

Support Bulletin # 32 SQL Performance Tips

To consider improving performance on SQL Server you must take into account all variables that contribute to performance on the entire network that SQL is running on. This may include a variety of hardware and software components installed across the server and workstations. In this way each site is unique and may require different adjustments for SQL Server to perform better. Professionals specialize in supporting and administering SQL Server, so please don't underestimate the depth of experience and knowledge needed to troubleshoot performance issues. Consider this statement regarding tweaking SQL Server Configuration settings from SQL-Server-Performance.Com:

*"Unless you know exactly what you are doing and have already performed impartial experiments that prove that making **SQL Server configuration changes** helps you in your particular environment, don't change any of the SQL Server configuration settings that affect server performance.*

SQL Server, in most cases, knows how to dynamically configure itself for optimum performance, and does a good job of it. In some cases, changing SQL Server configuration settings can end up causing more problems than they fix."

The best advice we can offer is to RESEARCH SQL SERVER PERFORMANCE TOPICS, GET SOME SQL SERVER TRAINING and/or RESOURCE AN SQL SERVER EXPERT. The following tips are sourced from a variety of internet sites and are meant as a general guide only.

General Tips:

- **Don't run a screensaver on your production SQL Server:** This can unnecessarily use CPU cycles that should be going to your application. The only exception to this is the "blank screen" screensaver, which is OK to use. (1)
- **Don't run SQL Server on the same physical server that you are running Terminal Services, MS Exchange, or Citrix software:** Both Terminal Services, MS Exchange and Citrix are huge resource hogs, and will significantly affect the performance of SQL Server. Running the administrative version of Terminal Services on a SQL Server physical server, on the other hand, is OK, and a good idea from a convenience point of view. Ideally, SQL Server should run on a dedicated physical server. But if you have to share a SQL Server with another application, make sure it is not Terminal Services, MS Exchange or Citrix. (1)
- **If you can, don't run any applications on your server other than SQL Server, with the exception of necessary utilities:** It is hard to tune and troubleshoot some server-related problems if you have more than one major application on your server, besides the performance hit SQL Server takes if it has to share hardware resources. (1)
- **Reboot your SQL Server machine:** Memory leaks can steal valuable memory from your SQL Server, reducing performance, and perhaps even forcing you to reboot your server. Some memory leaks come from the operating system itself, device drivers, MDAC components, and even SQL Server. And of course, virtually any application can cause a memory leak, which is another good reason to dedicate a single server to SQL Server instead of sharing it among multiple applications. (1)
- **Reindex the database** - See ABM SB28 How to Re-index an SQL database
- **Schedule regular maintenance on the database** – Use Enterprise Manager or a third party product that supports scheduling.
- **Use a third party performance tools to tune the operating system and/or SQL:**
 - **Sysinternals** - Tools to defrag your server's swap file, among many others. Link: <http://www.sysinternals.com>
 - **Teratrx Performance Monitor** – Link: <http://www.teratrx.com/tpm/index.html>

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- **Check out the internet for information regarding improving SQL performance** (see reference section for some links or enter "SQL performance" in Google).

Hardware:

Many people assume that the server hardware they work with is installed and configured correctly. This can be a costly misjudgement. Server hardware (and their drivers) are often installed incorrectly or configured. While the hardware may continue to run in spite of problems, performance problems may lurk beneath the surface. (1)

- **Add more memory** - In most cases, the more physical RAM your server has, the greater SQL Server's performance. Ideally, you want all your database's tables in RAM (3)
- **Having many smaller drives is better than having one large drive for SQL Server machines:** Even though the seek time is faster in larger drives, you will still get a tremendous performance improvement by spreading files, tables, and logs among more than one drive. (2)
- **Ensure that the hardware you select for your SQL Server is on Microsoft's Hardware Compatibility List:** Doing so helps to ensure against performance problems and the blue screen of death. See Products Designed for Microsoft Windows – Windows Catalog and HCL link <http://www.microsoft.com/whdc/hcl/default.msp> (1)
- **At the very minimum, your server should have at least one 100Mbs network card, and perhaps two:** Two cards can be used to increase network throughput and to offer redundancy. In addition, the network card(s) should be connected to full-duplex switched ports for best performance. (1)
- **Limit the number of network protocols installed on the server:** Unnecessary network protocols increase overhead on the server and send out unnecessary network traffic. For the best overall performance, only install TCP/IP on the server, and use the SQL Server TCP/IP Network Library to communicate to clients. (1)

Reference:

1. SQL-Server-Performance.Com - <http://www.sql-server-performance.com>
 - Performance Tuning SQL Server Hardware - Excellent guide to CPU, Network, I/O, Memory issues: http://www.sql-server-performance.com/hardware_tuning.asp
 - SQL Server Configuration Settings – http://www.sql-server-performance.com/sql_server_configuration_settings.asp
2. Teratrax - http://www.teratrax.com/articles/sql_server_performance.html
3. SQL Team.Com - <http://www.sqlteam.com>
4. Microsoft - Optimizing Performance in SQL Server Solutions - <http://msdn.microsoft.com/SQL/sqlperf/default.aspx>

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