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XPS 13
Service Manual

Computer Model: XPS 13-9370
Regulatory Model: P82G
Regulatory Type: P82G001

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

Before working inside your computer.....8
Before you begin 8
Safety instructions..... 8
Recommended tools.....9
Screw list.....10

After working inside your computer.....12

Removing the base cover..... 13
Procedure..... 13

Replacing the base cover.....17
Procedure..... 17

Removing the battery.....18
Prerequisites..... 18
Procedure..... 18

Replacing the battery..... 20
Procedure..... 20
Post-requisites..... 20

Removing the solid-state drive..... 21
Prerequisites..... 21
Procedure..... 21

Replacing the solid-state drive.....23
Procedure.....23
Post-requisites..... 24

Removing the speakers.....25
Prerequisites..... 25
Procedure..... 25

Replacing the speakers..... 27
Procedure.....27
Post-requisites.....27

Removing the coin-cell battery..... 28
Prerequisites.....28
Procedure.....28

Replacing the coin-cell battery..... 30
Procedure..... 30
Post-requisites..... 30

Removing the heat sink..... 31
Prerequisites..... 31
Procedure..... 31

Replacing the heat sink.....33
Procedure.....33
Post-requisites..... 33

Removing the display assembly.....34
Prerequisites.....34
Procedure.....34

Replacing the display assembly.....38
Procedure..... 38
Post-requisites..... 39

Removing the headset port.....40
Prerequisites..... 40
Procedure..... 41

Replacing the headset port.....44
Procedure.....44
Post-requisites..... 44

Removing the fans.....45
Prerequisites..... 45
Procedure..... 45

Replacing the fans..... 48
Procedure..... 48
Post-requisites..... 48

Removing the system board.....49
Prerequisites..... 49
Procedure..... 49

Replacing the system board.....52
Procedure..... 52
Post-requisites..... 53
Entering the Service Tag in the BIOS setup program..... 53

Removing the power button.....54
Prerequisites..... 54
Procedure..... 54

Replacing the power button.....56
Procedure..... 56
Post-requisites..... 56

Removing the keyboard.....57
Prerequisites.....57
Procedure.....57

Replacing the keyboard..... 59
Procedure..... 59
Post-requisites..... 59

Removing the palm-rest assembly..... 60
Prerequisites..... 60
Procedure..... 61

Replacing the palm-rest assembly.....62
Procedure..... 62
Post-requisites..... 63

Downloading drivers.....64
Downloading the audio driver.....64
Downloading the graphics driver..... 64
Downloading the USB 3.0 driver..... 65
Downloading the Wi-Fi driver.....65
Downloading the media-card reader driver.....66
Downloading the chipset driver.....66
Downloading the network driver.....67

System setup.....68
Boot Sequence..... 68
Navigation keys.....68
BIOS overview..... 69
Entering BIOS setup program.....69
Enabling or disabling the USB in BIOS setup program..... 70
Identifying the storage drive in BIOS setup program..... 70
Checking the system memory in BIOS setup program.....70
System setup options.....71

System and setup password.....79
Assigning a system password and setup password.....79
Deleting or changing an existing system and or setup password..... 80
Clearing CMOS settings.....80
Clearing forgotten passwords..... 81

Troubleshooting..... 82
Flashing the BIOS.....82
Flashing BIOS (USB key).....82
Fixing a no-boot issue caused by USB-boot support.....83
Enhanced Pre-Boot System Assessment (ePSA) diagnostics..... 83
Running the ePSA diagnostics..... 84
System diagnostic lights.....84
Flea power release..... 86
Wi-Fi power cycle..... 86

Getting help and contacting Dell..... 87
Self-help resources.....87
Contacting Dell.....88

Before working inside your computer

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

Before you begin

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

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

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.

WARNING: 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.

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

Recommended tools

The procedures in this document may require the following tools:

- Phillips #00 and #01 screwdriver
- Torx #5 (T5) screwdriver
- Plastic scribe

Screw list

The following table provides the list of screws that are used for securing different components.

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
Keyboard	Palm-rest assembly	M1.6x1.5	29	
Fingerprint-reader board	Palm-rest assembly	M1.6x1.5	1	
Power button	Palm-rest assembly	M1.4x1.7	2	
System board	Palm-rest assembly	M1.6x2.5	10	
Fans	System board	M1.6x3L	2	
Speakers	Palm-rest assembly	M2x2	4	
Heat sink	System board	M2x3	4	
Headset port	Palm-rest assembly	M1.6x3	4	
Display assembly	Palm-rest assembly	M2.5x4	4	
Wireless antenna and camera cable bracket	System board	M1.6x3L	1	
Display cable bracket	System board	M1.6x2.5	2	
Solid-state drive shield and solid-state drive	System board	M2x3L	1	

Component	Secured to	Screw type	Quantity	Screw image
Battery	Palm-rest assembly	M2x2	4	
Battery	Palm-rest assembly	M1.6x4	1	
Base cover	Palm-rest assembly	M2x3, Torx	8	

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

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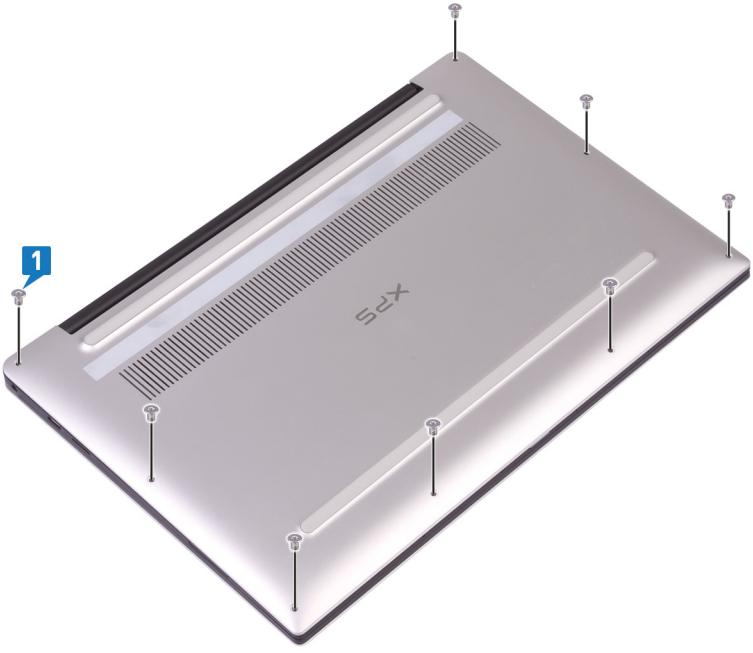
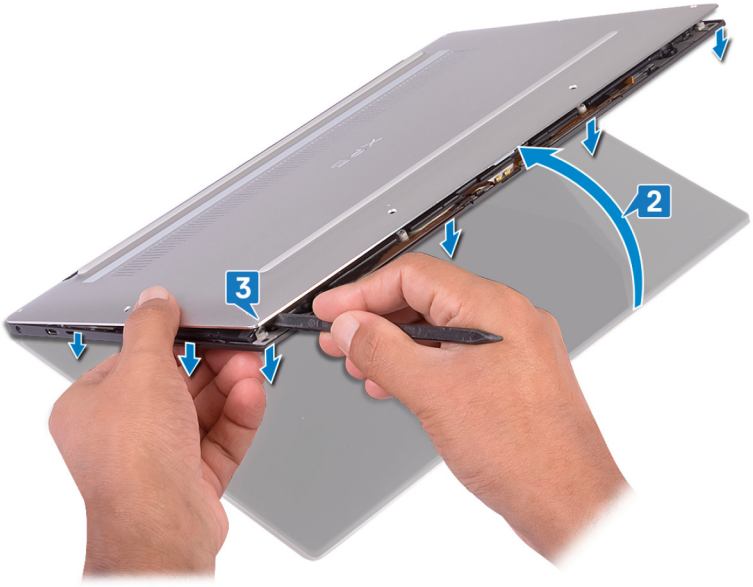
Procedure

