

DELL FOUNDATIONS TRAINING FOR DESKTOPS

Duration 120 Minutes



*You will need to close this window and re-launch the course
if your session is inactive for more than two (2) hours.*



INTRODUCTION

Dell Foundations course for Desktops presents an overview of Dell's desktop portfolio, troubleshooting guidelines, need to know callouts for selected systems, and information on how to perform replacement of Dell desktop parts.

This course is designed to provide collective information across all desktop systems. For specific product information on each Dell system, refer to the course material for the system you require.



COURSE OBJECTIVES

AT THE END OF THE COURSE YOU WILL BE ABLE TO:

- Explain the positioning of the Desktops portfolio and list the products within the portfolio.
- Define safety and troubleshooting best practices, state commonly required tools, and list additional technical resources available.
- Recall the disassembly and reassembly and specific need-to-know procedures for each desktop.



COURSE OVERVIEW

Introduction

Product
Portfolio

Fundamentals

Need to Know

Summary

Assessment





PRODUCT PORTFOLIO

This course is designed to provide collective information across all desktop systems. For specific product information on each Dell system, refer to course material for the system you require.

PRODUCT PORTFOLIO OBJECTIVES

This section presents product overview knowledge required prior to troubleshooting Dell Desktops.

AT THE END OF THE MODULE, YOU WILL BE ABLE TO:

- Explain the positioning of the identified portfolio
- List the products within the portfolio



DESKTOP PORTFOLIO POSITIONING

Dell offers a large selection of products designed to meet specific market demands. The result is a wide selection of Desktop computers with an array of options to provide the Desktop user with the solutions they need.



Optiplex



Inspiron



Vostro



Precision



XPS



Alienware*



* The Dell Foundations Training for Alienware course offers additional information regarding Alienware desktops.

OptiPlex

Professional Desktops for Networked environments.



OptiPlex

The OptiPlex LOB is structured into four basic chassis types,

Mini-Tower— This is the most common chassis type. A mini-tower case will typically have only one or two external bays.

Desktop — This chassis is typically smaller than the mini-tower but larger than the small form factor chassis. The desktop chassis will only allow for one optical drive. The significant difference with mini-tower is using low profile (half height) I/O cards though full height can be used when a riser card is available.

Small Form Factor — SFF systems are far smaller than traditional mini-tower and desktop. They are designed to support the same features as desktop computers but in a smaller space. The small size of SFF cases may limit expansion options. Offerings provide only one 3.5" drive bay and one or two 5.25" external bays.

Ultra Small Form Factor — Ideal for space constrained environments. The USFF chassis is durable, easy to service and can be mounted anywhere . This helps make deployments easy and cost effective with tool-less components and DirectDetect LED. diagnostic lights.

Inspiron

Designed for business. Best in class performance.



Inspiron

The Dell Inspiron desktop brings all the basic functionalities required for everyday use for both office work and entertainment on the go. Inspiron desktops are currently available with up to 8GB DDR3 memory, up to 1TB of storage capacity, Bluetooth module (optional), Blu-ray (optional), Intel/AMD processor, HDMI ports and other optional elements to enhance users experience.



Inspiron One

The Dell Inspiron desktop has three different chassis types – slim, mini-tower, and All-in-One. The slim and mini-tower have common features, thus are very similar to service.

The Inspiron One, is an integrated Desktop with built-in Monitor and all Inspiron Ones share a common system board and chassis. Newer models are equipped with touch screen and second generation Core i5/i7 processors.

Vostro

Worry-free business solutions and services designed for small business.



Vostro

Vostro products offer the following characteristic which are different from other model of desktops or portables:

- Vostro desktops do not come with Quad Pack Diagnostic LEDs
- All Vostro offer optional RAID
- Legacy Vostro Desktops do not have Motherboard LED (Flea Light) on the motherboard
- Optional wireless for Vostro Desktops
- Optional slim tower and minitower and tower chassis

Precision

The Ultimate in Workstation Performance.



Precision

Precision WorkStation systems are marketed towards users who need to run graphics and performance intensive applications such as AutoCAD, Solidworks, Adobe Premiere, and other Independent Software Vendor (ISV) applications.

- High and Mid-range WorkStations have dual-processor configurations
- Higher end video cards designed specifically to work with ISV applications
- Integrated and Expansion SCSI and RAID controllers

XPS

Artful blend of high performance and purposeful design for consumers.



XPS

The XPS is a line of high-end gaming computers. XPS is an acronym of Xtreme Performance System.

The XPS systems combine sophistication, expansion, the latest technology, both creating and consuming all types of media.

It is used as a creative workstation as well as a hub for collecting and disseminating media content.

The XPS PC provides a best-in-class experience for typical mainstream PC usages (communication, productivity, photo, mainstream gaming, music, and video).

Portfolio Knowledge Check

Question 1 of 1

Point Value: 10

Which Desktop product line is most suited to high-performance processing of complex applications?

- ☐ Optiplex
- ☐ XPS
- ☐ Precision
- ☐ Vostro



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Properties...



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A man with dark hair and glasses, wearing a blue and white striped shirt, is smiling while talking on a black telephone. He is in an office environment with a large window in the background showing greenery. A semi-transparent light blue banner is at the bottom of the image.

FUNDAMENTALS

This course is designed to provide collective information across all desktop systems. For specific product information on each Dell system, refer to the course material for the system you require.

OBJECTIVES

This section presents fundamental knowledge required prior to troubleshooting Dell Desktops.

AT THE END OF THE MODULE, YOU WILL BE ABLE TO:

- Define general safety procedures
- Utilize Desktop repair best practices
- Confirm your Service Tag
- List available diagnostic tools and indicators
- State troubleshooting guidelines
- State commonly required tools
- List additional technical resources available



MODULE OVERVIEW

General Safety
Precautions

Best Practices

Diagnostics and
Indicators

Troubleshooting

Recommended
Tools

Technical Resources

GENERAL SAFETY PRECAUTIONS



GENERAL SAFETY PRECAUTIONS



1

Turn off the system and any attached peripherals.

2

Disconnect the system and any attached peripherals from AC power and remove the battery.

3

Disconnect network or telephone lines from the system.

4

Use a wrist grounding strap and mat when working inside any computer system.

5

After removing any system component, carefully place the removed component on an anti-static mat.

6

Wear shoes with non-conductive rubber soles.

ELECTROSTATIC DISCHARGE (ESD)

ESD is a major concern when handling components. Very slight charges can damage circuits. ESD damage may occur immediately or it may result in intermittent problems or a shortened product lifespan.



- Use only a properly grounded ESD wrist strap and ESD mat. Wireless anti-static straps are inadequate. ESD mat should be properly grounded. If work surface is not grounded, connect to a metal surface, such as table or desk.

- Simply touching the chassis before handling parts is not adequate protection.

- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor and workbench pads.

- Handle static-sensitive components by the edges. Avoid touching pins and circuit boards.

- When unpacking a static-sensitive component, do not remove it from the anti-static package until ready for installation. Before opening the anti-static package, discharge static electricity.

- Before transporting a static-sensitive component, place it in an anti-static container or package.

PREVENTING ELECTROSTATIC DAMAGE



Video Placeholder
Your video will display here.

This
demonstration will
show:



How static
electricity destroys
equipment.



How to prevent
electrostatic
damage.



How to transport
static-sensitive
items.

