

A presentation on

Why Does Windows Crash?

The Top 10 Reasons

and

What To Do About It!

given to the
Illawarra Computer Enthusiasts (ICE)

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Introduction: Some Visible Signs of a Crash

- Blue Screen of Death (**BSOD**) at any time
- desktop is frozen (unresponsive mouse/kb)
- unresponsive running **program**
- **BSOD** at boot-time
- Windows **doesn't finish booting** (computer just hangs)
- **shutting down** issues (computer just hangs)

The Difference Between Software Related Causes and Hardware Related Causes

- hardware problems can be permanently fixed (with a high-quality replacement component)
- software-related Windows stability and/or compatibility issues are much harder to fix permanently, eg:
 - drivers for hardware
 - system files, eg, '**.dll**', etc

ALL Software Solution are ONLY Temporary Solutions

There is no PERMANENT FIX to software related Windows Crashes! The problem always comes back. It's a question of WHEN, not IF!

IMPORTANT NOTE:

- **VISTA** DIDN'T FIX the PROBLEM
- **WINDOWS 7** DIDN'T FIX the PROBLEM
- **WINDOWS 8** DIDN'T FIX the PROBLEM
- **WINDOWS 20??** WON'T FIX the PROBLEM

No Permanent Software Fixes

- no permanent fixes to Windows instability caused by incompatible software/drivers, so
- appropriate 'fix' needs to be applied every time the problem occurs

The Top 10 Reasons Given

1. Bad Memory or Motherboard
2. BIOS Settings
3. Corrupt Registry
4. Incorrect ('Incompatible') or Corrupt Drivers
5. Hard Drive Problems
6. Hardware Conflicts
7. Virus or Trojan [**Malware**, generally]
8. Power (Supply) Issues
9. Software
10. Overheating

**Problem #1:
Bad Memory or Motherboard**

A Likely Cause of Bad Memory or a Faulty Motherboard

- not as common as in the past, but
- can still happen in cheaper computer brands
- hardware supplier didn't use high-enough quality components for reliable performance.

Some Symptoms of Bad Memory

- unexplained audible ‘beeps’ during the **POST** (power-on self-test)
- unexplained **BSOD** (‘Blue Screen of Death’)
- ‘**Fatal Exception**’ error message (due to ‘data could not be retrieved’)

Some Symptoms of a Faulty Motherboard

- unexplained '**beeps**' during **POST**, or
- a **Blue Screen of Death**, or
- an **error message** (can vary) on boot up, or
- computer **freezes** before Windows can even load, or
- **nothing** happens when you first switch on the computer – no video signal, no sound

A Solution to Bad Memory or Faulty Motherboard

- **testing** all the computer's **functions** with the computer's built-in **diagnostic** test (if it exists), or using a third-party utility (such as 'memtest86.exe' from <http://memtest.org> for testing the computer's memory
- **identifying** the faulty component, and
- **replacing** it, since it's impossible to repair these items

Problem #2

BIOS Settings

BIOS Settings Incompatible with Installed Hardware

In some situations, the selected settings in **BIOS** may cause the computer to malfunction, or behave differently to your expectations.

This means the settings are '**incompatible**' with the installed hardware

Some Symptoms of Incompatible BIOS Settings

- installed hardware not being recognized by the computer, even though you know it's attached
- unable to boot the computer from externally attached storage devices, such as USB thumb drives or USB hard disks
- in extreme cases of incompatible BIOS settings, the computer may even refuse to boot up into Windows

A Solution to Incompatible BIOS Settings

- pressing the proper sequence of keys to enter the computer's '**Setup**' or **BIOS**
- selecting '**Default**' to **reset** the **BIOS** to the most compatible values that should work in 99.9% of circumstances
- **saving** the new settings before re-booting the computer

Note: If you know how, you can customize BIOS settings to improve performance/usability

Replacing a Flat CMOS Battery

The settings in BIOS are 'remembered' by a small battery (3.0V, CR-32 button cell).

If the battery goes 'flat' or the voltage drops to a low level, any customized settings in BIOS may be lost and replaced with the built-in default values.

This may change settings, such as the boot-order of external USB storage devices.

