7. Remove the [touch pad](#).
8. Remove the [display assembly](#).
9. Remove the [system board](#).
10. Remove the [keyboard](#).

Procedure

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



Replacing the palm-rest assembly

i **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.

Topics:

- Procedure
- Post-requisites

Procedure

Place the palm-rest assembly on a flat surface.

Post-requisites

1. Replace the [keyboard](#).
2. Replace the [system board](#).
3. Replace the [display assembly](#).
4. Replace the [touch pad](#).
5. Replace the [coin-cell battery](#).
6. Replace the [speakers](#).
7. Reconnect the [wireless card](#).
8. Replace the [solid-state drive](#).
9. Replace the [battery](#).
10. Replace the [base cover](#).

System setup

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

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

Use the BIOS Setup program for the following purposes:

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

Topics:

- BIOS overview
- Entering BIOS setup program
- Navigation keys
- Boot Sequence
- System setup options

BIOS overview

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

Entering BIOS setup program

1. Turn on (or restart) your computer.
 2. During POST, when the DELL logo is displayed, watch for the F2 prompt to appear, and then press F2 immediately.
-  **NOTE:** The F2 prompt indicates that the keyboard is initialized. This prompt can appear very quickly, so you must watch for it, and then press F2. If you press F2 before the F2 prompt, this keystroke is lost. 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.

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

Boot Sequence

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

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

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

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

(i) | NOTE: XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

(i) | 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

(i) | NOTE: Depending on this computer and its installed devices, the items listed in this section may or may not appear.

Table 3. System setup options—System information menu

General-System Information

System Information

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.
Ownership Tag	Displays the ownership 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.
Signed Firmware Update Status	Displays the status of signed-firmware updates.

Processor Information

Processor Type	Displays the processor type.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Microcode Version	Displays the processor microcode version.
Current Clock Speed	Displays the current processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Maximum Clock Speed	Displays the maximum processor clock speed.
Processor L2 Cache	Displays the processor L2 cache size.
Processor L3 Cache	Displays the processor L3 cache size.
Intel Hyper-Threading Capable	Displays whether the processor is HyperThreading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.

Memory Information

General-System Information

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.

Device Information

Audio Controller	Displays the audio controller installed.
Modem	Displays the modem that is installed.
Wi-Fi Device	Displays the Wi-Fi device installation status.
WiGig Device	Displays the WiGig device installation status.
Bluetooth Device	Displays the Bluetooth device installation status.

Battery Information

Date/Time

Advanced Boot Options

Enable Legacy Option ROMs	Enable or disable the legacy option ROMs.
Enable UEFI Network Stack	Enable or disable UEFI network stack.

Boot Sequence

Boot List Option	Displays the available boot options.
Boot Sequence	Displays the boot sequence.

BIOS Setup Advanced Mode

Enable or disable BIOS setup advanced mode.

Table 4. System setup options—System Configuration menu

System Configuration

SATA Operation	Configure operating mode of the integrated SATA hard drive controller.
Drives	Enable or disable various drives on board.
SMART Reporting	Enable or disable SMART Reporting during system startup.
USB/Thunderbolt Configuration	This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB mass storage devices. If the USB port is enabled, the device that is attached to this port is enabled and available in the operating system. If the USB port is disabled, the operating system does not have access to the USB port. The options are: <ul style="list-style-type: none">• Enable USB Boot Support (enabled by default)• Enable External USB Port (enabled by default)• Enable Thunderbolt Port (enabled by default)• Enable Thunderbolt Boot Support. This is an optional feature.• Always Allows Dell Docks. This is an optional feature.• Enables Thunderbolt (and PCIe behind TBT) Pre-boot
	NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.
USB PowerShare	Enable or disable charging external devices through the USB PowerShare port.
Touchscreen	Enable or disable the touchscreen.

System Configuration

Audio	This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected. The options are: <ul style="list-style-type: none">• Enable microphone (enabled by default)• Enable internal speaker (enabled by default)
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are: <ul style="list-style-type: none">• Disabled• Dim• Bright (enabled by default)
Unobtrusive Mode	Enable or disable the Fn+F7 key combination to turn off all lights and sound emissions in the system. Default: Disabled.
Miscellaneous Devices	Enable or disable various onboard devices.

