2021

Dell™ Optiplex™ 780

User Manual

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UCCS 4080

Information Architecture

In collaboration with L3 Harris

CONTENTS

Chapter 1: System Overview

This chapter provides information regarding the basic system functions and procedures for this desktop unit. This section includes information on basic safety precautions, BIOS procedures, a detailed list of your computer's specifications, and an introductory look at your system's components.

⚠ Note For a more detailed look at the components, refer to Chapter 2: Illustrated Parts Breakdown:

Notes, Cautions, and Warnings

Note: Indicates important information for the user to better use the product.

Caution: Indicates potential damage to hardware or program software.

Warning: Indicates a potential of damage to property, personal injury or death.

Safety Guidelines

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution Many of the repairs should be done be a certified service technician. You should only do simple repairs and troubleshooting on authorized products listed in the manual.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Theory of Operations

When Starting up your computer, it is important to understand the boot menu and corresponding codes. This section details how to use the BIOS and includes specific inputs needed for boot actions.

Boot Sequence

Press <F12> when the dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system

The options listed contain:

Internal HDD
CD/DVD/CD-RW Drive
Onboard NIC
BIOS Setup
Diagnostics

This menu is useful when you are attempting to boot a particular device or to bring up the diagnostics for the system.

Navigation Keystrokes

Use the following keystrokes to navigate the System Setup screens.

Action	Keystroke
Expand and collapse the field	<Enter>, left or right arrow key, or +/-
Expand or collapse all fields	< >
Exit BIOS	<Esc>--Remain in setup, Save/Exit, Discard/Exit
Change a setting	Left or right arrow key

Action	Keystroke
Select field to change	<Enter>
Cancel modification	<esc>
Reset defaults	<Alt>, <F>, or **Load Defaults** menu option

Specifications

Note The following specifications are only those required by law to ship with your computer. For a complete and current listing of the specifications for your computer, go to support.dell.com.

Note A comprehensive list of term abbreviation definitions can be found in the Glossary.

System Information

Optiplex 780 Desktop Technical Specifications		
Processor	Intel Core™ 2 Duo, Intel Core 2 Quad, Intel Pentium® Dual Core, and Intel Celeron®	
Chipset	Intel® Q45 Express Chipset w/ICH10DO	
Video	**Integrated**	**Discrete**
	Intel integrated video	PCI Express x16 graphics adapter Note The PCI Express x16 is disabled when a display is connected to the integrated DisplayPort connector

Optiplex 780 Desktop Technical Specifications		
Video Memory	**Integrated**	
	Up to 256 MB shared video memory (system memory greater than 512 MB)	
Memory	**Memory module connector**	Four DIMM slots
	Memory module capacity	1 GB, 2 GB, 4 GB
	Type	1066 MHz DDR3 SDRAM (non-ECC only)
	Minimum memory	1 GB
	Maximum memory	16 GB
Drives	**Externally accessible**	One 5.25-inch drive bay One 3.5-inch drive bay
	Internally accessible	One 3.5-inch SATA drive bay
Wattage	255W	
Maximum Heat Dissipation	955 BTU/hr Note Heat dissipation is calculated by using the power supply wattage rating	
Voltage	90-265 VAC, 50/60 Hz	

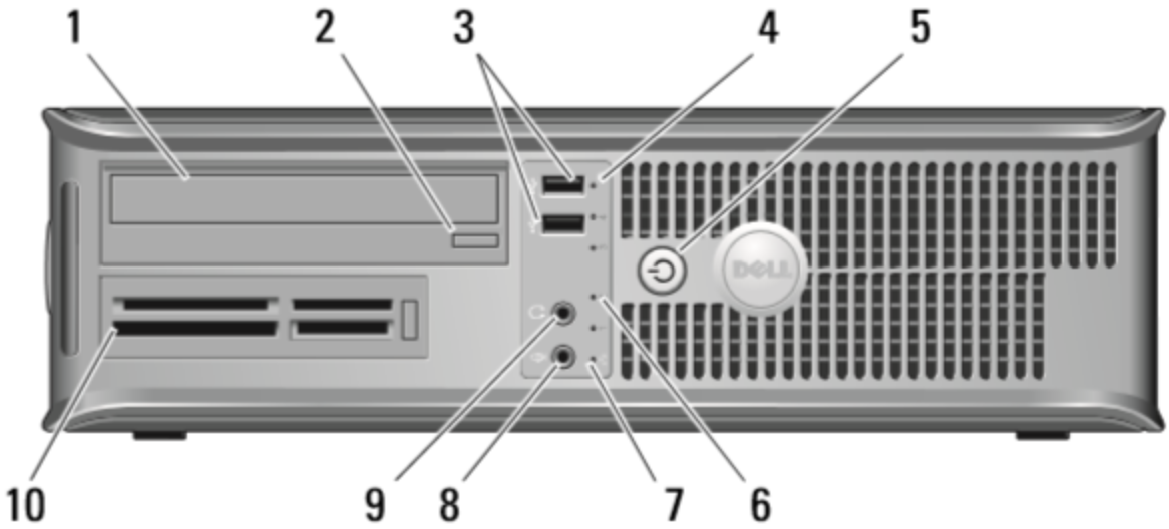
Optiplex 780 Desktop Technical Specifications	
Coin-cell Battery	3V CR2032 lithium coin cell
Height	11.40 cm (4.50 inches)
Width	39.90 cm (15.70 inches)
Depth	35.30 cm (13.90 inches)
Weight	(18.20 pounds)

System Description

The Dell Optiplex 780 model is a general use desktop computer suitable for internet access, data management, and the use of external applications

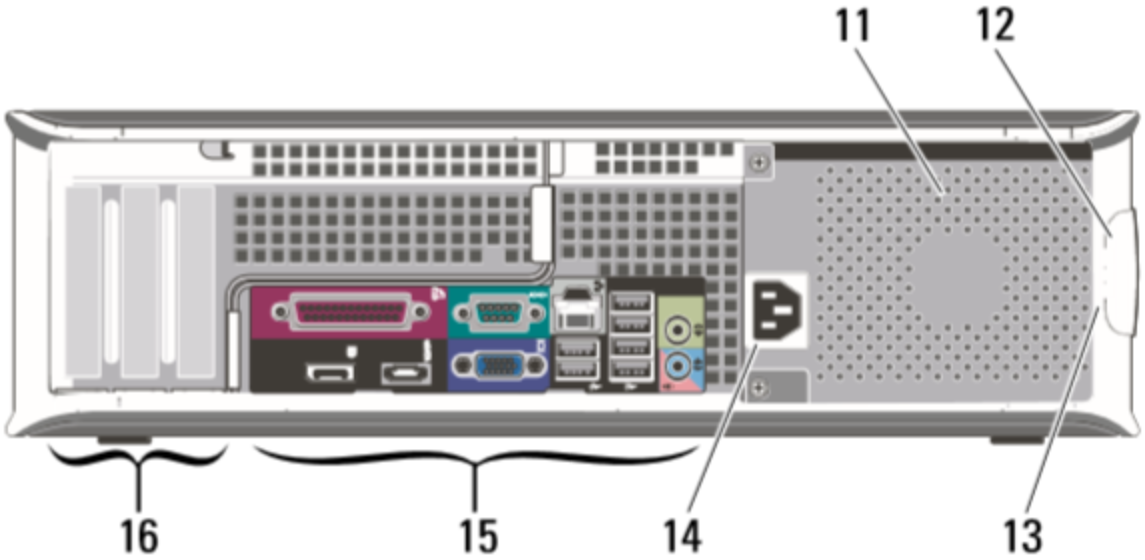
Note For more information on supplied hardware, see Illustrated Parts Breakdown

