Dell Precision 5520

Owner's Manual

D≪LLEMC

Notes, cautions, and warnings

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

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

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

Contents

1

Working on your computer

Topics:

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.**

You can turn off your computer in two ways :
1. Using the power button
2. Using the charms menu

Using power button

1. Press and hold the **Power** button ⟨⏻⟩ to turn off the screen.

Using charms

1. Swipe from the right edge of the display to access the **Charms** menu.
2. Touch **Settings** ⚙—> **Power** ⏻ —> **Shut down** to turn off the computer.

Before working inside your computer

Steps

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer.
3. Disconnect all network cables from the computer (if available).

   ⚠ **CAUTION: If your computer has an RJ45 port, disconnect the network cable by first unplugging the cable from your computer.**

4. Disconnect your computer and all attached devices from their electrical outlets.
5. Open the display.
6. Press and hold the power button for few seconds, to ground the system board.

   ⚠ **CAUTION: To guard against electrical shock unplug your computer from the electrical outlet before performing Step # 8.**

   ⚠ **CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.**

7. Remove any installed ExpressCards or Smart Cards from the appropriate slots.

After working inside your computer

About this task

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning 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.**

Steps

1. Connect any external devices, such as a port replicator, battery slice, or media base, and replace any cards, such as an ExpressCard.
2. Connect any telephone or network cables to your computer.

   ⚠️ **CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.**

3. Replace the battery.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

Chassis

This chapter illustrates the multiple chassis views along with the ports and connectors and also explains the FN hot key combinations.

Topics:

* System Overview
* Hot key combinations

System Overview
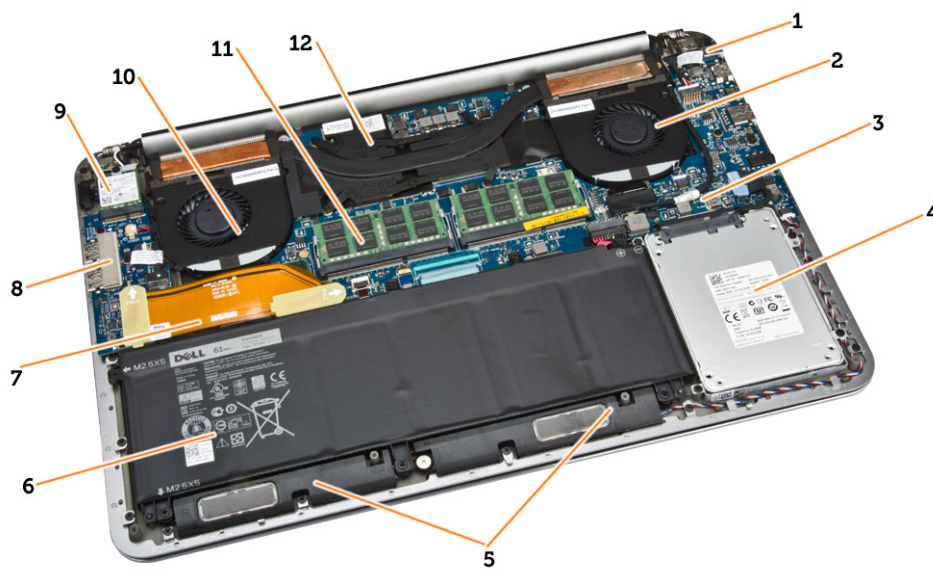
Figure 1. Inside View — Back

1. power connector
2. system fan
3. system board
4. hard drive
5. speakers
6. battery
7. I/O board cable
8. I/O board
9. WLAN card
10. video-card fan
11. memory modules
12. heatsink

Figure 2. Front View

1. Power button
2. Keyboard
3. Palmrest
4. Touchpad
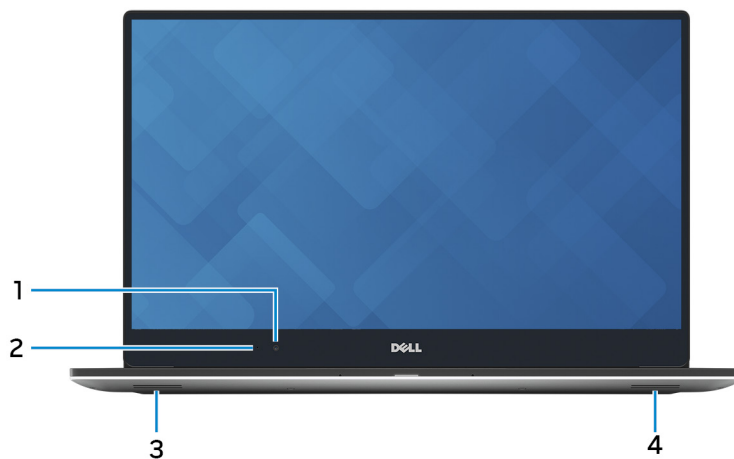
Figure 3. Front Open View

1. Camera
2. Camera-status light
3. Left speaker
4. Right speaker
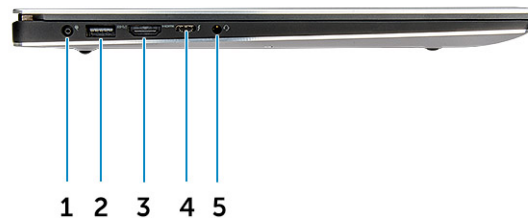
Figure 4. Left View

1. Power port
3. HDMI port
5. Headset port

2. USB 3.0 port with PowerShare
4. Thunderbolt 3 port
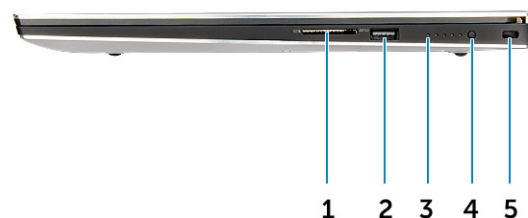
Figure 5. Right View

1. Memory card reader
3. Battery status lights
5. Kensington security slot

2. USB 3.0 port with PowerShare
4. Battery status button

Hot key combinations

The table below details the hot key combinations.

Table 1. Hot key combination

Fn key combination	Precision 5520
Fn+ESC	Fn Toggle
Fn+ F1	Speaker Mute
Fn+ F2	Volume Down

Table 1. Hot key combination (continued)

Fn key combination	Precision 5520
Fn+ F3	Volume Up
Fn+ F4	Rewind
Fn+ F5	Play/Pause
Fn+ F6	Forward
Fn+ F8	Display Toggle (Win + P)
Fn+ F9	Search
Fn+ F10	Increase Keyboard Back light Brightness
Fn+ F11	Panel Brightness Down
Fn+ F12	Panel Brightness Up
Fn+ PrtScr	Wireless

Disassembly and reassembly

Topics:

Recommended Tools

The procedures in this document may require the following tools:
*   Small flat-blade screwdriver
*   #0 Phillips screwdriver
*   #1 Phillips screwdriver
*   T5 Torx screwdriver
*   Small plastic scribe

Base cover

Removing the Base Cover

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Close the display and turn the computer over.
3. Turn the system badge flap over (1) and then remove the ten M2x3 screws that secure the base cover to the computer (2).

    (i) **NOTE:** Use a Torx #5 screwdriver for the base screws and a Philips screwdriver for the two M2x8 screws inside the badge flap.
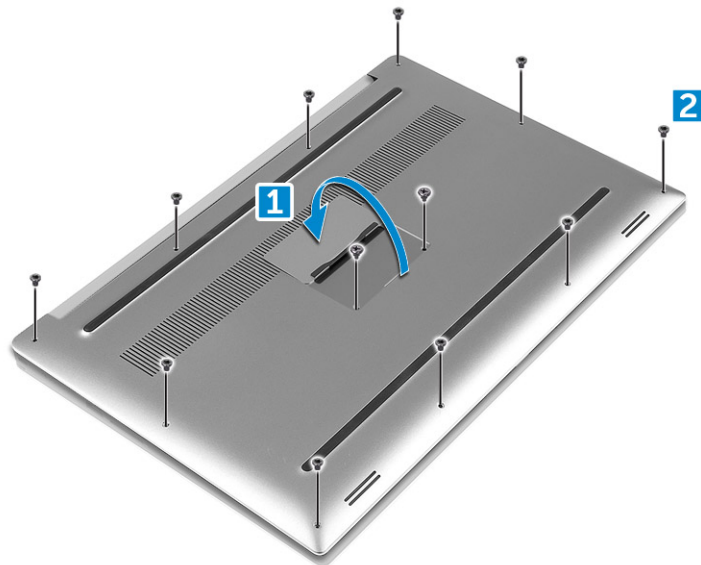
4. Pry the edges of the base cover and lift it to remove it from the computer.
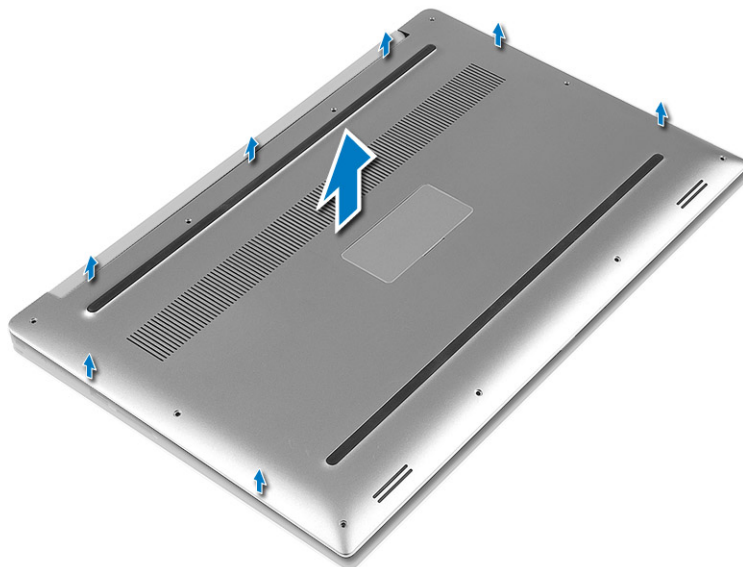
Installing the Base Cover

Steps

1. Place the base cover on the computer and snap it in place.
2. Tighten the ten M2x3 screws to secure the base cover to the computer.

   ⓘ **NOTE:** Ensure you use a Torx #5 screwdriver for the base screws and a Philips screwdriver for the two M2x8 system badge screws.

3. Turn the system badge flap over and snap it in place.
4. Follow the procedures in *After Working Inside Your Computer*.

Battery

Lithium-ion battery precautions

⚠️ **CAUTION:**

- **Exercise caution when handling Lithium-ion batteries.**
- **Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**

Removing the Battery

About this task

ⓘ **NOTE:** Discharge the battery as much as possible before removing from the system. This can be done by disconnecting the A/C adapter from the system (while the system is turned on) to allow the system to drain the battery.

