Why Restarting Often Resolves Computer Issues

"Whenever something goes wrong,
I just push this little button and restart.
I wish my whole life was like that!"

When a computer begins to work strangely, my first recommendation is to restart the computer. Frequently, this resolves the issue. But why?

To understand why this works, I need to first provide a basic explanation of how software executes on your computer. Data is typically stored in two ways within your computer: memory and disk.

A computer's memory is technically known as volatile memory or volatile storage, because it requires power to maintain the stored information. The most common form of computer memory is random access memory, or RAM.

A disk or hard drive is non-volatile storage because it does not require power to maintain stored information.

When you power on your computer, something called the BIOS (which is permanently stored on the flash memory of your computer's motherboard) starts running and loads the operating system (Windows or Mac OS) from your hard drive into the computer's memory and allows it to begin operation. Once the operating system begins operation, it is in control of everything that happens on your computer. Just as the operating system has to be loaded from the hard drive into your computer's memory to run, so does everything else. So for instance when you want to run Internet Explorer, the operating system finds it on your hard drive, loads it into memory, and executes it. The larger your computer's memory, the more the computer can run software efficiently in parallel. Computer memory is much faster than a hard drive, which is fundamentally why everything gets loaded into memory to execute. But, recall that memory is volatile, so if power is lost, so is everything in memory.

When you shut down or restart the computer, the entire process begins anew. Anything that was previously in memory is gone and is reloaded from the hard drive.

Operating systems and applications are very complicated and involve many things on your computer. The longer they run, the more things change. Memory is used, released, and fragmented. The disk and other peripherals (video cards, networking hardware, printers, etc) are used continuously and intermittently. This constant activity acting together and alone can result in unforeseen states that can cause problems. When you restart the computer, everything is restored to a (mostly) known initial state. So, problematic states are thereby frequently resolved.

If restarting the computer does not resolve the issue, that is useful information in identifying the source of the problem as well. But, restarting is always a good first thing to try.

This newsletter, as well as all past newsletters, can be found on my web site (http://steve.gimnicher.com).