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.
# Contents

## 1 Working on Your Computer ................................................................. 5
- Before Working Inside Your Computer ........................................ 5
- Turning Off Your Computer ......................................................... 6
- After Working Inside Your Computer ....................................... 7

## 2 Removing and Installing Components ............................................. 8
- Recommended Tools ........................................................................ 8
- System Overview ........................................................................... 9
- Removing the Battery ..................................................................... 10
- Installing the Battery ..................................................................... 11
- Removing the SD Card ................................................................... 11
- Installing the SD Card .................................................................... 11
- Removing the ExpressCard ............................................................ 11
- Installing the ExpressCard ............................................................. 12
- Removing the SIM Card ................................................................. 12
- Installing the SIM Card ................................................................. 12
- Removing the Display Bezel ......................................................... 12
- Installing the Display Bezel ......................................................... 13
- Removing the Display Panel ...................................................... 13
- Installing the Display Panel ....................................................... 14
- Removing the Camera .................................................................. 14
- Installing the Camera .................................................................. 15
- Removing the Keyboard Trim ..................................................... 15
- Installing the Keyboard Trim ....................................................... 15
- Removing the Keyboard ............................................................... 16
- Installing the Keyboard ............................................................... 17
- Removing the Base Cover ............................................................ 18
- Installing the Base Cover ............................................................. 18
- Removing the Optical Drive ........................................................ 18
- Installing the Optical Drive ........................................................ 19
- Removing the Hard Drive ............................................................. 20
- Installing the Hard Drive ............................................................. 20
- Removing the Memory Module ................................................... 21
- Installing the Memory Module .................................................... 21
- Removing the WLAN Card .......................................................... 22
- Installing the WLAN Card ......................................................... 22
- Removing the Coin-Cell Battery .................................................. 22
- Installing the Coin-Cell Battery .................................................. 23
Removing the Display Hinge ................................................................. 23
Installing the Display Hinge ............................................................. 24
Removing the Palmrest ................................................................. 24
Installing the Palmrest .................................................................. 26
Removing the Display Assembly .................................................. 26
Installing the Display Assembly ...................................................... 28
Removing the ExpressCard Cage ................................................... 28
Installing the ExpressCard Cage .................................................... 29
Removing the System Fan ............................................................... 29
Installing the System Fan ............................................................... 30
Removing the System Board ........................................................ 31
Installing the System Board ............................................................ 33
Removing the Heatsink ................................................................. 34
Installing the Heatsink ................................................................. 34
Removing the I/O Board (Left) ....................................................... 35
Installing the I/O Board (Left) ....................................................... 35
Removing the I/O Board (Right) .................................................... 36
Installing the I/O Board (Right) ..................................................... 36
Removing the Power Connector .................................................... 37
Installing the Power Connector ..................................................... 37
Removing the Speakers ............................................................... 38
Installing the Speakers ............................................................... 38
Removing the Status-Light Board .................................................. 40
Installing the Status-Light Board ................................................... 40

3 System Setup ............................................................................. 42
Boot Sequence ............................................................................. 42
Navigation Keys .......................................................................... 42
System Setup Options .................................................................. 43
Updating the BIOS ....................................................................... 53
System and Setup Password ........................................................ 53
  Assigning a System Password and Setup Password ................. 54
  Deleting or Changing an Existing System and/or Setup Password 54

4 Diagnostics ............................................................................... 56
Enhanced Pre-Boot System Assessment (ePSA) Diagnostics ........ 56
Device Status Lights .................................................................... 57
Battery Status Lights ................................................................... 57

5 Specifications ............................................................................ 58

6 Contacting Dell ................................................................. 64
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.
\(\text{CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.}\)

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.

\(\text{NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.}\)

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.

\(\text{CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.}\)

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

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

## Turning Off Your Computer

\(\text{CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.}\)

1. Shut down the operating system:
   - In Windows 8:
     a. Using a touch-enabled device:
        i. Swipe in from the right edge of the screen, opening the Charms menu and select Settings.
        ii. Select the \(\text{ and then select Shut down}\)
         Using a mouse:
        i. Point to upper-right corner of the screen and click Settings.
        ii. Click the \(\text{ and select Shut down.}\)
   - 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, battery slice, or media base, and replace any cards, such as an ExpressCard.
2. Connect any telephone or network cables to your computer.
   ⚠️ CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.
3. Replace the battery.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.
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 may require the following tools:

- Small flat-blade screwdriver
- #0 Phillips screwdriver
- #1 Phillips screwdriver
- Small plastic scribe
System Overview

Figure 1. Inside View — Back

1. hard drive with isolation cap
2. coin-cell battery
3. memory module
4. optical drive
5. WLAN card
Figure 2. Inside view — Front
1. power connector  
2. I/O board (left)  
3. system fan  
4. ExpressCard cage  
5. speakers  
6. status-light board  
7. system board  
8. I/O board (right)

Removing the Battery
1. Follow the procedures in Before Working Inside Your Computer.
2. Perform the following steps:
   a. Slide the battery release latches into the unlock position.
   b. Push and remove the battery from the computer.
Installing the Battery
1. Slide the battery into its slot until it clicks into place.
2. Follow the procedures in *After Working Inside Your Computer*.

Removing the SD Card
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Press in on the SD card to release it from the computer.
3. Slide the SD card out of the computer.

Installing the SD Card
1. Push the SD card into its slot until it clicks into place.
2. Follow the procedures in *After Working Inside Your Computer*.

