

Precision 3630 Tower

Service Manual

1



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.

Chapter 1: Working on your computer.....	6
Safety instructions.....	6
Turning off your computer — Windows 10.....	6
Before working inside your computer.....	7
After working inside your computer.....	7
Chapter 2: Technology and components.....	8
DDR4.....	8
USB features.....	9
USB Type-C.....	11
Advantages of DisplayPort over USB Type-C.....	11
HDMI 2.0.....	12
Chapter 3: Major components of your system.....	13
Chapter 4: Disassembly and reassembly.....	16
Chassis rubber feet.....	16
Removing the chassis rubber feet.....	16
Installing the chassis rubber feet.....	18
Cover.....	20
Removing the cover.....	20
Installing the cover.....	21
SD card—optional.....	22
Removing the SD card	22
Installing the SD card.....	23
Bezel.....	24
Removing the front bezel.....	24
Installing the front bezel.....	25
Hard drive.....	25
Removing the 3.5-inch hard drive	25
Installing the 3.5-inch hard drive	26
Removing the 2.5-inch hard drive	27
Installing the 2.5-inch hard drive	29
PSU hinge.....	31
Opening the PSU hinge.....	31
Closing the PSU hinge.....	31
Graphics card.....	32
Removing the graphics card.....	32
Installing the graphics card.....	34
Memory module.....	37
Removing the memory module.....	37
Installing the memory module.....	37
Speaker.....	38
Removing speaker.....	38

Installing the speaker.....	39
Coin cell battery.....	41
Removing the coin cell battery.....	41
Installing the coin cell battery.....	41
Power supply unit.....	42
Removing the power supply unit.....	42
Installing the power supply unit	45
Optical drive.....	48
Removing the optical drive.....	48
Installing the optical drive.....	50
IO panel.....	51
Removing the IO panel.....	51
Installing the IO panel.....	56
Solid state drive.....	61
Removing the PCIe SSD card.....	61
Installing the PCIe SSD card.....	62
Power button module.....	64
Removing power button module.....	64
Installing power button module.....	65
Heatsink assembly.....	67
Removing heatsink assembly - 65 W or 80 W CPU.....	67
Installing heatsink assembly - 65 W or 80 W CPU.....	68
Blower and heat sink assembly.....	69
Removing heatsink assembly — 95 W CPU.....	69
Installing the heatsink assembly — 95 W CPU.....	71
Voltage regulator heat sink.....	73
Removing VR heatsink.....	73
Installing VR heatsink.....	73
Front fan.....	74
Removing front fan.....	74
Installing front fan.....	77
System fan.....	79
Removing system fan.....	79
Installing system fan.....	80
Optional IO card.....	82
Removing optional IO card.....	82
Installing the optional IO card	82
Processor.....	84
Removing the processor.....	84
Installing the processor.....	84
Intrusion switch.....	85
Removing intrusion switch.....	85
Installing intrusion switch.....	86
System board.....	87
Removing the system board.....	87
Installing the system board.....	89
Chapter 5: Troubleshooting.....	93
Power supply unit Built-in Self Test	93
Steps to confirm that power supply unit is defective.....	93

Enhanced Pre-Boot System Assessment — ePSA diagnostics.....	94
Running the ePSA Diagnostics.....	94
Diagnostics.....	94
Diagnostic error messages.....	95
System error messages.....	98
Chapter 6: Getting help.....	99
Contacting Dell.....	99
Appendix A: Cable cover	100
Appendix B: Dust filter	106

Working on your computer

Topics:

- [Safety instructions](#)
- [Turning off your computer — Windows 10](#)
- [Before working inside your computer](#)
- [After 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 the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.

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

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the [Regulatory Compliance Homepage](#)

 **CAUTION:** Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

 **CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

 **CAUTION:** When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

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

Turning off your computer — Windows 10

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

1. Click or tap .
2. Click or tap  and then click or tap **Shut down**.

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

Before working inside your computer

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that you follow the [Safety instructions](#).
2. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
3. Turn off your computer.
4. Disconnect all the network cables from the computer.

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

5. Disconnect your computer and all attached devices from the electrical outlets.
6. Press and hold the power button while the computer is unplugged to ground the system board.

 **NOTE:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

After working inside your computer

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

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

Technology and components

This chapter details the technology and components available in the system.

Topics:

- [DDR4](#)
- [USB features](#)
- [USB Type-C](#)
- [Advantages of DisplayPort over USB Type-C](#)
- [HDMI 2.0](#)

DDR4

DDR4 (double data rate fourth generation) memory is a higher-speed successor to the DDR2 and DDR3 technologies and allows up to 512 GB in capacity, compared to the DDR3's maximum of 128 GB per DIMM. DDR4 synchronous dynamic random-access memory is keyed differently from both SDRAM and DDR to prevent the user from installing the wrong type of memory into the system.

DDR4 needs 20 percent less or just 1.2 volts, compared to DDR3 which requires 1.5 volts of electrical power to operate. DDR4 also supports a new, deep power-down mode that allows the host device to go into standby without needing to refresh its memory. Deep power-down mode is expected to reduce standby power consumption by 40 to 50 percent.

DDR4 Details

There are subtle differences between DDR3 and DDR4 memory modules, as listed below.

Key notch difference

The key notch on a DDR4 module is in a different location from the key notch on a DDR3 module. Both notches are on the insertion edge but the notch location on the DDR4 is slightly different, to prevent the module from being installed into an incompatible board or platform.

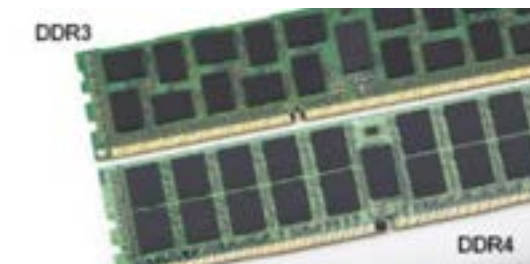


Figure 1. Notch difference

Increased thickness

DDR4 modules are slightly thicker than DDR3, to accommodate more signal layers.



Figure 2. Thickness difference

Curved edge

DDR4 modules feature a curved edge to help with insertion and alleviate stress on the PCB during memory installation.



Figure 3. Curved edge

Memory Errors

Memory errors on the system display the new ON-FLASH-FLASH or ON-FLASH-ON failure code. If all memory fails, the LCD does not turn on. Troubleshoot for possible memory failure by trying known good memory modules in the memory connectors on the bottom of the system or under the keyboard, as in some portable systems.

NOTE: The DDR4 memory is imbedded in board and not a replaceable DIMM as shown and referred.

USB features

Universal Serial Bus, or USB, was introduced in 1996. It dramatically simplified the connection between host computers and peripheral devices like mice, keyboards, external drivers, and printers.

Table 1. USB evolution

Type	Data Transfer Rate	Category	Introduction Year
USB 2.0	480 Mbps	High Speed	2000
USB 3.0/USB 3.1 Gen 1	5 Gbps	SuperSpeed	2010
USB 3.1 Gen 2	10 Gbps	SuperSpeed	2013

USB 3.0/USB 3.1 Gen 1 (SuperSpeed USB)

For years, the USB 2.0 has been firmly entrenched as the de facto interface standard in the PC world with about 6 billion devices sold, and yet the need for more speed grows by ever faster computing hardware and ever greater bandwidth demands. The USB 3.0/USB 3.1 Gen 1 finally has the answer to the consumers' demands with a theoretically 10 times faster than its predecessor. In a nutshell, USB 3.1 Gen 1 features are as follows:

- Higher transfer rates (up to 5 Gbps)
- Increased maximum bus power and increased device current draw to better accommodate power-hungry devices
- New power management features

- Full-duplex data transfers and support for new transfer types
- Backward USB 2.0 compatibility
- New connectors and cable

The topics below cover some of the most commonly asked questions regarding USB 3.0/USB 3.1 Gen 1.

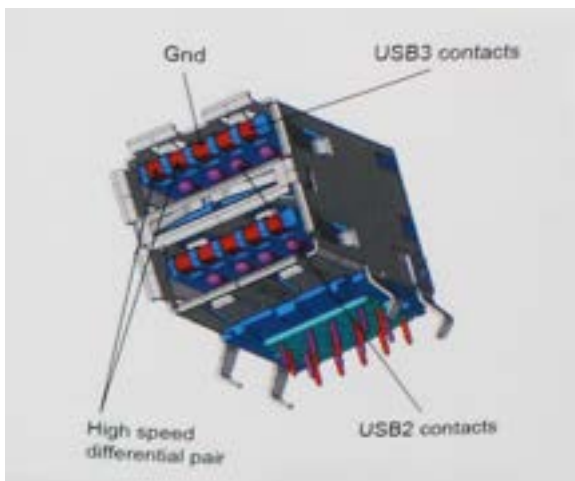


Speed

Currently, there are 3 speed modes defined by the latest USB 3.0/USB 3.1 Gen 1 specification. They are Super-Speed, Hi-Speed and Full-Speed. The new SuperSpeed mode has a transfer rate of 4.8 Gbps. While the specification retains Hi-Speed, and Full-Speed USB mode, commonly known as USB 2.0 and 1.1 respectively, the slower modes still operate at 480 Mbps and 12 Mbps respectively and are kept to maintain backward compatibility.

USB 3.0/USB 3.1 Gen 1 achieves the much higher performance by the technical changes below:

- An additional physical bus that is added in parallel with the existing USB 2.0 bus (refer to the picture below).
- USB 2.0 previously had four wires (power, ground, and a pair for differential data); USB 3.0/USB 3.1 Gen 1 adds four more for two pairs of differential signals (receive and transmit) for a combined total of eight connections in the connectors and cabling.
- USB 3.0/USB 3.1 Gen 1 utilizes the bidirectional data interface, rather than USB 2.0's half-duplex arrangement. This gives a 10-fold increase in theoretical bandwidth.



With today's ever increasing demands placed on data transfers with high-definition video content, terabyte storage devices, high megapixel count digital cameras etc., USB 2.0 may not be fast enough. Furthermore, no USB 2.0 connection could ever come close to the 480Mbps theoretical maximum throughput, making data transfer at around 320 Mbps (40 MB/s) — the actual real-world maximum. Similarly, USB 3.0/USB 3.1 Gen 1 connections will never achieve 4.8Gbps. We will likely see a real-world maximum rate of 400MB/s with overheads. At this speed, USB 3.0/USB 3.1 Gen 1 is a 10x improvement over USB 2.0.

Applications

USB 3.0/USB 3.1 Gen 1 opens up the laneways and provides more headroom for devices to deliver a better overall experience. Where USB video was barely tolerable previously (both from a maximum resolution, latency, and video compression perspective), it's easy to imagine that with 5-10 times the bandwidth available, USB video solutions should work that much better. Single-link DVI requires almost 2Gbps throughput. Where 480Mbps was limiting, 5Gbps is more than promising. With its promised 4.8Gbps speed, the standard will find its way into some products that previously weren't USB territory, like external RAID storage systems.

Listed below are some of the available SuperSpeed USB 3.0/USB 3.1 Gen 1 products:

- External Desktop USB 3.0/USB 3.1 Gen 1 Hard Drives
- Portable USB 3.0/USB 3.1 Gen 1 Hard Drives

- USB 3.0/USB 3.1 Gen 1 Drive Docks & Adapters
- USB 3.0/USB 3.1 Gen 1 Flash Drives & Readers
- USB 3.0/USB 3.1 Gen 1 Solid-state Drives
- USB 3.0/USB 3.1 Gen 1 RAID's
- Optical Media Drives
- Multimedia Devices
- Networking
- USB 3.0/USB 3.1 Gen 1 Adapter Cards & Hubs

Compatibility

The good news is that USB 3.0/USB 3.1 Gen 1 has been carefully planned from the start to peacefully co-exist with USB 2.0. First of all, while USB 3.0/USB 3.1 Gen 1 specifies new physical connections and thus new cables to take advantage of the higher speed capability of the new protocol, the connector itself remains the same rectangular shape with the four USB 2.0 contacts in the exact same location as before. Five new connections to carry receive and transmitted data independently are present on USB 3.0/USB 3.1 Gen 1 cables and only come into contact when connected to a proper SuperSpeed USB connection.

USB Type-C

USB Type-C is a new, tiny physical connector. The connector itself can support various exciting new USB standards like USB 3.1 and USB power delivery (USB PD).

Alternate Mode

USB Type-C is a new connector standard that is very small. It is about a third the size of an old USB Type-A plug. This is a single connector standard that every device should be able to use. USB Type-C ports can support a variety of different protocols using "alternate modes," which allows you to have adapters that can output HDMI, VGA, DisplayPort, or other types of connections from that single USB port

USB Power Delivery

The USB PD specification is also closely intertwined with USB Type-C. Currently, smartphones, tablets, and other mobile devices often use a USB connection to charge. A USB 2.0 connection provides up to 2.5 watts of power — that'll charge your phone, but that's about it. A laptop might require up to 60 watts, for example. The USB Power Delivery specification ups this power delivery to 100 watts. It's bi-directional, so a device can either send or receive power. And this power can be transferred at the same time the device is transmitting data across the connection.

This could spell the end of all those proprietary laptop charging cables, with everything charging via a standard USB connection. You could charge your laptop from one of those portable battery packs you charge your smartphones and other portable devices from today. You could plug your laptop into an external display connected to a power cable, and that external display would charge your laptop as you used it as an external display — all via the one little USB Type-C connection. To use this, the device and the cable have to support USB Power Delivery. Just having a USB Type-C connection doesn't necessarily mean they do.

USB Type-C and USB 3.1

USB 3.1 is a new USB standard. USB 3's theoretical bandwidth is 5 Gbps same as of USB 3.1 Gen 1, while USB 3.1 Gen 2's bandwidth is 10 Gbps. That's double the bandwidth, as fast as a first-generation Thunderbolt connector. USB Type-C isn't the same thing as USB 3.1. USB Type-C is just a connector shape, and the underlying technology could just be USB 2 or USB 3.0. In fact, Nokia's N1 Android tablet uses a USB Type-C connector, but underneath it's all USB 2.0 — not even USB 3.0. However, these technologies are closely related.

Advantages of DisplayPort over USB Type-C

- Full DisplayPort audio/video (A/V) performance (up to 4K at 60Hz)
- Reversible plug orientation and cable direction

- Backwards compatibility to VGA, DVI with adaptors
- SuperSpeed USB (USB 3.1) data
- Supports HDMI 2.0a and is backwards compatible with previous versions

HDMI 2.0

This topic explains the HDMI 2.0 and its features along with the advantages.

HDMI (High-Definition Multimedia Interface) is an industry-supported, uncompressed, all-digital audio/video interface. HDMI provides an interface between any compatible digital audio/video source, such as a DVD player, or A/V receiver and a compatible digital audio and/or video monitor, such as a digital TV (DTV). The intended applications for HDMI TVs, and DVD players. The primary advantage is cable reduction and content protection provisions. HDMI supports standard, enhanced, or high-definition video, plus multichannel digital audio on a single cable.

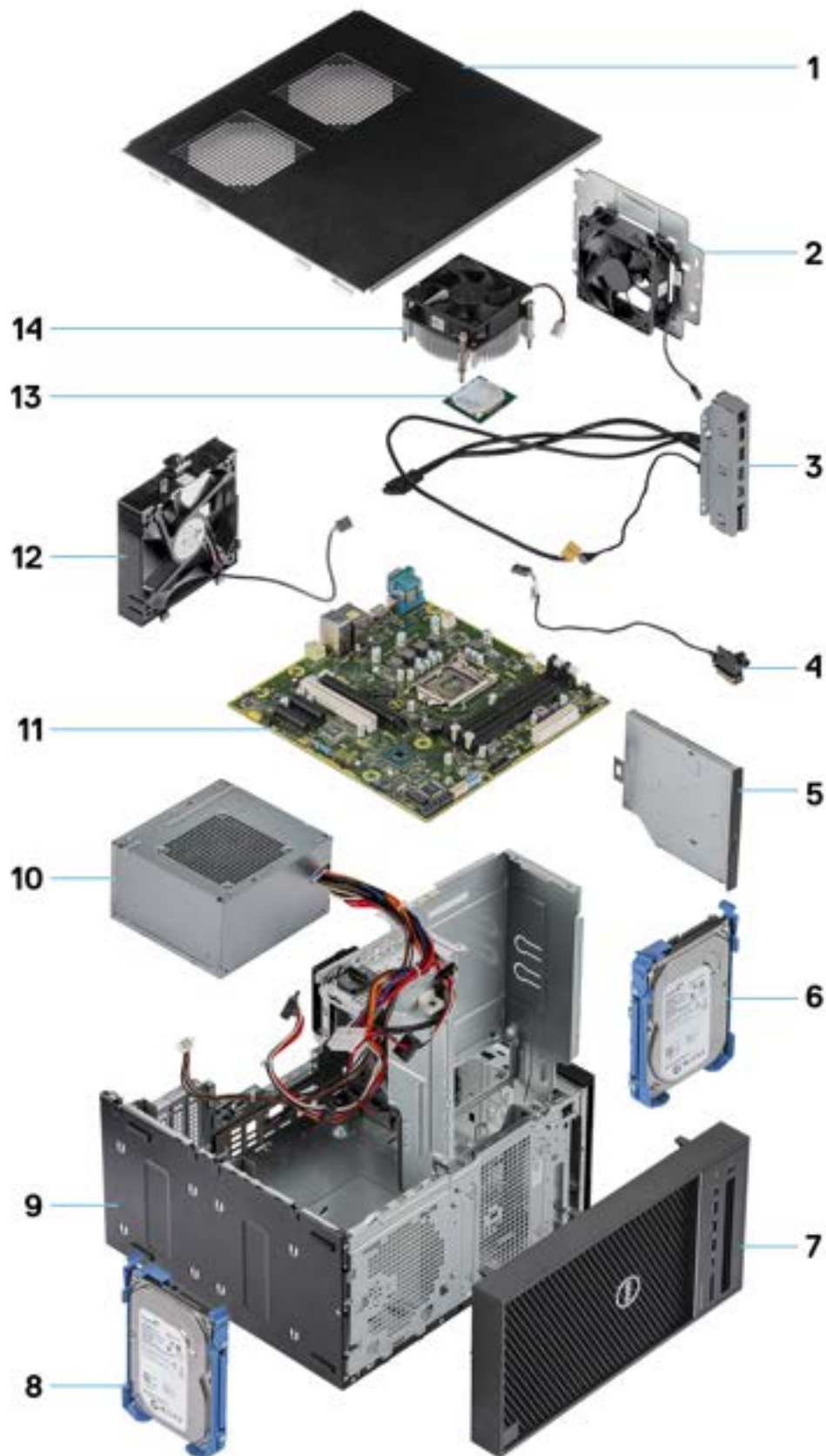
HDMI 2.0 Features

- **HDMI Ethernet Channel** - Adds high-speed networking to an HDMI link, allowing users to take full advantage of their IP-enabled devices without a separate Ethernet cable
- **Audio Return Channel** - Allows an HDMI-connected TV with a built-in tuner to send audio data "upstream" to a surround audio system, eliminating the need for a separate audio cable
- **3D** - Defines input/output protocols for major 3D video formats, paving the way for true 3D gaming and 3D home theater applications
- **Content Type** - Real-time signaling of content types between display and source devices, enabling a TV to optimize picture settings based on content type
- **Additional Color Spaces** - Adds support for additional color models used in digital photography and computer graphics
- **4K Support** - Enables video resolutions far beyond 1080p, supporting next-generation displays that will rival the Digital Cinema systems used in many commercial movie theaters
- **HDMI Micro Connector** - A new, smaller connector for phones and other portable devices, supporting video resolutions up to 1080p
- **Automotive Connection System** - New cables and connectors for automotive video systems, designed to meet the unique demands of the motoring environment while delivering true HD quality

Advantages of HDMI

- Quality HDMI transfers uncompressed digital audio and video for the highest, crispest image quality.
- Low -cost HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner
- Audio HDMI supports multiple audio formats from standard stereo to multichannel surround sound
- HDMI combines video and multichannel audio into a single cable, eliminating the cost, complexity, and confusion of multiple cables currently used in A/V systems
- HDMI supports communication between the video source (such as a DVD player) and the DTV, enabling new functionality

Major components of your system



1. Cover
2. System fan
3. IO panel
4. Power button module
5. Optical drive
6. Hard drive
7. Bezel
8. Hard drive
9. Chasis
10. Power supply unit
11. System board
12. Front fan
13. Processor
14. Heatsink assembly

 **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.

Disassembly and reassembly

Topics:

- Chassis rubber feet
- Cover
- SD card—optional
- Bezel
- Hard drive
- PSU hinge
- Graphics card
- Memory module
- Speaker
- Coin cell battery
- Power supply unit
- Optical drive
- IO panel
- Solid state drive
- Power button module
- Heatsink assembly
- Blower and heat sink assembly
- Voltage regulator heat sink
- Front fan
- System fan
- Optional IO card
- Processor
- Intrusion switch
- System board

Chassis rubber feet

Removing the chassis rubber feet

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Pull one end of rubber feet out of the slot [1] and slide the rubber feet to remove it from the system [2].



Figure 4. Front rubber feet removal



Figure 5. Rear rubber feet removal

Installing the chassis rubber feet

1. Insert one end of the rubber feet into the slot [1] and slide it to secure it to the system [2] and press the other end to secure it to the system [3].



Figure 6. Front rubber feet installation



Figure 7. Rear rubber foot installation

2. Follow the procedure in *After Working Inside Your Computer*.

Cover

Removing the cover

1. Follow the procedure in *Before Working Inside Your Computer*.
2. Pull the release latch to release the cover [1].

NOTE: Release latch may have been secured with a security screw. Remove the security screw to release the cover.



3. Rotate the cover and lift the cover to remove it from the computer [2,3]



Installing the cover

1. Align the hooks on the cover with the tabs on the chassis of the computer.
2. Rotate the cover until it clicks into place.



3. Follow the procedure in [After Working Inside Your Computer](#).

SD card—optional

SD card is an optional component.

Removing the SD card

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Pull the SD card out of the system.



Installing the SD card

1. Insert the SD card into the SD card slot on the system.



2. Follow the procedure in [After Working Inside Your Computer](#).

Bezel

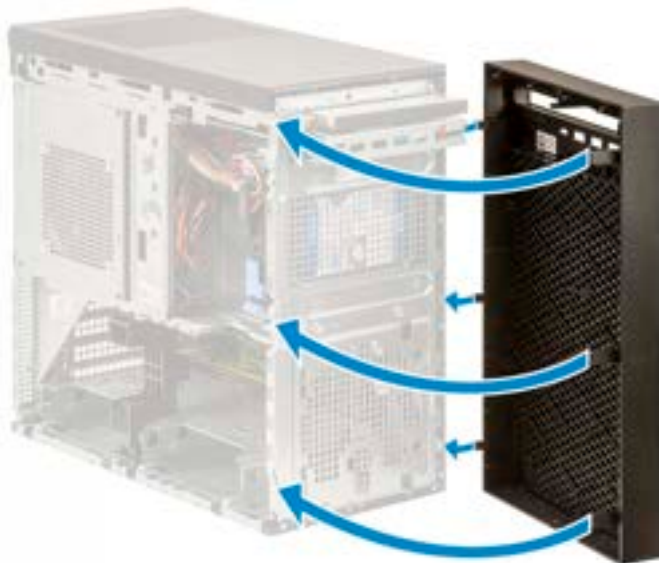
Removing the front bezel

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. To remove the front bezel:
 - a. Lift the retention tabs [1] to release the front bezel.
 - b. Rotate and pull the front bezel to release the front bezel from the slots on the chassis [2,3].



