

Whitepaper - Restarting Windows Terminal (and Standard) Servers

Savings, Benefits, and Features

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Introduction

As operating systems and 3rd party software that runs businesses become more complex, so does the way that the servers need to be handled.

Just in the past five years, computing power has increased tenfold, with processor speeds not jumping to the scales they did in the past. So power has increased with increasingly complex memory shifting algorithms and software to take advantage of new features released with each generation of CPUs.

What this means is more load and demands are being placed on servers. The load is being increased by more complex applications manipulating and filtering more and more data, increasing amounts of simultaneous users connecting to servers through faster network connections, and more complex drivers to address new hardware technology.

Compounded by these are terminal servers, which host dozens of users. Software that is not designed specifically for terminal servers may not show any error on the desktop, because the user shuts the desktop down at least once a week. But, multiply one user by fifty other users in a terminal server environment, and the problem can show itself very quickly, or the problem may exist right at the edge of a server restart. Also, hypervisor-based, or virtual, operating systems, which further segment memory and users on a single hardware platform, also increase complexity.

Just like desktop operating systems, after a period of time (from once a day to once every few weeks), servers benefit from being restarted. This clears out any possible errors, cleans up memory segmentation and unused handles, which stress a server more the longer these are left unchecked. Many other factors necessitate the need for a server restart, such as software patches and updates for 3rd party software and operating system. Often these require the server to be restarted, so to maximize the security of servers addressed by these new patches, regular restarts are a must.

In some organizations, more than 80% of errors encountered by users and system administrators are cleared up by restarting the desktop or server.

Costs of Restarts

So once we know that servers benefit from, and are often required to, having a restart, the question then becomes how to do this with minimal impact to the business and IT staff.

Most server farms are designed by the IT staff for simplicity and agility. Making sure software is rolled out to users on a timely basis with no work interruption is usually top priority. This cannot be a tradeoff for decreased reliability.

Restarting servers manually takes a long time and is unreliable, simply because the restart process needs to be managed by the IT person involved, not to mention all of the users involved. Another problem adds to the overhead of restarting servers manually - human error. Restarts often take place off hours, which can increase user error. If the restart takes place during the day when most users are working, an interruption of their work is just not desirable.

According to a recent survey, restarting terminal servers costs an organization an industry average of \$120 per server restart in lost productivity and production. Restarting these servers manually takes too long and is unreliable in that it introduces the possibility of user errors and end user frustration. It also consumes excessive administrator time and interrupts users. To be effective, this process must be automated. Here is an example of an average terminal server restart:

Time for a restart to occur:	20min
Time for users to switch to another server:	15min
Server user count:	40
Average Worker Salary:	\$16/hr
Average Engineer Salary:	\$30/hr
Cost of software:	\$245 per server
Cost of restart:	\$170 per server
Restart cost calculation (40 users * \$16 * 15min + \$30 * 20min)	
Lost Worker Productivity:	Unknown

On this basis the software pays for itself after just two restarts.

Typical Ways of Restarting

There are quite a few ways to restart a server. Below are the ways, perceived benefit, and potential end results:

Don't restart the server at all	No administration time spent by IT staff and no end user interruptions	Ends up being a dangerous situation for end users and IT staff. End users complain their software is not working as it should, the server has gotten slower, or they are unable to logon to the server. IT has to manually manage the users and the restart simultaneously, and possibly rebuilding the server and reloading the operating system software. IT staff still needs to babysit servers and users lose productivity.
Run the AT command and run tsshutdown.exe to restart the server, or manually restart the server.	Easy, cheap, fast, no administration time spent by IT staff.	Fails to do a proper logging off of users, closing registry handles down properly, and unload user registries from the server, causing a buildup of the registry, slow user load times and logoff times, a "domino effect" of potential problems. IT staff still needs to babysit servers and users lose productivity. The AT command method is not even recommended by Microsoft.
Use the built-in restart function in 3rd party software	Easy, fast, minimal administration time spent by IT staff.	Users are notified of the upcoming restart, users are interrupted and IT staff still needs to manage restarts on multiple servers. Has many of the same drawbacks to using the AT command (see above). Overall server slowdowns. IT staff still needs to babysit servers and users lose productivity. tsshutdown.exe actually runs.
Write a utility program that schedules the restarts and logs off users automatically.	Handles restarting benefits and logs users off.	With just a few public Windows APIs, any programmer can logoff users and restart a computer. However, this does not address the many facets of logging users off, clearing up registry handles, properly freeing memory, and many other tasks to ensure a successful restart. IT staff still needs to babysit servers and users lose productivity.

