

Dell Latitude 14 Rugged Extreme – 7404 Owner's Manual

Regulatory Model: P45G
Regulatory Type: P45G001



Notes, Cautions, and Warnings

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

 **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.

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Working on Your Computer


Before Working Inside Your Computer


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


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


 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance

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

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


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

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

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

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

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).
3. If the computer is connected to a docking device (docked) such as the optional Media Base or Battery Slice, undock it.

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

4. Disconnect all network cables from the computer.
5. Disconnect your computer and all attached devices from their electrical outlets.
6. Close the display and turn the computer upside-down on a flat work surface.



NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.

7. Remove the main battery.
8. Turn the computer top-side up.
9. Open the display.
10. Press the power button to ground the system board.



CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

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

Turning Off Your Computer




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

1. Shut down the operating system:

- In Windows 8:


- Using a touch-enabled device:

- a. Open the Charms menu and click **Settings**.

- b. Select the  and then select **Shut down**

- Using a mouse:

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

- b. Click the  and select **Shut down**.

- In Windows 7:

1. Click **Start** .

2. Click **Shut Down**.

or

1. Click **Start** .

2. Click the arrow in the lower-right corner of the **Start** menu as shown below, 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 4 seconds to turn them off.

After Working Inside Your Computer

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

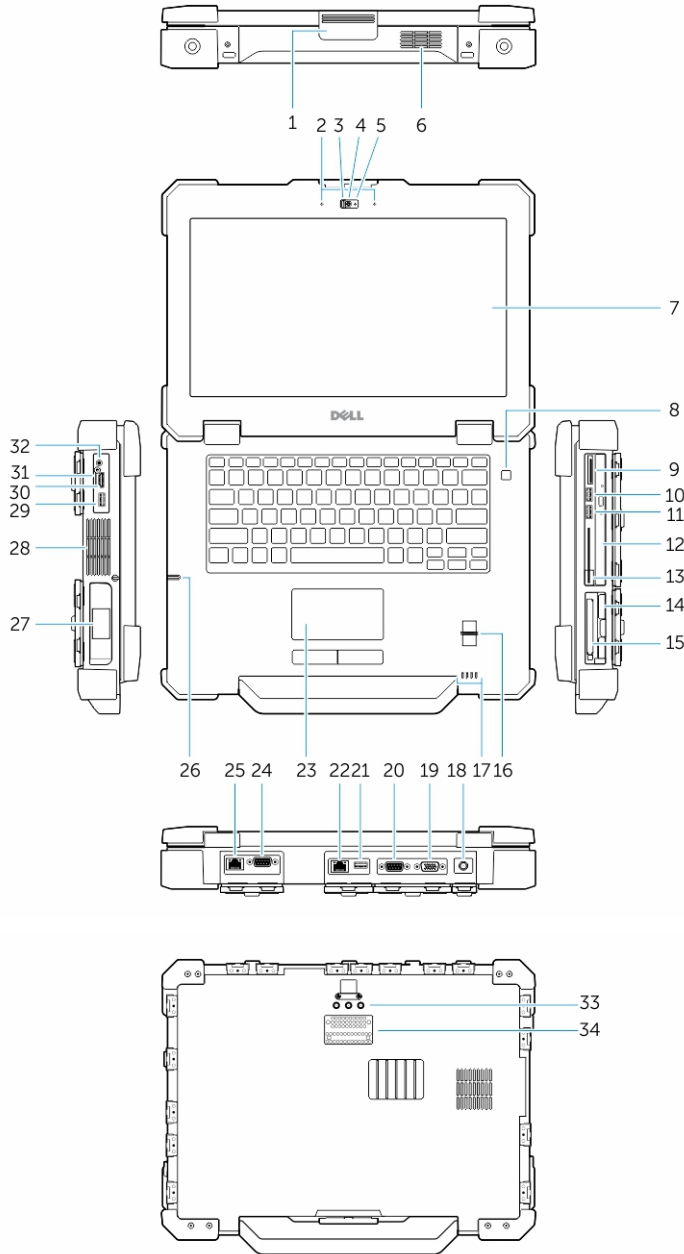
 **CAUTION: To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.**

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

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

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


System Overview




1. display latch

2. microphone

- | | |
|---|------------------------------|
| 3. privacy shutter | 4. camera (optional) |
| 5. camera status light | 6. speaker |
| 7. outdoor-readable display/touchscreen | 8. power button |
| 9. memory-card reader | 10. USB 2.0 Connector |
| 11. USB 3.0 Connector | 12. optical drive |
| 13. smart Card reader | 14. hard drive |
| 15. ExpressCard reader or PCMCIA | 16. fingerprint reader |
| 17. status lights | 18. power connector |
| 19. VGA connector | 20. serial connector |
| 21. USB 2.0 connector | 22. network connector |
| 23. touchpad | 24. serial connector |
| 25. network connector | 26. stylus |
| 27. battery | 28. sealed thermal chamber |
| 29. USB 3.0 connector with PowerShare | 30. HDMI Connector |
| 31. SIM card reader | 32. audio connector |
| 33. radio frequency pass-through connectors | 34. docking device connector |

 **WARNING: Do not block, push objects into, or allow dust to accumulate in the air vents. Do not store your Dell computer in a low-airflow environment, such as a closed briefcase, while it is running. Restricting the airflow can damage the computer. The computer turns on the fan when the computer gets hot. Fan noise is normal and does not indicate a problem with the fan or the computer.**

 **Danger: EXPLOSION HAZARD**-External Connections (Power Jack, HDMI Port, USB Ports, RJ45 Port, RS232 Port, Audio Port, Smart Card Reader, SD card Reader, Express Card Reader, PC-card Reader, SIM card Reader) are not to be used in a hazardous location.

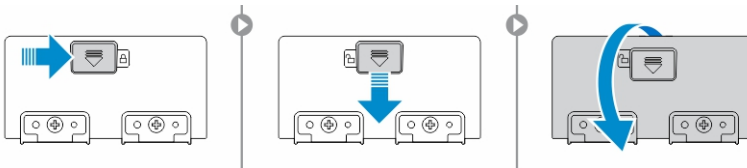
Removing and Installing Components

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

Opening the Press-Latch Doors

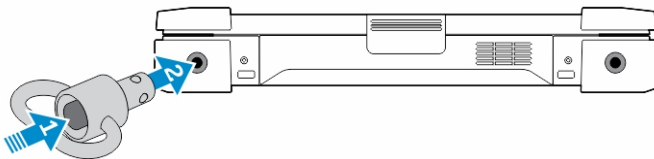
There are eight press-latch doors. Four on the back, two on the right side, and two on the left side of the computer.

1. Left and right side press-latch doors: Slide the latch towards the back of the computer to lock and towards the front to unlock.
2. Back press-latch door: Slide the latch to the right to lock and to the left to unlock.
3. The door can now be opened by pressing down on the latch and pulling the door in a direction away from the computer.



Installing a QD (Quick Disconnect) connector

1. Perform the following steps to install a QD connector:



- a. Align the QD connector to the receptacle on the corner of the computer.
 - b. Press and hold the button on top of the QD connector.
2. Insert the connector into the receptacle while holding the button pressed.
 3. Release the button after the connector is seated in the receptacle to secure it.

Removing the Stylus and Tether

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Perform the following steps:
 - a. Pull the stylus out from its slot on the computer.
 - b. Release and remove the tether from the computer.



Figure 1.

Installing the Stylus and Tether

1. Install the tether to the computer.
2. Insert the stylus into its slot and push it inwards.

Removing the Battery

1. Follow the procedures in [Before Working Inside your computer.](#)
2. Perform the following steps to remove the battery:
 - a. Lift and open the battery bay press latch door.
 - b. Press the blue battery release tab to release the battery.
 - c. Pull the blue tab on the battery outwards to remove the battery from the computer.



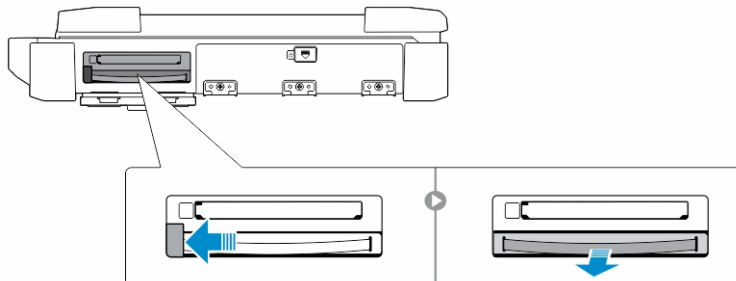
Figure 2.

Installing the Battery


1. Slide the battery into the battery bay.
2. Close the battery bay press latch door.
3. Follow the procedures in [After Working Inside Your Computer.](#)

Removing the Hard Drive

1. Slide the hard drive release latch to the left to unlock.
2. Pull the hard drive outwards using the pull-loop and remove it from the computer.



Installing the Hard Drive

1. To secure the hard drive, push the hard drive into its compartment.
2. Rotate the door back towards the computer and press until it is in a closed position.
 -  **NOTE:** Ensure that the hard drive pull tab does not cover the water seal.
3. Engage the lock by sliding it until the lock symbol is visible.

Removing the Bottom Cover

1. Follow the procedures in [Before Working Inside your computer](#)
2. Remove the [battery](#).
3. Perform the following steps to remove the bottom cover:
 - a. Remove the screws that secure the bottom cover.
 - b. Lift the bottom cover and remove it from the computer.

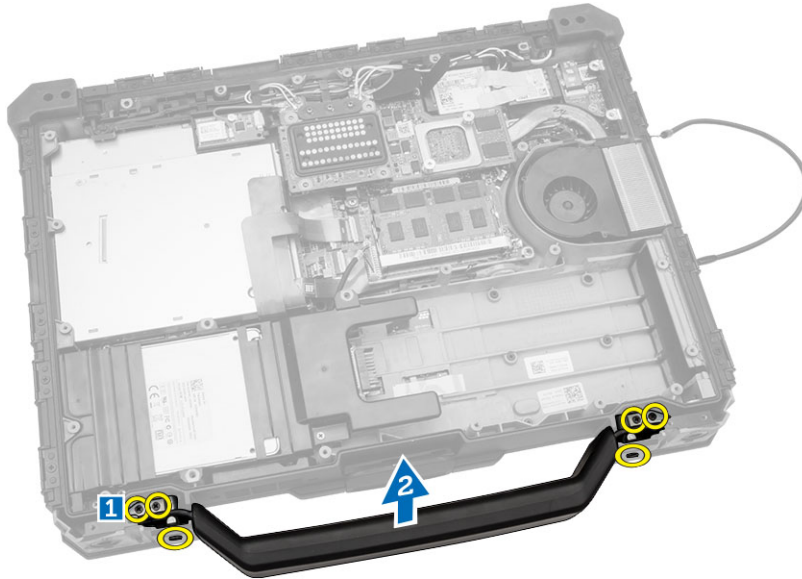


Installing the Bottom Cover

1. Place the bottom cover on the base of the computer.
2. Install the screws that secure the bottom cover to the computer.
3. Install the [battery](#).
4. Follow the procedures in [After Working Inside Your computer](#).

Removing the Handle

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [bottom cover](#)
3. Perform the following steps to remove the handle:
 - a. Remove the front screws. [1]
 - b. Remove the screws that secure the handle to the computer. [1]
 - c. Lift and remove the handle from the computer. [2]

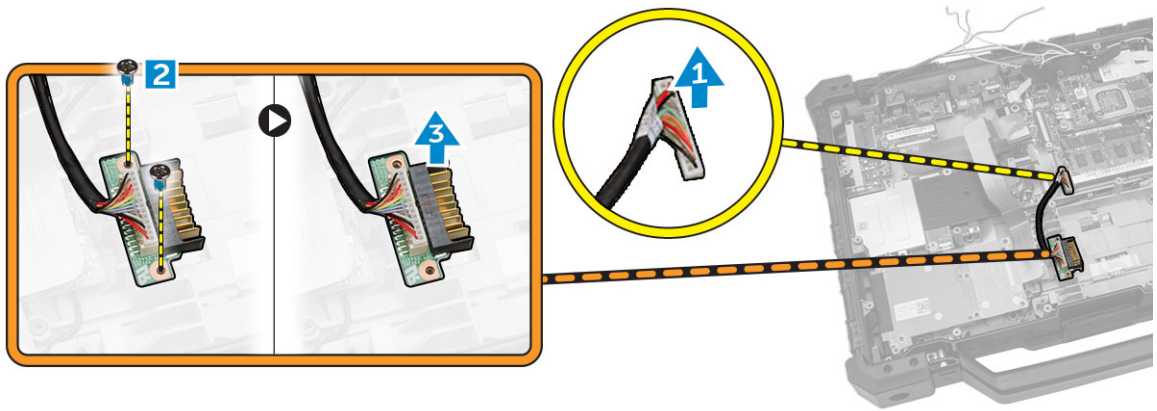


Installing the Handle

1. Place the handle and align it to its position on the computer.
2. Install the screws that secure the handle to the computer.
3. Install the front screws.
4. Install:
 - a. [bottom cover](#)
 - b. [hard drive](#)
 - c. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Battery Connector

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
3. Perform the following steps to remove the battery connector:
 - a. Disconnect the battery connector cable from the system board. [1]
 - b. Remove the screws that secure the battery connector board to the computer. [2]
 - c. Lift and remove the battery connector board from the computer. [3]



Installing the Battery Connector

1. Place the battery connector board in its position on the computer.
2. Install the screws that secure the battery connector to the computer.
3. Connect the battery connector cable to its slot on the system board.
4. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Docking Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)

3. Perform the following steps:
 - a. Disconnect the docking board antenna cables. [1]

⚠ CAUTION: Please exercise caution while disconnecting the antenna cables. Improper removal may result in damage/breakage of the antenna cables.

