Dell XPS 13
Owner's Manual

Computer model: L321x **Regulatory model: P29G** **Regulatory type: P29G001**

Notes, Cautions, and Warnings

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

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: P29G **Regulatory type: P29G001**

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Before You Begin

Turn Off Your Computer and Connected Devices

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 click **Shut Down**.

   Microsoft Windows shuts down and then the computer turns off.

   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 telephone cables, network cables, and attached devices from your computer.
5. After the computer is unplugged, press and hold the power button for about 5 seconds to ground the system board.

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 additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

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.

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 power source.

CAUTION: Only a certified service technician is authorized to remove the computer cover and access any of the components inside the computer. See the safety instructions for complete information about safety precautions, working inside your computer, and protecting against electrostatic discharge.

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 connectors and ports are correctly oriented and aligned.

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

Recommended Tools

The procedures in this document may require the following tools:

- Torx 5 screwdriver
- Phillips screwdriver
- Plastic scribe

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After Working Inside Your Computer

After you complete replacement procedures, ensure the following:

- Replace all screws and ensure that no stray screws remain inside your computer
- Connect any external devices, cables, cards, and any other part(s) you removed before working on your computer
- Connect your computer and all attached devices to their electrical outlets

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

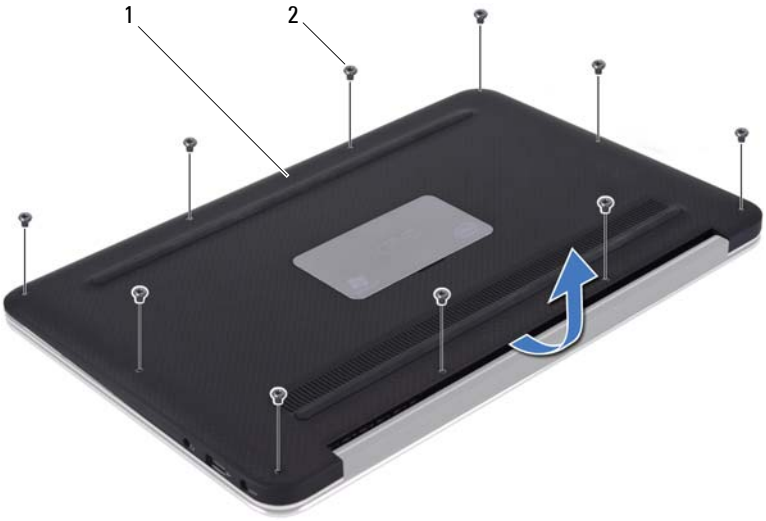
3

Base Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Removing the Base Cover

1. Close the display and turn the computer over.
2. Using a Torx 5 screwdriver, remove the screws that secure the base cover to the palm-rest assembly.
3. Using your fingertips, lift the base cover starting from the back of your computer.
4. Remove the base cover off the palm-rest assembly.



1 base cover 2 screws (10)

Replacing the Base Cover

1. Align the base cover with the palm-rest assembly and press the base cover into place.
2. Using a Torx 5 screwdriver, replace the screws that secure the base cover to the palm-rest assembly.
3. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Power-Light Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

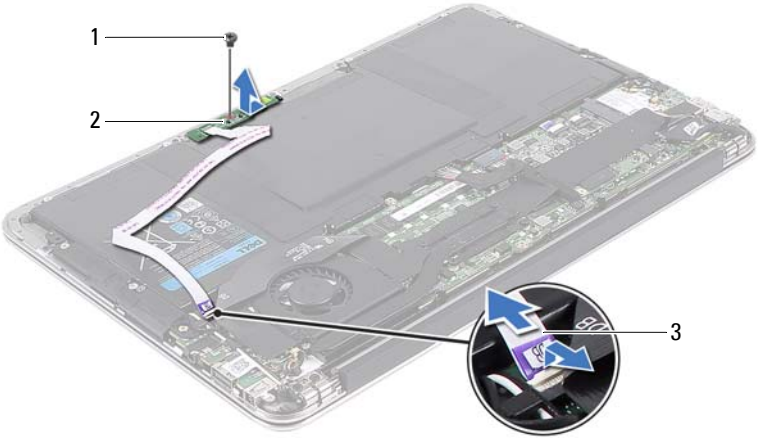
1 Remove the base cover. See "Removing the Base Cover" on page 13.

Removing the Power-Light Board

1 Lift the connector latch and pull the pull-tab to disconnect the power-light board cable from the connector on the I/O board.

2 Remove the screw that secures the power-light board to the palm-rest assembly.

3 Lift the power-light board off the palm-rest assembly.



1 screw

2 power-light board cable

3 power-light board

Replacing the Power-Light Board

1. Align the screw hole on the power-light board with the screw hole on the palm-rest assembly.
2. Replace the screw that secures the power-light board to the palm-rest assembly.
3. Slide the power-light board cable into the system-board connector and press down on the connector latch to secure the cable.

Postrequisites

1. Replace the base cover. See "Replacing the Base Cover" on page 14.
2. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Battery

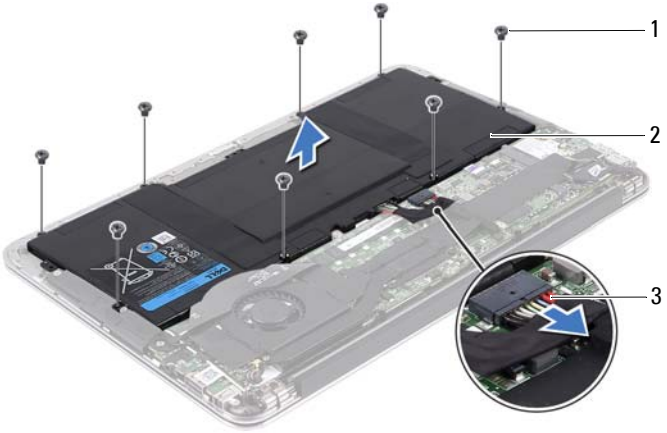
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.

Removing the Battery

1. Disconnect the battery cable from the system-board.
2. Remove the screws that secure the battery to the palm-rest assembly.
3. Lift the battery off the palm-rest assembly.