Removing the ExpressCard
1. Follow the procedures in *Before Working On Your Computer*.
2. Perform the following steps:
   a. Push in on the ExpressCard to release from the computer [1].
   b. Slide the ExpressCard out of the computer [2].
Installing the ExpressCard

1. Slide the ExpressCard in its slot until it clicks in place.
2. Follow the procedures in *After Working Inside Your Computer*.

Removing the SIM Card

1. Follow the procedures in *Before Working On Your Computer*.
2. Remove the battery.
3. Press and release the SIM card located on the battery wall.
4. Slide the SIM card from the computer.

![Image of SIM card being removed from a computer](image)

**NOTE:** The SIM slot in the computer supports only micro SIM.

Installing the SIM Card

1. Insert the SIM card into the slot.
2. Install the battery.
3. Follow the procedures in *After Working Inside Your Computer*.

Removing the Display Bezel

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the battery.
3. Perform the following steps:
   a. Pry up the bottom edge of the display bezel.
   b. Work your way around the sides and top edge of the display bezel.
4. Remove the display bezel from the computer.

Installing the Display Bezel

1. Place the display bezel onto the display assembly.
2. Starting from the top corner, press on the display bezel and work around the entire bezel until it snaps onto the display assembly.
3. Install the battery.
4. 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
   b. display bezel
3. Remove the screws that secure the display panel and flip the panel over.

4. Perform the following steps:
a. Lift the mylar tape and disconnect the low-voltage differential signaling (LVDS) cable from the back of the display panel.
b. Remove the display panel from the display assembly.

Installing the Display Panel
1. Place the display panel to the display assembly.
2. Align the display panel in its original position.
3. Connect the low-voltage differential signaling (LVDS) cable to the display panel and attach the tape.
4. Flip the display panel over and tighten the screws to secure the display panel.
5. Install:
   a. display bezel
   b. battery
6. 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 bezel
3. Perform the following steps:
   a. Remove the screw that secures the camera and microphone module.
   b. Disconnect the camera cable.
   c. Lift and remove the camera and microphone module.
Installing the Camera

1. Place the camera and microphone module on its place.
2. Connect the camera cable.
3. Tighten the screw to secure the camera and microphone module.
4. Install:
   a. display bezel
   b. battery
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Keyboard Trim

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the battery.
3. Perform the following steps:
   a. Pry up the keyboard trim on its sides and the top edge.
   b. Lift upwards and remove the keyboard trim from the computer.

Installing the Keyboard Trim

1. Align the keyboard trim to its place.
2. Press along the sides of the keyboard trim until it snaps in place.
3. Install the battery.
4. Follow the procedures in After Working Inside Your Computer.

Removing the Keyboard

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. battery
   b. keyboard trim
3. Remove the screws at the back of the computer and flip the computer over.

4. Remove the screws that secure the keyboard [1] and lift the keyboard from the computer [2] and [3].
5. Disconnect the keyboard cable and remove the keyboard from the computer.

Installing the Keyboard

1. Connect the keyboard cable to the keyboard.
2. Place the keyboard into its place until all the metal tabs fit into their positions.
3. Press down on the keyboard to the left and right side ensuring that all the snaps are fully engaged with the computer.
4. Install the screws to secure the keyboard to the palmrest.
5. Install the screws at the back of the computer.
6. Install:
   a. keyboard trim
b. battery
7. Follow the procedures in After Working Inside Your Computer.

Removing the Base Cover
1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Perform the following steps:
   a. Remove the screws that secure the base cover.
   b. Pry the base cover towards the front of the computer and remove it from the computer.

   NOTE: You may need a sharp tool to pry the base cover.

Installing the Base Cover
1. Insert the base cover into its slot until it clicks into place.
2. Tighten the screws to secure the base cover to the computer.
3. Install the battery.
4. 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. base cover
3. Perform the following steps:
   a. Remove the screw that secures the optical drive to the computer.
   b. Push the optical drive away to remove it from the computer.
4. After removing the optical-drive bracket, perform the following steps:
   a. Remove the screws that secure the optical-drive bracket [1].
   b. Remove the optical-drive bracket from the optical drive [2].

5. Disengage the optical drive bezel tabs to separate the optical drive bezel from the optical drive.
6. Remove the optical-drive bezel.

**Installing the Optical Drive**

1. Engage the optical-drive bezel tabs to attach the optical-drive bezel to the optical drive.
2. Install the optical-drive bracket.
3. Tighten the screws to secure the optical-drive bracket.
4. Insert the optical drive into the computer.
5. Tighten the screw to secure the optical drive in its place.
6. Install:
   a. base cover
   b. battery
7. Follow the procedures in *After Working Inside Your Computer*. 
Removing the Hard Drive

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. battery  
b. base cover
3. Perform the following steps:
   a. Remove the screws that secure the hard-drive bracket in place.
   b. Slide and pull the hard drive to remove from its connectors.
4. Remove the hard-drive isolation cap from the hard drive.

Installing the Hard Drive

1. Engage the hard-drive isolation cap to the hard drive.
2. Place the hard drive on its connector.
3. Place the hard-drive bracket on the hard drive and tighten the screws to secure the hard-drive bracket in place.
4. Install:
   a. base cover
   b. battery
5. 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. base cover
3. Pry the retention clips away from the memory module until it pops up.
4. Lift up the memory module and remove it from the computer.

Installing the Memory Module

1. Insert the memory into the memory socket.
2. Press the clips to secure the memory module to the system board.
3. Install:
   a. base 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. base cover
3. Perform the following steps:
   a. Disconnect the antennae cables from the WLAN card.
   b. Remove the screw that secures the WLAN card to the computer.
   c. Remove the WLAN card from its slot on the system board.

