

# Dell™ XPS™ 8500

# Owner's Manual

**Regulatory model: D03M**  
**Regulatory type: D03M005**

# Notes, Cautions, and Warnings



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



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



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

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# Before You Begin

## Turn Off Your Computer and Connected Devices

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

- 1 Save and close all open files and exit all open programs.
- 2 Follow the instructions to shut down your computer based on the operating system installed on your computer.
  - *Windows 8:*  
Move your mouse pointer to the upper-right or lower-right corner of the screen to open the Charms sidebar, and then click **Settings**→**Power**→**Shutdown**.
  - *Windows 7:*  
Click **Start**  and click **Shut Down**.


Microsoft Windows shuts down and then the computer turns off.








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

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

## Safety Instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the [Regulatory Compliance Homepage at dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

-  **WARNING:** Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.
-  **CAUTION:** To avoid damaging the computer, ensure that the work surface is flat and clean.
-  **CAUTION:** To avoid damaging the components and cards, handle them by their edges and avoid touching pins and contacts.
-  **CAUTION:** Only a certified service technician is authorized to remove the computer cover and access any of the components inside the computer. See the safety instructions for complete information about safety precautions, working inside your computer, and protecting against electrostatic discharge.
-  **CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.
-  **CAUTION:** When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the connectors and ports are correctly oriented and aligned.
-  **CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

## Recommended Tools

The procedures in this document may require the following tools:

- Small Phillips screwdriver
- Hex nut driver
- Flash BIOS executable update program available at [support.dell.com](http://support.dell.com)

# After Working Inside Your Computer

After you complete replacement procedures, ensure the following:

- Replace all screws and ensure no stray screws remain inside your computer
- Connect any external devices, cables, cards, and any other part you removed before working on your computer
- Connect your computer and all attached devices to their electrical outlets



**CAUTION: Before turning on your computer, replace all screws and ensure that no stray screws remain in the computer. Failure to do so may damage your computer.**

- Turn on your computer.



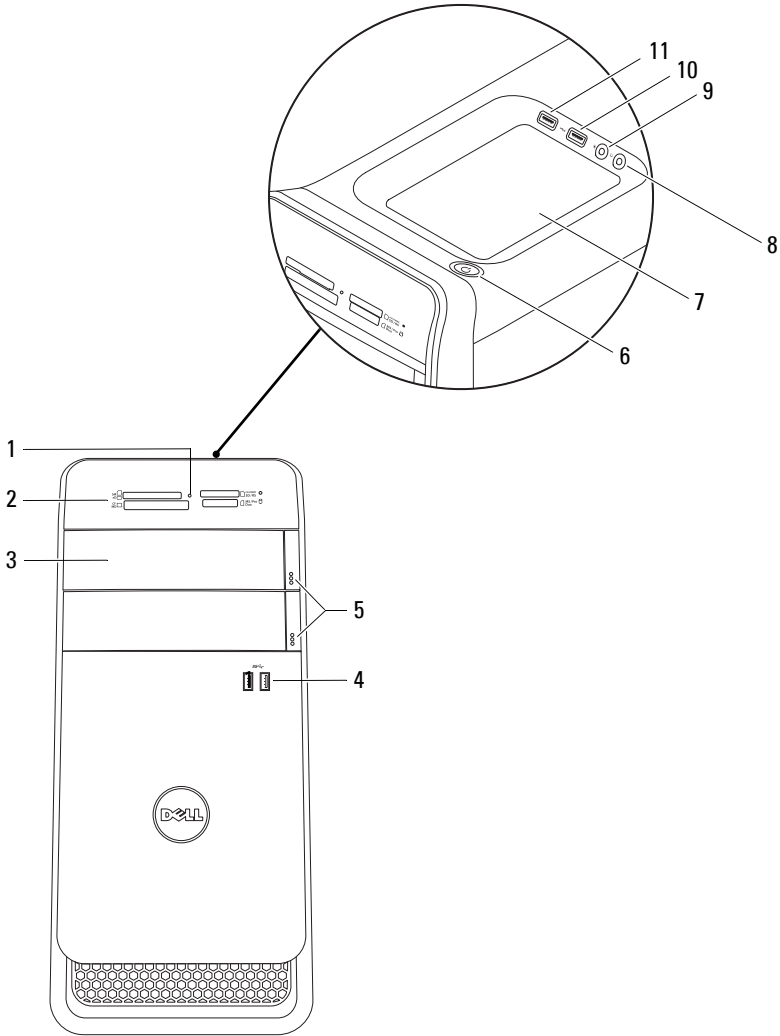


# Technical Overview



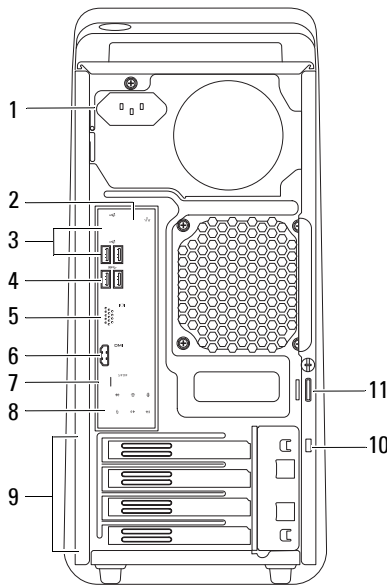
**WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

# Front View of Your Computer



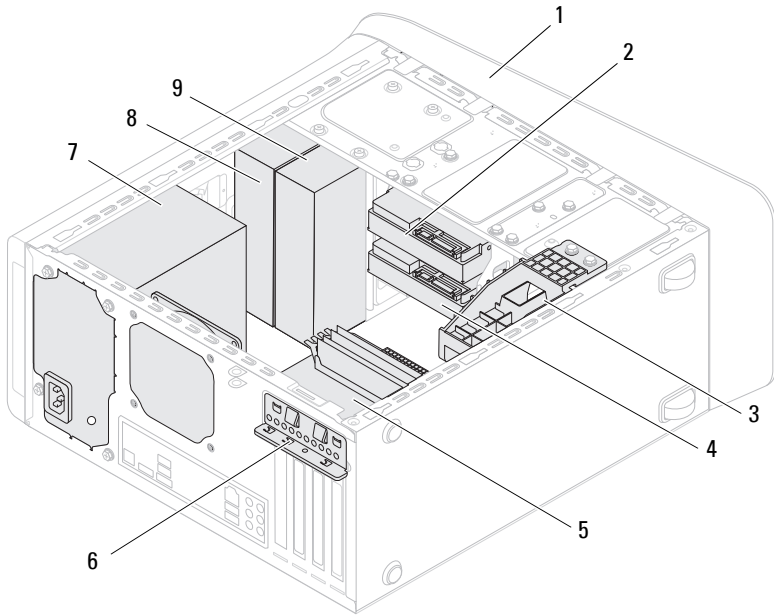
- |    |                                 |    |                   |
|----|---------------------------------|----|-------------------|
| 1  | media-card reader light         | 2  | media-card reader |
| 3  | optical-drive covers (2)        | 4  | USB 3.0 ports (2) |
| 5  | optical-drive eject buttons (2) | 6  | power button      |
| 7  | accessory tray                  | 8  | headphone port    |
| 9  | microphone port                 | 10 | USB 2.0 port      |
| 11 | USB 2.0 port with PowerShare    |    |                   |

## Back View of Your Computer



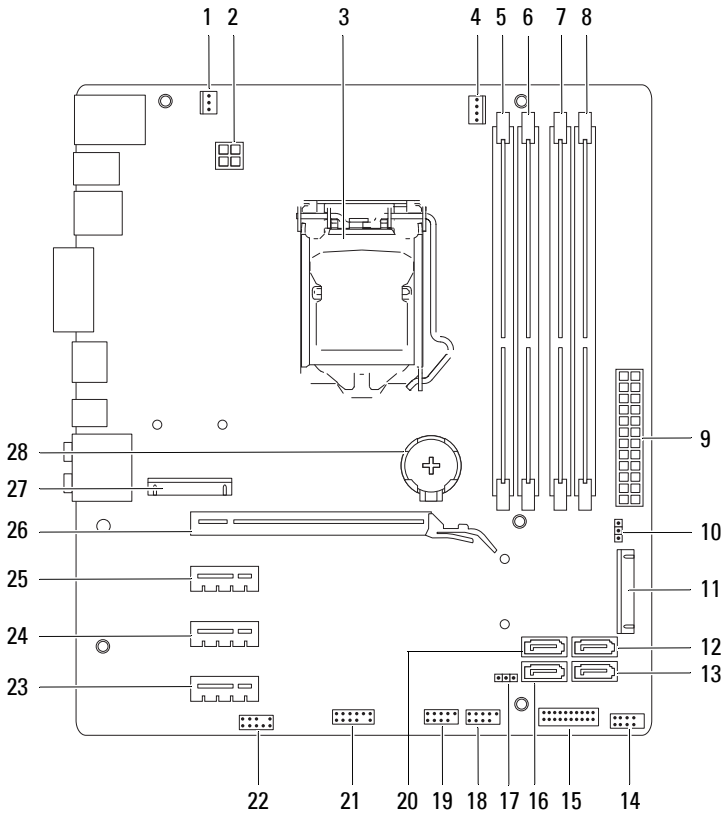
- |    |                      |    |                     |
|----|----------------------|----|---------------------|
| 1  | power port           | 2  | network port        |
| 3  | USB 2.0 ports (4)    | 4  | USB 3.0 ports (2)   |
| 5  | VGA port             | 6  | HDMI port           |
| 7  | optical S/P DIF port | 8  | audio ports         |
| 9  | expansion-card slots | 10 | security-cable slot |
| 11 | padlock rings        |    |                     |

# Inside View of Your Computer



- |   |                                  |   |                       |
|---|----------------------------------|---|-----------------------|
| 1 | front bezel                      | 2 | primary hard-drive    |
| 3 | graphics-card bracket (optional) | 4 | secondary hard-drive  |
| 5 | system board                     | 6 | card retention clamp  |
| 7 | power supply                     | 8 | primary optical-drive |
| 9 | secondary optical-drive          |   |                       |

# System-Board Components




1	chassis fan connector (SYS_FAN 1)	2	power connector (PWR2)
3	processor socket	4	processor fan connector (CPU_FAN)
5	memory module connector (DIMM3)	6	memory module connector (DIMM1)
7	memory module connector (DIMM4)	8	memory module connector (DIMM2)
9	main power connector (PWR1)	10	password reset jumper (PSWD)
11	mSATA slot (MSATA1)	12	SATA 2.0 (3 Gb/s) drive connector (SATA 2)
13	SATA 2.0 (3 Gb/s) drive connector (SATA 3)	14	front panel USB connector (F_USB3)
15	front panel USB connector (F_USB2)	16	SATA 2.0 (3 Gb/s) drive connector (SATA 1)
17	CMOS reset jumper (RTCRST)	18	power button connector (F_PANEL)
19	front panel USB connector (F_USB1)	20	SATA 3.0 (6 Gb/s) drive connector (SATA 0)
21	front panel USB connector (F_USB4)	22	front panel audio connector (F_AUDIO1)
23	PCI-Express x1 card slot (PCI-EX1_3)	24	PCI-Express x1 card slot (PCI-EX1_2)
25	PCI-Express x1 card slot (PCI-EX1_1)	26	PCI-Express x16 card slot (PCI-EX16_1)
27	Mini-Card slot (PCIE_MINICARD)	28	battery socket (BATTERY)

# Computer Cover

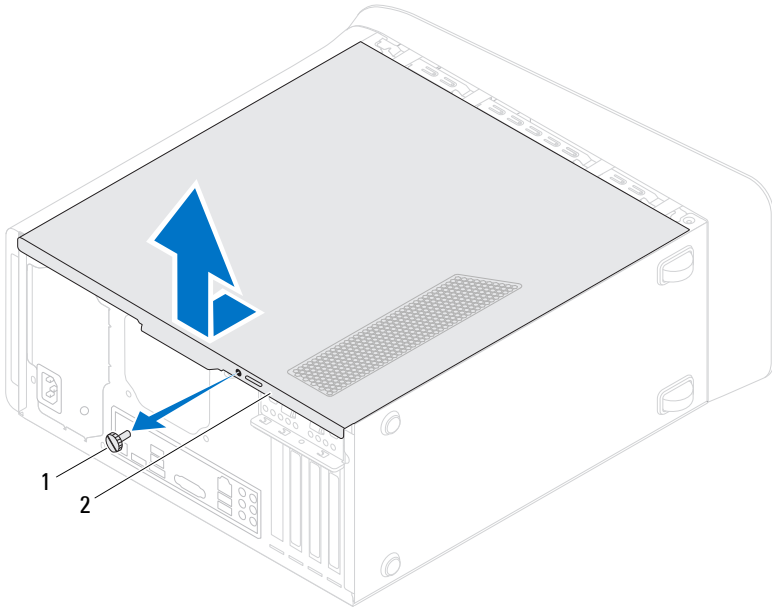
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **CAUTION:** Ensure that sufficient space exists to support the computer with the computer cover removed—at least 30 cm (1 ft.) of desk top space.

## Removing the Computer Cover

 **NOTE:** Ensure that you remove the security cable from the security cable slot (if applicable).

- 1 Lay the computer on its side with the computer cover facing up.
- 2 Remove the thumbscrew that secures the computer cover to the chassis, using a screw driver, if necessary.
- 3 Release the computer cover by sliding it away from the front of the computer.
- 4 Lift the cover away from the computer and set it aside in a secure location.



