Dell Latitude E7470
Owner's Manual

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

Working on your computer

Safety instructions

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or--if purchased separately--installed by performing the removal procedure in reverse order.

⚠ **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.**

⚠ **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 www.dell.com/ regulatory_compliance**

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

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

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

⚠ **CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.**

📝 **NOTE: The color of your computer and certain components may appear differently than shown in this document.**

Before working inside your computer

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that you follow the Safety instructions.
2. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
3. Turn off your computer, see Turning off your computer.

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

4. Disconnect all the network cables from the computer.
5. Disconnect your computer and all attached devices from the electrical outlets.
6. Press and hold the power button while the computer is unplugged to ground the system board.
7. Remove the cover.

⚠ 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.

Turning off your computer

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

1. Turning off your computer:
   - In Windows 10 (using a touch enabled device or mouse):

       1. Click or tap ⊞ .

       2. Click or tap ⏻ and then click or touch **Shut down**.
   - In Windows 8 (using a touch enabled device):

       1. Swipe in from the right edge of the screen, opening the **Charms** menu and select **Settings**.

       2. Tap ⏻ and then tap **Shut down**
   - In Windows 8 (using a mouse):

       1. Point to upper-right corner of the screen and click **Settings**.

       2. Click ⏻ and then click **Shut down**.
   - In Windows 7:

       1. Click **Start**.
       2. Click **Shut Down**.

       or

       1. Click **Start**.
       2. Click the arrow in the lower-right corner of the **Start** menu and then click **Log off**.
2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

After working inside your computer

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.

1. Connect any external devices, such as a port replicator 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. Replace the base cover.
5. Connect your computer and all attached devices to their electrical outlets.
6. Turn on your computer.

2

Removing and installing components

This section provides detailed information on how to remove or install the components from your computer.

Recommended tools

The procedures in this document require the following tools:

- Small flat blade screwdriver
- Phillips # 1 screwdriver
- Small plastic scribe
- Hex screwdriver

Subscriber Identification Module (SIM) card

Installing the Subscriber Identification Module (SIM) card

1. Follow the procedure in After working inside your computer.
2. Insert a paperclip or a SIM card removal tool into the pinhole [1].
3. Pull the SIM card tray to remove it [2].
4. Place the SIM card on the SIM card tray.
5. Push the SIM card tray into the slot until it clicks into place.
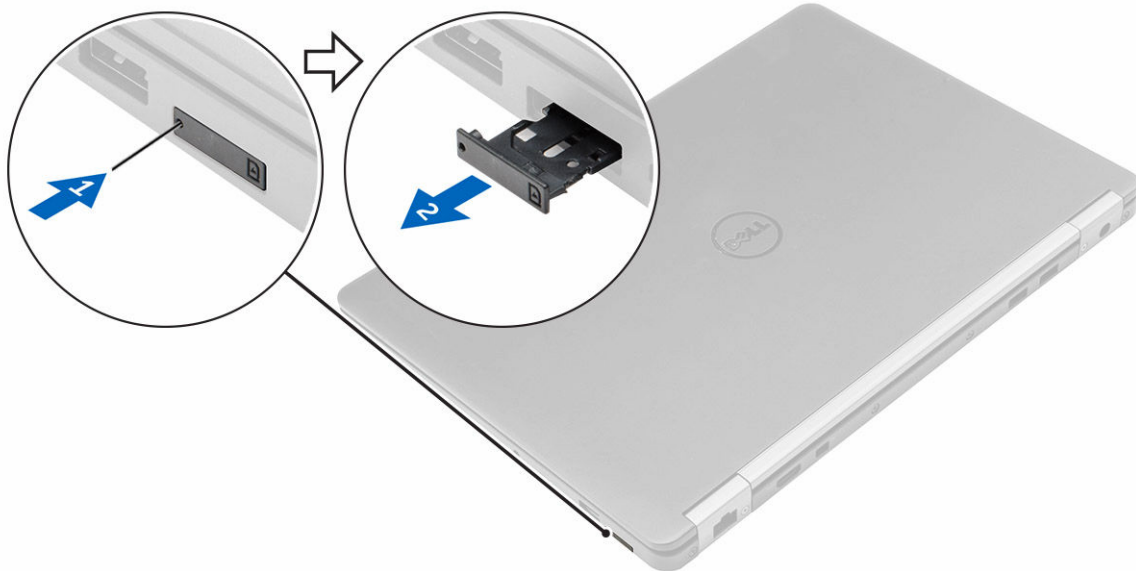
Removing the Subscriber Identification Module (SIM) card

> ⚠ CAUTION: Removing the SIM card when the computer is on may cause data loss or damage the card. Ensure your computer is turned off or the network connections are disabled.

1. Insert a paperclip or a SIM card removal tool into the pinhole on the SIM card tray.

2. Pull the SIM card tray to remove it.
3. Remove the SIM card from the SIM card tray.
4. Push the SIM card tray into the slot until it clicks into place.

SD card

Removing the Secure Digital (SD) Card

1. Follow the procedure in Before working inside your computer
2. Press in on the SD card to release it from the computer.
3. Slide the SD card out of the computer.
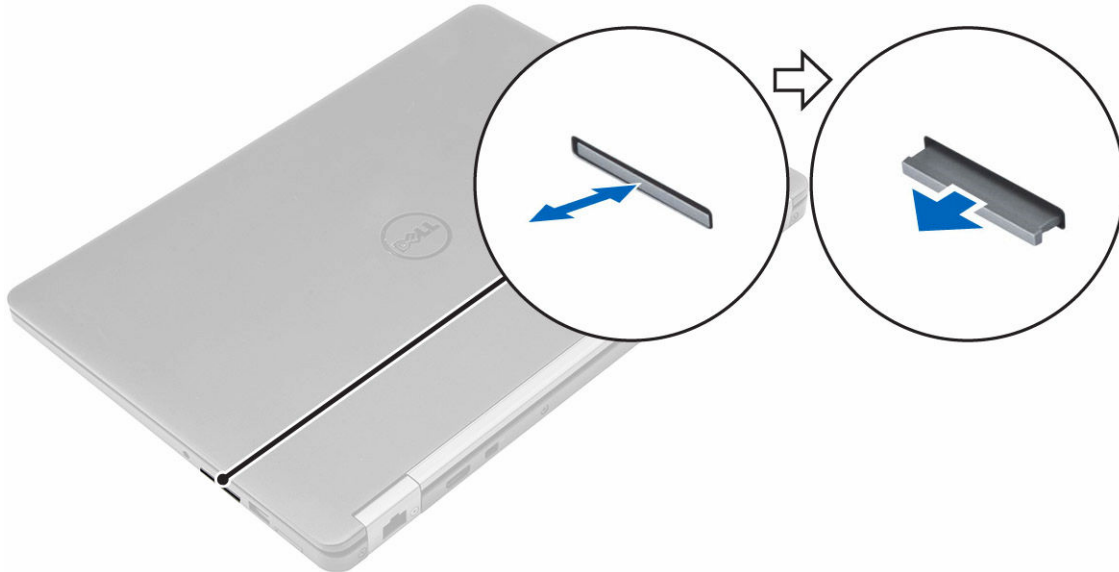
Installing the Secure Digital (SD) Card

1. Slide the SD card into the slot until it clicks into place.
2. Follow the procedures in .After working inside your computer

Base cover

Removing the base cover

1. Follow the procedure in Before working inside your computer.
2. To remove the base cover:
   a. Loosen the screws that secure the base cover to the computer [1].
   b. Lift the base cover from the edges and remove it from the computer [2, 3].

   📝 NOTE: You may need a plastic scribe to lift the base cover from the edges.
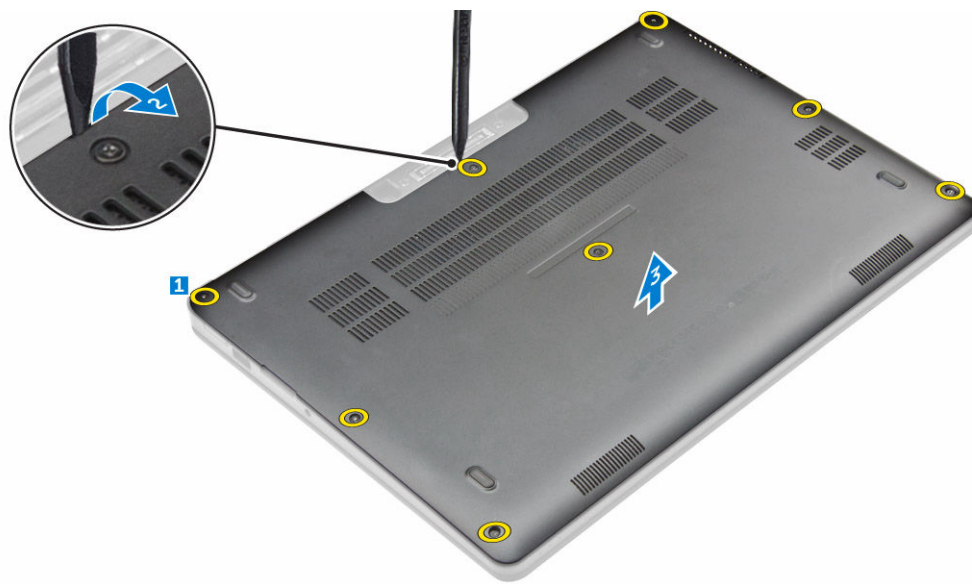
Installing the base cover

1. Align the tabs on the base cover with the slots on the computer.
2. Press the edges of the cover until it clicks into place.
3. Tighten the screws to secure the base cover to the computer.
4. Follow the procedure in After working inside your computer.

Battery

Removing the battery

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. To remove the battery:
   a. Disconnect the battery cable from the connector on the system board [1].
   b. Remove the screw that secures the battery to the computer [2].
   c. Lift the battery away from the computer [3].
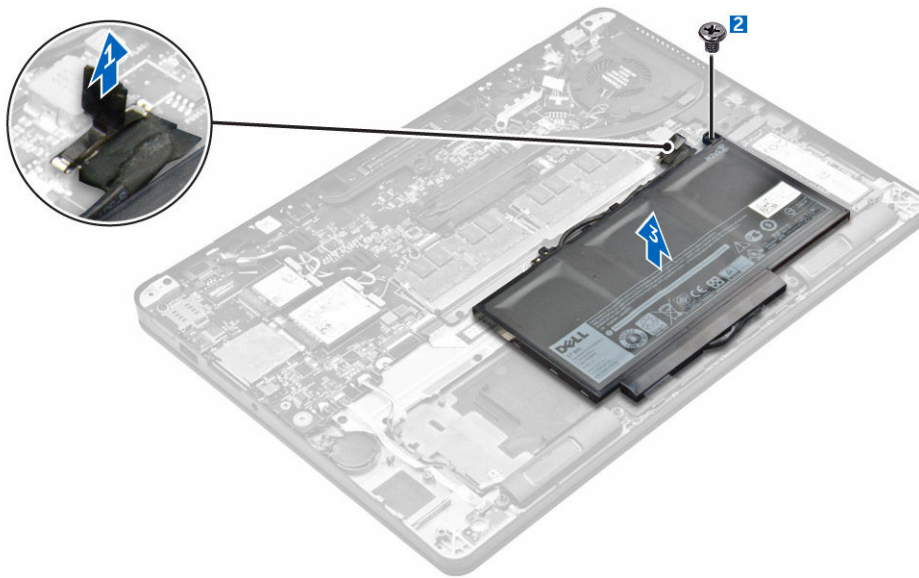
Installing the battery

1. Align the tabs on the battery with the slots on the palmrest.

   NOTE: Ensure that the battery cable is routed through the routing clips on the battery.

2. Tighten the screws to secure the battery to the computer.

   NOTE: The number of screws will vary depending on the type of battery.

3. Connect the battery cable to the connector on the system board.
4. Install the base cover.
5. Follow the procedure in After working inside your computer.

Solid State Drive (SSD)

Removing the Solid State Drive (SSD)

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. To remove the SSD:
   a. Remove the screw that secures the SSD to the computer [1].
   b. Remove the SSD from the computer [2].
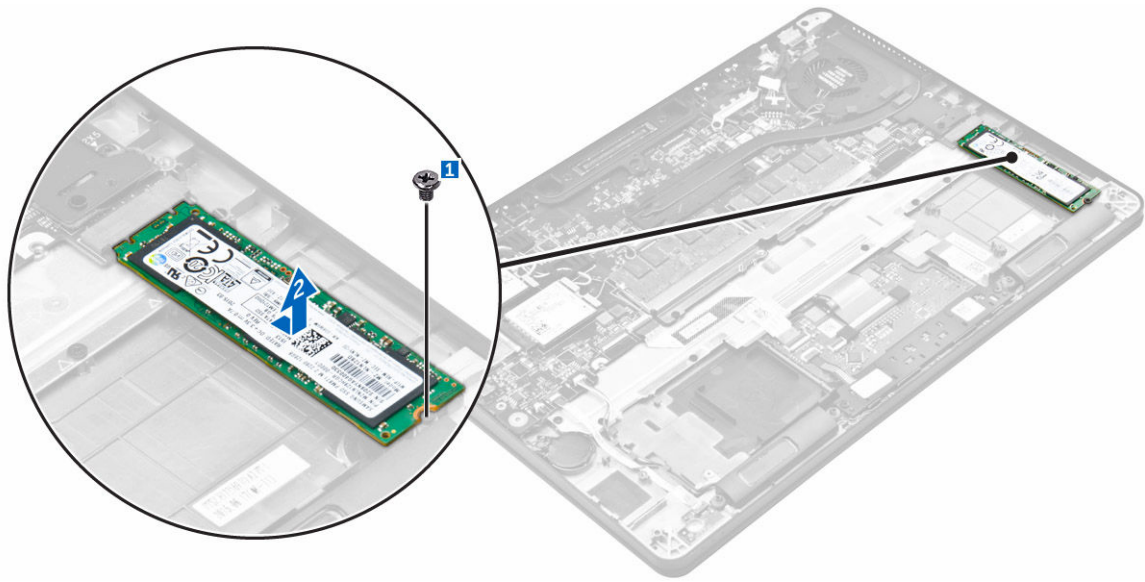
Installing the Solid State Drive (SSD)

1. Insert the SSD into the connector on the system board.
2. Tighten the screw to secure the SSD to the computer.
3. Install the:
   a. battery
   b. base cover
4. Follow the procedure in After working inside your computer.

