Dell Latitude 7280

Owner's Manual

Notes, cautions, and warnings

(i) **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 — Windows

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

1. Click or tap ⊞ .

2. Click or tap ⏻ and then click or tap **Shut down**.

   ⓘ **NOTE:** 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.

Turning off your computer — Windows 8

⚠️ **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 8 (using a touch enabled device):
     a. Swipe in from the right edge of the screen, opening the **Charms** menu and select **Settings**.
     b. Tap ⏻ and then tap **Shut down**
   - In Windows 8 (using a mouse):
     a. Point to upper-right corner of the screen and click **Settings**.
     b. Click ⏻ and then click **Shut down**.

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.

Turning off your computer — Windows 7

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

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

(i) **NOTE:** 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.

Before working inside your computer

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer.
3. If the computer is connected to a docking device (docked), undock it.
4. 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.**

5. Disconnect your computer and all attached devices from their electrical outlets.
6. Open the display.
7. 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.**

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

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and 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 the reverse order.

(i) **NOTE:** 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.

(i) **NOTE:** 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 that is grounded to ground yourself before you touch the computer to perform any disassembly tasks.**

△ **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.

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

After working inside your computer

After you complete any replacement procedure, ensure that you connect 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. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.

Disassembly and reassembly

Topics:

Screw size list

Table 1. Latitude 7280 - screw size list

Component	M2.5 x 6	M2 x 5	M2.5 x 3.5	M2 x 3	M2.5 x 4	M2 x 2.5	M2 x 2
Back cover	8 (captive screws)						
Battery—3-cell		1					
Battery—4-cell		2					
SSD module				1			
Heat sink module				4			
System fan				2			
Speaker				4			
WWAN card				1			
WLAN card				1			

Table 1. Latitude 7280 - screw size list (continued)

Component	M2.5 x 6	M2 x 5	M2.5 x 3.5	M2 x 3	M2.5 x 4	M2 x 2.5	M2 x 2
Power connector port				1			
ESD bracket				1			
EDP bracket				2			
Touchpad buttons						2	
Fingerprint reader						1	
LED board						1	
Smart card reader cage						2	
Keyboard Lock bracket					1		
Display hinge			6				
Keyboard support plate						19	
Keyboard							5
System board				9			
Memory module bracket				1			

Recommended tools

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

Subscriber Identification Module (SIM) card

Removing SIM card or SIM card tray

ⓘ **NOTE:** SIM card or SIM card tray removal is only available on systems that are shipped with WWAN module. Hence, removing procedure is only applicable for systems that are shipped with WWAN module.

⚠ **CAUTION: Removing the SIM card when the computer is On, may cause data loss or damage the card. Ensure that 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 [1].
2. Use a scribe to pull the SIM card tray
3. Remove the SIM card, if a SIM card is available from the SIM card tray.
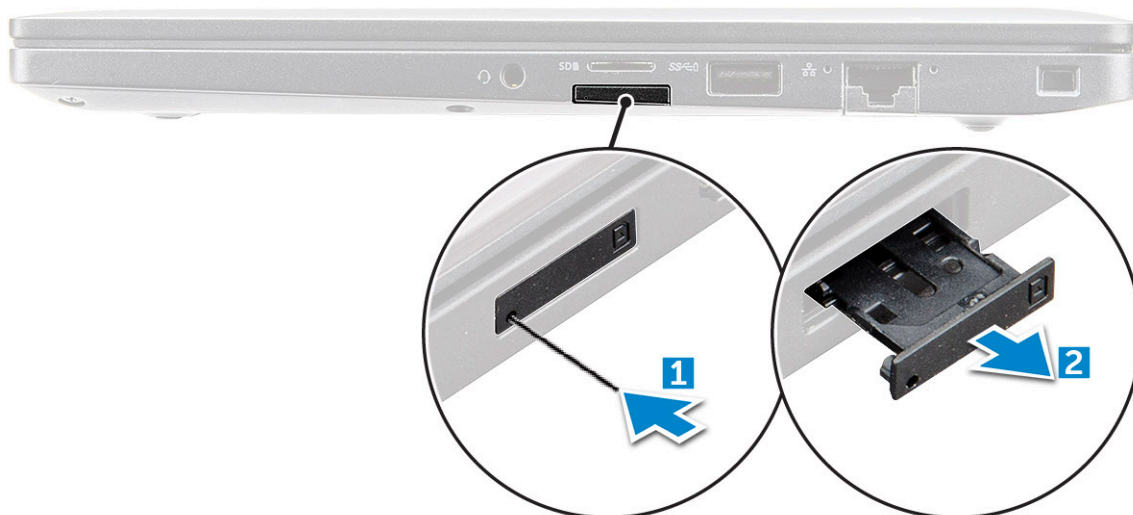
Replacing SIM card

ⓘ **NOTE:** You can replace a SIM card only for those systems that are shipped with WWAN module.

1. Insert a paperclip or a SIM card removal tool into the pinhole on the SIM card tray.
2. Use a scribe to pull the SIM card tray.
3. Place on the SIM card on the tray.
4. Insert the SIM card tray into the slot.

Base cover

Removing base cover

1. Follow the procedure in Before working inside your computer.
2. To release the base cover:
   a. Loosen the M2.5 x 6 captive screws (8) that secure the base cover to the computer [1].
      ⓘ **NOTE:** Exercise caution when loosening the screws. Angle the screwdriver to match the head of the front corners of screw, to avoid a possible stripped screw head.

   b. Use a plastic scribe to release the base cover from the edge and lift it from the computer [2].

⚠️ **CAUTION: Exercise caution when loosening the screws. Angle the screwdriver to match the head of the screw (front corners on the laptop base cover) to avoid a possible stripped screw head.**

3. Lift the base cover from the computer.

Installing base cover

1. Align the base cover tabs to the slots on the edges of the computer.
2. Press the edges of the cover until it clicks into place.
3. Tighten the M2.5 x 6.0 captive screws to secure the base cover to the computer.

   ⓘ **NOTE:** Exercise caution when tightening the screws. Angle the screw driver to match the head of the screw to avoid a possible stripped screw head.

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

Battery

Lithium-ion battery precautions

⚠ **CAUTION:**
- **Exercise caution when handling Lithium-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **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.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen Lithium-ion batteries, see Handling swollen Lithium-ion batteries.**

Removing 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 M2.0 x 5.0 screws that secure the battery to the computer [2].

      ⓘ **NOTE:** A 3-cell battery has a single screw, and a 4-cell battery has two screws. Hence, the image displayed below is a 4-cell battery.

   c. Lift the battery from the computer [3].
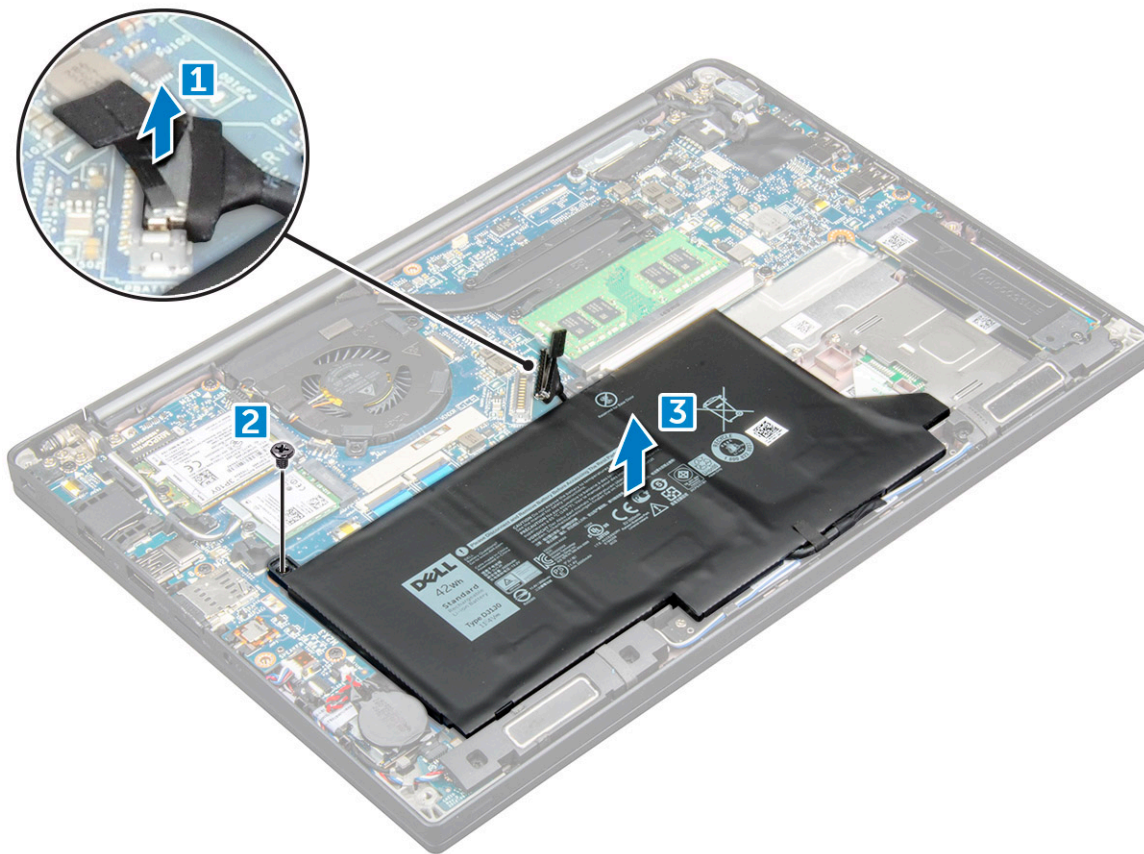
Installing battery

1. Insert the battery into the slot on the computer.
2. Route the battery cable through the routing clip and connect the battery cable to the connector on the system board.

   ⓘ **NOTE:** Route the battery cable, if the cable at the base of the battery is un routed.

3. Tighten the M2.0 x 5.0 screws to secure the battery to the computer.

   ⓘ **NOTE:** A small battery (3-cell) has a single screw, a larger battery (4-cell) has two screws.

4. Install the base cover
5. Follow the procedure in After working inside your computer.

PCIe Solid State Drive (SSD)

Removing PCIe SSD

1. Follow the procedure in Before working inside your computer.
2. Disconnect the battery cable from the connector on the system board.
3. To remove the PCIe SSD:
   a. Loosen the M2 x3 captive screw that secures the SSD bracket [1].
   b. Remove the SSD bracket [2].
   c. Remove the PCIe SSD from the connector on the system board [3].
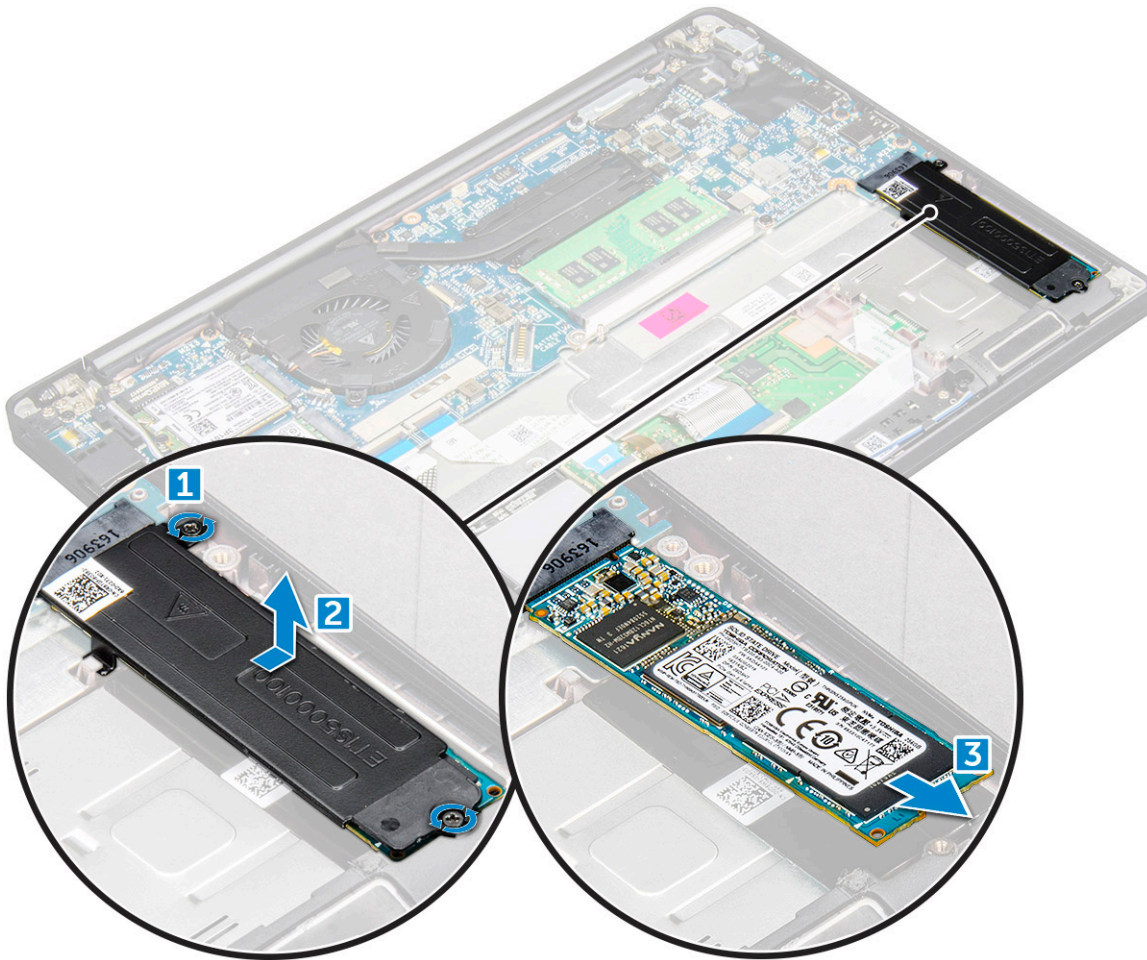
Installing PCIe SSD

1. Insert the PCIe SSD card into the connector.
2. Install the SSD bracket over the PCIe SSD card.

   ⓘ **NOTE:** When installing the SSD bracket, ensure that the tab on the bracket is held securely with the tab on the palm rest.

   ⓘ **NOTE:** Ensure to install the bracket is the system is shipped with bracket.

3. Tighten the M2 x 3 screws to secure it the SSD bracket.
4. Connect the battery cable to the connector on the system board.
5. Install the base cover.
6. Follow the procedure in After working iinside your computer.

Speaker

Removing speaker module

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. To release the speaker module:

a. Push to disconnect the speaker cable from the connector on the system board [1].

   ⓘ **NOTE:** Ensure to unroute the speaker cable from the routing clip.

   ⓘ **NOTE:** Use a plastic scribe to release the cable from the connector. Do not pull the cable as it may result in breakage.

b. Un-route the speaker cable from the routing clips [2].
c. Remove the tape that secures the speaker cables to the touchpad board [3].
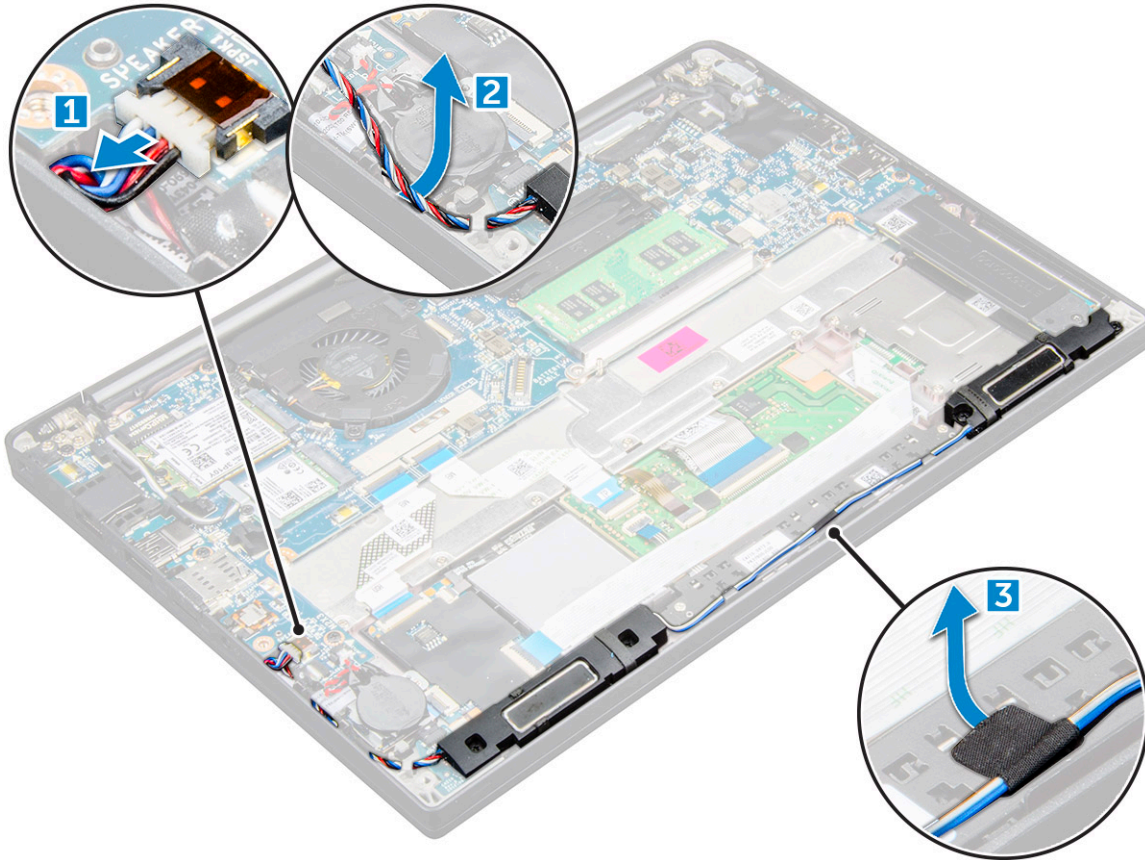
5. To remove the speaker module:
   a. Remove the M2.0x3.0 screws (4) that secure the speaker module to the computer [1].
   b. Remove the M2.0x3.0 screws that secure the speaker module to the computer [1].