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the Base cover
3. Perform the following steps to remove the battery:
   a. Disconnect the battery cable from the system board [1].
   b. Remove the seven M2x4 screws that secure the battery to the computer [2].
   c. Lift the battery off the computer [3].
   - **Do not** apply pressure to the surface of the battery
   - **Do not** bend
   - **Do not** use tools of any kind to pry on or against the battery
   - If a battery cannot be removed within the constraints above, please contact Dell technical support
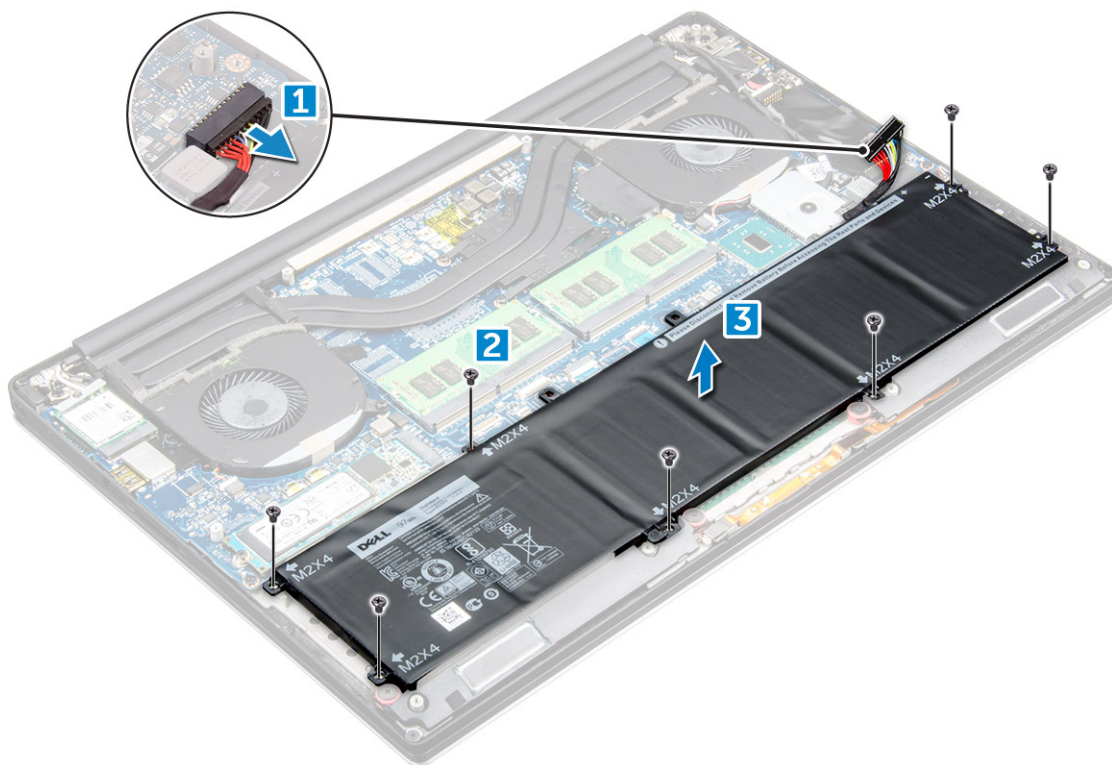
Installing the Battery

Steps

1. Place and align the battery in the battery bay.
2. Tighten the seven M2x4 screws that secure the battery to the computer.
3. Connect the battery cable to the system board.
4. Install the base cover.
5. Follow the procedures in *After Working Inside Your Computer.*

PCIe Solid State Drive (SSD)

Removing the Solid State Drive (SSD)

Steps

1. Follow the procedures in *Before Working Inside Your Computer*
2. Remove the:
   a. Base cover
   b. battery
3. Remove the screw that secures the solid-state drive (SSD) to the system board [1]. Then, slide the SSD out from its connector on the system board [2].
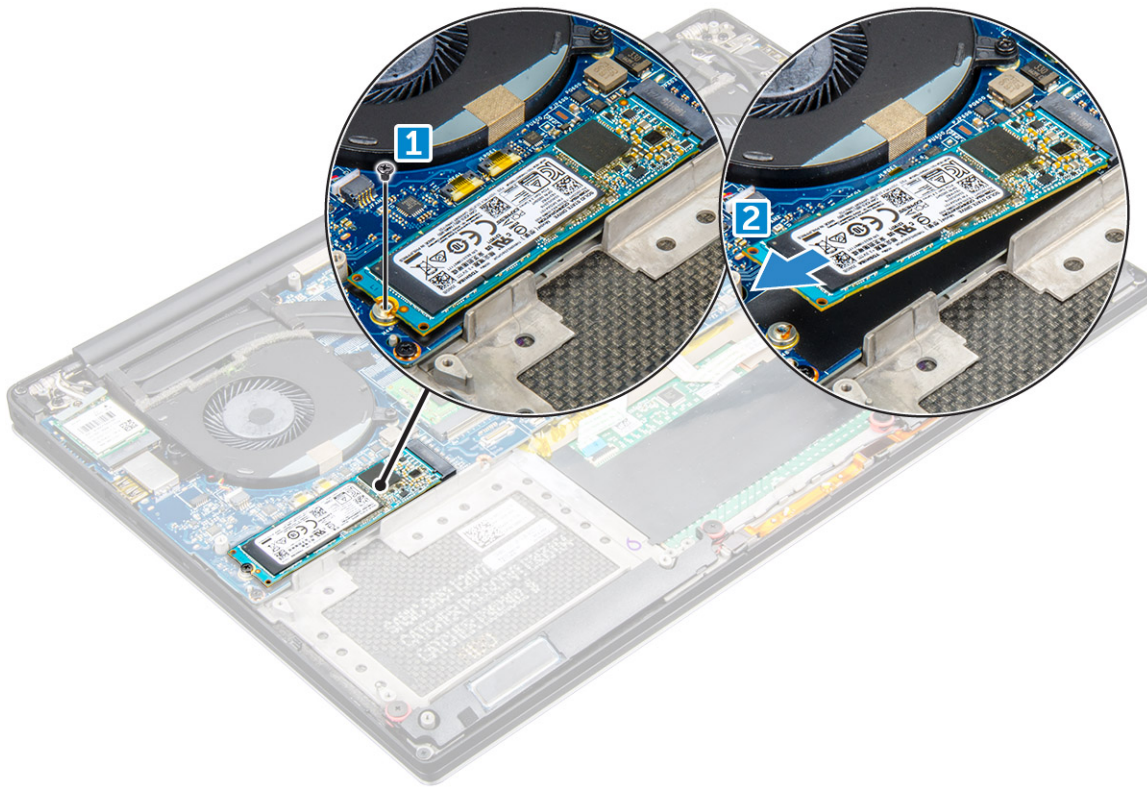
Installing the solid-state drive

Steps

1. Adhere the thermal pad to the solid-state drive.

   ⓘ **NOTE:** The thermal pad is applicable only for a PCIe SSD card.

2. Slide the solid-state drive at an angle into the solid-state drive slot.
3. Press the other end of the solid-state drive down and replace the M2 x 3 screw that secures the solid-state drive to the system board.
4. Install the:
   a. battery
   b. base cover
5. Follow the procedures in *After Working Inside Your Computer.*

Hard drive

Removing the Hard Drive

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. Base cover
   b. battery
3. Perform the following steps to remove the hard-drive bracket from the computer:
   a. Remove the four M2x4 screws securing the hard-drive bracket to the computer [1].
   b. Lift the hard-drive cage [2] off the hard drive assembly [3].

1   2   3
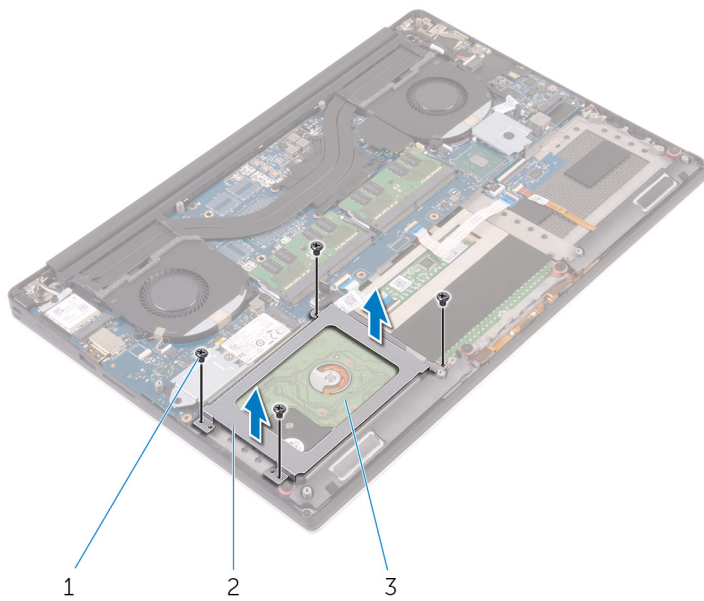
4. Perform the following steps to remove the hard-drive:

 a. Disconnect the hard-drive cable from the system board [1].

 b. Lift the hard drive off the palm rest assembly [2].

1

2
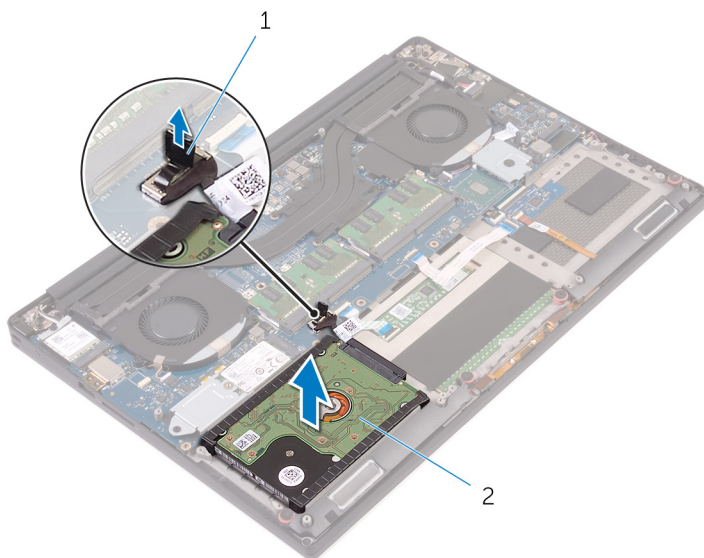
5. Disconnect the hard drive interposer from the hard drive assembly and then remove the hard drive covers away from the hard drive.
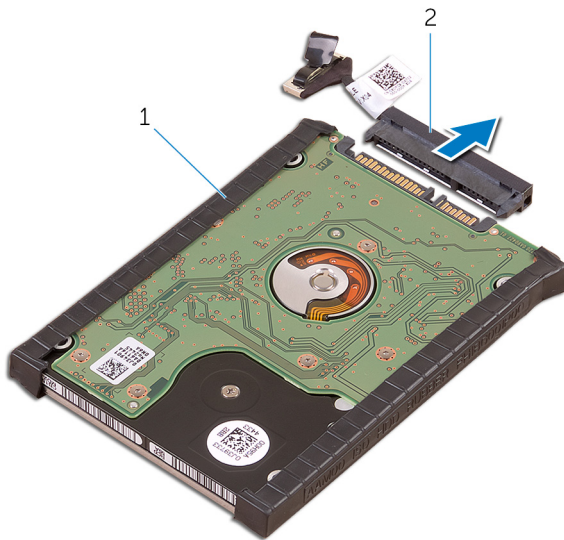
Installing the Hard Drive

Steps

1. Replace the hard-drive covers on the hard drive.
2. Connect the hard-drive interposer to the hard-drive assembly.
3. Place the hard-drive assembly on the palm-rest assembly.
4. Connect the hard-drive cable to the system board.
5. Align the screw holes on the hard-drive cage with the screw holes on the hard-drive assembly.
6. Replace the four M2x4 screws that secure the hard-drive cage to the palm-rest assembly.
7. Install the:
   a. battery
   b. base cover
8. Follow the procedures in *After Working Inside Your Computer.*

