Dell OptiPlex 3020–Small Form Factor

Owner's Manual

Regulatory Model: D08S
Regulatory Type: D08S001

Notes, cautions, and warnings

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

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

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

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Contents

1

Working on your computer

Before working inside your computer

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

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning off your computer).

   CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
3. Disconnect all network cables from the computer.
4. Disconnect your computer and all attached devices from their electrical outlets.
5. Press and hold the power button while the computer is unplugged to ground the system board.
6. Remove the cover.

   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.

Turning off your computer

After working inside your computer

After you complete any replacement procedure, ensure that you connect any external devices, cards, and cables before turning on your computer.

1. Connect any telephone or network cables to your computer.

   CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.
2. Connect your computer and all attached devices to their electrical outlets.
3. Turn on your computer.
4. If required, verify that the computer works correctly by running **ePSA diagnostics**.

2

Disassembly and reassembly

Recommended tools

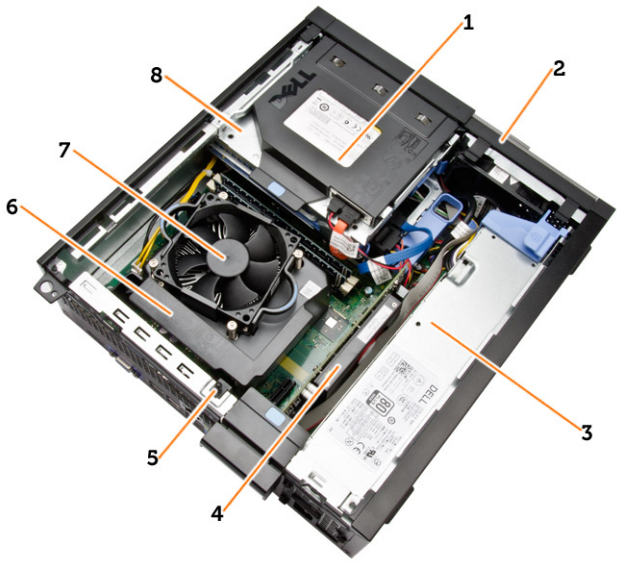
The procedures in this document require the following tools:

- Small flat blade screwdriver
- Phillips # 1 screwdriver
- Small plastic scribe

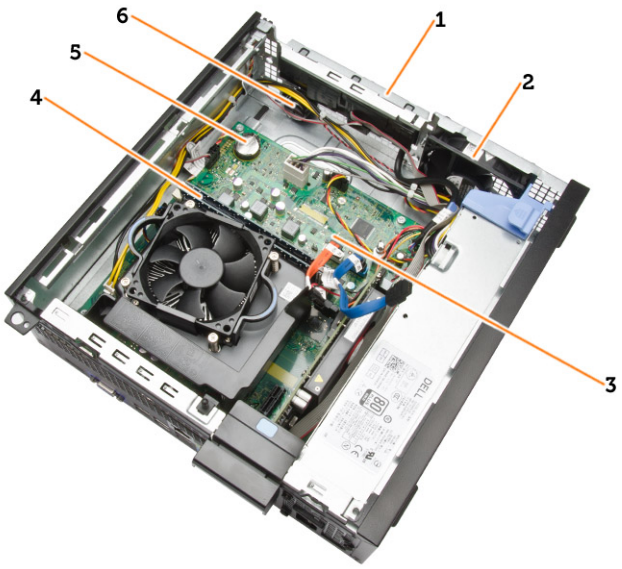
System Overview

The figure below displays the inside view of the Small Form Factor after the base cover has been removed. The call outs show the names and the layout of the components inside the computer.

Inside view



1. optical drive
2. front bezel
3. power supply unit
4. expansion card
5. intrusion switch
6. heatsink cover
7. heatsink
8. drive cage



1. front I/O
2. system fan
3. system board
4. memory module
5. coin cell
6. speaker

Removing the Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the thumbscrews that secure the cover to the computer. Slide the cover from the computer.

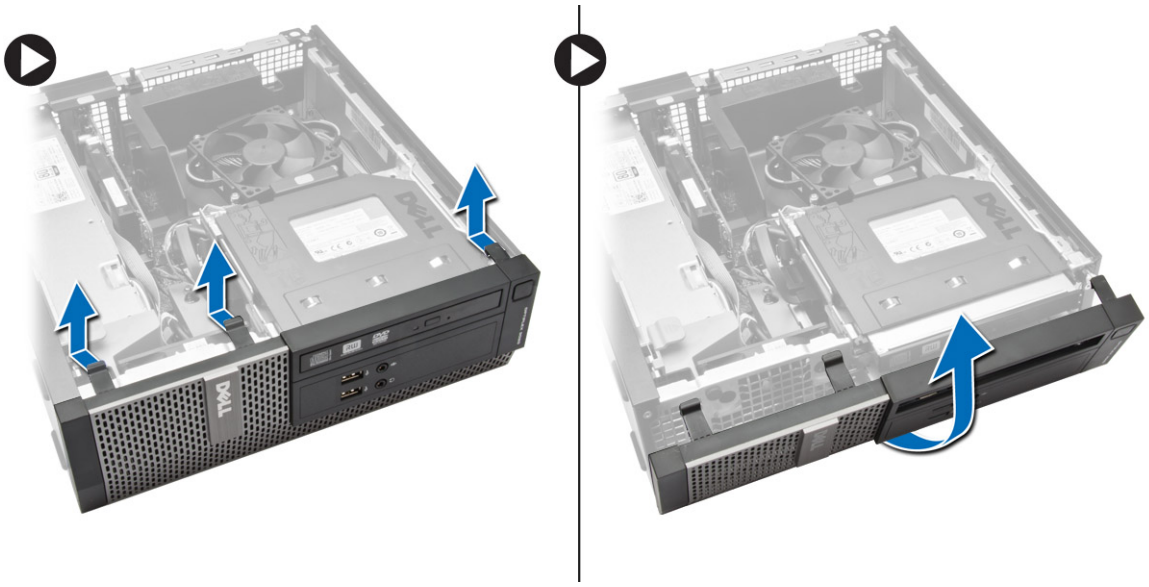
3. Lift the cover upward to a 45–degree angle and remove it from the computer.

Installing the Cover

1. Place the cover on the computer.
2. Slide the computer cover towards the front of the chassis until it is fully engaged.
3. Tighten the thumbscrew in clockwise direction to secure the computer cover.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Front Bezel

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover.
3. Pry the front bezel retention clips away from the chassis.
4. Rotate the bezel away from the computer to release the hooks on the opposite edge of the bezel from the chassis. Then, lift the chassis and remove the front bezel from the computer.



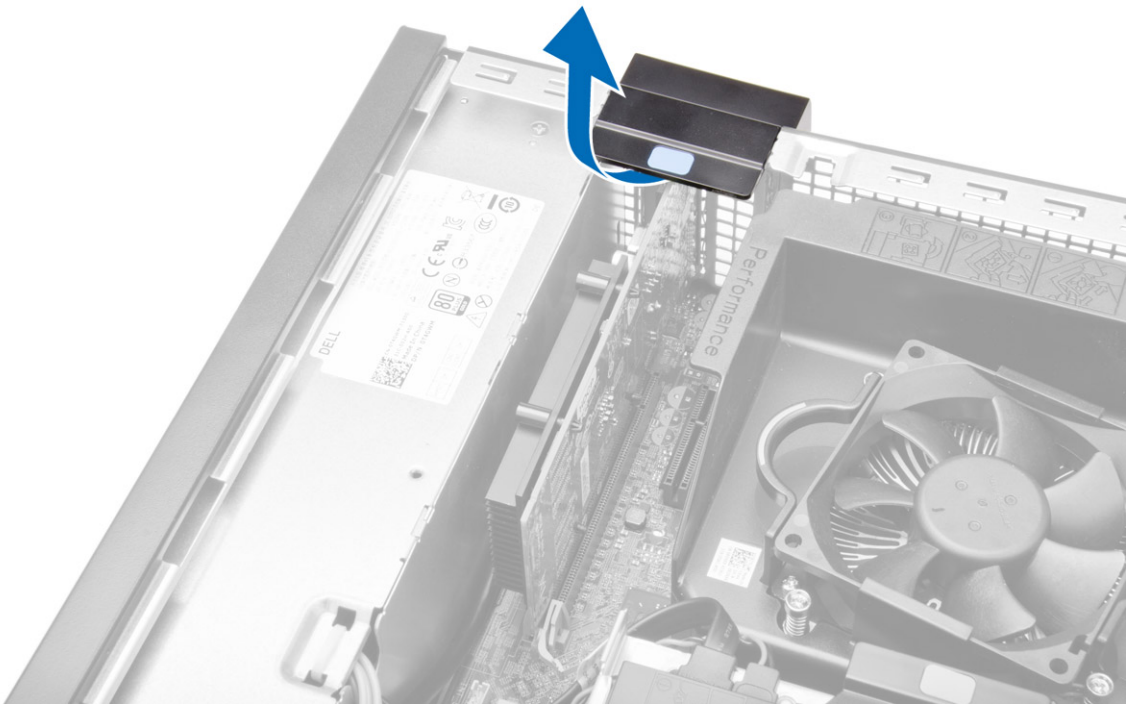
Installing the Front Bezel

1. Insert the hooks along the bottom edge of the front bezel into the slots on the chassis front.

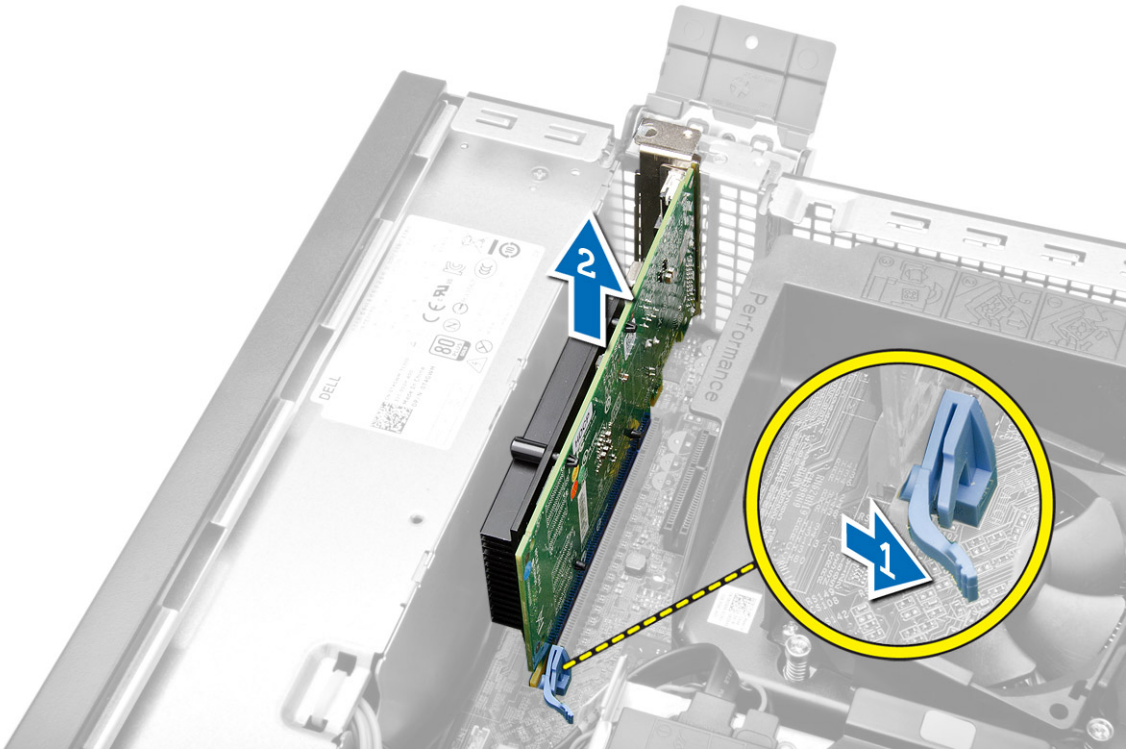
2. Push the bezel toward the computer to engage the front bezel retention clips until they click into place.
3. Install the cover.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing The Expansion Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover
3. Rotate the release tab on the card-retention latch upward.