**Installing the WLAN Card**

1. Insert the WLAN card into its connector on the system board.
2. Connect the antenna cables to the respective connectors marked on the WLAN card.
3. Tighten the screw to secure the WLAN card to the computer.
4. Install:
   a. base cover
   b. battery
5. 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. base cover
3. Perform the following steps:
   a. Disconnect the coin-cell battery cable from the system board.
   b. Pry and remove the coin-cell battery from the adhesive.
Installing the Coin-Cell Battery

1. Place the coin-cell battery on the system board with adhesive side downwards.
2. Connect the coin-cell battery cable to the system board.
3. Install:
   a. base cover
   b. battery
4. Follow the procedures in After Working Inside Your Computer.

Removing the Display Hinge

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. battery
   b. base cover
   c. keyboard trim
   d. keyboard
3. Remove the screws that secure the display hinge at the back of the computer.
4. Remove the screws that secure the display hinge at the front of the computer. Press and remove the display hinge from the computer.

Installing the Display Hinge

1. Place the display hinge on the computer.
2. Tighten the screws to secure the display hinge at the front and back of the computer.
3. Install:
   a. keyboard
   b. keyboard trim
   c. base cover
   d. battery
4. 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. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. optical drive
   h. hard drive
   i. display hinge
3. Remove the screws at the bottom of the computer.
4. Disconnect:
   a. media-buttons cable
   b. touch-pad cable
   c. fingerprint-scanner cable
   d. power-button cable

5. Perform the following steps:
   a. Remove the screws that secure the palmrest of the computer.
   b. Lift and remove the palmrest from the computer
Installing the Palmrest

1. Align the palmrest assembly to its original position in the computer and snap it into place.
2. Connect the following cables to the system board:
   a. power-button cable
   b. fingerprint-scanner cable
   c. touch-pad cable
   d. media button cable
3. Tighten the screws to secure the palmrest at the front and back of the computer.
4. Install:
   a. display hinge
   b. hard drive
   c. optical drive
   d. memory
   e. keyboard
   f. keyboard trim
   g. base cover
   h. battery
   i. SD card
5. 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. SD card
   b. battery
   c. base cover
   d. keyboard trim
e. keyboard  
f. display hinge  
g. palmrest  

3. Disconnect and remove WLAN cable from its routing channels.

4. Perform the following steps:  
a. Remove the screws that secure the display-cable connector and remove it from the system board.  
b. Disconnect the display cables from the system board.

5. Remove the screws that secure the display assembly in place and lift to remove the display assembly from the computer.
NOTE: The above display assembly removal procedures are applicable for both Touch and Non-touch versions of the computer.

Installing the Display Assembly

1. Tighten the screws that secure the display assembly in place.
2. Insert the WLAN cable through the holes on the chassis.
3. Route the display cable along its compartment and connect the display cables to its connectors on the system board.
4. Connect the WLAN cables to their connectors.
5. Install:
   a. palmrest
   b. display hinge
   c. keyboard
   d. keyboard trim
   e. base cover
   f. battery
   g. SD card
6. Follow the procedures in After Working Inside Your Computer.

Removing the ExpressCard Cage

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
Perform the following steps:

a. Remove the screws that secure the ExpressCard cage.
b. Lift and remove the ExpressCard cage from the computer.

Installing the ExpressCard Cage

1. Align the ExpressCard cage to its original position on the computer and snap it into place.
2. Install the screws that secure the ExpressCard cage to the system board.
3. Install:
   a. palmrest
   b. display hinge
   c. keyboard
   d. keyboard trim
   e. base cover
   f. battery
   g. SD card
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. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. optical drive
   h. hard drive
   i. display hinge
   j. palmrest
3. Disconnect:
   a. system-fan cable
   b. I/O board cable

4. Remove the screws that secure the system fan and lift the system fan to remove from the computer.

Installing the System Fan

1. Place the system fan on the computer.
2. Connect the system-fan cable to the system board.
3. Connect the I/O board cable to its connector.
4. Tighten the screws to secure the system fan on the computer.
5. Install:
   a. palmrest
   b. display hinge
   c. memory
   d. hard drive
   e. optical drive
6. 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. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. optical drive
   h. hard drive
   i. WLAN card
   j. display hinge
   k. palmrest
   l. system fan
   m. ExpressCard cage
3. Disconnect:
   a. coin-cell battery cable
   b. speaker cable
4. Flip the computer and disconnect:
   a. power cable
   b. status-light board cable
   c. I/O board cable
5. Perform the following steps:
   a. Remove the screws that secure the display-cable connector and remove it from the system board.
   b. Disconnect the display cables and power-connector cable from the system board.

6. Remove the screws that secure the system board and lift the system board to remove from the computer.
Installing the System Board

1. Align the system board into its original position on the computer.
2. Replace and tighten the screws to secure the system board to the computer.
3. Connect the following cables:
   a. I/O board cable
   b. power-connector cable
   c. status-light board cable
4. Turn over the computer and connect the coin-cell battery cable and speaker cable to the system board.
5. Install:
   a. ExpressCard cage
   b. system fan
   c. palmrest
   d. display hinge
   e. WLAN card
   f. hard drive
   g. optical drive
   h. memory
   i. keyboard
   j. keyboard trim
   k. base cover
   l. battery
   m. SD card
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. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. optical drive
   h. hard drive
   i. WLAN card
   j. display hinge
   k. palmrest
   l. system fan
   m. ExpressCard cage
   n. system board
3. Perform the following steps:
   a. Remove the screws that secure the heatsink in place.
   b. Lift to remove the heatsink from the computer.