Speaker

Removing the Speakers

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. Base cover
   b. battery
3. Perform the following steps to remove the speaker:
   a. Disconnect the speaker cable from the audio board [1].
   b. Remove the 4 M2x2 screws that secure the speakers to the computer [2].
   c. Lift the speakers, along with the speaker cable, off the computer [3].
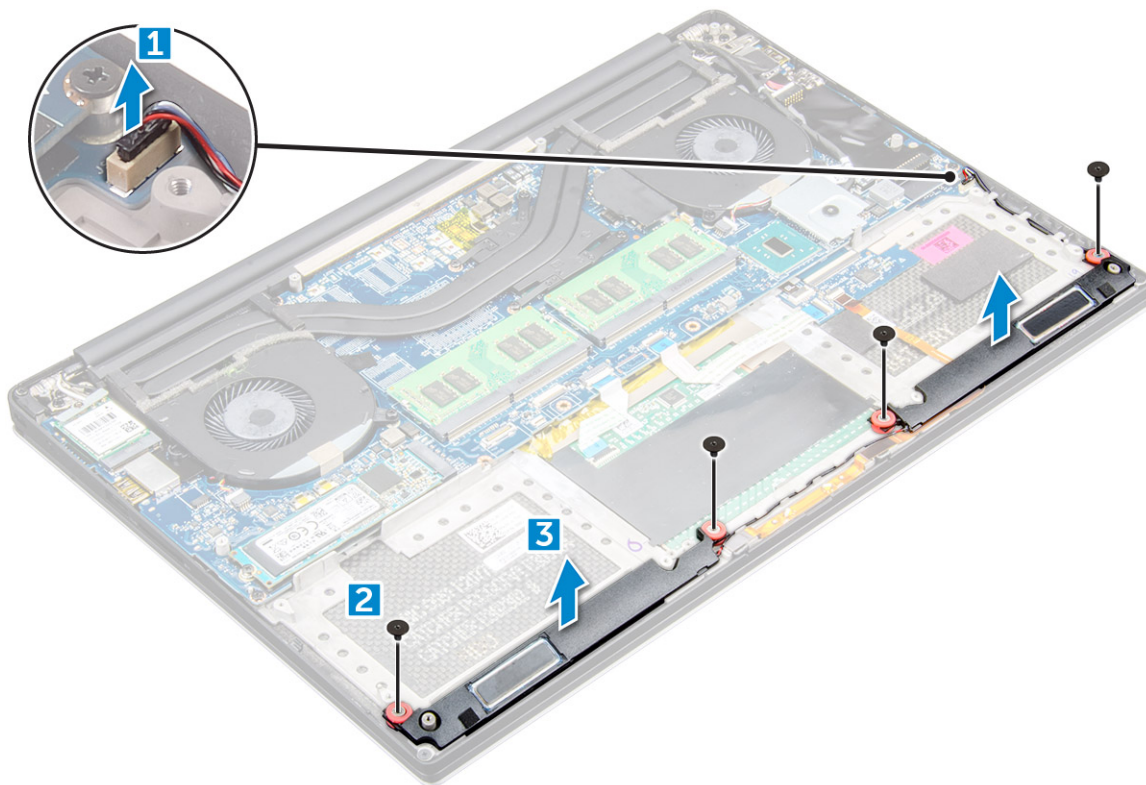
Installing the Speakers

Steps

1. Using the alignment posts, place the speakers on the palm-rest assembly.
2. Replace the four M2x2 screws that secure the speakers to the palm-rest assembly.
3. Route the speaker cables through the routing guides on the palm-rest assembly.
4. Connect the speaker cable to the system board.
5. Install the:
   a. battery
   b. base cover
6. Follow the procedures in *After Working Inside Your Computer*.

Coin-cell battery

Removing the Coin-Cell Battery

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.

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

2. Remove the:
   a. base cover
   b. battery
   c. WLAN card
   d. hard drive

    e. fans

    f. heatsink assembly

    g. memory modules

    h. system board

3. Perform the following steps to remove the coin-cell battery:

    a. Turn the system board over.

    b. Lift up the coin cell battery [1]

    c. Disconnect the coin cell battery cable [2] from the system board [3].
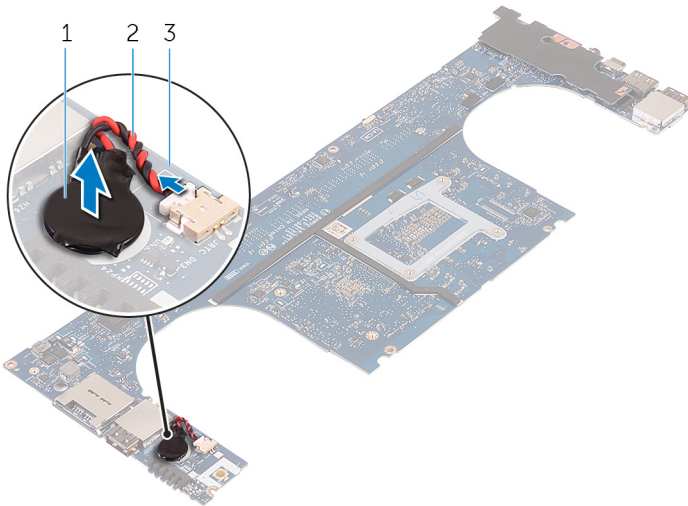
Installing the Coin-Cell Battery

Steps

1. Replace the coin-cell battery in its slot in the computer.
2. Connect the coin-cell battery cable to the system board.
3. Turn the system board over.
4. Install the:

    a. Memory

    b. Heatsink assembly

    c. Fans

    d. Hard drive

    e. WLAN card

    f. Battery

    g. Base cover

5. Follow the procedures in *After Working Inside Your Computer*.

Keyboard lattice and Keyboard

Removing the Keyboard

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:

    a. base cover

    b. battery

    c. fans

d. heatsink
e. SSD
f. memory module
g. system board
3. Perform the following steps to disconnect the keyboard and backlight connectors from the computer.
   a. Lift up the connector lock [1] and the disconnect the cables from the connectors [2].
   b. Peel back the screw shields [3].
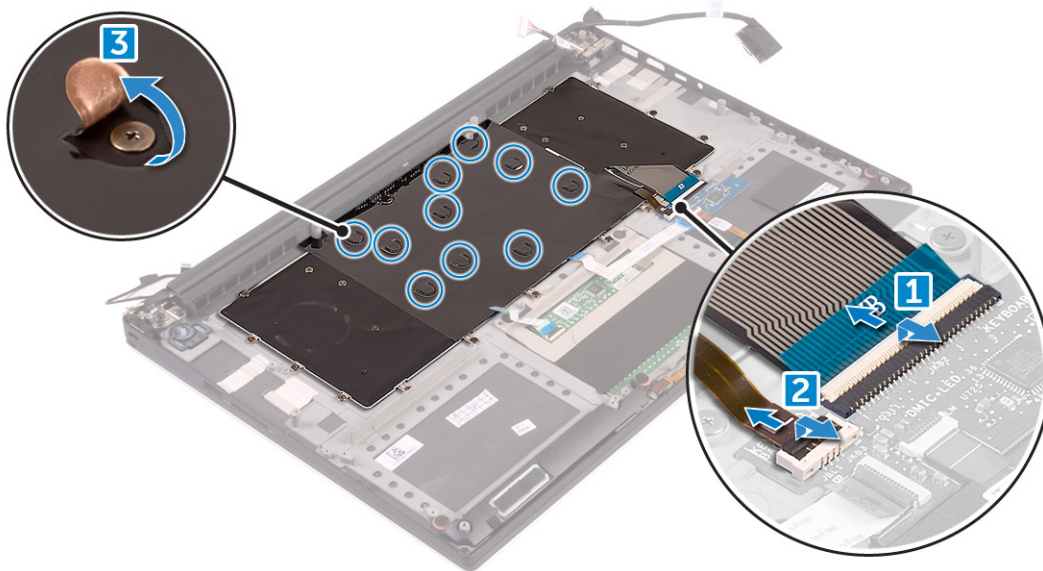
4. Un-route the LVDS cable [1] and then remove the 31 M1.6 x 1.5 screws that secure the keyboard to the computer [2].

5. Lift and remove the keyboard from the computer.
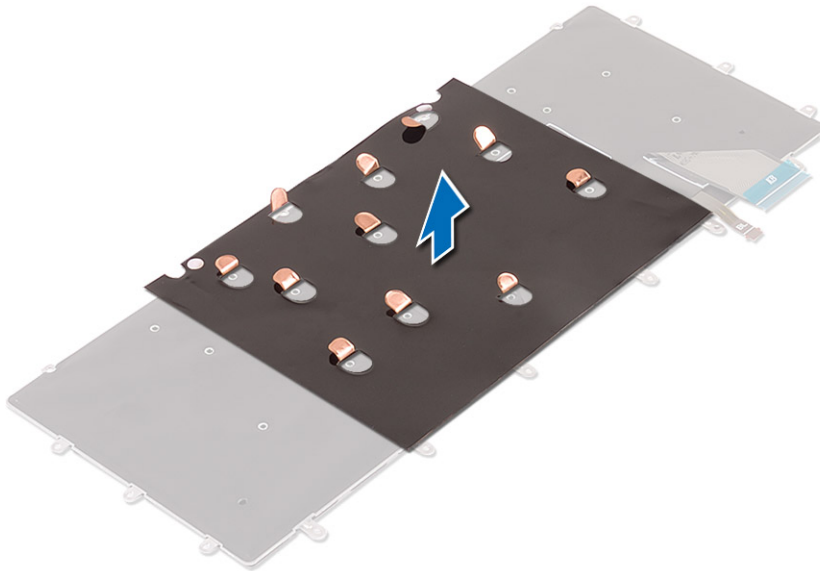
Installing the Keyboard

Steps

1. Adhere the Mylar to the keyboard.
2. Align the screw holes on the keyboard with the screw holes on the palm-rest assembly.
3. Replace the 31 M1.6 x 1.5 screws that secure the keyboard to the palm-rest assembly.
4. Adhere the Mylar to the screws that secure the keyboard to the palm-rest assembly.
5. Connect the keyboard cable and keyboard-backlight cable to the keyboard-controls board.
6. Install the:
   a. system board
   b. hard drive
   c. base cover
7. Follow the procedures in *After Working Inside Your Computer.*

