

Inspiron 14 3000

Service Manual

Computer Model: Inspiron 14-3476
Regulatory Model: P76G
Regulatory Type: P76G002



Notes, cautions, and warnings



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



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



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

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Before working inside your computer



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

Before you begin

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

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and 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 screwdriver #1
- Plastic scribe

Screw list

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest assembly	M2.5x8	8	
Base cover	Palm-rest assembly	M2x5	6	
Base cover	Palm-rest assembly	M2x2	3	
Display hinges	Display back-cover and antenna assembly	M2.5x2.5	6	
Display panel	Display-back cover and antenna assembly	M2x3	4	
Hard drive	Hard-drive assembly	M3x3	4	
Hard-drive bracket	Hard-drive assembly	M2x3	2	
Hinges	Palm-rest assembly	M2.5x8	3	
Optical-drive bracket	Optical drive	M2x3	1	
Power-adaptor port	Palm-rest assembly	M2x3	1	



Component	Secured to	Screw type	Quantity	Screw image
Power-button board	Palm-rest assembly	M2x2	1	
System board	Palm-rest assembly	M2x3	1	
Touch-pad board	Palm-rest assembly	M2x3	6	
Touch-pad bracket	Palm-rest assembly	M2x3	1	
Wireless-card bracket	System board	M2x3	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.



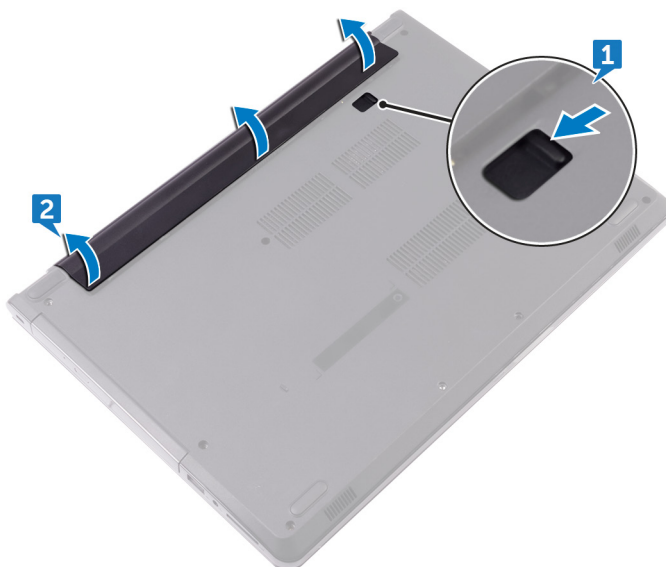
Removing the battery



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Procedure

- 1 Turn the computer over and slide the battery latch to the unlock position. You can hear a click sound when the battery is unlocked.
- 2 Using your fingertips, lift the battery at an angle and remove the battery off the computer base.



- 3 Turn the computer over, open the display, and press the power button for five seconds to ground the system board.

Replacing the battery



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Procedure

Slide the tabs on the battery into the slots on the battery bay and snap the battery into place.



Removing the optical drive



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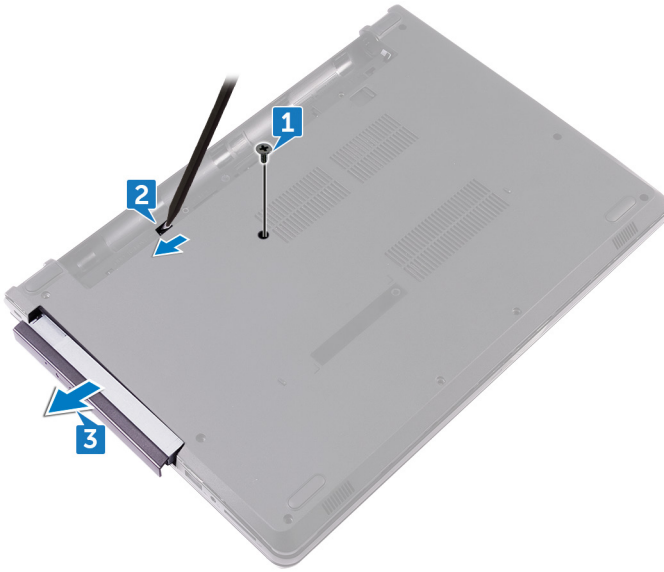
Prerequisites

Remove the [battery](#).

Procedure

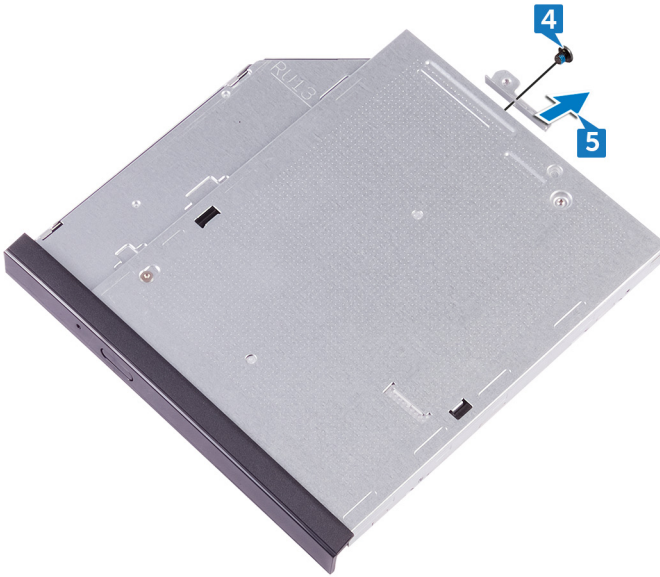
- 1 Remove the screw (M2x5) that secures the optical-drive assembly to the base cover.
- 2 Using a plastic scribe, push to release the optical-drive assembly from the optical-drive bay.

- 3** Slide and remove the optical-drive assembly out of the optical-drive bay.

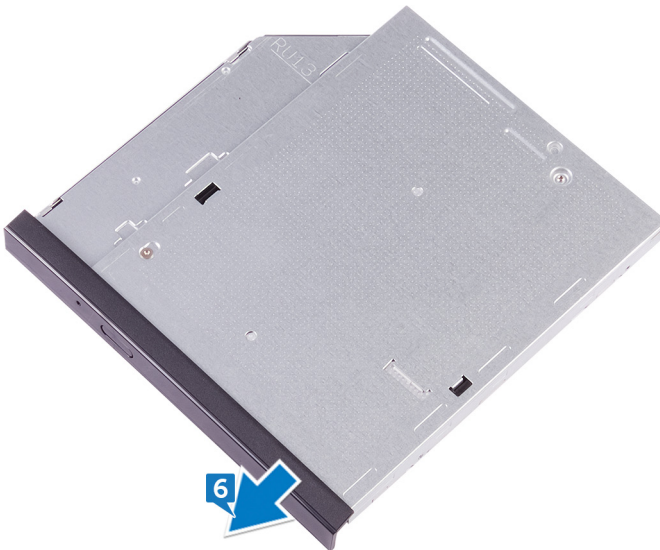


- 4** Remove the screw (M2x3) that secures the optical-drive bracket to the optical drive.

- 5** Remove the optical-drive bracket.



- 6** Pull the optical-drive bezel carefully to remove it from the optical drive.



Replacing the optical drive



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Procedure

- 1 Align the tabs on the optical-drive bezel with the slots on the optical drive and snap the optical-drive bezel into place.
- 2 Align the screw hole on the optical-drive bracket with the screw hole on the optical drive.
- 3 Replace the screw (M2x3) that secures the optical-drive bracket to the optical drive.
- 4 Slide the optical-drive assembly into the optical-drive bay and align the screw hole on the optical-drive bracket with the screw hole on the base cover.
- 5 Replace the screw (M2x5) that secures the optical-drive assembly to the base cover.

Post-requisites

Replace the [battery](#).



Removing the keyboard



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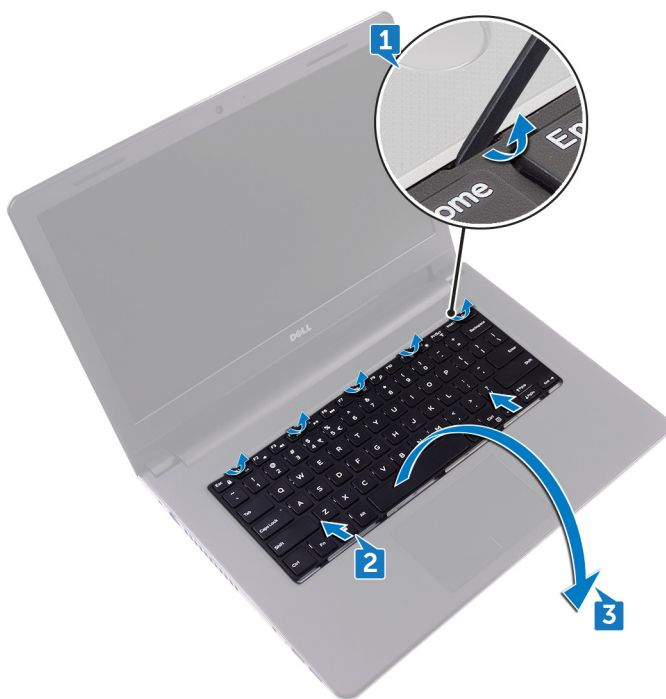
Prerequisites

Remove the [battery](#).

