Using PC Checkup

Over time as you use your computer, the information stored on the hard drives changes. This happens when you save, modify or move documents as well as when you install, update or uninstall application programs. As the information changes, there is a slim chance that critical information, such as the master boot record used to start your PC, can accidentally become damaged.

In a perfect world, all application programs would coexist peacefully, store their data exactly where they should, and always play by the rules. In the real world, this doesn't always happen. The result can be missing files; orphaned shortcuts, fonts or registry entries; inefficient Windows settings; or even corrupted data that can prevent you from starting Windows, or worse yet, from starting your PC at all.

In a perfect world, the electric power coming into your computer would always flow like a clear, placid, spring-fed stream, with no power spikes or surges to inadvertently change the state of a critical bit of data, or worse. In computing, as in the real world, there may be perfect moments or a perfect day at a stream, but a perfect lifetime is exceedingly rare.

If you've encountered a problem with your computer, we understand your frustration. While you're trying to get good work done quickly—who these days has the luxury of doing work at a leisurely pace?—your PC stops in its tracks. Such problems force you to focus on the tool rather than on the work itself.

Our advice? First, remain calm. Second, take a deep breath. Third, read this chapter, which describes Safe & Sound's PC Checkup that can help you diagnose, repair and recover information on your system.

Performing a Standard Diagnosis

You should start with a standard diagnosis and repair. Then you can perform an advanced diagnosis and repair if necessary. PC Checkup lets you know which repairs you make can be undone later.

To use PC Checkup to diagnose and repair PC problems:

1. Click the Start button and do one of the following:
   - Choose the Safe & Sound command from the Start menu and click the Checkup button.
   - Choose the Programs > Safe & Sound > PC Checkup command.

   The PC Checkup Wizard window appears.
2. Click Next > to perform a standard diagnosis first.

Note Clicking Advanced lets you perform advanced diagnostics. This option lets you run a more detailed analysis of your PC. You should use this option after performing a standard diagnosis as described in this procedure. Clicking Undo lets you undo repairs made using PC Checkup.

3. Select the items you want analyzed (by default all the options are selected).

   When you select some of these options, the Properties button becomes active, indicating that there are options you can select to fine tune the diagnosis of this part of your system. The items you can diagnose are:
   - Fonts Properties
   - Hard Drive Properties
   - Memory Properties
   - Parallel Properties
   - Serial Ports Properties
   - Shortcuts Properties
   - System Check Properties
   - System Files Properties
4. Click Next >.

   PC Checkup begins diagnosing your PC. You can click Skip to skip any item, or click Stop to halt the diagnosis. Depending on the number of items selected and the speed of your PC, the time it takes to diagnose your PC varies.

   When the diagnosis is complete, PC Checkup makes a Summary list available along with options for repairing any problems it encountered during testing.
5. Do any of the following:
   - Click the Plus (+) button to view individual problems.
   - Click a check box to select a problem or all problems for an item that you want to fix.
   - Select an item or problem in the list and click Explain to get information about it.
   - Click the Summary button to view or print a list of the problems found on your PC.
   - Click the AutoFix > button to let PC Checkup fix all the problems that it can for you.
   - Click the Manual Fix button to select from a list of solutions for each item. It steps you through each item, giving you an opportunity to automatically fix the problems, manually fix them yourself, ignore them for now, and other solutions appropriate for those problems.

   PC Checkup lets you know how the repair is progressing and describes the problem being fixed

   You can manually fix any problems not solved with AutoFix. Press < Back, select the problems to fix, and click the Manual Fix button.

Performing Automatic Repairs

After you perform a standard or advanced diagnosis, you can select to let PC Checkup fix as many of the problems it found automatically as it can.

Click the AutoFix > button to let PC Checkup fix all the problems it can for you.

If any problems remain, you can select them in the problem list and click the Manual Fix button. PC Checkup will step you through each type of problem, offering you possible solutions to select from. If you still have problems in the list when you finish the manual repair, you can perform an advanced diagnosis.

Performing Manual Repairs

Click the Manual Fix button to select from a list of solutions for each item. It steps you through each item, giving you an opportunity to automatically fix the problems, manually fix them yourself, ignore them for now, and other solutions appropriate for those problems.

