

# Dell OptiPlex 9010 All-In-One (Touch) Owner's Manual

Regulatory Model: W04C  
Regulatory Type: W04C001



# Notes, Cautions, and Warnings



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



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



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

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# การทำงานกับส่วนประกอบภายในของคอมพิวเตอร์

## การดำเนินการกับส่วนประกอบภายในคอมพิวเตอร์

ปฏิบัติตามคำแนะนำต่อไปนี้เพื่อปกป้องคอมพิวเตอร์จากความเสียหาย และเพื่อความปลอดภัยของคุณเอง ขั้นตอนที่แจ้งในเอกสารนี้แนะนำภายใต้เงื่อนไขดังต่อไปนี้ ยกเว้นมีระบุไว้เป็นอย่างอื่น:

- คุณได้อ่านข้อมูลด้านความปลอดภัยที่นำมาพร้อมกับคอมพิวเตอร์ของคุณแล้ว
- ส่วนประกอบที่สามารถเปลี่ยนใหม่ หรือในกรณีของส่วนประกอบจัดซื้อแยกจะต้องติดตั้งตามขั้นตอนการถอดโดยย้อนลำดับขั้นตอน



**คำเตือน:** ก่อนดำเนินการกับส่วนประกอบภายในคอมพิวเตอร์ กรุณาอ่านข้อมูลด้านความปลอดภัยที่จัดมาให้พร้อมกับคอมพิวเตอร์ก่อนในเบื้องต้น ดูรายละเอียดเพิ่มเติมด้านความปลอดภัยได้จากโฮมเพจการควบคุมมาตรฐานได้ที่ [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance)



**ข้อควรระวัง:** การซ่อมแซมหลายส่วนสามารถดำเนินการได้โดยช่างที่ผ่านการรับรองเท่านั้น คุณสามารถแก้ไขปัญหาและซ่อมแซมเครื่องเบื้องต้นตามที่แนะนำในเอกสารกำกับผลิตภัณฑ์ หรือตามที่ทีมให้บริการและช่วยเหลือระบบออนไลน์หรือโทรศัพท์ที่แจ้งเท่านั้น ความเสียหายเนื่องจากการซ่อมแซมที่ไม่ได้รับการรับรองจาก Dell จะไม่ได้รับความคุ้มครองตามการรับประกัน อ่านและปฏิบัติตามคำแนะนำด้านความปลอดภัยที่จัดมาให้พร้อมกับผลิตภัณฑ์



**ข้อควรระวัง:** เพื่อป้องกันไฟฟ้าสถิต ให้คลายประจุไฟฟ้าสถิตในตัวคุณโดยการใส่สายรัดข้อมือป้องกันไฟฟ้าสถิต หรือให้สัมผัสพื้นผิวโลหะที่ไม่ทาสี เช่น ช่องต่อที่ด้านหลังของคอมพิวเตอร์ เป็นระยะ ๆ



**ข้อควรระวัง:** ใช้งานส่วนประกอบและการ์ดด้วยความระมัดระวัง อย่าสัมผัสที่ส่วนประกอบหรือหน้าสัมผัสของการ์ด ถีการ์ดจากขอบหรือที่หุ้ยึดโลหะ ถือส่วนประกอบ เช่น โปรเซสเซอร์ที่ขอบ อย่าจับที่ขาหน้าสัมผัส



**ข้อควรระวัง:** ในกรณีที่ต้องการปลดสายต่อ ให้ดึงที่ขั้วต่อหรือแถบดึง อย่าดึงที่สาย สายบางชนิดมีขั้วต่อพร้อมแถบล็อก หากคุณปลดสายเหล่านี้ให้กดที่แถบล็อกก่อนนำสายต่อออก ขณะดึงขั้วต่อออก ให้ดึงตามแนวที่ต่อเพื่อไม่ให้ขาต่อเกิดการงอ ก่อนต่อสาย ตรวจสอบก่อนว่าขั้วต่อทั้งสองได้แนวถูกต้องดีแล้ว



**หมายเหตุ:** สีของคอมพิวเตอร์และของส่วนประกอบบางอย่างอาจไม่เหมือนกับสีที่แสดงในเอกสารนี้

เพื่อป้องกันความเสียหายที่อาจเกิดขึ้นกับคอมพิวเตอร์ ให้ปฏิบัติตามขั้นตอนต่อไปนี้ก่อนทำงานกับภายในของคอมพิวเตอร์

1. ตรวจสอบว่าพื้นผิวที่ใช้งานคอมพิวเตอร์นั้นเรียบและสะอาดเพื่อป้องกันไม่ให้ฝาครอบคอมพิวเตอร์มีรอยขีดข่วน
2. ปิดคอมพิวเตอร์ (ดูในหัวข้อ การปิดคอมพิวเตอร์)



**ข้อควรระวัง:** ปลดสายเครือข่ายโดยถอดสายออกจากคอมพิวเตอร์ก่อน แล้วจึงถอดสายจากอุปกรณ์เครือข่าย

3. ถอดสายโทรศัพท์หรือสายเครือข่ายทั้งหมดออกจากคอมพิวเตอร์
4. ถอดปลั๊กคอมพิวเตอร์และอุปกรณ์ต่าง ๆ ทั้งหมดที่ต่ออยู่กับคอมพิวเตอร์ออกจากเคเบิลไฟฟ้า
5. กดปุ่มเปิดปิดเครื่องค้างไว้ขณะถอดปลั๊กเครื่องเพื่อคายประจุไฟฟ้าสถิตจากเมนบอร์ด
6. ถอดฝาครอบออก



**ข้อควรระวัง:** ก่อนสัมผัสส่วนประกอบด้านในคอมพิวเตอร์ ให้ลงกราวด์ตัวเองโดยสัมผัสพื้นผิวโลหะที่ไม่มีการเคลือบผิว เช่น โลหะที่ด้านหลังคอมพิวเตอร์ ขณะปฏิบัติงาน ให้สัมผัสพื้นผิวโลหะไม่เคลือบผิวเป็นประจำเพื่อถ่ายประจุไฟฟ้าสถิตที่อาจเป็นอันตรายต่อส่วนประกอบภายในของคอมพิวเตอร์

# Turning Off Your Computer




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

## 1. Shut down the operating system:

– In Windows 8:


\* Using a touch-enabled device:

a. Swipe in from the right edge of the screen, opening the Charms menu and select **Settings**.

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

\* Using a mouse:

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

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

– In Windows 7:

1. Click **Start** .

2. Click **Shut Down**.

or

1. Click **Start** .

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



**Down..**

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

## หลังจากทำงานกับส่วนประกอบภายในของคอมพิวเตอร์

หลังจากที่คุณดำเนินการเปลี่ยนชิ้นส่วนใด ๆ เสร็จสิ้นแล้ว ตรวจสอบว่าคุณได้ต่ออุปกรณ์ต่อพ่วง การ์ด และสายใด ๆ ให้เรียบร้อยก่อนที่จะเปิดเครื่องคอมพิวเตอร์ของคุณ

1. ใต้ฝาครอบกลับเข้าที่



**ข้อควรระวัง:** สำหรับการเสียบสายเครือข่าย ให้เสียบสายเข้ากับอุปกรณ์เครือข่ายก่อน แล้วจึงเสียบสายอีกด้านเข้ากับคอมพิวเตอร์

2. เสียบสายโทรศัพท์หรือสายเครือข่ายเข้ากับคอมพิวเตอร์

3. เสียบปลั๊กคอมพิวเตอร์และอุปกรณ์ต่าง ๆ ทั้งหมดที่ต่ออยู่กับคอมพิวเตอร์เข้ากับเต้ารับไฟฟ้า

4. เปิดคอมพิวเตอร์

5. ในกรณีที่จำเป็นให้ตรวจสอบให้แน่ใจว่าคอมพิวเตอร์ทำงานได้ตามปกติโดยใช้ Dell Diagnostics

## Important Information



**NOTE:** Avoid using the touchscreen in dusty, hot, or humid environments.





**NOTE:** Sudden change in temperature may cause condensation on the inner surface of the glass screen, which will disappear after a short time and does not affect normal usage.



## การถอดและติดตั้งส่วนประกอบต่าง ๆ

เนื้อหาในส่วนนี้ระบุรายละเอียดในการถอดหรือติดตั้งส่วนประกอบต่าง ๆ ในคอมพิวเตอร์


### เครื่องมือที่แนะนำให้ใช้

ขั้นตอนต่าง ๆ ในเอกสารนี้อาจจำเป็นต้องใช้เครื่องมือต่อไปนี้ :

- ไขควงปากแบนขนาดเล็ก
- ไขควงหัวแฉก
- แท่งพลาสติกขนาดเล็กสำหรับจัด

## Removing the Video Electronics Standards Association (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.

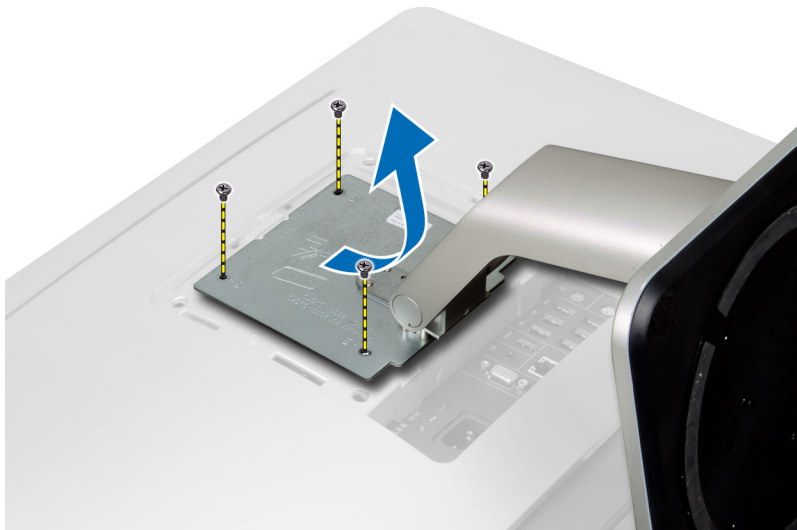
 **NOTE:** To avoid damaging the VESA stand cover, handle the plastic scribe with care.



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.

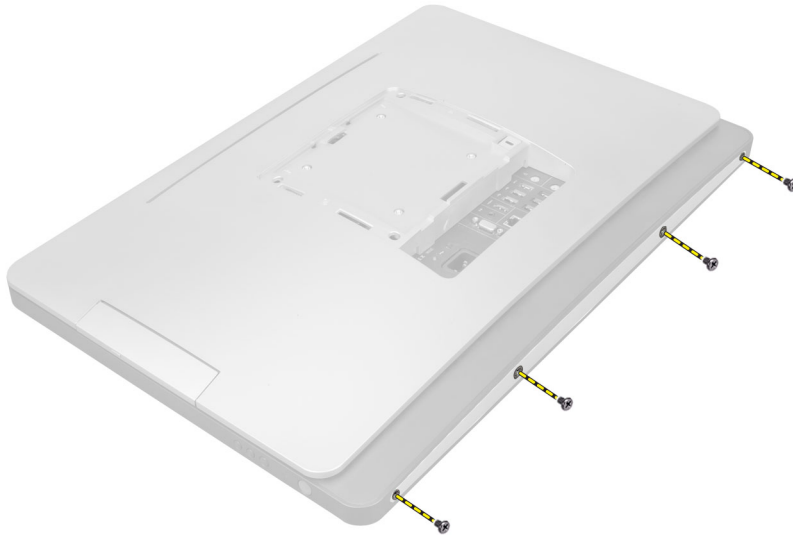


## Installing the VESA Stand

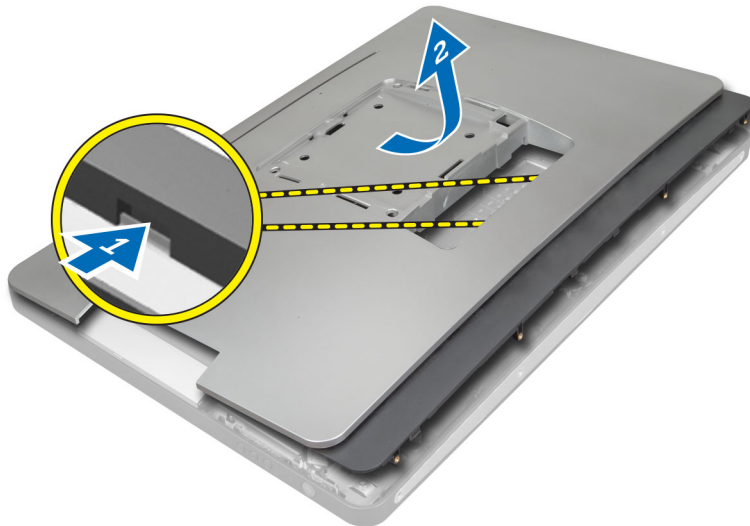
1. Align and place the VESA stand on the back of the computer.
2. Tighten the screws to secure the VESA stand to the computer.
3. Place and press the VESA cover on the computer, till it clicks into place.
4. Follow the procedures in *After Working Inside Your Computer*.

## 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.



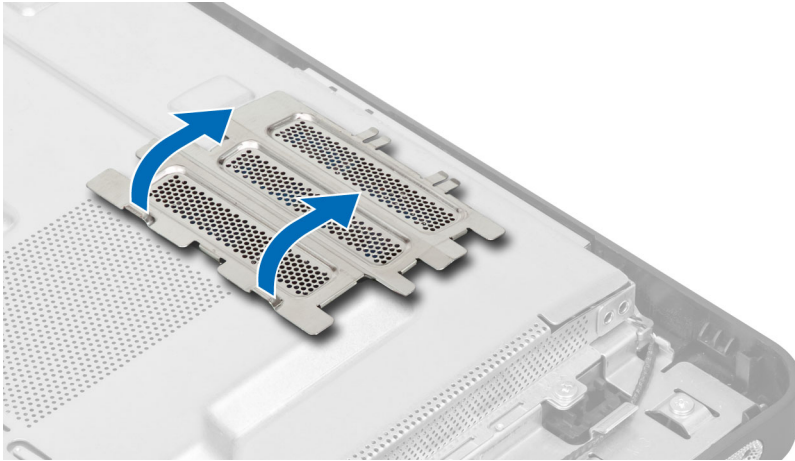
## Installing the Back Cover

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*.

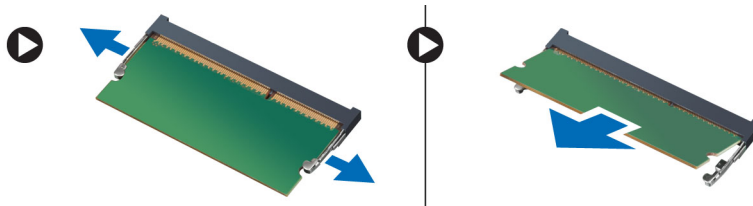
## Removing the Memory

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.

