SQL Manager.net™

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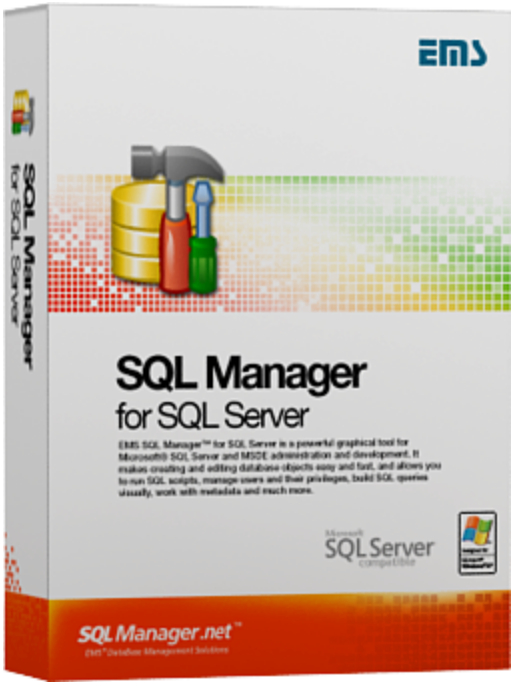

SQL Manager for SQL Server
User's Manual

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SQL Manager for SQL Server
User's Manual

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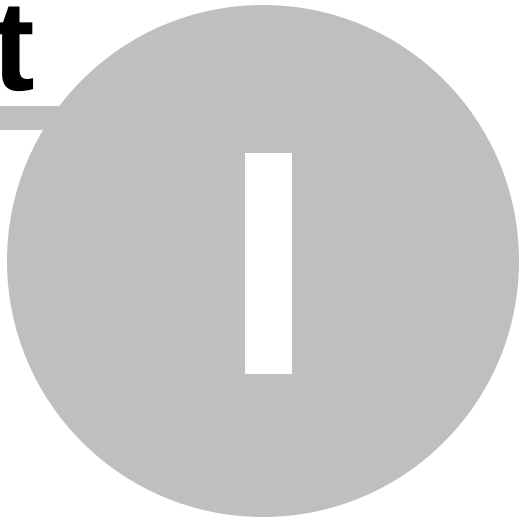
Part



1 Welcome to SQL Manager for SQL Server!

EMS SQL Manager for SQL Server is a powerful tool for SQL Server administration and development. SQL Manager for SQL Server works with all SQL Server versions from 2000 to the newest one and supports all the latest SQL Server features including memory-optimized tables, backup encryption, FileTables, columnstore indices and other. It offers plenty of powerful SQL tools such as Visual Database Designer that allows designing SQL Server database in few clicks, Design Query and advanced SQL editor to build complicated SQL Server queries and many more useful features for efficient SQL Server development and administration. SQL Manager has a new state-of-the-art graphical user interface with well-described wizard system, so clear in use that even a newbie will not be confused with it.

Visit our web-site for details: https://www.sqlmanager.net/

Key features

- Support of SQL Server versions up to 2025 and Azure SQL Database
- Easy management of all SQL Server objects
- Excellent visual and text tools for query building
- Visual Database Designer to handle database structure in a few clicks
- Powerful Transact-SQL debugger to trace procedures, functions, SQL scripts
- Comparison and synchronization of database structure
- Simple getting your database under source control
- Rapid database management and navigation
- Impressive data export and import capabilities
- Advanced data manipulation tools
- Effective security management
- Easy-to-use wizards performing SQL Server administrative tasks
- Report designer with clear in use report construction wizard

Product information

Homepage:	https://www.sqlmanager.net/products/mssql/manager
Support Ticket System:	https://www.sqlmanager.net/support
Register on-line at:	https://www.sqlmanager.net/products/mssql/manager/buy

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1.1 What's new

Version	Release date
SQL Manager for SQL Server 6.0	October 6, 2026

What's new in SQL Manager for SQL Server 6.0?
- AI assistant functionality has been implemented.
- Other fixes and enhancements.

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1.2 System requirements

System requirements for SQL Manager for SQL Server

- Microsoft Windows XP, Microsoft Windows Server 2003, Microsoft Windows Server 2008, Microsoft Windows Server 2008 R2, Microsoft Windows Server 2012, Microsoft Windows Server 2012 R2, Microsoft Windows Server 2016, Microsoft Windows Server 2019, Microsoft Windows Vista, Microsoft Windows 7, Microsoft Windows 8/8.1, Microsoft Windows 10, Microsoft Windows 11, Microsoft Windows 11 ARM
- 512MB RAM or more; 1024MB or more recommended
- 100MB of available HD space for program installation
- Microsoft® Data Access Components (MDAC) or SQL Server Native Client
- Possibility to connect to any local or remote Microsoft® SQL Server™
- Supported Microsoft SQL Server versions: from 2000 up to 2025 (We do not support SQL Server Compact Edition), Azure SQL Databases and Amazon RDS for Microsoft SQL Server

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1.3 Feature Matrix

The **FREE** *Lite version* of SQL Manager for SQL Server does not include all features of the *Full version* and has some limitations concerning the number of the databases that can be registered and the set of data manipulation and server maintenance tools. The detailed feature matrix is given below.

Note that when using the **FREE** *Lite version* of SQL Manager for SQL Server you can activate 856 a 14-day period of fully-functional usage. After the period expires, you will be able to continue using the **Lite** version.

For more information on activating the **Full** version features see Full Mode activation 856.

To browse the **Feature Matrix**, visit the following page: https://www.sqlmanager.net/products/mssql/manager/matrix

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1.4 Installation

If you are **installing SQL Manager for SQL Server for the first time** on your PC:

- download the SQL Manager for SQL Server distribution package from the download page available at our site;
- unzip the downloaded file to any local directory, e.g. *C:\unzipped*;
- run *MSManagerFull.msi* (**Full** version) or *MSManagerLite.msi* (**Lite** version) from the local directory and follow the instructions of the installation wizard;
- after the installation process is complete, find the SQL Manager shortcut in the corresponding group of Windows Start menu.

If you want to **update an installed copy of SQL Manager for SQL Server** you need to use the **Help | Check For Updates** main menu item.
Also you can use the full distribution package to upgrade your current version of SQL Manager for SQL Server. In this case, you should repeat the steps you have made for the first-time installation.

See also:

SQL Manager FAQ 30

1.5 Purchasing

All purchases are processed by **PayPro Global** registration service. The **PayPro Global** order process is protected by a secure connection, making online ordering by credit/debit card quick and safe.

PayPro Global is a global e-commerce provider for software and shareware sales via the Internet. It accepts payments in US Dollars, Euros, Pounds Sterling, Japanese Yen, Australian Dollars, Canadian Dollars or Swiss Francs by Credit Card (Visa, MasterCard/ EuroCard, American Express, Diners Club), Bank/Wire Transfer.

If you want to review your order information or have questions about ordering or payments, please visit our PayPro Global Shopper Support, provided by **PayPro Global.**

Please note that all of our products are delivered via ESD (Electronic Software Delivery) only. After the purchase, you will be able to download the registration keys immediately. You will also receive a copy of the registration keys by email. Please make sure to enter a valid email address when placing your order. If you have not received the keys within 2 hours, please contact us at sales@sqlmanager.net.

Product distribution	**PayPro Global**
EMS SQL Manager for SQL Server (Business) + 1-Year Maintenance*	Register Now!
EMS SQL Manager for SQL Server (Business) + 2-Year Maintenance*	
EMS SQL Manager for SQL Server (Business) + 3-Year Maintenance*	
EMS SQL Manager for SQL Server (Individual & Non-profit) + 1-Year Maintenance*	
EMS SQL Manager for SQL Server (Individual & Non-profit) + 2-Year Maintenance*	
EMS SQL Manager for SQL Server (Individual & Non-profit) + 3-Year Maintenance*	
EMS SQL Manager for SQL Server (Business) 1 Month Subscription*	
EMS SQL Manager for SQL Server (Business) 1 Year Subscription*	
EMS SQL Manager for SQL Server (Individual & Non-profit) 1 Month Subscription*	
EMS SQL Manager for SQL Server (Individual & Non-profit) 1 Year Subscription*	
EMS SQL Manager for SQL Server (Trial version)	Download Now!
EMS SQL Manager for SQL Server Freeware	Download Now!

***EMS Maintenance/Subscription Program** provides the following benefits:

- Free software bug fixes, enhancements, updates, and upgrades during the maintenance/subscription period
- Free unlimited communications with technical staff for the purpose of reporting Software failures
- A reasonable number of free communications for consultation on operational aspects of the software

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A *perpetual license* with a maintenance term is bought once and lets the software run indefinitely. After your maintenance expires, you will not be able to update your software or get technical support, however you will still be able to use the program. To protect your investment and have your software up-to-date, you need to renew your maintenance.
A *subscription license* gives you the right to use the software and receive updates and support for as long as it's active. When the subscription expires, the software stops working (after a short grace period for renewal) — unlike a perpetual license.

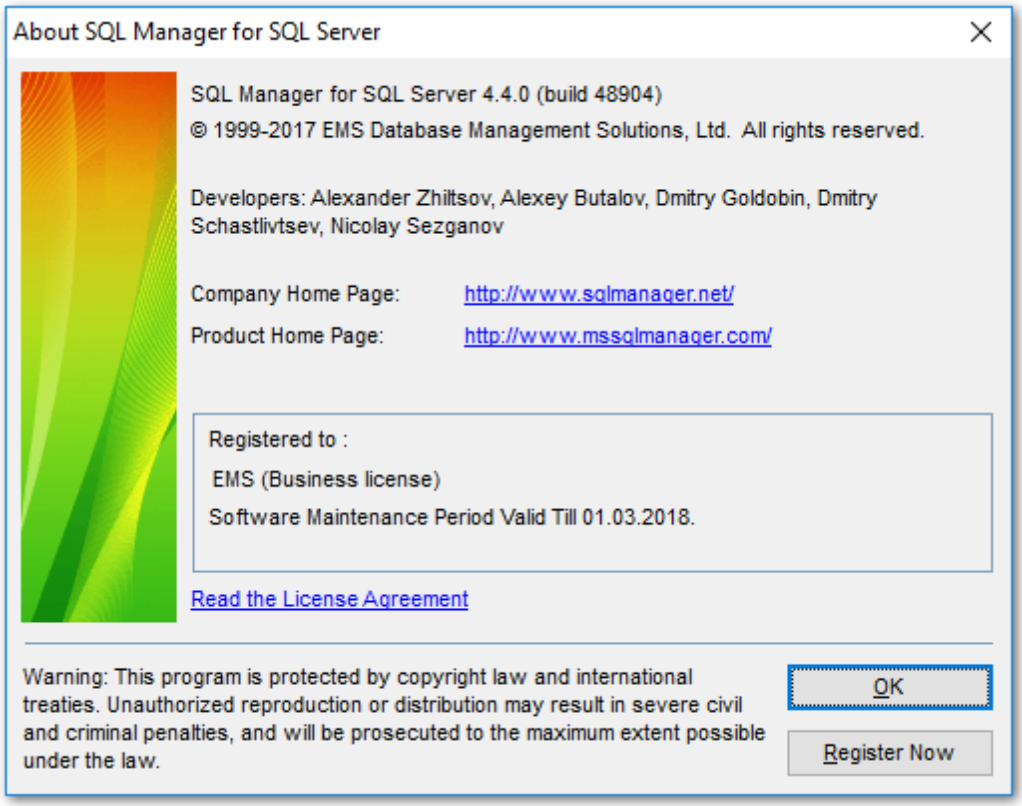
You can easily renew your maintenance/subscription on-line through our Customer Portal. After renewal, you will receive a confirmation e-mail with all the necessary information.

See also:

How to register SQL Manager 28

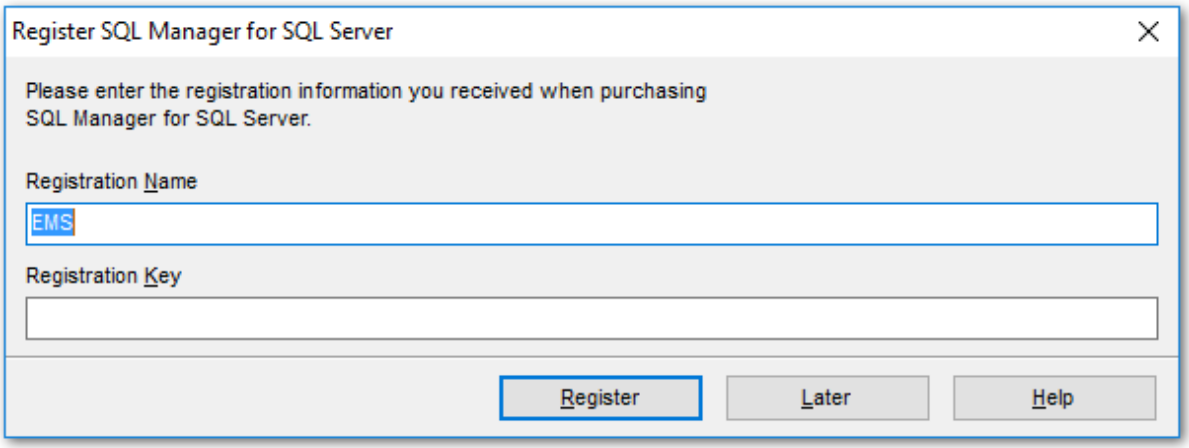
1.6 How to register SQL Manager

If you have not registered your copy of SQL Manager for SQL Server yet, you can do it by pressing the **Register Now** button and entering your registration information in the **Register SQL Manager for SQL Server** dialog.



To register your newly purchased copy of EMS SQL Manager for SQL Server, perform the following steps:

- receive the notification letter from **Digital River** with the registration info;
- enter the **Registration Name** and the **Registration Key** from this letter;
- make sure that the registration process has been completed successfully – check the registration information in the **About SQL Manager for SQL Server** dialog (use the **Help | About** menu item to open this dialog).



See also:

Registration 26

1.7 EMS SQL Manager FAQ

Please read this page attentively if you have questions about EMS SQL Manager for SQL Server.

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Question/answer list

Q:
What is EMS SQL Manager for SQL Server?
A:
EMS SQL Manager for SQL Server is a powerful graphical tool for Microsoft SQL Server development and administration. It makes creating and editing MS SQL Server database objects easy and fast, and allows you to run SQL scripts, manage users and their privileges, build SQL queries visually, extract, print and search metadata, export data to 14 available formats and import them from most popular formats, view and edit BLOB fields, and much more.

Q:

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What is the difference between Full and Freeware editions of EMS SQL Manager for SQL Server?
A:
These editions of SQL Manager for SQL Server differ in their functionality. Being a light edition, SQL Manager Freeware has certain restrictions, for example, it can handle not more than 5 databases, and some others. You can view the list of all functional differences between full and freeware versions at our Feature Matrix Page.

Q:
What do I need to start working with EMS SQL Manager for SQL Server?
A:
First of all you must have an opportunity to connect to some local or remote SQL Server from 2000 up to the latest one (We do not support SQL Server Compact Edition), Azure SQL Databases or Amazon RDS for Microsoft SQL Server. Besides you need your computer to satisfy the system requirements of SQL Manager for SQL Server.

Q:
Why cannot I connect to SQL Server?
A:
1. If your server is installed as named instance, use server name in form . SQL Server 2005 Express Editor has by default SQLEXPRESS instance name.
2. If you connect to the remote server, make sure that the connection is not blocked by firewall. Ask your system administrator to correctly open appropriate ports.
3. Make sure that SQL Server is started and you have correct login to access it.
4. Make sure that client protocols are correctly tuned. User SQL Server Configuration Manager on connection to SQL Server 2005 (it is installed with Native Client) or SQL Server Client Network Utility (system32 cliconfg.exe) on connection to earlier versions.
5. Make sure that remote connection is enabled on server and server protocols are correctly tuned. Use SQL Server Surface Area Configuration on SQL Server 2005 and SQL Server Network Utility (Program FilesMicrosoft SQL Server80ToolsBinnsvrnetcn.exe) on earlier server versions.
6. If you use named instance of server with dynamic TCP/IP port, make sure that SQL Browser service is running.
7. If you connect remotely, try using server IP address instead of its name to ensure that DNS works well.

Q:
How can I customize data formats in a grid?
A:
You can customize all display formats: integer, float, date, time and date/time in the Environment Options window on the Grid | Color & Formats tab.

Q:
How can I speed up my work with large tables?
A:
For your convenience and to speed up your work Data Grid allows customizing many data display parameters. Here are the most important of them (accessible through Database Registration Info dialog):

- Limit options in table and view editors. The “Select all records of a table” option will enable you to see all table records without extra references to the server, yet in case of large tables or low speed connection channel the data may be fetched with huge delays and the incoming traffic might grow considerably.This mode is recommended when working with local databases or in a private network.

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- The “Select only” mode restricts the maximum number of records returned after the query. Man can't process a massive amount of information at once. Hence, we came up with this mode. This mode speeds up table data viewing considerably, prevents hanging and connection timeout. It is recommended to work with large tables, in case of low speed connection channels and when the traffic volume is of importance. This is a default mode.
- Default Grid Mode. This option defines whether the requested rows will be loaded in the Grid all at once ("Load all rows"), or in parts ("Load visible rows") as the user scrolls down table data. The first mode increases the query opening time but speeds up scrolling. In the second mode the query opens very fast but there might be delays when navigating the grid.

We recommend that you set the following option values to achieve maximum efficiency when working with large tables:

- Select only - On
- Load visible rows - On

Q:
I need to perform some changes in database objects of my test database and then make the same changes on master database. Are there any tools for this purpose in EMS SQL Manager for SQL Server?
A:
Database Registration Info dialog contains Log tab where you can enable logging metadata changes that are performed on a database and SQL statements that are executed in Query Data.

Q:
How to connect to a named instance of SQL Server 2000 in EMS SQL Manager for SQL Server?
A:
If you have troubles in connection to a named instances of SQL Server 2000 please try the following:
- Run SQL Server Client Network Utility (system32cliconfg.exe) on client computer where EMS SQL Manager for SQL Server runs.
- Go to the second (Alias) tab of the Utility.
- Add a new server alias with Server Name in form and TCP/IP as Network library.
- Use the server alias name as host name on Database Registration Info dialog of EMS SQL Manager for SQL Server.

Q:
I can access my server via an alternative port. I have searched for a setting in EMS SQL Manager for SQL Server to alter the connection port, but have not yet been able to locate this. How would I go about altering this port?
A:
To connect to SQL Server 2005 on alternative port, do the following:
- Run SQL Server Configuration Manager (it is installed with Native Client) on client computer where SQL Manager runs.
- Select SQL Native Client Configuration | Aliases node.
- Add a new server alias and set port number, TCP/IP as protocol and server name.
- Use the server alias name as host name on Database Registration Info dialog of SQL Manager.

To connect to SQL Server 2000 or earlier on alternative port, do the following:
- Run SQL Server Client Network Utility (system32cliconfg.exe) on client computer where SQL Manager runs.

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- Go to the second (Alias) tab of the Utility.
- Add a new server alias and set server name, port number and TCP/IP as Network library.
- Use the server alias name as host name on Database Registration Info dialog of SQL Manager.

Q:
What is the difference between the Export/Import functions in EMS SQL Manager for SQL Server tool and EMS Data Export/Import for SQL Server utilities?
A:
EMS Data Export/Import for SQL Server includes some additional features, which are not available in SQL Manager for SQL Server such as:
export/import data from/to several tables at once;
export/import data from/to tables selected from different databases on one host;
command line utility to export/import data using the configuration file with all the export/import options.

Q:
What is the difference between the Design Query module in EMS SQL Manager for SQL Server tool and EMS SQL Query for SQL Server utility?
A:
First of all, EMS SQL Query for SQL Server works faster as it is a much lighter product. Besides it provides additional features for query building, e.g.:
keeping query history, which allows you to rollback to any edited query;
various interface improvements for more productive and easy work.

Q:
I can't modify DDL. Why?
A:
The 'DDL' tabs of the Table Editor, View Editor, etc. are read-only. They display the definition of tables. To modify this text you can copy it to the clipboard and modify it using Query Data.

Q:
When I create database objects, their names are always converted to lower case. How can I prevent it?
A:
You need to switch off the "Convert created object's names to lower case" option in Environment Options dialog on the Tools | Object Editors tab.

Q:
I have a table with ~ 1000 records only and a large number of columns. Opening this table on Data tab takes too much time.
A:
You need to set Grid Mode for the table to 'Load Visible Rows'. Please right click on the table's grid and select Grid Mode | Load Visible Rows.

Q:
What is the difference between the Extract Database and Export As SQL Script functions?
A:
Export As SQL Script is intended to export table data that will be inserted into a database system other than MS SQL Server. Use Extract Database to copy data to a table on MS SQL Server.

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Q:
I'm trying to export table, but TEXT columns are not exported.
A:
Columns of types TEXT, BINARY, IMAGE, etc. are not exported by default. You should select these columns manually on the columns tab.

Q:
How do I change the default directory where exported data will be saved?
A:
Follow the steps below to change directory.
- Right click on the database you need in DB Explorer and click on "Database Registration Info..." item in popup menu (you can also find this item in main menu "Database"). The Database Properties form will be opened.
- Click on the "Save Options" tab.
- In the "Default Directory for Export Data" section you can choose the default directory for export file.

Q:
I get an error 'Timeout expired' when I try to execute a query in Query Data or when I perform some operations with database objects.
A:
You need to increase timeout values on Tools | Timeouts tab of Environment Options dialog, or set them to 0 - unlimited.

Q:
I get the error "Debugger interface not registered on client" when trying to run the T-SQL Debugger.
A:
In order to debug code on the remote host the client machine must be configured as follows http://msdn.microsoft.com/en-us/library/cc646024.aspx.

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If you still have any questions, contact us at our Support Center.

1.8 Other EMS Products

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MySQL

SQL Management Studio for MySQL
EMS SQL Management Studio for MySQL is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!

SQL Manager for MySQL
Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

Data Export for MySQL
Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more.

Data Import for MySQL
Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

Data Pump for MySQL
Migrate from most popular databases (MySQL, PostgreSQL, Oracle, DB2, InterBase/Firebird, etc.) to MySQL.

Data Generator for MySQL
Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

DB Comparer for MySQL
Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.

DB Extract for MySQL
Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

SQL Query for MySQL
Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

Data Comparer for MySQL
Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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Microsoft SQL Server

[SQL Management Studio for SQL Server](#)
EMS SQL Management Studio for SQL Server is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!

[EMS SQL Backup for SQL Server](#)
Perform backup and restore, log shipping and many other regular maintenance tasks on the whole set of SQL Servers in your company.

[SQL Administrator for SQL Server](#)
Perform administrative tasks in the fastest, easiest and most efficient way. Manage maintenance tasks, monitor their performance schedule, frequency and the last execution result.

[SQL Manager for SQL Server](#)
Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

[Data Export for SQL Server](#)
Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more

[Data Import for SQL Server](#)
Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

[Data Pump for SQL Server](#)
Migrate from most popular databases (MySQL, PostgreSQL, Oracle, DB2, InterBase/Firebird, etc.) to Microsoft® SQL Server™.

[Data Generator for SQL Server](#)
Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

[DB Comparer for SQL Server](#)
Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.

[DB Extract for SQL Server](#)
Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

[SQL Query for SQL Server](#)
Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

[Data Comparer for SQL Server](#)
Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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PostgreSQL

SQL Management Studio for PostgreSQL
EMS SQL Management Studio for PostgreSQL is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!

EMS SQL Backup for PostgreSQL
Creates backups for multiple PostgreSQL servers from a single console. You can use automatic backup tasks with advanced schedules and store them in local or remote folders or cloud storages

SQL Manager for PostgreSQL
Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

Data Export for PostgreSQL
Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more

Data Import for PostgreSQL
Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

Data Pump for PostgreSQL
Migrate from most popular databases (MySQL, SQL Server, Oracle, DB2, InterBase/Firebird, etc.) to PostgreSQL.

Data Generator for PostgreSQL
Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

DB Comparer for PostgreSQL
Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.

DB Extract for PostgreSQL
Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

SQL Query for PostgreSQL
Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

Data Comparer for PostgreSQL
Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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InterBase / Firebird

SQL Management Studio for InterBase/Firebird
EMS SQL Management Studio for InterBase and Firebird is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!

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SQL Manager for InterBase/Firebird
Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

Data Export for InterBase/Firebird
Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more

Data Import for InterBase/Firebird
Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

Data Pump for InterBase/Firebird
Migrate from most popular databases (MySQL, SQL Server, Oracle, DB2, PostgreSQL, etc.) to InterBase/Firebird.

Data Generator for InterBase/Firebird
Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

DB Comparer for InterBase/Firebird
Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.

DB Extract for InterBase/Firebird
Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

SQL Query for InterBase/Firebird
Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

Data Comparer for InterBase/Firebird
Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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Oracle

SQL Management Studio for Oracle
EMS SQL Management Studio for Oracle is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!

SQL Manager for Oracle
Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

Data Export for Oracle
Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more.

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Data Import for Oracle
Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

Data Pump for Oracle
Migrate from most popular databases (MySQL, PostgreSQL, MySQL, DB2, InterBase/Firebird, etc.) to Oracle

Data Generator for Oracle
Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

DB Comparer for Oracle
Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.

DB Extract for Oracle
Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

SQL Query for Oracle
Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

Data Comparer for Oracle
Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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IBM DB2

SQL Manager for DB2
Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

Data Export for DB2
Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more.

Data Import for DB2
Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

Data Pump for DB2
Migrate from most popular databases (MySQL, PostgreSQL, Oracle, MySQL, InterBase/Firebird, etc.) to DB2

Data Generator for DB2
Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

DB Extract for DB2
Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

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SQL Query for DB2
Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

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Tools & components

Advanced Data Export for RAD Studio VCL
Advanced Data Export for RAD Studio VCL allows you to save your data in the most popular office programs formats.

Advanced Data Export .NET
Advanced Data Export .NET is a component for Microsoft Visual Studio .NET that will allow you to save your data in the most popular data formats for the future viewing, modification, printing or web publication. You can export data into MS Access, MS Excel, MS Word (RTF), PDF, TXT, DBF, CSV and more! There will be no need to waste your time on tiresome data conversion - Advanced Data Export will do the task quickly and will give the result in the desired format.

Advanced Data Import for RAD Studio VCL
Advanced Data Import for RAD Studio VCL will allow you to import your data to the database from files in the most popular data formats.

Advanced PDF Generator for RAD Studio
Advanced PDF Generator for RAD Studio gives you an opportunity to create PDF documents with your applications written on Delphi or C++ Builder.

Advanced Query Builder for RAD Studio VCL
Advanced Query Builder for RAD Studio VCL is a powerful component for Delphi and C++ Builder intended for visual building SQL statements for the SELECT, INSERT, UPDATE and DELETE clauses.

Advanced Excel Report for RAD Studio
Advanced Excel Report for RAD Studio is a powerful band-oriented generator of template-based reports in MS Excel.

Advanced Localizer for RAD Studio VCL
Advanced Localizer for RAD Studio VCL is an indispensable component for Delphi for adding multilingual support to your applications.

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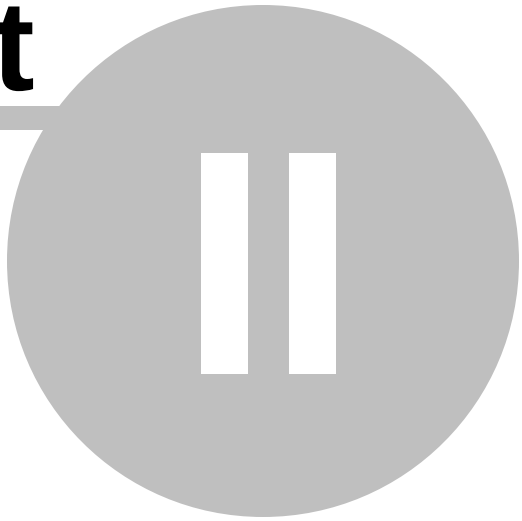
Part



2 Getting Started

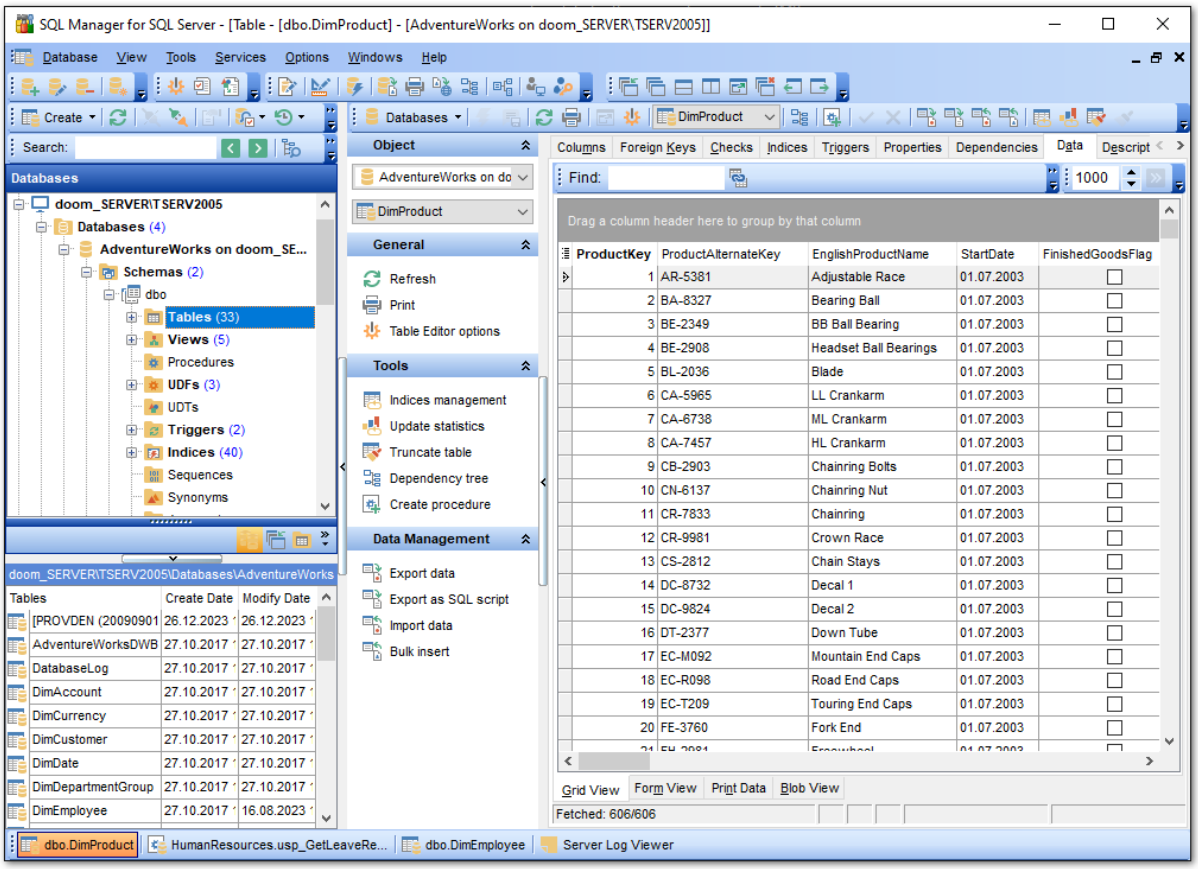
SQL Manager for SQL Server provides you with an ability to contribute to efficient SQL Server administration and development using a variety of available tools easily and quickly.

The succeeding chapters of this document are intended to inform you about the tools implemented in SQL Manager for SQL Server. Please see the instructions below to learn how to perform various operations in the easiest way.

- Selecting style and language 44
- How the application looks when you start it for the first time 46
- Using Desktop Panel 48
- Database navigation 50
- Working with database objects 52
- Using context menus 54
- Working with child windows 60

See the How to... 991 chapter to view brief instructions on how to perform some operations on databases, database objects, etc.

Enjoy your work with EMS SQL Manager for SQL Server!



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Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
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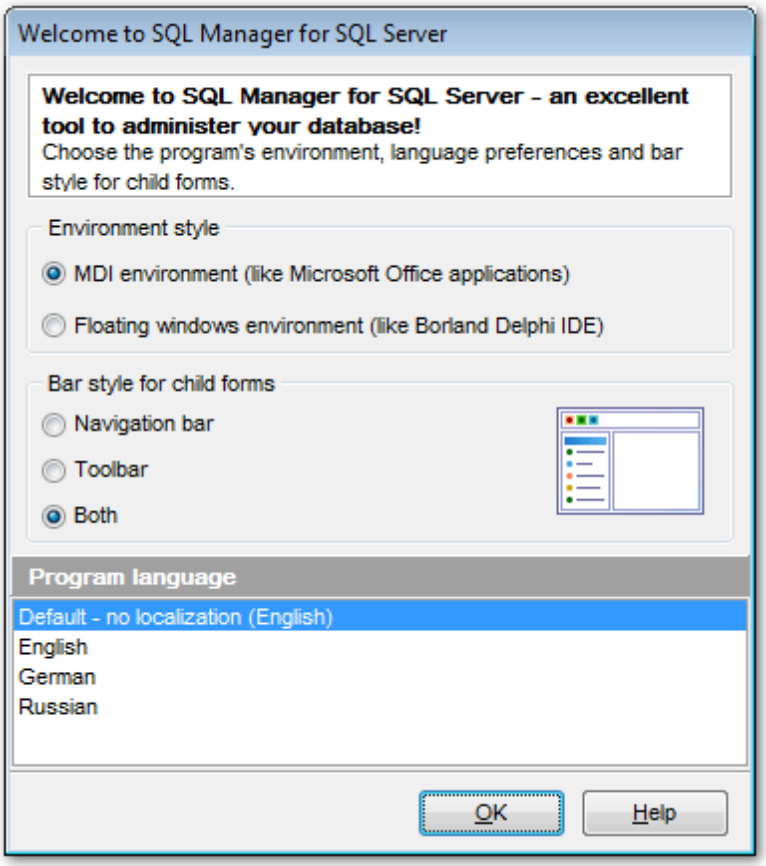
2.1 Selecting style and language

Before you start SQL Manager for the first time, you have to choose the environment style and the interface language. You can change these settings any time using the **Environment Options** 854 dialog (**Options | Environment Options...**) to configure the environment style and the Select Language 928 dialog (**Options | Select Program Language...**) to change the program language.

Environment style
This switch allows you to define the main window behavior style - *MDI* (like in MS Office applications) or *Floating windows* (like Borland Delphi IDE).

Bar style for child forms
Here you can define the location of action buttons: within the *Navigation bar* (on the left) and/or on the *Toolbar*.

Program Language
Select the interface language from the list of available languages.



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Using context menus 54
Working with windows 60

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2.2 First time started

This is how SQL Manager for SQL Server looks when you start it for the first time. Use the Desktop panel 48 to fulfill any of common tasks: Create a new database 99, Manage existing database(s) 114, and several tasks that do not require database registration, i.e. Execute Script 625, accessing the **reference system** or using available **Internet resources**.

The main menu 951 allows you to perform various **Database** operations, open To-Do List 973 and activate/deactivate Database Explorer 65, SQL Assistant 87 and various toolbars 953 within the **View** menu, manage your databases using items of the **Tools** and **Services** menus, customize 853 the application using the **Options** menu, manage SQL Manager **Windows** using Window List 975 and other tools, view the Tip of the Day and access Registration 26 information and product documentation, update 980 the product to the latest version using the corresponding items available within the **Help** menu.

To start working with your SQL Server, you should first register one or several databases using Register Database Wizard 114.

By default the corresponding **Register Host**, **Register Database** buttons are available on the toolbar 953 and within the **Database** menu.

When the database connection settings are specified, you can set connection to your database and proceed to Database navigation 50, Database Objects management 182, working with SQL queries 430 and other tools of SQL Manager.

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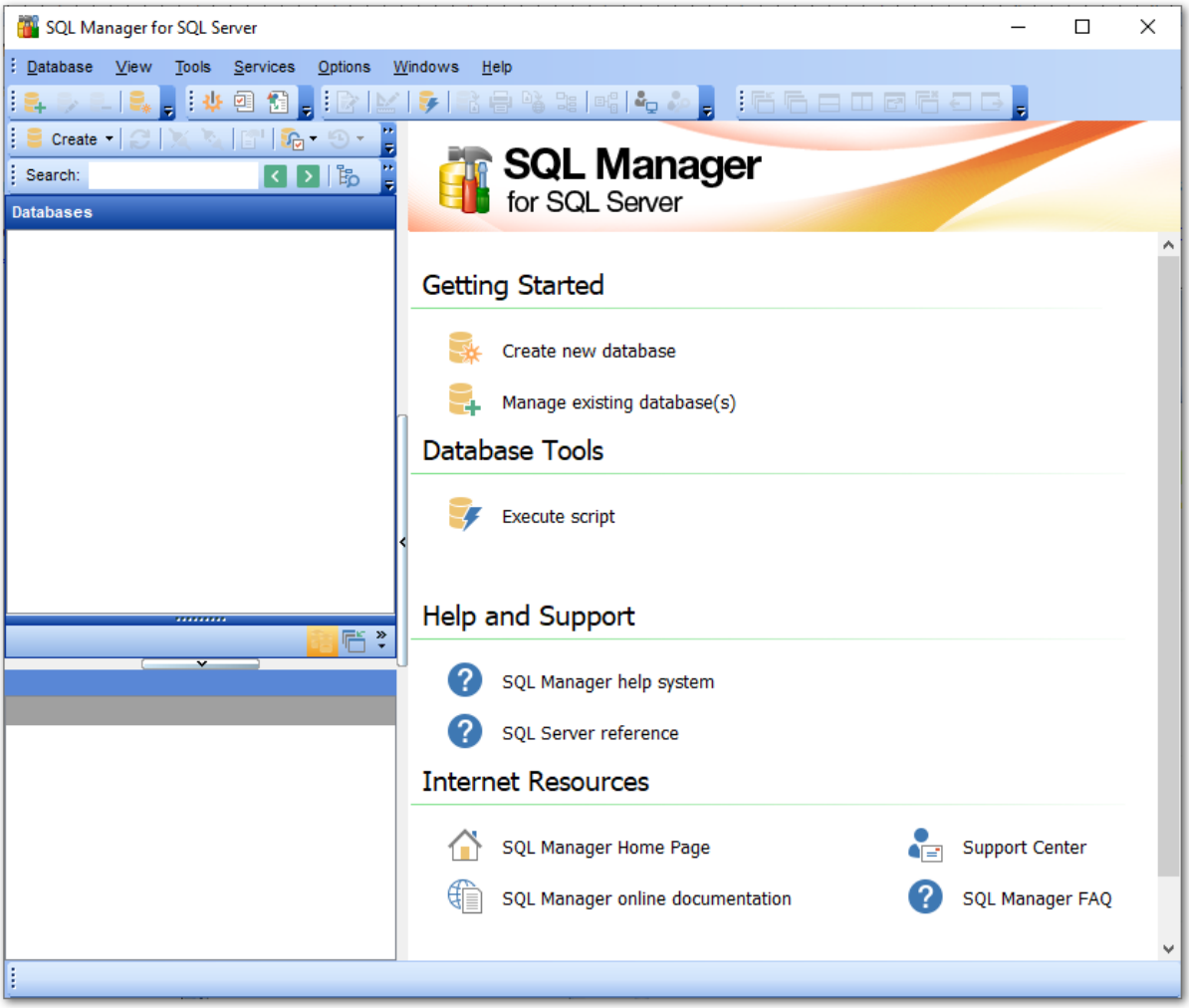

See also:

Selecting style and language 44
Using Desktop Panel 48
Database navigation 50
Working with database objects 52
Using context menus 54
Working with windows 60

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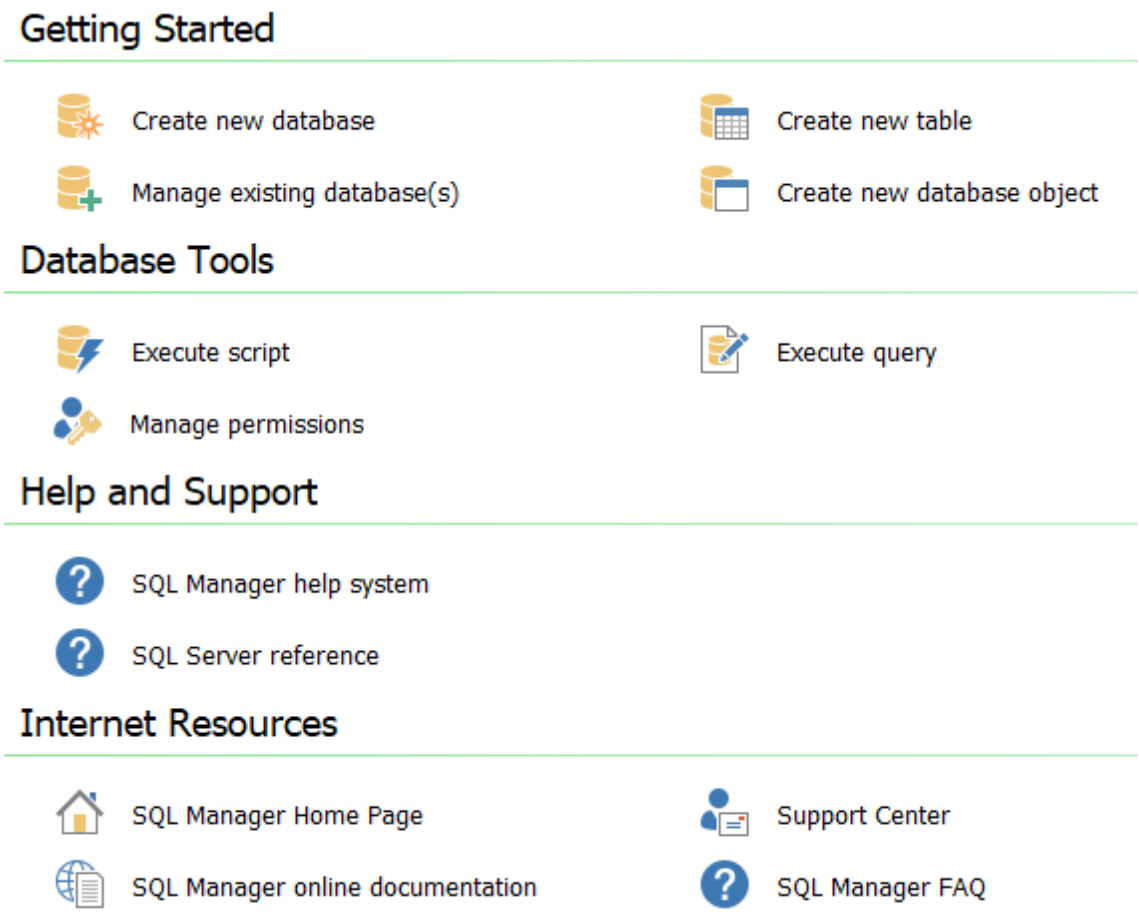
2.3 Using Desktop Panel

Desktop Panel is the area that is visible when no child windows are open in SQL Manager for SQL Server. The working area of **Desktop Panel** is divided into four sections: *Getting Started*, *Database Tools*, *Help and Support*, *Internet Resources*.



Using the **Desktop Panel** items you can:

Getting Started

create 99 a new SQL Server database

register 114 existing database(s) to operate them afterwards in SQL Manager

create a new table within the current database using the New Table 197 window (this item is available if there is at least one active database connection)

create a new database object 184 within the current database (this item is available if there is at least one active database connection)

Database Tools

execute a script using Execute Script 625 editor

execute a SQL query using Query Data 432 editor (this item is available if there is at least one active database connection)

grant permissions on database objects to SQL Server users using Grant Manager 688 (this item is available if there is at least one active database connection)

Help and Support

show this help file

use SQL Server reference

Internet Resources

visit **SQL Manager** Home Page

browse **SQL Manager** on-line documentation

go to Technical Support Center

look through the Frequently Asked Questions 30 page

See also:

Selecting style and language 44
First time started 46
Database navigation 50
Working with database objects 52
Using context menus 54
Working with windows 60

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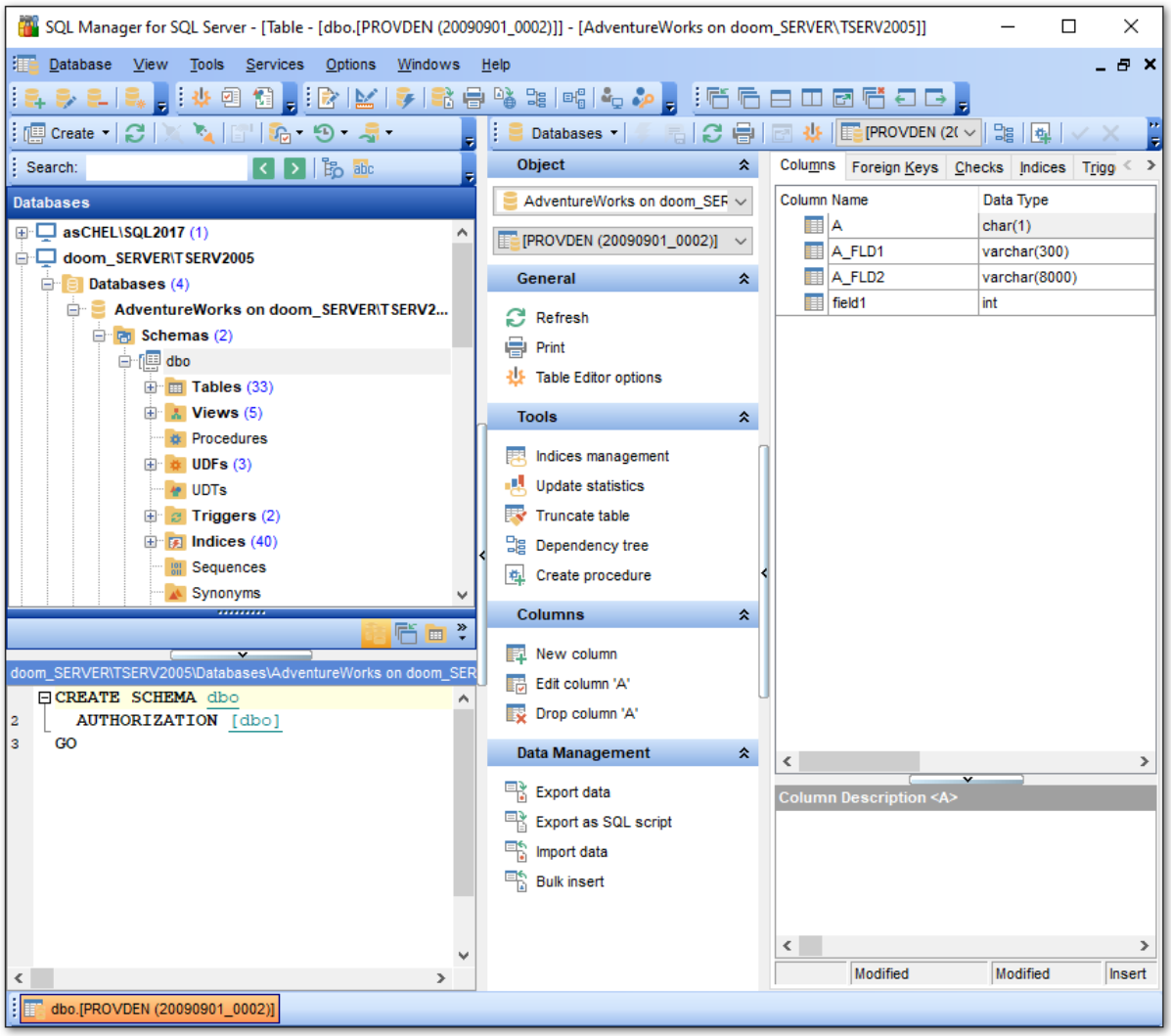
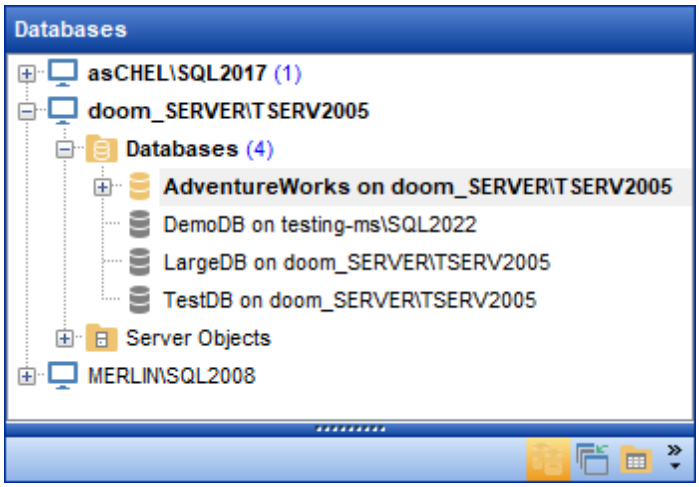
2.4 Database navigation

After you have registered the required database(s), the corresponding alias(es) appear in the DB Explorer 65 tree on the left. If the **Show Hosts** option is checked on the Environment Options 854 | DB Explorer 868 page, the host nodes are also displayed in the tree (alternatively, you can use the **Show Hosts** item of the Database context menu 55, or the drop-down menu of the **View Mode** toolbar 90 button for the same purpose). If necessary, you can also specify that empty schemas should be hidden in the tree: use the corresponding option available on the DB Explorer 868 page of the Environment Options 854 dialog.



DB Explorer 65 displays all registered databases. Connected/disconnected databases can be easily distinguished in the tree: aliases of disconnected databases are grayed out.



To connect 70 to a database, simply double-click its alias (or select the database alias in DB Explorer 65 and press **Enter**). If the connection is successful, the database node expands into a tree of objects. To select the types of objects to be expanded upon successful database connection, you can use the **Expand on connection** group of the Environment Options 854 | DB Explorer 868 page.

Now you can navigate within the database objects. Use SQL Assistant 87 to get extended information about the currently selected object.

For your convenience objects having different status (e.g. enabled/disabled) are displayed with different icons in Database Explorer 65.

See also:

Selecting style and language 44
First time started 46
Using Desktop Panel 48
Working with database objects 52
Using context menus 54
Working with windows 60

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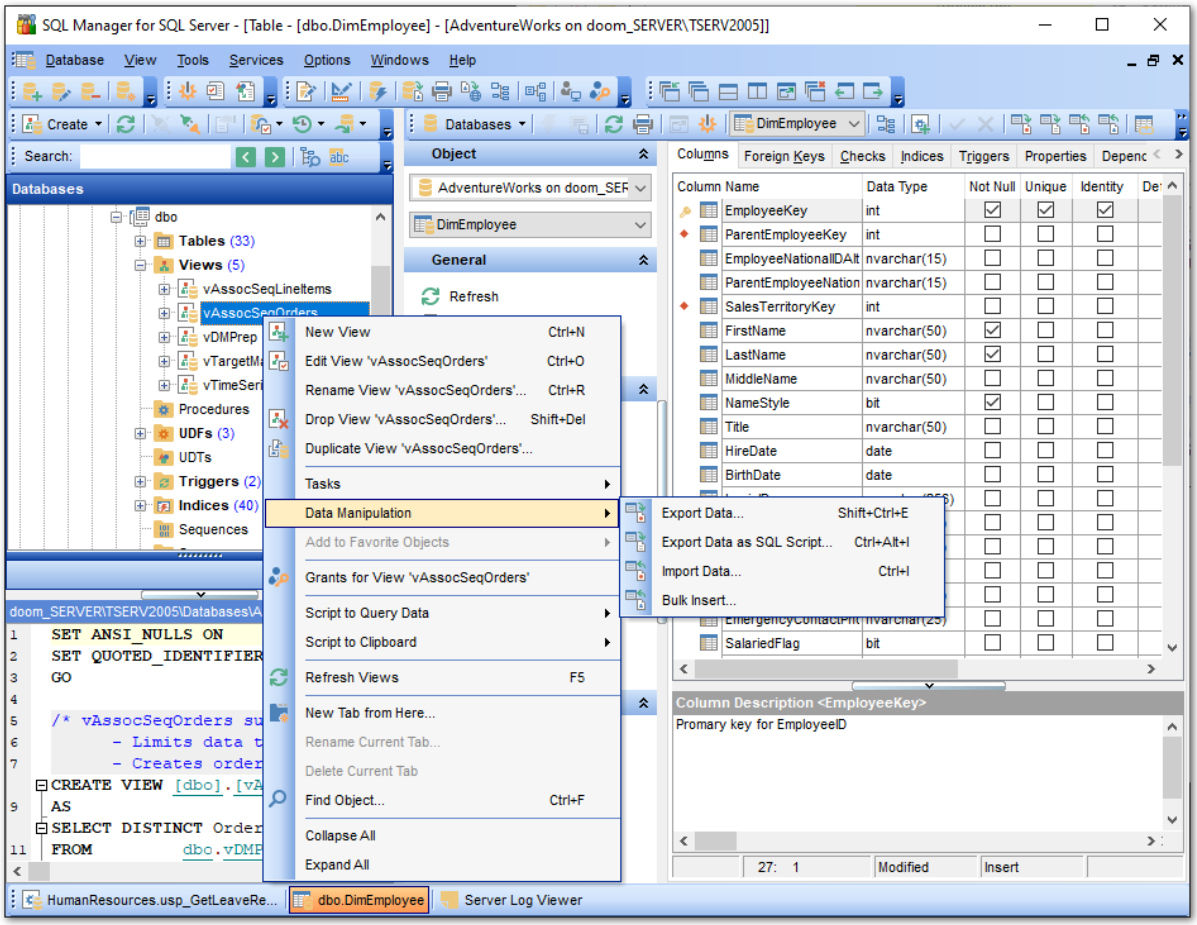
2.5 Working with database objects

The nodes of the DB Explorer 65 tree allow you to access server objects 358 and objects of the selected database 182 respectively. If SQL Server you are connected to supports certain types of objects, their nodes will appear in the tree.

Double-click an object group *to expand/collapse the corresponding tree node*.
Double-click an object *to open it in the corresponding editor*.
Right-click an object to display its context menu 57 which allows you to perform various *operations over the selected object or database*.



If you want to use the DB Explorer 65 tree for working with **table subobjects** (columns, indexes, Foreign keys, etc.), check the **Show table subobjects** option which is available within the **General options** group of the Environment Options 854 | DB Explorer 868 page (you can also use the **Show Table Subobjects** menu item in the drop-down menu of the **View Mode** toolbar 90 button for the same purpose.)

See also:

Selecting style and language 44
First time started 46
Using Desktop Panel 48
Database navigation 50
Using context menus 54
Working with windows 60

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2.6 Using context menus

The **context menus** are aimed at facilitating your work with SQL Manager for SQL Server: you can perform a variety of operations using context menu items.

Select an object in DB Explorer 65 and right-click its alias to open the context menu.

- Host context menu 54
- Database context menu 55
- Object context menu 57

See also:

Selecting style and language 44
First time started 46
Using Desktop Panel 48
Database navigation 50
Working with database objects 52
Working with windows 60

2.6.1 Host context menu

The **context menu of a host** in the DB Explorer 65 tree allows you to:

- access server objects 358 and some common services 742 available in the **Tasks** submenu;
- view/edit the selected host properties within the Server Properties 165 dialog;
- create a new database 99 on the selected host;
- register a new database using Register Database Wizard 114;
- unregister 96 the selected host;
- configure representation of hosts and databases in Database Explorer 65;
- create a new tab for the selected host to access it through this tab quickly 79 and/or manage the existing tab;
- search 85 for an object within the tree.

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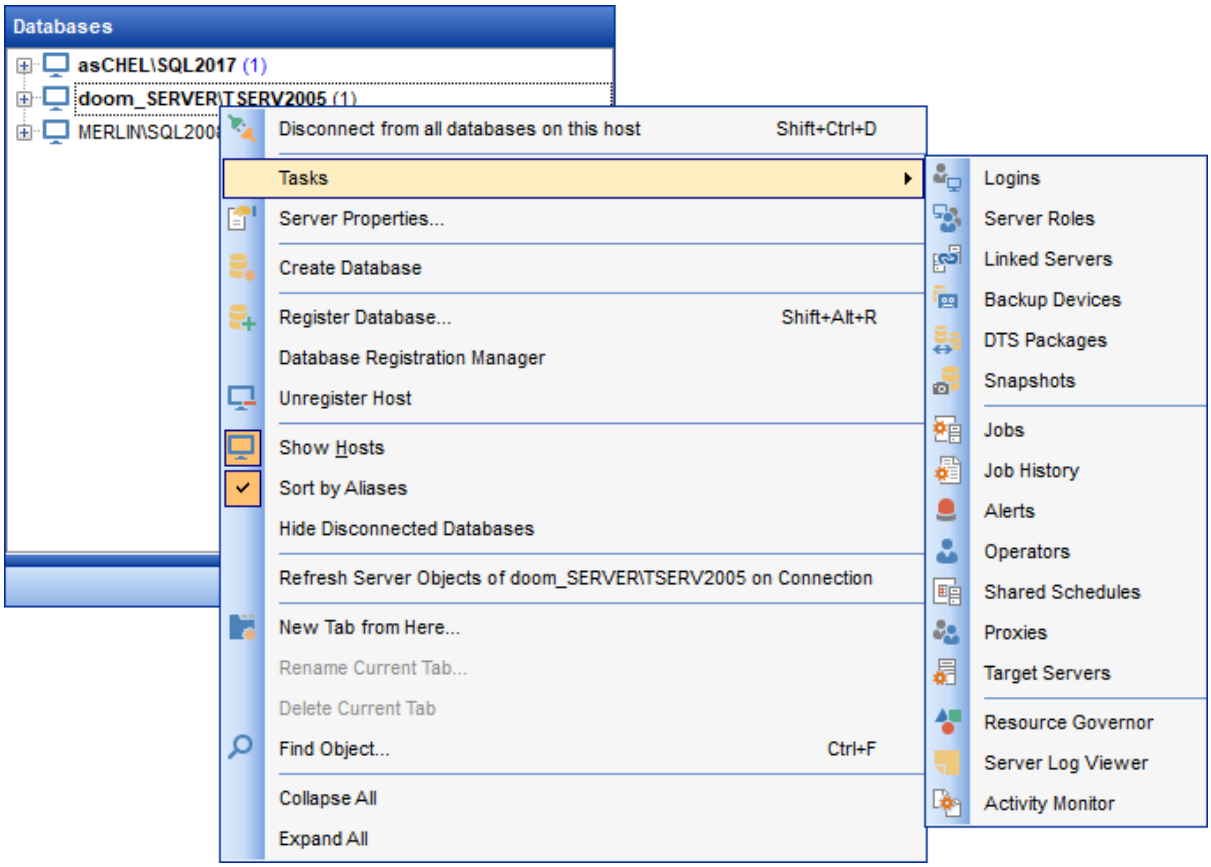


See also:

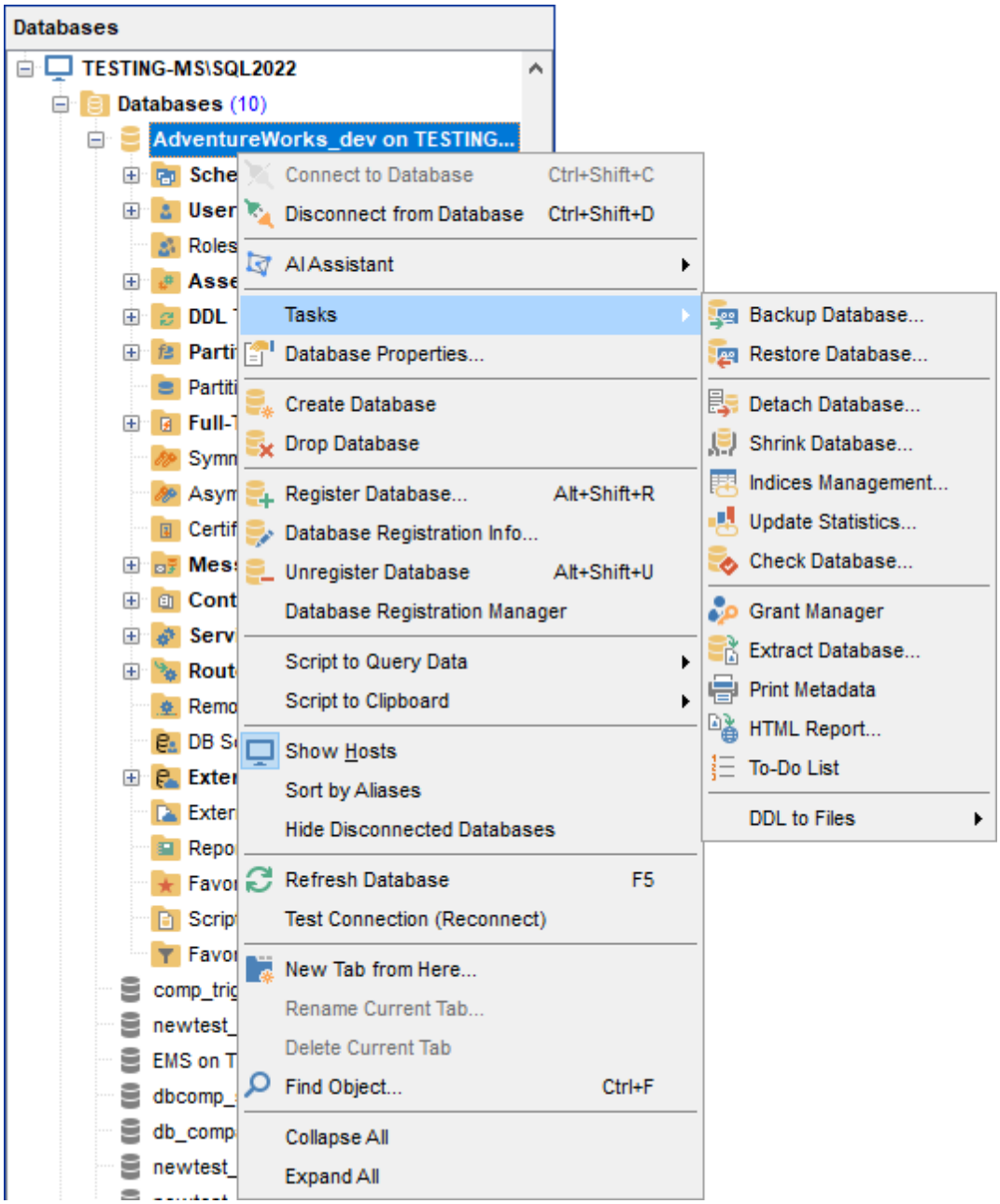
Database context menu 55
Object context menu 57

2.6.2 Database context menu

The **context menu of a registered database** in the DB Explorer 65 tree allows you to:

- connect 70 to the selected database (if connection to the database is not active yet);
- disconnect 97 from the selected database (if connection to the database has been already set);
- add the DDL of the database or of the objects it contains to the AI Assistant context 57;
- access database tools 617 available in the **Tasks** submenu;
- view/edit the Database properties 137;
- create a new database 99 on the host where the selected database resides;
- drop 96 the selected database;
- register a new database using Register Database Wizard 114;
- view/edit the selected database registration information within the Database Registration Info 120 dialog;
- unregister 96 the selected database;

- unregister 96 the host where the selected database resides;
- generate the script and open it in Query Data 432;
- generate the script and copy its text to Windows clipboard;
- configure representation of hosts and databases in Database Explorer 65;
- refresh the selected database;
- test connection to the database (or reconnect if connection has been already established);
- create a new tab for the selected database to access it through this tab quickly 79 and/or manage the existing tab;
- search 85 for an object within the tree.



AI Assistant submenu allows you to:
- add the DDL of the database itself to the context 730 with **Add object DDL to chat**;
- add the DDL of all the objects the database contains with **Add subtree DDL to chat**; what goes into the metadata snapshot is set on the Context 864 tab.

Tasks submenu allows you to:
- backup database 745
- restore database 759
- detach database 779
- shrink database 784
- manage indices 789
- update statistics 795
- check database 802
- manage privileges 688
- extract database 632 objects and/or data to an SQL script
- print metadata 649
- generate html report 657 of the selected objects
- create to-do list 973

See also:

Host context menu 54

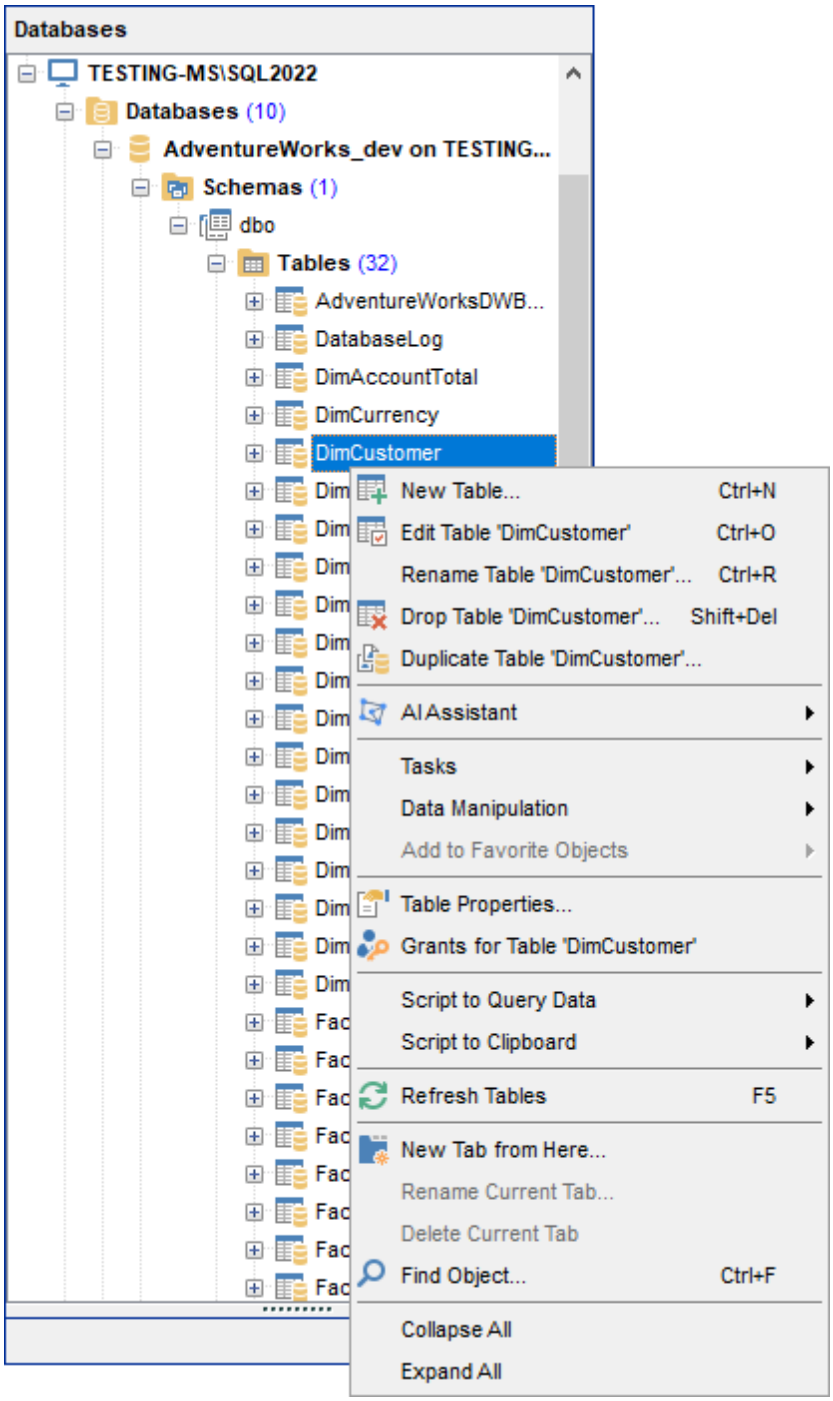
Object context menu 57

2.6.3 Object context menu

The **context menu of an object** (e.g. *table* or *view*) in the DB Explorer 65 tree allows you to:
- create 184 a new database object of the same type;
- edit 182 the selected object in its editor;
- rename 182 the selected object;
- drop 182 the selected object from the database;
- duplicate 186 the selected object (create a new object with the same DDL 955 structure and properties as the selected object has);
- add the DDL of the selected object to the AI Assistant context 730;
- access common **Tasks** applied to this object;
- perform data manipulation 536 operations (for tables 196 and views 250);
- add object to favorite objects 83
- table properties 215;
- define grants 688 for the selected object;
- generate the object script and open it in Query Data 432;
- generate the object script and copy its text to Windows clipboard;
- refresh all objects of the selected object type;
- view/edit the database registration information within the Database Registration Info 120 dialog (for database objects 182);
- create a new tab for the selected object to access it through this tab quickly 79

and/or manage the existing tab;

- search 85 for an object within the tree.



See also:

Host context menu 54

Database context menu 55

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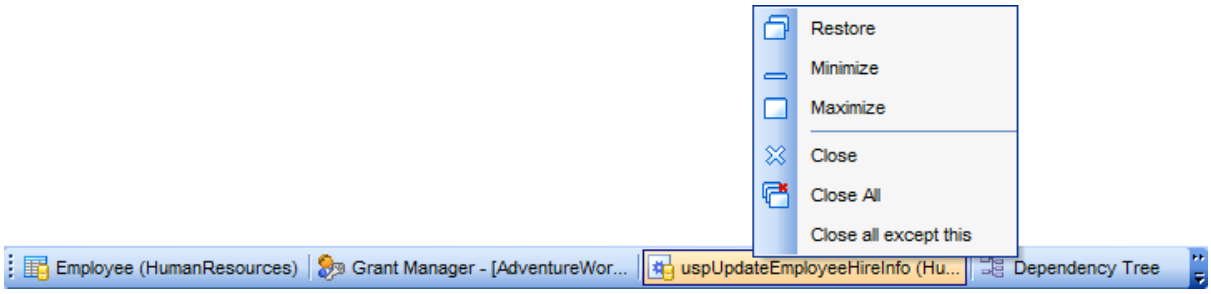
2.7 Working with windows

The **Windows Toolbar** of SQL Manager allows you to switch between child windows easily, like in Windows Task Bar.

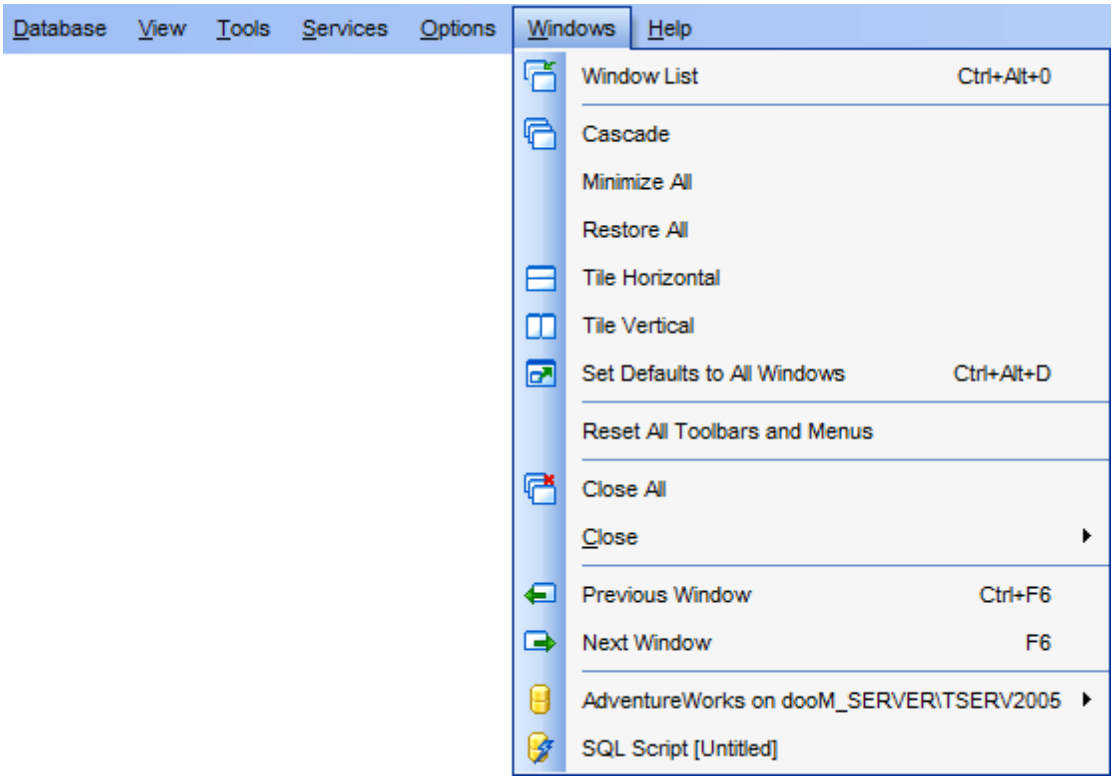
To activate the window you need, simply click one of the window buttons. To perform some additional actions with the window, right-click its tab and select the corresponding menu item from the popup menu.



If you have multiple windows opened, you can also switch between them using the *Ctrl+Tab* shortcut 986.

The **Number of open editors is restricted** option available in the Windows 858 section of the Environment Options 854 options dialog allows you to set the maximum number of editors that may be opened simultaneously. When the number of editors exceeds the specified value, the previously opened editors will be closed automatically.

The **Windows** menu facilitates your work with SQL Manager windows.



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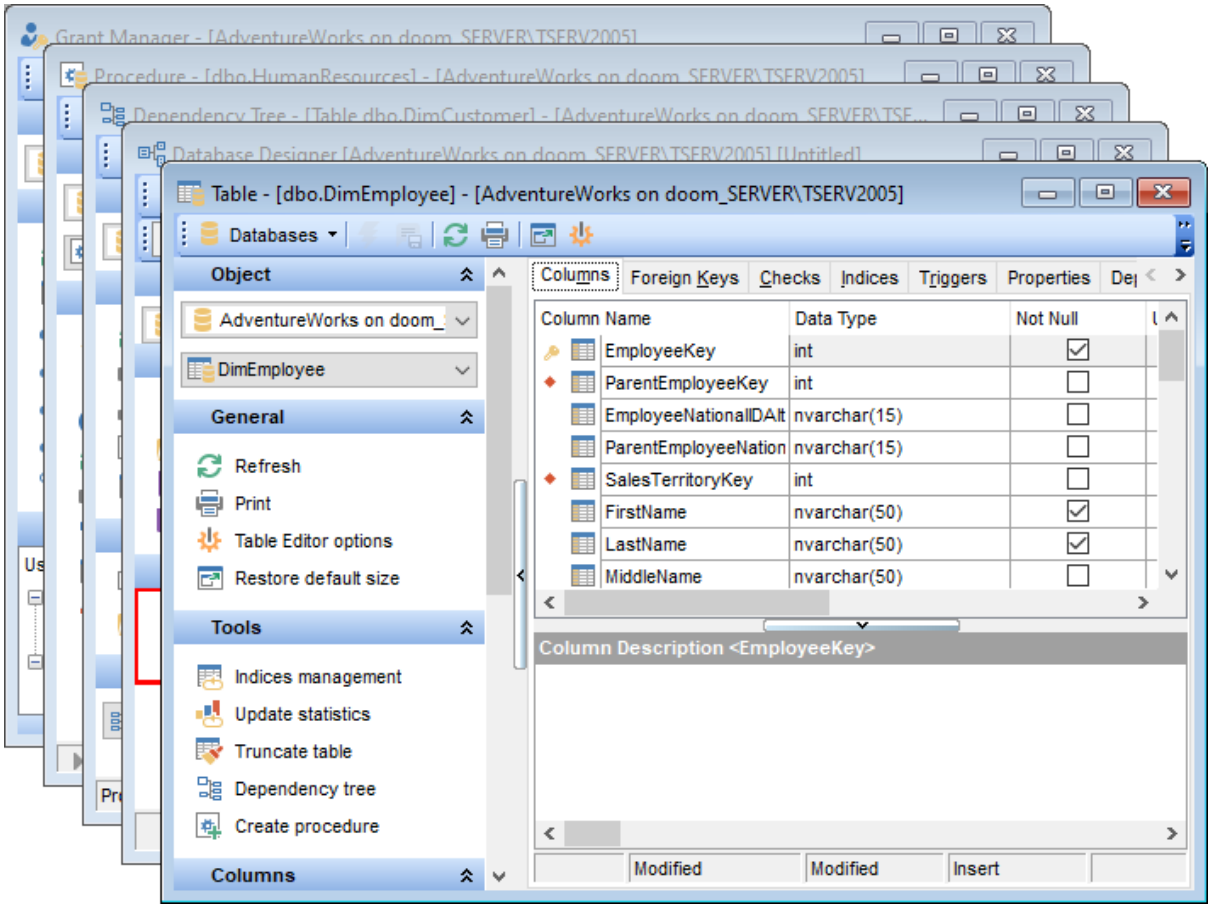
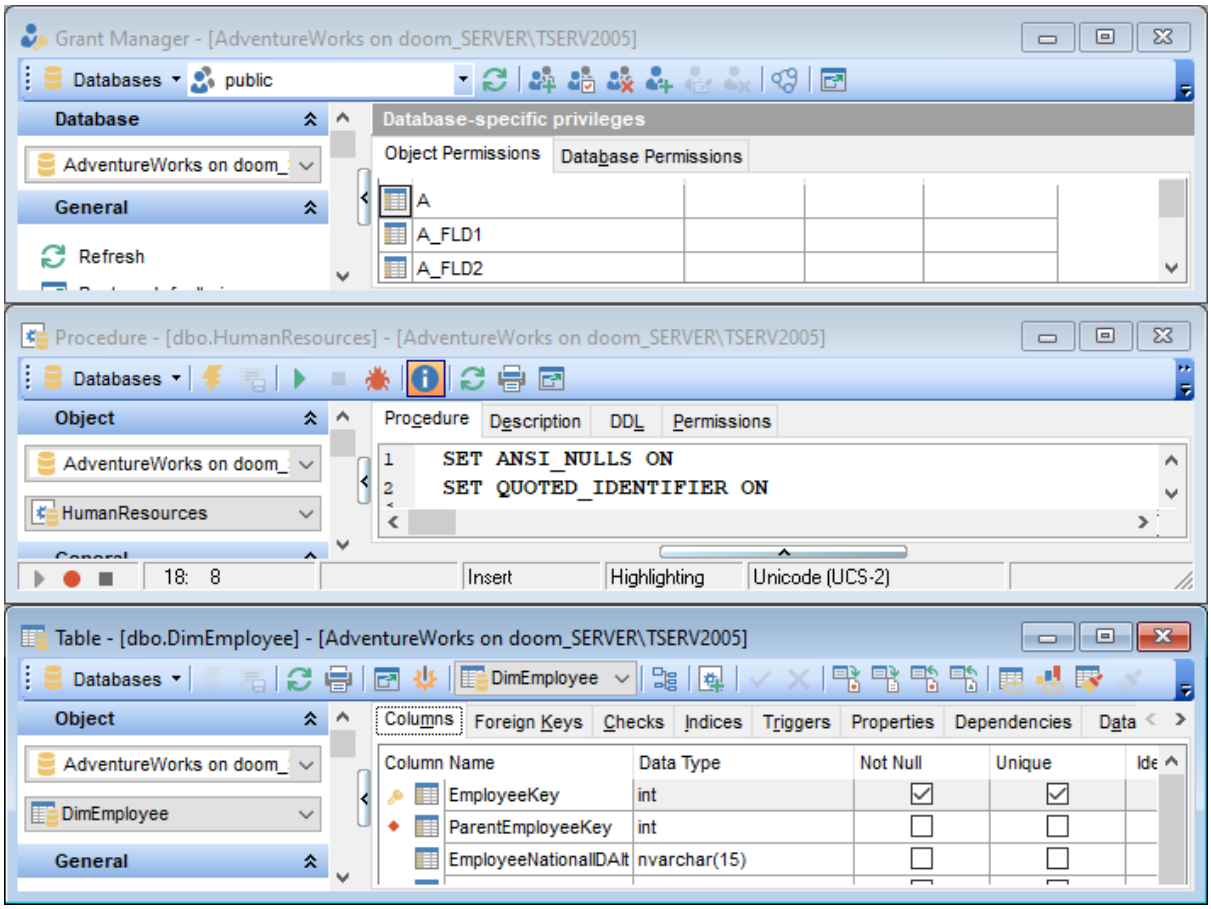
The **Windows** menu allows you to:

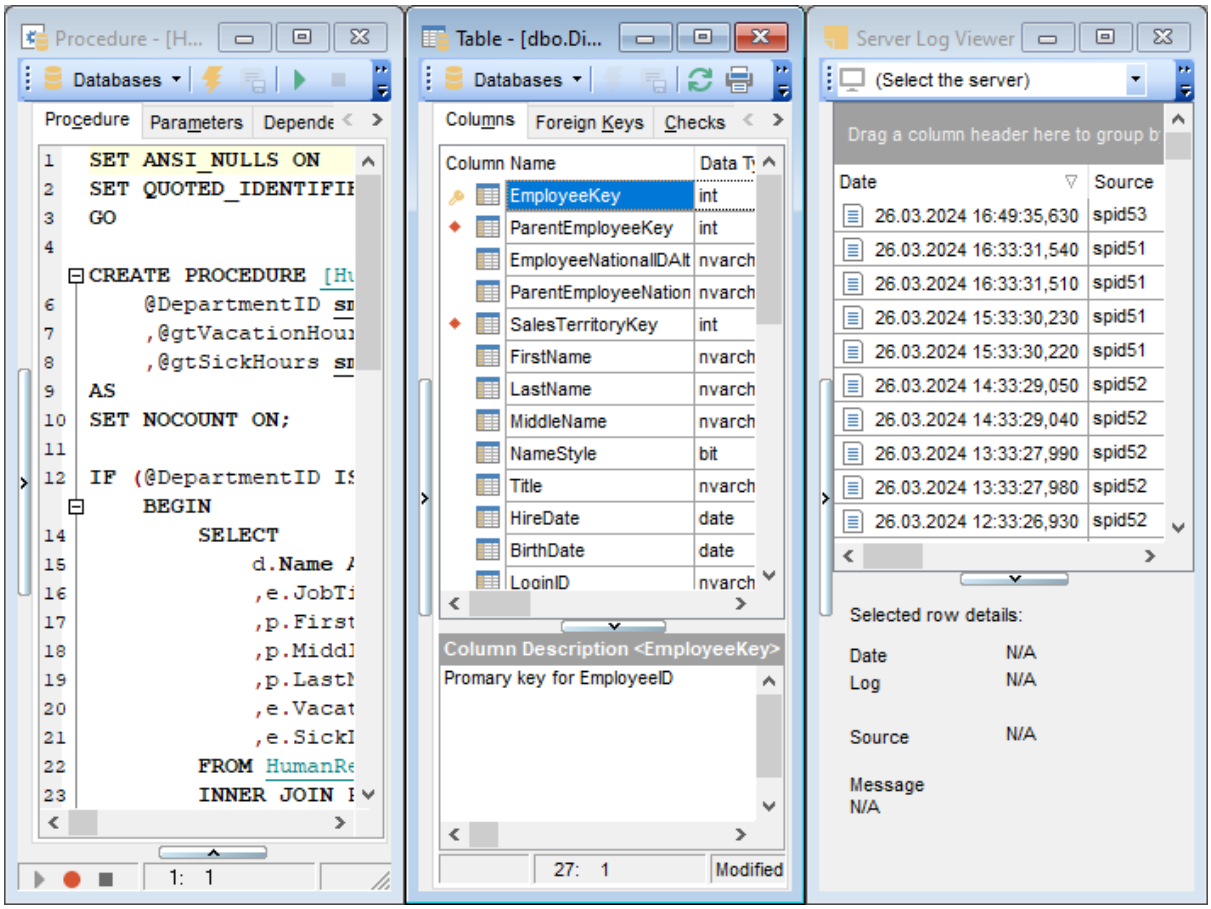
- view the Windows List 975 within the corresponding tab 79 of DB Explorer;
- set all current windows *cascade*:



- minimize all windows;
- restore all windows;
- tile all current windows *horizontally*:



- tile all current windows *vertically*:



- set defaults to all windows;
- reset all toolbars and menus 976;
- close all windows;
- close all editors of the specified object type (can be selected from the submenu);
- switch to the previous window;
- switch to the next window;
- activate one of currently opened windows.

See also:

Selecting style and language 44
First time started 46
Using Desktop Panel 48
Database navigation 50
Working with database objects 52
Using context menus 54

Part III

3 Database Explorer

Database Explorer (or **DB Explorer**) is the basic window of SQL Manager for SQL Server for navigation 50 within databases and working with database and server objects. The tree-like structure of DB Explorer allows you to manage the databases, database and server objects and perform other everyday operations quickly and easily.

The following list contains the most frequently used features provided by Database Explorer.

- Managing database registration info 68
- Connecting to databases and hosts 70
- Performing basic operations upon database objects 73
- Selecting multiple objects 76
- Navigating database objects using multiple tabs 79
- Easy access to recently opened objects 82
- Managing favorite objects 83
- Searching within the tree 85
- Viewing extended information about database objects 87
- Configuring Database Explorer 89
- Managing Favorite queries 92
- Managing scripts 93

All objects are structured by their types and are available within the corresponding nodes of the tree. The number of objects of each type is displayed in brackets after the node name denoting the object type. To expand/collapse a node, you can double-click it or use the +/- icons. Alternatively, yu can use "Right"/"Left" buttons: when pressing "Left", first the subnodes of the current node are collapsed, after pressing again the parent node is focused and so on; when pressing "Right" the current node expands.

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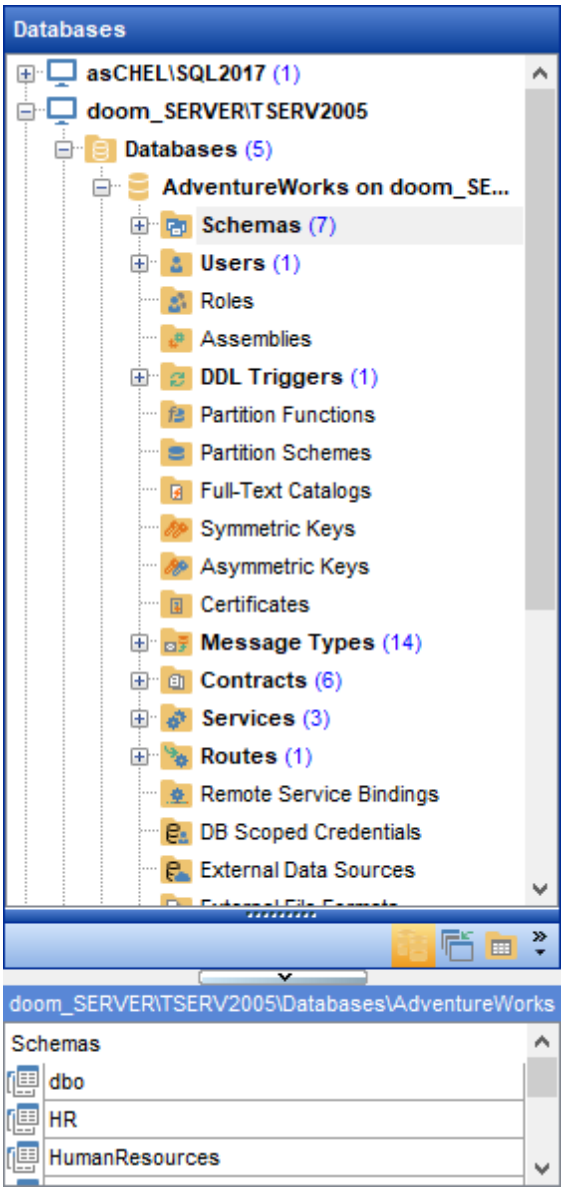
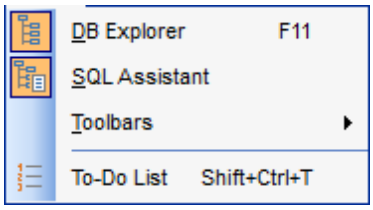


To view/hide the Database Explorer window, use the **View | DB Explorer** main menu 951 item or press the **F11** key.



Use the *Ctrl+Shift+C* shortcut 986 to collapse current **DB Explorer** tree branch and switch to the parent node.

Note that you can change host and database aliases order by dragging them within the

DB Explorer tree.

See also:

Getting Started 42
Database Management 96
Database Objects Management 182
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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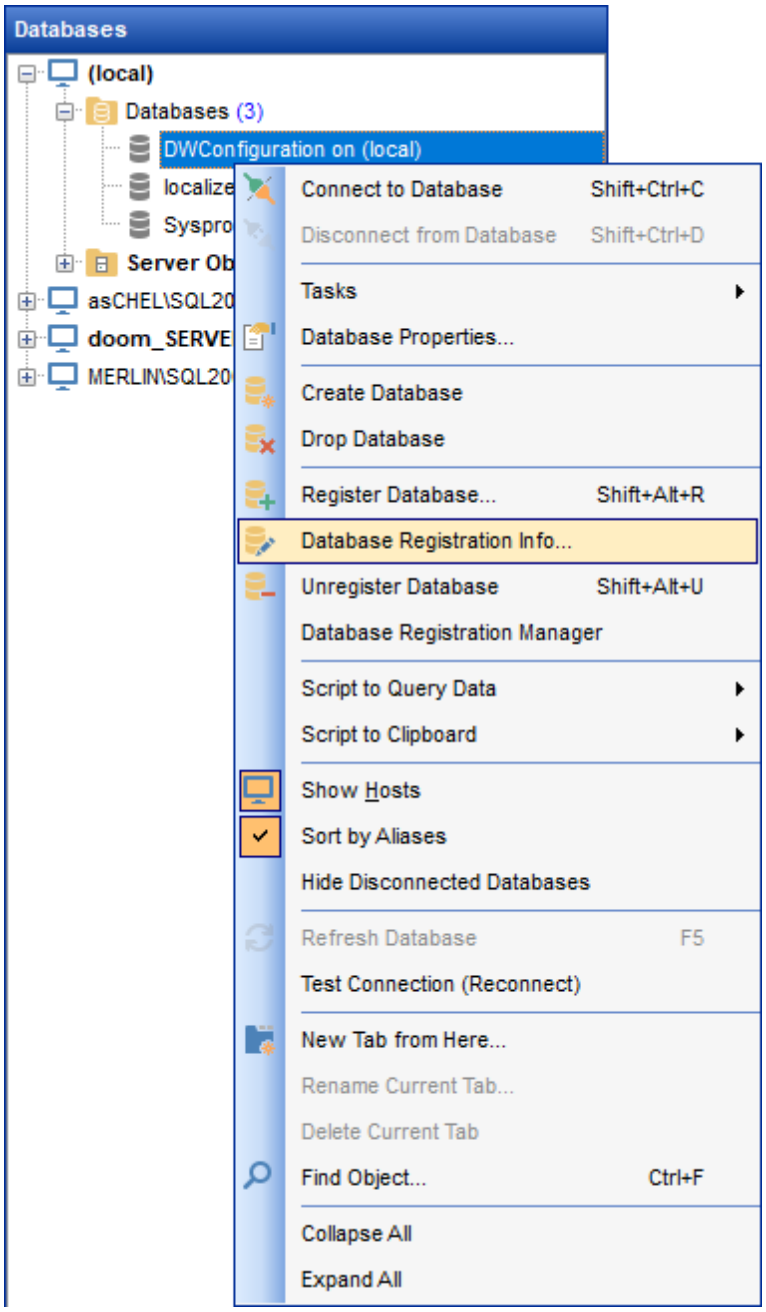
3.1 Managing database registration info

After you have created and/or registered your database in SQL Manager for SQL Server, you can perform a number of operations with the database using the context menu 55.

If you need to view/edit the registration information of a database, right-click the database alias in DB Explorer and select the **Database Registration Info...** context menu item to open the Database Registration Info 120 dialog.



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See also:

Register Database 114
Database Registration Info 120
Database Properties 137

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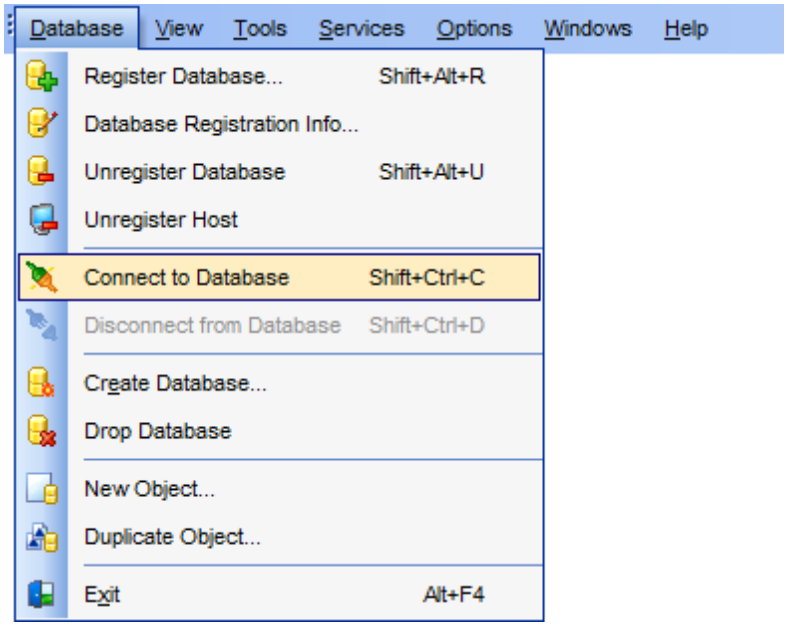
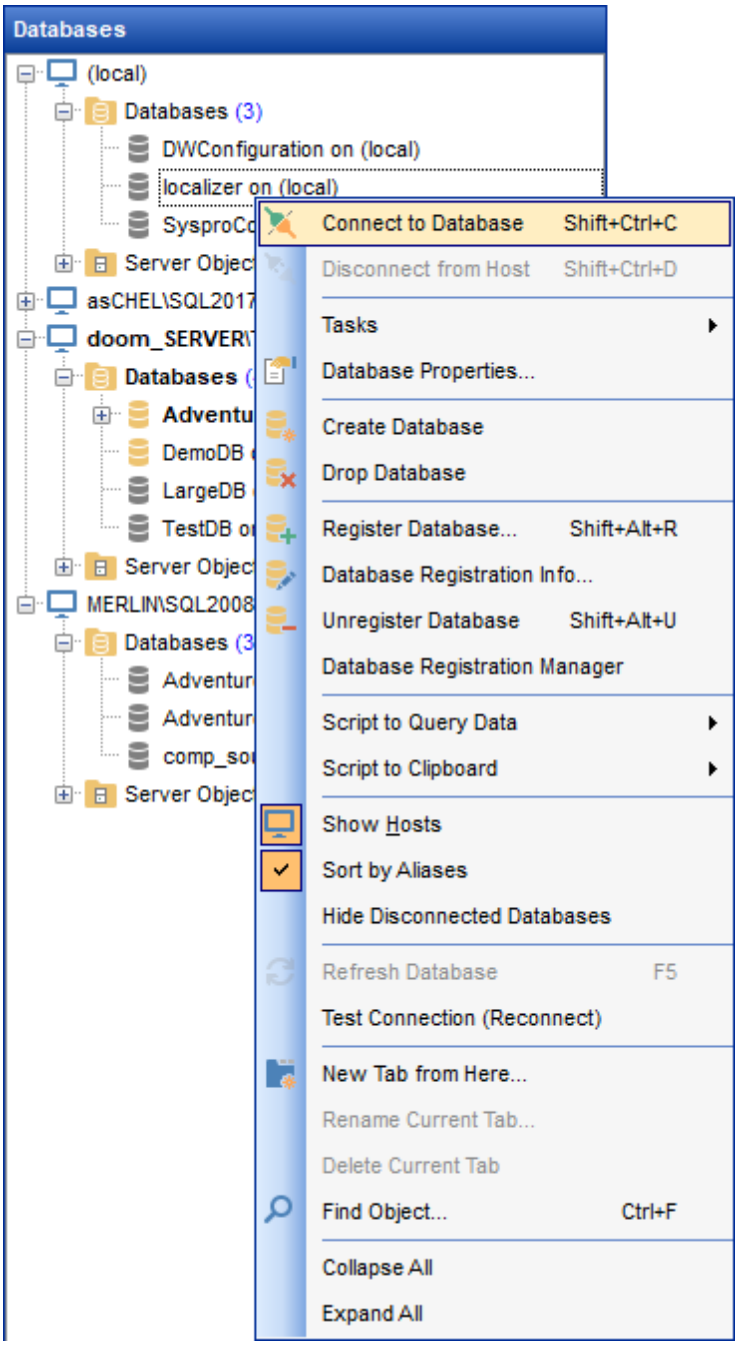
3.2 Connecting to databases

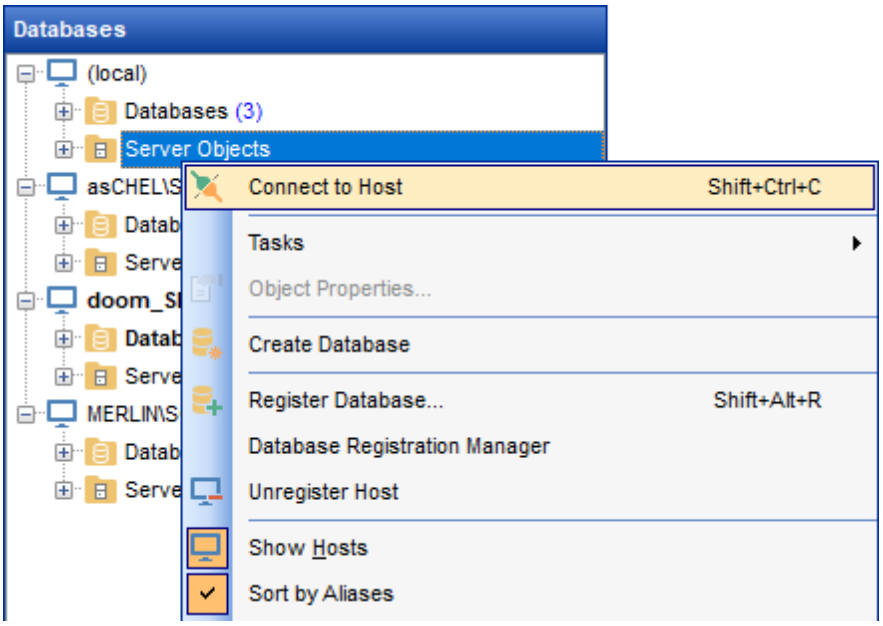
When the database registration 114 is complete, you can establish connection to your database.



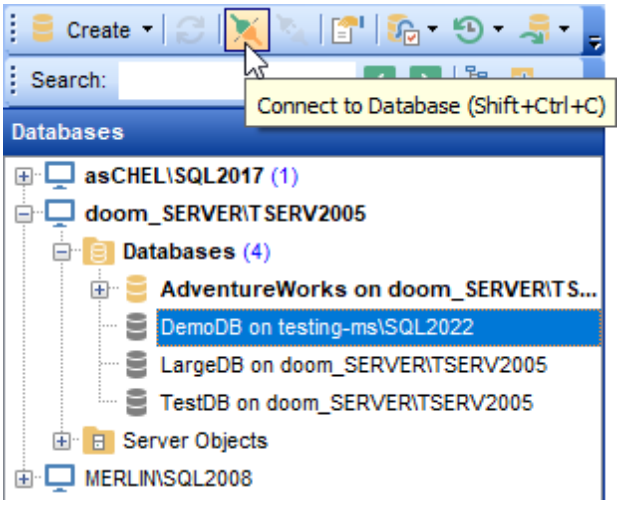
The simplest way to connect to a database is to double-click its alias in the Database Explorer 65 tree. The same operation can be performed by selecting the **Connect to Database** item of the database alias context menu 55, or by using the **Database | Connect to Database** main menu 951 item.



Before working with server-scoped objects and services, a host connection must be established by selecting the **Connect to Host** item of the **Server Objects** node context menu, or by using the **Database | Connect to Host** main menu 951 item.



Alternatively, you can use the *Shift+Ctrl+C* shortcut 986 or the **Connect to Database** (**Connect to Host**) toolbar 89 buttons.



See also:

Register Database 114

Database Registration Info 120

3.3 Operations with database and server objects

Database Explorer allows you to perform various operations with database objects 182 and server objects 358.

To open an object in its editor, you can double-click the object in the **DB Explorer** tree.

You can also right-click an object within the **DB Explorer** tree and use its context menu 57 to perform a number of operations:

- create a new object (the **New <object>...** item);
- edit currently selected object (the **Edit <object_name>...** item);
- rename currently selected object (the **Rename <object_name>...** item);
- drop the selected object from the database (the **Drop <object_name>...** item);
- duplicate the selected object (the **Duplicate <object_name>...** item);
- add the DDL of the selected object to the AI Assistant context 730 (**AI Assistant | Add object DDL to chat**);
- define grants for the selected object (the **Grants for <object_name>...** item).

Note that the context menu contains object-specific items only when the object is currently selected in **DB Explorer**.

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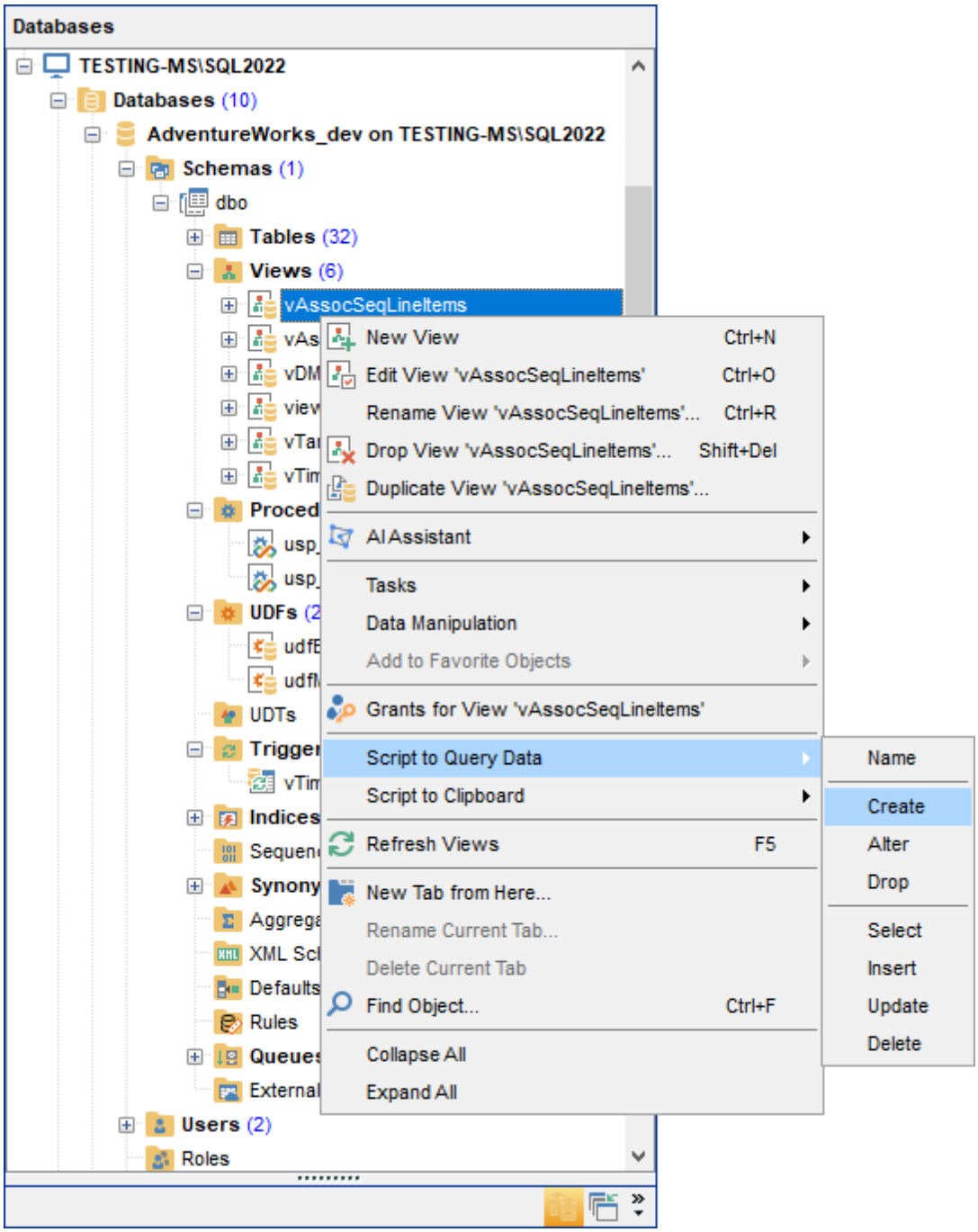
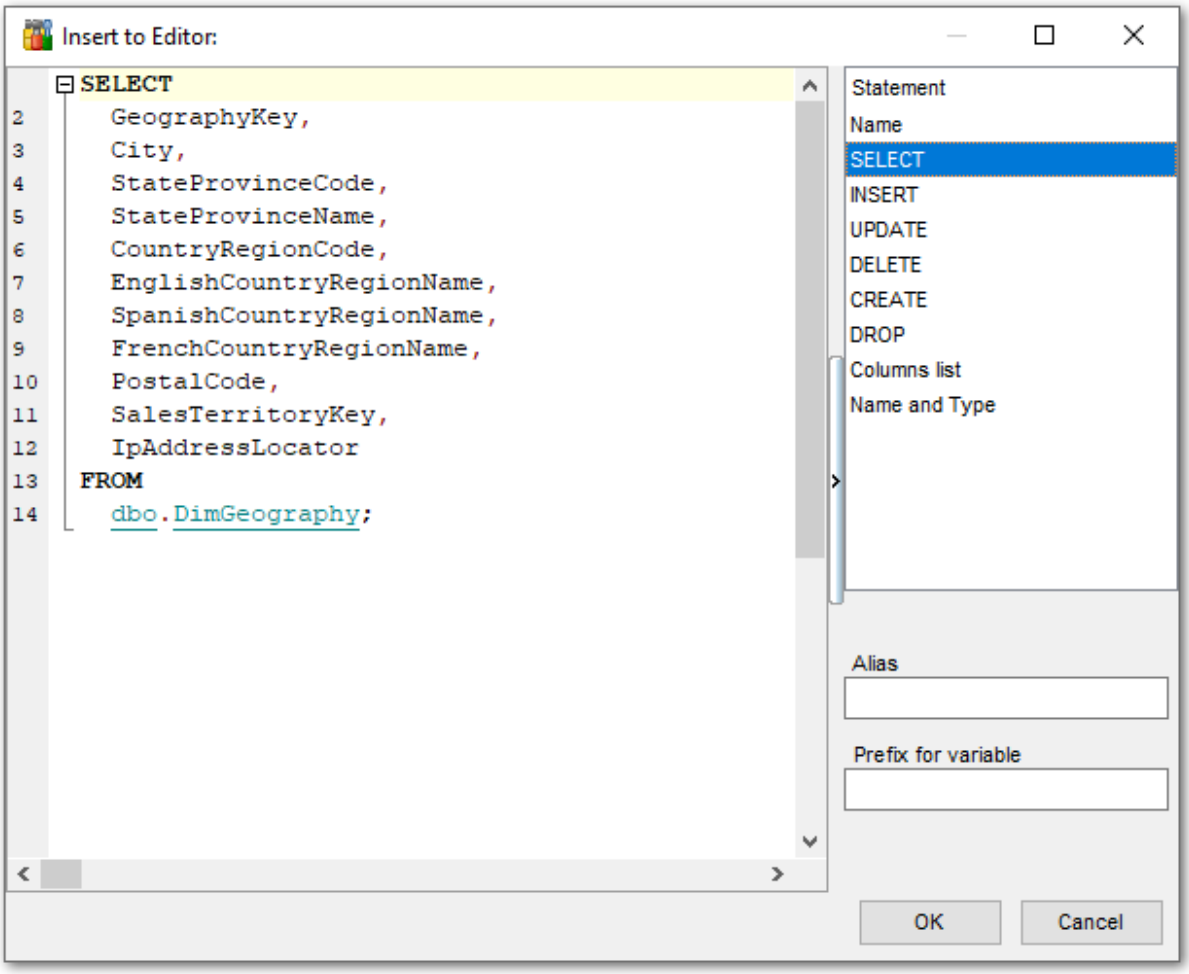


Using drag-and-drop operations you can add objects to Query Data 432, Design Query 448 or Execute Script 625 editor. For your convenience the **Insert to editor** dialog is implemented. The dialog allows you to specify the **statement** to be inserted into the editor: *Name*, *SELECT*, *INSERT*, *UPDATE*, *DELETE*, *CREATE*, *DROP*, Columns *list*, *Name and Type*. If necessary, set the **Alias** and **Prefix for variable**.

If more convenient, you can edit the generated statement manually (see Working with Query Data area 435).



See also:

Database and Server Objects Management 182
Query Data 432
Selecting multiple objects 76

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3.4 Selecting multiple objects

You can select more than one object in **Database Explorer** by pressing the *Ctrl* or the *Shift* key and selecting multiple objects one by one.

The **context menu** of several selected objects allows you to:

- create 182 a new database object of the same type;
- edit the selected objects;
- drop the selected objects;
- add the DDL of the selected objects to the AI Assistant context 730 (AI Assistant | Add object DDL to chat);
- perform other operations with the first of the selected objects (see Operations with database objects 73).

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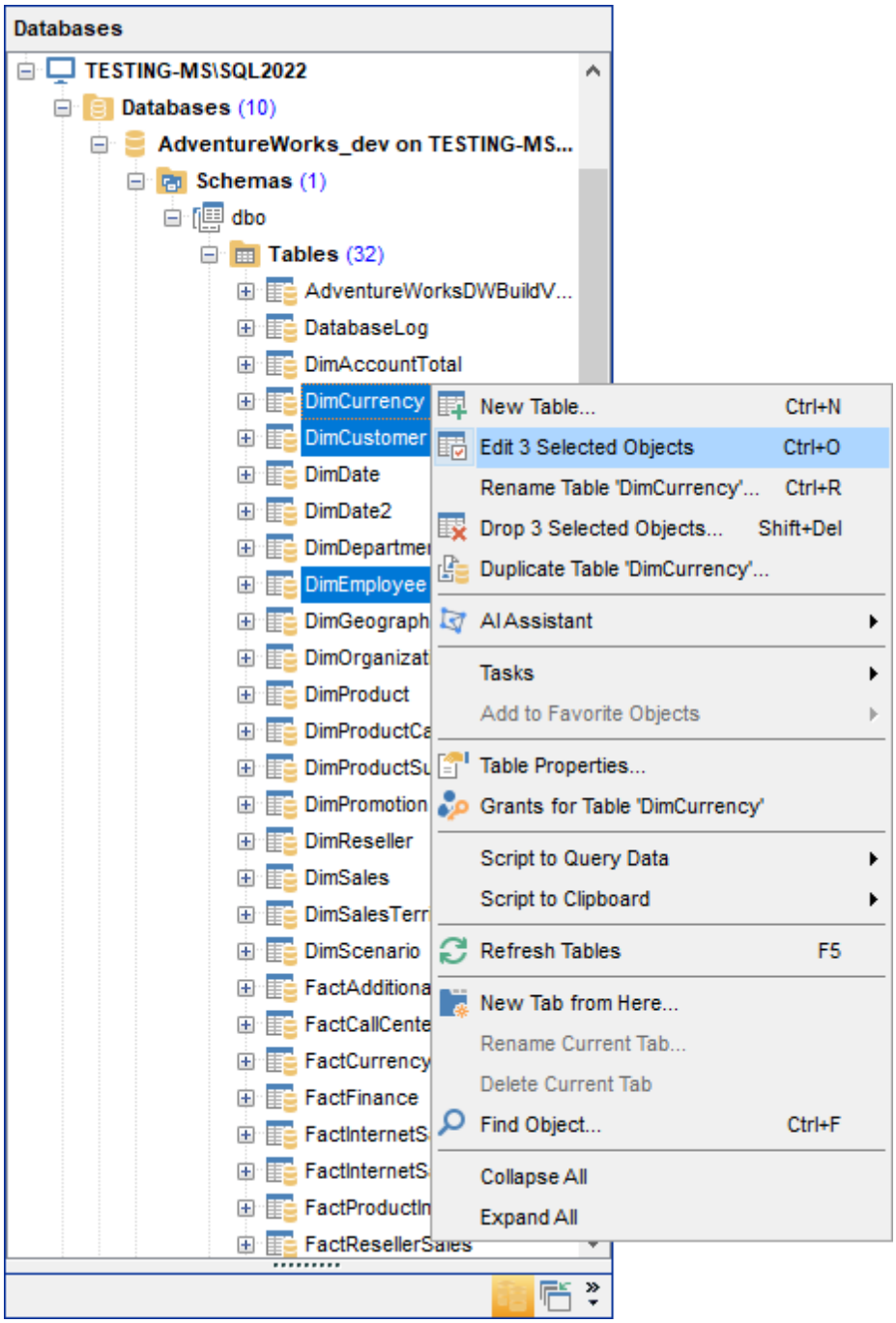

Hint: You can move several objects to your projects 83: just drag and drop the selected objects to the previously created subfolder within the **Projects** node of **DB Explorer**.

See also:

Operations with database and server objects 73

Database and Server Objects Management 182

Managing favorite objects 83

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3.5 Using tabs for database navigation

To make your work with **Database Explorer** even more convenient, the capability of **working with several tabs** is implemented.

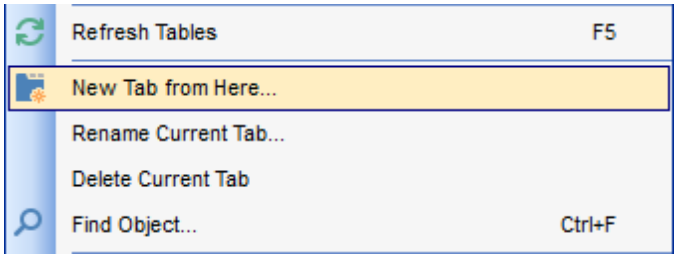
You can use tabs when you wish to work with a particular node of the DB Explorer tree only: with one specific schema, or with tables of some schema, or with a specific database project 83. Creating such tabs will minimize scrolling within large trees, you only need to switch between them with a single click on the corresponding tab.

Creating tabs

In order to create a new tab:

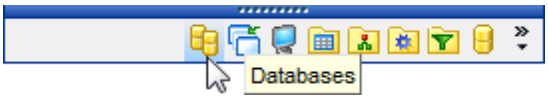
- right-click the node (e.g. the **Tables** node) for which you wish to create a tab and select the **New Tab from Here...** context menu item.

Note: A tab can be created only on the basis of a tree node. For example, if the **Show Table Subobjects** option is disabled in the View Mode 90 menu, the **New Tab from Here...** item will not be available for tables, since none of them will be a tree node anymore.

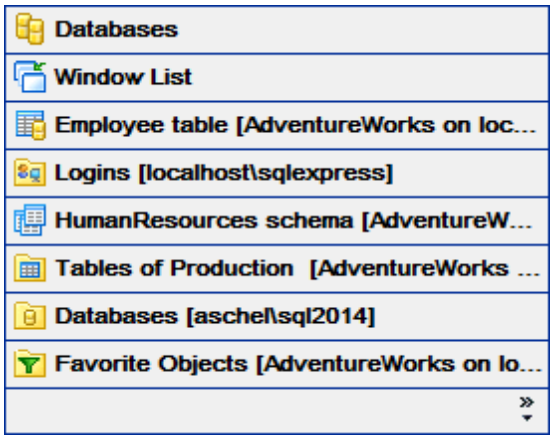


The specified tabs can be displayed in either of the two views:

- as *icons* on the lower pane of DB Explorer:



- as *tabs* with captions:



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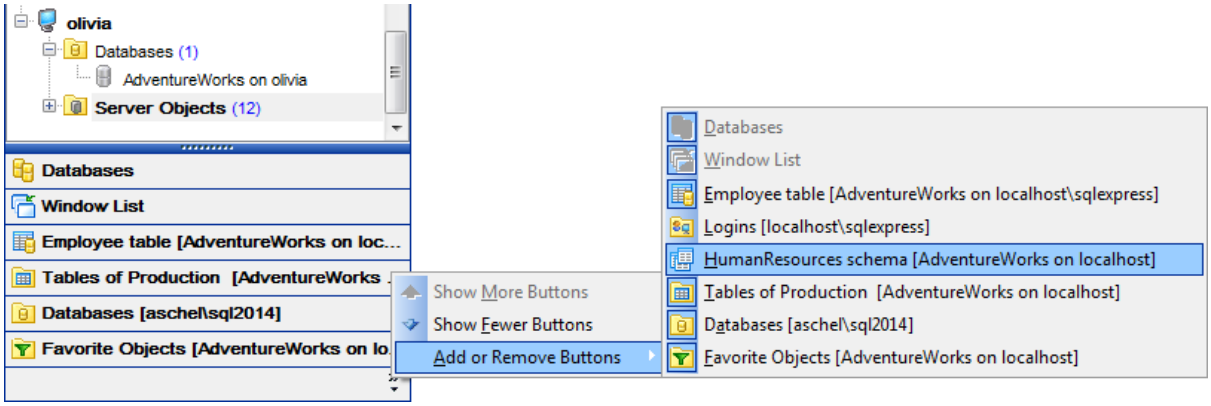
Hint: You can reorder items in the *tabs* view by dragging their captions up and down.

To add/remove items to/from the *tabs* view, you can drag the horizontal splitter 953 up/ down:

or click the **Configure buttons** icon available in the bottom right corner of the **DB Explorer** window, and select **Show More Buttons** / **Show Fewer Buttons** / **Add or Remove Buttons** items from the popup menu.



Note: Navigation through the tabs is also possible with the help of the following shortcuts 989:

- *Ctrl+Shift+N* - move to the next tab;
- *Ctrl+Shift+P* - move to the previous tab.

Renaming tabs

In order to rename a tab:

- switch to the tab by clicking its caption or icon (there can be only one active tab, and it is highlighted with a different color);
- right-click within the DB Explorer area and select the **Rename Current Tab...** context menu item.

Removing tabs

In order to remove a tab:

- switch to the tab by clicking its caption or icon (there can be only one active tab, and it is highlighted with a different color);
- right-click within the DB Explorer area and select the **Delete Current Tab** context menu item.

See also:

Managing favorite objects 83

Windows List 975

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Database and Server Objects Management 182

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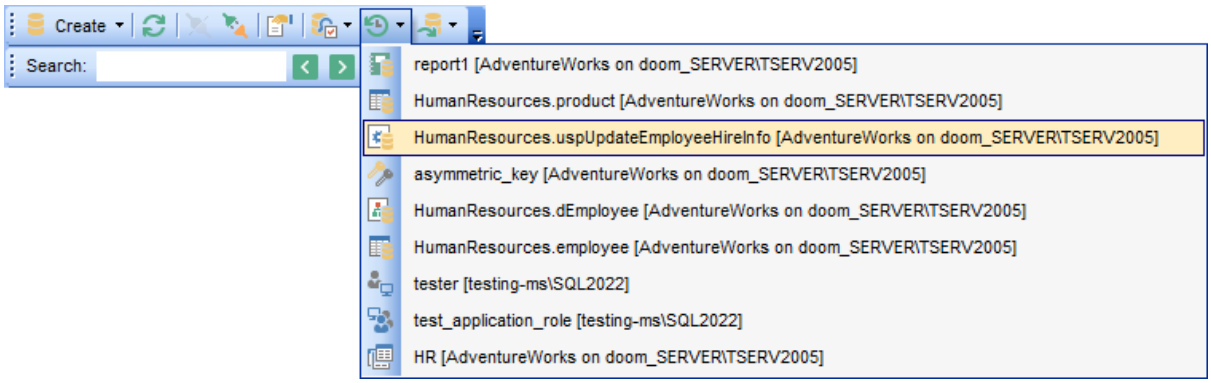
3.6 Recently opened objects

Use the **Recent Objects** button available on the DB Explorer toolbar 89 to access the list of recently opened database objects (during the current session).

This list is common for all registered databases. Next to the object name the database name and the host/address are displayed. Select an object from this list to open it using its editor.



To change the number of objects that are considered 'recent', select the **Options | Environment Options** main menu 951 item, proceed to the **Tools | DB Explorer** section within the **Environment Options** dialog, and set the **Recent objects count** option value (see Environment Options 854 for details).

See also:

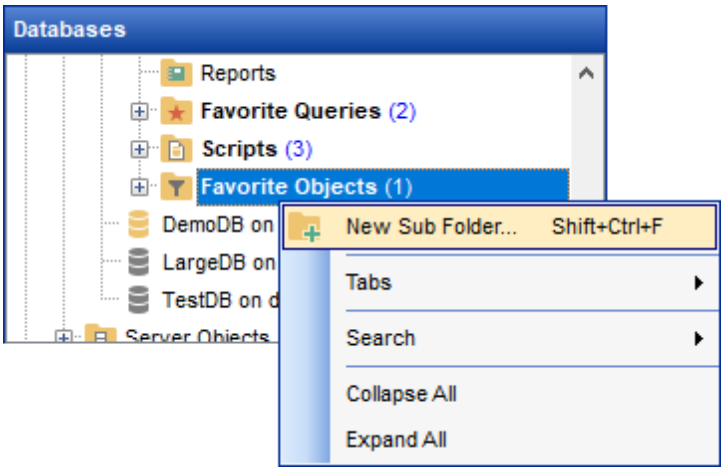
Database and Server Objects Management 182

Environment Options 854

3.7 Managing favorite objects

Use the **Favorite Objects** node for each database to work with the selected objects of this database only. You can place any object from the database tree here.

