

Dell Inspiron 14z-N411z

# Owner's Manual

**FILE LOCATION:** C:\Users\v\_kumaran\Desktop\Edoc\Shakira\English  
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Template Last Updated -03/06/2010

Regulatory Model: P23G  
Regulatory Type: P23G001



## Notes, Cautions, and Warnings



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



**CAUTION:** A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.




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

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**Regulatory model:** P23G  
**Regulatory type:** P23G001

**2011-07 Rev. A00**

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# Before You Begin

This manual provides instructions for removing and installing components in your computer. Unless otherwise noted, each procedure assumes that the following conditions exist:

- You have performed the steps in "Turning Off Your Computer" on page 9 and "Before Working Inside Your Computer" on page 10.
- You have read the safety information that shipped with your computer.
- A component can be replaced or—if purchased separately—installed by performing the removal procedure in the reverse order.

## Recommended Tools


The procedures in this document may require the following tools:

- Phillips screwdriver
- Small flat-blade screwdriver
- Plastic scribe
- BIOS executable update program available at [support.dell.com](http://support.dell.com)

## Turning Off Your Computer





**CAUTION:** To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.


- 1 Save and close all open files and exit all open programs.
- 2 Click **Start**  and then click **Shut Down**. The computer turns off after the operating system shutdown process is complete.
- 3 Ensure that the computer is turned off. If your computer did not automatically turn off when you shut down the operating system, press and hold the power button until the computer turns off.


# Before Working Inside Your Computer


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


 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

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

 **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; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

 **CAUTION:** To avoid damaging the computer, perform the following steps before you begin working inside the computer.

- 1 Ensure that the work surface is flat and clean to prevent the computer cover from being scratched.
- 2 Turn off your computer and all attached devices. See "Turning Off Your Computer" on page 9.

 **CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

- 3 Disconnect all telephone or network cables from the computer.
- 4 Remove any cards installed in the Media-Card Reader.
- 5 Disconnect your computer and all attached devices from their electrical outlets.
- 6 Disconnect all attached devices from your computer.




**CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.


- 7** Remove the battery. See "Removing the Battery" on page 13.
- 8** Turn the computer top-side up, open the computer, and press the power button to ground the system board.




# Battery

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

 **CAUTION:** To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.

## Removing the Battery

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Turn off the computer and turn the computer over.
- 3 Slide both the battery release latches to the unlocked positions. The battery pops out of the battery bay.
- 4 Lift the battery out of the battery bay.



**NOTE:** After you remove the battery, ensure that the battery-release latches are in the locked position.






1 battery

2 battery-release latches (2)

## Replacing the Battery

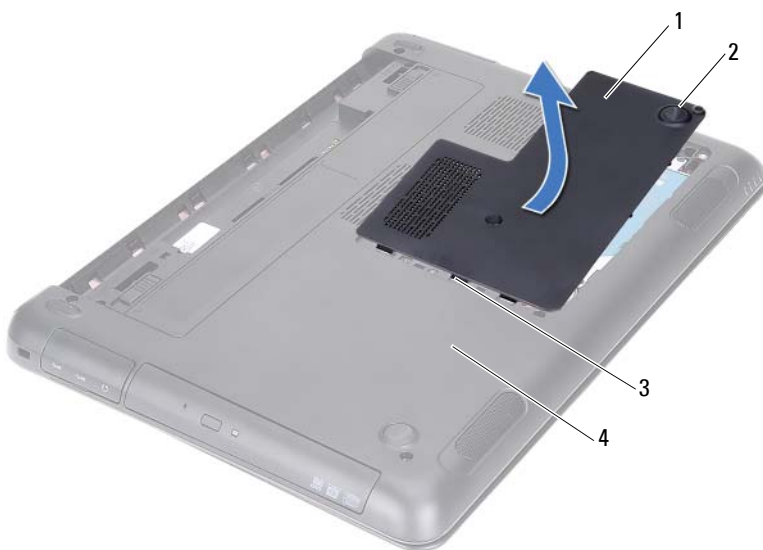
- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Place the battery in the battery bay and press down until the battery clicks into place.
- 3 Ensure that both the battery-release latches are in the locked position.

# Module Cover

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

## Removing the Module Cover

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Loosen the captive screw that secures the module cover to the computer base.
- 4 Use your fingertips to release the tabs on the module cover from the slots on the computer base.
- 5 Lift the module cover off the computer base.



1 module cover  
3 tabs

2 captive screw  
4 computer base


## Replacing the Module Cover


- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the tabs on the module cover with the slots on the computer base and snap the module cover into place.
- 3 Tighten the captive screw that secures the module cover to the computer base.
- 4 Replace the battery. See "Replacing the Battery" on page 14.




## Coin-Cell Battery

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

 **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Coin-Cell Battery

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Using a plastic scribe, gently pry the coin-cell battery out of the battery socket on the system board.



1 plastic scribe

2 coin-cell battery










## Replacing the Coin-Cell Battery

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 With the positive side facing up, snap the coin-cell battery into the battery socket on the system board.
- 3 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 4 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

# Hard-Drive Assembly

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **WARNING:** If you remove the hard drive from the computer when the drive is hot, *do not touch* the metal housing of the hard drive.
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To prevent data loss, turn off your computer (see "Turning Off Your Computer" on page 9) before removing the hard drive. Do not remove the hard drive while the computer is On or in Sleep state.
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.
-  **CAUTION:** Hard drives are extremely fragile. Exercise care when handling the hard drive.
-  **NOTE:** Dell does not guarantee compatibility or provide support for hard drives from sources other than Dell.
-  **NOTE:** If you are installing a hard drive from a source other than Dell, you must install an operating system, drivers, and utilities on the new hard drive. See *Me and My Dell*.

## Removing the Hard-Drive Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Remove the four screws that secure the hard-drive assembly to the computer base.

- 5** Using the pull-tab, slide the hard-drive assembly to disconnect it from the connector on the system board.
- 6** Lift the hard-drive assembly off the computer base.



**1** screws (4)

**2** pull tab

**3** hard-drive assembly

- 7** Remove the four screws that secure the hard-drive bracket to the hard drive.
- 8** Lift the hard drive away from the hard-drive bracket.



- 1    hard drive
- 2    hard-drive bracket
- 3    screws (4)

## Replacing the Hard-Drive Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the replacement hard drive from its packaging. Save the packaging for storing or shipping the old hard drive.
- 3 Align the screw holes on the hard-drive bracket with the screw holes on the hard drive.
- 4 Replace the four screws that secure the hard-drive bracket to the hard drive.
- 5 Place the hard-drive assembly in the computer base.
- 6 Using the pull-tab, slide the hard-drive assembly into the connector on the system board.
- 7 Replace the four screws that secure the hard-drive assembly to the computer base.
- 8 Replace the module cover. See "Replacing the Module Cover" on page 16.

- 9 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.


- 10 Connect your computer and all attached devices to electrical outlets, and turn them on.
- 11 Install the operating system for your computer, as needed.
- 12 Install the drivers and utilities for your computer, as needed.




**NOTE:** For more information on installing the operating system, drivers, and utilities for your computer, see *Me and My Dell* at [support.dell.com/manuals](http://support.dell.com/manuals).

# Optical Drive

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

## Removing the Optical Drive

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Remove the screw that secures the optical-drive assembly to the computer base.
- 5 Slide the optical-drive assembly out of the optical-drive bay.