4. Perform the following steps as shown in the illustration:
   a) Pull the release lever away from the expansion card until you release the securing tab from the dent in the card. [1].
   b) Ease the card up and out of its connector and remove it from the computer. [2].

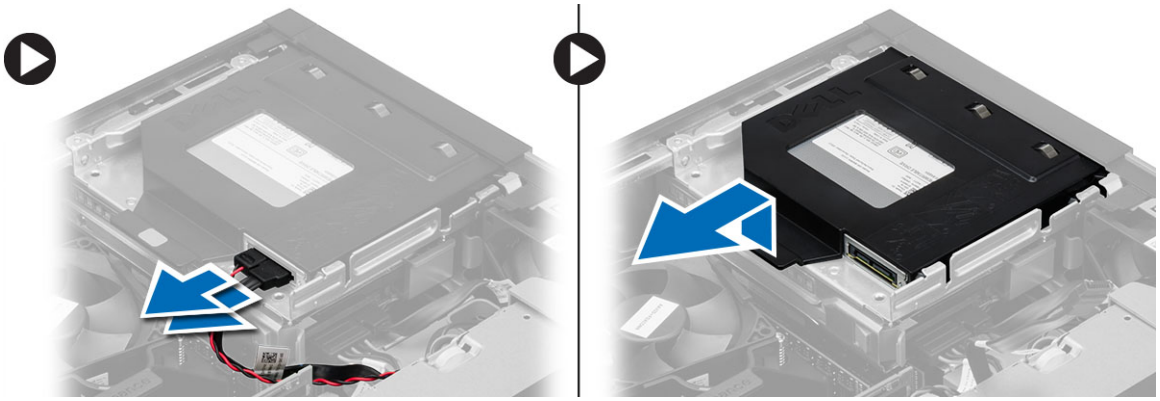


Installing The Expansion Card

1. Insert the expansion card into the connector on the system board and press down to secure it in place.
2. Install the cover
3. Follow the procedures in *After Working Inside Your Computer*.

Removing the Optical Drive

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover.
3. Disconnect the data and power cables from the back of the optical drive.
4. Lift the tab and slide the optical drive out to remove it from the computer.



5. Flex the optical-drive bracket and then lift the optical drive from the bracket

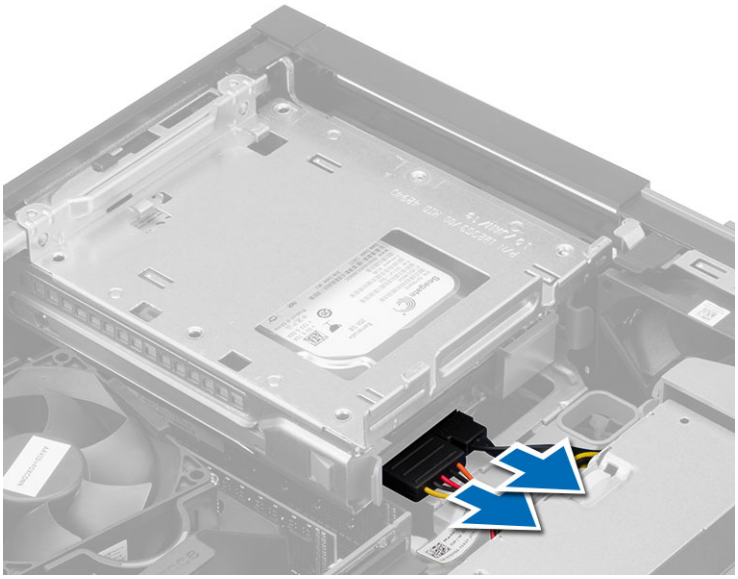
6. Repeat steps 3 to 5 to remove the second optical drive (if available).

Installing the Optical Drive

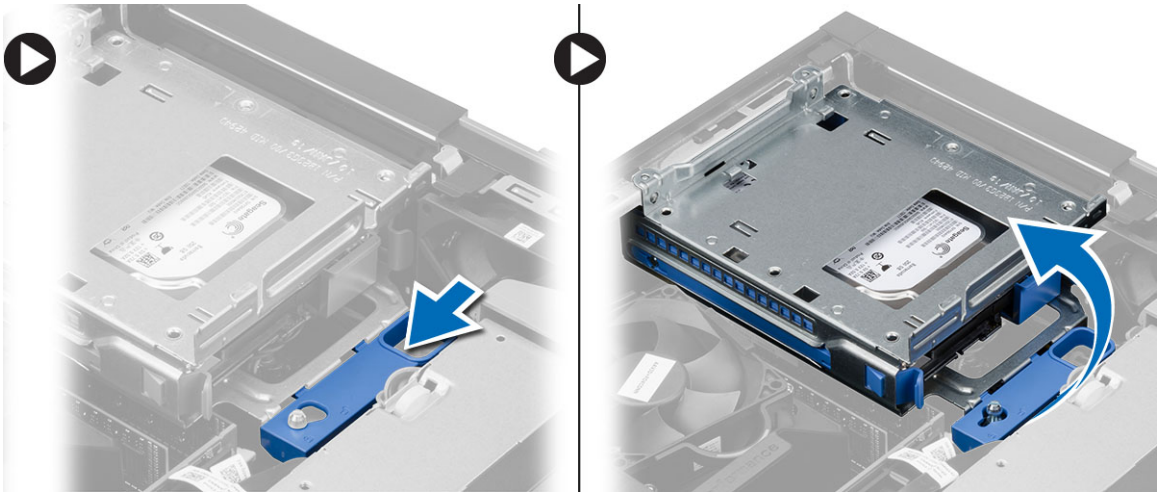
1. Insert the optical drive into the bracket.
2. Slide the optical drive to insert it into the drive cage.
3. Connect the data and power cables to the optical drive.
4. Install the cover.
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Drive Cage

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) cover
   b) front bezel
   c) optical drive
3. Disconnect the data and the power cables from the back of the hard drive.



4. Slide the blue drive-cage handle toward unlock position and lift the hard drive cage from the computer.

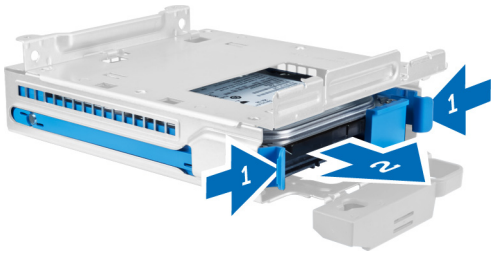


Installing the Drive Cage

1. Place the drive cage on the edge of the computer to allow access to the cable connectors on the hard drive.
2. Connect the data and power cables to the back of the hard drive.
3. Flip over the drive cage and insert it into the chassis. The drive cage tabs are secured by the slots in the chassis.
4. Slide the drive-cage handle toward the locked position.
5. Install the:
   a) front bezel
   b) optical drive
   c) cover
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Hard Drive

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) cover
   b) optical drive
   c) drive cage
3. Perform the following steps as shown in the illustration: and
   a) Press the retention clips inwards [1].
   b) Slide the hard-drive bracket out from the drive cage. [2].



4. Flex the hard-drive bracket and remove the hard drive from the bracket.

5. Remove the screws that secure the mini hard drive to the hard-drive bracket and remove the hard drive from its bracket.

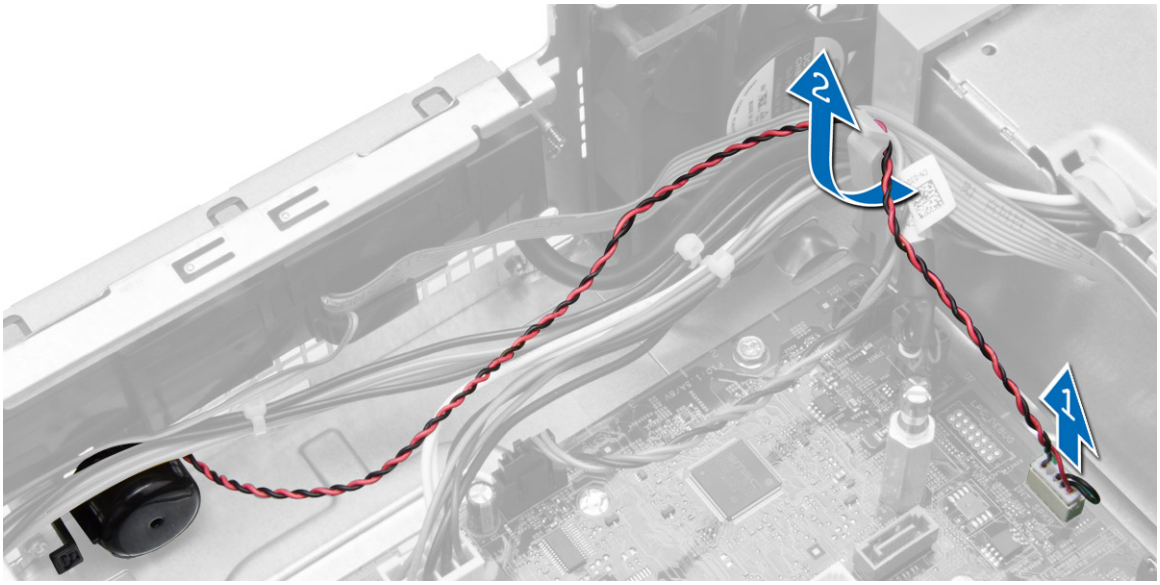
NOTE: Perform step 5 only if you have a mini hard drive.

Installing the Hard Drive

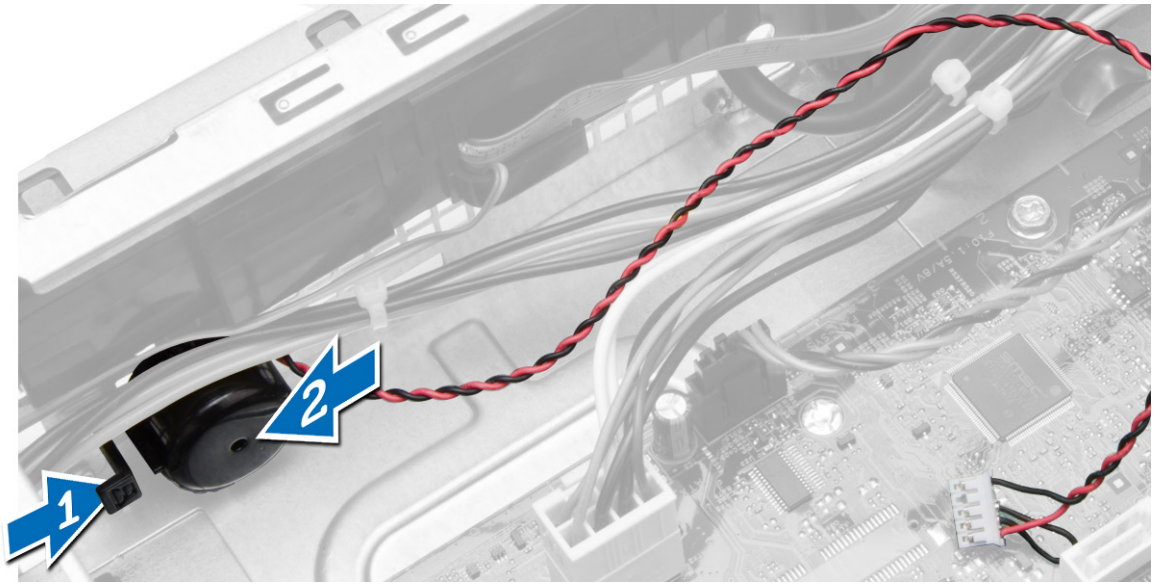
1. Tighten the screws to secure the mini hard drive (if available) to the hard-drive bracket.
2. Flex the hard-drive bracket and then insert the hard drive into the bracket.
3. Slide the hard-drive bracket into the drive cage.
4. Install the:
   a) drive cage
   b) optical drive
   c) cover
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Speaker

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) cover
   b) optical drive
   c) drive cage
3. Perform the following steps as shown in the illustration:
   a) Disconnect the speaker cable from the system board [1]
   b) Release it from the securing tab inside the chassis. [2].