Installing the front bezel

1. Hold the bezel and ensure that the hooks on the bezel align with notches on the computer.
2. Rotate the front bezel toward the computer.
3. Press the front bezel until the tabs click into place.

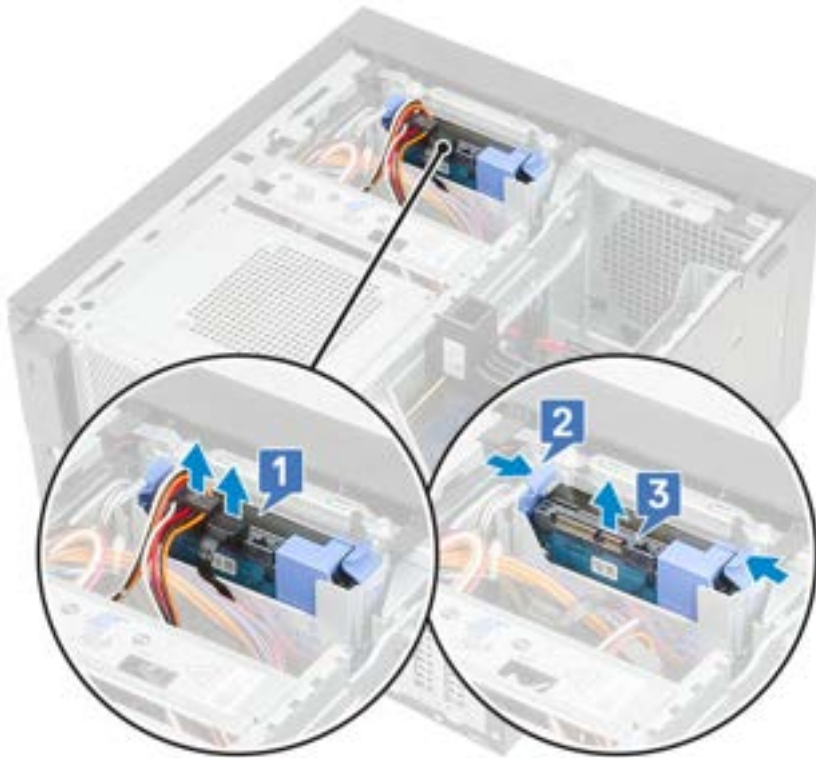


4. Install the [cover](#).
5. Follow the procedure in [After Working Inside Your Computer](#).

Hard drive

Removing the 3.5-inch hard drive

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Disconnect the data cable and the power cable from the hard drive [1].
4. Press the blue securing bracket tabs [2] and lift the hard drive bracket out of the hard drive bay [3].



5. Flex the hard drive bracket [1] and lift the hard drive from the hard drive bracket [2].



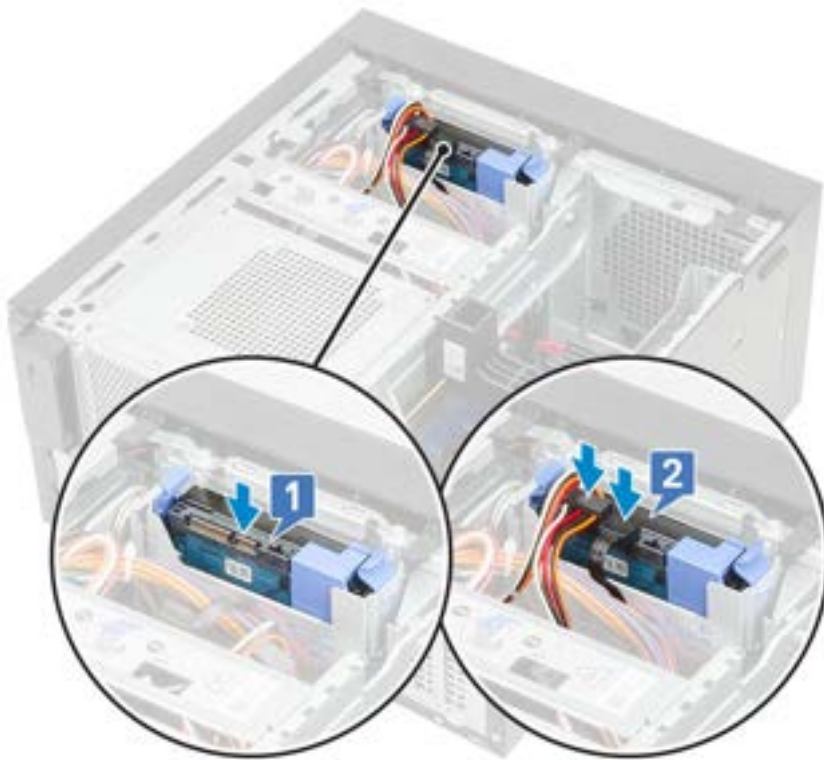
6. To remove additional hard drive (if available), repeat steps from 3 to 5.

Installing the 3.5-inch hard drive

1. Insert the holes on one side of the hard disk into the pins on the hard drive bracket and then place the hard drive into the bracket.



2. Slide the hard drive assembly into the hard drive bay [1].
3. Connect the data cable and the power cable to the hard drive [2].



4. To install additional hard drive, follow the steps from 1 to 3.
5. Install the [cover](#).
6. Follow the procedure in [After Working Inside Your Computer](#).

Removing the 2.5-inch hard drive

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Disconnect the data cables and the power cables from the respective connectors on the hard drives [1].
4. Press the blue securing bracket tabs [2] and lift the hard drive bracket out of the front hard drive bay [3].

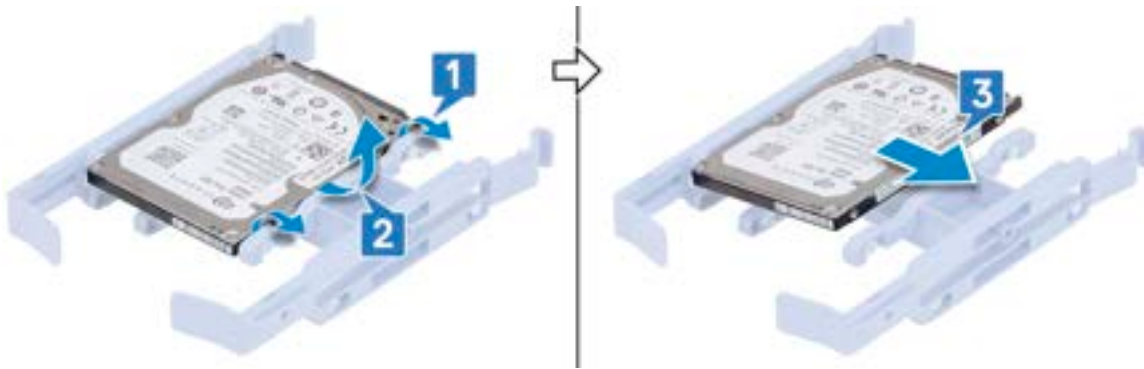


5. Disconnect the data cables and the power cables from the respective connectors on the hard drives [1].
6. Press the blue securing bracket tabs and lift the hard drive bracket out of the bottom hard drive bays [2].
7. Disconnect the SATA power cable from the connectors on the PSU [3].



8. Flex the hard drive bracket [1], lift the hard drive [2], and then slide out from the hard drive bracket [3].

NOTE: Follow the same procedure to remove another hard drive on the other side of the bracket.



Installing the 2.5-inch hard drive

1. Insert the holes on one side of the hard disk into the pins on the hard drive bracket [1], and then place the hard drive into the bracket such that the pins on other side of the bracket is aligned with the holes on the hard drive [2].

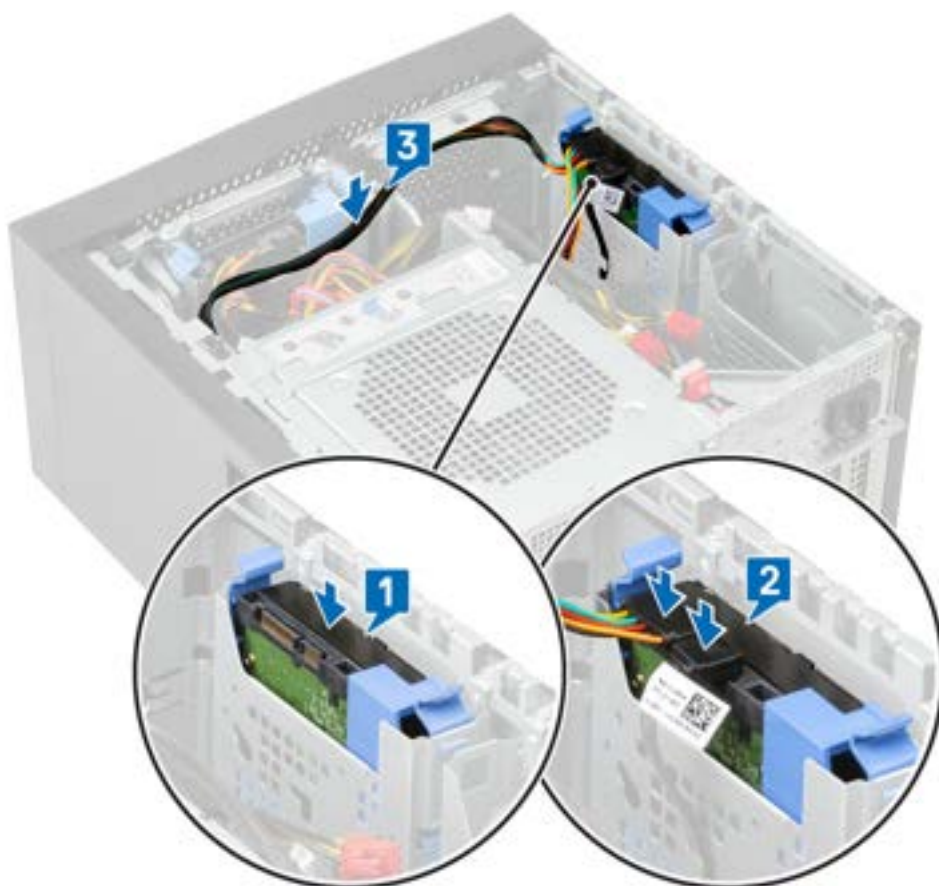
NOTE: Follow the same procedure to install another hard drive on the other side of the bracket.



2. Slide the hard drive assembly into the front hard drive bay [1].
3. Connect the data cables and the power cables to the respective connectors on the hard drives [2].



4. Slide the hard drive assembly into the bottom hard drive bay [1].
5. Connect the data cables and the power cables to the respective connectors on the hard drives [2].
6. Route the power SATA cables along the guide to connect to the PSU [3].

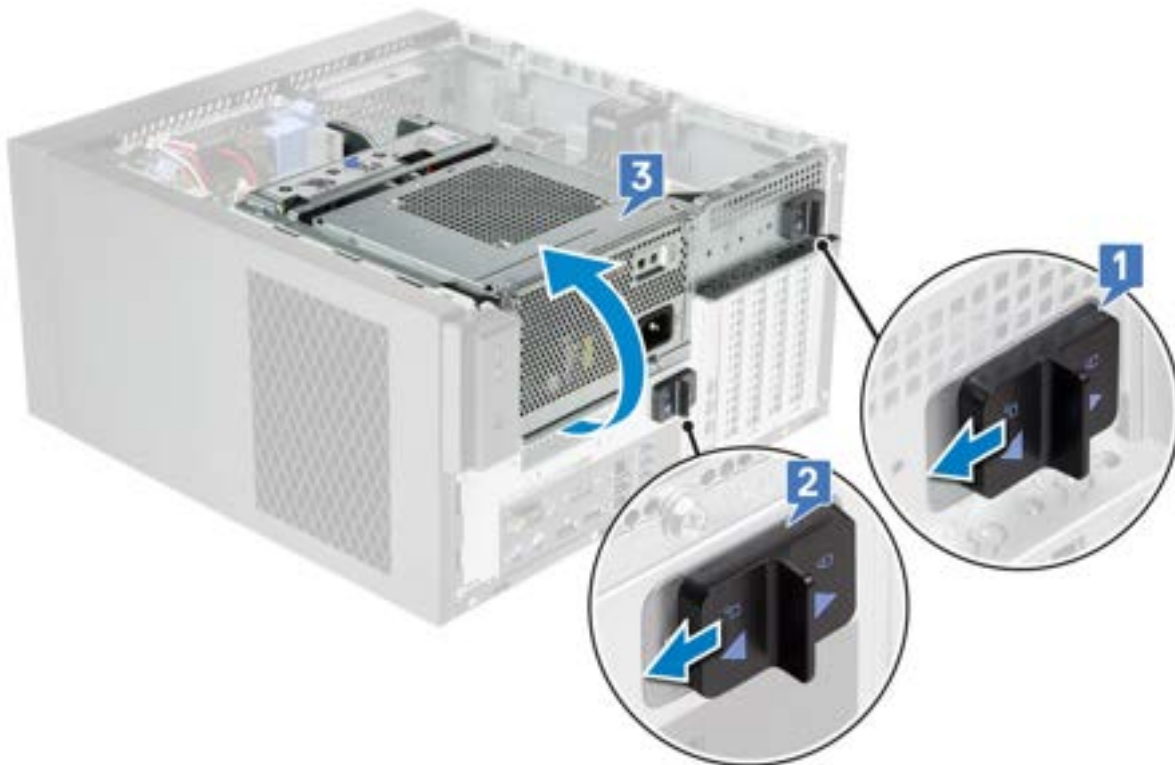


7. Install the [cover](#).
8. Follow the procedure in [After Working Inside Your Computer](#).

PSU hinge

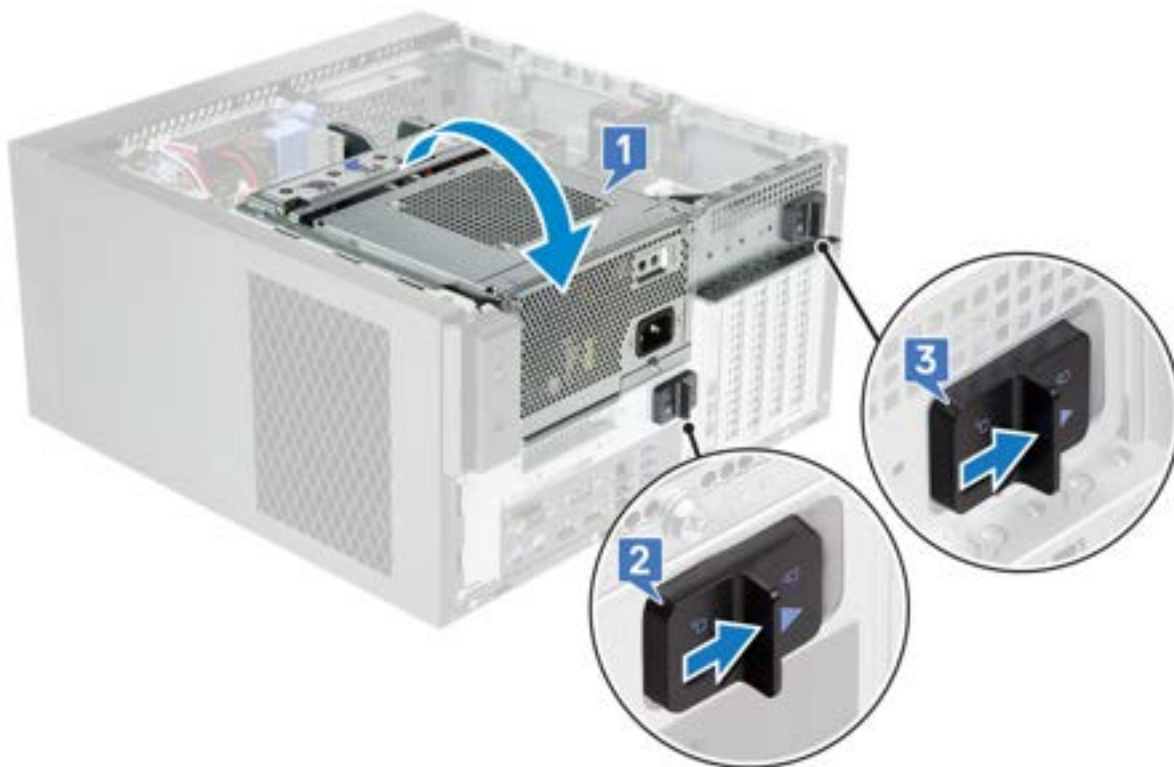
Opening the PSU hinge

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [cover](#):
3. Unlock the PSU release latches [1,2]
4. Rotate the PSU hinge as shown in the figure [3].



Closing the PSU hinge

1. Rotate the PSU hinge [1]
2. Unlock the PSU release latches to secure the PSU hinge to the system [2,3].



3. Install the [cover](#):
4. Follow the procedure in [After Working Inside Your Computer](#).

Graphics card

Removing the graphics card

NOTE: You may see a PCIe card installed in some configurations. Follow the same steps except step 4 to remove the expansion card.

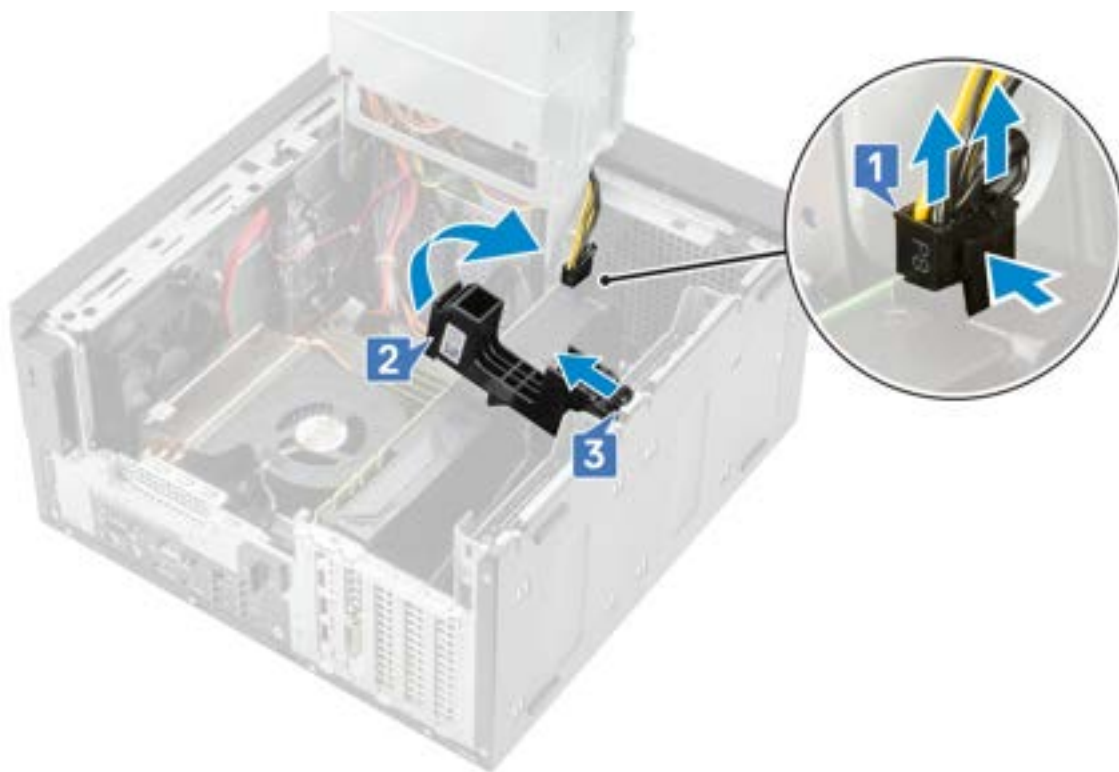
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [cover](#).
3. Disconnect the VGA power cable from the graphics cards in a dual graphics card configuration [1].
4. Lift the plastics latch to free the cables [2] and unroute the cables from the tabs [3].



5. Open the [PSU hinge](#).
6. Press the releasing clip and disconnect the graphics-card power cable from the connector on the graphics card [1].
7. **NOTE:** A PCIe holder may not be required for system shipped with NVIDIA Quadro P4000 or RTX4000 dual graphics cards configuration.

Lift the side of the PCIe holder that sits on the graphics card [2].

8. Slide the PCIe holder to release the tab on the PCIe holder from the slot on the chassis [3].



9. Push the card retention latch away from the card [1] and lift the graphics card out of the computer [2].



Installing the graphics card

NOTE: Follow the same steps except step 2 to install the expansion card.

