

Best Practices for Backup of Microsoft SQL 2000 Databases with Unitrends Backup Professional

Introduction

The information presented in this document is a supplement to the SQL Server Agent chapter in the Unitrends DPU Manual. The Best Practices detailed in the following sections will help ensure successful operations when using the Unitrends Backup Professional Microsoft SQL Server Agent to backup and restore SQL 2000 databases.

How to Backup

Backup options for Microsoft SQL 2000 Databases are dictated by the level of expertise available to the end customer with Microsoft SQL 2000 Server and business requirements.

If a high level of Microsoft SQL Server 2000 expertise is present, SQL Server Enterprise Manager offers great functionality and flexibility using a Microsoft Management Console. For ease of use, the Unitrends SQL Server Agent offers a large set of functionality that is quickly implemented. It is important that the SQL 2000 database files are protected in just one manner. SQL Server Enterprise Manager and Unitrends SQL Server Agent should not be configured to backup database files concurrently.

Point in time recovery with transaction log backups, performed at short intervals between backups (i.e. transaction log backup every hour), are available using the Unitrends Backup Professional SQL Server Agent. To allow for point in time recovery, the database needs to be using the Full Recovery Model. It is recommended that most production databases use the Full Recovery Model.

If a database is using the Simple Recovery Model, only full and differential backups of the database can be backed up.

What to Back Up

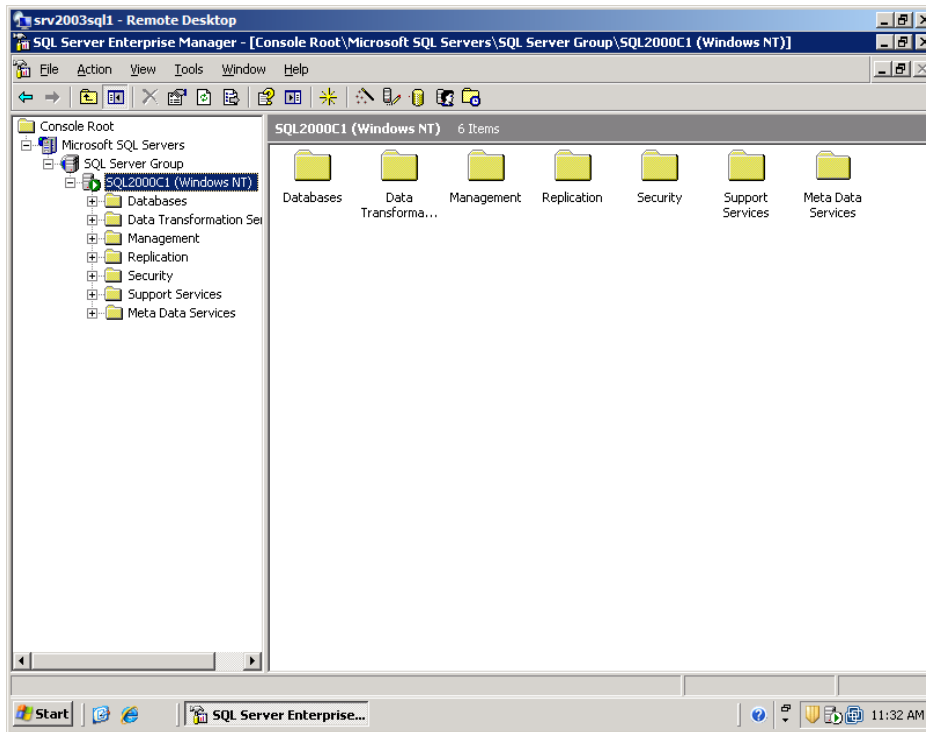
When backing up a Microsoft SQL Server, it is important to distinguish what must be backed up with the operating system and what requires backup via the Unitrends SQL Server Agent.

The Microsoft SQL Server 2000 has three areas that must be protected via either file based backup or using the Unitrends SQL Server Agent; registry entries, program files and database files (a simplification). The standard file based backup will protect the registry and program files. The Unitrends SQL Server Agent will capture the database files.

The program files for Microsoft SQL Server 2000 by default are installed in C:\Program Files\Microsoft SQL Server\MSSQL. The Database files by default are installed in C:\Program Files\Microsoft SQL Server\MSSQL\Data. Customer databases may be installed to any location, but default to the default location unless changed by an application or the customer.

The Enterprise Manager can be used to determine the location of the database files (log and data files for the databases). Open the Enterprise Manager and go to the Database Instance you desire to protect.