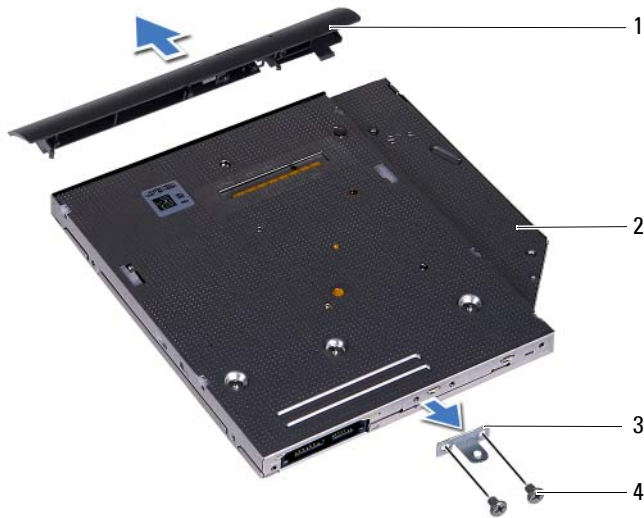
1 optical-drive assembly

2 computer base

3 screw

- 6 Remove the two screws that secure the optical-drive bracket to the optical drive.
- 7 Remove the optical-drive bracket from the optical drive.
- 8 Gently pry out the tabs on the optical-drive bezel and remove the bezel from the optical-drive assembly.





- |   |                       |   |               |
|---|-----------------------|---|---------------|
| 1 | optical-drive bezel   | 2 | optical drive |
| 3 | optical-drive bracket | 4 | screws (2)    |

## Replacing the Optical Drive





- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the tabs on the optical-drive bezel with the slots on the optical drive and snap the optical-drive bezel into place.
- 3 Align the screw holes on the optical-drive bracket with the screw holes on the optical drive.
- 4 Replace the two screws that secure the optical-drive bracket to the optical drive.
- 5 Slide the optical-drive assembly into the optical-drive bay.
- 6 Replace the screw that secures the optical-drive assembly to the computer base.
- 7 Replace the module cover. See "Replacing the Module Cover" on page 16.

- 8 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

# Memory Module(s)

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Upgrading System Memory

Your computer supports up to two memory-module connectors. You can access DIMM B connector by removing the module cover at the bottom of your computer. You can access DIMM A connector by removing the palm-rest assembly.

You can increase your computer memory by installing memory modules on the system board. For information on the memory supported by your computer, see the *Comprehensive Specifications* for your computer model at [support.dell.com/manuals](http://support.dell.com/manuals).



**NOTE:** Memory modules purchased from Dell are covered under your computer warranty.



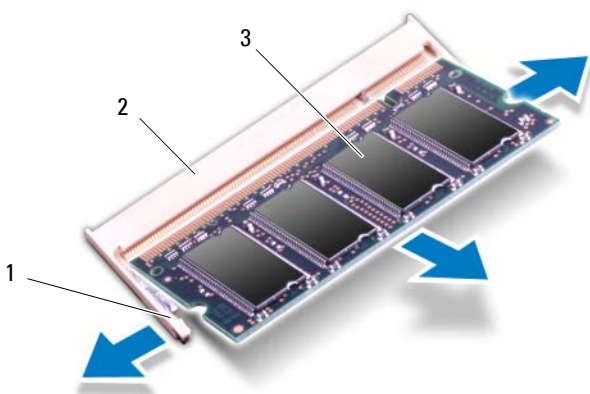
**NOTE:** If you ordered one memory module with your system, it is installed in the DIMM A connector.

## Removing the Memory Module(s)

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.

**CAUTION:** To prevent damage to the memory-module connector, do not use tools to spread the memory module securing clips.

- 4 To remove the memory module from the DIMM B connector, go to step 5. To remove the memory module from the DIMM A connector:
  - a Turn the computer over.
  - b Remove the keyboard. See "Removing the Keyboard" on page 31.
- 5 Use your fingertips to carefully spread apart the securing clips on each end of the memory-module connector until the memory module pops up.



1 securing clips (2)

2 memory-module connector

3 memory module

- 6 Remove the memory module from the memory-module connector.

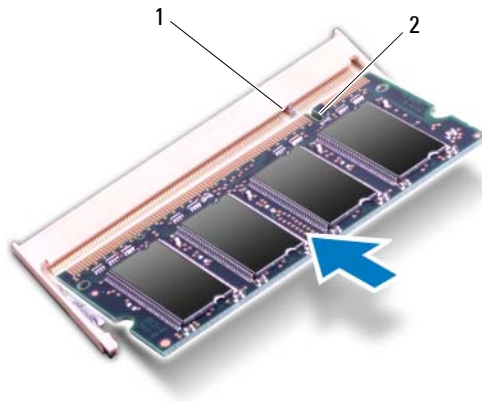
## Replacing the Memory Module(s)

- 1 Follow the instructions in "Before You Begin" on page 9.

- 2 Align the notch on the memory module with the tab in the memory-module connector.
- 3 Slide the memory module firmly into the memory-module connector at a 45-degree angle, and then press down the memory module on both sides until it clicks into place. If you do not hear the click, remove the memory module and reinstall it.



**NOTE:** If the memory module is not installed properly, the computer may not boot.




1 tab

2 notch







- 4 If you replaced the memory module in the DIMM B connector, go to step 6.
- 5 If you replaced the memory module in the DIMM A connector:
  - a Replace the keyboard. See "Replacing the Keyboard" on page 33.
  - b Turn the computer over.
- 6 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 7 Replace the battery. See "Replacing the Battery" on page 14.

Connect your computer and all attached devices to electrical outlets, and turn them on. As the computer boots, it detects the memory module(s) and automatically updates the system configuration information.

To confirm the amount of memory installed in the computer:

Click **Start**  → **Control Panel** → **System and Security** → **System**.

# Keyboard

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.
-  **CAUTION:** The keycaps on the keyboard are fragile, easily dislodged, and time-consuming to replace. Be careful when removing and handling the keyboard.
-  **CAUTION:** Be extremely careful when removing and handling the keyboard. Failure to do so could result in scratching the display panel.

## Removing the Keyboard

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Turn the computer over and open the display as far as possible.
- 4 Gently slide a plastic scribe between the keyboard and palm-rest assembly.
- 5 Press the four tabs on the palm-rest assembly and disengage the keyboard.



- |   |          |   |                    |
|---|----------|---|--------------------|
| 1 | tabs (4) | 2 | plastic scribe     |
| 3 | keyboard | 4 | palm-rest assembly |

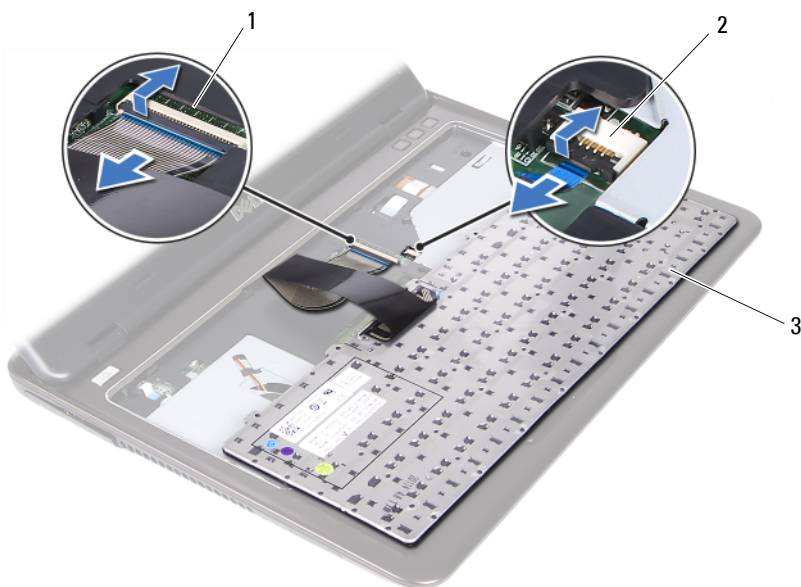
**CAUTION:** Exercise caution while lifting up the keyboard to avoid pulling the keyboard connector from the system board forcefully.

- 6 Carefully lift the keyboard and slide the keyboard tabs out of the slots on the palm-rest assembly.
- 7 Turn the keyboard over and place the keyboard on the palm-rest assembly.
- 8 Lift the connector latches and disconnect the keyboard cable and the keyboard-backlight cable from the connectors on the system board.



**NOTE:** The keyboard-backlight cable is available only if you purchased a back-lit keyboard.






- 1 keyboard-cable connector
  - 2 keyboard-backlight cable connector
  - 3 keyboard
- 9 Lift the keyboard off the palm-rest assembly.


