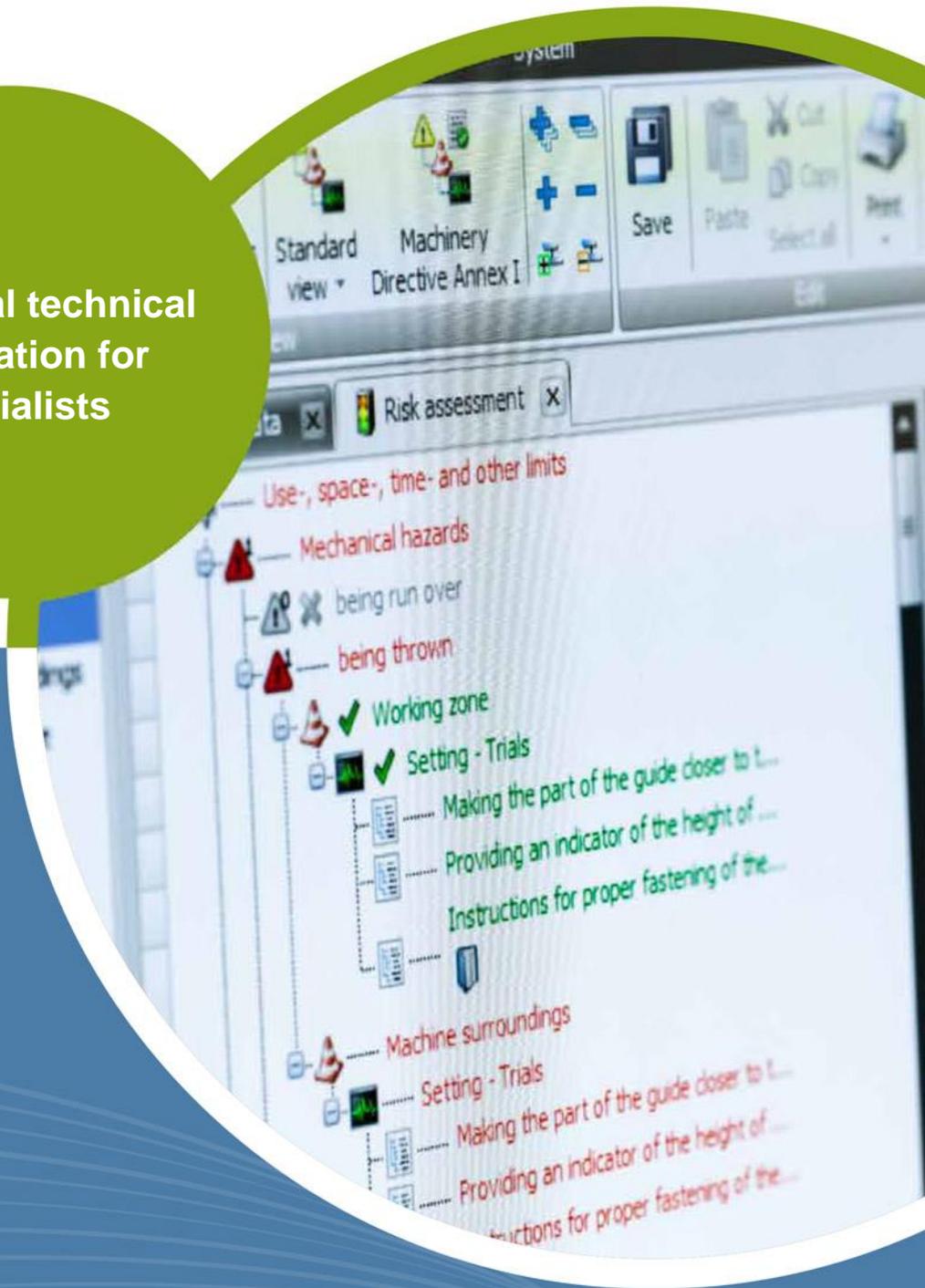


Installation manual SQL Server

Version: 2024-10-01

Additional technical
information for
specialists

Safexpert



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1. Brief overview of how to use the SQL Server

This whitepaper document is a supplement to the installation instructions of Safexpert (see chapter 3 in the Safexpert manual).

It provides a brief overview of how to combine Safexpert with the Microsoft SQL Server as a database backend and is intended for experienced administrators.

In chapter 2 the most important configuration steps are briefly explained.

It also shows the necessary steps required to install an SQL Server. If there is an SQL Server available in your company, please contact your IT administrator. The IT administrator can, if necessary, set up a login and password for installing the Safexpert database on the server.

Note: The illustrations reflect the installation of SQL Server 2012, however, the procedure of the installation of other SQL Server versions is not significantly different.

We support the following MSSQL Server versions: 2016, 2017, 2019 and 2022.