- b. Release the docking board antenna cables from the routing channels. [2]

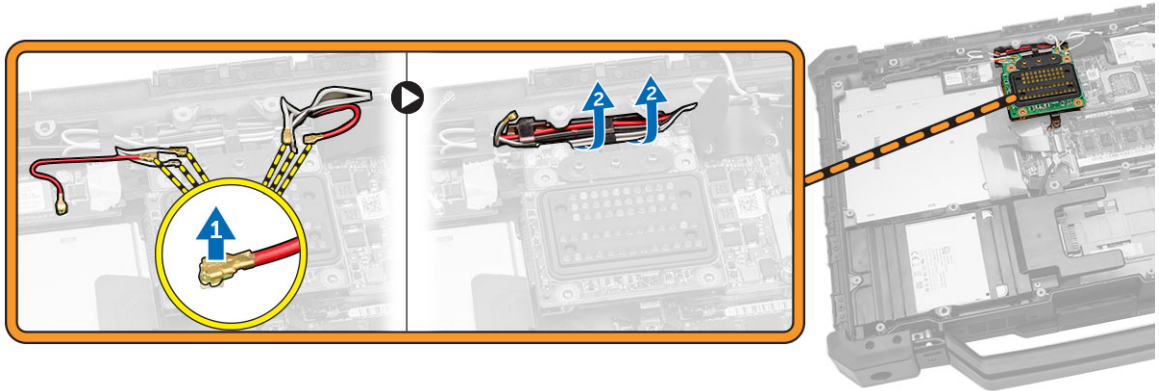


Figure 3.

4. Perform the following steps :
 - a. Remove the screws that secure the docking board to the system board and turn it around in the direction indicated. [1,2]
 - b. Disconnect the docking board connector cable by lifting the cable release tab. [3,4]
 - c. Lift and remove the docking board from the computer.

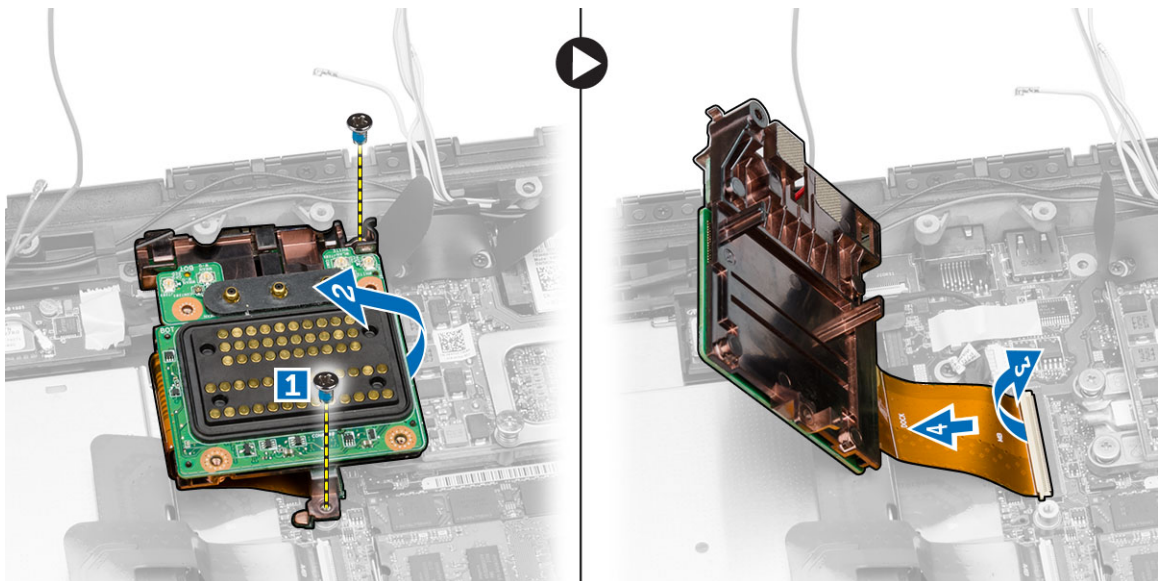


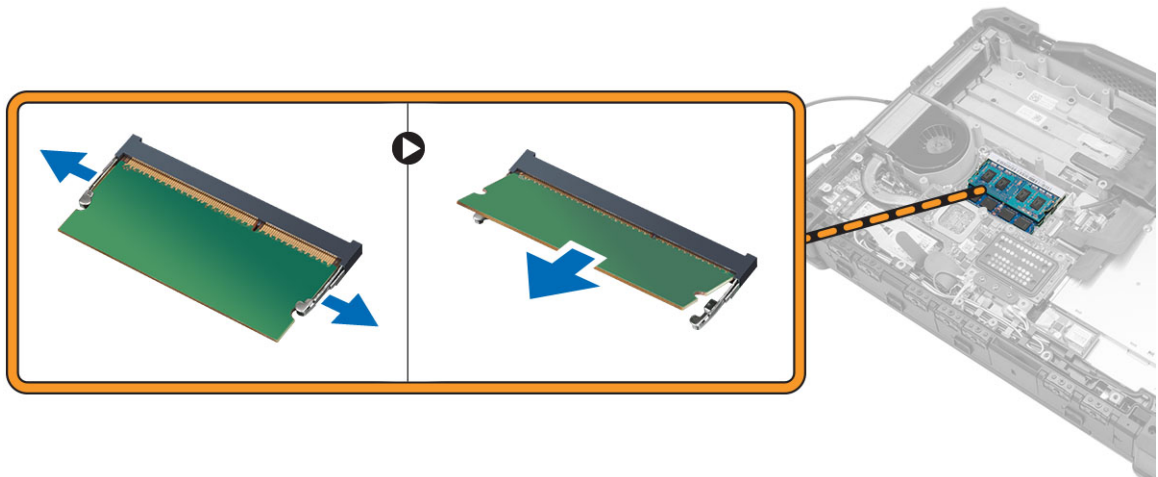
Figure 4.

Installing the Docking Board

1. Connect the docking board connector cable to the system board.
2. Align the docking board in its position on the system board and install the screws that secure it.
3. Route the docking board antenna cables through the routing channels.
4. Connect the antenna cables to their corresponding location on the docking board.
5. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
6. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Memory Module

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
3. Pry the securing clips away from the memory module until it pops up. Remove the memory module from its connector on the system board.



Installing the Memory Module

1. Insert the memory module into the memory socket.
2. Align the keyed notch on the memory module to the memory socket.
3. Press the memory module down until it clicks into place.
4. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the ExpressCard Module

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
 - c. [hard drive](#)
3. Perform the following steps to remove the ExpressCard shroud:
 - a. Disconnect the ExpressCard board shroud cable from the system board. [1,2]
 - b. Remove the screws that secure the ExpressCard shroud. [3]
 - c. Lift and remove the ExpressCard shroud from the computer. [4]

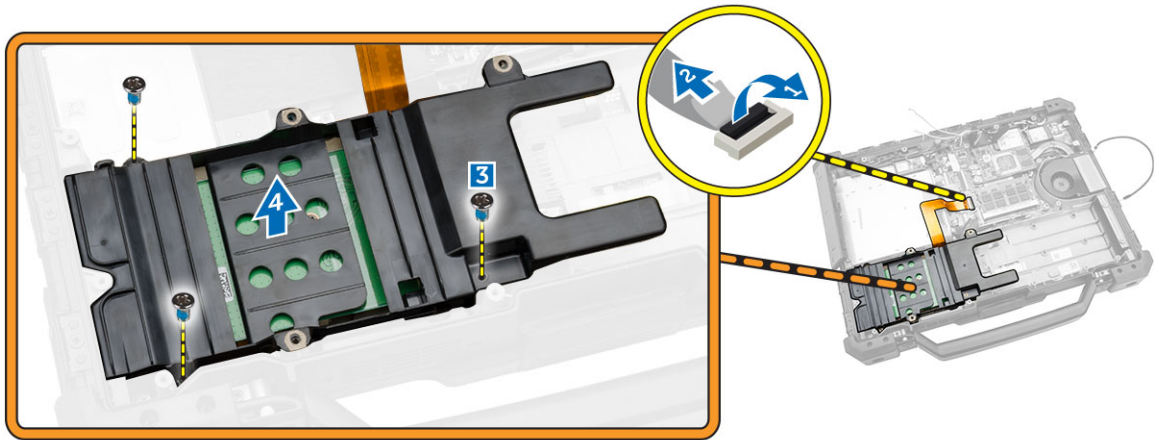


Figure 5.

4. Perform the following steps to remove the ExpressCard board:
 - a. Disconnect the ExpressCard board connector cable from the system board. [1,2]
 - b. Remove the screws that secure the ExpressCard board. [3]
 - c. Lift and remove the ExpressCard board from the computer. [4]

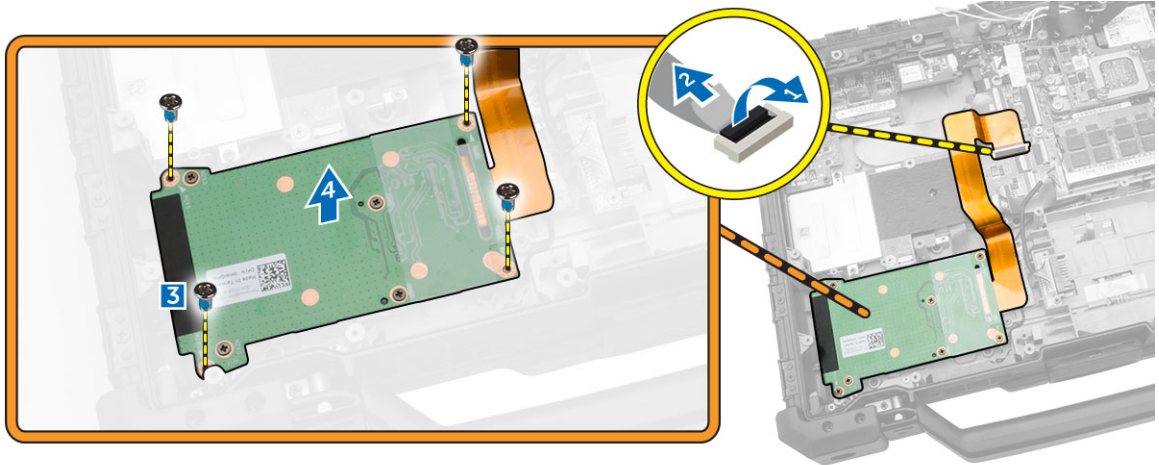


Figure 6.

Installing the ExpressCard Module

1. Align the ExpressCard board into its position on the chassis.
2. Connect the ExpressCard board connector cable to the system board.
3. Install the screws that secure the ExpressCard board to the system board.
4. Align the ExpressCard shroud above the ExpressCard board.
5. Install the screws that secure the ExpressCard shroud to the ExpressCard board.
6. Connect the ExpressCard board shroud cable to the system board.
7. Install:
 - a. [hard drive](#)
 - b. [bottom cover](#)
 - c. [battery](#)
8. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Optical Drive

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
 - c. [docking board](#)

3. Perform the following steps to remove the optical drive:
 - a. Unlock the optical drive bay press latch doors and open it.
 - b. Disconnect the optical drive connector cable. [1,2]
 - c. Remove the screws that secure the optical drive. [3]
 - d. Slide the optical drive out of the press latch door. [4]

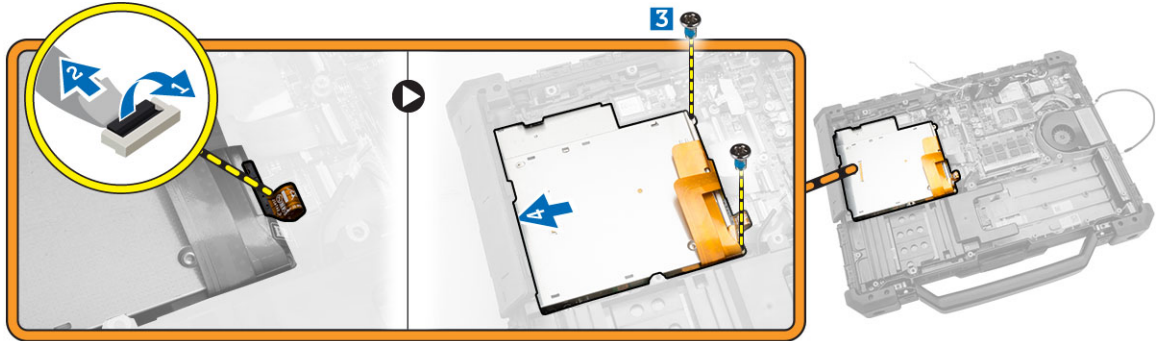


Figure 7.

4. Perform the following steps to remove the optical drive connector:
 - a. Remove the screw that secures the optical drive connector. [1]
 - b. Pull the optical drive connector outwards in the direction indicated. [2]
 - c. Remove the optical drive connector from the computer.

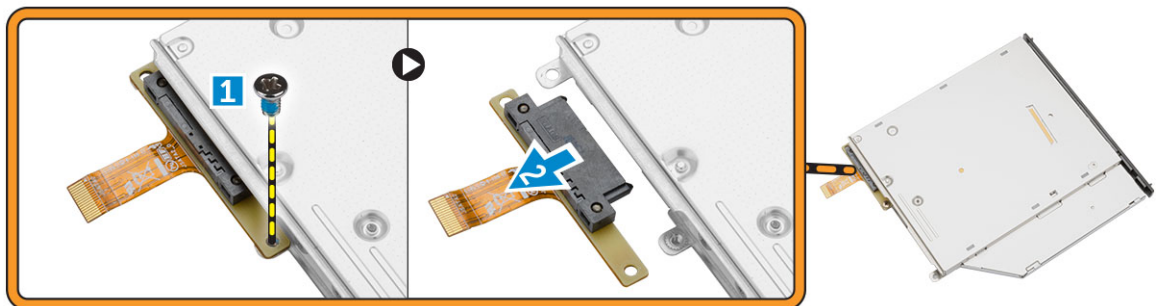


Figure 8.

Installing the Optical Drive

1. Align the optical drive connector to its position on the optical drive module.
2. Install the screw that secures the optical drive connector to the optical drive module.
3. Push the optical drive through the press latch door until it is firmly aligned to the optical drive connector on the system board.
4. Install the screws that secure the optical drive to the system board.
5. Connect the optical drive cable.

