

Topic

## Managing the Transaction Log (SOSDATA.LOG)



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Product ALL

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### Overview

Your SOS database consists of 12 files, located by default in the \SOS\DATA folder. Eleven of these files contain the database proper, and the last file, named SOSDATA.LOG, contains the *transaction log*. All changes to the database are stored in the transaction log in the order in which they occur. As a result, the log file can grow quite large. If it is not backed up and restarted from time to time it can easily be as large as the other eleven files combined.

The space consumed by the log, however, is a very small price to pay for the additional safety it affords your data. If you were to suffer a database loss, you could restore your most recent backup, then use the current transaction log to restore all your changes since the last backup was done (as long as you have a single continuous log, or consecutive log files going back to the time of the last database backup or earlier). In most cases, therefore, you can restore *everything* up to the time of your failure or loss, not just up to the time of your backup! The only price you pay for this additional security is the disk space taken by the transaction log.

Note that by default, the transaction log is installed on the same device and in the same folder as the database (\SOS\DATA), and the database is not configured to mirror (see below) the transaction log. Having the log in the same location as the database is convenient, but it does not protect against media failure.

To prevent loss of both the database files and the transaction log in the event of a hard disk failure, you can configure your database to write the transaction log on a different drive on the same computer, if you have more than one hard drive.

For even greater protection, you can maintain two identical transaction logs in different locations. This is called *transaction log mirroring*. For additional security against media failure, the transaction log may be written to a different device than the database file. Note that some machines with two or more hard drive letters only have one physical disk drive with several *logical drives* or *partitions*. If you want protection against media failure, make sure that you have a machine with two or more separate, physical disk drives.

*Tip: Placing the transaction log on a separate device also can result in improved performance by eliminating the need for disk head movement between the transaction log and the main database file. A transaction log mirror, however, can retard performance slightly because the transaction information must be written to both the transaction log file and the mirror file.*

In the sections below you will learn:

- How to archive and restart your log file from time to time in order to save disk space,
- How to relocate the log to another disk for safety and performance benefits, and

- How to configure your system for mirrored transaction logs for an even greater margin of safety.

## Backing Up, Renaming and Restarting the Transaction Log

There are three ways of restarting your log.

### ***Manual Process with Database Shut Down***

1. Shut down the database.
2. Rename the SOSDATA.LOG file (by default located in the \SOS\DATA folder) to a different name.
3. Copy the renamed log file to a CD or DVD.
4. Double check the copy to be sure it matches the original. (Check, at minimum, the size of the copy. Better would be to use a file compare utility, such as the Windows command line utility, FC, to make sure that they match, bit for bit. Be sure to use the binary option.)
5. Carefully label the CD or DVD with the date and version of SOS in use, and store the disk in your safe deposit box or other secure, off-premises location.
6. (Optional) Delete the original, renamed log.
7. Restart the database. When you restart the database, the absence of the SOSDATA.LOG file will cause a new transaction log file to be created automatically.

*If using this technique (or any of the others, for that matter) you must be extremely careful to archive every log. Even starting and immediately shutting down the database causes a change that is captured in the log, and must be present in the archived logs in order to do a successful restore from before that point in time.*

### ***Using a Command Line with Database Running***

Use of the following command will do a live (that is, while the database is running) backup of the transaction log into the target directory, will rename the backup with the form YYMMDD##.LOG (where ## is a sequential number starting with 00, in case you execute the command more than once on a single date), and will create a new log file. The result will be:

- A copy of the current transaction log will be created in the specified backup folder.
- The current transaction log file and the copy in the backup folder will be renamed, with the new name reflecting the date of the backup.
- A new, small SOSDATA.LOG file will be created in the original folder.