1 thumbscrew

2 computer cover







## Memory Module(s)

**⚠ WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

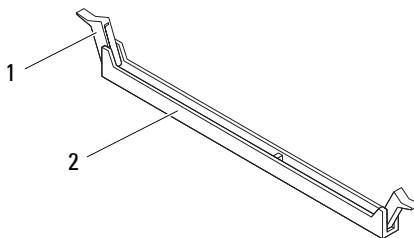
### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

### Removing Memory Module(s)

**⚠ WARNING:** The memory module(s) may become very hot during normal operation. Allow the memory module(s) to cool before touching them.

- 1 Push the securing clips away from the memory module.
- 2 Grasp the memory module and then gently ease the memory module out of the memory-module connector.

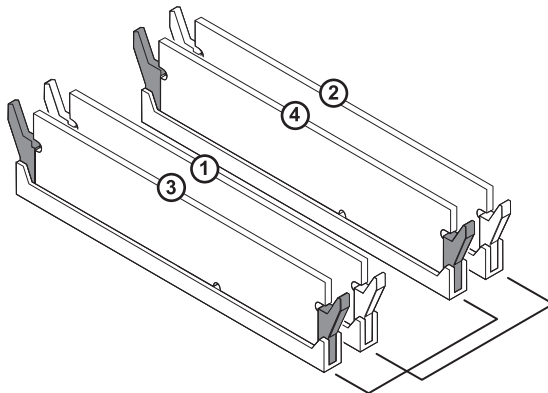


1 securing clip

2 memory-module connector

# Replacing Memory Module(s)

- △ **CAUTION:** If the memory module is not installed correctly, your computer may not boot.
- △ **CAUTION:** If you remove the original memory module(s) from your computer during a memory upgrade, keep them separate from any new module(s) that you may have, even if you purchased the new module(s) from Dell. If possible, do not pair an original memory module with a new memory module. Otherwise, your computer may not start properly. The recommended memory configurations are: matched memory modules installed in DIMM connectors 1 and 2 and another matched memory modules installed in DIMM connectors 3 and 4.



Recommended memory configuration:

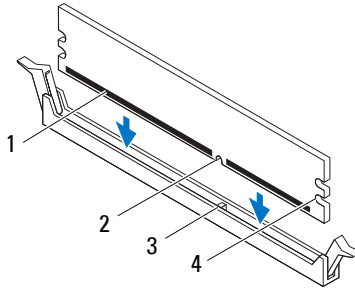
**Type**

1600 MHz DDR3

**Slots**

Slots 1 and 2 or slots 1 through 4

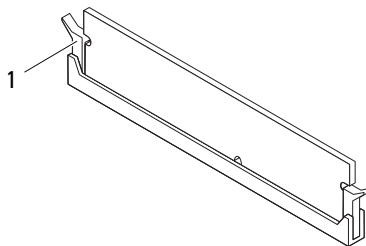
- 1 Align the notch on the bottom of the memory module with the tab on the memory-module connector.



- |   |               |   |             |
|---|---------------|---|-------------|
| 1 | memory module | 2 | notch       |
| 3 | tab           | 4 | cutouts (2) |

**CAUTION:** To avoid damage to the memory module, press the memory module straight down into the connector while you apply equal force to each end of the memory module.

- 2 Insert the memory module into the memory-module connector until the memory module snaps into position and the securing clip locks in place.



- 1 securing clip (snapped in position)

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.

# Front Bezel

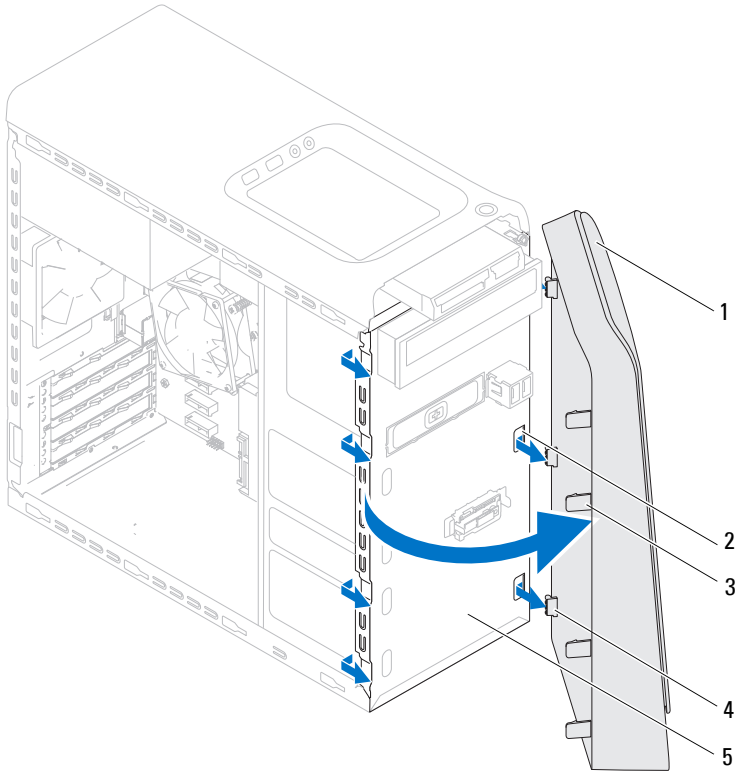
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

## Removing the Front Bezel

- 1 Place the computer in an upright position.
- 2 Grasp and release the front bezel tabs sequentially, one at a time by moving them outward from the front panel.
- 3 Rotate and pull the front bezel away from the front of the computer to release the front bezel clamps from the front panel slots.



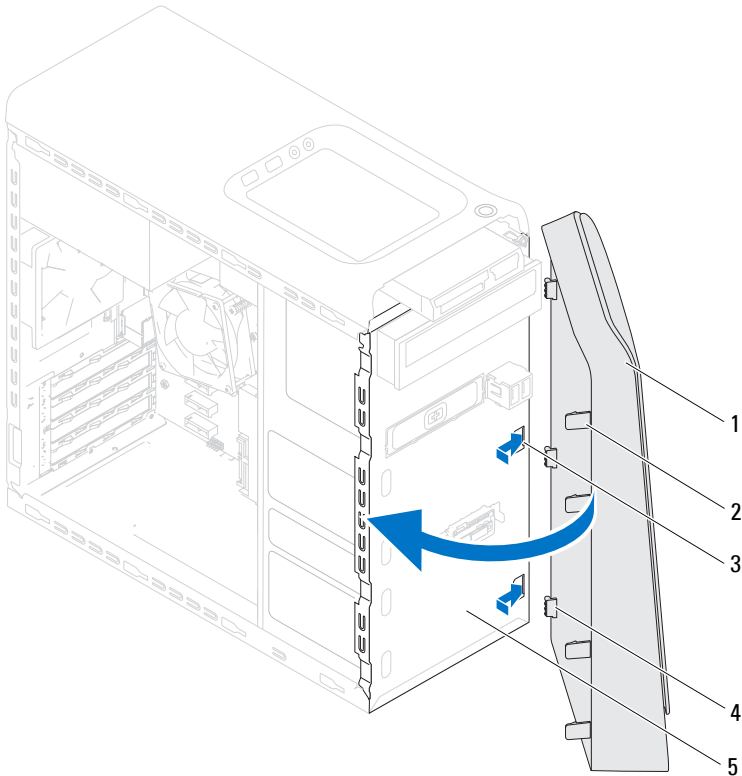
- 1 front bezel
- 2 front panel slots (3)
- 3 front bezel tabs (4)
- 4 front bezel clamps (3)
- 5 front panel

**4** Set aside the front bezel in a secure location.



## Replacing the Front Bezel

- 1 Align and insert the front bezel clamps into the front panel slots.
- 2 Rotate the front bezel towards the computer until the front bezel tabs snap into place.



- |   |                       |   |                        |
|---|-----------------------|---|------------------------|
| 1 | front bezel           | 2 | front bezel tabs (4)   |
| 3 | front panel slots (3) | 4 | front bezel clamps (3) |
| 5 | front panel           |   |                        |

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.

# Graphics-Card Bracket (optional)

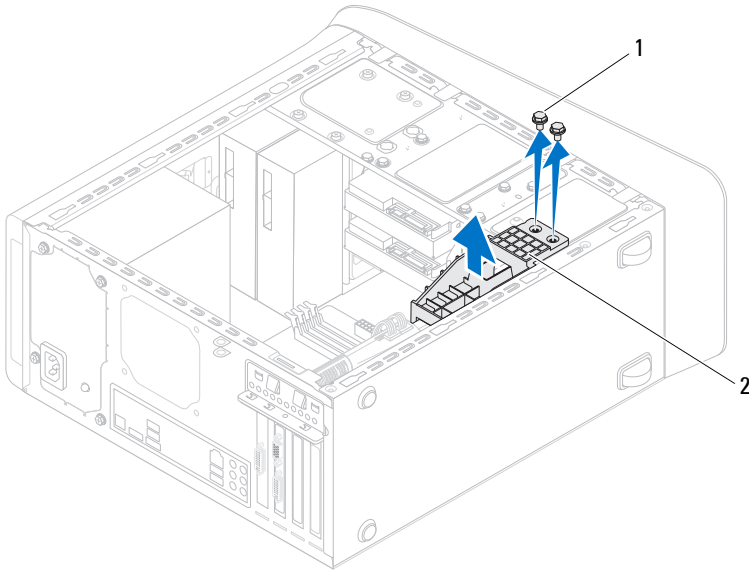
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

## Removing the Graphics-Card Bracket

- 1 Remove the screws that secure the graphics-card bracket to the chassis.
- 2 Lift the graphics-card bracket off the chassis.
- 3 Set the graphics-card bracket aside in a secure location.



1 screws (2)

2 graphics-card bracket

## Replacing the Graphics-Card Bracket

- 1 Align the screw holes on the graphics-card bracket with the screw holes on chassis.
- 2 Replace the screws that secure the graphics-card bracket to the chassis.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.

# Graphics Card

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

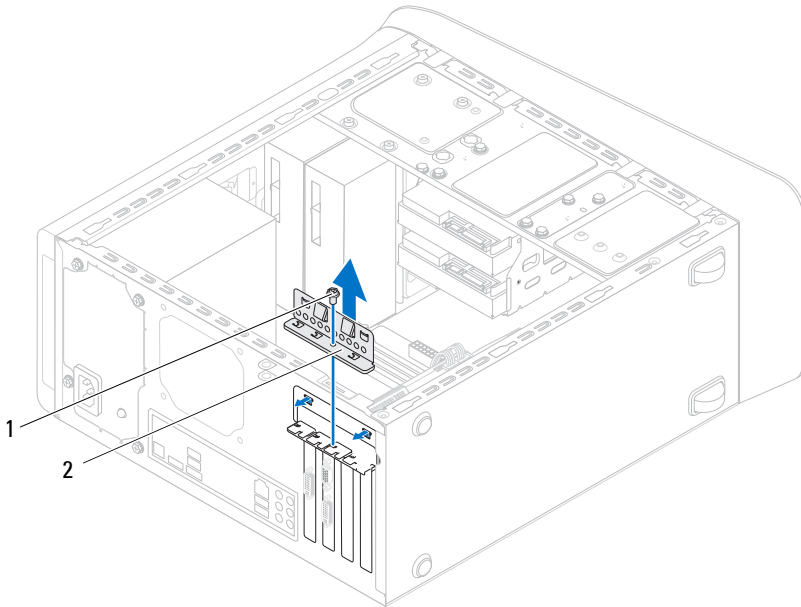
The system board of your computer is equipped with one PCI-Express x16 connector to install graphics card. To locate the PCI-Express x16 connector on the system board, see "System-Board Components" on page 21.

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the graphics-card bracket, if applicable. See "Removing the Graphics-Card Bracket" on page 35.

## Removing the Graphics Card


- 1 Remove the screw that secures the card-retention bracket to the chassis.
- 2 Lift the card-retention bracket and set it aside in a secure location.




1 screw

2 card-retention bracket

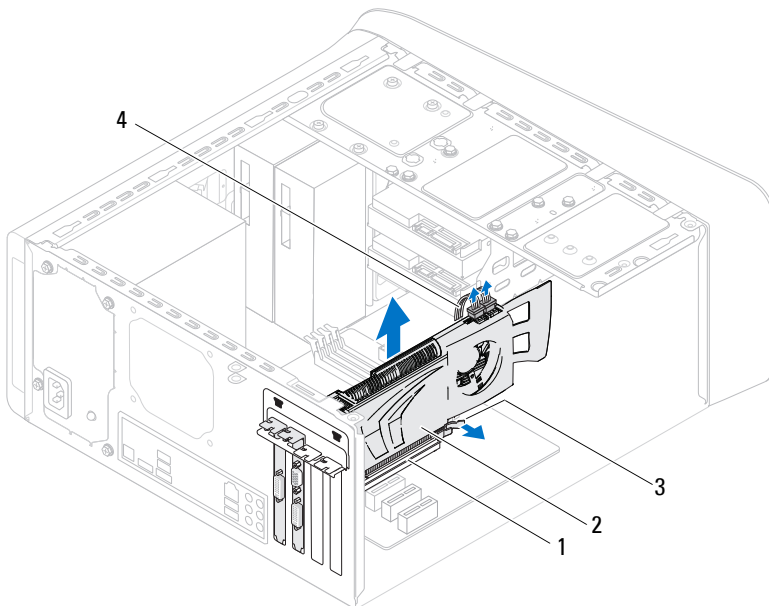
- 3 Locate the graphics card (PCI-Express x16 card) on the system board. See "System-Board Components" on page 21.

