

# **Installation manual SQL Server**

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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  $\underline{2}$  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: <u>https://www.microsoft.com/en-us/sql-server/sql-server-downloads</u>.

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 multiuser 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!

🏗 SQL Server 2012 Setup				
License Terms To install SQL Server 20:	12, you must accept the Microsoft Software License Terms.			
License Terms Product Updates Install Setup Files	MICROSOFT SOFTWARE LICENSE TERMS MICROSOFT SQL SERVER 2012 EXPRESS These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft • updates, • supplements, • Internet-based services, and			
	Copy Print I accept the license terms. Send feature usage data to Microsoft. Feature usage data includes information about your hardware configuration and how you use SQL Server and its components. See the Microsoft SQL Server 2012 Privacy Statement for more information. See the Microsoft SQL Server 2012 Privacy Statement for more information.			

Select I accept the license terms, then Next



1 SQL Server 2012 Setup				- • ×
Product Updates Always install the latest up	dates to enhance your SQL Server secur	ity and performance.		
License Terms Product Updates	☑ Include SQL Server product up	dates		
Install Setup Files	Name	Size (MB)	More Informati	on
instan secup rines	SQL Server 2012 SP1 GDR Setup .	26	KB 2793634	
	The Setup updates (26 MB) will b Read our privacy statement onlin Learn more about SQL Server pro	e installed when you click g duct updates	Next.	
			< Back Next >	Cancel

Activate Include SQL Server product updates, then Next

SQL Server 2012 Setup		
Install Setup Files SQL Server Setup will nov update will also be install	v be installed. If an update for SQL Server Setup ed.	is found and specified to be included, the
License Terms Product Updates Install Setup Files	Update is being extracted.	
listan Setup riles	Task	Status
	Scan for product updates	Completed
	Download Setup files	Completed
	Extract Setup files	In Progress
	Install Setup files	Not started
		< Back Install Cancel

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



📸 SQL Server 2012 Setup					X
Instance Configuration Specify the name and instance	ID for the instance of SQL Serve	er. Instance I	D becomes part of t	the installation path.	
Setup Support Rules Feature Selection Installation Rules	<ul> <li>Default instance</li> <li>Named instance:</li> </ul>	SQLExpres	5		
Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration	Instance ID: Instance root directory:	SQLEXPRE C:\Program	SS n Files\Microsoft SC	2L Server\	
Reporting Services Configuration Error Reporting Installation Configuration Rules Installation Progress Complete	SQL Server directory: Reporting Services directory: Installed instances:	C:\Progran C:\Progran	n Files\Microsoft SQ n Files\Microsoft SQ	L Server\MSSQL11.SQ L Server\MSRS11.SQL	LEXPRESS EXPRESS
	Instance Name Instar	nce ID	Features	Edition	Version
			< Back	Next > Car	icel Help

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

🖾 Database connectio	on 🖪 Information about the database	
Database type:	MS SQL Server V Connection test	
Database name:	SAFEXPERT	
Server name:	10.10.10.2\SQLEXPRESS Port: 0	
User name:	ibf	
Password:	******	

#### 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**.



SQL Server 2012 Setup			-		$\overline{\mathbb{Q}}$
Specify the service accounts and	l collation configuration.				
Setup Support Rules Feature Selection	Service Accounts Collation	a separate account for each	SQL Server serv	ce.	
Installation Rules	Service	Account Name	Password	Startup Type	
Disk Space Requirements	SOL Server Database Engine	NT Service\MSSOL\$SOL		Automatic	
Server Configuration	SOL Server Reporting Services	NT Service\ReportServer		Automatic	
Database Engine Configuration	SQL Full-text Filter Daemon Launc	NT Service\MSSQLFDLa		Manual	
Reporting Services Configuration	SQL Server Browser	NT AUTHORITY\LOCAL		Disabled	•
rror regoring installation Configuration Rules installation Progress Complete					