Desktop Chassis Front View



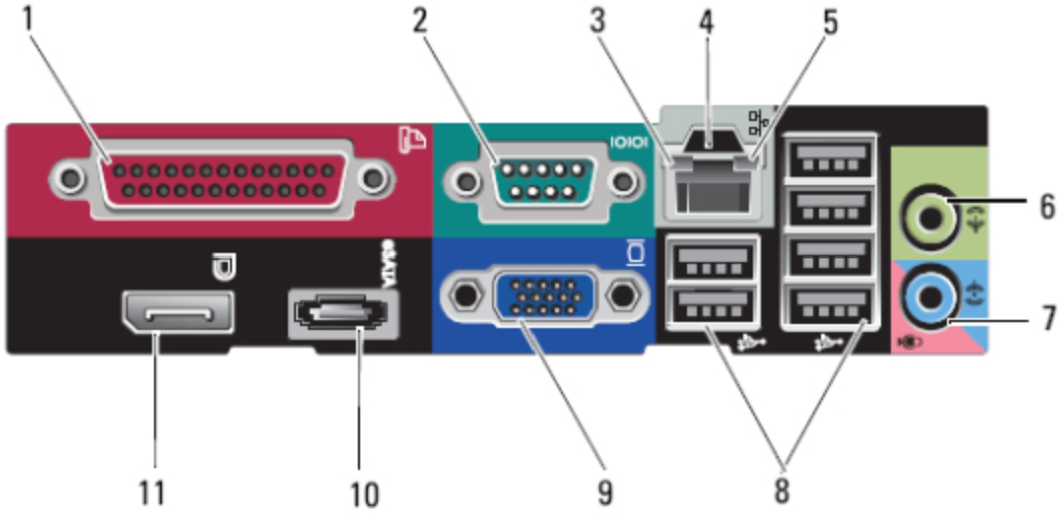
1. Optical Drive	2. Optical drive eject button	3. USB 2.0 connectors (2)
4. Drive activity light	5. Power button, power light	6. Diagnostic lights (4)
7. Network connectivity light	8. Microphone connector	9. Headphone connector
10. Media card reader (optional)		

Desktop Chassis Back View



11. Cooling vents	12. Cover release latch	13. Padlock ring
14. Power connector	15. Back panel connectors	16. Expansion card slots (3)

Back Panel Connectors



1. Parallel connector	2. Serial connector
3. Link integrity light	4. Network adapter connector
5. Network activity light	6. Line-out connector
7. Line-in (microphone) connector	8. USB2.0 connectors
9. VGA connector	10. eSATA connector
11. DisplayPort connector	

Chapter 2: Illustrated Parts Breakdown

This chapter features a comprehensive list of all of the components featured in your Dell Optiplex 780. Each component is accompanied by a corresponding image and description.

Note: Offerings may vary by region. For more information regarding the configuration of your computer, click Start®

Note: Unless otherwise stated, the specifications are identical for mini-tower, desktop, and small form factor computers.

Caution Refer to Safety Guidelines before examining interior components.

Chassis Components

Chassis Front View

Dell OptiPlex 780

Figure 2.2.2 Desktop Front View

Functional Description

The Dell Optiplex 780 Desktop model is 4.5X15.7X13.9 (inches) and weighs in at 18.2 lbs. This model comes equipped with Windows 7 and the Intel Core 2 Dual processor.

Chassis Back View

Dell OptiPlex 780

Figure 2.2.3 Desktop Back View

Functional Desription

The rear side of the chassis contains the majority of the computer's external connectors.

See 1.5.3 Back Panel Connectors for a full breakdown.

For instructions on how to remove any of these components, see 5.5 Removal and Replacement.

Riser Cage

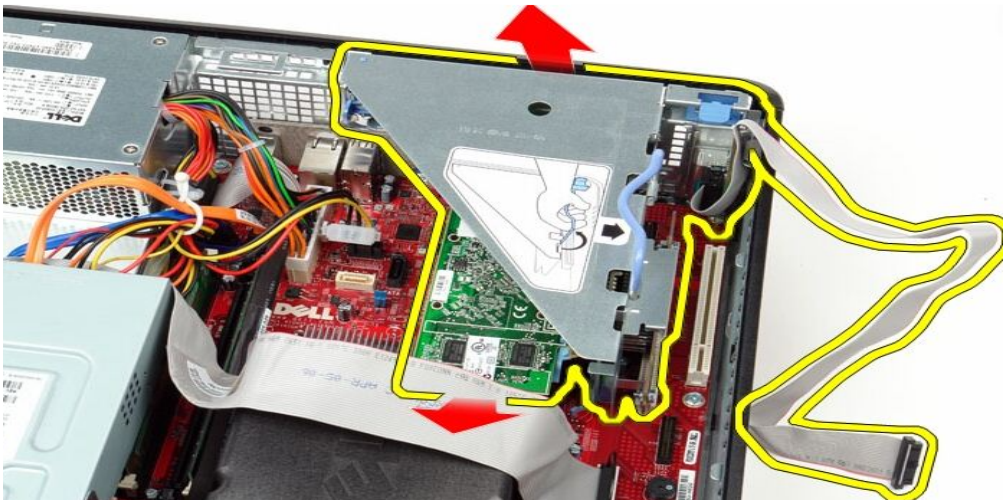


Figure 2.2.4 Riser cage Top View

Functional Description

The riser cage houses the riser card, allowing for additional adapters to be connected.

For more information on how to remove the riser cage, see 5.5 Removal and Replacement

Internal Components

DVD Drive

Figure 2.3.2 DVD drive front / top view

Functional Description

The DVD drive is can be accessed externally, as seen in Chassis Front View . This drive allows for the rendering of CD/DVD disks and comes equipped in each Dell Optiplex model.

Hard Drive

Figure 2.3.3 Hard drive top view

Functional Description

The hard drive is located deep in the motherboard of the Dell Optiplex 780 chassis. It is the primary data storage system.

Storage: 1000 GB
Cache Size: 3.5 inches
Form Facor: 32 MB

If your hard drive needs replacing, see 5.5 Removing and Replacing Parts

Power Supply

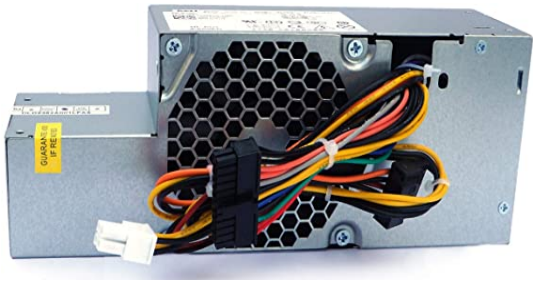


Figure 2.3.4.1 Power Supply Side View

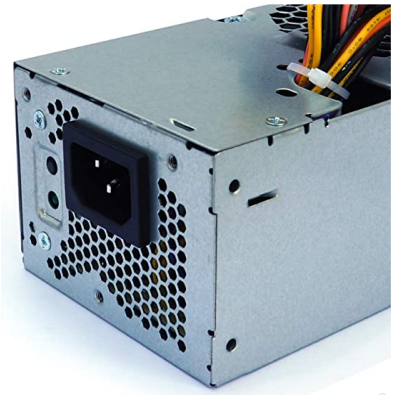


Figure 2.3.4.2 Power Supply Back View

Functional Description

Supplies power to the computer.