4. Perform the following steps as shown in the illustration:
   a) Press the speaker-securing tab [1].
   b) Slide the speaker towards the right of the computer to release it [2].



Installing the Speaker

1. Place the speaker at the appropriate location on the chassis.
2. Press the speaker-securing tab and slide the speaker towards the left of the computer to secure it.
3. Guide the speaker cable through the securing tab and connect the speaker cable to the system board.
4. Install the:
   a) drive cage
   b) optical drive
   c) cover
5. Follow the procedures in *After Working Inside Your Computer*.

Memory Module Guidelines

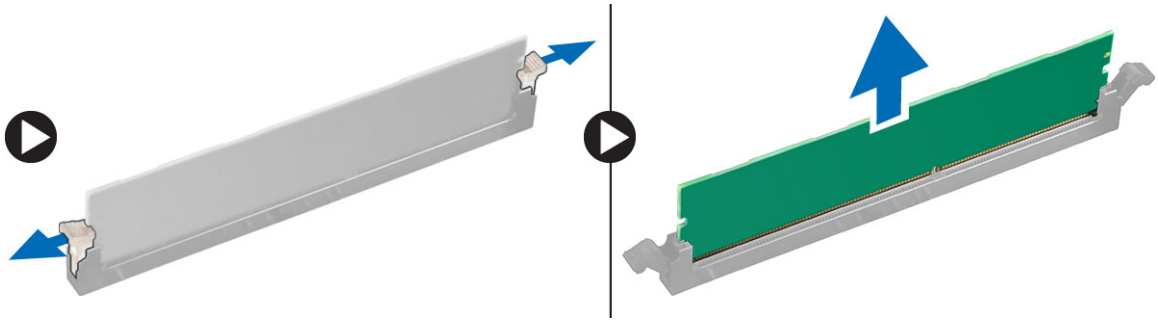
To ensure optimal performance of your computer, observe the following general guidelines when configuring your system memory:

- Memory modules of different sizes can be mixed (for example, 2 GB and 4 GB). But, all populated channels must have identical configurations.
- Memory modules must be installed beginning with the first socket.

  NOTE: The memory sockets in your computer may be labeled differently depending on the hardware configuration. For example, A1, A2 or 1,2,3.
- If the quad-rank memory modules are mixed with single or dual-rank modules, the quad-rank modules must be installed in the sockets with the white release levers.
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory modules.

Removing the Memory

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover.
3. Press down on the memory retaining tabs on each side of the memory modules, and lift the memory modules out of the connectors on the system board.

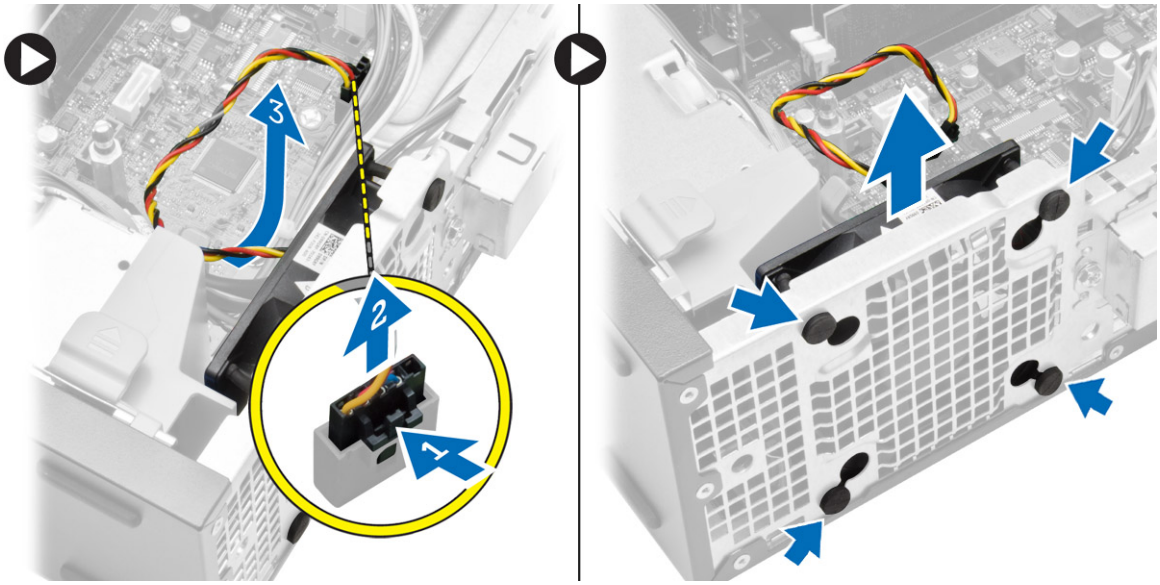


Installing the Memory

1. Align the notch on the memory-card with the tab in the system-board connector.
2. Press down on the memory module until the release tabs spring back to secure them in place.
3. Install the cover.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the System Fan

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove
   a) cover
   b) optical drive
   c) drive cage
   d) front bezel
3. Perform the following steps as shown in the illustration:
   a) Press the system-fan cable [1].
   b) Disconnect the system-fan cable from the system board [2].
   c) Unroute the cable from the system board.
   d) Pry and remove the system fan away from the grommets securing it to the front of the computer.
   e) Then press the grommets inward along the slots and pass through the chassis.

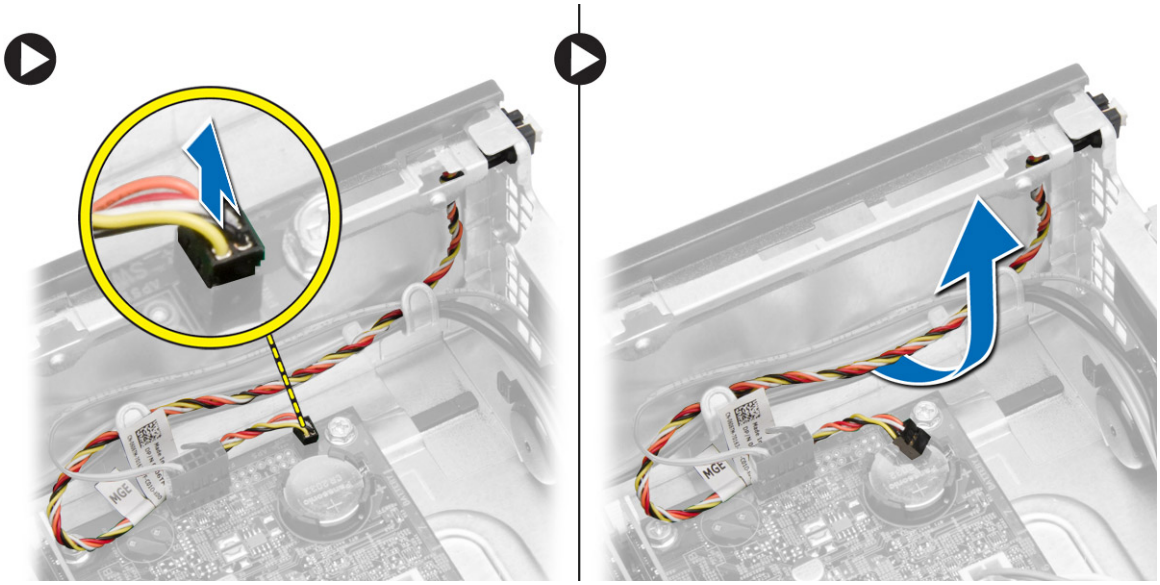


Installing the System Fan

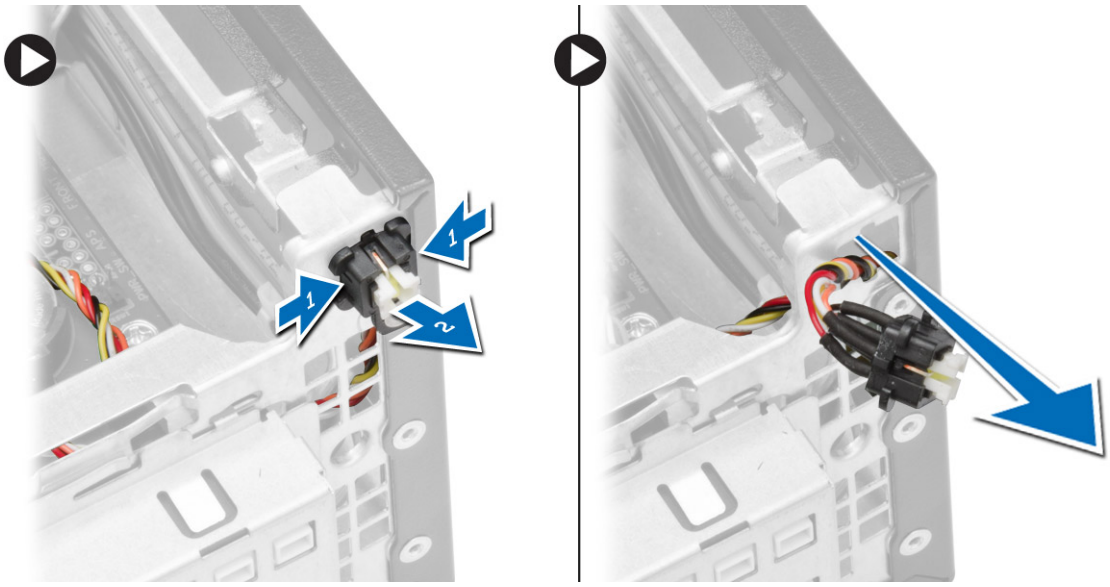
1. Place the system-fan in the chassis.
2. Pass the grommets through the chassis and slide outward along the groove to secure it in place.
3. Connect the system-fan cable to the system board.
4. Install:
   a) front bezel
   b) drive cage
   c) optical drive
   d) cover
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Power Switch

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) cover
   b) front bezel
   c) optical drive
   d) drive cage
3. Perform the following steps as shown in the illustration:
   a) Disconnect the power-switch cable from the system board.
   b) Unroute the cable from the system board.