 **NOTE:** Your graphics card may have power-cable connectors.

- 4 Press the releasing clips on the power-cable connectors and disconnect the power cable from the graphics card, if applicable.

 **NOTE:** The appearance of the securing tab may be different on your computer.

- 5 Press and hold the securing tab on the card connector, grasp the card by its top corners, and then ease the card out of the card connector.

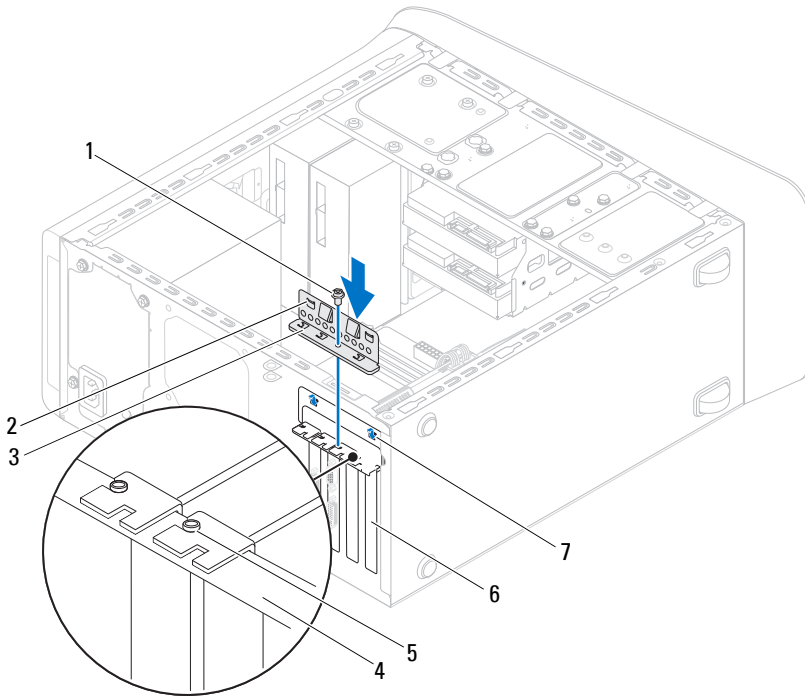


- |   |                           |   |               |
|---|---------------------------|---|---------------|
| 1 | PCI-Express x16 connector | 2 | graphics card |
| 3 | securing tab              | 4 | power cable   |

## Replacing the Graphics Card

- 1 Align the graphics card with the PCI-Express x16 card connector on the system board.
- 2 Place the card in the connector and press down firmly. Ensure that the card is firmly seated in the slot.
- 3 Connect the power cable to the graphics card, if applicable.
- 4 Replace the card-retention bracket, ensuring that:
  - The guide clamp is aligned with the guide notch.
  - The top of all cards and filler brackets are flush with the alignment bar.
  - The notch on top of the card or filler bracket fits around the alignment guide.

5 Replace the screw that secures the card-retention bracket.



- |                          |                    |
|--------------------------|--------------------|
| 1 screw                  | 2 guide clamps (2) |
| 3 card-retention bracket | 4 alignment bar    |
| 5 alignment guide        | 6 filler bracket   |
| 7 guide notches (2)      |                    |



## Postrequisites

- 1** Replace the graphics-card bracket, if applicable. See "Replacing the Graphics-Card Bracket" on page 36.
- 2** Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 3** Follow the steps in "After Working Inside Your Computer" on page 15.



# PCI-Express x1 Card(s)

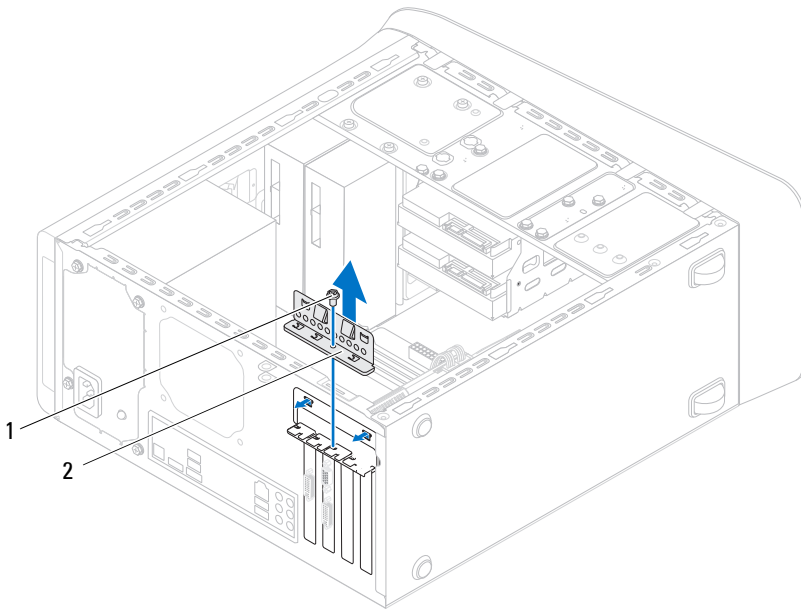
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the graphics-card bracket, if applicable. See "Removing the Graphics-Card Bracket" on page 35.

## Removing the PCI-Express x1 Card(s)

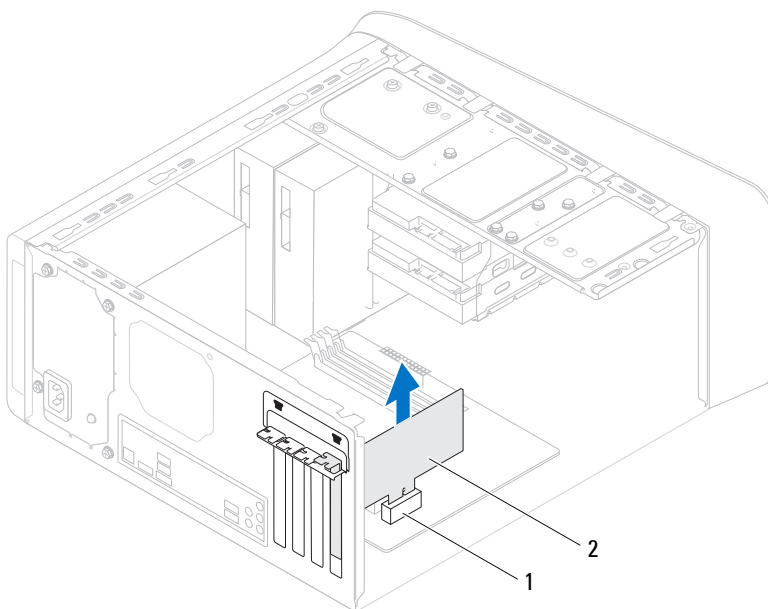
- 1 Remove the screw that secures the card-retention bracket.
- 2 Lift the card-retention bracket and set it aside in a secure location.



1 screw

2 card-retention bracket

- 3 Locate the PCI-Express x1 card on the system board.  
See "System-Board Components" on page 21.
- 4 Disconnect any cables connected to the card, if applicable.
- 5 Grasp the card by its top corners, and ease it out of its connector.

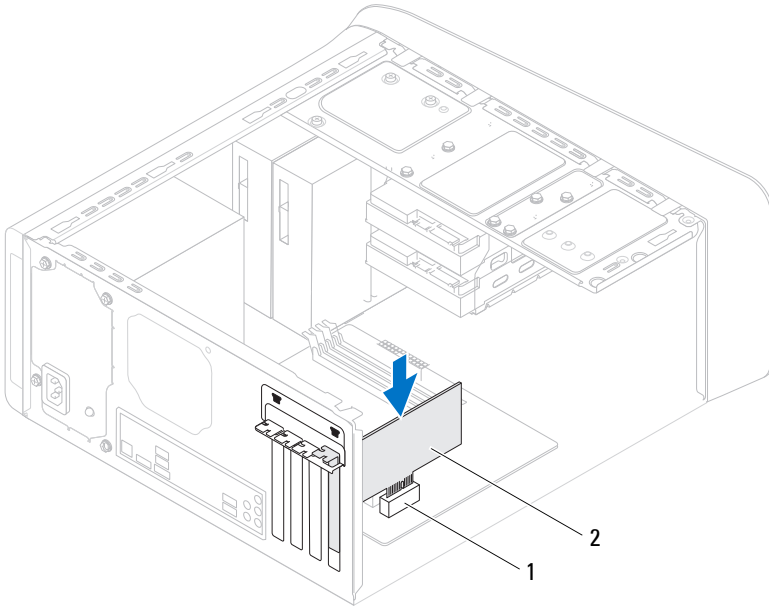


1 PCI-Express x1 card slot

2 PCI-Express x1 card

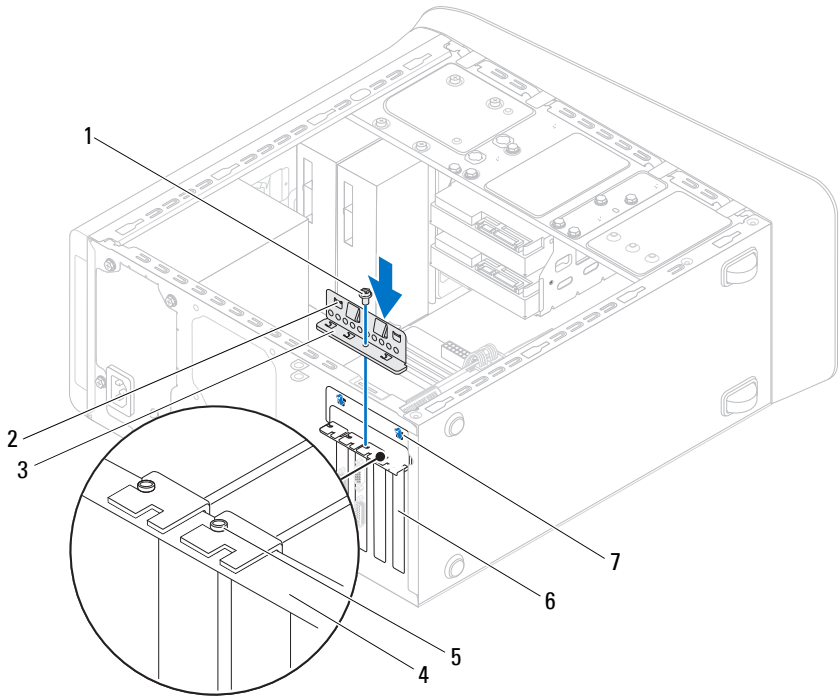
## Replacing the PCI-Express x1 Card(s)

- 1 Place the PCI-Express x1 card in the slot on the system board and press down firmly. Ensure that the PCI-Express x1 card is fully seated in the slot.



- 1 PCI-Express x1 card slot                      2 PCI-Express x1 card

- 2 Replace the card-retention bracket, ensuring that:
  - The guide clamp is aligned with the guide notch.
  - The top of all cards and filler brackets are flush with the alignment bar.
  - The notch on top of the card or filler bracket fits around the alignment guide.
- 3 Replace the screw that secures the card-retention bracket.



- |   |                        |   |                  |
|---|------------------------|---|------------------|
| 1 | screw                  | 2 | guide clamps (2) |
| 3 | card-retention bracket | 4 | alignment bar    |
| 5 | alignment guide        | 6 | filler bracket   |
| 7 | guide notches (2)      |   |                  |

## Postrequisites

- 1 Replace the graphics-card bracket, if applicable. See "Replacing the Graphics-Card Bracket" on page 36.
- 2 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 3 Follow the steps in "After Working Inside Your Computer" on page 15.



## Wireless Mini-Card



**WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).



**CAUTION:** When the Mini-Card is not in the computer, store it in protective antistatic packaging (see "Protecting Against Electrostatic Discharge" in the safety instructions that shipped with your computer).



**NOTE:** Dell does not guarantee compatibility or provide support for Mini-Cards from sources other than Dell.

If you ordered a wireless Mini-Card with your computer, the card is already installed.

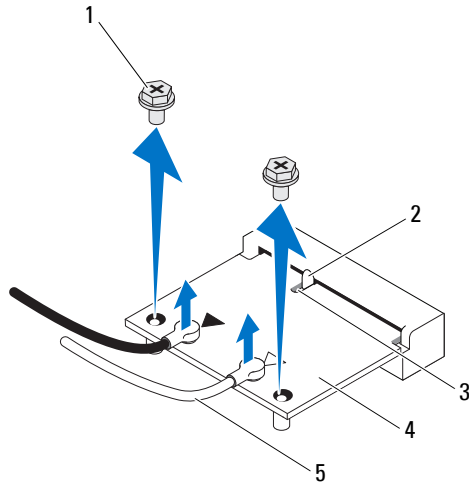
Your computer supports one half Mini-Card slot for Wireless Local Area Network (WLAN) and Bluetooth combo card.

### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

# Removing the Mini-Card

- 1 Disconnect the antenna cable(s) from the Mini-Card.
- 2 Remove the screws that secure the Mini-Card to the system board.