The power supply directs voltage to the motherboard and serves as the source of power. The Dell Optiplex 780 utilizes a C18 to C20 12V adapter.

Motherboard

Figure 2.3.5.1 Motherboard top view

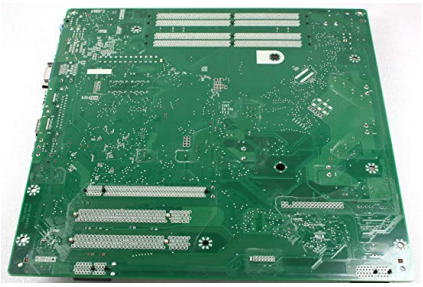


Figure 2.3.5.1 Mother board bottom view

Functional Description

The motherboard is the main circuit board inside a computer that connects the different parts of a computer together. It has sockets for the CPU, RAM and expansion cards and it also hooks up to hard drives, disc drives and front panel ports with cables and wires. Other than bridging internal components, the motherboard ports also allow you to connect external devices to the computer.

CPU Cooler

Figure 2.3.6.1 CPU cooler top view

Figure 2.3.6.2 CPU cooler bottom view

Functional Description

This component draws heat away from the processor. The Dell Optiplex 780 features an air cooling system that redirects and diffuses heat from the CPU away from the hardware.

Fan

Figure 2.3.7 Fan top view

Functional Description

This keeps the internal components of the computer cool. The fan is located within the chassis and acts as a general purpose coolant to regulate system temperatures.

For more information regarding the temperature of your CPU, see 1.4 Specifications.

Processor

Figure 2.3.8 Processor top view

Functional Description

The processor is located within the system motherboard. The Dell Optiplex 780 comes equipped with the Intel Core 2 Dual processor.

Memory

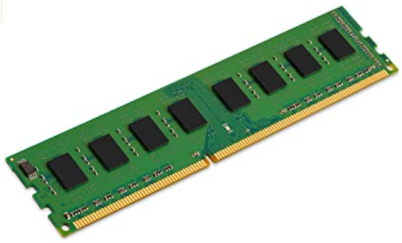


Figure 2.3.9 Memory side view

The memory card stores all of the intimidate files of your CPU. The Dell Optiplex 780 comes with 1066 MHz DDR3 SDRAM.

Chapter 3: Operation

This chapter provides information regarding the operation of your computer. This chapter covers the procedures related to powering on your computer, powering off your computer, boot menu options, system setup, and system maintenance.

⚠ Note Included components may differ depending on region.r

Power Procedures

This section details the normal power operation of your computer. The information includes procedures for powering on, powering down, and managing the power of your computer.

Power Up Procedures

Warning Before you begin any of the procedures in this section, read the safety information that shipped with your computer. In addition, refer to 1.2 Notes, Cautions, and Warnings.

Note Some devices may not be included if you did not order them.

1. Connect the monitor using the following cables:

   VGA Adapter
   DisplayPort Cable
   VGA to DisplayPort Adapter

2. Connect the USB keyboard and/or mouse (optional)

   USB connection

3. Connect the network cable (optional)

   Network connection

4. Connect the power cable(s)

   Power connection

5. Press the power buttons on the monitor and computer

   Turning on power

Power Down Procedures

Caution To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system:

In Windows Vista:

Click Start, then click the arrow in the lower-right corner of the Start menu as shown below, and then click Shut Down.

In Windows XP:

Click Start, Turn Off Computer, Turn Of

The computer turns off after the operating shutdown process is complete.

2. Ensure that the computer and all attached devices are turned off.

Note 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.

Power Management

Your computer has multiple modes to help manage the power usage.

Power Management	
AC Recovery	Determines how the system responds when AC power is re-applied after a power loss. You can set the AC Recovery to: Power Off (default) Power On Last State
Auto On Time	Sets time to automatically turn on the computer. Time is kept in the standard 12-hour format (hours:minutes:seconds). Change the startup time by typing the values in the time and AM/PM fields.  Note This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if Auto Power On is set to disabled.
Low Power Mode	Enables or disables low power mode. This option is disabled by default. When low power mode is enabled, the integrated network card is disabled when the system is shutdown or in Hibernate mode. Only Add-in NIC cards will be able to remotely wake the system.

Power Management	
Remote Wake up	Allows the system to power up when a network interface controller receives a wake up signal. You can set Remote Wake up to: Disable (default) Enable Enable with Boot NIC
Suspend Mode	Sets the power management suspend mode to: S1 S3 (default) Note If the AMT Management Engine (ME) of the system is disabled, the S1 suspend mode is unavailable in the system setup.
Fan Control Override	Controls the speed of the system fan. Note When enabled, the fan runs at full speed.

Entering System Setup

Your computer offers the following BIOS and System Setup options: Bring up a one-time boot menu by pressing <F12> Access System Setup by pressing <F2>

F12 Menu

Press <F12> when the Dell™ logo appears to initiate a one-time boot menu with a list of the valid boot devices for the computer. Diagnostics and Enter Setup options are also included in this menu. The devices listed on the boot menu depend on the bootable devices installed in the computer. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the computer. Making changes in the boot menu does not make any changes to the boot order stored in the BIOS

F2

Press <F2> to enter System Setup and make changes to user-definable settings. If you have trouble entering System Setup using this key, press <F2> when the keyboard lights first flash.

System Setup Menu Options

Note System Setup options on your computer are varied and may not appear in the same order as indicated in this section.

General	
System Board	Displays the following information: System information: Displays BIOS Info,, System Info, Service Tag, Express Service Code, Asset Tag, Manufacture Date, and the Ownership Date. Memory information: Displays Installed Memory, Usable Memory,

General	
	Memory Speed, Memory Channel Mode, Memory Technology, DIMM_ 1 Size, DIMM_2 Size, DIMM_3 Size, and DIMM_4 Size. . Processor information: Displays the Processor Type, Processor Speed, Processor Bus Speed, Processor L2 cache, Processor ID, Microcode Version, Multi Core Capable and HT Capable 64-bit Technology. PCI information: Displays available slots on the system board.
Date and Time	Displays the system date and time. Changes to the system date and time take effect immediately.
Boot Sequence	Specifies the order in which the computer attempts to find an operating system from the devices specified in this list Onboard or USB Floppy HDD (will show the model currently in the system) Onboard or USB CD-Rom Drive USB Device

System Configuration	
Integrated NIC	Enables or disables the integrated network card. You can set the integrated NIC to: Disable Enable (default) Enable with PXE Enable with ImageSever

System Configuration	
	ImageServe is incompatible with RAID mode. Please disable RAID if enabling ImageServer. PXE is needed only if intending to boost to an operating system located on a server, not if you are booting on an OS located on a hard drive in this system.
USB for Flex Bay	This field enable and disable the internal USB for Flex Bay, you can set: Disable - Internal USB for Flex Bay is disable Enable - Internal USB for Flex Bay is enable No Boot - Internal USB for Flex Bay is enable, but not bootable. (default)
USB Controller	Enables or disables the integrated USB controller. You can set the USB controller to: Enable (default) Disable No boot Operating systems with USB support will recognize USB Storage
Parallel Port	Identifies and defines the parallel port settings. You can set the parallel port to: Disable AT PS/2 (default) EPP

System Configuration	
	ECP No DMA ECP DMA 1 ECP DMA 3
Parallel Port Address	Sets the base I/O address of the integrated parallel port
Serial Port #1	Identifies and defines the serial port settings. You can set the serial port to: Disable Auto (default) COM1 COM3 The Operating System may allocate resources even though the setting is disabled
Serial Port #2	Identifies and defines the serial port settings. You can set the serial port to: Disable Auto (default) COM2 COM4 The Operating System may allocate resources even though the setting is disabled.
Miscellaneous	Enables or disables the following onboard devices:

System Configuration	
Devices	Front USB Rear Dual USB Rear Quad USB PCI slots Audio

Video	
Primary Video	This field determines which video controller will become the primary video controller when 2 controllers are available in the system. This selection matters only if there are 2 video controller present. Auto(default) - Use the add-in video controller. Onboard/Card - Use the integrated video controller unless a Graphic care is installed. A PCI Express Graphic(PEG) card will override and disable the integrated video controller.

