Vostro 3020 Small Desktop

Service Manual

DELLTechnologies

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.

Contents

1

Working inside your computer

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that you have read the safety information that shipped with your computer.

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

⚠ **WARNING: Disconnect your computer from 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 your computer to an electrical outlet.**

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

⚠ **CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the 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 is 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 it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the ports and the connectors are correctly oriented and aligned.**

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

⚠ **CAUTION: Exercise caution when handling Lithium-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.**

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

Before working inside your computer

About this task

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

Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. For Windows operating system, click **Start** > ⏻ **Power** > **Shut down**.

> (i) **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.

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

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

Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

Observe the following safety precautions before you perform any installation or break/fix procedures involving disassembly or reassembly:

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any tabletnotebookdesktop to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 15 seconds should discharge residual power in the system board.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done through the use of a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding yourself and the equipment.

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:
- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD field service kit

The unmonitored Field Service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

Components of an ESD field service kit

The components of an ESD field service kit are:
- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

ESD protection summary

It is recommended to use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

⚠️ **CAUTION: Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.**

1. Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
2. Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
3. Lift with your legs, not your back.
4. Keep the load close. The closer it is to your spine, the less force it exerts on your back.
5. Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
6. Follow the same techniques in reverse to set the load down.

After working inside your computer

About this task

ⓘ **NOTE:** Leaving stray or loose screws inside your computer may severely damage your computer.

Steps

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.

BitLocker

⚠️ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress, and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system reinstall. For more information about this subject, see Knowledge Article: updating the BIOS on Dell systems with BitLocker enabled.**

The installation of the following components triggers BitLocker:
- Hard disk drive or solid state drive
- System board

Removing and installing components

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

Left-side cover

Removing the left-side cover

Prerequisites

1. Follow the procedure in Before working inside your computer.

About this task

The following image indicates the location of the left-side cover and provides a visual representation of the removal procedure.

2x
#6-32

Steps

1. Loosen the two screws (#6-32) that secure the left-side cover to the chassis.
2. Hold the tab on the left-side cover firmly. Slide and remove the left-side cover from the chassis.

Installing the left-side cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the left-side cover and provides a visual representation of the installation procedure.

2x
#6-32

Steps

1. Align the left-side cover on the left side of the chassis.
2. Hold the tab on the left-side cover firmly. Slide the left-side cover into the chassis towards the front cover.
3. Tighten the two screws (#6-32) to secure the left-side cover to the chassis.

Next steps

1. Follow the procedure in After working inside your computer.

Front cover

Removing the front cover

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.

About this task

The following image indicates the location of the front cover and provides a visual representation of the removal procedure.
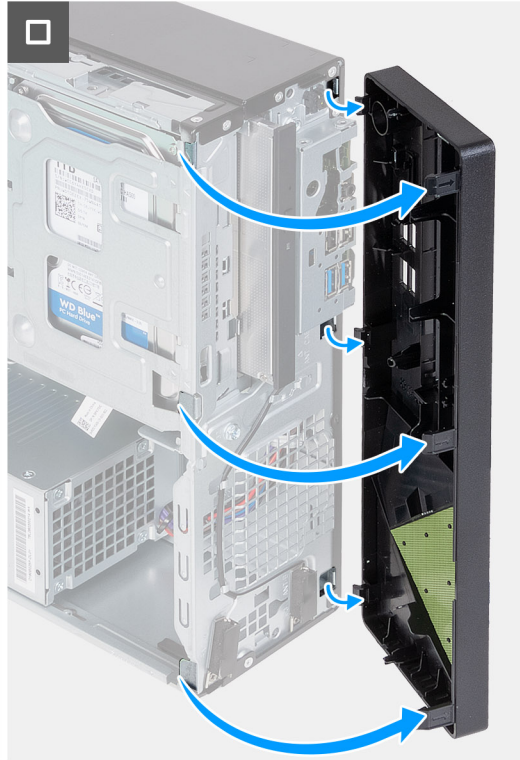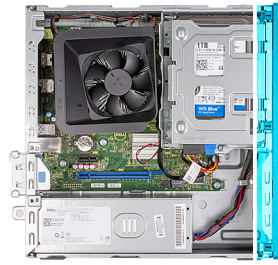
Steps

1. Gently pry and release the tabs that secure the front cover to the chassis.
2. Lift the front cover away from the chassis.

Installing the front cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following images indicate the location of the front cover and provides a visual representation of the installation procedure.
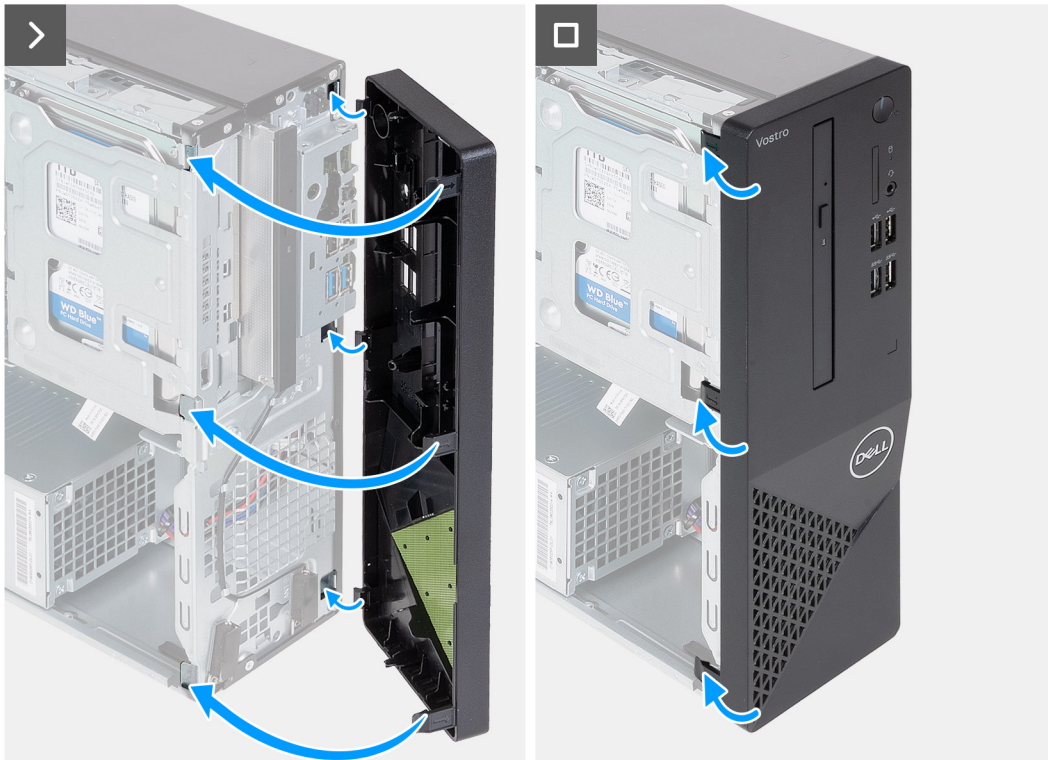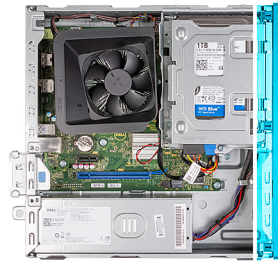
Steps

1. Align and insert the tabs on the front cover into the slots on right side of the chassis.
2. Rotate the front cover towards the chassis and snap the tabs on the front cover into place.

Next steps

1. Install the left-side cover.
2. Follow the procedure in After working inside your computer.

Hard drive

Removing the 2.5-inch hard drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.

About this task

The following image indicates the location of the 2.5-inch hard drive and provides a visual representation of the removal procedure.

Steps

1. Remove the (#6-32) screw that secures the 2.5-inch hard-drive assembly to the hard-drive and optical-drive bracket.
2. Disconnect the data and power cables from the connectors on the hard drive.
3. Lift and slide the 2.5-inch hard-drive assembly away from the hard-drive and optical-drive bracket.
4. Turn over and place the 2.5-inch hard-drive assembly on a flat surface.
5. In a reverse sequential order (4>3>2>1), remove the four (#6-32) screws that secure the 2.5-inch hard drive to the hard-drive cage.
6. Slide and remove the 2.5-inch hard drive from the hard-drive cage.

Installing the 2.5-inch hard drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the 2.5-inch hard drive and provides a visual representation of the installation procedure.

Steps

1. Align and slide the 2.5-inch hard drive into the hard-drive cage.
2. In a sequential order (1>2>3>4), replace the four (#6-32) screws to secure the 2.5-inch hard drive to the hard-drive cage.
3. Align and slide the hard drive assembly into the hard-drive and optical-drive bracket.
4. Replace the (#6-32) screw to secure the 2.5-inch hard drive assembly to the hard-drive and optical-drive bracket.
5. Connect the power cable and data cables to the connectors on the 2.5-inch hard drive.

Next steps

1. Install the front cover.
2. Install the left-side cover.
3. Follow the procedure in After working inside your computer.

Removing the 3.5-inch hard drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.

About this task

The following image indicates the location of the 3.5-inch hard drive and provides a visual representation of the removal procedure.
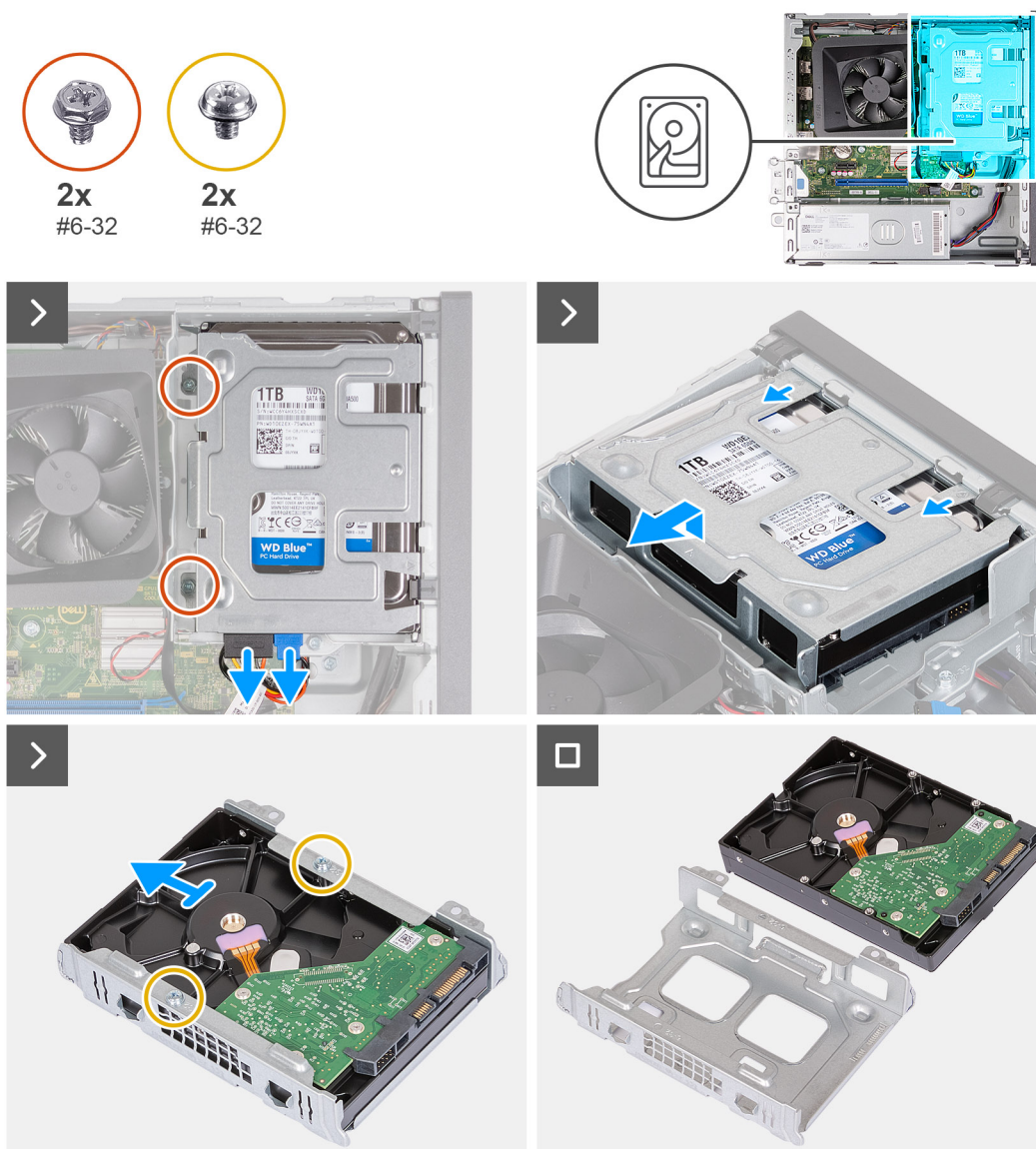
Steps

1. Disconnect the data and power cable from the connectors on the 3.5-inch hard drive.
2. Remove the two (#6-32) screws that secure the 3.5-inch hard-drive assembly to the hard-drive and optical-drive bracket.
3. Lift and slide the 3.5-inch hard-drive assembly away from the hard-drive and optical-drive bracket.
4. Turn over and place the 3.5-inch hard-drive assembly on a flat surface.
5. Remove the two (#6-32) screws that secure the 3.5-inch hard drive to the hard-drive cage.
6. Slide and remove the 3.5-inch hard drive from the hard-drive cage.

Installing the 3.5-inch hard drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the 3.5-inch hard drive and provides a visual representation of the installation procedure.
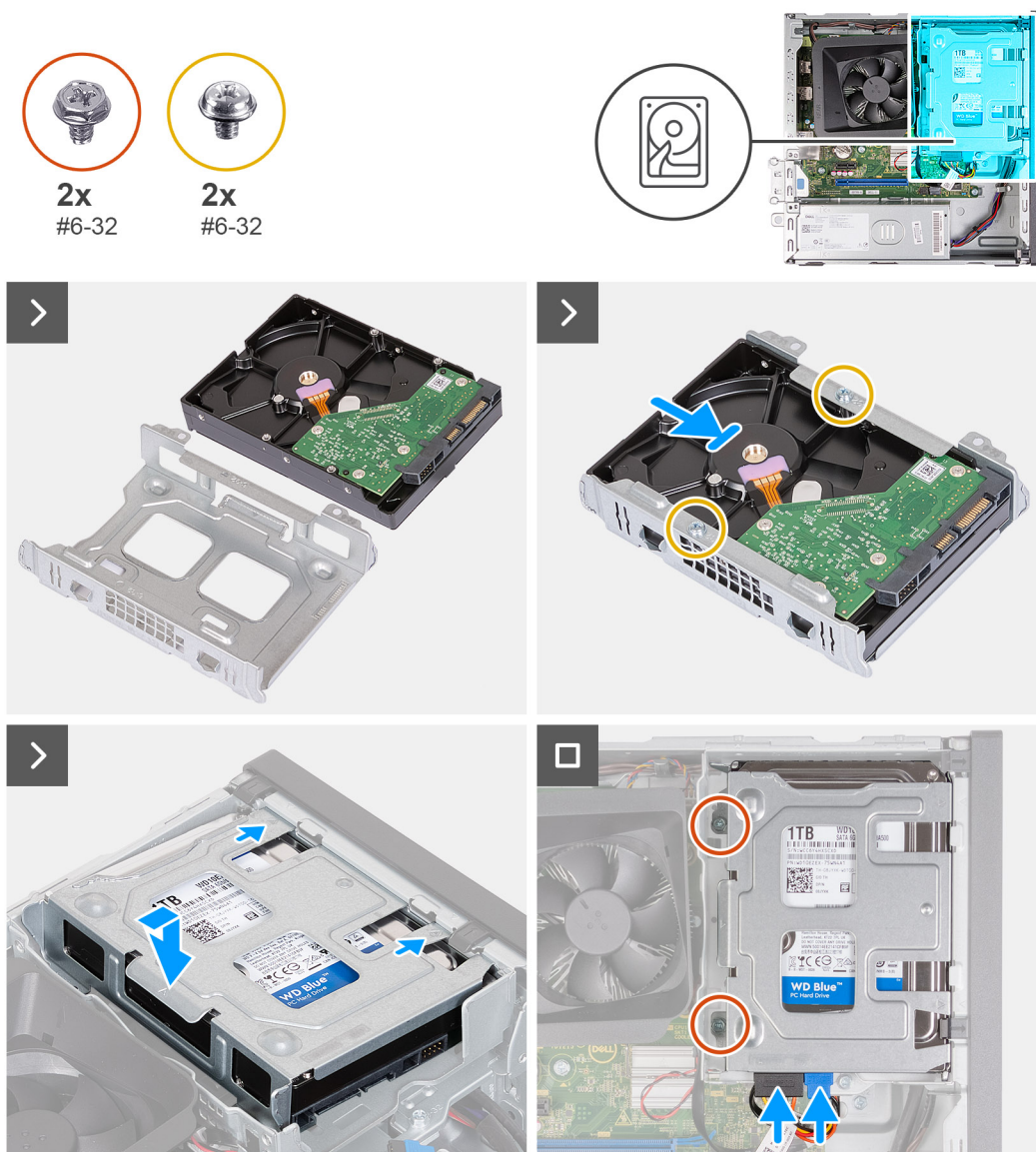
Steps

1. Align and slide the 3.5-inch hard drive into the hard-drive cage.
2. Replace the two (#6-32) screws to secure the 3.5-inch hard drive to the hard-drive cage.
3. Align and slide the hard drive assembly into the hard-drive and optical-drive bracket.
4. Replace the two (#6-32) screws to secure the 3.5-inch hard drive assembly to the hard-drive and optical-drive bracket.
5. Connect the power cable and data cable to connectors on the 3.5-inch hard drive.

