

Alienware X51 Service Manual

Computer Model: Alienware X51 R3
Regulatory Model: D05S
Regulatory Type: D05S003



Notes, cautions, and warnings



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



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



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

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Before working inside your computer



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

Before you begin

- 1 Save and close all open files and exit all open applications.
- 2 Shut down your computer.
 - Windows 10: Click or tap **Start** →  **Power** → **Shut down**.
 - Windows 8.1: On the **Start** screen, click or tap the power icon  → **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 cables such as telephone cables, network cables and so on, from your computer.
- 5 Disconnect all attached devices and peripherals, such as keyboard, mouse, monitor, and so on, from your computer.
- 6 Remove any media card and optical disc from your computer, if applicable.
- 7 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:

- Philips screwdriver
- Flat-head screwdriver
- Plastic scribe



After working inside your computer



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

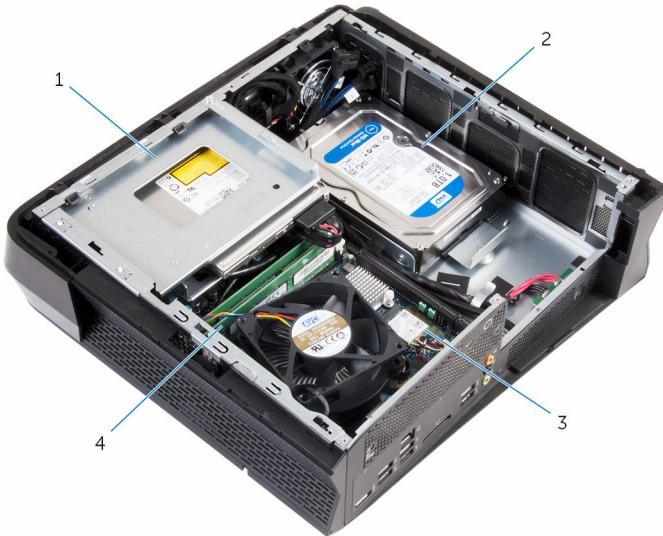
- 1 Replace all screws and ensure that no stray screws remain inside your computer.
- 2 Connect any external devices, peripherals, or cables you removed before working on your computer.
- 3 Replace any media cards, discs, or any other parts that you removed before working on your computer.
- 4 Connect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

Technical overview



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Inside View Of Your Computer



1 optical-drive assembly

2 hard-drive assembly

3 wireless card

4 memory modules

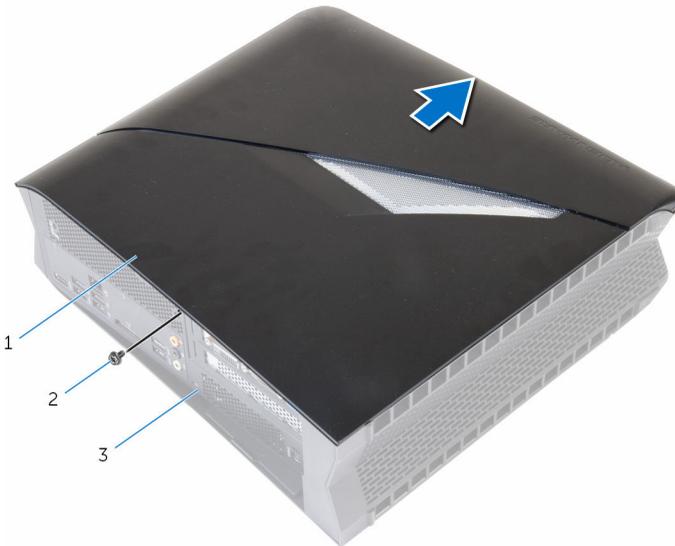


Removing the side panel

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Procedure

- 1 Place the computer on its side with the left panel facing up.
- 2 Remove the screw that secures the left panel to the chassis.
- 3 Release the left panel by sliding it towards the front of the computer.

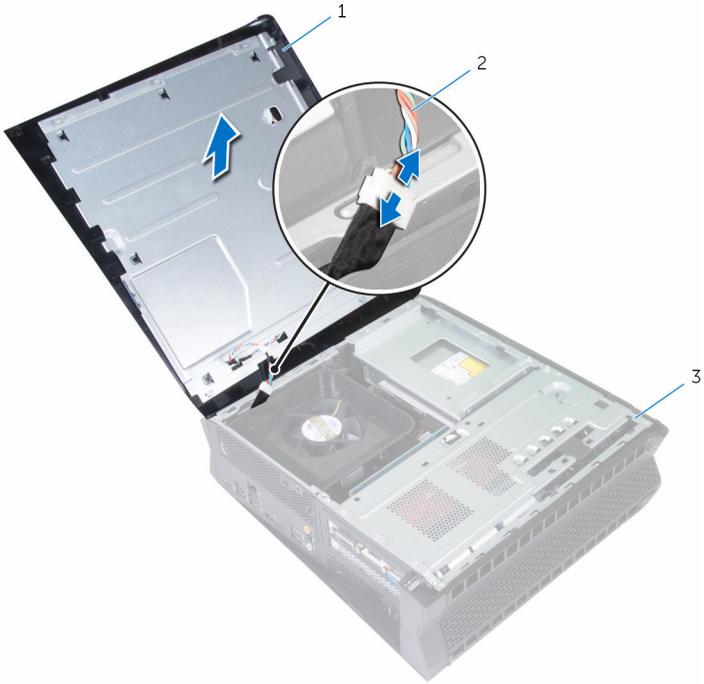


1 left panel
3 chassis

2 screw

- 4 Turn the left panel over and disconnect the lighting cable as shown.

