

Dell OptiPlex 9010 All-In-One Owner's Manual

Regulatory Model: W04C
Regulatory Type: W04C001



Notes, Cautions, and Warnings



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



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



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

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Working on Your Computer

Before Working Inside Your Computer

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

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

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

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

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

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

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

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

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

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).

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

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

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

Turning Off Your Computer

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

1. Shut down the operating system:

- In Windows 7:

Click **Start** , then click **Shut Down**.

- In Windows Vista:

Click **Start** , then click the arrow in the lower-right corner of the **Start** menu as shown below, and then click **Shut Down**.



- In Windows XP:

Click **Start** → **Turn Off Computer** → **Turn Off**. The computer turns off after the operating system shutdown process is complete.

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

After Working Inside Your Computer

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

1. Replace the cover.

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

2. Connect any telephone or network cables to your computer.
3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.
5. If required, verify that the computer works correctly by running the Dell Diagnostics.

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
- Phillips screwdriver
- Small plastic scribe

Removing the VESA Stand

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Place the computer on a flat surface, display side facing downwards.
3. Using a plastic scribe, release the cover starting with the notches at the bottom.



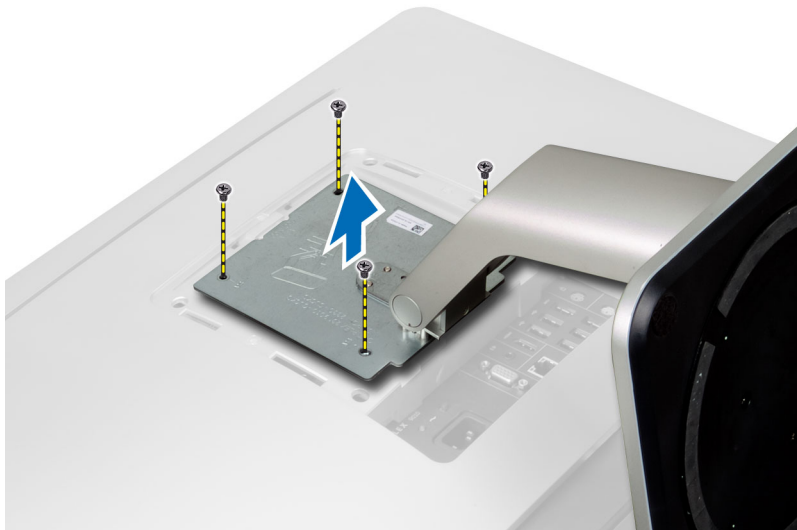
NOTE: To avoid damaging the VESA stand cover, handle the plastic scribe with care.



4. Lift the VESA cover upwards and away from the computer.



5. Remove the screws that secure the VESA stand to the computer and lift the VESA stand away from the computer.

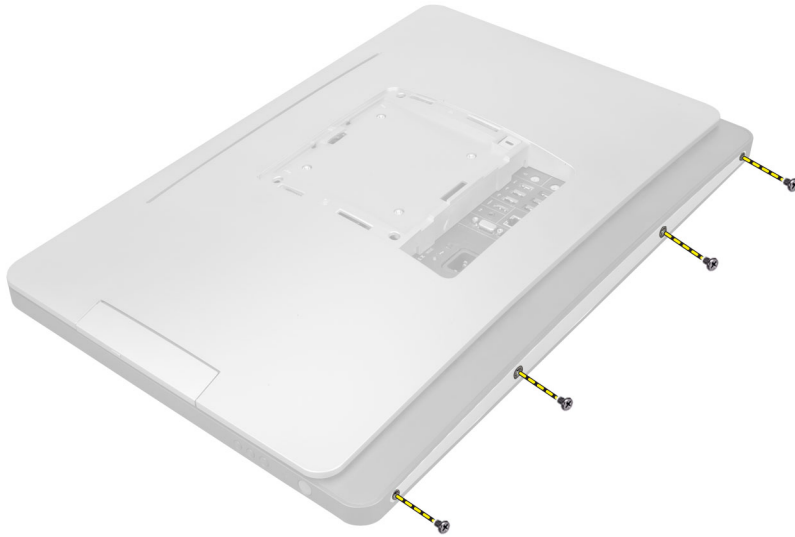


Installing the VESA Stand

1. Align and place the VESA stand on the back of the computer.
2. Tighten the screws to secure the VESA stand to the computer.
3. Place and press the VESA cover on the computer, till it clicks into place.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Back Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the VESA stand.
3. Remove the screws from the base of the computer.



4. Lift the cover and remove it from the computer using the notches near the input/output panel.



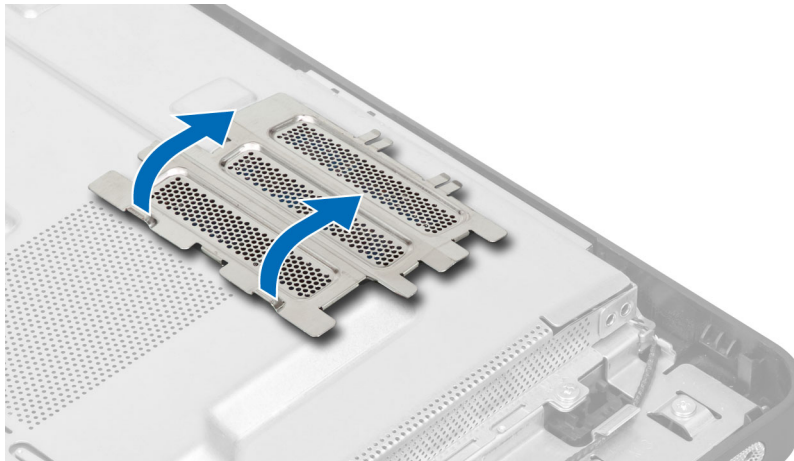
Installing the Back Cover

1. Place the cover on the back of the computer using the notches near the input/output panel.
2. Tighten the screws to secure the back cover to the computer.
3. Install the VESA stand.
4. Follow the procedures in *After Working Inside Your Computer*.

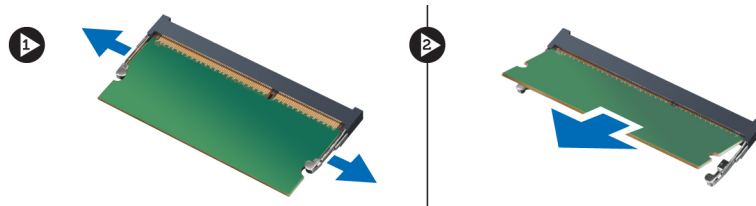
Removing the Memory

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover

3. Lift the memory shield outwards.



4. Pry the retention clips away from the memory module until it pops up. Lift and remove the memory module from its connector.

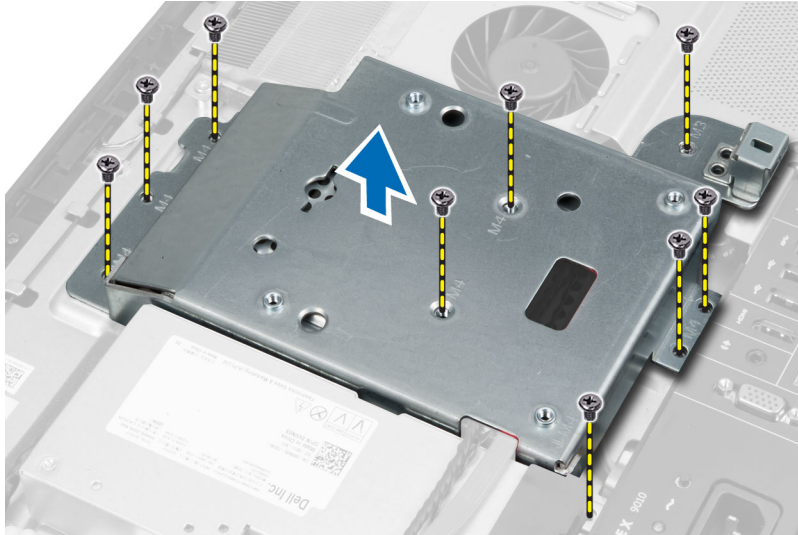


Installing the Memory

1. Align the notch on the memory-card with the tab in the system-board connector.
2. Press down on the memory module until the release tabs spring back to secure them in place.
3. Place the memory shield back into its place.
4. Install the:
 - a) back cover
 - b) VESA stand
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the VESA Mount Bracket

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
3. Remove the screws that secure the VESA mount bracket to the computer. Lift the bracket away from the computer.

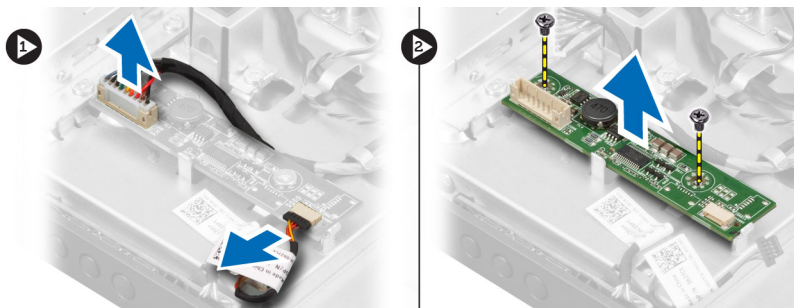


Installing the VESA Mount Bracket

1. Align and place the bracket on the back of the computer.
2. Tighten the screws to secure the VESA mount bracket to the computer.
3. Install the:
 - a) back cover
 - b) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Converter Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
3. Disconnect the backlight and converter cables from the converter board. Remove the screws that secure the converter board to the computer. Lift the converter board away from the computer.

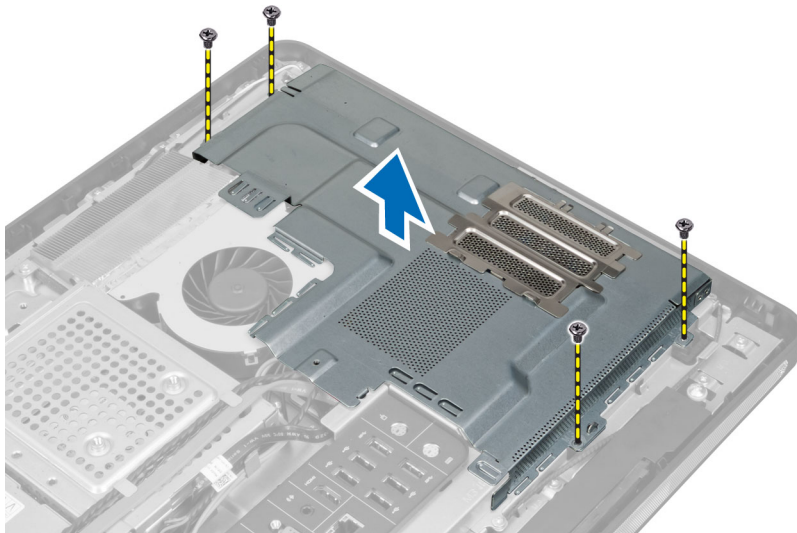


Installing the Converter Board

1. Place the converter board into its place.
2. Tighten the screws that secure the converter board to the computer.
3. Connect the backlight and converter cables to the converter board.
4. Install the:
 - a) back cover
 - b) VESA stand
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the System-Board Shield

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
3. Remove the screws that secure the system-board shield to the computer. Lift the system-board shield away from the computer.