1.1. System requirements

- Operating system: Windows 10; Windows 11; Windows Server 2016; Windows Server 2019; Windows Server 2022
- Processor: Pentium processor (or compatible) with 1,4 GHz clock speed or faster (recommended: 2 GHz clock speed)
- System memory: at least 1 GB for the Express-Edition (recommended: 4 GB and should be as database size increases to ensure optimal performance)
- Hard disk capacity: at least 6 GB
- Microsoft SQL Server in one of the following editions:
 - Express
 - Developer
 - Standard
 - Enterprise
- A stable network connection with a minimum of 1 MBit bandwidth

A free version can be downloaded directly from Microsoft at: <https://www.microsoft.com/en-us/sql-server/sql-server-downloads>.

We recommend downloading the English version, as it can be installed irrespective of the language settings of your operating system.

Microsoft offers several installation options. The “Standard” variant is sufficient for Safexpert.

1.2. Required disk space

The required disk space for the Safexpert database depends on several factors. Apart from technical parameters like project quantity and project size (number of the limits of the machines, interfaces, etc.), the user behavior matters. For example, Safexpert allows embedding files in the database, which requires more disk space.

Approximate values for estimation of required disk space are:

- 500 MB for the basic installation
- 80 MB per project
- additionally the size of the embedded files (values up to several 100MB possible)

1.3. Field of application

Safexpert can be connected with different database systems via database connectors. The standard package contains the connectors for a file-based database (VistaDB) and for the Microsoft SQL Server.

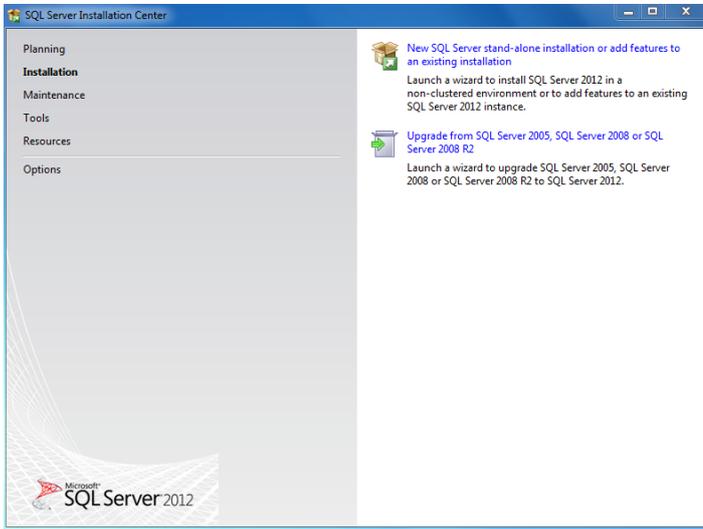
A file-based, local database simplifies the installation and is suitable for small single user versions. But since the performance strongly decreases in a network, an SQL Server is recommended as a database backend for multi-user installations.

The administration of an SQL Server must be carried out by trained IT personnel.

2. Configuration

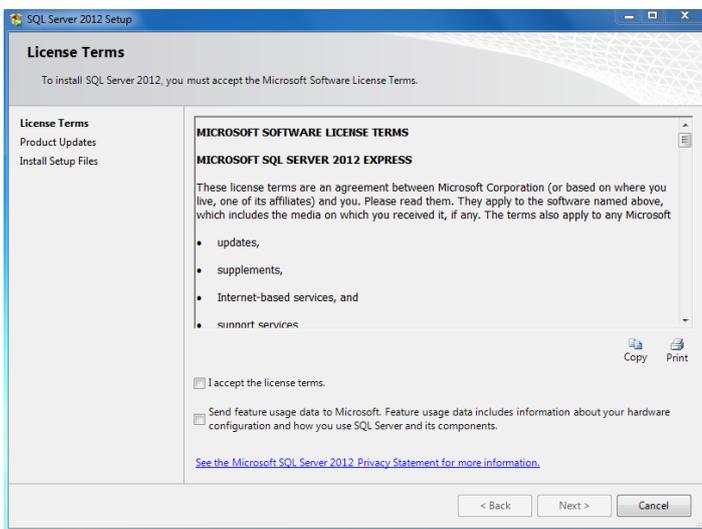
2.1. Installation of the SQL Server

After launching the download file:

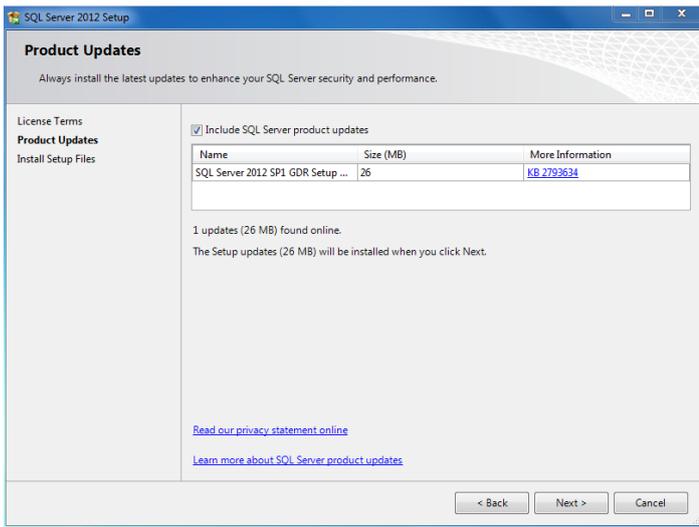


Click on **New SQL Server stand-alone installation...**

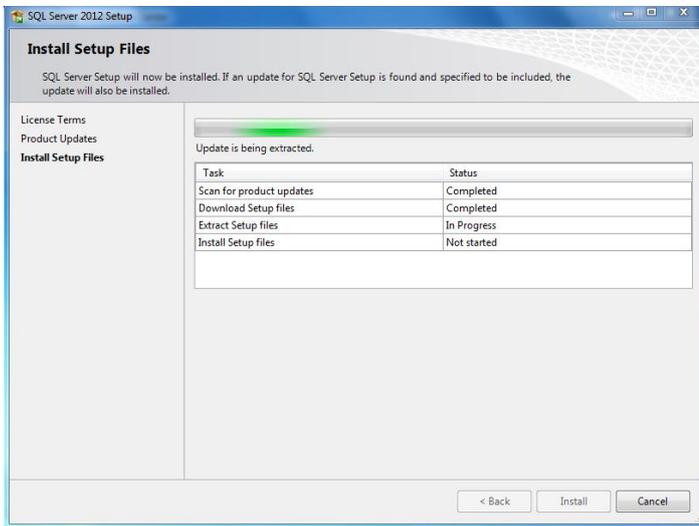
Setup Support Rules runs through automatically. If an error message appears here, please consult your IT administrator!



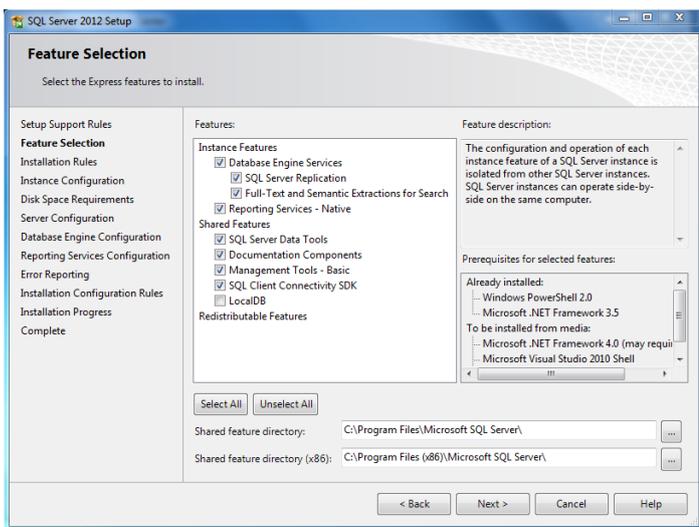
Select **I accept the license terms**, then **Next**



Activate Include SQL Server product updates, then Next

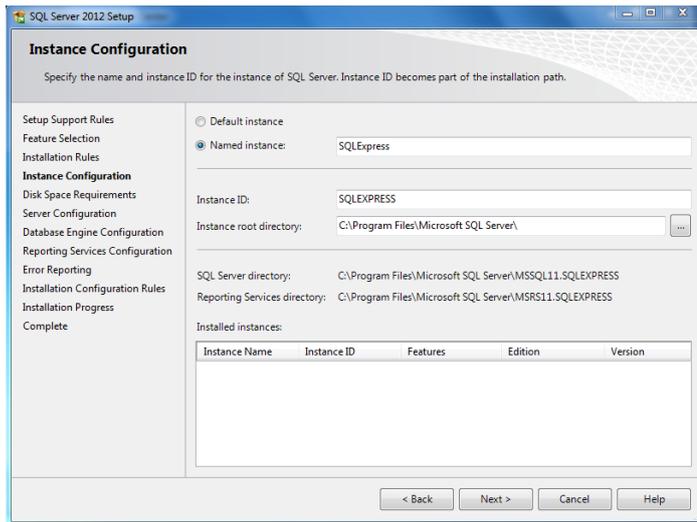


SQL Server Updates are installed.



Select the desired features and click "Next". Safexpert requires at least:

- Database Engine Services
- SQL Client Connectivity SDK
- Management Tools - Basic



When installing the SQL Server, the name of the SQL instance is defined in the step **Instance Configuration**. If you select **Named Instance**, the setup uses **SQLEXPRESS** as a default instance name.

Note: This information is important, because this is required when entering the server data in Safexpert.