Performance	
Multi Core Support	This field specifies whether the processor will have one or all cores enable. The performance of some application will improve with the additional cores
Intel SpeedStep	This Option enables or disables the Intel® SpeedStep™ mode of the processor. When disabled, the system is placed into the highest performance state and the Intel® SpeedStep™ applet or native operating system driver are prevented from adjusting the processor's performance. When enable. the Intel® SpeedStep™,

Performance	
	enabled CPU is allowed to operate in multiple performance states. This option is disabled by default
C States Control	This option enables or disables additional processor sleep states. The operating system may optionally use these for additional power saving when idle. This option is disabled by default.
Limit CPUID Value	This field limits the maximum value the processor Standard CPUID Function will support. Some operating systems will not complete installation when the maximum CPUID Function supported is greater than 3. This option is disabled by default.
HDD Acoustic Mode	This option allows you to optimize your hard drives performance and acoustic noise level based on your personal preferences. Bypass(default)- Do nothing (needed for older drives) Quiet- The drive is slower, but quieter. Suggested - Allow drive manufacturer to select the mode. Performance- The drive is faster, but possibly noisier.

System Maintenance

Your computer comes equipped with security features to maintain the privacy of your data and various tags to aid with maintenance of your computer.

Maintenance	
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 the SERR Message mechanism be disabled.

Security Measures

Your computer comes with built in security measures that can be customized. Most of the options are not set by default.

Security	
Administrative Password	Provides restricted access to the computer's system setup program in the same way that access to the system can be restricted with the System Password option. This option is not set by default.
System Password	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified. This option is not set by default.
Password Changes	Enables or disables the user from changing the system password without the administrative password. This option is enabled by default.
TPM Security	Enables or disables the trusted platform module (TPM) security.You can set the TPM security to: Deactivate (default) Activate Clear  Note When TPM Security is set to Clear the system setup program clears the user information stored in the TPM.

Security	
CPU XD Support	Enables or diables the execute disable mode of the processor. This option is enabled by default.
Comoutrace(R)	Enables or disables the optional Computrace® service designed for asset management. You can set this option to: Deactivate (default) Disable Activate
SATA-0 Password	Displays the current status of the password set for the hard drive connected to the SATA-0 connector on the system board. You can also set a new password. This option is not set by default. ⚠ Note The system setup program displays a password for each of the hard drives connected to your system board.

System Password Setup

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

Password Type	System password
Description	Password that you must enter to log on to your system
Password Type	Setup password

Description	Password that you must enter to access and make changes to the BIOS settings of 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 its not locked and left unattended.

Note Your computer is shipped with the system and setup password feature disabled.

Assigning a System and Setup Password

You can assign a new System Password and/or Setup Password or change an existing System Password and/or Setup

Password only when Password Status is Unlocked. If the Password Status is Locked, you cannot change the System

Password.

Note If the password jumper is disabled, the existing System Password and Setup Password are deleted and you need not provide the system password to log on to the computer.

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

1. In the System BIOS or System Setup screen, select System Security and press <Enter>.

The System Security screen appears.

2. In the System Security screen, verify that Password Status is Unlocked.

3. Select System Password , enter your system password, and press <Enter> or <Tab>.

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, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

Re-enter the system password when prompted.

4. Type the system password that you entered earlier and click OK.

5. Select Setup Password, type your system password and press <Enter> or <Tab>.

A message prompts you to re-type the setup password.

6. Type the setup password that you entered earlier and click OK.

7. Press <Esc> and a message prompts you to save the changes.

8. Press <Y> to save the changes.

The computer reboots.

System Password Changing or Deleting

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

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

1. In the System BIOS or System Setup screen, select System Security and press <Enter>. The System Security screen is displayed.

2. In the System Security screen, verify that Password Status is Unlocked.

3. Select System Password, alter or delete the existing system password and press <Enter> or <Tab>.

4. Select Setup Password, alter or delete the existing setup password and press <Enter> or <Tab>.

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

5. Press <Esc> and a message prompts you to save the changes.

6. Press <Y> to save the changes and exit from the System Setup.

The computer reboots.

Deleting 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.

Chapter 4: Controls, Indicators, and Connectors

This chapter provides a comprehensive overview of the controls, indicators, and connectors that are featured in the chassis of your computer.

Controls and Indicators

This section details the function of the controls and indicators on your computer. If these components are not functioning properly, see Chapter 5: Troubleshooting, Removal, and Replacement.

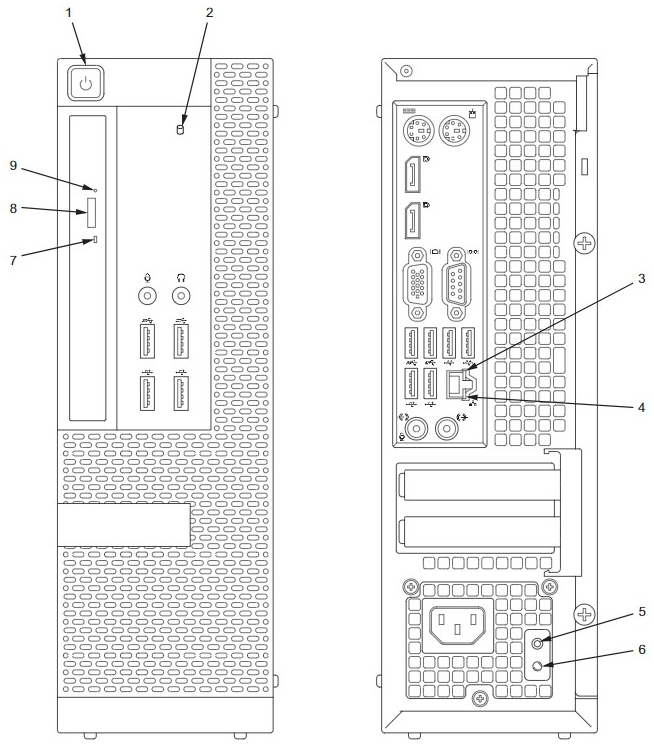


Figure 4.2 Connectors Front and Back View

1.	Power Button LED	On (white) - Computer is powered on Flashing (white) - Computer is in sleep mode Off - Computer has no power
2.	Hard drive activity LED	Flashing (white) - Computer reading data from or is writing data to hard drive
3.	Link integrity LED	On (green) - Computer is connected to network operating at 10Mbps On (green) - Computer is connected to network operating at 100Mbps On (orange) - Computer is connected to network operating at 1000Mbps Off- Computer is not detecting a physical connection to the network
4.	Network activity LED	Flashing (yellow) - Network activity is present Off - Computer is not detecting network activity
5.	Power supply diagnostic button	Initiates power supply Built in Self test
6.	Power supply diagnostic LED	On (green) - Indicates power supply normal operation Flashing (amber) - Indicated power supply failure Off - Indicates power supply is off
7.	Optical drive LED	Flashing (green) - Indicates drive is being

		assessed for read or write activity Off - Indicates no activity on drive
8.	Optical disk eject button	Ejects disk from drive or closes drive
9.	Recessed eject button	Ejects disk from drive

Connectors

This section deals with the external connectors that are available with the Dell Optiplex 780.

