Notes, cautions, and warnings

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

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

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.
Contents

Before working inside your computer.......................... 11
  Before you begin ............................................................................................................. 11
  Safety instructions ......................................................................................................... 11
  Recommended tools ......................................................................................................... 12
  Screw list .......................................................................................................................... 13

After working inside your computer.............................. 14

Technical overview....................................................... 15
  Inside view of your computer .......................................................................................... 15
  System-board components ............................................................................................... 17

Removing the stand ..................................................... 19
  Easel stand ....................................................................................................................... 19
  Pedestal stand .................................................................................................................. 21
  Procedure to remove stand riser from stand base ......................................................... 22

Replacing the stand ....................................................... 25
  Easel stand ....................................................................................................................... 25
  Pedestal stand .................................................................................................................. 25
  Procedure to replace stand riser to stand base ......................................................... 25

Removing the back cover .............................................. 26
  Prerequisites .................................................................................................................... 26
  Procedure ......................................................................................................................... 26
Replacing the back cover................................. 28
  Procedure....................................................... 28
  Post-requisites................................................ 28

Replacing the optical drive............................. 29
  Prerequisites.................................................... 29
  Procedure....................................................... 29

Removing the optical drive............................ 32
  Procedure....................................................... 32
  Post-requisites................................................ 32

Removing the hard drive............................... 33
  Prerequisites.................................................... 33
  Procedure....................................................... 33

Replacing the hard drive............................... 36
  Procedure....................................................... 36
  Post-requisites................................................ 36

Removing the system-board shield.................. 37
  Prerequisites.................................................... 37
  Procedure....................................................... 37

Replacing the system-board shield.................. 39
  Procedure....................................................... 39
  Post-requisites................................................ 39

Removing the memory module........................ 40
  Prerequisites.................................................... 40
  Procedure....................................................... 40
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacing the memory module</td>
<td>42</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>44</td>
</tr>
<tr>
<td>Procedure</td>
<td>42</td>
</tr>
<tr>
<td>Removing the wireless card</td>
<td>45</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>45</td>
</tr>
<tr>
<td>Procedure</td>
<td>45</td>
</tr>
<tr>
<td>Replacing the wireless card</td>
<td>47</td>
</tr>
<tr>
<td>Procedure</td>
<td>47</td>
</tr>
<tr>
<td>Post-requisites</td>
<td>49</td>
</tr>
<tr>
<td>Removing the control-buttons board</td>
<td>50</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>50</td>
</tr>
<tr>
<td>Procedure</td>
<td>50</td>
</tr>
<tr>
<td>Replacing the control-buttons board</td>
<td>52</td>
</tr>
<tr>
<td>Procedure</td>
<td>52</td>
</tr>
<tr>
<td>Post-requisites</td>
<td>52</td>
</tr>
<tr>
<td>Removing the microphone</td>
<td>53</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>53</td>
</tr>
<tr>
<td>Procedure</td>
<td>53</td>
</tr>
<tr>
<td>Replacing the microphone</td>
<td>55</td>
</tr>
<tr>
<td>Procedure</td>
<td>55</td>
</tr>
<tr>
<td>Post-requisites</td>
<td>55</td>
</tr>
<tr>
<td>Removing the camera</td>
<td>56</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>56</td>
</tr>
<tr>
<td>Procedure</td>
<td>56</td>
</tr>
</tbody>
</table>
Replacing the camera......................................................... 60
  Procedure........................................................................... 60
  Post-requisites.................................................................... 60

Removing the coin-cell battery........................................... 61
  Prerequisites....................................................................... 61
  Procedure............................................................................ 61

Replacing the coin-cell battery........................................... 63
  Procedure............................................................................ 63
  Post-requisites.................................................................... 63

Removing the fan................................................................. 64
  Prerequisites....................................................................... 64
  Procedure............................................................................ 64

Replacing the fan................................................................. 66
  Procedure............................................................................ 66
  Post-requisites.................................................................... 66

Removing the heat sink....................................................... 67
  Prerequisites....................................................................... 67
  Procedure............................................................................ 67

Replacing the heat sink....................................................... 69
  Procedure............................................................................ 69
  Post-requisites.................................................................... 69

Removing the speakers....................................................... 70
  Prerequisites....................................................................... 70
  Procedure............................................................................ 70
Replacing the speakers

Procedure
Post-requisites

Removing the system board

Prerequisites
Procedure

Replacing the system board

Procedure
Post-requisites

Removing the display assembly

Prerequisites
Procedure

Replacing the display assembly

Procedure
Post-requisites

Removing the display cable

Prerequisites
Procedure

Replacing the display cable

Procedure
Post-requisites

Removing the rubber feet

Prerequisites
Procedure
Replacing the rubber feet ........................................ 89
Procedure ........................................................................ 89
Post-requisites ................................................................ 89

BIOS setup program ...................................................... 90
BIOS overview .................................................................. 90
Entering BIOS setup program ............................................. 90
Clearing forgotten passwords ............................................. 91
  Prerequisites ................................................................ 91
  Procedure .................................................................... 91
  Post-requisites ............................................................. 92
Clearing CMOS settings ................................................... 92
  Prerequisites ................................................................ 93
  Procedure .................................................................... 93
  Post-requisites ............................................................. 94