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



2 With the computer face-down, open the computer at an angle.

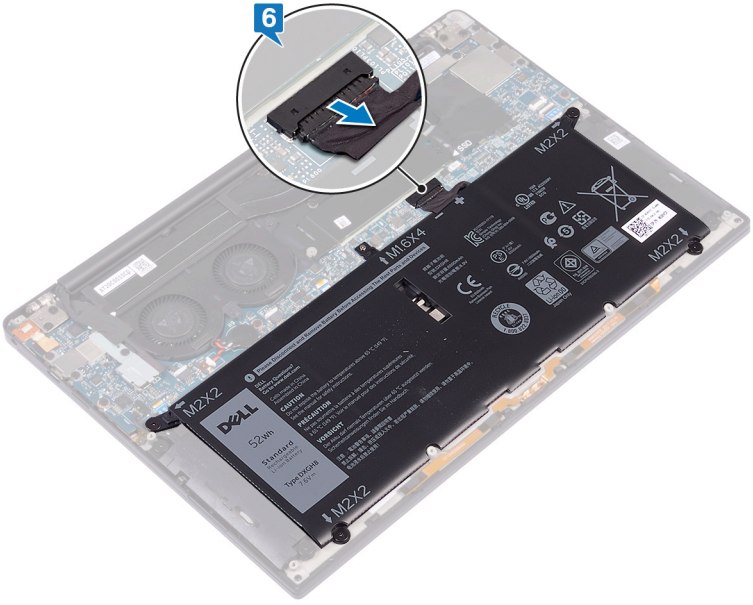
3 Using a plastic scribe, pry the base cover from the palm-rest assembly.



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

5 Lift the base cover from the palm-rest assembly.

6 Disconnect the battery cable from the system board.



Replacing the base cover

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Procedure

1. Connect the battery cable to the system board.
2. Align the screw holes on the base cover with the screw holes on the palm-rest assembly and snap the base cover into place.
3. Replace the eight screws (M2x3, Torx) that secure the base cover to the palm-rest assembly.

Removing the battery

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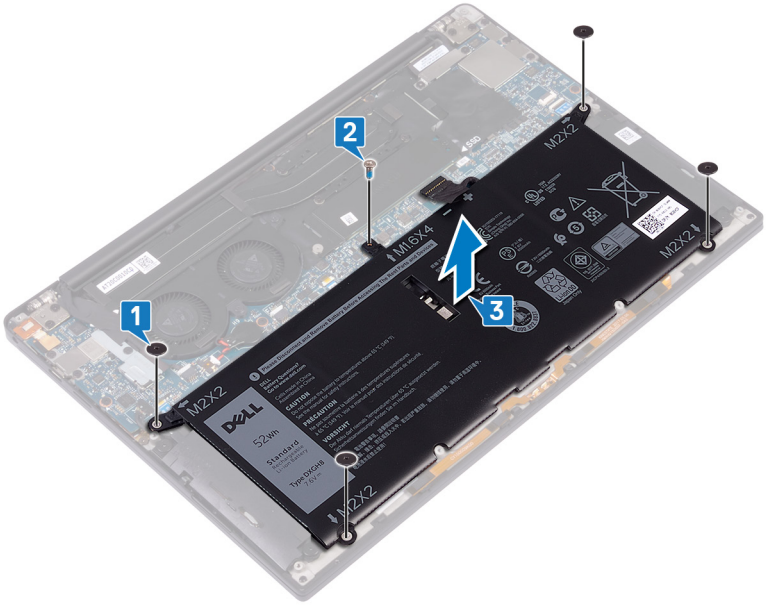
Prerequisites

Remove the base cover.

Procedure

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

3 Lift the battery off the palm-rest assembly.



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

Replacing the battery

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Procedure

1. Align the screw holes on the battery with the screw holes on the palm-rest assembly.
2. Replace the four screws (M2x3) that secure the battery to the palm-rest assembly.
3. Replace the screw (M1.6x4) that secures the battery to the palm-rest assembly.

Post-requisites

Replace the base cover.

Removing the solid-state drive

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

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

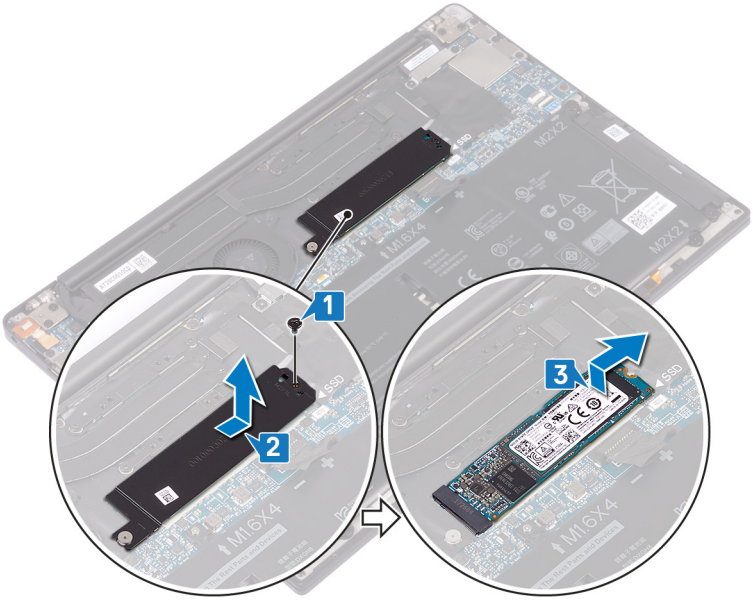
Prerequisites

Remove the base cover.

Procedure

1. Remove the screw (M2x3L) that secures the solid-state drive shield and the solid-state drive to the system board.
2. Slide and remove the solid-state drive shield from the solid state drive slot.

3 Lift the solid-state drive at an angle, then slide and remove the solid-state drive from the solid-state drive slot.



Replacing the solid-state drive

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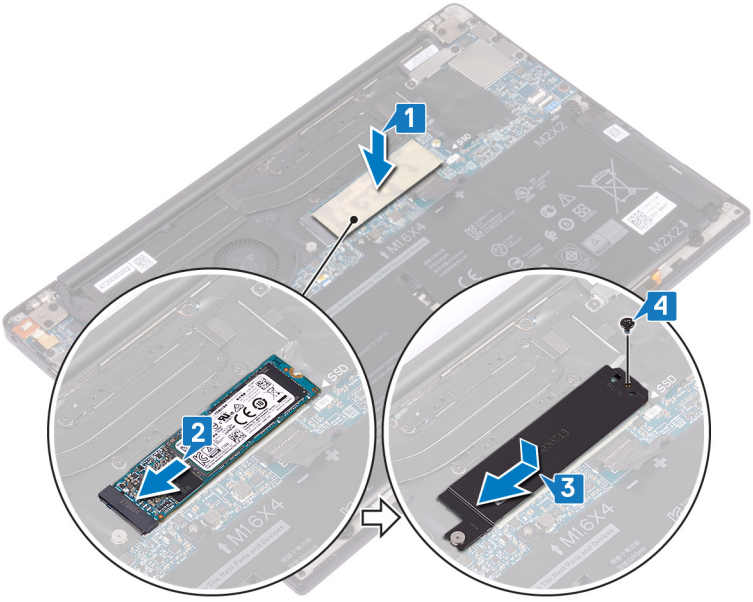
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

Procedure

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

3 Replace the screw (M2x3L) that secures the solid-state drive to the system board.



Post-requisites

Replace the base cover.