⚠ Note The components listed may not be labeled the same way in the desktop, small form factor, and ultra small form factor models.

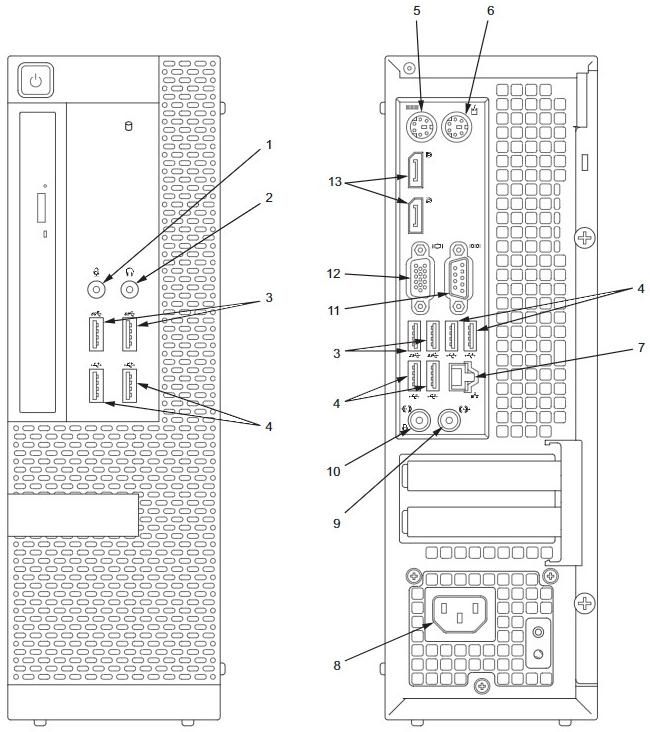


Figure 4.1 Connectors Front and Back View

1.	Microphone connector	Provides audio connection to an external microphone
2.	Headphone connector	Provides audio connection external headphones or speakers
3.	USB 3.0 connector	Connects to external USB device
4.	USB 2.0 connector	Connects to second external USB device
5.	Keyboard connector	Connects to keyboard
6.	Mouse connector	Connects to mouse
7.	Network connector	Provides Ethernet connection and network capability
8.	Power supply connector	Connects power cable to desktop computer chassis
9.	Line-out connector	Used to transmit audio to from desktop computer chassis to external source
10.	Line-in connector	Used to transmit audio from external source to desktop computer chassis
11.	Serial connector	Sequentially transfers information by individual bit from the desktop computer chassis to external source
12.	VGA connector	Provides data connection to external monitor
13.	DisplayPort connector	Provides a connection point to external display devices such as monitors.

Chapter 5: Troubleshooting, Removal, and Replacement

This chapter will show you how to troubleshoot power buttons, beep codes, diagnostic light codes, and how to remove and replace parts.

⚠ Note The color of your computer and components may appear different than shown in the manual.

⚠ Note Please follow all of the safety guidelines before working on your computer.

Power Button

The power button lights give more information on the system state of your computer. The Dell Optiplex 780 utilizes light codes to indicate potential problems in the power supply. This is shown in the power button table.

Power Light State	Description
Off 	Power is off, light is blank.
Blinking Amber 	• Initial state of light at power up. • Indicates system has power, but the POWER_GOOD signal is not yet active. • If the Hard Drive light is off, it is probable that the power supply needs to be replaced. • If the Hard Drive light on, it is probable that an on board regulator or VRM has failed. Look at the diagnostic • lights for further information.
Solid Amber 	• Second state of the light at power up. Indicates the POWER_GOOD signal is active and it is probable that the power supply is fine. • Look at the diagnostic lights for further information.
Blinking Green	System is in a low power state. Look at the diagnostic lights to

	determine which state the system is in.
Solid Green 	• System is in the normal power state of a functioning machine. • The basic input and output of the system will turn the light to this state to indicate it has started fetching op-codes.

Beep Codes

If no error message is displayed on the monitor during POST, you may hear a series of beeps that can help you identify what problem has occurred during assembly or component failure. These tables help you identify the beeps. Most beep codes indicate a fatal error that prevents the computer from completing the boot sequence.

Code	Cause
1-1-2	Microprocessor register failure
1-1-3	NVRAM read/write failure
1-1-4	ROM BIOS checksum failure
1-2-1	Programmable interval timer failure
1-2-2	DMA initialization failure
1-2-3	DMA page register read/write failure
1-3	Video Memory Test failure
1-3-1 through 2-4-4	Memory not being properly identified or used
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure

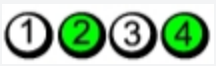
3-1-3	Master interrupt mask register failure
3-1-4	Slave interrupt mask register failure
3-2-2	Interrupt vector loading failure
3-2-4	Keyboard Controller Test failure
3-3-1	NVRAM power loss
3-3-2	Invalid NVRAM configuration
3-3-4	Video Memory Test failure
3-4-1	Screen initialization failure
3-4-2	Screen retrace failure
3-4-3	Search for video ROM failure
4-2-1	No timer tick
4-2-2	Shutdown failure
4-2-3	Gate A20 failure
4-2-4	Unexpected interrupt in protected mode

4-3-1	Memory failure above address 0FFFFh
4-3-3	Timer-chip counter 2 failure
4-3-4	Time-of-day clock stopped
4-4-1	Serial or parallel port test failure
4-4-2	Failure to decompress code to shadowed memory
4-4-3	Math-coprocessor test failure
4-4-4	Cache test failure

Diagnostic Lights

The Dell Optiplex 780 comes quipped with a set of LED lights that indicate potential errors in your computer's components.

Optiplex 780 Desktop Diagnostic Lights		
Light Pattern	Problem Description	Suggested Resolution
	The computer is in a normal off condition on or a possible pre-BIOS failure has occurred. The diagnostic lights are not lit after the computer successfully boots to the operating system.	• Plug the computer into a working electrical outlet. • If the problem persists, contact Dell support.
	A possible processor failure has occurred.	• Reset the processor. • If the problem persists, contact Dell support.
	Memory modules are detected, but a possible memory failure has occurred.	• If two or more memory modules are installed, remove the modules, then reinstall one module and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have

Optiplex 780 Desktop Diagnostic Lights		
		identified a faulty module or reinstalled all modules without error. • If available, install working memory of the same type into your computer. • If the problem persists, contact Dell.
	A possible graphics card failure has occurred.	• Restart any installed graphics cards. • If available, install a working graphics card into your computer. • If the problem persists, contact Dell support.
	A possible USB failure has occurred.	• Reinstall all USB devices and check all cable connections. • If the problem persists, contact Dell support.
	No memory modules are detected.	• If two or more memory modules are installed, remove the modules, then reinstall one module and restart the com-

Optiplex 780 Desktop Diagnostic Lights		
		puter. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. • If available, install working memory of the same type into your computer. • If the problem persists, contact Dell support.
	Memory modules are detected, but a possible memory configuration or compadapility error has occured.	• Ensure that no special requirements for memory module/connector placement exist. • Ensure that the memory you are using is supported by your computer (see the "Specifications" section for your computer). • If the problem persists, contact Dell support.
	Another failure has occurred.	• Ensure that all hard drive and optical drive cables are prop-

Optiplex 780 Desktop Diagnostic Lights		
		erly connected to the system board . • If there is an error message on the screen identifying a problem with a device (such as the floppy drive or hard drive), check the device to make sure it is functioning properly. • If the operating system is attempting to boot from a device (such as the floppy drive or optical drive), check system setup to ensure the boot sequence is correct for the devices installed on your computer. • If the problem persists, contact Dell support.