      ⓘ **NOTE:** Refer the speaker screw list

   c. Lift the speaker module from the computer [2].

      ⓘ **NOTE:** Ensure to un-route the speaker cable from the routing clips.
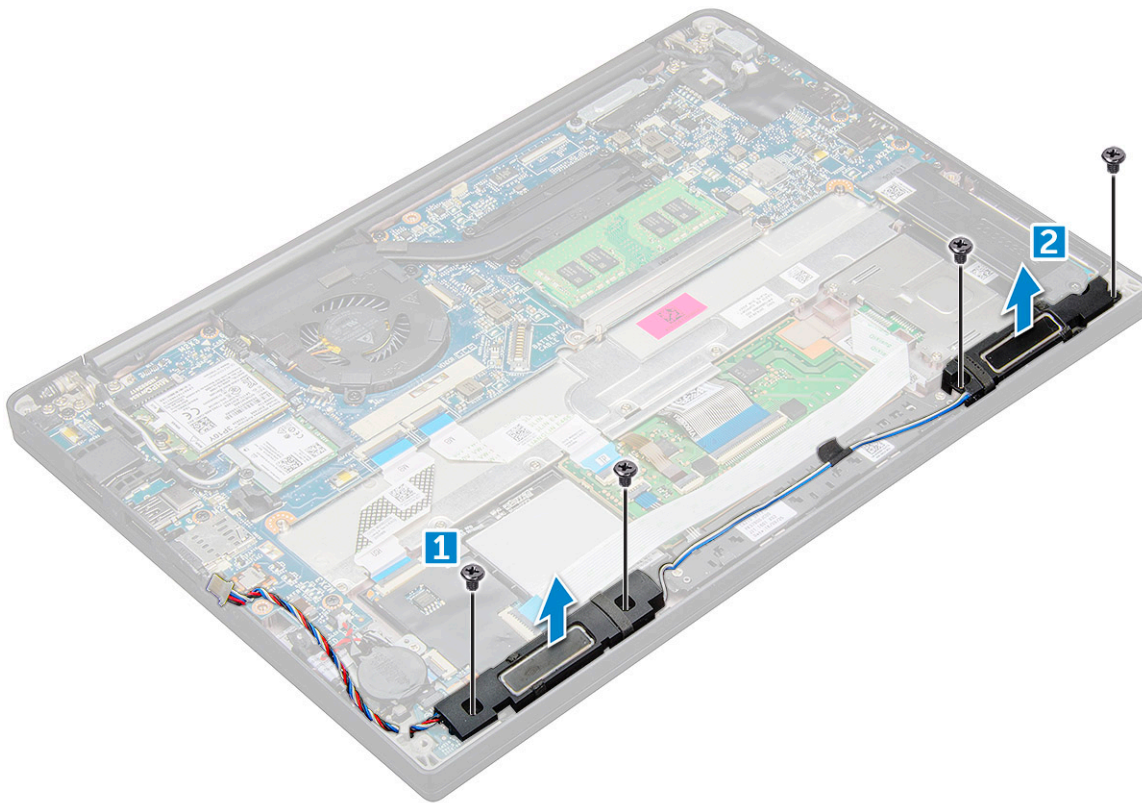
Installing speaker module

1. Place the speaker module into the slots on the computer.
2. Tighten the M2.0x3.0 screws to secure the speaker to the computer.
3. Route the speaker cable through the retention clips on the computer.
4. Connect the speaker cable to the connector on the system board.
5. Connect the battery cable to the connector on the system board.
6. Install the base cover.
7. 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 base cover.
3. Disconnect the battery cable from the connector on the system board.
4. 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 [2].
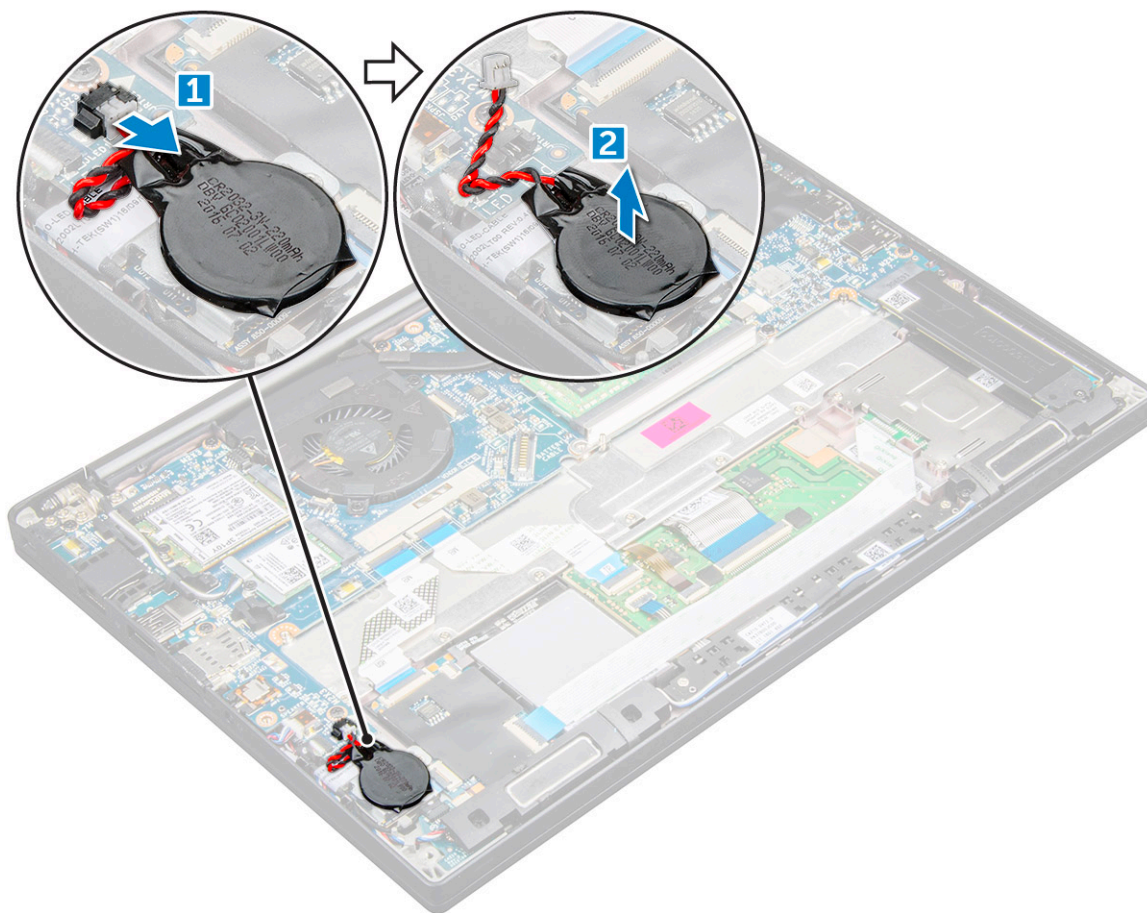
Installing coin cell battery

1. Affix the coin cell battery on the slot inside the computer.
2. Route the coin cell battery cable through the routing channel before connecting the cable.
3. Connect the coin cell battery cable to the connector on the system board.
4. Connect the battery cable to the connector on the system board.
5. Install the base cover.
6. Follow the procedure in After working inside your computer.

WWAN card

Removing WWAN card

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. To remove the WWAN card:
   a. Remove the M2.0 x 3.0 screw that secures the metal bracket to the WWAN card [1].
   b. Lift the metal bracket that secures the WWAN card [2].
   c. Disconnect the WWAN cables from the connectors on the WWAN card with a plastic scribe.[3].
   d. [4].

Installing WWAN card

1. Insert the WWAN card into the connector on the system board.
2. Connect the WWAN cables to the connectors on the WWAN card.
3. Place the metal bracket and tighten the M2.0 x 3.0 screw to secure it to the computer.
4. Connect the battery cable to the connector on the system board.
5. Install the base cover.
6. Follow the procedure in After working inside your computer.

   (i) **NOTE:** The IMEI number can also be found on the WWAN card.

WLAN card

Removing WLAN card

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. To remove the WLAN card:
   a. Remove the M2.0 x 3.0 screw that secures the metal bracket to the WLAN card [1].
   b. Lift 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].

      (i) **NOTE:** Ensure NOT to pull the WLAN card more than 35°, to avoid damage to pin.

Installing 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 M2.0 x 3.0 screw to secure it to the computer.
4. Connect the battery cable to the connector on the system board.
5. Install the .base cover.
6. Follow the procedure in After working inside your computer.

Memory modules

Removing memory module

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. To remove the memory module:
   a. Pull the clips securing the memory module until the module snaps-out [1].
   b. Remove the memory module from the connector on the system board [2].
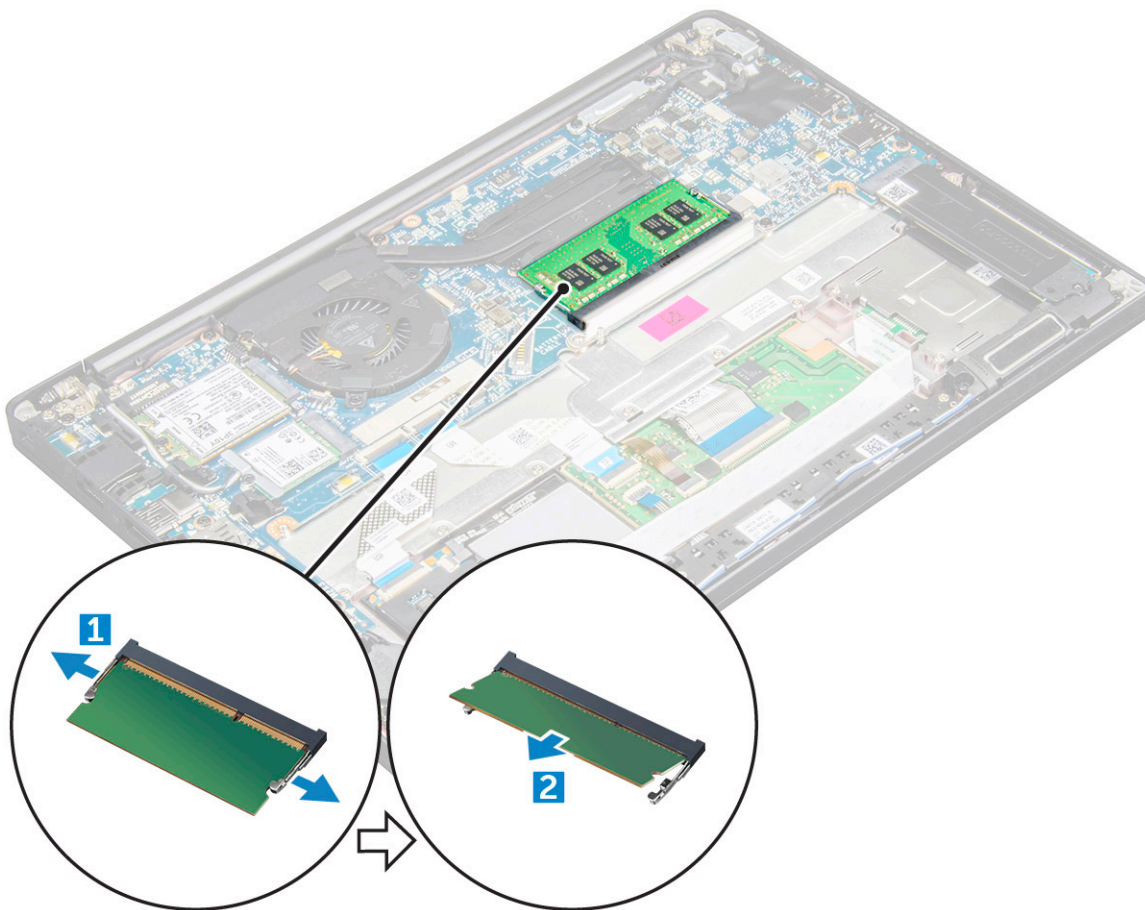
Installing memory module

1. Insert the memory module into the connector until snaps in.
2. Connect the battery cable to the connector on the system board.
3. Install the base cover.
4. Follow the procedures in After working inside your computer.

Heat sink

Removing heat sink assembly

Heat sink assembly consists of heat sink and the system fan.

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. To remove the heat sink assembly:

   ⓘ **NOTE:** To identify the number of screws, see screw list.

   a. Disconnect the fan cable from the system board [1].

   ⓘ **NOTE:** After removing the heat sink assembly, ensure to disconnect the fan cable.

   b. Remove the M2.0 x 5.0 screws that secure the heat sink and the M2.0 x 3.0 screws that secure the fan to the system board [2].

(i) **NOTE:** Remove the screws in the order of the callout numbers [1, 2, 3, 4] as indicated on the heat sink.

c. Lift the heat sink assembly from the system board [3].
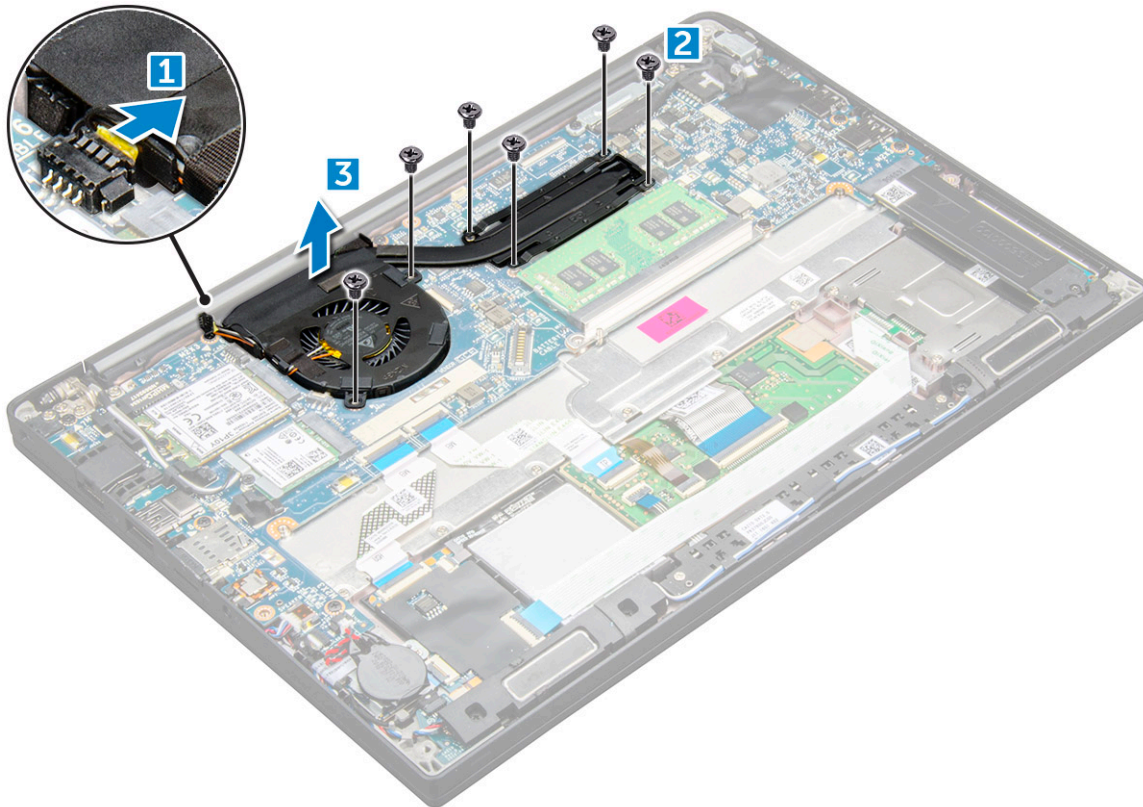
Installing heat sink assembly

Heat sink assembly consists of heat sink and the system fan.

1. Align the heat sink assembly with screw holders on the system board .
2. Tighten the M2.0 x 3.0 screws to secure the heat sink to the system board.

