

MaintScape Database Backup and Recovery

Warning

Do not assume your normal backup procedures will backup MaintScape database files. Be sure to read and understand all material within the *Ensuring your Database is Backed Up* section of this document.

Ensuring your Database is Backed Up

A Potential Problem

If you are running MaintScape in Network configuration, then it is very likely that the SQL Anywhere database engine used by MaintScape will always be running. The database files will then be considered “open” by the server operating system. Many backup programs will NOT backup open files. If this is true, then your MaintScape database files may not be backed up regularly, and you may not even realize it. Even if your backup program backs up open files, the backup may not be reliable.

A Solution to the Problem

Scheduled backups are supported in MaintScape if you are using SQL Anywhere version 7.03 or greater. All new versions of MaintScape (as of build 101) ship with scheduled backups enabled. The default schedule will back up the MaintScape database to a backup directory every 24 hours at 1:00 am. Your normal backup procedure may bypass the open database files, but will backup the copies.

You should ensure the MaintScape scheduled backup runs before your normal backup procedure.

More Detail on Backing Up

MaintScape data is managed by the SQL Anywhere relational database engine from Sybase Inc. Your MaintScape database is represented by 2 files:

- | | |
|--------------|--|
| maintscp.db | This file is your actual database. It contains all your data, as well as the indexes and internal data structure information.

Appendix A describes how to find your database file. |
| maintscp.log | This file is your ‘transaction log’ file. Every update applied to your database is recorded in the transaction log file. By default, the transaction log is stored in the same directory as the database file, however a safety measure (see ‘Safety Measures’) suggests this should be changed. |

The simplest way to back up a MaintScape database file is to copy the file when the SQL Anywhere database engine is not running. This is feasible when you are running MaintScape in stand-alone configuration since the database engine is only running when MaintScape is running. However this is not as feasible when running MaintScape in network configuration since the database engine usually runs all the time. When running network configuration, you should ensure the MaintScape scheduled backup functionality is enabled (see *A Solution to the Problem*, above).

The bottom of the MaintScape main menu window displays the date of the last successful scheduled backup. You should keep an eye on this information to ensure that backups are in fact occurring.

The backup process creates a “maintscp.db” and a transaction log file into a backup directory. The default backup directory is a sub-directory “backup” of the directory containing your “maintscp.db” database file (appendix A describes how to find your database file). The “maintscp.db” file will overwrite the one created from the prior backup, however the transaction log file will be a new file named “<yymmddnn>.log”. The name components are ‘year’, ‘month’, ‘day’ and sequential number. For example, “01031800.log” is the first transaction log backup on 2001 March 18. The backup transaction log files may accumulate over time. We recommend purging these files

only after having made a permanent archival backup (e.g. onto tape) of the current backup database file and all transaction log files. By having archival backup database files and all subsequent daily transaction log files, you preserve the capability to recover from an old backup by 'rolling forward' all updates which have ever occurred. This can be invaluable in the rare case of database corruption which is not immediately detected.

Please refer to the following SQL Anywhere online documentation for a comprehensive discussion of database backup and recovery:

SQL Anywhere 9 Access the online documentation by clicking the 'Start' button, then selecting menu item 'Programs' / 'Sybase SQL Anywhere 9' / 'Online Books'.

Expand the 'contents' page as follows and select the bottom topic:

- ASA Database Administration Guide
 - Backup and Data Recovery

SQL Anywhere 7 Access the online documentation by clicking the 'Start' button, then selecting menu item 'Programs' / 'Sybase SQL Anywhere 7' / 'SQL Anywhere Documentation'.

Expand the 'contents' page as follows and select the bottom topic:

- ASA Adaptive Server Anywhere User's Guide
 - PART 5. Database Administration and Advanced Use
 - CHAPTER 21. Backup and Data Recovery

MaintScape Backup and Administer Database Window

You access the MaintScape 'Backup and Administer Database' window from the MaintScape main menu window by clicking on icon 'System Administration', then select item 'Backup and Administer Database...'.

Enable and configure unattended scheduled backups on the "Backup Schedule" tab page. You must be logged on as the system administration user "dba" ('sql' is the default password, but may have been changed). The fields on this page will be disabled if you are running a version of SQL Anywhere which does not support scheduled backups. If this is the case, you should contact GrandRavine Software to secure an upgrade.

The default backup directory is a sub-directory 'backup' off the directory containing the MaintScape database file "maintscp.db" (appendix A describes how to find your database file). For maximum safety, the backup folder should be set to a different disk drive from that which contains the MaintScape database. This is not absolutely necessary if your normal backup procedure subsequently copies the backup files to another media (i.e. tape).

If you specify a non-default backup directory, do not include a trailing '\' character. Specify a network directory using a UNC path, however include 4 '\' characters prior to the server name rather than the usual 2. For example: '\\\\myserver\topdirectory\backupdirectory'.

Selecting "Validate Database after Backup" adds to the processing time. There is no harm in doing this, especially if the backup runs during off business hours

Note that you can trigger a backup to occur immediately by clicking the "Backup Now" button. You should avoid doing this if MaintScape is being actively used. However this is an effective way to test whether you have correctly specified your non-default backup directory (look for the backup files after giving the process some time to complete).

