System Recovery Information Brief

— Presented by imagine LAN, Inc. —

What is System Recovery?

System recovery is the process by which you can revert a problematic PC to a previous "state" in which it worked properly. There are several types of tools on the market that provide system recovery capabilities. The technologies work somewhat differently, but they have the common goal of attempting to return a system to the configuration in place before a problem has been introduced. This paper will provide an overview of system recovery, why you need it, and it will outline the components of a good system recovery solution.

Why You Need System Recovery Protection

System recovery is more important now than ever. Problems are introduced more frequently due to the increasing underlying complexity of PCs. In years past, older operating systems such as DOS and Windows 3.x were more easily managed, yet provided less intelligence and functionality. If a system encountered problems, you could simply boot it into DOS, replace a few necessary files and reboot the system again. Under most circumstances, the system would reboot properly, and system integrity would remain intact.

These days, PCs can accomplish much more than their predecessors, and they're equipped with the intelligence to take care of many tasks automatically. Users don't need to know much about their systems to install software or hardware, and they really don't need much technical knowledge about the system's underlying architecture in order to set up and configure a custom system. However, the outcome of this intelligence and user-friendly operation is an underlying system architecture and interaction between components and software that is an intricately woven web.

As a result, we've probably all experienced some PC problems firsthand, or heard horror stories from friends and colleagues—a new software program is installed and suddenly the spreadsheet program stops functioning. You accidentally delete some files on your system, and now nothing seems to work anymore. Or you added a new zip drive, and now your system won't even boot into Windows. The problem then becomes, "how do I get my system back to the state it was in just before I installed the new hardware/software/made the change?" One option is to reformat the hard drive and reinstall Windows. But this process results in a complete loss of all data, and it requires the re-installation of all applications—a very time-consuming task. For these types of situations, system recovery is the fastest and most accurate way to get your system back without losing data.

What Types of System Recovery Tools Exist?

There are two primary technologies that exist to provide system recovery: time travel technology and system snapshot technology.

Time travel technology relies on a continuous tracking of every single change made to a PC—it sits in the background of the PC and constantly monitors the system for changes. When it detects a change, it tracks and stores that change. Time travel works at a level "below" Windows, and it reserves a portion of the hard drive to store all of the change information. When you recover a system using time travel technology, it reverts every single change that has been made to the system, including all data files (such as Word or Excel documents). This methodology makes it extremely difficult (if not impossible for non-technical users) to track the scope of the changes, or files that have been reverted. In addition, if you wish to "bring back to the present" some files that you did not want to revert, the process to accomplish this can be very time-consuming.

System snapshot technology relies on a scheduled or intelligent tracking of important changes made to a PC. Rather than sitting in the background and intercepting every single change, system snapshot products use a combination of automatic and manual snapshots. They also have built-in intelligence that automatically detects new hardware or software installations and keeps a record of the system at the point in time just prior to the new installation. These products also record changes at scheduled intervals, or when requested to do so by the PC user. System snapshot technology keeps data and system file tracking separate so as to allow users to choose which aspects of a system are to be recovered.

What to Look for in a System Recovery Solution

There are a variety of circumstances that influence the effectiveness of system recovery tools. Below are some issues that you should consider when evaluating a system recovery product.

- **System Change Tracking Integrity**
  It is important to maintain a long-term historical record of system changes. Some system recovery products reserve a portion of the hard disk to store system changes, and when that portion is filled, older data is deleted. For these types of products, users can only maintain one week's worth of data, on average. In addition, when using some system recovery products, there are certain circumstances in which you need to disable the product, such as when you are installing an upgraded version of the product. When you do this, the system's history is completely deleted. A good system recovery tool will enable you to maintain records as far back as the system's original configuration.

- **Software Compatibility**
  System recovery tools should not conflict with any software programs, so that you can be assured of continuous protection. There are a variety of system recovery products that do not work with disk utilities, partition tools, boot managers, disk cloning software, DEFRAG, or systems with multiple operating systems. When using any of these software programs, you need to disable the system recovery tool, which will result in the loss of *all* stored history of changes on your system.

- **Plug and Play Compatibility**
  On 32-bit Windows platforms such as Windows 95/98 and Windows 2000, the operating system automatically detects new hardware and will proceed to set it up for users. Much of the configuration information and settings for Plug and Play hardware is stored in the Windows Registry. The Registry is a database that houses all of the necessary information in order to enable hardware and software to function within Windows. Some technologies do not handle a system recovery process well when Plug and Play hardware is involved, unless you *physically* remove the hardware devices that you have added. If you do not remove the devices, upon reboot Plug and Play will rediscover your hardware, automatically re-install the drivers, and potentially cause the original problem to occur repeatedly. Your system recovery tool should be able to handle Plug and Play without causing this situation to take place.

- **System File Protector**
  Windows 98 and Windows 2000 automatically include the Windows System File Protector feature to serve as a "watchdog" over system files. It periodically updates changed or deleted system files with a fresh copy of the original. The system recovery process should not interfere with the operations of System File Protector, as it may lead to unpredictable results and a system that is left in a more problematic state than before the recovery.

- **Powerful Tracking Capabilities**
  System recovery tools should track every aspect of the system's configuration that is important to the system's operation. In addition to tracking standard file and system changes, it should also track some of the following items:

- changes to files made in MS-DOS mode
- files on all locally accessible drives (including compressed, SCSI and network drives)
- changes to the Windows Registry
- hardware changes
- network connections
- memory, processor type/vendor
- operating system version

- **Comparison and Troubleshooting Capabilities**
  In addition to providing system recovery capabilities, it is important to be able to identify the source of system problems so that you can avoid reintroducing the problem repeatedly. You should be able to use a system recovery tool to look at the differences between one period of time and another. Changes must be easily identifiable, in order to enable you or technical professionals to analyze trends that may be causing problems. In addition, the ability to view comparison data between a "live" system (current configuration) and a previous configuration, between two different systems, and to identify live Registry corruptions will greatly increase the chance of full system recovery success.

- **Broad Support**
  A good system recovery solution should support a broad range of platforms so that it is useful throughout your entire enterprise. Support for networks, Windows 95/98, Windows NT, and Windows 2000 will enable you to implement the solution across most platforms.

Summary

The goal of a good system recovery solution is to quickly bring a system back to the best functional state possible. To do this, system recovery tools should remove only the malfunctioned portions or components. It should be able to co-exist with other software programs, and should employ a non-intrusive architecture. If the tool does not meet these criteria, it may cause unknown, unexpected and unpredictable system stability, as well as system corruption problems.

imagine LAN's' approach to system recovery addresses the issues defined in this information brief. The company provides products and technologies that offer the most comprehensive system recovery and troubleshooting capabilities, yet the technologies employed do not intrude or interfere with the general architecture of the Windows operating system or other system and productivity applications.

For More Information

For more information about system recovery and imagine LAN solutions, contact us at:

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