WLAN card

Removing the WLAN Card

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. Base cover
   b. battery
3. Perform the following steps to remove the WLAN card:
   a. Remove the screw to release the bracket that secures the WLAN card to the computer [1] and lift the bracket away from the computer [2].
   b. Disconnect the antenna cables from the WLAN card [3].
   c. Slide and remove the WLAN card from its connector on the board [4].
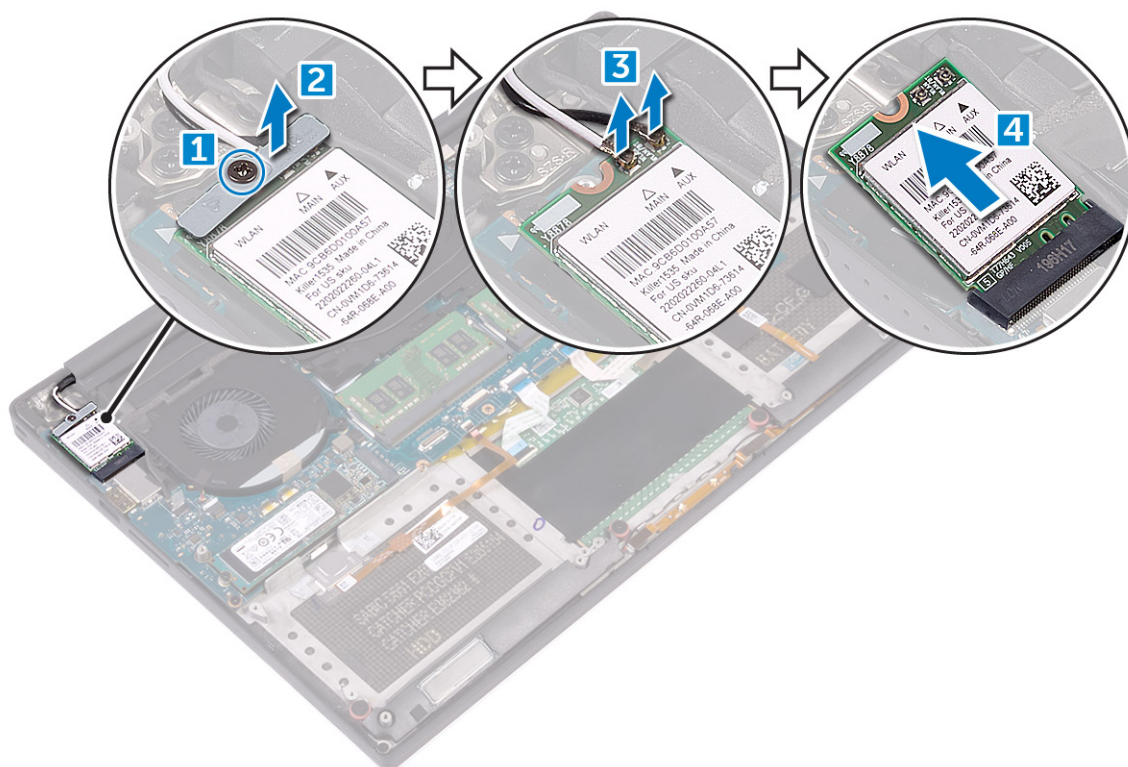
Installing the WLAN Card

Steps

1. Align the notch on the WLAN card with the tab on the WLAN-card connector on the system board.
2. Align the bracket which secures the WLAN card to the palmrest assembly.
3. Connect the antenna cables to the WLAN card.

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

   ⓘ **NOTE:** The color of the antenna cables is visible near the tip of the cables. The antenna-cable color scheme for the WLAN card supported by your computer is as follows:

Table 2. Antenna-Cable Color Scheme for the WLAN Card

Connectors on the WLAN card	Antenna-cable color
Main (white triangle)	white
Auxiliary (black triangle)	black
Multiple input, multiple output (grey triangle)	Grey (optional)

4. Tighten the screw to secure the bracket and the WLAN card to the palmrest assembly.
5. Install the:
   a. battery
   b. base cover
6. Follow the procedures in *After Working Inside Your Computer*.

Memory modules

Removing the Memory Module(s)

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. Base cover
   b. battery
3. Pry the securing clips away from the memory module until it pops-up [1]. Then, remove the memory module from its connector on the system board [2].
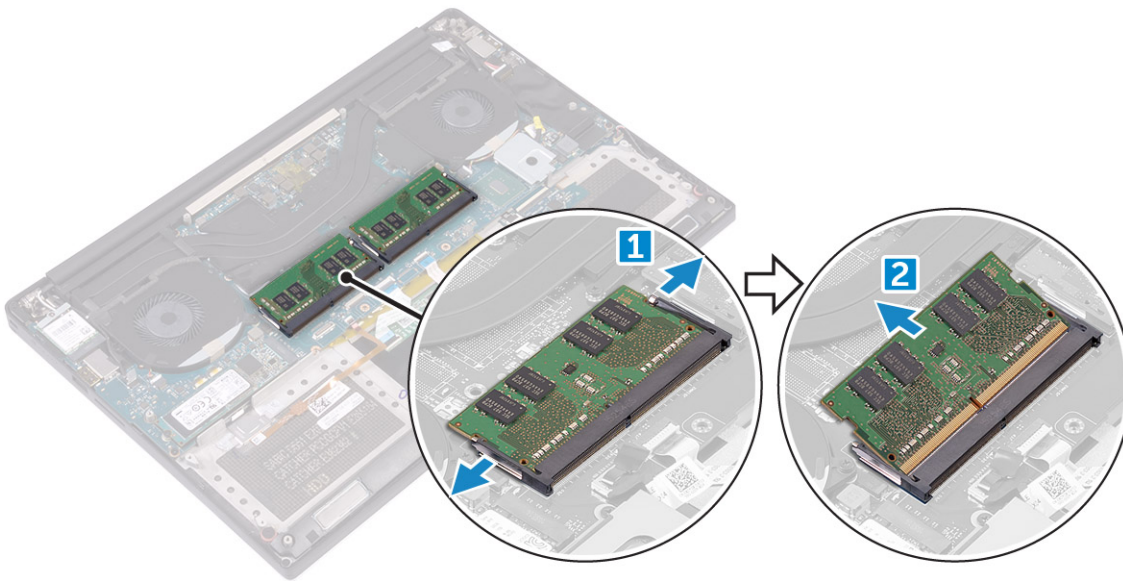
Installing the Memory Module(s)

Steps

1. Insert the memory module into the memory socket.
2. Press the memory module down until it clicks into place.

   ⓘ **NOTE:** If you do not hear the click, remove the memory module and re-install it.

3. Install the:
   a. battery
   b. base cover
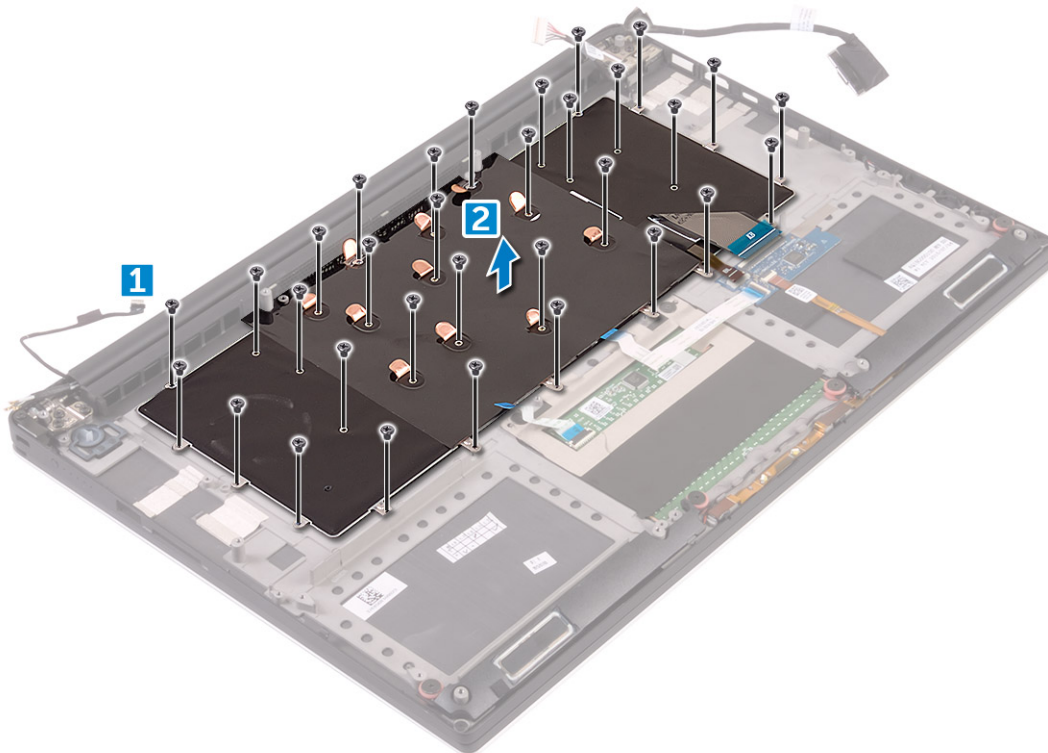4. Follow the procedures in *After Working Inside Your Computer*.

System fan

Removing the Fans

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:

a. Base cover
b. battery
3. Perform the following steps to remove the left video-card fan:
   a. Disconnect the fan cable from the system board [1].
   b. Remove the two M2x4 screws that secure the fan to the system board[2].
   c. Lift the fan away from the computer [3]
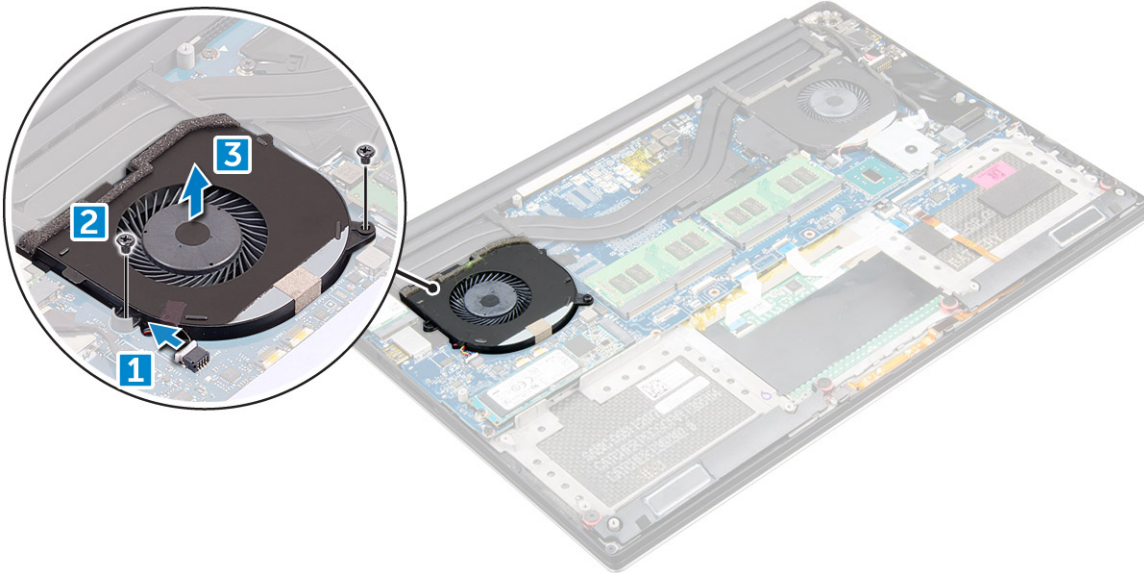
4. Perform the following steps to remove the right system fan:
   a. Un-thread the LVDS cable from its restraints [1].
   b. Disconnect the fan cable from the system board [2]
   c. Remove the two M2x4 screws that secure the fan to the computer [3].
   d. Lift the fan away from the computer [4].

Installing the Fans

Steps

1. Perform the following steps to install the system fan:
   a. Align the screw holes on the left fan with the screw holes on the palm-rest assembly.
   b. Connect the left fan cable to the system board.

c. Route the display cable through the routing guides on the left fan.

d. Replace the four M2x4 screws that secure the left fan to the system board.

e. Connect the right fan cable to the system board.

f. Route the touch-screen cable through the routing guides on the right fan.

g. Adhere the tape that secures the touch-screen cable to the right fan.

h. Connect the display cable to the system board.

i. Replace the four M2x4 screws that secure the right fan to the system board.