Next steps

1. Install the front cover.
2. Install the left-side cover.
3. Follow the procedure in After working inside your computer.

Hard-drive and optical-drive cage

Removing the hard-drive and optical-drive cage

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.

About this task

The following image indicates the location of the hard-drive and optical-drive cage and provides a visual representation of the removal procedure.
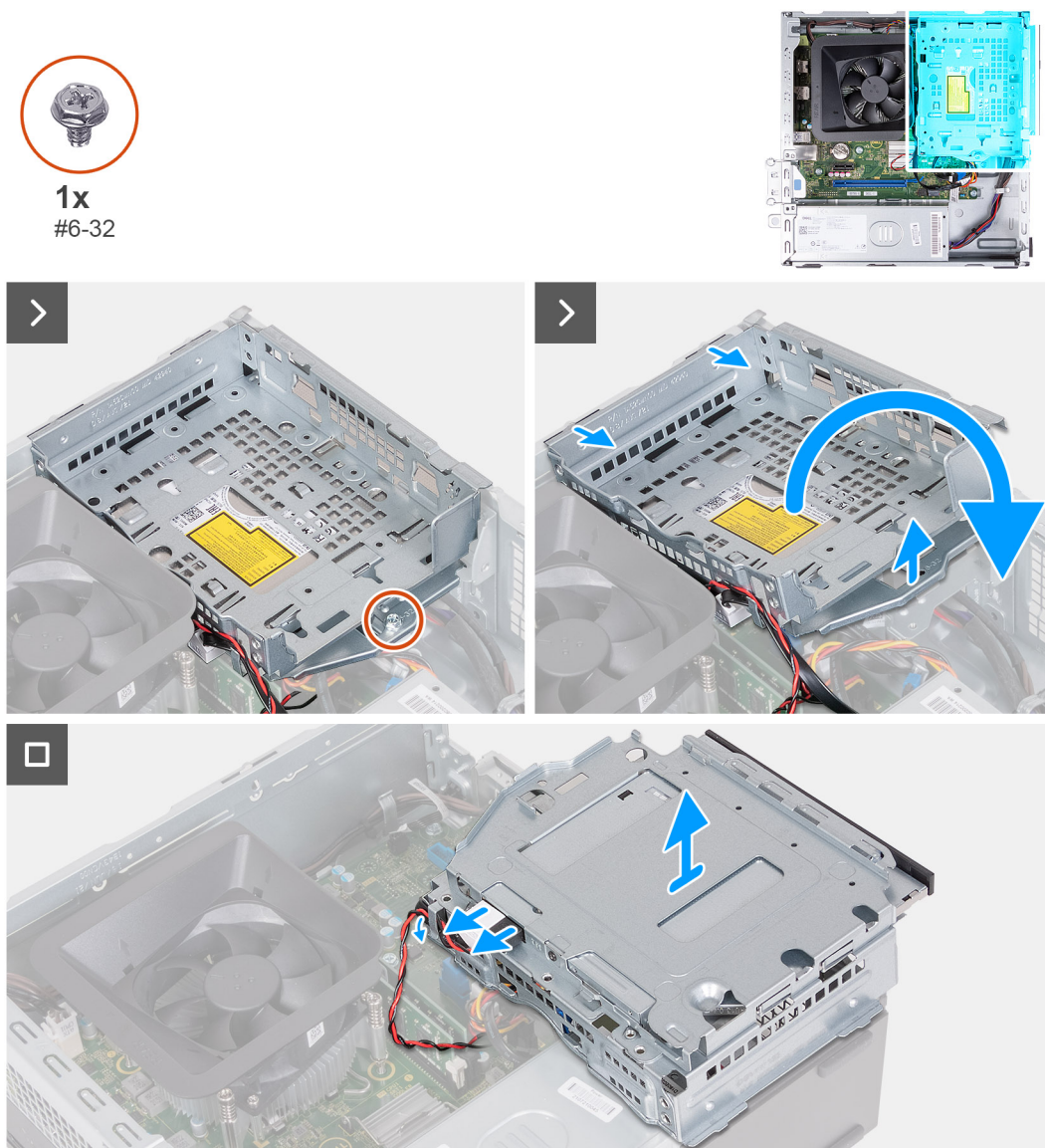
Steps

1. Remove the (#6-32) screw that secures the hard-drive and optical-drive bracket to the chassis.
2. Lift and slide the hard-drive and optical-drive bracket away from the chassis.

ⓘ **NOTE:** The data and power cables are still connected to the optical drive. Carefully slide out the hard-drive and optical-drive bracket.

ⓘ **NOTE:** Skip this step if the computer is not shipped with an optical drive.

3. Hold onto the hard-drive and optical-drive bracket and turn it over.
4. Unroute the data and power cables through the routing guides on the hard-drive and optical-drive bracket.
5. Disconnect the data and power cables from the connectors on the optical drive.
6. Lift the hard-drive and optical-drive bracket away from the chassis.

Installing the hard-drive and optical-drive cage
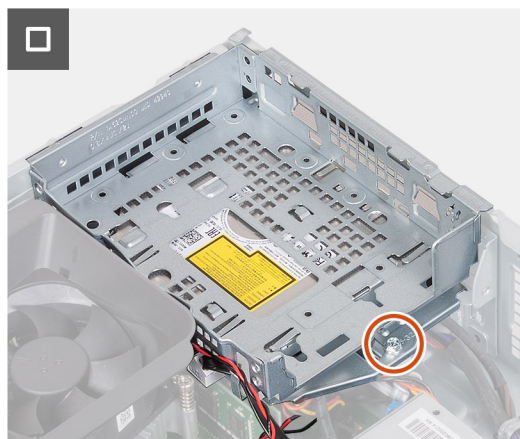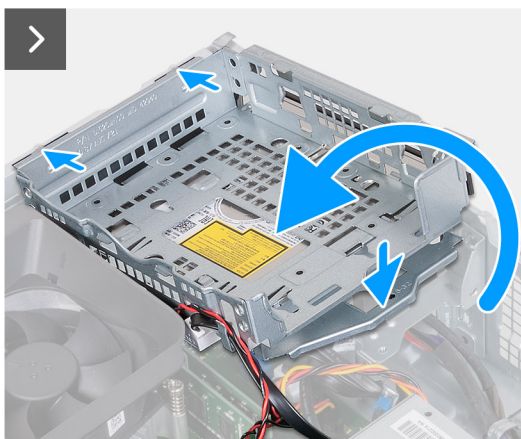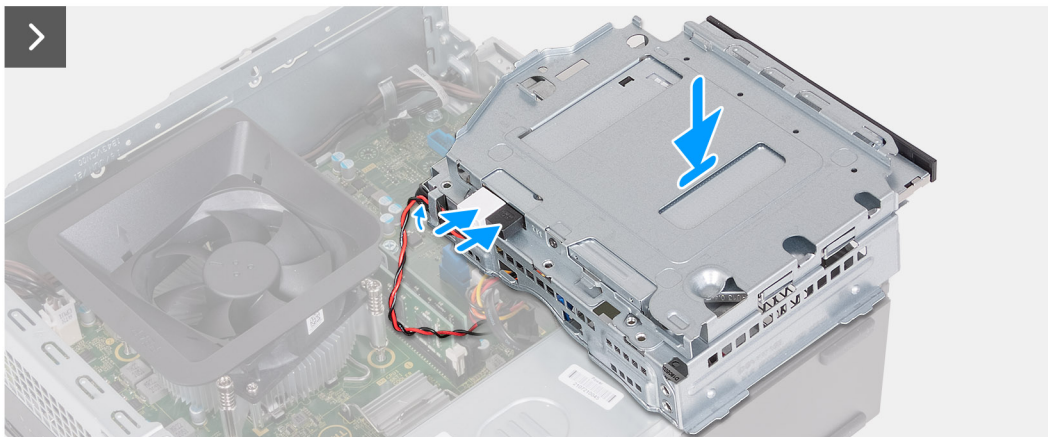
Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the hard-drive and optical-drive cage and provides a visual representation of the installation procedure.

1x
#6-32

Steps

1. Connect the data and power cables to the connectors on the optical drive.
2. Route the data and power cables through the routing guides on the hard-drive and optical-drive bracket.
3. Hold the hard-drive and optical-drive bracket near the chassis, and connect the data and power cables to the connectors on the optical drive.

   (i) **NOTE:** Skip this step if the computer is not shipped with an optical drive.

4. Turn over and align the hard-drive and optical-drive bracket to the chassis.
5. Slide and insert the bracket at an angle and place it down on the chassis.
6. Replace the (#6-32) screw to secure the hard-drive and optical-drive bracket to the chassis.

Next steps

1. Install the 3.5-inch hard drive or 2.5-inch hard drive.
2. Install the front cover.
3. Install the left-side cover.
4. Follow the procedure in After working inside your computer.

Optical drive (optional)

Removing the optical drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

(i) **NOTE:** Depending on the configuration ordered, your computer may not have an optical drive installed.

The following image indicates the location of the optical drive and provides a visual representation of the removal procedure.

1x
M2x3
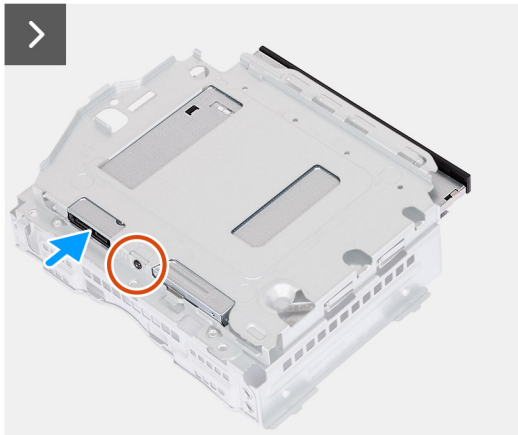
Steps

1. Place the hard-drive and optical-drive bracket on a flat surface to locate the (M2x3) screw.
2. Remove the (M2x3) screw that secures the optical drive to the hard-drive and optical-drive bracket.
3. Slide the optical drive out from the hard-drive and optical-drive bracket.
4. Turn over and place the optical drive on a flat surface.
5. Use a pin or a tool with a pointed end and insert the pointed end into the optical-drive emergency eject pinhole to eject the optical drive tray.
6. Use the end of a plastic scribe to push out and unlock the first securing tab of the optical drive bezel.
7. Gently pull the optical drive bezel to release the two remaining securing tabs of the optical bezel.

Installing the optical drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following images indicate the location of the optical drive and provides a visual representation of the installation procedure.

1x
M2x3
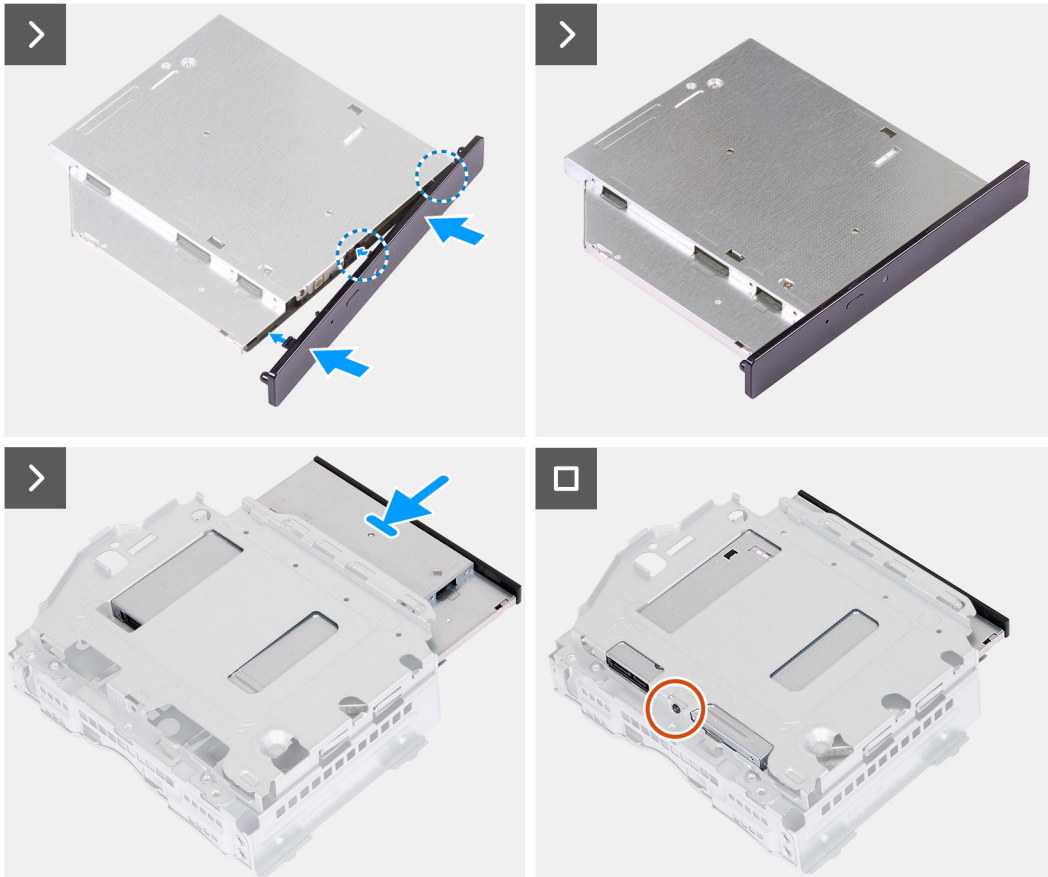
Steps

1. Align the optical drive bezel to the optical drive and snap the bezel onto the optical drive.

   ⓘ **NOTE:** Start from the edge of the bezel with the smaller securing tabs and snap them into place.

2. Slide the optical drive into the hard-drive and optical-drive bracket.
3. Replace the (M2x3) screw to secure the optical drive to the hard-drive and optical-drive bracket.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Power button

Removing the power button

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
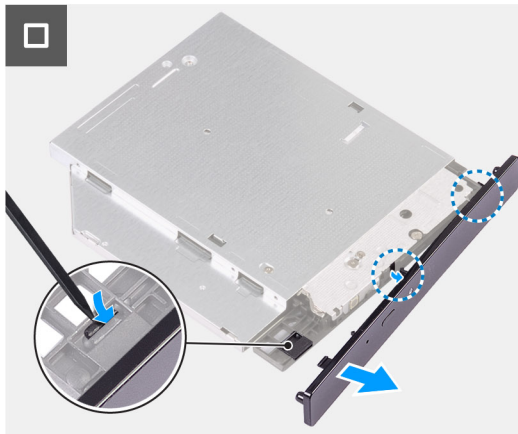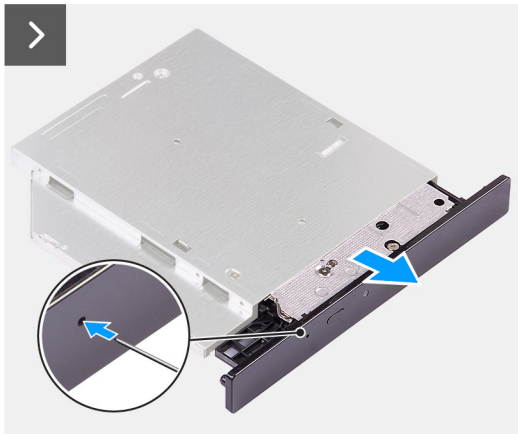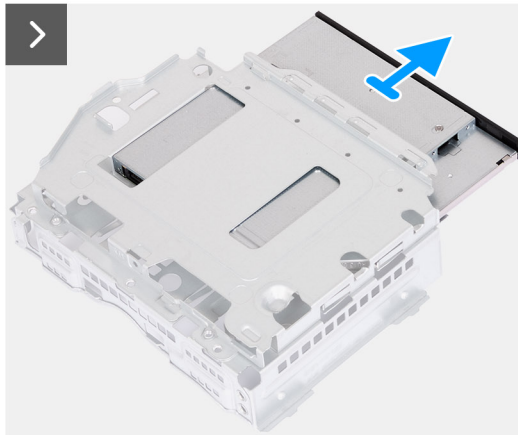5. Remove the hard-drive and optical-drive cage.