6. Install:
 - a. [docking board](#)
 - b. [bottom cover](#)
 - c. [battery](#)
7. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Graphics Processing Unit (GPU)

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
3. Perform the following steps to remove the GPU:
 - a. Remove the screws that secure the GPU module to the heat sink. [1]
 - b. Remove the support ring that secures the GPU module to the heat sink. [2]
 - c. Remove the screws that secure the GPU module to the system board. [3]
 - d. Lift upwards using the available pull tabs and remove the GPU module from the computer. [4]

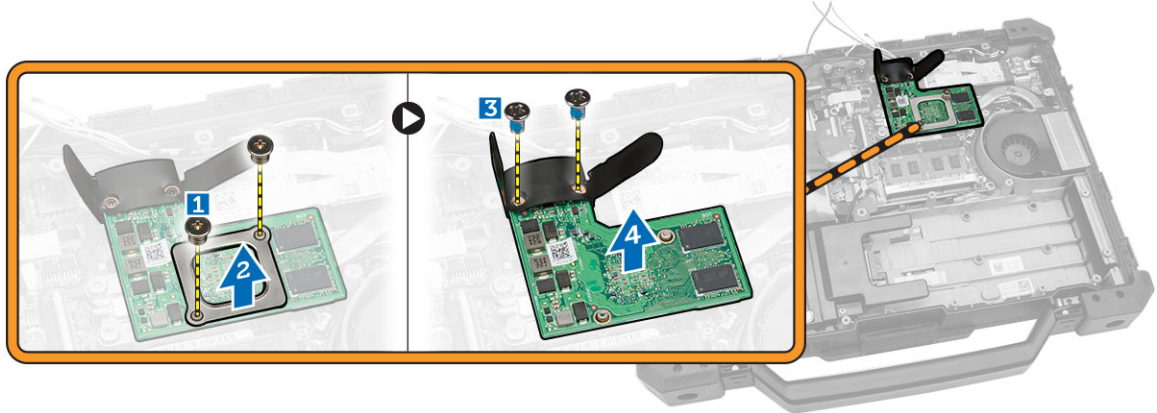



Figure 9.

Installing the Graphics Processing Unit (GPU)

1. Align and connect the GPU module to its slot on the system board.
2. Install the screws that secure the GPU board to the system board.
3. Place the heat sink support bracket on the GPU module.
4. Install the screws that secure the GPU module.
5. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
6. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Heatsink

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
 - c. [GPU module](#) (optional)
3. Perform the following steps to remove the Heatsink:
 - a. Loosen the screws (in order) that secure the heat sink to the system board. [1,2,3,4]
 **NOTE:** These screws are retained by the heatsink and should not be fully removed.
 - b. Lift and remove the heatsink from the computer.

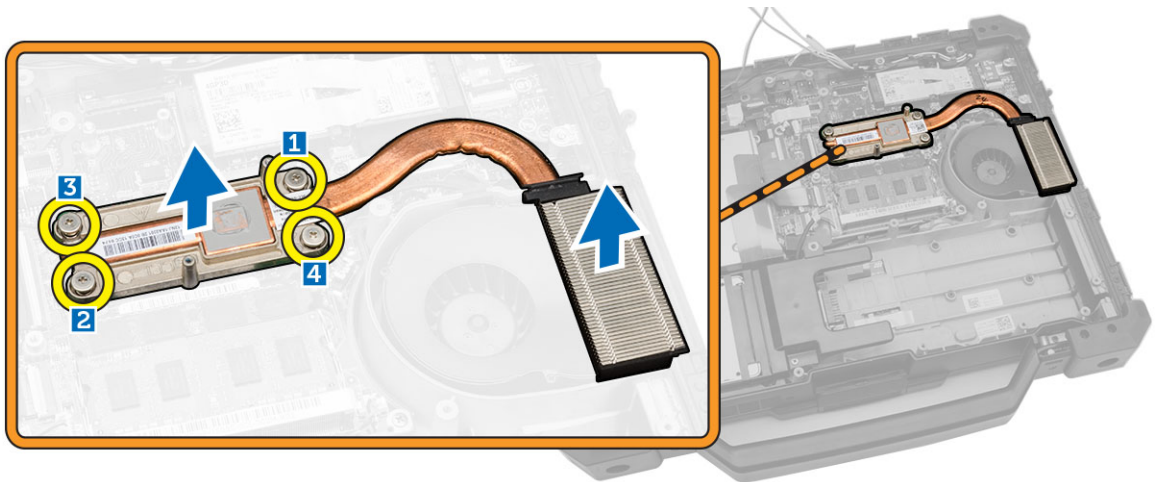


Figure 10.

4. Clean the old thermal grease and apply a replacement thermal pad (if available).

Installing the Heatsink

1. Align the heatsink to its position on the system board.
2. Install the screws that secure the heatsink to the system board.
3. Install:
 - a. [GPU module](#) (optional)
 - b. [bottom cover](#)
 - c. [battery](#)
4. Follow the procedures in [After Working Inside Your Computer](#).

Removing the System Fan

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
3. Perform the following steps to remove the system fan:
 - a. Remove the system fan connector cable from the system board. [1]
 - b. Remove the screws that secure the system fan to the computer. [2]
 - c. Lift and remove the system fan from the computer. [3]

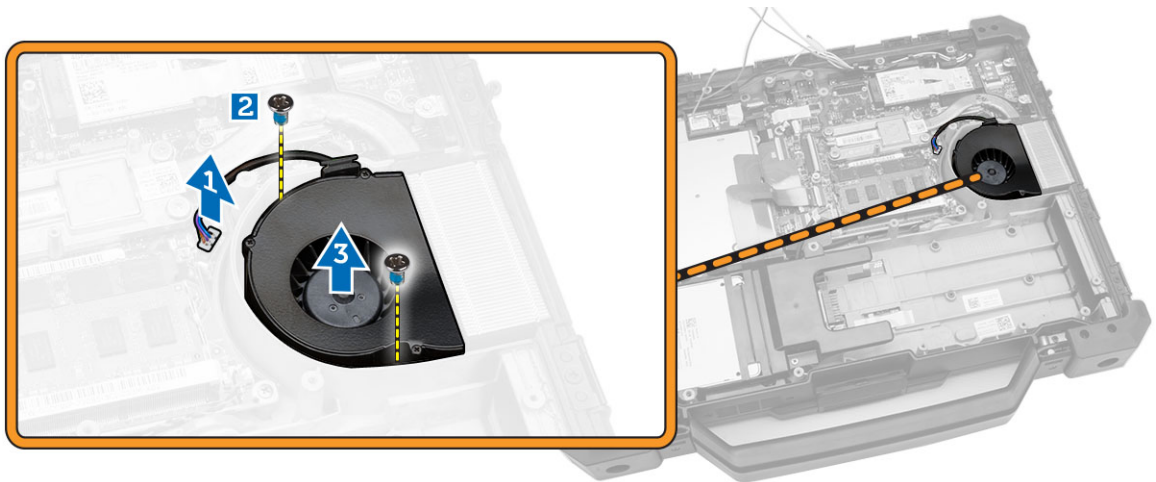


Figure 11.

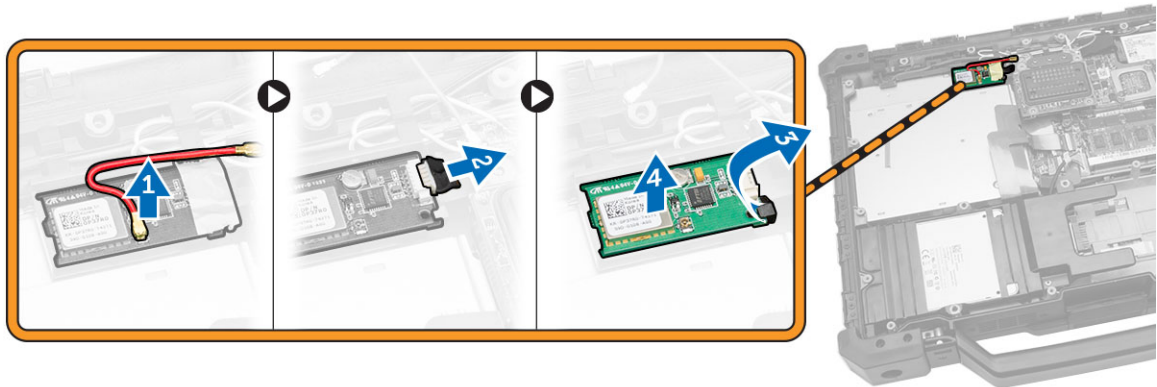
Installing the System Fan

1. Align the system fan in its position in the chassis.
2. Install the screws that secure the system fan to the computer.
3. Connect the system fan connector cable to the system board connector.
4. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Global Positioning System (GPS) Module

1. Follow the procedures in [Before Working Inside your computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)

3. To remove the GPS module:
 - a. Disconnect the GPS antenna cable from the module. [1]
 - b. Release the GPS module from its connector to the system board. [2]
 - c. Pry the GPS module retention latch upwards and remove the GPS module from the computer. [3]
[4]



Installing the Global Positioning System (GPS) Module

1. Insert the GPS module into its slot and align it with the connector to the system board.
2. Connect the GPS module antenna cable.
3. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
4. Follow the procedures in [After Working Inside Your computer](#).

Removing the USH Daughter Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
 - c. [hard drive](#)
 - d. [ExpressCard](#)

3. Perform the following steps to remove the USH daughter board:
 - a. Disconnect the USH daughter board connector cable by lifting the release tab upwards. [1,2]
 - b. Remove the screws that secure the USH daughter board. [3]
 - c. Flip the board over and disconnect the other USH daughter board cable connectors. [4]
 - d. Remove the USH daughter board from the computer. [5,6]

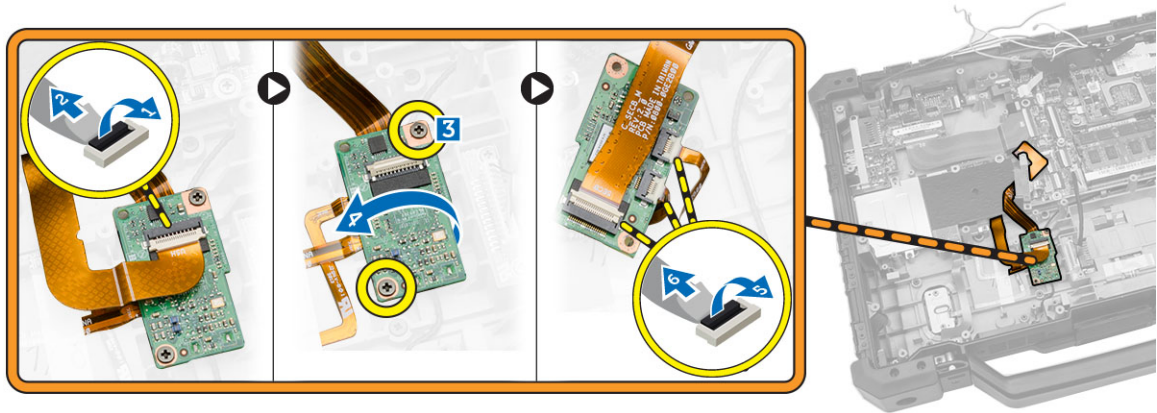


Figure 12.

Installing the USH Daughter Board

1. Connect the USH daughter board connector cables at the bottom of the USH daughter board and flip the board over.
2. Align the USH daughter board into its position on the computer and install the screws that secure it.
3. Connect the USH daughter board connector cable at the top of the USH daughter board.
4. Install:
 - a. [ExpressCard](#)
 - b. [bottom cover](#)
 - c. [hard drive](#)
 - d. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the LED Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [bottom cover](#)
 - d. [ExpressCard](#)

3. Perform the following steps to remove the LED board:
 - a. Disconnect the LED board connector cable by lifting the release tab upwards. [1,2]
 - b. Remove the screws that secure the LED board. [3]
 - c. Lift and remove the LED board from the computer. [4]

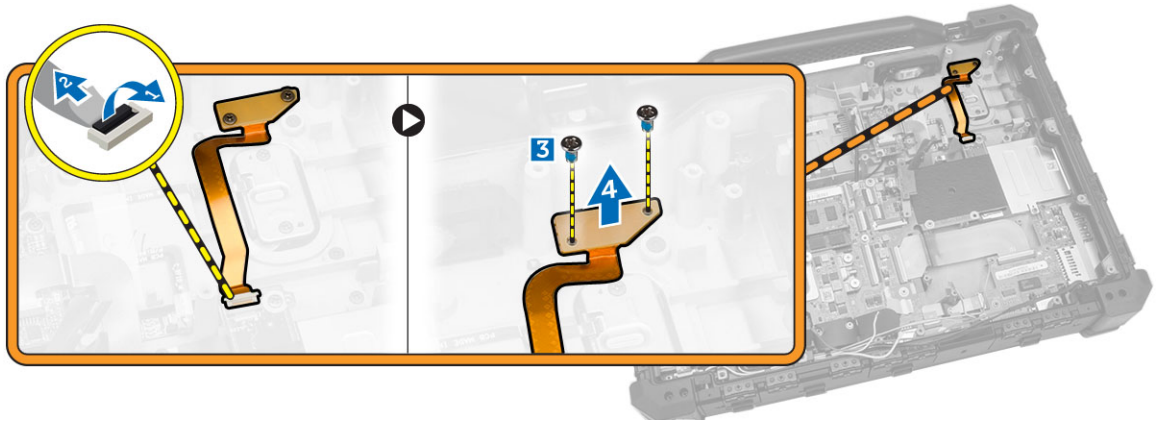


Figure 13.