PCIe Solid State Drive (SSD)

Removing the optional PCIe SSD

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. To remove the PCIe SSD:
   a. Remove the screws that secure the SSD bracket to the computer [1].
   b. Remove the SSD bracket [2].
   c. Remove the SSD from the computer [3].
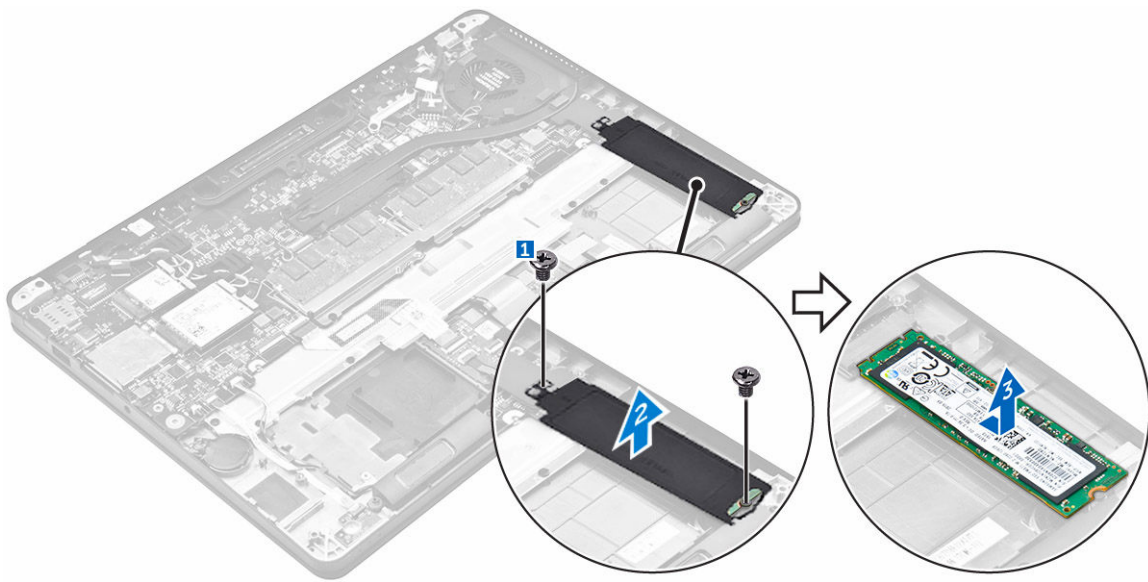
Installing the optional PCIe SSD

1. Insert the SSD into the connector on the system board.
2. Place the SSD bracket over the SSD and tighten the screws to secure it to the computer.
3. Install the:
   a. battery
   b. base cover
4. Follow the procedure in After working inside your computer.

Speaker

Removing the speakers

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. To remove the speaker:
   a. Disconnect the speaker cable from the connector on the system board [1].
   b. Unroute the speaker cable from the routing clips on the touchpad and the computer [2].
   c. Remove the speaker from the computer [3].
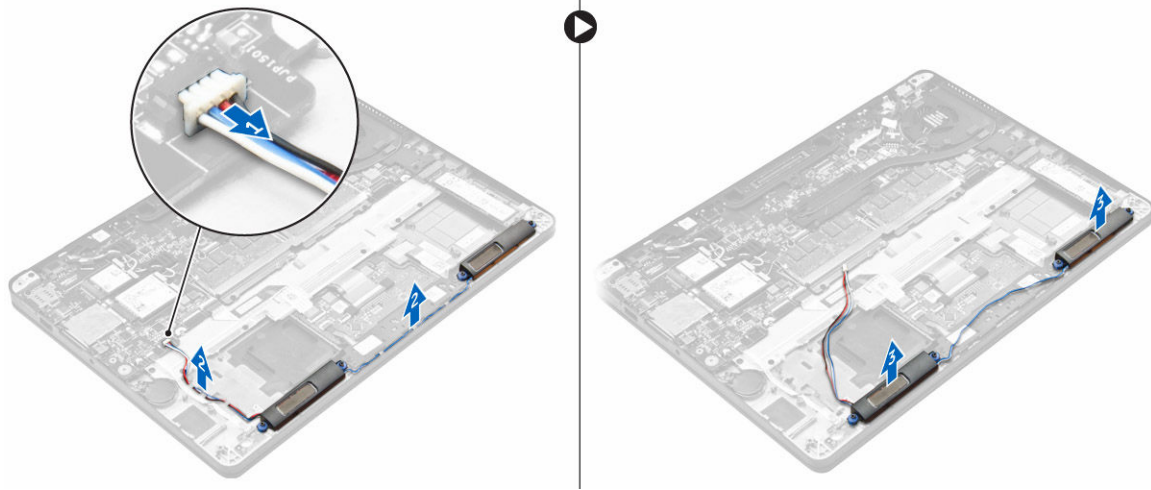
Installing the speakers

1. Place the speakers into the slots on the computer.
2. Route the speaker cable through the retention clips on the computer.
3. Connect the speaker cable to the connector on the system board.
4. Install the:
   a. battery
   b. base cover
5. Follow the procedure in After working inside your computer.

Coin cell battery

Removing the coin cell battery

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. To remove the coin cell battery:
   a. Disconnect the coin cell battery cable from the connector on the system board [1].
   b. Lift the coin cell battery to release it from the adhesive and remove it from the system board [2].
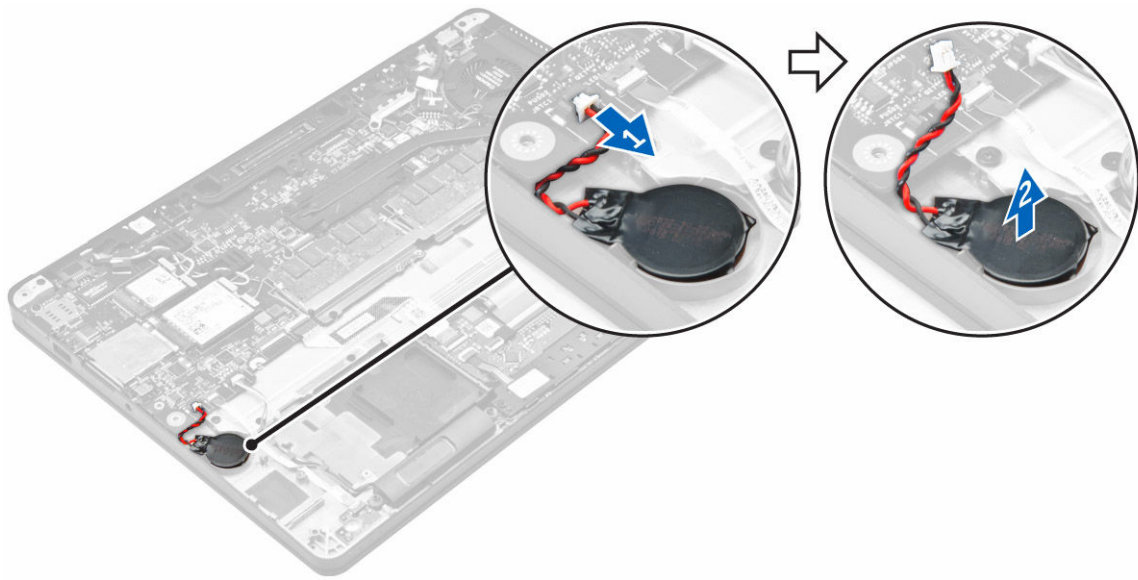
Installing the coin cell battery

1. Insert the coin cell battery into the slot on the computer.
2. Connect the coin cell battery cable to the connector on the system board.
3. Install the:
   a. battery
   b. base cover
4. Follow the procedure in After working inside your computer.

WWAN card

Removing the WWAN card

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. To remove the WWAN card:
   a. Remove the screw that secures the WWAN card [1].
   b. Remove the metal bracket [2].
   c. Disconnect the WWAN cables from the connectors on the WWAN card [3].
   d. Remove the WWAN card from the computer [4].
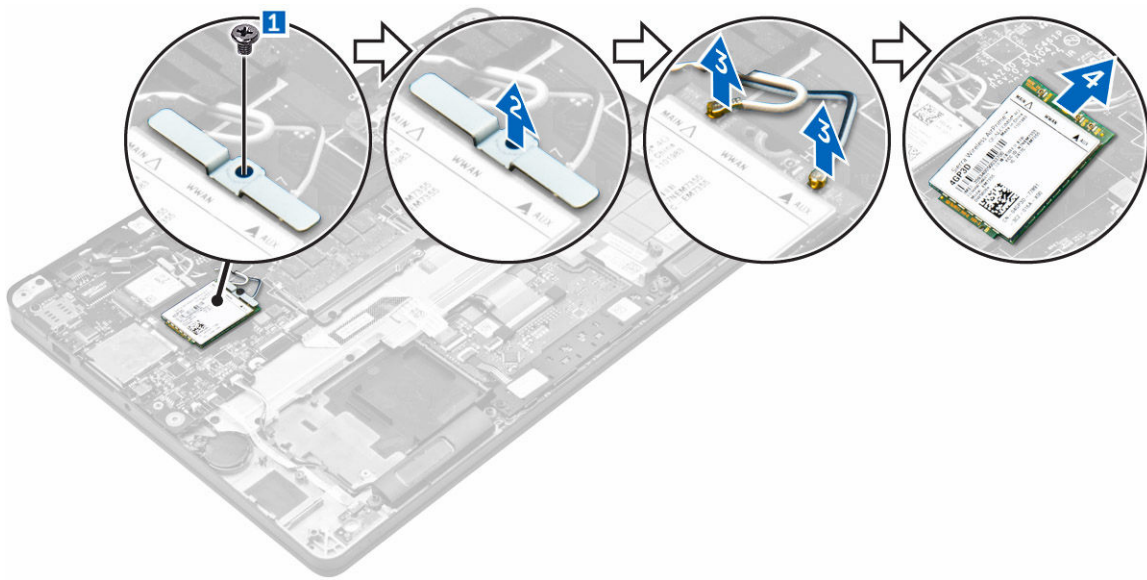
Installing the WWAN card

1. Insert the WWAN card into the connector on the computer.
2. Connect the WWAN cables to the connectors on the WWAN card.
3. Place the metal bracket and tighten the screw to secure it to the computer.
4. Install the:
   a. battery
   b. base cover
5. Follow the procedure in After working inside your computer.

WLAN card

Removing the WLAN card

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. To remove the WLAN card:
   a. Remove the screw that secures the metal bracket to the WLAN card [1].
   b. Remove the metal bracket [2].
   c. Disconnect the WLAN cables from the connectors on the WLAN card [3].
   d. Remove the WLAN card from the computer [4].
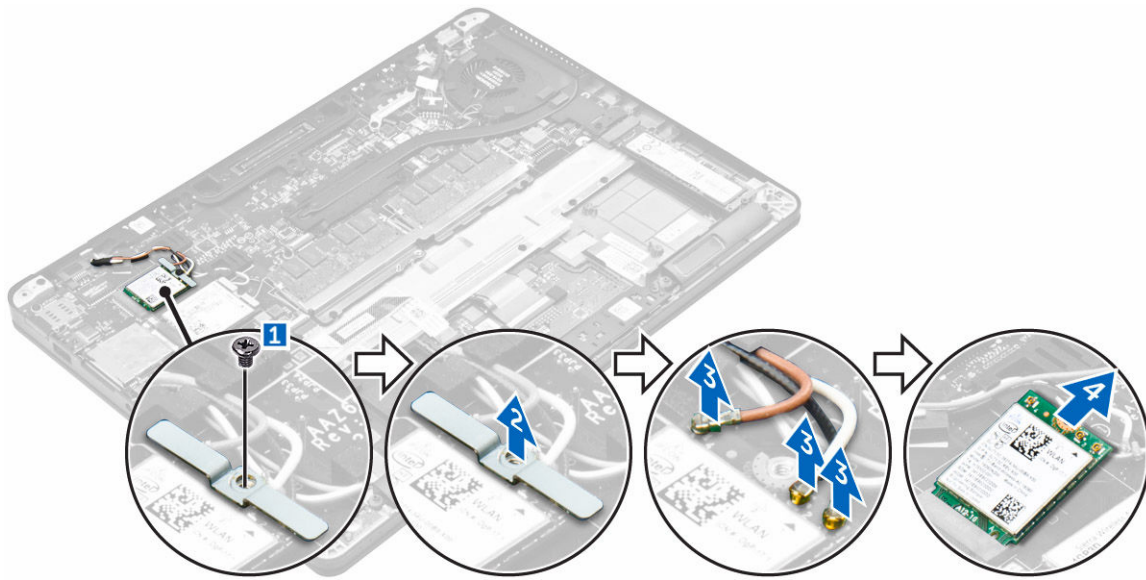
Installing the WLAN card

1. Insert the WLAN card into the connector on the system board.
2. Connect the WLAN cables to the connectors on the WLAN card.
3. Place the metal bracket and tighten the screw to secure it to the computer.
4. Install the:
   a. battery
   b. base cover
5. Follow the procedure in After working inside your system.