About this task

The following image indicates the location of the power button and provides a visual representation of the removal procedure.
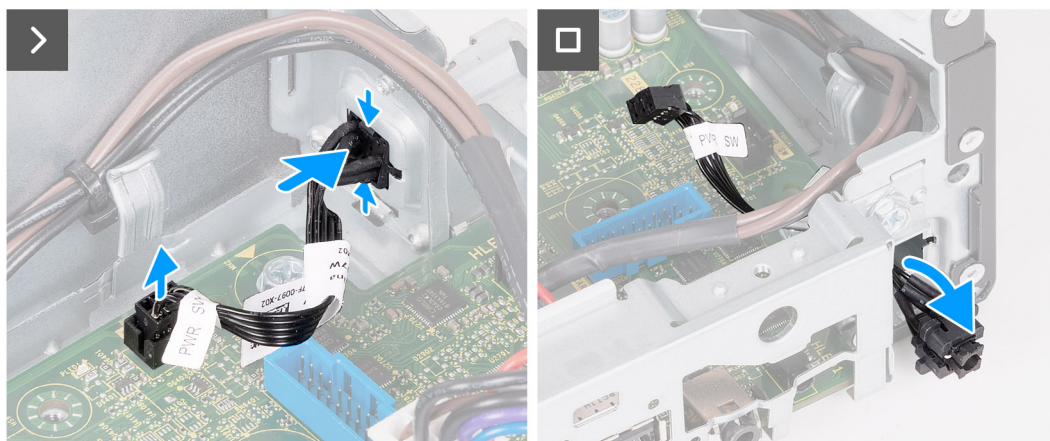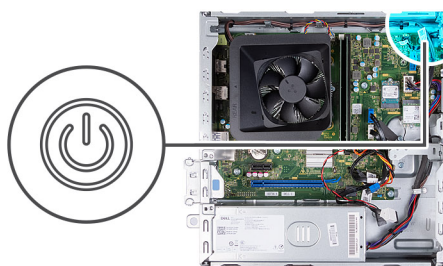
Steps

1. Disconnect the power-button cable from the connector on the system board.
2. Press the release tabs on the power button to release the power button from the slot on the chassis.
3. Remove the power button and the cable through the slot on the front of the chassis.

Installing the power button

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the power button and provides a visual representation of the installation procedure.
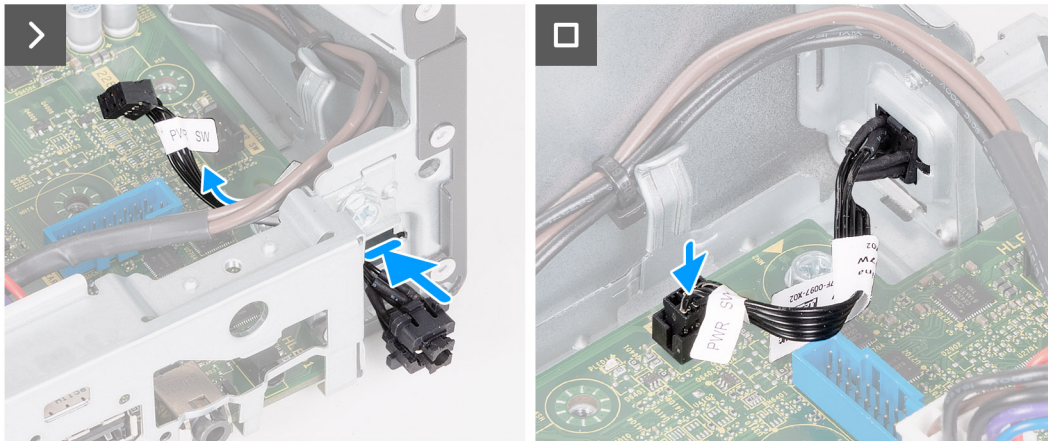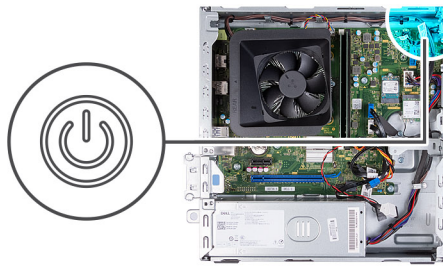
Steps

1. Slide the power-button cable through the slot on the front of the chassis.
2. Press the tabs on the power button and insert the power button through the slot on the front of the chassis until the power button is secure in place.
3. Connect the power-button cable to the connector on the system board.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Memory

Removing the memory

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

The following image indicates the location of the memory and provides a visual representation of the removal procedure.
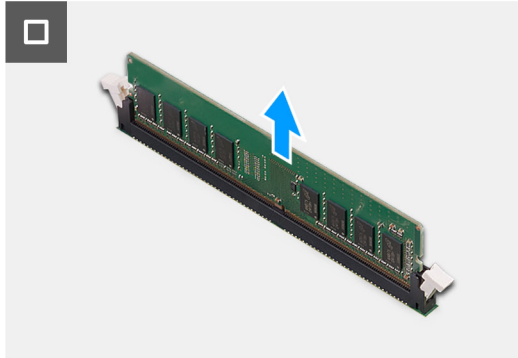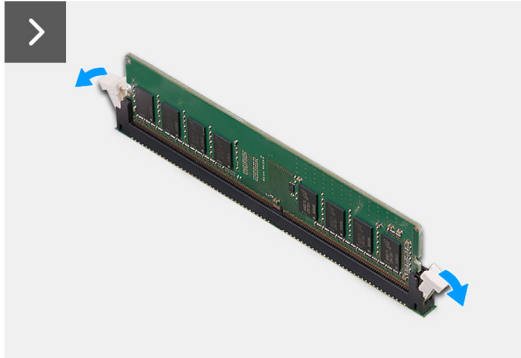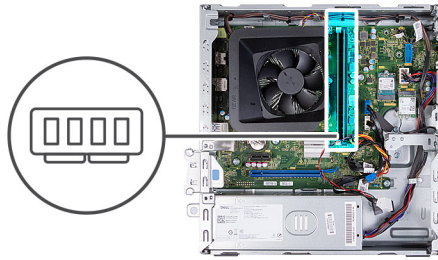
Steps

1. Pull the securing clips on each end of the memory-module slot down to release the memory module.
2. Grasp the memory module from the middle and remove the memory module from memory-module slot.

   ⓘ **NOTE:** Repeat Steps 1 and 2 to remove any other memory modules installed in your computer.

Installing the memory

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following images indicate the location of the memory and provides a visual representation of the installation procedure.
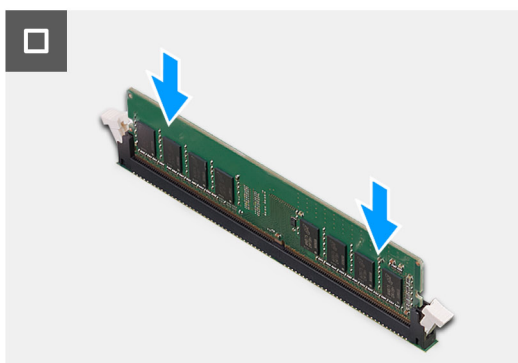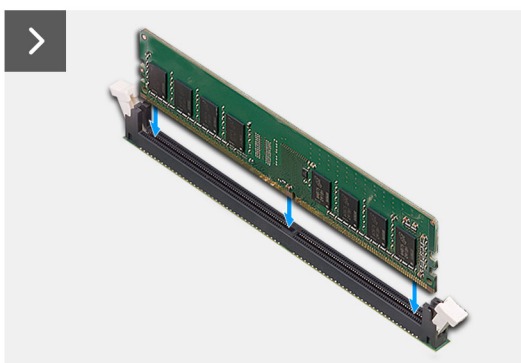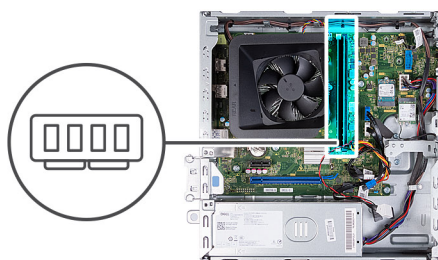
Steps

1. Align the notch on the memory module with the tab on the memory-module slot.
2. Press the memory module down until the memory module snaps into place and the securing clips lock in place.

   (i) **NOTE:** Repeat Steps 1 and 2 to remove any other memory modules installed in your computer.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Solid-state drive

Removing the M.2 2230 solid-state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

The following image indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the removal procedure.

Steps

1. Remove the screw (M2x3) that secures the M.2 2230 solid-state drive to the system board.
2. Slide and lift the M.2 2230 solid-state drive from the M.2 card slot on the system board.

Installing the M.2 2230 solid-state drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

ⓘ **NOTE:** If you are replacing a M.2 2280 solid-state drive with a M.2 2230 solid-state drive, ensure the M.2 2280 solid-state drive is removed first.

ⓘ **NOTE:** Refer to the procedure for removing the M.2 2280 solid-state drive.

ⓘ **NOTE:** The following image indicates the location to install the solid-state drive screw mount based on form factor.
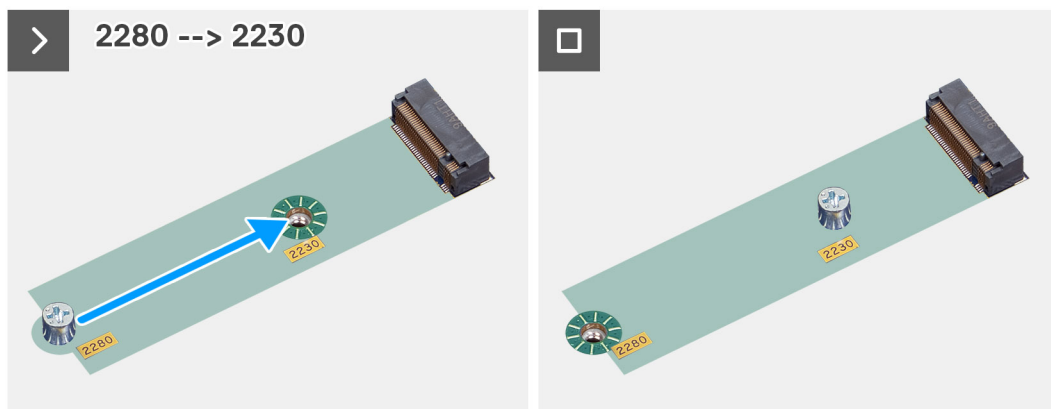
The following image indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the installation procedure.
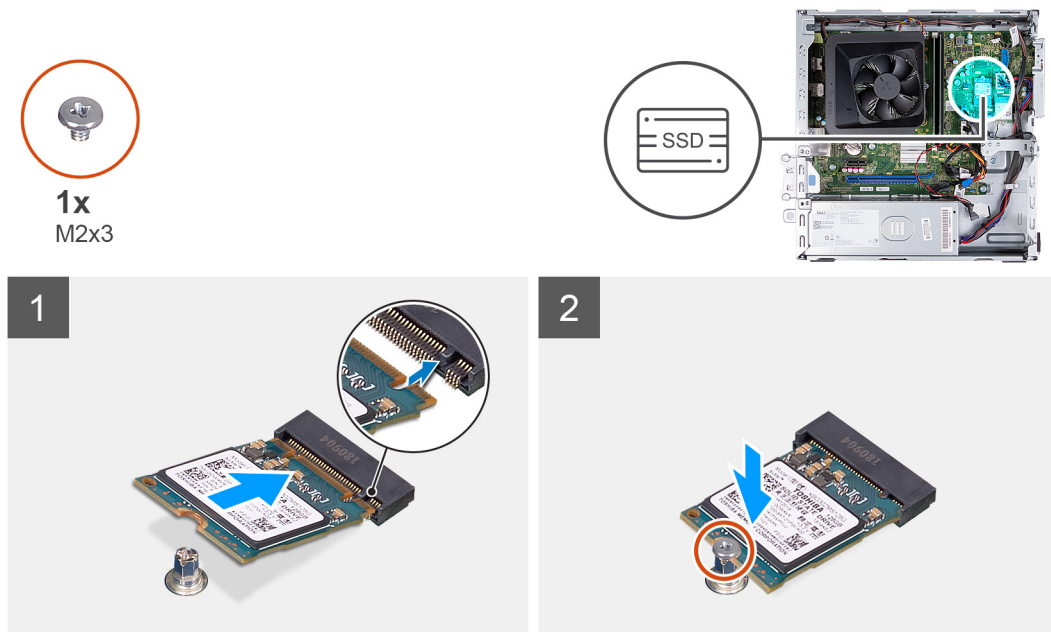
Steps

1. Align the notch on the M.2 2230 solid-state drive with the tab on the M.2 card slot.
2. Slide the M.2 2230 solid-state drive at an angle into the M.2 card slot on the system board.
3. Replace the screw (M2x3) to secure the M.2 2230 solid-state drive to the system board.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Removing the M.2 2280 solid-state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

The following image indicates the location of the M.2 2280 solid-state drive and provides a visual representation of the removal procedure.

Steps

1. Remove the screw (M2x3) that secures the M.2 2280 solid-state drive to the system board.
2. Slide and lift the M.2 2280 solid-state drive from the M.2 card slot on the system board.

Installing the M.2 2280 solid-state drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

ⓘ **NOTE:** If you are replacing a M.2 2230 solid-state drive with a M.2 2280 solid-state drive, ensure the M.2 2230 solid-state drive is removed first.

ⓘ **NOTE:** See the procedure for removing the M.2 2230 solid-state drive.

ⓘ **NOTE:** The following image indicates the location to install the solid-state drive screw mount based on form factor.

The following image indicates the location of the M.2 2280 solid-state drive and provides a visual representation of the installation procedure.
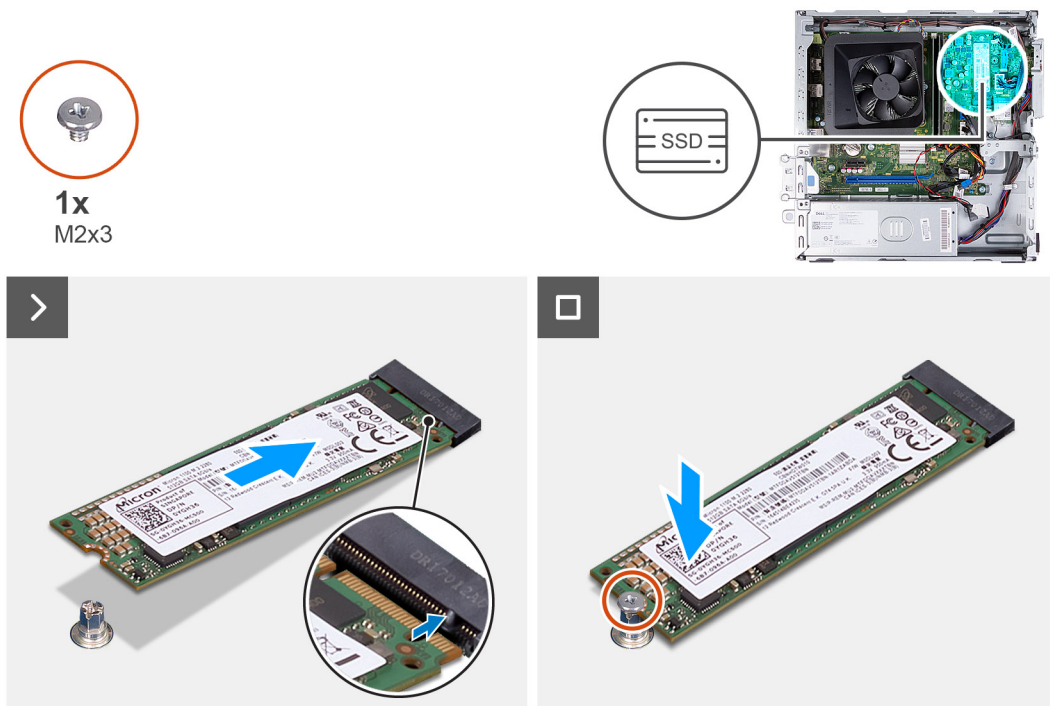
Steps

1. Align the notch on the M.2 2280 solid-state drive with the tab on the M.2 card slot.
2. Slide the M.2 2280 solid-state drive at an angle into the M.2 card slot on the system board.
3. Replace the screw (M2x3) to secure the M.2 2280 solid-state drive to the system board.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.