4. Perform the following steps as shown in the illustration:
   a) Press the clips on both side of the power switch [1].
   b) Release it from the chassis [2].
   c) Remove the power switch along with its cable from the computer



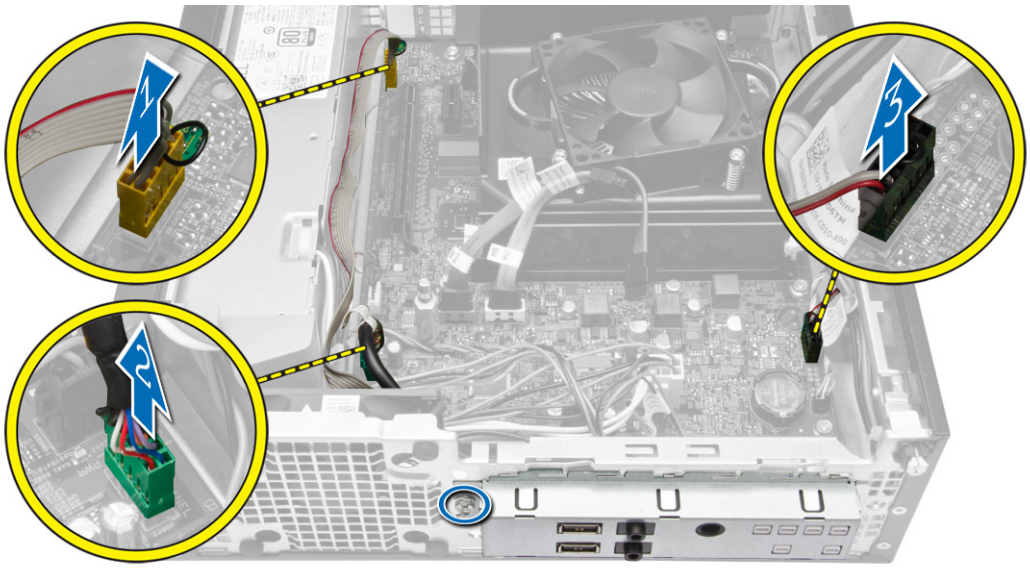
Installing the Power Switch

1. Slide the power switch in through the front of the computer.
2. Connect the power-switch cable to the system board.
3. Install the:
   a) drive cage
   b) optical drive
   c) front bezel
   d) cover
4. Follow the procedures in *After Working Inside Your Computer*.

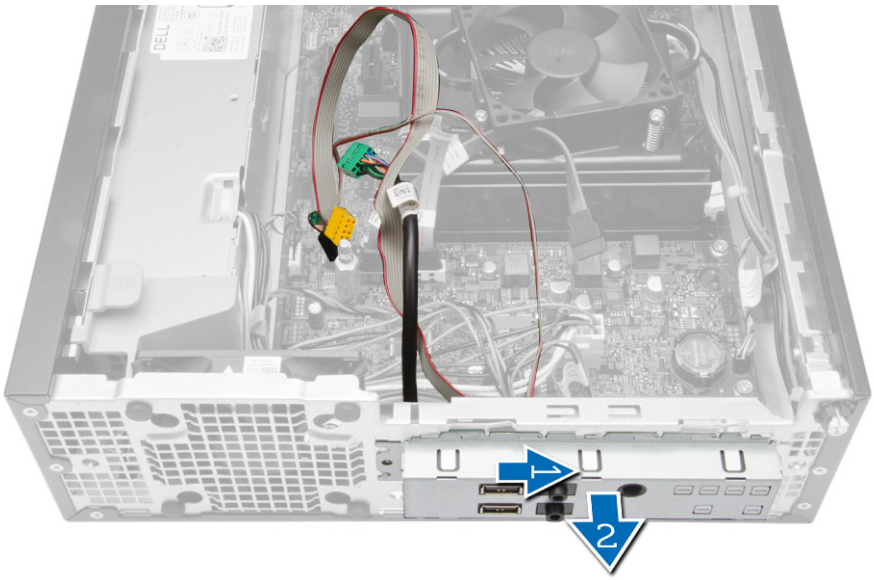
Removing the I/O Panel

1. Follow the procedures in *Before Working Inside Your Computer*.

2. Remove the:
   a) cover
   b) optical drive
   c) drive cage
   d) front bezel
3. Perform the following steps as shown in the illustration:
   a) Disconnect the I/O cable the computer [1].
   b) Disconnect the audio cable the computer [2].
   c) Disconnect the HDD LED cable the computer [3].



4. Perform the following steps as shown in the illustration:
   a) Remove the screw that secures the I/O panel to the chassis. [1].
   b) Slide the I/O panel to release and remove it from the computer [2].



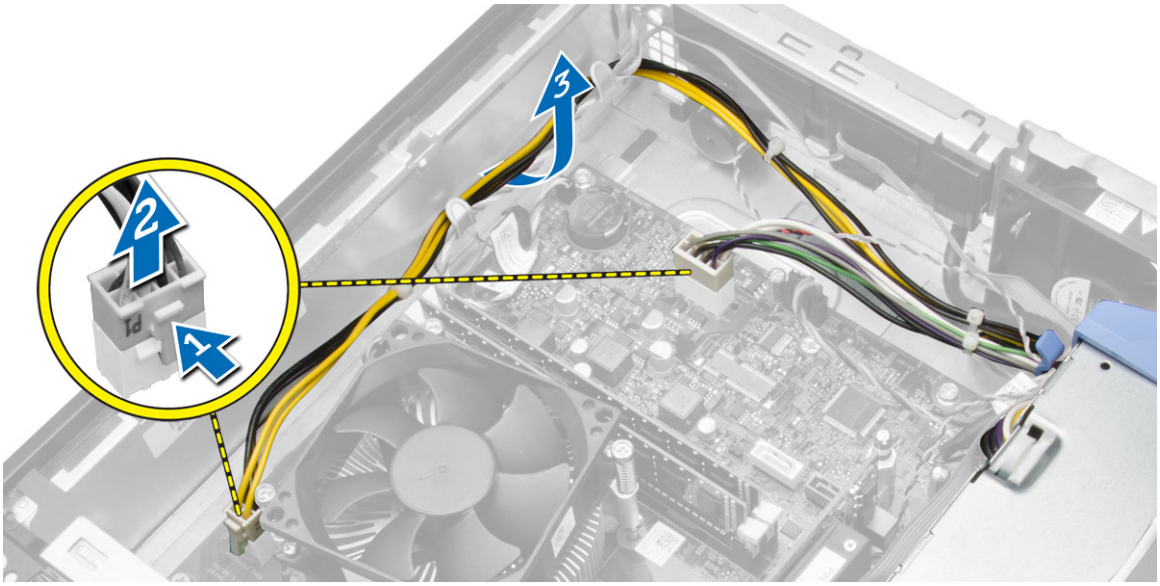
Installing the I/O Panel

1. Insert the I/O panel into the slot on the chassis front.
2. Slide the I/O panel to secure it to the chassis.
3. Tighten the screw to secure the I/O panel to the chassis.
4. Connect the I/O panel, audio cable, and fan shelter clip to the system board.

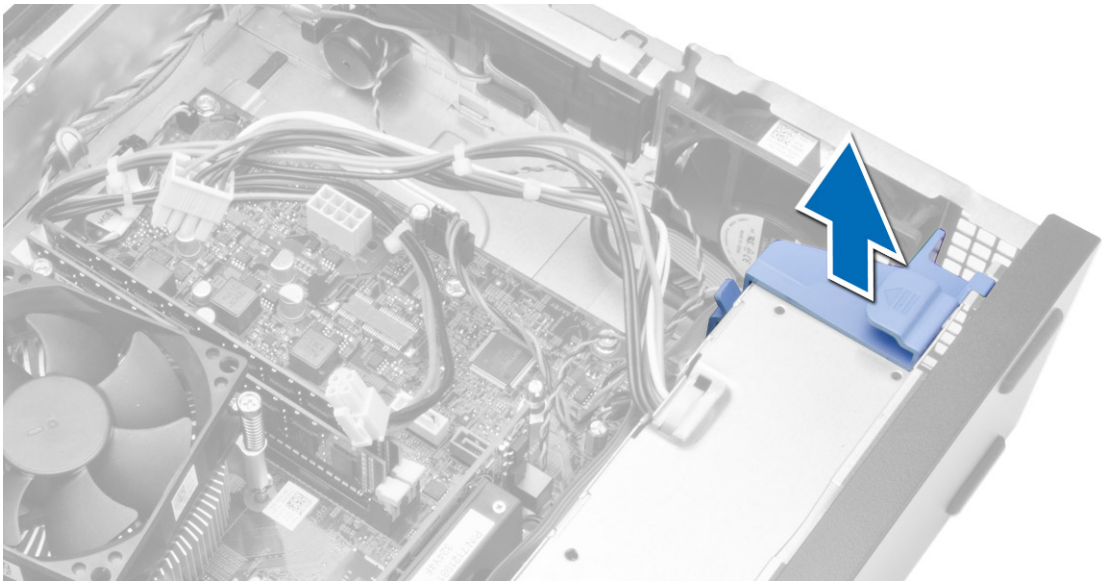
5. Install the:
   a) drive cage
   b) optical drive
   c) front bezel
   d) cover
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Power Supply

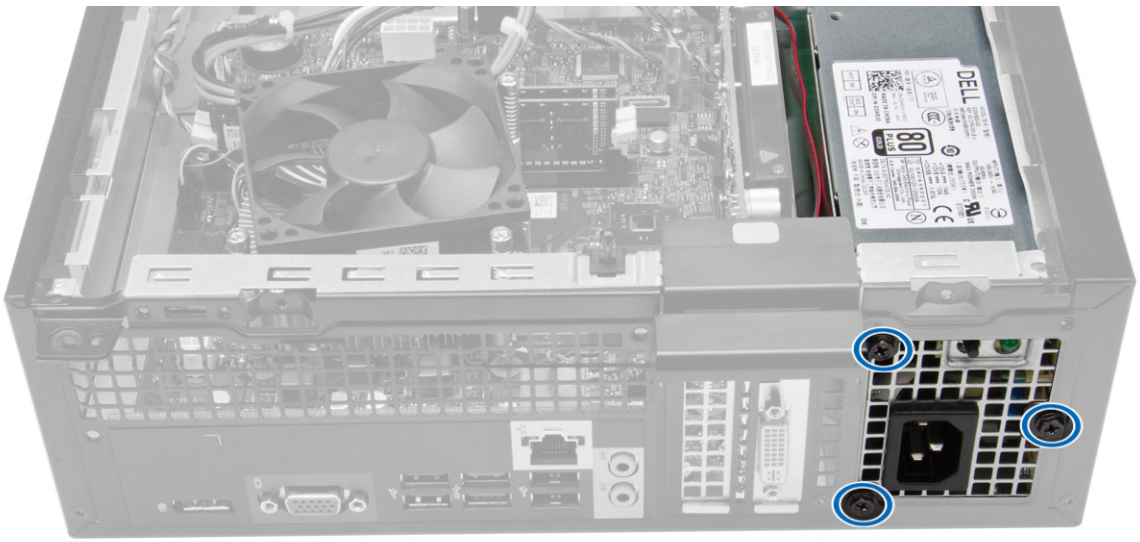
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) cover
   b) front bezel
   c) optical drive
   d) drive cage
3. Perform the following steps as shown in the illustration:
   a) Press the 8–pin and 4–pin power cable [1].
   b) Disconnect the 8-pin and 4–pin power cables from the system board [2].
   c) Unroute the cable from the system board.