Memory module

Removing the memory module

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
3. Pull the clips securing the memory module until the memory module pops up [1].
4. Remove the memory module from the system board [2].
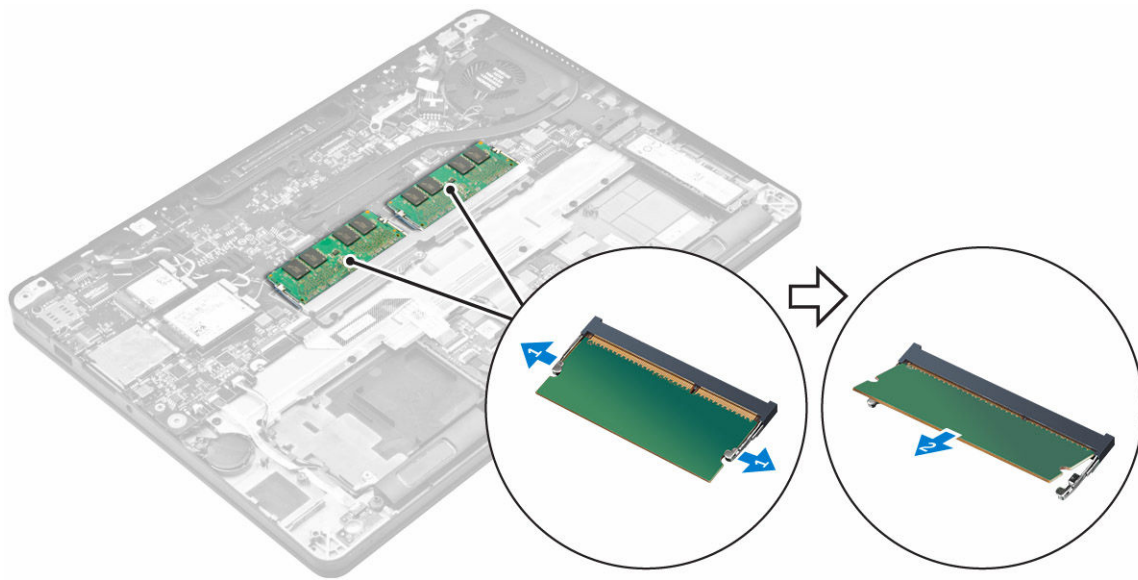
Installing the memory module

1. Insert the memory module into the memory module socket until the clips secure the memory module.
2. Install the:
   a. [battery](#)
   b. [base cover](#)
3. Follow the procedures in [After working inside your computer](#).

Heat sink

Removing the heat sink assembly

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
   a. [base cover](#)
   b. [battery](#)
3. Disconnect the fan cable.
4. Remove the screws that secure the heat sink assembly to the computer and the system board [1, 2].
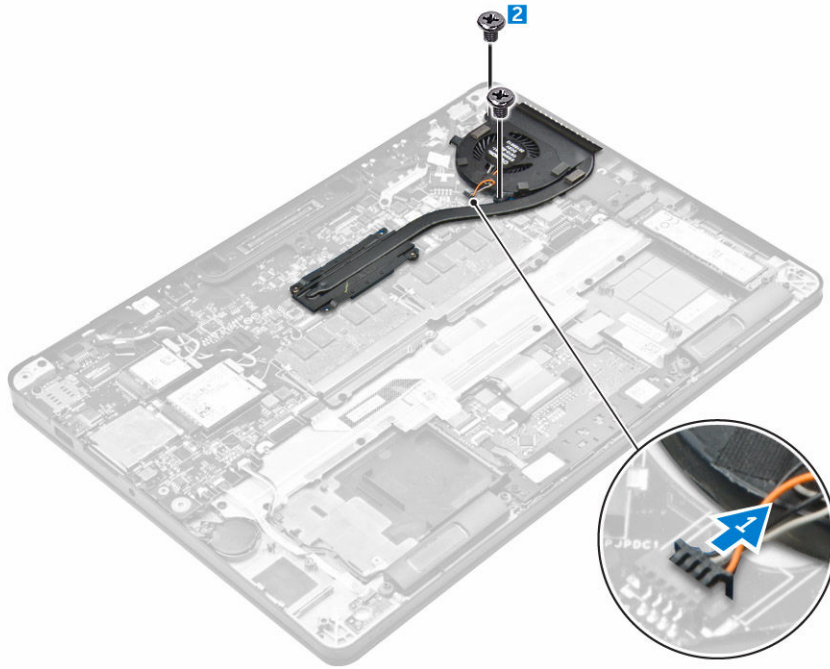
5. To remove the heat sink:
   a. Remove the screws that secure the heat sink assembly to the system board [1, 2, 3, 4].

   > **NOTE: Remove the screws that secure the heat sink to the system board in the order of the callouts shown [1, 2, 3, 4].**

   b. Lift the heat sink assembly from the system board [5].
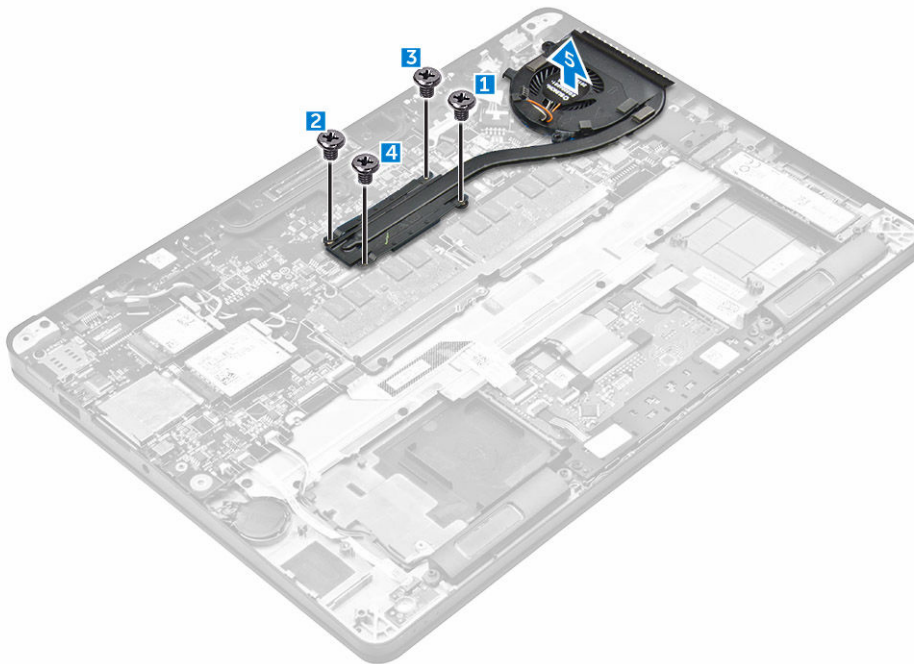
Installing the heat sink assembly

1. Align the heat sink assembly with screw holders on the system board.
2. Tighten the screws to secure the heat sink assembly to the computer and system board.

> **NOTE: Tighten the screws on the system board in the order of the callout numbers [1, 2, 3, 4].**

3. Connect the fan cable to the connector on the system board.

4. Install the:
   a. battery
   b. base cover

5. Follow the procedure in After working inside your computer.

Power connector port

Removing the power connector port

1. Follow the procedure in Before working inside your computer.

2. Remove the:
   a. base cover
   b. battery

3. To remove the power connector port:
   a. Disconnect the power connector port cable from the system board[1] .
   b. Unroute the power connector port cable from the clip on the heat sink.
   c. Remove the screw to release the metal bracket on the power connector port [2].
   d. Lift the metal bracket from the computer [3].
   e. Remove the power connector port from the computer [4].
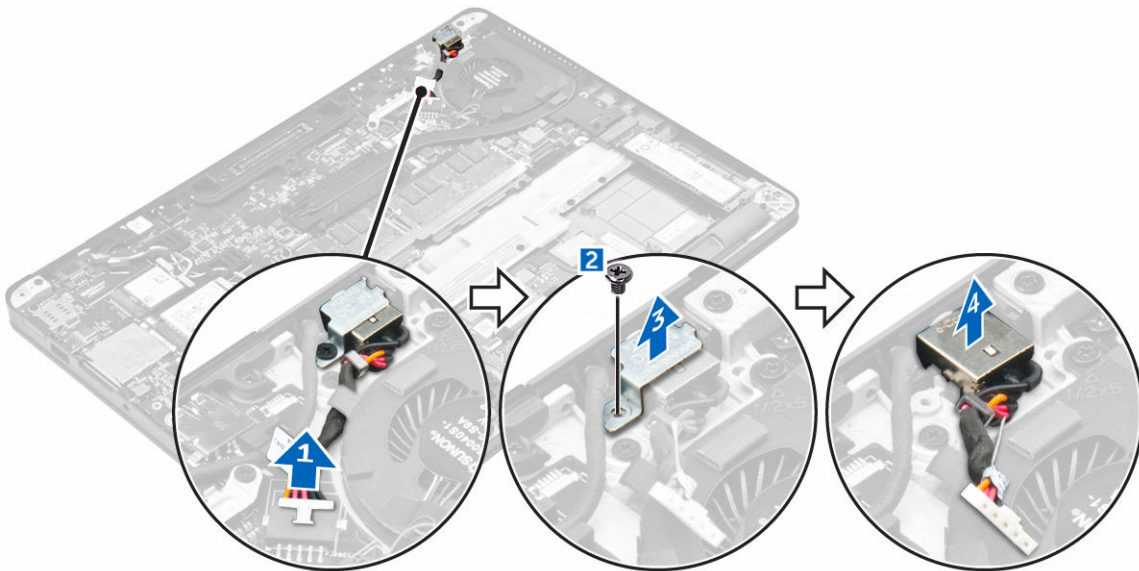
Installing the power connector port

1. Insert the power connector port into the slot on the computer.

2. Place the metal bracket on the power connector port and tighten the screw to secure the power connector port to the computer.

3. Route the power connector port cable through the routing clip on the heat sink.

4. Connect the power connector port cable to the connector on the system board.

5. Install the:
   a. battery
   b. base cover

6. Follow the procedure in After working inside your computer.

Dock frame

Removing the dock frame

1. Follow the procedure in <u>Before working inside your computer</u>.
2. Remove the:
   a. <u>base cover</u>
   b. <u>battery</u>
3. Remove the screws that secure the dock frame to the computer [1].
4. Lift the dock frame from the computer [2].

Installing the dock frame

1. Place the dock frame on the computer.
2. Tighten the screws to secure the dock frame to the computer.
3. Install the:
   a. <u>battery</u>
   b. <u>base cover</u>
4. Follow the procedure in <u>After working inside your system</u>.

System board

Removing the system board

1. Follow the procedure in <u>Before working inside your computer</u>.
2. Remove the:
   a. <u>base cover</u>
   b. <u>battery</u>
   c. <u>memory module</u>
   d. <u>SSD</u>
   e. <u>dock frame</u>
   f. <u>WLAN card</u>
   g. <u>WWAN card</u>