4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Wireless card

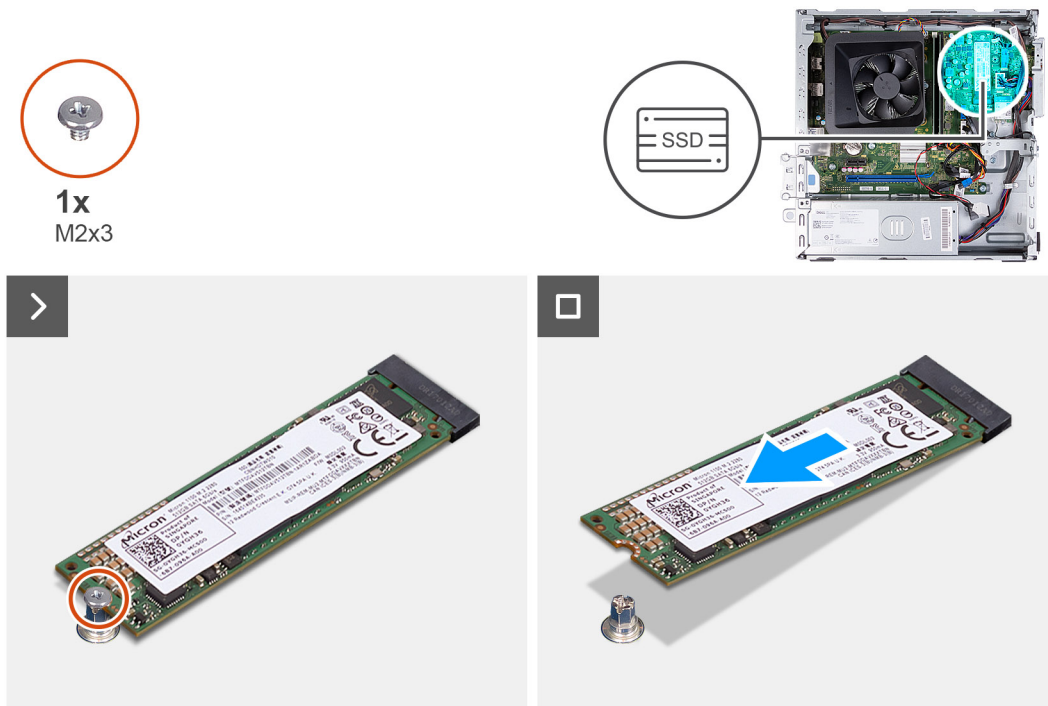## Removing the wireless card

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

The following image indicates the location of the wireless card and provides a visual representation of the removal procedure.
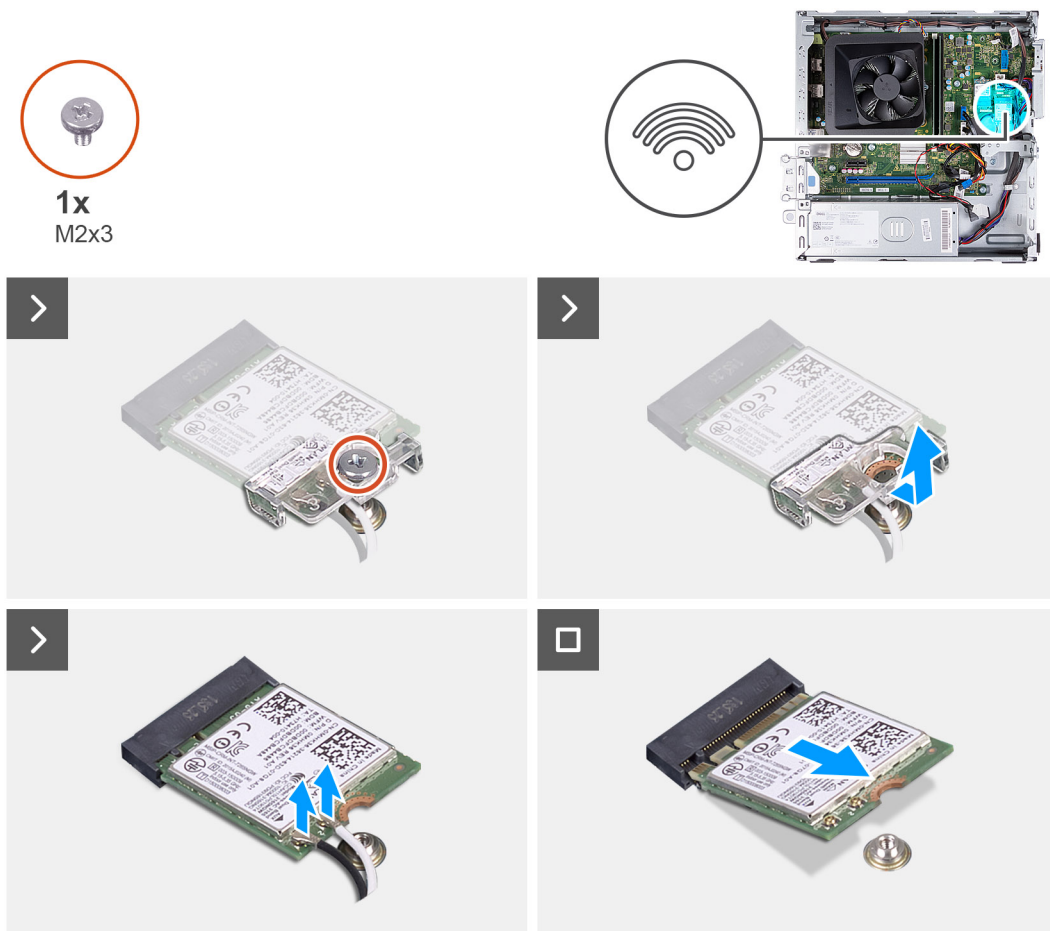
Steps

1. Remove the screw (M2x3) that secures the wireless card on the system board.
2. Slide and lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the connectors on the wireless card.
4. Slide and remove the wireless card at an angle from the wireless-card slot.

Installing the wireless card

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the wireless card and provides a visual representation of the installation procedure.
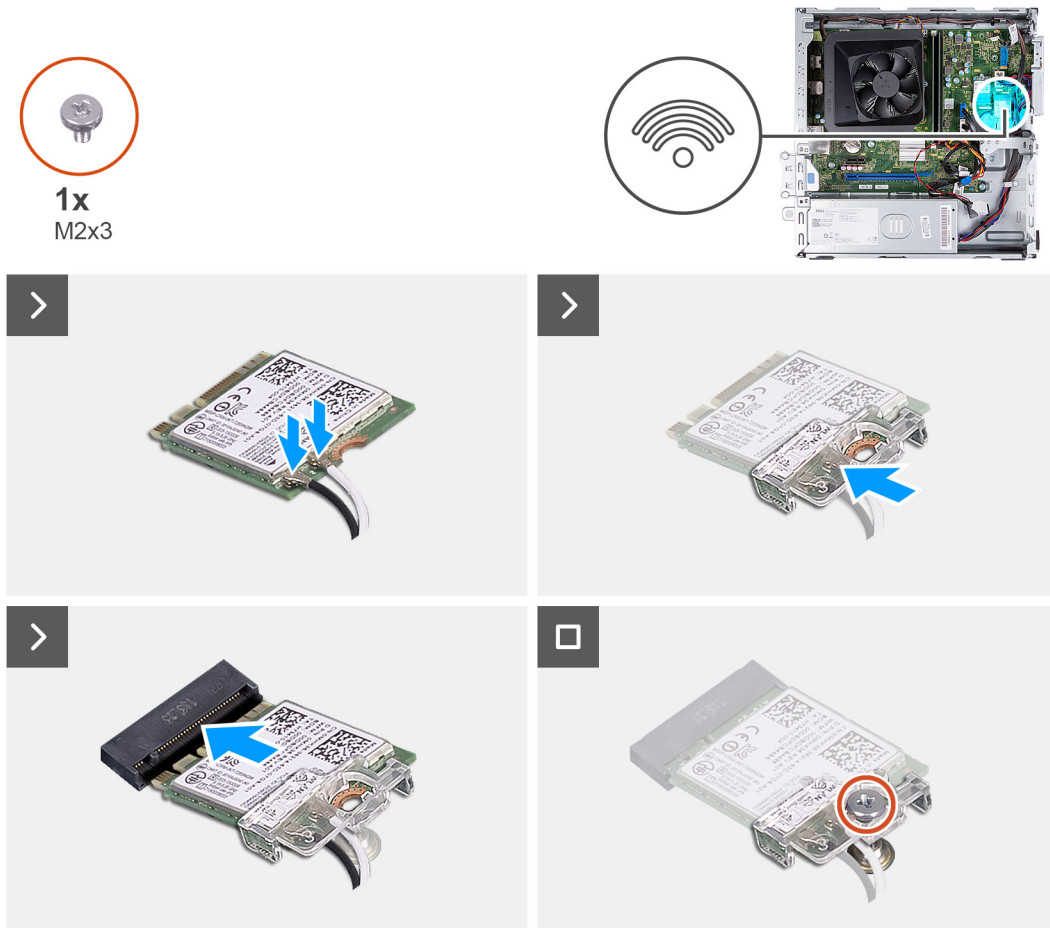
Steps

1. Connect the antenna cables to connectors on the wireless card.

   (i) **NOTE:** Start from the edge of the bezel with the smaller securing tabs and snap them into place.

2. Slide and place the wireless-card bracket on the wireless card.
3. Align the notch on the wireless card with the tab on the wireless-card slot.
4. Slide the wireless card at an angle into the wireless-card slot.
5. Replace the screw (M2x3) to secure the wireless card on the system board.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Coin-cell battery

Removing the coin-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.

About this task

The following image indicates the location of the coin-cell battery and provides a visual representation of the removal procedure.
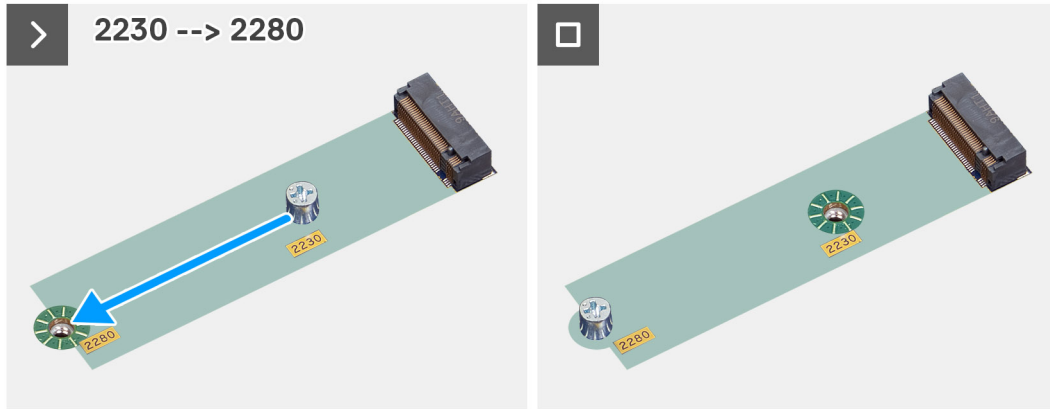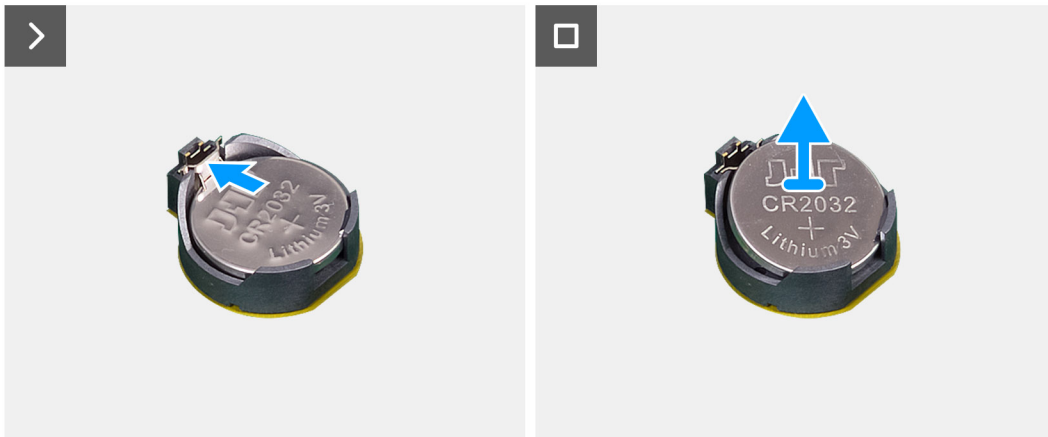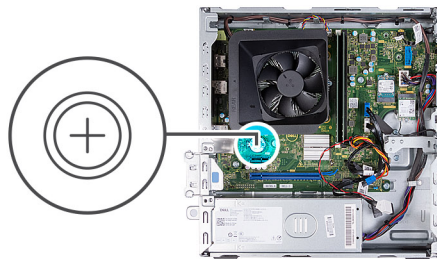

Steps

Push the coin-cell battery securing-clip on the coin-cell battery socket to release the coin-cell battery.

Installing the coin-cell battery

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the coin-cell battery and provides a visual representation of the installation procedure.
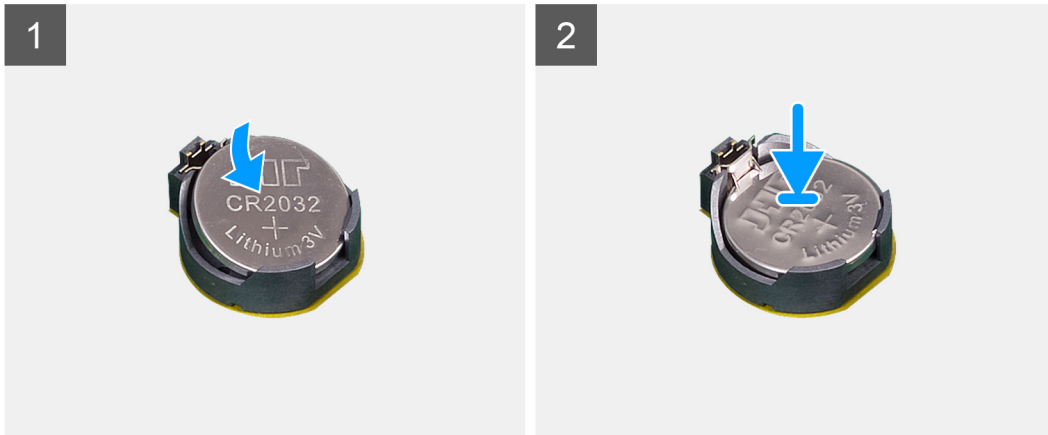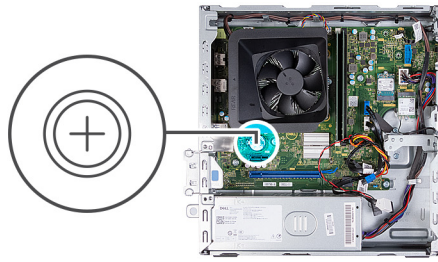
Steps

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

Next steps

1. Install the left-side cover.
2. Follow the procedure in After working inside your computer.

Media-card reader (optional)

Removing the media-card reader

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

The following image indicates the location of the media-card reader and provides a visual representation of the removal procedure.