1. Insert the graphics card to the connector on the system board.

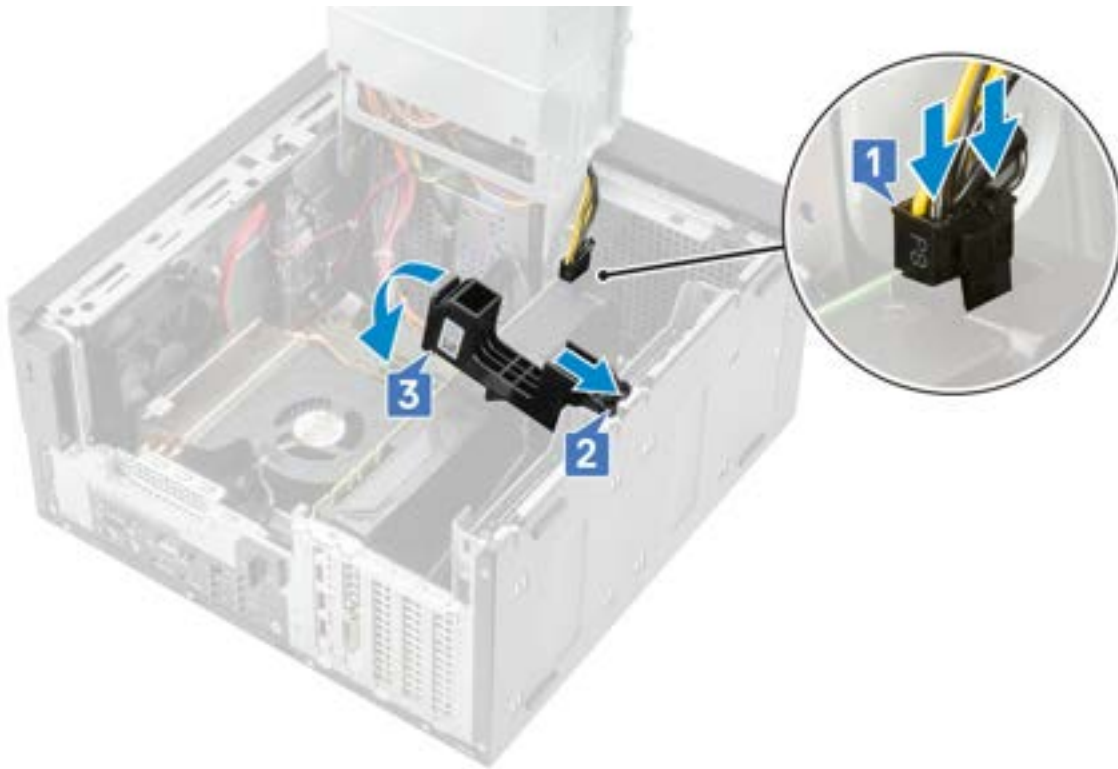


Figure 8. Single graphics card

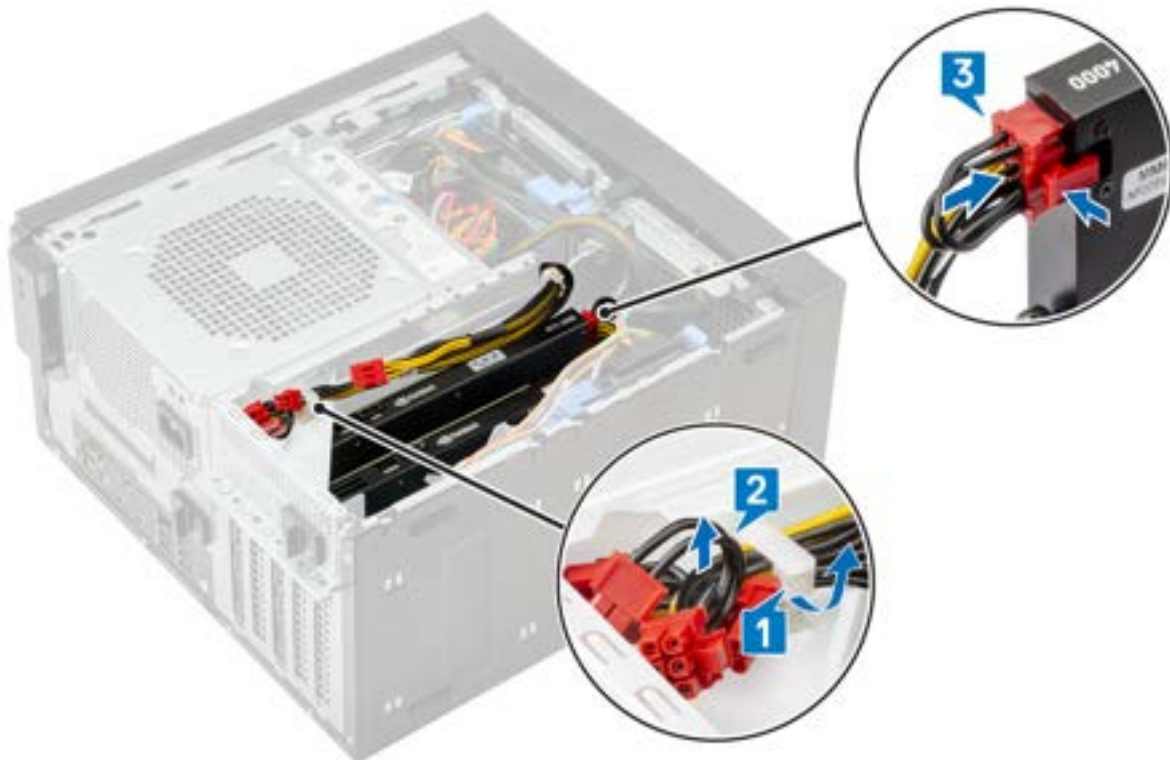


Figure 9. Dual graphics card

2. Connect the graphics-card power cable to the connector on the graphics card for a single graphics card configuration [1].
3. Insert the tab on the PCIe card holder into the slot on the chassis [2] and press until it is secured to the graphics card [3].



4. Close the [PSU hinge](#).
5. Connect the VGA power cables to the dual graphics card configuration:
 - a. Unroute the VGA power cables from the securing tabs on the PSU [1].
 - b. Lift the plastics latch to free the cables [2].
 - c. Connect the VGA power cables to the connectors on both the graphics card [3].

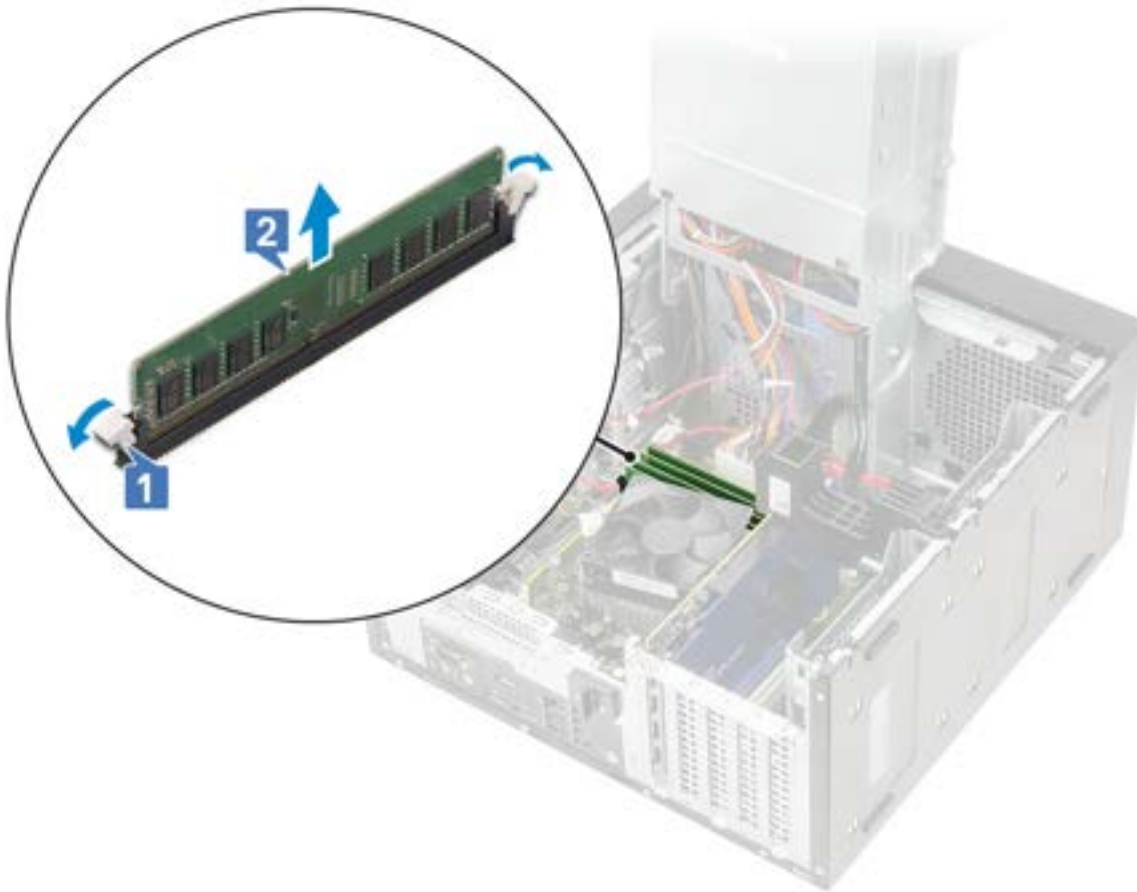


6. Install the [Cover](#).
7. Follow the procedure in [After working inside your computer](#).

Memory module

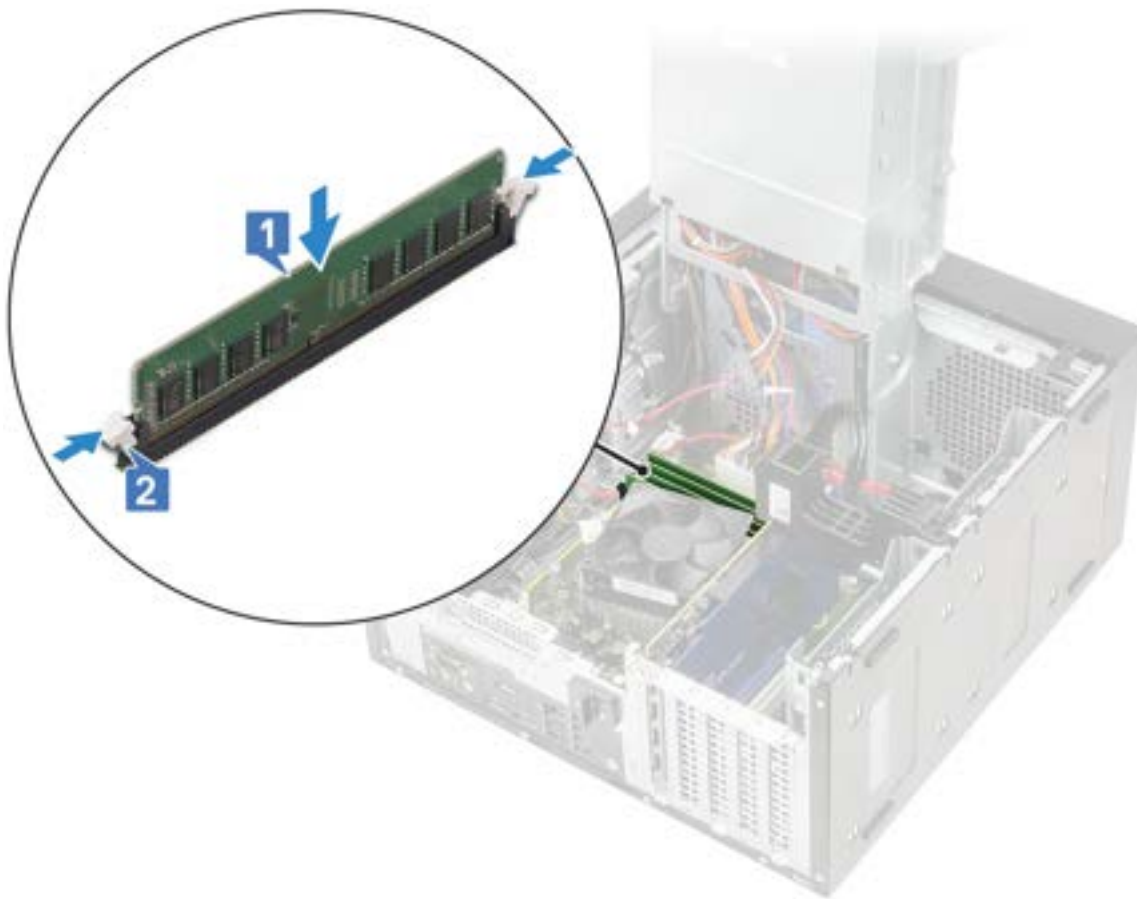
Removing the memory module

1. Follow the procedure in *Before Working Inside Your Computer*.
2. Remove the [Cover](#).
3. Open the [PSU hinge](#).
4. Press the memory module retention tabs on each side of the memory module [1].
5. Lift the memory module out of the connectors on the system board [2].



Installing the memory module

1. Align the notch on the memory module with the tab on the memory module connector and insert the memory module into the memory module socket [1].
2. Press the memory module until the retention tabs clicks into place [2].



3. Close the [PSU hinge](#).
4. Install the [cover](#).
5. Follow the procedure in [After Working Inside Your Computer](#).

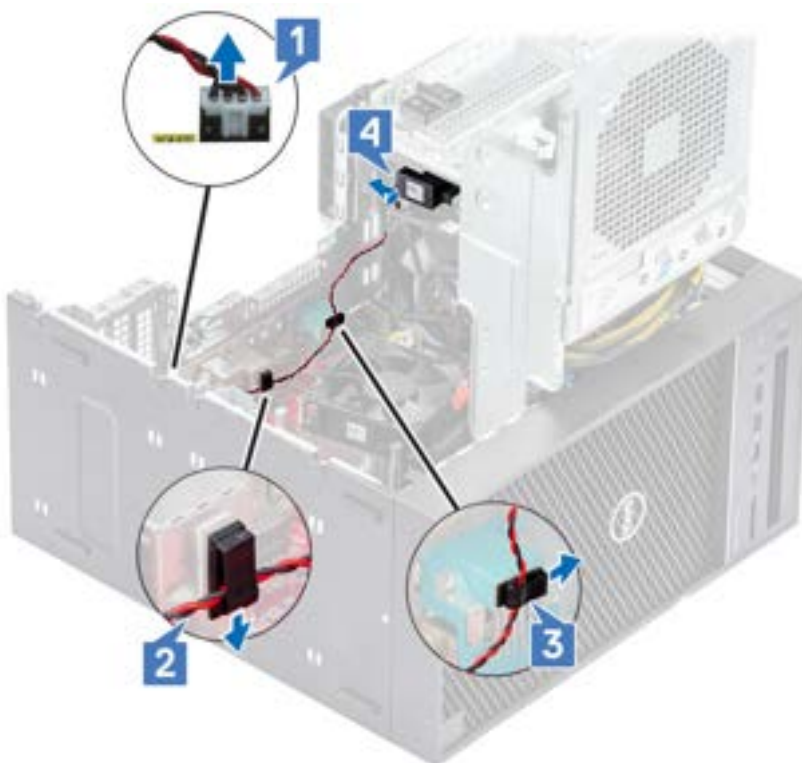
Speaker

Removing speaker

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [Cover](#)
 - b. [PSU hinge](#)
3. To remove speaker shipped with 60/ 85 W CPU system configuration:
 - a. Disconnect the speaker cable from the connector on the system board [1].
 - b. Press the release tab [2] and pull the speaker out from front of the system chassis [3].



4. To remove speaker for system shipped with 95 W CPU system configuration :
- Disconnect the speaker cable from the system board [1].
 - Unroute the speaker cable from the tabs on the system board [2,3].
 - Press the release tab and pull the speaker out from front of the system chassis [4].



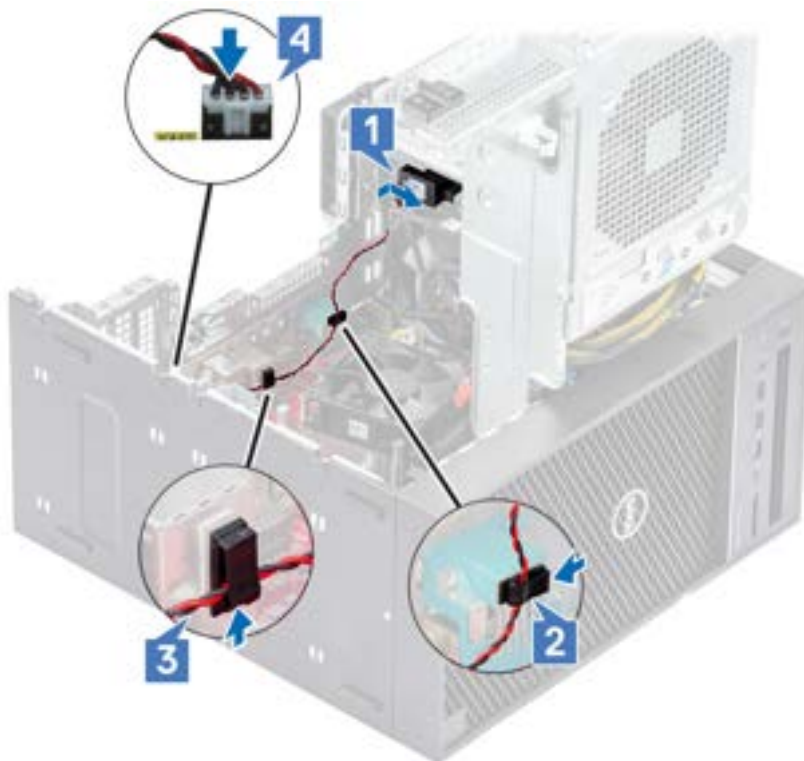
Installing the speaker

1. To install speaker shipped with 60/ 85 W CPU system configuration:

- a. Insert the speaker into the front slot on the system chassis and press it until it clicks into place [1].
- b. Connect the speaker cable to the connector on the system board [2].



2. To install speaker for system 95 W CPU system configuration :
 - a. Replace the speaker into the rear portion of the chassis above the front fan [1].
 - b. Route the speaker cable along the tabs on the I/O port of the system board [2,3] and connect it to the system board [4].



3. Close the [PSU hinge](#).
4. Install the [Cover](#).
5. Follow the procedure in [After working inside your computer](#).

Coin cell battery

Removing the coin cell battery

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [cover](#).
3. Open the [PSU hinge](#).
4. To remove the coin cell battery:
 - a. Press the release latch until the coin cell battery pops out [1].
 - b. Remove the coin cell battery from the connector on the system board [2].



Installing the coin cell battery

1. Hold the coin cell battery with the "+" sign facing up and slide it under the securing tabs at the positive side of the connector [1].
2. Press the battery into the connector until it locks into place [2].

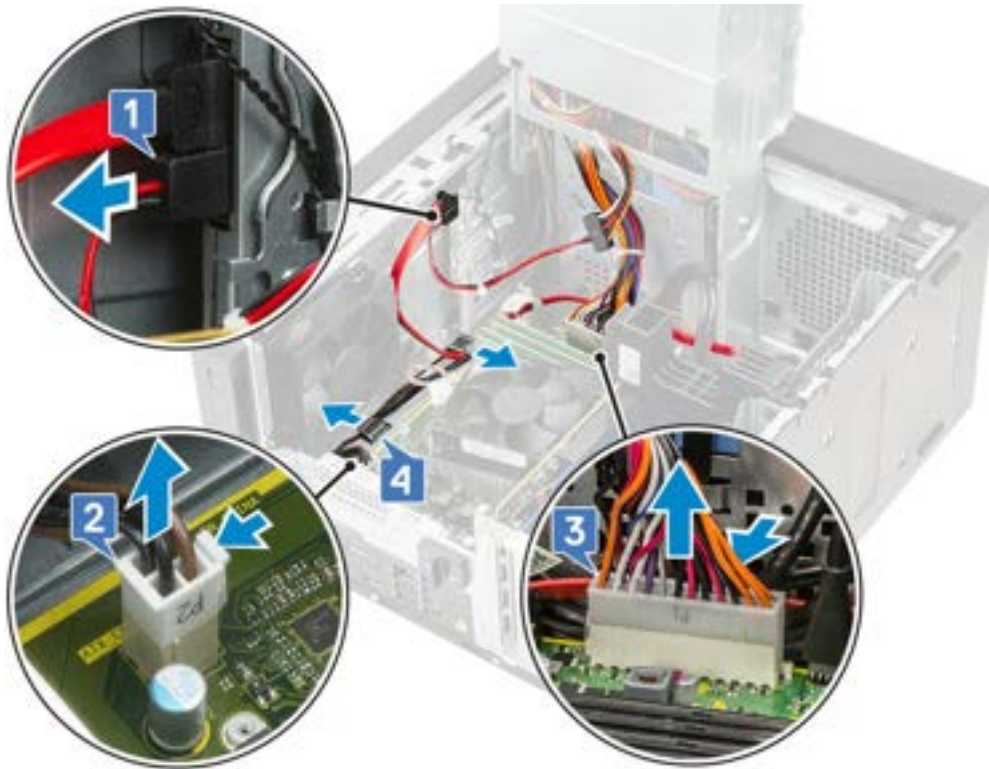


3. Close the [PSU hinge](#).
4. Install the [Cover](#).
5. Follow the procedure in [After working inside your computer](#).

Power supply unit

Removing the power supply unit

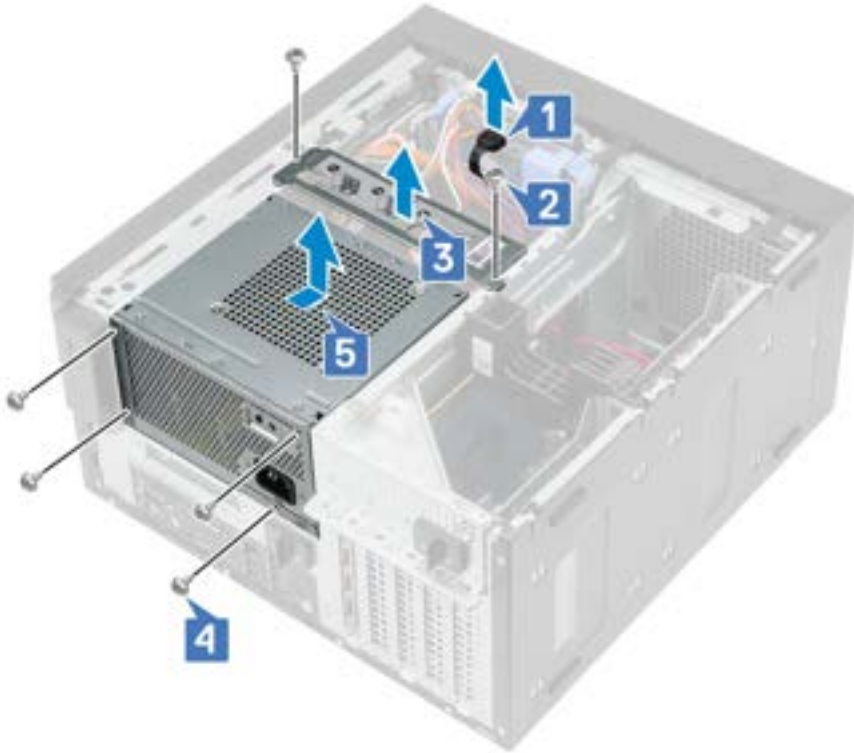
1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Remove:
 - a. [Cover](#)
 - b. [Heatsink assembly](#)
3. Open the [PSU hinge](#)
4. Disconnect the following cables:
 - For systems shipped with 65 W/80 W CPU system configurations:
 - a. Disconnect the optical-drive power cable from the optical drive [1].
 - b. Disconnect the CPU-power cable and system board power cable from the system board [2,3].
 - c. Unroute the CPU power cable from the routing guide on the chassis [4].



- For systems shipped with heatsink assembly for 95 W CPU system configurations:
 - a. Disconnect the optical-drive power cable from the optical drive [1].
 - b. Disconnect the CPU-power cable and system board power cable from the system board [2,3].
 - c. Disconnect the graphics-card power cable from the connector on the graphics card [4]
 - d. Unroute the CPU-power cable from the routing guide on the chassis [5].



5. Close the [PSU hinge](#).
6. To remove the power supply unit (PSU):
 - a. Disconnect the hard-disk power cable [1].
NOTE: There could be up to four hard-disk power cables depending on the quantity of hard-disk drive installed.
 - b. Remove the two #6-32x1/4" screws that secure the power-supply bracket to the chassis [2] and lift the power-supply bracket from the system [3].
 - c. Remove the four #6-32x1/4" screws that secure the power-supply unit to the chassis [4].
 - d. Lift the PSU off the chassis [5].