h. heat sink assembly
i. coin cell battery

3. To remove the display assembly cable:
    a. Unroute the WWAN and WLAN cables [1].
    b. Remove the screws that secures the display assembly cable bracket to the system board [2].
    c. Lift the display assembly cable bracket from the computer [3].
    d. Disconnect the display assembly cable from the computer [4].
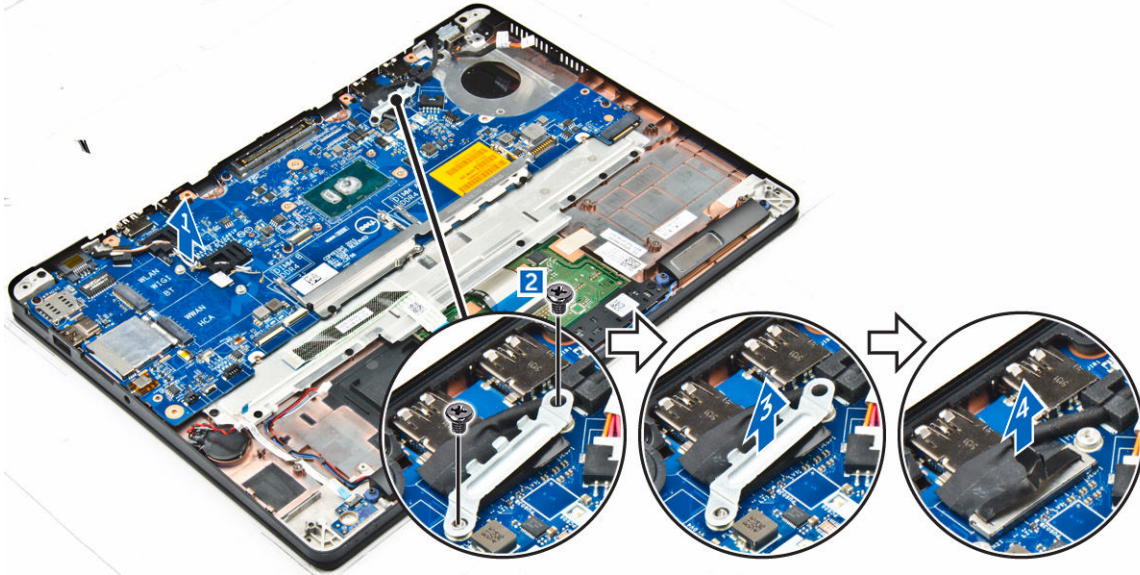
4. Disconnect the speaker cable [1], coin cell battery cable [2], LED board cable, touchpad cable [3, 4], and power connector port cable [5].
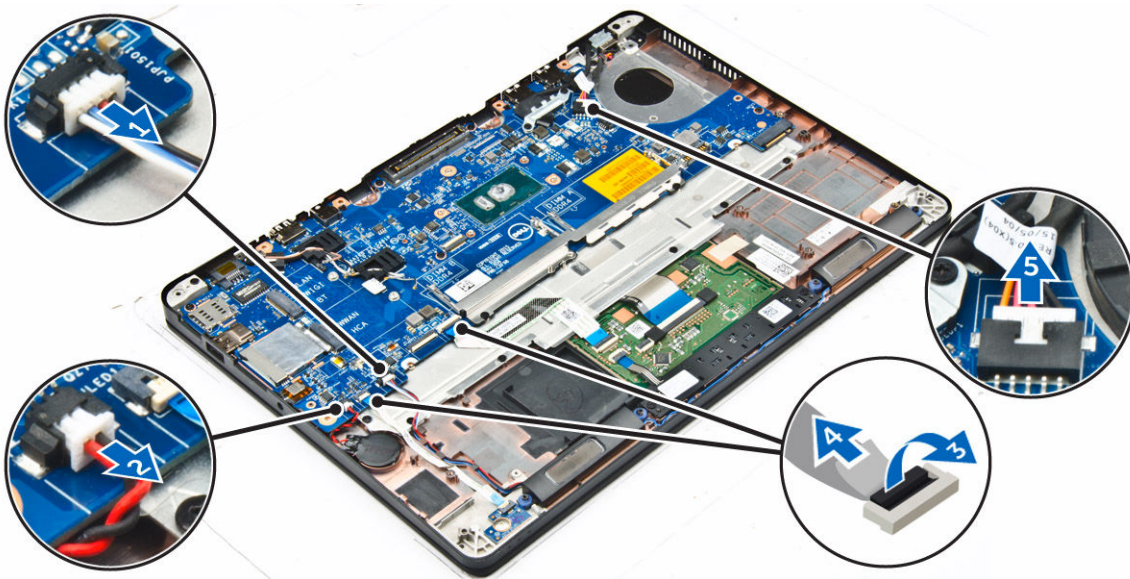
5. To remove the system board:
    a. Remove the screws that secure the metal bracket to the system board [1]
    b. Lift the metal bracket [2].
    c. Remove the screws that secure system board to the computer [3].
    d. Lift the system board from the computer [4].
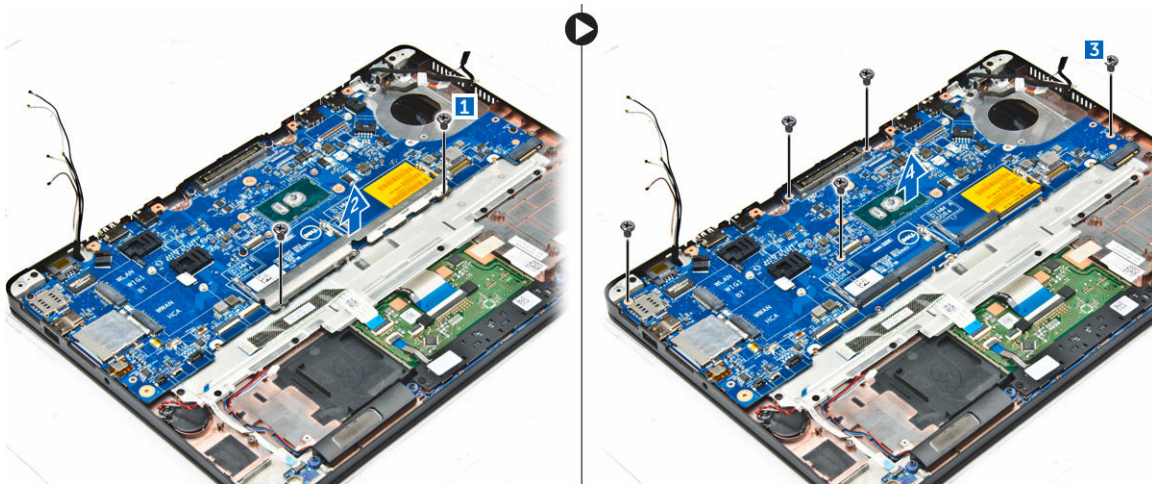
Installing the system board

1. Align the system board with the screw holders on the computer.
2. Place the metal bracket over the memory module connectors and tighten the screws to secure it to the computer.
3. Tighten the screws to secure the system board to the computer.
4. Connect the speaker, power connector, LED, touchpad, and system board cables to the connectors on the system board:
5. Connect the display assembly cable to the connector on the system board.
6. Place the metal bracket over the display assembly cable and tighten the screws to secure it.
7. Install the:
   a. coin cell battery
   b. heat sink assembly
   c. WWAN card
   d. WLAN card
   e. dock frame
   f. SSD
   g. memory module
   h. battery
   i. base cover
8. Follow the procedure in After working inside your computer.

Keyboard

Removing the keyboard assembly

> **NOTE: The keyboard and the keyboard tray together is called the keyboard assembly.**

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. SSD
   d. WLAN card
   e. WWAN card
   f. memory module
   g. heat sink assembly
   h. coin cell battery

i. dock frame
j. power connector port
k. system board

3. Peel the touchpad cable from the keyboard assembly [1].

4. Disconnect the keyboard cables from the connectors on the touchpad board [2, 3].

5. Remove the screws that secure the keyboard assembly to the computer [1].

6. Lift the keyboard assembly from the computer [2].
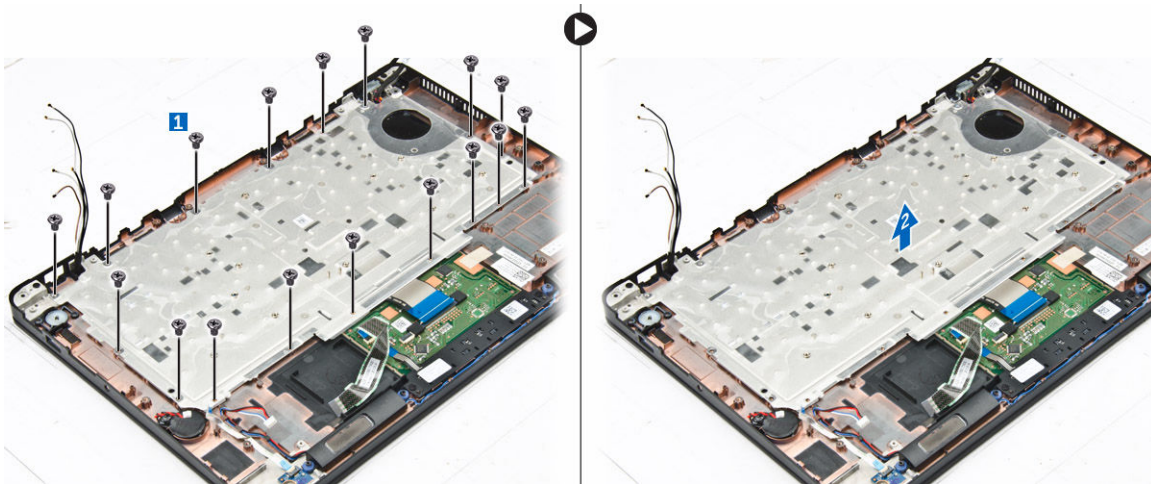
Removing the keyboard from the keyboard tray

1. Follow the procedure in Before working inside your computer.

2. Remove the keyboard assembly.

3. Remove the screws that secure the keyboard to the keyboard assembly [1].

4. Lift the keyboard away from the keyboard tray [2].

Installing the keyboard to the keyboard tray

1. Align the keyboard with the screw holders on the keyboard tray.
2. Tighten the screws to secure the keyboard to the keyboard tray.
3. Install the keyboard assembly.

Installing the keyboard assembly

> NOTE: The keyboard and the keyboard tray together is called the keyboard assembly.

1. Align the keyboard assembly with the screw holders on the computer.
2. Tighten the screws that secure the keyboard to the computer.
3. Connect the keyboard cables to the connectors on the touchpad board.
4. Install the:
   a. system board
   b. dock frame
   c. WLAN card
   d. WWAN card
   e. memory module
   f. heat sink assembly
   g. power connector port
   h. coin cell battery
   i. SSD
   j. battery
   k. base cover
5. Follow the procedure in After working inside your system.

Display assembly

Removing the display assembly

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover

b. battery
   c. WLAN card
   d. WWAN card
3. To remove the display hinge brackets:
   a. Remove the screw that secures the display hinge bracket to the computer [1].
   b. Remove the display hinge bracket from the computer [2].
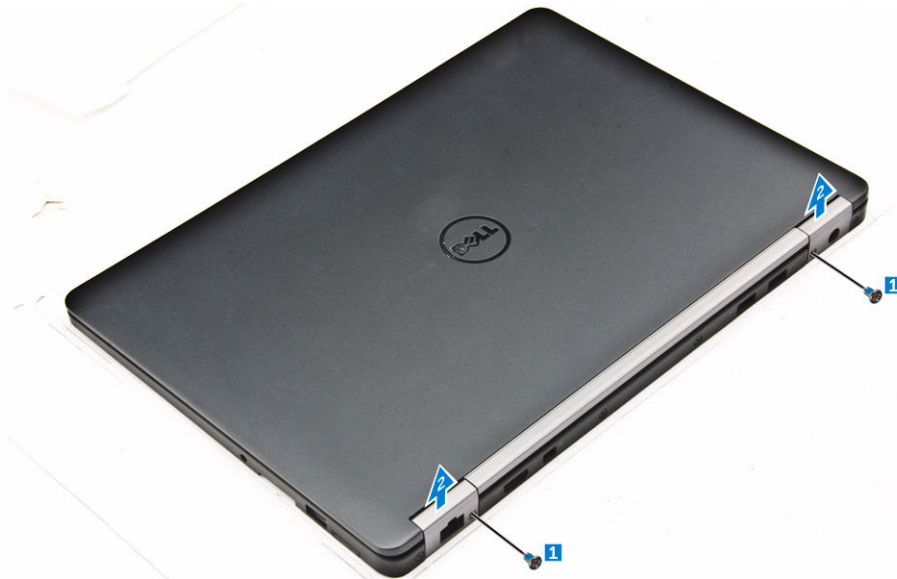
4. To disconnect the display assembly cable:
   a. Unroute the WLAN and WWAN cables from the routing channel on the system board [1].
   b. Remove the screws that secure the display assembly cable bracket to the computer [2].
   c. Remove the display assembly cable bracket to access the display assembly cable [3].
   d. Disconnect the display assembly cable from the system board [4].
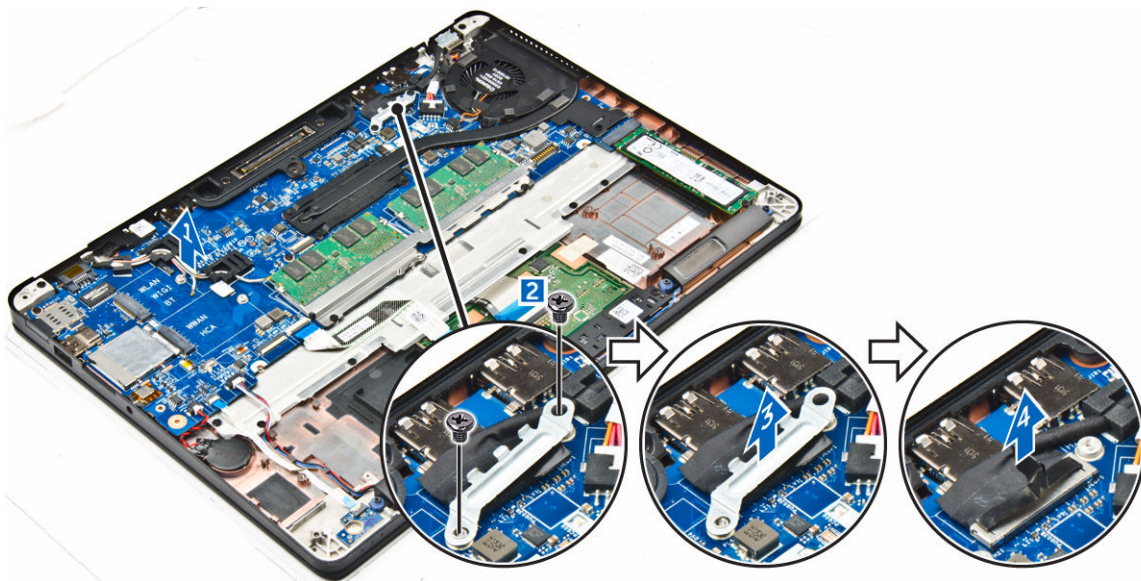
5. To disconnect the display assembly:
   a. Remove the screws that secure the display assembly [1].
   b. Release the WWAN and WLAN cables and display assembly cable from the slot on the computer [2].
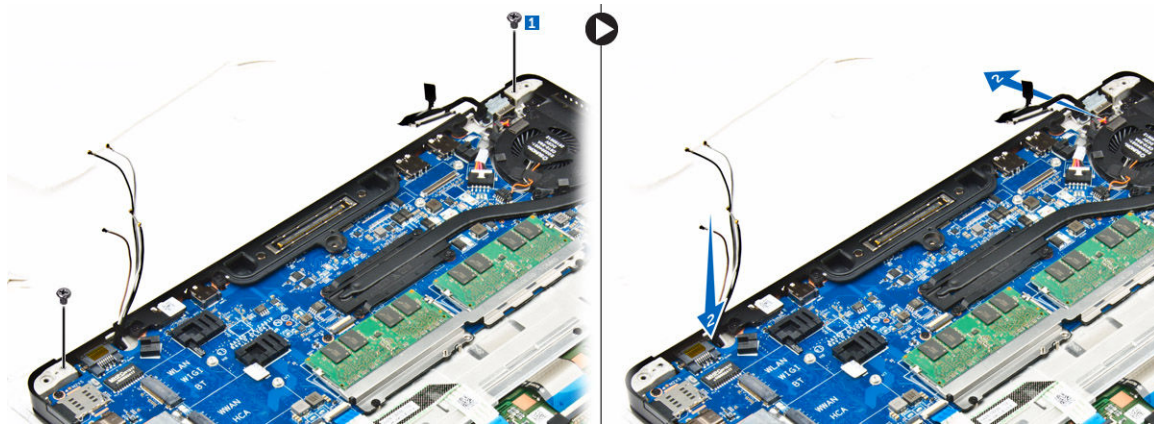
6. To remove the display assembly:
   a. Remove the screws that secure the display assembly to the computer [1].
   b. Open the display assembly [2] and lift the display assembly to remove it from the computer [3].
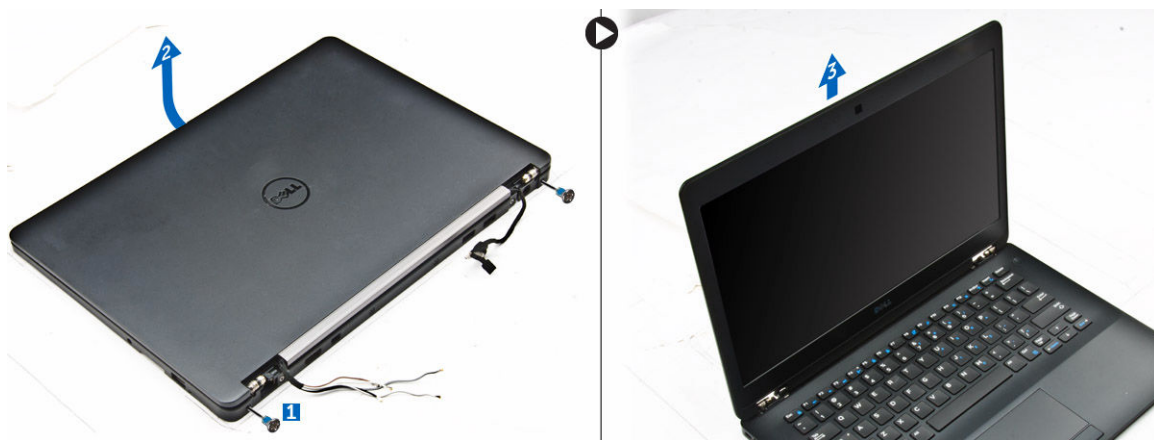
Installing the display assembly