   (i) **NOTE:** Tighten the screws in the order of the callout numbers [1, 2, 3, 4] as indicated on the heat sink.

3. Tighten the M2.0 x 5.0 screws to secure the fan to the system board.
4. Connect the fan cable to the connector on the system board.
5. Connect the battery cable to the connector on the system board.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Power connector port

Removing power connector port

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. To remove the power connector port:
   a. Disconnect the power connector port cable from the system board [1].

(i) **NOTE:** Ensure to remove the adhesive tape that covers the connector.

(i) **NOTE:** Use a plastic scribe to release the cable from the connector. Do not pull the cable as it may result in breakage.

b. Remove the M2.0x3.0 screw (1) to release the metal bracket on the power connector port [2].
c. Lift the metal bracket from the computer [3].
d. the power connector port from the computer [4].

Installing power connector port

1. Install the power connector port into the slot on the computer.
2. Place the metal bracket on the power connector port.
3. Tighten the M2.0x3.0 screw to secure the power connector port to the computer.
4. Connect the power connector port cable to the connector on the system board.
5. Connect the battery cable to the connector on the system board.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

LED board

Removing LED board

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

3. Disconnect the battery cable from the connector on the system board.
4. To remove the LED board:
   a. Disconnect the LED cable from the LED board [1].

   > ⚠️ **CAUTION: Avoid pulling the cable as it would result in breaking the cable connector. Instead, use a scribe to release the LED cable from its connector.**

   b. Unroute the LED cable from the routing channel [2].
   c. Remove the M2.0 x 2.5 screw that secures the LED board to the computer [3].
   d. Lift the LED board from the computer [4].
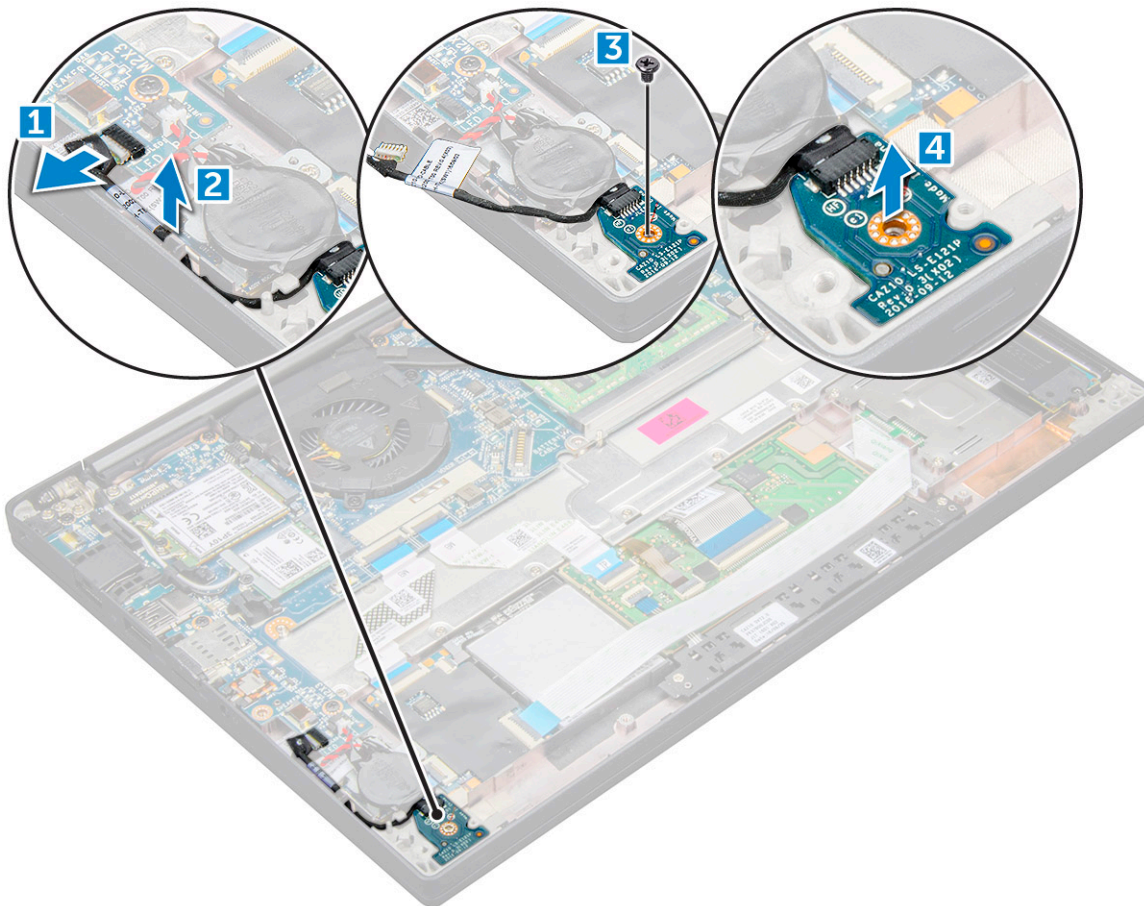
Installing LED board

1. Insert the LED board into the slot on the computer.
2. Tighten the M2.0 x 2.5 screw to secure the LED board.
3. Route the LED cable through the routing channel.
4. Connect the LED cable to the system board.
5. Connect the battery cable to the connector on the system board.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

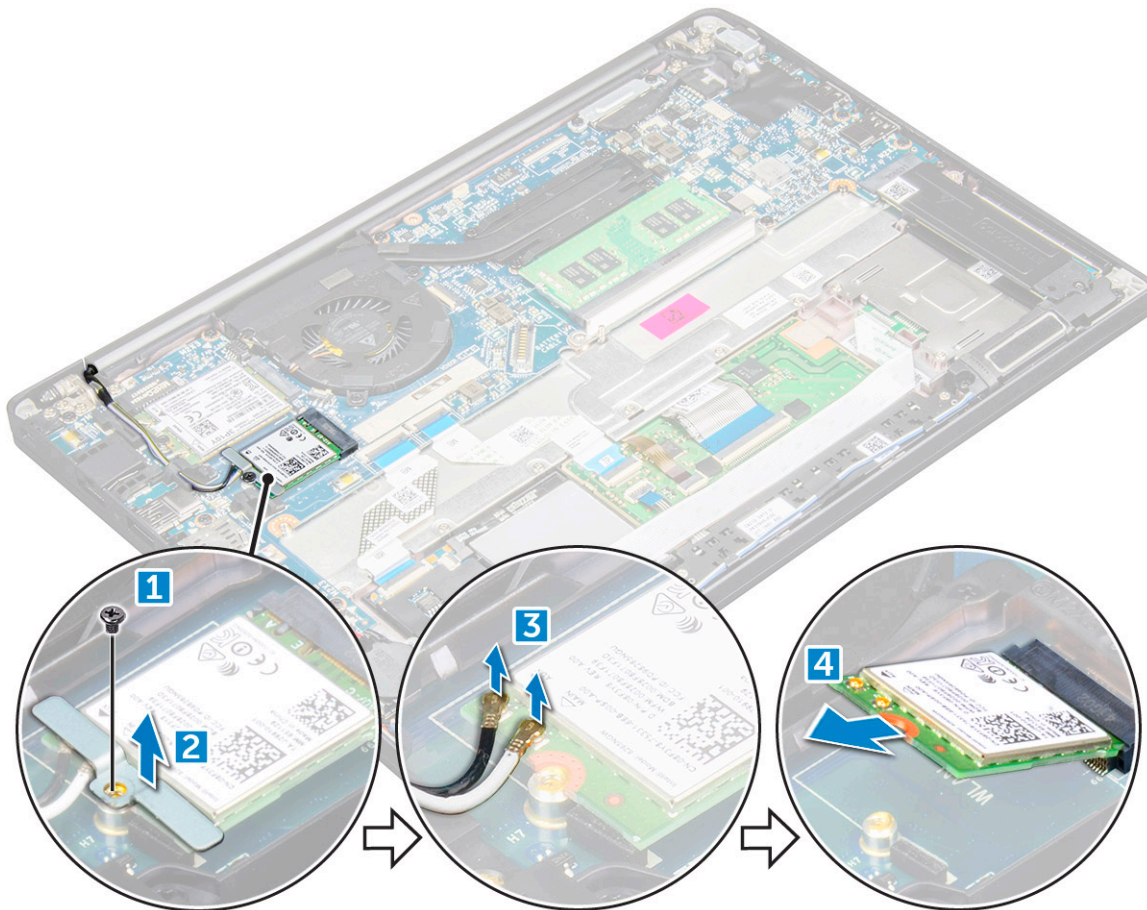# Smart card module

Removing smart card cage

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

2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the PCIe SSD card .
5. To disconnect the smart card cable:
   a. Disconnect the smart card cable [1].

      ⓘ **NOTE:** Ensure to gently push the connector, to avoid damage to the smart card head.

   b. Lift the smart card cable that is affixed to the touchpad module [2].

      ⓘ **NOTE:** Ensure to pull gently to release it with adhesive tape.
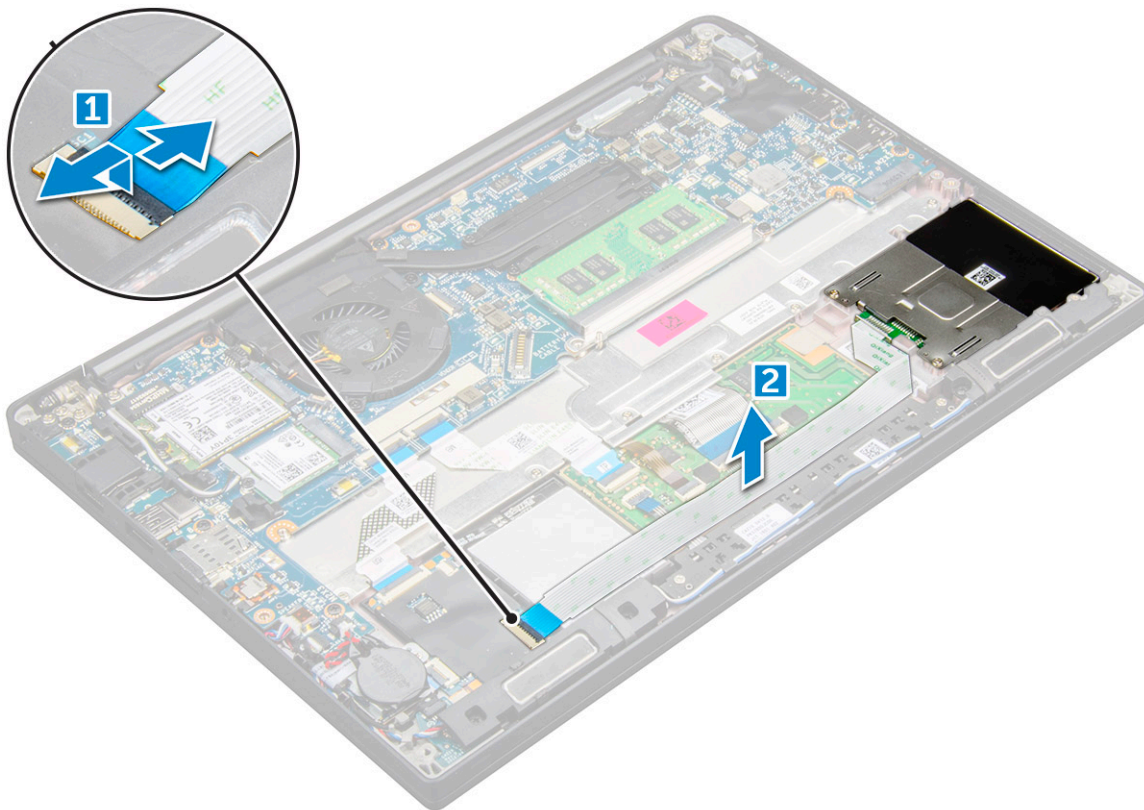
6. To remove the smart card cage:

   ⓘ **NOTE:** To identify the number of screws, see screw list.

   a. Remove the M2 x 3 screws (2) that secure the smart card cage to the computer [1].
   b. Slide and lift the smart card cage from the computer [2].

Installing smart card cage

1. Slide the smart card cage into the slot to align with the tabs on the computer.
2. Tighten the M2 x 3 screws to secure the smart card cage to the computer.
3. Affix the smart card cable and connect it to the connector on the computer .
4. Install the PCIe SSD card.
5. Connect the battery cable to the connector on the system board.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Touchpad

Removing touchpad buttons board

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the speaker.
5. To disconnect the smart card cable:
   a. Disconnect the smart card cable [1].
   b. Lift the smart card cable that is affixed to the computer [2] to reveal the touchpad buttons board cable.
   c. Remove the adhesive tape that secures the speaker cable to the touchpad panel [3].

ⓘ **NOTE:** Un-route the speaker cable from the routing clips from the touchpad buttons.
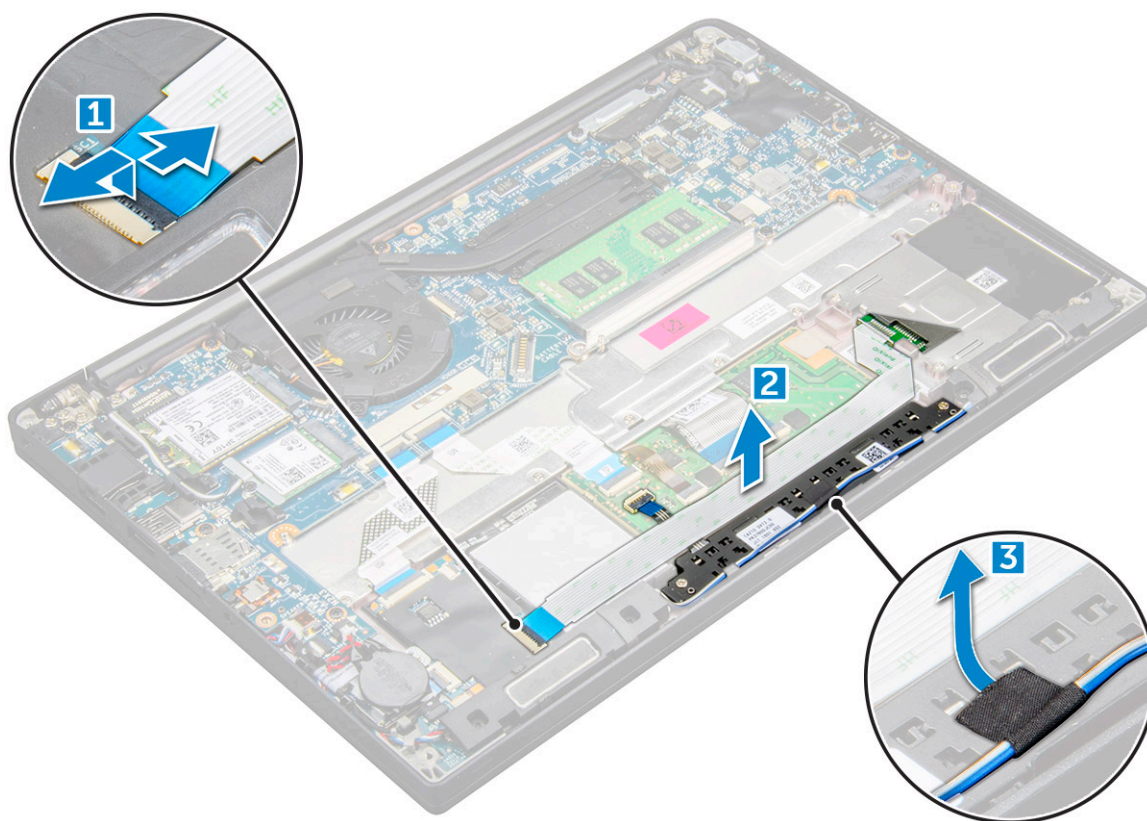
6. To remove the touchpad buttons board:
   a. Disconnect the touchpad buttons board cable from the touchpad board [1].

   ⓘ **NOTE:** The touchpad buttons board cable is below the smart card cable. Ensure to lift the latch, to release the touchpad button board cable.

   b. Remove M2.0 x 2.5 screws (2) that secure the touchpad buttons board [2].

