UPGRADING TO SV 10.0 MIGRATION OF THE HDS DATABASES

ABSTRACT: THIS DOCUMENT CONTAINS INFORMATION RELATED TO THE AUTOMATIC AND MANUAL MIGRATION OF THE HDS DATABASES WHEN UPGRADING TO THE SUPERVISOR VERSION 10.0.

KEYWORDS: HDS, SQL, MIGRATION, SV 10.0, UPGRADE

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CHANGES

Revision	Written by	Action	Reviewed by	Date	Distribution
1.0	AD/BL	For distribution	MV	16/05/2011	Custormers & partners

CONTENTS

The following icons are used to signify

An essential note.

A warning

Introduction

Some evolutions made available since version 10.0 of the Supervisor require changes to the Historical Data Server databases structures. In particular, new maximum lengths of variable names, descriptions and text extended attributes require that some table column data types are changed.

This document explains how HDS database structures and data can be migrated when starting to use SV 10.0 with an application that used to be run with an earlier version. 2 procedures are available, an automatic process and a manual one. Using one or the other is dependent on the size of your databases.

Failing to follow instructions described in this document may:

- Prevent the HDS from starting or,
- Lead to the corruption of the data archived using the HDS capabilities.

It is strongly recommended that you take a backup of your databases before launching your application with the Supervisor version 10.0.

This document is applicable in the following context:

- *SV version 10.0 or upper* using the *Historical Data Server* to archive data in a *Microsoft SQL Server* database.
- *Microsoft SQL Server 2005/2008*: All editions, including *SQL Server Express*.

This document is not applicable if:

- You intend to discard HDS archived data prior to the upgrade of an existing application to version 10.0 of the Supervisor,
- You are working on a new application, without HDS archived data to preserve during the version upgrade phase.

In the following sections:

- The *Supervisor* is referred to as *SV*,
- The *Historical Data Server* is referred to as *HDS*,
- *Microsoft SQL Server Management Studio* is referred to as *SSMS*,
- *Transact-SQL script* is referred to as *T-SQL*,

The document contains the following sections:

- How to use the SQL Server Management Studio - A note for prime users of SSMS,
- How to backup and restore a database,
- The first SV startup and the automatic migration,
- How to manually migrate HDS tables.

If your SV application takes advantage of multiple HDS databases and/or multiple SQL Server hosts, it is required to apply the following instructions to each HDS database on each SQL Server host.

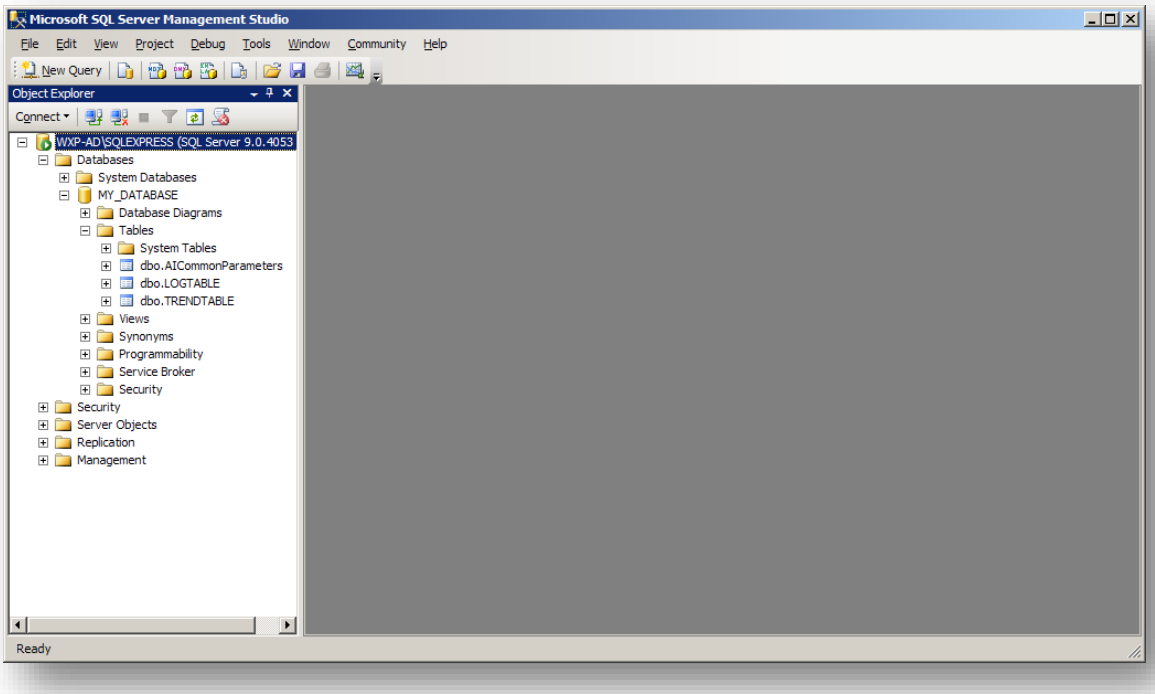
How to use the SQL Server Management Studio