5 Lift the left panel off the chassis.



1 left panel

2 lighting cable

3 chassis



Replacing the side panel



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Procedure

- 1 Connect the lighting cable to the left panel.
- 2 Align the tabs on the left panel with the slots on the chassis and slide it toward the back of the computer.
- 3 Replace the screw that secures the left panel to the chassis.

Removing the wireless card



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Prerequisites

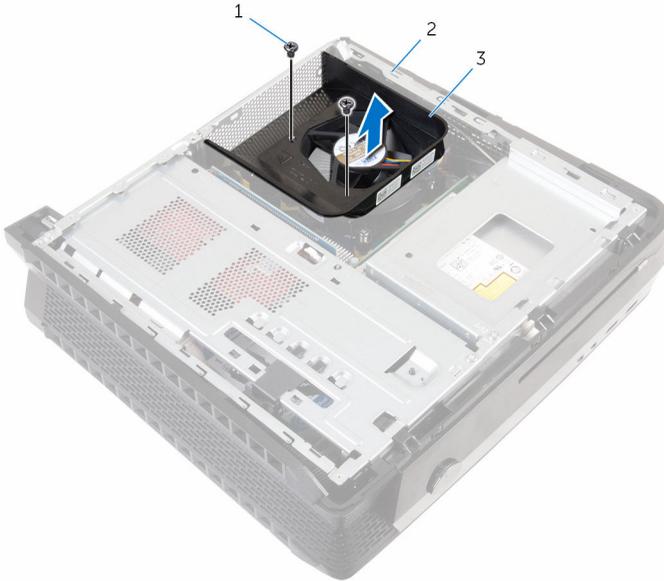
Remove the [side panel](#).

Procedure

- 1 Remove the screws that secure the fan shroud to the processor fan.



- 2 Lift the fan shroud off the processor fan.



- 1 screws (2)
- 3 fan shroud

- 2 chassis

- 3 Disconnect the antenna cables from the wireless card.
- 4 Remove the screw that secures the wireless card to the system board.

5 Slide the wireless card out of the wireless-card slot.



- 1 wireless-card slot
- 3 system board
- 5 antenna cables (2)

- 2 wireless card
- 4 screw



Replacing the wireless card

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Procedure

 **CAUTION:** To avoid damage to the wireless card, do not place any cables under it.

- 1 Align the notch on the wireless card with the tab on the wireless-card slot.
- 2 Slide the wireless card into the wireless-card slot.
- 3 Replace the screw that secures the wireless card to the system board.
- 4 Connect the antenna cables to the wireless card.

The following table provides the antenna-cable color scheme for the wireless card supported by your computer.

Connectors on the wireless card	Antenna-cable color
Main (white triangle)	White
Auxiliary (black triangle)	Black

- 5 Align the screw holes on the fan shroud with the screw holes on the processor fan.

6 Replace the screws that secure the fan shroud to the processor fan.



- | | | | |
|---|--------------------|---|--------------------|
| 1 | tab | 2 | notch |
| 3 | wireless-card slot | 4 | wireless card |
| 5 | screw | 6 | antenna cables (2) |
| 7 | system board | | |

Post-requisites

Replace the [side panel](#).



Replacing the optical drive



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Prerequisites

Remove the [side panel](#).

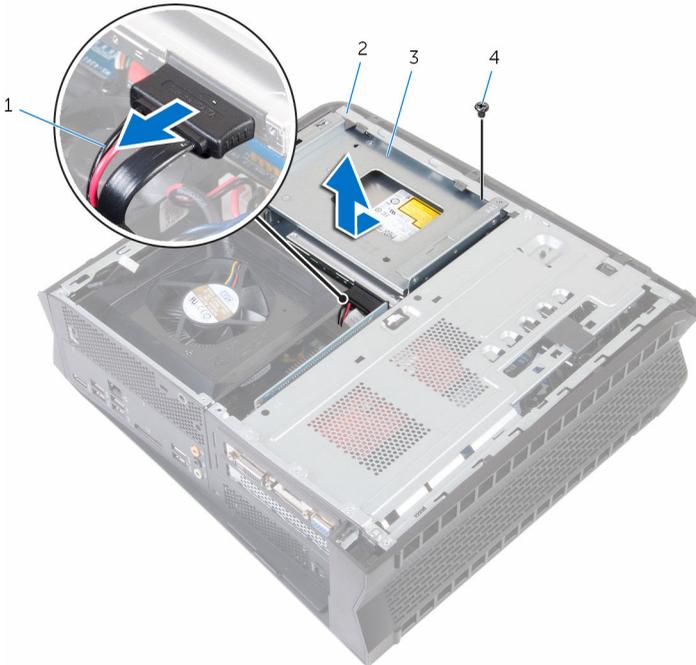
Procedure

- 1 Disconnect the optical-drive data and power cable from the optical drive.
- 2 Remove the screw that secures the drive cage to the chassis.