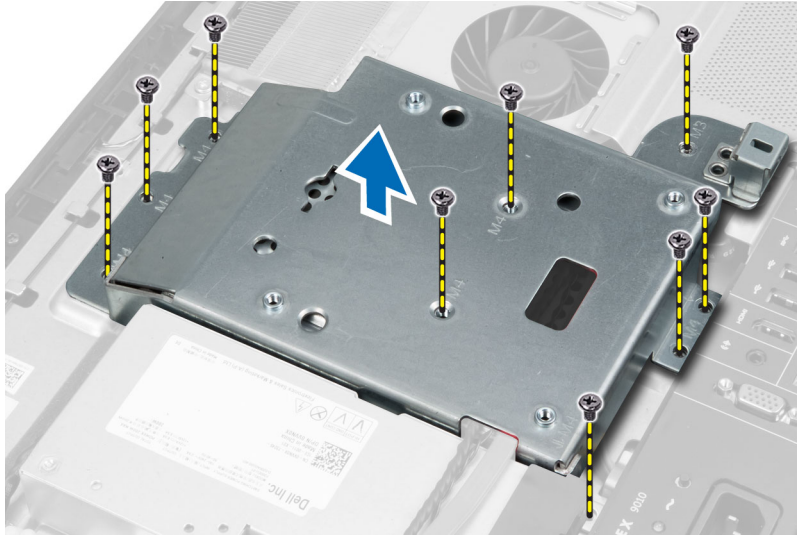


## Installing the Memory

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.

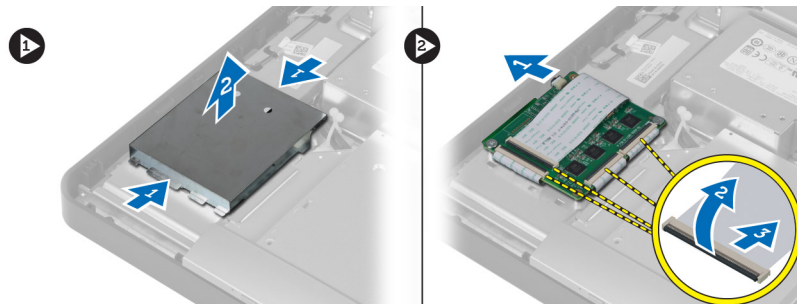


## Installing the VESA Mount Bracket

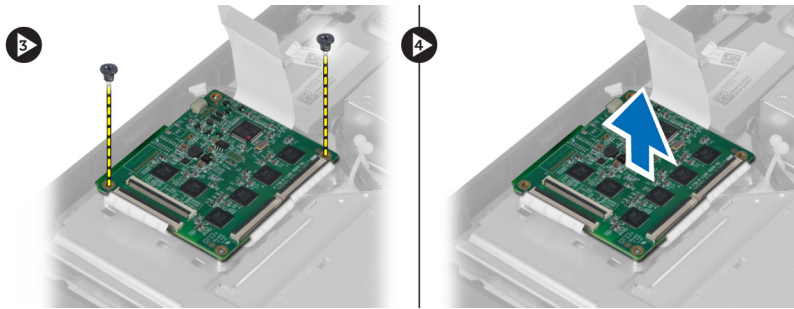
1. Align and place the bracket on the back of the computer.
2. Tighten the screws to secure the VESA mount bracket to the computer.
3. Install the:
  - a) back cover
  - b) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

## Removing the Touchscreen Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
  - a) VESA stand
  - b) back cover
  - c) VESA mount bracket
3. Press the sides of the touchscreen-board shield to release the notches securing it to the chassis and remove the touchscreen-board shield from the chassis. Disconnect the system-board cable from the touchscreen-board cable connector. Lift the connector latch and disconnect the touchscreen-board cables from the touchscreen board.



4. Remove the screws that secure the touchscreen board to the chassis. Lift up and remove the touchscreen board from the chassis.

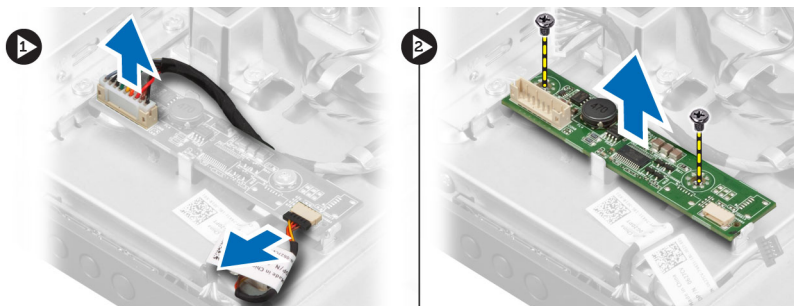


## Installing the Touchscreen Board

1. Tighten the screws to secure the touchscreen board to the chassis.
2. Connect all the touchscreen-board cables to the connectors on the touchscreen board and secure the latches.
3. Connect the system-board cable to the touchscreen-board cable connector.
4. Align and press the sides of touchscreen-board shield to secure the notches into the slots and snap the shield into place.
5. Install:
  - a) VESA mount bracket
  - b) back cover
  - c) VESA stand
6. 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

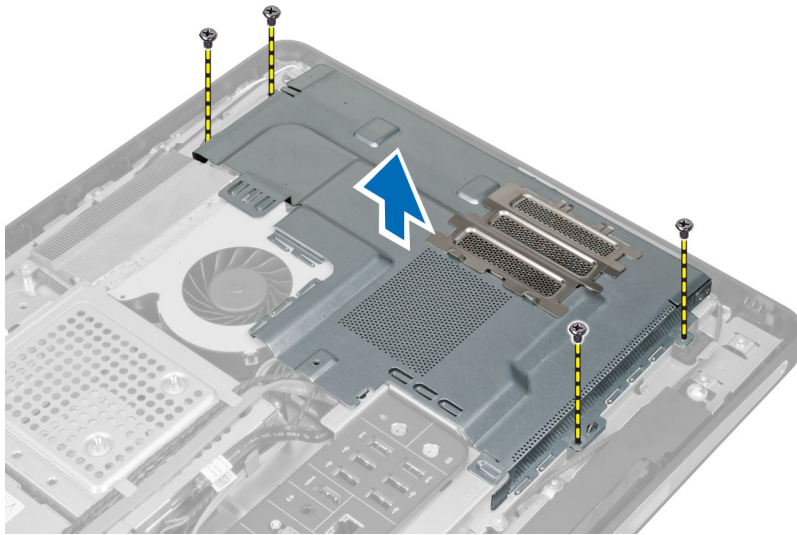
1. Place the converter board into its place.
2. Tighten the screws that secure the converter board to the computer.
3. Connect the backlight and converter cables to the converter board.



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

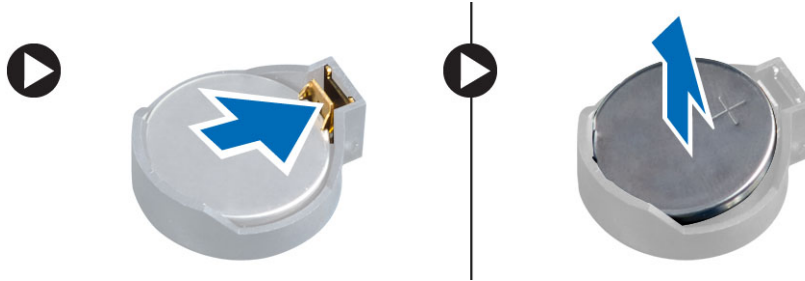
1. Align and place the system-board shield on the back of the computer.
2. Tighten the screws that secure the system-board shield to the computer.
3. Install the:
  - a) VESA mount bracket
  - b) back cover
  - c) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

## 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.

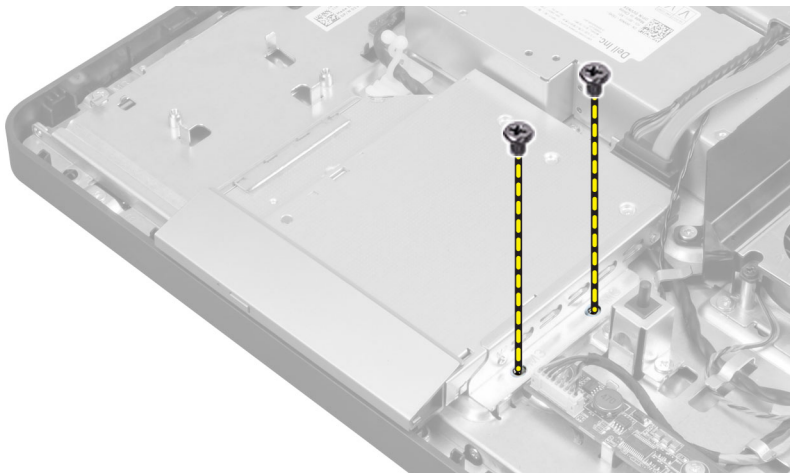


## Installing the Coin-Cell Battery

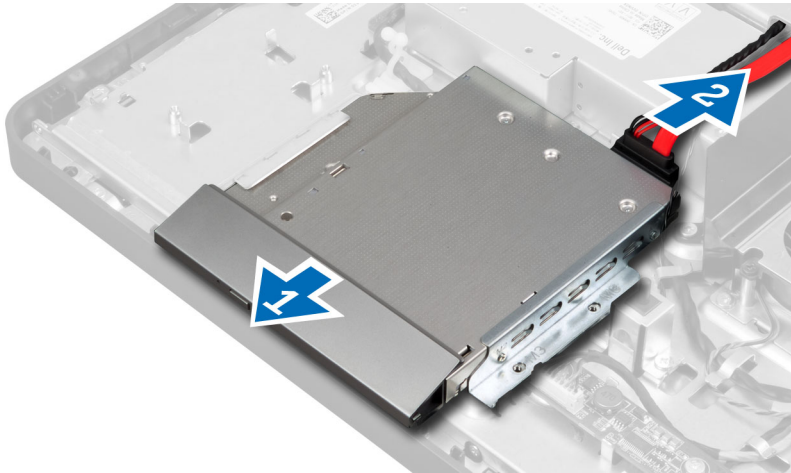
1. Place the coin-cell battery into its slot on the system board.
2. Press the coin-cell battery downward until the release latch springs back into place and secures it.
3. Install:
  - a) system-board shield
  - b) base cover
  - c) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

## Removing the Optical Drive

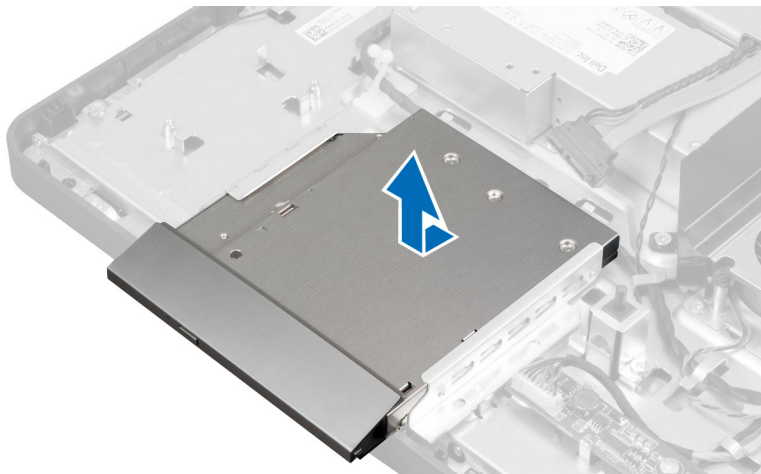
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
  - a) VESA stand
  - b) back cover
  - c) VESA mount bracket
3. Remove the screws that secure the optical-drive bracket to the computer.



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.

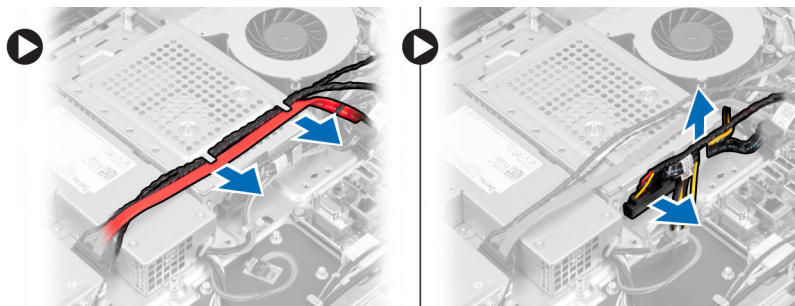


## Installing the Optical Drive

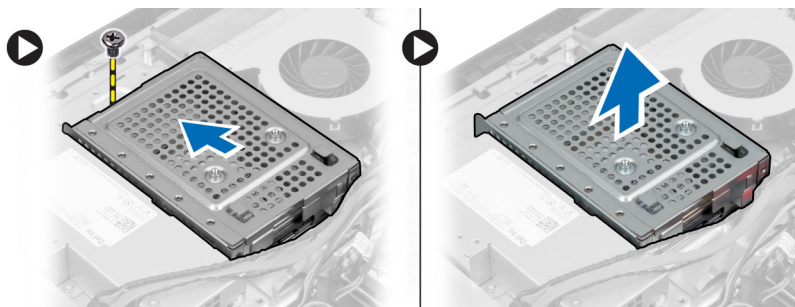
1. Place the optical-drive bracket on the optical drive.
2. Tighten the screws that secure the optical-drive bracket to the optical drive.
3. Align and slide the optical drive into its slot.
4. Connect the optical-drive cable.
5. Tighten the screws that secure the optical drive to the computer.
6. Install 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

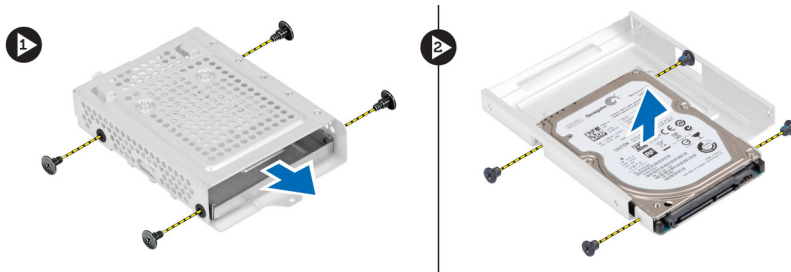
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
  - a) VESA stand
  - b) back cover
  - c) VESA mount bracket
3. Unthread the cables from the notches on the hard-drive bracket. Disconnect the hard-drive cables from the hard drive.



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.



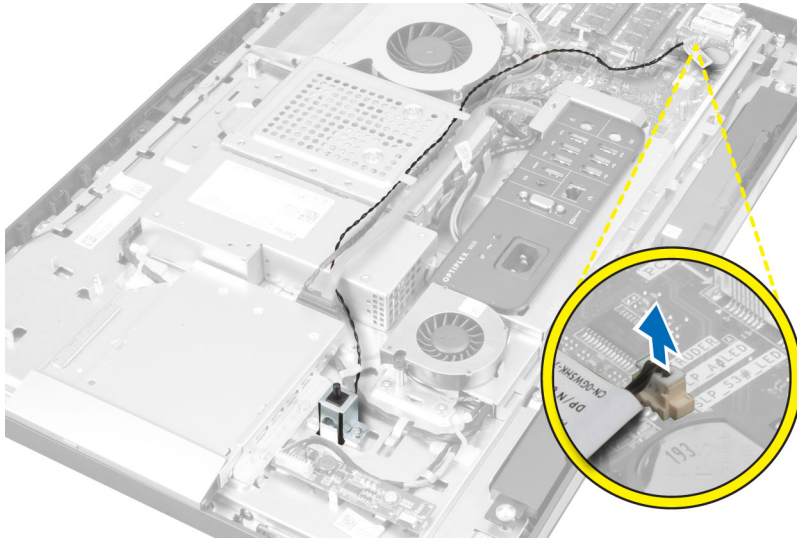
## Installing the Hard Drive

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*.