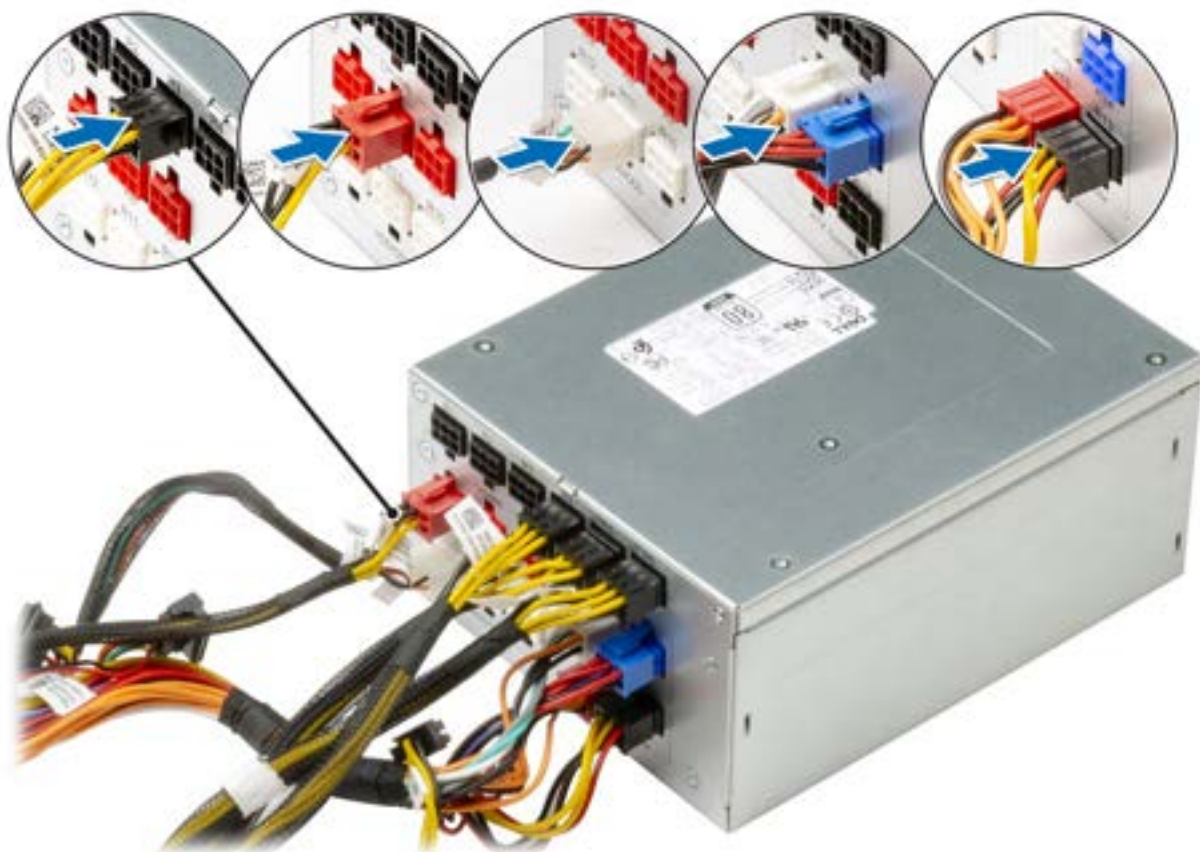


7. Disconnect the wiring harness from the 95 W CPU system configuration.

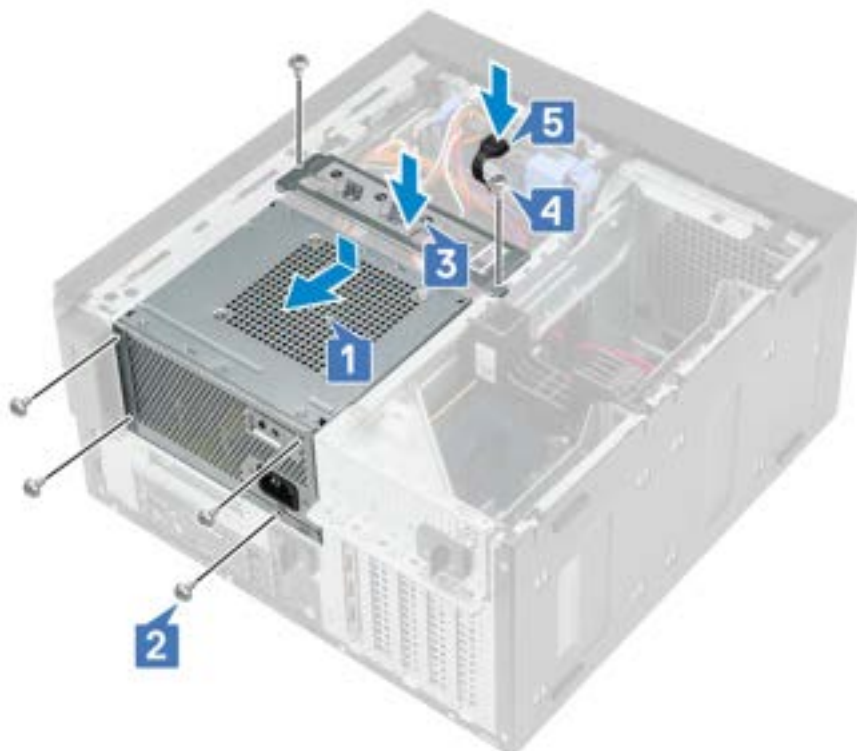


Installing the power supply unit

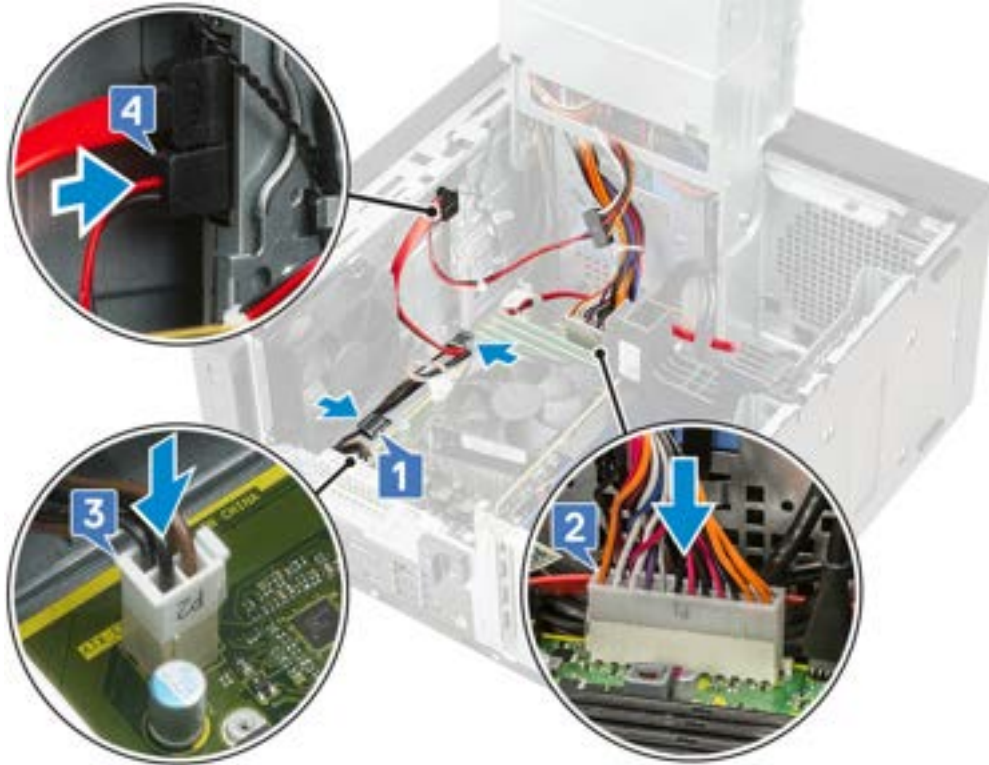
1. Connect the wiring harness to the 95 W CPU system configuration.



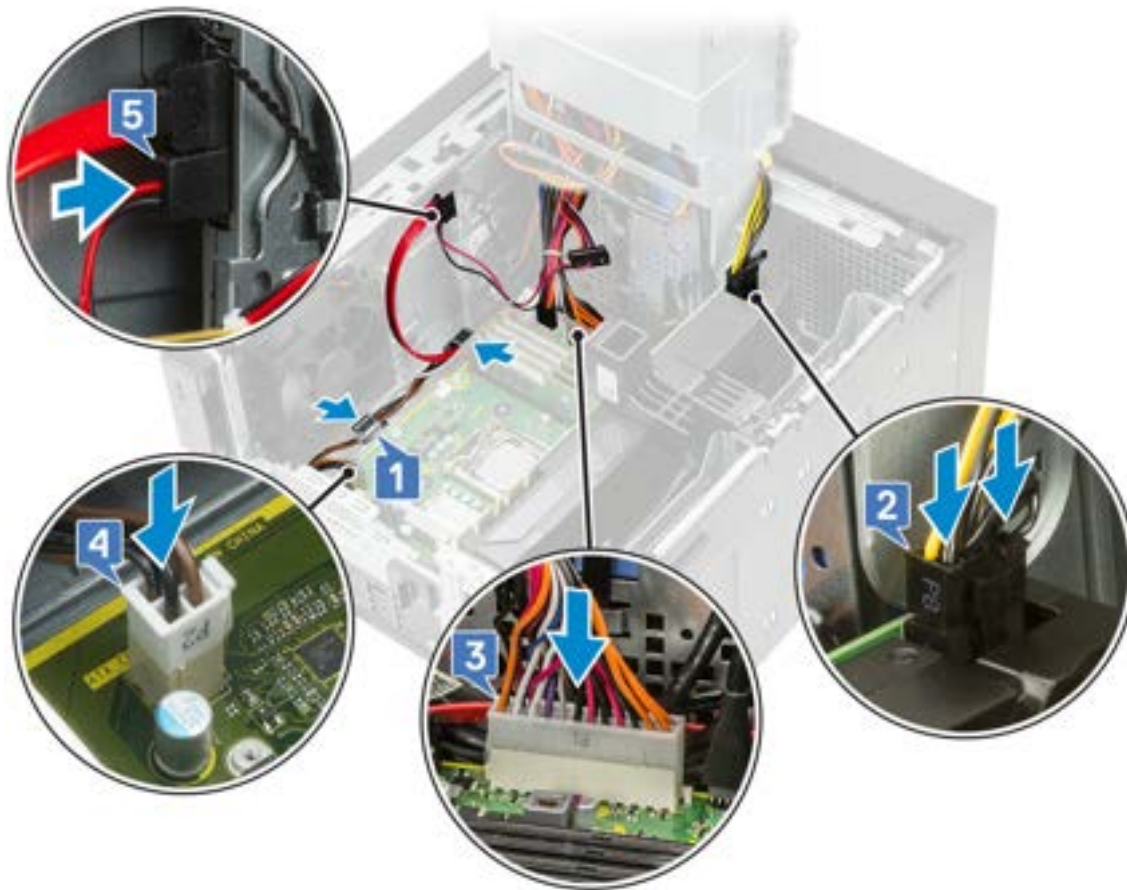
2. Insert the PSU into the PSU slot and slide it towards the back of the computer until it clicks into place [1].
3. Replace the four #6-32x1/4" screws to secure the PSU to the computer [2].
4. Place the power supply bracket [3] and tighten the two #6-32x1/4" screws to secure the PSU to the computer [4].
5. Connect the hard drive power cable [5]



6. Open the [PSU hinge](#).
7. Connect the following cables:
 - For systems shipped with 65 W/80 W CPU system configuration:
 - a. Route the CPU power cable through the routing guide on the chassis [1].
 - b. Connect the system board power cable [2].
 - c. Connect the CPU power cable to the connector on the system board [3].
 - d. Connect the optical-drive power cable to the connector on the optical drive [4].



- :
 - a. Route the CPU power cable through the routing guide on the chassis [1].
 - b. Connect the graphics-card power cable [2].
 - c. Connect the system-board power cable [3]
 - d. Connect the CPU power cable to the connector on the system board [4].
 - e. Connect the optical-drive power cable to the connector on the optical drive [5].

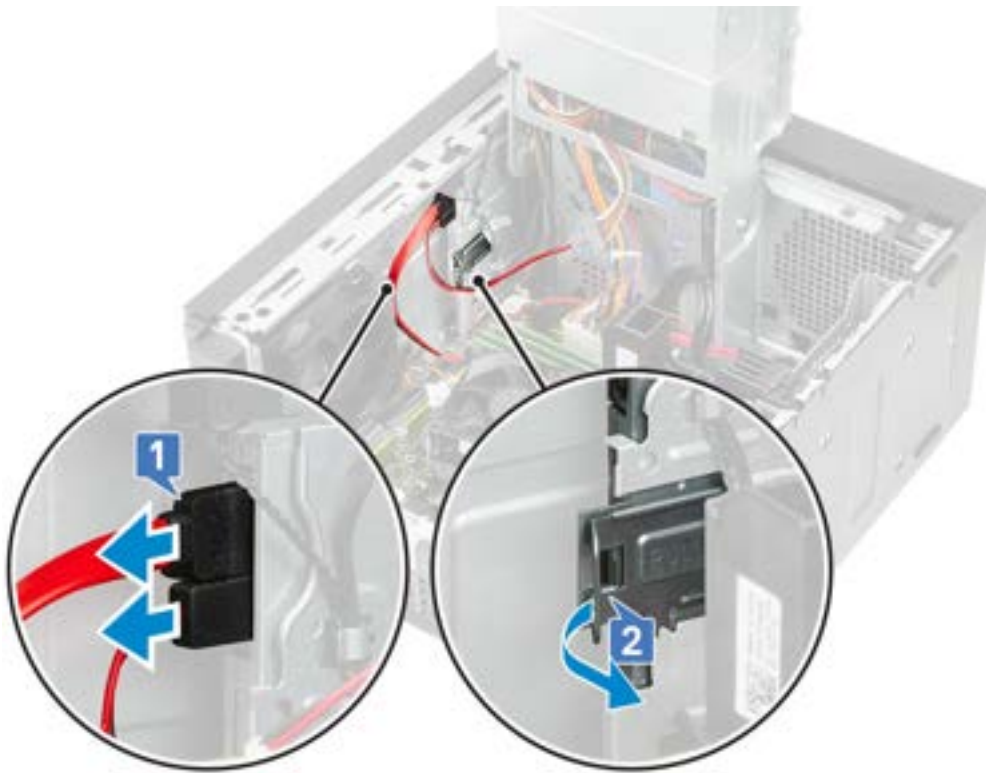


8. Install the:
 - a. [Heatsink assembly](#)
 - b. [Cover](#)
9. Close the [PSU hinge](#).
10. Follow the procedure in [After Working Inside Your Computer](#).

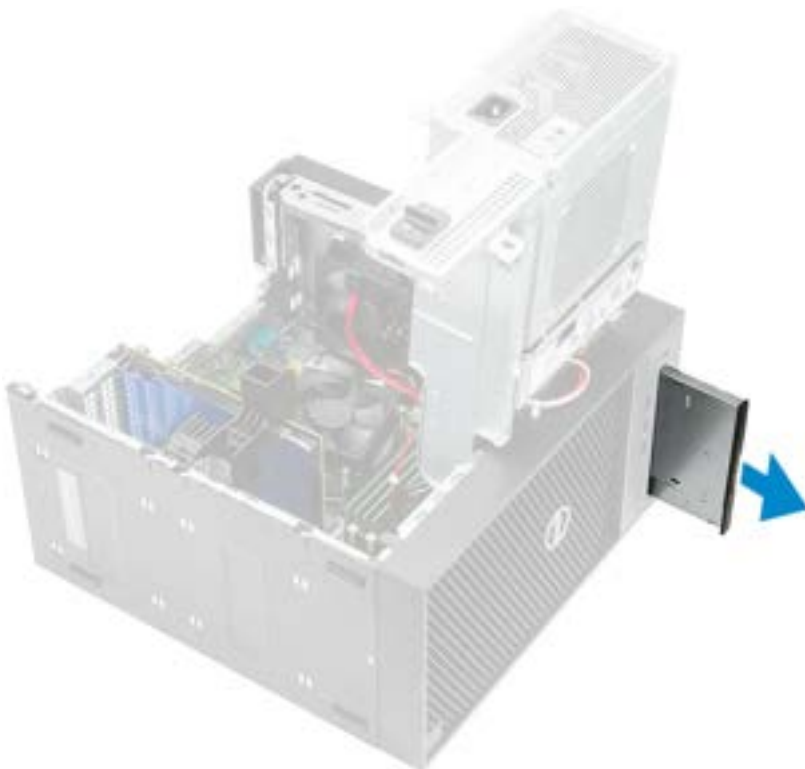
Optical drive

Removing the optical drive

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. [Front bezel](#)
4. Open the [PSU hinge](#).
5. Disconnect the data cable and the power cable from the optical drive [1].
6. Hold and pull the optical drive latch to unlock the optical drive [2].



7. Slide the optical drive from the front of the computer.



8. Remove the M2x2.5 screw that secures the optical-drive bracket to the optical drive [1] and remove the optical-drive bracket [2].

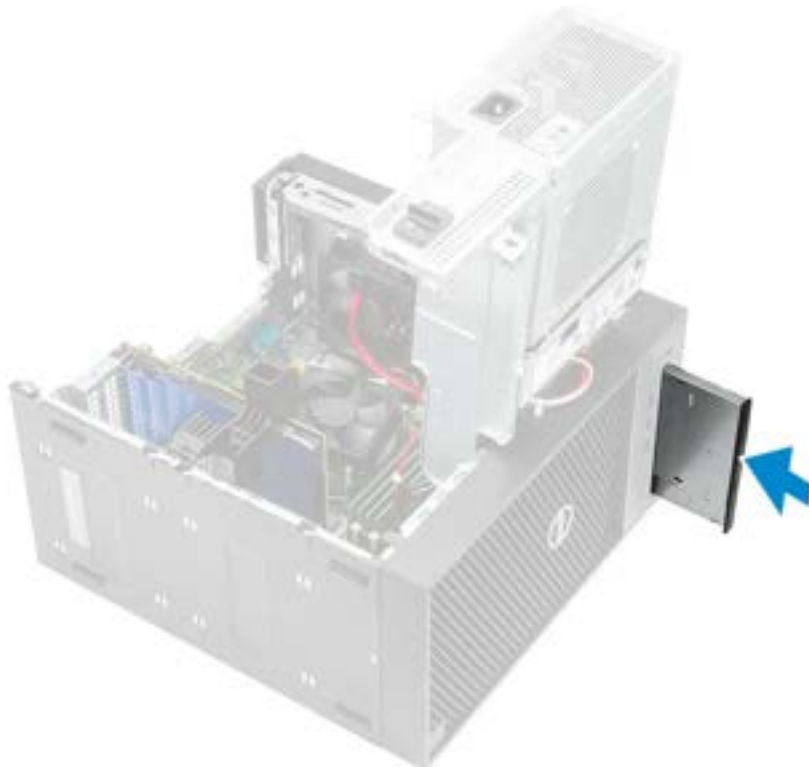


Installing the optical drive

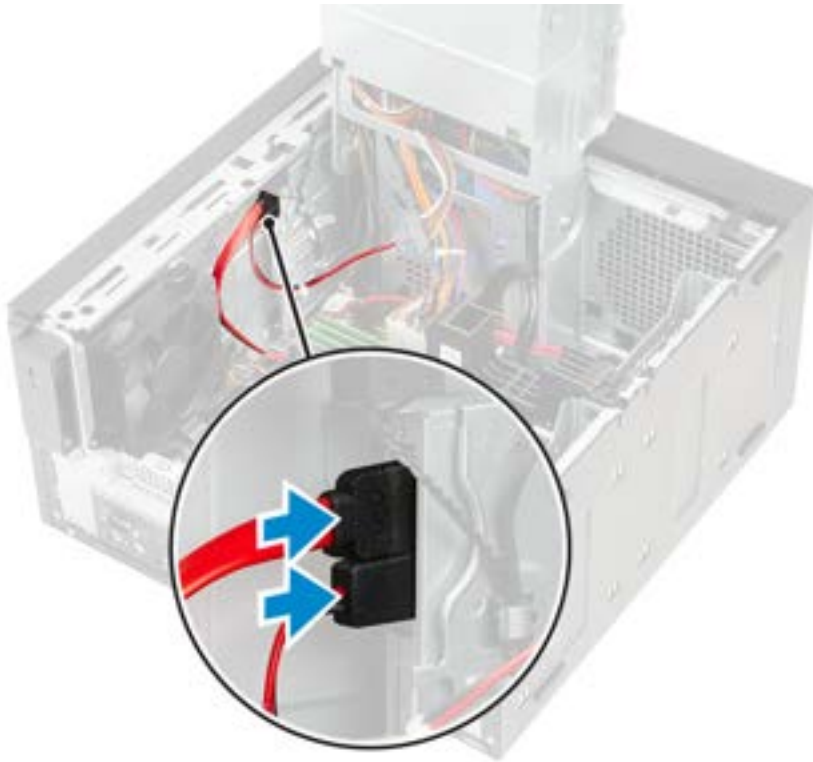
1. Align the screw hole on the optical-drive bracket with the screw hole on the optical drive [1] and replace the M2x2.5 screw to secure the optical-drive bracket to the optical drive [2].



2. Slide the optical drive into the drive bay from the front of the computer until it is secured.



3. Connect the data cable and power cable to the optical drive.

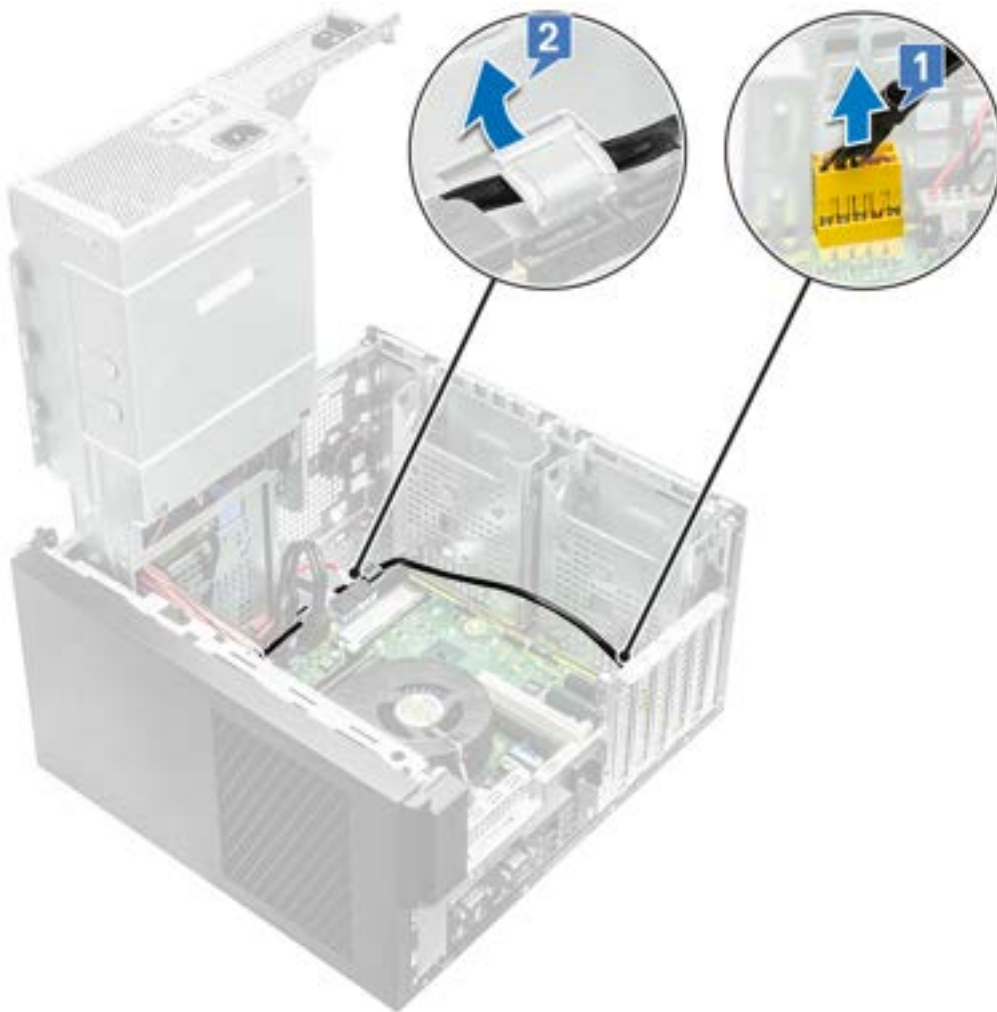


4. Close the [PSU hinge](#).
5. Install the [Front bezel](#)
6. Install the [cover](#).
7. Follow the procedure in [After Working Inside Your Computer](#).

