Inspiron 3670

Service Manual

Computer Model: Inspiron 3670
Regulatory Model: D19M
Regulatory Type: D19M005

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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1

Before working inside your computer

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

Topics:

- Before you begin
- Safety instructions
- Recommended tools
- Screw list

Before you begin

1 Save and close all open files and exit all open applications.

2 Shut down your computer. Click **Start** > **Power** > **Shut down**.

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

3 Disconnect your computer and all attached devices from their electrical outlets.

4 Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

5 Remove any media card and optical disc from your computer, if applicable.

6 After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

Safety instructions

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

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

WARNING: Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the electrical outlet.

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

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

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

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

CAUTION: When you disconnect a cable, pull on its connector or on its pull tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the ports and connectors are correctly oriented and aligned.

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

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #1
- Plastic scribe

Screw list

The following table provides the list of screws that are used for securing different components to the computer.

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
Computer cover	Chassis	#6-32x6.35	2	
Solid-state drive/Intel Optane memory	System board	M2x3.5	1	
Card-retention bracket	Chassis	#6-32x6.35	1	
Wireless card	System board	M2x3.5	1	
Power-supply unit	Chassis	#6-32x6.35	4	
3.5-inch hard drive	Chassis	#6-32x3.6	4	
2.5-inch hard drive(s) **NOTE: Depending on the configuration ordered there may be up to two 2.5-inch hard drives installed.**	Chassis	M3x3.5	2-4	
Optical drive	Chassis	M2x2	2	
Front-I/O bracket	Chassis	#6-32x6.35	1	
System board	Chassis	#6-32x6.35	8	
System board	Chassis	#6-32x4.8, standoff	1	

2

After working inside your computer

△ | **CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.**

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

3

Technical overview

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

Topics:

- Inside view of your computer
- System board components

Inside view of your computer

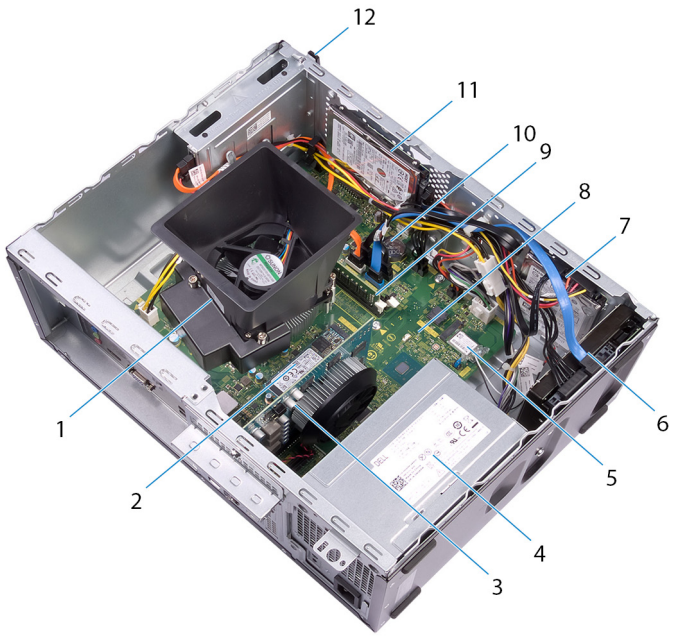
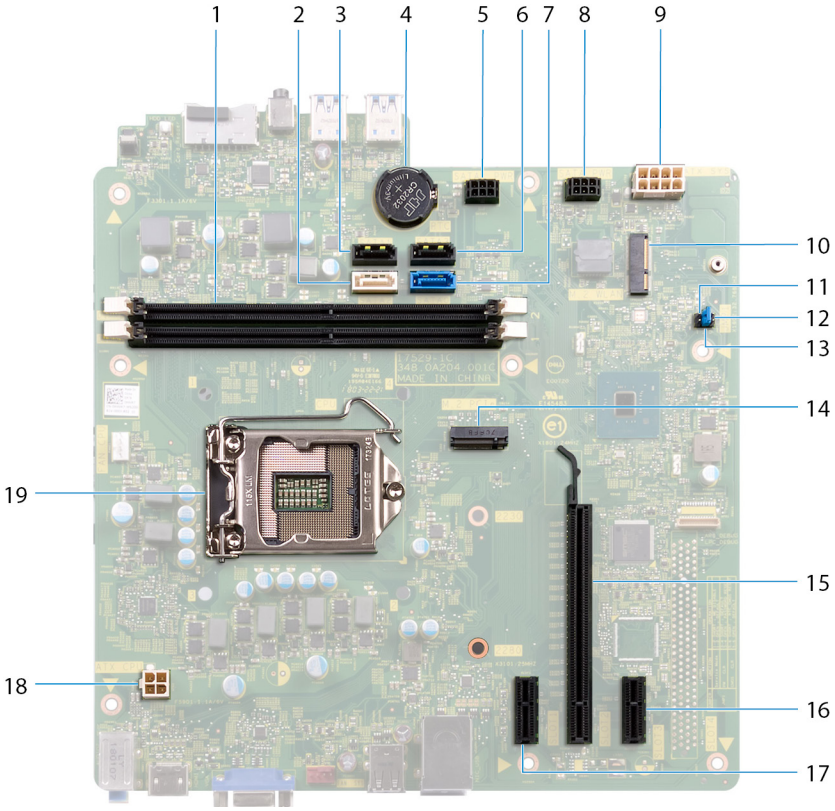


Figure 1. Inside view of your computer

1	processor fan and heat-sink assembly	2	solid-state drive/Intel Optane memory
3	graphics card	4	power-supply unit
5	wireless card	6	3.5-inch hard drive
7	2.5-inch hard drive	8	system board
9	memory module(s)	10	coin-cell battery
11	2.5-inch hard drive	12	optical-disk drive

System board components



1	memory-module slots (2)	2	SATA 2 cable connector (SATA 2)
3	SATA 1 cable connector (SATA 1)	4	coin-cell battery
5	hard-drive power cable connector (SATA PWR)	6	SATA 3 cable connector (SATA 3)
7	SATA 0 cable connector (SATA 0)	8	hard-drive power cable connector (SATA PWR)
9	power-supply unit cable connector (ATX PWR)	10	wireless-card slot
11	service mode jumper	12	CMOS clear jumper
13	password clear jumper	14	M.2 PCIe connector
15	graphics card slot	16	PCI-Express X1 slot
17	PCI-Express X1 slot	18	processor-power cable connector (ATX CPU)
19	processor socket		

Removing the computer cover

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

Procedure

1 Place the computer on its side.
2 Remove the two screws (#6-32x6.35) that secure the computer cover to the chassis.
3 Slide the computer cover towards the back of the computer and lift the computer cover off the chassis.

Replacing the computer cover

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Procedure

1 Align the tabs on the computer cover with the slots on the chassis and slide it towards the front of the computer until it snaps into position.

2 Replace the two screws (#6-32x6.35) that secure the computer cover to the chassis.

3 Place the computer in an upright position.

6

Removing the front bezel

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Topics:

- Prerequisites
- Procedure

Prerequisites

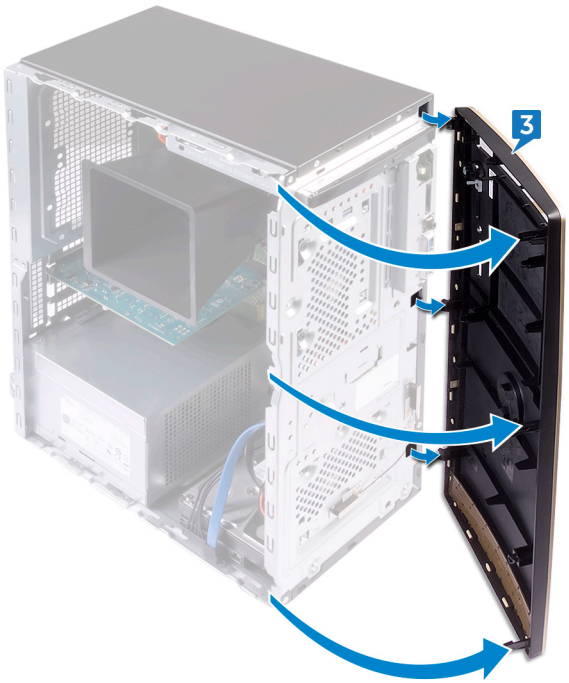
Remove the computer cover.

Procedure

1 Place the computer in an upright position.

2 Pry and release the tabs on the front bezel away from the chassis.

3 Rotate and pull the front bezel away from the computer to release the tabs on the front bezel from the slots on the chassis.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Replacing the front bezel

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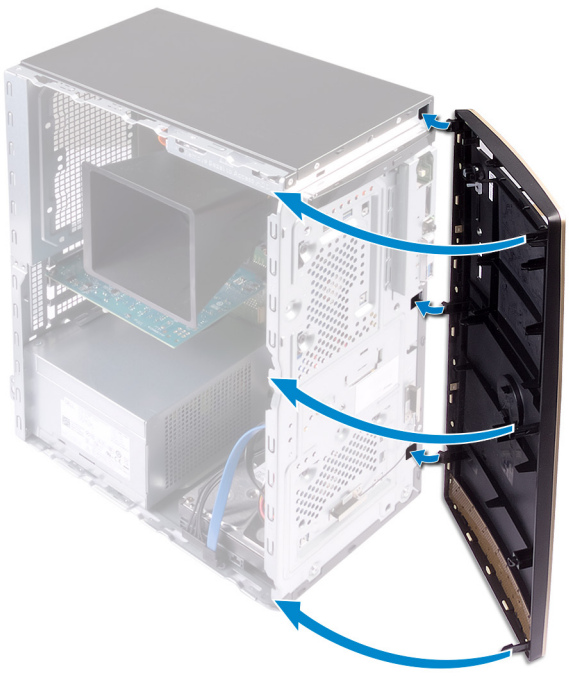
Topics:

- Procedure
- Post-requisites

Procedure

1 Align the tabs on the front bezel with the slots on the chassis, and then rotate the front bezel towards the chassis until it snaps into place.

NOTE: Ensure that the front-bezel slot is aligned correctly with the optical drive.



2 Place the computer on its side.

Post-requisites

Replace the computer cover.

8

Removing the memory module

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Topics:

- Prerequisites
- Procedure

Prerequisites

Remove the computer cover.

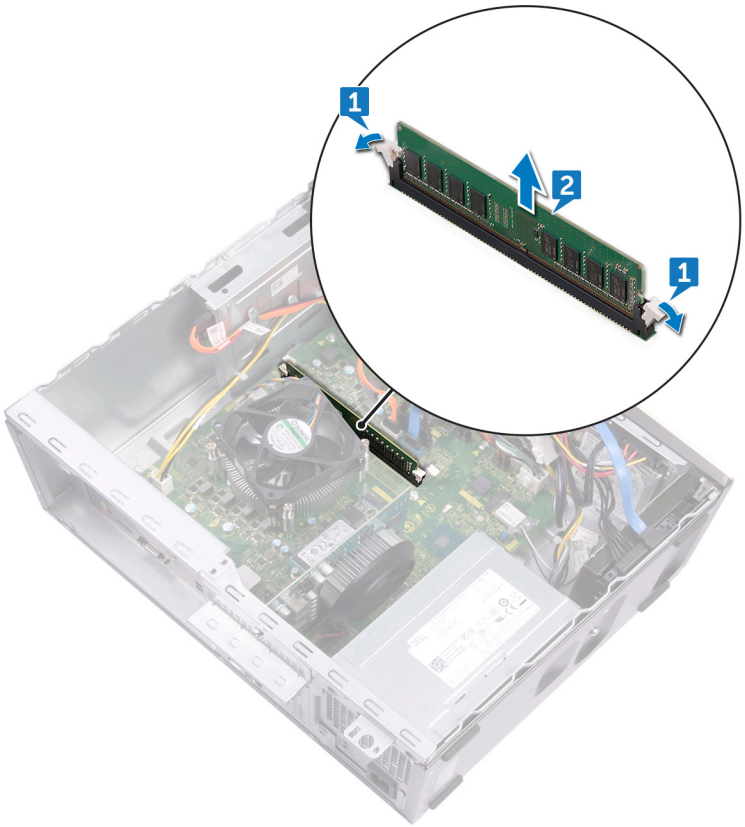
Procedure

NOTE: Depending on the configuration ordered, your computer may have up to two memory modules installed on the system board.

1 Using the fingertips, spread apart the securing clip at each end of the memory-module slot until the memory module pops up.

