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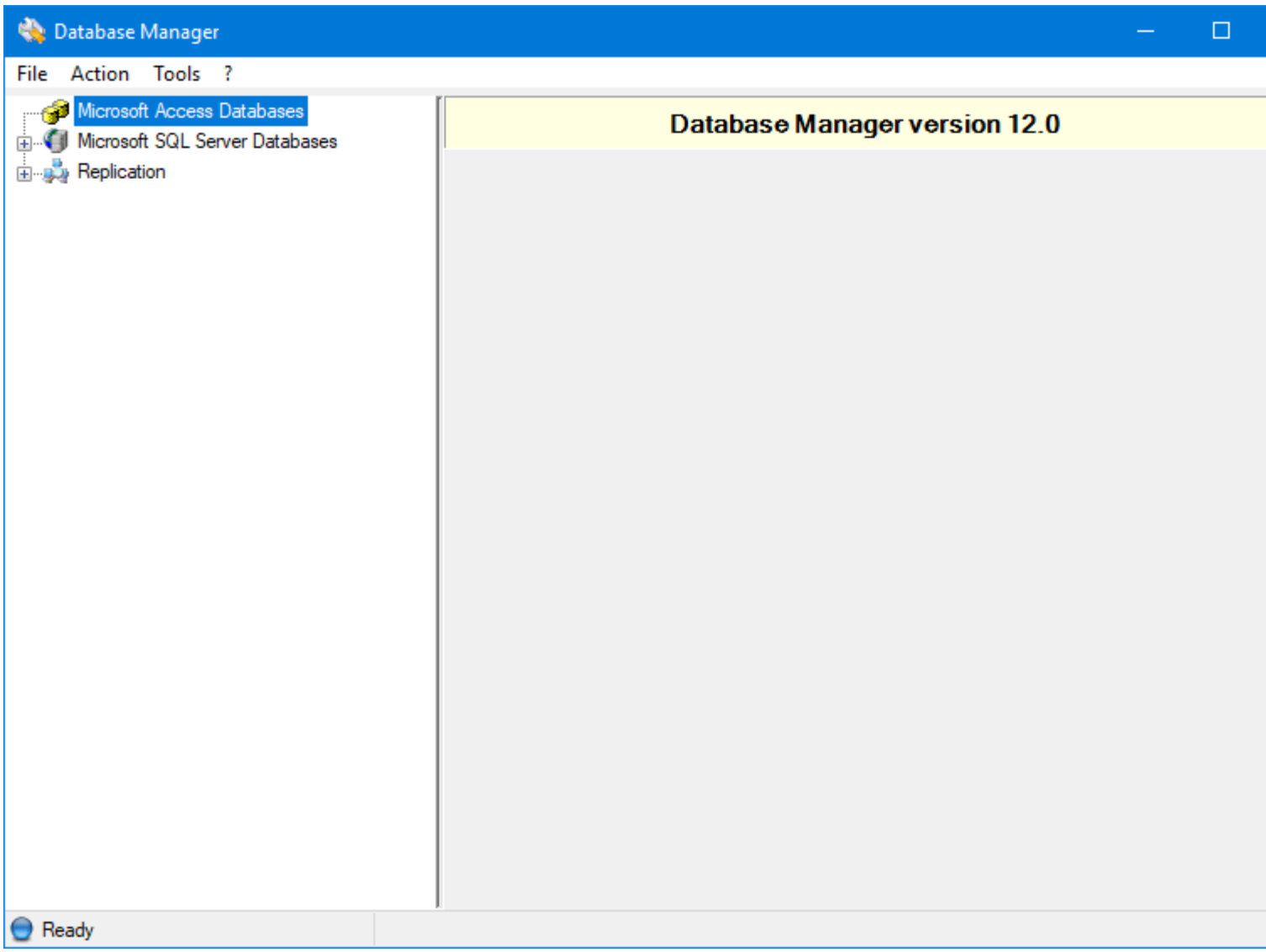
About the Database Manager

The purpose of the Database Manager is to provide easy access to databases that are regularly administered. The tools it provides may be used with any Microsoft Access or SQL Server databases.

Functions

The Database Manager provides these capabilities: Show picture



- Local and remote navigation and browsing to select database files.
- Keeping an index of the locations of the databases you administer.
- Replicating databases.
- Viewing and maintaining database properties.
- Viewing and maintaining database contents.
- File compaction and deletion.
- Administering security measures.

You can access these functions through the Database Manager's menu bar or from the context menu that opens when you right-click on an item in the left-hand pane.

Opening the Database Manager

The Database Manager is a stand-alone tool and does not require any other application to be running. To start it:

- Use the Windows Start menu to locate the program within the program group that was selected when it was installed, for instance: Programs\...\Database Manager.

You can also put an icon on the PC's desktop or in its task bar to start the Database Manager conveniently.

Concurrent access

Certain functions of the Database Manager should not be used at the same time as other applications that use the databases concerned.

An error message will be displayed if you run a function of the Database Manager that attempts to change a database that is locked for use by another application. When that happens:

1. Select OK to clear the message.
2. Take the database out of use by the other application.
3. Run the function in the Database Manager.
4. Make the database available again to the other application.

The functions that should not be run while a database is in use are marked in the help topics with a warning note similar to the one above.

The rest of the functions do not require exclusive access to a database, so other applications can be connected to a database when they are running. However for a few of those functions, there is a note to recommend that the Database Manager should preferably be given exclusive access to the database before the function is performed.

Tool Options for the Database Manager

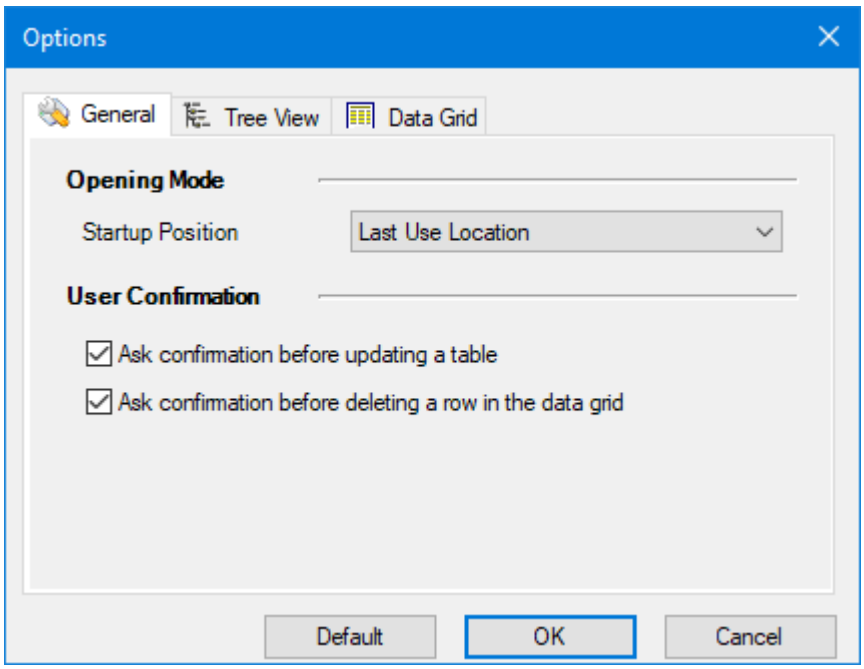
You can configure the Database Manager as follows:

1. In the main menu of the Database Manager, select Tools to open the Options dialog.
2. Select a tab: General (the default on opening), Tree View or Data Grid.

The options in the tabs are described in this topic.

General options

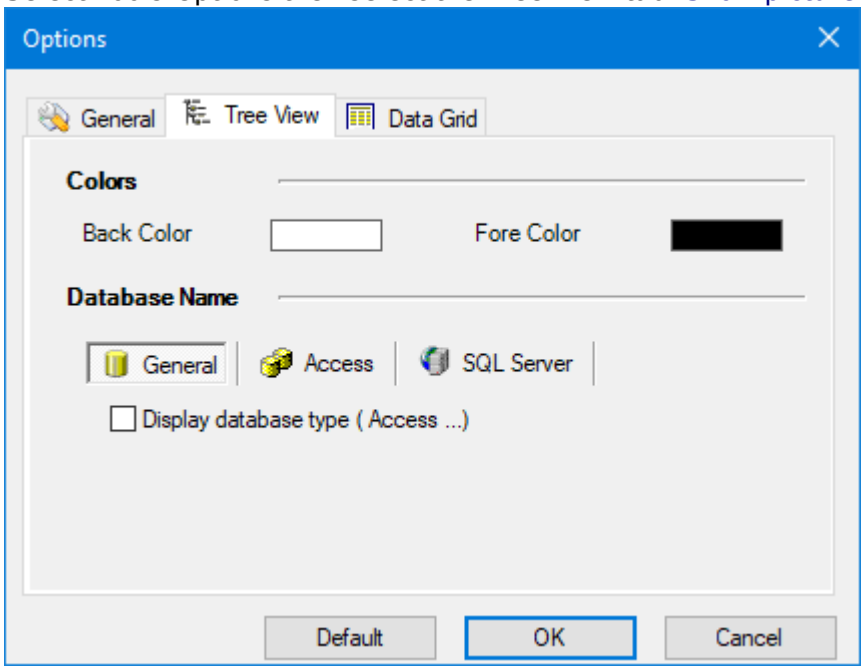
These control the window position and the display of messages to confirm actions. Show picture



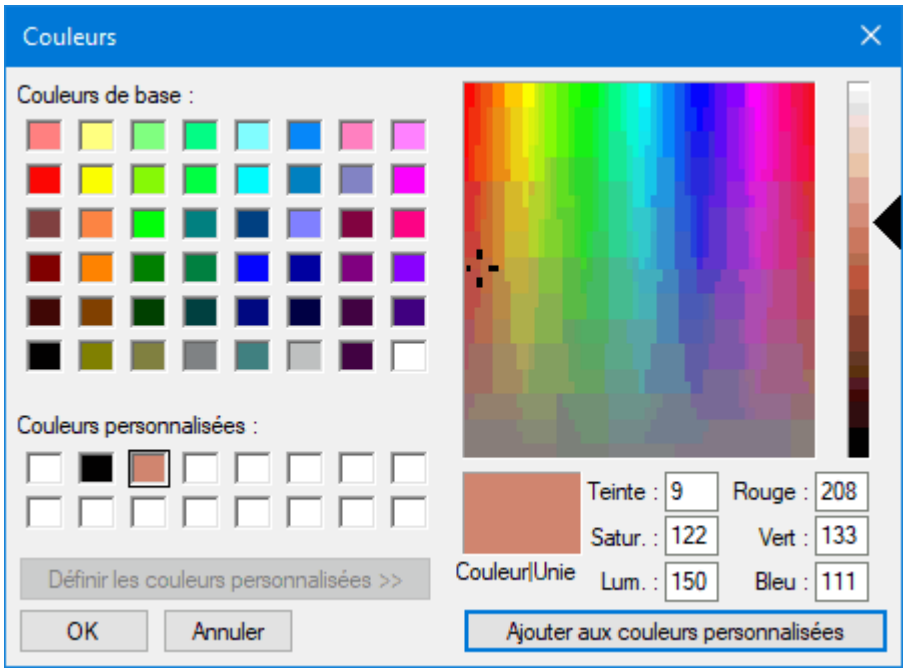
Tool	Action
Opening Mode	
Startup Position:	Specify the position on the screen at which the Database Manager should open:
- Last Use Location	- in the previous position.
- Center Screen	- centred.
- Full Screen	- on the entire screen.
User Confirmation	Tick the box if you wish a message to be displayed:
Ask confirmation before updating a table	- before a data table is altered.
Ask confirmation before deleting a row in the data grid	- before a row in a data grid is removed.

Configuring the tree view

- Select Tools.Options then select the Tree View tab. Show picture



For each color setting listed below, you can choose a basic color or you can add custom colors to the palette by using the button Define Custom Colors. Show picture

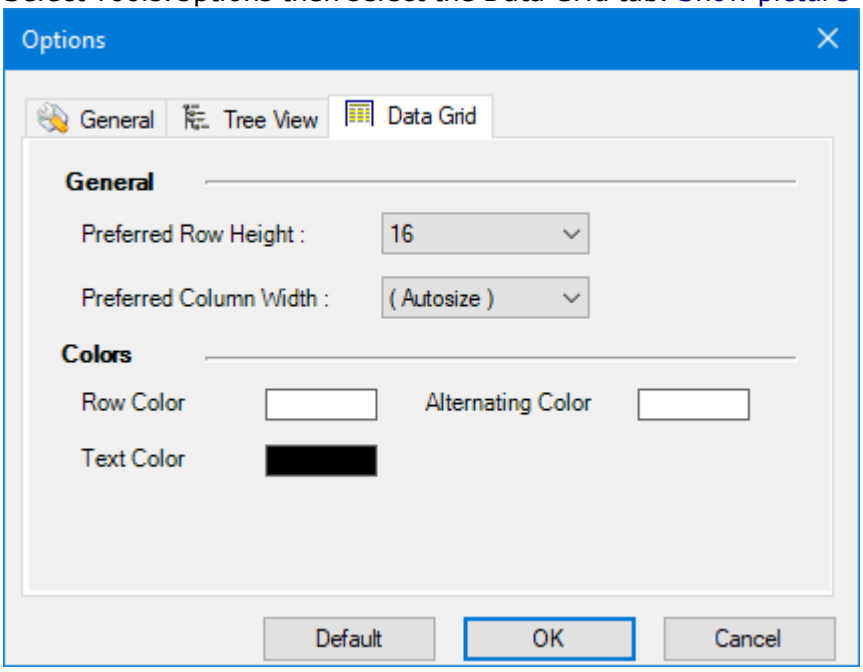


Tool	Action
Colors	
Back Color	Select a background color for the left-hand pane.
Fore Color	Select a color for text in the left-hand pane.
Database Name	
There are three tabs under Database Name: General, Access and SQL Server.	
In each of those, each database name is listed, preceded by optional items as chosen below.	
General	
- Display database type	Tick to show the type of database.
Access	
- Display full path	Tick to show the path to the database.
- Display computer name	Tick to show the name of the computer on which the database is stored.

SQL Server	
- Display server name	Tick to show the name of the SQL Server to which the database is attached.
- Display computer name	Tick to show the name of the computer on which the database is stored.
Default	Reset the values on the tab to their standard settings.

Configuring the Data Grid

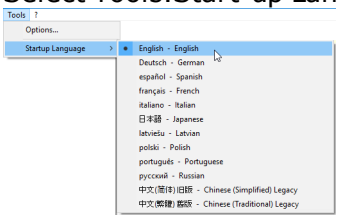
- Select Tools.Options then select the Data Grid tab. Show picture



Tool	Action
General	
Preferred Row Height	Set the desired height for cells (in pixels).
Preferred Column Width	Set the desired width for cells (in pixels), or Autosize.
Colors	
Row Color	Select a color for the data rows.
Alternating Color	Select a color for alternate rows, for ease of reading.
Text Color	Select a color for the text.
Default	Reset the values on the tab to their standard settings.

Configuring the Start-up Language

- Select Tools.Start-up Language, then select a particular language. Show picture

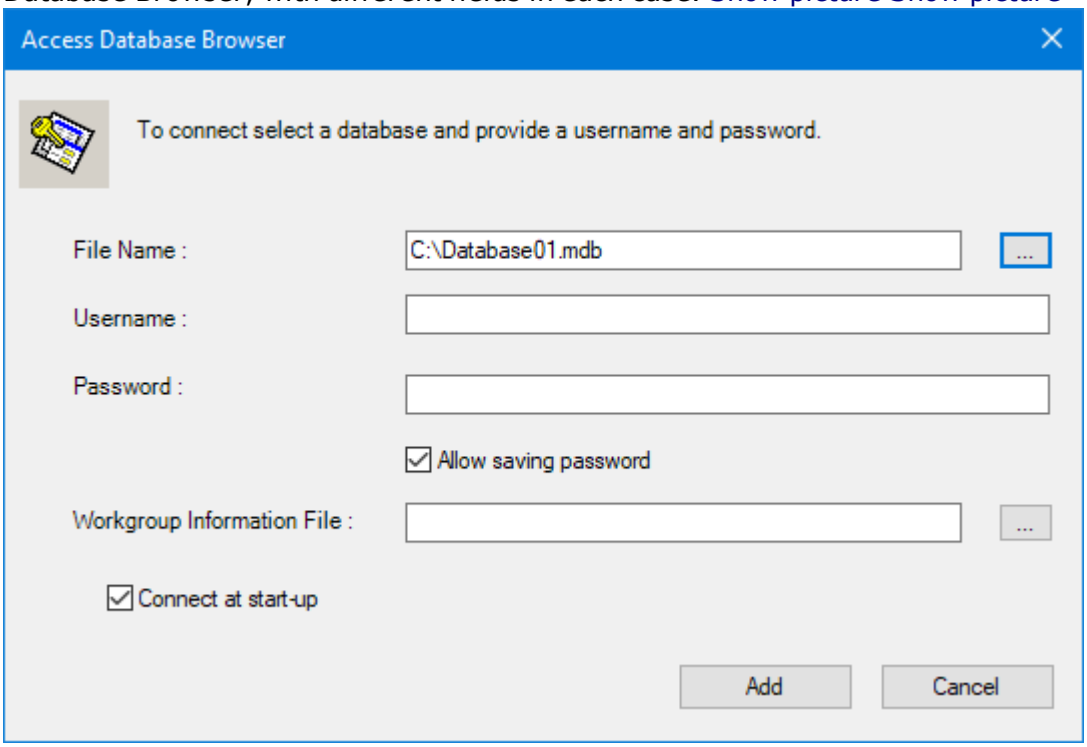


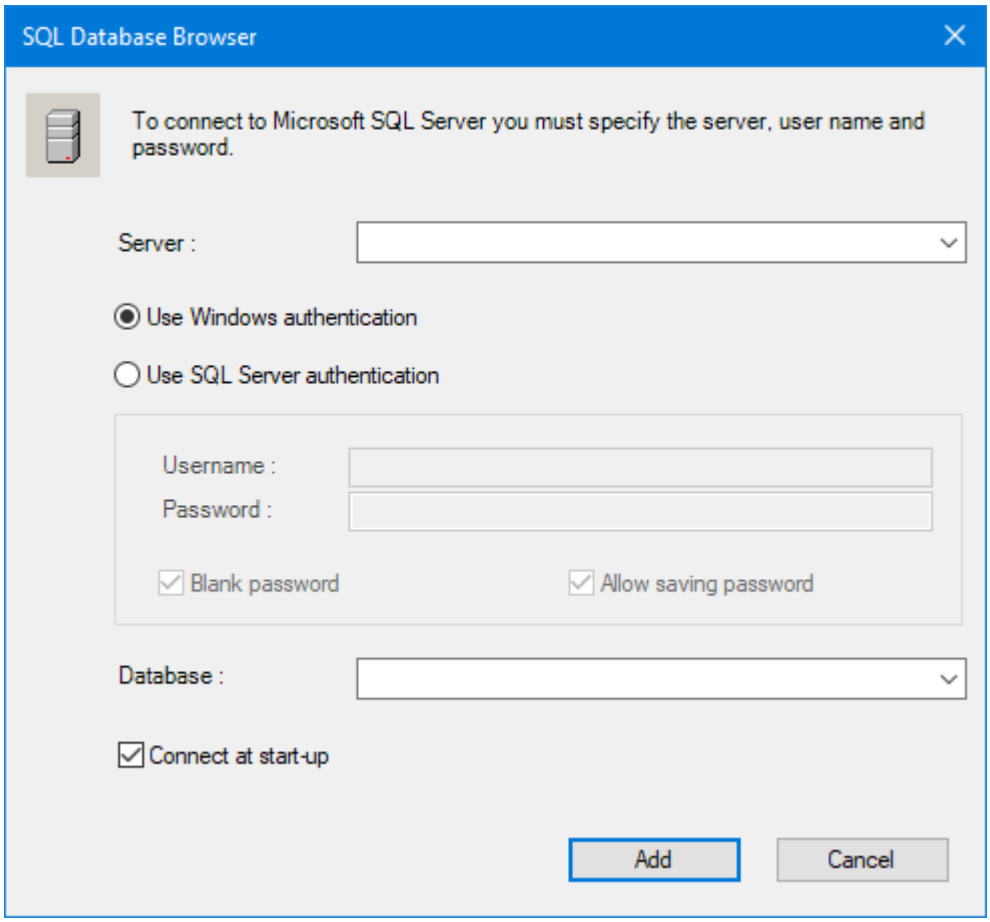
Opening the Database Browser

The Database Manager enables you to browse and select databases on a PC or across a network. The databases that are found are presented in a tree structure with one node for Access databases and another for SQL Server databases.

You can open the Database Browser from the Database Manager:

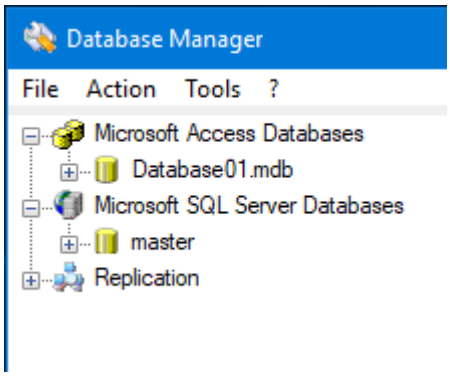
1. Open the Database Manager from the Windows Start button (or from a desktop icon, if you have created one).
2. In the left-hand pane, right-click either on Access Databases or SQL Server Databases to open the context menu.
3. Click on Add to open the Database Browser. It will be titled either Access Database Browser or SQL Database Browser, with different fields in each case. Show picture Show picture





Tree structure and start-up

Every time the Database Manager starts: Show picture



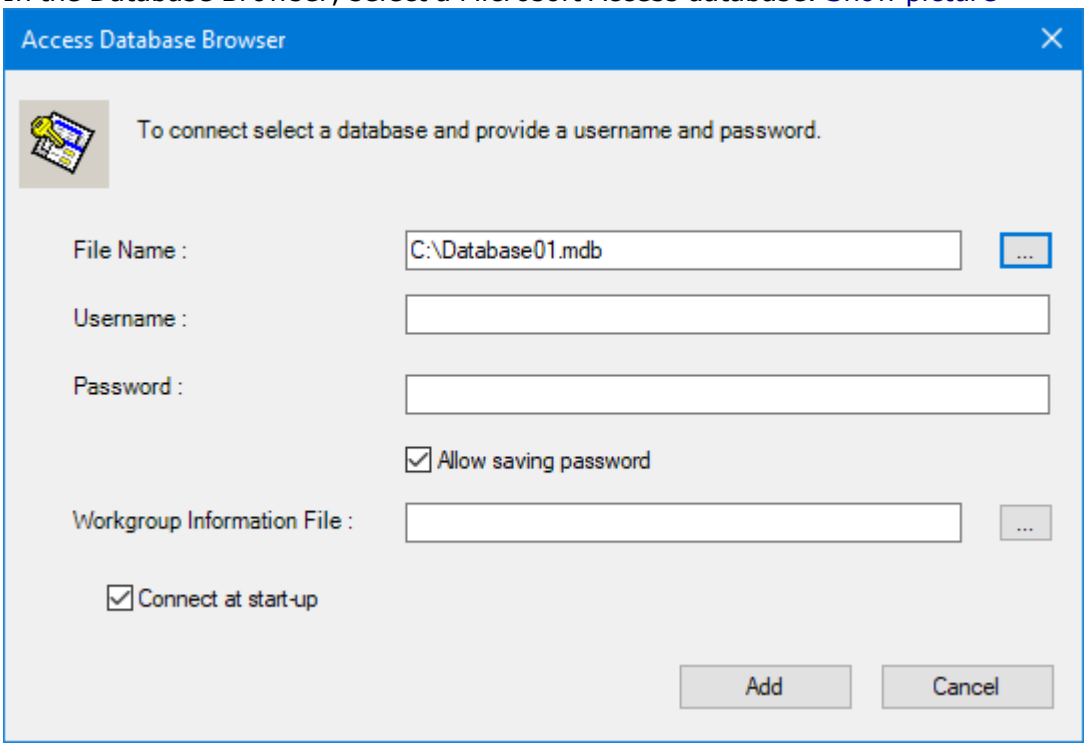
- It displays any previously identified databases in its tree structure.
- It tries to connect to any of those databases for which the option 'Connect at start-up' has been ticked in the Database Browser.

How to Browse Microsoft Access Databases

The Database Manager enables you to select Microsoft Access databases. The databases are then displayed in its tree structure. To enable the Database Manager to access a database, you have to identify it, specify its location and provide any security data that is configured for it.

Selecting an Access database

1. In the Database Browser, select a Microsoft Access database. Show picture



2. Set the parameters for connection as shown in the table below.
3. Click on the Add button to include the Access database in the Database Manager's list.

Field	Action
File Name	Enter the path and file name of the database file that contains the data, or use the browse button (...) to navigate to it.
Username	Type the User ID for authentication when logging on to the data source. This parameter depends on the database configuration (if any users are configured for the database). Default: ADMIN.
Password	Type the password for authentication when you log on to the data source (if a password is configured for the user name). Default: no password.
Allow saving password	If this flag is set, the password is saved in the Database Manager's configuration file.
Workgroup Information File	Identify the file in which Microsoft Access stores the security data for a protected database. There may be several such files, named SYSTEM.MDW.
Connect at start-up	If this flag is set, the Database Manager will attempt to connect to the database whenever it is started.