2. Follow the procedures in *After Working Inside Your Computer*.

Heat sink

Removing the Heatsink

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.

2. Remove the:

   a. Base cover

   b. battery

3. Remove the four M2x3 screws that secure the heatsink to the system board.
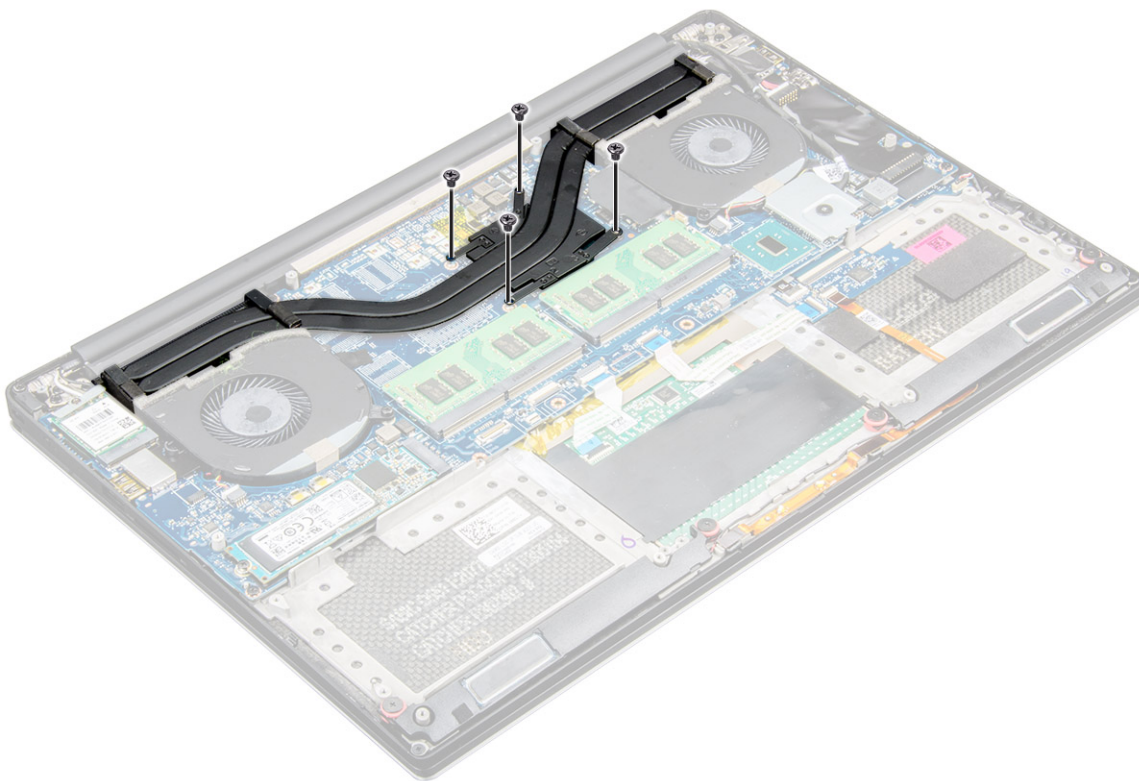
4. Lift the heatsink off the computer.

Installing the Heatsink

Steps

1. Align the screw holes on the heatsink with the screw holes on the system board.
2. Replace the screws to secure the heatsink to the system board.
3. Install the:
   a. battery
   b. base cover
4. Follow the procedures in *After Working Inside Your Computer.*

Power connector port

Removing the DC-in Connector

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. Base cover
   b. battery
3. Perform the following steps to remove the I/O board:
   a. Disconnect the DC-in cable from the system board [1].
   b. Remove the M2x3 screw that secures the DC-in cable to the computer.
   c. Remove the DC-in connector from the computer.
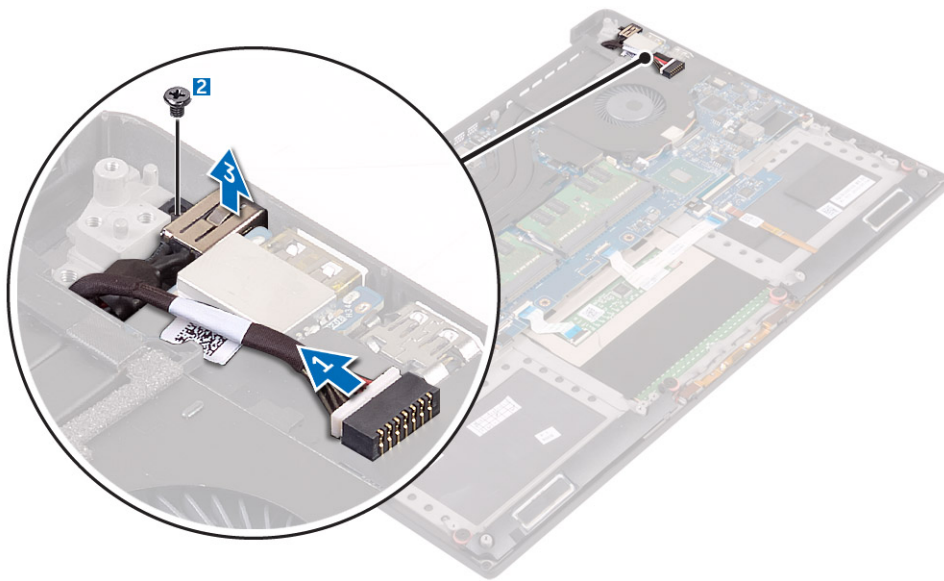
Installing the DC-in Adapter Port

Steps

1. Place the DC-in adapter port into the slot on the palm-rest assembly.
2. Route the power-adapter port cable through its routing guides on the palm-rest assembly.
3. Replace the M2x3 screw that secures the power-adapter port to the palm-rest assembly.
4. Connect the power-adapter port cable to the system board.
5. Install the:
   a. battery
   b. base cover
6. Follow the procedures in *After Working Inside Your Computer*.

Antenna cover

Removing the antenna cover

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. base cover
   b. battery
   c. WLAN Card
   d. display assembly
3. Carefully turn the display hinges at an angle.
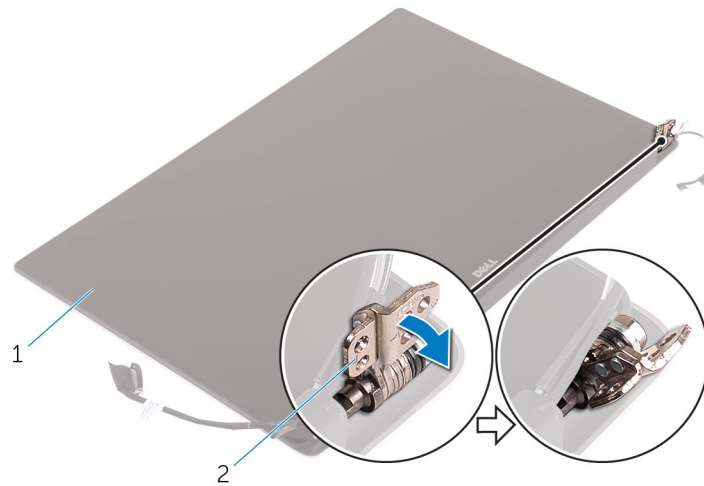
Figure 6. Turning the display hinge

a. display assembly
b. display hinges (2)

4. Slide and lift the antenna cover away from the display assembly.
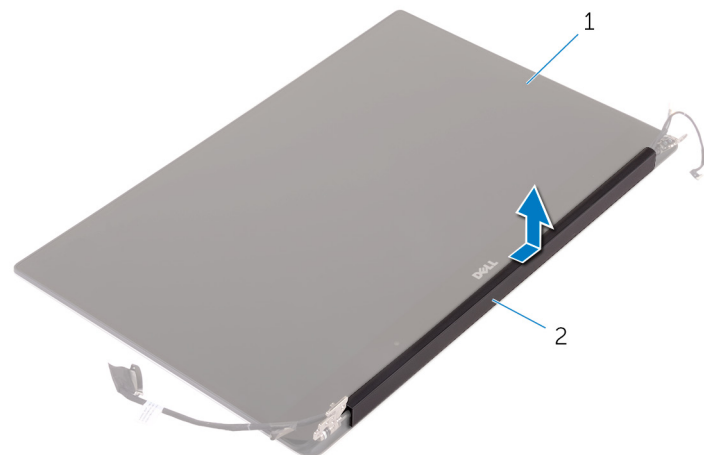
Figure 7. Removing the antenna cover

a. display assembly
b. antenna cover

Installing the antenna cover

Steps

1. Replace the antenna cover on the display assembly.
2. Turn the display hinges to the normal position.
3. Install the:
    a. display assembly
    b. wireless card
    c. battery
    d. base cover
4. Follow the procedures in *After Working Inside Your Computer*.
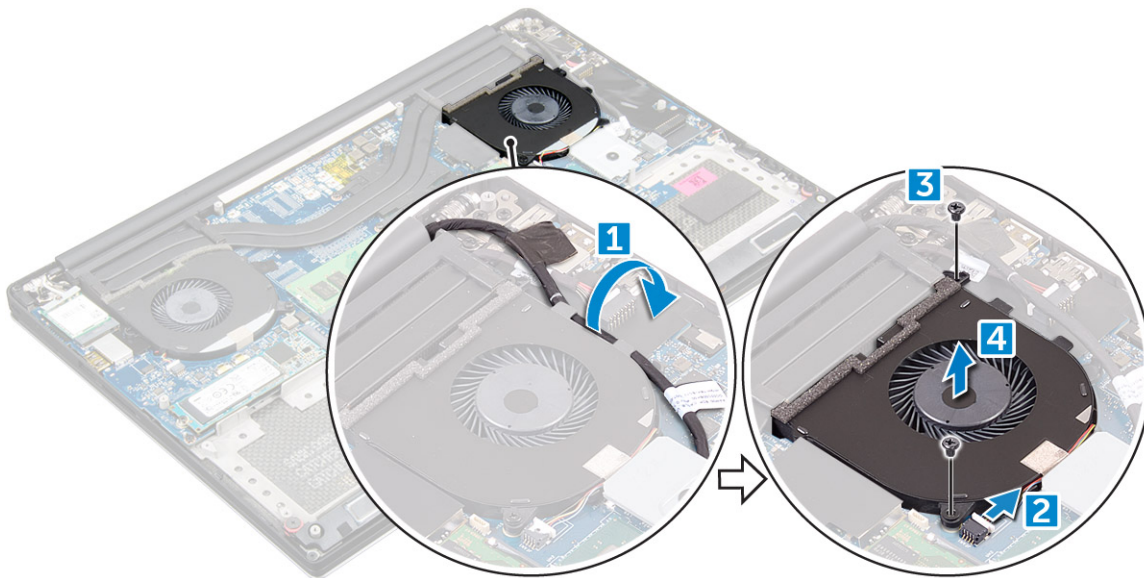
Display Assembly