Procedure

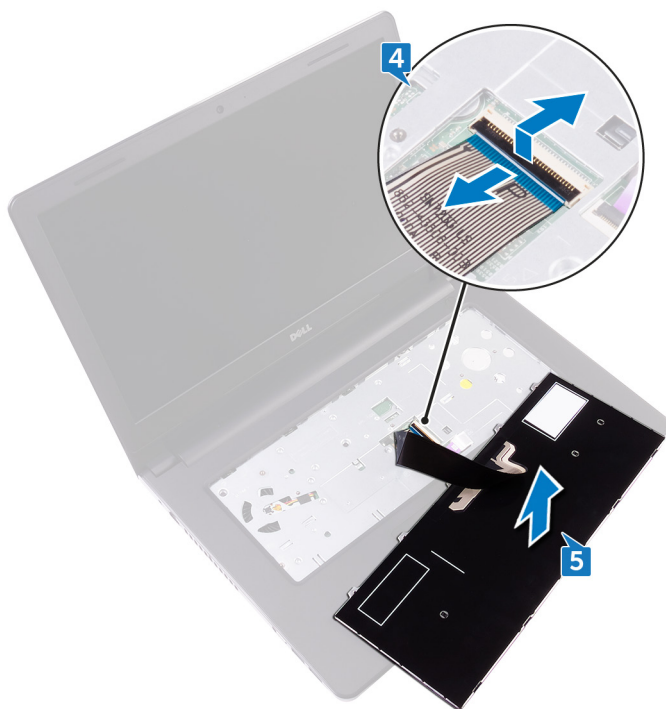
- 1 Using a plastic scribe, gently release the tabs that secure the keyboard to the palm-rest assembly.
- 2 Slide the keyboard up to release it from the slots on the palm-rest assembly.

- 3** Turn the keyboard over, and place it on the palm-rest assembly.



- 4** Open the latch, and disconnect the keyboard cable from the system board.

- 5** Lift the keyboard off the palm-rest assembly.



Replacing the keyboard



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Procedure



NOTE: If you are installing a new keyboard, fold the cables the same way they are folded on the old keyboard.

- 1 Slide the keyboard cable into the connector and close the latch to secure the cable.
- 2 Turn the keyboard over.
- 3 Slide the tabs on the keyboard into the slots on the palm-rest assembly and snap the keyboard into place.

Post-requisites

Replace the [battery](#).



Removing the base cover



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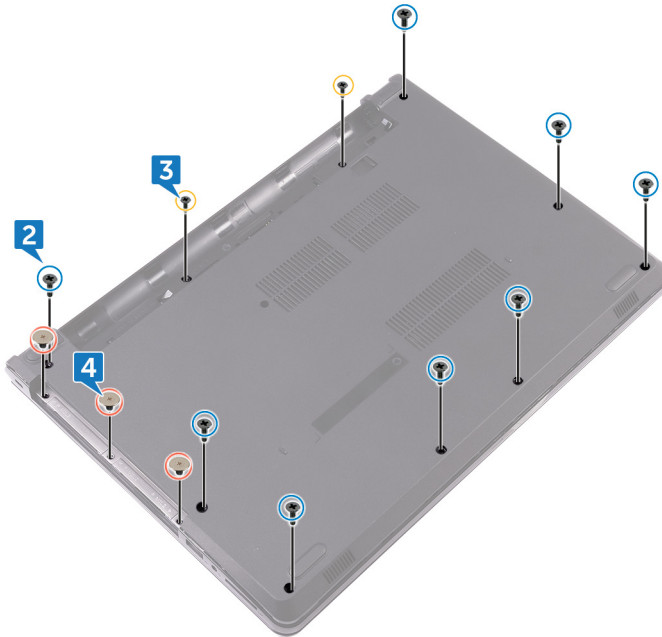
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).

Procedure

- 1 Close the display, and turn the computer over.
- 2 Remove the eight screws (M2.5x8) that secure the base cover to the palm-rest assembly.
- 3 Remove the two screws (M2x5) that secure the base cover to the palm-rest assembly.

- 4 Remove the three screws (M2x2) that secure the base cover to the palm-rest assembly.



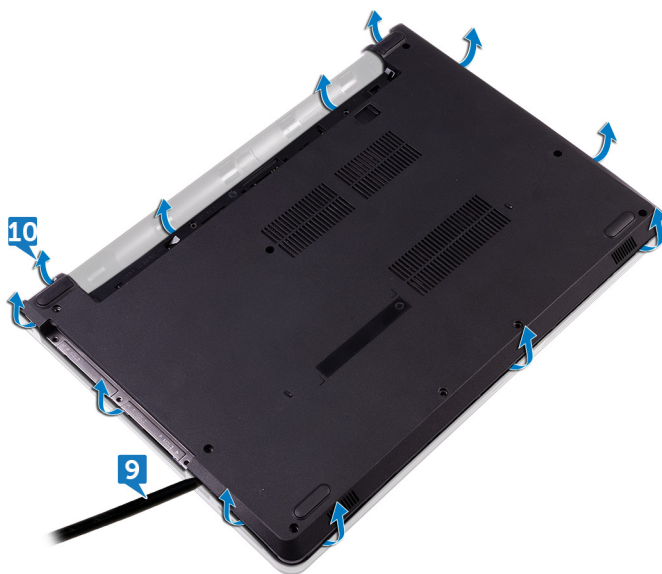
- 5 Turn the computer over, and open the display.
- 6 Remove the three screws (M2x5) that secure the base cover to the palm-rest assembly.

- 7 Open the latch, and disconnect the optical-drive cable from the system board.

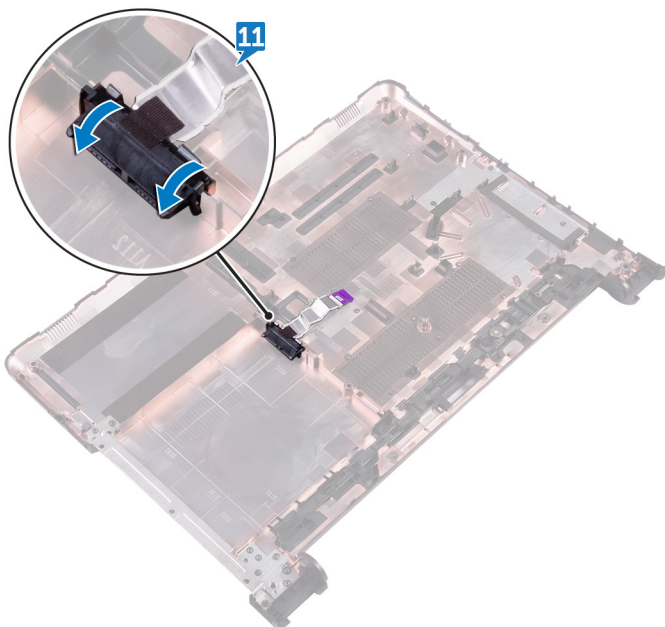


- 8 Close the display, and turn the computer over.
- 9 Using a plastic scribe, pry the base cover off the palm-rest assembly.

- 10** Lift the base cover off the palm-rest assembly.



- 11** Release the optical-drive interposer from the tabs, and remove it from the base cover.



Replacing the base cover



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Procedure

- 1 Slide the optical-drive interposer into the tabs on the base cover and snap it into place.



- 2** Place the base cover on the palm-rest assembly and route the optical-drive cable through the slot on the palm-rest assembly.



- 3** Slide the tabs on the base cover into the slots on the palm-rest assembly, and snap the base cover into place.
- 4** Slide the optical-drive cable into the connector on the system board and press down the latch to secure the cable.
- 5** Replace the three screws (M2x5) that secure the base cover to the palm-rest assembly.
- 6** Close the display, and turn the computer over.
- 7** Replace the three screws (M2x2) that secure the base cover to the palm-rest assembly.
- 8** Replace the two screws (M2x5) that secure the base cover to the palm-rest assembly.
- 9** Replace the eight screws (M2.5x8) that secure the base cover to the palm-rest assembly.

Post-requisites

- 1 Replace the [keyboard](#).
- 2 Replace the [optical drive](#).
- 3 Replace the [battery](#).



Removing the memory modules



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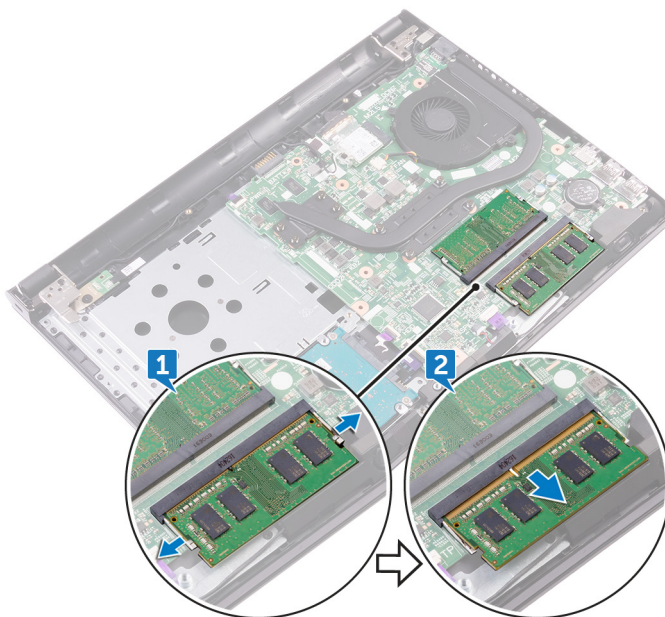
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

- 1 Use your fingertips to carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops up.

- 2 Remove the memory module from the memory-module slot.



Replacing the memory modules



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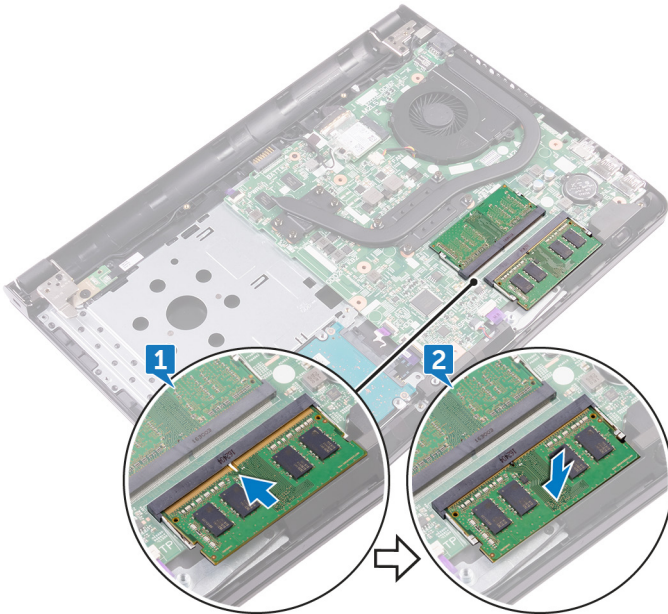
Procedure

- 1 Align the notch on the memory module with the tab on the memory-module slot.