3 Slide and lift the drive cage out of the chassis.

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

1



1 optical-drive data and power cable

2 chassis

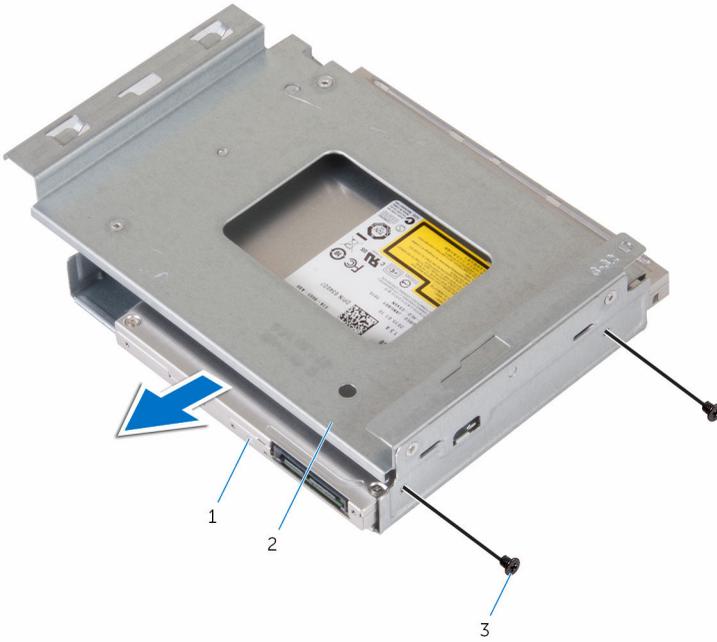
3 drive cage

4 screw

4 Remove the screws that secure the optical drive to the drive cage.



5 Slide the optical drive out of the drive cage.



- 1 optical drive
- 3 screws (2)

- 2 drive cage

Removing the optical drive



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Procedure

- 1 Slide the optical drive into the drive cage.
- 2 Align the screw holes on the optical drive with the screw holes on the drive cage.
- 3 Replace the screws that secure the optical drive to the drive cage.
- 4 Slide and place the drive cage into the chassis.
- 5 Connect the optical-drive data and power cable to the optical drive.
- 6 Replace the screw that secures the drive cage to the chassis.

Post-requisites

Replace the [side panel](#).



Removing the memory module



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Prerequisites

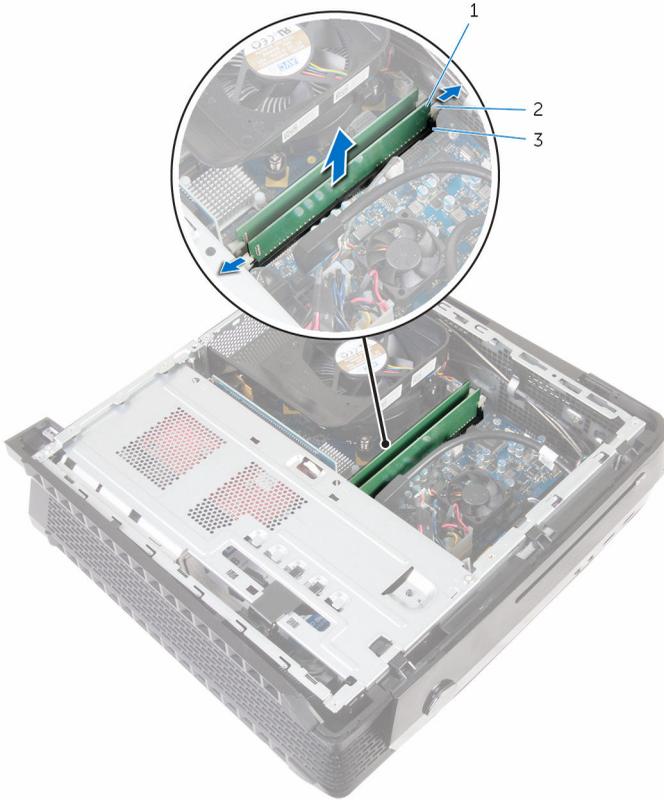
- 1 Remove the [side panel](#).
- 2 Follow the procedure from step 1 to step 3 in "[Removing the optical drive](#)".

Procedure

- 1 Using your fingertips, press the securing clips at each end of the memory-module slot until the memory module pops up.

- 2 Remove the memory module from the memory-module slot.

⚠ CAUTION: To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module.



- 1 memory module
3 memory-module slot

- 2 securing clips (2)



Replacing the memory module



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Procedure

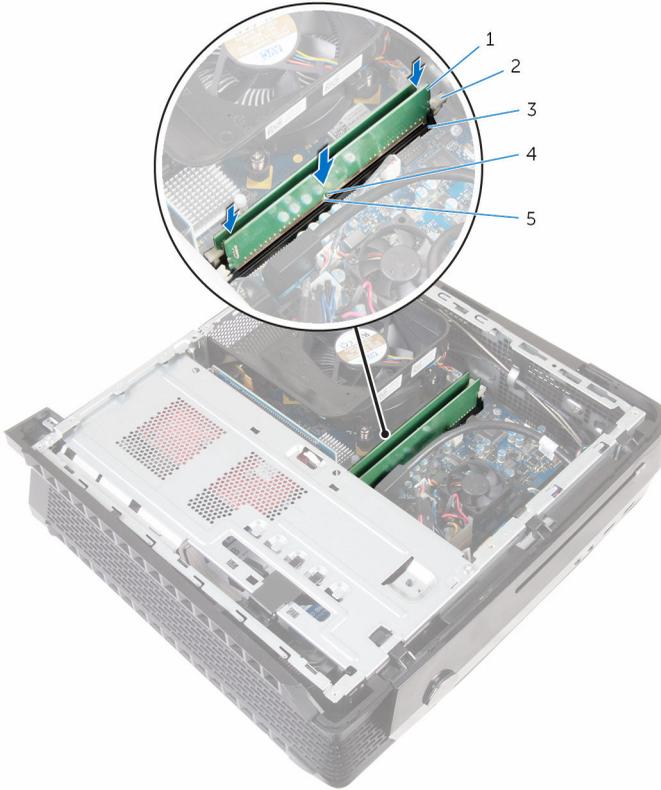


NOTE: Alienware X51 R3 supports only DDR4 memory modules. If you are adding additional memory modules or upgrading the memory modules, ensure to use DDR4 UDIMMs.