The best method of avoiding Electrostatic Discharge

Question 1 of 1

Point Value: 10

The best method of avoiding Electrostatic Discharge is to:

- ☐ Use a magnetized screwdriver
- ☐ Use anti-static floor and workbench pads
- ☐ Use a grounded ESD wrist strap
- ☐ Touch a non-painted part of the chassis



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BEST PRACTICES



CONFIRM YOUR SERVICE TAG

Always check the service tag to ensure you are servicing the correct system.



General Guidelines



It is vital to verify the fix.
Take extra care to ensure that the problem is solved after troubleshooting and that no other problem exists.

Start the troubleshooting process before opening a part's sealed packaging.

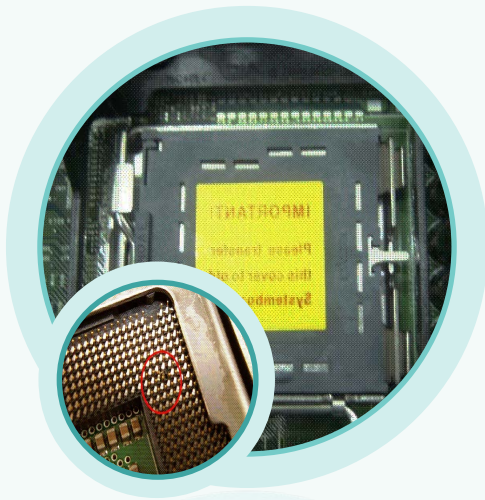
If you have received more than one part, verify the failed component prior to opening a part's packaging.

Many issues can be addressed with the latest version of BIOS. Whenever possible, always download and install the latest BIOS revision prior to troubleshooting.

NOTE: Troubleshooting prior to parts replacement is not always an option. Always follow process and dispatch instructions.

Repackaging

Parts that are returned to Dell should be repackaged in the same manner in which they were received. Electrostatic bags, socket covers, and LCD protective materials such as Mylar screen covers are examples. Also, some system boards are shipped with daughterboards attached. Technicians are required to return the fully assembled system board with daughterboard to avoid transit damage back to Dell. Below is an example of a repackaging issue common to desktops:



Every dispatched system board has a ZIF socket T cover installed to protect the pins on the system board when shipped for repair. All field technicians must return the defective system board with the cover properly attached to the Socket T on the service board to prevent the pins from being damaged during transportation.

Repackaging – Parts Unpacking

All parts including motherboards, cards, HDD, etc. must be handled by lifting and holding from the edges or sides. Avoid touching the surface or bottom of the parts.



Do not break the tamper proof seal on the ESD bag unless you intend to install the part immediately.



Verify the part. If you have questions contact technical support.



Place the box on a secure surface and break the tamper proof seal with a safe tool. Carefully open the package top or lid.



Visually inspect the foam and the part was packaged correctly. Remove upper layer of foam from the box.



If the part contained in the box was secured properly without visible damage, continue with next steps.



Using approved ESD procedures, carefully remove the part from the box by lifting the part from the edge or side. If needed, place the part on a secure ESD surface. Never stack parts on top of each other.

If the part has visible damage, do not use the part. Contact tech support to dispatch another part. Return the part with a description of the damage.

Repackaging – LCD Module*

Parts that are returned to Dell should be repackaged in the same manner in which they were received.



Insert unit into new ESD bag. Fold the ESD bag to the front and place the first PPID** (Piece Part ID) Package label on the ESD bag. Ensure the label position is placed evenly on the three surfaces of the ESD bag.



For repacking, use the same box the part arrived with foam inserts. Ensure the box has the bottom packaging foam and the side packaging foam inserts.



Place the LCD unit into box enclosed with the foam packing. Fold the excess portion of the ESD bag to the back and place the panel in the box facing down.



Apply the final foam insert on top of the unit. Close the box top and insert the lid tabs into the slots on the left and right edge. Complete the traveller (sticker) if required.

Place extra parts between the upper covering foam insert and the box lid. Only small service kit part such as cables, inverter, converters are allowed, use plastic bag if available.

Where an LCD clamshell is available, the LCD must be oriented with the panel face up and the top of panel on the hinge side of clamshell.

* Applies to All-In-One desktop systems.

** Every Dell part has a unique PPID with barcode

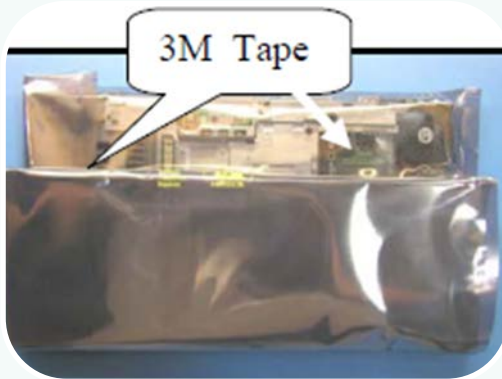
Repackaging – Printed Circuit Board Assembly (PCBA)

Parts that are returned to Dell should be repackaged in the same manner in which they were received.



Carefully insert board into ESD bag ensuring components are not pulled or knocked off.

Fold the top part of the ESD bag and re-tape.



Pack the board into the foam inserts of a Dell approved box, with the bottom of the board down and the surface of the board facing up. The PPID sticker should be placed on top.

Place covering foam over the unit. Close the box top and insert the lid tabs into the slots on the left and right edge.



Place small extra parts between the upper covering foam insert and the box lid.

Hold and carry motherboards using both hands.

PCBA's are very susceptible to handling damage. Ensure ESD methods are applied when handling PCBA's.

System Motherboard Replacement – Service Tag Utility

Entering Service Tag:

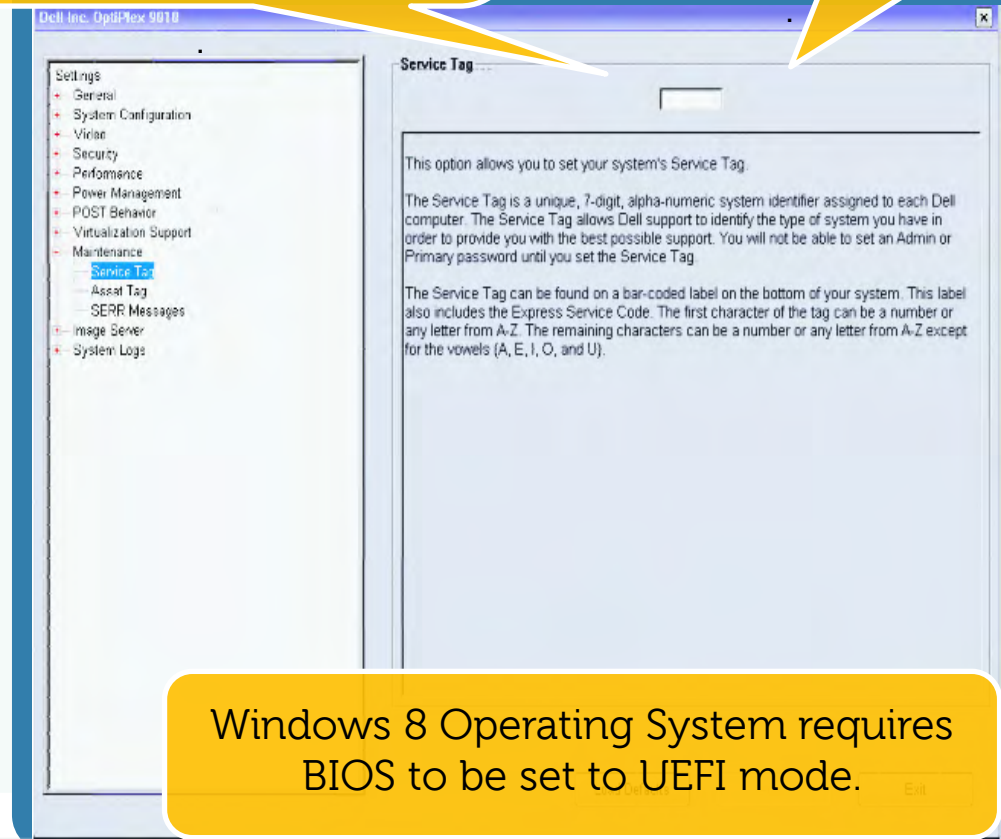
Press F2 after power-on to enter BIOS (boots directly into BIOS Service Tag field in some models)