Installing the Heatsink

1. Place the heatsink on the system board.
2. Tighten the screws to secure the heatsink to the computer.
3. Install:
   a. system board
   b. ExpressCard cage
c. system fan
d. palmrest
e. display hinge
f. WLAN card
g. hard drive
h. optical drive
i. memory
j. keyboard
k. keyboard trim
l. base cover
m. battery
n. SD card

4. Follow the procedures in After Working Inside Your Computer.

Removing the I/O Board (Left)

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. SD card
   b. battery
c. base cover
d. keyboard trim
e. keyboard
f. memory
g. optical drive
h. hard drive
i. WLAN card
j. display hinge
k. palmrest
l. system fan
m. ExpressCard cage
n. system board

3. Perform the following steps:
   a. Remove the screw that secures the left I/O board on the computer.
   b. Lift the I/O board and remove from the computer.
Installing the I/O Board (Left)

1. Place the I/O board on the computer.
2. Tighten the screw to secure the I/O board to the computer.
3. Install:
   a. system board
   b. ExpressCard cage
   c. system fan
   d. palmrest
   e. display hinge
   f. WLAN card
   g. hard drive
   h. optical drive
   i. memory
   j. keyboard
   k. keyboard trim
   l. base cover
   m. battery
   n. SD card
4. Follow the procedures in After Working Inside Your Computer.

Removing the I/O Board (Right)

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. optical drive
   h. hard drive
   i. WLAN card
   j. display hinge
   k. palmrest
   l. system fan
   m. ExpressCard cage
   n. system board
3. Perform the following steps:
   a. Remove the screws that secure the I/O board on the computer.
   b. Lift the I/O board and remove from the computer.
Installing the I/O Board (Right)

1. Place the I/O board on the computer.
2. Tighten the screws to secure the I/O board to the computer.
3. Install:
   a. system board
   b. ExpressCard cage
   c. system fan
   d. palmrest
   e. display hinge
   f. WLAN card
   g. hard drive
   h. optical drive
   i. memory
   j. keyboard
   k. keyboard trim
   l. base cover
   m. battery
   n. SD card
4. 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. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. hard drive
   h. optical drive
   i. WLAN card
j. display hinge
k. palmrest
l. ExpressCard cage
m. system fan
n. system board

3. Perform the following steps:
   a. Remove the power-connector cable from the routing channels.
   b. Lift and remove the power connector from the computer.

Installing the Power Connector

1. Place the power connector on its place in the computer.
2. Route the power-connector cable on its routing channels.
3. Install:
   a. system board
   b. system fan
   c. ExpressCard cage
   d. palmrest
   e. display hinge
   f. WLAN card
   g. hard drive
   h. optical drive
   i. memory
   j. keyboard
   k. keyboard trim
   l. base cover
   m. battery
   n. SD card

4. Follow the procedures in After Working Inside Your Computer.

Removing the Speakers

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove:
   a. SD memory card
   b. battery
   c. base cover
d. keyboard trim  
e. keyboard  
f. memory  
g. optical drive  
h. hard drive  
i. WLAN card  
j. display hinge  
k. palmrest  
l. system fan  
m. ExpressCard cage  
n. system board  

3. Perform the following steps:  
   a. Remove the speaker cable from the routing channels.  
   b. Remove the screws that secure the speakers from the computer.  
   c. Lift and remove the speakers from the computer.  

**Installing the Speakers**  
1. Place the speakers on the computer.  
2. Secure the speaker cable to the routing channels.  
3. Tighten the screws to secure the speakers to the computer.  
4. Install:  
   a. system board  
   b. ExpressCard cage  
   c. system fan  
   d. palmrest  
   e. display hinge  
   f. WLAN card  
   g. hard drive  
   h. optical drive
i. memory
j. keyboard
k. keyboard trim
l. base cover
m. battery
n. SD card

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

**Removing the Status-Light Board**

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a. SD card
   b. battery
   c. base cover
   d. keyboard trim
   e. keyboard
   f. memory
   g. optical drive
   h. hard drive
   i. WLAN card
   j. display hinge
   k. palmrest
   l. system fan
   m. ExpressCard cage
   n. system board
   o. speakers
3. Perform the following steps:
   a. Remove the LED cover.
   b. Disconnect the status-light board cable and remove the screw that secures the status-light board.
   c. Lift and remove the status-light board from the computer.

**Installing the Status-Light Board**

1. Place the status-light board on its place on the computer.
2. Connect the status-light board cable to its connector.
3. Tighten the screw to secure the status-light board on the computer.
4. Place the LED cover on the status-light board.

5. Install:
   a. speakers
   b. system board
   c. system fan
   d. ExpressCard cage
   e. palmrest
   f. display hinge
   g. WLAN card
   h. hard drive
   i. optical drive
   j. memory
   k. keyboard
   l. keyboard trim
   m. base cover
   n. battery
   o. SD card

6. 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

<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>&lt;Enter&gt;</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>&lt;Tab&gt;</td>
<td>Moves to the next focus area.</td>
</tr>
<tr>
<td>&lt;Esc&gt;</td>
<td>Moves to the previous page till you view the main screen. Pressing &lt;Esc&gt; in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.</td>
</tr>
<tr>
<td>&lt;F1&gt;</td>
<td>Displays the System Setup help file.</td>
</tr>
</tbody>
</table>

NOTE: For the standard graphics browser only.