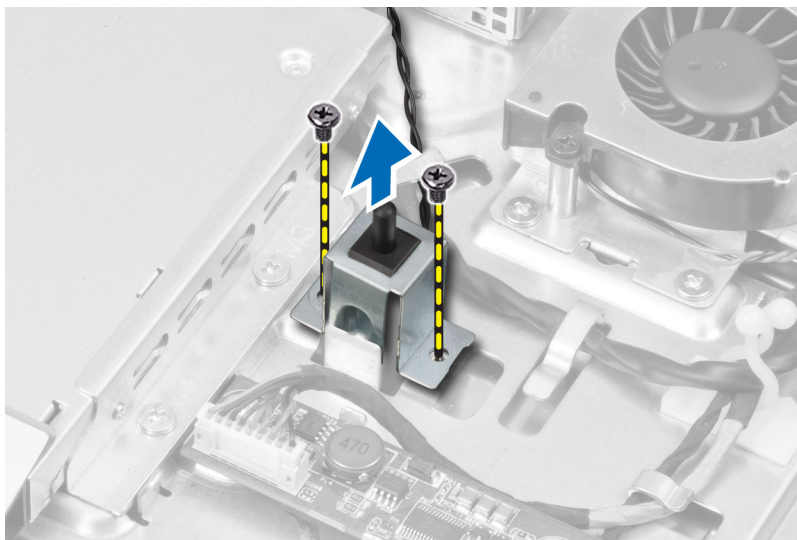
## Removing the Intrusion Switch

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.



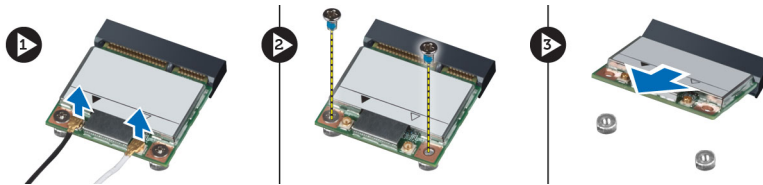
## Installing the Intrusion Switch

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.

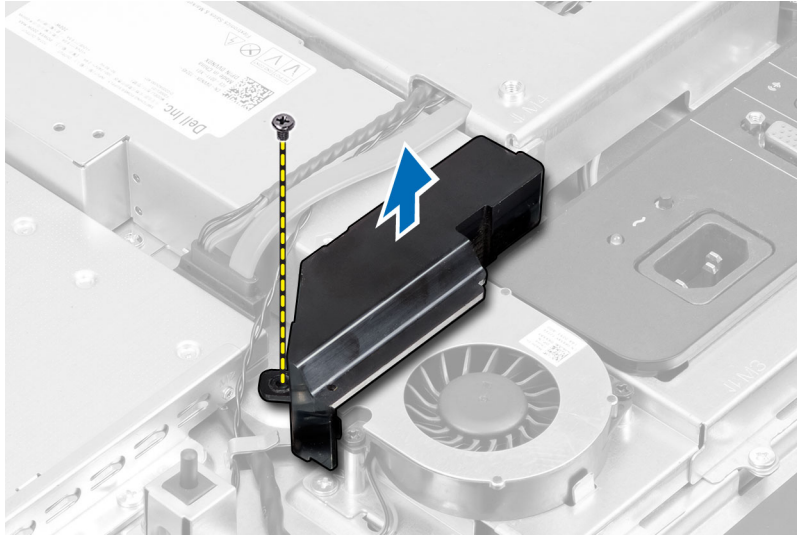


## Installing the WLAN Card

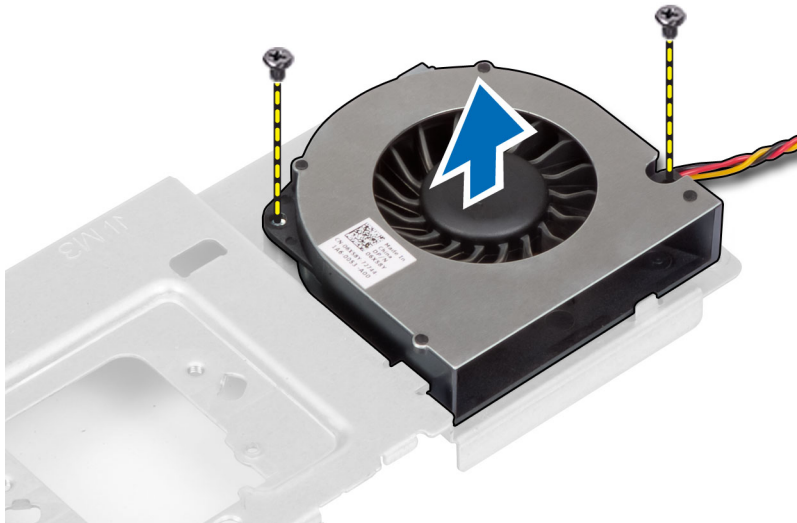
1. Align and place the WLAN card on the connector.
2. Tighten the screws to secure the WLAN card to the system board.
3. Connect the WLAN cables.
4. Install:
  - a) system-board shield
  - b) VESA mount bracket
  - c) back cover
  - d) VESA stand
5. Follow the procedures in *After Working Inside Your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



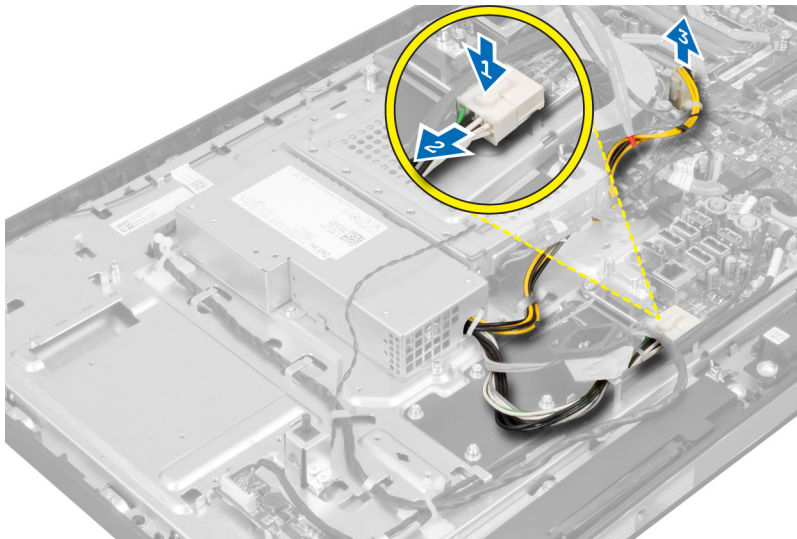
## Installing the Power-Supply Fan

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*.

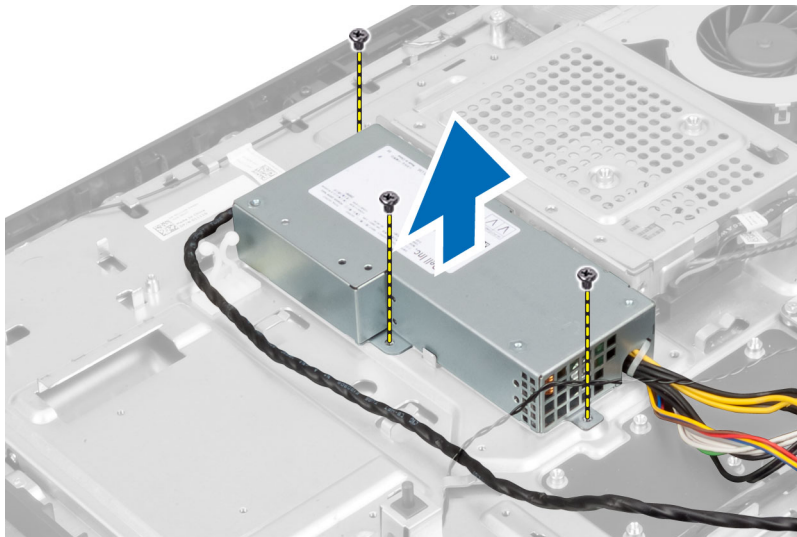


## Removing the Power Supply Unit (PSU)

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.

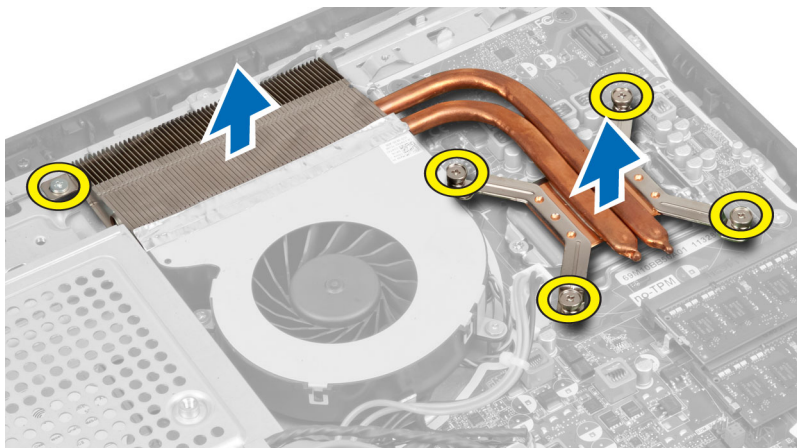


## Installing the Power Supply Unit

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

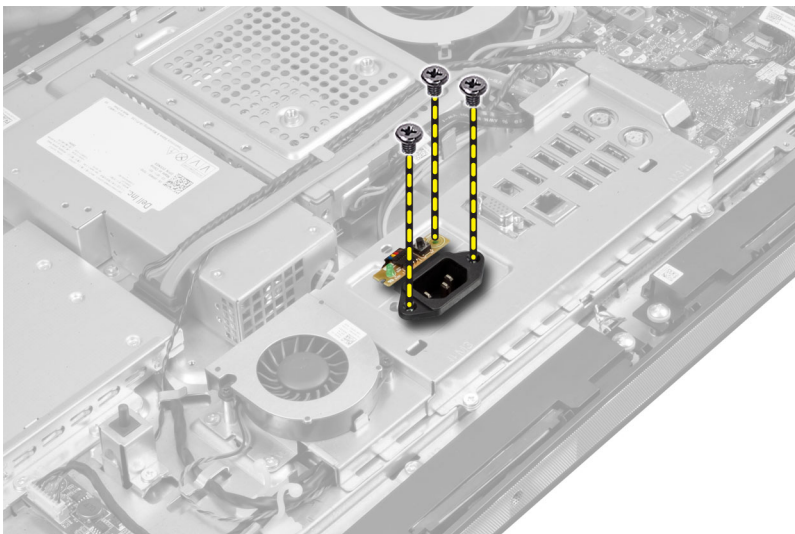
- b) VESA mount bracket
  - c) back cover
  - d) VESA stand
4. Follow the procedures in *After Working Inside Your Computer*.

## Removing the Input/Output Board Shield

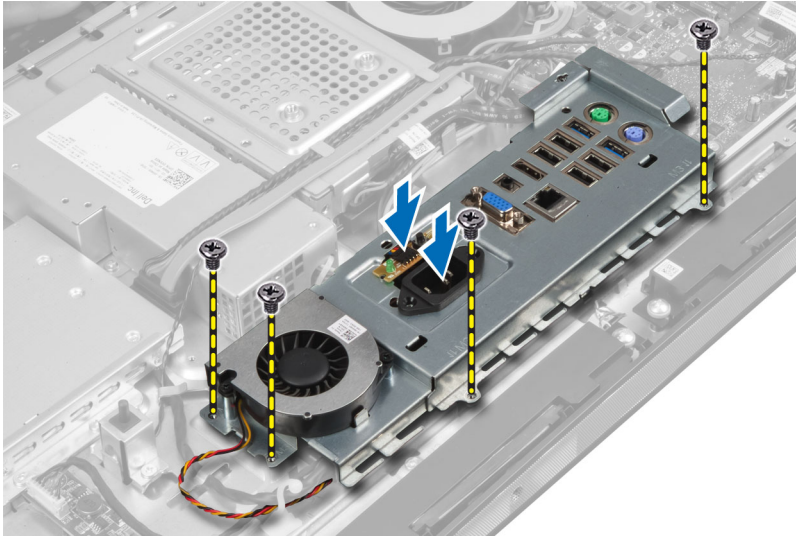
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
  - a) VESA stand
  - b) back cover
  - c) VESA mount bracket
  - d) system-board shield
  - e) power-supply fan
3. Lift the input/output panel away from the computer.



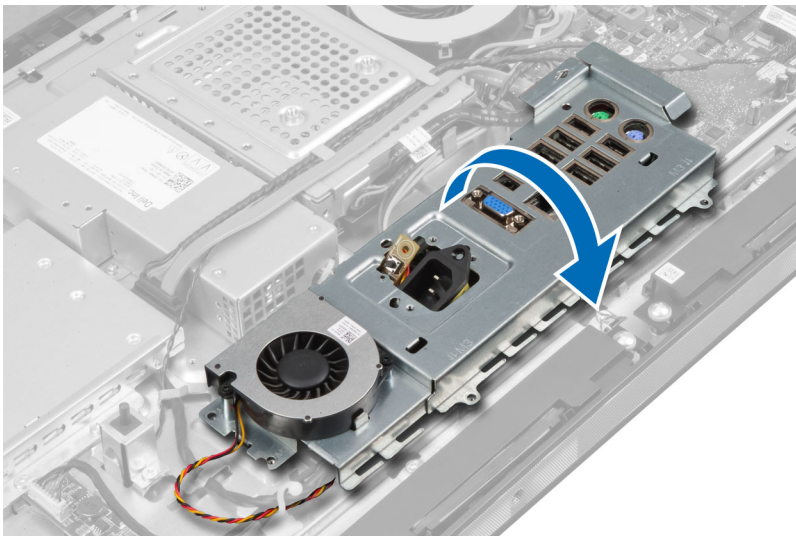
4. Remove the screws that secure the power connector to the input/output board shield.



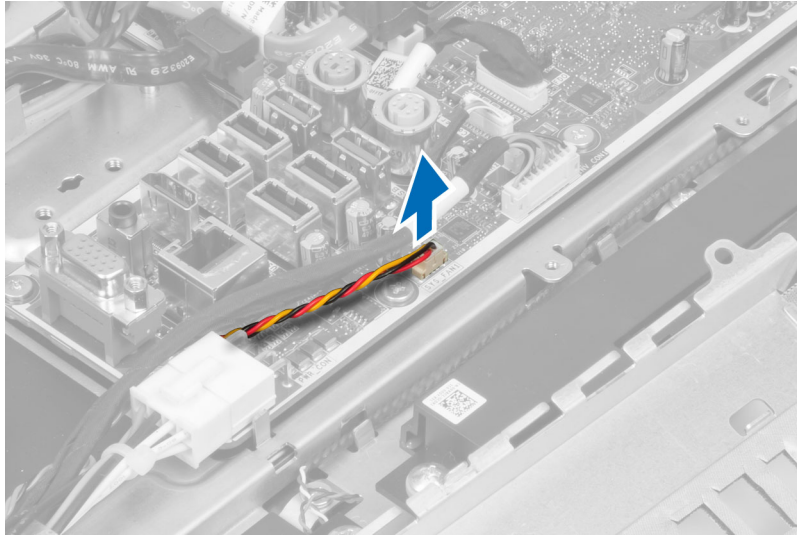
5. Remove the screws that secure the input/output board shield to the chassis. Loosen the power connector and press it down the socket.