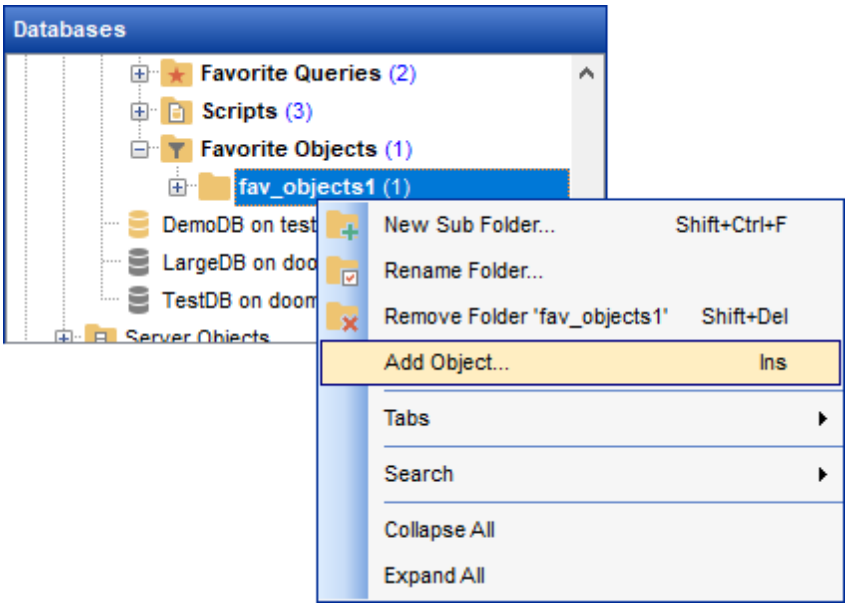
You can also create a separate tab for your favorite object folder. See Using tabs for database navigation 79 section for details.



Creating favorite objects folders

In order to create a new folder:

- create a folder (if necessary, you can create subfolders inside the favorite objects folder) by right-clicking the **Favorite Objects** node and selecting the **New Sub Folder...** context menu item;
- enter the folder name within the **New Folder** dialog.



Adding objects

In order to add a new object to the favorite objects folder:
- extent the **Favorite Objects** node in DB Explorer;
- drag an object (or multiple objects) from the database tree to the favorite objects folder

or
- right-click the favorite objects folder and select the **Add Object...** context menu item, or use the *Ins* key;
- use the Select Object 985 dialog to specify objects to be added to the favorite objects folder.

Removing objects from the favorite objects

In order to remove an object from the favorite objects:
- right-click the object and select the **Remove <object_name> from Favorite Objects** context menu item, or use the *Shift+Ctrl+Del* shortcut 986;
- confirm removing in the dialog window.

Note: This operation does not drop the object from the database, but only removes its alias from the favorite objects tree.

See also:

Using tabs for database navigation 79
Select Object dialog 985
Database and Server Objects Management 182

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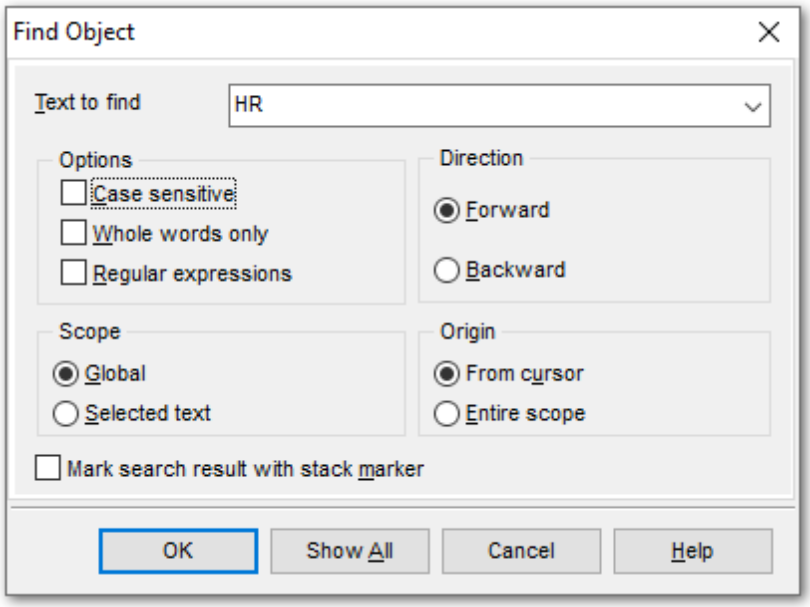
3.8 Searching within the tree

SQL Manager for SQL Server provides an ability to search for items within the **DB Explorer** tree. Searching for items may be useful if you have a lot of database objects, and it may be sometimes hard to find the one you need.

There are two search facilities implemented in SQL Manager for your convenience. You can search for objects within the **DB Explorer** tree in either of the following ways:

- using the **Find Object** dialog

To call the **Find Object** dialog, right-click the **Database** alias, any database object group nodes or objects in the **DB Explorer** tree and select the **Find Object...** context menu 54 item, or use the *Ctrl+F* shortcut 986.

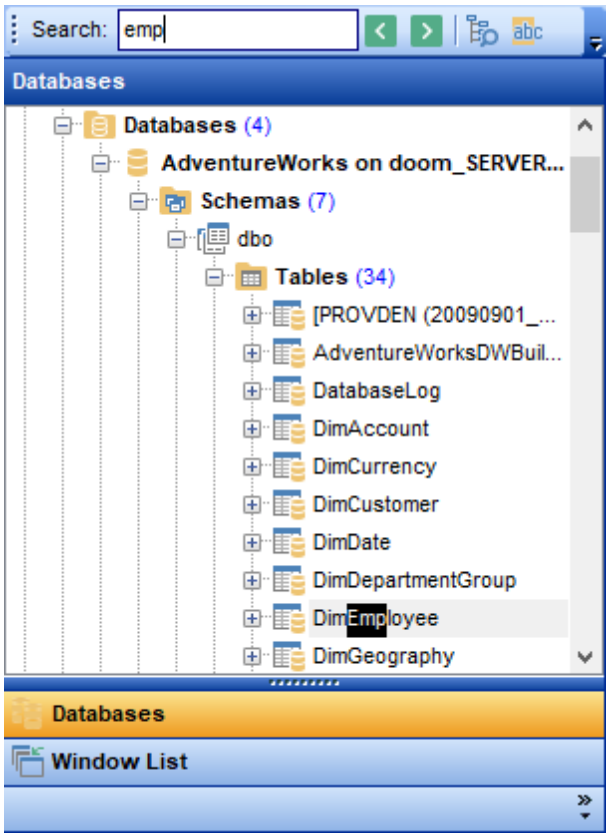


Available search options are similar to those provided by the **Find Text** dialog. For detailed description of the search options refer to the Find Text dialog 961 page.

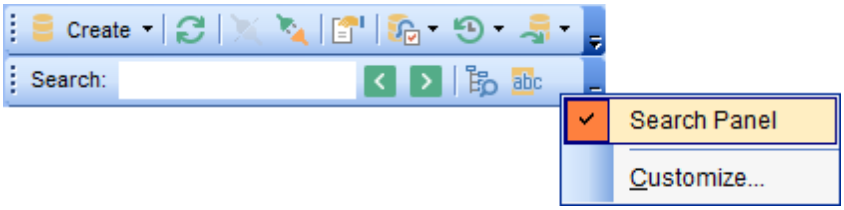
Note: You can specify whether the search will be performed within the entire tree or within the currently selected node only: toggle search mode using the **Search by categories** button on the Search Panel 89, or use the corresponding option available in the Tools | DB Explorer 868 section of the Environment Options 854 dialog.

- using the **Search Panel**

Type in the first letters in the edit-box, and the corresponding object will be highlighted in the tree, as displayed in the picture below. The buttons allow you to define the search direction.



By default, the **Search Panel** is activated in the upper area of DB Explorer. To disable the panel, right-click within the panel and deselect the checkbox at the corresponding popup menu item.



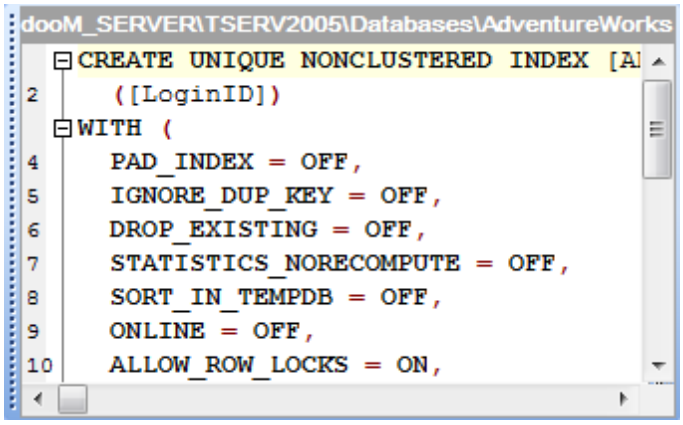
Hint: The **Search Panel** is dockable, i.e. you can drag it to any location within the **DB Explorer** form.

See also:

Find Text dialog 961

3.9 SQL Assistant

SQL Assistant which is located at the bottom of the **Database Explorer** window helps you to work with your database objects 182. Depending on the current selection in DB Explorer, the SQL Assistant area displays additional information pertaining to the selected object.



If you select a **host** in DB Explorer, SQL Assistant displays the list of registered *databases* that reside on this host.

If you select a **database** in DB Explorer, SQL Assistant displays the list of the database *object groups* and *the number of objects* in each group.

If you select a **schema** in DB Explorer, SQL Assistant displays the schema *definition* (by default).

Selecting an **object group** in DB Explorer displays the list of the *objects* in SQL Assistant. Double-clicking the object name in **SQL Assistant** makes the object available for editing in the appropriate editor. The context menu of the object or group of objects (selected with the *Ctrl* or *Shift* keys pressed) allows you to edit or drop the selected objects.

If you select a **table** or a **view** in DB Explorer, SQL Assistant displays the list of the table subobjects (e.g. columns and their *types*) by default. What is displayed in **SQL Assistant** when a table or a view is selected in DB Explorer depends on the **Table Details** / **View Details** selection. Click the **View Mode** toolbar 90 button and select the **Table Details | Show...** (or **View Details | Show...**) drop-down menu item, or use the context menu of SQL Assistant. Possible values are: *Show Columns*, *Show Foreign Keys*, *Show Checks*, *Show Indexes*, *Show Triggers*, *Show Table Info*, *Show DDL*, *Show Description* (for **tables**); *Show Columns*, *Show Indexes*, *Show Triggers*, *Show DDL*, *Show Description* (for **views**).

If you select a **procedure** or a **user-defined function** in DB Explorer, SQL Assistant lists its parameters by default. Use the **Procedure and UDF Details | Show...** context menu item within the SQL Assistant area to define the content of SQL Assistant when a procedure or a user-defined function is selected in DB Explorer. Possible values are: *Show Parameters*, *Show DDL*, *Show Description*.

Selecting other objects in **DB Explorer** displays the definition in **SQL Assistant** by

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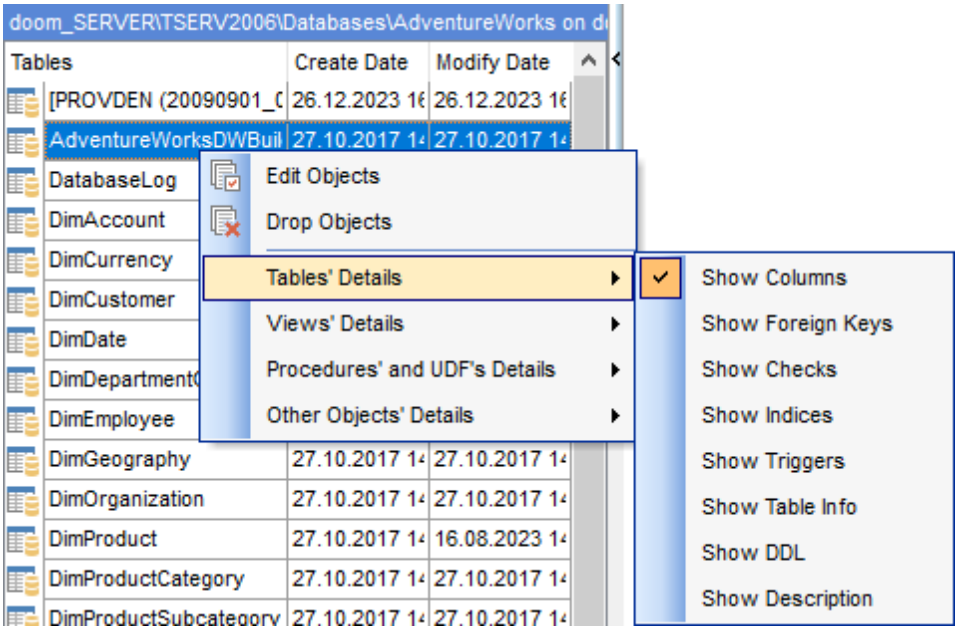
default. Use the **Other Objects' Details | Show...** context menu item within the SQL Assistant area to define the content of SQL Assistant when an object is selected in DB Explorer. Possible values are: *Show DDL*, *Show Description*.



You can also use **SQL Assistant** to work with your queries 430 quickly. You can drag-and-drop object aliases to the Query Data 432, Design Query 448 or Execute Script 625 editor working area, in the same way as this operation 73 is performed in **Database Explorer**.

See also:

Database and Server Objects Management 182

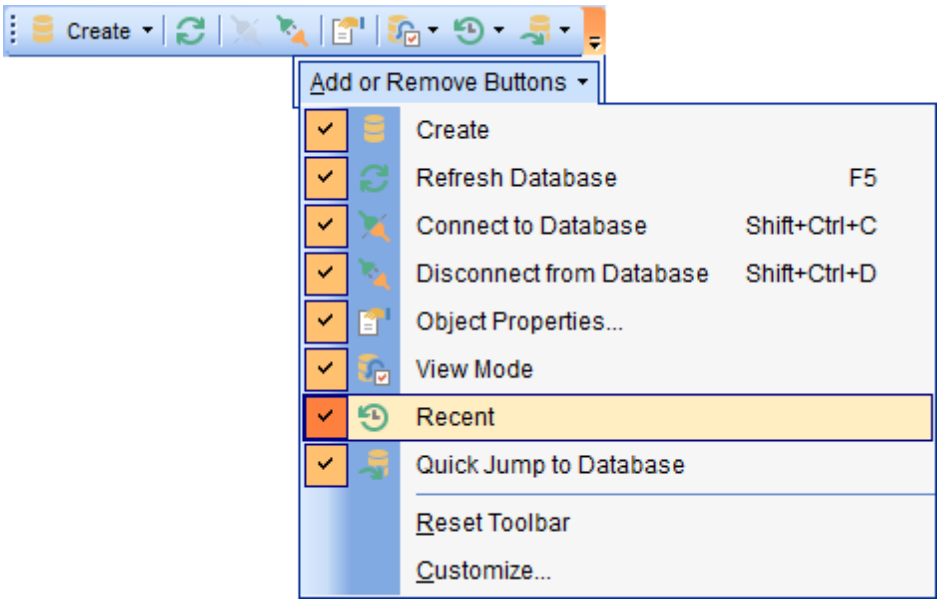
3.10 Configuring Database Explorer

Configuring DB Explorer toolbar

The toolbar 953 of Database Explorer contains most frequently used tools for working with databases and database objects, and a tool for configuring DB Explorer. The following actions are available in the toolbar by default:

- create 182 a new object;
- refresh the current tree branch;
- connect 70 to a database;
- disconnect 97 from a database;
- view the selected object properties;
- configure Database Explorer using the View Mode 90 menu;
- view the list of recently opened objects 82;
- jump to any of registered databases quickly.

Click **More buttons...** on the right side of the toolbar and use the **Add or Remove Buttons** popup menu items to define the set of actions available in the toolbar. To customize 976 the toolbar, select the **Add or Remove Buttons | Customize...** item from the popup menu.



Configuring the Search Panel

Click **More buttons...** on the right side of the Search Panel 85 and use the **Add or Remove Buttons** popup menu items to define the set of the panel elements. To customize 976 the panel, select the **Add or Remove Buttons | Customize...** item from the popup menu.

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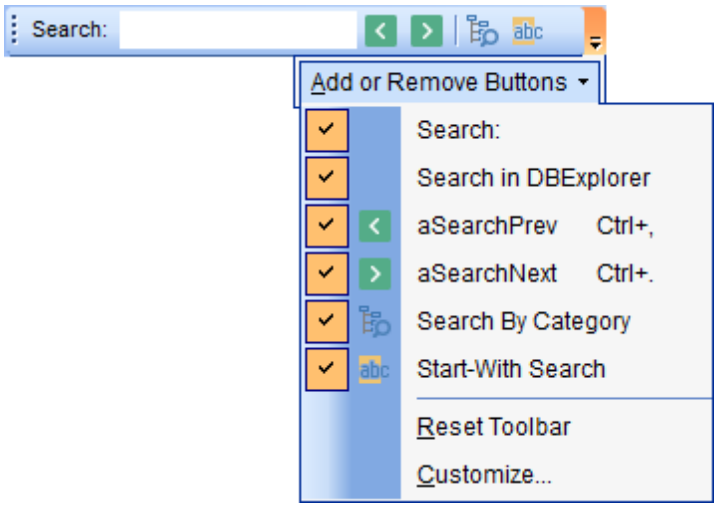
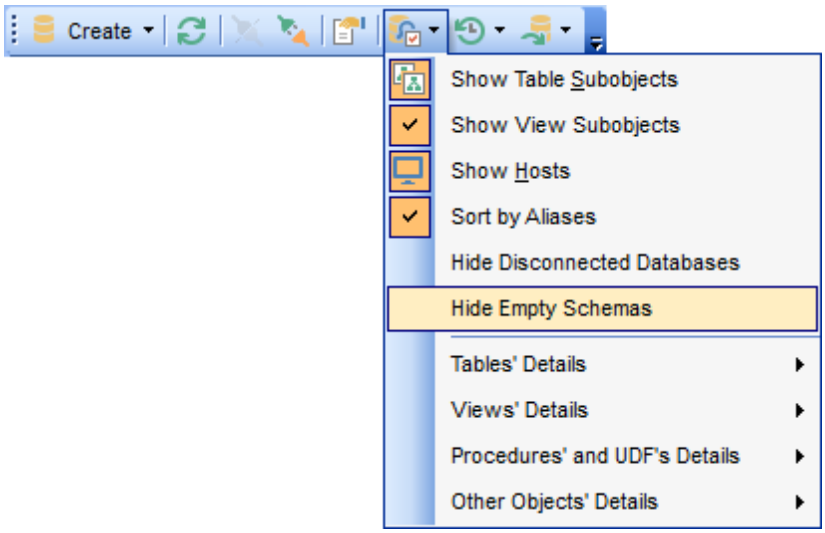


Using View Mode menu

Use the **View Mode** toolbar[89] button to configure **Database Explorer** according to your needs.

The drop-down menu called upon clicking this button allows you to:

- show/hide table subobjects as child nodes of tables[196];
- show/hide view subobjects as child nodes of views[250];
- show/hide host nodes for registered databases[114];
- sort the list of databases by their aliases in the DB Explorer tree;
- show/hide disconnected databases[70];
- show/hide empty schemas[193];
- configure table/view/procedure/UDF/other objects' details for the SQL Assistant[87] area.



Use the DB Explorer[868] section of the Environment Options[854] dialog (**Options | Environment Options...**) to see more options to configure **Database Explorer**.

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See also:

Customize toolbars and menus 976
DB Explorer options 868

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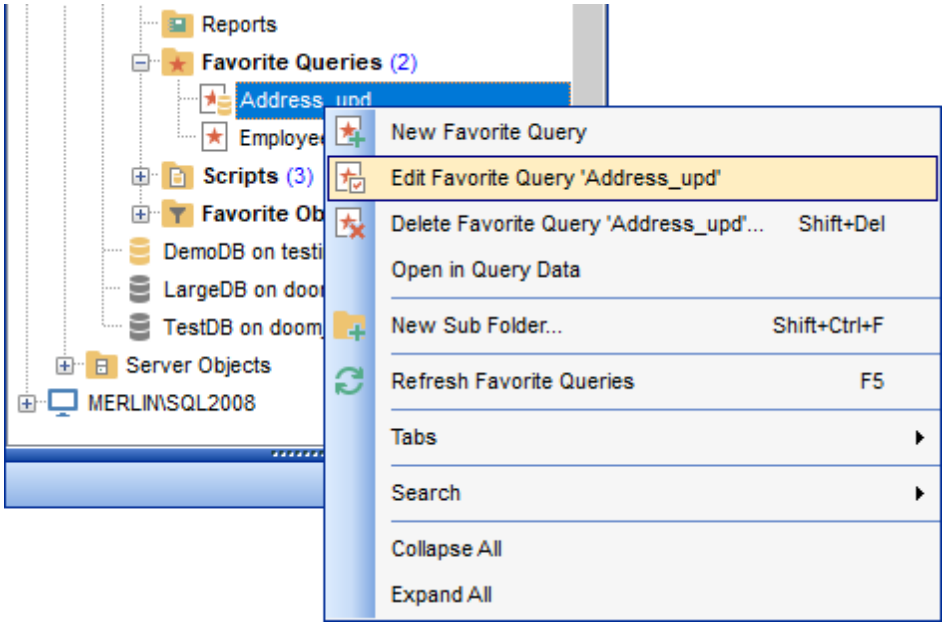
3.11 Managing Favorite queries

Favorite Queries is a new feature of SQL Manager. Now you are provided with an opportunity to save the most frequently used SQL queries as Favorite Queries.

Use the **Favorite Queries** node of DB Explorer to access the list of your Favorite queries quickly. Queries stored in the database and those stored in Windows registry can be easily distinguished by their icons.

Using the context menu you can create a new Favorite query or edit an existing one using Favorites editor 445, open any of the existing queries in Query Data 432 or remove a query if you don't need it any longer.



You can also create a separate tab for your Favorite queries. See Using tabs for database navigation 79 section for details.

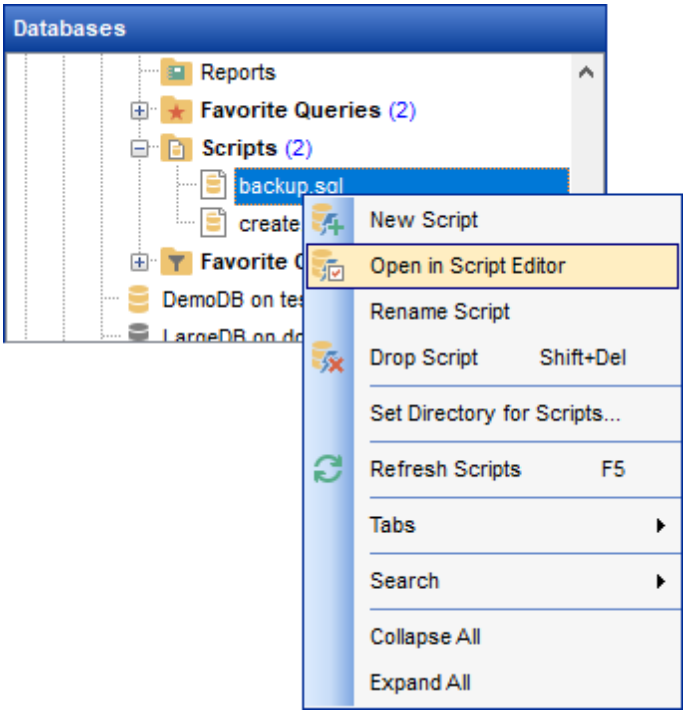
See also:

Using tabs for database navigation 79

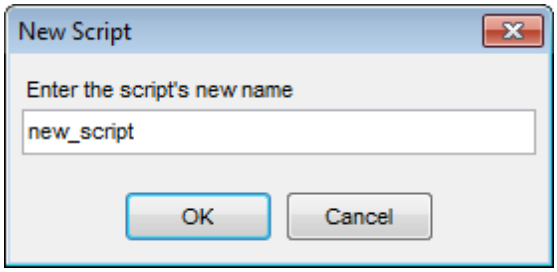
Favorites editor 445

3.12 Managing scripts

Script 625 files stored locally on the server can be easily accessed from the DB Explorer 65 within the **Scripts** branch.



To create new script right-click the appropriate branch in the DB Explorer tree and select the **New Script** item. You will be asked for the script name. When the name is assigned the script appears in the DB Explorer tree and the Execute Script 625 editor is opened.



If a script is created in Execute Script editor and saved to the default folder 125, it will appear in the DB Explorer tree automatically.

It is also possible to create subfolders in the **Scripts** branch by selecting the **New script folder** context menu item. Folders created there are created physically as subfolders to the folder assigned as default for local scripts in the **DB Registration info** | **Directories**.

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To change directory where local scripts to be stored use the **Select Directory** item of the **Scripts** context menu, or use the respective column of the **DB Registration info** | **Directories** dialog. If specified folder already contains scripts, these scripts will be added to the DBExplorer 65 tree.

Using the context menu of a script you can:

- open the script in the Execute Script 625 editor,
  rename the script,
- drop the script.

See also:

Execute Script 625
Database Explorer 65
Database Registration Info 120

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Part IV

4 Database Management

SQL Manager for SQL Server provides a number of tools you may need to manage your SQL Server databases.
Find the list of common database management operations for working in SQL Manager below.

Unregistering Hosts

In order to unregister a host in SQL Manager for SQL Server:
- select the host to unregister in the DB Explorer 65 tree;
- select the **Database | Unregister Host** main menu 951 item or use the corresponding **Unregister Host** toolbar 953 button

or
- right-click the host alias and select the **Unregister Host** context menu 54 item in the DB Explorer 65 tree;
- confirm unregistering in the corresponding dialog window.

Creating Databases

In order to create a database in SQL Manager for SQL Server:
- select the **Database | Create Database** main menu 951 item or use the corresponding **Create Database** toolbar 953 button;
- set all the necessary options using Create Database wizard 99 which guides you through the entire process of creating a new database.

Dropping Databases

In order to drop a database in SQL Manager for SQL Server:
- select the database to drop in the DB Explorer 65 tree;
- select the **Database | Drop Database** main menu 951 item;
- confirm dropping in the corresponding dialog window.

Registering Databases

In order to register a single database in SQL Manager for SQL Server:
- select the **Database | Register Database...** main menu 951 item or use the corresponding **Register Database** toolbar 953 button

or
- right-click any database alias and select the **Register Database...** context menu 55 item in the DB Explorer 65 tree;
- set all the necessary options using Register Database wizard 114 which guides you through the entire process of database registration.

Unregistering Databases

In order to unregister a database in SQL Manager for SQL Server:
- select the database to unregister in the DB Explorer 65 tree;
- select the **Database | Unregister Database** main menu 951 item or use the corresponding **Unregister Database** toolbar 953 button

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or
- right-click the database alias and select the **Unregister Database** context menu 55 item in the DB Explorer 65 tree;
- confirm unregistering in the corresponding dialog window.

Connecting to Databases

In order to connect to a database in SQL Manager for SQL Server:
- select the database to connect to in the DB Explorer 65 tree;
- select the **Database | Connect to Database** main menu 951 item or use the corresponding **Connect to Database** toolbar 89 button

or
- right-click the database alias and select the **Connect to Database** context menu 55 item in the DB Explorer 65 tree.

Disconnecting from Databases

In order to disconnect from a database in SQL Manager for SQL Server:
- select the database to disconnect from in the DB Explorer 65 tree;
- select the **Database | Disconnect from Database** main menu 951 item or use the corresponding **Disconnect from Database** toolbar 89 button

or
- right-click the database alias and select the **Disconnect from Database** context menu 55 item in the DB Explorer 65 tree.

Viewing and Editing Database Registration Info

In order to view/edit database registration info in SQL Manager for SQL Server:
- select the database or any of its objects in the DB Explorer 65 tree;
- select the **Database | Database Registration Info...** main menu 951 item

or
- right-click the database alias or any of its objects and select the **Database Registration Info...** context menu 55 item in the DB Explorer 65 tree.

Viewing and Editing Database Properties

In order to view/edit database properties in SQL Manager for SQL Server:
- select the database in the DB Explorer 65 tree;
- right-click the database alias and select the **Database Properties...** context menu 55 item or use the corresponding **Properties** toolbar 89 button.

Viewing and editing Server Properties

In order to view/edit server properties in SQL Manager for SQL Server:
- select the host or a database that resides on this host in the DB Explorer 65 tree;
- right-click the host or the database alias and select the **Server Properties** context menu 54 item.

See also:

Getting Started 42

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Database Explorer 65
Database Objects Management 182
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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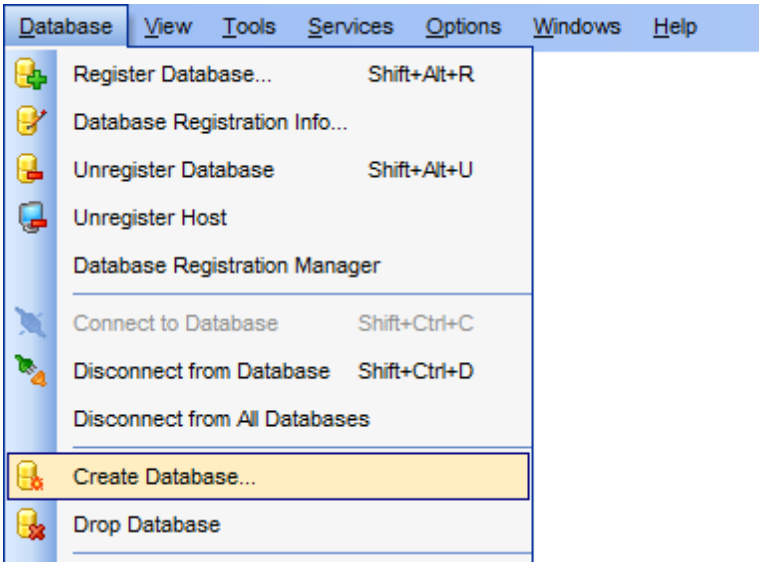
4.1 Create Database wizard

Create Database wizard allows you to create a new database on your SQL Server host.

To start the wizard, select the **Database | Create Database...** main menu 951 item, or use the **Create Database** button on the main toolbar 953.



- Setting database name 99
- Setting connection properties 100
- Defining database files 102
- Defining transaction log files 104
- Defining filestream files and filegroups 107
- Setting recovery model and collation 108
- Viewing result SQL statement 112

See also:

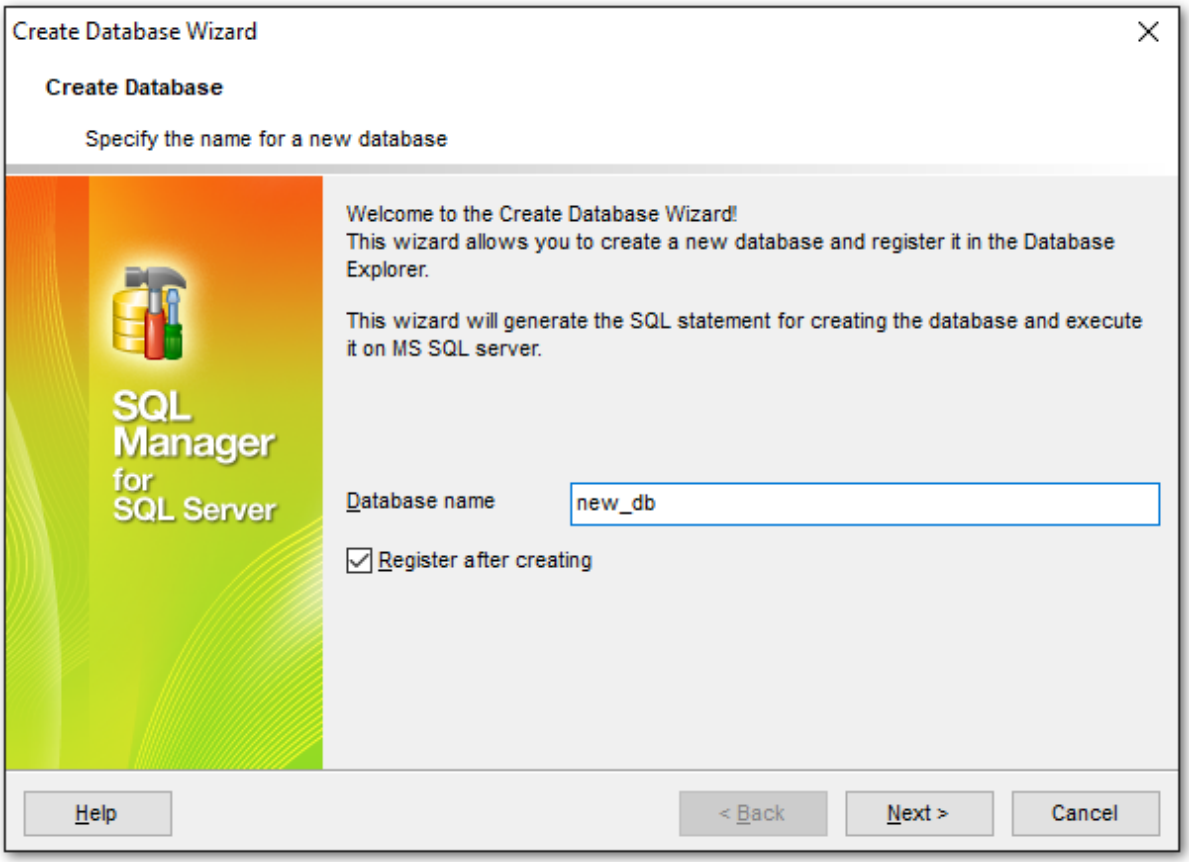
Register Database wizard 114

Database Registration Info 120

Database Properties 137

4.1.1 Setting database name

Use this step of the wizard to enter a **name** for the database being created.

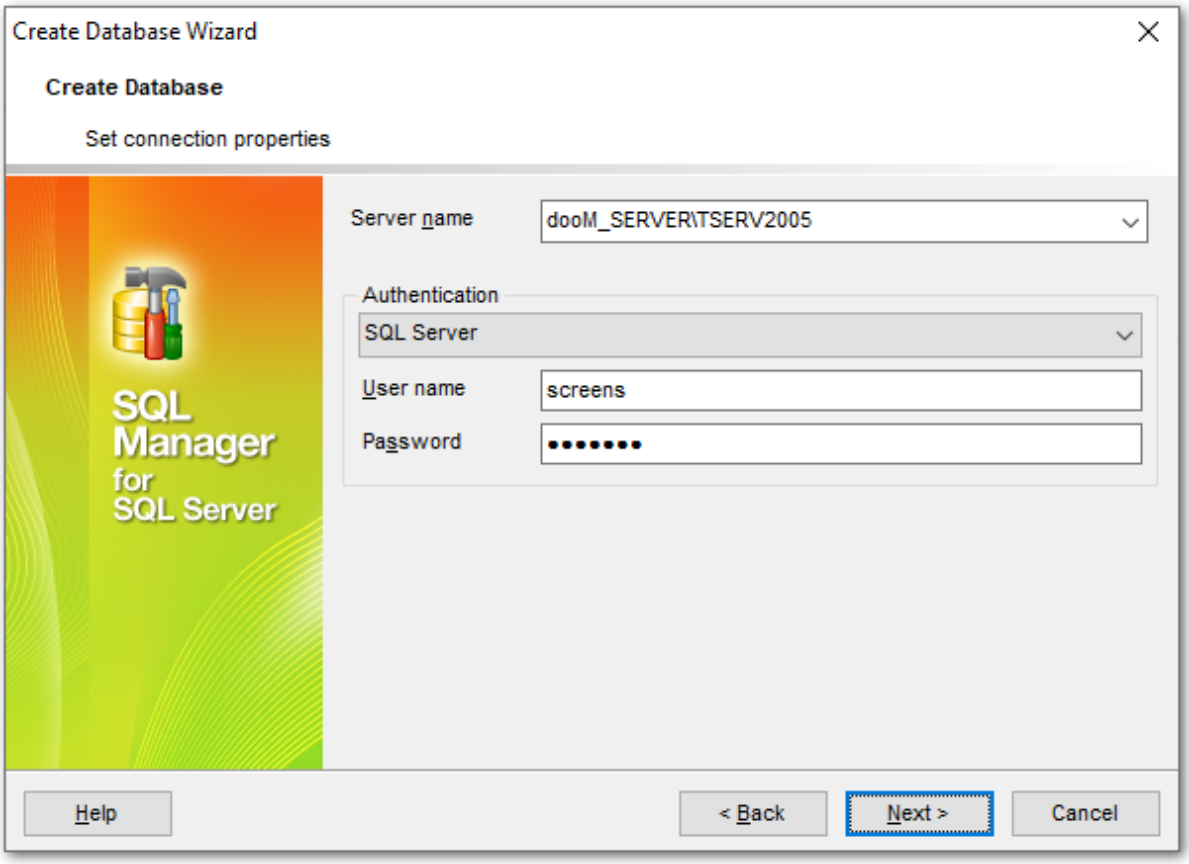


☑ **Register after creating**
Check this option to register[114] the newly created database in SQL Manager (the Database Registration Info[120] dialog will be opened after database creation).

Click the **Next** button to proceed to the Setting connection properties[100] step of the wizard.

4.1.2 Setting connection properties

Use this step of the wizard to set the necessary **connection parameters** for the database being created. Use the corresponding boxes and options: *Server name*, *Authentication*, *User name* and *Password*.



Specify the host where the database being created will reside: type in the host name in the **Server name** field or select one in the drop-down list.
Please note that if Microsoft® SQL Server™ is installed as a named instance, you should enter the name of your machine and the instance name in the **Server name** field in the following format: *computer_name\sqlserver_instance_name* (e.g. "*MYCOMPUTER\SQLEXPRESS*").

Authentication type
Specify the type of authentication to set up connection to the server.

Windows
With this option SQL Server validates the account name and password using the Windows principal token in the operating system and, and doesn't perform the identity validation.

SQL Server
Select this type if you wish to use SQL Server Authentication for the login. SQL Server Authentication stores logins and passwords in SQL Server and does not depend upon Windows. You can select SQL Server Authentication only if SQL Server Authentication has been enabled on the server.

Microsoft Intra MFA
Uses the standard interactive method with multifactor authentication option for Microsoft Entra accounts.

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Microsoft Intra password
Allows specifying the username and password to the client and driver.

User name
Specify user name for selected authentication type.

Password
Input a password.

Click the **Next** button to proceed to the Defining database files 102 step of the wizard.

4.1.3 SQL Server Database

4.1.3.1 Defining database files

This step of the wizard allows you to define **database files** for the new database.

Here you can specify that the disk files used to store the data portions of the database (data files) are defined explicitly, and fill the list of file items defining the data files for the primary file group.

To add a data file, right-click in the main working area and select the **Add File** popup menu item.
To remove a data file, right-click the file in the list and select the **Delete File** popup menu item.

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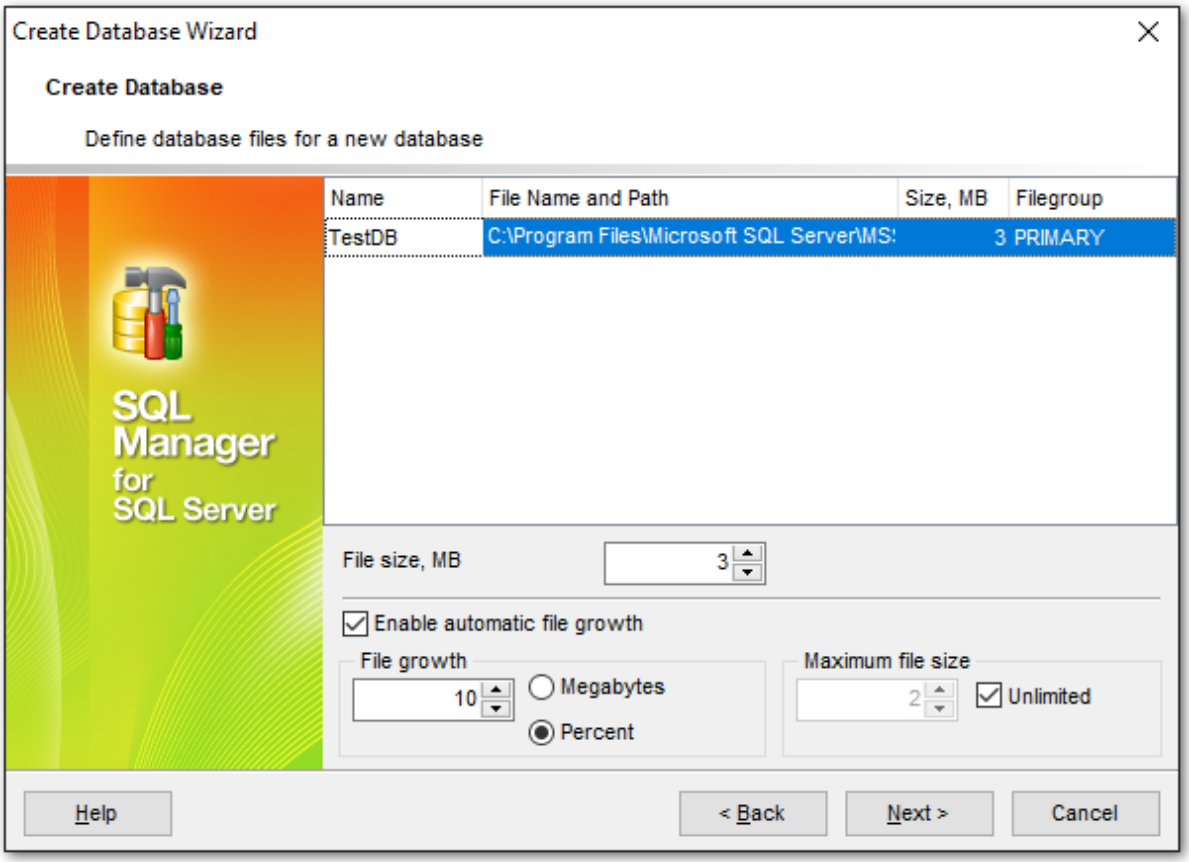

The **Name** is a logical name used to refer to the physical file in all Transact-SQL statements. The logical file name must conform to the rules for SQL Server identifiers and must be unique within the database.

The **File Name and Path** is the name of the physical file including the directory path. The path must follow the rules for operating system file names.

File Group
The *Primary* file group contains the primary data file and any other files not specifically assigned to another file group. All pages for the system tables are allocated in the primary file group. *User-defined* file groups are any other file groups specified by the user.
Note: You can manage file groups for an existing database using the Filegroups 157 section of the Database Properties 137 dialog.

File size
Use the spinner control to specify the original size of the selected database file (in megabytes).

SQL Server 2005 (and higher) database files can grow automatically from their originally specified size. When you define a file, you can specify a **file growth** increment (in *megabytes* or in *percent*). Each time the file fills, it increases its size by the growth increment. If there are multiple files in a file group, they do not autogrow until all the files are full. Growth then occurs using a round-robin algorithm.

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Each file can also have **maximum file size** specified. If ☑ **Unlimited** is specified, the file can continue to grow until it has used all available space on the disk.

Note: After the database is created, you can manage database files using the Data files 152 section of the Database Properties 137 dialog.

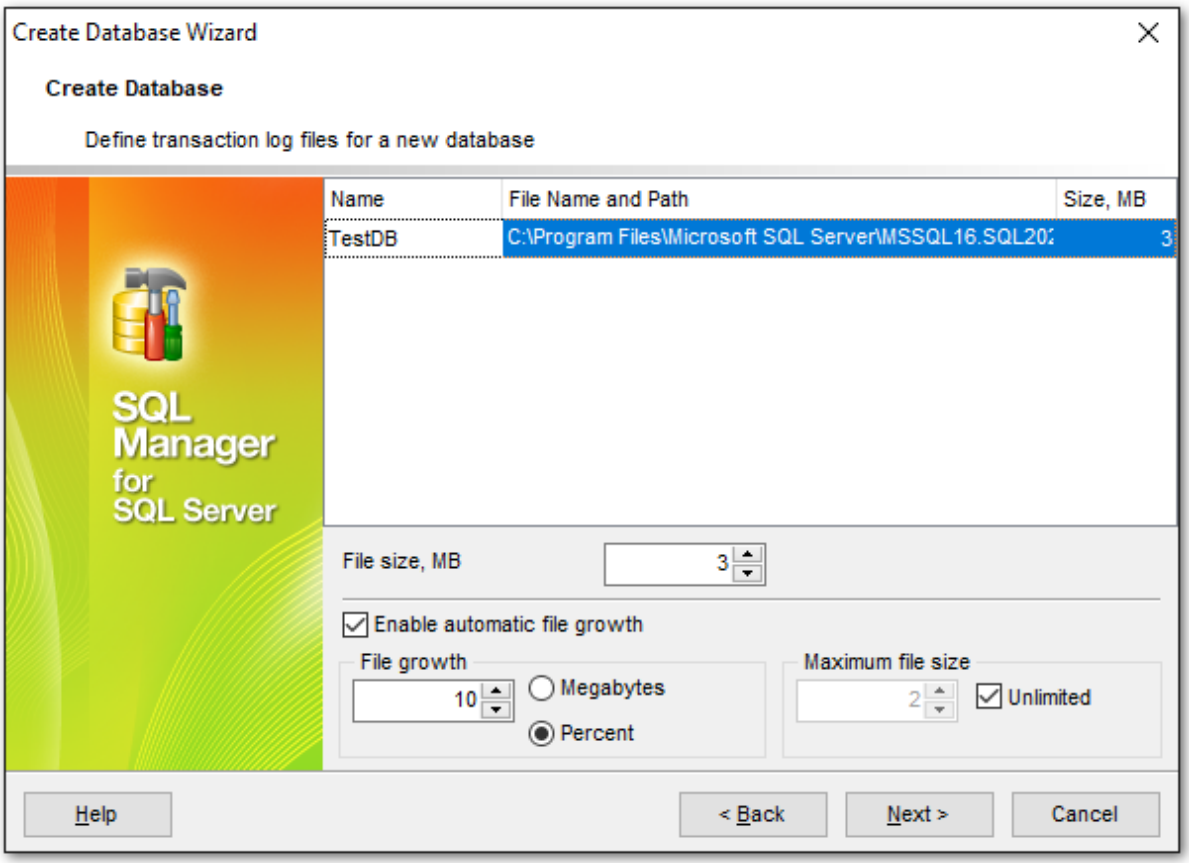
Click the **Next** button to proceed to the Defining transaction log files 104 step of the wizard.

4.1.3.2 Defining transaction log files

This step of the wizard allows you to define **transaction log files** for the new database.

Log files hold all of the log information used to recover the database. There must be at least one log file for each database, although there can be more than one. The recommended file name extension for log files is **.ldf*.

To add a log file, right-click in the main working area and select the **Add File** popup menu item.
To remove a log file, right-click the file in the list and select the **Delete File** popup menu item.



The **Name** is a logical name used to refer to the physical file in all Transact-SQL statements. The logical file name must conform to the rules for SQL Server identifiers and must be unique within the database.

The **File Name and Path** is the name of the physical file including the directory path. The path must follow the rules for operating system file names.

File size
Use the spinner control to specify the original size of the selected transaction log file (in megabytes).

SQL Server 2005 (and higher) transaction log files can grow automatically from their originally specified size. When you define a file, you can specify a **file growth** increment. Each time the file fills, it increases its size by the growth increment. If there are multiple files in a file group, they do not autogrow until all the files are full. Growth then occurs using a round-robin algorithm.

Each file can also have **maximum file size** specified. If ☑ **Unlimited** is specified, the file can continue to grow until it has used all available space on the disk.

Note: After the database is created, you can manage transaction log files using the Log files 154 section of the Database Properties 137 dialog.

Click the **Next** button to proceed to the Defining filestream files and filegroups 107 step (for SQL Server 2008) or to the Setting recovery model and collation 108 step of the wizard.

4.1.3.3 Defining files for memory-optimized data

This step of the wizard allows you to define filegroup and files for memory-optimized data tables of the new database.

Note: This step is available for SQL Server 2014.

Creating a memory-optimized filegroup is necessary for creating memory-optimized tables. The memory-optimized filegroup holds one or more containers.
Use the **Memory-optimized data files** grid to add containers to the memory-optimized filegroup.

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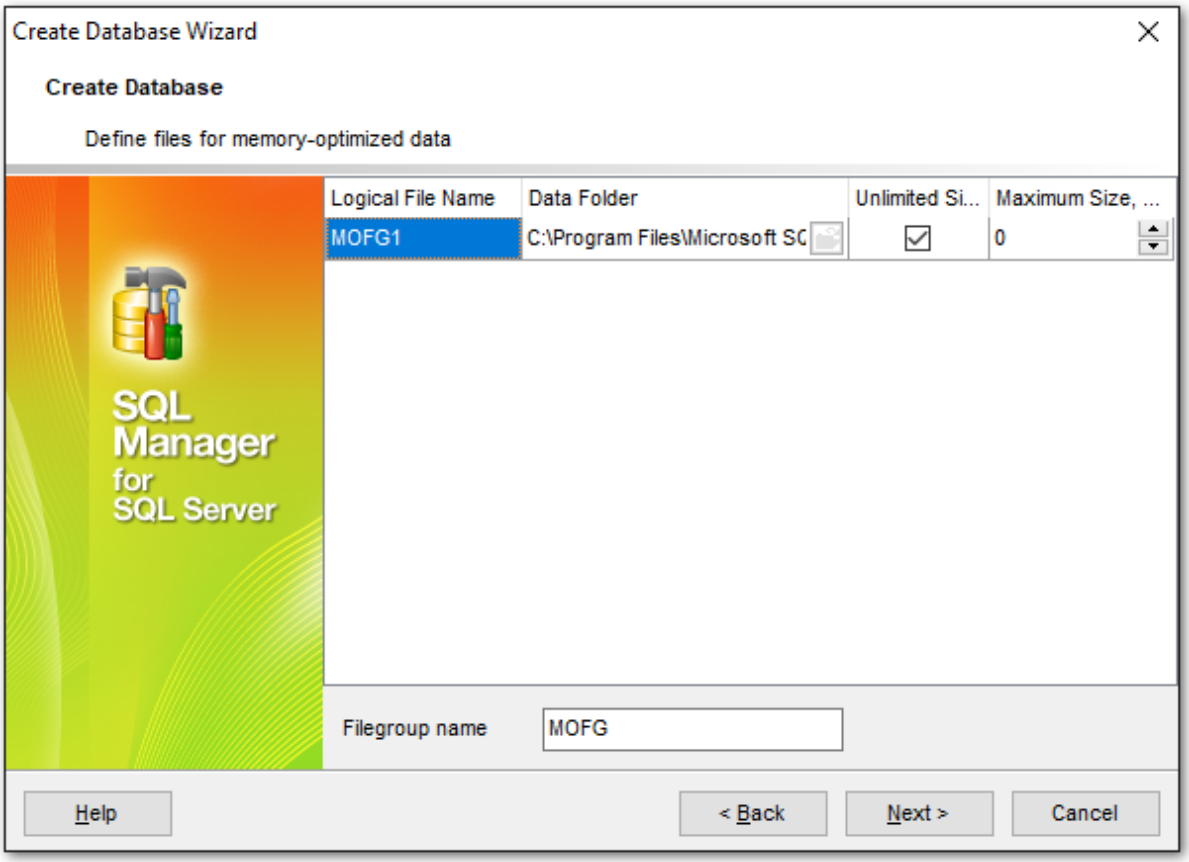


To add a memory-optimized data file, right-click in the main working area and select the **New Memory-Optimized Data File** popup menu item.
To remove a memory-optimized data file, right-click the file in the list and select the **Delete Memory-Optimized Data File** popup menu item.

The **Logical File Name** is the name of the logical file storing the data used to refer to the physical file in all Transact-SQL statements.

Data Folder
The physical location of the data. The directory must be located on the server where the database resides. Use the button to
open the SQL Server Folders 984 dialog to select the preferable directory.

Each file can also have **Maximum size** specified. Use the spinner control to specify the original size of the selected database file (in megabytes).
If **Unlimited Size** is specified, the file can continue to grow until it has used all available space on the disk.

Name of filegroup for memory-optimized data
Specify the name of the memory-optimized filegroup on the database.

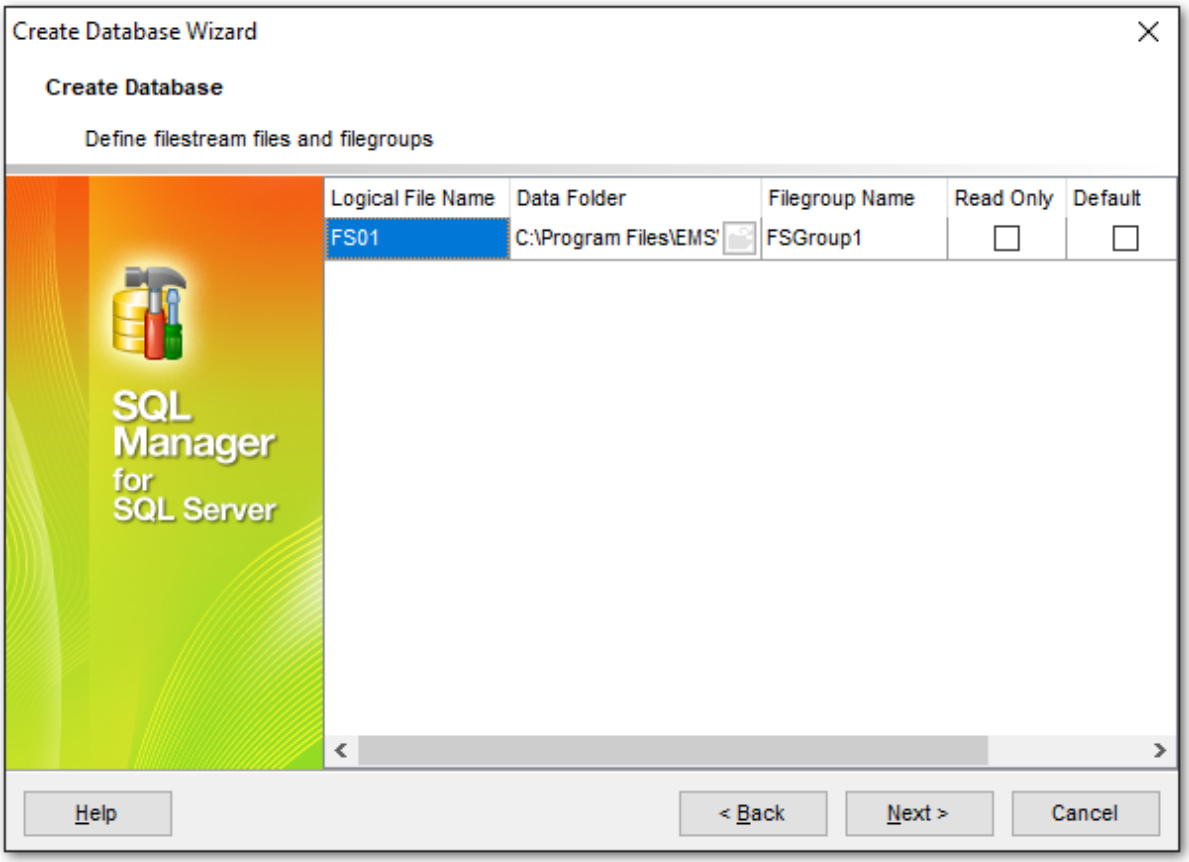
4.1.3.4 Defining filestream files and filegroups

This step of the wizard allows you to define **filestream files and filegroups** for the new database.

Note: This step is available for SQL Server 2008 (and higher).

In SQL Server 2008, FILESTREAM enables the application to store unstructured data (such as text documents, images, videos, etc.) on the file system. FILESTREAM integrates the SQL Server Database Engine with an NTFS file system by storing varbinary (max) binary large object (BLOB) data as files on the file system. Transact-SQL statements can insert, update, query, search, and back up FILESTREAM data. Win32 file system interfaces provide streaming access to the data.

To add a filestream file, right-click in the main working area and select the **Add Filestream File** popup menu item.
To remove a filestream file, right-click the file in the list and select the **Delete Filestream File** popup menu item.



The **Logical File Name** is the name of the logical file storing the data used to refer to the physical file in all Transact-SQL statements.

Directory
The physical location of the data. The directory must be located on the server where the

database resides.

Filegroup Name
Specify the name of the filestream filegroup.

☑ **Read Only**
Specifies that the filestream filegroup is read-only. Updates to objects that reside in this filestream filegroup are not allowed. The default fiestream filegroup cannot be read-only.

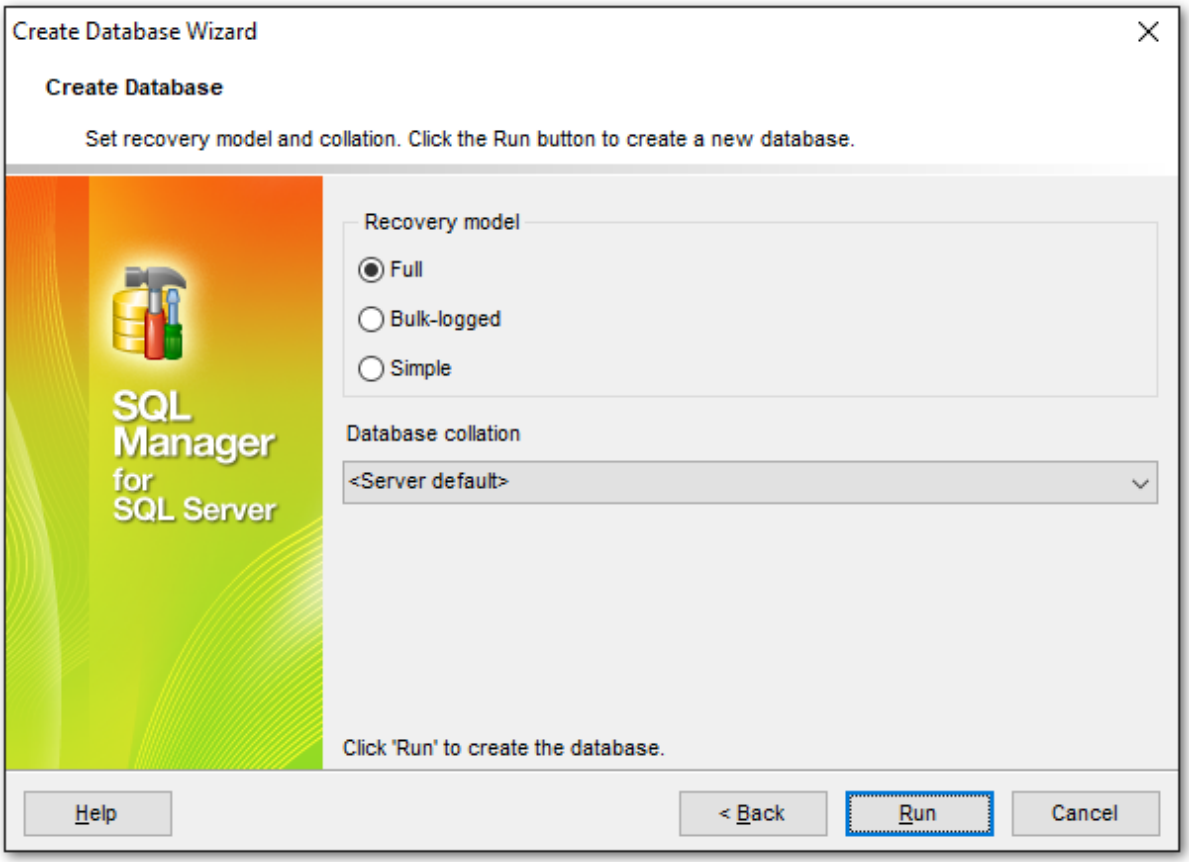
☑ **Default**
The filestream fields data will be stored in this filestream filegroup if none was specified for the table.

Note: After the database is created, you can manage filestream files using the Filestream files and filegroups 158 section of the Database Properties 137 dialog.

Click the **Next** button to proceed to the Setting recovery model and collation 108 step of the wizard.

4.1.3.5 Setting recovery model and collation

This step of the wizard allows you to set **recovery model** and **collation** for the new database.



Recovery model

SQL Server recovery models are used for backup and restore operations. A *recovery model* is a database property that controls the basic behavior of backup and restore operations for a database: how transactions are logged, whether the transaction log requires backup, what kinds of restore operations are available, etc.

Full
When this recovery model is set, all transactions are fully logged and all the transaction log records are retained until after they are backed up. In the Enterprise Edition of SQL Server, the full recovery model allows a database to be recovered to the point of failure, assuming that the tail of the log has been backed up after the failure.

Bulk-logged
When this recovery model is set, most bulk operations are minimally logged (e.g. index creation and bulk loads), and other transactions are fully logged.

Simple
When this recovery model is set, most transactions are minimally logged: only the information required to ensure database consistency after a system crash or after restoring a data backup.

For detailed information concerning recovery models refer to SQL Server documentation.

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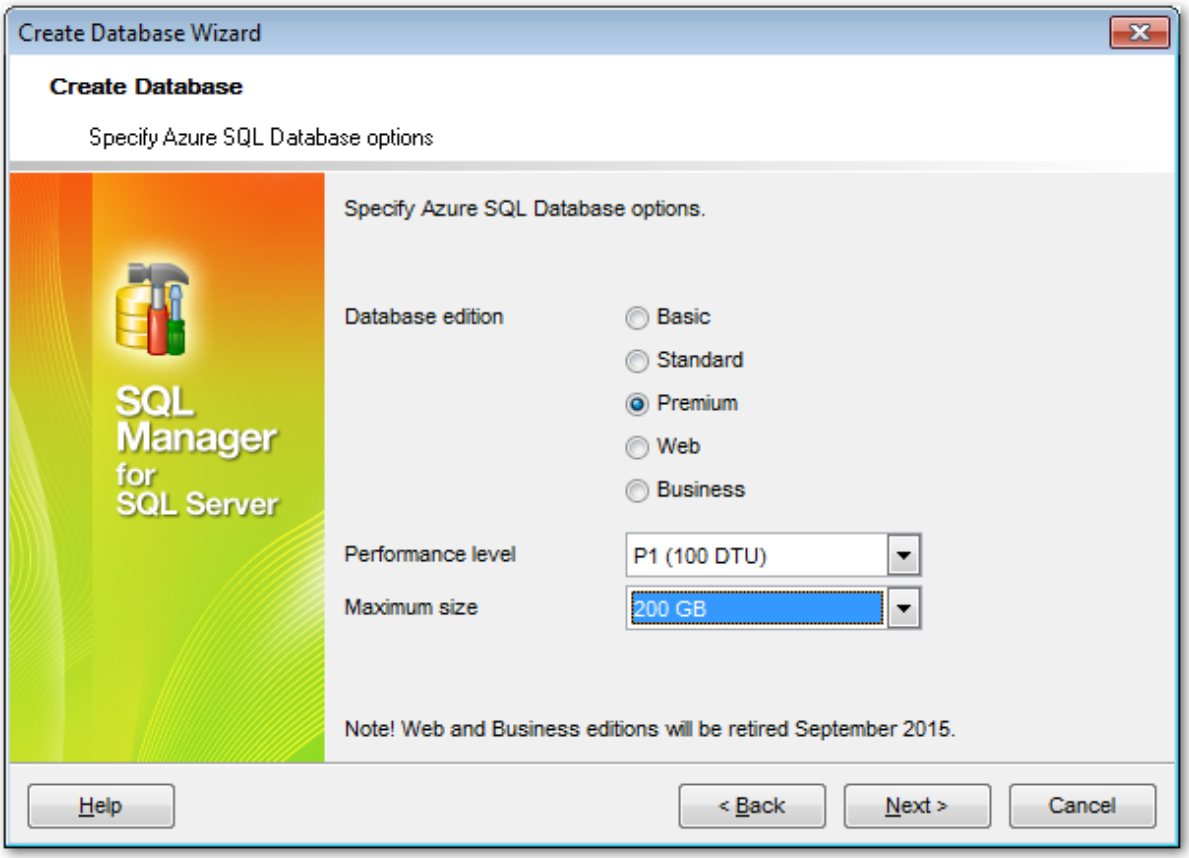
Database collation
Use the drop-down list to specify collation for the database being created. By default, the server collation is used.

When you are done, click the **Run** button to view the result SQL statement 112.

4.1.4 SQL Azure Database

4.1.4.1 Setting SQL Azure Database options

On this step of the wizard you can set options specific for Azure SQL Database.



Database Edition
Here you can set the edition of the SQL Azure database.

Basic
Small databases with a single operation at a given point in time.

Standard
Workgroup and cloud applications with multiple concurrent transactions.

Premium

Mission-critical, high transactional volume with many concurrent users.

Web
Web apps, workgroup, dept. apps, and other lightweight database workloads.

Business
Lightweight database workloads that require larger sizes than supported with Web.

Note: Web and Businesss editions will be retired September 2015.

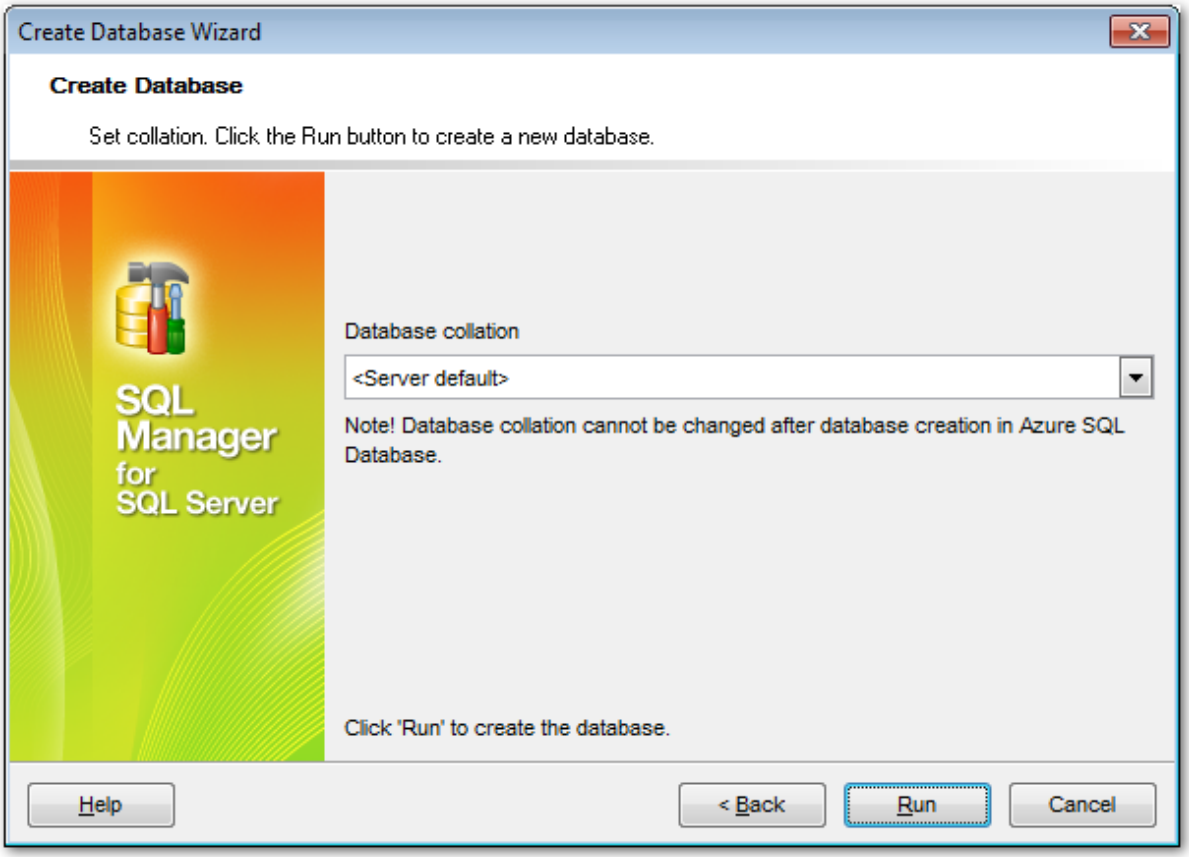
Performance Level
Use the drop-down list to select the Performance Level for the database. Performance levels are specific for the selected database edition.

Maximum size
Specifies the maximum size of the database. This value must be valid for the specified Edition.

Click the **Next** button to proceed to the Setting database collation 111 step of the wizard.

4.1.4.2 Setting database collation

This step of the wizard allows you to set the **collation** for the new database.



Database collation
Use the drop-down list to specify collation for the database being created. By default, the server collation is used.

Note: SQL Azure Database collation cannot be changed after the database is created.

When you are done, click the **Run** button to view the result SQL statement 112.

4.1.5 Viewing result SQL statement

View the result *CREATE DATABASE* statement issued for the new database creation. You can alter the script manually, if necessary. For more information see Changing Metadata window 959.

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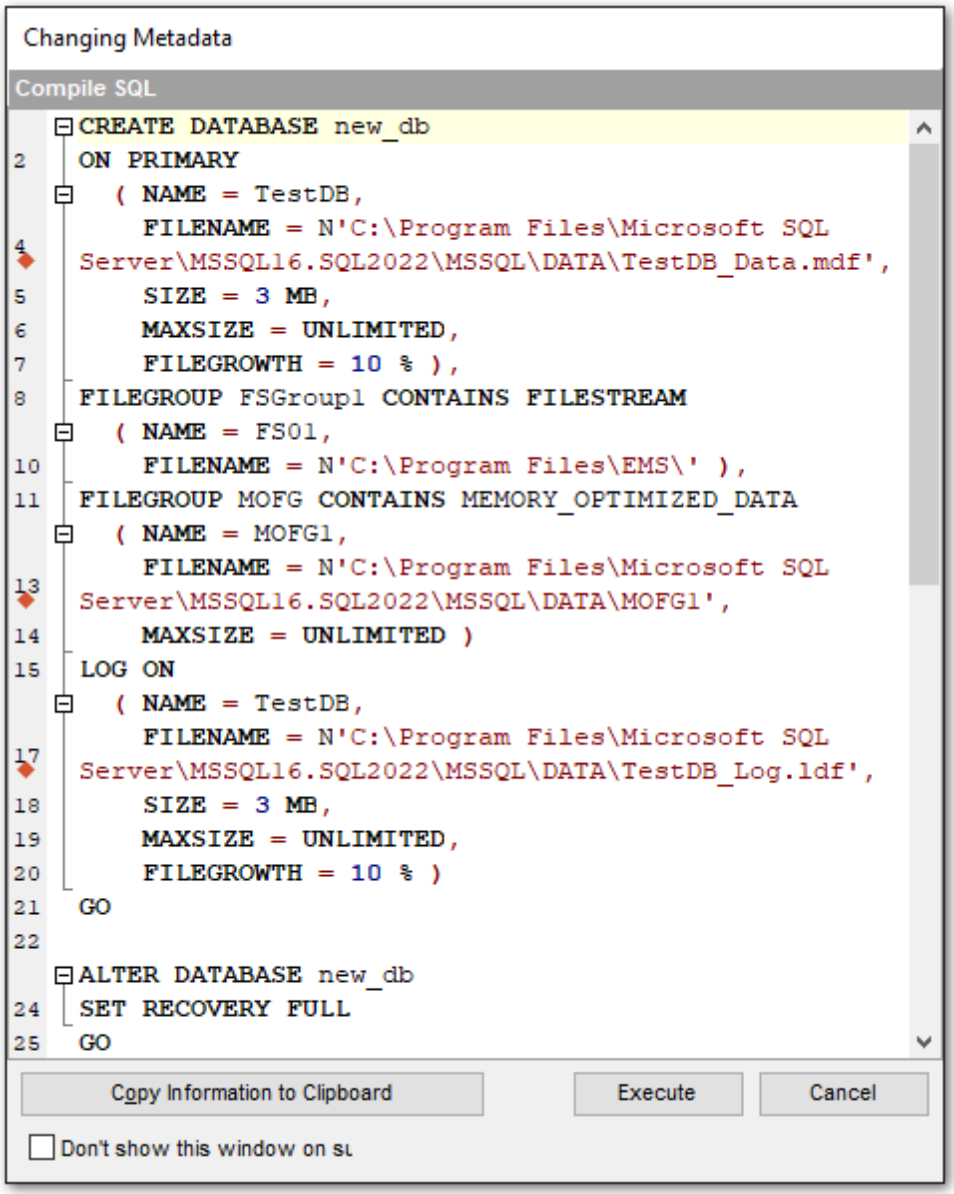
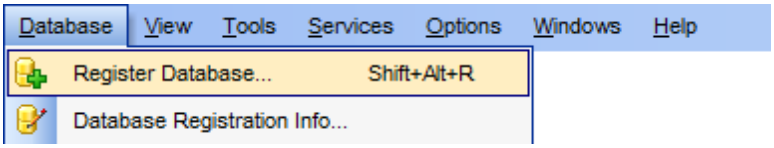


If the ☑ **Register after creating** option was checked at the Setting database name 99 step of the wizard, the Database Registration Info 120 dialog will appear.

4.2 Register Database wizard

Register Database Wizard allows you to register a single database.

To start the wizard, select the **Database | Register Database...** main menu 951 item, or use the **Register Database** button on the main toolbar 953. You can also use the *Shift+Alt+R* shortcut 986 for the same purpose.



- Setting connection parameters 114
- Setting specific options 117

See also:

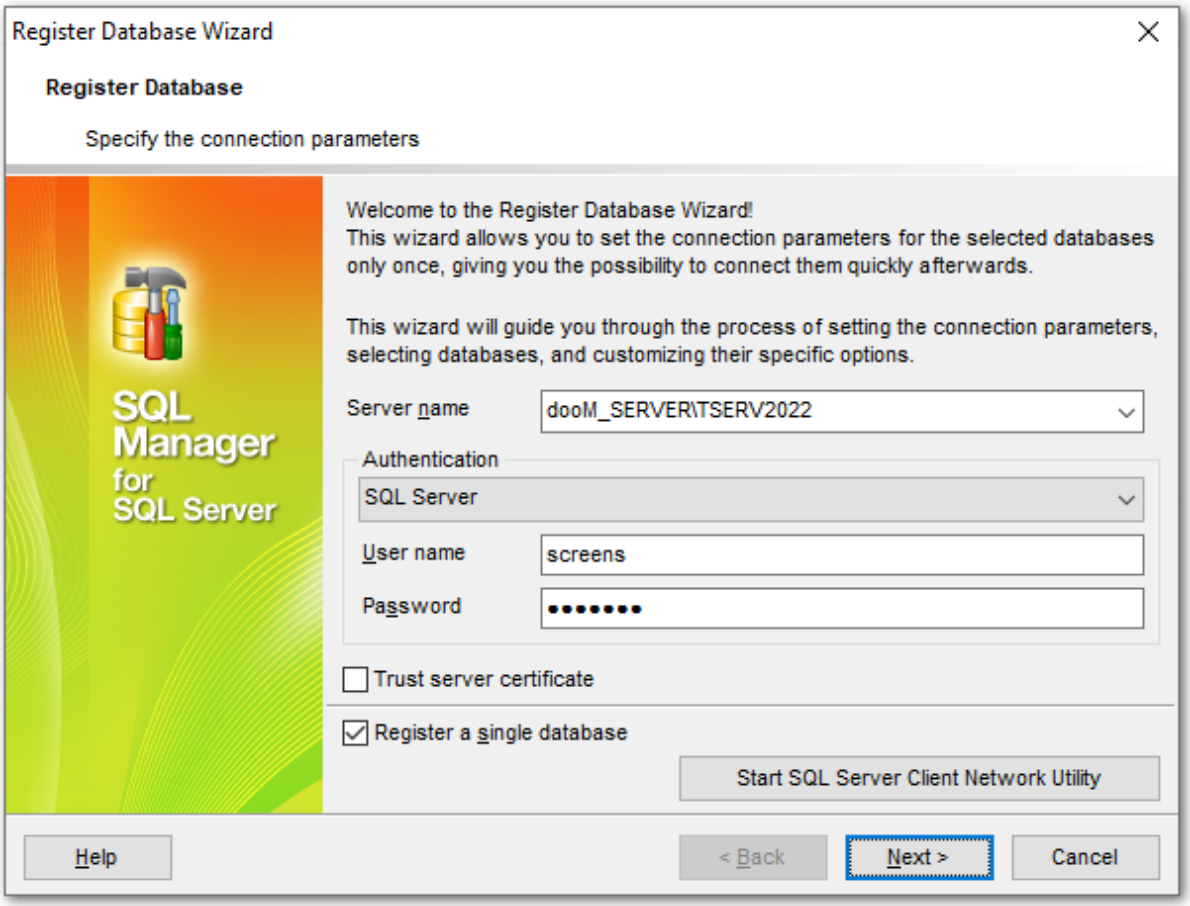
Create Database wizard 99

Database Registration Info 120

Database Properties 137

4.2.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the new database using the corresponding boxes and options: *Host name*, *Authentication*, *User name* and *Password*.



Specify the host where the database being registered resides: type in the host name in the **Server name** field or select one in the drop-down list.
Please note that if Microsoft® SQL Server™ is installed as a named instance, you should enter the name of your machine and the instance name in the **Host name** field in the following format: *computer_name\sqlserver_instance_name* (e.g. "*MYCOMPUTER\SQLEXPRESS*").

Authentication type
Specify the type of authentication to set up connection to the server.

Windows
With this option SQL Server validates the account name and password using the Windows principal token in the operating system and, and doesn't perform the identity validation.

SQL Server
Select this type if you wish to use SQL Server Authentication for the login. SQL Server Authentication stores logins and passwords in SQL Server and does not depend upon Windows. You can select SQL Server Authentication only if SQL Server Authentication has been enabled on the server.

Microsoft Intra MFA
Uses the standard interactive method with multifactor authentication option for Microsoft Entra accounts.

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Microsoft Intra password
Allows specifying the username and password to the client and driver.

User name
Specify user name for selected authentication type.

Password
Input a password.

☑ **Trust server certificate**
If you use this option, the connection process skips the trust chain validation. In this case, the application connects even if the certificate can't be verified.

If necessary, you can **start SQL Server Configuration Manager** which is provided by Microsoft® for configuration management of SQL Server services, server/client protocols and client aliases.

Click the **Next** button to proceed to the Setting specific options 117 step or to the Selecting databases 116 step of the wizard, depending on whether the ☑ **Register a single database** option has been selected or not.

4.2.2 Selecting databases

This step of the wizard allows you to select the database(s) that reside on the host for registration in SQL Manager.
To select a database, you need to move it from the **Available databases** list to the **Selected databases** list. Use the buttons or drag-and-drop operations to move the databases from one list to another.

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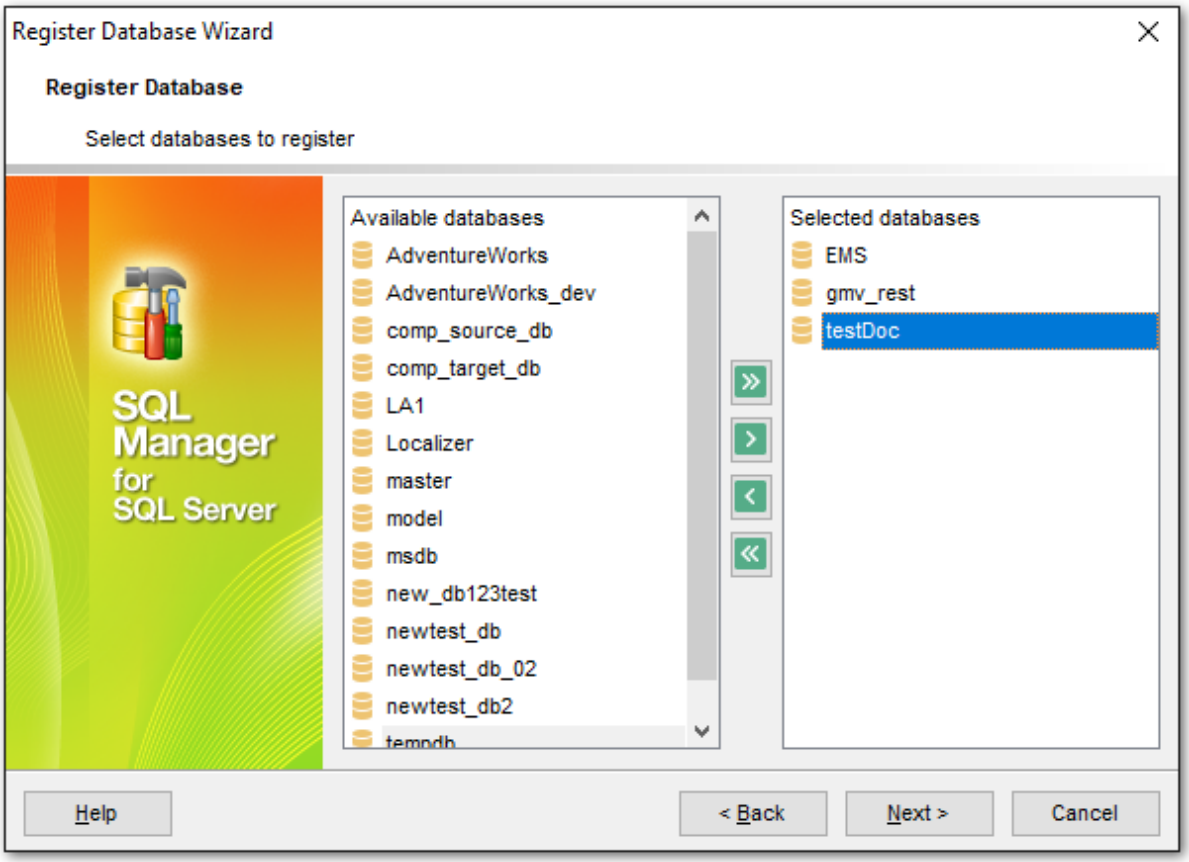
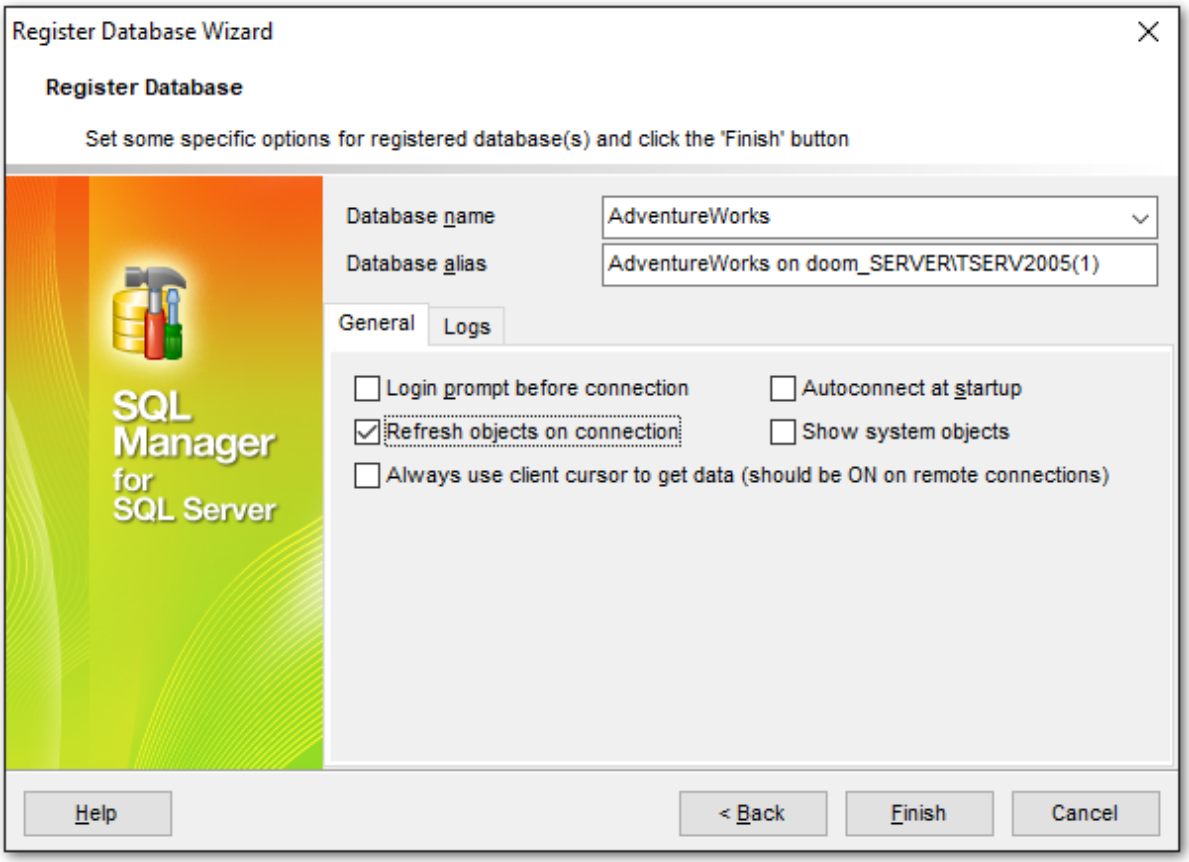


Click the **Next** button to proceed to the Setting specific options 117 step of the wizard.

4.2.3 Setting specific options

This step of the wizard allows you to set the **database name**, **database alias**, and **registration options** (using the *General* and *Logs* tabs).



The **General** tab allows you to set common database registration options:

Database name
Type in or use the drop-down list to select the database to be registered.

Database alias
Enter the alias to be used to display the database in DB Explorer 65 and SQL Manager tools. By default, a database alias generated by the application has the following format: *<database_name> on <host_name[\instance_name]>*

☑ **Login prompt before connection**
Enables SQL Manager for SQL Server to prompt 981 for user name and password each time you connect 70 to the database.

☑ **Autoconnect at startup**
With this option set, connection 70 to the registered database is established automatically at application startup.

☑ **Refresh objects on connection**
This option allows you to enable/disable refreshing objects on connection to the database. It is highly recommended to uncheck this option if your database contains many objects or if connection to the database is slow.

☑ **Show system objects**
If this option is checked, SQL Server system objects will be displayed in DB Explorer 65.

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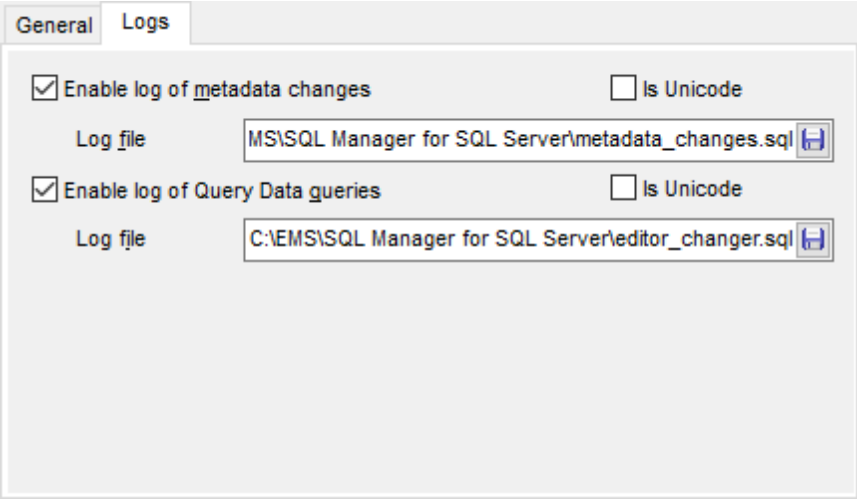

The **Logs** tab allows you to set log options for the database:

Enable log of metadata changes
Check this option if you wish to log metadata changes of your database in a file.

Log file
This field is enabled if the **Enable log of metadata changes** option is selected. Type in or use the **Save as** button to specify the path to the **.sql* file to store the metadata logs.

Enable log of Query Data queries
Check this option if you wish to log your Query Data 432 queries in a file.

Log file
This field is enabled if the **Enable log of Query Data queries** option is selected. Type in or use the **Save as** button to specify the path to the **.sql* file to store the logs of SQL queries.

Is Unicode
Enable this option to save logs in Unicode. If the option is disabled, ANSI will be used.

Click the **Finish** button when done to start working with the newly registered database in SQL Manager for SQL Server.

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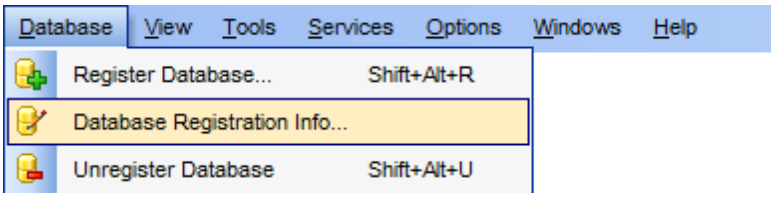
4.3 Database Registration Info

Use the **Database Registration Info** dialog to view and edit the registration properties of the database.

To open the dialog, select the database or any of its objects in the DB Explorer 65 tree, then select the **Database | Database Registration Info...** main menu 951 item, or right-click the database alias in DB Explorer 65 and use the **Database Registration Info...** context menu 55 item. You can also use the **Database Registration Info...** button on the main toolbar 953.



- Editing connection properties 120
- Setting database options 122
- Setting display options 124
- Setting default directories 125
- Setting log options 125
- Setting data options 127
- Find Option 135

See also:

Register Database wizard 114

Create Database wizard 99

Database Properties 137

4.3.1 Connection

The **Connection** section of the **Database Registration Info** dialog allows you to view and/or edit the connection properties in the corresponding boxes: *Host name*, *Authentication*, *User name*, *Password*, *Database name*, *Database alias*, *Font charset*, *OLE DB Provider*.

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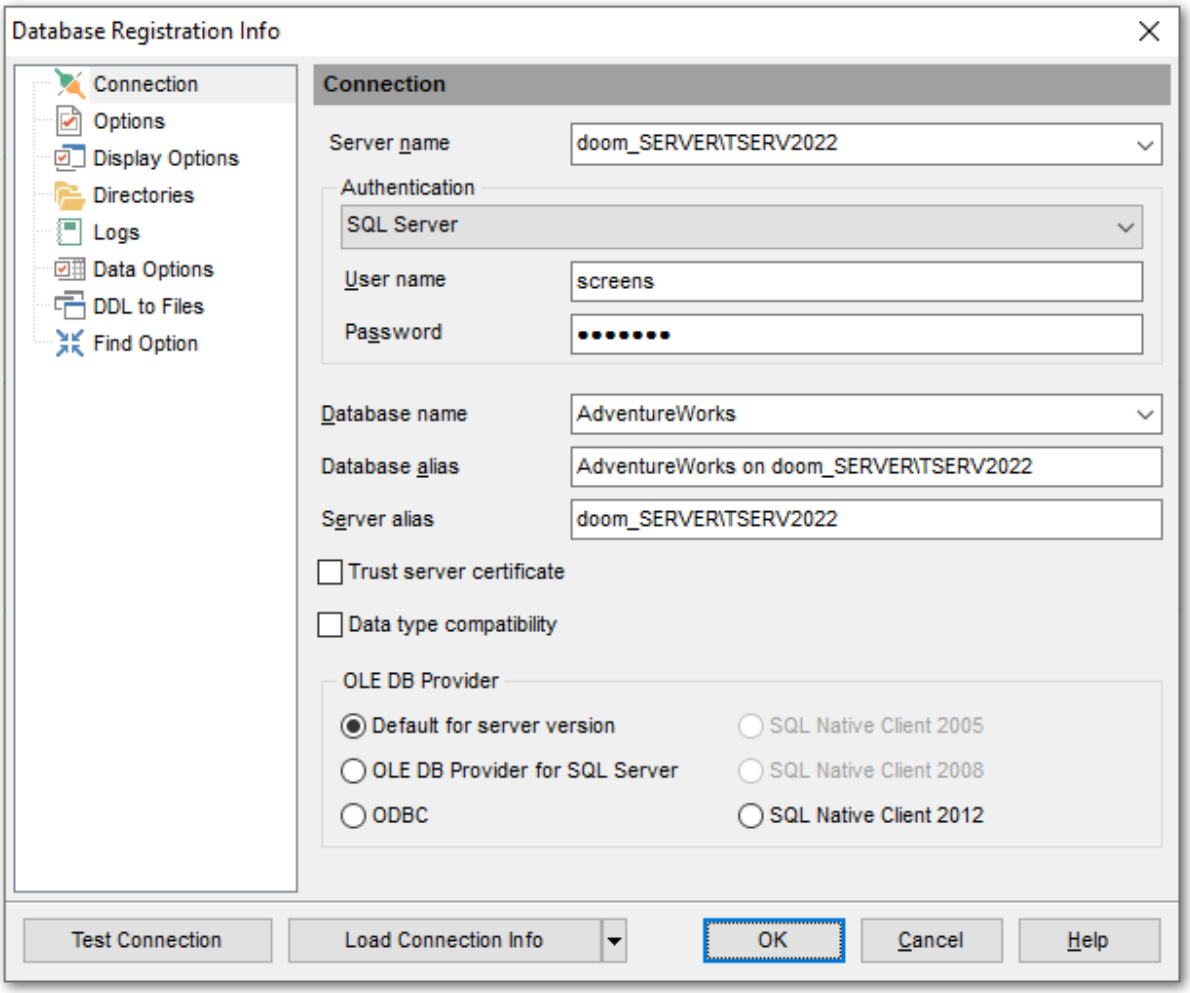

Server name
Stores the name of the Host where the database resides.

Authentication type
Specify the type of authentication to set up connection to the server.

Windows
With this option SQL Server validates the account name and password using the Windows principal token in the operating system and, and doesn't perform the identity validation.

SQL Server
Select this type if you wish to use SQL Server Authentication for the login. SQL Server Authentication stores logins and passwords in SQL Server and does not depend upon Windows. You can select SQL Server Authentication only if SQL Server Authentication has been enabled on the server.

Microsoft Intra MFA
Uses the standard interactive method with multifactor authentication option for Microsoft Entra accounts.

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Microsoft Intra password
Allows specifying the username and password to the client and driver.

User name
Specify user name for selected authentication type.

Password
Input a password.

☑ **Trust server certificate**
If you use this option, the connection process skips the trust chain validation. In this case, the application connects even if the certificate can't be verified.

☑ **Data type compatibility**
Use this option to apply date time custom mask to query results specified at Color & Formats 896.

Database name
Stores the name of the database.

Database alias
Stores the database alias which is displayed in the DB Explorer 65 tree and SQL Manager tools. By default, a database alias generated by the application has the following format: *<database_name> on <host_name[\instance_name]>*

Font charset
Stores the character set used to display data in the grid 471.

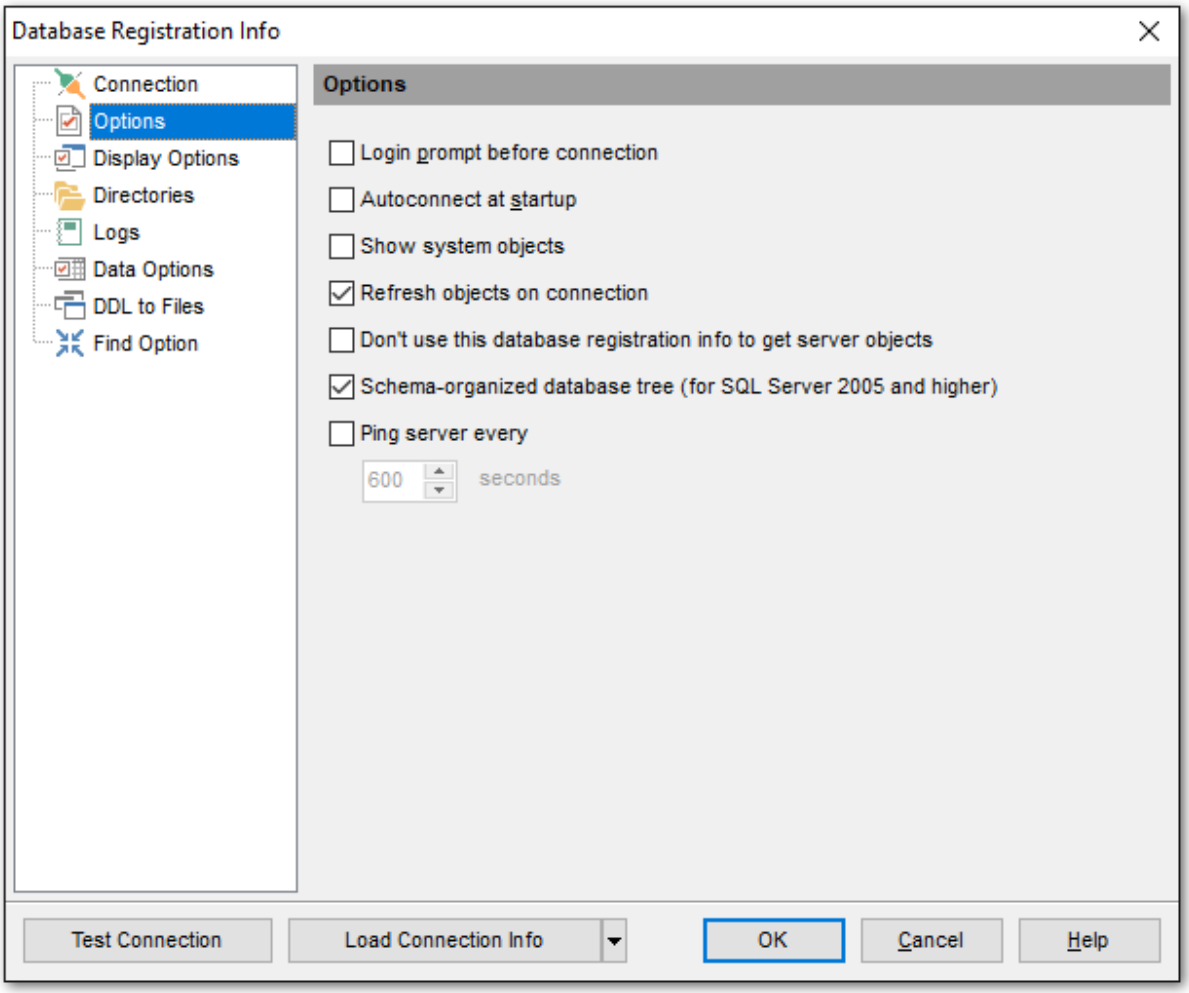
OLE DB Provider
The list of drivers is based on the ones available in the system. Select the preferable OLE DB Provider to be used for the connection; it affects the program behaviour on processing some specific data types, such as XML and TIME, and on performing T-SQL statements.

Once you have specified the connection properties, you can check whether it is possible to establish connection to the database: click the **Test Connect** button for this purpose. If connection is successful, you will get the *'Connected!'* message; otherwise an error message will be returned.

The **Copy Alias from...** menu allows you to select the alias of a previously registered database and use it for the newly created/configured database.

4.3.2 Options

The **Options** section of the **Database Registration Info** dialog allows you to set various options for the database.



Customize common database options according to your needs. The detailed description is given below.

Login prompt before connection
Enables SQL Manager for SQL Server to prompt 981 for user name and password each time you connect 70 to the database.

Autoconnect at startup
Check this option to specify that SQL Manager for SQL Server automatically establishes connection to the registered database at application startup.

Show system objects
This option determines whether SQL Server system objects are displayed in the DB Explorer 65 tree.

Refresh objects on connection
This option allows you to enable/disable refreshing objects on connection to the database. It is highly recommended to uncheck this option if your database contains many objects or if connection to the database is slow.

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Don't use this database registration info to get server objects
If this option is enabled, the registration info of this database will not be used to establish server connection and get server objects (when expanding the **Server Objects** node in DB Explorer 65).

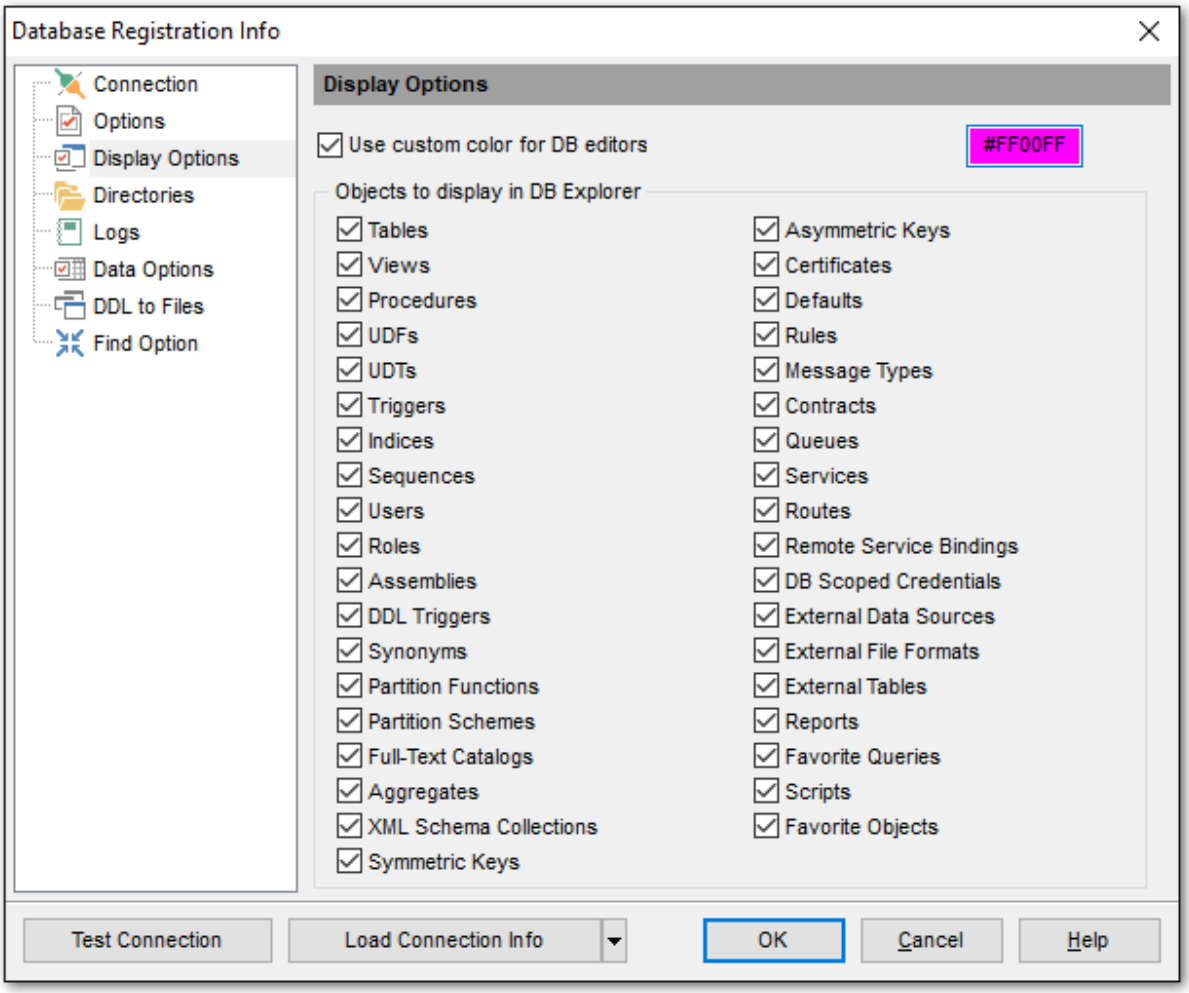
Schema-organized database tree
If this option is disabled, the object tree is built without grouping into schemas 193 (for SQL Server 2005 and higher).

Ping server every ... seconds
If this option is ON, the program sends 'SELECT 1' statement every period specified to keep active connection to the server.

4.3.3 Display options

The **Display Options** section of the **Database Registration Info** dialog allows you to specify which objects 182 will be displayed in the Database Explorer 65 tree.

Use custom color for DB editors
With this option unchecked the text color for editor tabs is black. To apply user font color check the option and select the color.



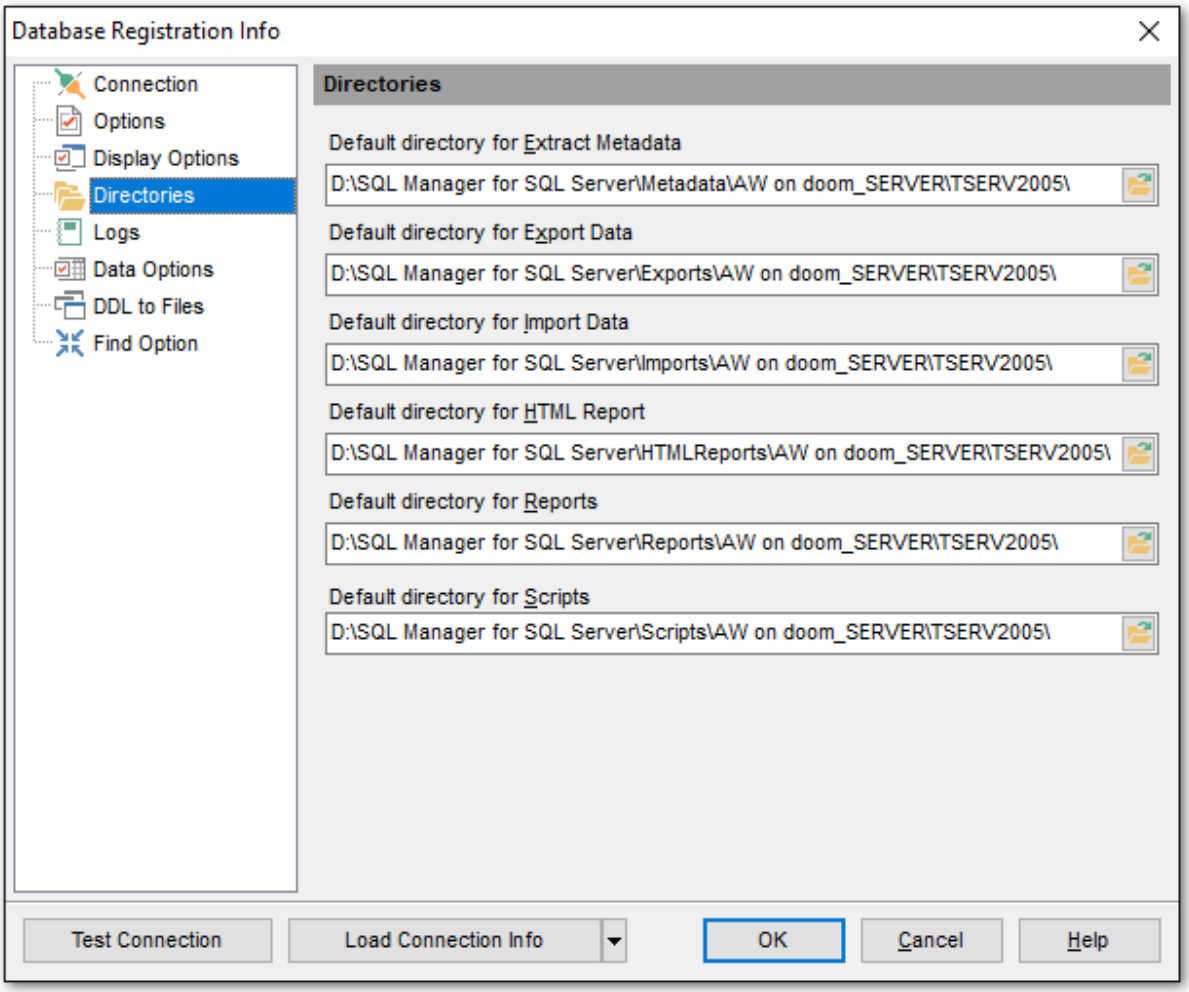
For your convenience the *Select All* and *Deselect All* functions are implemented in the **context menu** of the objects list area.

See also:

Database and Server Objects Management 182

4.3.4 Default directories

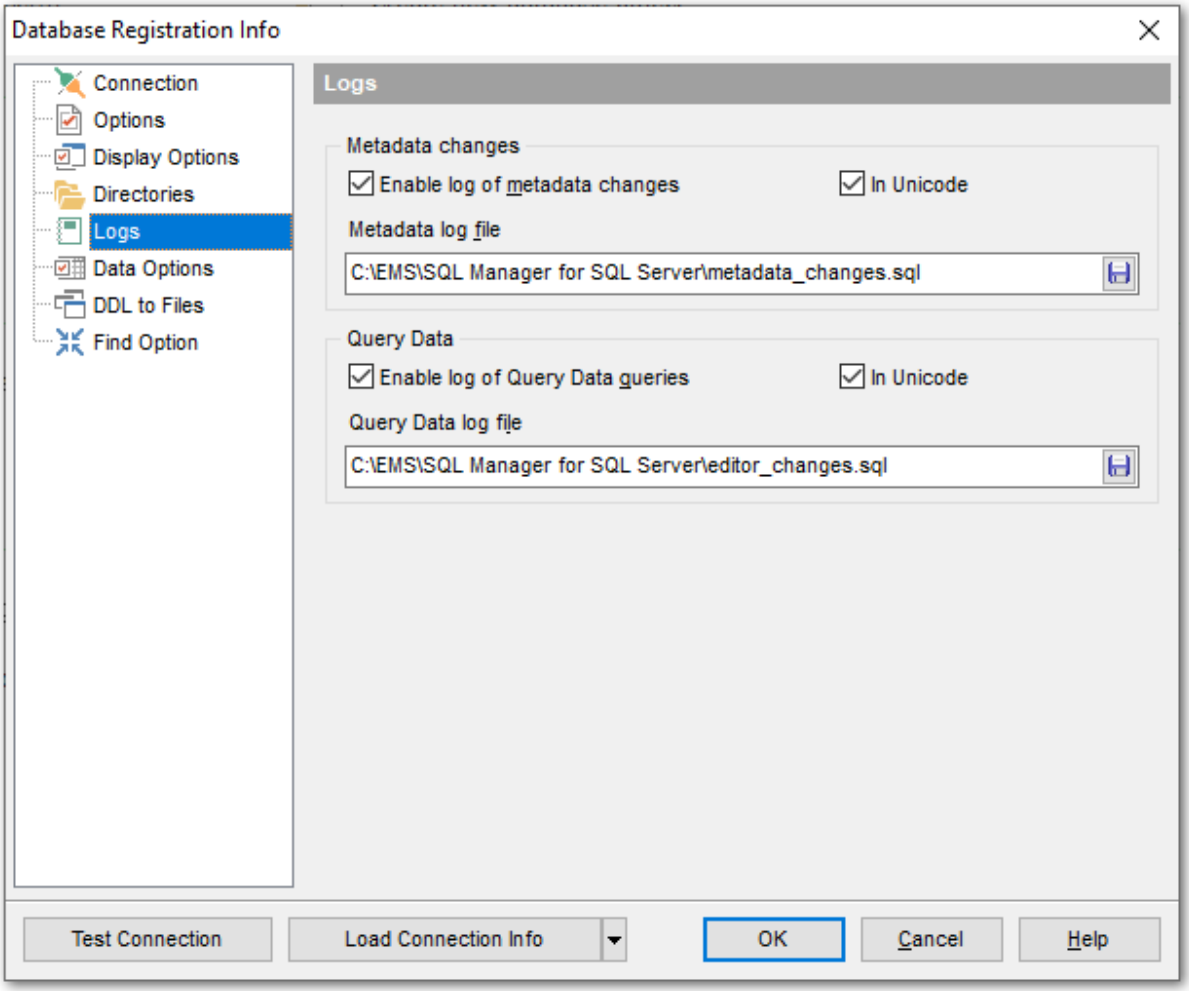
The **Directories** section of the **Database Registration Info** dialog allows you to set the directories to be used by default for database extract 632, data export 537, data import 577, saving HTML reports 657, creating reports 665, saving scripts 625 operations.



4.3.5 Logs

The **Logs** section of the **Database Registration Info** dialog allows you to specify log file names for metadata changes logging and SQL query logging, if necessary.

Logging can be useful when you are going to move the changes made in the development database to the production database.



Metadata changes

☑ **Enable log of metadata changes**
Check this option if you wish to log metadata changes of your database in a file.

Metadata log file
This field is enabled if the **Enable log of metadata changes** option is selected. Type in or use the **Save as** button to specify the path to the **.sql* file to store the metadata logs.

Query Data

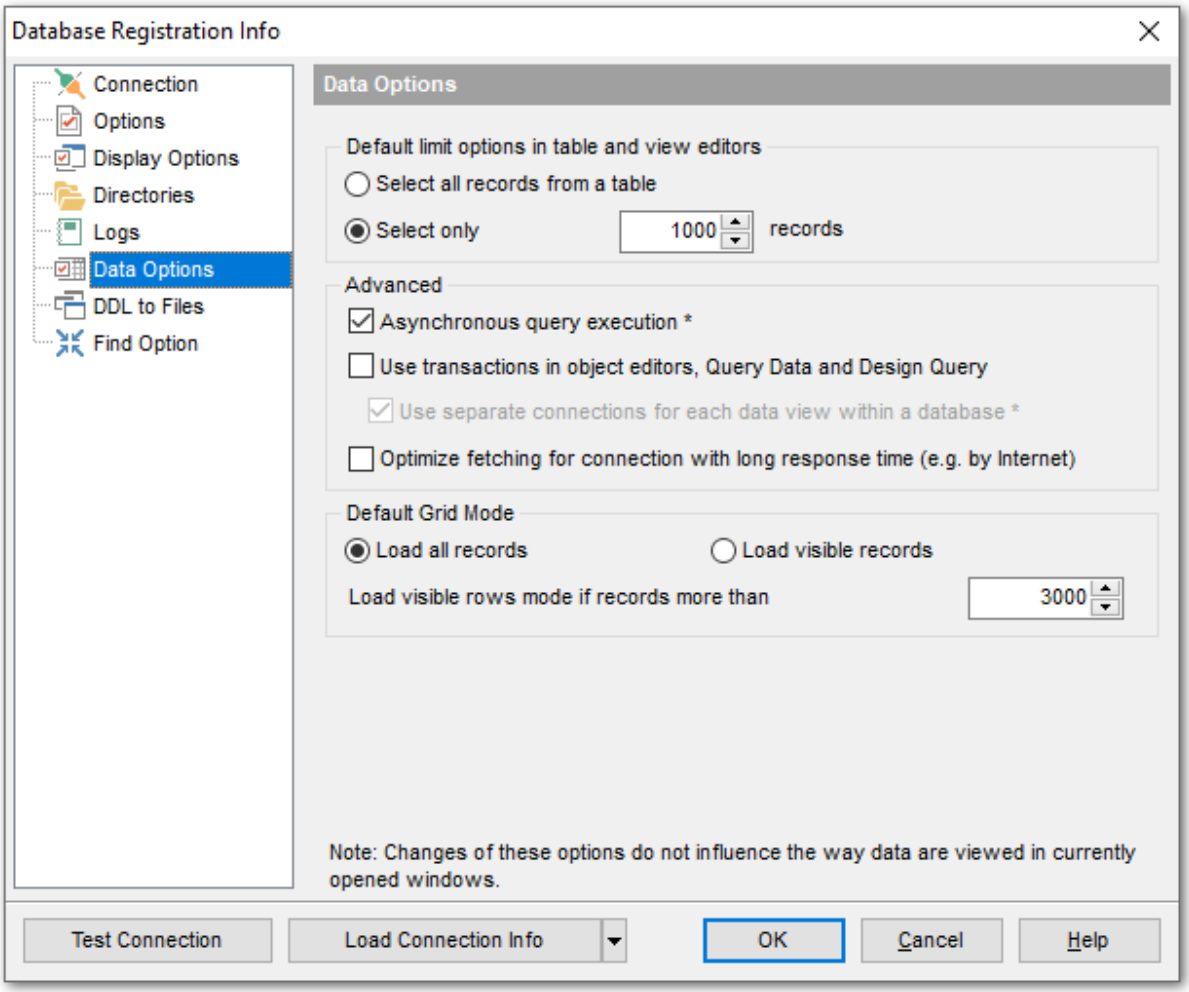
☑ **Enable log of Query Data queries**
Check this option if you wish to log your Query Data 432 queries in a file.

Query Data log file
This field is enabled if the **Enable log of Query Data queries** option is selected. Type in or use the **Save as** button to specify the path to the **.sql* file to store the logs of SQL queries: date/time of query execution, SQL text, execution result or errors (if any).

In Unicode
Enable this option to save logs in Unicode. If the option is disabled, ANSI will be used.

4.3.6 Data options

The **Data Options** section of the **Database Registration Info** dialog allows you to define options for data view 469. These options will be applied only to this database. Default settings for newly registered databases can be defined on the Grid | Data Options 893 page of the Environment Options 854 dialog.



Default limit options in table and view editors

Define the number of records to be selected on opening the **Data** tab of Table Editor 204

and View Editor 250:
Select all records from a table
Select only ... records (you should set the number of records using the corresponding spinner control)

Advanced

Asynchronous query execution
Check this option to allow executing queries in background mode (asynchronously).

Use transactions in object editors, Query Data and Design Query
If this option is enabled, a transaction is active until the 'Data' tab is closed or the 'Commit' button is pressed; all edited records are blocked until the transaction is committed. If this option is disabled, the transaction starts and is immediately committed (autocommit) on saving each record which is blocked only for a short period of time.

Use separate connections for each data view within a database
Select this option to use a separate connection for each data view 469 within a database. Disabling this option is recommended if maximum allowed number of connections is too low. Note that this option is only available when the *Use transactions in Data tab of object editors, Query Data and Design Query* option is enabled.

Optimize fetching for connection with long response time
Select this option to use optimized methods of fetching data from the database if the response time for the connection is long (e.g. the database resides on a server in Internet).

Default Grid Mode

Load visible rows
The grid loads only a fixed number of dataset records into memory. This option minimizes dataset loading time. The automatic sorting, filtering, summary calculations are not supported in this mode.

Load all rows
The grid loads all records from a dataset. This option increases the grid performance by reloading only changed dataset records when updating. In this mode all features (automatic sorting, filtering and summary calculations) are available.

Default Grid Mode defines grid mode which will be used by default.
With the **Load all rows** option enabled, when loading data, all the records are loaded into grid buffers. In this mode opening the tables with many records may take a very long time. But in this case you have some advantages: e.g. in the filter drop-down list the column headers are displayed with the values for quick filter; it is possible to open several sublevels at the same time when viewing data in master-detail view, etc.
Because opening and other operations with an object consisting of many records takes sufficient time the **Load visible rows** mode should be used instead. It can be set individually for each table and is saved between sessions (can be set through the context menu 478 of the grid).

Load visible rows mode if records more than...

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Set this option to switch to the **Load visible rows** mode when the number of records in the dataset exceeds the specified value.

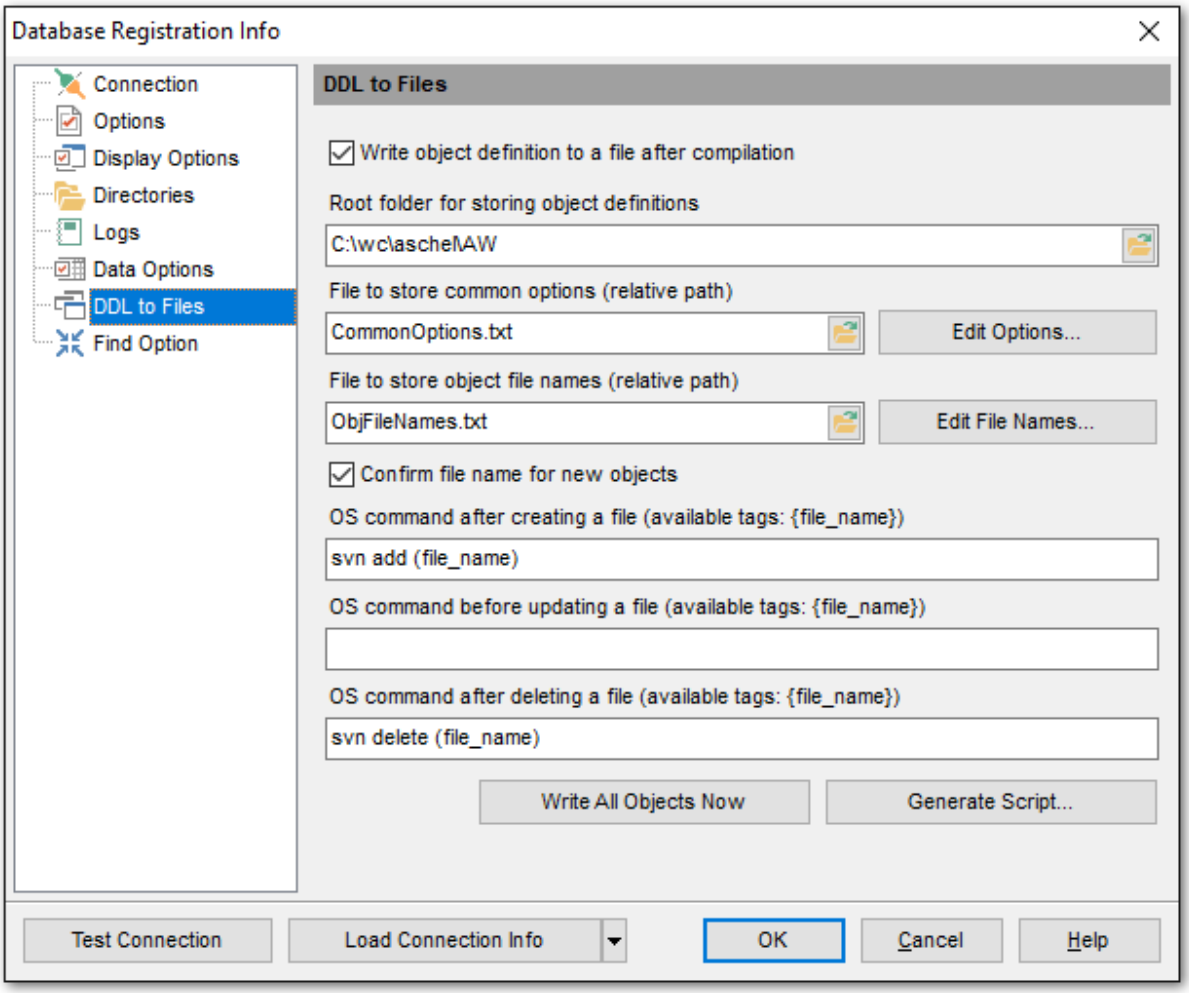
See also:

Grid View 471
Grid options 891

4.3.7 DDL to Files

The **DDL to Files** section of the **Database Registration Info** dialog allows you to set options for saving database objects definitions to files.
Saving objects definitions to files allows using external tools for processing database scripts or using version control systems for their storage.

To launch the **Database Registration Info** dialog with **DDL to Files** tab opened use the **Tools | DDL to Files | Options** main menu item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | DDL to Files | Options** item of the context menu 55.



Write object definition to a file after compilation
Check this option if you want to save objects DDL after changing their definition and subsequent compilation.

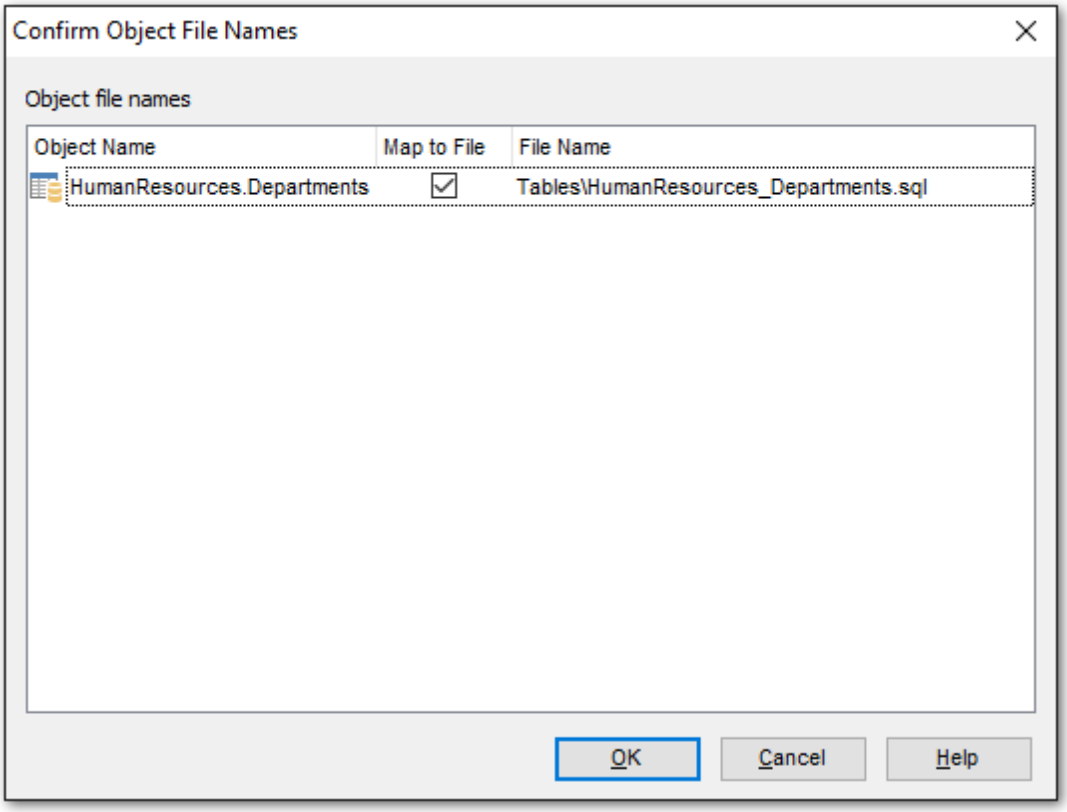
Root folder for storing object definitions
Use the button to select the directory for storing files with objects DDL. In order to make this data be under version control this directory must be a working copy.

File to store common options (relative path)
Enter the name of **.xml* file that will contain the list of types of objects which definitions should be stored in files. This file contains templates of object file names as well.
Note: If you do not provide the full path to the file it is stored in the directory defined in the **Root folder for storing object definitions** field. To select another location use the button.
Click the **Edit File** button to select object types and set templates for file names in the Options for Storing Object Definitions 132 dialog.

File to store object file names (relative path)
Enter the name of **.txt* file that will contain object names and file names respective to

those objects.
Note: If you do not provide the full path to the file it is stored in the directory defined in the **Root folder for storing object definitions** field. To select another location use the button.
Click the **Edit File** button to set file names in the Object File Names 133 dialog.

Confirm file name for new object
If this option is checked then you will be asked to set a file name for a newly created object in the **Confirm Object File Names** dialog. The file name for a new object is generated automatically based on defined templates 132 but you can change it if needed.



The following fields can be used for working with version control systems.

OS command after creating a file
Enter any command that will be executed after a file with object definition is created.
If you are using version control system then, for example, the following command can be entered: *svn add {file_name}* (for Subversion revision control system) where *{file_name}* stands for the respective newly created name of a file with object definition.

OS command before updating a file
Enter any command that will be executed before a file with object definition is updated.
If you are using version control system then, for example, the following command can be entered: *ss checkout {file_name} -C-* (for Visual Source Safe revision control system) where *{file_name}* stands for the respective name of a file with object definition being updated.

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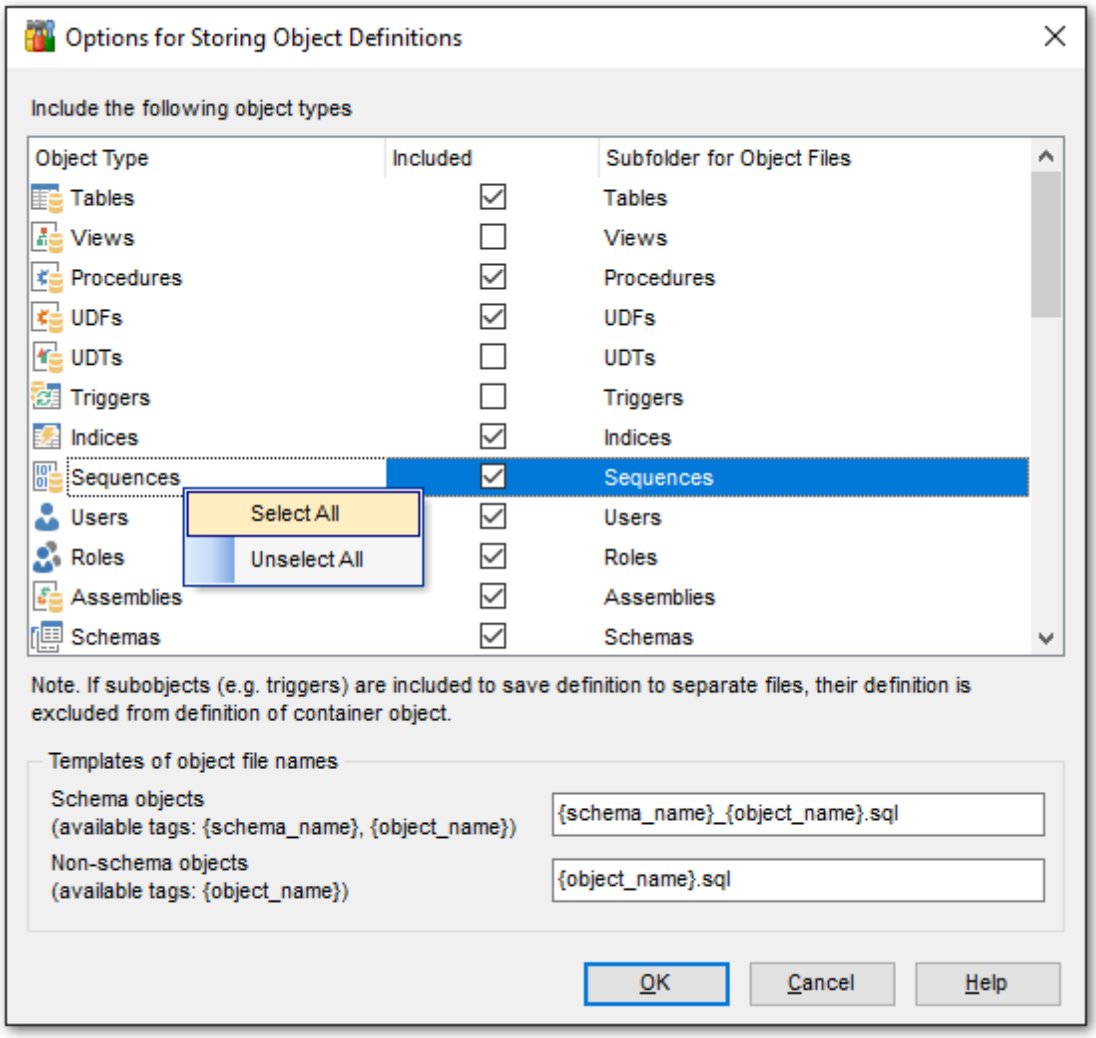
OS command after deleting a file
Enter any command that will be executed after a file with object definition is deleted.
If you are using version control system then, for example, the following command can be entered: *svn del {file_name}* (for Subversion revision control system) where *{file_name}* stands for the respective name of a file with object definition being deleted.

Click the **Write All Objects Now** button to save immediately all selected objects definitions to respective files set in the Object file names 133 dialog. The content of already existing files will be updated.

Click the **Generate Script...** button to create an **.sql* file containing definitions of all objects. The order of objects definitions is the same as in the Object file names 133 dialog.

4.3.7.1 Options for storing object definitions

This dialog is used for selecting object types to be saved and setting templates for file names.
For objects of non-selected types definition is saved.



Include the following object types
This grid contains the list of object types presented in a database. To select an object type check the corresponding checkbox in the *Included* column. For your convenience the *Select All* and *Unselect All* functions are implemented in the **context menu** of the list area.
Note: If subobjects (e.g. triggers) are included to save definition to separate files, their definition is excluded from definition of container object.
If you create or edit an object of the selected object type its definition is written to its corresponding **.sql* file. Existing objects of the selected types can be chosen in the Object file names 133 dialog.

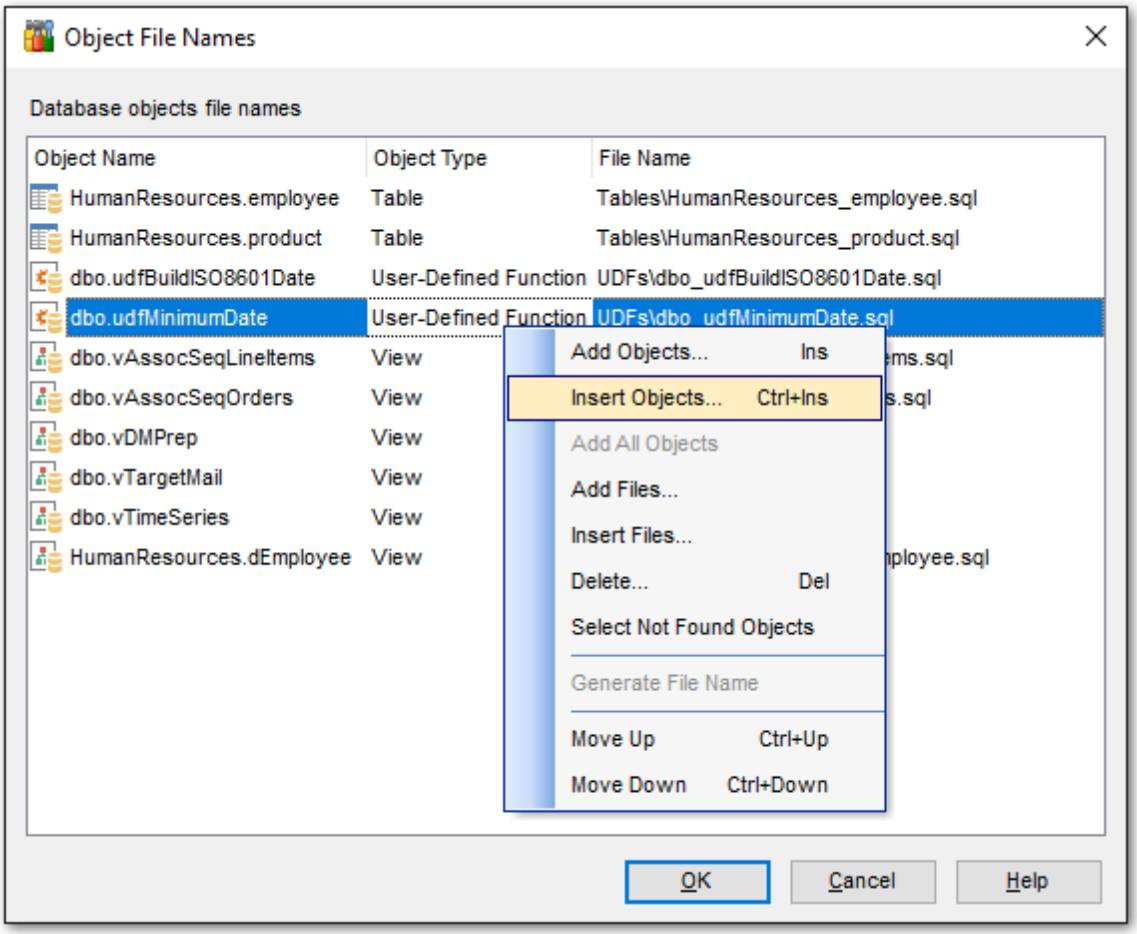
The directory for storing same type objects is defined in the *Subfolder for Object Files* column. By default all folders have the same names as the corresponding object types.
Note: If you do not provide the full path to the folder it is stored in the directory defined in the **Root folder for storing object definitions** field. To select another location use the button. This button appears on clicking the corresponding cell.

Templates of object file names

Use this group of options to define templates for file names that are used for storing objects definitions.
For your convenience tags are provided. You can use *{object_name}* tag both for **schema** and **non-schema objects** files templates. For schema objects a *{schema_name}* tag is available as well.
Files extension is optional.

4.3.7.2 Object file names

This dialog is used for managing objects that should be written to files and respective file names.
The order of objects definitions in the general script that is created on clicking the **Generate Script...** button coincides with the objects order in this list.



If a database object is not added to this list its definition is not saved to file. To manage this list use the grid context menu.

To add all already existing database objects of selected types 132 use the **Add All Objects** context menu item.

To add separate objects use the **Add Objects...** or **Insert Objects...** context menu item. Pick up needed object(s) in the opened Select Object dialog 985.

File names are generated automatically according to templates defined in the Options for storing object definitions 132 dialog. You can change the file name and its path if needed by pressing the button. For your convenience the **Generate File Name** option is available. If the **File Name** field is empty due to some reasons you can use this option to set the default file name based on corresponding templates 132.

You can add any **.sql* files to this list that are not associated with objects definitions. For example, you can add a file with a script for filling up a table with data. Use the **Add Files...** or **Insert Files...** commands for this purpose. After the file is added to the list select the *SQL* as the *Object Type* for it and define the *Object Name*.

To remove files from the list use the **Delete...** context menu item. The multiple select is

available.

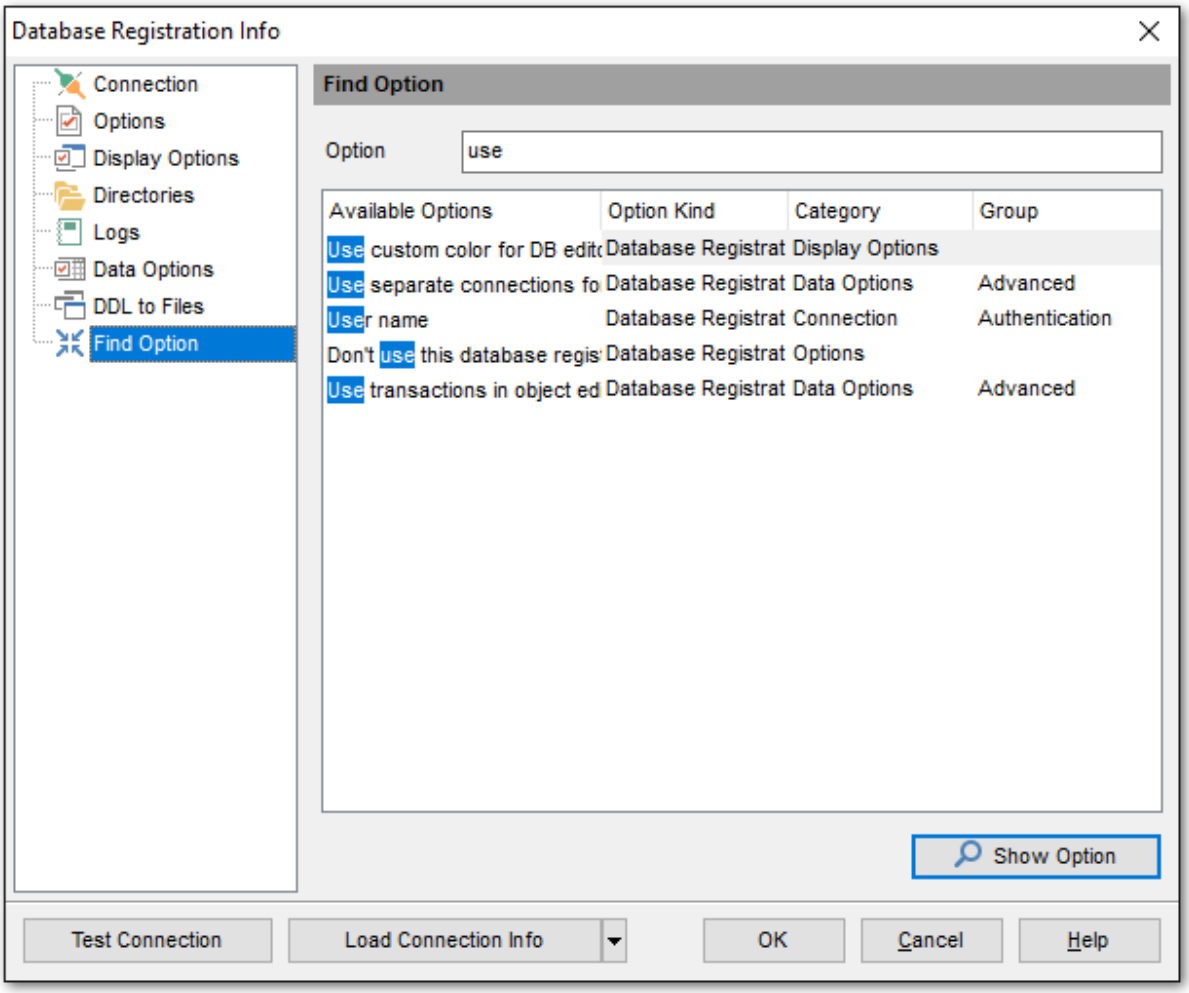
Use the **Select Not Found Objects** context menu item to reveal objects that are presented in the list but do not exist in the database.

Use the **Move up** and the **Move down** context menu items to reorder the objects.

4.3.8 Find Option

The **Find Option** section allows you to search for options available within the **Database Registration Info** dialog easily and quickly.

Option
In this field you can enter the name of the option to search for within the database registration options.



The **Available options** area lists all options of the Database Registration category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

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Select the required option in the list and click **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated icon.

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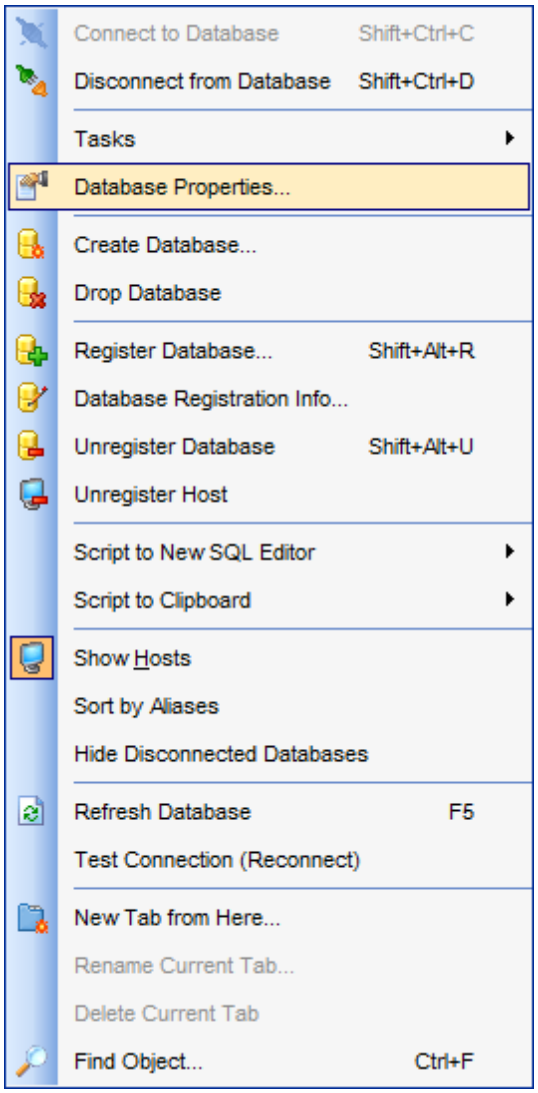
4.4 Database Properties

The **Database Properties** dialog allows you to view/edit a number of properties which can be changed to optimize database performance.

To open the dialog, right-click the database alias in DB Explorer 65 and select the **Database Properties...** context menu 55 item, or use the **Properties** button on the DB Explorer toolbar 89.

A number of database-level options that determine the characteristics of the database can be set for each database. Only the system administrator, database owner, members of the **sysadmin** and **dbcreator** fixed server roles 699 and **db_owner** fixed database roles 306 can modify these options. These options are unique to each database and do not affect other databases.



- Information 138
- Options 139

- ✓ Recovery options 142
- ✓ ANSI options 143
- ✓ SQL options 145
- ✓ Automation options 146
- ✓ Cursor options 148
- ✓ Advanced database options 150
- Data files 152
- Transaction log files 154
- Filegroups 157
- Filestream files and filegroups 158
- Find Option 160

See also:

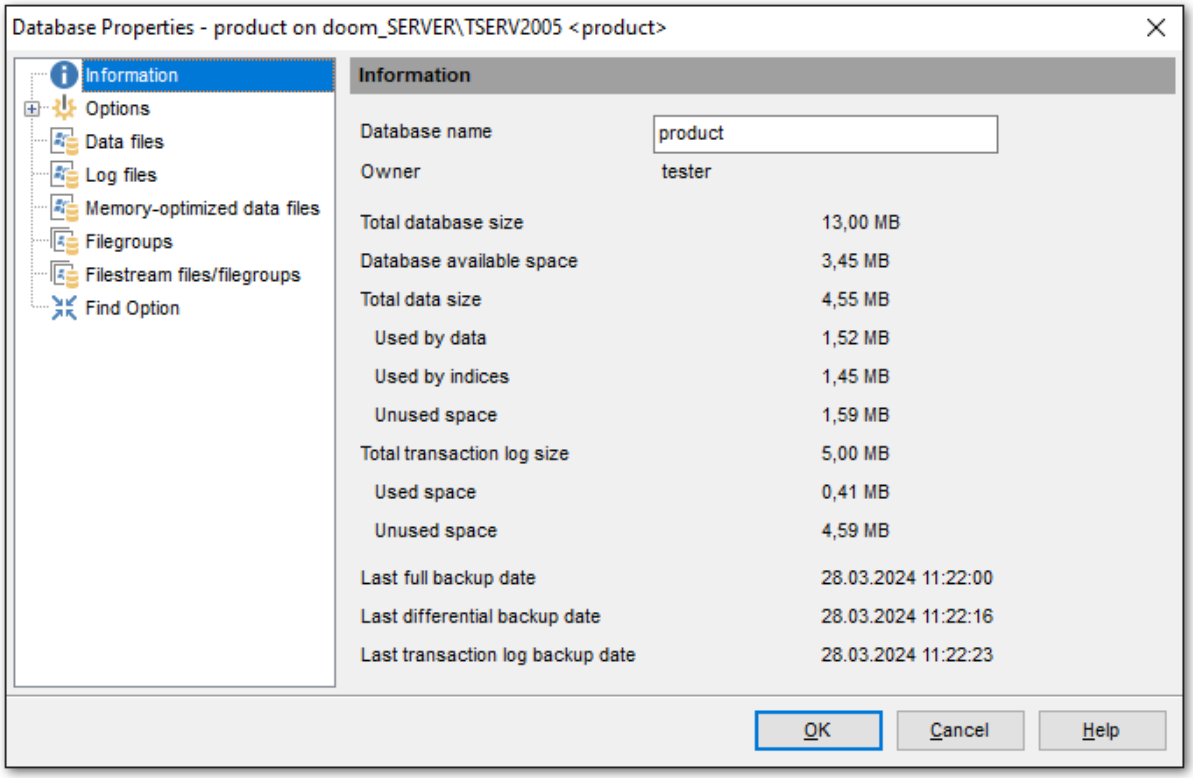
Register Database wizard 114

Create Database wizard 99

Database Registration Info 120

4.4.1 Information

The **Information** section of the **Database Properties** dialog allows you to view the database summary: *Database name*, *Database owner*, *Total database size*, *Database available space*, *Total data size* (*used by data*, *used by indices*, *unused space*), *Total transaction log size* (*used space*, *unused space*), *Last full/differential/transaction log backup dates*.



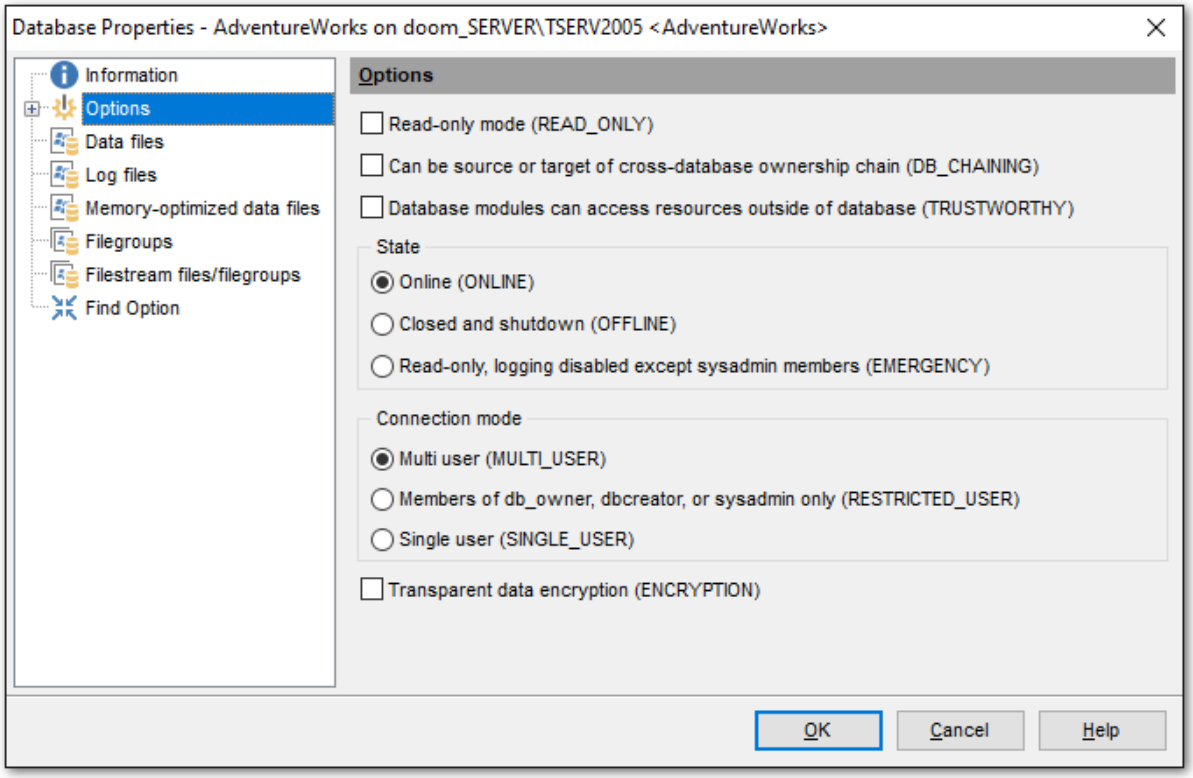
See also:

Options 139
Data files 152
Log files 154
Filegroups 157
Filestream files and filegroups 158
Find Option 160

4.4.2 Options

The **Options** section of the **Database Properties** dialog allows you to view/edit options pertaining to the SQL Server database in groups: *General*, *Recovery*, *ANSI*, *SQL*, *Auto*, *Cursor*, *FileTable*, *Advanced*.

- Recovery options 142
- ANSI options 143
- SQL options 145
- Automation options 146
- Cursor options 148
- FileTable options
- Advanced 150



Options

Read-only mode (READ_ONLY)
When this option is enabled, the database is in read-only mode. Users can retrieve data from the database, but cannot modify the data, because a read-only database does not allow data modifications:
a. Automatic recovery 142 is skipped at system startup.
b. Shrinking 784 the database is not possible.
c. No locking takes place in read-only databases, which can result in faster query 430 performance.

Can be source or target of cross-database ownership chain (DB_CHAINING)
When this option is checked, *DB_CHAINING* is enabled and the database can be the source or target of a cross-database ownership chain. When the option is unchecked, the database cannot participate in cross-database ownership chaining. You can change this option for user databases, but not for system databases.

Database modules can access resources outside of database (TRUSTWORTHY)
When this option is on, database modules (for example, views 250, user-defined functions 263, or stored procedures 257) that use an impersonation context are allowed to access resources outside of the database.

State
ONLINE
The database is open and available for use (enabled by default).
OFFLINE
The database is closed and shutdown, and marked offline. The database cannot be modified while it is in the offline state.
EMERGENCY
The database is marked *READ_ONLY*, logging is disabled, and only members of the **sysadmin** fixed server role can access the database.

Connection mode
MULTI_USER
Allows all users with the appropriate permissions to connect to the database (enabled by default).
RESTRICTED_USER
Allows only members of the **db_owner** fixed database role and **dbcreator** and **sysadmin** fixed server roles to connect to the database, but it does not limit their number.
SINGLE_USER
Allows one user at a time to connect to the database. All other user connections are broken.

Transparent data encryption (ENCRYPTION)
Enable the option to use encryption. Encryption of the database file is performed at the page level. The pages in an encrypted database are encrypted before they are written to disk and decrypted when read into memory.
Note: This option is available only for SQL Server 2008 databases and higher.

For SQL Azure databases the Options tab looks the following way:

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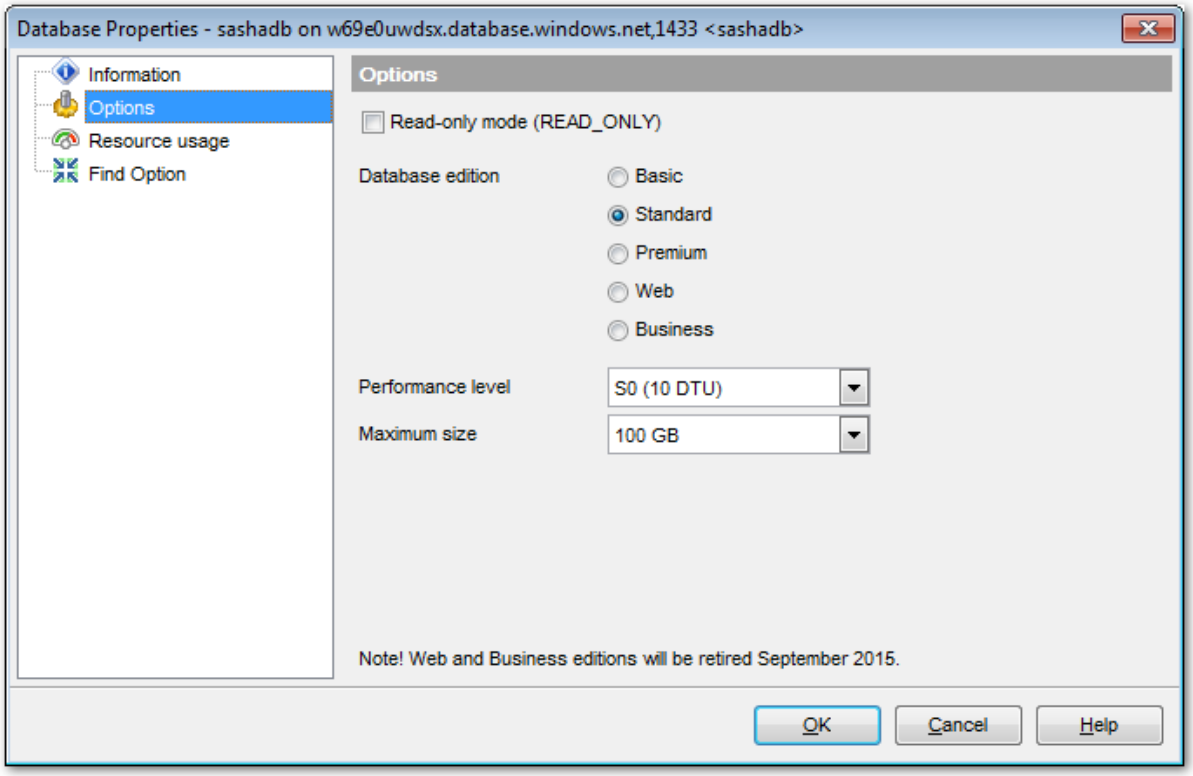

Database Edition

Here you can view the current edition of the SQL Azure database and change it, if necessary.

Basic
Small databases with a single operation at a given point in time.

Standard
Workgroup and cloud applications with multiple concurrent transactions.

Premium
Mission-critical, high transactional volume with many concurrent users.

Web
Web apps, workgroup, dept. apps, and other lightweight database workloads.

Business
Lightweight database workloads that require larger sizes than supported with Web.

Note: Web and Businesss editions will be retired September 2015.

Performance Level
Use the drop-down list to select the Performance Level for the database. Performance levels are specific for the selected database edition.

Maximum size
Specifies the maximum size of the database. This value must be valid for the specified Edition.

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See also:

Information 138
Data files 152
Log files 154
Filegroups 157
Filestream files and filegroups 158
Find Option 160

4.4.2.1 Recovery options

Recovery model

FULL

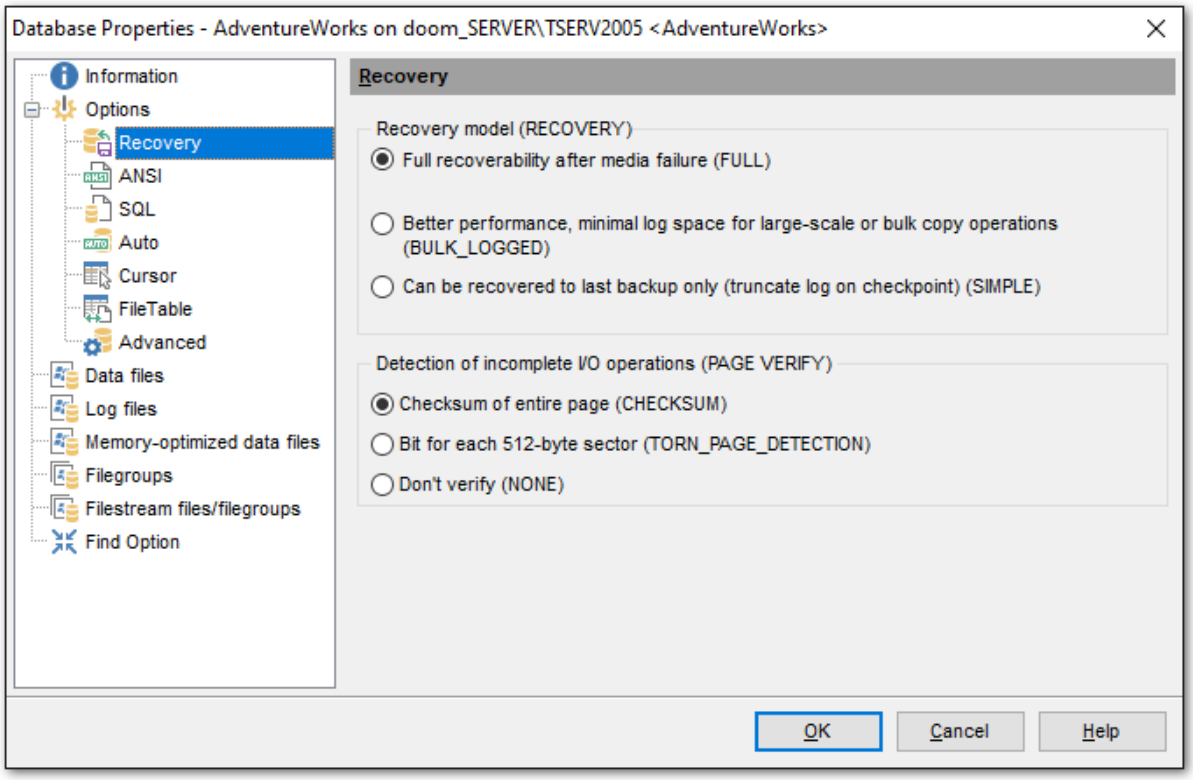
Database backups 745 and transaction log backups 745 are used to provide full recoverability from media failure. All operations, including bulk operations such as *SELECT INTO*, *CREATE INDEX*, and bulk loading 608 data, are fully logged.

BULK_LOGGED

Logging for all *SELECT INTO*, *CREATE INDEX*, and bulk loading 608 data operations is minimal and therefore requires less log space.

SIMPLE

The database can be recovered only to the last full database backup or last differential backup.



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Detection of Incomplete I/O Operations
This group can be used to specify three options to discover incomplete I/O transactions caused by disk I/O errors:
- *CHECKSUM*

A checksum is taken over the contents of the entire page and stored in the page header when a page is written to disk. When a page is read from disk, the checksum is recomputed and compared to the checksum value stored in the page header.
- *TORN_PAGE_DETECTION*

A bit is reversed for each 512-byte sector in the 8-kilobyte (KB) database page when the page is written to disk. If a bit is in the wrong state when the page is later read, the page was written incorrectly; a torn page is detected.
- *NONE*

PAGE_VERIFY is set to OFF and future data page writes will not contain a *CHECKSUM* or *TORN_PAGE_DETECTION* bit and the page will not be verified at read time.

See also:

ANSI options 143
SQL options 145
Automation options 146
Cursor options 148
FileTable options
Advanced 150

4.4.2.2 ANSI options

☑ **NULL is default for UDTs and columns (ANSI_NULL_DEFAULT)**
When this option is enabled, all user-defined data types 268 or columns 217 that are not explicitly defined as *NOT NULL* during a *CREATE TABLE* or *ALTER TABLE* statement default to allowing null values. Columns that are defined with constraints follow constraint rules regardless of this option.

☑ **Comparisons to null value evaluate to NULL (ANSI_NULLS)**
When this option is enabled, all comparisons to a null value evaluate to *NULL* (unknown). When disabled, comparisons of non-Unicode values to a null value evaluate to *TRUE* if both values are *NULL*.

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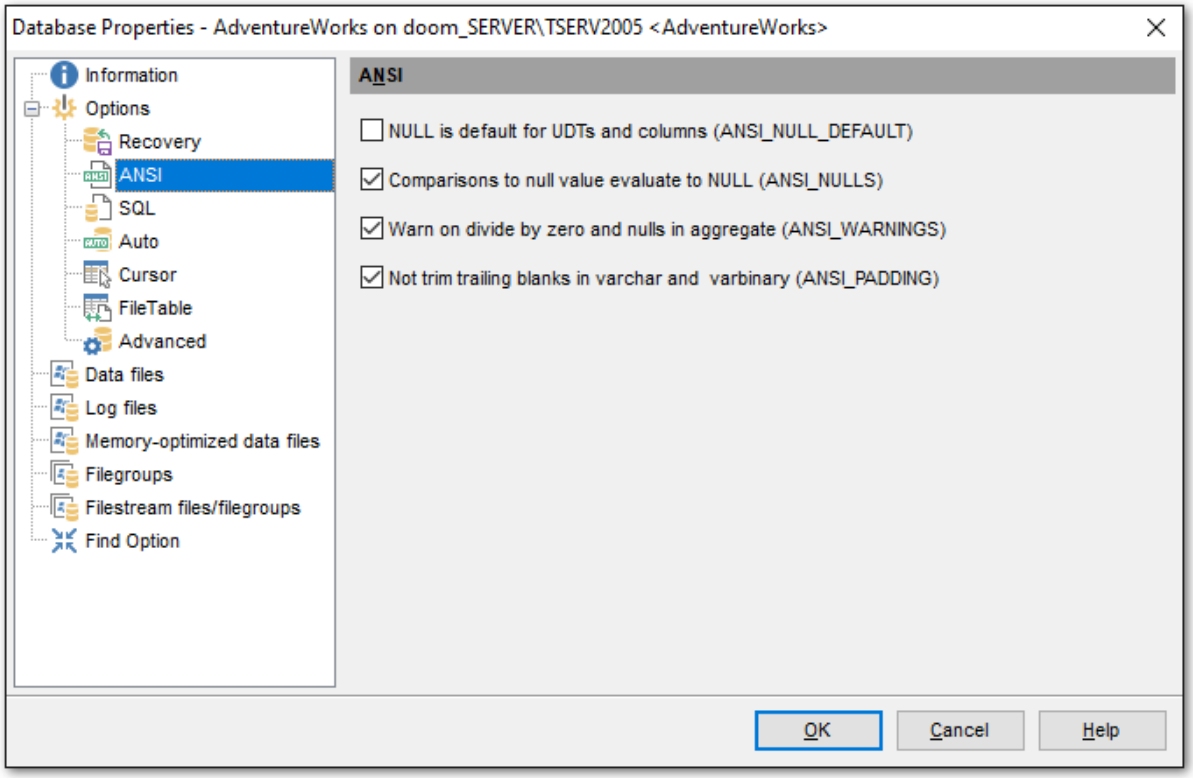


☑ **Warn on divide by zero and nulls in aggregate (ANSI_WARNINGS)**
When this option is enabled, errors or warnings are issued when conditions such as "divide by zero" occur or null values appear in aggregate functions 283. When disabled, no warnings are raised when null values appear in aggregate functions, and null values are returned when conditions such as "divide by zero" occur.

☑ **Not trim trailing blanks in varchar and varbinary (ANSI_PADDING)**
When this option is enabled, trailing blanks in character values inserted into *varchar* or *nvarchar* columns and trailing zeros in binary values inserted into *varbinary* columns are not trimmed. Values are not padded to the length of the column. When disabled, the trailing blanks (for *varchar* or *nvarchar*) and zeros (for *varbinary*) are trimmed. This option affects only the definition of new columns 217.

See also:

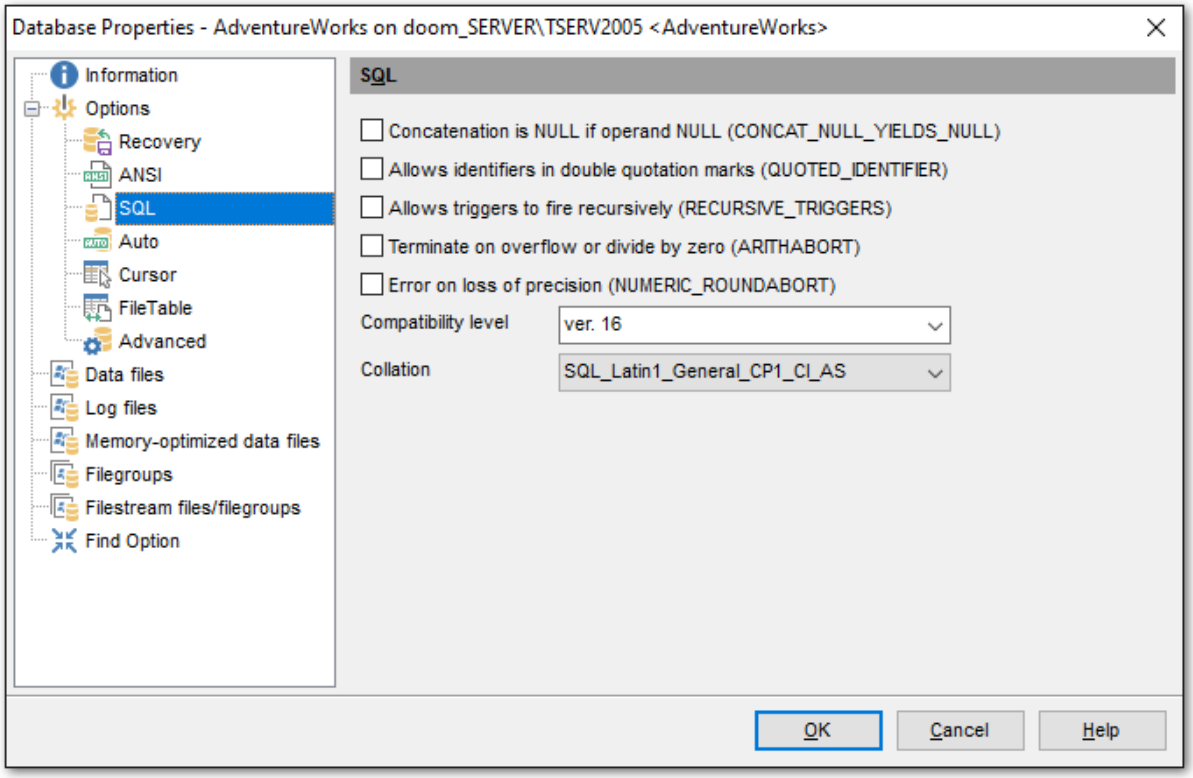
Recovery options 142
SQL options 145
Automation options 146
Cursor options 148
FileTable options
Advanced 150

4.4.2.3 SQL options

☑ **Concatenation is NULL if operand NULL (CONCAT_NULL_YIELDS_NULL)**
When this option is enabled, if one of the operands in a concatenation operation is *NULL*, the result of the operation is *NULL*.
When disabled, concatenating a null value with a character string yields the character string as the result; the null value is treated as an empty character string.

☑ **Allows identifiers in double quotation marks (QUOTED_IDENTIFIER)**
When this option is enabled, identifiers can be delimited by double quotation marks and literals must be delimited by single quotation marks.
When disabled, identifiers cannot be in quotation marks and must follow all Transact-SQL rules for identifiers. Literals can be delimited by either single or double quotation marks.

☑ **Allow triggers to fire recursively (RECURSIVE_TRIGGERS)**
When this option is enabled, triggers are allowed to fire recursively. When disabled, triggers cannot be fired recursively.



☑ **Terminate on overflow or divide by zero (ARITHABORT)**
When this option is enabled, an overflow or divide-by-zero error causes the query or batch to terminate. If the error occurs in a transaction, the transaction is rolled back.
When disabled, a warning message is displayed if one of these errors occurs, but the query, batch, or transaction continues to process as if no error occurred.

☑ **Error on loss of precision (NUMERIC_ROUNDABORT)**
If this option is enabled, an error is generated when loss of precision occurs in an expression. When disabled, losses of precision do not generate error messages and the result is rounded to the precision of the column or variable storing the result.

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The **Compatibility Level** option group controls the behavior of an instance of Microsoft® SQL Server™, setting behavior to match a specified version of SQL Server.

Collation can be either a Windows collation name or a SQL collation name. By default, the server collation is used.

See also:

Recovery options 142
ANSI options 143
Automation options 146
Cursor options 148
FileTable options
Advanced 150

4.4.2.4 Automation options

☑ **Shut down if no connected users (AUTO_CLOSE)**
When this option is enabled, the database is closed and shut down when the last user of the database exits and all processes in the database complete, thereby freeing any resources. The database reopens automatically when a user tries to use the database again. When disabled, the database remains open even if no users are currently using the database.

☑ **Auto create statistics on columns in predicates (AUTO_CREATE_STATISTICS)**
When this option is enabled, statistics are automatically created on columns used in a predicate. Adding statistics improves query performance because the SQL Server query optimizer can better determine how to evaluate a query. If the statistics are not used, SQL Server automatically deletes them. When disabled, statistics are not automatically created; instead, statistics can be manually created.

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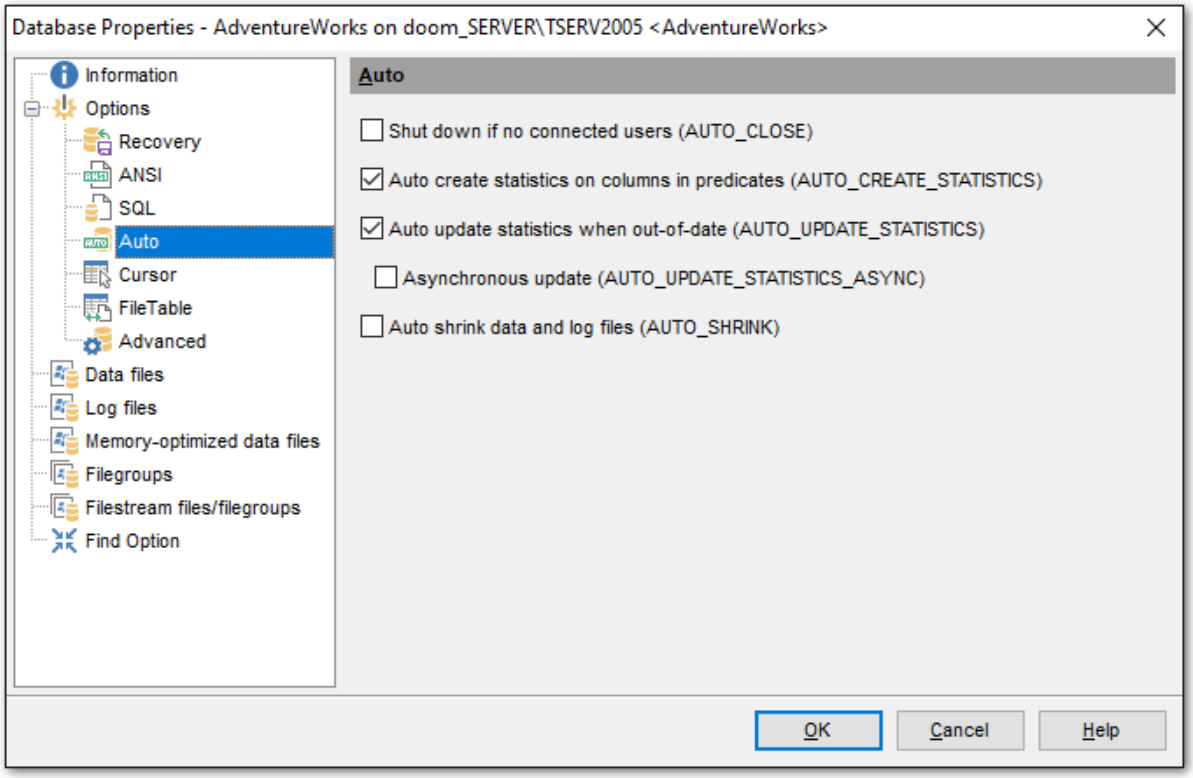

Auto update statistics when out-of-date (AUTO_UPDATE_STATISTICS)
When this option is enabled, existing statistics are automatically updated 795 when the statistics become out-of-date because the data in the tables have been changed. When disabled, existing statistics are not automatically updated; instead, statistics can be manually updated.

Asynchronous update (AUTO_UPDATE_STATISTICS_ASYNC)
When this option is enabled, queries do not wait for the statistics to be updated 795 before compiling. Instead, the out-of-date statistics are put on a queue for updating by a worker thread in a background process. The query and any other concurrent queries compile immediately by using the existing out-of-date statistics.

Auto shrink data and log files (AUTO_SHRINK)
When this option is enabled, the database files are candidates for periodic shrinking 784. Both data files 152 and log files 154 can be shrunk automatically by SQL Server. *AUTO_SHRINK* reduces the size of the transaction log only if the database is set to *SIMPLE* recovery model 142 or if the log is backed up. When disabled, the database files are not automatically shrunk during periodic checks for unused space.

See also:
Recovery options 142
ANSI options 143
SQL options 145

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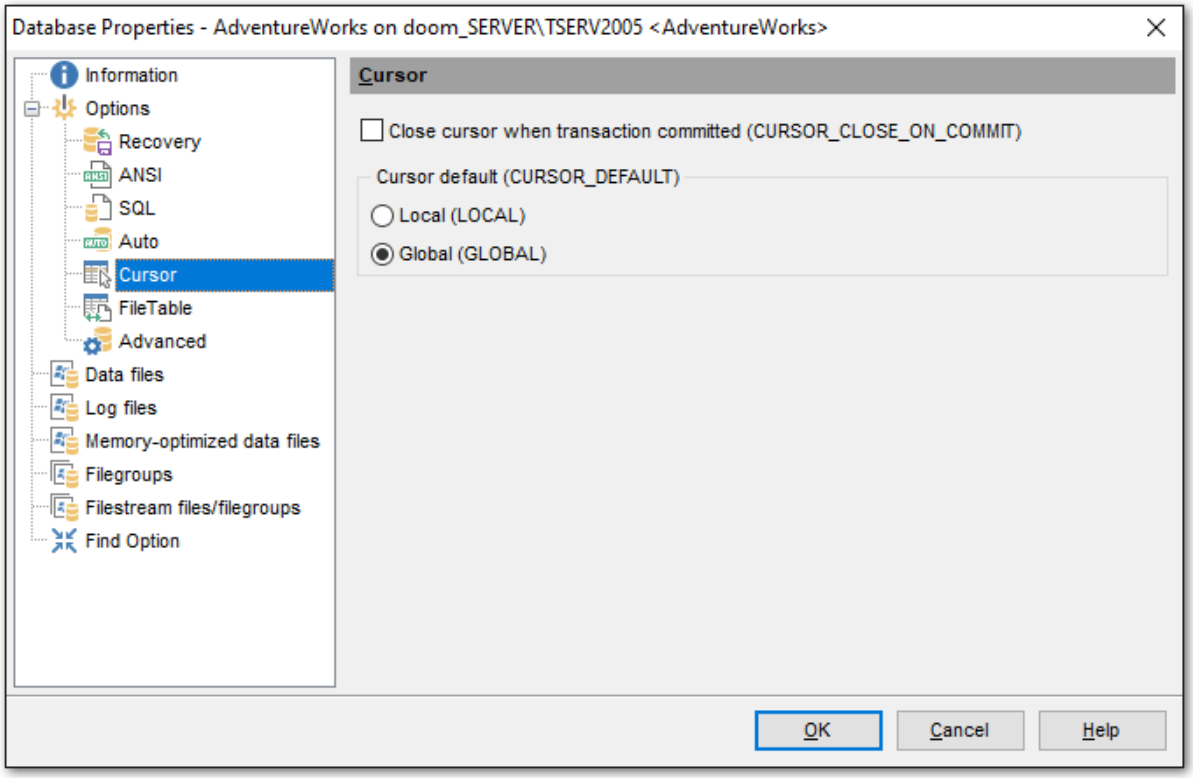
Cursor options 148
FileTable options
Advanced 150

4.4.2.5 Cursor options

☑ **Close cursor when transaction committed (CURSOR_CLOSE_ON_COMMIT)**
When this option is enabled, any open cursors are closed automatically (in compliance with SQL-92) when a transaction is committed. When disabled, cursors remain open across transaction boundaries, closing only when the connection is closed or when they are explicitly closed.



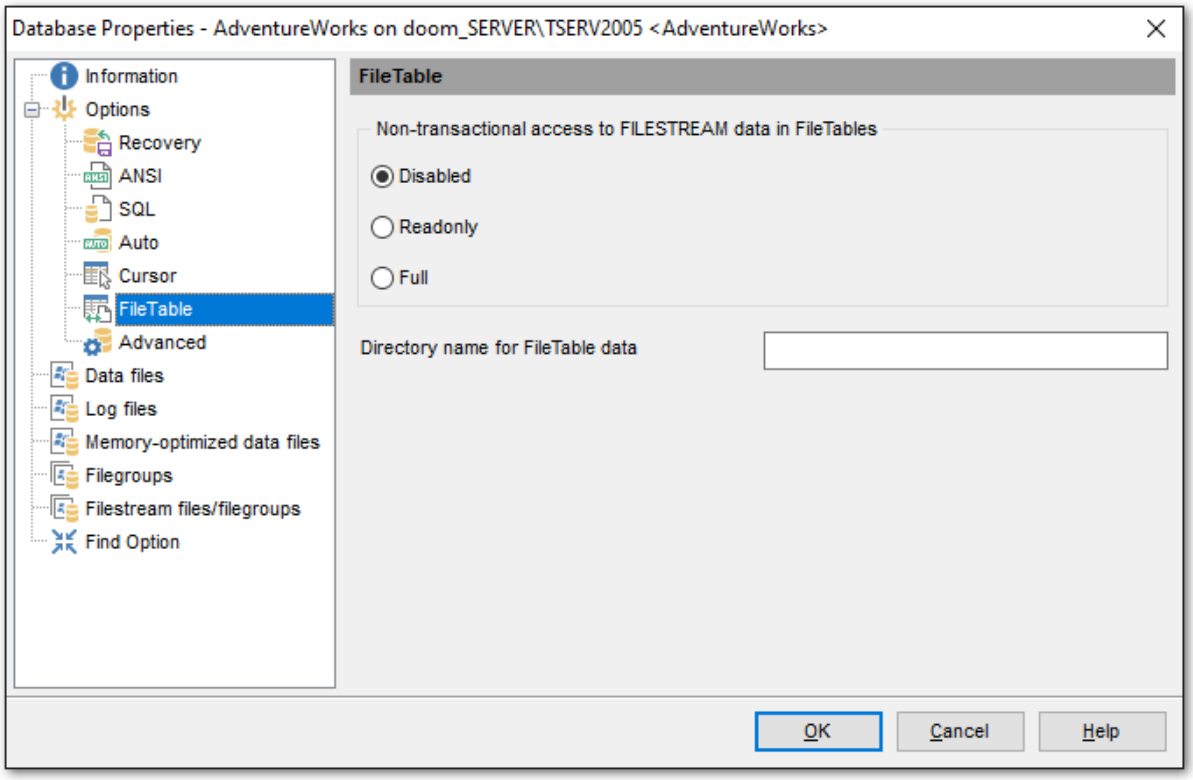
Cursor default (CURSOR_DEFAULT)
◉ *LOCAL*
The scope of the cursor is local to the batch, stored procedure 257, or trigger 240 in which the cursor was created.The cursor name is valid only within this scope. The cursor can be referenced by local cursor variables in the batch, stored procedure 257, or trigger 240, or a stored procedure 257 OUTPUT parameter.
◉ *GLOBAL*
The scope of the cursor is global to the connection. The cursor name can be referenced in any stored procedure 257 or batch executed by the connection.

See also:

Recovery options 142
ANSI options 143
SQL options 145
Automation options 146
FileTable options
Advanced 150

4.4.2.6 FileTable options

These options are available for SQL Server 2012 only.



Non-transactional access to FILESTREAM data in FileTables

Disabled

Check this option to disable non-transactional access. All the FileTable directories and their contents are no longer accessible or visible.

Readonly

If this option is checked then all the FileTable directories and their contents are read-only

Full

Check this option to enable full non-transactional access to FILESTREAM FileTables.

Directory name for FileTable data

Define the directory name to store in the FileTable.

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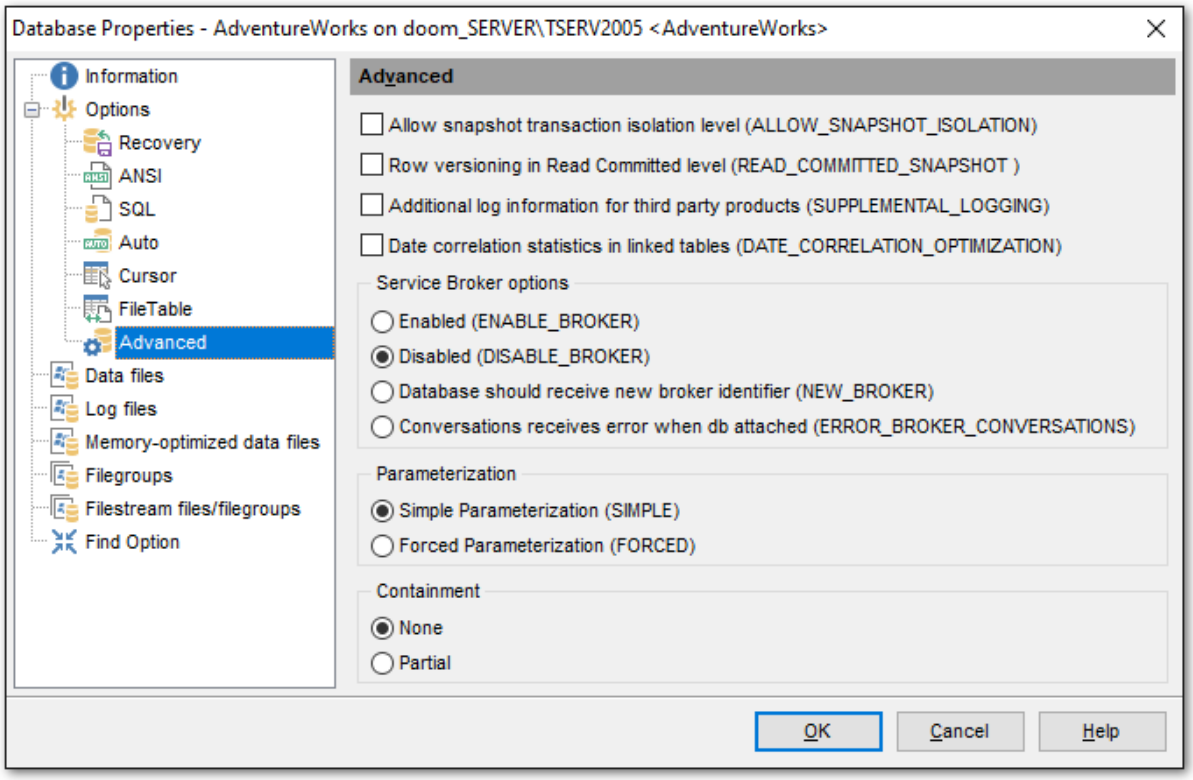
4.4.2.7 Advanced

☑ **Allow snapshot transaction isolation level (ALLOW_SNAPSHOT_ISOLATION)**
If this option is enabled, SQL Server will execute snapshot 833 transactions against the specified database when transactions are explicitly set to the *SNAPSHOT* transaction isolation level.

☑ **Row versioning in Read Comitted level (READ_COMMITTED_SNAPSHOT)**
If this option is enabled, transactions setting the read-committed isolation level use row versioning instead of locking.

☑ **Additional log information for third party products (SUPPLEMENTAL_LOGGING)**
When this option is enabled, additional information is added to the log for third-party products. Setting this option on will increase log space usage and may impact performance.

☑ **Date correlation statistics in linked tables (DATE_CORRELATION_OPTIMIZATION)**
If this option is enabled, SQL Server maintains correlation statistics between any two tables in the database that have *DATETIME* columns and are linked by a one-column foreign key 225 constraint.



Service Broker options

- *ENABLE_BROKER*

Specifies that Service Broker is enabled for the specified database. The *IS_BROKER_ENABLED* flag is set to TRUE in the sys.databases catalog view and message delivery is started.

- *DISABLE_BROKER*

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Specifies that Service Broker is disabled for the specified database. The *IS_BROKER_ENABLED* flag is set to FALSE in the sys.databases catalog view and message delivery is stopped.

- *NEW_BROKER*

Specifies that the database should receive a new broker identifier. Because the database is considered to be a completely new service broker, all existing conversations in the database are immediately removed without producing end dialog messages.

- *ERROR_BROKER_CONVERSATIONS*

Specifies that conversations in the database should receive an error message when the database is attached. This allows your applications to perform normal clean up for existing conversations.

Parametrization

- *Simple Parametrization (SIMPLE)*

Queries 430 are parameterized on the basis of the default behavior of the database.

- *Forced Parametrization (FORCED)*

SQL Server parameterizes all queries 430 in the database.

Containment

Contained Database is independent of the SQL Server Instance. All the database metadata and user information is stored inside the database itself.

- *None*

Check this option to make a non-contained database.

- *Partial*

Check this option to make a database partially contained. A partially contained database is a contained database that can allow some features that cross the database boundary (The boundary between a database and the instance of SQL Server or between a database and other databases). SQL Server includes the ability to determine when the containment boundary is crossed. The partially contained database can store important information in the database so the database still has the information after it is moved.

See also:

Recovery options 142
ANSI options 143
SQL options 145
Automation options 146
Cursor options 148
FileTable options

4.4.3 Resource usage

On this tab the results of the *sys.resource_stats* command are displayed. It returns CPU usage and storage data for an Azure SQL Database.

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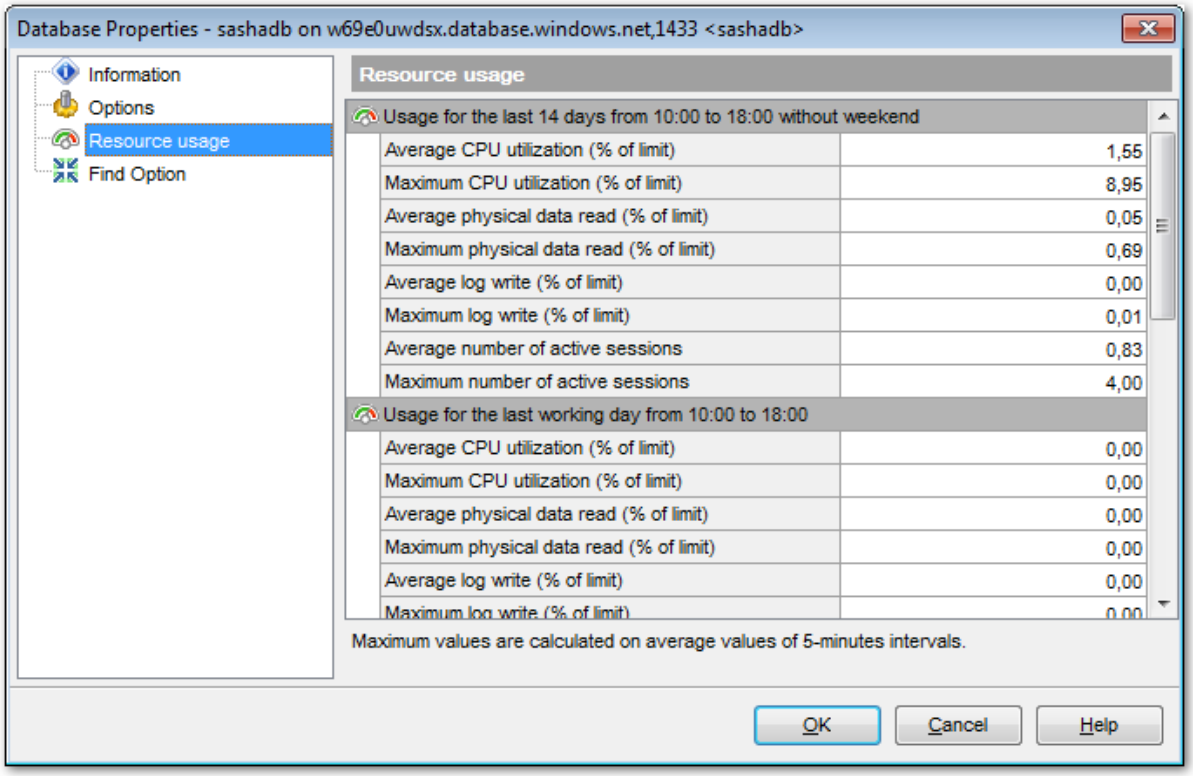
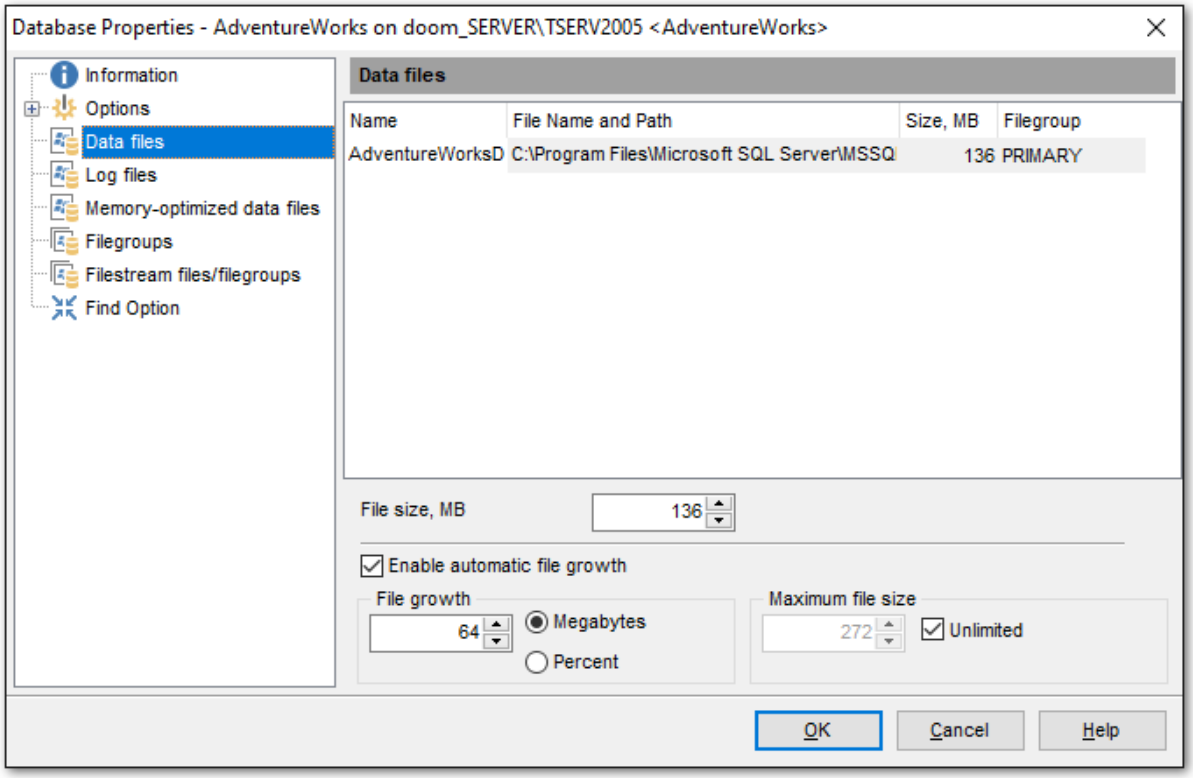


4.4.4 Data files

The **Data files** section of the **Database Properties** dialog allows you to specify that the disk files used to store the data portions of the database (data files) are defined explicitly, and fill the list of file items defining the data files for the primary file group.

To add a data file, right-click in the main working area and select the **Add file** popup menu item.
To remove a data file, right-click the file in the list and select the **Delete file** popup menu item.



The **Name** is a logical name used to refer to the physical file in all Transact-SQL statements. The logical file name must conform to the rules for SQL Server identifiers and must be unique within the database.

The **File Name and Path** is the name of the physical file including the directory path. The path must follow the rules for operating system file names.

File Group
The *Primary* file group contains the primary data file and any other files not specifically assigned to another file group. All pages for the system tables are allocated in the primary file group. *User-defined* file groups are any other file groups specified by the user.
Note: You can manage file groups for an existing database using the Filegroups 157 section of the Database Properties 137 dialog.

File size
Use the spinner control to specify the original size of the selected database file (in megabytes).

SQL Server 2005 (and higher) database files can grow automatically from their originally specified size. When you define a file, you can specify a **file growth** increment (in *megabytes* or in *percent*). Each time the file fills, it increases its size by the growth increment. If there are multiple files in a file group, they do not autogrow until all the files are full. Growth then occurs using a round-robin algorithm.

Each file can also have **maximum file size** specified. If ☑ **Unlimited** is specified, the file can continue to grow until it has used all available space on the disk.

See also:

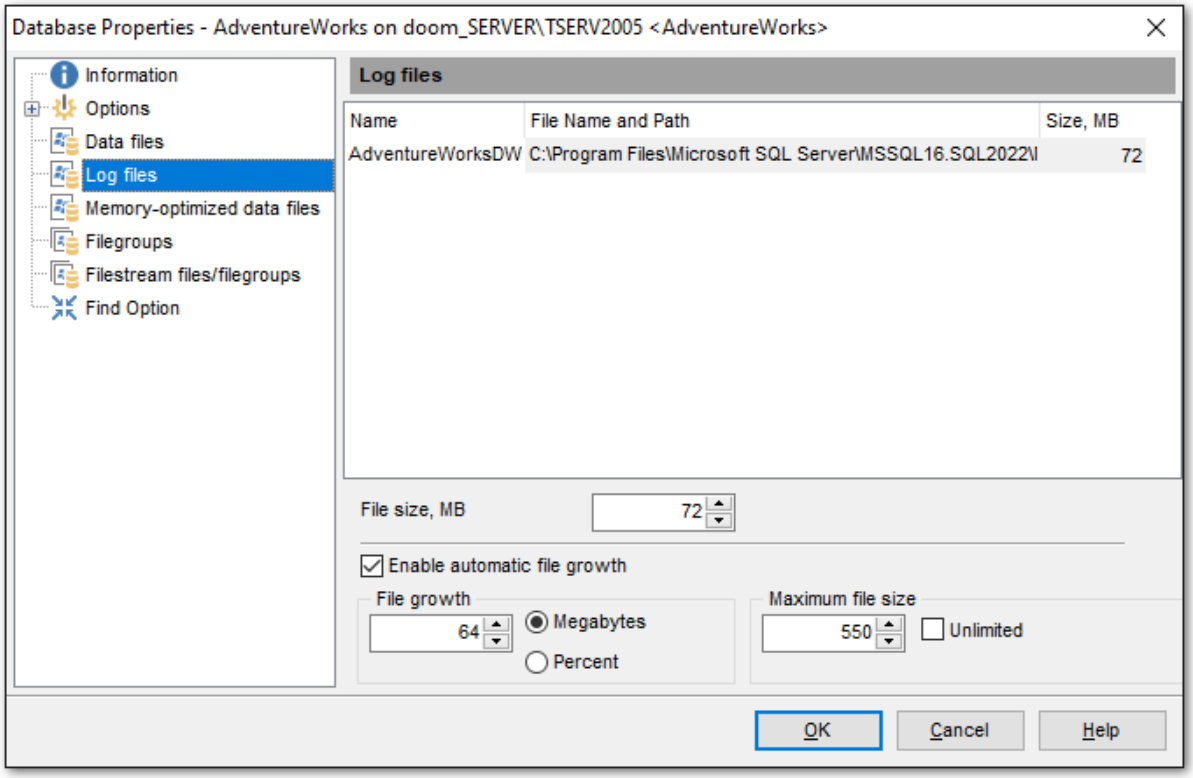
Information 138
Options 139
Log files 154
Filegroups 157
Filestream files and filegroups 158
Find Option 160

4.4.5 Log files

The **Log files** section of the **Database Properties** dialog allows you to manage **transaction log files** for the database.

Log files hold all of the log information used to recover the database. There must be at least one log file for each database, although there can be more than one. The recommended file name extension for log files is **.ldf*.

To add a log file, right-click in the main working area and select the **Add file** popup menu item.
To remove a log file, right-click the file in the list and select the **Delete file** popup menu item.



The **Name** is a logical name used to refer to the physical file in all Transact-SQL

statements. The logical file name must conform to the rules for SQL Server identifiers and must be unique within the database.

The **File Name and Path** is the name of the physical file including the directory path. The path must follow the rules for operating system file names.

File size
Use the spinner control to specify the original size of the selected transaction log file (in megabytes).

SQL Server 2005 (and higher) transaction log files can grow automatically from their originally specified size. When you define a file, you can specify a **file growth** increment. Each time the file fills, it increases its size by the growth increment. If there are multiple files in a file group, they do not autogrow until all the files are full. Growth then occurs using a round-robin algorithm.

Each file can also have **maximum file size** specified. If ☑ **Unlimited** is specified, the file can continue to grow until it has used all available space on the disk.

See also:
Information 138
Options 139
Data files 152
Filegroups 157
Filestream files and filegroups 158
Find Option 160

4.4.6 Memory-optimized data files

The **Memory-optimized data files** section of the **Database Properties** dialog allows you to manage containers of the **memory-optimized filegroup** for the database.

Note: This section is only available for SQL Server 2014.

Creating a memory-optimized filegroup is necessary for creating memory-optimized tables. The memory-optimized filegroup holds one or more containers.
Use the **Memory-optimized data files** grid to add containers to the memory-optimized filegroup.

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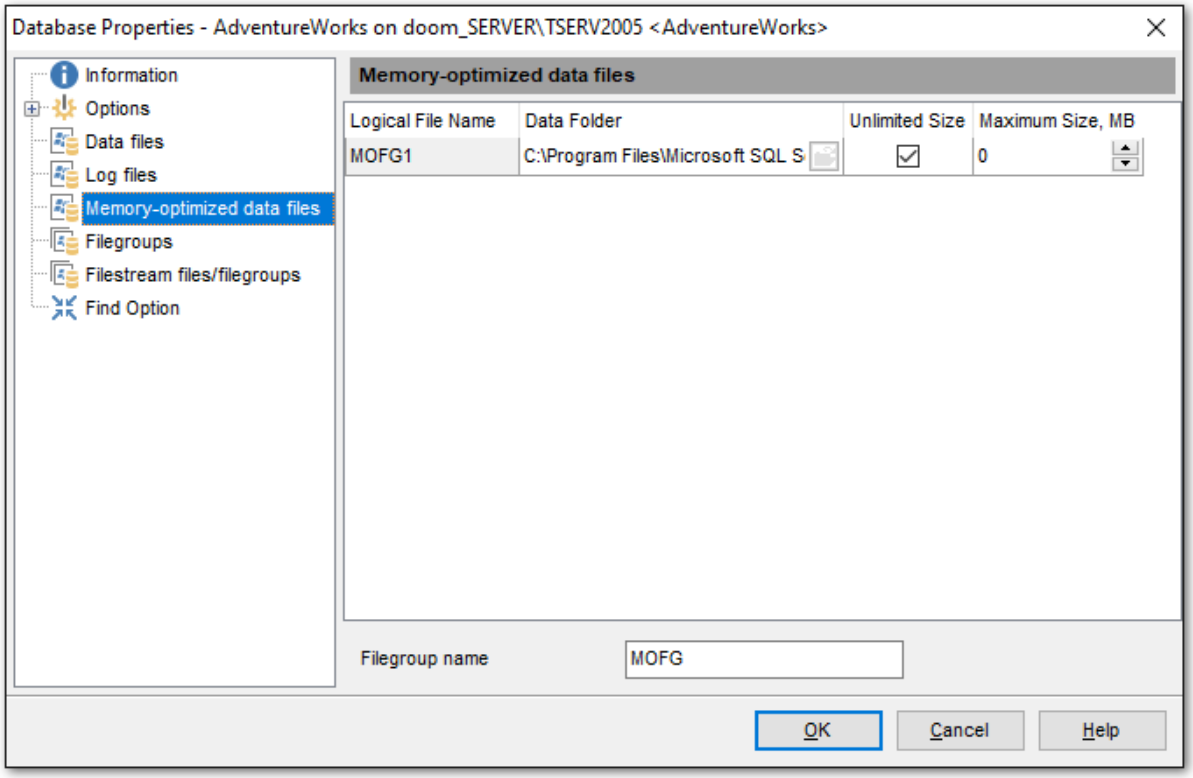

To add a memory-optimized data file, right-click in the main working area and select the **New Memory-Optimized Data File** popup menu item.
To remove a memory-optimized data file, right-click the file in the list and select the **Delete Memory-Optimized Data File** popup menu item.

The **Logical File Name** is the name of the logical file storing the data used to refer to the physical file in all Transact-SQL statements.

Data folder
The physical location of the data. The directory must be located on the server where the database resides. Use the button to open the SQL Server Folders 984 dialog to select the preferable directory.

Each file can also have **Maximum size** specified. Use the spinner control to specify the original size of the selected database file (in megabytes).
If **Unlimited** is specified, the file can continue to grow until it has used all available space on the disk.

Name of filegroup for memory-optimized data
Specify the name of the memory-optimized filegroup on the database.

Drop the filegroup
If the memory-optimized filegroup is no longer needed enable this checkbox. Note that the filegroup can be deleted only in case it is empty.

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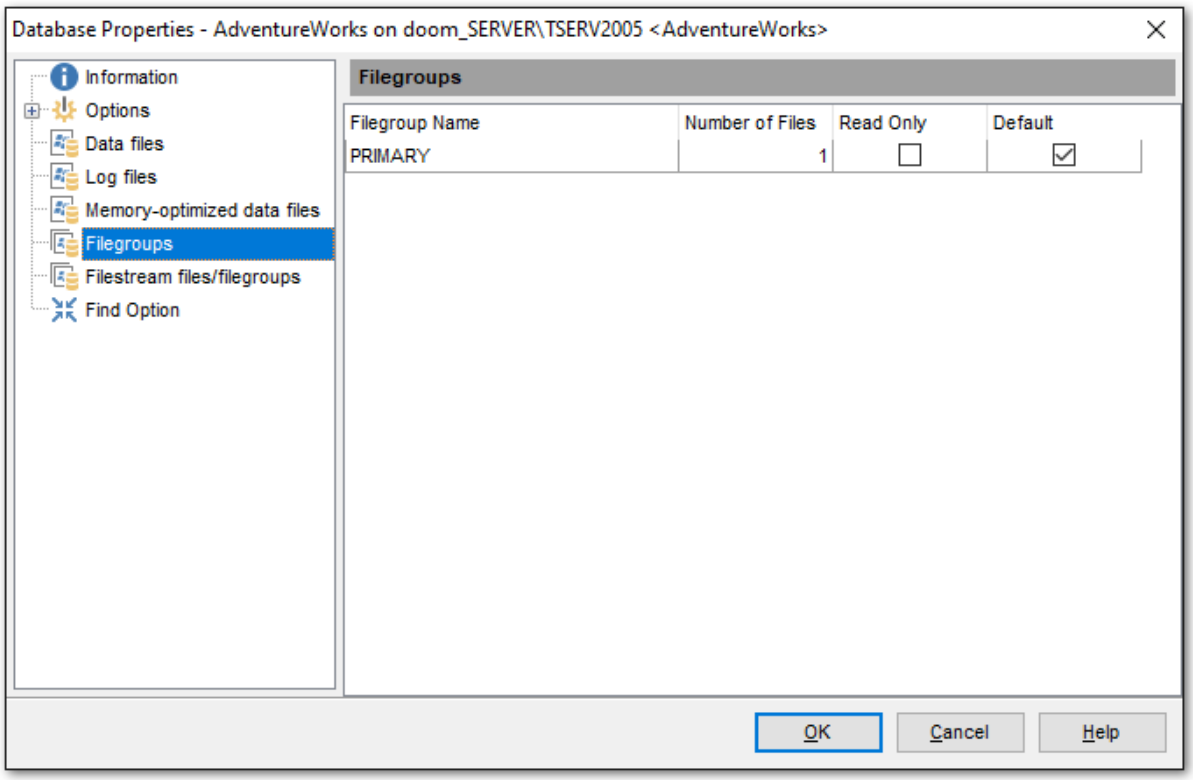
4.4.7 Filegroups

The **Filegroups** section of the **Database Properties** dialog allows you to manage **filegroups** for the database.

Each database has a *PRIMARY* filegroup which contains the primary data file and any secondary files that are not put into other filegroups. User-defined filegroups can be created to group data files together for administrative and data allocation/placement purposes.



All data files are stored in filegroups:

- *PRIMARY*: the filegroup that contains the primary file. All system tables are allocated to the primary filegroup.
- *User-defined*: any filegroup that is specifically created by the user when first creating or later altering the database.

Read Only
Specifies that the filegroup is read-only. Updates to objects that reside in this filegroup are not allowed. The *PRIMARY* filegroup cannot be marked read-only.

Default
When objects are created in the database without specifying to which filegroup they belong, they are assigned to the default filegroup. At any time, exactly one filegroup is designated as the default filegroup. The files in the default filegroup must be large enough to hold any new objects not allocated to other filegroups. Initially, the *PRIMARY* filegroup is the default filegroup.

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See also:
Information 138
Options 139
Data files 152
Log files 154
Filestream files and filegroups 158
Find Option 160

4.4.8 Filestream files and filegroups

The **Filestream files and filegroups** section of the **Database Properties** dialog allows you to manage **filestream filegroups** for the database.

Note: This section is only available for SQL Server 2008 and higher.

In SQL Server 2008, FILESTREAM enables the application to store unstructured data (such as text documents, images, videos, etc.) on the file system. FILESTREAM integrates the SQL Server Database Engine with an NTFS file system by storing varbinary (max) binary large object (BLOB) data as files on the file system. Transact-SQL statements can insert, update, query, search, and back up FILESTREAM data. Win32 file system interfaces provide streaming access to the data.

To add a filestream file, right-click in the main working area and select the **Add Filestream File** popup menu item.
To remove a filestream file, right-click the file in the list and select the **Delete Filestream File** popup menu item.

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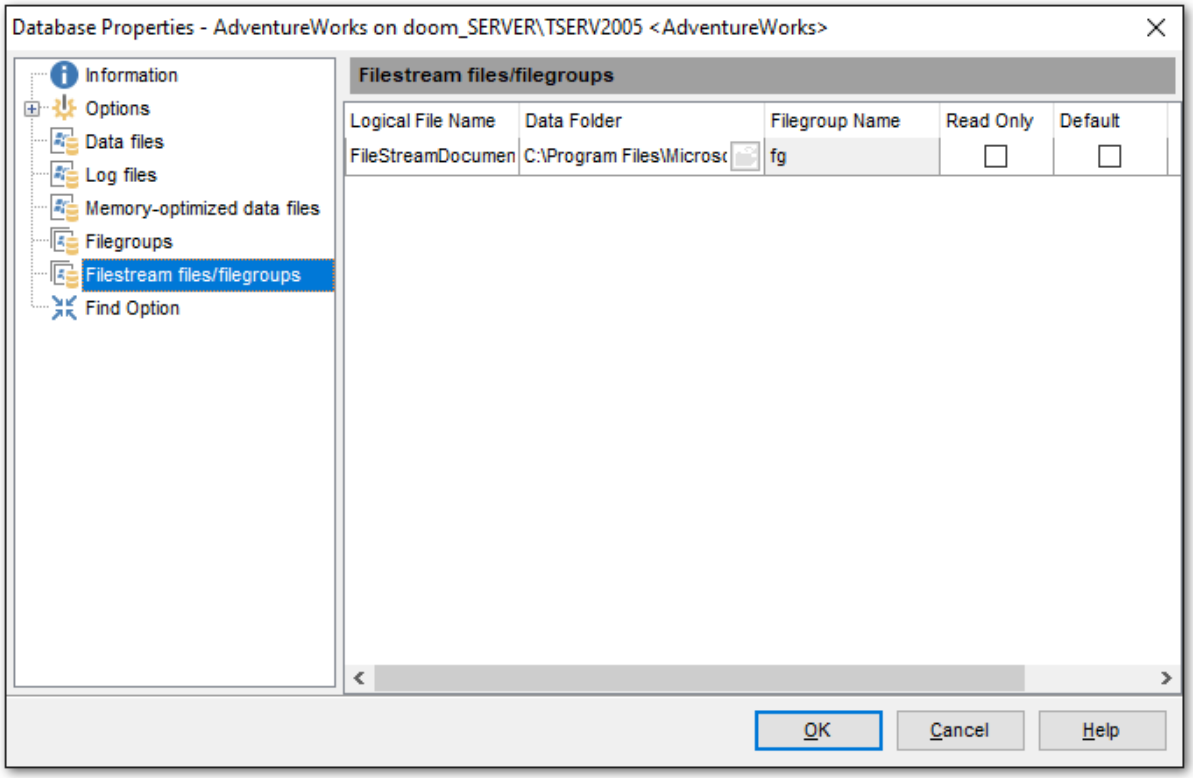

The **Logical File Name** is the name of the logical file storing the data used to refer to the physical file in all Transact-SQL statements.

Data folder
The physical location of the data. The directory must be located on the server where the database resides. Use the button to open the SQL Server Folders 984 dialog to select the preferable directory.

Filegroup Name
Specify the name of the filestream filegroup.

Read Only
Specifies that the filestream filegroup is read-only. Updates to objects that reside in this filestream filegroup are not allowed. The default fiestream filegroup cannot be read-only.

Default
The filestream fields data will be stored in this filestream filegroup if none was specified for the table.

See also:
Information 138
Options 139
Data files 152
Log files 154

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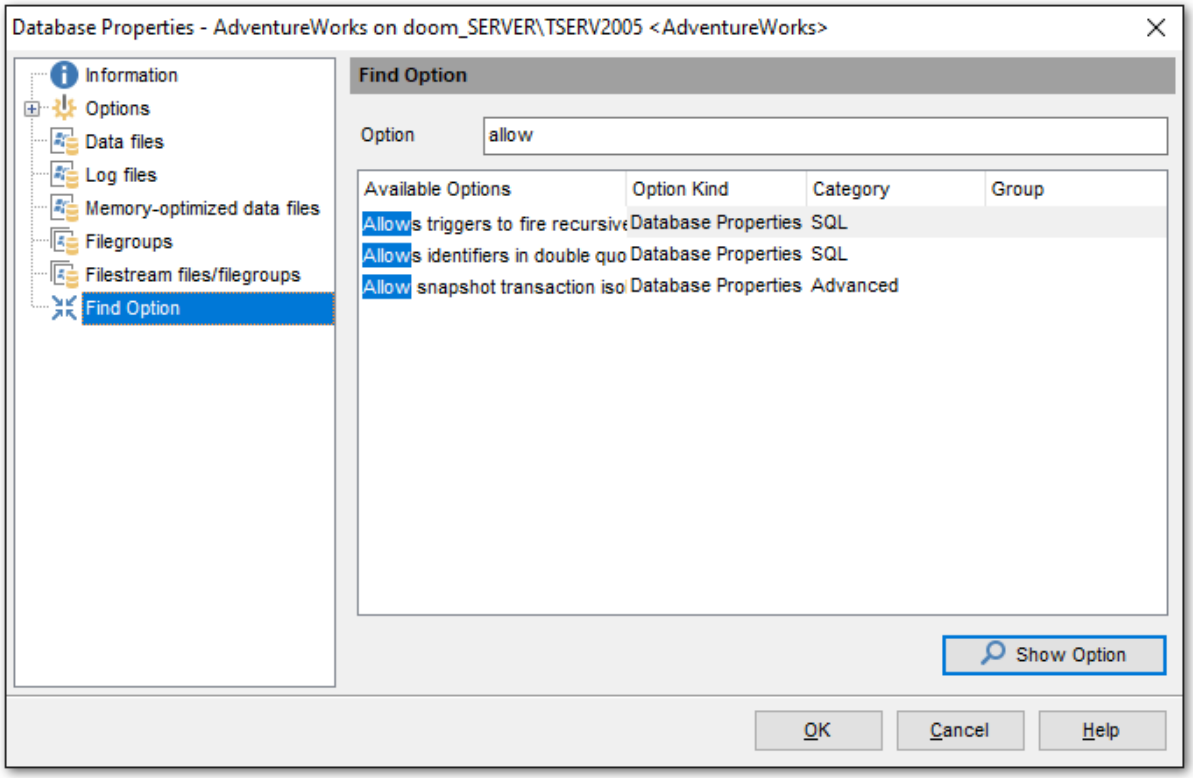
Filegroups 157
Find Option 160

4.4.9 Find Option

The **Find Option** section allows you to search for options available within the **Database Properties** dialog easily and quickly.

Option
In this field you can enter the name of the option to search for within the database properties.



The **Available options** area lists all options of the Database Properties category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.
Select the required option in the list and click **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated icon.

See also:
Information 138
Options 139
Data files 152

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Log files 154
Filegroups 157
Filestream files and filegroups 158

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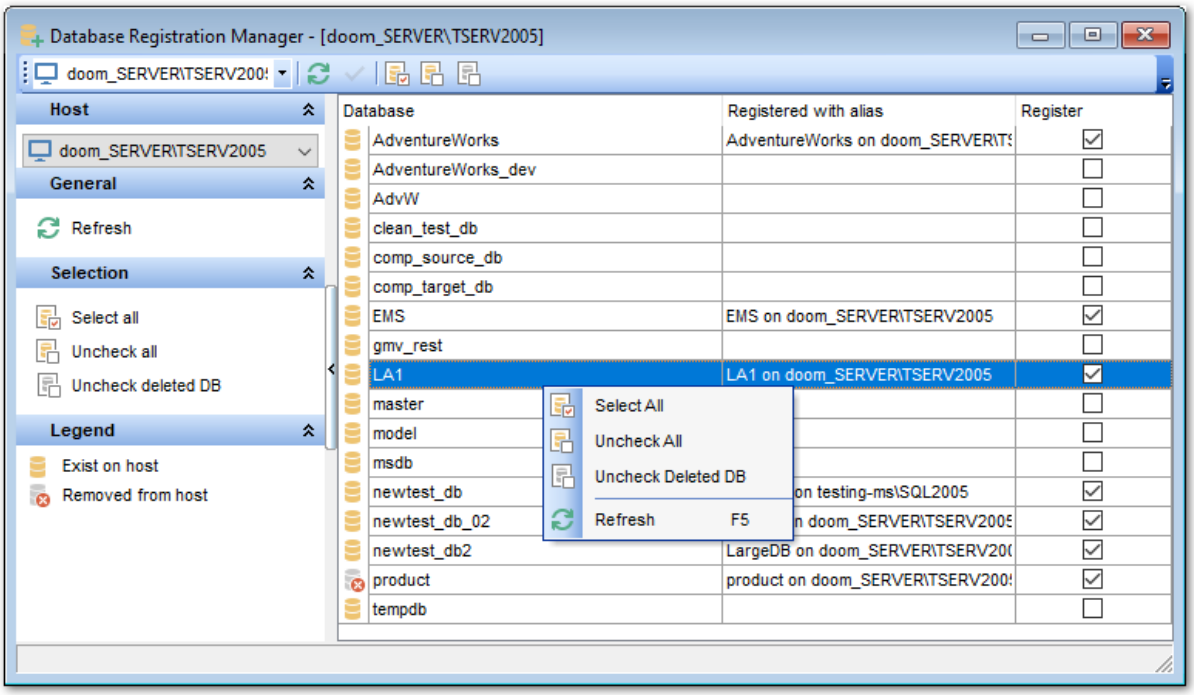
4.5 Database Registration Manager

Database Registration Manager allows you to register new databases and delete the registration of no longer needed databases, including non-existing ones.

To open **Database Registration Manager** use the corresponding item of the database context menu 55 or the host context menu 54.



The grid contains all databases located on the selected host. You can change **Host** selection using the appropriate drop-down list in the navigation bar 163.
Check databases you want to be registered.

Using the context menu you can:
- select all databases,
- uncheck all databases,
- uncheck deleted databases,
- refresh the list.

After the selection is made click the ✔ **Apply changes button** to register selected databases.

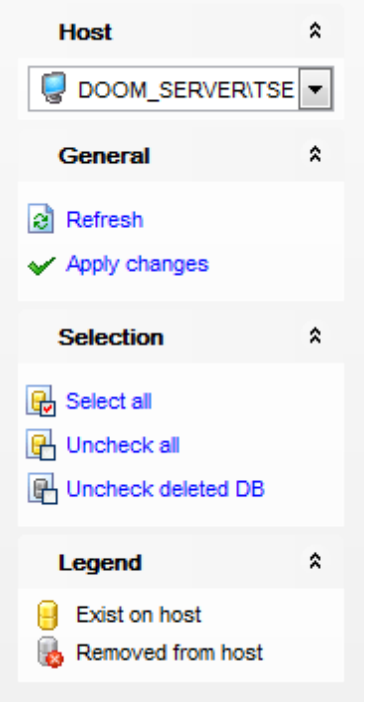
Availability:
Full version (for Windows) **Yes**
Lite version (for Windows) **No**
Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Register Database wizard 114
Database Registration Info 120

4.5.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Database Registration Manager**.



The **Navigation bar** of **Database Registration Manager** allows you to:

Host
select a host

General
refresh the list of databases
apply changes - register selected databases

Selection
select all databases located on the host
uncheck all databases in the list
uncheck databases deleted from the host

Legend
database existing on the host
database removed from the host

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Items of the **Navigation bar** are also available on the **ToolBar** of **Schema Editor**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

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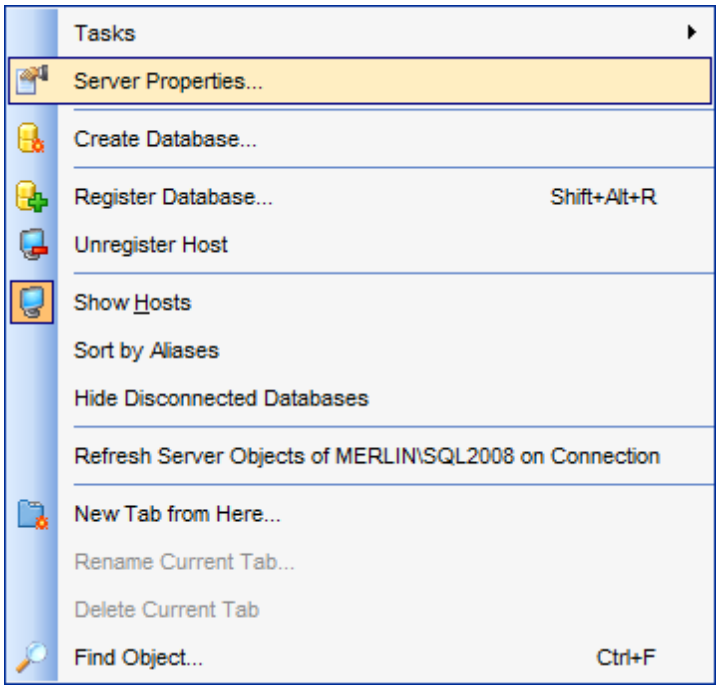
4.6 Server Properties

The **Server Properties** dialog allows you to view/edit a number of server options which can be changed to optimize Microsoft® SQL Server performance.

To open the dialog, right-click the database or host alias in DB Explorer 65 and select the **Server Properties...** context menu item.



- General options 166
- Memory options 167
- Processor options 168
- Security options 170
- Active Directory 172
- Connection settings 173
- Database Settings 175
- Misc Server Settings 177
- Advanced settings 178
- Find Option 180

Configured values
This option displays the configured values for options on this page. If you change these values, select **Running Values** to see whether the changes have taken effect. If they have not, the instance of SQL Server must be restarted first.

Running values
This option displays the currently running values for options on this page. These values are read-only.

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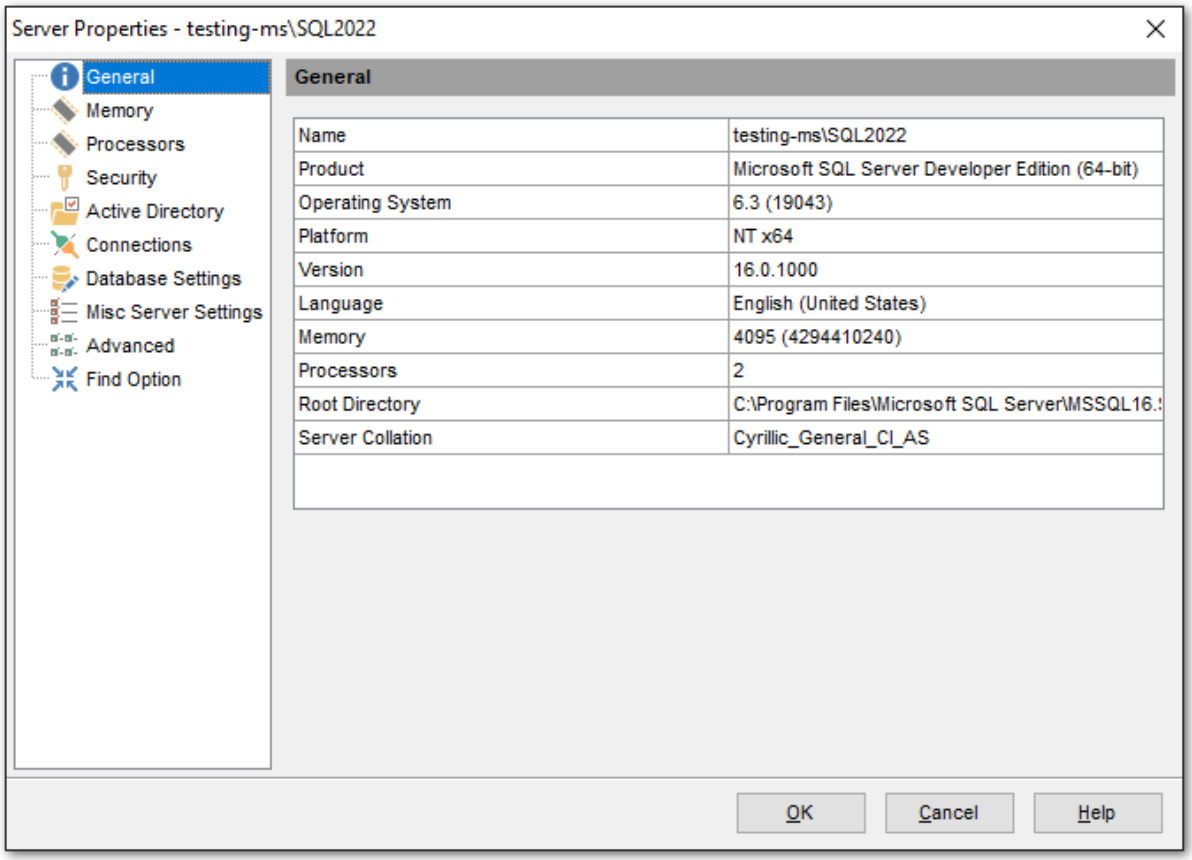
4.6.1 General options

The **General** section of the **Server Properties** dialog allows you to take a brief look at the general server configuration properties: *Name*, *Product*, *Operating System*, *Platform*, *Version*, *Language*, *Memory*, *Processors*, *Root Directory*, *Server Collation*.

Note: These properties are read-only.



Name
Indicates the name of the instance of SQL Server in the following format: *computer_name\sqlserver_instance_name*

Product
Indicates the full product name of SQL Server.

Operating System
Indicates the OS version and its build.

Platform
Indicates the OS and hardware configuration used on the server.

Version
Indicates SQL Server version.

Language

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Indicates SQL Server language.

Memory
Indicates the amount of memory available on the machine where SQL Server is running.

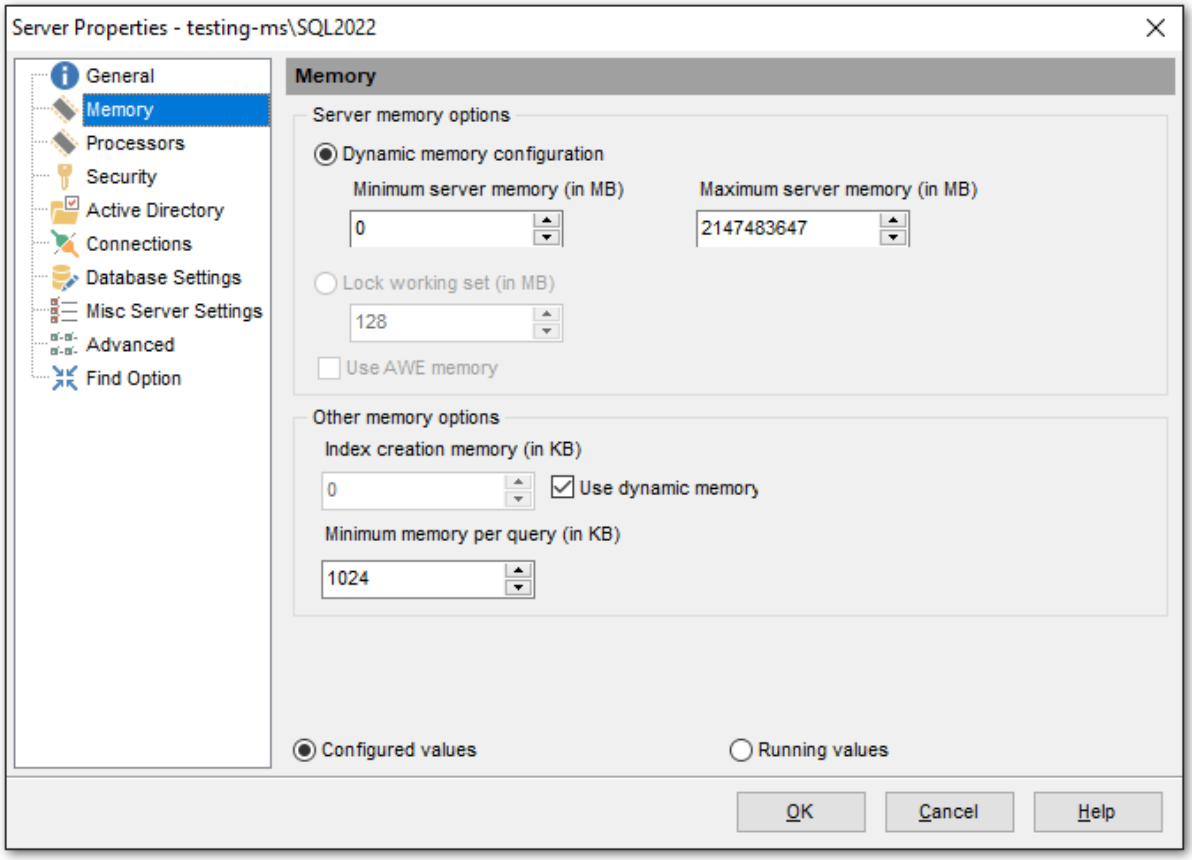
Processors
Indicates the quantity of CPUs on the server machine.

Root Directory
Indicates the installation directory of SQL Server instance

Server Collation
Indicates the collation used on the server.

4.6.2 Memory options

The **Memory** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting options pertaining to memory usage in groups: *Server memory options*, *Other memory options*.



Server memory options

Dynamic memory configuration

Use the two server memory options, *Minimum server memory* and *Maximum server memory*, to reconfigure the amount of memory (in megabytes) in the buffer pool used by the instance of SQL Server.
By default, SQL Server can change its memory requirements dynamically on the basis of available system resources. The default setting for *Minimum server memory* is *0*, and the default setting for *Maximum server memory* is *2147483647*. The minimum amount of memory that can be specified for *Maximum server memory* is *16 MB*.

Locking working set
Allowing SQL Server to use memory dynamically is recommended; however, you can set the memory options manually and restrict the amount of memory that SQL Server can access.

Use AWE memory
Under Windows Server 2003, SQL Server 2005 (and higher) can use Address Windowing Extensions (AWE) memory to further assist in balancing its own memory requirements with those of the operating system. This balancing between SQL Server and the operating system is subject to the constraints of the *Minimum server memory* and *Maximum server memory* options.

Other memory options

In SQL Server 2000/2005/2008 the **Index creation memory** option controls the maximum initial amount of memory allocated for index creation. If additional amount of memory is required for index creation operation, and it is available, the server will use additional memory thus exceeding the setting of this option. If additional memory is not available, the memory that has been already allocated will be used for index creation.

Use the **Minimum memory per query** option to specify the minimum amount of memory (in kilobytes) that will be allocated for execution of a query. For example, if **Minimum memory per query** is set to *2,048 KB*, the query is guaranteed to get at least that much total memory. You can set **Minimum memory per query** to any value from *512* up to *2,147,483,647 KB (appr. 2 GB)*. The default value is *1,024 KB*.

4.6.3 Processor options

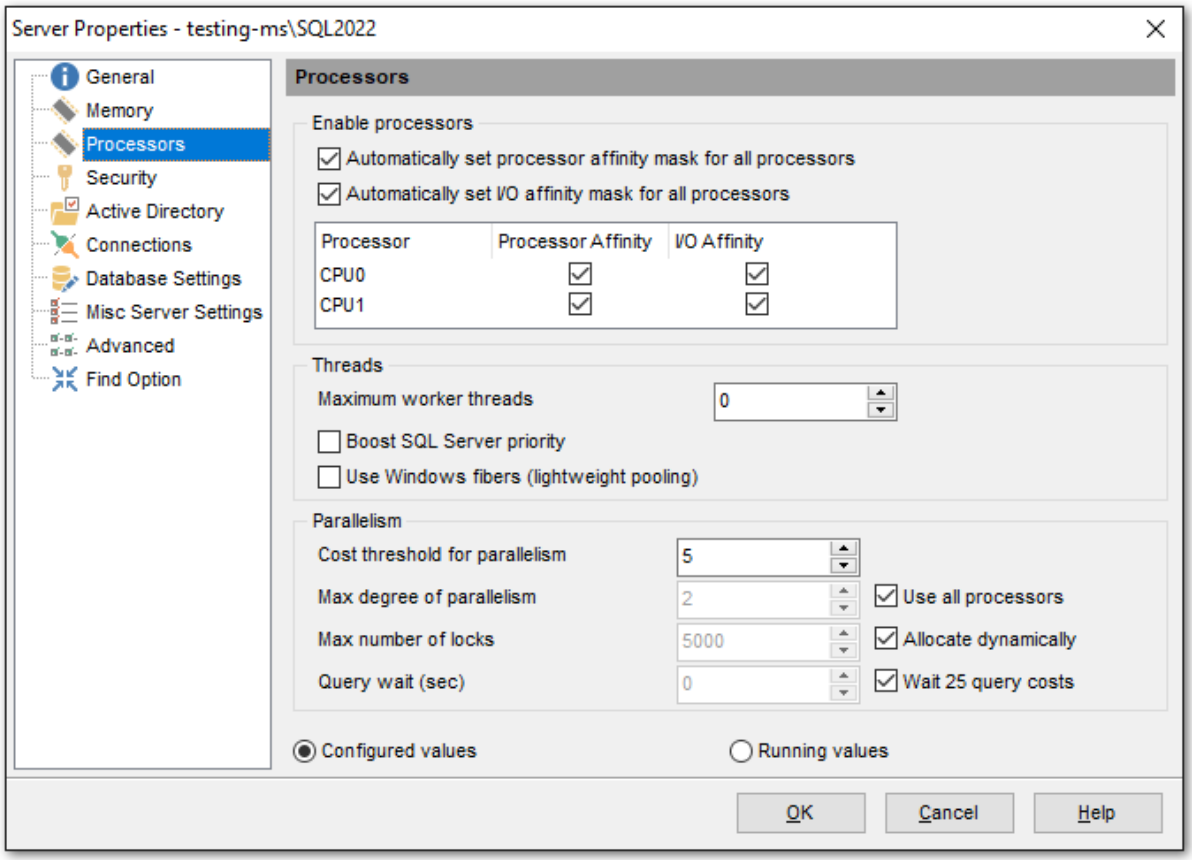
The **Processors** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting options pertaining to processors usage in groups: *Enable processors*, *Threads*, *Parallelism*.

Enable processors

To carry out multitasking, it is possible to distribute process threads among different processors. Although efficient from an operating system point of view, this activity can reduce SQL Server performance under heavy system loads, as each processor cache is repeatedly reloaded with data. Assigning processors to specific threads can improve performance under these conditions by eliminating processor reloads and reducing thread migration across processors (thereby reducing context switching); such an association between a thread and a processor is called *processor affinity*.

You can enable any or both two affinity mask options supported by SQL Server 2005 (and higher): **Automatically set processor affinity mask** (also known as **CPU affinity**

mask) and ☑ **Automatically set I/O affinity mask for all processors**.



Threads

Use the **Maximum worker threads** option to configure the number of working threads available to Microsoft® SQL Server processes. SQL Server uses the native thread services of the Microsoft® Windows 2000 and Windows Server 2003 operating systems so that one or more threads support each network that SQL Server supports simultaneously, another thread handles database checkpoints, and a pool of threads handles all users.

Use the ☑ **Boost SQL Server priority** option to specify whether SQL Server should run at a higher Windows 2000 or Windows 2003 scheduling priority than other processes on the same computer. If you set this option to 1, SQL Server runs at a priority base of 13 in the Windows 2000 or Windows Server 2003 scheduler. The default is 0, which is a priority base of 7.

Select the ☑ **Use Windows fibers (lightweight pooling)** option to provide a means of reducing the system overhead associated with the excessive context switching sometimes seen in symmetric multiprocessing (SMP) environments. When excessive context switching is present, lightweight pooling can provide better throughput by performing the context switching inline, thus helping to reduce user/kernel ring transitions.

Parallelism

Use the **Cost threshold for parallelism** option to specify the threshold at which SQL Server creates and runs parallel plans for queries. SQL Server creates and runs a parallel plan for a query only when the estimated cost to run a serial plan for the same query is higher than the value set in **Cost threshold for parallelism**. The cost refers to an estimated elapsed time in seconds required to run the serial plan on a specific hardware configuration. Only set **Cost threshold for parallelism** on symmetric multiprocessors.

Use the **Max number of locks** option to set the maximum number of available locks, thereby limiting the amount of memory the Database Engine uses for them. The default setting is 0, which allows the Database Engine to allocate and deallocate lock structures dynamically, based on changing system requirements. When the server is started with locks set to 0, the lock manager acquires sufficient memory from the Database Engine for an initial pool of 2,500 lock structures. As the lock pool is exhausted, additional memory is acquired for the pool. Allowing SQL Server to use locks dynamically is the recommended configuration.

Use the **Query wait** option to specify the time in seconds (from 0 through 2147483647) that a query waits for resources before timing out. If the default value of -1 is used, or if –1 is specified, then the time-out is calculated as 25 times of the estimated query cost. In Microsoft SQL Server, memory-intensive queries (such as those involving sorting and hashing) are queued when there is not enough memory available to run the query. The query times out after a set time calculated by SQL Server (25 times the estimated cost of the query) or the time specified by the nonnegative value of the query wait.

When SQL Server 2005 (and higher) runs on a computer with more than one CPU, it detects the best degree of parallelism for each instance of a parallel query execution. You can use the **Max degree of parallelism** option to limit the number of processors to use in parallel plan execution. The default value of *0* indicates that all available processors are used. Set **Max degree of parallelism** to *1* to suppress parallel plan generation. Set the value to a number greater than *1* (up to a maximum of *64*) to restrict the maximum number of processors used by a single query execution. If a value greater than the number of available processors is specified, or in case the ☑ **Use all processors** option is selected, the actual number of available processors is used. If the computer has only one processor, the **max degree of parallelism** value is ignored.

4.6.4 Security options

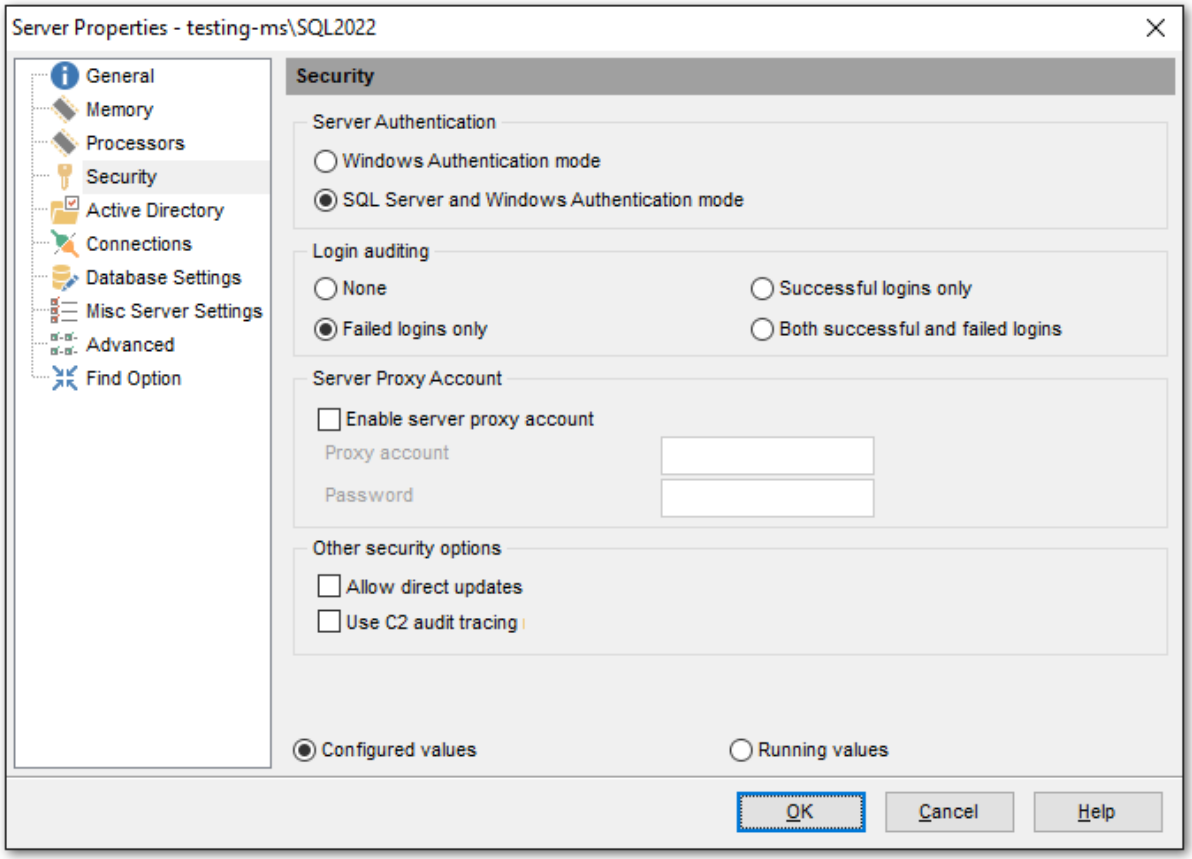
The **Security** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting options pertaining to server security in groups: *Server Authentication*, *Login auditing*, *Server Proxy Account*, *Other security options*.

Server Authentication

Windows Authentication mode
When a user connects through a Microsoft® Windows user account, SQL Server validates the account name and password using information in the Windows operating system. This is the default authentication mode, and is much more secure than the mixed mode. Windows Authentication utilizes Kerberos security protocol, provides password policy enforcement in terms of complexity validation for strong passwords, provides support for account lockout, and supports password expiration.

SQL Server and Windows Authentication mode

This option enables the mixed mode and allows users to connect using either Windows Authentication or SQL Server Authentication. Users who connect through a Windows user account can make use of trusted connections that are validated by Windows.



The **Login auditing** property exposes SQL Server Authentication logging behavior:

- *None* (does not log authentication attempts)
- *Successful logins only* (logs successful authentication)
- *Failed logins only* (logs failed authentication)
- *Both successful and failed logins* (logs all authentication attempts regardless of success or failure)

Server Proxy account

This option allows SQL Server users that do not belong to the *sysadmin* fixed server role to execute *xp_cmdshell* commands and to own SQL Server jobs. To get access to this feature, you must enter **Proxy account** name and **Password**.

Note that this option is only available when you use SQL Server 2005 (and higher). The login used by the server proxy account should have the least privileges required to perform the intended work. Excessive privileges for the proxy account could be used by a malicious user to compromise your system security.

Other security options

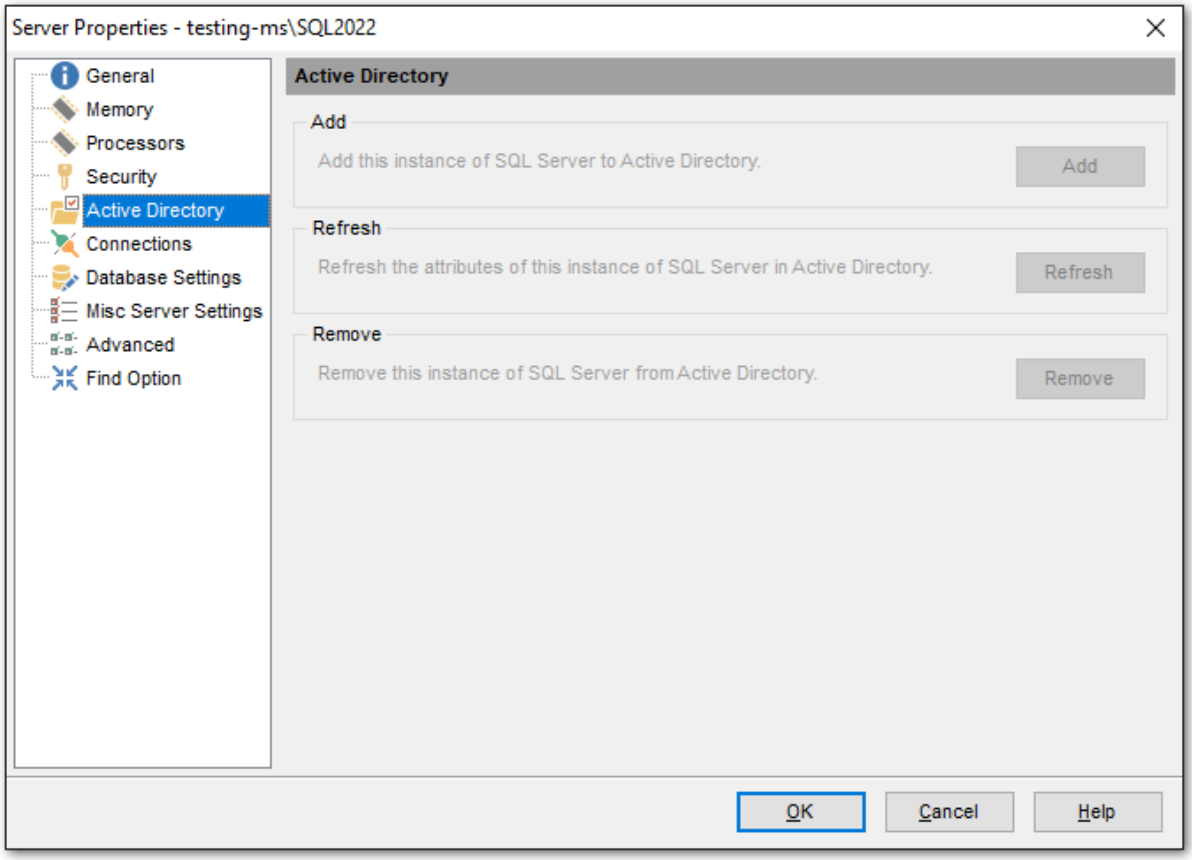
☑ **Allow direct updates system tables**
Turn this option on to modify system tables directly.
Note: System tables should not be changed directly by any user. It is not recommended to modify system tables with *DELETE*, *UPDATE*, *INSERT* statements or user-defined triggers.

☑ **Use C2 audit tracing mode**
Selecting this option will configure the server to record both failed and successful attempts to access statements and objects. This information can help you profile system activity and track possible security policy violations.

4.6.5 Active Directory

The **Active Directory** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by managing its Active Directory: *Add*, *Refresh*, *Remove*.

Add SQL Server to Microsoft Active Directory when you want users to be able to use Active Directory to find this instance of SQL Server. This may be useful in large organizations with many instances of SQL Server.



Add

Add this instance of SQL Server to Active Directory.

Connects to Active Directory and registers the instance of Microsoft® SQL Server in the Active directory.

Refresh

Refresh the attributes of this instance in Active Directory.
Updates Active Directory with the current Microsoft® SQL Server properties.

Remove

Remove this instance of SQL Server from Active Directory.
Unregisters the instance of Microsoft® SQL Server from the Active Directory.

4.6.6 Connection settings

The **Connections** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting options pertaining to connection in groups: *Connections*, *Remote server connections*.

Connections

Maximum number of concurrent connections
If this option is set to a value other than zero, the number of connections that SQL Server will allow is limited. The default value is *0* (unlimited).

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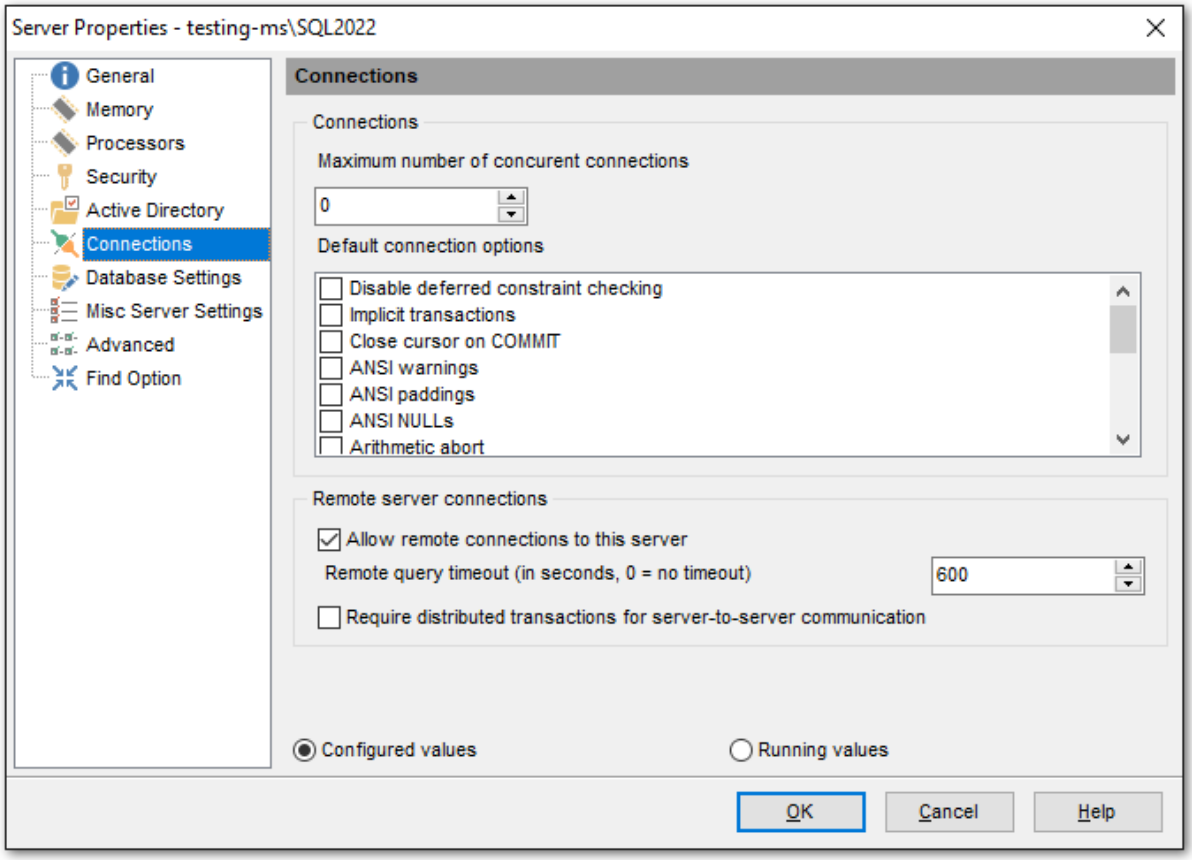

Default connection options
Specifies the default connection options as described in the table below:

Configuration option	Description
☑ *Disable deferred constraint checking*	Controls interim or deferred constraint checking.
☑ *Implicit transactions*	Controls whether a transaction is started implicitly when a statement is run.
☑ *Cursor close on COMMIT*	Controls behavior of cursors after a commit operation has been performed.
☑ *ANSI warnings*	Controls truncation and NULL in aggregate warnings.
☑ *ANSI padding*	Controls padding of fixed-length variables.
☑ *ANSI NULLs*	Controls NULL handling when using equality operators.
☑ *Arithmetic abort*	Terminates a query when an overflow or divide-by-zero error occurs during query execution.
☑ *Arithmetic ignore*	Returns NULL when an overflow or divide-by-zero error occurs during a query.
☑ *Quoted identifier*	Differentiates between single and double quotation marks when evaluating an expression.

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☑ *No count*	Turns off the message returned at the end of each statement that states how many rows were affected.
☑ *ANSI NULL default on*	Alters the session's behavior to use ANSI compatibility for nullability. New columns defined without explicit nullability are defined to allow nulls.
☑ *ANSI NULL default off*	Alters the session's behavior not to use ANSI compatibility for nullability. New columns defined without explicit nullability are defined not to allow nulls.
☑ *Concat NULL yields NULL*	Returns NULL when concatenating a NULL value with a string.
☑ *Numeric round abort*	Generates an error when a loss of precision occurs in an expression.
☑ *Xact abort*	Rolls back a transaction if a Transact-SQL statement raises a run-time error.

Remote Server Connections

☑ **Allow remote connections to this server**
Controls the execution of stored procedures from remote servers running instances of SQL Server. Selecting this check box has the same effect as setting the *sp_configureremote access* option to *1*. Clearing it prevents execution of stored procedures from a remote server.

Remote query timeout (in seconds, 0 = no timeout)
Specifies how long (in seconds) a remote operation may take before SQL Server times out. The default is 600 seconds, or a 10-minute wait.

☑ **Require distributed transactions for server-to-server communication**
Protects the actions of a server-to-server procedure through a Microsoft® Distributed Transaction Coordinator (MS DTC) transaction.

4.6.7 Database Settings

The **Database Settings** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting options pertaining to database in groups: *Default index fill factor*, *Backup and restore*, *Recovery*, *Database default locations*.

Default index fill factor

This value specifies how full SQL Server should make each page when it creates a new index using existing data. The fill factor affects performance because SQL Server takes time to split pages when they fill up.
The default value is *0*; valid values range from *0* to *100*. A fill factor of *0* or *100* creates clustered indexes with full data pages and nonclustered indexes with full leaf pages, but it leaves some space within the upper level of the index tree. Fill factor values *0* and *100* are identical in all respects.
With low fill factor values specified, SQL Server creates indexes with pages that are not

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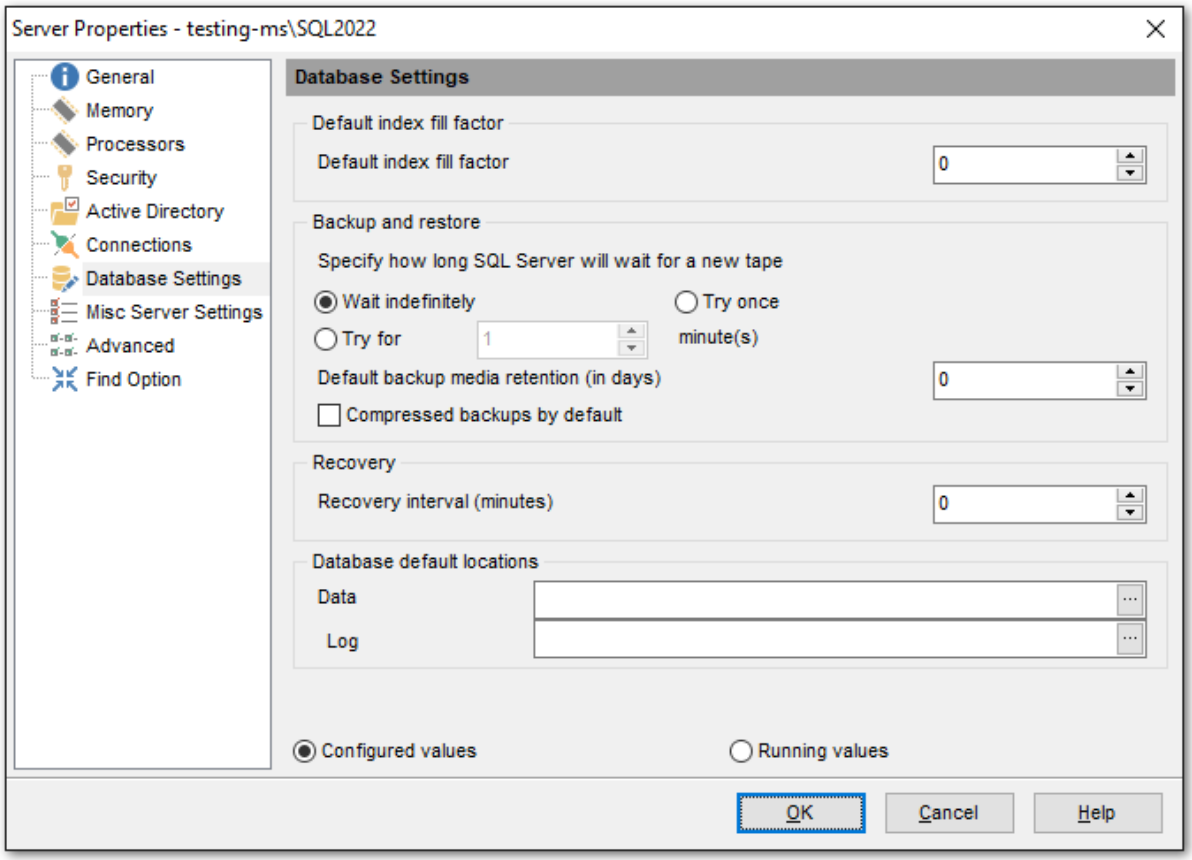
full. Each index takes more storage space, but there is more room for subsequent insertions without requiring page splits.



Backup and restore

Wait indefinitely
Specifies that SQL Server will never time out while waiting for a new backup tape.

Try once
Specifies that SQL Server will time out if a backup tape is not available when needed.

Try for ... minute(s)
Specifies that SQL Server will time out if a backup tape is not available within the defined period of time.

Default backup media retention (in days)
Provides a system-wide default for the length of time to retain each backup medium after it has been used for a database or transaction log backup. This option helps protect backups from being overwritten until the specified number of days has elapsed.

Compressed backups by default
Check this option to enable default compression of backups.

Recovery

Recovery interval (minutes)
Sets the maximum period of time to recover a database. The default is *0*, it stands for automatic configuration by SQL Server. In practice, this means a recovery time of less than one minute and a checkpoint approximately every one minute for active databases.

Database default locations

Data
Specify the default location for data files: type in the path in the **Data** field or use the ellipsis button to browse for directory using the SQL Server Folders 984 dialog.

Log
Specify the default location for log files: type in the path in the **Log** field or use the ellipsis button to browse for directory using the **SQL Server Folders** dialog.

4.6.8 Misc Server Settings

The **Misc Server Settings** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting miscellaneous server options in groups: *General settings*, *Two-digit year support*, *Network settings*.

General settings

Use the **Default language for user** drop-down list to select the default language for all newly created user logins.

☑ **Allow triggers to fire other triggers**
Use this option to specify whether server-level triggers can be fired recursively.

☑ **Use query governor to prevent long-running queries**
This option allows you to specify a limit on the time period in which a query can run. The query governor disallows execution of any query that has an estimated cost exceeding that value.

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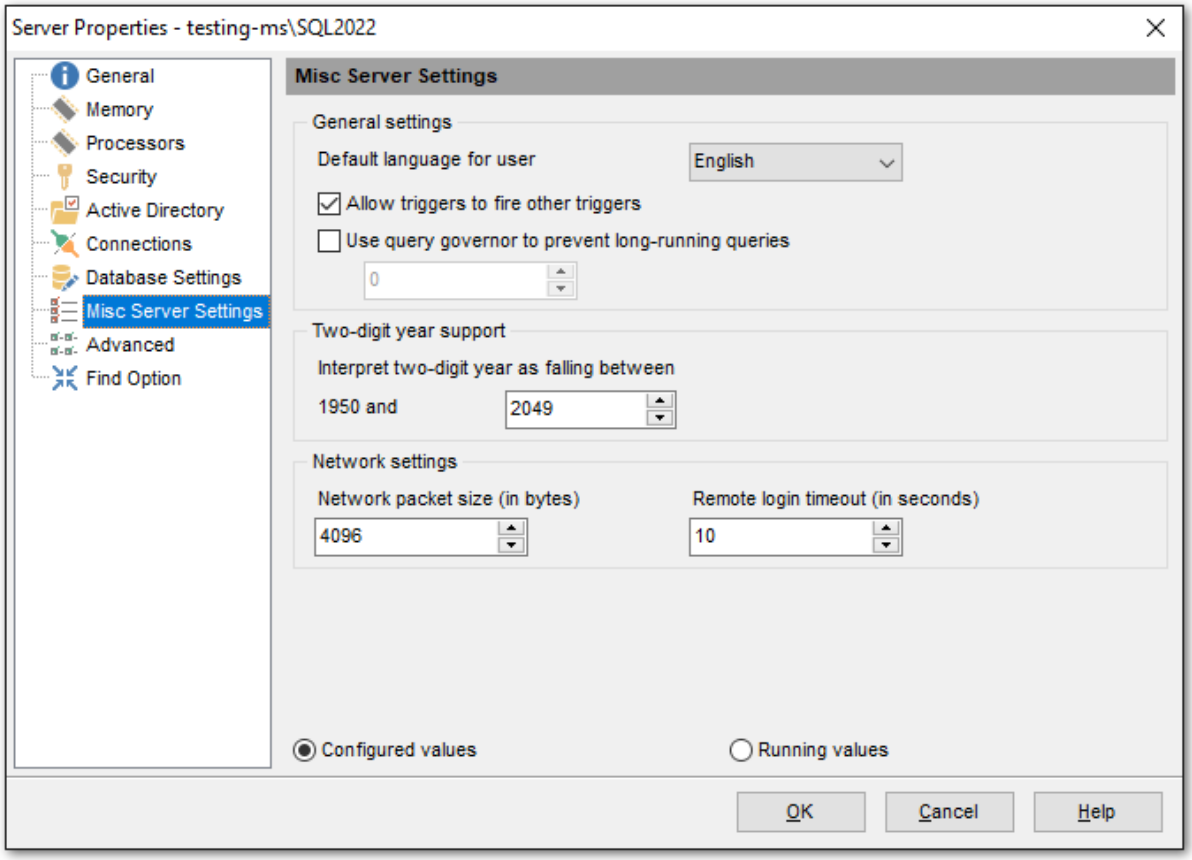


Two-digit year support

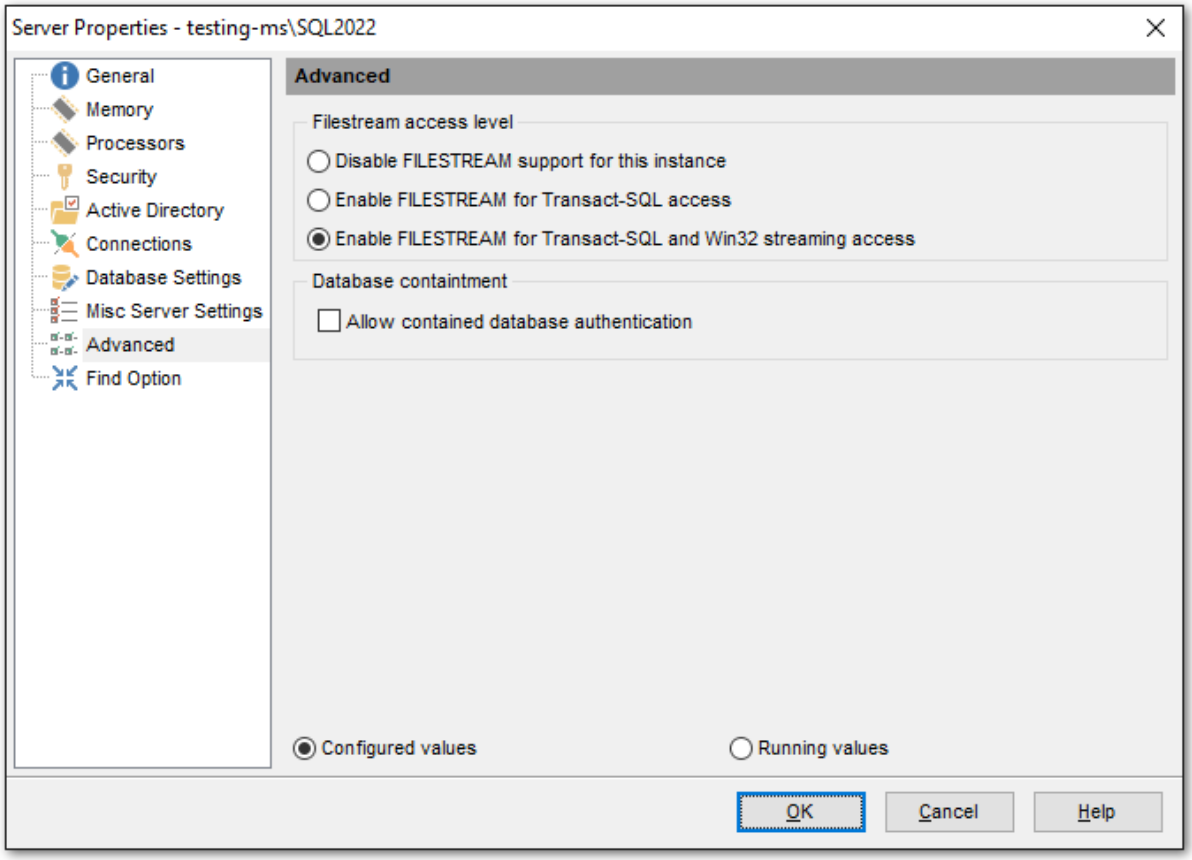
Interpret two-digit year as falling between 1950 and ...
Use this option to specify an integer from 1950 to 9999 that represents the cutoff year for interpreting two-digit years as four-digit years.

Use the **Network packet size** option to set the packet size (in bytes) used across the entire network.

Use the **Remote login timeout** option to specify the time interval (in seconds) to wait before returning from a failed attempt to log in to a remote server.

4.6.9 Advanced settings

The **Advanced** section of the **Server Properties** dialog allows you to configure the instance of Microsoft® SQL Server by setting advanced server options in groups: *Filestream access level*, *Database containment*.



Filestream access level

FILESTREAM enables SQL Server-based applications to store unstructured data, such as documents and images, on the file system. Applications can leverage the rich streaming APIs and performance of the file system and at the same time maintain transactional consistency between the unstructured data and corresponding structured data.

Disable FILESTREAM support for this instance
Check this option to disable FILESTREAM feature for handling unstructured data.

Enable FILESTREAM for Transact-SQL access
Enable this option to manage FILESTREAM data with Trancast-SQL statements (*insert*, *update*, *query*, *search*, and *back up*).

Enable FILESTREAM for Transact-SQL and Win32 streaming access
Win32 file system interfaces provide I/O streaming access to the data. You can use Win32 to read and write data to a FILESTREAM BLOB.

Database containment

Contained Database is independent of the SQL Server Instance. All the database metadata and user information is stored inside the database itself.

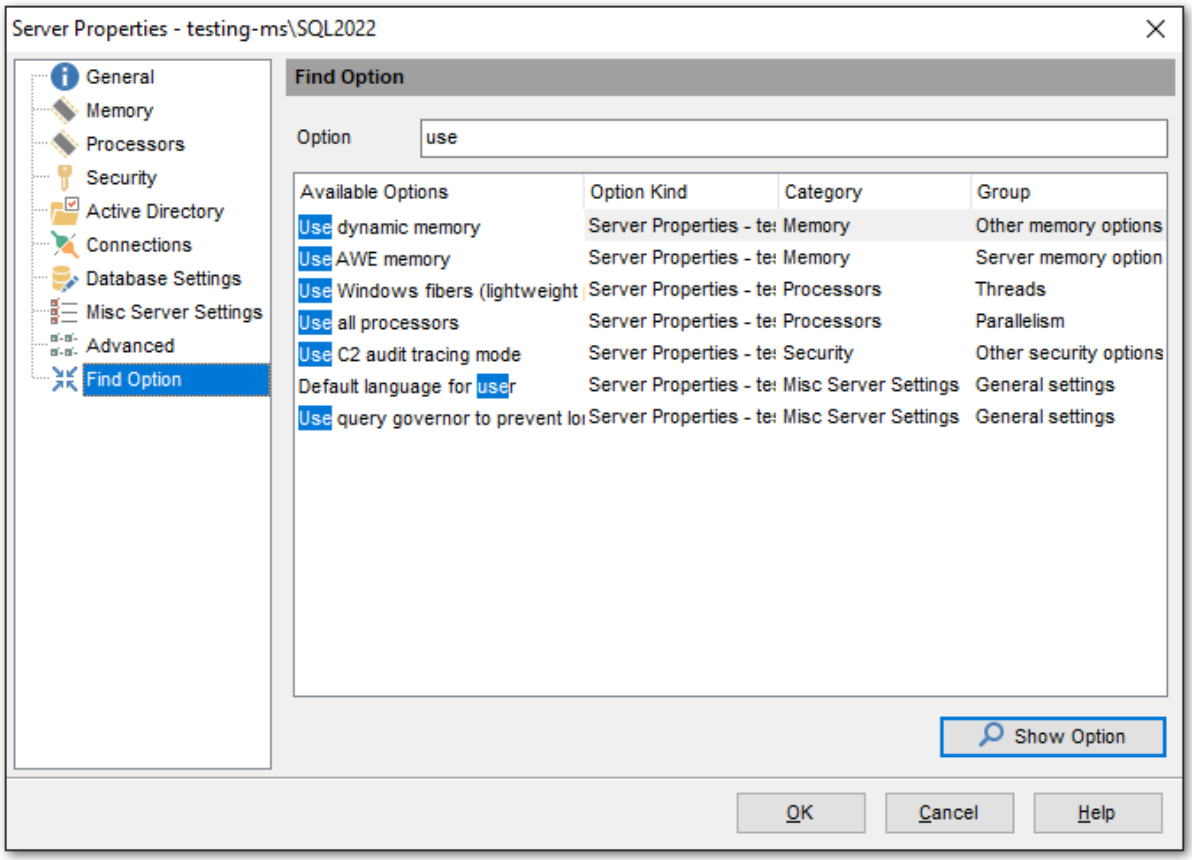
Allow contained database authentication
If this option is checked then contained databases can be created, or attached to the

Database Engine.

4.6.10 Find Option

The **Find Option** section allows you to search for options available within the **Server Properties** dialog easily and quickly.

Option
In this field you can enter the name of the option to search for within the server properties.



The **Available options** area lists all options of the Server Properties category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.
Select the required option in the list and click **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated icon.

Part V

5 Database and Server Objects Management

SQL Manager for SQL Server provides powerful tools to manage **database** and **server objects**.

To obtain detailed information concerning SQL Server database and objects, refer to the official Microsoft® SQL Server™ documentation.

Note: Before working with database and objects in SQL Manager for SQL Server you should connect to the database 70 first.

Creating Database and Server Objects

To create a database or server objects:
- select the **Database | New Object...** main menu 951 item;
- define whether to **Create Database Object** or **Create Server Object**;
- select the type of object within the New Object 184 dialog;
- follow the steps of the wizard which guides you through the entire process of creating the object, or set the object properties using its editor - depending on the selected object type.

Note that you can also create a database object by selecting the appropriate context menu 54 item of the DB Explorer 73 tree or using the *Ctrl+N* shortcut 986.

Editing Database and Server Objects

To edit a database or server object:
- select the database object in the DB Explorer 65 tree;
- right-click the object to call its context menu 57 and select the **Edit <object type> <object name>** context menu item, or double-click the object to open it in its editor.

Renaming Database and Server Objects

To rename a database or server object:
- select the object to rename in the DB Explorer 65 tree;
- right-click the object and select the **Rename <object type> <object name>...** item from the context menu 57;
- edit the object name using the **Rename Object...** dialog.

Note: This operation is possible for all objects except for schemas 193, XML Schema Collections 286, Assemblies 309, Certificates 334, Asymmetric Keys 330, Symmetric Keys 327, Full-Text Catalogs 322.

Dropping Database and Server Objects

To drop a database or server object:
- select the database or server object in the DB Explorer 73 tree;
- right-click the object to call its context menu 57 and select the **Drop <object type> <object name>** context menu item;
- confirm dropping in the dialog window.

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When using an object editor, you can benefit from **tabs**. To switch between tab views, click on their respective tabs at the top of the main editor window. You can do it at any time, since the tab views are absolutely independent.

To compile a newly created or edited object, you can use the **Compile** item available within the Navigation bar 951 or Toolbar 953 of the object editor.

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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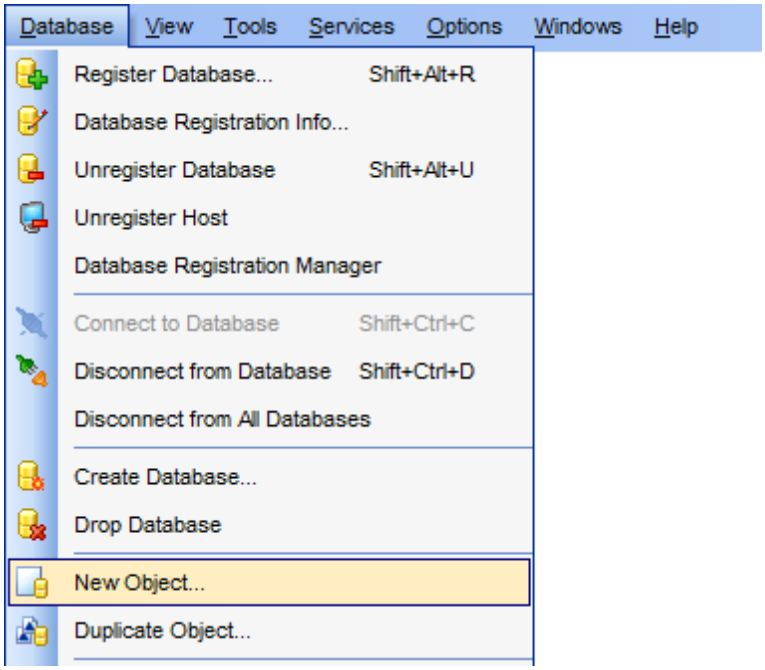
5.1 New Object

The **Create New Object** dialog allows you to select the type of the object to be created and run the appropriate wizard or editor.

To open the dialog, select the **Database | New Object...** main menu 951 item.



Specify whether object of the *database* or *server level* is to be created. Use the **Database** or **Server** drop-down list to select the alias of the database or server where the new object should be created. Pick an object type icon and click **OK** to invoke the corresponding wizard or dialog.

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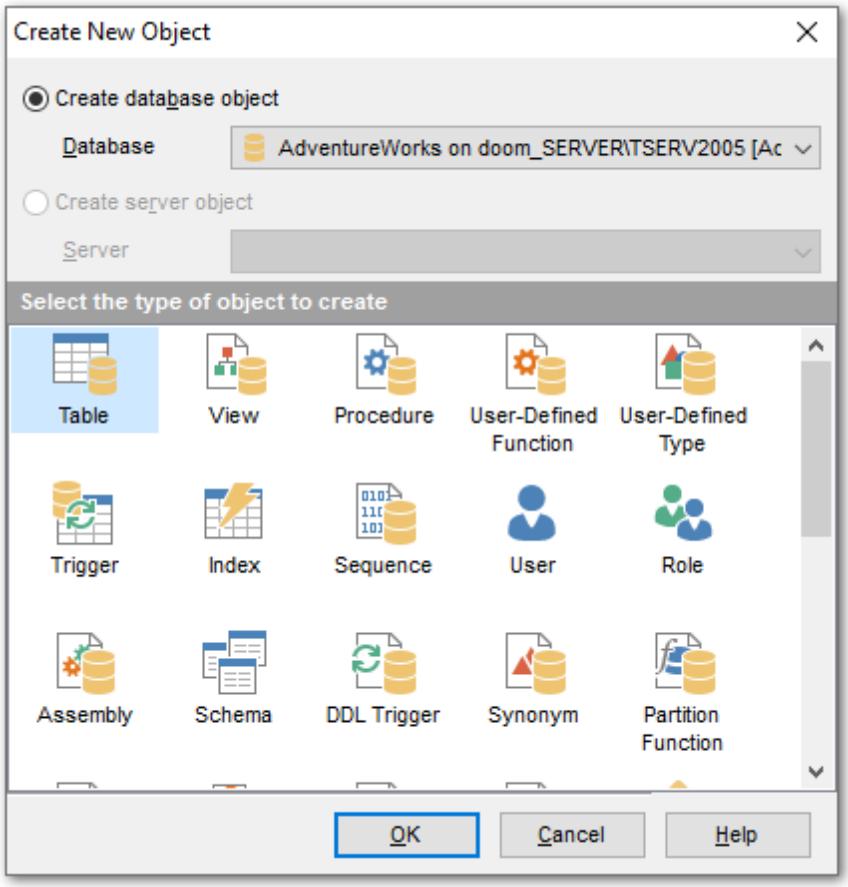

Note: The **Create server object** option is available only if you are connected to the host 70.

See also:

Operations with database and server objects 73

Duplicate Object Wizard 186

Database objects 191

Server Objects 358

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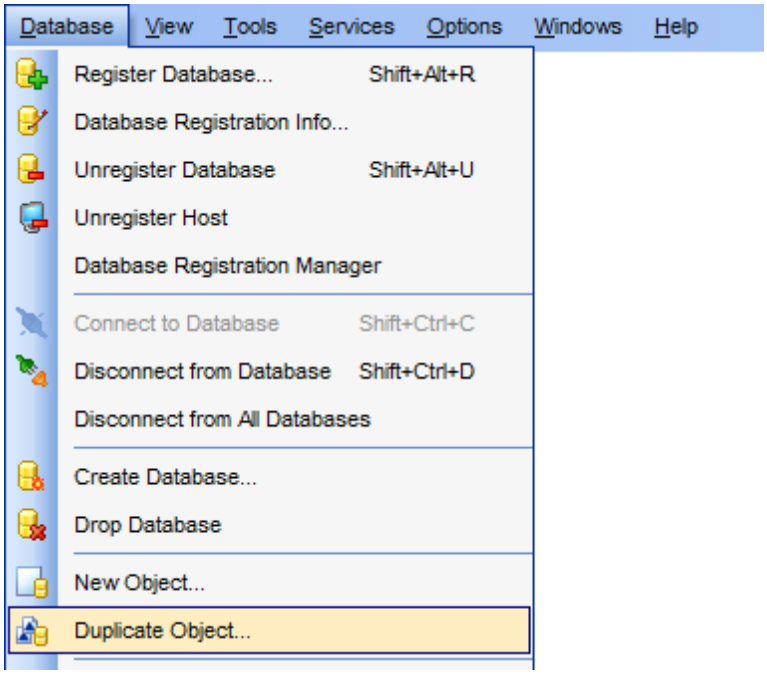
5.2 Duplicate Object Wizard

Use the **Duplicate Object Wizard** to create a new database or server object of the same type and having the same properties as one of the existing ones.
To run the wizard, select the **Database | Duplicate Object...** main menu 951 item, or right-click an object of the desired type in the DB Explorer 65 tree and use the **Duplicate <object type> <object name>...** context menu 57 item.

Note: **Duplicate Object Wizard** can be launched on drag-and-drop operation, when you drag an object from one server in the DB Explorer 65 to another.



- Selecting the source database 186
- Selecting object to duplicate 187
- Selecting destination database 188
- Modifying the new object's definition 189

See also:

New Object dialog 184

Database objects 191

Server Objects 358

5.2.1 Selecting the source database

This step of the wizard allows you to specify whether object of the database or server level is to be duplicated, and to select the **source database** / **server** containing the source object for duplication.

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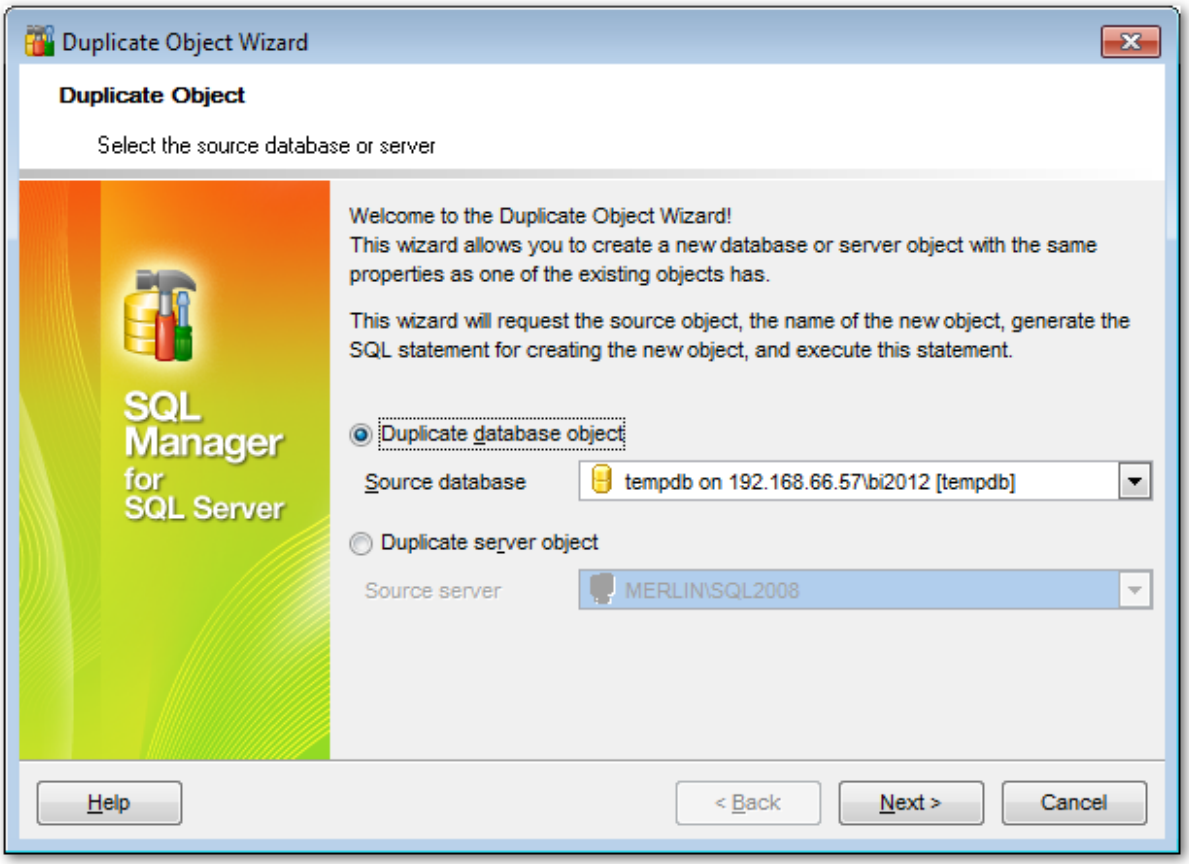

Click the **Next** button to proceed to the Selecting object to duplicate 187 step of the wizard.

5.2.2 Selecting object to duplicate

Use the **Objects** drop-down menu to select the type of object you intend to duplicate.

Select a database/server object to copy its properties to the new object.

Hint: The **context menu** of the objects list area allows you to specify whether objects of the specified type should be displayed as *icons* or as *list*.

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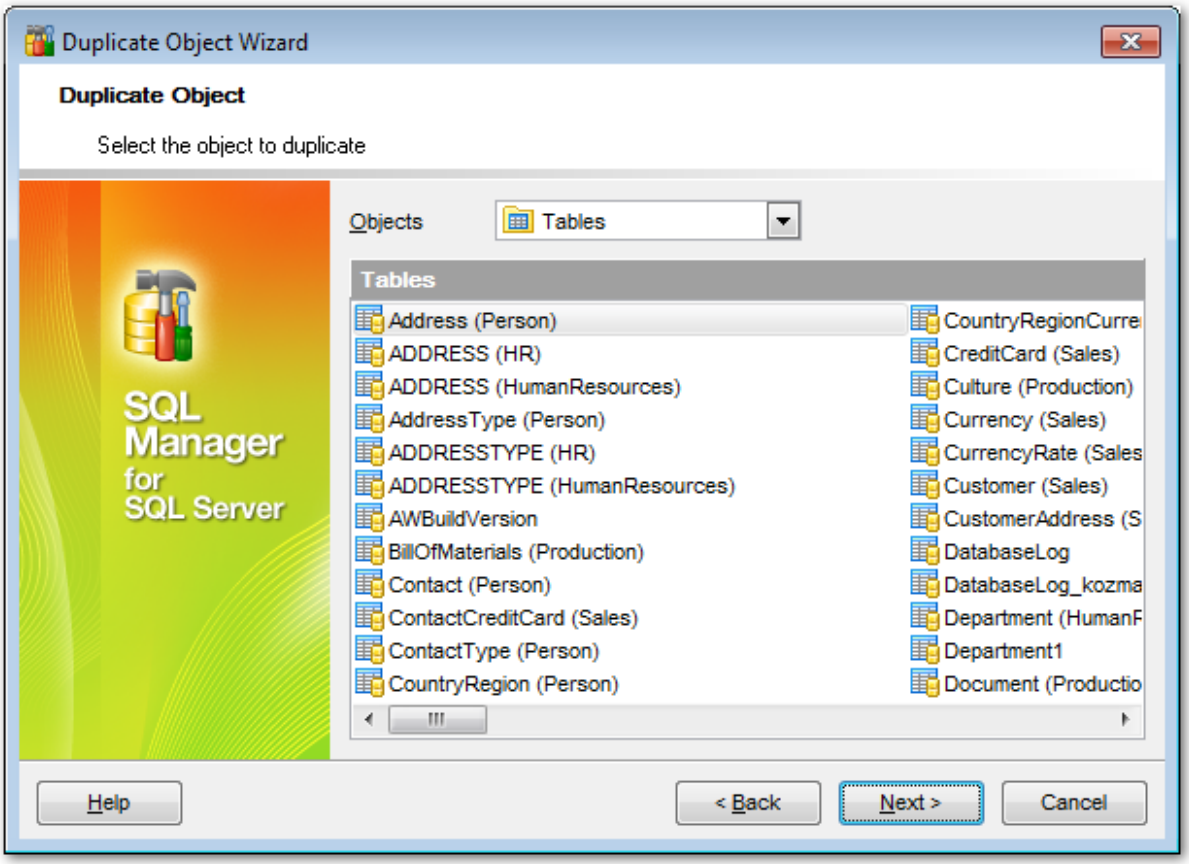
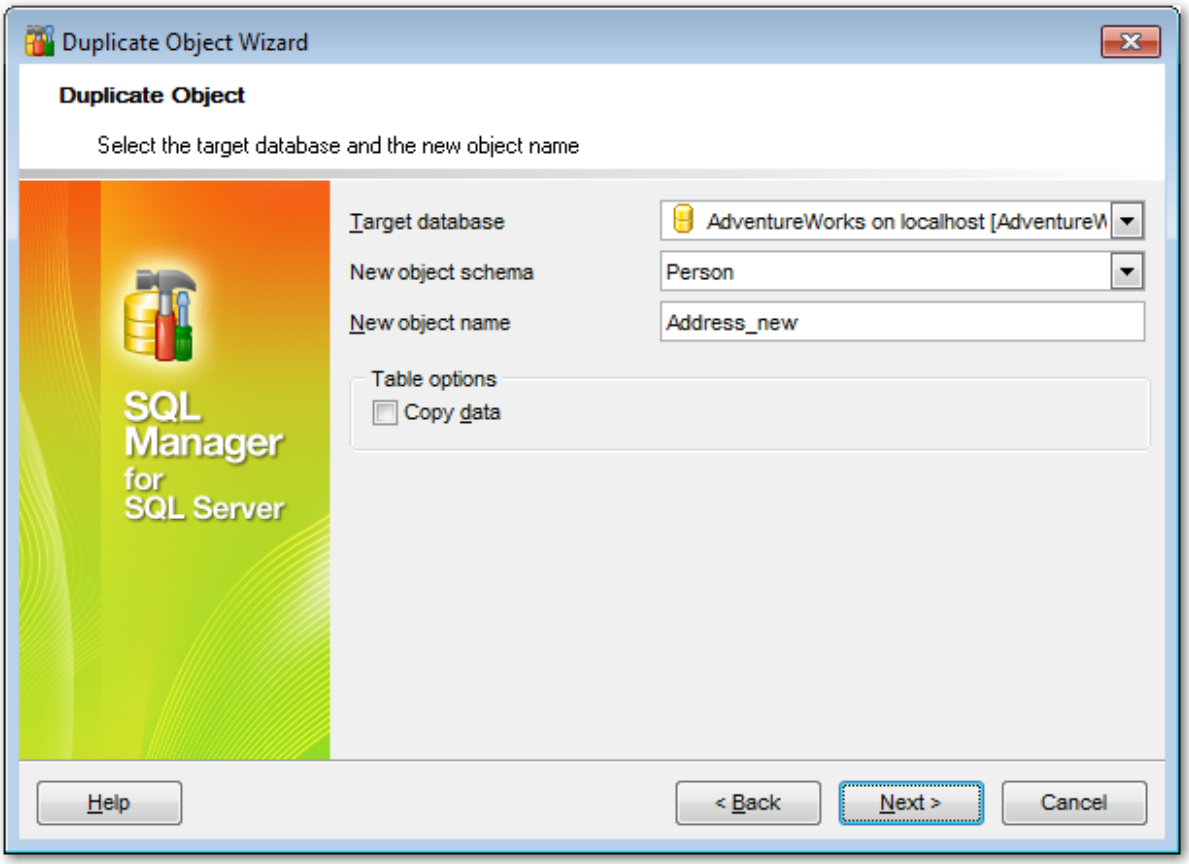


Click the **Next** button to proceed to the Selecting destination database 188 step of the wizard.

5.2.3 Selecting destination database or server

Select the **target database** / **server** and **schema** (for a database object) to create the new object in, set the **name** of the new database/server object.

Check the ☑ **Copy data** option to copy data from the source table to the new one.

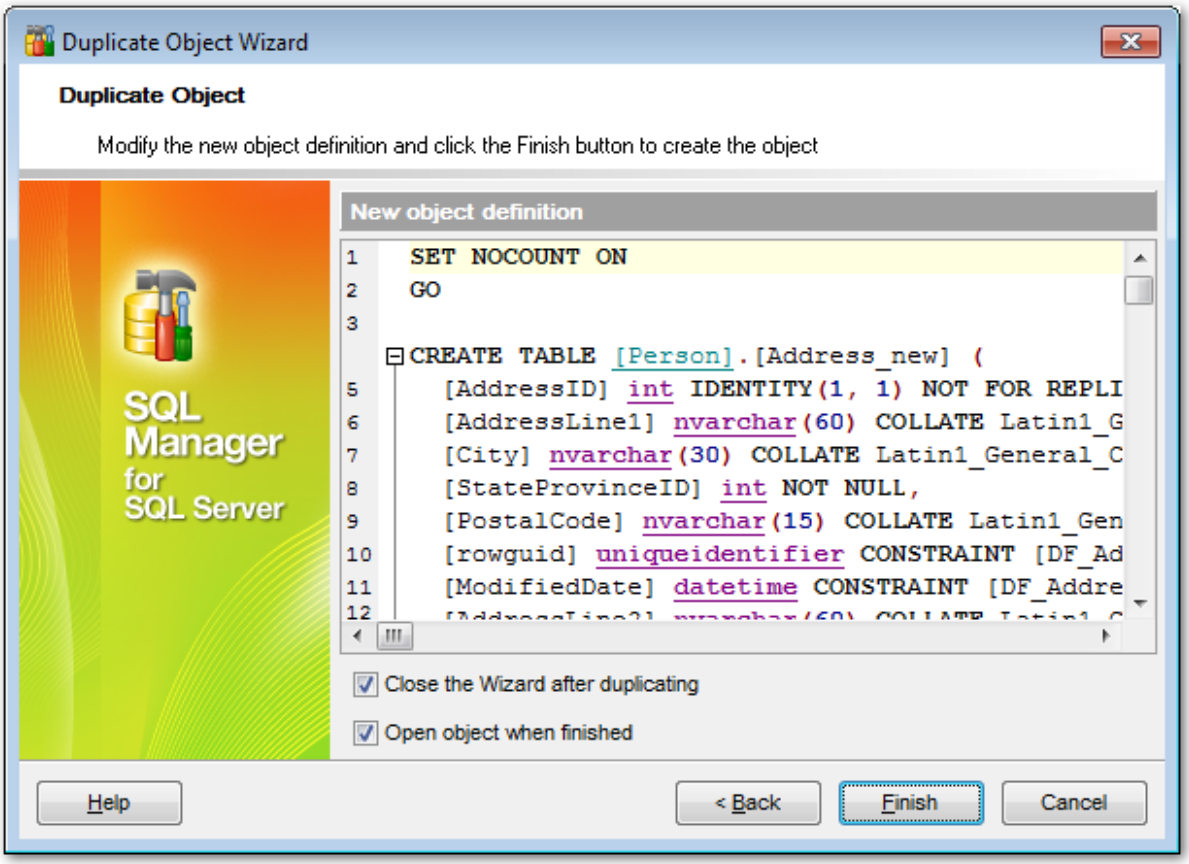


Click the **Next** button to proceed to the Modifying the new object's definition 189 step of the wizard.

5.2.4 Modifying the new object's definition

This step of the wizard allows you to browse **the result SQL statement**.

If necessary, you can edit the definition of the new object.



☑ **Close the wizard after duplicating**
If this option is selected, the wizard is closed automatically when the new object is created.

☑ **Open object when finished**
Select this option to open the newly created object in its editor.

Click the **Finish** button to create the object.

5.3 Database objects

SQL Manager for SQL Server provides all necessary facilities for working with database objects.

Note: To start working with database objects you need to connect to database 70.

Database Objects:
Schemas 193

Schema Objects:
Tables 196
Views 250
Procedures 257
UDTs 268
UDFs 263
Synonyms 280
Aggregates 283
XML Schema Collections 286
Defaults 289
Rules 292
Queues 294

Non-schema Objects:
Assemblies 309
DDL Triggers 312
Partition Functions 315
Partition Schemes 319
Full-Text Catalogs 322
Symmetric Keys 327
Asymmetric Keys 330
Certificates 334
Message Types 339
Contracts 342
Services 345
Routes 348
Remote Service Bindings 351

Creating Database Objects

To create a database object:
- select the **Database | New Object...** main menu 951 item;
- select the type of object within the New Object 184 dialog;
- follow the steps of the wizard which guides you through the entire process of creating the object, or set the object properties using its editor - depending on the selected object type.

Note that you can also create a database object by selecting the appropriate context menu 54 item of the DB Explorer 73 tree or using the *Ctrl+N* shortcut 986.

To create a new object with the same properties as one of existing objects has:
- select the **Database | Duplicate Object...** main menu 951 item;
- follow the instructions of Duplicate Object Wizard 186.

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Alternatively, you can right-click an object in the DB Explorer 65 tree and select the **Duplicate Object <object_name>...** context menu item.

Editing Database Objects

To edit a database object:
- select the database object in the DB Explorer 65 tree;
- right-click the object to call its context menu 57 and select the **Edit <object type> <object name>** context menu item, or double-click the object to open it in its editor;

Renaming Database Objects

To rename a database object:
- select the object to rename in the DB Explorer 65 tree;
- right-click the object and select the **Rename <object type> <object name>...** item from the context menu 57;
- edit the object name using the **Rename Object...** dialog.

Note: This operation is possible for all objects except for schemas 193, XML Schema Collections 286, Assemblies 309, Certificates 334, Asymmetric Keys 330, Symmetric Keys 327, Full-Text Catalogs 322.

Dropping Database Objects

To drop a database object:
- select the database object in the DB Explorer 73 tree;
- right-click the object to call its context menu 57 and select the **Drop <object type> <object name>** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new object;
Ctrl+O to edit the selected object;
Ctrl+R to rename the object;
Shift+Del to drop the object from the database.

When using an object editor, you can benefit from **tabs**. To switch between tab views, click on their respective tabs at the top of the main editor window. You can do it at any time, since the tab views are absolutely independent.

To compile a newly created or edited object, you can use the **Compile** item available within the Navigation bar 951 or Toolbar 953 of the object editor.

See also:
Operations with database and server objects 73
New Object 184
Duplicate Object Wizard 186
Server Objects 358

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5.3.1 Schemas

A **Schema** is essentially a namespace: it can be defined as a collection of database objects 196 that form a single namespace. A namespace is a set in which each element has a unique name.

Creating Schemas

To create a new schema:
- select the **Database | New Object...** main menu 951 item;
- select **Schema** in the Create New Object 184 dialog;
- define schema properties using the appropriate tabs of Schema Editor 194.

Hint: To create a new schema, you can also right-click the **Schemas** node or any object within this node in the DB Explorer 65 tree and select the **New Schema** item from the context menu 57.

To create a new schema with the same properties as one of existing schemas has:
- select the **Database | Duplicate Object...** main menu 951 item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a schema in the DB Explorer 65 tree and select the **Duplicate Schema <schema_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the database to create a new schema in, and to edit the result SQL statement for creating the schema.

Editing Schemas

To edit an existing schema:
- select the schema for editing in the DB Explorer 65 tree (type the first letters of the schema name for quick search 85);
- right-click the object and select the **Edit Schema <schema_name>...** context menu item, or simply double-click the schema;
- edit schema properties using the appropriate tabs of Schema Editor 194.

Dropping Schemas

To drop a schema:
- select the schema to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Schema <schema_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new schema;
Ctrl+O to edit the selected schema;
Shift+Del to drop the object from the database.

See also:
Schema Objects 196

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5.3.1.1 Schema Editor

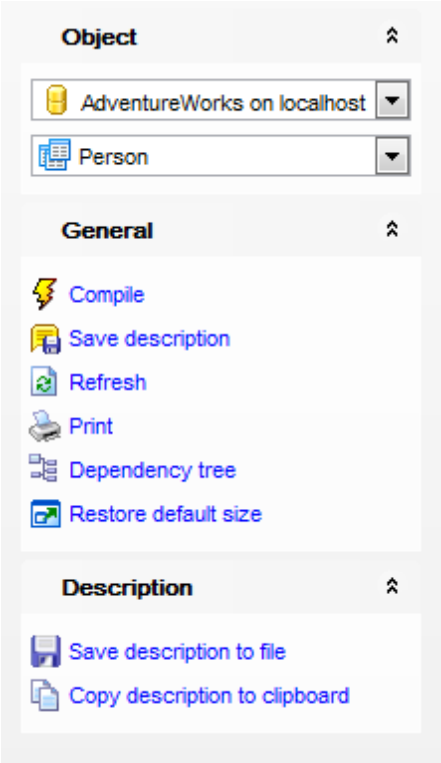
Schema Editor allows you to manage SQL Server schemas efficiently. It opens automatically when you create a new schema and is available on editing an existing one (see Create schema 193 and Edit schema 193 for details).

To open a schema in **Schema Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 194
- Creating/editing schema 195
- Browsing object dependencies 957
- Editing schema description 956
- Viewing DDL definition 955
- Setting object permissions 958

5.3.1.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Schema Editor**.



The **Navigation bar** of **Schema Editor** allows you to:

Object

select a database

select a schema for editing

General

compile 959 the schema (if it is being created/modified)
save the schema description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the schema
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the schema:

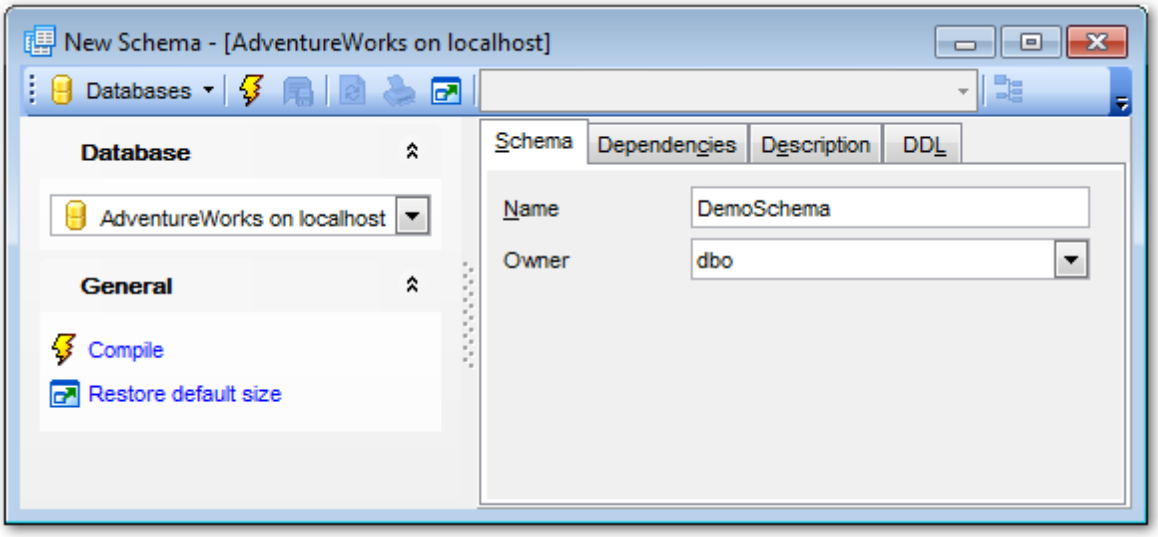
Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Schema Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.1.1.2 Creating/editing schema

Use the **Schema** tab of **Schema Editor** to create/edit a schema and specify its properties.



Name
Specify the name by which the schema is identified within the database.

Owner

Specify the name of the database-level principal (user 300 or role 306) that will own the schema. This principal may own other schemas, and may not use the current schema as its default schema.

5.3.2 Schema Objects

A **schema** is a collection of logical structures of data, or **schema objects**. A schema is owned by a database user. Each user can own a single schema. Schema objects can be created and manipulated with SQL and include the following types of objects:

- Tables 196
- Views 250
- Procedures 257
- User-defined types 268
- User-defined functions 263
- Synonyms 280
- Aggregates 283
- XML Schema Collections 286
- Defaults 289
- Rules 292
- Queues 294
- External Tables 298

Use the DB Explorer 65 tree to navigate 50 within the existing schemas and their objects.

See also:

New Object dialog 184

Duplicate Object Wizard 186

5.3.2.1 Tables

Relational databases store all their data in **Tables**. A table is a data structure consisting of an unordered set of horizontal rows, each containing the same number of vertical columns. The intersection of an individual row and column is a field that contains a specific piece of information. Much of the power of relational databases comes from defining the relations among the tables.

Creating Tables

To create a new table:

- select the **Database | New Object...** main menu 951 item;
- select **Table** in the Create New Object 184 dialog;
- define table properties and columns using the appropriate tabs of Table Editor 197.

Hint: To create a new table, you can also right-click the **Tables** node or any object within this node in the DB Explorer 65 tree and select the **New Table...** item from the context menu 57.

To create a new table with the same properties as one of existing tables has:

- select the **Database | Duplicate Object...** main menu 951 item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a table in the DB Explorer 65 tree and select the **Duplicate Table <table_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the database to create a new table in, and to edit the result SQL statement for creating the table.

Editing Tables

To edit an existing table (manage its columns 208, indexes 212, data 214, etc.):
- select the table for editing in the DB Explorer 65 tree (type the first letters of the table name for quick search 85);
- right-click the object and select the **Edit Table <table_name>** context menu item, or simply double-click the table;
- edit table subobjects and data using the appropriate tabs of Table Editor 204.

To change the name of a table:
- select the table to rename in the DB Explorer 65 tree;
- right-click the table alias and select the **Rename Table <table_name>...** item from the context menu 57;
- edit the table name using the **Rename Object...** dialog.

Dropping Tables

To drop a table:
- select the table to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Table <table_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new table;
Ctrl+O to edit the selected table;
Ctrl+R to rename the table;
Shift+Del to drop the object from the database.

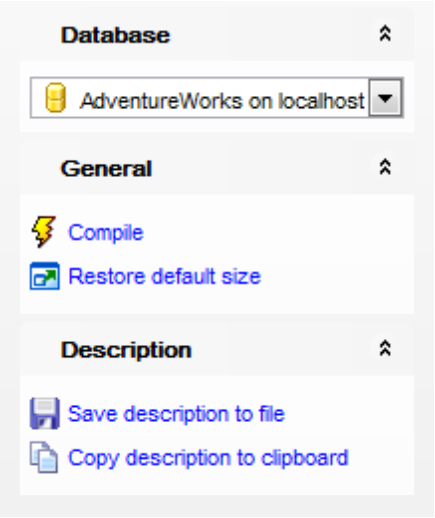
5.3.2.1.1 New table

The **New Table** window is a mode of Table Editor 204 that opens automatically when you create a new table (see Create table 196 for details) and allows you to create a new table, set table properties 199, specify table columns 200 and edit table description.

To call **Table Editor** for creating a new table, you can right-click the **Tables** node or any object within this node in the DB Explorer 65 tree and use the *Ctrl+N* shortcut 986.
- Using Navigation bar and Toolbar 197
- Setting table properties 199
- Specifying table columns 200

5.3.2.1.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Table Editor**.



The **Navigation bar** of **Table Editor** (in the *New table* mode) allows you to:

Database
select a database to create a new table in

General
compile 959 the newly created table
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the table:

Columns
add 217 a new column
edit 217 selected column
drop 217 selected column(s)

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

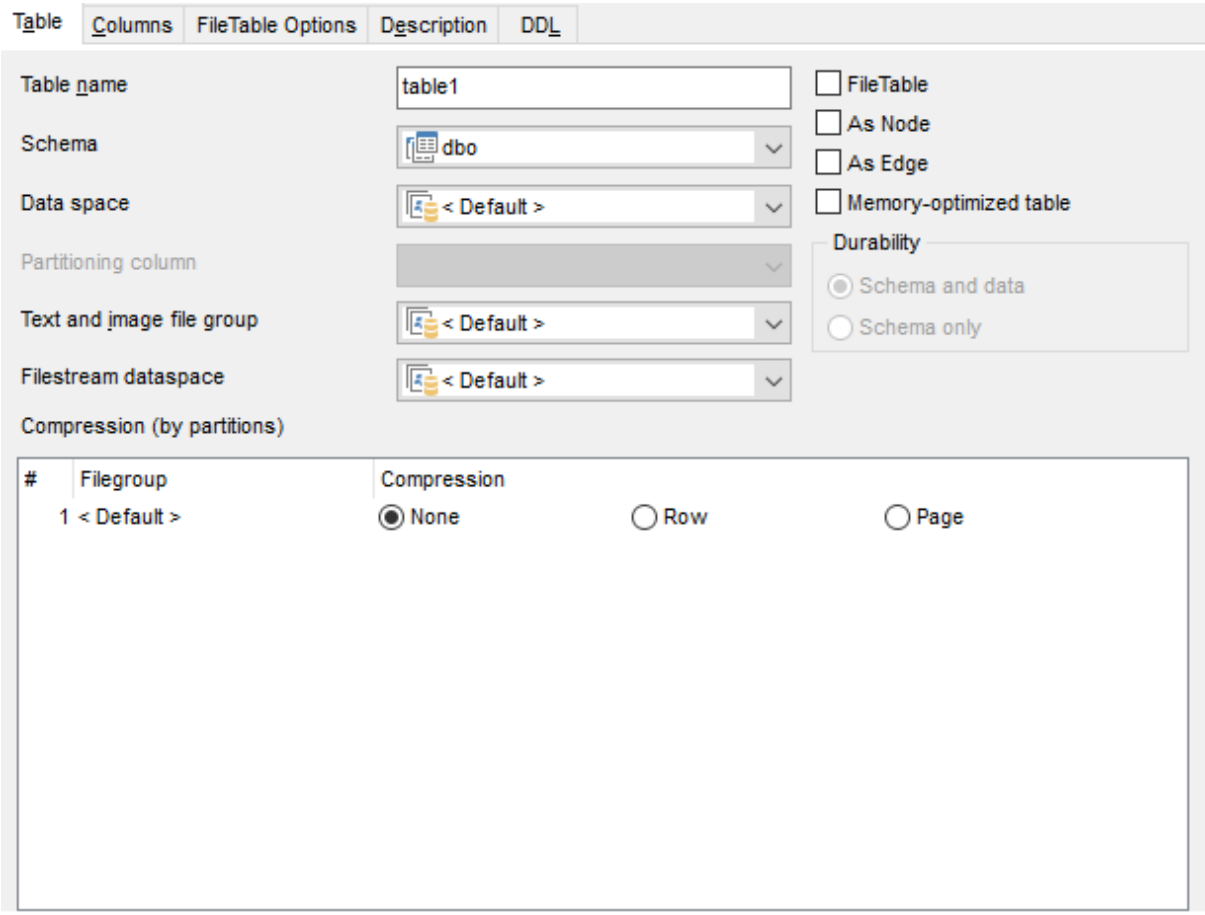
Items of the **Navigation bar** are also available on the **ToolBar** of **Table Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.1.1.2 Setting table properties

Use the **Table** tab of **Table Editor** to create a table and specify its properties.

Table name
Enter a name for the new table. Note that table names must comply with the rules for identifiers and must be unique within the schema 193. A table name can contain a maximum of 128 characters.

Schema
Use the drop-down list to select the schema 193 to which the table belongs. The default selection is the default schema for the current user 300.



☑ **File table**
Check this option to enable file and directory storage in the database. A FileTable is a specialized user table with a pre-defined schema that stores FILESTREAM data, as well as file and directory hierarchy information and file attributes.

☑ **As Node**
Check this option to create a node table for SQL Graph.

☑ **As Edge**
Check this option to create an edge table for SQL Graph.

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Memory-optimized table
Check this option to enable memory-optimized table creation. Memory-optimized tables are in memory user tables, the schema of which is persisted on disk similar to other user tables.
If you have selected to create a memory-optimized table, you must specify memory-optimized table indices 202.

Durability
Schema and data
This value indicates that the table is a durable memory-optimized table. This option provides durability of both schema and data.

Schema only
This value indicates that the table is non-durable. This option ensures durability of the table schema, including indexes.
Such tables are not logged and their data is not persisted on disk.

Data space
Use the drop-down list to specify the new table data storage (a file group or a partition scheme 319).

Partitioning column
This drop-down list is only available if a partition scheme 319 is specified for **Data space**. Select a column 200 that will be used as the partitioning column for the table.

Text and image file group
Use the drop-down list to select the file group where data of the *text* and *image* types will be stored.

If necessary, you can also use the **Description** area to supply a *description* for the table being created.

For SQL Server 2008 and higher, **Table Editor** provides some additional table properties to define:

Filestream dataspace
Select the needed Filestream filegroup 158 from the drop-down list.

Compression (by partitions)
Use this area to set compression options for the table. Compression type can be different for each table partition. Set the partition compression to *Row* or *Page*. Set *None* to leave a partition uncompressed.

To compile the table, use the **Compile** item available within the Navigation bar 197.

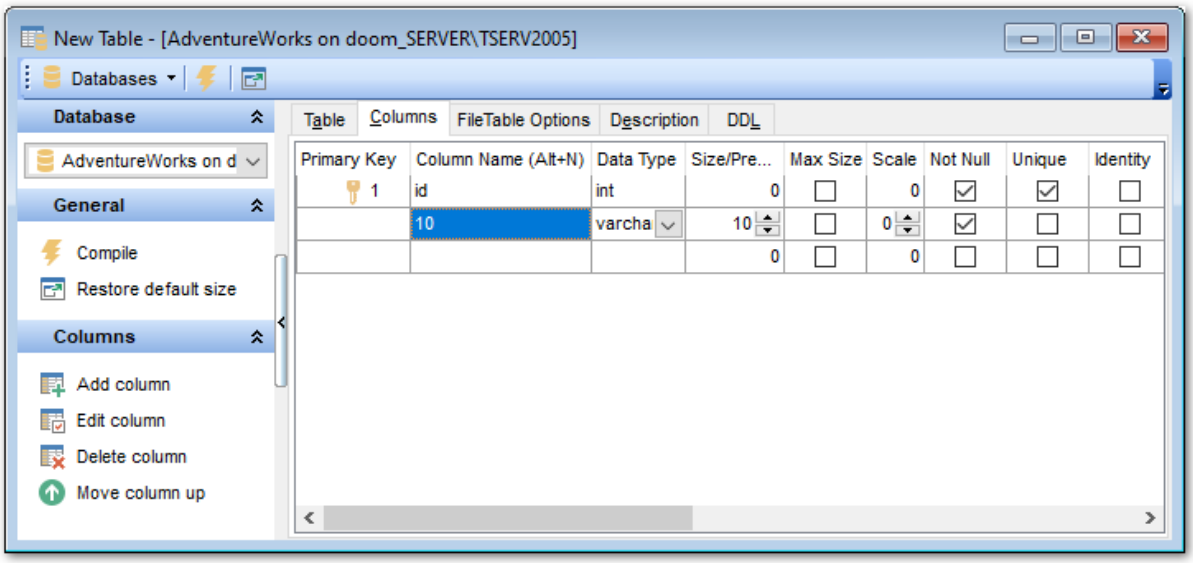
5.3.2.1.1.3 Specifying columns

The **Columns** tab is intended for setting up table column 217. Double-click a row to open Column Editor 218 for editing the column.

Right-click within the **Table Columns** area to display the context menu allowing you to

add, *insert*, *edit* or *delete* columns.

Columns management tools are also available through the Navigation bar 197 of **Table Editor**.



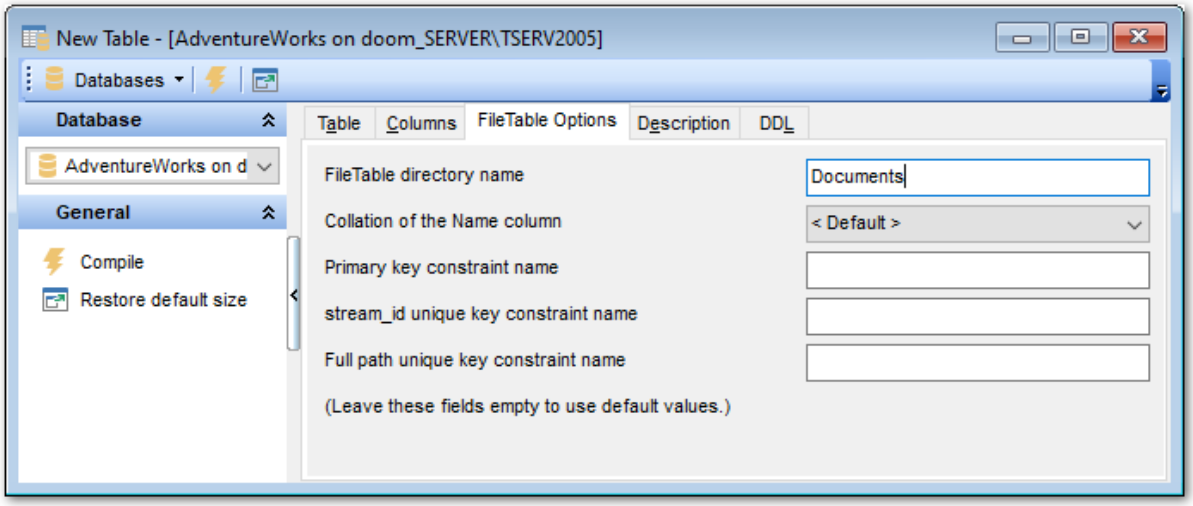
The **Table Columns** list provides the following attributes of each field of the new table:
Primary Key
Column Name
Data Type
Size
Max Size
Precision
Not Null
Unique
Identity
Default Value
Default Object
Comment

For details see Columns 217.

To compile the table, use the **Compile** item available within the Navigation bar 197.

5.3.2.1.1.4 Specifying FileTable options

Use the **FileTable Options** tab to configure settings for the FileTable being created. This tab is available only for SQL Server 2012.
The fields on this tab are enabled only if the **File table** option is checked on the Table 199 tab.



FileTable directory name
Specifies the windows-compatible FileTable directory name. This name should be unique among all the FileTable directory names in the database. If this value is not specified, the name of the filetable is used.

Collation of the Name column
Select the name of the collation to be applied to the *Name* column in the FileTable. If this value is not specified, the database default collation is used.

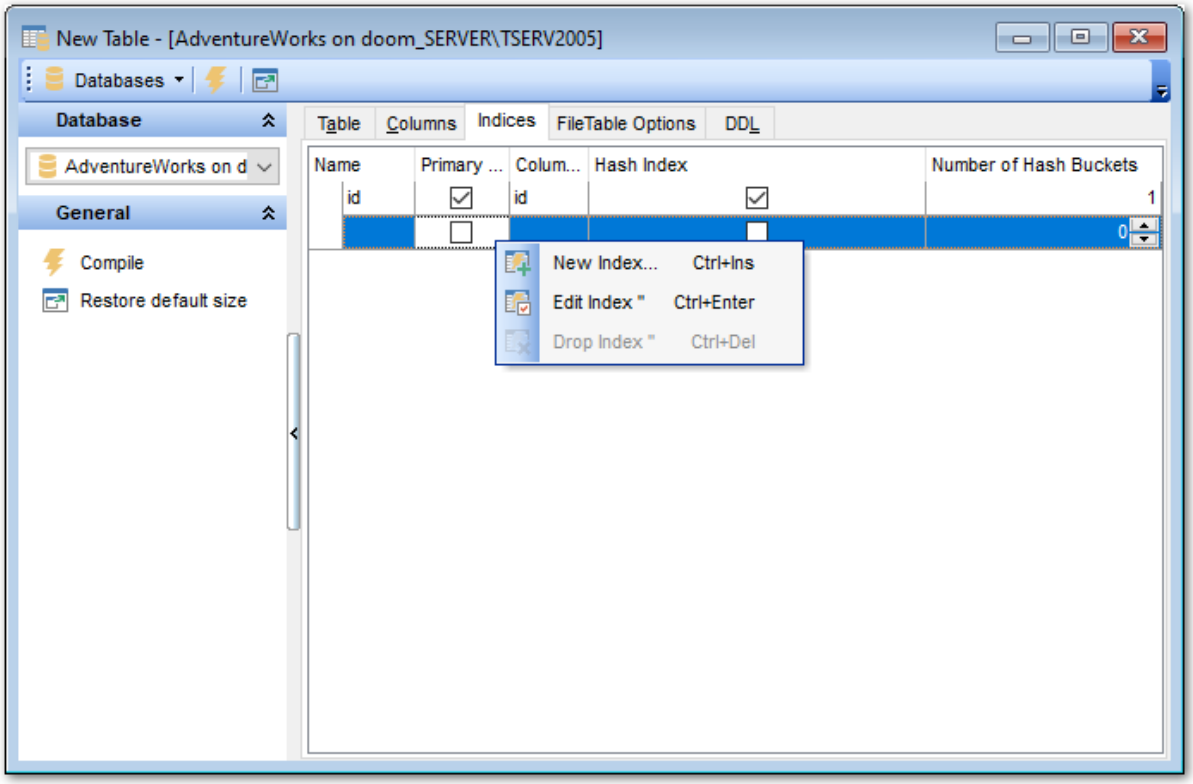
Primary key constraint name
Set the name to be used for the primary key constraint that is automatically created on the FileTable. If this value is not specified, the system generates a name for the constraint.

stream_id unique key constraint name
Define the name to be used for the unique constraint that is automatically created on the *stream_id* column in the FileTable. If this value is not specified, the system generates a name for the constraint.

Full path unique key constraint name
Specify the name to be used for the unique constraint that is automatically created on the *parent_path_locator* and *name* columns in the FileTable. If this value is not specified, the system generates a name for the constraint.

5.3.2.1.1.5 Specifying memory-optimized table indices

Use the **Indices** tab to specify indices for the newly created memory- optimized table.



The **Indexes** list provides the following attributes of each index of the table:
Name
Primary Key
Columns
Hash index
Number of Hash Bucket

Right-click an index to display the context menu allowing you to *create* new, *edit* or *drop* an index.
Double-click an index or use the *New/Edit Index* context menu item to open Memory-optimized table index editor for editing the index.

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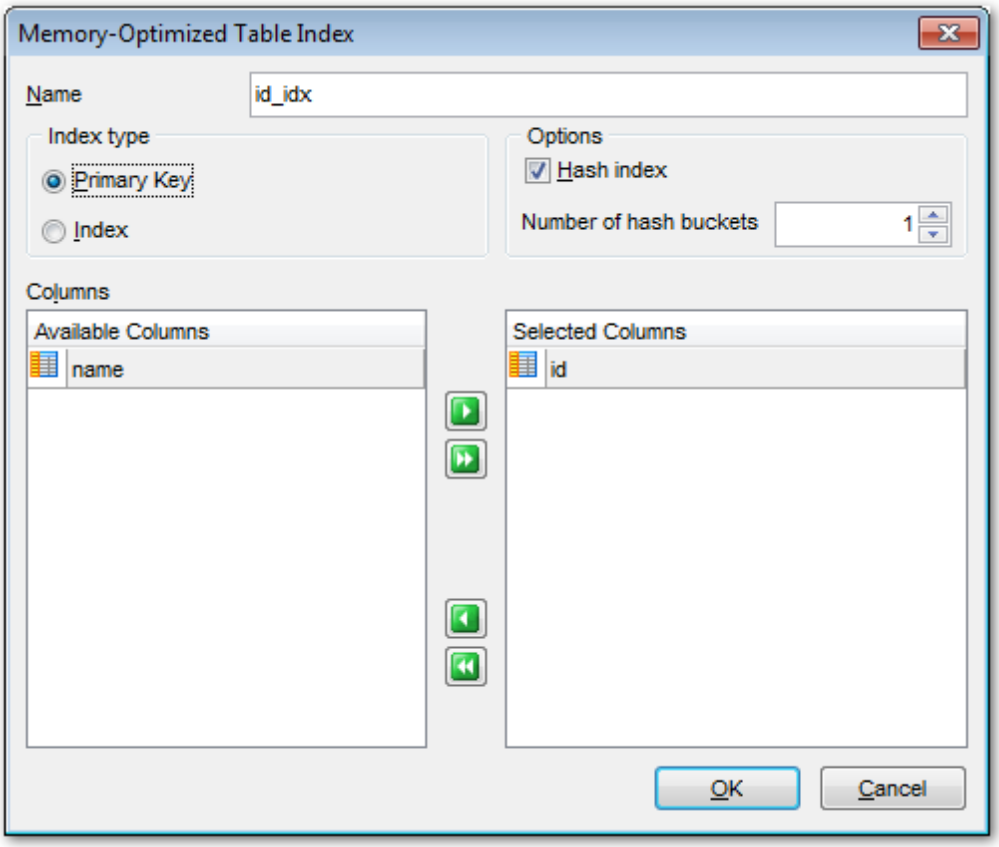


Index type

Primary Key
This selection indicates that the primary key index is created.

Index
This selection specifies a regular, non-unique index.

Options

Hash index
Checking this option indicates that a HASH index is created. A hash index consists of a collection of buckets organized in an array.

Number of hash buckets
Define the number of buckets that should be created in the hash index.

Columns
To include column(s) in the index, you need to move it from the **Available Columns** list to the **Selected Columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

5.3.2.1.2 Table Editor

Table Editor is the basic SQL Manager tool for working with tables 196. It opens automatically in the New table 197 mode when you create a new table and is available on

editing an existing one (see Create table 196 and Edit table 197 for details).

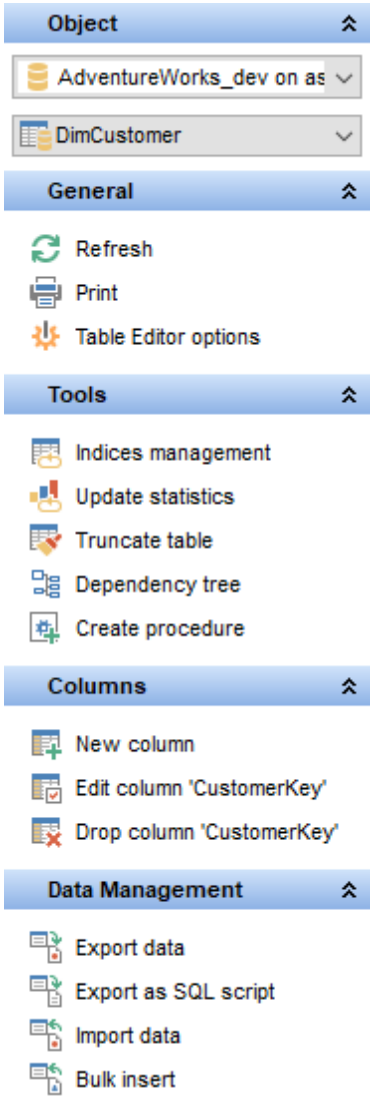
Table Editor allows you to create, edit and drop table's columns 217, indexes 232, foreign keys 225 and other table subobjects, manage table data 214, properties 215 and much more.

To open a table in **Table Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 205
- Managing table columns 208
- Changing columns order 209
- Managing table foreign keys 210
- Managing table checks 211
- Managing table indexes 212
- Managing table triggers 213
- Browsing object dependencies 957
- Working with table data 214
- Editing table description 956
- Viewing DDL definition 955
- Setting object permissions 958
- Table properties 215

5.3.2.1.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Table Editor**.



The **Navigation bar** of **Table Editor** (in the *Edit table* mode) allows you to:

Object

select a database
select a table for editing

General

compile 959 the table (if it is being modified)
save the table description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the table
adjust Table Editor options 871
restore the default size and position of the editor window

Tools

manage table indexes using Indices Management Wizard 789
update table statistics using Statistics Update Wizard 795
truncate data of the table (with the *TRUNCATE TABLE* statement used)
rebuild the dependent objects (for views only)
view the dependency tree 618 for the table
create 245 a procedure 257 based on the table

Explorer

browse the table subobjects using the Explorer tree

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the table:

Columns

add 217 a new column
edit 217 selected column
drop 217 selected column(s)

Foreign keys

add 225 a new foreign key
edit 225 selected foreign key
drop 226 selected foreign key(s)

Checks

add 229 a new check
edit 229 selected check
drop 230 selected check(s)

Indices

add 232 a new index
edit 232 selected index
drop 232 selected index(-es)

Triggers

add 241 a new trigger
edit 241 selected trigger
drop 241 selected trigger(s)

Data Management

commit transaction
rollback transaction
export data from the table using Export Data Wizard 537
export data from the table as SQL script using Export as SQL Script Wizard 599
import data into the table using Import Data Wizard 577
load data into the table using Bulk Insert Wizard 608

Description

save object description 956 to file

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copy description 956 to clipboard

DDL

save DDL 955 to file

open DDL 955 in Query Data 432

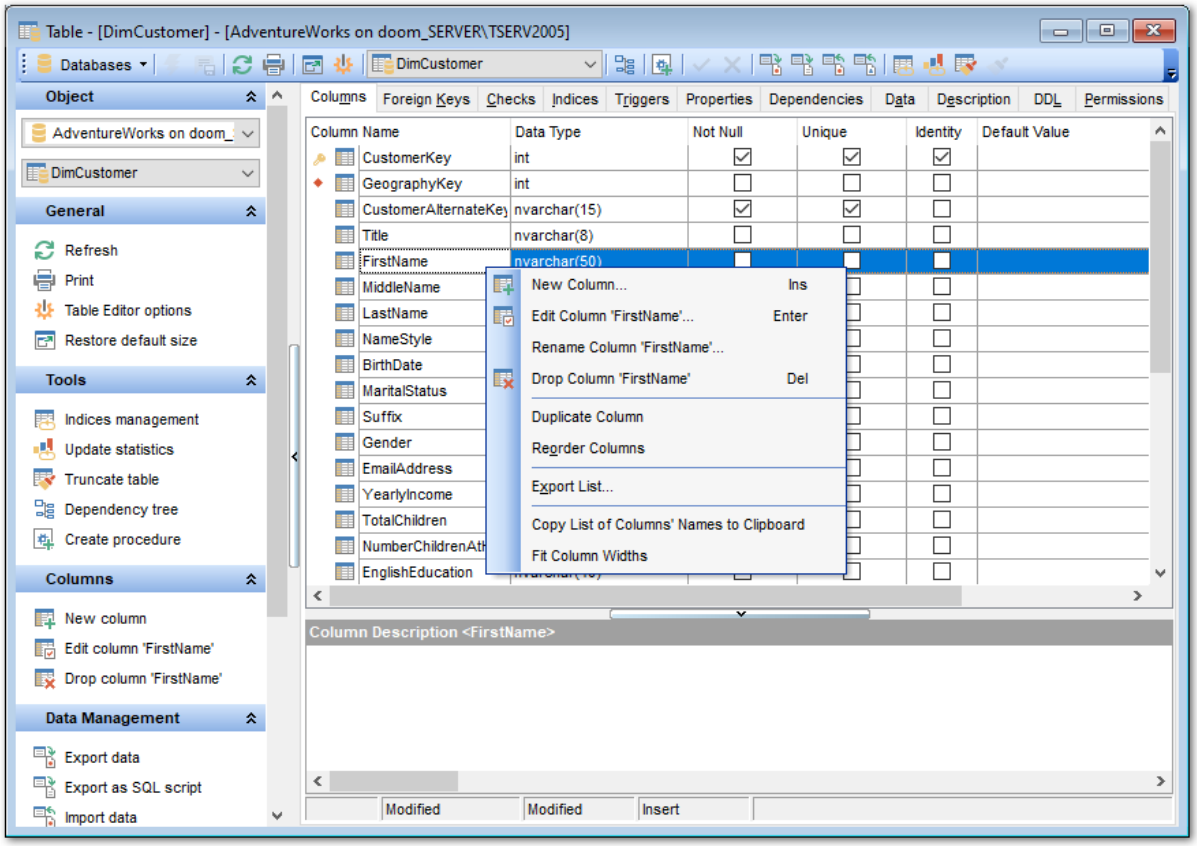
Items of the **Navigation bar** are also available on the **ToolBar** of **Table Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.1.2.2 Managing columns

The **Columns** tab is intended for managing table columns 217. Double-click a row to open Column Editor 218 for editing the column.

Right-click a row to display the context menu allowing you to *create* new, *edit*, *drop*, *rename*, *duplicate* the selected column, or reorder 209 columns of the table. Using the menu you can also export 537 the list of the table columns to any of supported formats 971.

Columns management tools are also available through the Navigation bar 205 of **Table Editor**.



The **Columns** list provides the following attributes of each column of the table:
Column Name
Data Type
Not Null
Unique
Identity
Default Value

For details see Columns 217.

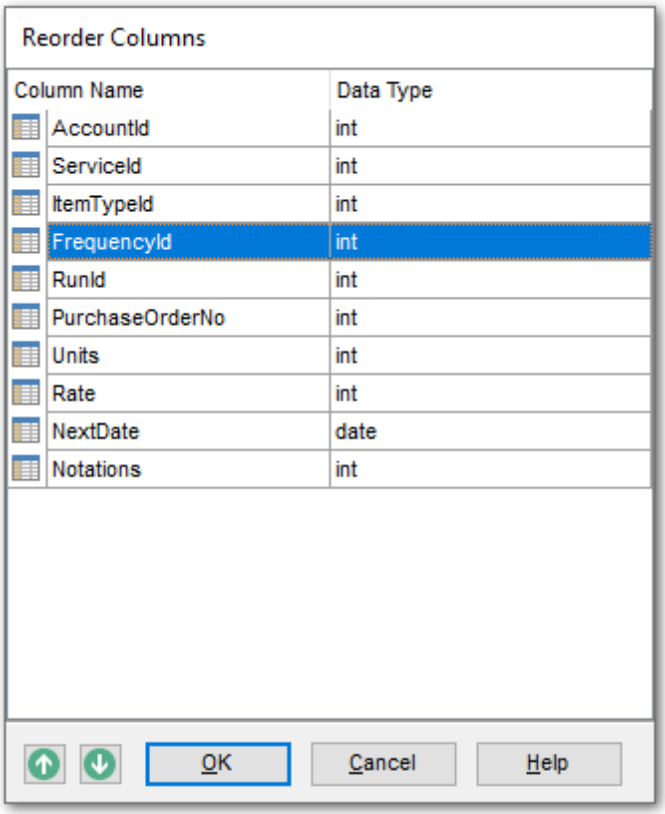
If necessary, you can also use the **Column Description** area to supply a *description* for each column.

5.3.2.1.2.3 Changing columns order

The **Reorder Columns** dialog allows you to change the columns order in the table.

To open this dialog, open the table in **Table Editor**, proceed to the Columns 208 tab there, right-click within the **Columns** list and select the **Reorder Columns** item from the context menu.

The columns are displayed in the **Column name** list in the current order.
To change the columns order, use the buttons or drag-and-drop operations within the list. Click the **OK** button to view the modification script in the Changing Metadata 959 window and apply changes.



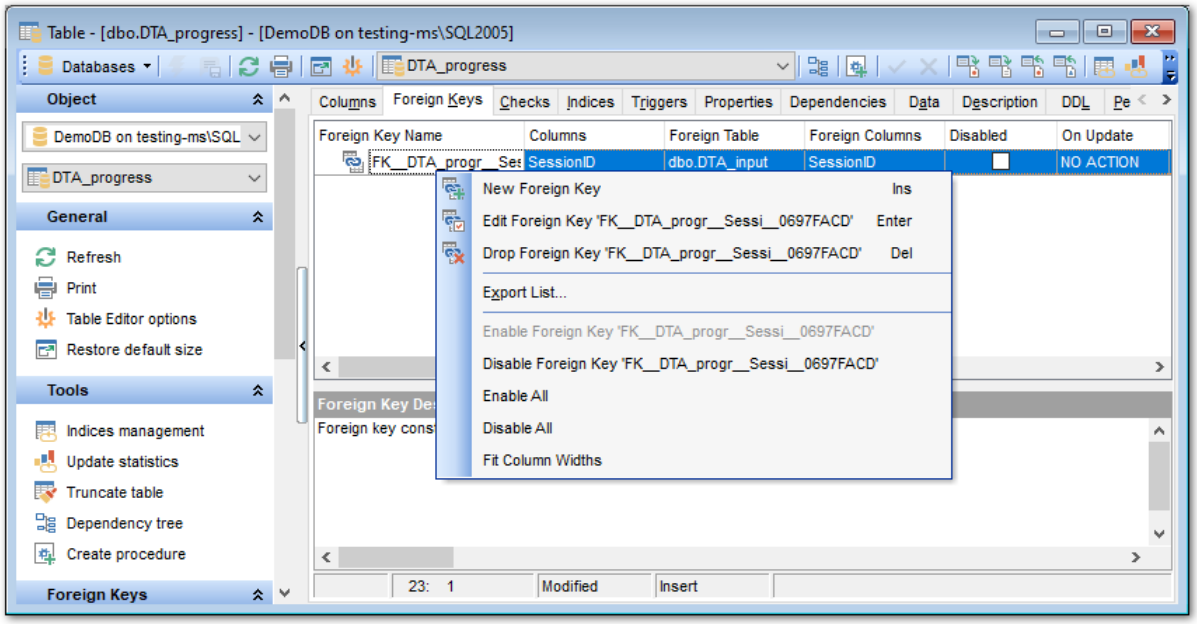
Note: This operation is performed by dropping/recreating the table.

5.3.2.1.2.4 Managing foreign keys

The **Foreign Keys** tab is provided for managing table foreign keys 225. Double-click a foreign key to open Foreign Key Editor 226 for editing the foreign key.

Right-click a foreign key to display the context menu allowing you to *create* new, *edit*, *drop*, *enable/disable* the selected foreign key, or *enable/disable* all foreign keys. Using the menu you can also export 537 the list of the table foreign keys to any of supported formats 971.

Foreign keys management tools are also available through the Navigation bar 205 of **Table Editor**.



The **Foreign Keys** list provides the following attributes of each foreign key of the table:
Foreign Key Name
Columns
Foreign Table
Foreign Columns
Disabled
On Update
On Delete

For details see Foreign Keys 225.

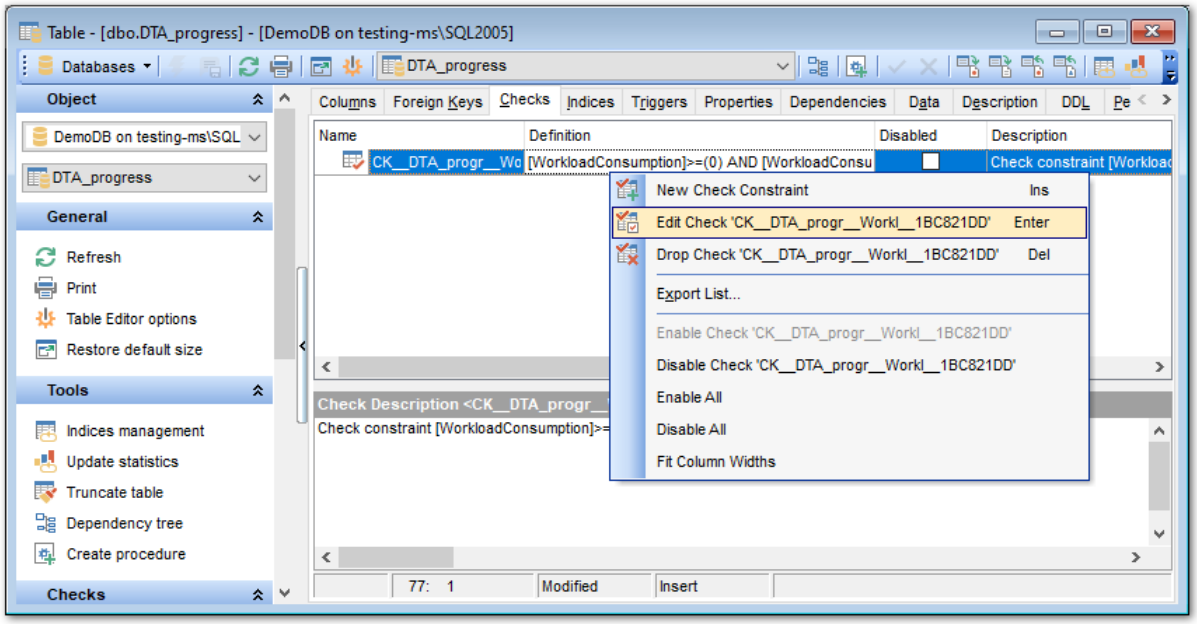
If necessary, you can also use the **Foreign Key Description** area to supply a *description* for each foreign key.

5.3.2.1.2.5 Managing checks

The **Checks** tab is provided for managing table check constraints 229. Double-click a check to open Check Editor 230 for editing the check.

Right-click a check to display the context menu allowing you to *create* new, *edit*, *drop*, *enable/disable* the selected check, or *enable/disable* all checks. Using the menu you can also export 537 the list of the table checks to any of supported formats 971.

Check constraints management tools are also available through the Navigation bar 205 of **Table Editor**.



The **Checks** list provides the following attributes of each check constraint of the table:
Name
Definition
Disabled
Description

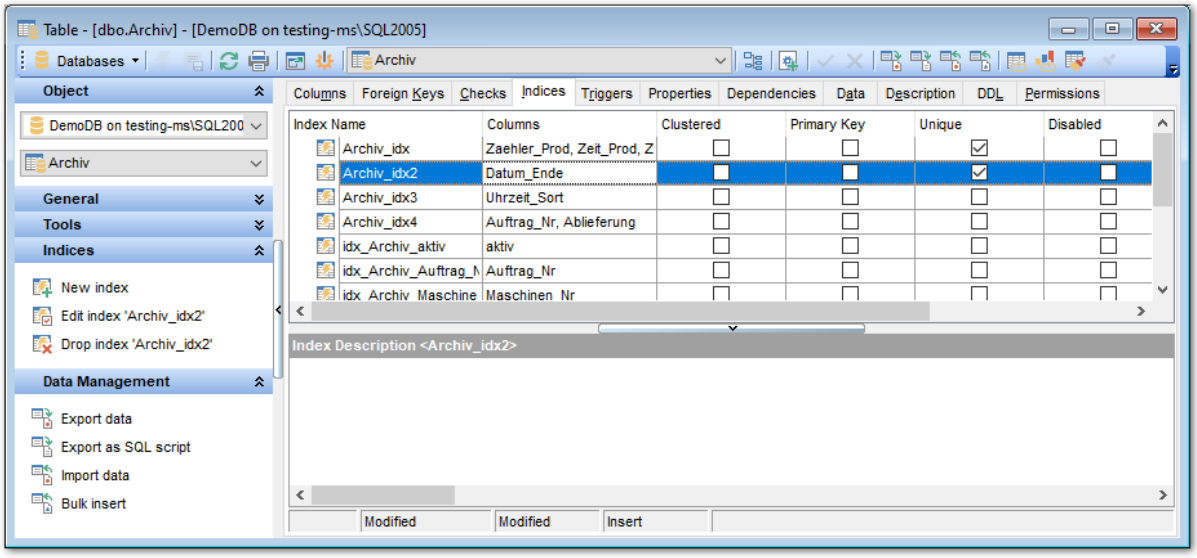
If necessary, you can also use the **Check Description** area to supply a *description* for each check constraint.

5.3.2.1.2.6 Managing indices

The **Indices** tab is provided for managing table indexes 232. Double-click an index to open Index Editor 232 for editing the index.

Right-click an index to display the context menu allowing you to *create* new, *edit*, *drop*, *enable/disable* the selected index, or *enable/disable* all indexes. Using the menu you can also export 537 the list of the table indexes to any of supported formats 971.

Indexes management tools are also available through the Navigation bar 205 of **Table Editor**.



The **Indexes** list provides the following attributes of each index of the table:
Index Name
Columns
Clustered
Primary Key
Unique
Disabled

For details see Indexes 232.

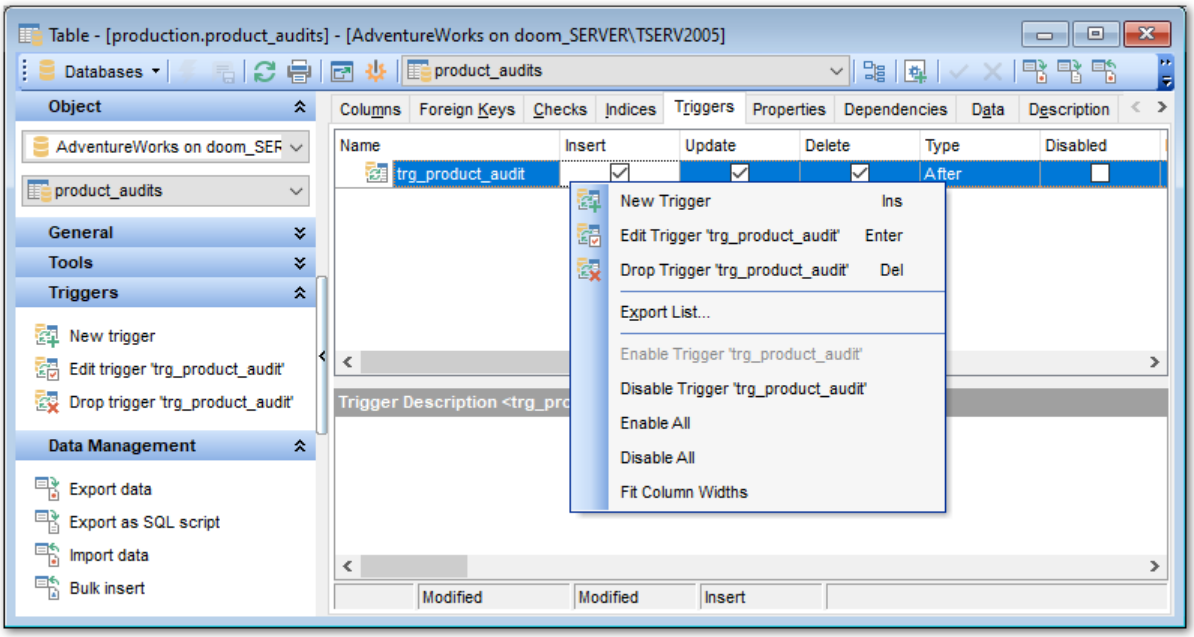
If necessary, you can also use the **Index Description** area to supply a *description* for each index.

5.3.2.1.2.7 Managing triggers

The **Triggers** tab is provided for managing table triggers 240. Double-click a trigger to open Trigger Editor 241 for editing the trigger.

Right-click the area to display the context menu allowing you to *create* new, *edit*, *drop*, *enable/disable* the selected trigger, or *enable/disable* all triggers. Using the menu you can also export 537 the list of the table triggers to any of supported formats 971.

Triggers management tools are also available through the Navigation bar 205 of **Table Editor**.



The **Triggers** list provides the following attributes of each trigger of the table:
Name
Insert
Update
Delete
Type
Disabled

For details see Triggers 240.

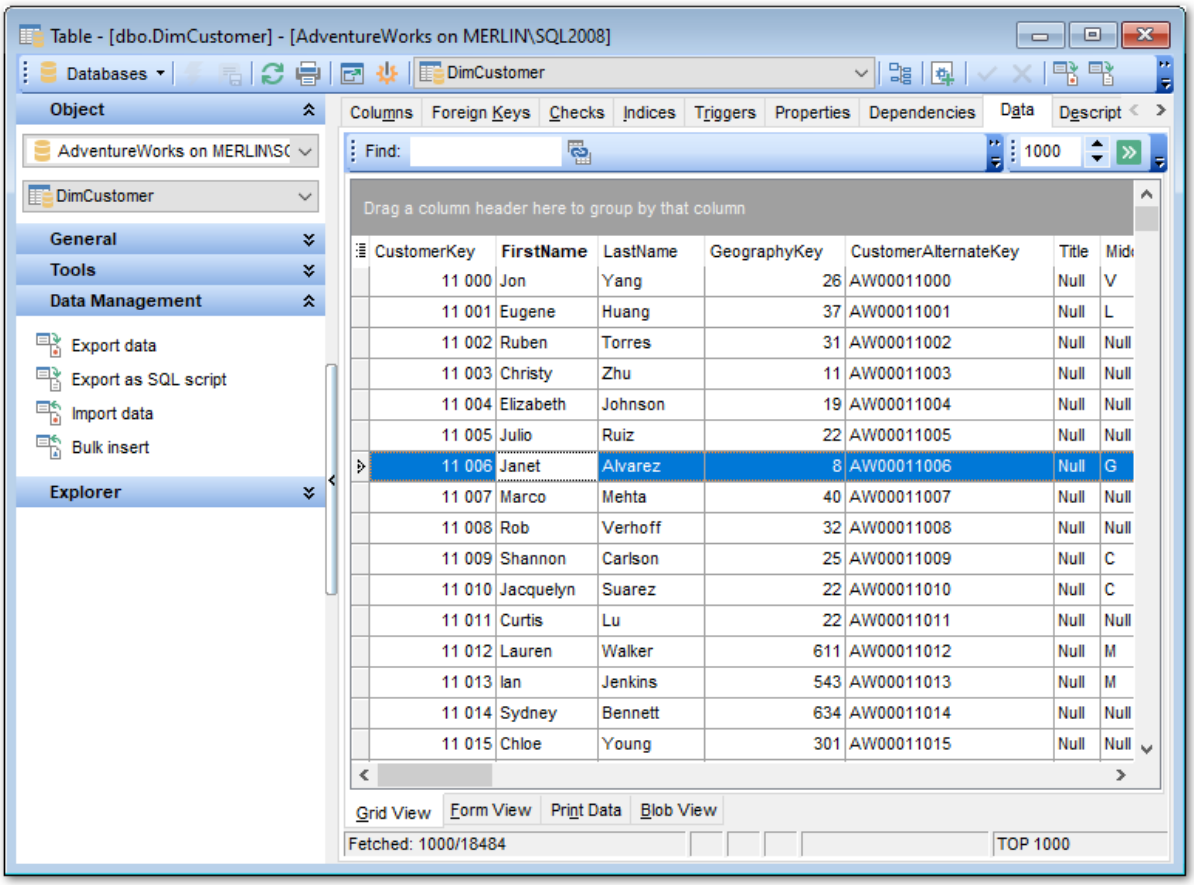
If necessary, you can also use the **Trigger Description** area to supply a *description* for each trigger.

5.3.2.1.2.8 Working with table data

The **Data** tab displays the table data as a grid by default (see Data View 469 for details). The context menu of this tab allows you to Export Data 537, Import Data 577, Export as SQL Script 599, Bulk Insert 608.

Data management tools are also available through the Navigation bar 205 of **Table Editor**.

While working with data, you are provided with a number of filtering 475 and grouping 473 facilities.
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.



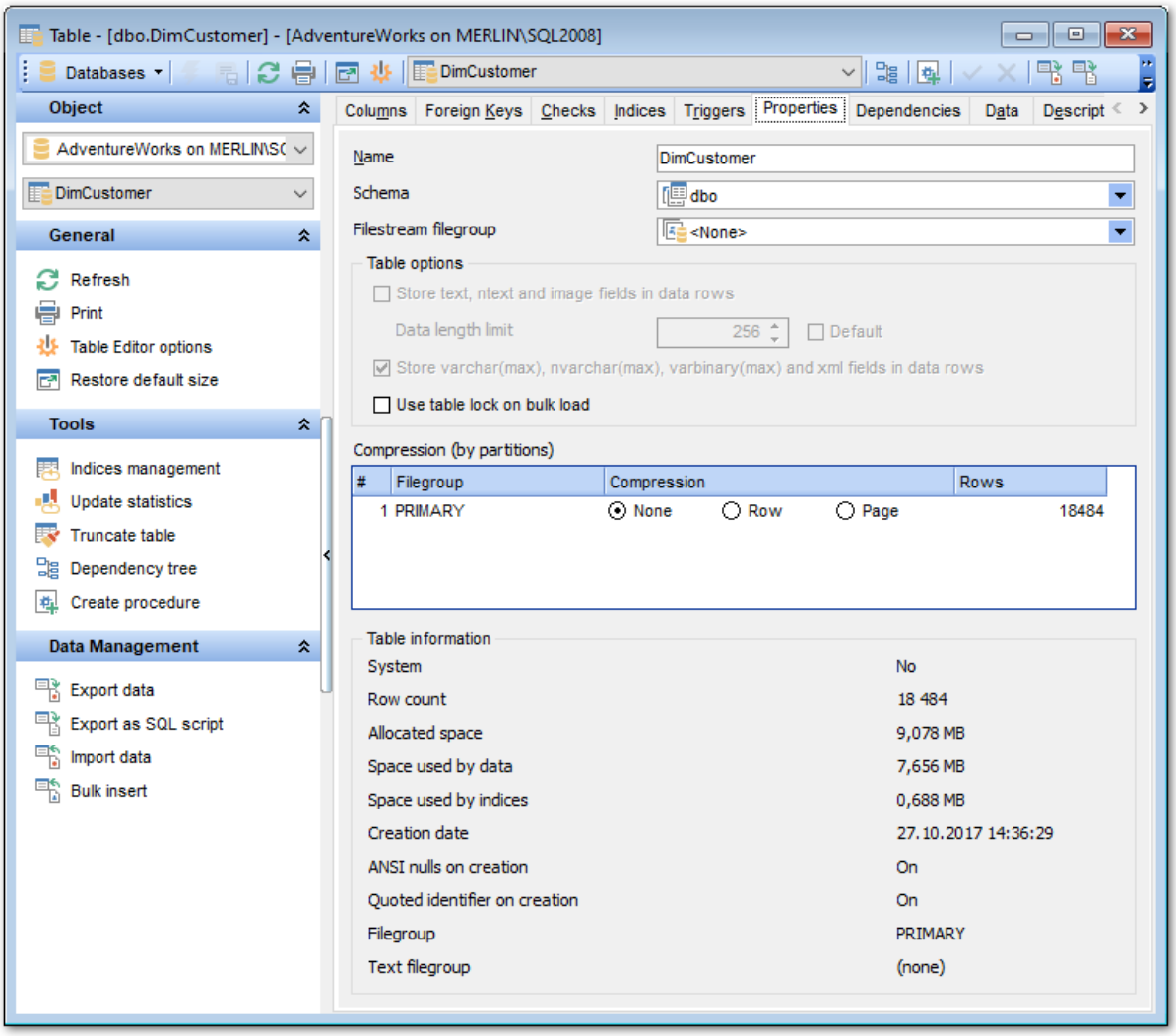
See also:

Data View 469

5.3.2.1.2.9 Table properties

The **Properties** tab allows you to view/edit common properties of the table: *Table name*, *Schema name*, *Table options* (*Storage attributes*, *Table lock usage*, etc.), *Table information*.

Hint: These properties are also available within a modal dialog which is called through the **Table Properties...** context menu item of the table alias in DB Explorer 65.



Name
Edit the name of the table. Note that table names must comply with the rules for identifiers. The name of the table must be unique within the schema. A table name can contain a maximum of 128 characters.

Schema
Use the drop-down list to select a schema 193 for the table.

Filestream dataspace
Select the needed Filestream filegroup 158 from the drop-down list. This option is available only for SQL Server 2008 and higher.

Table options
This group allows you to specify to ☑ **Store text, ntext and image fields in data rows**, set the **Data length limit**, specify to ☑ **Store varchar(max), nvarchar(max), varbinary(max) and xml fields in data rows**, and select whether to ☑ **Use table lock on bulk load** or not.

Compression (by partitions)
Use this area to set compression options for the table. Compression type can be different for each table partition. Set the partition compression to *Row* or *Page*. Set *None* to leave a partition uncompressed.

The **Table information** group allows you to view the table summary: *System* (*Yes/No*), *Row count*, *Space used by data*, *Space used by indices*, *Creation date*, *ANSI nulls on creation* (*On/Off*), *Quoted identifier on creation* (*On/Off*), *File group*, *Text file group*.

Durability
This group of options is available for memory-optimized tables only.

Schema and data
This value indicates that the table is a durable memory-optimized table. This option provides durability of both schema and data.

Schema only
This value indicates that the table is non-durable. This option ensures durability of the table schema, including indexes.
Such tables are not logged and their data is not persisted on disk.

5.3.2.1.3 Columns

Table columns are managed within the **Columns** tab of Table Editor 204.

Creating Columns

To create a new table column:
- open the table in Table Editor 204;
- proceed to the **Columns** tab there;
- right-click the tab area and select the **New Column** context menu item, or press the *Ins* key;
- define the column properties using the Column Editor 218 dialog.

Editing Columns

To edit an existing table column:
- open the table in Table Editor 204;
- proceed to the **Columns** tab there;
- right-click the row and select the **Edit Column <column_name>** context menu item, or simply double-click the column;
- edit the column properties using the Column Editor 218 dialog.

To change the order of table columns:
- open the table in Table Editor 204;
- proceed to the **Columns** tab there;
- right-click the row and select the **Reorder Columns <column_name>** context menu item;
- edit columns' order using the Reorder Columns 209 dialog.

Dropping Columns

To drop a table column:
- open the table in Table Editor 204;
- proceed to the **Columns** tab there;
- right-click the row and select the **Drop Column <column_name>** context menu item;
- confirm dropping in the dialog window.

5.3.2.1.3.1 Column Editor

Column Editor allows you to specify column definition and set column properties. It opens automatically when you create a new column and is available on editing an existing one (see Create column 217 and Edit column 217 for details).

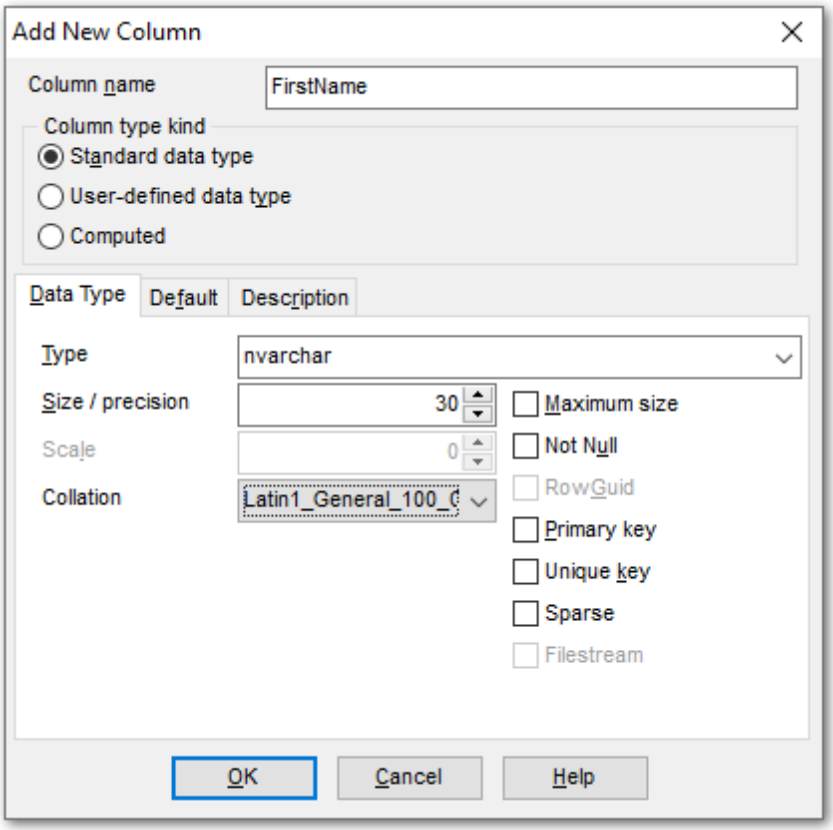
To open a column in **Column Editor**, double-click it in the DB Explorer 65 tree, or use the **Edit Column...** item of the context menu within the Columns 208 tab of Table Editor 204.
- Setting column name and type 218
- Setting column identity 221
- Setting column defaults 223
- Setting column description 224

Column name
Enter a name for the new column, or modify the name of the column being edited. Note that the name of a column must be unique among all the column names in the table.

The **Data type** tab defines the type of the column.

Column type kind
This group allows you to select whether the column being created/edited is based on a standard data type, a user-defined type 268, or is a computed column.

Standard data type
Specifies that the column is based upon a built-in SQL Server data type.



Type
Here you can set the column type by selecting it from the drop-down list of the standard SQL Server data types.

Size
Specify the size value (for certain types). Check the ☑ **Maximum size** option to use the maximum values set by SQL Server.

Scale
Defines the maximum number of decimal digits that can be stored to the right of the decimal point of the value (for numeric and decimal data types).

Collation
Use the drop-down list to specify the collation for text and char columns. By default, the column is assigned the default collation of the database.

☑ **Not NULL**
Check this option to specify that the values for the column should never contain a null value. *NOT NULL* affects all INSERT and UPDATE operations on a column.

☑ **RowGuid**
This option specifies that the *ROWGUIDCOL* property is added to the column. *ROWGUIDCOL* indicates that the column is a row GUID column.

☑ **Primary key**

Check this option to include the column into the primary key. Note that if you include a column to a primary key, you should also make it *Not Null*.
A table typically has a column or combination of columns that contain values that uniquely identify each row in the table. This column, or columns, is called the primary key (PK) of the table and enforces integrity of the table.

Unique key
Check this option to create a unique key on the column that provides entity integrity for a particular column or columns using a unique index.

Sparse
Check this option to make the column a Sparse column. Sparse columns are ordinary columns that have an optimized storage for null values. Sparse columns reduce the space requirements for null values at the cost of more overhead to retrieve non-null values.

Filestream
Check this option to store the data from this column in the Filestream filegroup 158. This option is available if any filestream file group is specified for the table.

Online
Check this option to enable ONLINE mode on column modification.

User-defined data type
Specifies that the column is based upon a user-defined data type.

Type
Use the drop-down list to select the user-defined type 268 for the column being created/edited.

Computed
Specifies that the column is computed from an expression that can use other columns in the same table.

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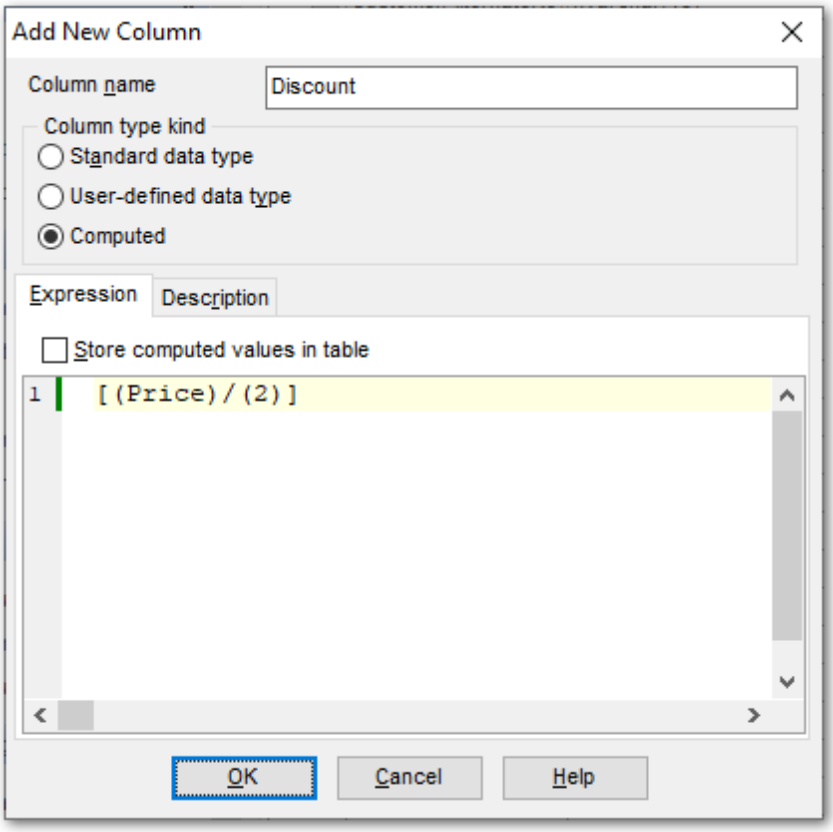

Store computed values in table
This option determines whether computed values are stored in the table or the column is not physically stored in the table.

Specify an expression that defines the value of the computed column. For example, a computed column can have the following definition:
*cost AS price * qty*.
The expression can be a noncomputed column name, constant, function, variable, and any combination of these connected by one or more operators. The expression cannot be a subquery or include an alias data type.

The **Identity** tab is only available for integer column types and for user-defined types 268 based on integer types. Using this tab you can create an identity column.

Identity
This option specifies that the new column is an identity column.

Seed
Specify the value used for the first row that is loaded into the table.

Increment
Specify the value added to the identity value of the previous row that is loaded.

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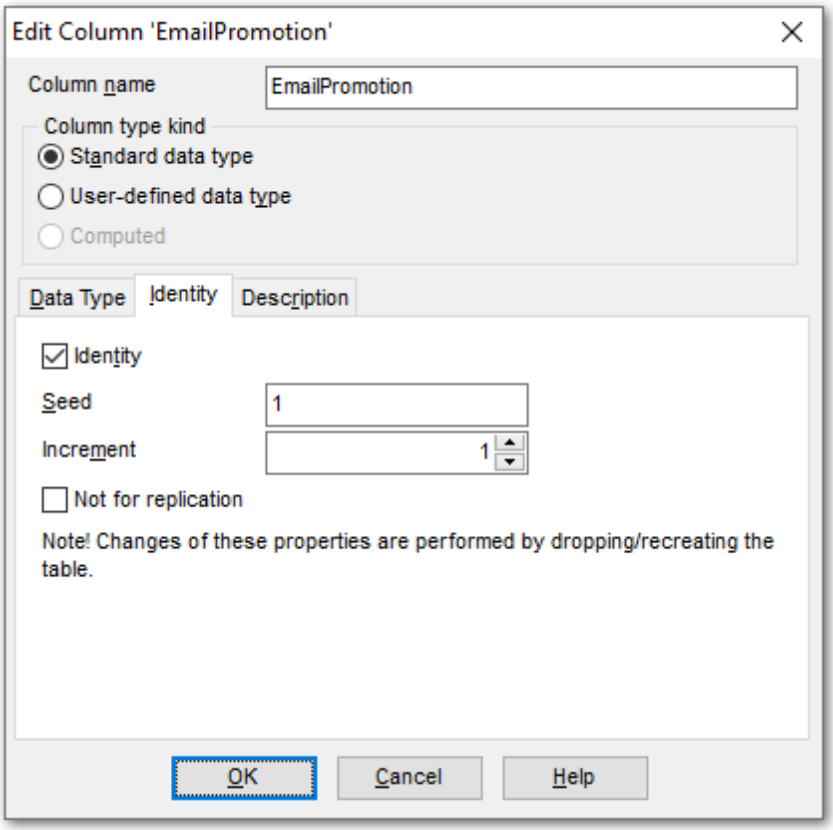

☑ **Not for replication**
This option allows you to specify that the Identity property should not be enabled when a replication agent modifies the table that contains the identity column.

NB: This operation is performed by dropping/recreating the table.

The **XML** tab is only available for XML column type and for user-defined types 268 based on XML type.

The **xml** data type is a built-in data type in SQL Server and is somewhat similar to other built-in types such as *int* and *varchar*. As with other built-in types, you can use the **xml** data type as a column type when you create a table as a variable type, a parameter type, a function-return type, or in CAST and CONVERT.

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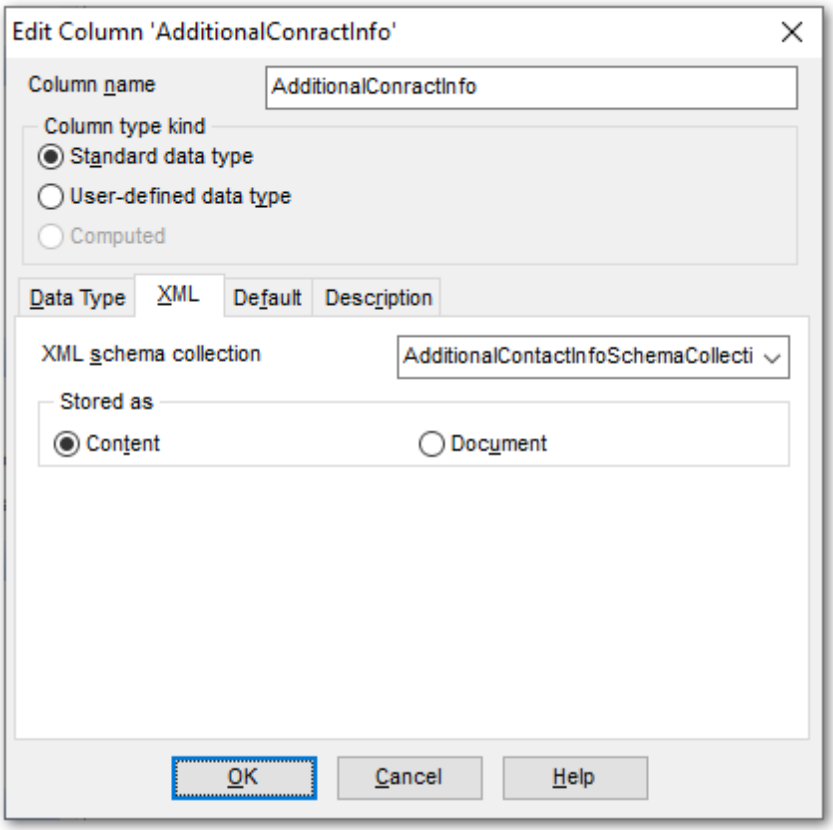
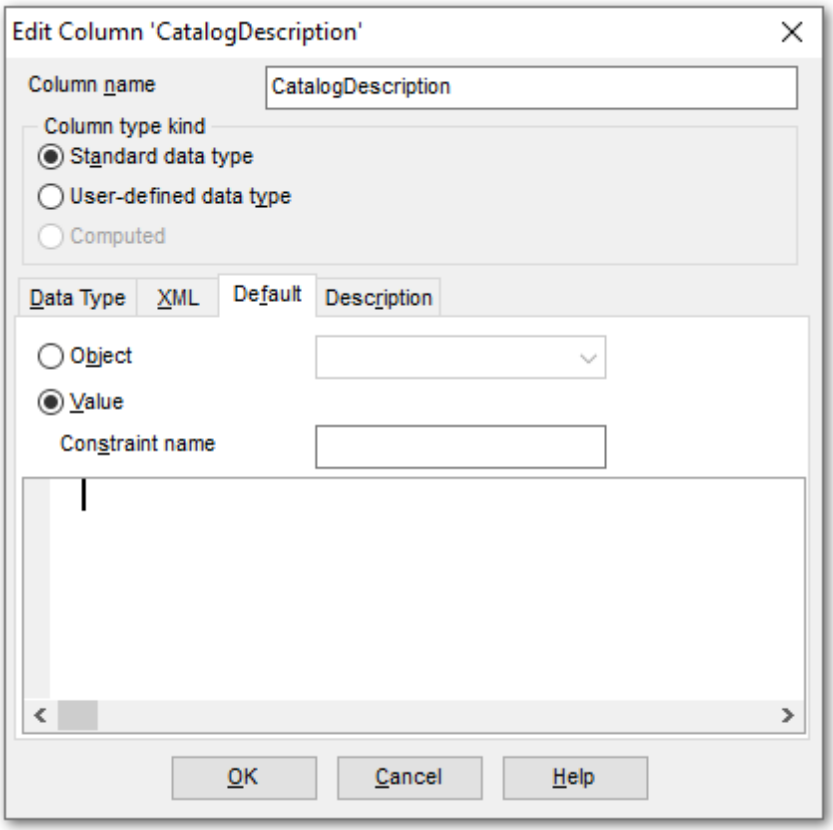


XML schema collection
Use the drop-down list to select an XML Schema Collection 286 to be used by this column.

The **XML schema collection** stores the imported XML schemas.
The schemas in the collection are used to validate the XML instances. By default, instances stored in the typed xml column are stored as XML content. For typed xml columns, you can constrain the column to allow only single, top-level elements for each instance stored in it. You can do this by selecting the **Document** option.

The **Stored as** group allows you to select the way your xml data will be stored: as **Content** or as a **Document**.

The **Default** tab allows you to define the default value for the column. You can either select the default object from the list of database defaults 289 or define a default value for the column. The second option is not available for the **Computed** column type.



Constraint name
This box allows you to set a name for the constraint which is automatically created when you set a default value for the data column. If you leave this field empty, the constraint will be named by the server.

The **Description** tab allows you to enter optional text as a description for the column.

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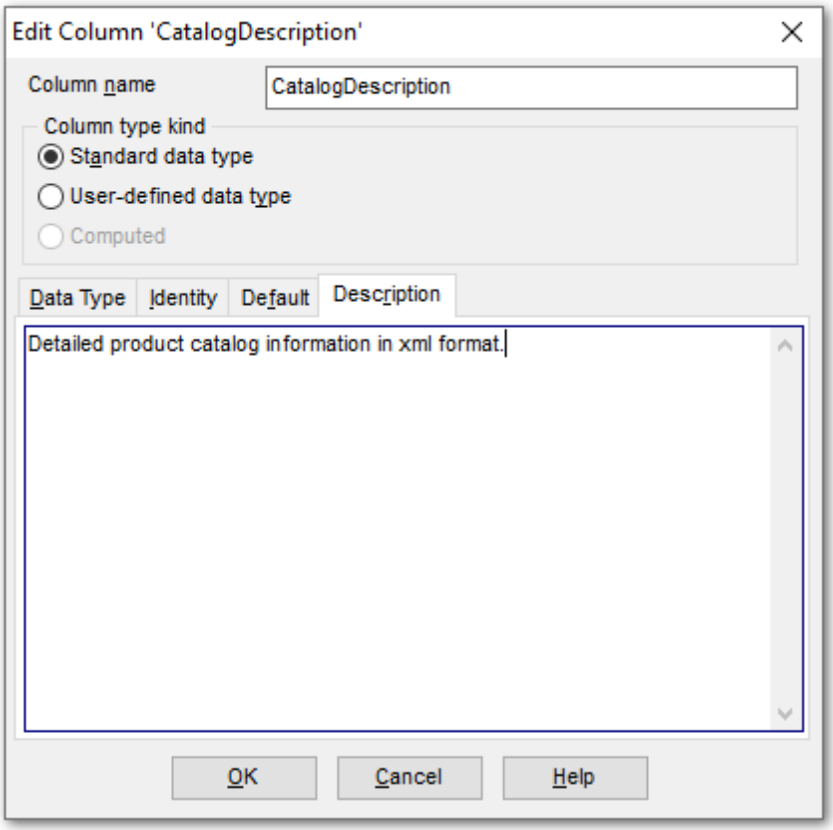


Note: Changing object description is performed by means of *sp_updateextendedproperty 'MS_Description'*.

5.3.2.1.4 Foreign Keys

A **Foreign key** constraint (also called a *referential integrity constraint*) designates a column as the Foreign key and establishes a relationship between that foreign key and a specified *Primary* or *Unique* key called the *referenced key*. A composite Foreign key designates a combination of columns as the foreign key.

Table Foreign keys are managed within the **Foreign Keys** tab of Table Editor 204.

Creating Foreign Keys

To create a new Foreign key:
- open the table in Table Editor 204;
- proceed to the **Foreign Keys** tab there;
- right-click the tab area and select the **New Foreign Key** context menu item, or press the *Ins* key;
- define the Foreign key properties using the Foreign Key Editor 226 dialog.

Editing Foreign Keys

To view/edit an existing Foreign key:
- open the table in Table Editor 204;
- proceed to the **Foreign Keys** tab there;
- right-click the Foreign key to edit and select the **Edit Foreign Key <foreign_key_name>** context menu item, or simply double-click the Foreign key;
- edit the Foreign key properties using the Foreign Key Editor 226 dialog.

Dropping Foreign Keys

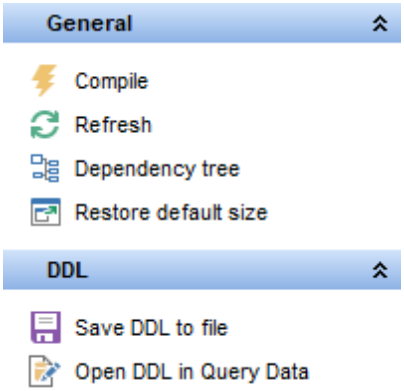
To drop a Foreign key:
- open the table in Table Editor 204;
- proceed to the **Foreign Keys** tab there;
- right-click the Foreign key and select the **Drop Foreign Key <foreign_key_name>** context menu item;
- confirm dropping in the dialog window.

5.3.2.1.4.1 Foreign Key Editor

Foreign Key Editor allows you to specify foreign key definition and set foreign key properties. It opens when you create a new foreign key or edit an existing one (see Create Foreign Key 225 and Edit Foreign Key 225 for details).

To open a foreign key in **Foreign Key Editor**, double-click it in the DB Explorer 65 tree, or use the **Edit Foreign Key...** item of the context menu within the Foreign Keys 210 tab of Table Editor 204.
- Using Navigation bar and Toolbar 226
- Creating/editing foreign key 227
- Browsing object dependencies 957
- Editing foreign key description 956
- Viewing DDL definition 955

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Foreign Key Editor**.



The **Navigation bar** of **Foreign Key Editor** allows you to:

General

compile 959 the foreign key (if it is being created/modified)
save the foreign key description 956 (if it has been modified)
refresh the content of the active tab
view the dependency tree 618 for the foreign key
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the foreign key:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Foreign Key Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

Use the **Foreign Key** tab of **Foreign Key Editor** to create/edit a foreign key constraint and specify its properties.

Name
Enter a name for the new foreign key, or modify the name of the foreign key being edited.

Table
The drop-down list of tables 196 allows you to select the table for which the foreign key is created.

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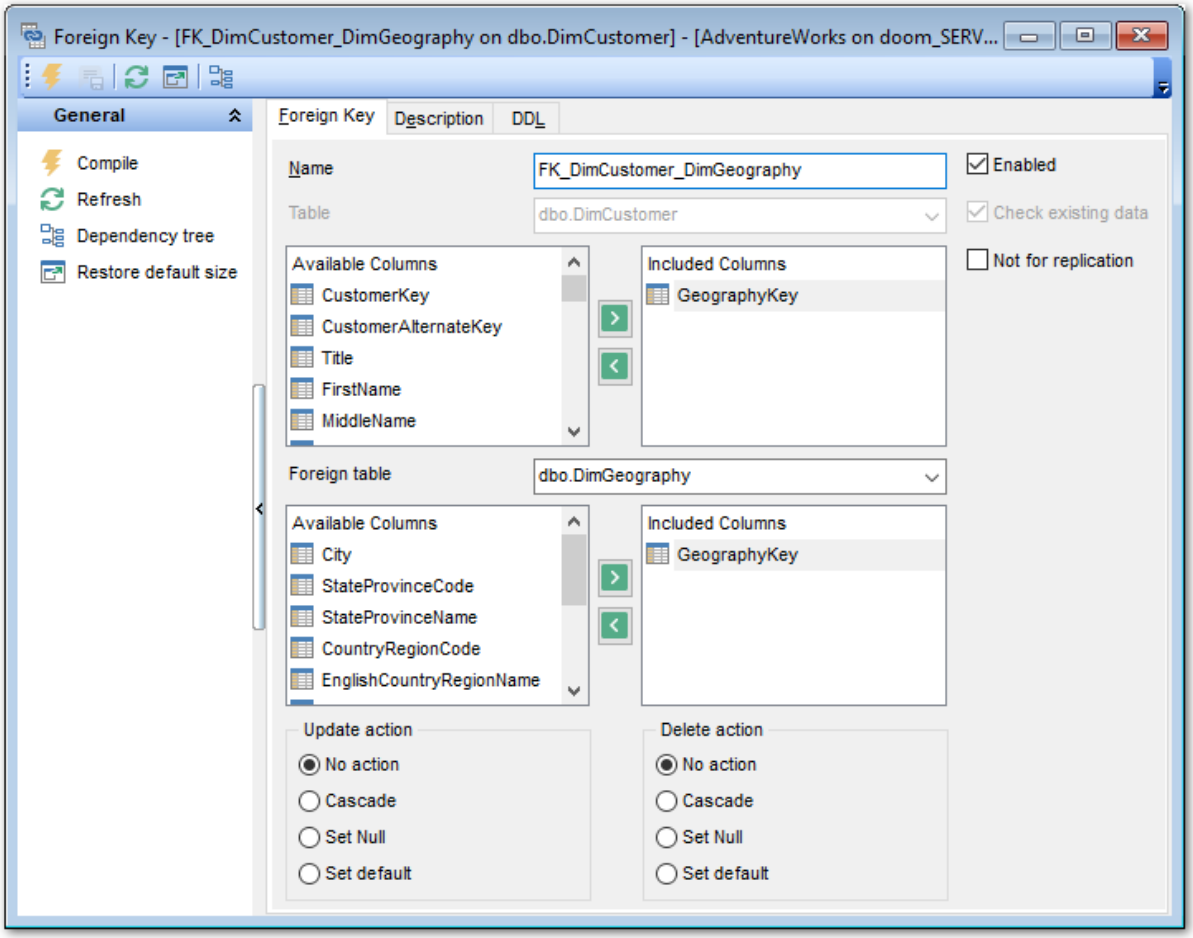

The **Table Columns** area allows you to select Foreign key column(s).
To select a column, you need to move it from the **Available Columns** list to the **Included Columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

Foreign table
Use the drop-down list to select the foreign table.

The **Foreign Table Columns** area allows you to select the column(s) of the Foreign table.
To select a column, you need to move it from the **Available Columns** list to the **Included Columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

If the referenced column(s) are changed frequently, it may be wise to add an index to the foreign key column so that referential actions associated with the foreign key column were performed more efficiently. See Indexes 232 for details.

Update action / **Delete action**

- *No action*

Produce an error indicating that the deletion or update would create a foreign key constraint violation. If the constraint is deferred, this error will be produced at constraint check time if there still exist any referencing rows. This is the default action.

- *Cascade*
  Delete any rows referencing the deleted row, or update the value of the referencing column to the new value of the referenced column, respectively.
- *Set NULL*
  Set the referencing column(s) to null.
- *Set default*
  Set the referencing column(s) to their default values.

Enabled
Enables/disables the foreign key immediately after it is created.

Check existing data
This option specifies whether the data in the table is or is not validated against a newly added or re-enabled foreign key.

Not for replication
This option allows you to specify that the foreign key should not be enabled when a replication agent modifies the table that is involved in the foreign key.

5.3.2.1.5 Checks

A **Check** specifies an expression producing a Boolean result which new or updated rows must satisfy for an insert or update operation to succeed. Expressions evaluating to TRUE or UNKNOWN succeed. Should any row of an insert or update operation produce a FALSE result an error exception is raised and the insert or update does not alter the database. A check constraint specified as a column constraint should reference that column's value only, while an expression appearing in a table constraint may reference multiple columns.

Table checks are managed within the **Checks** tab of Table Editor 204.

Creating Checks

To create a new check:
- open the table in Table Editor 204;
- proceed to the **Checks** tab there;
- right-click the tab area and select the **New Check Constraint** context menu item, or press the *Ins* key;
- define the check properties using the Check Editor 230 dialog.

Editing Checks

To view an existing check:
- open the table in Table Editor 204;
- proceed to the **Checks** tab there;
- right-click the check and select the **Edit Check <check_name>** context menu item, or simply double-click the check;
- edit the check properties using the Check Editor 230 dialog.

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Dropping Checks

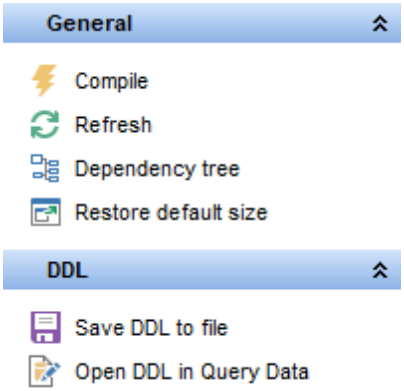
To drop a check:
- open the table in Table Editor 204;
- proceed to the **Checks** tab there;
- right-click the check and select the **Drop Check <check_name>** context menu item;
- confirm dropping in the dialog window.

5.3.2.1.5.1 Check Editor

Check Editor allows you to specify check definition and set check properties. It opens automatically when you create a new check and is available on editing an existing one (see Create check 229 and Edit check 229 for details).

To open a check constraint in **Check Editor**, double-click it in the DB Explorer 65 tree, or use the **Edit Check...** item of the context menu within the Checks 211 tab of Table Editor 204.
- Using Navigation bar and Toolbar 230
- Creating/editing check 231
- Browsing object dependencies 957
- Editing check description 956
- Viewing DDL definition 955

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Check Editor**.



The **Navigation bar** of **Check Editor** allows you to:

General
compile 959 the check (if it is being created/modified)
save the check description 956 (if it has been modified)
refresh the content of the active tab
view the dependency tree 618 for the check
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the check:

Description
save object description 956 to file
copy description 956 to clipboard

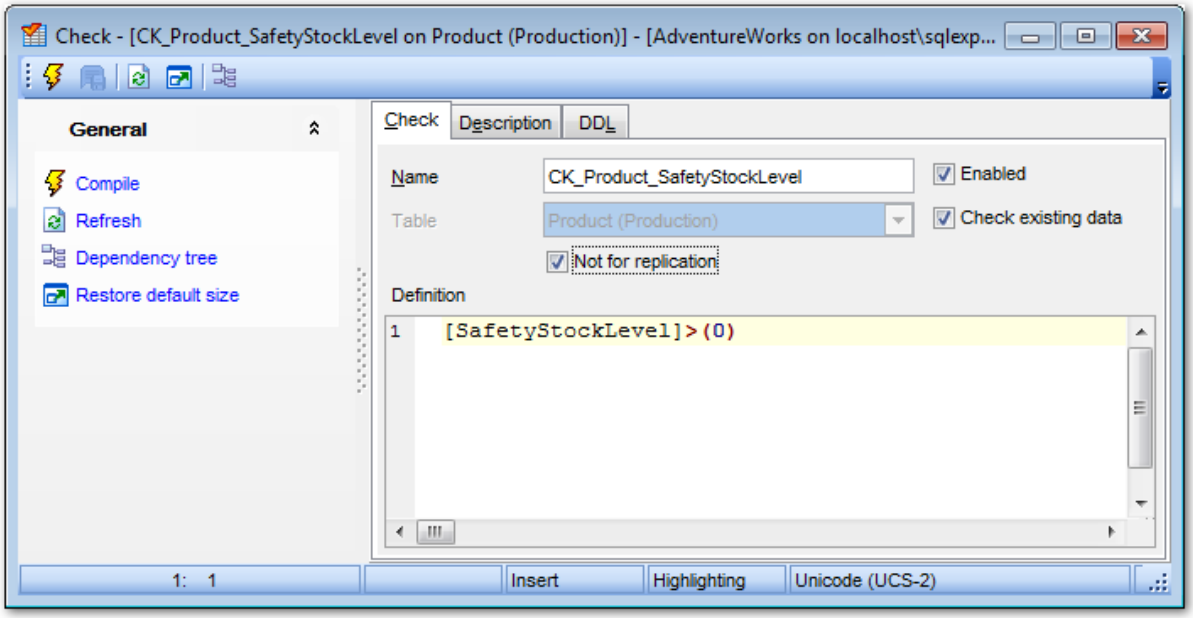
DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Check Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

Use the **Check** tab of **Check Editor** to create/edit a check constraint and specify its properties.

Name
Enter a name for the new check, or modify the name of the check being edited.

Table
The drop-down list of tables 196 allows you to select the table for which the check is created.



Enabled
Enables/disables the check immediately after it is created.

Check existing data
This option specifies whether the data in the table is or is not validated against a newly added or re-enabled check.

Not for replication
This option allows you to specify that the check should not be enabled when a replication agent modifies the table that is involved in the check.

Definition
This area represents the condition implied by the check constraint.
You can specify any logical (Boolean) expression that returns *TRUE* or *FALSE* based on the logical operators. For example, *salary >= 15000 AND salary <= 100000*.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

5.3.2.1.6 Indices

Table indexes are managed within the **Indices** tab of Table Editor 204.

Creating Indices

To create a new table index:
- open the table in Table Editor 204;
- proceed to the **Indices** tab there;
- right-click the tab area and select the **New Index** context menu item, or press the *Ins* key;
- define the index properties using the Index Editor 232 dialog.

Editing Indices

To edit an existing table index:
- open the table in Table Editor 204;
- proceed to the **Indices** tab there;
- right-click the index and select the **Edit Index** context menu item, or simply double-click the index;
- edit the index properties using the Index Editor 232 dialog.

Dropping Indices

To drop a table index:
- open the table in Table Editor 204;
- proceed to the **Indices** tab there;
- right-click the index and select the **Drop Index** context menu item;
- confirm dropping in the dialog window.

5.3.2.1.6.1 Index Editor

Index Editor allows you to specify index definition and set index properties. It opens automatically when you create a new index and is available on editing an existing one

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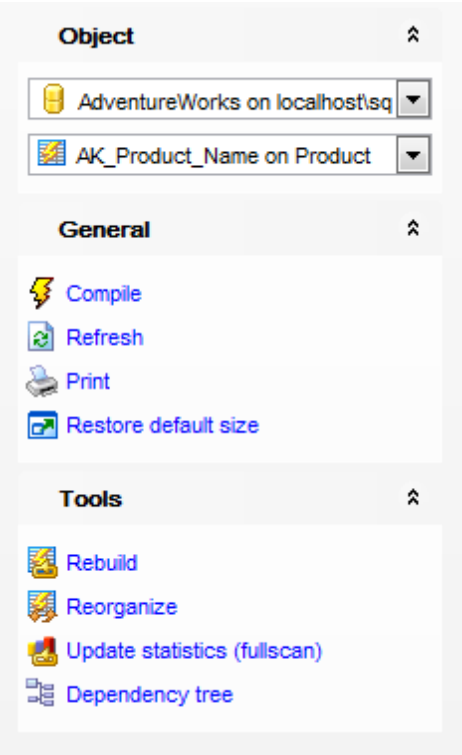
(see Create Index 232 and Edit Index 232 for details).

To open an index in **Index Editor**, double-click it in the DB Explorer 65 tree, or use the **Edit Index...** item of the context menu within the Indices 212 tab of Table Editor 204.

- Using Navigation bar and Toolbar 233
- Creating/editing index 234
- Defining index storage 237
- Viewing index info 240
- Editing index description 956
- Viewing DDL definition 955

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Index Editor**.



The **Navigation bar** of **Index Editor** allows you to:

Object

select a database
select an index for editing

General

compile 959 the index (if it is being created/modified)
save the index description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the index
restore the default size and position of the editor window

Tools

rebuild the index using the *ALTER INDEX ... REBUILD* statement
reorganize the index using the *ALTER INDEX ... REORGANIZE* statement
update statistics using the *UPDATE STATISTICS* statement
view the dependency tree 618 for the index

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the index:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Index Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

Use the **Index** tab of **Index Editor** to create/edit an index on a specified table 196 or view 250, or an XML index on a specified table 196, and specify index properties.

Name
Enter a name for the new index, or modify the name of the index being edited.

Table or view
The drop-down list of tables 196 and views 250 allows you to select the table or view to be indexed.

Fill factor
Specify a percentage that indicates how full the Database Engine should make the leaf level of each index page during index creation or rebuild.

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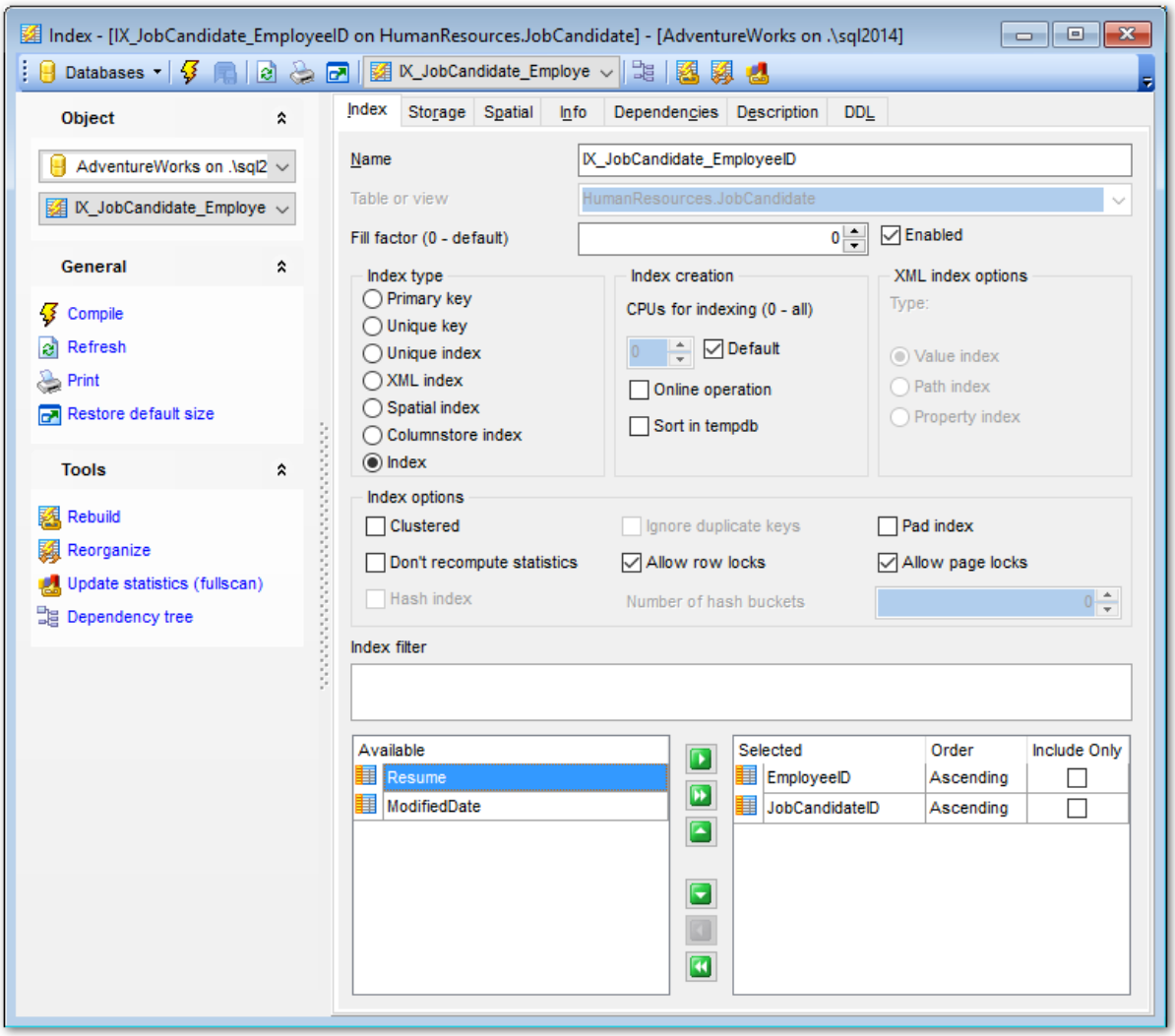

Index type

Primary Key
This selection indicates that the primary key index is created.

Unique key
This selection indicates that the unique key index is created (no two rows are permitted to have the same index value). A clustered index on a view must be unique.

Unique index
This selection indicates that the unique index is created (ensures that the index key contains no duplicate values and therefore each row in the table or view is in some way unique). Both clustered and nonclustered indexes can be unique.

XML index
This selection indicates that the XML index on the specified XML column is created.

Spatial index
This selection indicates that the spatial index is created. These indexes are used by

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spatial databases (databases which store information related to objects in space).

Columnstore index
This selection indicates that the columnstore index is created. These indices group and store data for each column and then join all the columns to complete the whole index.

Index
This selection specifies a regular, non-unique index.

Index creation

CPUs for indexing
This option allows you to limit the number of processors used in a parallel plan execution. Set a value to restrict the maximum number of processors used in a parallel index operation to the specified number or fewer based on the current system workload. If *0* is specified, the actual number of processors is used.

Default
If this option is checked, the default setting for the number of processors is applied.

Online operation
This option specifies whether underlying tables and associated indexes are available for queries and data modification during the index operation.

Sort in tempdb
This option specifies whether temporary sort results should be stored in **tempdb**.

XML Index options

Select the XML index type:
Value index
This selection indicates creation of a secondary XML index on columns where key columns are (node value and path) of the primary XML index. If your workload involves querying for values from XML instances without knowing the element or attribute names that contain the values, VALUE index may be useful.
Path index
This selection indicates creation of a secondary XML index on columns built on path values and node values in the primary XML index. If your queries generally specify path expressions on xml type columns, a PATH secondary index may be able to speed up the search.
Property index
This selection indicates creation of a secondary XML index on columns (PK, path and node value) of the primary XML index where PK is the primary key of the base table. Queries that retrieve one or more values from individual XML instances may benefit from a PROPERTY index.

Index options

Clustered
Use this option to create an index in which the logical order of the key values determines the physical order of the corresponding rows in a table. The bottom, or leaf, level of the clustered index contains the actual data rows of the table. A table 196 or view 250 is allowed one clustered index at a time.

Ignore duplicate keys
This option is available if the Unique option is checked. This option specifies the error response to duplicate key values in a multiple-row insert operation on a unique clustered or unique nonclustered index.

Pad index
This option determines whether the percentage of free space that is specified by fillfactor is applied to the intermediate-level pages of the index.

Do not recompute statistics
This option specifies that out-of-date index statistics are not automatically recomputed.

In cases when access patterns are well understood and consistent, limiting the locking levels available for an index can be beneficial. Disallowing a locking level can affect the concurrency for a table 196 or index.

Allow row locks
This option specifies whether row locks are allowed when accessing the index.

Allow page locks
This option specifies whether page locks are allowed when accessing the index.

Hash index (for memory-optimized tables)
Checking this option indicates that a HASH index is created. A hash index consists of a collection of buckets organized in an array.

Number of hash buckets (for memory-optimized tables)
Define the number of buckets that should be created in the hash index.

Index filter
Use this field to set the filter for the data from the column(s) included in this index. Available for SQL Server 2008 and higher.

Columns for index
To include column(s) in the index, you need to move it from the **Available** list to the **Selected** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

To change the sorting order for a column, select the column in the **Selected** list and change the **Order** value (*ascending/descending*).
Set the **Include Only** flag to specify that the non-key column is added to the leaf level of the nonclustered index.

At the **Storage** tab of the **Index Editor** you need to define the storage for the index.

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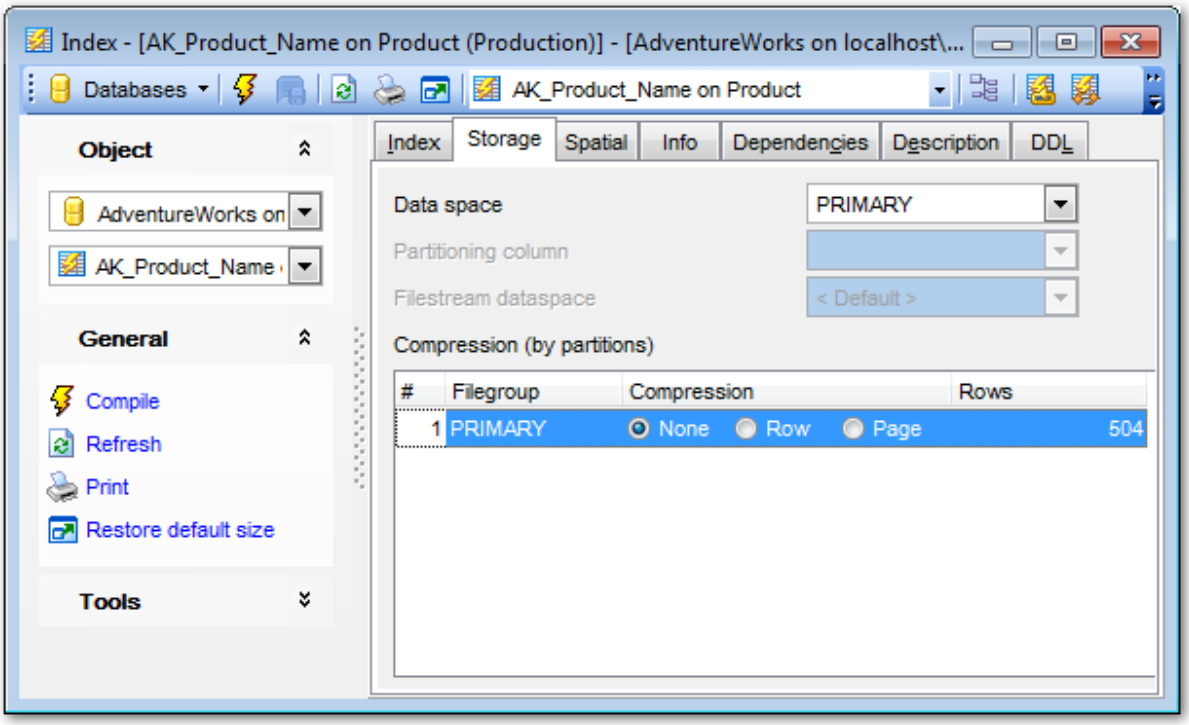


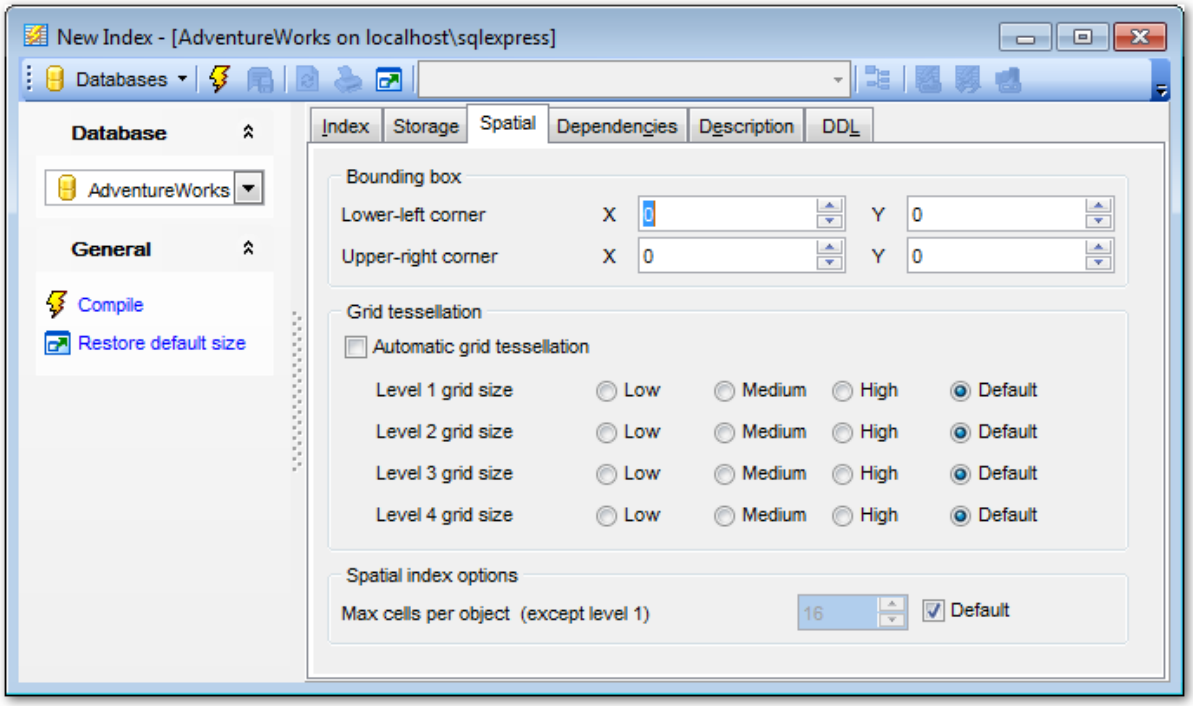
Data space
Use the drop-down list to specify the new index data storage (a file group or a partition scheme 319 that defines the filegroups onto which the partitions of a partitioned index will be mapped).
Note: When creating an index you need not specify the data space; the data space of the table 199 is used by default.

Partitioning column
This drop-down list is only available if a partition scheme 319 is specified for **Data space**. Select a column 200 that will be used as the partitioning column for the table.

Filestream dataspace
Select the needed Filestream filegroup 158 from the drop-down list. This option is available only in SQL Server 2008 and higher.

Compression (by partitions)
Use this section to set the compression options for the index. Compression type can be different for each partition. Set the index compression to *Row* or *Page*. Set *None* to leave a partition uncompressed.

Use the **Spatial** tab to set spatial index options. The settings on this tab are available only if the **Spatial index** was selected on the Index 234 tab.
Spatial indices are enabled in SQL Server 2008 and higher.



Bounding box

Specifies a numeric four-tuple that defines the four coordinates of the bounding box: the x-min and y-min coordinates of the **Lower-left corner**, and the x-max and y-max coordinates of the **Upper-right corner**.

Grid tessellation

Define the density of the grid at each level of a tessellation scheme.

Automatic grid tessellation

Check this option to set default values for this data type.

Level n grid size

Low

Specifies the lowest possible density for the grid at a given level. LOW equates to 16 cells (a 4x4 grid).

Medium

Specifies the medium density for the grid at a given level. MEDIUM equates to 64 cells (an 8x8 grid).

High

Specifies the highest possible density for the grid at a given level. HIGH equates to 256 cells (a 16x16 grid).

Default

If the database compatibility level is set to 100 or lower, then the default is MEDIUM on all levels. When the database compatibility level is set to 110 or higher, then the default

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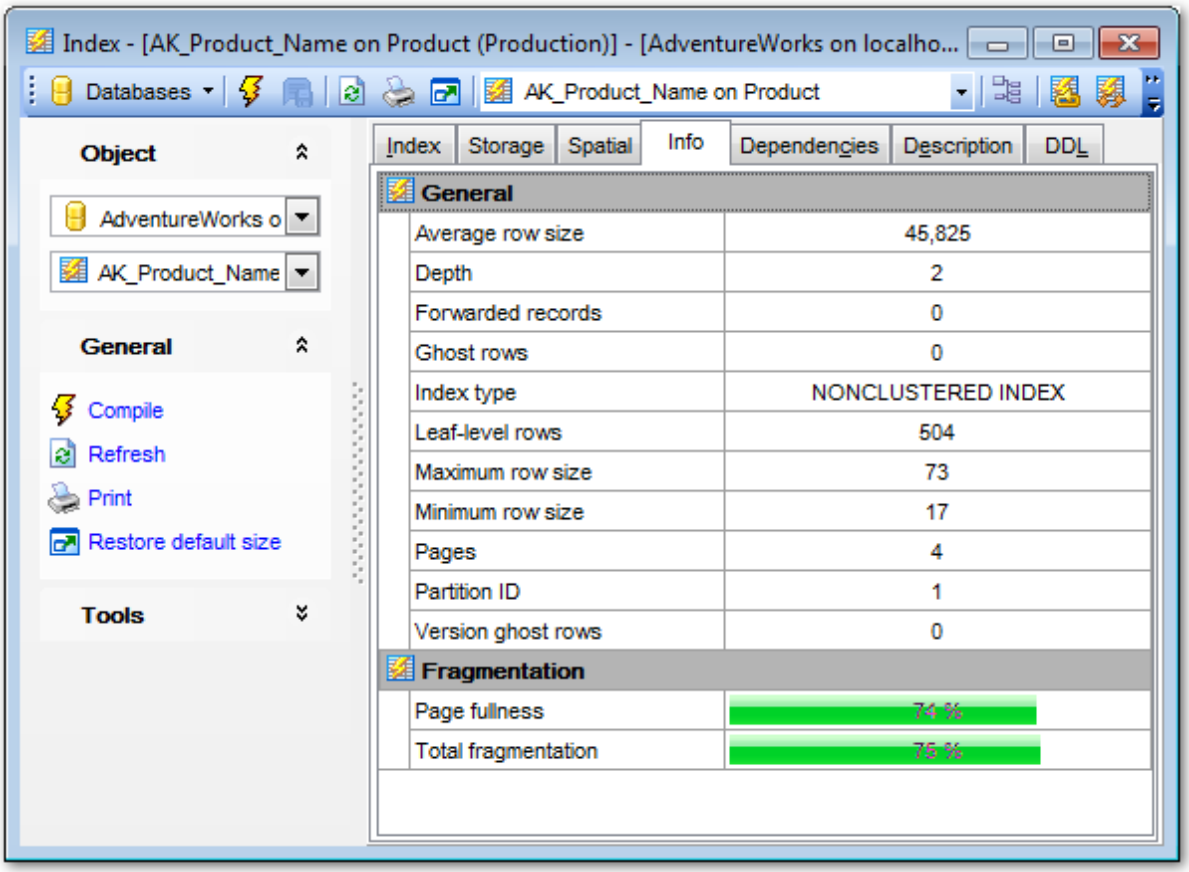
is an auto grid scheme.

Spatial index options

Max cells per object (except level 1)
Set the number of tessellation cells per object that can be used for a single spatial object in the index by the tessellation process. If the ☑ **Default** option is checked then the default value is used for the specified tessellation.

The **Info** tab of **Index Editor** allows you to view the index summary:



General: *Average row size*, *Depth*, *Forwarded records*, *Ghost rows*, *Index type*, *Leaf-level rows*, *Maximum row size*, *Minimum row size*, *Pages*, *Partition ID*, *Version ghost rows*; Fragmentation: *Page fullness*, *Total fragmentation*.

5.3.2.1.7 Triggers

A **Trigger** is a special kind of stored procedure 257 that automatically executes when an event occurs in the database server.

DML Triggers execute when a user tries to modify data through a data manipulation language (DML) event. DML events are *INSERT*, *UPDATE*, or *DELETE* statements on a table

196 or view 250.

Table triggers are managed within the **Triggers** tab of Table Editor 204.

Creating Triggers

To create a new trigger:
- open the table in Table Editor 204;
- proceed to the **Triggers** tab there;
- right-click the tab area and select the **New Trigger** context menu item, or press the *Ins* key;
- define the trigger properties using the Trigger Editor 241 dialog.

Editing Triggers

To edit an existing trigger:
- open the table in Table Editor 204;
- proceed to the **Triggers** tab there;
- right-click the trigger and select the **Edit Trigger <trigger_name>** context menu item, or simply double-click the trigger;
- edit the trigger properties using the Trigger Editor 241 dialog.

Dropping Triggers

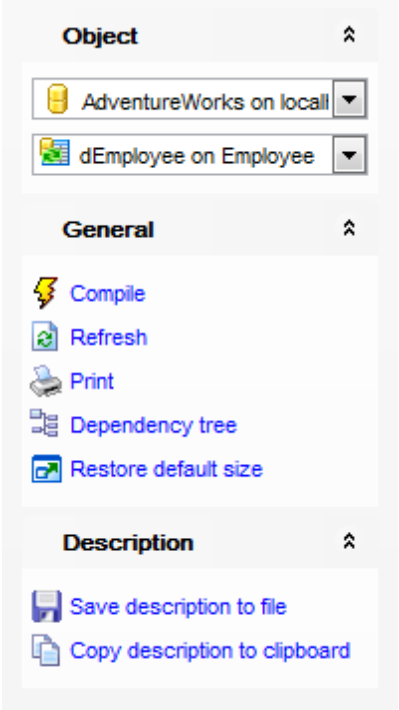
To drop a trigger:
- open the table in Table Editor 204;
- proceed to the **Triggers** tab there;
- right-click the trigger and select the **Drop Trigger <trigger_name>** context menu item;
- confirm dropping in the dialog window.

5.3.2.1.7.1 Trigger Editor

Trigger Editor allows you to specify trigger definition and set trigger properties. It opens automatically when you create a new trigger and is available on editing an existing one (see Create Trigger 241 and Edit Trigger 241 for details).

To open a trigger in **Trigger Editor**, double-click it in the DB Explorer 65 tree, or use the **Edit Trigger...** item of the context menu within the Triggers 213 tab of Table Editor 204.
- Using Navigation bar and Toolbar 241
- Creating/editing trigger 243
- Browsing object dependencies 957
- Editing trigger description 956
- Viewing DDL definition 955

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Trigger Editor**.



The **Navigation bar** of **Trigger Editor** allows you to:

Object
select a database
select a trigger for editing

General
compile 959 the trigger (if it is being created/modified)
save the trigger description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the trigger
view the dependency tree 618 for the trigger
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the trigger:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Datar 432

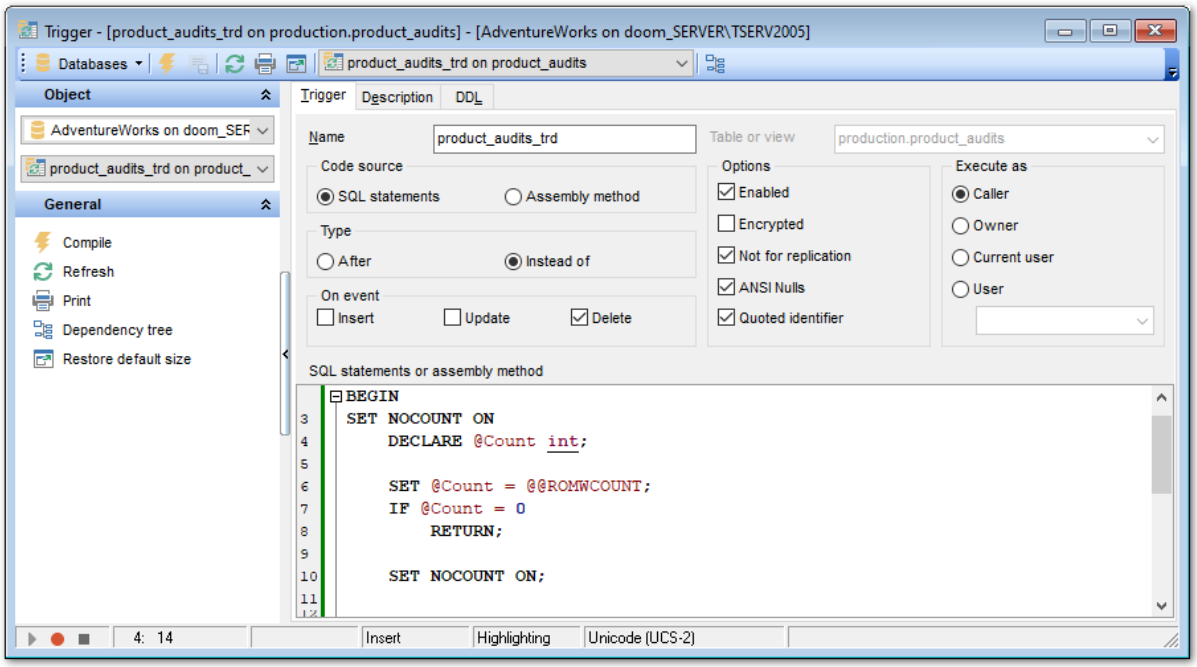
Items of the **Navigation bar** are also available on the **ToolBar** of **Trigger Editor**. To

enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

Use the **Trigger** tab of **Trigger Editor** to create/edit a DML trigger and specify its properties.

Name
Enter a name for the new trigger, or modify the name of the trigger being edited.

Table or view
The drop-down list of tables196 and views250 allows you to select the table or view on which the trigger is executed.



Type
Select the trigger behavior type:
After
This selection specifies that the trigger is fired only when all operations specified in the triggering SQL statement have executed successfully.
Instead of
This selection specifies that the trigger is executed instead of the triggering SQL statement.

On event
Specify the data modification statements that activate the trigger when it is tried against this table or view: *Insert*, *Update* or *Delete*. At least one option must be specified.

Options

Enabled
Enables/disables the trigger immediately after it is created. Enabling a trigger causes it to fire when any Transact-SQL statements on which it was originally programmed are executed. A disabled trigger still exists as an object in the current database, but does not fire.

Not for replication
This option allows you to specify that the trigger should not be executed when a replication agent modifies the table that is involved in the trigger.

Encrypted
You can check this option to encrypt the text of the *CREATE TRIGGER* statement if you want to ensure that other users 300 cannot view the trigger definition.

ANSI Nulls
This option specifies ISO compliant behavior of the Equals (=) and Not Equal To (<>) comparison operators when they are used with null values. When this option is switched on, a *SELECT* statement that uses *WHERE column_name = NULL* returns zero rows even if there are null values in *column_name*. A *SELECT* statement that uses *WHERE column_name <> NULL* returns zero rows even if there are nonnull values in *column_name* .

Quoted identifier
This option causes SQL Server to follow the ISO rules regarding quotation mark delimiting identifiers and literal strings. When this option is switched on, identifiers can be delimited by double quotation marks, and literals must be delimited by single quotation marks. When it is switched off, identifiers cannot be quoted and must follow all Transact-SQL rules for identifiers.

Execute as
Specify the security context under which the trigger is to be executed: *Caller*, *Owner*, *Current user* or *User* (select which user 300 account should be used to validate permissions on the objects that are referenced by the trigger).

Code Source
Select the trigger code source: it can be a direct set of SQL statements or an external procedure call from a .NET assembly or DLL.

SQL statements or assembly method
This area allows you to set the trigger conditions and actions. Trigger conditions specify additional criteria that determine whether the tried DML statements cause the trigger actions to be performed.
The trigger actions take effect when the DML operation is performed.

For your convenience, you can work on the definition with the help of the AI Assistant 721: the context menu of the editor provides the AI Assistant submenu, which lets you have the text explained, checked, optimized or formatted, or add it to the context 730 of your next request.

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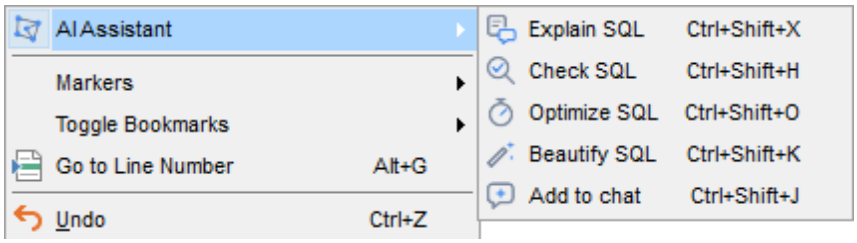


5.3.2.1.8 Creating procedures from table

SQL Manager for SQL Server provides you with an ability to create SELECT/INSERT/UPDATE/DELETE procedures from a table and set their properties using the **Create Procedures** dialog.

To open the dialog, right-click the table in DB Explorer and select the **Tasks | Create SIUD Procedures...** context menu 57 item, or open the table in Table Editor 204 and use the **Create Procedure** item of the Navigation bar 205.

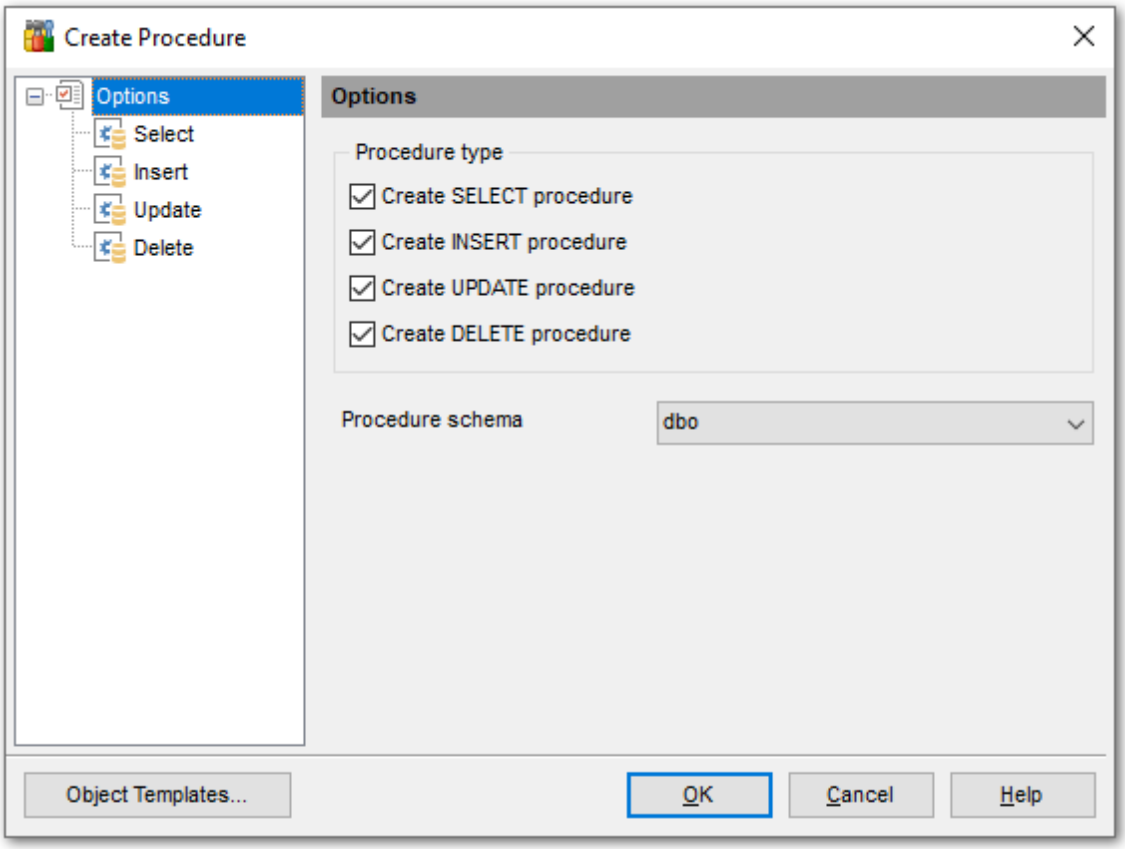
- Options 245
- SELECT procedure 246
- INSERT procedure 249
- UPDATE procedure 247
- DELETE procedure 250

See also:

Procedures 257

5.3.2.1.8.1 Options

The **Options** section of the **Create Procedures** dialog allows you to specify common options for the procedures being created.

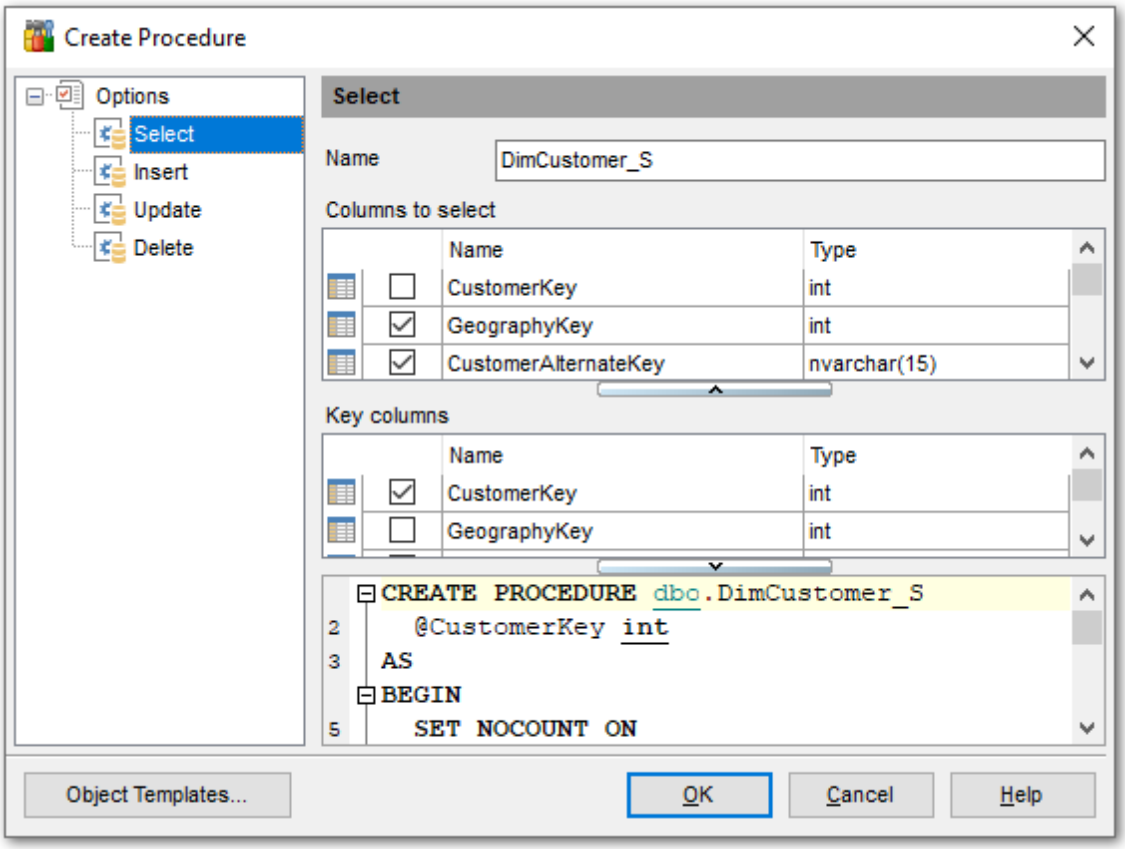


Procedure type
Select procedure 258 type(s) to be created with the help of the corresponding flags:
☑ *Create SELECT procedure*
☑ *Create INSERT procedure*
☑ *Create UPDATE procedure*
☑ *Create DELETE procedure*

Procedure schema
Select the schema 193 where the procedure should be created.

5.3.2.1.8.2 SELECT Procedure

The **Select** section of the **Create Procedures** dialog provides the definition of the SELECT procedure generated from the table.



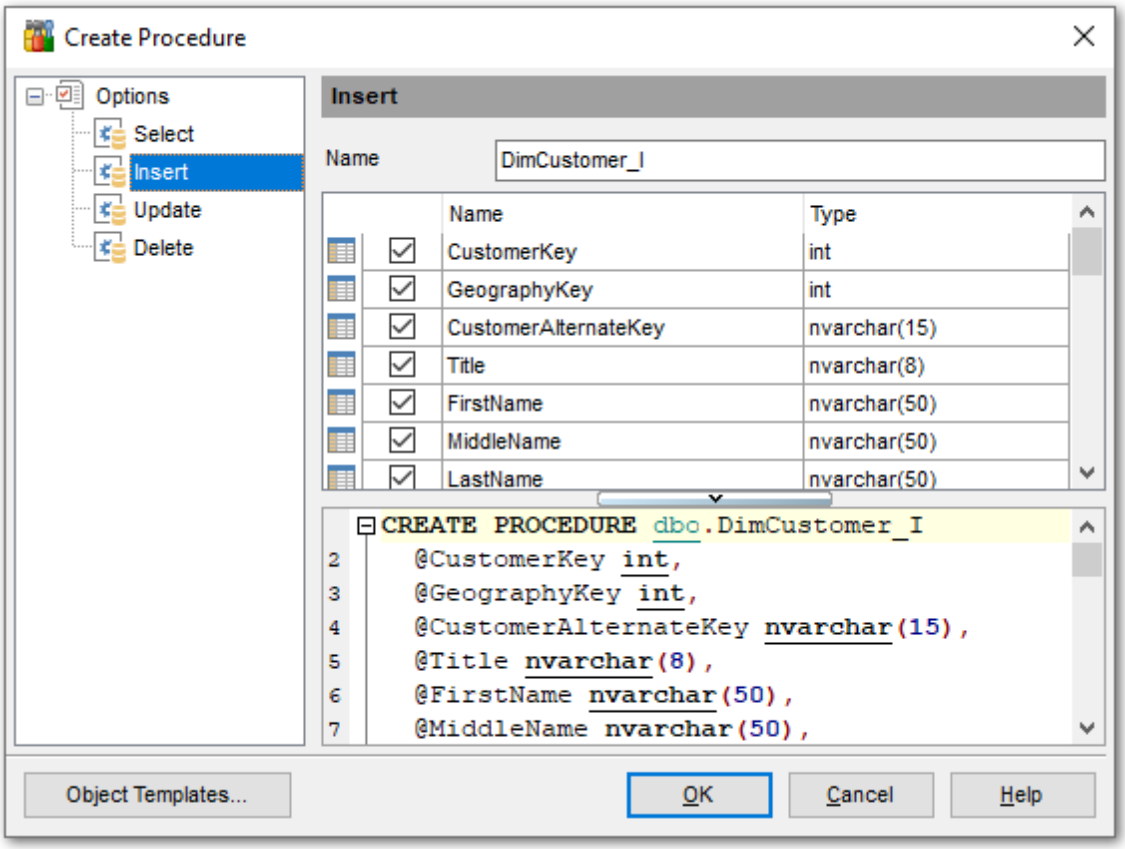
Name
Specifies procedure name (if necessary, you can edit the one assigned by default).

The **Columns** list displays columns as specified in the *columns clause* of the procedure definition.
The list provides the following attributes of each column:
Name
Type
To add/remove columns to/from the construction, check/uncheck flags available in the first column of the **Columns** list.
For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the columns list area.

The lower area represents the SELECT procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

5.3.2.1.8.3 INSERT Procedure

The **Insert** section of the **Create Procedures** dialog provides the definition of the INSERT procedure generated from the table.



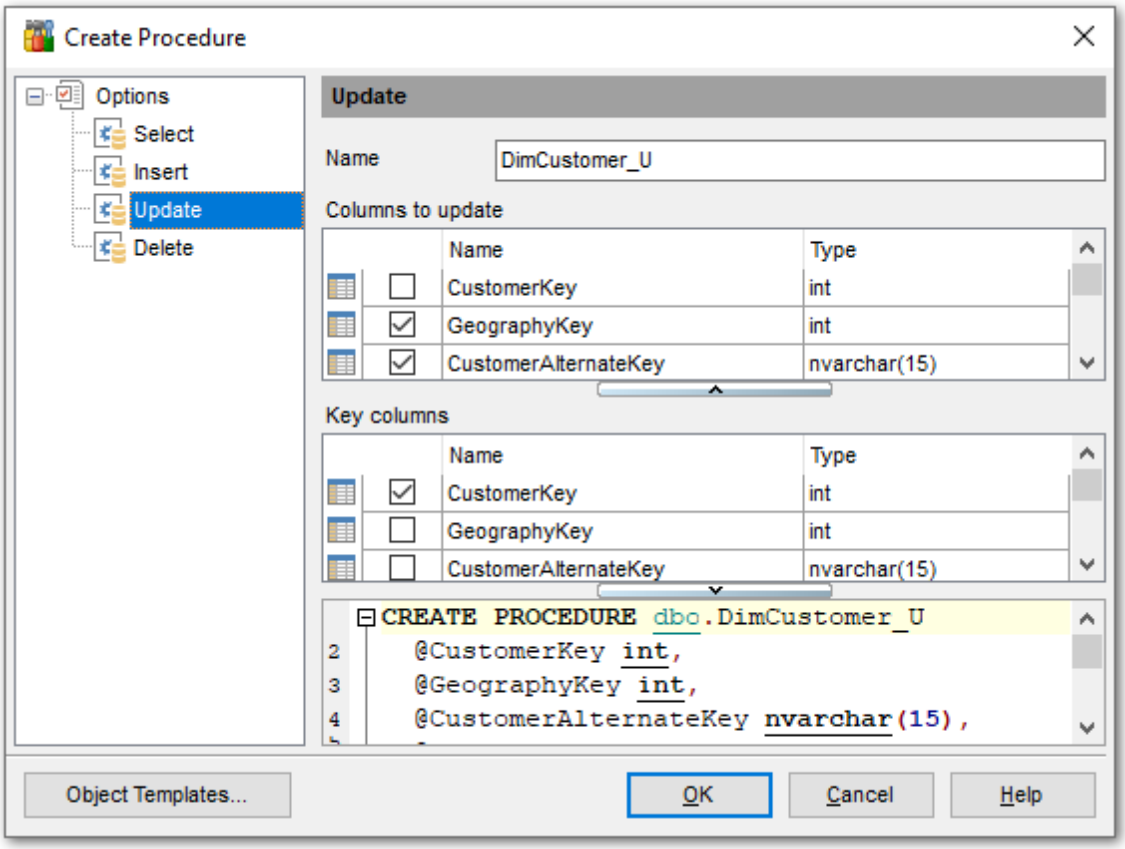
Name
Specifies procedure name (if necessary, you can edit the one assigned by default).

The **Columns** list displays columns as specified in the *columns clause* of the procedure definition.
The list provides the following attributes of each column:
Name
Type
To add/remove columns to/from the construction, check/uncheck flags available in the first column of the **Columns** list.
For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the fields list area.

The lower area represents the INSERT procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

5.3.2.1.8.4 UPDATE procedure

The **Update** section of the **Create Procedures** dialog provides the definition of the UPDATE procedure generated from the table.



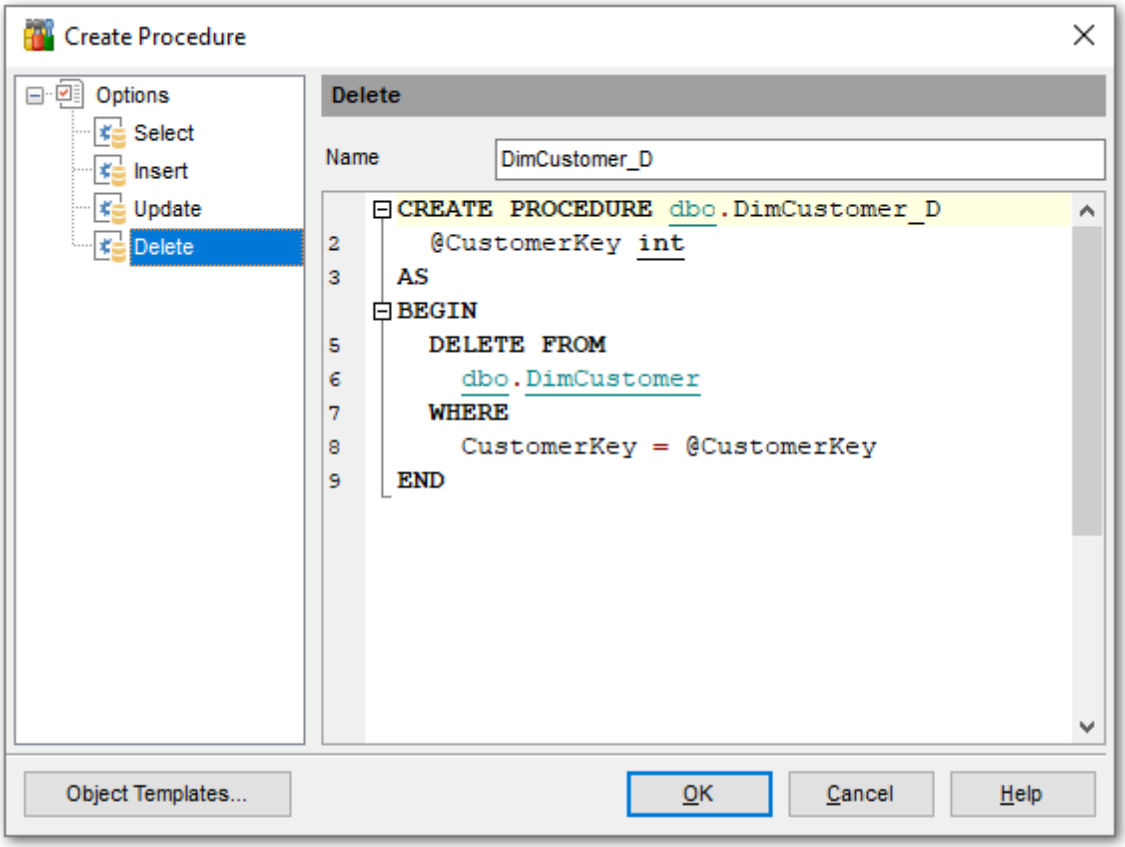
Name
Specifies procedure name (if necessary, you can edit the one assigned by default).

The **Columns** list displays columns as specified in the *columns clause* of the procedure definition.
The list provides the following attributes of each column:
Name
Type
To add/remove columns to/from the construction, check/uncheck flags available in the first column of the **Columns** list.
For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the columns list area.

The lower area represents the UPDATE procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

5.3.2.1.8.5 DELETE Procedure

The **Delete** section of the **Create Procedures** dialog provides the definition of the DELETE procedure generated from the table.



Name
Specifies procedure name (if necessary, you can edit the one assigned by default).

The lower area represents the DELETE procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

5.3.2.2 Views

A **View** is a logical table based on one or more tables 196 or views. A view contains no data itself. The tables upon which a view is based are called *base tables*.

Views are useful for allowing users to access a set of relations (tables 196) as if it were a single table, and limiting their access to just that. Views can also be used to restrict

access to rows (a subset of a particular table).

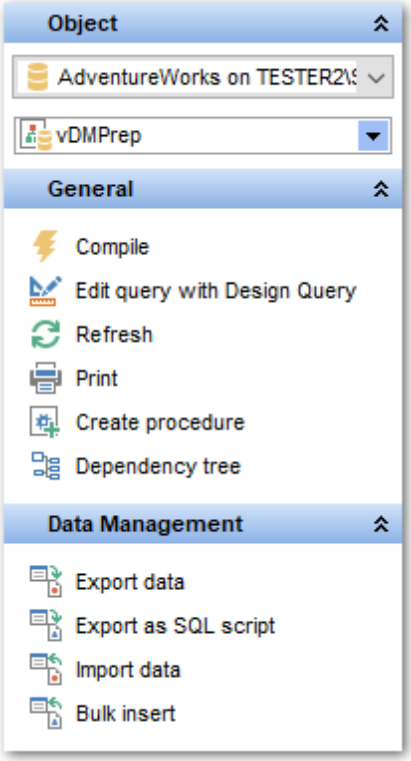
View Editor allows you to create new views and define their properties (view name and the SELECT statement it implements). It opens automatically when you create a new view and is available on editing an existing one.

To open a view in **View Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 251
- Creating/editing view 253
- Managing columns 254
- Managing indexes 254
- Managing triggers 255
- Browsing object dependencies 957
- Working with data 256
- Editing view description 956
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **View Editor**.



The **Navigation bar** of **View Editor** allows you to:

Object

select a database
select a view for editing

General

compile 959 the view (if it is being created/modified)
save the view description 956 (if it has been modified)
edit the view query using Design Query 448
refresh the content of the active tab
print metadata 649 of the view
create 245 a procedure 257 based on the view
view the dependency tree 618 for the view
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the view:

Indices

add 232 a new index
edit 232 selected index
drop 232 selected index(-es)

Triggers

add 241 a new trigger
edit 241 selected trigger
drop 241 selected trigger(s)

Data Management

commit transaction
rollback transaction
export data from the view using Export Data Wizard 537
export data from the view as SQL script using Export as SQL Script Wizard 599
import data 577
bulk insert 608

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

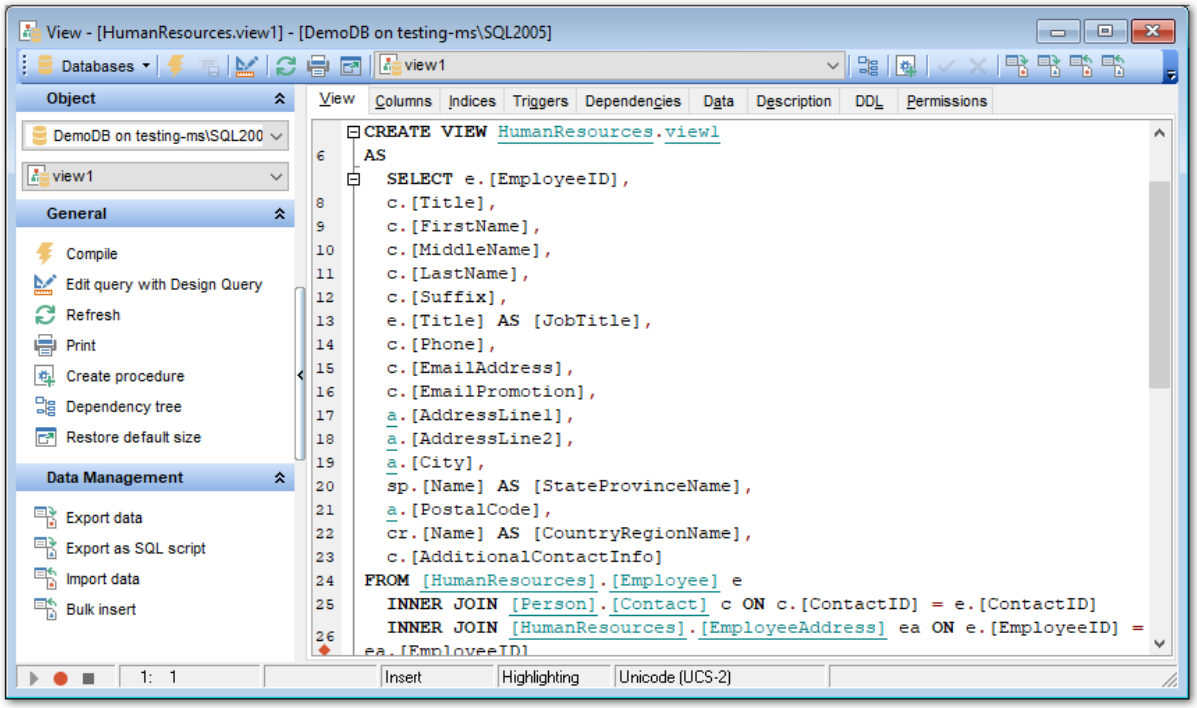
Items of the **Navigation bar** are also available on the **ToolBar** of **View Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.2.2 Creating/editing view

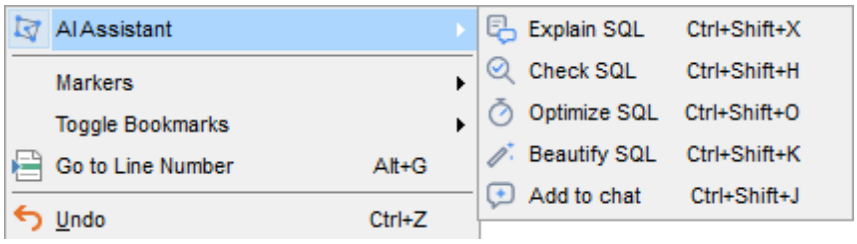
Use the **View** tab of **View Editor** to create/edit a view and specify its definition.

This tab represents the view definition as SQL statement, hence it is enough to simply edit the whole definition using the editor area to make appropriate changes, and recompile the view.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.



You can also work on the view definition with the help of the AI Assistant 721: the context menu of the editor provides the AI Assistant submenu, which lets you have the definition explained, checked, optimized or formatted, or add it to the context 730 of your next request.

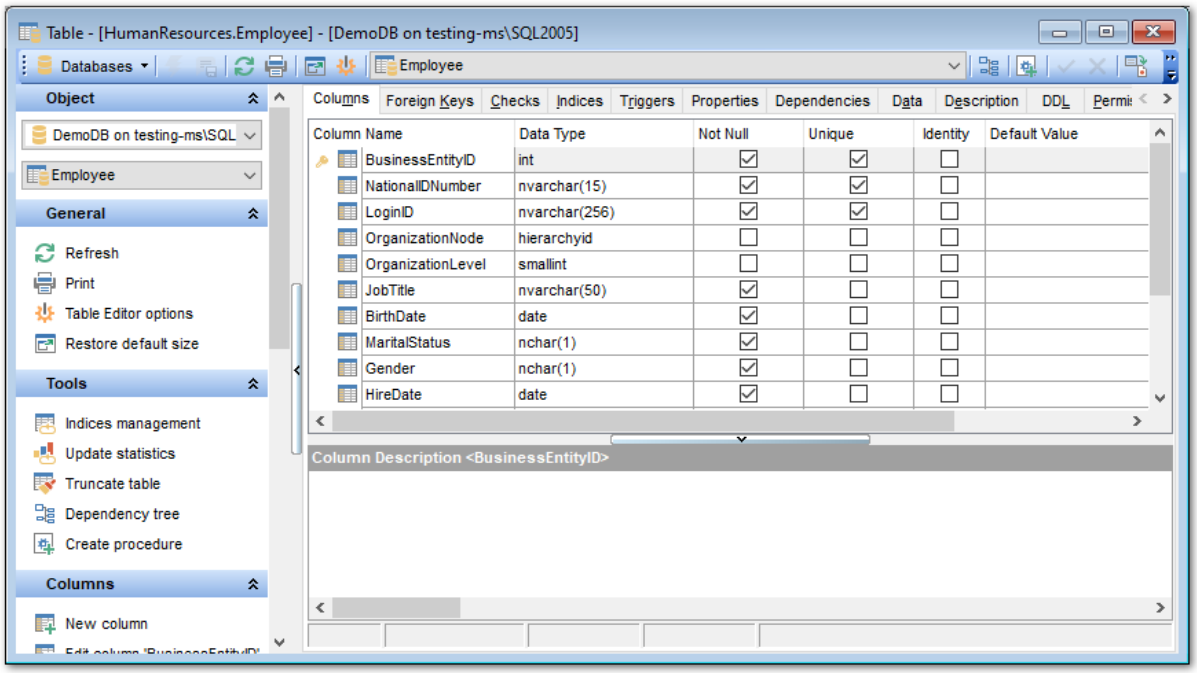


To compile a view, you can use the **Compile** item available within the Navigation bar 251.

5.3.2.2.3 Managing columns

The C**olumns** tab is provided for viewing columns represented in the view.

Right-click a row to display the context menu allowing you to export 537 column name list or copy it to clipboard.



The **Columns** list provides the following attributes of each column of the view:
Column Name
Data Type
Not Null
Unique
Identity
Default Value
Description

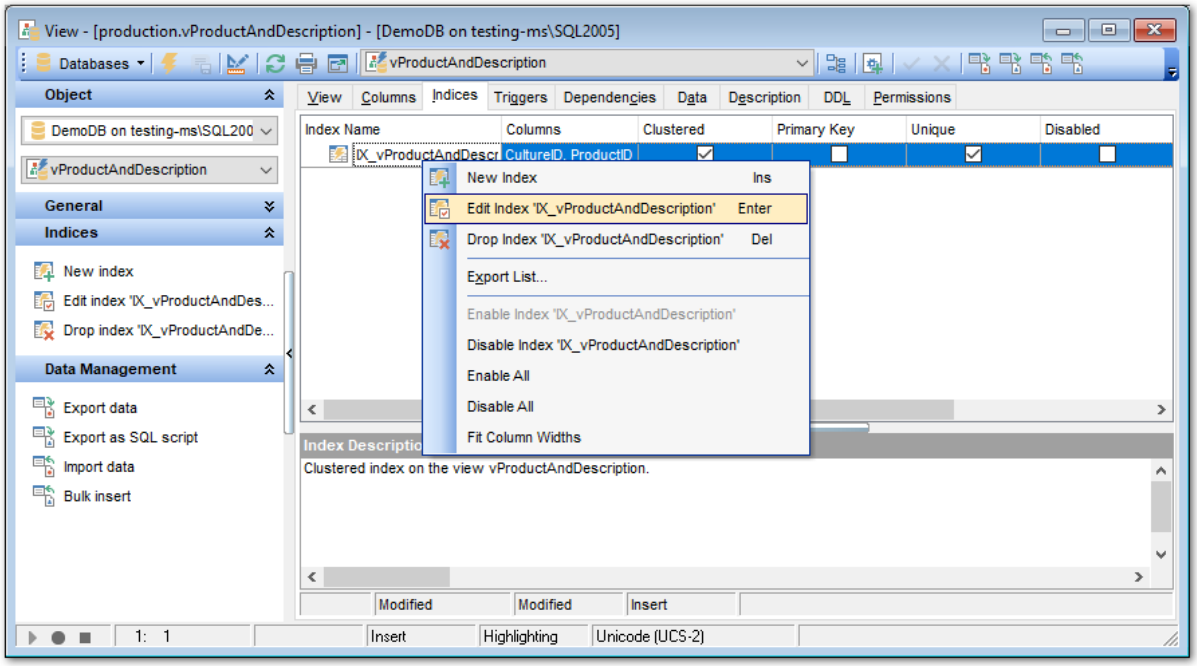
For details see Columns 217.

If necessary, you can also use the **Column Description** area to supply a *description* for each column.

5.3.2.2.4 Managing indexes

The **Indices** tab is provided for viewing indexes represented in the view. Double-click an index to open Index Editor 232 for editing the index.

Right-click an index to display the context menu allowing you to *create* new, *edit*, *drop*, *enable/disable* the selected index, or *enable/disable* all indexes. Using the menu you can also export 537 the list of the view indexes to any of supported formats 971.



The **Indexes** list provides the following attributes of each index of the view:
Index Name
Columns
Clustered
Primary Key
Unique
Disabled

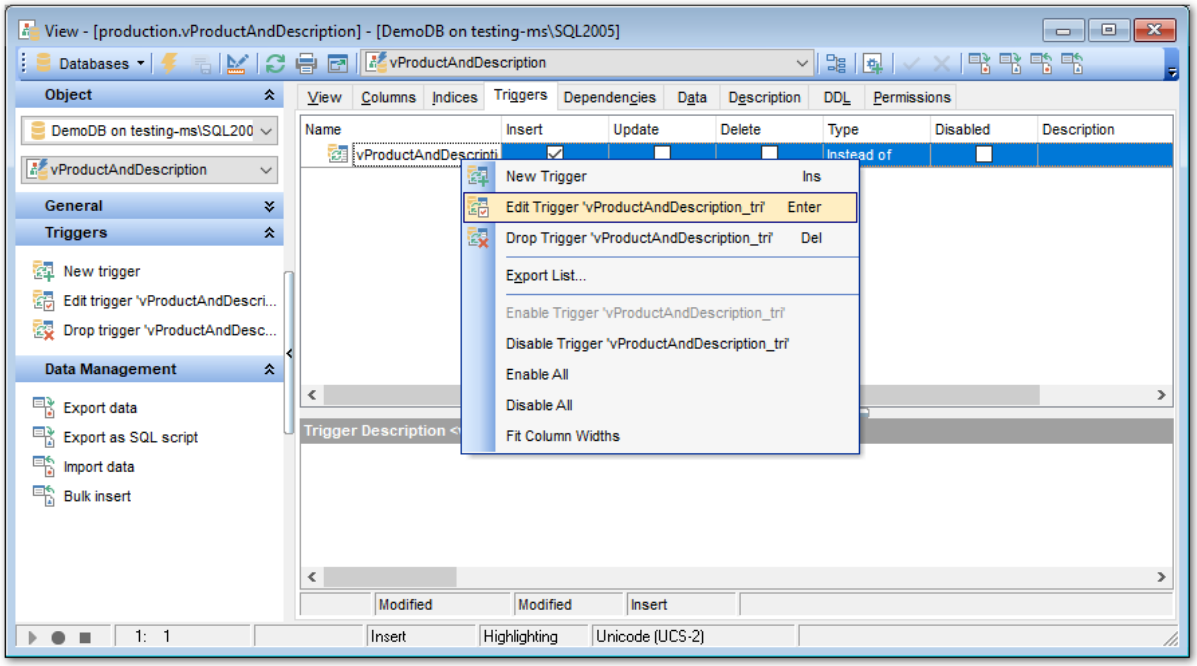
For details see Indexes 232.

If necessary, you can also use the **Index Description** area to supply a *description* for each index.

5.3.2.2.5 Managing triggers

The **Triggers** tab is provided for managing triggers represented in the view. Double-click a trigger to open Trigger Editor 241 for editing the trigger.

Right-click the area to display the context menu allowing you to *create* new, *edit*, *drop*, *enable/disable* the selected trigger, or *enable/disable* all triggers. Using the menu you can also export 537 the list of the view triggers to any of supported formats 971.



The **Triggers** list provides the following attributes of each trigger of the view:
Name
Insert
Update
Delete
Type
Disabled

For details see Triggers 240.

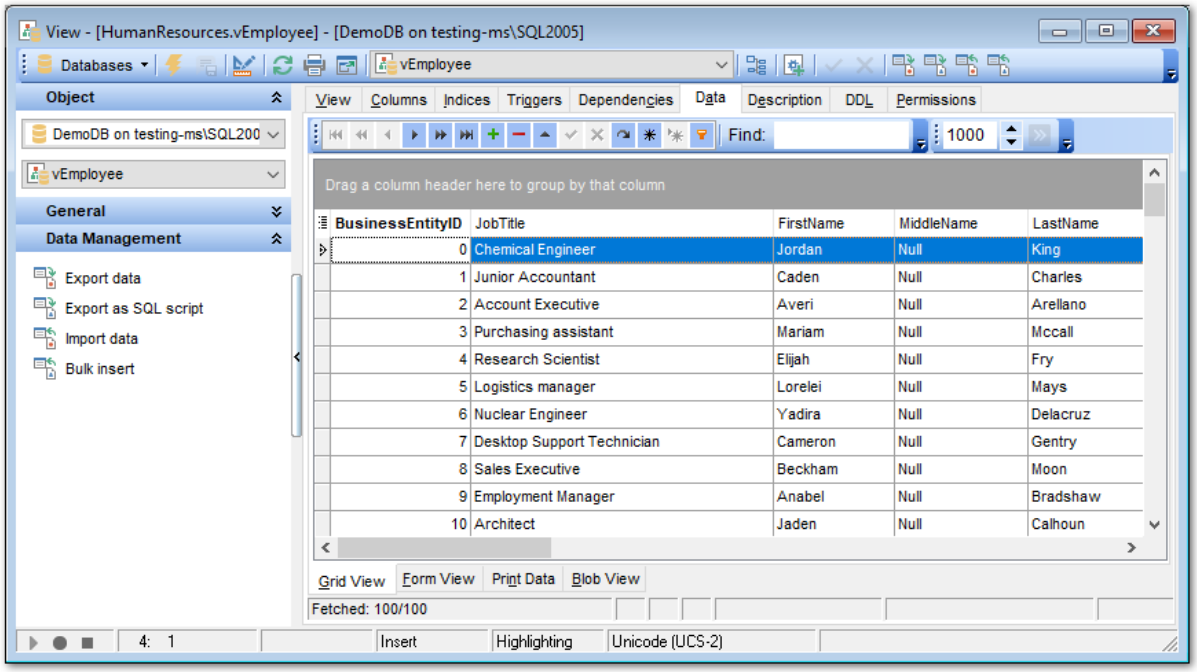
If necessary, you can also use the **Trigger Description** area to supply a *description* for each trigger.

5.3.2.2.6 Working with data

The **Data** tab displays the view data as a grid by default (see Data View 469 for details). The context menu of this tab and the Navigation bar 251 allow you to Export Data 537, Import Data 577, Export as SQL Script 599, Bulk Insert 608.

While working with view data, you are provided with a number of filtering 475 and grouping 473 facilities.
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

Data management 468 tools are also available through the Navigation bar 251 and toolbar 252 of **View Editor**.



See also:

Data View 469

5.3.2.3 Procedures

A **Procedure** is a set of procedural constructs and embedded SQL statements that is stored in the database and can be called by name.

When you create an application with Microsoft SQL Server 2005 (and higher), the Transact-SQL programming language is the primary programming interface between your applications and the Microsoft SQL Server database. When you use Transact-SQL programs, two methods are available for storing and executing the programs. You can store the programs locally and create applications that send the commands to SQL Server and process the results, or you can store the programs as stored procedures in SQL Server and create applications that execute the stored procedures and process the results.

A **stored procedure** is a saved collection of Transact-SQL statements or a reference to a Microsoft .NET Framework common language runtime (CLR) method that can take and return user-supplied parameters. Procedures can be created for permanent use or for temporary use within a session, local temporary procedure, or for temporary use within all sessions, global temporary procedure.

Procedure Editor allows you to create new procedure, execute the existing procedure or edit its definition. It opens automatically when you create a new procedure and is available on editing an existing one.

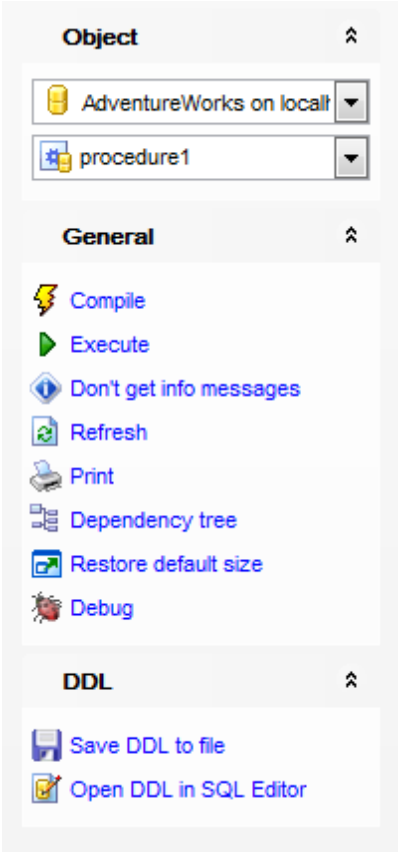
To open a stored procedure in **Procedure Editor**, double-click it in the DB Explorer 65

tree.

- Using Navigation bar and Toolbar 258
- Creating/editing procedure 259
- Browsing procedure parameters 261
- Browsing object dependencies 957
- Editing procedure description 956
- Specifying input parameters 262
- Executing procedure 262
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Procedure Editor**.



The **Navigation bar** of **Procedure Editor** allows you to:

Object

select a database

select a procedure for editing

General

- compile 959 the procedure (if it is being created/modified)
- save the procedure description 956 (if it has been modified)
- execute 262 the procedure
- enable/disable information messages
- refresh the content of the active tab
- print metadata 649 of the procedure
- view the dependency tree 618 for the procedure
- restore the default size and position of the editor window
- debug 443 the procedure

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the procedure:

Description

- save object description 956 to file
- copy description 956 to clipboard

DDL

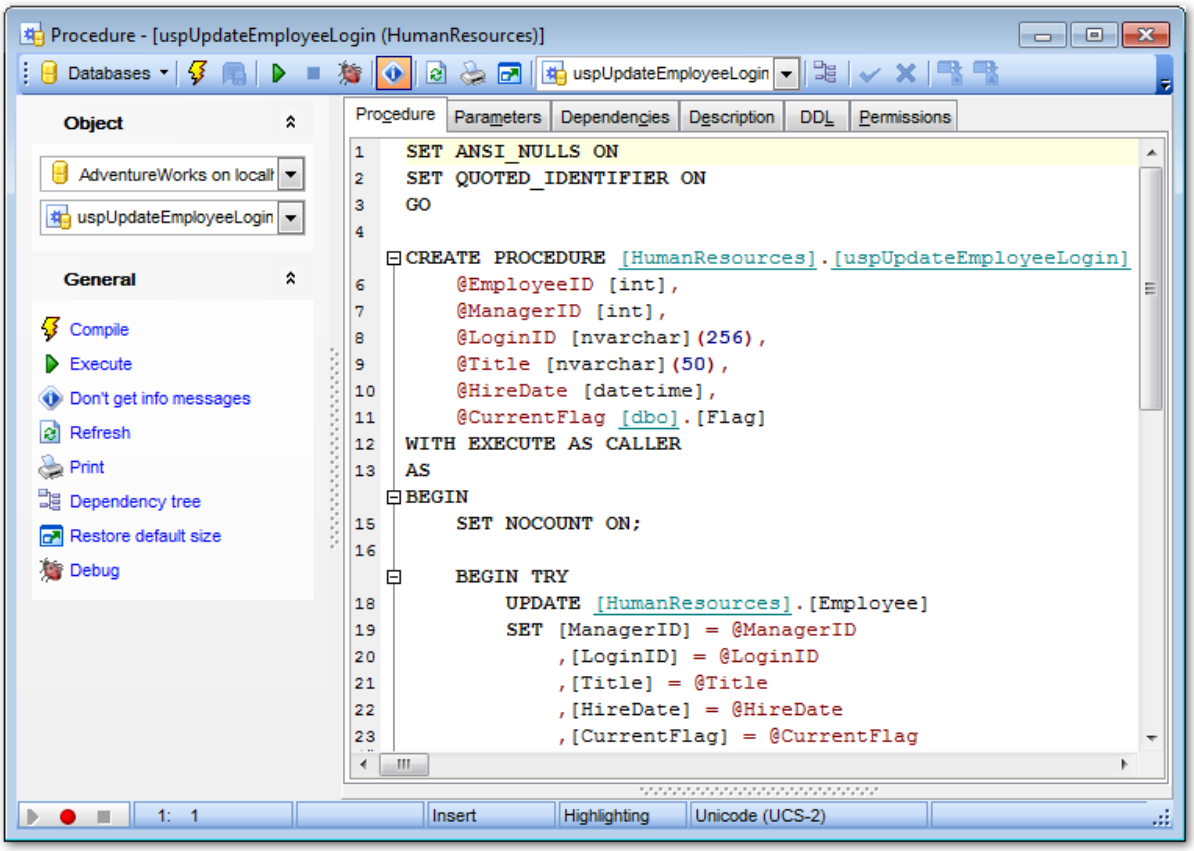
- save DDL 955 to file
- open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Procedure Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

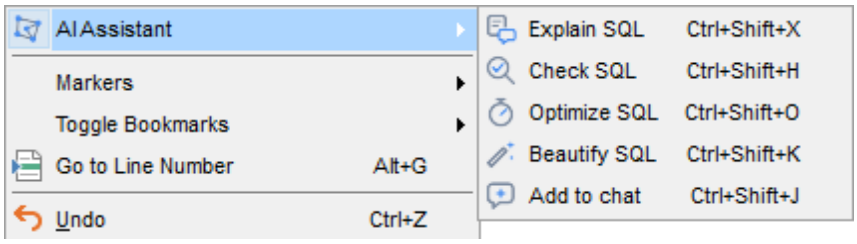
5.3.2.3.2 Creating/editing procedure

Use the **Procedure** tab of **Procedure Editor** to create/edit a stored procedure and specify its definition.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

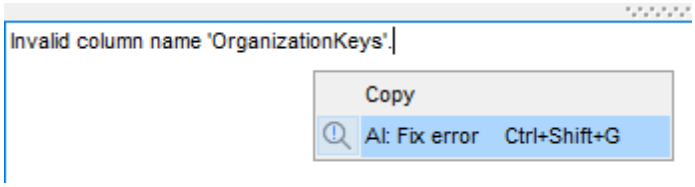


You can also work on the procedure definition with the help of the AI Assistant 721: the context menu of the editor provides the AI Assistant submenu, which lets you have the text explained, checked, optimized or formatted, or add it to the context 730 of your next request.



To execute 262 a procedure, you can use the **Execute** item available within the Navigation bar 258.

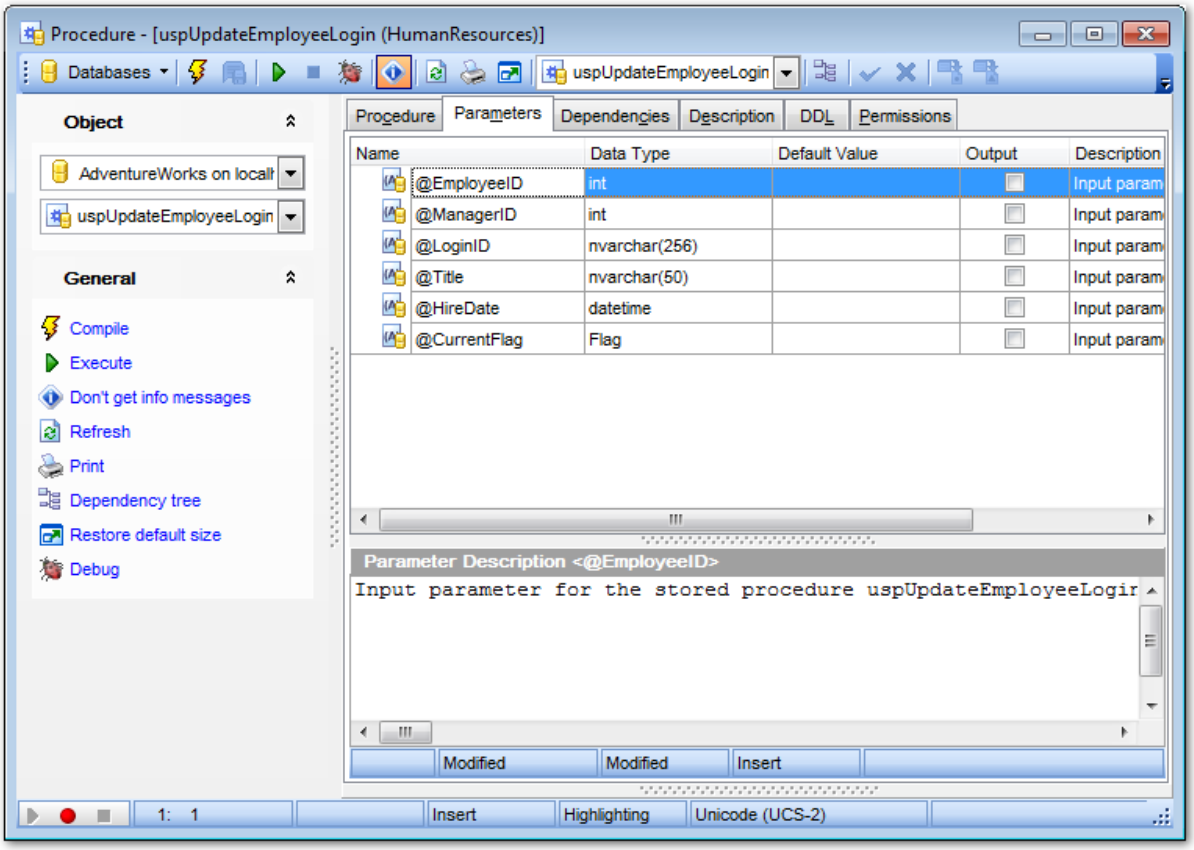
If an error occurs while the procedure is being executed, the context menu of the message area at the bottom of the editor provides the **AI: Fix error** 735 item: the AI Assistant receives the error text together with the statement that caused it and suggests a fix.



5.3.2.3.3 Browsing procedure parameters

The **Parameters** tab is provided for browsing the list of parameters of the stored procedure.

Right-click the list to display the popup menu allowing you to export 537 this list to any of supported formats 971.

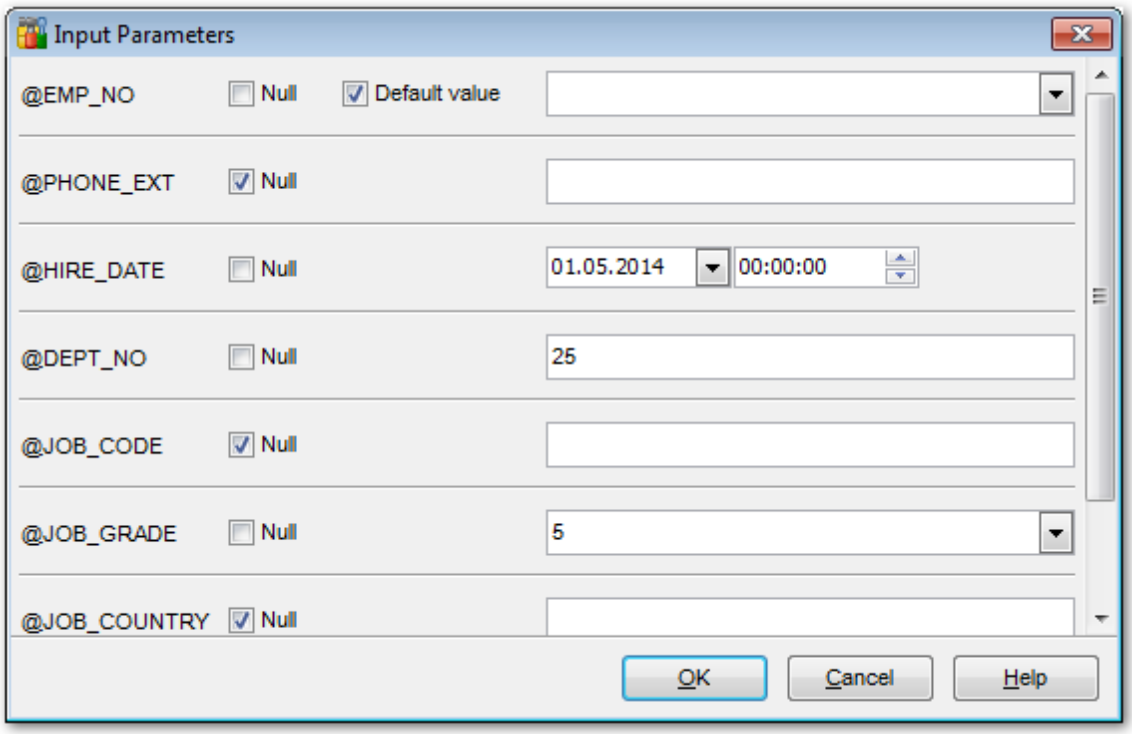


The parameter list provides the following attributes of each parameter used in the procedure:
Name (parameter name specified by using an at (@) sign as the first character)
Data Type (the parameter data type)
Default Value (a default value for the parameter)
Output (indicates that the parameter is an output parameter)

If necessary, you can also use the **Parameter Description** area to supply a *description* for each parameter.

5.3.2.3.4 Specifying input parameters

If the stored procedure (or user-defined function) has parameters, the **Input Parameter dialog** appears before the procedure execution. It allows you to specify the values for all procedure parameters. After changes are done, click the **OK** button to execute the stored procedure, or the **Cancel** button to abort the execution.



Check the ☑ **Default** option to apply specified default input parameters.

See also:

Executing procedure/function 262

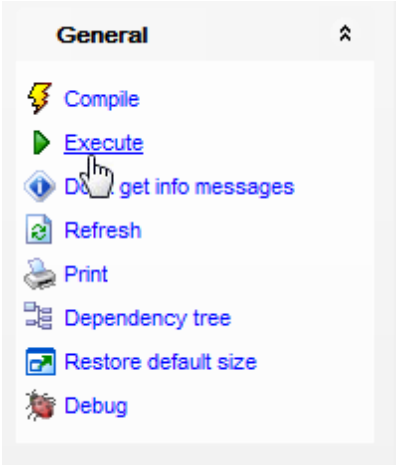
5.3.2.3.5 Executing procedure/function

Procedure Editor / **UDF Editor** provide an ability to execute procedures and user-defined functions. Click the **Execute** item of the Navigation bar 951 or use the corresponding toolbar 953 button to execute the procedure/UDF.

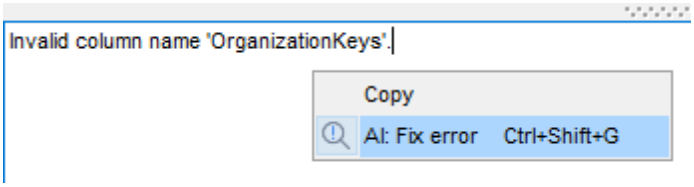
If the procedure/UDF has input parameters, SQL Manager allows you to specify the values for these parameters in the Input Parameters 262 dialog which appears just before execution.

The result of the successfully executed procedure/UDF, as well as the error message in

case of execution failure, appears in the message panel at the bottom of the **Procedure Editor** / **UDF Editor** window.



If an error occurs while the procedure/UDF is being executed, the context menu of the message area at the bottom of the editor provides the **AI: Fix error** 735 item: the AI Assistant receives the error text together with the statement that caused it and suggests a fix.



Note: If any unsaved changes are applied to the stored procedure/UDF being currently edited, the execution of the procedure/UDF is impossible unless changes are saved through the **Compile** item of the **Navigation bar**.

See also:

Specifying input parameters 262
Procedure Editor 257
UDF Editor 263

5.3.2.4 UDFs

A **Function** is a mapping embodied as a program (the function *body*) that can be invoked by using zero or more input values (*arguments*) to a single value (the *result*). A **User-Defined Function** is stored as a database object providing reusable code.

The Transact-SQL programming language provides the following types of functions:
Rowset functions (can be used like table references in an SQL statement)
Aggregate functions (operate on a collection of values but return a single, summarizing value)

Ranking functions (return a ranking value for each row in a partition)
Scalar functions (operate on a single value and then return a single value; scalar functions can be used wherever an expression is valid)

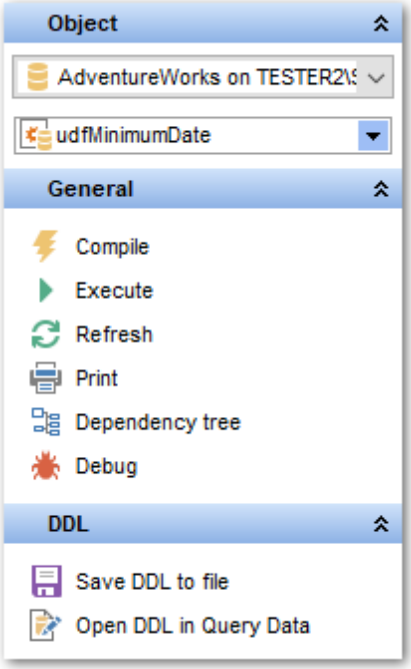
UDF Editor allows you to define user-defined function properties. It opens automatically when you create a new user-defined function and is available on editing an existing one.

To open a user-defined function in **UDF Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 264
- Creating/editing user-defined function 265
- Browsing user-defined function parameters 267
- Browsing object dependencies 957
- Editing user-defined function description 956
- Specifying input parameters 262
- Executing function 262
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.4.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **UDF Editor**.



The **Navigation bar** of **UDF Editor** allows you to:

Object
select a database
select a user-defined function for editing

General

- compile 959 the UDF (if it is being created/modified)
- save the UDF description 956 (if it has been modified)
- execute 262 the UDF
- refresh the content of the active tab
- print metadata 649 of the UDF
- view the dependency tree 618 for the UDF
- restore the default size and position of the editor window
- debug 443 the procedure

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the UDF:

Description

- save object description 956 to file
- copy description 956 to clipboard

DDL

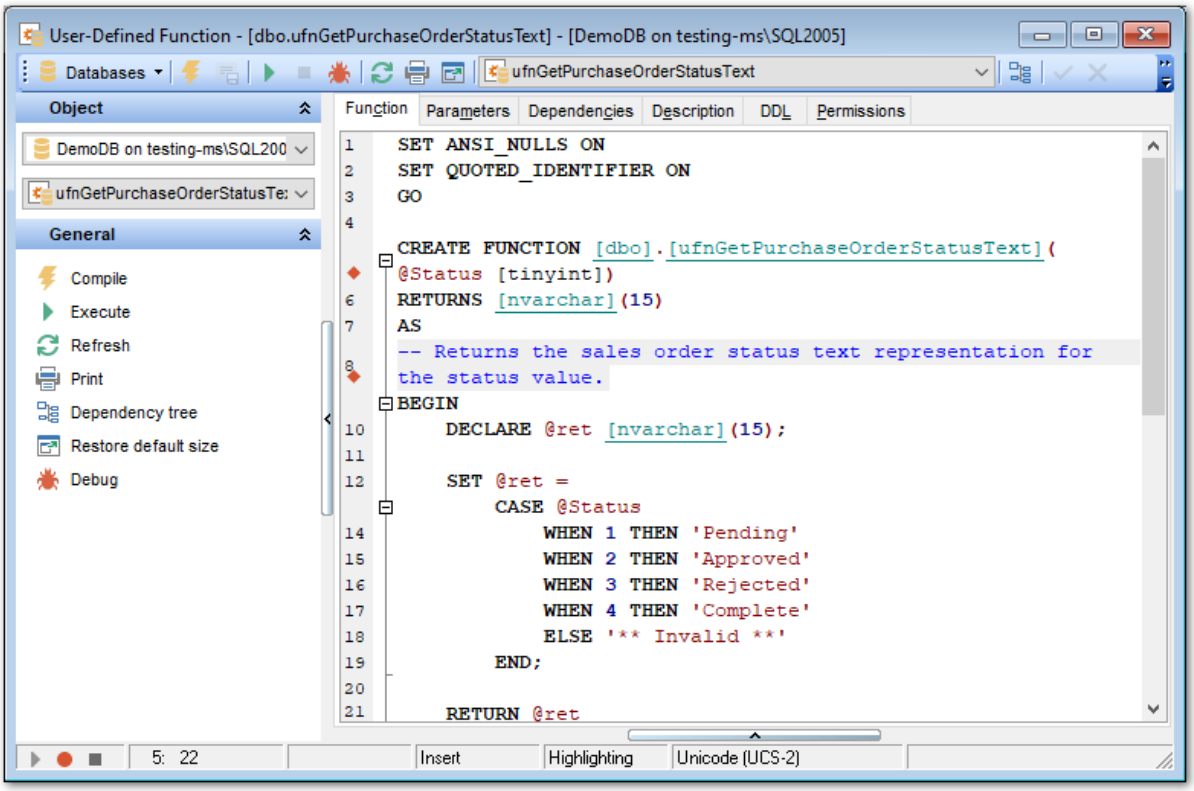
- save DDL 955 to file
- open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **UDF Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

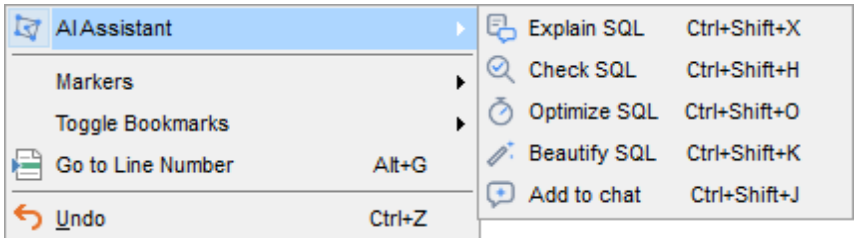
5.3.2.4.2 Creating/editing UDF

Use the **Function** tab of **UDF Editor** to create/edit a user-defined function and specify its definition.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.



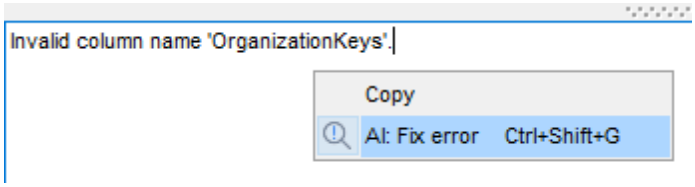
You can also work on the UDF's definition with the help of the AI Assistant 721: the context menu of the editor provides the AI Assistant submenu, which lets you have the text explained, checked, optimized or formatted, or add it to the context 730 of your next request.



Note: A UDF is a Transact-SQL or common language runtime (CLR) routine that returns a value. User-defined functions, like system functions, can be invoked from a query 430. Scalar functions can be executed by using an *EXECUTE* statement like stored procedures 257.

To execute 262 a UDF, you can use the **Execute** item available within the Navigation bar 264.

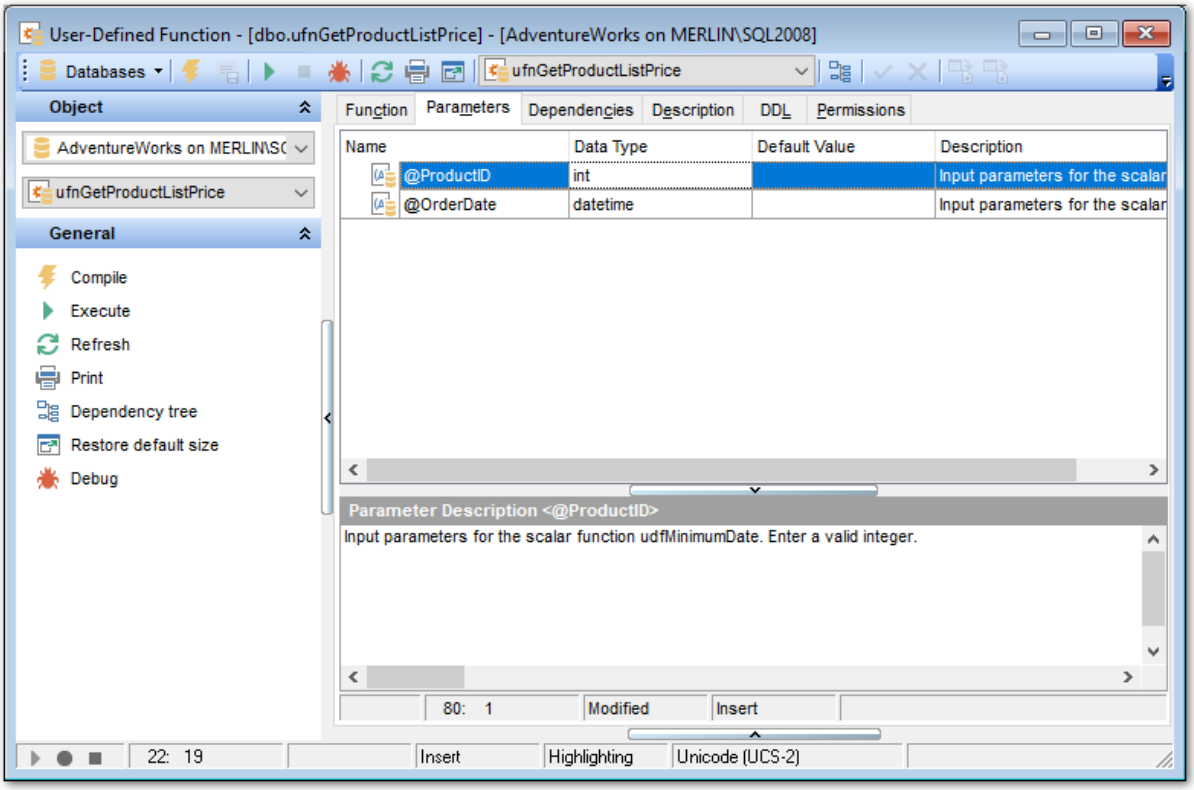
If an error occurs while the UDF is being executed, the context menu of the message area at the bottom of the editor provides the **AI: Fix error** 735 item: the AI Assistant receives the error text together with the statement that caused it and suggests a fix.



5.3.2.4.3 Brow sing UDF parameters

The **Parameters** tab is provided for browsing the list of parameters of the user-defined function.

Right-click the list to display the popup menu allowing you to export 537 this list to any of supported formats 971.



The parameter list provides the following attributes of each parameter used in the UDF:
Name (parameter name specified by using an 'at' (@) sign as the first character)
Data Type (the parameter data type)
Default Value (a default value for the parameter)

If necessary, you can also use the **Parameter Description** area to supply a *description* for each parameter.

5.3.2.5 UDTs

A **User-Defined Data Type** is internally represented as an existing type, but is considered to be a separate data type. In fact, this is an *alias data type* in an instance of SQL Server, a *CLR data type*, or a *table data type* (for SQL Server 2008). An alias data type's implementation is based on a SQL Server native system type. A user-defined type is implemented through a class of an assembly in the Microsoft .NET Framework common language runtime (CLR).

UDT Editor allows you to define user-defined type properties. It opens automatically when you create a new type and is available on editing an existing one.

To open a user-defined type in **UDT Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 268
- Creating/editing user-defined type 270
- Managing UDT checks 273
- Managing UDT Primary/Unique Keys 275
- Browsing object dependencies 957
- Editing user-defined type description 956
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.5.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **UDT Editor**.

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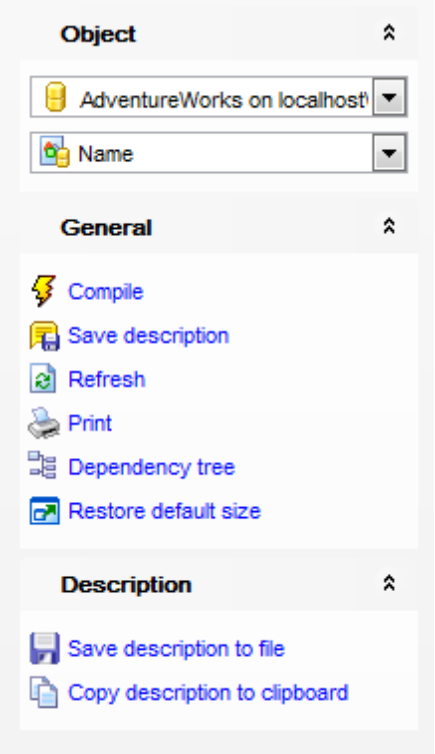


The **Navigation bar** of **UDT Editor** allows you to:

Object

select a database
select a user-defined type for editing

General

compile 959 the user-defined type (if it is being created/modified)
save the UDT description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the UDT
view the dependency tree 618 for the UDT
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the user-defined type:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

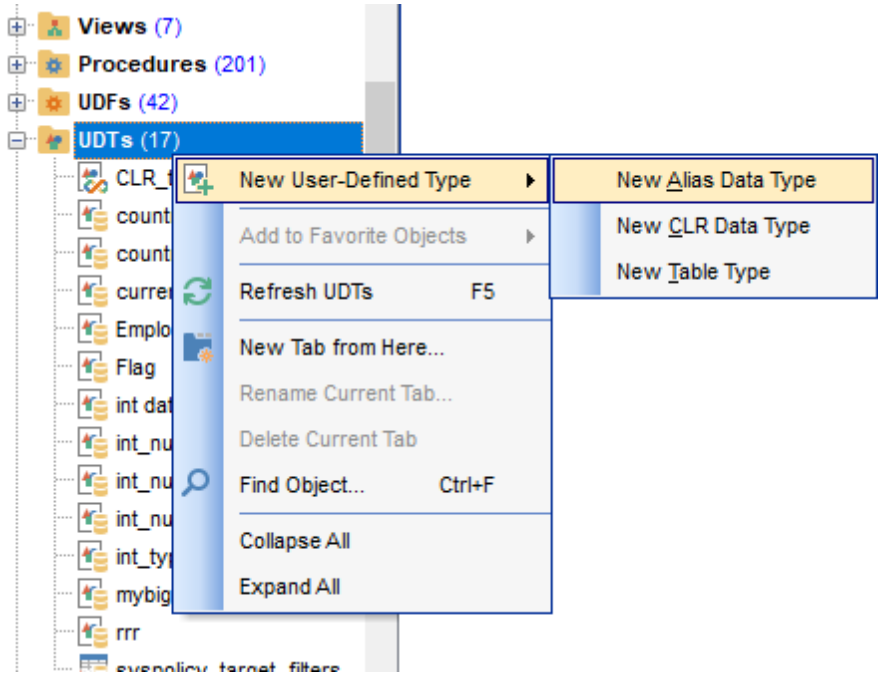
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **UDT Editor**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

5.3.2.5.2 Creating/editing UDT

Use the **Type** tab of **UDT Editor** to create/edit a user-defined data type and specify its properties.

If you create a new user-defined type, you should first specify its implementation kind.



Alias data type
This selection specifies that an alias data type will be created on the basis of an existing SQL Server data type.

CLR data type
This selection specifies that the user-defined will be taken from an assembly309.

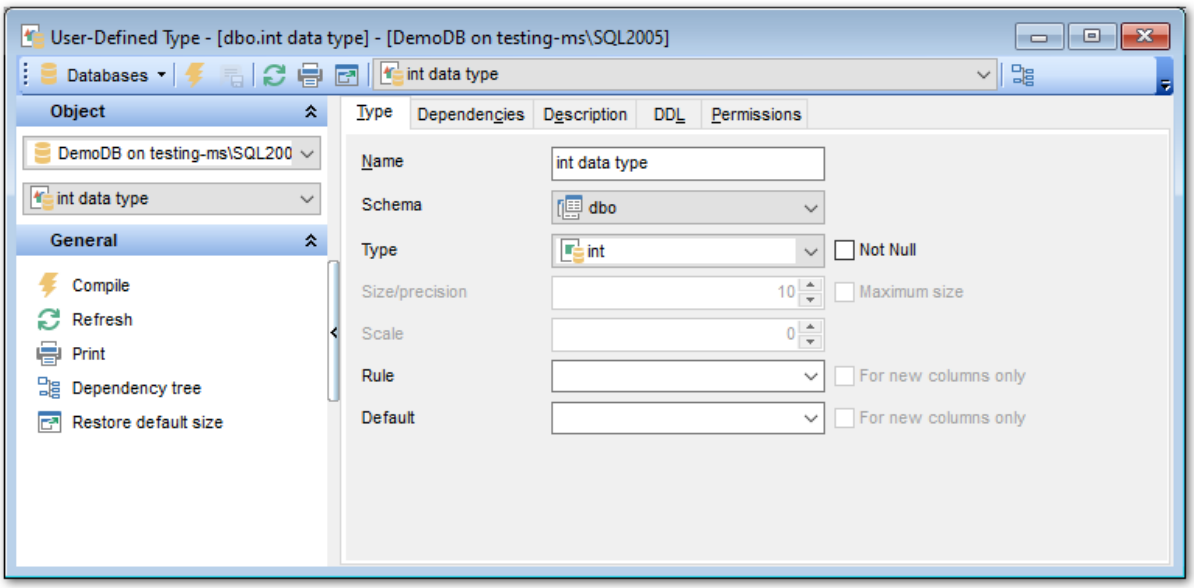
Table data type
This selection specifies that a new user-defined table type will be created.

Name
Enter a name for the new user-defined type, or modify the name of the user-defined type being edited.

Schema

Use the drop-down list to select the schema 193 to which the user-defined type belongs. The default selection is the default schema for the current user. For Microsoft® SQL Server 2000 or SQL Server 7.0, specify the owner of the UDT (the default value is the current user 300).

Alias Data Type Properties



Type
Use the drop-down list to select SQL Server supplied data type on which the alias data type is based (*base_type*). The base type of an existing UDT is not editable.

☑ **Not Null**
Specify whether the UDT can accept NULL values. The nullability of an existing UDT is not editable.

Size
Specify the size value (for certain types). Check ☑ **Maximum size** to use the maximum values set by SQL Server.

Scale
Defines the maximum number of decimal digits that can be stored to the right of the decimal point of the value (for numeric and decimal data types).

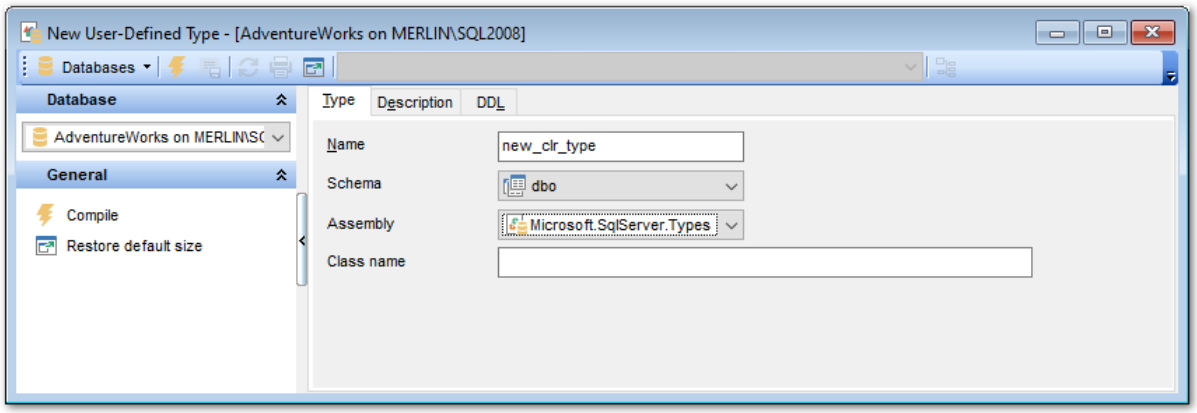
Rule
Use the drop-down list to select a rule 292 to bind to the user-defined data type (optional). Check ☑ **For new columns only** to apply the selected rule only to newly added columns.

Default
Use the drop-down list to select a default 289 to bind to the user-defined data type (optional). Check ☑ **For new columns only** to apply the selected default only to newly

added columns.

Note: Some properties cannot be modified because of dependent objects. Open the Dependencies 957 tab to browse the list of dependent objects, or view the dependency tree 618 for the user-defined type.

CLR Data Type Properties



Assembly
Use the drop-down list to select the SQL Server assembly 309 that references the implementation of the user-defined type in the common language runtime (CLR). The assembly must have been already created in the database.

Class name
Specifies the class within the assembly that implements the user-defined type. The class name can be a namespace-qualified name (if the programming language that is used to write the class uses the concept of namespaces, such as C#).

Table Data Type Properties

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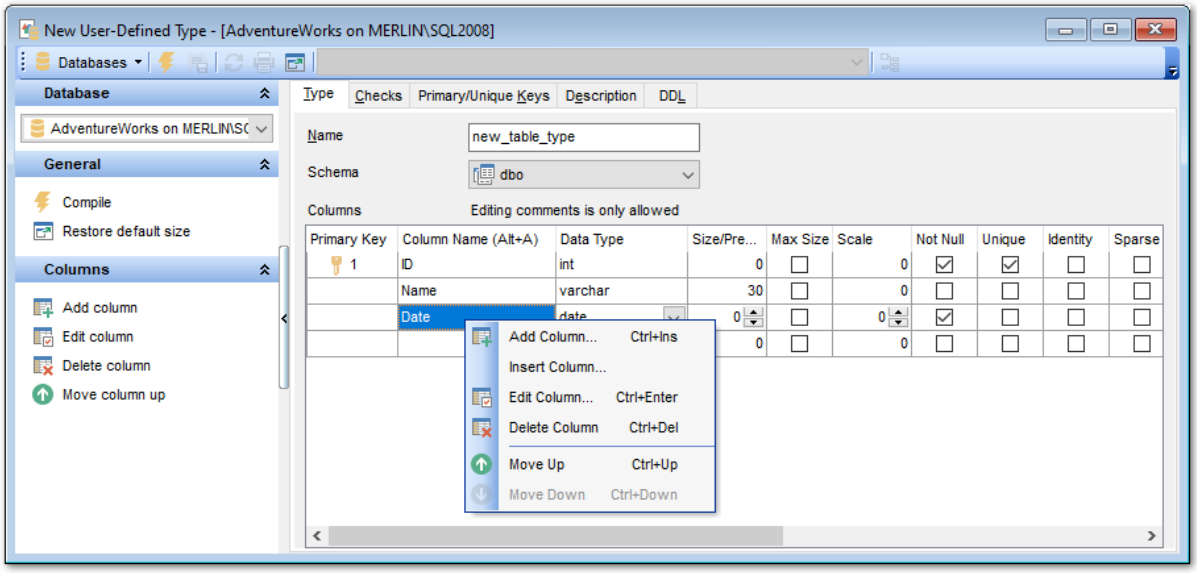


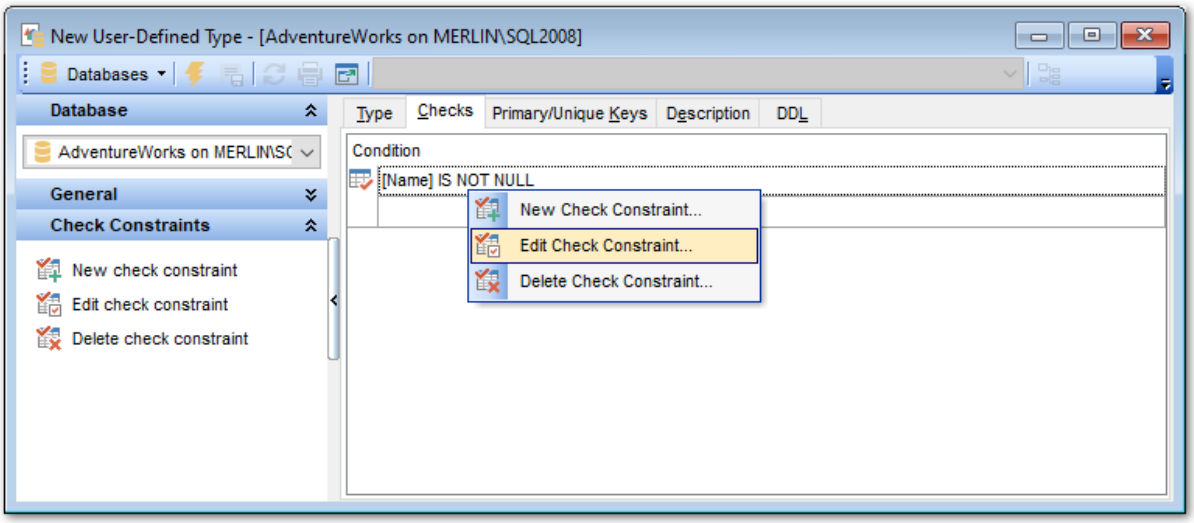
Columns
This area lists the columns of the user-defined type as a grid.
Double-click a row to open Column Editor 218 for editing the column.
Right-click within the **Columns** area to display the context menu allowing you to *add* new, *insert*, *edit* using Column Editor 218, *delete* the selected column, or move it up/down within the list.

The **Columns** list provides the following attributes of each column of the UDT:
Primary Key
Column Name
Data Type
Size/Precision
Max Size
Scale
Not Null
Unique
Identity
Sparse
Filestream
Default Value
Comment

For details see Columns 217.

5.3.2.5.3 Managing UDT checks

The **Checks** tab is provided for viewing and editing UDT checks. This tab is only available for Table Data Type 272.



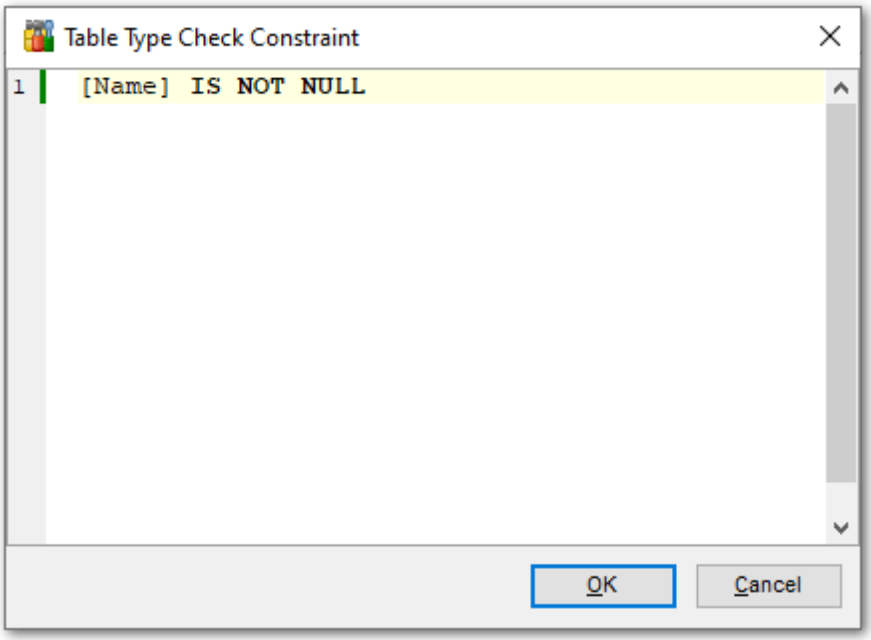
Double-click a check to edit the condition of the check using the Table Type Check Constraint 274 dialog.

Right-click a check to display the context menu allowing you to *create* new, *edit*, or *drop* the selected check constraint.

5.3.2.5.3.1 Table Type Check Constraint dialog

The **Table Type Check Constraint** dialog allows you to specify the UDT check condition.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

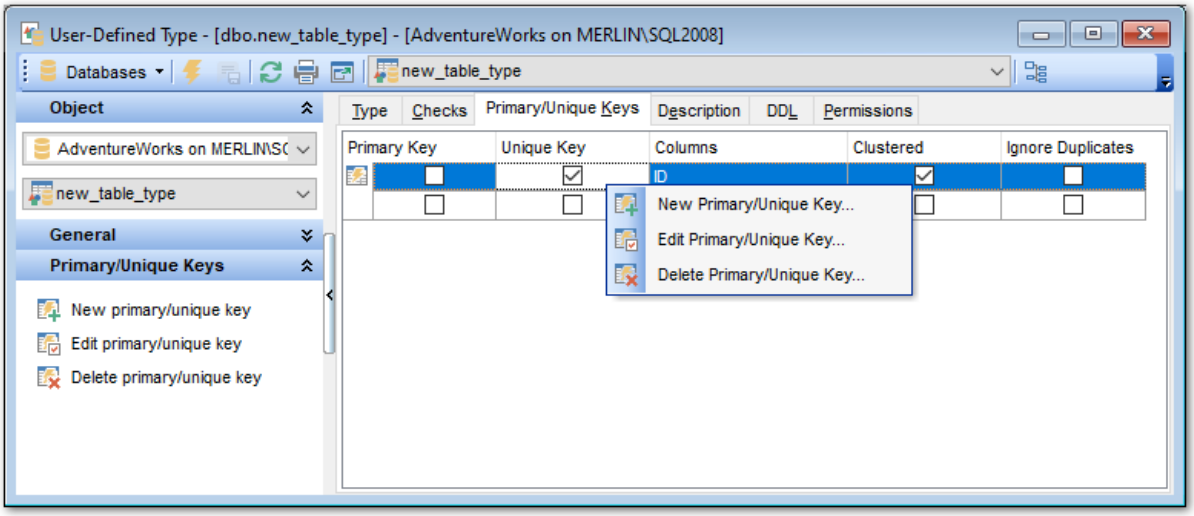


5.3.2.5.4 Managing UDT Primary/Unique Keys

The **Primary/Unique Keys** tab is provided for viewing and editing UDT primary/unique keys. This tab is only available for Table Data Type 272.

Double-click a constraint to edit it using the Table Type Constraint 275 dialog.

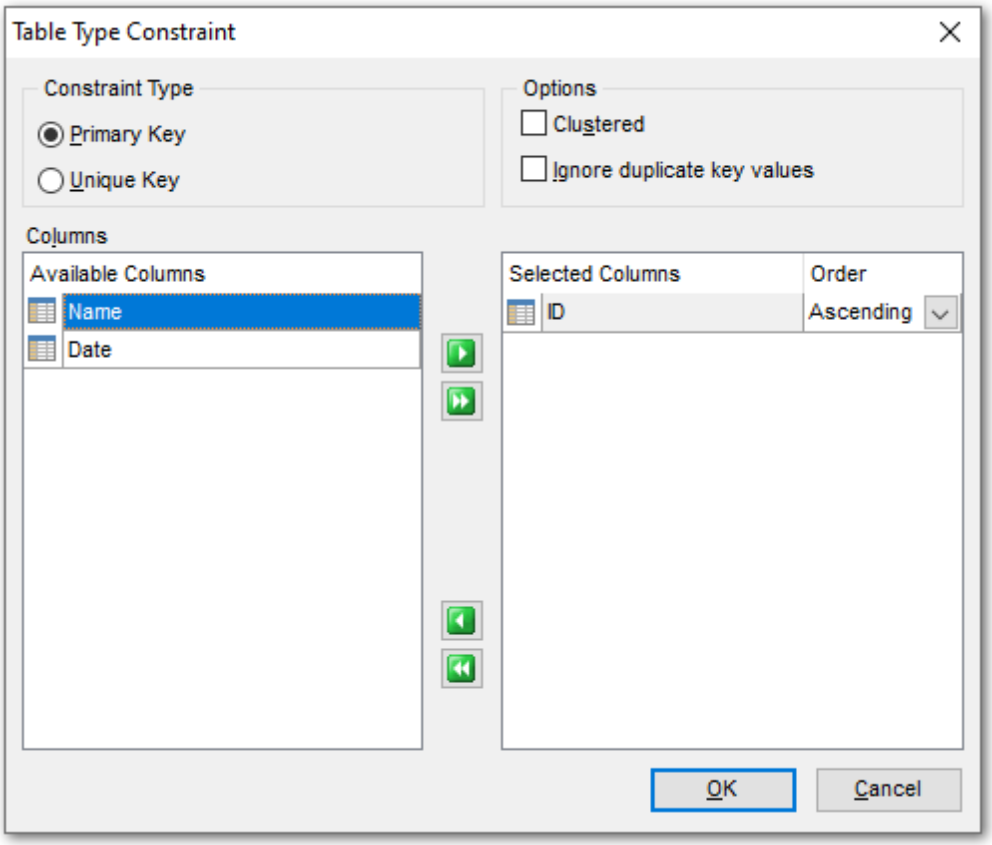
Right-click a constraint to display the context menu allowing you to *create* new, *edit*, or *drop* the selected constraint.



The **Columns** list provides the following attributes of each constraint of the UDT:
Primary Key
Unique Key
Columns
Clustered
Ignore Duplicates

5.3.2.5.4.1 Table Type Constraint dialog

The **Table Type Constraint** dialog allows you to specify the UDT Primary/Unique Key properties.



Constraint Type
This group allows you to specify the UDT constraint type:
Primary Key
Specifies a primary key constraint.
Unique Key
Specifies a unique key constraint.

Options

Clustered
If this option is selected, the logical order of the key values determines the physical order of the corresponding rows in a table.

Ignore duplicate keys
This option specifies the error response to duplicate key values in a multiple-row insert operation on a unique clustered or unique nonclustered constraint.

Columns
To specify column(s) for the UDT constraint, you need to move it from the **Available Columns** list to the **Selected Columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

To change the sorting order for a column, select the column in the **Selected Columns** list

and change the **Order** value (*ascending/descending*).

5.3.2.6 Sequences

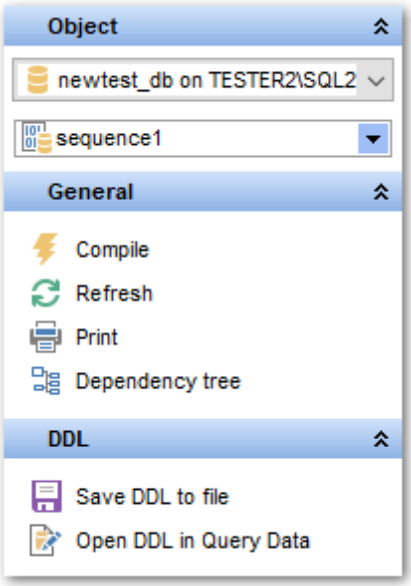
A **Sequence** is a database object from which multiple users may generate unique integers. You can use sequences to automatically generate primary key values. When a sequence number is generated, the sequence is incremented, independently of the transaction committing or rolling back. If two users concurrently increment the same sequence, then the sequence numbers each user acquires may have gaps, because sequence numbers are being generated by the other user. One user can never acquire the sequence number generated by another user. After a sequence value is generated by one user, that user can continue to access that value regardless of whether the sequence is incremented by another user.

Sequence Editor allows you to define sequence properties. It opens automatically when you create a new sequence and is available on editing an existing one (see Create sequence and Edit sequence for details).
To open a sequence in the **Sequence Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 277
- Creating/editing sequence 278
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.6.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Sequence Editor**.



The **Navigation bar** of **Sequence Editor** allows you to:

Object

select a database
select a sequence for editing

General
compile 959 the sequence (if it is being created)
set printing options 651 to print metadata 649 of the sequence
view the dependency tree 618 for the sequence
refresh the content of the active tab
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the sequence:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Sequence Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.6.2 Creating/editing sequence

Use the **Sequence** tab of **Sequence Editor** to create/edit a sequence and specify its properties.

Name
Specify the name of the sequence to be created, or view the name of the sequence being edited. Note that the sequence name must be unique within its schema.

Cycle
This option indicates that the sequence continues to generate values after reaching either its maximum or minimum value. After an ascending sequence reaches its maximum value, it generates its minimum value. After a descending sequence reaches its minimum, it generates its maximum value.

Schema
Use the drop-down list to specify the schema in which the sequence will be created.

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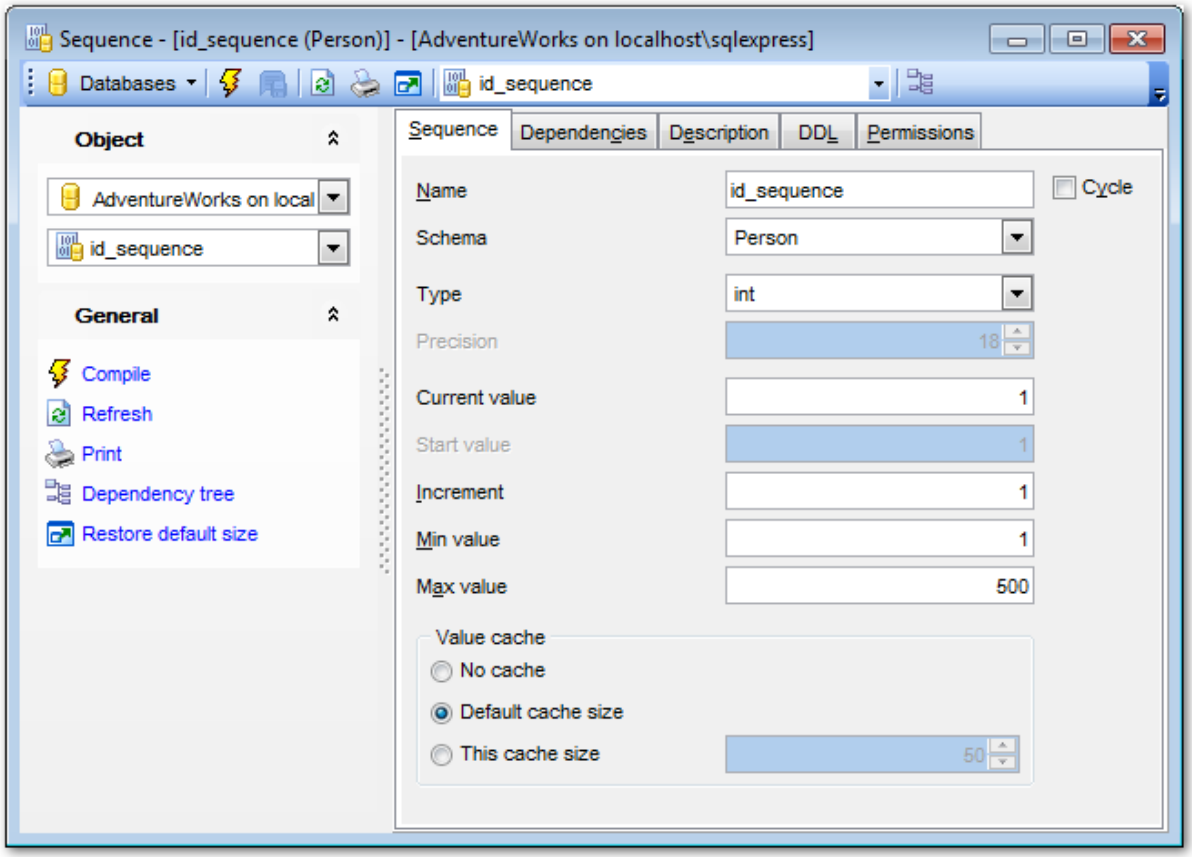

Type
Specify the type of generated sequence numbers.

Precision
Specify the size value (for the *decimal* type).

Start value
Specify the first sequence number to be generated. Use this setting to start an ascending sequence at a value greater than its minimum or to start a descending sequence at a value less than its maximum.

Increment
Specify which value is added to the current sequence value to create a new value. A positive value will make an ascending sequence, a negative one - a descending sequence. The default value is *1*.

Min value
Specify the minimum value of the sequence.

Max value
Specify the maximum value for the sequence.

Value Cache
Specify how many sequence numbers are to be preallocated and stored in memory for

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faster access in the *This size cache* field or select *Default cache size* or *No cache*.

To compile959 the object, use the corresponding **Compile** item of the Navigation bar277 or toolbar277.

5.3.2.7 Synonyms

You can use **Synonyms** in place of their referenced base object in a number of SQL statements and expression contexts. When working with synonyms in these contexts, the base object is affected. For example, if you have a synonym that references a base object that is a table196, when you insert a row into the synonym, you are actually inserting a row into the referenced table.

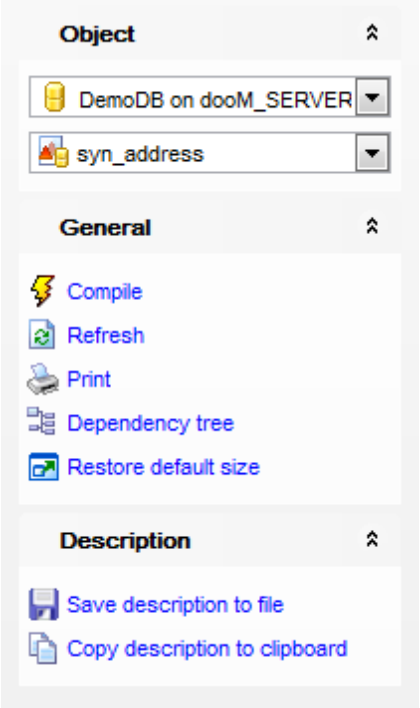
Synonym Editor allows you to define synonym properties. It opens automatically when you create a new synonym and is available on editing an existing one.

To open a synonym in **Synonym Editor**, double-click it in the DB Explorer65 tree.

- Using Navigation bar and Toolbar280
- Creating/editing synonym282
- Browsing object dependencies957
- Editing synonym description956
- Viewing DDL definition955
- Setting object permissions958

5.3.2.7.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Synonym Editor**.



The **Navigation bar** of **Synonym Editor** allows you to:

Object

select a database
select a synonym for editing

General

compile 959 the synonym (if it is being created/modified)
save the synonym description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the synonym
view the dependency tree 618 for the synonym
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the synonym:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

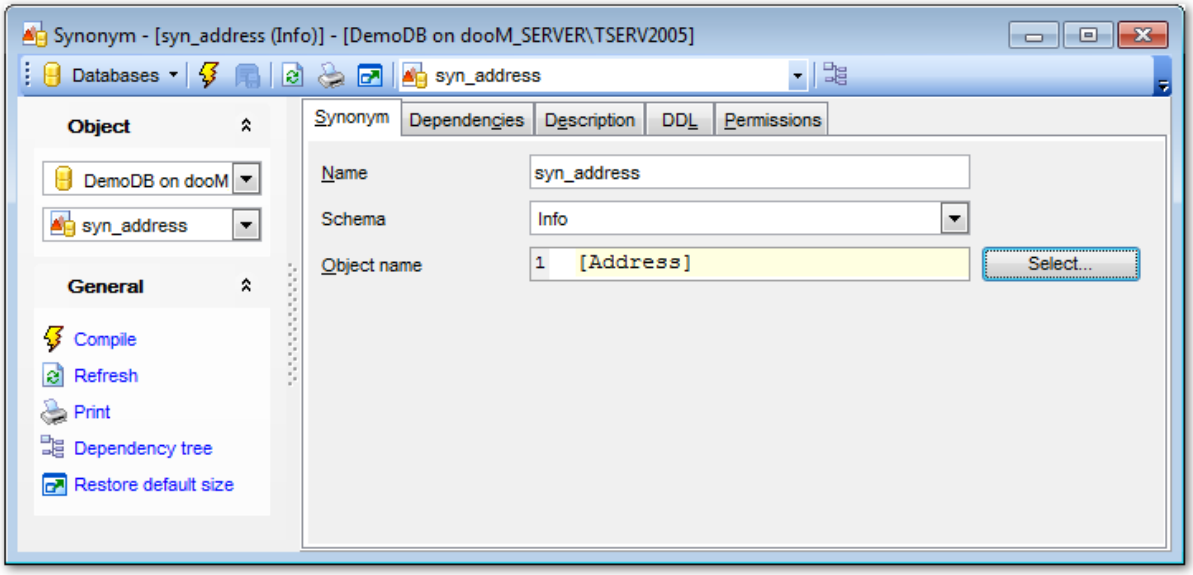
Items of the **Navigation bar** are also available on the **ToolBar** of **Synonym Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.7.2 Creating/editing synonym

Use the **Synonym** tab of **Synonym Editor** to create/edit a synonym and specify its properties.

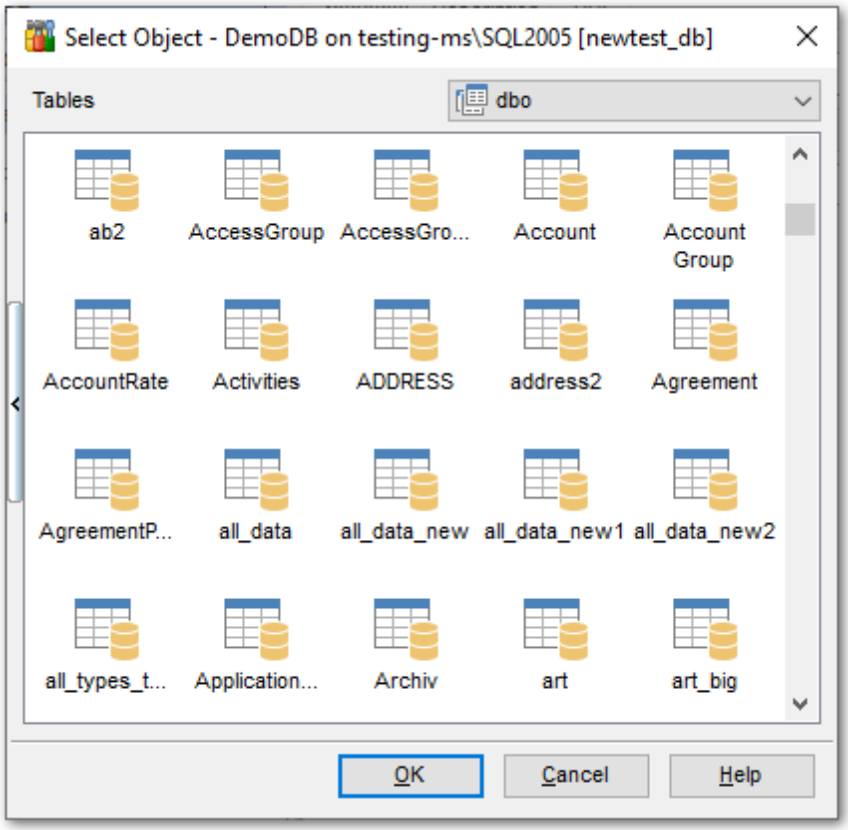
Name
Enter a name for the new synonym, or modify the name of the synonym being edited.

Schema
Use the drop-down list to select the schema 193 in which the synonym is created.



Object name
This box displays the base object that the synonym references. To change the object, click the **Select...** button.

The **Select Object** dialog allows you to specify a database object to use as the referenced object.



Hint: The context menu of the **Select Object** dialog allows you to toggle the *Icons/List* object representation mode.

5.3.2.8 Aggregates

Aggregate functions, or **Aggregates**, perform a calculation on a set of values and return a single value. Traditionally Microsoft® SQL Server supported only built-in aggregate functions, such as *SUM* or *MAX*, that operate on a set of input scalar values and generate a single aggregate value from that set. SQL Server integration with the .NET Framework common language runtime (CLR) now allows developers to create custom aggregate functions in managed code and make these functions accessible to Transact-SQL or other managed code.

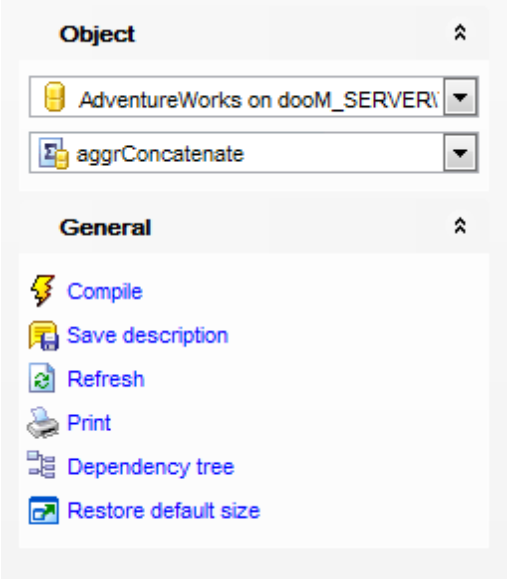
Aggregate Editor allows you to define aggregate properties. It opens automatically when you create a new aggregate and is available on editing an existing one.

To open an aggregate in **Aggregate Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 284
- Creating/editing aggregate 285
- Browsing object dependencies 957
- Editing aggregate description 956
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.8.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Aggregate Editor**.



The **Navigation bar** of **Aggregate Editor** allows you to:

Object
select a database
select an aggregate for editing

General
compile 959 the aggregate (if it is being created/modified)
save the aggregate description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the aggregate
view the dependency tree 618 for the aggregate
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the aggregate:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file

open DDL in Query Data

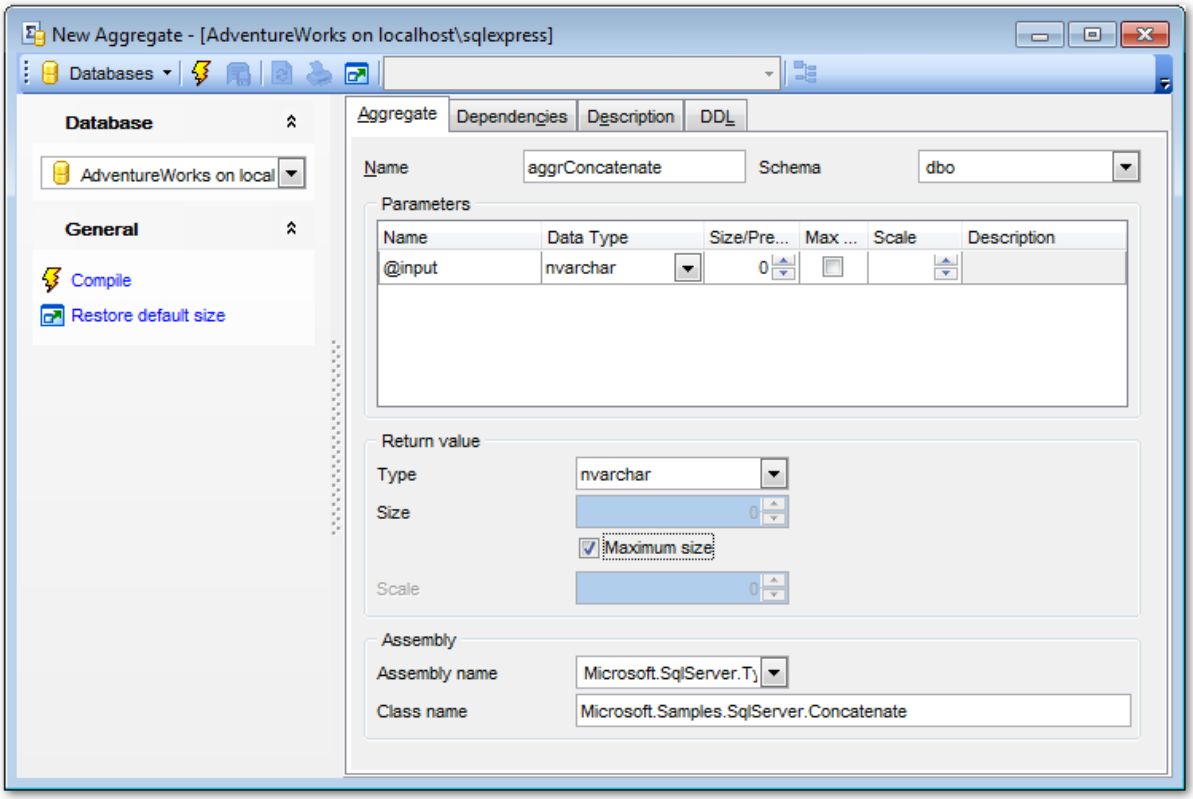
Items of the **Navigation bar** are also available on the **ToolBar** of **Aggregate Editor**. To enable the toolbar, open the Environment Options dialog, proceed to the Windows section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar) in the **Bar style for child forms** group.

5.3.2.8.2 Creating/editing aggregate

Use the **Aggregate** tab of **Aggregate Editor** to create/edit an aggregate function and specify its definition.

Name
Enter a name for the new aggregate, or modify the name of the aggregate being edited.

Schema
Use the drop-down list to select the schema to which the user-defined aggregate function belongs.



Parameter

Name
Specify the parameter name for the user-defined aggregate. The value of the parameter is supplied by the user when the aggregate function is executed. Specify a parameter

name using an at (@) sign as the first character.

Type
Use the drop-down list to select one of the SQL Server system scalar data types to hold the value of the input parameter or return value.

Size
Specify the size value (for certain types). Check the ☑ **Maximum size** option to use the maximum values set by SQL Server.

Scale
Defines the maximum number of decimal digits that can be stored to the right of the decimal point of the value (for float data types).

Return value

Type
Use the drop-down list to select the name of an existing data type to be used as the return value type.

Size
Specify the size value (for certain types). Check the ☑ **Maximum size** option to use the maximum values set by SQL Server.

Assembly

Assembly name
Use the drop-down list to select the SQL Server assembly 309 to bind with the user-defined aggregate function. The assembly must already have been created in the database.

Class name
Specify the name of the class in the assembly that implements the user-defined aggregate. This value must be a valid SQL Server identifier and match the name of a class that exists in the assembly. This may be a namespace-qualified name if the programming language used to write the class uses namespaces, such as C#.

5.3.2.9 XML Schema Collections

Microsoft® SQL Server™ provides native storage of XML data through the XML data type. The **XML Schema Collection** stores the imported XML schemas and is then used to do the following:

- Validate XML instances
- Type the XML data as they are stored in the database

The XML stored in a column or variable that a schema is associated with is referred to as typed XML, because the schema provides the necessary data type information for the instance data. SQL Server uses this type information to optimize data storage.

Note that XML Schema Collection is a metadata entity like a table in the database, hence the XML Schema Collection can be created, modified and dropped.

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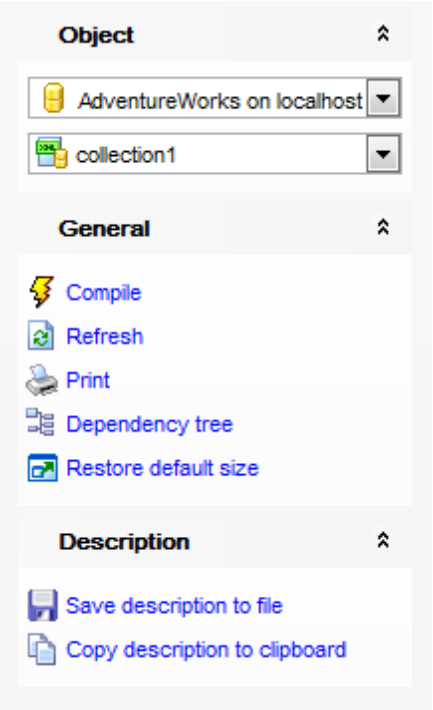
XML Schema Collection Editor allows you to define XML schema collection properties. It opens automatically when you create a new XML schema collection and is available on editing an existing one.

To open a XML schema collection in **XML Schema Collection Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 287
- Creating/editing XML Schema Collection 288
- Browsing object dependencies 957
- Editing object description 956
- Viewing DDL definition 955
- Setting object permissions 958

5.3.2.9.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **XML Schema Collection Editor**.



The **Navigation bar** of **XML Schema Collection Editor** allows you to:

Object

select a database

select a XML schema collection for editing

General

compile 959 the XML schema collection (if it is being created/modified)

save the XML schema collection description 956 (if it has been modified)

refresh the content of the active tab

print metadata 649 of the XML schema collection
view the dependency tree 618 for the XML schema collection
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the XML schema collection:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

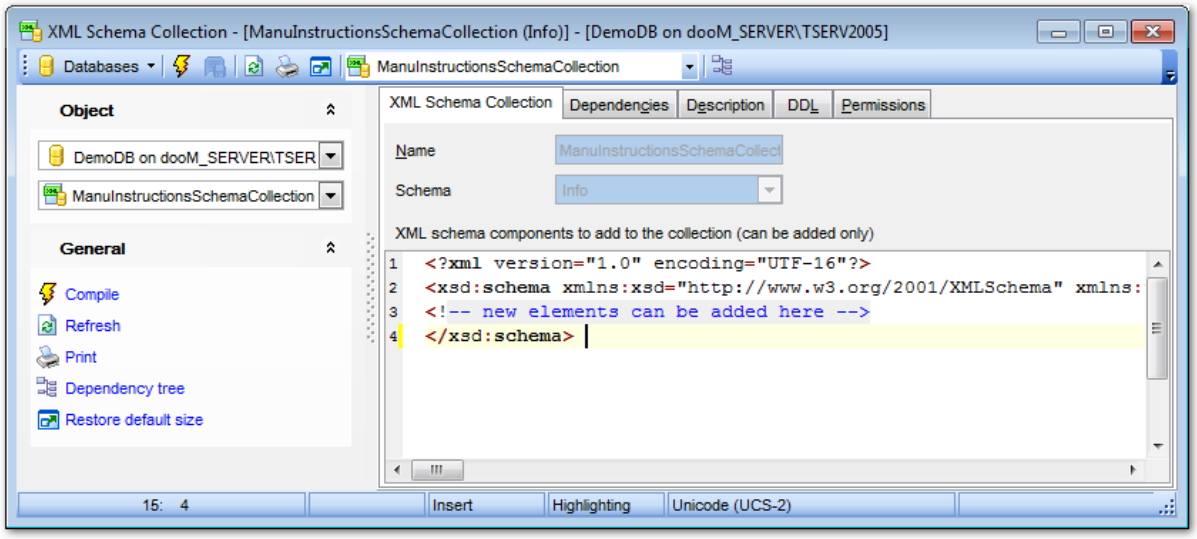
Items of the **Navigation bar** are also available on the **ToolBar** of **XML Schema Collection Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.9.2 Creating/editing XML Schema Collection

Use the **XML Schema Collection** tab of **XML Schema Collection Editor** to create/edit a XML Schema Collection and specify its definition.

Name
Enter a name for the new XML Schema Collection, or view the name of the XML Schema Collection being edited.

Schema
Use the drop-down list to select the schema 193 to which the XML Schema Collection belongs.



The lower area of the editor window allows you to specify the XML Schema Collection definition. You can add a new schema or its component(s) to **XML Schema Collection**. After successful compilation, the **DDL** tab will display the changes made to the schema. To compile the schema, use the corresponding item of the Navigation bar 287.

5.3.2.10 Defaults

When bound to a column 217 or a user-defined data type 263, a **Default** specifies a value to be inserted into the column to which the object is bound (or into all columns, in case of UDF 263) when no value is explicitly supplied during an insert operation.

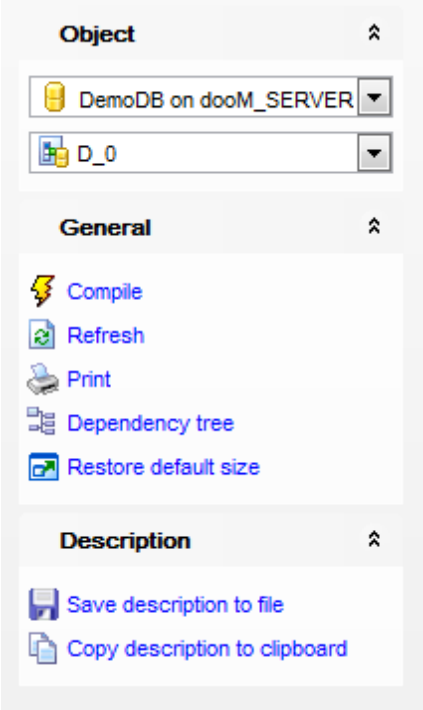
Default Editor allows you to define default properties. It opens automatically when you create a new default and is available on editing an existing one.

To open a default in **Default Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 289
- Creating/editing default 291
- Browsing object dependencies 957
- Editing default description 956
- Viewing DDL definition 955

5.3.2.10.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Default Editor**.



The **Navigation bar** of **Default Editor** allows you to:

Object
select a database
select a default for editing

General
compile 959 the default (if it is being created/modified)
save the default description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the default
view the dependency tree 618 for the default
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the default:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Default Editor**. To

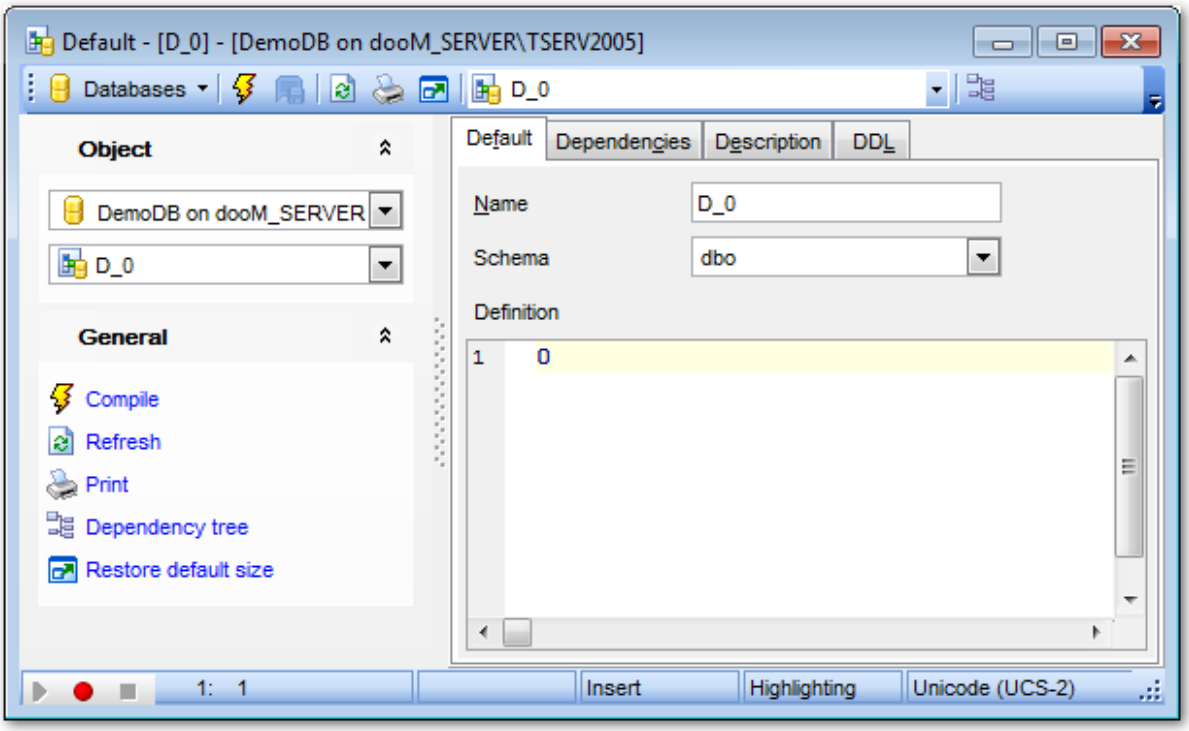
enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

5.3.2.10.2 Creating/editing default

Use the **Default** tab of **Default Editor** to create/edit a default and specify its definition.

Name
Enter a name for the new default, or modify the name of the default being edited.

Schema
Use the drop-down list to select the schema193 to which the default belongs.



Definition
This area represents an expression that contains only constant values (it cannot include the names of any columns217 or other database objects). Any constant, built-in function, or mathematical expression can be used, except those containing alias data types.

The definition must conform to the following rules:
- character and date constants are enclosed in single quotation (') marks;
- monetary, integer, and floating-point constants do not require quotation marks;
- binary data must be preceded by 0x
- monetary data must be preceded by a dollar ($) sign.

5.3.2.11 Rules

When bound to a column 217 or a user-defined data type 263, a **Rule** specifies the acceptable values that can be inserted into that column or to the fields having the specified data type.

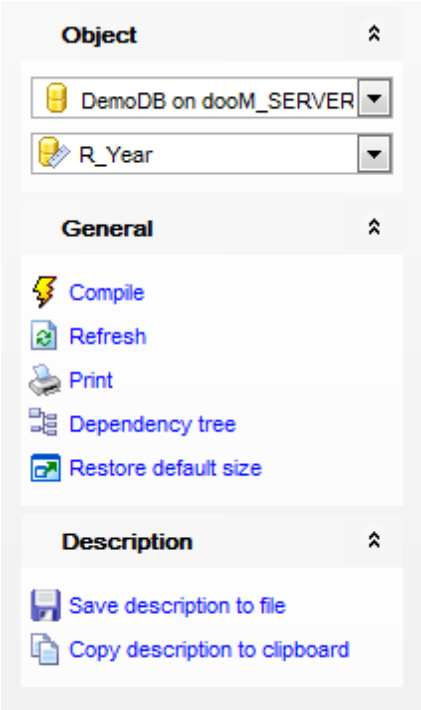
Rule Editor allows you to define rule properties. It opens automatically when you create a new rule and is available on editing an existing one.

To open a rule in **Rule Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 292
- Creating/editing rule 293
- Browsing object dependencies 957
- Editing rule description 956
- Viewing DDL definition 955

5.3.2.11.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Rule Editor**.



The **Navigation bar** of **Rule Editor** allows you to:

Object

select a database

select a rule for editing

General

compile 959 the rule (if it is being created/modified)
save the rule description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the rule
view the dependency tree 618 for the rule
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the rule:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

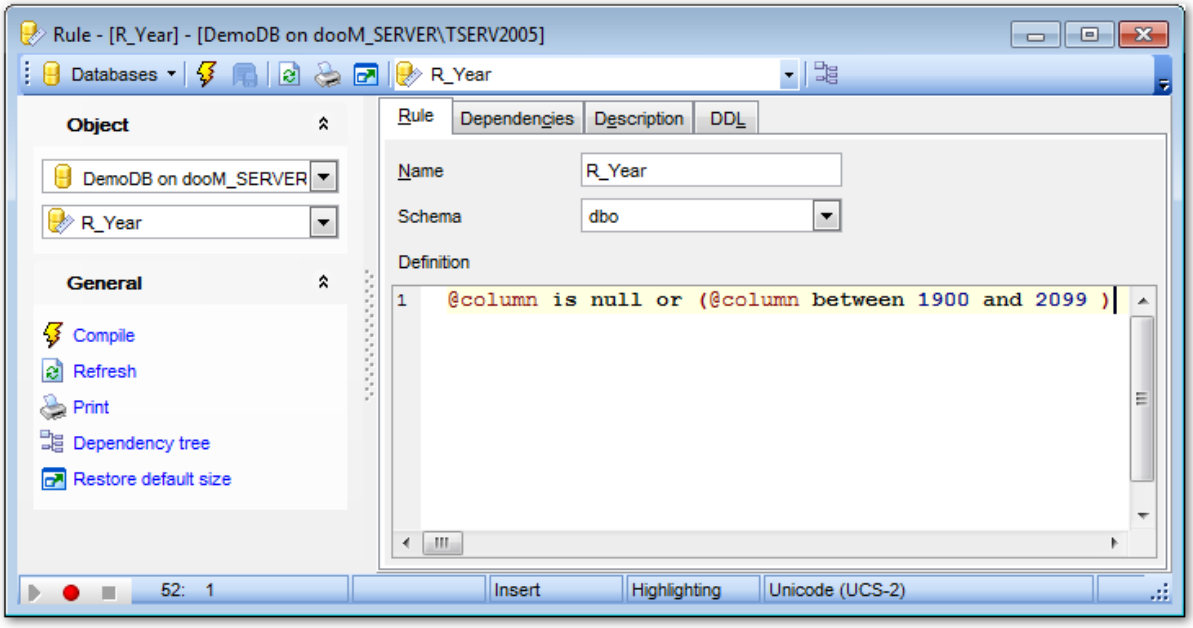
Items of the **Navigation bar** are also available on the **ToolBar** of **Rule Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.11.2 Creating/editing rule

Use the **Rule** tab of **Rule Editor** to create/edit a rule and specify its definition.

Name
Enter a name for the new rule, or modify the name of the rule being edited.

Schema
Use the drop-down list to select the schema 193 to which the rule belongs.



Definition
This area represents the condition(s) that define the rule (*condition_expression*). This can be any expression valid in a *WHERE* clause and can include elements such as arithmetic operators, relational operators, and predicates (for example, *IN*, *LIKE*, *BETWEEN*).
Rule definition includes one variable. The at (@) sign precedes each local variable. The expression refers to the value entered with the UPDATE or INSERT statement. Any name or symbol can be used to represent the value when creating the rule, but the first character must be the at (@) sign.

5.3.2.12 Queues

A **Queue** is a schema object that holds incoming messages for a service 345. When a message arrives for a service, Service Broker puts the message on the queue associated with the service.

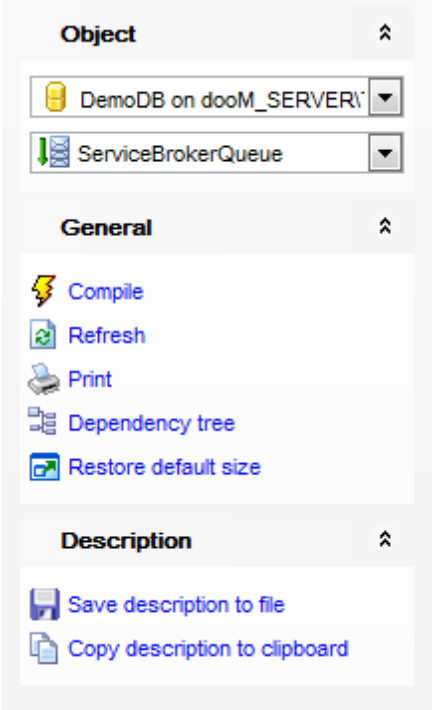
Queue Editor allows you to define queue properties. It opens automatically when you create a new queue and is available on editing an existing one.

To open a queue in **Queue Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 295
- Creating/editing queue 296
- Viewing queue messages 297
- Browsing object dependencies 957
- Editing rule description 956
- Viewing DDL definition 955

5.3.2.12.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Queue Editor**.



The **Navigation bar** of **Queue Editor** allows you to:

Object
select a database
select a queue for editing

General
compile 959 the queue (if it is being created/modified)
save the queue description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the queue
view the dependency tree 618 for the queue
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the queue:

Description
save object description 956 to file
copy description 956 to clipboard

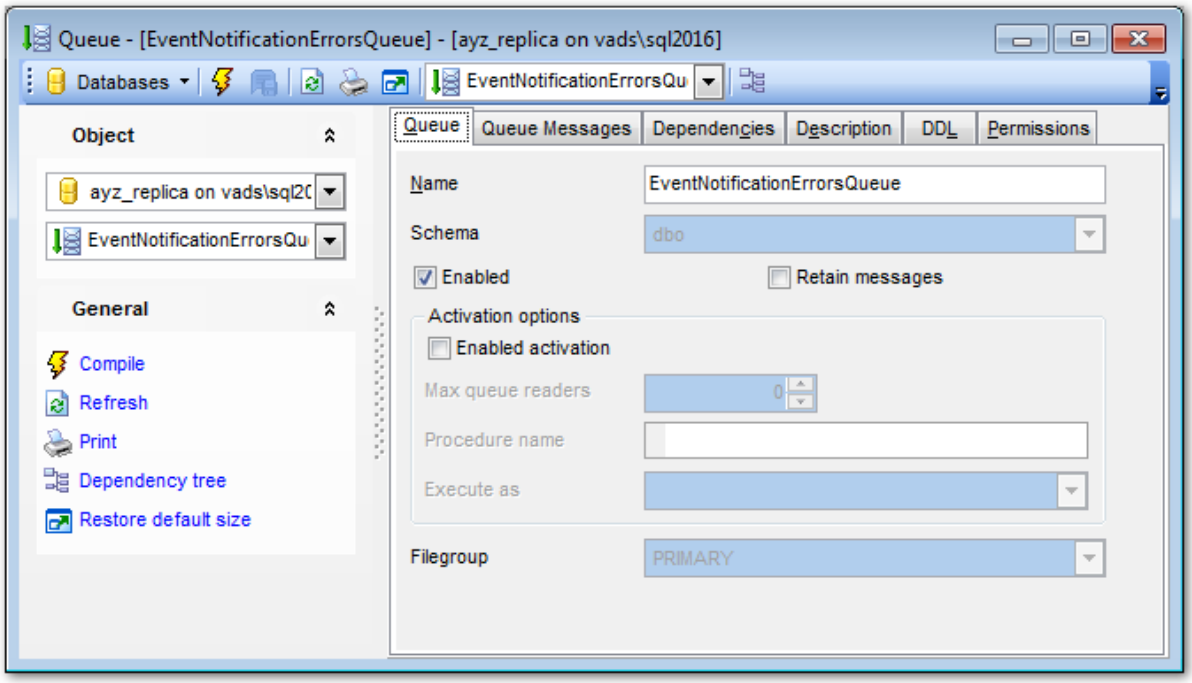
DDL

save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Queue Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.2.12.2 Creating/editing queue

Use the **Queue** tab of **Queue Editor** to create/edit a queue and specify its properties.



Name
Is the name of the queue to create. This name must meet the guidelines for SQL Server identifiers.

Schema
Is the name of the schema to which the new queue belongs. The schema defaults to the default schema for the user that executes the statement.

☑ **Enabled**
Specifies whether the queue is enabled (available) or disabled (unavailable). When the queue is disabled, no messages can be added to the queue or removed from the queue.

☑ **Retain messages**
Specifies the retention setting for the queue. If the option is enabled, all messages sent or received on conversations that use this queue are retained in the queue until the

conversations have ended.

Activation options

Enabled activation
Specifies whether Service Broker starts the stored procedure to process messages in this queue.

Procedure name
Enter the name of the activation stored procedure 257, i.e. the stored procedure that has to be started to process messages in this queue.

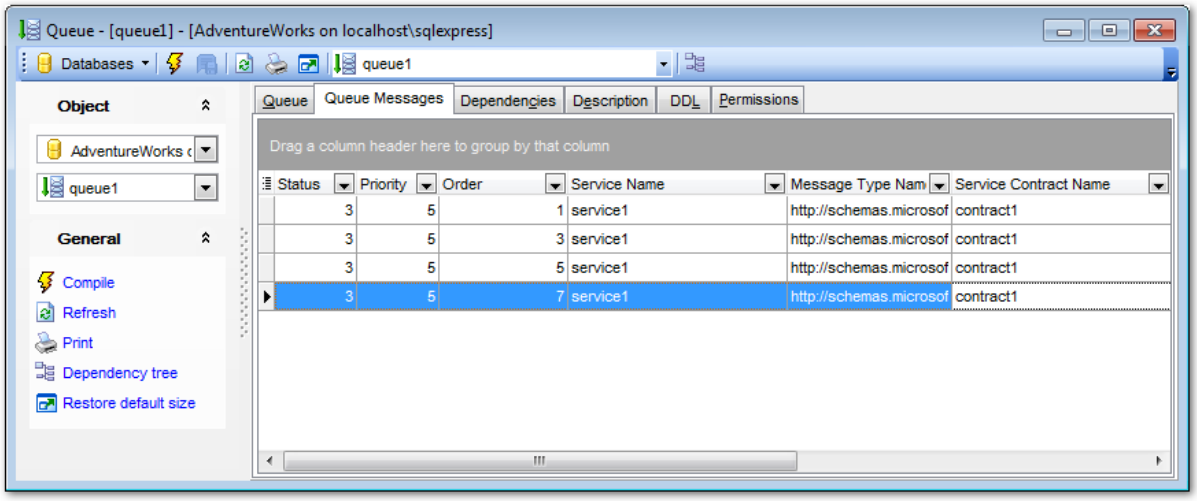
Max queue readers
Specifies the maximum number of instances of the activation stored procedure that the queue starts at the same time.

Execute as
Use the drop-down list to select the SQL Server database user account under which the activation stored procedure runs.

Filegroup
Specifies the SQL Server filegroup 158 on which the queue is created.

5.3.2.12.3 Viewing queue messages

Use the **Queue Messages** tab of **Queue Editor** to view queue messages within a request-reply message cycle.



The **Queue Messages List** displays the messages as a grid with the following columns: *Status*, *Priority*, *Order*, *Message Sequence Number*, *Service Name*, *Service Contract Name*, *Message Type Name*, *Validation*, *Message Body*. If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the

descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

5.3.2.13 External Tables

External tables are used in SQL Server to access data stored in a Hadoop cluster or Azure blob storage. It can also be used to create an external table for Elastic Database query.

To open an external table double-click it in the DB Explorer 65 tree.

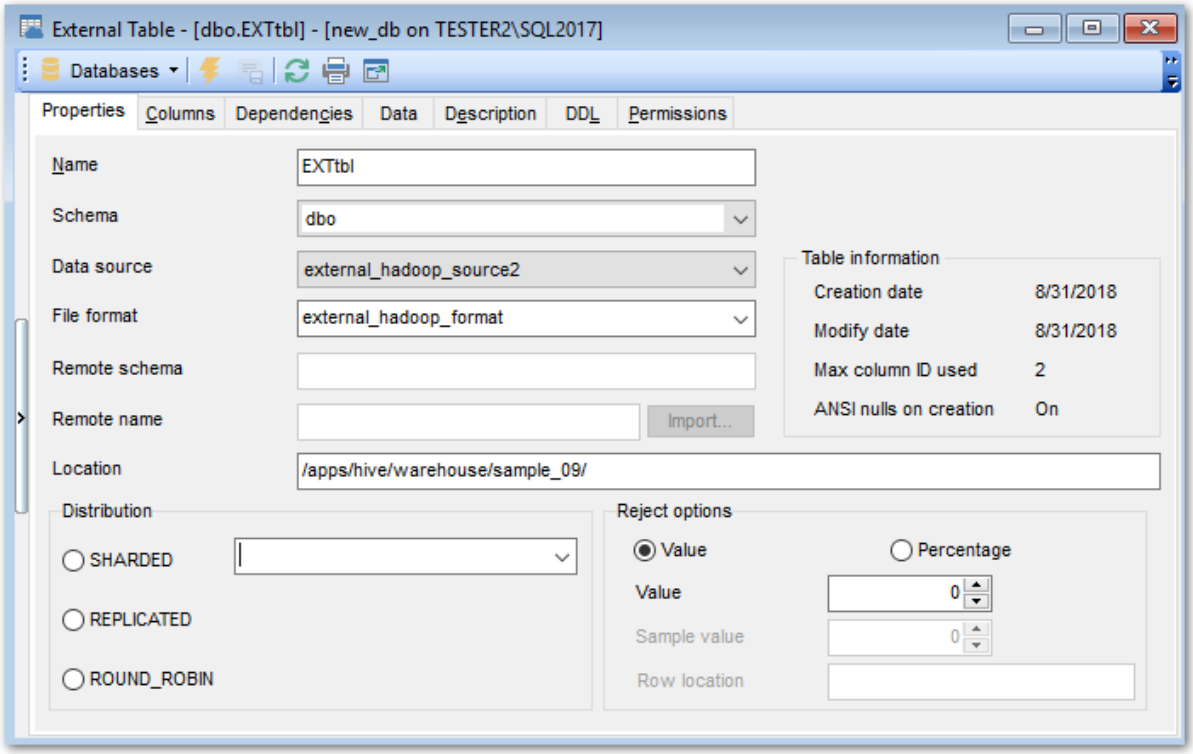
- Creating/editing external tables 298
- Editing external table description 956
- Viewing DDL definition 955

5.3.2.13.1 Creating/editing external tables

Name
Specify the name for the new external table.

Schema
Select schema for the external table location.

Data source
Select the name of the external data source.



File format
Select the existing external file format object that stores file type and compression method for external data.

Remote schema
Specify the different schema on the remote database to map the external table definition.

Remote name
Set the remote table name

Location
Specify the folder or the full path to the file for the actual data in Hadoop or Azure blob storage. The location starts from the root folder; the root folder is the data location specified in the external data source.

Distribution
This option is only required SHARD_MAP_MANAGER databases. Select how the table is treated:

- **SHARDED** table so data from different tables is not overlapped;
- **REPLICATED** table so that tables have the same data on every shard;
- **ROUND_ROBIN** so that application-specific method is used to distribute the data.

Reject options
Reject parameters are used to determine how PolyBase will handle dirty records.

Select if the values will be specified as literal Value or Percentage.

Value
Specifies the value or the percentage of rows that can be rejected before the query fails.

Sample value
This attribute is required when you specify Percentage value type. It determines the number of rows to attempt to retrieve before the PolyBase recalculates the percentage of rejected rows.

Row location
Input the directory within the External Data Source to write rejected rows and the error file.

5.3.3 Non-schema Objects

Other types of objects are also stored in the database and can be created and manipulated with SQL, but are not contained in a schema:

- Assemblies 309
- DDL Triggers 312
- Partition Functions 315
- Partition Schemes 319
- Full-Text Catalogs 322
- Symmetric Keys 327
- Asymmetric Keys 330
- Certificates 334
- Message Types 339
- Contracts 342
- Services 345
- Routes 348
- Remote Service Bindings 351
- DB Scoped Credentials 354
- External Data Sources 355
- External File Formats 356

Use the DB Explorer 65 tree to navigate 50 within the database(s) and the objects.

See also:

New Object dialog 184

Duplicate Object Wizard 186

5.3.3.1 Users

A database **User** is a database-level security principal enabling object access permission control at the finest level of granularity. A user represents a single SQL Server login within the scope of the database in which the user is defined.

User Editor allows you to define user properties and membership. It opens automatically when you create a new user and is available on editing an existing one.

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To open a user in **User Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 301
- Creating/editing user 302
- Defining user membership 303
- Editing object description 956
- Viewing DDL definition 955
- Setting object permissions 958

See also:

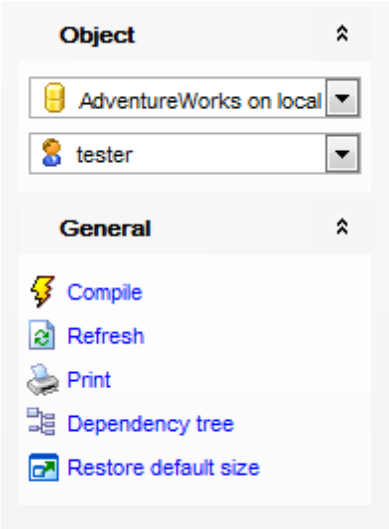
Roles 306

Logins 359

Grant Manager 688

5.3.3.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **User Editor**.



The **Navigation bar** of **User Editor** allows you to:

Object

select a database

select a user for editing

General

compile 959 the user (if it is being created/modified)

save the user description 956 (if it has been modified)

refresh the content of the active tab

print metadata 649 of the user

view the dependency tree 618 for the user
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the user:

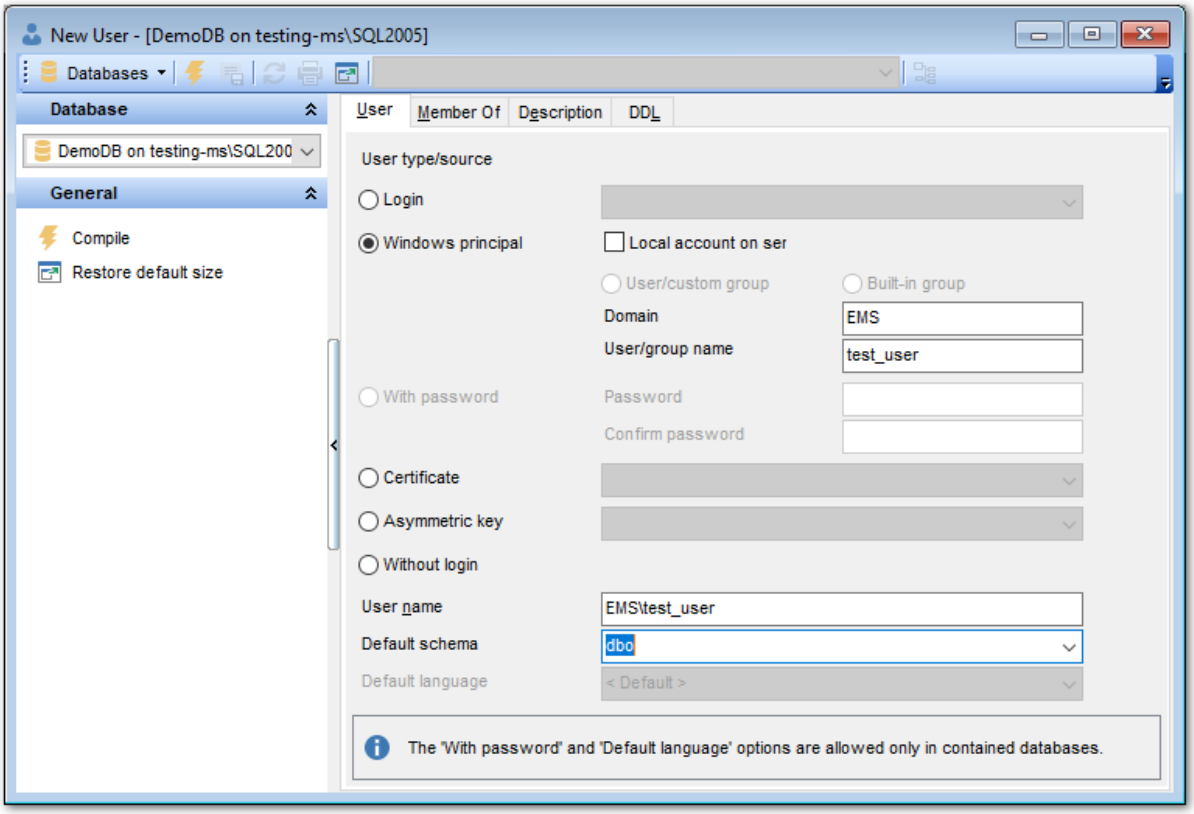
Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **User Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.1.2 Creating/editing user

Use the **User** tab of **User Editor** to create/edit a user and specify its properties.



Login

If this option is selected, use the drop-down list to specify the SQL Server login 687 for which the database user is being created.

Windows principal
Check this option to specify the Windows principal for which the database user is being created. The Windows principal can be a Windows user, or a Windows group. The user will be created even if the Windows principal does not have a login. When connecting to SQL Server, if the Windows principal does not have a login, the Windows principal must authenticate at the Database Engine through membership in a Windows group that has a login, or the connection string must specify the contained database as the initial catalog.

Local account on server
Select this option to specify a built-in server account for the user, or specify the Windows **Domain**. After that specify **User/group name** in the corresponding field.
You can select whether a new user will be created in a **User/custom group** or in a **Built-in group**.

Certificate
If this option is selected, use the drop-down list to specify the certificate 334 for which the database user is being created.

Asymmetric key
If this option is selected, use the drop-down list to specify the asymmetric key 330 for which the database user is being created.

Without login
This option specifies that the user should not be mapped to any of existing logins 687.

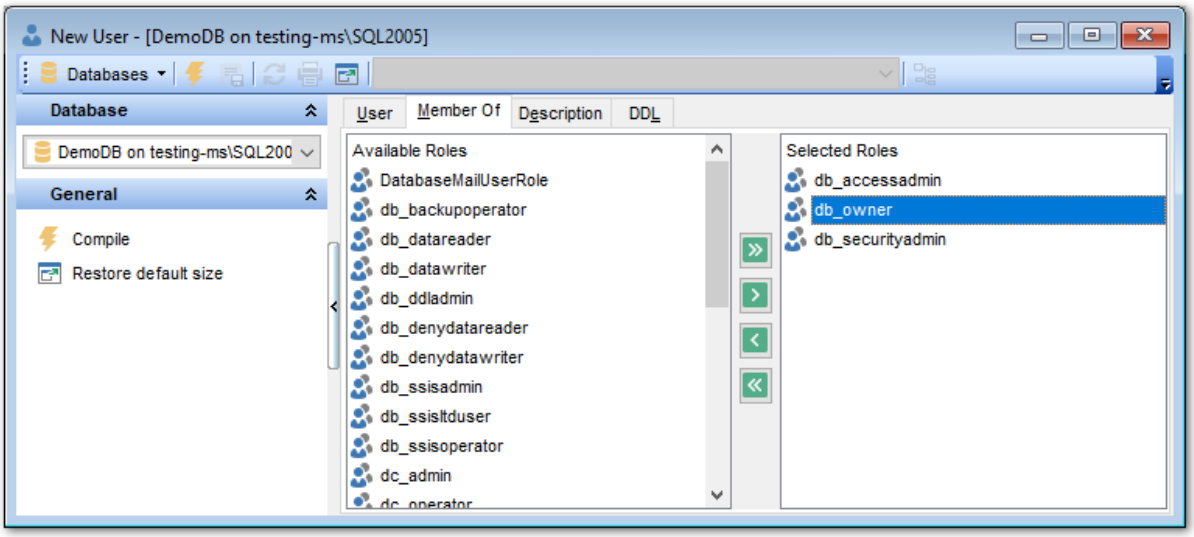
User Name
Specifies the name by which the user is identified inside this database.

Default schema
Use the drop-down list to specify the first schema 193 that will be searched by the server when it resolves the names of objects for this database user.

Default language
Specify the default language for the new user. If no default language is specified, the default language for the user will be the default language of the database.
Note: Default language can be specified only for contained database users.

5.3.3.1.3 Defining user membership

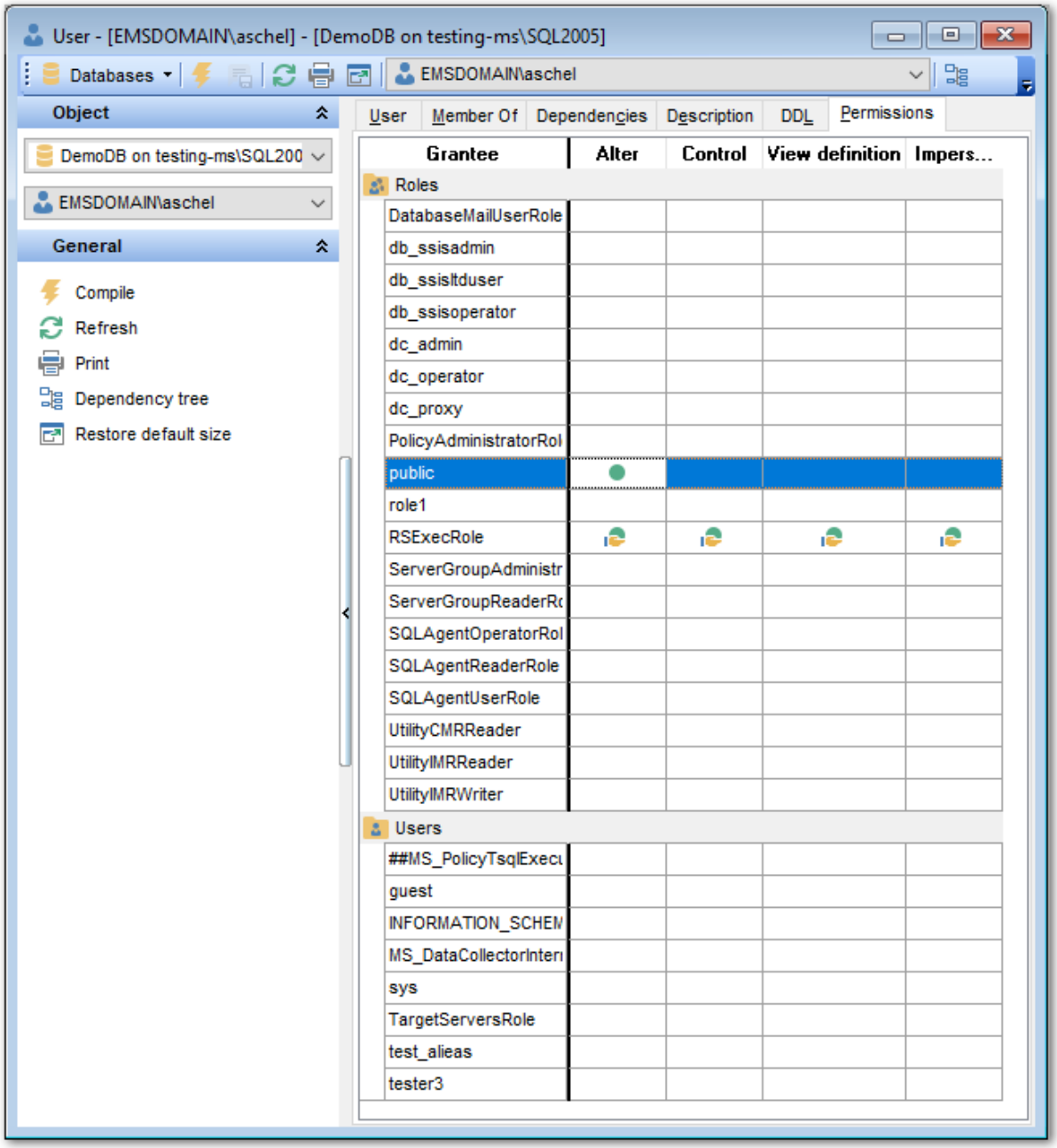
The **Member of** tab of **User Editor** allows you to define user membership, i.e. to select the built-in database role(s) 306 the user will belong to. The selected roles determine the tasks that can be performed through the user.



To select a role, you need to move it from the **Available Roles** list to the **Selected Roles** list. Use the buttons or drag-and-drop operations to move the roles from one list to another.

5.3.3.1.4 Specifying permissions

Use the **Permissions** tab to grant permissions to a user.



The **Grantee** column contains the list of roles and users; each subsequent column corresponds to the permission which can be granted on the selected user: *ALTER*, *CONTROL*, *VIEW DEFINITION*, *IMPERSONATE*.

Right-click a cell to grant a specific permission on a certain user or role. To grant a permission on a user, you should find the object in the **Grantee** list and the column with the corresponding permission. The context menu of a cell allows you to:

- grant a permission to the user;
- grant a permission (with Grant Option) to the user;
- deny a permission to the user;

- revoke a previously granted or denied permission;
- grant all permissions to the user;
- grant all permissions (with Grant Option) to the user;
- deny all permissions to the user;
- revoke all previously granted or denied permissions;
- grant a permission on all users and roles to the user;
- grant a permission (with Grant Option) on all users and roles to the user;
- deny a permission on all users and roles to the user;
- revoke a previously granted or denied permission on all users

5.3.3.2 Roles

All users 300 interact with SQL Server within the context of a database-level principal - **Role**. A user can belong to multiple groups and have multiple roles, and the operations that are permitted by each role determine the actions that the user can perform. It is necessary to create SQL Server database roles when a group of users needs to perform a specified set of activities in the database.

Role Editor allows you to define role properties and membership. It opens automatically when you create a new role and is available on editing an existing one.

To open a role in **Role Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 306
- Creating/editing role 308
- Defining role membership 309
- Viewing DDL definition 955
- Setting object permissions 958

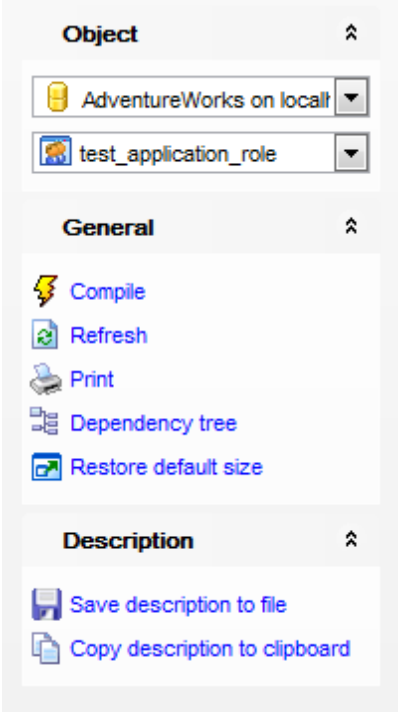
See also:

Users 300

Grant Manager 688

5.3.3.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Role Editor**.



The **Navigation bar** of **Role Editor** allows you to:

Object
select a database
select a role for editing

General
compile 959 the role (if it is being created/modified)
refresh the content of the active tab
print metadata 649 of the role
view the dependency tree 618 for the role
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the role:

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

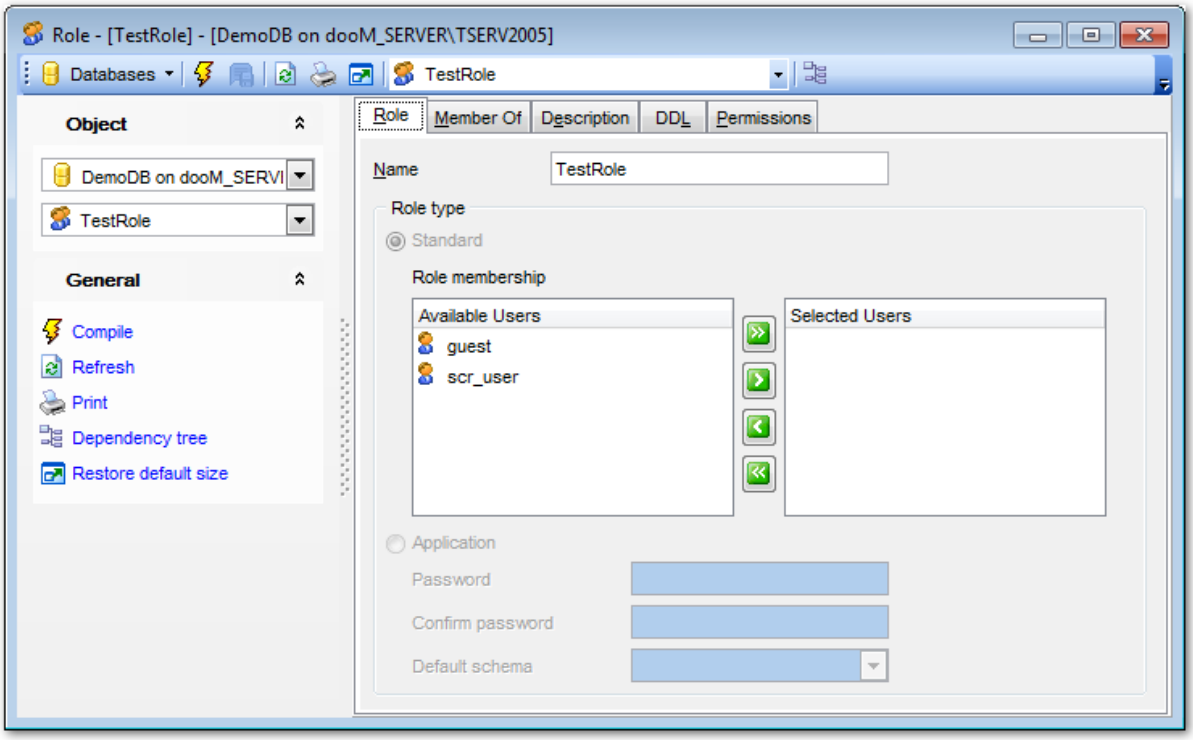
Items of the **Navigation bar** are also available on the **ToolBar** of **Role Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.2.2 Creating/editing role

Use the **Role** tab of **Role Editor** to create/edit a role and specify its properties and membership.

Name
Enter a name for the new role, or view the name of the role being edited.

Role type
Select whether the preferable role type:
- *Standard* (user-defined) role
- *Application* role



If a **Standard** role is being created/edited, you should add members to the role, i.e. add the users 300 (or other roles) that will inherit the permissions of the role.

To add a user, you need to move it from the **Available Users** list to the **Selected Users** list. Use the buttons or drag-and-drop operations to move the users from one list to another.

An *Application role* is a database principal that enables an application to run with its own, user-like permissions. You can use application roles to enable access to specific data to only those users who connect through a particular application.
If an **Application** role is being created/edited, you should specify a **password** for the role.

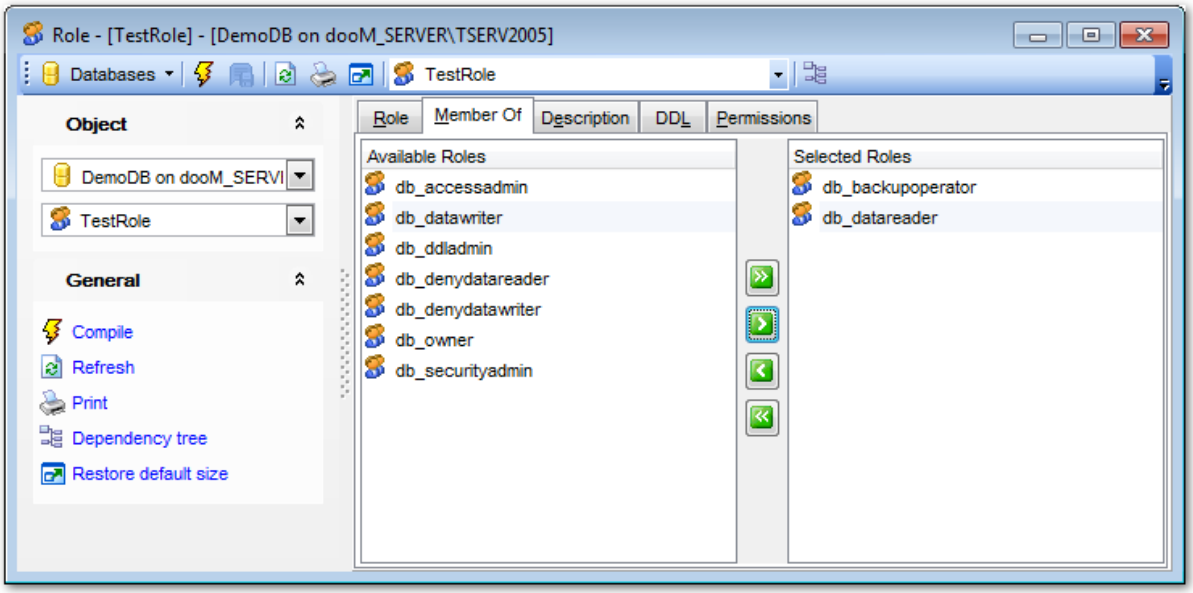
Default schema
Specify the first schema that will be searched by the server when it resolves the names of objects for this role.

Note: If this field remains <Default>, the application role will use DBO as its default schema. The schema defined may not exist in the database.

Note that in the Database Explorer 65 different icons are used for **Application role** and **User role**.

5.3.3.2.3 Defining role membership

The **Member of** tab of **Role Editor** allows you to define role membership, i.e. to select the built-in database role(s) the current role will be a member of. The selected roles determine the tasks that can be performed through the current role.



To select a role, you need to move it from the **Available Roles** list to the **Selected Roles** list. Use the buttons or drag-and-drop operations to move the roles from one list to another.

5.3.3.3 Assemblies

An **Assembly** is a managed application module containing class metadata and managed code as an object in SQL Server, against which CLR functions, stored procedures 257, triggers 312, user-defined aggregates 283, and user-defined types 268 can be created in SQL Server.

Assembly Editor allows you to define assembly properties. It opens automatically when you create a new assembly and is available on editing an existing one.

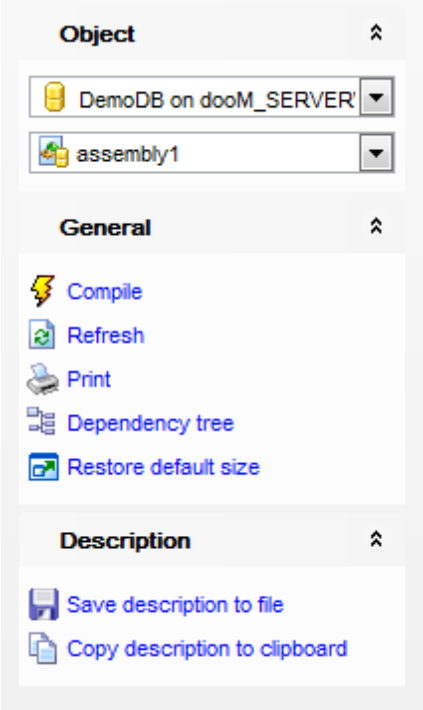
To open an assembly in **Assembly Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 310
- Creating/editing assembly 314
- Browsing object dependencies 957

- Editing object description 956
- Viewing DDL definition 955
- Setting object permissions 958

5.3.3.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Assembly Editor**.



The **Navigation bar** of **Assembly Editor** allows you to:

Object
select a database
select an assembly for editing

General
compile 959 the assembly (if it is being created/modified)
save the assembly description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the assembly
view the dependency tree 618 for the assembly
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the assembly:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

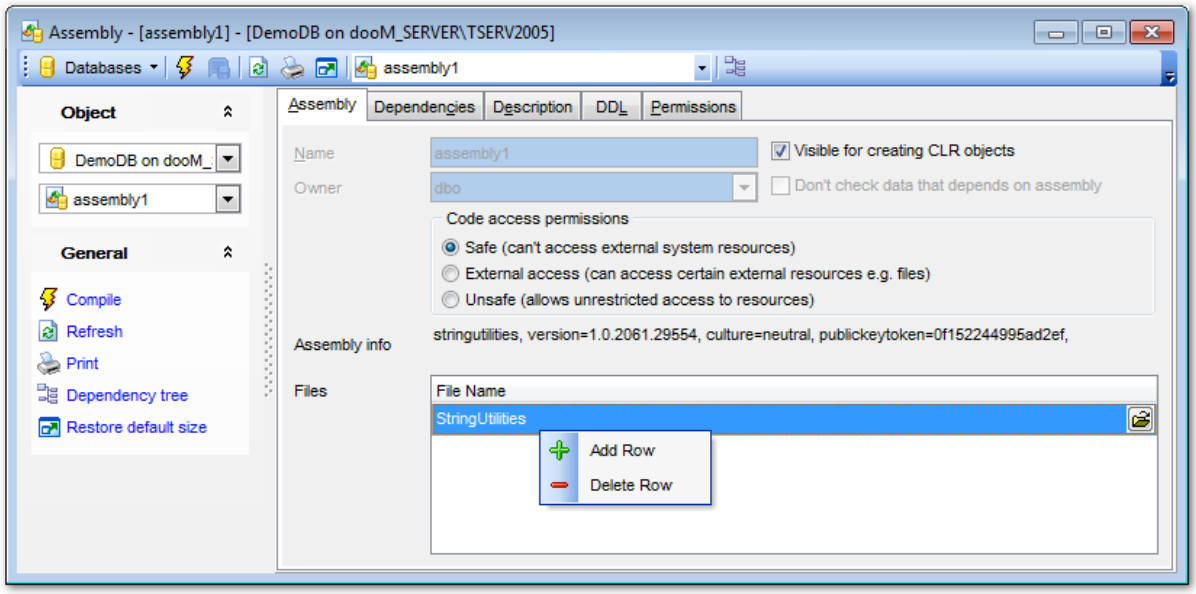
Items of the **Navigation bar** are also available on the **ToolBar** of **Assembly Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.3.2 Creating/editing assembly

Use the **Assembly** tab of **Assembly Editor** to create/edit an assembly and specify its properties.

Name
Enter a name for the new assembly, or view the name of the assembly being edited.

Owner
Use the drop-down list to select the owner of the assembly (the name of a database user 300 or role 306).



Visible for creating CLR objects
This option specifies whether the assembly is visible for creating common language runtime (CLR) functions, stored procedures 257, triggers 312, user-defined aggregates 283, and user-defined types 268 against it. If disabled, the assembly is intended to be called only by other assemblies. If there are existing CLR database objects already created

against the assembly, the visibility of the assembly cannot be changed.

Don't check data that depends on assembly
If this option is unchecked, SQL Server refreshes even those assemblies upon which persisted data in the database is dependent.

Code access permissions
Specifies a set of code access permissions granted to the assembly when it is accessed by SQL Server.

Safe
The most restrictive permission set. Code executed by an assembly cannot access external system resources such as files, the network, environment variables, or the registry.

External access
Allows assemblies to access certain external system resources such as files, networks, environmental variables, and the registry.

Unsafe
Allows assemblies unrestricted access to resources, both within and outside SQL Server. Code executing from within an Unsafe assembly can call unmanaged code.

The **Assembly info** panel is used to display information about the assembly or application, including a description, version information, company name, product name, and more. This information corresponds to the values of global assembly attributes.

The **Files** list allows you to manage files that correspond to the assembly, and specify the local path or network location.

To add a file, right-click within the *Files* area and select the **Add Row** popup menu item.
To remove a file, right-click the file name within the *Files* area and select the **Delete Row** popup menu item.

5.3.3.4 DDL Triggers

A **Trigger** is a special kind of stored procedure 257 that automatically executes when an event occurs in the database.

DDL Triggers fire in response to a variety of data definition language (DDL) events which are primarily *CREATE*, *ALTER* and *DROP* statements; logon triggers fire in response to the *LOGON* event that is raised when a user sessions is being established.

DDL Trigger Editor allows you to define DDL trigger properties (the scope of the DDL triggers is applied to the current database, i.e. the trigger fires whenever *event_type* or *event_group* happens in the current database). It opens automatically when you create a new DDL trigger and is available on editing an existing one.

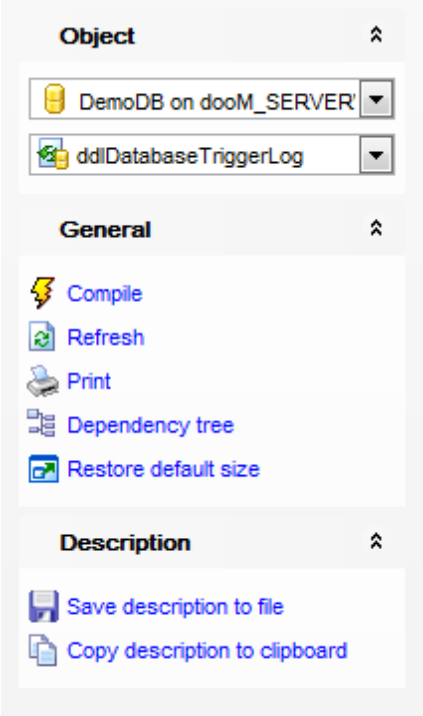
To open a DDL trigger in **DDL Trigger Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 313
- Creating/editing DDL trigger 314

- Browsing object dependencies 957
- Editing object description 956
- Viewing DDL definition 955

5.3.3.4.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **DDL Trigger Editor**.



The **Navigation bar** of **DDL Trigger Editor** allows you to:

Object
select a database
select a DDL trigger for editing

General
compile 959 the DDL trigger (if it is being created/modified)
save the DDL trigger description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the DDL trigger
view the dependency tree 618 for the DDL trigger
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the DDL trigger:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

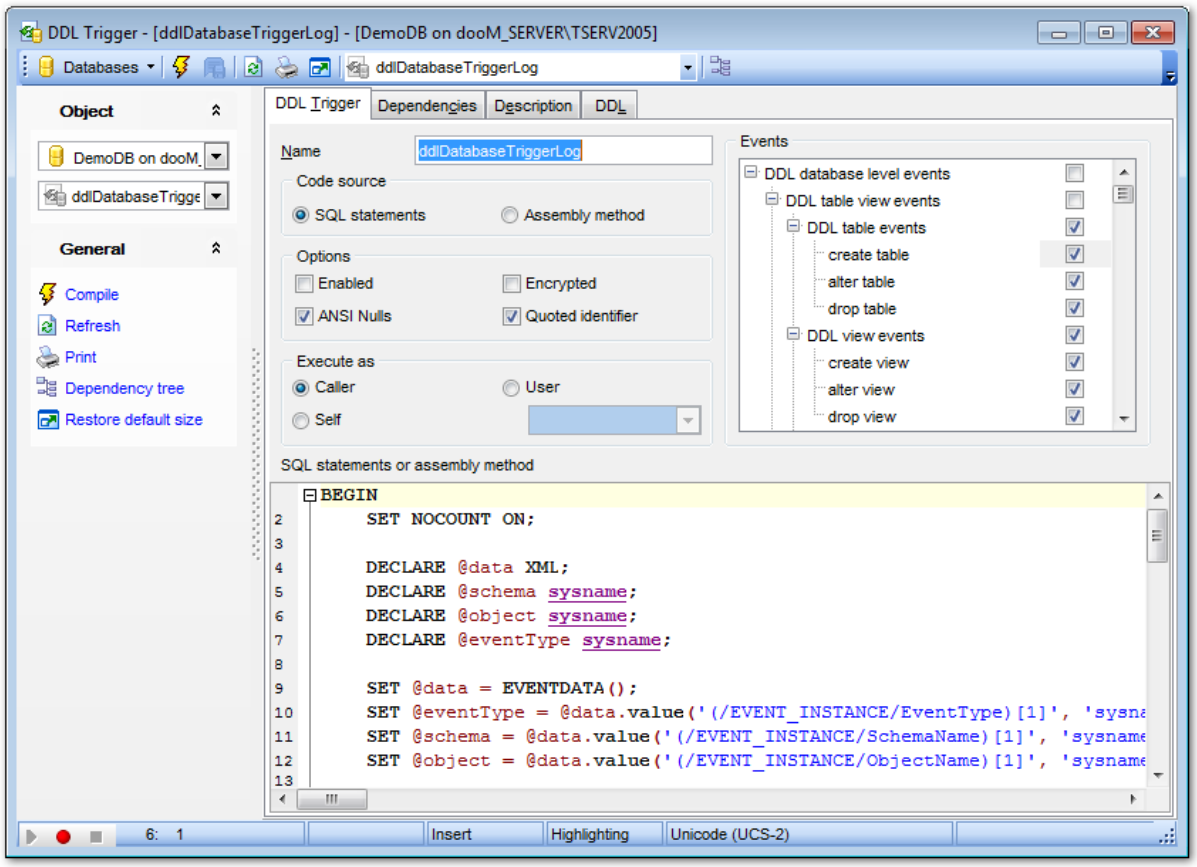
Items of the **Navigation bar** are also available on the **ToolBar** of **DDL Trigger Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.4.2 Creating/editing DDL trigger

Use the **DDL Trigger** tab of **DDL Trigger Editor** to create/edit a database-scoped DDL trigger and specify its properties.

Name

Enter a name for the new DDL trigger, or modify the name of the DDL trigger being edited.



Enabled

Enables/disables the trigger immediately after it is created. A disabled trigger still exists as an object in the current database, but does not fire.

☑ **Encrypted**
If this option is selected, the text of the *CREATE TRIGGER* statement is encrypted. Using this option prevents the trigger from being published as part of SQL Server replication.

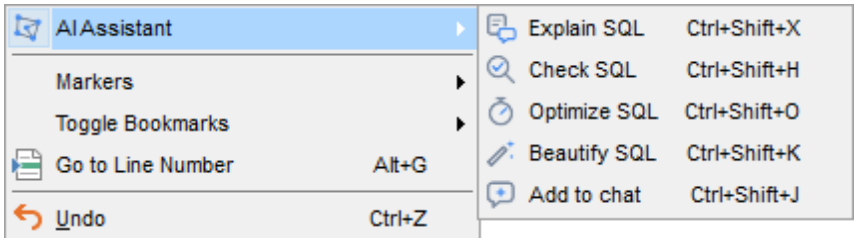
Execute as
Specify the security context under which the trigger is to be executed: ◉ *Caller*, ◉ *Self* or ◉ *User* (select which user 300 account should be used to validate permissions on any database objects that are referenced by the trigger).

Code Source
Select the trigger code source: it can be a direct set of SQL statements or an external procedure call from a .NET assembly or DLL.

Events
This area lists the DDL events as groups. The trigger will fire after execution of any data definition language event selected in this list. Set the corresponding flag next to an event or event group name.

SQL statements or assembly method
This area allows you to set the trigger conditions and actions. Trigger conditions specify additional criteria that determine whether the tried DDL statements cause the trigger actions to be performed.
The trigger actions take effect when the DDL operation is performed.

For your convenience, you can work on the definition with the help of the AI Assistant 721: the context menu of the editor provides the AI Assistant submenu, which lets you have the text explained, checked, optimized or formatted, or add it to the context 730 of your next request.



5.3.3.5 Partition Functions

A **Partition function** specifies how a table 196 or index 232 is partitioned. The function maps the domain into a set of partitions. When creating a partition function, you specify the number of partitions, the partitioning column, and the range of partition column values for each partition. Note that when you specify the partitioning column, you can only specify one.

Partition Function Editor allows you to define partition function properties. It opens automatically when you create a new partition function and is available on editing an existing one.

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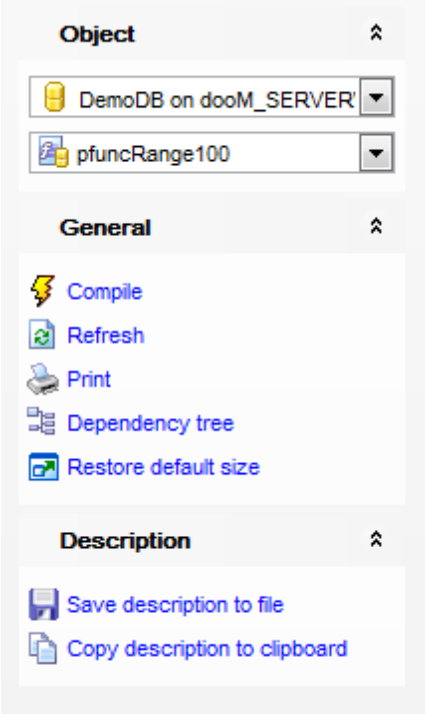
To open a partition function in **Partition Function Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 316
- Creating/editing partition function 317
- Browsing object dependencies 957
- Editing object description 956
- Viewing DDL definition 955

5.3.3.5.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Partition Function Editor**.



The **Navigation bar** of **Partition Function Editor** allows you to:

Object

select a database

select a partition function for editing

General

compile 959 the partition function (if it is being created/modified)

save the partition function description 956 (if it has been modified)

refresh the content of the active tab

print metadata 649 of the partition function

view the dependency tree 618 for the partition function

restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the partition function:

Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Partition Function Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.5.2 Creating/editing partition function

Use the **Partition Function** tab of **Partition Function Editor** to create/edit a partition function and specify its properties.

Name
Enter a name for the new partition function, or view the name of the partition function being edited.

Parameter

Type
Specifies the data type of the column used for partitioning.

Size
Specifies the size of the data type. This box is not editable if the size of the selected data type is fixed or not applicable.

Scale
Specifies the maximum number of decimal digits that can be stored to the right of the decimal point. This box is editable only for *numeric* and *decimal* data types only.

Collation
Defines the collation for *text*, *char*, *nchar*, *varchar*, *nvarchar* values.

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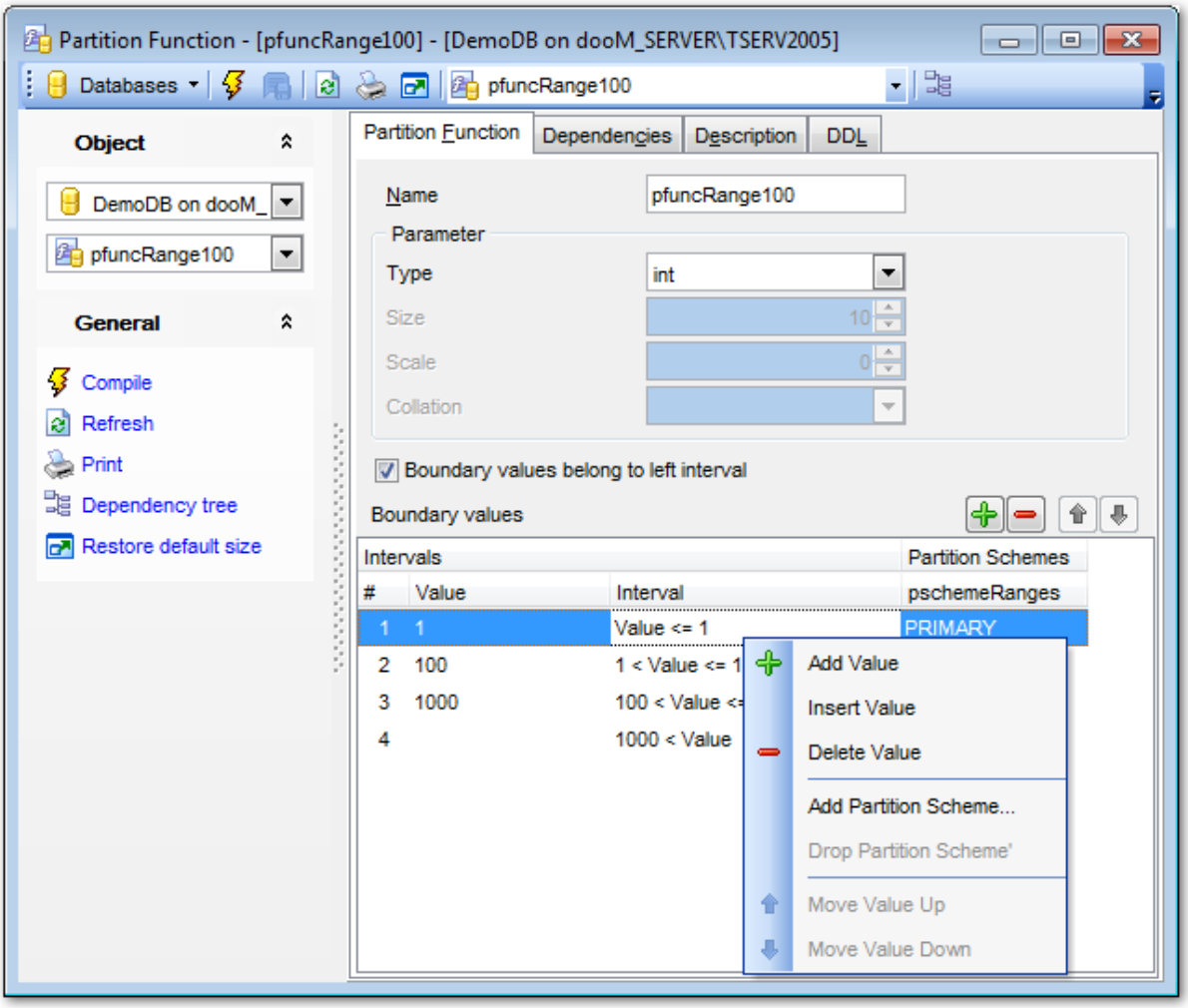

Boundary values belong to left interval
This option specifies to which side of each boundary value interval, left or right, the **boundary value** belongs, when interval values are sorted by the Database Engine in ascending order from left to right. If checked, *LEFT* is specified.

Boundary values
This area lists the boundary values specified by the partition function.

To add a value, right-click within the *Boundary values* area and select the **Add Value** popup menu item, or press the corresponding **Add value** button.

To remove a value, right-click the value within the *Boundary values* area and select the **Delete Value** popup menu item, or press the corresponding **Delete value** button.

Use the **Move up** and the **Move down** buttons or popup menu items to reorder the intervals.

To add a partition scheme which will use the current partition function, right-click within the *Boundary values* area and select the **Add Partition Scheme...** popup menu item.
To drop the partition scheme which uses the current partition function, right-click within the *Boundary values* area and select **Drop Partition Scheme <partition_scheme_name>** popup menu item.

5.3.3.6 Partition Schemes

A **Partition scheme** maps the partitions produced by a partition function 315 to a set of filegroups that you define. A partition scheme can use only one partition function. However, a partition function can participate in more than one partition scheme.

Partition Scheme Editor allows you to define partition scheme properties. It opens automatically when you create a new partition scheme and is available on editing an existing one.

To open a partition scheme in **Partition Scheme Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 319
- Creating/editing partition scheme 321
- Browsing object dependencies 957
- Editing object description 956
- Viewing DDL definition 955

5.3.3.6.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Partition Scheme Editor**.

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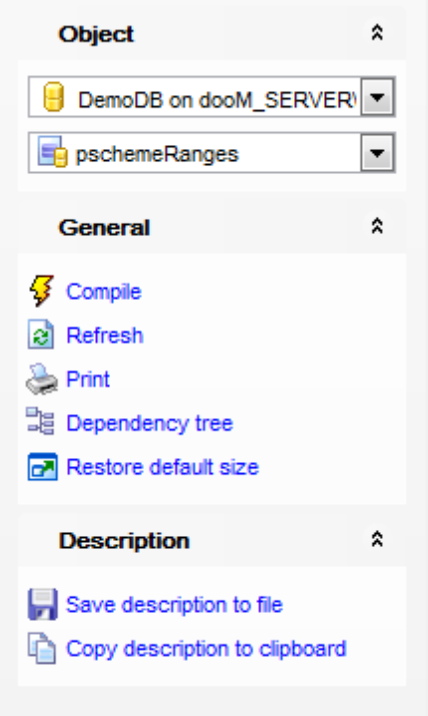


The **Navigation bar** of **Partition Scheme Editor** allows you to:

Object

select a database
select a partition scheme for editing

General

compile 959 the partition scheme (if it is being created/modified)
save the partition scheme description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the partition scheme
view the dependency tree 618 for the partition scheme
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the partition scheme:

Description

save object description 956 to file
copy description 956 to clipboard

DDL

save DDL 955 to file
open DDL 955 in Query Data 432

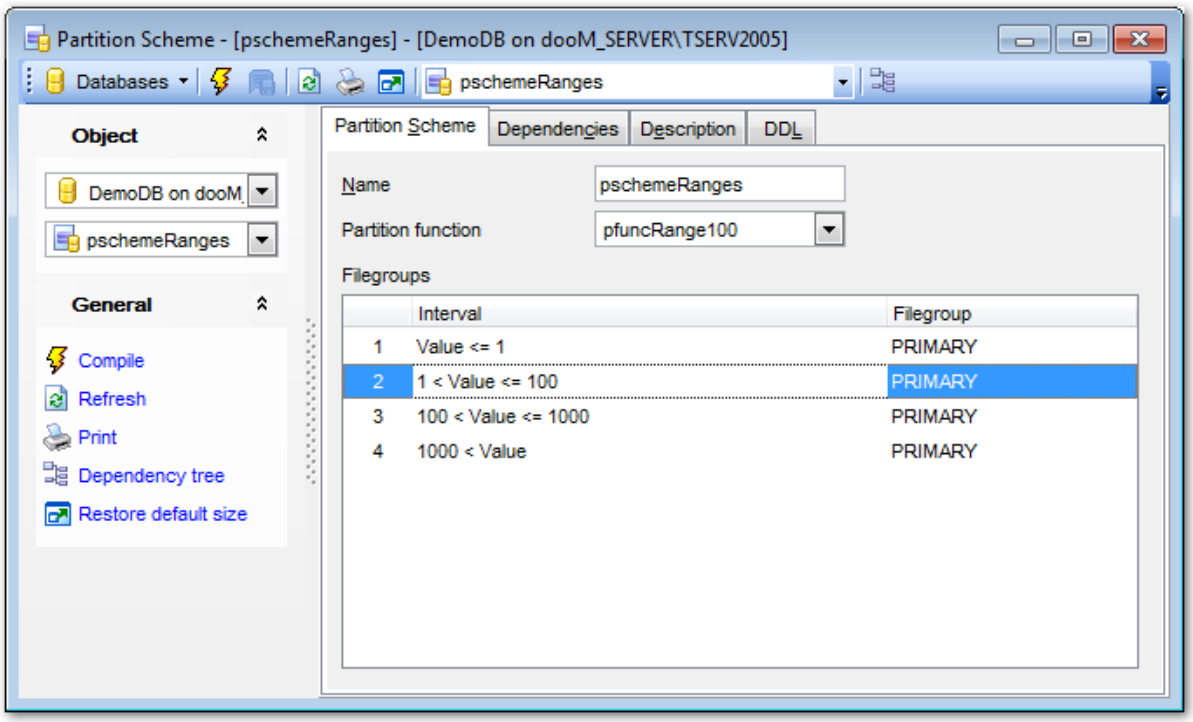
Items of the **Navigation bar** are also available on the **ToolBar** of **Partition Scheme Editor**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

5.3.3.6.2 Creating/editing partition scheme

Use the **Partition Scheme** tab of **Partition Scheme Editor** to create/edit a partition scheme and specify its properties.

Name
Enter a name for the new partition scheme, or modify the name of the partition scheme being edited.

Partition function
Use the drop-down list to select the name of the partition function315 that will use the partition scheme.



Filegroups
Partitions created by the partition function315 are mapped to the filegroups specified in the partition scheme.
Select the filegroup name in the **Filegroup** drop-down list for each of the intervals specified by the partition function315. If *PRIMARY* is selected, the partition is stored in the primary filegroup.

Hint: Filegroups can be created on the Filegroups157 page of the Database Properties137

dialog.

5.3.3.7 Full-Text Catalogs

Full-text catalogs and **Full-text indexes** are the objects that are implemented in Microsoft® SQL Server for efficient full-text administration which is carried out at the server, database, table and column levels.

Like regular indexes 232, **Full-text indexes** can be automatically updated as data are modified in the associated tables. Index updating is normally performed as an asynchronous process that runs in the background during periods of low database activity. Tables with the same update characteristics (e.g. small number of changes and large number of changes) should be grouped together and assigned to the same **Full-text catalog**.

One **Full-text catalog** can have several *full-text indexes*, but a full-text index can only be part of one full-text catalog.

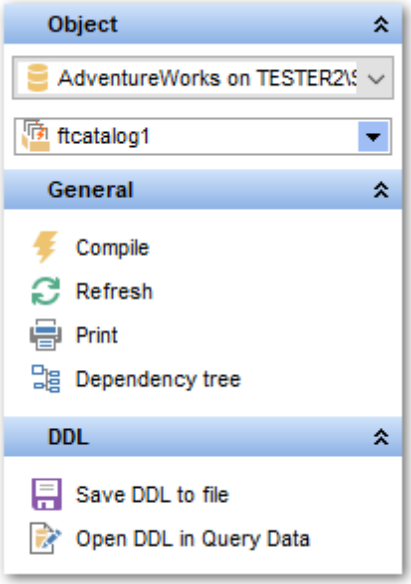
Full-Text Catalog Editor allows you to define full-text catalog properties. It opens automatically when you create a new full-text catalog and is available on editing an existing one.

To open a full-text catalog in **Full-Text Catalog Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 322
- Creating/editing full-text catalog 324
- Managing full-text indexes 325
- Viewing DDL definition 955
- Setting object permissions 958

5.3.3.7.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Full-Text Catalog Editor**.



The **Navigation bar** of **Full-Text Catalog Editor** allows you to:

Object
select a database
select a full-text catalog for editing

General
compile 959 the full-text catalog (if it is being created/modified)
refresh the content of the active tab
print metadata 649 of the full-text catalog
view the dependency tree 618 for the full-text catalog
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the full-text catalog:

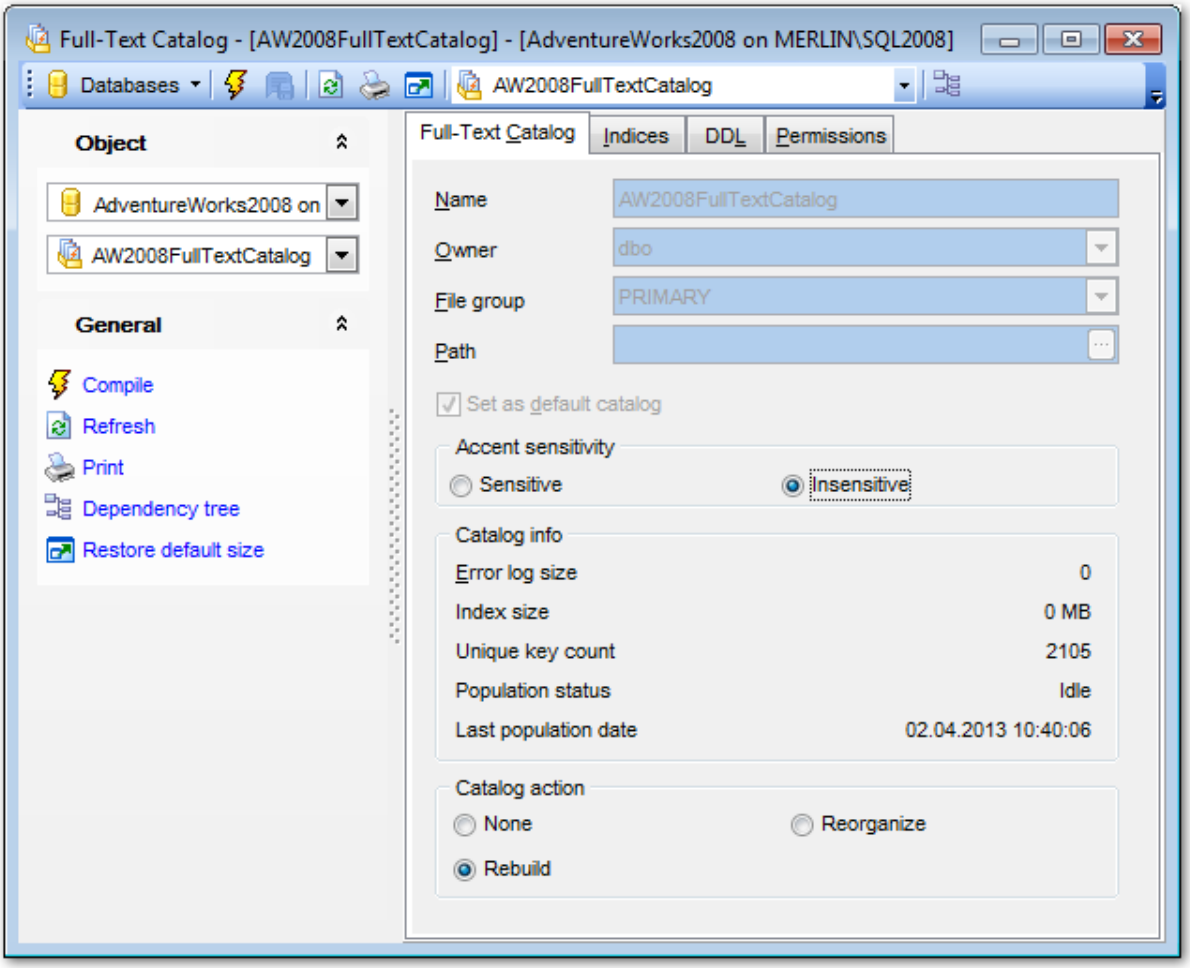
DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Full-Text Catalog Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.7.2 Creating/editing full-text catalog

Use the **Full-Text Catalog** tab of **Full-Text Catalog Editor** to create/edit a full-text catalog and specify its properties.

Name
Enter a name for the new full-text catalog, or view the name of the full-text catalog being edited.



Owner
Use the drop-down list to select the owner of the full-text catalog (the name of a database user 300 or role 306).

File group
Use the drop-down list to select the filegroup which will include the new catalog. The default full-text filegroup is the *PRIMARY* filegroup for the database.

Path
Use the ellipsis button to specify the root directory for the catalog using the SQL Server Folders 984 dialog.

Note: Full-text catalogs must be created on a local hard drive associated with an instance of SQL Server.

Set as default catalog
This option specifies that the catalog is the default catalog. When full-text indexes are created without a full-text catalog explicitly specified, the default catalog is used.

Accent sensitivity
Specify whether the catalog is *accent* *sensitive* or *insensitive* for full-text indexing.

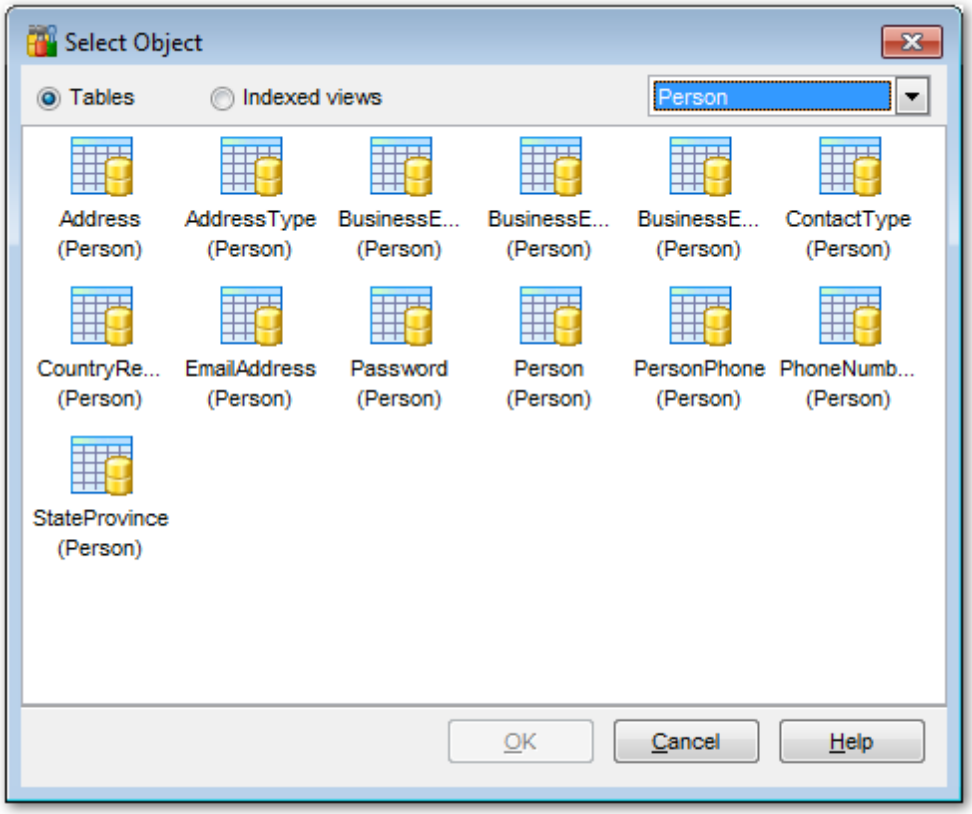
5.3.3.7.3 Managing full-text indexes

The **Indices** tab of **Full-Text Catalog Editor** allows you to manage full-text indexes and specify their properties.

Indices
This area lists the tables containing indexes that will be used by the full-text catalog.

To add a full-text index, right-click within the *Indices* area and select the **Add index** popup menu item, or use the corresponding button at the bottom.

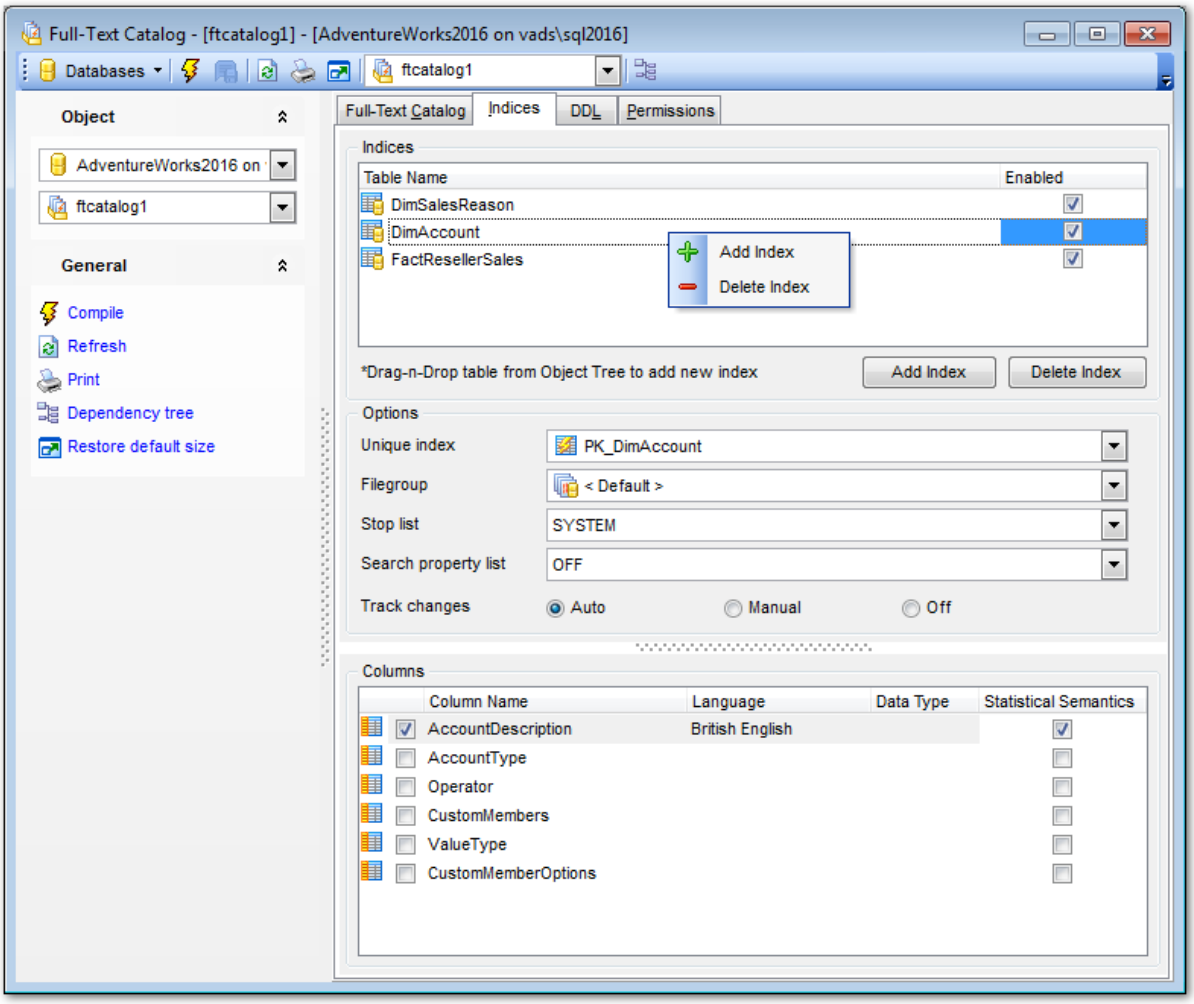
The **Select Object** dialog allows you to specify a table 196 or an indexed view 250 to use indexes from.



Hint: The context menu of the **Select Object** dialog allows you to toggle the *Icons/List*

object representation mode.

To remove a full-text index, right-click the index within the *Indices* area and select the **Delete index** popup menu item, or use the corresponding button at the bottom.



Options

Select the unique not null key index from **Unique index** dropdown list, which is required for a full-text index.

Select the **Filegroup** for creating a full-text index. If 'Default' value is selected the full-text index is placed in the same filegroup as base table or view for a nonpartitioned table or in the Primary filegroup for a partitioned table.

Select the full-text **Stop list** for the index. The index is not populated with any tokens that are part of the specified stoplist.

Use **Search property list** to associate with the index.

If a table index is enabled (i.e. the ☑ *Enabled* flag is set in the **Indices** list), you can

select the unique index and set the **Track changes** property:

Auto
Specifies that SQL Server automatically updates the full-text index as the data are modified in the associated tables.

Manual
Specifies that the change-tracking log will be propagated either on a schedule using SQL Server Agent, or manually by the user.

Off
Specifies that SQL Server does not keep a list of changes to the indexed data.

Columns
This area lists the columns of the selected table. Set the **Language** of the data stored in each column. Specifies the Data Type that is used to hold the document type for a varbinary(max) or image document. Tick **Statistical Semantics** on to create the additional key phrase and document similarity indexes that are part of statistical semantic indexing.

5.3.3.8 Symmetric Keys

In SQL Server 2005 and higher, data can be encrypted with a hierarchical encryption and key management infrastructure. Each layer encrypts the layer below it by using a combination of the following mechanisms for encryption: **symmetric keys**, asymmetric keys 330, certificates 334.

A **Symmetric key** is a single key that is used for both encryption and decryption. Encryption and decryption by using a symmetric key is fast and suitable for routine use with sensitive data in the database.

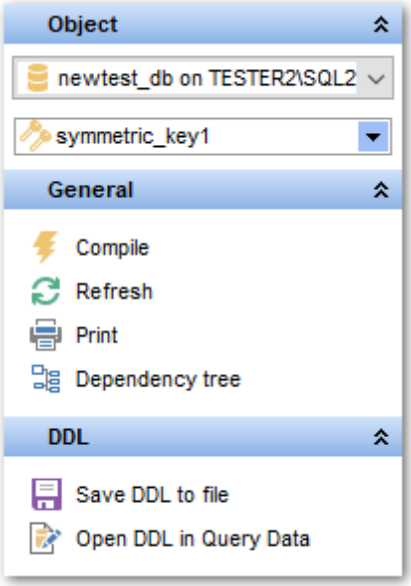
Symmetric Key Editor allows you to define symmetric key properties. It opens automatically when you create a new symmetric key and is available on editing an existing one.

To open a symmetric key in **Symmetric Key Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 327
- Creating/editing symmetric key 329
- Browsing object dependencies 957
- Viewing DDL definition 955
- Setting object permissions 958

5.3.3.8.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Symmetric Key Editor**.



The **Navigation bar** of **Symmetric Key Editor** allows you to:

Object

select a database
select a symmetric key for editing

General

compile 959 the symmetric key (if it is being created/modified)
refresh the content of the active tab
print metadata 649 of the symmetric key
view the dependency tree 618 for the symmetric key
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the symmetric key:

DDL

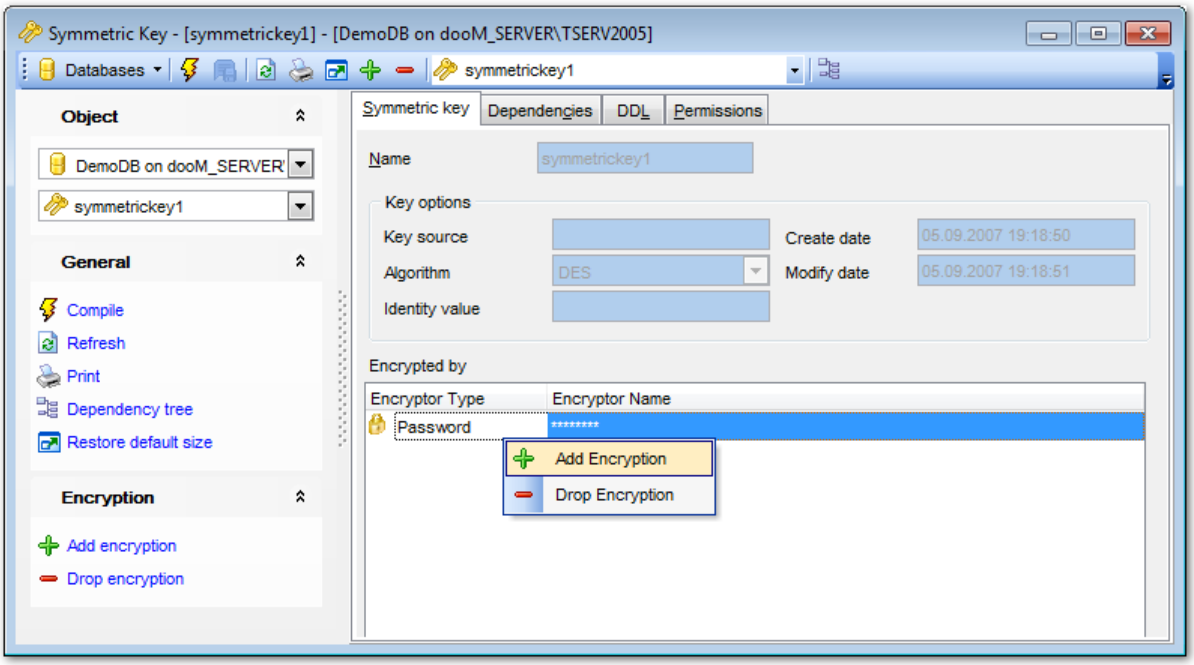
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Symmetric Key Editor** . To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.8.2 Creating/editing symmetric key

Use the **Symmetric key** tab of **Symmetric Key Editor** to create/edit a symmetric key and specify its properties.

Name
Enter a name for the new symmetric key, or view the name of the symmetric key being edited.



Key options

Key source
Specify a passphrase that will be used to derive the key from.

Algorithm
Use the drop-down list to specify an algorithm to be used by the symmetric key. Possible values are: *DES*, *TRIPLE_DES*, *RC2*, *RC4*, *DESX*, *AES_128*, *AES_192*, *AES_256*.

Identity value
Specify an identity phrase from which to generate a GUID for tagging data that is encrypted with a temporary key.

Create date
Stores the date when the symmetric key was created.

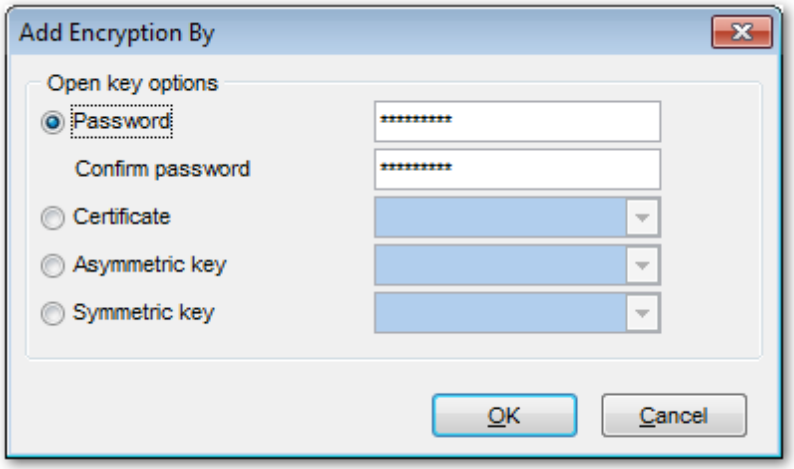
Modify date
Stores the date when the symmetric key was last modified.

Symmetric key encrypt by

This area lists the encrypting mechanisms used by the symmetric key (the *ENCRYPTION BY* clause).

To add an encrypting mechanism, right-click within the *Symmetric key encrypt by* area and select the **Add Encryption** popup menu item.

The **Add Encryption By** dialog allows you to specify a password, a certificate 334, an asymmetric key 330, or a symmetric key 327 to be used to encrypt the key that is being created.



To remove an encrypting mechanism, right-click the encrypting mechanism within the *Symmetric key encrypt by* area and select the **Drop Encryption** popup menu item.

5.3.3.9 Asymmetric Keys

In SQL Server 2005 and higher, data can be encrypted with a hierarchical encryption and key management infrastructure. Each layer encrypts the layer below it by using a combination of the following mechanisms for encryption: symmetric keys 327, **asymmetric keys**, certificates 334.

An **Asymmetric key** is composed of a private key and the corresponding public key. Each key can decrypt data encrypted by the other. Asymmetric encryption and decryption provide a higher level of security than symmetric 327 encryption. An asymmetric key can be used to encrypt a symmetric key 327 for storage in a database.

Asymmetric Key Editor allows you to define asymmetric key properties. It opens automatically when you create a new asymmetric key and is available on editing an existing one.

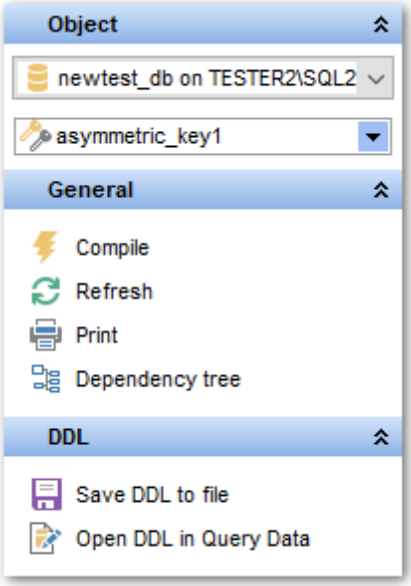
To open an asymmetric key in **Asymmetric Key Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 331
- Creating/editing asymmetric key 332
- Browsing object dependencies 957

- Viewing DDL definition 955
- Setting object permissions 958

5.3.3.9.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Asymmetric Key Editor**.



The **Navigation bar** of **Asymmetric Key Editor** allows you to:

Object
select a database
select an asymmetric key for editing

General
compile 959 the asymmetric key (if it is being created/modified)
refresh the content of the active tab
print metadata 649 of the asymmetric key
view the dependency tree 618 for the asymmetric key
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the asymmetric key:

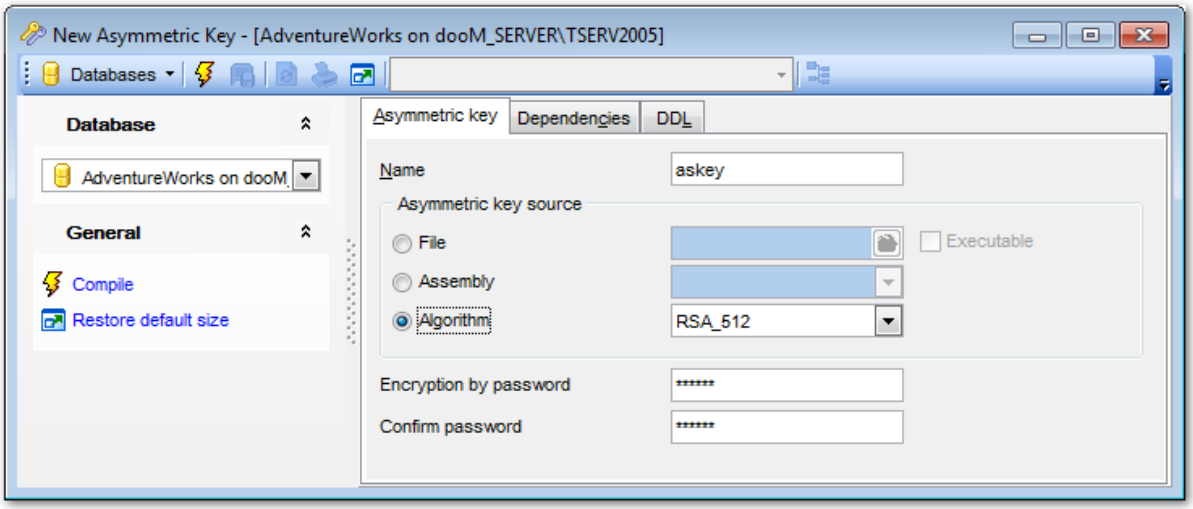
DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Asymmetric Key Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.9.2 Creating/editing asymmetric key

Use the **Asymmetric key** tab of **Asymmetric Key Editor** to create/edit an asymmetric key and specify its properties.

Name
Enter a name for the new asymmetric key, or view the name of the asymmetric key being edited.



Asymmetric key source

File
If this option is selected, you should specify the path to a strong-name file to be used to load the key pair from. Use the button to specify the complete path and the name of the strong-name file.

Executable
If this option is selected, the file is a DLL used by the asymmetric key.

Assembly
If this option is selected, use the drop-down list to specify an assembly 309 to be used to load the public key from.

Algorithm
If this option is selected, use the drop-down list to specify an algorithm to be used by the asymmetric key (the *WITH ALGORITHM* clause). Possible values are: *RSA_512*, *RSA_1024*,

RSA_2048.

Encryption by password / **Confirm password**
Specify the password that will be used to encrypt the private key, and confirm the password in the corresponding boxes.

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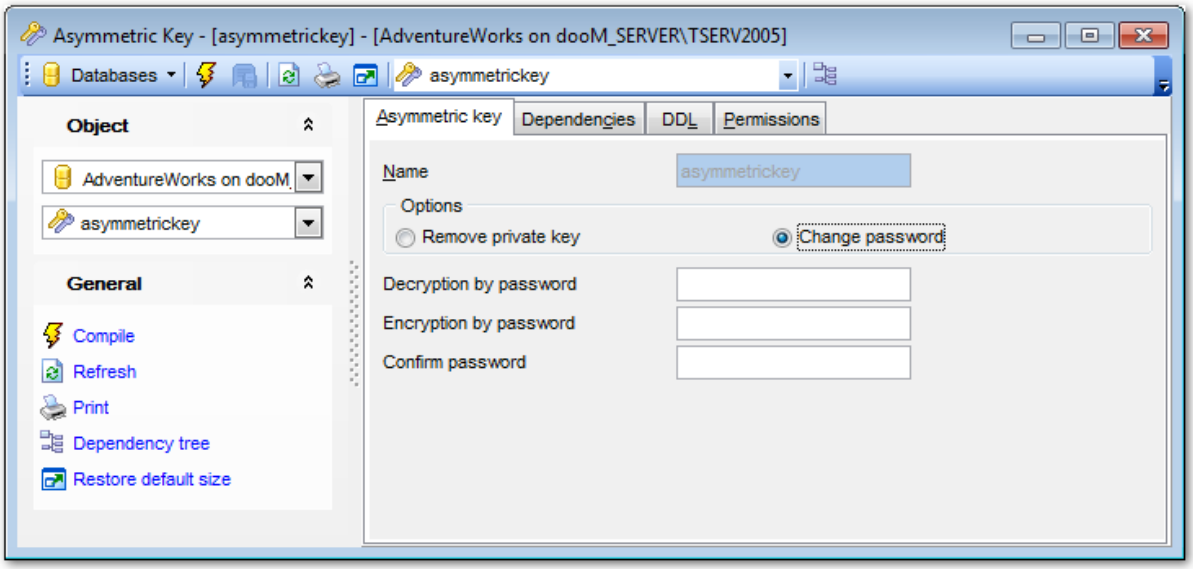
The **Asymmetric key** tab of **Asymmetric Key Editor** allows you to edit properties of an exiting asymmetric key.



Options

Remove private key
If this option is selected, the private key will be removed from the asymmetric key.

Change password
If this option is selected, you can change the password used to encrypt the private key.

Decryption by password / **Encryption by password** / **Confirm password**
Specify the current password, a new password that will be used to encrypt the private key, and confirm the password in the corresponding boxes.

5.3.3.10 Certificates

In SQL Server 2005 and higher, data can be encrypted with a hierarchical encryption and key management infrastructure. Each layer encrypts the layer below it by using a combination of the following mechanisms for encryption: symmetric keys 327, asymmetric keys 330, **certificates**.

A **Certificate** is a digitally-signed statement that binds the value of a public key to the identity of the person, device or service that holds the corresponding private key. Certificates are database-level securable objects that follow the X.509 standard and support X.509 V1 fields. A certificate can be loaded from a file or assembly 309 upon its creation.

Certificate Editor allows you to define certificate properties. It opens automatically when you create a new certificate and is available on editing an existing one.

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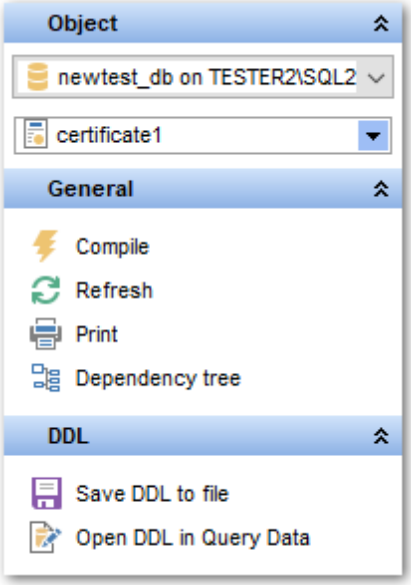
To open a certificate in **Certificate Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 335
- Creating/editing certificate 336
- Backup Certificate dialog 339
- Browsing object dependencies 957
- Viewing DDL definition 955
- Setting object permissions 958

5.3.3.10.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Certificate Editor**.



The **Navigation bar** of **Certificate Editor** allows you to:

Object

select a database
select a certificate for editing

General

compile 959 the certificate (if it is being created/modified)
refresh the content of the active tab
print metadata 649 of the certificate
view the dependency tree 618 for the certificate
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the certificate:

Actions

save the certificate using the Backup Certificate 339 dialog

DDL

save DDL 955 to file

open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Certificate Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.10.2 Creating/editing certificate

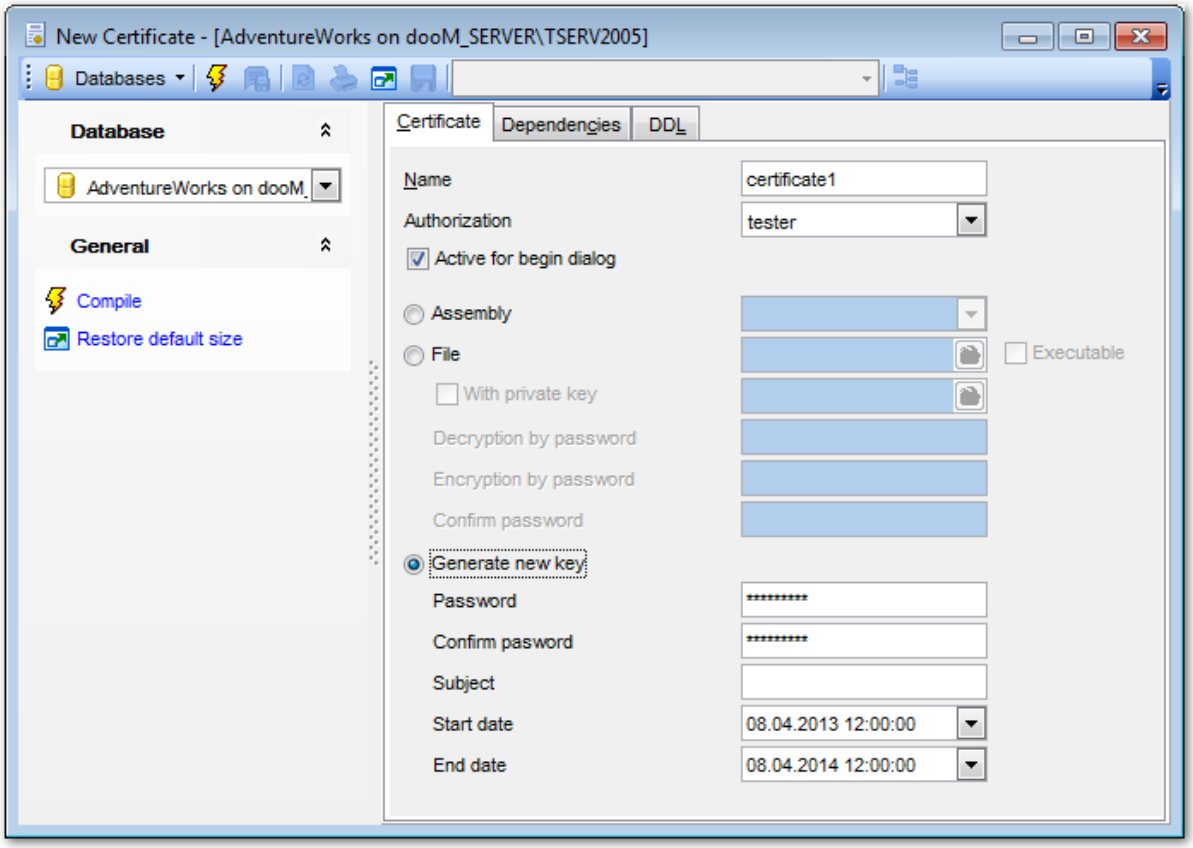
Use the **Certificate** tab of **Certificate Editor** to create/edit a certificate and specify its properties.

Name

Enter a name for the new certificate, or view the name of the certificate being edited.

Authorization

Use the drop-down list to select the name of the user that will own this certificate, or view the user selected upon the certificate creation.



Active for begin dialog
This option makes the certificate available to the initiator of a Service Broker dialog conversation.

Assembly
If this option is selected, use the drop-down list to specify a signed assembly 309 that has been already loaded into the database.

File
If this option is selected, you should specify the complete path and name of a DER-encoded file that contains the certificate.

Executable
If this option is used, the file is a DLL that has been signed by the certificate.

With private key
Check this option to specify that the private key of the certificate is loaded into SQL Server. This option is only available when the certificate is being created from a file.

Use the button to specify the complete path and name of the private key.

Decryption by password
Specify the password required to decrypt a private key that is retrieved from a file.

Encryption by password / **Confirm password**
Specify the password that will be used to encrypt the private key, and confirm the password in the corresponding box.

Generate new key
If this option is selected, a new key will be generated for the certificate. In this case you should specify the **password** for the new key, and the **subject** (a field in the metadata of the certificate as defined in the X.509 standard).

Start date
Set the date when the certificate becomes valid.

Expire date
Set the date when the certificate expires.

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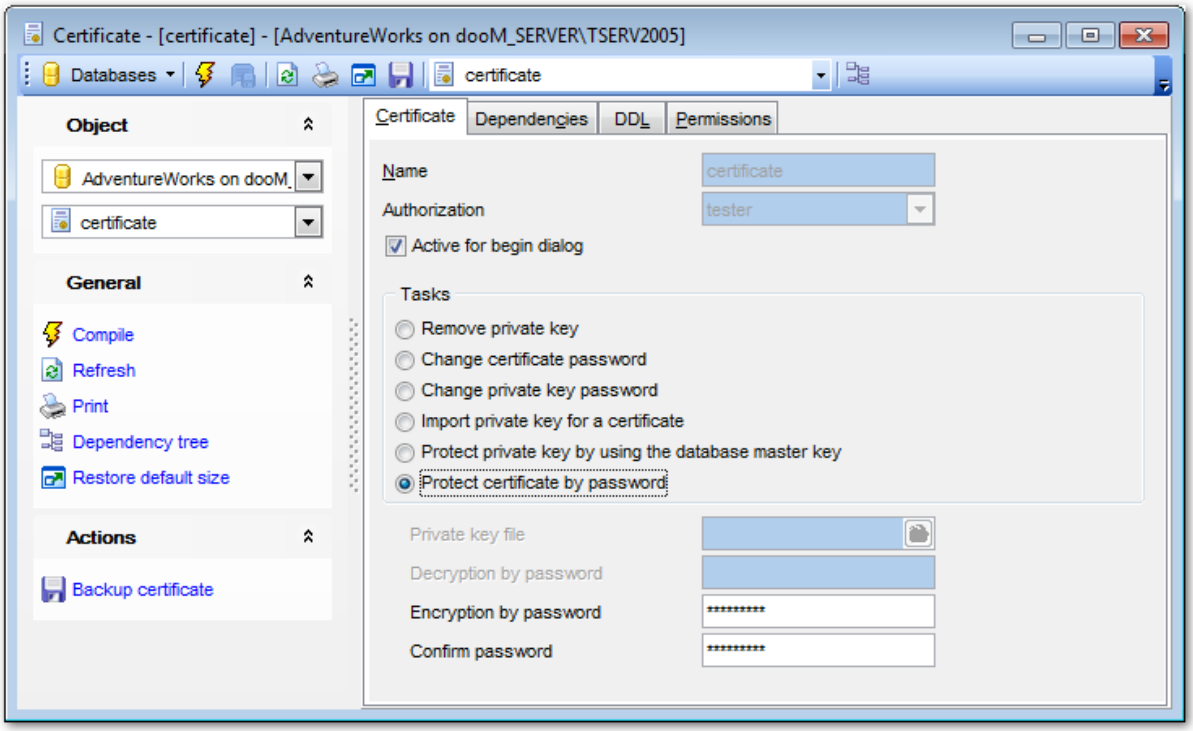
The **Certificate** tab of **Certificate Editor** allows you to edit properties of an exiting certificate.



Tasks

Remove private key
If this option is selected, the private key will be removed from the certificate.

Change certificate password
If this option is selected, you can change the password used to protect the certificate.

Change private key password
If this option is selected, you can change the password used to encrypt the private key.

Import private key for a certificate
If this option is selected, you can import a private key to the certificate.

Protect private key using the database master key
If this option is selected, the private key used for the certificate will be protected with the database master key.

Protect certificate by password
If this option is selected, you can set a password to protect the certificate.

Private key file

Use the button to specify the complete path and name of the private key.

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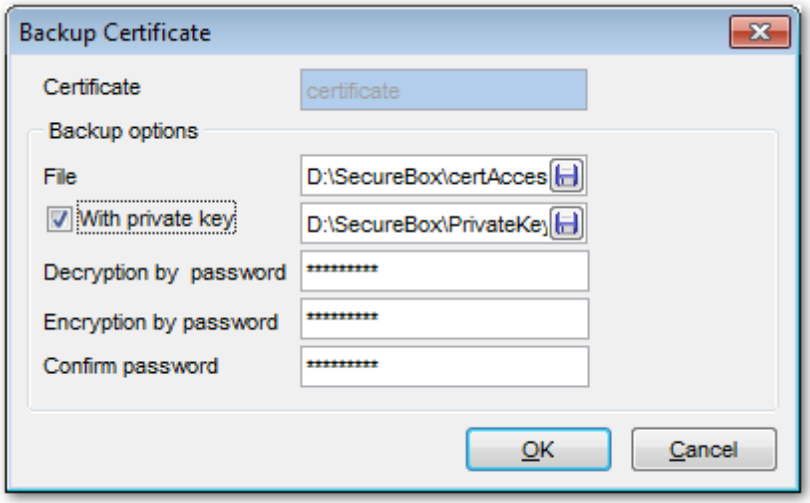
Decryption by password / **Encryption by password** / **Confirm password**
Specify the current password, a new password that will be used to encrypt the certificate / private key, and confirm the password in the corresponding boxes.

5.3.3.10.3 Backup Certificate dialog

The **Backup Certificate** dialog allows you to set saving certificate options.

To call this dialog, use the **Backup Certificate** item of the Navigation bar 335 or toolbar 336 .



File
Type in or use the button to specify the path and name of the file that will contain the certificate.

With private key
Check this option to specify that the certificate has a private key. Type in or use the button to specify the path and name of the private key file.

Decryption by password
Specify the password required to decrypt the private key.

Encryption by password / **Confirm password**
Specify the password that will be used to encrypt the private key, and confirm the password in the corresponding box.

5.3.3.11 Message Types

A **Message type** object defines a name for a message type and defines the type of data that the message contains. Message types persist in the database where the message type is created. You create an identical message type in each database that participates in a conversation.

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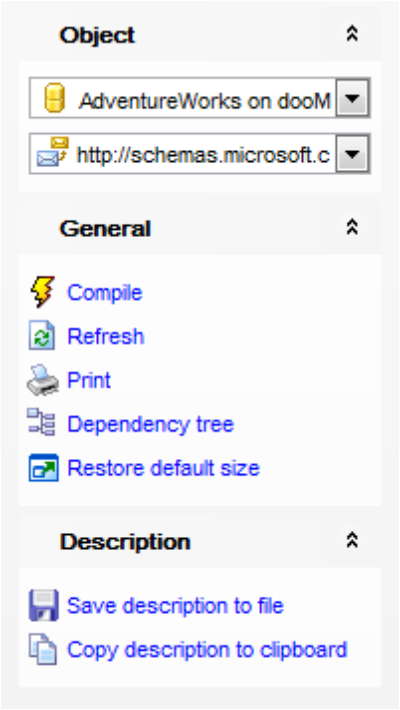
Message Type Editor allows you to define message type properties. It opens automatically when you create a new message type and is available on editing an existing one.

To open a message type in **Message Type Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 340
- Creating/editing message type 341
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.11.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Message Type Editor**.



The **Navigation bar** of **Message Type Editor** allows you to:

Object

select a database

select a message type for editing

General

compile 959 the message type (if it is being created/modified)

save the message type description 956 (if it has been modified)

refresh the content of the active tab

print metadata 649 of the message type
view the dependency tree 618 for the message type
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the message type:

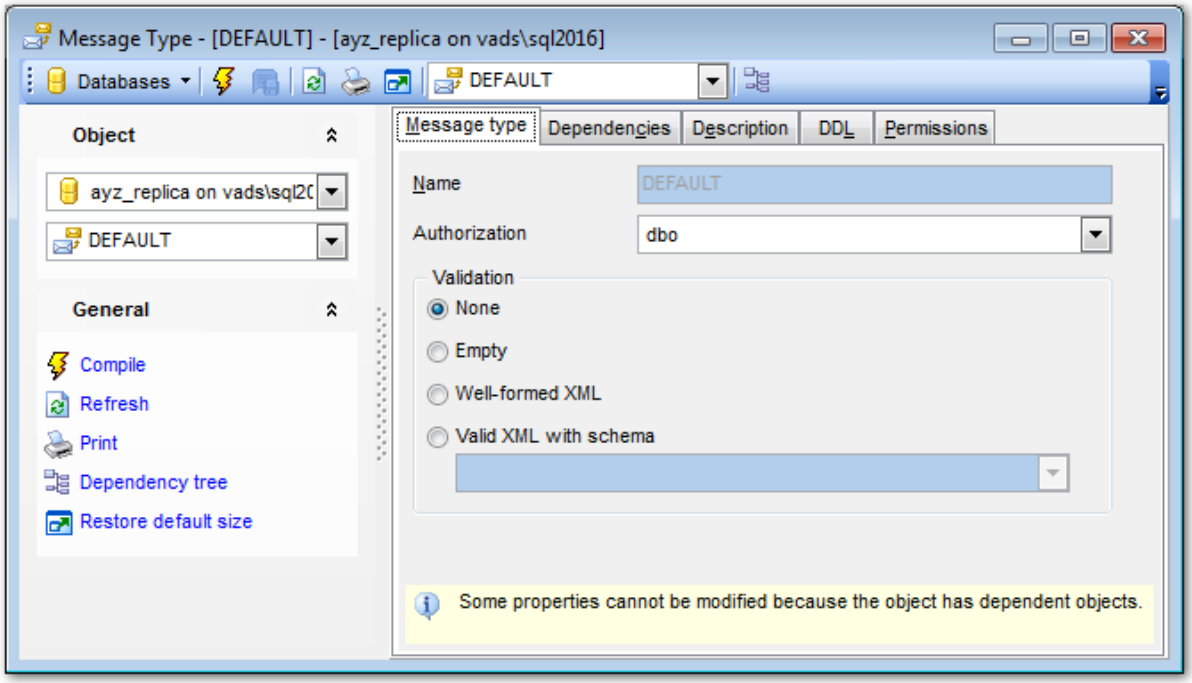
Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Message Type Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.11.2 Creating/editing message type

Use the **Message Type** tab of **Message Type Editor** to create/edit a message type and specify its properties.



Name
Enter a name for the new message type, or view the name of the message type being edited.

Authorization
Use the drop-down list to set the owner of the message type to the specified database user 300 or role 306.

Validation
Specifies how Service Broker validates the message body for messages of this type.

None
Specifies that no validation is performed. The message body can contain data, or it can be NULL.

Empty
Specifies that the message body must be NULL.

Well-formed XML
Specifies that the message body must contain well-formed XML.

Valid XML with schema
Specifies that the message body must contain XML that complies with a schema in the specified schema collection. Use the drop-down list below to select an existing XML schema collection 286.

Note: Some properties cannot be modified because of dependent objects. Open the Dependencies 957 tab to browse the list of dependent objects, or view the dependency tree 618 for the message type.

5.3.3.12 Contracts

Contracts define the name of a specific business task and list the message types used in that task. Service Broker contracts define two different service roles: the initiator and the target. The initiator of a conversation begins the conversation by sending a message to the target. The contract that the conversation uses defines which service role can send messages of a given message type 339.

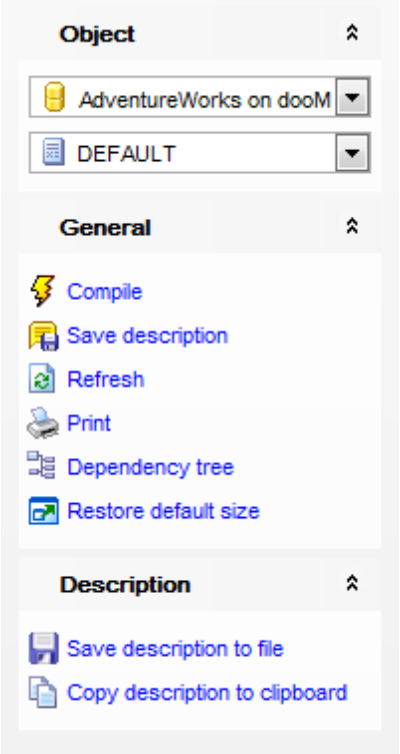
Contract Editor allows you to define contract properties. It opens automatically when you create a new contract and is available on editing an existing one.

To open a contract in **Contract Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 343
- Creating/editing contract 344
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.12.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Contract Editor**.



The **Navigation bar** of **Contract Editor** allows you to:

Object
select a database
select a contract for editing

General
compile 959 the contract (if it is being created/modified)
save the contract description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the contract
view the dependency tree 618 for the contract
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the contract:

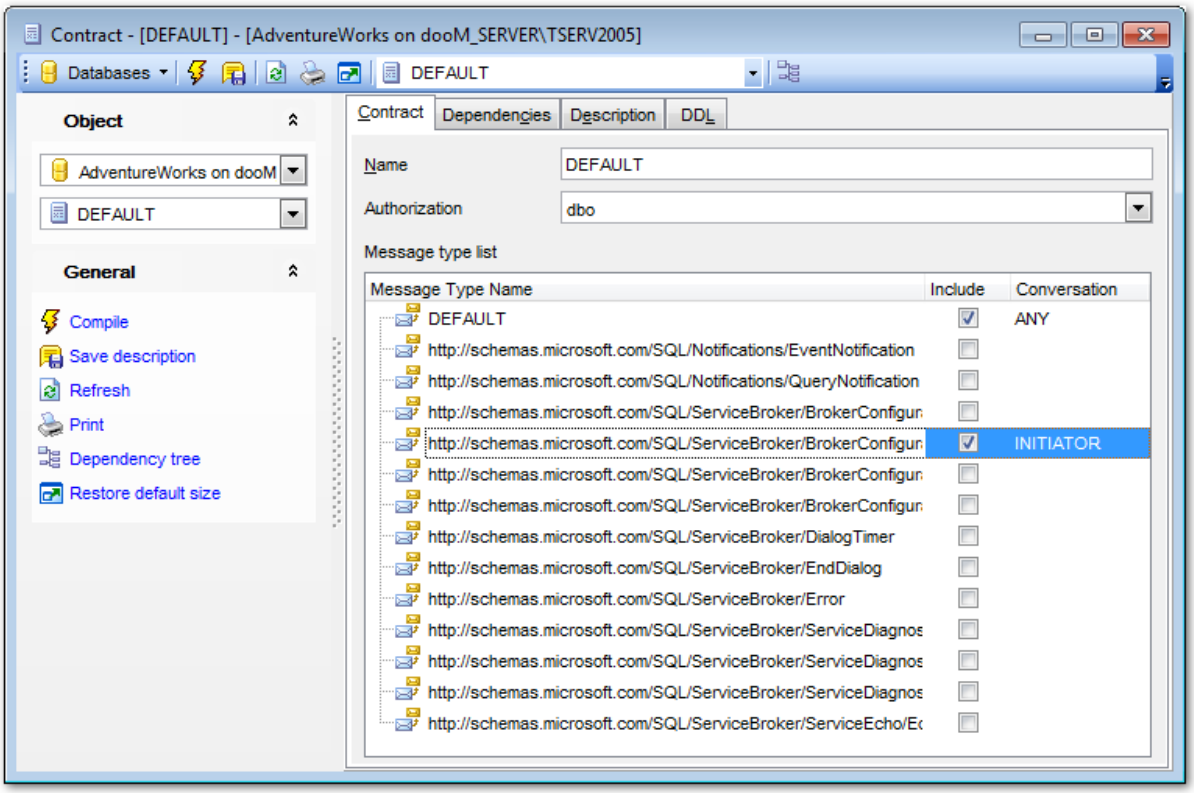
Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Contract Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.12.2 Creating/editing contract

Use the **Contract** tab of **Contract Editor** to create/edit a contract and specify its properties.



Name
Enter a name for the new contract, or modify the name of the contract being edited.

Authorization
Use the drop-down list to set the owner of the contract to the specified database user 300 or role 306.

Message type list
This area contains the list of message types 339 to be included as part of the contract.

Conversation field
Specifies which endpoint can send a message of the indicated message type. Contracts document the messages that services can use to have specific conversations. Each conversation has two endpoints: the initiator endpoint, the service that started the conversation, and the target endpoint, the service that the initiator is contacting.

INITIATOR
Indicates that only the initiator of the conversation can send messages of the specified message type. A service that starts a conversation is referred to as the initiator of the conversation.

TARGET
Indicates that only the target of the conversation can send messages of the specified message type. A service that accepts a conversation that was started by another service is referred to as the target of the conversation.

ANY
Indicates that messages of this type can be sent by both the initiator and the target.

Note: Some properties cannot be modified because of dependent objects. Open the Dependencies 957 tab to browse the list of dependent objects, or view the dependency tree 618 for the contract.

5.3.3.13 Services

A Service Broker **Service** is a name for a specific task or set of tasks. Service Broker uses the name of the service to route messages, deliver messages to the correct queue 294 within a database, and enforce the contract 342 for a conversation.

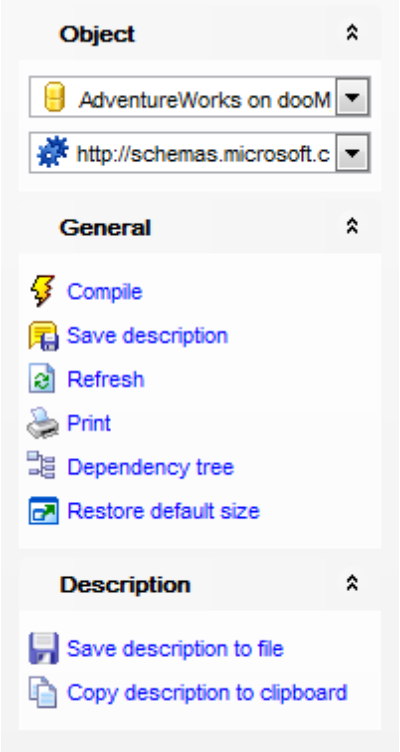
Service Editor allows you to define service properties. It opens automatically when you create a new service and is available on editing an existing one.

To open a service in **Service Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 345
- Creating/editing service 347
- Viewing service dialogs 348
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.13.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Service Editor**.



The **Navigation bar** of **Service Editor** allows you to:

Object

select a database
select a service for editing

General

compile 959 the service (if it is being created/modified)
save the service description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the service
view the dependency tree 618 for the service
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the service:

Description

save object description 956 to file
copy description 956 to clipboard

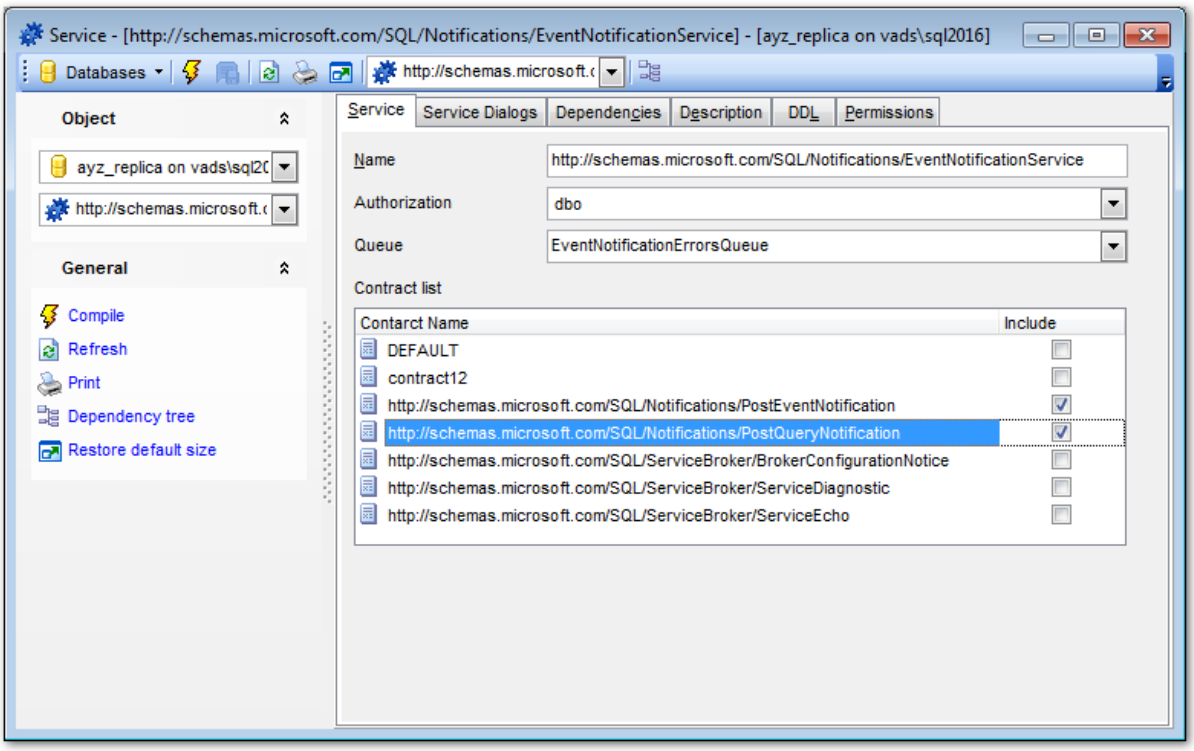
DDL

save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Service Editor**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

5.3.3.13.2 Creating/editing service

Use the **Service** tab of **Service Editor** to create/edit a service and specify its properties.



Name
Enter a name for the new service, or modify the name of the service being edited.

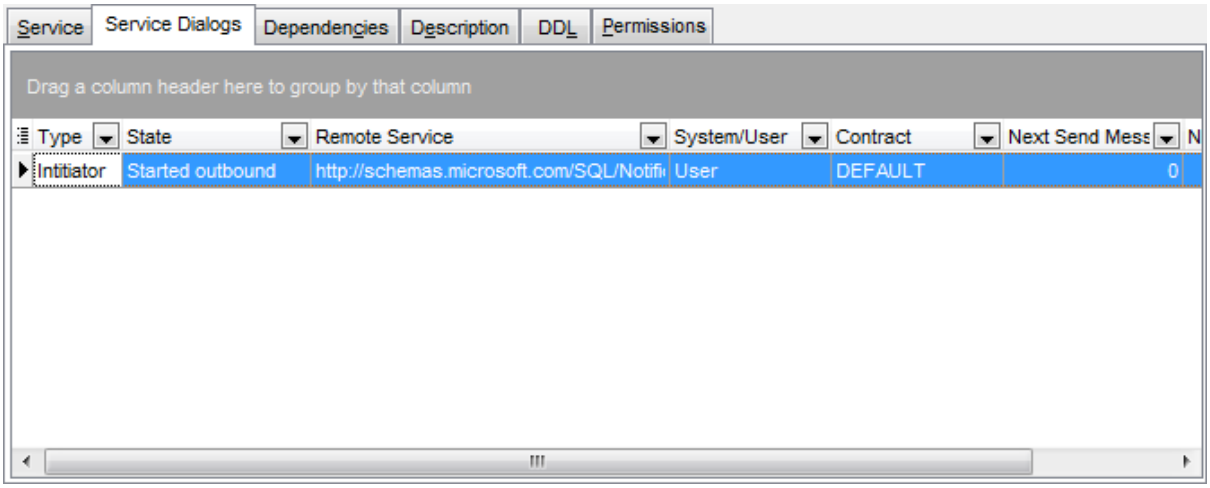
Authorization
Use the drop-down list to set the owner of the service to the specified database user300 or role306.

Queue
Use the drop-down list to specify the queue294 that will receive messages for the service.

Contract list
This area contains the list of contracts342 for which this service may be a target. Service programs initiate conversations to this service using the contracts specified. If no contracts are included, the service may only initiate conversations.

5.3.3.13.3 Viewing service dialogs

Use the **Service Dialogs** tab of **Service Editor** to view service dialogs within a request-reply message cycle.



The **Service Dialogs List** displays the messages as a grid with the following columns: *State*, *Remote Service*, *System/User*, *Contract*, *Next Send Message*, *Next Receive Message*. If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

5.3.3.14 Routes

A **Route** is a non-schema object which can be added to the routing table for the current database. For outgoing messages, Service Broker determines routing by checking the routing table in the local database. For messages on conversations that originate in another instance, including messages to be forwarded, Service Broker checks the routes in msdb.

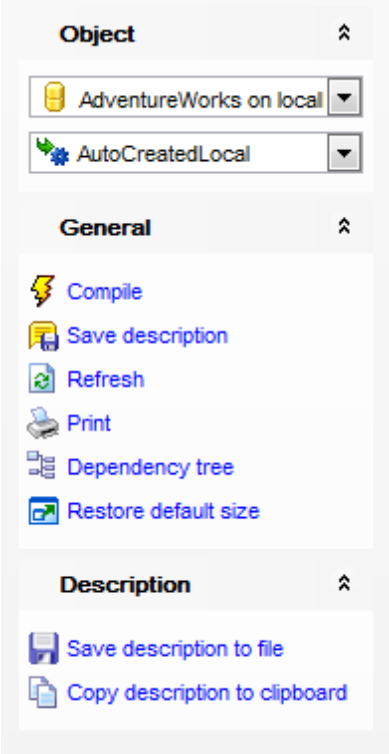
Route Editor allows you to define route properties. It opens automatically when you create a new route and is available on editing an existing one.

To open a route in **Route Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 349
- Creating/editing route 350
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.14.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Route Editor**.



The **Navigation bar** of **Route Editor** allows you to:

Object
select a database
select a route for editing

General
compile 959 the route (if it is being created/modified)
save the route description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the route
view the dependency tree 618 for the route
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the route:

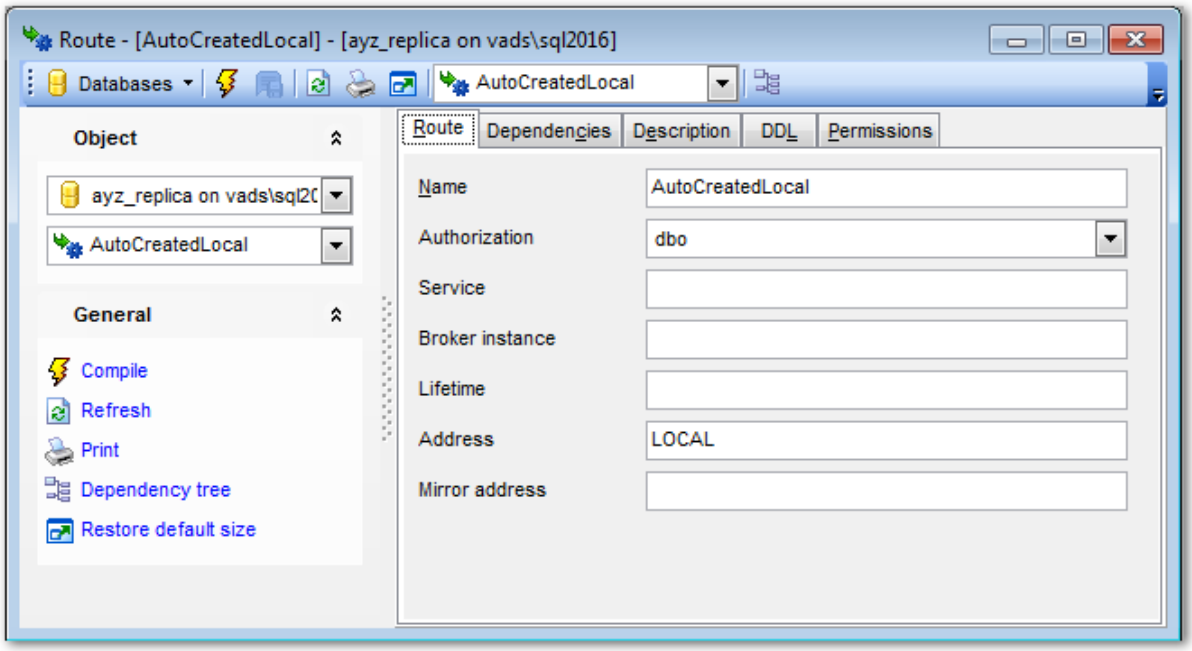
Description
save object description 956 to file
copy description 956 to clipboard

DDL
save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Route Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.3.3.14.2 Creating/editing route

Use the **Route** tab of **Route Editor** to create/edit a route and specify its properties.



Name
Enter a name for the new route, or modify the name of the route being edited.

Authorization
Use the drop-down list to set the owner of the route to the specified database user 300 or role 306.

Service
Specifies the name of the remote service 345 that this route points to. It must exactly match the name the remote service uses.

Broker instance
Specifies the database that hosts the target service.

Lifetime

Specifies the time, in seconds, that SQL Server retains the route in the routing table. At the end of the lifetime, the route expires, and SQL Server no longer considers the route when choosing a route for a new conversation.

Address
Specifies the network address for this route.

Mirror address
Specifies the network address for a mirrored database.

5.3.3.15 Remote Service Bindings

A **Remote service binding** establishes a relationship between a local database user 300, the certificate 334 for the user, and the name of a remote service 345. Service Broker uses the remote service binding to provide dialog security for conversations that target the remote service.

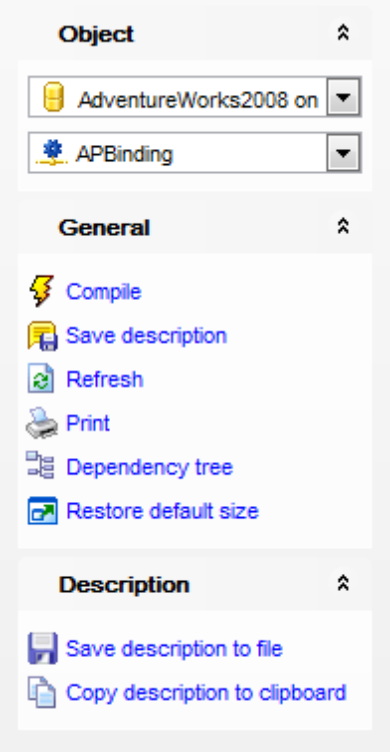
Remote Service Binding Editor allows you to define remote service binding properties. It opens automatically when you create a new remote service binding and is available on editing an existing one.

To open a remote service binding in **Remote Service Binding Editor**, double-click it in the DB Explorer 65 tree.

- Using Navigation bar and Toolbar 351
- Creating/editing remote service binding 353
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.15.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Remote Service Binding Editor**.



The **Navigation bar** of **Remote Service Binding Editor** allows you to:

Object

select a database
select a remote service binding for editing

General

compile 959 the remote service binding (if it is being created/modified)
save the remote service binding description 956 (if it has been modified)
refresh the content of the active tab
print metadata 649 of the remote service binding
view the dependency tree 618 for the remote service binding
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the remote service binding:

Description

save object description 956 to file
copy description 956 to clipboard

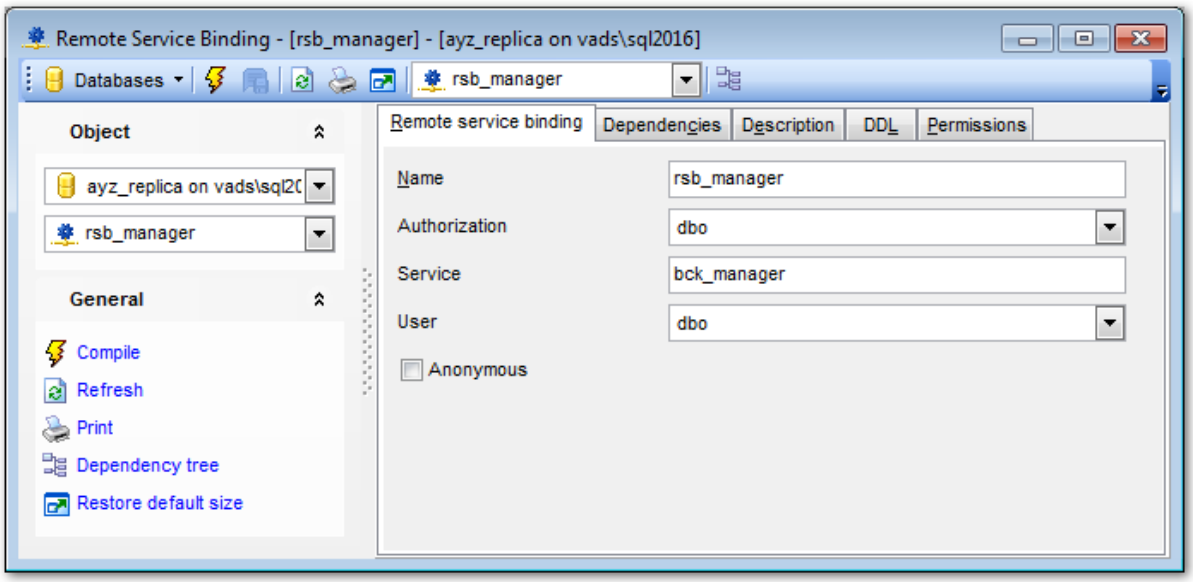
DDL

save DDL 955 to file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Remote Service Binding Editor**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

5.3.3.15.2 Creating/editing remote service binding

Use the **Remote Service Binding** tab of **Remote Service Binding Editor** to create/edit a remote service binding and specify its properties.



Name
Enter a name for the new remote service binding, or modify the name of the remote service binding being edited.

Authorization
Use the drop-down list to set the owner of the remote service binding to the specified database user300 or role306.

Service
Enter the name of the remote service345 to bind to the user identified in the **User** field.

User
Use the drop-down list to specify the database principal that owns the certificate334 associated with the remote service set within the **Service** field. This certificate is used for encryption and authentication of messages exchanged with the remote service.

☑ **Anonymous**
Specifies whether anonymous authentication is used when communicating with the remote service.

5.3.3.16 DB Scoped Credentials

A DB scoped credential is used by the database to access to the external location anytime the database is performing an operation that requires access. It is not connected with any server login or database user.

To open a DB scoped credential in the editor, double-click it in the DB Explorer 65 tree.

- Creating/editing db scoped credential 354
- Browsing object dependencies 957
- Viewing DDL definition 955

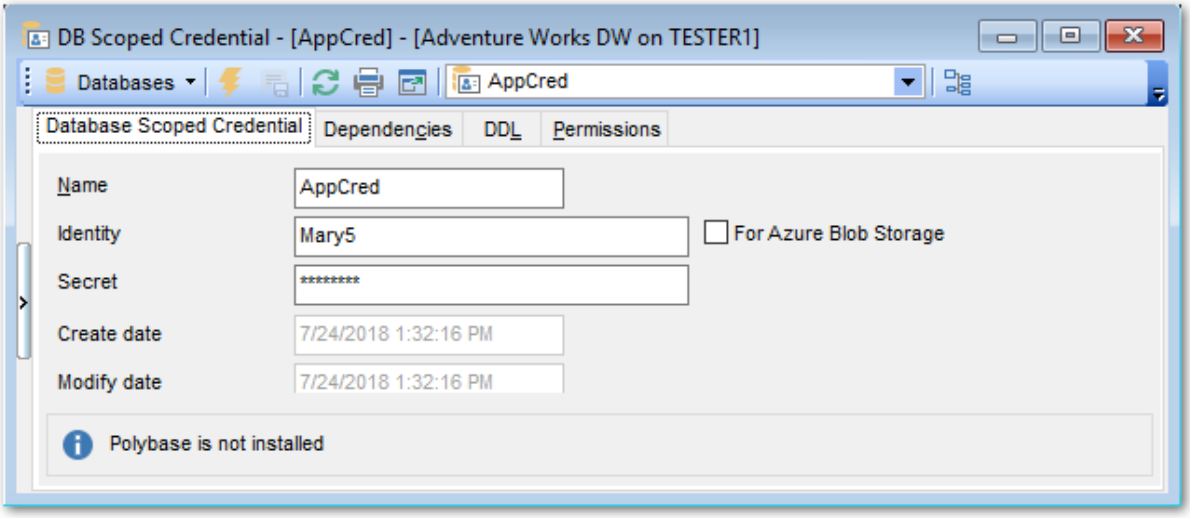
5.3.3.16.1 Creating/editing db scoped credential

Name
Specify the name of the database scoped credential.

Identity
Specify the name of the account to be used when connecting outside the server.

☑ **For Azure Blob Storage**
Select this option to create SHARED ACCESS SIGNATURE identity for Azure Blob storages.

Secret
Specify the secret for outgoing authentication.



Create date
Displays date and time when the credential was created.

Modify date
Displays date and time when the credential was last modified.

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5.3.3.17 External Data Sources

An **external data source** is used for PolyBase or Elastic Database queries.

To open an external data source in the editor, double-click it in the DB Explorer 65 tree.

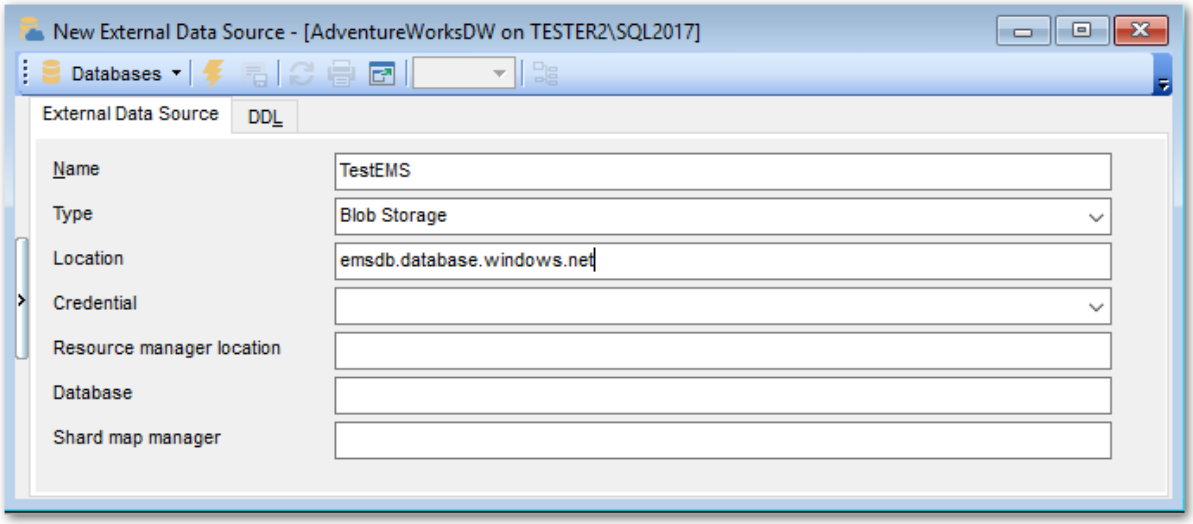
- Creating/editing external data source 355
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.17.1 Creating/editing external data source

Name
Specify the unique name for the data source being created.

Type
Select the type of the data source: HADOOP or BLOB_STORAGE.

Location
Specify connection string for HADOOP or Azure blob storage in the special format.



Credential
Specify the database-scoped credential 354 for authenticating to the external data source.

Resource manager location
Specify the Hadoop resource manager location to improve query performance.

Database
Specify the name of the database that functions as the shard map manager or the remote database.

Shard map manager
Set the name of the shard map.

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5.3.3.18 External File Formats

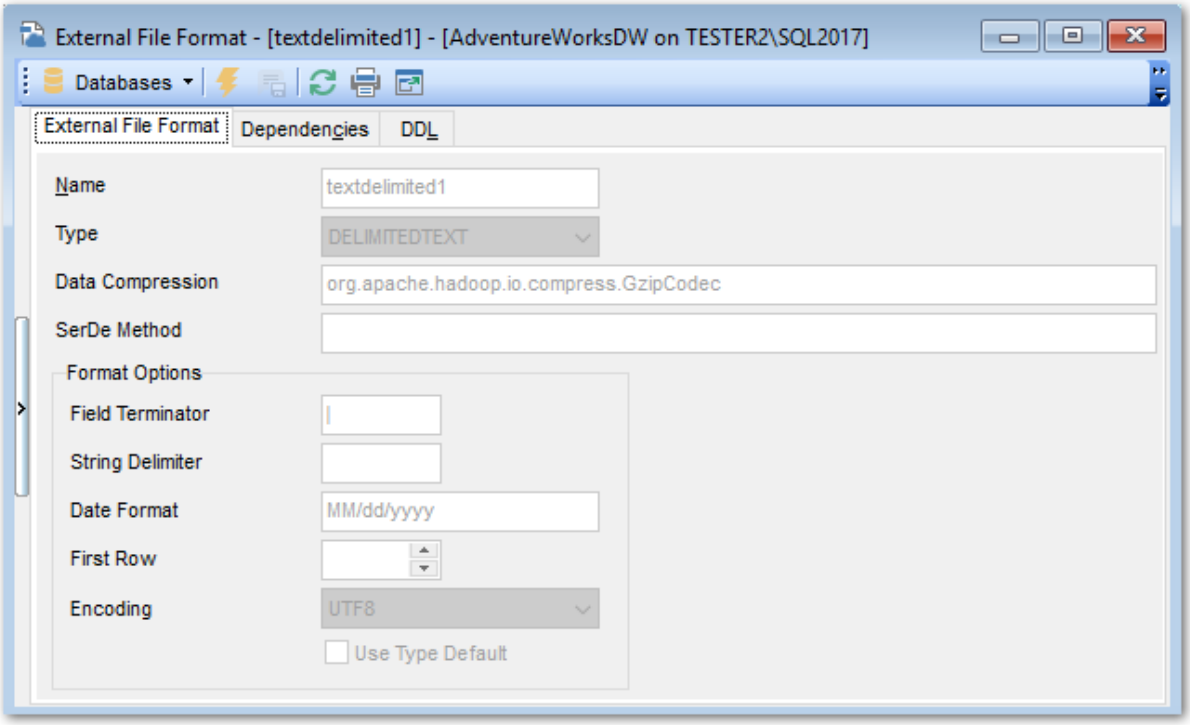
An external file format is the object defining external data stored in Hadoop, Azure Blob Storage, or Azure Data Lake Store. Creating an external file format is a prerequisite for creating an External Table 298. It stores the actual layout of the data referenced by an external table.

To open an external file format double-click it in the DB Explorer 65 tree.

- Creating/editing external file format 356
- Browsing object dependencies 957
- Viewing DDL definition 955

5.3.3.18.1 Creating/editing external file format

Name
Specify the name for the new external file format being created.



Type
Select the type for the external file format from the list: *PARQUET*, *ORC*, *RCFILE* or *DELIMITEDTEXT*.

Data compression
Set the data compression method for external data. If not specified, data will not be compressed.

SerDe method
Specify the SerDe method to be used for RCFiles.

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Format options

Set the options for the text format with column delimiters (*DELIMITEDTEXT*).

Field terminator

Set one or more characters that mark the end of each field in the text-delimited file. The default terminator is the ?|?character.

String delimiter

Specify the field terminator for string type in the text-delimited file. The default is the empty string "".

Date format

Set custom date and time format for the file.

First row

Specify the row number that is read first in all files during a PolyBase load (1-15).

Encoding

Set the UTF8 or UTF16 encoding.

☑ **Use type default**

Check this option to use default values in delimited text files if the value is missing.

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5.4 Server Objects

SQL Manager for SQL Server provides all necessary facilities for working with server objects.

Note: To start working with server objects you need to connect to server 70.

Server Objects:
Logins 359
Backup Devices 371
Jobs 373
Schedules 382
Alerts 386
Operators 392
Proxies 397
Credentials 401
Linked Servers 404
Endpoints 408
DDL Triggers 418
DTS Packages 427

Creating Server Objects

To create a server object:
- select the **Database | New Object...** main menu 951 item;
- select the type of object within the New Object 184 dialog;
- follow the steps of the wizard which guides you through the entire process of creating the object, or set the object properties using its editor - depending on the selected object type.

Note that you can also create a server object by selecting the appropriate context menu 54 item of the DB Explorer 73 tree or using the *Ctrl+N* shortcut 986.

To create a new object with the same properties as one of existing objects has:
- select the **Database | Duplicate Object...** main menu 951 item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click an object in the DB Explorer 65 tree and select the **Duplicate Object <object_name>...** context menu item.

Editing Server Objects

To edit a server object:
- select the server object in the DB Explorer 65 tree;
- right-click the object to call its context menu 57 and select the **Edit <object type> <object name>** context menu item, or double-click the object to open it in its editor;

Renaming Server Objects

To rename a server object:
- select the object to rename in the DB Explorer 65 tree;

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- right-click the object and select the **Rename <object type> <object name>...** item from the context menu 57;
- edit the object name using the **Rename Object...** dialog.

Note: This operation is possible for all objects except for Logins 359, Credentials 401, Linked Servers 404, Endpoints 408, DTS Packages 427.

Dropping Server Objects

To drop a server object:
- select the server object in the DB Explorer 73 tree;
- right-click the object to call its context menu 57 and select the **Drop <object type> <object name>** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new object;
Ctrl+O to edit the selected object;
Ctrl+R to rename the object;
Shift+Del to drop the object from the server.

When using an object editor, you can benefit from **tabs**. To switch between tab views, click on their respective tabs at the top of the main editor window. You can do it at any time, since the tab views are absolutely independent.

To compile a newly created or edited object, you can use the **Compile** item available within the Navigation bar 951 or Toolbar 953 of the object editor.

See also:
Database objects 191

5.4.1 Logins

Microsoft® SQL Server™ uses two ways to validate connections to SQL Server databases:
Windows Authentication which uses Windows-level principals
and
SQL Server Authentication which uses logins to validate the connection.
A **login** is an indivisible principal which is used to connect to the server and use its resources.

Login Editor allows you to define login properties. It opens automatically when you create a new server login and is available on editing an existing one.

To open a login in **Login Editor**, double-click it in the DB Explorer 65 tree or in the Login Manager 687. Alternatively, you can right-click the login alias and select the **Edit Login** context menu item.
- Setting login parameters 360
- Allocating members 364
- Defining server permissions 365

- Defining server role permissions 366
- Defining endpoint permissions 368
- Defining database permissions 369
- User mapping 371
- Viewing DDL definition 955

See also:

Users 300

Server roles 421

Grant Manager 688

Login Manager 687

5.4.1.1 Setting login parameters

Use the **Login** tab of **Login Editor** to configure login authentication and default parameters.

Specify the way used by the login to connect to the instance of SQL Server:

- *Windows authentication*
- *SQL Server authentication*
- *Mapped to certificate*
- *Mapped to asymmetric key*

Enabled

Enables/disables the login immediately after it is created. A disabled login still exists in the server, but it cannot be used to connect to the instance of SQL Server.

Login is locked out

This option is used to indicate whether the login is locked out.

Windows authentication

When Windows Authentication is used to connect to SQL Server, Microsoft Windows is completely responsible for authenticating the client. In this case, the client is identified by its Windows account (Windows-level login).

Built-in account on server

Select this option to specify a built-in server account for the login (*User* or *Group*), or specify the Windows **Domain** and **User or group name**.

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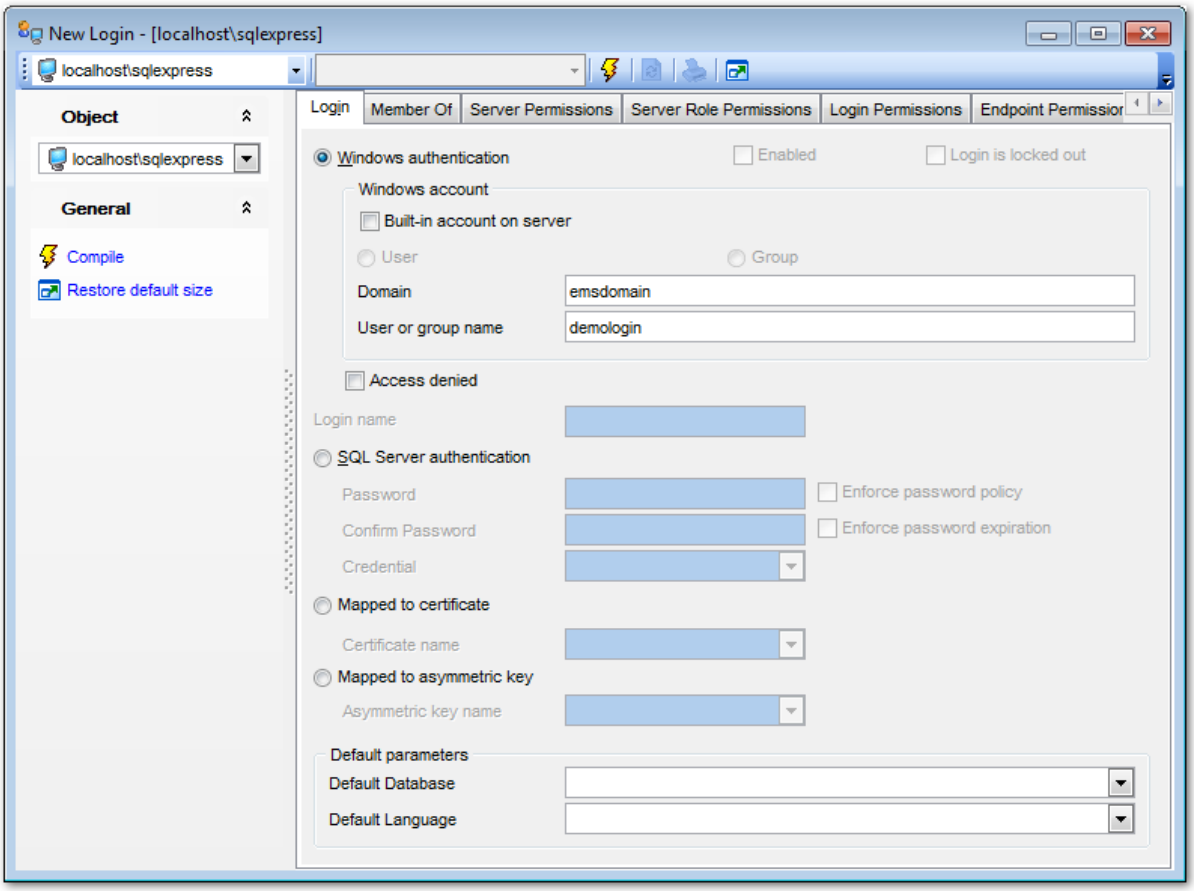


Access denied
Select this option to forbid any connections to the server for the login.

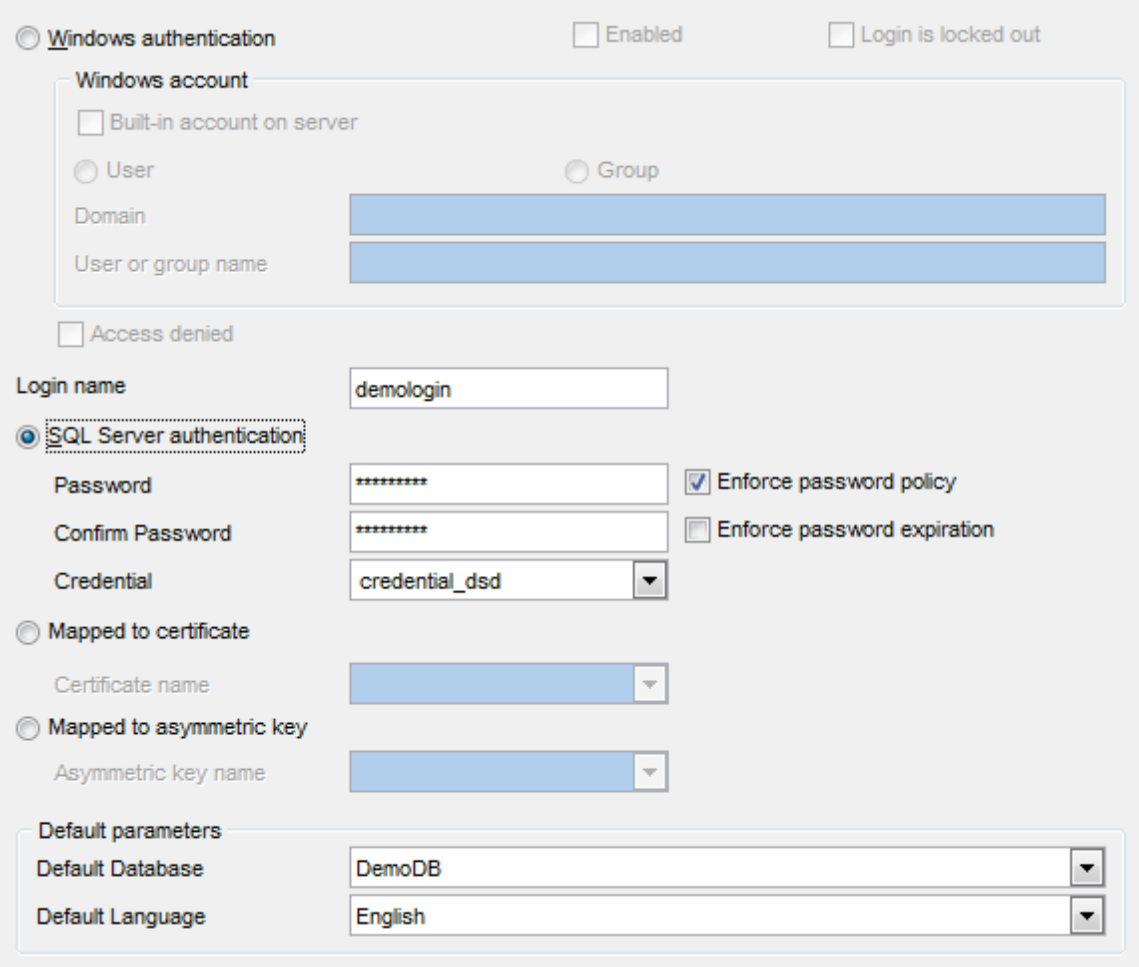
Login name
Enter a name for the new login, or modify the name of the login being edited.

SQL Server authentication
When SQL Server Authentication is used, SQL Server authenticates the client by comparing the client-supplied user name and password to the list of valid user names and passwords maintained within SQL Server.

Enforce password policy
This option specifies that the Windows password policies of the computer where SQL Server is running should be enforced on this login.

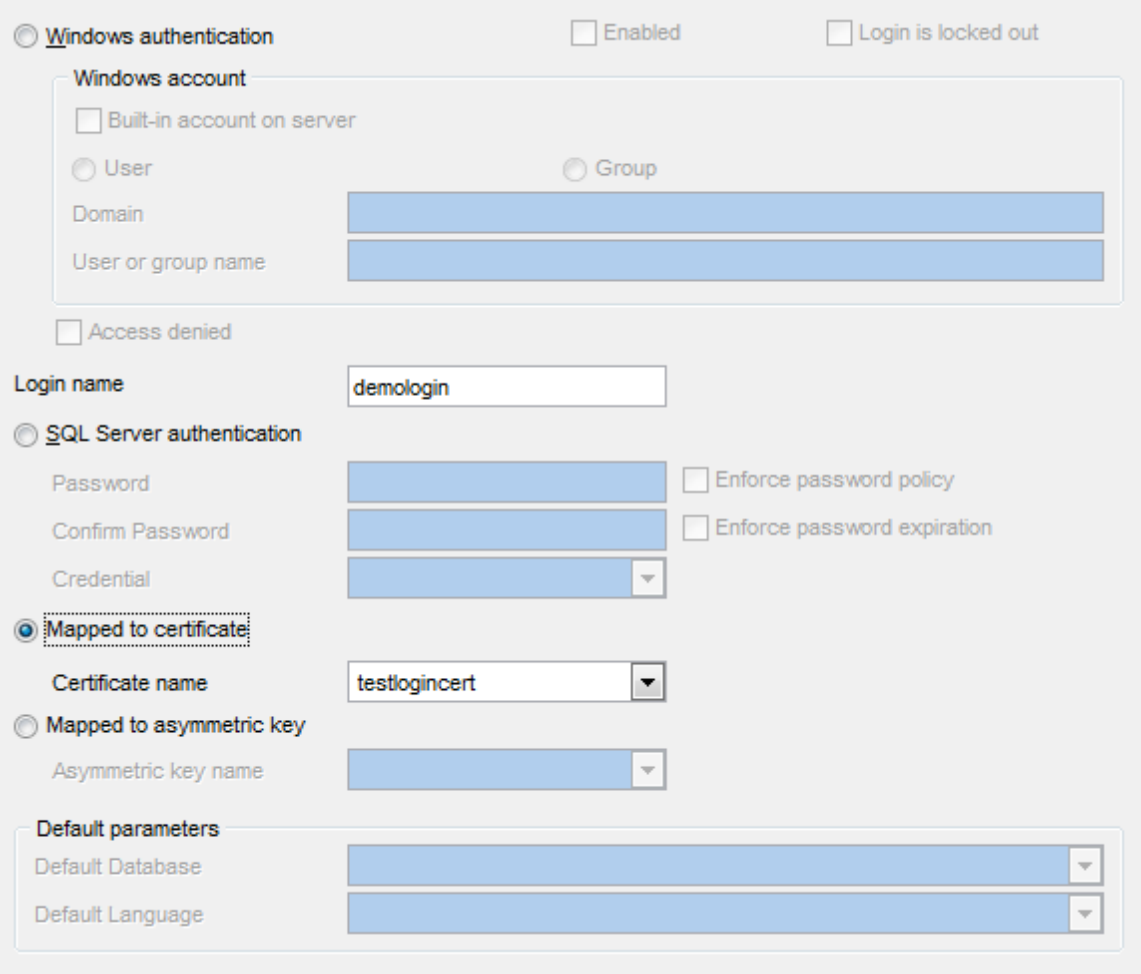
Enforce password expiration
This option specifies whether password expiration policy should be enforced on this login.

Credential
Use the drop-down list to select the credential 401 that will be mapped to the new SQL Server login.



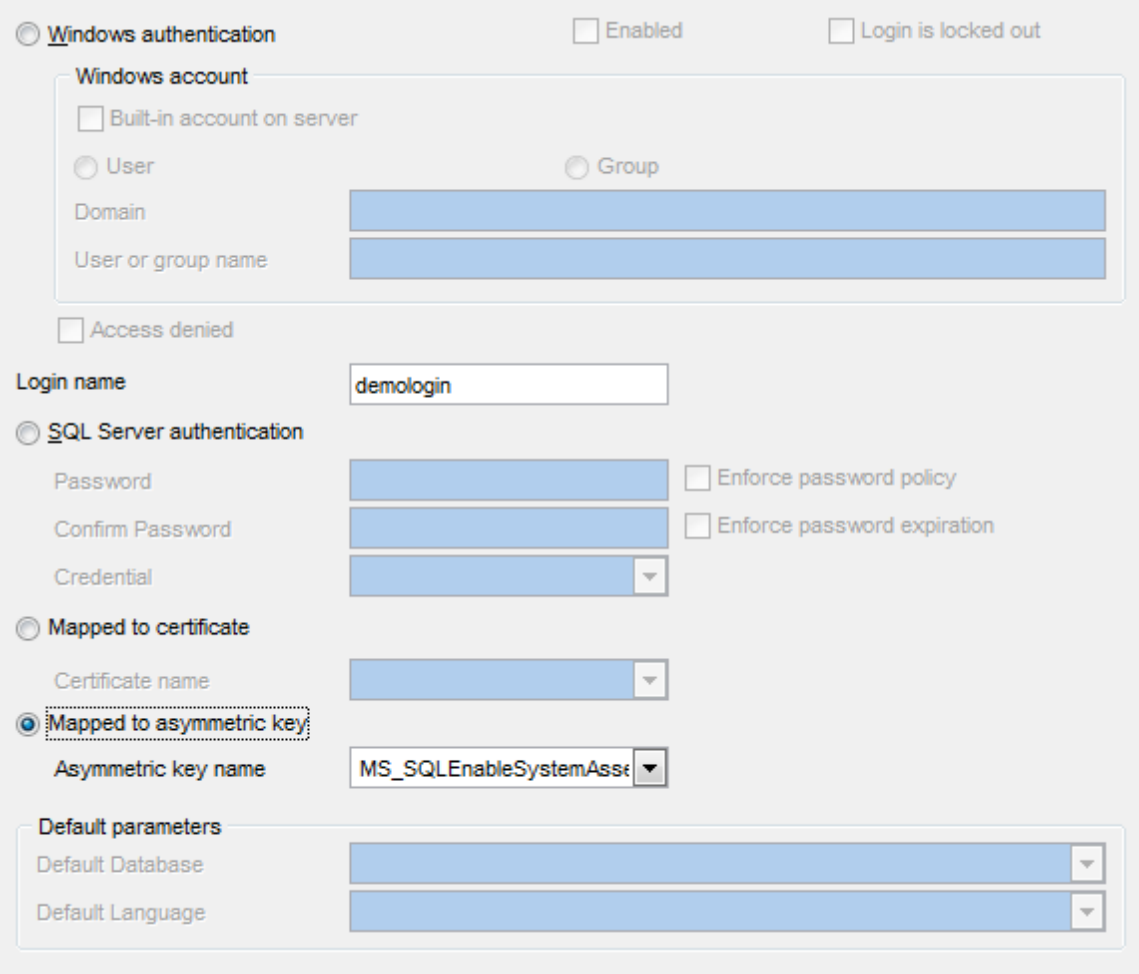
Mapped to certificate
Select this option to specify a certificate-mapped login.

Certificate name
Use the drop-down list to select the certificate 334 that will be associated with this login.



Mapped to asymmetric key
Select this option to specify an asymmetric key-mapped login.

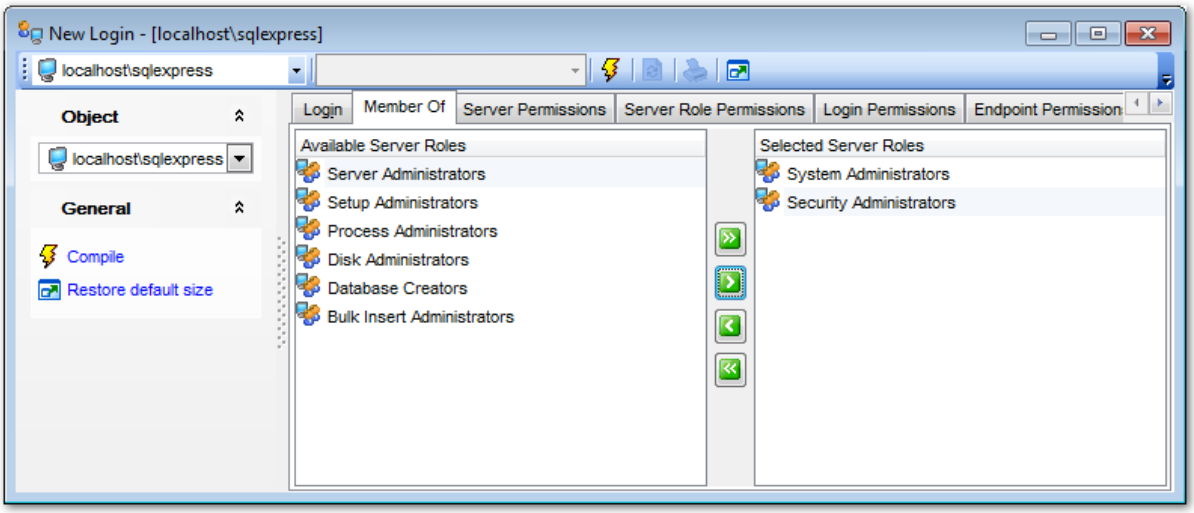
Asymmetric key name
Use the drop-down list to select the asymmetric key 330 that will be associated with this login.



The lower group allows you to set the **Default parameters** pertaining to the login: **Default Database** and **Default Language**. Use the corresponding drop-down lists to select the required values that will be assigned to the login.

5.4.1.2 Allocating members

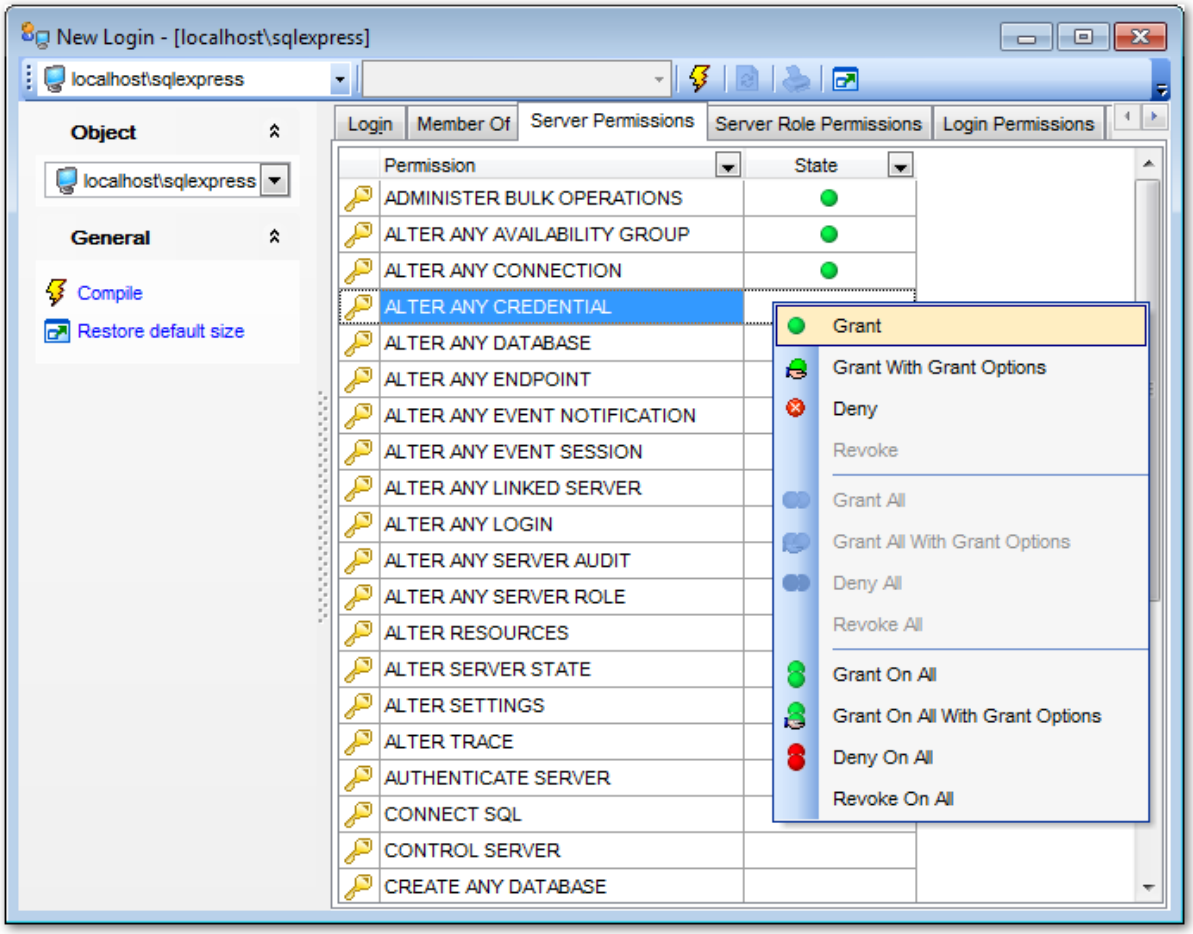
The **Member Of** tab of **Login Editor** allows you to define the login membership, i.e. to select the built-in server role(s) 699 the login will belong to. The selected server roles determine the tasks that can be performed through the login.



To select a server role, you need to move it from the **Available Server Roles** list to the **Selected Server Roles** list. Use the buttons or drag-and-drop operations to move the server roles from one list to another.

5.4.1.3 Defining server permissions

This tab allows you to grant **Server permissions** to the login.



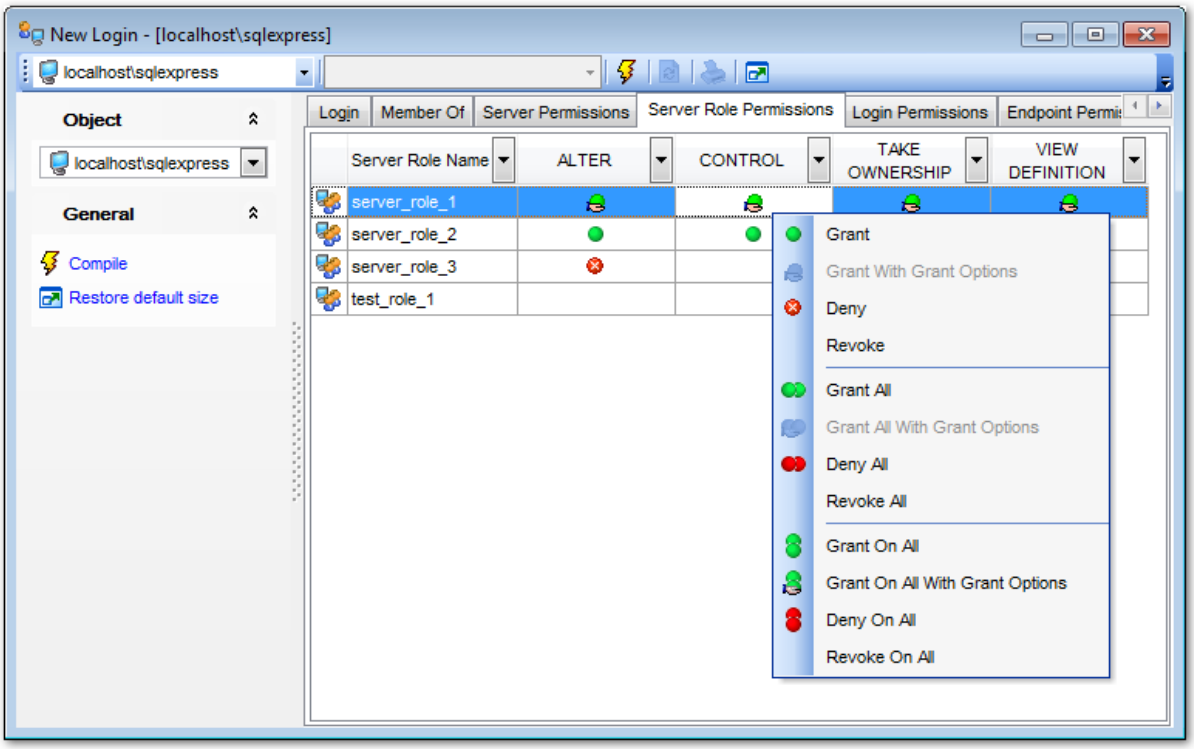
The **Permission** column contains the list of server permissions that can be granted to the login: *CONNECT SQL*, *SHUTDOWN*, *CREATE ANY DATABASE*, *CREATE ENDPOINT*, *ALTER ANY LOGIN*, *ALTER ANY CREDENTIAL*, *ALTER ANY LINKED SERVER*, *ALTER ANY CONNECTION*, etc.

Right-click a cell within the **State** column to grant a permission to the login. The context menu of a cell allows you to:

- grant a permission to the login;
- grant a permission (with Grant Option) to the login;
- deny a permission to the login;
- revoke a previously granted or denied permission;
- grant all permissions to the login;
- grant all permissions (with Grant Option) to the login;
- deny all permissions to the login;
- revoke all previously granted or denied permissions.

5.4.1.4 Defining server role permissions

This tab is available in SQL Server 2012 only. It allows to define **Server role permissions** .

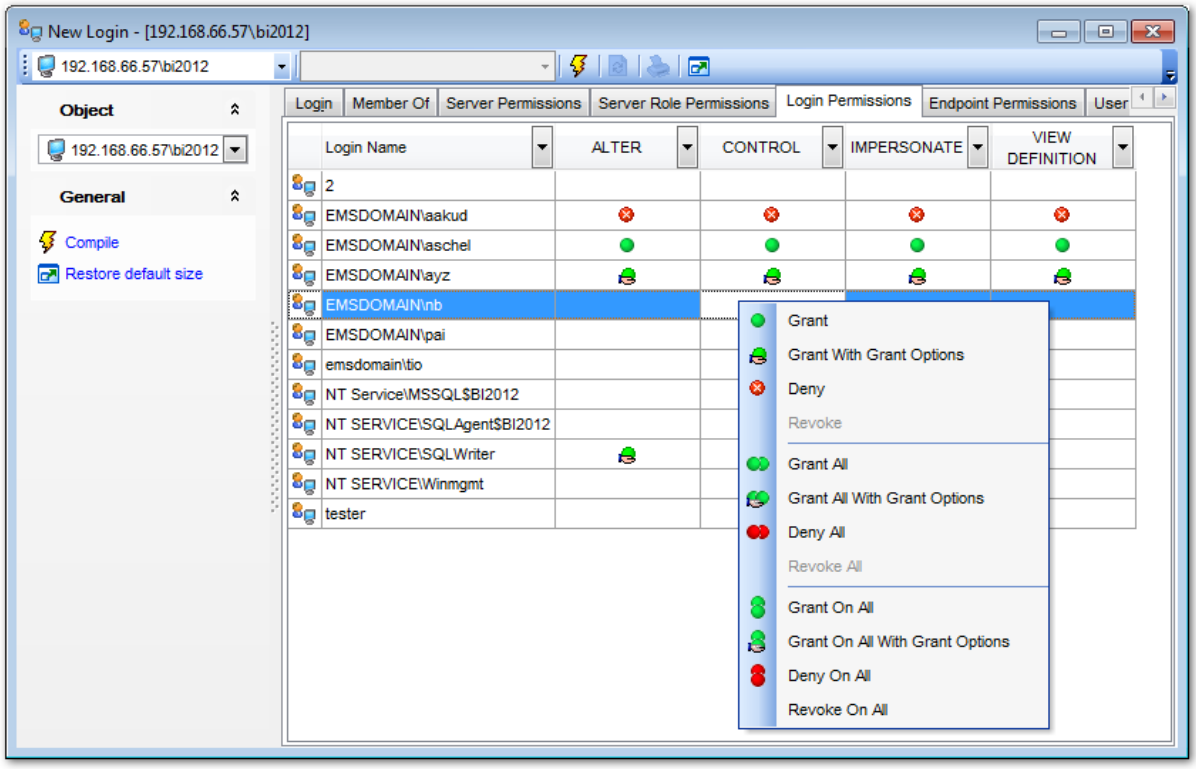


The **Server Role Name** column contains the list of server roles; each subsequent column corresponds to the permission which can be granted on the selected server role: *ALTER, CONTROL, TAKE OWNERSHIP, VIEW DEFINITION*.
Right-click a cell to grant a specific permission on a certain server role. To grant a permission on a server role, you should find the object in the **Server role name** list and the column with the corresponding permission. The context menu of a cell allows you to:

- grant a permission on the server role to the login;
- grant a permission (with Grant Option) on the server role to the login;
- deny a permission on the server role to the login;
- revoke a previously granted or denied permission;
- grant all permissions on the server role to the login;
- grant all permissions (with Grant Option) on the server role to the login;
- deny all permissions on the server role to the login;
- revoke all previously granted or denied permissions;
- grant a permission on all server role to the login;
- grant a permission (with Grant Option) on all server role to the login;
- deny a permission on all server role to the login;
- revoke a previously granted or denied permission on all server role

5.4.1.5 Defining login permissions

This tab allows you to define **Login permissions** to the login.



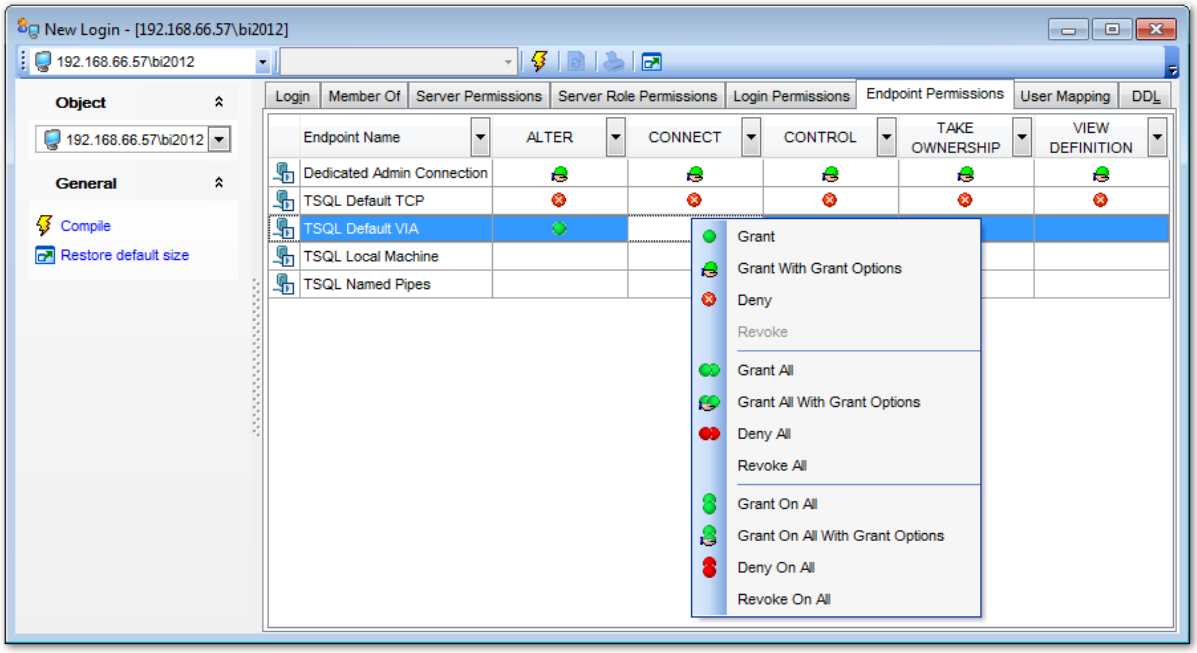
The **Login Name** column contains the list of server logins; each subsequent column corresponds to the permission which can be granted on the selected login: *ALTER, CONTROL, IMPERSONATE, VIEW DEFINITION*.

Right-click a cell to grant a specific permission on a certain login. To grant a permission on a login, you should find the object in the **Login name** list and the column with the corresponding permission. The context menu of a cell allows you to:

- grant a permission to the login;
- grant a permission (with Grant Option) to the login;
- deny a permission to the login;
- revoke a previously granted or denied permission;
- grant all permissions to the login;
- grant all permissions (with Grant Option) to the login;
- deny all permissions to the login;
- revoke all previously granted or denied permissions;
- grant a permission on all logins to the login;
- grant a permission (with Grant Option) on all logins to the login;
- deny a permission on all logins to the login;
- revoke a previously granted or denied permission on all logins

5.4.1.6 Defining endpoint permissions

This tab allows you to grant **Endpoint permissions** to the login.



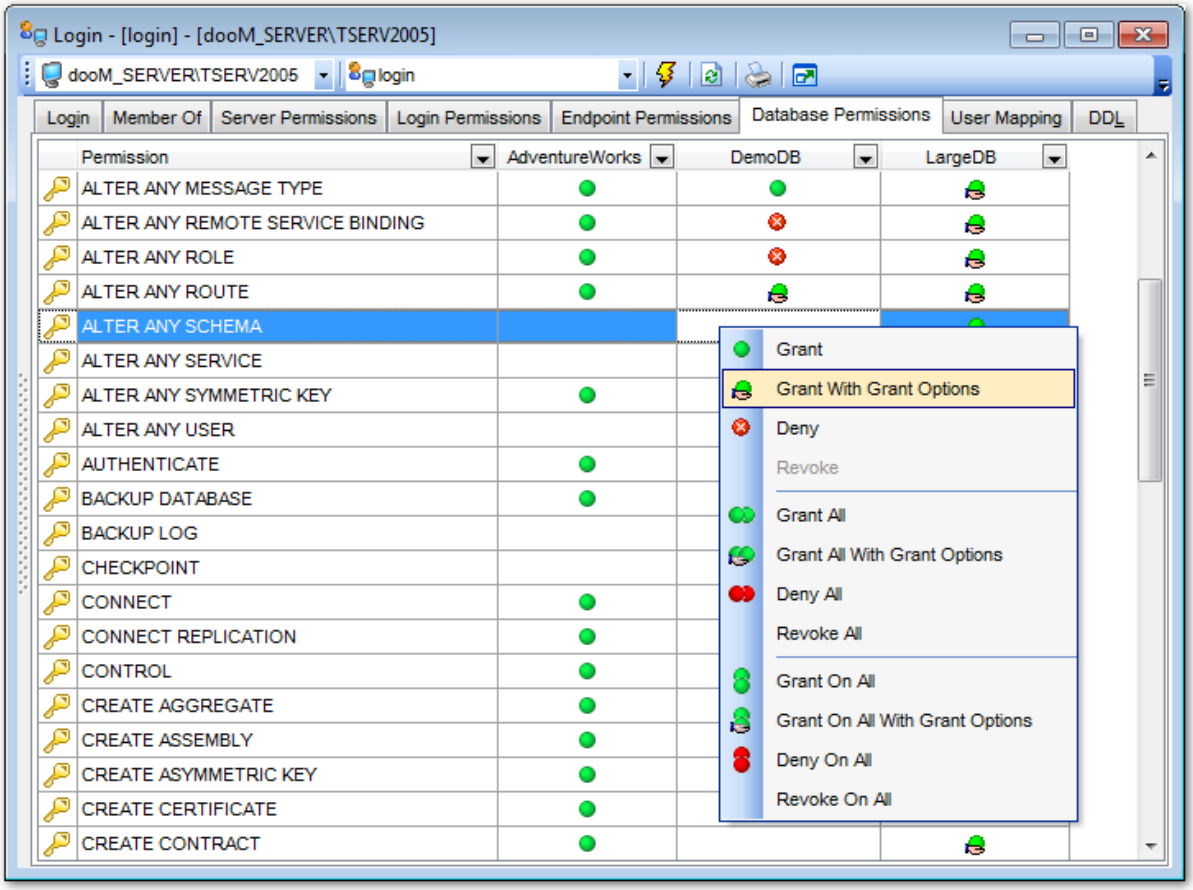
The **Endpoint Name** column contains the list of server endpoints 408; each subsequent column corresponds to the permission which can be granted on the selected endpoint: *ALTER*, *CONNECT*, *VIEW DEFINITION*, *TAKE OWNERSHIP*, *CONTROL*.

Right-click a cell to grant a specific permission on a certain endpoint. To grant a permission on an endpoint, you should find the object in the **Endpoint name** list and the column with the corresponding permission. The context menu of a cell allows you to:

- grant a permission on the endpoint to the login;
- grant a permission (with Grant Option) on the endpoint to the login;
- deny a permission on the endpoint to the login;
- revoke a previously granted or denied permission;
- grant all permissions on the endpoint to the login;
- grant all permissions (with Grant Option) on the endpoint to the login;
- deny all permissions on the endpoint to the login;
- revoke all previously granted or denied permissions;
- grant a permission on all endpoints to the login;
- grant a permission (with Grant Option) on all endpoints to the login;
- deny a permission on all endpoints to the login;
- revoke a previously granted or denied permission on all endpoints

5.4.1.7 Defining database permissions

This tab allows you to grant **Database permissions** to the user. This tab is only available on editing 686 an existing server login.



The **Permission** column contains the list of database permissions that can be granted to the login: *CREATE ANY VIEW*, *CREATE PROCEDURE*, *CREATE FUNCTION*, *CREATE RULE*, *CREATE DEFAULT*, *BACKUP DATABASE*, etc.; each subsequent column corresponds to a database that resides on the selected server.

Right-click a cell to grant a specific permission on a certain database that has a user mapped 371 to the login. To grant a permission on a database, you should find the permission in the **Permission** list and the column with the corresponding database. The context menu of a cell allows you to:

- grant a permission on the database to the login;
- grant a permission (with Grant Option) on the database to the login;
- deny a permission on the database to the login;
- revoke a previously granted or denied permission;
- grant all permissions on the database to the login;
- grant all permissions (with Grant Option) on the database to the login;
- deny all permissions on the database to the login;
- revoke all previously granted or denied permissions;
- grant a permission on all databases to the login;
- grant a permission (with Grant Option) on all databases to the login;
- deny a permission on all databases to the login;
- revoke a previously granted or denied permission on all databases

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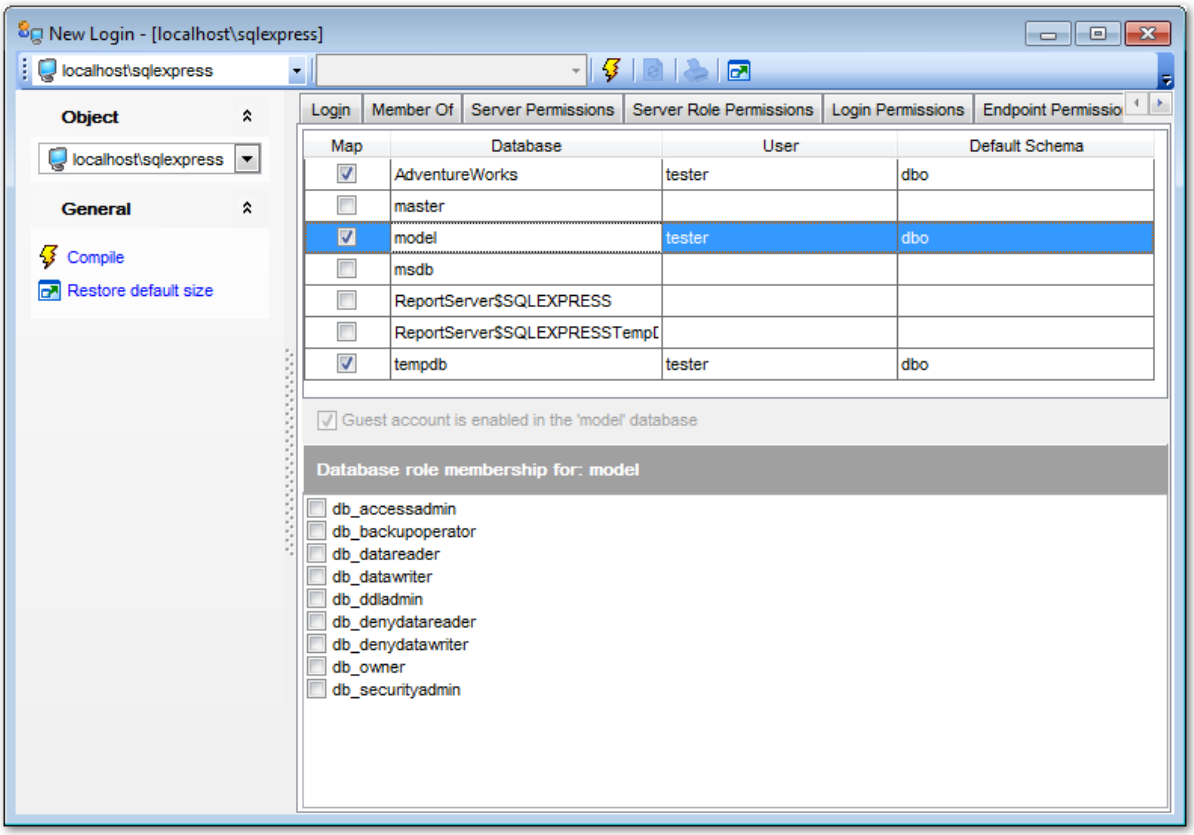
5.4.1.8 User mapping

The **User Mapping** tab allows you to browse the list of databases available on the specified server, and to map their users 300 to the login.



Set the **Map** flag next to a database name, and specify the **User** and the **Default Schema** of the database using the corresponding drop-down lists.

If necessary, use the **Database role membership for** area at the bottom to define database role(s) 306 for each mapped user.

5.4.2 Backup Devices

A **Backup device** is a tape drive or a disk drive used in backup 745 and restore 759 operations. When creating a backup, you must select a backup device 748 where the data will be written. Microsoft SQL Server 2005 (and higher) can back up databases, transaction logs, and files to disk and tape devices.

Creating Backup Devices

To create a new backup device:

- right-click the **Backup Devices** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Backup Device** item from the context menu 57;

- define backup device properties using the appropriate boxes of the New Logical Backup Device 372 dialog

or

- select the **Database | New Object...** main menu 951 item;
- select **Backup Device** in the Create New Object 184 dialog;
- define backup device properties using the New Logical Backup Device 372 dialog.

Hint: To create a new backup device, you can also select the **Services | Backup Devices** main menu 951 item to open the **Backup devices manager** and select the **Add Device...** item from the context menu or on the Navigation bar.

To create a new backup device with the same properties as one of existing backup devices has:

- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a backup device in the DB Explorer 65 tree and select the **Duplicate Backup Device <backup_device_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new backup device and to edit the result SQL statement for creating the backup device.

To create, rename and drop backup devices, you can also use the **context menu** and the **Navigation bar** of Backup devices manager 770.

See also:

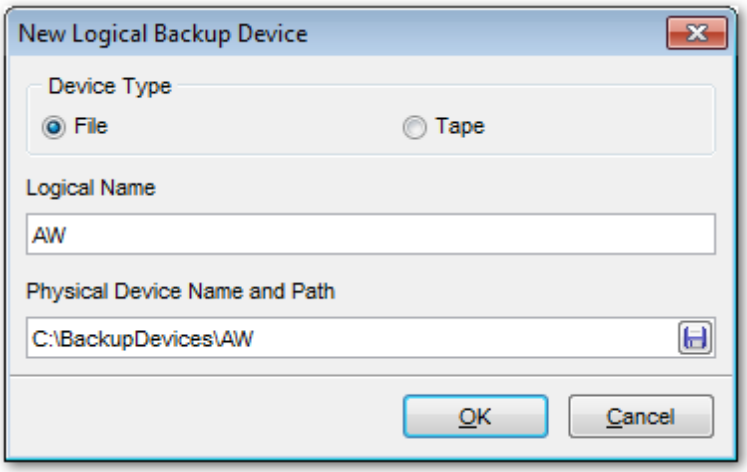
Backup Database 745

Backup Devices 770

5.4.2.1 New backup device

The **New Logical Backup Device** dialog opens automatically when you create a new backup device and allows you to define the new backup device parameters.

To call the dialog, you can right-click the **Backup Devices** node or any object within this node in the DB Explorer 65 tree and use the *Ctrl+N* shortcut 986.



Device Type

Select the logical backup device type: *File*, *Pipe* (for SQL Server versions earlier than 2005), or *Tape*.

Disk backup devices are files on hard disks or other disk storage media are the same as regular operating system files.
Tape backup devices are used in the same way as disk devices, but the tape device must be connected physically to the computer running an instance of SQL Server, and if a tape backup device is filled during the backup operation, but more data still needs to be written, SQL Server prompts for a new tape and continues the backup operation.

Logical Name
Enter a name for the new backup device.

Physical Device Name and Path
Define the physical location of the device.
If **Device Type** is set to *File*, enter the path and the full name of the file.
If **Device Type** is set to *Tape*, enter the physical name of the device.

5.4.3 Jobs

A **job** is a specified set of operations performed sequentially by SQL Server Agent. A job can perform a wide range of activities, including running Transact-SQL scripts, command-line applications, Microsoft ActiveX scripts, Integration Services packages, Analysis Services commands and queries, or Replication tasks. Jobs can run repetitive or scheduled 823 tasks, and they can automatically notify operators 820 of job status by generating alerts 817.

Before using SQL Server jobs, make sure that the **SQL Server Agent** service is running.

Job Editor allows you to define job properties. It opens automatically when you create a new job and is available on editing an existing one.

To open a job in **Job Editor**, double-click it in the DB Explorer 65 tree or in the Jobs

manager 813. Alternatively, you can right-click the job alias and select the **Edit Job** context menu item.

- Setting job properties 374
- Managing job steps 375
- Managing job schedules 379
- Managing notifications 380
- Managing target servers 382
- Viewing DDL definition 955

To create, edit, rename and drop jobs, you can also use the **context menu** and the **Navigation bar** of Jobs manager 813.

See also:

Jobs manager 813

Schedules 382

Alerts 386

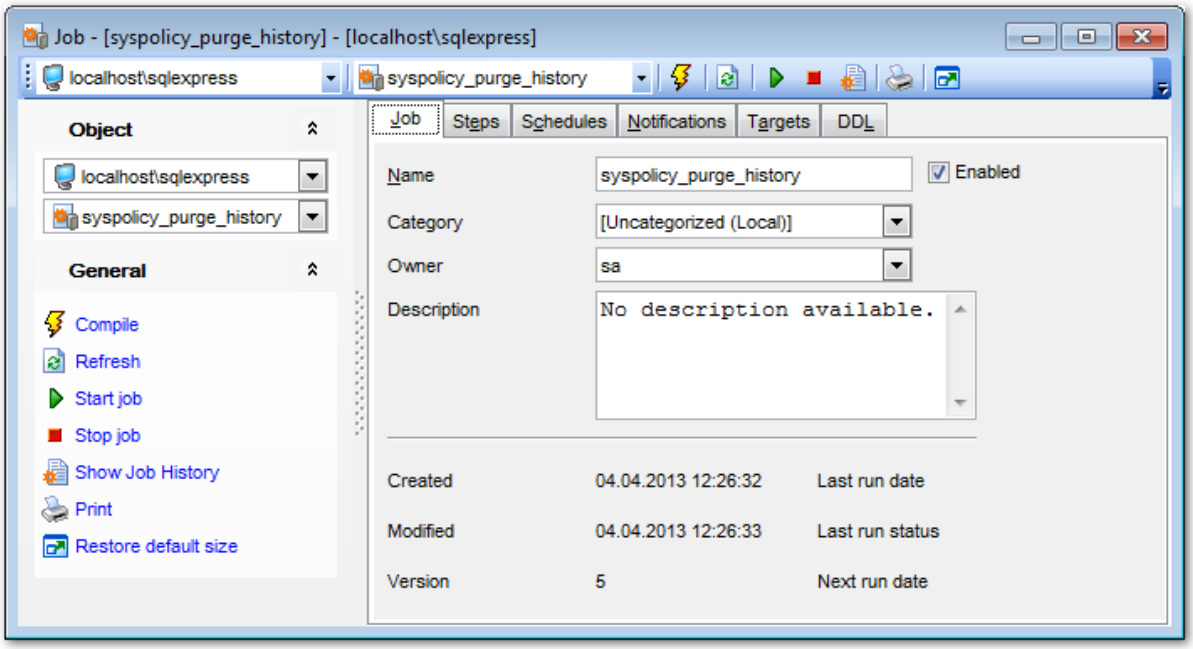
Operators 392

5.4.3.1 Setting job properties

Use the **Job** tab of the **Job Editor** to configure/view job properties. If necessary, you can use items of the **Navigation bar** to manage the currently opened job (see Jobs manager 813).

Name

Enter a name for the new job, or modify the name of the job being edited. Enable/disable the job using the ☑ **Enabled** option.



Category
Use the drop-down list to select the job category.
Job categories help you organize your jobs for easy filtering and grouping. For example, you can organize all your database backup jobs in the *Database Maintenance* category.

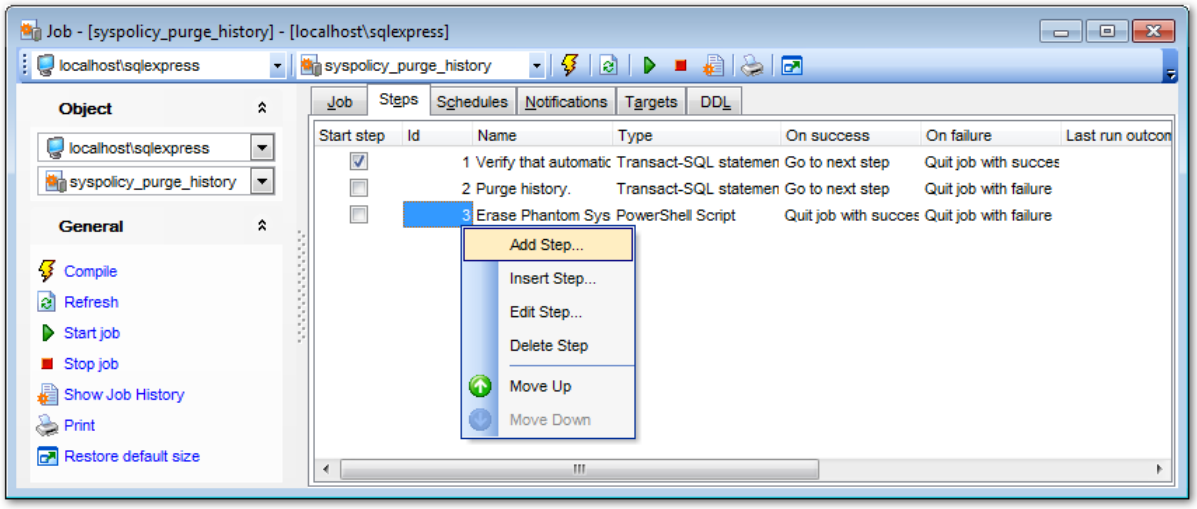
Owner
Use the drop-down list to select the job owner.
Note: To create a job, a user must be a member of one of the SQL Server Agent fixed database roles or the sysadmin fixed server role. A job can be edited only by its owner or members of the sysadmin role.

Description
In this memo field you can supply an optional description for the job.

The lower area displays the following job events and properties:
Created
Modified
Version
Last run date
Last run status
Next run date

5.4.3.2 Managing job steps

Use the **Steps** tab of **Job Editor** to manage job steps (operations). A **job step** is an action that the job takes on a database or a server. Every job must have at least one job step.