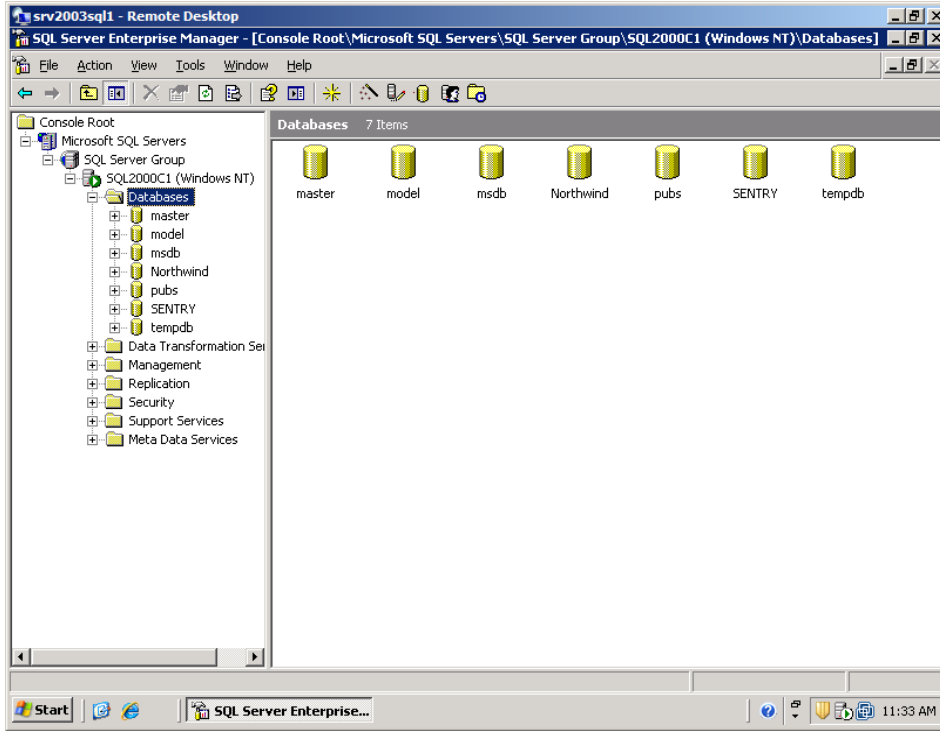
In the following example the instance to protect is SQL2000C1.



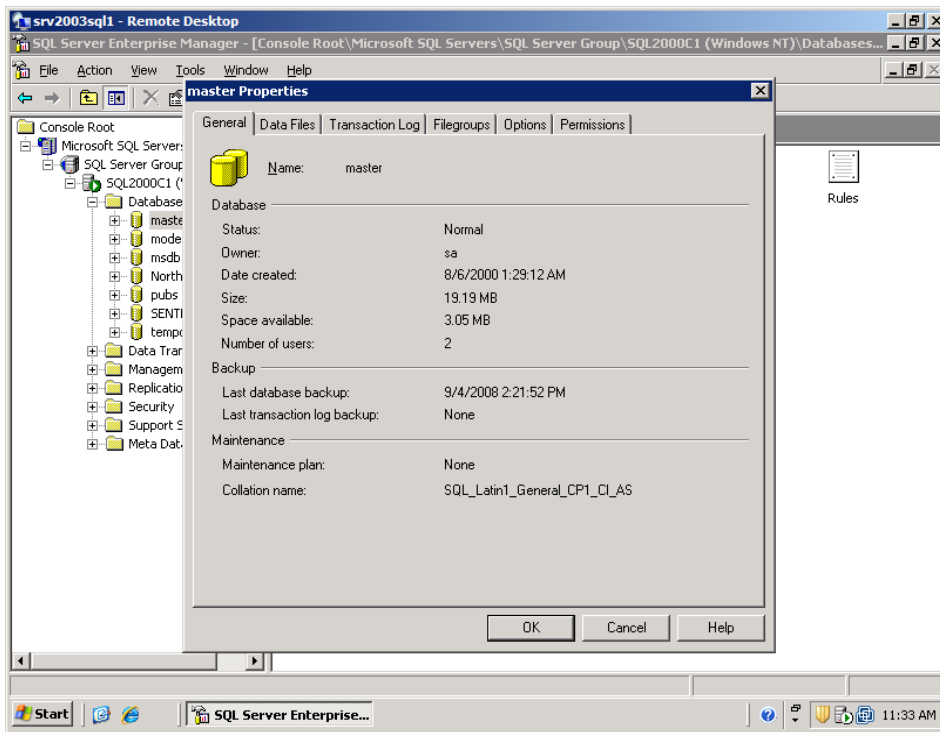
If you expand the Databases section you will see the databases associated with the instance of Microsoft SQL Server 2000. In this example they are:

