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Registry Cleaner

Tips, Tricks and Myths

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What exactly is the Windows Registry?

The Windows Registry is a set of data files used to help Windows control hardware, software, the user's environment, and the "look and feel" of the Windows interface. The Registry is contained in two files in the Windows directory (in XP they are called "hives"): system.dat and user.dat, with backup copies system.da0 and user.da0. The Registry database is accessed with regedit.exe which is in the Windows directory. Formerly, in older version of windows (before windows 95) these functions were performed by WIN.INI, SYSTEM.INI, and other .INI files that are associated with applications.

Originally, SYSTEM.INI and WIN.INI controlled all Windows and application features and access. It worked well when average users used only a few applications. As the number and complexity of applications grew, so did the number of entries to the .INI files. The downside of this approach, in a growing environment, is that everyone would make changes to the .INI files when applications were added to the system. However, no one ever removed references from their .INI files when they removed applications, so SYSTEM.INI and WIN.INI continued to get larger and larger. Each incremental size increase meant slower performance. Even upgrading applications presented its challenges. The upgrade would add entries but never take the old ones away, presumably to ensure compatibility if another program was to access the settings.

The Registry is a set of files that control all aspects of the operating system and how it works with outside events. Those "events" range from accessing a hardware device directly to how the interface will react to a specific user to how an application will be run and much more. It was designed to work exclusively with 32-bit applications, and file size is limited to about 40MB.

The Registry is complex by its very nature, and on purpose.

It is the data file for all 32-bit hardware/driver combinations and 32-bit applications in both Windows XP and Windows 95. Sixteen-bit drivers do not work in NT, so all devices are controlled

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through the Registry, even those normally controlled by the BIOS. In Windows 95, 16-bit drivers will continue to work as real-mode devices, and they use SYSTEM.INI for control.

Without the Registry, the operating system would not have the necessary information to run, to control attached devices, to launch and control applications, and to respond correctly to user input.

When a user attempts to launch an application, the Registry supplies application information to the OS so the application can be found, the correct data file locations are set, and other settings are available.

The Registry holds information about default data and auxiliary file locations, menus, button bars, window status, and other options. It also holds installation information such as the date of installation, the user who installed the software, the version number and date, and sometimes the serial number. Depending on the actual software installed, it may contain other application-specific information.

Without the Registry, Windows 95 and Windows XP would not be possible. They are too complex to be controlled by the older .INI files, and their expansion capabilities allow almost unlimited installation and use of applications. The Registry is, however, much more complex than the .INI files, and understanding how it works, what it does, and how to work with it is critical for effective system administration.

The Registry controls all 32-bit applications and their functions on the system, plus the interaction between multiple applications, such as copying and pasting. It also controls all the hardware and drivers. Though most of the settings are made during installation and through the Control Panel, understanding the Registry is fundamental to reliable and capable management of Windows XP and Windows 95 systems.

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Potential Registry Problems

If the Registry is severely damaged, access to hardware and software may be drastically limited, and the system may not even boot. Even in a case of a minor problem, an application may not work as it was designed, or may perform erratically.

The Registry is protected while it is running, so it is not possible to copy, delete, or change the contents, except through a "certified" program (installation programs, registry editing tools, and security changes through User Manager for Domains and the Explorer). Because of this protection, the Registry is quite secure but it is not bulletproof. Problems can and do occur, and you need to be prepared to recognize them so you can fix them.

How to Recognize When You Have a Registry Problem

Most of us have heard of or felt the following symptoms, all of them characteristic of Registry problems:

"My computer and Internet are very slow suddenly."

"I can not remove these programs from my computer."

"It worked yesterday, but it won't work today."

"It worked until I added this software/hardware, and now I can't use it."

"My system doesn't work the way it used to."

"When I try to shut down the computer, it just keeps beeping and beeping."

"My computer won't start up."

"Eeeeeek! It's the dreaded Blue Screen of Death!"

Why does the registry get corrupted?

The most common ways the Registry gets corrupted are:

Applications and drivers are added to the system

Hardware changes or up gradation

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Regular adding and removing programs

Users make changes to the Registry

Program Errors-Adding and removing programs account for the majority of errors found in the Registry. Most users add between six and seven applications, and add or upgrade drivers, applications etc. four or five times per month. Then there are applications which are added to your computer without your information through the Internet. During initial installation and setup, the numbers are even greater.

Here are the most common reasons that applications cause problems with the Registry:

Poorly written application (bugs)-There are no applications without bugs or errors. In the best case, the errors that are there are minor, esoteric problems that you may never see, which were left alone because of time and money constraints. To a programmer, a problem may be minor, but it becomes a major problem to you if it crashes your system.