Removing and Replacing Parts

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

Riser Cage Removal

1. Disconnect the serial-port cable from the motherboard.

Figure 5.5.1.1 Riser Cage Connection

2. Pivot the riser cage handle to the upright position.

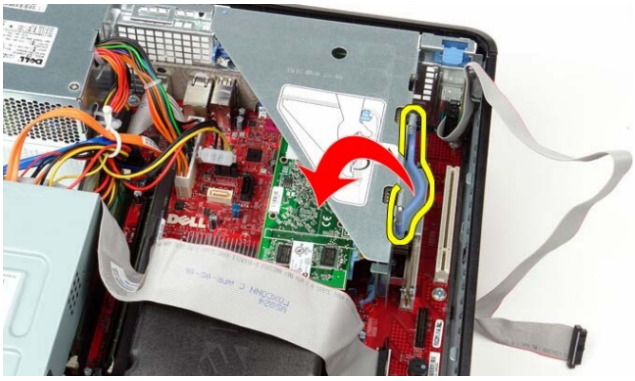


Figure 5.5.1.2 Riser Cage Handle

3. Gently pull the riser cage handle and lift away from the computer.

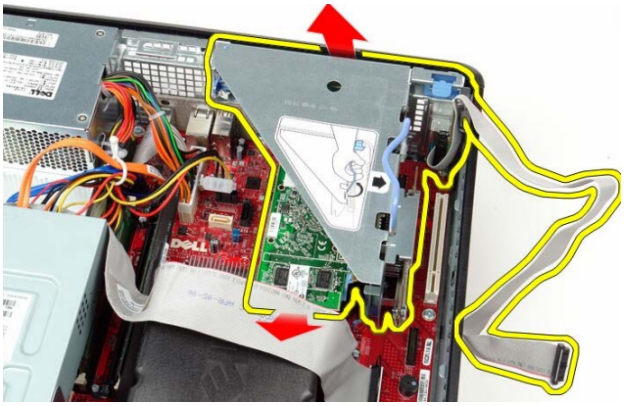


Figure 5.5.1.3 Riser Cage Removal

4. Rotate the latch upwards.

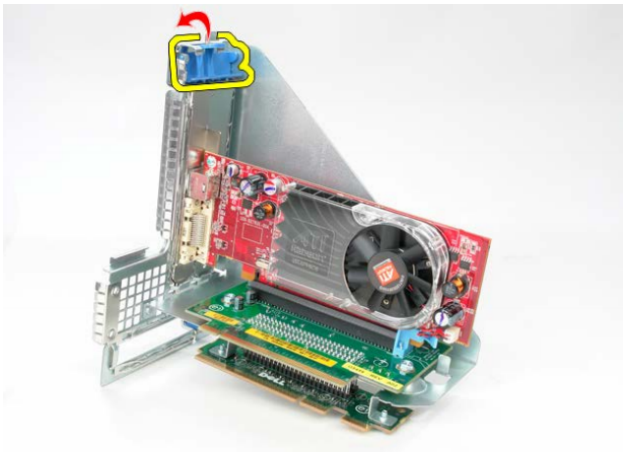


Figure 5.5.1.4 Riser Cage Latch

5. Gently pull the card and release latch on the riser cage and ease away from the connector.

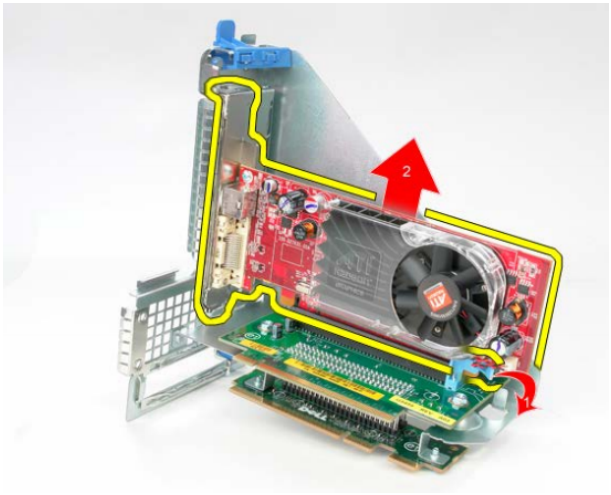


Figure 5.5.1.5 Riser Cage Card

Note To replace the riser cage, follow the steps avobe in reverse order.

NoteTo learn more about this part click here.

DVD Drive Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, use thepull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Disconnect the DVD drive from the data cable.

Figure 5.5.2.1 DVD Drive Connection

2. Disconnect the DVD drive power cable.

Figure 5.5.2.2 DVD Drive Disconnect

3. Lift the release latch and slide the DVD drive towards the back of the computer.

Figure 5.5.2.3 DVD Drive Release Latch

4. Lift and remove the DVD drive away from the computer.

Figure 5.5.2.4 DVD Drive Removal

Note To replace the DVD drive, follow the steps above in reverse order.

Note To learn more about this part click here.

Hard Drive Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Disconnect the hard drive cable.

Figure 5.5.3.1 Hard Drive Connection

2. Disconnect the hard drive power cable.

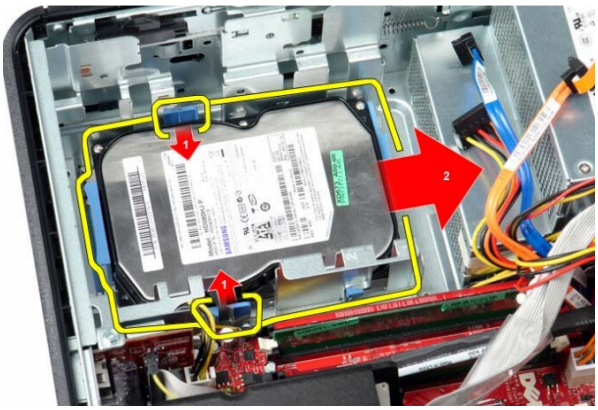


Figure 5.5.3.2 Hard Drive Power Connection

3. Press in the blue tabs on each side of the hard drive and slide the drive towards the power supply or back of the computer.

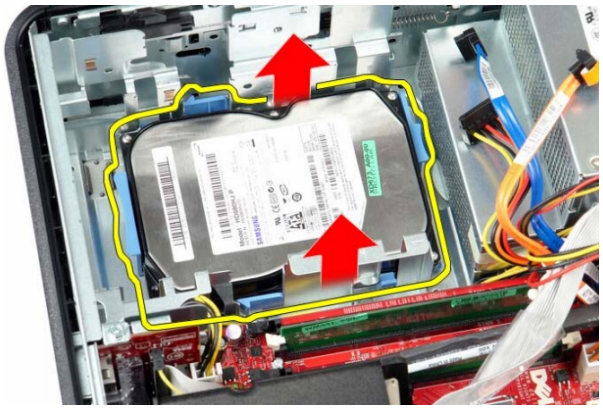


Figure 5.5.3.3 Hard Drive Removal

4. Lift the hard drive up and away from the computer.

Note To replace the hard drive, follow the steps above in reverse order.

NoteTo learn more about this part click here.