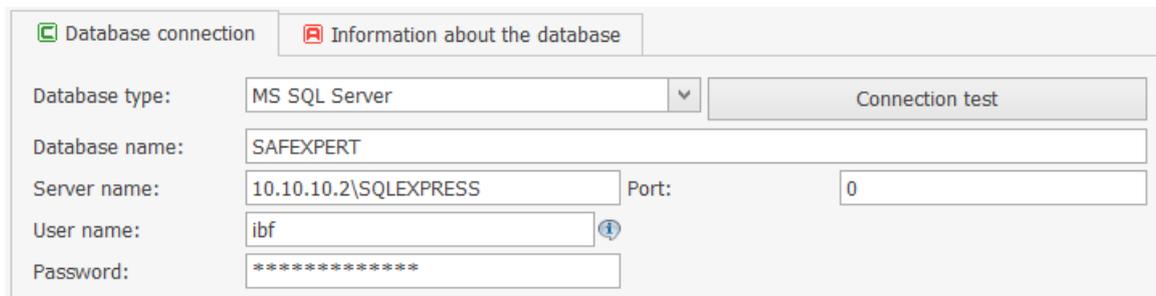
The following settings apply to the Safexpert Setup:

- The picture above shows the installation of an SQL SERVER Express. You can change the suggested instance name SQLEXPRESS into any other name in the field **Named instance**. In Safexpert this data has to be entered as follows:
Server name\Instance name
- **Default instance** means that no instance name has to be added in the field **Server name**. In this case, only the Server name has to be specified, without any instance name.

Alternatively, the IP address of the SQL Server can be used.

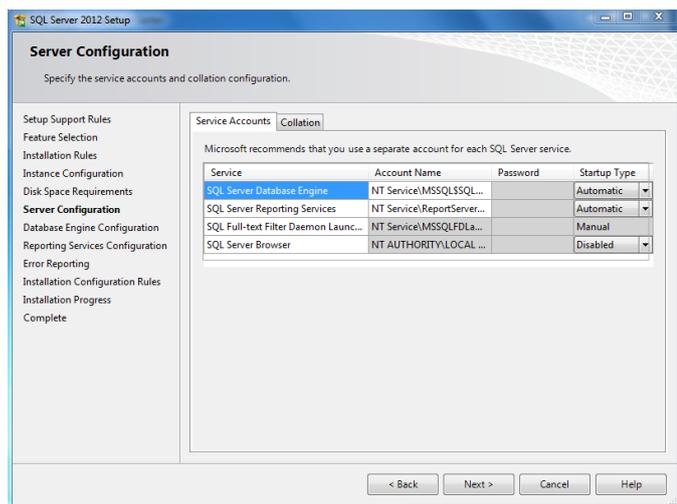
Example:

10.10.10.2\SQLEXPRESS

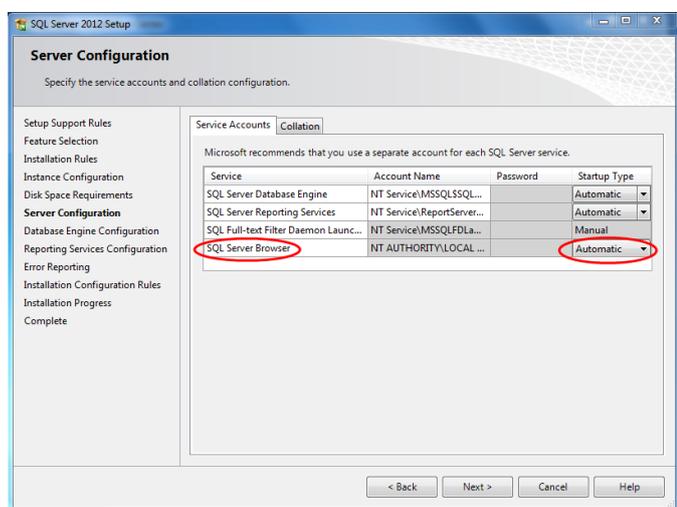


2.1.1. Configuration of services

The SQL Server starts automatically with Windows if it was appropriately configured in Windows services. For the single user version it is sufficient to start the service **SQL Server (instance name)** automatically. If users from other computers would also like to gain access, activate the service **SQL Server Browser**. The services can be configured in the **SQL Server Configuration**.



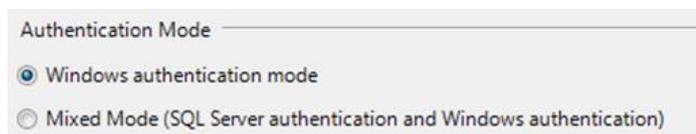
In order to start the service with Windows, change the **Startup Type** of the **SQL Server Browser** to **Automatic**.



2.1.2. Authentication options

The SQL Server can be configured in two authentication methods:

- **Windows authentication mode**
- **Mixed Mode (SQL Server and Windows authentication)**



Safexpert supports both methods.

2.1.3. Windows authentication

This method is especially recommended for the single user installation. The advantage is that no particular users with access rights have to be defined on the SQL Server itself. For authentication, the user name and password of the Windows user are used.