   ⓘ **NOTE:** To identify the screws, see screw list

   c. Lift the touchpad buttons board from the computer [3].
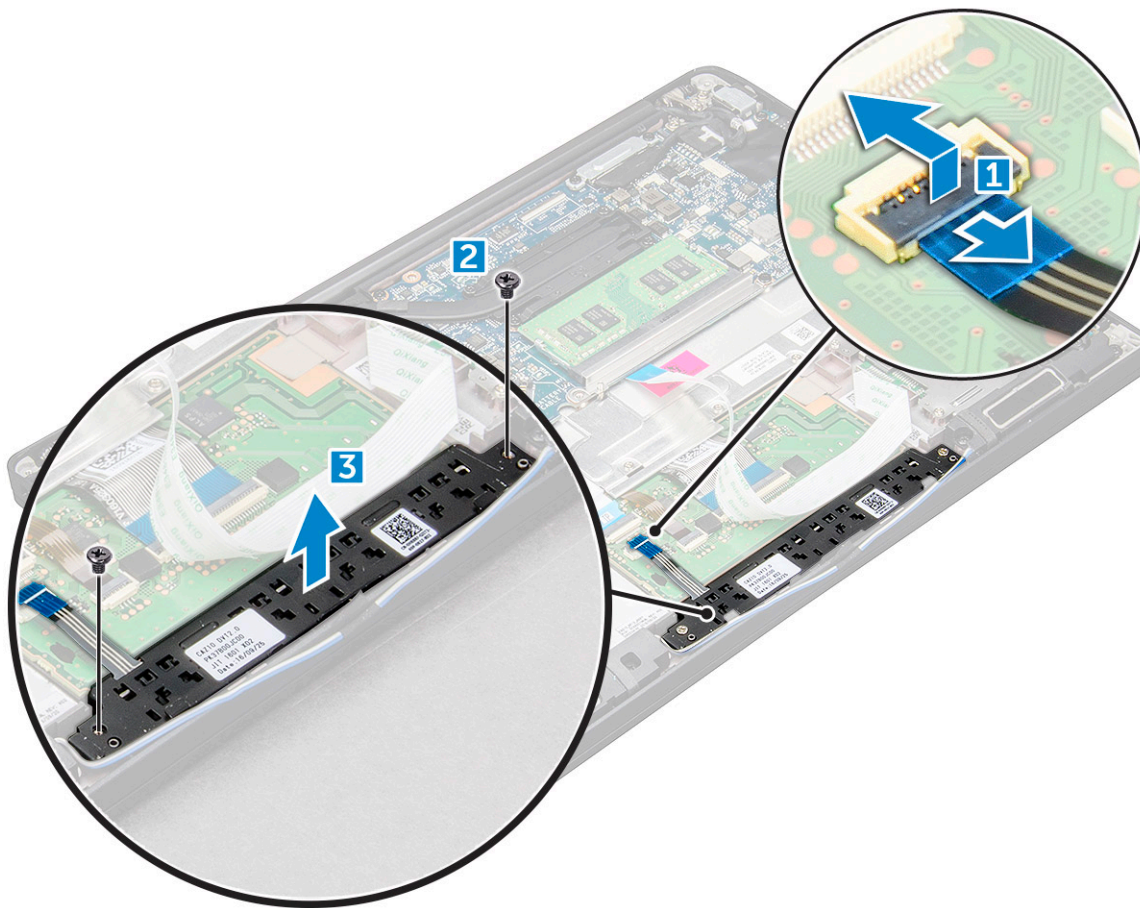
Installing touchpad buttons board

1. Insert the touchpad buttons board into the slot to align the tabs with the grooves on the computer.
2. Tighten the M2.0 x 2.5 screws to secure the touchpad buttons board to the computer.
3. Connect the touchpad buttons board cable to the connector on the touchpad board.
4. Affix the smart card cable and connect it to the connector on the computer.
5. Install the speaker.
6. Connect the battery cable to the connector on the system board.
7. Install the base cover.
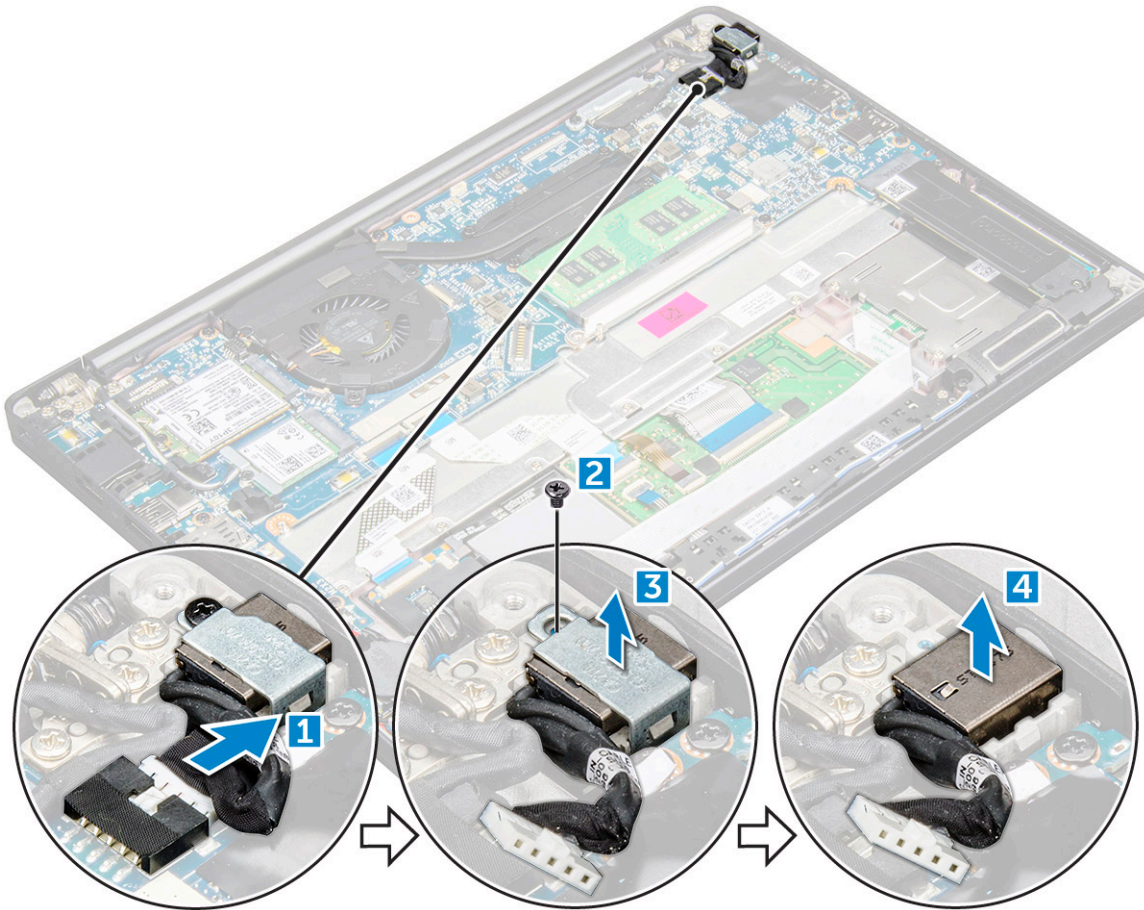8. Follow the procedure in After working inside your computer.

Display Assembly

Removing display assembly

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the WLAN card.
5. Remove the WWAN card.

   (i) **NOTE:** To identify the number of screws, see screw list

6. To remove the display assembly:

a. Un route the WLAN and WWAN cables from the routing channels [1].
b. Remove the M2.0 x 5.0 screws that secure the eDP bracket [2].
c. Lift the eDP bracket from the eDP cable [3].
d. Lift the eDP cable to disconnect it from the connector on the system board [4].
e. Un route the eDP cable from the routing channel [5].
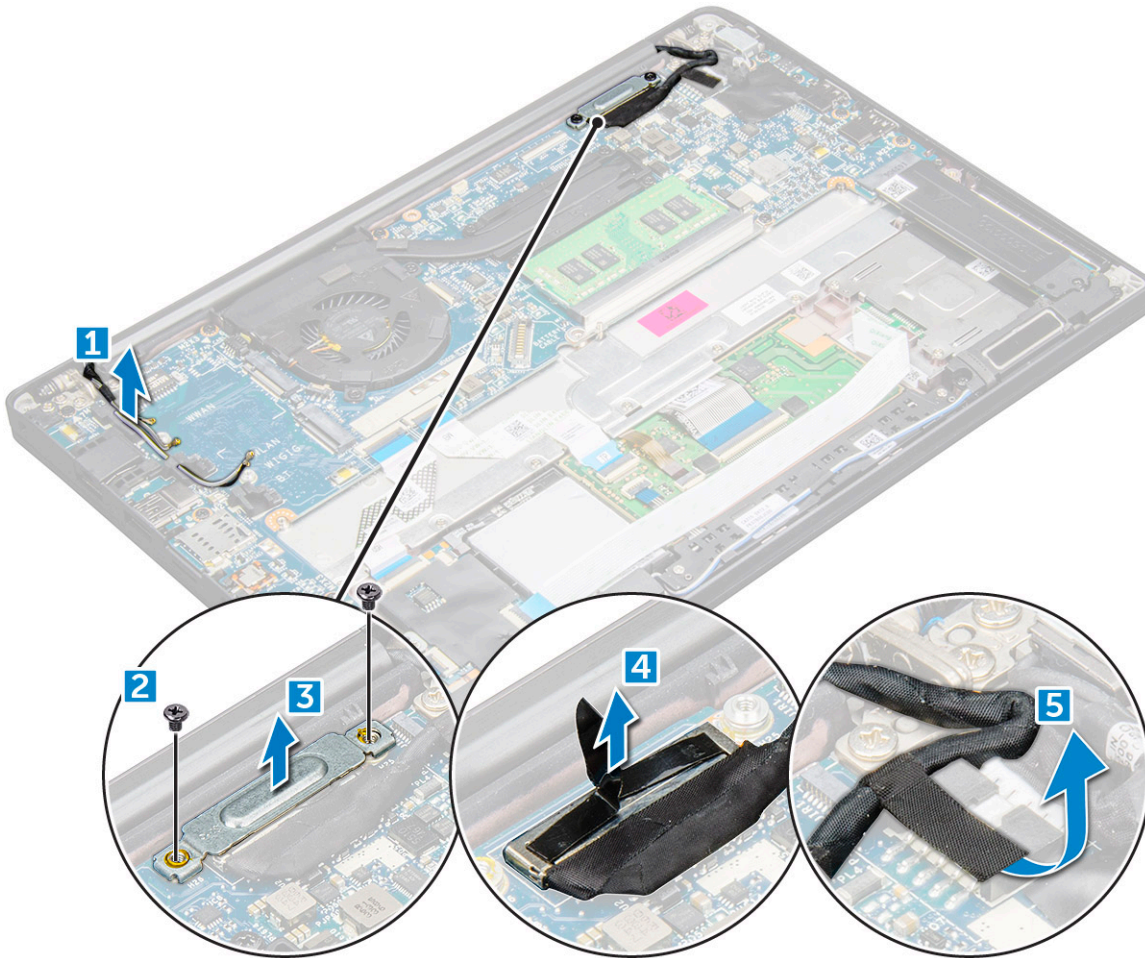
7. To remove the display assembly:
   a. Open the display of the computer and lay it on a flat surface at an 180-degree angle.
   b. Remove the M2.5 x 4.0 screws that secure the display hinge to the display assembly [1].
   c. Lift the display assembly from the computer.
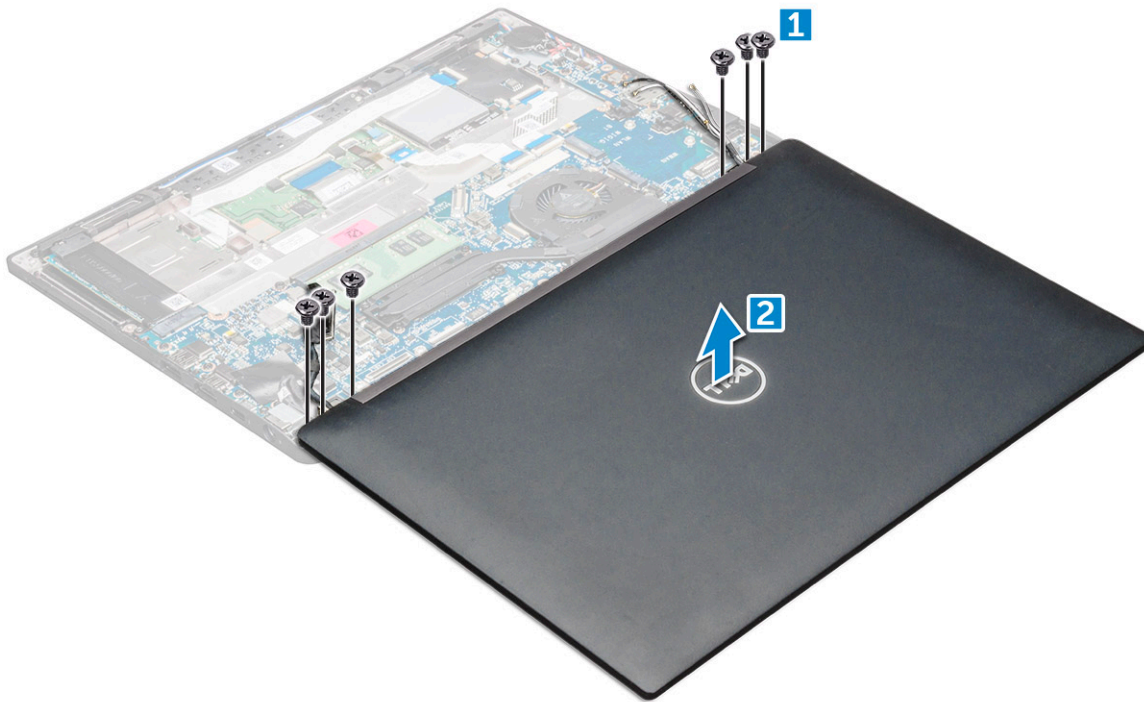
Installing display assembly

1. Place the base of the computer on a plane surface of a table and position it closer to the edge of the table.
2. Install the display assembly to align it with the display hinge holders on the system.
3. Holding the display assembly, tighten the M2.5 x 4.0 screws to secure the display hinges on the system display assembly with the system unit.
4. Affix the tapes to secure the eDP cable (display cable).
5. Connect the eDP cable to the connector on the system board.
6. Install the eDP metal bracket on the eDP cable and tighten the M2.0 x 5.0 screws.
7. Route the WLAN and WWAN cables through the routing channels.
8. Install the WLAN card.
9. Install the WWAN card.
10. Connect the battery cable to the connector on the system board.
11. Install the base cover.
12. Follow the procedure in After working inside your computer.

Touch display panel

Removing touch display panel

ⓘ **NOTE:** The touch display panel removal procedure is applicable only for systems with touch display configuration.
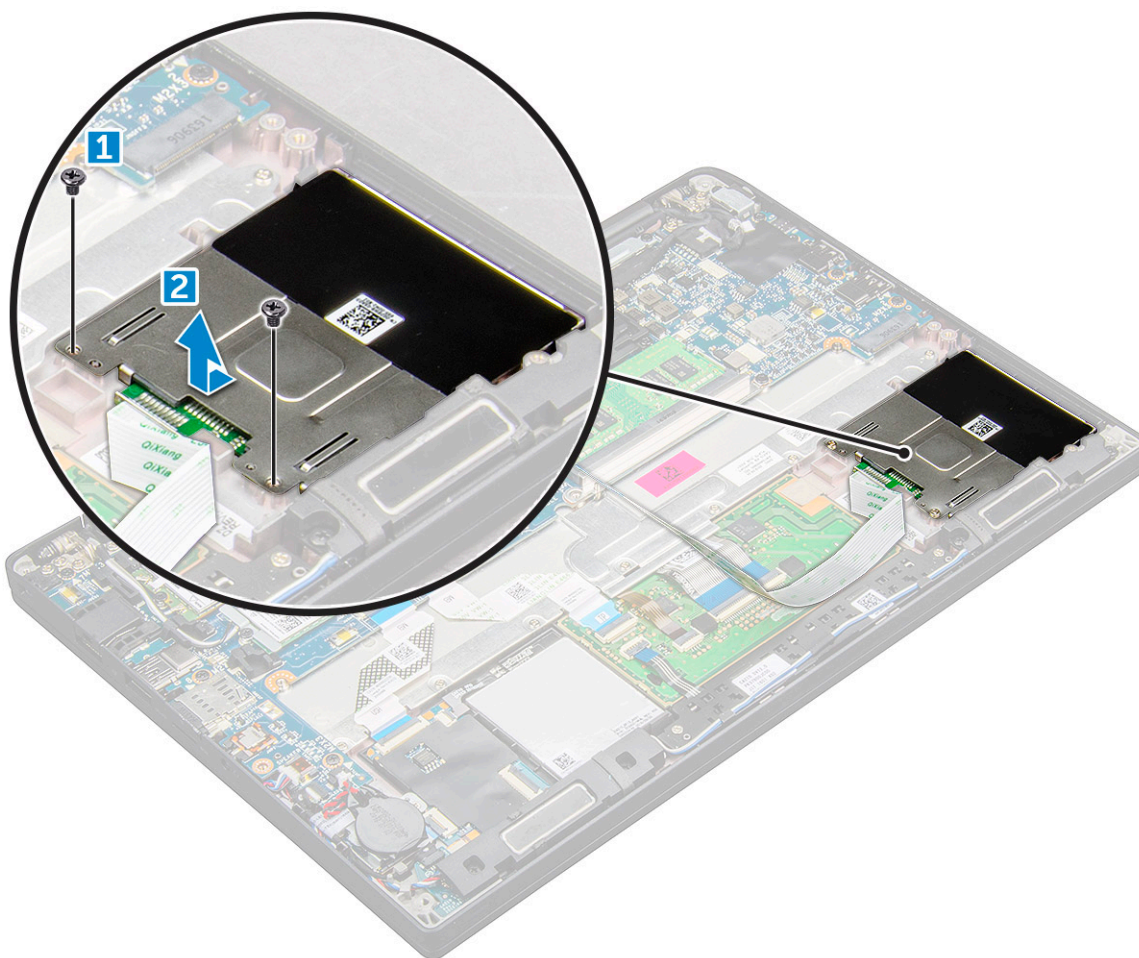
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the WLAN card.
5. Remove the WWAN card.
6. Remove the display assembly.
7. To remove the touch display panel:

a. Use a plastic scribe to loosen the edges of the display panel.