2x
M3x5
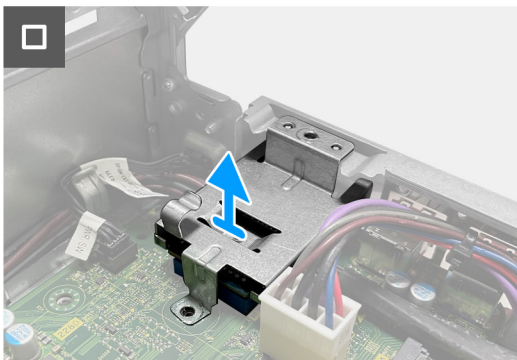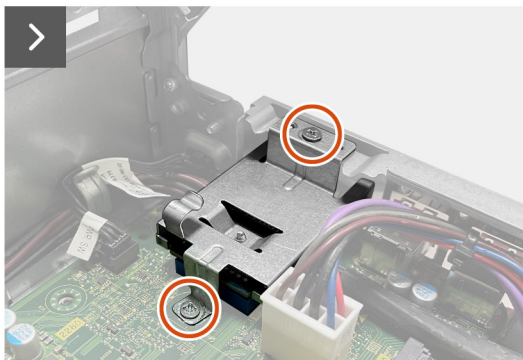
Steps

1. Remove the two screws (M3x5) that secure the media-card reader bracket to the system board and the chassis.
2. Push the media-card reader bracket to release it from the chassis
3. Slide and lift the media-card reader and the bracket off the system board.

Installing the media-card reader

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the media-card reader and provides a visual representation of the installation procedure.

2x
M3x5
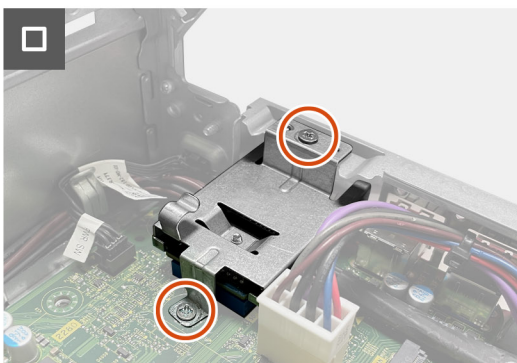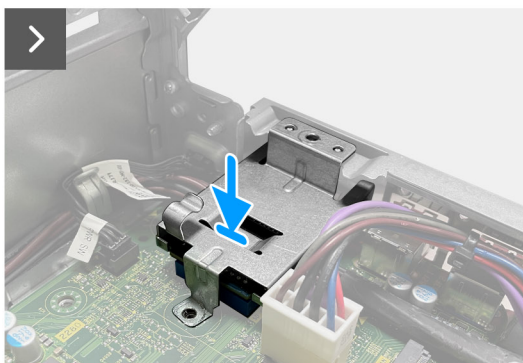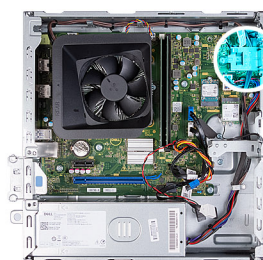
Steps

1. Align the screw hole on the media-card reader bracket with the screw holes on the system board and the chassis.
2. Align and slide the media-card reader and the bracket into the slot on the system board.
3. Replace the two screws (M3x5) to secure the media-card reader bracket on the system board and the chassis.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Power supply unit

Removing the power supply unit

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.

About this task

The following images indicate the location of the power supply unit and provide a visual representation of the removal procedure.

3x
#6-32
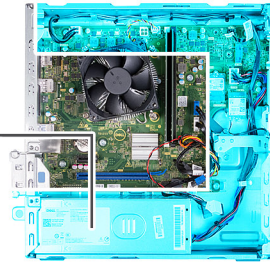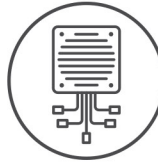
Steps

1. Press the securing clips and disconnect the processor-power cable and the system-board power cable from the connectors on the system board.
2. Unroute the power supply unit cables from the routing guides on the chassis.

3. In a reverse sequential order (3>2>1), remove the three screws (#6-32) that secure the power supply unit on the chassis.
4. Slide and lift the power supply unit off the chassis.

Installing the power supply unit

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following images indicate the location of the power supply unit and provide a visual representation of the installation procedure.

3x
#6-32
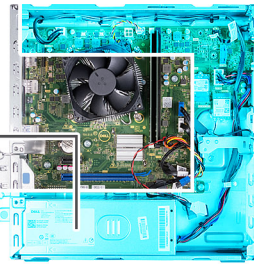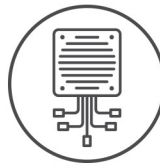
Steps

1. Align and slide the tabs on the power supply unit into the latches on the chassis.
2. Align the screw holes on the power supply unit with the screw holes on the chassis.
3. In a sequential order (1>2>3), replace the three screws (#6-32) to secure the power supply unit on the chassis.
4. Route the power supply unit cables through the routing guides on the chassis.
5. Connect the system-board power cable and the processor-power cable to the connectors on the system board.

Next steps

1. Install the hard-drive and optical-drive cage.
2. Install the 3.5-inch hard drive or 2.5-inch hard drive.
3. Install the front cover.
4. Install the left-side cover.
5. Follow the procedure in After working inside your computer.

Antenna modules

Removing the antenna modules

⚠️ **CAUTION: The information in this section is intended for authorized service technicians only.**

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.

4. Remove the 3.5-inch hard drive or 2.5-inch hard drive.
5. Remove the hard-drive and optical-drive cage.
6. Remove the wireless card.

About this task

The following image indicates the location of the antenna modules and provides a visual representation of the removal procedure.

Steps

1. Remove the two screws (M2x3) that secure the antenna modules to the chassis.
2. Unroute the antenna cables from the routing guide on the chassis.
3. Remove the antenna cables from the slot on the chassis.
4. Lift the antenna modules along with the cables off the chassis.

Installing the antenna modules

⚠ CAUTION: **The information in this section is intended for authorized service technicians only.**

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the antenna modules and provides a visual representation of the installation procedure.
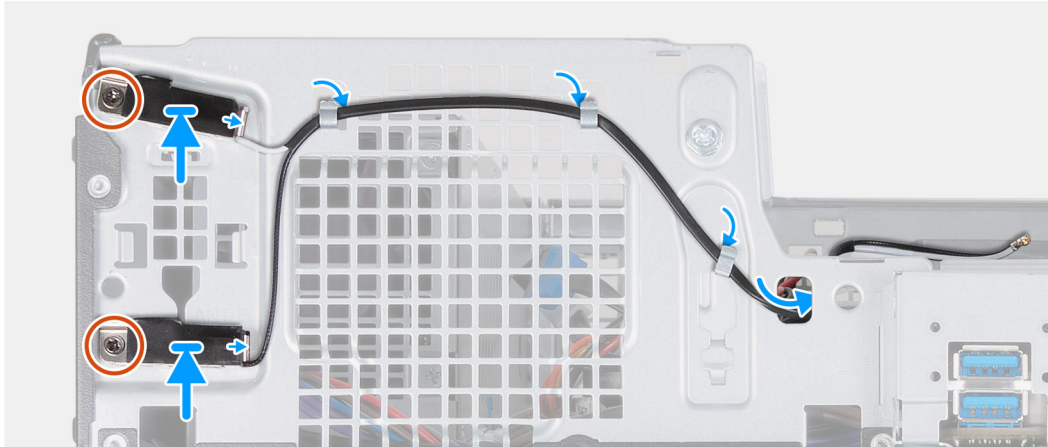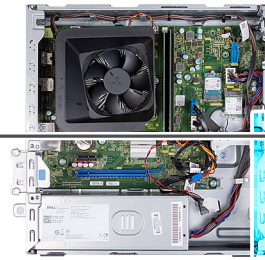
Steps

1. Align the screws on the antenna modules with the screw holes on the chassis.
2. Replace the two screws (M2x3) to secure the antenna modules on the chassis.
3. Route the antenna cables through the routing guides on the chassis.
4. Insert the antenna cables through the slot on the chassis.

Next steps

1. Install the wireless card.
2. Install the hard-drive and optical-drive cage.
3. Install the 3.5-inch hard drive or 2.5-inch hard drive.
4. Install the front cover.
5. Install the left-side cover.
6. Follow the procedure in After working inside your computer.

Fan shroud

Removing the fan shroud

⚠ CAUTION: **The information in this section is intended for authorized service technicians only.**

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.

About this task

The following image indicates the location of the fan shroud and provides a visual representation of the removal procedure.

Steps

1. Pull the securing tabs of the fan shroud to release the fan shroud from the processor fan.
2. Lift the fan shroud off the processor fan.

Installing the fan shroud

⚠ CAUTION: **The information in this section is intended for authorized service technicians only.**

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the fan shroud and provides a visual representation of the installation procedure.

Steps

1. Align the fan shroud over the processor fan.

   ⓘ **NOTE:** The side of the fan with the word 'REAR' written must face the rear of the chassis.

   ⓘ **NOTE:** The stubs on the fan shroud must align to the corresponding stub holes on the processor fan.

2. Press down on the fan shroud until all the securing tabs snap into position.

Next steps

1. Install the left-side cover.
2. Follow the procedure in After working inside your computer.

Processor fan and heat-sink assembly

Removing the fan and heat-sink assembly

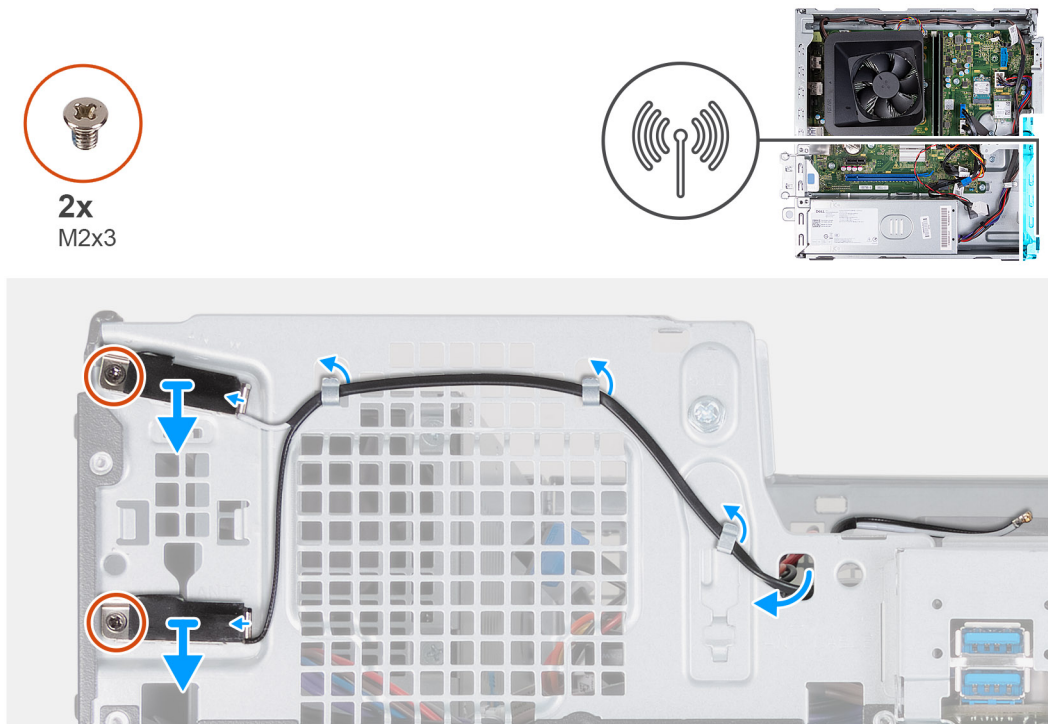⚠ **CAUTION: The information in this section is intended for authorized service technicians only.**

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the fan shroud.

About this task

The following image indicates the location of the fan and heat-sink assembly and provides a visual representation of the removal procedure.
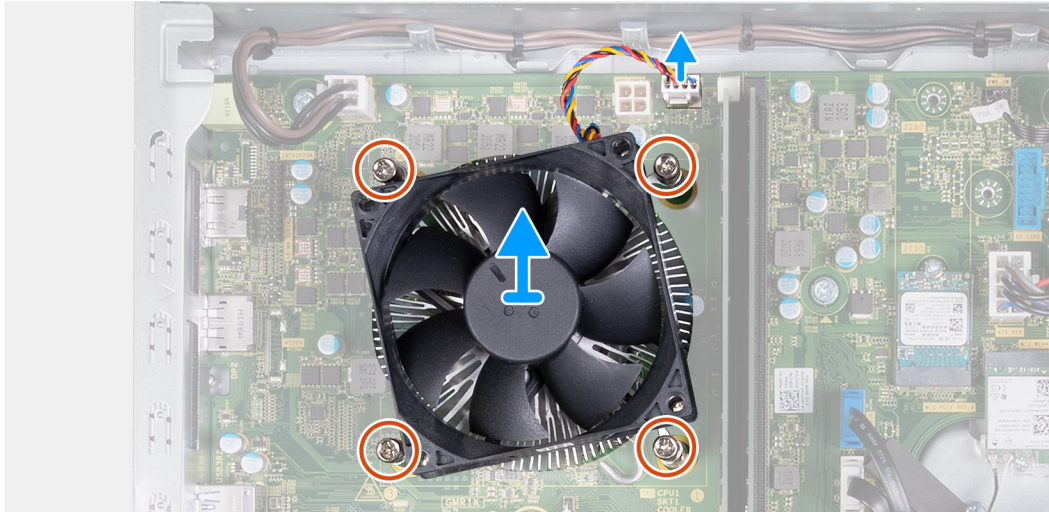
Steps

1. Disconnect the fan and heat-sink assembly cable from the connector on the system board.

2. In a reverse sequential order (4>3>2>1), loosen the four captive screws that secure the processor fan and heat-sink assembly to the system board.

3. Lift the processor fan and heat-sink assembly from the system board.

Installing the fan and heat-sink assembly

⚠️ CAUTION: **The information in this section is intended for authorized service technicians only.**

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the fan and heat-sink assembly and provides a visual representation of the installation procedure.
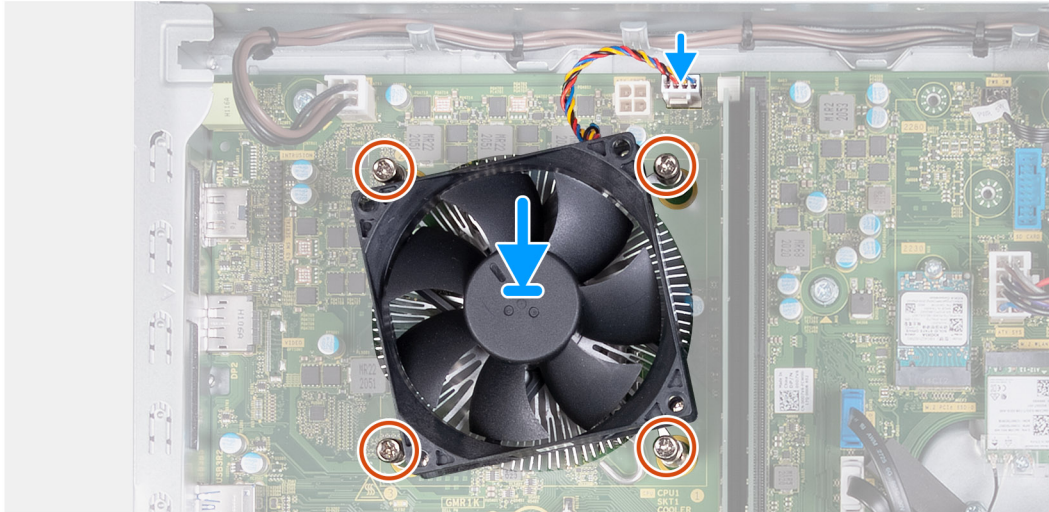
Steps

1. Gently align and place the processor fan and heat-sink assembly on the processor.
2. Align the screw holes on the processor fan and heat-sink assembly with the screw holes on the system board.
3. In a sequential order (1>2>3>4), tighten the four captive screws to secure the processor fan and heat-sink assembly on the system board.
4. Connect the fan and heat-sink assembly cable to the connector on the system board.