2 Lift the memory module out of the memory-module slot.

NOTE: If the memory module is difficult to remove, gently ease the memory module back and forth alongside the memory-module slot to remove it.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Replacing the memory module

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Topics:

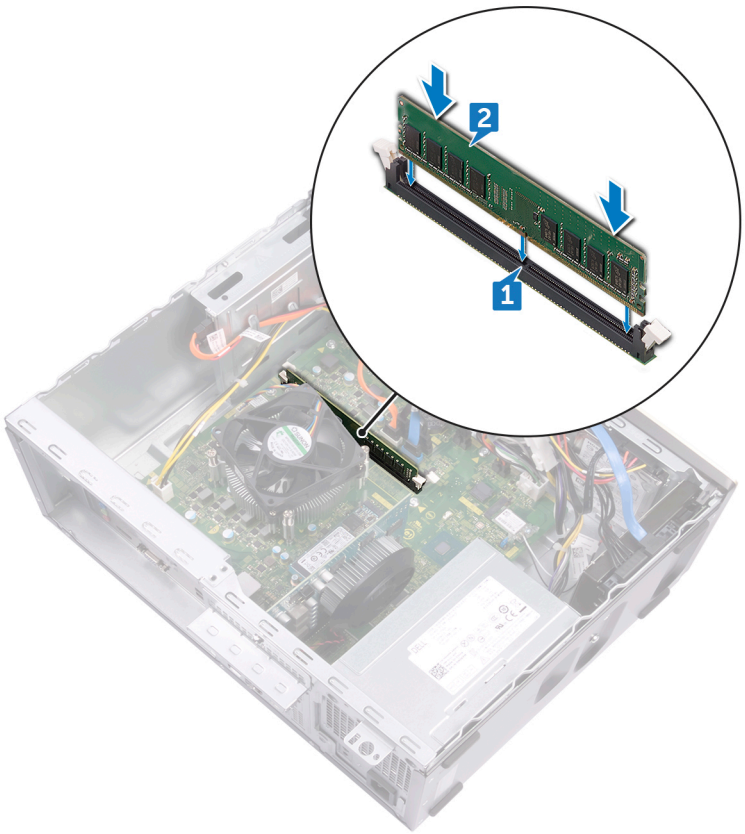
- Procedure
- Post-requisites

Procedure

1 Align the notch on the memory module with the tab on the memory-module slot.

NOTE: Ensure that the securing clips are extended away from the memory-module slot.

2 Insert the memory module into the memory-module slot, and then press the memory module down until the securing clips lock in place.



Post-requisites

Replace the computer cover.

Removing the solid-state drive/Intel Optane memory module

You need to disable the Intel Optane memory before removing Intel Optane memory module from your computer. For more information about disabling the Intel Optane memory, see Disabling Intel Optane memory.

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Topics:

- Prerequisites
- Procedure

Prerequisites

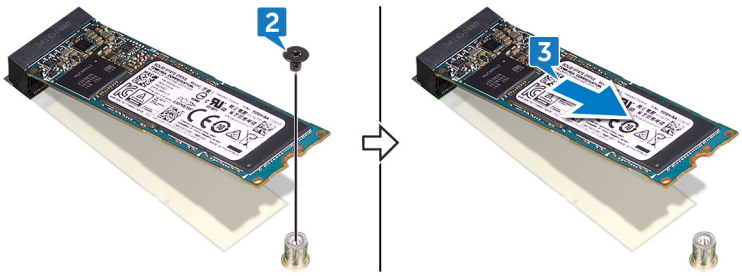
Remove the computer cover.

Procedure

1 Locate the solid-state drive or Intel Optane memory on the system board.

2 Remove the screw (M2x3.5) that secures the solid-state drive or Intel Optane memory to the system board.

3 Slide and remove the solid-state drive or Intel Optane memory from the M.2 card slot on the system board.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Replacing the solid-state drive/Intel Optane memory module

Enable the Intel Optane memory after you replace the Intel Optane memory module. For more information about enabling the Intel Optane memory, see Enabling Intel Optane memory.

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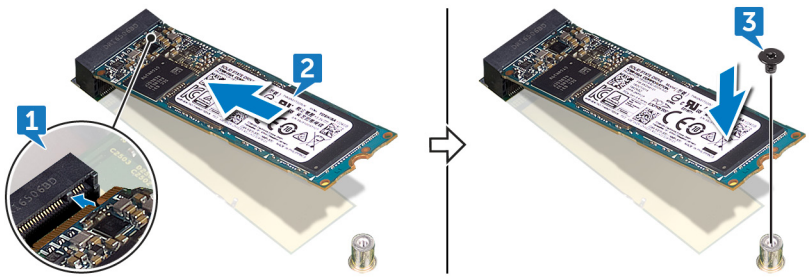
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

Topics:

- Procedure
- Post-requisites

Procedure

1 Align the notch on the solid-state drive or Intel Optane memory with the tab on the M.2 card slot.
2 Slide the solid-state drive or Intel Optane memory into the M.2 card slot on the system board.
3 Replace the screw (M2x3.5) that secures the solid-state drive or Intel Optane memory to the system board.



Post-requisites

Replace the computer cover.

Removing the graphics card

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Topics:

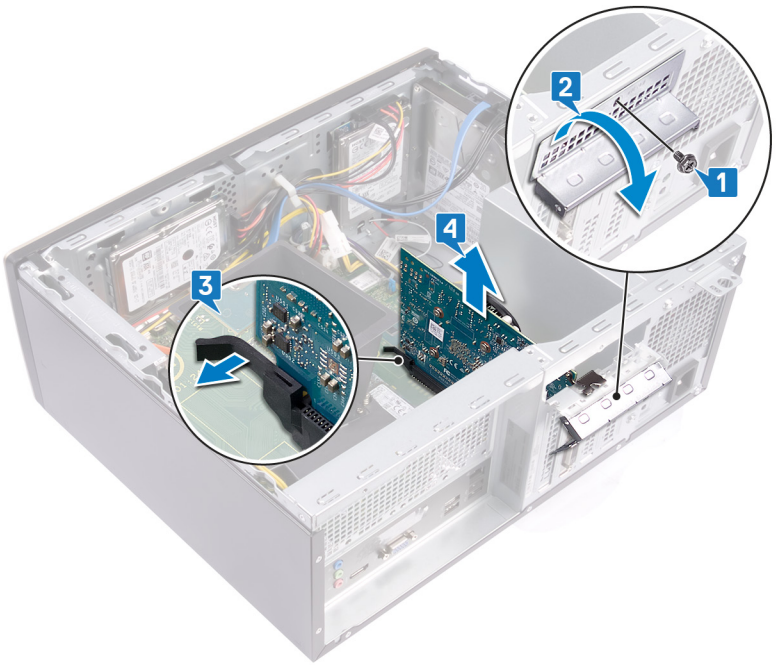
- Prerequisites
- Procedure

Prerequisites

Remove the computer cover.

Procedure

1 Remove the screw (#6-32x6.35) that secures the card-retention bracket to the chassis.
2 Rotate the card-retention bracket away from the chassis to access the expansion cards.
3 Push and hold the securing tab on the graphics-card slot.
4 Hold firmly on the edge of the graphics card and lift it out of the slot on the graphics-card slot.



Replacing the graphics card

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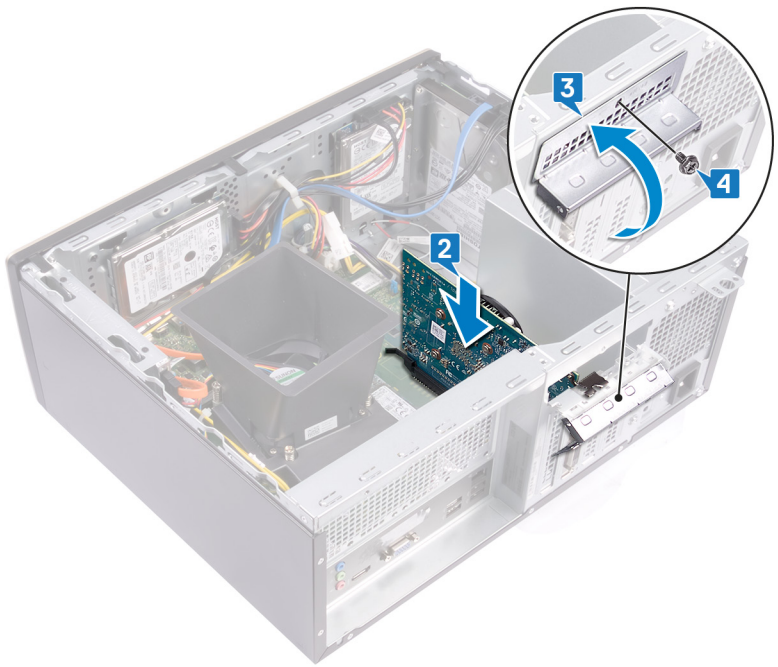
Topics:

- Procedure
- Post-requisites

Procedure

1. Ensure the securing tab on the system board is pushed away from the graphics-card slot.
2. Align the notch on the graphics card with the tab on the graphics card slot, and then press down firmly until the graphics card snaps into place.

   NOTE: The securing tab will move to a closed position when the graphics card is replaced correctly. Remove the graphics card and repeat the procedure if the securing tab does not close.
3. Rotate the card-retention bracket and align the screw hole on the card-retention bracket with the screw hole on the chassis.
4. Replace the screw (#6-32x6.35) that secures the card-retention bracket to the chassis.



Post-requisites

Replace the computer cover.

Removing the coin-cell battery

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

Topics:

- Prerequisites
- Procedure

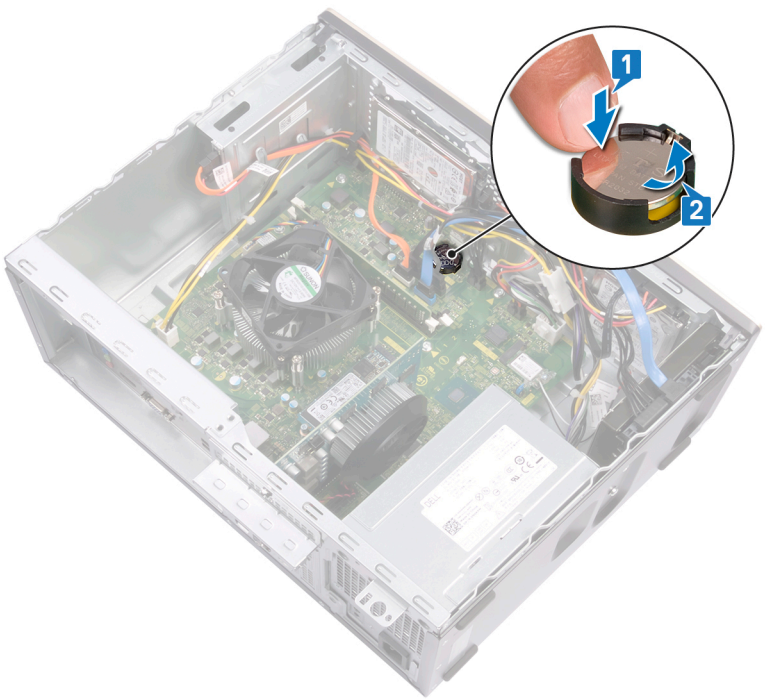
Prerequisites

Remove the computer cover.

Procedure

1 Press on the edge of the coin-cell battery to release it from the battery socket on the system board.

2 Lift the coin-cell battery out of the battery socket on the system board.



Replacing the coin-cell battery

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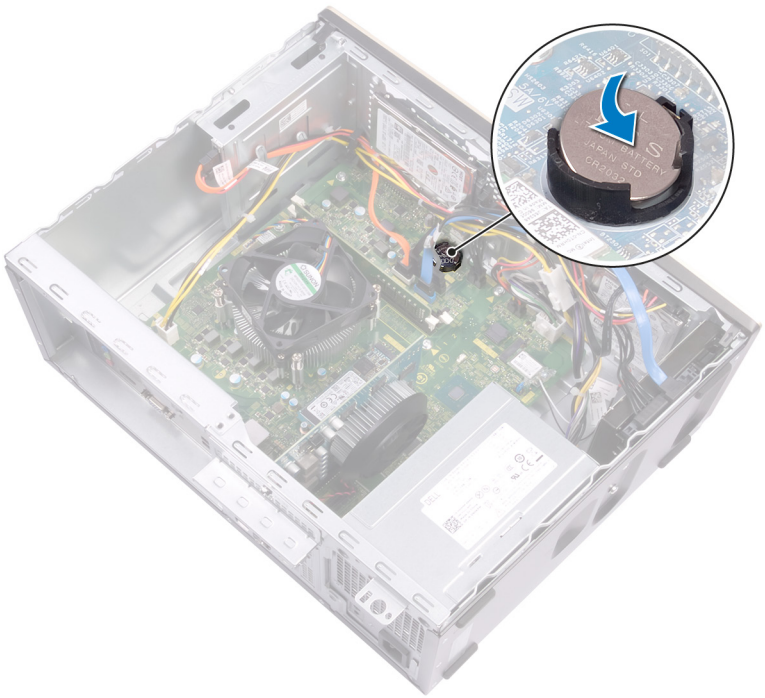
Topics:

- Procedure
- Post-requisites

Procedure

Insert the coin-cell battery into the battery socket with the positive side facing up, and snap the battery into place.