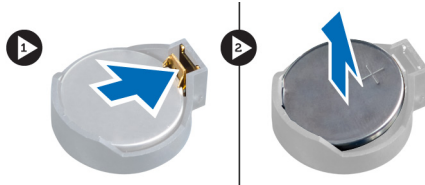


Installing the System-Board Shield

1. Align and place the system-board shield on the back of the computer.
2. Tighten the screws that secure the system-board shield to the computer.
3. Install the:
 - a) VESA mount bracket
 - b) back cover
 - c) VESA stand
4. 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 the:
 - a) VESA stand
 - b) back cover
 - c) system-board shield
3. Press the release latch away from the battery. The battery pops out from the socket, lift the coin-cell battery out of the computer.

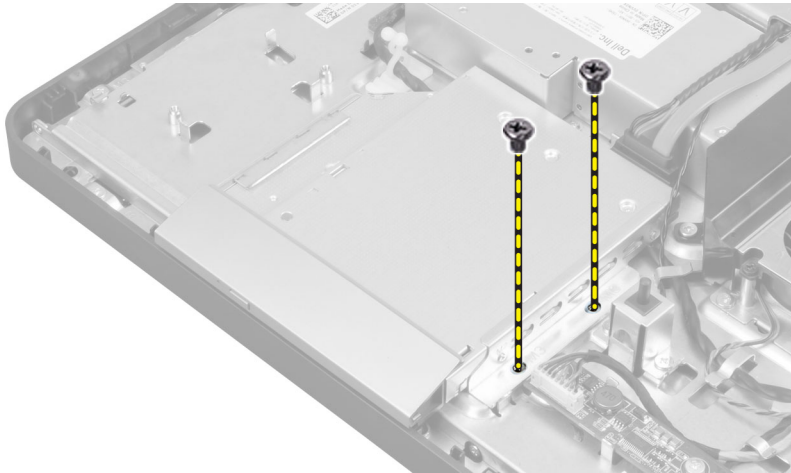


Installing the Coin-Cell Battery

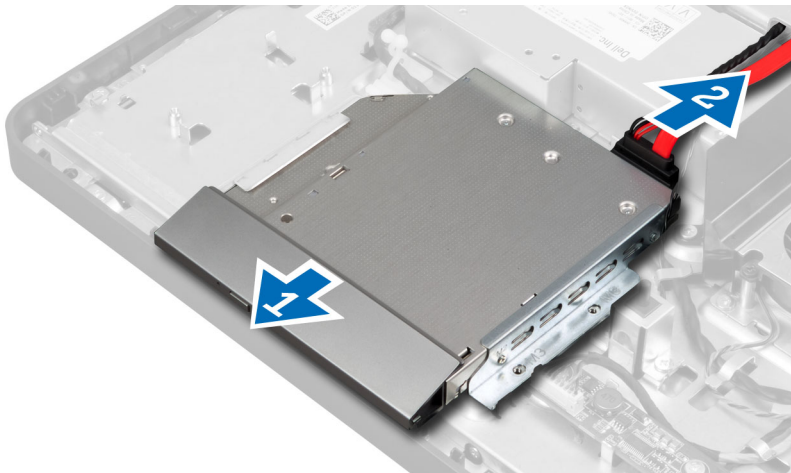
1. Place the coin-cell battery into its slot on the system board.
2. Press the coin-cell battery downward until the release latch springs back into place and secures it.
3. Install:
 - a) system-board shield
 - b) base cover
 - c) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Optical Drive

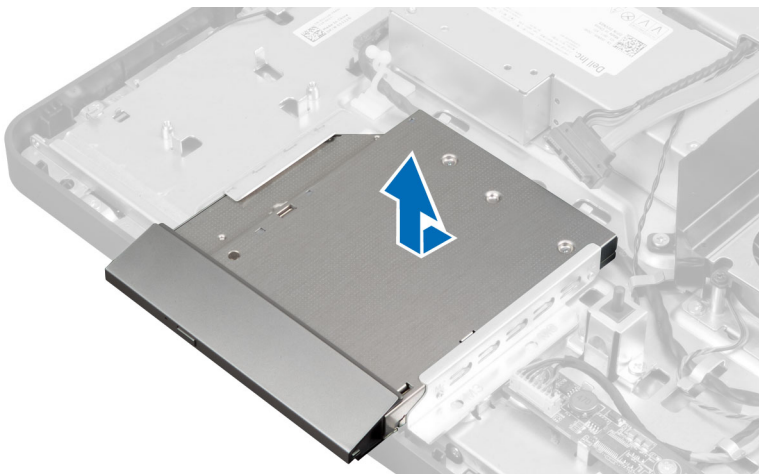
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
3. Remove the screws that secure the optical-drive bracket to the computer.



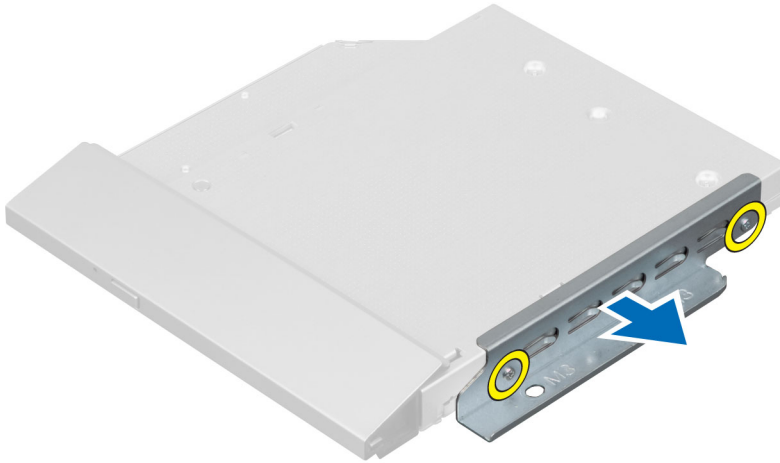
4. Slide the optical drive outwards. Disconnect the optical-drive cable.



5. Lift the optical drive from the computer.



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

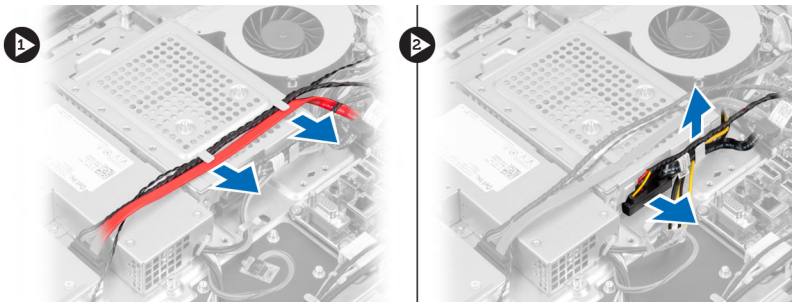


Installing the Optical Drive

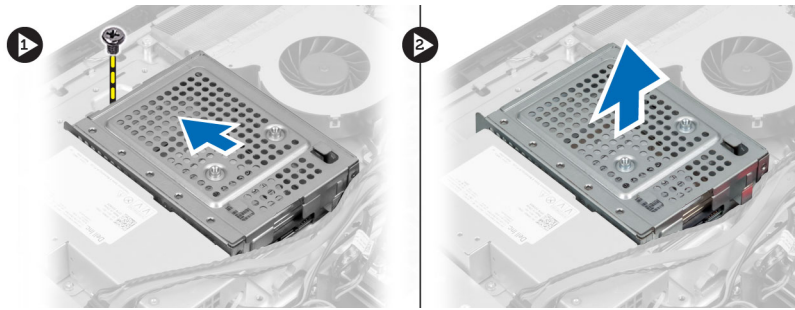
1. Place the optical-drive bracket on the optical drive.
2. Tighten the screws that secure the optical-drive bracket to the optical drive.
3. Align and slide the optical drive into its slot.
4. Connect the optical-drive cable.
5. Tighten the screws that secure the optical drive to the computer.
6. Install the:
 - a) VESA mount bracket
 - b) back cover
 - c) VESA stand
7. Follow the procedures in *After Working Inside Your Computer*.

Removing the Hard Drive

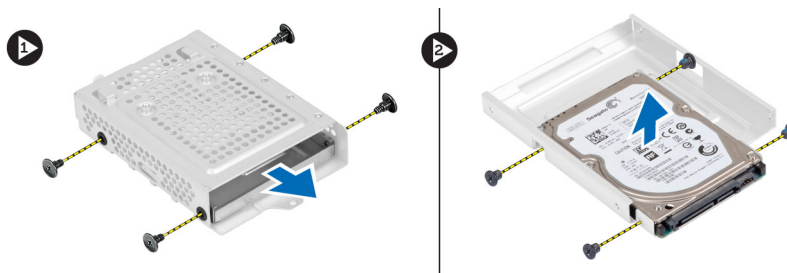
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
3. Unthread the cables from the notches on the hard-drive bracket. Disconnect the hard-drive cables from the hard drive.



4. Remove the screw that secures the hard-drive bracket to the system board. Slide and lift the hard-drive bracket away from the computer.



5. For a 2.5-inch hard drive, remove the screws that secure the hard drive to the hard-drive bracket. Slide the hard drive from the hard-drive bracket. Remove the screws that secure the hard-drive case to the hard drive.



6. For a 3.5-inch hard drive, remove the screws that secure the hard drive to the hard-drive bracket. Slide the hard drive from the hard-drive bracket.