Navigate to Maintenance field, then enter *Service Tag*, and confirm

If Maintenance field is not present, navigate to System Info, then Security Info field to enter *Service Tag*

Always reset the Service Tag after a system board replacement. Ensure that you enter the Service Tag information correctly.

Replacement Motherboards allow the Service Tag to be entered without a BIOS CD*



Windows 8 Operating System requires BIOS to be set to UEFI mode.

* Older products may be supplied with a BIOS CD. If supplied, the BIOS CD should be used.

System Board Knowledge Check

Question 1 of 1

Point Value: 10

When returning a damaged system board to Dell, which of the following two items should be used to prevent damage during transportation:

- ☐ Solid plastic case
- ☐ Mylar cover
- ☐ ZIF socket T cover
- ☐ Electro-static bag



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DIAGNOSTICS AND INDICATORS



DIAGNOSTICS AND INDICATORS



NOTE: Pressing F2 during POST will bring up the BIOS settings screen.



Diagnostic Indicators



POST



BIOS



ePSA (enhanced Pre-Boot System Assessment)



Dell Support Center:








System Information



PC Checkup by PC Doctor

Desktop LED & Diagnostics

Below is an example of LED diagnostic indicators.

	Off	Power is off, LED is blank.
	Blinking Amber	Initial state of LED at power up.
	Solid Amber	Second state of the LED at power up. Indicates the POWER_GOOD signal is active and it is probable that the power supply is fine.
	Blinking White	Blinking white means system is in sleeping or standby mode. It does not indicate a fault condition.
	Solid White	Solid White indicates that the system is on.

Newer OptiPlex systems no longer have the 4 LED Diagnostic indicators. Instead, the Power button LED is used to indicate a fault.

Diagnostic indicators differ from model to model. Always refer to the course material for the system you require in order to obtain the specific indicators.

Diagnostic Indicators



Check system-specific documentation for a list of all Indicator Codes

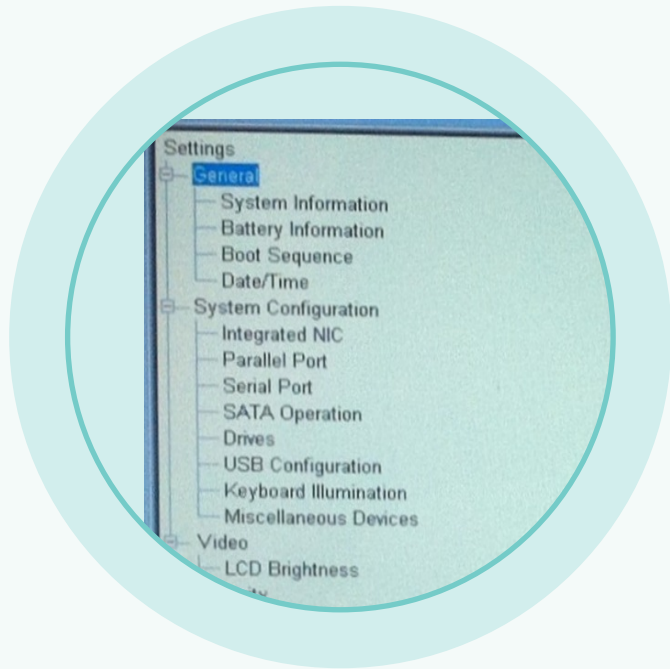
Diagnostic Light Codes - Four single color lights (LEDs) are incorporated on the front control panel to serve as a diagnostic aid for troubleshooting systems exhibiting No Post/No Video symptoms.

Diagnostic Beep Codes - When errors occur during a boot routine that cannot be reported on the monitor, the computer may emit a beep code that identifies the problem.

System Messages – If an issue or error occurs at boot time, a System Message may be displayed to help identify the cause and action needed to resolve the issue.

NOTE: Information on beep codes can be found in the individual course material, the support.dell.com site, or in the product documentation.

BIOS Details



NOTE: Pressing F2 during POST will bring up the BIOS settings screen.

What?



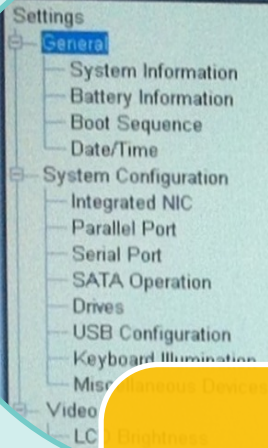
Basic Input/Output System



Activates all hardware required to boot including:

- Chipsets
- Processors and Caches
- System Memory
- Internal Drives
- Graphics and Audio Controllers
- Internal Expansion Cards

Why use BIOS?



Reasons you may need to go into the BIOS.

Why?



Verify devices are connected.



Report on the computer hardware including:

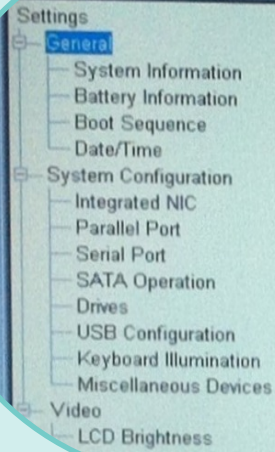
- Hard Drive Size
- Amount of Memory
- Current Processor Information



Make adjustments to hardware functionality

- Hardware configuration
- Date and Time
- Boot Sequence
- System and Hard Drive Passwords
- Restore Default Configuration

How to Use BIOS



How?