Post-requisites

Replace the computer cover.

Removing the wireless card

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Topics:

- Prerequisites
- Procedure

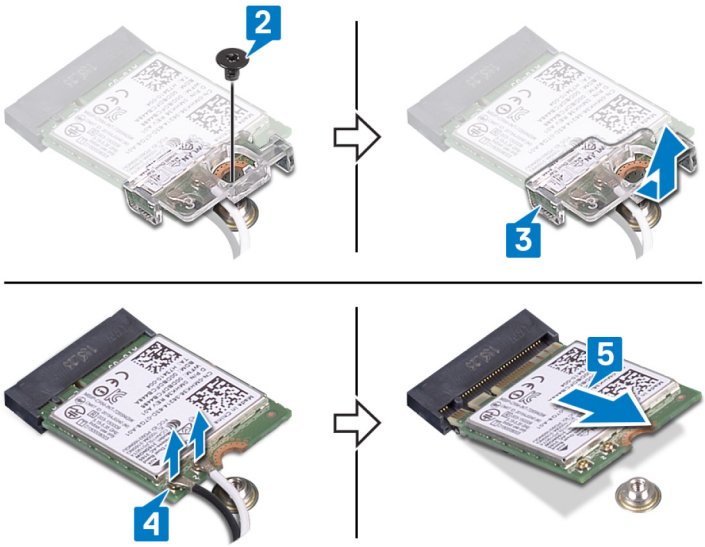
Prerequisites

Remove the computer cover.

Procedure

1 Locate the wireless card on the system board.

2 Remove the screw (M2x3.5) that secures the wireless card to the system board.
3 Lift the wireless-card bracket off the wireless card.
4 Disconnect the antenna cables from the wireless card.
5 Slide and remove the wireless card from the wireless-card slot on the system board.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Replacing the wireless card

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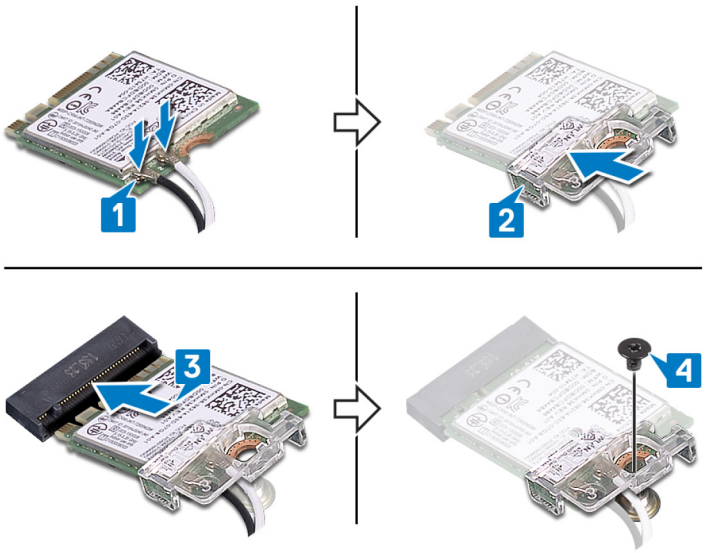
Topics:

- Procedure
- Post-requisites

Procedure

1. Connect the antenna cables to the wireless card.
2. Slide the wireless-card bracket on the wireless card, and align the screw hole on the bracket with the screw hole on the wireless card.
3. Align the notch on the wireless card with the tab on the wireless-card slot, then slide the wireless card at an angle into the wireless-card slot.
4. Replace the screw (M2x3.5) that secures the wireless card to the system board.



Post-requisites

Replace the computer cover.

Removing the optical drive

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Topics:

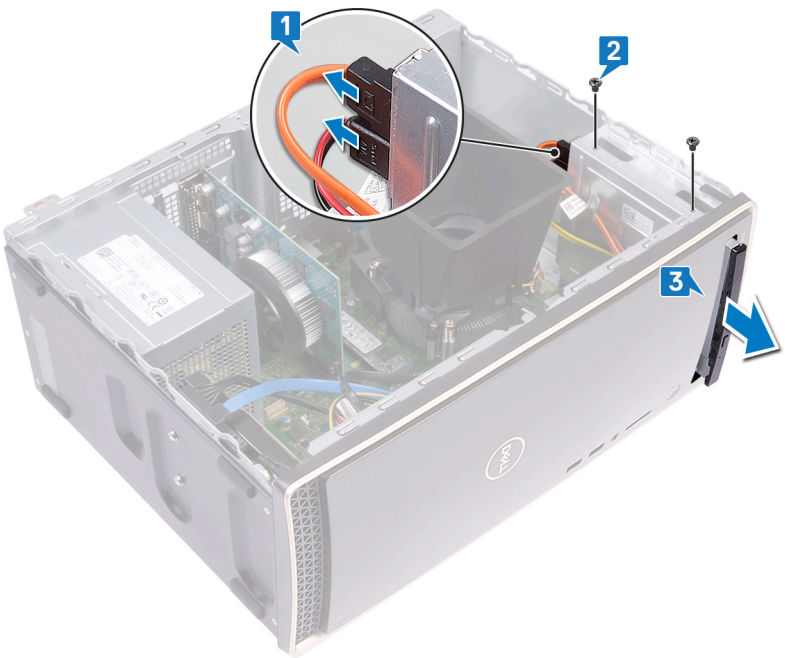
- Prerequisites
- Procedure

Prerequisites

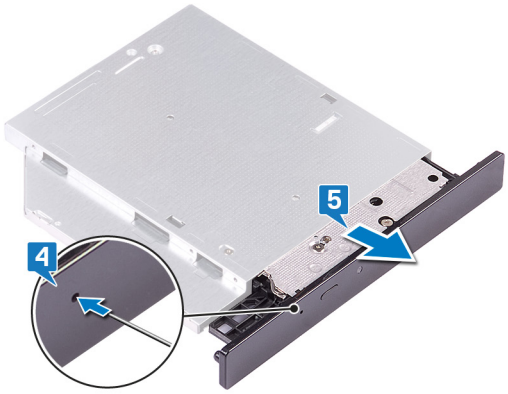
Remove the computer cover.

Procedure

1 Disconnect the optical-drive data cable and power cable from the optical-drive assembly.
2 Remove the two screws (M2x2) that secure the optical-drive assembly to the chassis.
3 Slide and remove the optical-drive assembly from its slot on the chassis.

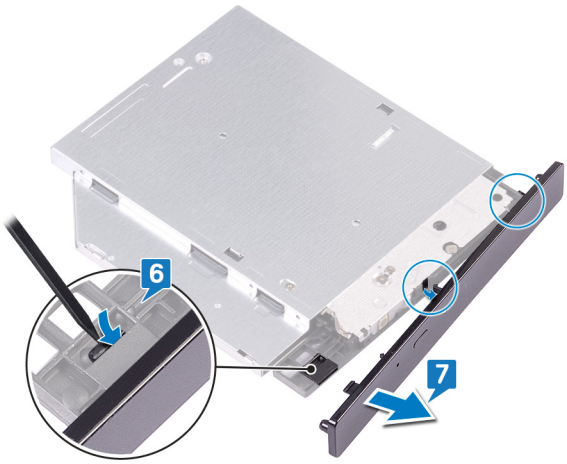


4 Insert a pin into the optical-drive emergency eject pinhole to release the optical-drive tray.
5 Gently pull to open the optical-drive tray from the optical-drive assembly.



6 Using a plastic scribe, push the tabs to release the optical-drive bezel from the optical drive.

7 Gently pull and disconnect the optical-drive bezel from the optical drive.



19

Replacing the optical drive

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

Topics:

- Procedure
- Post-requisites

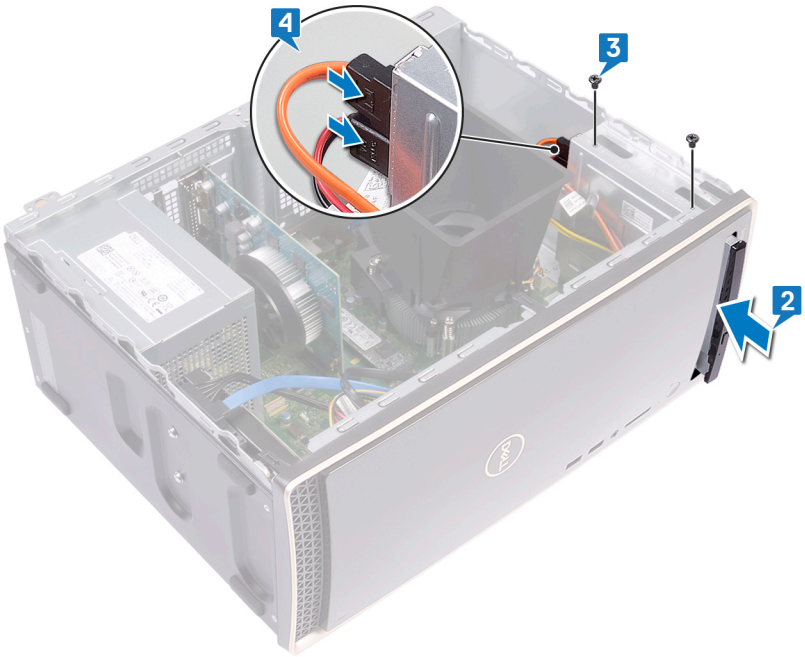
Procedure

1 Align and replace the optical-drive bezel to the optical-drive tray.

2 Slide the optical-drive assembly into its slot on the chassis and align the screw holes on the optical-drive assembly to the screw holes on the chassis.

3 Replace the screws (M2x2) that secures the optical-drive assembly to the chassis.

4 Connect the optical-drive data cable and power cable to the optical-drive assembly.



Post-requisites

Replace the computer cover.

Removing the power-supply unit

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

Topics:

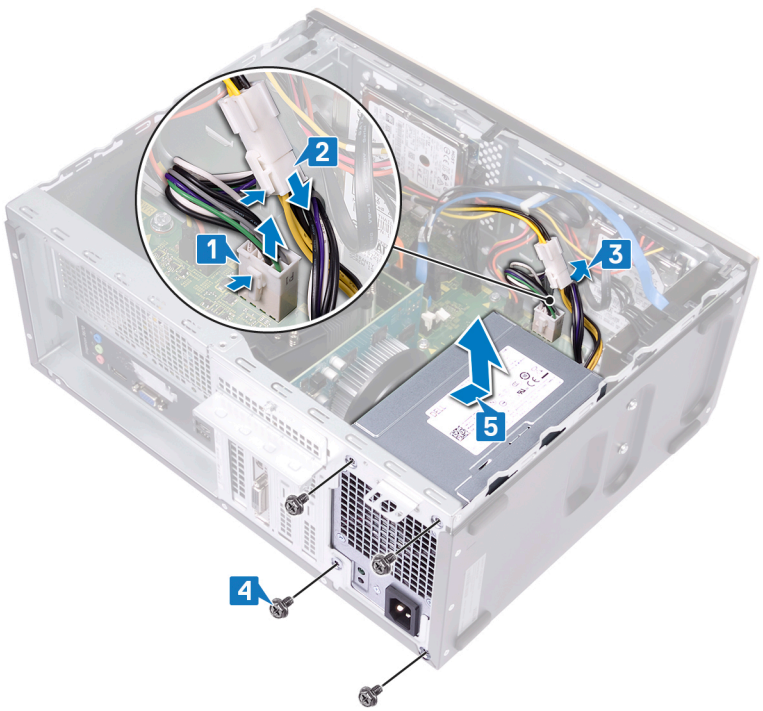
- Prerequisites
- Procedure

Prerequisites

Remove the computer cover.

Procedure

1 Press the securing clip and disconnect the power-supply unit cable (P1) from the system board (ATX SYS).
2 Press the securing clip and disconnect the power-supply unit cable (P2) from the processor-power cable (ATX CPU).
3 Remove the power-supply unit cable (P1) from the routing guide on the chassis.
4 Remove the four screws (#6-32x6.35) that secure the power-supply unit to the chassis.
5 Lift the power-supply unit along with the cables off the chassis.