Power Supply Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

1. Remove the DVD drive.
2. Remove the hard drive.
3. Disconnect the main power connector from the motherboard.

Figure 5.5.4.1 Power Supply Main Connector

4. Disconnect the processor connector from the motherboard.

Figure 5.5.4.2 Power Supply Processor Connector

5. Release the processor power connector cable from the motherboard.

Figure 5.5.4.3 Power Supply Motherboard Connector

6. Remove the screw from the power supply from the back of the chassis.

Figure 5.5.4.4 Power Supply Screws

7. Press the power supply release latch at the bottom of the chassis and slide the power supply towards the front of the chassis.

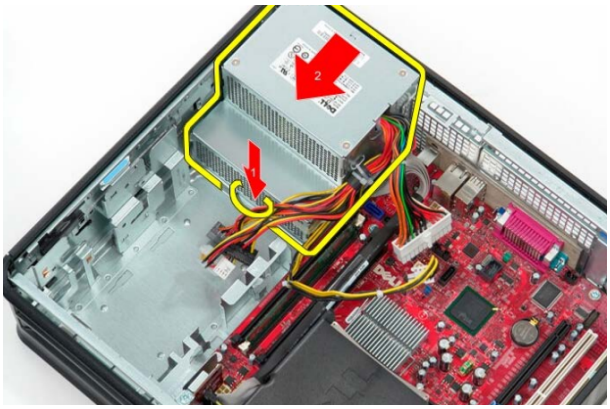


Figure 5.5.4.5 Power Supply Release Latch

8. Lift the power supply away from the chassis.

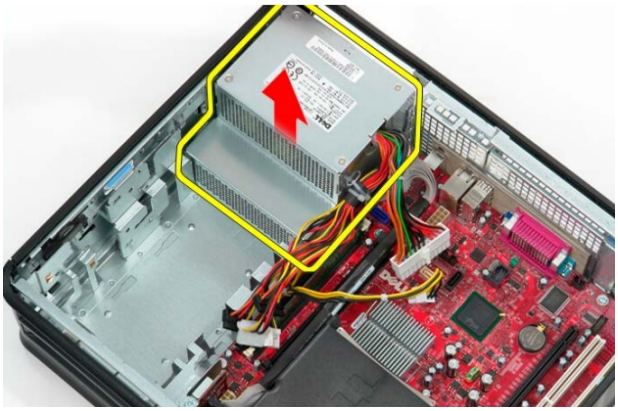


Figure 5.5.4.6 Power Supply Removal

Note To replace the power supply, follow the steps above in reverse order.

NoteTo learn more about this part click here.

Motherboard Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Remove the riser cage.
2. Remove the CPU cooler and processor.
3. Remove the memory.
5. Disconnect the fan power cable.

Figure 5.5.5.1 Fan Connection

6. Disconnect the main power cable from the motherboard.

Figure 5.5.5.2 Power Connection

7. Disconnect the DVD drive from the motherboard.

Figure 5.5.5.3 DVD Drive Connection

8. Disconnect the hard drive cable from the motherboard.

Figure 5.5.5.4 Hard Drive Connection

9. Disconnect the processor power cable.

Figure 5.5.5.5 Processor Connection

10. Remove the highlighted screws from the motherboard.

Figure 5.5.5.6 Motherboard Screws

11. Remove the processor assembly bracket.

Figure 5.5.5.7 Motherboard Assembly Bracket

12. To remove the motherboard, slide the motherboard towards the back of the computer and lift the motherboard up and away from the computer.

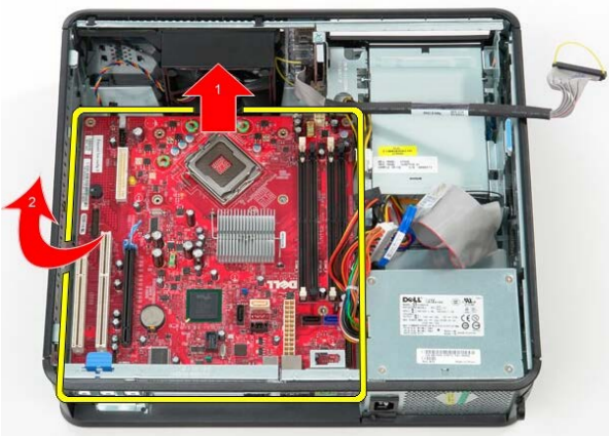


Figure 5.5.5.8 Motherboard Removal

Note To replace the motherboard, follow the steps above in reverse order.

NoteTo learn more about this part click here.

CPU Cooler Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Loosen the captive screws on each highlighted area on the CPU cooler.

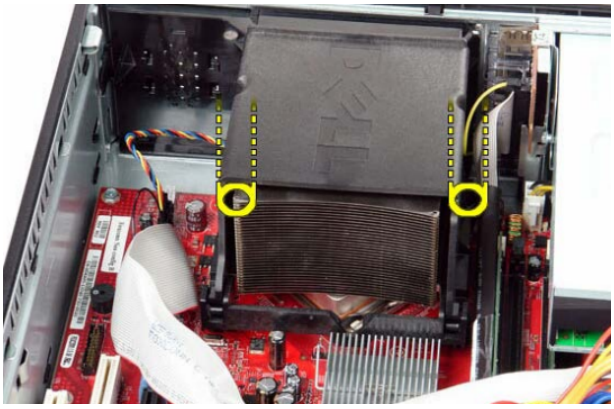


Figure 5.5.6.1 CPU Cooler Screws

2. Rotate the CPU cooler upwards.

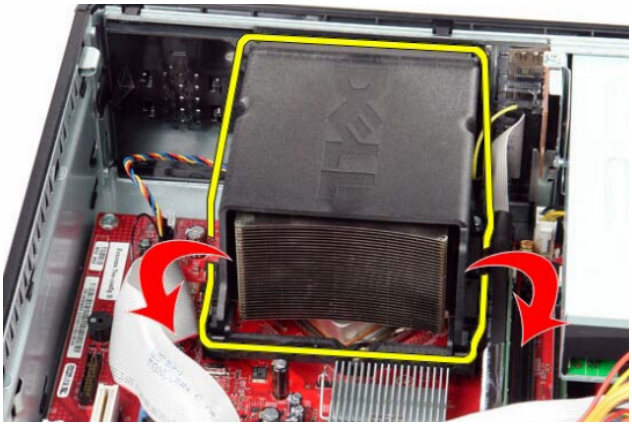


Figure 5.5.6.2 CPU Cooler Rotation

3. Lift the CPU cooler and remove away from the computer.

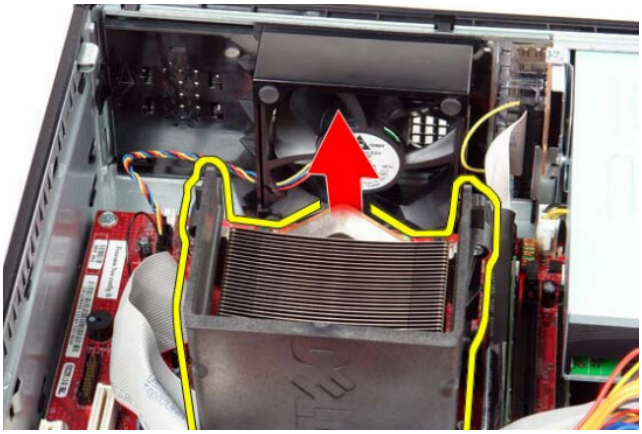


Figure 5.5.6.3 CPU Cooler Removal

Note To replace the CPU cooler, follow the steps above in reverse order.

NoteTo learn more about this part click here.