IO panel

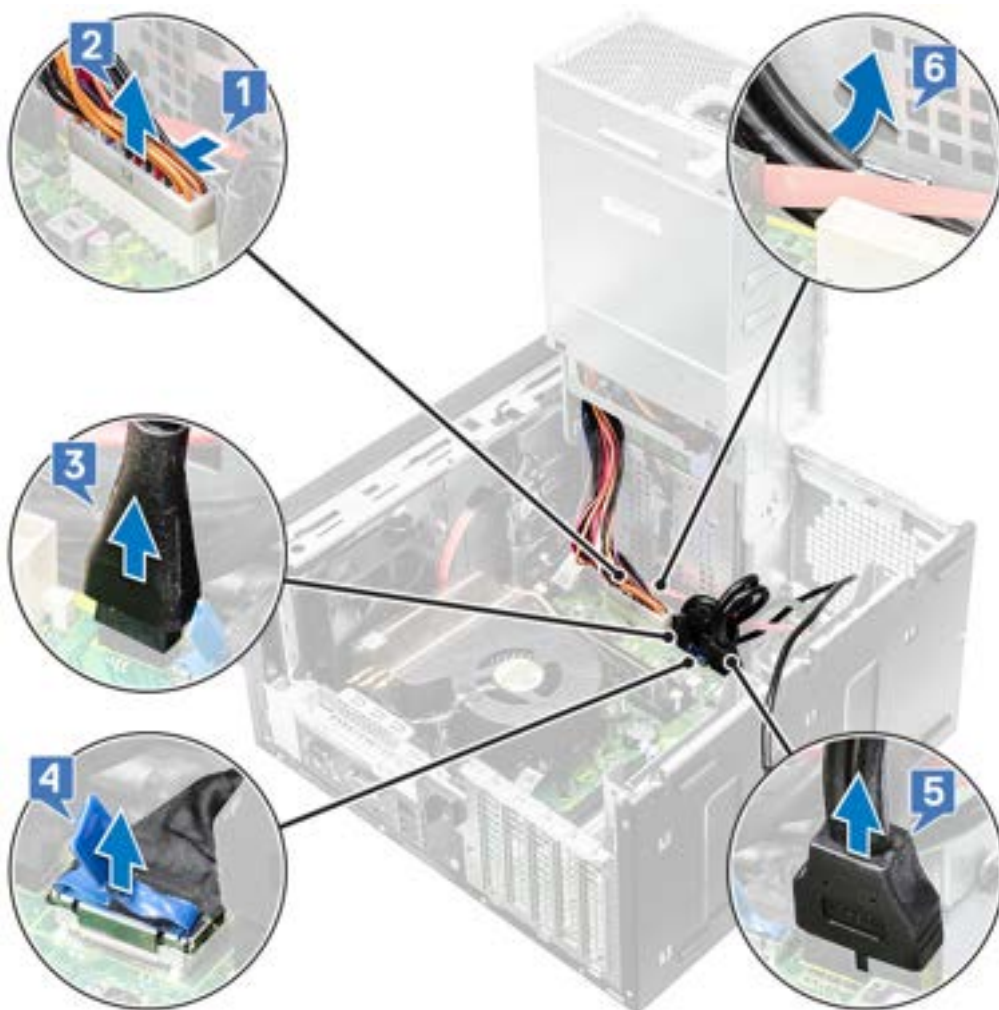
Removing the IO panel

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [Cover](#)
 - b. [Front bezel](#)
 - c. [Optical drive](#)
3. Open the [PSU hinge](#).
4. Disconnect the IO audio cable from the connector on the system board [1] and unroute the cable from routing guides next to the system board on the chassis [2].



5. Disconnect the following cables from their respective connectors on the system board:

- System board power connector cable [1,2]
- SD card cable [3]
- Type-C cable [4]
- IO USB cable [5]
- Unroute the cables [6]



6. Remove the #6-32x1/4" screw that secures the IO panel to the chassis.



7. Lift the IO panel to release the tabs on the IO panel from the slots on the chassis.



8. Pull the IO panel along with the cables to remove it from the IO panel slot on the chassis.



Installing the IO panel

1. Insert the cables through the IO panel slot on the chassis.



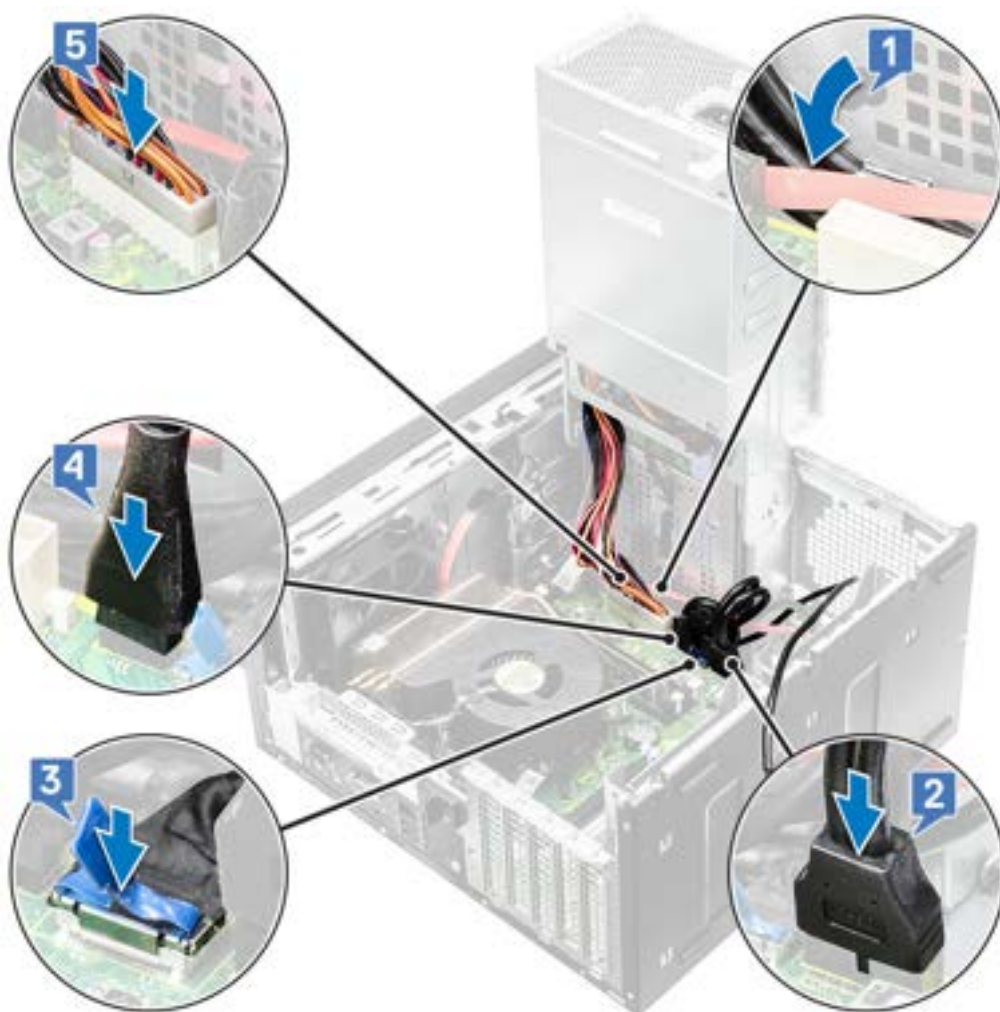
-
2. Insert the IO-panel tabs into the slots on the system [1] and tilt the IO panel to secure it to the system [2].



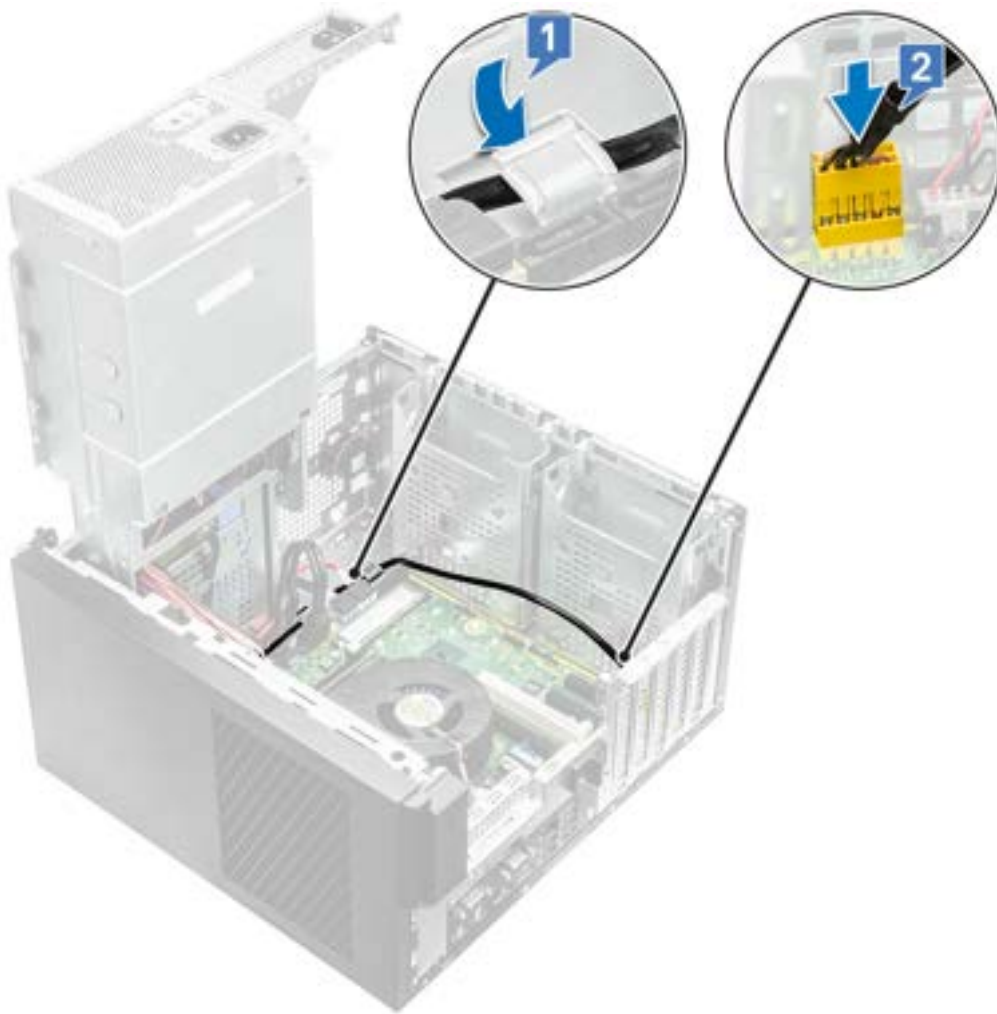
3. Replace the #6-32x1/4" screw to secure the IO panel to the system.



4. Route the cables through the routing channel [1] and connect the following cables to their respective connectors on the system board:
- IO USB cable [2]
 - Type-C cable [3]
 - SD card cable [4]
 - System board power connector cable [5]



5. Route the IO audio cable through the routing clip next to the system board on the chassis [1].
6. Connect the IO audio cable to the connector on the system board [2].



7. Install the:
 - a. [Optical drive](#)
 - b. [Front bezel](#)
 - c. [Cover](#)
8. Close the [PSU hinge](#).
9. Follow the procedure in [After Working Inside Your Computer](#).

Solid state drive

Removing the PCIe SSD card

NOTE: The instructions are applicable for removal of M.2 SATA SSD card also.

1. Follow the procedure in [Before Working Inside Your Computer](#).
2. Remove the:
 - a. [cover](#).
 - b. [Graphics card](#).
3. Open the [PSU hinge](#).
4. To remove the SSD card:
 - a. Remove the M2x2.5 screw that secures the PCIe SSD card [1].
 - b. Slide and lift the PCIe SSD card from the computer [2].
 - c. Remove the SSD thermal pad [3].

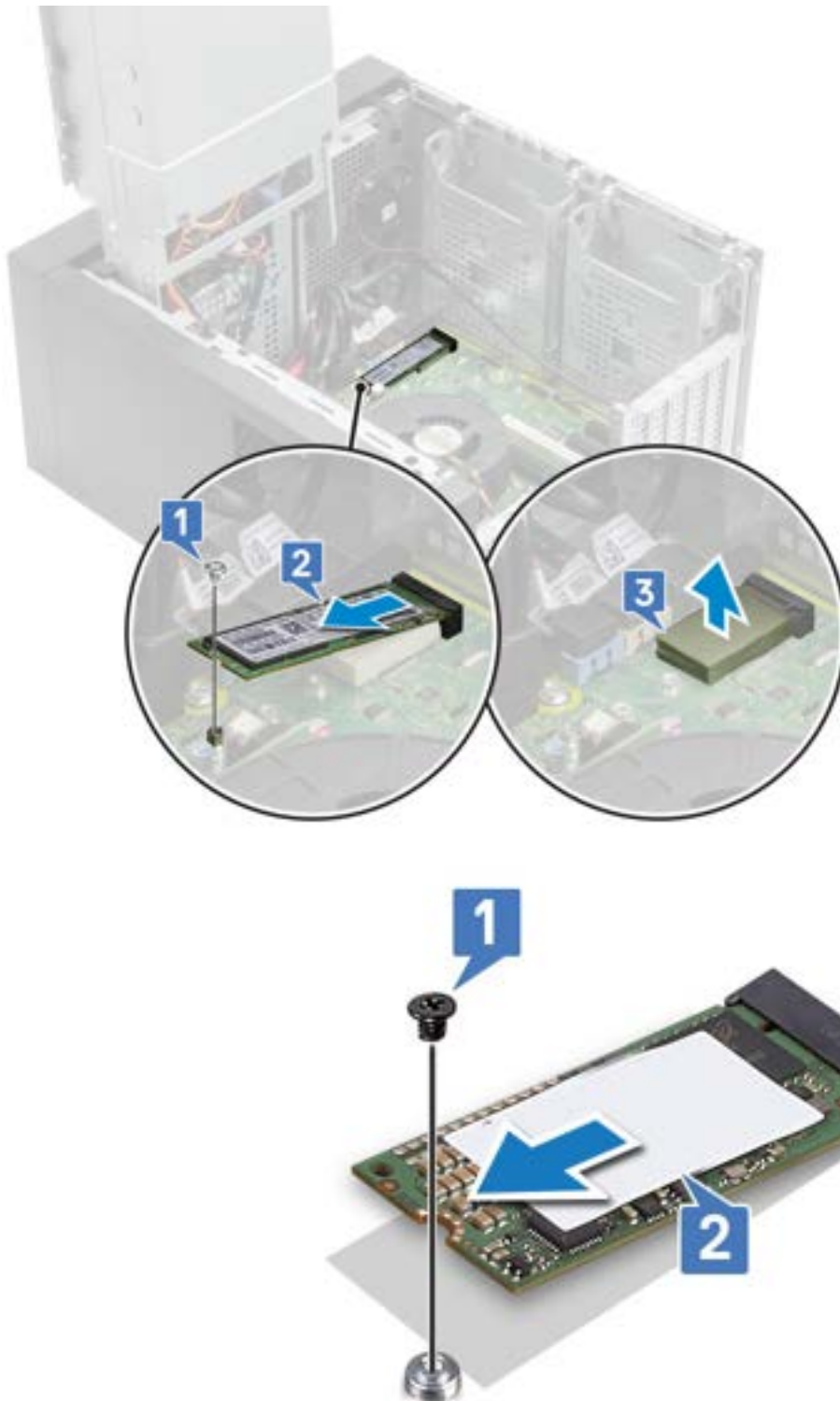


Figure 10. 2242 SSD

Installing the PCIe SSD card

NOTE: The instructions are applicable for installation of M.2 SATA SSD card also.

1. Place the SSD thermal pad into the slot on the system board [1] .

2. Slide the PCIe SSD card into the slot and tighten the M2x2.5 screw to secure the SSD card to the system board [2,3].

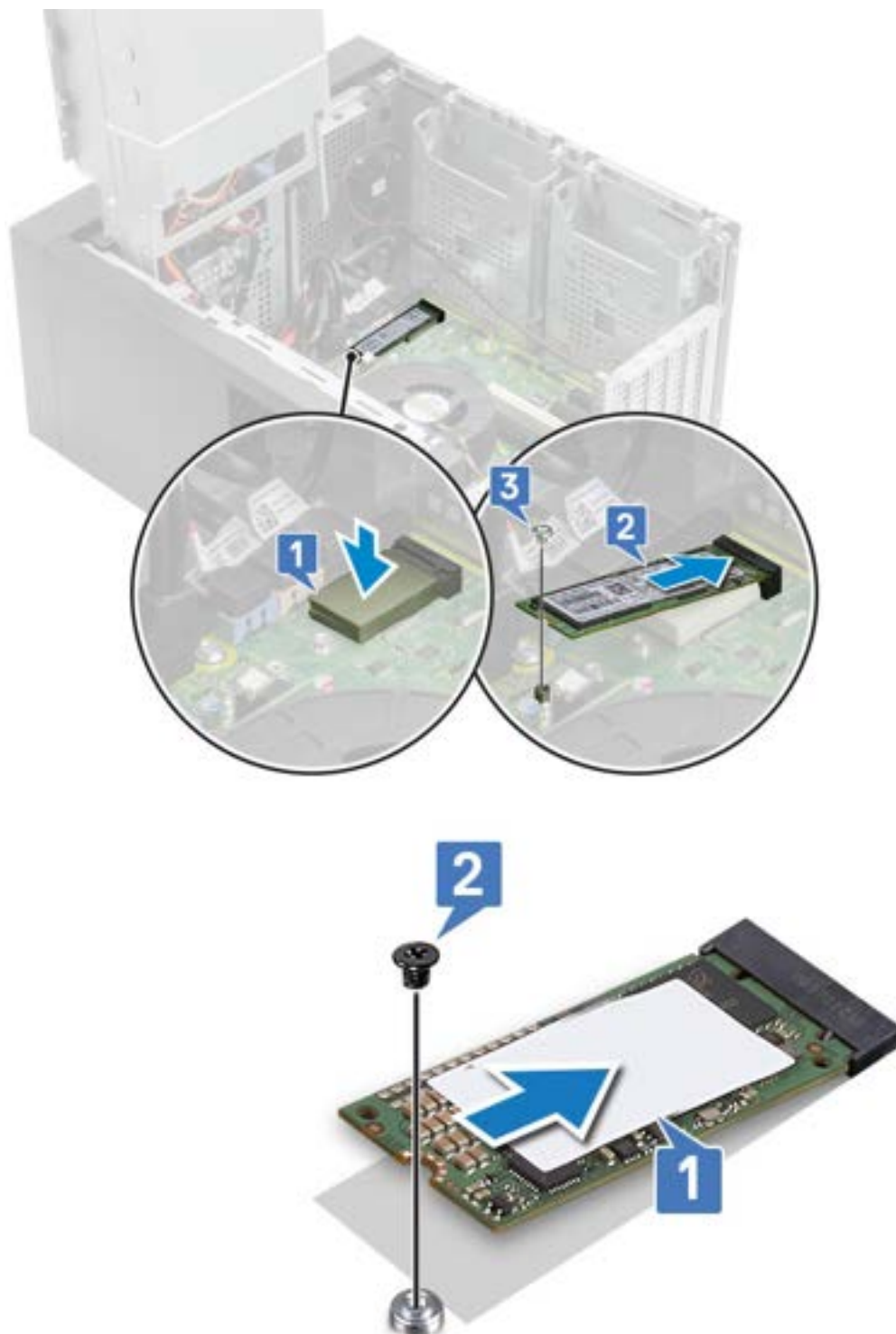


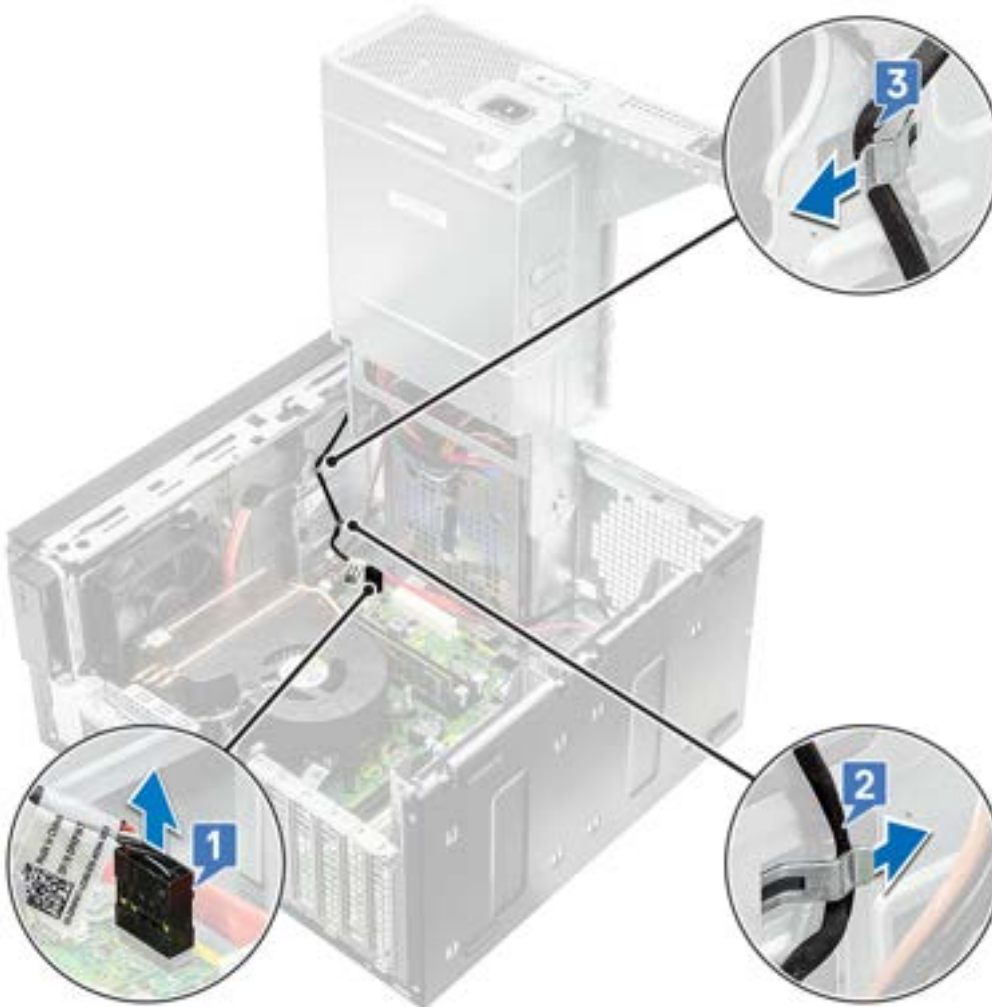
Figure 11. 2242 SSD

3. Install the:
 - a. [Cover](#).
 - b. [Graphics card](#).
4. Close the [PSU hinge](#).
5. Follow the procedure in [After Working Inside Your Computer](#).