Removing the speakers

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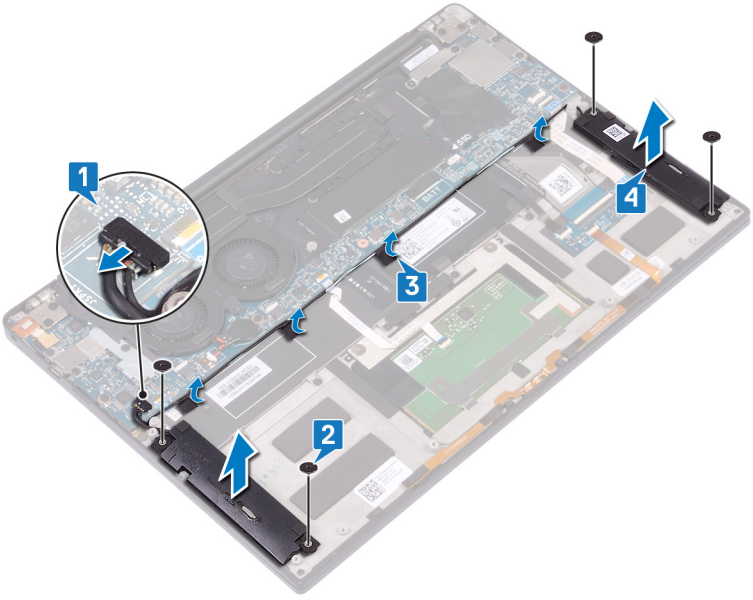
Prerequisites

1. Remove the base cover.
2. Remove the battery.

Procedure

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

4 Lift the left and right speakers, along with their cables, off the palm-rest assembly.



Replacing the speakers

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Procedure

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

Post-requisites

1. Replace the battery.
2. Replace the base cover.

Removing the coin-cell battery

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

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

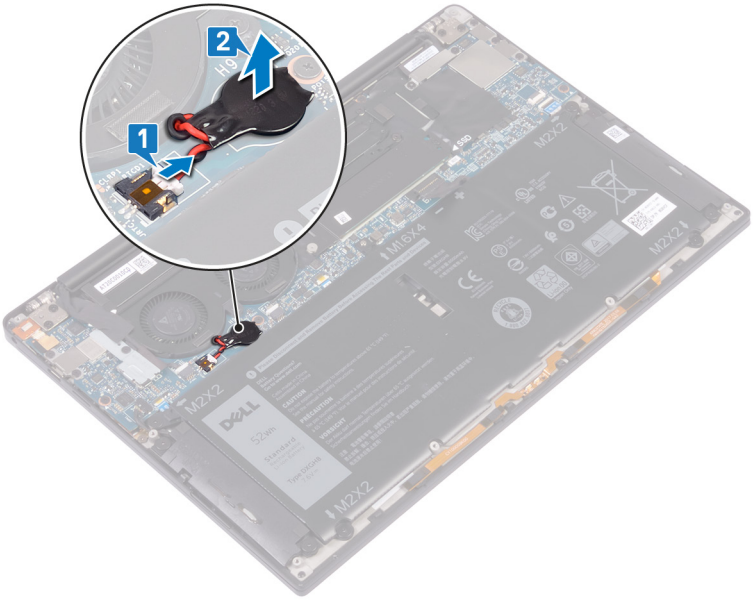
Prerequisites

Remove the base cover.

Procedure

1 Disconnect the coin-cell battery cable from the system board.

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



Replacing the coin-cell battery

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Procedure

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

Post-requisites

Replace the base cover.

Removing the heat sink

WARNING: 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.

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

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

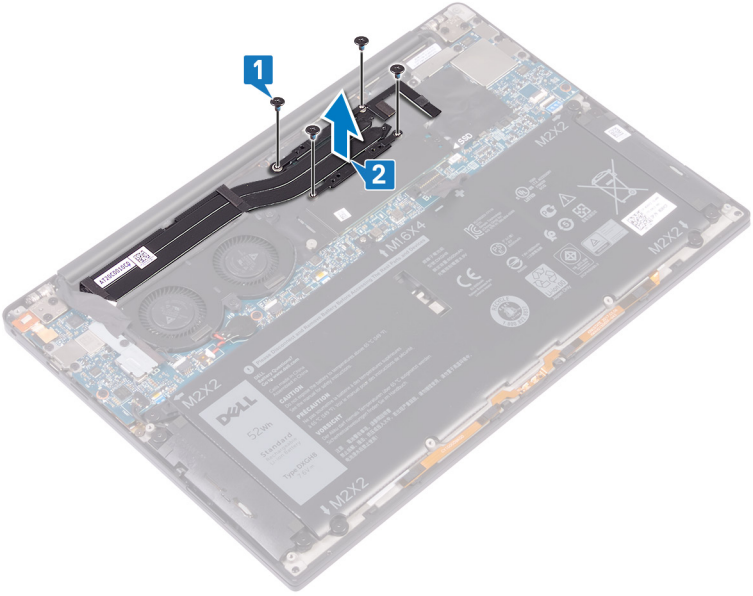
Prerequisites

Remove the base cover.

Procedure

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

2 Lift the heat sink off the system board.



Replacing the heat sink

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

NOTE: The original thermal grease can be reused if the original system board and heat sink are reinstalled together. If either the system board or the heat sink is replaced, use the thermal pad provided in the kit to ensure that thermal conductivity is achieved.

Procedure

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

Post-requisites

Replace the base cover.

Removing the display assembly

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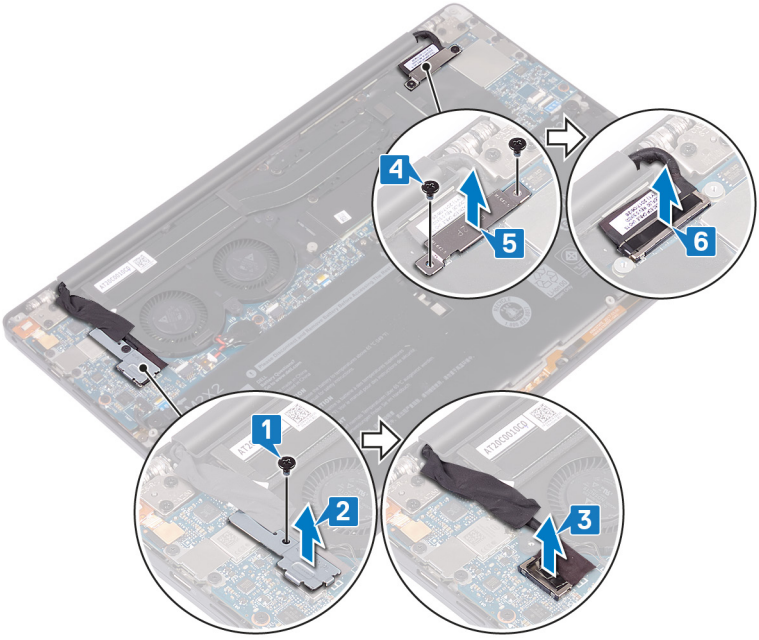
Prerequisites

Remove the base cover.