Driver incompatibility-The open architecture of the PC world creates significant risk because any type of eclectic combination of parts and pieces is possible. Testing all combinations and ensuring the compatibility of all the devices is impossible. The other challenge arises when the driver for wrong Operating System is used (like Windows 98 driver in Windows XP).

Incorrect entries added to the Registry by the application during installation-During installation, most applications use a file called SETUP.INF for detailed information about what disks are required, which directories should be created, where to copy files, and Registry entries that need to be made to make the application work correctly. If there is a mistake in the SETUP.INF file, the change will still be made, and there may be serious problems.

Incorrect associations set between applications and file types by an application-When an application is installed, default document types are recorded in the Registry. A user can then double-click to start the application and load the document. Many times, other applications use the same extension. For example, the last graphics program loaded will be the one launched when a TIF graphic is activated based on the settings in the Registry. Occasionally, completely

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different, non-compatible applications will use the same extensions on their document files, and the document-loading shortcut won't work.

Errors created during the uninstall process-Whether you remove applications through Add/Remove programs in the Control Panel, through a proprietary uninstall feature of the application, or through a third-party utility, you run a risk of damaging the Registry. Besides taking out the program, auxiliary, and data files, an uninstall routine may attempt to remove Registry entries as well. It may inadvertently remove required entries for other applications because it is nearly impossible for the system to know all the entries accessed by an application.

Errors in fonts-When the font ID in the Registry gets corrupted, you will see a different font than the one listed in the application. It can be annoying and may require you to remove some or all of your fonts and replace them. It mostly happens when user installs and removes fonts frequently.

Unfortunately, you may find out about these problems too late, after you have lost time, money, and/or data. Also, you are almost powerless to truly solve them, because someone else wrote the program, and most people do not have the expertise required to change the application itself. The best you can do as an administrator is to repair the Registry Using Registry Repair tools like a Registry Cleaner.

System Problems

If the computer system itself has a problem, the Registry can become corrupted. Usually, these errors can be prevented with proper system care and management.

Virus-Viruses are an insidious attempt to affect our systems by changing the nature of files and in whole corrupting the registry.

Electrical surges, spikes, or brownouts-Nearly all power problems can be easily avoided with good surge protectors and UPS devices (uninterruptible power supplies).

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Disk problems-Most of the time you will replace hard disks because of capacity limitations far sooner than you would because of hardware failure. If the whole hard drive fails, of course, you will have to restore your Registry from a backup. The other concern is the failure of individual sectors or clusters on the drive. Although it is highly unlikely with today's systems, a fault in the surface of the drive media may make parts of the disk unreadable, including those where the Registry files are located. Regular maintenance is critical, and a good backup is vital.

Easiest way to take care of errors would be to regularly use tools like Registry Cleaner.

Manual Changes Made to the Registry

When people manually edit the Registry, they are prone to make errors because of the complexity of the data, and the errors may be significant enough to cause the system to quit working.

Copying Another Systems Registry

Copying other Registries is a very serious mistake many users make. Just because it works on the other machine doesn't mean it will automatically work on this one. Much of what is in the Registry is specific to the individual system, even if the hardware is the same. Copying the files that make up the Registry to another system will not work. Characteristically, if another system's Registry is used, most of the hardware will not work, and user and security issues may make the data and application information inaccessible.

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4 Myths about Windows XP Registry Cleanup

What you wanted to know about cleaning registry on your PC but were afraid to ask

Windows registry is the "heart and soul" of your Windows computer. Similar to a file system where you store your documents, registry is where Windows system stores information about your computer. All software and hardware settings, as well as every other aspect of the system configuration is stored in the registry. Similar to a file system registry is organized in a hierarchical tree-like structure. For example, the settings for Internet Explorer are stored in HKLM\SOFTWARE\Microsoft\Internet Explorer (computer specific settings) as well as HKCU\Software\Microsoft\Internet Explorer (user specific settings) keys or registry files. Windows uses this information to perform every operation.

When you install new software (even if you install a small ActiveX component from the Internet) or make any changes to the configuration (add new hardware or modify appearance of your desktop) the changes are recorded in the registry.

If you have a brand new computer your registry is clean and healthy. However, over time it accumulates old and incorrect records which can lead to system errors and slowdown in performance. In addition, spyware, keyloggers, viruses, and Trojan horses use registry to manipulate the system.

Registry is the most sensitive and critical element of the Microsoft operating system. Cleaning and repairing registry requires knowledge and expertise. Doing it the wrong way can lead to more problems and even fatal system errors. Doing it the right way will lead to less system errors and better performance.