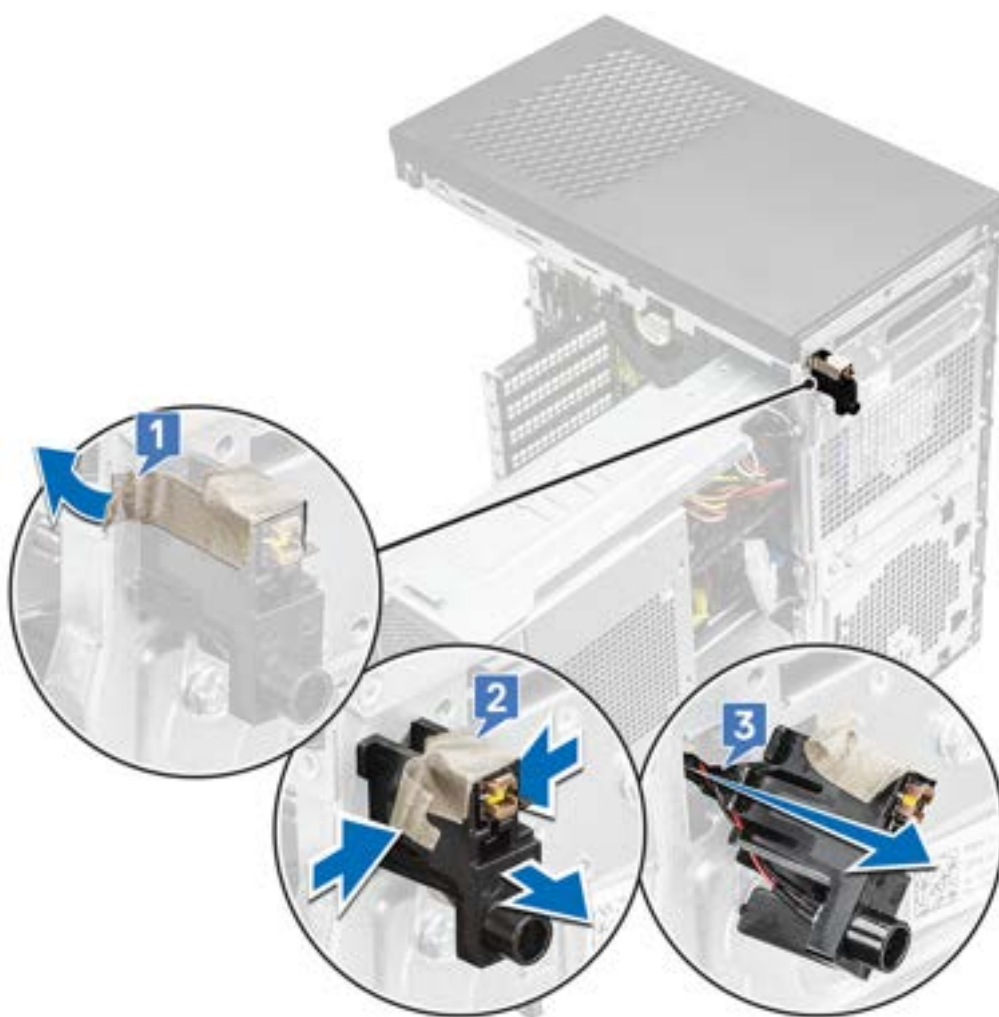
Power button module

Removing power button module

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [Cover](#)
 - b. [Front bezel](#)
 - c. [IO panel](#)
3. Open the [PSU hinge](#).
4. Disconnect the power button module cable from the connector on the system board [1].
5. Remove the button module cable from the routing guides next to the system board on the chassis [2,3].

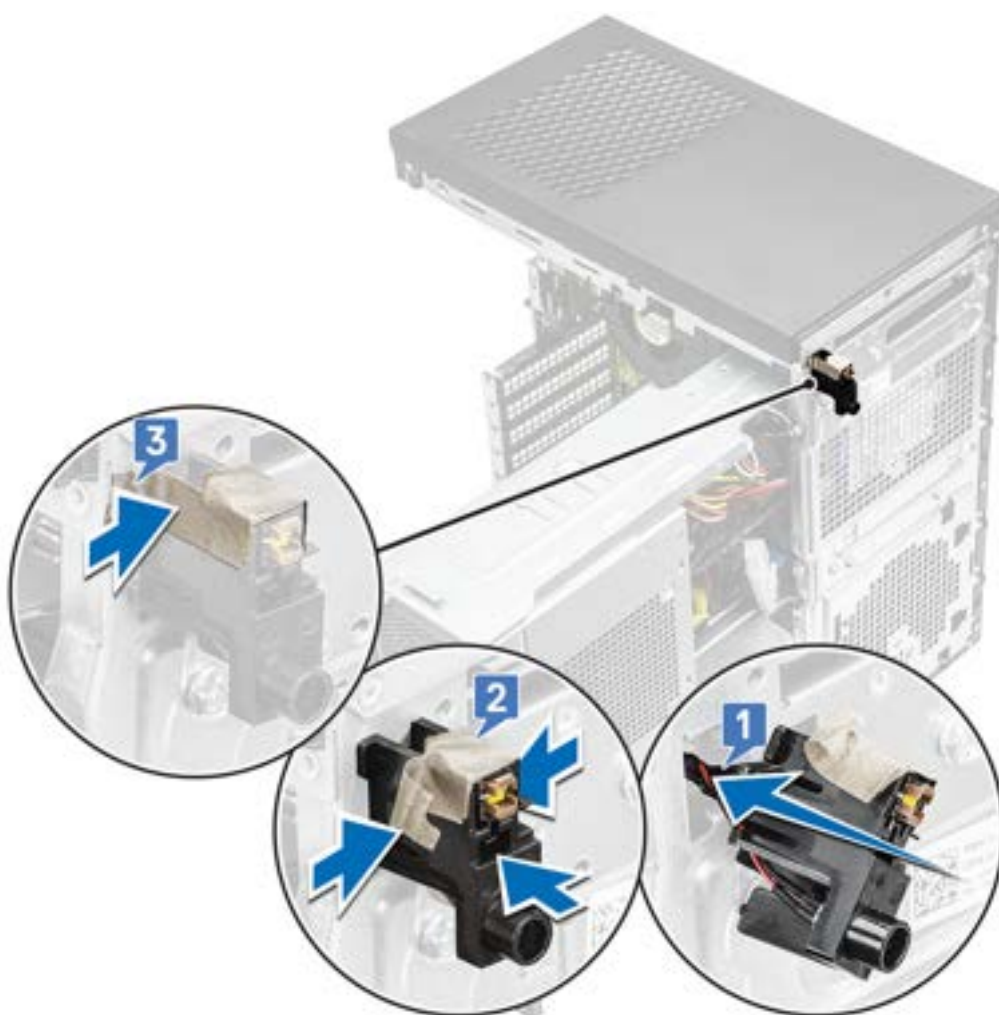


6. Remove the adhesive tape that secures the power button module to the chassis [1].
7. Press the notches to release the power button module and pull the power button module to remove it from the system [2,3].

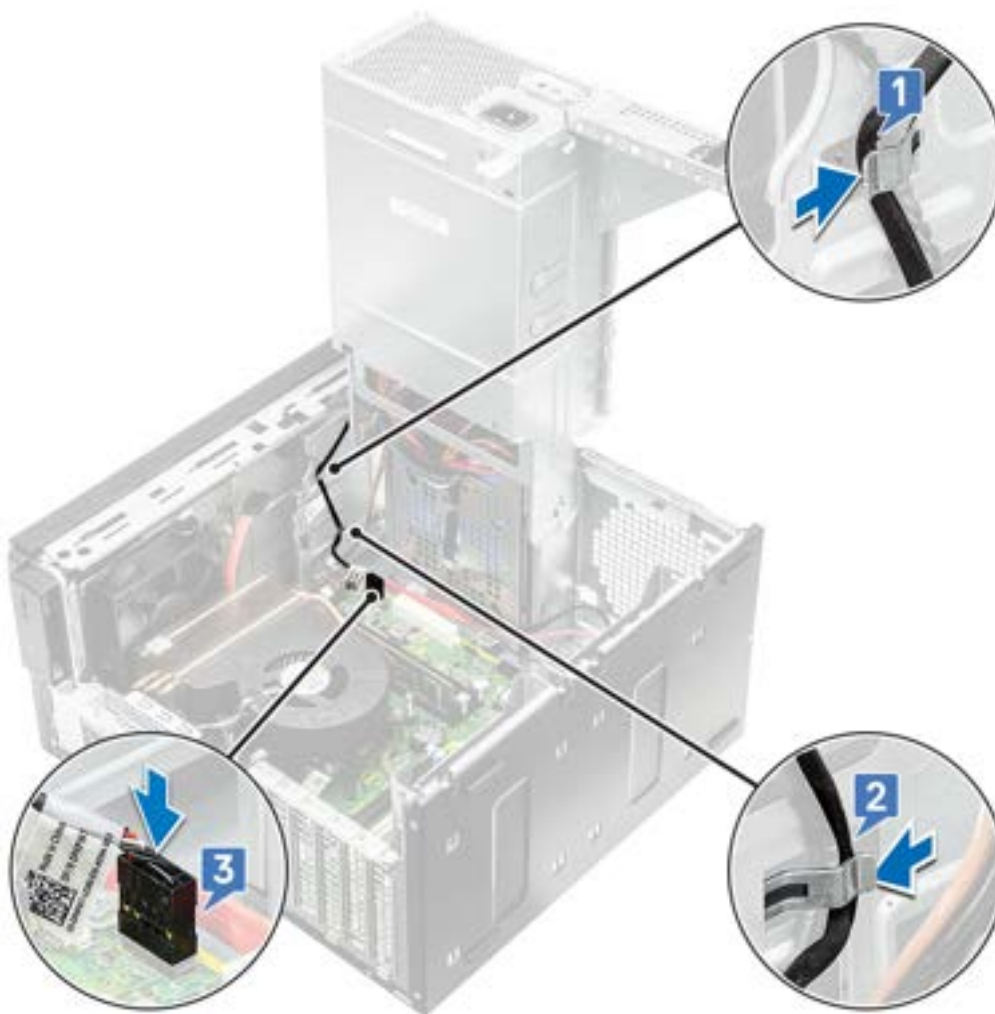


Installing power button module

1. Insert the power button module into its slot on the system [1] and press the notches and secure it to the system [2].
2. Affix the adhesive tape to secure the power button module to the system [3].



3. Route the power button module cable through the routing clips on the system [1,2].
4. Connect the power button module cable to the connector on the system board [3].



5. Install the:
 - a. IO panel
 - b. Optical drive
 - c. Front bezel
 - d. Cover
6. Close the PSU hinge.
7. Follow the procedure in *After Working Inside Your Computer*.

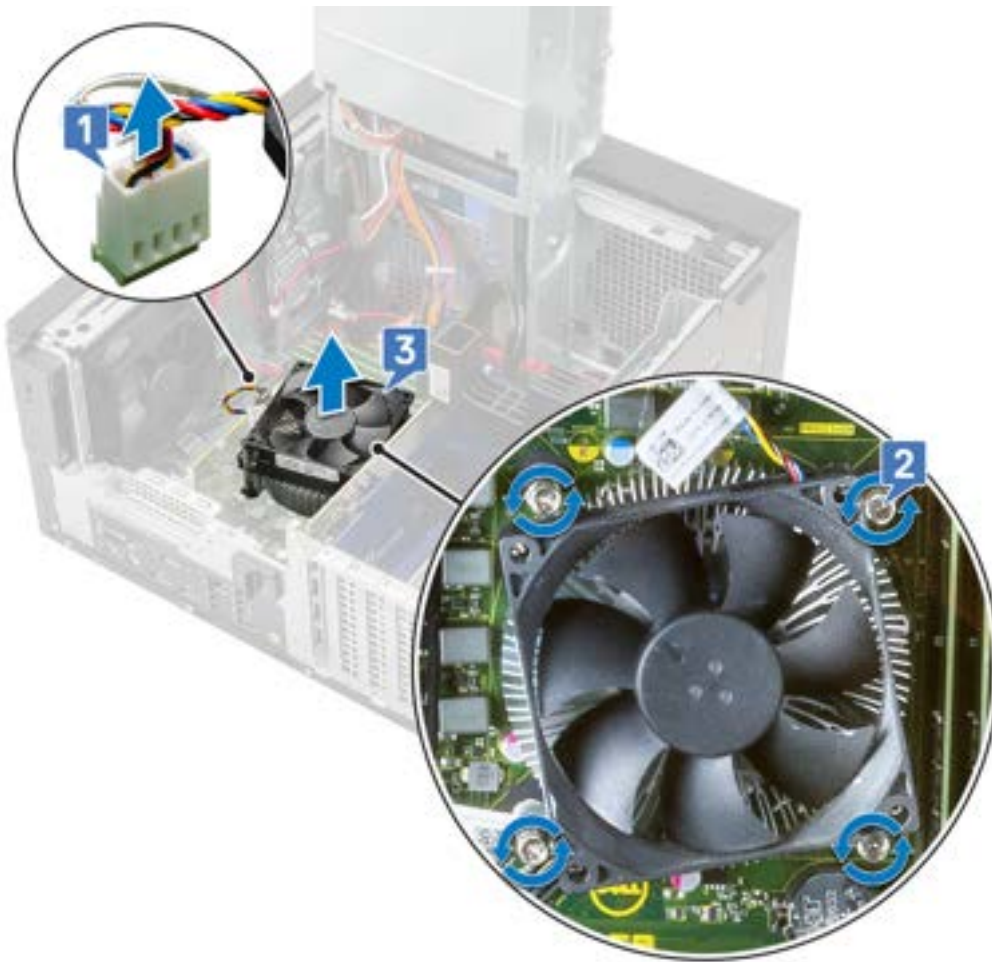
Heatsink assembly

Removing heatsink assembly - 65 W or 80 W CPU

These steps applies to system configurations shipped with 65 W or 80 W CPU.

1. Follow the procedure in *Before working inside your computer*.
2. Remove the Cover.
3. Open the PSU hinge.
4. To remove the heat sink assembly:
 - a. Disconnect the heat sink assembly cable from the connector on the system board [1].
 - b. Loosen the 4 captive screws that secure the heat sink assembly [2] and lift it from the system [3].

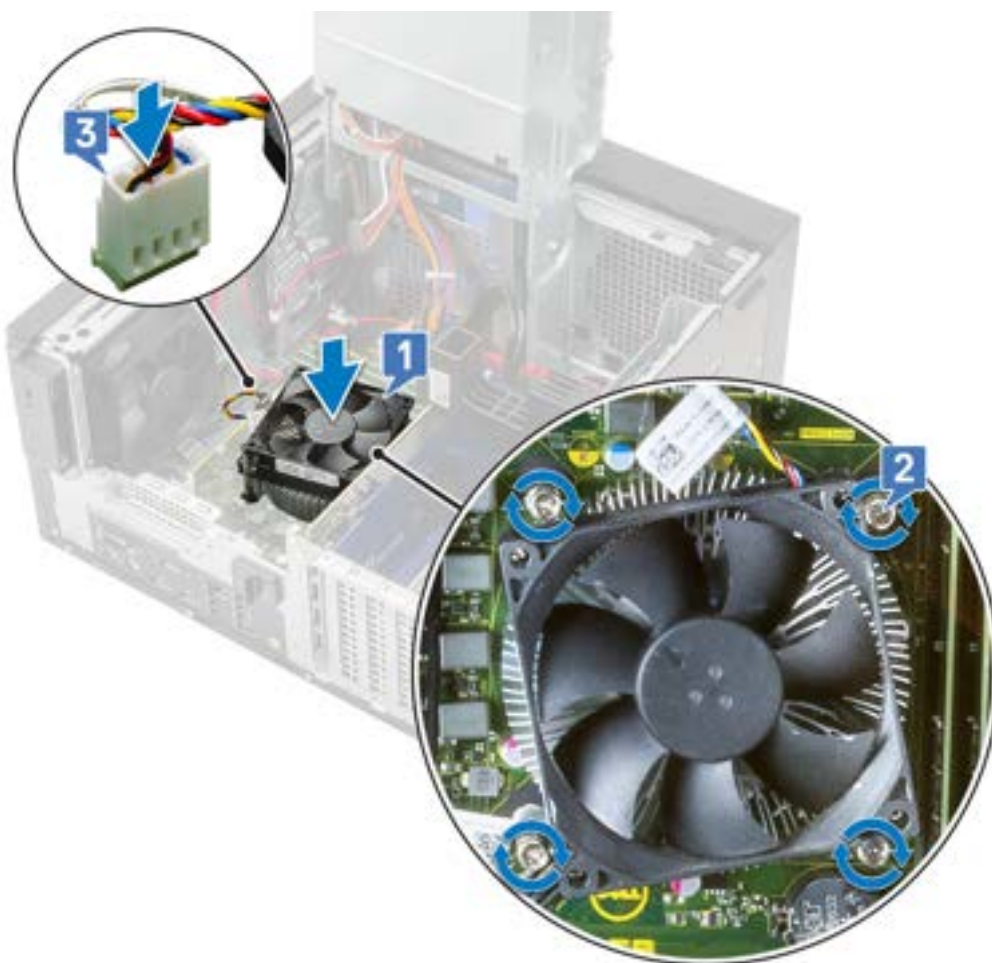
NOTE: Loosen the screws in a sequential order (1,2,3,4) as mentioned on the system board.



Installing heatsink assembly - 65 W or 80 W CPU

These steps apply to system configurations shipped with 65 W or 80 W CPU.

1. Align the heat sink assembly with the screw holders on the system board and place it on the processor [1].
2. Tighten the 4 captive screws to secure the heat sink assembly to the system board [2].
i NOTE: Tighten the screws in a sequential order (1,2,3,4) as mentioned on the system board.
3. Connect the heat sink assembly cable to the connector on the system board [3].



4. Close the [PSU hinge](#).
5. Install the [cover](#).
6. Follow the procedure in [After working inside your computer](#).

Blower and heat sink assembly

Removing heatsink assembly — 95 W CPU

These steps apply to system configurations shipped with 95 W CPU.

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [cover](#).
3. Open the [PSU hinge](#).
4. Remove the three #6-32x1/4" screws that secure the blower to the heat-sink assembly [1].
5. Flip over the blower and place it to a side [2].



6. Loosen the captive screws that secure the heat-sink assembly to the system board [1].
7. Lift the heat-sink assembly off the system board [2].



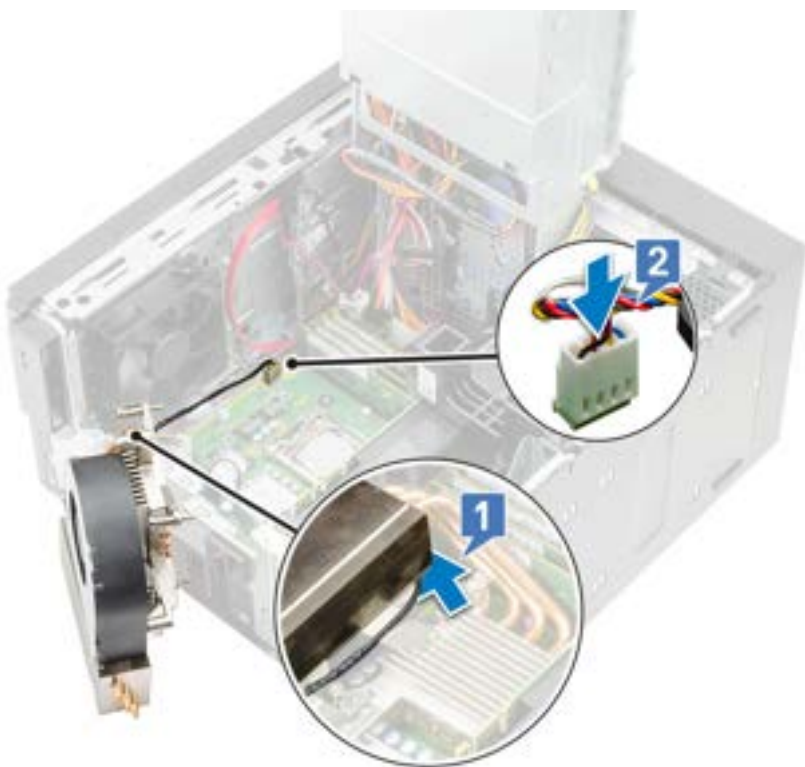
8. Disconnect the blower cable from the system board.



Installing the heatsink assembly — 95 W CPU

These steps apply to system configurations shipped with 95 W CPU.

1. Route the blower cable through the heat sink assembly [1] and connect the blower cable to the connector on the system board [2].



2. Place the heat-sink assembly over the processor.
3. Align the captive screws on the heat-sink assembly with the screw holes on the system board.

4. Tighten the captive screws that secure the heat-sink assembly to the system board.



5. Align the screw holes on the blower to the screw holes on the heat-sink assembly and place the blower over the heat-sink assembly [1].
6. Replace the screws that secure the blower to the heat-sink assembly [2].



7. Close the [PSU hinge](#).
8. Install the [cover](#).
9. Follow the procedure in [After working inside your computer](#).

Voltage regulator heat sink

Removing VR heatsink

1. Follow the procedure in [Before working inside your computer.](#)
2. Remove the:
 - a. [Cover](#)
 - b. [Graphics card](#)
 - c. [SSD](#)
 - d. [Heatsink assembly](#)
3. Open the [PSU hinge](#).
4. Loosen the captive screws that secure the VR heatsink to the system board [1].
5. Lift the VR heatsink from the system board [2].



Installing VR heatsink

1. Align the screws on the heatsink with the screw holders on the system board and place the VR heatsink on the system board [1].
2. Tighten the captive screws that secure the VR heatsink to the system board [2].



3. Install the:
 - a. [Heatsink assembly](#)
 - b. [SSD](#)
 - c. [Graphics card](#)
 - d. [Cover](#)
4. Close the [PSU hinge](#)
5. Follow the procedure in [After working inside your computer.](#)

Front fan

Removing front fan

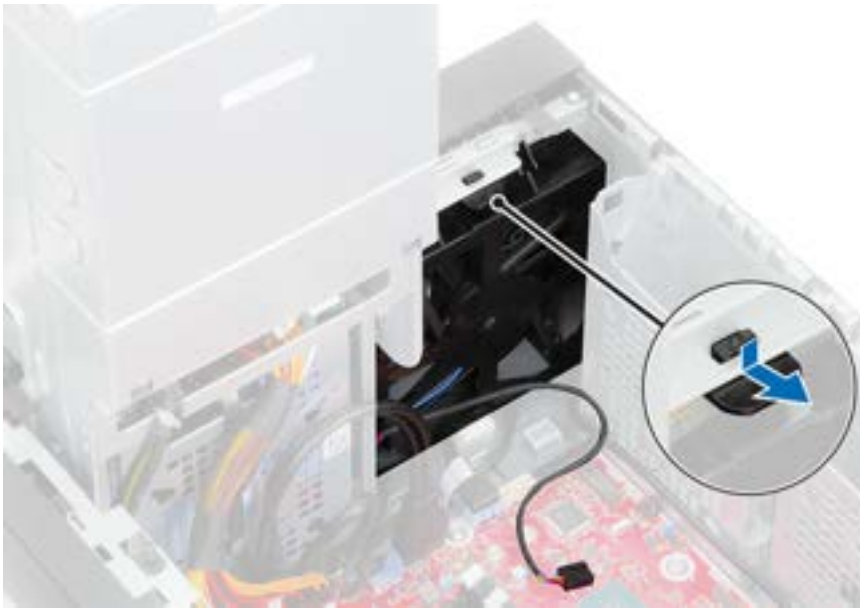
1. Follow the procedure in [Before Working Inside Your Computer.](#)
2. Remove the:
 - a. [Cover](#)
 - b. [PSU hinge](#)
3. Unroute the hard drive card cables from over the fan bracket.