- 2 Slide the memory module firmly into the slot at an angle and press the memory module down until it clicks into place.



NOTE: If you do not hear the click, remove the memory module and reinstall it.



Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).



Removing the hard drive



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CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.



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

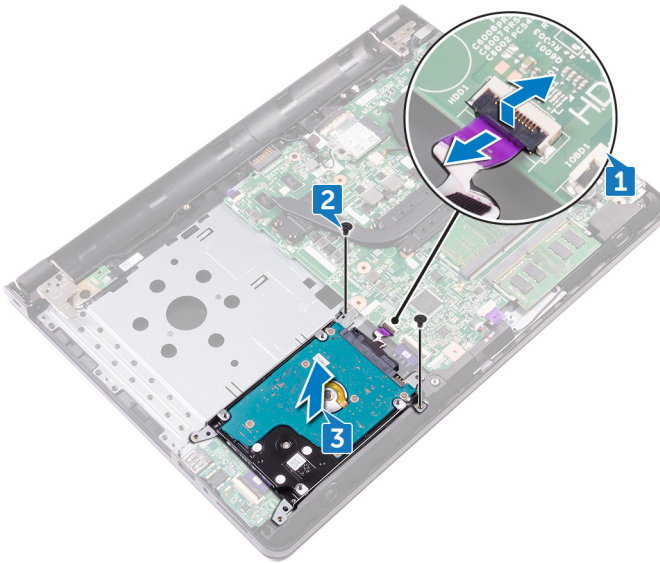
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

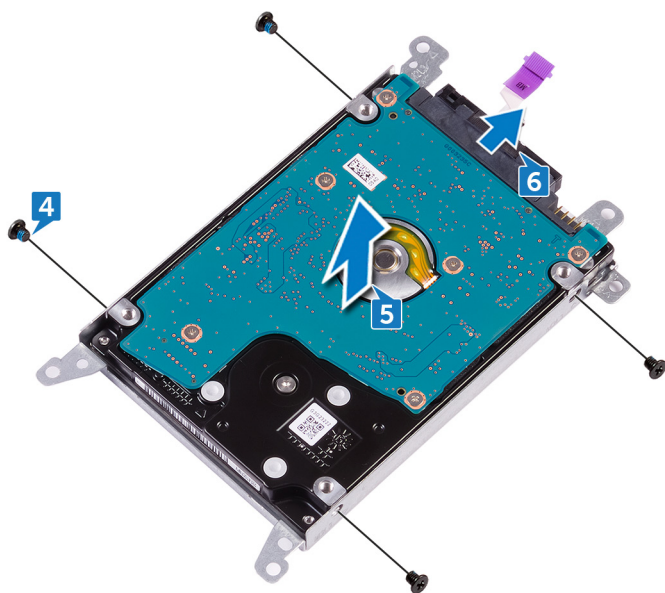
- 1 Open the latch, and disconnect the hard-drive cable from the connector on the system board.
- 2 Remove the two screws (M2x3) that secure the hard-drive assembly to the palm-rest assembly.

- 3** Lift the hard-drive assembly along with its cable off the palm-rest assembly.



- 4** Remove the four screws (M3x3) that secure the hard-drive bracket to the hard-drive assembly.
- 5** Lift the hard-drive assembly off the hard-drive bracket.

- 6 Disconnect the interposer from the hard drive.



Replacing the hard drive



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CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

Procedure

- 1 Connect the interposer to the hard drive.
- 2 Align the screw holes on the hard-drive bracket with the screw holes on the hard-drive assembly.
- 3 Replace the four screws (M3x3) that secure the hard-drive bracket to the hard-drive assembly.
- 4 Align the screw holes on the hard-drive assembly with the screw holes on the palm rest and keyboard assembly.
- 5 Replace the two screws (M2x3) that secure the hard-drive assembly to the palm-rest assembly.
- 6 Slide the hard-drive cable into the connector on the system board and press down the latch to secure the cable.

Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).



Removing the wireless card



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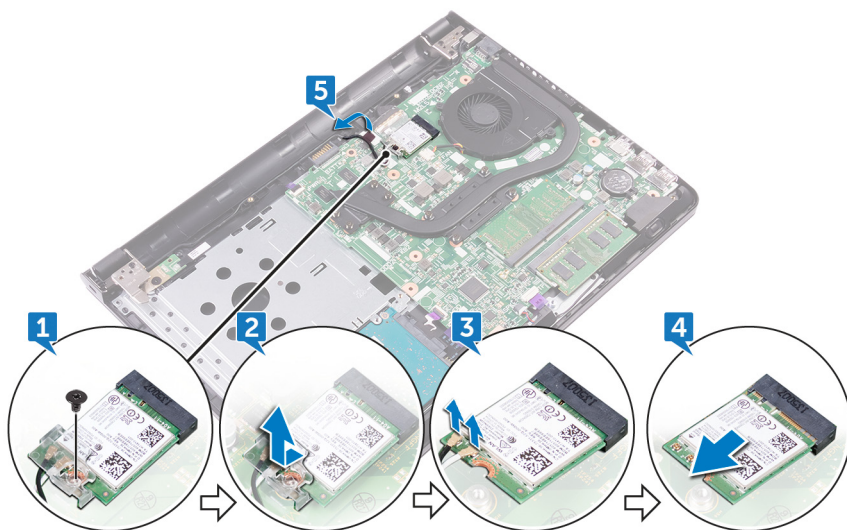
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

- 1 Remove the screw (M2x3) that secures the wireless-card bracket to the system board.
- 2 Slide and remove the wireless-card bracket.
- 3 Disconnect the antenna cables from the wireless card.
- 4 Slide and remove the wireless card from the wireless-card slot.

- 5** Peel off the tape that secures the antenna cables to the system board.



Replacing the wireless card



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Procedure



CAUTION: To avoid damage to the wireless card, do not place any cables under it.

- 1 Align the notch on the wireless card with the tab on the wireless-card slot and insert the wireless card at an angle into the wireless-card slot.
- 2 Connect the antenna cables to the wireless card.

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

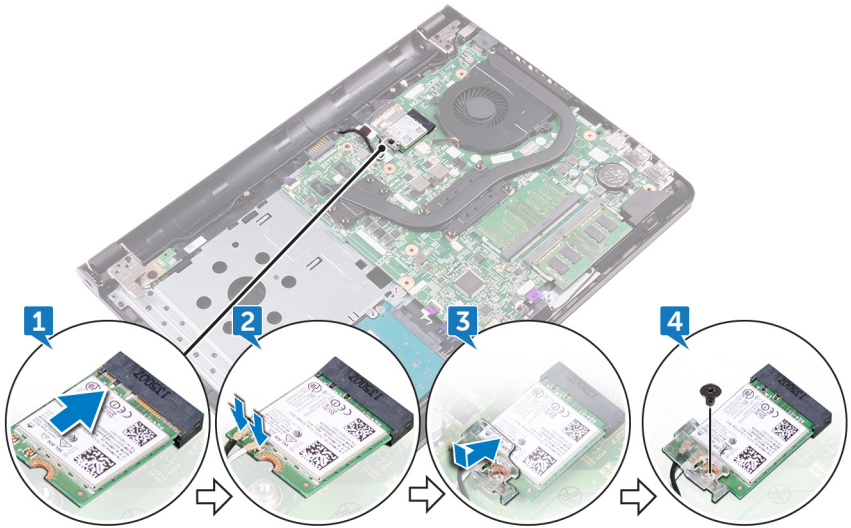
Table 2. Antenna cable color scheme for wireless card

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

- 3 Slide to align the screw hole on the wireless-card bracket with the screw hole on the wireless card.



- 4 Replace the screw (M2x3) that secures the wireless-card bracket to the wireless card and the system board.



Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).

Removing the I/O board



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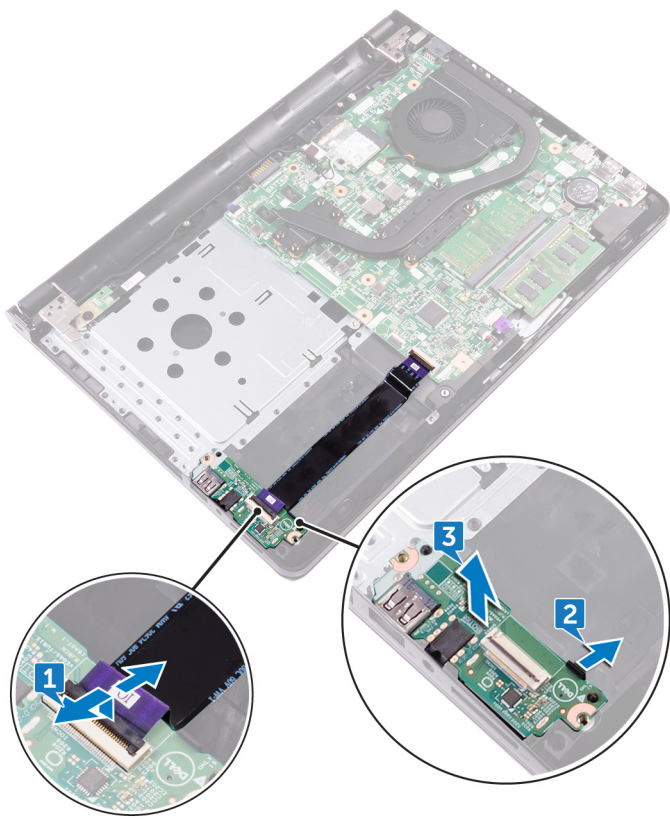
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [hard drive](#).

Procedure

- 1 Open the latch, and disconnect the I/O-board cable from the I/O board.
- 2 Push the securing tab to release the I/O board from the palm-rest assembly.

- 3** Lift the I/O board off the palm-rest assembly.



Replacing the I/O board



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Procedure

- 1 Using the alignment posts, place the I/O board on the palm-rest assembly and snap the I/O board into place.
- 2 Slide the I/O-board cable into the connector on the I/O board and close the latch to secure the cable.

Post-requisites

- 1 Replace the [hard drive](#).
- 2 Replace the [base cover](#).
- 3 Replace the [keyboard](#).
- 4 Replace the [optical drive](#).
- 5 Replace the [battery](#).

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.