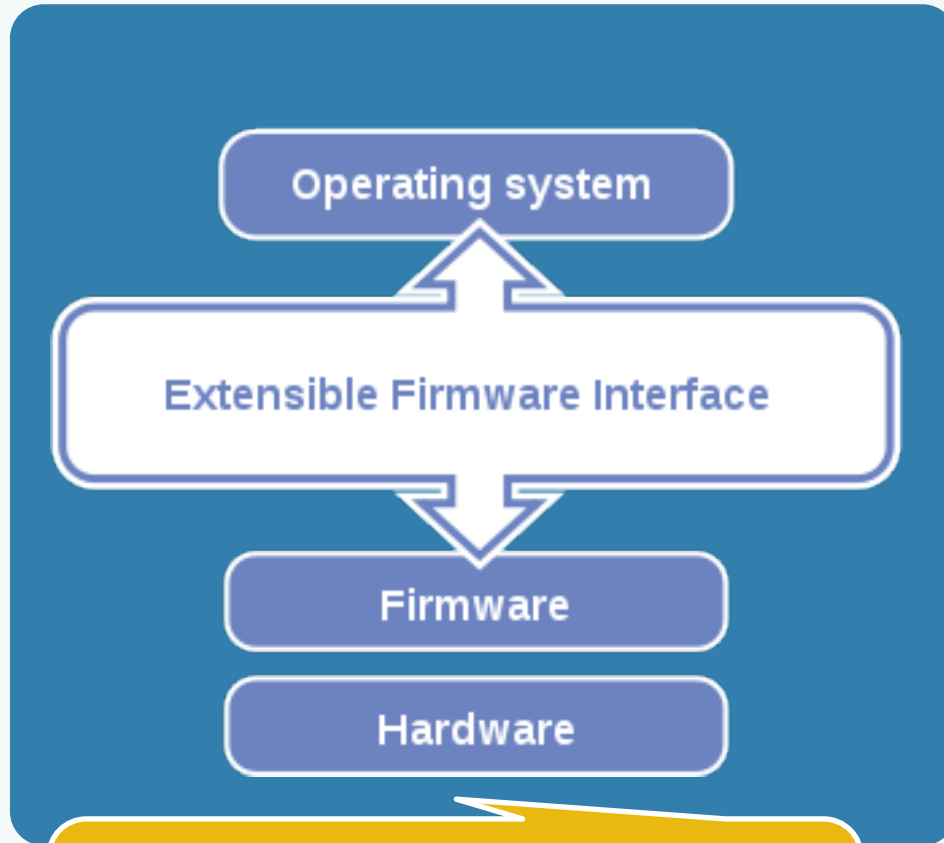
Restart your computer.

At the first text on the screen or when the Dell™ logo appears, tap <F2> until the message **Entering Setup** appears.

Alternatively, press <F12> then select **BIOS Setup** from the Boot Options menu.

UEFI BIOS

The UEFI (Unified Extensible Firmware Interface) specification defines a new model for the interface between PC OS and platform firmware.



Dell UEFI BIOS implementation supersedes the older BIOS in the portables and desktop products into one single UEFI BIOS.

UEFI BIOS is responsible for booting an OS as well as running pre-boot applications, such as ePSA.

There is no difference in the boot sequence unless the UEFI option is checked in the 'Boot Sequence' setting in the BIOS page.

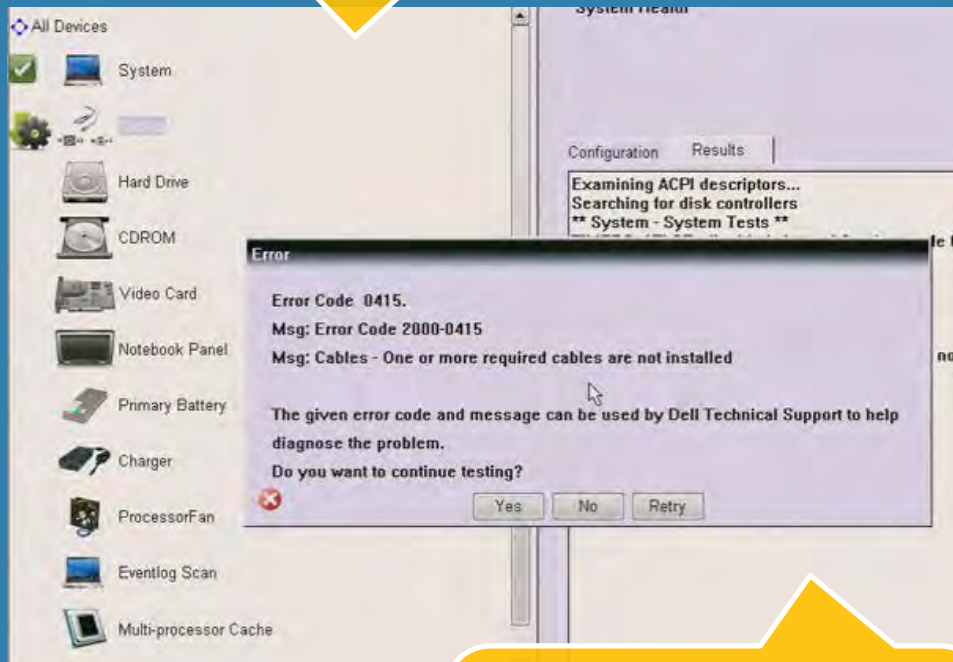
Windows 8 operating systems requires BIOS to be set to UEFI mode.

Enhanced Preboot System Assessment (ePSA)

The ePSA help screen can be accessed pressing <F12> during POST, and then selecting Diagnostics.

ePSA has replaced Dell 32-bit Diagnostics.

The Preboot Assessment tool can be accessed from the BIOS or run from external media.



ePSA provides advanced diagnostics on a range of devices including:

- Power Supply
- Battery
- Processor
- Memory
- Drives
- Thermals
- Display
- Other Components

Run ePSA after the fix to verify repairs.

ePSA Download Files

ePSA began shipping on new products, in March 2011, and is embedded in BIOS. For older products, a version of ePSA can be used from a bootable USB key. Please refer to the Quick Links in Dell's learning management system for instructions and download files for the USB key version.

ePSA Comparison with PSA



Video Placeholder
Your video will display here.

ePSA Diagnostics Knowledge Check

Question 1 of 1

Point Value: 10

Select three devices which ePSA can perform advanced diagnostics on

- ☐ Thermals
- ☐ Serial
- ☐ Drives
- ☐ Display



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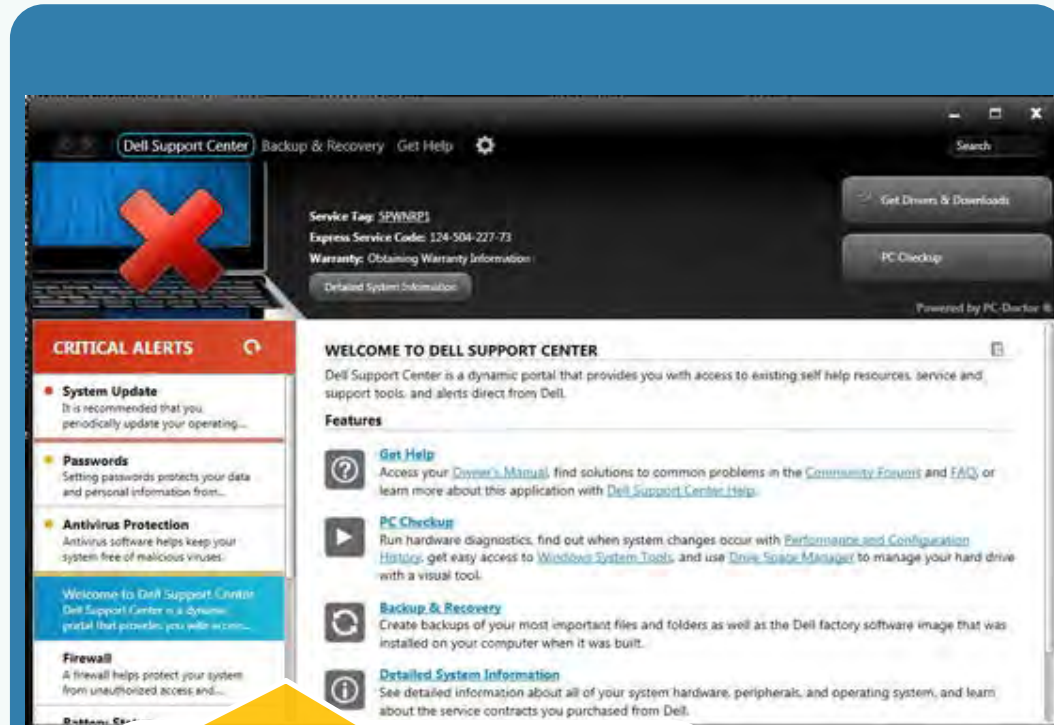


Properties...