Replacing the power-supply unit

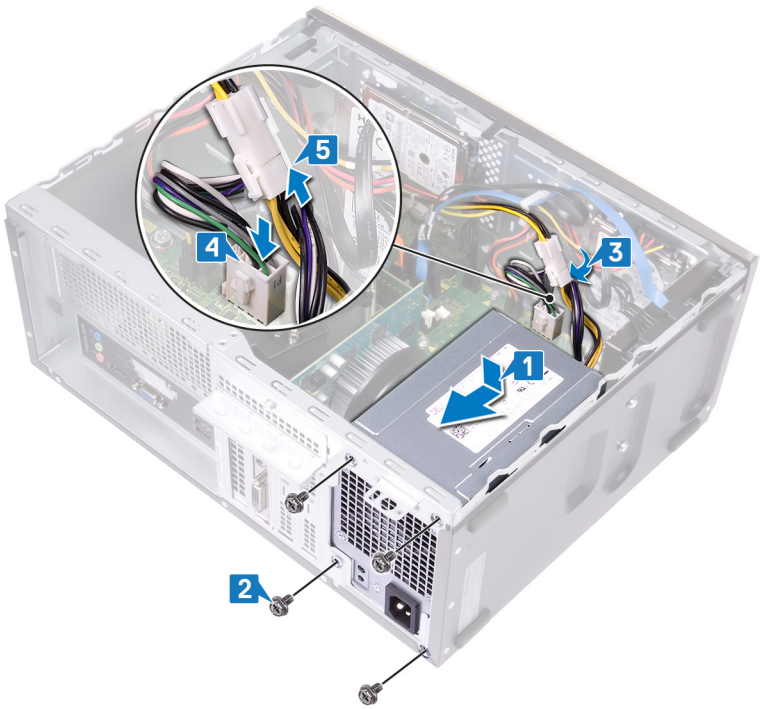
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see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

Topics:

- Procedure
- Post-requisites

Procedure

1 Place the power-supply unit on the chassis, aligning the screw holes on the power-supply unit to the screw holes on the chassis.
2 Replace the four screws (#6-32x6.35) that secure the power-supply unit to the chassis.
3 Route the power-supply unit cable (ATX SYS) through the routing guide on the chassis.
4 Connect the power-supply unit cable (P1) to the system board (ATX SYS).
5 Connect the power-supply unit cable (P2) to the processor-power cable (ATX CPU).



Post-requisites

Replace the computer cover.

Removing the 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 working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

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

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

Topics:

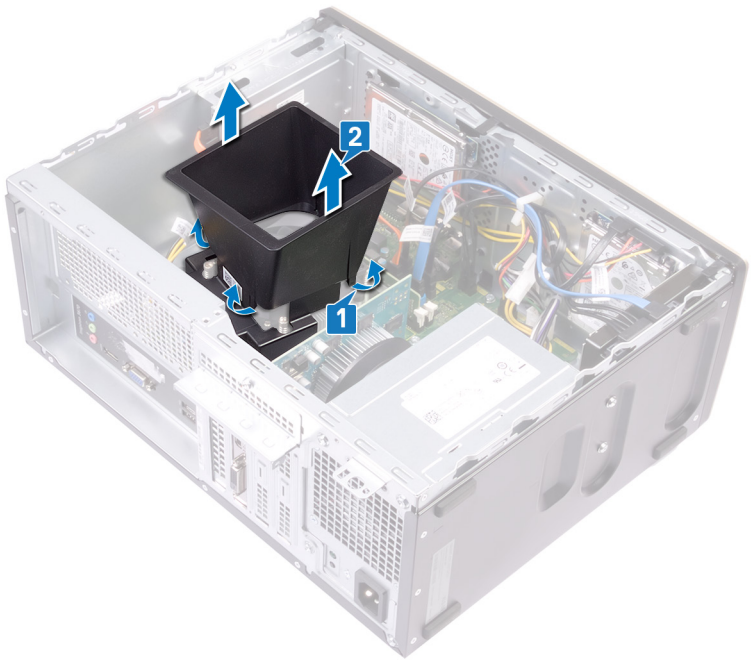
- Prerequisites
- Procedure

Prerequisites

Remove the computer cover.

Procedure

1 Pry and release the tabs that secure the fan shroud to the processor fan and heat-sink assembly.
2 Lift the fan shroud off the processor fan and heat-sink assembly.



3 Disconnect the processor-fan cable from the system board. (FAN CPU)

4 In reversed order (as indicated on the system board), loosen the four captive screws that secure the processor fan and heat-sink assembly to the system board.

5 Lift the processor fan and heat-sink assembly along with its cable off the system board.

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Replacing the 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 working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Topics:

- Procedure
- Post-requisites

Procedure

1 Place and align the captive screws on the processor fan and heat-sink assembly with the screw holes on the system board.

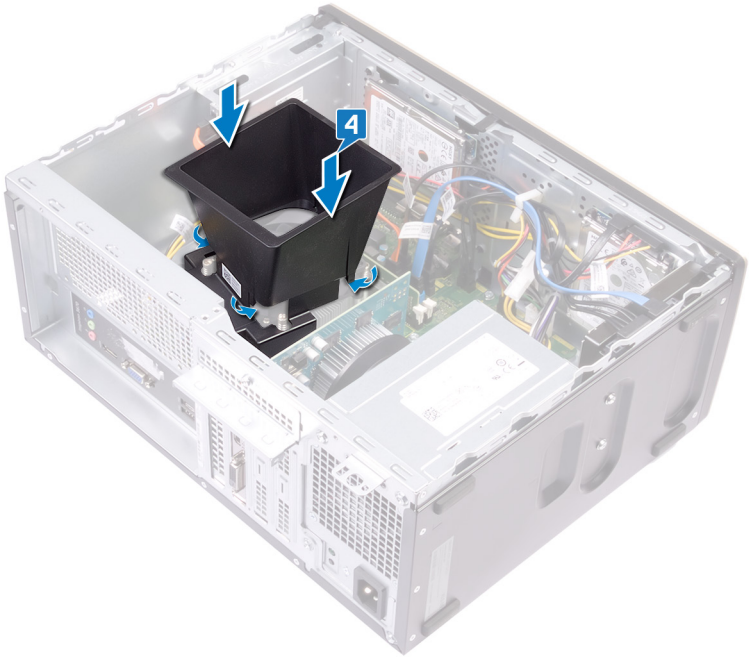
NOTE: As shown in the image, ensure that the processor-fan cable faces the front of the computer before tightening the captive screws.

2 In sequential order (as indicated on the system board), tighten the four captive screws that secure the processor fan and heat-sink assembly to the system board.

3 Connect the processor-fan cable to the system board (FAN CPU).

4 Place the fan shroud on the processor fan and heat-sink assembly. Then press down on the fan shroud and snap it into place.

NOTE: Ensure that the "Rear Facing" etching on the fan shroud faces the back of the computer before snapping the fan shroud into place.



Post-requisites

Replace the computer cover.

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Removing the processor

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

Topics:

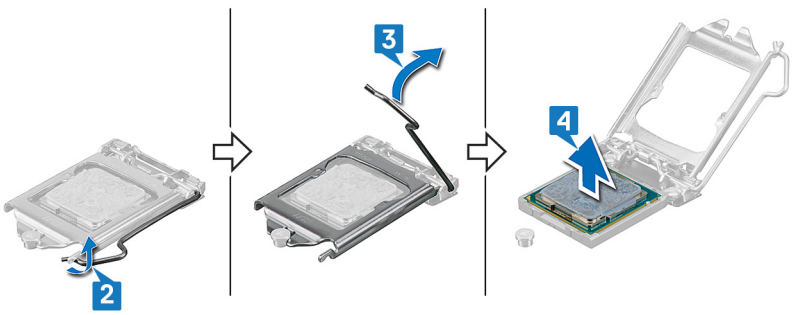
- Prerequisites
- Procedure

Prerequisites

1 Remove the computer cover.
2 Remove the processor fan and heat-sink assembly.

Procedure

1 Press the release-lever down and then push it away from the processor to release it from the securing bracket.
2 Pull the release-lever up completely to unlock the processor.
3 Gently lift the processor and remove it from the processor socket.



Replacing the processor

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

CAUTION: If either the processor or the heat sink is replaced, use the thermal grease provided in the kit to ensure that thermal conductivity is achieved.

NOTE: A new processor ships with a thermal pad in the package. In some cases, the processor may ship with the thermal pad attached to it.

Topics:

- Procedure
- Post-requisites

Procedure

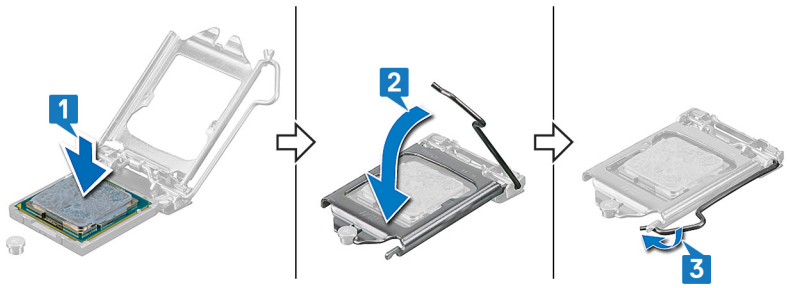
1 Ensure that the release lever on the processor socket is fully extended in the open position. Then align the notches on the processor with the tabs on the processor socket and place the processor in the processor socket.

CAUTION: The pin-1 corner of the processor is marked with a triangle that must align with the triangle marking on the pin-1 corner on the processor socket to ensure that the processor is properly seated. When the processor is properly seated, all four corners are aligned at the same height. If one or more corners of the processor are higher than the others, the processor is not seated properly and closing the securing bracket may permanently damage the processor.

CAUTION: Ensure that the securing-bracket notch is positioned underneath the alignment post.

2 When the processor is fully seated in the socket, close the securing bracket.

3 Pivot the release-lever down and place it under the tab on the securing bracket.



Post-requisites

1 Replace the processor fan and heat-sink assembly.

2 Replace the computer cover.

Removing the 3.5-inch hard drive

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

Topics:

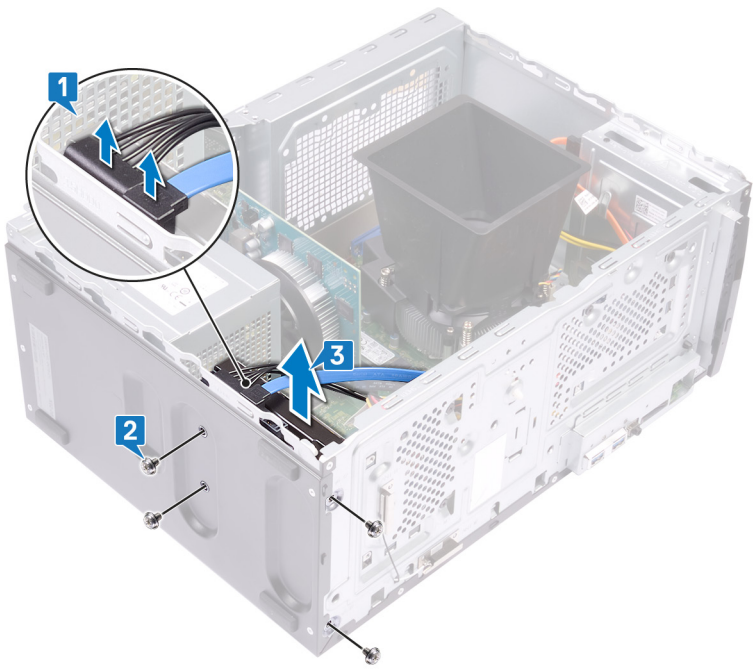
- Prerequisites
- Procedure

Prerequisites

1 Remove the computer cover.
2 Remove the front bezel.

Procedure

1 Disconnect the hard-drive data cable and power cable from the hard drive.
2 Remove the four screws (#6-32x3.6) that secure the hard drive to the chassis.
3 Lift the hard drive off the chassis.



Replacing the 3.5-inch hard drive

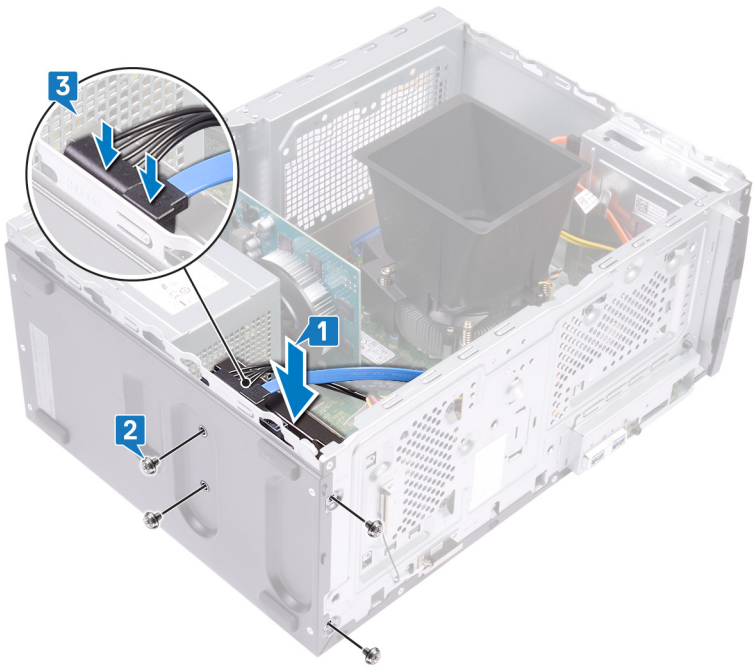
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see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

Topics:

- Procedure
- Post-requisites

Procedure

1 Place the hard drive on the chassis and align the screw holes on the hard drive with the screw holes on the chassis.
2 Replace the four screws (#6-32x3.6) that secure the hard drive to the chassis.
3 Connect the hard-drive data cable and power cable to the hard drive.