1. Insert the display hinges into the slots on the computer.

   > **NOTE: This should be done with the display assembly in open position. Ensure that the cables are free from the hinge slots and computer.**

2. Close the display assembly.
3. Insert the WLAN and WWAN cables through the slot on the computer
4. Route the display assembly cable through the slot and routing clips on the computer.
5. Tighten the screws to secure the display assembly to the computer.
6. Route the WLAN and WWAN cables through the routing channel on the system board.
7. Connect the WLAN and WWAN cables to the connectors on the WLAN and WWAN cards.
8. Connect the display cable to the connector on the system board.
9. Place the display cable bracket over the connector and tighten the screws to secure the display cable to the system board.
10. Tighten the screws to secure the display assembly to the computer.
11. Install the display hinge brackets and tighten the screws to secure it to the computer.
12. Install the:
    a. WLAN card
    b. WWAN card
    c. battery
    d. base cover
13. Follow the procedure in After working inside your computer.

Display bezel

Removing the display bezel

NOTE: The display bezel is available only for non touch systems.

1. Follow the procedure in <u>Before working inside your computer</u>.
2. Remove the:
   a. <u>base cover</u>
   b. <u>battery</u>
   c. <u>display assembly</u>
3. Using a plastic scribe, release the tabs on the edges to release the display bezel from the display assembly [1, 2].
4. Remove the display bezel from the display assembly.
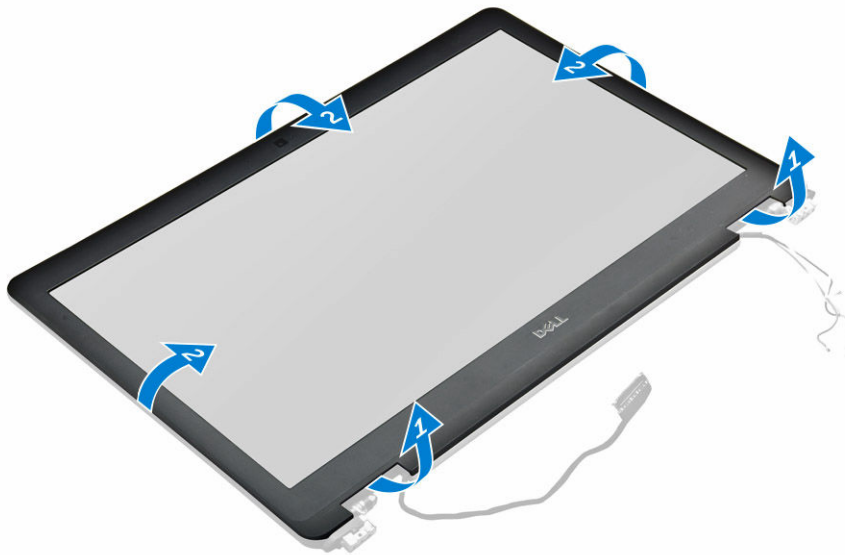
Installing the display bezel

1. Place the display bezel on the display assembly.
2. Press the edges of the display bezel until it clicks onto the display assembly.
3. Install the:
   a. <u>display assembly</u>
   b. <u>battery</u>
   c. <u>base cover</u>
4. Follow the procedure in <u>After working inside your system</u>.

Display panel

Removing the display panel

1. Follow the procedure in <u>Before working inside your computer</u>.
2. Remove the:
   a. <u>base cover</u>
   b. <u>battery</u>
   c. <u>display assembly</u>

d. display bezel

NOTE: This is applicable only for non touch systems.

3. To remove the display panel for non touch systems:
   a. Remove the screws that secure the display panel to the display assembly [1].
   b. Lift the display panel and turn the display panel over to access the eDP cable [2].
   c. Peel the adhesive [3] to access the eDP cable.
   d. Disconnect the eDP cable from the connector [4, 5, 6].
   e. Lift the display panel.
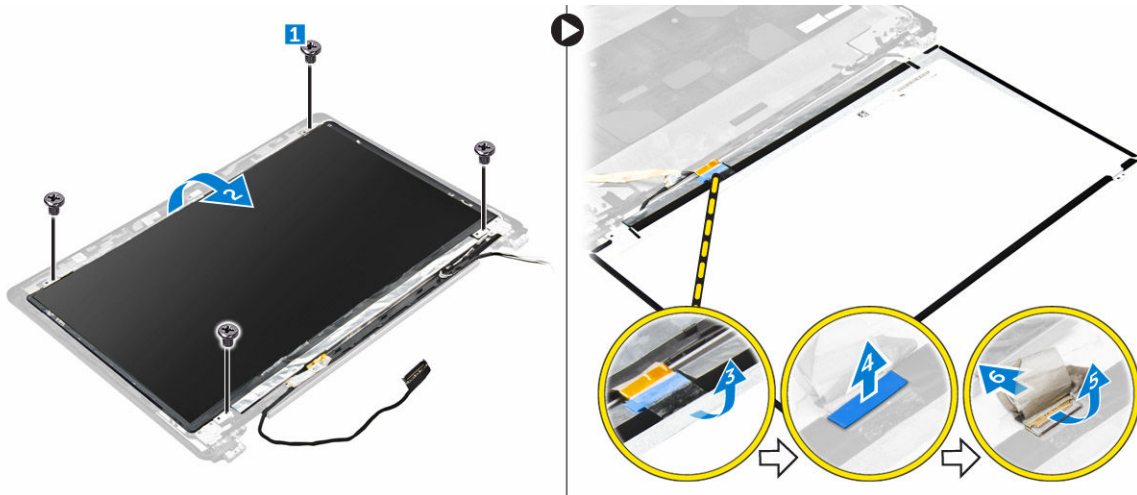
4. To remove the display panel for touch systems:
   a. Using a plastic scribe lift the edges of the display panel to disengage it from the display assembly.
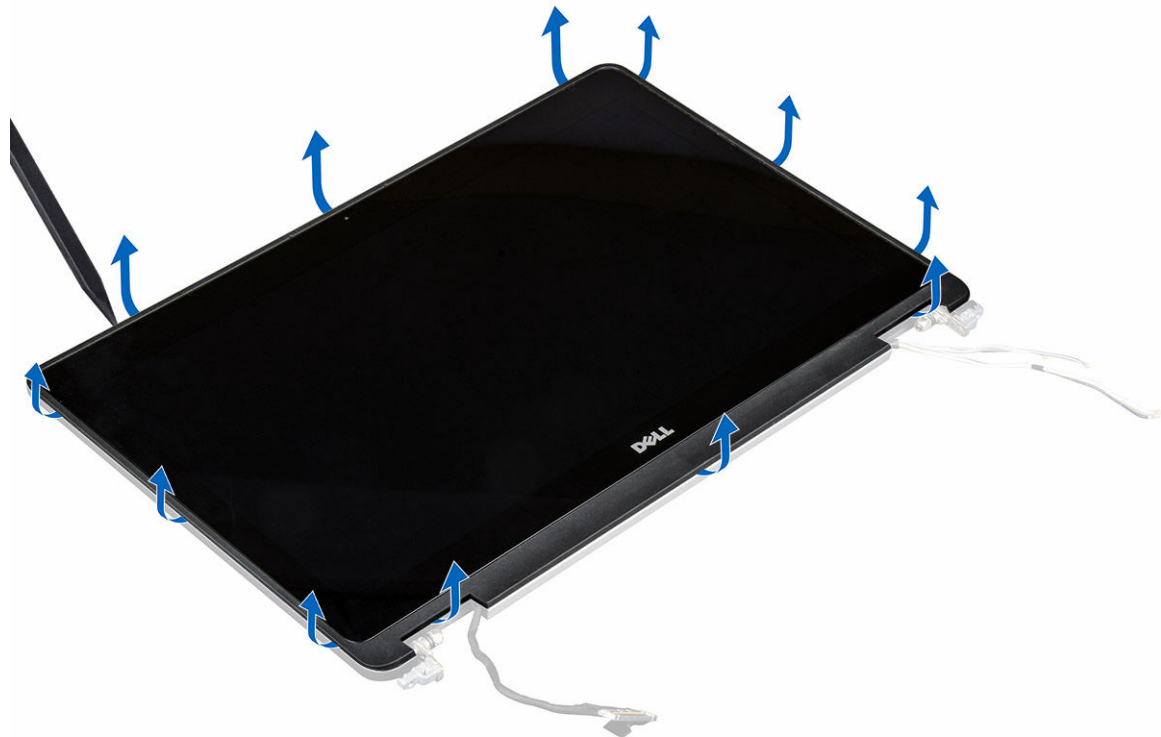
   b. Place the display panel facedown.
   c. Slide the display assembly to access the eDP cable.

d. Peel the adhesive to access the eDP cable [1].
e. Disconnect the eDP cable from the connector on the back of the display panel [2, 3].
f. Lift the display assembly from the display pane [4].

Installing the display panel

1. To install the display panel for non touch systems:
   a. Connect the eDP cable to the connector on the back of the display panel and fix the adhesive tape.
   b. Align the display panel with the tabs on the display assembly.
   c. Tighten the screws to secure the display panel to the display assembly.
2. To install the display panel for touch systems:
   a. Place the display panel facedown.
   b. Place the display assembly over the display panel and slide it forward.
   c. Connect the eDP cable to the connector on the back of the display panel and fix the adhesive tape.
   d. Turn the display assembly over.
   e. Align the display panel with the tabs on the display assembly.
   f. Press the edges of the display panel to secure it to the display assembly.
3. Install the:
   a. display bezel

   > NOTE: This is applicable only for non touch systems.

   b. display assembly
   c. battery
   d. base cover
4. Follow the procedure in After working inside your system.

Display hinges

Removing the display hinge

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. display assembly
   d. display bezel

   > NOTE: This is applicable only for non touch systems.

   e. display panel

   > NOTE: This is applicable only for touch systems.