## Replacing the Keyboard

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Slide the keyboard cable into the connector on the system board and press down on the connector latch to secure the keyboard cable.
- 3 Align the tabs on the keyboard with the slots on the palm-rest assembly and lower the keyboard into place.
- 4 Gently press around the edges of the keyboard to secure the keyboard in place.
- 5 Replace the battery. See "Replacing the Battery" on page 14.




## Palm-Rest Assembly

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

 **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Palm-Rest Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the nine screws that secure the palm-rest assembly to the computer base.



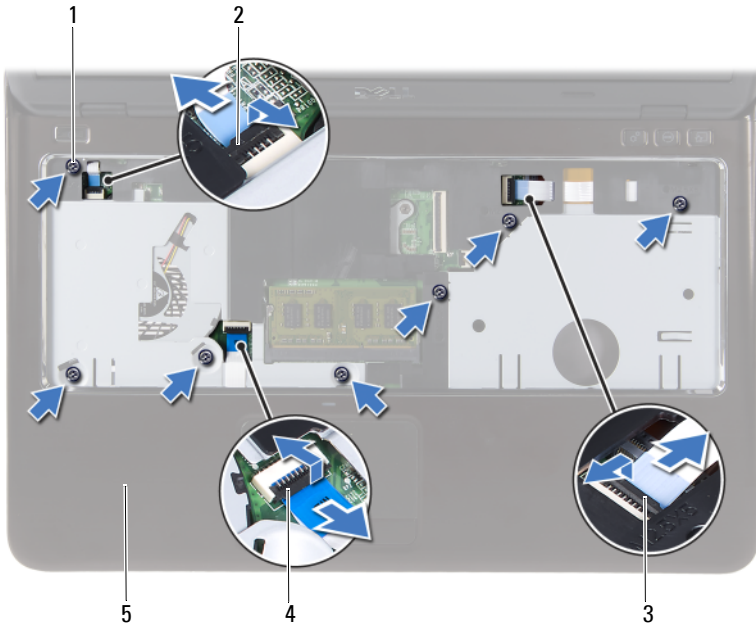
6 Turn the computer over.

7 Remove the keyboard. See "Removing the Keyboard" on page 31.

**CAUTION:** Pull on the plastic tab on top of the connectors to avoid damaging the connectors.

8 Lift the securing latches and disconnect the power button, touchpad, and hot-key board cables from their connectors on the system board.

9 Remove the seven screws that secure the palm-rest assembly to the computer base.



- |   |                               |   |                              |
|---|-------------------------------|---|------------------------------|
| 1 | screws (7)                    | 2 | power-button cable connector |
| 3 | hot-key board cable connector | 4 | touchpad-cable connector     |
| 5 | palm-rest assembly            |   |                              |

**CAUTION:** Separate the palm-rest assembly from the computer base carefully to avoid damage to the palm-rest assembly and the display.

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



- 1 palm-rest assembly

## Replacing the Palm-Rest Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the tabs on the palm-rest assembly with the slots on the computer base and gently snap the palm-rest assembly in place.
- 3 Slide the power button, touchpad, and hot-key board cables into the respective connectors on the system board and press down the connector latches to secure the cables.
- 4 Replace the seven screws that secure the palm-rest assembly to the computer base.
- 5 Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 6 Turn the computer over and replace the nine screws that secure the palm-rest assembly to the computer base.
- 7 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 8 Replace the module cover. See "Replacing the Module Cover" on page 16.

- 9 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.





## Wireless Mini-Card



**WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).



**CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.



**CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on your computer.



**CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.



**CAUTION:** When the mini-card is not in the computer, store it in protective antistatic packaging. See "Protecting Against Electrostatic Discharge" in the safety instructions that shipped with your computer.



**NOTE:** Dell does not guarantee compatibility or provide support for mini-cards from sources other than Dell.

Your computer has one half mini-card slot that supports a Wi-Fi+WiMax or Wi-Fi+Bluetooth combo card.

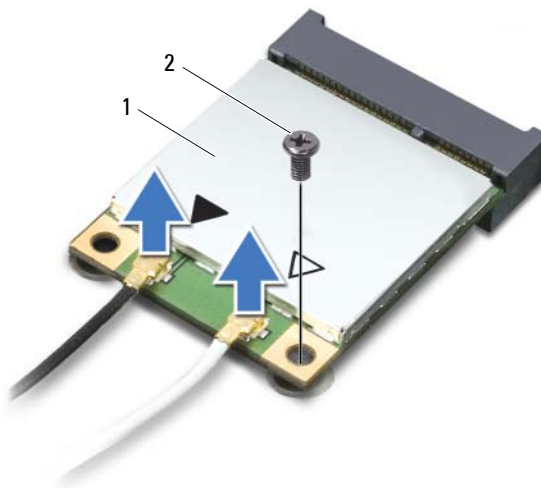


**NOTE:** If you ordered a wireless mini-card with your computer, the card is already installed.

## Removing the Mini-Card

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.

- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Lift the securing latches and disconnect the USB-board cable from the connectors on the USB board and the system board, and then remove the USB-board cable. See "Removing the USB Board" on page 61.
- 8 Disconnect the wireless antenna cables from the connectors on the mini-card.
- 9 Remove the screw that secures the mini-card to the system board.




1 mini-card

2 screw


- 10 Lift the mini-card out of the connector on the system board.


## Replacing the Mini-Card

- 1 Follow the instructions in "Before You Begin" on page 9.

 **NOTE:** Your computer can support either one Wi-Fi+WiMax mini-card or one Wi-Fi+Bluetooth combo card at a time.

- 2 Remove the replacement mini-card from its packaging.

 **CAUTION:** Use firm and even pressure to slide the mini-card into place. If you use excessive force, you may damage the connector.

 **CAUTION:** The connectors are keyed to ensure correct insertion. If you feel resistance, check the connectors on the mini-card and on the system board, and realign the mini-card.


 **CAUTION:** To avoid damage to the mini-card, never place cables under the mini-card.


- 3 Insert the mini-card connector at a 45-degree angle into the connector on the system board.
- 4 Press the other end of the mini-card down and replace the screw that secures the mini-card to the system board.
- 5 Connect the antenna cables to the mini-card as follows:
  - Connect the white cable to the connector with the white triangle.
  - Connect the black cable to the connector with the black triangle.
- 6 Secure any unused antenna cables in the protective mylar sleeve.
- 7 Slide the USB-board cable into the connectors on the USB board and the system board, and press down the securing latches. See "Replacing the USB Board" on page 63.
- 8 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 9 Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 10 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 11 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 12 Replace the battery. See "Replacing the Battery" on page 14.
- 13 Install the drivers and utilities for your mini-card as required. For more information, see *Me and My Dell* on [support.dell.com/manuals](http://support.dell.com/manuals).




# Display

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).

 **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

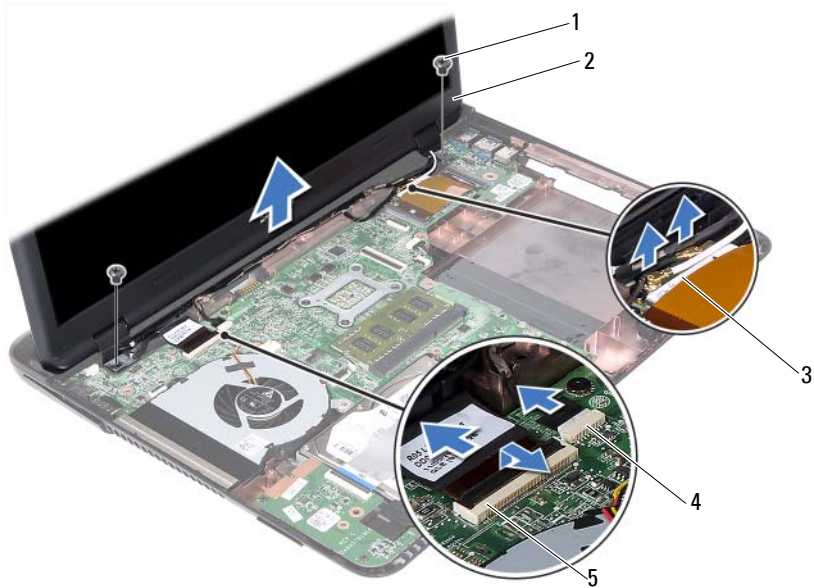
## Display Assembly

### Removing the Display Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions in step 4 to step 5 of "Removing the Optical Drive" on page 23.
- 5 Remove the two screws that secure the display assembly to the computer base.