Removing the Display Assembly

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. Base cover
   b. battery
3. Perform the following steps:
   a. Remove the screw securing the metal bracket [1].
   b. Lift the metal bracket off the computer [2].
   c. Disconnect the LVDS cable from the system board [3].
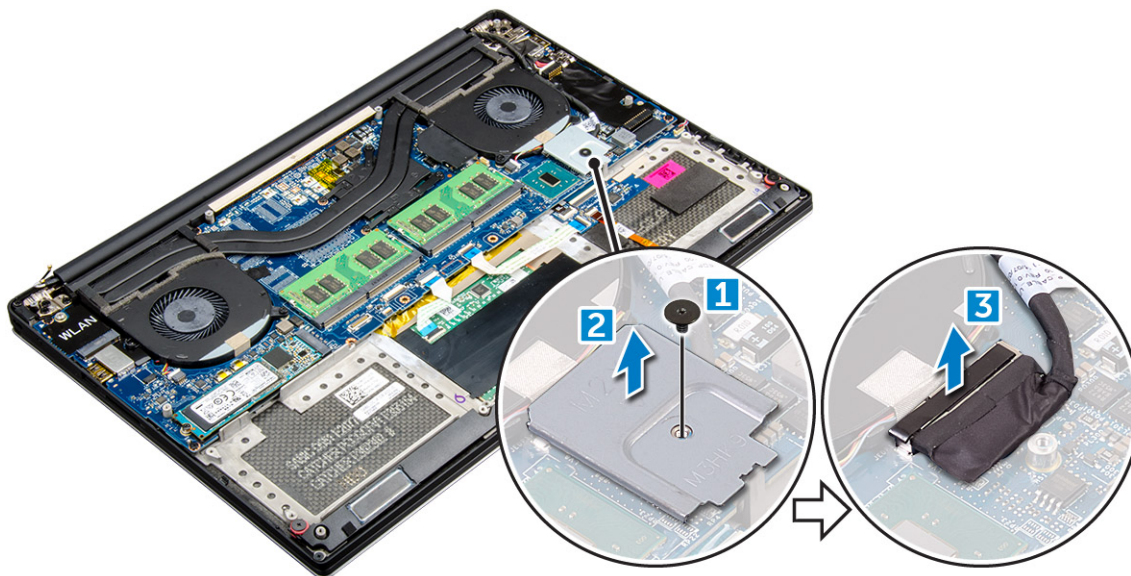
4. Place the computer at the edge of a table as shown and remove the six M2.5x5 screws [1] securing the display assembly to the computer. Then, lift the display assembly off the computer [2].

Installing the Display Assembly

Steps

1. Place the palm-rest assembly at the edge of the table with the speakers facing away from the edge.
2. Align the screw holes on the palm-rest assembly with the screw holes on the display hinges.
3. Replace the six M2.5 x 5 screws that secure the display hinges to the palm-rest assembly.
4. Adhere the tape and route the touch-screen cable through the routing guides on the fan.
5. Connect the touch-screen cable and display cable to the system board.
6. Replace the screw that secures the display-cable bracket to the system board.
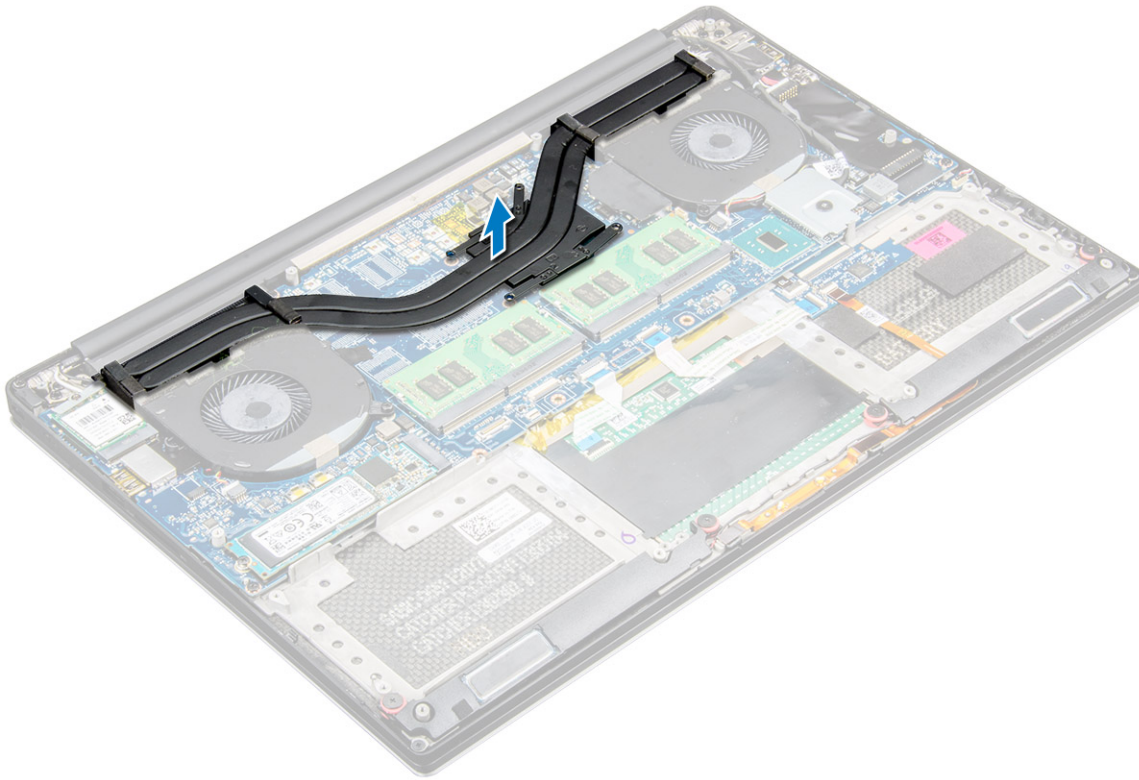7. Follow the procedures in *After Working Inside Your Computer.*

System board

Removing the System Board

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. base cover
   b. battery

c. fans
d. heatsink
e. SSD
f. memory module

ⓘ **NOTE:** Your computer's Service Tag is located under the system badge flap. You must enter the Service Tag in the BIOS after you replace the system board.

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

3. Remove the M2x2 screw securing the metal bracket for the LVDS to the system board [1] and remove the bracket off the computer [2]. Then, disconnect the LVDS cable from the system board [3].
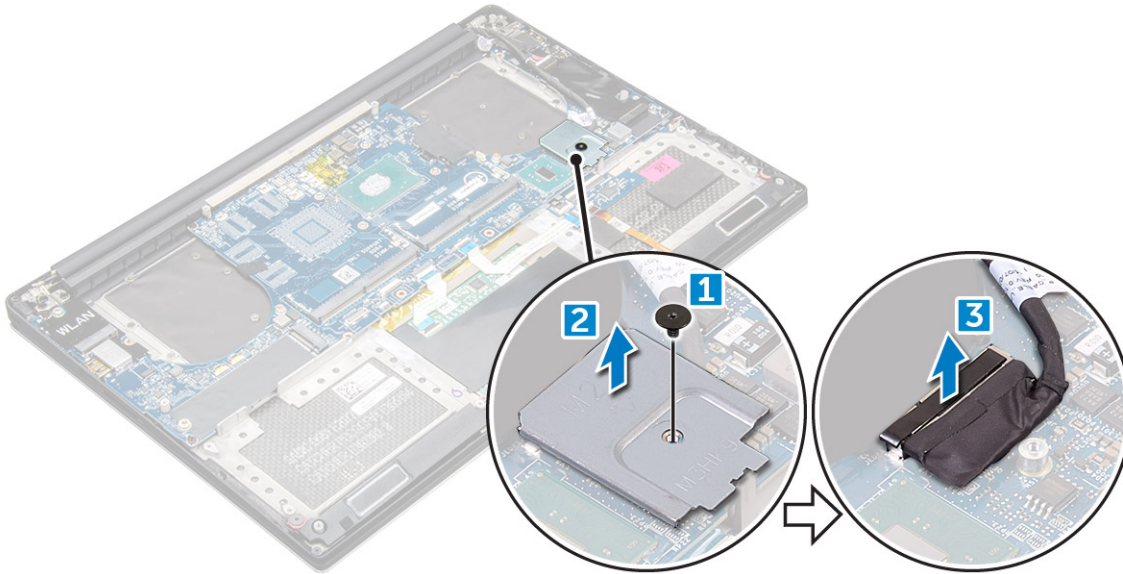
4. Slide out the connector latches to disconnect all the cables from the system board.
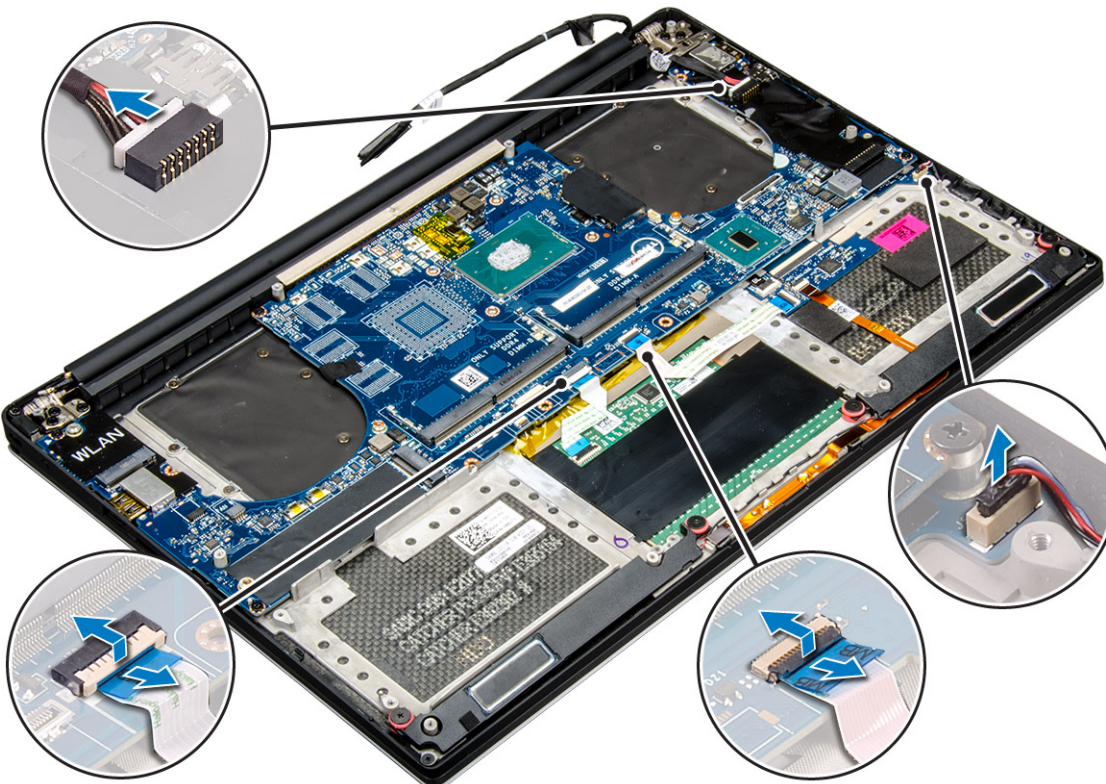
5. Perform the following steps to remove the system board from the computer:
   a. Remove the five M2x4 screws that secure the system board to the computer [1].