As you can see, there are many ways to restart a server, but each one of them has its own issues. Now let's see how WM Software uses its patented algorithms to restart servers.

WM Software Server Restart Products

WM Software's server restarting product line encompasses many ways of restarting your servers:

Software	ShutdownPlus CR	ShutdownPlus Rolling Restart, Server and TSE	ShutdownPlus Server and TSE
Features	<p>Easy logoff and restart setup.</p> <p>Unlimited configurations of schedules for logging off, disabling/enabling logons, and restarting automatically.</p>	<p>Centralized management of automated terminal server restarts following a hub/spoke model.</p> <p>Status report after each re-boot cycle.</p>	<p>Scheduled and automatic shutdown of standard servers (Server) and terminal servers (TSE).</p> <p>Shutdown scripting.</p> <p>Security on who can restart the server.</p>
Benefits	<p>Simple administration for small terminal server farms.</p> <p>Settings can be exported/imported across servers.</p>	<p>Users are never impacted or notified.</p> <p>Decreased administration costs by not babysitting server restarts and user logoffs.</p> <p>Server restarts can happen during the day with no user intervention.</p>	<p>Simple administration for small server or terminal server farms.</p> <p>Settings can be replicated across servers.</p> <p>Ensures server applications such as SQL Server, Exchange, Domino, etc, are gracefully brought down before a restart.</p>
When To Use	<p>When you have a small amount of servers. Or if you want to restart terminal servers at a specific time on a regular schedule.</p>	<p>When you need servers up and running in a 24x7 environment or when users cannot be impacted.</p> <p>When you have two or more servers.</p>	<p>When you have a small amount of servers. Or if you want to run a script at shutdown for users (TSE) or to stop 3rd party application services (SQL Server, etc).</p>

Our software has helped IT Departments worldwide by decreasing support and costs. Our solutions target everyday problems that exist within all organizations, regardless of size, industry, or location. From Fortune 100 companies, to small companies and home users, our software saves money, increases ROI, saves time, and helps the environment.

You can evaluate our software free of charge for 30 days. When you are ready to purchase, you can do so online, through your salesperson, or through one of our 135 resellers in over 15 countries. See how our software can provide your company real solutions that work.

Hardware and Software Requirements

The following hardware and software requirements are necessary to use this software:

- **Operating System.**
Windows Server 2003 with Service Pack 2 or later installed, Windows Server 2008 or 2008 R2.
For Windows Servers running Terminal Server, select one of our terminal server-specific products.
- **Hardware.** A system with at least 256 Mb of RAM and a Pentium III or better CPU is required. The client consumes approximately 200kB RAM and 2MB Hard Drive space.

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About WM Software

We write Green software, utility software, and performance software for Microsoft® Windows® running Terminal Server, Server, and Desktop operating systems. Our goal is to create value-added software for companies of all sizes. Since incorporating in 1994, our software has always focused on innovative technology solutions for all industries across the globe. With our Microsoft Gold Partner Certification and other partner relationships, we work closely with our partners and leading industry organizations in developing our software. This benefits you by ensuring compatibility and longevity of service.

Our software has freed IT Departments from tedious administrative tasks without any end-user training or sacrificing security, as well as decreased support and costs. Our solutions target everyday problems that exist within any organization regardless of size, industry, or location. From Fortune 100 companies, to small companies and home users, our software saves money, increases ROI, saves time, and helps the environment. To get started, browse our products, arranged by operating system category, and download ones that match your situations. All software products can be downloaded and run for 30-days.

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