Notes, cautions, and warnings

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

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

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.
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Working on your computer

Safety instructions

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

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

**WARNING:** Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

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

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

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

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

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

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

Before working inside your computer

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

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

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

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

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

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

1. Turning off your computer:
   • In Windows 10 (using a touch enabled device or mouse):
     1. Click or tap 🔄.
     2. Click or tap 🏷️ and then click or touch Shut down.
   • In Windows 8 (using a touch enabled device):
     1. Swipe in from the right edge of the screen, opening the Charms menu and select Settings.
     2. Tap 🏷️ and then tap Shut down.
   • In Windows 8 (using a mouse):
     1. Point to upper-right corner of the screen and click Settings.
     2. Click 🏷️ and then click Shut down.
   • In Windows 7:
     1. Click Start.
     2. Click Shut Down.

2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

After working inside your computer

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

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

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

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

3. Replace the battery.
4. Replace the base cover.
5. Connect your computer and all attached devices to their electrical outlets.
6. Turn on your computer.
Removing and installing components

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

Recommended tools

The procedures in this document require the following tools:

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

Subscriber Identification Module (SIM) card

Removing the SIM card

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

1. Insert a paperclip or a SIM card removal tool into the pinhole on the SIM card tray [1].
2. Pull the SIM card tray to remove it [2].
3. Remove the SIM card from the SIM card tray.
4. Push the SIM card tray into the slot until it clicks into place.
Installing the SIM card

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

SD card

Removing the SD Card

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

Installing the SD Card

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

Base cover

Removing the base cover

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

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

Battery

Lithium-ion battery precautions

⚠️ CAUTION:
- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any kind to pry on or against the battery.
- 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 Lithium-ion battery can be dangerous. In such an instance, the entire system should be replaced. Contact https://www.dell.com/support for assistance and further instructions.
- Always purchase genuine batteries from https://www.dell.com or authorized Dell partners and re-sellers.
Removing the battery

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

Installing the battery

1. Align the tabs on the battery with the slots on the palmrest.
   ① | **NOTE:** Ensure that the battery cable is routed through the routing clips on the battery.
2. Tighten the screws to secure the battery to the computer.
   ① | **NOTE:** The number of screws will vary depending on the type of battery.
3. Connect the battery cable to the connector on the system board.
4. Install the base cover.
5. Follow the procedure in After working inside your computer.

Solid State Drive (SSD)

Removing the SSD

① | **NOTE:** Your system can accommodate either an Solid State Drive (SSD) or PCIe SSD and not both.

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

Installing the SSD

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

PCle Solid State Drive (SSD)

Removing the optional PCle SSD

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

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

Speaker

Removing the speakers

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

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

Coin cell battery

Removing the coin cell battery

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

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

WWAN card

Removing the WWAN card

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

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

WLAN card

Removing the WLAN card

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

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

Memory modules

Removing the memory module

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

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

Heat sink

Removing the heat sink assembly

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

a. Remove the screws that secure the heat sink assembly to the system board [1, 2, 3, 4].

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

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

---

**Installing the heat sink assembly**

1. Align the heat sink assembly with screw holders on the system board.
2. Tighten the screws to secure the heat sink assembly to the computer and system board.
NOTE: Tighten the screws on the system board in the order of the callout numbers [1, 2, 3, 4].

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

Power connector port

Removing the power connector port

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a base cover
   b battery
3 To remove the power connector port:
   a Disconnect the power connector port cable from the system board[1].
   b Unroute the power connector port cable from the clip on the heat sink.
   c Remove the screw to release the metal bracket on the power connector port [2].
   d Lift the metal bracket from the computer [3].
   e Remove the power connector port from the computer [4].

Installing the power connector port

1 Insert the power connector port into the slot on the computer.
2 Place the metal bracket on the power connector port and tighten the screw to secure the power connector port to the computer.
3 Route the power connector port cable through the routing clip on the heat sink.
4 Connect the power connector port cable to the connector on the system board.
5 Install the:
   a battery
   b base cover
6 Follow the procedure in After working inside your computer.
Dock frame

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

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

System board

Removing the system board
1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a base cover
   b battery
   c memory module
d SSD
3 To remove the display assembly cable:
   a Unroute the WWAN and WLAN cables [1].
   b Remove the screws that secure the display assembly cable bracket to the system board [2].
   c Lift the display assembly cable bracket from the computer [3].
   d Disconnect the display assembly cable from the computer [4].

4 Disconnect the speaker cable [1], coin cell battery cable [2], LED board cable, touchpad cable [3, 4], and power connector port cable [5].

5 To remove the system board:
   a Remove the screws that secure the metal bracket to the system board [1]
   b Lift the metal bracket [2].
   c Remove the screws that secure system board to the computer [3].
   d Lift the system board from the computer [4].
Installing the system board

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

Keyboard

Removing the keyboard assembly

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

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

1. Follow the procedure in Before working inside your computer.
2. Remove the keyboard assembly.
3. Remove the screws that secure the keyboard to the keyboard assembly [1].
4. Lift the keyboard away from the keyboard tray [2].
Installing the keyboard to the keyboard tray

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

Installing the keyboard assembly

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

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

Removing the display assembly

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

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

3. To remove the display hinge brackets:
   a. Remove the screw that secures the display hinge bracket to the computer [1].
   b. Remove the display hinge bracket from the computer [2].