The SSMS will be the place for some of the actions you will have to lead in order to safely migrate your HDS databases. Here are the instructions to connect to a particular SQL Server instance.

1. Launch the *SSMS* tool via the *Start → All programs → Microsoft SQL Server 2008 (or 2005) → SQL Server Management Studio* program folder.

2. Click on *File → Connect Object Explorer…*

3. Select the SQL Server name hosting your HDS database, enter your Login & Password and click on the *Connect* button.



You are now connected to a particular SQL Server instance and can access all databases it hosts.

How to backup your database

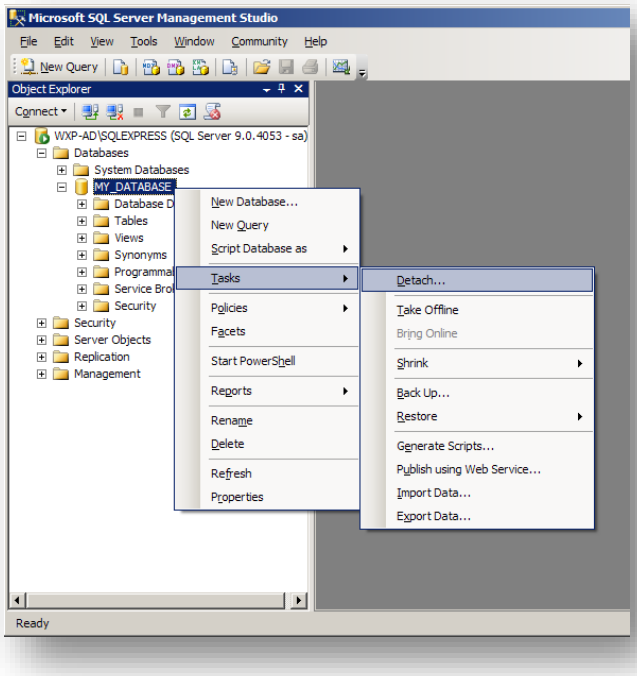
You can save the database in 2 ways:

- Copy database files, or
- Make an SQL Server backup.

Copy database files

The easier way to preserve your database is to copy the database files to another storage device.

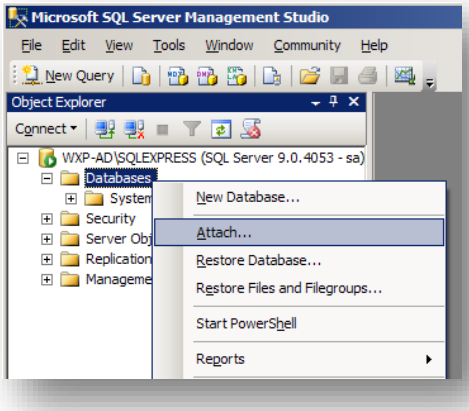
1- Using the *SSMS* tool, detach the database:



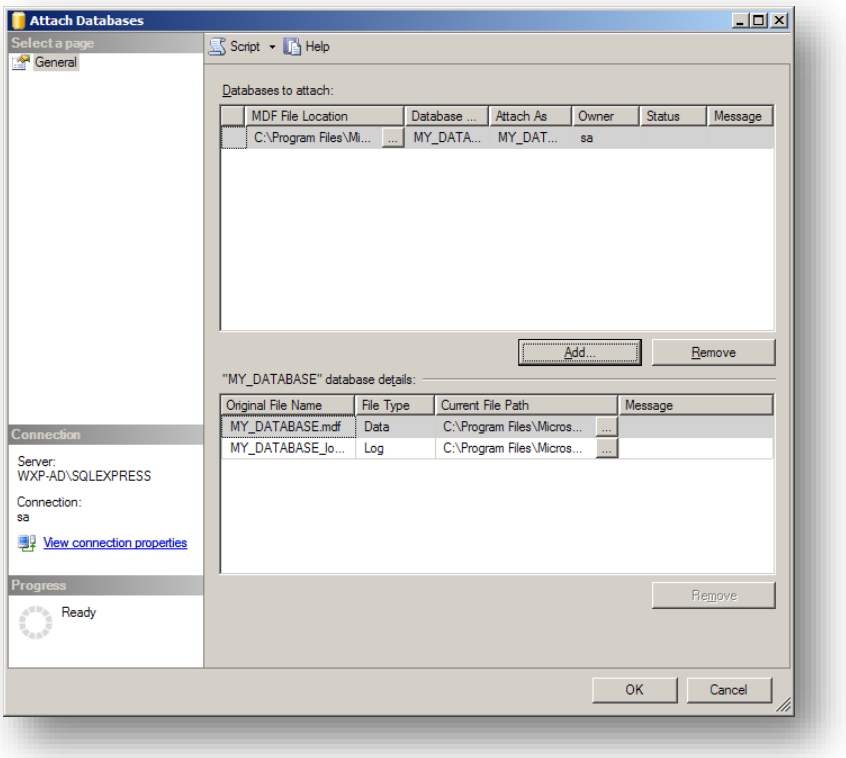
Right-click on the name of the database to be backed up and then *Tasks → Detach...*

2- Copy the *.mdf* and *.ldf* files to the other storage.
By default, these files are saved in the SV installation subfolder named *Databases*.

3- Again with the *SSMS* tool, re-attach the original database.



Right-click on *Databases → Attach...*



Click the *Add* button and select the original *.mdf* file of the database
Click the *OK* button.

Your original database files are saved on another storage device and the database is ready for the migration.

SQL Server: Full Backup

A full backup can potentially interfere with regular backup that may be in place on your system.
Contact your database administrator before proceeding.

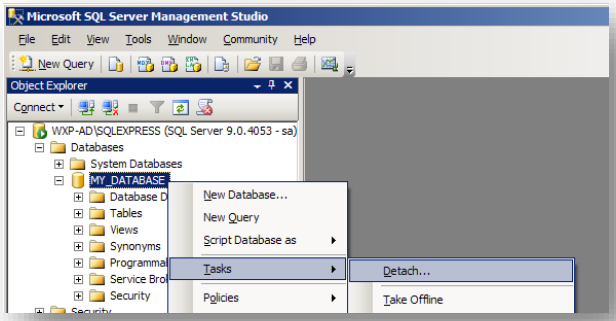
How to restore your database

The procedure described below will help you restoring the original database if something went wrong during the migration.

Copy the database files

This procedure can only be used if a backup was done using the “Copy database files” method.

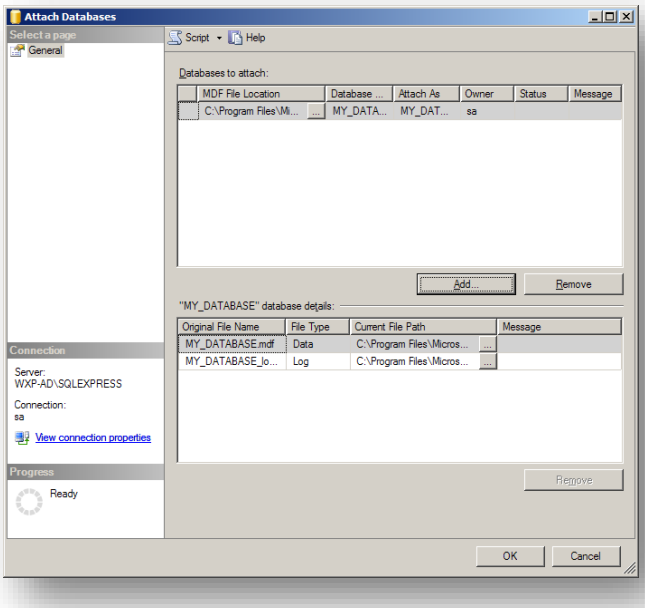
1- Using the *SSMS* tool, detach the corrupted database:



Right-click on the name of the database to be deleted *Tasks → Detach...*

2- Replace the *.mdf* and *.ldf* files with the previously saved files

3- Attach the restored database:
Right-click on *Databases → Attach...*



Click the *Add* button and select the *.mdf* files of the saved database
Click the *OK* button.

Your original database is back online.

SQL Server: Restore

A full restore can potentially interfere with regular backups that may be in place on your system.
Contact your database administrator before proceeding.

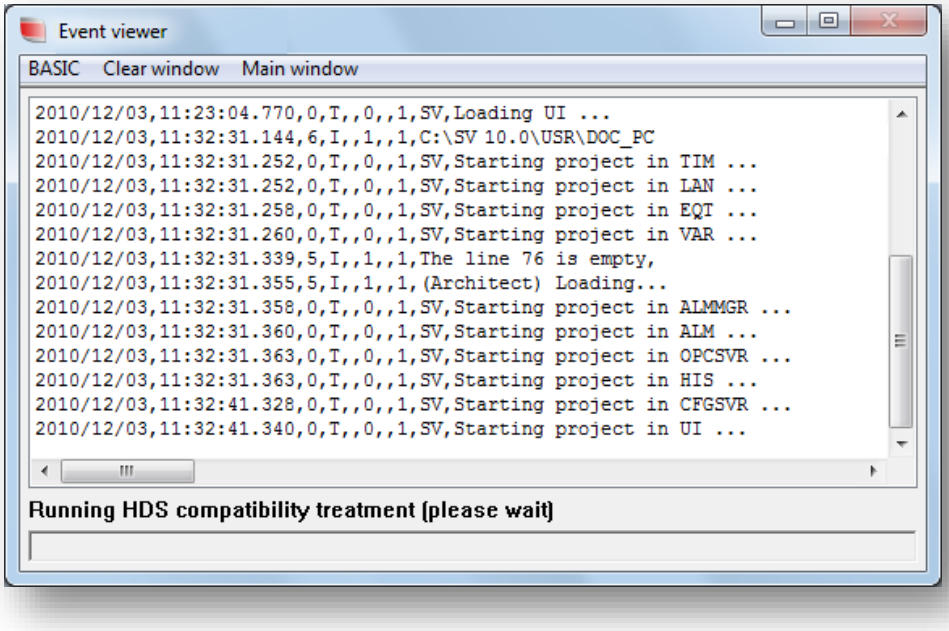
SV startup and the automatic migration

It is strongly recommended that you take a full backup of your databases before launching your application with SV version 10.0.

During the SV startup, the HDS checks its databases' structures.

The migration process consists in:
- Changing the log and trend table structures,
- Re-building the indexes of these tables.

As these operations can take some time, the HDS will convert them automatically during the first start-up of your application with version 10.0 of the Supervisor if the total size of all your databases is less than 10 GB.
In such a case, you will see the following message in the event viewer indicating that the database structures and data are being migrated.



This operation can take a few minutes. Interrupting this process by stopping or killing the SV or HDS processes or hard-stopping the computer can lead to corrupted and unrecoverable data.