When you do a manual repair, PC Checkup lets you select a solution for each item with problems. After you select one of the solutions, the Explain button becomes active so you can view an explanation of what that solution will do. Once you finish reading the explanation, simply click elsewhere to dismiss the pop-up help message. Also, each solution that can be undone later is marked with an asterisk (*).

PC Checkup lets you know how the repair is progressing and describes the problem being fixed

Undoing Repairs

After you've made repairs with PC Checkup, you can choose to undo the solutions that displayed asterisks beside them during the repair process.

To undo repairs:

1. Click the Start button and do one of the following:
   - Choose the Safe & Sound command from the Start menu and click the Checkup button.
   - Choose the Programs > Safe & Sound > PC Checkup command.

   The PC Checkup Wizard window appears.
2. Click the Undo button.
3. Follow the instructions on the screen.

Performing an Advanced Diagnosis

After you have performed a standard diagnosis and repair, you may still have some problems that remain unresolved. You can use the Advanced options to perform a more exhaustive analysis of your PC. This process may take a lot more time.

To perform an advanced diagnosis and repair:

1. Start Checkup by following step 1 of the procedure in the Performing a Standard Diagnosis. Then click the Advanced button to select Advanced options to use:
   - **Perform advanced diagnostics**–Select this option to perform a more detailed analysis of your PC. This process may take a considerable amount of time. Use this option after performing a standard diagnosis, resolving the listed problems, and still run into system performance issues.
   - **Diagnose in silent mode**–Select this option to run the diagnose process transparently. By doing so, the Performance Diagnosis wizard will not display the diagnosis status. The Performance Diagnosis wizard will appear once the process is complete and problems were found.
2. Click OK. Then continue with the procedure above, starting at step 2.

PC Checkup Wizard Window

The PC Checkup Wizard window contains the following options:

Undo
Click the Undo button to undo repairs you've made earlier whose solutions displayed an asterisk beside them (*).

Advanced
Click the Advanced button to specify Advanced diagnostics options. You should only perform an Advanced diagnosis after performing a standard diagnosis that doesn't solve all the problems found on your PC.

Next >
Click the Next > button to select the diagnostics you want to run.

Cancel
Click the Cancel button to close PC Checkup without finishing the virus scan.

PC Checkup Wizard (Diagnostics List) Window

The PC Checkup Wizard (Diagnostics List) window contains the following options:

Diagnostics List
Select the items in this list that you want PC Checkup to diagnose and repair. Your options are:

- **Applications**–Searches for incomplete applications on your hard drives, such as missing DLL files for your applications.

  A DLL (Dynamic Link Library) file is an executable code module that applications can load on demand. These DLLs let your applications share common modules, which are loaded at run time. It also provides a simple means of updating a particular DLL without updating the entire application.

  If an application is missing one of the DLL files it uses, it will be unable to perform the functions that DLL module controls.
- **Fonts**–Checks that the fonts in your system are properly referenced in your registry (that they are not orphans), and that you are not missing fonts or running out of font memory.
- **Hard Drive**–Checkup lets you select the drives to scan and the fragmentation threshold percentage, above which you want to be alerted. If the fragmentation exceeds the threshold, Checkup lets you know.
- **Hardware**–Checks various hardware components to ensure they are functioning properly.
- **Memory**–Tests the physical memory, or RAM (Random Access Memory), on your PC. You can select the regions of memory to test, the tests to perform and the patterns to test.
- **Modem/Dial-up Networking**–During the testing process, you can select the dial-up networking phone book entries that you want Checkup to diagnose. It does this by establishing the connection and attempting to access the Internet. Windows Dial-up Networking is a Communications component that you can install during Windows Setup.
- **Multimedia**–Checkup tests your multimedia settings and programs used for playing sound, animation or video on your PC if it has a sound card or CD-ROM drive.
- **Parallel**–You can select the parallel ports to test, the internal and external tests to perform, and whether to test ECP.
- **Printing**–Checkup tests to be sure your printers are working properly.
- **Registry Scan**–Checkup diagnoses your PC's registry file for orphaned registry items and invalid values.
- **Serial Ports**–You can select the serial ports and speeds, the parity, data bits, and stop bit to test. You can also specify whether FIFO (first in first out) is enabled, whether to receive FIFO triggers or to transmit FIFO blocks.
- **Shortcuts**–You can select the folders to search for shortcuts and the drive to search when repairing orphaned shortcuts.
- **System Check**–Tests your system board components. You can select to perform: Interrupt Controller Tests, DMA Controller Tests, CMOS Tests or Timer Tests.