4. Disconnect the front fan cable from the system board.



5. To release the front fan from the bracket, push the tab securing the front fan to the bracket.



6. Lift the front fan off the computer.



7. Release the fan cable from the hook on the fan frame [1] and flip over [2].

8. Pry from all sides [3] and remove the fan from the frame [4].



Installing front fan

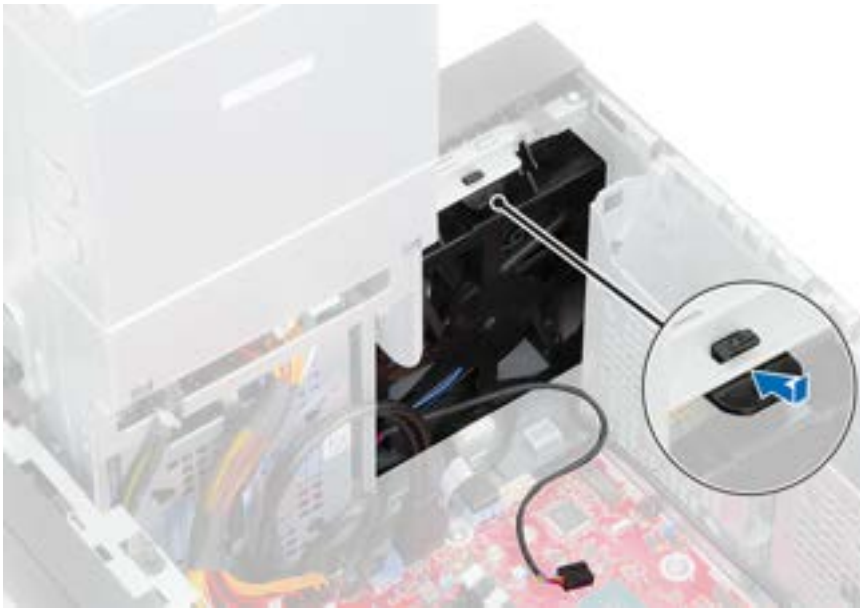
1. Replace the fan into the frame [1] and flip over [2].
2. Route the fan cable through the hook on the fan frame [3].



3. Replace the front fan on the fan bracket.



4. Press the tab to secure the front fan to the bracket on the computer.



5. Connect the front fan cable to the system board.



6. Route the hard drive card cables from over the front fan bracket.



System fan

Removing system fan

1. Follow the procedure in *Before Working Inside Your Computer*.
2. Remove the:
 - a. [Cover](#)
 - b. [PSU hinge](#)
 - c. [Heatsink assembly](#)
3. Disconnect the system fan cable from the connector on the system board.
4. Remove the #6-32x1/4" screw that secures the system-fan bracket to the chassis [1].
5. Slide the system-fan assembly towards the front of the computer to release it from the chassis and pull the system-fan assembly to remove it from the system [3].



6. Unroute the system fan cable from the routing channel on the system-fan bracket [1].
7. To release the system fan from the bracket, pull the rubber grommets and remove the grommets securing the system fan to the bracket [2].
8. Lift the system fan off the system-fan bracket [3].

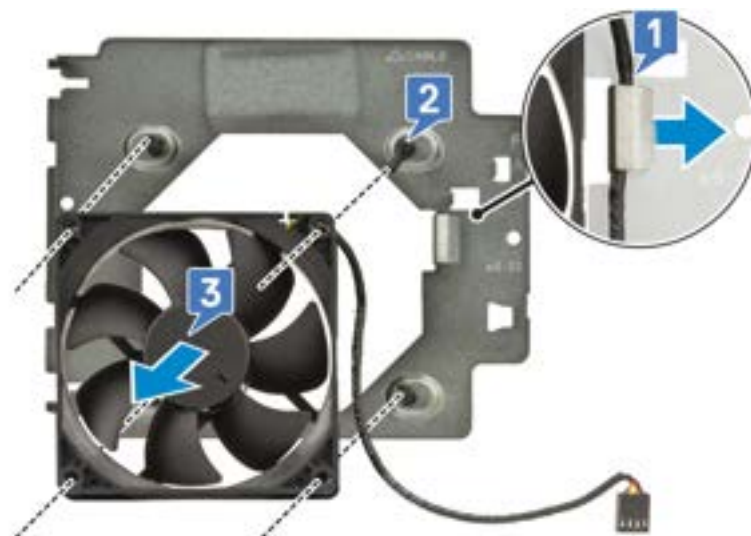
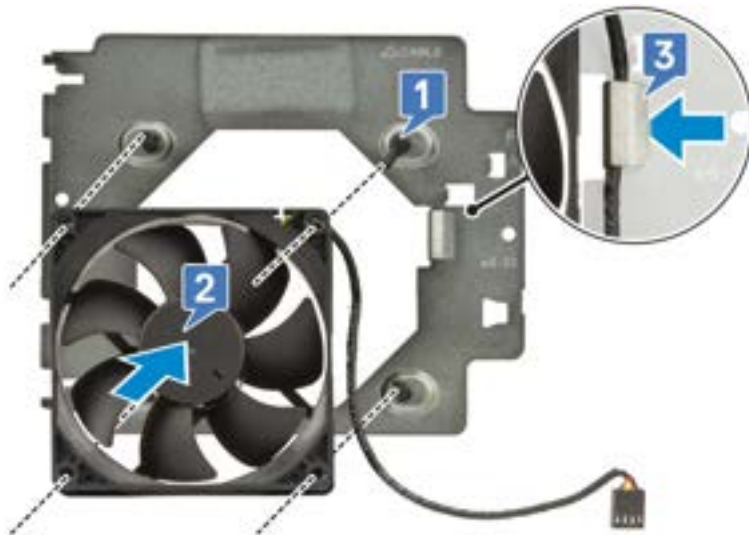


Figure 12. Removing the chassis fan

Installing system fan

1. Insert the rubber grommets through the holders on the system-fan bracket, align the system fan holes with the rubber grommets and insert the rubber grommets through the holes on the system fan to secure the system fan to the bracket [1].
2. Route the system fan cable through the routing channel on the system-fan bracket [2].



3. Align the grooves on the system-fan assembly with the holders on the chassis and slide the assembly [1].
4. Replace the #6-32x1/4" screw to secure the system-fan bracket to the chassis [2].
5. Connect the system fan cable to the connector on the system board [3].



6. Install the:
 - a. [Heatsink assembly](#)
 - b. [PSU hinge](#)
 - c. [Cover](#)
7. Follow the procedure in [After working inside your computer.](#)

Optional IO card

Removing optional IO card

NOTE: You may see one of these cards-HDMI/DisplayPort/VGA/Type-C based on the additional component you may have ordered with the system.

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [cover](#).
3. Open the [PSU hinge](#).
4. To remove the optional IO card:
 - a. Disconnect the IO card cable from the connector on the system board [1].
 - b. Remove the two M3X3 screws that secure the IO card to the system [2].
 - c. Remove the IO card from the system [3].



Installing the optional IO card

1. To remove the metal bracket as shown below, insert a flathead screwdriver in the hole of the bracket [1], push the bracket to release the bracket [2], and then lift the bracket out from the system.



2. Insert the IO card into its slot from the inside of your computer [1] and replace the two M3X3 screws to secure the IO card to the system [2].
3. Connect the IO card cable to the connector on the system board [3].

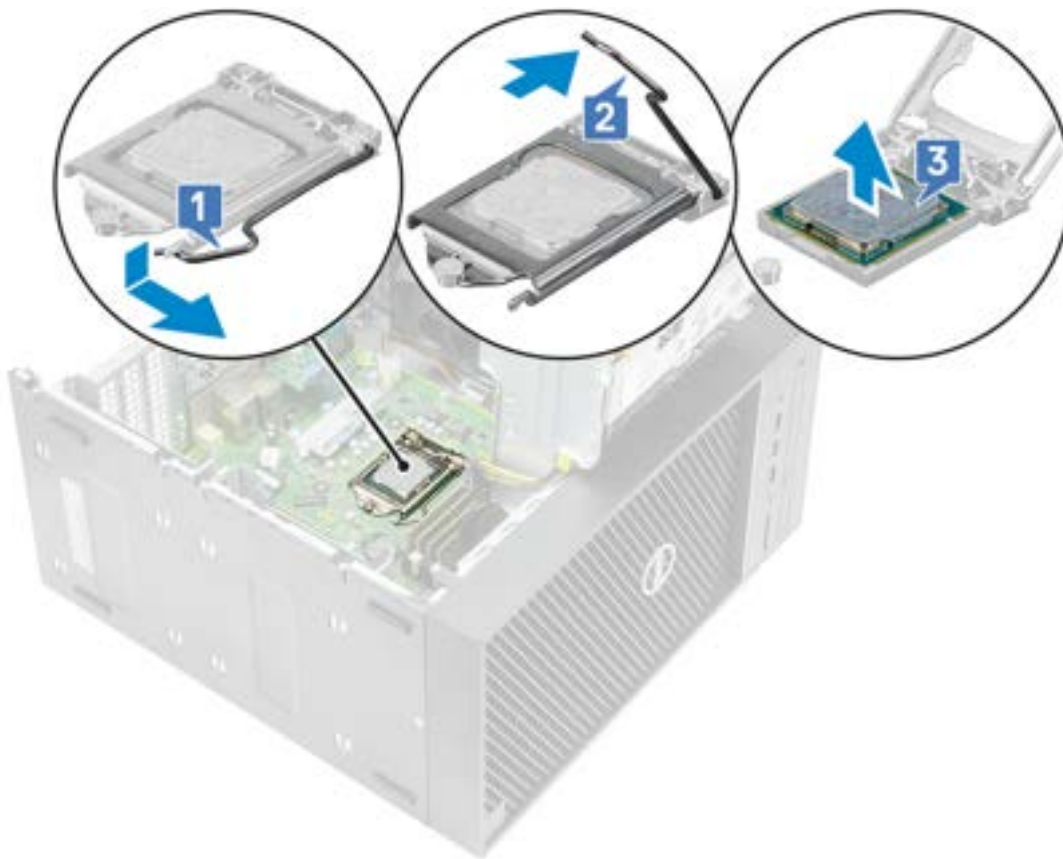


4. Close the [PSU hinge](#).
5. Install the [cover](#).

Processor

Removing the processor

1. Follow the procedure in *Before Working Inside Your Computer*.
2. Remove the:
 - a. [Cover](#)
 - b. [PSU hinge](#)
 - c. [Heatsink assembly](#)
3. To remove the processor:
 - a. Release the socket lever by pushing the lever down and out from under the tab on the processor shield [1].
 - b. Lift the lever upward and lift the processor shield [2].
 - c. Lift the processor out of the socket [3].



Installing the processor

1. Align the pin-1 indicator of the processor with the triangle on the socket and place the processor on the socket such that the slots on the processor align with the socket keys [1].
2. Close the processor shield by sliding it under the retention screw [2].
3. Lower the socket lever and push it under the tab to lock it [3].



4. Install the:
 - a. [Heatsink assembly](#)
 - b. [PSU hinge](#)
 - c. [Cover](#)
5. Follow the procedure in [After Working Inside Your Computer](#).

Intrusion switch

Removing intrusion switch

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [cover](#).
3. Open the [PSU hinge](#).
4. To remove the intrusion switch:
 - a. Disconnect the intrusion switch cable from the connector on the system board [1].
 - b. Unroute the intrusion switch cable from the routing clips on the chassis [2].
 - c. Slide the intrusion switch and lift it to remove from the computer [3].



Installing intrusion switch

1. Slide the intrusion switch into the slot on the computer [1].
2. Route the intrusion switch cable through the routing clips on the chassis [2].
3. Connect the intrusion switch cable to the connector on the system board [3].



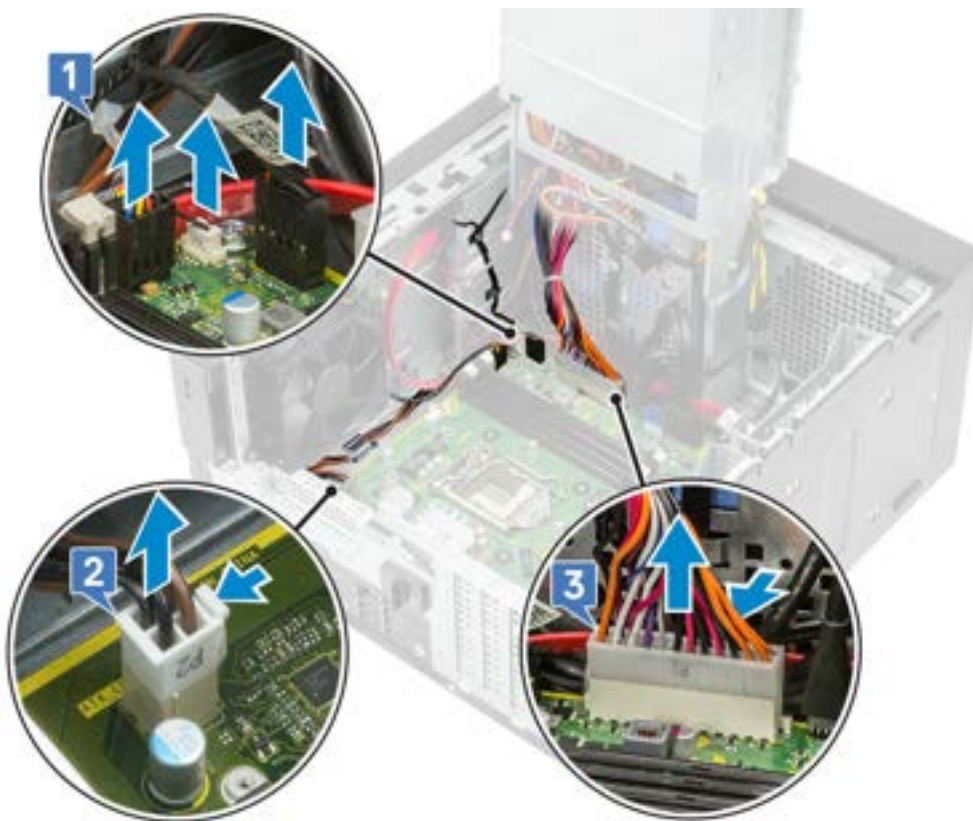
4. Close the [PSU hinge](#).
5. Install the [cover](#).

6. Follow the procedure in [After working inside your computer.](#)

System board

Removing the system board

1. Follow the procedure in [Before Working Inside Your Computer.](#)
2. Remove the:
 - a. [Cover](#)
 - b. [PSU hinge](#)
 - c. [Memory module](#)
 - d. [Graphics card](#)
 - e. [SSD](#)
 - f. [Heatsink assembly](#)
 - g. [VR heat sink](#) (for models shipped with 95 W heatsink assembly)
 - h. [Optional IO card](#)
 - i. [Processor](#)
3. Remove the following cables:
 - System fan cable, intrusion cable, and IO panel cable [1]
 - CPU power cable [2]
 - System board power connector cable [3]



4. Remove the following cables:
 - SD card cable [1]
 - Type-C cable [2]
 - IO USB cable [3]
 - Primary HDD SATA cable [4]
 - ODD SATA cable [5]



5. Remove the following cables:

- Speaker cable [1]
- IO audio cable [2]



6. Remove the 8 #6-32x1/4" screws that secure the system board to the chassis.



7. Lift the system board at an angle and remove it from the computer.



Installing the system board

1. Slide the I/O ports on the system board into the slots on the chassis [1]. Align the screw holes on the system board with the screw holes on the chassis [2].



2. Replace the 8 #6-32x1/4" screws that secure the system board to the chassis.



3. Route and connect the following cables:

- IO audio cable [1]
- Speaker cable [2]



4. Route and connect the following cables:

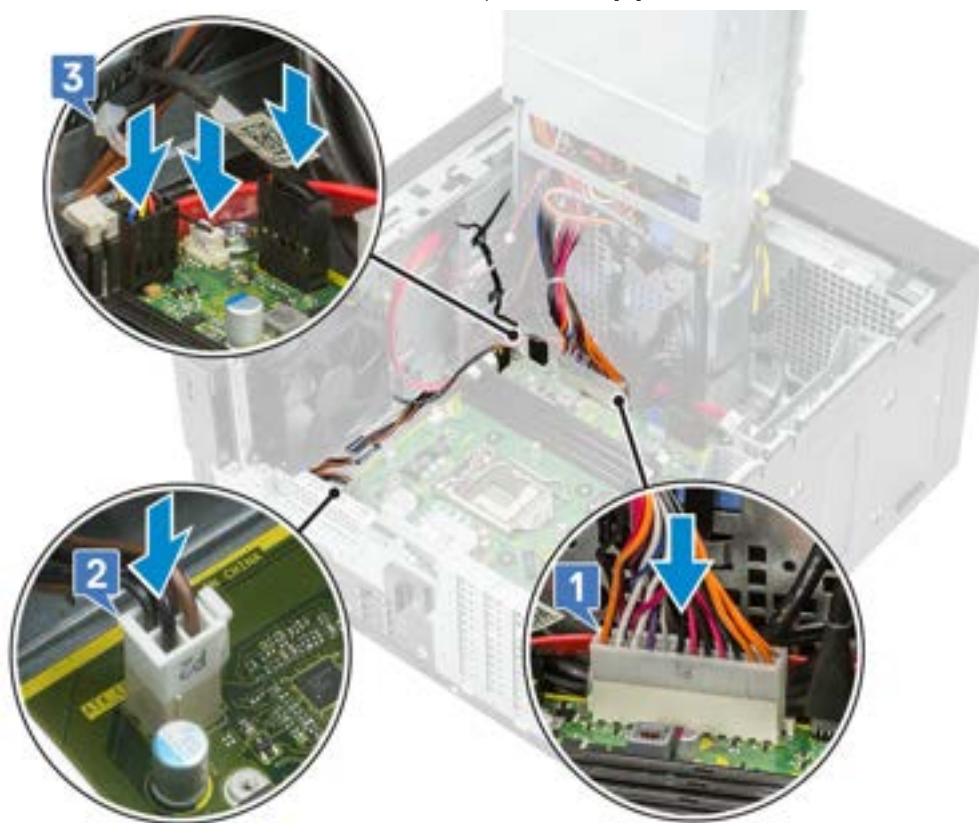
- ODD SATA cable [1]
- Primary HDD SATA cable [4]
- IO USB cable [3]
- Type-C cable [4]
- SD card cable [5]



5. Route and connect the following cables:

- System board power connector cable [1]

- CPU power cable [2]
- System fan cable, intrusion cable, and IO panel cable [3]



6. Install the:
 - a. [Optional IO card](#)
 - b. [Processor](#)
 - c. [VR heat sink](#) (for models shipped with 95W heat sink assembly)
 - d. [Heatsink assembly](#) (for models shipped with 95W heat sink assembly)
 - e. [SSD](#)
 - f. [Graphics card](#)
 - g. [Memory module](#)
 - h. [PSU hinge](#)
 - i. [Cover](#)
7. Follow the procedure in [After Working Inside Your Computer](#).

Troubleshooting

Topics:

- [Power supply unit Built-in Self Test](#)
- [Enhanced Pre-Boot System Assessment — ePSA diagnostics](#)
- [Diagnostics](#)
- [Diagnostic error messages](#)
- [System error messages](#)

Power supply unit Built-in Self Test

Precision 3630 supports a new power supply unit Built-in Self Test (BIST). You can test the health of the power system by pressing the test button or by connecting the power cord. When the power cord is connected, the self-test LED is lit for 3-5 seconds indicating PSU functionality. To test the health with PSU BIST button follow the below steps:

1. Turn off your computer.
2. Disconnect the power cord from the power supply unit, and wait for 15 seconds.
3. Press the PSU BIST button.
 - If the LED turns on and remains on while the BIST button is pressed, it indicates that the power supply unit is functional. Continue with troubleshooting steps for other devices.
 - If the LED does not turn on, it indicates PSU failure.



Steps to confirm that power supply unit is defective

1. Disconnect the power cord from the power supply unit.

 **CAUTION:** Ensure that you take adequate safety precautions before accessing the components on your computer. See the removing and replacing instructions in the service manual for procedure to access the power-supply unit and its cables.

2. Disconnect the power supply unit cables from the system board and other components.
3. Press the PSU BIST button.
 - If the LED turns on and remains on while the BIST button is pressed, it indicates that the power-supply unit is functional. Continue with troubleshooting steps for other devices.
 - If the LED does not turn on, it indicates a power-supply unit failure. Replace the power supply unit.

Enhanced Pre-Boot System Assessment — ePSA diagnostics

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

The ePSA diagnostics can be initiated by the FN+PWR buttons while powering on the computer.

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

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

Running the ePSA Diagnostics

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

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

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

4. Press the arrow in the lower-right corner to go to the page listing. The detected items are listed and tested.
5. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
6. Select the device from the left pane and click **Run Tests**.
7. If there are any issues, error codes are displayed. Note the error code and contact Dell.

Diagnostics

Power status light: Indicates the power status.

Solid Amber – The system is unable to boot to the operating system. This indicates that the power supply or another device in the system is failing.

Blinking Amber – The system is unable to boot to the operating system. This indicates that the power supply is normal but another device in the system is failing or not installed properly.

 **NOTE:** To determine the device that is failing, see the light patterns .

Off – System is in hibernation or turned off.

The power status light blinks amber along with beep codes indicating failures.

For example, the power status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off indicating the Recovery image is not found.

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

Table 2. Diagnostic LED/Beep codes

LED # of Flashes	Problem description	Faults
2,1	Faulty system board	Faulty system board
2,2	Faulty system board, power supply unit (PSU), or cabling	Faulty system board, power supply unit (PSU), or cabling
2,3	Faulty system board, CPU, or DIMMS	Faulty system board, power supply unit (PSU), or DIMMS
2,4	Faulty coin cell battery	Faulty coin cell battery
2,5	BIOS Recovery	AutoRecovery trigger, recovery image is not found or is invalid
2,6	CPU	CPU Error
2,7	Memory	Memory SPD failure
3,3	Memory	No memory detected
3,5	Memory	Modules incompatible or invalid configuration
3,6	BIOS Recovery	On-demand trigger, recovery image is not found
3,7	BIOS Recovery	On-demand trigger, recovery image is invalid

The system may emit a series of beeps during start-up if the errors or problems cannot be displayed. The repetitive beep codes help the user troubleshoot problems with the system.

Diagnostic error messages

Table 3. Diagnostic error messages

Error messages	Description
AUXILIARY DEVICE FAILURE	The touchpad or external mouse may be faulty. For an external mouse, check the cable connection. Enable the Pointing Device option in the System Setup program.
BAD COMMAND OR FILE NAME	Ensure that you have spelled the command correctly, put spaces in the proper place, and used the correct path name.
CACHE DISABLED DUE TO FAILURE	The primary cache internal to the microprocessor has failed. Contact Dell
CD DRIVE CONTROLLER FAILURE	The optical drive does not respond to commands from the computer.
DATA ERROR	The hard drive cannot read the data.
DECREASING AVAILABLE MEMORY	One or more memory modules may be faulty or improperly seated. Reinstall the memory modules or, if necessary, replace them.
DISK C: FAILED INITIALIZATION	The hard drive failed initialization. Run the hard drive tests in Dell Diagnostics .
DRIVE NOT READY	The operation requires a hard drive in the bay before it can continue. Install a hard drive in the hard drive bay.