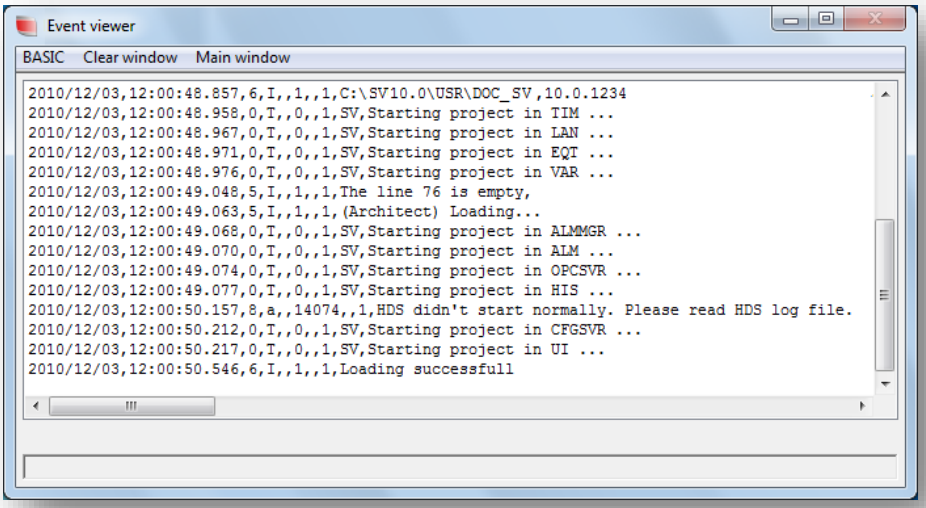
Typical durations as seen during internal qualification and beta testing are as follow:

Database size	Migration duration
1 GB	1 mn 30 sec
10 GB	30 mn
On a computer with 4 GB of RAM and a Core2Duo E6750@2,66GHz CPU	

If the total size of all your databases is over 10 GB, the migration will not be processed automatically and the HDS will refuse to start.
In such a case, you will see the following message in the event viewer indicating that the HDS failed to start:

Event viewer message: *HDS didn't start normally. Please read HDS log file*

HDS.log file message: *Unable to run HDS compatibility treatment on databases (files are too big): use manual scripts*



The HDS.log file can be found in the following folder:
SVInstallDir\Bin\Log files\HDS.log
Where *SVInstallDir* is the installation directory of the Supervisor.

In this situation, you have to run the Transact-SQL migration script yourself using the Microsoft SQL Server Management Studio.
See the next section for more information.

How to migrate the database structure manually

This section explains how to migrate your HDS databases from version 9.0 to version 10.0 of the Supervisor without losing data in the case where the migration is not done automatically at startup.
Depending on the amount of data in your databases, this migration can take a long time.

If your SV application takes advantage of multiple HDS databases and/or multiple SQL Server hosts, it is required to apply the following instructions to each trend and log table of each HDS database on each SQL Server host.

It is strongly recommended that you take a full backup of your databases before proceeding to the migration.

Software required

The manual migration requires:

- The *SSMS* 2005 or *SSMS* 2008 tool installed on your computer,
- The *T-SQL* template file named *UpgradeLogTable.sql* for migrating log tables structures
- The *T-SQL* template file names *UpgradeTrendTable.sql* for migrating trend tables structures.

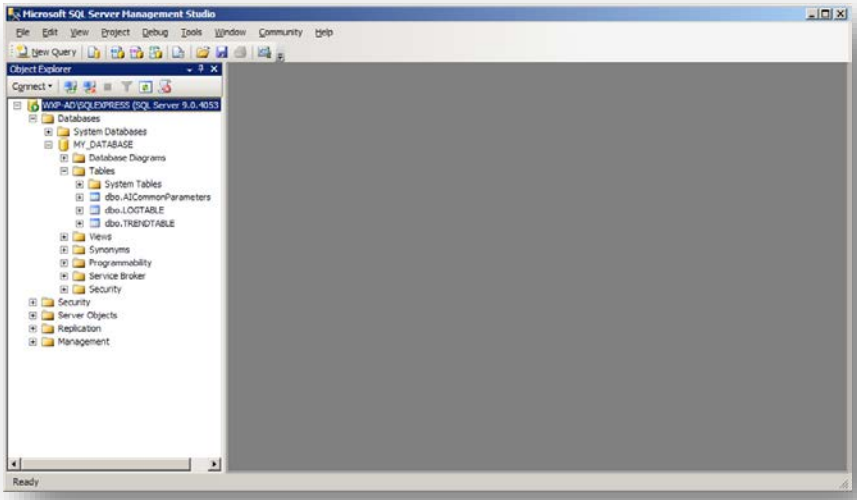
Both T-SQL template files can be found in the following folder:
SVInstallDir\Bin
Where *SVInstallDir* is the installation directory of the Supervisor.