Installing the LED Board

1. Align the LED board to its location on the chassis.
2. Install the screws that secure the LED board to the computer.
3. Connect the LED board connector cable to the system board.
4. Install:
 - a. [ExpressCard](#)
 - b. [bottom cover](#)
 - c. [hard drive](#)
 - d. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Fingerprint reader

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [bottom cover](#)
 - d. [ExpressCard](#)

3. Perform the following steps to remove the fingerprint reader:
 - a. Remove the screws that secure the fingerprint reader cover. [1]
 - b. Lift the cover and remove it to expose the fingerprint reader board underneath. [2]
 - c. Disconnect the fingerprint reader cable by lifting the release tab upwards. [3,4]
 - d. Lift and remove the fingerprint reader board from the computer. [5]

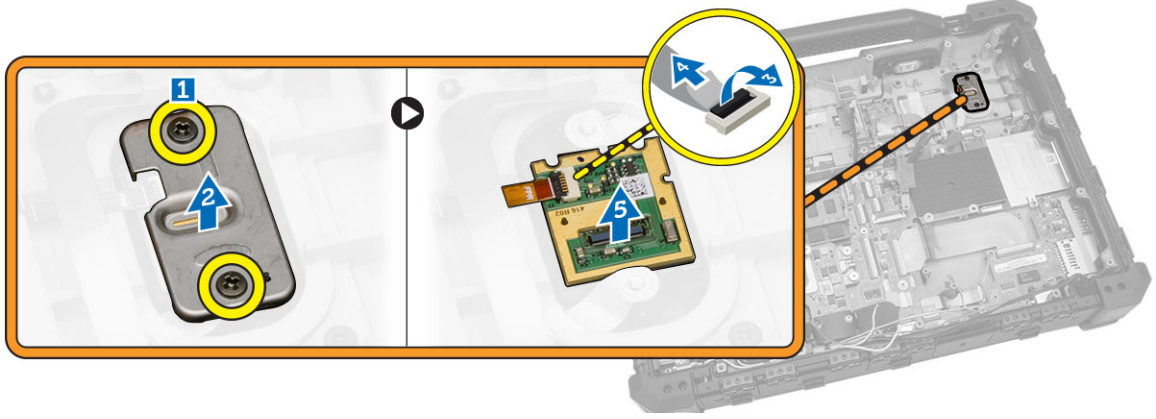


Figure 14.

Installing the Fingerprint Reader

1. Align the fingerprint reader board into its position on the computer and install the fingerprint reader board connector.
2. Place the metal cover on top of the fingerprint reader board and install the screws that secure it.
3. Install:
 - a. [ExpressCard](#)
 - b. [bottom cover](#)
 - c. [hard drive](#)
 - d. [battery](#)
4. Follow the procedures in [After Working Inside Your Computer](#).

Removing the SIM Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)

3. Perform the following steps:
 - a. Open the press latch door by pressing the release tab upwards and lifting it in the direction indicated. [1,2]
 - b. Remove the screws that secure the SIM board to the chassis. [3]

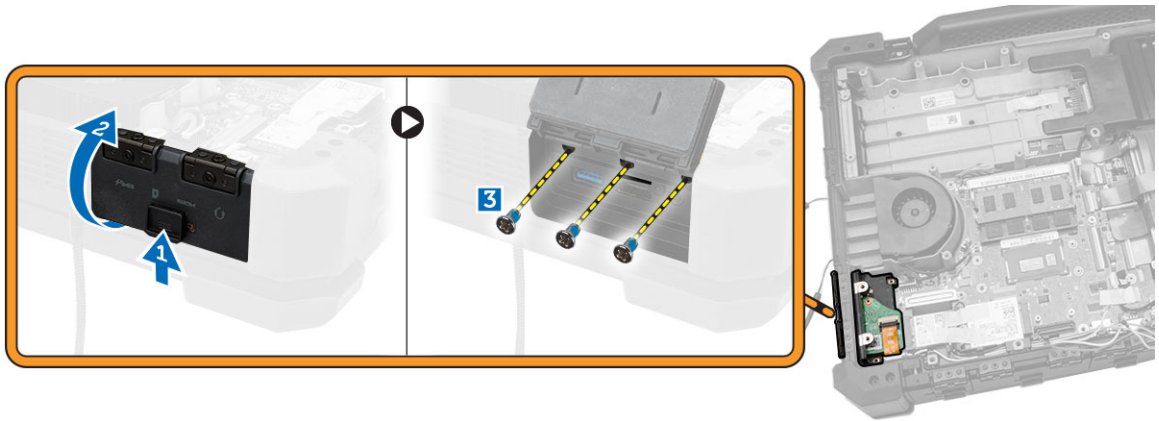


Figure 15.

4. Perform the following steps to remove the SIM board:
 - a. Disconnect the SIM board cable by lifting the release tab upwards. [1,2]
 - b. Remove the screws that secure the SIM board to the system board. [3]
 - c. Lift and remove the SIM board from the computer. [4]

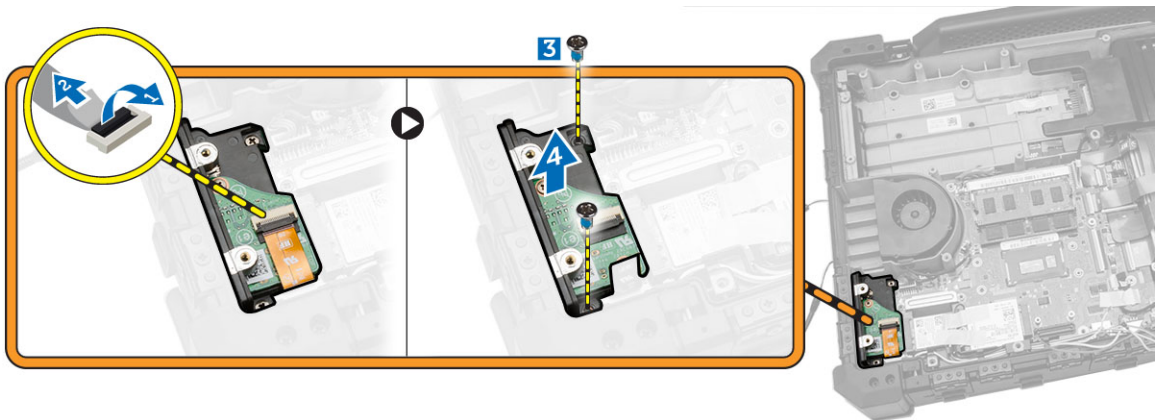


Figure 16.

Installing the SIM Board

1. Align the SIM board into its position on the computer and install the screws that secure it.
2. Connect the SIM board connector cable to the SIM board.
3. Install the screws that secure the SIM board from inside the connection area within the computer.
4. Close the press latch door by lowering the door downwards until it snaps into place.

5. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
6. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Coin-cell Battery

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
3. Perform the following steps to remove the coin-cell battery:
 - a. Peel away the double-stick adhesive tape.
 - b. Disconnect the coin-cell battery cable from the system board. [1]
 - c. Lift and remove the coin-cell battery from the computer. [2]

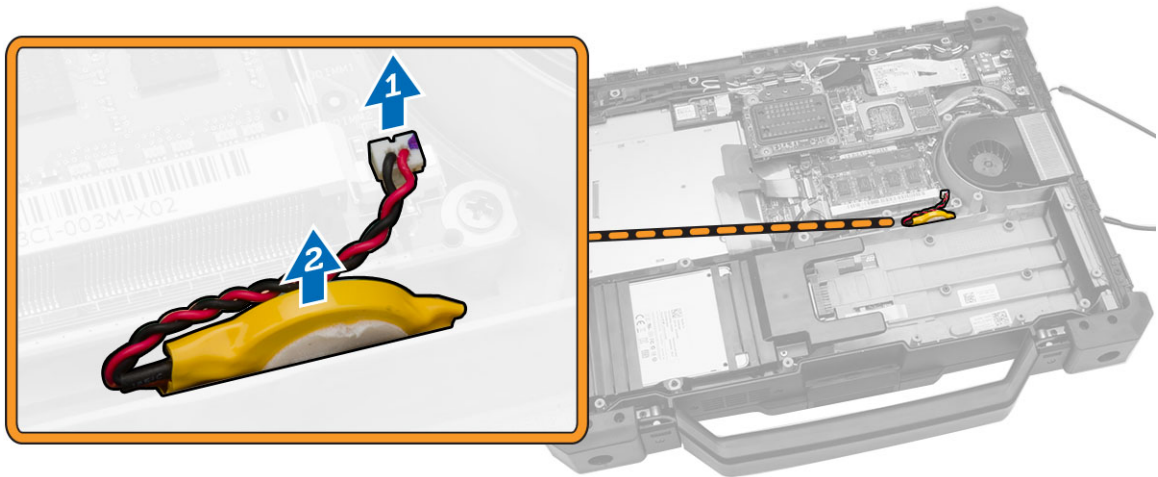


Figure 17.

Installing the Coin-cell Battery

1. Align the coin-cell battery into its position on the computer, adhering it to the chassis wall.
2. Install the coin-cell battery connector to its slot on the system board.
3. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
4. Follow the procedures in [After Working Inside Your Computer](#).

Removing the WLAN Card

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
3. Perform the following steps to remove the WLAN card:
 - a. Disconnect the antenna cables from the WLAN card.
 - b. Remove the screw that secures the WLAN card.
 - c. Slide the card out of the card connector on the system board and remove it.

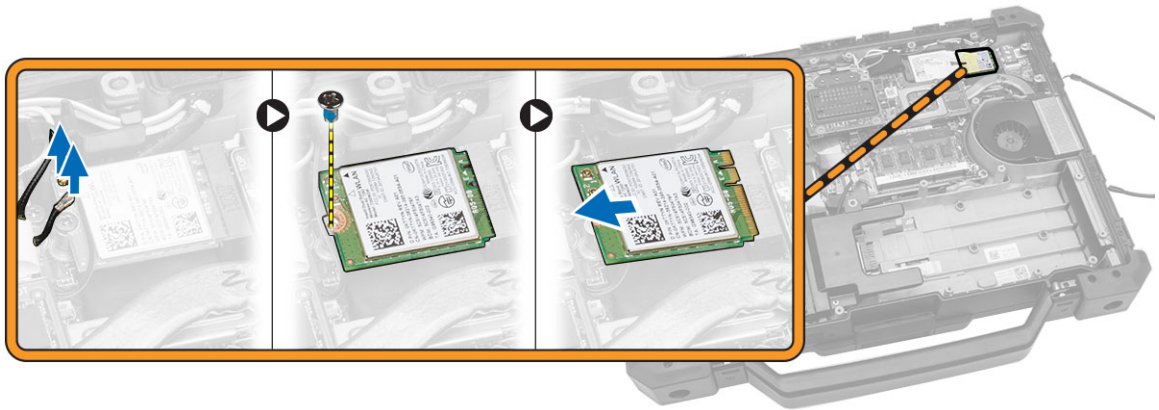


Figure 18.

Installing the WLAN Card

1. Slide the WLAN card into its connector on the system board.
2. Press the card down and install the screw that secures the WLAN card.
3. Replace the antenna cables on the WLAN card.
4. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the WWAN Card

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)

3. Perform the following steps to remove the WWAN card:
 - a. Disconnect the antenna cables from the WWAN card.
 - b. Remove the screw that secures the WWAN card.
 - c. Slide the card out of the card connector on the system board and remove it.

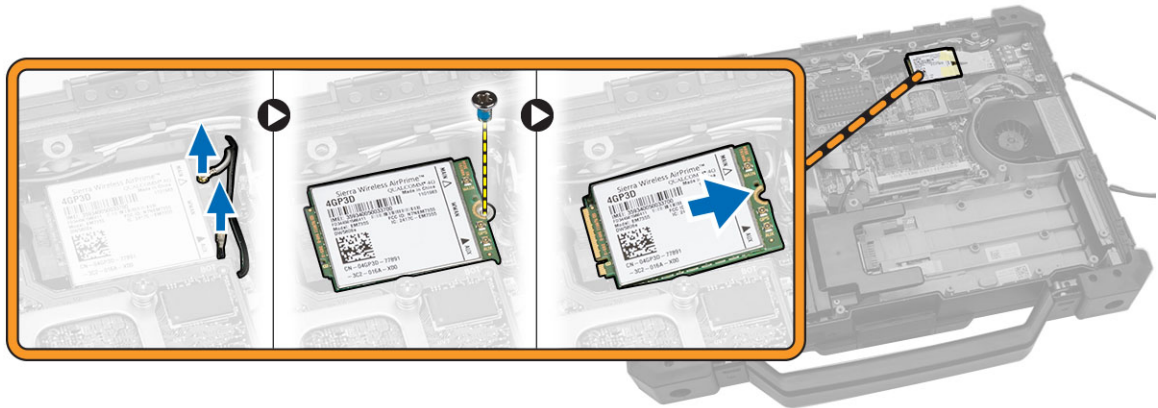


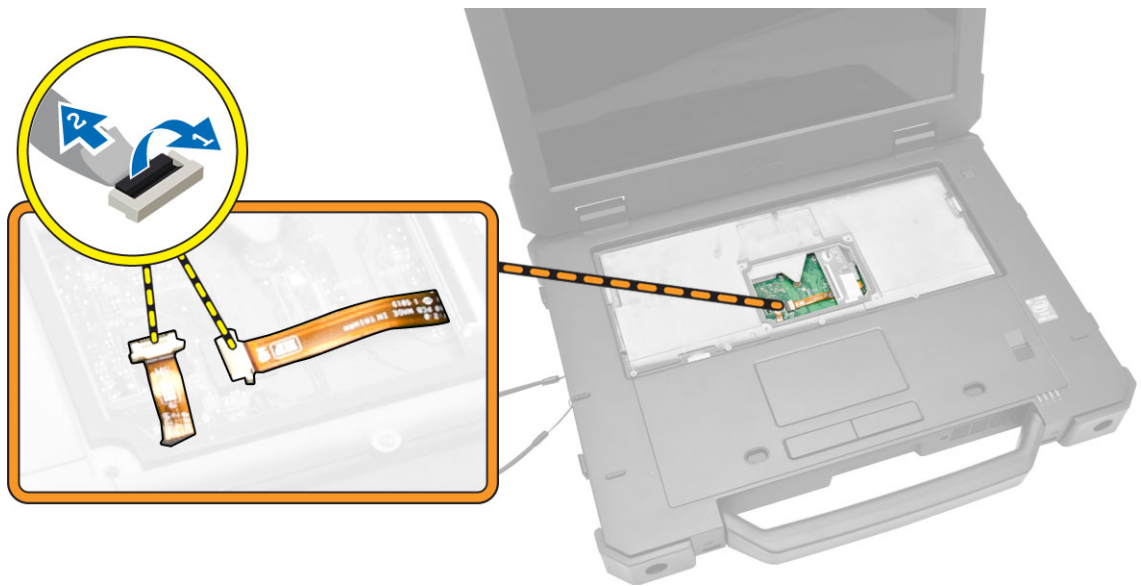
Figure 19.