Table 5. System setup options—Video menu

Video	
LCD Brightness	Set the panel brightness independently for battery or AC power.
EcoPower	Enable or disable EcoPower.

Table 6. System setup options—Security menu

Security	
Admin Password	Set, change, or delete the administrator password.
System Password	Set, change, or delete the system password.
Strong Password	Enable or disable strong passwords.
Password Configuration	Control the minimum and maximum number of characters that are allowed for Admin and System passwords.
Master Password Lockout	Enable to prevent users from entering Setup when a Master Password is set.
Password Bypass	Bypass the System (Boot) Password and the internal hard disk password prompts during a system restart.
Password Changes	Enable or disable changes to the system and hard disk passwords when an administrator password is set.
UEFI Capsule Firmware Updates	Enable or disable BIOS updates through UEFI capsule update packages.
TPM 2 Security	This field lets you choose the Trusted Platform Module (TPM) 2.0 Security features. The options are: <ul style="list-style-type: none">• TPM On• PPI Bypass for Enable Commands• PPI Bypass for Disable Commands• SHA-256• Clear• Attestation Enable• Key Storage Enable Enable or disable the TPM state. Default: Enabled.
Computrace	Enable or disable the BIOS module interface of the optional Computrace Service from Absolute Software.

Security

OROM Keyboard Access	Enable or disable the Optional ROM configuration screens using hot-keys during boot.
Admin Setup Lockout	Enable to prevent users from entering the System Setup menu when an Admin Password is set.
Intel Software Guard Extensions	Enable or disable a secured environment for running code/storing sensitive information in the context of the operating system.

Table 7. System setup options—Secure Boot menu

Secure Boot

Secure Boot Enable	Enable or disable the secure boot feature.
--------------------	--

Expert Key Management

Enable Custom Mode	Enable or disable custom values for expert key management.
Custom Mode Key Management	Select the custom values for expert key management.

Table 8. System setup options—Performance

Performance

Intel Hyper-Threading	Enable or disable Hyper-Threading in the processor. Default: Enabled.
Intel SpeedStep Technology	Enable or disable Intel Speedstep Technology. Default: Enabled.
	(i) NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
Intel TurboBoost	Enable or disable Intel Turbo Boost mode of the processor. Default: Enabled.
Multi Core Support	Enable multiple cores. Default: Enabled.
C-States Support	Enable or disable additional processor sleep states. Default: Enabled.

Table 9. System setup options—Power Management

Power Management

AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. Default setting: Wake on AC is not selected.
Auto on Time	Enable to set the computer to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days. Default: Disabled.
Peak Shift	Enables minimization of the AC power consumption during the peak power times of day. When this option is enabled the system runs only on battery even when the AC is plugged in.
Advanced Battery Charge Configuration	Enable Advanced Battery Charge Configuration from the beginning of the day to a specified work period.
Primary Battery Charge Configuration	Set the primary battery charge settings with a pre-selected custom charge start and stop.

Power Management

Default: Adaptive.

Table 10. System setup options—Wireless menu

Wireless

Wireless Switch	Determine which wireless devices can be controlled by the Wireless Switch.
Wireless Device Enable	Enable or disable internal wireless devices.

Table 11. System setup options—POST Behavior

POST Behavior

Numlock LED	Enable or disable Numlock. Default: Enable Numlock.
Adapter Warnings	Enable adapter warnings. Default: Enabled.
Keypad (Embedded)	Allows you to select one of two methods to enable the keypad that is embedded in the internal keyboard. <ul style="list-style-type: none">• Fn Key Only — The keypad is only enabled when you hold down the <Fn> key.• By Num Lk — The keypad is enabled when (1) the Num Lock LED is on and (2) no external keyboard is attached. <p>Note that the system might not notice immediately when an external keyboard is detached.</p>
	<i>(i) NOTE: When system setup is running, this field has no effect—system setup works in the Fn Key Only mode.</i>
	Default setting: Fn Key Only.
Extend BIOS POST Time	This option creates an additional pre-boot delay. This allows the user to see POST status messages. 0 seconds (Default Setting)
Fastboot	Enable to set the speed of the boot process. Default: Thorough.
Fn Lock Options	Enable or disable the Fn lock mode.
Mouse/Touchpad	Define the mouse and touchpad input. Default: Touchpad/PS-2 Mouse.