- |   |                    |   |           |
|---|--------------------|---|-----------|
| 1 | screws (2)         | 2 | tab       |
| 3 | notch              | 4 | Mini-Card |
| 5 | antenna cables (2) |   |           |

- 3 Lift the Mini-Card away from the system-board connector.

## Replacing the Mini-Card



**CAUTION:** The connectors are keyed to ensure correct insertion. Use of excessive force may damage the connectors.



**CAUTION:** To avoid damage to the Mini-Card, ensure that there are no cables or antenna cables under the Mini-Card.

- 1 Align the notch on the Mini-Card with the tab in the system-board connector.
- 2 Insert the Mini-Card at a 45-degree angle into the system-board connector.
- 3 Press the other end of the Mini-Card down into the slot on the system board and replace the screws that secure the Mini-Card to the system board.
- 4 Connect the appropriate antenna cables to the Mini-Card you are installing. The Mini-Card has two triangles marked on the label (black and white):
  - Connect the black cable to the connector marked with a black triangle.
  - Connect the white cable to the connector marked with a white triangle.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.



# Mini-Card Antennas

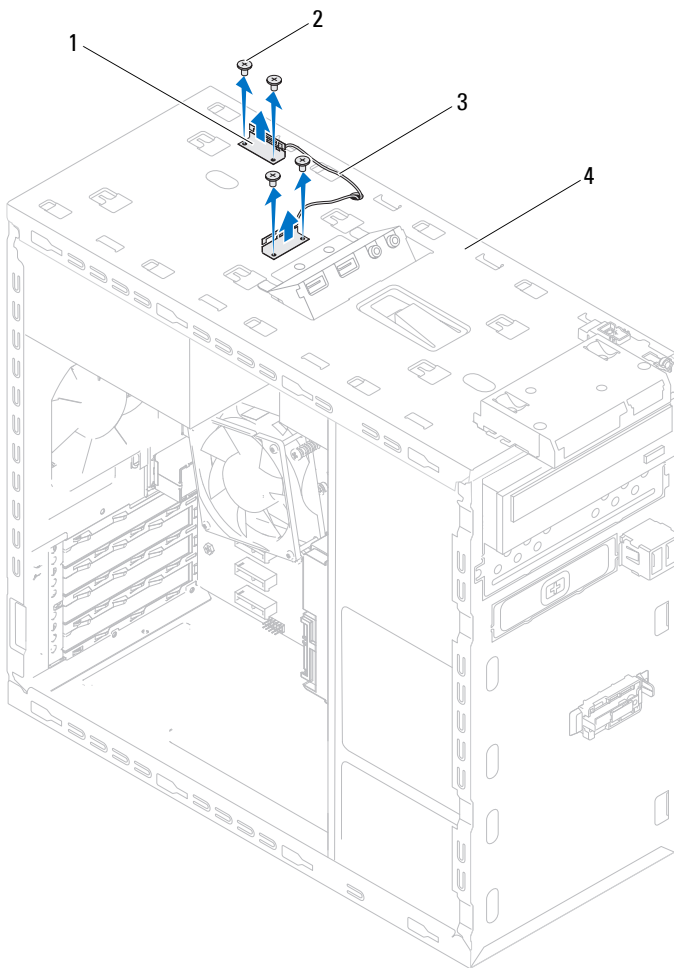
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.
- 3 Remove the top cover. See "Removing the Top Cover" on page 77.

## Removing the Mini-Card Antennas

- 1 Disconnect the Mini-Card antenna cable(s) from the Mini-Card.
- 2 Make note of the Mini-Card antenna-cable routing and remove the cables from the routing guides.
- 3 Remove the screws that secure the Mini-Card antennas to the top panel.
- 4 Lift the Mini-Card antennas to release them from the top panel.



- 1 Mini-Card antennas (2)
- 3 Mini-Card antenna cables

- 2 screws (4)
- 4 top panel

## Replacing the Mini-Card Antennas

- 1 Place the Mini-Card antennas in position and replace the screws that secure the Mini-Card antennas to the top panel.
- 2 Route the Mini-Card antenna cables through the routing guides.
- 3 Connect the appropriate antenna cables to the WLAN card you are installing. The WLAN card has two triangles marked on the label (black and white):
  - Connect the black cable to the connector marked with a black triangle.
  - Connect the white cable to the connector marked with a white triangle.

## Postrequisites

- 1 Replace the top cover. See "Replacing the Top Cover" on page 78.
- 2 Replace the front bezel. See "Replacing the Front Bezel" on page 33.
- 3 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 4 Follow the steps in "After Working Inside Your Computer" on page 15.





## mSATA Drive

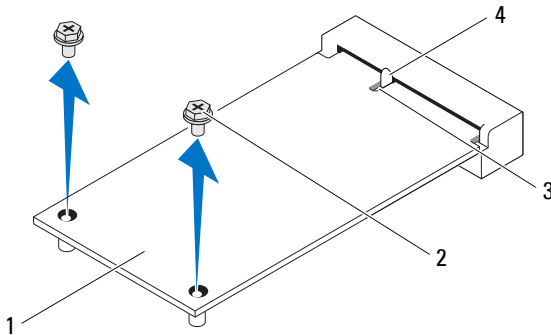
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

### Removing the mSATA Drive

- 1 Locate the mSATA slot (MSATA1) on the system board. See "System-Board Components" on page 21.
- 2 Remove the screws that secure the mSATA drive to the system board.
- 3 Lift the mSATA drive away from the system-board connector.



- |   |             |   |            |
|---|-------------|---|------------|
| 1 | mSATA drive | 2 | screws (2) |
| 3 | notch       | 4 | tab        |

## Replacing the mSATA Drive





- ⚠ **CAUTION:** The connectors are keyed to ensure correct insertion. Use of excessive force may damage the connectors.
  - ⚠ **CAUTION:** To avoid damage to the mSATA drive, ensure that there are no cables under the mSATA drive.
- 1 Align the notch on the mSATA drive with the tab in the system-board connector.
  - 2 Insert the mSATA drive at a 45-degree angle into the system-board connector.
  - 3 Press the other end of the mSATA drive down into the slot on the system board and replace the screws that secure the mSATA drive to the system board.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.



## Hard Drive(s)

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **WARNING:** If you remove the hard drive from the computer when the drive is hot, *do not touch* the metal housing of the hard drive.
-  **CAUTION:** To avoid data loss, do not remove the hard drive while the computer is on or in Sleep state.
-  **CAUTION:** Hard drives are extremely fragile. Exercise care when handling the hard drive.

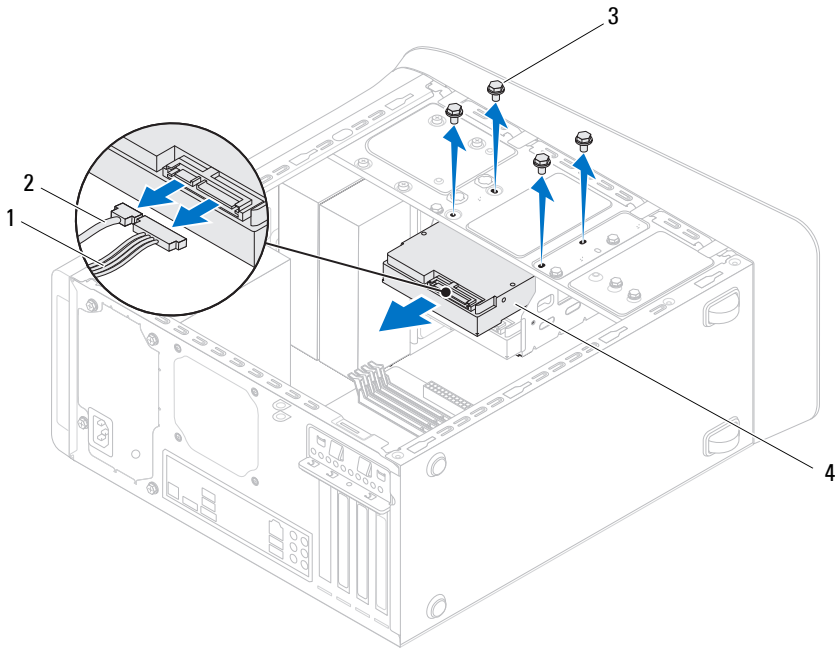
## Primary Hard-Drive

### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

### Removing the Primary Hard-Drive

- 1 Disconnect the power and data cables from the primary hard-drive.
- 2 Remove the screws that secure the hard drive to the chassis.
- 3 Slide the hard drive out towards the back of the computer.



- |   |             |   |                    |
|---|-------------|---|--------------------|
| 1 | power cable | 2 | data cable         |
| 3 | screws (4)  | 4 | primary hard-drive |

## Replacing the Primary Hard-Drive

- 1 Slide the primary hard-drive into the hard drive cage.
- 2 Align the screw holes on the primary hard-drive with the screw holes on the chassis.
- 3 Replace the screws that secure the primary hard-drive to the chassis.
- 4 Connect the power and data cables to the primary hard-drive.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.

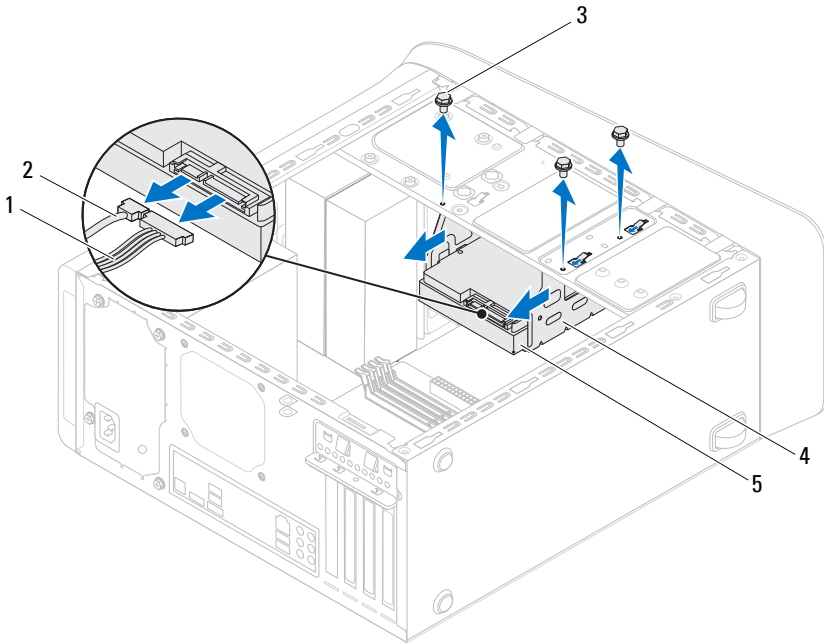
# Hard Drive Cage

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the primary hard-drive. See "Removing the Primary Hard-Drive" on page 61.

## Removing the Hard Drive Cage

- 1 If applicable, disconnect the power and data cables from the secondary hard-drive.
- 2 Remove the screws that secure the hard drive cage to the chassis.
- 3 Slide the hard drive cage towards the back of the chassis.



- |   |                      |   |                 |
|---|----------------------|---|-----------------|
| 1 | power cable          | 2 | data cable      |
| 3 | screws (3)           | 4 | hard drive cage |
| 5 | secondary hard-drive |   |                 |

## Replacing the Hard Drive Cage

- 1 Align the screw holes on the hard drive cage with the screw holes on the chassis.
- 2 Replace the screws that secure the hard drive cage to the chassis.
- 3 If applicable, connect the power and data cables to the secondary hard-drive.



## Postrequisites

- 1 Replace the primary hard-drive. See "Replacing the Primary Hard-Drive" on page 62.
- 2 Replace the computer cover. See "Replacing the Computer Cover" on page 25.

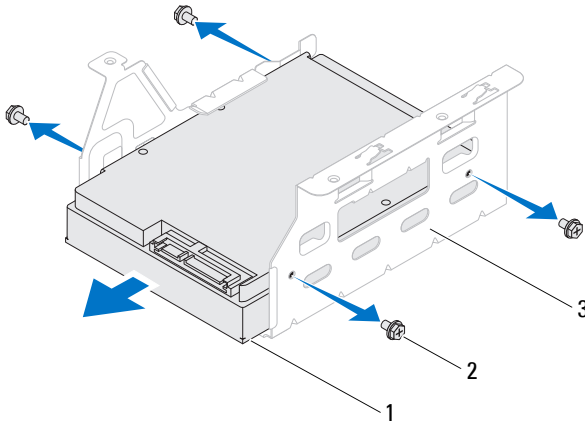
# Secondary Hard-Drive (optional)

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the primary hard-drive. See "Removing the Primary Hard-Drive" on page 61.
- 3 Remove the hard drive cage. See "Removing the Hard Drive Cage" on page 63.

## Removing the Secondary Hard-Drive

- 1 Remove the screws that secure the secondary hard-drive to the hard drive cage.
- 2 Slide the secondary hard-drive away from the hard drive cage.



- 1 secondary hard-drive  
2 screws (4)  
3 hard drive cage

## Replacing the Secondary Hard-Drive

- 1 Slide the secondary hard-drive into the hard drive cage.
- 2 Align the screw holes on the secondary hard-drive with the screw holes on the hard drive cage.
- 3 Replace the screws that secure the secondary hard-drive to the hard drive cage.