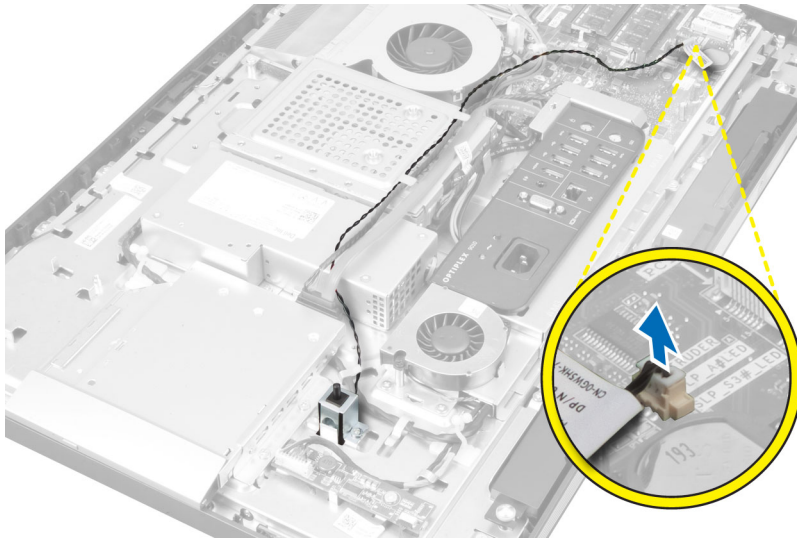
Installing the Hard Drive

1. For a 3.5-inch hard drive, slide the hard drive into the hard-drive bracket. Tighten the screws that secure the hard drive to the hard-drive bracket.
2. For a 2.5-inch hard drive, tighten the screws that secure the hard-drive case to the hard drive. Slide the hard drive into the hard-drive bracket. Tighten the screws that secure the hard drive to the hard-drive bracket.
3. Align and place the hard-drive bracket on the computer. Tighten the screw that secures the hard-drive bracket to the system board.
4. Connect the hard drive cables to the hard drive. Thread the cables into the notches on the hard-drive bracket.
5. Install:

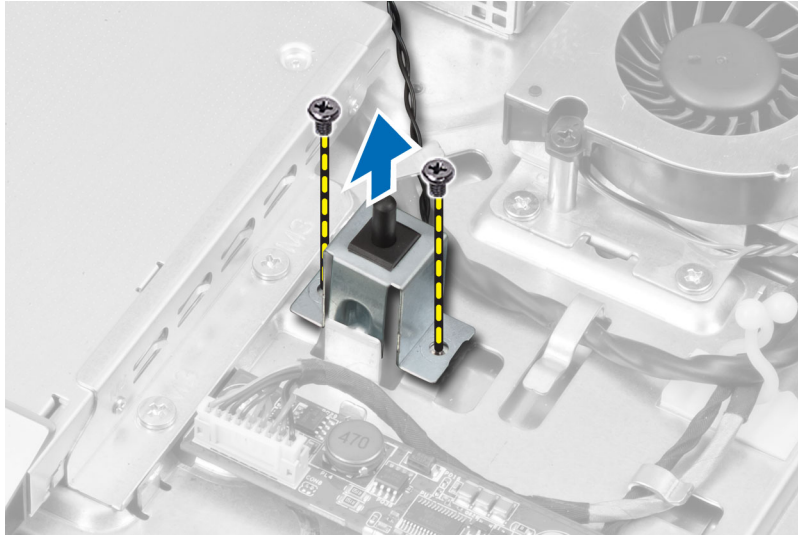
- a) VESA mount bracket
 - b) back cover
 - c) VESA stand
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Intrusion Switch

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
3. Disconnect the intrusion cable from the connector on the system board. Unthread the cable from the notches on the computer.



4. Remove the screws that secure the intrusion switch to the chassis. Lift the intrusion switch and remove it from the computer.

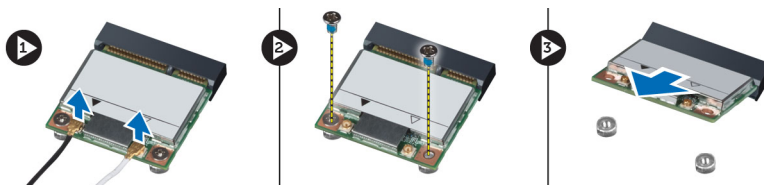


Installing the Intrusion Switch

1. Place the intrusion switch on the computer and tighten the screw to secure it to the chassis.
2. Thread the cable along the notches on the chassis and connect the intrusion switch to the connector on the system board.
3. Install:
 - a) system-board shield
 - b) VESA mount bracket
 - c) back cover
 - d) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Wireless Local Area Network (WLAN) Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
3. Disconnect the WLAN cables. Remove the screws that secure the WLAN card to the system board. Remove the WLAN card from the connector.

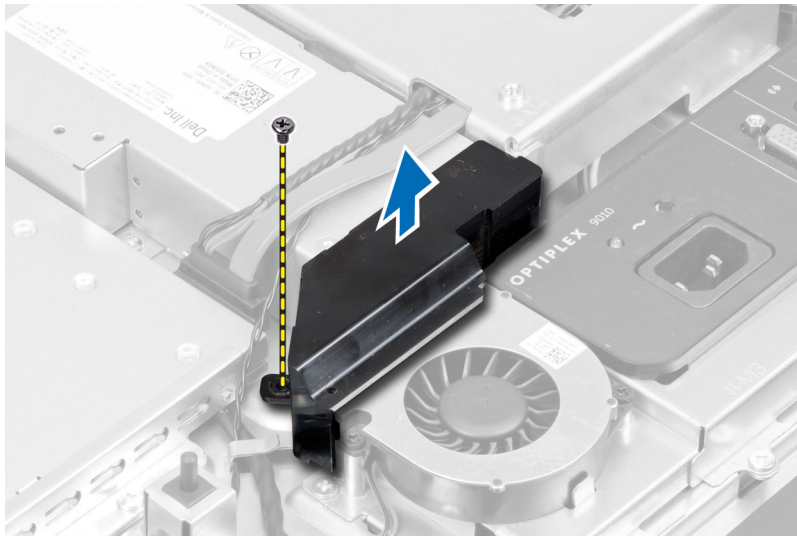


Installing the WLAN Card

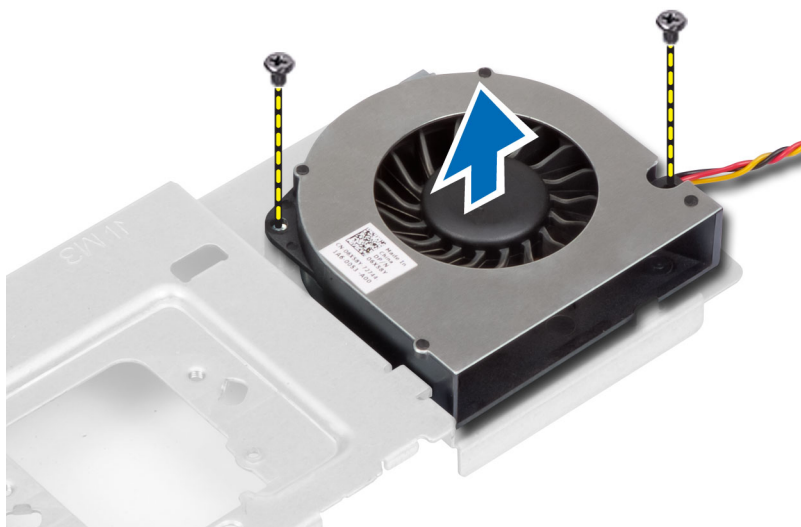
1. Align and place the WLAN card on the connector.
2. Tighten the screws to secure the WLAN card to the system board.
3. Connect the WLAN cables.
4. Install:
 - a) system-board shield
 - b) VESA mount bracket
 - c) back cover
 - d) VESA stand
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Power-Supply Fan

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
3. Remove the screw that secures the fan bracket to the chassis. Lift the fan bracket away from the computer.



4. Remove the screws that secure the power-supply fan to its chassis and lift it away from the computer.

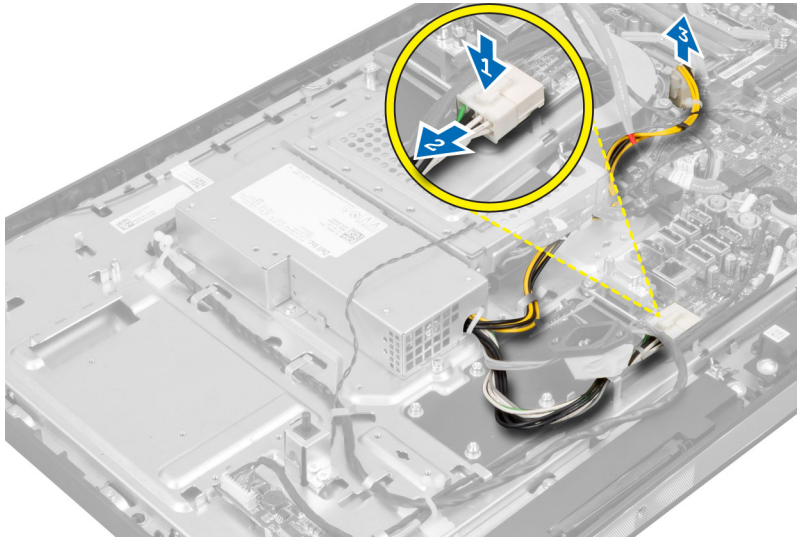


Installing the Power-Supply Fan

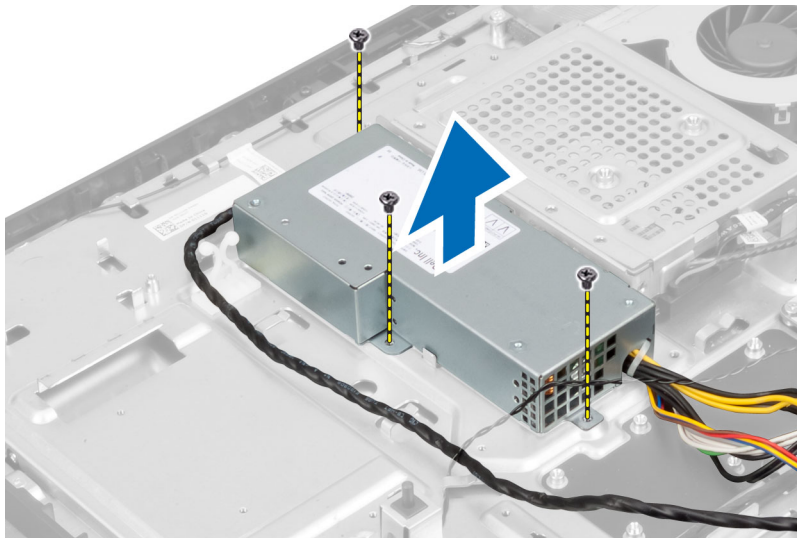
1. Place the power-supply fan on the computer and tighten the screws to secure it to its chassis.
2. Align and place the fan bracket on from the computer.
3. Tighten the screw to secure the fan bracket to the chassis.
4. Install:
 - a) system-board shield
 - b) VESA mount bracket
 - c) back cover
 - d) VESA stand
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Power Supply Unit (PSU)

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
 - e) input/output board shield
 - f) power-supply fan
3. Press the tab and disconnect the power-supply cable from the connector on the system board. Unthread the cable from the hooks in the computer.