Post-requisites

1 Replace the front bezel.
2 Replace the computer cover.

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Removing the 2.5-inch hard drive

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

Topics:

- Prerequisites
- Procedure

Prerequisites

1 Remove the computer cover.
2 Remove the front bezel.

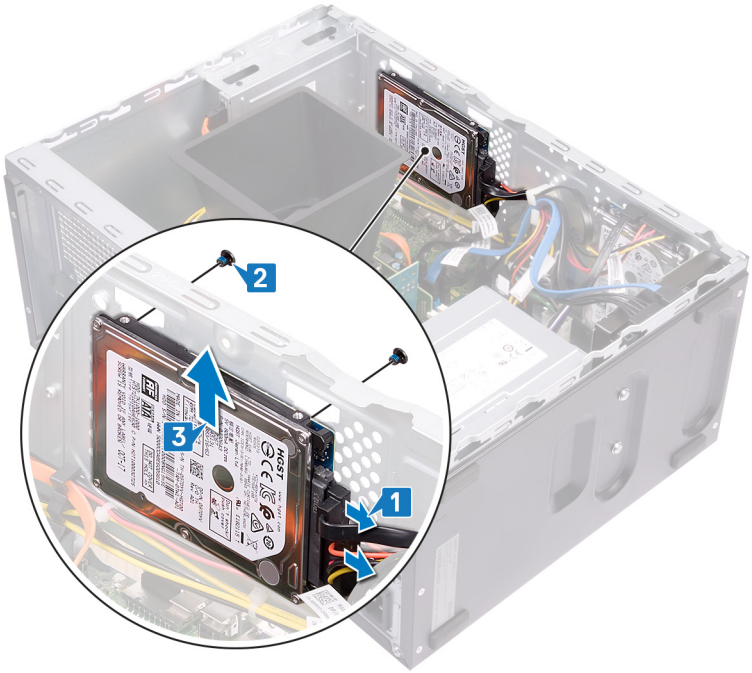
Procedure

NOTE: Depending on the configuration ordered there may be up to two 2.5-inch hard drives installed in your computer. The following procedure enables you to remove the 2.5-inch hard drive(s) in either or both locations.

1 Disconnect the hard-drive data cable and power cable from the hard drive.
2 Remove the two screws (M3x3.5) that secure the hard drive to the chassis.

CAUTION: To prevent damage to the other components inside the computer, hold the hard drive in place before removing the screws that secure it to the chassis.

3 Lift the hard drive off the chassis.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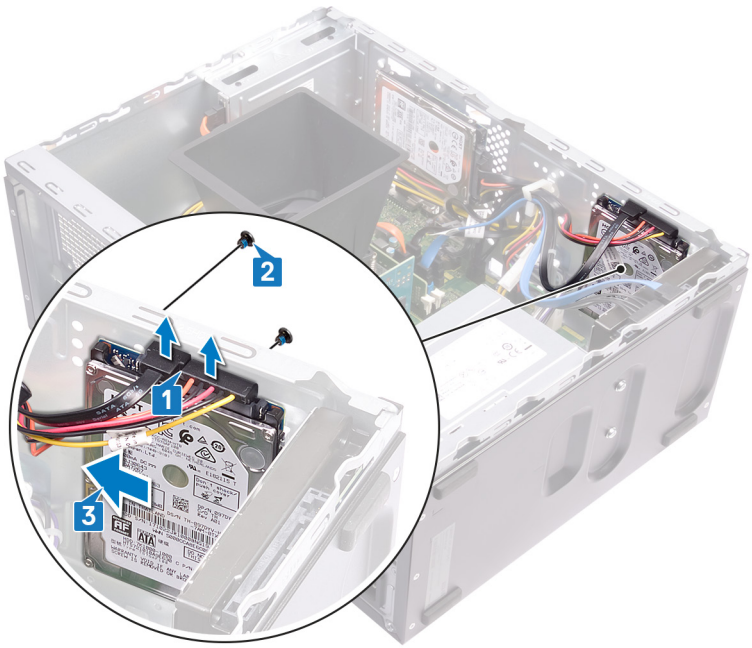

2
1
3

29

Replacing the 2.5-inch hard drive

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

Topics:

- Procedure
- Post-requisites

Procedure

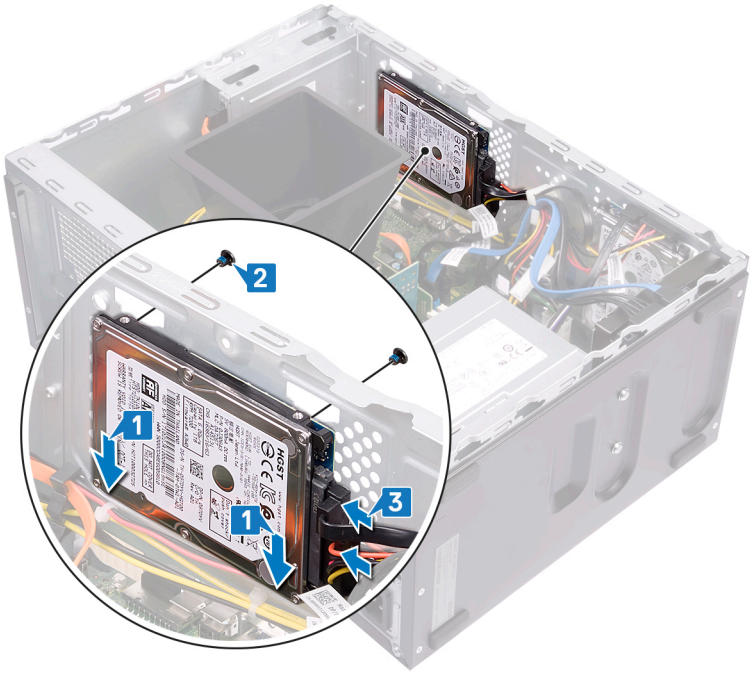
NOTE: Depending on the configuration ordered there may be up to two 2.5-inch hard drives installed in your computer. The following procedure lists the steps to remove the 2.5-inch hard drive(s) in either or both locations.

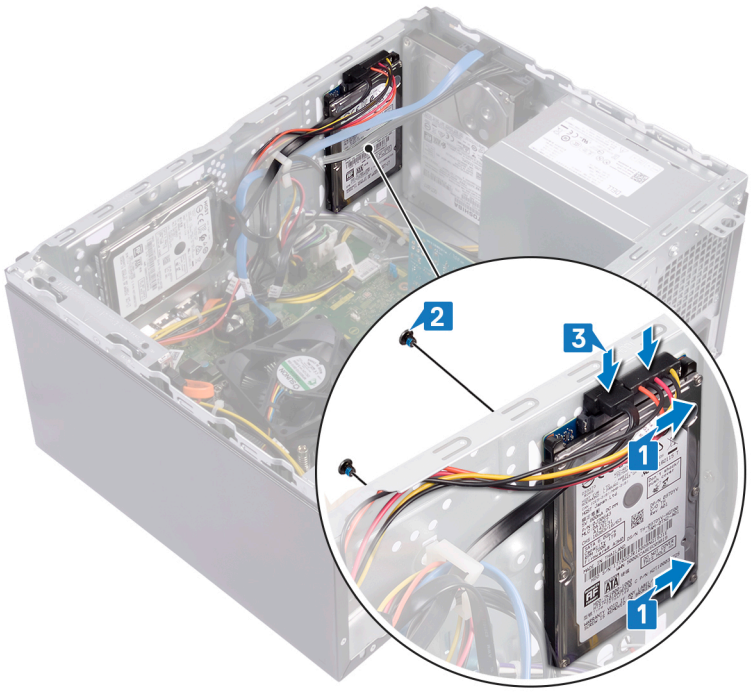
1 Align and place the slots on the hard drive with the posts on the chassis, then hold the hard drive in place.

NOTE: Ensure that the hard drive is seated correctly with the posts on the chassis before replacing the screws.

2 Replace the two screws (M3x3.5) that secure the hard drive to the chassis.

3 Connect the hard-drive data cable and power cable to the hard drive.





Post-requisites

1 Replace the front bezel.

2 Replace the computer cover.

Removing the antenna modules

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

Topics:

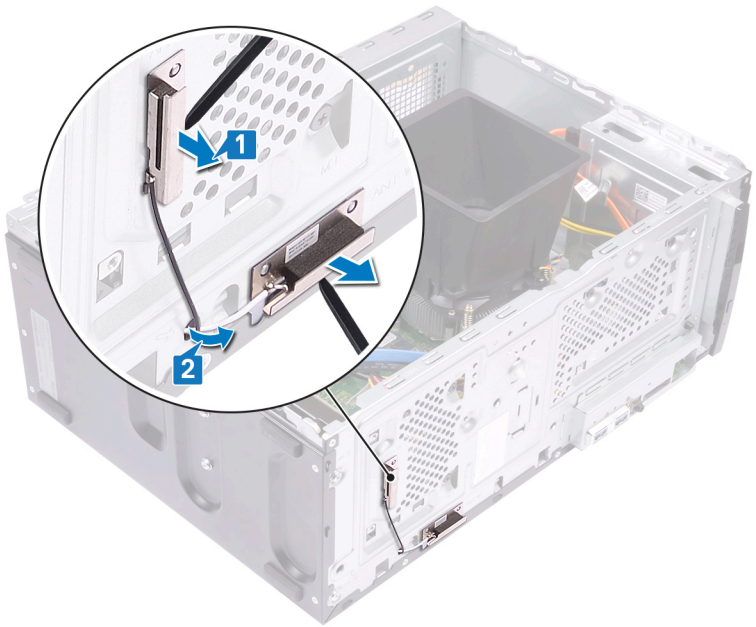
- Prerequisites
- Procedure

Prerequisites

1 Remove the computer cover.
2 Remove the front bezel.
3 Follow the procedure from step 1 to step 4 in "Removing the wireless card".

Procedure

1 Using a plastic scribe, pry and peel the antenna modules (2) from the locations on the chassis.
2 Pull and route the antenna cables through the antenna-cable slot on the chassis.



Replacing the antenna modules

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Topics:

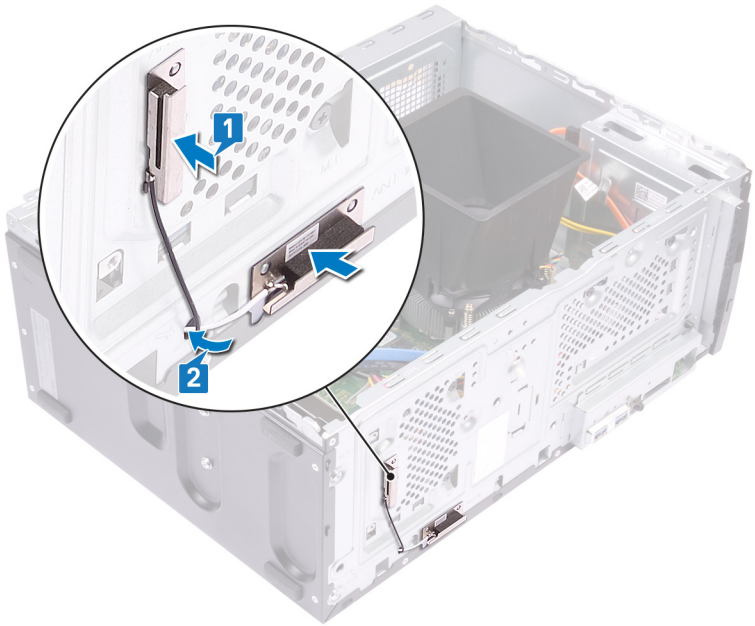
- Procedure
- Post-requisites

Procedure

1 Using the alignment posts, adhere the antenna modules (2) to the chassis.

NOTE: Ensure the antenna modules (ANT-W and ANT-B) are replaced in the correct locations on the chassis.