- 6** Turn the computer over.
- 7** Remove the keyboard. See "Removing the Keyboard" on page 31.
- 8** Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 9** Turn the computer over and open the display as far as possible.
- 10** Disconnect the antenna cables from the mini-card. See "Removing the Mini-Card" on page 41.
- 11** Lift the connector latch and disconnect the display cable from the connector on the system board.
- 12** Disconnect the camera cable. See "Removing the Camera Module" on page 65.
- 13** Note the routing of the display, camera, and mini-card antenna cables, and remove the cables from their routing guides.
- 14** Remove the two screws that secure the display assembly to the computer base.



- |   |                          |   |                        |
|---|--------------------------|---|------------------------|
| 1 | screws (2)               | 2 | display assembly       |
| 3 | mini-card antenna cables | 4 | camera-cable connector |
| 5 | display-cable connector  |   |                        |

**15** Lift the display assembly off the computer base.

## Replacing the Display Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Place the display assembly in position and replace the two screws that secure the display assembly to the computer base.



**NOTE:** Ensure that no cables are caught between the display assembly and the computer base.

- 3 Route the display, camera, and mini-card antenna cables through their routing guides.

- 4 Connect the camera cable. See "Replacing the Camera Module" on page 67.
- 5 Slide the display cable in the connector on the system board and press down the latch to secure the cable.
- 6 Connect the antenna cables to the mini-card. See "Replacing the Mini-Card" on page 42.
- 7 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 8 Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 9 Turn the computer over.
- 10 Replace the two screws that secure the display assembly to the computer base.
- 11 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 12 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 13 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

## Hinge Cover

### Removing the Hinge Cover



**CAUTION: The hinge caps are extremely fragile. Be careful when removing the hinge caps to prevent damaging them.**

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Remove the optical-drive assembly. See "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.



- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 8 Remove the two screws that secure the hinge cover to the computer base.
- 9 Pry out the six tabs that secure the hinge cover to the computer base and remove the hinge cover from the computer base.



1 screws (2)

2 tabs (6)

## Replacing the Hinge Cover

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the tabs on the hinge cover to the slots on the computer base and snap the hinge cover to the computer base.
- 3 Replace the two screws that secure the hinge cover in place.

- 4 Replace the display assembly. See "Replacing the Display Assembly" on page 47.
- 5 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 6 Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 7 Replace the optical-drive assembly. See "Replacing the Optical Drive" on page 25.
- 8 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 9 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

## Display Bezel

### Removing the Display Bezel

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the display assembly. See "Removing the Display Assembly" on page 45.



**CAUTION: The display bezel is extremely fragile. Be careful when removing the bezel to prevent damage.**

- 3 Using your fingertips, carefully pry up the inside edges of the display bezel.
- 4 Lift the display bezel off the display assembly.



- 1 display bezel

## Replacing the Display Bezel

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the display bezel with the display cover and snap the display bezel into place.
- 3 Replace the display assembly. See "Replacing the Display Assembly" on page 47.



**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

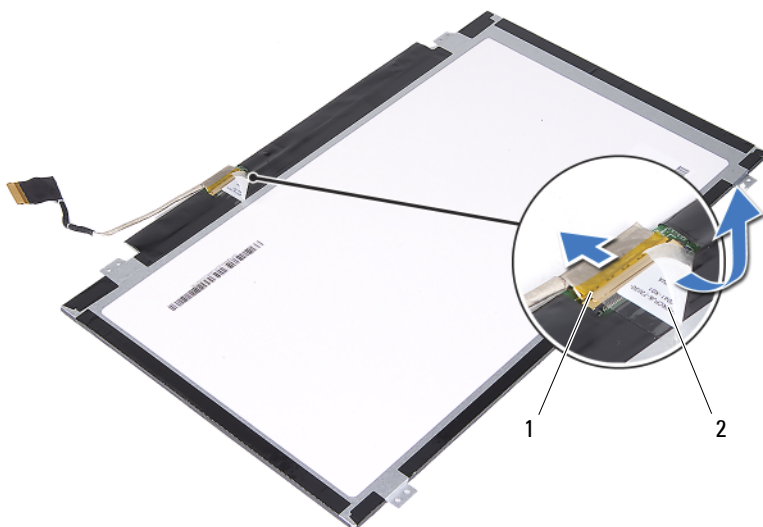
## Display Panel

### Removing the Display Panel

- 1 Follow the instructions in "Before You Begin" on page 9.

- 2** Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 3** Remove the display bezel. See "Removing the Display Bezel" on page 50.
- 4** Remove the four screws that secure the display panel to the display cover.

- 1 screws (4) 2 display panel



1 display-cable connector

2 tape

## Replacing the Display Panel

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Connect the display cable to the display-board connector and adhere the display cable with the tape.
- 3 Align the display panel on the display cover.
- 4 Replace the four screws that secure the display panel to the display cover.
- 5 Replace the display bezel. See "Replacing the Display Bezel" on page 51.
- 6 Replace the display assembly. See "Replacing the Display Assembly" on page 47.



**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

# Hinge Assembly

## Removing the Hinge Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 3 Remove the display bezel. See "Removing the Display Bezel" on page 50.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Display Panel" on page 51.
- 5 Remove the six screws that secure the hinge assembly to the display cover.



1 screws (6)

2 hinge assembly

- 6 Lift the hinge assembly away from the display cover.

## Replacing the Hinge Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.

- 2 Place the hinge assembly on the display cover.
- 3 Replace the six screws that secure the hinge assembly to the display cover.
- 4 Follow the instructions from step 3 and step 4 in "Replacing the Display Panel" on page 53.
- 5 Replace the display bezel. See "Replacing the Display Bezel" on page 51.
- 6 Replace the display assembly. See "Replacing the Display Assembly" on page 47.







**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.



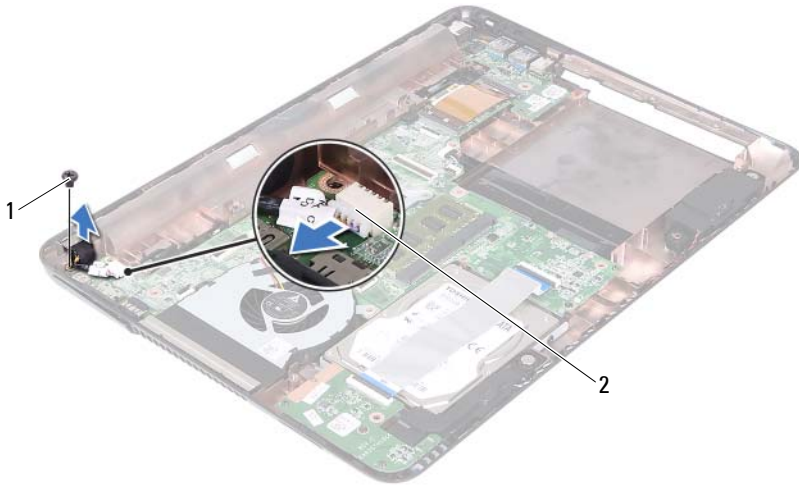


## DC-in Connector Assembly

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the DC-in Connector Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 8 Remove the hinge cover. See "Removing the Hinge Cover" on page 48.
- 9 Remove the screw that secures the DC-in assembly to the computer base.



1 screw

2 DC-in cable connector

- 10 Disconnect the DC-in connector cable from the connector on the system board.
- 11 Lift the DC-in connector off the computer base.