4. Remove the screws securing the power supply unit to the chassis. Lift the PSU up and remove it from the computer.



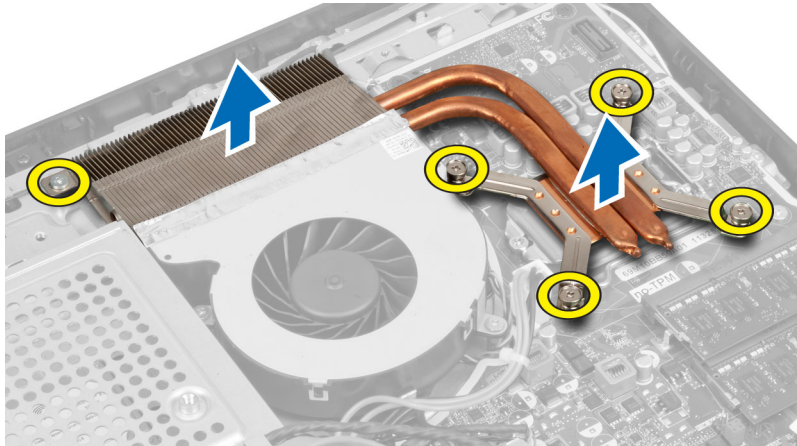
Installing the Power Supply Unit

1. Place the power supply unit on the computer.
2. Tighten the screws to secure the power supply unit to the chassis.
3. Thread the cable on the hooks in the computer.
4. Connect the power-supply cable to the connector on the system board.
5. Install:
 - a) power-supply fan
 - b) input/output board shield
 - c) system-board shield
 - d) VESA mount bracket
 - e) back cover
 - f) VESA stand

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

Removing the Heat-Sink Assembly

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
3. Remove the screws that secure the thermal module to the chassis. Lift the heat-sink assembly up and remove it from the computer.



Installing the Heat-Sink Assembly

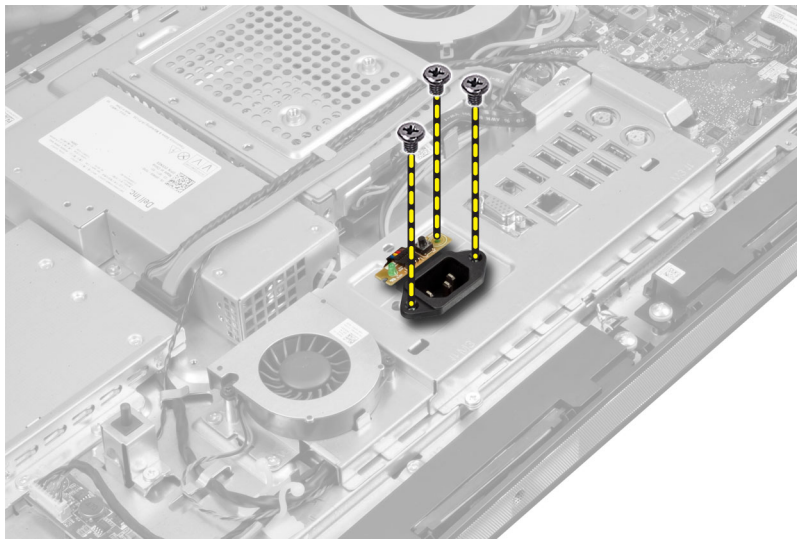
1. Align and place the heat-sink assembly on the computer.
2. Tighten the screws to secure the heat-sink assembly to the chassis.
3. Install:
 - a) system-board shield
 - b) VESA mount bracket
 - c) back cover
 - d) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Input/Output Board Shield

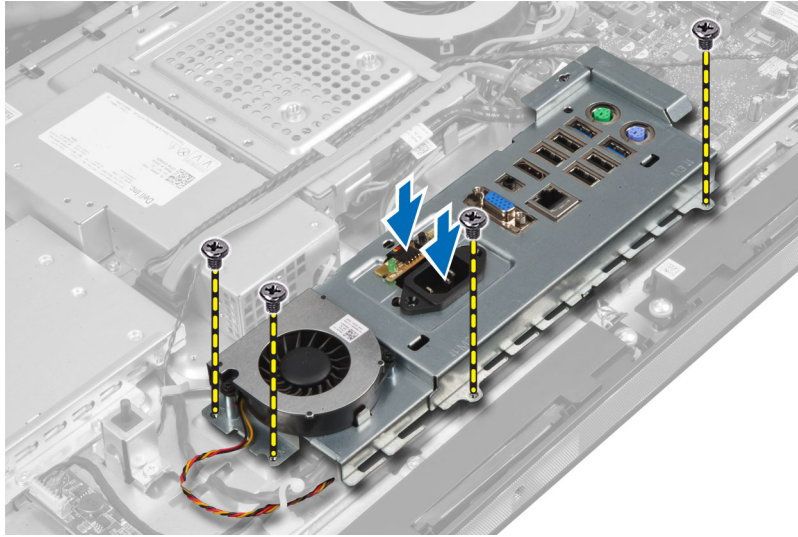
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
 - e) power-supply fan
3. Lift the input/output panel away from the computer.



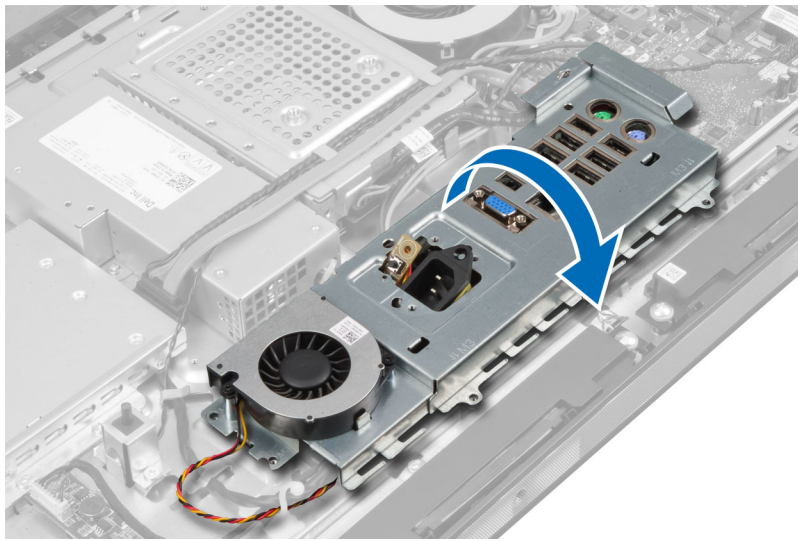
4. Remove the screws that secure the power connector to the input/output board shield.



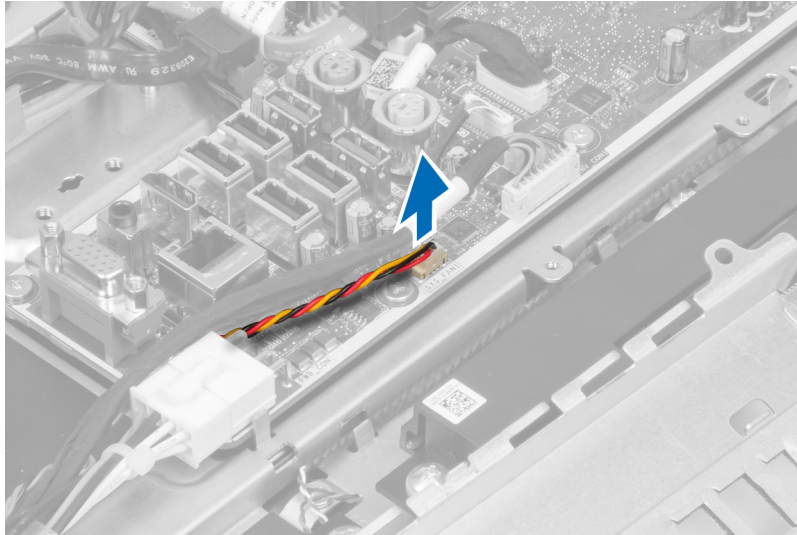
5. Remove the screws that secure the input/output board shield to the chassis. Loosen the power connector and press it down the socket.



6. Flip the input/output board shield and remove it from the computer.



7. Disconnect the power-conector cable.

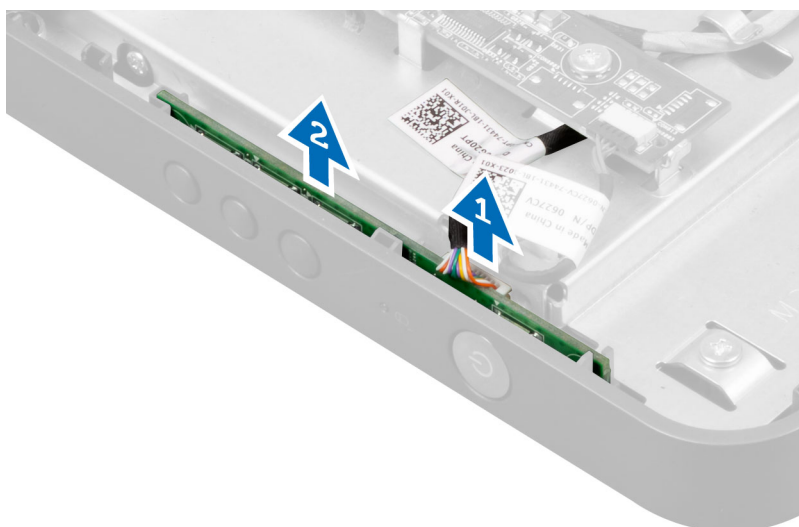


Installing the Input/Output Board Shield

1. Connect the power-connector cable.
2. Place the input/output board shield on the computer.
3. Pass the power connector and fix it to the socket. Tighten the screws to secure the input/output board shield to the chassis.
4. Tighten the screws that secure the power connector to the input/output shield.
5. Place the input/output panel on the computer.
6. Install:
 - a) power-supply fan
 - b) system-board shield
 - c) VESA mount bracket
 - d) back cover
 - e) VESA stand
7. Follow the procedures in *After Working Inside Your Computer*.

Removing the Power-Button Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
3. Disconnect the power-button cable from the board. Lift the power-button board from the chassis.

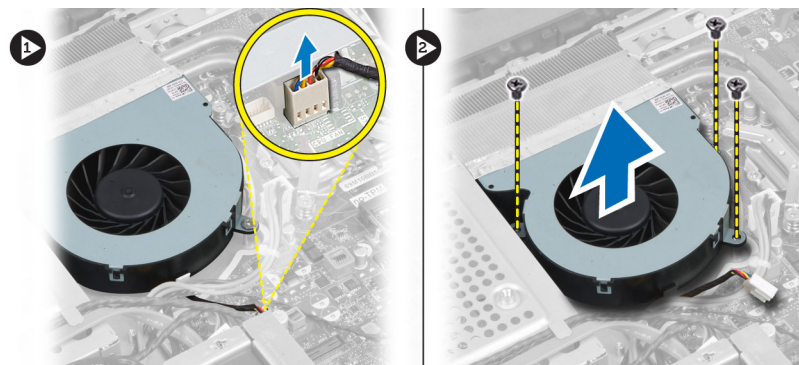


Installing the Power-Button Board

1. Align and place the power-button board on the computer.
2. Connect the power-button cable to the board.
3. Install:
 - a) back cover
 - b) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Processor Fan

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
3. Disconnect the processor-fan cable from the connector on the system board. Remove the screws that secure the processor fan to the system board and lift it away from the computer.



Installing the Processor Fan

1. Place the processor fan on the computer and tighten the screws to secure the processor fan to the system board.
2. Connect the processor-fan cable to the connector on the system board.
3. Install:
 - a) system-board shield
 - b) VESA mount bracket
 - c) back cover
 - d) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Processor

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
 - e) heat-sink assembly
3. Press the release lever down and then move it outward to release it from the retention hook that secures it. Lift the processor cover and remove the processor from its socket.