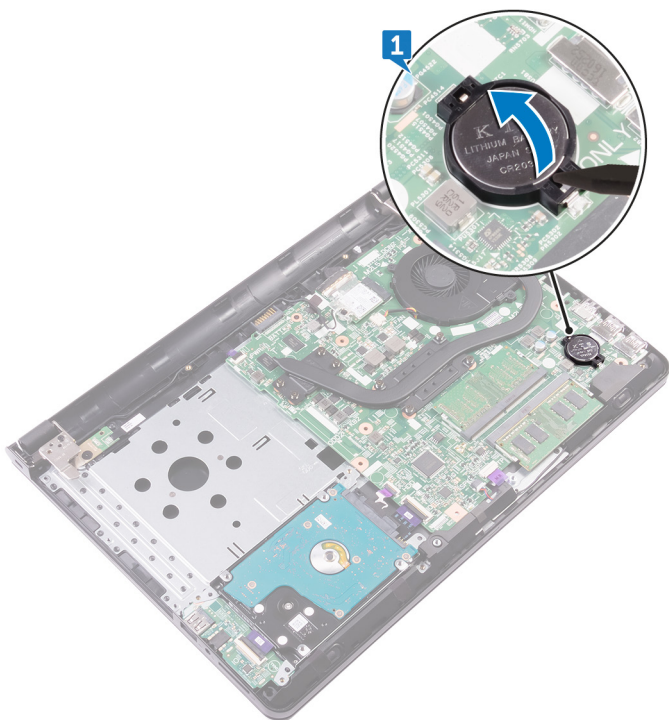
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

Using a plastic scribe, gently pry out the coin-cell battery out of the battery socket on the system board.





Replacing 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.

Procedure

With the positive-side facing up, snap the coin-cell battery into the battery socket on the system board.

Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).



Removing the speakers



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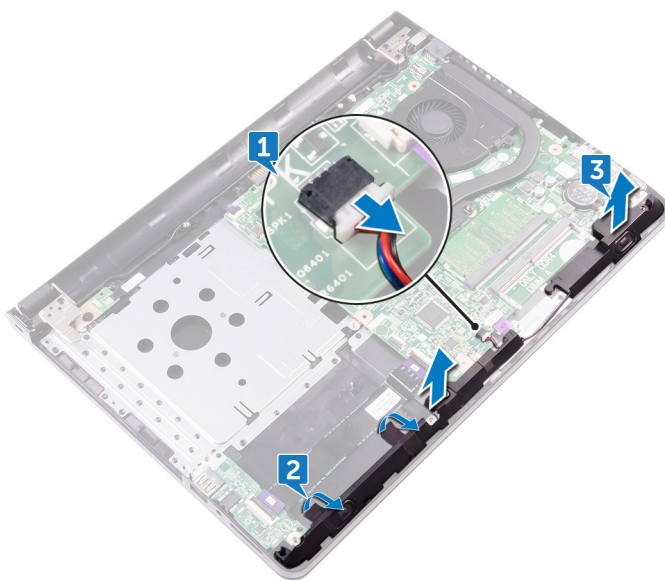
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [hard drive](#).

Procedure

- 1 Disconnect the speaker cable from the system board.
- 2 Peel the tapes that secure the speaker to the palm-rest assembly.

- 3** Lift the speakers, along with the speaker cable, off the palm-rest assembly.



Replacing the speakers



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Procedure

- 1 Using the alignment posts, place the speakers on the palm-rest assembly.
- 2 Adhere the tapes that secure the speakers to the palm-rest assembly.
- 3 Connect the speaker cable to the system board.

Post-requisites

- 1 Replace the [hard drive](#).
- 2 Replace the [base cover](#).
- 3 Replace the [keyboard](#).
- 4 Replace the [optical drive](#).
- 5 Replace the [battery](#).

Removing the heat sink



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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

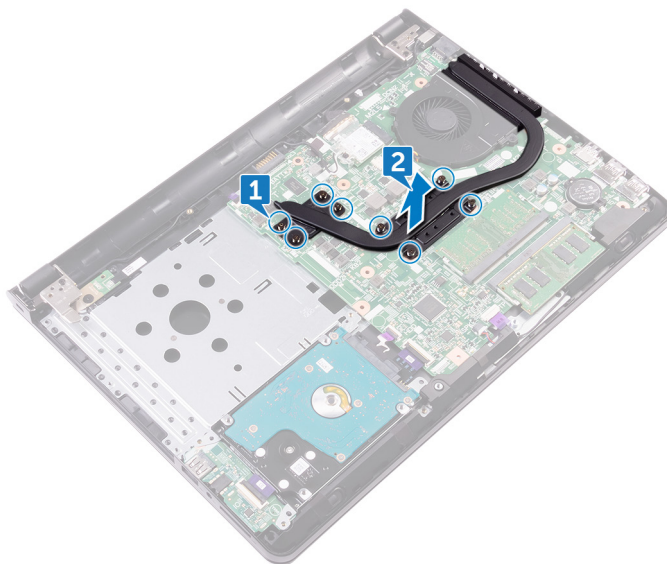
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

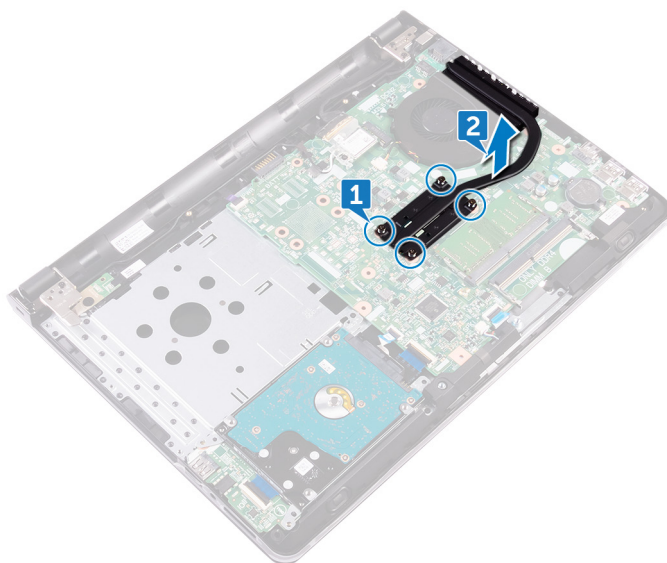
- 1 In sequential order (as indicated on the heat sink), loosen the captive screws that secure the heat sink to the system board.



- 2** Lift the heat sink off the system board.
- Discrete: Eight captive screws



- Integrated: Four captive screws



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 Place the heat sink on the system board and align the screw holes on the heat sink with the screw holes on the system board.
- 2 In sequential order (indicated on the heat sink), tighten the captive screws that secure the heat sink to the system board.

Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).



Removing the fan



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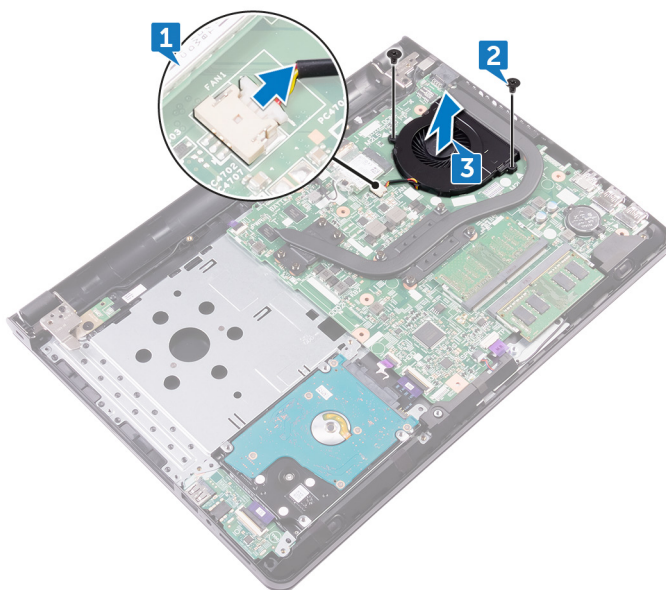
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

- 1 Disconnect the fan cable from the system board.
- 2 Remove the two screws (M2x5) that secure the fan to the palm-rest assembly.

- 3** Lift the fan off the palm-rest assembly.



Replacing the fan



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Procedure

- 1 Place the fan on the palm-rest assembly.
- 2 Align the screw holes on the fan with the screw holes on the palm-rest assembly.
- 3 Replace the two screws (M2x5) that secure the fan to the palm-rest assembly.

Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).

Removing the power-button board



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Prerequisites

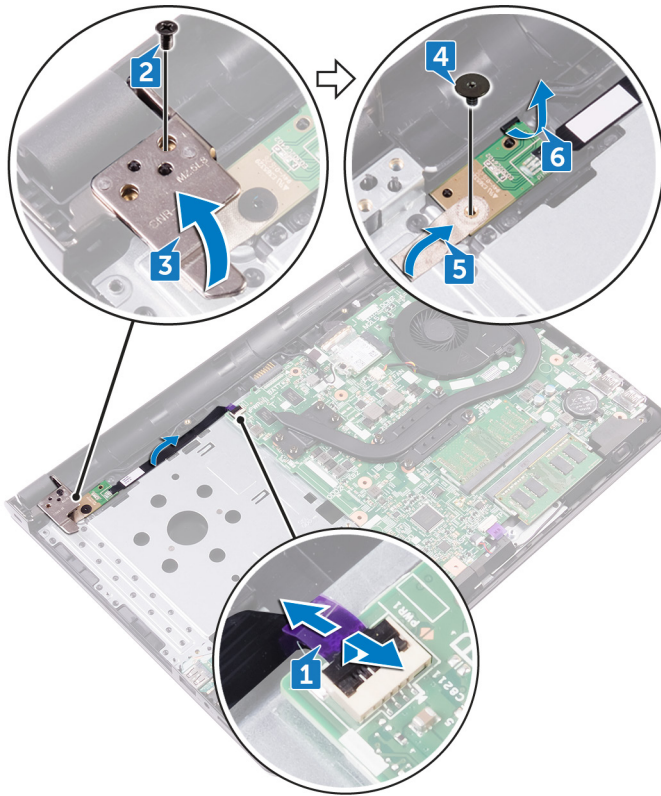
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).