The "Backup – Local" tab page supported performing backups when using earlier versions of SQL Anywhere. This functionality, and the earlier SQL Anywhere versions, should not be used.

Recovering from the most recent Backup

Your data is fully recoverable up to the last transaction if either of the database file (maintscp.db) or the transaction log file (maintscp.log) files are lost or damaged. You will have to revert to the most recent backup (see below) if both files are affected. For this reason, we recommend the database and transaction log files be stored on different disks. See *Cleaning up* backup LOG files

The MaintScape automatic backup process creates a file of type “log” every time it runs. As mentioned above, the log file name will reflect the date it was created. As time goes by, the number of these log files can grow. Periodically, you can clean these up by performing the following steps:

1. Stop the SQL Anywhere database server (use Sybase Central if you are running SQL Anywhere as a service on a MS Windows computer – consult the MaintScape Upgrade instructions if you are not familiar with how to do this, or call MaintScape technical support).
2. Copy your production MaintScape database file to a secure location. Appendix A describes how to find your database file.
3. Move your backup directory and all yymmdd*.log files from your production database directory to a temporary save location. This should NOT be the same “secure location” as where you copied your production database file.
4. Re-start SQL Anywhere, and ensure that you can run MaintScape and that all your data is as expected.
5. Delete the files you copied to a temporary location, as instructed above.
6. The next day, check the bottom of the MaintScape main menu window to verify that a scheduled backup occurred as usual.

Safety Measures, below.

If the transaction log file is lost or corrupted:

A new transaction log file is created by the SQL Anywhere database engine if one is not found. Therefore simply delete or move the corrupted transaction log file before starting the SQL Anywhere database engine. Before doing so, create a backup copy of your database file.

If the database file is lost or corrupted:

You can recover by applying transactions from the current transaction log file to the latest database file backup. Recovery is not described in detail in this document since it is rarely required and is well described in the Sybase documentation referenced above. If recovery is necessary, please consult the Sybase documentation or contact MaintScape technical support.

Revert to the most recent Backup

The following steps will restore your MaintScape database to the latest scheduled backup:

1. Ensure the SQL Anywhere database engine is not running.
2. Replace the backup “maintscp.db” file into your production database directory.
3. Copy the most recent backup file “yymmddnn.log” where yy: year, mm: month, dd: day, nn: sequence number (usually 00) into your transaction log directory (same directory as the production database directory by default). Rename this file to “maintscp.log”.
4. Start the SQL Anywhere database engine.

Cleaning up backup LOG files

The MaintScape automatic backup process creates a file of type “log” every time it runs. As mentioned above, the log file name will reflect the date it was created. As time goes by, the number of these log files can grow. Periodically, you can clean these up by performing the following steps:

7. Stop the SQL Anywhere database server (use Sybase Central if you are running SQL Anywhere as a service on a MS Windows computer – consult the MaintScape Upgrade instructions if you are not familiar with how to do this, or call MaintScape technical support).
8. Copy your production MaintScape database file to a secure location. Appendix A describes how to find your database file.

9. Move your backup directory and all yymmdd*.log files from your production database directory to a temporary save location. This should NOT be the same “secure location” as where you copied your production database file.
10. Re-start SQL Anywhere, and ensure that you can run MaintScape and that all your data is as expected.
11. Delete the files you copied to a temporary location, as instructed above.
12. The next day, check the bottom of the MaintScape main menu window to verify that a scheduled backup occurred as usual.

Safety Measures

Apart from performing backups, the following extra measures can be taken to maximize data safety:

1. Store the database and transaction log files on separate hard drives on the server computer.

See *Recovering from the most recent Backup*, above, for very good reasons why this should be done. This measure should also improve database performance since disk activity is spread onto two drives rather than managed by one.

2. Use a transaction log mirror

A transaction log mirror file is a duplicate copy of your transaction log file. If one copy is corrupted, the other may be used. The two transaction log files should be stored on separate hard drives to protect against both being lost due to hardware failure.

This extra level of protection is usually more than necessary. Transaction log mirroring involves a performance cost as two transaction logs must be written instead of one.

Both of the above safety measures can be implemented within Sybase Central using the utility, “Change Log File Information/Settings”. Please contact MaintScape technical support for more information or if you need help setting this up.

Appendices

Appendix A) Where is my production MaintScape Database File?

When MaintScape runs in Network Configuration:

The file location is easily identified within the command you use to start the Sybase SQL Anywhere database server. Consult the MaintScape installation instructions document, “install.doc”, included in the “Document” folder of your MaintScape CD-ROM. In particular, refer to documentation section, “Configure Sybase SQL Anywhere Database Software” for your version of SQL Anywhere.

When MaintScape runs in Stand-Alone Configuration:

Run ‘ODBC Administrator’ by double-clicking ‘ODBC Data Sources’ within the ‘Administrative Tools’ folder of Control Panel. If you cannot find this entry, click the ‘Start’ button, select ‘Run...’, then type “odbcad32.exe” (no quotes), then click ‘OK’.

Find the Data Source named ‘MaintScape’ on either the ‘User DSN’ or ‘System DSN’ tab page. When found, highlight it by clicking on it, then click ‘Configure...’. Switch to the ‘Database’ tab page. Your database file location is specified by the ‘Database file’ field.