Procedure

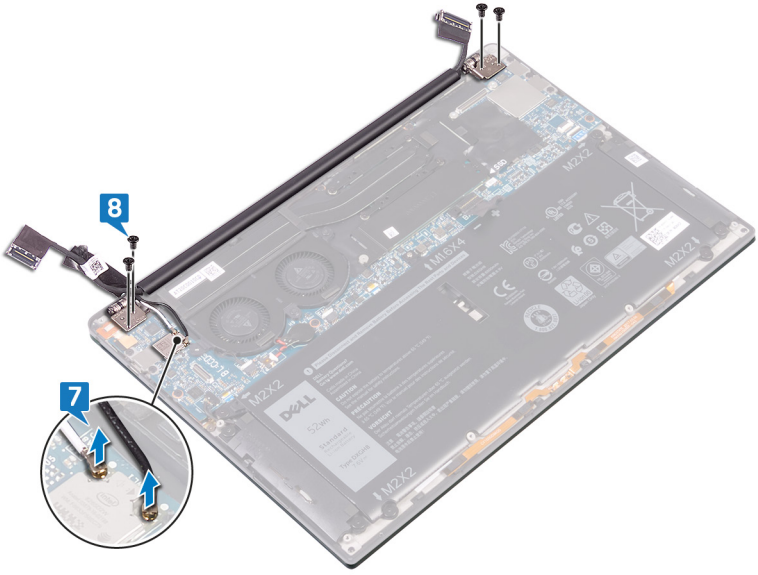
1. Remove the screw (M1.6x3L) that secures the wireless antenna and camera cable bracket to the system board.
2. Lift the wireless antenna and camera cable bracket from the system board.
3. Disconnect and lift the camera cable from the system board, peeling off the tape securing the camera cable to the fans.
4. Remove the two screws (M1.6x2.5) that secure the display cable bracket to the system board.
5. Lift the display cable bracket from the system board.

6 Disconnect the display cable from the system board.



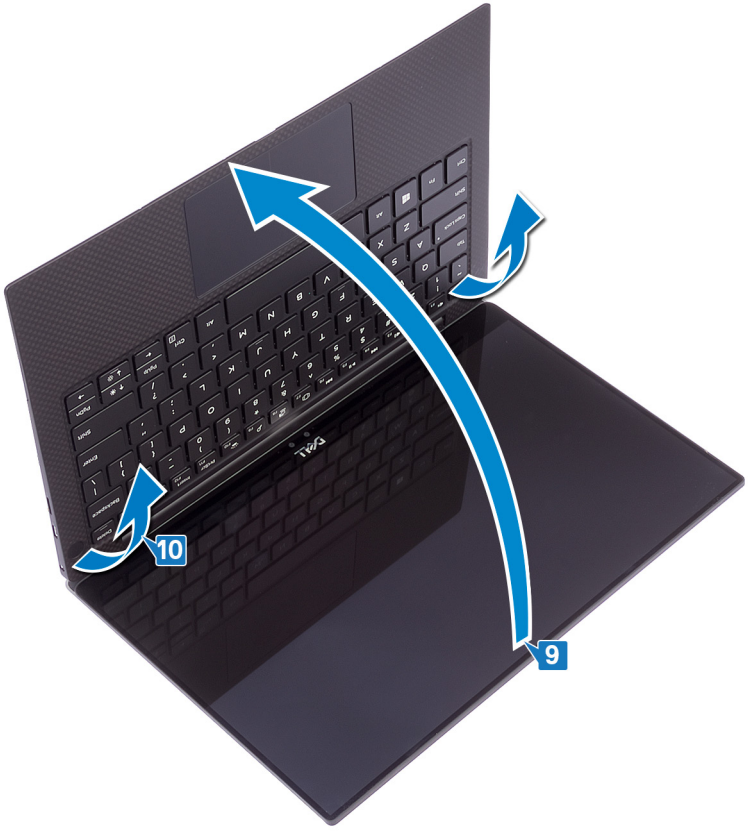
7 Disconnect the antenna cables from the system board.

8 Remove the four screws (M2.5x4) securing the display assembly to the palm-rest assembly.



9 Place the top surface of the computer on a flat and clean surface, then open the computer at a 90 degree angle.

10 Gently slide and lift the display assembly from the palm-rest assembly.



Replacing the display assembly

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Procedure

1. Slide the palm-rest assembly under the hinges of the display assembly.
2. Using the alignment posts, press the display hinges down on the palm-rest assembly, aligning the screw holes on the display hinges with the screw holes on the palm-rest assembly.
3. Connect the display cable to the system board.
4. Align the screw holes on the display-cable bracket with the screw holes on the system board.
5. Replace the two screws (M1.6x2.5) that secure the display-cable bracket to system board.
6. Connect the antenna cables to the system board.

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

   Table 2. Antenna-cable color scheme

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

7. Connect the camera cable to the system board, adhering the tape securing the camera cable to the fans.
8. Align the screw hole on the wireless antenna and camera cable bracket to screw hole on the system board.
9. Replace the screw (M1.6x3L) that secures the wireless antenna and camera cable bracket to the system board.

Post-requisites

Replace the base cover.

Removing the headset port

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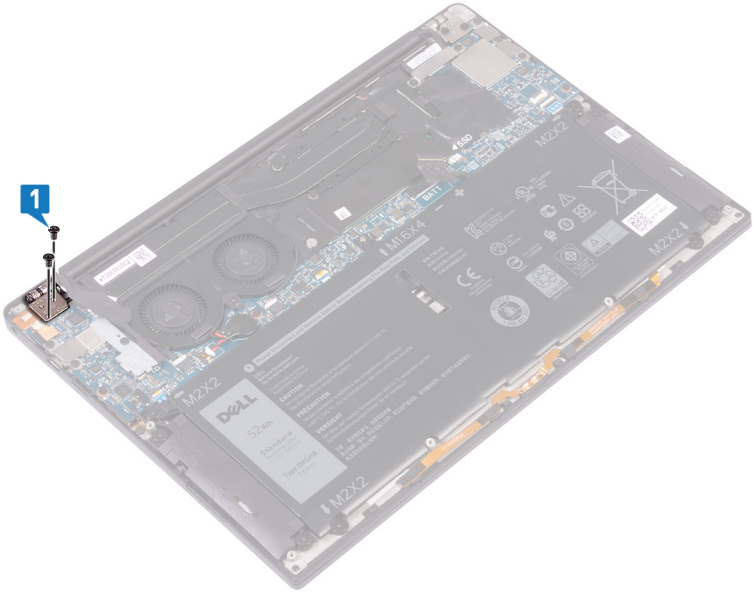
Prerequisites

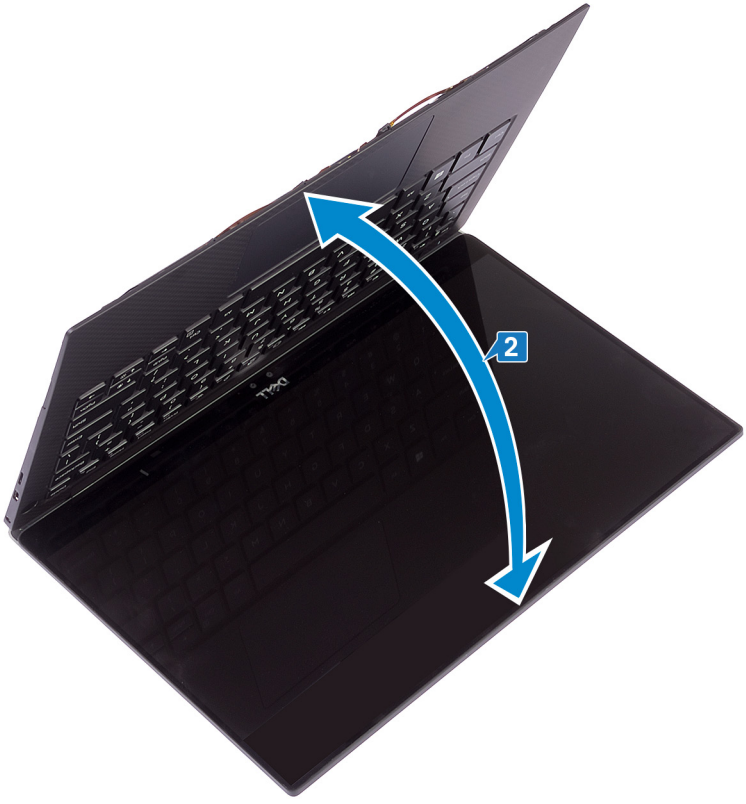
Remove the base cover.