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



7. Disconnect the power-connector cable.

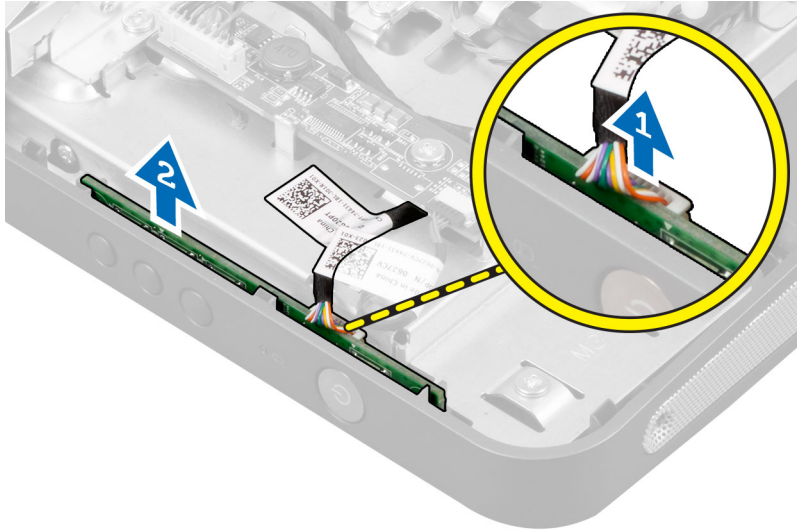


## Installing the Input/Output Board Shield

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.

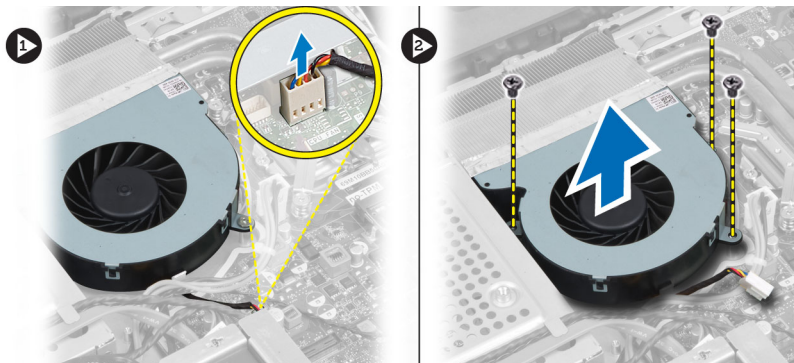


## Installing the Power-Button Board

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.

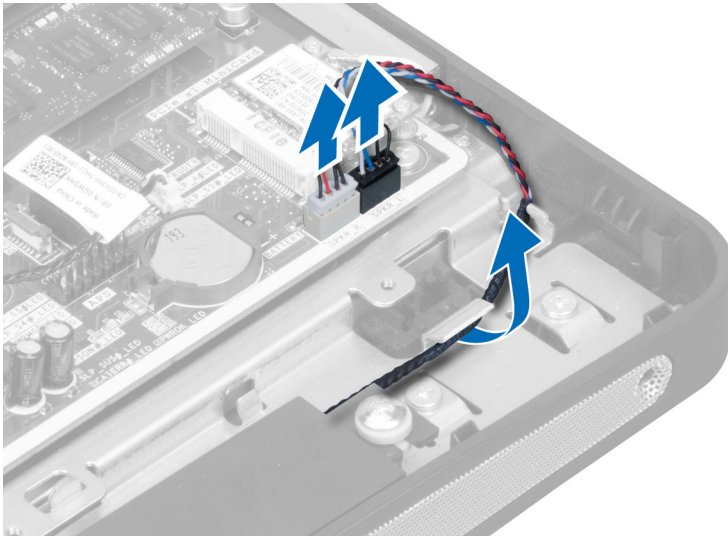


## Installing the Processor

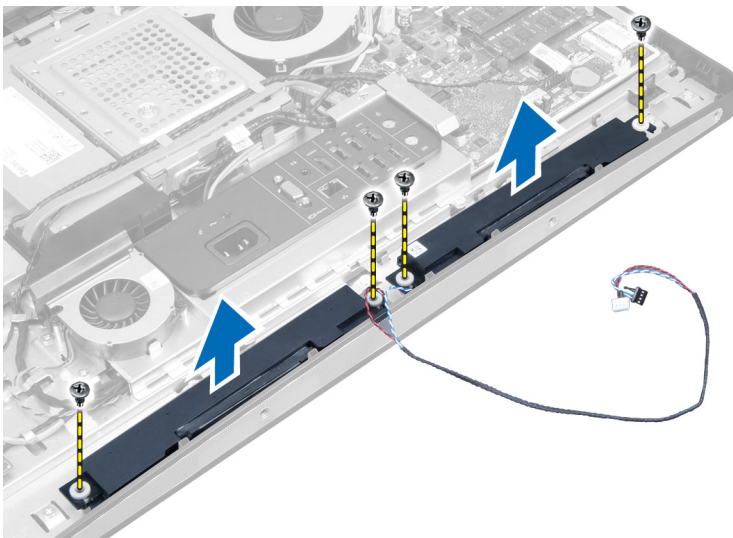
1. Insert the processor into the processor socket. Ensure the processor is properly seated.
2. Press the release lever down and then move it inward to secure it with the retention hook.
3. Install:
  - a) heat-sink assembly
  - b) system-board shield
  - c) VESA mount bracket
  - d) back cover
  - e)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



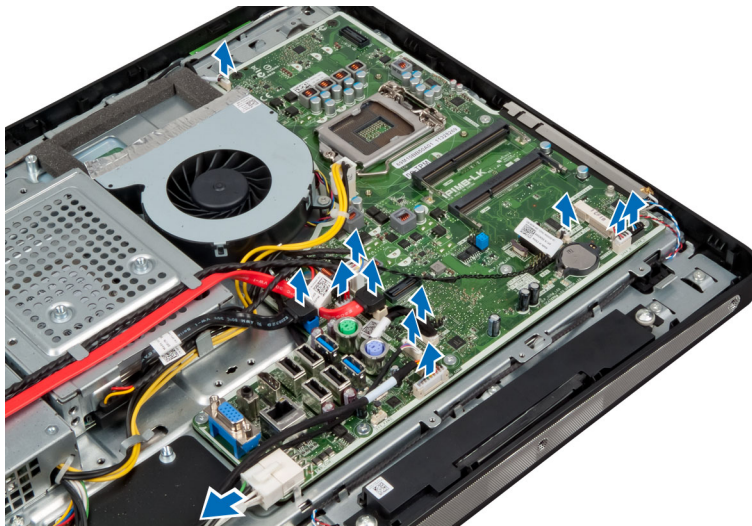


## Installing the Speakers

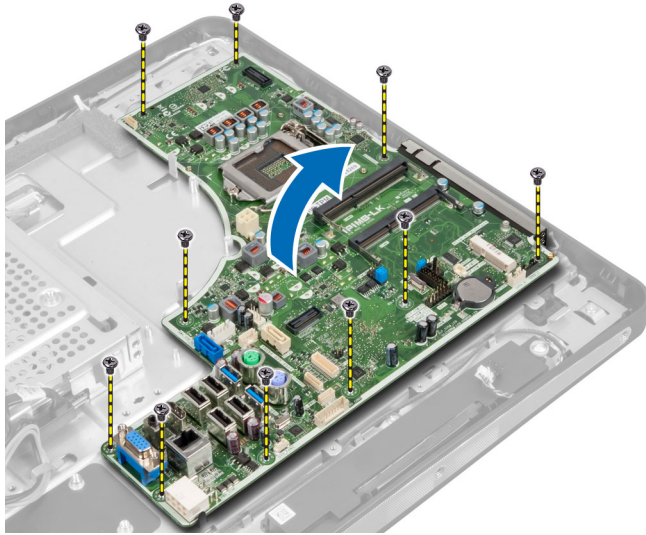
1. Place and align the speakers on the computer. Tighten the screws to secure the speaker to the chassis.
2. Thread the cables on the notches. Connect the right and left speaker cables to the connector on the system board.
3. Install:
  - a) system-board shield
  - b) VESA mount bracket
  - c) back cover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

## Removing the System Board

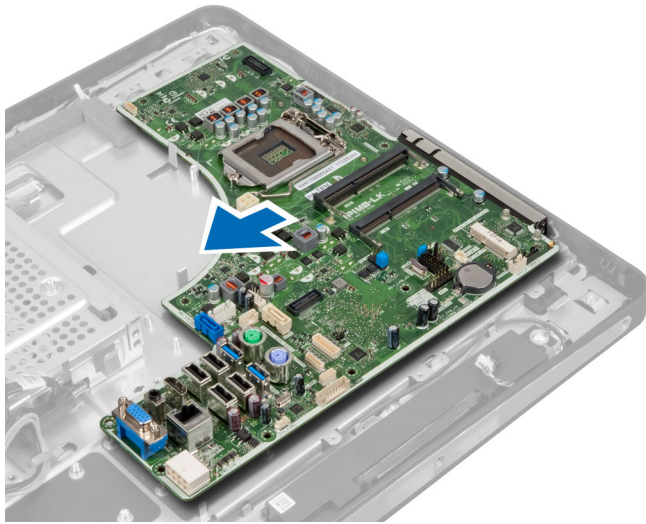
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
  - a) VESA stand
  - b) back cover
  - c) VESA mount bracket
  - d) system-board shield
  - e) memory
  - f) optical drive
  - g) hard drive
  - h) heat-sink assembly
  - i) power supply unit
  - j) input/output board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

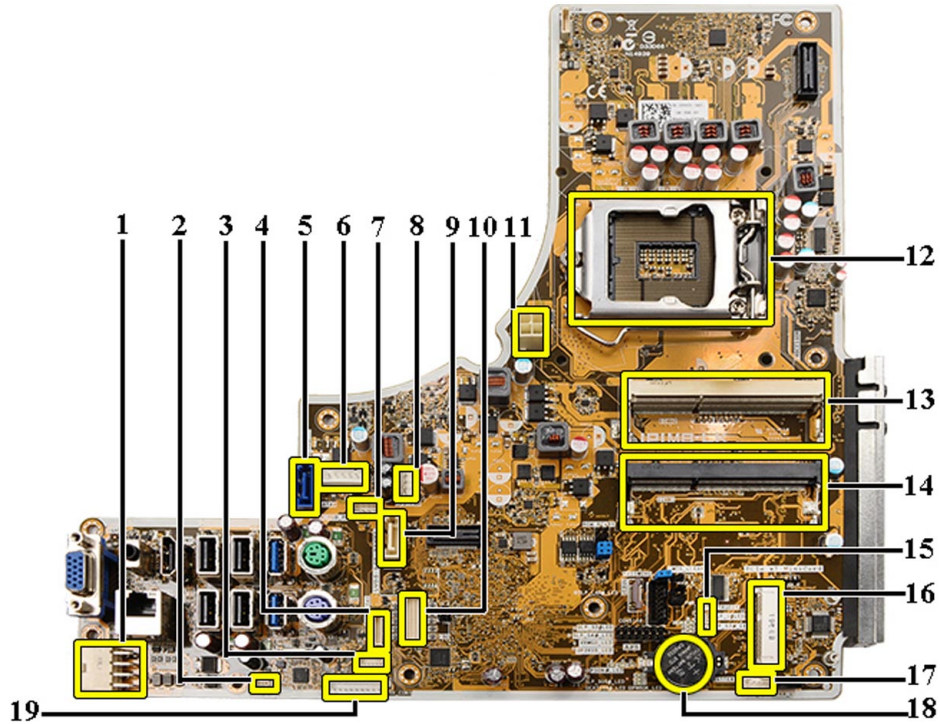


5. Lift and remove the system board from the chassis.



## 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

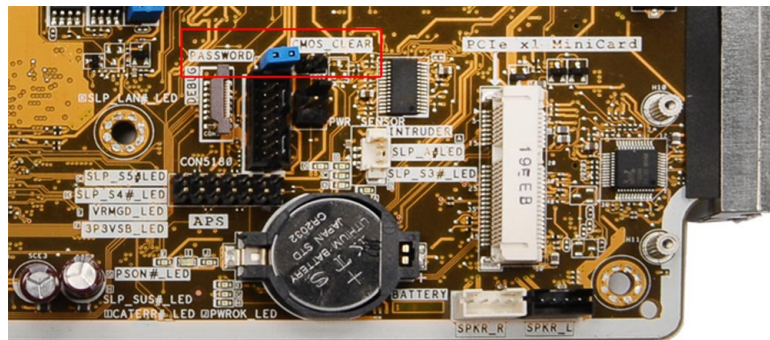
## Installing the System Board

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*.