  DMA (Direct Memory Access) is a high-speed method for moving information from a storage device or LAN (local area network) interface card directly to RAM (physical memory).

  CMOS (Complementary Metal Oxide Semiconductor) is a method of building computer chips (also called integrated circuits or ICs) that requires very little electricity.
- **System Files**–Checkup will test the INI files on your PC to make sure that files listed in each INI file are located at the place indicated by the path. You can select which drives to search when repairing the system files.
- **Windows**–Checkup tests the efficiency of your Windows settings. For example, it lets you know if your system is optimally configured for multimedia.

Properties
When you select some of the diagnostics items, the Properties button becomes active, indicating that there are options you can select to fine tune the diagnosis of this part of your system. The items you can

diagnose are:

- Fonts Properties
- Hard Drive Properties
- Memory Properties
- Parallel Properties
- Serial Ports Properties
- Shortcuts Properties
- System Check Properties
- System Files Properties

< Back
Click the < Back button to go back if you want to select different options (such as to undo repairs or select an advanced diagnosis).

Next >
Click the Next > button to begin the diagnosis of the items you selected.

Cancel
Click the Cancel button to close PC Checkup without finishing the diagnosis and repair procedure.

PC Checkup Wizard (Problems List) Window

The PC Checkup Wizard (Problems List) window contains the following options:

Problems List
Select the items in the list that you want PC Checkup to repair automatically or that you want to repair yourself. You can click the + buttons to expand a problem category and select individual items within that category to fix.

AutoFix
Select the items in the list that you want PC Checkup to automatically repair and click the AutoFix button.

Manual Fix
Select the items in the list that you want PC Checkup to help you manually repair and click the Manual Fix button. PC Checkup offers you solutions that you can select to resolve each problem.

Explain
Select an problem category or item in the Problems List and click Explain to view a pop-up help explanation of it.

Summary
Click the Summary button to view or print a list of all the problems that PC Checkup has found on your PC.

< Back
Click the < Back button to go back if you want to repeat the diagnosis process.

Next >
Click the Next > button to begin the repair of the items you selected.

Cancel
Click the Cancel button to close PC Checkup without finishing the diagnosis and repair procedure.

PC Checkup Wizard (Repair Status) Window

The PC Checkup Wizard (Repair Status) window shows you the progress of repairs it is making along with status information describing the nature of the solution.

Stop
Click the Stop button if you want PC Checkup to stop a repair it is making.

< Back
Click the < Back button to go back if you want to select different problems to repair.

Next >
Click the Next > button to finish the diagnosis and repair process.

Cancel
Click the Cancel button to close PC Checkup without finishing the diagnosis and repair procedure.

PC Checkup Wizard (Manual Repair) Window

The PC Checkup Wizard (Manual Repair) window offers solutions to the indicated problem that you can select.

Stop
Click the Stop button if you want PC Checkup to stop a repair it is making.

< Back
Click the < Back button to go back if you want to select different problems to repair.

Next >
Click the Next > button to finish the diagnosis and repair process.

Cancel
Click the Cancel button to close PC Checkup without finishing the diagnosis and repair procedure.

Address Space

The sum total of all possible memory addresses available at a given time. This is 4 GB (gigabytes) on a 386 or later PC in protected mode.

Launch Pad

The Launch Pad is a window where you can place application and document icons so you can conveniently access them.

Benchmarks

A benchmark is a standardized task that tests various devices for measurements, such as speed.

BIOS

The BIOS (or Basic Input/Output System) contains buffers for sending information from an application to the hardware device, such as a printer, where the information should go.

Buffers

A buffer is a temporary storage location for information being sent or received.

Bytes

A byte is eight bits of information composed of zeros and ones, one of which may be a parity bit. Most character sets, such as ASCII, use one byte to represent each character (letter, number, or special symbol).