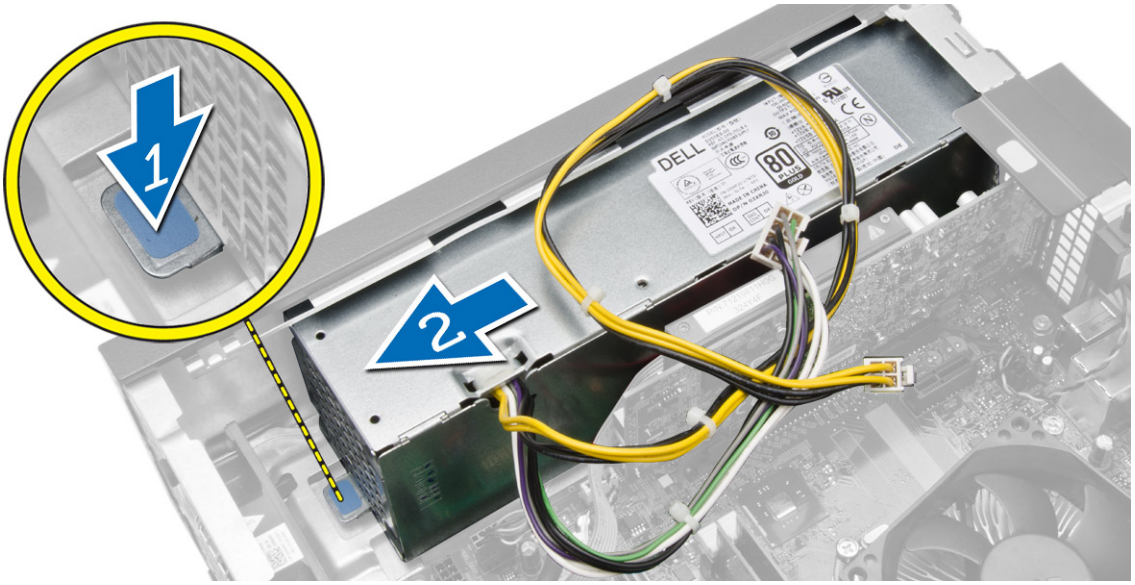
4. Release the blue latch from the system.



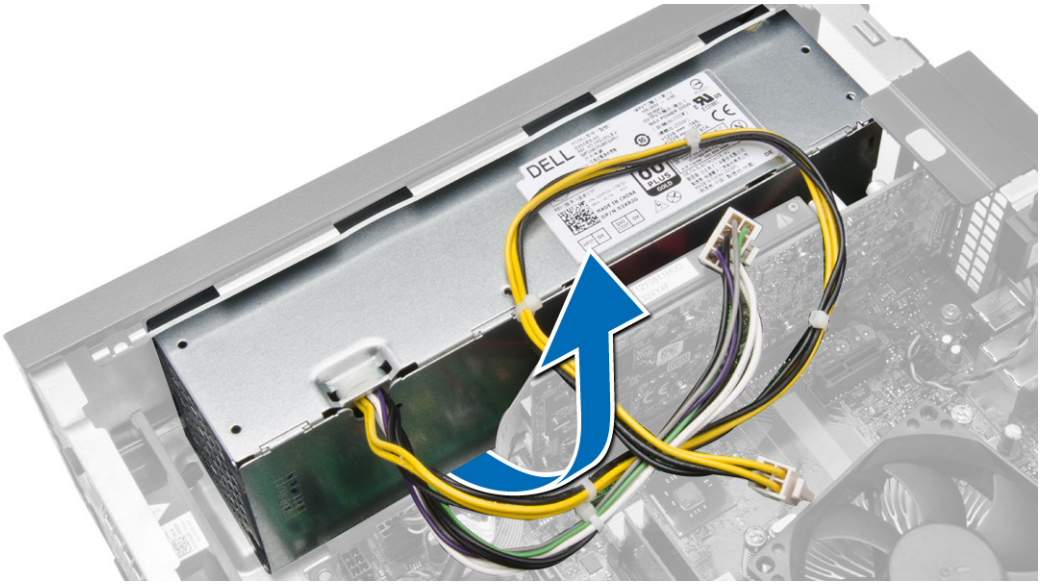
5. Remove the screws that secure the power supply to the back of the computer



6. Perform the following steps as shown in the illustration:
   a) Press the latch downwards to release the power supply unit [1].
   b) Slide the power supply unit from the computer [2].



7. Lift the power supply out of the computer.



Installing the Power Supply

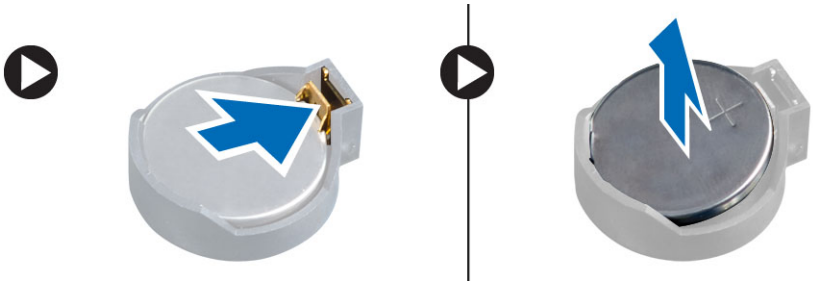
1. Place the power supply in the chassis and slide towards the back of the computer to secure it.
2. Tighten the screws securing the power supply to the back of the computer.
3. Connect the 4-pin and 8–pin power cables to the system board.
4. Thread the power cables into the chassis clips.
5. Install:
   a) drive cage
   b) optical drive
   c) front bezel
   d) cover
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Coin-Cell Battery

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:

a) cover
b) front bezel
c) drive cage

3. Press the release latch away from the battery to allow it to pop-up from the socket and then lift the coin-cell battery out of the computer.

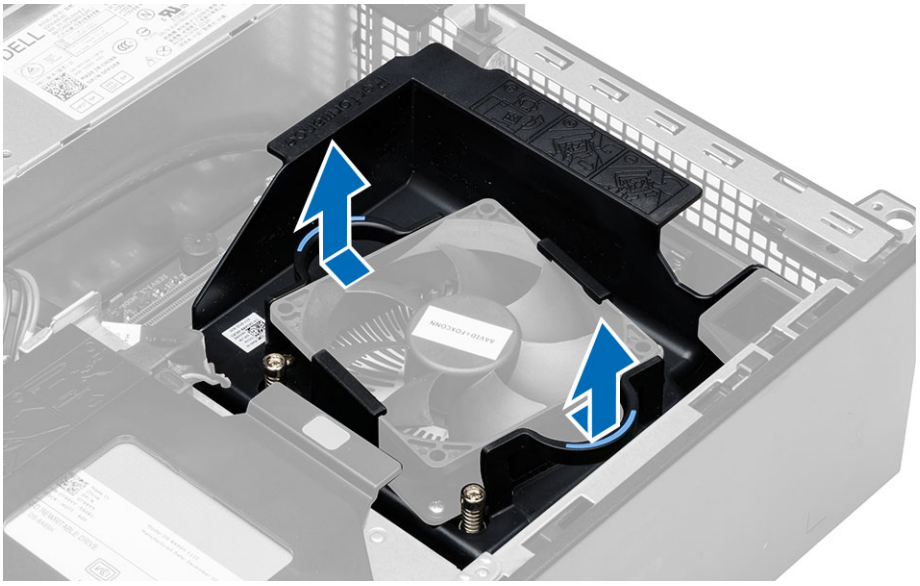


Installing the Coin-Cell Battery

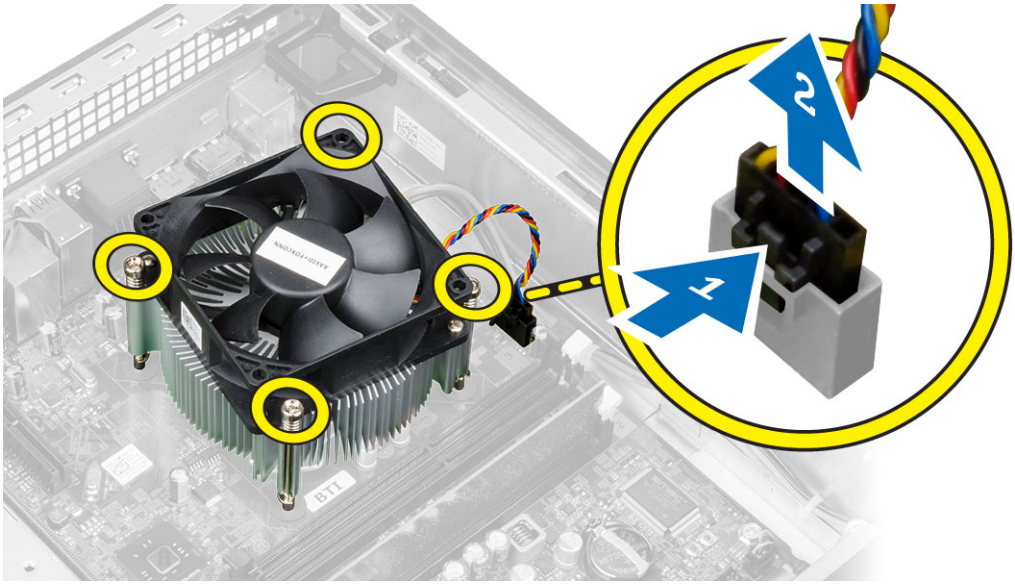
1. Place the coin-cell battery into its slot on the system board.
2. Press the coin-cell battery downward until the release latch springs back into place and secures it.
3. Install the:
   a) drive cage
   b) front bezel
   c) cover
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Heatsink Assembly

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover
3. Using both hands, push away the two release handles while lifting the fan shroud upward and off the computer.



4. Perform the following steps as shown in the illustration:
   a) Press the fan cable [1].
   b) Disconnect the fan cable from the system board [2].
   c) Loosen the captive screws, lift the heat sink assembly and then remove it from the computer.

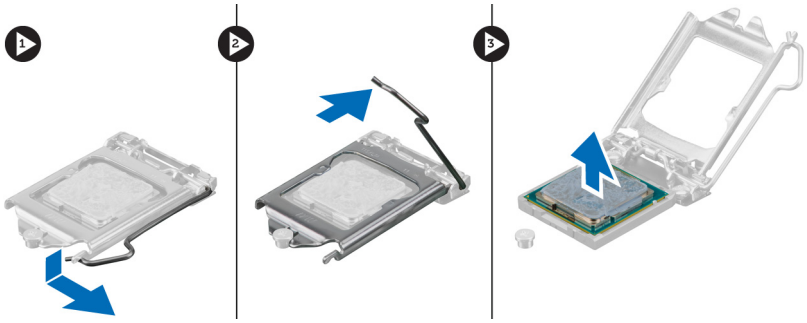


Installing the Heatsink Assembly

1. Place the heat-sink assembly into the chassis.
2. Tighten the captive screws to secure the heat-sink assembly to the system board.
3. Connect the fan cable to the system board.
4. Place the fan shroud on the fan and push to click in place.
5. Install the cover
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Processor

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover.
3. Remove the heat sink assembly.
4. Press the release lever down and then move it outward to release it from the retention hook. Lift the processor cover and remove the processor from the socket, and place it in antistatic bag.