## Replacing the DC-in Connector Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Place the DC-in connector on the computer base.
- 3 Connect the DC-in connector cable to the connector on the system board.
- 4 Replace the screw that secures the DC-in connector assembly.
- 5 Replace the hinge cover. See "Replacing the Hinge Cover" on page 49.
- 6 Replace the display assembly. See "Replacing the Display Assembly" on page 47.
- 7 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 8 Replace the keyboard. See "Replacing the Keyboard" on page 33.





- 9 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 10 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 11 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

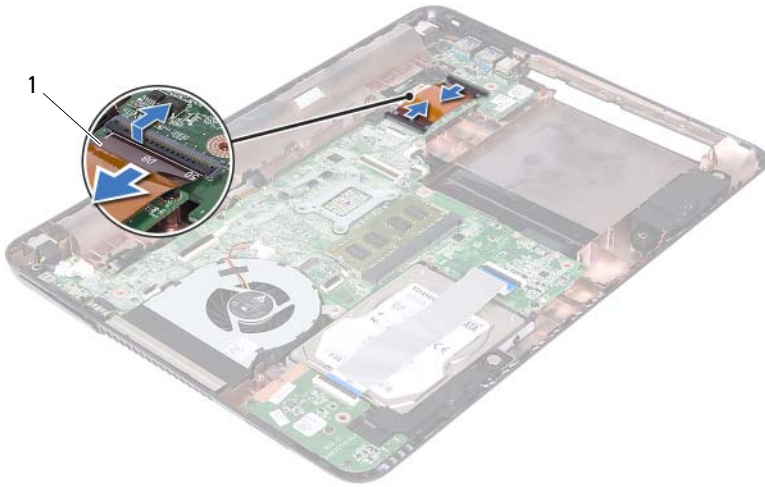


## USB Board

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-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

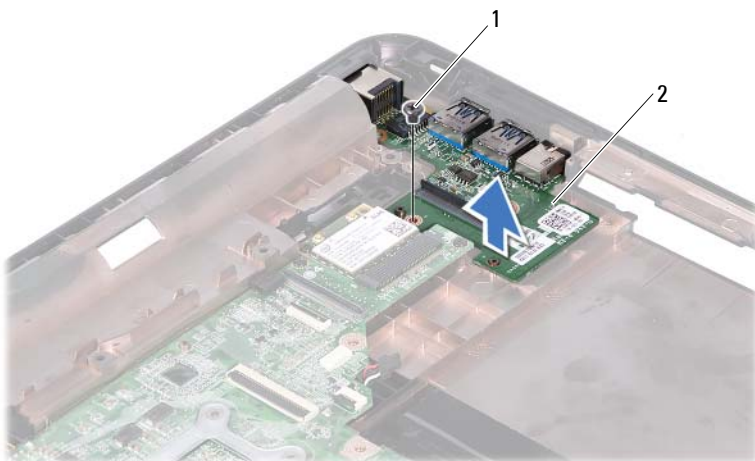
## Removing the USB Board

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Remove the optical-drive assembly. "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 8 Remove the hinge cover. See "Removing the Hinge Cover" on page 48.
- 9 Lift the securing latches and disconnect the USB-board cable from the connector on the USB board and the system board.



1 USB-board cable

**10** Remove the screw that secures the USB board to the computer base.



1 screw

2 USB board

**11** Lift the USB board off the computer base.

## Replacing the USB Board

- 1** Follow the instructions in "Before You Begin" on page 9.
- 2** Align the screw hole on the USB board with the screw hole on the system board.
- 3** Replace the screw that secures the USB board to the system board.
- 4** Slide the USB-board cable into the connectors on the USB board and the system board, and press down the securing latches.
- 5** Replace the hinge cover. See "Replacing the Hinge Cover" on page 49.
- 6** Replace the display assembly. See "Replacing the Display Assembly" on page 47.





- 7 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 8 Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 9 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 10 Replace the module cover. See "Replacing the Module Cover" on page 16.
- 11 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

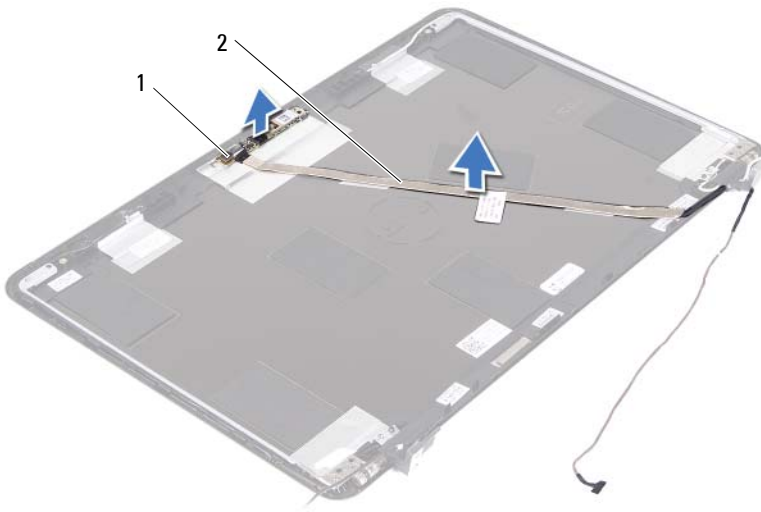


# Camera Module

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-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Camera Module

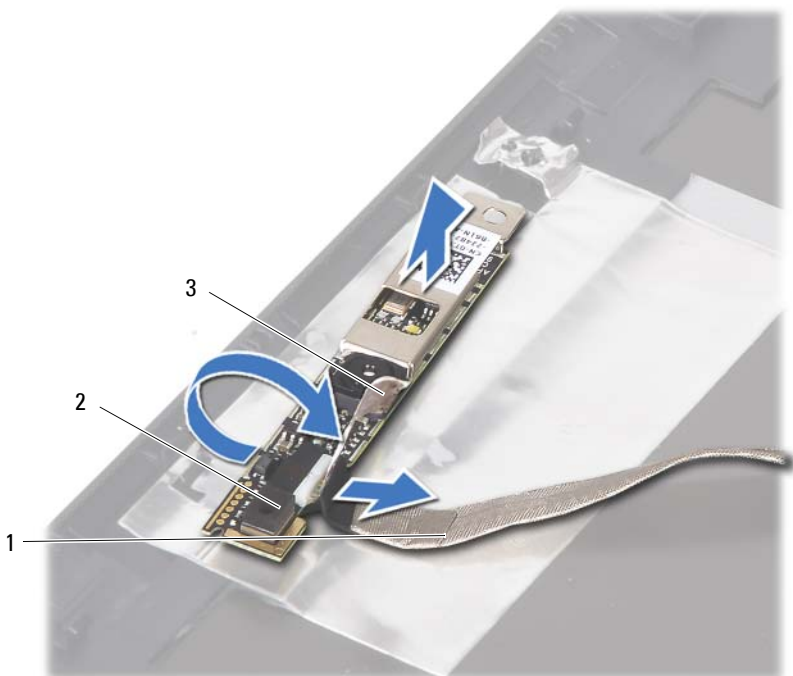
- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions in step 4 to step 5 of "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 8 Remove the display bezel. See "Removing the Display Bezel" on page 50.
- 9 Remove the display panel. See "Removing the Display Panel" on page 51.
- 10 Lift the camera cable off the adhesive tapes on the display cover.



1 camera module

2 camera cable

- 11** Lift the camera module from the alignment posts and remove the camera module from the display cover.
- 12** Remove the tape that secures the camera cable to the camera module.



- 1 camera cable
- 2 camera module
- 3 adhesive tape

**13** Disconnect the camera cable from the connector on the camera module.

## Replacing the Camera Module

- 1** Follow the instructions in "Before You Begin" on page 9.
- 2** Connect the camera cable to the camera module, and adhere the tape that secures the cable to the camera module.
- 3** Align the camera module to the alignment posts in the display cover and place the camera module in the display cover.
- 4** Adhere the camera cable to the tapes on the display cover.
- 5** Replace the display panel. See "Replacing the Display Panel" on page 53.