4. To disconnect the display assembly cable:
   a. Unroute the WLAN and WWAN cables from the routing channel on the system board [1].
   b. Remove the screws that secure the display assembly cable bracket to the computer [2].
   c. Remove the display assembly cable bracket to access the display assembly cable [3].
   d. Disconnect the display assembly cable from the system board [4].
5 To disconnect the display assembly:
   a. Remove the screws that secure the display assembly [1].
   b. Release the WWAN and WLAN cables and display assembly cable from the slot on the computer [2].

6 To remove the display assembly:
   a. Remove the screws that secure the display assembly to the computer [1].
   b. Open the display assembly [2] and lift the display assembly to remove it from the computer [3].
Installing the display assembly

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

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

Display bezel

Removing the display bezel

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

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

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

Display panel

Removing the display panel

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

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

e  Disconnect the eDP cable from the connector on the back of the display panel [2, 3].

f  Lift the display assembly from the display pane [4].
Installing the display panel

1 To install the display panel for non touch systems:
   a Connect the eDP cable to the connector on the back of the display panel and fix the adhesive tape.
   b Align the display panel with the tabs on the display assembly.
   c Tighten the screws to secure the display panel to the display assembly.

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

3 Install the:
   a display bezel
   b display assembly
   c battery
   d base cover

4 Follow the procedure in After working inside your system.

Display hinges

Removing the display hinge

1 Follow the procedure in Before working inside your computer.

2 Remove the:
   a base cover
   b battery
   c display assembly
   d display bezel
   e display panel

3 To remove the hinges:
   a Remove the screws that secure the display hinge to the display assembly [1, 3].
   b Remove the display hinge [2, 4].
Figure 1. Removing hinges for a non touch system

Figure 2. Removing hinges for a touch system
Installing the display hinge

1. Align the display hinges with the screw holders on the display assembly.
2. Tighten the screws to secure the display hinge to the display assembly.
3. Install the:
   a. display bezel
   b. display panel
   c. display assembly
   d. battery
   e. base cover
4. Follow the procedure in After working inside your system.

eDP cable

Removing the eDP cable

1. Follow the procedure in Before working inside your computer.
2. Remove the:
   a. base cover
   b. battery
   c. display assembly
   d. display bezel
   e. display panel
3. Disconnect the camera cable from the camera [1].
4. Peel the camera cable adhesive and unrout the eDP and display cable from the routing clips on the display assembly [2, 3].
5. Remove the eDP cable from the display assembly.
Figure 3. Removing the eDP cable for non touch systems

Figure 4. Removing the eDP cable for touch systems
Installing the eDP cable

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

   ![NOTE: This is applicable only for non touch systems.]
   c. display assembly
   d. battery
   e. base cover

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

Camera

Removing the camera

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

   ![NOTE: This is applicable only for non touch systems.]
   e. display panel

3. Peel the adhesive that secures the camera to the display assembly [1].
4. Disconnect the camera cable from the connector on the display assembly [2].
5. Lift the camera away from the display assembly [3].
Installing the camera

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

   **NOTE:** This is applicable only for non touch systems.
   c display assembly
   d battery
   e base cover

5 Follow the procedure in After working inside your system.

Palmrest

Replacing the palmrest

1 Follow the procedure in Before working inside your computer.

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

   **NOTE:** The component you are left with is the palmrest.

3 Install the following components on the new palmrest.
   a keyboard assembly
   b system board
4 Follow the procedure in After working inside your system.
Topics:

- Boot Sequence
- Navigation keys
- System setup options
- General screen options
- System Configuration screen options
- Video screen options
- Security screen options
- Secure Boot screen options
- Intel Software Guard Extensions screen options
- Performance screen options
- Power Management screen options
- POST Behavior screen options
- Virtualization support screen options
- Wireless screen options
- Maintenance screen options
- System Log screen options
- Updating the BIOS
- System and setup password

**Boot Sequence**

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

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

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

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

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

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

**Navigation keys**

The following table displays the system setup navigation keys.
NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Table 1. Navigation keys

<table>
<thead>
<tr>
<th>Keys</th>
<th>Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up arrow</td>
<td>Moves to the previous field.</td>
</tr>
<tr>
<td>Down arrow</td>
<td>Moves to the next field.</td>
</tr>
<tr>
<td>Enter</td>
<td>Allows you to select a value in the selected field (if applicable) or follow the link in the field.</td>
</tr>
<tr>
<td>Spacebar</td>
<td>Expands or collapses a drop-down list, if applicable.</td>
</tr>
<tr>
<td>Tab</td>
<td>Moves to the next focus area.</td>
</tr>
</tbody>
</table>

NOTE: For the standard graphics browser only.

Esc | Moves to the previous page till you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

F1  | Displays the System Setup help file.