Procedure

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



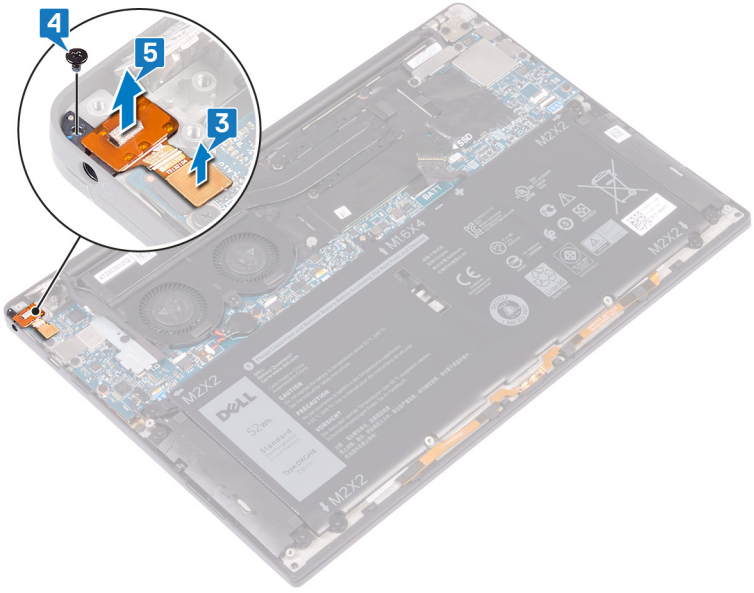
2 Place the top surface of the computer on a flat and clean surface, then open and close the computer.



3 Disconnect the headset-port cable from the system board.

4 Remove the screw (M1.6x3) that secures the headset port to the palm-rest assembly.

5 Lift the headset port from the system board.



Replacing the headset port

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Procedure

1. Place the headset port in its slot on the palm-rest assembly.
2. Replace the screw (M1.6x3) that secures the headset port to the palm-rest assembly
3. Reconnect the headset-port cable to the system board.
4. Using the alignment posts, press the right display hinge down on the palm-rest assembly aligning the screw holes on the display hinge to the screw holes on the palm-rest assembly.
5. Replace the two screws (M2.5x4) that secure the display assembly to the palm-rest assembly.

Post-requisites

Replace the base cover.

Removing the fans

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

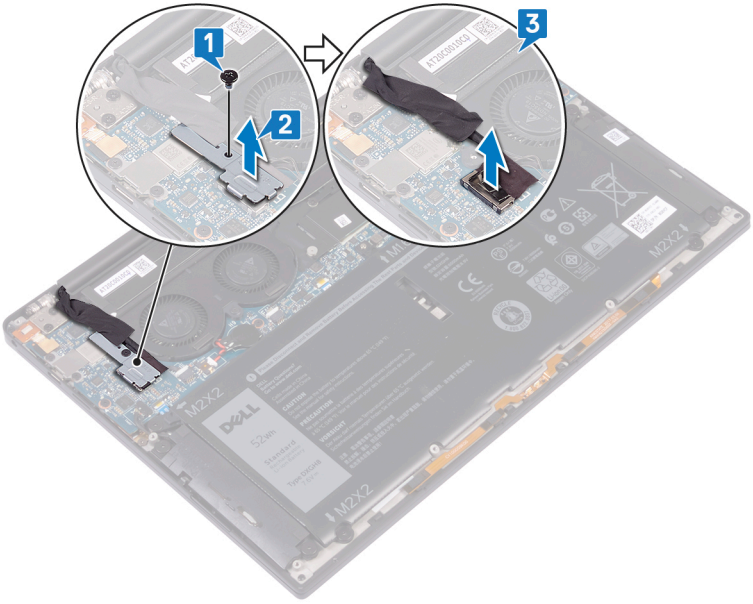
Prerequisites

Remove the base cover.

Procedure

1. Remove the screw (M1.6x3L) that secures the wireless antenna and camera cable bracket to the system board.
2. Lift the wireless antenna and camera cable bracket from the system board.

3 Disconnect and lift the camera cable from the system board, peeling off the tape securing the camera cable to the fans.

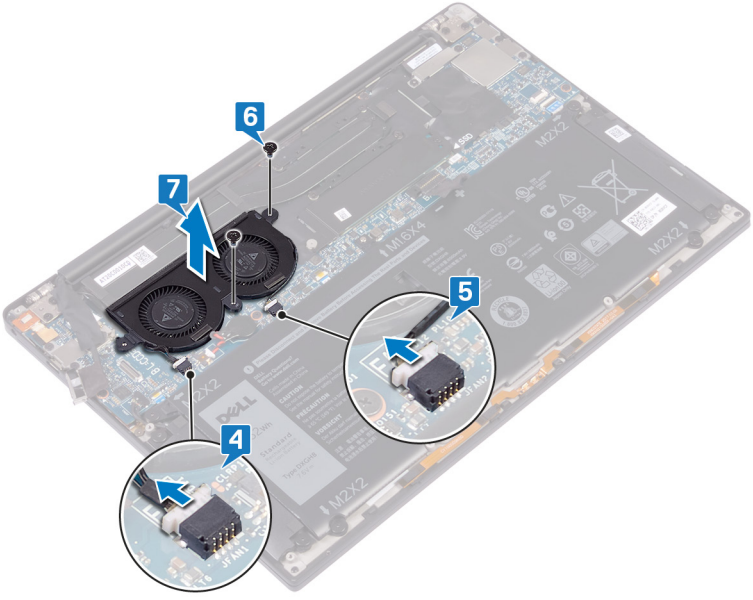


4 Disconnect the right fan cable from the system board.

5 Disconnect the left fan cable from the system board.

6 Remove the two screws (M1.6x3L) that secure the left and right fan to the system board.

7 Lift the left and right fans along with their cables off the system board.



Replacing the fans

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

Procedure

1. Align the screw holes on the left and right fans with the screw holes on the system board.
2. Replace the two screws (M1.6x3L) that secure the left and right fans to the system board.
3. Connect the left and right fan cables to the system board.
4. Connect the camera cable to the system board.
5. Align the screw hole on the wireless antenna and camera cable bracket to the screw hole on the system board.
6. Replace the screw (M1.6x3L) that secures the wireless antenna and camera cable bracket to the system board.
7. Adhere the tape that secures the camera cable to the fans.

Post-requisites

Replace the base cover.

Removing the system board

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NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

NOTE: Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.