Fan Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Disconnect the fan power cable from the motherboard.

Figure 5.5.7.1 Fan Power Connection

2. Pull the fan tab and shift the fan towards the motherboard.

Figure 5.5.7.2 Fan Tab

3. Lift the fan away from the computer.

Figure 5.5.7.3 Fan Removal

Note To replace the fan, follow the steps above in reverse order.

NoteTo learn more about this part click here.

Processor Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Open the processor cover by sliding the release lever from under the cover latch on the socket. Pull the lever back and release processor cover.

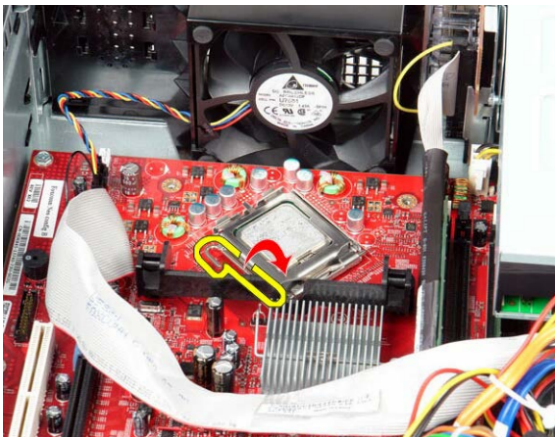


Figure 5.5.8.1 Processor Release Lever

2. Lift the processor cover.

Figure 5.5.8.2 Processor Cover

3. Remove the processor from the motherboard.

Figure 5.5.8.3 Processor Removal

Note To replace the processor, follow the steps above in reverse order.

Caution When replacing the processor, do not touch the metal pins inside the socket or allow any objects to fall on or in the metal pins.

NoteTo learn more about this part click here.

Memory Removal

Warning To avoid injury, disconnect all power sources. Computer must be in complete reassemble before connecting power.

Caution To avoid electronic discharge, periodically touch unpainted metal surfaces while touching connectors on the back of the computer.

Caution Handle all components with care. Hold components by their edges.

Caution When disconnecting cables, pull by their pull-tabs and not the cable.

Note The color of your computer and components may appear different than shown in the manual.

Note Please follow all of the safety guidelines before working on your computer.

1. Press down on the white tabs on each end of the memory card.

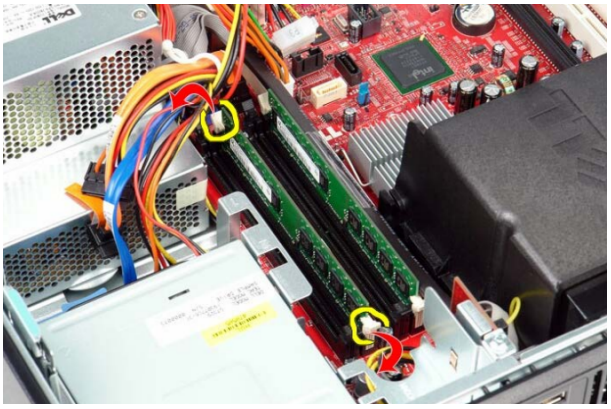
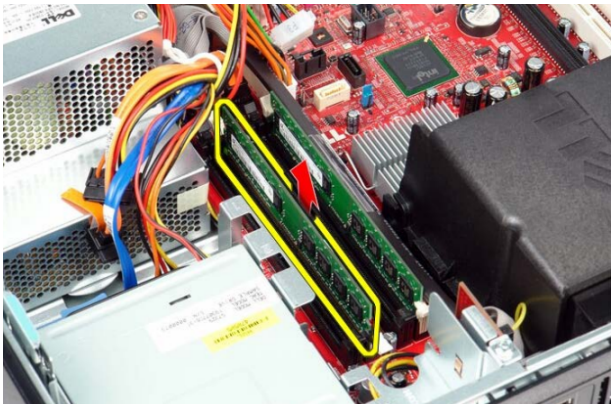


Figure 5.5.9.1 Memory Card Tabs

2. Lift the memory card from the connector slot and remove away from the computer.



5.5.9.1 Memory Card Removal

Note To replace the memory car, follow the steps above in reverse order.

NoteTo learn more about this part click here.

Glossary

A

AC Recovery

Determines how the system responds when AC power is re-applied after a power loss.

Assigning a System and Setup Password

You can assign a new System Password and/or Setup Password or change an existing System Password and/or Setup.

Auto On Time

Sets time to automatically turn on the computer.

B

Beep Codes

A series of beeps that can help you identify what problem has occurred during assembly or component failure.

Boot Sequence

the initial set of operations that the computer performs when it is switched on.

C

Cautions

Indicates potential damage to hardware or program software.

CPU Cooler

Draws heat away from the processor.

D

Date and Time

Displays the system date and time. Changes to the system date and time take effect immediately.

Deleting 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.

Diagnostic Lights

To help troubleshoot a problem if the computer malfunctions, the sequence of the lights help to identify the problem.

DVD Drive

DVD drive that reads and writes all common CD and DVD formats.

F

F12 Menu

Bring up a one-time boot menu by pressing Access System Setup by pressing.

F2

Press F2 to enter System Setup and make changes to user-definable settings. If you have trouble entering System Setup using this key, press when the keyboard lights first flash.

Fan

A fan keeps the internal components of the computer cool.

Fan Control Override

Controls the speed of the system fan.

H

Hard Drive

A hard drive stores all your data.

I

Illustrated Parts Breakdown

A comprehensive list of all of the components featured in your Dell Optiplex 780.

Integrated NIC

Integrated NIC enables or disables the integrated network card. You can set the integrated NIC.

L

Low Power Mode

Enables or disables low power mode.

M

Memory

Memory is used to store information for immediate use in a computer.

Miscellaneous Devices

Enables or disables the following onboard devices: front USB, rear dual USB, rear quad USB, PCI slots audio.

Motherboard

The main circut board of your computer.

Multi Core Support

Specifies whether the processor will have one or all cores enable.

N

Navigation Keystrokes

Use the following keystrokes to navigate the System Setup screens.

Notes

Indicates important information for the user to better use the product.

P

Parallel Port

Identifies and defines the parallel port settings.

Parallel Port Address

Sets the base I/O address of the integrated parallel port.

Password Changes

Enables or disables the user from changing the system password without the administrative password.

Power Button

The power button lights give more information on the system state of your computer. This is shown in the power button table.

Power Down Procedures

The steps involved to turn off a computer.

Power Supply

Supplies power to the computer.

Power Up Procedures

The steps involved to turn on a computer.

Primary Video

Determines which video controller will become the primary video controller.

Processor

To receive input and provide the appropriate output.

R

Remote Wake up

Allows the system to power up when a network interface controller receives a wake up signal.

Riser Cage

The riser cage houses the riser card, allowing for additional adapters to be connected.

S

Serial Port #1

Identifies and defines the serial port settings.

Serial Port #2

Identifies and defines the serial port settings.

Suspend Mode

Suspend Mode Sets the power management suspend mode to: S1 or S3 (default).

System Maintenance

Your computer comes equipped with security features to maintain the privacy of your data and various tags to aid with maintenance of your computer.

System Password

Displays the current status of the system's password security feature and allows a new system password to be assigned and verified.

System Setup

System Setup enables you to manage your hardware and specify Basic Input/Output System level options.

U

USB Controller

Enables or disables the integrated USB controller.

USB for Flex Bay

This field enable and disable the internal USB for Flex Bay.

W

Warning

Indicates a potential of damage to property, personal injury or death.