System setup options

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

General screen options

This section lists the primary hardware features of your computer.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Information</td>
<td>This section lists the primary hardware features of your computer.</td>
</tr>
<tr>
<td></td>
<td>• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code.</td>
</tr>
<tr>
<td></td>
<td>• Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size,</td>
</tr>
<tr>
<td></td>
<td>• 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,</td>
</tr>
<tr>
<td></td>
<td>• Device Information: Displays Primary Hard Drive, M.2 SSD-0, Dock eSATA Device, LOM MAC Address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, WiGig Device, Cellular Device, Bluetooth Device.</td>
</tr>
<tr>
<td>Battery Information</td>
<td>Displays the battery status and the type of AC adapter connected to the computer.</td>
</tr>
<tr>
<td>Boot Sequence</td>
<td>Allows you to change the order in which the computer attempts to find an operating system.</td>
</tr>
<tr>
<td></td>
<td>• Diskette Drive</td>
</tr>
<tr>
<td></td>
<td>• Internal HDD</td>
</tr>
<tr>
<td></td>
<td>• USB Storage Device</td>
</tr>
<tr>
<td></td>
<td>• CD/DVD/CD-RW Drive</td>
</tr>
<tr>
<td></td>
<td>• Onboard NIC</td>
</tr>
<tr>
<td>Advanced Boot Options</td>
<td>This option allows you the legacy option ROMs to load. By default, the Enable Legacy Option ROMs is disabled.</td>
</tr>
<tr>
<td>Date/Time</td>
<td>Allows you to change the date and time.</td>
</tr>
</tbody>
</table>
## System Configuration screen options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integrated NIC</strong></td>
<td>Allows you to configure the integrated network controller. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• Enabled</td>
</tr>
<tr>
<td></td>
<td>• Enabled w/PXE: This option is enabled by default.</td>
</tr>
<tr>
<td><strong>Parallel Port</strong></td>
<td>Allows you to configure the parallel port on the docking station. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• AT: This option is enabled by default.</td>
</tr>
<tr>
<td></td>
<td>• PS2</td>
</tr>
<tr>
<td></td>
<td>• ECP</td>
</tr>
<tr>
<td><strong>Serial Port</strong></td>
<td>Allows you to configure the integrated serial port. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• COM1: This option is enabled by default.</td>
</tr>
<tr>
<td></td>
<td>• COM2</td>
</tr>
<tr>
<td></td>
<td>• COM3</td>
</tr>
<tr>
<td></td>
<td>• COM4</td>
</tr>
<tr>
<td><strong>SATA Operation</strong></td>
<td>Allows you to configure the internal SATA hard-drive controller. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• AHCI</td>
</tr>
<tr>
<td></td>
<td>• RAID On: This option is enabled by default.</td>
</tr>
<tr>
<td><strong>Drives</strong></td>
<td>Allows you to configure the SATA drives on board. All drives are enabled by default. The options are:</td>
</tr>
<tr>
<td></td>
<td>• SATA-1</td>
</tr>
<tr>
<td></td>
<td>• M.2 PCI-e SSD-0</td>
</tr>
<tr>
<td></td>
<td>• SATA-2</td>
</tr>
<tr>
<td><strong>SMART Reporting</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• Enable SMART Reporting</td>
</tr>
<tr>
<td><strong>USB Configuration</strong></td>
<td>This is an optional feature.</td>
</tr>
<tr>
<td></td>
<td>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).</td>
</tr>
<tr>
<td></td>
<td>If USB port is enabled, device attached to this port is enabled and available for OS.</td>
</tr>
<tr>
<td></td>
<td>If USB port is disabled, the OS cannot see any device attached to this port.</td>
</tr>
<tr>
<td></td>
<td>The options are:</td>
</tr>
<tr>
<td></td>
<td>• Enable USB Boot Support (by default enable)</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Enable External USB Port</td>
<td>(by default enable)</td>
</tr>
<tr>
<td><strong>NOTE:</strong> USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</td>
<td></td>
</tr>
<tr>
<td>USB PowerShare</td>
<td>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.</td>
</tr>
<tr>
<td>Audio</td>
<td>This field enables or disables the integrated audio controller. By default, the <strong>Enable Audio</strong> option is selected. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Enable Microphone (by default enable)</td>
</tr>
<tr>
<td></td>
<td>• Enable Internal Speaker (by default enable)</td>
</tr>
<tr>
<td>Keyboard Illumination</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• Dim</td>
</tr>
<tr>
<td></td>
<td>• Bright (enabled by default)</td>
</tr>
<tr>
<td>Keyboard Backlight with AC</td>
<td>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.</td>
</tr>
<tr>
<td>Keyboard Backlight Timeout with AC</td>
<td>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.</td>
</tr>
<tr>
<td>Keyboard Backlight Timeout on Battery</td>
<td>The Keyboard Backlight Timeout dims out with Battery option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled.</td>
</tr>
<tr>
<td>Unobtrusive Mode</td>
<td>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.</td>
</tr>
<tr>
<td>Miscellaneous Devices</td>
<td>Allows you to enable or disable the following devices:</td>
</tr>
<tr>
<td></td>
<td>• Enable Camera — enabled by default</td>
</tr>
<tr>
<td></td>
<td>• SD Card Read Only — enabled by default</td>
</tr>
<tr>
<td></td>
<td>• Enable Media Card</td>
</tr>
<tr>
<td></td>
<td>• Disable Media Card</td>
</tr>
</tbody>
</table>