3. To remove the hinges:
   a. Remove the screws that secure the display hinge to the display assembly [1, 3].

   > NOTE: The number of screws will vary for touch and non touch systems.

   b. Remove the display hinge [2, 4].
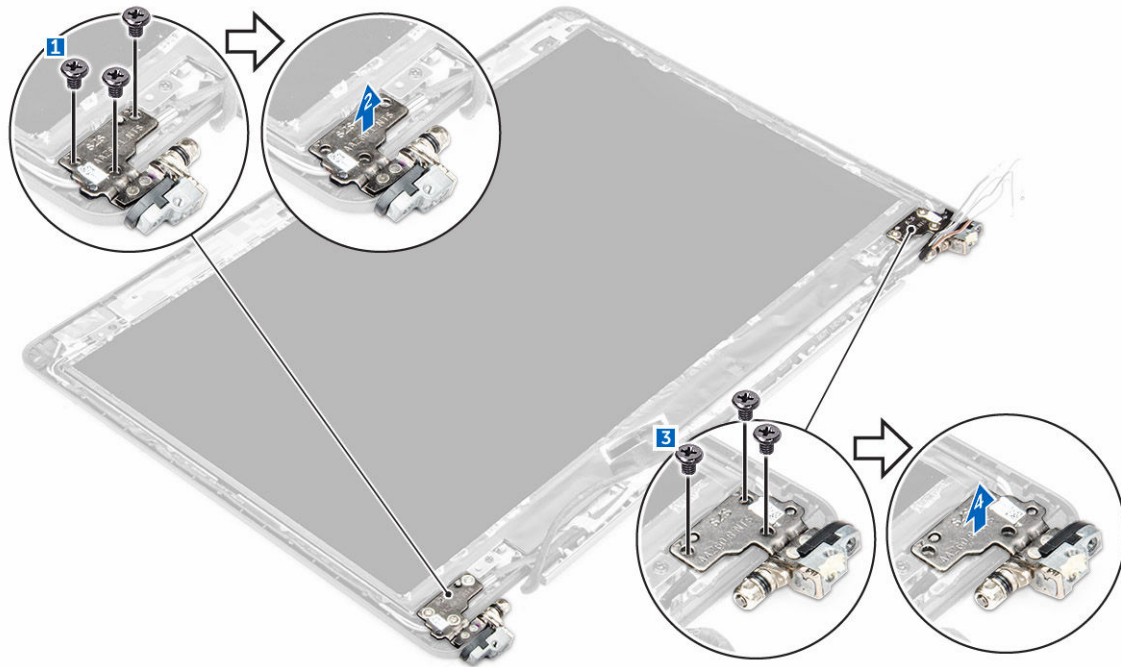
Figure 1. Removing hinges for a non touch system
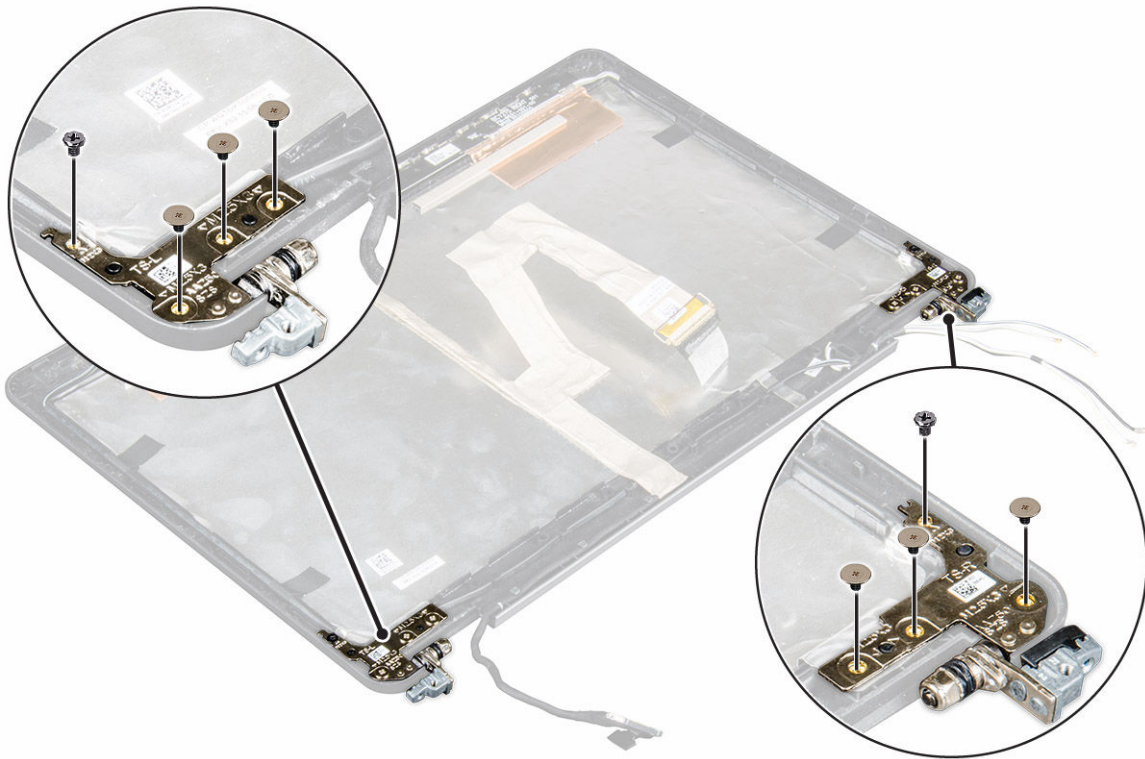
Figure 2. Removing hinges for a touch system

Installing the display hinge

1. Align the display hinges with the screw holders on the display assembly.
2. Tighten the screws to secure the display hinge to the display assembly.
3. Install the:

a. display bezel

   ![NOTE icon] **NOTE: This is applicable only for non touch systems.**

b. display panel

   ![NOTE icon] **NOTE: This is applicable only for touch systems.**

c. display assembly
d. battery
e. base cover

4. Follow the procedure in After working inside your system.

eDP cable

Removing the eDP cable

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. display assembly
   d. display bezel

      ![NOTE icon] **NOTE: This is applicable only for non touch systems.**

   e. display panel
3. Disconnect the camera cable from the camera [1].
4. Peel the camera cable adhesive and unroute the eDP and display cable from the routing clips on the display assembly [2, 3].
5. Remove the eDP cable from the display assembly.
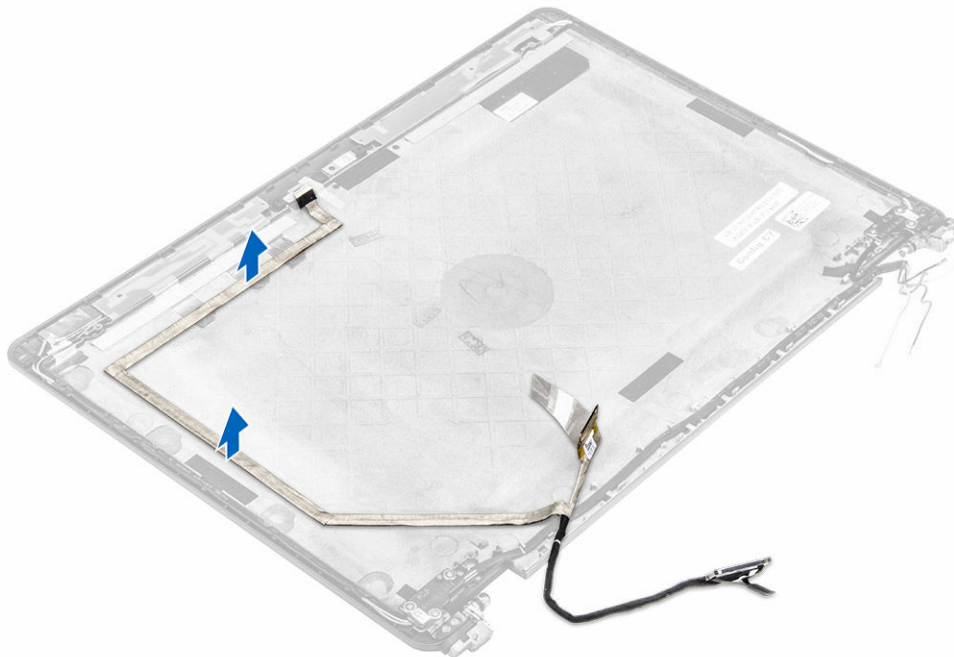
Figure 3. Removing the eDP cable for non touch systems
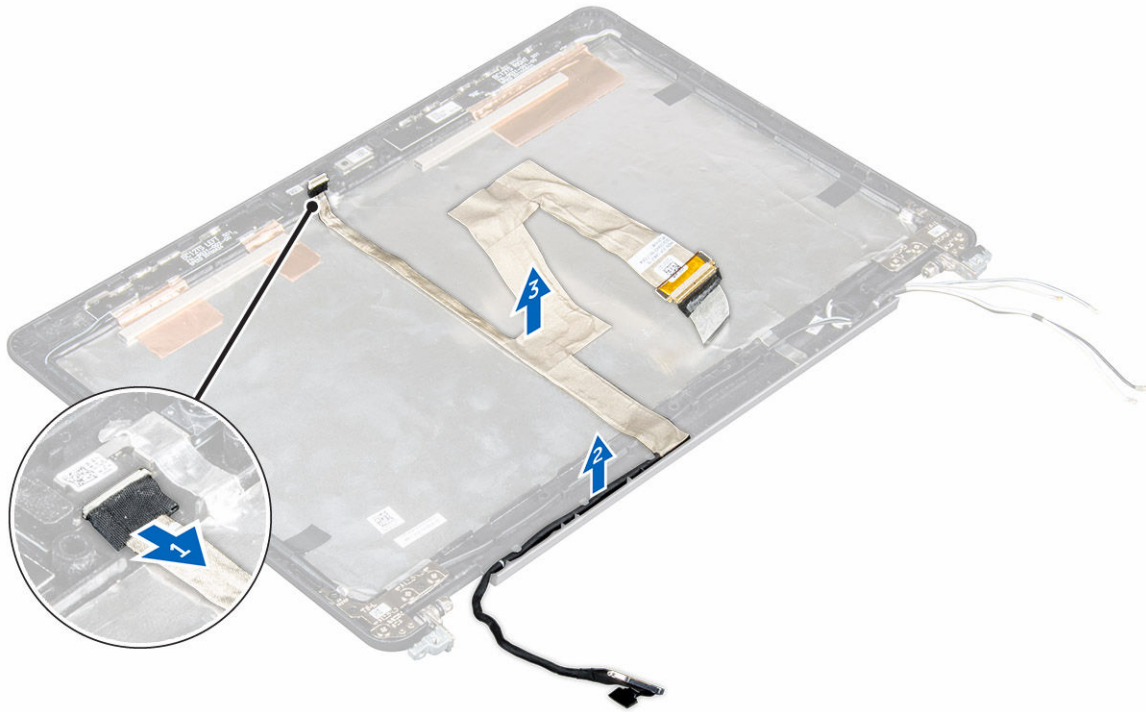
Figure 4. Removing the eDP cable for touch systems

Installing the eDP cable

1. Route the display cable through the routing clips on the display assembly.
2. Affix the camera cable adhesive and connect the camera cable.
3. Connect the eDP cable to the connector on the display assembly.
4. Install the:
   a. display panel
   b. display bezel

   > ![NOTE icon] NOTE: This is applicable only for non touch systems.

   c. display assembly
   d. battery
   e. base cover
5. Follow the procedure in After working inside your system.

Camera

Removing the camera

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. display assembly
   d. display bezel

   > ![NOTE icon] NOTE: This is applicable only for non touch systems.

e. [display panel](#)