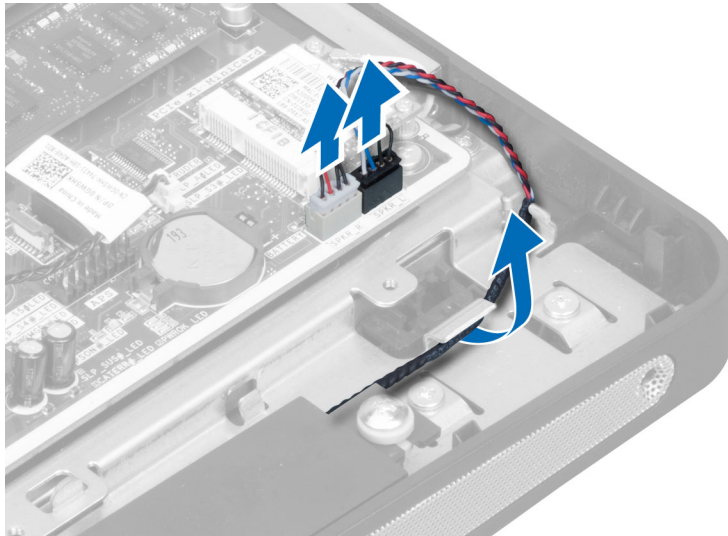


Installing the Processor

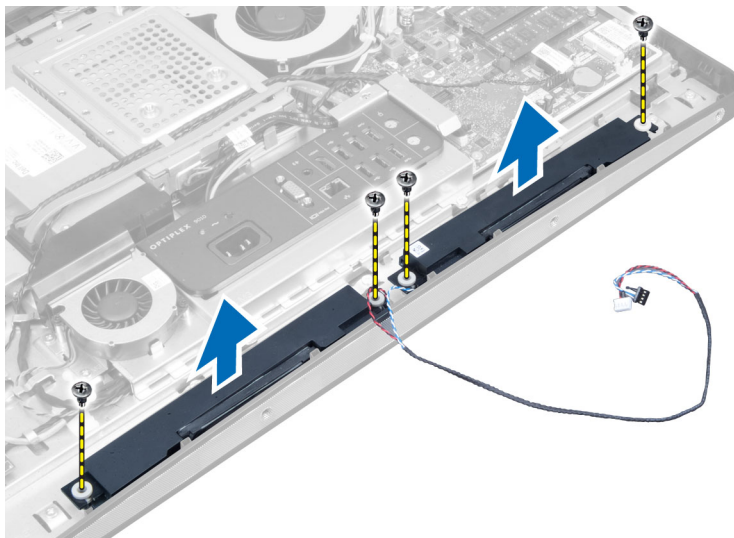
1. Insert the processor into the processor socket. Ensure the processor is properly seated.
2. Press the release lever down and then move it inward to secure it with the retention hook.
3. Install:
 - a) heat-sink assembly
 - b) system-board shield
 - c) VESA mount bracket
 - d) back cover
 - e) VESA stand
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 the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
3. Disconnect the right and left speaker cables from the connector on the system board. Unthread the cables from the notches.



4. Remove the screws that secure the speaker to the chassis. Lift the speakers from the computer.



Installing the Speakers

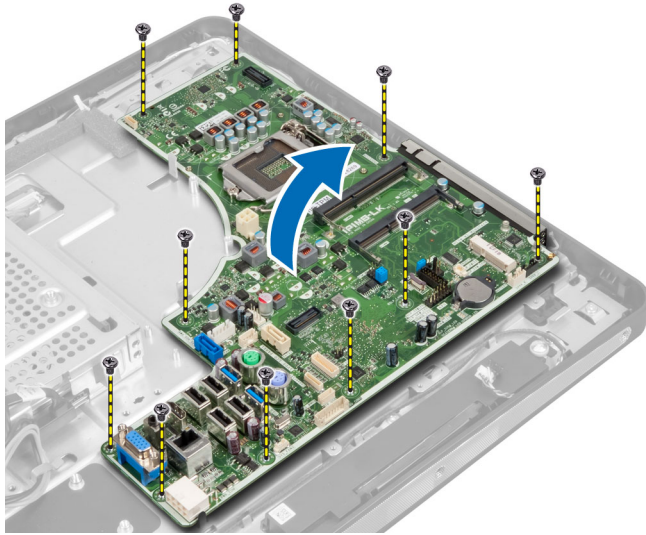
1. Place and align the speakers on the computer. Tighten the screws to secure the speaker to the chassis.
2. Thread the cables on the notches. Connect the right and left speaker cables to the connector on the system board.
3. Install:
 - a) system-board shield
 - b) VESA mount bracket
 - c) back cover
 - d) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the System Board

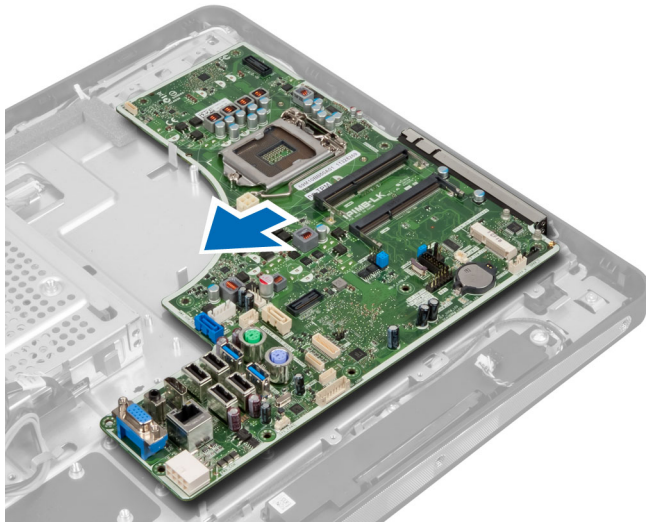
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
 - e) memory
 - f) optical drive
 - g) hard drive
 - h) heat-sink assembly
 - i) power supply unit
 - j) input/output board shield
 - k) converter board
 - l) power-supply fan
3. Disconnect any cables connected to the system board.



4. Remove the screws that secure the system board to the computer.

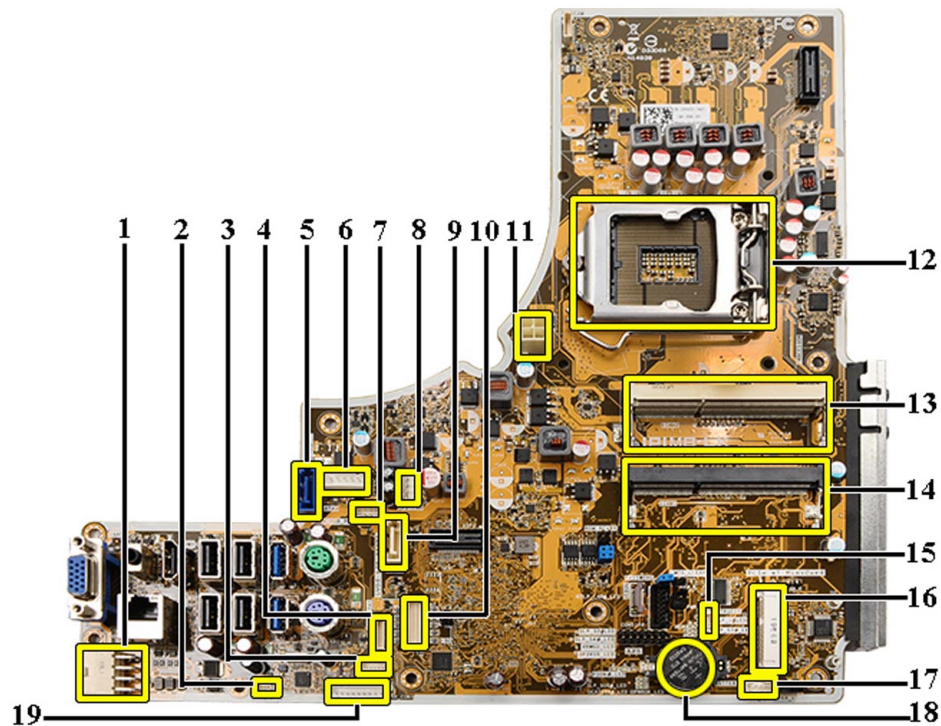


5. Lift and remove the system board from the chassis.



System Board Layout

The following image displays the system board layout of the computer.



1. PSU connector
2. PSU fan connector
3. Touch panel connector
4. Power button board connector
5. SATA HDD connector
6. SATA HDD power connector
7. SATA ODD power connector
8. CPU fan connector
9. SATA ODD connector
10. LVDS connector
11. 12V CPU power connector
12. Processor socket
13. Memory connector (SODIMM socket B)
14. Memory connector (SODIMM socket A)
15. Intrusion switch connector
16. Mini-PCI socket
17. Internal speaker connector
18. Coin-cell battery connector
19. Converter board connector

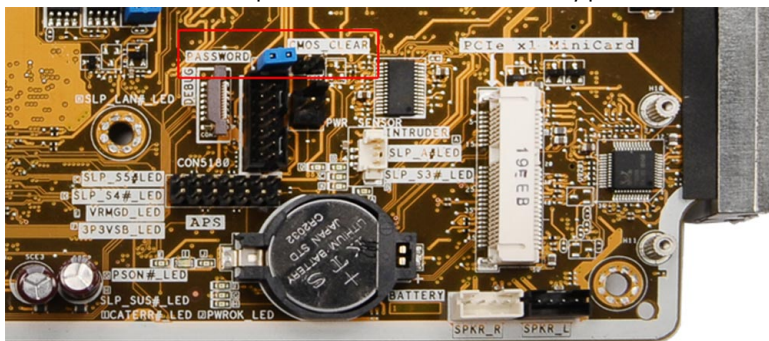
Installing the System Board

1. Place the system board on the computer.
2. Tighten the screws to secure the system board to the base panel.

3. Install:
 - a) power-supply fan
 - b) converter board
 - c) input/output board shield
 - d) power supply unit
 - e) heat-sink assembly
 - f) hard drive
 - g) optical drive
 - h) memory
 - i) system-board shield
 - j) VESA mount bracket
 - k) back cover
 - l) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Jumper Settings

The system's software security features include a system password and a setup password. The PASSWORD jumper enables or disables these password features and clears any password(s) currently in use.



Clearing the CMOS Password

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the VESA stand, back cover, VESA mount bracket, system-board shield, memory, optical drive, hard drive, heat-sink assembly, power supply unit, input/output board shield, converter board, power-supply fan.
3. Locate the jumper on the system board. Remove the jumper from the PASSWORD pin.
4. Plug the jumper to CMOS_CLEAR.
5. Wait for 3-4 seconds. Replace the jumper to its original position.
6. Install all the components removed in step 2.
7. Connect your computer and devices to electrical outlets. Power on the computer.