2 Slide and route the antenna cables through the antenna-cable slot on the chassis.



Post-requisites

1 Follow steps 1, 2 and 4 in "Replacing the wireless card".
2 Replace the front bezel.
3 Replace the computer cover.

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Removing the system board

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

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

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

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

Topics:

- Prerequisites
- Procedure

Prerequisites

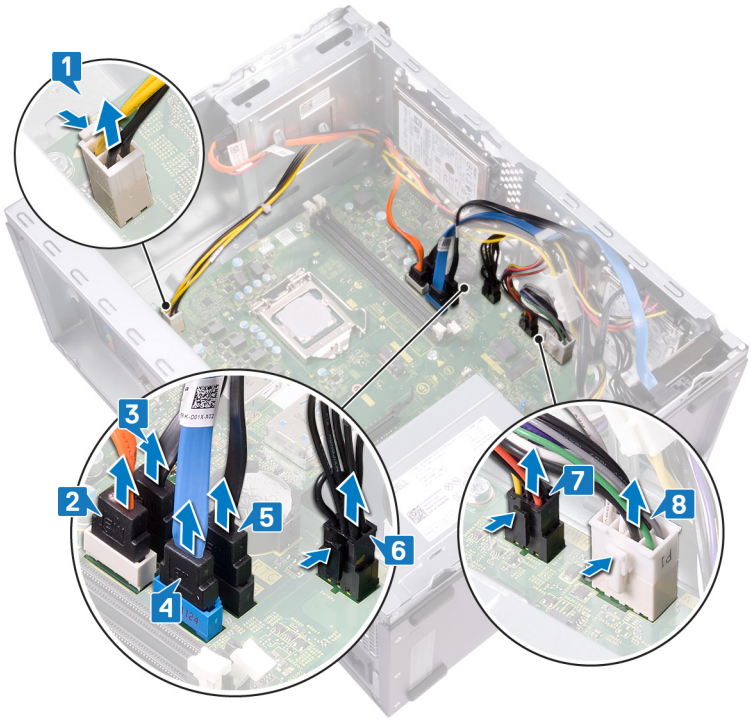
1 Remove the computer cover.
2 Remove the front bezel.
3 Remove the memory module.
4 Remove the solid-state drive/Intel Optane memory.
5 Remove the graphics card.
6 Remove the wireless card.
7 Remove the processor fan and heat-sink assembly.
8 Remove the processor.

Procedure

NOTE: Note the routing of all cables as you remove them so that you can reroute them correctly after you replace the system board. For information on system board connectors, see "System board components".

NOTE: Depending on the configuration ordered your computer may have up to two 2.5-inch hard drives installed. If only one hard drive is installed skip step 3 or step 5 where applicable.

1 Disconnect the processor-power cable from the system board (ATX CPU).
2 Disconnect the optical-drive data cable from the system board (SATA 2).
3 Disconnect the hard-drive data cable from the system board (SATA 1).
4 Disconnect the hard-drive cable from the system board (SATA 0).
5 Disconnect the hard-drive data cable from the system board (SATA 3).
6 Disconnect the hard-drive power cable from the system board (SATA PWR).
7 Disconnect the hard-drive power cables from the system board (SATA PWR).
8 Disconnect the power-supply unit cable (P1) from the system board (ATX SYS).

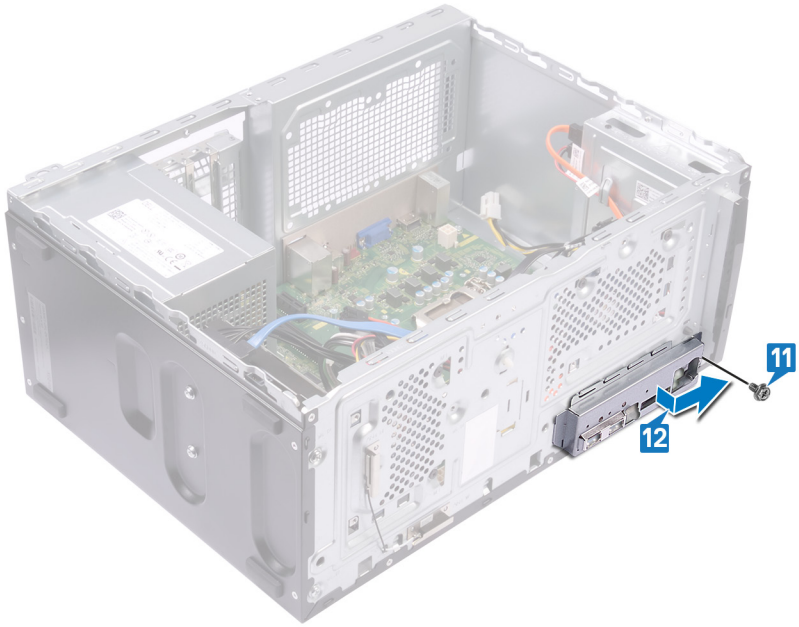


9 Remove the eight screws (#6-32x6.35) that secure the system board to the chassis.

10 Remove the screw (#6-32x4.8, standoff) that secures the system board to the chassis.

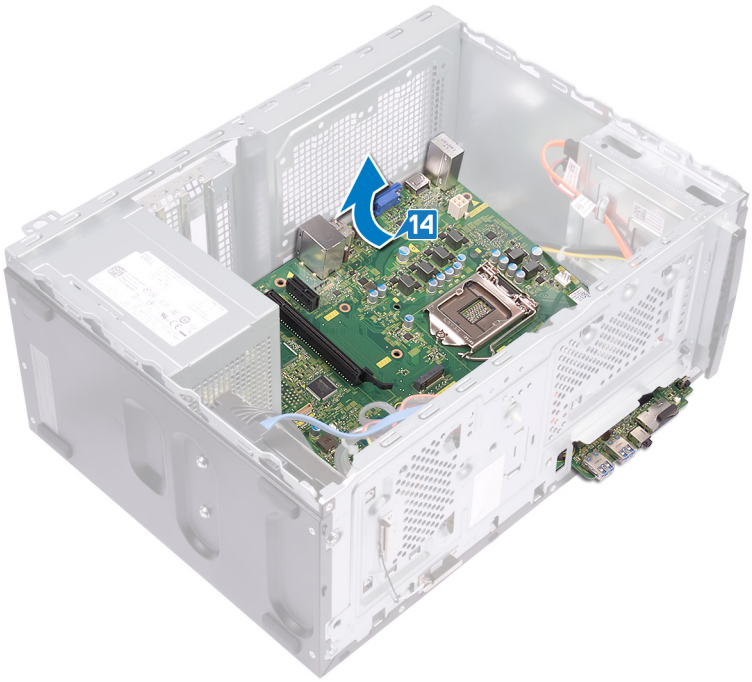
11 Remove the screw (#6-32x6.35) that secures the front-I/O bracket to the chassis.

12 Remove the front-I/O bracket from the front-I/O slot on the chassis.



13 Lift the system-board and slide it toward the front-I/O slot, releasing the back-I/O ports from the back-I/O bracket.

14 Lift the system board and remove it from the chassis.


14

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Replacing the system board

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

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

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

Topics:

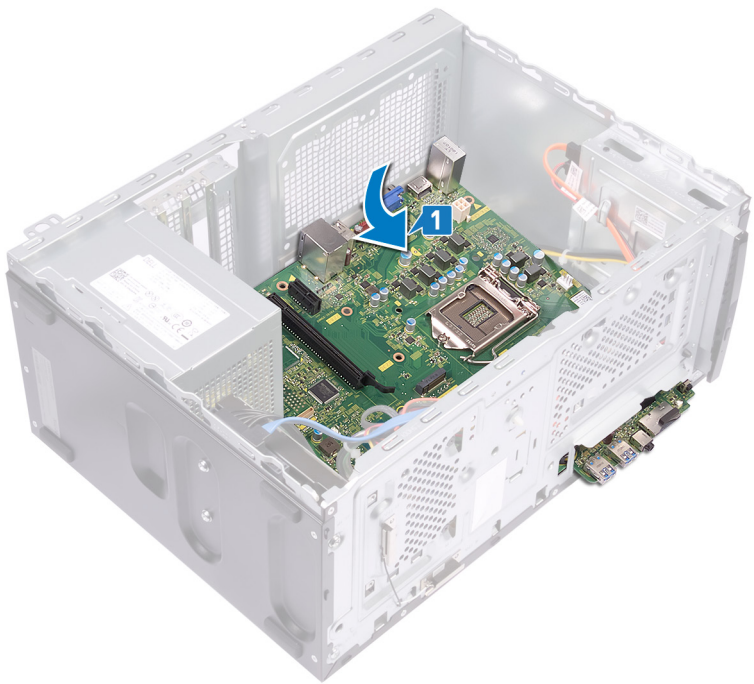
- Procedure
- Post-requisites

Procedure

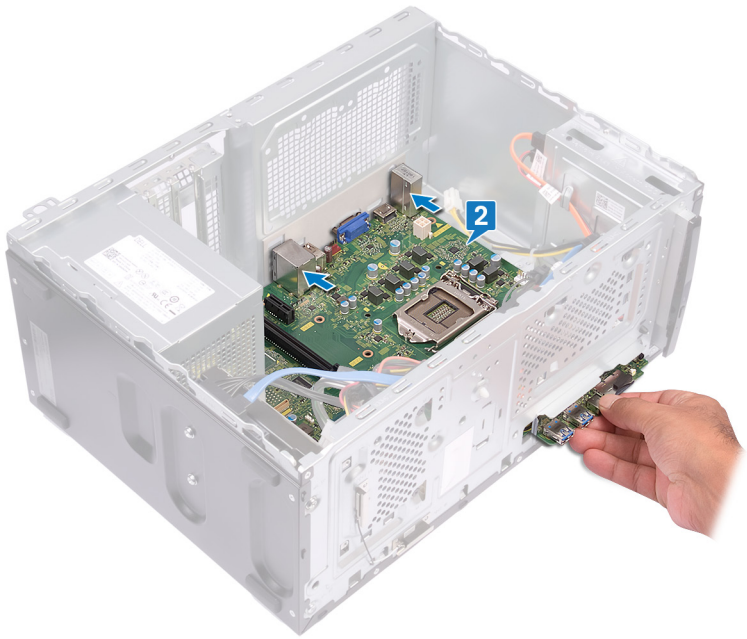
NOTE: To ensure that cables are connected to the correct system board connectors, see "System board components'.

NOTE: Depending on the configuration ordered your computer may have up to two 2.5-inch hard-drives installed. If only one hard-drive is installed skip step 9 or step 11 where applicable.

1 Slide the edge of the system board into the front-I/O slot on the chassis and lower the system board into the chassis.



2 Align the screw holes on the system board with the screw holes on the on the chassis.

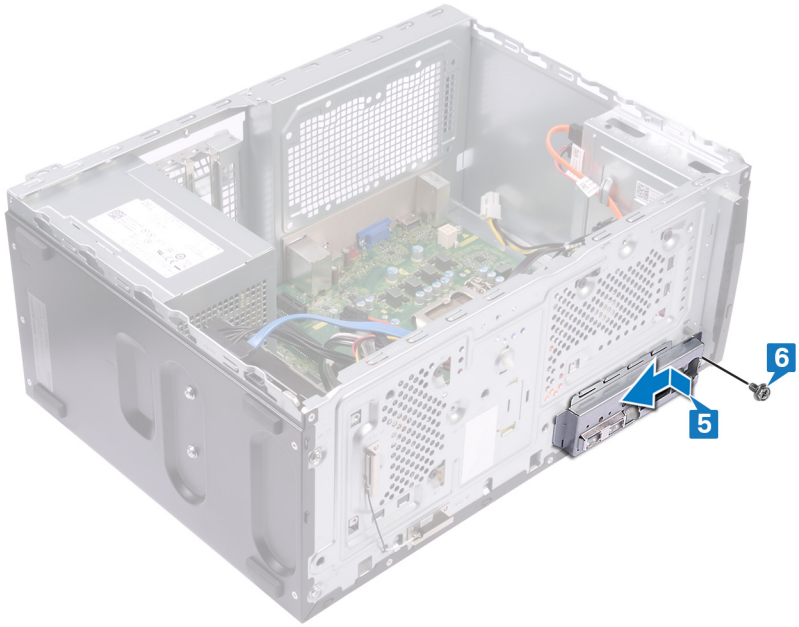


3 Replace the eight screws (#6-32x6.35) that secure the system board to the chassis.

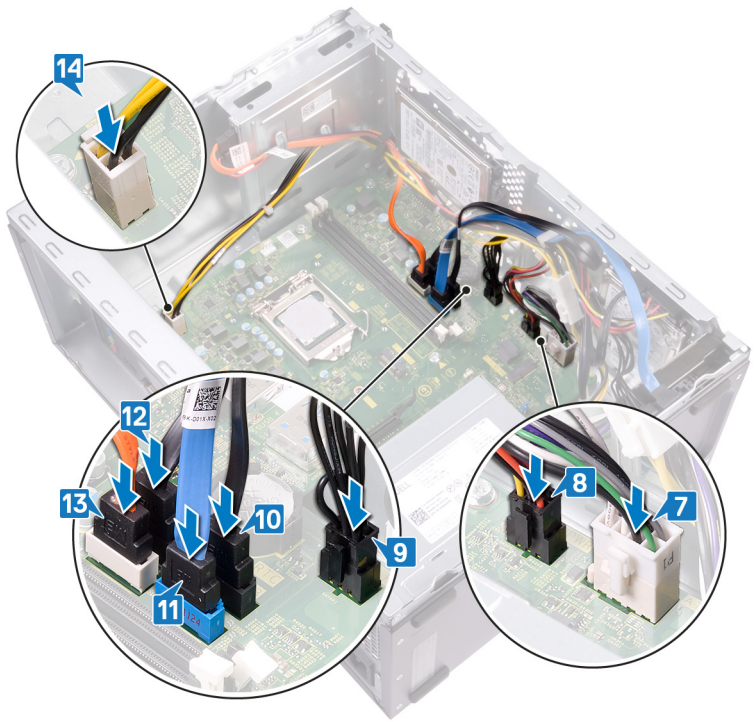
4 Replace the screw (#6-32x4.8, standoff) that secures the system board to the chassis.