Next steps

1. Install the fan shroud.
2. Install the left-side cover.
3. Follow the procedure in After working inside your computer.

Processor

Removing the processor

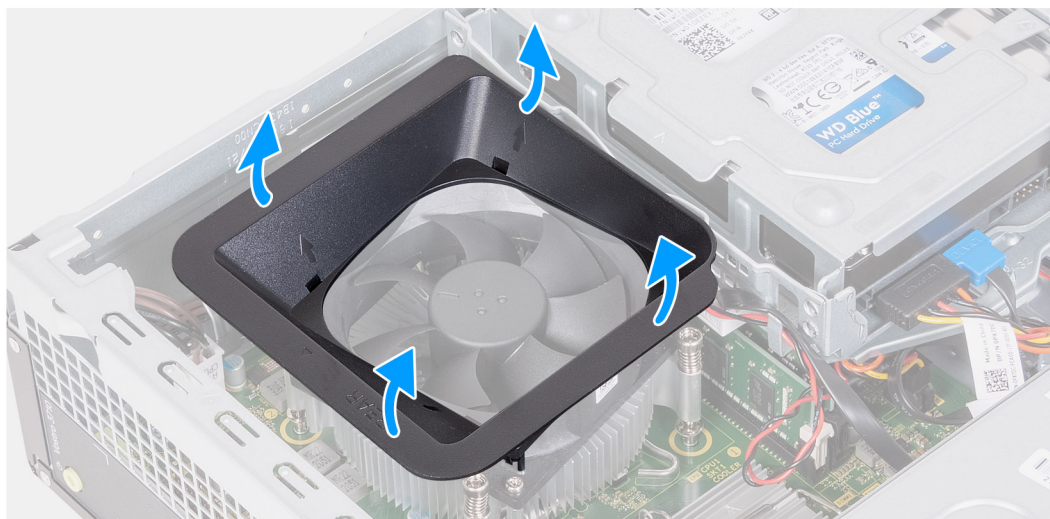⚠ **CAUTION: The information in this section is intended for authorized service technicians only.**

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the fan shroud.
4. Remove the fan and heat-sink assembly.

About this task

The following image indicates the location of the processor and provides a visual representation of the removal procedure.
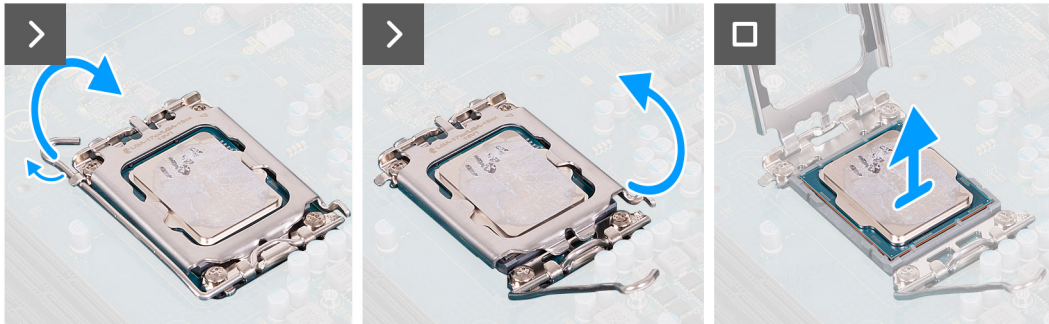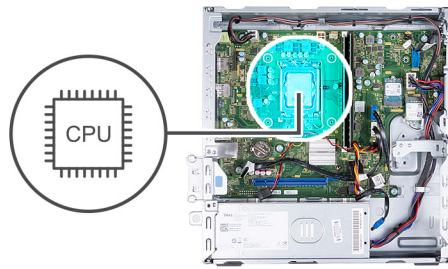
Steps

1. Press the release lever down and push the lever away from the processor to release the lever from the securing tab.
2. Extend the release lever completely and open the processor cover.
3. Gently lift and remove the processor from the processor socket.

Installing the processor

⚠️ **CAUTION: The information in this section is intended for authorized service technicians only.**

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

The following image indicates the location of the processor and provides a visual representation of the installation procedure.

Steps

1. Extend the release lever and the processor cover completely in an open position.
2. Align the notches on the processor with the tabs on the processor socket.
3. Place the processor in the processor socket.
4. Close the processor cover.
5. Pivot the release lever down and place it under the tab on the processor socket.

Next steps

1. Install the fan and heat-sink assembly.
2. Install the fan shroud.
3. Install the left-side cover.
4. Follow the procedure in After working inside your computer.

System board

Removing the system board

⚠️ **CAUTION: The information in this section is intended for authorized service technicians only.**

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the left-side cover.
3. Remove the front cover.
4. Remove the 3.5-inch hard drive or 2.5-inch hard drive as applicable.
5. Remove the hard-drive and optical-drive cage.
6. Remove the memory.
7. Remove the M.2 2230 solid-state drive or M.2 2280 solid-state drive, as applicable.
8. Remove the wireless card.
9. Remove the coin-cell battery.
10. Remove the media-card reader.
11. Remove the fan shroud.
12. Remove the fan and heat-sink assembly.
13. Remove the processor.

About this task

ⓘ **NOTE:** The Service Tag information of your computer 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 that 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.

The following image indicates the location of the connectors and slots of the system board.

1. Processor-power cable connector (ATX CPU1)
2. Processor socket
3. Processor-power cable connector (ATX CPU2)
4. Processor-fan cable connector
5. Memory module slots
6. M.2 2230/2280 solid-state drive slot
7. Power-button cable connector
8. Media-card reader cable connector
9. System-board power cable connector (ATX SYS)
10. M.2 wireless-card slot
11. Optical-drive data cable connector (SATA-3)
12. Hard-drive and optical-drive power cable connector (SATA PWR)
13. Hard-drive data cable connector (SATA-0, boot drive)
14. PCIe x16 slot (SLOT2)
15. PCIe x1 slot (SLOT1)
16. Coin-cell battery socket

The following images indicate the location of the system board and provide a visual representation of the removal procedure.

8x
#6-32

1x
#6-32x3.8
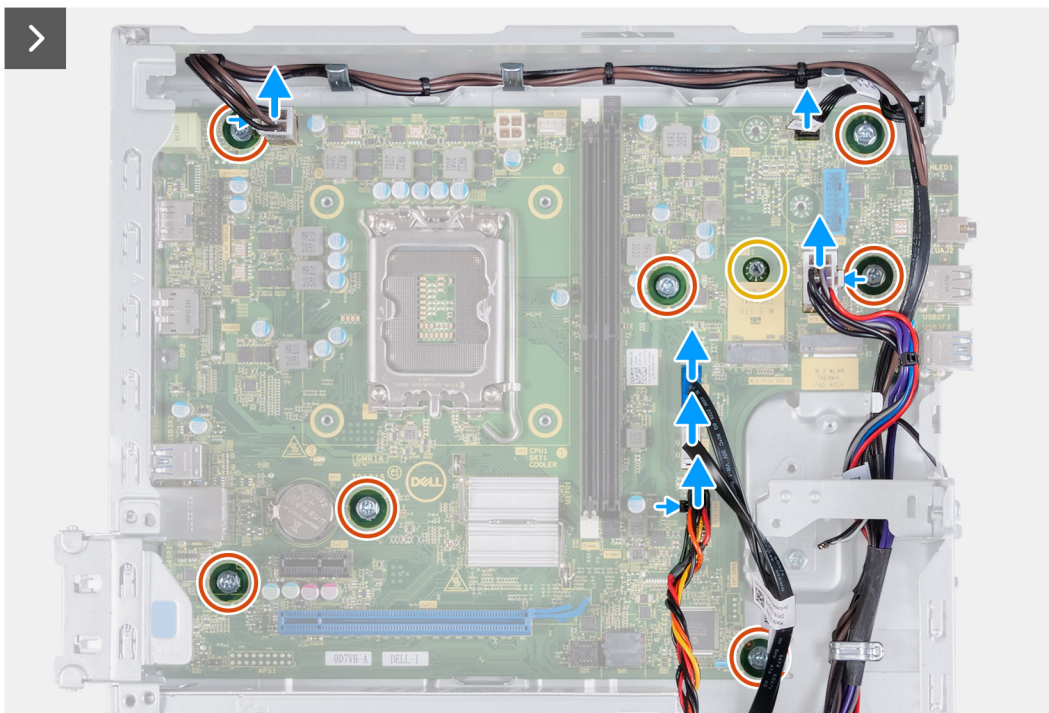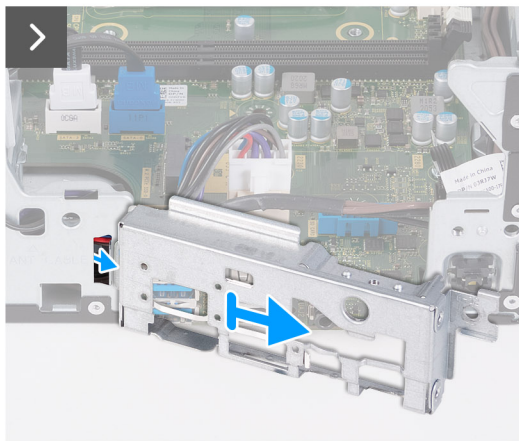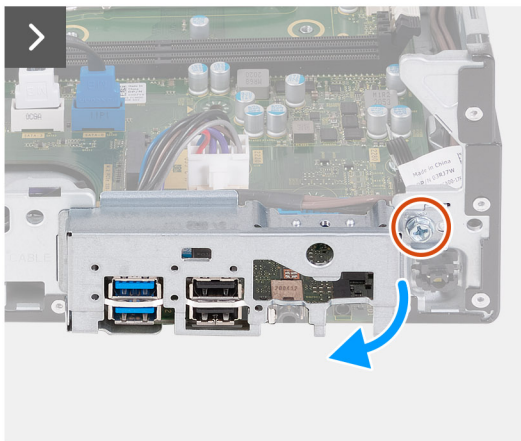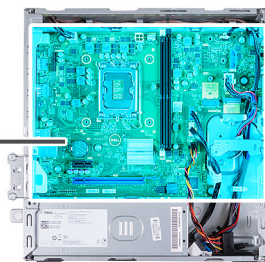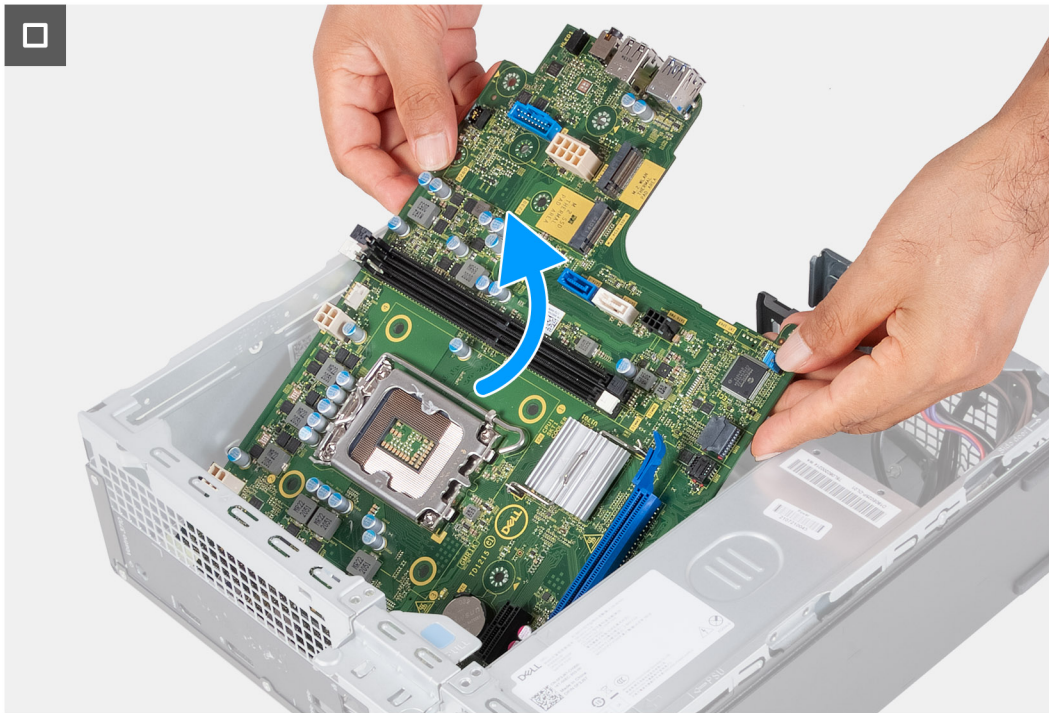
Steps

1. Remove the screw (#6-32) that secures the front I/O bracket to the chassis.
2. Lift and remove the front I/O bracket off the chassis.
3. Disconnect the following cables from the system board.
   - hard-drive and optical-drive power cable
   - optical-drive data cable
   - hard-drive data cable
   - system-board power cable
   - power-button cable
   - processor-power cable
4. Remove the seven screws (#6-32) and the screw (#6-32x3.8) that secure the system board to the chassis.
5. Lift the system board at an angle and remove it from the chassis.
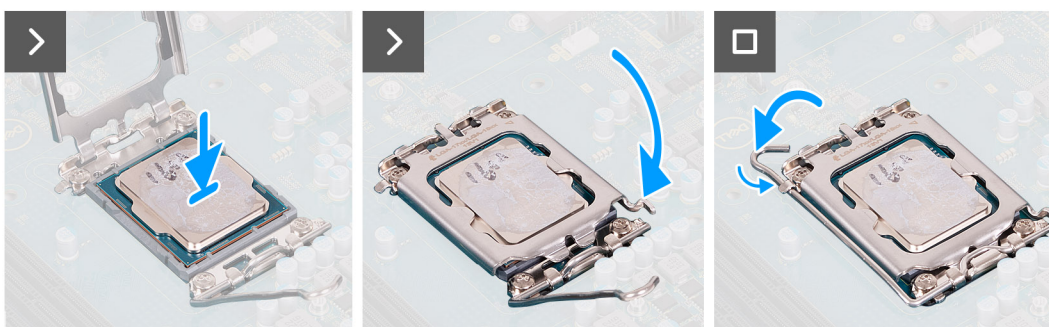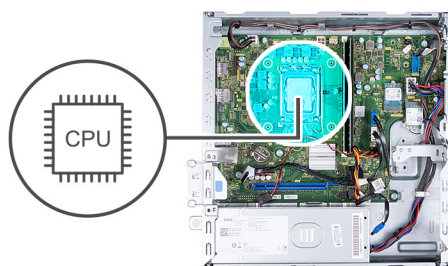
Installing the system board

⚠️ CAUTION: **The information in this section is intended for authorized service technicians only.**

Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

About this task

ⓘ NOTE: The Service Tag information of your computer 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 that 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.

The following image indicates the location of the connectors and slots of the system board.

1. Processor-power cable connector (ATX CPU1)
2. Processor socket
3. Processor-power cable connector (ATX CPU2)
4. Processor-fan cable connector
5. Memory module slots
6. M.2 2230/2280 solid-state drive slot
7. Power-button cable connector
8. Media-card reader cable connector
9. System-board power cable connector (ATX SYS)
10. M.2 wireless-card slot
11. Optical-drive data cable connector (SATA-3)
12. Hard-drive and optical-drive power cable connector (SATA PWR)
13. Hard-drive data cable connector (SATA-0, boot drive)
14. PCIe x16 slot (SLOT2)
15. PCIe x1 slot (SLOT1)
16. Coin-cell battery socket

The following images indicate the location of the system board and provide a visual representation of the installation procedure.