1	screws (8)	2	battery
3	battery cable		

Replacing the Battery

1. Align the screw holes on the battery with the screw holes on the palm-rest assembly.
2. Replace the screws that secure the battery to the palm-rest assembly.
3. Connect the battery cable to the system-board.

Postrequisites

1. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
2. Replace the base cover. See "Replacing the Base Cover" on page 14.
3. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Speakers

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

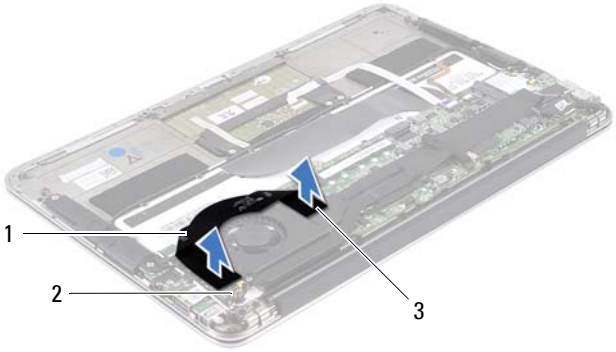
Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.

Removing the Speakers

Left Speaker

1. Disconnect the I/O cable from the I/O board connector and system-board connector.



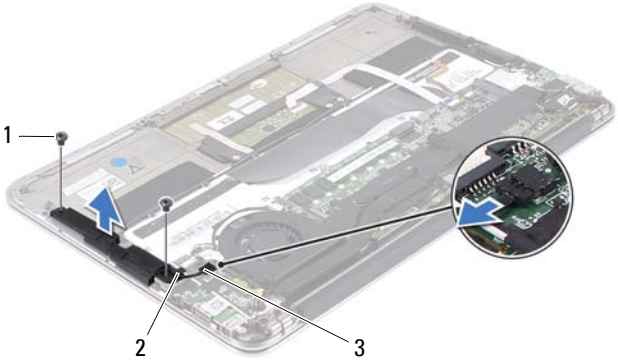
1 I/O cable
2 I/O board connector
3 system-board connector

2 Disconnect the left-speaker cable from the I/O board connector.

3 Release the Mini-Card cables from the routing guide on the left speaker.

4 Remove the two screws that secure the left speaker to the palm-rest assembly.

5 Lift the left speaker off the palm-rest assembly.



1	screws (2)	2	routing guide
3	left-speaker cable		

Right Speaker

1. Disconnect the right-speaker cable from the system-board connector.
2. Remove the two screws that secure the right speaker to the palm-rest assembly.
3. Lift the right speaker off the palm-rest assembly.

1 screws (2) 2 right-speaker cable

Replacing the Speakers

Left Speaker

1. Align the screw holes on the left speaker with the screw holes on the palm-rest assembly.
2. Replace the two screws that secure the left speaker to the palm-rest assembly.
3. Route the mini-card cables through the routing guide on the left speaker.
4. Connect the left-speaker cable to the I/O board connector.
5. Connect the I/O cable to the I/O board connector and system-board connector.

Right Speaker

1. Align the screw holes on the right speaker with the screw holes on the palm-rest assembly.
2. Replace the two screws that secure the right speaker to the palm-rest assembly.
3. Connect the right-speaker cable to the system-board connector.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 18.
2. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
3. Replace the base cover. See "Replacing the Base Cover" on page 14.
4. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Wireless Mini-Card

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

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

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

Your computer has one half mini-card slot which supports a Wireless Local Area Network (WLAN) + Bluetooth combo card.

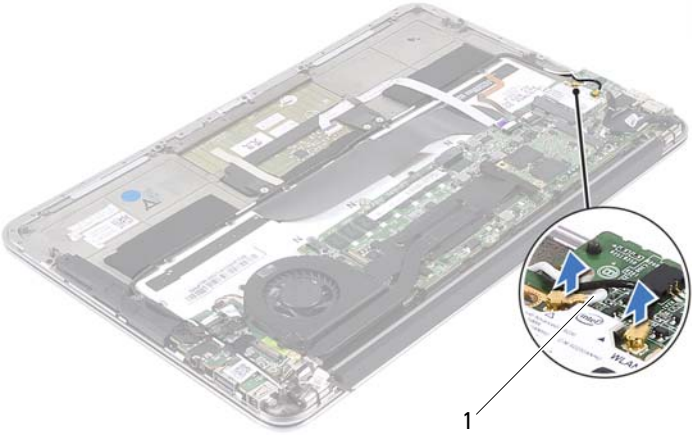
Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the right speaker. See "Removing the Speakers" on page 19.

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

Removing the Mini-Card

1 Disconnect the mini-card cables from the connectors on the mini-card.



1 mini-card cables (2)

2 Remove the screw that secures the mini-card to the system board.

3 Slide and remove the mini-card out of the system-board connector.

1 screw
2 mini-card
3 system-board connector

Replacing the Mini-Card

1. Remove the new mini-card from its packaging.
2. Align the notch on the mini-card with the tab in the system-board connector.

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 system-board connector.
4. Press the other end of the mini-card down into the slot on the system board and replace the screw that secures the mini-card to the system board.
5. Connect the mini-card cables to the connectors on the mini-card.

   The following table provides the mini-card cable color scheme for the Mini-Card supported by your computer.

Connectors on the Mini-Card	Mini-Card Cable Color Scheme
WLAN + Bluetooth (2 cables)	
Main WLAN + Bluetooth (white triangle)	white
Auxiliary WLAN + Bluetooth (black triangle)	black

Postrequisites

1. Replace the right speaker. See "Replacing the Speakers" on page 22.
1. Replace the battery. See "Replacing the Battery" on page 18.
2. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
3. Replace the base cover. See "Replacing the Base Cover" on page 14.
4. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Solid-State Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

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

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

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.

Removing the Solid-State Drive

1. Peel the tape that is adhered over the solid-state drive.

1 tape

2. Remove the screw that secures the solid-state drive to the system board.

3 Slide and remove the solid-state drive out of the system-board connector.

1 screw
2 system-board connector
3 solid-state drive

Replacing the Solid-State Drive

1 Align the notch on the solid-state drive with the tab in the system-board connector.

CAUTION: Use firm and even pressure to slide the solid-state drive into place. If you use excessive force, you may damage the connector.