**Video screen options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD Brightness</td>
<td>Allows you to set the display brightness depending up on the power source (On Battery and On AC).</td>
</tr>
<tr>
<td><strong>NOTE:</strong> The video setting will be visible only when a video card is installed into the system.</td>
<td></td>
</tr>
</tbody>
</table>

**Security screen options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin Password</td>
<td>Allows you to set, change, or delete the administrator (admin) password.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>System Password</td>
<td>Allows you to set, change or delete the system password.</td>
</tr>
<tr>
<td>Internal HDD-2</td>
<td>Allows you to set, change, or delete the administrator password.</td>
</tr>
<tr>
<td>Strong Password</td>
<td>Allows you to enforce the option to always set strong passwords.</td>
</tr>
<tr>
<td>Password Configuration</td>
<td>Allows you to determine the minimum and maximum length of Administrator and System passwords.</td>
</tr>
<tr>
<td>Password Bypass</td>
<td>Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:</td>
</tr>
<tr>
<td>Password Change</td>
<td>Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.</td>
</tr>
<tr>
<td>Non-Admin Setup Changes</td>
<td>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.</td>
</tr>
<tr>
<td>TPM 1.2/2.0 Security</td>
<td>Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:</td>
</tr>
<tr>
<td>Computrace</td>
<td>Allows you to activate or disable the optional Computrace software The options are:</td>
</tr>
</tbody>
</table>

**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.

**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.

**NOTE:** To upgrade or downgrade TPM1.2/2.0, download the TPM wrapper tool (software).
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU XD Support</td>
<td>Allows you to enable the Execute Disable mode of the processor.</td>
</tr>
<tr>
<td>OROM Keyboard Access</td>
<td>Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are:</td>
</tr>
<tr>
<td>Admin Setup Lockout</td>
<td>Allows you to prevent users from entering Setup when an Administrator password is set.</td>
</tr>
</tbody>
</table>

### Secure Boot screen options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure Boot Enable</td>
<td>This option enables or disables the <strong>Secure Boot</strong> feature.</td>
</tr>
<tr>
<td>Intel Software Guard Extensions</td>
<td>This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:</td>
</tr>
<tr>
<td>Enclave Memory Size:</td>
<td>This option sets SGX Enclave Reserve Memory Size. The option are:</td>
</tr>
<tr>
<td>Intel Software Guard Extensions</td>
<td>This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:</td>
</tr>
</tbody>
</table>
Option | Description
---|---
Enclave Memory Size: | This option sets SGX Enclave Reserve Memory Size. The option are:
| 32 MB
| 64 MB
| 128 MB

Expert Key Management | Allows you to manipulate the security key databases only if the system is in Custom Mode. The Enable Custom Mode option is disabled by default. The options are:
| PK
| KEK
| db
| dbx
If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:
| Save to File—Saves the key to a user-selected file
| Replace from File—Replaces the current key with a key from a user-selected file
| Append from File—Adds a key to the current database from a user-selected file
| Delete—Deletes the selected key
| Reset All Keys—Resets to default setting
| Delete All Keys—Deletes all the keys

**NOTE:** If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.

Intel Software Guard Extensions | This fields specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:
| Disabled (Default Setting)
| Enabled

Enclave Memory Size | This option sets SGX Enclave Reserve Memory Size. The option are:
| 32 MB
| 64 MB
| 128 MB

**Intel Software Guard Extensions screen options**

Option | Description
---|---
Intel SGX Enable | This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:
| Disabled
| Enabled
Default setting: Disabled

Enclave Memory Size | This option sets SGX Enclave Reserve Memory Size. The options are:
| 32 MB
### Performance screen options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multi Core Support</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• Enable Multi Core Support</td>
</tr>
<tr>
<td></td>
<td>Default setting: The option is enabled.</td>
</tr>
<tr>
<td><strong>Intel SpeedStep</strong></td>
<td>Allows you to enable or disable the Intel SpeedStep feature.</td>
</tr>
<tr>
<td></td>
<td>• Enable Intel SpeedStep</td>
</tr>
<tr>
<td></td>
<td>Default setting: The option is enabled.</td>
</tr>
<tr>
<td><strong>C-States Control</strong></td>
<td>Allows you to enable or disable the additional processor sleep states.</td>
</tr>
<tr>
<td></td>
<td>• C states</td>
</tr>
<tr>
<td></td>
<td>Default setting: The option is enabled.</td>
</tr>
<tr>
<td><strong>Intel TurboBoost</strong></td>
<td>Allows you to enable or disable the Intel TurboBoost mode of the processor.</td>
</tr>
<tr>
<td></td>
<td>• Enable Intel TurboBoost</td>
</tr>
<tr>
<td></td>
<td>Default setting: The option is enabled.</td>
</tr>
<tr>
<td><strong>Hyper-Thread Control</strong></td>
<td>Allows you to enable or disable the Hyper-Threading in the processor.</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• Enabled</td>
</tr>
<tr>
<td></td>
<td>Default setting: Enabled.</td>
</tr>
</tbody>
</table>