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

- 2 Insert the memory module into the memory-module slot and press the memory module down until it clicks into place.

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



- | | | | |
|---|--------------------|---|--------------------|
| 1 | memory module | 2 | securing clips (2) |
| 3 | memory-module slot | 4 | tab |
| 5 | notch | | |

Post-requisites

- 1 Follow the procedure from step 4 to step 6 in [“Replacing the optical drive”](#).



2 Replace the [side panel](#).



Removing the hard drive

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

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

Prerequisites

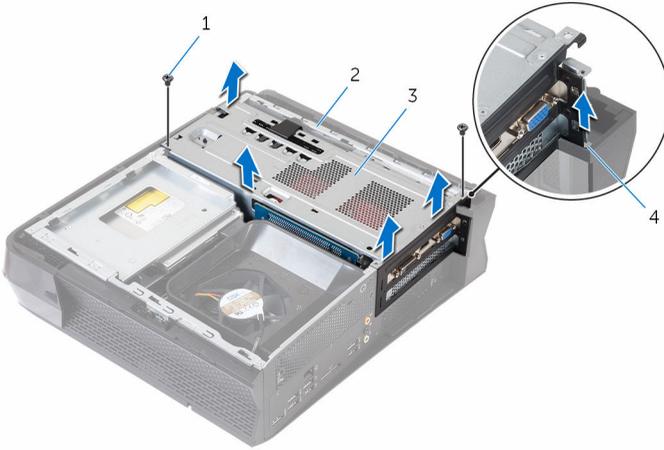
Remove the [side panel](#).

Procedure

- 1 Remove the screws that secure the riser cage to the chassis.



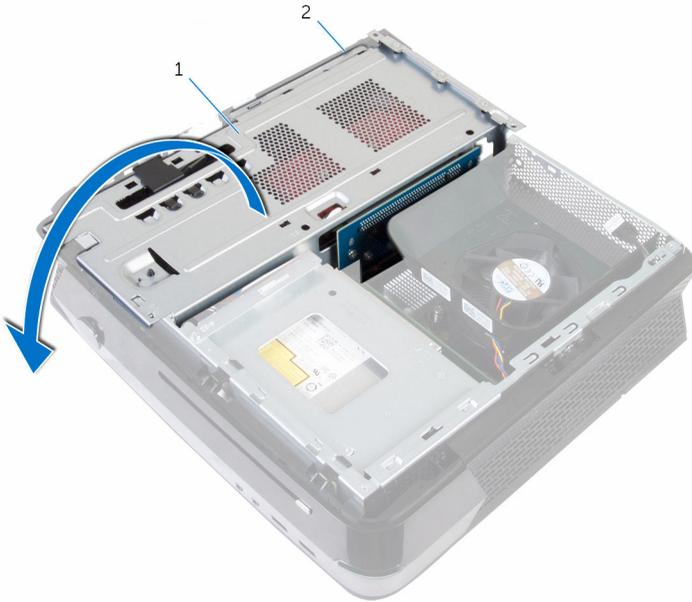
2 Release the riser cage from the tabs on the chassis.



- 1 screws (2)
- 3 riser cage

- 2 chassis
- 4 tab

- 3** Lift the riser cage from the chassis and place it towards the front-side of the computer.



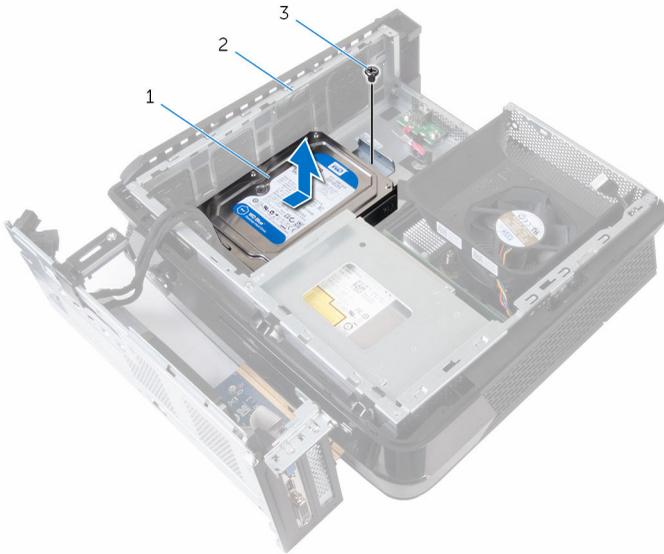
1 riser cage

2 chassis

- 4** Remove the screw that secures the hard-drive assembly to the chassis.
- 5** Slide the hard-drive assembly toward the inside of the computer to disconnect the power cable and the data cable from the hard drive.



- 6** Lift the hard-drive assembly off the chassis.



1 hard-drive assembly

2 chassis

3 screw

- 7** Remove the screws that secure the hard-drive bracket to the hard-drive assembly.