Table 3. Diagnostic error messages (continued)

Error messages	Description
ERROR READING PCMCIA CARD	The computer cannot identify the ExpressCard. Reinsert the card or try another card.
EXTENDED MEMORY SIZE HAS CHANGED	The amount of memory recorded in non-volatile memory (NVRAM) does not match the memory module installed in the computer. Restart the computer. If the error appears again, Contact Dell
THE FILE BEING COPIED IS TOO LARGE FOR THE DESTINATION DRIVE	The file that you are trying to copy is too large to fit on the disk, or the disk is full. Try copying the file to a different disk or use a larger capacity disk.
A FILENAME CANNOT CONTAIN ANY OF THE FOLLOWING CHARACTERS: \ / : * ? " < > -	Do not use these characters in filenames.
GATE A20 FAILURE	A memory module may be loose. Reinstall the memory module or, if necessary, replace it.
GENERAL FAILURE	The operating system is unable to carry out the command. The message is usually followed by specific information. For example, <i>Printer out of paper</i> . Take the appropriate action.
HARD-DISK DRIVE CONFIGURATION ERROR	The computer cannot identify the drive type. Shut down the computer, remove the hard drive, and boot the computer from an optical drive. Then, shut down the computer, reinstall the hard drive, and restart the computer. Run the Hard Disk Drive tests in Dell Diagnostics .
HARD-DISK DRIVE CONTROLLER FAILURE 0	The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive, and boot the computer from an optical drive. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard Disk Drive tests in Dell Diagnostics .
HARD-DISK DRIVE FAILURE	The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive, and boot the computer from an optical drive. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard Disk Drive tests in Dell Diagnostics .
HARD-DISK DRIVE READ FAILURE	The hard drive may be defective. Shut down the computer, remove the hard drive, and boot the computer from an optical. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard Disk Drive tests in Dell Diagnostics .
INSERT BOOTABLE MEDIA	The operating system is trying to boot to non-bootable media, such as an optical drive. Insert bootable media.
INVALID CONFIGURATION INFORMATION-PLEASE RUN SYSTEM SETUP PROGRAM	The system configuration information does not match the hardware configuration. The message is most likely to occur after a memory module is installed. Correct the appropriate options in the system setup program.
KEYBOARD CLOCK LINE FAILURE	For external keyboards, check the cable connection. Run the Keyboard Controller test in Dell Diagnostics .
KEYBOARD CONTROLLER FAILURE	For external keyboards, check the cable connection. Restart the computer, and avoid touching the keyboard or the mouse during the boot routine. Run the Keyboard Controller test in Dell Diagnostics .

Table 3. Diagnostic error messages (continued)

Error messages	Description
KEYBOARD DATA LINE FAILURE	For external keyboards, check the cable connection. Run the Keyboard Controller test in Dell Diagnostics .
KEYBOARD STUCK KEY FAILURE	For external keyboards or keypads, check the cable connection. Restart the computer, and avoid touching the keyboard or keys during the boot routine. Run the Stuck Key test in Dell Diagnostics .
LICENSED CONTENT IS NOT ACCESSIBLE IN MEDIADIRECT	Dell MediaDirect cannot verify the Digital Rights Management (DRM) restrictions on the file, so the file cannot be played.
MEMORY ADDRESS LINE FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
MEMORY ALLOCATION ERROR	The software you are attempting to run is conflicting with the operating system, another program, or a utility. Shut down the computer, wait for 30 seconds, and then restart it. Run the program again. If the error message still appears, see the software documentation.
MEMORY DOUBLE WORD LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
MEMORY ODD/EVEN LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
MEMORY WRITE/READ FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
NO BOOT DEVICE AVAILABLE	The computer cannot find the hard drive. If the hard drive is your boot device, ensure that the drive is installed, properly seated, and partitioned as a boot device.
NO BOOT SECTOR ON HARD DRIVE	The operating system may be corrupted, Contact Dell .
NO TIMER TICK INTERRUPT	A chip on the system board may be malfunctioning. Run the System Set tests in Dell Diagnostics .
NOT ENOUGH MEMORY OR RESOURCES. EXIT SOME PROGRAMS AND TRY AGAIN	You have too many programs open. Close all windows and open the program that you want to use.
OPERATING SYSTEM NOT FOUND	Reinstall the operating system. If the problem persists, Contact Dell .
OPTIONAL ROM BAD CHECKSUM	The optional ROM has failed. Contact Dell .
SECTOR NOT FOUND	The operating system cannot locate a sector on the hard drive. You may have a defective sector or corrupted File Allocation Table (FAT) on the hard drive. Run the Windows error-checking utility to check the file structure on the hard drive. See Windows Help and Support for instructions (click Start > Help and Support). If a large number of sectors are defective, back up the data (if possible), and then format the hard drive.
SEEK ERROR	The operating system cannot find a specific track on the hard drive.
SHUTDOWN FAILURE	A chip on the system board may be malfunctioning. Run the System Set tests in Dell Diagnostics . If the message reappears, Contact Dell .
TIME-OF-DAY CLOCK LOST POWER	System configuration settings are corrupted. Connect your computer to an electrical outlet to charge the battery. If the problem persists, try to restore the data by entering the System Setup program, then immediately exit the program. If the message reappears, Contact Dell .

Table 3. Diagnostic error messages (continued)

Error messages	Description
TIME-OF-DAY CLOCK STOPPED	The reserve battery that supports the system configuration settings may require recharging. Connect your computer to an electrical outlet to charge the battery. If the problem persists, Contact Dell .
TIME-OF-DAY NOT SET-PLEASE RUN THE SYSTEM SETUP PROGRAM	The time or date stored in the system setup program does not match the system clock. Correct the settings for the Date and Time options.
TIMER CHIP COUNTER 2 FAILED	A chip on the system board may be malfunctioning. Run the System Set tests in Dell Diagnostics .
UNEXPECTED INTERRUPT IN PROTECTED MODE	The keyboard controller may be malfunctioning, or a memory module may be loose. Run the System Memory tests and the Keyboard Controller test in Dell Diagnostics or Contact Dell .
X:\ IS NOT ACCESSIBLE. THE DEVICE IS NOT READY	Insert a disk into the drive and try again.

System error messages

Table 4. System error messages

System message	Description
Alert! Previous attempts at booting this system have failed at checkpoint [nnnn]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support	The computer failed to complete the boot routine three consecutive times for the same error.
CMOS checksum error	RTC is reset, BIOS Setup default has been loaded.
CPU fan failure	CPU fan has failed.
System fan failure	System fan has failed.
Hard-disk drive failure	Possible hard disk drive failure during POST.
Keyboard failure	Keyboard failure or loose cable. If reseating the cable does not solve the problem, replace the keyboard.
No boot device available	No bootable partition on hard disk drive, the hard disk drive cable is loose, or no bootable device exists. - If the hard drive is your boot device, ensure that the cables are connected and that the drive is installed properly and partitioned as a boot device. - Enter system setup and ensure that the boot sequence information is correct.
No timer tick interrupt	A chip on the system board might be malfunctioning or motherboard failure.
NOTICE - Hard Drive SELF MONITORING SYSTEM has reported that a parameter has exceeded its normal operating range. Dell recommends that you back up your data regularly. A parameter out of range may or may not indicate a potential hard drive problem	S.M.A.R.T error, possible hard disk drive failure.

Getting help

Topics:

- [Contacting Dell](#)

Contacting Dell

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

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Go to **Dell.com/support**.
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.

Cable cover

The cable cover for Precision Tower 3630 helps protect ports and cables connected to the system.

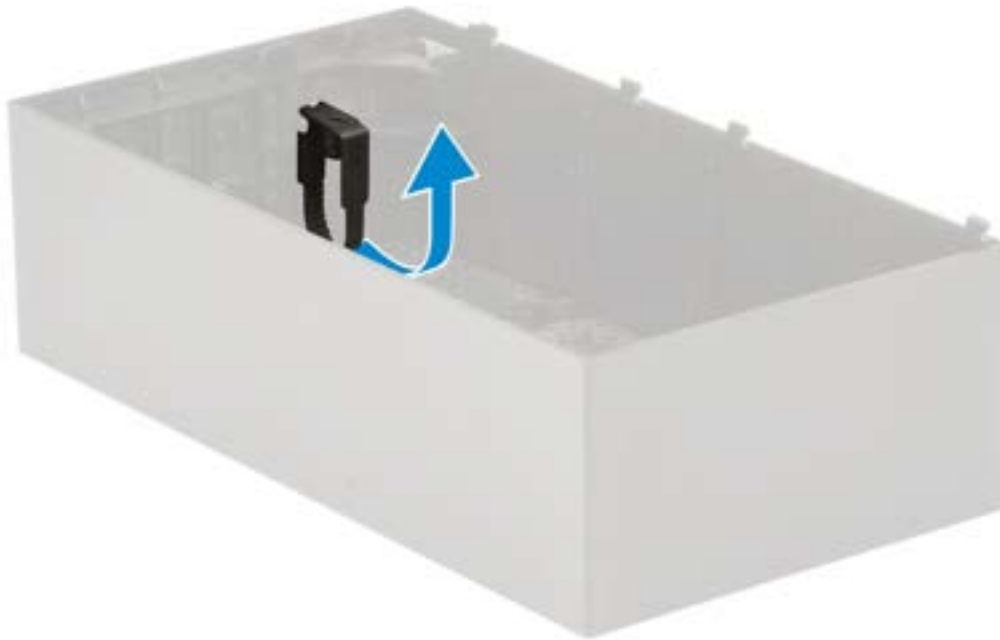
Follow these steps to install the cable cover on the system chassis.

NOTE: Images shown below are for representation only and may vary depending on the system's configuration.

1. Insert the tab on the security-lock metal bracket into the slot on the rear side of the system [1] and rotate to align the holes on the metal bracket with screw holders on the chassis [2]
2. Fasten the two #6-32x1/4" screws to secure the security metal bracket to the chassis [3].



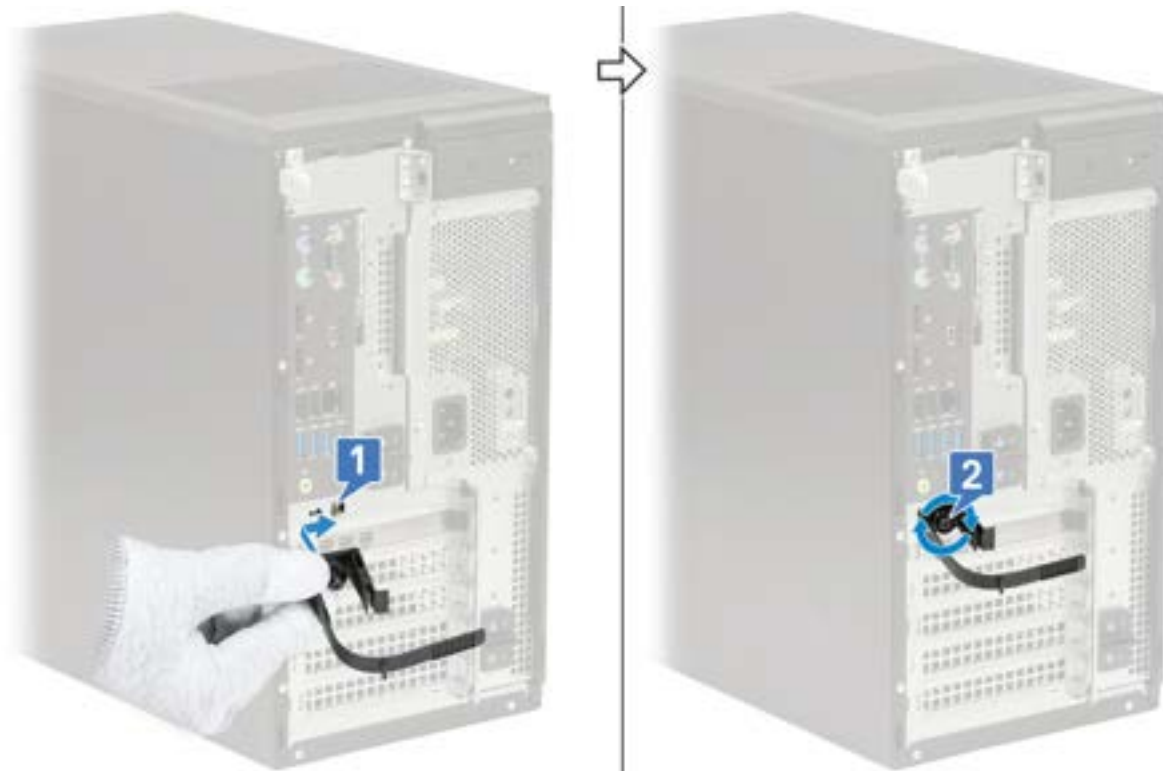
3. Pull the cable release latch and lift the latch away from the cable cover.



4. Lift the tab [1] to release and pull the cable tie from the slot on the cable release latch [2].



5. Align the cable release latch on the system chassis slot [1]. Tighten the screw to secure the cable release latch to the system chassis [2].



6. Route the cables through the slot of the cable cover [1], and connect them to their respective ports on the system [2]. Secure the cable with the cable tie and lock the tab in place [3].

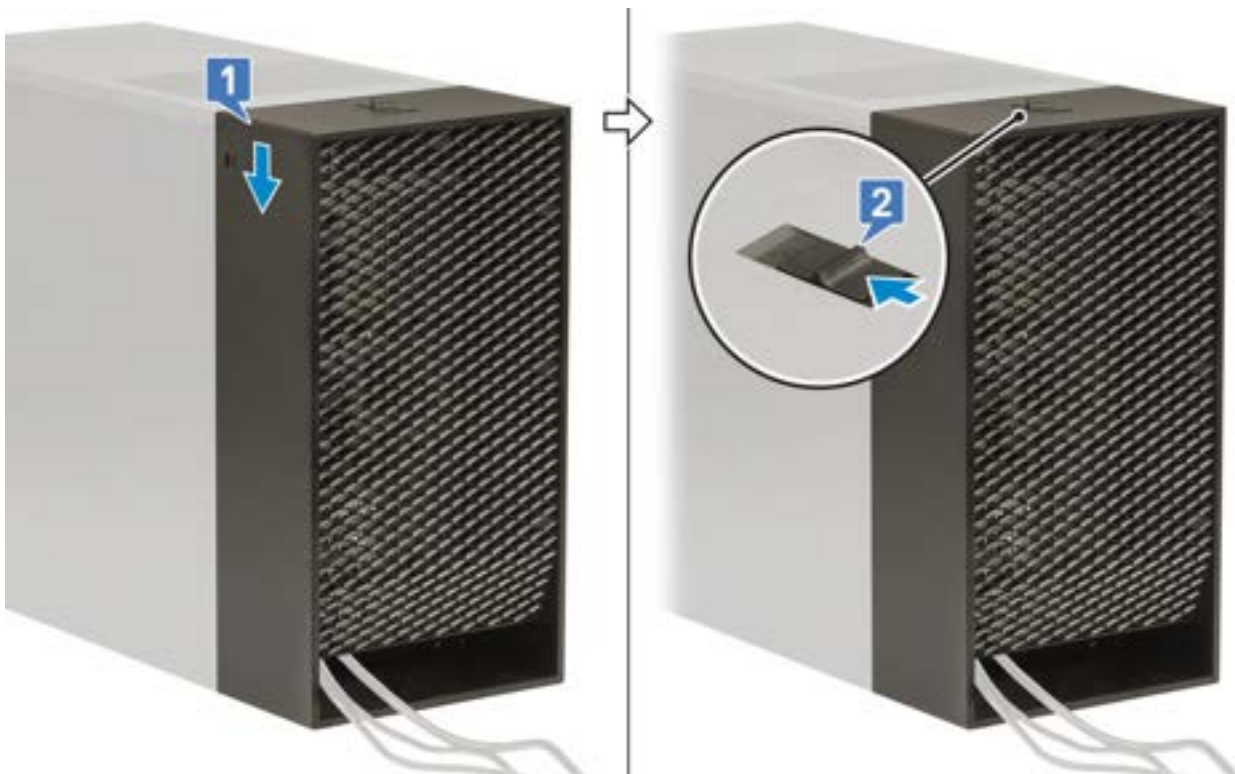
CAUTION: Take care not to break or bend the delicate plastic hooks.



7. Align the plastic hooks of the cable cover to the slots on the system .

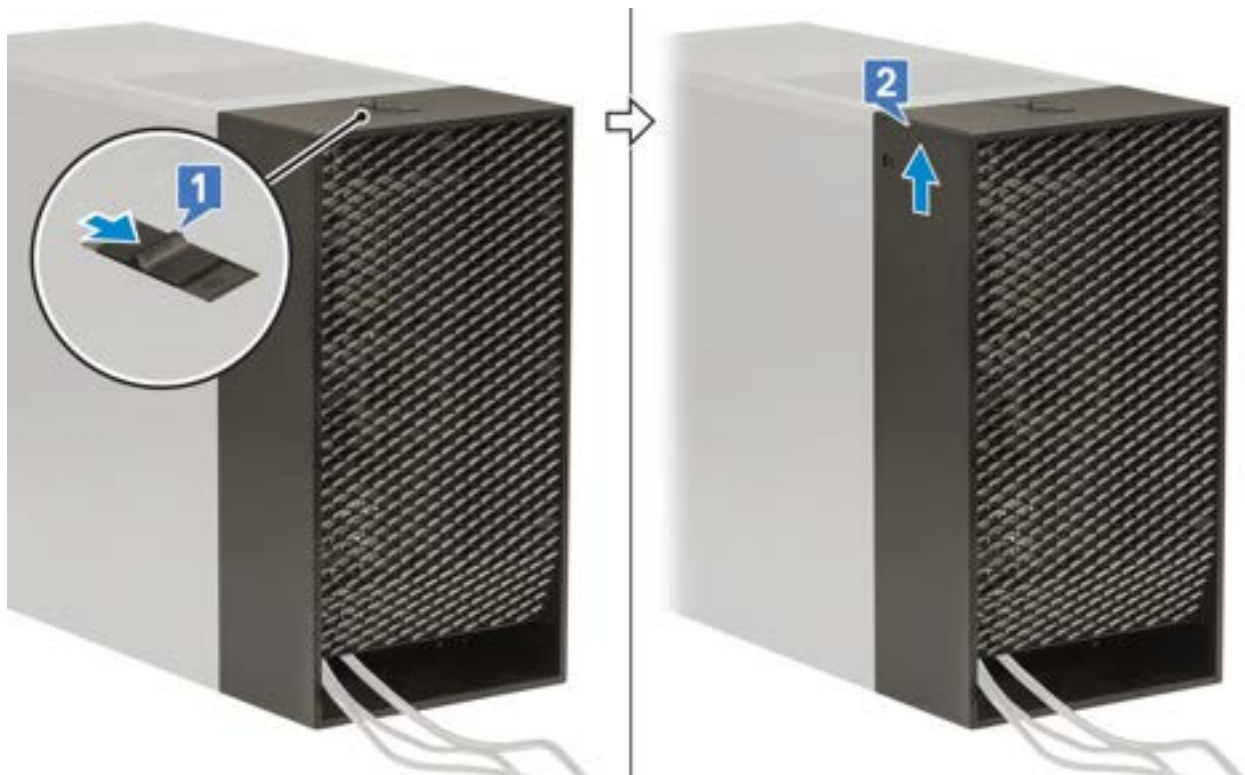


8. Gently press down on the cable cover until it clicks into place [1]. Slide the latch towards the chassis [2] to lock the cable cover in place.



NOTE: For added security, use the Padlock ring to secure the system.

9. To remove the cable cover:
 - a. Slide the latch away from the chassis to unlock the cable cover [1].
 - b. Lift the cable cover away from the system chassis [2].



10. Pull the cable cover to release it from the chassis.



11. Open the tab and unroute the cables from cable tie [1], disconnect the cables from the ports on the system [2]. Remove the cables from the slot of the cable cover [3].

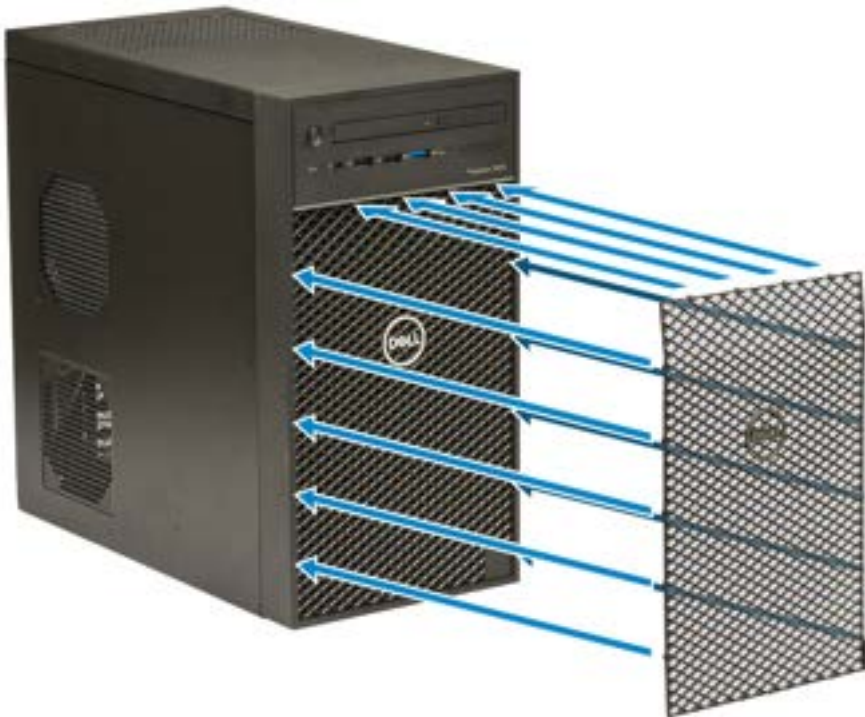


Dust filter

The dust filter for the Precision Tower 3630 helps protect the system from fine dust particles. After installation of the dust filter, the BIOS can be enabled to generate a preboot reminder to clean or replace the dust filter based on the time interval set.

Follow these steps to install the dust filter:

1. Align the plastic tabs of the dust filter to the slots on the system chassis and gently press to ensure that the dust filter fits firmly onto the system.



2. To remove the dust filter:
 - a. With the help of a plastic scribe, gently pry the edge from the bottom to loosen the dust filter [1].
 - b. Remove the dust filter from the system chassis [2].



3. Restart the system and press **F2** to enter the BIOS Setup menu.
4. In the BIOS Setup menu, navigate to **System Configuration > Dust Filter Maintenance** and select from any of the following intervals: 15, 30, 60, 90, 120, 150, or 180 days.

 **NOTE:** Default setting: Disabled.

 **NOTE:** Alerts are generated only during a system reboot and not during normal OS operation.

To clean the dust filter, brush or gently vacuum and then wipe down the external surfaces with a moist cloth.