5 Slide the front-I/O bracket into the front-I/O slot, aligning the screw hole on the front-I/O board to the screw hole on the chassis.

6 Replace the screw (#6-32x6.35) that secures the front-I/O bracket to the chassis.



7 Connect the power-supply unit cable (P1) to the system board (ATX CPU).
8 Connect the hard-drive power cables to the system board (SATA PWR).
9 Connect the hard-drive power cable to the system board (SATA PWR).
10 Connect the hard-drive data cable to the system board (SATA 3).
11 Connect the hard-drive cable to the system board (SATA 0).
12 Connect the hard-drive data cable to the system board (SATA 1).
13 Connect the optical-drive data cable to the system board (SATA 2).
14 Connect the processor-power cable to the system board (ATX SYS).



Post-requisites

1 Replace the processor.
2 Replace the processor fan and heat-sink assembly.
3 Replace the wireless card.
4 Replace the graphics card.
5 Replace the solid-state drive/Intel Optane memory.
6 Replace the memory module.
7 Replace the front bezel.
8 Replace the computer cover.

Downloading drivers

Downloading the audio driver

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

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

4 Click **Drivers & downloads**.
5 Click the **Detect Drivers** button.
6 Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7 If necessary, your computer starts to download and install **SupportAssist**.

NOTE: Review on-screen instructions for browser-specific instructions.

8 Click **View Drivers for My System**.
9 Click **Download and Install** to download and install all driver updates detected for your computer.
10 Select a location to save the files.
11 If prompted, approve requests from **User Account Control** to make changes on the system.
12 The application installs all drivers and updates identified.

NOTE: Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13 For manual download and installation, click **Category**.
14 Click **Audio** in the drop-down list.
15 Click **Download** to download the audio driver for your computer.
16 After the download is complete, navigate to the folder where you saved the audio driver file.
17 Double-click the audio driver file icon and follow the instructions on the screen to install the driver.

Table 2. Audio controller status in Device Manager

Before Installation	After Installation
Sound, video and game controllers Realtek(R) Audio	Sound, video and game controllers Intel(R) Display Audio NVIDIA High Definition Audio NVIDIA Virtual Audio Device (Wave Extensible) (WDM) Realtek(R) Audio

Downloading the graphics driver

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

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

4 Click **Drivers & downloads**.
5 Click the **Detect Drivers** button.
6 Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7 If necessary, your computer starts to download and install **SupportAssist**.

NOTE: Review on-screen instructions for browser-specific instructions.

8 Click **View Drivers for My System**.
9 Click **Download and Install** to download and install all driver updates detected for your computer.
10 Select a location to save the files.
11 If prompted, approve requests from **User Account Control** to make changes on the system.
12 The application installs all drivers and updates identified.

NOTE: Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13 For manual download and installation, click **Category**.
14 Click **Video** in the drop-down list.
15 Click **Download** to download the graphics driver for your computer.
16 After the download is complete, navigate to the folder where you saved the graphics driver file.
17 Double-click the graphics driver file icon and follow the instructions on the screen to install the driver.

Table 3. Display adapter status in Device Manager

Before Installation	After Installation
Display adapters Intel(R) UHD Graphics 630	Display adapters Intel(R) UHD Graphics 630 NVIDIA GeForce GTX 1050

Downloading the USB driver

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

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

4 Click **Drivers & downloads**.
5 Click the **Detect Drivers** button.
6 Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7 If necessary, your computer starts to download and install **SupportAssist**.

NOTE: Review on-screen instructions for browser-specific instructions.

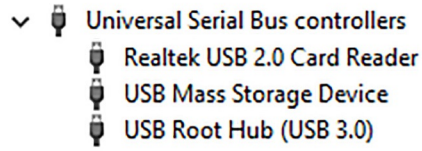
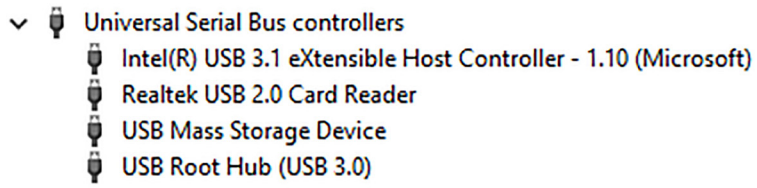
8 Click **View Drivers for My System**.
9 Click **Download and Install** to download and install all driver updates detected for your computer.
10 Select a location to save the files.
11 If prompted, approve requests from **User Account Control** to make changes on the system.
12 The application installs all drivers and updates identified.

NOTE: Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13 For manual download and installation, click **Category**.
14 Click **Chipset** in the drop-down list.
15 Click **Download** to download the USB driver for your computer.
16 After the download is complete, navigate to the folder where you saved USB driver file.

17 Double-click the USB driver file icon and follow the instructions on screen to install the driver.

Table 4. USB controller status in Device Manager

Before Installation	After Installation
	

Downloading the chipset driver

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

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

4 Click **Drivers & downloads**.
5 Click the **Detect Drivers** button.
6 Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7 If necessary, your computer starts to download and install **SupportAssist**.

NOTE: Review on-screen instructions for browser-specific instructions.

8 Click **View Drivers for My System**.
9 Click **Download and Install** to download and install all driver updates detected for your computer.
10 Select a location to save the files.
11 If prompted, approve requests from **User Account Control** to make changes on the system.
12 The application installs all drivers and updates identified.

NOTE: Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13 For manual download and installation, click **Category**.
14 Click **Chipset** in the drop-down list.
15 Click **Download** to download the appropriate chipset driver for your computer.
16 After the download is complete, navigate to the folder where you saved the chipset driver file.
17 Double-click the chipset driver file icon and follow the instructions on the screen to install the driver.

Downloading the network driver

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

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

4 Click **Drivers & downloads**.
5 Click the **Detect Drivers** button.
6 Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7 If necessary, your computer starts to download and install **SupportAssist**.

NOTE: Review on-screen instructions for browser-specific instructions.

8 Click **View Drivers for My System**.

9 Click **Download and Install** to download and install all driver updates detected for your computer.

10 Select a location to save the files.

11 If prompted, approve requests from **User Account Control** to make changes on the system.

12 The application installs all drivers and updates identified.

> **NOTE: Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.**

13 For manual download and installation, click **Category**.

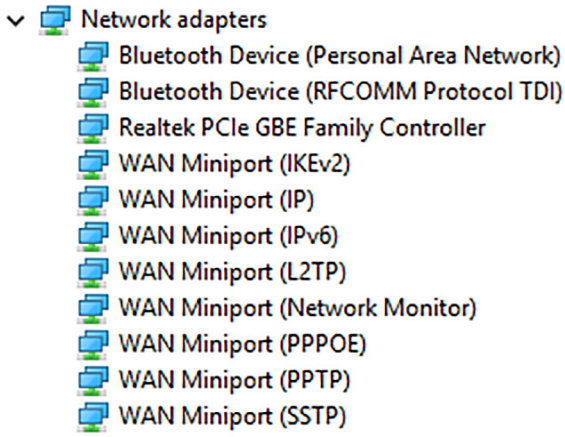
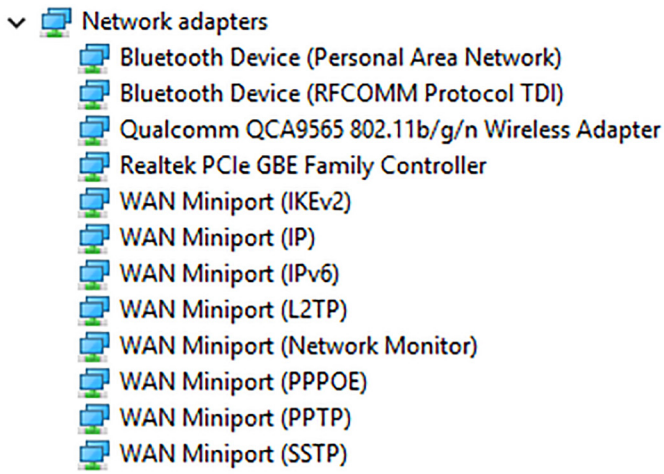
14 Click **Network** in the drop-down list.

15 Click **Download** to download the network driver for your computer.

16 Save the file, and after the download is complete, navigate to the folder where you saved the network driver file.

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

Table 5. Network adapter status in Device Manager

Before Installation	After Installation
	

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System setup

NOTE: Depending on the computer and its installed devices, the items listed in this section may or may not be displayed.

Topics:

- Boot Sequence
- Navigation keys
- System setup
- Entering BIOS setup program
- System Setup Options
- Flashing the BIOS

Boot Sequence

Boot Sequence allows you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

  NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.

The boot sequence screen also displays the option to access the System Setup screen.

Navigation keys

NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.

Keys	Navigation
Esc	Moves to the previous page until 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.

System setup

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

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

Use the BIOS Setup program for the following purposes:

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

Entering BIOS setup program

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

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

Enabling or disabling the USB in BIOS setup program

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

Identifying the hard drive in BIOS setup program

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

Checking the system memory in BIOS setup program

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

System Setup Options

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

Table 6. System setup options—Main menu

Main	
System Time	Displays the current time in hh:mm:ss format.
System Date	Displays the current date in mm/dd/yyyy format.
BIOS Version	Displays the BIOS version number.
Product Name	Displays the product name.
Service Tag	Enables you to enter the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.
CPU Type	Displays the CPU type.
CPU Speed	Displays the speed of the CPU.
CPU ID	Displays the CPU identification code.
Cache L1	Displays the processor L1 cache size.
Cache L2	Displays the processor L2 cache size.
First HDD	Displays the primary hard disk.
AC Adapter Type	Displays the AC adapter type.
System Memory	Displays the total computer memory installed.
Memory Speed	Displays the memory speed.

Table 7. System setup options—Advanced menu

Advanced	
Advanced BIOS Features	
Intel SpeedStep Technology	Enables you to enable or disable Intel Speedstep Technology. Default: Enabled **NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.**
Virtualization	Enables you to enable or disable Intel Virtualization Technology feature for the processor.
VT for Direct I/O	Enables you to enable or disable Intel Virtualization Technology feature for the Direct I/O.
Integrated NIC	Enables you to enable or disable the on-board LAN controller. Default: Enabled
SATA Operation	Enables you to configure the operating mode of the integrated SATA hard drive controller. Default: AHCI
Adapter Warnings	Enables you to choose if the computer should display warning messages when you use AC adapters that are not supported by your computer.

Advanced	
	Default: Enabled
Intel Software Guard Extensions	Enable or disable Intel Software Guard Extensions. Default: Software Controlled
Intel Software Guard Extensions allocated memory size	Displays the allocated memory size for Intel Software Guard Extensions.
BIOS Recovery from Hard Drive	Enables you to enable or disable BIOS Recovery from hard drive. Default: Enabled
BIOS Auto-Recovery	Enable or disable BIOS Auto-Recovery. Default: Disabled
Always Perform Integrity Check	Enable or disable Always Perform Integrity Check. Default: Disabled
USB Configuration	
Front USB Ports	Enables you to enable or disable the front USB ports.
Rear USB Ports	Enables you to enable or disable the rear USB ports.
Power Options	
Wake Up by Integrated LAN	Enables the computer to be powered on by special LAN signals.
AC Recovery	Sets what action the computer takes when power is restored.
Deep Sleep Control	Enables you to define the controls when Deep Sleep is enabled.
USB Wake Support	Enables you to enable the USB devices to wake the computer from Standby.
Numlock Key	Enables you to set the status of the Numlock key during boot to On or Off. Default: Disabled
SupportAssist System Resolution	
Auto OS Recovery Threshold	Control the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery tool.
SupportAssist OS Recovery	The SupportAssist OS Recovery option will enable or disable the boot flow for SupportAssist OS Recovery tool in the event of certain system errors. If the SupportAssist OS Recovery setup option is set to disabled then all automatic boot flow for SupportAssist OS Recovery tool will be disabled. Default: Disabled

Table 8. System setup options—Security menu

Security	
Unlock Setup Status	Displays if the setup status is unlocked.
Admin Password Status	Displays whether the admin password is set.
System Password Status	Displays whether the system password is set.
HDD Password Status	Displays if the hard drive password is set.
Admin Password	Enables you to set the admin password.