The option Allow Saving Password is useful to avoid typing the password each time the Database Manager tries to connect to the database.

The password is stored as plain text (unmasked and unencrypted), so this is not a secure way of keeping it secret.

How to Browse SQL Server Databases

The Database Manager enables you to select SQL Server databases. The databases are then displayed in its tree structure.

About authentication

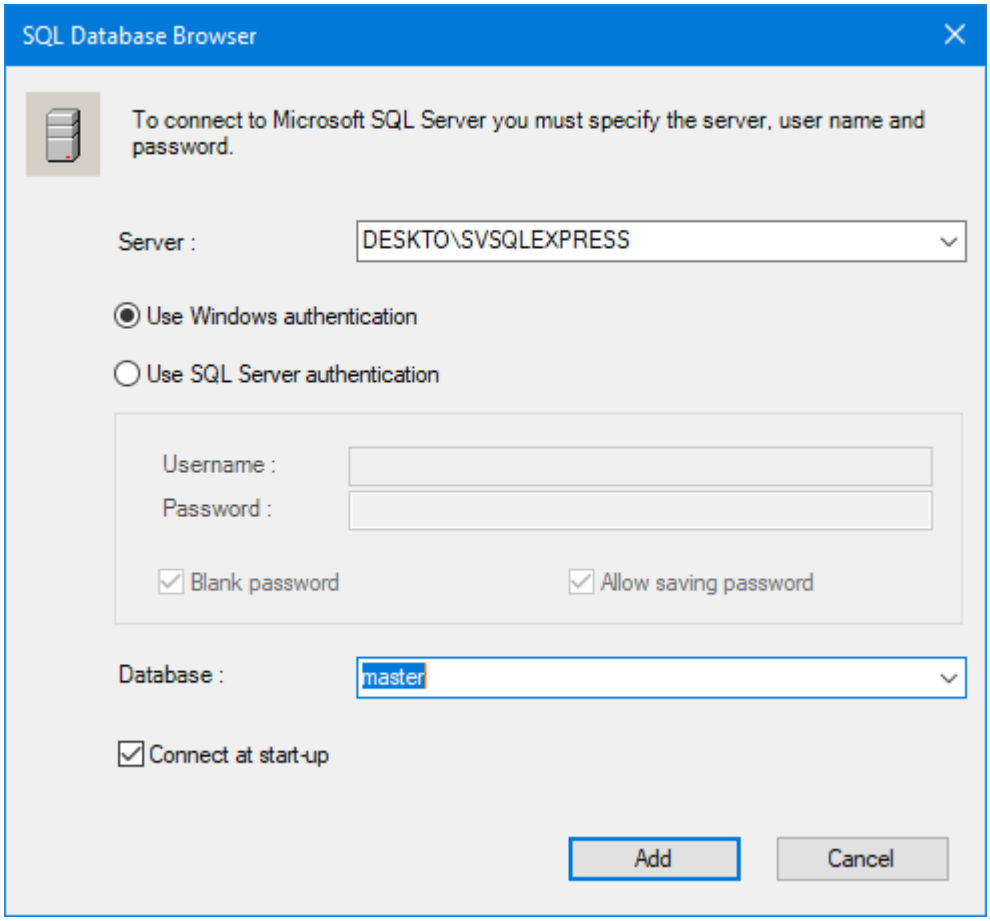
User access to a database on the same PC or across a network can be controlled using Windows authentication or SQL Server authentication. The principle for networked access is that the user should be identified on both PCs using a Windows domain account, local accounts with identical passwords or a native SQL Server user account.

Use of SQL Server user accounts is less secure and is only advisable on the same PC. For use across a network, added protection measures should be installed.

Selecting a SQL Server and database

If you move a database between SQL servers, you must also re-configure any applications that use it. For details of this process, see the topic Moving a Database.

1. In the Database Browser, select a SQL Server and a database from their drop-down boxes. Show picture



2. Set other parameters for connection as shown in the table below.
3. Click on the Add button to add it to the Database Manager list.

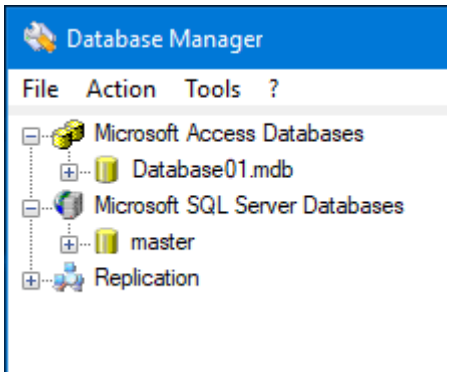
Field	Action
Server	Enter the name of the server holding the data source or select one from the drop-down list.
Use Windows Authentication	To indicate that the application uses Windows Authentication for logging on to the SQL Server database. (Username etc. below are grayed out for this default option.)
Use SQL Server Authentication	To indicate that the application uses SQL Server Authentication for logging on to the SQL Server database.

- Username	Type the User ID for authentication when logging on to the data source (if any users are configured for the database).
- Password	Type the password for authentication when logging on to the data source (if a password is configured for the user name selected above).
- Blank password	Specify whether the Password field is to remain blank as the user enters the password.
- Allow saving password	If this flag is set, the password is saved in the Database Manager configuration file.
Database	Display a list of databases connected to the SQL Server.
Connect at start-up	If this flag is set, the Database Manager will attempt to connect to the database whenever it is started.

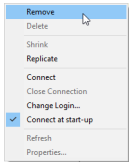
The option Allow Saving Password is useful to avoid typing the password each time the Database Manager tries to connect to the database.

About Maintaining a Database

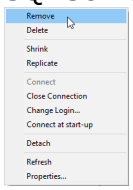
The functions described in this book are accessed from the Database Manager. To do so, you must first select a particular database: Show picture



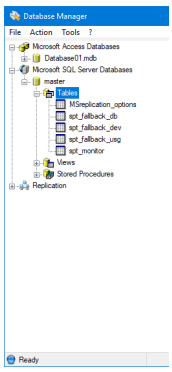
1. Open the Database Manager from the Windows Start button (or a desktop icon, if you have created one).
2. Double-click on Access Databases or SQL Server Databases to open that part of the tree structure.
3. Click on a database's name to select it.
4. Right-click on a database's name to display its context menu. It is different for:
   - Access databases. Show picture

   - SQL Server databases. Show picture

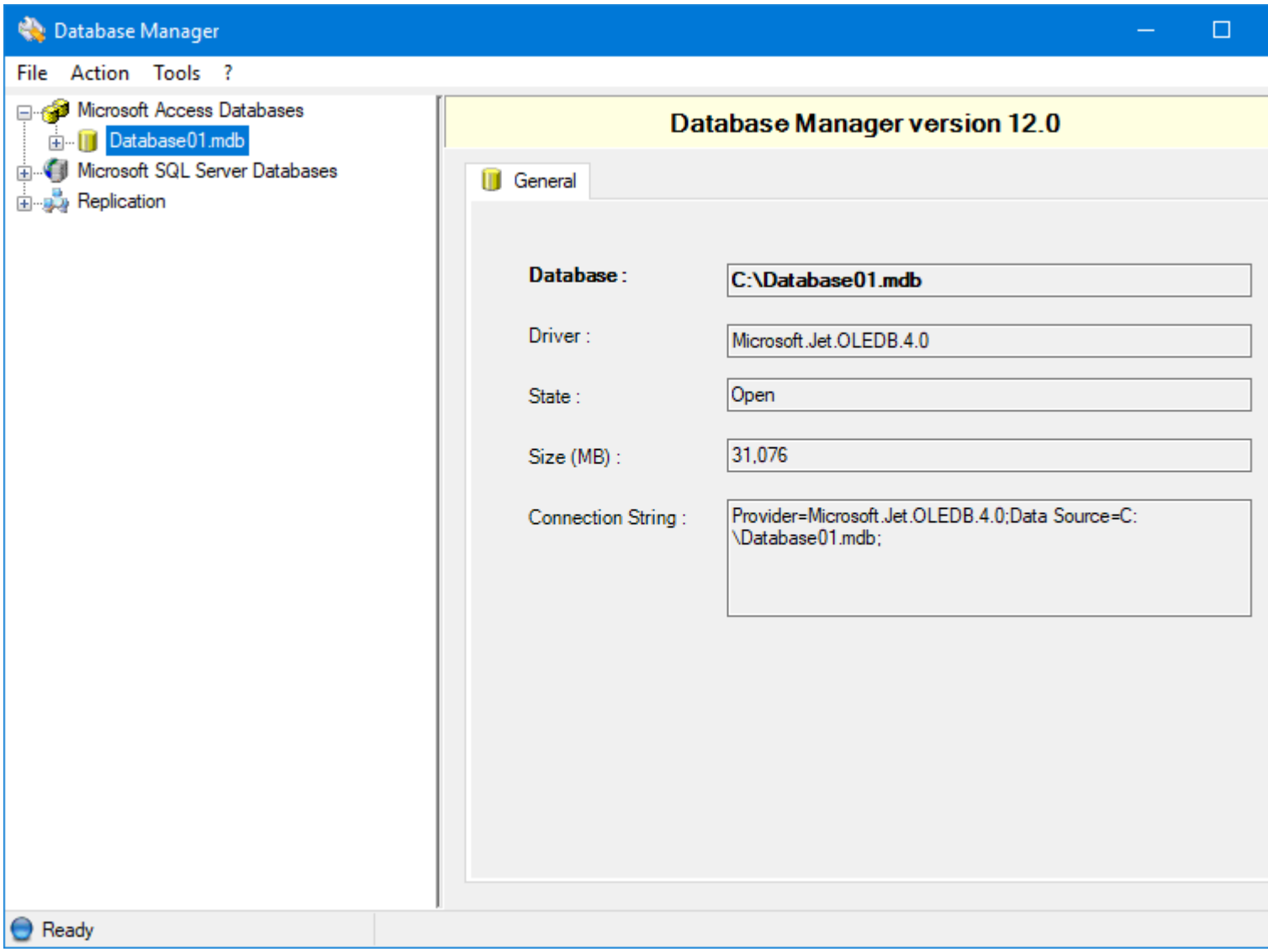
In the tree structure, these icons designate the kinds of items in the subtrees: Show picture



Item	Icon
Table	
Column	
Procedure	
View	

Displaying the Properties of a Database

You can access the properties of a database from the tree structure in the Database Manager in these ways:
Show picture



- Click on the database's name then select Action.Properties from the main menu.
- Right-click on the database's name to open its context menu, then select Properties.

The properties are displayed in the right-hand pane. This is the default function when you select a database in the tree structure. For both types of database, Access or SQL Server, the right-hand pane shows:

- A General tab to display general properties.

In the case of a SQL Server database, there are two more tabs:

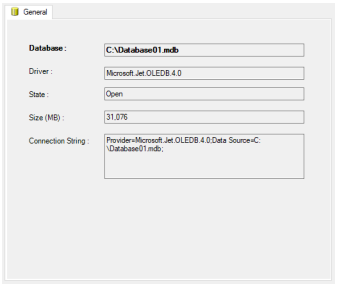
- A Files tab to list each file (data or log) and its properties.
- An Options tab to display and modify options.

On the General and Files tabs, you can use the context menu (by right-clicking on a cell) to copy a value.

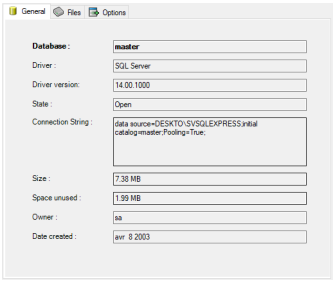
The only properties that can be set from the Database Manager are those on the Options tab.

General properties

The details identify the database, driver and manner of connection, plus current state and size. Show picture



The SQL Server version has some extra fields. Show picture

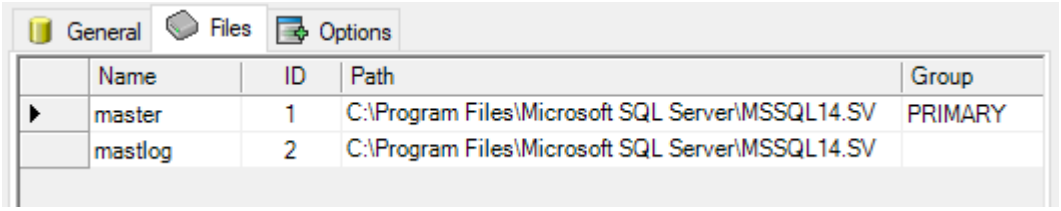


For a SQL Server database the value Space Unused shows the disk space occupied by deleted records. A high value indicates the need to compact the database to release that space.

File properties (SQL Server database)

Use the horizontal scroll bar, and/or adjust column widths, to view all of the columns.

A database consists of two files: Show picture



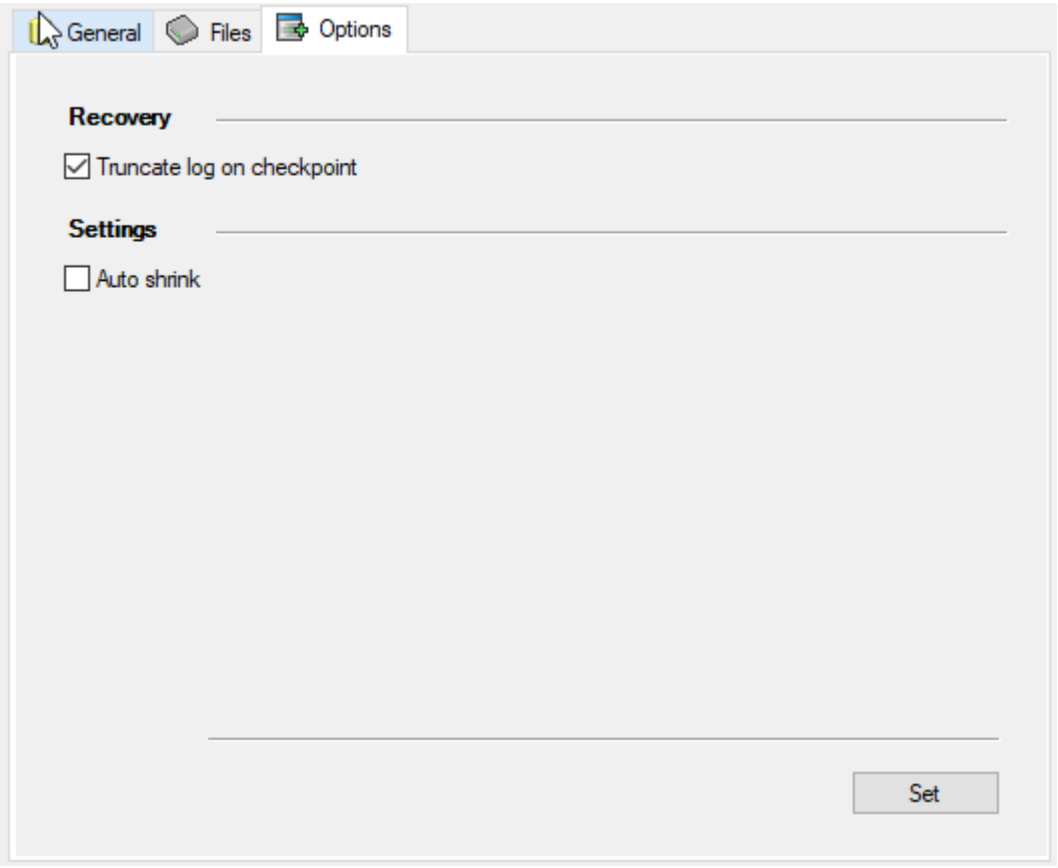
- A file of data.
- A log file that traces all actions performed on the database.

For each file, this tab shows details of its location and size.

Space is allocated to a database in increments as required. The Growth figure indicates the steps to be used, so 10% means that when the database has grown by 10%, another 10% is added to allow for further expansion.

Options properties (SQL Server database)

The property under Recovery determines whether the SQL Server periodically purges the log file of actions on this database. To cause the SQL Server to do so: Show picture



- Tick the property Truncate Log on Checkpoint.

A checkpoint occurs when the SQL Server's internal timer triggers an action on its databases.

The Auto Shrink setting should be kept un-ticked so that database compacting is controlled by the Scheduler, not the SQL Server.

Deleting a Database

The action of deleting a database physically removes a database, including its files, from the PC's hard disk. Its main purpose is to recover the disk space used by databases that are no longer used, for example a database that was used in an application project that has been deleted. This option is subject to user confirmation and the user needs to have deletion rights.

How to delete any database that is listed

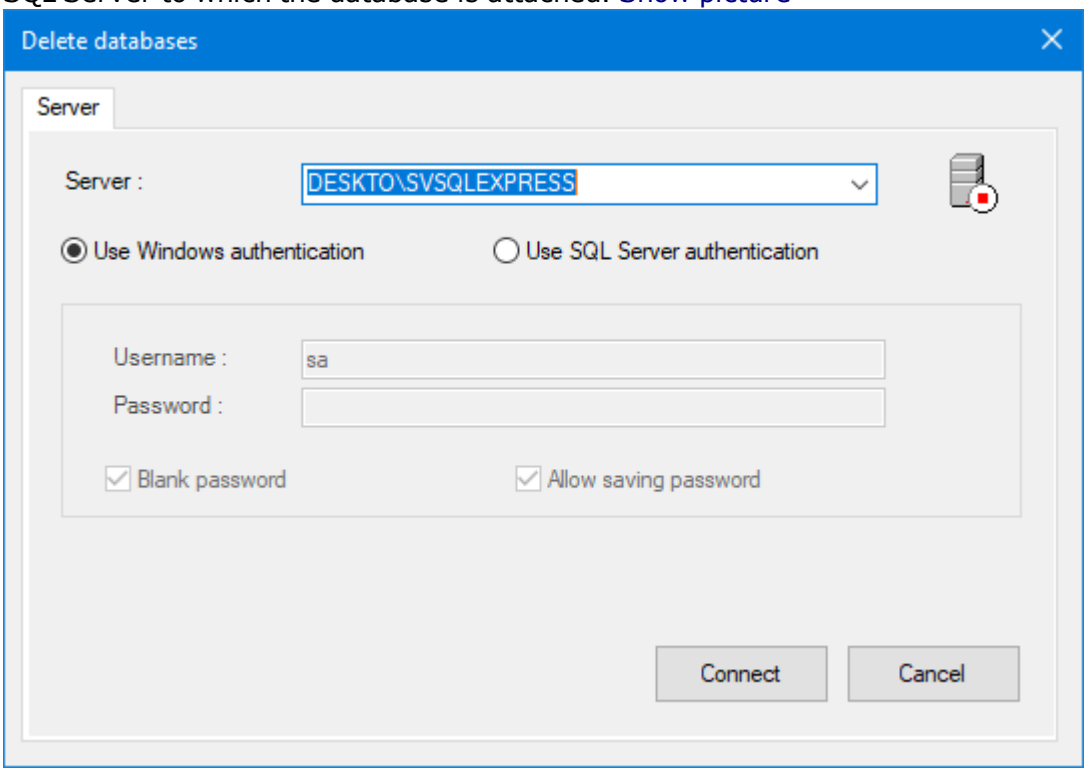
To delete a database that appears in the Database Manager's display list:

1. Select the database from the tree.
2. Right-click to open its context menu then select the Delete command.

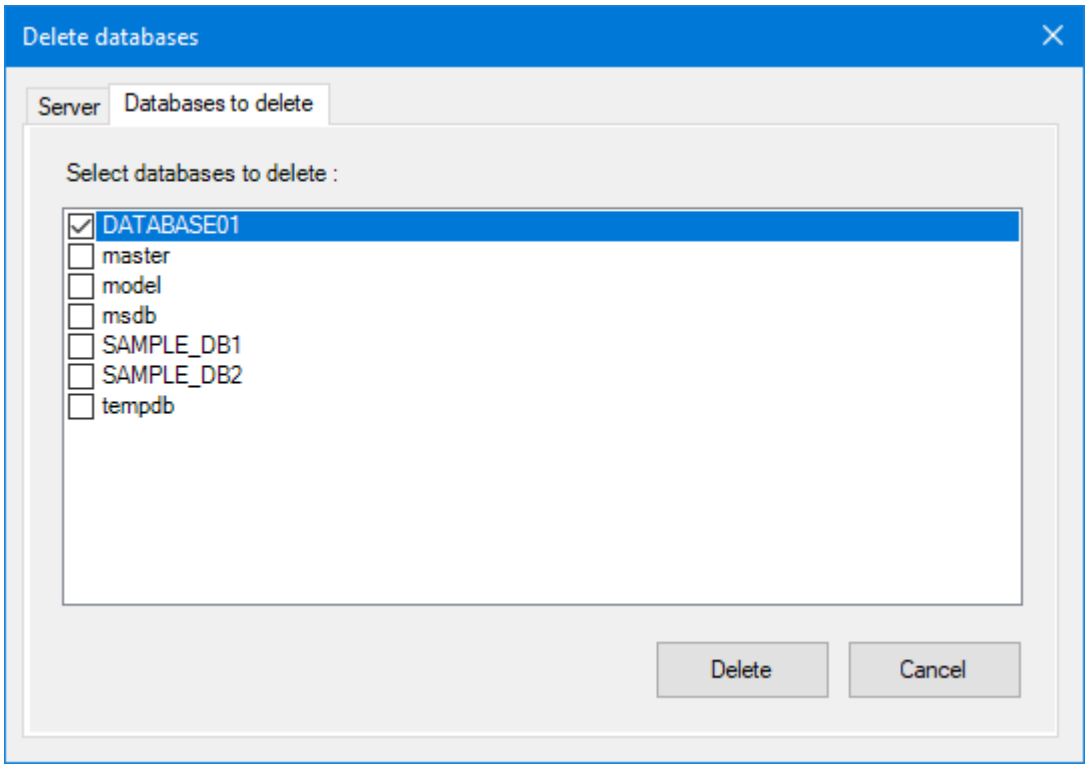
In this case the Delete command first removes the database from the display list and then deletes it.

How to delete a SQL Server database that is not listed

1. In the left pane, click on Microsoft SQL Server Databases.
2. From the Action menu, select the Delete command. A dialog is displayed from which you select the SQL Server to which the database is attached. Show picture

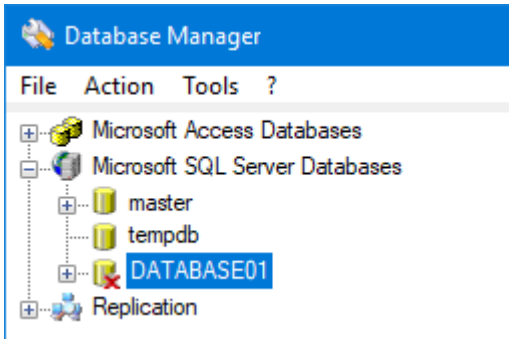


3. In the Server tab, select the SQL Server using the drop down list box and click the Connect button.
4. A list of databases that are currently attached to the SQL Server is displayed in the tab Databases to Delete. Show picture



5. Tick the database(s) that you wish to delete and click the Delete button.
6. A confirmation dialog is displayed. Click Yes to complete deletion of the database and all its files.

Each deleted database's icon is marked with an 'x' in the tree structure. Show picture



The Delete function requires exclusive access to the database, so any other applications must be disconnected from the database first.

You cannot delete a database that appears in the Database Manager's display list using this method.

The deleted databases are not available in the Windows Recycler, so you cannot restore them.

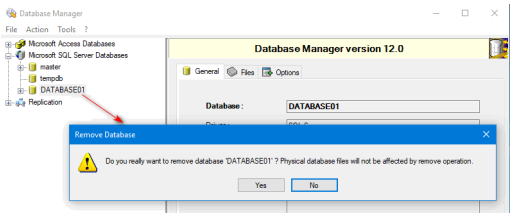
Removing a Database

The options for when removing a database are as follows.

Action	Comment
To remove the database from the Database Manager's tree structure.	This has no effect on the database but removes its name from the list of databases to administer.
To delete the database physically from the disk drive.	This option is subject to user confirmation and the user needs to have deletion rights.

You can access these options from the tree structure in the Database Manager.

1. Click on the database's name then select the Action menu (or right-click on the required database to open its context menu).
2. Select Remove to remove the database from the list in the Database Manager.
3. Select Yes to confirm the action. Show picture



For the procedures for deleting databases, see the topic Deleting a Database.

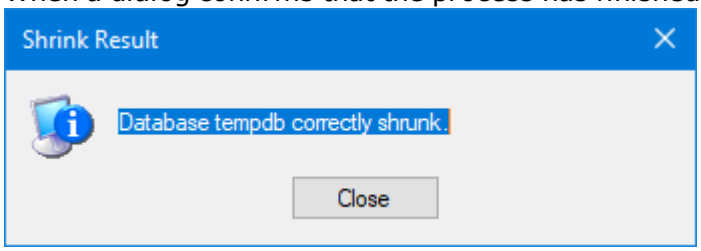
Compacting a Database

The Database Manager can compact Access databases and SQL Server databases. The compacting function seeks to reduce the size of the files that make up a database by:

- Removing previously deleted records.
- Reorganising the physical structure so as to eliminate wasted space.