Prerequisites

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

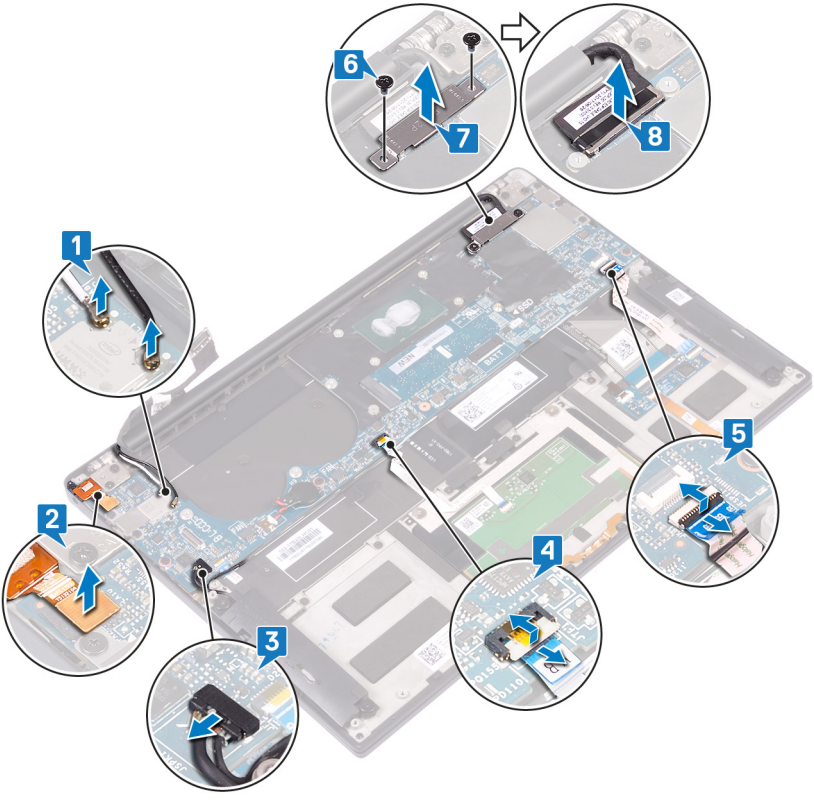
Procedure

1. Disconnect the antenna cables from the system board.
2. Disconnect the headset-port cable from the system board.
3. Disconnect the speaker cable from the system board.
4. Open the latch and disconnect the touchpad cable from the system board.
5. Open the latch and disconnect the keyboard-controller cable from the system board.

6 Remove the two screws (M1.6x2.5) that secure the display-cable bracket to the system board.

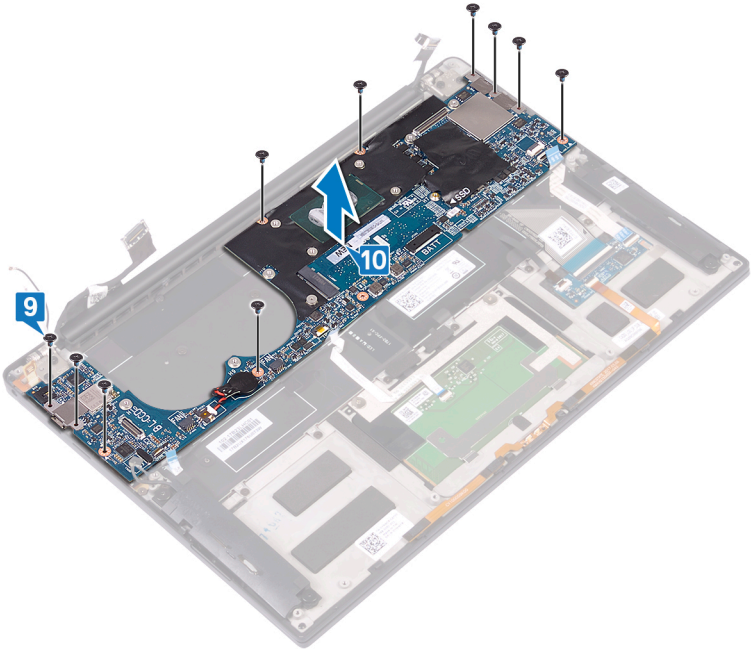
7 Lift the display-cable bracket from the system board.

8 Using the pull tab, disconnect the display cable from the system board.



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

10 Lift the system board from the palm-rest assembly.



Replacing the system board

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NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

Procedure

1. Using the alignment posts, place the system on the palm-rest assembly and align the screw holes on the system board with the screw holes on the palm-rest assembly.
2. Replace the 10 screws (M1.6x2.5) that secure the system board to the palm-rest assembly.
3. Slide the touchpad cable and the keyboard-controller board cable into the system board and close the connector latches to secure the cables.
4. Connect the headset port cable, speaker cable, and display cable to the system board.
5. Connect the antenna cables to the system board.

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

Table 3. Antenna-cable color scheme

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

6 Align the screw holes on the display-cable bracket with the screw holes on the system board.

7 Replace the two screws (M1.6x2.5) that secure the display-cable bracket to system board.

Post-requisites

1 Replace the fans.

2 Replace the heat sink.

3 Replace the solid-state drive.

4 Replace the battery.

5 Replace the base cover.

Entering the Service Tag in the BIOS setup program

1 Turn on or restart your computer.

2 Press F2 when the Dell logo is displayed to enter the BIOS setup program.

3 Navigate to the **Main** tab and enter the Service Tag in the **Service Tag Input** field.

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

Removing the power button

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

Prerequisites

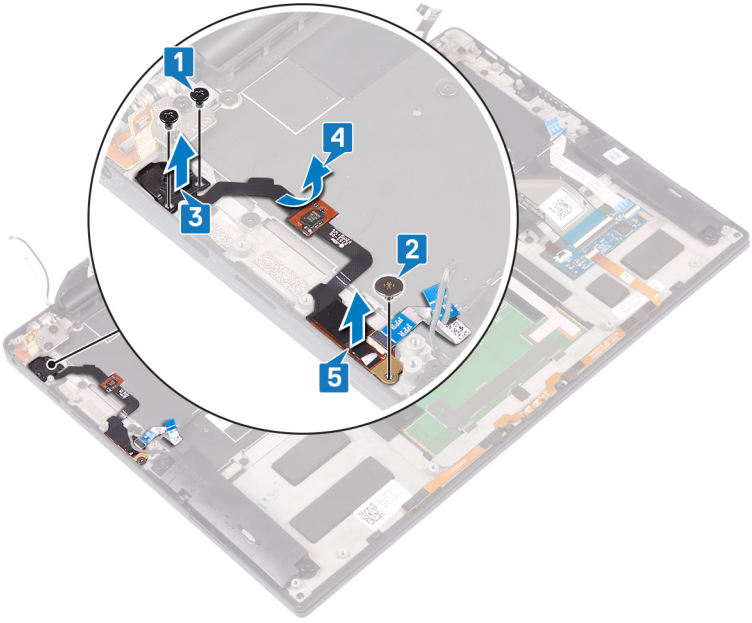
1. Remove the base cover.
2. Remove the battery.
3. Remove the solid-state drive.
4. Remove the heat sink.
5. Remove the fans.
6. Remove the system board.

Procedure

NOTE: Only steps 1 and 3 need to be performed if the power button does not have the optional fingerprint reader.

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

5 Lift the fingerprint-reader board from the palm-rest assembly.



Replacing the power button

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Procedure

NOTE: Only steps 2 and 3 need to be performed if the power button does not have the optional fingerprint reader.

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

Post-requisites

1. Replace the system board.
2. Replace the fans.
3. Replace the heat sink.
4. Replace the solid-state drive.
5. Replace the battery.
6. Replace the base cover.