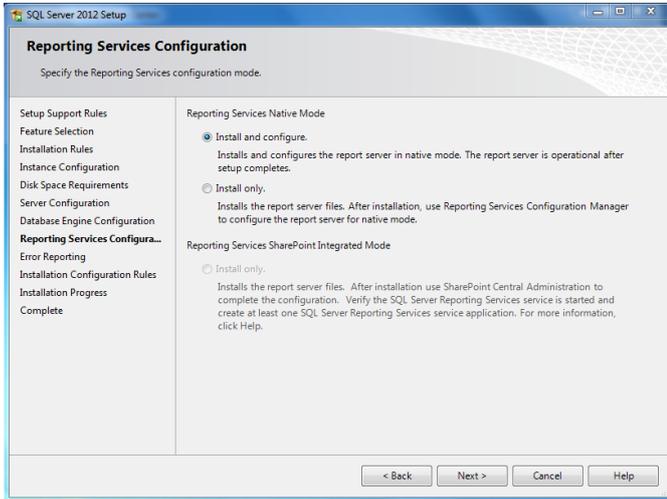
The disadvantage is the assignment of access rights in the network. Individual access rights must be defined for every single Windows user. A Safexpert user, who is not registered as a user on the SQL Server cannot work with Safexpert.

Recommendation: Use Windows authentication for single user installations.

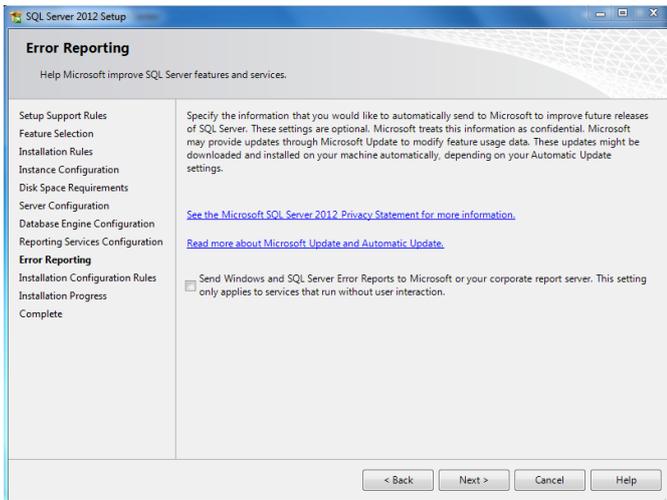
2.1.4. SQL Server Authentication

This method is especially recommended for multi-user access. The advantage is that only one user with access rights has to be set up on the SQL Server itself. So, all users that have been created in Safexpert have access to the server, regardless of their Windows user names.

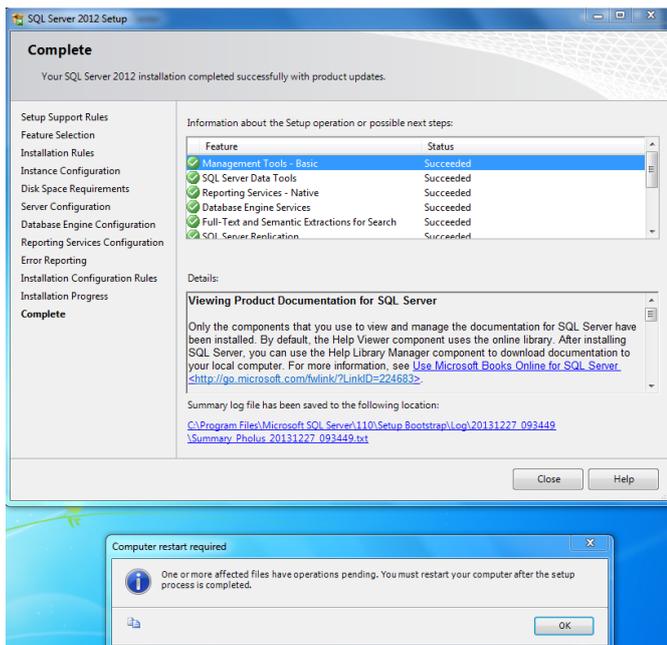
2.1.5. Next steps



Next



Next



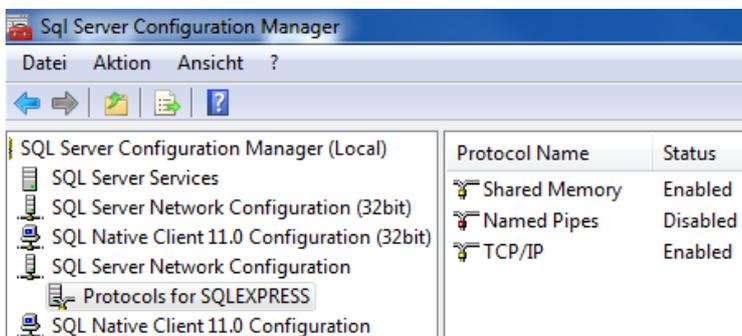
The status of each feature needs to be Succeeded. Click OK to restart the computer and to finish the installation. If the status of one or several features is Failed, please consult your IT administrator.

2.1.6. Configuration of the network protocols

This point is only necessary for multi-user access.