You can access the compacting options for a database from the tree structure in the Database Manager:

1. Click on the database's name then select the Action menu (or right-click on the required database to open its context menu).
2. Select Shrink. The compaction process is run immediately.
3. When a dialog confirms that the process has finished, select Close. Show picture



For Access databases, the compacting function requires exclusive access to database, so any other applications must first be disconnected from the database.

For SQL Server databases, applications can remain connected but exclusive access is recommended.

Ataching and Detaching a Database (SQL Server)

The Attach and Detach functions can only be used with a local SQL Server.

You can use these functions to assist with administering databases. For instance, you may want to move a database to a different disk drive when the disk containing the database file has run out of space and you prefer to expand the existing file on another drive (rather than add a new file to the database).

The Attach and Detach functions require exclusive access to the database, so any other applications must be disconnected from the database.

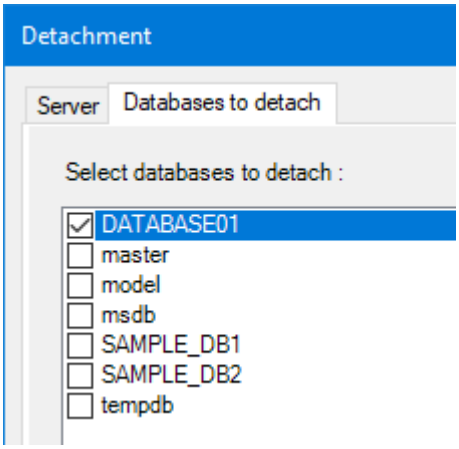
Attach and Detach only apply to a local SQL Server, i.e. on the same PC or on the same network as the station.

Detaching a database removes the database from the SQL Server but leaves the data and transaction log files of the database intact on the disk drive. These files can then be used in the attach procedure when creating another database either on the same or a different SQL Server.

Detaching a database from the SQL Server

You cannot detach a database that appears in the Database Manager's tree.

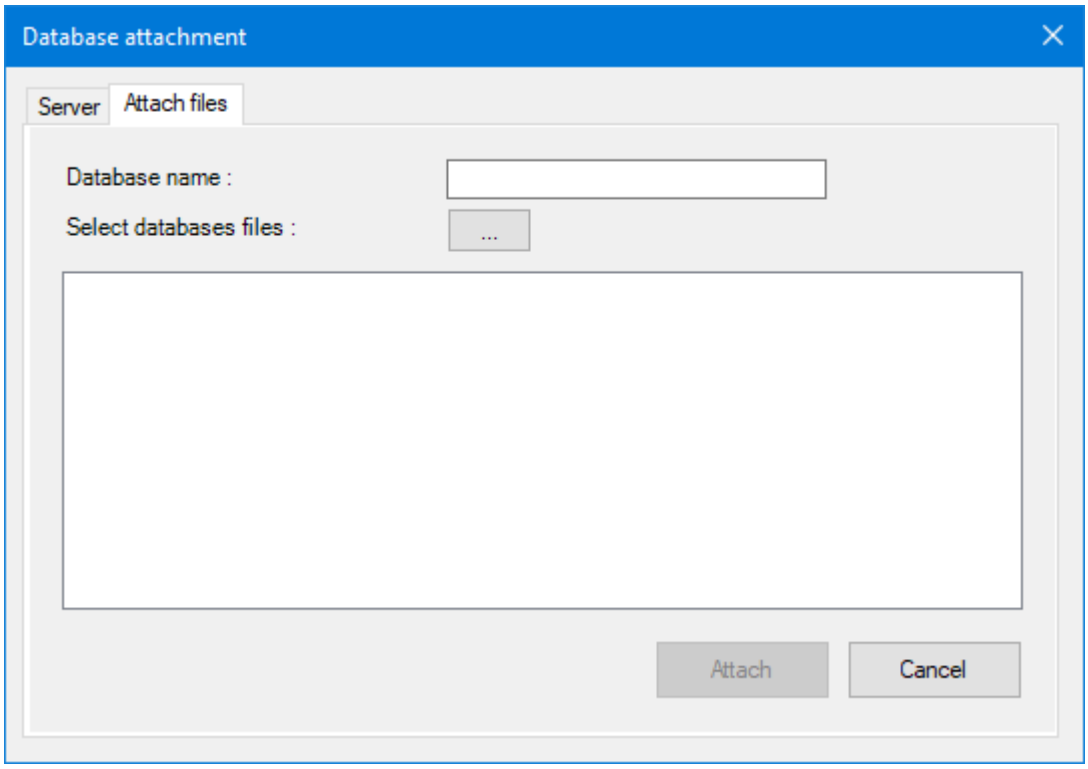
1. In the left pane, click on the Microsoft SQL Server Databases icon.
2. From the Action menu select the Detach command to display a dialog with a Server tab.
3. Select the SQL Server using the drop down list box and click the Connect button. A new tab titled Databases to Detach shows a list of databases that are currently attached to the SQL Server. Show picture



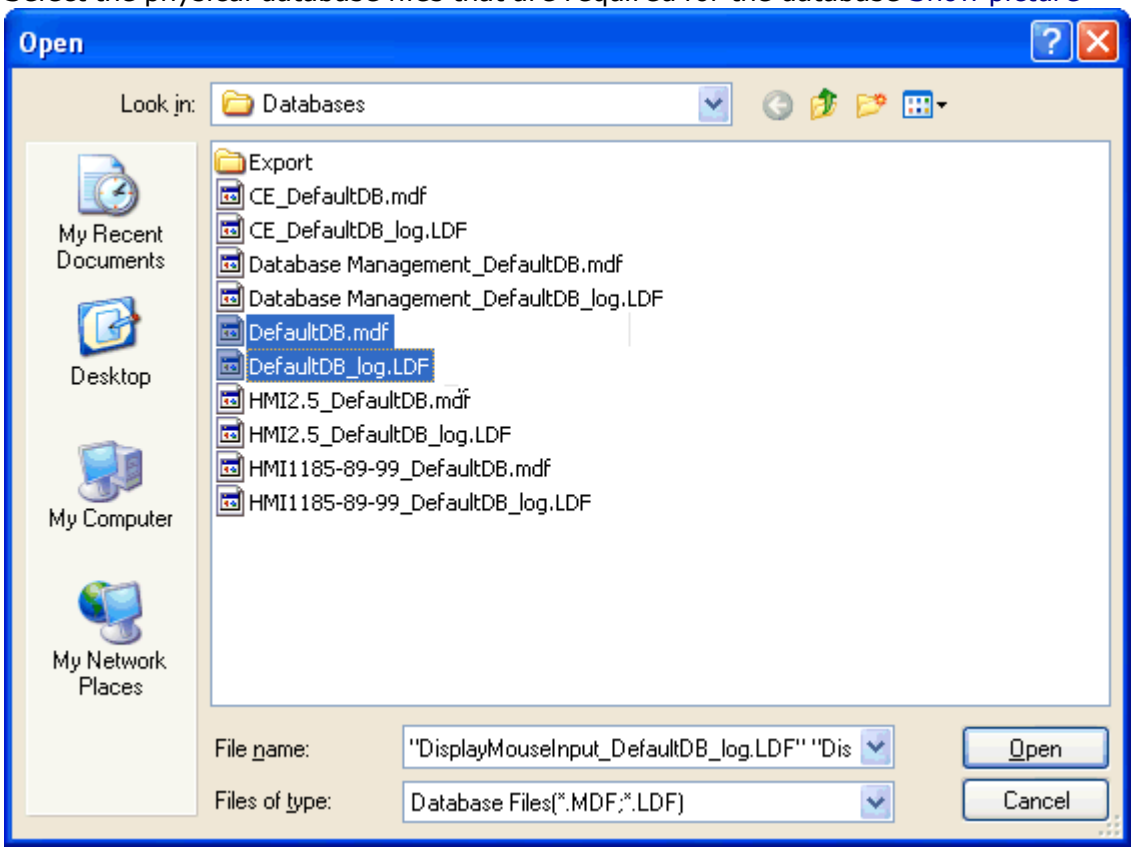
4. Tick the database(s) that you wish to detach and click the Detach button.
5. A confirmation dialog is displayed. Click Yes to complete detachment of the database.

Attaching a database to the SQL Server

1. In the left pane, click on the Microsoft SQL Server Databases icon.
2. From the Action menu select the Attach command to display a dialog with a Server tab.
3. Select the SQL Server using the drop-down list box and click the Connect button. A new tab titled Attachment Files is displayed. Show picture



4. In the Database Name field, enter the name by which the database will be known to the SQL server. It is conventional (but not essential) for the database name to be same as the files that it contains.
5. Click the Browse button to display the Open dialog.
6. Select the physical database files that are required for the database Show picture



You can select more than one file at a time by clicking while holding down the Ctrl button.

These two files are always required: <Database Name>.mdf and <Database Name>_log.ldf.

7. When you have selected the database files, click on Open.
8. Confirm the attachment action by clicking the Attach button.
9. When asked whether you want the database to be added to the Database Manager's tree, select Yes or No as appropriate.

Authentication

See the topic How to Browse SQL Server Databases on how to comply with authentication by Windows or by SQL Server.

Moving a Database

To move a database or a database file to another server or disk:

1. First detach the database from the SQL Server, as described in Attaching and detaching a database.
2. Move the database file(s) to the other server or disk (e.g. using Windows Explorer).
3. Attach the database as described in Attaching and detaching a database, using the new location of the moved files.

Once the attachment takes place, the moved database can be added to the Database Manager's tree structure. Its properties show the new path.

This function requires exclusive access to the database, so any other applications must be disconnected from the database before it is applied.

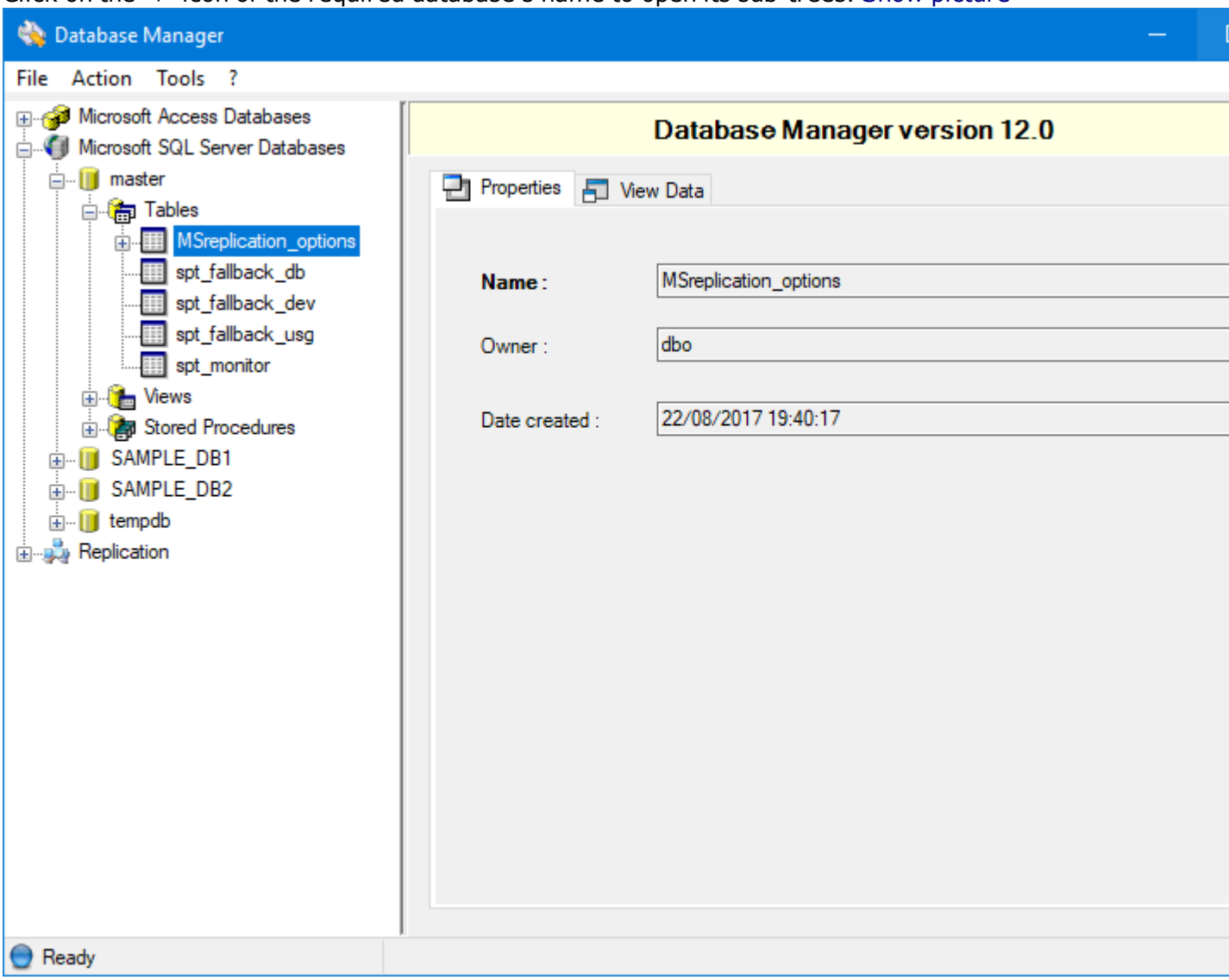
Lists of Tables, Views and Stored Procedures

You can list the database tables, views and stored procedures of a database from the tree structure in the Database Manager.

If a '+' icon is not shown beside a name in the tree structure, click on the name. If there are any items to be listed within it, the '+' icon will appear after a short pause.

Displaying a table

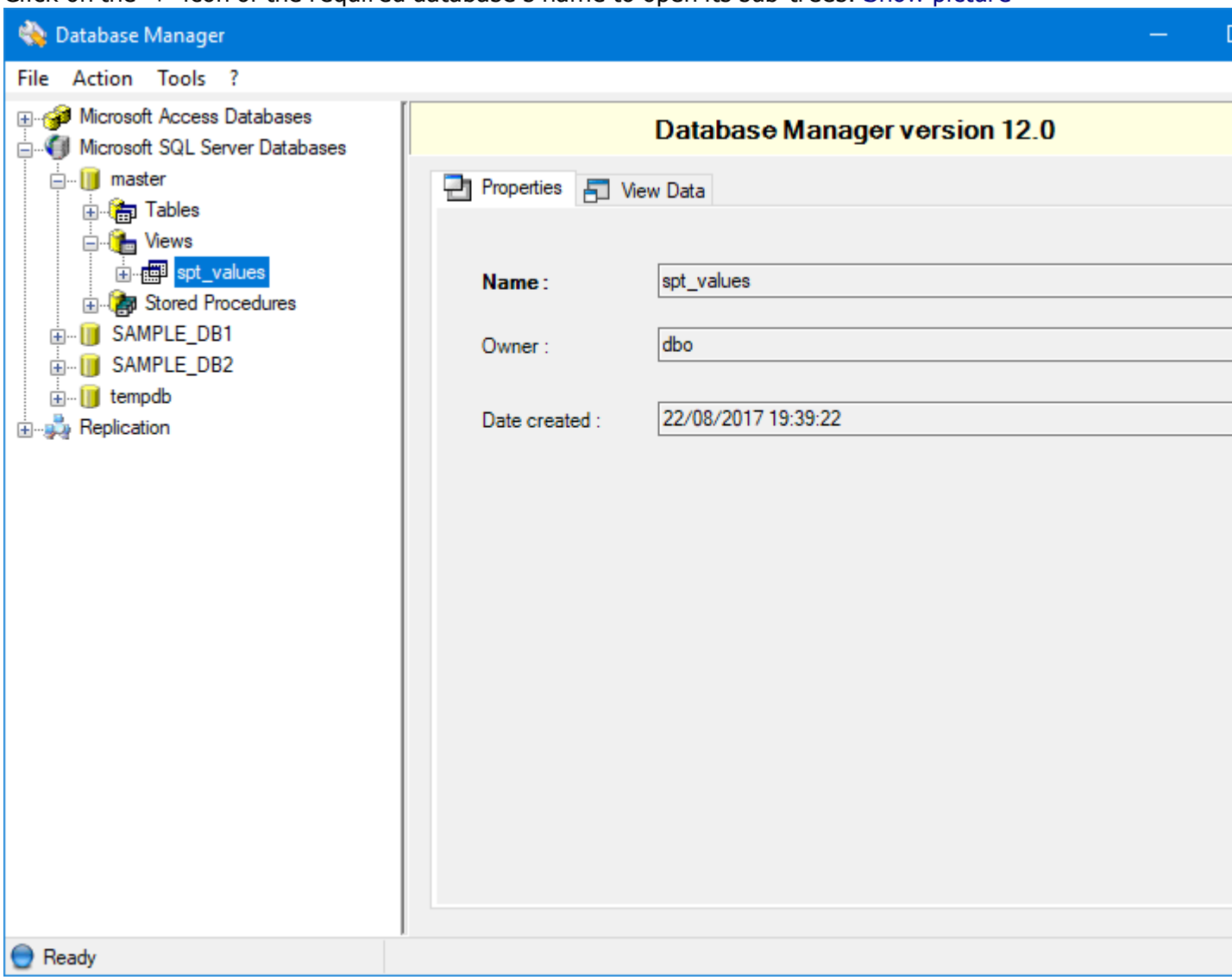
1. Click on the '+' icon of the required database's name to open its sub-trees. Show picture



2. Click on the '+' icon of Tables to list its tables.
3. Select a particular table to display its properties in the right-hand pane.
4. Click on the '+' icon of a particular table to list its columns as a sub-tree.
5. Select a column's name in the sub-tree to display its properties or contents in the right-hand pane.

Displaying a view

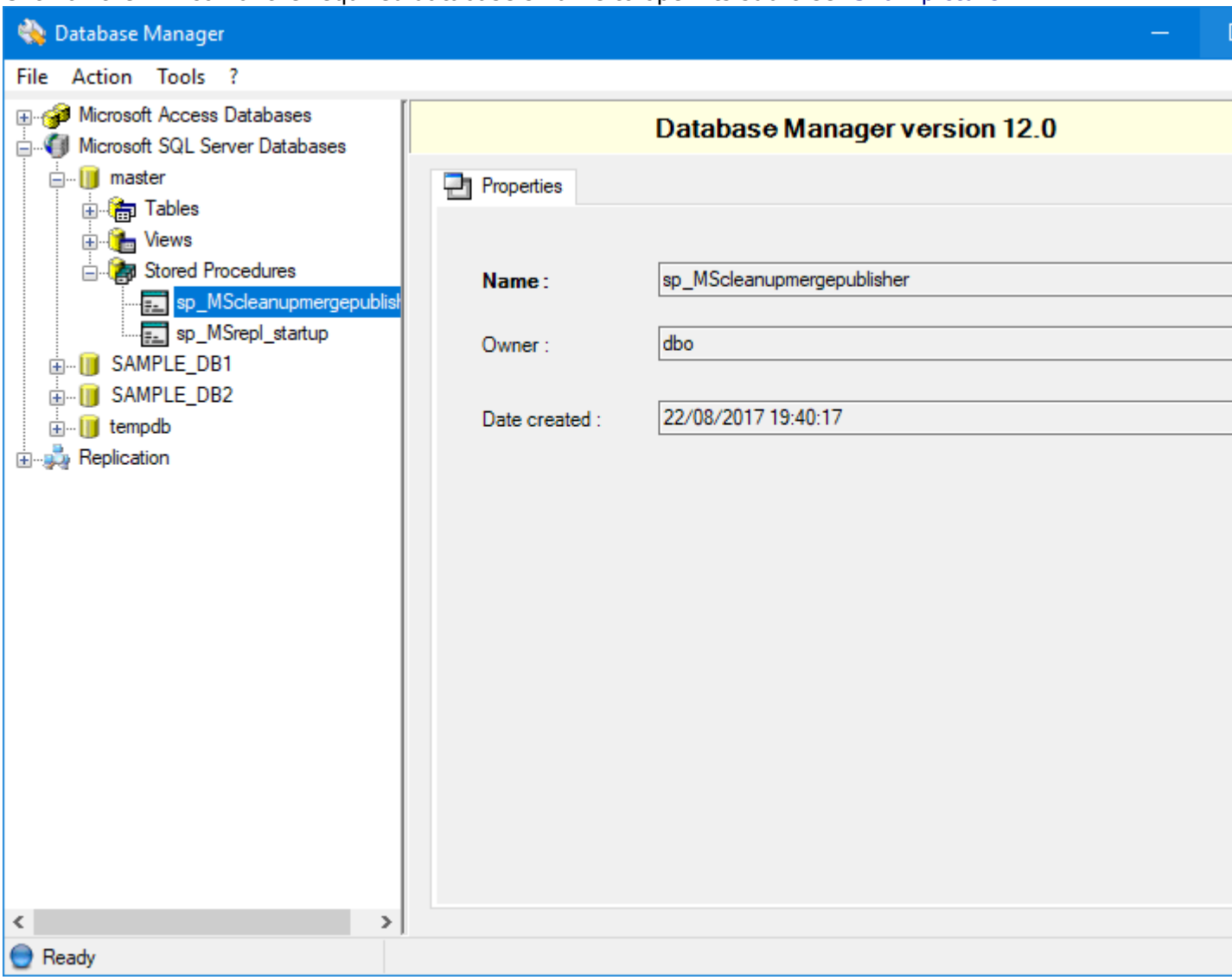
1. Click on the '+' icon of the required database's name to open its sub-trees. Show picture



2. Click on the '+' icon of Views to list its views.
3. Select a particular view to display its properties in the right-hand pane.
4. Click on the '+' icon of a particular view to list its columns as a sub-tree.
5. Select a column's name in the sub-tree to display its properties or contents in the right-hand pane.

Displaying a stored procedure

1. Click on the '+' icon of the required database's name to open its sub-tree. Show picture

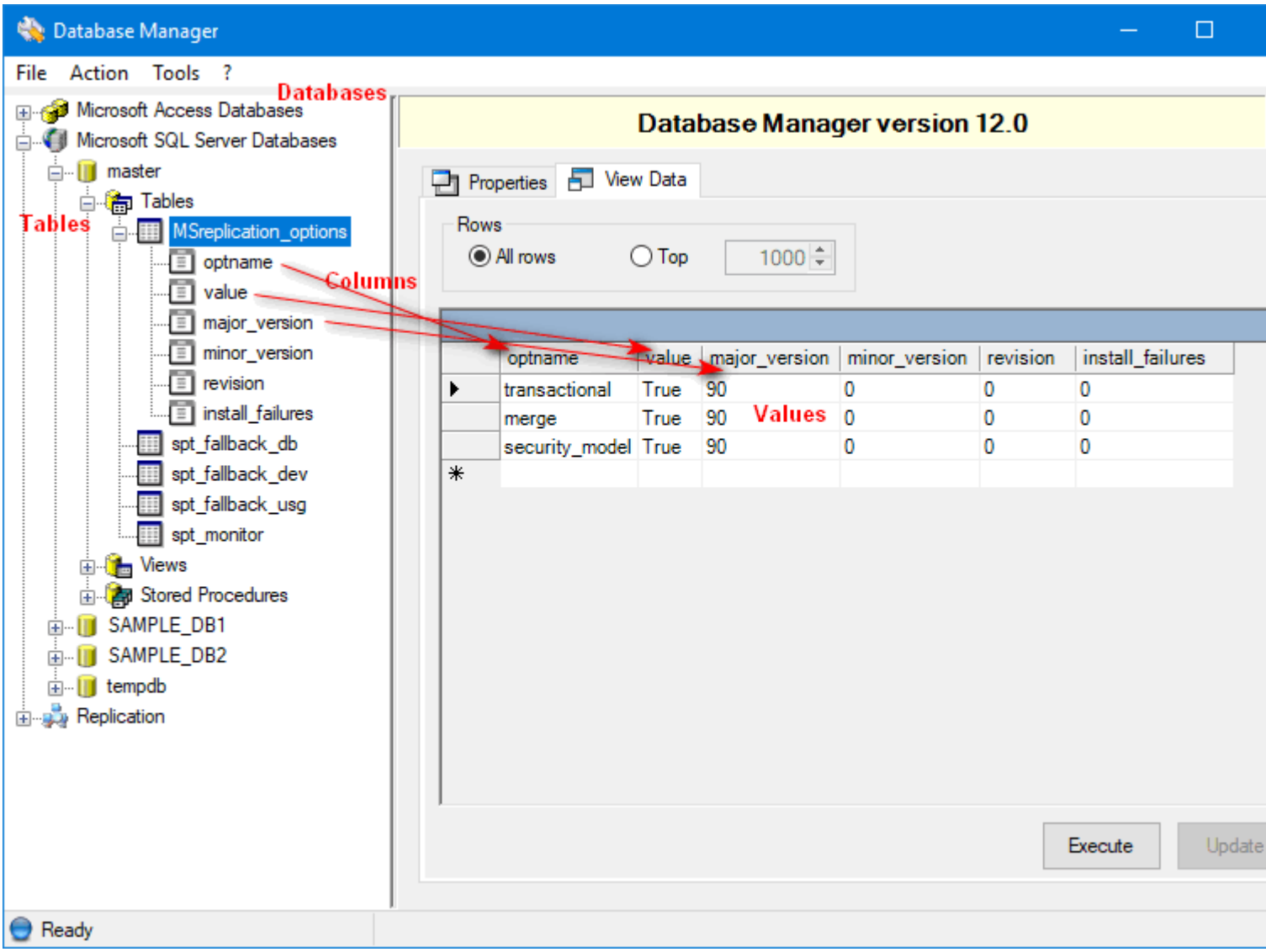


2. Click on the '+' icon of Views to list its stored procedures as a sub-tree.
3. Select a particular stored procedure's name in the sub-tree to display its properties in the right-hand pane.
4. If a stored procedure has a '+' icon, you can click on it to list its components.
5. Select a component's name in the sub-tree to display its properties or contents in the right-hand pane.