Disabling the Password

The system's software security features include a system password and a setup password. The password jumper disables any password(s) currently in use.

 **NOTE:** You can also use the following steps to disable a forgotten password.

1. Follow the procedures in *Before Working Inside Your Computer*.

2. Remove the:

- a) VESA stand
- b) back cover
- c) VESA mount bracket
- d) system-board shield
- e) memory
- f) optical drive
- g) hard drive
- h) heat-sink assembly
- i) power supply unit
- j) input/output board shield
- k) converter board
- l) power-supply fan

3. Identify the PSWD jumper on the system board.

4. Remove the PSWD jumper from the system board.



NOTE: The existing passwords are not disabled (erased) until the computer boots without the jumper.

5. Install all the components removed in step 2.



NOTE: If you assign a new system and/or setup password with the PSWD jumper installed, the system disables the new password(s) the next time it boots.

6. Connect the computer to the electrical outlet and power-on the computer.

7. Power-off the computer and disconnect the power cable from the electrical outlet.

8. Repeat step 2.

9. Replace the PSWD jumper on the system board.

10. Install all the components removed in step 8.

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

12. Power-on the computer.

13. Go to the system setup, and assign a new system or setup password. See *System and Setup Password*.

Removing the Display Panel

1. Follow the procedures in *Before Working Inside Your Computer*.

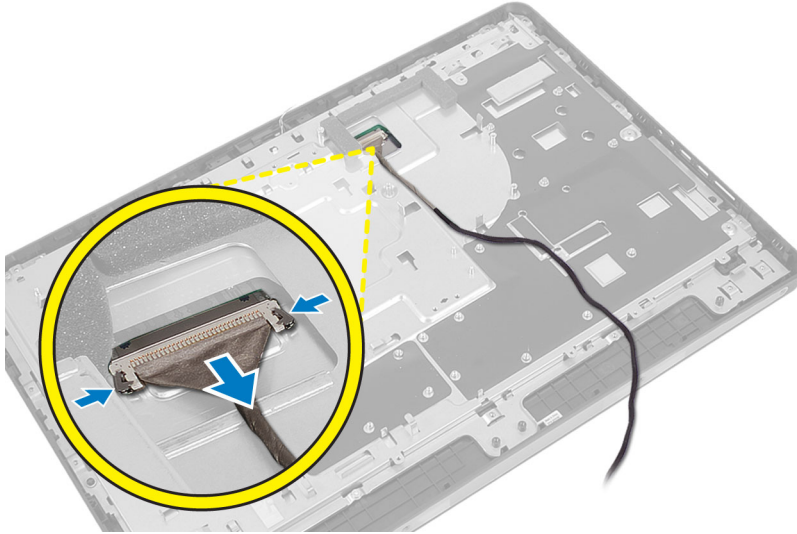
2. Remove the:

- a) VESA stand
- b) back cover
- c) VESA mount bracket
- d) system-board shield
- e) input/output board shield
- f) WLAN card
- g) optical drive
- h) hard drive
- i) intrusion switch
- j) power-button board
- k) converter board
- l) power-supply fan
- m) power supply unit
- n) heat-sink assembly

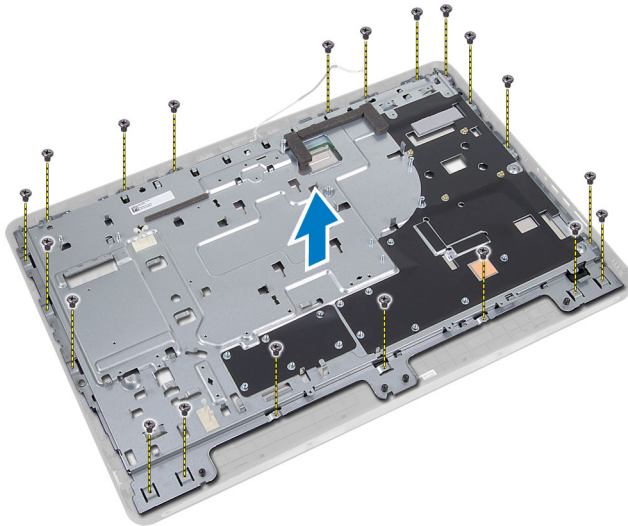
- o) processor fan
- p) speakers
- q) antenna module
- r) system board

 **NOTE:** These instructions are valid only for non-touch computers. For touch computers, the display panel should be disassembled in a clean room environment.

3. Remove the LVDS cable by pressing the latch inwards and disconnecting it from the connector. Remove any other cables or antennas around the edges of the base panel.



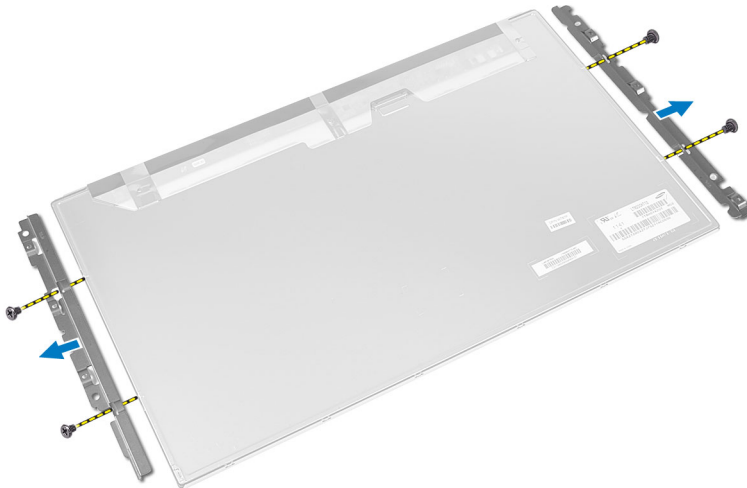
4. Remove the screws that secure the base panel to the chassis. Lift the base panel from the chassis.



5. Lift the display panel from the chassis.



6. Remove the screws that secure the display bracket to the display panel. Remove the display bracket from the display panel.



Installing the Display Panel

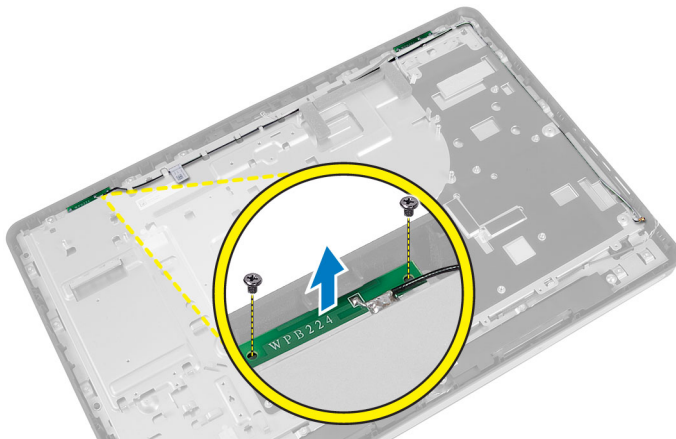
1. Tighten the screws to secure the display bracket to the display panel.
2. Place the display panel on the chassis.
3. Place the base panel on the chassis.
4. Tighten the screws to secure the base panel to the chassis.
5. Connect the LVDS cable to the connector.
6. Install:
 - a) system board
 - b) antenna module
 - c) speakers
 - d) system board
 - e) processor fan

- f) heat-sink assembly
- g) power supply unit
- h) power-supply fan
- i) converter board
- j) power-button board
- k) intrusion switch
- l) hard drive
- m) optical drive
- n) WLAN card
- o) input/output board shield
- p) system-board shield
- q) VESA mount bracket
- r) back cover
- s) VESA stand

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

Removing the Antenna Modules

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
 - e) input/output board shield
 - f) WLAN card
 - g) optical drive
 - h) hard drive
 - i) intrusion switch
 - j) power button board
 - k) converter board
 - l) processor fan
 - m) power supply unit
 - n) heat-sink assembly
 - o) power-supply fan
 - p) system board
3. Remove the screws that secure the antenna module to the chassis. Unthread the antenna cable from around the edges of the computer. Lift and remove the antenna module.

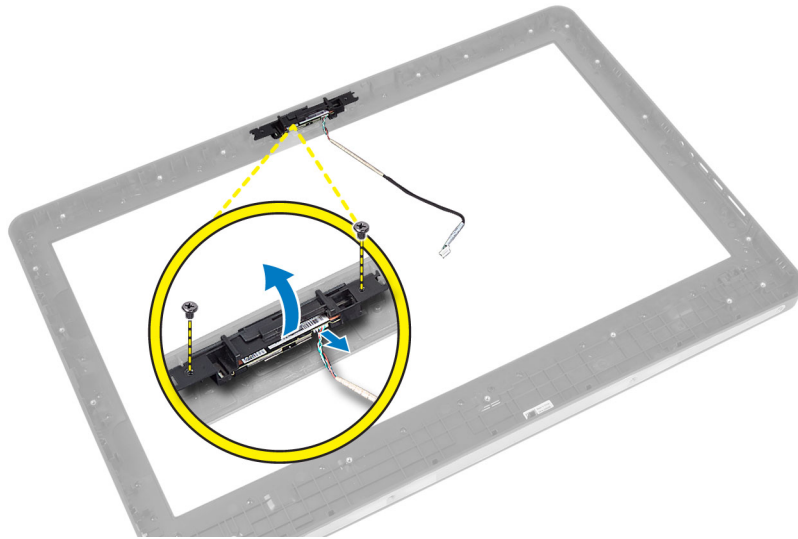


Installing the Antenna Modules

1. Place the antenna module on the chassis.
2. Thread the antenna cable around the edges of the computer. Tighten the screws to secure the antenna module to the chassis
3. Install:
 - a) system board
 - b) power-supply fan
 - c) heat-sink assembly
 - d) power supply unit
 - e) processor fan
 - f) converter board
 - g) power-button board
 - h) intrusion switch
 - i) hard drive
 - j) optical drive
 - k) WLAN card
 - l) input/output board shield
 - m) system-board shield
 - n) VESA mount bracket
 - o) back cover
 - p) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Camera

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
 - a) VESA stand
 - b) back cover
 - c) VESA mount bracket
 - d) system-board shield
 - e) input/output board shield
 - f) WLAN card
 - g) optical drive
 - h) hard drive
 - i) intrusion switch
 - j) power button board
 - k) converter board
 - l) processor fan
 - m) power supply unit
 - n) heat-sink assembly
 - o) power-supply fan
 - p) system board
 - q) display panel
3. Lift the latch and disconnect the camera cable. Remove the screws that secure the camera to the chassis.



Installing the Camera

1. Tighten the screws to secure the camera to the chassis.
2. Connect the camera cable and fix the latch.
3. Install:
 - a) display panel
 - b) system board
 - c) power-supply fan
 - d) heat-sink assembly
 - e) power supply unit
 - f) processor fan
 - g) converter board
 - h) power-button board
 - i) intrusion switch
 - j) hard drive
 - k) optical drive
 - l) WLAN card
 - m) input/output board shield
 - n) system-board shield
 - o) VESA mount bracket
 - p) back cover
 - q) VESA stand
4. 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 restart the system.