Flashing the BIOS .......................................................... 95

Technology and components ............................................ 96
Audio ............................................................................. 96
  Downloading the audio driver ....................................... 96
  Identifying the audio controller .................................... 96
  Changing the audio settings .......................................... 97
Camera ............................................................................ 97
  Identifying the webcam in device manager .................... 97
  Starting the camera application .................................... 97
  Getting the Dell Webcam Central.................................. 98
Display ............................................................................. 98
  Adjusting the brightness ............................................. 98
  Changing the screen resolution ..................................... 99
Cleaning the display................................................................. 100
HDMI.................................................................................. 100
Graphics............................................................................. 100
  Downloading the graphics driver......................................... 100
  Identifying the display adapter........................................... 101
  Changing the display and Graphics Control Panel.............. 101
Intel WiDi........................................................................... 102
  Downloading the WiDi application..................................... 103
  Setting up the wireless display........................................ 103
USB................................................................................. 103
  Downloading the USB 3.0 driver....................................... 104
  Enabling or disabling the USB in BIOS setup program...... 104
  Fixing a no-boot issue caused by USB emulation............. 105
Wi-Fi.................................................................................. 105
  Turning Wi-Fi on or off................................................... 105
  Downloading the Wi-Fi driver.......................................... 105
  Configuring Wi-Fi.......................................................... 106
Bluetooth........................................................................... 106
  Turning Bluetooth on or off............................................ 107
  Pairing the Bluetooth-enabled devices............................ 107
  Removing the Bluetooth device...................................... 108
  Transferring files between devices using Bluetooth......... 109
Hard Drive........................................................................ 109
  Identifying the hard drive............................................. 109
  Identifying the hard drive in BIOS setup program........... 110
Media-card reader............................................................... 110
  Downloading the media-card reader driver...................... 110
  Browsing a media card.................................................. 111
Power adapter....................................................................... 111
Chipsets............................................................................. 111
  Downloading the chipset driver...................................... 111
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying the chipset</td>
<td>112</td>
</tr>
<tr>
<td>Memory</td>
<td>113</td>
</tr>
<tr>
<td>Checking the system memory in Windows</td>
<td>113</td>
</tr>
<tr>
<td>Verifying the system memory in BIOS setup program</td>
<td>113</td>
</tr>
<tr>
<td>Testing memory using ePSA</td>
<td>113</td>
</tr>
<tr>
<td>Processors</td>
<td>113</td>
</tr>
<tr>
<td>Checking the processor usage in the task manager</td>
<td>114</td>
</tr>
<tr>
<td>Identifying the processors in Windows</td>
<td>114</td>
</tr>
<tr>
<td>Operating system</td>
<td>114</td>
</tr>
<tr>
<td>Service Tag location</td>
<td>115</td>
</tr>
<tr>
<td>Device drivers</td>
<td>115</td>
</tr>
<tr>
<td>Intel Dynamic Platform and Thermal Framework</td>
<td>115</td>
</tr>
<tr>
<td>Intel Chipset Software Installation Utility</td>
<td>115</td>
</tr>
<tr>
<td>Graphics</td>
<td>116</td>
</tr>
<tr>
<td>Intel Serial IO Driver</td>
<td>117</td>
</tr>
<tr>
<td>Intel Trusted Execution Engine Interface</td>
<td>118</td>
</tr>
<tr>
<td>Intel Virtual Button driver</td>
<td>119</td>
</tr>
<tr>
<td>Intel Wireless 3165 Wi-Fi and Bluetooth drivers</td>
<td>120</td>
</tr>
<tr>
<td>BIOS overview</td>
<td>121</td>
</tr>
<tr>
<td>Entering the BIOS setup program</td>
<td>121</td>
</tr>
<tr>
<td>Boot menu</td>
<td>121</td>
</tr>
<tr>
<td>Boot menu enhancements</td>
<td>121</td>
</tr>
<tr>
<td>Timing key sequences</td>
<td>122</td>
</tr>
</tbody>
</table>

**System diagnostic lights** ........................................... 123

**Getting help and contacting Dell** .................................. 125

Self-help resources ................................................................ 125
Contacting Dell ..................................................................... 126
Before working inside your computer

NOTE: The images in this document may differ from your computer depending on the configuration you ordered.

Before you begin

1. Save and close all open files and exit all open applications.
2. Shut down your computer.
   The shut-down instruction varies depending on the operating system installed on your computer.
   - Windows 10: Click Start → Power → Shut down.
   - Windows 8.1: On the Start screen, click the power icon → Shut down.
   - Windows 7: Click Start → Shut down.

   NOTE: If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
5. Remove any media card and optical disc from your computer, if applicable.
6. After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

   CAUTION: Place the computer on a flat, soft, and clean surface to avoid scratches on the display.

7. Place the computer face down.

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

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 electrical outlet.

CAUTION: To avoid damaging the computer, ensure that the work surface is flat and clean.

CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching pins and contacts.

CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that shipped with the product or at www.dell.com/regulatory_compliance.

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.

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 or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the ports and connectors are correctly oriented and aligned.

CAUTION: Press and eject any installed card from the media-card reader.

**Recommended tools**

The procedures in this document may require the following tools:

- Phillips screwdriver
- Plastic scribe
# Screw list

<table>
<thead>
<tr>
<th>Component</th>
<th>Secured to</th>
<th>Screw type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB Bracket</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>4</td>
</tr>
<tr>
<td>Main Board</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>4</td>
</tr>
<tr>
<td>Fan</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>2</td>
</tr>
<tr>
<td>Stand Plate</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>4</td>
</tr>
<tr>
<td>HDD Bracket</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>1</td>
</tr>
<tr>
<td>ODD Bracket</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>1</td>
</tr>
<tr>
<td>HDD</td>
<td>HDD Bracket</td>
<td>M3X5</td>
<td>3</td>
</tr>
<tr>
<td>Main Bracket</td>
<td>Middle Frame</td>
<td>M3X5</td>
<td>15</td>
</tr>
<tr>
<td>Main Bracket</td>
<td>Panel Bracket</td>
<td>M3X5</td>
<td>4</td>
</tr>
<tr>
<td>Thermal Module</td>
<td>Main Bracket</td>
<td>M3X5</td>
<td>1</td>
</tr>
<tr>
<td>Foot Bracket</td>
<td>Middle Frame</td>
<td>M3X5</td>
<td>4</td>
</tr>
<tr>
<td>Easel Stand</td>
<td>Stand Plate</td>
<td>M4X8</td>
<td>2</td>
</tr>
<tr>
<td>Pedestal Stand</td>
<td>Stand Plate</td>
<td>M4X8</td>
<td>4</td>
</tr>
<tr>
<td>Panel Bracket</td>
<td>Panel</td>
<td>M3X3</td>
<td>4</td>
</tr>
<tr>
<td>ODD Bracket</td>
<td>ODD</td>
<td>M2X2.5</td>
<td>2</td>
</tr>
<tr>
<td>NGFF</td>
<td>Main Board</td>
<td>M2X2.5</td>
<td>1</td>
</tr>
<tr>
<td>DUMMY ODD</td>
<td>BACL COVER</td>
<td>M3X6(TAPPING SCREW)</td>
<td>2</td>
</tr>
</tbody>
</table>
After working inside your computer

⚠️ CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.
Technical overview

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Inside view of your computer

1 control-buttons board
2 hard-drive assembly
3 optical-drive assembly
4 display-assembly base
5 fan
6 camera module
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>microphone board</td>
</tr>
<tr>
<td>9</td>
<td>wireless card</td>
</tr>
<tr>
<td>11</td>
<td>system board</td>
</tr>
<tr>
<td>13</td>
<td>speakers (2)</td>
</tr>
<tr>
<td>8</td>
<td>heat sink</td>
</tr>
<tr>
<td>10</td>
<td>memory module</td>
</tr>
<tr>
<td>12</td>
<td>coin-cell battery</td>
</tr>
<tr>
<td>14</td>
<td>VESA-mount bracket</td>
</tr>
</tbody>
</table>
System-board components

1. Wireless-card slot (NGFF_WIFI)
2. Memory-module slots (2)
3. Camera-cable connector (WEB CAM)
4. CMOS clear jumper (RTC RST)
5. Password clear jumper (PSWD)
6. Coin-cell battery
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>speaker-cable connector (SPEAKER)</td>
</tr>
<tr>
<td>8</td>
<td>touch-screen board cable connector (TOUCH)</td>
</tr>
<tr>
<td>9</td>
<td>control-buttons board cable connector</td>
</tr>
<tr>
<td>10</td>
<td>display-panel power cable connector (PWRCN1)</td>
</tr>
<tr>
<td>11</td>
<td>display-cable connector</td>
</tr>
<tr>
<td>12</td>
<td>hard-drive data cable connector (SATA HDD)</td>
</tr>
<tr>
<td>13</td>
<td>optical-drive cable connector (SATA ODD)</td>
</tr>
<tr>
<td>14</td>
<td>hard-drive and optical-drive power cable connector (SATAP1)</td>
</tr>
<tr>
<td>15</td>
<td>fan-cable connector (FAN_CPU)</td>
</tr>
</tbody>
</table>
Removing the stand

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Easel stand

1. Using a plastic scribe, pry the stand cover off the back cover.
2. Slide and remove the stand cover from the back cover.