8 Slide the hard drive out of the hard-drive bracket.



1 hard drive

2 hard-drive bracket

3 screws (2)



Replacing the hard drive

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

Procedure

- 1 Slide the hard drive into the hard-drive bracket.
- 2 Align the screw holes on the hard drive with the screw holes on the hard-drive bracket.
- 3 Replace the screws that secure the hard-drive bracket to the hard drive.
- 4 Slide and place the hard-drive assembly into the chassis to connect the power cable and the data cable to the hard drive .
- 5 Replace the screw that secures the hard-drive assembly to the chassis.
- 6 Align and place the rise cage on the chassis.
- 7 Replace the screws that secure the riser cage to the chassis.

Post-requisites

Replace the [side panel](#).

Removing the graphics card

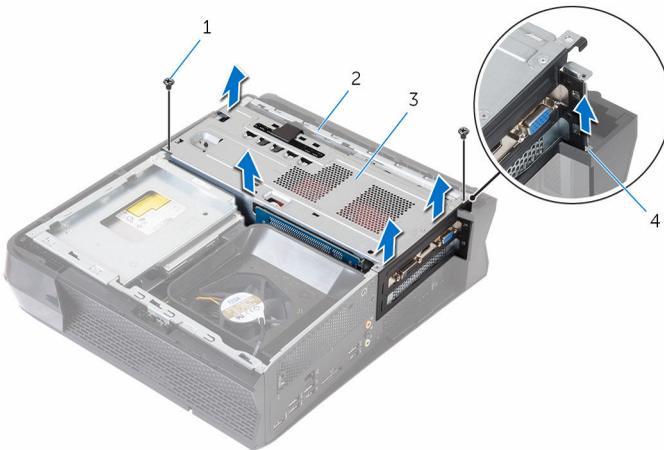
⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices,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

Prerequisites

Remove the [side panel](#).

Procedure

- 1 Remove the screws that secure the riser cage to the chassis.
- 2 Release the riser cage from the tabs on the chassis.



1 screw

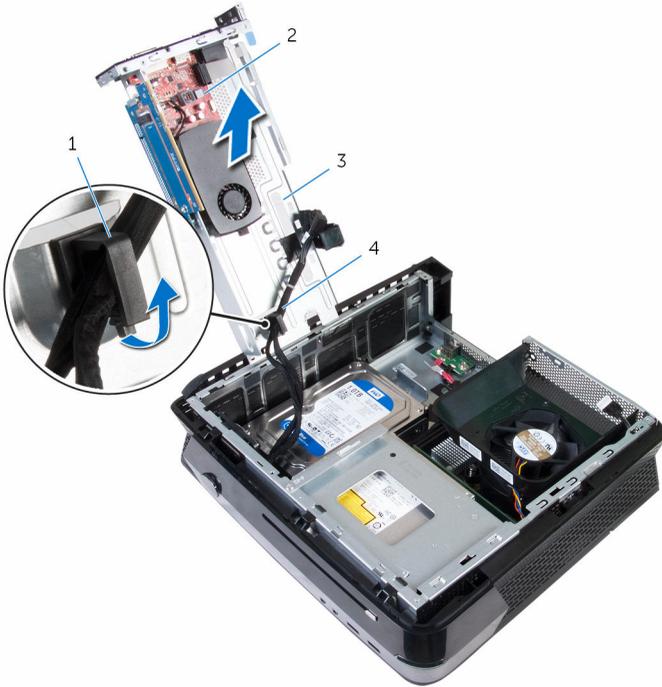
2 chassis

3 riser cage

4 tab



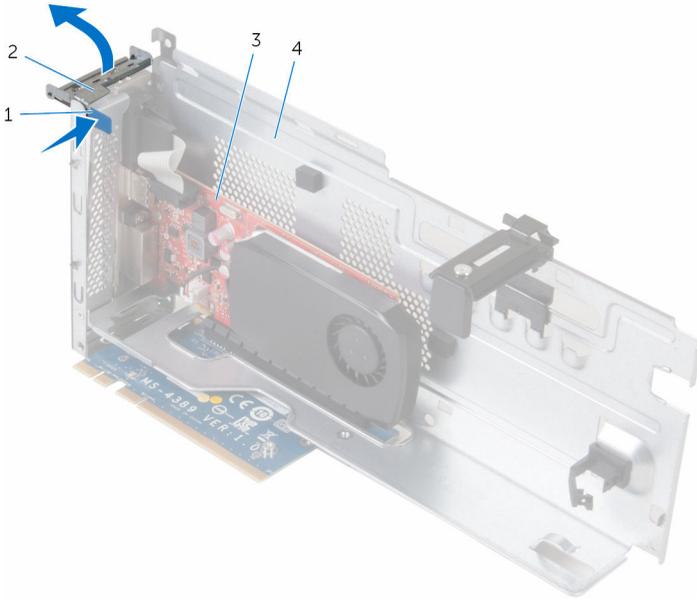
- 3** Lift the riser cage from the chassis and remove the graphics-card power cables from the routing guide on the riser cage.