b. Lift the system board off the computer [2].
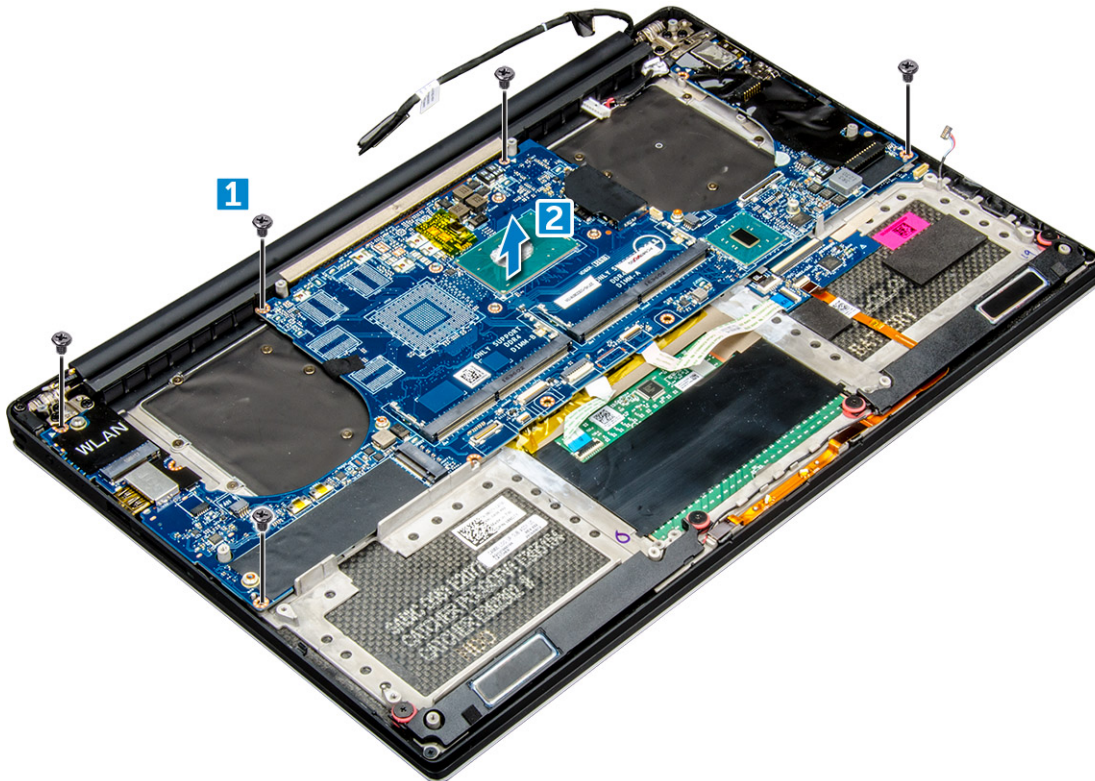
Installing the System Board

Steps

1. Hold the system board at the center. Avoid holding the system board by the "neck" area to avoid damaging it.

2. Replace the M2x4 (4) screws that secure the system board to the palm-rest assembly.

3. Angle the system board onto the palm-rest assembly with the SD-card slot side. Angling it this way while mounting the system board gives sufficient clearance as the audio daughter-board is beneath the other side of the system board.

4. Connect the power-adapter port cable, speaker cable, keyboard-control board cable, touchpad cable, and touch-screen cable to the system board.
5. Connect the display cable to the system board.
6. Align the display-cable bracket with the screw hole on the system board and replace the screw (2).
7. Install the components as per the process.
8. Follow the procedures in After working inside your computer..

Palm rest

Removing the Palmrest Assembly

Steps

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a. base cover
   b. battery
   c. memory modules
   d. hard drive
   e. WLAN card
   f. speakers
   g. heatsink assembly
   h. fans
   i. display assembly
   j. power adapter port
   k. system board
   l. keyboard
3. After performing the above steps, we are left with the palmrest assembly [1].

Installing the Palm rest Assembly

Steps

1. Align the palm rest assembly on the display assembly.
2. Tighten the screws to secure the display hinges to the palm rest assembly.
3. Press down on the palm rest assembly to close the display.
4. Install the:

a. keyboard
   b. system board
   c. power connector port
   d. display assembly
   e. fans
   f. heatsink assembly
   g. speakers
   h. WLAN card
   i. hard drive(optional)
   j. memory modules
   k. battery
   l. base cover

5. Follow the procedures in After Working Inside Your Computer

Diagnostics

If you experience a problem with your computer, run the ePSA diagnostics before contacting Dell for technical assistance. The purpose of running diagnostics is to test your computer's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Topics:

- Enhanced Pre-Boot System Assessment — ePSA diagnostics
- Device Status Lights

Enhanced Pre-Boot System Assessment — ePSA diagnostics

About this task

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

The ePSA diagnostics can be initiated by the FN+PWR buttons while powering on the computer.

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

ⓘ **NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

Device Status Lights

Table 3.

Icon	Description
⏻	Turns on when you turn on the computer.

Battery status lights

If the computer is connected to an electrical outlet, the battery light operates as follows:

Alternately blinking amber light and white light	An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop. Replug battery connector, replace battery if the issue recurs.
Alternately blinking amber light with steady white light	Temporary battery failure with AC adapter present. Replug battery connector, replace battery if the issue recurs.

Constantly blinking amber light	Fatal battery failure with AC adapter present. Fatal battery, replace the battery.
Light off	Battery in full charge mode with AC adapter present.
White light on	Battery in charge mode with AC adapter present.

Diagnostic LED

Occasionally the computer may indicate bicolor flashes on Battery Charge LED. A specific blink pattern, flashing a pattern of amber, followed by white, and then the same pattern repeats.

(i) **NOTE:** The diagnostic pattern consists of a two-digit number that is represented by a first group of amber LED blinks (1 through 9), followed by a 1.5-second pause with the LED off, and then a second group of LED blinks (1 through 9) in white. Followed by a three-second pause, with the LED off, before repeating over again. Each LED blink takes 0.5 s.

The system does not shut down when displaying the Diagnostic Error Codes. Diagnostic Error Codes supersedes any other use of the LED. For instance, on laptops, battery codes for Low Battery or Battery Failure situations are not displayed when the Diagnostic Error Codes are being displayed:

Table 4. LED pattern

Blinking pattern		Problem Description	Suggested Resolution
Amber	White		
2	1	processor	processor failure
2	2	system board, BIOS ROM	system board, covers BIOS corruption or ROM error
2	3	memory	no memory/no RAM detected
2	4	memory	memory failure/RAM failure
2	5	memory	invalid memory installed
2	6	system board; chipset	system board/ chipset error
2	7	display	display failure
3	1	RTC power failure	coin-cell battery failure
3	2	PCI/Video	PCI/Video card/chip failure
3	3	BIOS recovery 1	recovery image nor found
3	4	BIOS recovery 2	recovery image found but invalid

System Setup Options

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

Table 5. Main

Option	Description
System Time/Date	Allows you to set the date and time.
BIOS Version	Displays the BIOS version.
Product Name	Displays the product name. **Dell Precision 5520** (Default Setting)
Service Tag	Displays the service tag.
Asset Tag	Displays the asset tag. **None** (Default Setting)
CPU Type	Displays the CPU type.
CPU Speed	Displays the CPU speed.
CPU ID	Displays the CPU ID.
CPU Cache	Displays the sizes of the CPU caches.
Fixed HDD	Displays the type and size of the HDD.
mSATA Device	Displays the type and size of the mSATA device.
AC Adapter Type	Displays the type of the AC adapter. **None** (Default Setting)
System Memory	Displays the size of the system memory.
Extended Memory	Displays the size of the extended memory.
Memory Speed	Displays the speed of the memory.
Keyboard Type	Displays the type of keyboard. **Backlite** (Default Setting)

Table 6. Advanced

Option	Description
Intel (R) SpeedStep (TM)	Allows you to enable or disable the Intel (R) SpeedStep (TM) feature. **Enabled** (Default Setting)
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization technology. Allows you to enable or disable the Virtualization feature. **Enabled** (Default Setting)
Multi Core Support	Specifies whether the processor will have one or more cores enabled. **All** (Default Setting)
Intel TurboBoost	Enables or disables the Intel TurboBoost mode of the processor. **Enabled** (Default Setting)
C-States Control	This option enables or disables additional processor sleep states. **Enabled** (Default Setting)

Table 6. Advanced (continued)

Option	Description
Audio	Enables or disables the integrated audio controller. **Enabled** (Default Setting)
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. **Disabled** (Default Setting)
USB Configuration	Allows you to configure the integrated USB controller. **Default Enabled**: Enable Boot Support, Enable Thunderbolt Ports; Always Allow Dell Docks; Enable External USB Port
Touchscreen	This field controls whether the touchscreen is enabled or disabled. **Enabled** (Default Setting)
AC Behavior	Allows the system (if OFF or in Hibernate) to power-on automatically when AC is inserted.
Wake On LAN	Allows the computer to power up from the off state when triggered by special LAN. **Disabled** (Default Setting)
Advanced Battery Charge Configuration	Maximizes battery health while still supporting heavy use during the work day. **Disabled** (Default Setting)
Block Sleep	Lets you to block entering to sleep (S3 state) in OS environment. **Disabled** (Default Setting)
Auto On Time	Sets the time of day when you would like the system to turn on automatically. **Disabled** (Default Setting)
Peak Shift	Minimizes AC power usage at times of peak demand. **Disabled** (Default Setting)
USB Wake Support	Allows you to enable USB devices to wake the system from Standby. **Enabled** (Default Setting)
LCD Brightness	This options sets the panel brightness independently for Battery and AC power.
USB Emulation	Allows you to enable or disable the USB Emulation feature. **Enabled** (Default Setting)
USB PowerShare	Allows you to enable or disable the USB PowerShare feature. **Enabled** (Default Setting)
USB Wake Support	This option allows you to enable USB devices to wake the system from Standby. **Disable**(Default Setting)
SATA Operation	Displays the SATA Operation information.
Adapter Warnings	Allows you to enable or disable the adapter warnings feature.
Multimedia Key Behaviour	**Function Key** (Default Setting)
Battery Health	Displays the battery health information.
Battery Charge Configuration	**Adaptive** (Default Setting)
Miscellaneous Devices	Allows you enable or disable the various on board devices. The options are: ● **External USB Ports** - **Enabled** (Default Setting) ● **USB Debug** - **Disabled** (Default Setting)

Table 7. Security

Option	Description
Unlock Setup Status	**Unlocked** (Default Setting)
Admin Password Status	Displays the status of the admin password.