3. Close the stand and remove the screws that secure the stand to the back cover.
4 Slide and remove the stand from the back cover.

1 screws (2)  
2 easel stand  
3 back cover
Pedestal stand

1 Using a plastic scribe, pry the stand cover off the back cover.

2 Remove the screws that secure the stand bracket to the back cover.
3 Lift the handle and slide it out from the back cover.

Procedure to remove stand riser from stand base

1 Lift the screw handle on the stand base.
2 Using the screw handle, loosen the captive thumbscrew that secures the stand base to the stand riser.

1 screw handle
2 captive thumbscrew
3 stand base
3  Slide the stand base off the stand riser.
**Replacing the stand**

⚠️ **WARNING**: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in *Before working inside your computer*. After working inside your computer, follow the instructions in *After working inside your computer*. For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory_compliance](http://www.dell.com/regulatory_compliance).

**Easel stand**

1. Insert the tabs on the stand bracket into the slots on the back cover.
2. Align the screw holes on the stand with the screw holes on the back cover.
3. Replace the screws that secure the stand to the back cover.
4. Replace the stand cover.

**Pedestal stand**

1. Insert the tabs on the stand bracket into the slots on the back cover.
2. Align the screw holes on the stand with the screw holes on the back cover.
3. Replace the screws that secure the stand bracket to the back cover.
4. Replace the stand cover.

**Procedure to replace stand riser to stand base**

1. Slide the stand base into the slot on the stand riser.
2. Tighten the captive thumbscrew and fold the screw handle on the stand base.
Removing the back cover

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

Remove the stand.

Procedure

⚠️ CAUTION: Do not remove the computer cover unless you need to install or replace internal components on your computer.

1. Using your thumb, press the slot on the back cover.
2. Using your fingertips, pry and release the tabs from the back cover.
3. Lift the back cover off the display-assembly base.

1. back cover
Replacing the back cover

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

Align the tabs on the back cover with the slots on the display-assembly base and snap the back cover into place.

⚠️ NOTE: Make sure that no cables are caught between the back cover and the display-assembly base.

Post-requisites

Replace the stand.
Replacing the optical drive

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the stand.
2. Remove the back cover.

Procedure

1. Disconnect the optical-drive cable from the optical drive.
2. Remove the screw that secures the optical-drive bracket to the display-assembly base.
3 Lift the optical-drive bracket from the display-assembly base.

4 Carefully pull the optical-drive bezel and remove it from the optical drive.

5 Remove the screws that secure the optical-drive bracket to the optical drive.
6 Remove the optical-drive bracket from the optical drive.

NOTE: Note the orientation of the optical-drive bracket so that you can replace it correctly.

1 optical-drive bezel  
2 optical drive  
3 optical-drive bracket  
4 screws (2)
Removing the optical drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Align the screw holes on the optical-drive bracket with the screw holes on the optical drive.

   NOTE: You must correctly align the optical-drive bracket to ensure that the optical drive can be properly secured to the computer. For correct orientation, see step 6 in "Removing the optical drive".

2. Replace the screws that secure the optical-drive bracket to the optical drive.

3. Carefully push the optical-drive bezel into the optical drive.

4. Place the optical-drive bracket on the display-assembly base.

5. Replace the screw that secures the optical-drive bracket to the display-assembly base.

6. Connect the optical-drive cable to the optical drive.

Post-requisites

1. Replace the back cover.

2. Replace the stand.
Removing the hard drive

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

⚠️ CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

⚠️ CAUTION: To avoid data loss, do not remove the hard drive while the computer is in sleep or on state.

Prerequisites

1. Remove the stand.
2. Remove the back cover.

Procedure

1. Disconnect the hard-drive cable from the hard drive.
2. Remove the screw that secures the hard-drive assembly to the display-assembly base.
3. Slide the hard-drive assembly until the securing tabs are released from the slots on the display-assembly base.
4 Lift the hard-drive assembly off the display-assembly base.

5 Remove the screws that secure the hard-drive bracket to the hard drive.
6 Remove the hard drive from the hard-drive bracket.

1 screws (3)  2 hard-drive bracket
3 hard drive
Replacing the hard drive

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

⚠️ CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

Procedure

1. Align the screw holes on the hard drive with the screw holes on the hard-drive bracket.
2. Replace the screws that secure the hard-drive bracket to the hard drive.
3. Align the tabs on the hard-drive assembly with the slots on the display-assembly base.
4. Slide the securing tabs on the hard-drive assembly into the slots on the display-assembly base.
5. Replace the screw that secures the hard-drive assembly to the display-assembly base.
6. Connect the hard-drive cable to the hard drive.

Post-requisites

1. Replace the back cover.
2. Replace the stand.
Removing the system-board shield

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the stand.
2. Remove the back cover.

Procedure

1. Remove the screws that secure the system-board shield to the display-assembly base.
2 Lift the system-board shield off the display-assembly base.

1 system-board shield
2 screws (4)
3 display-assembly base
Replacing the system-board shield

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**Procedure**

1. Align the slots on the system-board shield with the ports on the system board and place the system-board shield on the display-assembly base.
2. Align the screw holes on the system-board shield with the screw holes on the display-assembly base.
3. Replace the screws that secure the system-board shield to the display-assembly base.

**Post-requisites**

1. Replace the back cover.
2. Replace the stand.
Removing the memory module

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**Prerequisites**

1. Remove the *stand*.
2. Remove the *back cover*.
3. Remove the *system-board shield*.

**Procedure**

1. Using your fingertips, spread apart the securing clips at each end of the memory-module slot until the memory module pops up.
2 Slide and remove the memory module from the memory-module slot.

1 memory module
2 securing clips (2)
3 memory-module slot
Replacing the memory module

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Procedure

1. Align the notch on the memory module with the tab on the memory-module slot.
2 Slide the memory module firmly into the slot at an angle and press the memory module down until it clicks into place.

**NOTE:** If you do not hear the click, remove the memory module and reinstall it.

1 memory module  
2 notch  
3 memory-module slot  
4 tab
Post-requisites

1. Replace the system-board shield.
2. Replace the back cover.
3. Replace the stand.
Removing the wireless card

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Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

1. Remove the screw that secures the wireless-card bracket and the wireless card to the system board.
2. Slide the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide the wireless card out of the wireless-card slot.