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

<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>System Information:</td>
<td>Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, and the Express Service Code.</td>
</tr>
<tr>
<td>Memory Information:</td>
<td>Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size.</td>
</tr>
<tr>
<td>Processor Information:</td>
<td>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>Device Information:</td>
<td>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.</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>Boot Sequence</td>
</tr>
<tr>
<td></td>
<td>Allows you to change the order in which the computer attempts to find an operating system. The options are:</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>
</tbody>
</table>

43
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated NIC</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>Parallel Port</td>
<td>Allows you to configure the parallel port on the docking station. The</td>
</tr>
<tr>
<td></td>
<td>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>Serial Port</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>SATA Operation</td>
<td>Allows you to configure the internal SATA hard-drive controller. The</td>
</tr>
<tr>
<td></td>
<td>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>Drives</td>
<td>Allows you to configure the SATA drives on board. All drives are enabled</td>
</tr>
<tr>
<td></td>
<td>by default. All drives are enabled by default.</td>
</tr>
<tr>
<td></td>
<td>The options are:</td>
</tr>
<tr>
<td></td>
<td>• SATA-0</td>
</tr>
<tr>
<td></td>
<td>• SATA-1</td>
</tr>
<tr>
<td></td>
<td>• SATA-2</td>
</tr>
</tbody>
</table>
Option | Description
--- | ---
| **SMART Reporting** | This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default.
* Enable SMART Reporting

| **USB Configuration** | This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy).
If USB port is enabled, device attached to this port is enabled and available for OS.
If USB port is disabled, the OS cannot see any device attached to this port.
* Enable Boot Support
* Enable External USB Port
* Enable USB3.0 Controller

**NOTE**: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.

| **Audio** | This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected.

| **Keyboard Illumination** | This field lets you choose the operating mode of the keyboard illumination feature.
The keyboard brightness level can be set from 25% to 100%
* Disabled.
* Level is 25%
* Level is 50%
* Level is 75%
* Level is 100%: This option is enabled by default

| **Unobtrusive Mode** | This option, when enabled, pressing Fn+B turns off all light and sound emissions in the system. To resume normal operation, press Fn+B again.
This option is Disabled by default.

| **Miscellaneous Devices** | Allows you to enable or disable the following devices:
* Enable Microphone
* Enable Camera
* Enable Express card
* Enable Hard Drive Free Fall Protection
* Enable Media Card
* Disable Media Card

**NOTE**: All devices are enabled by default.
You can also enable or disable Media Card.

Table 4. Video

<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>
</tbody>
</table>

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

Table 5. Security

<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></td>
<td><strong>NOTE:</strong> 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.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> Successful password changes take effect immediately.</td>
</tr>
<tr>
<td>System Password</td>
<td>Allows you to set, change or delete the system password.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> Successful password changes take effect immediately.</td>
</tr>
<tr>
<td>Internal HDD-1 Password</td>
<td>Allows you to set or change the system’s internal hard-disk drive.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> Successful password changes take effect immediately.</td>
</tr>
<tr>
<td>Default Setting: Not set</td>
<td></td>
</tr>
<tr>
<td>Strong Password</td>
<td>Allows you to enforce the option to always set strong passwords.</td>
</tr>
<tr>
<td>Default Setting: Enable Strong Password is not selected.</td>
<td></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></td>
<td>• Disabled</td>
</tr>
<tr>
<td></td>
<td>• Reboot bypass</td>
</tr>
</tbody>
</table>
## Table 6. Secure Boot

<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 Secure Boot Feature.</td>
</tr>
<tr>
<td></td>
<td>• Disable (default)</td>
</tr>
</tbody>
</table>
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.

### Table 7. Performance

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi Core Support</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>- All</td>
</tr>
<tr>
<td></td>
<td>- 1</td>
</tr>
<tr>
<td></td>
<td>- 2</td>
</tr>
<tr>
<td>Default Setting:</td>
<td>All</td>
</tr>
<tr>
<td>Intel SpeedStep</td>
<td>Allows you to enable or disable the Intel SpeedStep feature. Default Setting: Enable Intel SpeedStep</td>
</tr>
<tr>
<td>C States Control</td>
<td>Allows you to enable or disable the additional processor sleep states. Default Setting: The option C states is enabled.</td>
</tr>
<tr>
<td>Intel TurboBoost</td>
<td>Allows you to enable or disable the Intel TurboBoost mode of the processor. Default Setting: Enable Intel TurboBoost</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hyper-Thread Control</td>
<td>Allows you to enable or disable the HyperThreading in the processor.</td>
</tr>
<tr>
<td></td>
<td>Default Setting: Enabled</td>
</tr>
<tr>
<td>Rapid Start Technology</td>
<td>This option might improve the battery life by automatically putting the</td>
</tr>
<tr>
<td></td>
<td>computer in to a low power state during Sleep, after a user-specified</td>
</tr>
<tr>
<td></td>
<td>amount of time.</td>
</tr>
<tr>
<td></td>
<td>Default Setting: Disabled</td>
</tr>
</tbody>
</table>