- 6** Replace the display bezel. See "Replacing the Display Bezel" on page 51.
- 7** Replace the display assembly. See "Replacing the Display Assembly" on page 47.
- 8** Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 9** Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 10** Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 11** Replace the module cover. See "Replacing the Module Cover" on page 16.
- 12** Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

## Thermal Fan



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**CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).



**CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Thermal Fan

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Remove the optical-drive assembly. "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Remove the screw that secures the thermal fan to the computer base.
- 8 Disconnect the thermal-fan cable from the connector on the system board.
- 9 Lift the thermal fan off the computer base.



- 1 screw
- 2 thermal fan
- 3 system-board connector

## Replacing the Thermal Fan

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the thermal fan to the alignment posts in the computer base and place the thermal fan in the computer base.
- 3 Replace the screw that secures the thermal fan to the computer base.
- 4 Connect the thermal-fan cable to the connector on the system board.
- 5 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 6 Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 7 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 8 Replace the module cover. See "Replacing the Module Cover" on page 16.

- 9 Replace the battery. See "Replacing the Battery" on page 14.







**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.





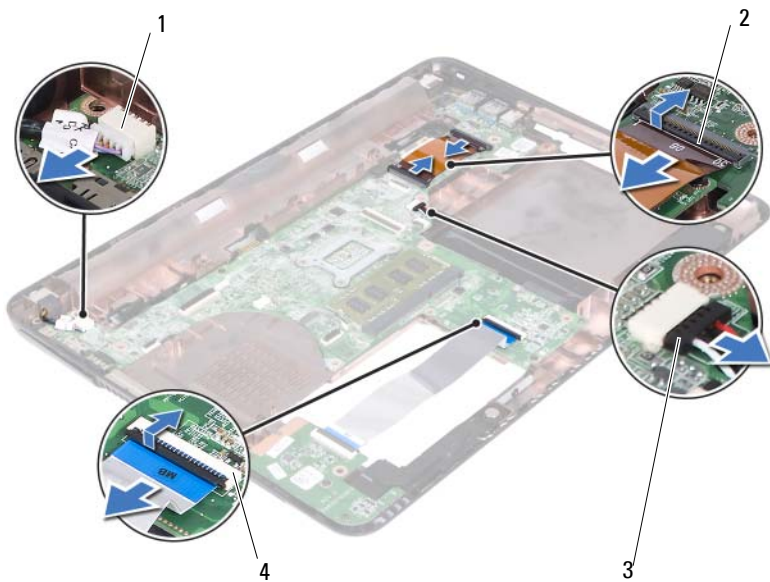
## System Board

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the System Board

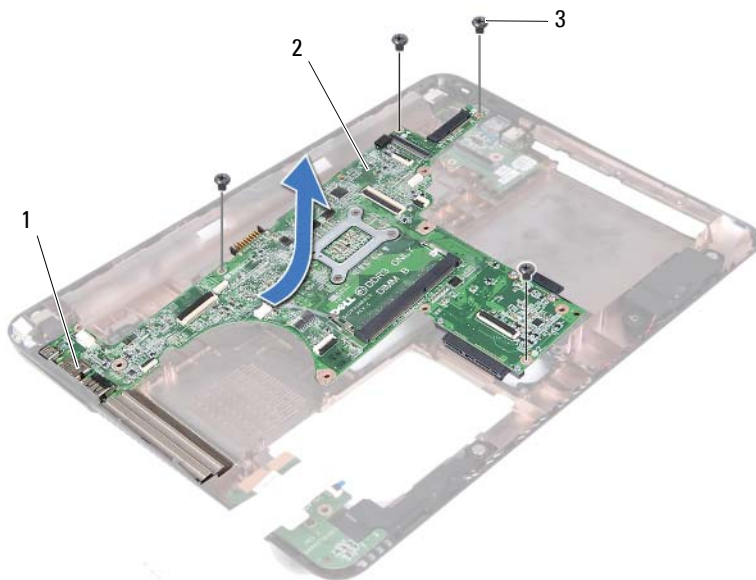
- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the hard-drive assembly. See "Removing the Hard-Drive Assembly" on page 19.
- 6 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 7 Remove the memory module(s). See "Removing the Memory Module(s)" on page 27.
- 8 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 9 Remove the wireless mini-card. See "Removing the Mini-Card" on page 41.
- 10 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 11 Remove the thermal fan. See "Removing the Thermal Fan" on page 69.

- 12 Disconnect the DC-in connector cable and the speaker cable from the connectors on the system board.
- 13 Lift the securing latches and disconnect the USB-board cable from the connectors on the system board and the USB board.
- 14 Lift the securing latch and disconnect the media-card reader board cable from the connector on the system board.



- |   |                         |   |  |
|---|-------------------------|---|--|
| 1 | DC-in cable connector   | 2 | USB-board cable connectors (2)         |
| 3 | speaker-cable connector | 4 | media-card reader cable connectors (2) |

- 15 Remove the four screws that secure the system-board assembly to the computer base.
- 16 Carefully ease the ports on the system-board assembly out of the slots in the computer base and lift the system-board assembly out of the computer base.




- |   |            |   |              |
|---|------------|---|--------------|
| 1 | ports      | 2 | system board |
| 3 | screws (4) |   |              |

**17** Turn the system-board assembly over.

**18** Remove the heat-sink assembly. See "Removing the Heat-Sink Assembly" on page 79.

## Replacing the System Board

- 1** Follow the instructions in "Before You Begin" on page 9.
- 2** Replace the heat-sink assembly. See "Replacing the Heat-Sink Assembly" on page 80.
- 3** Turn the system-board assembly over.

- 4 Ease the ports on the system-board assembly into the slots on the computer base.
  - 5 Align the system-board assembly to the alignment posts in the computer base and place the system board in the computer base.
-  **NOTE:** Ensure that the speaker-cable connector is not caught between the system-board assembly and the computer base.
- 6 Replace the four screws that secure the system-board assembly to the computer base.
  - 7 Connect the DC-in connector cable and the speaker cable to the connectors on the system board.
  - 8 Connect the USB-board cable to the connectors on the system board and the USB board. Press down the securing latches.
  - 9 Connect the media-card reader board cable to the connector on the system board. Press down the securing latch.
  - 10 Replace the wireless mini-card. See "Replacing the Mini-Card" on page 42.
  - 11 Replace the thermal fan. See "Replacing the Thermal Fan" on page 70.
  - 12 Replace the display assembly. See "Replacing the Display Assembly" on page 47.
  - 13 Replace the memory module(s). See "Replacing the Memory Module(s)" on page 28.
  - 14 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
  - 15 Replace the keyboard. See "Replacing the Keyboard" on page 33.
  - 16 Replace the hard-drive assembly. See "Replacing the Hard-Drive Assembly" on page 21.
  - 17 Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
  - 18 Replace the module cover. See "Replacing the Module Cover" on page 16.
  - 19 Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

- 20 Turn on the computer.



**NOTE:** After you have replaced the system board, type the computer's Service Tag into the BIOS of the replacement system board.






- 21** Enter the service tag. See "Entering the Service Tag in the BIOS" on page 77.

## Entering the Service Tag in the BIOS

- 1** Ensure that the AC adapter is plugged in and that the main battery is installed properly.
- 2** Turn on the computer.
- 3** Press <F2> during POST to enter the system setup program.
- 4** Navigate to the **Security** tab and type the service tag in the **Set Service Tag** field.



# Heat-Sink Assembly

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **WARNING:** If you remove the heat-sink assembly from the computer when the heat sink is hot, *do not touch* the metal housing of the heat-sink assembly.
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Heat-Sink Assembly

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the hard-drive assembly. See "Removing the Hard-Drive Assembly" on page 19.
- 6 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 7 Remove the memory module(s). See "Removing the Memory Module(s)" on page 27.
- 8 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 9 Remove the wireless mini-card. See "Removing the Mini-Card" on page 41.