Installing the WWAN Card

1. Slide the WWAN card into its connector on the system board.
2. Press the card down and install the screw that secures the WWAN card.
3. Replace the antenna cables on the WWAN card.
4. Install:
 - a. [bottom cover](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the System Board


1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [keyboard door](#)
 - e. [bottom cover](#)
 - f. [docking board](#)
 - g. [optical drive](#)
 - h. [memory module](#)
 - i. [GPU module](#)
 - j. [heatsink](#)
 - k. [ExpressCard](#)
 - l. [GPS module](#)
 - m. [WLAN card](#)
 - n. [WWAN card](#)
 - o. [SIM board](#)
3. Disconnect the cables underneath the keyboard by pressing on the release tab and lifting it upward.
[1,2]



4. Perform the following steps:
 - a. Remove the screws that secure the display connector to the system board. [1]
 - b. Lift and remove the metal piece that covers the display connector. [2]
 - c. Disconnect the display connector cable from the system board. [3]



Figure 20.

 **NOTE:** All the cables connected to the system board should be disconnected prior to system board removal.

5. Perform the following steps:
 - a. Remove the screws that secure the display ports to the computer chassis. [1]
 - b. Remove the screws that secure the system board to the chassis. [2]

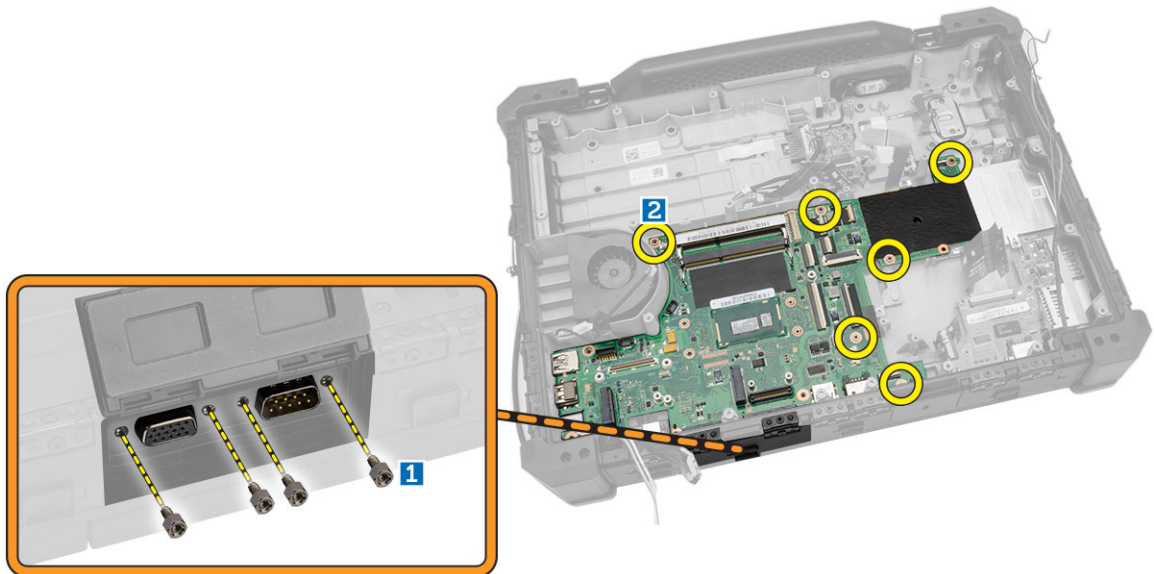


Figure 21.

6. Perform the following steps:
 - a. Lift and rotate the system board in the direction indicated. [1]
 - b. Slide the system board forward and release any other additional connections at the bottom of the chassis. [2]
 - c. Disconnect the connector cable underneath the system board by pressing the release tab and lifting it upwards.
 - d. Lift and remove the system board from the computer. [3]

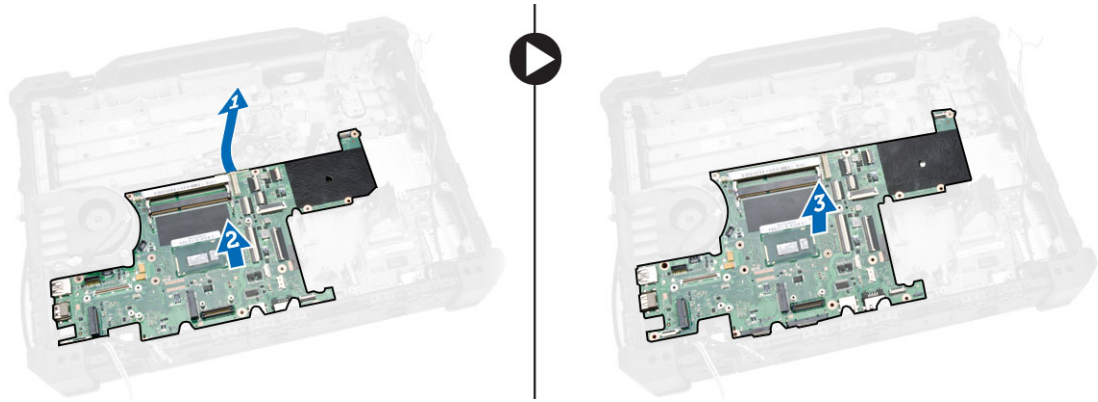


Figure 22.

Installing the System Board

1. Connect the system board connector cable to the system board and flip it around.
2. Align the system board on the computer by positioning it along the ports until it is firmly seated.
3. Install the screws that secure the system board to the chassis.
4. Install the screws that secure the I/O board press latch doors to the computer.
5. Connect the display cable to the system board.
6. Install the screws that secure the metal cover to the display cable on the system board.
7. Turn the computer over and connect the cables underneath the keyboard to the system board.
8. Install:
 - a. [sim board](#)
 - b. [WWAN card](#)
 - c. [WLAN card](#)
 - d. [GPS module](#)
 - e. [ExpressCard](#)
 - f. [heatsink](#)
 - g. [GPU module](#)
 - h. [Memory module](#)
 - i. [optical drive](#)
 - j. [docking board](#)
 - k. [bottom cover](#)
 - l. [keyboard](#)
 - m. [keyboard door](#)
 - n. [hard drive](#)
 - o. [battery](#)

9. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Smart Card

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [bottom cover](#)
 - e. [docking board](#)
 - f. [optical drive](#)
 - g. [memory module](#)
 - h. [GPU module](#)
 - i. [heatsink](#)
 - j. [ExpressCard](#)
 - k. [GPS module](#)
 - l. [WLAN card](#)
 - m. [WWAN card](#)
 - n. [SIM board](#)
 - o. [system board](#)
3. Perform the following steps:
 - a. Disconnect the smart card ribbon cable from the USH board. [1,2]
 - b. Remove the screws that secure the smart card module to the computer. [3]
 - c. Lift and remove the smart card module from the computer. [4]

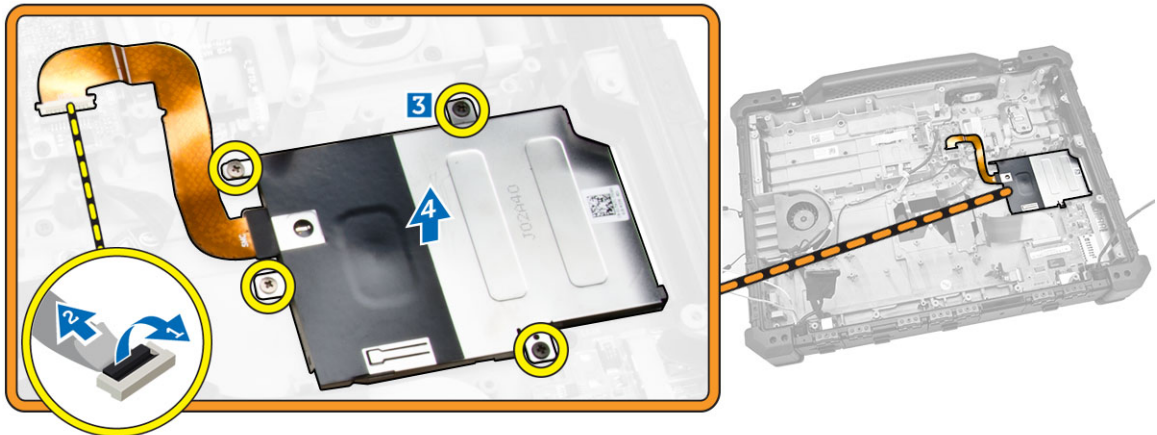


Figure 23.

Installing the Smart Card

1. Align the smart card module along its position on the computer.
2. Install the screws that secure the smart card module to the computer.
3. Connect the smart card ribbon cable to the USH board.

4. Install:
 - a. [system board](#)
 - b. [sim board](#)
 - c. [WWAN card](#)
 - d. [WLAN card](#)
 - e. [GPS module](#)
 - f. [ExpressCard](#)
 - g. [heatsink](#)
 - h. [GPU module](#)
 - i. [Memory module](#)
 - j. [optical drive](#)
 - k. [docking board](#)
 - l. [bottom cover](#)
 - m. [keyboard](#)
 - n. [hard drive](#)
 - o. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Palmrest

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [bottom cover](#)
 - e. [docking board](#)
 - f. [optical drive](#)
 - g. [memory module](#)
 - h. [coin-cell battery](#)
 - i. [GPU module](#)
 - j. [heatsink](#)
 - k. [ExpressCard](#)
 - l. [GPS module](#)
 - m. [WLAN card](#)
 - n. [WWAN card](#)
 - o. [fingerprint reader](#)
 - p. [SIM board](#)
 - q. [system board](#)
 - r. [SmartCard reader](#)

3. Perform the following steps:
 - a. Remove the screws that secure the palmrest to the chassis. [1]
 - b. Flip the computer over in the direction indicated.

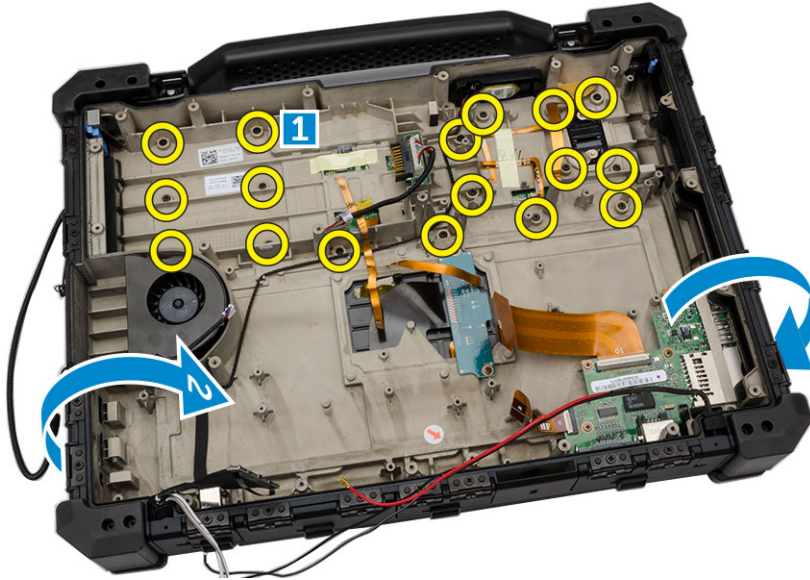


Figure 24.

4. Perform the following steps :
 - a. Open the computer lid in the direction indicated. [1]
 - b. Pry the palmrest at the bottom side of the touch pad buttons to release it from the snaps.
 - c. Lift and remove the palmrest from the computer. [2]



Figure 25.

Installing the Palmrest

1. Install the palmrest to its position on the computer until it snaps in place.
2. Flip the computer over and install the screws that secure the palmrest to the chassis.

3. Install:
 - a. [SmartCard reader](#)
 - b. [system board](#)
 - c. [sim board](#)
 - d. [fingerprint reader](#)
 - e. [WWAN card](#)
 - f. [WLAN card](#)
 - g. [GPS module](#)
 - h. [coin-cell battery](#)
 - i. [ExpressCard](#)
 - j. [heatsink](#)
 - k. [GPU module](#)
 - l. [Memory module](#)
 - m. [optical drive](#)
 - n. [docking board](#)
 - o. [bottom cover](#)
 - p. [keyboard](#)
 - q. [hard drive](#)
 - r. [battery](#)
4. Follow the procedures in [After Working Inside Your Computer](#).

Removing the I/O Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [bottom cover](#)
 - e. [docking board](#)
 - f. [optical drive](#)
 - g. [memory module](#)
 - h. [GPU module](#)
 - i. [heatsink](#)
 - j. [ExpressCard](#)
 - k. [GPS module](#)
 - l. [WLAN card](#)
 - m. [WWAN card](#)
 - n. [SIM board](#)
 - o. [system board](#)
 - p. [SmartCard reader](#)

3. Perform the following steps:
 - a. Open the I/O port press latch door.
 - b. Remove the thumb screws that secure the I/O port module to the computer.

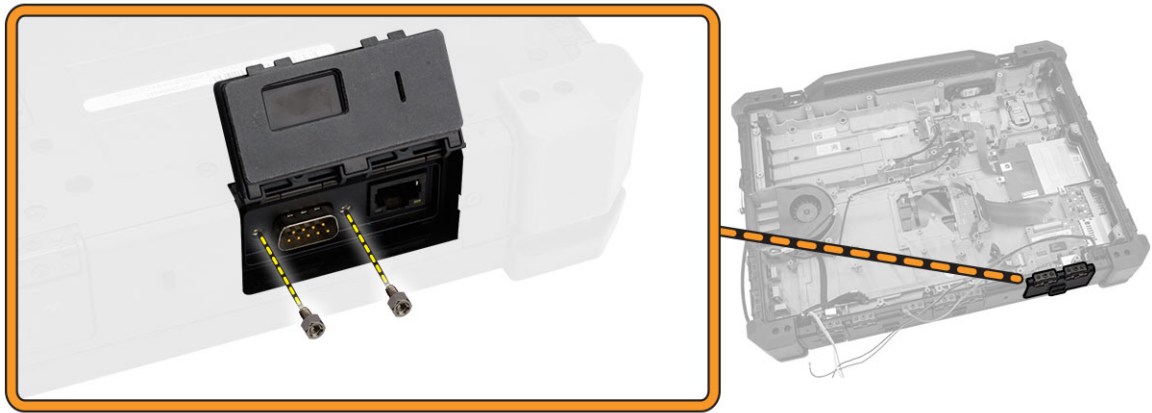


Figure 26.