Table 1. Navigation Keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.

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

System Setup Options — BIOS Setup

 **NOTE:** Before proceeding download and install the latest BIOS version from support.dell.com

Table 2. General

Option	Description
System Information	Displays the following information: • System Information — Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date, and the Express Service Code. • Memory Information — Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, and the DIMM B Size. • PCI Information — Displays SLOT1. • Processor Information — Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology. • Device Information — Displays SATA-0, SATA-1, LOM MAC Address, Audio Controller, Wi-Fi, Cellular Device, and Bluetooth Device.  NOTE: Due to an amount of memory being assigned for system use, “Memory Available”, is less than “Memory Installed”. Note that certain operating systems may not be able to use all the available memory.
Boot Sequence	This list specifies the order that the BIOS searches devices when trying to find an operating system to boot. The boot devices can also be selected or de-selected from the list using the check boxes on the left hand side. • Diskette Drive • PO: ST500LX003–1AC15G • USB Storage Device • CD/DVD/CD-RW Drive

Option	Description
	Onboard NIC
Boot List Option	- Legacy - UEFI
Date/Time	This option controls the system date and time. Changes to the date and time take effect immediately. - MM /DD /YY - HH: MM: SS: A/P

Table 3. System Configuration

Option	Description
Integrated NIC	This option controls the on-board LAN Controller. - Disabled — The internal LAN is off and not visible top the operating system. - Enabled — The internal LAN is enabled. - Enabled w/PXE (selected by default) — The internal LAN is enabled (with PXE boot). - Enabled w/ImageServer — The internal LAN is enabled (with ImageServer boot).
SATA Operation	This option configures the operating mode of the integrated SATA hard drive controller. - Disabled — SATA controllers are hidden. - ATA — SATA is configured for ATA mode. - AHCI (selected by default) — SATA is configured for AHCI. - RAID On — configured to support RAID mode (Intel Rapid Restore Technology).
Drives	This option lets you enable or disable various drives on board. By default the options are enabled. - SATA-0 - SATA-1
SMART Reporting	This field controls if the hard drive errors for the integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. Enable SMART Reporting - This option is disabled by default.
USB Configuration	This field configures the integrated USB controller. If <i>Boot Support</i> 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 operation system.

Option	Description
	If USB port is disabled, the operation system cannot see any device attached to this port. • Enable Boot Support • Enable Front USB Ports • Enable Rear Dual USB Ports • Enable Rear Quad USB Ports
Miscellaneous Devices	Allows you to enable or disable various on-board devices. • Enable Microphone • Enable Camera • Enable Media Card • Disable Media Card

Table 4. Security

Option	Description
Admin Password	This field lets you set, change, or delete the administrator (admin) password (sometimes called the setup password). The admin password enables several security features. The drive does not have a password set by default. • Enter the old password • Enter the new password • Confirm the new password Click OK after entering the password details.
System Password	Allows you to set, change, or delete the computer password (previously called the primary password). The drive does not have a password set by default. • Enter the old password • Enter the new password • Confirm the new password Click OK after entering the password details.
Internal HDD-0 Password	Allows you to set, change, or delete the password on the computer's internal hard disk drive (HDD). Successful changes to this password take effect immediately. The drive does not have a password set by default. • Enter the old password • Enter the new password • Confirm the new password Click OK after entering the password details.
Strong Password	Enable strong password - This option is disabled by default.

Option	Description
Password Configuration	This field controls the minimum and maximum number of characters allowed for the admin and system passwords. • Admin Password Min • Admin Password Max • System Password Min • System Password Max
Password Bypass	Allows you to bypass the <i>System Password</i> and the internal HDD password prompts during a system restart. • Disabled (selected by default) — Always prompt for the system and internal HDD password when they are set. • Reboot Bypass — Bypass the password prompts on restarts (warm boots).  NOTE: The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present.
Password Change	Allows you to determine whether changes to the system and hard disk passwords are permitted when an administrator password is set. • Allow Non-Admin Password Changes (selected by default)
TPM Security	This option lets you control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system. TPM Security (selected by default)  NOTE: Activation, deactivation, and clear options are not affected if you load the setup program's default values. Changes to this option take effect immediately.
Computrace (R)	This field lets you activate or disable the BIOS module interface of the optional <i>Computrace Service</i> from <i>Absolute Software</i>. • Deactivate (selected by default) • Disable • Activate
Chassis Intrusion	This field controls the chassis intrusion feature. • Disable • Enable (selected by default) • On-Silent
CPU XD Support	Allows you to enable or disable the execute disable mode of the processor. • Enable CPU XD Support (selected by default)
OROM Keyboard Access	Allows you to determine if you access the Option Read Only Memory (OROM) configuration screens via hotkeys during boot. These settings prevent access to the Intel RAID (CTRL+I) or Intel Management Engine BIOS Extension (CTRL+P/F12).

Option	Description
	• Enable (selected by default) — User may enter OROM configuration screens via the hotkey. • One-Time Enable — User can enter the OROM configuration screens via the hotkeys during the next boot. After the boot, the setting will revert to disabled. • Disable — User can not enter the OROM configuration screens via the hotkey.
Admin Setup Lockout	Allows you to enable or disable the option to enter setup when an admin password is set. • Enable Admin Setup Lockout (selected by default)

Table 5. Performance

Option	Description
Multi Core Support	Specifies whether the process will have one or all cores enabled. The performance of some applications will improve with the additional cores. • All (selected by default) • 1 • 2
Intel® SpeedStep™	Allows you to enable or disable the Intel SpeedStep mode of the processor. • Enable Intel(R) SpeedStep (selected by default)
C States Control	Allows you to enable or disable the additional processor sleep states. • C states (selected by default)
Intel® TurboBoost™	Allows you to enable or disable Intel TurboBoost mode of the processor. • Enable Intel TurboBoost (selected by default) — Allows the Intel TurboBoost driver to increase the performance of the CPU or graphics processor.
HDD Protection Support	This options allows users to enable and disable the HDD Protection feature. • HDD Protection Support

Table 6. Power Management

Option	Description
AC Recovery	Specifies how the computer will respond when AC power is applied after an AC power loss. You can set the AC Recovery to: • Power Off (selected by default) • Power On • Last Power State
Auto On Time	This option sets the time of the day when you would like the system to turn on automatically. Time is kept in standard 12-hour format (hour:minutes:seconds). The startup time can be changed by typing the values in the time and A.M./P.M. fields. • Disabled — The system will not automatically power up. • Every Day — The system will power up every day at the time you specified above . • Weekdays — The system will power up Monday through Friday at the time you specified above. • Select Days — The system will power up on days selected above at the time you specified above.  NOTE: This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if Auto Power is set to disabled.
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. • Disabled • Enabled in S5 only • Enabled in S4 and S5 This option is disabled by default.
Fan Control Override	Controls the speed of the system fan. • Fan Control Override (not selected)  NOTE: When enabled, the fan runs at full speed.
USB Wake Support	This option allows you to enable USB devices to wake the computer from standby. • Enable USB Wake Support (not selected by default)
Wake on LAN/WLAN	This option allows the computer to power up from the off state when triggered by a special LAN signal. Wake-up from the Standby state is unaffected by this setting and must be enabled in the operating system. This feature only works when the computer is connected to AC power supply. The options differ based on the form factor. • Disabled (selected by default) — Does not allow the system to power on by special LAN signals when it receives a wake-up signal from the LAN or wireless LAN. • LAN Only — Allows the system to be powered on by special LAN signals. • WLAN Only — Allows the system to be powered on by special WLAN signals. • LAN or WLAN — Allows the system to be powered on by special LAN or WLAN signals.

Option	Description
Block Sleep	This option lets you block entering to sleep (S3 state) in operating system environment. Block Sleep (S3 state) - This option is disabled by default.

Table 7. POST Behavior

Option	Description
Numlock Enable	Specifies if the NumLock function can be enabled when the system boots. Enable Numlock (default)
Keyboard Errors	Specifies whether keyboard related errors are reported when it boots. Enable Keyboard Error Detection (selected by default)
POST Hotkeys	Specifies whether the sign-on screen displays a message, that displays the keystroke sequence required to enter the BIOS Boot Option Menu. Enable F12 Boot Option menu (selected by default)
Fastboot	This option can speed up the boot process bypassing some compatibility steps. - Minimal - Thorough - Auto

Table 8. Virtualization Support

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

Table 9. Wireless

Option	Description
Wireless Switch	This option determines which wireless device can be controlled by the Wireless Switch. • WWAN • WLAN • Bluetooth(R)
Wireless Device Enable	This option allows enabling/disabling of internal wireless devices. • WWAN • WLAN • Bluetooth(R)

Table 10. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
SERR Messages	Controls the SERR message mechanism. Some graphics cards require that the SERR message mechanism be disabled. • Enable SERR Messages (selected by default)

Table 11. Image Server

Option	Description
Lookup Method	Specifies how the ImageServer looks up the server address. • Static IP • DNS (selected by default)  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i>.
ImageServer IP	Displays the primary static IP address of the ImageServer with which the client software communicates. The default IP address is 255.255.255.255 .  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i> and when <i>Lookup Method</i> is set to <i>Static IP</i>.
ImageServer Port	Allows you to specify the primary IP port of the ImageServer, which is used by the client to communicate. The default IP port is 06910 .  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i>.

Option	Description
Client DHCP	Specifies how the client obtains the IP address. - Static IP - DHCP (selected by default)  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i>.
Client IP	Displays the static IP address of the client. The default IP address is 255.255.255.255.  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i> and when <i>Client DHCP</i> is set to <i>Static IP</i>.
Client SubnetMask	Displays the subnet mask of the client. The default setting is 255.255.255.255.  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i> and when <i>Client DHCP</i> is set to <i>Static IP</i>.
Client Gateway	Displays the gateway IP address for the client. The default setting is 255.255.255.255.  NOTE: This field is only relevant when the <i>Integrated NIC</i> control in the <i>System Configuration</i> group is set to <i>Enabled with ImageServer</i> and when <i>Client DHCP</i> is set to <i>Static IP</i>.
License Status	Displays the current license status.

Table 12. System Logs

Option	Description
BIOS events	Displays the system event log and allows you to clear the log. Clear Log

Updating the BIOS

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

- Restart the computer.
- Go to **support.dell.com/support/downloads**.
- If you have your computer's Service Tag or Express Service Code:

 **NOTE:** For desktops, the service tag label is available on the front of your computer.

 **NOTE:** For notebooks, the service tag label is available on the bottom of your computer.

- Enter the **Service Tag** or **Express Service Code** and click **Submit**.
 - Click **Submit** and proceed to step 5.
- If you do not have your computer's service tag or express service code, select one of the following:
 - Automatically detect my Service Tag for me**
 - Choose from My Products and Services List**

- c) **Choose from a list of all Dell products**
5. On the application and drivers screen, under the **Operating System** drop-down list, select **BIOS**.
6. Identify the latest BIOS file and click **Download File**.
7. Select your preferred download method in the **Please select your download method below window**; click **Download Now**.
The **File Download** window appears.
8. Click **Save** to save the file on your computer.
9. Click **Run** to install the updated BIOS settings on your computer.
Follow the instructions on the screen.