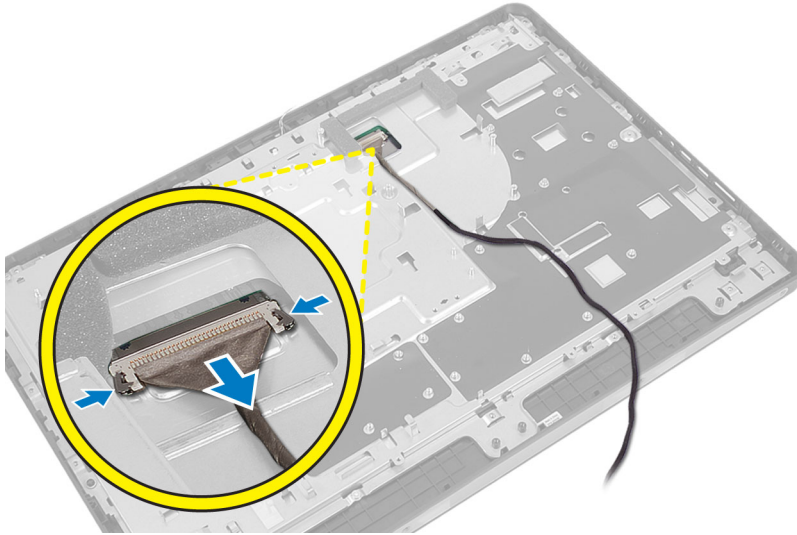
## Removing the Display Panel

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

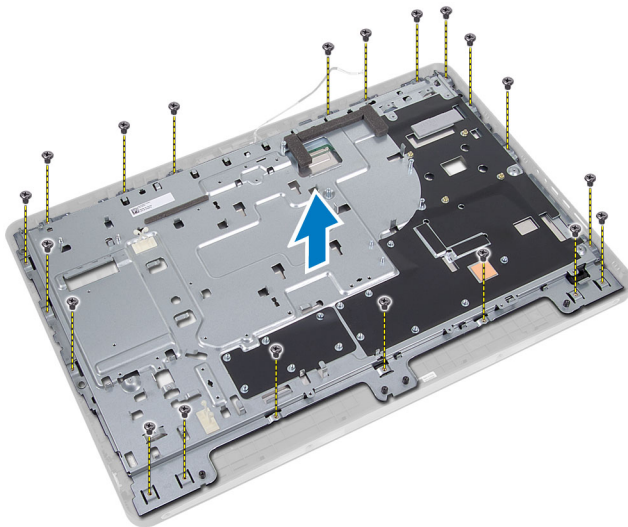
- l) power-supply fan
- m) power supply unit
- n) heat-sink assembly
- o) processor fan
- p) speakers
- q) antenna module
- r) system board

 **NOTE:** The display panel should be disassembled in a clean-room environment.

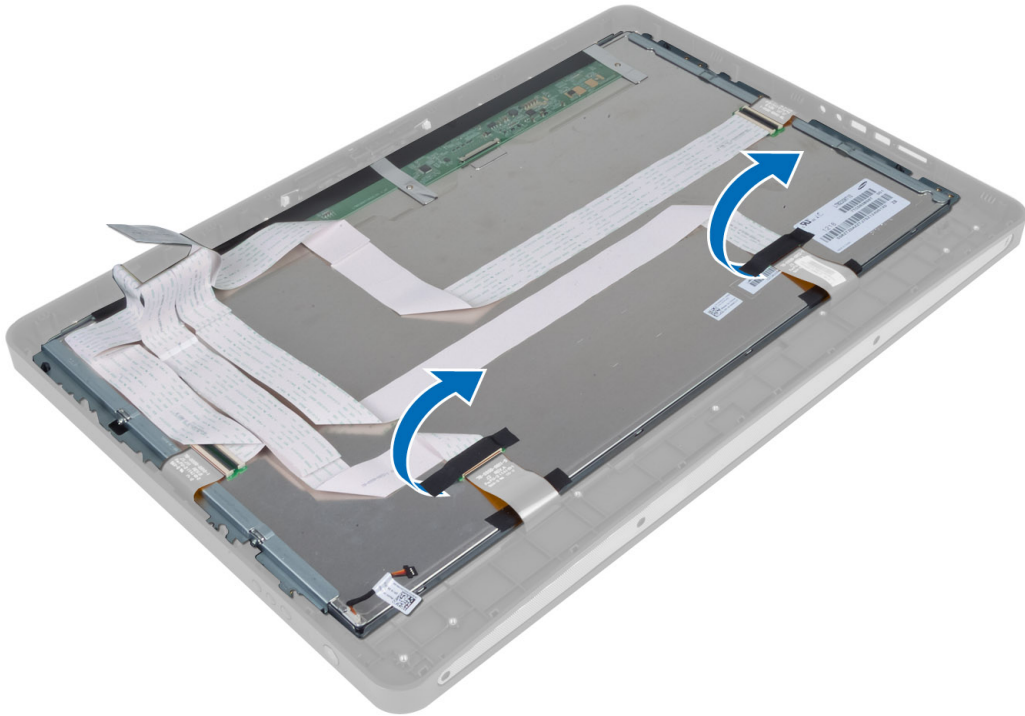
3. Remove the LVDS cable by pressing the latch inwards and disconnecting it from the connector. Remove any other cables or antennae around the edges of the base panel.



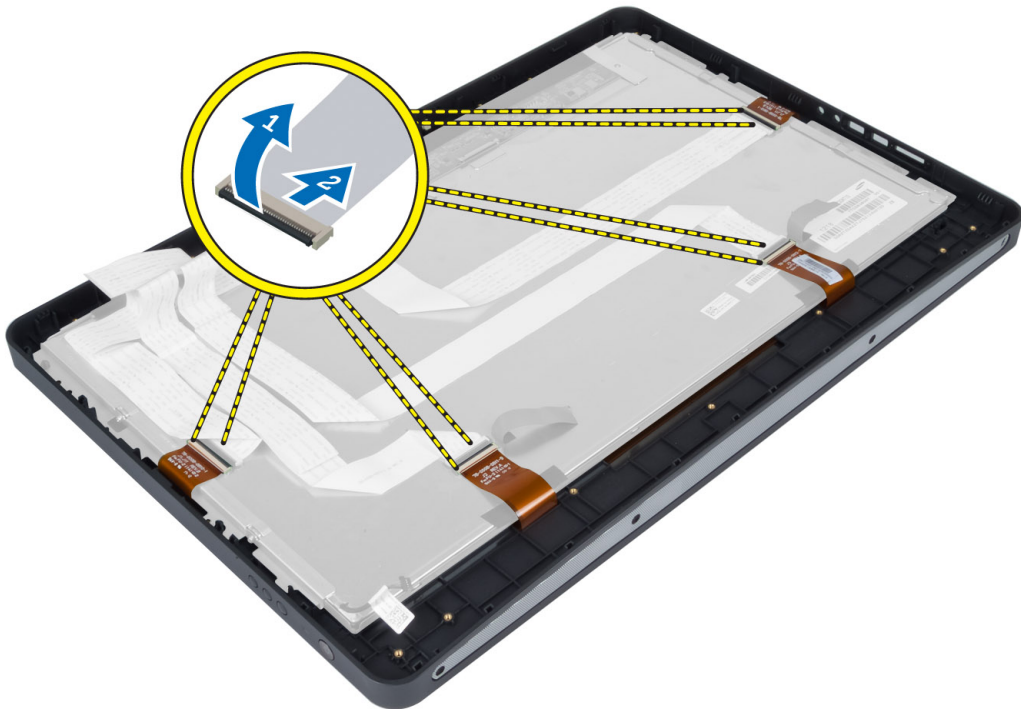
4. Remove the screws that secure the chassis to the middle frame. Lift the chassis off the middle frame.



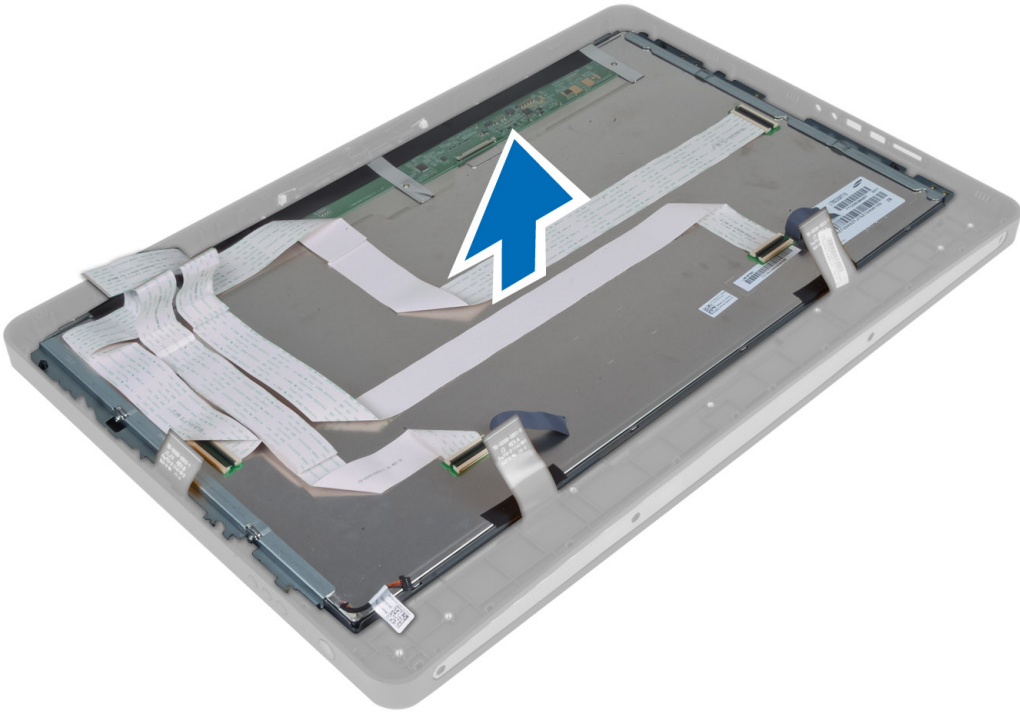
5. Peel off the tape that adheres the connectors to the display panel.



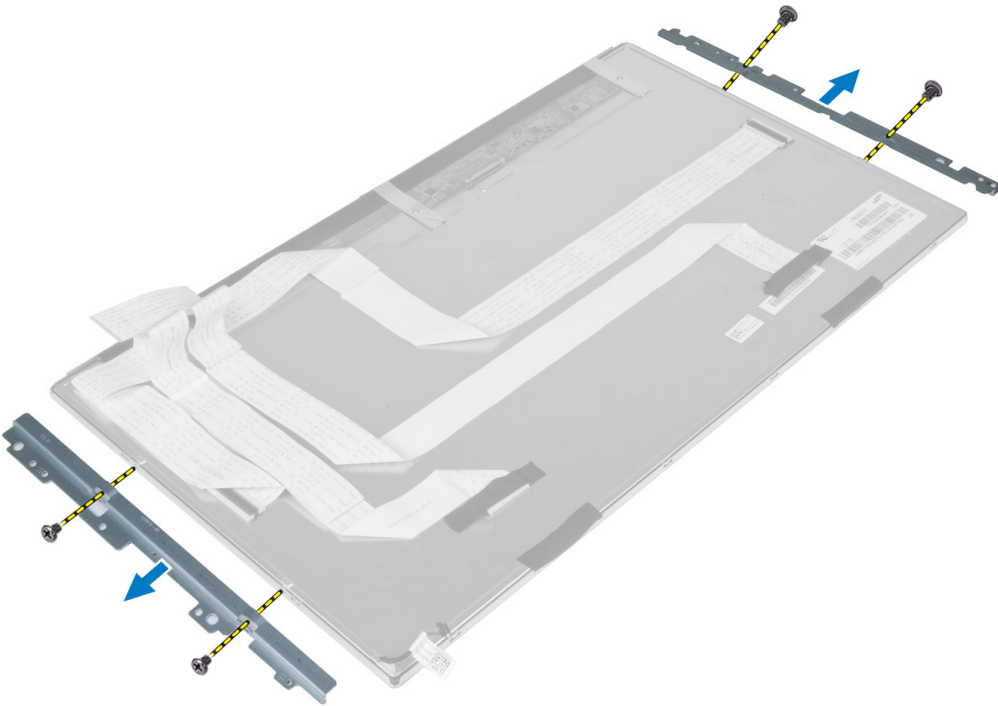
6. Lift the connector latches and disconnect the touchscreen-board cables.



7. Lift and remove the display panel from the middle frame.



8. Remove the screws that secure the display brackets to the display panel and remove the display brackets from the display panel.





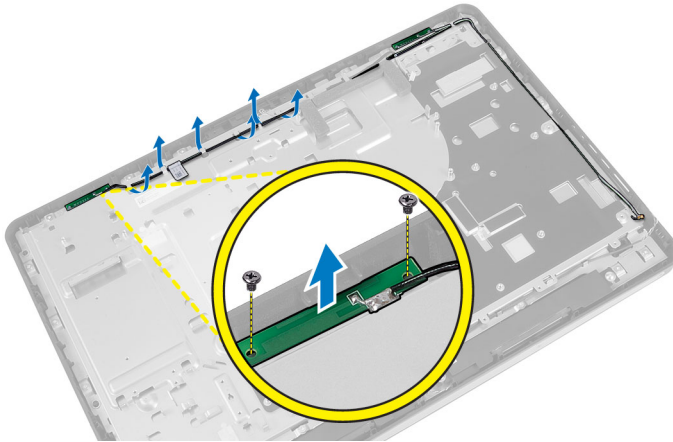
## Installing the Display Panel

1. Tighten the screws that secure the display brackets to the display panel.
2. Align the display assembly over the middle frame.
3. Connect all the touchscreen-board cables to the connectors on the display panel.
4. Affix the tape that adheres the connectors to the display panel.
5. Align the chassis over the display panel and tighten the screws to secure the chassis to the middle frame.
6. Replace the screws that secure the chassis to the middle frame.
7. Connect the LVDS cable to its connector and connect any other cables or antennae around the edges of the base panel.
8. Install:
  - a) system board
  - b) antenna module
  - c) speakers
  - d) processor fan
  - e) heat-sink assembly
  - f) power supply unit
  - g) power-supply fan
  - h) converter board
  - i) power-button board
  - j) intrusion switch
  - k) hard drive
  - l) optical drive
  - m) WLAN card
  - n) input/output board shield
  - o) system-board shield
  - p) VESA mount bracket
  - q) back cover
  - r) VESA stand
9. 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

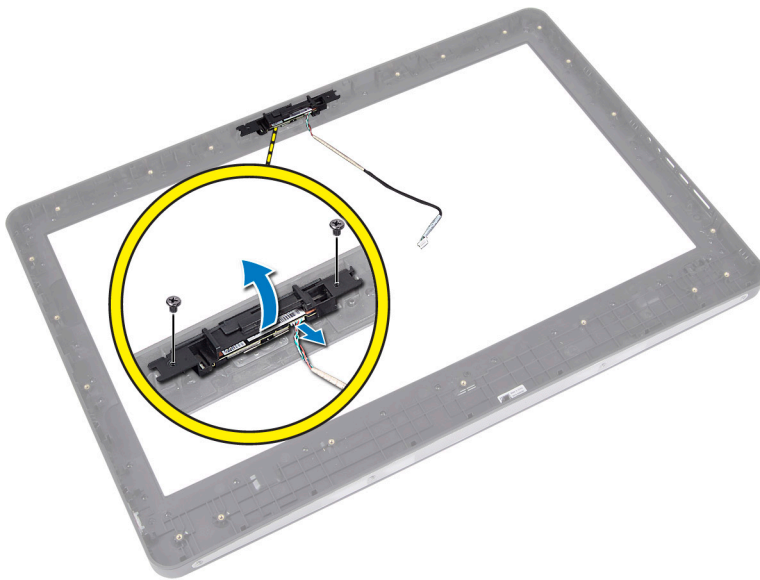
1. Place the antenna module on the chassis.
2. Thread the antenna cable around the edges of the computer. Tighten the screws to secure the antenna module to the chassis
3. Install:
  - a) system board
  - b) power-supply fan
  - c) heat-sink assembly
  - d) power supply unit
  - e) processor fan
  - 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) touchscreen board
- e) system-board shield
- f) input/output board shield
- g) WLAN card
- h) optical drive
- i) hard drive
- j) intrusion switch
- k) power button board
- l) converter board
- m) processor fan
- n) power supply unit
- o) heat-sink assembly
- p) power-supply fan
- q) system board
- r) display panel

3. Disconnect the camera cable from the connector on the camera module. Remove the screws that secure the camera to the display panel. Remove the camera module from the display panel.



## Installing the Camera

1. Align the camera module to its slot on the display panel.
2. Tighten the screws to secure the camera module to the display panel.
3. Connect the camera cable to the connector.
4. 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) touchscreen board
  - p) VESA mount bracket
  - q) back cover
  - r) VESA stand
5. Follow the procedures in *After Working Inside Your Computer*.