4. Perform the following steps to remove the I/O board:
 - a. Remove the screws that secure the I/O board module to the computer chassis. [1]
 - b. Disconnect the I/O board ribbon cables from the system board.
 - c. Lift and remove the I/O board module from the computer. [2]

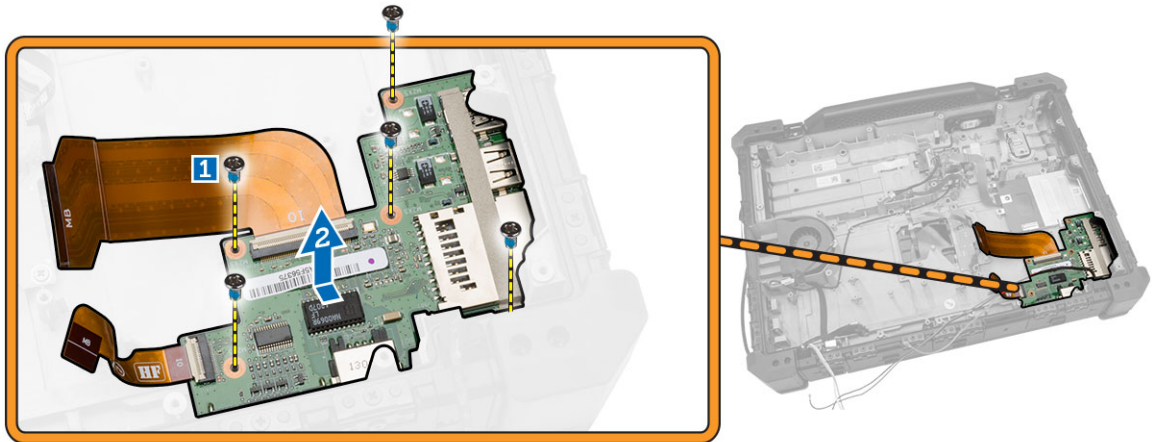


Figure 27.

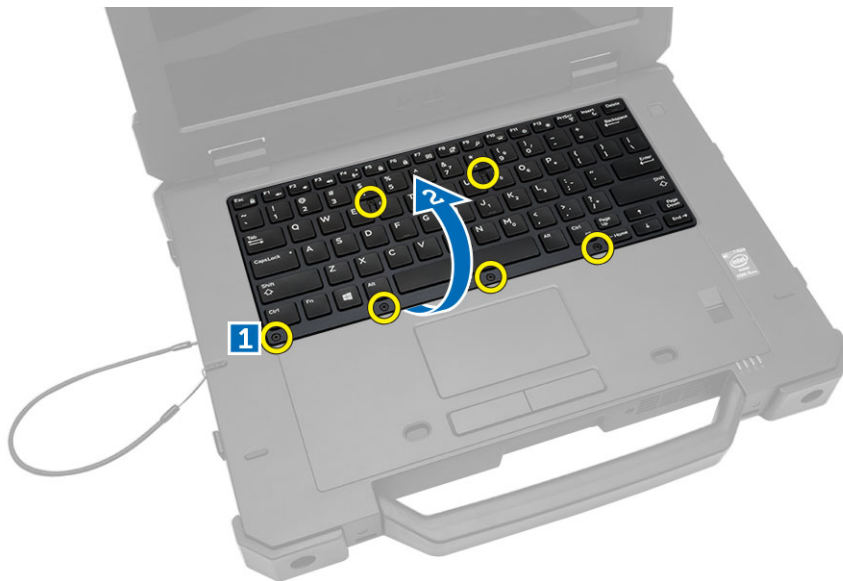
Installing the I/O Board

1. Align the I/O board module along its position on the computer by first sliding I/O port end through the press latch door.
2. Connect the I/O board ribbon cable to the system board.
3. Install the screws that secure the I/O port to the computer and close the press latch door.

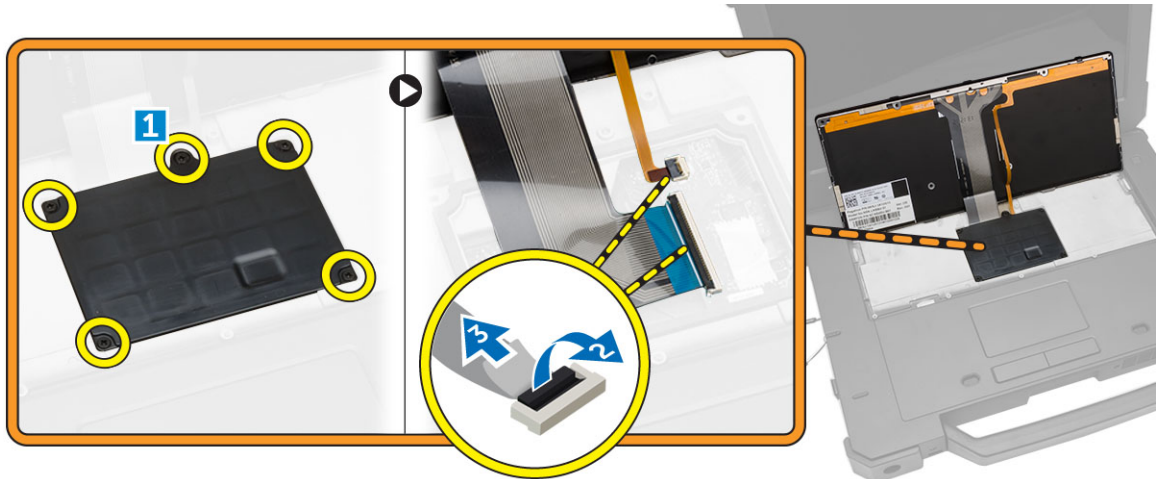
4. Install the thumb screws that secure the I/O board to the computer chassis.
5. Install:
 - a. [SmartCard reader](#)
 - b. [system board](#)
 - c. [sim board](#)
 - d. [WWAN card](#)
 - e. [WLAN card](#)
 - f. [GPS module](#)
 - g. [ExpressCard](#)
 - h. [heatsink](#)
 - i. [GPU module](#)
 - j. [Memory module](#)
 - k. [optical drive](#)
 - l. [docking board](#)
 - m. [bottom cover](#)
 - n. [keyboard](#)
 - o. [hard drive](#)
 - p. [battery](#)
6. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Keyboard

1. Follow the procedures in [MagellanOMBeforeworking](#)
2. Perform the following steps to remove the keyboard:
 - a. Remove the screws that secure the keyboard to the computer. [1]
 - b. Pry along the edges and flip the keyboard towards the display. [2]



3. Perform the following steps to remove the keyboard door:
 - a. Remove the screws that secure the keyboard door. [1]
 - b. Disconnect the keyboard cables from the keyboard controller card by pressing on the locking tab and lifting the connector upwards. [2,3]
 - c. Lift and remove the keyboard from the computer.



Installing the Keyboard

1. Connect the keyboard flex cables to its connectors on the keyboard controller card.
2. Place the keyboard door over its slot on the computer chassis.
3. Tighten the screws that secure the keyboard door to the computer chassis.
4. Align the keyboard into its slot on the computer.
5. Tighten the screws to secure the keyboard to the computer.
6. Follow the procedures in [After Working Inside Your computer](#).

Removing the Keyboard Control Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [bottom cover](#)
 - e. [docking board](#)
 - f. [optical drive](#)
 - g. [memory module](#)
 - h. [GPU module](#)
 - i. [heatsink](#)
 - j. [ExpressCard](#)
 - k. [GPS module](#)
 - l. [WLAN card](#)
 - m. [WWAN card](#)
 - n. [SIM board](#)
 - o. [system board](#)
3. Perform the following steps:
 - a. Remove the screws that secure the keyboard control board. [1]
 - b. Lift and remove the keyboard control board module from the computer. [2]

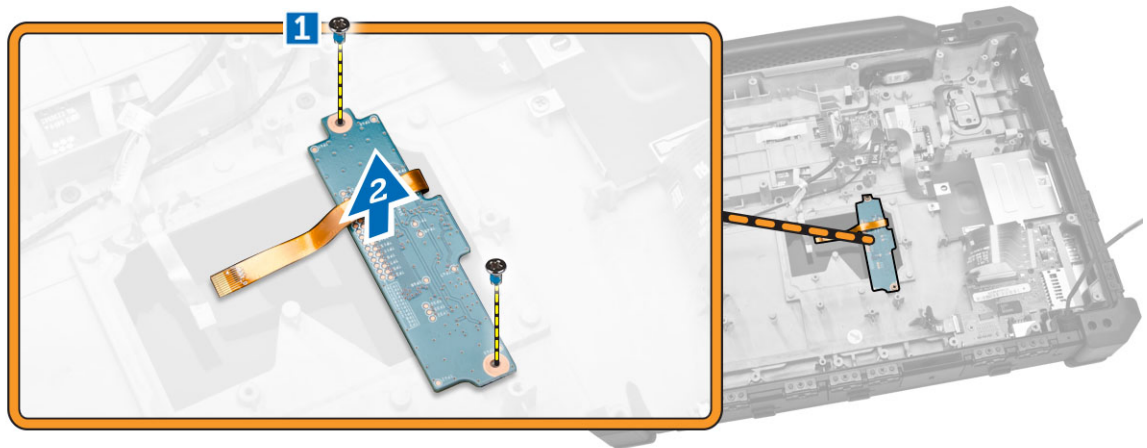


Figure 28.

Installing the Keyboard Control Board

1. Turn the board over and align it along its position on the computer.
2. Install the screws that secure the keyboard control board to the computer chassis.

3. Install:
 - a. [system board](#)
 - b. [sim board](#)
 - c. [WWAN card](#)
 - d. [WLAN card](#)
 - e. [GPS module](#)
 - f. [ExpressCard](#)
 - g. [heatsink](#)
 - h. [GPU module](#)
 - i. [Memory module](#)
 - j. [optical drive](#)
 - k. [docking board](#)
 - l. [bottom cover](#)
 - m. [keyboard](#)
 - n. [hard drive](#)
 - o. [battery](#)
4. Follow the procedures in [After Working Inside Your computer](#).

Removing the Speaker

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [bottom cover](#)
 - e. [docking board](#)
 - f. [optical drive](#)
 - g. [memory module](#)
 - h. [GPU module](#)
 - i. [heatsink](#)
 - j. [ExpressCard](#)
 - k. [GPS module](#)
 - l. [WLAN card](#)
 - m. [WWAN card](#)
 - n. [SIM board](#)
 - o. [system board](#)

3. Perform the following steps to remove the speaker:
 - a. Remove the screws that secure the speaker module to the computer. [1]
 - b. Unroute the speaker cable from its routing channel on the chassis. [2]
 - c. Push the speaker module inwards and lift to remove it from the computer. [3]

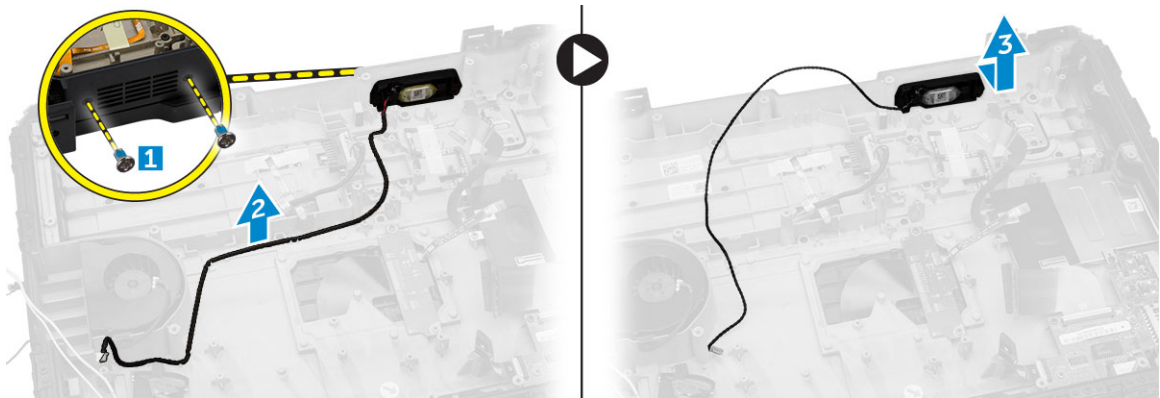


Figure 29.

Installing the Speaker

1. Slide the speaker into its slot on the computer.
2. Install the screws that secure the speaker to the computer.
3. Route the speaker cable along its routing channel on the chassis.
4. Install:
 - a. [system board](#)
 - b. [sim board](#)
 - c. [WWAN card](#)
 - d. [WLAN card](#)
 - e. [GPS module](#)
 - f. [ExpressCard](#)
 - g. [heatsink](#)
 - h. [GPU module](#)
 - i. [Memory module](#)
 - j. [optical drive](#)
 - k. [docking board](#)
 - l. [bottom cover](#)
 - m. [keyboard](#)
 - n. [hard drive](#)
 - o. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Power Connector

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [hard drive](#)
 - c. [keyboard](#)
 - d. [bottom cover](#)
 - e. [docking board](#)
 - f. [optical drive](#)
 - g. [memory module](#)
 - h. [GPU module](#)
 - i. [heatsink](#)
 - j. [ExpressCard](#)
 - k. [GPS module](#)
 - l. [WLAN card](#)
 - m. [WWAN card](#)
 - n. [SIM board](#)
 - o. [system board](#)
3. Perform the following steps to remove the power connector:
 - a. Pry up the power connector and remove it from the computer.