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Dell Support Center



Download Dell Support Center from the Dell PC Diagnostics page at **support.dell.com**.

Dell Support Center offers additional information, such as:

System Alerts

Backup & Recovery

Training & Tutorials

Drivers and Downloads

PC Checkup

TROUBLESHOOTING

The purpose of this section is not for detailed troubleshooting. Instead, it is focused on best practices to prevent the replacement of good parts, improve customer satisfaction, and to eliminate repeat dispatches. This information is not meant to override or limit local practices.



Processors



Processors rarely fail.

Processor Troubleshooting Steps
can be found on the following slide.


Processor Troubleshooting Steps

Eliminate thermal checks

- Check BIOS or OS event logs.
- Ensure fans are operational.
- Ensure thermal material is in place.
- Ensure heat sinks are not obstructed.

Check beep codes

- Checking a beep code involves inducing an error condition such as removing all of the memory.
- If the system beeps, the processor is performing basic functions and is likely not the source of the problem.



If the source of the problem is unclear but is either the processor or the system board, replace the system board first.

Memory



Do not open the DIMM packaging before confirming that the module is bad.

Like processors, a very high percentage of memory modules received after repair have no defects.

All the memory in a system is unlikely to fail at the same time.

Memory Troubleshooting Steps

Reseat the memory modules (DIMM), and recheck for a memory error.

If there is more than 1 DIMM, remove all but the memory in the first slot.

1 If the error remains, swap out the other DIMM into the same slot.

2 If the error remains, it's likely a system board (DIMM connector).

3 If the error is gone, then the first module was bad.

4 For memory troubleshooting steps refer to next page.

If bad memory is confirmed, replace only the confirmed bad DIMM, unless specified on Dell's dispatch notes.

Boot Issues Considerations – Before Replacing a Hard Drive

BEFORE REPLACING A HARD DRIVE

Run the hard drive self-test:

- Run from ePSA.
- Running the hard drive self-test is 90% effective and takes less than 7 minutes no matter what size hard drive is being tested.

Boot Issues- Troubleshooting Steps

1

Power on system and press <F2> for BIOS.

2

Arrow down to hard drive field.

3

If HDD is not detected, shut down machine and reseal connector.

4

If HDD is detected, power off and run ePSA, shown, steps A through E.

a

Power on the system.

b

At the Dell splash screen press <F12> until the one-time boot menu appears. The user will be provided a menu.

c

Arrow down to "Diagnostics" and press <Enter>. PSA Diagnostics is now launched.

d

At about 1 minute, 15 seconds from power up the user will hear a beep and be asked if colors are displayed properly. Press<Y> for yes and to continue.

e

A HD test and memory test will start and run in parallel. When the memory quick test finishes the HD self test results are displayed.

5

If ePSA says that the hard drive passes and the system will not boot, a likely problem is a corrupt or missing operating system.



PSA HDD Knowledge Check

Question 1 of 1

Point Value: 10

If ePSA/PSA displays that the Hard drive passes the diagnostic test, but does not boot, what is the likely cause?

- ☐ BIOS is out-of-date
- ☐ Corrupt Operating System
- ☐ Display adapter issue
- ☐ Device Driver error



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Properties...



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Power Supply Units (PSUs)

Verify the external power source or wall socket.

Verify the intermediary or connecting devices such as extension cords or surge suppressors.

Check the Built in Self-test (BIST) test button and LEDs on the Power Supply:

A test button and LED are on the side of the unit where the AC plug is located.



If Built in Self-Test fails, remove connectors from Power Supply and other components then rerun test.



If the LED now lights up, the attached connectors are shorted or the component attached to the connector is shorted.



If the LED does not light up, the Power supply is defective.

Desktop PSU Built In Self-Test

Small Form Factor



Desktop



Minitower



Most mainstream systems now include a power supply with the built in self-test (BIST) feature that drives new troubleshooting steps. Press and hold the test button to run the BIST.

The test button and LED are on the side of the unit where the AC plug is located.

All Energy Star power supplies have BIST to assist troubleshooting.

System Board- Troubleshooting Steps



Use the indicators below, and the Product documentation to determine system board faults:



Diagnostic LEDs



Power Button LEDs



Beep Codes

One quick way to verify a bad system board is to remove the DIMMS. If 4 beeps are not heard during power on, the system board is bad.

Display-Considerations

Display problems should be isolated to the monitor, cable or the video adapter.

Always check that the cable is secure and the pins are aligned.

Symptoms of display or video adapter failure include:

● Caps lock, num lock, and scroll lock LEDs respond to their respective keys even though the display remains blank.

● Windows start-up sounds play, but the display remains blank.

● The display is jittery, distorted, or flickers and powering up or down.

If the display is working but is displaying distorted lines, software-related problems can be eliminated by running in safe mode. Software-related problems will disappear in safe mode.

RECOMMENDED TOOLS

Dell provides a recommended list of tools for field technicians. The tools included in this list are standard industry repair technician tools, and will likely be needed during field service for Dell products. Please review this List, which is a current list as of January 1, 2013, and use it as a guideline going forward.

*****Important -** You can always find the most current Recommended Toolkit located in the Quick Links in Dell's learning management system.



Recommended Tool List

Tool	Comments
#0, #1, #2 (8") Cross-tip (Phillips) Screwdriver	90% of screws covered by these two screwdrivers. Do not use metal screwdrivers on plastics
1/4" Slotted-tip Screwdriver 6"	Variety of sizes is preferred 1/8" – 3/16"
Hex Drivers	3mm, 5.5mm slim line, 7mm driver, and 7mm slim line
Torx Driver	Need T5, T8, T10,T15, T20, T25, T8 short right angle, and T8 long right angle
Anti-Static Mat and Wrist Strap	Prevents electrostatic damage
Linux Live bootable CD	Allows boot to an alternate OS environment ***ESF 1 and 2 only
USB key 4GB	EPSA or OMSA live with 32 bit diags
Plastic Scribe	Used to loosen plastic/rubber parts, Dell P/N 2N558
Flashlight	For visibility
Portable	***EMC LVL 2 ESF only