### Power Management screen options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AC Behavior</strong></td>
<td>Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected.</td>
</tr>
<tr>
<td></td>
<td>Default setting: Wake on AC is not selected.</td>
</tr>
<tr>
<td><strong>Auto On Time</strong></td>
<td>Allows you to set the time at which the computer must turn on automatically. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• Every Day</td>
</tr>
<tr>
<td></td>
<td>• Weekdays</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Select Days</td>
<td>Default setting: Disabled</td>
</tr>
<tr>
<td>USB Wake Support</td>
<td>Allows you to enable USB devices to wake the system from Standby.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> 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.</td>
</tr>
<tr>
<td></td>
<td>• Enable USB Wake Support</td>
</tr>
<tr>
<td></td>
<td>Default setting: The option is disabled.</td>
</tr>
<tr>
<td>Wireless Radio Control</td>
<td>Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection.</td>
</tr>
<tr>
<td></td>
<td>• Control WLAN Radio</td>
</tr>
<tr>
<td></td>
<td>• Control WWAN Radio</td>
</tr>
<tr>
<td></td>
<td>Default setting: The option is disabled.</td>
</tr>
<tr>
<td>Wake on LAN/WLAN</td>
<td>Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.</td>
</tr>
<tr>
<td></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• LAN Only</td>
</tr>
<tr>
<td></td>
<td>• WLAN Only</td>
</tr>
<tr>
<td></td>
<td>• LAN or WLAN</td>
</tr>
<tr>
<td></td>
<td>Default setting: Disabled</td>
</tr>
<tr>
<td>Block Sleep</td>
<td>This option lets you block entering to sleep (S3 state) in operating system environment.</td>
</tr>
<tr>
<td></td>
<td>Block Sleep (S3 state)</td>
</tr>
<tr>
<td></td>
<td>Default setting: This option is disabled</td>
</tr>
<tr>
<td>Peak Shift</td>
<td>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.</td>
</tr>
<tr>
<td>Dock Support on Battery</td>
<td>This option allows you to use the docking station when AC power is absent but only when the battery is above a certain charge percentage. The percentage may change per battery and per platform.</td>
</tr>
<tr>
<td></td>
<td>• Dock Support on Battery</td>
</tr>
<tr>
<td></td>
<td>Default setting: Disabled</td>
</tr>
<tr>
<td>Advanced Battery Charge</td>
<td>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.</td>
</tr>
<tr>
<td>Configuration</td>
<td>Disabled</td>
</tr>
<tr>
<td></td>
<td>Default setting: Disabled</td>
</tr>
<tr>
<td>Primary Battery Charge</td>
<td>Allows you to select the charging mode for the battery. The options are:</td>
</tr>
<tr>
<td>Configuration</td>
<td>• Adaptive</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Option</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>Fully charges your battery at a standard rate.</td>
</tr>
<tr>
<td><strong>Express Charge</strong></td>
<td>The battery charges over a shorter period of time using Dell’s fast charging technology. This option is enabled by default.</td>
</tr>
<tr>
<td><strong>Primarily AC use</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Custom</strong></td>
<td>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
<td>All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</td>
</tr>
</tbody>
</table>

**POST Behavior screen options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adapter Warnings</strong></td>
<td>Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. Default setting: Enable Adapter Warnings</td>
</tr>
<tr>
<td><strong>Keypad (Embedded)</strong></td>
<td>Allows you to choose one of two methods to enable the keypad that is embedded in the internal keyboard.</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Fn Key Only</strong></td>
<td>This option is enabled by default.</td>
</tr>
<tr>
<td><strong>By Numlock</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
<td>When setup is running, this option has no effect. Setup works in Fn Key Only mode.</td>
</tr>
<tr>
<td><strong>Mouse/Touchpad</strong></td>
<td>Allows you to define how the system handles mouse and touch pad input. The options are:</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Serial Mouse</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PS2 Mouse</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Touchpad/PS-2 Mouse</strong></td>
<td>This option is enabled by default.</td>
</tr>
<tr>
<td><strong>Numlock Enable</strong></td>
<td>Allows you to enable the Numlock option when the computer boots. Enable Network. This option is enabled by default.</td>
</tr>
<tr>
<td><strong>Fn Key Emulation</strong></td>
<td>Allows you to set the option where the Scroll Lock key is used to simulate the Fn key feature. Enable Fn Key Emulation (default)</td>
</tr>
<tr>
<td><strong>Fn Lock Options</strong></td>
<td>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:</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Fn Lock</strong></td>
<td>This option is selected by default.</td>
</tr>
<tr>
<td><strong>Lock Mode Disable/Standard</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Lock Mode Enable/Secondary</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MEBx Hotkey</strong></td>
<td>Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. Default Setting: Enable MEBx Hotkey</td>
</tr>
<tr>
<td><strong>Fastboot</strong></td>
<td>Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Minimal</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Thorough (default)</strong></td>
<td></td>
</tr>
</tbody>
</table>
Option | Description
--- | ---
Auto

Extended BIOS POST Time

Allows you to create an additional preboot delay. The options are:

- 0 seconds. This option is enabled by default.
- 5 seconds
- 10 seconds

**Virtualization support screen options**

Option | Description
--- | ---
Virtualization | Allows you to enable or disable the Intel Virtualization Technology. Enable Intel Virtualization Technology (default).