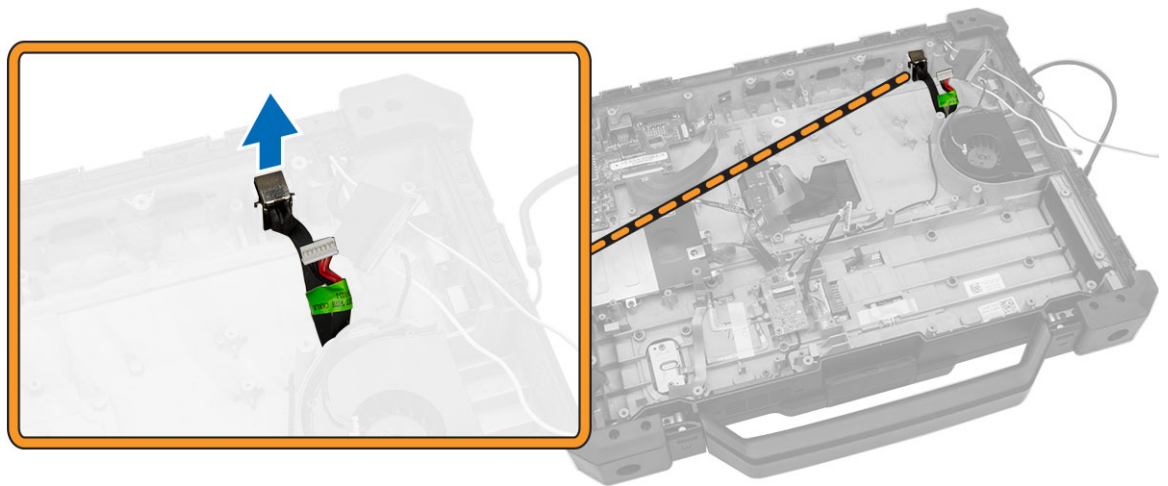


Figure 30.

Installing the Power Connector

1. Place the power connector in its position on the chassis, aligning the guides on the connector sides with the base.
2. Press down firmly to secure the power connector to the chassis.

3. Install:
 - a. [system board](#)
 - b. [sim board](#)
 - c. [WWAN card](#)
 - d. [WLAN card](#)
 - e. [GPS module](#)
 - f. [ExpressCard](#)
 - g. [heatsink](#)
 - h. [GPU module](#)
 - i. [Memory module](#)
 - j. [optical drive](#)
 - k. [docking board](#)
 - l. [bottom cover](#)
 - m. [keyboard](#)
 - n. [hard drive](#)
 - o. [battery](#)
4. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Display Assembly

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [bottom cover](#)
 - c. [GPU module](#)
 - d. [heatsink](#)

3. Perform the following steps:
 - a. Unroute the display cables and antennas from the routing channels. [1]
 - b. Disconnect the antennas from the modules. [2]
 - c. Remove the screws that secure the display connector cable cover to the system board. [2][3]
 - d. Disconnect the display connector cable from the system board. [4]

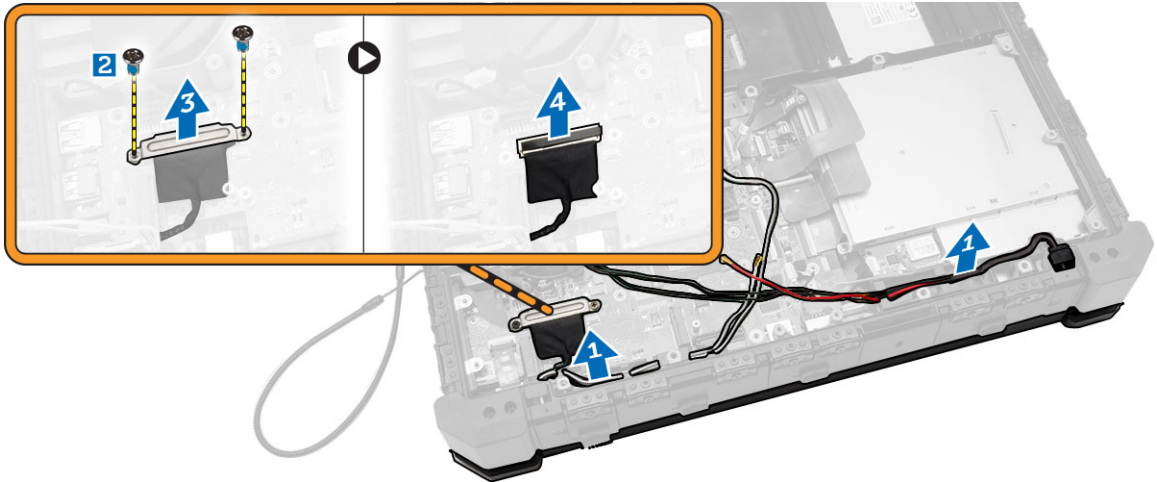


Figure 31.

4. Perform the following steps:
 - a. Remove the screws indicated to remove the hinge covers. [1]
 - b. Lift the hinge covers and remove them to expose the display cable routing and the display hinges underneath. [2]
 - c. Lift the cables to expose the display hinge screws. [3]

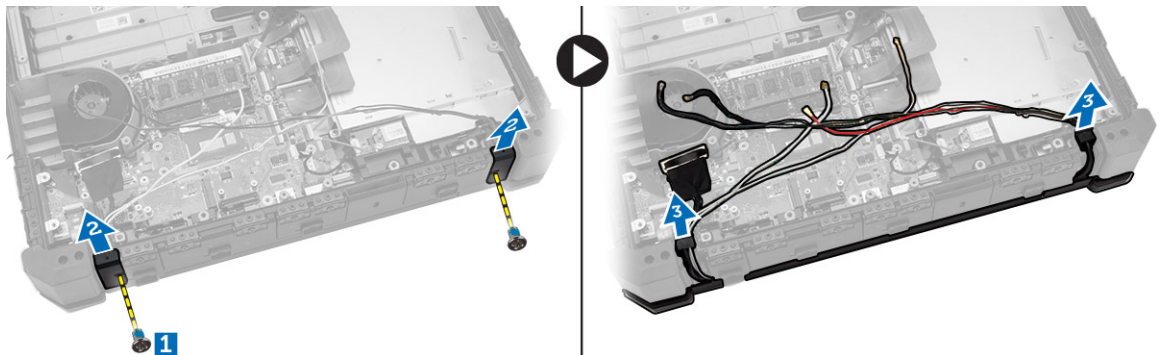


Figure 32.

5. Perform the following steps:
 - a. Remove the screws that secure the display hinges to the computer.
 - b. Unroute the display cables completely from the routing channels.
 - c. Flip the computer over to continue with the display removal.

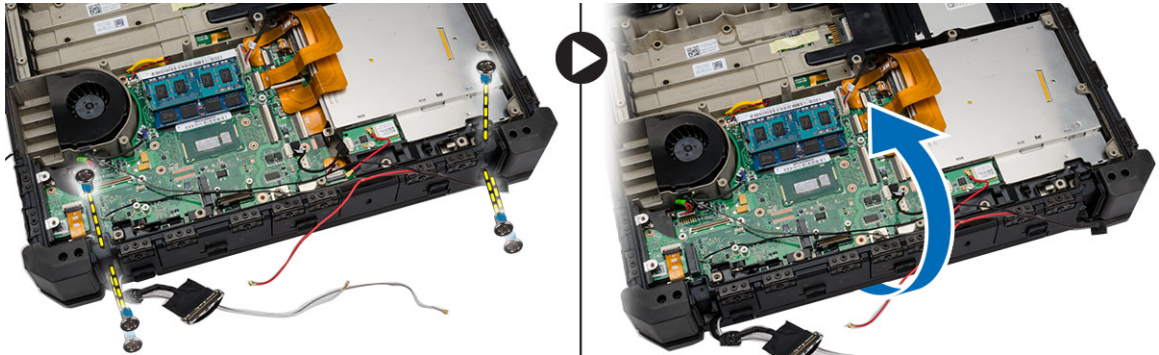


Figure 33.

6. Perform the following steps:
 - a. Open the display lid.
 - b. Lift the display panel from the hinges and remove it from the computer.



Figure 34.

Installing the Display Assembly

1. Attach the display to the hinges on the computer.
2. Close the computer lid and flip it around.
3. Route the display connector and antenna cables along the routing channels.
4. Install the screws that secure the display hinges to the computer chassis.
5. Install the display hinges.
6. Install the screws that secure the hinges to the computer.
7. Connect the display connector cable to the system board.
8. Place the metal plate to cover the connector cable and install the screws to secure it.

9. Install:
 - a. [heatsink](#)
 - b. [GPU module](#)
 - c. [bottom cover](#)
 - d. [battery](#)
10. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Display Panel

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
3. Perform the following steps:
 - a. Remove the screws that secure the display panel. [1]
 - b. Flip the display around so that screen is facing upwards. [2][3]
 - c. Pry along the edges to separate the display panel from the display assembly.



Figure 35.

4. Perform the following steps to remove the display panel:
 - a. Disconnect the eDP cable from the display assembly. [1]
 - b. Disconnect the camera connector cables from the display assembly. [2][3]
 - c. Remove the display panel from the display assembly. [4]

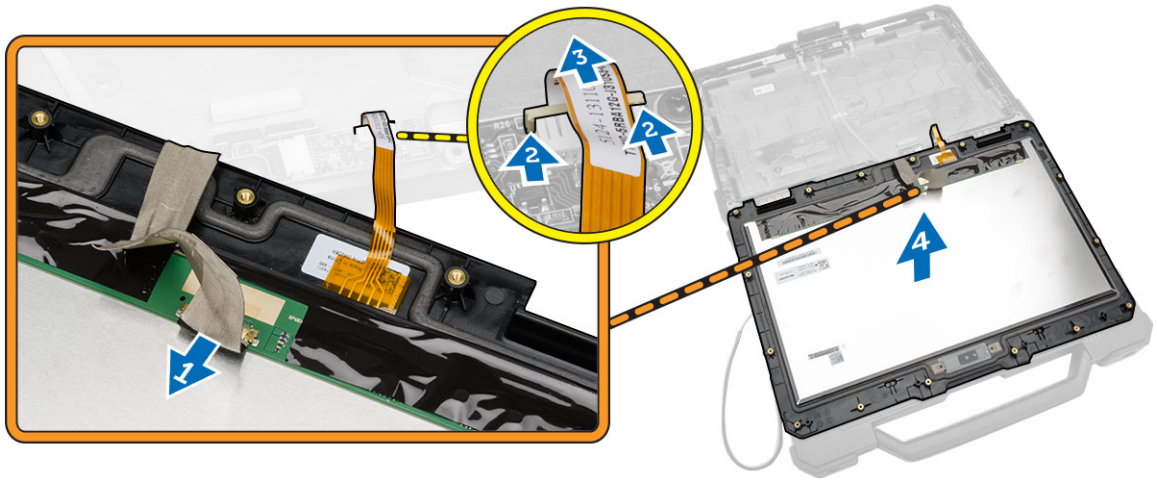


Figure 36.

Installing the Display Panel

1. Connect the eDP connector cable to the display assembly.
2. Connect the camera cable connectors to the display assembly.
3. Attach the display panel to the display assembly.
4. Flip the display assembly over.
5. Install the screws that secure the display panel to the display assembly.
6. Install:
 - a. [battery](#)
7. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Camera

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [display panel](#)

3. Perform the following steps to remove the camera:
 - a. Disconnect the camera cable from the assembly. [1]
 - b. Remove the screws that secure the camera to the display panel. [2]
 - c. Lift and remove the camera from the computer. [3]

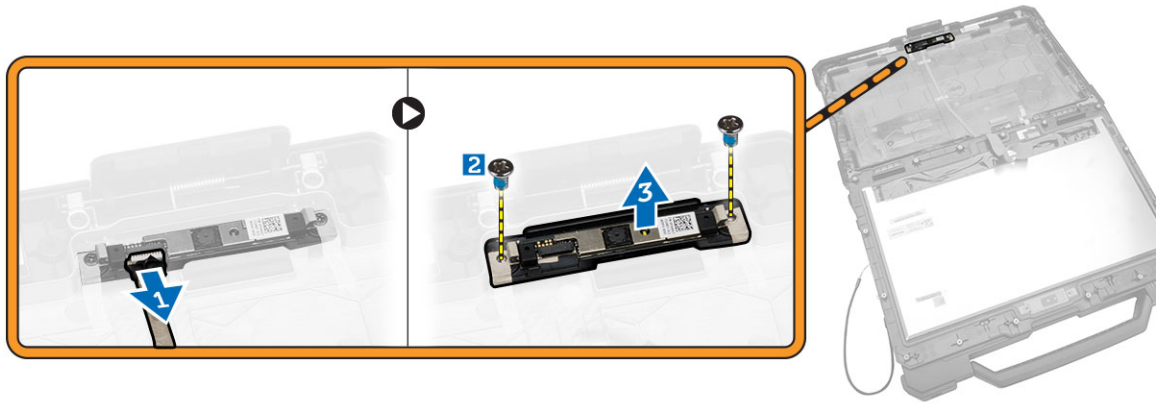


Figure 37.

Installing the Camera

1. Place and align the camera into its position on the display panel.
2. Install the screws that secure the camera to the display panel.
3. Connect the camera cable connector to the camera board.
4. Install:
 - a. [display panel](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

Removing the Touch Screen Controller Board

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [battery](#)
 - b. [display](#)

3. Perform the following steps:
 - a. Disconnect the touch screen controller board cable. [1]
 - b. Remove the screw that secures the touch screen controller board. [2]
 - c. Lift and remove the touch screen controller board from the computer. [3]

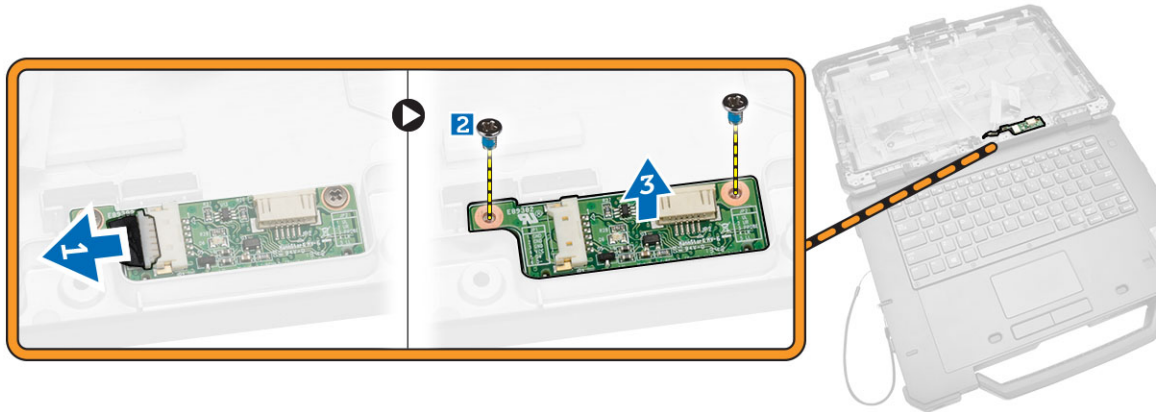


Figure 38.