## System Setup (การตั้งค่าระบบ)

System Setup (การตั้งค่าระบบ) ใช้เพื่อจัดการฮาร์ดแวร์คอมพิวเตอร์และระบบค่าต่าง ๆ ใน BIOS จาก System Setup คุณสามารถ:

- แก้ไขค่า NVRAM หลังจากใส่หรือถอดฮาร์ดแวร์
- ดูโครงสร้างฮาร์ดแวร์ของเครื่อง
- เปิดหรือปิดอุปกรณ์ในตัวต่าง ๆ
- กำหนดค่าประสิทธิภาพในการทำงานและการจัดการพลังงาน
- กำหนดค่าระบบความปลอดภัยสำหรับคอมพิวเตอร์

## Boot Sequence (ลำดับการบูต)

Boot Sequence ใช้เพื่อข้ามลำดับอุปกรณ์บูตที่กำหนดจาก System Setup โดยบูตตรงจากอุปกรณ์ที่กำหนด (เช่น ออปติคัลไดรฟ์หรือฮาร์ดไดรฟ์) ระหว่างทดสอบระบบไฟ (POST) เมื่อโลโก้ Dell ปรากฏขึ้น คุณสามารถ:

- เรียกใช้ System Setup โดยกดปุ่ม <F2>
- เรียกใช้เมนูบูตแบบครั้งเดียวโดยกดปุ่ม <F12>

เมนูบูตแบบครั้งเดียวจะแสดงอุปกรณ์ต่าง ๆ ที่สามารถใช้บูต รวมทั้งตัวเลือกในการวินิจฉัยระบบ ตัวเลือกเมนูบูตได้แก่

- Removable Drive (ไดรฟ์ถอดพ่วง - ถ้ามี)
- ไดรฟ์ STXXXX



หมายเหตุ: XXX คือเลขไดรฟ์ SATA

- ไดรฟ์ออฟฟิคอล
- Diagnostics (การวินิจฉัยระบบ)



หมายเหตุ: หลังจากเลือก Diagnostics (การวินิจฉัยระบบ) หน้าจอ ePSA diagnostics (วินิจฉัย ePSA) จะปรากฏขึ้น

หน้าจอลำดับบูตจะแสดงตัวเลือกในการเรียกใช้หน้าจอ System Setup ด้วยเช่นกัน

## Navigation Keys


The following table displays the system setup navigation keys.



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

**Table 1. Navigation Keys**


Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
<Enter>	Allows you to select a value in the selected field (if applicable) or follow the link in the field.

Keys	Navigation
Spacebar	Expands or collapses a drop-down list, if applicable.
<Tab>	Moves to the next focus area.
	 <b>NOTE:</b> 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](http://support.dell.com)

**Table 2. General**

Option	Description
System Information	<p>Displays the following information:</p> <ul style="list-style-type: none"> <li>• <b>System Information</b> — Displays <b>BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date,</b> and the <b>Express Service Code.</b></li> <li>• <b>Memory Information</b> — Displays <b>Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size,</b> and <b>DIMM B Size .</b></li> <li>• <b>PCI Information</b> — Displays <b>SLOT1.</b></li> <li>• <b>Processor Information</b> — Displays <b>Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable,</b> and <b>64-Bit Technology .</b></li> <li>• <b>Device Information</b> — Displays <b>SATA-0, SATA-1, LOM MAC Address, Video info, Audio Controller, Modem Controller, Wi-Fi Device, Cellular Device,</b> and <b>Bluetooth Device.</b></li> </ul> <p> <b>NOTE:</b> 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.</p>
Boot Sequence	<p>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.</p> <ul style="list-style-type: none"> <li>• Diskette Drive</li> <li>• Internal HDD</li> <li>• USB Storage Device</li> <li>• CD/DVD/CD-RW Drive</li> </ul>

Option	Description
	<ul style="list-style-type: none"> <li>Onboard NIC (Portables enables, Desktop disables)</li> </ul>
Boot List Option	<ul style="list-style-type: none"> <li>Legacy</li> <li>UEFI</li> </ul>
Date/Time	<p>This option controls the system date and time. Changes to the date and time take effect immediately.</p> <ul style="list-style-type: none"> <li>MM /DD /YY</li> <li>HH: MM: SS: A/P</li> </ul>
Battery Information	<p>Displays each battery graphically with the percent charged, charging state, Health, and AC adapter information.</p>

**Table 3. System Configuration**




Option	Description
<b>Integrated NIC</b>	<p>This option controls the on-board LAN Controller.</p> <ul style="list-style-type: none"> <li>Disabled — The internal LAN is off and not visible top the operating system.</li> <li>Enabled — The internal LAN is enabled.</li> <li>Enabled w/PXE (selected by default) — The internal LAN is enabled (with PXE boot).</li> <li>Enabled w/ImageServer — The internal LAN is enabled (with ImageServer boot).</li> </ul>
<b>SATA Operation</b>	<p>This option configures the operating mode of the integrated SATA hard drive controller.</p> <ul style="list-style-type: none"> <li>Disabled — SATA controllers are hidden.</li> <li>ATA — SATA is configured for ATA mode.</li> <li>AHCI (selected by default) — SATA is configured for AHCI.</li> <li>RAID On — configured to support RAID mode (Intel Rapid Restore Technology).</li> </ul>
<b>Drives</b>	<p>This option lets you enable or disable various drives on board. By default the options are enabled.</p> <ul style="list-style-type: none"> <li>SATA-0</li> <li>SATA-1</li> </ul>
<b>SMART Reporting</b>	<p>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.</p> <ul style="list-style-type: none"> <li><b>Enable SMART Reporting</b> - This option is disabled by default.</li> </ul>

Option	Description
<b>USB Configuration</b>	<p>This field configures the integrated USB controller. If <b>Boot Support</b> is enabled, the system is allowed to boot any type of USB mass storage devices (HDD, memory key, floppy).</p> <p>If USB port is enabled, device attached to this port is enabled and available for operation system.</p> <p>If USB port is disabled, the operation system cannot see any device attached to this port.</p> <ul style="list-style-type: none"> <li>• Enable Boot Support</li> <li>• Enable Front USB Ports</li> <li>• Enable Rear Dual USB Ports</li> <li>• Enable Rear Triple USB Ports</li> </ul>
<b>Miscellaneous Devices</b>	<p>Allows you to enable or disable various on-board devices.</p> <ul style="list-style-type: none"> <li>• Enable/Disable Microphone</li> <li>• Enable/Disable Camera</li> <li>• Enable/Disable Media Card</li> </ul>

**Table 4. Security**

Option	Description
<b>Admin Password</b>	<p>This field lets you set, change, or delete the administrator (admin) password (sometimes called the setup password). The admin password enables several security features.</p> <p>The drive does not have a password set by default.</p> <ul style="list-style-type: none"> <li>• Enter the old password</li> <li>• Enter the new password</li> <li>• Confirm the new password</li> </ul> <p>Click <b>OK</b> after entering the password details.</p>
<b>System Password</b>	<p>Allows you to set, change, or delete the computer password (previously called the primary password).</p> <p>The drive does not have a password set by default.</p> <ul style="list-style-type: none"> <li>• Enter the old password</li> <li>• Enter the new password</li> <li>• Confirm the new password</li> </ul> <p>Click <b>OK</b> after entering the password details.</p>
<b>Internal HDD-0 Password</b>	<p>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.</p> <p>The drive does not have a password set by default.</p> <ul style="list-style-type: none"> <li>• Enter the old password</li> <li>• Enter the new password</li> <li>• Confirm the new password</li> </ul> <p>Click <b>OK</b> after entering the password details.</p>





Option	Description
<b>Strong Password</b>	Enable strong password - This option is disabled by default.
<b>Password Configuration</b>	<p>This field controls the minimum and maximum number of characters allowed for the admin and system passwords.</p> <ul style="list-style-type: none"> <li>• Admin Password Min</li> <li>• Admin Password Max</li> <li>• System Password Min</li> <li>• System Password Max</li> </ul>
<b>Password Bypass</b>	<p>Allows you to bypass the <b>System Password</b> and the internal HDD password prompts during a system restart.</p> <ul style="list-style-type: none"> <li>• Disabled (selected by default) — Always prompt for the system and internal HDD password when they are set.</li> <li>• Reboot Bypass — Bypass the password prompts on restarts (warm boots).</li> </ul> <p> <b>NOTE:</b> 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.</p>
<b>Password Change</b>	<p>Allows you to determine whether changes to the system and hard disk passwords are permitted when an administrator password is set.</p> <ul style="list-style-type: none"> <li>• Allow Non-Admin Password Changes (selected by default)</li> </ul>
<b>TPM Security</b>	<p>This option lets you control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system.</p> <p>TPM Security (selected by default)</p> <p> <b>NOTE:</b> Activation, deactivation, and clear options are not affected if you load the setup program's default values. Changes to this option take effect immediately.</p>
<b>TCM Security</b>	<p>Allows you to enable or disable TCM security.</p> <p>TCM Security (selected by default)</p> <p> <b>NOTE:</b> Activation, deactivation, and clear options are not affected if you load the setup program's default values. Changes to this option take effect immediately.</p>
<b>Computrace</b>	<p>This field lets you activate or disable the BIOS module interface of the optional <b>Computrace Service</b> from <b>Absolute Software</b>.</p> <ul style="list-style-type: none"> <li>• Deactivate (selected by default)</li> <li>• Disable</li> <li>• Activate</li> </ul>
<b>Chassis Intrusion</b>	<p>This field controls the chassis intrusion feature.</p> <ul style="list-style-type: none"> <li>• Disable</li> <li>• Enable (selected by default)</li> <li>• On-Silent</li> </ul>
<b>CPU XD Support</b>	Allows you to enable or disable the execute disable mode of the processor.

Option	Description
	<ul style="list-style-type: none"> <li>• Enable CPU XD Support (selected by default)</li> </ul>
<b>OROM Keyboard Access</b>	<p>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).</p> <ul style="list-style-type: none"> <li>• Enable (selected by default) — User may enter OROM configuration screens via the hotkey.</li> <li>• 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.</li> <li>• Disable — User can not enter the OROM configuration screens via the hotkey.</li> </ul>
<b>Admin Setup Lockout</b>	<p>Allows you to enable or disable the option to enter setup when an admin password is set.</p> <ul style="list-style-type: none"> <li>• Enable Admin Setup Lockout (selected by default)</li> </ul>

**Table 5. Performance**

Option	Description
<b>Multi Core Support</b>	<p>Specifies whether the process will have one or all cores enabled. The performance of some applications will improve with the additional cores.</p> <ul style="list-style-type: none"> <li>• All (selected by default)</li> <li>• 1</li> <li>• 2</li> </ul>
<b>Intel Speed Step</b>	<p>Allows you to enable or disable the Intel SpeedStep mode of the processor.</p> <ul style="list-style-type: none"> <li>• Enable Intel SpeedStep (selected by default)</li> </ul>
<b>C States Control</b>	<p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> <li>• C states (selected by default)</li> </ul>
<b>Intel TurboBoost</b>	<p>Allows you to enable or disable Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> <li>• Enable Intel TurboBoost (selected by default) — Allows the Intel TurboBoost driver to increase the performance of the CPU or graphics processor.</li> </ul>
<b>Hyperthread Control</b>	<p>This options allows users to enable and disable the Hyperthread Control.</p> <ul style="list-style-type: none"> <li>• Hyperthread Control (selected by default)</li> </ul>
<b>HDD Protection Support</b>	<p>Allows you enable or disable the hard disk drive protection card. HDD Protection Card - Enable/Disable</p>

**Table 6. Power Management**

<b>Option</b>	<b>Description</b>
<b>AC Recovery</b>	<p>Specifies how the computer will respond when AC power is applied after an AC power loss. You can set the AC Recovery to:</p> <ul style="list-style-type: none"><li>• Power Off (selected by default)</li><li>• Power On</li><li>• Last Power State</li></ul>
<b>Auto On Time</b>	<p>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.</p> <ul style="list-style-type: none"><li>• Disabled — The system will not automatically power up.</li><li>• Every Day — The system will power up every day at the time you specified above .</li><li>• Weekdays — The system will power up Monday through Friday at the time you specified above.</li><li>• Select Days — The system will power up on days selected above at the time you specified above.</li></ul> <p>It wasn</p> <p> <b>NOTE:</b> This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if <b>Auto Power is set to disabled</b>.</p>
<b>Deep Sleep Control</b>	<p>Allows you to define the controls when Deep Sleep is enabled.</p> <ul style="list-style-type: none"><li>• Disabled</li><li>• Enabled in S5 only</li><li>• Enabled in S4 and S5</li></ul> <p>This option is disabled by default.</p>
<b>Fan Control Override</b>	<p>Controls the speed of the system fan.</p> <ul style="list-style-type: none"><li>• Fan Control Override (not selected)</li></ul> <p> <b>NOTE:</b> When enabled, the fan runs at full speed.</p>
<b>USB Wake Support</b>	<p>This option allows you to enable USB devices to wake the computer from standby.</p> <ul style="list-style-type: none"><li>• Enable USB Wake Support (not selected by default)</li></ul>
<b>Wake on LAN/WLAN</b>	<p>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.</p> <ul style="list-style-type: none"><li>• 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.</li><li>• LAN Only — Allows the system to be powered on by special LAN signals.</li><li>• WLAN Only — Allows the system to be powered on by special WLAN signals.</li></ul>

Option	Description
	<ul style="list-style-type: none"> <li>LAN or WLAN — Allows the system to be powered on by special LAN or WLAN signals.</li> </ul>
<b>Block Sleep</b>	<p>This option lets you block entering to sleep (S3 state) in operating system environment.</p> <ul style="list-style-type: none"> <li>Block Sleep (S3 state) - This option is disabled by default.</li> </ul>

**Table 7. POST Behavior**

Option	Description
<b>Adapter Warnings</b>	Allows you to enable/disable the BIOS warning messages when you use certain power adapters.
<b>Numlock LED</b>	<p>Specifies if the NumLock function can be enabled when the system boots.</p> <ul style="list-style-type: none"> <li>Enable Numlock (default)</li> </ul>
<b>Keyboard Errors</b>	<p>Specifies whether keyboard related errors are reported when it boots.</p> <ul style="list-style-type: none"> <li>Enable Keyboard Error Detection (selected by default)</li> </ul>
<b>POST Hotkeys</b>	<p>Specifies whether the sign-on screen displays a message, that displays the keystroke sequence required to enter the BIOS Boot Option Menu.</p> <ul style="list-style-type: none"> <li>Enable F12 Boot Option menu (selected by default)</li> </ul>
<b>Fastboot</b>	<p>This option can speed up the boot process bypassing some compatibility steps.</p> <ul style="list-style-type: none"> <li>Minimal</li> <li>Thorough</li> <li>Auto</li> </ul>

**Table 8. Virtualization Support**

Option	Description
<b>Virtualization</b>	<p>This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization technology.</p> <ul style="list-style-type: none"> <li>Enable Intel Virtualization Technology (selected by default)</li> </ul>
<b>VT for Direct I/O</b>	<p>Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O.</p> <ul style="list-style-type: none"> <li>Enable Intel VT for Direct I/O (selected by default)</li> </ul>
<b>Trusted Execution</b>	<p>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.</p>

Option	Description
	<ul style="list-style-type: none"> <li>Trusted Execution - This option is disabled by default.</li> </ul>



**Table 9. Wireless**

Option	Description
<b>Wireless Switch</b>	<p>This option determines which wireless device can be controlled by the Wireless Switch.</p> <ul style="list-style-type: none"> <li>WWAN</li> <li>WLAN</li> <li>Bluetooth</li> </ul>
<b>Wireless Device Enable</b>	<p>This option allows enabling/disabling of internal wireless devices.</p> <ul style="list-style-type: none"> <li>WWAN</li> <li>WLAN</li> <li>Bluetooth</li> </ul>

**Table 10. Maintenance**

Option	Description
<b>Service Tag</b>	Displays the service tag of your computer.
<b>Asset Tag</b>	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
<b>SERR Messages</b>	<p>Controls the SERR message mechanism. Some graphics cards require that the SERR message mechanism be disabled.</p> <ul style="list-style-type: none"> <li>Enable SERR Messages (selected by default)</li> </ul>

**Table 11. Image Server**

Option	Description
<b>Lookup Method</b>	<p>Specifies how the ImageServer looks up the server address.</p> <ul style="list-style-type: none"> <li>Static IP</li> <li>DNS (selected by default)</li> </ul> <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b>.</p>
<b>ImageServer IP</b>	<p>Displays the primary static IP address of the ImageServer with which the client software communicates. The default IP address is <b>255.255.255.255</b>.</p> <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> and when <b>Lookup Method</b> is set to <b>Static IP</b>.</p>






Option	Description
<b>ImageServer Port</b>	Allows you to specify the primary IP port of the ImageServer, which is used by the client to communicate. The default IP port is <b>06910</b> .   <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> .
<b>Client DHCP</b>	Specifies how the client obtains the IP address. <ul style="list-style-type: none"> <li>• Static IP</li> <li>• DHCP (selected by default)</li> </ul>  <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> .
<b>Client IP</b>	Displays the static IP address of the client. The default IP address is <b>255.255.255.255</b> .   <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> and when <b>Client DHCP</b> is set to <b>Static IP</b> .
<b>Client SubnetMask</b>	Displays the subnet mask of the client. The default setting is <b>255.255.255.255</b> .   <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> and when <b>Client DHCP</b> is set to <b>Static IP</b> .
<b>Client Gateway</b>	Displays the gateway IP address for the client. The default setting is <b>255.255.255.255</b> .   <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> and when <b>Client DHCP</b> is set to <b>Static IP</b> .
<b>License Status</b>	Displays the current license status.