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

Server Configuration Specify the service accounts a	nd collation configuration.			
Setup Support Rules Feature Selection Installation Rules	Service Accounts Collation Microsoft recommends that you use	a separate account for each	SQL Server serv	ice.
Instance Configuration	Service	Account Name	Password	Startup Type
Disk Space Requirements	SQL Server Database Engine	NT Service\MSSQL\$SQL		Automatic 💌
Server Configuration	SQL Server Reporting Services	NT Service\ReportServer		Automatic 💌
atabase Engine Configuration	SQL Full-text Filter Daemon Launc	NT Service\MSSQLFDLa		Manual
eporting Services Configuration	SQL Server Browser	NT AUTHORITY\LOCAL		Automatic -
nstallation Configuration Rules nstallation Progress Complete				

#### 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)

Authentication Mode

Windows authentication mode

```
Mixed Mode (SQL Server authentication 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

🐮 SQL Server 2012 Setup						
Reporting Services Configuration Specify the Reporting Services configuration mode.						
Setup Support Rules Feature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configura Error Reporting Installation Configuration Rules Installation Progress Complete	<ul> <li>Reporting Services Native Mode</li> <li>Install and configure.</li> <li>Install and configures the report server in native mode. The report server is operational after setup completes.</li> <li>Install only.</li> <li>Install the report server files. After installation, use Reporting Services Configuration Manager to configure the report server for native mode.</li> <li>Reporting Services SharePoint Integrated Mode</li> <li>Install only.</li> <li>Install only.</li> <li>Install the report server files. After installation use SharePoint Central Administration to complete the configuration. Verify the SQL Server Reporting Services service is started and create at least one SQL Server Reporting Services service application. For more information, click Help.</li> </ul>					
	< Back Next > Cancel Help					

#### Next



Next



Complete Your SQL Server 2	2012 installati	on completed successfully with product updates.	
Setup Support Rules Feature Selection Installation Rules Instance Configuration Disk Space Requireme Server Configuration Database Engine Conf Reporting Services Co Error Reporting Installation Progress Complete	n ints figuration nfiguration tion Rules	Information about the Setup operation or possible of Feature Sol, Serve Dua Tools - Baic Sol, Serve Dua Tools Database Engine Services - Native Database Engine Services Database Engine Services Sol Serve Renization Pull-Test and Semantic Educations for Search Sol Server, Benization Details: Viewing Product Documentation for SoL S Only the components that you use to view and ben installed. By default, the Help Livery Man your local computer. For more information, easy Summary log file has been saved to the following lo C\Program FileAMicrosoft SQL Server\110\Setup E Summary. Pholus 20131227.093449.tst	net steps: Status Succeeded Su
T			
	Computer rest	art required cormore affected files have operations pending. You mu cess is completed.	st restart your computer after the setup OK

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





2. Activate the SQL Server and Windows Authentication mode:

Server Properties - PHOLUS\SQLEXPRESS			
Select a page	Script  Help  Server authentication  Windows Authentication mode  SQL Server and Windows Authentication mode  Login auditing  None  Failed logins only  Successful logins only  Both failed and successful logins  Server proxy account  Prove server proxy account Prove server prox		
Connection	Password:		
Server: PHOLUS\SQLEXPRESS Connection: Pholus\christiankeller Pholus\christiankeller	Options		
Progress			
Ready			
	OK Cancel		





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\_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

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 Dukadmin
 Dukadmin

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 Duber admin
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 Securatient

 Status
 Securatient

#### 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:

💿 Database - Safexpert 9.1 (	)) installation	_ □	×
	Database Type: Settings Server: Port: Database: User name: Password:	MS SQL Server          10.10.10.2\SQLEXPRESS         0         SAFEXPERT         ibf	
		Back Next Ca	ancel

Depending on which authentication method (see chapter <u>2.1.2</u>) 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:

See Database - Safexpert 9.1 (0) installation − □ ×		
	Database	
	Type:	MS SQL Server $\sim$
	Settings	
	Server:	10.10.10.2\SQLEXPRESS
	Port:	0
	Database:	SAFEXPERT
	User name:	ibf
	Password:	*****
		Back Next Cancel

#### 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