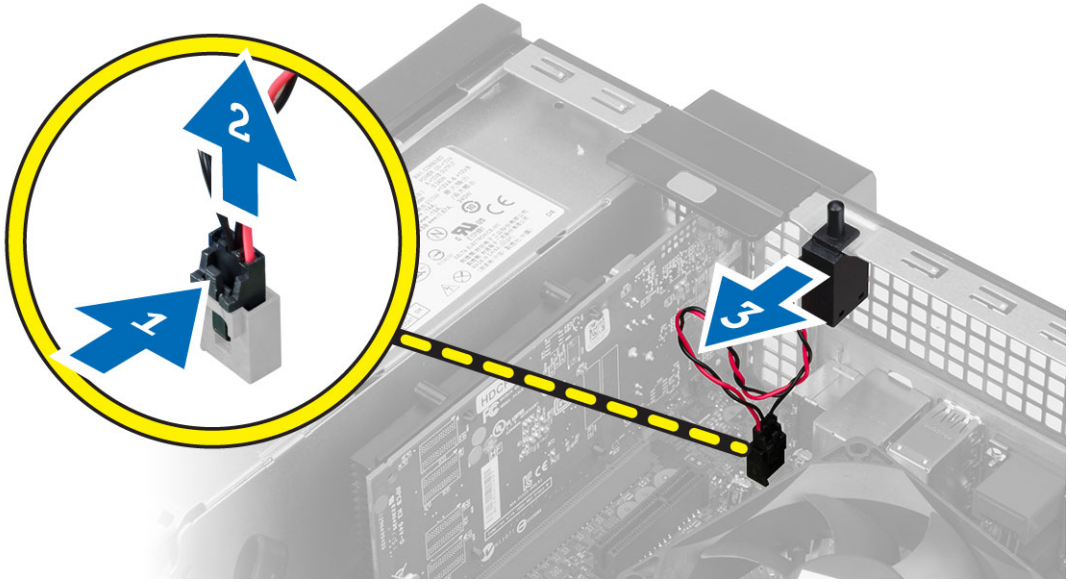


Installing the Processor

1. Insert the processor into the processor socket. Ensure the processor is properly seated.
2. Gently lower the processor cover.
3. Press the release lever down and then move it inward to secure it with the retention hook.
4. Install the heat-sink assembly.
5. Install the cover.
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Intrusion Switch

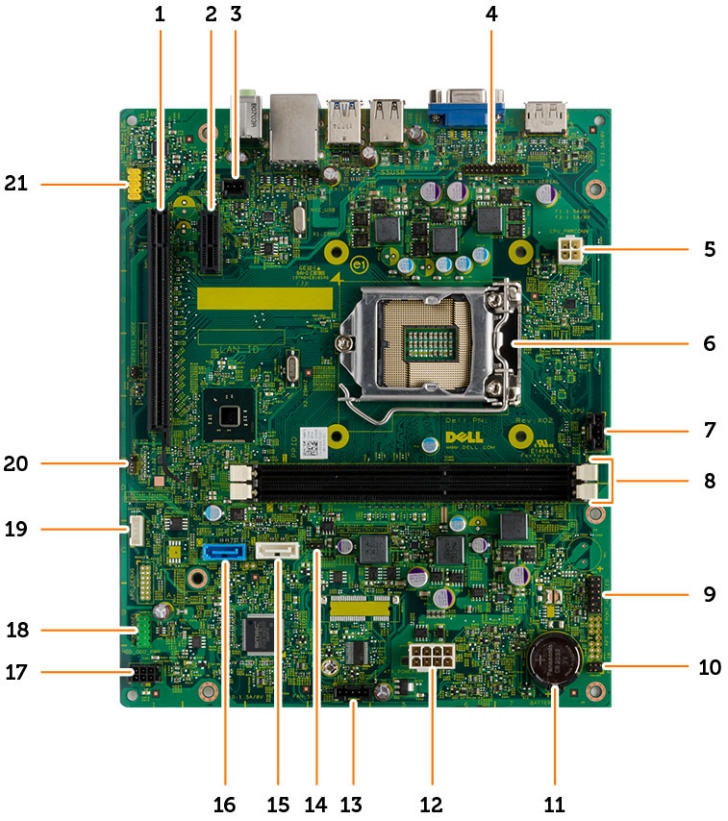
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) cover
   b) heat sink assembly
3. Disconnect the intrusion-switch cable from the system board.
4. Slide the intrusion switch toward the bottom of the chassis and remove it from the computer.



Installing the Intrusion Switch

1. Insert the intrusion-switch into the chassis rear and slide it outward to secure it.
2. Connect the intrusion-switch cable to the system board.
3. Install the:
   a) heat sink assembly
   b) cover
4. Follow the procedures in *After Working Inside Your Computer*.

System Board Components

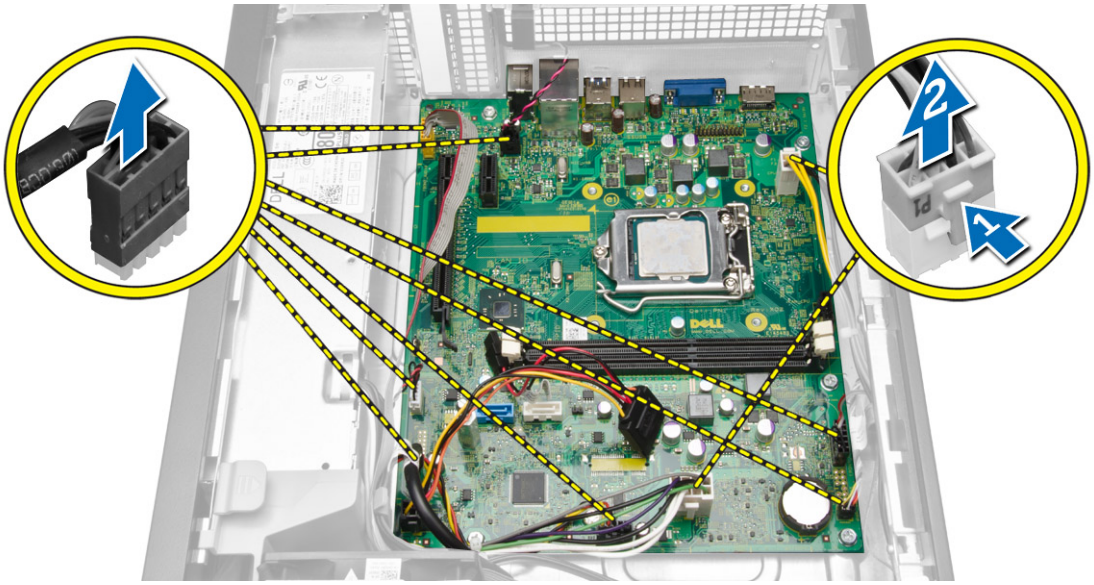


The following image displays the system board layout.

1. PCI Express x16 connector
2. PCI Express x1 connector
3. intrusion-switch connector
4. PS/2, serial connector
5. power connector
6. processor socket
7. CPU fan connector
8. memory module connectors
9. HDD LED & chassis detect connector
10. power switch connector
11. coin-cell battery
12. system power connector
13. system fan connector
14. RTC reset jumper
15. ODD SATA connector
16. HDD SATA connector
17. power connector
18. front i/o connector
19. internal speaker connector
20. password reset jumper
21. front audio connector

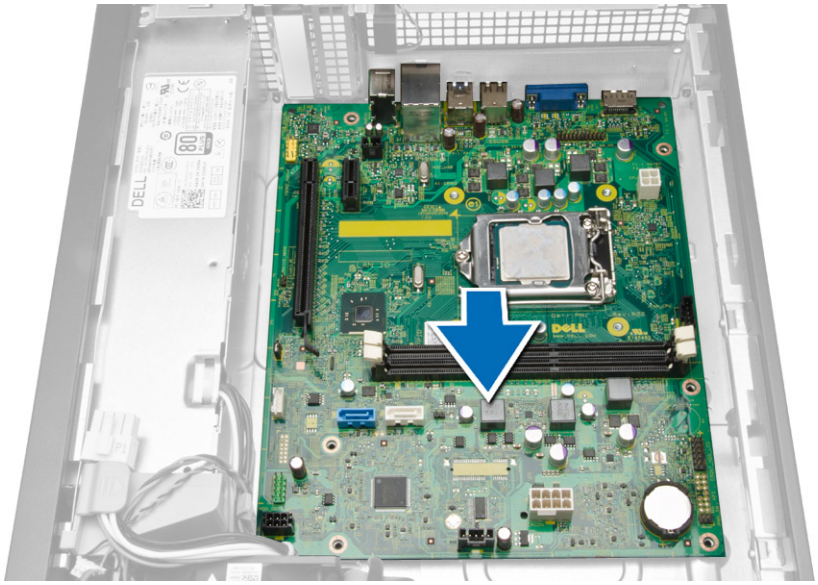
Removing the System Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) cover
   b) front bezel
   c) optical drive
   d) drive cage
   e) memory
   f) heat sink assembly
   g) expansion card(s)
   h) power supply
3. Disconnect all the cables connected to the system board, and move the cables away from the chassis.

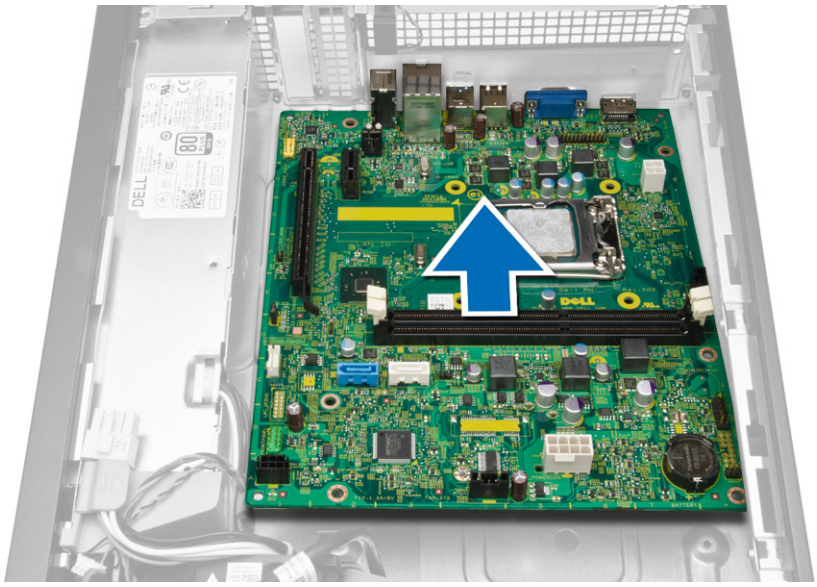


4. Turn the hex screw counter clockwise and remove from the system board

5. Lift the cover upward to a 45–degree angle and remove it from the computer.



6. Remove the system board from the chassis.



Installing the System Board

1. Align the system board to the port connectors on the rear of the chassis and place the system board in the chassis.
2. Tighten the screws securing the system board to the chassis.
3. Connect the cables to the system board.
4. Install the:
   a) power supply
   b) expansion card(s)
   c) heat sink assembly
   d) memory
   e) drive cage
   f) optical drive
   g) front bezel
   h) cover
5. Follow the procedures in *After Working Inside Your Computer*.

3

System setup

System setup enables you to manage your desktop hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive

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

  NOTE: Choosing Diagnostics, displays the ePSA diagnostics screen.

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

Navigation keys

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

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

Keys	Navigation
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

System Setup Options

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

Table 1. General

Option	Description
System Board	This section lists the primary hardware features of your computer. • System Information • Memory Information • PCI Information • Processor Information • Device Information

Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system.
	• **Boot Sequence**
	• Diskette drive
	• SATA HDD Drive
	• USB Storage Device
	• CD/DVD/CD-RW Drive
	• Onboard NIC
	• **Boot List Option**
	• Allows you to change the boot list option.
	  • Legacy
	  • UEFI

Advanced Boot Options	Allows you to Enable Legacy Option ROMs • **Enabled Legacy Options ROMs** (Default: Enabled)
Date/Time	Allows you to set the date and time. The changes to the system date and time takes effect immediately.