***IMPORTANT:*** *In addition to the data recovery considerations, HIPAA security rules make it extremely desirable, if not mandatory, that you maintain a full audit trail of all database activity. The transaction log files serve this function very well, so you should carefully label and store copies of your log file when you restart it as described above. SOS strongly recommends that each backed up log be copied to one or more CD or DVD disks, labeled with the date and version of SOS in use at the time, and stored in your safe deposit box or other secure, off-premises location. If you want a copy to be handy in case it is needed, then make a second CD or DVD for this purpose, but under no circumstances should you store your only*

*copy in the same location as your database. Off-site backups of your database and transaction log are important safeguards against theft, fire, and other types of localized catastrophes.*

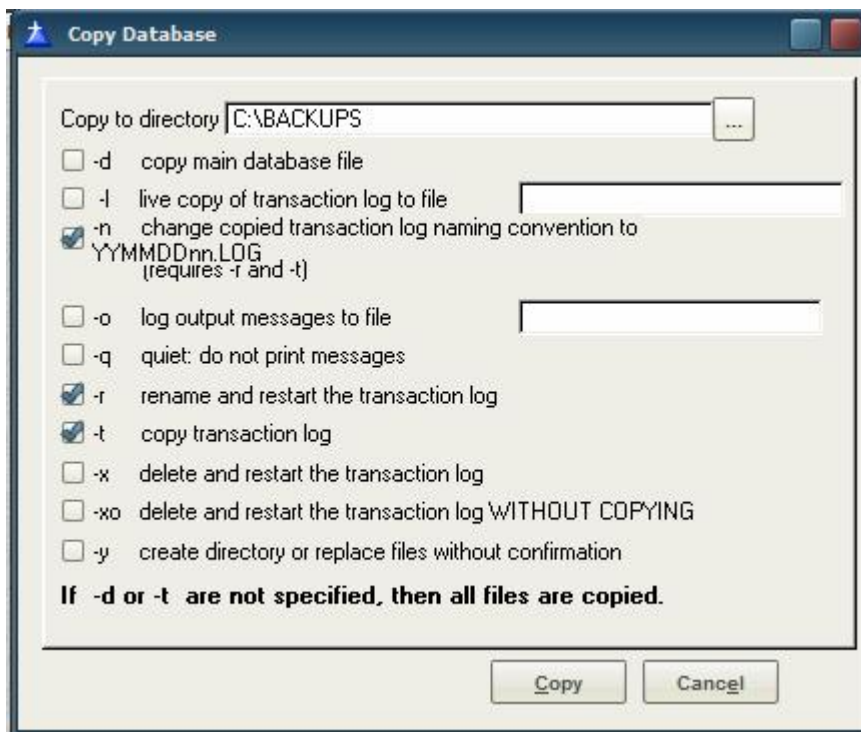
The following is the “backup, rename, and restart the log” command, which can be run as a scheduled task or in a batch or cmd file:

**C:\SOS\DBTOOLS B=C:\BACKUPS -t -r -n**

You can specify any existing directory on the server (or standalone system) instead of “C:\BACKUPS”, but be sure to type the -t -r and -n in lower case.

## **Using Database Tools in the SOS Administration Module**

If you prefer to work within a graphical interface, you can accomplish the same result using **Database Tools > DBA Utilities** in the Administration module. Select **Copy Database** on the Tools menu, specify the desired backup directory and check the -t, -r, and -n options as shown in the figure below:



When the process is complete and you have confirmed the backup copy in the target folder, you can remove the renamed copy in the original folder.

## **Changing the Location of the Transaction Log**

By default, the transaction log is located in the same folder as the eleven database files. If you have another hard drive and would like to keep the log file on it for safety and performance reasons, you can easily change its location.

Use the ASA DBLOG utility, located in the \SOS\ASA\WIN32 folder, to move the transaction log to a different drive by setting a new transaction log name. Simply copying the file from one drive to another will not work because the location of the log is stored in the database. Do the following from the console of your Windows server or standalone SOS computer, or from a

workstation -- but only if the SOS folder on the server is shared and mapped to a drive letter on that workstation.