Cache

A cache is part of the computer's memory used to temporarily store recently accessed information. A cache is designed on the premise that recently used information may be needed again soon. Keeping information available in cache reduces the time it takes for an application to obtain the information again.

Cluster

A cluster is a unit of storage allocation usually consisting of four or more 512-byte sectors.

Conventional Memory

Conventional memory is the first 640 K (kilobytes) of RAM (random access memory).

CPU (Central Processing Unit)

The “brain” of your computer. This is main computer chip that controls all activity that takes place on a computer.

Diagnostics

Diagnostics are tests run to detect faults in a computer system. Diagnostics tests are run to detect faults before they become serious problems so the faults can be corrected.

Directories

Directories are locations within a volume on a drive where you can store files or subdirectories. In Windows, directories are equivalent to folders that appear on the desktop in a drive window.

Discardable Memory

Discardable memory is memory used by an application that it has marked as discardable. Windows can reallocate the discardable memory to a different application if it needs to.

DLLs (Dynamic Link Libraries)

A DLL is an executable code module that can be loaded on demand and linked at run time. DLLs can be shared among multiple applications and independently updated, transparent to the applications. DLLs can also be unloaded when they are no longer needed.

DMA (Direct Memory Access)

DMA is a fast method of moving information from a storage device or LAN interface card directly to RAM which speeds processing time. DMA is direct memory access by a peripheral device that by-passes the CPU to save time.

Expanded Memory

DOS running on the Intel 80286, 80386, or 80486 family of computers can only address one megabyte of memory at one time. Expanded memory is the memory located between the base memory (either 512 K or 640 K) and one megabyte. Expanded memory is reserved by DOS for housekeeping tasks, such as managing information that appears on the screen.

Extended Memory

Memory above one megabyte in 80286 and higher PCs. Extended memory can be used for RAM disks, disk caches, or Windows, but it requires the CPU to run in a special mode (protected mode or virtual real mode).

FAT (File Allocation Table)

The FAT is an index to the location where all the information is stored on a floppy disk or hard drive. The FAT is extremely important because the system uses it to store and retrieve files containing information.

GDT (General Description Table)

The GDT is a table that is basic to the operation of protected mode. This table contains data structures (descriptors) that describe various regions of memory and how they may be accessed. Windows uses the GDT for system devices. *See LDT.*

Global Heap

The Global Heap is the general pool of memory available to Windows applications.

GPF (General Protection Fault)

An error condition caused by an application when it attempts to perform an operation not allowed by the operating system. Windows uses GPFs to determine and control the state of the currently executing application. GPFs that are unexpected by Windows cause a system error message to appear.

HMA (High Memory Area)

The HMA is the first 64 K of extended memory. If you use DOS 5.0, you can save memory by loading DOS into the HMA. Do this by adding the DOS=HIGH setting to your CONFIG.SYS file and restarting your PC.

Interrupt

A temporary suspension of a process caused by an event outside that process. More specifically, an interrupt is a signal or call to a specific routine. Interrupts allow peripheral devices, such as printers or modems, to send a call to the CPU requesting attention.

I/O (Input/Output) Device

An I/O device is any piece of computer hardware that can exchange information with the CPU. Examples of I/O devices include network cards, printers, speakers or other sound devices, or devices connected to the serial or parallel ports of your PC such as external modems.

Kernel

The Kernel is the part of a computer operating system that performs basic functions such as switching between tasks.

LDT (Local Descriptor Table)

The LDT is a secondary data structure table that contains additional information about various regions of memory and how they can be accessed. Windows uses the LDT for programs.

Linear Memory

Linear memory is the currently defined address space of the system that Windows uses to allocate memory to Windows applications.

Local Heap

The Local Heap is a region of memory allocated for local use by an application.

Locked Memory

Locked memory is memory used by an application that cannot be relocated or discarded by Windows.

Mapping

Mapping is the process of assigning physical memory (RAM) to a particular linear address range.

Mode Switch

A mode switch is a transition made by the CPU when changing from one mode of operation to another. For example, switching from real or protected mode, or a transition between different levels of protection. *See Ring 0, 1, 2, 3*.

Modules

A module is a device driver loaded by Windows.

Paging

The process of saving information stored in RAM to the swap file on the system hard drive so Windows can make the RAM available at a different linear address.