8x
#6-32

1x
#6-32x3.8
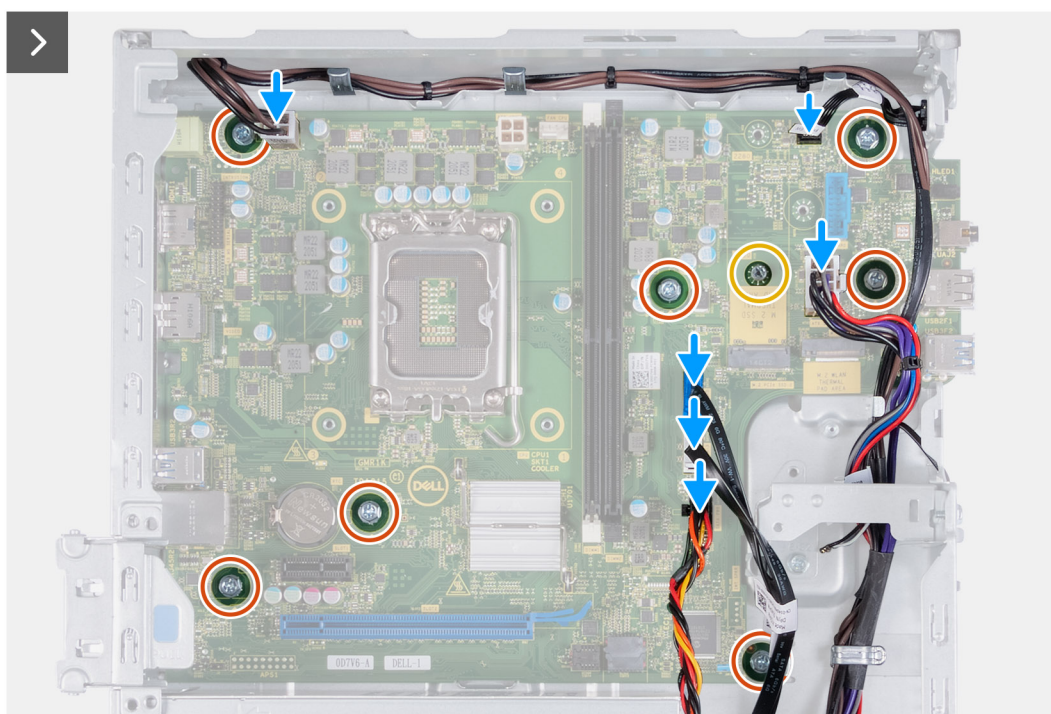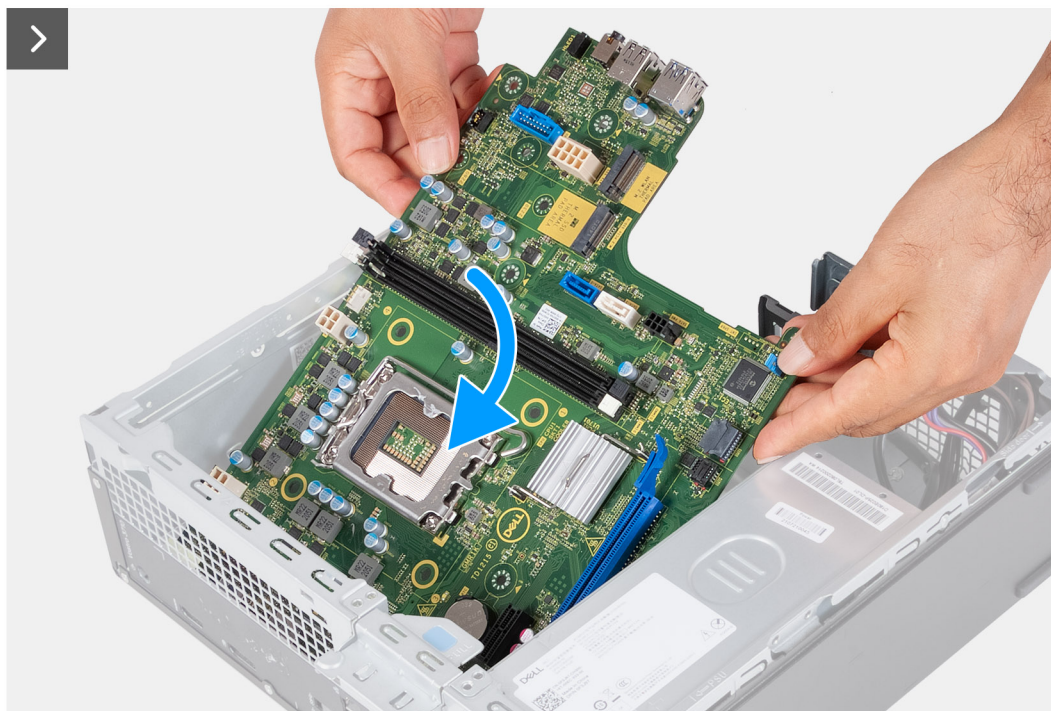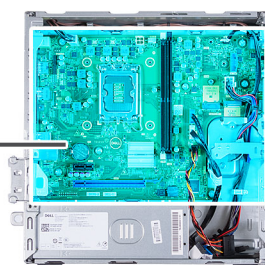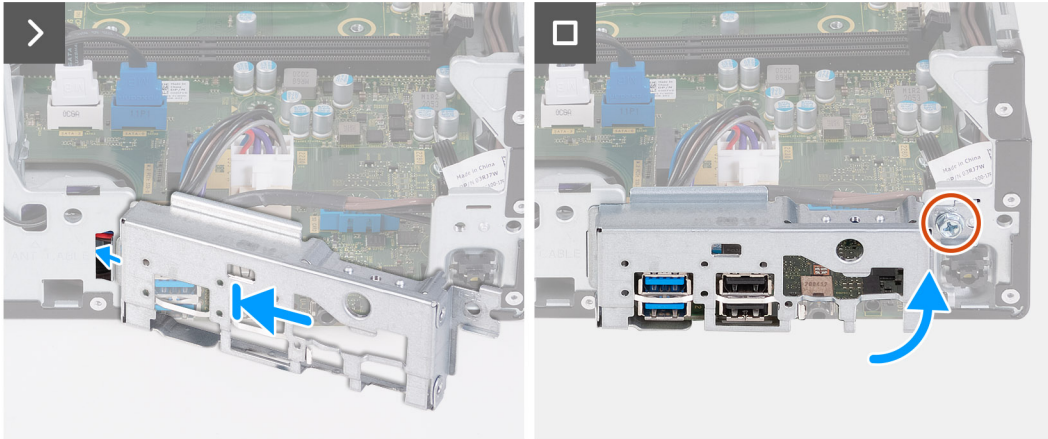
Steps

1. Slide the system board at an angle with the rear external ports aligned to their respective openings at the rear of the chassis.
2. Place the system board onto the chassis.
3. Replace the seven screws (#6-32) and the screw (#6-32x3.8) to secure the system board on the chassis.
4. Route and connect the following cables to the system board.
   - hard-drive and optical-drive power cable
   - optical-drive data cable
   - hard-drive data cable
   - system-board power cable
   - power-button cable
   - processor-power cable
5. Align and place the front I/O bracket with I/O slot on the chassis.
6. Replace the screw (#6-32) to secure the front I/O bracket on the chassis.

Next steps

1. Install the processor.
2. Install the fan and heat-sink assembly.
3. Install the fan shroud.
4. Install the media-card reader.
5. Install the coin-cell battery.
6. Install the wireless card.
7. Install the M.2 2230 solid-state drive or M.2 2280 solid-state drive, as applicable.
8. Install the memory.
9. Install the hard-drive and optical-drive cage.
10. Install the 3.5-inch hard drive or 2.5-inch hard drive as applicable. .
11. Install the front cover.
12. Install the left-side cover.
13. Follow the procedure in After working inside your computer.

Recommended tools

The procedures in this document may require the following tools:

- Philips screwdriver #1 and #2

Screw list

(i) **NOTE:** When removing screws from a component, it is recommended to note the screw type, the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.

(i) **NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.

(i) **NOTE:** Screw color may vary with the configuration ordered.

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
Left-side cover	Chassis	#6-32	2	
2230 solid-state drive	System board	M2x3	1	
2280 solid-state drive	System board	M2x3	1	
Wireless card	System board	M2x3	1	
2.5-inch hard drive	Chassis	#6-32 M3x4	1 4	
3.5-inch hard drive	Chassis	#6-32	2 2	
Power supply unit	Chassis	#6-32, hex head	3	
Optical drive (optional)	Chassis	M2x2	2	
Media-card reader (optional)	Chassis	M3x5	2	
Processor fan and heat-sink assembly	System board	Captive	4	
System board	Chassis	#6-32 #6-32x3.8	8 1	
Antenna modules	Chassis	M2x3	2	

Major components of Vostro 3020 Small Desktop

The following image shows the major components of Vostro 3020 Small Desktop.
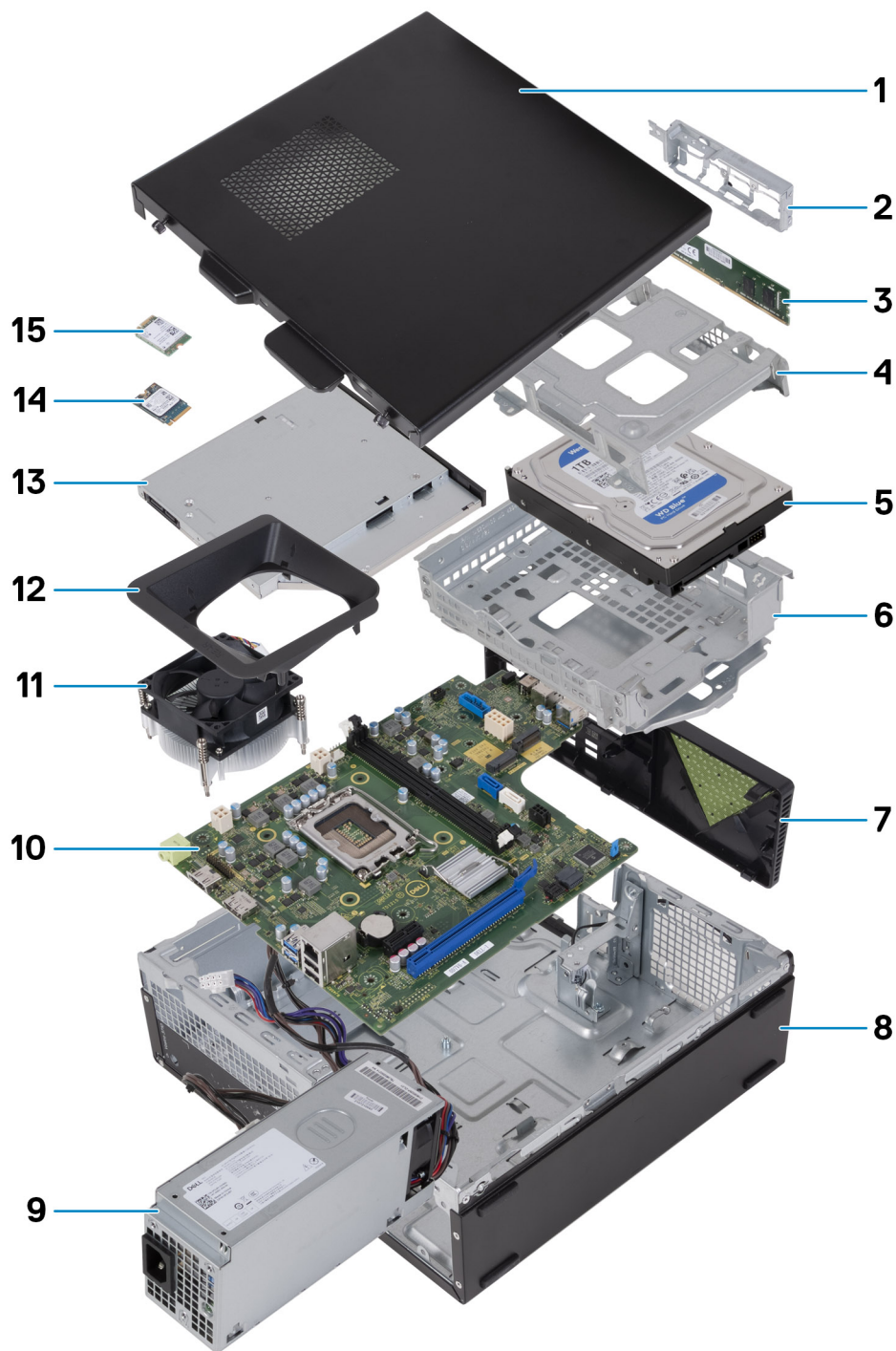
1. Left-side cover
2. Front-I/O bracket
3. Memory module
4. Hard-drive cage
5. Hard drive
6. Hard-drive and optical-drive bracket
7. Front cover
8. Chassis
9. Power-supply unit
10. System board
11. Fan and heat-sink assembly
12. Fan shroud
13. Optical drive (optional)
14. M.2 2230 solid-state drive
15. Wireless card

(i) **NOTE:** Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

3

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ 000123347.

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

ⓘ **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

About this task

Turn on (or restart) your computer and press F2 immediately.

Navigation keys

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

Table 2. Navigation keys

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. ⓘ **NOTE:** For the standard graphics browser only.
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.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

ⓘ **NOTE:** It is recommended to shutdown the computer if it is on.

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

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

System setup options

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

Table 3. System setup options—System information menu

Overview	
System Information	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the express service code of the computer.
Ownership Tag	Displays the ownership tag of the computer.
Signed Firmware Update	Displays whether the signed firmware update is enabled.
PROCESSOR	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the Processor L2 Cache size.
Processor L3 Cache	Displays the Processor L2 Cache size.
Microcode Version	Displays the microcode version of the processor.
Intel® Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
MEMORY	
Memory Installed	Displays the total computer memory installed.
Memory Available	Displays the total computer memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.

Table 3. System setup options—System information menu (continued)

Overview	
DIMM 1 Size	Displays the DIMM 1 memory size.
DIMM 2 Size	Displays the DIMM 2 memory size.
DEVICES	
Video Controller	Displays the video controller type of the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the wireless device information of the computer.
Native Resolution	Displays the native resolution of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays the Bluetooth device information of the computer.
LOM MAC Address	Displays the LOM MAC address of the computer.
Slot 2	Displays the status of the expansion slot (Slot 2) of the computer.
Slot 3	Displays the status of the expansion slot (Slot 3) of the computer.

Table 4. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of this computer.
Boot Sequence	Specifies the order that the BIOS searches the list of devices to find an operating system to boot.
	By default, UEFI Hard Drive 2 is selected
	By default, Windows Boot Manager is selected
	By default, UEFI Hard Drive is selected
	By default, ONBOARD NIC (IPV4) is selected
	By default, ONBOARD NIC (IPV6) is selected
	By default, UEFI HTTPS Boost is selected
Secure Boot	
Enable Secure Boot	Enables secure boot using only validated boot software.
	Default: OFF
Secure Boot Mode	Modifies the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. Deployed Mode should be selected for normal operation of Secure Boot.
	By default, Deployed Mode is selected.
Expert Key Management	
Enable Custom Mode	Allows the PK, KEK, db, and dbx security key databases to be modified.
	Default: OFF
	(i) **NOTE:** If Custom Mode is not enabled, any changes that are made with respect to the keys will not be saved.
Custom Mode Key Management	Allows for selection of key database. ● Save to File will save the key to a user-selected file. ● Replace from File will replace the current key with a key from a user-selected file.

Table 4. System setup options—Boot Configuration menu (continued)

Boot Configuration	
	• Append from File will add a key to the current database from a user-selected file. • Delete will delete the selected key. • Reset All Keys will reset all four keys to their default settings. By default, PK security key database is selected. By default, Save to File is selected.

Table 5. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between 12-hour and 24-hour clock. Changes to the time take effect immediately.
Audio	Enables or disables all integrated audio controller. Default: ON
Enable Microphone	Enables or disables microphone. By default, Enable Microphone is selected.
Enable Internal Speaker	Enables or disables internal speaker. By default, Enable Internal Speaker is selected.
USB Configuration	Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, Enable Front USB Ports is selected. By default, Enable Rear USB Ports is selected. By default, Enable USB Boot Support is selected.
Front USB Configuration	Enables or disables individual USB ports. By default, Front Port 1 (Bottom Left)* is selected. By default, Front Port 2 (Bottom Right)* is selected. By default, Front Port 3 (Top Left) is selected. By default, Front Port 5 (Top Right) is selected. * Denotes a USB 3.0-capable port ⓘ **NOTE:** USB keyboard and mouse always work in the BIOS setup irrespective of this setting.
Rear USB Configuration	Enables or disables individual USB ports. By default, Rear Port 1 (Top Left)* is selected. By default, Rear Port 2 (Top Right)* is selected. By default, Rear Port 3 (Bottom Left) is selected. By default, Rear Port 5 (Bottom Right) is selected. * Denotes a USB 3.0-capable port ⓘ **NOTE:** USB keyboard and mouse always work in the BIOS setup irrespective of this setting.