Security	
System Password	Enables you to set the system password.
HDD Password	Enables you to set the hard drive password.
Password Change	Enable or disable changes to the System and Hard Disk passwords when an administrator password is set.
Computrace	Enable or disable tracking assets and providing recovery services in the event the computer is lost or stolen. Default: Deactivate
Firmware TPM	Enables you to enable or disable the firmware TPM function. Default: Enabled
PPI Bypass for Clear Command	Allows you to control the TPM Physical Presence Interface (PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing the Clear command. Changes to this setting take effect immediately. Default: Disabled
UEFI Firmware Capsule Updates	Enables you to enable or disable the UEFI Firmware Capsule Updates function. Default: Enabled

Table 9. System setup options—Boot menu

Boot	
Boot List Option	Displays the available boot devices.
File Browser Add Boot Option	Enables you to set the boot path in the boot option list.
File Browser Del Boot Option	Enables you to delete the boot path in the boot option list.
Secure Boot	Enables you to enable or disable the secure boot control. Default: Disabled
Boot Option Priorities	Displays the available boot devices.
Boot Option #1	Displays the first boot device.
Boot Option #2	Displays the second boot device.

Table 10. System setup options—Exit menu

Exit	
Save Changes and Reset	Enables you to exit system setup and save your changes.
Discard Changes and Reset	Enables you to exit system setup and load previous values for all system setup options.
Restore Defaults	Enables you to load default values for all system setup options.
Discard Changes	Enables you to exit your changes.
Save Changes	Enables you to save your changes.

Flashing the BIOS

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

Follow these steps to flash the BIOS:

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

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

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

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System and setup password

Table 11. System and setup password

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.

You can create a system password and a setup password to secure 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: System and setup password feature is disabled.

Topics:

- Assigning a system setup password
- Deleting or changing an existing system setup password
- Clearing Forgotten Passwords
- Clearing CMOS Settings

Assigning a system setup password

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

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

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   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, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and a message prompts you to save the changes.
5. Press Y to save the changes.
   The computer reboots.

Deleting or changing an existing system setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.
To enter the System Setup, press F2 immediately after a power-on or reboot.

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

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

5 Press Esc and a message prompts you to save the changes.
6 Press Y to save the changes and exit from System Setup.
The computer reboot.

Clearing Forgotten Passwords

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

Prerequisites

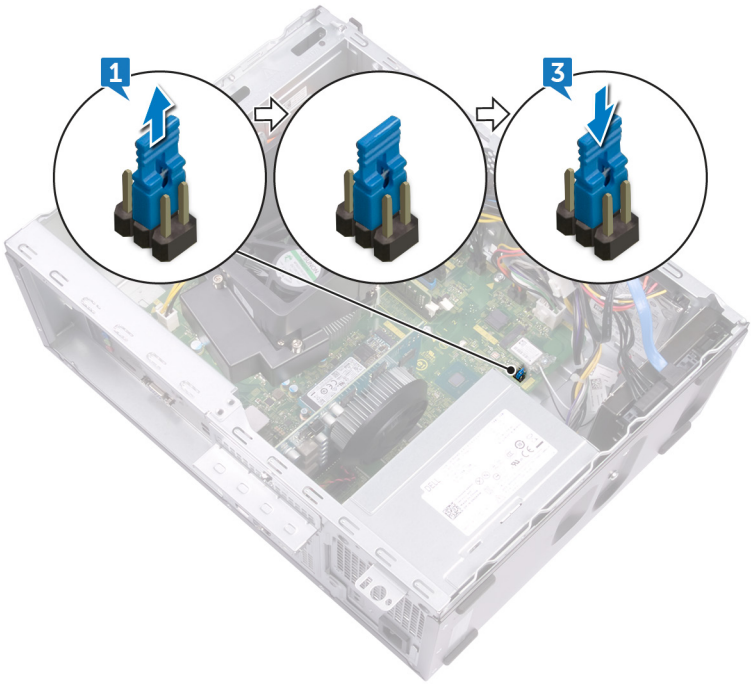
Remove the computer cover.

Procedure

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

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

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



Post-requisites

Replace the computer cover.

Clearing CMOS Settings

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

Prerequisites

Remove the computer cover.

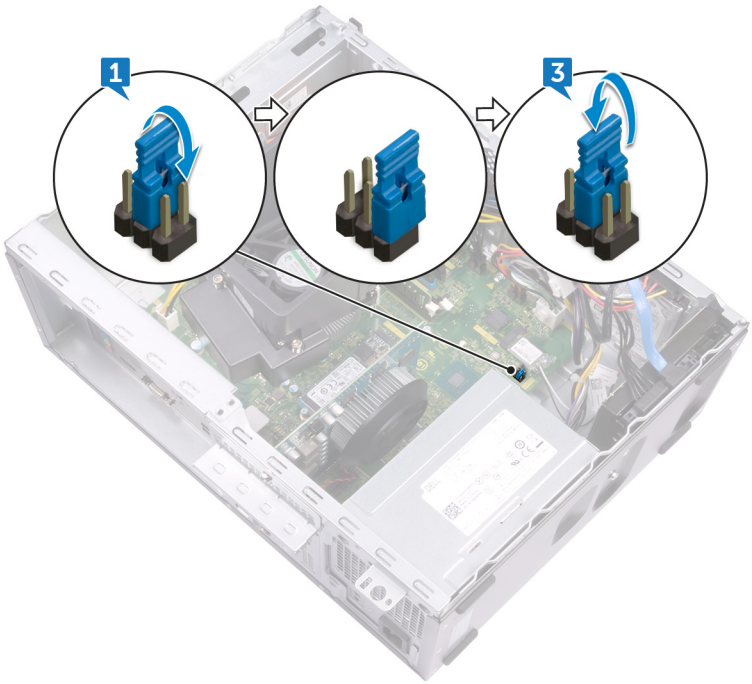
Procedure

1 Locate the CMOS jumper (CMCL R2) on the system board.

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

2 Remove the jumper plug from the password jumper-pins (PSWD) and connect it to the CMOS jumper-pins.

3 Wait for 5 seconds, and then replace the jumper plug to its original location.



Post-requisites

Replace the computer cover.

Troubleshooting

Flashing the BIOS

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

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

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

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

Reinstall Windows using a USB recovery drive

CAUTION: This process formats the hard drive and removes all data on your computer. Ensure that you back up data on your computer before beginning this task.

NOTE: Before reinstalling Windows, ensure your computer has more than 2 GB of memory and more than 32 GB of storage space.

NOTE: This process may take up to an hour to complete and your computer will restart during the recovery process.

1 Connect the USB recovery drive to your computer.
2 Restart your computer.
3 Press F12 after the Dell logo is displayed on the screen to access the boot menu.
A **Preparing one-time boot menu** message appears.
4 After the boot menu loads, select the USB recovery device under **UEFI BOOT**.
The system reboots and a screen to **Choose the keyboard layout** is displayed.
5 Choose your keyboard layout.
6 In the **Choose an option** screen, click **Troubleshoot**.
7 Click **Recover from a drive**.
8 Choose one of the following options:
- **Just remove my files** to do a quick format.
- **Fully clean the drive** to do a complete format.

9 Click **Recover** to start the recovery process.

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

For more information, see Dell EPSA Diagnostic 3.0.

Running the ePSA Diagnostics

Invoke diagnostics boot by either of the methods that are suggested below:

1 Power on the computer.
2 As the computer boots, press the F12 key when the Dell logo is displayed.
3 In the boot menu screen, use Up/Down arrow key to select the **Diagnostics** option and then press **Enter**.

NOTE: The Enhanced Pre-boot System Assessment window displays, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.

4 Press the arrow in the lower-right corner to go to the page listing.
The detected items are listed and tested.
5 To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
6 Select the device from the left pane and click **Run Tests**.
7 If there are any issues, error codes are displayed.
Note the error code and contact Dell.
or
8 Shut down the computer.
9 Press and hold the Fn key, while pressing the power button, and then release both.
10 Repeat steps 3–7 above.

Diagnostics

The computer POST (Power On Self Test) ensures that it meets the basic computer requirements and the hardware is working appropriately before the boot process begins. If the computer passes the POST, the computer continues to start in a normal mode. However, if the computer fails the POST, the computer emits a series of LED codes during the start-up. The system LED is integrated on the Power button.

The following table shows different light patterns and what they indicate.

Table 12. Diagnostics

Number of amber LED flashes	Problem description
2, 1	System board failure
2, 2	System board, PSU or PSU cabling failure
2, 3	System board, RAM or CPU failure
2, 4	CMOS battery failure
2, 5	Corrupt BIOS. Recovery image not detected or is invalid during BIOS auto-recovery process.
2, 6	CPU configuration error or CPU failure
2, 7	RAM failure
3, 1	PCIe (e.g. GPU) card failure
3, 2	Storage/USB configuration error or failure
3, 3	No RAM detected
3, 4	System board error
3, 5	Memory configuration error, incompatible memory or invalid memory configuration
3, 6	Recovery image not detected
3, 7	Recovery image detected but invalid

Enabling Intel Optane memory

1 On the taskbar, click the search box, and then type `Intel Rapid Storage Technology`.
2 Click **Intel Rapid Storage Technology**.
The **Intel Rapid Storage Technology** window is displayed.
3 On the **Status** tab, click **Enable** to enable the Intel Optane memory.
4 On the warning screen, select a compatible fast drive, and then click **Yes** to continue enabling Intel Optane memory.
5 Click **Intel Optane memory** > **Reboot** to complete enabling your Intel Optane memory.

NOTE: Applications may take up to three subsequent launches after enablement to see the full performance benefits.

Disabling Intel Optane memory

CAUTION: After disabling Intel Optane memory, do not uninstall the driver for Intel Rapid Storage Technology as it will result in a blue screen error. The Intel Rapid Storage Technology user interface can be removed without uninstalling the driver.

NOTE: Disabling Intel Optane memory is required before removing the SATA storage device accelerated by the Intel Optane memory module from the computer.

1 On the taskbar, click the search box, and then type `Intel Rapid Storage Technology`.
2 Click **Intel Rapid Storage Technology**.
The **Intel Rapid Storage Technology** window is displayed.
3 On the **Intel Optane memory** tab, click **Disable** to disable the Intel Optane memory.

NOTE: For computers in which Intel Optane memory acts as a primary storage, do not disable the Intel Optane memory. The Disable option will be grayed out.

4 Click **Yes** if you accept the warning.
The disabling progress is displayed.
5 Click **Reboot** to complete disabling your Intel Optane memory and restart your computer.

Flea power release

Flea power is the residual static electricity that remains on the computer even after it has been powered off and the battery has been removed. The following procedure provides the instructions on how to conduct flea power release:

1 Turn off your computer.
2 Disconnect the power adapter from your computer.
3 Press and hold the power button for 15 seconds to drain the flea power.
4 Connect the power adapter to your computer.
5 Turn on your computer.

Wi-Fi power cycle

If your computer is unable to access the Internet due to Wi-Fi connectivity issues a Wi-Fi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a Wi-Fi power cycle:

NOTE: Some ISPs (Internet Service Providers) provide a modem/router combo device.

1 Turn off your computer.
2 Turn off the modem.
3 Turn off the wireless router.
4 Wait for 30 seconds.
5 Turn on the wireless router.
6 Turn on the modem.
7 Turn on your computer.

Getting help and contacting Dell

Self-help resources

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

Table 13. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell	
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on.	www.dell.com/support
Dell knowledge base articles for a variety of computer concerns.	1 Go to www.dell.com/support. 2 Type the subject or keyword in the **Search** box. 3 Click **Search** to retrieve the related articles.
Learn and know the following information about your product: • Product specifications • Operating system • Setting up and using your product • Data backup • Troubleshooting and diagnostics • Factory and system restore • BIOS information	See *Me and My Dell* at www.dell.com/support/manuals. To locate the *Me and My Dell* relevant to your product, identify your product through one of the following: • Select **Detect Product**. • Locate your product through the drop-down menu under **View Products**. • Enter the **Service Tag number** or **Product ID** in the search bar.

Contacting Dell

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

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

NOTE: If you do not have an active internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.