

Best Practices in SQL Server Maintenance

Questions? From your BS&A program, go to **Help>Contact Customer Support** and select **Request Support Phone Call** or **Email Support**. Or, you may call us at (855) 272-7638 and ask for the appropriate support department. Questions for our I.T. department may be submitted by phone (same number), or by emailing tech@bsasoftware.com.

BS&A Software produces some of the largest, most actively utilized databases in the local government space. Our product line consists of more than 20 applications, all of which interact with each other, reading and writing data to and from dozens of what can be very large tables. Other than some forms of GIS, it is very rare to find an application as resource-intensive as those developed by BS&A. If not properly maintained, these applications will promptly slow to a crawl. After extensive research, BS&A has developed a list of four maintenance routines that should be run regularly to ensure database integrity and performance.

Step 1... Database Backups

Database backups are essential for the recovery of a BS&A database in the event of a corrupt database or server failure. Several different recovery models can be used when backing up BS&A databases, but "typically, a database uses the full recovery model or the simple recovery model." All BS&A databases default to a simple recovery model when created. (Choosing the Recovery Model for a Database, Article ID ms175987-Microsoft.com)

- The simple backup model allows a BS&A database to be recovered to the point of the backup. "The simple recovery model is inappropriate for production systems where loss of recent changes is unacceptable." (Choosing the Recovery Model for a Database, Article ID ms175987-Microsoft.com)
- The full recovery model allows a BS&A database to be recovered to the point of corruption or any other point in time, but log backups are required.
- "Under the full recovery and bulk-logged recovery models, log backups are essential. If you do not want to take log backups, use the simple recovery model." (Choosing the Recovery Model for a Database, Article ID ms175987-Microsoft.com)
- BS&A recommends simple or full database backups once per day. If using the full recovery model, BS&A recommends backing up the transaction log file at least once per day.

Step 2... Check Database Integrity (checkdb)

Corruption in BS&A databases is a fairly rare event and is usually caused by failing hardware on the server. In the event a database becomes corrupt, BS&A strongly recommends that the server be tested for hardware failure. A database integrity check "Checks the logical and physical integrity of all the objects in the specified database." (DBCC CHECKDB, Article ID ms176064-Microsoft.com)

- BS&A recommends running database integrity checks daily to detect and repair database corruption as soon as possible. "To repair errors, we recommend restoring from a backup." (DBCC CHECKDB, Article ID ms176064-Microsoft.com)

Step 3... Rebuild/Reorganize

BS&A's product line consists of more than 20 applications, all of which interact with each other, reading and writing data to and from dozens of what can be large tables. As data is written to the databases, fragmentation will occur. "Heavily fragmented indexes can degrade query performance and cause your application to respond slowly." (Reorganizing and Rebuilding Indexes, Article ID ms189858-Microsoft.com)

- If the database is less than 30 percent fragmented, a database reorganize is recommended.
- If the database is over 30 percent fragmented, a rebuild is required.
- To ensure good database performance, BS&A recommends running a database reorganize once per week and a database rebuild once per month.

Step 4... Delete Backup and Restore History

"A complete history of all SQL Server backup and restore operations on a server instance is stored in the **msdb** database." As this complete history builds, the msdb database begins to grow and use resources that would otherwise be allocated to the BS&A databases. (Viewing Information About Backups, Article ID ms188653-Microsoft.com)

- BS&A recommends removing historical backup and restore information once per month.

Summary

BS&A wants all of our customers to have a pleasant experience running our software, and a properly maintained SQL server will help to ensure that. BS&A recommends that all SQL maintenance steps be run after hours, as they are very resource-intensive and will significantly slow down BS&A .NET applications.

Works cited or reviewed in the writing of this document

Recovery Model Overview

<http://msdn.microsoft.com/en-us/library/ms189275.aspx>

DBCC CHECKDB

<http://msdn.microsoft.com/en-us/library/ms176064.aspx>

Reorganizing and Rebuilding Indexes

<http://technet.microsoft.com/en-us/library/ms189858.aspx>

Viewing Information About Backups

<http://msdn.microsoft.com/en-us/library/ms188653.aspx>