b. Flip the display screen over from the top.
c. Peel the adhesive tape [1], Mylar shield [2].
d. Release the latch [3], and disconnect the eDP cable [4].
e. Peel the adhesive tape [5], and disconnect the IR cable [6].
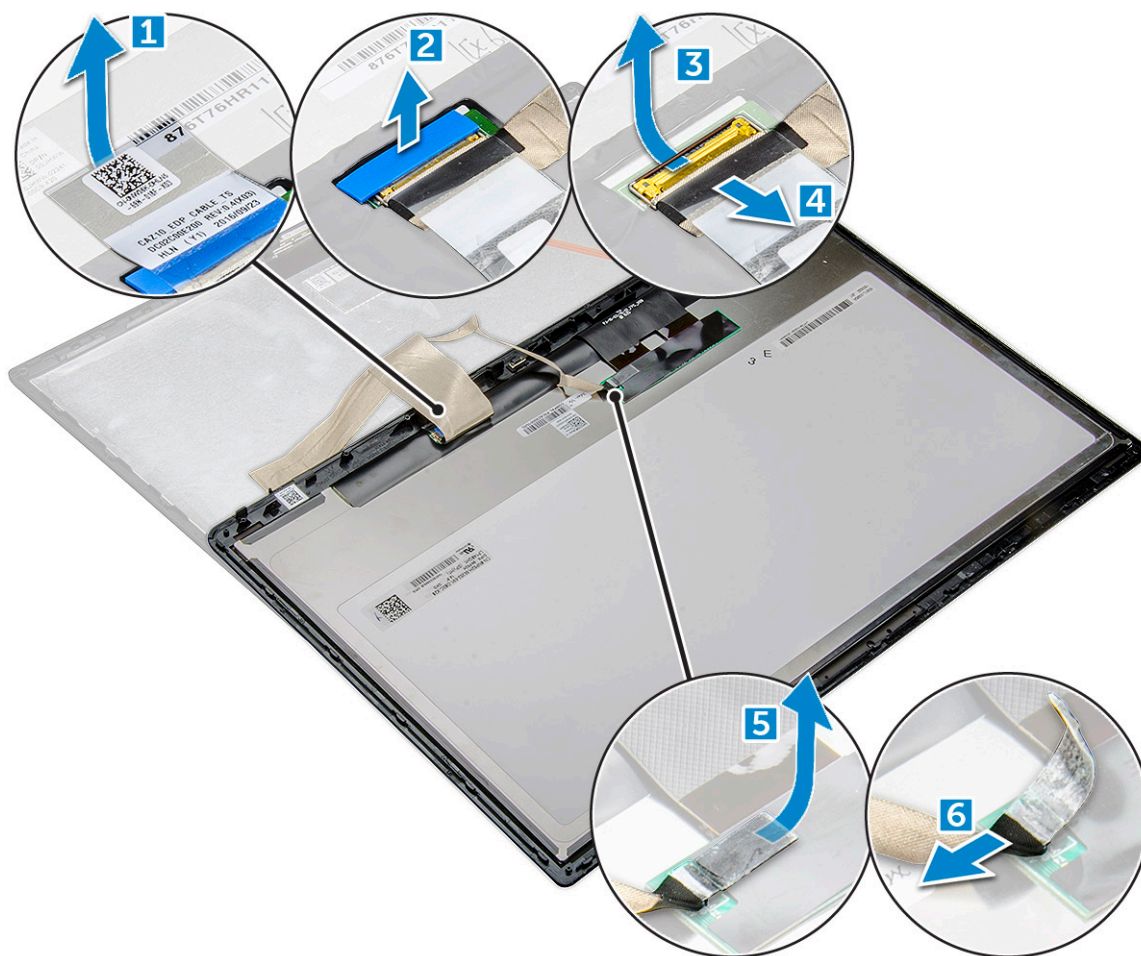
8. Remove the display bezel from the display assembly.

Installing touch display panel

(i) **NOTE:** The touch display panel installation procedure is applicable only for touch display configuration.

1. Place the display panel on the display assembly.
2. Reconnect the IR cable and eDP cable.
3. Replace the adhesive tapes and the Mylar shield.
4. Press the edges of the display panel until it clicks into the display assembly.
5. Install the display assembly.
6. Install the WLAN card.
7. Install the WWAN card.
8. Connect the battery cable to the connector on the system board.
9. Install the base cover.
10. Follow the procedure in After working inside your computer.

Display Bezel

Removing display bezel (nontouch)

(i) **NOTE:** The display bezel removal procedure is applicable only for nontouch display configuration.

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the WLAN card.
5. Remove the WWAN card.
6. Remove the display assembly.
7. To remove the display bezel:
    a. Use a plastic scribe to loosen the bottom edge of the display [1].
    b. Loosen the tabs on the edges of the display [2].
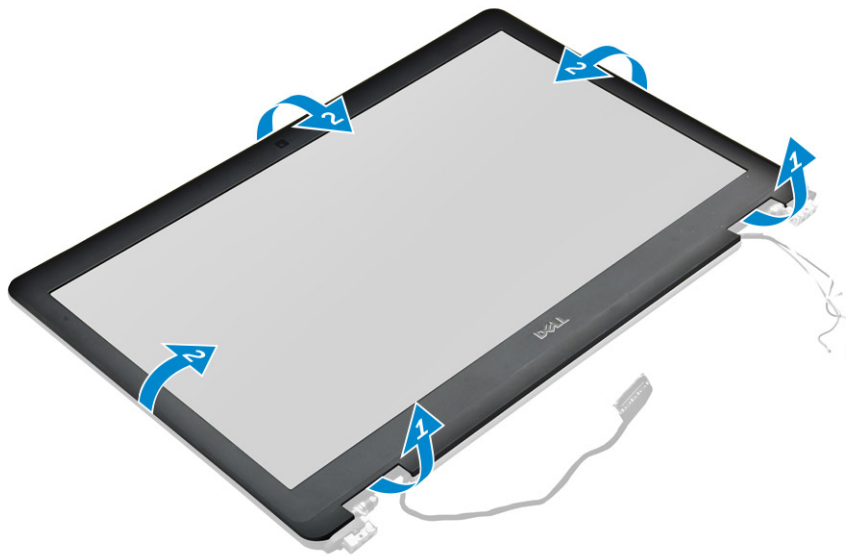
ⓘ NOTE: Adhesive is used to secure the display bezel to the display panel.

8. Remove the display bezel from the display assembly.

Installing display bezel (nontouch)

ⓘ NOTE: The display bezel installation procedure is applicable only for nontouch display configuration.

1. Place the display bezel on the display assembly.
2. Press the edges of the display bezel until it clicks onto the display assembly.

    ⓘ NOTE: Adhesive is used to secure the display bezel to the display panel.

3. Install the display assembly.
4. Install the WLAN card.
5. Install the WWAN card.
6. Connect the battery cable to the connector on the system board.
7. Install the base cover.
8. Follow the procedure in After working inside your computer.

Nontouch display panel

Removing the display panel (nontouch)

ⓘ NOTE: The display panel removal procedure is applicable only for nontouch display configuration.

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the WLAN card.
5. Remove the WWAN card.
6. Remove the display assembly.
7. Remove the display bezel.
8. Remove the hinge caps.
9. To remove the display panel:
   a. Remove the two (M2.0 x 2.0) screws on the panel [1].
   b. Lift the top edge of the display panel [2] and flip the display panel over.

   c. Peel off the display connector adhesive strip from the display panel [1].
   d. Peel off the Mylar tape securing the display cable on the back of the display panel [2].
   e. Lift the metal tab and disconnect the display cable from the back of the display panel [3,4].
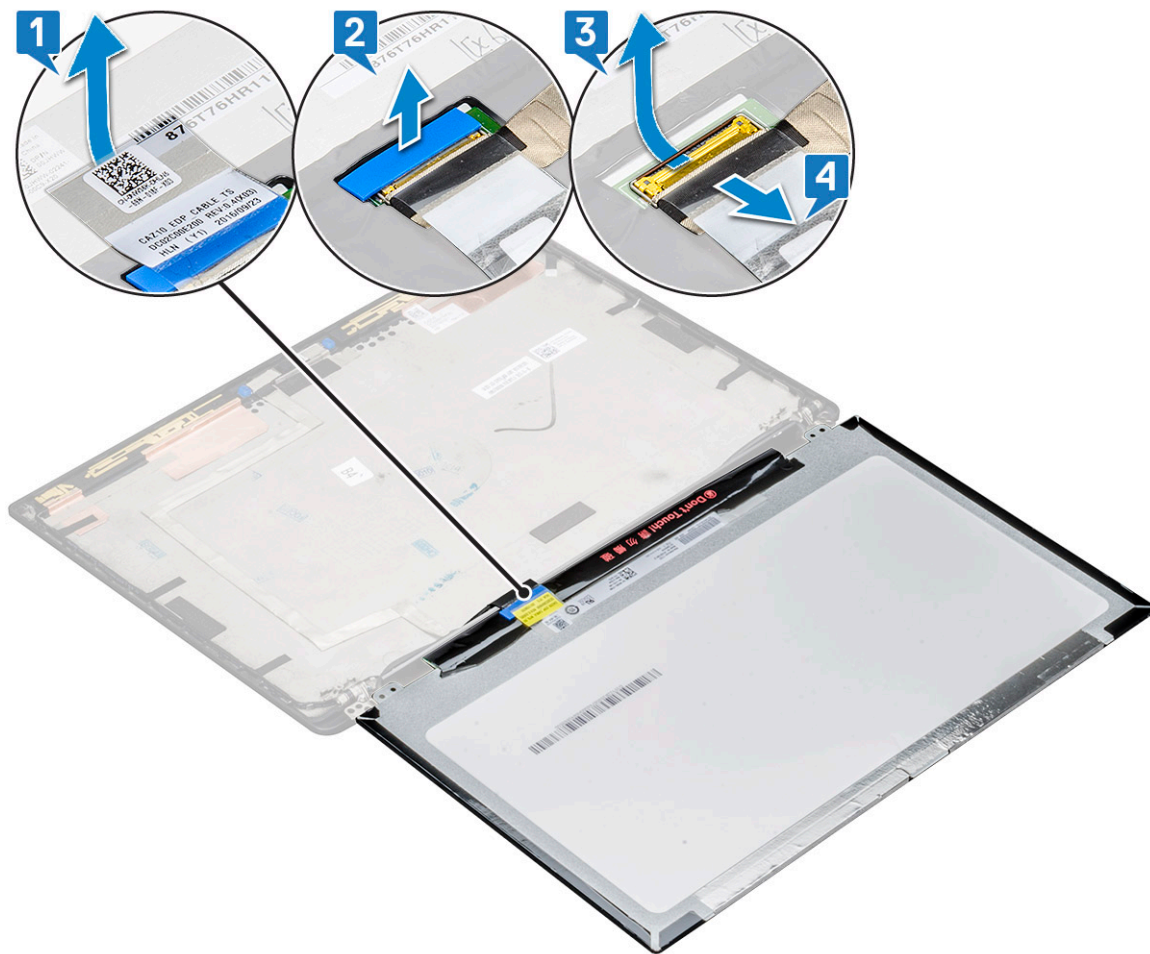
f. Remove the display panel.

Installing the display panel (nontouch)

ⓘ **NOTE:** The display panel installation procedure is applicable only for nontouch display configuration.

1. Connect the display cable on the back of the display panel.
2. Affix the mylar tape securing the display cable on the back of the display panel.
3. Affix display connector adhesive strip to the display panel.
4. Flip the display panel over and slide the display panel towards the system.
5. Replace the two (M2.0 x 2.0) screws on the panel.
6. Install the bezel.
7. Install the hinge cap.
8. Install the display assembly.
9. Install the WLAN card.
10. Install the WWAN card.
11. Connect the battery cable to the connector on the system board.
12. Install the base cover.
13. Follow the procedure in After working inside your computer.

Camera Microphone Module

Removing camera-microphone module

The removal procedure of the microphone camera module is only for a nontouch display configuration.
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the WLAN card.
4. Remove the WWAN card.
5. Disconnect the battery cable from the connector on the system board.
6. Remove the display assembly.
7. Remove the display bezel.
8. Remove the display hinge.
9. To remove the camera microphone module:
   a. Peel off the two pieces of conductive tape covering the camera microphone module [1].

      ⓘ **NOTE:** The conductive tape is a separate part from the camera module that must be removed and then reattached when replacing the camera microphone module.

   b. Lift the camera microphone module [2].
   c. Disconnect the camera cable from the camera module [3].
   d. Lift and remove the camera microphone module [4].
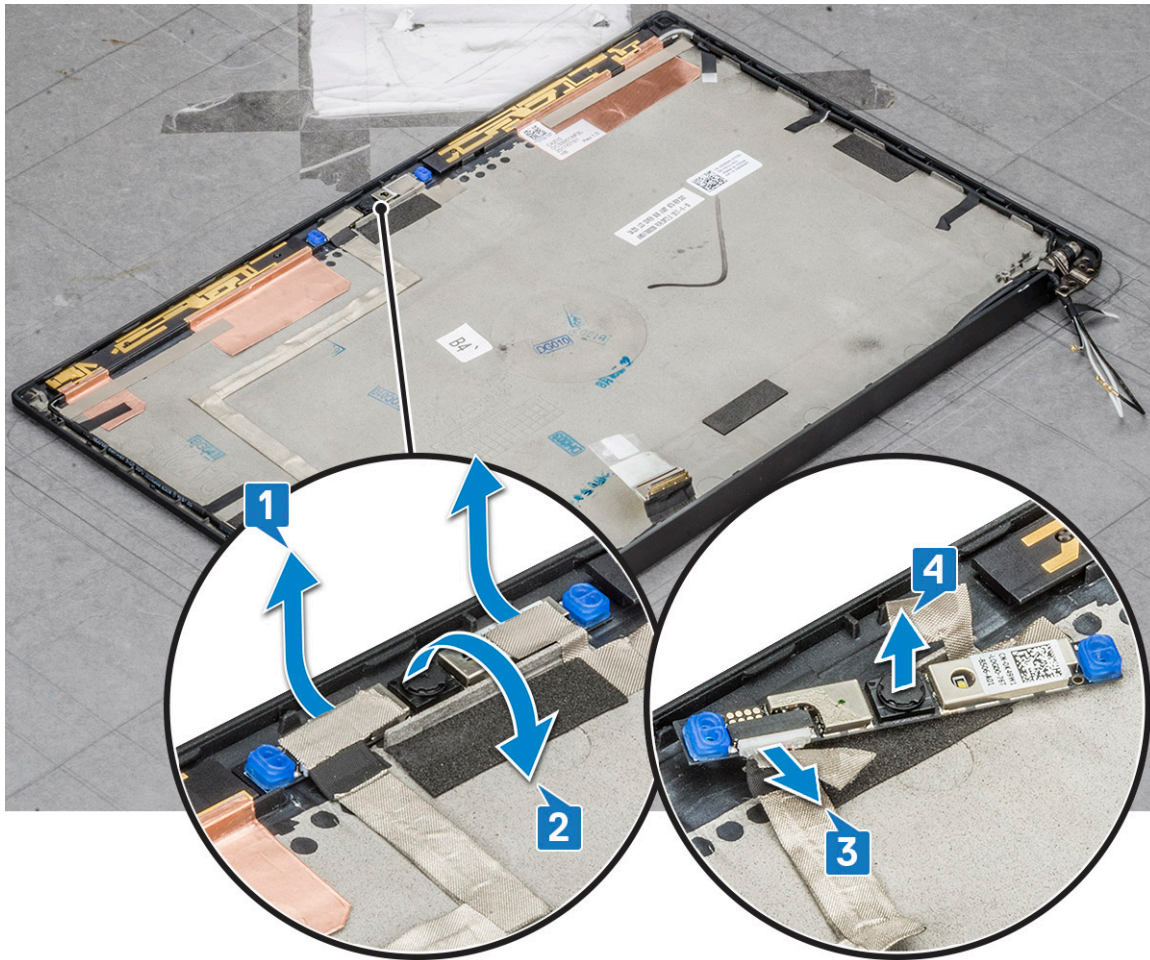
Installing camera

The installation procedure is applicable only for systems shipping with a nontouch display configuration.

1. Connect the camera cable.
2. Insert the camera microphone module into the slot on the display assembly.
3. Affix the tape to secure the camera module.
4. Install the display bezel.
5. Install the display assembly.
6. Install the display hinges.
7. Install the display panel.
8. Install the WLAN card.
9. Install the WWAN card.
10. Connect the battery cable to the connector on the system board.
11. Install the base cover.
12. Follow the procedure in After working inside your computer.