- master
- model
- msdb
- Northwind
- pubs
- SENTRY
- tempdb

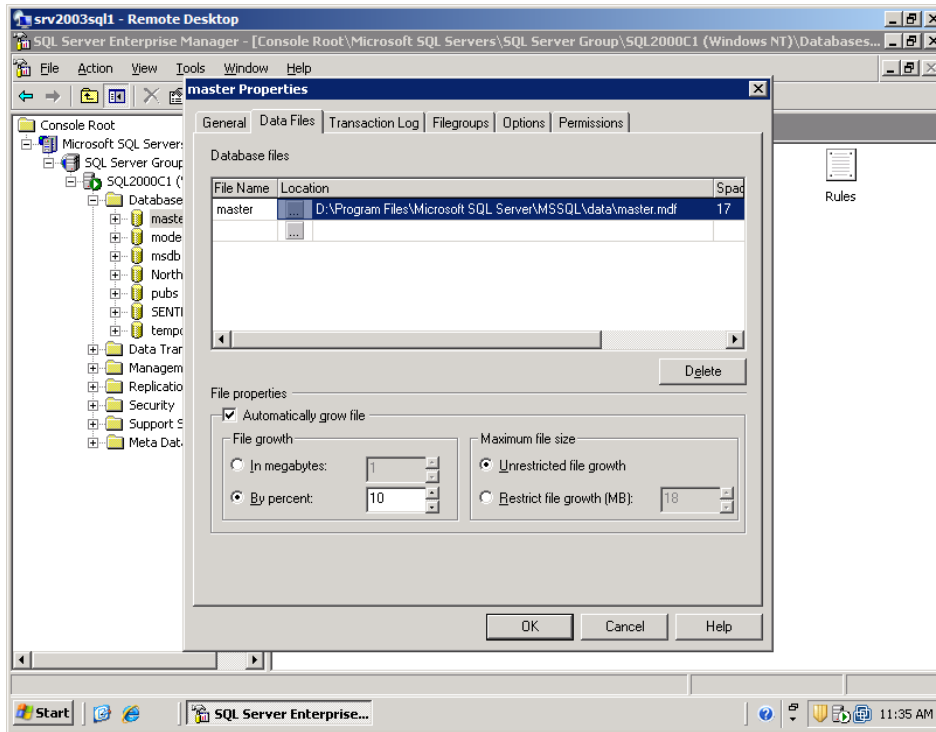
All but SENTRY and Northwind are system databases, and will be present on every installation of Microsoft SQL 2000. Northwind is a sample database often installed. SENTRY is the customer database in this example.



Right Clicking on a database and selecting properties will open the properties dialog for the database.