**Problem #3:
Corrupt Registry**

Causes of a Corrupt Registry

- redundant registry entries left behind after uninstalling programs
- very large (>200,000 entries) or heavily fragmented registry may cause registry problems
- registry entries associated with missing files or redundant links can result in error messages
- **malware** can cause registry corruption by altering/deleting registry information

Symptoms of a Corrupt Registry

- a **BSOD** or unable to boot into Windows
- programs refuse to run
- computer runs more slowly than normal
- unexpected error messages appear on the screen

The Only Solution To A Corrupt Registry

Install a suitable registry cleaner to:

- **correct** corrupt registry entries
- **remove** redundant registry entries
- **restore** incomplete/missing registry entries
(may be possible in some cases)
- **defragment** the registry, to improve the speed (this feature is included with some registry cleaners)

**Problem #4:
'Incorrect' or Corrupt Drivers**

Some Causes of Incompatible or Corrupt Drivers

- using a driver written for another version of Windows (because the vendor has not yet released a driver designed for your OS)
- using a driver written for another model of your hardware (because the vendor has not yet released a driver designed for your model – and may not, if the hardware was designed to run on older versions of the OS)

Some Symptoms of Incompatible or Corrupt Drivers

- hardware not recognized by the Windows OS (common with USB based hardware, eg printers with USB interfaces)
- hardware not behaving as expected (again, common with USB based hardware)

A Solution To Incompatible or Corrupt Drivers

- obtain the latest version of all hardware drivers designed for your operating system (Windows version) from the hardware vendor's website
- reinstall any drivers for hardware that shows signs of not functioning properly (if known to have functioned properly in the past)

Problem #5: Hard Drive Problems

Some Causes of Hard Drive Problems

- heavily fragmented (high %age of files) leads to impaired (very slow) performance
- corrupted/lost files or directory information from not properly turning off the computer
- corrupted/lost files or directory information due to power glitches while the hard drive is writing information
- corrupted/lost files or directory information from malware activity

Overheating, An Overlooked Cause of Hard Drive Problems

- an often overlooked cause of hardware problems with hard disks is caused by OVERHEATING
- this can be the result of inadequate case ventilation, or
- the necessity for having a cooling fan designed to directly blow cool air over the drive's circuit board, in times of heavy HDD activity, high ambient temperature, or both

Some Symptoms of Hard Drive Problems

- very slow performance (especially when writing to disk)
- corrupted files/directory information shows up as 'garbage' when view it
- hard drive won't boot up or Windows doesn't run
- error messages on the screen when you try to run certain programs

Some Solutions To Hard Drive Problems

- don't let the hard disk overheat in Summer or during periods of sustained heavy use
- keep fragmentation levels to a minimum by regular use of reliable 'defragging' software
- run Windows' 'chkdsk' utility, whenever the computer doesn't shut down properly, to fix any corrupted information and remove 'lost clusters'

Problem #6: Hardware Conflicts

Some Causes of Hardware Conflicts

Issues with hardware are visible if you look at the Device Manager. If there is a question mark against the device, no driver has been installed and the item isn't working.

Hardware designated with an exclamation mark isn't working properly because it is in conflict with other installed hardware.

Some Symptoms of Hardware Conflicts

The most obvious sign of a hardware conflict is that the particular piece of hardware isn't working as it should.

In some circumstances, there may be a conflict with other installed hardware.

In the worst case, there may be conflict with the OS itself, resulting in BSOD, screen lockups, etc.

Some Solutions To Hardware Conflicts

Most conflicts can be fixed by downloading and installing the most-up-to-date driver for the hardware in question.

**Problem #7:
Infection by a Virus or Trojan**

Main Cause of Infection by a Virus or Trojan

- **connection** to the **Internet** ('online'), and
- **not** having appropriate **security software** running in the background, and
- not monitoring **all** suspicious activity

Remember: When you connect to the Internet, the Internet connects to you!