Procedure

- 1 Open the latch, and disconnect the power-button board cable from the system board.
- 2 Remove the screw (M2.5x8) that secures the display hinge to the palm-rest assembly.
- 3 Lift the display hinge.
- 4 Remove the screw (M2x2) that secures the power-button board to the palm-rest assembly.
- 5 Peel the tape that secures the power-button board to the palm-rest assembly.



- 6** Release the power-button board from the tab, and lift it along with the cable off the palm-rest assembly.



Replacing the power-button board



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Procedure

- 1 Slide the power-button board under the tab on the palm-rest assembly.
- 2 Using the alignment post, place the power-button board on the palm-rest assembly.
- 3 Align the screw hole on the power-button board with the screw hole on the palm-rest assembly.
- 4 Replace the screw (M2x2) that secures the power-button board to the palm-rest assembly.
- 5 Adhere the tape that secures the power-button board to the palm-rest assembly.
- 6 Close the display hinge, and replace the screw (M2.5x8) that secures the display hinge to the palm-rest assembly.
- 7 Connect the power-button board cable to the system board.

Post-requisites

- 1 Replace the [base cover](#).
- 2 Replace the [keyboard](#).
- 3 Replace the [optical drive](#).
- 4 Replace the [battery](#).



Removing the display assembly



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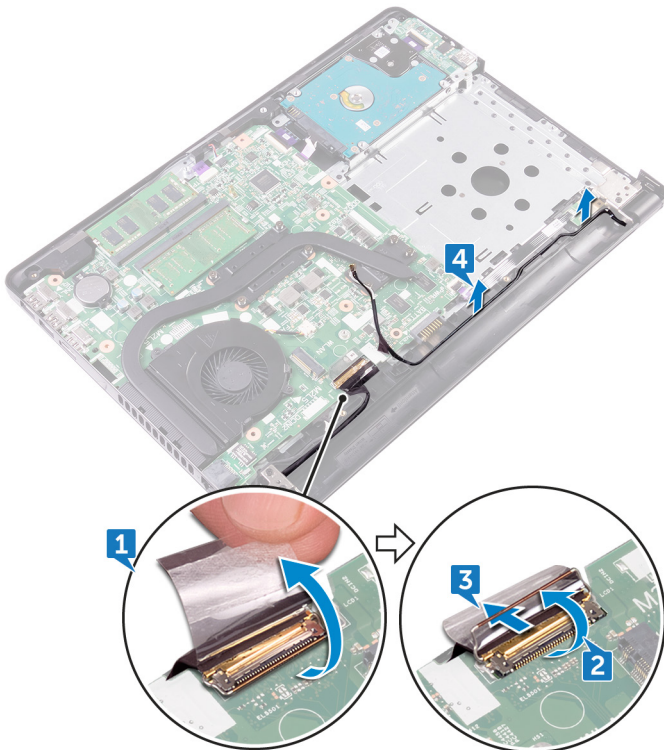
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).

Procedure

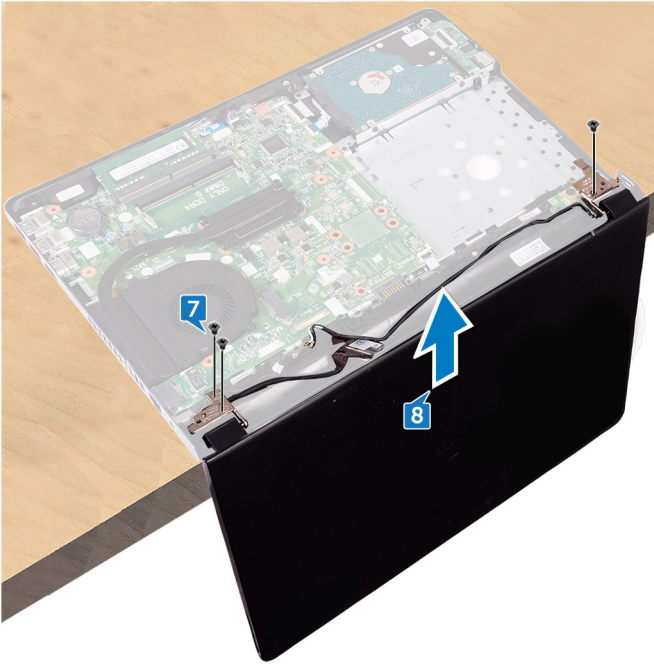
- 1 Peel the tape that adheres the display cable to the system board.
- 2 Open the latch that secures the display cable into position.
- 3 Disconnect the display cable from the system board.

- 4 Note the antenna-cable routing, and remove the antenna cable from the routing guides on the palm-rest assembly.



- 5 Turn the computer over and open the display at an angle of 90 degrees.
- 6 Turn the computer over and place it on the edge of the table in a position that allows access to the screws on the display hinges.
- 7 Remove the three screws (M2.5x8) that secure the display-hinge brackets to the palm-rest assembly.

- 8** Carefully lift the display assembly from the palm-rest assembly.



- 9** Carefully place the display assembly on a clean and flat surface.

Replacing the display assembly



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Procedure

- 1 Place the palm-rest assembly at the edge of the table.
- 2 Align the screw holes on the palm-rest assembly with the screw holes on the display hinges.
- 3 Replace the three screws (M2.5x8) that secure the display hinges to the palm-rest assembly.
- 4 Route the antenna cables through the routing guides on the palm-rest assembly.
- 5 Connect the display cable from the system board.
- 6 Close the latch that secures the display cable to the system board.
- 7 Adhere the tape that secures the display cable to the system board.

Post-requisites

- 1 Replace the [wireless card](#).
- 2 Replace the [base cover](#).
- 3 Replace the [keyboard](#).
- 4 Replace the [optical drive](#).
- 5 Replace the [battery](#).



Removing the display bezel



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Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [display assembly](#).

Procedure

- 1 Using your fingertips, carefully pry up the inside edge of the display bezel.

- 2** Remove the display bezel off the display back-cover and antenna assembly.



Replacing the display bezel



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Procedure

Align the display bezel with the display back-cover and antenna assembly, and gently snap the display bezel into place.

Post-requisites

- 1 Replace the [display assembly](#).
- 2 Replace the [wireless card](#).
- 3 Replace the [base cover](#).
- 4 Replace the [keyboard](#).
- 5 Replace the [optical drive](#).
- 6 Replace the [battery](#).

Removing the display panel



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Prerequisites

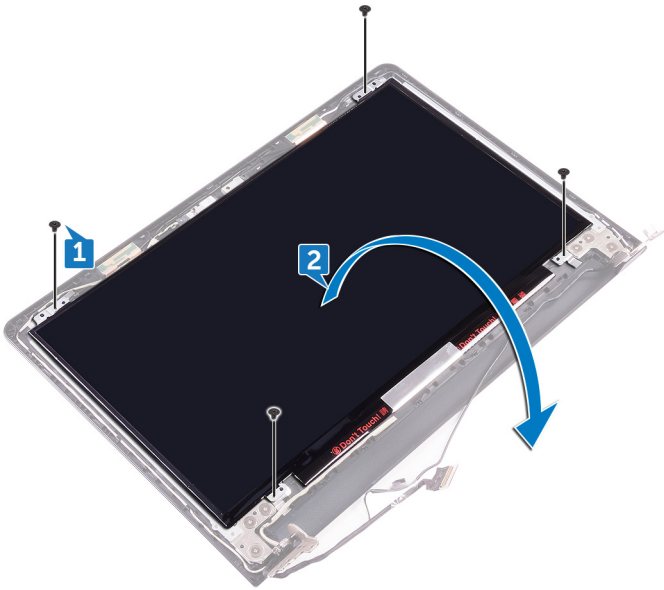
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [display assembly](#).
- 7 Remove the [display bezel](#).

Procedure

- 1 Remove the four screws (M2x3) that secure the display panel to the display back-cover and antenna assembly.

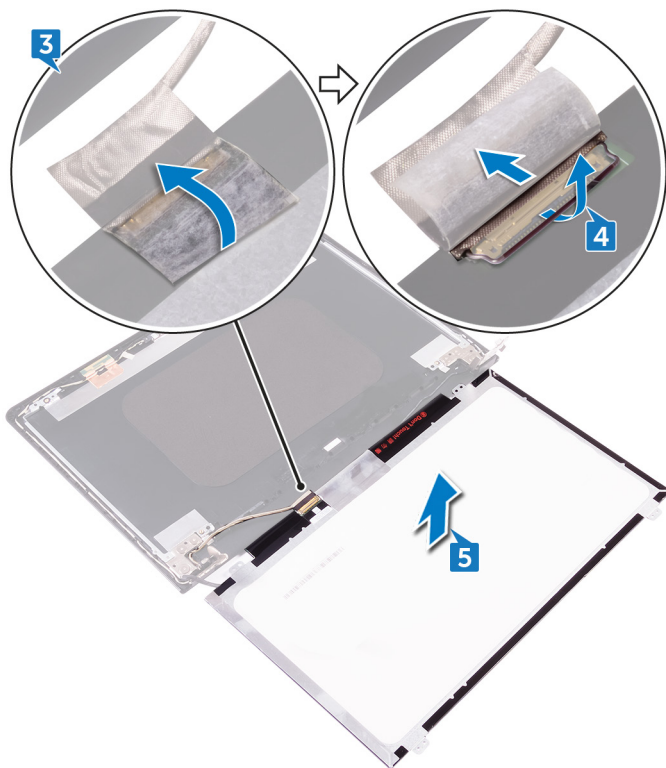


- 2** Lift the display panel gently, and turn it over.



- 3** Peel the tape that secures the display cable to the display back-cover and antenna assembly.
- 4** Lift the latch, and disconnect the display cable from the display panel.

- 5** Lift the display panel away from the display back-cover and antenna assembly.



Replacing the display panel



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Procedure

- 1 Connect the display cable to the display-panel connector on the display panel.
- 2 Close the latch, and adhere the tape that secures the display cable to the display back-cover and antenna assembly.
- 3 Place the display panel gently on the display back-cover and antenna assembly.
- 4 Align the screw holes on the display panel with the screw holes on the display back-cover and antenna assembly.
- 5 Replace the four screws (M2x3) that secure the display panel to the display back-cover and antenna assembly.