- 10 Remove the display assembly. See "Removing the Display Assembly" on page 45.
- 11 Remove the thermal fan. See "Removing the Thermal Fan" on page 69.
- 12 Follow the instructions from step 12 to step 17 in "Removing the System Board" on page 73.
- 13 In the sequential order, as indicated on the heat sink, loosen the four captive screws that secure the heat sink-assembly to the system board.
- 14 Lift the heat-sink assembly away from the system board.



1 heat-sink assembly

2 captive screws (4)

## Replacing the Heat-Sink Assembly



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

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Clean the thermal grease from the bottom of the heat sink and reapply it.







- 3** Align the four captive screws on the heat sink with the screw holes on the system board and tighten the screws in sequential order as indicated on the heat sink.
- 4** Follow the instructions from step 2 to step 9 in "Replacing the System Board" on page 75.
- 5** Replace the wireless mini-card. See "Replacing the Mini-Card" on page 42.
- 6** Replace the thermal fan. See "Replacing the Thermal Fan" on page 70.
- 7** Replace the display assembly. See "Replacing the Display Assembly" on page 47.
- 8** Replace the memory module(s). See "Replacing the Memory Module(s)" on page 28.
- 9** Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.
- 10** Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 11** Replace the hard-drive assembly. See "Replacing the Hard-Drive Assembly" on page 21.
- 12** Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 13** Replace the module cover. See "Replacing the Module Cover" on page 16.
- 14** Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

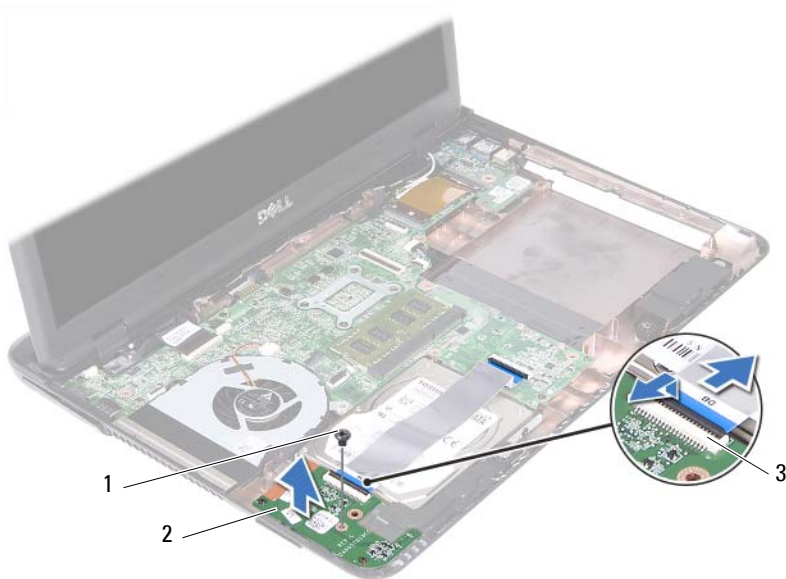


## Media-Card Reader Board

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Media-Card Reader Board

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the keyboard. See "Removing the Keyboard" on page 31.
- 6 Remove the palm-rest assembly. See "Removing the Palm-Rest Assembly" on page 35.
- 7 Lift the securing latches and disconnect the media-card reader board cable from the connectors on the system board and the media-card reader board.
- 8 Remove the screw that secures the media-card reader board to the computer base.



- 1 screw
  - 2 media-card reader board
  - 3 media-card reader board cable connectors (2)
- 9 Lift the media-card reader board away from the computer base.

## Replacing the Media-Card Reader Board

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Align the media-card reader board with the alignment poles on the computer base.
- 3 Replace the screw that secures the media-card reader board to the computer base.
- 4 Slide the cable into the connectors on the system board and the media-card reader board, and then press down the securing latches.
- 5 Replace the palm-rest assembly. See "Replacing the Palm-Rest Assembly" on page 38.





- 6** Replace the keyboard. See "Replacing the Keyboard" on page 33.
- 7** Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 8** Replace the module cover. See "Replacing the Module Cover" on page 16.
- 9** Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

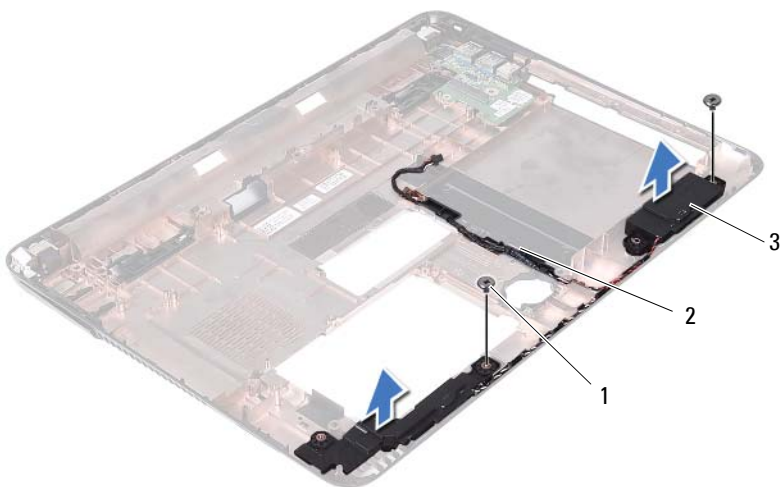


# Speakers

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **CAUTION:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on your computer).
-  **CAUTION:** To help prevent damage to the system board, remove the main battery (see "Removing the Battery" on page 13) before working inside the computer.

## Removing the Speakers

- 1 Follow the instructions in "Before You Begin" on page 9.
- 2 Remove the battery. See "Removing the Battery" on page 13.
- 3 Remove the module cover. See "Removing the Module Cover" on page 15.
- 4 Follow the instructions from step 4 to step 5 in "Removing the Optical Drive" on page 23.
- 5 Remove the hard-drive assembly. See "Removing the Hard-Drive Assembly" on page 19.
- 6 Follow the instructions in step 5 to step 17 in "Removing the System Board" on page 73.
- 7 Remove the media-card reader board. See "Removing the Media-Card Reader Board" on page 83.
- 8 Note the speakers cable routing and remove the cable from the routing guides.
- 9 Remove the two screws that secure the speakers to the computer base.



- 1 screws (2)
- 3 speakers (2)

- 2 speaker cable

**10** Lift the speakers, along with the speaker cable, off the computer base.

## Replacing the Speakers

- 1** Follow the instructions in "Before You Begin" on page 9.
- 2** Route the speaker cables through the routing guides.
- 3** Align the speakers with the alignment posts on the computer base and place the speakers in the computer base.
- 4** Replace the two screws that secure the speakers to the computer base.
- 5** Replace the media-card reader board. See "Replacing the Media-Card Reader Board" on page 84.
- 6** Replace the hard-drive assembly. See "Replacing the Hard-Drive Assembly" on page 21.



- 7** Follow the instructions in step 3 to step 16 in "Replacing the System Board" on page 75.
- 8** Follow the instructions from step 5 to step 6 in "Replacing the Optical Drive" on page 25.
- 9** Replace the module cover. See "Replacing the Module Cover" on page 16.
- 10** Replace the battery. See "Replacing the Battery" on page 14.



**CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**



# System Setup

Use the system setup to:

- Change the system configuration information after you add, change, or remove any hardware in your computer
- Set or change a user-selectable option such as the user password
- Read the current amount of memory or set the type of hard drive installed



**NOTE:** Before you change system setup, it is recommended that you note the system-setup screen information for future reference.

## Entering System Setup

- 1 Turn on (or restart) your computer.
- 2 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 has 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 Microsoft Windows desktop. Then, shut down your computer. See "Turning Off Your Computer" on page 9 and try again.

### System Setup Screens

The system-setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into three areas: the **setup item**, active **help screen**, and **key functions**.