For details of how to display and modify the contents a table, see the book Maintaining Database Contents.

About Maintaining a Database's Contents

In the Database Manager, you can view, change and delete the tables, views and columns of a database.
Show picture



The action of permitted viewing of a database is harmless, but direct editing and deletion of database components and contents are extremely risky. Such maintenance should only be done with advanced knowledge and due precautions.

You have to have the rights to perform the actions.

You should first make a back-up copy of the database, or part of a database, that is to be altered.

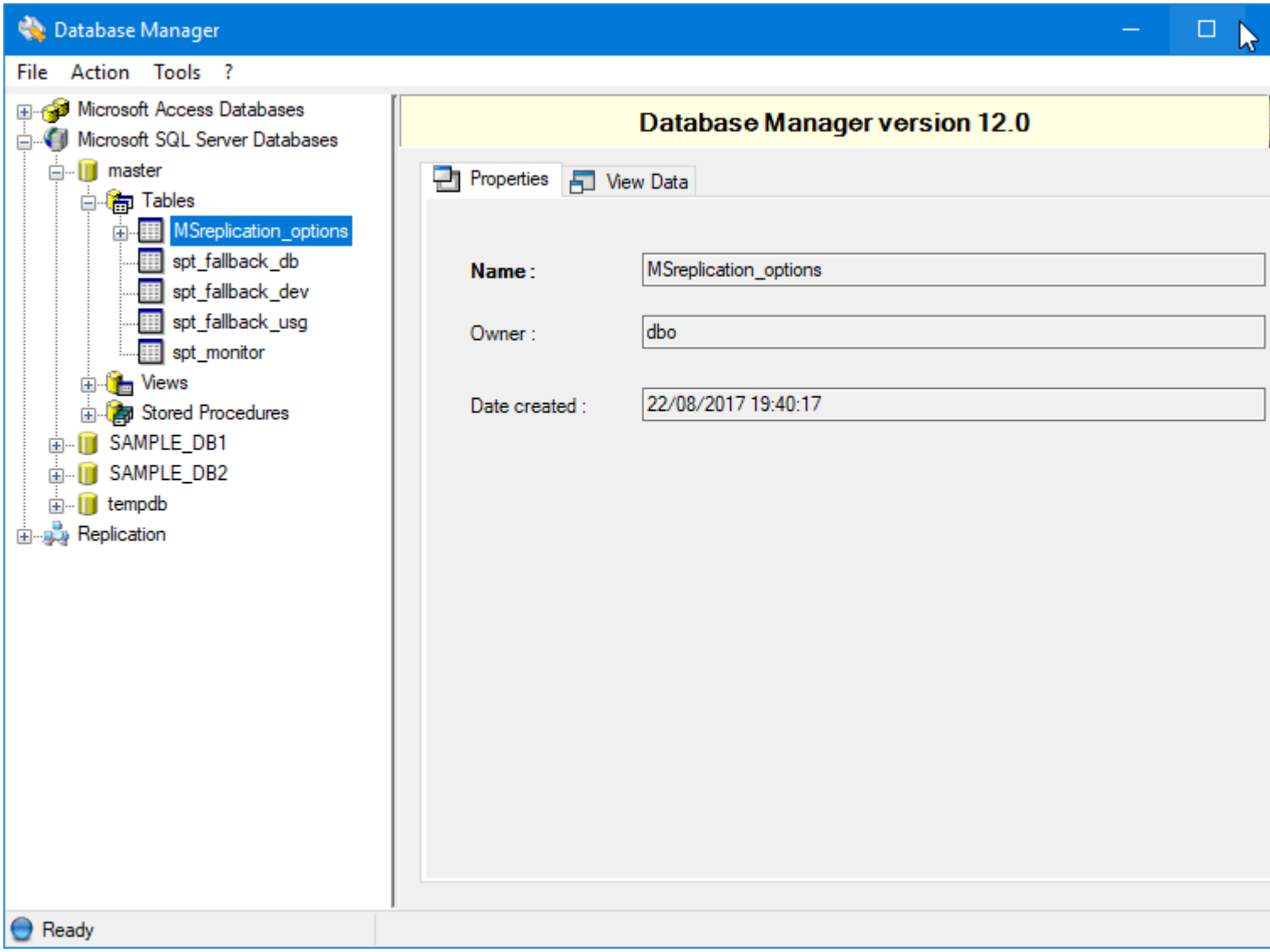
You must comply with other applications' requirements upon the databases. Specific warnings are included in the topics where such restrictions may apply.

Bear in mind that an otherwise valid change in one part of a database may cause inconsistency with the contents of other parts of that database.

Maintaining Database Tables

Displaying a table's properties

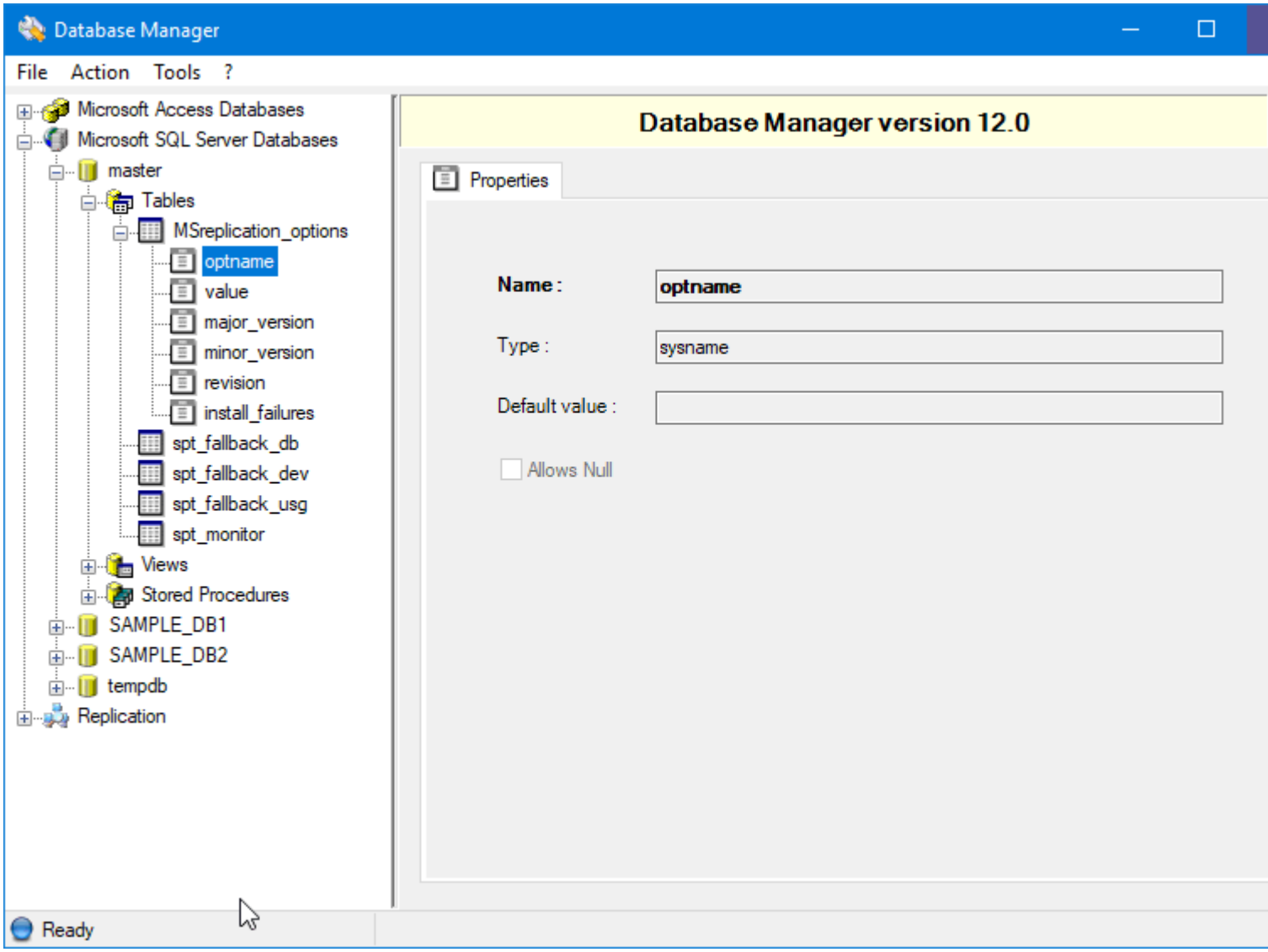
This is the default function when you select a table in the tree structure of the Database Manager: Show picture



1. Click on the '+' icon for a database to expand the list of tables. Select a table's name.
2. Its properties are displayed in the right-hand pane.

Displaying a table's columns

You can expand a table node in the tree structure to list a table's columns: Show picture

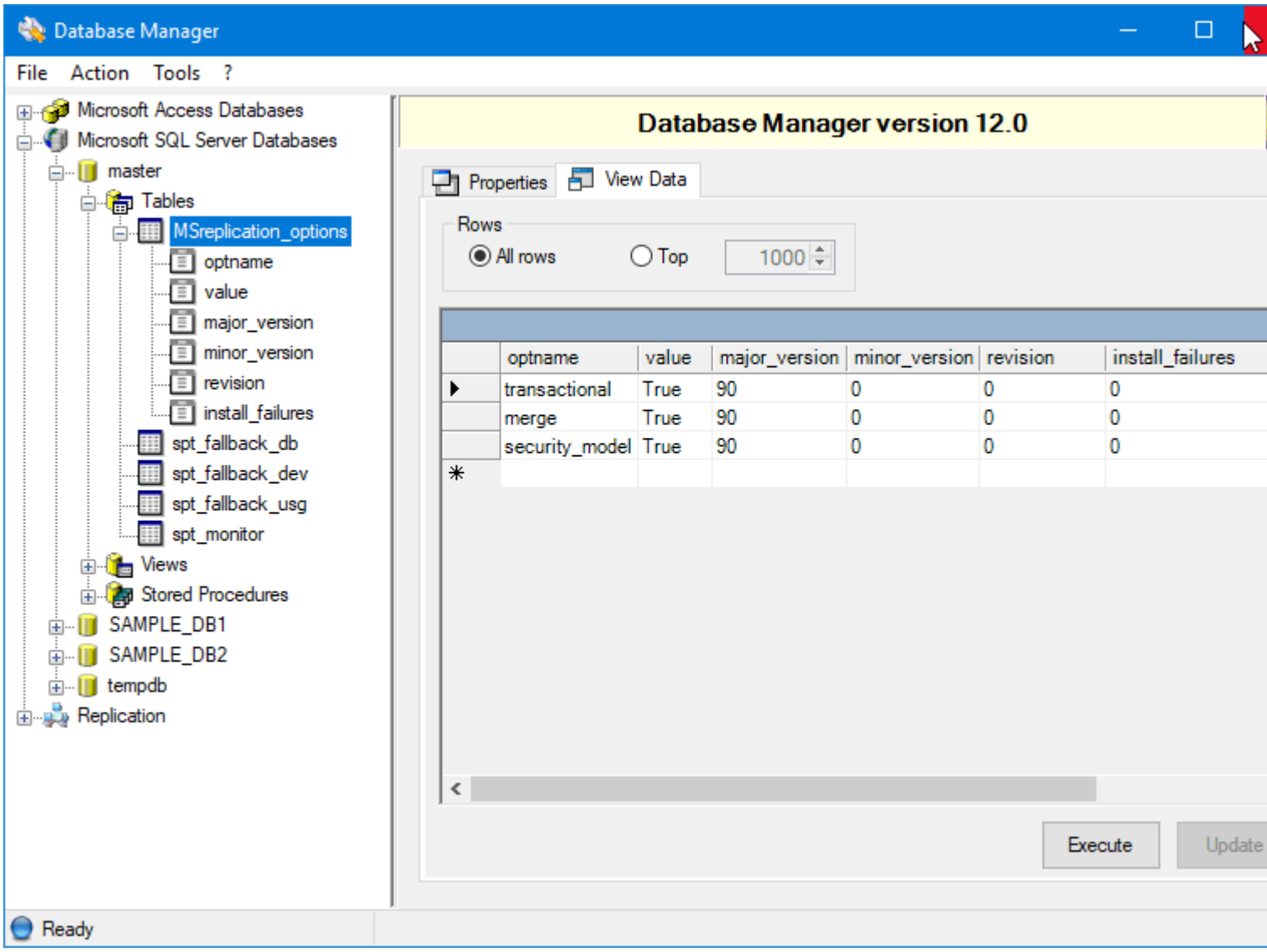


1. Click on the + icon by a table's name to list its columns.
2. Select a column's name to display its properties in the right-hand pane.

For information on how to display a column's properties or delete it, see the topic Maintaining Columns.

Displaying or updating the data contents

You can display the contents of a table, or only a portion of the data, in a grid: Show picture



1. Select a table. In the right-hand pane, select the View Data tab.
2. Select either All Rows or Top *N* Rows, where you set *N* to the number of rows to display.
3. If you select Top *N* Rows, the Ordered By box is displayed. In it, select a column name to sequence the rows by its values.
4. You can use the AZ/ZA button to toggle between alphabetical/ascending and reverse/descending sequences.
5. Click on the Execute button below the table to display the data contents.
6. Use the scroll bars to move the data grid relative to the pane.

You can also directly modify the table's contents by editing the data in the grid in the right-hand pane of the View Data tab:

1. Click on a particular cell to select and change its entire contents.
2. Click between characters to select an insertion point, or drag the cursor to select characters to replace, then type into the cell.
3. Press the Enter key to enter a changed value and to select the next cell downwards in the same column.
4. Select the Update button to apply the changes to the database.

Until you select Update, you can press Ctrl+Z to undo the most recent change in the current cell only.

Exercise extreme caution when making changes, since this function only checks what you enter in terms of the values permitted in each cell. No other constraints or dependencies are applied.

Deleting a table

From its context menu, you can physically delete a table from the database:

1. In the Database Manager, right-click on a table's name to open its context menu.
2. Select Delete to display a confirmation box, then select Yes to delete the table.
3. In the database's context menu, select Refresh to re-display its structure.

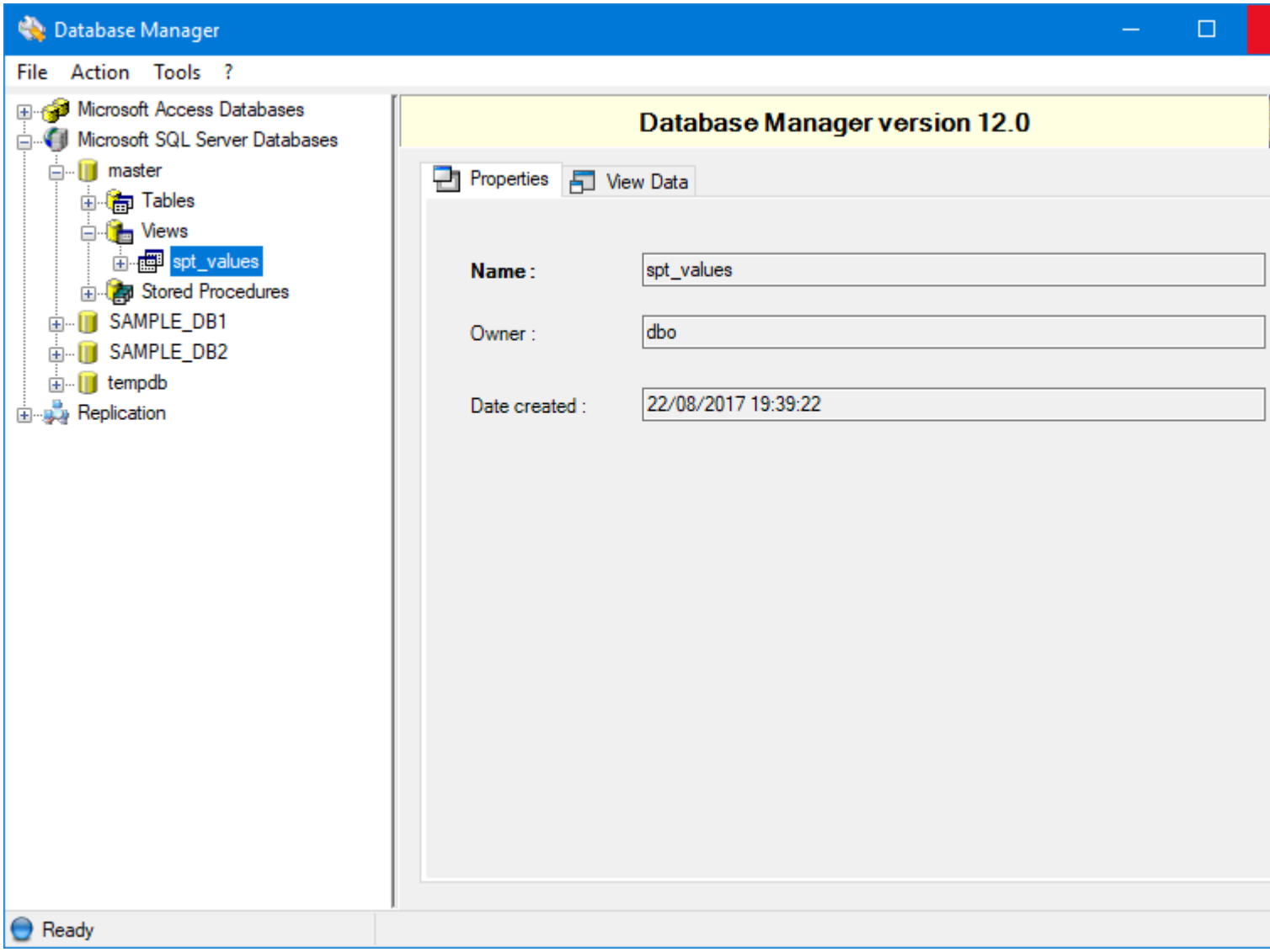
You have to have deletion rights to delete a table.

This function does not require exclusive access to database, so other applications can be connected to the database when it is run. However you must take care not to delete a table that is required by other applications.

Maintaining Database Views

Displaying a view's properties

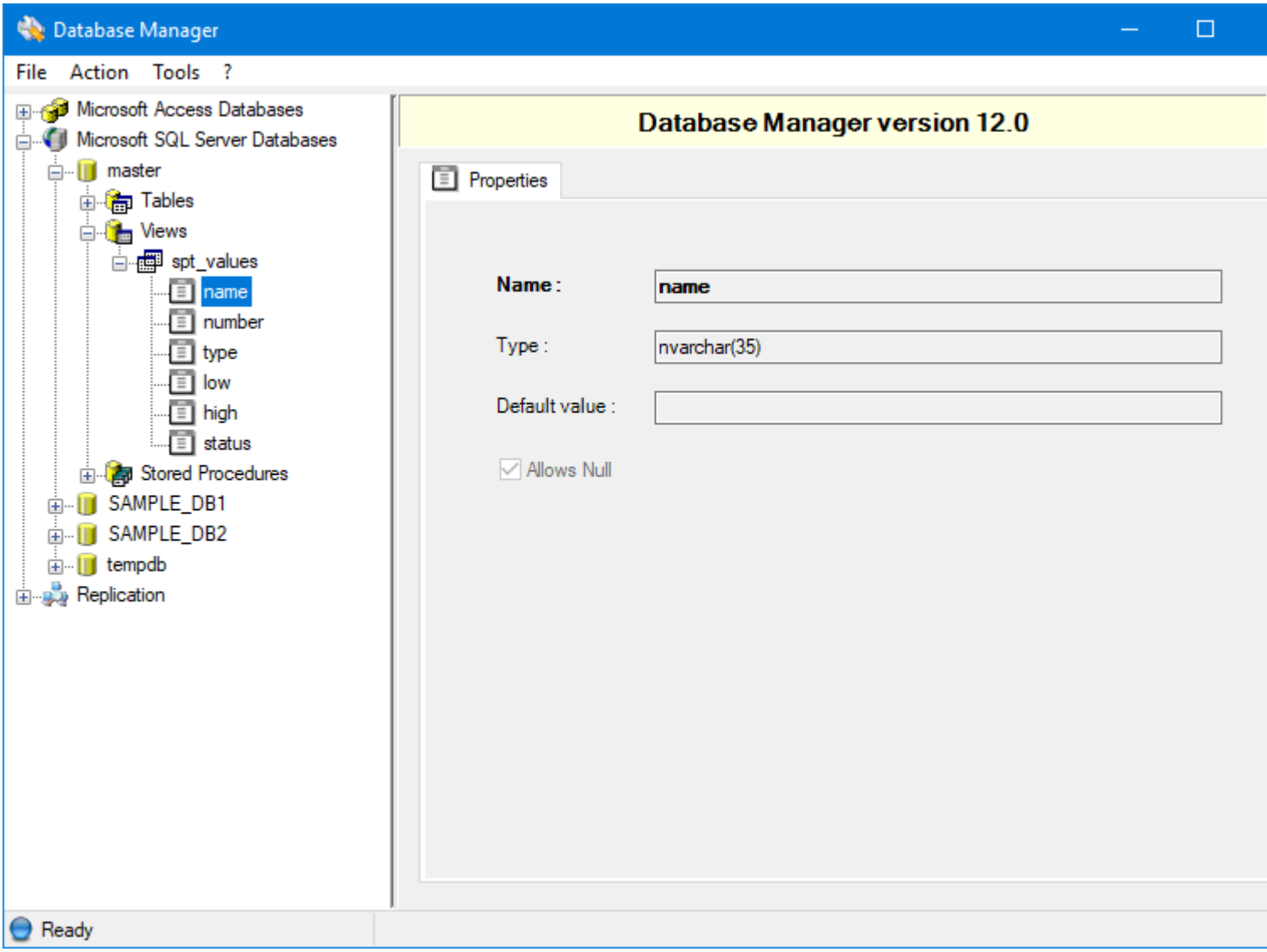
This is the default function when you select a view in the tree structure. Show picture



1. In the Views section, select a view's name.
2. Select the Properties tab to display the properties in the right-hand pane.

Displaying a view's columns

You can list the columns of a view as follows: Show picture

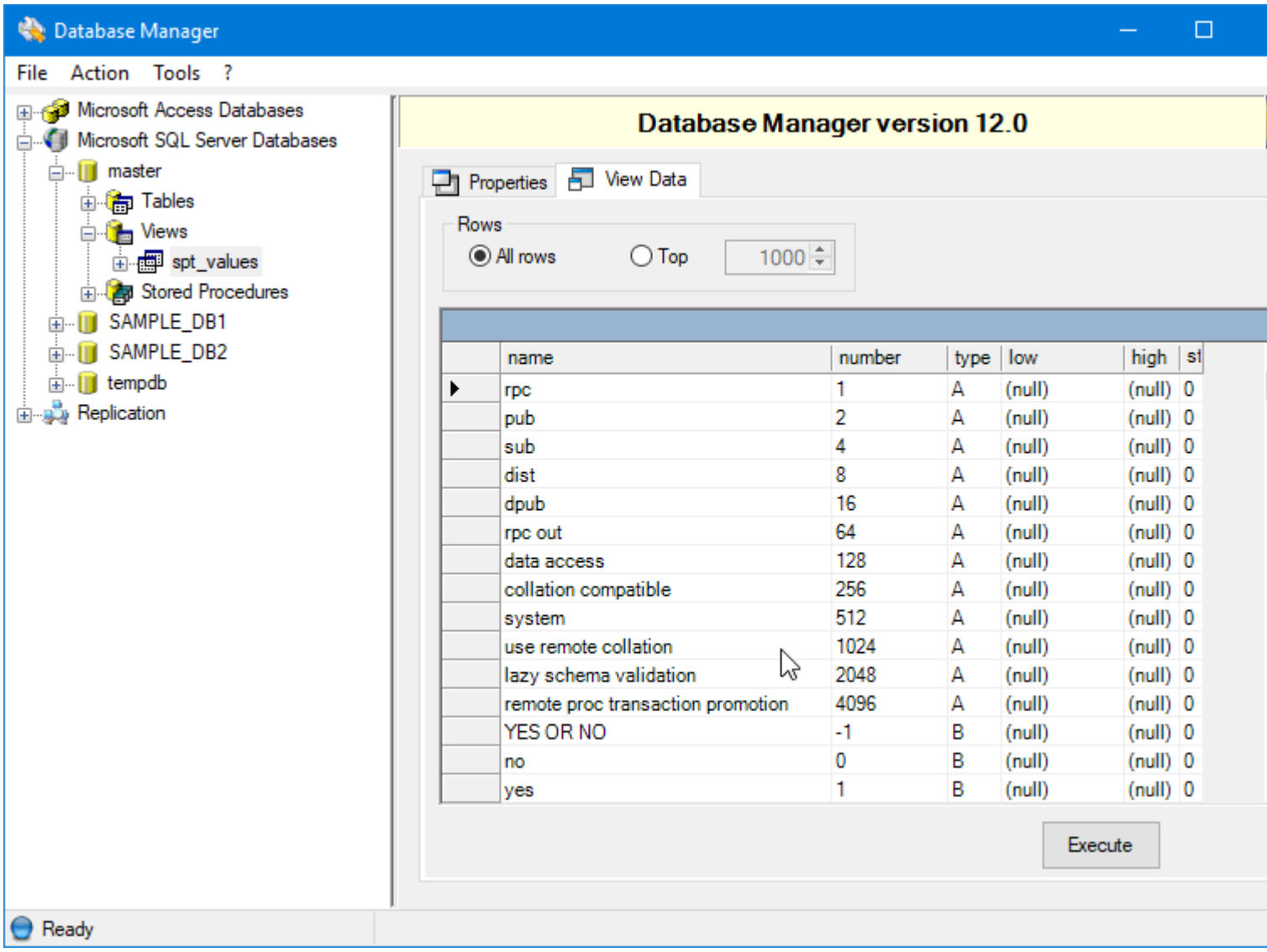


1. In the Views section, click on the '+' icon by a view's name.
2. Select a column to display its properties in the right-hand pane.