3. Peel the adhesive that secures the camera to the display assembly [1].
4. Disconnect the camera cable from the connector on the display assembly [2].
5. Lift the camera away from the display assembly [3].
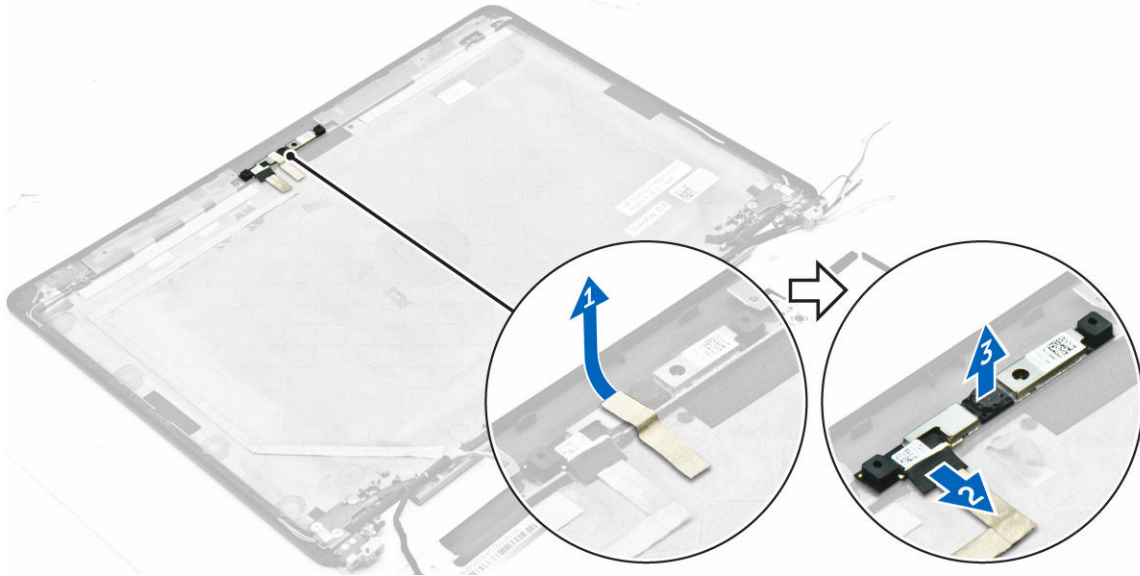
Figure 5. Removing the camera from a non touch system
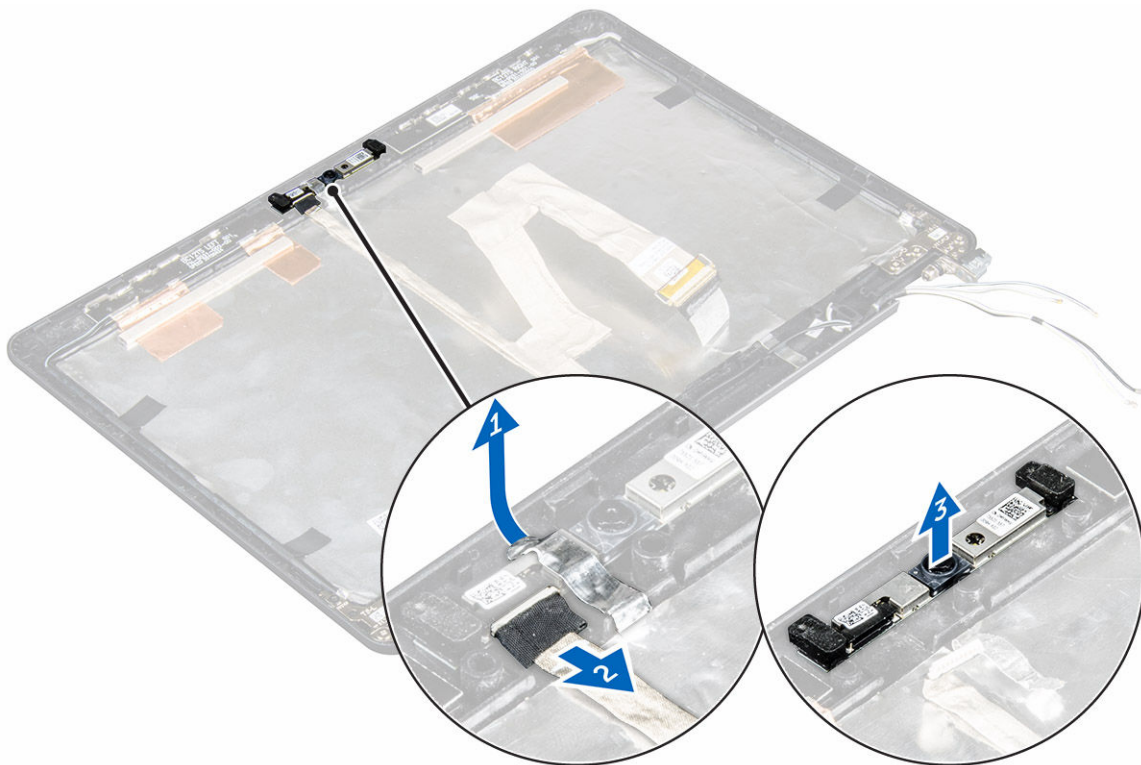
Figure 6. Removing the camera from a touch system

Installing the camera

1. Place the camera on the display assembly.
2. Connect the camera cable to the connector on the display assembly
3. Affix the adhesive to secure the camera to the display assembly.
4. Install the:
   a. display panel
   b. display bezel

   > ![NOTE icon] NOTE: This is applicable only for non touch systems.

   c. display assembly
   d. battery
   e. base cover
5. Follow the procedure in After working inside your system.

Palmrest

Replacing the palmrest

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. memory module
   d. SSD
   e. dock frame
   f. WLAN card
   g. WWAN card
   h. heat sink assembly
   i. power connector port
   j. coin cell battery
   k. display assembly
   l. speakers
   m. keyboard
   n. system board

   > ![NOTE icon] NOTE: The component you are left with is the palmrest.

3. Install the following components on the new palmrest.
   a. keyboard assembly
   b. system board
   c. coin cell battery
   d. WLAN card
   e. WWAN card
   f. memory module
   g. heat sink assembly
   h. power connector port
   i. dock frame
   j. display assembly
   k. SSD
   l. speakers
   m. battery
   n. base cover
4. Follow the procedure in After working inside your system.

System Setup

Boot Sequence

Boot Sequence allows you to bypass the System Setup-defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.

- Optical Drive
- Diagnostics

  NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.

The boot sequence screen also displays the option to access the System Setup screen.

Navigation keys

The following table displays the system setup navigation keys.

NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Table 1. Navigation keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Allows you to select a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area. **NOTE: For the standard graphics browser only.**
Esc	Moves to the previous page till you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
F1	Displays the System Setup help file.

System setup options

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

General screen options

This section lists the primary hardware features of your computer.

Option	Description
System Information	This section lists the primary hardware features of your computer.
	• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code.
	• Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM ASize, DIMM B Size,
	• Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology.
	• Device Information: Displays Primary Hard Drive, M.2 SSD-0, Dock eSATA Device, LOM MAC Address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, WiGig Device, Cellular Device, Bluetooth Device.
Battery Information	Displays the battery status and the type of AC adapter connected to the computer.
Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system.
	• Diskette Drive
	• Internal HDD
	• USB Storage Device
	• CD/DVD/CD-RW Drive
	• Onboard NIC
Advanced Boot Options	This option allows you the legacy option ROMs to load. By default, the **Enable Legacy Option ROMs** is disabled.
Date/Time	Allows you to change the date and time.

System Configuration screen options

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. The options are:
	• Disabled
	• Enabled
	• Enabled w/PXE: This option is enabled by default.
Parallel Port	Allows you to configure the parallel port on the docking station. The options are:
	• Disabled
	• AT: This option is enabled by default.
	• PS2

Option	Description
	• ECP
Serial Port	Allows you to configure the integrated serial port. The options are: • Disabled • COM1: This option is enabled by default. • COM2 • COM3 • COM4
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: • Disabled • AHCI • RAID On: This option is enabled by default.
Drives	Allows you to configure the SATA drives on board. All drives are enabled by default. The options are: • SATA-1 • M.2 PCI-e SSD-0 • SATA-2
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default. • Enable SMART Reporting
USB Configuration	This is an optional feature. This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy). If USB port is enabled, device attached to this port is enabled and available for OS. If USB port is disabled, the OS cannot see any device attached to this port. The options are: • Enable USB Boot Support (by default enable) • Enable External USB Port (by default enable) 📝 **NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.**
USB PowerShare	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port.
Audio	This field enables or disables the integrated audio controller. By default, the **Enable Audio** option is selected. The options are: • Enable Microphone (by default enable) • Enable Internal Speaker (by default enable)

Option	Description
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are: • Disabled • Dim • Bright (enabled by default)
Keyboard Backlight with AC	The Keyboard Backlight with AC option does not affect the main keyboard illumination feature. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled.
Keyboard Backlight Timeout with AC	The Keyboard Backlight Timeout dims out with AC option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled.
Keyboard Backlight Timeout on Battery	The Keyboard Backlight Timeout dims out with Battery option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled.
Unobtrusive Mode	This option, when enabled, pressing Fn+F7 turns off all light and sound emissions in the system. To resume normal operation, press Fn+F7 again. This option is disabled by default.
Miscellaneous Devices	Allows you to enable or disable the following devices: • Enable Camera —enabled by default • SD Card Read Only —enabled by default • Enable Media Card • Disable Media Card

Video screen options

Option	Description
LCD Brightness	Allows you to set the display brightness depending up on the power source (On Battery and On AC).

 **NOTE: The video setting will be visible only when a video card is installed into the system.**

Security screen options

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password. **NOTE: You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password and the hard drive password.** **NOTE: Successful password changes take effect immediately.** Default setting: Not set
System Password	Allows you to set, change or delete the system password. **NOTE: Successful password changes take effect immediately.**

Option	Description
	Default setting: Not set
Internal HDD-2 Password	Allows you to set, change, or delete the administrator password.
	✎ **NOTE: Successful password changes take effect immediately.**
	Default setting: Not set
Strong Password	Allows you to enforce the option to always set strong passwords.
	Default Setting: Enable Strong Password is not selected.
	✎ **NOTE: If Strong Password is enabled, Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.**
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Password Bypass	Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:
	• Disabled
	• Reboot bypass
	Default setting: Disabled
Password Change	Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.
	Default setting: **Allow Non-Admin Password Changes** is selected.
Non-Admin Setup Changes	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password.
TPM 1.2/2.0 Security	Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:
	• TPM On (enabled by default)
	• Clear
	• PPI Bypass for Enabled Commands
	• PPI Bypass for Disabled Commands
	• Disabled
	• Enabled
	✎ **NOTE: To upgrade or downgrade TPM1.2/2.0, download the TPM wrapper tool (software).**
Computrace	Allows you to activate or disable the optional Computrace software The options are:
	• Deactivate
	• Disable
	• Activate
	✎ **NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed**
	Default setting: Deactivate

Option	Description
CPU XD Support	Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support (default)
OROM Keyboard Access	Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are: · Enable · One Time Enable · Disable Default setting: Enable
Admin Setup Lockout	Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: **Disabled**

Secure Boot screen options

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. · Disabled · Enabled Default setting: Enabled.
Intel Software Guard Extensions	This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are: · **Disabled** (Default Setting) · Enabled
Enclave Memory Size:	This option sets SGX Enclave Reserve Memory Size. The option are: · 32 MB · 64 MB · 128 MB
Intel Software Guard Extensions	This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are: · **Disabled** (Default Setting) · Enabled
Enclave Memory Size:	This option sets SGX Enclave Reserve Memory Size. The option are: · 32 MB · 64 MB · 128 MB

Option	Description
Expert Key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: • PK • KEK • db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **Save to File**—Saves the key to a user-selected file • **Replace from File**—Replaces the current key with a key from a user-selected file • **Append from File**—Adds a key to the current database from a user-selected file • **Delete**—Deletes the selected key • **Reset All Keys**—Resets to default setting • **Delete All Keys**—Deletes all the keys NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.
Intel Software Guard Extensions	This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are: • **Disabled** (Default Setting) • Enabled
Enclave Memory Size	This option sets SGX Enclave Reserve Memory Size. The option are: • 32 MB • 64 MB • 128 MB

Intel Software Guard Extensions screen options

Option	Description
Intel SGX Enable	This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are: • Disabled • Enabled Default setting: Disabled
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory Size**. The options are: • 32 MB • 64 MB • 128 MB

Performance screen options

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. This option is enabled by default. Allows you to enable or disable multi-core support for the processor. The installed processor supports two cores. If you enable Multi Core Support, two cores are enabled. If you disable Multi Core Support, one core is enabled. • Enable Multi Core Support Default setting: The option is enabled.
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep feature. • Enable Intel SpeedStep Default setting: The option is enabled.
C-States Control	Allows you to enable or disable the additional processor sleep states. • C states Default setting: The option is enabled.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. • Enable Intel TurboBoost Default setting: The option is enabled.
Hyper-Thread Control	Allows you to enable or disable the Hyper-Threading in the processor. • Disabled • Enabled Default setting: Enabled.

Power Management screen options

Option	Description
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. Default setting: Wake on AC is not selected.
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: • Disabled • Every Day • Weekdays • Select Days

Option	Description
	Default setting: Disabled
USB Wake Support	Allows you to enable USB devices to wake the system from Standby.

NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.

- Enable USB Wake Support

Default setting: The option is disabled.

Option	Description
Wireless Radio Control	Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection.

- Control WLAN Radio
- Control WWAN Radio

Default setting: The option is disabled.

Option	Description
Wake on LAN/ WLAN	Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.

- Disabled
- LAN Only
- WLAN Only
- LAN or WLAN

Default setting: Disabled

Option	Description
Block Sleep	This option lets you block entering to sleep (S3 state) in operating system environment. Block Sleep (S3 state)

Default setting: This option is disabled

Option	Description
Peak Shift	This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached.
Dock Support on Battery	This option allows you to use the docking station when AC power is absent but only when the battery is above a certain charge percentage. The percentage may change per battery and per platform.

- Dock Support on Battery

Default setting: Disabled

Option	Description
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health. Disabled

Default setting: Disabled

Option	Description
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are:

- Adaptive
- Standard — Fully charges your battery at a standard rate.
- ExpressCharge — The battery charges over a shorter period of time using Dell's fast charging technology. This option is enabled by default.
- Primarily AC use
- Custom

If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.

> ✎ NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.

POST Behavior screen options

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. Default setting: Enable Adapter Warnings
Keypad (Embedded)	Allows you to choose one of two methods to enable the keypad that is embedded in the internal keyboard.

- Fn Key Only: This option is enabled by default.
- By Numlock

> ✎ NOTE: When setup is running, this option has no effect. Setup works in Fn Key Only mode.

Option	Description
Mouse/Touchpad	Allows you to define how the system handles mouse and touch pad input. The options are:

- Serial Mouse
- PS2 Mouse
- Touchpad/PS-2 Mouse: This option is enabled by default.

Option	Description
Numlock Enable	Allows you to enable the Numlock option when the computer boots. Enable Network. This option is enabled by default.
Fn Key Emulation	Allows you to set the option where the Scroll Lock key is used to simulate the Fn key feature. Enable Fn Key Emulation (default)
Fn Lock Options	Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are:

- Fn Lock. This option is selected by default.
- Lock Mode Disable/Standard
- Lock Mode Enable/Secondary

Option	Description
MEBx Hotkey	Allows you to specify whether the MEBx Hotkey function should enable, during the system boot.