Some Symptoms of Infection by a Virus or Trojan

From bad to worse:

- no visible signs at all
- your computer is running more slowly
- unexplained hard drive activity
- people complaining about receiving unwanted/inappropriate emails from you
- your Credit Card is suddenly **maxed out**
- the Federal Police suddenly arrive and want to seize all your computer equipment

Preventing Malware

The only solution to **preventing** a malware infection is to install appropriate anti-malware software. This may include:

- a full security-suite, combining the functions of firewall, anti-virus, anti-spyware, identity protection, spam filtering for emails, etc.
- separate software to carry out specified security tasks, eg, firewall, anti-malware, spam filtering, identity protection, etc.

What To Do If Your Computer Is Already Infected

- if already infected with malware, and
- don't have an anti-virus software installed, or
- haven't kept the virus definition files updated
- only solution is to run a **live** CD containing an **anti-virus software** with **up-to-date** virus definition files

**Problem #8:
Power Supply Issues**

Some Causes of Power Supply Problems

- main cause is the quality of the power supply hardware, and its ability to deliver the maximum required current at the designated voltage (without any voltage drop)
- the power supply may be under-rated for the computer it is installed in, for example
- the video card has very high-current requirements that requires a beefed-up power supply (eg 850W instead of 350W)

Some Causes of Power Supply Problems

- the fan in the power supply failed, leading to reduced performance or even hardware failure

Some Symptoms of Power Supply Problems

- random rebooting of the system
- unexplained lockups or system freezes
- corrupted display in which the picture is distorted, fuzzy, or the colors are off
- drives or other hardware devices that just stop working

Some Solutions To Power Supply Issues

- replacement of the power supply (if faulty)
- installing a higher capacity power supply
- connecting the computer to a different electrical circuit to prevent/minimize the effect of other electrical appliances 'tripping' in/out, eg washing machines/fridges/freezers
- using an in-line surge protector to prevent / minimize '**spikes**' in the electricity supply

Problem #9: Software

A Cause of Software Related Computer Crashes

There may be a problem with system instability, leading to screen freezes or computer lockups, if you are running very old versions of software on the latest Microsoft's Operating Systems.

A Cause of Software Related Computer Crashes

For example, running a 16-bit **DOS** based program (as I am wont to do) in a CL ('command-line') window of a 32-bit operating system such as Windows XP will sometimes cause a hiccup and result in a reboot being required.

Software

Third-party computer software is not usually the culprit when a computer locks up, BUT in my situation at home, I have noticed that a significant proportion of my lock-ups can be attributed to Internet Explorer locking up.

I have yet to determine why this is so!

The Solution To Software Related Computer Crashes

Generally, running the latest version of any software program should ensure that such problems are minimized, if not eliminated.

Problem #10: Overheating

Overheating During Summer

- overheating more prevalent in Summer
- ambient temperature up to 20°C hotter, and
- most mass produced PCs can't cope with such temperature extremes.
- sometimes the only solution is to switch off until ambient temperature <25°C ('normal')

Note: The temperature inside the computer is at least 15°C hotter than ambient, and most computers start having problems ~ 55-60°C

Overheating in Portables

Laptops or other portable computers are prone to overheat if they are used on soft surfaces that may block the air-vents underneath, eg: blankets, cushions, etc.

Also, if the cooling fans or vents become blocked with dust or lint ('fuzz'), overheating may occur during the hotter months of the year.

Some Cause of Overheating

- inadequate case ventilation caused by poor placement of the computer
- faulty power supply fan
- faulty case fan (not usually installed)
- severe build-up of dust inside the case
- faulty fan or loose heat sink on the CPU
- faulty fan or loose heat sink on the GPU of a high-end video card

Some Symptoms of Overheating

- random rebooting of the computer
- unexplained lockups ('BSOD')

Some Solutions To Overheating

- not placing portables (laptops/netbooks) on surfaces that will restrict adequate air-flow
- replacing failed fans with good-quality units
- installing a fan-failure audible alarm
- remove dust build up from components inside the case (if dust a problem in the past)
- laptops will need to be professionally cleaned (if dust a problem in the past)

Finally, My Failsafe Solution!

My Two Permanent Solutions To Windows Crashes

1. Run a **Linux** Operating System (**OS**) on your desktop/laptop/notebook computer,
or
2. Get a **Macintosh** ('**Mac**') computer

Any Questions?