For information on how to display a column's properties or delete it, see the topic Maintaining Columns.

Displaying a view's data

You can display all contents of a view or a selection of the data: Show picture



1. In the Views section, select a view's name.
2. Select the View Data tab to display the properties in the right-hand pane.

Unlike the Table datadialog, the View data cannot be modifieddialog does not let you update the data that is displayed.

Deleting a view

By using its context menu, you can delete a view from the database:

1. In the Views section, right-click on a view's name.
2. Select Delete to open a confirmation box. Select Yes to remove the view from the database.
3. In the database's context menu, select Refresh to re-display its structure.

You have to have deletion rights to delete a view.

This function does not require exclusive access to database, so other applications can be connected to the database when it is run.

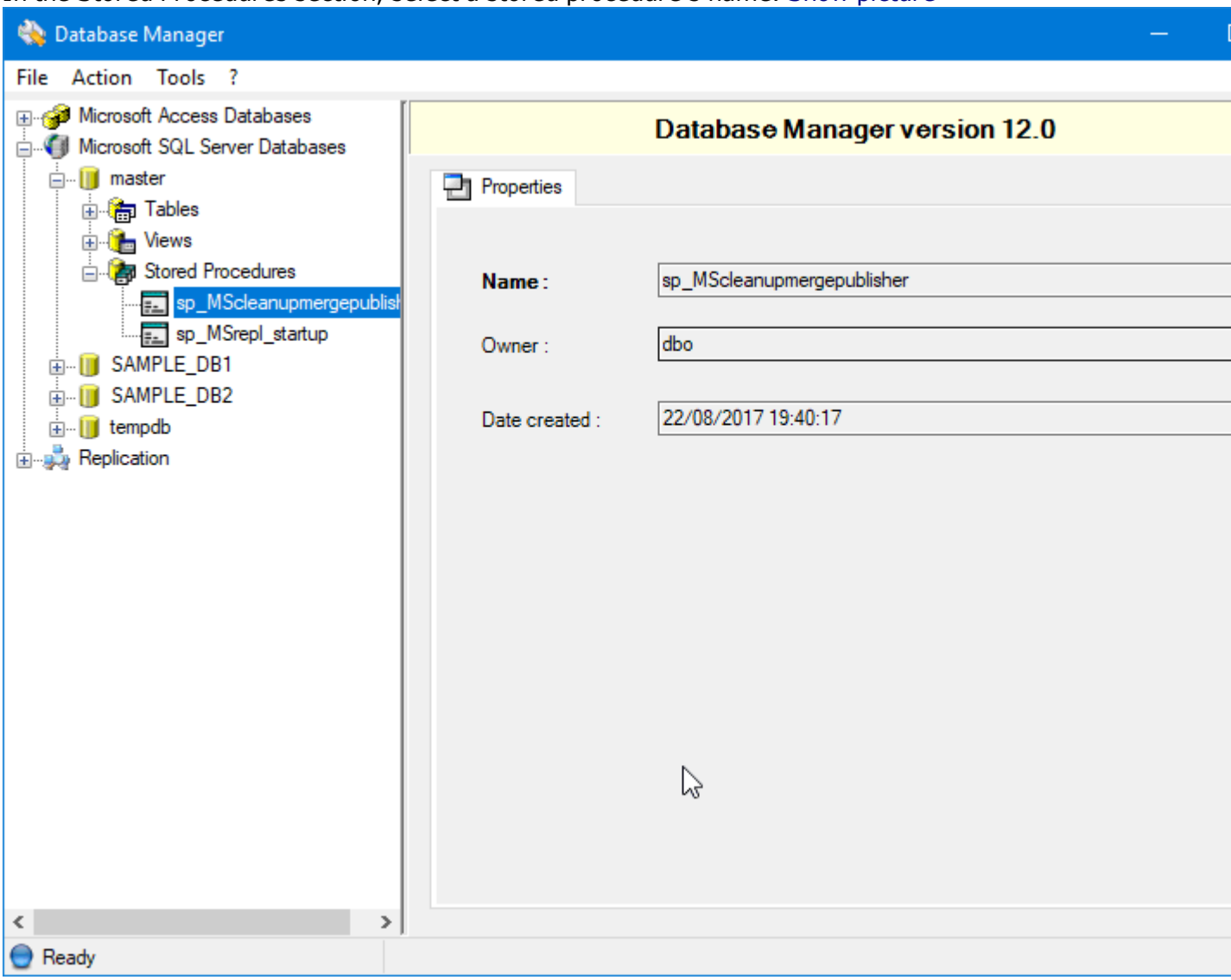
Take care not to delete a view that is required by other applications.

Maintaining Stored Procedures

You can display the properties of a stored procedure for a database, or delete it.

Displaying the properties of a stored procedure

1. In the Stored Procedures section, select a stored procedure's name. Show picture



2. The Properties tab displays the properties in the right-hand pane.

Deleting a stored procedure

From its context menu, you can delete a stored procedure from the database:

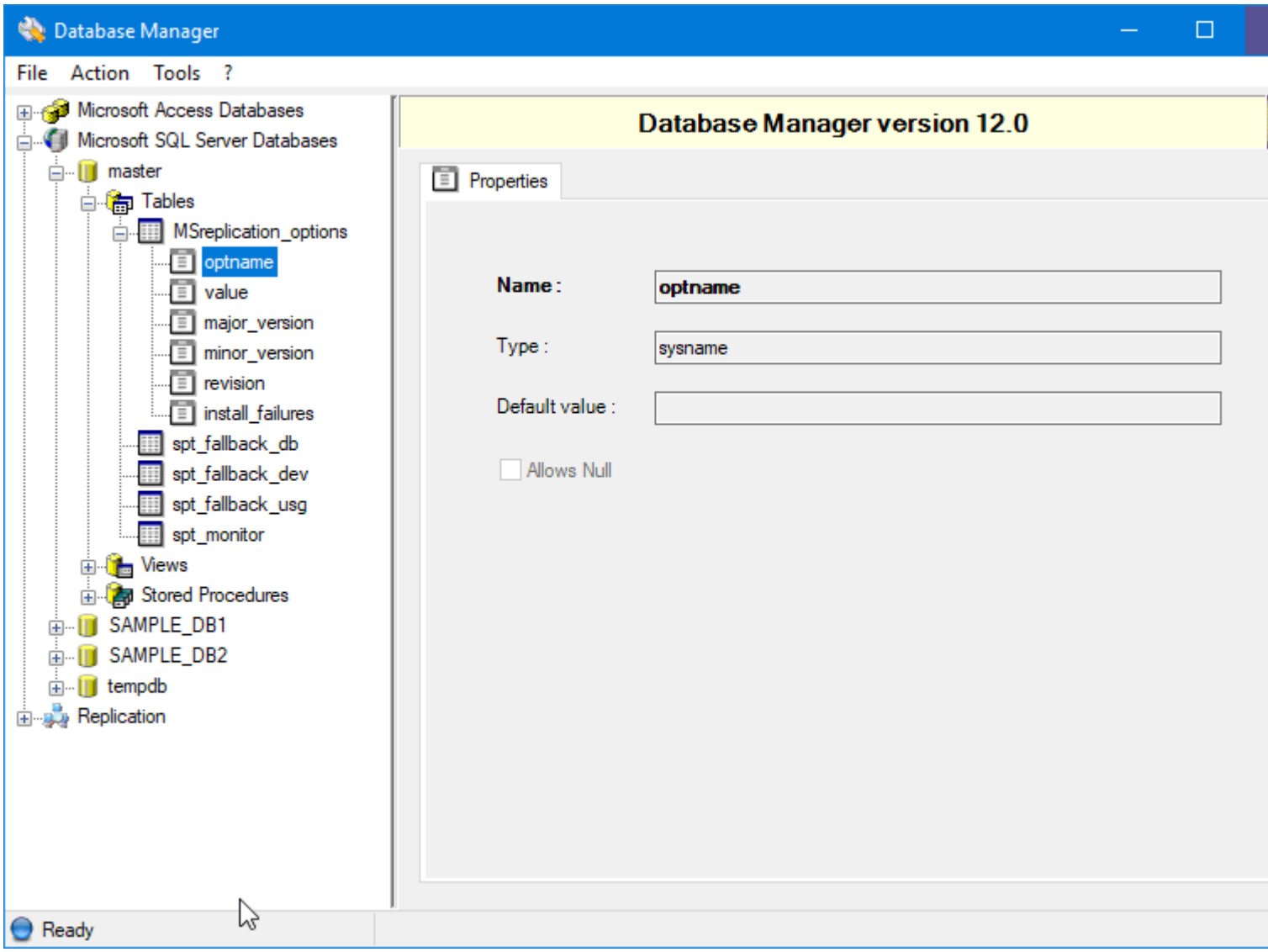
1. In the Stored Procedures section, right-click on a stored procedure's name to open its context menu.
2. Select Delete to open a confirmation box, then select Yes to remove the stored procedure from the database.
3. In the context menu, select Refresh to re-display the structure.

You have to have deletion rights to delete a stored procedure.

Take care not to delete a stored procedure that is required by other applications.

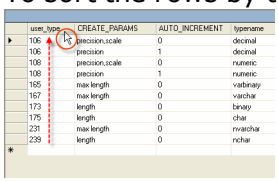
Maintaining Columns of a Table or View

You can display the properties of a column of a table or a view, or delete it. Show picture

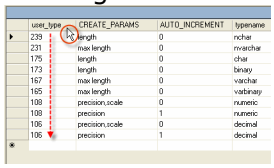


Displaying a column's properties

1. In tree structure, expand the sub-tree of a table or view, then select the name of a column.
2. Select the Properties tab to display its properties in the right-hand pane.
3. To sort the rows by the values of a column, click on its header. Show picture



4. Click again to reverse the sequence. Show picture



To adjust the width of a column:

- Drag a margin of its header to the left or right.

The changes you make to the sequence of rows or the widths of columns make no difference to the database contents. They are lost when you display anything else in the Database Manager or close it.

How to delete a column

You can delete a column from the database as follows:

1. In tree structure, click on the column's name then select the Action menu (or right-click on a column's name to open its context menu).
2. Select Delete to open a confirmation box, then select Yes to remove the column from the table or from the view of the database.
3. In the main menu or context menu, select Refresh to re-display the database's structure.

You have to have deletion rights to delete a column.

Take care not to delete a column of a table or view that is required by other applications.

About Replicating a Database

This Help book describes the actions required to enable replication of databases under SQL Server Express:

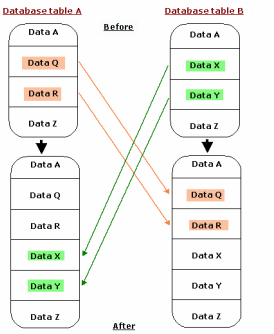
- To configure SQL Server and Windows Firewall.
- To configure the replication process so that it can be run and repeated.
- To run a replication process and check its log file.

The replication process does not use the Microsoft SQL Server's Replication process, which has a different configuration process.

What is replication?

Replication consists in copying data from one database table to another. After a bidirectional (two-way) replication process between two tables, they will contain exactly the same data as each other. The process synchronizes the states of the databases at the level of rows (records, values).

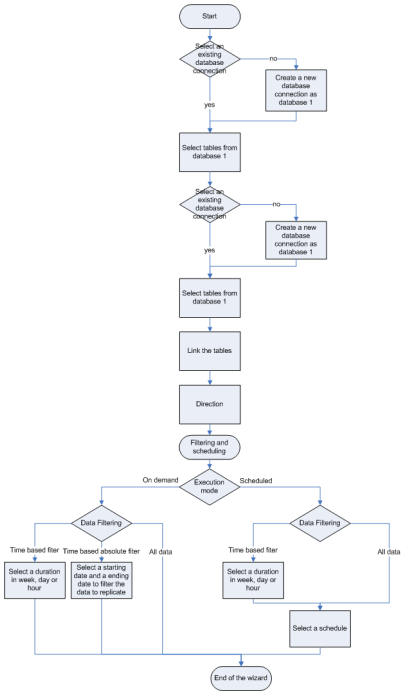
This is accomplished by copying all data that is present in table A (but not in table B) to table B, and copying all data that is present in table B (but not in table A) to table A. Show diagram



For instance if records have been deleted from database A but not from database B, replication will restore them to database A.

The process of replication

Replication follows a uniform process: select and connect each database, then link the tables and filter the data if required. These steps are explained in the rest of this book. Show flowchart



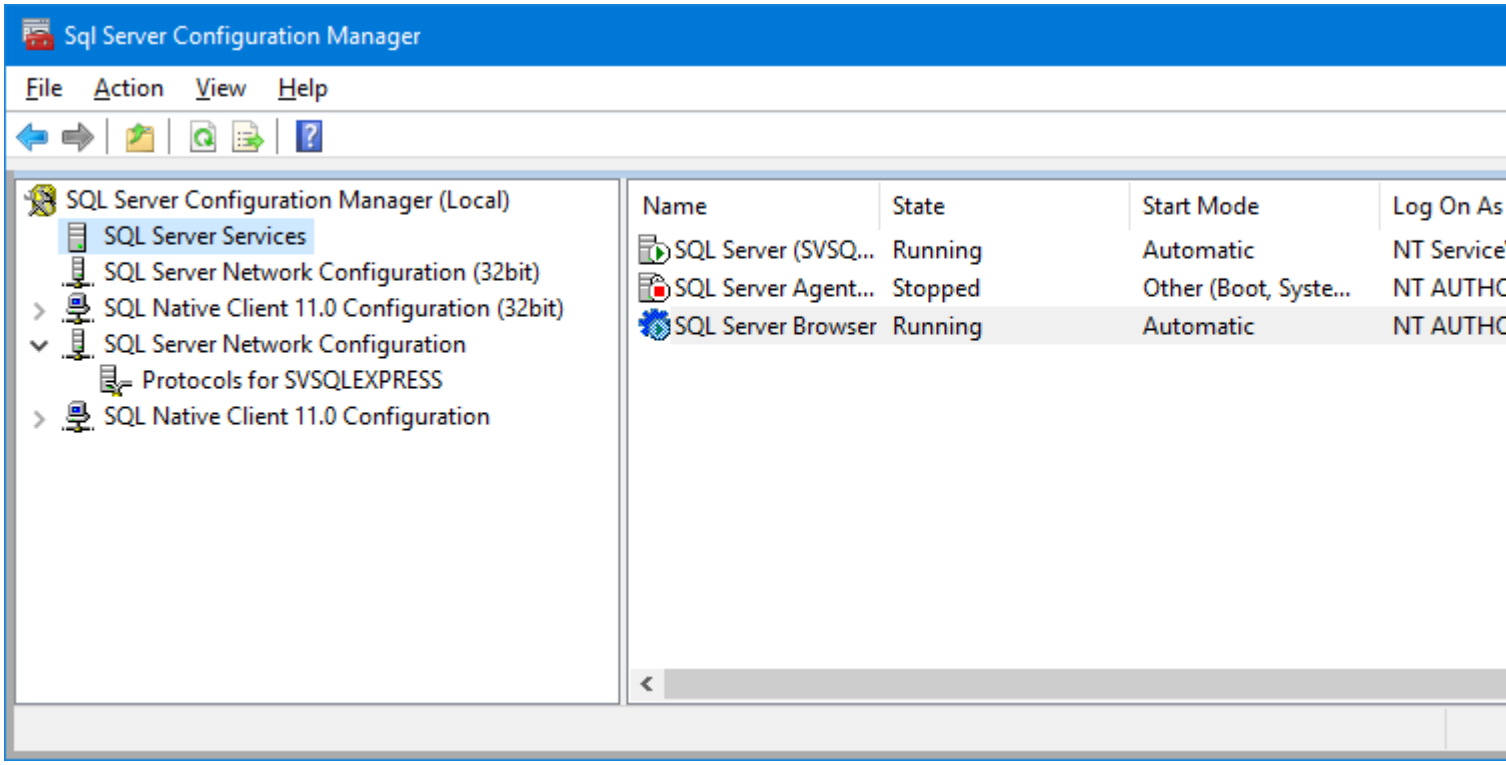
Authorizing the SQL Server

When should I authorize the service ?

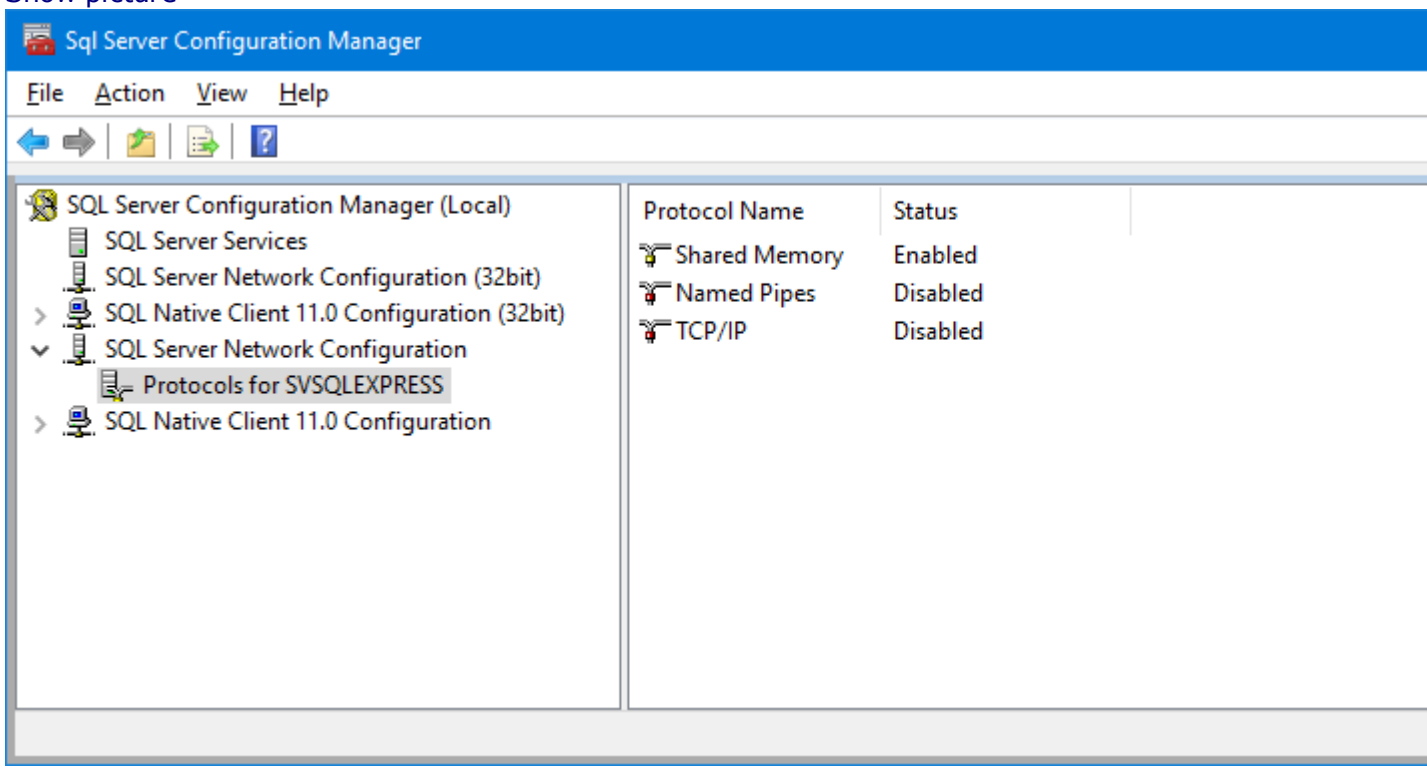
By default, Microsoft's SQL Server Express Edition and SQL Server Developer Edition do not allow remote connections. The replication process or access to a remote SQL Server requires the service to be authorized.

Authorizing the service

You must authorize SQL Server to use network connections. Show picture

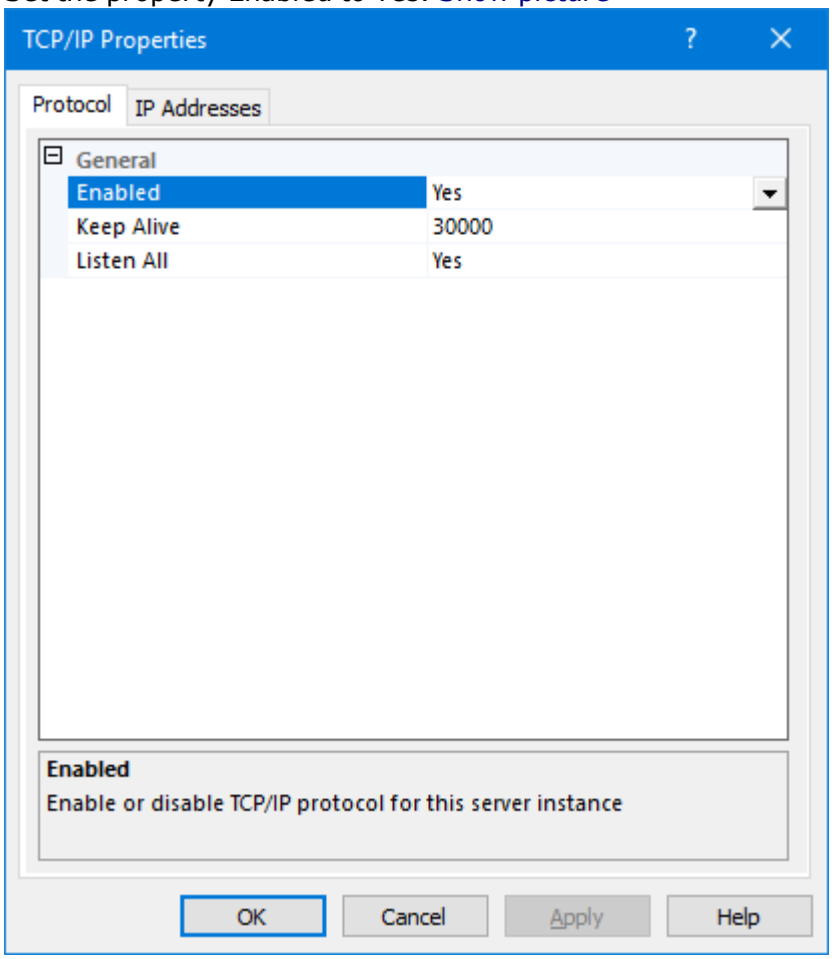


1. From the Windows Start menu, open Microsoft SQL Server .SQL Server Configuration Manager.
2. The Sql Server Configuration Manager dialog displays a tree view on the left and a list on the right.
   Show picture



3. In the left-hand pane, open the node SQL Server Network Configuration.

4. There is a sub-node for each SQL Server installed on the computer. Select 'Protocols for...' for the SQL Server for the server to be used in the replication process.
5. In the right-hand pane, double-click on TCP/IP to open the TCP/IP Properties dialog.
6. Set the property Enabled to Yes. Show picture



7. Click on OK and confirm the message about restarting the service.

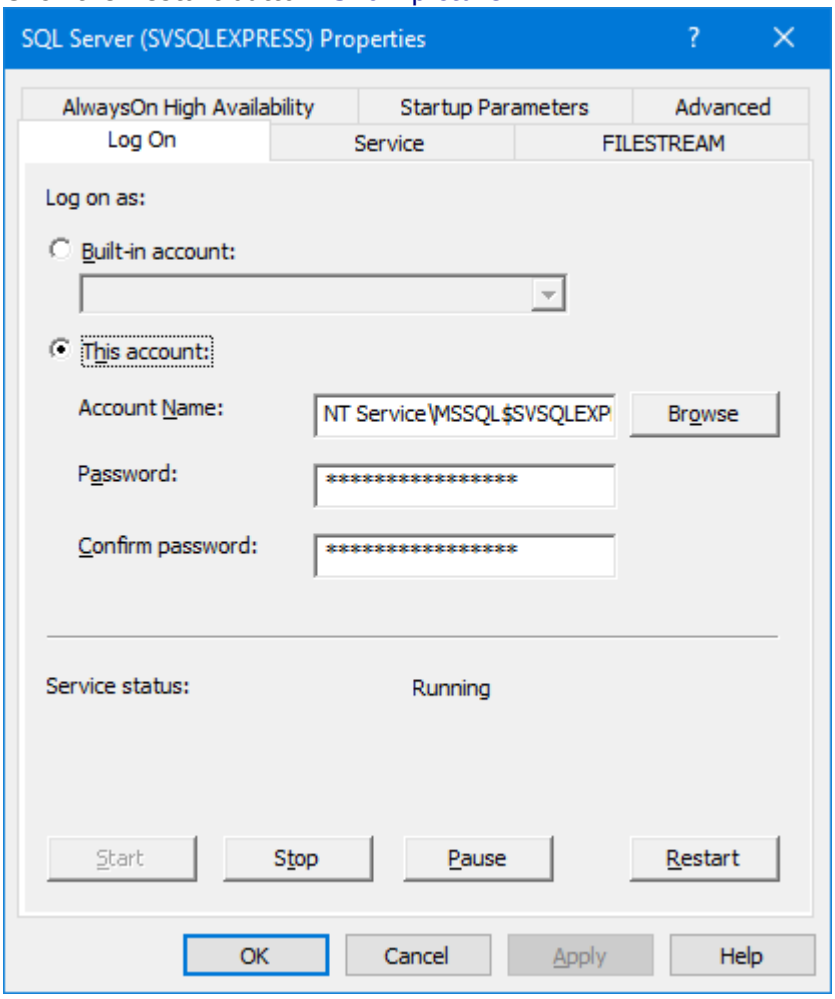
The change will only be applied after you restart the SQL Server service, as follows.