   (i) **NOTE:** The two conductive tape pieces must be removed and then reattached when replacing the camera module.

Display Hinge Caps

Removing the display hinge cap

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the WLAN card.
5. Remove the WWAN card.
6. Remove the display assembly.
7. Slide hinge cap from left to the right to release and remove the display hinge cap from the display panel.
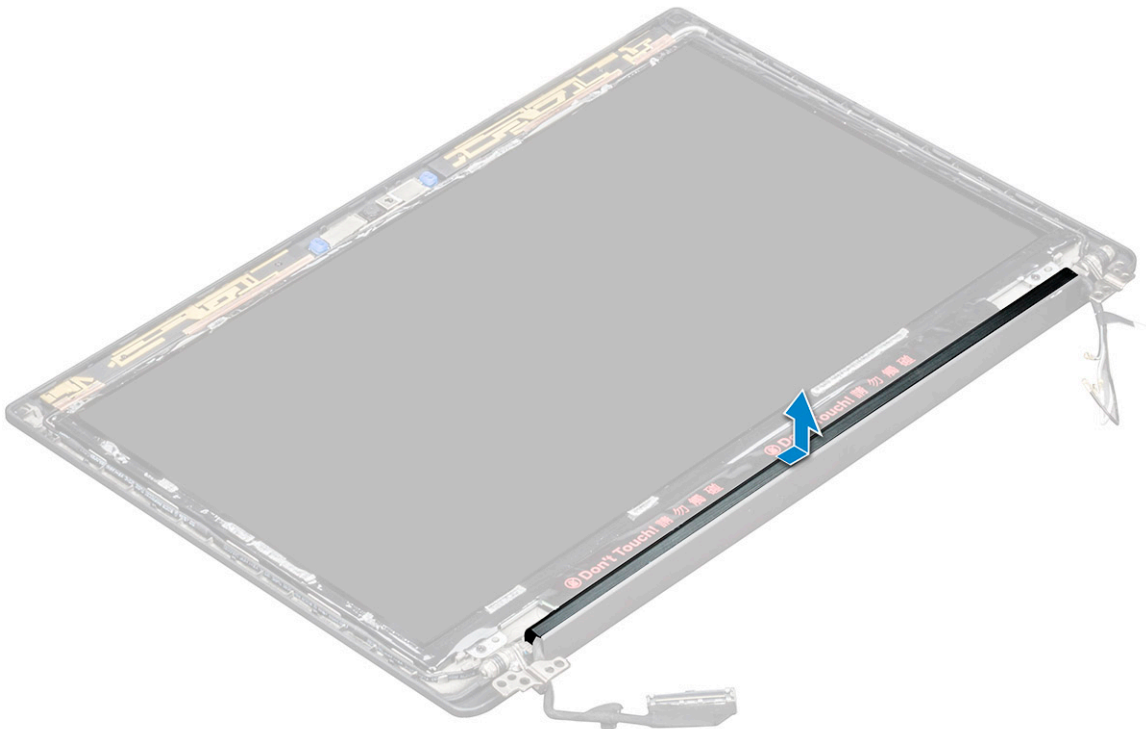
Installing the display hinge cap

1. Place the display hinge cap on the slot and slide it back to fit on the display assembly.
2. Install the display assembly.
3. Install the WLAN card.
4. Install the WWAN card.
5. Connect the battery cable to the connector on the system board.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

System board

Removing system board

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

If your computer is shipped with a WWAN card, then the removal of a blank SIM card tray is a requirement.

2. Remove the SIM card.
3. Remove the base cover.
4. Disconnect the battery cable from the connector on the system board.
5. Remove the memory module.
6. Remove the PCIe SSD.
7. Remove the WLAN card.
8. Remove the WWAN card.
9. Remove the heat sink assembly.
10. To disconnect the eDP cable:

    (i) **NOTE:** If your system is shipped with an IR camera, then the IR cable must be disconnected. The IR cable is located beneath the eDP cable connector.

    a. Un route the WLAN and WWAN cables from the routing channels [1].
    b. Remove the M2.0 x 3.0 screws that secure the eDP cable [2].
    c. Remove the eDP cable bracket [3].
    d. Disconnect the eDP cable from the system board [4].
    e. Lift the tape that secures the eDP cable to the system board [5].
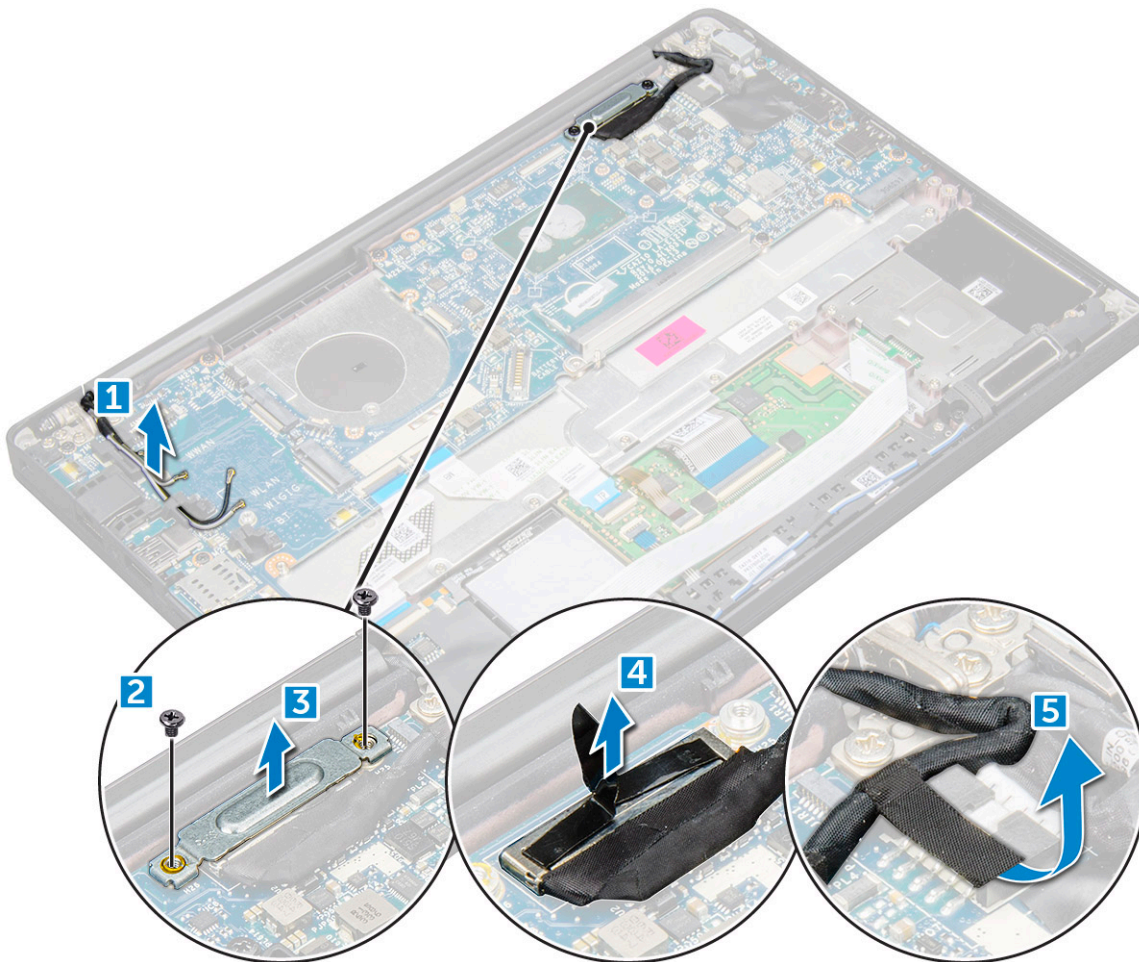
11. To disconnect the cables:

    (i) **NOTE:** To disconnect the speaker, LED board, coin cell battery and the power connector port cables, use a plastic scribe to release the cable from the connector. Do not pull the cable as it may result in breakage.

    a. speaker cable [1]
    b. LED board cable [2]
    c. coin cell battery cable [3]

d. touchpad cable and USH board cable [4]
e. power connector port cable [5]
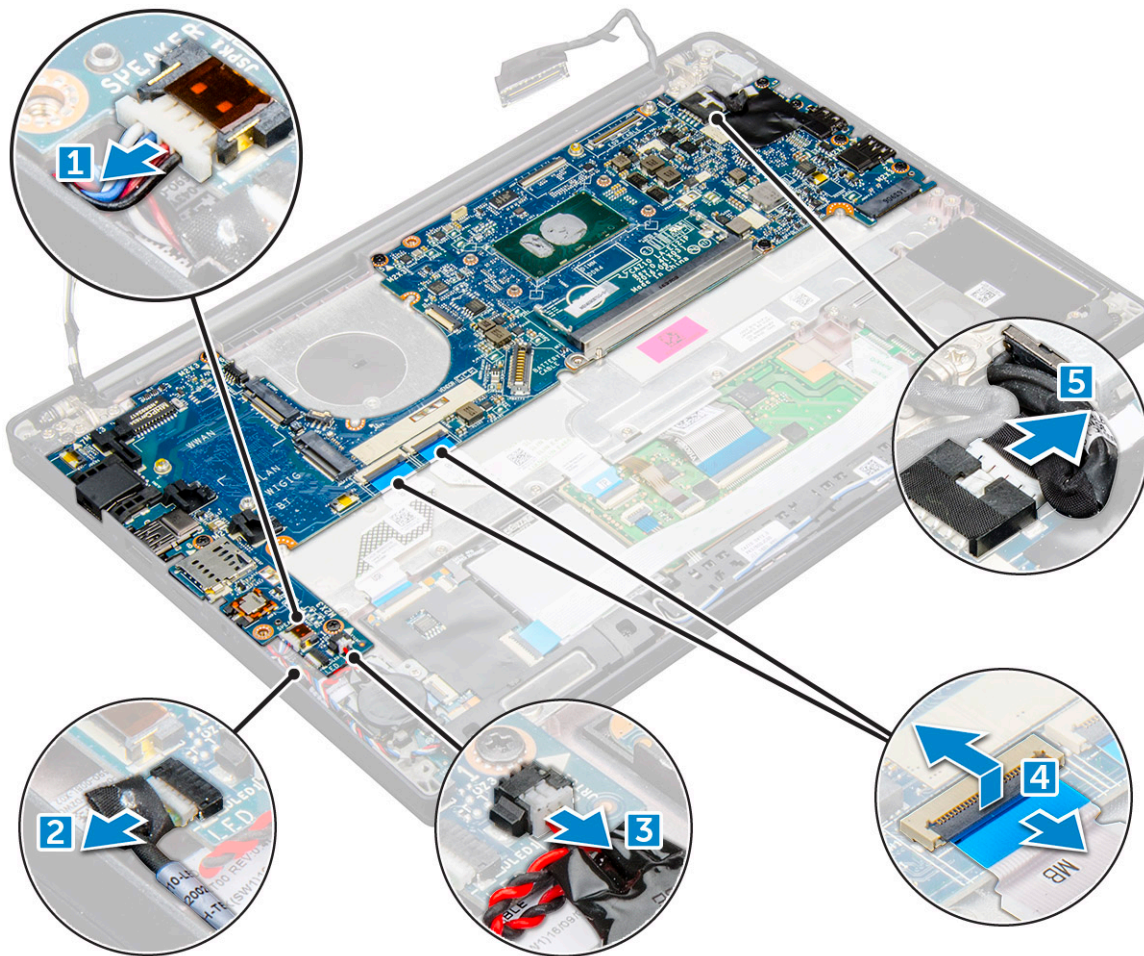
12. To remove the system board:
    a. Disconnect the M2.0x3.0 screws that secure the system board to computer [1].
    b. Lift the system board away from the computer.
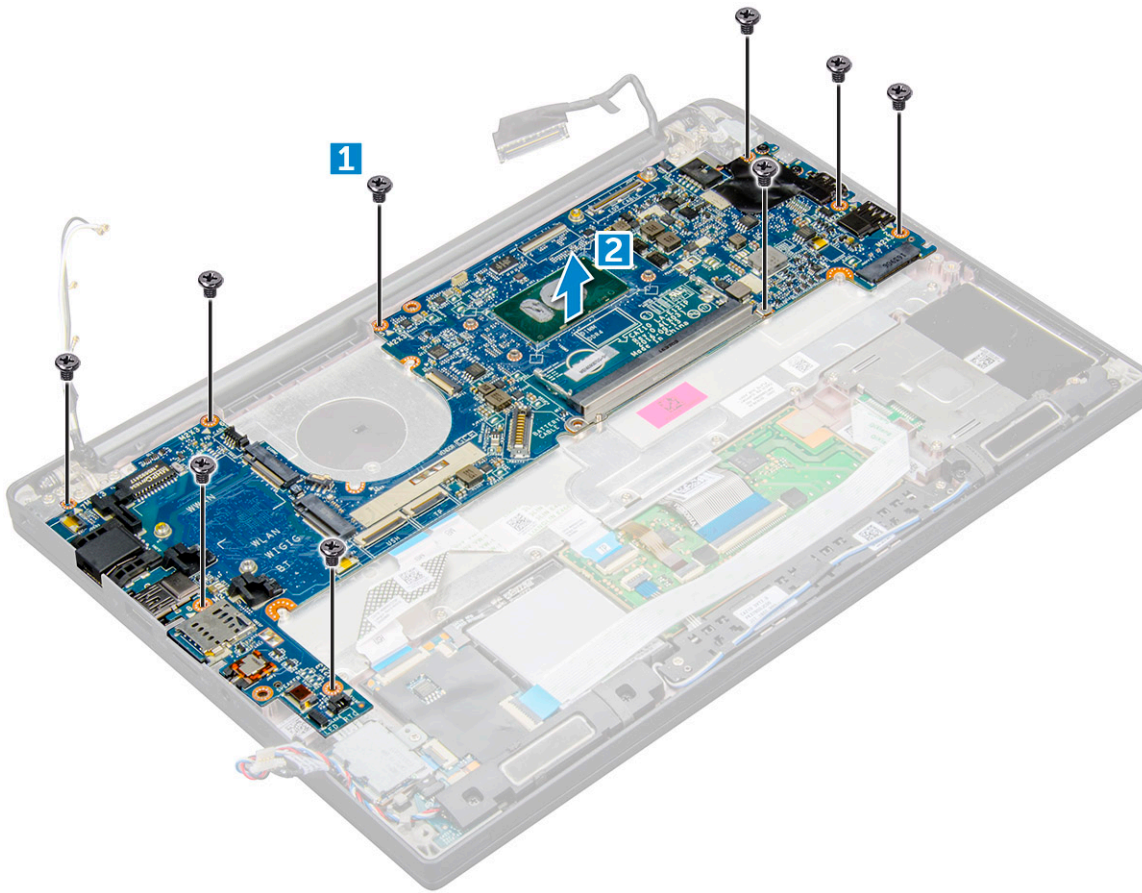
13. Remove the M2.0x5.0 screws that secure the USB Type-C bracket.
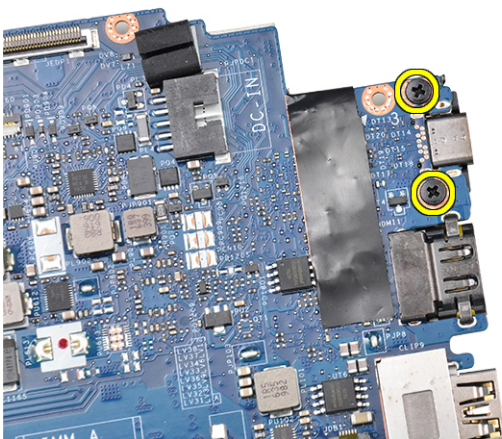
14. Flip the system board, peel off the tapes securing the bracket and remove the USB Type-C port from the system board.
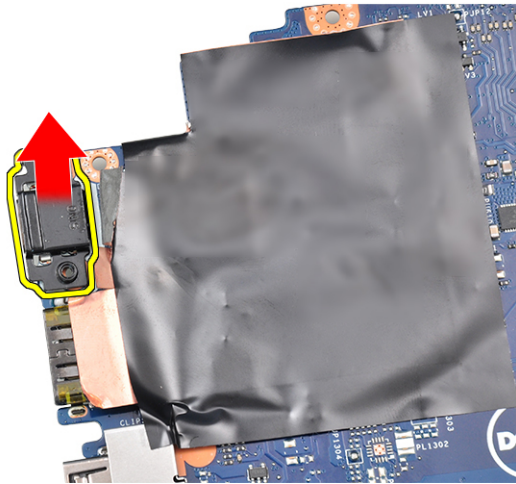
Installing system board

1. Place the USB Type-C port along with the bracket in the slot on the system board.
2. Affix the tape to secure the Type-C bracket.
3. Flip the system board and tighten the M2 x 3 screws to secure the USB type-C port to the system board.
4. Align the system board with the screw holders on the computer.
5. Tighten the M2 x 3 screws to secure the system board to the computer.
6. Connect the speaker, power connector, LED board, touchpad, and USH cables to the connectors on the system board.
7. Connect the eDP cable to the connector on the system board.
8. Place the metal bracket over the eDP cable and tighten the M2.0 x 3.0screw to secure it.
9. Remove the metal bracket from the memory module connectors of the system board that was removed.
10. Place the metal bracket over the memory module connectors and tighten the M2 x 3 screws to secure it to the computer.