In order to enable other users to connect to the SQL Server, the TCP/IP protocol must be enabled. This setting is found in **Sql Server Configuration Manager** in the area **Protocols for instance name**.

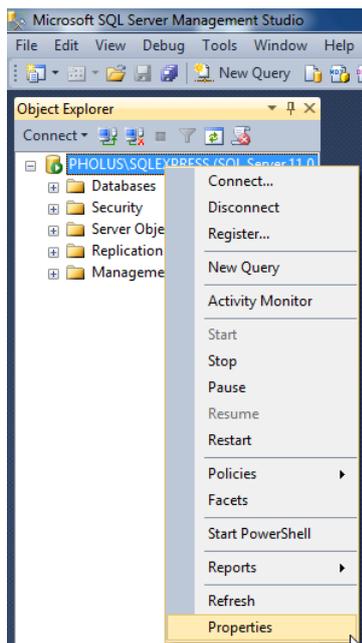
Note: After enabling TCP/IP the service needs to be restarted.



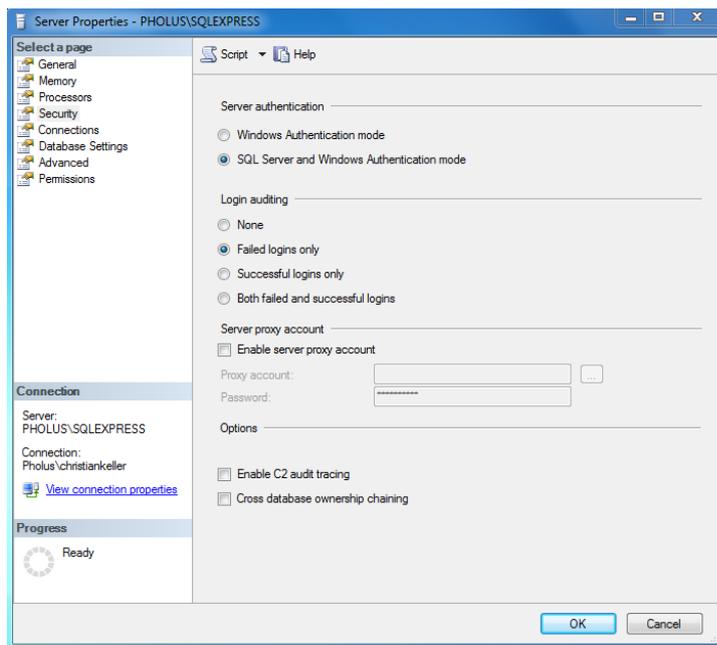
2.1.7. Creating an SQL user

Start the **Microsoft SQL Server Management Studio**

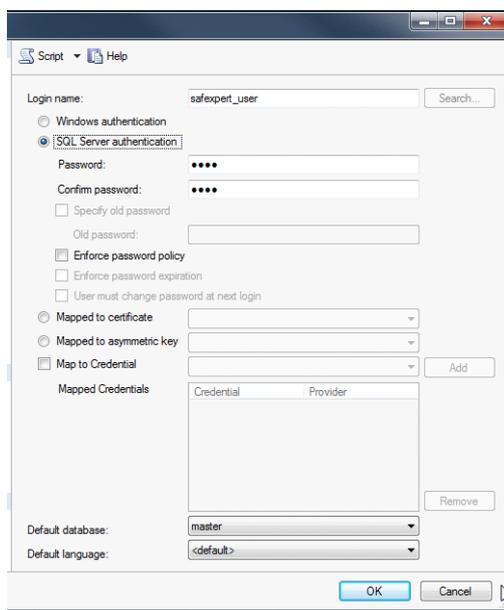
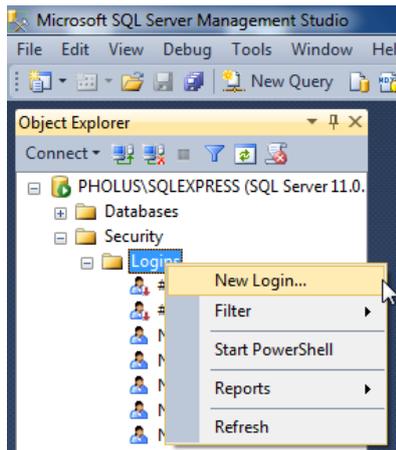
1. Choose "Properties" from the context menu:



2. Activate the **SQL Server and Windows Authentication mode**:



3. Create a new user in the menu **Security -> Logins -> New Login...**

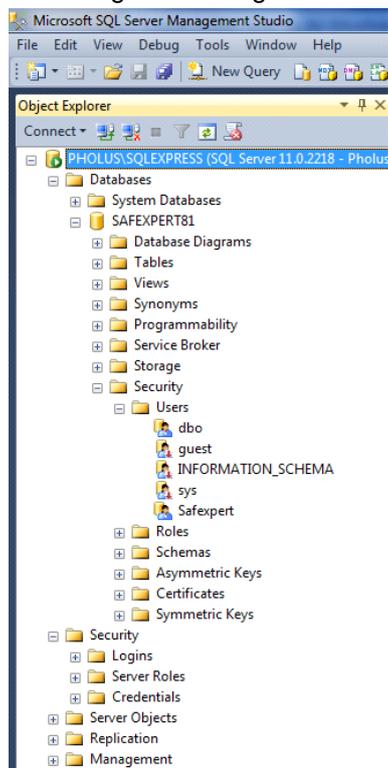


Please define here:

- **Login name**
- **Authentication of the SQL Server**
- **Password**

2.2. Assignment of rights for an SQL user

The assignment of rights is divided into two levels.