2 Insert the solid-state drive connector at a 45-degree angle into the system-board connector.

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

4 Adhere the tape over the solid-state drive.

Postrequisites

1 Replace the battery. See "Replacing the Battery" on page 18.

2 Replace the power-light board.
See "Replacing the Power-Light Board" on page 16.

3 Replace the base cover. See "Replacing the Base Cover" on page 14.

4 Follow the instructions in "After Working Inside Your Computer" on page 11.

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Heat Sink

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.

Removing the Heat Sink

1. In sequential order (indicated on the heat sink), remove the screws that secure the heat sink to the system board.
2. Lift the heat sink off the system board.

1 heat sink

2 screws (4)

Replacing the Heat Sink

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.

1. Clean the thermal grease from the bottom of the heat sink and reapply it.
2. Align the screw holes on the heat sink with the screw holes on the system board.
3. In sequential order (indicated on the heat sink), replace the screws that secure the heat sink to the system board.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 18.
2. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
3. Replace the base cover. See "Replacing the Base Cover" on page 14.
4. Follow the instructions in "After Working Inside Your Computer" on page 11.

10

Fan

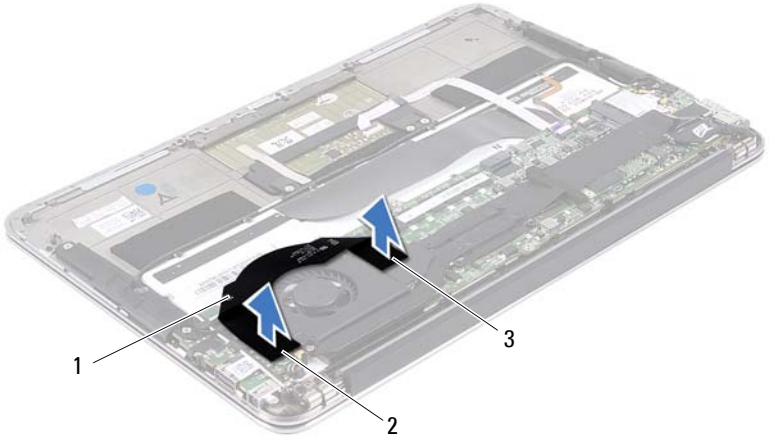
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.

Removing the Fan

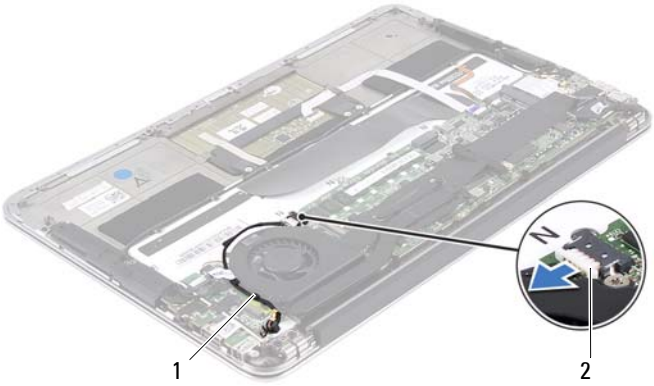
1. Disconnect the I/O cable from the I/O board connector and system-board connector.



1 I/O cable
2 I/O board connector
3 system-board connector

2 Disconnect the power-adapter connector cable from the system-board connector.

3 Release the power-adapter connector cable from the routing guides on the fan.

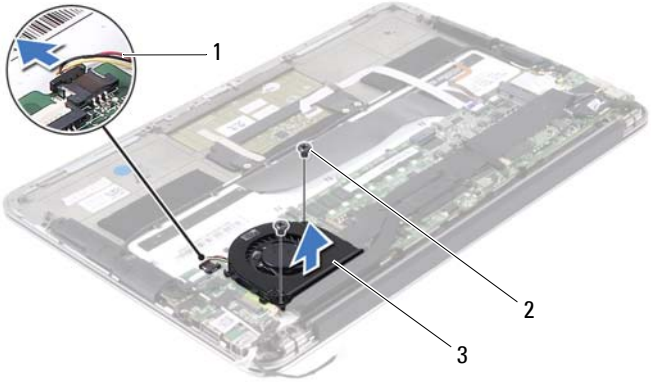


1 routing guides 2 power-adapter connector cable

4 Disconnect the fan cable from the I/O board connector.

5 Remove the screws that secure the fan to the palm-rest assembly.

6 Lift the fan off the palm-rest assembly.



1 fan cable 2 screws (2)

3 fan

Replacing the Fan

1. Align the screw holes on the fan with the screw holes on the palm-rest assembly.
2. Replace the screws that secure the fan to the palm-rest assembly.
3. Connect the fan cable to the I/O board connector.
4. Route the power-adapter connector cable through the routing guides on the fan.
5. Connect the power-adapter connector cable to the system-board connector.
6. Connect the I/O cable to the I/O board connector and system-board connector.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 18.
2. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
3. Replace the base cover. See "Replacing the Base Cover" on page 14.
4. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Power-Adapter Connector

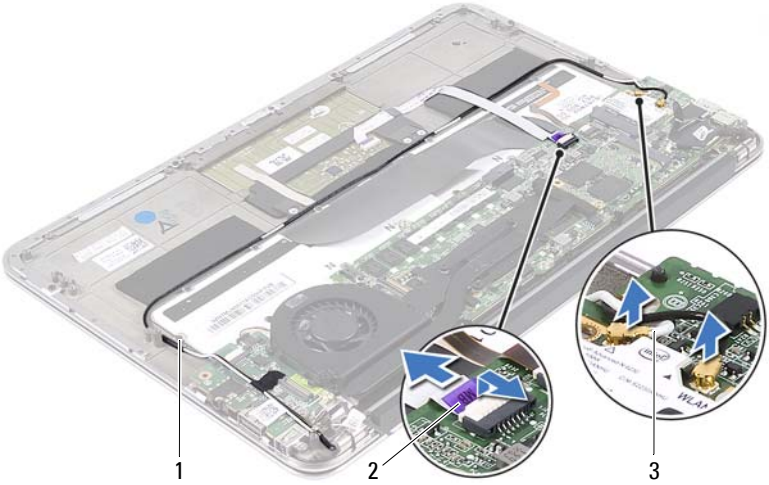
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the speakers. See "Removing the Speakers" on page 19.