VT for Direct I/O | Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O. Enable VT for Direct I/O - enabled by default.

Trusted Execution | This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. The TPM Virtualization Technology, and Virtualization technology for direct I/O must be enabled to use this feature. Trusted Execution - disabled by default.

**Wireless screen options**

Option | Description
--- | ---
Wireless | Allows to set the wireless devices that can be controlled by the wireless technology. 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.
Maintenance screen options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Tag</strong></td>
<td>Displays the Service Tag of your computer.</td>
</tr>
<tr>
<td><strong>Asset Tag</strong></td>
<td>Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.</td>
</tr>
<tr>
<td><strong>BIOS Downgrade</strong></td>
<td>This controls flashing of the system firmware to previous revisions.</td>
</tr>
<tr>
<td><strong>Data Wipe</strong></td>
<td>This field allows users to erase the data securely from all internal storage devices. The following is list of devices affected:</td>
</tr>
<tr>
<td></td>
<td>• Internal HDD</td>
</tr>
<tr>
<td></td>
<td>• Internal SDD</td>
</tr>
<tr>
<td></td>
<td>• Internal mSATA</td>
</tr>
<tr>
<td></td>
<td>• Internal eMMC</td>
</tr>
<tr>
<td><strong>BIOS Recovery</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• BIOS Recovery from Hard Drive (enabled by default)</td>
</tr>
</tbody>
</table>

System Log screen options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIOS Events</strong></td>
<td>Allows you to view and clear the System Setup (BIOS) POST events.</td>
</tr>
<tr>
<td><strong>Thermal Events</strong></td>
<td>Allows you to view and clear the System Setup (Thermal) events.</td>
</tr>
<tr>
<td><strong>Power Events</strong></td>
<td>Allows you to view and clear the System Setup (Power) events.</td>
</tr>
</tbody>
</table>

Updating the BIOS

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

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

Click Save to save the file on your computer.

Click Run to install the updated BIOS settings on your computer.
Follow the instructions on the screen.

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

System and setup password

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

<table>
<thead>
<tr>
<th>Password type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System password</td>
<td>Password that you must enter to log on to your system.</td>
</tr>
<tr>
<td>Setup password</td>
<td>Password that you must enter to access and make changes to the BIOS settings of your computer.</td>
</tr>
</tbody>
</table>

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

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

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

Assigning a system password and setup password

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

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

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

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

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

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

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

Re-enter the system password when prompted.

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

5. Select Setup Password, type your system password and press Enter or Tab.
A message prompts you to re-type the setup password.

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

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

8. Press Y to save the changes.
The computer reboots.
Deleting or changing an existing system and or setup password

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

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

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

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

5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.

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

Topics:
- Enhanced Pre-Boot System Assessment — ePSA diagnostics
- Device status lights
- Battery status lights

**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.**

**Device status lights**

<table>
<thead>
<tr>
<th>Icon</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>⚡️</td>
<td>Power status light</td>
<td>Turns on when you turn on the computer and blinks when the computer is in a power management mode.</td>
</tr>
<tr>
<td>🗻</td>
<td>Hard drive status light</td>
<td>Turns on when the computer reads or writes data.</td>
</tr>
<tr>
<td>🍃</td>
<td>Battery charge indicator</td>
<td>Turns on steadily or blinks to indicate battery charge status.</td>
</tr>
<tr>
<td>🌐</td>
<td>WiFi indicator</td>
<td>Turns on when wireless networking is enabled.</td>
</tr>
</tbody>
</table>

**(NOTE:** Refer to the following table for Battery charge LED indicator codes.**

---

Diagnostics

4

55
The device status LEDs are usually located either on the top or left side of the keyboard. They display the storage, battery and wireless devices connectivity and activity. Apart from that they can be useful as a diagnostic tool when there's a possible failure to the system.

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

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

### Table 3. Battery charge LED indicator

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

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

**NOTE:**

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

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

### Battery status lights

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

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

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

- Windows 10, click or tap **Start > Settings > System > About.**
- Windows 8.1 and Windows 8, click or tap **Start > PC Settings > PC and devices > PC Info.**
- Windows 7, click **Start**, right-click **My Computer**, and then select **Properties.**

### Table 4. System Information

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipset</td>
<td>Skylake</td>
</tr>
<tr>
<td>DRAM bus width</td>
<td>64-bit</td>
</tr>
<tr>
<td>Flash EPROM</td>
<td>SPI 32 Mbits, 64 Mbits</td>
</tr>
<tr>
<td>PCIe bus</td>
<td>100 MHz</td>
</tr>
<tr>
<td>External Bus Frequency</td>
<td>DMI (5GT/s)</td>
</tr>
</tbody>
</table>

### Table 5. Processor

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types</td>
<td>Intel Core i3 / i5 / i7</td>
</tr>
<tr>
<td>L3 cache</td>
<td>3 MB, 4MB, 6 MB, and 8 MB</td>
</tr>
</tbody>
</table>

### Table 6. Memory

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory connector</td>
<td>Two SODIMM slots</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>4GB and 8GB</td>
</tr>
<tr>
<td>Memory type</td>
<td>DDR4 SDRAM (1600 MHz ~ 2400 MHz )</td>
</tr>
<tr>
<td>Minimum memory</td>
<td>4 GB</td>
</tr>
<tr>
<td>Maximum memory</td>
<td>16 GB</td>
</tr>
</tbody>
</table>