Removing the keyboard

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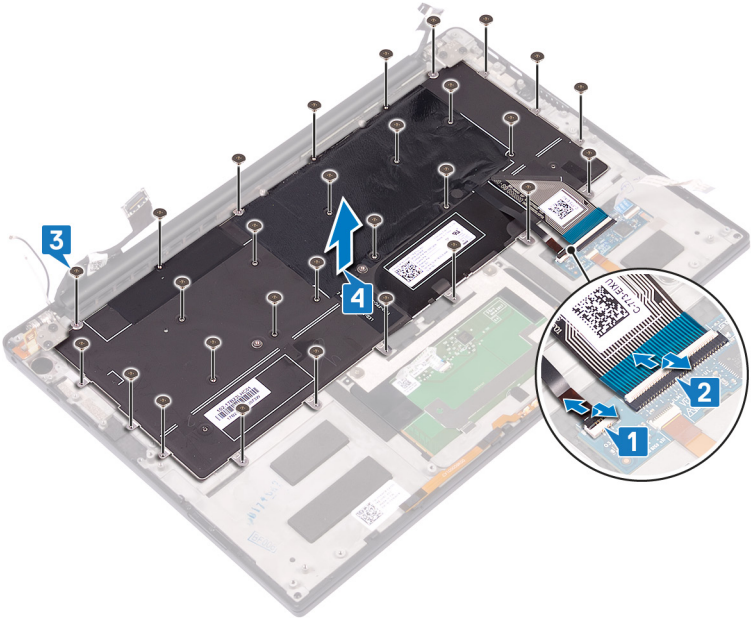
Prerequisites

1. Remove the base cover.
2. Remove the battery.
3. Remove the solid-state drive.
4. Remove the heat sink.
5. Remove the fans.
6. Remove the system board.
7. Remove the power button (only on computers shipped with the optional fingerprint reader).

Procedure

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

4 Lift the keyboard off the palm-rest assembly.



Replacing the keyboard

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

Procedure

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

Post-requisites

1. Replace the power button (only on computers shipped with the fingerprint reader).
2. Replace the system board.
3. Replace the fans.
4. Replace the heat sink.
5. Replace the solid-state drive.
6. Replace the battery.
7. Replace the base cover.

Removing the palm-rest assembly

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

Prerequisites

1. Remove the base cover.
2. Remove the battery.
3. Remove the solid-state drive.
4. Remove the speakers.
5. Remove the coin-cell battery.
6. Remove the heat sink.
7. Remove the display assembly.
8. Remove the headset port.
9. Remove the fans.
10. Remove the system board.
11. Remove the power button (only on computers shipped with the optional fingerprint reader).
12. Remove the keyboard.

Procedure

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

Replacing the palm-rest assembly

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

Procedure

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

Post-requisites

1. Replace the keyboard.
2. Replace the power button (only on computers shipped with the fingerprint reader).
3. Replace the system board.
4. Replace the fans.
5. Replace the headset port.
6. Replace the display assembly.
7. Replace the heat sink.
8. Replace the coin-cell battery.
9. Replace the speakers.
10. Replace the solid-state drive.
11. Replace the battery.
12. Replace the base cover.

Downloading drivers

Downloading the audio driver

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

   NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & Downloads** → **Find it myself**.
5. Scroll down the page and expand **Audio**.
6. Click **Download** to download the audio driver for your computer.
7. After the download is complete, navigate to the folder where you saved the audio driver file.
8. Double-click the audio driver file icon and follow the instructions on the screen to install the driver.

Table 4. Audio controller in device manager

Before installation	After installation
Sound, video and game controllers Realtek Audio	Sound, video and game controllers Intel(R) Display Audio Realtek Audio

Downloading the graphics driver

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

   NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & downloads** → **Find it myself**.

5 Scroll down the page and expand **Video**.

6 Click **Download** to download the graphics driver for your computer.

7 After the download is complete, navigate to the folder where you saved the graphics driver file.

8 Double-click the graphics driver file icon and follow the instructions on the screen to install the driver.

Downloading the USB 3.0 driver

1 Turn on your computer.

2 Go to www.dell.com/support.

3 Click **Product Support**, enter the Service Tag of your computer, and then click **Submit**.

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

4 Click **Drivers & Downloads → Find it myself**.

5 Scroll down the page and expand **Chipset**.

6 Click **Download** to download the USB 3.0 driver for your computer.

7 After the download is complete, navigate to the folder where you saved USB 3.0 driver file.

8 Double-click the USB 3.0 driver file icon and follow the instructions on screen to install the driver.

Downloading the Wi-Fi driver

1 Turn on the computer.

2 Go to www.dell.com/support.

3 Click **Product support**, enter the Service Tag of your computer, and then click **Submit**.

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

4 Click **Drivers & downloads → Find it myself**.

5 Scroll down the page and expand **Network**.

6 Click **Download** to download the Wi-Fi driver for your computer.

7 After the download is complete, navigate to the folder where you saved the Wi-Fi driver file.

8 Double-click the driver file icon and follow the instructions on the screen.

Downloading the media-card reader driver

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

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

4 Click **Drivers & downloads** → **Find it myself**.
5 Scroll down the page, and expand **Chipset**.
6 Click **Download** to download the media-card reader driver for your computer.
7 After the download is complete, navigate to the folder where you saved the card reader driver file.
8 Double-click the card reader driver file icon, and follow the instructions on the screen.

Downloading the chipset driver

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

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

4 Click **Drivers & downloads** → **Find it myself**.
5 Scroll down the page and expand **Chipset**.
6 Click **Download** to download the appropriate chipset driver for your computer.
7 After the download is complete, navigate to the folder where you saved the chipset driver file.
8 Double-click the chipset driver file icon and follow the instructions on the screen to install the driver.

Downloading the network driver

1 Turn on your computer.

2 Go to www.dell.com/support.

3 Click **Product support** enter the Service Tag of your computer and click **Submit**.

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

4 Click **Drivers & downloads → Find it myself**.

5 Scroll down the page and expand **Network**.

6 Click **Download** to download the network driver for your computer.

7 Save the file, and after the download is complete, navigate to the folder where you saved the network driver file.

8 Double-click the network driver file icon and follow the instructions on screen.

System setup

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

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

  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.

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. **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.

BIOS overview

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.

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.

Enabling or disabling the USB in BIOS setup program

1 Turn on or restart your computer.

2 Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.

The BIOS setup program is displayed.

3 On the left pane, select **Settings → System Configuration → USB Configuration**.

The USB configuration is displayed on the right pane.

4 Select or clear the **Enable External USB Port** check box to enable or disable it respectively.

5 Save the BIOS setup program settings and exit.

Identifying the storage drive in BIOS setup program

1 Turn on or restart your computer.

2 Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.

A list of storage drives is displayed under **Drives** in the **System Configuration** group.

Checking the system memory in BIOS setup program

1 Turn on or restart your computer.

2 Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.

3 On the left pane, select **Settings → General → System Information**.

The memory information is displayed on the right pane.

System setup options

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

Table 5. 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.
Memory 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 used for the memory.
DIMM A Size	Displays the DIMM A memory size.
DIMM B Size	Displays the DIMM B memory size.
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.
Current Clock Speed	Displays the current processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.

General-System Information	
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.
HT Capable	Displays whether the processor is HyperThreading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
Device Information	
M.2 SATA	Displays the M.2 SATA SSD device information of the computer.
M.2 PCIe SSD-0	Displays the M.2 PCIe SSD information of the computer.
Video Controller	Displays the video controller type of the computer.
dGPU Video Controller	Displays the discrete graphics information of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Video Memory	Displays the video memory information of the computer.
Panel Type	Displays the Panel Type of the computer.
Native Resolution	Displays the native resolution of the computer.
Audio Controller	Displays the audio controller information of the computer.
Wi-Fi Device	Displays the wireless device information of the computer.
Bluetooth Device	Displays the bluetooth device information of the computer.
Battery Information	Displays the battery health information.
Boot Sequence	
Boot Sequence	Displays the boot sequence.
Boot List Option	Displays the available boot options.