System and Setup Password

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

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

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

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

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

Assigning a System Password and Setup Password

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

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

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

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>.
The **System Security** screen appears.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, enter your system password, and press <Enter> or <Tab>.
Use the following guidelines to assign the system password:

- A password can have up to 32 characters.
- The password can contain the numbers 0 through 9.
- Only lower case letters are valid, upper case letters are not allowed.
- Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (:), ([), (\), (]), (^).

Re-enter the system password when prompted.

4. Type the system password that you entered earlier and click **OK**.
5. Select **Setup Password**, type your system password and press <Enter> or <Tab>.

A message prompts you to re-type the setup password.

6. Type the setup password that you entered earlier and click **OK**.
7. Press <Esc> and a message prompts you to save the changes.
8. Press <Y> to save the changes.

The computer reboots.

Deleting or Changing an Existing System and/or Setup Password

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

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

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



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

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



NOTE: Before proceeding download and install the latest BIOS version from support.dell.com

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.

Power Supply Built in Self-Test

This computer comes equipped with a power supply built in self-test (BIST) that helps in troubleshooting.

All power supply units include a self-test ability in an isolation mode. A test button and LED are on the top of the unit where the power connector is located.



Customers can test the health of the power system by pressing the test button. The button is lit by a signal in the power supply called Power_Good (PG). When the +3.3v, +5v, and +12v rails are up and within specification, the PG signal turns on, lighting the self-test LED. By removing the cable harness in units that do not pass this test, you can isolate the failure's cause to an attached device of the power supply. For example, if the self-test LED does not light when you press the button, you can remove the connectors from the devices and tests again. If the PG LED now lights up, one of the attached devices is shorted and holding down the power supply. If the LED does not light up, the power supply is defective.

Troubleshooting Your Computer

You can troubleshoot your computer using indicators like Diagnostic Lights, Beep Codes, and Error Messages during the operation of the computer.

Diagnostic Power LED Codes

The power LED states are shown in the following table.

 **NOTE:** The power LED can only serve as an indicator of the progress through the POST process. These LEDs do not indicate the problem that caused the POST routine to stop.

Power LED	Description
OFF	Power is off. LED is blank.
Blinking Amber	Initial state of LED at power up. Refer the following table for Blinking Amber Power LED diagnostics suggestion and possible failures.
Solid Amber	Second state of the LED at power up. Indicates the POWER_GOOD signal is active.
Blinking White	System is in a low power state. Does not indicate a fault condition.
Solid White	The computer is in power-on state.

The power LED light blinking amber pattern will help you determine a few failures as shown below. The Amber LED blinking pattern is as follows, the pattern is 2 or 3 blinks followed by a short pause then X number of blinks up to 7. The repeated pattern has a long pause inserted in the middle. For example 2,3 = 2 amber blinks, short pause, 3 amber blinks followed by long pause then repeats.

Blinking Amber Power LED	Problem Description
2,1	The motherboard may be faulty.
2,2	The motherboard, power supply or power supply cabling may be faulty.
2,3	The motherboard, memory or processor may be faulty.
2,4	The coin-cell battery may be faulty.
2,5	The system may be in recovery mode. Download and install the latest BIOS from support.dell.com/support .
2,6	The processor may be faulty.
2,7	The memory may be faulty. Reseat the memory or install a different memory module.
3,1	The video device or subsystem may be faulty.
3,2	The video subsystem may be faulty.
3,3	No memory module was detected.

Blinking Amber Power LED	Problem Description
3,4	The storage device may be faulty.
3,5	The memory may not be compatible.
3,6	The system board may be faulty.
3,7	The memory has been detected but of an invalid configuration.

Beep Codes

The beep pattern 1-3-2 (1 beep, then 3 beeps, then 2 beeps) indicates that the computer has encountered a memory problem. Occasionally, re-seating the memory modules may fix the beep code errors.

Error Messages

Message	Description
Alert! Previous attempts at booting this system have failed at checkpoint [nnnn]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support.	The computer failed to complete the boot routine three consecutive times for the same error. Contact Dell and report the checkpoint code (nnnn) to the support technician.
System fan failure	Possible fan failure
CPU fan failure	Possible CPU fan failure
Hard-disk drive failure	Possible hard drive failure during POST.
Hard-disk drive read failure	Possible hard drive failure during boot test.
Keyboard failure	A cable or connector may be loose, or the keyboard or keyboard/mouse controller may be faulty.
RTC is reset, BIOS Setup default has been loaded. Strike the F1 key to continue, F2 to run the setup utility.	RTC Jumper may be wrongly set.
No boot device available	No bootable partition on the hard drive, a cable or connector is loose, or no bootable device exists. • If the hard drive is your boot device, ensure that the cables are connected and that the drive is installed properly and partitioned as a boot device. • Enter system setup and ensure that the boot sequence information is correct.
No timer tick interrupt	A chip on the system board might be malfunctioning.
USB over current error	Disconnect the USB device. The USB device needs more power for it to function properly. Use an external power source to connect the USB device, or if the device has two USB cables, connect both of them.

Message

CAUTION - Hard Drive SELF MONITORING SYSTEM has reported that a parameter has exceeded its normal operating range. Dell recommends that you back up your data regularly. A parameter out of range may or may not indicate a potential hard drive problem

Description

S.M.A.R.T error or possible hard disk drive failure. Contact Dell and report the issue to a support technician.

Technical 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 13. System Information

Feature	Specification
Processor type	- Intel Dual Core - Intel Core i3 series - Intel Core i5 series - Intel Core i7 series
Total cache	Up to 8 MB cache depending on processor type
Chipset	Intel Q77 Express chipset

Table 14. Memory

Feature	Specification
Type	up to 1600 MHz, unbuffered non-ECC, dual-channel DDR3 configuration
Connectors	two internally-accessible DDR3 SODIMM sockets
Capacity	2 GB, 4 GB, and 8 GB
Minimum Memory	2 GB
Maximum Memory	16 GB

Table 15. Video

Feature	Specification
Video Controller (Integrated)	Intel HD2000, HD2500, HD3000 or HD4000 (depends on processor selected)
Video Memory	shared memory
External Display Support	VGA, HDMI, and Wi-Fi display

 **NOTE:** Wi-Fi display requires a wireless card which can be purchased separately.

Table 16. Audio

Feature	Specification
Controller	Intel High Definition Audio with Waves MaxxAudio3
Speaker	single 8-ohms speakers in both the left and right speaker assembly (5 W average per channel)
Internal speaker amplifier	up to 15 W per channel
Internal microphone support	dual digital microphone
Volume controls	Volume up/down buttons, program menus, and keyboard media-control keys

Table 17. Communications

Feature	Specification
Network adapter	10/100/1000 Mbps Ethernet LAN on system board
Wireless	- half mini-card (Wi-Fi b/g/n supporting Wi-Fi display) - combo half mini-card (Bluetooth 4.0 and Wi-Fi b/g/n supporting Wi-Fi display)

Table 18. Cards

Feature	Specification
Mini PCI Express	one

Table 19. Displays

Feature	Specification
Type	23-inch full-HD WLED
Maximum resolution	1920 x 1080
Refresh rate	60 Hz
Operating angle	170° (horizontal) / 160° (vertical)
Pixel pitch	0.2652 mm
Controls	on-screen controls

Table 20. Drives

Feature	Specification
Hard drive	one 3.5-inch SATA drive or one 2.5-inch SATA drive with an adapter bracket
Optical drive (optional)	one DVD-ROM, DVD+/- RW or combo Blu-ray writer

Table 21. Ports and Connectors

Feature	Specification
Audio:	• one line-out connector • one audio input/microphone port • one headphone port
Network adapter	one RJ45 connector
USB 2.0	four
USB 3.0	four
Video	15-pin VGA connector
HDMI	one 19-pin output port
Media card reader	one 8-in-1 slot

Table 22. Power

Feature	Specification
Frequency	50 Hz – 60 Hz
Voltage	100 VAC – 240 VAC
Input current:	
90 VAC	maximum 2.90 A
180 VAC	maximum 1.45 A
Coin-cell battery	3 V CR2032 lithium coin cell

Table 23. Camera (optional)

Feature	Specification
Image resolution	1.3 megapixel
Video resolution	HD (720p)
Diagonal viewing angle	60 degrees

Table 24. Stand

Feature	Specification
Tilt	–5 degrees to 30 degrees

Table 25. Physical Dimensions

Feature	Specification
Width	574.00 mm (22.60 inches)
Height	440.40 mm (17.34 inches)
Depth:	

Feature	Specification
Without stand	68.00 mm (2.68 inches)
With Stand	220.00 mm (8.66 inches)
Weight:	
Without stand	7.34 kg – 9.00 kg (16.18 lb – 19.84 lb)
With Stand	9.34 kg – 11.20 kg (20.59 lb – 24.69 lb)
 NOTE: The weight of your computer may vary depending on the configuration ordered and the manufacturing variability.	

Table 26. Controls and Lights

Feature	Specification
Power button light	White light — Solid white light indicates power-on state; blinking white light indicates sleep state of the computer.
Hard Drive activity light	White light — Blinking white light indicates that the computer is reading data from or writing data to the hard drive.
Camera LED	White light — solid while light indicates that the camera is on.
Back panel:	
Link integrity light on integrated network adapter :	Green — a good 10 Mbps connection exists between the network and the computer. Orange — a good 100 Mbps connection exists between the network and the computer. Yellow — a good 1000 Mbps connection exists between the network and the computer. Off (no light) — the computer is not detecting a physical connection to the network.
Network activity light on integrated network adapter	Yellow light — A blinking yellow light indicates that network activity is present.
Power supply diagnostic light	Green light — The power supply is turned on and is functional. The power cable must be connected to the power connector (at the back of the computer) and the electrical outlet.

Table 27. Environmental

Feature	Specification
Temperature range:	
Operating	10 °C to 35 °C (50 °F to 95 °F)
Storage	–40 °C to 65 °C (–40 °F to 149 °F)
Relative humidity (maximum):	
Operating	10% to 90% (non-condensing)

Feature	Specification
Storage	10% to 95% (non-condensing)
Maximum vibration:	
Operating	0.66 GRMS
Storage	1.30 GRMS
Maximum shock:	
Operating	110 G
Storage	160 G
Altitude:	
Operating	–15.20 m to 3048 m (–50 ft to 10,000 ft)
Storage	–15.20 m to 10,668 m (–50 ft to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ANSI/ISA-S71.04-1985

Contacting Dell

To contact Dell for sales, technical support, or customer service issues:

1. Visit support.dell.com.
2. Verify your country or region in the **Choose a Country/Region** drop-down menu at the bottom of the page.
3. Click **Contact Us** on the left side of the page.
4. Select the appropriate service or support link based on your need.
5. Choose the method of contacting Dell that is convenient for you.