Removing the Power-Adapter Connector

1. Disconnect the mini-card cables from the connectors on the mini-card.
2. Lift the connector latch and pull the pull-tab to disconnect the touchpad cable from the connector on the system board.
3. Release the mini-card cables from the routing guides.



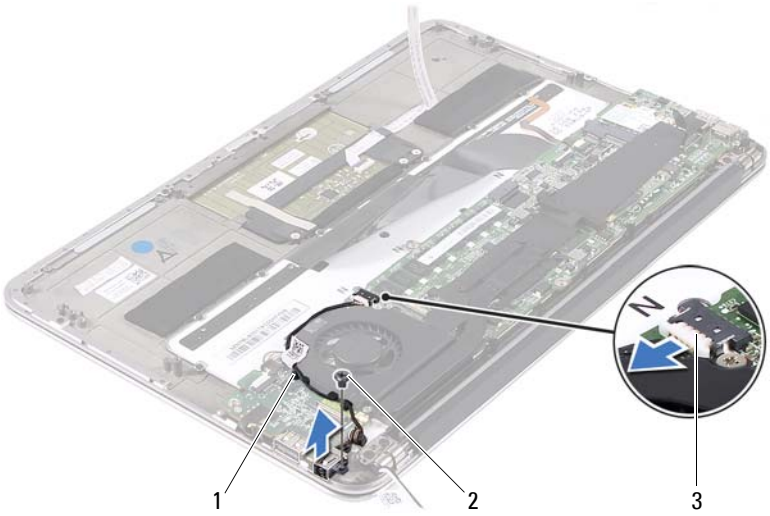
1	routing guides	2	touchpad cable
3	mini-card cables (2)		

4 Disconnect the power-adapter connector cable from the system-board connector.

5 Release the power-adapter connector cable from the routing guides on the fan.

6 Remove the screw that secures the power-adapter connector to the palm-rest assembly.

7 Lift the power-adapter connector off the palm-rest assembly.



1	routing guides	2	screw
3	power-adapter connector cable		

Replacing the Power-Adapter Connector

1. Align the screw hole on the power-adapter connector with the screw hole on the palm-rest assembly.
2. Replace the screw that secures the power-adapter connector to the palm-rest assembly.
3. Route the power-adapter connector cable through the routing guides on the fan.
4. Connect the power-adapter connector cable to the system-board connector.
5. Route the mini-card cables through the routing guides.
6. Slide the touchpad cable into the system-board connector and press down on the connector latch to secure the cable.

7 Connect the mini-card cables to the connectors on the mini-card.

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

Connectors on the Mini-Card	Mini-Card Cable Color Scheme
WLAN + Bluetooth (2 cables)	
Main WLAN + Bluetooth (white triangle)	white
Auxiliary WLAN + Bluetooth (black triangle)	black

Postrequisites

1 Replace the speakers. See "Replacing the Speakers" on page 22.

2 Replace the battery. See "Replacing the Battery" on page 18.

3 Replace the power-light board.
See "Replacing the Power-Light Board" on page 16.

4 Replace the base cover. See "Replacing the Base Cover" on page 14.

5 Follow the instructions in "After Working Inside Your Computer" on page 11.

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I/O Board

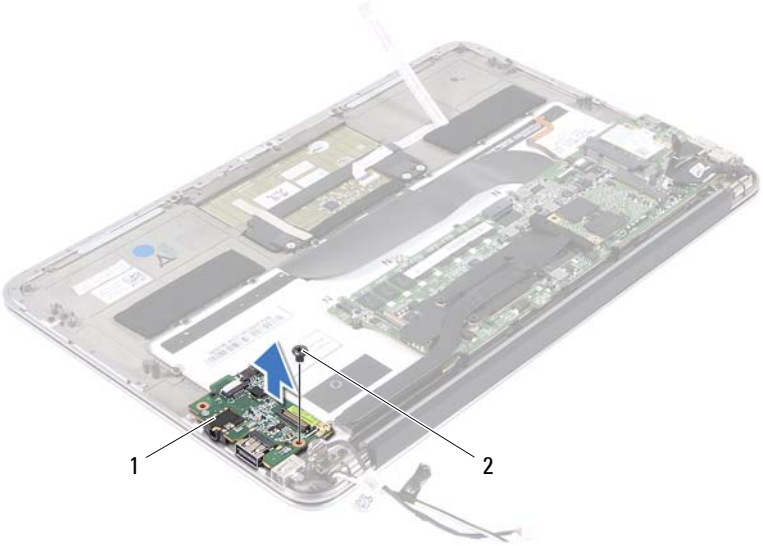
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the speakers. See "Removing the Speakers" on page 19.
5. Remove the power-adapter connector.
   See "Removing the Power-Adapter Connector" on page 35.
6. Remove the fan. See "Removing the Fan" on page 31.

Removing the I/O Board

1. Remove the screw that secures the I/O board to the palm-rest assembly.
2. Lift the I/O board off the palm-rest assembly.



1 I/O board 2 screw

Replacing the I/O Board

1. Align the screw holes on the I/O board with the screw holes on the palm-rest assembly.
2. Replace the screw that secure the I/O board to the palm-rest assembly.

Postrequisites

1. Replace the fan. See "Replacing the Fan" on page 33.
2. Replace the power-adapter connector. See "Replacing the Power-Adapter Connector" on page 37.
3. Replace the speakers See "Replacing the Speakers" on page 22.
4. Replace the battery. See "Replacing the Battery" on page 18.
5. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
6. Replace the base cover. See "Replacing the Base Cover" on page 14.
7. Follow the instructions in "After Working Inside Your Computer" on page 11.