Table 12. System Logs


Option	Description
<b>BIOS events</b>	Displays the system event log and allows you to clear the log. <ul style="list-style-type: none"> <li>• Clear Log</li> </ul>

## System Setup Options (For Windows 8 only)

 **NOTE:** Before proceeding download and install the latest BIOS version from [support.dell.com](http://support.dell.com)

Table 13. General

Option	Description
<b>System Information</b>	Displays the following information: <ul style="list-style-type: none"> <li>• <b>System Information</b> — Displays <b>BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date,</b> and the <b>Express Service Code</b>.</li> </ul>

Option	Description
	<ul style="list-style-type: none"> <li>• <b>Memory Information</b> — Displays <b>Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, and DIMM B Size</b> .</li> <li>• <b>PCI Information</b> — Displays <b>SLOT1</b>.</li> <li>• <b>Processor Information</b> — Displays <b>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</b> .</li> <li>• <b>Device Information</b> — Displays <b>SATA-0, SATA-1, LOM MAC Address, Video info, Audio Controller, Modem Controller, Wi-Fi Device, Cellular Device, and Bluetooth Device</b>.</li> </ul>
<b>Boot Sequence</b>	<p> <b>NOTE:</b> 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.</p> <p>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.</p> <ul style="list-style-type: none"> <li>• Diskette Drive</li> <li>• UEFI: HDD</li> <li>• Legacy HDD</li> <li>• Onboard NIC(IPV</li> <li>• USB Storage Device</li> <li>• Onboard NIC(IPV6</li> <li>• CD/DVD/CD-RW Drive</li> <li>• Onboard NIC (Portables enables, Desktop disables)</li> </ul>
<b>Boot List Option</b>	<ul style="list-style-type: none"> <li>• Legacy</li> <li>• UEFI</li> </ul>
<b>Advanced Boot Options</b>	Enable Legacy Option ROM
<b>Date/Time</b>	<p>This option controls the system date and time. Changes to the date and time take effect immediately.</p> <ul style="list-style-type: none"> <li>• MM /DD /YY</li> <li>• HH: MM: SS: A/P</li> </ul>


**Table 14. System Configuration**


Option	Description
<b>Integrated NIC</b>	This option controls the on-board LAN Controller.

Option	Description
	<ul style="list-style-type: none"> <li>• Disabled — The internal LAN is off and not visible to the operating system.</li> <li>• Enabled — The internal LAN is enabled.</li> <li>• Enabled w/PXE (selected by default) — The internal LAN is enabled (with PXE boot).</li> <li>• Enabled w/ImageServer — The internal LAN is enabled (with ImageServer boot).</li> </ul>
<b>SATA Operation</b>	<p>This option configures the operating mode of the integrated SATA hard drive controller.</p> <ul style="list-style-type: none"> <li>• Disabled — SATA controllers are hidden.</li> <li>• ATA — SATA is configured for ATA mode.</li> <li>• AHCI (selected by default) — SATA is configured for AHCI.</li> </ul>
<b>Drives</b>	<p>This option lets you enable or disable various drives on board. By default the options are enabled.</p> <ul style="list-style-type: none"> <li>• SATA-0</li> <li>• SATA-1</li> </ul>
<b>SMART Reporting</b>	<p>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.</p> <ul style="list-style-type: none"> <li>• <b>Enable SMART Reporting</b> - This option is disabled by default.</li> </ul>
<b>USB Configuration</b>	<p>This field configures the integrated USB controller. If <b>Boot Support</b> is enabled, the system is allowed to boot any type of USB mass storage devices (HDD, memory key, floppy).</p> <p>If USB port is enabled, device attached to this port is enabled and available for operation system.</p> <p>If USB port is disabled, the operation system cannot see any device attached to this port.</p> <ul style="list-style-type: none"> <li>• Enable Boot Support</li> <li>• Enable Front/Rear Dual USB 3.0 Ports</li> <li>• Enable Rear Quad USB 2.0 Ports (2x2.0)</li> </ul>
<b>Audio</b>	<p>The field allows you to enable the audio.</p> <p>Enable Audio</p>
<b>Miscellaneous Devices</b>	<p>Allows you to enable or disable various on-board devices.</p> <ul style="list-style-type: none"> <li>• Enable/Disable Microphone</li> <li>• Enable/Disable Camera</li> <li>• Enable/Disable Media Card</li> </ul>



**Table 15. Security**

Option	Description
<b>Admin Password</b>	<p>This field lets you set, change, or delete the administrator (admin) password (sometimes called the setup password). The admin password enables several security features.</p> <p>The drive does not have a password set by default.</p> <ul style="list-style-type: none"> <li>• Enter the old password</li> <li>• Enter the new password</li> <li>• Confirm the new password</li> </ul> <p>Click <b>OK</b> after entering the password details.</p>
<b>System Password</b>	<p>Allows you to set, change, or delete the computer password (previously called the primary password).</p> <p>The drive does not have a password set by default.</p> <ul style="list-style-type: none"> <li>• Enter the old password</li> <li>• Enter the new password</li> <li>• Confirm the new password</li> </ul> <p>Click <b>OK</b> after entering the password details.</p>
<b>Internal HDD-0 Password</b>	<p>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.</p> <p>The drive does not have a password set by default.</p> <ul style="list-style-type: none"> <li>• Enter the old password</li> <li>• Enter the new password</li> <li>• Confirm the new password</li> </ul> <p>Click <b>OK</b> after entering the password details.</p>
<b>Strong Password</b>	<p>Enable strong password - This option is disabled by default.</p>
<b>Password Configuration</b>	<p>This field controls the minimum and maximum number of characters allowed for the admin and system passwords.</p> <ul style="list-style-type: none"> <li>• Admin Password Min</li> <li>• Admin Password Max</li> <li>• System Password Min</li> <li>• System Password Max</li> </ul>
<b>Password Bypass</b>	<p>Allows you to bypass the <b>System Password</b> and the internal HDD password prompts during a system restart.</p> <ul style="list-style-type: none"> <li>• Disabled (selected by default) — Always prompt for the system and internal HDD password when they are set.</li> <li>• Reboot Bypass — Bypass the password prompts on restarts (warm boots).</li> </ul> <p> <b>NOTE:</b> 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.</p>

Option	Description
<b>Password Change</b>	<p>Allows you to determine whether changes to the system and hard disk passwords are permitted when an administrator password is set.</p> <ul style="list-style-type: none"> <li>• Allow Non-Admin Password Changes (selected by default)</li> </ul>
<b>TPM Security</b>	<p>This option lets you control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system.</p> <ul style="list-style-type: none"> <li>• TPM Security (selected by default)</li> <li>• Clear</li> <li>• TPM ACPI Support</li> <li>• TPM PPI Deprovision Override</li> <li>• TPM PPI Provision Override</li> </ul> <p> <b>NOTE:</b> Activation, deactivation, and clear options are not affected if you load the setup program's default values. Changes to this option take effect immediately.</p>
<b>Computrace</b>	<p>This field lets you activate or disable the BIOS module interface of the optional <b>Computrace Service</b> from <b>Absolute Software</b>.</p> <ul style="list-style-type: none"> <li>• Deactivate (selected by default)</li> <li>• Disable</li> <li>• Activate</li> </ul>
<b>Chassis Intrusion</b>	<p>This field controls the chassis intrusion feature.</p> <ul style="list-style-type: none"> <li>• Disable</li> <li>• Enable (selected by default)</li> <li>• On-Silent</li> </ul>
<b>CPU XD Support</b>	<p>Allows you to enable or disable the execute disable mode of the processor.</p> <ul style="list-style-type: none"> <li>• Enable CPU XD Support (selected by default)</li> </ul>
<b>OROM Keyboard Access</b>	<p>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).</p> <ul style="list-style-type: none"> <li>• Enable (selected by default) — User may enter OROM configuration screens via the hotkey.</li> <li>• 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.</li> <li>• Disable — User can not enter the OROM configuration screens via the hotkey.</li> </ul>
<b>Admin Setup Lockout</b>	<p>Allows you to enable or disable the option to enter setup when an admin password is set.</p> <ul style="list-style-type: none"> <li>• Enable Admin Setup Lockout (selected by default)</li> </ul>

**Table 16. Secure Boot**



Option	Description
<b>Secure Boot</b>	Allows to Enable/Disable Secure Boot.
<b>Expert Key Management</b>	This gives the choice of Expert Key Management and Custom Mode Key Management. <ul style="list-style-type: none"> <li>• Expert Key Management</li> <li>• Enable Custom Mode</li> <li>• Custom Mode Key Management</li> <li>• PK</li> <li>• KEK</li> <li>• db</li> <li>• dbx</li> </ul>

**Table 17. Performance**

Option	Description
<b>Multi Core Support</b>	Specifies whether the process will have one or all cores enabled. The performance of some applications will improve with the additional cores. <ul style="list-style-type: none"> <li>• All (selected by default)</li> <li>• 1</li> <li>• 2</li> </ul>
<b>Intel Speed Step</b>	Allows you to enable or disable the Intel SpeedStep mode of the processor. <ul style="list-style-type: none"> <li>• Enable Intel SpeedStep (selected by default)</li> </ul>
<b>C States Control</b>	Allows you to enable or disable the additional processor sleep states. <ul style="list-style-type: none"> <li>• C states (selected by default)</li> </ul>
<b>Intel TurboBoost</b>	Allows you to enable or disable Intel TurboBoost mode of the processor. <ul style="list-style-type: none"> <li>• Enable Intel TurboBoost (selected by default) — Allows the Intel TurboBoost driver to increase the performance of the CPU or graphics processor.</li> </ul>
<b>Hyperthread Control</b>	This options allows users to enable and disable the Hyperthread Control. <ul style="list-style-type: none"> <li>• Hyperthread Control (selected by default)</li> </ul>
<b>HDD Protection Support</b>	Allows you enable or disable the hard disk drive protection card. HDD Protection Card - Enable/Disable

**Table 18. Power Management**

Option	Description
<b>AC Recovery</b>	Specifies how the computer will respond when AC power is applied after an AC power loss. You can set the AC Recovery to: <ul style="list-style-type: none"> <li>• Power Off (selected by default)</li> </ul>

Option	Description
<b>Auto On Time</b>	<ul style="list-style-type: none"> <li>• Power On</li> <li>• Last Power State</li> </ul> <p>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.</p> <ul style="list-style-type: none"> <li>• Disabled — The system will not automatically power up.</li> <li>• Every Day — The system will power up every day at the time you specified above .</li> <li>• Weekdays — The system will power up Monday through Friday at the time you specified above.</li> <li>• Select Days — The system will power up on days selected above at the time you specified above.</li> </ul> <p>It wasn</p> <p> <b>NOTE:</b> This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if <b>Auto Power is set to disabled</b>.</p>
<b>Deep Sleep Control</b>	<p>Allows you to define the controls when Deep Sleep is enabled.</p> <ul style="list-style-type: none"> <li>• Disabled</li> <li>• Enabled in S5 only</li> <li>• Enabled in S4 and S5</li> </ul> <p>This option is disabled by default.</p>
<b>Fan Control Override</b>	<p>Controls the speed of the system fan.</p> <ul style="list-style-type: none"> <li>• Fan Control Override (not selected)</li> </ul> <p> <b>NOTE:</b> When enabled, the fan runs at full speed.</p>
<b>USB Wake Support</b>	<p>This option allows you to enable USB devices to wake the computer from standby.</p> <ul style="list-style-type: none"> <li>• Enable USB Wake Support (not selected by default)</li> </ul>
<b>Wake on LAN/WLAN</b>	<p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• LAN Only — Allows the system to be powered on by special LAN signals.</li> <li>• WLAN Only — Allows the system to be powered on by special WLAN signals.</li> <li>• LAN or WLAN — Allows the system to be powered on by special LAN or WLAN signals.</li> </ul>
<b>Block Sleep</b>	<p>This option lets you block entering to sleep (S3 state) in operating system environment.</p>

Option	Description
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- Block Sleep (S3 state) - This option is disabled by default.