Table 12. System setup options—Virtualization menu

Virtualization

Intel Virtualization Technology (VT)	Specify whether a Virtual Machine Monitor (VMM) can use the additional hardware capabilities that are provided by Intel Virtualization Technology.
Intel VT for Direct I/O	Specify whether a Virtual Machine Monitor (VMM) can use the additional hardware capabilities that are provided by Intel Virtualization Technology for Direct I/O.
Intel Trusted Execution Technology (TXT)	Specify whether a Virtual Machine Monitor (VMM) can use the additional hardware capabilities that are provided by Intel Trusted Execution Technology.

Table 13. System setup options—Maintenance menu

Maintenance

Asset Tag	Create a system Asset Tag.
Service Tag	Display the system's Service Tag.

Maintenance

BIOS Downgrade	Control flashing of the system firmware to previous revisions.
BIOS Recovery	Enable the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB drive.
Data Wipe	Enable to securely erase data from all internal storage devices.

Table 14. System setup options—Manageability

Manageability

USB Provision	Enable or disable USB provisioning.
MEBx Hotkey	Enable or disable the MEBx Hotkey function when the system boots.

Table 15. System setup options—System Logs menu

System Logs

Power Events	Display Power events.
BIOS Events	Display BIOS events.
Thermal Events	Display Thermal events.

Table 16. System setup options—SupportAssist System Resolution menu

SupportAssist System Resolution

Dell Auto OS Recovery Threshold	Control the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery tool.
SupportAssist OS Recovery	Enable or disable the boot flow for SupportAssist OS Recovery tool in the even of certain system errors.
MPM Configuration	Configures the Multi-Processing Modules.

System and setup password

Table 17. System and setup password

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

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

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

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

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

Topics:

- Assigning a system setup password
- Deleting or changing an existing system setup password
- Clearing CMOS settings
- Clearing BIOS (System Setup) and System passwords

Assigning a system setup password

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

To enter the system setup, press F2 immediately after a power-on or re-boot.

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 allowed.
- Only the following special characters are allowed: 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 prompts you to save the changes.
5. Press Y to save the changes.
The computer reboots.

Deleting or changing an existing system setup password

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.

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

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, re-enter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
The computer reboot.

Clearing CMOS settings

1. Remove the [base cover](#).
2. Remove the [battery](#).
3. Remove the [coin-cell battery](#).
4. Wait for one minute.
5. Replace the [coin-cell battery](#).
6. Replace the [battery](#).
7. Replace the [base cover](#).

Clearing BIOS (System Setup) and System passwords

Contact Dell technical support to clear the forgotten passwords. For more information, see www.dell.com/contactdell.

Troubleshooting

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

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.

For more information, see [Dell EPSA Diagnostic 3.0](#).

Running the ePSA diagnostics

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.

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.

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**.
- (i) | 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.

Backup media and recovery options

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

WiFi power cycle

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:

(i) | 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.

Flea power release

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

1. Turn off your computer.
2. Remove the [base cover](#).
3. Press and hold the power button for 15 seconds to drain the flea power.
4. Replace the [base cover](#).
5. Turn on your computer.

System diagnostic lights

Battery-status light

Indicates the power and battery-charge status.

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

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

Off

- Power adapter is connected and the battery is fully charged.
- Computer is running on battery and the battery has more than 5 percent charge.

- Computer is in sleep state, hibernation, or turned off.

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

Table 18. 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
3,1	Coin-cell 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

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

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

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

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

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 19. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
Dell Help & Support app	
Accessing help	In Windows search, type Help and Support, and press Enter.
Online help for operating system	www.dell.com/support/windows
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.	<ol style="list-style-type: none"> 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. <p>See <i>Me and My Dell</i> at www.dell.com/support/manuals.</p> <p>To locate the <i>Me and My Dell</i> relevant to your product, identify your product through one of the following:</p> <ul style="list-style-type: none"> • 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.
Learn and know the following information about your product:	<ul style="list-style-type: none"> • Product specifications • Operating system • Setting up and using your product • Data backup • Troubleshooting and diagnostics • Factory and system restore • BIOS information

Contacting Dell

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

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

i | 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.