Post-requisites

- 1 Replace the [display bezel](#).
- 2 Replace the [display assembly](#).
- 3 Replace the [wireless card](#).
- 4 Replace the [base cover](#).
- 5 Replace the [keyboard](#).
- 6 Replace the [optical drive](#).
- 7 Replace the [battery](#).

Removing the camera



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Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [display assembly](#).
- 7 Remove the [display bezel](#).
- 8 Remove the [display panel](#).

Procedure

- 1 Peel off the foil from the camera module.
- 2 Using a plastic scribe, pry the camera module, and then lift the camera module at an angle.



- 3** Disconnect the camera cable from the camera module.



Replacing the camera



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Procedure

- 1 Connect the camera cable to the camera module.
- 2 Using the alignment post, place the camera on the display back-cover and antenna assembly.
- 3 Adhere the foil to the camera module.

Post-requisites

- 1 Replace the [display panel](#).
- 2 Replace the [display bezel](#).
- 3 Replace the [display assembly](#).
- 4 Replace the [wireless card](#).
- 5 Replace the [base cover](#).
- 6 Replace the [keyboard](#).
- 7 Replace the [optical drive](#).
- 8 Replace the [battery](#).



Removing the display hinges



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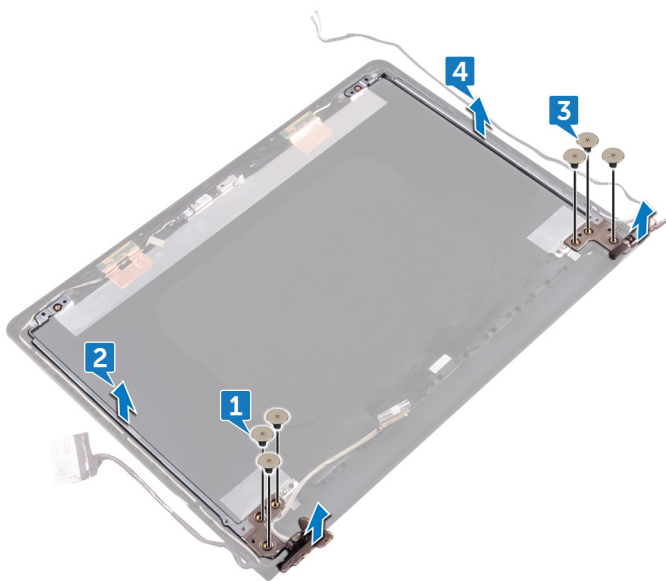
Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [display assembly](#).
- 7 Remove the [display bezel](#).
- 8 Remove the [display panel](#).

Procedure

- 1 Remove the three screws (M2.5x2.5) that secure the left display hinge to the display back-cover and antenna assembly.
- 2 Lift the left display hinge off the display back-cover and antenna assembly.
- 3 Remove the three screws (M2.5x2.5) that secure the right display hinge to the display back-cover and antenna assembly.

- 4** Lift the right display hinge off the display back-cover and antenna assembly.



Replacing the display hinges



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Procedure

- 1 Align the screw holes on the display hinges with the screw holes on the display back-cover and antenna assembly.
- 2 Replace the six (M2.5x2.5) screws that secure the display hinges to the display back-cover and antenna assembly.

Post-requisites

- 1 Replace the [display panel](#).
- 2 Replace the [display bezel](#).
- 3 Replace the [display assembly](#).
- 4 Replace the [wireless card](#).
- 5 Replace the [base cover](#).
- 6 Replace the [keyboard](#).
- 7 Replace the [optical drive](#).
- 8 Replace the [battery](#).

Removing the display cable



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Prerequisites

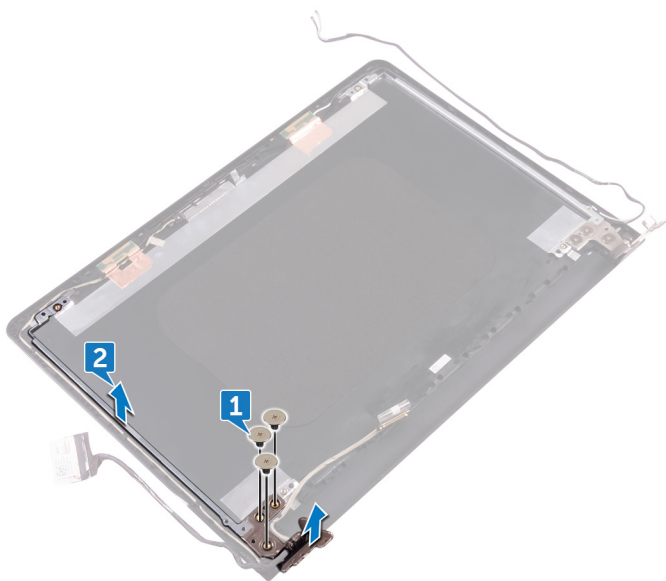
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [display assembly](#).
- 7 Remove the [display bezel](#).
- 8 Remove the [display panel](#).
- 9 Remove the [camera](#).

Procedure

- 1 Remove the three screws (M2.5x2.5) that secure the left display hinge to the display back-cover and antenna assembly.



-
- 2** Lift the left display hinge off the display back-cover and antenna assembly.



-
-
- 3** Note the display cable routing, and remove the display cable from the routing guides on the display back-cover and antenna assembly.

- 4 Remove the display cable off the display back-cover and antenna assembly.



Replacing the display cable



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Procedure

- 1 Route the display cable through the routing guides on the display back-cover and antenna assembly.
- 2 Place the left display hinge on the display back-cover and antenna assembly.
- 3 Replace the three screws (M2.5x2.5) that secure the left display hinge to the display back-cover and antenna assembly.

Post-requisites

- 1 Replace the [camera](#).
- 2 Replace the [display panel](#).
- 3 Replace the [display bezel](#).
- 4 Replace the [display assembly](#).
- 5 Replace the [wireless card](#).
- 6 Replace the [base cover](#).
- 7 Replace the [keyboard](#).
- 8 Replace the [optical drive](#).
- 9 Replace the [battery](#).

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

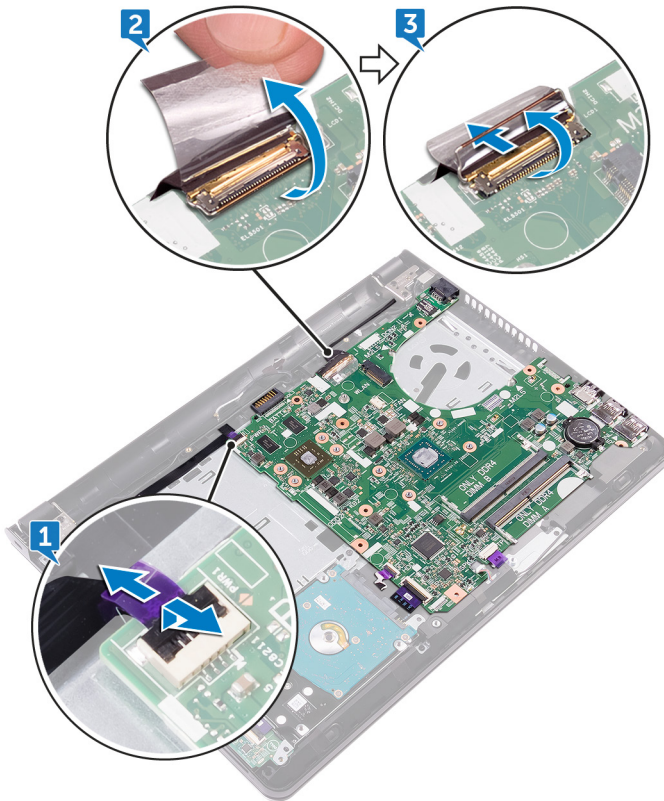
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [heat sink](#).

Procedure

- 1 Open the latch, and disconnect the power-button board cable from the system board.
- 2 Peel the tape adhering the display cable to the system board.

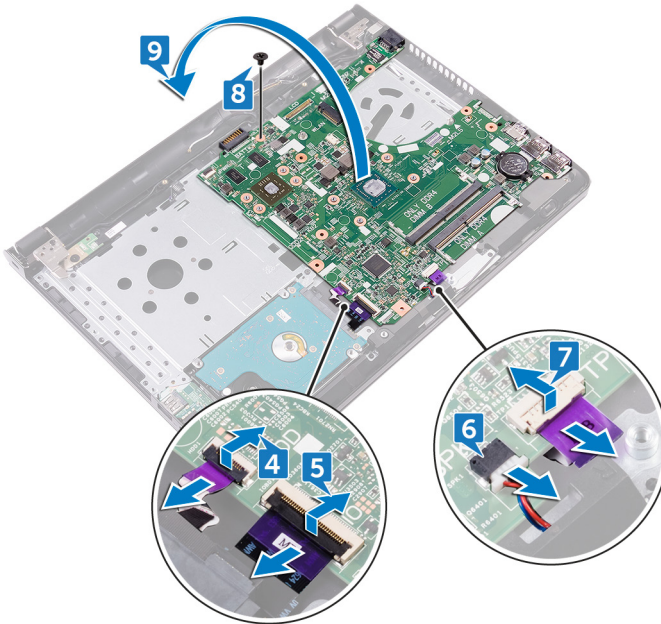


- 3 Open the latch, and disconnect the display cable from the system board.