**Table 19. POST Behavior**

Option	Description
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<b>Numlock LED</b>	Specifies if the NumLock function can be enabled when the system boots. <ul style="list-style-type: none"> <li>• Enable Numlock (default)</li> </ul>
<b>Keyboard Errors</b>	Specifies whether keyboard related errors are reported when it boots. <ul style="list-style-type: none"> <li>• Enable Keyboard Error Detection (selected by default)</li> </ul>
<b>POST Hotkeys</b>	Specifies whether the sign-on screen displays a message, that displays the keystroke sequence required to enter the BIOS Boot Option Menu. <ul style="list-style-type: none"> <li>• Enable F12 Boot Option menu (selected by default)</li> </ul>
<b>Fastboot</b>	This option can speed up the boot process bypassing some compatibility steps. <ul style="list-style-type: none"> <li>• Minimal</li> <li>• Thorough</li> <li>• Auto</li> </ul>

**Table 20. Virtualization Support**

Option	Description
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<b>Virtualization</b>	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization technology. <ul style="list-style-type: none"> <li>• Enable Intel Virtualization Technology (selected by default)</li> </ul>
<b>VT for Direct I/O</b>	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O. <ul style="list-style-type: none"> <li>• Enable Intel VT for Direct I/O (selected by default)</li> </ul>
<b>Trusted Execution</b>	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. <ul style="list-style-type: none"> <li>• Trusted Execution - This option is disabled by default.</li> </ul>

**Table 21. Wireless**

Option	Description
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<b>Wireless Device Enable</b>	This option allows enabling/disabling of internal wireless devices. <ul style="list-style-type: none"> <li>• WLAN</li> </ul>
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Option	Description
	<ul style="list-style-type: none"> <li>Bluetooth</li> </ul>

Table 22. Maintenance

Option	Description
<b>Service Tag</b>	Displays the service tag of your computer.
<b>Asset Tag</b>	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
<b>SERR Messages</b>	Controls the SERR message mechanism. Some graphics cards require that the SERR message mechanism be disabled. <ul style="list-style-type: none"> <li>Enable SERR Messages (selected by default)</li> </ul>

Table 23. Image Server

Option	Description
<b>Lookup Method</b>	Specifies how the ImageServer looks up the server address. <ul style="list-style-type: none"> <li>Static IP</li> <li>DNS (selected by default)</li> </ul> <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b>.</p>
<b>ImageServer IP</b>	Displays the primary static IP address of the ImageServer with which the client software communicates. The default IP address is <b>255.255.255.255</b> . <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> and when <b>Lookup Method</b> is set to <b>Static IP</b>.</p>
<b>ImageServer Port</b>	Allows you to specify the primary IP port of the ImageServer, which is used by the client to communicate. The default IP port is <b>06910</b> . <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b>.</p>
<b>Client DHCP</b>	Specifies how the client obtains the IP address. <ul style="list-style-type: none"> <li>Static IP</li> <li>DHCP (selected by default)</li> </ul> <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b>.</p>
<b>Client IP</b>	Displays the static IP address of the client. The default IP address is <b>255.255.255.255</b> . <p> <b>NOTE:</b> This field is only relevant when the <b>Integrated NIC</b> control in the <b>System Configuration</b> group is set to <b>Enabled with ImageServer</b> and when <b>Client DHCP</b> is set to <b>Static IP</b>.</p>



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

**Table 24. System Logs**

Option	Description
<b>BIOS events</b>	Displays the system event log and allows you to clear the log. <ul style="list-style-type: none"> <li>• Clear Log</li> </ul>

## Updating the BIOS

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

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


# System and Setup Password

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

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


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

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

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

## Assigning a System Password and Setup Password

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

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

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

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

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

Re-enter the system password when prompted.


4. Type the system password that you entered earlier and click **OK**.
5. Select **Setup Password**, type your system password and press <Enter> or <Tab>. A message prompts you to re-type the setup password.
6. Type the setup password that you entered earlier and click **OK**.
7. Press <Esc> and a message prompts you to save the changes.
8. Press <Y> to save the changes. The computer reboots.

การลบหรือแก้ไขรหัสผ่านเครื่องและ/หรือรหัสผ่านตั้งค่าที่ใช้อยู่

**Password Status** (สถานะรหัสผ่าน) จะต้องตั้งค่าเป็น **Unlocked** (จาก **System Setup**) ก่อนพยายามลบหรือแก้ไขรหัสผ่านเครื่องและ/หรือรหัสผ่านตั้งค่าที่ใช้อยู่ ไม่สามารถลบหรือแก้ไขรหัสผ่านเครื่องหรือรหัสผ่านตั้งค่าได้หาก **Password Status** (สถานะรหัสผ่าน) ตั้งค่าเป็น **Locked** ไว้



เข้าสู่ System Setup โดยกด <F2> ทันทีหลังจากเปิดเครื่องหรือรีบูต

1. จากหน้าจอ **System BIOS (BIOS เครื่อง)** หรือ **System Setup** (ตั้งค่าระบบ) เลือก **System Security** (ค่าความปลอดภัยของเครื่อง) จากนั้นกด <Enter>  
หน้าจอ **System Security** (ค่าความปลอดภัยของเครื่อง) จะปรากฏขึ้น
2. จากหน้าจอ **System Security** (ค่าความปลอดภัยของเครื่อง) ให้ตรวจสอบว่า **Password Status** (สถานะรหัสผ่าน) ตั้งค่าเป็น **Unlocked** (ปลดล็อก)
3. เลือก **System Password** (รหัสผ่านเครื่อง) จากนั้นแก้ไขหรือลบรหัสผ่านเครื่องที่ใช้อยู่ แล้วกด <Enter> หรือ <Tab>
4. เลือก **Setup Password** (รหัสผ่านตั้งค่า) จากนั้นแก้ไขหรือลบรหัสผ่านตั้งค่าที่ใช้อยู่แล้วกด <Enter> หรือ <Tab>  
 **หมายเหตุ:** ในกรณีที่ถูกลบแก้ไขรหัสผ่านเครื่องและ/หรือรหัสผ่านตั้งค่า ให้กรอกรหัสผ่านใหม่เมื่อได้รับแจ้ง หากคุณลบรหัสผ่านเครื่องและ/หรือรหัสผ่านตั้งค่า ให้ยืนยันการลบเมื่อได้รับแจ้ง
5. กด <Esc> จากนั้นจะมีข้อความปรากฏขึ้นเพื่อแจ้งให้บันทึกการเปลี่ยนแปลง
6. กด <Y> เพื่อบันทึกการเปลี่ยนแปลงและออกจาก **System Setup**  
คอมพิวเตอร์จะทำการรีบูต



## Diagnosics


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](http://support.dell.com)

### การวินิจฉัยด้วยฟังก์ชันประเมินความสมบูรณ์ของระบบก่อนบูต (ePSA)

ระบบวินิจฉัย ePSA (หรือฟังก์ชันวินิจฉัยระบบ) จะทำหน้าที่ตรวจสอบฮาร์ดแวร์ทั้งหมด ePSA ติดตั้งมาพร้อมกับ BIOS และเรียกใช้ผ่าน BIOS ฟังก์ชันวินิจฉัยระบบในตัวนี้ประกอบไปด้วยตัวเลือกต่าง ๆ สำหรับอุปกรณ์และกลุ่มอุปกรณ์ โดยสามารถใช้เพื่อ:

- เรียกใช้การทดสอบฮาร์ดแวร์โนนมิติหรือในโหมดอินเตอร์แอคทีฟ
- ทวนซ้ำการทดสอบ
- แสดงหรือบันทึกผลการทดสอบ
- เรียกใช้การทดสอบอย่างละเอียดเพื่อเข้าสู่ตัวเลือกในการทดสอบเพิ่มเติม ทำให้มีข้อมูลเพิ่มมากขึ้นเกี่ยวกับอุปกรณ์ที่เกิดปัญหา
- ดูข้อความแจ้งสถานะเพื่อให้ทราบว่า การทดสอบดำเนินการเสร็จสิ้นหรือไม่
- ดูข้อความแจ้งข้อผิดพลาดเพื่อให้ทราบปัญหาที่พบระหว่างการทดสอบ

 **ข้อควรระวัง:** ใช้ฟังก์ชันวินิจฉัยระบบเพื่อทดสอบคอมพิวเตอร์ของคุณเท่านั้น การใช้โปรแกรมนี้กับคอมพิวเตอร์เครื่องอื่นอาจทำให้ผลการทดสอบไม่ถูกต้องหรือมีข้อความแจ้งข้อผิดพลาด

 **หมายเหตุ:** การทดสอบอุปกรณ์บางตัวอาจต้องอาศัยการดำเนินการร่วมจากผู้ใช้ คุณจะต้องอยู่น้ำคอมพิวเตอร์ขณะดำเนินการวินิจฉัยระบบด้วย

1. เปิดคอมพิวเตอร์
2. ขณะคอมพิวเตอร์บูต ให้กดปุ่ม <F12> ขณะที่โลโก้ Dell ปรากฏขึ้น
3. จากหน้าจอเมนูบูต เลือกตัวเลือก **Diagnostics** (การวินิจฉัย)  
หน้าต่าง **Enhanced Pre-boot System Assessment** (ฟังก์ชันเสริมการประเมินระบบก่อนบูต) จะปรากฏขึ้น พร้อมแสดงอุปกรณ์ทั้งหมดที่พบในคอมพิวเตอร์ ระบบวินิจฉัยจะเริ่มทำการทดสอบอุปกรณ์ทั้งหมดที่ตรวจพบ
4. หากต้องการเรียกใช้การทดสอบเพื่อวินิจฉัยระบบกับอุปกรณ์ใดเป็นการเฉพาะ ให้กด <Esc> จากนั้นคลิก **Yes** (ใช่) เพื่อหยุดการวินิจฉัยระบบ
5. เลือกอุปกรณ์จากแถบคำสั่งด้านซ้าย จากนั้นคลิกที่ **Run Tests** (เรียกใช้การทดสอบ)
6. หากพบปัญหา รหัสข้อผิดพลาดจะปรากฏขึ้น  
จดบันทึกรหัสข้อผิดพลาดและติดต่อ 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.

## การแก้ไขปัญหาคอมพิวเตอร์


สามารถแก้ไขปัญหาคอมพิวเตอร์ได้โดยสังเกตุลักษณะต่าง ๆ เช่น ไฟวินิจฉัยระบบ เสียงรหัสดังเตือน ข้อความแจ้งข้อผิดพลาด ระหว่างที่คอมพิวเตอร์ทำงาน

### Important Information

-  **NOTE:** Avoid using the touchscreen in dusty, hot, or humid environments.
-  **NOTE:** Sudden change in temperature may cause condensation on the inner surface of the glass screen, which will disappear after a short time and does not affect normal usage.

### 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
<b>OFF</b>	Power is off. LED is blank.
<b>Blinking Amber</b>	Initial state of LED at power up. Refer the following table for Blinking Amber Power LED diagnostics suggestion and possible failures.
<b>Solid Amber</b>	Second state of the LED at power up. Indicates the POWER_GOOD signal is active.
<b>Blinking White</b>	System is in a low power state. Does not indicate a fault condition.
<b>Solid White</b>	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
<b>2,1</b>	The motherboard may be faulty.
<b>2,2</b>	The motherboard, power supply or power supply cabling may be faulty.
<b>2,3</b>	The motherboard, memory or processor may be faulty.
<b>2,4</b>	The coin-cell battery may be faulty.
<b>2,5</b>	The system may be in recovery mode. Download and install the latest BIOS from <a href="http://support.dell.com/support">support.dell.com/support</a> .
<b>2,6</b>	The processor may be faulty.

<b>Blinking Amber Power LED</b>	<b>Problem Description</b>
<b>2,7</b>	The memory may be faulty. Reseat the memory or install a different memory module.
<b>3,1</b>	The video device or subsystem may be faulty.
<b>3,2</b>	The video subsystem may be faulty.
<b>3,3</b>	No memory module was detected.
<b>3,4</b>	The storage device may be faulty.
<b>3,5</b>	The memory may not be compatible.
<b>3,6</b>	The system board may be faulty.
<b>3,7</b>	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



<b>Message</b>	<b>Description</b>
<b>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.</b>	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.
<b>System fan failure</b>	Possible fan failure
<b>CPU fan failure</b>	Possible CPU fan failure
<b>Hard-disk drive failure</b>	Possible hard drive failure during POST.
<b>Hard-disk drive read failure</b>	Possible hard drive failure during boot test.
<b>Keyboard failure</b>	A cable or connector may be loose, or the keyboard or keyboard/mouse controller may be faulty.
<b>RTC is reset, BIOS Setup default has been loaded. Strike the F1 key to</b>	RTC Jumper may be wrongly set.

Message	Description
<b>continue, F2 to run the setup utility.</b>	
<b>No boot device available</b>	<p>No bootable partition on the hard drive, a cable or connector is loose, or no bootable device exists.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Enter system setup and ensure that the boot sequence information is correct.</li> </ul>
<b>No timer tick interrupt</b>	A chip on the system board might be malfunctioning.
<b>USB over current error</b>	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.
<p><b>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</b></p>	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 25. System Information**

Feature	Specification
Processor type	<ul style="list-style-type: none"> <li>• Intel Dual Core</li> <li>• Intel Core i3 series</li> <li>• Intel Core i5 series</li> <li>• Intel Core i7 series</li> </ul>
Total cache	Up to 8 MB cache depending on processor type
Chipset	Intel Q77 Express chipset

**Table 26. 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 27. Video**

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

**Table 28. Audio**

<b>Feature</b>	<b>Specification</b>
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 29. Communications**

<b>Feature</b>	<b>Specification</b>
Network adapter	10/100/1000 Mbps Ethernet LAN on system board
Wireless	<ul style="list-style-type: none"> <li>• half mini-card (Wi-Fi b/g/n ) - optional</li> <li>• combo half mini-card (Bluetooth 4.0 and Wi-Fi b/g/n ) - optional</li> </ul>

**Table 30. Cards**

<b>Feature</b>	<b>Specification</b>
Mini PCI Express	one

**Table 31. Displays**

<b>Feature</b>	<b>Specification</b>
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 32. Drives**

<b>Feature</b>	<b>Specification</b>
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 33. Ports and Connectors**

<b>Feature</b>	<b>Specification</b>
Audio:	<ul style="list-style-type: none"> <li>• one line-out connector</li> <li>• one audio input/microphone port</li> <li>• one headphone port</li> </ul>
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 34. Power**

<b>Feature</b>	<b>Specification</b>
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 35. Camera (optional)**

<b>Feature</b>	<b>Specification</b>
Image resolution	1.3 megapixel
Video resolution	HD (720p)
Diagonal viewing angle	60 degrees
Rotational angle	+1 degree to -10 degrees

**Table 36. Stand**

<b>Feature</b>	<b>Specification</b>
Tilt	–5 degrees to 30 degrees
Articulating stand	–5 degrees to 60 degrees

**Table 37. Physical Dimensions**

Feature	Specification
Width	574.00 mm (22.60 inches)
Height	440.40 mm (17.34 inches)
Depth:	
Without basic stand	68.00 mm (2.68 inches)
With basic stand	220.00 mm (8.66 inches)
Weight:	
Without basic stand	7.34 kg – 9.00 kg (16.18 lb – 19.84 lb)
With basic stand	9.34 kg – 11.20 kg (20.59 lb – 24.69 lb)
	 <b>NOTE:</b> The weight of your computer may vary depending on the configuration ordered and the manufacturing variability.
Without articulating stand	7.03 kg – 10.02 kg (15.49 lb – 22.09 lb)
With articulating stand	10.03 kg – 13.02 kg (22.11 lb – 28.70 lb)

**Table 38. 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 white 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 39. Environmental**

<b>Feature</b>	<b>Specification</b>
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)
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



## การติดต่อกับ Dell

เมื่อต้องการติดต่อ Dell เกี่ยวกับการซื้อขาย ความช่วยเหลือด้านเทคนิค หรือประเด็นที่เกี่ยวกับการให้บริการลูกค้า

1. กรุณาเข้าไปที่เว็บไซต์ [support.dell.com](https://support.dell.com)
2. ตรวจสอบประเทศหรือภูมิภาคที่คุณอาศัยอยู่จากเมนู **Choose a Country/Region** (เลือกประเทศ/ภูมิภาค) ที่ด้านล่างของเพจ
3. คลิก **Contact Us** (ติดต่อ Dell) ทางด้านซ้ายของหน้า
4. เลือกลิงค์ของบริการหรือความช่วยเหลือที่ตรงกับความต้องการของคุณ
5. เลือกวิธีการติดต่อกับ Dell ที่คุณสะดวก