Restarting

To restart an SQL Server service that is running:

1. In the left hand pane of the SQL Server Configuration Manager dialog, Select SQL Server Services.
2. In the right-hand pane, double-click on the SQL Server (*InstanceName*), e.g. SQLEXPRESS.

3. Click the Restart button. Show picture



4. A time bar is displayed while Windows stops and then starts the service. Close the dialogs.

Checking

To test the service, try to connect locally and/or remotely as follows:

From	Method
A remote PC	Use either: Microsoft SQL Server Management Studio / Studio Express (an administrative tool in Microsoft SQL Server / Express). This Database Manager.
The local PC	In Microsoft SQL Server Management Studio / Studio Express, use the SQL Server name without the computer name (e.g. .\SVSQLEXPRESS instead of *computer_name*.\SVSQLEXPRESS).

For access to databases beyond a firewall, see the topic Replication Across a Firewall.

About Configuring Replication Across a Firewall

By default, Microsoft's SQL Server Express Edition and SQL Server Developer Edition do not allow remote connections.

Also if you are running a firewall on the same computer as SQL Server, external connections to SQL Server will be blocked unless SQL Server and the SQL Server Browser service can communicate through the Windows Firewall.

The enabling of communication through a firewall can create vulnerabilities, so it is normally subject to company security policies. See the article 'Allowing a program...' cited below.

Summary

The steps for enabling access to databases across a firewall are as follows.

1. Assign a TCP/IP port number to the SQL Server Database Engine.
2. Run the Service Browser to obtain the instance identity of SQL Server.
3. Create an exception in Windows Firewall for that instance of SQL Server.
4. Repeat step 3 for any other instance of SQL Server that requires remote connection.
5. In a similar manner, create an exception for the SQL Server Browser service

For further information

Title	Microsoft source
Allowing a program to communicate through Windows Firewall	Windows Firewall.Exceptions tab, link at foot of dialog.

Authorization of SQL Server is described in the topic Authorizing the SQL Server.

Configuration for Replicating Databases Across Windows Firewall

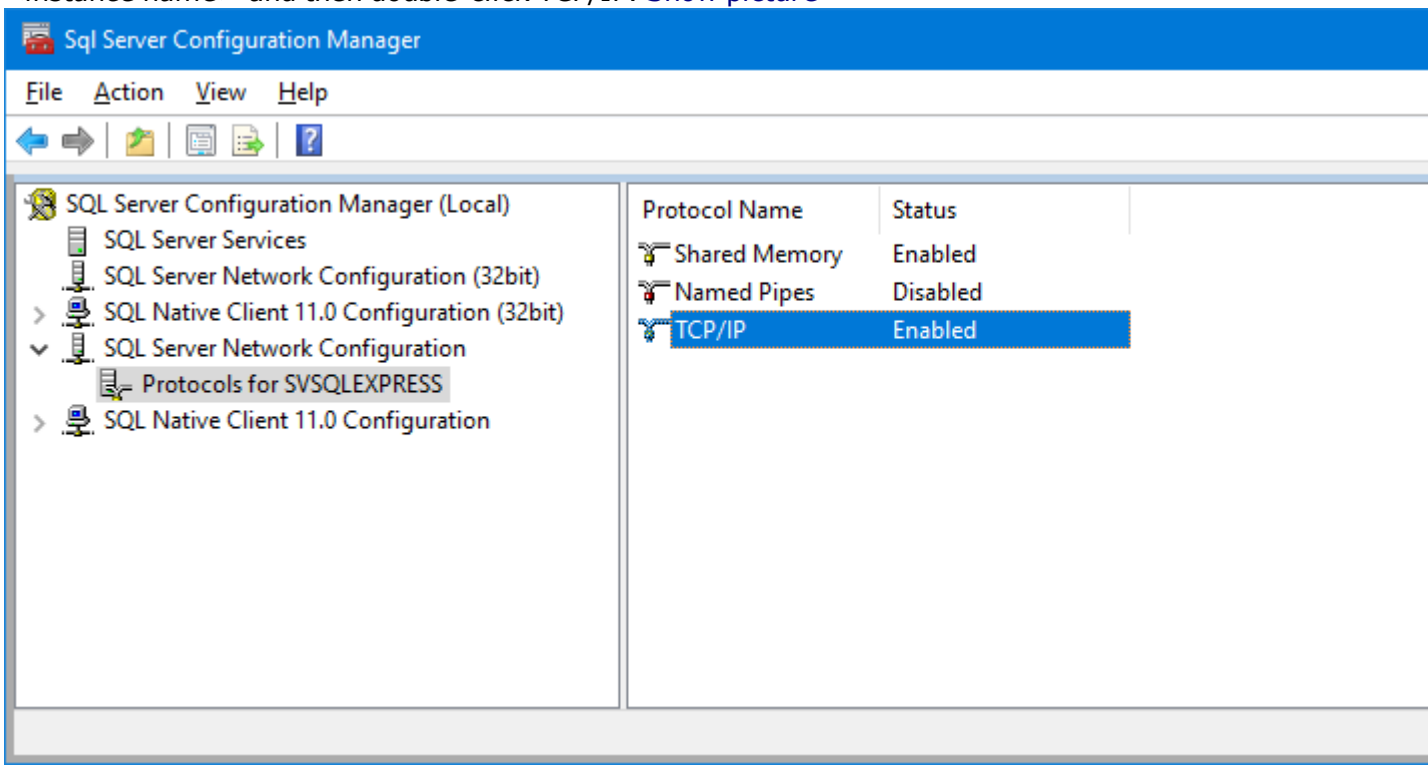
If you are running a firewall on the computer that is running SQL Server, external connections to SQL Server will be blocked unless SQL Server and the SQL Server Browser service can communicate through the firewall. You have to create an exception for each instance of SQL Server that you want to accept remote connections and an exception for the SQL Server Browser service.

If enabled, the default instance of the Microsoft SQL Server Database Engine listens on TCP port 1433.

Named instances of the SQL Server Database Engine are configured for to use dynamic ports, which means that they select an available port when the SQL Server service is started. When connecting to a named instance through a firewall, you need to configure the Database Engine to listen on a specific port, so that the appropriate port can be opened in the firewall.

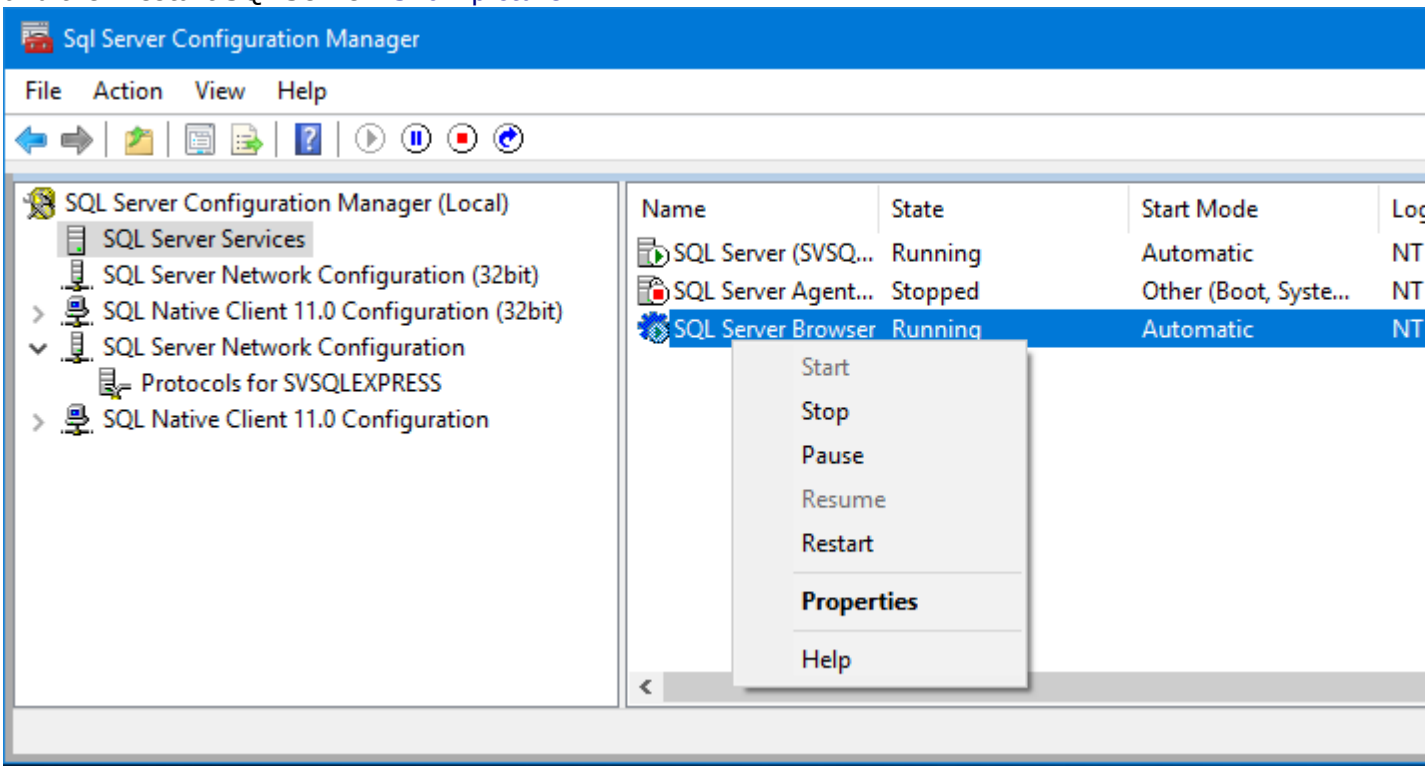
Assigning a TCP/IP port number to the SQL Server Database Engine

1. Click Start, select Microsoft SQL Server and then click on SQL Server Configuration Manager.
2. In the left hand (console) pane, expand SQL Server Network Configuration, expand Protocols for *<instance name>* and then double-click TCP/IP. Show picture



3. In the TCP/IP Properties dialog, open the IP Addresses tab. Any IP addresses will appear in the format IP1, IP2, up to IPAll. (One of these is for the IP address of the loopback adapter, 127.0.0.1; you can ignore it.)
4. Additional IP addresses appear for each IP device on the computer. Right-click each address, and then click Properties to identify the IP address that you wish to configure.
5. If the TCP Dynamic Ports dialog shows 0, indicating that the Database Engine is listening on dynamic ports, delete the 0.
6. In the IP*n* Properties area box, in the TCP Port box, type the port number you wish this IP address to listen on, then click OK.
7. In the console pane, click SQL Server Services.
8. In the right hand (details) pane, right-click SQL Server (*<instance name>*) and click on Restart to stop

and then restart SQL Server. Show picture



You the run the SQL Server Browser service on the server to connect to the Database Engine instance by name, as follows.

Running the Service Browser

SQL Server uses an instance ID as part of the path when you install its program files. To create an exception for each instance of SQL Server, you must identify the correct instance ID. To obtain an instance ID, follow these steps:

1. In SQL Server Configuration Manager, click the SQL Server Browser service in the right pane, right-click the instance name in the main window and then click on Properties.
2. On the SQL Server Browser Properties dialog, click the Advanced tab, locate the instance ID in the property list and then click OK.

Configuring the Replication

If at any interim stage you wish to change your choices, select the Back button and repeat the previous steps.

In this topic, the databases you select to take part in replication are referred to Database 1 and Database 2 to reflect the order of selection.

Creating a new replication process

To create a replication process, you start with one database:

1. In the Database Manager's tree structure, right-click on Replication and click on Add in the context menu to open the Replication Setup Wizard. Show picture

2. Click on Next to open the next step. Enter a name for this replication process in the Name box. It is not modifiable. Click Next.

The Replication Name must be unique. This name will be reused whenever the replication is run.

It is limited to alphanumeric characters (A to Z and 0 to 9 only). It is not case sensitive.

Creating or selecting the connection to database 1

1. In the next dialog (Select the First Database) either:
   - Enter or select a database name in the combo box.
   - Select the option to configure a new database connection.
2. Click on Next.

The next dialog depends on your choice in step 3 above.

Forbidden connections

Some connections options are forbidden. The Database combo box in the dialogs described below will not permit connection using them.

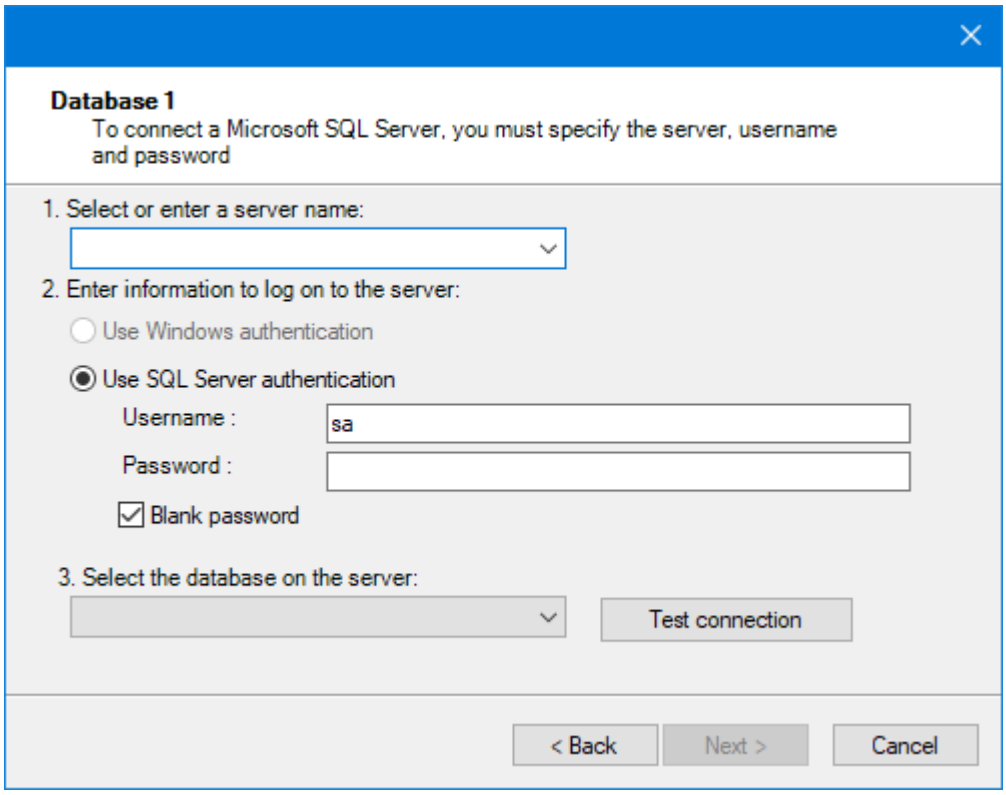
The SQL Server name must be fully qualified in the context in which the replication process is run. The following errors can occur if there is a mismatch:

- No '.' shortcut.
- No '(local)' shortcut.
- No IP address shortcut.
- No Windows authentication.

For instance, access to a server or a database may be blocked by a firewall on the same PC as SQL Server or elsewhere on the network. For advice on the local case, see the topic Replication across a Firewall.

Configuring a new database connection

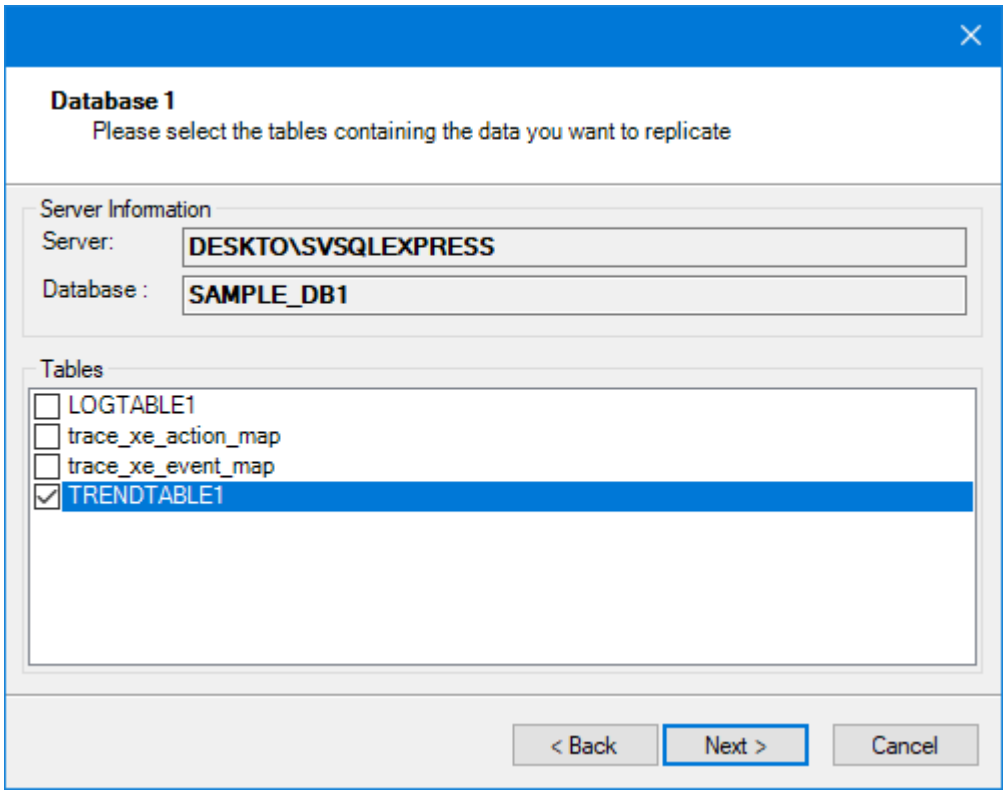
If you selected this option, a dialog Database 1 opens for Database Connection. Show picture



1. In the upper combo box, select or enter the name for the SQL Server.
2. Select the option Use SQL Server Authentication. Enter the user name then either enter a password or tick the Blank Password box.
3. In the lower drop-down box, select or enter a database name.
4. To test the connection, click on the Test Connection button. If that is successful, a dialog confirms it. Click on Close to return to the wizard.

Selecting tables of Database 1

If you selected this option, a Database dialog Database 1 opens for selecting tables in the first database for the replication process Show picture

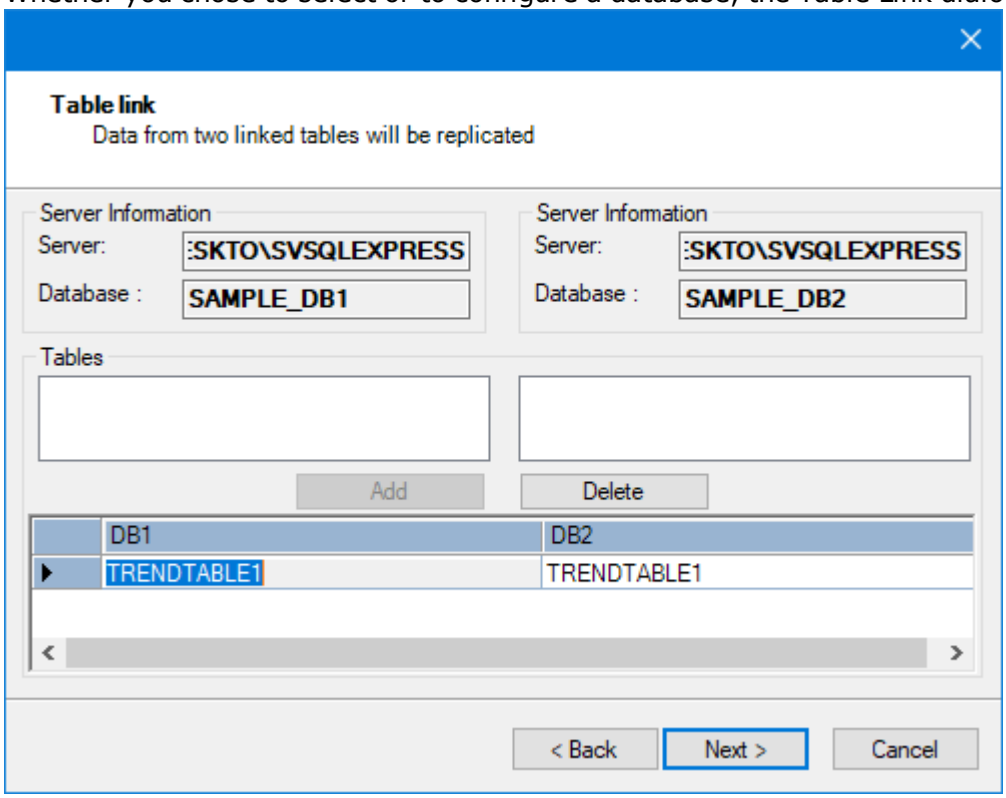


1. Tick the boxes of the tables to be replicated then click on Next.

3. In the dialog Select a Second Database, select a database as Database 2, as described for Database 1 above. Only databases not already selected for replication are shown. Click on Next.
4. Select the tables to be replicated from Database 2, as described for Database 1 above.

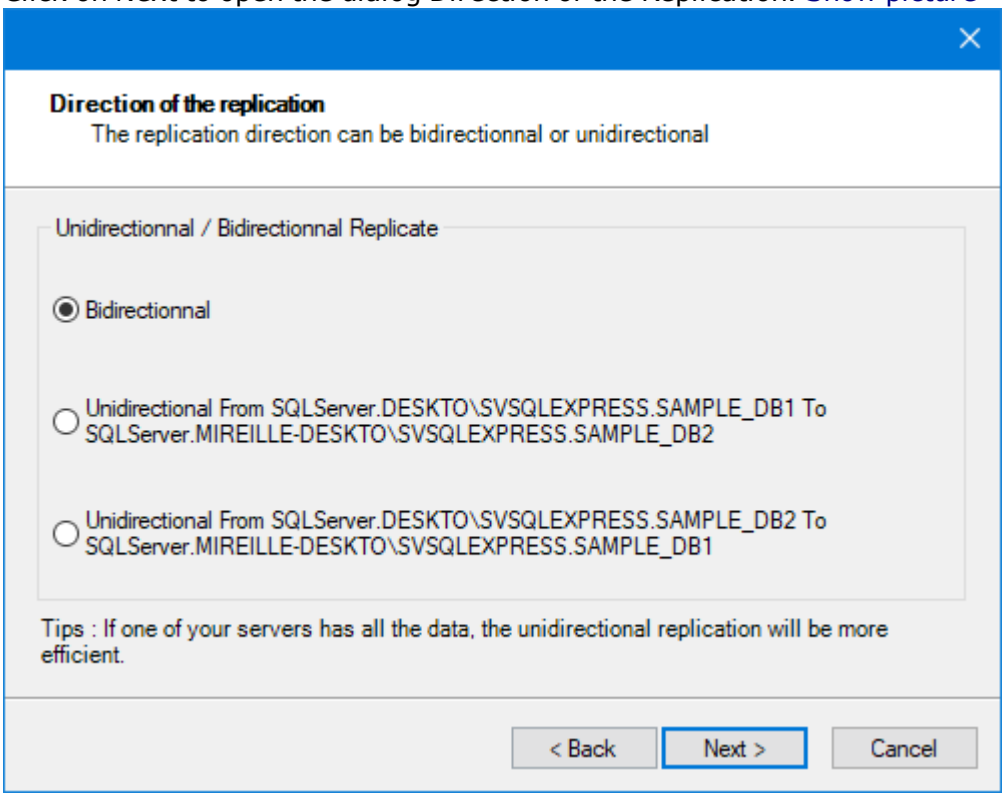
Configuring the table linking

Whether you chose to select or to configure a database, the Table Link dialog appears next. Show picture



1. It shows one database on each side. In the Tables section, select one corresponding table in each database.
2. Click on the Add button to list that pair of tables in the bottom pane of the dialog.