### Table 7. Storage - 512 GB M.2 2280 PCIe SSD

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (GB)</td>
<td>512</td>
</tr>
<tr>
<td>Dimensions mm (W x D x H)</td>
<td>22 x 80 x 2.38</td>
</tr>
</tbody>
</table>
### Feature | Specification
--- | ---
Interface type and Maximum speed | PCIe Gen3 8Gb/s (up to 4 lanes)
MTBF | 800k hours
Logical Blocks | 1,000,215,216
**Power Source:**
Power Consumption (reference only) | Idle 1.7 W, Active 4.5 W

**Environmental Operating Conditions (Non-Condensing):**
Temperature Range | 0°C to 70°C
Relative Humidity Range | 10% to 90%
Non-Op Shock (@0.5ms) | 1500G

**Environmental Non-Operating Conditions (Non-Condensing):**
Temperature Range | -40°C to 70°C
Relative Humidity Range | 5% to 95%

#### Table 8. Audio

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Four-channel high-definition audio</td>
</tr>
<tr>
<td>Controller</td>
<td>Realtek ALC3235</td>
</tr>
<tr>
<td>Stereo conversion</td>
<td>24-bit (analog-to-digital and digital-to-analog)</td>
</tr>
<tr>
<td>Interface:</td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>High-definition audio</td>
</tr>
<tr>
<td>External</td>
<td>Microphone-in, stereo headphones, and headset combo connector</td>
</tr>
<tr>
<td>Speakers</td>
<td>Two</td>
</tr>
<tr>
<td>Internal speaker amplifier</td>
<td>2 W (RMS) per channel</td>
</tr>
<tr>
<td>Volume controls</td>
<td>Hot keys</td>
</tr>
</tbody>
</table>

#### Table 9. Video

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Integrated on system board</td>
</tr>
<tr>
<td>Controller:</td>
<td></td>
</tr>
<tr>
<td>UMA</td>
<td>Intel HD Graphics 5500</td>
</tr>
<tr>
<td>Data bus</td>
<td>PCI-E Gen2 x4</td>
</tr>
</tbody>
</table>
| External display support | • one HDMI 2560x1440 @ 30 Hz  
• one mDP 1920 x 1200 pixels |

**NOTE:** Supports one VGA, two DP/DVI ports through Docking station.
### Table 10. Camera

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD camera resolution</td>
<td>1280 x 720 pixels (Non Touch)</td>
</tr>
<tr>
<td>FHD camera resolution</td>
<td>1920 x 1080 pixels (Touch)</td>
</tr>
<tr>
<td>Video Resolution (maximum)</td>
<td>1280 x 720 pixels</td>
</tr>
<tr>
<td>Diagonal viewing angle</td>
<td>74°</td>
</tr>
</tbody>
</table>

### Table 11. Communications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network adapter</td>
<td>10/100/1000 Mb/s Ethernet (RJ-45)</td>
</tr>
<tr>
<td>Wireless</td>
<td>Internal wireless local area network (WLAN) and wireless wide area network (WWAN)</td>
</tr>
<tr>
<td></td>
<td>• Bluetooth 4.0</td>
</tr>
</tbody>
</table>

### Table 12. Ports and Connectors

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>One microphone/stereo headphone/speakers connector</td>
</tr>
<tr>
<td>Video</td>
<td>• one HDMI</td>
</tr>
<tr>
<td></td>
<td>• one mDP</td>
</tr>
<tr>
<td>Network adapter</td>
<td>RJ-45 connector</td>
</tr>
<tr>
<td>USB 3.0</td>
<td>Two USB 3.0, one PowerShare</td>
</tr>
<tr>
<td>Memory card reader</td>
<td>Support upto SD4.0</td>
</tr>
<tr>
<td>Micro Subscriber Identity Module (uSIM) card</td>
<td>One</td>
</tr>
<tr>
<td>Docking port</td>
<td>One</td>
</tr>
<tr>
<td>Smart Card</td>
<td>One</td>
</tr>
</tbody>
</table>

### Table 13. Display

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Latitude 7470</td>
</tr>
<tr>
<td>Type</td>
<td>HD</td>
</tr>
<tr>
<td>Dimensions:</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>181.4 mm (7.14 inches)</td>
</tr>
<tr>
<td>Width</td>
<td>290.5 mm (11.4 inches)</td>
</tr>
<tr>
<td>Diagonal</td>
<td>3.0 mm (0.1 inch)</td>
</tr>
<tr>
<td>Maximum resolution</td>
<td>1366 x 768</td>
</tr>
<tr>
<td>Refresh rate</td>
<td>60 Hz/48 Hz</td>
</tr>
</tbody>
</table>
### Minimum Viewing Angles:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td>+/-40°</td>
</tr>
<tr>
<td></td>
<td>+/-80°</td>
</tr>
<tr>
<td>Vertical</td>
<td>+10°/-30°</td>
</tr>
<tr>
<td></td>
<td>+/-80°</td>
</tr>
<tr>
<td>Pixel pitch</td>
<td>0.2025 x 0.2025</td>
</tr>
</tbody>
</table>