- 1 routing guide
3 riser cage

- 2 graphics card
4 graphics-card power cables

4 Open and release the card-retention bracket from the riser cage.

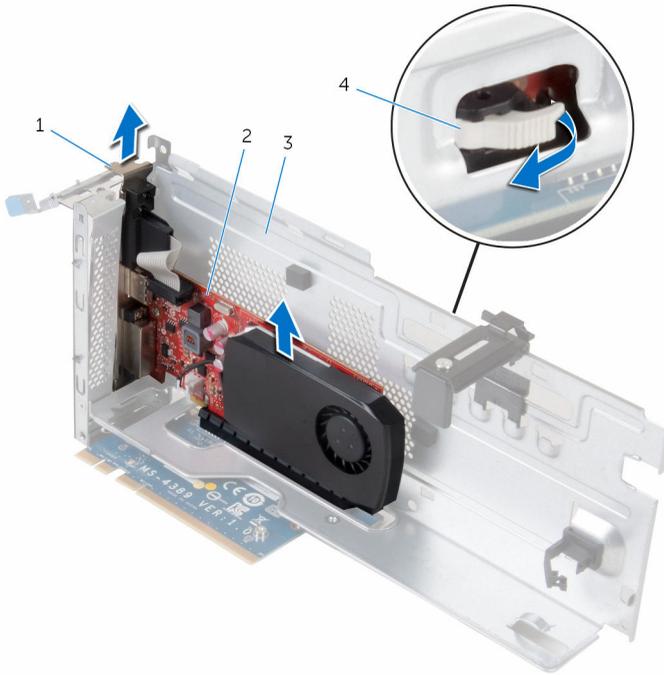


- | | | | |
|---|---------------|---|------------------------|
| 1 | tab | 2 | card-retention bracket |
| 3 | graphics-card | 4 | riser cage |

5 Turn around the riser cage and locate the PCI express latch.



- 6 Press down the PCI x16 express card latch and lift the graphics-card assembly off the riser cage.



- 1 card-retention bracket
3 riser cage

- 2 graphics-card assembly
4 PCI express latch

Replacing the graphics card



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Procedure

- 1 Align the graphics-card assembly with the slot on the riser cage.
- 2 Place the graphics-card assembly in the slot and press down firmly. Ensure that the graphics-card assembly is seated in the slot.
- 3 Rotate the card retention bracket towards the riser cage until it snaps into place.
- 4 Route the graphics-card power cables through the routing guide on the riser cage.
- 5 Align and press down the riser cage until the riser card slides into the riser-card slot on the chassis.
- 6 Replace the screws that secure the riser cage to the chassis.

Post-requisites

Replace the [side panel](#).



Removing the solid-state drive

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

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

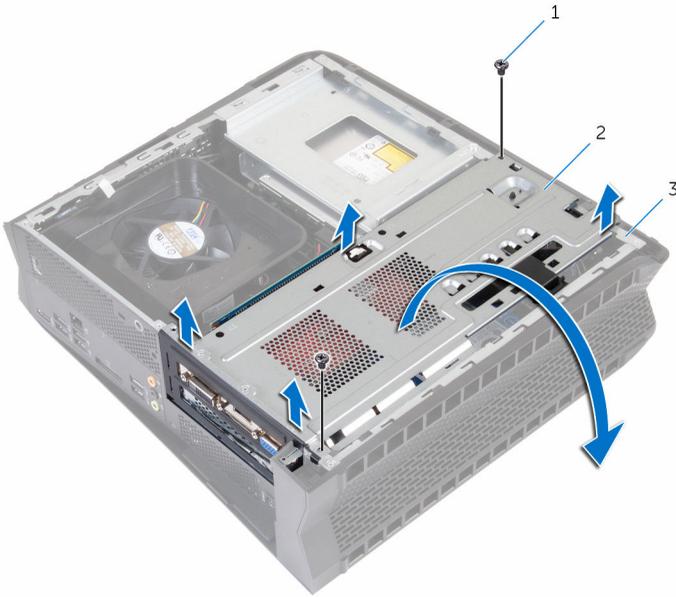
Prerequisites

Remove the [side panel](#).

Procedure

- 1 Remove the screws that secure the riser cage to the chassis.
- 2 Release the riser cage from the tabs on the chassis

- 3** Lift the riser cage from the chassis and place it on the side of the computer as shown.



1 screw

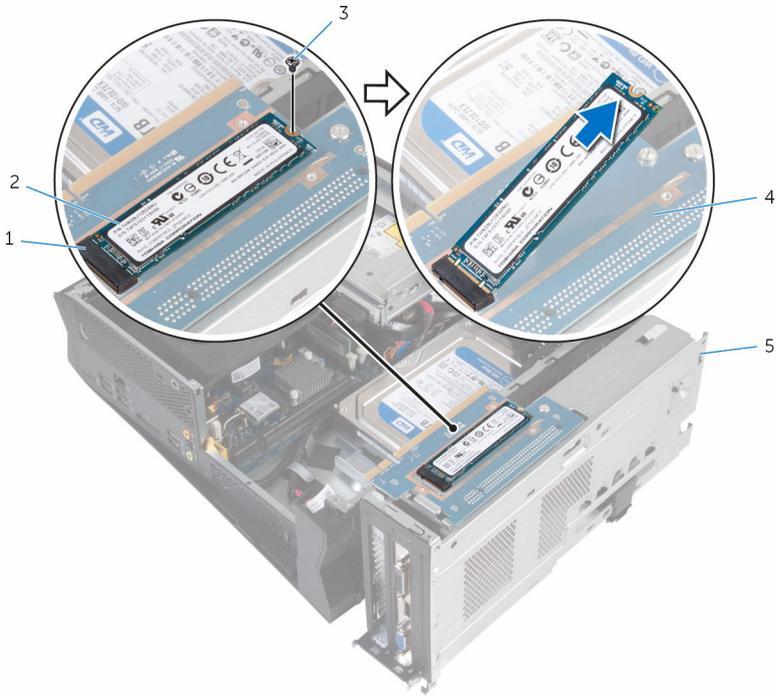
2 riser cage

3 chassis

- 4** Remove the screw that secures the SSD card to the riser card.



- 5 Slide the SSD card out of the SSD-card slot.