13

System Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

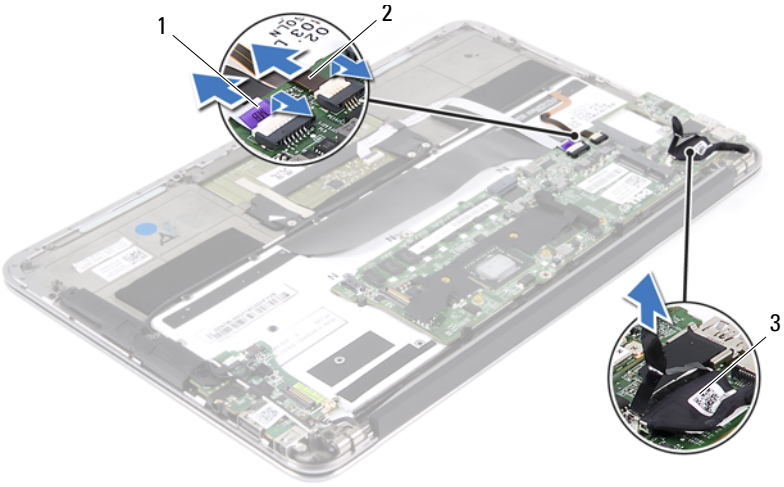
1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the right speaker. See "Removing the Speakers" on page 19.
5. Remove the mini-card. See "Removing the Mini-Card" on page 24.
6. Remove the solid-state drive.
   See "Removing the Solid-State Drive" on page 27.
7. Remove the heat sink. See "Removing the Heat Sink" on page 29.
8. Remove the fan. See "Removing the Fan" on page 31.

Removing the System Board

NOTE: Your computer's service tag is stored in the system board. You must enter the service tag in the BIOS after you replace the system-board assembly.

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

1. Disconnect the display cable from the connector on the system board.
2. Lift the connector latch and pull the pull-tab to disconnect the touchpad cable and keyboard-backlight cable from the connectors on the system board.



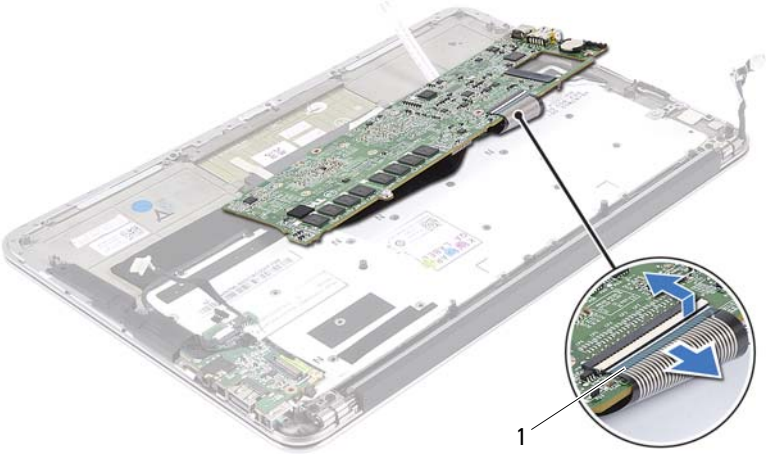
1	touchpad cable	2	keyboard-backlight cable
3	display cable		

3 Remove the screws that secure the system board to the palm-rest assembly.

1 system board 2 screws (4)

4 Turn the system board over and place it over the palm-rest assembly.

5 Lift the connector latch and disconnect the keyboard cable from the system board connector.



1 keyboard cable

Replacing the System Board

1. Slide the keyboard cable into the system-board connector and press down on the connector latch to secure the cable.
2. Align the screw holes on the system board with the screw holes on the palm-rest assembly.
3. Replace the screws that secure the system board to the palm-rest assembly.
4. Connect the display cable to the system board connector.
5. Slide the touchpad-cable and keyboard-backlight cable into the system-board connectors and press down on the latch to secure the cables.

Postrequisites

1. Replace the fan. See "Replacing the Fan" on page 33.
2. Replace the heat sink. See "Replacing the Heat Sink" on page 30.
3. Replace the solid-state drive.
   See "Replacing the Solid-State Drive" on page 28.
4. Replace the mini-card. See "Replacing the Mini-Card" on page 25.
5. Replace the right speaker. See "Replacing the Speakers" on page 22.
6. Replace the battery. See "Replacing the Battery" on page 18.
7. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
8. Replace the base cover. See "Replacing the Base Cover" on page 14.
9. Follow the instructions in "After Working Inside Your Computer" on page 11.

Entering the Service Tag in BIOS

1. Turn on the computer.
2. Press <F2> during POST to enter the system setup program.
3. Navigate to the main tab and enter the service tag in the **Service Tag Setting** field.

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Coin-Cell Battery

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

WARNING: The battery may explode if installed incorrectly. Replace the battery only with the same or equivalent type. Discard used batteries according to the manufacturer's instructions.

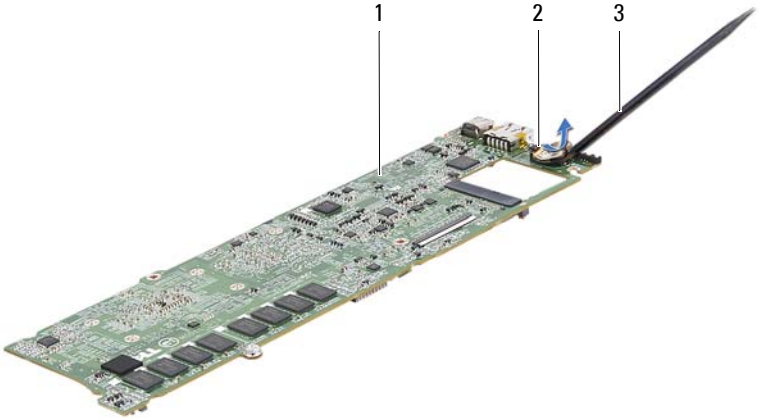
Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the Mini-Card. See "Removing the Mini-Card" on page 24.
5. Remove the solid-state drive.
   See "Removing the Solid-State Drive" on page 27.
6. Remove the heat sink. See "Removing the Heat Sink" on page 29.
7. Remove the fan. See "Removing the Fan" on page 31.
8. Remove the system board. See "Removing the System Board" on page 44.

Removing the Coin-Cell Battery

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

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



1	system board	2	coin-cell battery
3	plastic scribe		

Replacing the Coin-Cell Battery

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

Postrequisites

1. Replace the system board. See "Replacing the System Board" on page 46.
2. Replace the fan. See "Replacing the Fan" on page 33.
3. Replace the heat sink. See "Replacing the Heat Sink" on page 30.
4. Replace the solid-state drive.
   See "Replacing the Solid-State Drive" on page 28.
5. Replace the Mini-Card. See "Replacing the Mini-Card" on page 25.
6. Replace the battery. See "Replacing the Battery" on page 18.
7. Replace the power-light board.
   See "Replacing the Power-Light Board" on page 16.
8. Replace the base cover. See "Replacing the Base Cover" on page 14.
9. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Display Assembly

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the speakers. See "Removing the Speakers" on page 19.