1. wireless-card bracket
2. screw
3. wireless-card slot
4. wireless card
5. antenna cables
Replacing the wireless card

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Procedure

1. Align the notch on the wireless card with the tab on the wireless-card slot.
2. Insert the wireless card into the wireless-card slot.
3. Connect the antenna cables to the wireless card.
   The following table provides the antenna-cable color scheme for the wireless card supported by your computer:

<table>
<thead>
<tr>
<th>Connectors on the wireless card</th>
<th>Antenna-cable color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main (white triangle)</td>
<td>White</td>
</tr>
<tr>
<td>Auxiliary (black triangle)</td>
<td>Black</td>
</tr>
</tbody>
</table>

4. Press down the other end of the wireless card and align the screw hole on the wireless-card bracket and wireless card with the screw hole on the system board.
Replace the screw that secures the wireless-card bracket and the wireless card to the system board.
Post-requisites

1. Replace the system-board shield.
2. Replace the back cover.
3. Replace the stand.
Removing the control-buttons board

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the stand.
2. Remove the back cover.

Procedure

1. Using a plastic scribe, push the securing clips on the control-buttons board slot.
   
   ✓ NOTE: Note the orientation of the control-buttons board so that you can replace it correctly.

2. Press the securing clips and lift the control-buttons board off the display-assembly base.
Open the latch and disconnect the control-buttons board cable from the control-buttons board.

1 control-buttons board
2 plastic scribe
3 securing clips (3)
4 control-buttons board cable
Replacing the control-buttons board

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Procedure

1. Slide the control-buttons board cable into the connector on the control-buttons board and close the latch to secure the cable.

   📂 NOTE: You must correctly align the control-buttons board to ensure that it is properly secured to the display-assembly base. For correct orientation, see step 1 in "Removing the control-buttons board".

2. Slide the control-buttons board into the slot on the display-assembly base until the securing clips lock in place.

Post-requisites

1. Replace the back cover.

2. Replace the stand.
Removing the microphone

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Prerequisites

1. Remove the **stand**.
2. Remove the **back cover**.

Procedure

1. Lift the microphone module off the display-assembly base.
2. Disconnect the microphone cable from the microphone module.
Replacing the microphone

⚠️ **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

**Procedure**

1. Connect the microphone cable to the microphone module.
2. Slide the microphone module into the slot on the display-assembly base.

**Post-requisites**

1. Replace the back cover.
2. Replace the stand.
Removing the camera

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Prerequisites

NOTE: This chapter is applicable only for systems with a touch screen display. For systems with a non-touch screen display, the microphones will be integrated on the camera assembly.

1. Remove the stand.
2. Remove the back cover.

Procedure

1. Note the routing of the camera cable and antenna cable and remove it from the routing guides using a plastic scribe.
2. Press the securing clip to release the camera frame from the tab on the display-assembly base and lift it off.
3 Turn the camera over and remove the camera cable from the tab on the back of the camera frame.

1 tab
2 camera cable
3 camera frame
4 Peel off the camera from the camera frame and lift up the camera from the frame.

1 camera frame

2 camera
Replacing the camera

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Procedure

1. Place the camera on the camera frame and secure the camera.
2. Connect the camera cable to the camera module.
3. Press the camera frame down into the slot on the display-assembly base until it snaps into place.
4. Route the camera cable and antenna cable through the routing guides on the display-assembly base.

Post-requisites

1. Replace the back cover.
2. Replace the stand.
Removing the coin-cell battery

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⚠️ CAUTION: Removing the coin-cell battery resets the BIOS setup program’s settings to default. It is recommended that you note the BIOS setup program’s settings before removing the coin-cell battery.

Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

Using a plastic scribe, gently pry the coin-cell battery out of the battery socket on the system board.
1. plastic scribe
2. coin-cell battery
3. battery socket
Replacing the coin-cell battery

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

With the positive-side facing up, insert the coin-cell battery into the battery socket and press down the battery into place.

Post-requisites

1. Replace the system-board shield.
2. Replace the back cover.
3. Replace the stand.
Removing the fan

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Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

1. Disconnect the fan cable from the system board.
2. Remove the screws that secure the fan to the display-assembly base.
3 Lift and slide the fan from under the heat sink.

1 fan
2 screws (2)
3 display-assembly base
4 fan cable
5 system board
Replacing the fan

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Slide the fan under the heat sink and place it on the display-assembly base.
2. Align the screw holes on the fan with the screw holes on the display-assembly base.
3. Replace the screws that secure the fan to the display-assembly base.
4. Connect the fan cable to the system board.

Post-requisites

1. Replace the system-board shield.
2. Replace the back cover.
3. Replace the stand.
Removing the heat sink

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⚠️ WARNING: The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

⚠️ CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

1. Remove the screw that secures the heat sink to the display-assembly base.
2. In sequential order (as indicated on the heat sink), loosen the captive screws that secure the heat sink to the system board.
3 Lift the heat sink off the system board.

1 screw
3 captive screws (3)

2 heat sink
Replacing the heat sink

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⚠️ CAUTION: Incorrect alignment of the heat sink can damage the system board and processor.

⚠️ NOTE: The original thermal grease can be reused if the original system board and heat sink are reinstalled together. If either the system board or the heat sink is replaced, use the thermal pad provided in the kit to ensure that thermal conductivity is achieved.

Procedure

1. Align the captive screws on the heat sink with the screw holes on the system board.
2. In sequential order (as indicated on the heat sink), tighten the captive screws that secure the heat sink to the system board.
3. Replace the screw that secures the heat sink to the display-assembly base.

Post-requisites

1. Replace the system-board shield.
2. Replace the back cover.
3. Replace the stand.
Removing the speakers

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

1. Disconnect the speaker cable from the system board.
2. Note the routing of the speaker cable and the position of the rubber grommets on the computer bezel.
3. Remove the speaker cable from the routing guides.
4. Remove the screw that secures the tape to the display-assembly base.
5. Peel off the tape that secures the speaker cable to the display-assembly base.
6 Lift the speakers, along with the speaker cable, off the display assembly.

1 speaker cable
2 routing guides
3 speakers (2)
4 screw
5 tape
6 rubber grommets (4)
Replacing the speakers

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Procedure

1. Using the alignment posts and rubber grommets on the display-assembly base, place the speakers on the display-assembly base.
2. Route the speaker cable through the routing guides on the display-assembly base.
3. Adhere the tape that secures the speaker cable to the display-assembly base.
4. Replace the screw that secures the tape to the display-assembly base.
5. Connect the speaker cable to the system board.

Post-requisites

1. Replace the system-board shield.
2. Replace the back cover.
3. Replace the stand.
Removing the system board

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NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

NOTE: Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.

Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.
4. Remove the heat sink.
5. Remove the memory module.
6. Remove the wireless card.

Procedure

1. Disconnect the fan cable, hard-drive and optical-drive power cable, optical-drive data cable, hard-drive data cable, microphone and camera cable, speaker cable, display-panel power cable, and touch-board cable from the system board.
2 Open the latches and disconnect the control-buttons board cable and display cable from the system board.

1 fan cable
2 hard-drive and optical-drive power cable
3 optical-drive data cable
4 hard-drive data cable
5 microphone and camera cable
6 speaker cable
7 display-panel power cable
8 control-buttons board cable
9 touch-board cable
10 display cable

NOTE: The touch-board cable is not available on the non-touch systems.