Option	Description
	Default Setting: Enable MEBx Hotkey
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:
	• Minimal
	• Thorough (default)
	• Auto
Extended BIOS POST Time	Allows you to create an additional preboot delay. The options are:
	• 0 seconds. This option is enabled by default.
	• 5 seconds
	• 10 seconds

Virtualization support screen options

Option	Description
Virtualization	Allows you to enable or disable the Intel Virtualization Technology.
	Enable Intel Virtualization Technology (default).
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O.
	Enable VT for Direct I/O - enabled by default.
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. The TPM Virtualization Technology, and Virtualization technology for direct I/O must be enabled to use this feature.
	Trusted Execution - disabled by default.

Wireless screen options

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are:
	• WWAN
	• GPS (on WWAN Module)
	• WLAN/WiGig
	• Bluetooth
	All the options are enabled by default.
	NOTE: For WLAN and WiGig enable or disable controls are tied together and they cannot be enabled or disabled independently.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices.
	• WWAN/GPS

Option	Description
	· WLAN/WiGig
	· Bluetooth
	All the options are enabled by default.

Maintenance screen options

Option	Description
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	This controls flashing of the system firmware to previous revisions.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. The following is list of devices affected: · Internal HDD · Internal SDD · Internal mSATA · Internal eMMC
BIOS Recovery	This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. · BIOS Recovery from Hard Drive (enabled by default)

System Log screen options

Option	Description
BIOS Events	Allows you to view and clear the System Setup (BIOS) POST events.
Thermal Events	Allows you to view and clear the System Setup (Thermal) events.
Power Events	Allows you to view and clear the System Setup (Power) events.

Updating the BIOS

It is recommended to update your BIOS (System Setup), on replacing the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet

1. Restart the computer.
2. Go to **Dell.com/support**.
3. Enter the **Service Tag** or **Express Service Code** and click **Submit**.

   NOTE: To locate the Service Tag, click **Where is my Service Tag?**

   NOTE: If you cannot find your Service Tag, click **Detect My Product. Proceed with the instructions on screen.**

4. If you are unable to locate or find the Service Tag, click the Product Category of your computer.
5. Choose the **Product Type** from the list.
6. Select your computer model and the **Product Support** page of your computer appears.

7. Click **Get drivers** and click **View All Drivers**.

    The Drivers and Downloads page opens.

8. On the Drivers and Downloads screen, under the **Operating System** drop-down list, select **BIOS**.

9. Identify the latest BIOS file and click **Download File**.

    You can also analyze which drivers need an update. To do this for your product, click **Analyze System for Updates** and follow the instructions on the screen.

10. Select your preferred download method in the **Please select your download method below** window, click **Download File**.

    The **File Download** window appears.

11. Click **Save** to save the file on your computer.

12. Click **Run** to install the updated BIOS settings on your computer.

    Follow the instructions on the screen.

> ✎ NOTE: It is recommended not to update the BIOS version for more than 3 revisions. For example: If you want to update the BIOS from 1.0 to 7.0, then install version 4.0 first and then install version 7.0.

System and setup password

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

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

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

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

> ✎ NOTE: Your computer is shipped with the system and setup password feature disabled.

Assigning a system password and setup password

You can assign a new **System Password** and/or **Setup Password** or change an existing **System Password** and/or **Setup Password** only when **Password Status** is **Unlocked**. If the Password Status is **Locked**, you cannot change the System Password.

> ✎ NOTE: If the password jumper is disabled, the existing System Password and Setup Password are deleted and you need not provide the system password to log on to the computer.

To enter the system setup, press F2 immediately after a power-on or re-boot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.

    The **System Security** screen appears.

2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.

3. Select **System Password** , enter your system password, and press Enter or Tab.

    Use the following guidelines to assign the system password:

    - A password can have up to 32 characters.
    - The password can contain the numbers 0 through 9.
    - Only lower case letters are valid, upper case letters are not allowed.
    - Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

    Re-enter the system password when prompted.

4. Type the system password that you entered earlier and click **OK**.

5. Select **Setup Password**, type your system password and press Enter or Tab.

    A message prompts you to re-type the setup password.

6. Type the setup password that you entered earlier and click **OK**.

7. Press Esc and a message prompts you to save the changes.

8. Press Y to save the changes.

   The computer reboots.

Deleting or changing an existing system and/or setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked. To enter the System Setup, press F2 immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.

   The **System Security** screen is displayed.

2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.

3. Select **System Password**, alter or delete the existing system password and press Enter or Tab.

4. Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

   > NOTE: If you change the System and/or Setup password, re-enter the new password when promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.

5. Press Esc and a message prompts you to save the changes.

6. Press Y to save the changes and exit from System Setup.

   The computer reboots.

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.

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

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

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

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

> ✏ **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.**

1. Power-on the computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.

   The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
4. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
5. Select the device from the left pane and click **Run Tests**.
6. If there are any issues, error codes are displayed.

   Note the error code and contact Dell.

Device status lights

Table 2. Device status lights

Icon	Name	Description
⏻	Power status light	Turns on when you turn on the computer and blinks when the computer is in a power management mode.
🖴	Hard drive status light	Turns on when the computer reads or writes data.

Icon	Name	Description
🔋	Battery charge indicator	Turns on steadily or blinks to indicate battery charge status. 📝 **NOTE: Refer to the following table for Battery charge LED indicator codes.**
📶	WiFi indicator	Turns on when wireless networking is enabled.

The device status LEDs are usually located either on the top or left side of the keyboard. They display the storage, battery and wireless devices connectivity and activity. Apart from that they can be useful as a diagnostic tool when there's a possible failure to the system.

📝 **NOTE: The position of the power status light may vary depending on the system.**

The following table lists how to read the LED codes when possible errors occur.

Table 3. Battery charge LED indicator

Amber blinking pattern	Problem description	Suggested resolution
2,1	CPU	CPU failure
2,2	System board: BIOS ROM	System board, covers BIOS corruption or ROM error
2,3	Memory	No memory/RAM detected
2,4	Memory	Memory/RAM failure
2,5	Memory	Invalid memory installed
2,6	System board: Chipset	System board / Chipset error
2,7	LCD	Replace the system board
3,1	RTC Power Failure	CMOS battery failure
3,2	PCI/Video	PCI or video card/chip failure

The blinking patterns will consist of 2 set of numbers being represented by (First Group: Amber blinks, Second Group: White blinks)

📝 **NOTE:**

1. First Group: The LED blinks 1 to 9 times followed by a brief pause with LED off at the interval of 1.5 seconds.(This is in Amber color)
2. Second Group: The LED blinks 1 to 9 times, that would be then followed by a longer pause before the next cycle starts again at the interval of 1.5 seconds.(This is in White color)

For Example: No Memory detected (2,3), Battery LED blinks two times of amber color followed by a pause, and then blinks three times of white color. The Battery LED will pause for 3 seconds before the next cycle repeat itself again.

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.
Alternately blinking amber light with steady white light	Temporary battery failure with AC adapter present.

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

Technical specifications

📝 **NOTE: Offerings may vary by region. For more information regarding the configuration of your computer in:**

- Windows 10, click or tap **Start** [⊞] → **Settings** → **System** → **About**.

- Windows 8.1 and Windows 8, click or tap **Start** [⊞] → **PC Settings** → **PC and devices** → **PC Info**.

- Windows 7, click **Start** 🪟, right-click **My Computer**, and then select **Properties**.

System specifications

Feature	Specification
Chipset	Skylake
DRAM bus width	64-bit
Flash EPROM	SPI 128 Mbits
PCIe bus	100 MHz
External Bus Frequency	DMI 3.0 (8GT/s)

Processor specifications

Feature	Specification
Types	Intel Core i3 / i5 / i7
Intel Smart Cache	3 MB and 4 MB

Memory specifications

Feature	Specification
Memory connector	Two SODIMM slots
Memory capacity	4 GB and 8 GB
Memory type	DDR4 SDRAM (2133MHz)
Minimum memory	4 GB
Maximum memory	16 GB

Audio specifications

Feature	Specification
Types	Four-channel high-definition audio
Controller	Realtek ALC3235
Stereo conversion	24-bit (analog-to-digital and digital-to-analog)
Internal interface	High-definition audio
External interface	Microphone-in, stereo headphones, and headset combo connector
Speakers	Two
Internal speaker amplifier	2 W (RMS) per channel
Volume controls	Hot keys

Video specifications

Feature	Specification
Type	Integrated on system board
UMA controller	Intel HD Graphics 520/540
External display support	• One HDMI • One mDP 📝 NOTE: Supports one VGA, two DP/DVI ports through Docking station.

Camera specifications

Feature	Specification
HD Panel Resolution	1280 x 720 pixels (Non Touch)
FHD Panel Resolution	1920 x 1080 pixels (Touch)
Video Resolution (maximum)	1280 x 720 pixels
Diagonal viewing angle	74°

Communication specifications

Features	Specification
Network adapter	10/100/1000 Mb/s Ethernet (RJ-45)
Wireless	Internal wireless local area network (WLAN) and wireless wide area network (WWAN)

Features	Specification
	• Bluetooth 4.1 LE

Port and connector specifications

Feature	Specification
Audio	One microphone/stereo headphone/speakers connector
Video	• One HDMI • One mDP
Network adapter	One RJ-45 connector
USB	Three USB 3.0, one PowerShare
Memory card reader	Up to SD4.0
Micro Subscriber Identity Module (uSIM) card	One
Docking port	One
Smart Card	One

Display specifications

Feature	Specification
HD anti-glare	
Height	181.4 mm (7.14 inches)
Width	290.5 mm (11.4 inches)
Diagonal	3.0 mm (0.1 inch)
Maximum resolution	1366 x 768
Refresh rate	60 Hz/48 Hz
Maximum viewing angles (horizontal)	+/-40°
Maximum viewing angles (vertical)	+10°/-30°
Pixel pitch	0.2025 x 0.2025
Touch FHD anti-glare:	
Height	194.9 mm (7.67 inches)
Width	302.8 mm (11.9 inches)
Diagonal	5.95 mm (0.23 inch)
Maximum resolution	1920 x 1080

Feature	Specification
Refresh rate	60 Hz/48 Hz
Maximum viewing angles (horizontal)	+/-80°
Maximum viewing angles (vertical)	+/-80°
Pixel pitch	0.144 x 0.144

Keyboard specifications

Feature	Specification
Number of keys	• United States: 82 keys • United Kingdom: 83 keys • Brazil: 84 keys • Japan: 86 keys

Touchpad specifications

Feature	Specification
Active Area:	
X-axis	99.50 mm
Y-axis	53.00 mm

Battery specifications

Feature	Specification
Type	• 3-cell Lithium Prismatic battery with ExpressCharge • 4-cell Lithium Prismaticbattery with ExpressCharge
3–cell:	
Depth	105.9 mm (4.17 inches)
Height	6.1 mm (0.24 inch)
Width	181.00 mm (7.13 inches)
Weight	195.0 g (0.43 lb)
Voltage	11.10 VDC
4–cell:	
Depth	105.9 mm (4.17 inches)
Height	6.1 mm (0.24 inch)
Width	238.00 mm (9.37 inches)

Feature	Specification
Weight	290.3 g (0.85 lb)
Voltage	7.40 VDC
Life span	300 discharge per charge cycles
Temperature range	
Operating	• Charge: 0°C to 50°C (32°F to 158°F) • Discharge: 0°C to 70°C (32°F to 122°F) • Operating: 0°C to 35°C (32°F to 95°F)
Non-operating	- 20°C to 65°C (- 4°F to 149°F)
Coin cell battery	3 V CR2032 lithium coin cell

AC Adapter specifications

Feature	Specification
Type	65 W and 90 W
Input voltage	90 V AC to 264 V AC
Input current (maximum)	1.5 A
Input frequency	47 Hz to 63 Hz
Output power	65 W and 90 W
Output current	3.34 A and 4.62 A
Rated output voltage	19.5 V DC
Weight	230 g (65 W) and 285 g (90 W)
Dimensions	107 x 46 x 29.5 mm (65W) / 130 x 66 x 22 mm (90W)
Temperature range (Operating)	0°C to 40°C (32°F to 104°F)
Temperature range (Non-Operating)	−40°C to 70°C (−40°F to 158°F)

Physical specifications

Feature	Specification
Front height (non-touch)	17.2 mm (0.68 inch)
Front height (touch)	18.20 mm (0.72 inch)
Back height (non-touch)	19.4 mm (0.76 inch)

Feature	Specification
Back height (touch)	21.8 mm (0.82 inch)
Width	334.00 mm (13.14 inches)
Depth	232.0 mm (9.13 inches)
Weight (non-touch with 3–cell battery)	1.41 kg (3.13 lb)
Weight (touch with 3–cell battery)	1.65 kg (3.65 lb)

Environmental specifications

Temperature	Specifications
Operating	0 °C to 60 °C (32 °F to 140 °F)
Storage	−51 °C to 71 °C (−59 °F to 159 °F)

Relative humidity (maximum)	Specifications
Operating	10 % to 90 % (non condensing)
Storage	5 % to 95 % (non condensing)

Altitude (maximum)	Specifications
Operating	−15.2 m to 3048 m (−50 to 10,000 ft)
	0° to 35°C
Non-operating	−15.24 m to 10,668 m (−50 ft to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ISA S71.04–1985

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Contacting Dell

![icon] **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.**

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:

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.