You will have to migrate all Log tables and Trend tables one at a time using the corresponding T-SQL template script files supplied.

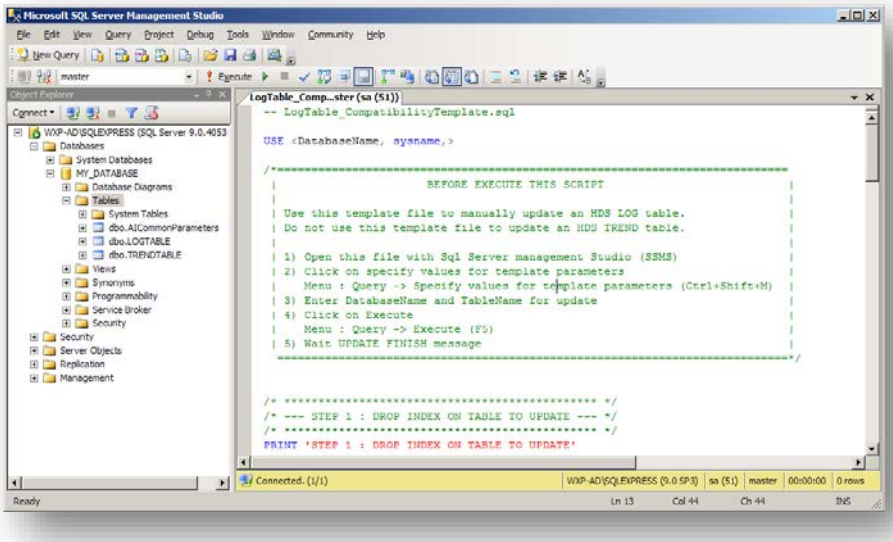
The Supervisor must not be running while the migration scripts are being executed.

How to migrate a Log table

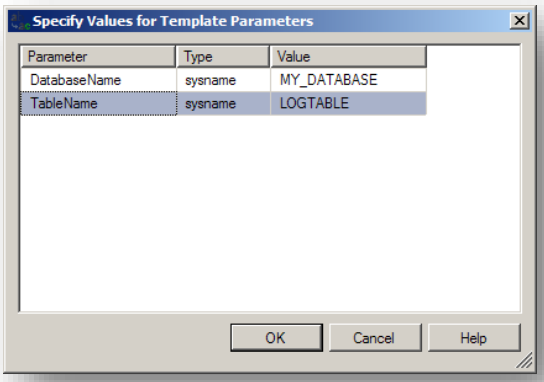
1. Copy and rename the *T-SQL* template file named *UpgradeLogTable.sql* into a working directory of your choice.
2. Launch the SSMS and connect to your database as explained in How to use the SQL Server Management Studio.



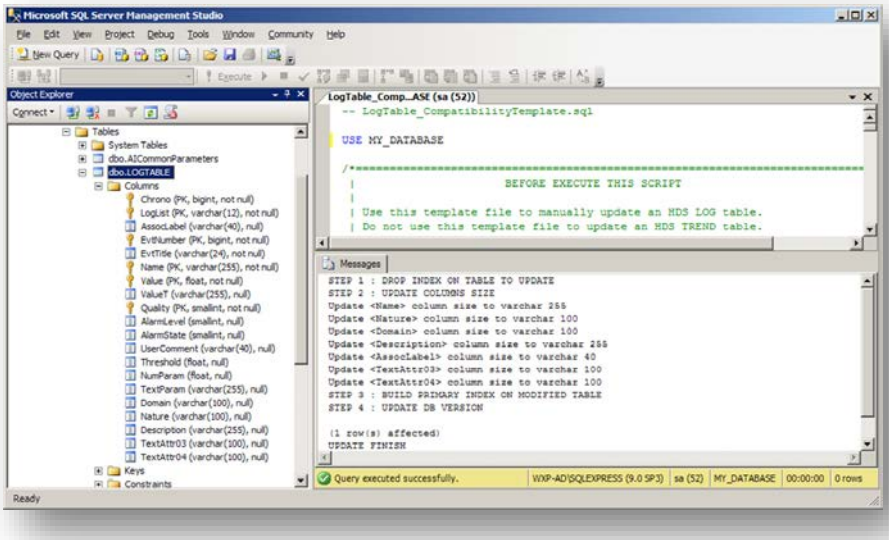
3. Expand the *Object Explorer* tree view and take note of the database name and log table name you need to migrate.
4. Click on *File → Open → File…*
5. Open the *T-SQL* script file named *UpgradeLogTable.sql* from your working directory.