3 Remove the screws that secure the system board to the display-assembly base.
4 Lift the system board off the display-assembly base.

1 system board
2 screws (4)
3 display-assembly base
Replacing the system board

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NOTE: Your computer’s Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

**Procedure**

1. Align the screw holes on the system board with the screw holes on the display-assembly base.
2. Replace the screws that secure the system board to the display-assembly base.
3. Slide the control-buttons board cable and the display cable into their respective connectors on the system board and close the latches to secure the cables.
4. Connect the touch-board cable, display-panel power cable, speaker cable, microphone and camera cable, hard-drive data cable, optical-drive data cable, hard-drive and optical-drive power cable, and fan cable to the system board.

**Post-requisites**

1. Replace the [wireless card](#).
2. Replace the [memory module](#).
3. Replace the [heat sink](#).
4. Replace the [system-board shield](#).
5. Replace the [back cover](#).
6. Replace the [stand](#).
Removing the display assembly

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Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the optical drive.
4. Follow the procedure from step 1 to step 4 in “Removing the hard drive”.
5. Remove the system-board shield.
6. Remove the memory module.
7. Remove the wireless card.
8. Remove the control-buttons board.
9. Remove the microphone.
10. Remove the camera.
11. Remove the fan.
12. Remove the heat sink.
13. Remove the speakers.
14. Remove the system board.

Procedure

1. Remove the screws that secure the VESA-mount bracket to the display-assembly base.
2 Lift the VESA-mount bracket off the display-assembly base.

1 screws (4) 2 VESA-mount bracket
3 display-assembly base

3 Disconnect the touch-screen board cable and display-panel power cable from their connectors on the display-assembly base.
4 Note the routing of the optical-drive data, touch-board, display backlight, hard drive, and control-buttons board cables and remove the cables from the routing guides on the display-assembly base.

1 touch-screen board cable
2 optical-drive data cable
3 hard-drive cable
4 routing guide
5 control-buttons board cable
6 display-panel power cable

5 Remove the screws that secure the display-assembly base to the display assembly.
6  Release the display-assembly base from the tabs on the display assembly.

7  Lift the display-assembly base off the display assembly.

8  Remove the rubber feet.
1 display assembly
Replacing the display assembly

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Replace the rubber feet.
2. Slide the tabs on the display assembly into the slots on the display-assembly base.
3. Replace the display-assembly base on the display assembly.
4. Replace the screws that secure the display-assembly base to the display assembly.
5. Route the optical-drive data cable, touch-board cable, display-backlight cable, hard-drive cables and control-buttons board cable through the routing guides on the display-assembly base.
6. Connect the touch-screen board cable and display-panel power cable to their connectors on the display-assembly base.
7. Align the screw holes on the VESA-mount bracket with the screw holes on the display-assembly base.
8. Replace the screws that secure the VESA-mount bracket to the display-assembly base.

Post-requisites

1. Replace the system board.
2. Replace the speakers.
3. Replace the heat sink.
4. Replace the fan.
5. Replace the camera.
6 Replace the microphone.
7 Replace the control-buttons board.
8 Replace the wireless card.
9 Replace the memory module.
10 Replace the system-board shield.
11 Follow the procedure in step 3 to step 6 in “Replacing the hard drive”.
12 Replace the optical drive.
13 Replace the back cover.
14 Replace the stand.
Removing the display cable

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Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the optical drive.
4. Follow the procedure from step 1 to step 4 in “Removing the hard drive”.
5. Remove the system-board shield.
6. Remove the memory module.
7. Remove the wireless card.
8. Remove the control-buttons board.
9. Remove the microphone.
10. Remove the fan.
11. Remove the heat sink.
12. Remove the speakers.
13. Remove the system board.
14. Remove the display assembly.

Procedure

1. Peel off the tape that secures the display cable to the display assembly.
2. Press the clips and disconnect the display cable from the display assembly.
3 Lift the display cable off the display assembly.

1 display assembly
2 display cable
3 tape
4 clips (2)
Replacing the display cable

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Connect the display cable to the display assembly and close the latch to secure the cable.
2. Adhere the tape that secures the display cable to the display assembly.

Post-requisites

1. Replace the display assembly.
2. Replace the system board.
3. Replace the speakers.
4. Replace the heat sink.
5. Replace the fan.
6. Replace the microphone.
7. Replace the control-buttons board.
8. Replace the wireless card.
9. Replace the memory module.
10. Replace the system-board shield.
11. Follow the procedure in step 3 to step 6 in “Replacing the hard drive”.
12. Replace the optical drive.
13. Replace the back cover.
14. Replace the stand.
Removing the rubber feet

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Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the optical drive.
4. Follow the procedure from step 1 to step 4 in "Removing the hard drive".
5. Remove the system-board shield.
6. Remove the memory module.
7. Remove the wireless card.
8. Remove the control-buttons board.
9. Remove the fan.
10. Remove the heat sink.
11. Remove the speakers.
12. Remove the system board.
13. Follow the procedure from step 1 to step 7 in Removing the display assembly.

Procedure

1. Remove the screws that secure the rubber feet to the display bezel.
2 Lift the rubber feet off the display bezel.

1 display bezel
2 screws (4)
3 rubber feet (2)
Replacing the rubber feet

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

1. Align the screw holes on the rubber feet with the screw holes on the display bezel.
2. Replace the screws that secure the rubber feet to the display bezel.

Post-requisites

1. Follow the procedure in step 2 to step 8 in “Replacing the display assembly”.
2. Replace the system board.
3. Replace the speakers.
4. Replace the heat sink.
5. Replace the fan.
6. Replace the control-buttons board.
7. Replace the wireless card.
8. Replace the memory module.
9. Replace the system-board shield.
10. Follow the procedure in step 3 to step 6 in “Replacing the hard drive”.
11. Replace the optical drive.
12. Replace the back cover.
13. Replace the stand.
BIOS setup program

BIOS overview

⚠️ **CAUTION:** Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.

🔥 **NOTE:** Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

**Entering BIOS setup program**

1. Turn on (or restart) your computer.
2. During POST, when the DELL logo is displayed, watch for the F2 prompt to appear, and then press F2 immediately.

⚠️ **NOTE:** The F2 prompt indicates that the keyboard is initialized. This prompt can appear very quickly, so you must watch for it, and then press F2. If you press F2 before the F2 prompt, this keystroke is lost. If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.
Clearing forgotten passwords

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

1. Locate the password reset jumper (PSWD) on the system board.

   NOTE: For more information on the location of the jumper, see “System-board components”.

2. Remove the jumper plug from the password jumper-pins.
3  Wait for 5 seconds and then replace the jumper plug in its original location.