### Keyboard

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of keys</td>
<td>United States: 82 keys, United Kingdom: 83 keys, Brazil: 84 keys, and Japan: 86 keys</td>
</tr>
</tbody>
</table>

### Touchpad

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Latitude 7470/E7470</td>
</tr>
<tr>
<td>Active Area:</td>
<td></td>
</tr>
<tr>
<td>X-axis</td>
<td>99.5 mm</td>
</tr>
<tr>
<td>Y-axis</td>
<td>53.0 mm</td>
</tr>
</tbody>
</table>

### Battery

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>3-cell Lithium Polymer battery with ExpressCharge</td>
</tr>
<tr>
<td></td>
<td>4-cell Lithium Polymer battery with ExpressCharge</td>
</tr>
<tr>
<td>Model</td>
<td>Latitude 7470</td>
</tr>
<tr>
<td></td>
<td>Latitude E7470</td>
</tr>
<tr>
<td>Depth</td>
<td>105.9 mm (4.17 inches)</td>
</tr>
<tr>
<td>Height</td>
<td>6.1 mm (0.24 inch)</td>
</tr>
<tr>
<td>Width</td>
<td>181.00 mm (7.13 inches)</td>
</tr>
<tr>
<td></td>
<td>283.00 mm (11.14 inches)</td>
</tr>
<tr>
<td>Weight:</td>
<td>189.3 g (042 lb)</td>
</tr>
<tr>
<td></td>
<td>290.3 g (0.85lb)</td>
</tr>
<tr>
<td>Voltage</td>
<td>11.10 VDC</td>
</tr>
<tr>
<td></td>
<td>7.40 VDC</td>
</tr>
<tr>
<td>Life span</td>
<td>300 discharge/charge cycles</td>
</tr>
<tr>
<td>Temperature range:</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>Charge: 0 °C to 50 °C (32 °F to 158 °F)</td>
</tr>
<tr>
<td></td>
<td>Discharge: 0 °C to 70 °C (32 °F to 122 °F)</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>-20 °C to 65 °C (4 °F to 149 °F)</td>
</tr>
<tr>
<td>Coin-cell battery</td>
<td>3 V CR2032 lithium coin cell</td>
</tr>
</tbody>
</table>
### Table 17. AC Adapter

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>65 W and 90 W</td>
</tr>
<tr>
<td>Input voltage</td>
<td>90 VAC to 264 VAC</td>
</tr>
<tr>
<td>Input current (maximum)</td>
<td>1.50 A</td>
</tr>
<tr>
<td>Input frequency</td>
<td>47 Hz to 63 Hz</td>
</tr>
<tr>
<td>Output power</td>
<td>65 W and 90 W</td>
</tr>
<tr>
<td>Output current</td>
<td>3.34 A and 4.62 A</td>
</tr>
<tr>
<td>Rated output voltage</td>
<td>19.5 VDC</td>
</tr>
<tr>
<td>Weight</td>
<td>230 g (65 W) and 285 g (90 W)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>107x46x29.5 mm (65 W) / 130x66 x22 mm (90 W)</td>
</tr>
<tr>
<td><strong>Temperature range:</strong></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0 °C to 40 °C (32 °F to 104 °F)</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>−40 °C to 70 °C (−40 °F to 158 °F)</td>
</tr>
</tbody>
</table>

### Table 18. Physical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Latitude 7470/E7470 Non-Touch</th>
<th>Latitude 7470/E7470 Touch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Height</td>
<td>17.2 mm (0.68 inch)</td>
<td>18.20 mm (0.72 inch)</td>
</tr>
<tr>
<td>Back Height</td>
<td>19.4 mm (0.76 inch)</td>
<td>21.8 mm (0.82 inch)</td>
</tr>
<tr>
<td>Width</td>
<td>334.00 mm (13.14 inches)</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>232.0 mm (9.13 inches)</td>
<td></td>
</tr>
<tr>
<td>Weight (with 3-cell battery)</td>
<td>1.51 kg (3.33 lb)</td>
<td>1.65 kg (3.65 lb)</td>
</tr>
</tbody>
</table>

### Table 19. Environmental

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature:</strong></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0 °C to 60 °C (32 °F to 140 °F)</td>
</tr>
<tr>
<td>Storage</td>
<td>−51 °C to 71 °C (−59 °F to 159 °F)</td>
</tr>
<tr>
<td><strong>Relative humidity (maximum):</strong></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>10 % to 90 % (non condensing)</td>
</tr>
<tr>
<td>Storage</td>
<td>5 % to 95 % (non condensing)</td>
</tr>
<tr>
<td><strong>Altitude (maximum):</strong></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>−15.2 m to 3048 m (−50 to 10,000 ft)</td>
</tr>
<tr>
<td></td>
<td>0° to 35°C</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>−15.24 m to 10,668 m (−50 ft to 35,000 ft)</td>
</tr>
<tr>
<td>Feature</td>
<td>Specification</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Airborne contaminant level</td>
<td>G2 or lower as defined by ISA S71.04–1985</td>
</tr>
</tbody>
</table>
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.

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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.