Table 6. System setup options—Storage menu

Storage	
SATA Operation	
SATA/NVMe Operation	Configures operating mode of the integrated storage device controller.
	Default: RAID On. Storage device is configured to support RAID. (Intel® Rapid Restore Technology)
Storage Interface	
Port Enablement	Enables or disables the onboard drives.
	Default: SATA-0 is ON
	Default: SATA-1 is ON
	Default: SATA-3 is ON
	Default: M.2 PCIe SDD-0 is ON
SMART Reporting	Enable or disable SMART Reporting during system startup.
	Default: OFF
Drive Information	Displays the information of various onboard drives.
Enable MediaCard	Turn on or off all media cards, or enable or disable the media card in read-only state.
	By default, Secure Digital (SD) Card is selected.

Table 7. System setup options—Display menu

Display	
Primary Display	
Video Primary Display	Set or change the primary video controller when multiple controllers are available in the system.
	By default, Auto is selected.
Full Screen Logo	
Full Screen Logo	Displays the full screen logo if the screen resolution matches the image of the logo.
	Default: OFF

Table 8. System setup options—Connection menu

Connection	
Network Controller Configuration	
Integrated NIC	Controls the onboard LAN controller.
	By default, Enable with PXE is selected.
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device.
	Default: ON
Bluetooth®	Enables or disables the internal Bluetooth® device.
	Default: ON
Enable UEFI Network Stack	
Enable UEFI Network Stack	Enable or disable UEFI Network Stack.
	Default: ON

Table 8. System setup options—Connection menu (continued)

Connection	
HTTP(s) Boot Feature	Enables or disables internal speaker.
	By default, Enable Internal Speaker is selected.
HTTP(s) Boot	Enables or disables HTTP(s) Boot Feature.
	Default: ON
HTTP(s) Boot Modes	Configure the HTTP(s) Boot Mode. Auto Mode will extract Boot URL from the Dynamic Host Configuration Protocol (DHCP). Manual mode reads user-provided Boot URL.
	By default, Auto Mode is selected.

Table 9. System setup options—Power menu

Power	
USB Wake Support	
Enable USB Wake Support	Enables USB devices like a mouse or keyboard to wake the system from Standby, Hibernation, or Power Off state.
	Default: ON
AC Behavior	
AC Recovery	Configures the system response when power is restored after an unexpected loss of power.
	Default: Power OFF is selected. System stays off after AC power is restored.
Active State Power Management	
ASPM	Configures the Active State Power Management (ASPM) level.
	Default: Auto. There is handshaking between the device and PCI Express hub to determine the best ASPM mode supported by the device.
Block Sleep	
Block Sleep	Blocks the computer from entering Sleep (S3) mode in the operating system.
	Default: OFF
Deep Sleep Control	
Deep Sleep Control	Configures how aggressive the system is at conserving power while in Shutdown (S5) or Hibernate (S4) mode.
	Default: Enabled in S4 and S5
Intel® Speed Shift Technology	
Intel® Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. Turning on this option allows the operating system to select the appropriate processor performance automatically.
	Default: ON

Table 10. System setup options—Security menu

Security	
TPM 2.0 Security	Enable or disable TPM 2.0 Security.
	Default: ON
Attestation Enable	Enable or disable Attestation.
	Default: OFF

Table 10. System setup options—Security menu (continued)

Security	
SHA-256	Enable or disable SHA-256.
	Default: OFF
Clear	Enable or disable the Intel Platform Trust Technology (PPT) owner information. When enabled, this setting will reset the PPT to its default state. Changes to this setting take effect after exiting the BIOS setup menu.
	Default: OFF
PPI ByPass for Clear Commands	Enable or disable 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: OFF
SMM Security Mitigation	
SMM Security Mitigation	Enable or disable additional SMM Security Mitigation protection. The operating system makes use of this feature to protect the secure environment crated by virtualization-based security.
	Default: OFF
Data Wipe on Next Boot	
Start Data Wipe	Enable or disable data wipe cycle. If enabled, the BIOS will schedule a data wipe cycle for storage device(s) connected to the motherboard on the next reboot. Any data on the storage device(s) cannot be recovered after this Secure Wipe Operation.
	Default: OFF
Absolute®	Enable or disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute® Software.
	Default: Enable Absolute
UEFI Boot Path Security	
UEFI Boot Path Security	Configures whether the computer will prompt the user for the admin password (if set) when booting to a UEFI boot path device from the F12 boot menu.
	Default: Always Except Internal HDD is selected
Admin Password	Set, change, or delete the administrator password.
System Password	Set, change, or delete the system password.
Internal HDD-0 Password	Set, change, or delete the internal hard-disk drive password.
Password Configuration	Control the minimum and maximum number of characters allowed for Admin and System passwords.
Password Change	Enable or disable changes to the System and Hard Disk passwords when an administrator password is set.
UEFI Capsule Firmware Updates	Enable or disable BIOS updates through UEFI capsule update packages.
PTT Security	
PTT On	Enable or disable Platform Trust Technology (PTT) visibility to the operating system.
Clear	Default: Disabled
PPI ByPass for Clear Commands	Enable or disable 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

Table 10. System setup options—Security menu (continued)

Security	
Absolute®	Enable or disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute® Software.
	Default: Enable Absolute
Admin Setup Lockout	Enable to prevent users from entering Setup when an Admin Password is set.
Master Password Lockout	Disables the master password support. Hard Disk passwords need to be cleared before changing the setting.
SMM Security Mitigation	Enable or disable SMM Security Mitigation

Table 11. System setup options—Passwords menu

Passwords	
Admin Password	Enables the user to set, change, or delete the administrator (admin) password. The admin password enables several security features
System Password	Enables the user to set, change, or delete the system password.
Password Configuration	
Upper Case Letter	Enforces password restriction that the password must contain at least one upper case letter.
	Default: OFF
Lower Case Letter	Enforces password restriction that the password must contain at least one lower case letter.
	Default: OFF
Digit	Enforces password restriction that the password must contain at least one digit.
	Default: OFF
Special Character	Enforces password restriction that the password must contain at least one special character.
	Default: OFF
Minimum Characters	Controls the minimum number of characters allowed for password.
	Default: 04
Password Changes	
Enable Non-Admin Password Changes	Enables or disables the user to change the system and hard drive password without the need for admin password.
	Default: ON
Master Password Lockout	
Enable Master Password Lockout	Enables or disables master password support.
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Enables or disables Physical Security ID (PSID) revert of NVMe storage drives from the Dell Security Manager prompt.
	Default: Disabled
	ⓘ **NOTE:** When disabled, the PSID revert is protected by the BIOS Admin password (if set), and the user will be prompted for the password before the revert is performed

Table 12. System setup options—Update,Recovery menu

Update,Recovery	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages.
	Default: ON
BIOS Recovery from Hard Drive	
BIOS Recovery from Hard Drive	Enables the computer to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key.
	Default: ON
	(i) **NOTE:** BIOS Recovery from Hard Drive is not available for Self-encrypting drives (SED).
BIOS Downgrade	
Allow BIOS Downgrade	Controls flashing of the system firmware to previous revisions.
	Default: ON
SupportAssist OS Recovery	
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool, in the event of certain system errors.
	Default: ON
BIOSConnect	
BIOSConnect	Enables or disables cloud Service OS recovery if the main OS fails to boot within the number of failures equal or greater than the value specified by Dell Auto OS Recovery Threshold, and local Service does not boot, or is not installed.
	Default: ON
Dell Auto OS Recovery Threshold	
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool.
	Default: 2.

Table 13. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a system Asset Tag that can be used by an IT administrator to uniquely identify a particular system. Once set in BIOS, the Asset Tag cannot be changed.
Wake on LAN/WLAN	
Wake on LAN/WLAN	Enables the computer to be powered on by special LAN signals.
	Default: Disabled
Auto On Time	
Auto On Time	Controls automatic powering up of system for defined days and times.
	Default: Disabled

Table 14. System setup options—Keyboard menu

Keyboard	
Keyboard Errors	

Table 14. System setup options—Keyboard menu (continued)

Keyboard	
Enable Keyboard Error Detection	Enables or disables report of keyboard-related errors when the computer boots. Default: ON
Numlock LED	
Enable Numlock LED	Enables or disables Numlock when the computer boots. Default: ON

Table 15. System setup options—Pre-boot Behavior menu

Pre-boot Behavior	
Warnings and Errors	
Warnings and Errors	Selects an action on encountering a warning or error during boot. Default: Prompt on Warnings and Errors. Stop, prompt, and wait for user input when warnings or errors are detected. ⓘ **NOTE:** Errors deemed critical to the operation of the computer hardware will always halt the computer.
Fastboot	
Fastboot	Configures the speed of the UEFI boot process. Default: Thorough. Performs complete hardware and configuration initialization during boot.
Extend BIOS POST Time	
Extend BIOS POST Time	Configures the BIOS POST (Power-On Self-Test) load time. Default: 0 seconds

Table 16. System setup options—Virtualization menu

Virtualization	
Intel® Virtualization Technology	
Enable Intel® Virtualization Technology (VT)	Enables the computer to run a virtual machine monitor (VMM). Default: ON
VT for Direct I/O	
Enable Intel® VT for Direct I/O	Enables the computer to perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. Default: ON

Table 17. System setup options—Performance menu

Performance	
Multi-Core Support	
Active Cores	CPU core disabling is not supported with current BIOS version. Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores. Default: All Cores
Intel® SpeedStep	

Table 17. System setup options—Performance menu (continued)

Performance	
Enable Intel SpeedStep Technology	Enables or disables the Intel SpeedStep Technology to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. Default: ON
C-States Control	
Enable C-State Control	Enables or disables the CPU's ability to enter and exit low-power states. Default: ON

Table 18. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear BIOS Event Log	Select keep or clear BIOS events. Default: Keep
Power Events	

Updating the BIOS

Updating the BIOS in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, search in the Knowledge Base Resource at www.dell.com/support.**

Steps

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   ⓘ **NOTE:** If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.

   For more information, search in the Knowledge Base Resource at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article 000131486 at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, search in the Knowledge Base Resource at www.dell.com/support.**

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, search in the Knowledge Base Resource at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, search in the Knowledge Base Resource at www.dell.com/support.**

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

ⓘ **NOTE:** Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

⚠ **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

Table 19. System and setup password

Password type	Description
System password	Password that you must enter to log in 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 that is stored on your computer if it is not locked and left unattended.**

ⓘ **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

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

About this task

To enter the system setup, press F12 immediately after a power-on or reboot.

Steps

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.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.
   - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system setup password

Prerequisites

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.

About this task

To enter the System Setup, press F12 immediately after a power-on or reboot.

Steps

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**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

   ⓘ **NOTE:** If you change the System and/or Setup password, reenter 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 restarts.

Clearing CMOS settings

About this task

⚠ **CAUTION: Clearing CMOS settings will reset the BIOS settings on your computer.**

Steps

1. Remove the left-side cover.
2. Disconnect the battery cable from the system board.
3. Remove the coin-cell battery.
4. Wait for one minute.
5. Replace the coin-cell battery.
6. Connect the battery cable to the system board.
7. Replace the left-side cover.

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.

ⓘ **NOTE:** For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

Troubleshooting

Locate the Service Tag or Express Service Code of your Dell computer

Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter its Service Tag or Express Service Code at www.dell.com/support.

For more information on how to find the Service Tag for your computer, see Locate the Service Tag for your Dell Laptop.

SupportAssist diagnostics

About this task

The SupportAssist diagnostics (previously known as ePSA diagnostics) performs a complete check of your hardware. The SupportAssist diagnostics is embedded in the BIOS and is launched by it internally. The SupportAssist diagnostics provides a set of options for particular devices or device groups. It allows 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 and provide extra information about the failed device(s)
- View status messages that indicate if the tests are completed successfully
- View error messages that indicate if problems were encountered during the test

(i) **NOTE:** Some tests are meant for specific devices and require user interaction. Ensure that you are present in front of the computer when the diagnostic tests are performed.

For more information, see SupportAssist Pre-Boot System Performance Check.

Power-Supply Unit Built-in Self-Test

Built-in Self-Test (BIST) helps determine if the power-supply unit is working. To run self-test diagnostics on the power-supply unit of a desktop or all-in-one computer, search in the Knowledge Base Resource at www.dell.com/support.

System diagnostic lights

Power-supply diagnostics light

Indicates the power-supply state.

Hard-drive activity light

Turns on when the computer reads from or writes to the hard drive.

Table 20. LED codes

Diagnostic light codes	Problem description
1,1	TPM detection failure
1,2	Unrecoverable SPI flash failure
2,1	CPU failure

Table 20. LED codes (continued)

Diagnostic light codes	Problem description
2,2	Motherboard, covers BIOS corruption or ROM error
2,3	No Memory/RAM detected
2,4	Memory/RAM failure
2,5	Invalid memory installed
2,6	Motherboard/chipset error
3,1	CMOS battery failure
3,2	PCI of Video card/chip failure
3,3	Recovery Image not found
3,4	Recovery Image found but invalid
3,5	EC ran into power sequencing failure
3,6	Flash corruption detected by SBIOS
3,7	Timeout waiting on ME to reply to HECI message
4,1	Memory DIMM power rail failure
4,2	CPU power cable connection issue

Table 21. LED codes

Diagnostic light codes	Problem description	Recommended solutions
1,1	TPM detection failure	Replace the system board or the TPM chip.
1,2	Unrecoverable SPI flash failure	Replace the system board.
2,1	CPU failure	Run the Intel CPU diagnostics tools. If problem persists, replace the system board.
2,2	Motherboard, covers BIOS corruption or ROM error	Flash latest BIOS version. If problem persists, replace the system board.
2,3	No Memory/RAM detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2,4	Memory/RAM failure	Reset the memory module. If problem persists, replace the memory module.
2,5	Invalid memory installed	Reset the memory module. If problem persists, replace the memory module.
2,6	Motherboard/chipset error	Flash latest BIOS version. If problem persists, replace the system board.
3,1	CMOS battery failure	Reset the CMOS battery connection. If problem persists, replace the CMOS battery.
3,2	PCI of Video card/chip failure	Replace the system board.
3,3	Recovery Image not found	Flash latest BIOS version. If problem persists, replace the system board.
3,4	Recovery Image found but invalid	Flash latest BIOS version. If problem persists, replace the system board.
3,5	EC ran into power sequencing failure	Run the PSU built-in self-test (BIST) to identify the issue, reseat the cables. If nothing works, replace the system board, power supply, or cabling.
3,6	Flash corruption detected by SBIOS	Flash corruption detected by system BIOS. If problem persists, replace the system board.

Table 21. LED codes (continued)

Diagnostic light codes	Problem description	Recommended solutions
3,7	Timeout waiting on ME to reply to HECI message	Timeout waiting on Management Engine to reply to HECI message. If problem persists, replace the system board.
4,1	Memory DIMM power rail failure	Replace the system board.
4,2	CPU power cable connection issue	Run the PSU built-in self-test (BIST) to identify the issue, reseat the CPU power cable. If nothing works, replace the system board, power supply, or cabling.

Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into their primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Real Time Clock—RTC reset

The Real Time Clock (RTC) reset function allows you or the service technician to recover the recently launched model Dell Latitude and Precision systems from **No POST/No Boot/No Power** situations. You can initiate the RTC reset on the system from a power-off state only if it is connected to AC power. Press and hold the power button for 25 seconds. The system RTC reset occurs after you release the power button.

(i) **NOTE:** If AC power is disconnected from the system during the process or the power button is held longer than 40 seconds, the RTC reset process gets aborted.

The RTC reset will reset the BIOS to Defaults, un-provision Intel vPro and reset the system date and time. The following items are unaffected by the RTC reset:
● Service Tag
● Asset Tag
● Ownership Tag
● Admin Password
● System Password
● HDD Password
● Key Databases
● System Logs

(i) **NOTE:** The IT administrator's vPro account and password on the system will be un-provisioned. The system needs to go through the setup and configuration process again to reconnect it to the vPro server.

The below items may or may not reset based on your custom BIOS setting selections:
● Boot List
● Enable Legacy Option ROMs
● Secure Boot Enable
● Allow BIOS Downgrade

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell proposes multiple options for recovering Windows operating system on your Dell PC. For more information. see Dell Windows Backup Media and Recovery Options.

WiFi power cycle

About this task

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

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

Steps

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 22. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
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
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

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

(i) **NOTE:** Availability varies by country/region and product, and some services may not be available in your country/region.

(i) **NOTE:** If you do not have an active Internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog.