Roger Access Control System 5

Application note no. 017

Document version: Rev. H

Operation with MS SQL Server database

Introduction

RACS 5 system enables use of MS SQL Server 2005 (and newer) database management system. Two types of databases can be used in the system:

- Local type MS SQL Server Compact
- Centralized type MS SQL Server e.g. Express, Standard, Enterprise

Local database is dedicated to small access control systems, which are managed from single workstation with installed VISO software, RogerSVC services and database. The procedure for creation and application of local database in RACS 5 is included in AN006 RACS 5 Quick start guide application note.

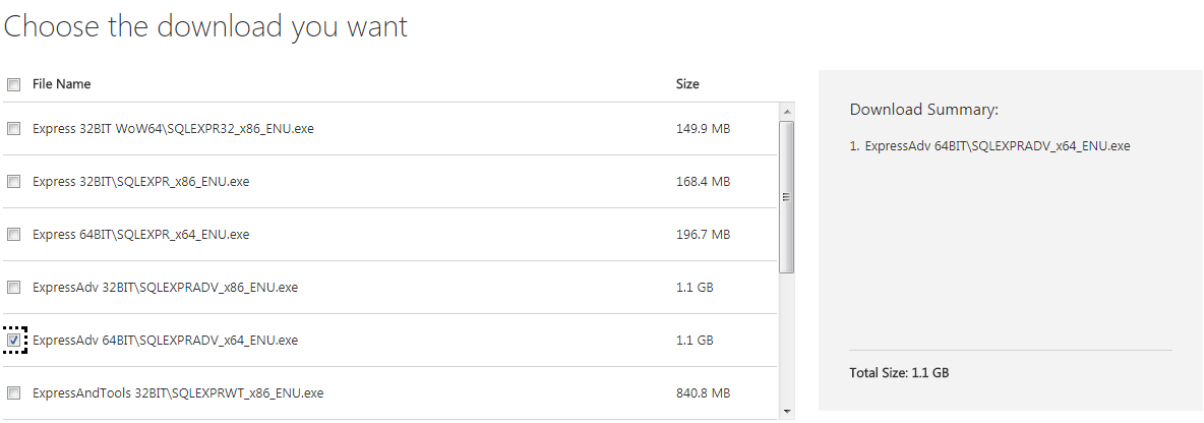
Centralized database is dedicated to medium and large systems and/or system managed from multiple workstations. In such case VISO software is installed on each workstation so all operators could communicate with database on a server. RACS 5 Windows services are usually installed on the same server as database.

This document explains installation and configuration of centralized database using MS SQL Server 2014 Express as well as procedures for database backup, database transfer to another server and migration from local type to centralized database. Description of Express edition database features and requirements is available on Microsoft webpage.

MS SQL Server 2014 Express system

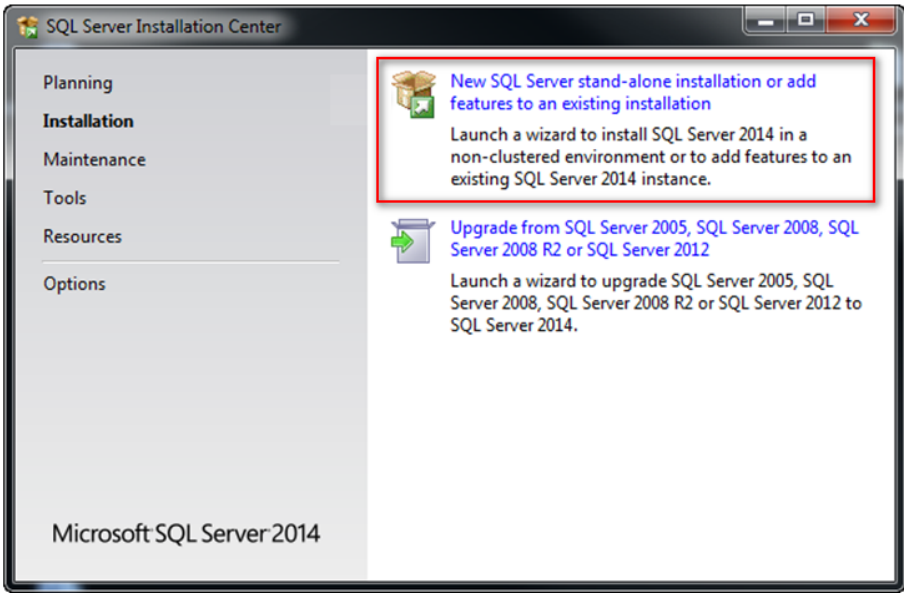
Installation file downloading

- Search for MS SQL Server 2014 at Microsoft website or use following link in your web browser: https://www.microsoft.com/en-US/download/details.aspx?id=42299
- Select language, click *Download* button and select one of following versions:
  - "ExpressAdv 64BIT\SQLEXPRADV_x64_ENU.exe" for 64-bit Windows OS
  - "ExpressAdv 32BIT\SQLEXPRADV_x86_ENU.exe" for 32-bit Windows OS

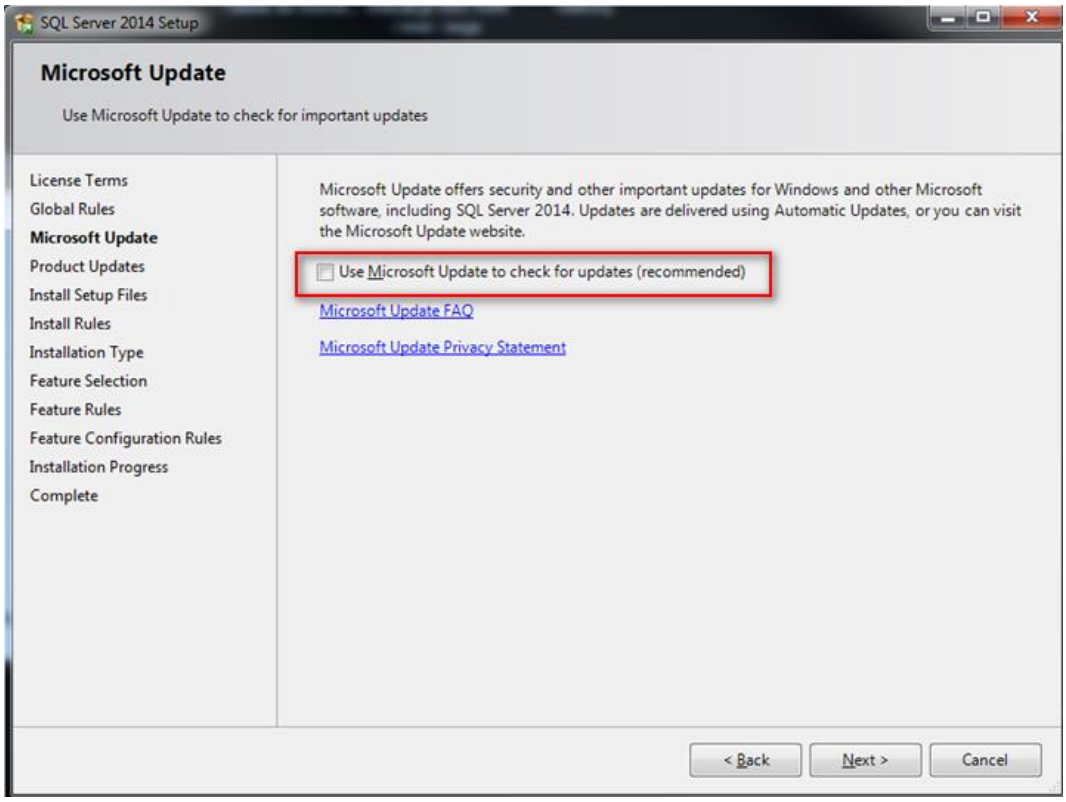


Installation and configuration of MS SQL Server

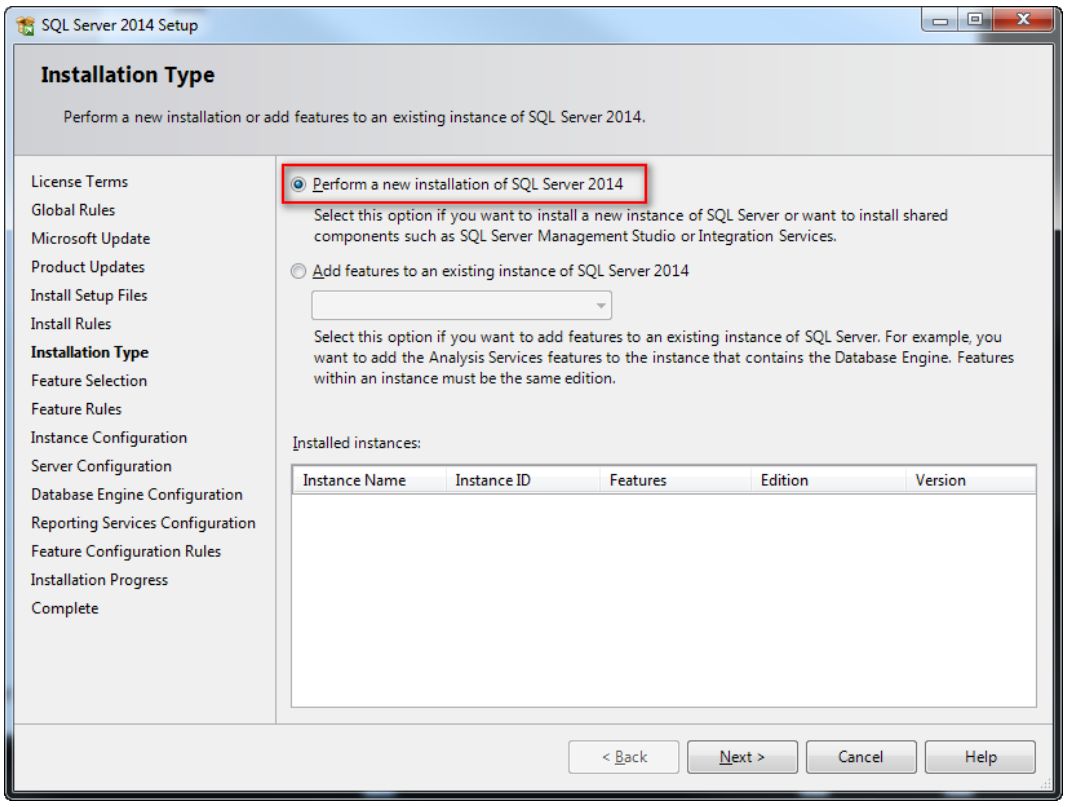
- Start downloaded installation file and after unpacking select the option below:



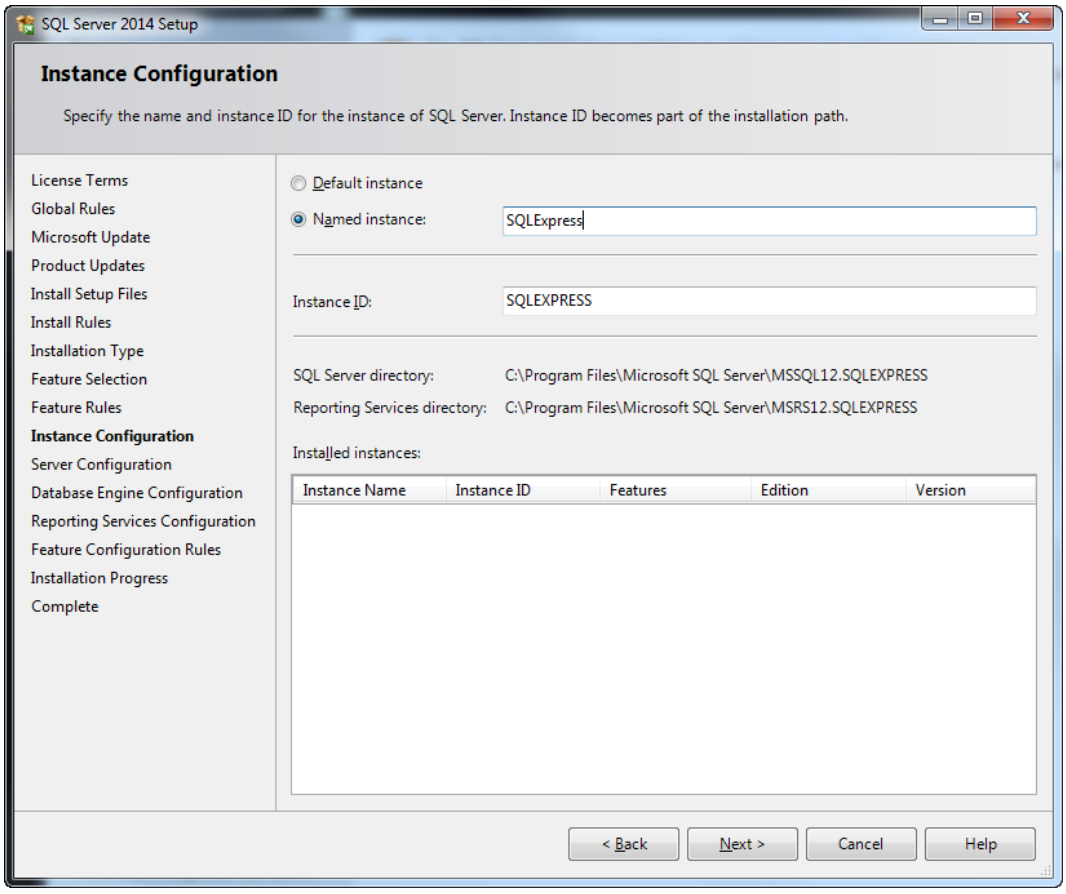
- Accept license agreement.
- Choose if you want to enable automatic updates.



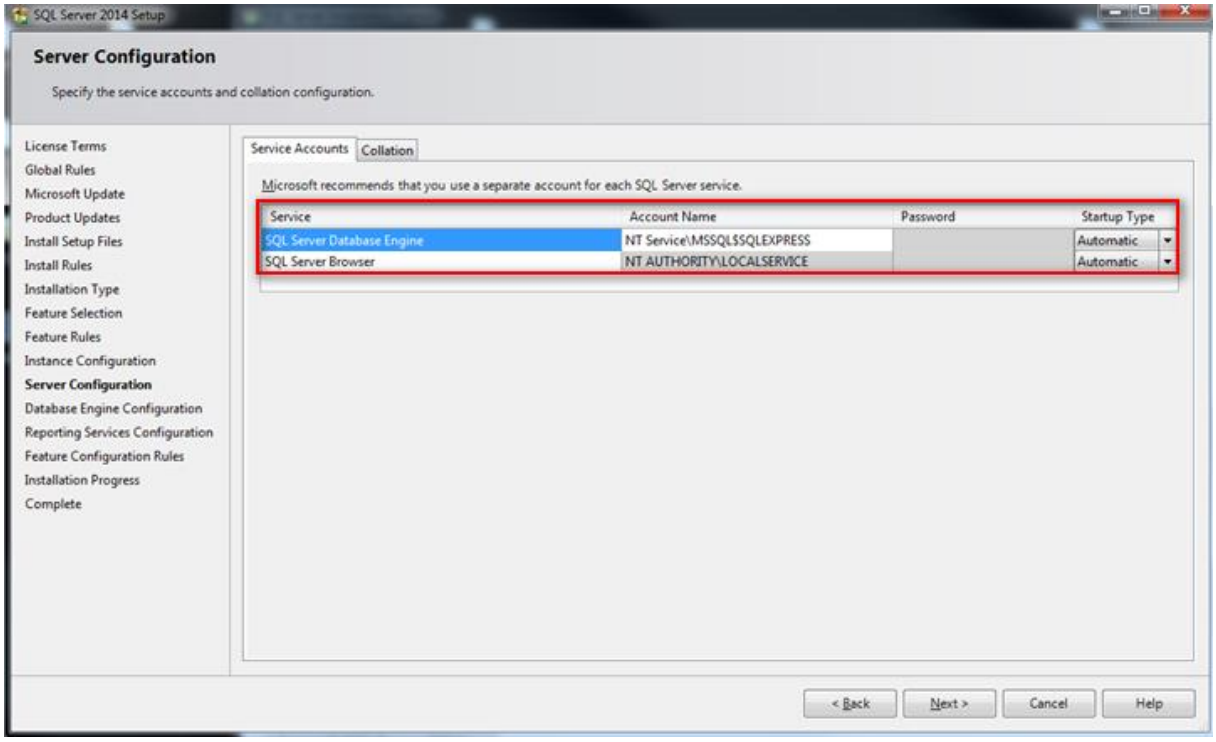
- Select installation of new database.



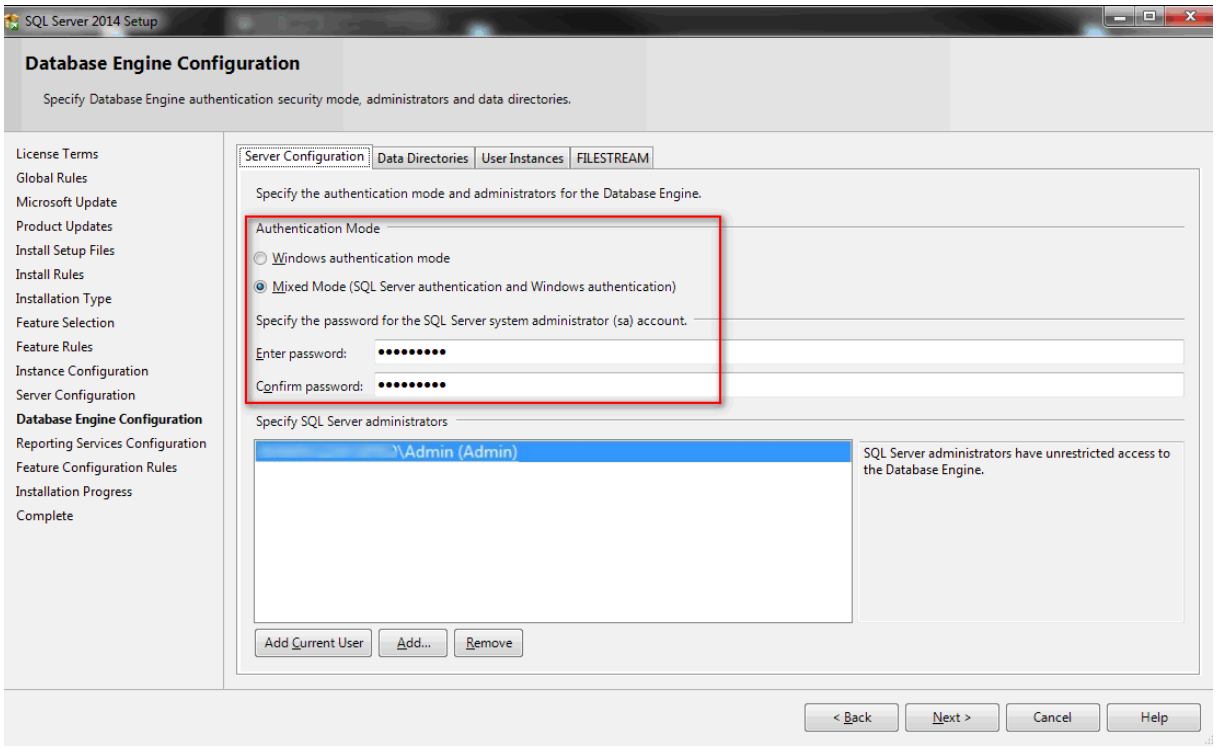
- Select named instance.



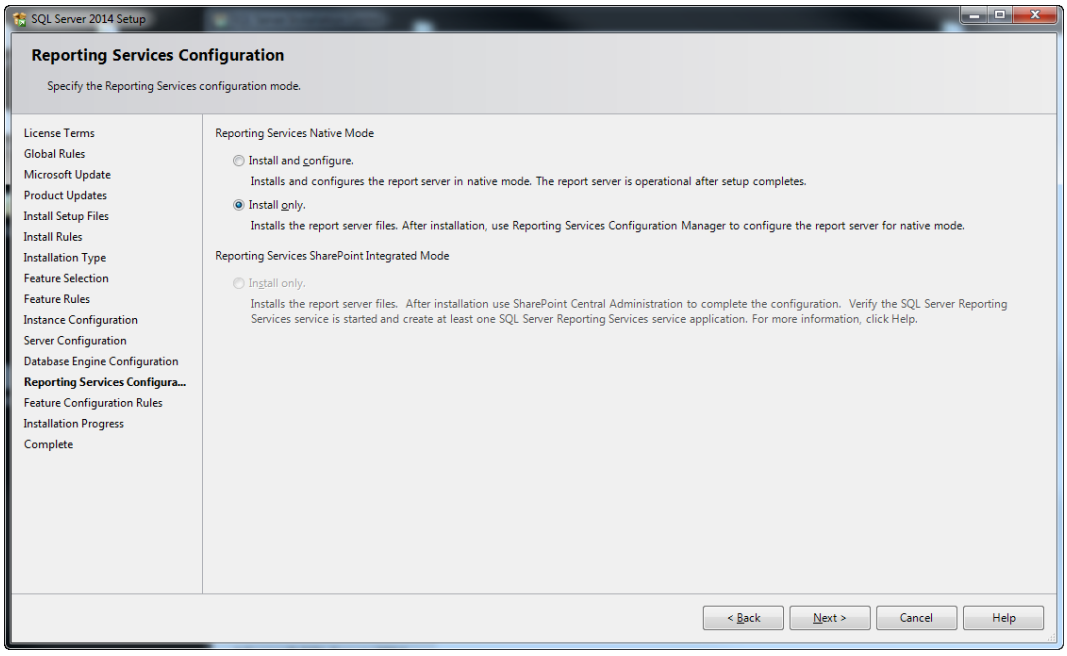
- Define parameters of Windows services.



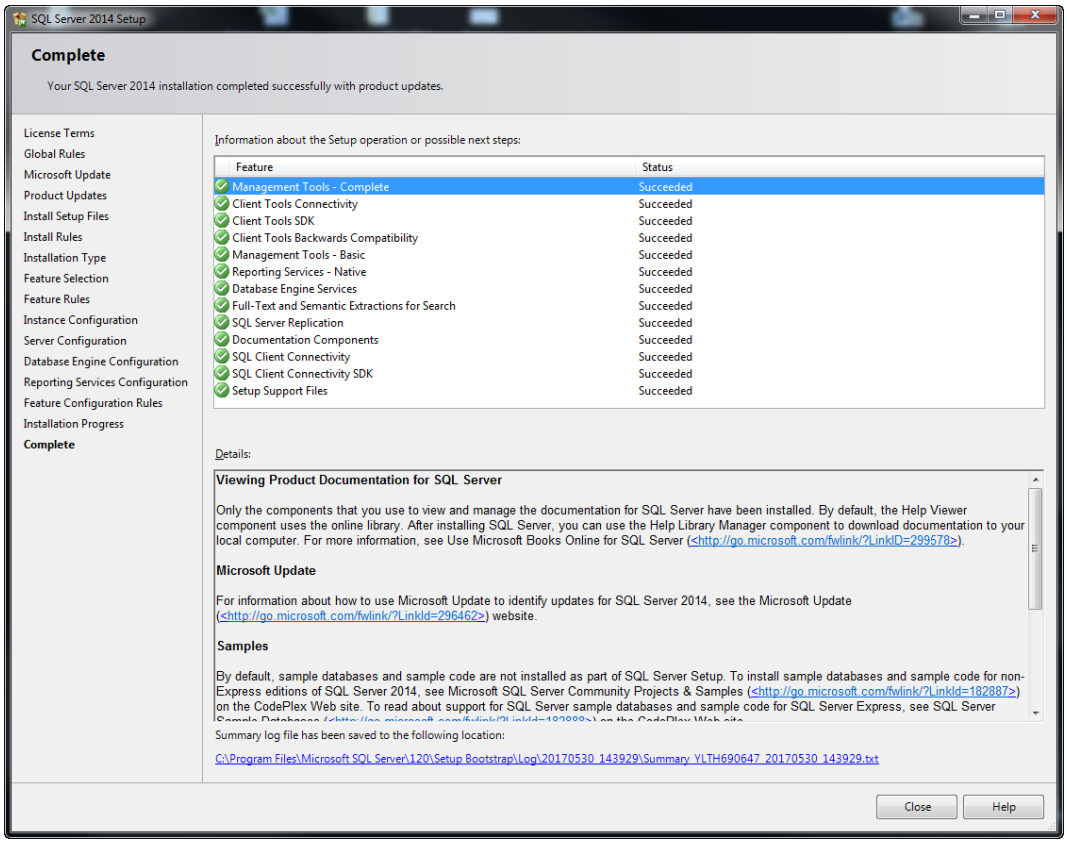
- Define authentication parameters as below. It is recommended to select *Mixed Mode*. Password for system administrator must be remembered for further use.



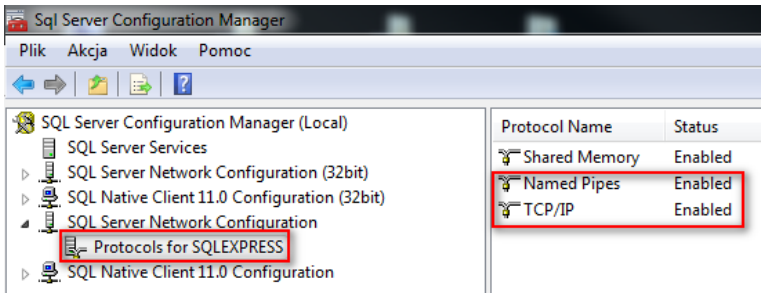
- Configure Reporting Services applying default settings.



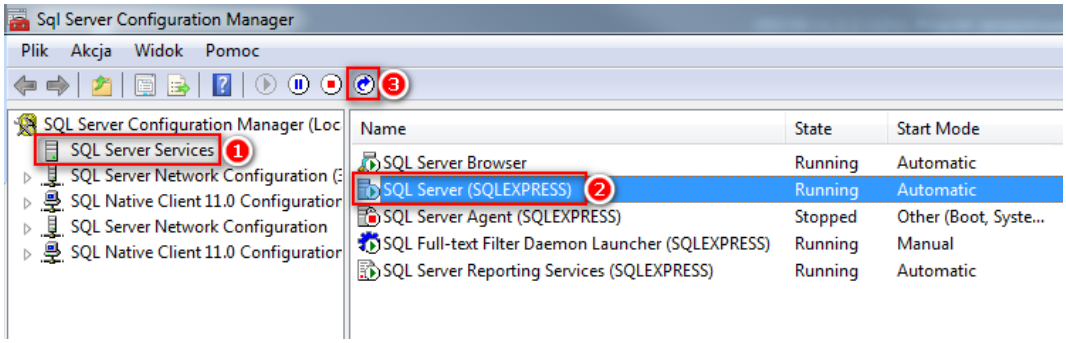
- Confirm installation on summary window.



- When the installation is finished then start SQL Manager typing *Sql Server Configuration Manager* phrase in Windows Start menu.
- In the navigation tree select *Protocols for SQLEXPRESS* and then enable *Named Pipes* and *TCP/IP* protocols as below.

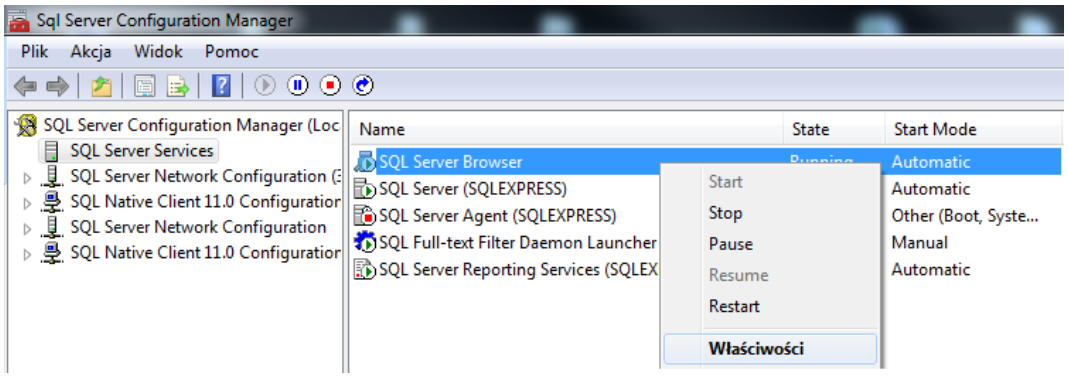


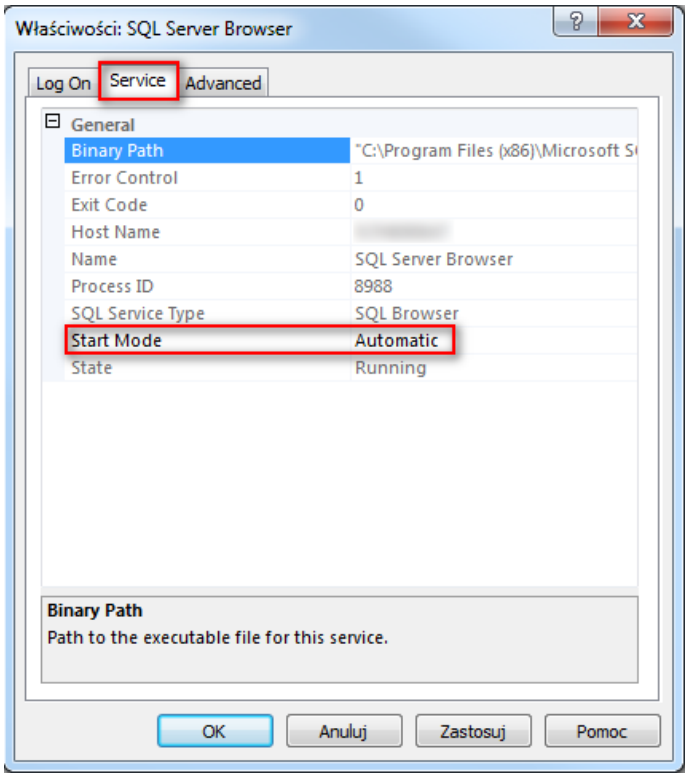
- Enabled protocols require service restarting. Select *Sql Server Services* (1), then *SQL Server (SQLEXPRESS)* (2) and finally use restart button (3)



- Verify if *SQL Server Browser* service is running. If not then right click it and select *Start* command. Additionally in the same menu select *Properties* command and then in *Service* tab

select the option *Automatic* for *Start mode* parameter in order to start the service automatically.



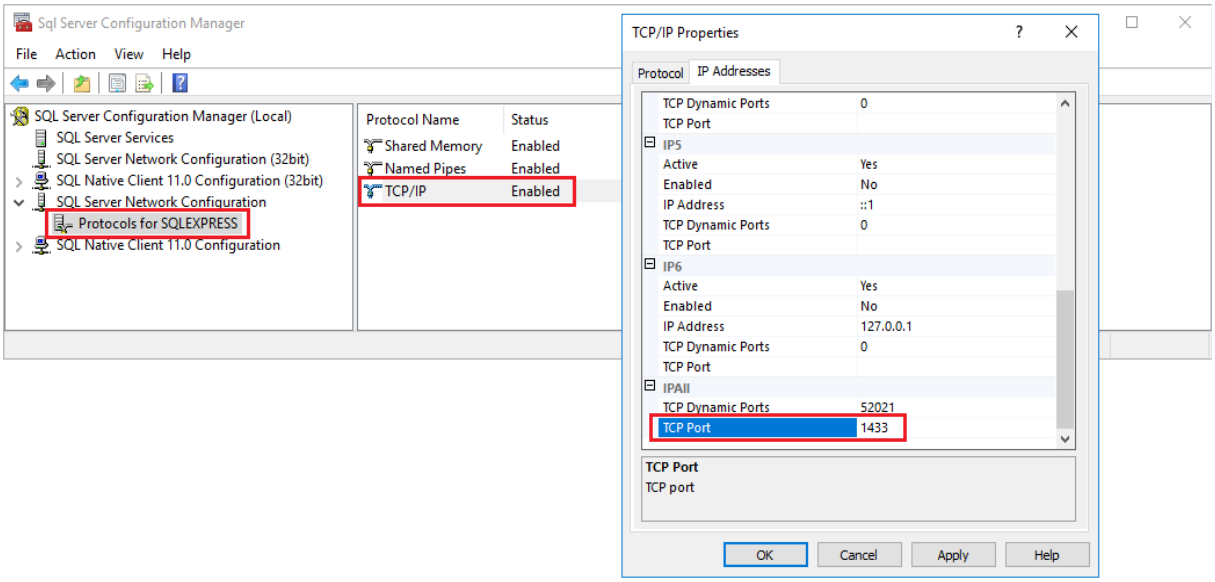


Firewall configuration

After MS SQL Express 2014 system installation it is necessary to unblock ports in Windows firewall:

- Start firewall typing *Windows Firewall with Advanced Security* in Windows Start menu.
- In the newly opened window select *Inbound rules* command and then *New Rule…*
- In the next window select *Port* rule type and then configure allowed connection for TCP ports 1433 and 1434 and another rule for UDP ports 1433 and 1434.
- Similarly configure *Outbound rules* for the same protocols and ports.

If particular instance of MS SQL Server is configured for dynamic ports then 1433 TCP port can be defined by starting SQL Server Configuration Manager as in the figure below.

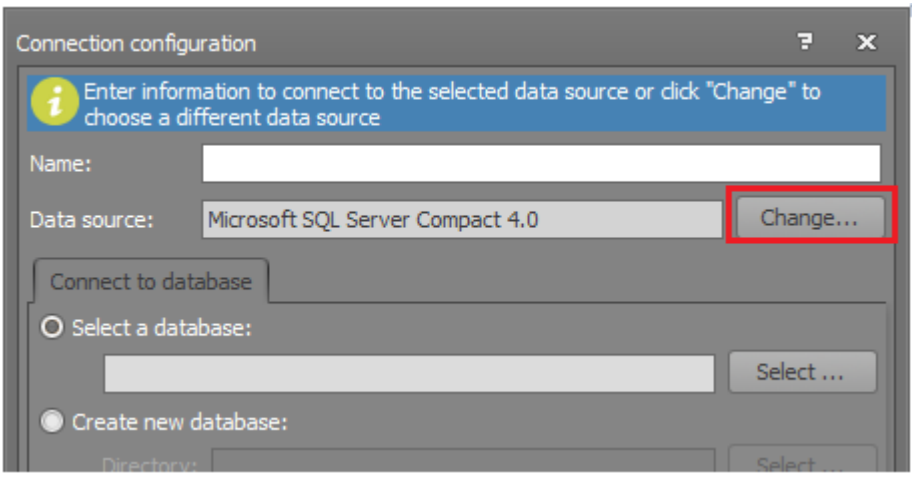


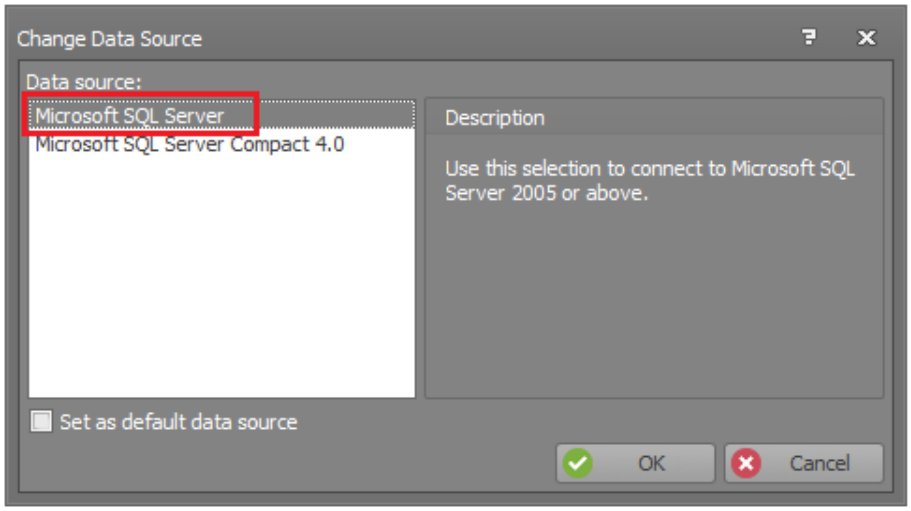
RACS 5 database (VISO)

VISO software for configuration and management of RACS 5 system enables creation of database in MS SQL Server system.

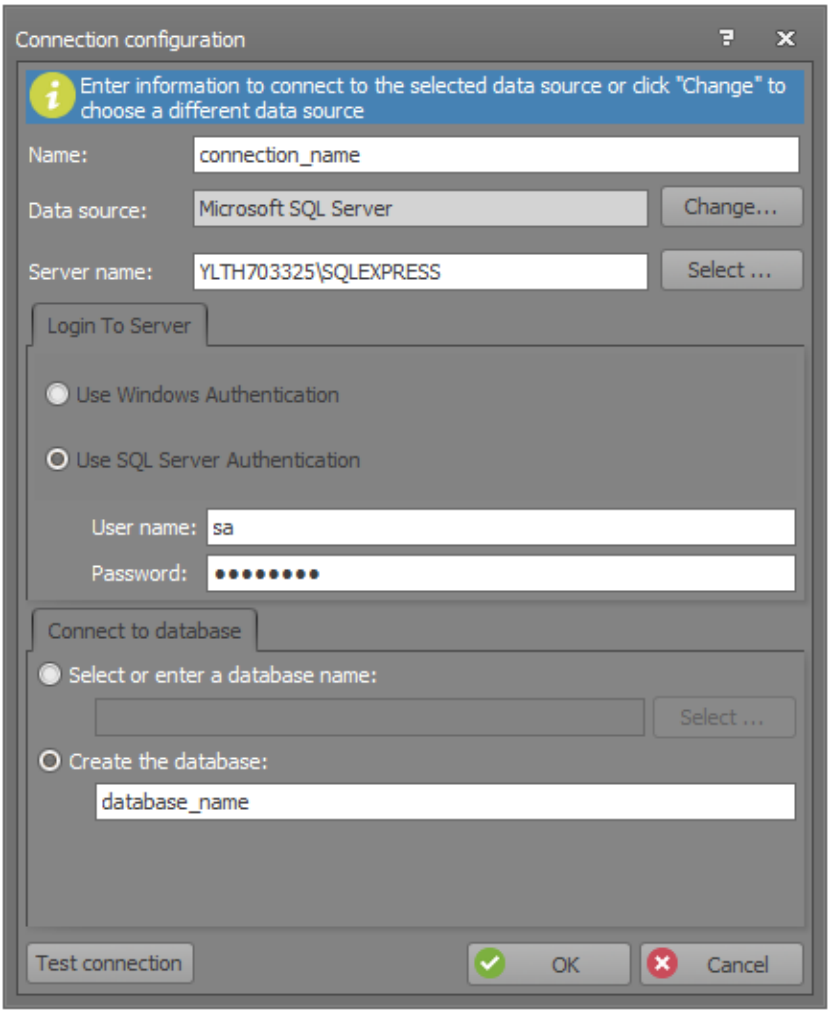
In order to create centralized type database:

- Download and start VISO software installation file from www.roger.pl.
- After installation, start VISO in order to display *Connection configuration* window. The window can also be accessed by selection of *System* command in VISO top menu and then *Add connection…*
- In the opened window in the *Name* field enter any connection name.
- Click *Change…* button in order to select *Microsoft SQL Server* instead of default *Microsoft SQL Server Compact* database type.

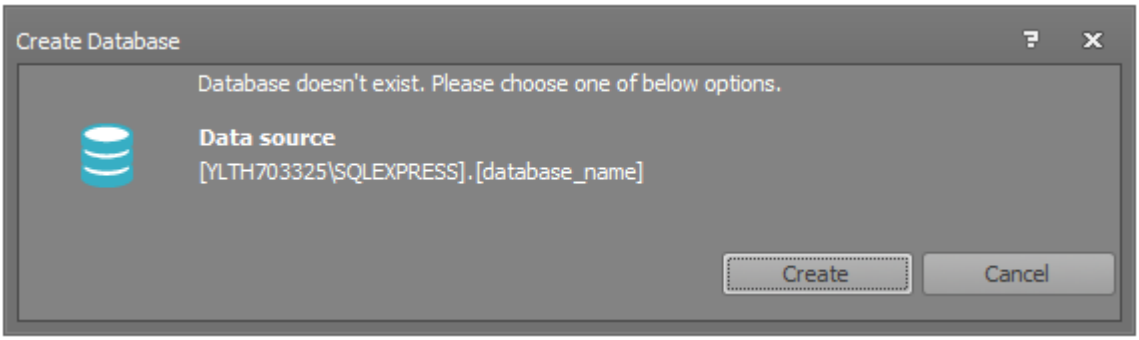




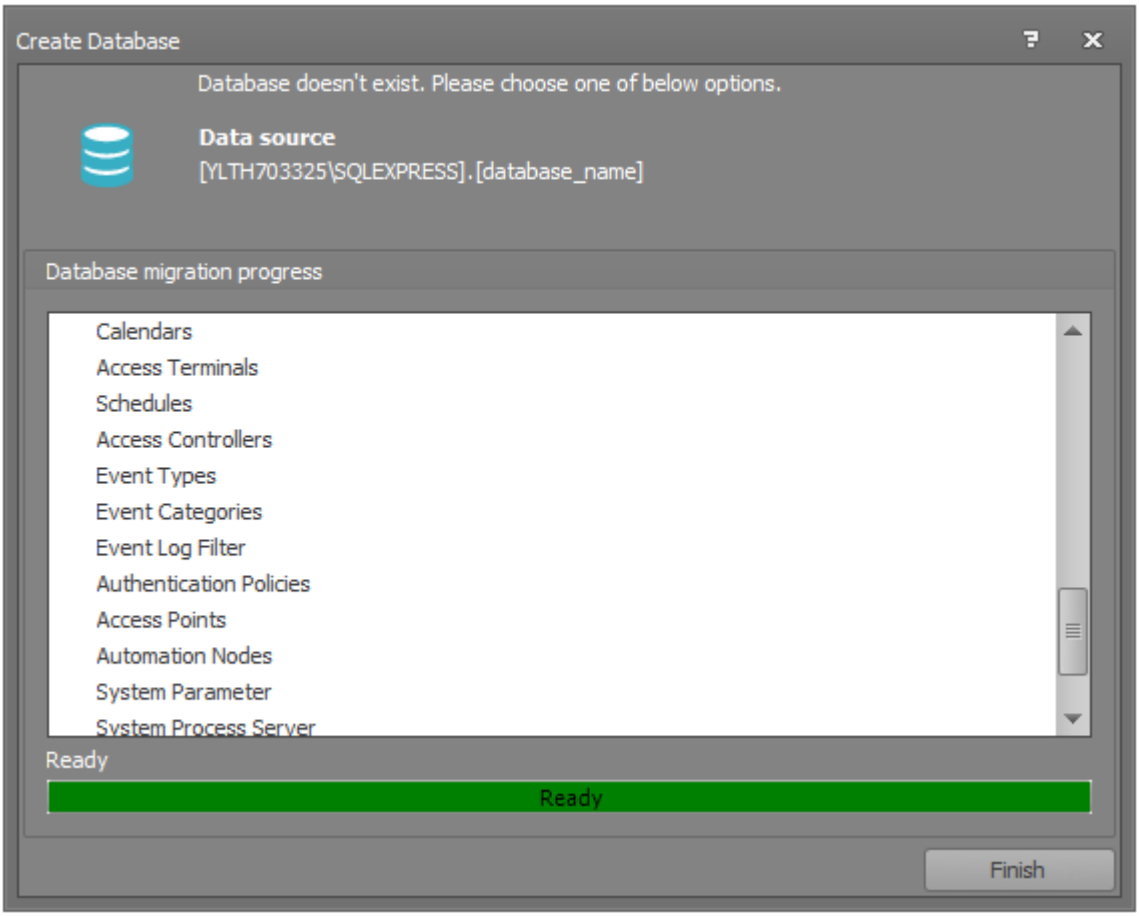
- Select server from the list using *Select...* button. It should be listed if it is available in local network or via properly configured VPN. If the server is not on the list then enter its address manually in the *Server name* field.
- For recommended *Mixed Mode* option selected during MS SQL Server installation click the option *Use SQL Server Authentication* and then enter previously defined login and password. Alternatively for *Windows authentication mode* option previously selected click the option *Use Windows Authentication* so domain account would be used for authentication.
- Enter any database name in the field *Create the database*.
- Use *Test connection* button to verify connection with MS SQL Server.



- Confirm with *OK* button and proceed.
- In the next window select *Create button* in order to create your new database.



- Summary shall be displayed when the database is created. Close the window with *Finish* button.



RACS 5 Windows services (RogerSVC)

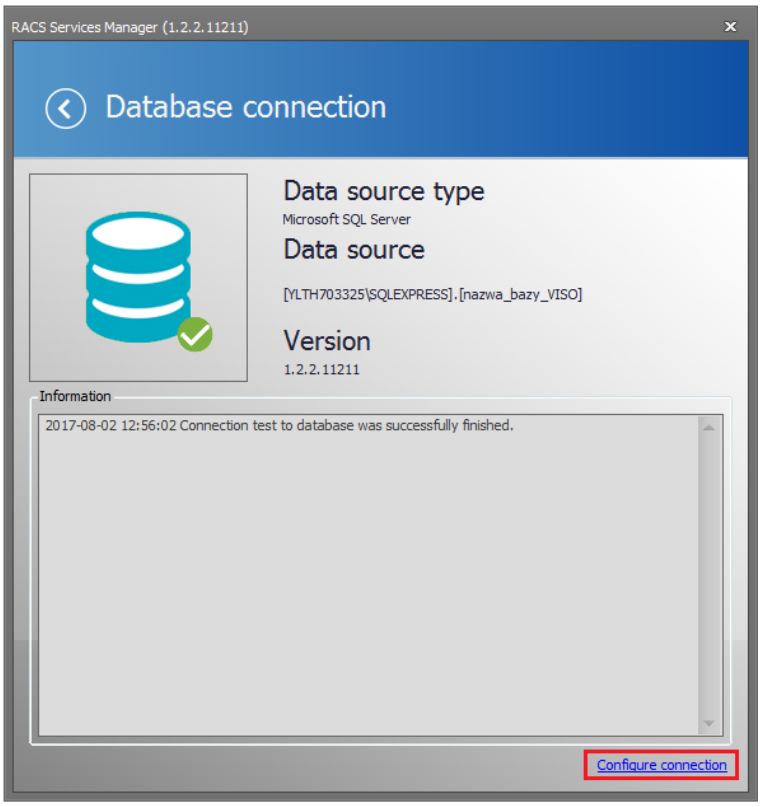
After MS SQL Express 2014 system installation and data base creation with VISO software it is necessary to configure Windows service for the communication of VISO software and RACS 5 devices with database. If VISO EX is applied then it might also be necessary to configure license and integration services.

In order to configure RACS 5 communication service:

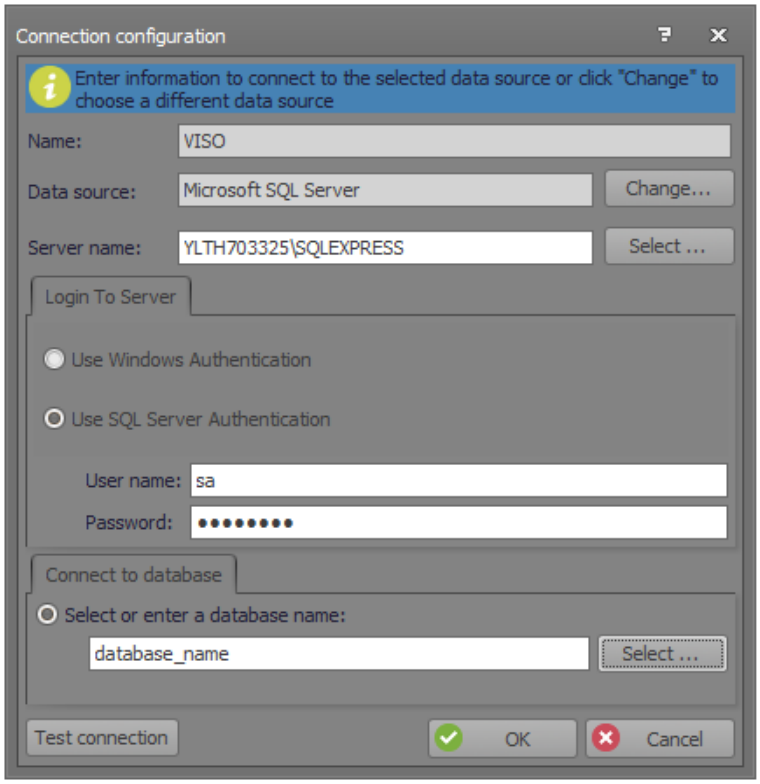
- Download and start RogerSVC software installation file from www.roger.pl.
- During installation select *Install Communication Service* and if necessary two other services as well. In the final window select *Launch RACS Services Manager*.
- If RACS Services Manager is started then its icon is displayed in Windows tray. Double click it to open the manager. The icon of manager can also be launched from Windows menu *Start->Roger->RogerSVC.*

- In the RACS Services Manager select the tile *Database connection.*

- Click the command *Configure connection*.



- Indicate the location of previously created database. Such indication requires the same parameters as used in database creation i.e. data source, server name, authentication parameters and database name.



- Use *Test connection* button to verify connection with MS SQL Server.
- Close the window with *OK* button and return to the main window of the manager.
- Select *Communication Service* tile.

- If VISO and RogerSVC are operated on the same workstation then in the opened window just select *Start* button in order to start the service. Otherwise click *Configuration* command and enter IP address of the computer with the service and define port for the service (by default 8890). Then select *Start* button in order to start the service. Additionally in the top menu of VISO software click *System*, then *Select communication server* and choose the service from the list or enter its network parameters manually so the VISO could communicate with the service installed on another workstation.
- Close RACS Services Manager as it is not necessary for functioning of services which are automatically started with Windows OS.

RACS 5 management from multiple workstations

RACS 5 system can be managed from multiple workstations only if centralized type database is applied and then it requires proper configuration on the level of VISO and RogerSVC programs and it may additionally require Windows firewall ports unblocking.

Note: Communication service from RogerSVC program can be installed only on single computer in the network.

In order to configure RACS 5 for operation with multiple workstations:

- Install MS SQL Server management system on dedicated server or one of workstations.
- Install VISO software on one of workstations and use it to create centralized database within MS SQL system for RACS 5 system.
- Install RogerSVC software on dedicated server or one of workstations.
- Use RACS Service Manager to indicate connection with database. In the properties of communication service select *Configuration* command. In the next window enter IP address of the computer with installed service and define port (by default 8890) so the service could be accessed by other workstations with VISO software. Start or restart the communication service.
- If necessary start Windows Firewall with Advanced Security on computer with installed communication service and define new allowing inbound rule for TCP protocol and communication service port (by default 8890).
- Install and start VISO software on all remaining workstations indicating previously created centralized database when connection with database is configured.
- If necessary start Windows Firewall with Advanced Security on each workstation with installed VISO software and define new allowing outbound rule for TCP protocol and communication service port (by default 8890).
- At each workstation in the top menu of VISO software select the command *System* and then *Select Communication Server.* In the newly opened window select the server from the list or manually enter IP address of the computer with communications service including port of the service.
- If necessary start Windows Firewall with Advanced Security on computer with installed communication service and define new allowing outbound rule for UDP protocol and 21063 port to unblock service communication with MC16 controllers.

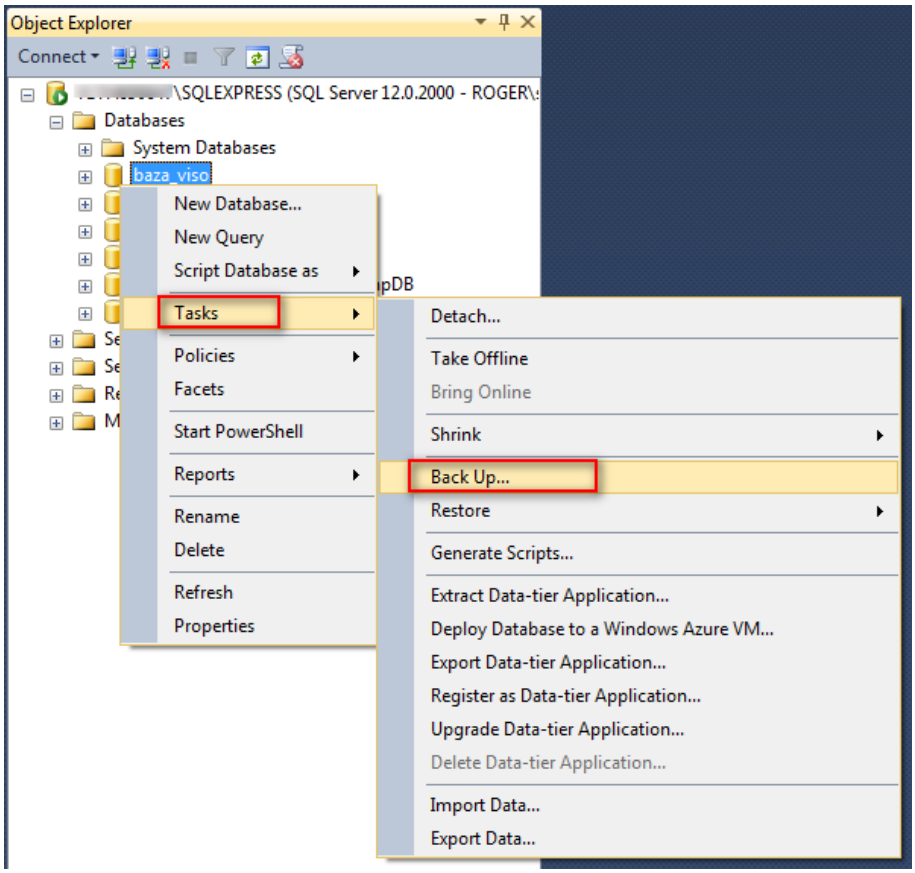
Database backup

Database can be backed up with MS SQL Server Management Studio program which is installed as a component of MS SQL Server system.

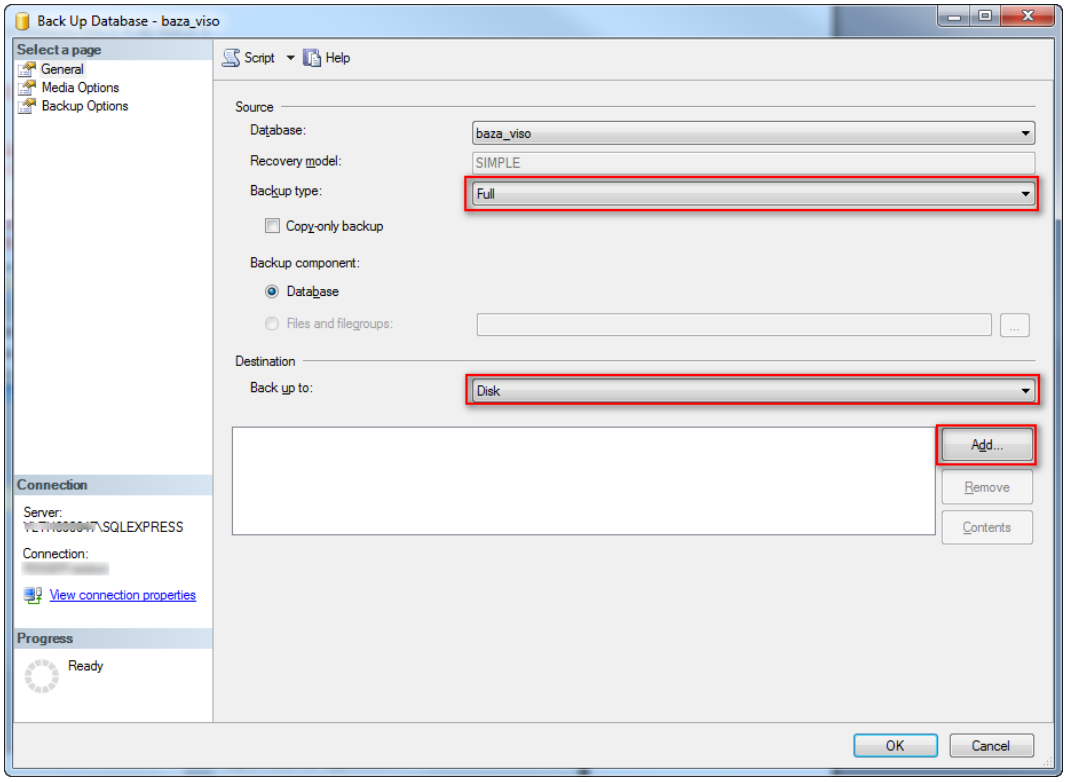
Backup export

- Stop event collecting to database by stopping Communication service in RACS Services Manager.
- Start MS SQL Server Management Studio and enter previously defined login and password.

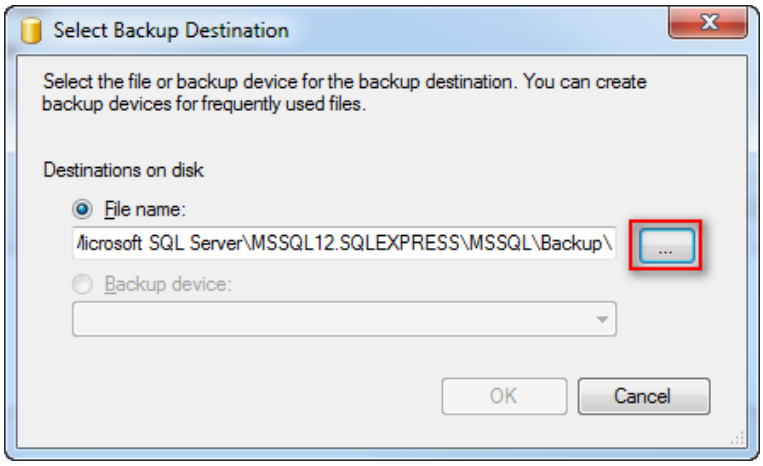
- Expand *Databases,* right click the database for backup, select *Tasks* and then *Back Up...*

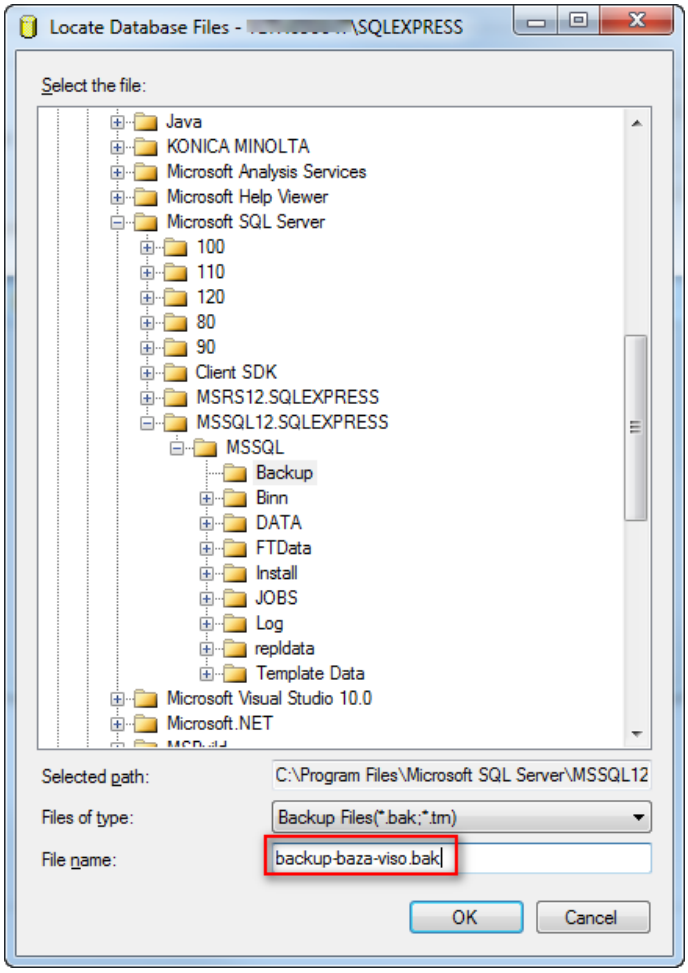


- In the newly opened window specify backup parameters. In case of default *Backup type: Full* and *Back up to: Disk* settings a full local backup is made.



- Select *Add…* button and in the next window specify backup file name and destination.



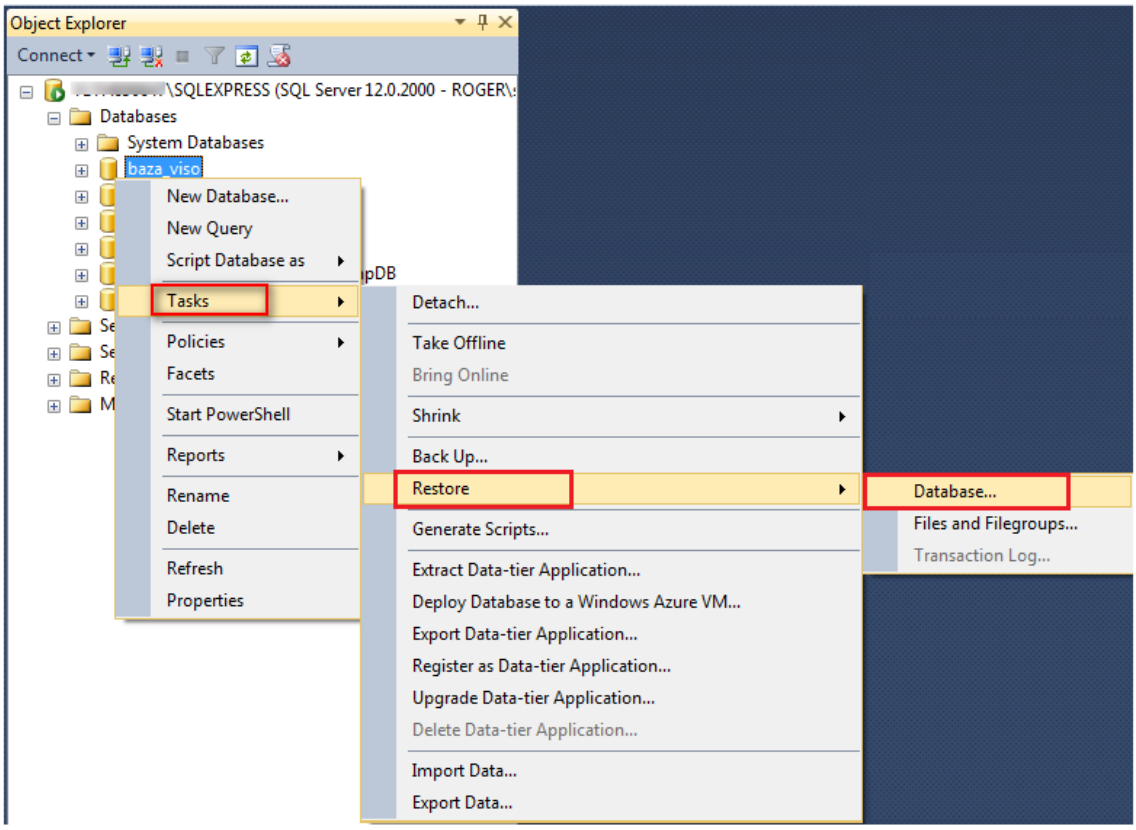


- Restore event collecting to database by starting Communication service in RACS Services Manager.

Backup import

- Stop event collecting to database by stopping Communication service in RACS Services Manager.
- Start MS SQL Server Management Studio and enter previously defined login and password.
- Expand *Databases,* right click the database to be restored, select *Tasks,* then *Restore-> Database...* and indicate the backup file.

- Restore event collecting to database by starting Communication service in RACS Services Manager.

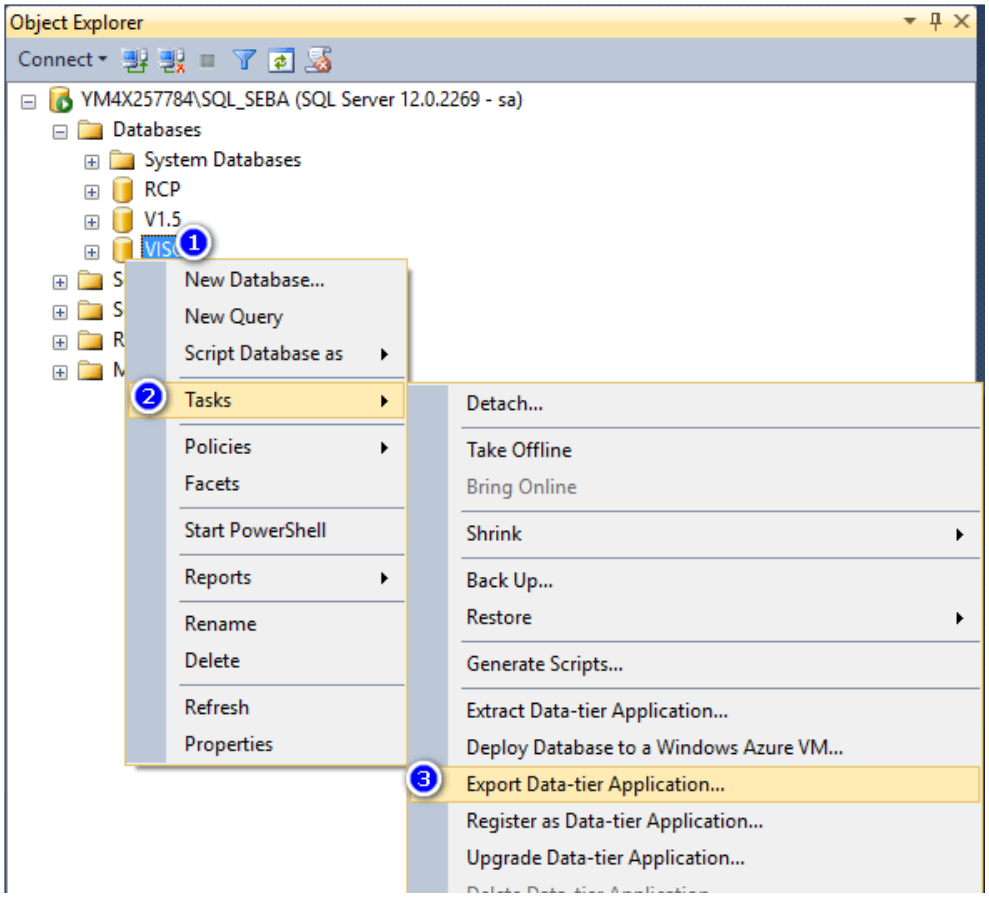


Database transfer to another server

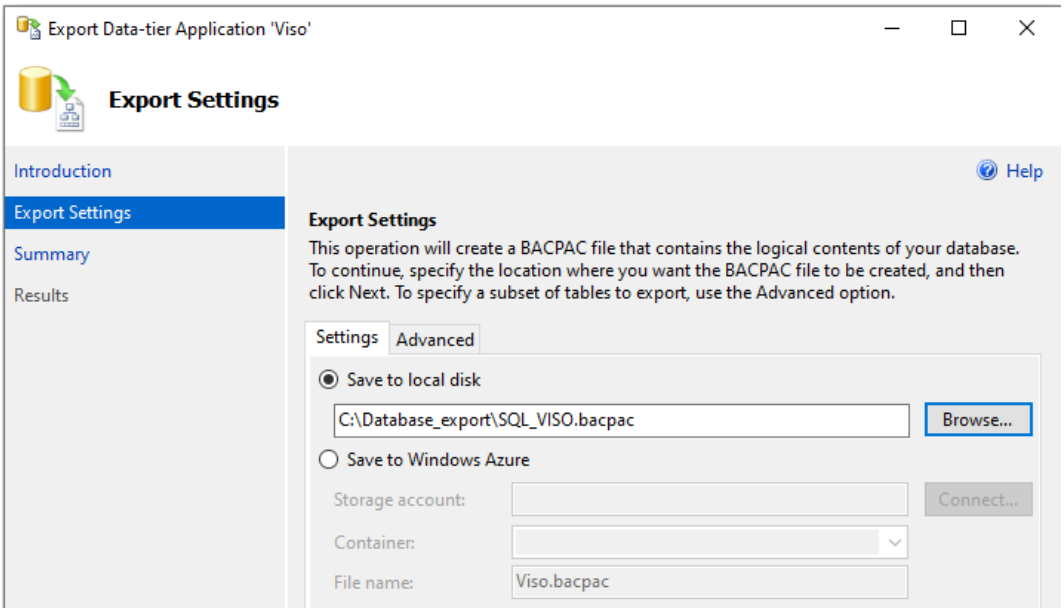
Database can be moved to another computer using Microsoft SQL Server Management Studio program which is installed as a component of MS SQL Server system.

Database export

- Stop event collecting to database by stopping Communication service in RACS Services Manager.
- Start MS SQL Server Management Studio and enter previously defined login and password.
- Expand *Databases,* right click the database for transfer, select *Tasks* and then *Export Data-tier Application*

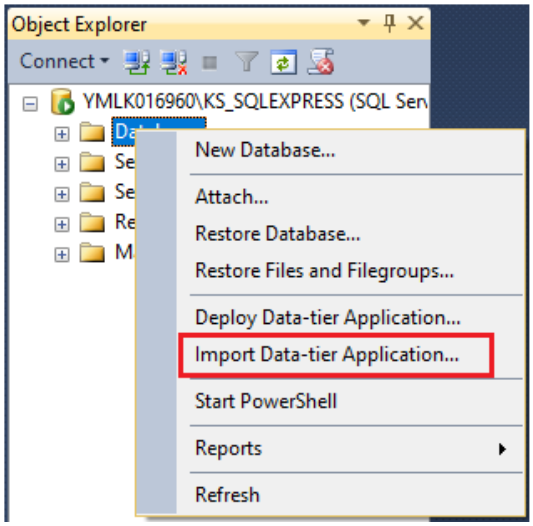


- Specify backup file name and destination. Proceed to finish the export.

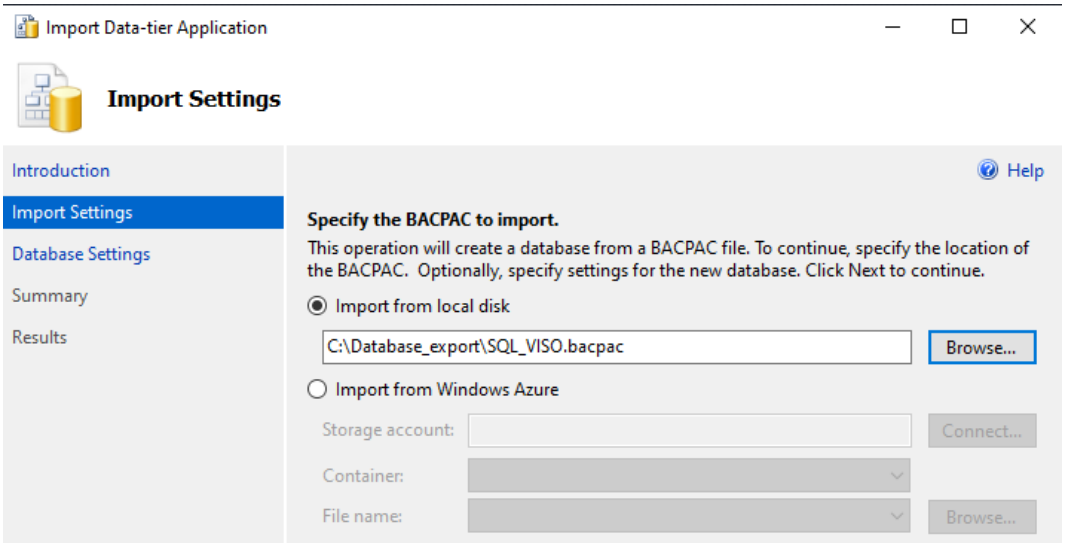


Database import

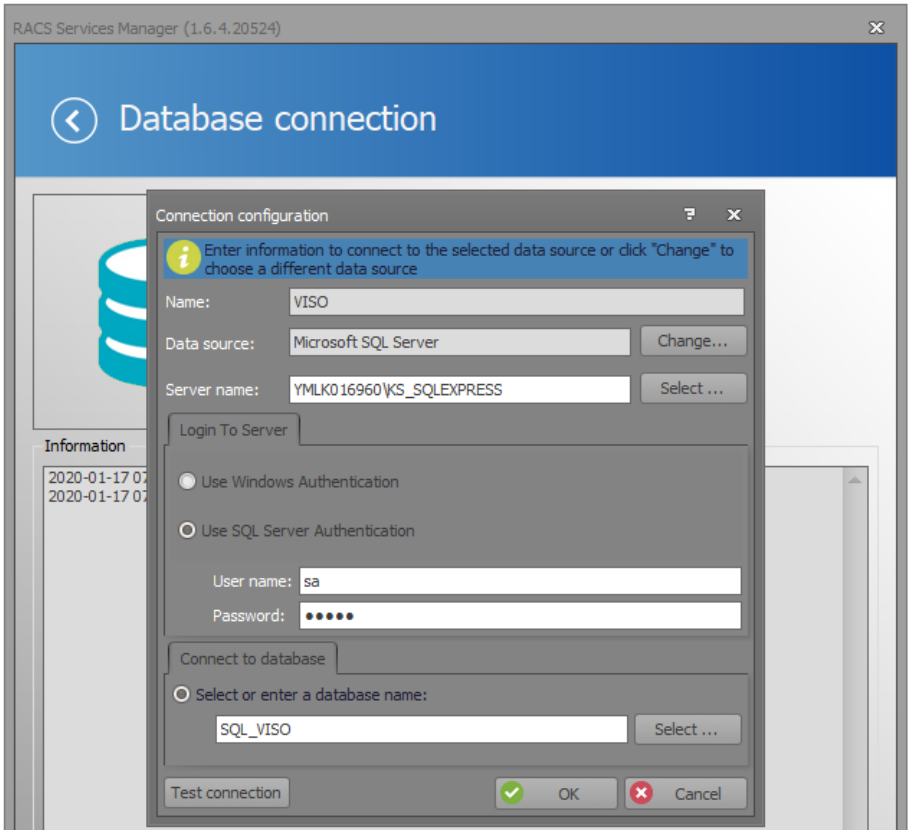
- Install MS SQL Server system on new server.
- Start MS SQL Server Management Studio and enter previously defined login and password.
- Right click *Databases* and select *Import Data-tier Application.*



- Indicate previously exported database file and proceed to finish the import.



- Start VISO, in the top menu select *System->Add connection…* and indicate new database.
- Start RACS Service Manager, select *Database connection* and then *Configure connection* to indicate new database.
- Start Communication service in RACS Services Manager.



Migration from local type to centralized type database

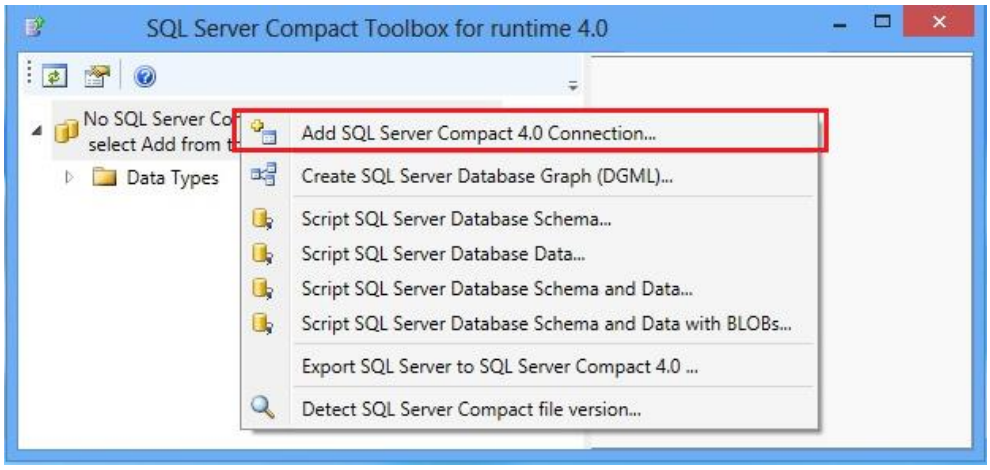
Note: The database type must be selected in the stage of RACS 5 system designing or installation. The migration is based on third party programs and Roger cannot guarantee full cohesion and integrity between databases after migration. In case of doubts regarding system requirements it is recommended in the first place to apply centralized type MS SQL Server database instead of local type MS SQL Server Compact. The Express edition of MS SQL Server is offered free of charge by Microsoft company.

Note: The present document explains one of possible migration methods. The migration can be also done with other available tools.

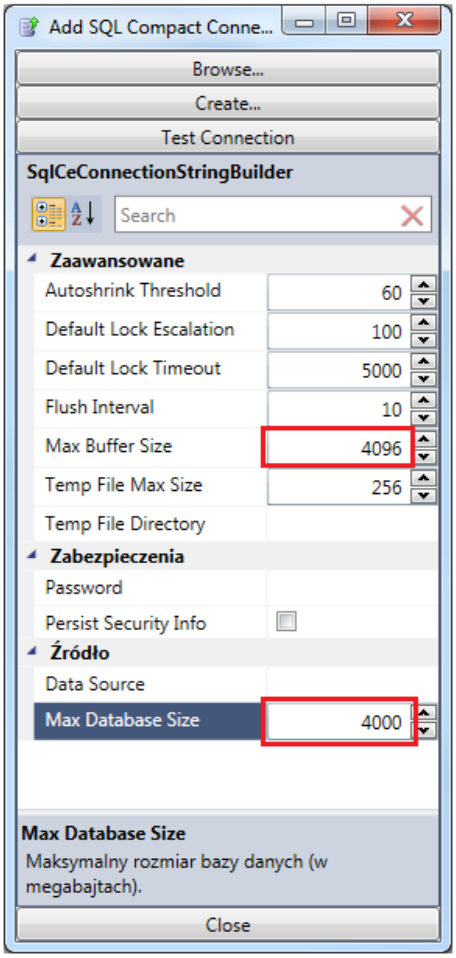
Export from local type database

Data can be exported from local type database with SQL Server Compact Toolbox 4.0 program.

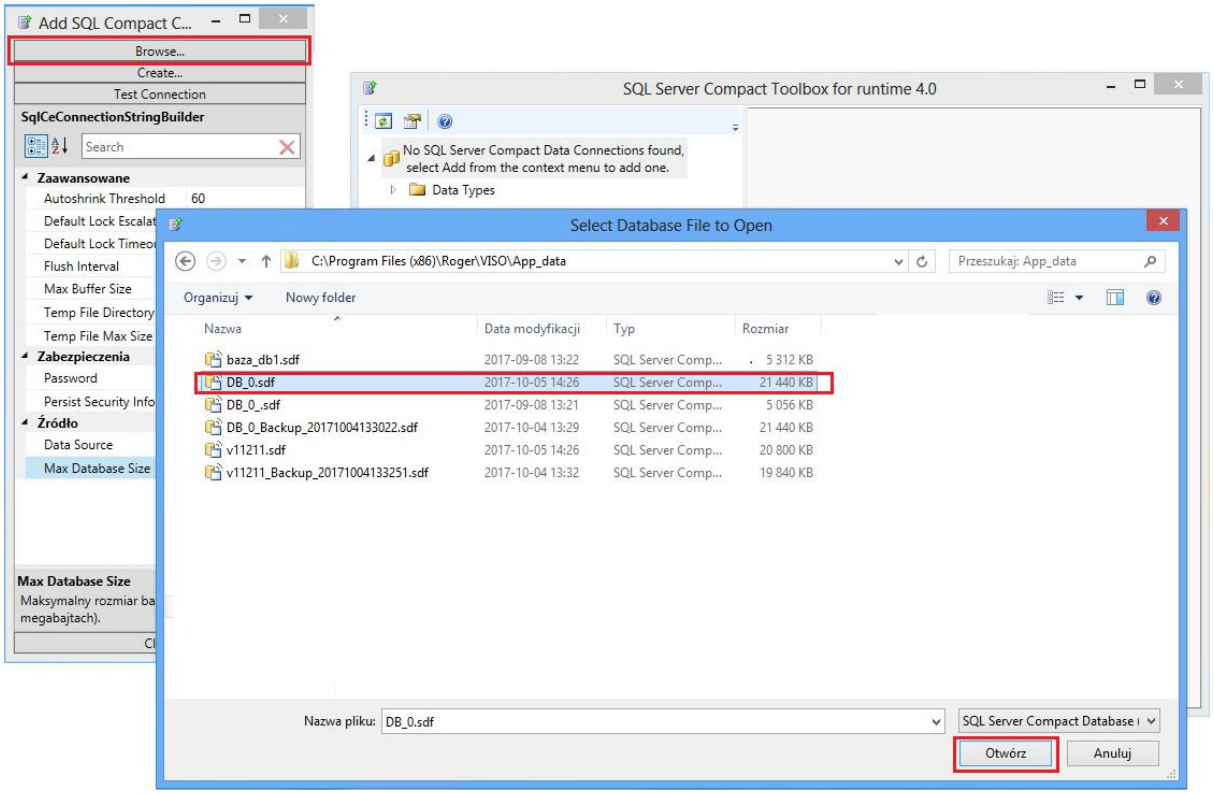
- Stop event collecting to local type MS SQL Server Compact database by stopping Communication service in RACS Services Manager.
- Search for SQL Server Compact 4.0 at Microsoft website or use following link in your web browser:
  https://www.microsoft.com/en-us/download/details.aspx?id=30709
- Download SQL Server Compact Toolbox 4.0 software in a standalone version and start it as Windows administrator.
  https://github.com/ErikEJ/SqlCeToolbox (project link)
  https://ci.appveyor.com/api/projects/ErikEJ/sqlcetoolbox/artifacts/SqlCe40ToolBox.zip?branch=master (direct link)
- Select the command *Add SQL Server Compact 4.0 Connection*.



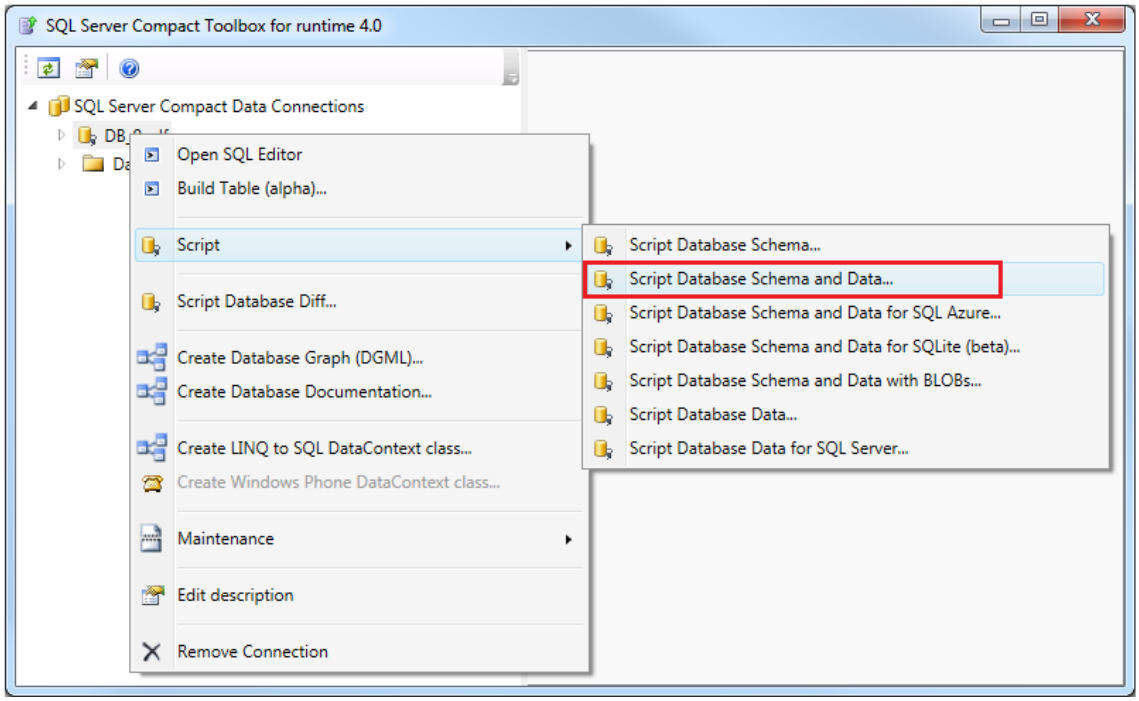
- In the newly opened window enter *Max Buffer Size* = 4096 and *Max Database Size* = 4000. Additionally enter password if it is required for your database.



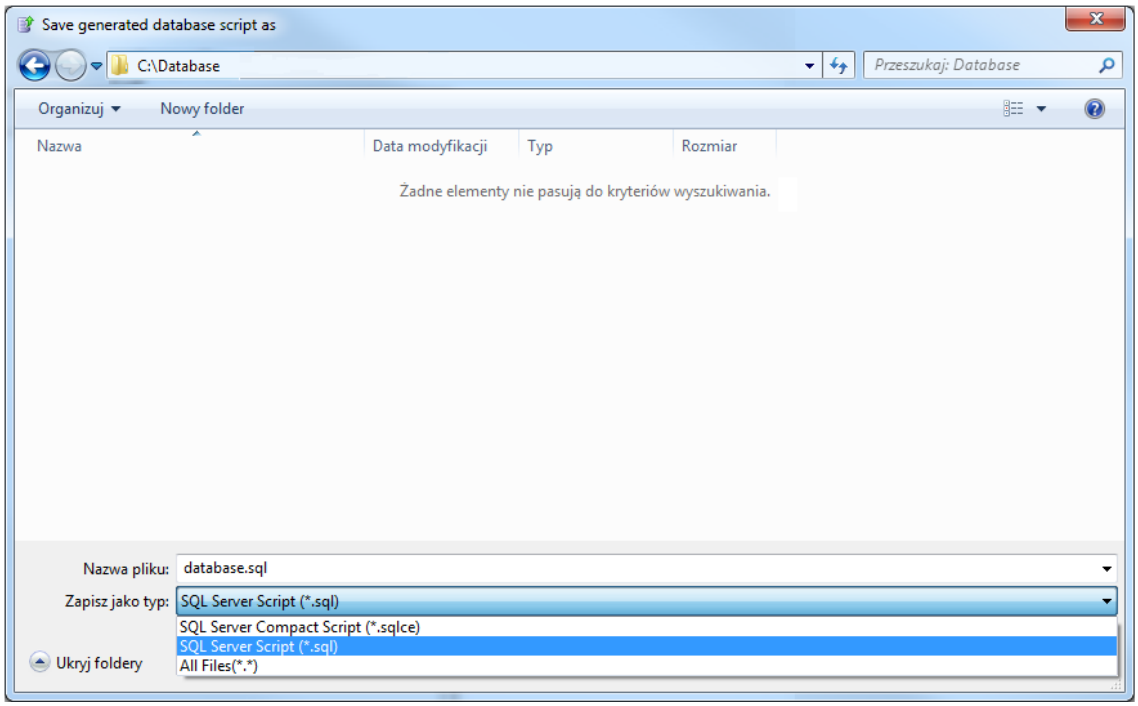
- Indicate your local type database using *Browse* button.



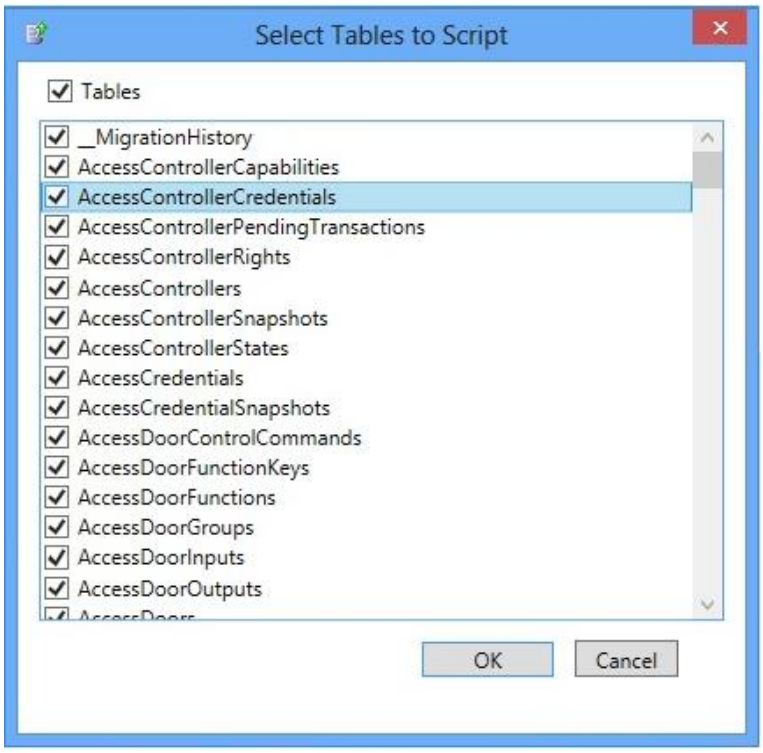
- Start scripts creating by right clicking the database connection and selecting *Script->Script SQL Server Database Schema and Data*.



- Define location and name for SQL (*.sql) and additionally SQL CE (*.sqlce) script file(s).



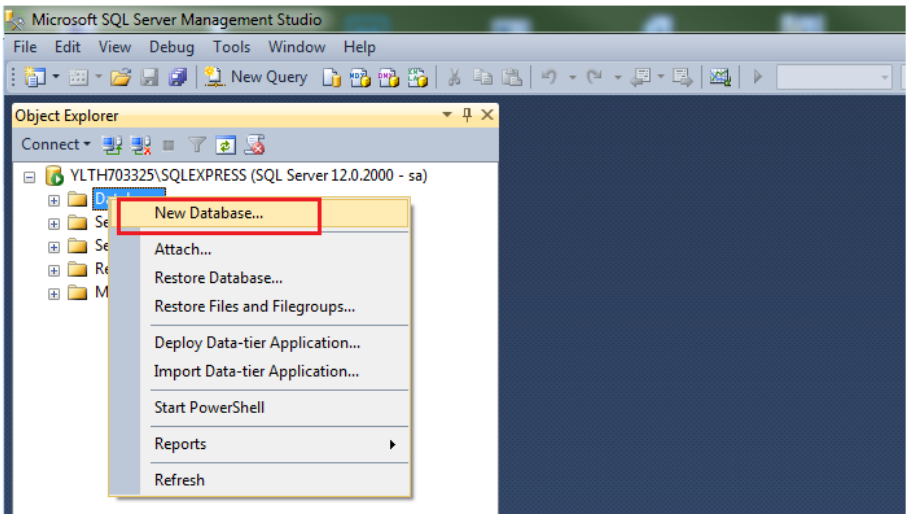
- Select all tables displayed on the list, including _MigrationHistory which is deselected by default.



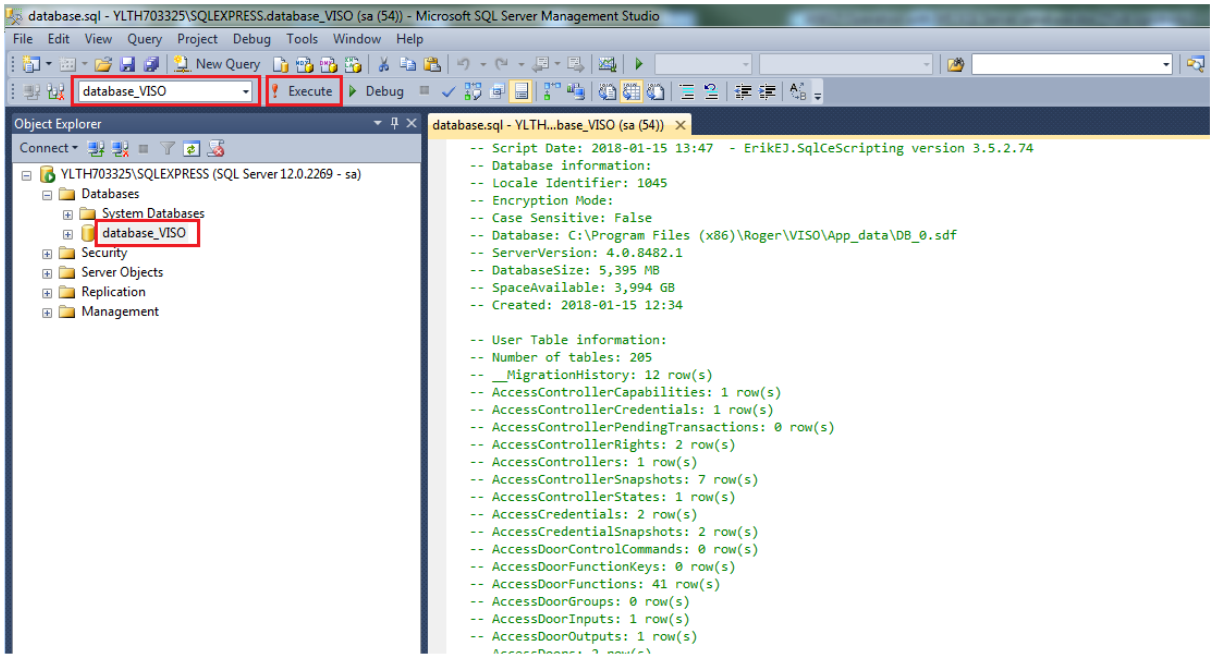
- Wait till program displays message confirming that all script files are created.

Import to centralized type database (MS SQL Management Studio)

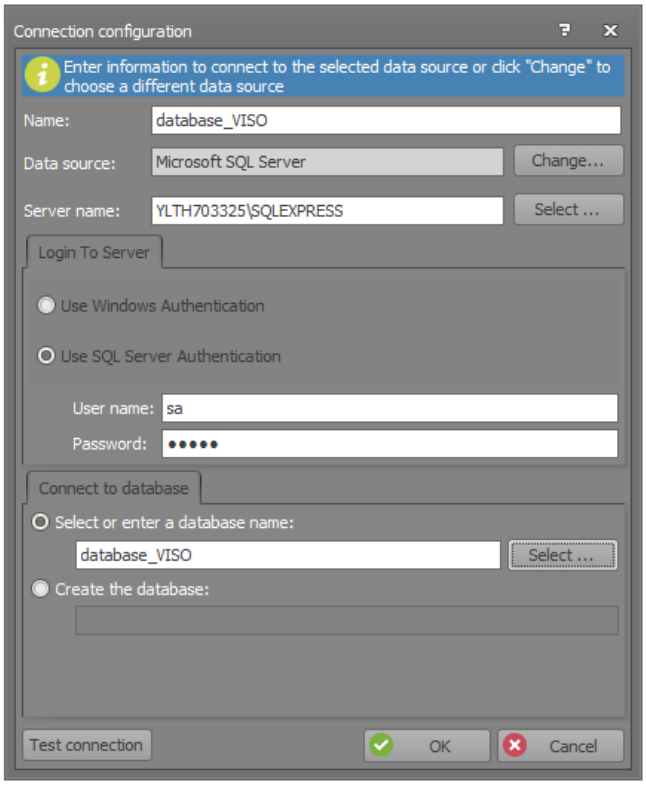
- Install MS SQL Server system on a server.
- Start MS SQL Server Management Studio and enter previously defined login and password.
- Right click *Databases*, select *New Database...* name the database e.g. database_VISO and click *OK*.



- Expand *Databases* command and select just created database on the list.
- In the top menu select *File->Open->File…* and indicate the first of previously created script files SQL (*.sql).
- Click *Execute* button to start the script.



- Repeat the same steps for the remaining scripts files in the order specified by their numbers.
- Start VISO, in the top menu select *System->Add connection…* and indicate new database.
- Start RACS Service Manager, select *Database connection* and then *Configure connection* to indicate new database.
- Start Communication service in RACS Services Manager.



Import to centralized type database (command line)

- Install MS SQL Server system on a server.
- Start MS SQL Server Management Studio and enter previously defined login and password.
- Right click *Databases*, select *New Database...* name the database e.g. database_VISO and click *OK*.
- Start Windows cmd with administrator rights and execute following command for all script files in the order specified by their numbers.

  sqlcmd –S server_name\Instance –d database_name –i script_file
  e.g. sqlcmd –S 192.168.100.99\SQLEXPRESS –d database_VISO –i C:\database\database.sql

- Start VISO, in the top menu select *System->Add connection…* and indicate new database.
- Start RACS Service Manager, select *Database connection* and then *Configure connection* to indicate new database.
- Start Communication service in RACS Services Manager.

Contact:
Roger sp. z o.o. sp.k.
82-400 Sztum
Gościszewo 59
Tel.: +48 55 272 0132
Fax: +48 55 272 0133
Tech. support: +48 55 267 0126
E-mail: support@roger.pl
Web: www.roger.pl