## Postrequisites

- 1 Replace the hard drive cage. See "Replacing the Hard Drive Cage" on page 64.
- 2 Replace the primary hard-drive. See "Replacing the Primary Hard-Drive" on page 62.
- 3 Replace the computer cover. See "Replacing the Computer Cover" on page 25.

# Optical Drive(s)

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).


## Prerequisites

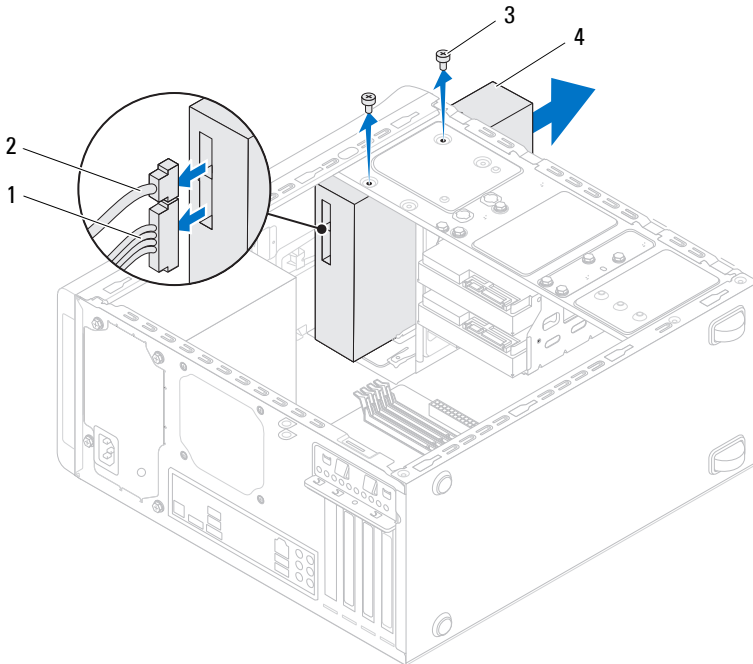
- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.

## Removing the Optical Drive

- 1 Disconnect the power and data cables from the optical drive.
- 2 Remove the screws that secure the optical drive to the chassis.

**3** Push and slide the optical drive out through the front of the computer.

 **NOTE:** Repeat steps 1 to 3 to remove secondary optical-drive, if applicable.



1 power cable

2 data cable

3 screws (2)

4 optical drive

**4** Set aside the optical drive in a secure location.

## Replacing the Optical Drive

- 1 Gently slide the optical drive into the optical-drive bay through the front of the computer.
- 2 Align the screw holes on the optical drive with the screw holes on the chassis.
- 3 Replace the screws that secure the optical drive to the chassis.
- 4 Connect the power and data cables to the optical drive.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Replace the front bezel. See "Replacing the Front Bezel" on page 33.

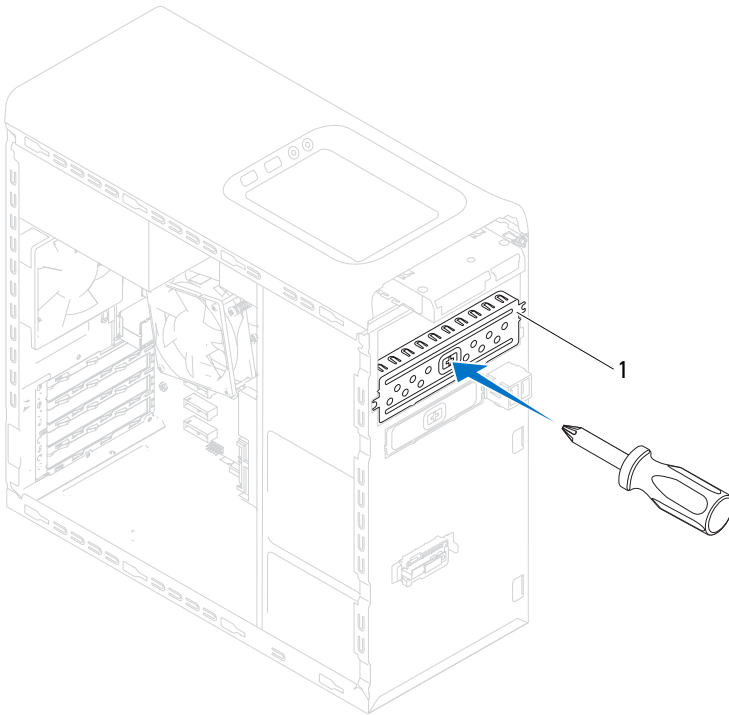
## Secondary Optical-Drive

### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.

## Installing a Secondary Optical-Drive

- 1 Insert a screw driver and twist it to remove the break-away metal plate.
- 2 Pull the break-away metal plate away from the chassis.



- 1 break-away metal plate
- 3 Gently slide the secondary optical-drive into the optical-drive bay through the front of the computer.
- 4 Align the screw holes on the secondary optical-drive with the screw holes on the chassis.
- 5 Replace the two screws that secure the secondary optical-drive to the chassis.
- 6 Connect the power and data cables to the secondary optical-drive.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Replace the front bezel. See "Replacing the Front Bezel" on page 33.





# Media-Card Reader

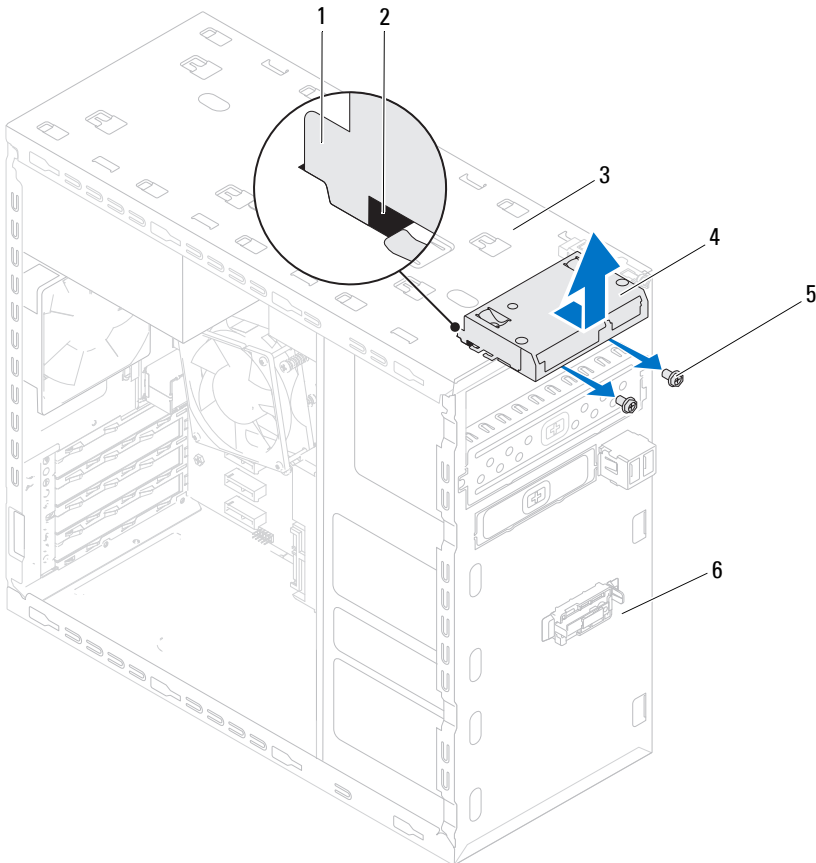
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## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.
- 3 Remove the optical drive. See "Removing the Optical Drive" on page 67.
- 4 Remove the top cover. See "Removing the Top Cover" on page 77.

## Removing the Media-Card Reader

- 1 Remove the screws that secure the Media-Card Reader to the front panel. The screws are located below the Media-Card Reader.
- 2 Disconnect the Media-Card Reader cable from the system board connector F\_USB1. See "System-Board Components" on page 21.
- 3 Slide and lift the Media-Card Reader to remove it from the top panel.



- |   |                              |   |                   |
|---|------------------------------|---|-------------------|
| 1 | Media-Card Reader guides (2) | 2 | slots (2)         |
| 3 | top panel                    | 4 | Media-Card Reader |
| 5 | screws (2)                   | 6 | front panel       |

## Replacing the Media-Card Reader

- 1 Gently slide the Media-Card Reader guides into the slots in the top panel.
- 2 Replace the screws that secure the Media-Card Reader to the front panel.
- 3 Connect the Media-Card Reader cable to the system board connector F\_USB1. See "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the top cover. See "Replacing the Top Cover" on page 78.
- 2 Replace the optical drive. See "Replacing the Optical Drive" on page 69.
- 3 Replace the front bezel. See "Replacing the Front Bezel" on page 33.
- 4 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 5 Follow the steps in "After Working Inside Your Computer" on page 15.



# Top Cover



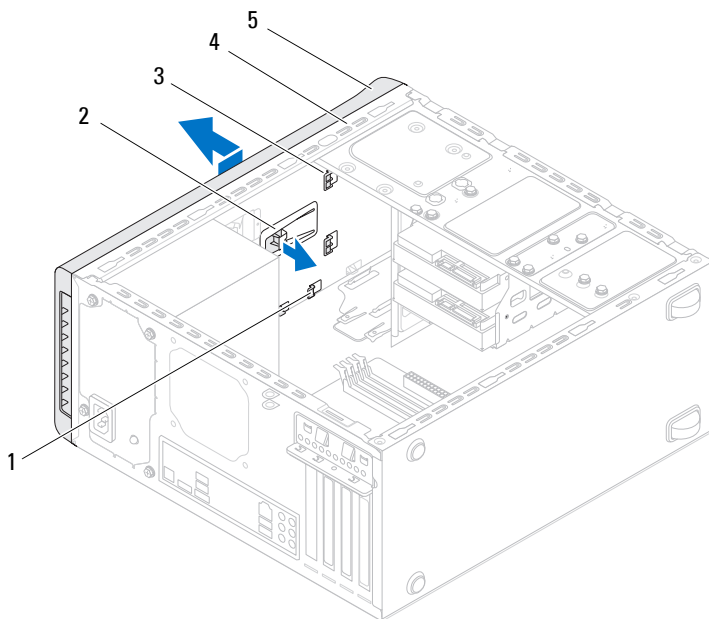
**WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.
- 3 Remove the optical drive. See "Removing the Optical Drive" on page 67.

## Removing the Top Cover

- 1 Pull the release tab, and slide the top cover towards the front of the computer to release the top-cover tabs from the slots on the top panel.
- 2 Pull the top cover away from the top panel.
- 3 Set the top cover aside in a secure location.



- |   |                |   |             |
|---|----------------|---|-------------|
| 1 | slots          | 2 | release tab |
| 3 | top-cover tabs | 4 | top panel   |
| 5 | top cover      |   |             |

## Replacing the Top Cover

- 1 Align the tabs on the top cover with the slots on the top panel.
- 2 Press and slide the top cover towards the back of the computer, until it clicks into place.

## Postrequisites

- 1** Replace the optical drive. See "Replacing the Optical Drive" on page 69.
- 2** Replace the front bezel. See "Replacing the Front Bezel" on page 33.
- 3** Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 4** Follow the steps in "After Working Inside Your Computer" on page 15.





## Top I/O Panel



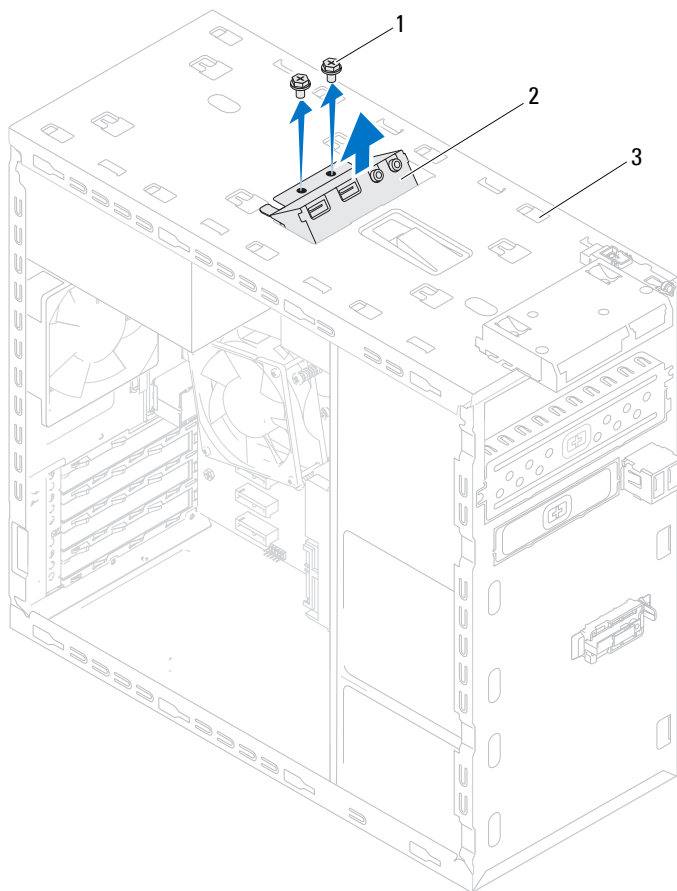
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### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.
- 3 Remove the optical drive. See "Removing the Optical Drive" on page 67.
- 4 Remove the top cover. See "Removing the Top Cover" on page 77.