Installing the Touch Screen Controller Board

1. Place and align the touch screen controller board into its position on the display panel.
2. Install the screws that secure the touch screen controller board to the display panel.
3. Connect the touch screen controller board connector to the controller board.
4. Install:
 - a. [display assembly](#)
 - b. [battery](#)
5. Follow the procedures in [After Working Inside Your Computer](#).

System Setup

System Setup enables you to manage your computer hardware and specify BIOS-level options. From the System Setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive
 - ✎ **NOTE:** XXX denotes the SATA drive number.
- Optical Drive
- Diagnostics
 - ✎ **NOTE:** Choosing Diagnostics, will display the **ePSA diagnostics** screen.


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

Navigation Keys

The following table displays the system setup navigation keys.

- ✎ **NOTE:** For most of the system setup options, changes that you make are recorded but do not take effect until you re-start the system.

Table 1. Navigation Keys

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

System Setup Options


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


Table 2. General

Option	Description
System Information	<p>This section lists the primary hardware features of your computer.</p> <ul style="list-style-type: none"> • System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code. • Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size, • Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology. • Device Information: Displays Primary Hard Drive, MiniCard Device, ODD Device, Dock eSATA Device, LOM MAC Address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, WiGig Device, Cellular Device, Bluetooth Device.
Battery Information	Displays the battery status and the type of AC adapter connected to the computer
Boot Sequence	<p>Boot Sequence</p> <p>Allows you to change the order in which the computer attempts to find an operating system. The options are:</p> <ul style="list-style-type: none"> • Diskette Drive • Internal HDD • USB Storage Device • CD/DVD/CD-RW Drive • Onboard NIC

Option	Description
	By default, all the options are checked. You can also deselect any option or change the boot order.
Boot List Option	Allows you to change the boot list option. <ul style="list-style-type: none"> • Legacy • UEFI
Advanced Boot Options	This option allows you the legacy option ROMs to load. By default, the Enable Legacy Option ROMs is checked.
Date/Time	Allows you to change the date and time.

Table 3. System Configuration

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. The options are: <ul style="list-style-type: none"> • Disabled • Enabled • Enabled w/PXE: This option is enabled by default.
Unmanaged NIC	This option controls the on-board USB LAN controller. This option is enabled by default.
Parallel Port	Allows you to configure the parallel port on the docking station. The options are: <ul style="list-style-type: none"> • Disabled • AT: This option is enabled by default. • PS2 • ECP
Serial Port 1	Allows you to configure the integrated serial port. The options are: <ul style="list-style-type: none"> • Disabled • COM1: This option is enabled by default. • COM3
Serial Port 2	Allows you to configure the integrated serial port. The options are: <ul style="list-style-type: none"> • Disabled • COM2: This option is enabled by default. • COM4
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: <ul style="list-style-type: none"> • Disabled • AHCI • RAID On: This option is enabled by default.

Option	Description
Drives	<p>Allows you to configure the SATA drives on board. All drives are enabled by default. The options are:</p> <ul style="list-style-type: none"> • SATA-0 • SATA-1 • SATA-2 • SATA-3
SMART Reporting	<p>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.</p> <ul style="list-style-type: none"> • Enable SMART Reporting
USB Configuration	<p>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).</p> <p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p> <ul style="list-style-type: none"> • Enable USB Boot Support • Enable External USB Ports • Enable USB3.0 Controller • Disable Docking Station Devices except video <p> NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p>
USB PowerShare	<p>This option configures the USB PowerShare feature behavior. This option is unchecked by default.</p>
Audio	<p>This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected.</p>
Keyboard Illumination	<p>This field lets you choose the operating mode of the keyboard illumination feature.</p> <p>The keyboard brightness level can be set from 25% to 100%</p> <ul style="list-style-type: none"> • Disabled. • Level is 25% • Level is 50% • Level is 75% • Level is 100%: This option is enabled by default
RGB Keyboard Backlight	<p>This option configures the RGB keyboard backlight feature. There are six available colors: four preset colors (white, red, green, and blue) and two user configurable colors.</p>


Option	Description
Touchscreen	This field controls whether the touchscreen is enabled or disabled. This option is enabled by default.
Stealth Mode Control	This field is used to enable or disable the stealth mode. This option is enabled by default.
Miscellaneous Devices	Allows you to enable or disable the following devices: <ul style="list-style-type: none"> • Enable Microphone • Enable Front Camera • Enable Express card • Enable Hard Drive Free Fall Protection • Enable Back Camera • Enable Dedicated GPS <p> NOTE: All devices are enabled by default.</p> <p>You can also enable or disable Media Card.</p>
Keyboard Backlight Always on with AC Power	This option keeps the keyboard backlight powered on when connected to AC power.

Table 4. Video

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








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

Table 5. Security

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password. <p> 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.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default Setting: Not set</p>
System Password	Allows you to set, change or delete the system password. <p> NOTE: Successful password changes take effect immediately.</p> <p>Default Setting: Not set</p>
Internal HDD-1 Password	Allows you to set or change the system's internal hard-disk drive. <p> NOTE: Successful password changes take effect immediately.</p>

Option	Description
Strong Password	<p data-bbox="592 243 847 268">Default Setting: Not set</p> <p data-bbox="592 306 1305 365">Allows you to enforce the option to always set strong passwords. Default Setting: Enable Strong Password is not selected.</p> <p data-bbox="592 401 1394 485"> NOTE: If Strong Password is enabled, Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.</p>
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Password Bypass	<p data-bbox="592 600 1390 659">Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:</p> <ul data-bbox="592 667 791 726" style="list-style-type: none"> <li data-bbox="592 667 719 693">• Disabled <li data-bbox="592 701 791 726">• Reboot bypass <p data-bbox="592 751 858 777">Default Setting: Disabled</p>
Password Change	<p data-bbox="592 810 1337 869">Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.</p> <p data-bbox="592 877 1302 903">Default Setting: Allow Non-Admin Password Changes is selected</p>
Non-Admin Setup Changes	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password.
TPM Security	<p data-bbox="592 1062 1362 1087">Allows you to enable the Trusted Platform Module (TPM) during POST.</p> <p data-bbox="592 1096 1011 1121">Default Setting: The option is disabled.</p>
Computrace	<p data-bbox="592 1157 1401 1215">Allows you to activate or disable the optional Computrace software The options are:</p> <ul data-bbox="592 1224 743 1325" style="list-style-type: none"> <li data-bbox="592 1224 743 1249">• Deactivate <li data-bbox="592 1257 703 1283">• Disable <li data-bbox="592 1291 711 1316">• Activate <p data-bbox="592 1350 1401 1409"> NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed</p> <p data-bbox="592 1425 804 1451">Deactivate (default)</p>
CPU XD Support	<p data-bbox="592 1482 1310 1514">Allows you to enable the Execute Disable mode of the processor.</p> <p data-bbox="592 1522 951 1547">Enable CPU XD Support (default)</p>
OROM Keyboard Access	<p data-bbox="592 1587 1331 1646">Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are:</p> <ul data-bbox="592 1654 820 1755" style="list-style-type: none"> <li data-bbox="592 1654 703 1680">• Enable <li data-bbox="592 1688 820 1713">• One Time Enable <li data-bbox="592 1722 703 1747">• Disable

Option	Description
	Default Setting: Enable
Admin Setup Lockout	Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: Enable Admin Setup Lockout is not selected.

Table 6. Secure Boot



Option	Description
Secure Boot Enable	This option enables or disables the Secure Boot Feature. <ul style="list-style-type: none"> • Disable (default) • Enable
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: <ul style="list-style-type: none"> • PK • KEK • db • dbx <p>If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:</p> <ul style="list-style-type: none"> • 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 <p> NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.</p>



Table 7. Performance

Option	Description
Multi Core Support	This field specifies whether the process will have one or all cores enabled. The performance of some applications will improve with the additional cores. This option is enabled by default. Allows you to enable or disable multi-core support for the processor. The options are: <ul style="list-style-type: none"> • All • 1 • 2

Option	Description
	Default Setting: All
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep feature. Default Setting: Enable Intel SpeedStep
C States Control	Allows you to enable or disable the additional processor sleep states. Default Setting: The option C states is enabled.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. Default Setting: Enable Intel TurboBoost
Hyper-Thread Control	Allows you to enable or disable the HyperThreading in the processor. Default Setting: Enabled
Rapid Start Technology	This option might improve the battery life by automatically putting the computer in to a low power state during Sleep, after a user-specified amount of time. Default Setting: Disabled

Table 8. Power Management

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: <ul style="list-style-type: none"> • Disabled (default) • Every Day • Weekdays • Select Days
USB Wake Support	Allows you to enable USB devices to wake the system from Standby. <p> 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 will remove power from all of the USB ports to conserve battery power.</p> <ul style="list-style-type: none"> • Enable USB Wake Support • DEnable USB Wake Support is not selected
Wireless Radio Control	Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection.

Option	Description
Wake on LAN/WLAN	<ul style="list-style-type: none"> • Control WLAN Radio • Control WWAN Radio • Control WLAN radio or Control WWAN radio is not selected (default) <p>Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.</p> <ul style="list-style-type: none"> • Disabled: This option is enabled by default • LAN Only • WLAN Only • LAN or WLAN • LAN with PXE Boot
Block Sleep	<p>This option lets you block entering to sleep (S3 state) in Operating System environment.</p> <p>Block Sleep (S3 state) - This option is disabled by default.</p>
Peak Shift	<p>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.</p>
Advanced Battery Charge Configuration	<p>This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health.</p> <p>Disabled (default)</p>
Primary Battery Charge Configuration	<p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> • Adaptive • Standard • ExpressCharge: This option is enabled by default. • Primarily AC use • Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p> NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p>
Battery Slice Charge Configuration	<p>Allows you to select the type of charge for the battery. The options are:</p> <ul style="list-style-type: none"> • Standard Charge • Express Charge : This option is enabled by default. <p> NOTE: Express charge may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p>

Option	Description
Intel Smart Connect Technology	This option, if enabled, periodically senses the nearby wireless connections, while the system is in sleep state. You can use this option to synchronize the email or other social media application that are open, when the system enters the sleep state.

Table 9. POST Behavior


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. <ul style="list-style-type: none"> • Fn Key Only: This option is enabled by default. • By Numlock <p> NOTE: The Keyboard (Embedded) option is not supported in Latitude E5540</p>
Mouse/Touchpad	Allows you to define how the system handles mouse and touch pad input. The options are: <ul style="list-style-type: none"> • 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 (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)
Mebx Hotkey	Allows you to specify whether the MEBx Hotkey function should be enabled when the system boots Enable MEBx Hotkey (default)
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: <ul style="list-style-type: none"> • Minimal • Thorough (default) • Auto
Extended BIOS POST Time	Allows you to create an additional pre-boot delay. The options are : 0 seconds, 5 seconds (default), and 10 seconds.

Table 10. Virtualization Support

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

Table 11. Wireless

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are: <ul style="list-style-type: none"> • WWAN • WLAN • WiGig • Bluetooth All the options are enabled by default.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. <ul style="list-style-type: none"> • WWAN • WLAN/WiGig • Bluetooth All options are enabled by default.

Table 12. Maintenance



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.

Table 13. 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

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

1. Re-start the computer.
2. Go to **dell.com/support**.
3. Enter the **Service Tag** or **Express Service Code** and click **Submit**.
 -  **NOTE:** To locate the Service Tag, click **Where is my Service Tag?**
 -  **NOTE:** If you cannot find your Service Tag, click **Detect My Product**. Proceed with the instructions on screen.
4. If you are unable to locate or find the Service Tag, click the Product Category of your computer.
5. Choose the **Product Type** from the list.
6. Select your computer model and the **Product Support** page of your computer appears.
7. Click **Get drivers** and click **View All Drivers**.
The Drivers and Downloads page opens.
8. On the Drivers and Downloads screen, under the **Operating System** drop-down list, select **BIOS**.
9. Identify the latest BIOS file and click **Download File**.
You can also analyze which drivers need an update. To do this for your product, click **Analyze System for Updates** and follow the instructions on the screen.
10. Select your preferred download method in the **Please select your download method below window**; click **Download File**.
The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.
Follow the instructions on the screen.


System and Setup Password

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

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


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

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

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

Assigning a System Password and Setup Password

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

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

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

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>. The **System Security** screen appears.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, enter your system password, and press <Enter> or <Tab>. Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (.), (-), (.), (/), (:), (I), (\), (l), (').Re-enter the system password when prompted.
4. Type the system password that you entered earlier and click **OK**.
5. Select **Setup Password**, type your system password and press <Enter> or <Tab>. A message prompts you to re-type the setup password.
6. Type the setup password that you entered earlier and click **OK**.
7. Press <Esc> and a message prompts you to save the changes.
8. Press <Y> to save the changes. The computer reboots.

Deleting or Changing an Existing System and/or Setup Password

Ensure that the **Password Status** is **Unlocked** (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is **Locked**.

To enter the System Setup, press <F2> immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>. The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press <Enter> or <Tab>.

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



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

5. Press <Esc> and a message prompts you to save the changes.
6. Press <Y> to save the changes and exit from the System Setup.
The computer reboots.

Diagnostics

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

Enhanced Pre-Boot System Assessment (ePSA) Diagnostics

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

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



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



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





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

The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.

4. If you wish to run a diagnostic test on a specific device, press <Esc> and click **Yes** to stop the diagnostic test.
5. Select the device from the left pane and click **Run Tests**.
6. If there are any issues, error codes are displayed.

Note the error code and contact Dell.

Device Status Lights


Icon	Description
	Turns on when you turn on the computer and blinks when the computer is in a power management mode.
	Turns on when the computer reads or writes data.
	Turns on steadily or blinks to indicate battery charge status.
	Turns on when wireless networking is enabled.

Battery Status Lights

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

Alternately blinking amber light and green light	An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop.
Alternately blinking amber light with steady green light	Temporary battery failure with AC adapter present.
Constantly blinking amber light	Fatal battery failure with AC adapter present.
Light off	Battery in full charge mode with AC adapter present.
green light on	Battery in charge mode with AC adapter present.

Contacting Dell

 **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. Visit **dell.com/support**
2. Select your support category.
3. Verify your country or region in the Choose a Country/Region drop-down menu at the top of page.
4. Select the appropriate service or support link based on your need.