- 1 SSD-card slot
3 screw
5 riser cage

- 2 SSD card
4 riser card

Replacing the solid-state drive



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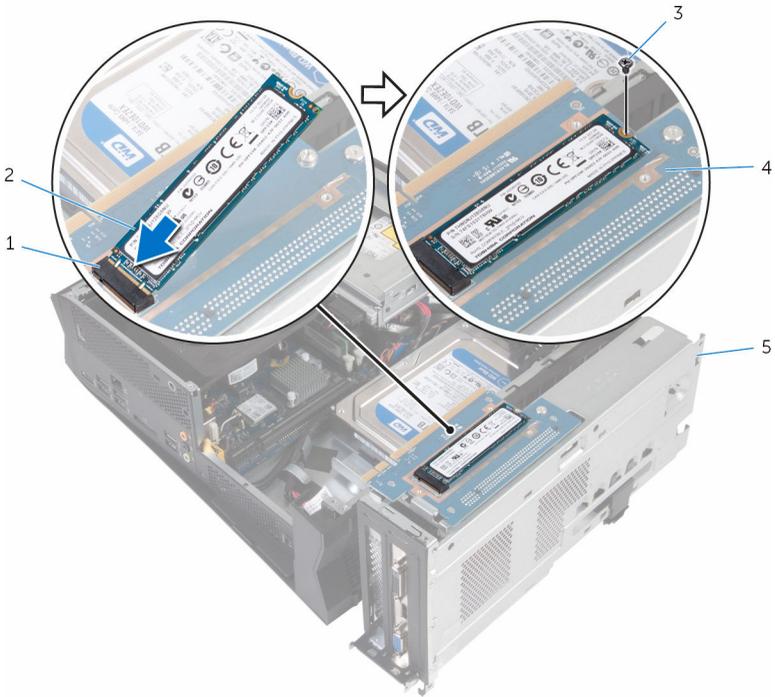
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

Procedure

- 1 Align the notch on the SSD card with the tab on the SSD-card slot.
- 2 Slide the SSD card into the SSD-card slot.



- 3 Replace the screw that secures the SSD card to the riser card.



- | | | | |
|---|---------------|---|------------|
| 1 | SSD-card slot | 2 | SSD card |
| 3 | screw | 4 | riser card |
| 5 | riser cage | | |

- 4 Align and press down the riser cage until the riser card slides into the riser-card slot on the chassis.
- 5 Replace the screws that secure the riser cage to the chassis.

Post-requisites

Replace the [side panel](#).

BIOS setup program

Overview

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

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

Use BIOS setup program 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.
- 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.

Entering System Setup

 **NOTE:** You must connect a keyboard and mouse to access and configure 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 operating system's desktop. Then, turn off your computer and try again.



System Setup Options



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

Main

System Date	Displays the current date in mm/dd/yyyy format.
System Time	Displays the current time in hh:mm:ss format.

BIOS Information

BIOS Version	Displays the BIOS version number.
BIOS Build Date	Displays the BIOS release date.

Product Information

Product Name	Displays the product name of your computer.
Set Service Tag	Allows you to enter the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.

ME Information

ME Firmware Version	Displays the Management Engine firmware version of your computer.
---------------------	---

EC Information

EC Firmware Version	Displays the embedded controller firmware version of your computer.
---------------------	---

Memory Information

Total Memory	Displays the total computer memory.
Memory Available	Displays the amount of memory available on the computer.
Memory Technology	Displays the type of memory technology used.

Main

Memory Speed Displays the memory speed.

CPU Information

Processor String Displays the processor string.

Processor ID Displays the processor identification code.

CPU Speed Displays the speed of the processor.

Cache L2 Displays the processor L2 cache size.

Cache L3 Displays the processor L3 cache size.

Device Information

SATA ODD Displays the if the drive is present.

Fixed HDD Displays the if the drive is present.

Second HDD Displays the if the drive is present.

mSATA Device Displays the if the mSATA is present.

NVMe Device Displays the if the NVMe is present.

Advanced

Advanced BIOS Features

OptionRom Display Screen Allows you to display or hide OptionRom Information during system POST.

CPU Configuration

Hyper-Threading Technology Allows you to enable or disable the HyperThreading in the processor.

XD Bit Capability Allows you to enable the Execute Disable mode of the processor.

Intel(R) SpeedStep Allows you to enable or disable Intel (R) SpeedStep Technology.



Advanced



NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.

Virtualization	Allows you to enable or disable Intel Virtualization Technology feature for the processor.
CPU C states	Allows you to enable or disable CPU C states.
Active Processor Cores	Allows you to enable or disable multi-core processor.
Intel(R) Software Guard Extensions	Allows you to enable or disable Intel(R) Software Guard Extensions.
Allocated memory size	Allows you to allocate memory size for Intel(R) Software Guard Extensions.

Integrated Devices

Front USB Port	Allows you to enable or disable the front USB ports.
Rear USB Port	Allows you to enable or disable the rear USB ports.
HD Audio	Allows you to enable or disable the HD Audio.
Integrated NIC	Allows you to enable or disable the Integrated NIC.
Pxe Option	
Launch PXE OpROM	Allows you to enable or disable the PXE OpROM.
UEFI PXE Driver	Allows you to enable or disable the UEFI PXE Driver.
Ipv4 PXE Support	Allows you to enable or disable the Ipv4 PXE.
Ipv6 PXE Support	Allows you to enable or disable the Ipv6 PXE.
SATA Mode	Displays the SATA mode on your computer.

Advanced

PCIe GEN3 Allows you to enable or disable the third generation of PCI express.