### Removing the Top I/O Panel

- 1 Disconnect the top I/O panel cables from the system board connectors, F\_USB3 and F\_AUDIO1. See "System-Board Components" on page 21.
- 2 Remove the screws that secure the top I/O panel to the top panel.
- 3 Carefully remove the top I/O panel from the top panel.



- 1 screws (2)
- 3 top panel

2 top I/O panel

## Replacing the Top I/O Panel

- 1 Align the screw holes on the top I/O panel with the screw holes on the top panel.
- 2 Replace the screws that secure the top I/O panel to the top panel.
- 3 Connect the top I/O panel cables to the system board connectors, F\_USB3 and F\_AUDIO1. See "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the top cover. See "Replacing the Top Cover" on page 78.
- 2 Replace the optical drive. See "Replacing the Optical Drive" on page 69.
- 3 Replace the front bezel. See "Replacing the Front Bezel" on page 33.
- 4 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 5 Follow the steps in "After Working Inside Your Computer" on page 15.



## Front USB Panel


 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

### Prerequisites

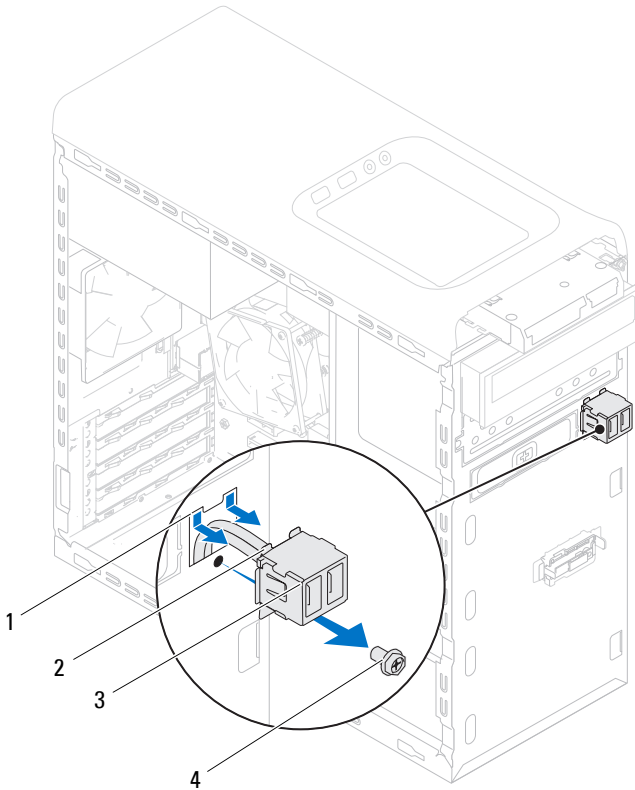
- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.

### Removing the Front USB Panel

 **CAUTION:** When sliding the front USB panel out of the computer, be extremely careful. Carelessness may result in damage to the cable connectors and the cable routing clips.

 **NOTE:** Note the routing of all cables as you remove them so that you can re-route them correctly after you replace the front USB panel.

- 1 Disconnect the front USB panel cables from the system board connector F\_USB2. See "System-Board Components" on page 21.
- 2 Remove the screw that secures the front USB panel to the front panel.
- 3 Slide the front USB panel down to release the clamps from the front panel and pull it away.



- |   |                            |   |            |
|---|----------------------------|---|------------|
| 1 | front USB panel clamp slot | 2 | clamps (2) |
| 3 | front USB panel            | 4 | screw      |

## Replacing the Front USB Panel

- 1 Align and slide the front USB panel clamps into the front USB panel clamp slot.
- 2 Replace the screw that secures the front USB panel to the front panel.
- 3 Connect the front USB panel cables to the system board connector F\_USB2. See "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the front bezel. See "Replacing the Front Bezel" on page 33.
- 2 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 3 Follow the steps in "After Working Inside Your Computer" on page 15.





# Power Button Module

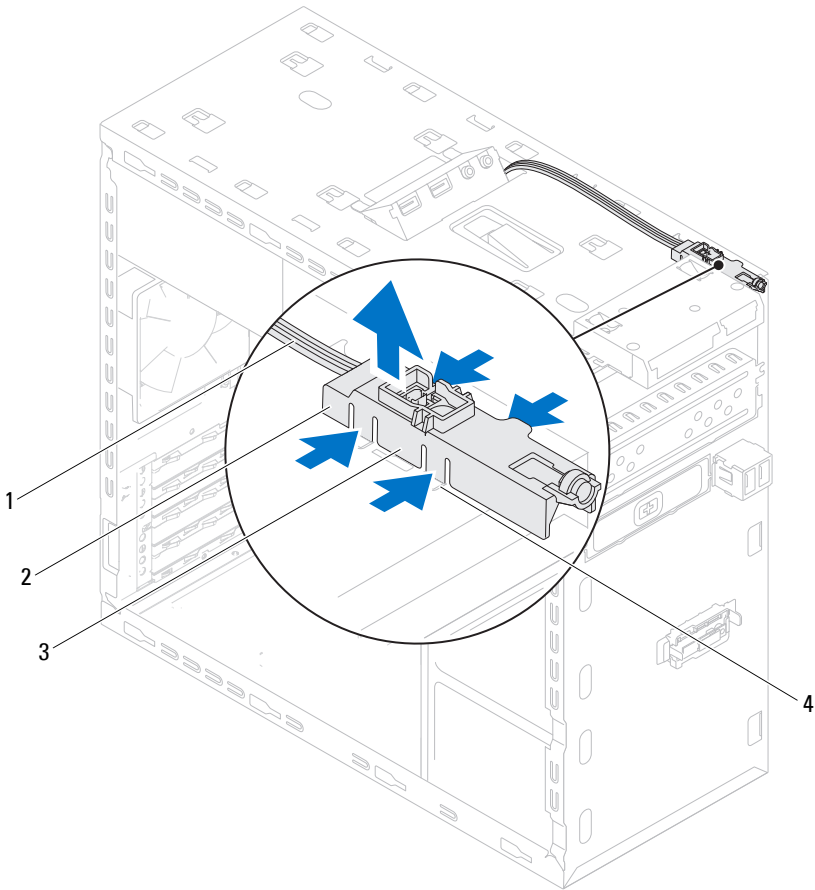
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## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the front bezel. See "Removing the Front Bezel" on page 31.
- 3 Remove the optical drive. See "Removing the Optical Drive" on page 67.
- 4 Remove the top cover. See "Removing the Top Cover" on page 77.

## Removing the Power Button Module

- 1 Disconnect the power button module cable from the system board connector, F\_PANEL. See "System-Board Components" on page 21.
- 2 Press the power button module tabs and lift the power button module to release it from the top panel.



- |   |                              |   |                     |
|---|------------------------------|---|---------------------|
| 1 | cable                        | 2 | power button module |
| 3 | power button module tabs (4) | 4 | slot                |

## Replacing the Power Button Module

- 1 Align and push the power button module tabs into the slots on the top panel.
- 2 Connect the power button module cable to the system board connector, F\_PANEL. See "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the top cover. See "Replacing the Top Cover" on page 78.
- 2 Replace the optical drive. See "Replacing the Optical Drive" on page 69.
- 3 Replace the front bezel. See "Replacing the Front Bezel" on page 33.
- 4 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 5 Follow the steps in "After Working Inside Your Computer" on page 15.



# Chassis Fan



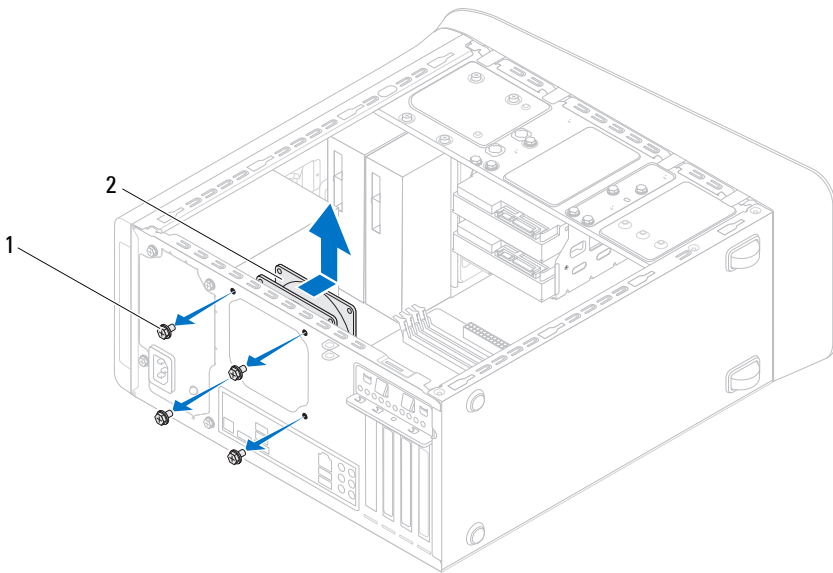
**WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

## Removing the Chassis Fan

- 1 Disconnect the chassis fan cable from the system board connector SYS\_FAN1. See "System-Board Components" on page 21.
- 2 Remove the screws that secure the chassis fan to the chassis.
- 3 Slide and lift the chassis fan away from the computer as shown in the illustration.



1 screws (4)

2 chassis fan

## Replacing the Chassis Fan

- 1 Align the screw holes on the chassis fan with the screw holes on the chassis.
- 2 Replace the screws that secure the chassis fan to the chassis.
- 3 Connect the chassis fan cable to the system board connector SYS\_FAN1.  
See "System-Board Components" on page 21.



## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.








# Processor Fan and Heat-Sink Assembly

-  **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).
-  **WARNING:** The heat sink may be very hot during normal operation. Provide sufficient time for the heat-sink to cool before you touch it.

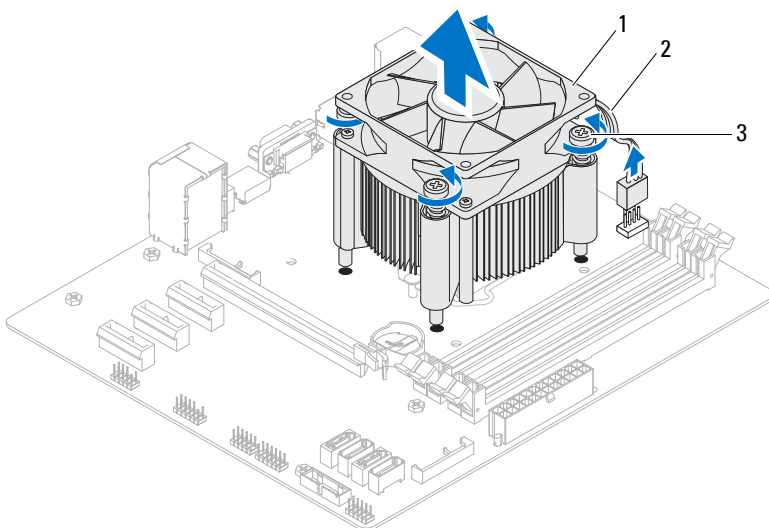
## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

## Removing the Processor Fan and Heat-Sink Assembly

-  **WARNING:** Despite having a plastic shield, the processor fan and heat-sink assembly may be very hot during normal operation. Ensure that it has had sufficient time to cool before you touch it.
  -  **CAUTION:** To ensure maximum cooling for the processor, do not touch the heat transfer areas on the processor fan and heat-sink assembly. The oils in your skin can reduce the heat transfer capability of the thermal grease.
  -  **CAUTION:** The processor fan and heat-sink assembly is a single unit. Do not try to remove the fan separately.
- 1 Disconnect the processor fan cable from the system board connector, CPU\_FAN. See "System-Board Components" on page 21.
  - 2 Using a flat-blade screwdriver loosen the four captive screws that secure the processor fan and heat-sink assembly to the system board.

- 3** Lift the processor fan and heat-sink assembly out of the computer.



- 1 processor fan and heat-sink assembly      2 processor fan cable  
3 captive screws (4)

# Replacing the Processor Fan and Heat-Sink Assembly


- 1 Clean the thermal grease from the bottom of the heat-sink.
- 2 Apply new thermal grease to the top of the processor, if applicable.
- 3 Place the processor fan and heat-sink assembly over the processor.
- 4 Align the captive screws on the processor fan and heat-sink assembly with the screw holes on the system board.
- 5 Tighten the captive screws that secure the processor fan and heat-sink assembly to the system board.
- 6 Connect the processor fan cable to the system board connector, CPU\_FAN. See "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.





# Processor

 **CAUTION:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

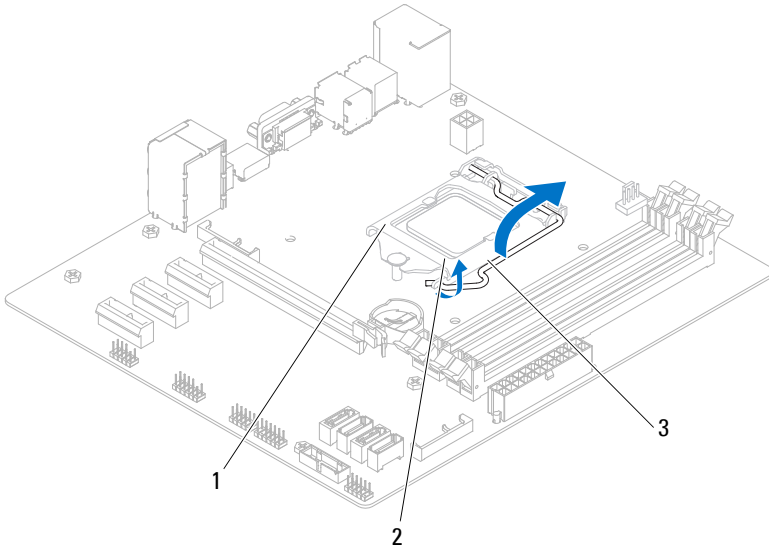
 **WARNING:** Despite having a plastic shield, the processor fan and heat-sink assembly may be very hot during normal operation. Ensure that it has had sufficient time to cool before you touch it.