Post-requisites

1  Replace the system-board shield.
2  Replace the back cover.
3  Replace the stand.

Clearing CMOS settings

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.
Prerequisites

1. Remove the stand.
2. Remove the back cover.
3. Remove the system-board shield.

Procedure

1. Locate the CMOS reset jumper (RTCRST) on the system board.
2. Remove the jumper plug from the password jumper-pins and connect it to the CMOS jumper-pins.
3. Wait for 5 seconds and then replace the jumper plug to its original location.
Post-requisites

1 Replace the system-board shield.
2 Replace the back cover.
3 Replace the stand.
Flashing the BIOS

You may need to flash (update) the BIOS when an update is available or when you replace the system board. To flash the BIOS:

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click Product support, enter the Service Tag of your computer, and then click Submit.
   
   ![NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.]

4. Click Drivers & downloads → Find it myself.
5. Select the operating system installed on your computer.
6. Scroll down the page and expand BIOS.
7. Click Download to download the latest version of the BIOS for your computer.
8. After the download is complete, navigate to the folder where you saved the BIOS update file.
9. Double-click the BIOS update file icon and follow the instructions on the screen.
Technology and components

NOTE: The screen shots of the device manager in your computer may vary depending on the configuration ordered.

Audio

This computer is shipped with Realtek ALC3661 with Waves MaxxAudio Pro, which is the utility to adjust various audio settings.

NOTE: The audio drivers are already installed when you receive your computer.

Downloading the audio driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click Product support, enter the Service Tag of your computer, and then click Submit.
   
   NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click Drivers & downloads → Find it myself.
5. Scroll down the page and expand Audio.
6. Click Download to download the audio driver.
7. Save the file, and after the download is complete, navigate to the folder where you saved the audio driver file.
8. Double-click the audio driver file icon and follow the instructions on the screen to install the driver.

Identifying the audio controller

1. On the taskbar, click the search box, and then type Device Manager.
2. Click Device Manager.
   The Device Manager window is displayed.
3 Expand **Sound, video and game controllers** to view the audio controller.

<table>
<thead>
<tr>
<th>Before installation</th>
<th>After installation</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Before installation" /></td>
<td><img src="image2.png" alt="After installation" /></td>
</tr>
</tbody>
</table>

**Changing the audio settings**

1. On the taskbar, click the search box, and then type **Dell Audio**.
2. Click **Dell Audio** and change the audio settings as required.

**Camera**

This computer is shipped with an integrated 0.92 megapixel high-speed camera with a maximum of 1280 X 720 HD resolution at 30 FPS.

**NOTE:** You must replace the camera module if you encounter any issues with the built-in microphones.

**Identifying the webcam in device manager**

1. On the taskbar, click the search box, and then type **Device Manager**.
2. Click **Device Manager**.
   - The **Device Manager** window is displayed.
3. Expand **Imaging devices**.

**Starting the camera application**

1. On the taskbar, click the search box, and then type **Camera**.
2 Click **Camera**.

![Image of Camera settings menu]

**Getting the Dell Webcam Central**

A CD is shipped along with your computer which contains the Dell Webcam Central software. If you do not have the software, you can download it by registering through My Account on the Dell website.

**NOTE:** The Dell Webcam Central is not available for download from the support site or the resource CD.

**Display**

This computer is shipped with the following display options:

- 21.5-in FHD + touch screen with 1920 x 1080 resolution
- 21.5-in FHD + non-touch screen with 1920 x 1080 resolution

**Adjusting the brightness**

1 Right-click on your desktop and select **Display settings**.
2 Drag the **Adjust brightness level** slider to adjust the brightness.

---

**Changing the screen resolution**

1 Right-click and hold on your desktop and select **Display settings**.
2 Click **Advanced display settings**.
3 Select the desired resolution from the drop-down list.
4 Click **Apply**.
Cleaning the display

⚠️ CAUTION: Do not use substances such as alcohol, chemicals, or household cleaners for cleaning the display.

⚠️ CAUTION: To avoid damaging the display, do not apply force when cleaning and wipe off any remaining liquid after cleaning.

💡 NOTE: A commercial display cleaning kit should be used for cleaning. If unavailable, use a soft, damp microfiber cloth lightly sprayed with distilled water.

1. Turn off your computer and display before cleaning.
2. Gently wipe the display in circular motion to remove any dust or dirt particles.
3. Let the display dry thoroughly before turning it on.

HDMI

This computer has an HDMI-in port located on the back side of your computer. The HDMI-in port allows you to connect a gaming console, Blu-ray player, or other HDMI-out enabled devices.

Graphics

This computer is shipped with AMD Radeon R5 A335 video controller.

Downloading the graphics driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click Product support, enter the Service Tag of your computer and click Submit.

⚠️ NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

4. Click Drivers & downloads → Find it myself.
5. Scroll down the page and expand Video.
6. Click Download to download the graphics driver for your computer.
7  Save the file, and after the download is complete, navigate to the folder where you saved the graphics driver file.

8  Double-click the graphics driver file icon and follow the instructions on the screen to install the driver.

**Identifying the display adapter**

1  On the taskbar, click the search box, and then type Device Manager.

2  Click Device Manager.

   The Device Manager window is displayed.

3  Expand Display adapters.

**Changing the display and Graphics Control Panel**

1  Right-click on the desktop and select Graphics Properties to launch the Intel HD Graphics Control Panel.

2  Click Display.
3 Change the display settings as required.

![Image of display settings](image)

**Intel WiDi**

The wireless display feature allows you to share your computer display with a compatible TV without using cables. You must connect a wireless display adapter to your TV before setting up the wireless display. To check if your TV supports this feature, see the documentation that is shipped with the TV.

The following table provides the basic system requirements for a wireless display.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>2nd generation Intel Core i3/i5/i7</td>
</tr>
<tr>
<td>Video Controller</td>
<td>Intel HD Graphics</td>
</tr>
<tr>
<td>WLAN card</td>
<td>Intel 2230 or Intel 6150</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 7 or later</td>
</tr>
</tbody>
</table>
| Driver               | Download and install the latest driver for “Intel Wireless Display Connection Manager” available at [www.dell.com/support](http://www.dell.com/support)
**Downloading the WiDi application**

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. Click **Product Support**, enter the Service Tag of your computer and click **Submit**.
   
   **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

4. Click **Drivers & downloads → Find it myself**.
5. Scroll down the page and expand **Video**.
6. Click **Download** to download the Intel WiDi application for your computer.
7. After the download is complete, navigate to the folder where you saved the application.
8. Double-click the application file icon and follow the instructions on the screen to install the application.

**Setting up the wireless display**

1. Turn on your computer.
   
   **NOTE:** Ensure that Wi-Fi is enabled.

2. Connect the wireless display adapter to the TV.
3. Turn on the TV and the wireless display adapter.
4. Select the appropriate video source for your TV, such as HDMI1, HDMI2, or S-Video.
5. Double-click or double-tap the Intel Wireless Display icon on the desktop. The **Intel Wireless Display** window is displayed.
6. Click or tap **Scan for available displays**.
7. Select your wireless display adapter from the **Detected Wireless Displays** list.
8. Enter the security code that is displayed on your TV.