**Table 8. Power Management**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Behavior</td>
<td>Allows you to enable or disable the computer from turning on automatically</td>
</tr>
<tr>
<td></td>
<td>when an AC adapter is connected.</td>
</tr>
<tr>
<td></td>
<td>Default Setting: Wake on AC is not selected.</td>
</tr>
<tr>
<td>Auto On Time</td>
<td>Allows you to set the time at which the computer must turn on automatically</td>
</tr>
<tr>
<td></td>
<td>The options are:</td>
</tr>
<tr>
<td></td>
<td>• Disabled (default)</td>
</tr>
<tr>
<td></td>
<td>• Every Day</td>
</tr>
<tr>
<td></td>
<td>• Weekdays</td>
</tr>
<tr>
<td></td>
<td>• Select Days</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</td>
</tr>
<tr>
<td></td>
<td>connected. If the AC power adapter is removed during Standby, the system</td>
</tr>
<tr>
<td></td>
<td>setup will remove power from all of the USB ports to conserve battery power.</td>
</tr>
<tr>
<td></td>
<td>• Enable USB Wake Support</td>
</tr>
<tr>
<td></td>
<td>• DEnable USB Wake Support is not selected</td>
</tr>
<tr>
<td>Wireless Radio Control</td>
<td>Allows you to enable or disable the feature that automatically switches</td>
</tr>
<tr>
<td></td>
<td>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>• Control WLAN radio or Control WWAN radio is not selected (default)</td>
</tr>
<tr>
<td>Wake on LAN/WLAN</td>
<td>Allows you to enable or disable the feature that powers on the computer</td>
</tr>
<tr>
<td></td>
<td>from the Off state when triggered by a LAN signal.</td>
</tr>
<tr>
<td></td>
<td>• Disabled: This option is enabled by default</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>• LAN with PXE Boot</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Block Sleep</td>
<td>This option lets you block entering to sleep (S3 state) in Operating System environment. Block Sleep (S3 state) - This option is disabled by default.</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>Advanced Battery Charge Configuration</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. Disabled (default)</td>
</tr>
<tr>
<td>Primary Battery Charge Configuration</td>
<td>Allows you to select the charging mode for the battery. The options are: • Adaptive • Standard • ExpressCharge: This option is enabled by default. • Primarily AC use • Custom If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</td>
</tr>
<tr>
<td>Battery Slice Charge Configuration</td>
<td>Allows you to select the type of charge for the battery. The options are: • Standard Charge • Express Charge : This option is enabled by default.</td>
</tr>
<tr>
<td>Intel Smart Connect Technology</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Table 9. POST Behavior**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter Warnings</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>Keypad (Embedded)</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>Option</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fn Key Only</td>
<td>This option is enabled by default.</td>
</tr>
<tr>
<td>By Numlock</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** The Keyboard (Embedded) option is not supported in Latitude E5540

Mouse/Touchpad

Allows you to define how the system handles mouse and touchpad input. The options are:
- Serial Mouse
- PS2 Mouse
- Touchpad/PS-2 Mouse: This option is enabled by default.

Numlock Enable

Allows you to enable the Numlock option when the computer boots.
Enable Network (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:
- 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)
- 10 seconds

**Table 10. Virtualization Support**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtualization</td>
<td>Allows you to enable or disable the Intel Virtualization Technology.</td>
</tr>
<tr>
<td></td>
<td>Enable Intel Virtualization Technology (default)</td>
</tr>
<tr>
<td>VT for Direct I/O</td>
<td>Enables or disables the Virtual Machine Monitor (VMM) from utilizing the</td>
</tr>
<tr>
<td></td>
<td>additional hardware capabilities provided by Intel® Virtualization technology for direct I/O.</td>
</tr>
<tr>
<td></td>
<td>Enable VT for Direct I/O — enabled by default.</td>
</tr>
</tbody>
</table>
### 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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Switch</td>
<td>Allows to set the wireless devices that can be controlled by the wireless switch. The options are:</td>
</tr>
<tr>
<td></td>
<td>Latitude E5440</td>
</tr>
<tr>
<td></td>
<td>• WWAN</td>
</tr>
<tr>
<td></td>
<td>• WLAN</td>
</tr>
<tr>
<td></td>
<td>• WiGig</td>
</tr>
<tr>
<td></td>
<td>• Bluetooth</td>
</tr>
<tr>
<td></td>
<td>All the options are enabled by default.</td>
</tr>
<tr>
<td></td>
<td>Latitude E5540</td>
</tr>
<tr>
<td></td>
<td>• WLAN</td>
</tr>
<tr>
<td></td>
<td>• WiGig</td>
</tr>
<tr>
<td></td>
<td>• Bluetooth</td>
</tr>
<tr>
<td></td>
<td>All the options are enabled by default.</td>
</tr>
<tr>
<td>Wireless Device Enable</td>
<td>Allows you to enable or disable the internal wireless devices.</td>
</tr>
<tr>
<td>Latitude E5440</td>
<td>• WWAN</td>
</tr>
<tr>
<td></td>
<td>• WLAN / WiGig</td>
</tr>
<tr>
<td></td>
<td>• Bluetooth</td>
</tr>
<tr>
<td></td>
<td>All the options are enabled by default.</td>
</tr>
<tr>
<td>Latitude E5540</td>
<td>• WLAN / WiGig</td>
</tr>
<tr>
<td></td>
<td>• Bluetooth</td>
</tr>
<tr>
<td></td>
<td>All the options are enabled by default.</td>
</tr>
</tbody>
</table>

---

### Table 12. Maintenance

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Tag</td>
<td>Displays the Service Tag of your computer.</td>
</tr>
<tr>
<td>Asset Tag</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>
</tbody>
</table>
### Table 13. System Logs

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS Events</td>
<td>Allows you to view and clear the System Setup (BIOS) POST events.</td>
</tr>
<tr>
<td>Thermal Events</td>
<td>Allows you to view and clear the System Setup (Thermal) events.</td>
</tr>
<tr>
<td>Power Events</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. Re-start the computer.
2. Go to [dell.com/support](http://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.

<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 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, (‘), (+), (-), (/), (;), (‘), (‘).
   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>. 