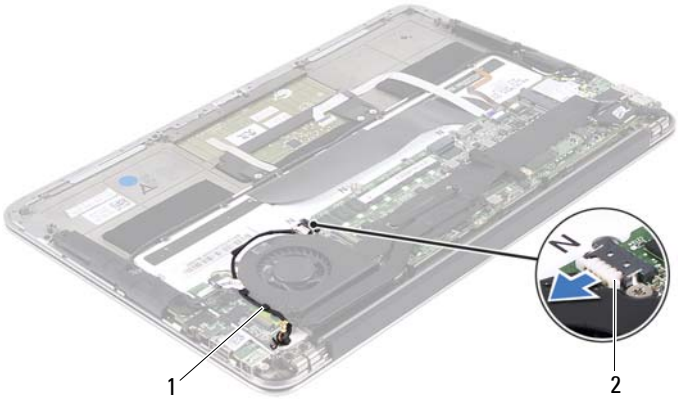
Removing the Display Assembly

1. Disconnect the display cable from the system-board connector.

1 display cable

2 Disconnect the power-adapter connector cable from the system-board connector.

3 Release the power-adapter connector cable from the routing guides on the fan.

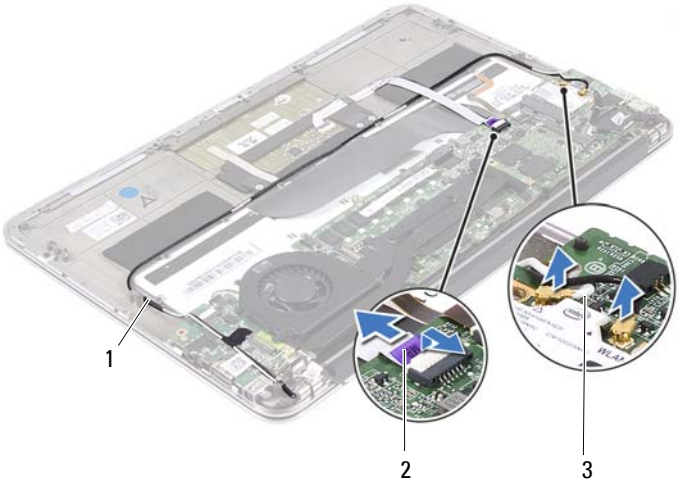


1 routing guides 2 power-adapter connector cable

4 Disconnect the mini-card cables from the connectors on the mini-card.

5 Lift the connector latch and pull the pull-tab to disconnect the touchpad cable from the connector on the system board.

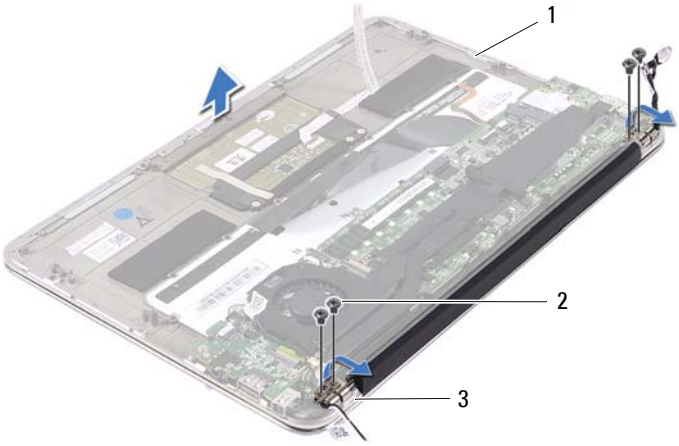
6 Release the mini-card cables from the routing guides.



1	routing guides	2	touchpad cable
3	mini-card cables (2)		

7 Remove the screws that secure the display assembly to the palm-rest assembly.

8 Gently lift the palm-rest assembly to a 90-degree angle and then release the palm-rest assembly off the display assembly.



1	palm-rest assembly	2	screws (4)
3	display hinges (2)		

Replacing the Display Assembly

1 Slide and place the palm-rest assembly over the display assembly.

2 Press down on the display hinges and ensure that the screw holes on the display hinges align with the screw holes on the palm-rest assembly.

3 Replace the screws that secure the display assembly to the palm-rest assembly.

4 Route the mini-card cables through the routing guides.

5 Slide the touchpad cable into the system-board connector and press down on the connector latch to secure the keyboard cable.

6 Connect the mini-card cables to the connectors on the mini-card.

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

Connectors on the Mini-Card	Mini-Card Cable Color Scheme
WLAN + Bluetooth (2 cables)	
Main WLAN + Bluetooth (white triangle)	white
Auxiliary WLAN + Bluetooth (black triangle)	black

7 Route the power-adapter connector cable through the routing guides on the fan.

8 Connect the power-adapter connector cable to the system-board connector.

Postrequisites

1 Replace the speakers. See "Replacing the Speakers" on page 22.

2 Replace the battery. See "Replacing the Battery" on page 18.

3 Replace the power-light board.
See "Replacing the Power-Light Board" on page 16.

4 Replace the base cover. See "Replacing the Base Cover" on page 14.

5 Follow the instructions in "After Working Inside Your Computer" on page 11.

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Keyboard

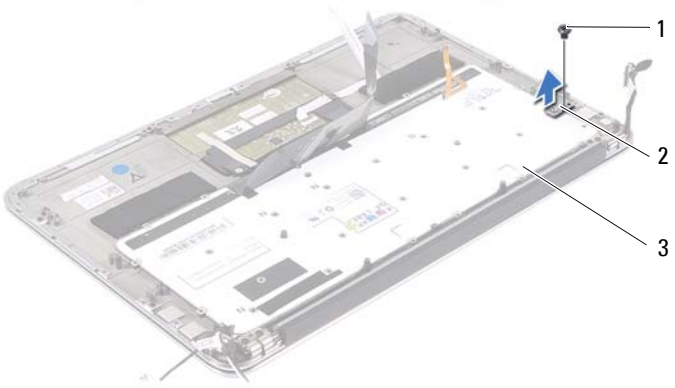
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the speakers. See "Removing the Speakers" on page 19.
5. Remove the mini-card. See "Removing the Mini-Card" on page 24.
6. Remove the solid-state drive.
   See "Removing the Solid-State Drive" on page 27.
7. Remove the heat sink. See "Removing the Heat Sink" on page 29.
8. Remove the power-adapter connector.
   See "Removing the Power-Adapter Connector" on page 35.
9. Remove the fan. See "Removing the Fan" on page 31.
10. Remove the I/O board. See "Removing the I/O Board" on page 40.
11. Remove the system board. See "Removing the System Board" on page 44.