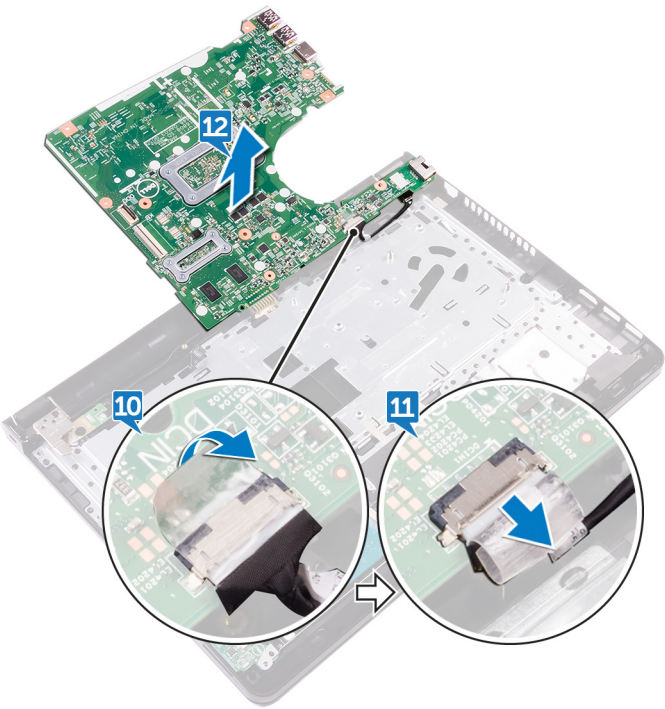
- 4 Open the latch, and disconnect the hard-drive cable from the system board.
- 5 Open the latch, and disconnect the I/O-board cable from the system board.
- 6 Disconnect the speaker cable from the system board.
- 7 Open the latch, and disconnect the touch-pad cable from the system board.
- 8 Remove the screw (M2x3) that secures the system board to the palm-rest assembly.

- 9** Gently release the ports on the system board from the slots and carefully turn the system board over.



- 10** Peel the tape that secures the power-adaptor port cable to the system board.
- 11** Disconnect the power-adaptor port cable from the system board.

12 Lift the system board off 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 Connect the power-adapter port cable to the system board.
- 2 Adhere the tape that secures the power-adapter port cable to the system board.
- 3 Turn the system board over carefully.
- 4 Using the alignment post, place the system board on the palm-rest assembly.
- 5 Align the screw hole on the system board with the screw hole on the palm-rest assembly.
- 6 Replace the screw (M2x3) that secures the system board to the palm-rest assembly.
- 7 Slide the touch-pad cable into the system-board connector and close the latch to secure the cable.
- 8 Connect the speaker cable to the system board.
- 9 Slide the I/O-board cable, and hard-drive cable into their connectors on the system board and close the latches to secure the cables.
- 10 Slide the display cable into the connector on the system board and close the latch.
- 11 Adhere the tape that secures the display cable to the system board.



- 12 Slide the power-button board cable into the connector on the system board, and close the latch.

Post-requisites

- 1 Replace the [heat sink](#).
- 2 Replace the [wireless card](#).
- 3 Replace the [base cover](#).
- 4 Replace the [keyboard](#).
- 5 Replace the [optical drive](#).
- 6 Replace the [battery](#).



Removing the touchpad



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Prerequisites

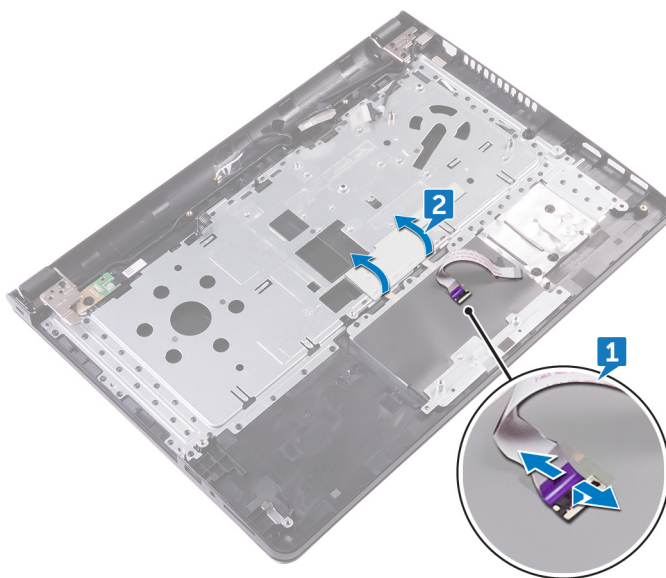
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [hard drive](#).
- 6 Remove the [wireless card](#).
- 7 Remove the [I/O board](#).
- 8 Remove the [display assembly](#).
- 9 Remove the [system board](#).
- 10 Remove the [speakers](#).

Procedure

- 1 Open the latch, and disconnect the touch-pad cable from the touch pad.

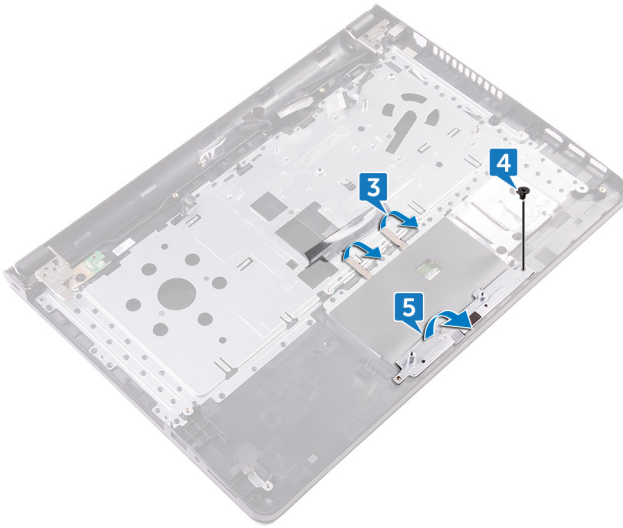


- 2** Lift the transparent film on the palm-rest assembly.

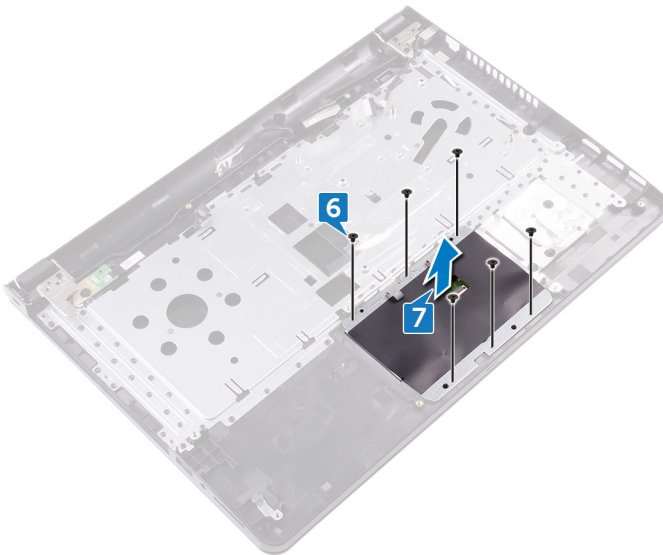


- 3** Peel the tapes that secure the touch-pad board to the palm-rest assembly.
- 4** Remove the screw (M2x3) that secures the touch-pad bracket to the palm-rest assembly.

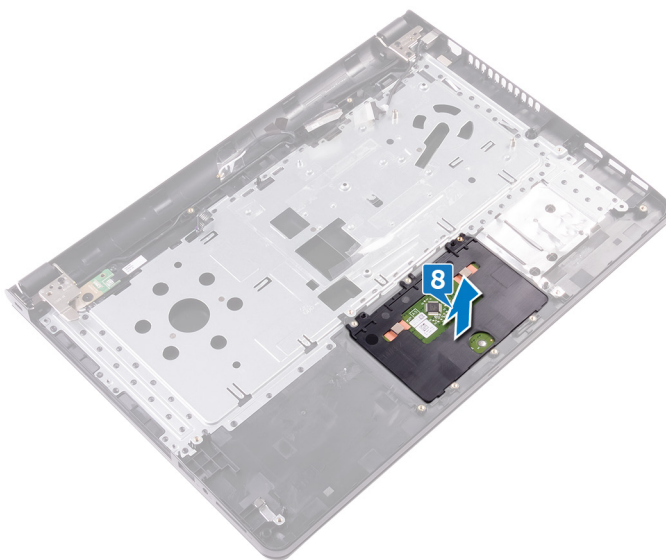
- 5** Release the touch-pad bracket from the tab, and lift it at an angle.



- 6** Remove the six screws (M2x3) that secure the touch-pad board to the palm-rest assembly.
- 7** Lift the touch-pad board off the palm-rest assembly.



- 8** Lift the touch pad off the palm-rest assembly.



Replacing the touchpad



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 Slide and replace the touch pad into its slot on the palm-rest assembly.
- 2 Align the screw holes on the touch-pad board with the screw holes on the palm-rest assembly.
- 3 Replace the six screws (M2x3) that secure the touch-pad board to the palm-rest assembly.
- 4 Slide the touch-pad bracket at an angle and align the screw hole on the touch-pad bracket with the screw hole on the palm-rest assembly.
- 5 Replace the screw (M2x3) that secures the touch-pad bracket to the palm-rest assembly.
- 6 Adhere the tapes that secure the touch-pad board to the palm-rest assembly and cover the tapes with the transparent film.
- 7 Connect the touch-pad cable to its connector and close the latch.

Post-requisites

- 1 Replace the [speakers](#).
- 2 Replace the [system board](#).
- 3 Replace the [display assembly](#).
- 4 Replace the [I/O board](#).
- 5 Replace the [hard drive](#).
- 6 Replace the [wireless card](#).
- 7 Replace the [base cover](#).
- 8 Replace the [keyboard](#).



- 9** Replace the [optical drive](#).
- 10** Replace the [battery](#).



Removing the power-adapter port



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

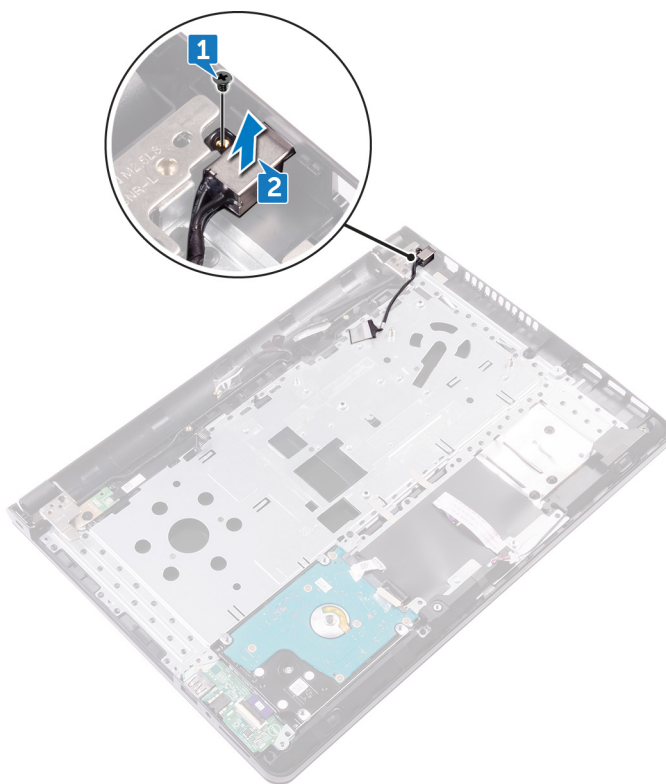
- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [wireless card](#).
- 6 Remove the [display assembly](#).
- 7 Remove the [power-button board](#).
- 8 Remove the [system board](#).