54
**NOTE:** If you change the System and/or Setup password, re-enter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Power" /></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><img src="image" alt="Battery Charge" /></td>
<td>Turns on steadily or blinks to indicate battery charge status.</td>
</tr>
<tr>
<td><img src="image" alt="Wireless Networking" /></td>
<td>Turns on when wireless networking is enabled.</td>
</tr>
</tbody>
</table>

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

Table 14. System Information

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAM bus width</td>
<td>64-bit</td>
</tr>
<tr>
<td>Flash EPROM</td>
<td>SPI 32Mbits + 64Mbits</td>
</tr>
<tr>
<td>PCIe Gen1 bus</td>
<td>100 MHz</td>
</tr>
<tr>
<td>External Bus Frequency</td>
<td>DMI (5GT/s)</td>
</tr>
</tbody>
</table>

Table 15. Processor

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
</table>
| Types   | • Intel Core i3 series  
|         | • Intel Core i5 series  
|         | • Intel Core i7 series  |
| L3 cache| up to 8 MB    |

Table 16. 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-module capacity per slot</td>
<td>4 GB, 8 GB</td>
</tr>
<tr>
<td>Memory type</td>
<td>DDR3 SDRAM 1600 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 17. mSATA Support

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>with Express Card I/O and Discrete Graphic Configuration</td>
<td>No mSATA support on both Latitude E5440 and Latitude E5540.</td>
</tr>
<tr>
<td>for other configurations</td>
<td>mSATA is supported on both Latitude E5440 and Latitude E5540.</td>
</tr>
</tbody>
</table>
Table 18. 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 ALC3226</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/external speakers connector</td>
</tr>
<tr>
<td>Speakers</td>
<td>two</td>
</tr>
<tr>
<td>Internal speaker amplifier</td>
<td>1W (RMS) per channel</td>
</tr>
<tr>
<td>Volume controls</td>
<td>hot keys for volume control and mute control</td>
</tr>
</tbody>
</table>

Table 19. 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 4600</td>
</tr>
</tbody>
</table>

Table 20. 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)</td>
</tr>
<tr>
<td></td>
<td>• Wireless wide area network (WWAN) (E5440 only)</td>
</tr>
</tbody>
</table>

Table 21. Ports and Connectors

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio (optional)</td>
<td>one microphone/stereo headphone/speakers connector</td>
</tr>
<tr>
<td>Video</td>
<td>• one 15-pin VGA connector</td>
</tr>
<tr>
<td></td>
<td>• 19-pin HDMI connector</td>
</tr>
<tr>
<td>Network adapter</td>
<td>one RJ-45 connector</td>
</tr>
</tbody>
</table>
USB 2.0
- one 4-pin USB 2.0–compliant connector (E5440)
- two 4-pin USB 2.0–compliant connectors (E5540)

**NOTE:** The USB 2.0 connector at the back of the Latitude E5540 computer, gets deactivated, when the Latitude E5540 computer is connected to the docking station.

USB 3.0
two USB 3.0–compliant connectors

Memory card reader
one 8-in-1 memory card reader

Docking port
one

Subscriber Identity Module (SIM) port
one (E5440 only)

### Table 22. Display

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
</tr>
<tr>
<td>Latitude E5440</td>
<td>HD(1366x768), WLED</td>
</tr>
<tr>
<td></td>
<td>HD+(1600 x 900)</td>
</tr>
<tr>
<td>Latitude E5540</td>
<td>HD(1366x768), WLED</td>
</tr>
<tr>
<td></td>
<td>FHD (1920 x 1080)</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td></td>
</tr>
<tr>
<td>Latitude E5440</td>
<td>14.0&quot;</td>
</tr>
<tr>
<td>Latitude E5540</td>
<td>15.6&quot;</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td></td>
</tr>
<tr>
<td>Latitude E5440:</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>192.5 mm (7.57 inches)</td>
</tr>
<tr>
<td>Width</td>
<td>324 mm (12.75 inches)</td>
</tr>
<tr>
<td>Diagonal</td>
<td>355.60 mm (14.00 inches)</td>
</tr>
<tr>
<td>Active area (X/Y)</td>
<td>309.40 mm x 173.95 mm</td>
</tr>
<tr>
<td>Maximum resolution</td>
<td>1366 x 768 pixels</td>
</tr>
<tr>
<td></td>
<td>1600 x 900 pixels</td>
</tr>
<tr>
<td>Maximum Brightness</td>
<td>200 nits</td>
</tr>
<tr>
<td>Latitude E5540:</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>210 mm (8.26 inches)</td>
</tr>
<tr>
<td>Width</td>
<td>360 mm (14.17 inches)</td>
</tr>
<tr>
<td>Diagonal</td>
<td>394.24 mm (15.60 inches)</td>
</tr>
</tbody>
</table>
### Feature Specification

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active area (X/Y)</td>
<td>344.23 mm x 193.54 mm</td>
</tr>
<tr>
<td>Maximum resolution</td>
<td>• 1366 x 768 pixels</td>
</tr>
<tr>
<td></td>
<td>• 1920 x 1080 pixels</td>
</tr>
<tr>
<td>Maximum Brightness</td>
<td>220 nits for HD, 300 nits for FHD</td>
</tr>
<tr>
<td>Operating angle</td>
<td>0° (closed) to 135°</td>
</tr>
<tr>
<td>Refresh rate</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Minimum Viewing angles:</td>
<td></td>
</tr>
<tr>
<td>Horizontal</td>
<td>• +/- 40° for HD</td>
</tr>
<tr>
<td></td>
<td>• +/- 60° for FHD</td>
</tr>
<tr>
<td>Vertical</td>
<td>• +10°/-30° for HD</td>
</tr>
<tr>
<td></td>
<td>• +/-50° for FHD</td>
</tr>
</tbody>
</table>