   (i) **NOTE:** If your computer has a WWAN card, then SIM card tray installation is a requirement.

11. Install the coin cell battery
12. Install the heat sink.
13. Install the WLAN card.
14. Install the WWAN card.
15. Install the SSD card.
16. Install the memory module.
17. Install the speaker.
18. Connect the battery cable to the connector on the system board.
19. Install the base cover.
20. Follow the procedure in After working inside your computer.

Keyboard assembly

Removing keyboard assembly

(i) **NOTE:** The keyboard and the keyboard tray together are called the keyboard assembly.

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Disconnect the battery cable from the connector on the system board.
4. Remove the memory module.

5. Remove the PCIe SSD.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the heat sink assembly.
9. Remove the system board.
10. Disconnect the cables from the palmrest end:
    a. touchpad and USH board cables [1]
    b. keyboard backlight cable [2]
    c. keyboard cable [3]
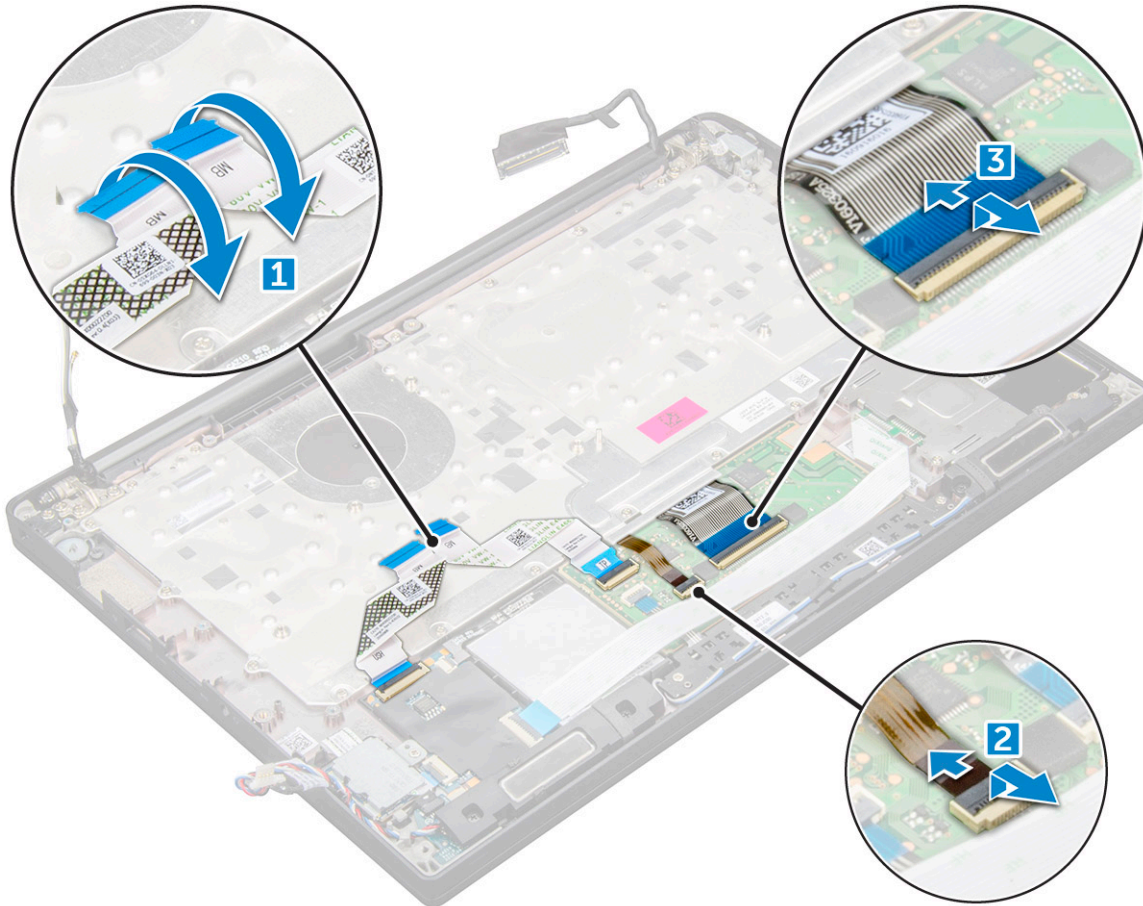
11. To remove the keyboard assembly:

    ⓘ **NOTE:** To identify the screws, see screw list

    a. Remove the M2.0 x 2.5 screws that secure the keyboard [1].
    b. Lift the keyboard assembly from the chassis [2].
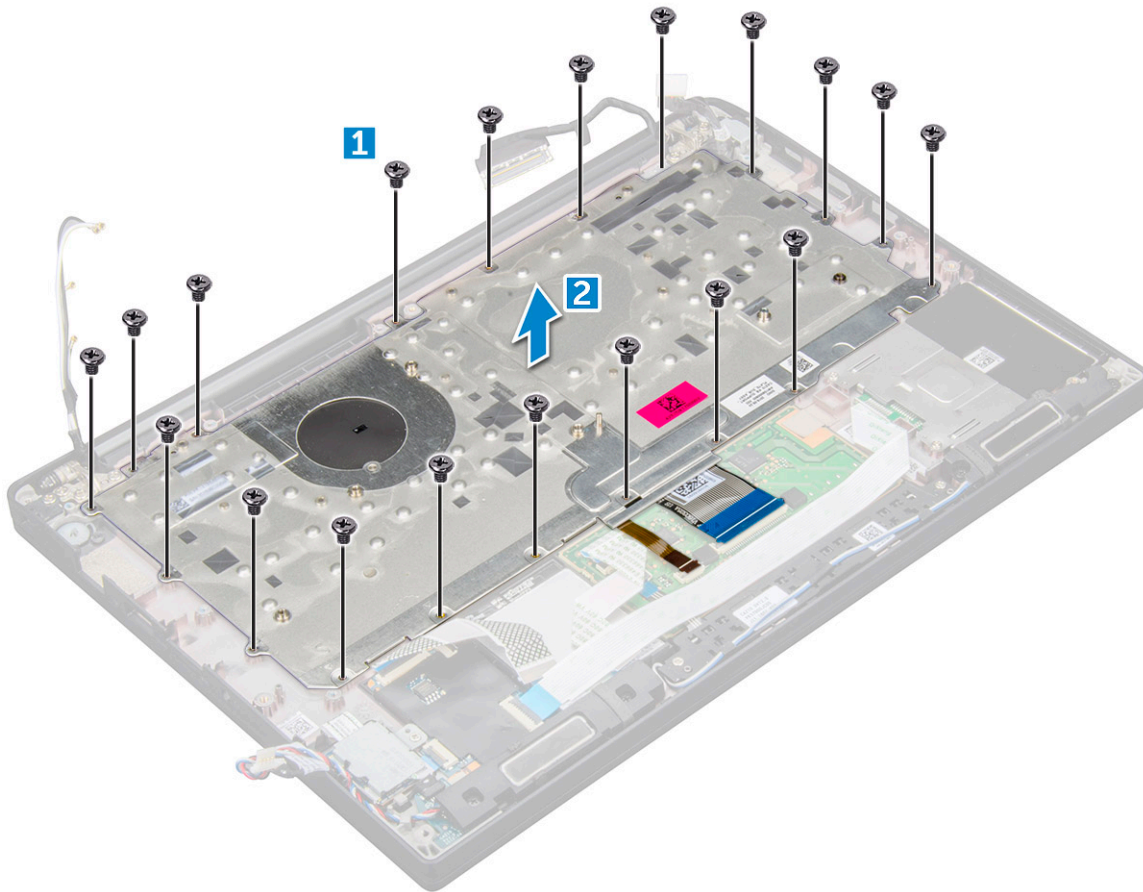
Installing keyboard assembly

(i) **NOTE:** The keyboard and the keyboard tray together are called the keyboard assembly.

(i) **NOTE:** The keyboard has multiple snap points on the lattice side which must be pushed down firmly at the snap points in order to secure and fit it to the replacement keyboard.

1. Align the keyboard assembly with the screw holders on the computer.
2. Tighten the M2.0 x 2.5 screws that secure the keyboard to the chassis.
3. Connect the keyboard cable, keyboard backlight cable, touchpad cable and USH cable to the connectors on the touchpad buttons board.
4. Install the system board.
5. Install the heat sink.
6. Install the WLAN card.
7. Install the WWAN card.
8. Install the SSD card.
9. Install the memory module.
10. Connect the battery cable to the connector on the system board.
11. Install the base cover.
12. Follow the procedure in After working inside your computer.

Keyboard lattice and Keyboard

Removing keyboard from keyboard tray

1. Follow the procedure in Before working inside your computer.
2. Remove the keyboard assembly
3. Remove the five M2.0 x 2.0 screws that secure the keyboard to the keyboard assembly.

4. Lift the keyboard away from the keyboard tray.

Installing keyboard to keyboard tray

1. Align the keyboard with the screw holders on the keyboard tray.
2. Tighten the five M2.0 x 2.0 screws to secure the keyboard to the keyboard tray.

3. Install the keyboard assembly.

Palm rest

Replacing palm rest

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

2. Remove the:
   a. base cover
   b. battery
   c. memory module
   d. PCIe SSD
   e. WLAN card
   f. WWAN card
   g. power connector port
   h. heat sink assembly
   i. coin cell battery
   j. speaker
   k. display assembly
   l. system board
   m. keyboard
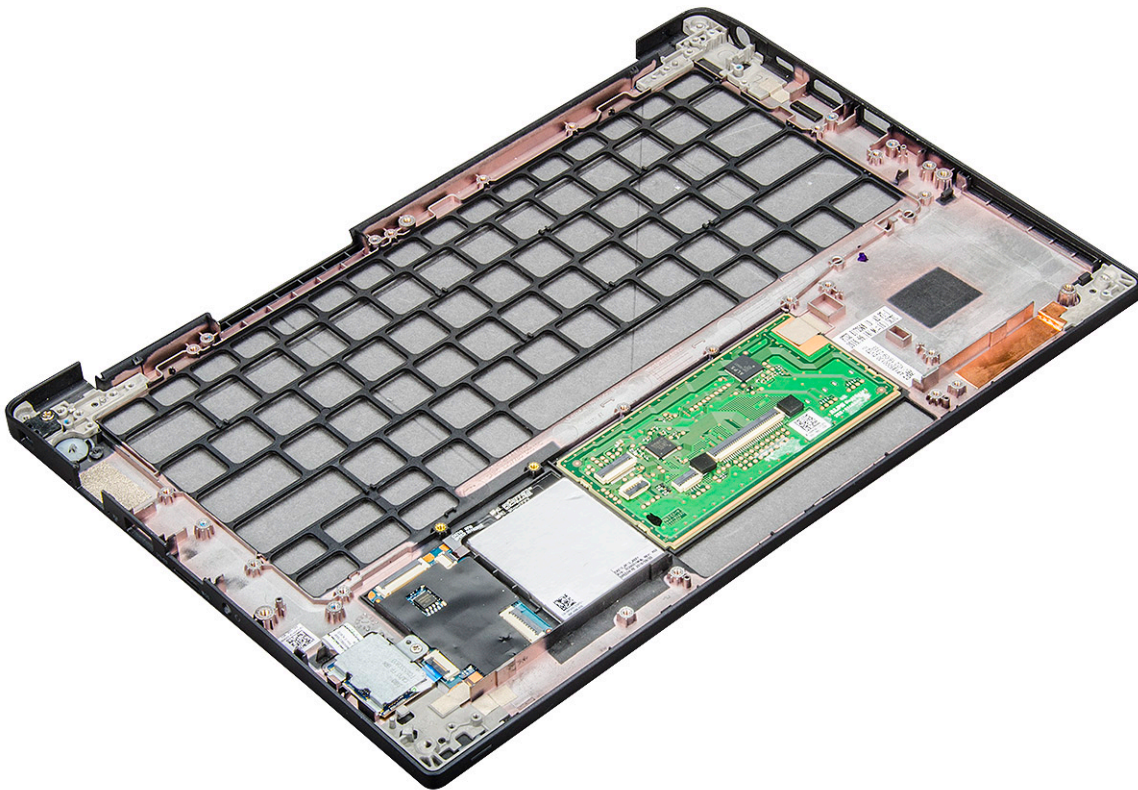
The component that you are left with is the palm rest.

3. Replace the palm rest.
4. Install the:
   a. keyboard
   b. system board
   c. display assembly
   d. speaker
   e. coin cell battery
   f. heatsink
   g. power connector port
   h. WLAN card
   i. WWAN card
   j. PCIe SSD
   k. memory
   l. battery
   m. base cover

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

System specifications

ⓘ **NOTE:** Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to **Help and Support** in your Windows operating system and select the option to view information about your computer.

Topics:

Supported operating systems

The topic lists the operating systems supported for Latitude 7280 system.

Table 2. Supported operating systems

Supported operating systems	Description
Windows 10	• Microsoft Windows 10 Pro 64-bit • Microsoft Windows 10 Home 64-bit
Other	• Ubuntu 16.04 LTS SP1 64-bit • NeoKylin v6.0 64-bit (China)

Processor specifications

Table 3. Processor specifications

Feature	Specifications
Intel 6th generation	i5/ i7 series
Intel 7th generation	i3 / i5/ i7 series

System specifications

Feature	Specification
Chipset	Integrated in the processor
DRAM bus width	64-bit
Flash EPROM	SPI 128 Mbits
PCIe bus	100 MHz
External Bus Frequency	DMI 3.0—8GT/s

Memory specifications

Feature	Specification
Memory connector	Integrated in the processor
Memory capacity	4 GB and 16 GB
Memory type	DDR4 SDRAM-2133 MHz
Minimum memory	4 GB
Maximum memory	16 GB

Storage specifications

This laptop supports one M.2 SATA SSD or M.2 PCIe NVMe SSD.

The options are:
- Up to 512 GB SATA SSD
- Up to 1 TB PCIe NVMe SSD
- Up to 512 GB NVMe SED SSD

Video specifications

Table 4. Video specifications

Feature	Specifications
UMA controller	Intel-Integrated HD Graphics 620Intel-Integrated HD Graphics 520 (available with Intel 6th Gen Core I only)
External display support	On system - eDP (internal display), HDMI
Type	Integrated on system board
Intel 7th generation	i3 / i5/ i7 series

(i) **NOTE:** Supports one VGA, DisplayPort, HDMI through the docking station .

Audio specifications

Feature	Specification
Types	Four-channel high-definition audio
Controller	Realtek ALC3246
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

Battery specifications

Feature	Specification
Type	● 3-cell Lithium Prismatic battery with ExpressCharge ● 4-cell Lithium Prismatic battery with ExpressCharge
42 WHr (3–cell):	
Length	200.5 mm (7.89 inches)
Width	95.9 mm (3.78 inches)
Height	5.7 mm (0.22 inch)
Weight	185.0 g (0.41 lb)
Voltage	11.4 VDC
60 WHr (4–cell):	
Length	238 mm (9.37 inches)
Width	95.9 mm (3.78 inch)
Height	5.7 mm (0.22 inch)
Weight	270 g (0.6 lb)
Voltage	7.6 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)
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	7.4 mm Barrel Type 65 W or 90 W
	ⓘ **NOTE:** The system is shipped with 65 W adapter and also supports 90 W adapter for fast charging.
Input voltage	100 V AC to 240 V AC
Input current—maximum	1.7 A / A
Input frequency	50 Hz to 60 Hz
Output current	3.34 A and 4.62 A
Rated output voltage	19.5 V DC
Weight	
Dimensions	22 x 66 x 106 mm (65 W) and 22 x 66 x 130 (90 W)
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)

Docking options

ⓘ **NOTE:** Docking stations are sold separately.

Options	
	● Dell Dock WD15
	● Dell Dock Stand DS1000
	● Dell Thunderbolt Dock TB16

Port and connector specifications

Table 5. Temperature specifications

Feature	Specifications
Audio	Microphone-in, stereo headphones, and headset combo connectorRealtek ALC3246 ControllerStereo conversion: 24-bit (analog-to-digital and digital-to-analog)Internal interface - high-definition audio codecExternal interface - microphone-in and stereo headphones/speakers universal connector
	Speakers: Power: 2X2 Wrms
	Internal speaker amplifier: Two watts per channel
	Internal microphone: Digital microphone (dual microphone with camera)
	No volume control buttons
	Support hot-key keyboard button
Network adapter	One RJ-45 connector

Table 5. Temperature specifications (continued)

Feature	Specifications
USB	One USB 3.0One DisplayPort over USB Type-C (optional Thunderbolt 3)
Memory card reader	
Micro Subscriber Identity Module (SIM) card	
Docking port	
Express Card	None
AC adapter	E5 65 W
	E5 65 W rug (Only for India)
	E5 90 W
	E4 65 W HF (BFR/PVC Free)
	Power Companion 45 W (Dura Ace)
	Hybrid Power Bank and adapter (45 W) (12 inches only, not 14/15) (No express charge)
Smart card reader	One (optional)
Video	HDMI 1.4

Communication specifications

Features	Specification
Network adapter	Intel i219LM Gigabit Ethernet Controller 10/100/1000 Mb/s(RJ-45)

Camera specifications

(i) **NOTE:** Systems with FHD display are also shipped with an optional IR camera that supports Windows hello feature.