3. Repeat step 26 for each pair of tables that is to be replicated.
4. To remove a table pair from the process, select it and click on Delete. That action will not affect the tables, but only exclude them from replication.
5. Click on Next to open the dialog Direction of the Replication. Show picture

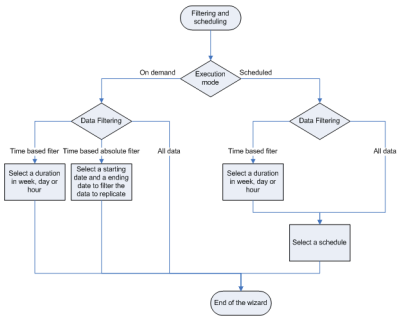


Configuring the direction of replication

1. Either select Unidirectional to copy data only in one direction or the other, or select Bidirectional replication.
2. Click on Next to open the Running Options dialog, as described in the topic Filtering and Scheduling.

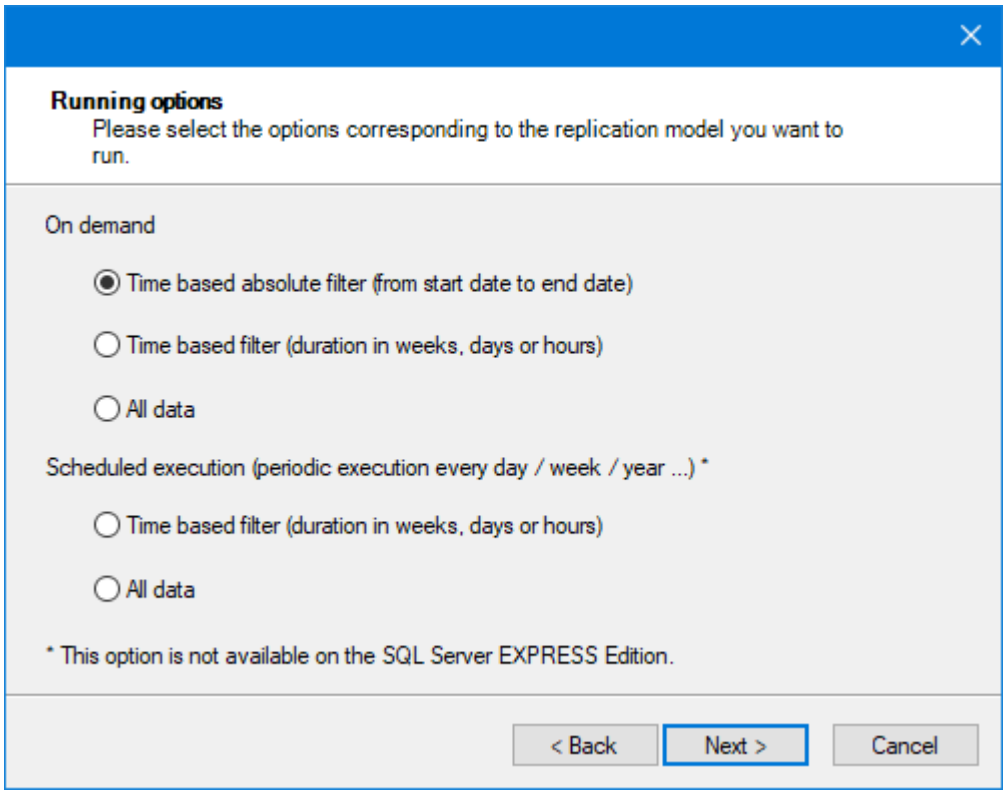
Filtering and Scheduling the Replication

This continues with the Replication Setup Wizard from the previous topic. The process of configuring the filtering and scheduling is as follows. Show flowchart



If at any interim stage you wish to change your choices, select the Back button and repeat the previous steps.

The Running Options dialog enables you to filter the data and to schedule the replication. Show picture



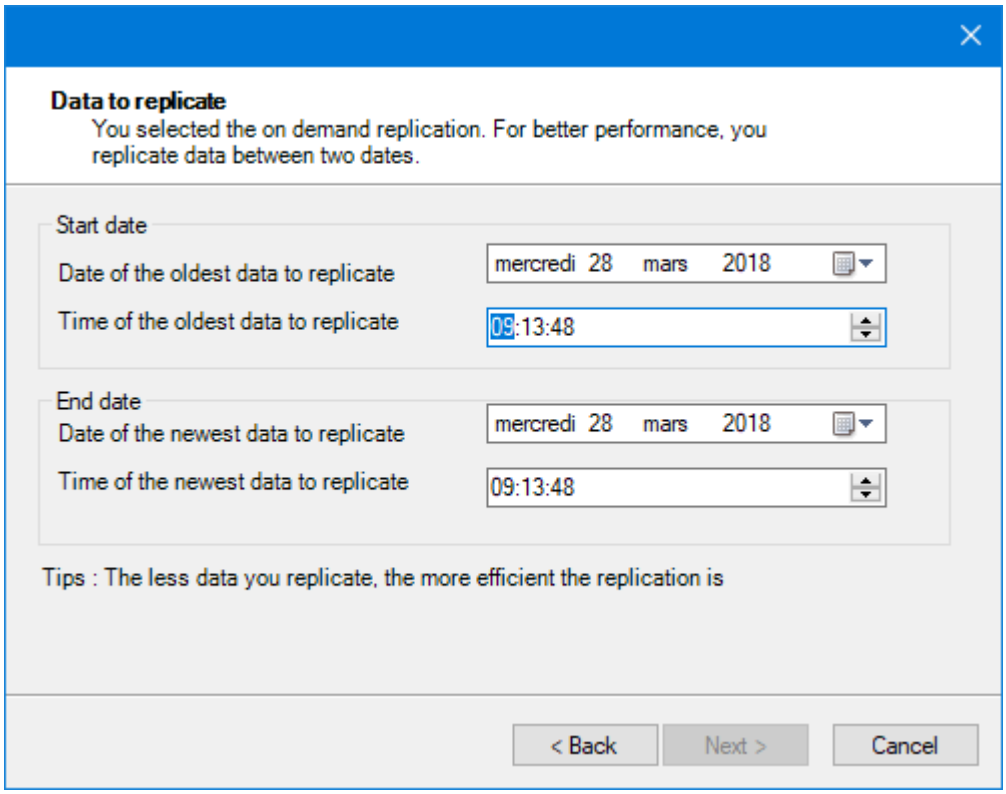
On demand execution

1. In the Running Options dialog, select one of the options in the On Demand section.

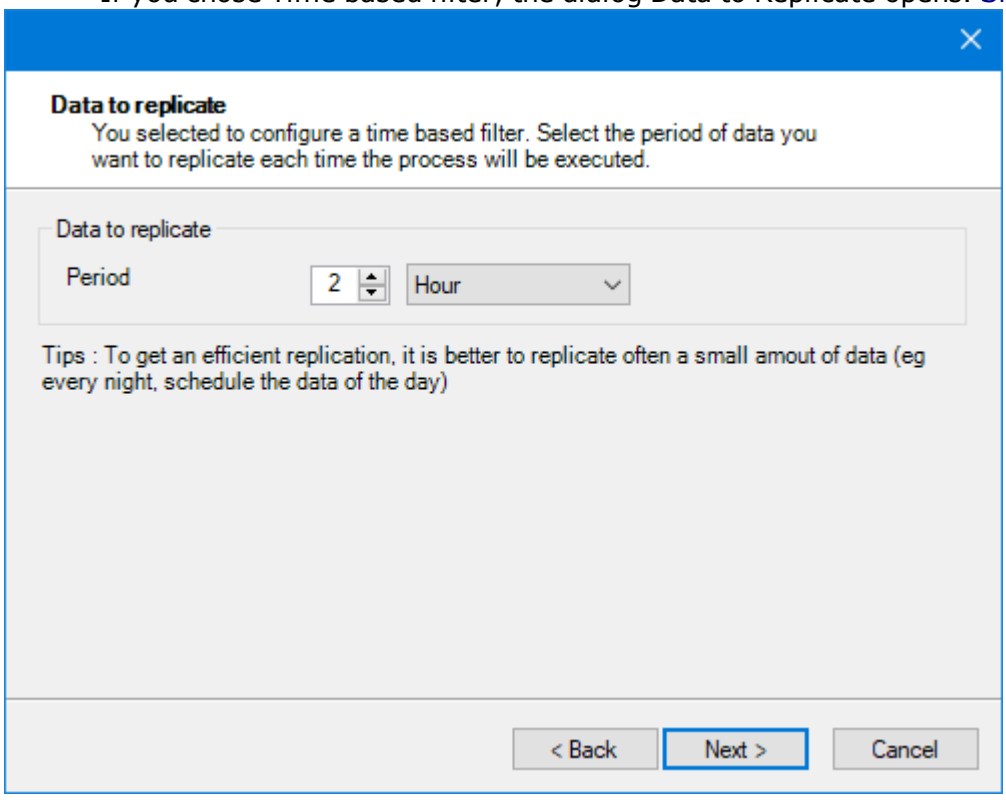
Option	Meaning
Time based absolute filter	Select data between two dates.
Time based filter	Select data in a duration.
All data	No filter - all data are passed.

2. Click on Next.

   If you chose All Data, you are asked to confirm the configuration.
   If you chose Time based absolute filter, the dialog Data to Replicate opens. Show picture



If you chose Time based filter, the dialog Data to Replicate opens. Show picture



3. Use the drop-down boxes to set a start date and time and an end date and time. Click on Next.

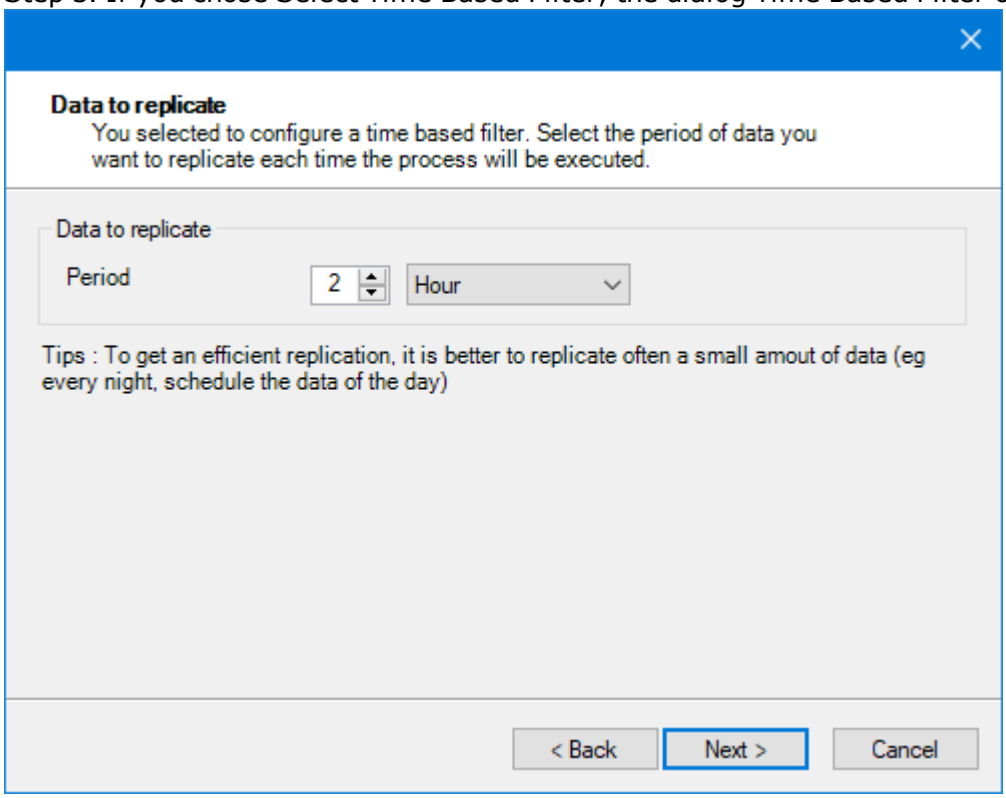
Scheduled execution

These options only apply if Microsoft SQL Server is used. In Microsoft SQL Server Express Edition, only the On Demand options are available.

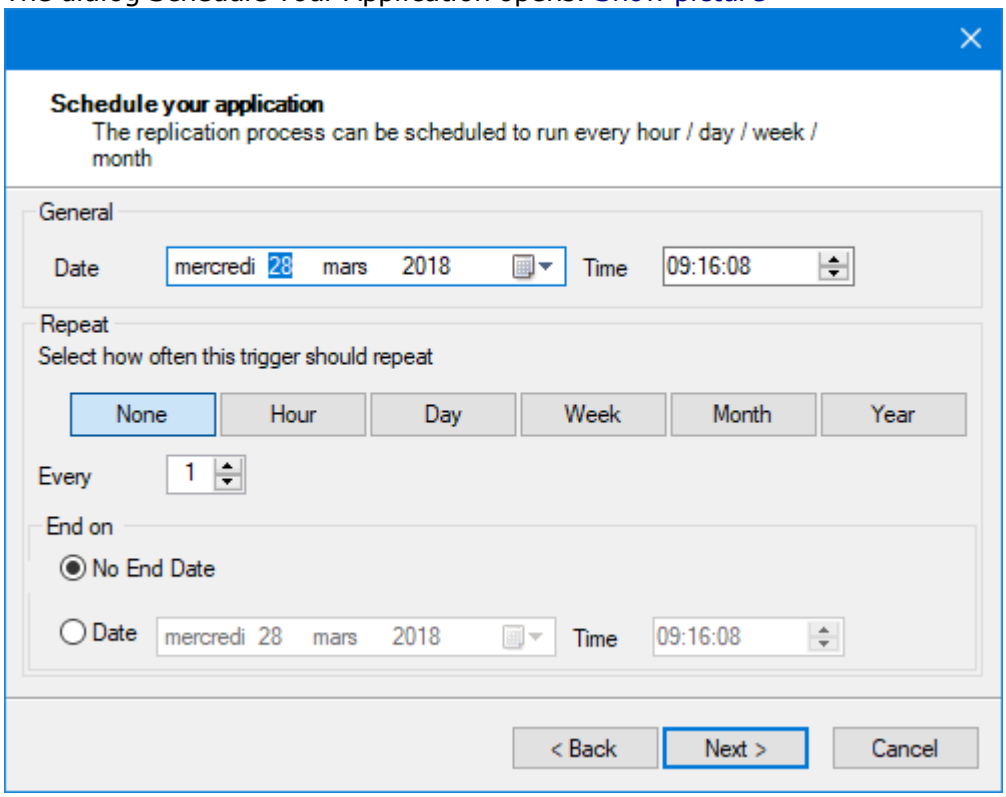
1. Select one of the options.

Option	Meaning
Time based filter	Select data in a duration.
All data	No filter - all data are passed.

2. Click on Next. If you selected All Data, this takes you to the dialog Schedule Your Application, below Step 3. If you chose Select Time Based Filter, the dialog Time Based Filter opens. Show picture



3. The dialog Schedule Your Application opens. Show picture

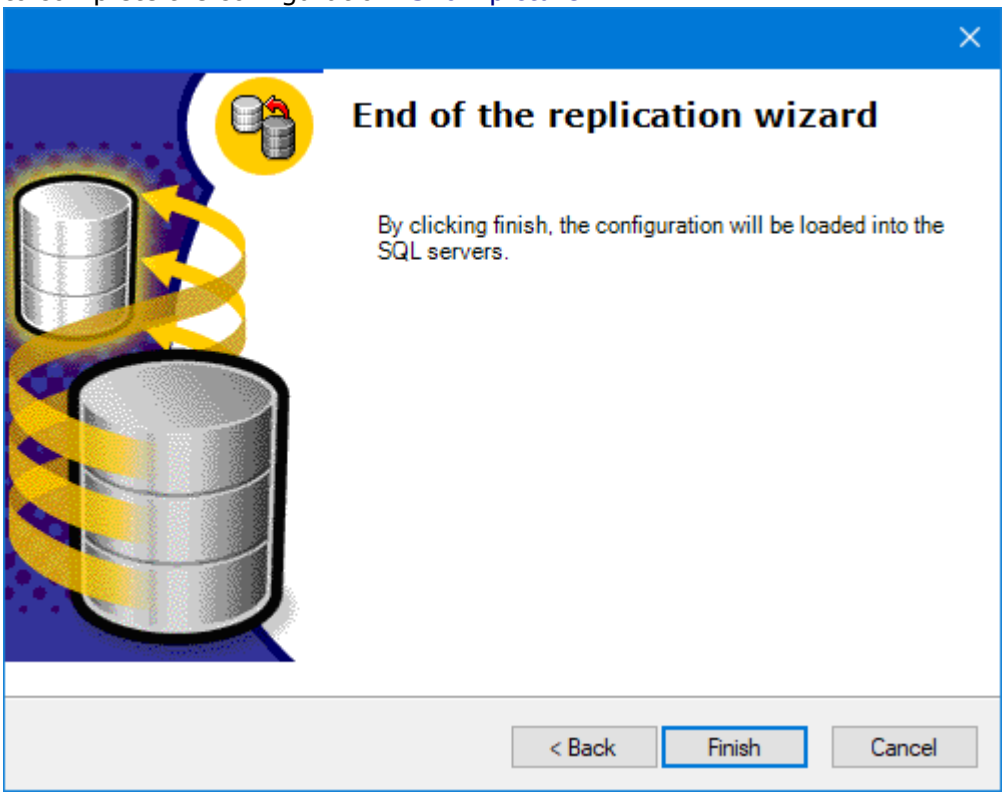


Section	Meaning
General	Set a start date and time.
Repeat	Set the period (in hours/days/weeks/months/years - or None).
End	Optionally set an ending date and time.

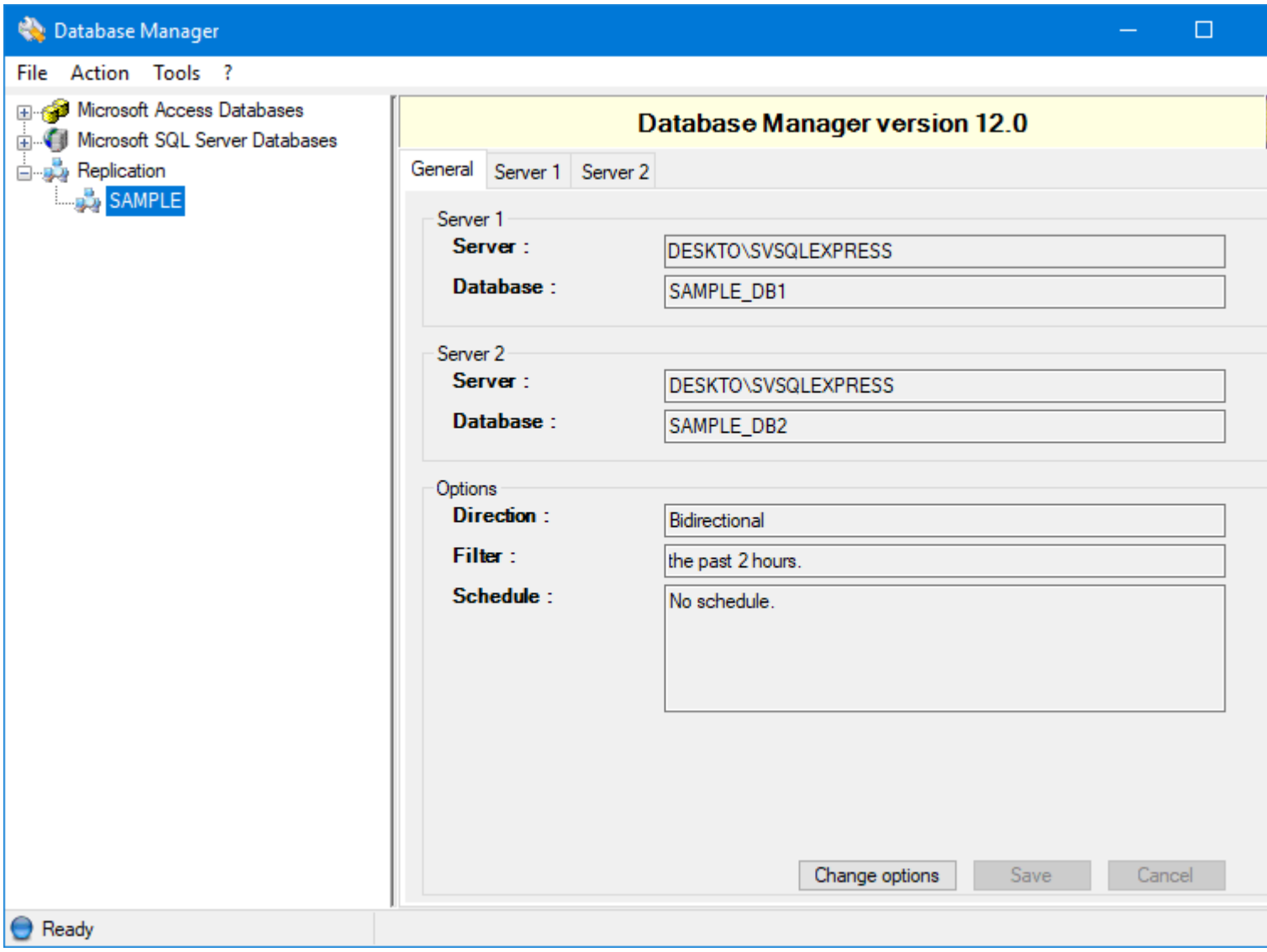
4. Configure these options then click on Next.

Confirming the configuration

- After the dialogs for Scheduled or On Demand Execution, a confirmation dialog opens. Click on Finish to complete the configuration. Show picture



The configured replication process appears in the Database Manager. Show picture



Where the configuration is stored

At this stage a configuration file has been created, but the replication process has not been sent to the SQL server nor launched, even for the option Run Now.

The configuration file is named REPLICATIONCONFIGS.XML and is stored in the BIN folder of the software.

The periodic execution is not launched automatically on SQL Server Express Edition.

SQL Server Express Edition does not include the Scheduler (an SQL Agent) for doing so. If you are using SQL Server Express Edition and you wish to use a Scheduled replication, please use the command line tool as described in the topic Using the Command Line Tool.

Launching the Replication

This topic completes the description of how to use the Replication Wizard.

Once the configuration file has been created (at the end of the Wizard), the replication process has to be sent to the SQL servers.

1. In the Database Manager, right-click on a replication node then click on Load in the context menu.
2. In the Replication Manager (a command line tool): see the topic Using the Command Line Tool.

The launching of the replication depends on which kind of replication you selected.

Option	Result
On demand	Replication starts, i.e. the data starts to be copied immediately.
Scheduled	The replication is created as a job in the SQL server with the appropriate schedule. The replication will be launched only when the job schedule triggers.

Depending on the SQL Server and the replication-scheduling configuration, some restrictions can apply.