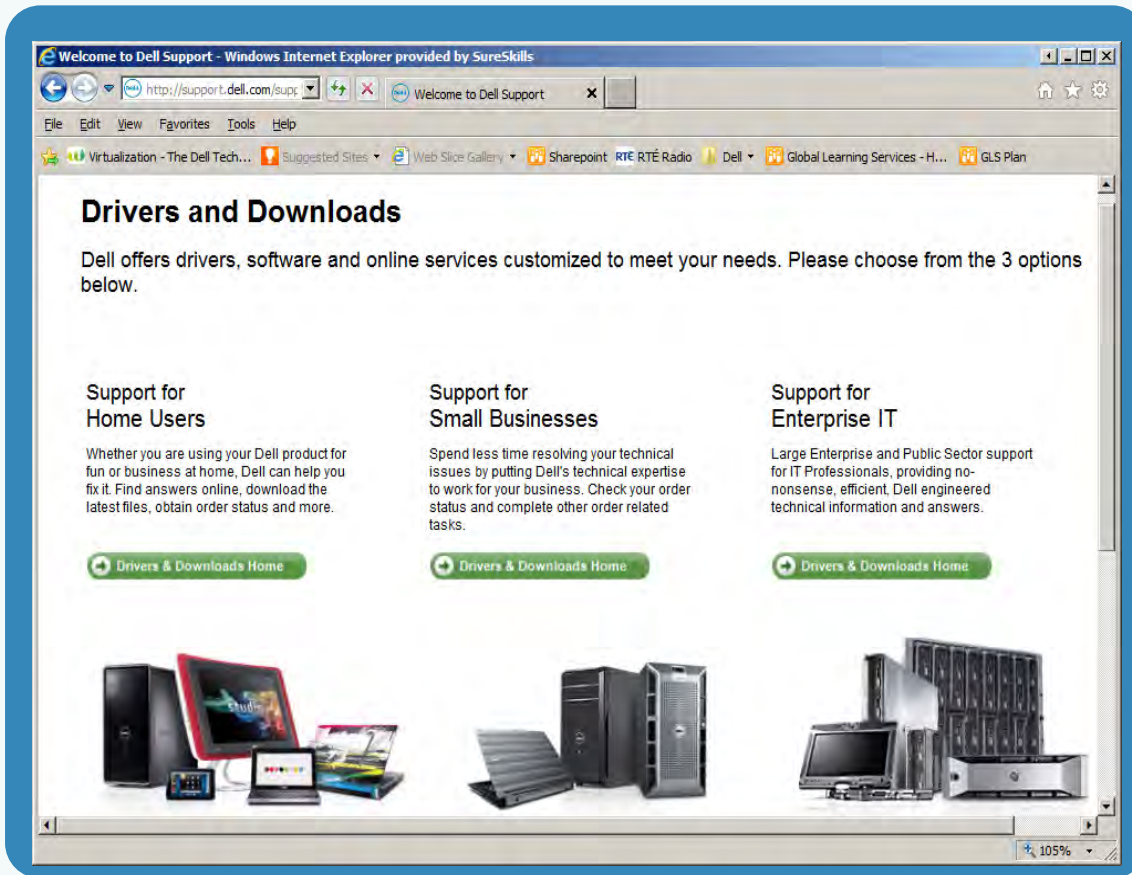
Other Recommended Tools

Also Recommended	Comments
7/16 inch open ended wrench	Seldom used but common size, if needed
11/32 inch open ended wrench	Seldom used, if needed
5.5 mm open-end wrench	For paper alignment adjustment in hi-end lasers
Socket set	With common sizes such as 5mm and 7mm.
Magnetizer/Demagnetizer	To magnetize screwdrivers
Dell Consumables Kit	Only available in the ABU through DSP PMO Offices
USB Key 4GB	Strongly recommended for all techs
Small container for spare screws	For example, pill container
Long nosed, Needle-nose and diagonal pliers	For use in tight places
Hemostats	For handling e-clips, cir-clips and roll-pins in tight places
Wire cutters	For cutting tie-wraps or wire
Precision Screwdriver Kit	Small size convenient on portables
4" Adjustable Wrench	Useful for small square and hex nuts
8" tie-wraps	As required
Laser compatible vacuum cleaner(*)	Must have filtration system qualified to handle toner particulates ***Printers Only
Parts retrieval tool	Spring loaded, flexible shaft preferred; used to retrieve a screw or other parts
Wipes and Large Ziplock bags	***Printers Only
Masking tape and rubber bands	***Printers Only

TECHNICAL RESOURCES



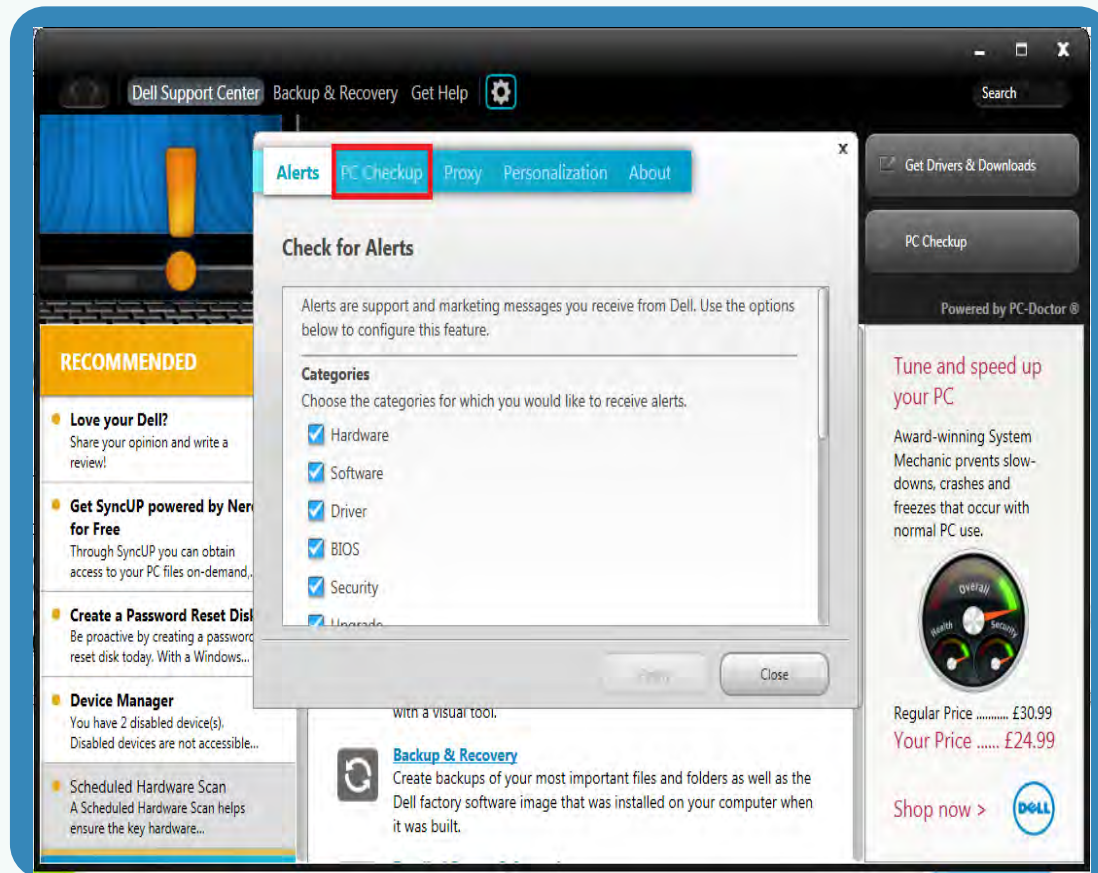
Drivers and Downloads



Reasons for updating device drivers and firmware:

- Increased system performance
- Patch security risks
- Expand compatibility
- Additional features
- Bug fixes
- As directed by Dell Support

Service Alerts



Dell Support Center's automated update and notification Alerts:

Help keep the system up to date and running efficiently.