6. Click on *Query → Specify values for template parameters*.



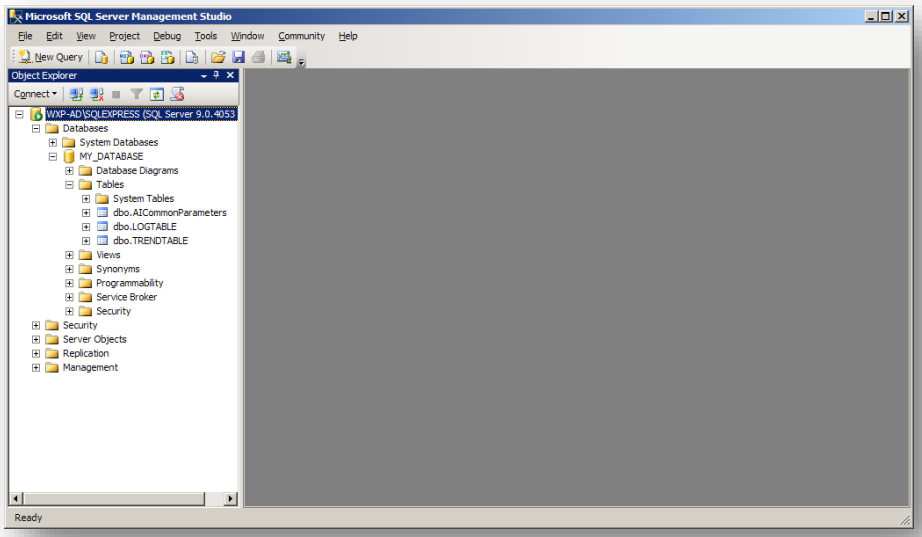
7. Enter the *DatabaseName* and *TableName* values for the first table you need to migrate and then click the *OK* button.
8. Click on *Query → Execute* and wait for the script execution to complete.



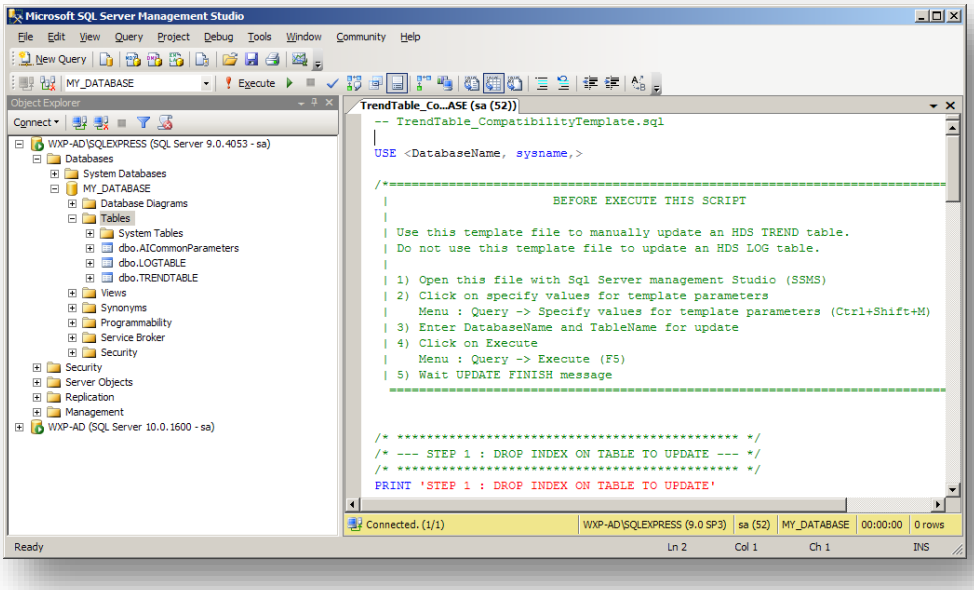
9. Check that all the steps succeeded and the migration script completed successfully.
10. Re-iterate for the other log tables you need to migrate.