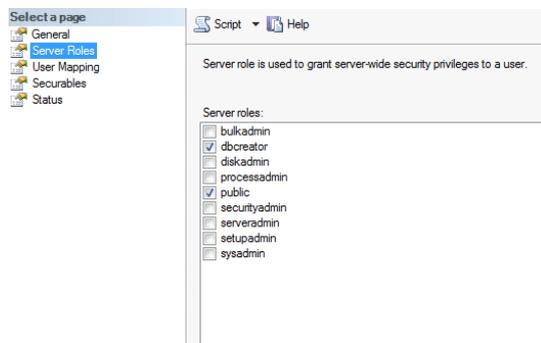
1. Server level (Server roles)
 - rights of the user are determined here for the logins.
 - the SQL user needs the following rights:
 - ✎ public
 - ✎ dbcreator

(Only required to create the database on the Safexpert setup. If the database has already been established previously by an administrator, this role is NOT required)

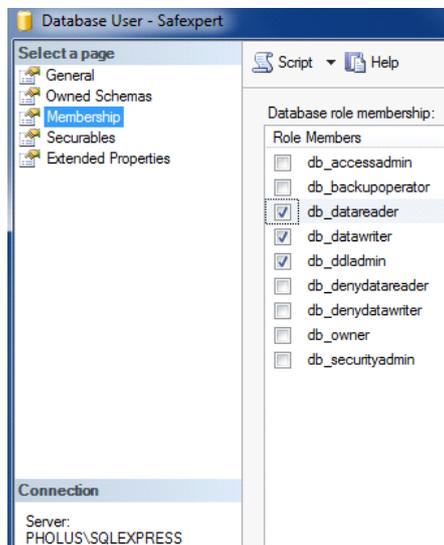
2. Database level (Database roles)
 - Here the rights are defined, which the user needs for the respective databases:
 - ✎ db_datareader
 - ✎ db_datawriter
 - ✎ db_ddladmin

(NOTE: In order to define the rights at the database level, the database must be created before)

Assignment of rights at the server level

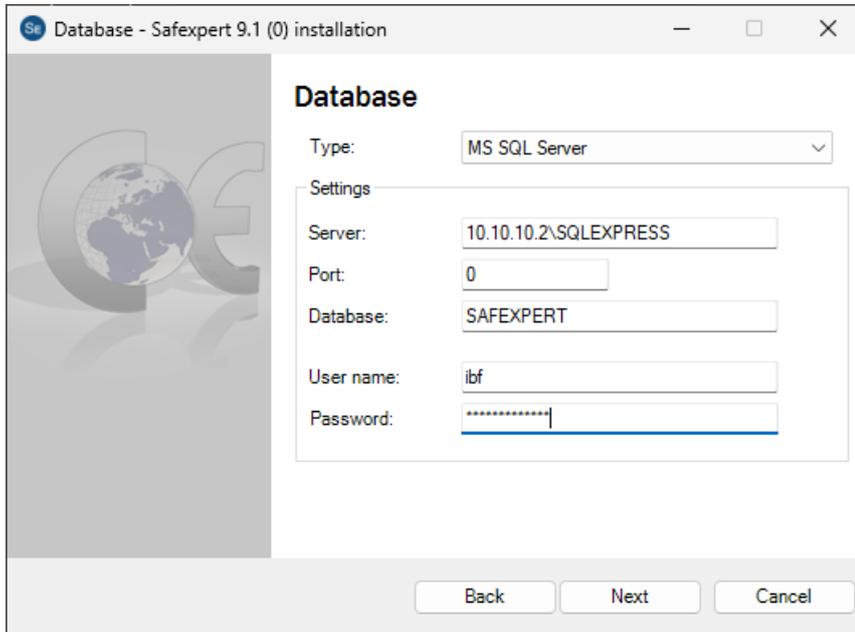


Assignment of rights at the database level



2.3. Selection of the database in the Safexpert Setup

Select the database that is to be used in Safexpert Setup:



Depending on which authentication method (see chapter [2.1.2](#)) you would like to use, select for the installation on an SQL server:

- MS SQL Server or
- MS SQL Server (Windows authentication).

The SQL Server must have been installed and configured before you can continue with the set up (see chapter [2.1](#)).

It is possible to install the Safexpert database in two versions:

- automatically via Safexpert Setup or
- manually by the IT administrator: Snapshot isolation must be activated.