 **NOTE:** Unless a new processor fan and heat-sink assembly is required for the new processor, reuse the original processor fan and heat-sink assembly when you replace the processor.

- 2 Remove the processor fan and heat-sink assembly from the computer. See "Removing the Processor Fan and Heat-Sink Assembly" on page 97.

# Removing the Processor

- 1 Press the release lever down and then pull it outwards to release it from the tab that secures it.
- 2 Extend the release lever completely to open the processor cover.

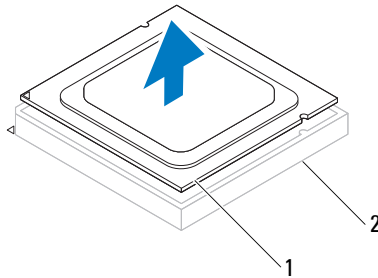


- 1 processor cover    2 tab  
3 release lever



**CAUTION:** When removing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

- 3 Gently lift the processor to remove it from the socket. Leave the release lever extended in the release position so that the socket is ready for the new processor.



1 processor    2 socket

## Replacing the Processor

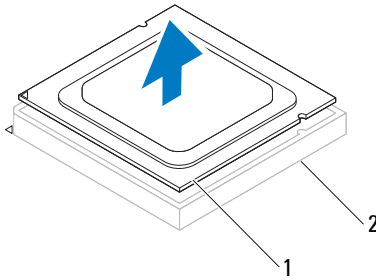
**△ CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.**

- 1 Unpack the new processor, being careful not to touch the underside of the processor.

**△ CAUTION: You must position the processor correctly in the processor socket to avoid damage to the processor.**

- 2 If the release lever on the socket is not fully extended, move it to that position.

- 3** Orient the alignment notches on the processor with the alignment tabs on the socket.
- 4** Align the pin-1 corner of the processor with the pin-1 corner of the processor socket, and then place the processor in the processor socket. Set the processor lightly in the socket and ensure that the processor is positioned correctly.

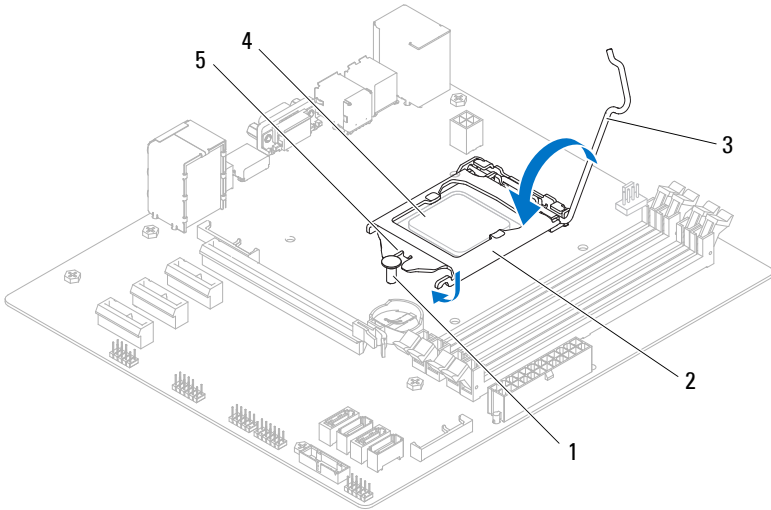


1 processor    2 socket



- 5 When the processor is fully seated in the socket, close the processor cover.
- 6 Pivot the release lever down and place it under the tab on the processor cover.

**⚠ CAUTION: Ensure that the processor cover notch is positioned underneath the alignment post.**




- |                         |                   |
|-------------------------|-------------------|
| 1 alignment post        | 2 processor cover |
| 3 release lever         | 4 processor       |
| 5 processor cover notch |                   |

## Postrequisites

- 1 Replace the processor fan and heat-sink assembly. See "Replacing the Processor Fan and Heat-Sink Assembly" on page 99.
- 2 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 3 Follow the steps in "After Working Inside Your Computer" on page 15.

## Coin-Cell Battery


 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **WARNING:** A battery may explode if installed incorrectly. Replace the battery only with the same or equivalent type. Discard used batteries according to the manufacturer's instructions.

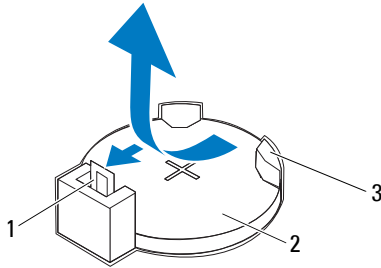
### Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

### Removing the Coin-Cell Battery

 **CAUTION:** Removing the coin-cell battery resets the BIOS settings to default. It is recommended that you note the BIOS settings before removing the coin-cell battery. See "System Setup" on page 119 for instructions on entering the system setup program.

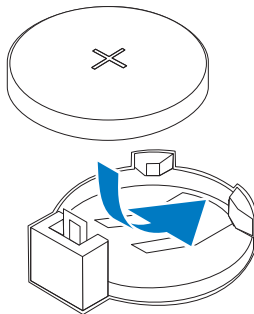
- 1 Locate the battery socket on the system board. See "System-Board Components" on page 21.
- 2 Press the battery-release lever to remove the coin-cell battery.



- 1 battery-release lever                      2 coin-cell battery  
3 battery socket

## Replacing the Coin-Cell Battery

- 1 Insert the coin-cell battery into the socket with the side labeled "+" facing up and press down the coin-cell battery in the socket.



## Postrequisites

- 1** Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2** Follow the steps in "After Working Inside Your Computer" on page 15.
- 3** Enter the system setup program and set the time and date. See "Entering System Setup" on page 119.
- 4** Update the BIOS settings with values you may have noted before replacing the coin-cell battery. See "System Setup" on page 119.



# Power-Supply Unit

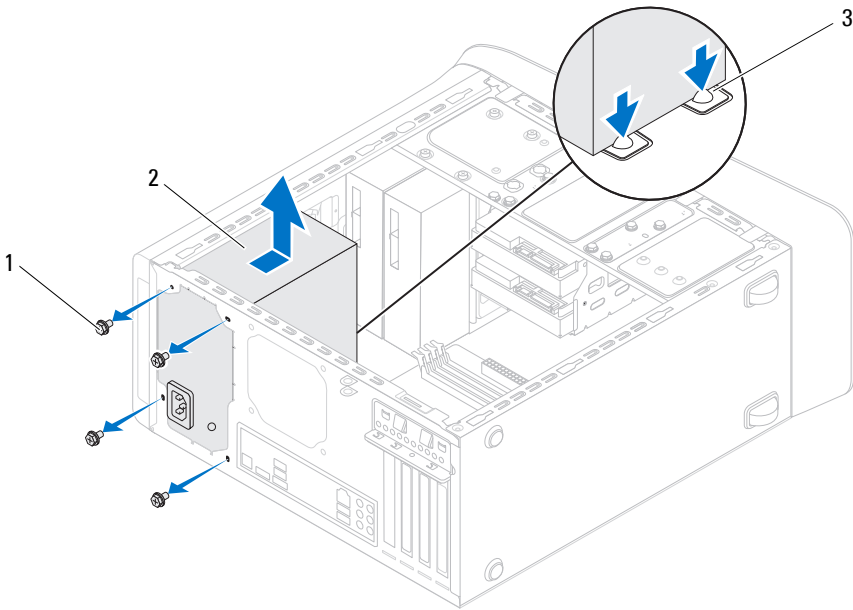
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.

## Removing the Power-Supply Unit

- 1 Disconnect the DC power cables from the system board and the drives. See "System-Board Components" on page 21.
- 2 Remove the screws that secure the power supply to the chassis.
- 3 Press the power supply clamps to release the power supply from the chassis.
- 4 Slide and lift the power supply away from the chassis.



1 screws (4)

2 power supply

3 power supply clamps (2)

## Replacing the Power-Supply Unit

- 1 Slide the power supply towards the back of the chassis.
- 2 Align the screw holes on the power supply with the screw holes on the chassis.



- 3 Replace the screws that secure the power supply to the chassis.



**WARNING: Failure to replace and tighten all screws may cause electrical shock as these screws are a key part of the system grounding.**

- 4 Connect the DC power cables to the system board and drives.  
See "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 2 Follow the steps in "After Working Inside Your Computer" on page 15.




# System Board


 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

## Prerequisites

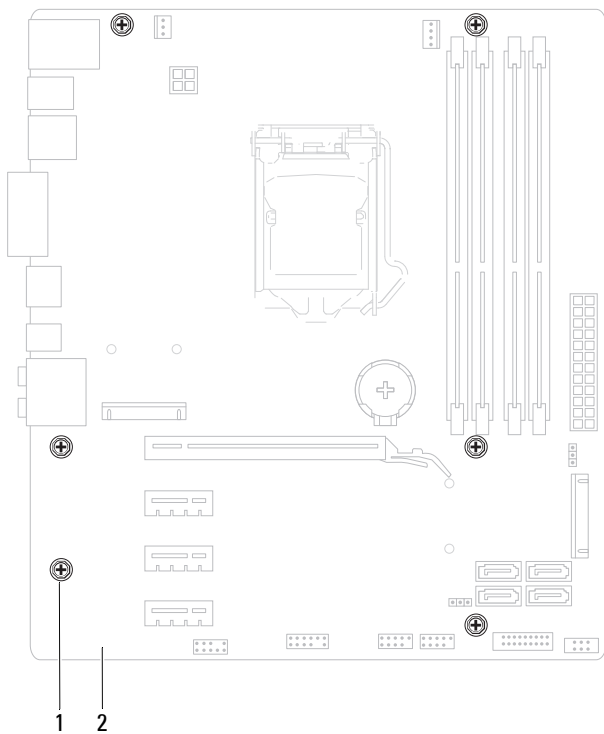
- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Remove the Mini-Card, if applicable. See "Removing the Mini-Card" on page 50.
- 3 Remove the memory module(s). See "Removing Memory Module(s)" on page 27.
- 4 Remove the any PCI-Express x1 card(s), if applicable. See "Removing the PCI-Express x1 Card(s)" on page 44.
- 5 Remove the graphics card. See "Removing the Graphics Card" on page 37.
- 6 Remove the processor fan and heat-sink assembly. See "Removing the Processor Fan and Heat-Sink Assembly" on page 97.
- 7 Remove the processor. See "Removing the Processor" on page 102.

## Removing the System Board

 **NOTE:** Your computer's service tag is stored in the system board. You must enter the service tag in the BIOS after you replace the system board.

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

- 1 Disconnect all the cables connected to the system board.
- 2 Make note of the cable routing and remove the cables from the routing guides.
- 3 Remove the screws that secure the system board to the chassis.



1 screws (6)

2 system board

**4** Lift the system board up and out of the chassis.

## Replacing the System Board

- 1 Gently place the system board into the chassis and slide it towards the back of the computer.
- 2 Replace the screws that secure the system board to the chassis.
- 3 Route and connect the cables that you disconnected from the system board.



**NOTE:** For information on system board connectors, see "System-Board Components" on page 21.

## Postrequisites

- 1 Replace the processor. See "Replacing the Processor" on page 103.
- 2 Replace the processor fan and heat-sink assembly. See "Replacing the Processor Fan and Heat-Sink Assembly" on page 99.
- 3 Replace the graphics card. See "Replacing the Graphics Card" on page 39.
- 4 Replace any PCI-Express x1 card(s), if applicable. See "Replacing the PCI-Express x1 Card(s)" on page 46.
- 5 Replace the memory module(s). See "Replacing Memory Module(s)" on page 28.
- 6 Replace the Mini-Card, if applicable. See "Replacing the Mini-Card" on page 51.
- 7 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 8 Follow the steps in "After Working Inside Your Computer" on page 15.

## Entering the Service Tag in BIOS

- 1 Turn on the computer.
- 2 Press <F2> during POST to enter the system setup program.
- 3 Navigate to the main tab and enter the service tag in the **Service Tag Setting** field.



**NOTE:** Set Service Tag field allows you to enter the service tag manually only when the service tag is absent.



# System Setup

## Overview

Use the system setup to:

- get information about the hardware installed in your computer, such as the amount of RAM, the size of the hard drive, and so on
- change the system configuration information after you add, change, or remove any hardware in your computer
- set or change a user-selectable option, such as the user password, type of hard drive installed, enabling or disabling base devices, and so on



**NOTE:** Before you change system setup, it is recommended that you note the system-setup screen information for future reference.

## Entering System Setup

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




**NOTE:** The F2 prompt indicates that the keyboard has initialized. This prompt can appear very quickly, so you must watch for it, and then press <F2>. If you press <F2> before the F2 prompt, this keystroke is lost. If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then, turn off your computer and try again. See "Turn Off Your Computer and Connected Devices" on page 13.

## System Setup Screens

The system setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into three areas: the **setup item**, active **help screen**, and **key functions**.