**USB**

This computer is shipped with the following USB ports:
### Ports and Location

<table>
<thead>
<tr>
<th>Ports</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB 2.0 ports (2)</td>
<td>Back side</td>
</tr>
<tr>
<td>USB 3.0 ports (2)</td>
<td>Left side</td>
</tr>
</tbody>
</table>

NOTE: USB 3.0 needs the driver to be installed before it can detect any USB devices.

### Downloading the USB 3.0 driver

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. Click **Product Support**, enter the Service Tag of your computer and click **Submit**.
   - NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & downloads → Find it myself**.
5. Scroll down the page and expand **Chipset**.
6. Click **Download** to download the USB 3.0 driver.
7. After the download is complete, navigate to the folder where you saved the USB 3.0 driver file.
8. Double-click the USB 3.0 driver file icon and follow the instructions on the screen.

### Enabling or disabling the USB in BIOS setup program

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
   - The BIOS setup program is displayed.
3. On the left pane, select **Settings → System Configuration → USB Configuration**.
   - The USB configuration is displayed on the right pane.
4. Check the **Enable External USB Port** check box to either enable or disable it.
5. Save the BIOS setup program settings and exit.
Fixing a no-boot issue caused by USB emulation

Sometimes the computer does not boot to the operating system when USB devices are connected to the computer during startup. This behavior occurs because the computer is looking for bootable files in the USB devices. Follow these steps to fix the no-boot issue:

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
3. On the left pane, select Settings → System Configuration → USB Configuration.
   The USB configuration is displayed on the right pane.
4. Clear the Enable Boot Support check box to either enable or disable it.
5. Save the settings and exit.

Wi-Fi

This computer is shipped with the following:

- Wi-Fi 802.11 ac
- Wi-Fi 802.11b/g/n

Turning Wi-Fi on or off

⚠️ NOTE: There is no physical switch to enable or disable Wi-Fi. It has to be done through computer settings.

1. Swipe-in from the right edge of the display, or click the Action Center icon on the taskbar to access the Action Center.
2. Click Wi-Fi to turn Wi-Fi on or off.

Downloading the Wi-Fi driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product Support**, enter the Service Tag of your computer and click **Submit**.

   **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

4. Click **Drivers & downloads → Find it myself**.

5. Scroll down the page and expand **Network**.

6. Click **Download** to download the Wi-Fi driver for your computer.

7. After the download is complete, navigate to the folder where you saved the Wi-Fi driver file.

8. Double-click the driver file icon and follow the instructions on the screen.

**Configuring Wi-Fi**

1. Turn on Wi-Fi. For more information, see [Turning Wi-Fi on or off](#).

2. Swipe-in from the right edge of the display or click the **Action Center** icon on the taskbar to access the Action Center.

3. Click **Wi-Fi** and then click **Go to settings**. A list of available networks is displayed.

4. Select your network and click **Connect**.

   ![Wi-Fi settings](image)

   **NOTE:** Type the network security key, if prompted.

**Bluetooth**

This computer is shipped with Bluetooth 4.0.
Turning Bluetooth on or off

NOTE: There is no physical switch to enable or disable Bluetooth. It has to be done through the computer settings.

1. Swipe-in from the right edge of the display, or click the Action Center icon on the taskbar to access the Action Center.
2. Click Bluetooth to turn Bluetooth on or off.

Pairing the Bluetooth-enabled devices

1. Turn on Bluetooth.
   For more information, see Turning Bluetooth on or off.
2. Swipe-in from the right edge of the display, or click the Action Center icon on the taskbar to access the Action Center.
3. Click Bluetooth, and then click Go to settings.
4. Select the desired Bluetooth device.
5. Click Pair to pair the bluetooth devices.
6 Click Yes to confirm the passcodes on both the devices.

Removing the Bluetooth device

1 Swipe-in from the right edge of the display, or click the Action Center icon on the taskbar to access the Action Center.
2 Click Bluetooth, and then click Go to settings.
3 Click the device you want to remove, and then click Remove device.
Transferring files between devices using Bluetooth

1. Swipe-in from the right edge of the display, or click the Action Center icon on the taskbar to access the Action Center.
2. Click on Bluetooth and then click Go to settings.
3. Select your Bluetooth device.
4. Click Send or receive files via Bluetooth.
5. In the Bluetooth file transfer window, click Send files and select the desired file.

Hard Drive

The following table shows the hard drive options available in this computer:

<table>
<thead>
<tr>
<th>Options</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDD</td>
<td>2.5 inch drive</td>
</tr>
</tbody>
</table>

Identifying the hard drive

1. On the taskbar, click the search box, and then type Device Manager.
2. Click Device Manager.
   The Device Manager window is displayed.
Identifying the hard drive in BIOS setup program

1. Turn on or restart the computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
   A list of hard drives is displayed under the **System Information** in the **General** group.

Media-card reader

This computer has one SD card slot located on the left side of your computer.

Downloading the media-card reader driver

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. Click **Product Support**, enter the Service Tag of your computer and click **Submit**.
   
   **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & downloads → Find it myself**.
5. Scroll down the page and expand **Chipset**.
6. Click **Download** to download the media-card reader driver for your computer.
7. After the download is complete, navigate to the folder where you saved the media-card reader driver file.
8. Double-click the card-reader driver file icon and follow the instructions on the screen.
Browsing a media card

1. Insert the media card with the metal contacts facing down. The card will auto-play and a notification appears on the screen.
2. Follow the instructions on the screen.

Power adapter

This computer is shipped with a 65 W or 90 W power adapter.

⚠️ WARNING: When you disconnect the power adapter cable from the computer, pull on its connector, not the cable itself. When disconnecting cable, keep it evenly aligned to avoid bending any connector pins. When connecting the cable, ensure that the port and the connector are correctly oriented and aligned.

⚠️ WARNING: The power adapter works with electrical outlets worldwide. However, power connectors and power strips vary among countries. Using an incompatible cable or improperly connecting the cable to the power strip or electrical outlet may cause fire or equipment damage.

Chipsets

The chipset is virtually divided into two sections — Northbridge and Southbridge. All computer components communicate with the CPU through the chipset. This computer is shipped with the chipset integrated in the processor.

Downloading the chipset driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click Product Support, enter the Service Tag of your computer and click Submit.

⚠️ NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click Drivers & downloads → Find it myself.
5. Scroll down the page and expand Chipset.
6. Click Download to download the chipset driver for your computer.
7 After the download is complete, navigate to the folder where you saved the chipset driver file.
8 Double-click the chipset driver file icon and follow the instructions on the screen.

**Identifying the chipset**

1 On the taskbar, click the search box, and then type Device Manager.
2 Click Device Manager. The Device Manager window is displayed.
3 Expand System devices.
Memory

This computer has two SODIMM (RAM) slots, which are accessible by removing the back cover. Memory configurations supported are 2GB, 4GB, 6GB, 8GB, 10GB, 12GB, and 16GB.

Checking the system memory in Windows

1. Click Start.
2. Select Settings.
3. Click System → About.

Verifying the system memory in BIOS setup program

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
3. On the left pane, select Settings → General → System Information. The memory information is displayed on the right pane.