Pixel pitch:

- Latitude E5440: 0.2265 mm x 0.2265 mm
- Latitude E5540: 0.2520 mm x 0.2520 mm for HD, 0.1790 x 0.1790 for FHD

### Table 23. Keyboard

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of keys</td>
<td>United States: 86 keys, United Kingdom: 87 keys, Brazil: 87 keys, and Japan: 90 keys</td>
</tr>
<tr>
<td>Layout</td>
<td>QWERTY/AZERTY/Kanji</td>
</tr>
</tbody>
</table>

### Table 24. Touchpad

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Area:</td>
<td></td>
</tr>
<tr>
<td>X-axis</td>
<td>80.00 mm (3.15 inches)</td>
</tr>
<tr>
<td>Y-axis</td>
<td>45.00 mm (1.77 inches)</td>
</tr>
</tbody>
</table>

### Table 25. Battery

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>4, 6 or 9-cell &quot;smart&quot; lithium ion</td>
</tr>
<tr>
<td>Dimensions:</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td></td>
</tr>
<tr>
<td>4-, 6-, and 9-cell</td>
<td>20.00 mm (0.79 inch)</td>
</tr>
<tr>
<td>Width</td>
<td></td>
</tr>
</tbody>
</table>
### Feature Specification

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>4- and 6-cell</td>
<td>208.00 mm (8.18 inches)</td>
</tr>
<tr>
<td>9-cell</td>
<td>214.00 mm (8.43 inches)</td>
</tr>
<tr>
<td><strong>Depth</strong></td>
<td></td>
</tr>
<tr>
<td>4- and 6-cell</td>
<td>48.08 mm (1.89 inches)</td>
</tr>
<tr>
<td>9-cell</td>
<td>71.79 mm (2.83 inches)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
</tr>
<tr>
<td>4-cell</td>
<td>240.00 g (0.53 lb)</td>
</tr>
<tr>
<td>6-cell</td>
<td>344.73 g (0.76 lb)</td>
</tr>
<tr>
<td>9-cell</td>
<td>508.20 g (1.12 lb)</td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td></td>
</tr>
<tr>
<td>4-cell</td>
<td>14.8 VDC</td>
</tr>
<tr>
<td>6- and 9-cell</td>
<td>11.1 VDC</td>
</tr>
<tr>
<td><strong>Temperature range:</strong></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0 °C to 50 °C (32 °F to 122 °F)</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>−40 °C to 85 °C (−40 °F to 185 °F)</td>
</tr>
</tbody>
</table>

**NOTE:** The battery pack is capable of safely withstanding the above storage temperatures with 100% charge.

**NOTE:** The battery pack is also capable of withstanding storage temperatures from −20 °C to +60 °C with no degradation in its performance.

### Coin-cell battery

3 V CR2032 lithium coin cell

### Table 26. AC Adapter

<table>
<thead>
<tr>
<th>Feature</th>
<th>Latitude E5440</th>
<th>Latitude E5540</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>65 W</td>
<td>90 W adapter</td>
</tr>
<tr>
<td>Input voltage</td>
<td>100 VAC to 240 VAC</td>
<td>100 VAC to 240 VAC</td>
</tr>
<tr>
<td>Input current (maximum)</td>
<td>1.7 A</td>
<td>1.5 A</td>
</tr>
<tr>
<td>Input frequency</td>
<td>50 Hz to 60 Hz</td>
<td>50 Hz to 60 Hz</td>
</tr>
<tr>
<td>Output power</td>
<td>65 W</td>
<td>90 W</td>
</tr>
<tr>
<td>Output current</td>
<td>3.34 A (continuous)</td>
<td>4.62 A (continuous)</td>
</tr>
<tr>
<td>Rated output voltage</td>
<td>19.5 +/− 1.0 VDC</td>
<td>19.5 +/− 1.0 VDC</td>
</tr>
<tr>
<td><strong>Temperature range:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0 °C to 40 °C (32 °F to 104 °F)</td>
<td>0 °C to 40 °C (32 °F to 104 °F)</td>
</tr>
</tbody>
</table>
Table 27. Physical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Latitude E5440</th>
<th>Latitude E5540</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>Touch</td>
<td>Non-touch</td>
</tr>
<tr>
<td></td>
<td>Front - 27.70 mm (1.09 inches)</td>
<td>Front - 25.20 mm (0.99 inch)</td>
</tr>
<tr>
<td></td>
<td>Back - 32.20 mm (1.27 inches)</td>
<td>Back - 28.65 mm (1.13 inches)</td>
</tr>
<tr>
<td>Width</td>
<td>338.00 mm (13.31 inches)</td>
<td>379.00 mm (14.92 inches)</td>
</tr>
<tr>
<td>Depth</td>
<td>235.00 mm (9.25 inches)</td>
<td>250.50 mm (9.86 inches)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.99 kg (4.40 lb)</td>
<td>2.42 kg (5.35 lb)</td>
</tr>
</tbody>
</table>

Table 28. Environmental

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0 °C to 35 °C (32 °F to 95 °F)</td>
</tr>
<tr>
<td>Storage</td>
<td>−40 °C to 65 °C (−40 °F to 149 °F)</td>
</tr>
<tr>
<td>Relative humidity (maximum):</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>Altitude (maximum):</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>−15.24 m to 3048 (−50 ft to 10,000 ft)</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>Airborne contaminant level</td>
<td>G1 as defined by ISA-71.04–1985</td>
</tr>
</tbody>
</table>
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. Go to [dell.com/support](http://dell.com/support).
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.