How to migrate a Trend table

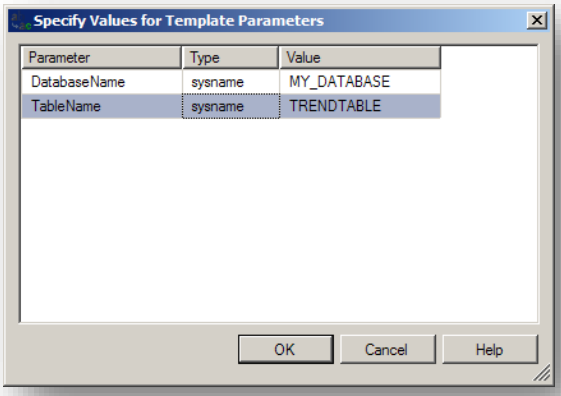
1. Copy and rename the *T-SQL* template file named *UpgradeTrendTable.sql* into a working directory of your choice.
2. Launch the SSMS and connect to your database as explained in How to use the SQL Server Management Studio.



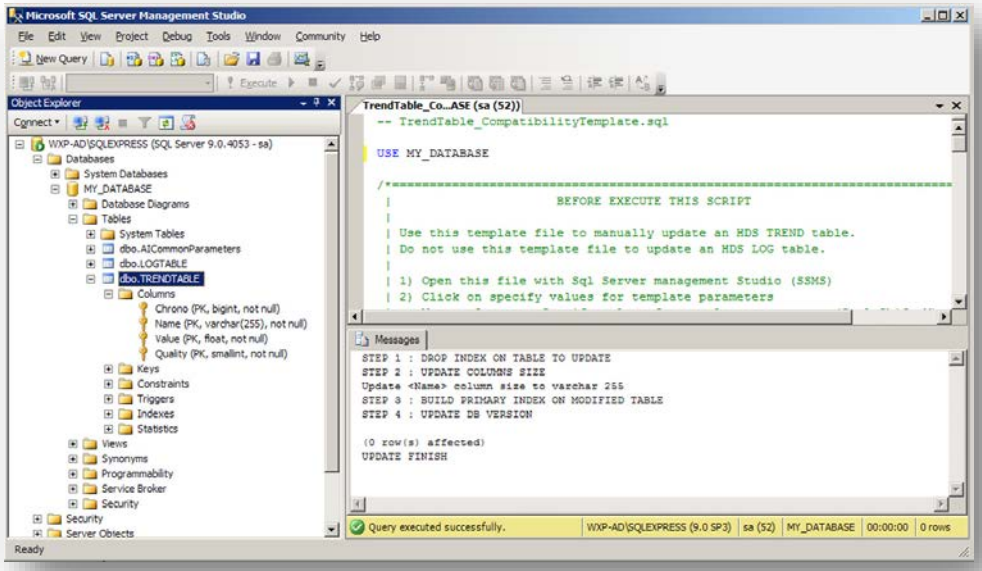
3. Expand the *Object Explorer* tree view and take note of the database name and trend table name you need to migrate.
4. Click on *File → Open → File…*
5. Open the *T-SQL* script file named *UpgradeTrendTable.sql* from your working directory.



6. Click on *Query → Specify values for template parameters*.



7. Enter the *DatabaseName* and *TableName* values for the first table you need to migrate and then click the *OK* button.
8. Click on *Query → Execute* and wait for the script execution to complete.



9. Check that all the steps succeeded and the migration script completed successfully.
10. Re-iterate for the other log tables you need to migrate.

If the disk space used by the database has increased significantly, it is recommended that you shrink the database to avoid activating a contingent purge at the next startup of the Supervisor.