Feature	Specification
Type	HD fixed focus
Sensor type	CMOS sensor technology
Imaging rate	Up to 30 frames per second
Video Resolution	1280 x 720 pixels (0.92 MP)

Touchpad specifications

Feature	Specification
Active Area:	Sensor-active area
X-axis	
Y-axis	
X/Y position resolution	X: 1048cpi; Y:984cpi
Multi-touch	Configurable single finger and multi-finger gestures

Display specifications

Feature	Specification
HD anti-glare	
Luminance	200 nits
Height	155.52 mm (6.12 inches)
Width	276.62 mm (10.89 inches)
Diagonal	317.5 mm (12.5 inches)
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 mm
FHD anti-glare:	
Luminance	300 nits
Height	155.52 mm (6.12 inches)
Width	276.62 mm (10.89 inches)
Diagonal	317.5 mm (12.5 inches)
Maximum resolution	1920 x 1080
Refresh rate	60 Hz
Maximum viewing angles—horizontal	+/-80°
Maximum viewing angles—vertical	+/-80°
Pixel pitch	0.144 x 0.144 mm

Feature	Specification
FHD anti-smudge	
Luminance	300 nits
Height	155.52 mm (6.12 inches)
Width	276.62 mm (10.89 inches)
Diagonal	305.3 mm (12.02 inches)
Maximum resolution	1920 x 1080
Refresh rate	60 Hz
Maximum viewing angles—horizontal	+/-80°

Feature	Specification
Maximum viewing angles—vertical	+/-80°
Pixel pitch	0.1 44 x 0.144

Physical specifications

Feature	Specification
Front height	11.51 mm (0.45 inch)
Back height—non-touch	17.05 mm (0.71 inch)
Back height—touch	17.3 mm (0.79 inch)
Width	304.8 mm (12.0 inches)
Depth	207.95 mm (8.19 inches)
Weight—non-touch with 3–cell battery	1.18 kg (2.61 lbs)

Environmental specifications

Table 6. Temperature 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)

Table 7. Relative humidity —specifications

Temperature	Specifications
Operating	10% to 90% (non-condensing)
Storage	5% to 95% (non-condensing)

Table 8. Altitude—maximum specifications

Temperature	Specifications
Operating	−15.2 m to 3048 m (−50 to 10,000 ft)
Non-operating	
Storage	5% to 95% (non-condensing)
Airborne contaminant level	

4

System Setup

Topics:

BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

Entering BIOS setup program

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

   ⓘ **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

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 9. Navigation keys

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

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

ⓘ **NOTE:** It is recommended to shutdown the computer if it is on.

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 (if available)
  ⓘ **NOTE:** XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

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

System setup options

ⓘ **NOTE:** Depending on the laptop 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, Express Service Code, the Signed Firmware update—enabled by default ● 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 M.2 SATA, M.2 PCIe SSD-0, LOM MAC Address, Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, WiGig Device, Cellular Device, Bluetooth Device

Option	Description
Battery Information	Displays the battery status health and whether the AC adapter is installed.
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
Boot sequence options	● Windows boot manager ● WindowsIns
Boot list options	● Legacy ● UEFI—selected by default
Advanced Boot Options	This option allows you the legacy option ROMs to load. By default, the **Enable Legacy Option ROMs** is disabled. Enable Attempt Legacy Boot is disabled by default.
UEFI boot path security	● Always, except internal HDD ● Always ● Never
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 ● Enable UEFI network stack: This option is enabled by default. ● Enabled w/PXE
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 ● 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-0 ● 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.

Option	Description
	● 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—enabled by default
	● Enable the Thunderbolt ports—enabled by default
	● Always Allow dell docks—enabled by default
	● Enable External USB Port—enabled by default
	● Enable Thunderbolt Boot Support
	● Enable Thunderbolt (and PCIE behind TBT) Preboot
	● Security level-no security
	● Security level-user configuration—enabled by default
	● Security level-secure connect
	● Security level- Display port only
	(i) **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. This option is disabled by default
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
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—enabled by default
	● Dim (50%)
	● Bright
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. This option is enabled by default.
Keyboard Backlight Timeout on 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. The options are:
	● 5 sec
	● 10 sec—enabled by default
	● 15 sec
	● 30 sec
	● 1 min
	● 5 min
	● 15 min
	● Never
Keyboard Backlight Timeout on Battery	The Keyboard Backlight Timeout dims out with the 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. The options are:
	● 5 sec
	● 10 sec—enabled by default
	● 15 sec

Option	Description
	30 sec 1 min 5 min 15 min - Never
Touchscreen	It controls whether the screen is enabled or disabled. This option is enabled by default.
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 - Secure Digital (SD) card—enabled by default - Secure Digital (SD) card boot - Secure Digital (SD) card read-only-mode

Video

Option	Description
LCD Brightness	Allows you to set the display brightness depending up on the power source—On Battery and On AC. The LCD brightness is independent for battery and AC adapter. It can be set using the slider.

ⓘ **NOTE:** The video setting is 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. 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, the 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 specify the minimum and max password lengths of the Administrator and System passwords. min-4—by default, if you want to change you can increase the number

Option	Description
	● max-32—you can decrease the number
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.
	Option "allow wireless switch changes" is not selected by default.
TPM 2.0 Security	Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:
	● UEFI capsule Firmware updates—enabled by default
	● TPM On—enabled by default
	● Clear
	● PPI Bypass for Enable Commands
	● PPI Bypass for Disabled Commands
	● Attestation enable—enabled by default
	● Key storage enable—enabled by default
	● SHA-256—enabled by default
	● Disabled
	● Enabled—enabled by default
	(i) **NOTE:** To upgrade or downgrade TPM 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—enabled by default
	(i) **NOTE:** The Activate and Disable options will permanently activate or disable the feature and no further changes are allowed
CPU XD Support	Allows you to enable the Execute Disable mode of the processor.
	Enable CPU XD Support—enabled by default
OROM Keyboard Access	Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are:
	● Enabled
	● 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: This option is enabled
Master password lockout	This option is not enabled by default

Secure Boot screen options

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. ● Disabled ● Enabled Default setting: Enabled
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—enabled by default ● 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 are erased and the keys restore to default settings.

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: Enabled
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory Size**. The options are: ● 32 MB ● 64 MB ● 128 MB—enabled by default

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

Option	Description
	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.
HyperThread Control	Allows you to enable or disable the Hyper-Threading in the processor. ● Disabled ● Enabled Default setting: Enabled is selected.

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 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 ● Wake on Dell USB-C dock Default setting: The option is disabled.
Wake on WLAN	Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal. Default setting: Disabled
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
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.
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 nonwork 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—enabled by default ● Standard—Fully charges your battery at a standard rate. ● ExpressCharge—The battery charges over a shorter 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.
Sleep mode	● OS Automatic selection—enabled by default Force S3
Type-C connector power	● 7.5 Watts ● 15 Watts—enabled by default

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—default. ● By Numlock ⓘ **NOTE:** When setup is running, this option has no effect. Setup works in Fn Key Only mode.
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.
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:
Extended BIOS POST Time	Allows you to create an extra preboot delay. The options are: ● 0 seconds—enabled by default. ● 5 seconds ● 10 seconds
Full Screen Log	● Enable Full Screen Logo—not enabled
Warnings and errors	● Prompt on warnings and errors—enabled by default ● Continue on warnings ● Continue on warnings and errors

Manageability

Option	Description
USB provision	Enable USB provision is not selected by default
MEBX Hotkey —enabled by default	Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. ● Disabled ● Enabled Default setting: Disabled

Virtualization support screen options

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

ⓘ **NOTE:** IMEI number for WWAN can be found ont the outer box or the WWAN card.

Maintenance screen

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.

Option	Description
BIOS Downgrade	This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: ● Internal SATA HDD/SSD ● Internal M.2 SATA SDD ● Internal M.2 PCIe SSD ● 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 ● Always perform integrity check—disabled by default

System logs

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

Updating the BIOS in Windows

⚠ CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.
   ⓘ NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.
   For more information, see knowledge base article 000124211 at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article 000131486 at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

> ⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https:// www.dell.com/support/article/sln153694**

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article 000145519 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

> ⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https:// www.dell.com/support/article/sln153694**

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

> ⓘ **NOTE:** Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

> ⚠ **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.

6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

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

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

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

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

ⓘ **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

To enter the system setup, press F12 immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
    The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
    Use the following guidelines to assign the system password:
    ● A password can have up to 32 characters.
    ● At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
    ● Numbers 0 through 9.
    ● Upper case letters from A to Z.
    ● Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
    The computer restarts.

Deleting or changing an existing system 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 F12 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**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

    ⓘ **NOTE:** If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

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 restarts.

Clearing CMOS settings

⚠ CAUTION: **Clearing CMOS settings will reset the BIOS settings on your computer.**

1. Remove the base cover.
2. Disconnect the battery cable from the system board.
3. Remove the coin-cell battery.
4. Wait for one minute.
5. Replace the coin-cell battery.
6. Connect the battery cable to the system board.
7. Replace the base cover.

Clearing BIOS (System Setup) and System passwords

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.

ⓘ NOTE: For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

Troubleshooting

Topics:

Handling swollen Lithium-ion batteries

Like most laptops, Dell laptops use lithium-ion batteries. One type of lithium-ion battery is the lithium-ion polymer battery. Lithium-ion polymer batteries have increased in popularity in recent years and have become standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to lithium-ion polymer battery technology is the potential for swelling of the battery cells.

Swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and should be replaced and disposed of properly. We recommend contacting Dell product support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing Lithium-ion batteries are as follows:
- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery before removing it from the system. To discharge the battery, unplug the AC adapter from the system and operate the system only on battery power. When the system will no longer power on when the power button is pressed, the battery is fully discharged.
- 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 type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell product support at https://www.dell.com/support for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from https://www.dell.com or otherwise directly from Dell.

Lithium-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, see Dell Laptop Battery - Frequently Asked Questions.

Dell SupportAssist Pre-boot System Performance Check diagnostics

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

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

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

For more information, see https://www.dell.com/support/kbdoc/000180971.

Running the SupportAssist Pre-Boot System Performance Check

1. Turn on your computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
4. Click the arrow at the bottom left corner.
   Diagnostics front page is displayed.
5. Click the arrow in the lower-right corner to go to the page listing.
   The items detected are listed.
6. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
7. Select the device from the left pane and click **Run Tests**.
8. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

Built-in self-test (BIST)

M-BIST

M-BIST (Built In Self-Test) is the system board's built-in self-test diagnostics tool that improves the diagnostics accuracy of system board embedded controller (EC) failures.

ⓘ **NOTE:** M-BIST can be manually initiated before POST (Power On Self Test).

How to run M-BIST

ⓘ **NOTE:** M-BIST must be initiated on the system from a power-off state either connected to AC power or with battery only.

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.
2. With both the **M** key and the **power button** held down, the battery indicator LED may exhibit two states:
   a. OFF: No fault detected with the system board
   b. AMBER: Indicates a problem with the system board
3. If there is a failure with the system board, the battery status LED will flash one of the following error codes for 30 seconds:

Table 11. LED error codes

Blinking Pattern		Possible Problem
Amber	White	
2	1	CPU Failure
2	8	LCD Power Rail Failure
1	1	TPM Detection Failure
2	4	Unrecoverable SPI Failure

4. If there is no failure with the system board, the LCD will cycle through the solid color screens described in the LCD-BIST section for 30 seconds and then power off.

LCD Power rail test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (i.e., the L-BIST circuit fails), the battery status LED will flash either an error code [2,8] or an error code [2,7].

(i) **NOTE:** If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

How to invoke L-BIST Test:

1. Press the power button to start the system.
2. If the system does not start up normally, look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace the system board.

LCD Built-in Self Test (BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell laptop or with the video card (GPU) and PC settings.

When you notice screen abnormalities like flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade etc., it is always a good practice to isolate the LCD (screen) by running the Built-In Self Test (BIST).

How to invoke LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold **D** key and **Power on** the laptop to enter LCD built-in self test (BIST) mode. Continue to hold the D key, until the system boots up.
5. The screen will display solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
6. Then it will display the colors white, black and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color or distortion on the screen).
8. At the end of the last solid color (red), the system will shut down.

(i) **NOTE:** Dell SupportAssist Pre-boot diagnostics upon launch, initiates an LCD BIST first, expecting a user intervention confirm functionality of the LCD.

System-diagnostic lights

This section lists the system-diagnostic lights of your Latitude 7280.

Table 12. System-diagnostic lights

Blinking pattern		Problem description	Suggested resolution
Amber	White		
1	1	TPM detection failure	Replace the system board.
1	2	Unrecoverable SPI Flash Failure	Replace the system board.
1	5	EC unable to program i-Fuse	Replace the system board.
1	6	Generic catch-all for ungraceful EC code flow errors	Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button for 3~5 seconds.
2	1	CPU failure	• Run the Dell Support Assist/Dell Diagnostics tool. • If problem persists, replace the system board.
2	2	System board failure (included BIOS corruption or ROM error)	• Flash latest BIOS version • If problem persists, replace the system board.
2	3	No memory/RAM detected	• Confirm that the memory module is installed properly. • If problem persists, replace the memory module.
2	4	Memory/RAM failure	• Reset and swap memory modules among the slots. • If problem persists, replace the memory module.
2	5	Invalid memory installed	• Reset and swap memory modules among the slots. • If problem persists, replace the memory module.
2	6	System board/Chipset Error	Replace the system board.
2	7	LCD failure (SBIOS message)	Replace the LCD module.
2	8	LCD failure (EC detection of power rail failure)	Replace the system board.
3	1	CMOS battery failure	• Reset the main battery connection. • If problem persists, replace the main battery.
3	2	PCI or Video card/chip failure	Replace the system board.

Table 12. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	White		
3	3	BIOS Recovery image not found	● Flash latest BIOS version ● If problem persists, replace the system board.
3	4	BIOS Recovery image found but invalid	● Flash latest BIOS version ● If problem persists, replace the system board.
3	5	Power rail failure	Replace the system board.
3	6	Flash corruption detected by SBIOS.	● Press power button for over 25 seconds to do RTC reset. If problem persists, replace the system board. ● Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button 3~5 seconds to ensure all power are drained. ● Run "BIOS recovery from USB", and the instructions are in the website Dell support. ● If problem persists, replace the system board.
3	7	Timeout waiting on ME to reply to HECI message.	Replace the system board.

ⓘ **NOTE:** Blinking 3-3-3 LEDs on Lock LED (Caps-Lock or Nums-Lock), Power button LED (without Fingerprint reader), and Diagnostic LED indicates failure to provide input during LCD panel test on Dell SupportAssist Pre-boot System Performance Check diagnostics.

Real Time Clock reset

The Real Time Clock (RTC) reset function allows you to recover your Dell system from **No POST/No Boot/No Power** situations. To initiate the RTC reset on the system make sure system is in a power-off state and is connected to power source . Press and hold the power button for 25 seconds and then release the power button. Go to how to reset real time clock.

ⓘ **NOTE:** If AC power is disconnected from the system during the process or the power button is held longer than 40 seconds, the RTC reset process is aborted.

The RTC reset will reset the BIOS to Defaults, un-provision Intel vPro and reset the system date and time. The following items are unaffected by the RTC reset:

● Service Tag
● Asset Tag
● Ownership Tag
● Admin Password
● System Password
● HDD Password
● TPM on and Active
● Key Databases
● System Logs

The following items may or may not reset based on your custom BIOS setting selections:

- The Boot List
- Enable Legacy OROMs
- Secure Boot Enable
- Allow BIOS Downgrade

Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into their primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell proposes multiple options for recovering Windows operating system on your Dell PC. For more information. see Dell Windows Backup Media and Recovery Options.

WiFi power cycle

If your computer is unable to access the internet due to WiFi connectivity issues a WiFi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a WiFi power cycle:

(i) **NOTE:** Some ISPs (Internet Service Providers) provide a modem/router combo device.

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

Drain residual flea power (perform hard reset)

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you are requested to drain residual flea power before removing or replacing any components in your computer.

Draining residual flea power, also known as a performing a "hard reset", is also a common troubleshooting step if your computer does not power on or boot into the operating system.

To drain residual flea power (perform a hard reset)

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Remove the base cover.
4. Remove the battery.

5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to your computer.
9. Turn on your computer.

   (i) **NOTE:** For more information about performing a hard reset, see the knowledge base article 000130881 at www.dell.com/support.

6

Contacting Dell

(i) **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.