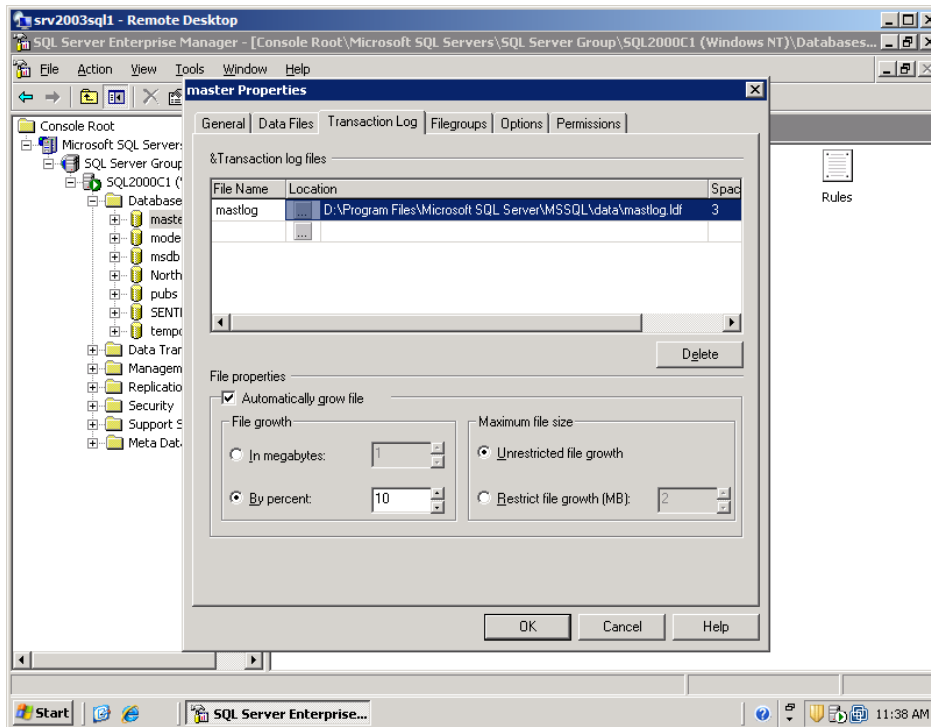


Select the Data Files tab to view the location of the data file for the database selected.



In this example you can observe that the data file location is: D:\Program Files\Microsoft SQL Server\MSSQL\data\master.mdf.

Clicking on the Transaction Log tab will show the location of the Transaction Log file for the database selected:



In this example you can observe that the transaction log file location is: D:\Program Files\Microsoft SQL Server\MSSQL\data\mastlog.ldf.

The data files and log file locations are important because they should be excluded from file level backups of the server. True relational databases require that log files and data file be synchronized—meaning that they have to be backed up at the same point and time. A file level backup of these files will always be at different points and times if the Microsoft SQL 2000 Server is running. This requirement is what necessitates the use of an application specific backup for Microsoft SQL Server 2000.

NOTE – *Regardless of the backup method used, all active database files must be excluded from the Unitrends file based backup.*

The only supported method for backing up data and log files via file level backup is to stop the Microsoft SQL Server 2000 service prior conducting the file level backup. The service can be stopped using a before command placed in the options list assigned to the backup schedule. An after command in the options list can start the service after the backup completes. If 24/7 operation of the database is not required, file level backup is an option for fully protecting the Microsoft SQL 2000 server provided the service is stopped and started in sequence with the backup. This is usually not feasible, however and an added complication is that should the backup fail for some reason, the Microsoft SQL 2000 service may not be restarted.

Unitrends recommends as a best practice excluding the data and log files from the file level backup, and ensuring that an application specific backup is taken of all the databases at regular intervals as dictated by business requirements. The application specific backup may be taken via the Enterprise Manager or the Unitrends Backup Professional SQL Agent.

Restore considerations

A failure of the machine hosting Microsoft SQL 2000 Server may result in the SQL 2000 Service not starting due to a missing or corrupt master database. In this case it is required that a working master database be built before starting the Microsoft SQL 2000 service. There are three methods of doing this that are supported by Microsoft:

- 1) Restore a file level backup IF the service was stopped when the backup was taken.
- 2) Re-install Microsoft SQL 2000 Server.
- 3) Use the rebuild.exe tool installed with Microsoft SQL Server 2000 (default location is c:\Program Files\Microsoft SQL Server\80\Tools\Binn) to rebuild a generic master database. The following link is a reference to Microsoft Instructions on how to do this: [http://msdn.microsoft.com/en-us/library/aa197950\(SQL.80\).aspx](http://msdn.microsoft.com/en-us/library/aa197950(SQL.80).aspx).

For steps 2 and 3, a master database restore is required using Backup Professional once a working master database is built. For this, the SQL server will need to be in Single user mode.

Note: Once in single user mode only the master database should be seen in the list of databases that can be restored.

After the Microsoft SQL 2000 service starts, restores from Unitrends Backup Professional SQL backups may be conducted.

For specific instructions on conducting backups and restores of Microsoft SQL Server 2000 databases please see the SQL Server Agent chapter in the Unitrends DPU Manual.

Summary

File based backups are essential to backup/restore of Microsoft SQL 2000 Server. The data and log files associated with the databases should be excluded from the file level backup unless the Microsoft SQL Server 2000 Service is stopped prior to the backup being taken. Application specific backup for Microsoft SQL Server 2000 must be taken if the database cannot be stopped for backup. This can be done with the Microsoft SQL Server 2000 Enterprise Manager or the Unitrends SQL Agent. Only one of the two methods should be used to avoid checkpoint confusion. When a failure occurs it is possible that the Microsoft SQL Server service will not start to allow application specific restores. If that occurs one of the three methods discussed must be used to obtain a working master database before restores can be conducted.