Table 2. System Configuration

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. The options are: • Enable UEFI Network Stack • Disabled • Enabled

Option	Description
	• **Enabled w/PXE** (Default) • Enabled w/ Cloud Desktop
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: • Disabled • ATA • **AHCI** (Default)
Drives	Allows you to enable or disable the various drives on-board: • SATA-0 • SATA-1 Default Setting: **All drives are enabled.**
SMART Reporting	Allows you to enable SMART reporting on hard drives during system startup. • **Enable SMART Reporting** - This option is disabled by default.
USB Configuration	Allows you to enable or disable the internal USB

Option	Description

	configuration. The options are:
	• Enable Boot Support
	• Rear USB Ports
	  • Port 1 (left)
	  • Port 2 (Center Left)
	  • Port 3 (Center Right)
	  • Port 4 (Right)
	• Side USB Ports
	  • Port 1 (Top)
	  • Port 2 (Bottom)
	Default Setting: **All devices are enabled.**

Audio	Allows you enable or disable the audio feature. • Enable Audio • Enable

Option	Description
	Microphone • Enable Internal Speaker Default Setting: **All devices are enabled.**
OSD Button Management	Allows you to disable the OSD (On-Screen Display) buttons. • Disable OSD Buttons Default Setting: **OSD buttons are not disabled**
Miscellaneous Devices	Allows you to enable or disable various on-board devices. • **Enable Camera** - This option is selected by default. • **Enable Media Card** - This option is selected by default. • **Disable Media Card**

Table 3. Security

Option	Description
Admin Password	This field lets you set, change, or delete the administrator (admin) password (sometimes called the setup password). The admin password enables several security features. The drive does not have a password set by default. · Enter the old password · Enter the new password · Confirm the new password
System Password	This field lets you set, change, or delete the system password. The system password enables several security features. The drive does not have a password set by default. · Enter the old password · Enter the new password · Confirm the new password
Internal HDD_0 Password	Allows you to set, change, or delete the password on the computer's internal hard disk drive (HDD) Successful change to this password take effect immediately. The drive does not have a password set by default · Enter the old password · Enter the new password · Confirm the new password
Strong Password	**Enable strong password** - This option is disabled by default.
Password Configuration	This field controls the minimum and maximum number of characters allowed for the admin and system passwords. · Admin Password Min · Admin Password Max · System Password Min · System Password Max By default the minimum characters are set to 4 and maximum to 32.
Password Bypass	Allows you to bypass the *System Password* and the internal HDD password prompts during a system restart. · Disabled - This option is selected by default. · Reboot Bypass
Password Change	Allows you to determine whether changes to the system and hard disk passwords are permitted when an administrator password is set. · **Allow Non-Admin Password Changes** - This option is enabled by default.
TPM Security	Allows you to control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system. **TPM Security** - This option is disabled by default.
Computrace	Allows you to activate, deactivate or disable the BIOS module interface of the optional *Computrace Service* from *Absolute Software*. · **Deactivate** - This option is disabled by default. · Disable · Activate
CPU XD Support	Allows you to enable or disable the execute disable mode of the processor. · **Enable CPU XD Support** - This option is enabled by default.

Option	Description
Admin Setup Lockout	Allows you to enable or disable the option to enter setup when an admin password is set. • **Enable Admin Setup Lockout** - This option is disabled by default.

Table 4. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable the Secure Boot Feature. The options are: • **Disabled** (Default) • Enabled
Expert Key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: • PK • KEK • db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **Save to File**- Saves the key to a user-selected file • **Replace from File**- Replaces the current key with a key from a user-selected file • **Append from File**- Adds a key to the current database from a user-selected file • **Delete**- Deletes the selected key • **Reset All Keys**- Resets to default setting • **Delete All Keys**- Deletes all the keys **NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.**

Table 5. Performance

Option	Description
Multi Core Support	Specifies whether the process will have one or all cores enabled. The performance of some applications will improve with the additional cores. • All - Enabled by default • 1 • 2
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep feature. Default Setting: **Enable Intel SpeedStep**
C States Control	Allows you to enable or disable the additional processor sleep states. Default Setting: **Enabled**
Limit CPUID Value	This field limits the maximum value the processor Standard CPUID Function will support • Enable CPUID Limit (Disabled by default) **NOTE: Some Operating system will not complete installation when the maximum CPUID Function is greater than 3**
Intel TurboBoost	Allows you to enable or disable Intel TurboBoost mode of the processor. This option is enabled by default.

Option	Description
	• **Enable Intel TurboBoost** - Allows the Intel TurboBoost driver to increase the performance of the CPU or graphics processor. Enabled by default.

Table 6. Power Management

Option	Description
AC Recovery	Specifies how the computer will respond when AC power is applied after a AC power loss. You can set the AC Recovery to: • **Power Off** (Default) • Power On • Last Power State
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: • **Disabled** (Default) • Every Day • Weekdays • Select Days
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. • Disabled • Enabled in S5 only • **Enabled in S4 and S5** Enabled
Fan Control Override	Controls the speed of the system fan. This option is disabled by default. • **Fan Control Override** This option is disabled by default.
USB Wake Support	This option allows you to enable USB devices to wake the computer from standby. • **Enable USB Wake Support** - This option is enabled by default.
Wake on LAN/WLAN	Allows you to power up the computer from the off state when triggered by a special LAN/WLAN signal. • **Disabled** • LAN Only • WLAN only • LAN with PXE Boot This option is Disabled by default.
Block Sleep	Allows you to block entering to sleep (S3 state) in OS Environment. • **Block Sleep (S3 State)** This option is disabled by default.
Intel Smart Connect Technology	The option is disabled by default. If option enables will periodically sense nearby wireless connection while the system is asleep. It will synchronize emails or social media application that were open when system entered the sleep state. • **Smart Connection**

Table 7. POST Behavior

Option	Description
Numlock LED	Allows you to enable NumLock on when the computer boots. This option is enabled by default. • **Enable Numlock LED**
Keyboard Errors	Allows you to enable keyboard related error report when the computer boots. This option is enabled by default.

Option	Description
	• **Enable Keyboard Error Detection**
Fastboot	Allows you to speed up the boot process by bypassing some compatibility steps. The options are: • Minimal • **Thorough** - This option is selected by default. • Auto

Table 8. Virtualization Support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization technology. • **Enable Intel Virtualization Technology** - This option is enabled by default.

Table 9. Wireless

Option	Description
Wireless Device Enable	Allows enabling/disabling the internal wireless devices. The options are is WLAN/WIGIG(enabled by default)

Table 10. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
SERR Messages	Controls the SERR message mechanism. This option is enabled by default. Some graphics cards require that the SERR message mechanism be disabled. • **Enable SERR Messages**

Table 11. Cloud Desktop

Option	Description
Server Lookup Method	Specifies how the ImageServer looks up the server address. • Static IP • **DNS** (enabled by default) **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer*.**
Server Name	Displays the name of the server.
Server IP Address	Displays the primary static IP address of the ImageServer with which the client software communicates. The default IP address is **255.255.255.255**. **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer* and when *Lookup Method* is set to *Static IP*.**
Server Port	Displays the primary IP port of the ImageServer, which is used by the client to communicate. The default IP port is **06910**. **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer*.**
Client Address Method	Specifies how the client obtains the IP address. • Static IP

Option	Description
	• **DHCP** (enabled by default) **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer*.**
Client IP Address	Displays the static IP address of the client. The default IP address is **255.255.255.255**. **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer* and when *Client DHCP* is set to *Static IP*.**
Client SubnetMask	Displays the subnet mask of the client. The default setting is **255.255.255.255**. **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer* and when *Client DHCP* is set to *Static IP*.**
Client Gateway	Displays the gateway IP address for the client. The default setting is **255.255.255.255**. **NOTE: This field is only relevant when the *Integrated NIC* control in the *System Configuration* group is set to *Enabled with ImageServer* and when *Client DHCP* is set to *Static IP*.**
DNS IP Address	Displays the DNS IP address of the cleint. The default setting is **255.255.255.255**.
Domain Name	Displays the Domain Name of the client.
Advanced	Specifies for Advanced debugging • **Verbose Mode** (Disabled by default)

Table 12. System Logs

Option	Description
BIOS events	Displays the system event log and allows you to clear the log. • Clear Log

Updating the BIOS in Windows

It is recommended to update your BIOS (System Setup), when you replace the system board or if an update is available.

NOTE: If BitLocker is enabled, it must be suspended prior to updating the system BIOS, and then re enabled after the BIOS update is completed.

1. Restart the computer.
2. Go to **Dell.com/support**.
   - Enter the **Service Tag** or **Express Service Code** and click **Submit**.
   - Click **Detect Product** and follow the instructions on screen.
3. If you are unable to detect or find the Service Tag, click **Choose from all products**.
4. Choose the **Products** category from the list.

   NOTE: Choose the appropriate category to reach the product page
5. Select your computer model and the **Product Support** page of your computer appears.
6. Click **Get drivers** and click **Drivers and Downloads**.
   The Drivers and Downloads section opens.
7. Click **Find it myself**.
8. Click **BIOS** to view the BIOS versions.
9. Identify the latest BIOS file and click **Download**.

10. Select your preferred download method in the **Please select your download method below** window, click **Download File**. The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.
    Follow the instructions on the screen.

Clearing Forgotten Password

The system's software security features include a system password and a setup password. The password jumper disables any password(s) currently in use. There are 3–pins for the password reset jumper.

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover.
3. Identify the password reset jumper on the system board, see the System Board Components.
4. Remove the 2-pin jumper plug from pins 2 and 3 and fix it on pins 1 and 2
5. Install the cover.
6. Connect the computer to the electrical outlet and power-on the computer to clear the password.
7. Power-off the computer and disconnect the power cable from the electrical outlet.
8. Remove the cover.
9. Replace the jumper on the pins 2 and 3.
10. Install the cover.
11. Follow the procedures in *After Working Inside Your Computer*.
12. Power-on the computer.
13. Go to the system setup, and assign a new system or setup password.

Clearing CMOS

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the cover.
3. Remove the PCI card if installed.
4. Identify the CMOS jumper on the system board, see the System Board Components.
5. Place the 2-pin jumper plug on pins 1 and 2 to clear CMOS
6. Install PCI card if installed.
7. Install the cover.
8. Connect the computer to the electrical outlet and power-on the computer to clear the CMOS.
9. Power-off the computer and disconnect the power cable from the electrical outlet.
10. Remove the cover.
11. Replace the jumper on the pins 1 and 2.
12. Install PCI card if installed.
13. Install the cover.
14. Follow the procedures in *After Working Inside Your Computer*.
15. Power-on the computer.

System and setup password

Table 13. System and setup password

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

You can create a system password and a setup password to secure your computer.

CAUTION: The password features provide a basic level of security for the data on your computer.

CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.

NOTE: System and setup password feature is disabled.

Assigning a system setup password

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

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

1. In the **System BIOS** or **System Setup** screen, select **Security** and press **Enter**.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - The password can contain the numbers 0 through 9.
   - Only lower case letters are valid, upper case letters are not allowed.
   - Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and a message prompts you to save the changes.
5. Press Y to save the changes.
   The computer reboots.

Deleting or changing an existing system setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

To enter the System Setup, press F2 immediately after a power-on or reboot.

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

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

Disabling a System Password

The system's software security features include a system password and a setup password. The password jumper disables any password(s) currently in use.

NOTE: You can also use the following steps to disable a forgotten password.

1. Follow the procedures in *Before Working on Your Computer*.
2. Remove the cover.
3. Identify the PSWD jumper on the system board.
4. Remove the PSWD jumper from the system board.