Testing memory using ePSA

1. Turn on or restart your computer.
2. Press F12 after the Dell logo is displayed on the screen to access the boot menu.
3. Use the arrow keys to highlight the Diagnostics menu option and press Enter.
4. Follow the instructions on the screen to complete the ePSA Pre-boot System Assessment (PSA).

NOTE: If the operating system logo appears, wait until you see the desktop. Turn off your computer and try again.

Processors

This computer is shipped with the following processors:

- 6th Generation Intel Core i3/i5
Checking the processor usage in the task manager

1. Right-click on the taskbar.
2. Click **Task Manager**.
   The **Task Manager** window is displayed.
3. Click the **Performance** tab to display the processor performance details.

Identifying the processors in Windows

1. On the taskbar, click the search box, and then type **Device Manager**.
2. Click **Device Manager**.
   The **Device Manager** window is displayed.
3. Expand **Processors**.

Operating system

This computer is shipped with the Windows 10 factory installation.
Service Tag location

The service tag is a unique alphanumeric identifier that allows Dell service technicians to identify the hardware components in your computer and access warranty information.

Device drivers

Intel Dynamic Platform and Thermal Framework

In the Device Manager, check if the Intel Dynamic Platform and Thermal Framework is installed. Install the driver updates from www.dell.com/support.

Intel Chipset Software Installation Utility

In the Device Manager, check if the chipset driver is installed. Install the driver updates from www.dell.com/support.
Graphics

In the Device Manager, check if the video driver is installed. Install the video driver updates from [www.dell.com/support](http://www.dell.com/support).
Intel Serial IO Driver

In the Device Manager, check if the Intel Serial IO Driver is installed. Install the driver updates from [www.dell.com/support](http://www.dell.com/support).
Intel Trusted Execution Engine Interface

In the Device Manager, check if the Intel Trusted Execution Engine Interface driver is installed. Install the driver updates from [www.dell.com/support](http://www.dell.com/support).
Intel Virtual Button driver

In the Device Manager, check if the Intel Virtual Button driver is installed. Install the driver updates from www.dell.com/support.
Intel Wireless 3165 Wi-Fi and Bluetooth drivers

In the Device Manager, check if the network card driver is installed. Install the driver updates from www.dell.com/support.
In the Device Manager, check if the Bluetooth driver is installed. Install the driver updates from www.dell.com/support.

**BIOS overview**

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

**Entering the BIOS setup program**

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
   You can change the user-defined settings in BIOS setup program.

**Boot menu**

This computer includes a one-time boot menu. This feature allows you to change the sequence of devices that your computer attempts to boot from, for example, floppy, CD-ROM, or hard drive.

**Boot menu enhancements**

The boot menu enhancements are as follows:

- **Easier Access** – Press F12 to access the boot selection menu.
- **User Prompting** – The user is prompted to use the keystroke on the BIOS screen.
- **Diagnostics Options** – The boot menu includes the ePSA diagnostic options.

**Timing key sequences**

The keyboard is not the first device initialized by Setup. As a result, if you press a keystroke too early, the keyboard is locked out. In such case, a keyboard error message is displayed on the screen, and you cannot restart your computer with the Ctrl+Alt+Del key combination.

To prevent the keyboard from locking, wait until the keyboard is initialized completely. The keyboard is initialized if one of the following occurs:

- The keyboard lights flash.
- The F2=Setup prompt appears at the top-right corner of the screen during boot.
System diagnostic lights

Power status light: Indicates the power status.

Solid Amber – The computer is unable to boot to the operating system. This indicates that the power supply or another device in the computer is failing.

Blinking Amber – The computer is unable to boot to the operating system. This indicates that the power supply is normal but another device in the computer is failing or not installed properly.

NOTE: See the light patterns to determine the device that is failing.

Off – Computer is in hibernation or turned off.

The power status light blinks amber along with beep codes indicating failures.

For example, the power status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 3,3 pattern continues until the computer is turned off indicating the Recovery image is not found.

The following table shows different light patterns what they indicate, and the suggested solutions:

<table>
<thead>
<tr>
<th>Light pattern</th>
<th>Problem description</th>
<th>Suggested solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>System board: BIOS and ROM failure</td>
<td>Flash latest BIOS version. If problem persists, replace the system board.</td>
</tr>
<tr>
<td>2</td>
<td>No memory or RAM detected</td>
<td>Confirm that the memory module is installed properly. If problem persists, replace the memory module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,3</td>
<td>Recovery image not found</td>
<td>Reimage the system.</td>
</tr>
<tr>
<td>3,4</td>
<td>Recovery image found but invalid</td>
<td>Reimage the system.</td>
</tr>
<tr>
<td>4</td>
<td>Memory or RAM failure</td>
<td>Replace the memory module.</td>
</tr>
<tr>
<td>5</td>
<td>CMOS battery failure</td>
<td>Replace the CMOS battery.</td>
</tr>
<tr>
<td>Light pattern</td>
<td>Problem description</td>
<td>Suggested solution</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Video card or chip failure</td>
<td>Replace the system board.</td>
</tr>
<tr>
<td>7</td>
<td>CPU failure</td>
<td>Replace the system board.</td>
</tr>
<tr>
<td>8</td>
<td>LCD failure</td>
<td>Replace the LCD.</td>
</tr>
</tbody>
</table>

The computer may emit a series of beeps during start-up if the errors or problems cannot be displayed. The repetitive beep codes help the user troubleshoot problems with the computer.

**Camera status light:** Indicates whether the camera is in use.

- Solid white – Camera is in use.
- Off – Camera is not in use.
Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 1. Self-help resources.

<table>
<thead>
<tr>
<th>Information about Dell products and services</th>
<th><a href="http://www.dell.com">www.dell.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 8.1 and Windows 10</td>
<td>Dell Help &amp; Support app</td>
</tr>
<tr>
<td>Windows 10</td>
<td>Get started app</td>
</tr>
<tr>
<td>Windows 8.1</td>
<td>Help + Tips app</td>
</tr>
<tr>
<td>Accessing help in Windows 8, Windows 8.1, and Windows 10</td>
<td>In Windows search, type Help and Support, and press Enter.</td>
</tr>
<tr>
<td>Accessing help in Windows 7</td>
<td>Click Start → Help and Support.</td>
</tr>
<tr>
<td>Online help for operating system</td>
<td><a href="http://www.dell.com/support/windows">www.dell.com/support/windows</a></td>
</tr>
<tr>
<td>Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on.</td>
<td><a href="http://www.dell.com/support/linux">www.dell.com/support/linux</a></td>
</tr>
<tr>
<td>Learn about your operating system, setting up and using your computer, data backup, diagnostics, and so on.</td>
<td><a href="http://www.dell.com/support">www.dell.com/support</a></td>
</tr>
<tr>
<td>See Me and My Dell at <a href="http://www.dell.com/support/manuals">www.dell.com/support/manuals</a>.</td>
<td></td>
</tr>
</tbody>
</table>
Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

NOTE: Availability varies by country and product, and some services may not be available in your country.

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.