1. Shut down the database, archive the existing sosdata.log file (copy to a CD or DVD, label, and set aside for storage in a secure, off-premises location).
2. Open a command window. (On Windows NT, 2000, XP, or 2003: **Start > Run**, then type CMD and press <Enter>; on Windows 98 or ME: **Start > Run**, then COMMAND and press <Enter> .)
3. Make sure you are on the correct drive by examining the drive letter at the beginning of the prompt. Change to the correct drive, if necessary. (For example, if SOS is on the D drive, you would have to type D: then press <enter>.)
4. Type CD \SOS\ASA\WIN32 to change to the \SOS\ASA\WIN32 directory.
5. Type, in lower case:

dblog -t <new log name> <database name>

where the *new log name* is the drive, path, and filename of the new log file, for example, d:\soslog\sosdata.log.

The *database name* should include the drive, path, and filename of the main database file, for example, c:\sos\data\sosdata.db. Using these examples, the entire command, therefore, would be:

dblog -t d:\soslog\sosdata.log c:\sos\data\sosdata.db

Remember that you must be at the \SOS\ASA\WIN32 prompt to execute this command!

## Using a Transaction Log Mirror File

A transaction log mirror is an identical copy of the transaction log, maintained at the same time as the transaction log. Every time a database change is written to the transaction log, it is also written to the transaction log mirror file. By default, ASA does not use a mirrored transaction log, but you can readily add a transaction log mirror to your system. The procedure is described in the next section. A mirrored transaction log is useful for extra protection of critical data. There is a performance penalty for using a mirrored log, as each database log write operation must be carried out twice. The performance penalty will depend on the nature and volume of database traffic and on the physical configuration of the database and logs. A transaction log mirror should be kept on a separate physical drive from the transaction log, so that if either drive fails, the other copy of the log keeps the data safe for recovery. Both drives should be on the same computer, however!

### Creating a Transaction Log Mirror

Use the ASA DBLOG utility, located in the \SOS\ASA\WIN32 folder, to create a transaction log mirror file on another hard drive.

1. Shut down the database, archive the existing sosdata.log file (copy to a CD or DVD, label, and set aside for storage in a secure, off-premises location).
2. Open a command window. (On Windows NT, 2000, XP, or 2003: **Start > Run**, then type CMD and press <Enter>; on Windows 98 or ME: **Start > Run**, then COMMAND and press <Enter> .)

3. Make sure you are on the correct drive by examining the drive letter at the beginning of the prompt. Change to the correct drive, if necessary. (For example, if SOS is on the D drive, you would have to type D: then press <enter>.)
4. Type CD \SOS\ASA\WIN32 to change to the \SOS\ASA\WIN32 directory.
5. Type, in lower case:

dblog -m <new log mirror file name> <database name>

where the *new log mirror file name* is the drive, path, and filename of the new log mirror file, for example, e:\sosmirrorlog\sosdata.mlg (mlg is the default mirror file extension).

The *database name* should include the drive, path, and filename of the main database file, for example, c:\sos\data\sosdata.db. Using these examples, the entire command, therefore, would be:

dblog -m e:\sosmirrorlog\sosdata.mlg c:\sos\data\sosdata.db

Remember that you must be at the \SOS\ASA\WIN32 prompt to execute this command!

## ***Removing a Transaction Log Mirror***

If you have been using a log mirror and no longer want to do so, use DBLOG to discontinue mirroring:

1. Shut down the database, archive the existing sosdata.log file (copy to a CD or DVD, label, and set aside for storage in a secure, off-premises location).
2. Open a command window. (On Windows NT, 2000, XP, or 2003: **Start > Run**, then type CMD and press <Enter>; on Windows 98 or ME: **Start > Run**, then COMMAND and press <Enter>.)
3. Make sure you are on the correct drive by examining the drive letter at the beginning of the prompt. Change to the correct drive, if necessary. (For example, if SOS is on the D drive, you would have to type D: then press <enter>.)
4. Type CD \SOS\ASA\WIN32 to change to the \SOS\ASA\WIN32 directory.
5. Type, in lower case:

dblog -r <database name>

The *database name* should include the drive, path, and filename of the main database file, for example, c:\sos\data\sosdata.db. Using these examples, the entire command, therefore, would be:

dblog -r c:\sos\data\sosdata.db

Remember that you must be at the \SOS\ASA\WIN32 prompt to execute this command!