   NOTE: The existing passwords are not disabled (erased) until the computer boots without the jumper.

5. Install the cover.

   NOTE: If you assign a new system and/or setup password with the PSWD jumper installed, the system disables the new password(s) the next time it boots.

6. Connect the computer to the electrical outlet and power-on the computer.
7. Power-off the computer and disconnect the power cable from the electrical outlet.
8. Remove the cover.
9. Replace the PSWD jumper on the system board.
10. Install the cover.
11. Follow the procedures in *After Working on Your Computer*.
12. Power-on the computer.
13. Go to the system setup, and assign a new system or setup password. See *Setting up a System Password*.

4

Diagnostics

If you experience a problem with your computer, run the ePSA diagnostics before contacting Dell for technical assistance. The purpose of running diagnostics is to test your computer's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Topics:

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.

5

Troubleshooting your computer

Power LED Diagnostics

The power button LED located on the front of the chassis also functions as a bicolored diagnostic LED. The diagnostic LED is only active and visible during the POST process. Once the operating system starts to load, it is no longer visible.

Amber LED blinking scheme – The pattern is 2 or 3 blinks followed by a short pause then x number of blinks up to 7. The repeated pattern has a long pause inserted in the middle. For example 2,3 = 2 amber blinks, short pause, 3 amber blinks followed by long pause then repeats.

Table 14. Power LED Diagnostics

Amber LED State	White LED State	Description
off	off	system is OFF
off	breathing	system is in sleep state
blinking	off	power supply unit (PSU) failure
steady	off	PSU is working but failed to fetch code
off	steady	system is ON

Amber LED State	Description
2,1	system board failure
2,2	system board, PSU or PSU cabling failure
2,3	system board, memory or CPU failure
2, 4	coin-cell battery failure
2,5	corrupt BIOS
2,6	CPU configuration failure or CPU failure
2,7	memory modules are detected, but a memory failure
3,1	possible peripheral card or system board failure
3,2	possible USB failure
3,3	no memory modules are detected
3,4	possible system board error
3,5	memory modules are detected, but a memory configuration or compatibility error
3,6	possible system board resource and/or hardware failure
3,7	some other failure with messages on screen

Beep Code

The computer can emit a series of beeps during start-up if the display does not show errors or problems. These series of beeps, called beep codes, identify various problems. The delay between each beep is 300 ms, the delay between each set of beeps is 3 sec, and the beep sound lasts 300 ms. After each beep and each set of beeps, the BIOS should detect if the user presses the power button. If so, BIOS will jump out from looping and execute the normal shutdown process and power system.

Code	1-3-2

Cause	Memory failure

NOTE: 1. If the system is attached with an internal speaker we can hear the beep sound directly.

NOTE: 2. If the system does have an internal speaker, connect an external speaker to line out connection to hear the beep sound.

NOTE: User can also check the power LED behavior instead of the beep code for troubleshooting purpose.

Error messages

Error message	Description
Address mark not found	The BIOS found a faulty disk sector or could not find a particular disk sector.
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. Contact Dell and report the checkpoint code (nnnn) to the support technician
Alert! Security override Jumper is installed.	The MFG_MODE jumper has been set and AMT Management features are disabled until it is removed.
Attachment failed to respond	The floppy or hard drive controller cannot send data to the associated drive.
Bad command or file name	Ensure that you have spelled the command correctly, put spaces in the proper place, and used the correct pathname.
Bad error-correction code (ECC) on disk read	The floppy or hard drive controller detected an uncorrectable read error.
Controller has failed	The hard drive or the associated controller is defective.
Data error	The floppy or hard drive cannot read the data. For the Windows operating system, run the chkdsk utility to check the file structure of the floppy or hard drive. For any other operating system, run the appropriate corresponding utility.
Decreasing available memory	One or more memory modules may be faulty or improperly seated. Re-install the memory modules and, if necessary, replace them.
Diskette drive 0 seek failure	A cable may be loose or the computer configuration information may not match the hardware configuration.
Diskette read failure	The floppy disk may be defective or a cable may be loose. If the drive access light turns on, try a different disk.
Diskette subsystem reset failed	The floppy drive controller may be faulty.
Gate A20 failure	One or more memory modules may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them.

Error message	Description
General failure	The operating system is unable to carry out the command. This message is usually followed by specific information—for example, **Printer out of paper**. Take the appropriate action to resolve the problem.
Hard-disk drive configuration error	The hard drive failed initialization.
Hard-disk drive controller failure	The hard drive failed initialization.
Hard-disk drive failure	The hard drive failed initialization.
Hard-disk drive read failure	The hard drive failed initialization.
Invalid configuration information-please run SETUP program	The computer configuration information does not match the hardware configuration.
Invalid Memory configuration, please populate DIMM1	DIMM1 slot does not recognize a memory module. The module should be re-seated or installed.
Keyboard failure	A cable or connector may be loose, or the keyboard or keyboard/mouse controller may be faulty.
Memory address line failure at address, read value expecting value	A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them.
Memory allocation error	The software you are attempting to run is conflicting with the operating system, another program, or a utility.
Memory data line failure at address, read value expecting value	A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them.
Memory double word logic failure at address, read value expecting value	A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them.
Memory odd/even logic failure at address, read value expecting value	A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them
Memory write/ read failure at address, read value expecting value	A memory module may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them.
Memory size in CMOS invalid	The amount of memory recorded in the computer configuration information does not match the memory installed in the computer.
Memory tests terminated by keystroke	A keystroke interrupted the memory test.

Error message	Description
No boot device available	The computer cannot find the floppy disk or hard drive.
No boot sector on hard-disk drive	The computer configuration information in System Setup may be incorrect.
No timer tick interrupt	A chip on the system board might be malfunctioning.
Non-system disk or disk error	The floppy disk in drive A does not have a bootable operating system installed on it. Either replace the floppy disk with one that has a bootable operating system, or remove the floppy disk from drive A and restart the computer.
Not a boot diskette	The operating system is trying to boot to a floppy disk that does not have a bootable operating system installed on it. Insert a bootable floppy disk.
Plug and play configuration error	The computer encountered a problem while trying to configure one or more cards.
Read fault	The operating system cannot read from the floppy or hard drive, the computer could not find a particular sector on the disk, or the requested sector is defective.
Requested sector not found	The operating system cannot read from the floppy or hard drive, the computer could not find a particular sector on the disk, or the requested sector is defective.
Reset failed	The disk re-set operation failed.
Sector not found	The operating system cannot locate a sector on the floppy or hard drive.
Seek error	The operating system cannot find a specific track on the floppy disk or hard drive.
Shutdown failure	A chip on the system board might be malfunctioning.
Time-of-day clock stopped	The battery might be dead.
Time-of-day not set-please run the System Setup program	The time or date stored in System Setup does not match the computer clock.
Timer chip counter 2 failed	A chip on the system board may be malfunctioning.
Unexpected interrupt in protected mode	The keyboard controller may be malfunctioning or a memory module may be loose.
WARNING: Dell's Disk Monitoring System has detected that drive [0/1] on the [primary/ secondary] EIDE controller is operating outside of normal specifications. It is advisable to immediately back up your data and replace your hard drive by calling your support desk or Dell.	During initial startup, the drive detected possible error conditions. When your computer finishes booting, immediately back up your data and replace your hard drive (for installation procedures, see "Adding and Removing Parts" for your computer type). If no replacement drive is immediately available and the drive is not the only bootable drive, enter System Setup and change the appropriate drive setting to **None**. Then remove the drive from the computer.
Write fault	The operating system cannot write to the floppy or hard drive.

Error message	Description
Write fault on selected drive	The operating system cannot write to the floppy or hard drive.

6

Technical Specifications

NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

Table 15. System Information

Feature	Specification
Processor type	Intel Core i3 / i5 series
Total Cache	upto 8 MB
Chipset	Intel H81 Chipset

Table 16. Memory

Feature	Specification
Type	up to 1600 MHz DDR3 Synch DRAM Non-ECC memory
Speed	1600 MHz
Connectors	2 internally accessible DDR3 DIMM sockets
Capacity	Up to 8 GB
Minimum Memory	2 GB
Maximum memory:	16 GB

Table 17. Video

Feature	Specification
Video Controller	Integrated: Intel HD Graphics 4600/ HD Graphics 4400/ HD Graphics Discrete: • 2 GB AMD Radeon R7 250 • 1 GB AMD Radeon R5 240
Video memory	shared memory

Table 18. Audio

Feature	Specification
Controller	Intel Realtek ALC3220 High Definition Audio
Speaker	single 4–ohms speaker in both the left and right speaker assembly
Internal microphone support	single digital microphone
Volume controls	volume up/down buttons, program menus, and keyboard media-control keys

Table 19. Communications

Feature	Specification
Network adapter	Intel 10/100/1000 Mbps Ethernet LAN on system board

Table 20. Drives

Feature	Specification
Externally accessible:	ODD is externally accessible
Internally accessible	HDD is internally accessible

Table 21. Ports and Connectors

Feature	Specification
Audio	• one audio input/microphone port • one headphone port
Network Adapter	support Broadcom NetXtreme 10/100/1000 PCIe Gigabit Networking Card
Serial	support Serial / PS/2 Add-in Bracket or Serial / Parallel Port PCIe Add-in Card
Parallel	Serial / Parallel Port PCIe Add-in Card
USB 2.0	two connectors in the front panel and four connectors on the back panel
USB 3.0	two connectors on the back panel

Table 22. Controls and Lights

Feature	Specification
Front of the computer:	
Power button light	White light — Solid white light indicates power-on state; Breathing white light indicates sleep state of the computer.
Drive activity light	White light — Blinking white light indicates that the computer is reading data from or writing data to the hard drive
Back of the computer:	
Link integrity light on integrated network adapter	Green — a good 10 Mbps connection exists between the network and the computer. Green — a good 100 Mbps connection exists between the network and the computer. Orange — a good 1000 Mbps connection exists between the network and the computer. Off (no light) — the computer is not detecting a physical connection to the network.
Network activity light on integrated network adapter	Yellow light — A blinking yellow light indicates that network activity is present.
Power supply diagnostic light	Green light — The power supply is turned on and is functional. The power cable must be connected to the power connector (at the back of the computer) and the electrical outlet.

Table 23. Power

Feature	Specification
Coin-cell battery	3V Lithium CR2032
Voltage	90 VAC to 264 VAC
Wattage	255 W
Maximum heat dissipation	N/A

NOTE: Heat dissipation is calculated by using the power supply wattage rating.

Table 24. Physical

Feature	Specification
Height	290.00 mm (11.41 inches)
Width	92.60 mm (3.64 inches)
Depth	312.00 mm (12.28 inches)
Weight	5 kg (11.02 lb)

Table 25. Environmental

Feature	Specification
Temperature:	
Operating	10 degrees to 35 degrees
Storage	-40 degrees to 65 degrees
Relative humidity (maximum):	
Operating	20 R.H. to 80 R.H.
Storage	5 R.H. to 95 R.H.
Maximum vibration:	
Operating	0.26 Grms
Storage	1.37 Grms
Maximum shock:	
Operating	40 G/2 ms
Storage	50 G/19 ms
Altitude:	
Operating	–15.2 m to 30482000 m (–50 to 10,0006560 ft)
Storage	–15.20 m to 10,668 m (–50 ft to 35,000 ft)
Airborne contaminant level	G1 or lower as defined by ANSI/ISA-S71.04-1985

7

Contacting Dell EMC

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

Dell EMC 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 EMC for sales, technical support, or customer service issues:

Go to **Dell.com/contactdell.**