Parallel Port

The parallel port is a connector on the back of your PC and on some peripheral devices. With the appropriate driver software installed and a parallel cable connected to the parallel ports on your PC and a peripheral device, the two can communicate with each other. Parallel transmissions have no EIA standard, but most equipment follows a quasi-standard called the Centronics Parallel Standard.

PCI (Peripheral Component Interconnect) Bus

The PCI Bus is a local motherboard specification (that provides connector slots on the motherboard for installing peripheral cards). The PCI Bus, designed by Intel, offers a high performance, peripheral component level interface to the CPU bus.

Physical Memory

Physical memory is the RAM (Random Access Memory) installed in your PC. *See Random Access Memory (RAM).*

Protected Mode

A mode of operation of 80286 or later CPUs which allows access to more than 1 MB of memory.

RAM (Random Access Memory)

RAM (Random Access Memory) is also called physical memory. It is installed in your PC on SIMMs (Single Inline Memory Modules) or DIMMs (Dual Inline Memory Modules). RAM is volatile, extremely high-speed storage used by your computer for processing information.

Real Mode

A mode of 80286 or later CPUs, where the CPU operates substantially like an older 8086 CPU and can address directly only 1 MB of memory.

Resources

Resources are objects that Windows and its applications can use, such as the buttons on the screen that you can click.

Ring 0, 1, 2, 3

Different levels of protection in protected mode, where programs having varying degrees of freedom of operation. Ring 0 (zero) is least protected and has direct access to all hardware in the system.

Sector

A sector is a pie-shaped portion of a hard disk. A disk is divided into tracks and sectors. Tracks are complete circuits and are divided into sectors. Under DOS, a sector is 512 bytes.

Serial Port

A serial port is an input/output port (connector) that allows the transmission of information out at one bit at a time, as opposed to parallel which transmits eight bits, or one byte at a time.

Swap File

The swap file is created by Windows on the system hard disk. It uses the swap file to copy information stored in part of the linear address space so it can reallocate the RAM used at that location to another linear address space.

Swapping

Swapping is the process of saving to disk or restoring from disk the contents of RAM so that the RAM can be used elsewhere in linear memory.

System Resources

System resources are a series of data structures kept by Windows. System resources are managed by the Windows User and GDI programs and maintain information about objects that appear on your screen.

32BDA (32-Bit Disk Access)

32BDA is a process in Windows where the device driver that accesses the disk runs entirely as a 32-bit program at Ring 0 (zero).

32BFA (32-Bit File Access)

32BFA is a process in Windows where the DOS file operations are controlled by a program, or set of devices, that operate entirely as 32-bit programs at Ring 0 (zero).

Unlocked Memory

Unlocked memory is physical memory that Windows can copy to the swap file on disk, and whose linear address can be changed whenever Windows chooses.

UMB (Upper Memory Block)

The UMB is the area in memory between 640 K and 1 MB that have RAM mapped into them by memory managers, such as Network Associates' Netroom or MemMaker. *See Expanded memory.*

V86 Mode (Virtual 8086 Mode)

V86 mode is a mode of operation of 80386 or later CPUs where programs, originally designed to run in real mode, can run as sub-programs to a protected mode control program or operating system.

Video Memory

Video memory, called VRAM, is physical memory installed on your PC's video card that is used for displaying information on the screen.

Virtual Memory

Virtual memory is the amount of memory that exists either as physical memory (RAM) or on the hard drive (in the swap file). When a part of memory that is located in the swap file is accessed by an application, Windows reads the information into RAM.

VMs (Virtual Machines)

Virtual machines (also called Virtual DOS machines or VDMs) are created in Windows 95/98 when you open a MS-DOS Prompt window. The VDM is a software emulation of a separate computer, offering all the services that the DOS application expects of a PC.

VxDs (Virtual Device Drivers)

VxDs are used in Windows to communicate with all physical hardware in the system. This prevents any application from having direct access to a piece of hardware. Instead, it communicates only through the VxD for that hardware.

Windows Registry

The Windows 95/98 Registry file contains user, application, and computer-specific configuration information in a central location that was kept in various .INI files in Windows 3.1. The Registry contains settings that determine how your computer runs.