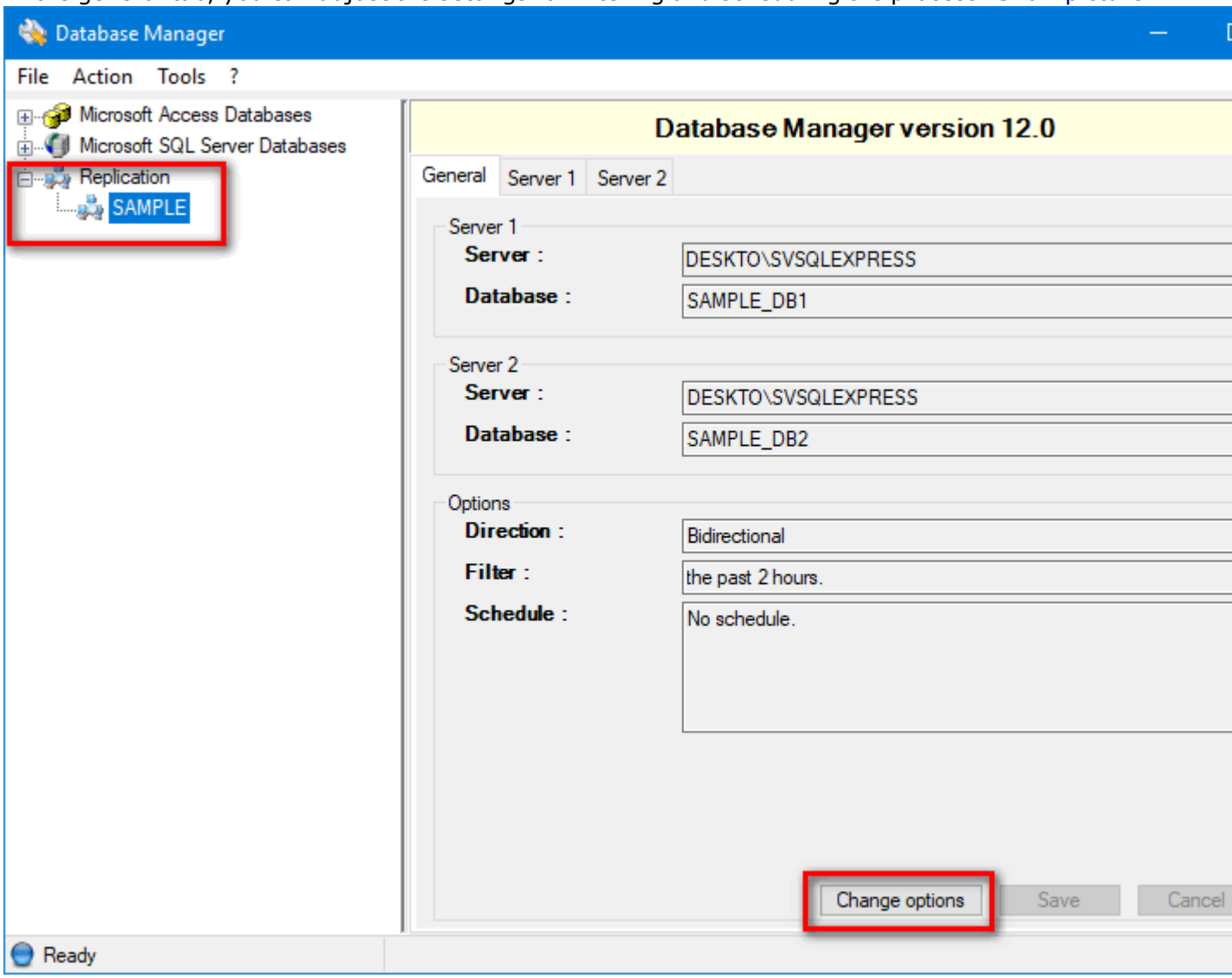
Type of scheduling	SQL Server Express Edition	SQL Server
		(Workgroup, Standard, Enterprise)
On demand	Database Manager	Database Manager
	Replication Manager (using the '/J' option)	Replication Manager
Schedule Replication	Does not work.	Database Manager
	The Replication Manager must be launched manually by the user, using the '/J' option on any kind of replication. You are advised to use SCADA Basic or the Windows Scheduler to launch the Replication Manager.	Replication Manager Only the first launch is required, then scheduling is managed by the SQL Server schedule.

To adjust the settings and/or run a replication process

To adjust, run or re-run a replication process from the Database Manager:

1. Open the Database Manager from the Windows Start button (or from a desktop icon, if you have created one).
2. In the tree structure in the left-hand pane, open the Replication section and select the replication process that is to be executed.

3. In the general tab, you can adjust the settings for filtering and scheduling the process: Show picture



- Click on the button Change Options at the foot of the window. That opens the dialog Running Options.

In either case, you can follow the steps in the topic Filtering and Scheduling to adjust the settings and run the replication.

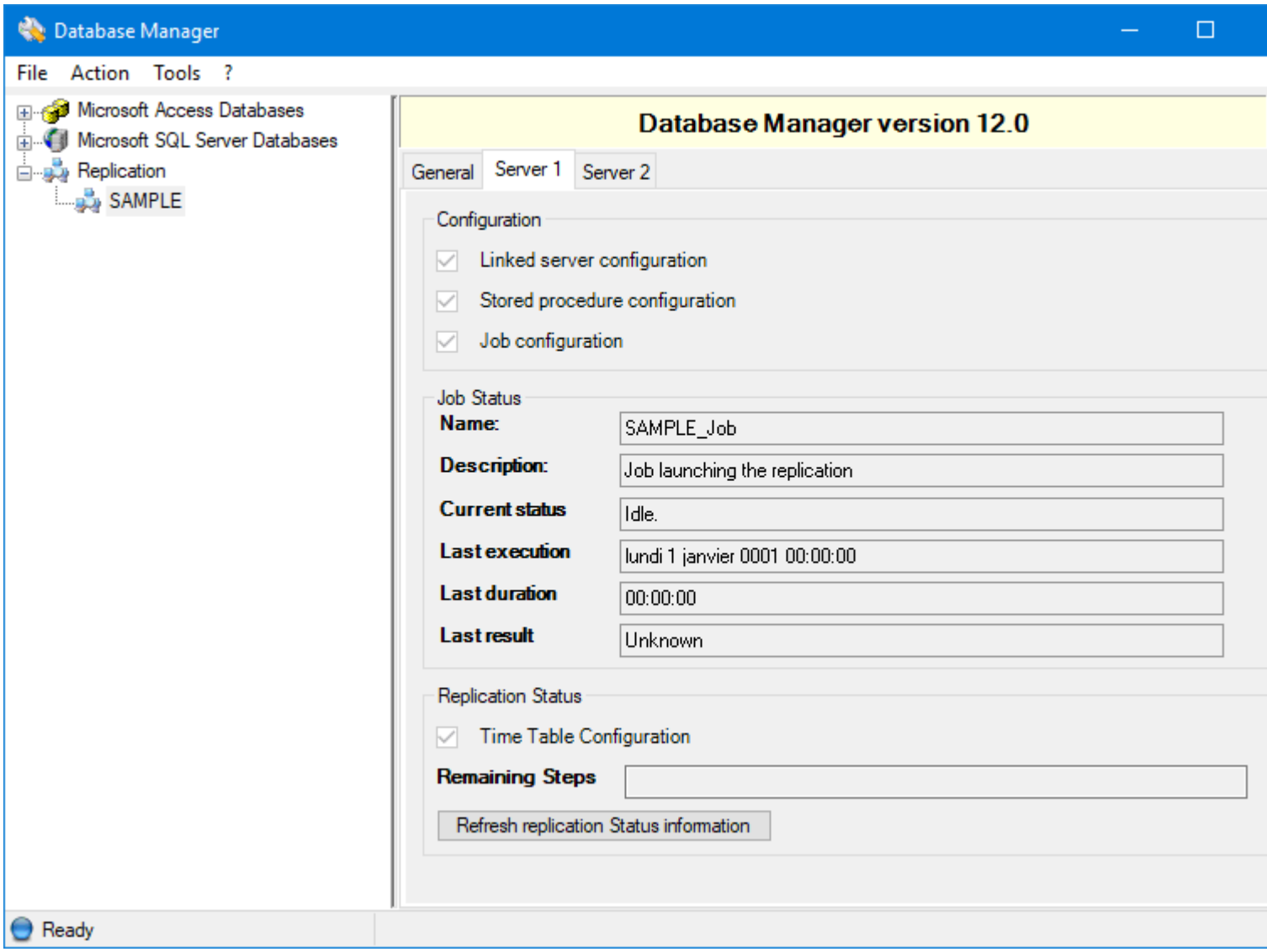
Saving the configuration

To save the changed configuration:

- Click on the Save button at the foot of the right-hand pane.

Monitoring the Replication

Once the replication is launched, you can monitor its progress. Show picture



1. In the Database Manager dialog, open the tab for Server *n*.

Section	What it shows
Configuration	The parameters for the replication process.
Status	Information about current activity, the most recent execution and the next scheduled execution cycle if any.

2. To refresh the values, click on the button Refresh Replication Status Information.

If a replication process fails part-way for some external reason, it will restart synchronizing the data from the point of failure.

Checking the outcome

To check that a replication process has been created:

- Open the tab Server *n* in the Database Manager's dialog. The upper section relates to the linked server and stored procedure(s).

You can check the outcome of the configuration process by inspecting log files (see the topic The Log File).

- Open it in a text editor or viewer. The contents should look like this. Show table

Log Entry	Message
28/03/2018 11:54:39,Low,Inform	XML replication file successfuly loaded
28/03/2018 11:54:39,Lowest,Inform	Configuration sucessfully loaded
28/03/2018 11:54:39,High,Inform	The linked server *xxxx\xxxx@xxxxxxx* is now succesfully added
28/03/2018 11:54:39,High,Inform	The linked server login *sa* is now succesfully added
28/03/2018 11:54:39,High,Inform	The linked server xxxx\xxxx@xxxxxxx is now succesfully added
28/03/2018 11:54:39,High,Inform	The linked server login *sa* is now succesfully added
28/03/2018 11:54:39,Lowest,Inform	Time management successfully loaded
28/03/2018 11:54:39,Lowest,Inform	stored procedure about time management successfully saved
28/03/2018 11:54:39,Low,Inform	Initialisation of the stored procedure sucessful
28/03/2018 11:54:39,Lowest,Fault	obj: ReplicationManagerJob fct: ExistsJob
28/03/2018 11:54:39,High,Fault	error during connection check existing job
28/03/2018 11:54:39,High,Fault	Exception: The specified @job_name (*'xxxx_Job'*) does not exist.
28/03/2018 11:54:40,High,Inform	New job successfully added
28/03/2018 11:54:40,High,Inform	Job task successfully added to the job *moug*
28/03/2018 11:54:40,High,Inform	Job task successfully added to the job *moug*
28/03/2018 11:54:40,High,Inform	Job server successfully added to the job *moug*
28/03/2018 11:54:40,Lowest,Fault	obj: ReplicationManagerJob fct: StartJob
28/03/2018 11:54:40,High,Fault	error starting job: *xxxxx_Job*
28/03/2018 11:54:40,High,Fault	Exception: SQLServerAgent is not currently running so it cannot be notified of this action.
28/03/2018 11:54:40,High,Fault	Error starting a job *xxxxx_Job*
28/03/2018 11:54:40,Highest,Fault	job configuration failed
28/03/2018 11:54:40,Highest,Fault	Exit program

Using the Command Line Tool

Once the configuration file has been created, the Command Line tool lets you to launch the replication.

In the case of a scheduled replication that is not on SQL Server Express, launching the replication means creating the SQL agent and creating a job to be executed according to the schedule.

Starting the replication tool

The tool's software file is named ReplicationManager.EXE and is stored in the Supervisor project's BIN folder.

- You can start it from there directly, via a command line or by first creating a shortcut to it.

Options

The Command Line tool contains several options as follows.

Mandatory arguments

Command	Meaning
/N=	Specify the replication name to launch (mandatory).

Optional arguments

See the topic Configuring the Replication for details of how to create a named process for replication.

Command	Meaning
/F=	Specify the name of the replication XML file (optional).
/J=	Specify the replication NOT to use a SQL server job. (This is mandatory for SQL Express) The replication is followed step by step. You can get a log file with the result of the replication (i.e. the number of rows copied, grouped by time interval). (See the topic The Log File.)

Parameters for loading a once-off replication

Command	Meaning
/S=	Specify the earlier chronological limit. (The date parameter in the configuration file is ignored.)
/E=	Specify the later chronological limit. (The date parameter in the configuration file is ignored.)

Parameters for loading a scheduled replication

Command	Meaning
/T=	Specify a time-span in hundreds of nanoseconds. (The time-span in the configuration file is ignored.)

Examples of using the Command Line tool

Example 1: loading a replication (without parameters)

```
/N=ReplicationName
```

Example 2: loading a once-off replication with a date range

```
/N=ReplicationName /S=2018-03-28-30T15:45:14.9531250+02:00 /E=2018-03-28T15:45:14.9531250+02:0
```

Example 3: loading a scheduled run to replicate the most recent hour of data

```
/N=ReplicationName /T=36000000000
```

The Database Manager's Log File

A log file named ReplicationManager.log and located in the Database Manager's root folder is created whenever the Command Line tool is used. It contains information about the replication run from which it was generated.

The log file is formatted in lines as follows:

```
Local date of the computer, Level of trace, Level of fault, message
```

The levels of trace are:

- Lowest.
- Low.
- Medium.
- High.
- Highest.

The levels of message are:

- Information.
- Process.
- Fault.

An example of a log trace is as follows. Show picture

```
28/03/2018 14:28:44,Lowest ,Inform ,Starting the replication manager
28/03/2018 14:28:44,Highest,Inform ,command line argument: replication name PS_LOG
28/03/2018 14:28:44,Highest,Inform ,command line argument: starting date 28/03/2018 14:14:10
28/03/2018 14:28:44,Highest,Inform ,command line argument: ending date 28/03/2018 14:30:44
28/03/2018 14:28:44,Low    ,Inform ,Replication XML file successfully loaded
28/03/2018 14:28:44,Lowest ,Inform ,Replication Configuration successfully loaded
28/03/2018 14:28:44,Low    ,Inform ,Replication Linked Server : Linked server VOSGES exists on
28/03/2018 14:28:44,Highest,Inform ,Replication Linked Server : Database PROJECT_DB_LOG
28/03/2018 14:28:44,Low    ,Inform ,Replication Linked Server : Linked server DEMO2 exists on
28/03/2018 14:28:44,Highest,Inform ,Replication Linked Server : Database PROJECT_DB_LOG
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_LogTable_Step1 su
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_LogTable_Step1 su
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_LogTable_Step2 su
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_LogTable_Step2 su
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_GetStartingChrono
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_GetEndingChrono s
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_GetStartingChrono
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_GetEndingChrono s
28/03/2018 14:28:44,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_TimeTable success
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : ReplicationDateTimeToFileTi
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : ReplicationDateTimeToFileTi
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_Launcher successf
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_Launcher successf
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_Execution success
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_Execution success
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_ExecutionStepBySt
28/03/2018 14:28:45,Lowest ,Inform ,Replication Stored Procedure : sp_PS_LOG_ExecutionStepBySt
28/03/2018 14:28:45,Highest,Inform ,Replication Stored Procedures successfully finished
28/03/2018 14:28:45,Highest,Inform ,Replication Started between DEMO2.PROJECT_DB_LOG to DEMO1.
28/03/2018 14:28:47,Highest,Process,000000125 Rows affected between 2018-03-28T13:14:16 and 20
28/03/2018 14:28:47,Highest,Process,000000000 Rows affected between 2018-03-28T13:14:17 and 20
28/03/2018 14:28:47,Highest,Process,000000045 Rows affected between 2018-03-28T13:14:18 and 20
28/03/2018 14:28:47,Highest,Process,000000458 Rows affected between 2018-03-28T13:14:19 and 20
28/03/2018 14:28:47,Highest,Process,000000045 Rows affected between 2018-03-28T13:14:20 and 20
28/03/2018 14:28:47,Highest,Process,000000002 Rows affected between 2018-03-28T13:14:21 and 20
28/03/2018 14:28:47,Highest,Process,000000000 Rows affected between 2018-03-28T13:14:23 and 20
28/03/2018 14:28:47,Highest,Process,000000058 Rows affected between 2018-03-28T13:14:24 and 20
28/03/2018 14:28:47,Highest,Process,000000078 Rows affected between 2018-03-28T13:14:25 and 20
28/03/2018 14:28:47,Highest,Process,000000050 Rows affected between 2018-03-28T13:14:26 and 20
```

The 'Process' information is most useful for reviewing the outcome of replication.

About SQL Server's Memory Options

You use the two server memory options, Min Server Memory and Max Server Memory, to re-configure the amount of memory (in megabytes, MB) in the buffer pool used by an instance of the SQL Server.

- By default, SQL Server can change its memory requirements dynamically based on available system resources.
- The default setting for Min Server Memory is 0.
- The default setting for Max Server Memory is the amount of RAM memory available to the PC.
- The minimum amount of memory you can specify for Max Server Memory is 4MB.

When SQL Server is using memory dynamically, it queries the system periodically to determine the amount of free physical memory available. SQL Server grows or shrinks the buffer cache to keep free physical memory between 4MB and 10MB depending on server activity. This prevents Microsoft Windows from paging.

- If there is less memory free, SQL Server releases memory to Windows that usually goes on the free list.
- If there is more memory free, SQL Server recommits memory to the buffer cache.
- SQL Server adds memory to the buffer cache only when its workload requires more memory, so a server at rest does not grow its buffer cache.

The recommended configuration is to allow SQL Server to use memory dynamically. However, you can over-ride SQL by setting the memory options manually.

SQL Server's ability to use memory dynamically

Before you set the amount of memory for SQL Server, you should determine the appropriate memory setting by subtracting from the total physical memory the memory required for:

- The Windows operating system.
- Any other instances of SQL Server.
- Other system purposes, if the computer is not wholly dedicated to SQL Server

The remainder is the maximum amount of memory you can assign to SQL Server.

How the SQL Server Uses Memory

There are two principal methods for setting the SQL Server memory options manually:

Method	Meaning
Set Min Server Memory and Max Server Memory:	
• to span a range of memory values.	This is useful in situations where system or database administrators want to configure an instance of SQL Server in conjunction with the memory requirements of other applications running on the same computer.
• to the same value.	This value corresponds to the fixed amount of memory that will be allocated to SQL Server.

Min Server Memory

You use Min Server Memory to guarantee a minimum amount of memory to an instance of SQL Server.

SQL Server will not immediately allocate the amount of memory specified in Min Server Memory on startup. However, after memory usage has reached this value due to loading from client stations, SQL Server cannot free memory from the allocated buffer pool unless the value of Min Server Memory is reduced.

SQL Server is not guaranteed to allocate the amount of memory specified in Min Server Memory. If the load on the server never necessitates the allocation of the amount of memory specified in Min Server Memory, then SQL Server will run with less memory.

Only set Min Server Memory if the start time of new applications sharing the same server as SQL Server becomes a problem. It is better to let SQL Server use all of the available memory.

Max Server Memory

You use Max Server Memory to prevent SQL Server from using more than the specified amount of memory, thus leaving the remaining memory available to start other applications quickly. SQL Server does not immediately allocate the memory specified in Max Server Memory on startup. Memory usage is increased as needed by SQL Server until it reaches the value specified in Max Server Memory. SQL Server cannot exceed this memory usage unless the value of Max Server Memory is raised.

There is a short delay between the start of a new application and the time when SQL Server releases memory. Using Max Server Memory prevents this delay and may give better performance to the other application.

As you increase the amount of SQL Server memory, ensure that there is sufficient disk space to grow the operating system's virtual memory support file to accommodate additional memory.

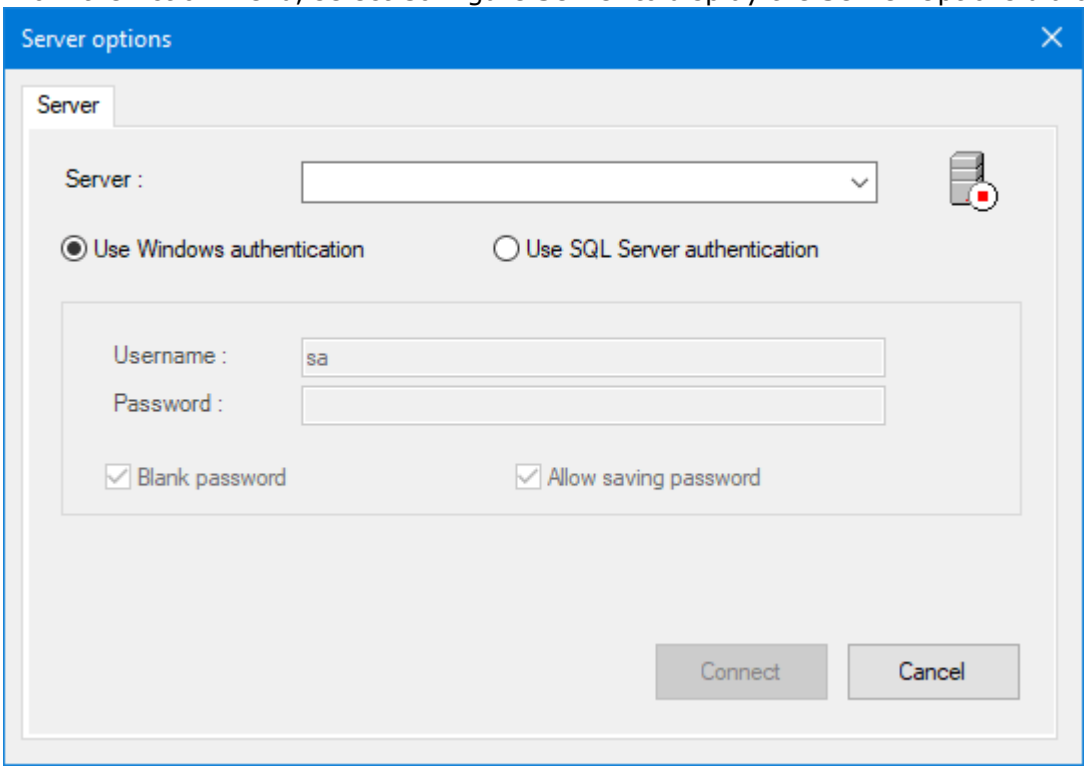
Configuring the Memory Usage of the SQL Server

If you have issues with memory usage on your PC, you may be advised by your support centre to change the memory settings for the SQL server.

How to connect to the SQL Server

Before you can change the memory settings you must first connect to the SQL server.

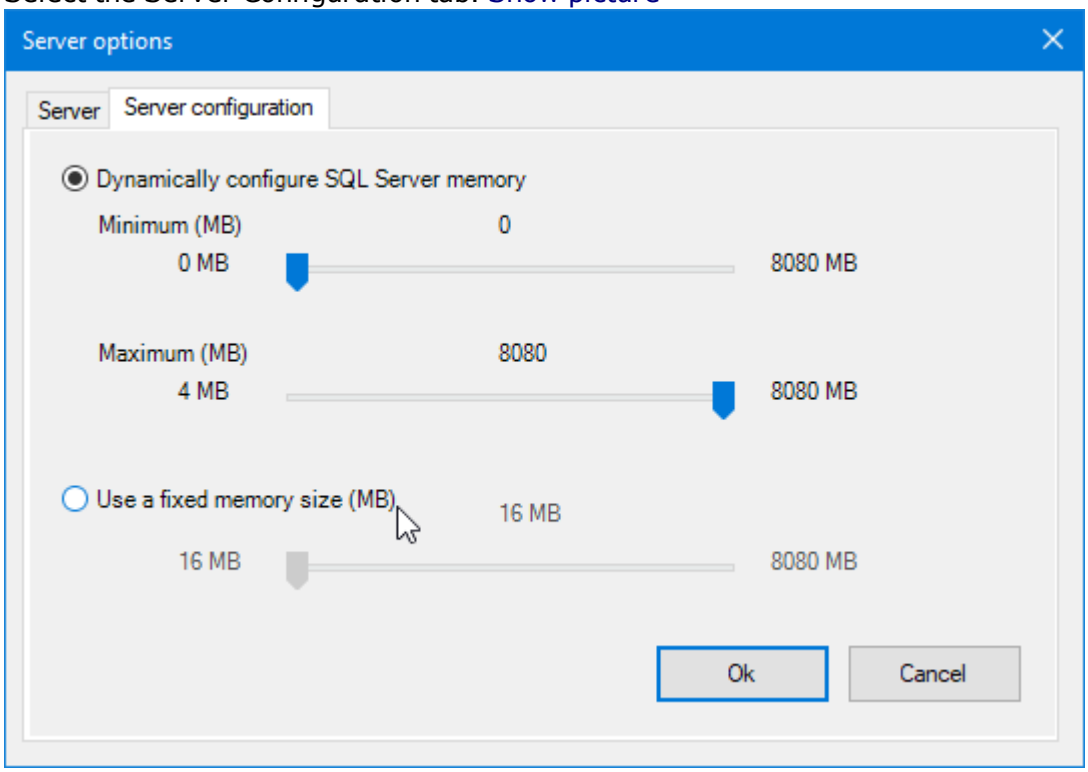
1. In the left pane of the Database Manager, select the node Microsoft SQL Server Databases.
2. From the Action menu, select Configure Server to display the Server Options dialog. Show picture



3. Using the Server combo box to select the server.
4. Select the authentication type. For more details on the available options see the topic How to browse SQL Server databases.
5. Click Connect to connect to the SQL Server. This may take a few seconds.

How to change the memory settings

1. Select the Server Configuration tab. Show picture



2. Use the slider controls to change the memory settings as advised by your support centre.
3. The sliders are moved to show the changed settings. Click OK to confirm the settings followed by Cancel to close the dialog.

Dynamic and fixed memory settings

- When you are using dynamic memory for SQL Server, the minimum and maximum server memory settings are individually configurable.
- The default setting for the maximum memory usage is the amount of RAM physically available to the PC.
- When you are using fixed memory for SQL Server, the minimum and maximum sizes of server memory have the same value.

SQL server's static memory needs

The amount of memory you specify must be sufficient for SQL Server's static memory needs (kernel overhead, open objects, locks etc.), as well as for the data cache (also called buffer cache).

Use the statistics from the Microsoft System Monitor to help you adjust the memory value if necessary. Change this value only when you add or remove memory, or when you change how you use your system.

1. In the Windows Control Panel, double-click Administrative Tools then double-click on the Performance icon.
2. In the Performance window's Console Root tree, select System Monitor. Show picture