Procedure

- 1 Remove the screw (M2x3) that secures the power-adapter port to the palm-rest assembly.



- 2** Lift the power-adaptor port along with its cable off the palm-rest assembly.



Replacing the power-adapter port



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 hole on the power-adapter port with the screw hole on the palm-rest assembly.
- 2 Replace the screw (M2x3) that secures the power-adapter port to the palm-rest assembly.

Post-requisites

- 1 Replace the [system board](#).
- 2 Replace the [power-button board](#).
- 3 Replace the [display assembly](#).
- 4 Replace the [wireless card](#).
- 5 Replace the [base cover](#).
- 6 Replace the [keyboard](#).
- 7 Replace the [optical drive](#).
- 8 Replace the [battery](#).



Removing the display back-cover and antenna assembly



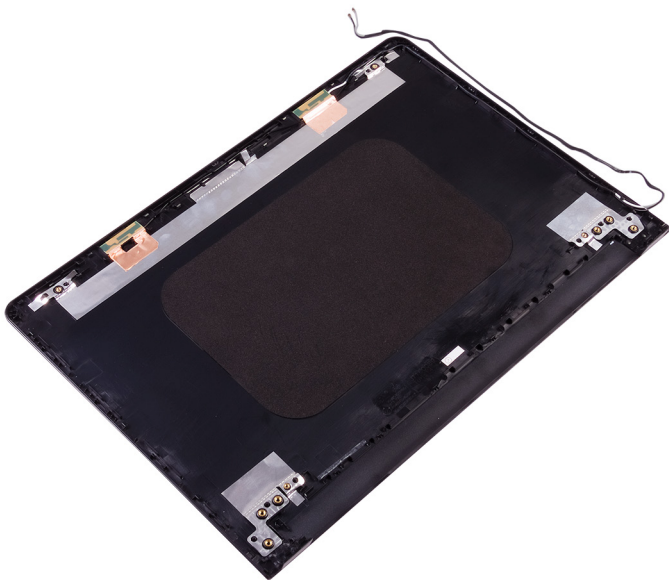
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices,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

Prerequisites

- 1 Remove the [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [display assembly](#).
- 6 Remove the [display bezel](#).
- 7 Remove the [display panel](#).
- 8 Remove the [camera](#).
- 9 Remove the [display hinges](#).
- 10 Remove the [display cable](#).

Procedure

After performing all the prerequisites, we are left with the display back-cover and antenna assembly.



Replacing the display back-cover and antenna 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 display back-cover on a flat surface.

Post-requisites

- 1 Replace the [camera](#).
- 2 Replace the [display cable](#).
- 3 Replace the [display hinges](#).
- 4 Replace the [display panel](#).
- 5 Replace the [display bezel](#).
- 6 Replace the [display assembly](#).
- 7 Replace the [base cover](#).
- 8 Replace the [keyboard](#).
- 9 Replace the [optical drive](#).
- 10 Replace the [battery](#).

Removing the palm rest



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 [battery](#).
- 2 Remove the [optical drive](#).
- 3 Remove the [keyboard](#).
- 4 Remove the [base cover](#).
- 5 Remove the [hard drive](#).
- 6 Remove the [wireless card](#).
- 7 Remove the [I/O board](#).
- 8 Remove the [speakers](#).
- 9 Remove the [heat sink](#).
- 10 Remove the [touch pad](#).
- 11 Remove the [power-button board](#).
- 12 Remove the [system board](#).
- 13 Remove the [power-adaptor port](#).



Procedure

After performing the steps in prerequisites, we are left with the palm rest.



Replacing the palm rest



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 on a flat surface.

Post-requisites

- 1 Replace the [power-adapter port](#).
- 2 Replace the [system board](#).
- 3 Replace the [power-button board](#).
- 4 Replace the [touch pad](#).
- 5 Replace the [heat sink](#).
- 6 Replace the [speakers](#).
- 7 Replace the [I/O board](#).
- 8 Replace the [wireless card](#).
- 9 Replace the [hard drive](#).
- 10 Replace the [base cover](#).
- 11 Replace the [keyboard](#).
- 12 Replace the [optical drive](#).
- 13 Replace the [battery](#).



Downloading drivers

Downloading the audio driver

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



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

- 4 Click or tap **Drivers & downloads** → **Find it myself**.
- 5 Scroll down the page and expand **Audio**.
- 6 Click or tap **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 or double-tap the audio driver file icon and follow the instructions on the screen to install the driver.

Downloading the graphics driver

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



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

- 4 Click or tap **Drivers & downloads** → **Find it myself**.
- 5 Scroll down the page and expand **Video**.
- 6 Click or tap **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 or double-tap the graphics driver file icon and follow the instructions on the screen.

Downloading the USB 3.0 driver

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



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

- 4 Click or tap **Drivers & downloads** → **Find it myself**.
- 5 Scroll down the page and expand **Chipset**.
- 6 Click or tap **Download** to download the USB 3.0 driver for your computer.
- 7 After the download is complete, navigate to the folder where you saved the USB 3.0 driver file.
- 8 Double-click or double-tap the driver file icon and follow the instructions on screen.

Downloading the Wi-Fi driver

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



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

- 4 Click or tap **Drivers & downloads** → **Find it myself**.
- 5 Scroll down the page and expand **Network**.
- 6 Click or tap **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 or double-tap the driver file icon and follow the on-screen instructions to install the driver.

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



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

- 4 Click or tap **Drivers & downloads** → **Find it myself**.
- 5 Scroll down the page and expand **Chipset**.
- 6 Click or tap **Download** to download the 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 or double-tap the chipset driver file icon and follow the instructions on the screen.

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.

System setup options



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.
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.



General-System Information

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.
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

SATA-0	Displays the SATA-0 device information of the computer.
SATA-1	Displays the SATA-1 device information of the computer.
LOM MAC Address	Displays the LAN On Motherboard (LOM) MAC address 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.



General-System Information

Wi-Fi Device	Displays the wireless device information of the computer.
Bluetooth Device	Displays the bluetooth device information of the computer.

Battery Information

Displays whether bluetooth is installed in the computer.

Boot Sequence

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

Advanced Boot Options

Enable Legacy Option ROMs	Enable or disable the Legacy Option ROMs.
---------------------------	---

Date/Time

Displays the current date in MM/DD/YY format and current time in HH:MM:SS AM/PM format.

Table 4. System setup options—System Configuration menu

System Configuration

Integrated NIC	Controls the on-board LAN controller.
Enable UEFI Network Stack	Enable or disable UEFI Network Stack.
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 Self-Monitoring, Analysis, and Reporting Technology (SMART) during system startup.
USB Configuration	
Enable Boot Support	Enable or disable booting from USB mass storage devices such as external hard drive, optical drive, and USB drive.

System Configuration

Enable External USB Port	Enable or disable booting from USB mass storage devices connected to external USB port.
--------------------------	---

Audio	Enable or disable the integrated audio controller.
--------------	--

Miscellaneous Devices	Enable or disable various onboard devices.
------------------------------	--

Enable Camera	Enable or disable the camera.
---------------	-------------------------------

Enable Secure Digital (SD) Card	Enable or disable the SD card.
---------------------------------	--------------------------------

Table 5. System setup options—Video menu

Video

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

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.
-----------------	---

Internal HDD-0 Password	Set, change, or delete the internal hard-disk drive password.
-------------------------	---

Strong Password	Enable or disable strong passwords.
-----------------	-------------------------------------

Password Configuration	Control the minimum and maximum number of characters allowed for the 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.
-------------------------	---



Security

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.
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	Enable to prevent users from entering System when an Master Password is set.
SMM Security Mitigation	Enable or disable SMM Security Mitigation.

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

Table 8. 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.
--------------------	------------------------

Intel Software Guard Extensions

	Default: Enabled.
Intel SpeedStep	Enable or disable Intel Speedstep Technology. Default: Enabled.
	 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 is inserted.
Enable Intel Speed Shift Technology	Enables the 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.
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 preselected custom charge start and stop. Default: Adaptive.

POST Behavior



Intel Software Guard Extensions

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. Default: Thorough.
Extend BIOS POST Time	Set the BIOS POST time.
Full Screen Logo	Enable or disable Full Screen Logo.
Warnings and Errors	Enable or disable Warnings and Errors.

Table 9. 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 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—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.

Maintenance	
Data Wipe	Enable to securely erase data from all internal storage devices.
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 12. System setup options—System Logs menu

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

Table 13. 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 the Dell OS Recovery tool.
SupportAssist OS Recovery	Enable or disable the boot flow for the SupportAssist OS Recovery tool when certain system errors.



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.

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.

Diagnostics

Power and battery-status light/hard-drive activity light

Indicates the battery-charge status or the hard-drive activity.



NOTE: Press **Fn+H** to toggle this light between power and battery-status light and hard-drive activity light.

Hard-drive activity light

Turns on when the computer reads from or writes to the hard drive.

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 the different power and battery-status light patterns and the problems that each light pattern indicate.

Table 14. Light patterns

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 15. 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.	<div><div>1</div><div>Go to www.dell.com/support.</div></div> <div><div>2</div><div>Type the subject or keyword in the Search box.</div></div> <div><div>3</div><div>Click Search to retrieve the related articles.</div></div>
Learn and know the following information about your product: <ul style="list-style-type: none">• Product specifications• Operating system	See <i>Me and My Dell</i> 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.