Note: If you want to copy an existing database, this has to be done via backup/restore. When copying by using diverse database scripts, standard field values could get lost. In this case the database gets corrupted.

Activating snapshot isolation

Execute the following SQL commands in SQL Server Management Studio or in the command line tool:

- ALTER DATABASE Name of new database SET READ_COMMITTED_SNAPSHOT ON;
- ALTER DATABASE Name of new database SET ALLOW_SNAPSHOT_ISOLATION ON;

Note: A connection to the server cannot be checked at that time, since the necessary database components have not yet been installed. If the entered connection data are incorrect, an error message will only appear later in the Setup.

2.3.1. Features of the single user installation

As a single user version, Safexpert is operated with the file-based database VistaDB. Since the installation of the file-based database is simpler, it is recommended by default. However, there are reasons to operate an SQL Server locally on the Windows PC even for this installation type.

Advantages:

- Better speed, especially for large projects

Disadvantages:

- Increased administration effort
- Backup has to be carried out using own backup solution

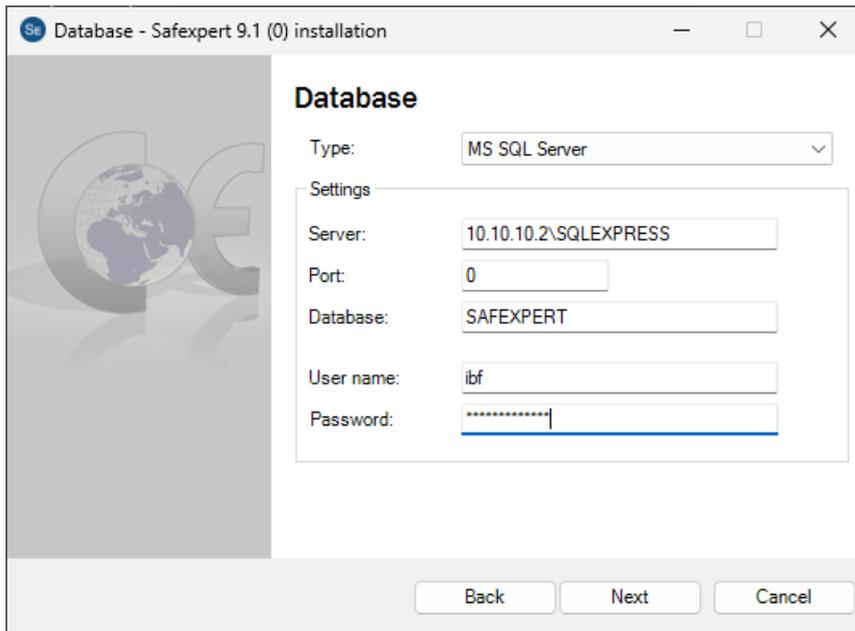
In single user installations, the SQL Server is directly installed on the PC or laptop on which Safexpert is to be installed.

No particular steps are necessary for configuration. The default settings which are suggested during the setup can be applied. These are:

- Instance name: SQLEXPRESS
- Authentication: Windows authentication
- Services started: SQL Server (SQLEXPRESS)

Other services are not required for the single user installation.

In this case use MS SQL Server (Windows authentication) in the Safexpert Setup as a database type and indicate the server as shown in the image:



2.3.2. Special features of the network installation

For network installations, it is important to ensure that the SQL Server is installed on a suitable machine, which is integrated in the business backup.

The service **SQL Server Browser** must be activated in addition to the default service **SQL Server** (see chapter [2.1.1](#)).

As network protocol, the TCP/IP protocol must be activated (see chapter [2.1.6](#)).

2.4. Information on silent installation

The Safexpert client has a silent installation method. The individual parameters for this method are defined in the Safexpert user guide. If you would like to connect clients via silent parameters with an SQL Server, please enter a connection string according to the following model:

Type: MS SQL Server

```
/DBCONNECTION="DBTYPE=MSSQL2008;DBSERVER=localhost\SQLEXPRESS;DBDATABASE=SAFEXPERT;
DBUSERNAME=max;DBPASSWORD=maxpwd;DBPORT=0;"
```

2.5. Step by step

Recommended steps for a single user installation

- 1) Install SQL Server with default settings
- 2) Install Safexpert
- 3) In step 4 of the setup, select the following settings:
 - a) Type: MS SQL Server (Windows authentication)
 - b) Server name: localhost\SQLEXPRESS
 - c) Database name: SAFEXPERT

Recommended steps for a network version

- 1) Install SQL Server with default settings on a suitable server
- 2) Activate TCP/IP for the SQL Server
- 3) Activate SQL Server Browser
- 4) Activate SQL Server authentication (see chapter [2.1.4](#))
- 5) Create SQL user for Safexpert (see chapter [2.1.7](#))
- 6) Install Safexpert
- 7) In step 4 of the setup, select the following settings:
 - a) Type: MS SQL Server
 - b) Server name: (enter the correct name here)
 - c) Database name: SAFEXPERT