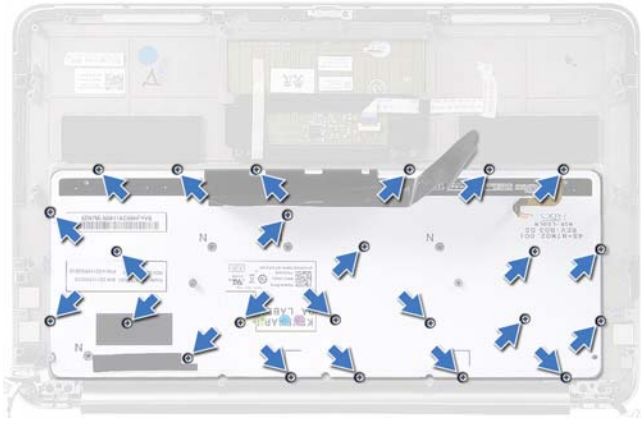
Removing the Keyboard

1. Remove the screw that secures the mini-card clamp.
2. Remove the mini-card clamp off the palm-rest assembly.



1	screw	2	mini-card clamp
3	keyboard		

3. Remove the screws that secure the keyboard to the palm-rest assembly.
4. Lift the keyboard off the palm-rest assembly.



Replacing the Keyboard

1. Align the screw holes on the keyboard with the screw holes on the palm-rest assembly.
2. Replace the screws that secure the keyboard to the palm-rest assembly.
3. Align the screw hole on the mini-card clamp with the screw hole on the palm-rest assembly.
4. Replace the screw that secures the mini-card clamp to the palm-rest assembly.

Postrequisites

1. Replace the system board. See "Replacing the System Board" on page 46.
2. Replace the I/O board. See "Replacing the I/O Board" on page 40.
3. Replace the fan. See "Replacing the Fan" on page 33.
4. Replace the power-adapter connector. See "Replacing the Power-Adapter Connector" on page 37.
5. Replace the heat sink. See "Replacing the Heat Sink" on page 30.
6. Replace the solid-state drive.
   See "Replacing the Solid-State Drive" on page 28.
7. Replace the mini-card. See "Replacing the Mini-Card" on page 25.
8. Replace the speakers. See "Replacing the Speakers" on page 22.
9. Replace the battery. See "Replacing the Battery" on page 18.
10. Replace the power-light board.
    See "Replacing the Power-Light Board" on page 16.
11. Replace the base cover. See "Replacing the Base Cover" on page 14.
12. Follow the instructions in "After Working Inside Your Computer" on page 11.

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Palm-Rest Assembly

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

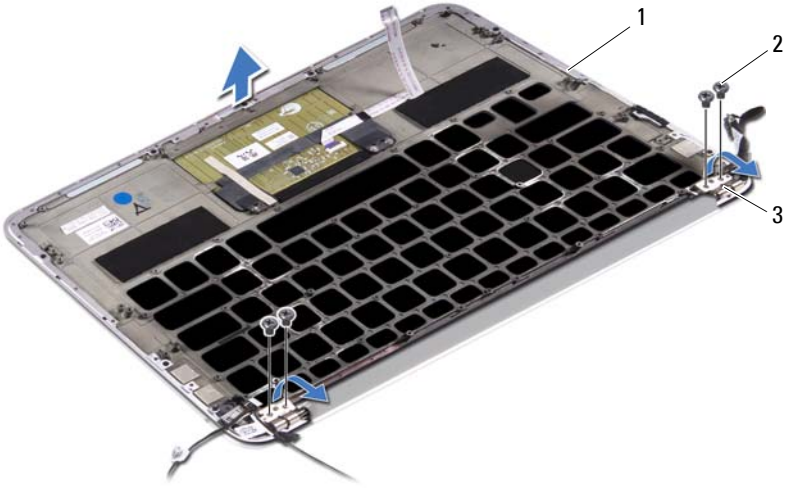
Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 13.
2. Remove the power-light board.
   See "Removing the Power-Light Board" on page 15.
3. Remove the battery. See "Removing the Battery" on page 17.
4. Remove the speakers. See "Removing the Speakers" on page 19.
5. Remove the mini-card. See "Removing the Mini-Card" on page 24.
6. Remove the solid-state drive.
   See "Removing the Solid-State Drive" on page 27.
7. Remove the heat sink. See "Removing the Heat Sink" on page 29.
8. Remove the power-adapter connector.
   See "Removing the Power-Adapter Connector" on page 35.
9. Remove the fan. See "Removing the Fan" on page 31.
10. Remove the system board. See "Removing the System Board" on page 44.
11. Remove the I/O board. See "Removing the I/O Board" on page 40.
12. Remove the keyboard. See "Removing the Keyboard" on page 60.

Removing the Palm-Rest Assembly

1. Remove the screws that secure the display assembly to the palm-rest assembly.
2. Gently lift the palm-rest assembly to a 90-degree angle and then release the palm-rest assembly off the display assembly.

CAUTION: Carefully separate the palm-rest assembly from the display assembly to avoid damage to the display assembly.



1	palm-rest assembly	2	screws (4)
3	display hinges (2)		

Replacing the Palm-Rest Assembly

1. Slide and place the palm-rest assembly over the display assembly.
2. Press down on the display hinges and ensure the screw holes in the display hinges align with the screw holes on the palm-rest assembly.
3. Replace the screws that secure the palm-rest assembly to the display assembly.