Detect when you are connected to the Internet and automatically check for items that are relevant to your system.

Includes software upgrades, drivers, and patches.

A close-up photograph of a person's hand holding a molecular model. The model consists of several spheres connected by white rods. The spheres are colored red, blue, and black. The hand is positioned in the foreground, with the fingers gently gripping the model. The background is blurred, showing more of the same molecular model.

NEED TO KNOW

This course is designed to provide collective information across all desktop systems. For specific product information on each Dell system, refer to the course material for the system you require.

NEED TO KNOW OBJECTIVES

The following section details procedures for:

- Desktop Need to Know Information

By the end of the section, Students should know:

- Disassembly/reassembly procedures
- Specific callouts for each Need to Know, where highlighted



This section highlights Need to Know and Disassembly procedures. For a specific system, refer to the course material for the system you require.

Precision Workstation for Data Center Environment

There is a growing number of Precision Workstations being housed in the Data Center, traditionally the home of Server systems.

As the Data Center is the foundation of a Company's IT infrastructure, a number of rules and guidelines must be adhered to when in the Data Center.

General Guidelines:

- No food or drink allowed in the Data Center.
- All packaging material must be removed from computer equipment/components before being moved into the Data Center.
- All parts must be removed from the work location at completion of the repairs, unless specifically instructed by Dell to leave the parts onsite.
- Only access racks that contain equipment for which they are personally responsible.
- Communicate all problems to the Data Center staff.
- Review all Data Center safety and security policies before beginning any work in the area.
- Access to the Data Center has to be granted. The rack doors and chassis bezel may be locked and require a key.
- Most Data Centers have strict policies that may inhibit telephony and Internet access.

Desktop HDD and Cage Assembly

XPS 8500 & Vostro 470



Video Placeholder
Your video will display here.

1. Disconnect the SATA and DC power cable from the hard drive.
2. With a regular Phillips-head screwdriver, remove the three screws that secure the hard drive cage to the computer chassis.
3. Slide the hard drive and cage assembly toward the rear of the system to free the cage from the computer chassis.
4. With a regular Phillips-head screw driver, remove the four screws that secure the hard drive to the cage.
5. Slide the hard drive out of the cage.

XPS One 2710 Inner Groove Assembly

XPS One 2710



Video Placeholder
Your video will display here.

1. Remove the eighteen screws that secure the inner-groove assembly to the chassis.
2. Pry the tabs on the inner-groove assembly from the chassis and lift the inner-groove assembly away from the computer.

While re-assembling the inner-groove assembly, ensure that the speaker cables are routed and placed in their original positions to avoid cable damage.

Precision Chassis Lock



Video Placeholder
Your video will display here.

Precision T7600 shown as an example.

1. Ensure the main front bezel lock within the chassis is released/unlocked.
2. Gently rotate the bezel away from the computer to release the hooks on the opposite edge of the chassis.

Future Precision systems may have slight changes to the chassis lock.

Precision Tower Front Bezel



Video Placeholder
Your video will display here.

Precision T7600 T5600 & T3600

1. Gently press upward on 9 latches to remove the Front I/O Panel Bezel.
2. Remove the Front I/O Panel Bezel.

Care must be taken not to break the clips attaching the bezel to the chassis during the removal of the bezel.

Precision USB 3.0 Cable



Video Placeholder
Your video will display here.

Precision T7600 shown as an example.

1. Slide the cable through the hole.
2. Remove the USB Cable.

Newer Precision Tower Workstations (T7600, T5600, T3600) have a USB3.0 cable going under the system board to the front panel.

In order to change the USB3.0 cable, the system board will need to be removed.

Precision Power Supply



Video Placeholder
Your video will display here.

Precision R5500 shown as an example.

Press and hold the orange tab towards latch, then pull the power supply unit away from the system. An orange tab indicates a hot-swappable and redundant component if there is another operational power supply.

Always install PSU to the lowest slot as primary first, followed by secondary slot on the upper chassis slot.

Precision System Fans Removal



Video Placeholder
Your video will display here.

Precision R5500 shown as an example.

1. Press the release tab and lift the fan out of the cooling fan assembly.
2. Repeat the process to remove the remaining five cooling fans.
3. An orange tab indicates a hot-swappable and redundant component if there is another operational fan.

Precision R5500 HDD Removal



Video Placeholder
Your video will display here.

Precision R5500

1. Press the release button.
2. Pull the hard-drive carrier handle open.
3. Grasp the front of the hard drive and slide out until it is free of the drive bay.

OptiPlex System Fans



Video Placeholder
Your video will display here.

OptiPlex

1. Disconnect the fan cable from the system board.
2. Pry the system fan away from the four grommets securing it to the chassis rear and remove.

Newer OptiPlex systems utilize rubber grommets instead of screws to mount fans to the system.

All-In-One Rear Cover Removal



Video Placeholder
Your video will display here.

OptiPlex 9010 & Inspiron 2330

Use a plastic scribe to pry open the Rear Cover from the system, as shown here.

Remove the VESA Stand and the 4 screws at the base of the computer first.

All-in-One Inspiron 2020 Rear Cover Removal

Inspiron 2020



Video Placeholder
Your video will display here.

Starting from above the Optical drive, use a plastic scribe to pry open the Rear Cover from the system, as demonstrated in the video

Remove the VESA Stand prior to removing the rear cover.

XPS 2710 Rear Cover Removal



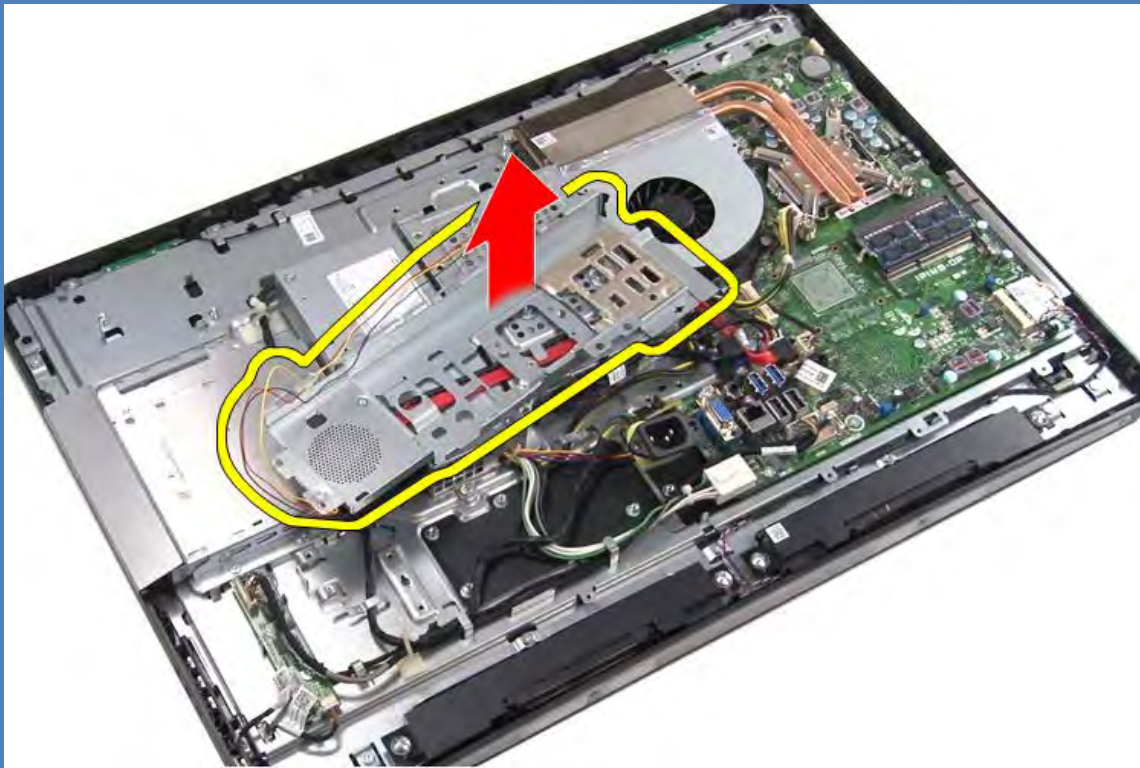
Video Placeholder
Your video will display here.