<p><b>Setup Item</b> — This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.</p> <p>Scroll up and down the list with the up- and down-arrow keys. As an option is highlighted, the <b>Help Screen</b> displays more information about that option and available settings.</p>	<p><b>Help Screen</b> — This field appears on the right side of the system setup window and contains information about each option listed in the <b>Setup Item</b>. In this field you can view information about your computer and make changes to your current settings.</p> <p>Press the up-arrow and down-arrow keys to highlight an option. Press &lt;Enter&gt; to make that selection active and return to the <b>Setup Item</b>.</p> <p><b>NOTE:</b> Not all settings listed in the <b>Setup Item</b> are changeable.</p>
<p><b>Key Functions</b> — This field appears below the <b>Help Screen</b> and lists keys and their functions within the active system setup field.</p>	

### System Setup Options

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

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**Main**

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System Information	
BIOS Revision	Displays the BIOS version number
BIOS Build Date	Displays the BIOS build date in mm/dd/yyyy format
System Name	Displays the marketing name of the system
System Time	Displays the current time in hh:mm:ss format
System Date	Displays the current date in week mm/dd/yyyy format
Service Tag	Displays the service tag of the computer when the service tag is present
	Displays a field to input the service tag manually when the service tag is absent



Asset Tag	Displays the asset tag of the computer when the asset tag is present. Displays "None" when asset tag is absent.
Processor Information	
Processor Type	Displays the processor information
Processor ID	Displays the processor family ID
Processor Core Count	Displays the number of processor cores
Processor L1 Cache	Displays the L1 cache size
Processor L2 Cache	Displays the L2 cache size
Processor L3 Cache	Displays the L3 cache size
Memory Information	
Memory Installed	Indicates the amount of memory installed in MB
Memory Available	Indicates the amount of memory available in MB
Memory Running Speed	Indicates the memory speed in MHz
Memory Technology	Indicates the type of installed memory
SATA Information	
SATA 0/Port 0	Displays the SATA drive connected to the SATA 0 connector
SATA 1/Port 5	Displays the SATA drive connected to the SATA 1 connector
SATA 2/Port 2	Displays the SATA drive connected to the SATA 2 connector
SATA 3/Port 3	Displays the SATA drive connected to the SATA 3 connector
MSATA1/Port1	Displays the eSATA or mSATA drive connected to the computer

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**Advanced**

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**Processor Configuration**

- Intel SpeedStep Technology — Enabled or Disabled (Enabled by default)
- Intel Virtualization Technology — Enabled or Disabled (Enabled by default)
- CPU XD Support — Enabled or Disabled (Enabled by default)
- Limit CUID Value — Enabled or Disabled (Disabled by default)
- Multi Core Support — Enabled or Disabled (Enabled by default)
- Intel Turbo Boost Technology — Enabled or Disabled (Enabled by default)

**USB Configuration**

- Front USB Ports — Enabled or Disabled (Enabled by default)
- Rear USB Ports — Enabled or Disabled (Enabled by default)
- Top USB Ports — Enabled or Disabled (Enabled by default)

**Onboard Device Configuration**

- Onboard Audio Controller — Enabled or Disabled (Enabled by default)
- SATA Mode — AHCI; RAID (AHCI by default)
- Intel Multi-Display — Enabled or Disabled (Disabled by default)
- Onboard LAN Controller — Enabled or Disabled (Enabled by default)
- Onboard LAN Boot ROM — Enabled or Disabled (Disabled by default)

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**Boot**

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NumLock Key	Bootup NumLock State — On; Off (On by default)
Keyboard Errors	Report or Do Not Report (Report by default)
USB Boot Support	Enabled or Disabled (Enabled by default)
Boot Menu Security	Enabled or Disabled (Disabled by default)
Boot Mode	Legacy or UEFI (Legacy by default)
1st Boot Device	Specifies the boot sequence from the available devices USB Floppy Device; Internal HDD Devices; USB Storage Device; Internal ODD Devices; Onboard NIC Device; Disabled (Internal HDD Devices by default)
2nd Boot Device	Specifies the boot sequence from the available devices USB Floppy Device; Internal HDD Devices; USB Storage Device; Internal ODD Devices; Onboard NIC Device; Disabled (USB Storage Device by default)
3rd Boot Device	Specifies the boot sequence from the available devices USB Floppy Device; Internal HDD Devices; USB Storage Device; Internal ODD Devices; Onboard NIC Device; Disabled (Internal ODD Devices by default)

4th Boot Device	Specifies the boot sequence from the available devices USB Floppy Device; Internal HDD Devices; USB Storage Device; Internal ODD Devices; Onboard NIC Device; Disabled (USB Floppy Device by default)
5th Boot Device	Specifies the boot sequence from the available devices USB Floppy Device; Internal HDD Devices; USB Storage Device; Internal ODD Devices; Onboard NIC Device; Disabled (Onboard NIC Device by default)

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## Power

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Power Management	<ul style="list-style-type: none"> <li>• Wake Up by integrated LAN — Enabled or Disabled (Disabled by default)</li> <li>• AC Recovery — Power Off; Power On; Last Power State (Power Off by default)</li> <li>• USB PowerShare in S4/S5 State — Enabled or Disabled (Disabled by default)</li> <li>• USB PowerShare in Sleep State — Normal; Enhanced (Normal by default)</li> <li>• Auto Power On — Enabled or Disabled (Disabled by default)</li> <li>• Auto Power On Date — 0 to 31, 0 for everyday (15 by default)</li> <li>• Auto Power On Hour — 0 to 23 (12 by default)</li> <li>• Auto Power On Minute — 0 to 59 (30 by default)</li> <li>• Auto Power On Second — 0 to 59 (30 by default)</li> </ul>
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## Security

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Supervisor Password	Displays the status of supervisor password (Not Installed by default)
User Password	Displays the status of user password (Not Installed by default)
Set Supervisor Password	Allows to set, change, or delete the supervisor password <b>NOTE:</b> Deleting the supervisor password will delete the user password. Hence, the supervisor password must be set before setting the user password.
HDD Protection	Enabled or Disabled (Disabled by default)
Set User Password	Allows to set, change, or delete the user password
Password Check	Setup or Always Specifies when the user must enter Supervisor Password; when entering System Setup or Always (Setup by default)

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## Exit

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Exit options	Provides options to <b>Save Changes and Reset, Discard Changes and Reset, and Load Defaults</b>
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## Boot Sequence

This feature allows you to change the boot sequence for devices.

### Boot Options

- **Diskette Drive** — The computer attempts to boot from the floppy disk drive. If no operating system is on the drive, the computer generates an error message.
- **Hard Drive** — The computer attempts to boot from the primary hard-drive. If no operating system is on the drive, the computer generates an error message.

- **CD/DVD/CD-RW Drive** — The computer attempts to boot from the optical drive. If no disc is in the drive, or if the disc is not bootable, the computer generates an error message.
- **USB Storage Device** — Insert the memory device into a USB connector and restart the computer. When **F12 Boot Options** appears in the lower-right corner of the screen, press <F12>. The BIOS detects the device and adds the USB flash option to the boot menu.
  - ✎ **NOTE:** To boot to a USB device, the device must be bootable. To ensure that your device is bootable, check the device documentation.
- **Network** — The computer attempts to boot from the network. If no operating system is found on the network, the computer generates an error message.

### Changing Boot Sequence for the Current Boot

You can use this feature to change the current boot sequence, for example, to boot from the optical drive to run Dell Diagnostics from the *Drivers and Utilities* disc. The previous boot sequence is restored at the next boot.


- 1 If you are booting from a USB device, connect the USB device to a USB connector.
- 2 Turn on (or restart) your computer.
- 3 When **F2 Setup**, **F12 Boot Options** appears in the lower-right corner of the screen, press <F12>.

✎ **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then shut down your computer and try again.

The **Boot Device Menu** appears, listing all available boot devices.


- 4 On the **Boot Device Menu** choose the device you want to boot from. For example, if you are booting to a USB memory key, highlight **USB Storage Device** and press <Enter>.

## Changing Boot Sequence for Future Boots

- 1 Enter system setup. See "Entering System Setup" on page 119.
- 2 Use the arrow keys to highlight the **Boot** menu option and press <Enter> to access the menu.
  -  **NOTE:** Write down your current boot sequence in case you want to restore it.
- 3 Press the up- and down-arrow keys to move through the list of devices.
- 4 Press plus (+) or minus (-) to change the boot priority of the device.

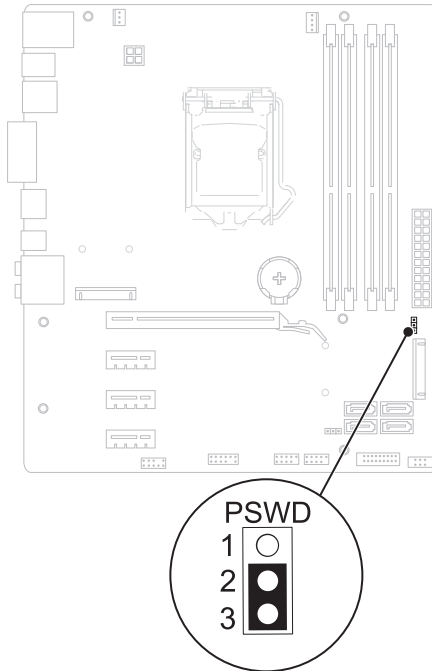
## Clearing Forgotten Passwords

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

 **WARNING:** The computer must be disconnected from the electrical outlet to clear the CMOS setting.

- 1 Remove the computer cover. See "Removing the Computer Cover" on page 23.
- 2 Locate the 3-pin password reset jumper (PSWD) on the system board. See "System-Board Components" on page 21.
- 3 Remove the 2-pin jumper plug from pins 2 and 3 and fix it on pins 1 and 2.

## Password:



- 4 Wait for approximately five seconds to clear the password setting.
- 5 Remove the 2-pin jumper plug from pins 1 and 2 and replace it on pins 2 and 3.
- 6 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 7 Follow the steps in "After Working Inside Your Computer" on page 15.



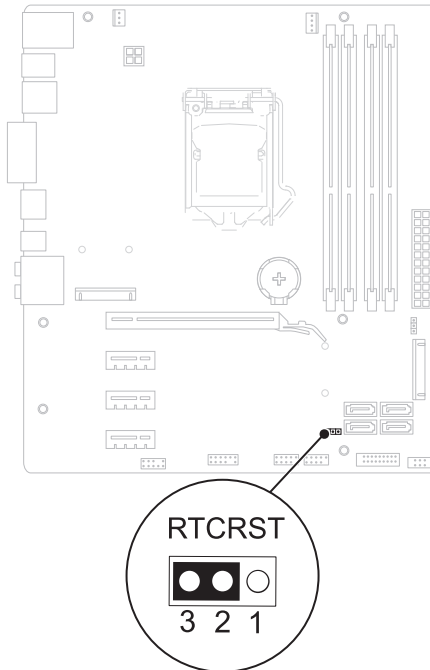
# Clearing CMOS Passwords

**⚠ WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 13. For additional safety best practices information, see the Regulatory Compliance Homepage at [dell.com/regulatory\\_compliance](http://dell.com/regulatory_compliance).

**⚠ WARNING:** The computer must be disconnected from the electrical outlet to clear the CMOS setting.

- 1 Remove the computer cover. See "Computer Cover" on page 23.
- 2 Locate the 3-pin CMOS reset jumper (RTCRST) on the system board. See "System-Board Components" on page 21.
- 3 Remove the 2-pin jumper plug from pins 2 and 3 and fix it on pins 1 and 2.

## CMOS:



- 4 Wait for approximately five seconds to clear the CMOS setting.
- 5 Remove the 2-pin jumper plug from pins 1 and 2 and replace it on pins 2 and 3.
- 6 Replace the computer cover. See "Replacing the Computer Cover" on page 25.
- 7 Follow the steps in "After Working Inside Your Computer" on page 15.





# Flashing the BIOS

The BIOS may require flashing when an update is available or when replacing the system board. To flash the BIOS:

- 1 Turn on the computer.
- 2 Go to [support.dell.com/support/downloads](http://support.dell.com/support/downloads).
- 3 Locate the BIOS update file for your computer:



**NOTE:** The Service Tag for your computer is located on a label at the back of your computer.

If you have your computer's Service Tag:

- a Click **Enter a Tag**.
- b Enter your computer's Service Tag in the **Enter a service tag:** field, click **Go**, and proceed to step 4.

If you do not have your computer's Service Tag:

- a Click **Select Model**.
- b Select the type of product in the **Select Your Product Family** list.
- c Select the product brand in the **Select Your Product Line** list.
- d Select the product model number in the **Select Your Product Model** list.



**NOTE:** If you have selected a different model and want to start over again, click **Start Over** on the top right of the menu.

- e Click **Confirm**.
- 4 A list of results appears on the screen. Click **BIOS**.
- 5 Click **Download Now** to download the latest BIOS file.  
The **File Download** window appears.

- 6** Click **Save** to save the file on your desktop. The file downloads to your desktop.
- 7** Click **Close** if the **Download Complete** window appears. The file icon appears on your desktop and is titled the same as the downloaded BIOS update file.
- 8** Double-click the file icon on the desktop and follow the instructions on the screen.

# Specifications

To learn about the features and advanced options available on your desktop, see **Specifications** at [support.dell.com/manuals](https://support.dell.com/manuals)





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