Table 7. Security (continued)

Option	Description
	Default Setting: **Not set**
System Password Status	Displays the status of the system password. Default Setting: **Not set**
HDD Password Status	Displays the status of the system password. Default Setting: **Not set**
Asset Tag	Allows you to set the asset tag.
Admin Password	Allows you to set, change, or delete the administrator (admin) password. (i) **NOTE:** You must set the admin password before you set the system or hard drive password. (i) **NOTE:** Successful password changes take effect immediately. (i) **NOTE:** Deleting the admin password automatically deletes the system password and the hard drive password. (i) **NOTE:** Successful password changes take effect immediately.
System Password	Allows you to set, change or delete the system password. (i) **NOTE:** Successful password changes take effect immediately.
HDD Password	Allows you to set, change or delete the administrator password.
Strong Password	This field enforces strong passwords that contain at least one uppercase character, one lowercase character, and be at least 8 characters long.
Password Change	Allows you to enable or disable permissions to set a System password and a Hard Drive password when the admin password is set. Default Setting: **Permitted**
Password Bypass	This option lets you bypass the System (Boot) password and the internal HDD password prompts during system re-start. **Disabled** (Default Setting)
Password configuration	These fields control the minimum and maximum number of characters allowed for Admin and System passwords.
Computrace	Allows you to activate or disable the optional Computrace software The options are: ● **Deactivate** (Default Setting) ● Activate (i) **NOTE:** The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed.
TPM Security	This option lets you control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system. When disabled the BIOS will not turn On the TPM During POST. The TPM will be non-functional and invisible to the operating system. When enabled, the BIOS will turn On the TPM during POST so that it can be used by the operating system. This option is **Enable** by default. (i) **NOTE:** Disabling this option does not change any settings you may have made to the TPM, nor does it delete or change any information or keys you may have stored there. It simply turns Off the TPM so that it cannot be used. When you re-enable this option, the TPM will function exactly as it did before it was disabled. (i) **NOTE:** Changes to this option take effect immediately.
UEFI Capsule Firmware Updates	This option controls whether this system allows BIOS updates via UEFI capsule update packages. **Enabled** (Default Setting)

Table 7. Security (continued)

Option	Description
CPU XD Support	This option enables or disables the Execute Disable mode for the processor. **Enabled** (Default Setting)
OROM Keyboard Access	This option determines whether users are able to enter Option ROM configuration screens via hotkeys during boot.

Table 8. Boot

Option	Description
Boot List Option	Default Setting: **Legacy**
Secure Boot	This option enables or disables the Secure Boot feature. ● **Disabled** (Default Setting) - Windows 7 (Intel Core Xeon E3–1505M v5 and Intel Core i7–6820HQ processors) ● Enabled - Windows 8.1 and Windows 10 (Intel Core Xeon E3–1505M; Intel Core i7–7820HQ; Intel Core i7–7700HQ; Intel Core i5–7440HQ; and Intel Core i5–7300HQ processors)
Load Legacy Option ROM	This option enables or disables the Load Legacy Option ROM feature. ● **Enabled** (Default Setting) - Windows 7 ● Disabled - Windows 8.1 and Windows 10
Expert Key Management	Expert Key Management allows the PK, KEK, db, and dbx security key databases to be manipulated. **Disabled** (Default Setting)
Intel Software Guard Extensions	Intel SGX Enabled: Enables Intel Software Guard Extensions (SGX) to provide a secured environment for running code/storing sensitive information in the context of the main OS. **Software Controlled** (Default Setting)
Set Boot Priority	Allows you to change the order in which the computer attempts to find an operating system: ● 1 st Boot Priority [CD/DVD/CD-RW Drive] ● 2nd Boot Priority [Network] ● 3rd Boot Priority [mini SSD] ● 4th Boot Priority [USB Storage Device ● 5th Boot Priority [Hard Drive] ● 6th Boot Priority [Diskette Drive]
Adapter Warnings	Lets you choose whether the system displays warning messages when you use certain power adapters. **Enabled** (Default Setting)
SupportAssist OS Recovery	Enables for disables the boot flow for SupportAssist OS Recovery tool in the event of certain errors. **Enabled** (Default Setting)
Keypad (embedded)	Lets you choose one of two methods to enable the keypad that is embedded in the internal keyboard. Fn Key Only **Enabled** by default.
Fastboot	This option can speed up the boot process by bypassing some compatibility steps. **Minimal** (Default Setting)
Extend BIOS POST Time	Creates an additional pre-boot delay to see POST messages.
Warnings and Errors	This option cause the boot process to only pause when warnings or errors are detected. **Enabled** (Default Setting)
Wireless Switch	Determines which wireless devices can be controlled by the Wireless Switch. WLAN and Bluetooth Enabled (Default Setting)
SupportAssist System Resolution	Auto OS Recovery Threshold: Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. Setting 2 default

Table 9. Exit

Option	Description
Save Changes and Reset	Allows you to save the changes you made.
Discard Changes and Reset	Allows you to discard the changes you made.
Restore Defaults	Allows you to restore the default options.
Discard Changes	Allows you to discard the changes you made.
Save Changes	Allows you to save the changes you made.

Technical Specifications

(i) **NOTE:** Offerings may vary by region. For more information regarding the configuration of your computer, click Start

 (Start icon) > **Help and Support**, and then select the option to view information about your computer.

Table 10. System Information

Feature	Specification
System Chipset	Mobile Intel HM175 Express Chipset / Intel CM238
DMA Channels	two VT-d DMA remap engines
Interrupt Levels	Intel 64 and IA-32 Architecture
BIOS Chip (NVRAM)	32 MB SPI ROM

Table 11. Processor

Feature	Specification
Processor type	6th Generation: ● Intel Core Xeon E3–1505M v5 ● Intel Core i7–6820HQ 7th Generation ● Intel Core Xeon E3–1505M v6 ● Intel Core i7–7820HQ ● Intel Core i7–7700HQ ● Intel Core i5–7440HQ ● Intel Core i5–7300HQ
L1 cache	up to 256 KB cache depending on processor type
L2 cache	up to 1024 KB cache depending on processor type
L3 cache	up to 6144 KB cache depending on processor type

Table 12. Memory

Feature	Specification
Type	DDR4
Speed	2400 MHz (i) **NOTE:** 2133 MHz with 6th Generation processors
Connectors	2 SoDIMM Sockets
Capacity	8 GB, 16 GB, and 32 GB
Minimum Memory	8 GB (2 x 4 GB)
Maximum memory	32 GB

Table 13. Video

Feature		Specification
Type		
	Discrete	NVIDIA Quadro M1200 / 4 GB GDDR5

Table 13. Video (continued)

Feature	Specification
Integrated	- Intel HD Graphics 630/P630 with 7th Generation processors - Intel HD Graphics 530 with 6th Generation processors
Data bus	PCIE x16, Gen3
Memory	
Discrete	Up to 4 GB GDDR5
Integrated	Shared system memory

Table 14. Audio

Feature	Specification
Integrated	dual-channel High-Definition audio

Table 15. Communication

Feature	Specification
Network adapter	Ethernet via USB-to-Ethernet Dongle (Optional). ⓘ **NOTE:** No RJ45 (10/100/1000Base-T, IPv6) provided.
Wireless	- Wi-Fi 802.11ac - Wi-Fi 802.11a/g/n - Bluetooth 4.2 - Miracast

Table 16. Ports and Connectors

Feature	Specification
Audio	One headset port (headphone and microphone combo)
USB 3.0	- two USB 3.0 ports with PowerShare - One Thunderbolt 3 port (USB-C)
Video	one HDMI 1.4
Memory card reader	SD 4.0

Table 17. Display

Feature	Specification
Type	1920 x 1080 FHD 3840 x 2160 UltraHD Touch 100% Adobe Color gamut minimum
Size	15.6 inches FHD 15.6 inches UltraHD
Dimensions:	
Height	194.50 mm (7.66 in)
Width	345.60 mm (13.61 in)
Diagonal	396.52 mm (15.61 in)
Active area (X/Y)	194.50 mm (7.66 in) x 345.60 mm (13.61 in) x 396.52 mm (15.61 in)

Table 17. Display (continued)

Feature	Specification
Maximum resolution	1920 X 1080 pixels / 3840 X 2160 pixels
Maximum Brightness	400 nits
Operating angle	0° (closed) to 135°
Refresh rate	60 Hz
Minimum viewing angles:	
Horizontal	80/80
Vertical	80/80

Table 18. Keyboard

Feature	Specification
Number of keys	- United States: 80 keys - United Kingdom: 81 keys - Brazil: 80 keys - Japan: 84 keys
Layout	QWERTY/AZERTY/Kanji

Table 19. Touchpad

Feature	Specification
Active Area:	
X-axis	105 mm
Y-axis	80 mm

Table 20. Camera

Feature	Specification
Type	HD Camera / Digital Array Microphone
Still Resolution	0.92 megapixels (Maximum)
Video Resolution	1280 x 720 pixels (HD) at 30 frames per second (Maximum)
Diagonal	74 degrees

Table 21. Storage

Feature	Specification
Storage:	
Storage Interface	SATA 3 Gbps
	SATA 6 Gbps
	PCIe 8 Gbps
Drives configurations:	
Hard Drives (optional)	one internal 2.5 inch SATA HDD (supports Intel Smart Response Technology)
Solid State Drives (optional)	one Solid State Drive (SSD), with Intel Cache support
Size:	512 GB / 1 TB/ 2 TB HDD
	256 GB / 360 GB / 512 GB / 1 TB SSD

Table 22. Battery

Feature	Specification
Type	Li-polymer 3-cell (56 Whr) / 6-cell (97 Whr)
Dimensions :	
56 Whr :	
Depth	223.20 mm (8.79 in)
Height	7.20 mm (0.28 in)
Width	71.80 mm (2.83 in)
Weight	0.54 lb (0.24 kg)
84 Whr :	
Depth	330.50 mm (13.01 in)
Height	7.20 mm (0.28 in)
Width	71.80 mm (2.83 in)
Weight	0.76 lb (0.34 kg)
Voltage	11.4 V
Life span	300 discharge/charge cycles
Temperature range:	
Operating (approximate)	- Operating: 0 °C to 35 °C (32 °F to 95 °F) - Charge : 0 °C to 50 °C (32 °F to 122 °F) - Discharge: 0 °C to 70 °C (32 °F to 158 °F)
Non-operating	−40 °C to 65 °C (−40 °F to 149 °F)
Coin-cell battery	ML1220

Table 23. AC Adapter

Feature	Specification
Input voltage	100 VAC to 240 VAC
Input current (maximum)	1.80 A
Input frequency	50 Hz to 60 Hz
Output power	130 W
Output current	6.67 A
Rated output voltage	19.50 VDC
Dimensions:	
Height	22 mm (0.86 inches)
Width	66 mm (2.59 inches)
Depth	143 mm (5.62 inches)
Temperature range:	
Operating	0 °C to 40 °C (32 °F to 104 °F)
Non Operating	−40 °C to 70 °C (−40 °F to 158 °F)

Table 24. Physical Dimensions

Physical	Specification
Height:	17 mm (0.66 in)
Width	357 mm (14.06 in)

Table 24. Physical Dimensions (continued)

Physical	Specification
Depth	235 mm (9.27 in)
Weight (Minimum)	2 kg (4.41 lb)

Table 25. Environmental

Feature	Specification
Temperature range:	
Operating	0 °C to 40 °C (32 °F to 104°F)
Storage	−40 °C to 70 °C (−40 °F to 158 °F)
Relative humidity (maximum):	
Operating	10 % to 90 % (non-condensing)
Storage	10 % to 95 % (non-condensing)
Maximum vibration:	
Operating	0.66 GRMS, 2 Hz - 600 Hz
Storage	1.3 GRMS, 2 Hz - 600 Hz
Maximum shock:	
Operating	110 G, 2 ms
Non-operating	160 G, 2 ms
Altitude:	
Operating	−15.2 m to 30482000 m (−50 to 10,0006560 ft)
Storage	15.2 m to 10,668 m (−50 ft to 35,000 ft)
Airborne contaminant level	G1 as defined by ISA-S71.04-1985

Contacting Dell

Prerequisites

ⓘ **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

About this task

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

Steps

1. Go to **Dell.com/support.**
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.