XPS One 2710

1. Loosen the two captive screws that secure the back cover to the computer.
2. Push the back cover towards the front of the computer.
3. Lift the back cover off the computer.

Removal of the VESA stand prior to back cover removal is not required for the XPS AIO.

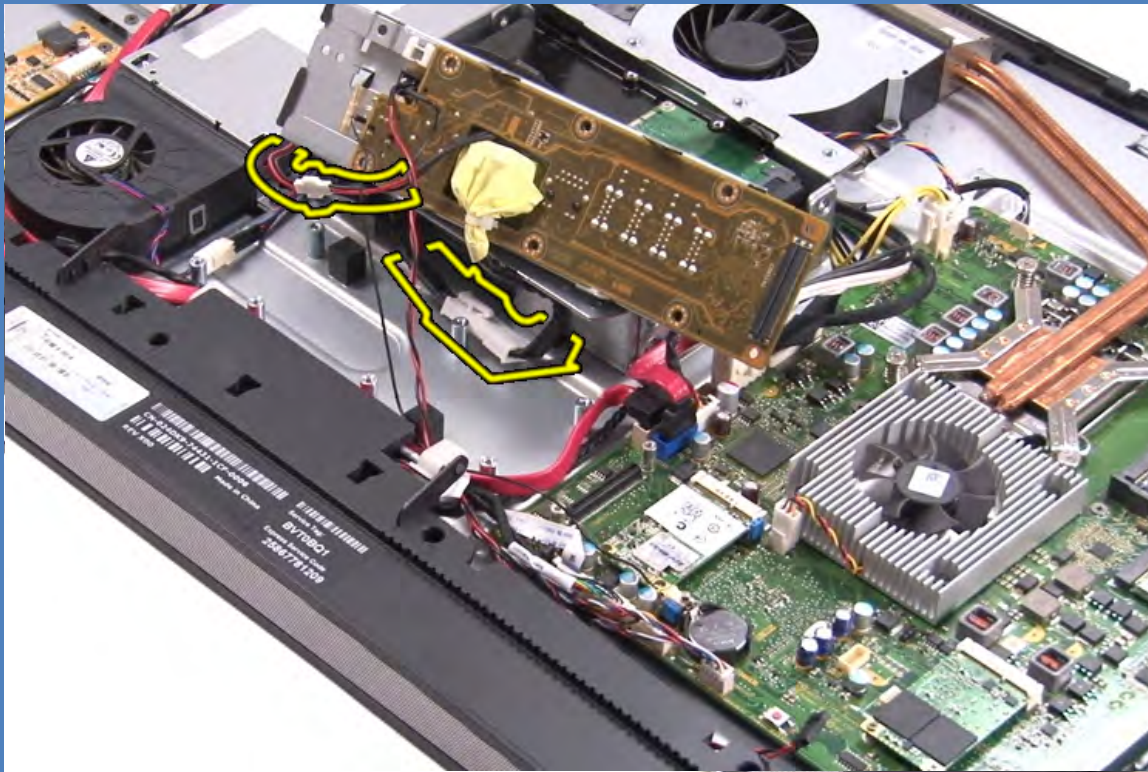
All-In-One Desktop Rear I/O Shield



1. Remove the two screws that secure the power port and the single screw that secures the power control board to the I/O board shield.
2. Remove the four screws that secure the I/O board shield to the chassis.
3. Turn the I/O board shield over and place it on the hard-drive cage.
4. Disconnect the power-supply fan cable from the system board.
5. Free the cables from the routing channel.
6. Lift the I/O board shield off the chassis.

All-in-One XPS One 2710 Rear I/O Shield

XPS One 2710



1. Disconnect the antenna cable from the TV tuner card.
2. Disconnect the rear I/O assembly cable from the system board.
3. Remove the seven screws that secure the I/O assembly to the inner groove assembly.
4. Remove the two screws that secure the rear I/O assembly to the system board.
5. Lift the rear I/O assembly off the and turn it over.
6. Disconnect the power cables from the rear I/O assembly and remove the rear I/O assembly from the computer.

All-In-One VESA Mount Bracket

Inspiron & OptiPlex



Video Placeholder
Your video will display here.

1. Remove the six screws securing the VESA mount bracket to the chassis.
2. Turn the system around.
3. Remove the three screws securing the VESA mount bracket to the chassis.
4. Lift the VESA mount bracket off the chassis.

Only the OptiPlex 9010 & Inspiron 2330 All-In-One Desktops have the VESA mount bracket for wall-mounting.

It is important to secure the VESA mount back properly to support the weight.

All-In-One System Board



Video Placeholder
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To avoid damage to the I/O Side Panel, tilt the system board slightly when lifting out.

Inspiron 2330 & OptiPlex 9010 AIO

1. Disconnect all the power and data cables from the System Board.
2. Disconnect the LVDS and second power connector cables from the System Board.
3. Disconnect the speaker cable from the System Board.
4. Remove the nine screws securing the System Board to the chassis.
5. Gently lift the system board to the side of your computer and remove the system board off of the chassis.



SUMMARY

SUMMARY

YOU ARE NOW ABLE TO:

- Explain the positioning of the Desktops portfolio and list the products within the portfolio
- Define safety and troubleshooting best practices, state commonly required tools, and list additional technical resources available
- Recall the disassembly and reassembly procedures for each of the Desktop Common and Specific Need to Know instructions.



Next Steps Prior to Certification

Prior to Certification you should:

- Ensure you are fully comfortable with all of the material presented in this course, especially the information in the **Fundamentals** and the **Need to Know** sections.
- Explore the product documentation for each of the product families presented in the Products Portfolio section of this course.
- Explore the disassembly and reassembly procedures in the **Need to Know** sections for components with which you are unfamiliar.



Desktops Certification

Question 1 of 22

Which product family is optimal for graphic rendering and complex data analysis?

- ☐ Inspiron
- ☐ XPS
- ☐ Precision
- ☐ Alienware



PROPERTIES

On passing, 'Finish' button:

On failing, 'Finish' button:

Allow user to leave quiz:

User may view slides after quiz:

User may attempt quiz:

[Goes to Next Slide](#)

[Goes to Next Slide](#)

[After user has completed quiz](#)

[At any time](#)

[Unlimited times](#)



Properties...



Edit in Quizmaker