Power Management Setup

Intel Ready Mode Technology Allows you to enable or disable the Intel Ready Mode Technology.

AC Recovery Sets what action the computer takes when power is restored.

Deep Sleep Control Allows you to define the controls when Deep Sleep is enabled.

Wake Up by Integrated LAN Allows the computer to be powered on by special LAN signals.

 **NOTE: This option is available only when Deep Sleep Control is disabled.**

USB Wake Support Allows you to enable or disable the USB Wake Support.

 **NOTE: This option is available only when Deep Sleep Control is disabled.**

Boot

Boot Configuration

Bootup Numlock State Allows you to set the status of the Num Lock key during boot to On or Off.

Wait For 'F1' If Error Allows you to enable or disable system to boot if F1 error occurs.

Secure Boot Control Allows you to enable or disable the secure boot control.

Load Legacy OPROM Allows you to enable or disable the Legacy Option ROM.

Set Boot Priority

Boot List Option Displays the available boot devices.



Boot

USB Boot Support	Allows you to enable or disable booting from USB mass storage devices such as external hard drive, optical drive, USB drive, and so on.
1st Boot	Displays the first boot device. Default: Hard disk.
2nd Boot	Displays the second boot device. Default: USB hard disk.
3rd Boot	Displays the third boot device. Default: Internal ODD Devices.
4th Boot	Displays the fourth boot device. Default: USB Floppy Device.
5th Boot	Displays the fifth boot device. Default: Onboard NIC Device.

OverClocking support for CPU and Memory



NOTE: This option is available only for Intel K SKU processors.

Memory Frequency	Allows you to change Memory Frequency for OverClocking.
Memory Voltage	Allows you to change Memory Voltage for OverClocking.
Load Level 1 OC setting	Allows you to load CPU OverClocking level 1 profile.

Security

Unlock Setup	Allows you to unlock setup.
Admin Password	Displays whether the admin password is set.
System Password	Displays whether the system password is set.
Password Change	Allows you to set, change, or delete the admin password. The admin password

Security

	controls access to the system setup utility.
HDD Password Status	Displays if the hard drive password is set.
HDD Password	Displays the hard drive password.
BIOS Recovery from Hard Drive	Allows you to enable or disable BIOS Recovery from hard drive.
Firmware TPM	Displays the firmware TPM.
TPM Security	Displays if the TPM security is enabled or disabled.
Clear TPM	Allows you to reset the TPM security.

Save & Exit

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

Boot sequence

This feature allows you to change the sequence of devices that your computer attempts to boot from. If the computer cannot boot from the device you select, it attempts to boot from the next bootable device. You can use this feature to change the:

- Current Boot Sequence — change the boot sequence for the current boot, for example, to boot from the optical drive to run Alienware Diagnostics from the Drivers and Utilities disc or to reinstall your operating system using an external media. The previous boot sequence is restored at the next boot.
- Future Boot Sequence — change the boot sequence for all future boots, for example, to boot from the primary hard drive.



Changing boot sequence for the current boot

- 1 If you are booting from a USB device, connect the USB device to a USB port.
- 2 Turn on (or restart) your computer.
- 3 When **F2 Setup**, **F12 Boot Options** appear 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 Options** appears, listing all available boot devices.

- 4 On the **Boot Options**, select the device you want to boot from and press Enter. For example, if you are booting to a USB hard drive, highlight **USB Hard Disk** and press Enter.

Boot Options

Following are the devices that your computer can boot from:

Floppy — 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** appear 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 future boots

- 1 Enter system setup.
See "[Entering System Setup](#)".
- 2 Use the arrow keys to highlight the **Boot** menu option and press Enter to access the menu.



NOTE: Note your current boot sequence in case you want to restore it.

- 3 Navigate to **Set Boot Priority** to configure the boot priority.
- 4 Use the arrow keys to highlight the boot priority and press Enter to display the different devices.
- 5 Select the device and press Enter to set the boot priority.



Flashing the BIOS



NOTE: It is recommended that you connect a keyboard and mouse to flash the BIOS.

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

- 1 Turn on the computer.
- 2 Go to **www.dell.com/support**.
- 3 If you have your computer's Service Tag, type your computer's Service Tag and click **Submit**.

If you do not have your computer's Service Tag, click **Detect My Product** to allow automatic detection of the Service Tag.



NOTE: If the Service Tag cannot be detected automatically, select your product under the product categories.

- 4 Click **Get Drivers and Downloads**.
- 5 Click **View All Drivers**.
- 6 In the **Operating System** drop-down, select the operating system installed on your computer.
- 7 Click **BIOS**.
- 8 Click **Download File** to download the latest version of the BIOS for your computer.
- 9 On the next page, select **Single-file download** and click **Continue**.
- 10 Save the file and once the download is complete, navigate to the folder where you saved the BIOS update file.
- 11 Double-click the BIOS update file icon and follow the instructions on the screen.

Getting help and contacting Alienware

Self-help resources

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

Information about Alienware products and services

www.alienware.com

Windows 8.1 and Windows 10

Dell Help & Support app



Windows 10

Get started app



Windows 8.1

Help + Tips app



Accessing help in Windows 8, Windows 8.1, and Windows 10

In Windows search, type **Help and Support**, and press **Enter**.

Accessing help in Windows 7

Click **Start** → **Help and Support**.

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.alienware.com/gamingservices



Videos providing step-by-step instructions to service your computer

www.youtube.com/alienwareservices

Contacting Alienware

To contact Alienware for sales, technical support, or customer service issues, see www.alienware.com.



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.