General-System Information	
Advanced Boot Options	
Enable Legacy Option ROMs	Enable or disable the Legacy Option ROMs.
Enable Attempt Legacy Boot	Enable or disable Legacy Boot.
UEFI Boot Path Security	Enable or disable the system to prompt the user to enter the Admin password when booting a UEFI boot path from the F12 boot menu.
Date/Time	Displays the current date in MM/DD/YY format and current time in HH:MM:SS AM/PM format.

Table 6. 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 Configuration	
Enable USB Boot Support	Enable or disable booting from USB mass storage devices such as external hard drive, optical drive, and USB drive.
Enable External USB Port	Enable or disable booting from USB mass storage devices connected to external USB port.
USB PowerShare	Enable or disable users to charge external devices, such as phones and portable music players, using the stored system battery power through the USB PowerShare port on the notebook.
Audio	Enable or disable the integrated audio controller.
Keyboard Illumination	Enables you to choose the operating mode of the keyboard illumination feature.

System Configuration	
Keyboard Backlight with AC Power	When the backlight is enabled, if Fn+F10 keys are pressed to disable the backlight, the backlight stays off regardless of AC state.
Miscellaneous Devices	Enable or disable various onboard devices.
Enable Camera	Enable or disable the camera.

Table 7. System setup options—Video menu

Video	
LCD Brightness	Set the panel brightness independently for Battery and AC power.

Table 8. 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 allowed for Admin and System passwords.
Password Bypass	Bypass the System (Boot) Password and the internal HDD password prompts during a system restart.
Password Change	Enable or disable changes to the System and Hard Disk passwords when an administrator password is set.
Non-Admin Setup Changes	Determines whether changes to the setup option are permitted when an administrator password is set.
UEFI Capsule Firmware Updates	Enable or disable BIOS updates through UEFI capsule update packages.
PTT Security	Enable or disable Platform Trust Technology (PTT) visibility to the operating system.

Security	
Computrace(R)	Enable or disable the BIOS module interface of the optional Computrace(R) Service from Absolute Software.
CPU XD Support	Enable or disable the Execute Disable mode of the Processor.
Admin Setup Lockout	Enable to prevent users from entering Setup when an Admin Password is set.
Master Password Lockout	Disables the master password support. Hard Disk passwords need to be cleared before changing the setting.

Table 9. System setup options—Secure Boot menu

Secure Boot	
Secure Boot Enable	Enable or disable the secure boot feature.
Expert Key Management	
Expert Key Management	Enable or disable Expert Key Management.
Custom Mode Key Management	Select the custom values for expert key management.

Table 10. System setup options—Intel Software Guard Extensions menu

Intel Software Guard Extensions	
Intel SGX Enable	Enable or disable Intel Software Guard Extensions.
Enclave Memory Size	Set the Intel Software Guard Extensions Enclave Reserve Memory Size.
Performance	
Multi Core Support	Enable multiple cores. Default: Enabled.
Intel SpeedStep	Enable or disable Intel Speedstep Technology. Default: Enabled.

Intel Software Guard Extensions	
	NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
C-States Control	Enable or disable additional processor sleep states. Default: Enabled.
Intel TurboBoost	Enable or disable Intel TurboBoost mode of the processor. Default: Enabled.
HyperThread control	Enable or disable HyperThreading in the processor. Default: Enabled.
Power Management	
AC Behavior	Enables the system to turn on automatically, when AC power is supplied.
Enable Intel Speed Shift Technology	Enable or disable Intel Speed Shift Technology.
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.
USB Wake Support	Enable the USB devices to wake the computer from Standby.
Peak Shift	Enable or disable the minimal usage of AC power at times of peak demand.
Primary Battery Charge Configuration	Set the primary battery charge settings with a preselected custom charge start and stop. Default: Adaptive.
POST Behavior	
Adapter Warnings	Enable adapter warnings. Default: Enabled.
Fn Lock Options	Enable or disable the Fn lock mode.
Fastboot	Enable to set the speed of the boot process.

Intel Software Guard Extensions	
	Default: Thorough.
Extend BIOS POST Time	Configure additional pre-boot delay.
Full Screen Logo	Enable or disable to display full screen logo.
Warnings and Errors	Configure the Warnings and Errors options which causes the boot process to pause when warnings or errors are detected, rather then stop, prompt and wait for user input.
Prompt on Warnings and Errors	Enable or disable Prompt on Warnings and Errors
Continue on Warnings	Enable or disable Continue on Warnings
Continue on Warnings and Errors	Enable or disable Continue on Warnings and Errors

Table 11. System setup options—Virtualization Support menu

Virtualization Support	
Virtualization	Specify whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization Technology.
VT for Direct I/O	Specify whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization Technology for Direct I/O.

Table 12. 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 13. System setup options—Maintenance menu

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

Table 14. System setup options—System Logs menu

System Logs	
BIOS Events	Display BIOS events.
Thermal Events	Display Thermal events.
Power Events	Display Power events.

Table 15. System setup options—SupportAssist System Resolution menu

SupportAssist System Resolution	
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.

System and setup password

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

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.

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

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

NOTE: System and setup password feature is disabled.

Assigning a system password and setup password

You can assign a new **System 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 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 and or 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 promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.

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 reboots.

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 forgotten passwords

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

Troubleshooting

Flashing the BIOS

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

Follow these steps to flash the BIOS:

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

   NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & downloads → Find it myself**.
5. Select the operating system installed on your computer.
6. Scroll down the page and expand **BIOS**.
7. Click **Download** to download the latest version of the BIOS for your computer.
8. After the download is complete, navigate to the folder where you saved the BIOS update file.
9. Double-click the BIOS update file icon and follow the instructions on the screen.

Flashing BIOS (USB key)

1. Follow the procedure from step 1 to step 7 in "Flashing the BIOS" to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information see the knowledge base article SLN143196 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** when the Dell logo is displayed on the screen.
6. Boot to the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.

8 The **BIOS Update Utility** appears. Follow the instructions on the screen to complete the BIOS update.

Fixing a no-boot issue caused by USB-boot support

Sometimes the computer does not boot to the operating system when USB devices are connected to the computer during startup. This behavior occurs because the computer is looking for bootable files in connected USB devices.

Either disconnect USB devices before booting or follow these steps to fix the no-boot issue.

1 Turn on or restart your computer.

2 Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.

The BIOS setup program is displayed.

3 On the left pane, select **Settings → System Configuration → USB Configuration**.

The USB configuration is displayed on the right pane.

4 Clear the **Enable Boot Support** check box to disable it.

5 Save the settings and exit.

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

CAUTION: Use the ePSA diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

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.

System diagnostic lights

Power and 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 16. Diagnostics

Light pattern	Problem description
2,1	CPU failure
2,2	System board: BIOS and ROM failure
2,3	No memory or RAM detected
2,4	Memory or RAM failure
2,5	Invalid memory installed
2,6	System board or chipset error
2,7	LCD failure
3,1	CMOS battery failure
3,2	PCI or video card or chip failure
3,3	Recovery image not found
3,4	Recovery image found but invalid

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.

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.

Wi-Fi power cycle

If your computer is unable to access the internet due to Wi-Fi connectivity issues a Wi-Fi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a Wi-Fi power cycle:

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

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

Getting help and contacting Dell

Self-help resources

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

Table 17. Self-help resources

Information about Dell products and services	www.dell.com
Dell Help & Support app	
Tips	
Contact Support	In Windows search, type `Help and 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	See *Me and My Dell* at www.dell.com/support/manuals.

- Setting up and using your product
- Data backup
- Troubleshooting and diagnostics
- Factory and system restore
- BIOS information

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 and product, and some services may not be available in your country.

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.