<p><b>Setup Item</b> — This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.</p> <p>Scroll up and down the list with the up- and down-arrow keys. As an option is highlighted, the <b>Help Screen</b> displays more information about that option and available settings.</p>	<p><b>Help Screen</b> — This field appears on the right side of the system setup window and contains information about each option listed in the <b>Setup Item</b>. In this field you can view information about your computer and make changes to your current settings.</p> <p>Press the up-arrow and down-arrow keys to highlight an option. Press &lt;Enter&gt; to make that selection active and return to the <b>Setup Item</b>.</p> <p><b>NOTE:</b> Not all settings listed in the <b>Setup Item</b> are changeable.</p>
<p><b>Key Functions</b> — This field appears below the <b>Help Screen</b> and lists keys and their functions within the active system setup field.</p>	

## System Setup Options

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

Setup	
System Time	Displays the current time in hh:mm:ss format
System Date	Displays the current date in mm/dd/yyyy format
BIOS Version	Displays the BIOS version number
Product Name	Displays the product name
Service Tag	Displays the service tag of the computer
Asset Tag	Displays the asset tag of the computer when the asset tag is present
CPU Type	Displays the CPU type
CPU Speed	Displays the CPU speed
CPU ID	Displays the CPU ID

CPU Cache	
L1 Cache size	Displays the L1 cache size
L2 Cache size	Displays the L2 cache size
L3 Cache size	Displays the L3 cache size
Fixed HDD	Displays the hard drive information
SATA ODD	Displays the optical drive information
AC Adapter Type	Displays AC adapter type
Memory Information	
System Memory	Indicates the amount of memory installed in MB
Extended Memory	Indicates the amount of extended memory
Memory Speed	Indicates the memory speed in MHz

## Advanced

- Intel SpeedStep - This field enables or disables the Intel SpeedStep mode of the processor.
- Virtualization - When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
- Integrated NIC - Enables/disables the on-board LAN controller.
- USB Emulation - Enables/disables the system's basic input/output system (BIOS) controls USB keyboards and mice.
- USB PowerShare - Enables/disables charging USB devices when system is off.
- USB Wake Support - Allows you to enable USB devices to wake the system from standby. This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed before standby, the BIOS will remove power from all of the USB ports to conserve battery power.
- SATA Operation - Two modes are available:  
AHCI Mode ATA Mode
- Adapter Warnings - Choose if the system must display warning messages when you use certain power adapters. The system displays these messages if you attempt to use a power adapter that has too little capacity for your configuration.
- Function Key Behavior - Allows you to configure function key behavior.
- Charger Behavior - Enable/disable charger behavior.
- External USB Ports - Enable/disable external USB ports

Advanced (Miscellaneous  
Devices)

Set Admin Password	Allows to set, change, or delete the administrator password <b>NOTE:</b> Deleting administrator password deletes the system password. Hence, set the administrator password before setting the system password.
Set System Password	Allows to set, change, or delete the system password
Set HDD Password	Allows to set, change, or delete the hard drive password
Password on Boot	Enables/disables Password on Boot
Password ByPass	Allows you to bypass the system (boot) password and the internal HDD password prompts during a system restart from the standby state
Computrace	The Absolute Anti-Theft solution is disabled by default.

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## Boot

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1st Boot Priority	Specifies the boot sequence from the available devices  Removable Drive; Hard Drive; USB Storage Device; CD/DVD/CD-RW Drive; Network; Disabled (Hard Drive by default)
2nd Boot Priority	Specifies the boot sequence from the available devices  Removable Drive; Hard Drive; USB Storage Device; CD/DVD/CD-RW Drive; Network; Disabled (CD/DVD/CD-RW Drive by default)
3rd Boot Priority	Specifies the boot sequence from the available devices  Removable Drive; Hard Drive; USB Storage Device; CD/DVD/CD-RW Drive; Network; Disabled (Removable Drive by default)

4th Boot Priority	Specifies the boot sequence from the available devices  Removable Drive; Hard Drive; USB Storage Device; CD/DVD/CD-RW Drive; Network; Disabled (Network by default)
5th Boot Priority	Specifies the boot sequence from the available devices  Removable Drive; Hard Drive; USB Storage Device; CD/DVD/CD-RW Drive; Network; Disabled (USB Storage Device by default)
<hr/> <b>Exit</b>	
Exit Options	Provides options to <b>Save Changes and Reset</b> , <b>Discard Changes and Reset</b> , <b>Restore Defaults</b> , <b>Discard Changes and Save Changes</b>

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## Boot Sequence

This feature allows you to change the boot sequence for devices.

### Boot Options

- **Removable Drive** — The computer attempts to boot from the removable drive. If no operating system is on the drive, the computer generates an error message.
- **Hard Drive** — The computer attempts to boot from the primary hard drive. If no operating system is on the drive, the computer generates an error message.
- **CD/DVD/CD-RW Drive** — The computer attempts to boot from the CD/DVD/CD-RW drive. If no CD/DVD/CD-RW is in the drive, or if the CD/DVD/CD-RW has no operating system, the computer generates an error message.
- **USB Storage Device** — Insert the memory device into a USB connector and restart the computer. When **F12 Boot Options** appears in the lower-right corner of the screen, press <F12>. The BIOS detects the device and adds the USB flash option to the boot menu.



**NOTE:** To boot to a USB device, the device must be bootable. To ensure that your device is bootable, check the device documentation.



- **Network** — The computer attempts to boot from the network. If no operating system is found on the network, the computer generates an error message.

## Changing Boot Sequence for the Current Boot

You can use this feature to change the current boot sequence, for example, to boot from the CD/DVD/CD-RW drive to run Dell Diagnostics from the *Drivers and Utilities* disc. On completion of diagnostic tests, the previous boot sequence is restored.

- 1 If you are booting from a USB device, connect the USB device to a USB connector.
- 2 Turn on (or restart) your computer.
- 3 When **F2 Setup**, **F12 Boot Options** appears in the lower-right corner of the screen, press <F12>.



**NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then shut down your computer and try again.

The **Boot Device Menu** appears, listing all available boot devices.

- 4 On the **Boot Device Menu** choose the device you want to boot from. For example, if you are booting to a USB memory key, highlight **USB Storage Device** and press <Enter>.



**NOTE:** To boot to a USB device, the device must be bootable. To ensure your device is bootable, check the device documentation.

## Changing Boot Sequence for Future Boots

- 1 Enter system setup. See "Entering System Setup" on page 91.
- 2 Use the arrow keys to highlight the **Boot** menu option and press <Enter> to access the menu.



**NOTE:** Write down your current boot sequence in case you want to restore it.

- 3 Press the up- and down-arrow keys to move through the list of devices.
- 4 Press plus (+) or minus (–) to change the boot priority of the device.







# Flashing the BIOS

The BIOS may require flashing when an update is available or when replacing the system board. To flash the BIOS:

- 1 Turn on the computer.
- 2 Go to [support.dell.com/support/downloads](http://support.dell.com/support/downloads).
- 3 Locate the BIOS update file for your computer.



**NOTE:** The Service Tag for your computer is located on a label at the bottom of your computer.

If you have your computer's Service Tag:

- a Click **Enter a Tag**.
- b Enter your computer's Service Tag in the **Enter a service tag** field, click **Go**, and proceed to step 4.

If you do not have your computer's Service Tag:

- a Click **Select Model**.
- b Select the type of product in the **Select Your Product Family** list.
- c Select the product brand in the **Select Your Product Line** list.
- d Select the product model number in the **Select Your Product Model** list.



**NOTE:** If you have selected a different model and want to start over again, click **Start Over** on the top right of the menu.

- e Click **Confirm**.
- 4 A list of results appears on the screen. Click **BIOS**.
- 5 Click **Download Now** to download the latest BIOS file. The **File Download** window appears.
- 6 Click **Save** to save the file on your desktop. The file downloads to your desktop.
- 7 Click **Close** if the **Download Complete** window appears. The file icon appears on your desktop and is titled the same as the downloaded BIOS update file.

- 8 Double-click the file icon on the desktop and follow the instructions that appear on the screen.