Postrequisites

1. Replace the keyboard. See "Replacing the Keyboard" on page 61.
2. Replace the system board. See "Replacing the System Board" on page 46.
3. Replace I/O board. See "Replacing the I/O Board" on page 40.
4. Replace the fan. See "Replacing the Fan" on page 33.
5. Replace the power-adapter connector.
   See "Replacing the Power-Adapter Connector" on page 37.
6. Replace the heat sink. See "Replacing the Heat Sink" on page 30.
7. Replace the solid-state drive.
   See "Replacing the Solid-State Drive" on page 28.
8. Replace the mini-card. See "Replacing the Mini-Card" on page 25.
9. Replace the speakers. See "Replacing the Speakers" on page 22.
10. Replace the battery. See "Replacing the Battery" on page 18.
11. Replace the power-light board.
    See "Replacing the Power-Light Board" on page 16.
12. Replace the base cover. See "Replacing the Base Cover" on page 14.
13. Follow the instructions in "After Working Inside Your Computer" on page 11.

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System Setup

Overview

Use the system setup to:

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

NOTE: Before you change system setup, it is recommended that you write down the system setup screen information for future reference.

Entering System Setup

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 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, turn off your computer 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**.

Setup Item — 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. Scroll up and down the list with the up- and down-arrow keys. As an option is highlighted, the **Help Screen** displays more information about that option and available settings.	**Help Screen** — This field appears on the right side of the system setup window and contains information about each option listed in the **Setup Item**. In this field you can view information about your computer and make changes to your current settings. Press the up- and down-arrow keys to highlight an option. Press <Enter> to make that selection active and return to the **Setup Item**. **NOTE:** Not all settings listed in the **Setup Item** are changeable.
Key Functions — This field appears below the **Help Screen** and lists keys and their functions within the active system setup field.	

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.

Main	
System Time (hh:mm:ss)	Displays the current time.
System Date (mm:dd:yy)	Displays current date.
BIOS Version	Displays the BIOS version number.
Product Name	Displays the product name.
Service Tag	Displays the service tag of your computer.
Asset Tag	Displays the asset tag of the computer.
CPU Type	Displays the processor type.
CPU Speed	Displays the processor speed.
CPU ID	Displays the processor identification code.

CPU Cache	
L1 Cache	Displays the processor L1 cache size.
L2 Cache	Displays the processor L2 cache size.
L3 Cache	Displays the processor L3 cache size.
Fixed HDD	Displays the device name and size.
AC Adapter Type	Displays the device name and type.
System Memory	Displays the system memory.
Extended Memory	Displays the extended memory.
Memory Speed	Displays the memory speed.
Keyboard Type	Displays the keyboard type.

Advanced

Intel (R) Speedstep (TM)	If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
Virtualization	If enabled, a Virtual Machine Monitor (VMM) will be able to access your computer.
USB Emulation	If enabled, defines how the BIOS controls USB devices.
USB Powershare	If enabled, external devices can be charged even when the computer is turned off.
USB Wake Support	If enabled, USB devices can be configured to wake the computer from Standby.
SATA Operation	If enabled, configures the operating mode of the integrated SATA controller.
Adapter Warnings	If enabled, the BIOS will display a warning message when the power adapter used is not compatible.
Function Key Behavior	If enabled, you can use the multimedia keys directly without using the function key combination.

Battery Health	Displays the battery health of your computer.
Intel (R) Smart Connect Technology	If enabled, allows your computer to check for updates even when in Sleep state.
Intel (R) Rapid Start Technology	
iRST Support	If enabled, will allow you to configure a RAID controller on your system.
Entry on S3 RTC wake	If enabled, will wake the computer before it reaches the hibernate state.
Entry after	If enabled, will allow you to set a timer to wake the computer at a particular interval.
Entry on S3 critical battery event	If enabled, will wake the computer and alert you when the battery level is low.
Miscellaneous Devices	
External USB Ports	Allows you to enable or disable external USB ports.

Security	
Set Service Tag	Allows you to enter the service tag of your computer.
Admin Password is:	Displays the admin account password.
System Password is:	Displays the system password.
HDD Password State	Displays the HDD password state.
Set Admin Password	Allows you to set the admin password.
Set System Password	Allows you to set the system password.
Set HDD Password	Allows you to set the HDD password.
Password Change:	Displays whether you have access to change passwords.
Computrace:	Allows you to track your computer, if it is lost or stolen.

Boot	
Boot Priority Order	
Removable Drive	Allows you to boot the system using a removable (external) drive.
Hard Drive	Allows you to boot the system from the primary hard drive.
USB Storage Device	Allows you to boot the system from a USB storage device.
CD/DVD/CD-RW Drive	Allows you to boot the system from the optical drive.
Exit	
Exit Saving Changes	Allows you to save the changes made and exit the BIOS.
Exit discarding Changes	Allows you to discard the changes made and exit the BIOS.
Load Setup Defaults	Allows you to load the default BIOS settings.
Discard Changes	Discards the changes made to the BIOS.
Save Changes	Saves the changes made to the BIOS.

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.
- **USB Storage Device** — Insert the memory device into a USB port 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.

- **CD/DVD/CD-RW Drive** — The computer attempts to boot from the optical drive. If no disc is in the drive, or if the disc is not bootable, 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 optical drive to run Dell Diagnostics from the *Drivers and Utilities* disc. The previous boot sequence is restored at the next boot.

1. If you are booting from a USB device, connect the USB device to a USB port.
2. Turn on (or restart) your computer.
3. When `F12 Boot Options` 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 Priority Order** menu appears, listing all available boot devices.

4. On the **Boot Priority Order** 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>.

Changing Boot Sequence for Future Boots

1. Enter system setup. See "Entering System Setup" on page 67.
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.

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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**.
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. For more information, see the Quick Start Guide that shipped with your computer.

   If you have your computer's Service Tag or Express Service Code:

   a. Enter your computer's Service Tag or Express Service Code in the **Service Tag or Express Service Code** field.

   b. Click **Submit** and proceed to step 4.

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

   a. Select one of the following options:

      - **Automatically detect my Service Tag for me**
      - **Choose from My Products and Services List**
      - **Choose from a list of all Dell products**

   b. Click **Continue** and follow the instructions on the screen.
4. A list of applications and drivers available for your computer appears on the screen. Click **BIOS**.
5. Click **Download File** to download the latest BIOS file.
6. Select your preferred download method in the **Please select your download method below** window; click **Download Now.**
   The File Download window appears.
7. Click **Save** to save the file on your computer and wait till the download has been completed.
8. Click **Run** to install the updated BIOS settings to your computer.
9. Follow the instructions on the screen.