Myth 1: Cleaning Registry on a regular basis is a must

If your Windows computer is relatively new, less than 6 months old, and you are not a very active user cleaning the registry would not give you much of a result. However, if you are an

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active PC user who frequently tries new software, you need to clean your registry regularly. To figure out how often you should clean your registry ask yourself the following questions:

How frequently do I install and uninstall games, audio and video, photo and graphics software, instant messaging or other Internet software, home and education software, new printer or other drivers, anti-virus, anti-spyware and other utilities?

How frequently do I install ActiveX or other components when browsing the Internet?

Do I follow the correct software uninstall procedure?

How often do I change my system configuration for example Internet Explore settings, or other?

How often do I change my hardware, printer, monitor, memory, etc?

Depending on how you answered the questions above you need to clean your PC registry daily, weekly, monthly, or every 6 months. More frequent changes require more frequent cleaning.

Myth 2: All registry cleaners work the same way.

The more problems it finds the better the cleaner. The number of problems a cleaner finds is just one of the indicators. The more important indicator is how many problems it fixes the right way.

In general, there are two different approaches to registry cleaning: 1) "Smart & safe"; and 2) "Bulk & Deep".

A good analogy would be house cleaning. Some people, in fact most of us, accumulate a lot of paper on their desks. You can clean your desk by going through every piece of paper, carefully reviewing each document: credit card statements, important notices, and newspaper articles. While doing that you put important documents in the appropriate folders and get rid of the junk. However, there are some documents you are not sure about. You do additional work to determine if those documents are important. This type of desk cleaning is smart & safe, which results in a clean desk and organized folders. In addition, you know you won't have problems in the future as you didn't throw away any important documents. Similarly, a smart & safe registry cleaner does the job the proper way - if it is not sure about the registry record it doesn't discard it but works to find out if the record is important. This cleaning results in a healthy registry, with less errors and better computer performance.

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Alternatively, while cleaning your desk you may keep only important documents and get rid of the documents you are not sure about along with the junk. This approach does not include additional work to find out if the documents that you are not sure about are important. Obviously, with this approach you will throw away more documents but it might lead to losing important ones. This method is called "bulk & deep" cleaning. Similarly, a "bulk & deep" registry cleaner might show more problems and remove good registry records.

In fact, some registry cleaners report a lot of so-called "false positives". False positives are falsely identified problems that are, in reality, non-problems. It is even more dangerous if these products try to fix those falsely identified errors. Vendors of those products "identify" more problems to make their product look better. They call "bulk" cleaning "deep" cleaning. "Bulk & deep" cleaning does a mediocre job cleaning your registry and can lead to more problems and errors. An example of a problem that can be created by "bulk" cleaning is described by Microsoft.

Myth 3: Full registry backup & restore is enough to keep you out of trouble.

Having full registry backup and restore is critical as it allows you to bring the registry back to how it was at a certain point in time. However, it is not enough to keep you out of trouble. You need both full registry restore and undo registry changes.

Let's say in a day or a week after cleaning the registry on your PC you experience a problem with one of your applications. You can use the full registry backup to bring the registry back exactly to the point in time when you created the full backup. However, you will lose all the changes to the computer configuration you made after that last backup. With "undo registry changes", on the other hand, you are able to reverse the problematic registry change without affecting the other registry parts. You can fix the problem without losing all the configuration changes made to your PC.

The rule of thumb is: use "full registry restore" for major disasters and "undo registry changes"

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to fix specific problems.

Registry is the most sensitive part of your computer. The ability to have both a full restore as well as selective undo is a must to keep you out of trouble.

Myth 4: All the care your registry needs is cleaning and repairing.

Your registry also needs compacting which reduces the registry size and defragments it by removing the holes and empty spaces in the registry tree.

Cleaning garbage from your registry makes it better since it removes unused and incorrect data that causes registry pollution, computer errors and a slowdown in performance. However, this is not the only thing you need to always have your registry at its best. Registry structure is such that when you remove unused and incorrect data, holes are created in the registry tree. Your computer uses registry to perform every operation. Having holes or empty spaces in the registry tree slows down your computers performance and might create operational errors. So, just like the defragmentation of files compacting the registry removes holes and fragments causing your computer to run smoother and faster. That is why in addition to cleaning and repairing the registry must also be compacted.

Bottom Line:

Registry cleaning is critical to the health and performance of your PC. Smart & safe registry cleaning, repairing and compacting will help to keep your PC healthy and fast.

Note:

Registry cleaning is just one of things you need to do to maintain your Windows computer. You should follow other good practices that include keeping your computer updated with the latest Microsoft updates.

For our Expert recommendations on the Registry Cleaners we tested please visit us at:

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