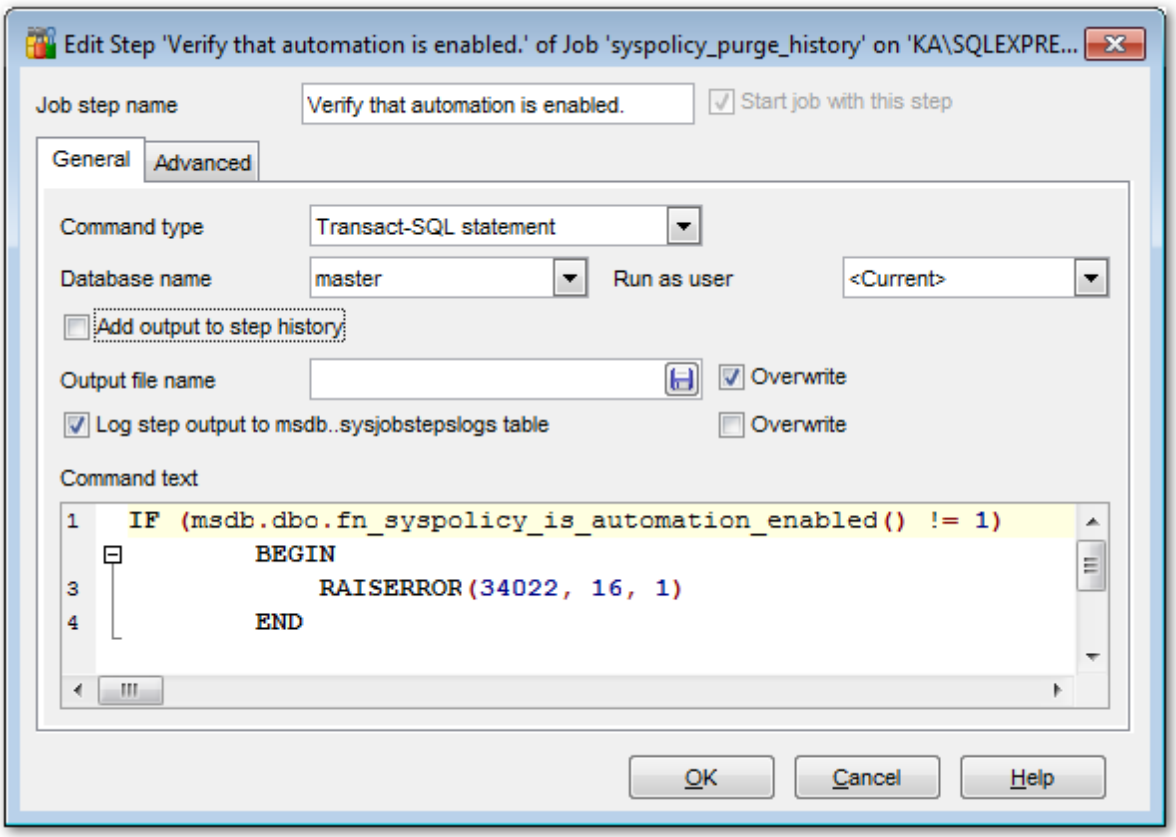
The current job steps are displayed as a grid with the following columns: *Start step*, *ID*, *Name*, *Type*, *On success*, *On failure*, *Last run outcome*, *Last run date*, *Command*.

Right-click an item within the list to call the **context menu** allowing you to *create* a new

job step and specify its properties using the **Edit Step** dialog, *insert* a step, *edit* or *delete* the selected step.

The **Add New Job Step / Edit Step** dialog allows you to define job step parameters.

The **General** tab allows you to define basic parameters of the step.



Job step name
Enter a name for the new step, or modify the name of the step being edited. If necessary, you can specify to ☑ **Start job with this step**. Note that a job can have only one start step.

Specify the **Command Type** of the step indicating the subsystem used by Microsoft SQL Server Agent service to execute the job command:

- ✓ *Transact-SQL statement*
- ✓ *Active Script*
- ✓ *Operating-system command or executable program*
- ✓ *Replication Distribution Agent job*
- ✓ *Replication Snapshot Agent job*
- ✓ *Replication Log Reader Agent job*
- ✓ *Replication Merge Agent job*
- ✓ *Replication Queue Reader Agent job*
- ✓ *Analysis Services query (MDX, DMX)*

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- ✓ *Analysis Services command (XMLA)*
- ✓ *Integration Services package execution*
- ✓ *PowerShell Script*

Use the **Database name** drop-down list to select the database for which the current step will be executed (for *Transact-SQL* command type step; for an *ActiveX* job step, you are to specify the name of the scripting language that the step uses), and specify the security context under which the command is executed using the **Run as user** drop-down list.

SQL Server Agent can write output from some job steps either to the *sysjobsteplogs* table in the *msdb* database or to an operating system file.
To use this feature, check the ☑ **Add output to step history** option and set the path and the file name in the **Output file name** field, and/or check ☑ **Log step output to msdb..sysjobsteplogs table**.

You can select the ☑ **Overwrite** option to specify that the existing destination log file / table will be overwritten.

Use the **Command text** memo field to enter the job step command code: *SQL* code (for **Transact-SQL** step), *Visual Basic Script / Java Script / other script* code (for **Active Script** step), or *OS command / executable program* (for **Operating-system command** step).

The **Advanced** tab provides flexible job step control of flow for success and failure.

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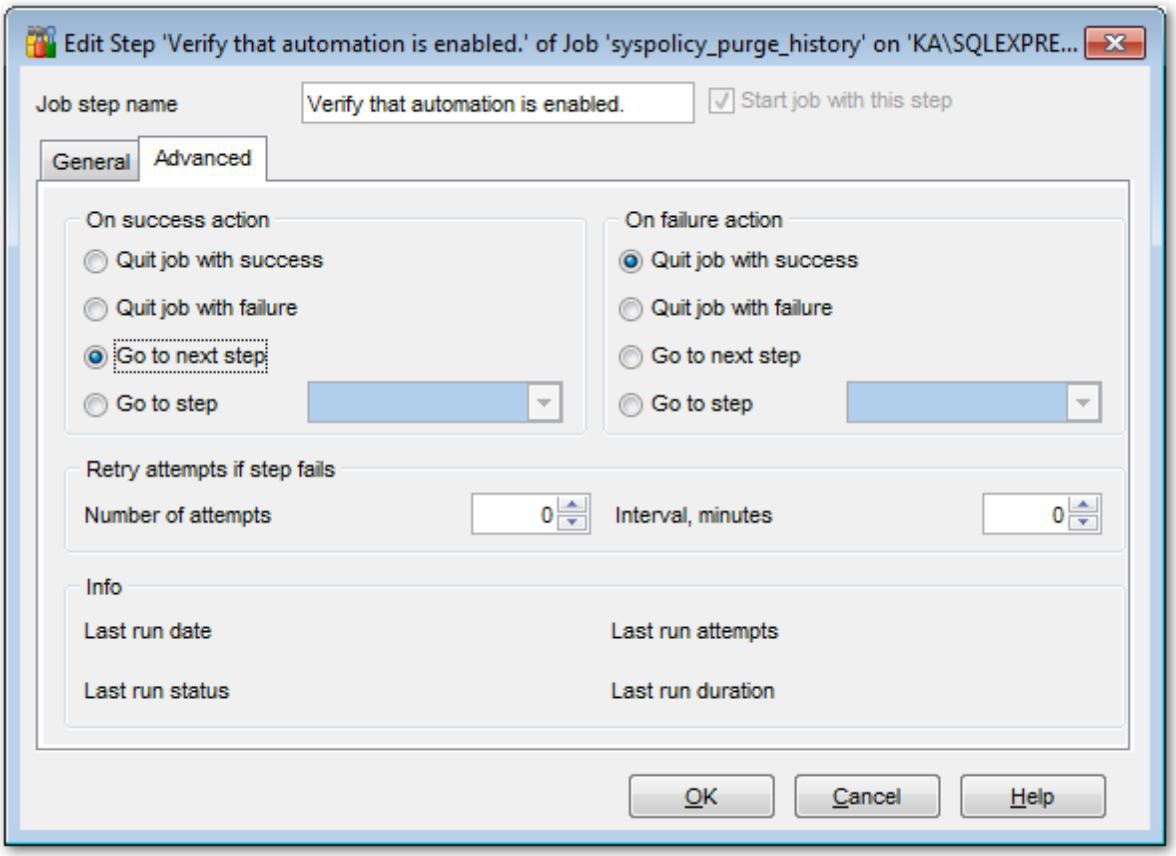


Specify the **On success action**, i.e. the action the job will take if the step succeeds:
- *Quit job with success*
- *Quit job with failure*
- *Go to next step*
- *Go to step ...* (select the step from the drop-down list)

Specify the **On failure action**, i.e. the action the job will take if the step fails:
- *Quit job with success*
- *Quit job with failure*
- *Go to next step*
- *Go to step ...* (select the step from the drop-down list)

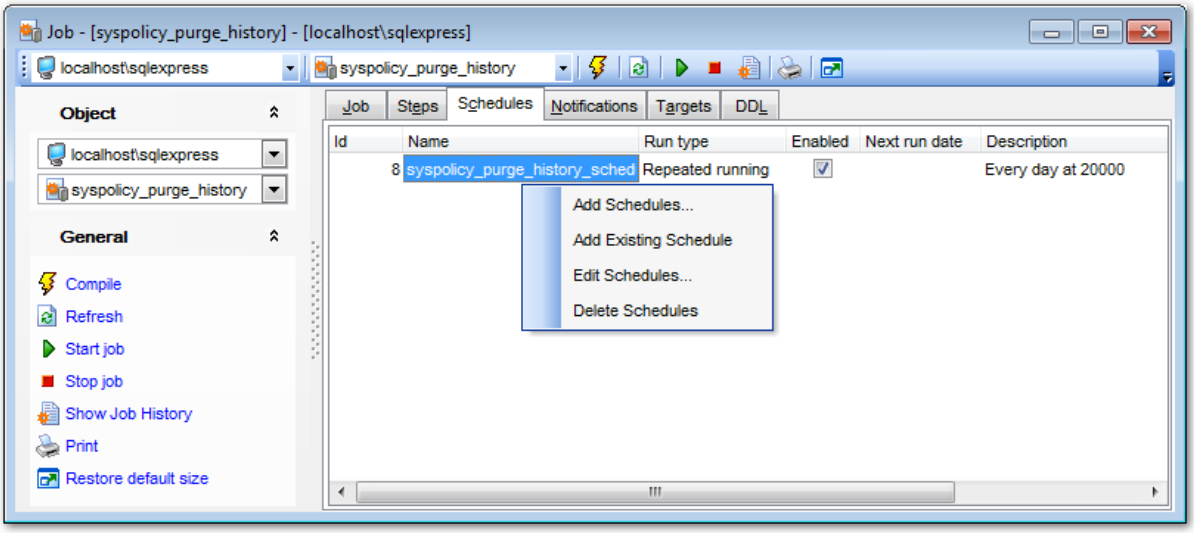
The **Retry attempts if step fails** group allows you to set optional parameters for the job step: the *Number of attempts* and the *Interval* between attempts (in minutes).

The **Info** group contains common information about the job step:
Last run date
Last run status
Last run attempts
Last run duration

5.4.3.3 Managing job schedules

The **Schedules** tab allows you to manage schedules[823] assigned to the job.

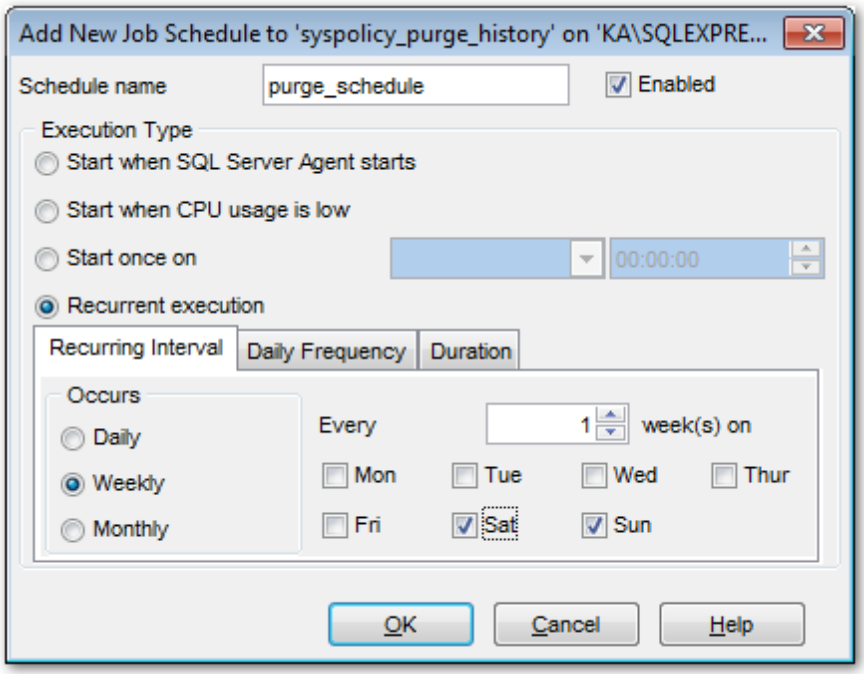
Scheduling administrative jobs consists in defining the condition(s) that cause the job to begin running. It is possible to schedule any type of job. More than one job can use the same job schedule.



The current job schedules are displayed as a grid with the following columns: *ID*, *Name*, *Run type*, *Enabled*, *Next Run Date*, *Description*.

Right-click an item within the list to call the **context menu** allowing you to *create* a new job schedule and specify its properties using the **Add New Job Schedule** dialog, *add an existing schedule*, *edit* or *delete* the selected schedule.

The **Add New Job Schedule / Edit Schedule** dialog allows you to define schedule parameters.



Schedule name
Enter a name for the new schedule, or modify the name of the schedule being edited. Enable/disable the schedule using the ☑ **Enabled** option.

Specify the **Execution Type** of the schedule indicating when the job is to be executed:

- *Start when SQL Server Agent starts*
- *Start when CPU usage is low*
- *Start once on...*
- *Recurrent execution*

If the **Recurrent execution** type is selected, you should also set the **Recurring Interval** , **Daily Frequency** and **Duration** properties of the current job schedule.

For details see Schedule Editor 823.

5.4.3.4 Managing notifications

The **Notifications** tab allows you to specify actions that the SQL Server Agent service will take after the job completes (succeeds or fails). Job responses ensure that database administrators know when jobs complete and how frequently they run.

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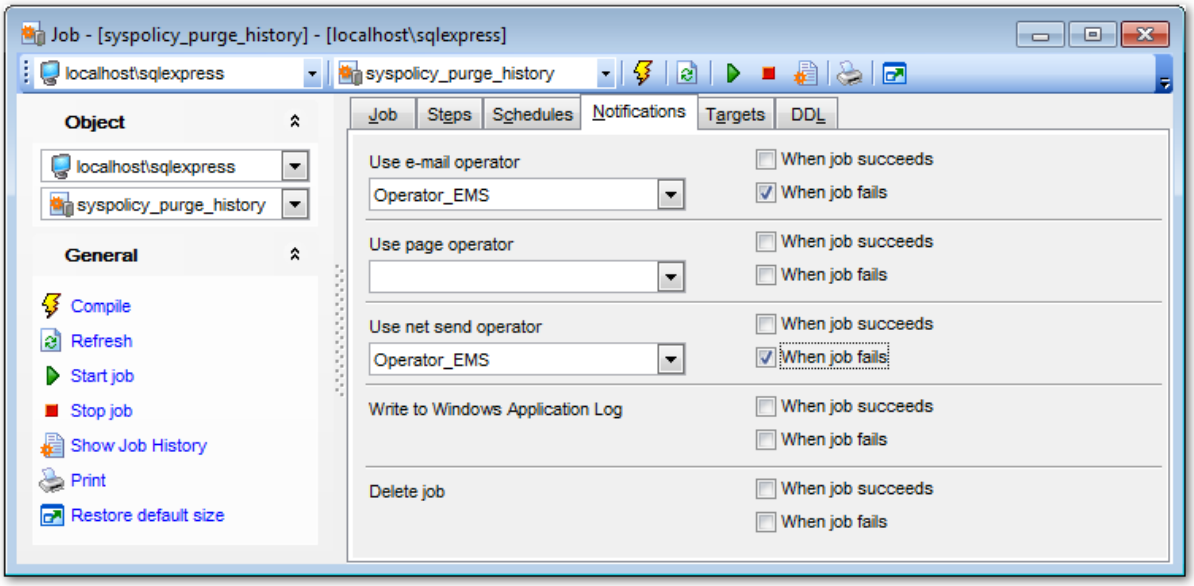

Use e-mail operator
Use the drop-down list to select the operator 820 that will be notified via *e-mail*, and specify the job status for the notification to be performed:
☑ *When job succeeds* and/or
☑ *When job fails*

Use page operator
Use the drop-down list to select the operator 820 that will be notified using *electronic paging*, and specify the job status for the notification to be performed:
☑ *When job succeeds* and/or
☑ *When job fails*

Use net send operator
Use the drop-down list to select the operator 820 that will be notified using a *net send* message, and specify the job status for the notification to be performed:
☑ *When job succeeds* and/or
☑ *When job fails*

Write to Windows Application Log
If necessary, specify the job status for writing to Microsoft Windows Application Log:
☑ *When job succeeds* and/or
☑ *When job fails*

Delete job
If you are certain that you do not need to rerun this job later, you can specify the job status deleting the job:
☑ *When job succeeds* and/or
☑ *When job fails*

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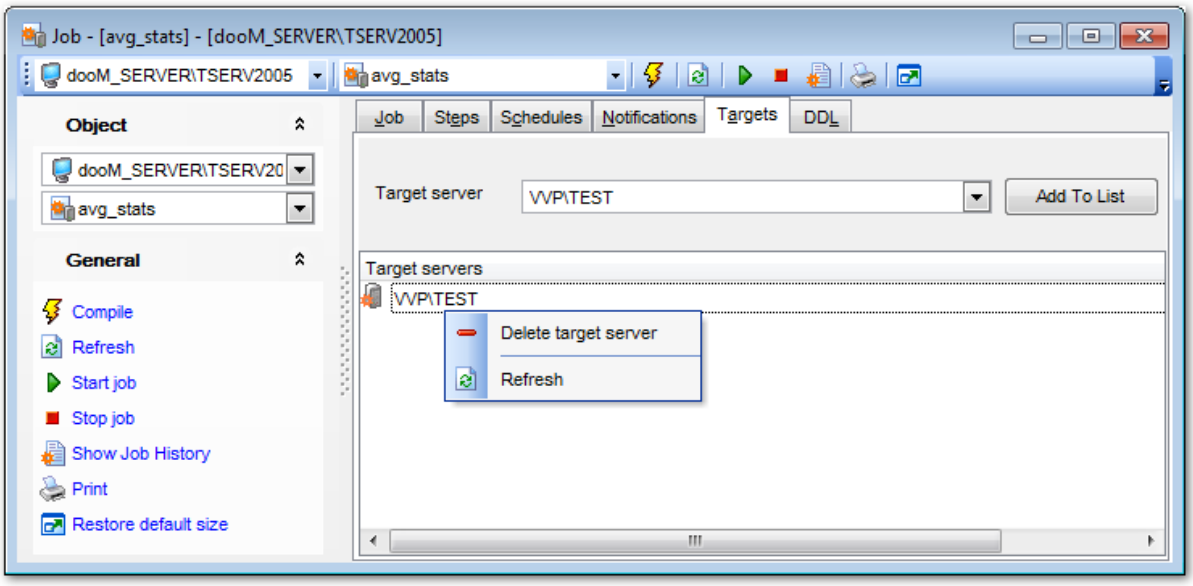
5.4.3.5 Managing target servers

The **Targets** tab allows you to target the job at the specified target server 830.



Target server
Use the drop-down list to select the target server 830 and press the **Add To List** button to add the selected server to the list of target servers available for the multiserver job operation.

Right-click an item within the **Target servers** area to call the **context menu** allowing you to *delete* the selected target server or *refresh* the list.

5.4.4 Schedules

Shared schedules are multipurpose items that contain ready-to-use schedule information. You can create a shared schedule once, and then reference it in a subscription or property page when you need to specify schedule information.

Before using SQL Server schedules, make sure that the **SQL Server Agent** service is running.

Schedule Editor allows you to define schedule properties. It opens automatically when you create a new schedule and is available on editing an existing one.

To open a schedule in **Schedule Editor**, double-click it in the DB Explorer 65 tree or in the Shared schedules manager 825. Alternatively, you can right-click the schedule alias and select the **Edit Schedule** context menu item.

- Using Navigation bar and Toolbar 383
- Setting schedule properties 384
- Viewing scheduled jobs 385
- Viewing DDL definition 955

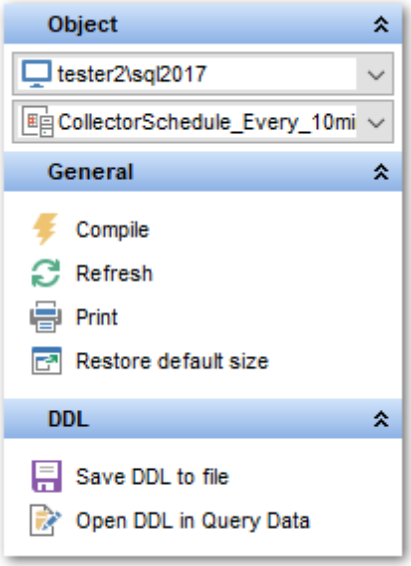
To create, edit and drop schedules, you can also use the **context menu** and the **Navigation bar** of Shared schedules manager 825.

See also:

Shared schedules manager 825

5.4.4.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Schedule Editor**.



The **Navigation bar** of **Schedule Editor** allows you to:

Object

select a server instance

select a schedule for editing

General

compile 959 the schedule (if it is being created/modified)

refresh the content of the active tab

restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the schedule:

DDL

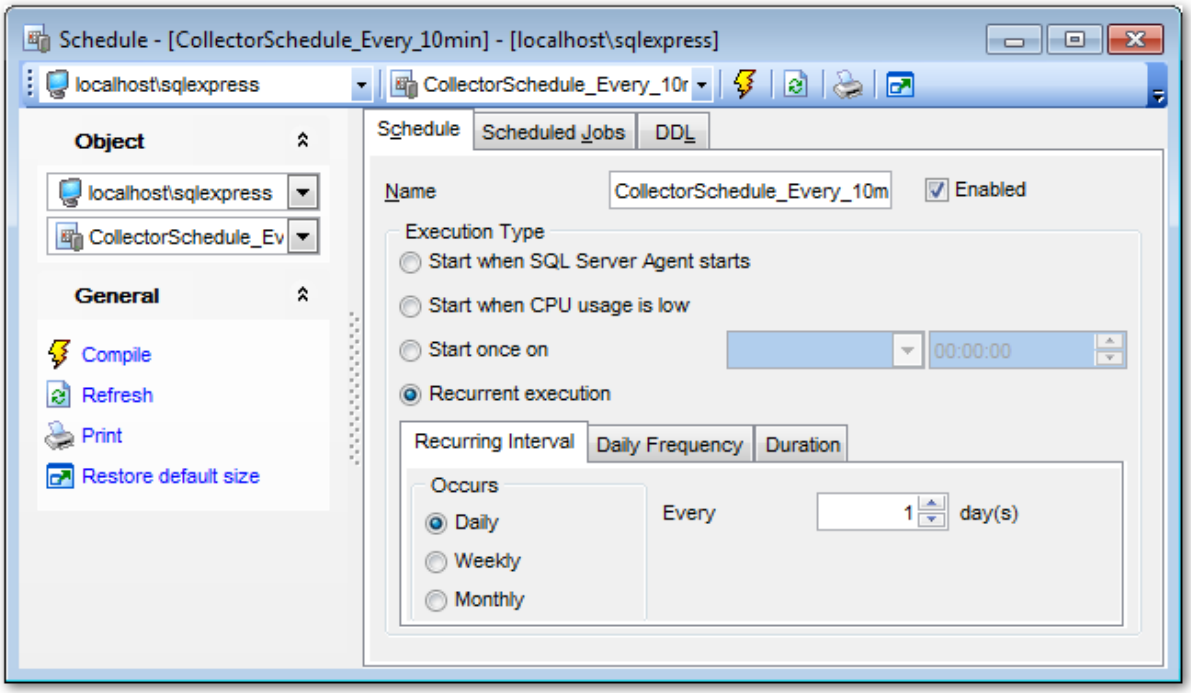
save DDL to an external *.sql file
open DDL in Query Data

Items of the **Navigation bar** are also available on the **ToolBar** of **Schedule Editor**. To enable the toolbar, open the Environment Options dialog, proceed to the Windows section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar) in the **Bar style for child forms** group.

5.4.4.2 Setting schedule properties

Use the **Schedule** tab of **Schedule Editor** to configure/view schedule properties.

Name
Enter a name for the new schedule, or modify the name of the schedule being edited. Enable/disable the schedule using the **Enabled** option.

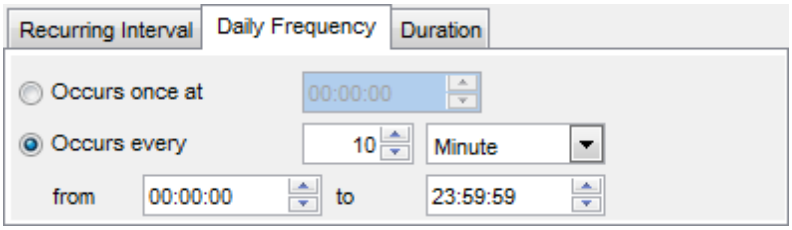


Specify the **Execution Type** of the schedule indicating when the scheduled job is to be executed:
Start when SQL Server Agent starts
Start when CPU usage is low
Start once on... (set the date using the **date editor** which is activated when you click the Arrow-Down element of the combo-box; specify the time value using the spinner control)
Recurrent execution

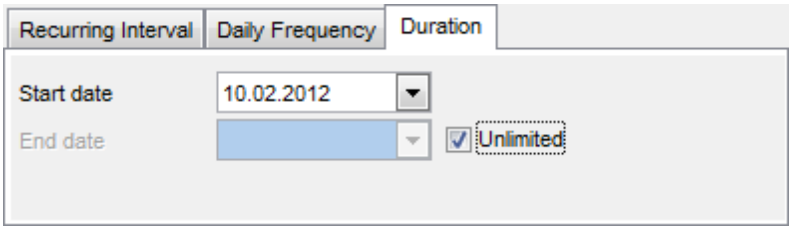
If the **Recurrent execution** type is selected, you should also set the **Recurring Interval** , **Daily Frequency** and **Duration** properties of the current schedule.

The **Recurring Interval** tab allows you to specify the **daily**/**weekly**/**monthly** recurrence rule, define the **Every ... days**/**weeks** value, and select the **days of the week**/**month** that can be set for the schedule.

The **Daily Frequency** tab allows you to select whether the scheduled job will be run **once at ...** or **every ... hours**/**minutes from ... to ...** (specify the day/time values using the drop-down menu and spinner controls).



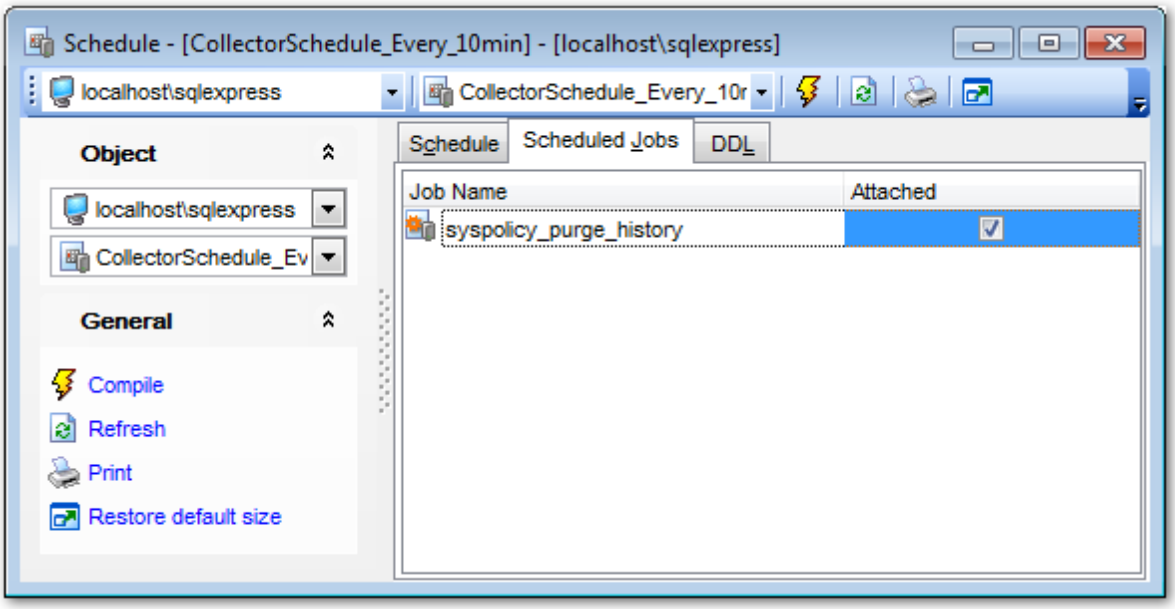
The **Duration** tab allows you to set the **Start date** and the **End date** threshold values for the interval using the **date editor** which is activated when you click the Arrow-Down element of the combo-box.



Unlimited
Check this option if you are uncertain when the scheduled job should be finished, or if no limitations on the job duration are required.

5.4.4.3 Viewing scheduled jobs

The **Scheduled Jobs** tab allows you to browse the list of jobs 811 that use the schedule, and to attach/detach them to/from the schedule.



Specify the **Attached** attribute for the jobs that should be attached to the schedule. Set the corresponding flag next to the job name.

5.4.5 Alerts

An **alert** is as an automated response to one or more events. You can define an alert to specify how SQL Server Agent should respond to their occurrence. An alert can respond to an event by notifying an administrator or running a job 811, or both. An alert can also forward an event to the Microsoft Windows application log on a different computer. By defining alerts, database administrators can monitor and manage SQL Server more effectively.

Before using SQL Server operators, make sure that the **SQL Server Agent** service is running.

Alert Editor allows you to define alert properties. It opens automatically when you create a new alert and is available on editing an existing one.

To open an alert in **Alert Editor**, double-click it in the DB Explorer 65 tree or in the Alerts manager 819. Alternatively, you can right-click the alert alias and select the **Edit Alert** context menu item.

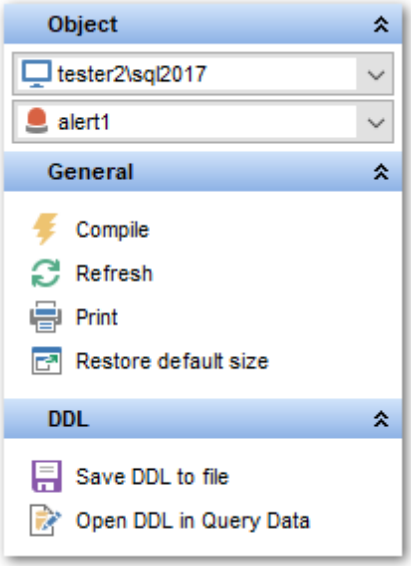
- Using Navigation bar and Toolbar 387
- Setting alert properties 388
- Setting additional properties 391
- Managing notifications 392
- Viewing DDL definition 955

To create, edit, rename and drop alerts, you can also use the **context menu** and the **Navigation bar** of Alerts manager 819.

See also:
Alerts manager 819

5.4.5.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Alert Editor**.



The **Navigation bar** of **Alert Editor** allows you to:

Object
select a server instance
select an alert for editing

General
compile 959 the alert (if it is being created/modified)
refresh the content of the active tab
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the alert:

DDL
save DDL 955 to an external **.sql* file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Alert Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need

both the toolbar and the Navigation bar (951) in the **Bar style for child forms** group.

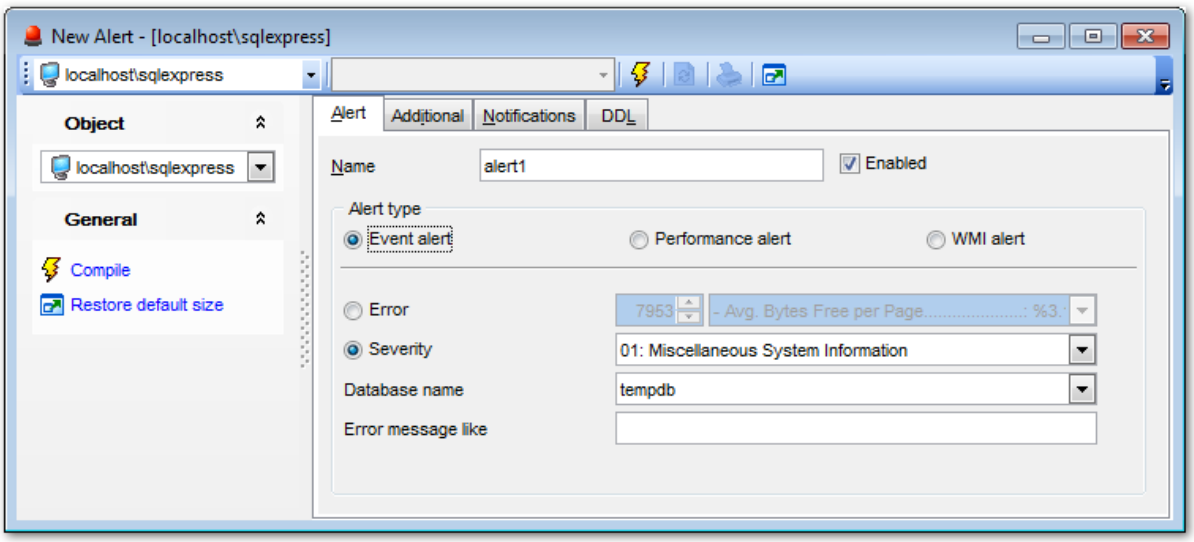
5.4.5.2 Setting alert properties

Use the **Alert** tab of **Alert Editor** to configure/view alert properties.

Name
Enter a name for the new alert, or modify the name of the alert being edited. Enable/disable the alert using the ☑ **Enabled** option.

An alert responds to an event of a specific type: *server event*, *server performance condition* or *WMI event*.

Event alert
Specify properties for the alert that responds to a *server event*.



Use the following parameters to specify the events that will trigger the alert:

Error
Select this option to specify that SQL Server Agent will fire the alert when a specific error occurs. Use the spinner control to specify the *Error ID* and the drop-down list to select the *Error message*.

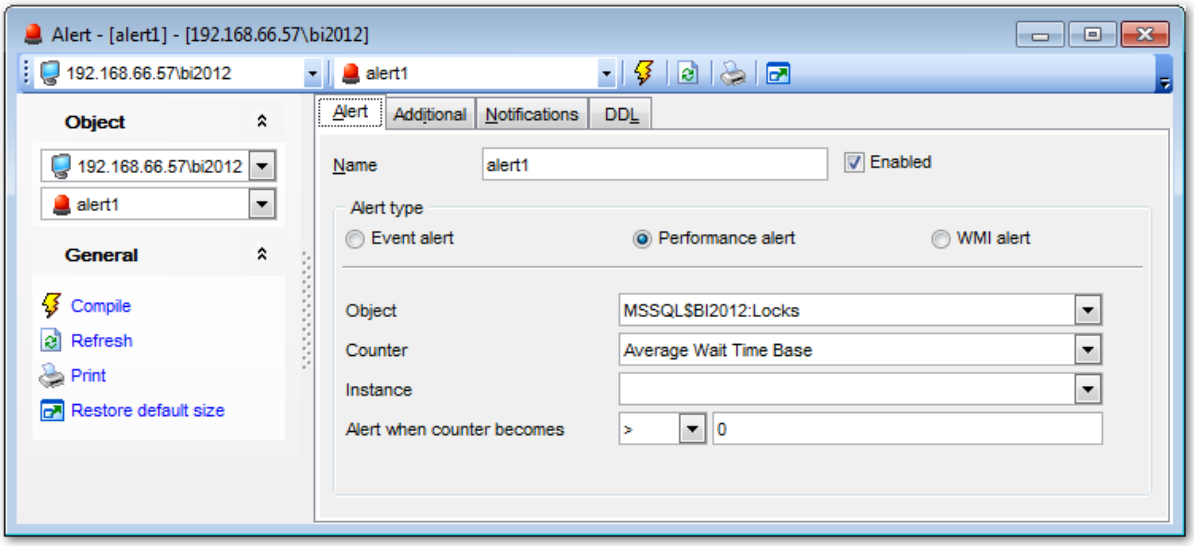
Severity
Select this option to specify that SQL Server Agent will fire the alert when any error of the specific severity occurs. Use the drop-down list to select the *Severity level*: 01-25. For example, you can specify a severity level of 15 to respond to syntax errors in Transact-SQL statements.

Database name
SQL Server Agent fires an alert only when the event occurs in a particular database. Select a database from the list of databases that reside on the specified SQL Server

instance (see Using Navigation bar 387).

Error messages like
SQL Server Agent fires an alert when the specified event contains a particular text string in the event message.

Performance alert
Specify properties for the alert that responds to a *server performance condition*.



Use the following parameters to specify the server performance conditions that will trigger the alert:

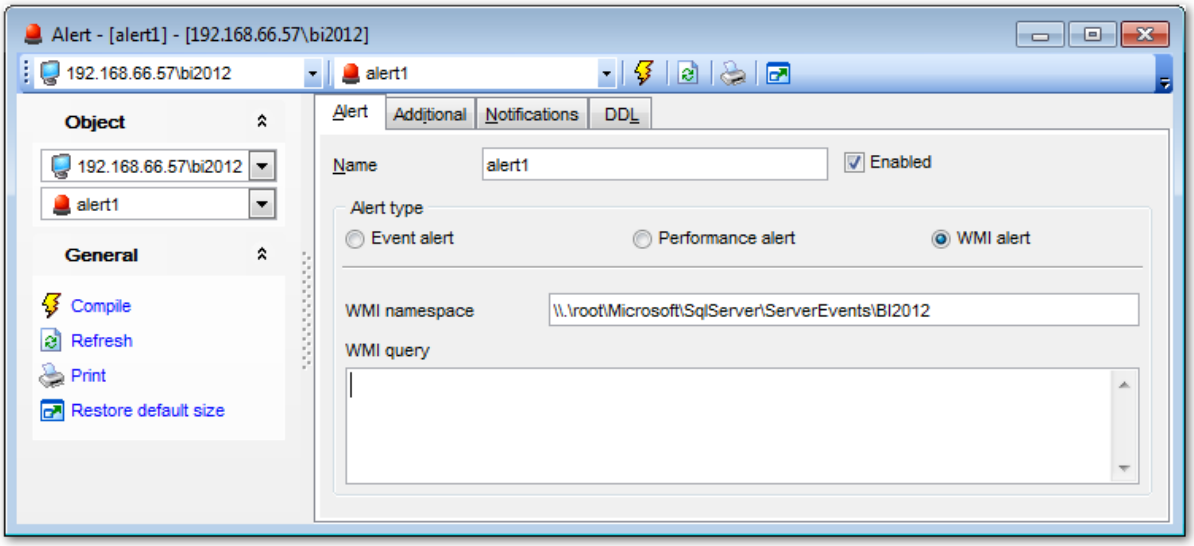
Object
Use the drop-down list to select the area of performance to be monitored.

Counter
Use the drop-down list to select the attribute of the area to be monitored.

Instance
Use the drop-down list to define the specific instance (if any) of the attribute to be monitored.

Alert when counter becomes / Value
Using these boxes you should specify the threshold for the alert and the behavior that produces the alert. Use the drop-down list to select the behavior value: < (falls below), = (becomes equal to), > (rises above). Use the **Value** edit-box to specify the threshold number that describes the performance condition counter.

WMI alert
Specify properties for the alert that responds to a *WMI event*.



WMI is an acronym for *Windows Management Instrumentation*. WMI is the Microsoft's implementation of Web-Based Enterprise Management (WBEM) - a new management technology that allows software to monitor and control managed resources throughout the network. Such managed resources include hard drives, file systems, settings of operating system, processes, services, shares, registry settings, networking components, event logs, users, groups, etc.
WMI allows monitoring of performance counters as well. Microsoft® SQL Server™ has the WMI Event Provider built-in.

One common way to use the WMI Event Provider is to create SQL Server Agent alerts 817 that respond to specific events. SQL Server Agent submits a WQL request, receives WMI events, and runs a job 811 in response to the event.

WMI namespace
Specify the WMI namespace on the machine where SQL Server is running.

WMI Query
Use this area to specify the WMI query text for the alert.

The WMI Query Language (WQL) is a subset of standard American National Standards Institute Structured Query Language (ANSI SQL) with minor semantic changes to support WMI.

Examples:

*SELECT * FROM Win32_OperatingSystem WHERE Caption="Microsoft Windows XP Professional" AND CSDVersion="Service Pack 2"*

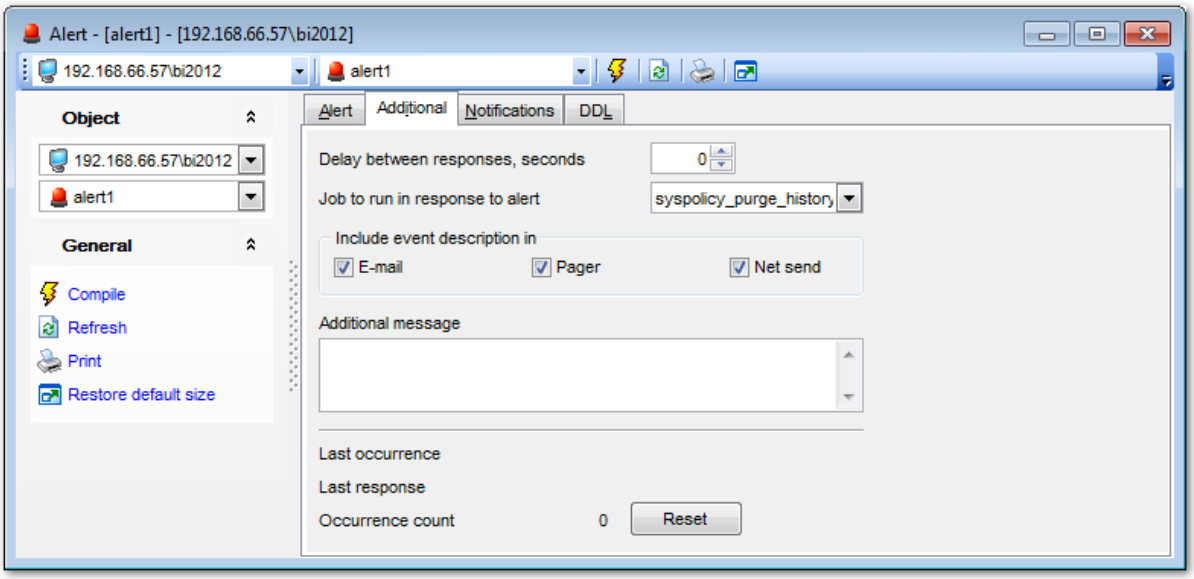
If one needs to monitor the number of processes which use more than 10 threads, the following query can used:
SELECT ThreadCount FROM Win32_Process WHERE ThreadCount>10

The following WQL query retrieves specific event properties for any event that occurs in the AdventureWorks database and exists under the DDL_DATABASE_LEVEL_EVENTS event

group:
SELECT SPID, SQLInstance, DatabaseName FROM DDL_DATABASE_LEVEL_EVENTS WHERE DatabaseName = 'AdventureWorks'

5.4.5.3 Setting additional properties

The **Additional** tab provides additional settings used for the specified alert.



Delay between responses, seconds
Specify the wait period, in seconds, between responses to the alert.

Job to run in response to alert
Use the drop-down list to select the name of the job 811 to be executed in response to this alert.

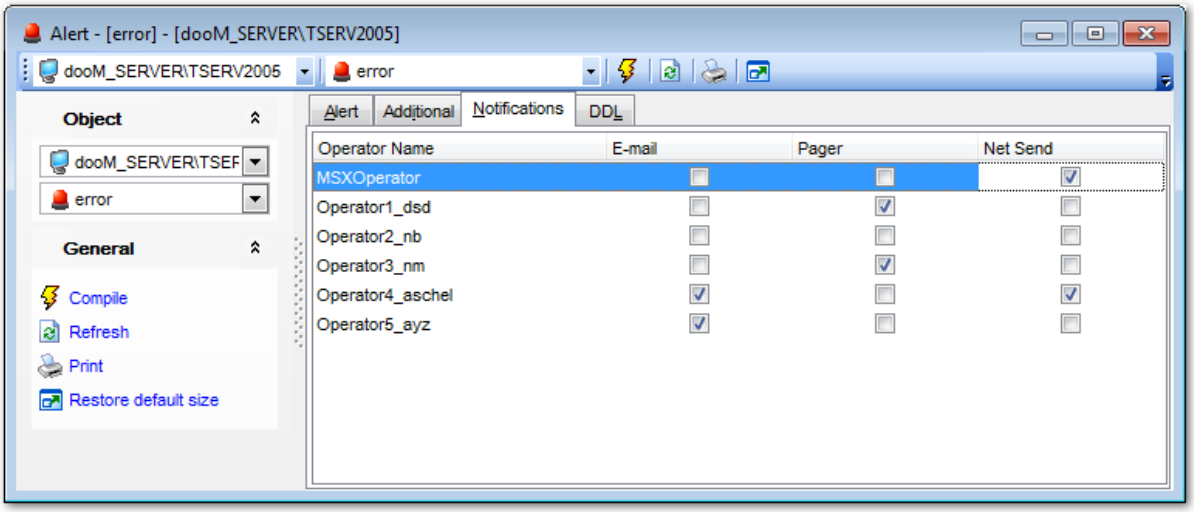
Include event description in
Specify in which way the description of the server error should be included as part of the notification message:
☑ *E-mail*, ☑ *Pager*, ☑ *Net send*

Additional message
Use this box to specify an optional additional message sent to the operator 820 as part of the e-mail, net send, or pager notification.

The lower area displays the following alert events:
Last occurrence
Last response
Occurrence count
If necessary, you can **reset** the occurrence history by clicking the corresponding button.

5.4.5.4 Managing notifications

The **Notifications** tab allows you to specify actions that the SQL Server Agent service will take after the alert fires. Alert notifications ensure that database administrators know when events/errors occur and which measures are taken in response.



The main area lists all currently available operators 820. Specify the method by which an operator is to be notified: *E-mail*, *Pager*, *Net Send*. Set the corresponding flag next to the operator name.

5.4.6 Operators

An **operator** is the object that represents a single SQL Server operator. SQL Server operators receive alert 817 and job 811 status notification in response to events generated by the server. You can assign alert notifications 392 and job notifications 380 for any operator defined for the instance of SQL Server.

Before using SQL Server operators, make sure that the **SQL Server Agent** service is running.

Operator Editor allows you to define operator properties. It opens automatically when you create a new operator and is available on editing an existing one.

To open an operator in **Operator Editor**, double-click it in the DB Explorer 65 tree or in the Operators manager 822. Alternatively, you can right-click the operator alias and select the **Edit Operator** context menu item.

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- Setting operator properties 394
- Setting additional properties 395
- Managing alert notifications 395
- Managing job notifications 396
- Viewing DDL definition 955

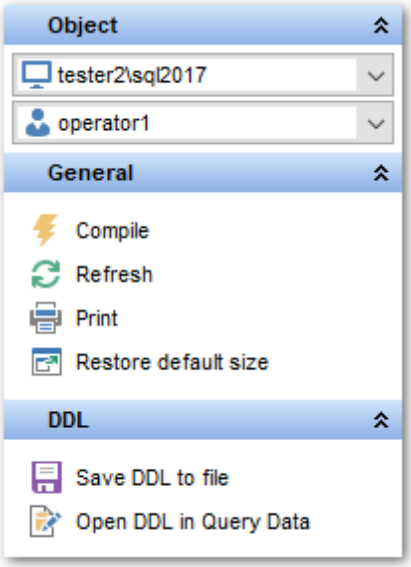
To create, edit, rename and drop operators, you can also use the **context menu** and the **Navigation bar** of Operators manager 822.

See also:

Operators manager 822

5.4.6.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Operator Editor**.



The **Navigation bar** of **Operator Editor** allows you to:

Object

select a server instance

select an operator for editing

General

compile 959 the operator (if it is being created/modified)

refresh the content of the active tab

restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the operator:

DDL

save DDL 955 to an external **.sql* file

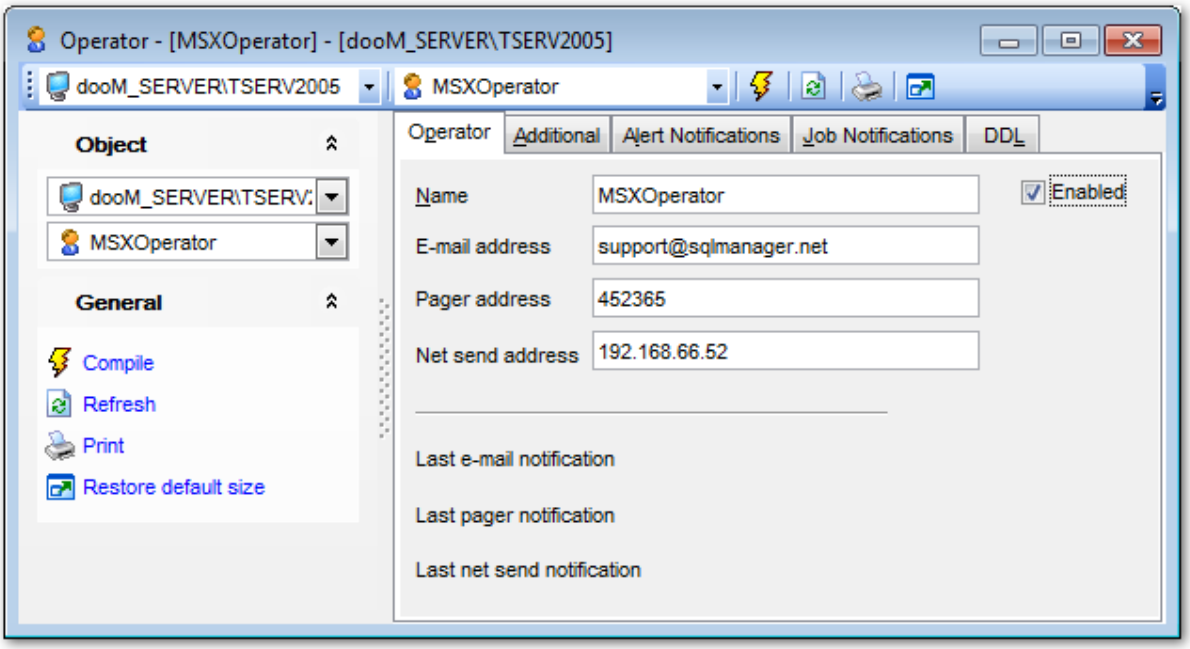
open DDL[955] in Query Data[432]

Items of the **Navigation bar** are also available on the **ToolBar** of **Operator Editor**. To enable the toolbar[953], open the Environment Options[854] dialog, proceed to the Windows[858] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[951]) in the **Bar style for child forms** group.

5.4.6.2 Setting operator properties

Use the **Operator** tab of **Operator Editor** to configure/view operator (notification recipient) properties.

Name
Enter a name for the new operator, or modify the name of the operator being edited. Enable/disable the operator using the **Enabled** option.



E-mail address
Specify the e-mail address of the operator.

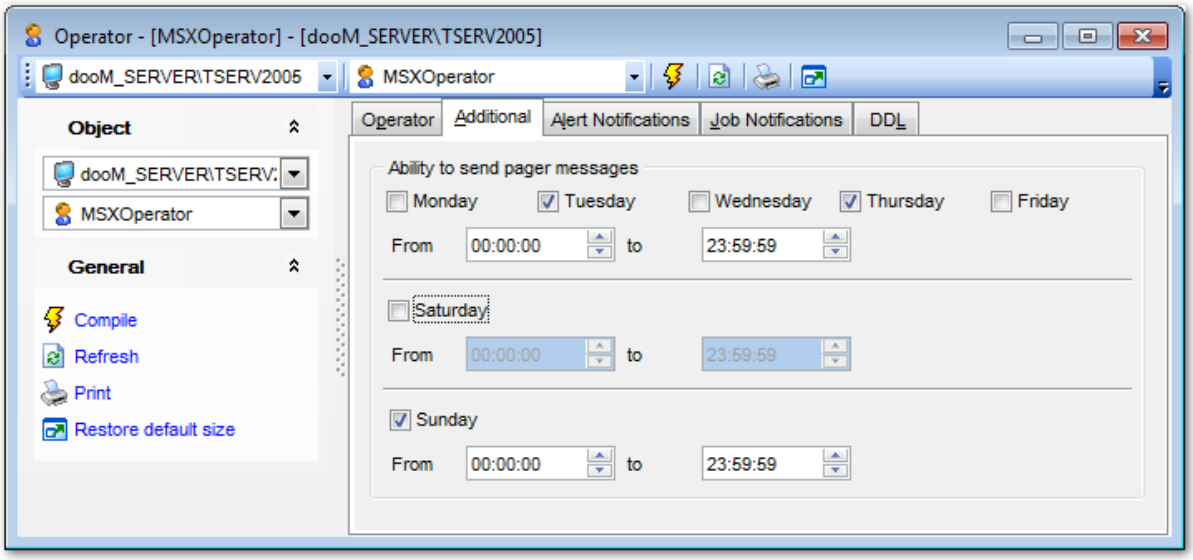
Pager address
Specify the pager address of the operator.

Net send address
Specify the network address of the operator to whom the network message will be sent.

The lower area displays the latest operator notifications:
Last e-mail notification
Last pager notification
Last net send notification

5.4.6.3 Setting additional properties

The **Additional** tab provides additional settings used for the specified operator.

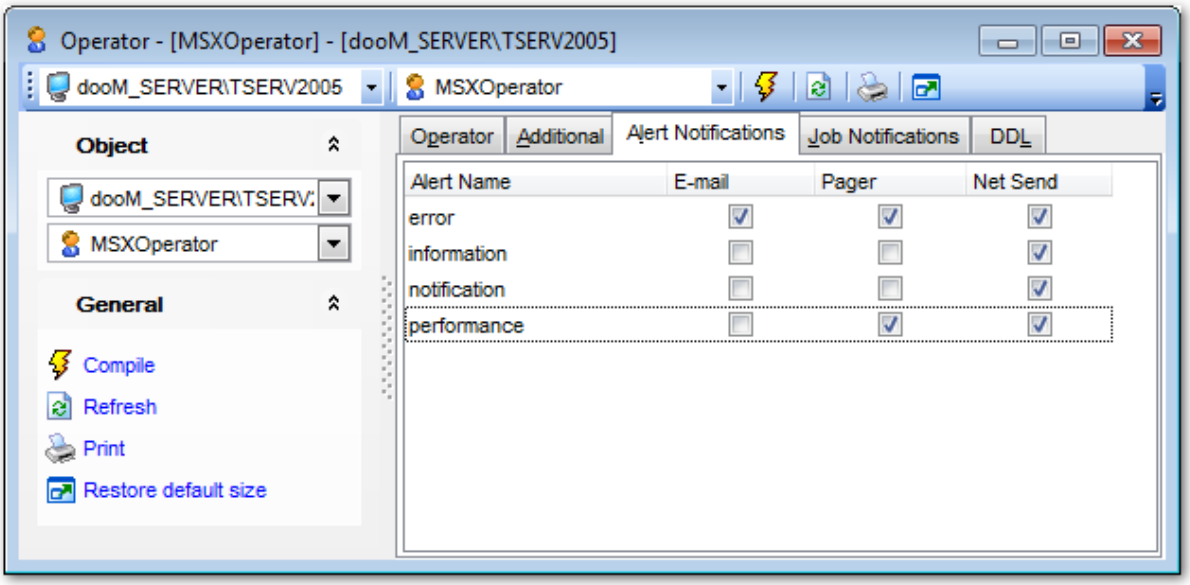


Ability to send pager messages
Specify when SQL Server Agent service can send pager notification to the operator:
☑ *Monday*, ☑ *Tuesday*, ☑ *Wednesday*, ☑ *Thursday*, ☑ *Friday*, ☑ *Saturday*, ☑ *Sunday*

From ... To ...
Set the day time interval values using the spinner controls.

5.4.6.4 Managing alert notifications

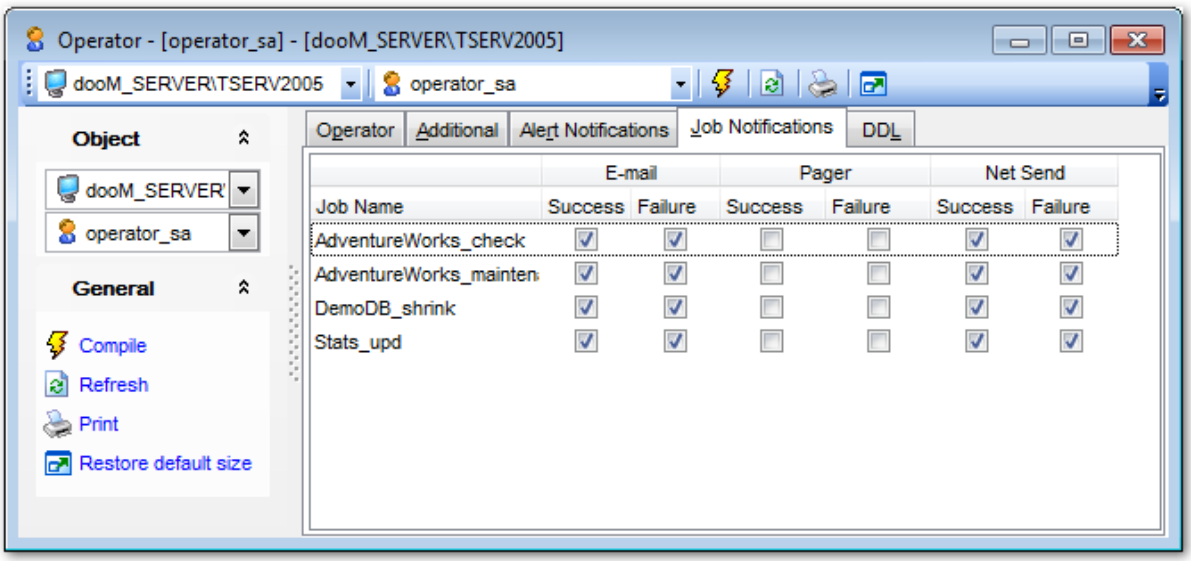
The **Alert Notifications** tab allows you to specify methods that the SQL Server Agent service uses to notify the operator when each of existing alerts 817 fires.



The main area lists all currently available alerts 817. Specify the method by which the operator is to be notified: *E-mail*, *Pager*, *Net Send*. Set the corresponding flag next to the alert name.

5.4.6.5 Managing job notifications

The **Job Notifications** tab allows you to specify methods that the SQL Server Agent service uses to notify the operator when each of existing jobs 811 is tried (succeeded or failed).



The main area lists all currently available jobs 811. Specify the method by which the operator is to be notified: *E-mail*, *Pager*, *Net Send*. Set the corresponding flag next to the

alert name.

5.4.7 Proxies

A Microsoft® SQL Server Agent **proxy** defines the security context for a job 811 step. A proxy provides SQL Server Agent with access to the security credentials 401 for a Microsoft Windows user. Each proxy can be associated with one or more subsystems. A job step 375 that uses the proxy can access the specified subsystems by using the security context of the Windows user. Before SQL Server Agent runs a job step 375 that uses a proxy, SQL Server Agent impersonates the credentials 401 defined in the proxy, and then runs the job step by using that security context.

SQL Server **proxies** can be used to help database administrators ensure that each job step runs with the minimum permissions required to perform its task.

Before using SQL Server proxies, make sure that the **SQL Server Agent** service is running.

Proxy Editor allows you to define proxy properties. It opens automatically when you create a new proxy and is available on editing an existing one.

A SQL Server Agent proxy manages security for job steps 375 that involve subsystems other than the Transact-SQL subsystem. Each proxy corresponds to a security credential 401. A proxy may have access to any number of subsystems.

To open a proxy in **Proxy Editor**, double-click it in the DB Explorer 65 tree or in the Proxies manager 829. Alternatively, you can right-click the proxy alias and select the **Edit Proxy** context menu item.

- Using Navigation bar and Toolbar 397
- Setting proxy properties 398
- Viewing proxy jobs 401
- Viewing DDL definition 955

To create, edit and drop proxies, you can also use the **context menu** and the **Navigation bar** of Proxies manager 829.

See also:

Proxies manager 829

5.4.7.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Proxy Editor**.

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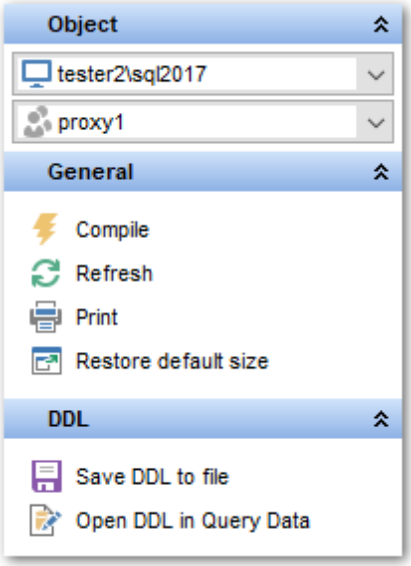


The **Navigation bar** of **Proxy Editor** allows you to:

Object
select a server instance
select a proxy for editing

General
compile 959 the proxy (if it is being created/modified)
refresh the content of the active tab
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the proxy:

DDL
save DDL 955 to an external **.sql* file
open DDL 955 in Query Data 432

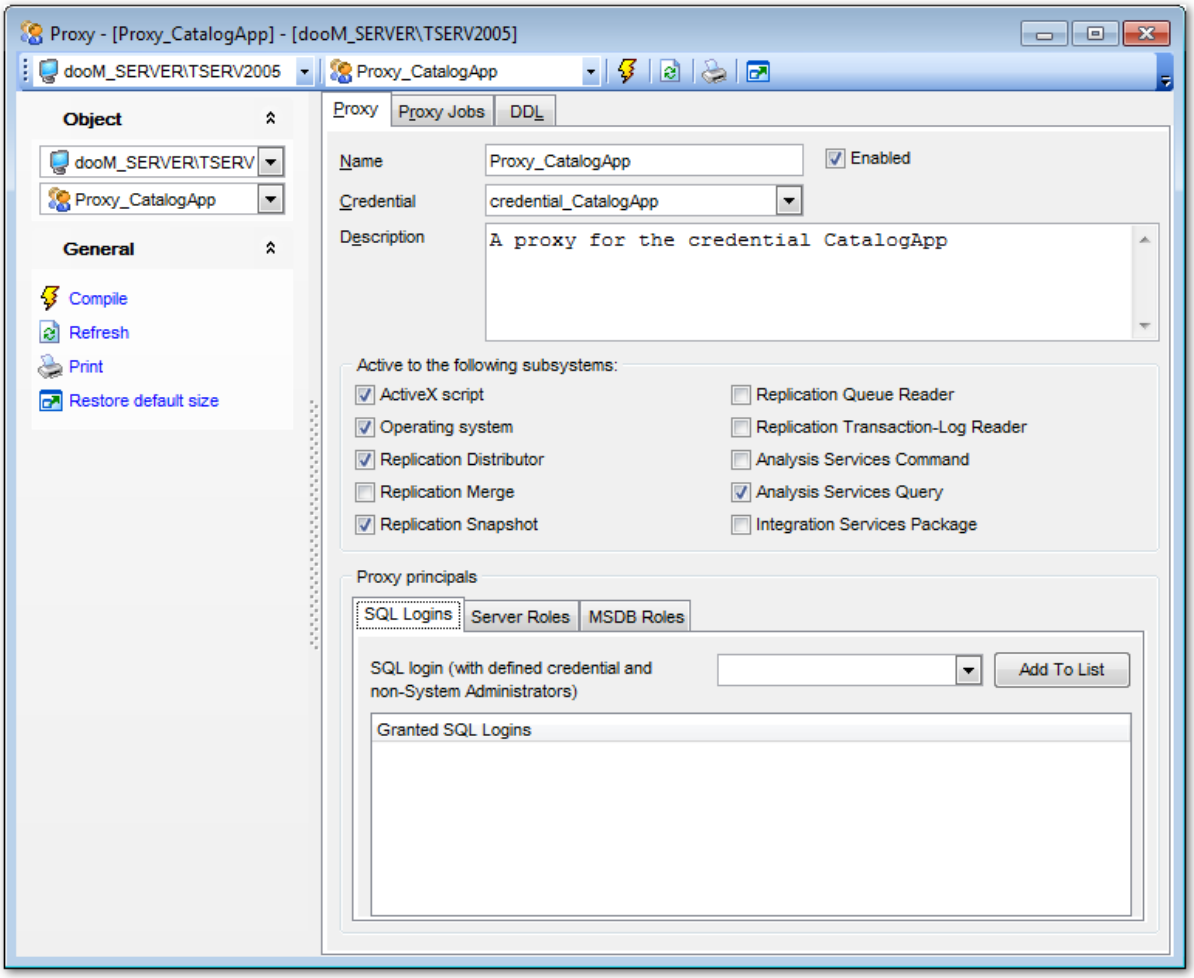
Items of the **Navigation bar** are also available on the **ToolBar** of **Proxy Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.4.7.2 Setting proxy properties

Use the **Proxy** tab of **Proxy Editor** to configure/view proxy properties. SQL Server Agent uses **proxies** to manage security contexts.

Name
Enter a name for the new proxy, or modify the name of the proxy being edited. Enable/

disable the proxy using the ☑ **Enabled** option.



Credential
Each proxy corresponds to a security credential 401. Use the drop-down list to select a credential for the proxy.

Description
In this memo field you can supply an optional description for the proxy.

Each proxy can be associated with a set of subsystems and a set of logins 687.

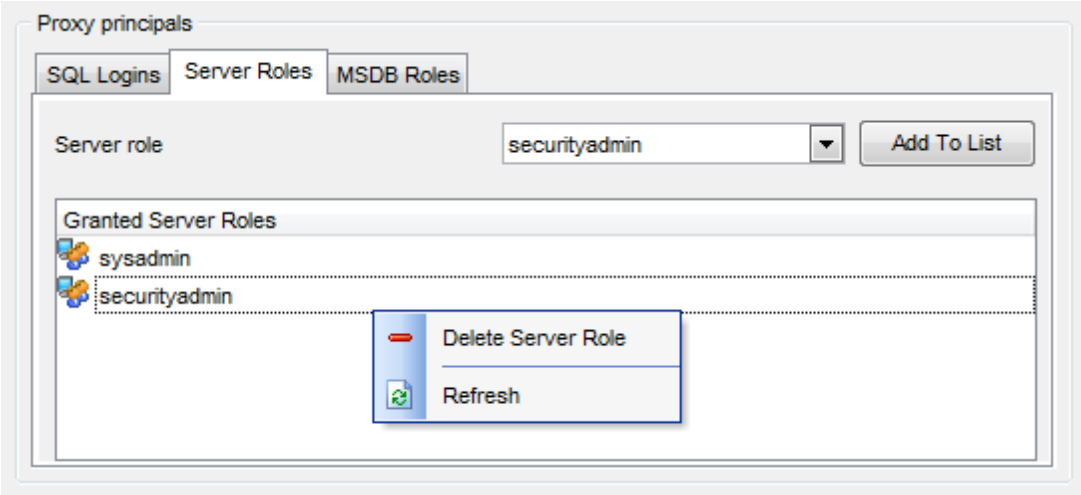
Active to the following subsystems
Tick off the subsystem(s) to grant access to:
☑ *ActiveX script*
☑ *Operating system*
☑ *Replication Distributor*
☑ *Replication Merge*
☑ *Replication Snapshot*
☑ *Replication Queue Reader*

- ☑ *Replication Transaction-Log Reader*
- ☑ *Analysis Services Command*
- ☑ *Analysis Services Query*
- ☑ *Integration Services Package*

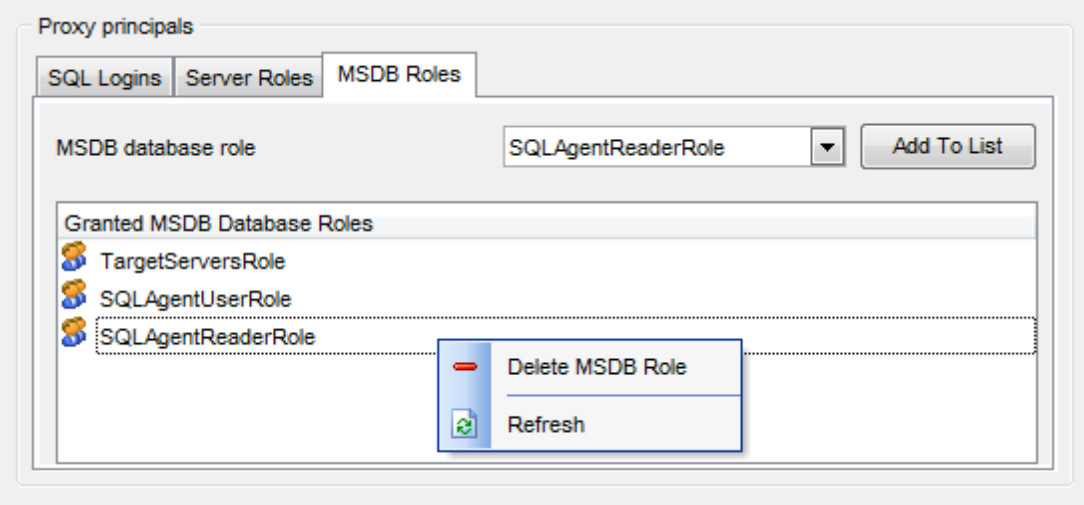
The **Proxy principals** group allows you to grant security principal 686 access to the proxy.

Use the **SQL Logins** tab to grant access to SQL logins 687 (with defined credentials 401).
To specify a login, select it in the drop-down list and click the **Add to List** button.

Use the **Server Roles** tab to grant access to fixed server roles 699.
To specify a server role, select it in the drop-down list and click the **Add to List** button.



Use the **MSDB Roles** tab to grant access to the database roles 306 in the *msdb* database.
To specify a database role, select it in the drop-down list and click the **Add to List** button.



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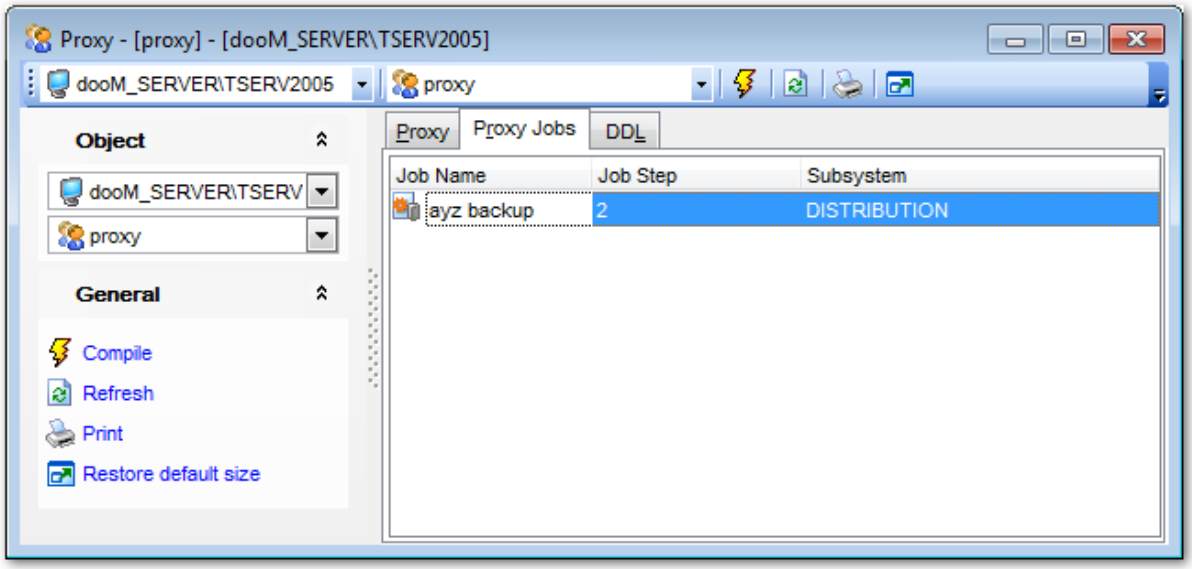
Right-click an item within the **Granted SQL Logins** / **Server Roles** / **MSDB Database Roles** list to call the **context menu** allowing you to *delete* a the selected principal and to refresh the list.

5.4.7.3 Viewing proxy jobs

The **Proxy Jobs** tab allows you to browse the list of job steps 375 that use the proxy.

Note: The proxy can be used only for job steps 375 that use a subsystem associated with the proxy. To create a job step that uses a specific proxy, the job owner must either belong to a login 687 associated with that proxy or be a member of a role 699 with unrestricted access to proxies.



A proxy can be used in more than one job step 375.
The list displays the job steps as a grid with the following columns: *Job Name*, *Job Step*, *Subsystem*.

5.4.8 Credentials

A **Credential** is a record containing the authentication information required to connect to a resource outside of SQL Server. Most credentials consist of a Windows login and password.
Credentials allow users 300 that connect to SQL Server using SQL Authentication to connect to Windows or other resources outside of SQL Server.
After creating a credential, you can map it to a login 687. A single credential can be mapped to multiple SQL Server logins 687. But a SQL Server login 687 can be mapped to only one credential.

Credential Editor allows you to define credential properties. It opens automatically when you create a new credential and is available on editing an existing one.

To open a credential in **Credential Editor**, double-click it in the DB Explorer 65 tree. Alternatively, you can right-click the credential alias and select the **Edit Credential** context menu item.

- Using Navigation bar and Toolbar 402
- Setting credential properties 403
- Viewing DDL definition 955

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

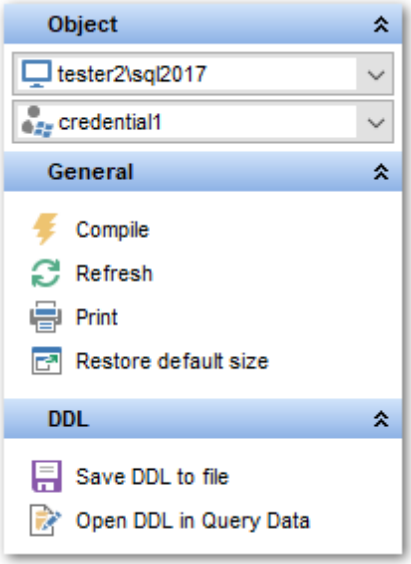
Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Logins 359

5.4.8.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Credential Editor**.



The **Navigation bar** of **Credential Editor** allows you to:

Object

select a server instance

select a credential for editing

General

compile 959 the credential (if it is being created/modified)
refresh the content of the active tab
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the credential:

DDL

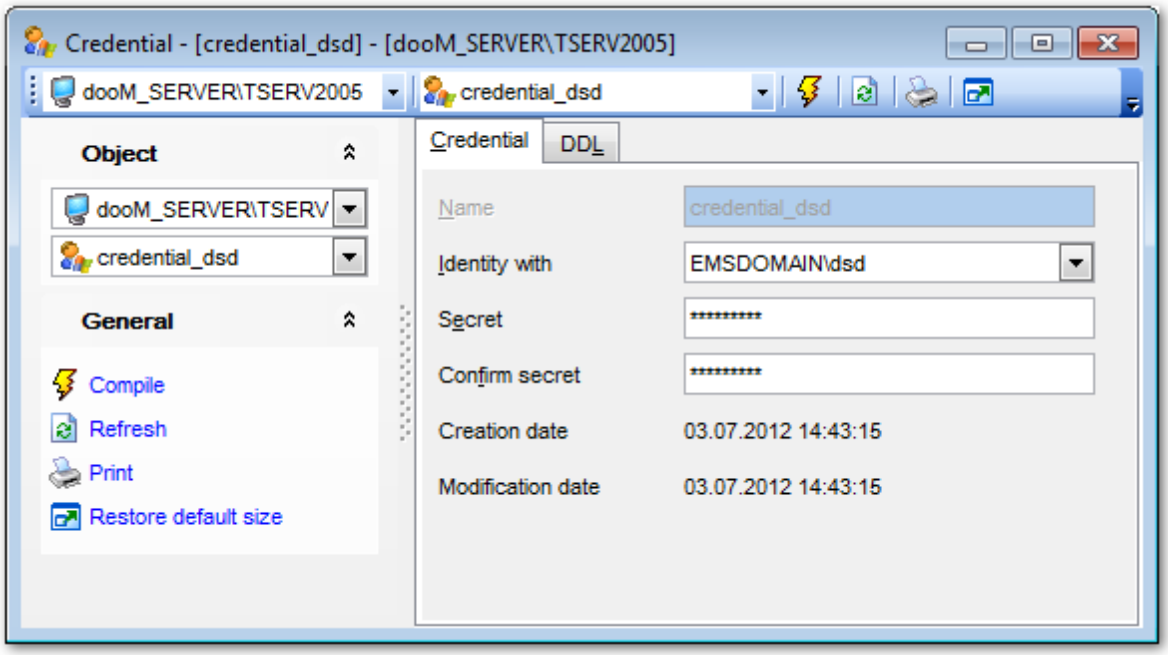
save DDL 955 to an external *.sql file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Credential Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.4.8.2 Setting credential properties

Use the **Credential** tab of **Credential Editor** to configure/view credential properties.

Name
Enter a name for the new credential, or view the name of the credential being edited.



Identity with

Use the drop-down list to select the name of the account 686 to be used when connecting outside the server.

Secret
Specify the secret required for outgoing authentication, and **confirm the secret** in the corresponding box.

The lower area displays the following credential events:
Creation date
Modification date

5.4.9 Linked Servers

A **Linked server** is a virtual server that can be defined to SQL Server 2005 (and higher) with all the information required to access an OLE DB data source. A **Linked server** configuration enables SQL Server to execute commands against OLE DB data sources on remote servers. **Linked servers** provide a number of features: remote server access; the ability to issue distributed queries, updates, commands and transactions on heterogeneous data sources; the ability to address diverse data sources universally.

Linked Server Editor allows you to define linked server properties. It opens automatically when you create a new linked server and is available on editing an existing one.

To open a linked server in **Linked Server Editor**, double-click it in the DB Explorer 65 tree or in the Linked servers manager 837. Alternatively, you can right-click the linked server alias and select the **Edit Linked Server** context menu item.

- Configuring Linked server 404
- Security settings 405
- Setting server options 407
- Linked Server content 408
- Viewing DDL definition 955

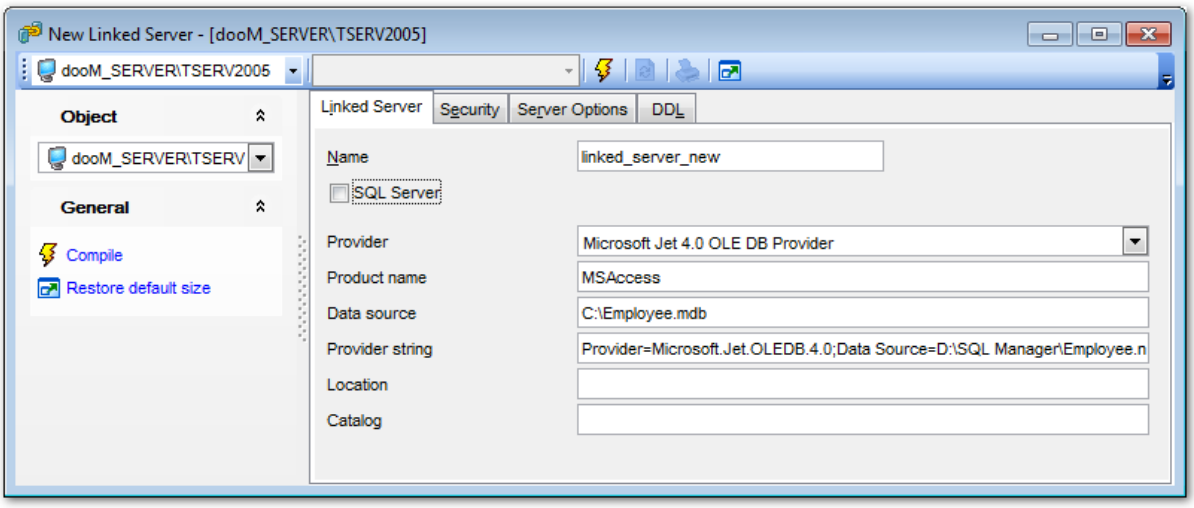
To create, edit and drop linked servers, you can also use the **context menu** and the **Navigation bar** of Linked servers manager 837.

See also:
Linked servers manager 837

5.4.9.1 Configuring Linked server

Use the **Linked Server** tab of **Linked Server Editor** to configure/view linked server properties.

Name
Enter a name for the new linked server, or view the name of the linked server being edited.



SQL Server
Select this option to identify the linked server as an instance of Microsoft® SQL Server™. If you use this method of defining a SQL Server linked server, the name of the linked server must be the network name of the server. Also, any tables retrieved from the server are from the default database defined for the login on the linked server.

Provider
Use the drop-down list to select the name of the OLE DB Provider to be used for access to the specified linked server.

Product name
Specify the product name of the OLE DB data source you want to add as a linked server.

Data source
Specify the OLE DB data source property corresponding to the linked server.

Provider string
Specify the OLE DB provider string corresponding to the linked server.

Location
Specify the OLE DB location property corresponding to the linked server.

Catalog
Specify the OLE DB catalog property corresponding to the linked server.

5.4.9.2 Security settings

The **Security** tab provides security settings used for the specified linked server connection.

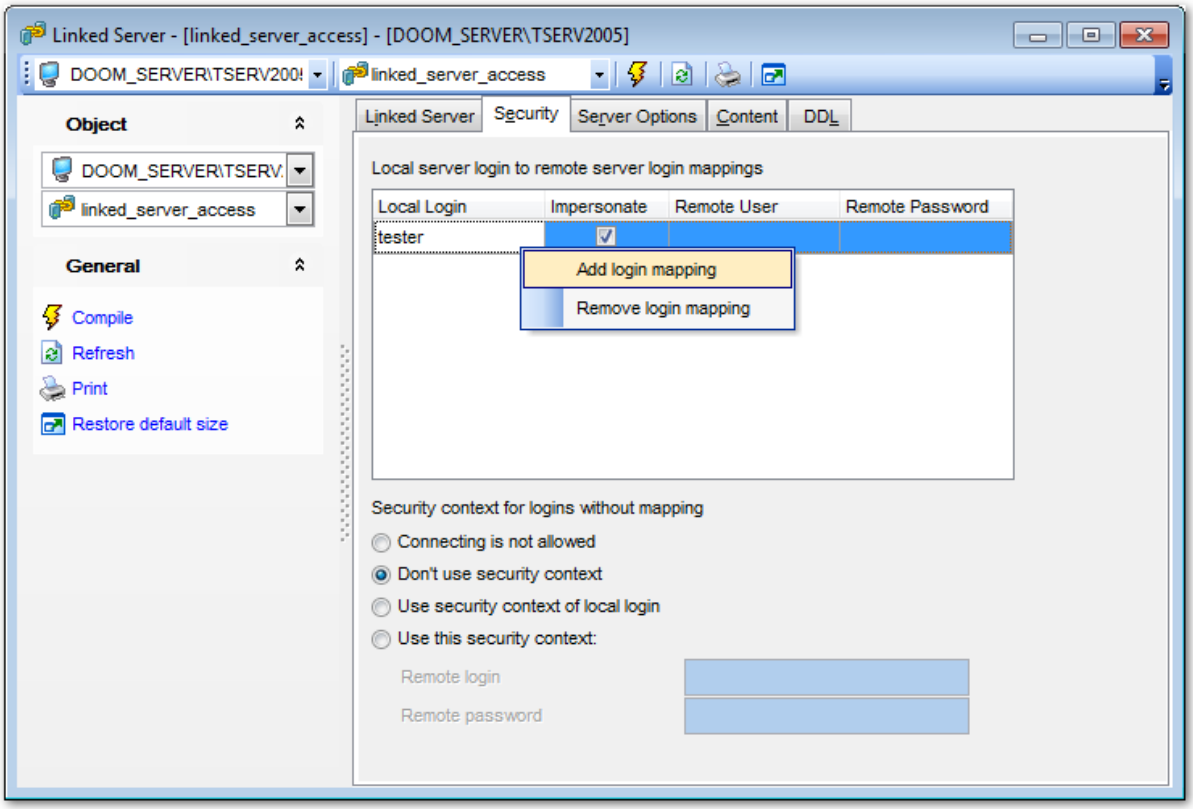
Local Login
Specify the local login IDs that can connect to the linked server.

Impersonate

Set this flag to specify that the local login ID will be used to connect to the linked server. Select this option if you are certain that the local login ID exactly matches a login ID with sufficient permissions on the linked server.

Remote user
Use the remote user to map the users that are not defined in **Local login**.

Remote password
Specify the password used to map the users that are not defined in **Local login**.



Connecting is not allowed
Select this option to specify that the connection will not be established for logins that are not defined in the mapping list.

Don't use security context
Select this option to specify that for logins that are not defined in the list, the connection will be established without using a security context.

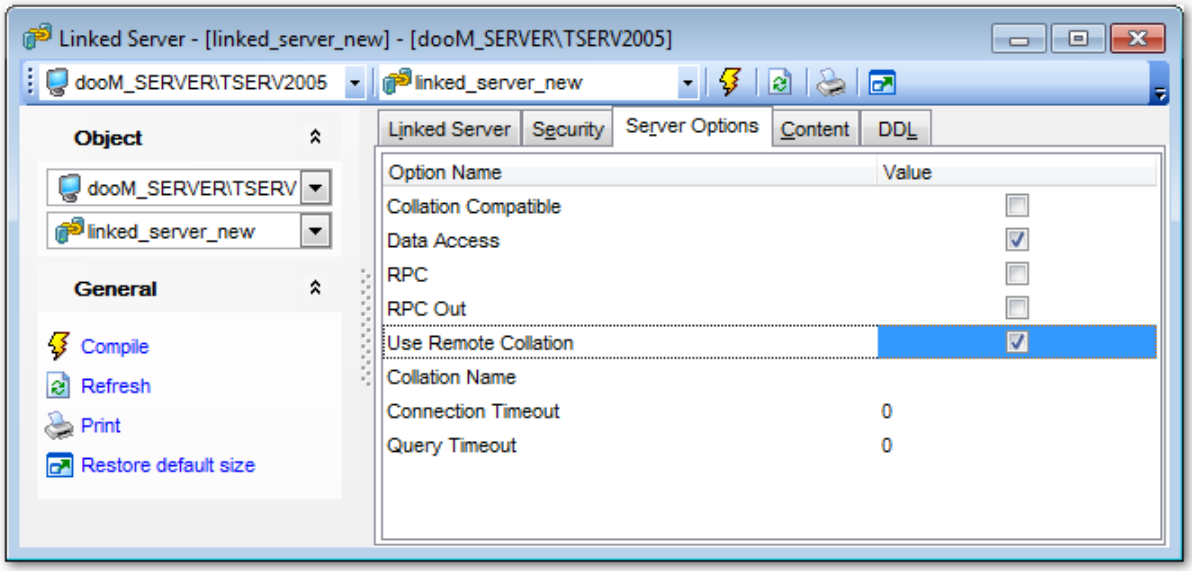
Use security context of local login
Select this option to specify that for logins that are not defined in the list, the connection will be established using the security context of the local login.

Use this security context
Select this option to specify that for logins that are not defined in the list, the connection will be established using the login and password specified in the **Remote Login** and

Remote password boxes below.

5.4.9.3 Setting server options

The **Security** tab allows you to set server options that will be used for the specified linked server connection.



Collation Compatible
If this option is enabled, SQL Server assumes that all characters in the linked server are compatible with the local server, with regard to character set and collation sequence (or sort order). This enables SQL Server to send comparisons on character columns to the provider.
This option should be set only if it is certain that the data source corresponding to the linked server has the same character set and sort order as the local server.

Data Access
This option enables/disables a linked server for distributed query access.

RPC
This option enables/disables RPC from the given server.

RPC Out
This option enables/disables RPC to the given server.

Use Remote Collation
This option determines whether the collation of a remote column or of a local server will be used.
If checked, the collation of remote columns is used for SQL Server data sources, and the collation specified in collation name is used for non-SQL Server data sources.
If unchecked, distributed queries will always use the default collation of the local server, while collation name and the collation of remote columns are ignored.

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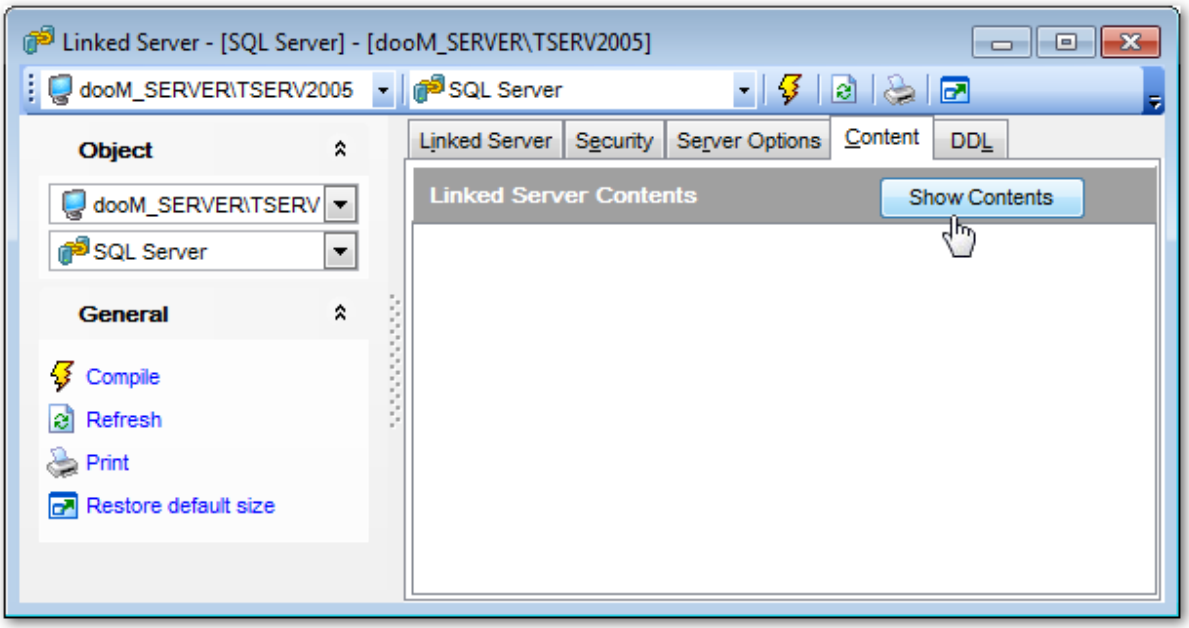
Collation Name
This drop-down list allows you to specify the name of the collation used by the remote data source if use remote collation is true and the data source is not a SQL Server data source.

Connection Timeout
Use this edit-box to set the time-out value for connecting to the linked server.

Query Timeout
Use this edit-box to set the time-out value for queries against the linked server.

5.4.9.4 Linked Server content

The **Content** tab allows you to browse the contents of the linked server.



To display the actual linked server contents, press the **Show Contents** button.

5.4.10 Endpoints

Communication of SQL Server Database Engine with an application is formatted in a Microsoft communication format called a tabular data stream (TDS) packet. The TDS packet is encapsulated inside a standard communication protocol (such as TCP/IP or Named Pipes) by the Net-Libraries on both the server and the client computers. On the server side the Net-Libraries are part of the Database Engine, whereas on the client side the Net-Libraries are part of the SQL Native Client. To configure Net-Libraries, the server and the SQL Native Client are configured to use a network protocol. The server creates a SQL Server object called a TDS **Endpoint** for each network protocol.

Endpoint Editor allows you to define endpoint properties. It opens automatically when

you create a new endpoint and is available on editing an existing one.

To open an endpoint in **Endpoint Editor**, double-click it in the DB Explorer 65 tree. Alternatively, you can right-click the endpoint alias and select the **Edit Endpoint** context menu item.

- Using Navigation bar and Toolbar 409
- Setting endpoint properties 410
- Setting protocol options 411
- Setting payload options 413
- Viewing DDL definition 955

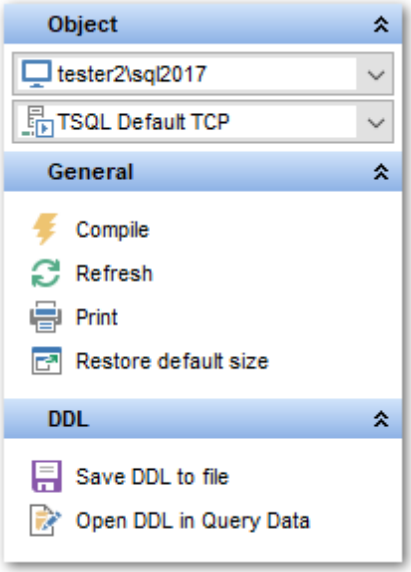
Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

5.4.10.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Endpoint Editor**.



The **Navigation bar** of **Endpoint Editor** allows you to:

Object

select a server instance

select an endpoint for editing

General

compile 959 the endpoint (if it is being created/modified)
refresh the content of the active tab
restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the endpoint:

DDL

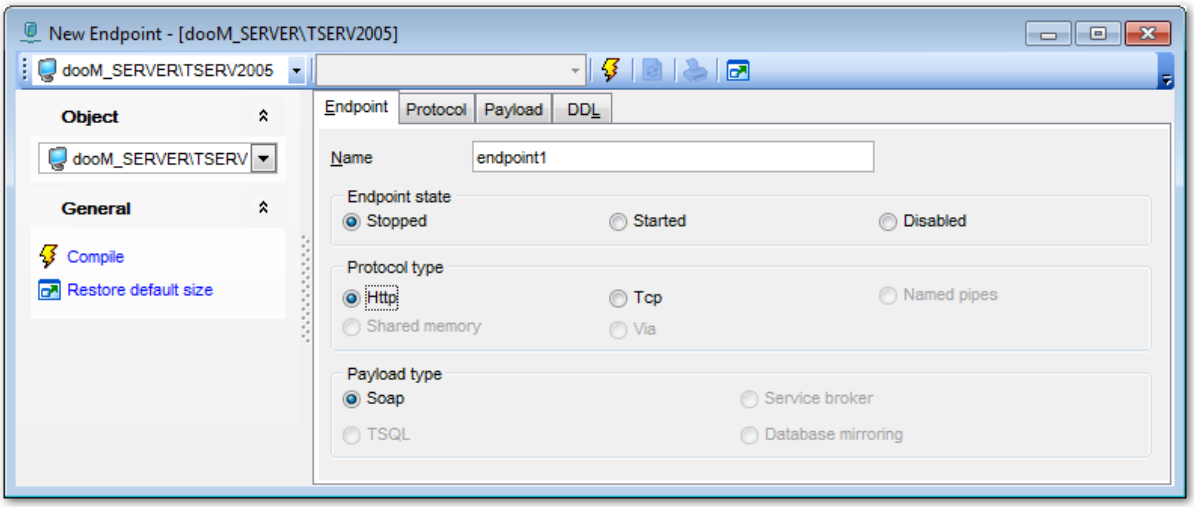
save DDL 955 to an external *.sql file
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **Endpoint Editor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

5.4.10.2 Setting endpoint properties

Use the **Endpoint** tab of **Endpoint Editor** to configure/view endpoint properties.

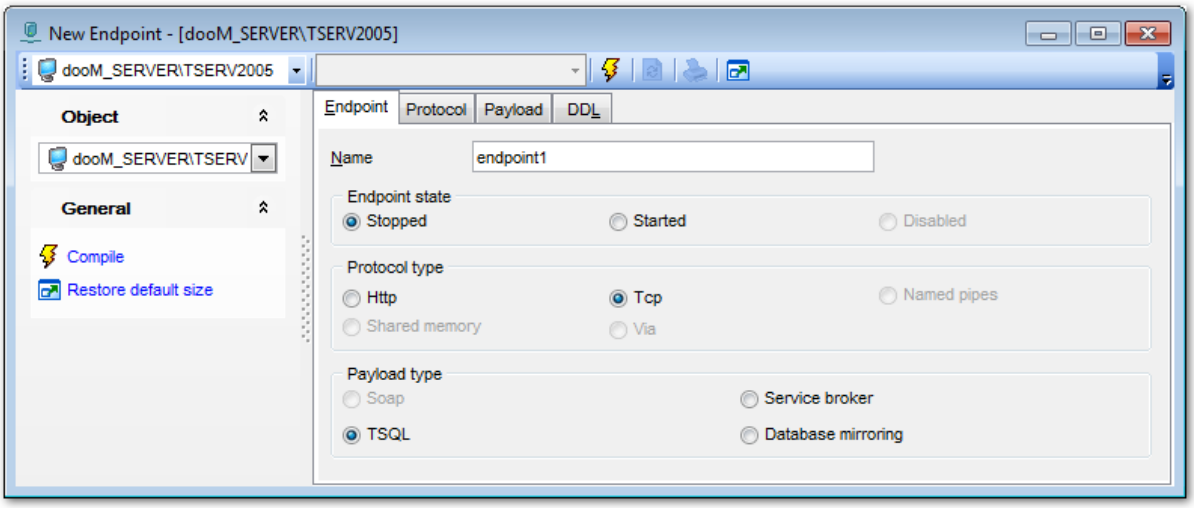
Name
Enter a name for the new endpoint, or view the name of the endpoint being edited.



Endpoint state
Specify the state of the endpoint when it is created:
Stopped
This option indicates that the endpoint is stopped. In this state, the server listens to port requests but returns errors to clients.
Started
This option indicates that the endpoint is started and is actively listening for connections.
Disabled

This option indicates that the endpoint is disabled. In this state, the server does not listen to the endpoint port or respond to any attempted requests to use the endpoint.

Protocol type
Specify the transport protocol to use:
- *HTTP*
- *TCP*
- *Named Pipes*
- *Shared memory*
- *Via*



Payload type
Specify the payload type:
- *Soap* (available for HTTP protocol only)
- *TSQL* (available for TCP protocol only)
- *Service broker* (available for TCP protocol only)
- *Database mirroring* (available for TCP protocol only)

5.4.10.3 Setting protocol options

The **Protocol** tab allows you to specify HTTP/TCP protocol options pertaining to the endpoint.

HTTP options

Path
Specify the URL path that identifies the location of the endpoint on the host computer. This string is a logical partitioning of the URL namespace that is used by the listener to route requests appropriately.

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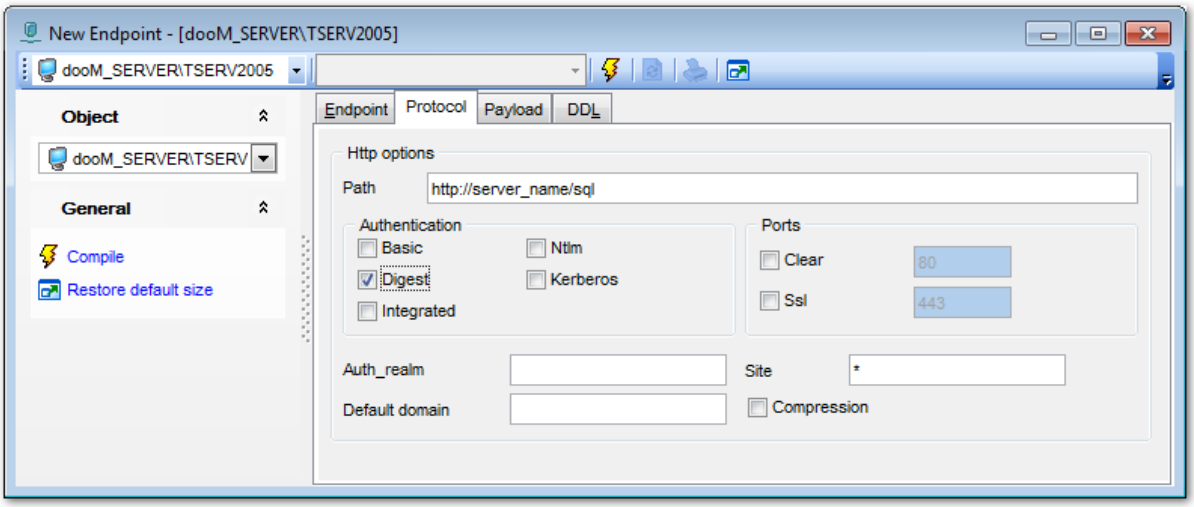

Authentication
Specify the authentication type(s) to be used to authenticate users that log on to the instance of SQL Server:

☑ *Basic*
It is one of the two required authentication mechanisms in the HTTP 1.1 specification. Basic authentication is made up of an Authentication header that contains the base64-encoded user name and password separated by a colon.

☑ *Digest*
It is the second authentication mechanism required by HTTP 1.1. This authentication is made up of the user name and password. This is then hashed with MD5, a one-way hashing algorithm, and sent to the server. The server has access to either the raw password, or a stored MD5 hash that was created when the password was set. The server can then compare the stored calculated value to the one provided by the client. This way, the client can prove that it knows the password without actually giving it to the server.

☑ *Integrated*
Endpoints configured to support integrated authentication can respond with either of the following authentication types as part of the authentication challenge: *Kerberos* or *NTLM*. Under this configuration, the server will try to authenticate the client with whichever type the client uses in requesting authentication.

☑ *NTLM*
It is the authentication mechanism supported by Windows 9x and Windows NT 4.0 (client and server). This authentication mechanism is a challenge-response protocol that offers stronger authentication than either basic or digest. NTLM is implemented in Windows 2000 and later versions by a Security Support Provider Interface (SSPI).

☑ *Kerberos*
This authentication is an Internet standard authentication mechanism. Kerberos authentication is supported in Windows 2000 and later versions by an SSPI. When Kerberos authentication is used, the instance of SQL Server must associate a Service Principal Name (SPN) with the account it will be running on.

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Ports
Use this group to specify the listening port type(s) to be associated with the endpoint:
☑ *Clear*
☑ *SSL*

Auth_realm
Specify the hint that returns to the client, which sent the SOAP request to the endpoint, as part of HTTP authentication challenge (applied when **Authentication** is set to *Digest*).

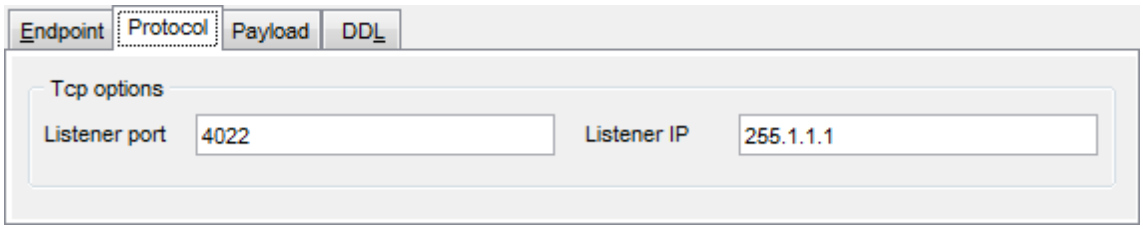
Default domain
Specify the default login domain (applied when **Authentication** is set to *Basic*).

Site
Specify the name of the host computer, or one of the specific signs:
*** (asterisk)
Implies that a listening operation applies to all possible host names for the computer that are not otherwise explicitly reserved.
+ (plus sign)
Implies that a listening operation applies to all possible host names for the computer.

☑ **Compression**
If this option is selected, SQL Server will honor requests where gzip encoding is accepted, and return compressed responses. That is, if a request comes in with an HTTP header specifying GZIP as a valid "accept-encoding", the server returns the response gzip-encoded.

TCP options

When TCP/IP is enabled for SQL Server, the Database Engine will listen for incoming connections on a connection point consisting of an IP address and TCP port number.



Listener port
Specify the port number that will be listened to for connections by the service broker TCP/IP protocol. The default port number is *4022*.

Listener IP
Specifies the IP address that the endpoint will listen on.

5.4.10.4 Setting payload options

The **Payload** tab allows you to define the payload that is supported on the endpoint.

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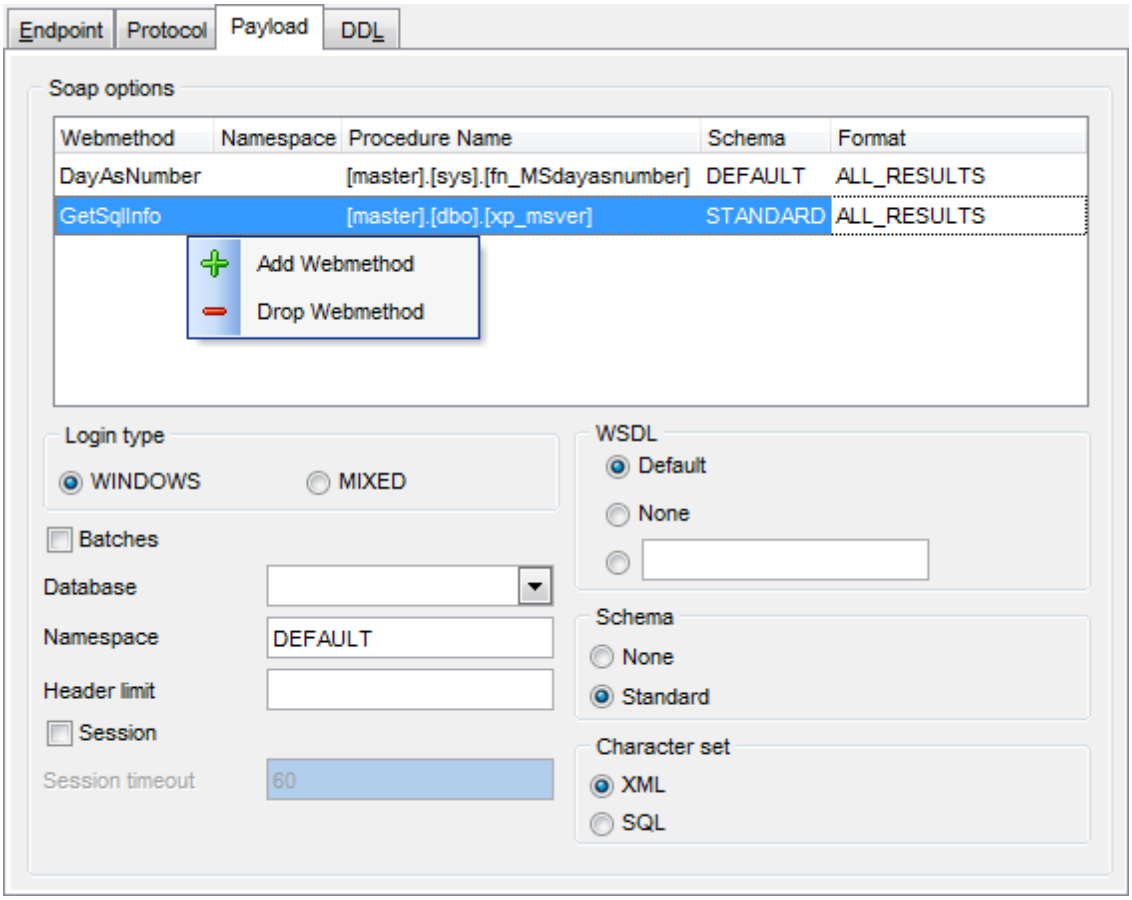

Soap options
This group is available if *HTTP* is selected as the **Protocol type** and *Soap* is specified as the **Payload type** at the Endpoint 410 tab of the editor.

The upper area of the group displays the webmethods (the methods for which HTTP SOAP requests can be sent to the endpoint) as a grid with the following columns: *Webmethod*, *Namespace*, *Procedure name*, *Schema*, *Format*.

Right-click an item within the list to call the **context menu** allowing you to *add* a new webmethod or *drop* the selected one.

Login type
Specify the SQL Server authentication mode for the endpoint:
WINDOWS
This option allows only Windows authentication to be used to authenticate endpoint users.
MIXED
This option allows either SQL Server authentication or Windows authentication to be used to authenticate endpoint users.

Batches
This option specifies whether special SQL requests are supported on the endpoint. If checked, SOAP requests for queries that use the *sqlbatch* method can be sent to this

endpoint.

Database
Use the drop-down list to select the database in the context of which the requested operation will be executed.

Namespace
Specify the namespace for the endpoint.

Header limit
This value specifies the maximum size, of the header section in the SOAP envelope (in bytes).

☑ **Session**
This option specifies whether the instance of SQL Server allows sessions support. If checked, SQL Server allows sessions support, whereby multiple SOAP request/response message pairs can be identified as part of a single SOAP session.

Session timeout
Specify time that is available before a SOAP session expires at the server when no further requests are received (in seconds).

WSDL
This group indicates whether WSDL document generation is supported for this endpoint: *None*, *Default* (a default WSDL response is generated and returned for WSDL queries submitted to the endpoint), or specify stored procedure 257 by name that will return a modified WSDL document.

Schema
This group specifies whether an XSD schema is returned by the endpoint when SOAP results are sent.
NONE
This option omits inline schema from SOAP responses.
STANDARD
This option includes inline schema in endpoint responses.

Character set
This group defines the character set behavior: *XML* (by default), or *SQL* (the characters that are not valid as character references are encoded, and then returned in the result).

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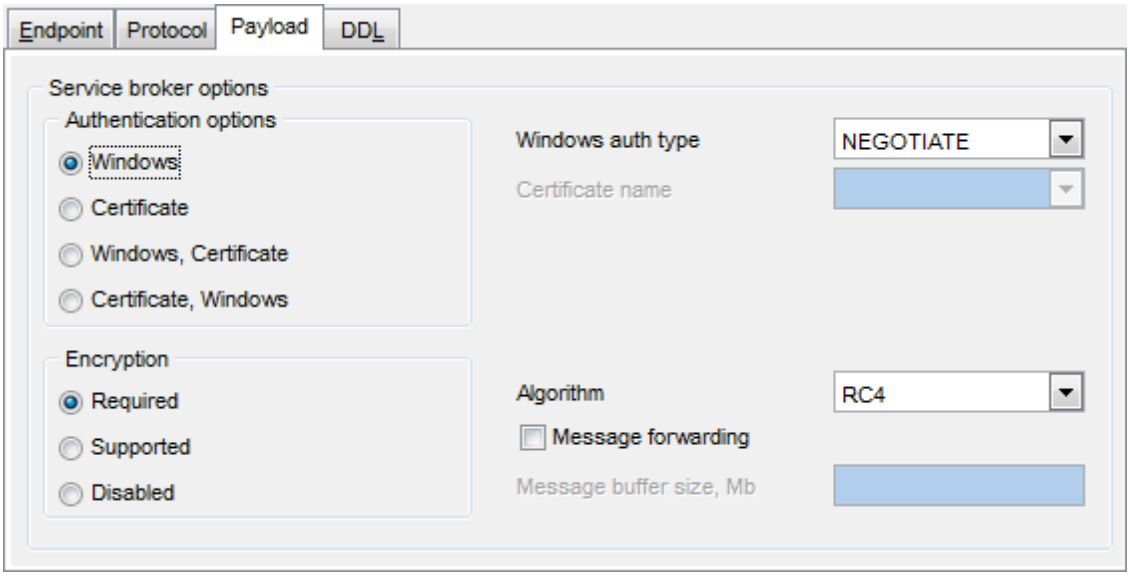

Service Broker options
This group is available if *TCP* is selected as the **Protocol type** and *Service broker* is specified as the **Payload type** at the Endpoint 410 tab of the editor.

Authentication options
Windows
Specifies that the endpoint is to connect using Windows Authentication protocol to authenticate the endpoints. In this case you should also select an authorization method (*NTLM* or *KERBEROS*) to be used as the authentication protocol, or *NEGOTIATE* that causes the endpoint to use the Windows negotiation protocol to choose either NTLM or Kerberos.
Certificate
Specifies that the endpoint is to authenticate the connection using a certificate 334 (you should select one from the drop-down list) to establish identity for authorization.
Windows, Certificate
Specifies that the endpoint is to try to connect by using Windows Authentication and, if that attempt fails, to then try using the specified certificate 334.
Certificate, Windows
Specifies that the endpoint is to try to connect by using the specified certificate 334 and, if that attempt fails, to then try using Windows Authentication.

Windows auth type
Use the drop-down list to select an authorization method (*NTLM* or *KERBEROS*) to be used as the authentication protocol, or *NEGOTIATE* that causes the endpoint to use the Windows negotiation protocol to choose either NTLM or Kerberos.

Certificate name
Use the drop-down list to select a certificate 334 to be used to authenticate the connection.

Encryption
This group specifies whether encryption is used in the process.

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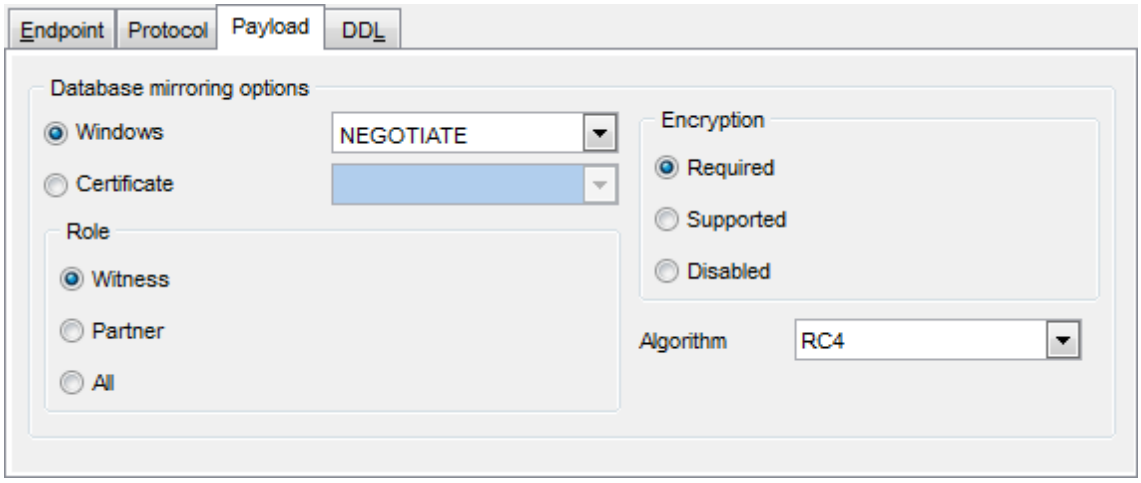
Required
Specifies that connections to this endpoint must use encryption. Therefore, to connect to this endpoint, another endpoint must have ENCRYPTION set to either SUPPORTED or REQUIRED.
Supported
Specifies that the data is encrypted only if the opposite endpoint specifies either SUPPORTED or REQUIRED.
Disabled
Specifies that data sent over a connection is not encrypted.

Algorithm
Specify the form of encryption used by the endpoint:
RC4 (specifies that the endpoint must use the RC4 algorithm)
AES (specifies that the endpoint must use the AES algorithm)
AES RC4 (specifies that the two endpoints will negotiate for an encryption algorithm with this endpoint giving preference to the AES algorithm)
RC4 AES (specifies that the two endpoints will negotiate for an encryption algorithm with this endpoint giving preference to the RC4 algorithm)

Message forwarding
This option determines whether messages received by this endpoint that are for services located elsewhere will be forwarded.

Message buffer size, Mb
Use the spinner control to specify the maximum amount of storage (in megabytes) to allocate for the endpoint to use when storing messages that are to be forwarded (if **Message forwarding** is selected).



Database mirroring options
This group is available if *TCP* is selected as the **Protocol type** and *Database mirroring* is specified as the **Payload type** at the Endpoint 410 tab of the editor.

Specify the TCP/IP authentication requirements for connections for this endpoint:
Windows
Specifies that the endpoint is to connect using Windows Authentication protocol to

authenticate the endpoints. In this case you should also select an authorization method (*NTLM* or *KERBEROS*) to be used as the authentication protocol, or *NEGOTIATE* that causes the endpoint to use the Windows negotiation protocol to choose either NTLM or Kerberos.

Certificate

Specifies that the endpoint is to authenticate the connection using a certificate 334 (you should select one from the drop-down list) to establish identity for authorization.

Encryption

This group specifies whether encryption is used in the process.

These options are common for *Service broker* and *Database mirroring* payload types. For details see **Service Broker options**.

Algorithm

Specifies the form of encryption used by the endpoint.

This option is common for *Service broker* and *Database mirroring* payload types. For details see **Service Broker options**.

Role

This group specifies the database mirroring role or roles that the endpoint supports.

Witness

Enables the endpoint to perform in the role of a witness in the mirroring process.

Partner

Enables the endpoint to perform in the role of a partner in the mirroring process.

All

Enables the endpoint to perform in the role of both a witness and a partner in the mirroring process.

5.4.11 DDL Triggers

A **Trigger** automatically executes when an event occurs in the database server.

DDL Triggers are a special kind of trigger that fire in response to Data Definition Language (DDL) statements. They can be used to perform administrative tasks in the database server.

DDL Trigger Editor allows you to define DDL trigger properties (the scope of the DDL triggers is applied to the current server, i.e. the trigger fires whenever *event_type* or *event_group* happens anywhere in the current server). It opens automatically when you create a new DDL trigger and is available on editing an existing one.

To open a DDL trigger in **DDL Trigger Editor**, double-click it in the DB Explorer 65 tree. Alternatively, you can right-click the DDL trigger alias and select the **Edit DDL Trigger** context menu item.

- Using Navigation bar and Toolbar 419
- Setting DDL trigger properties 420
- Viewing DDL definition 955

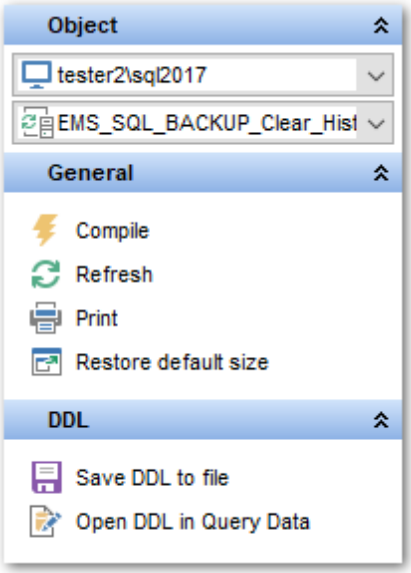
Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

5.4.11.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **DDL Trigger Editor**.



The **Navigation bar** of **DDL Trigger Editor** allows you to:

Object

select a server instance

select a DDL trigger for editing

General

compile 959 the DDL trigger (if it is being created/modified)

refresh the content of the active tab

restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the DDL trigger:

DDL

save DDL 955 to an external **.sql* file

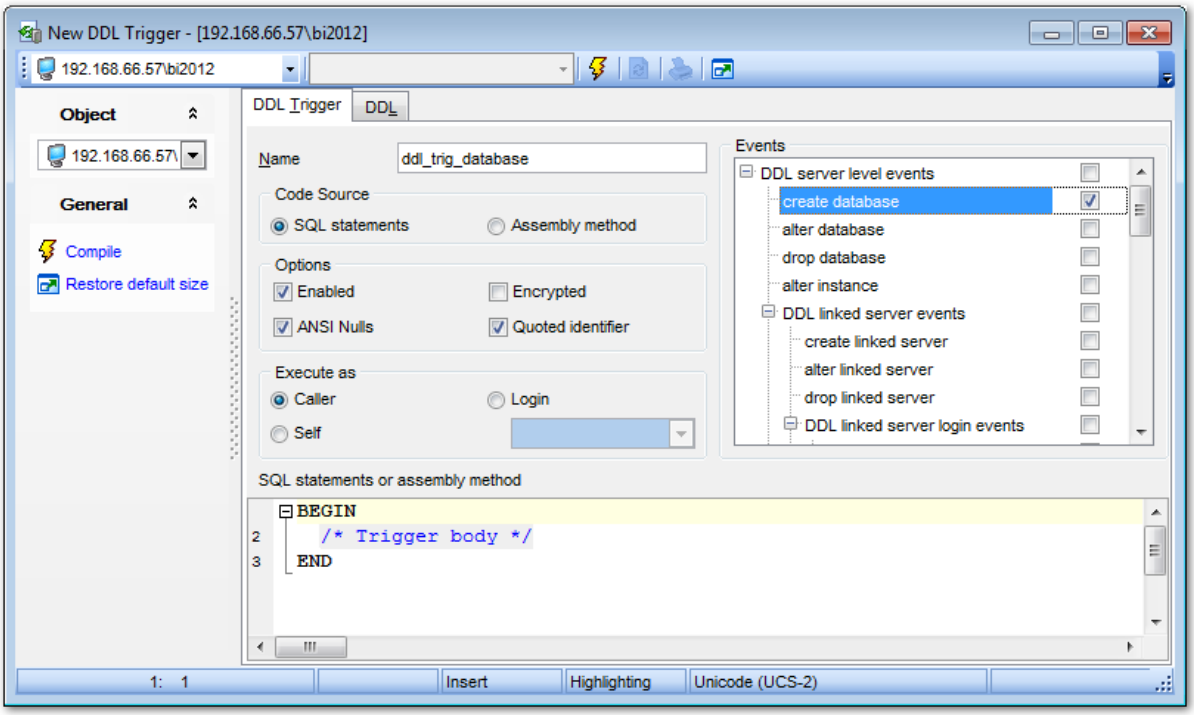
open DDL 955 in Query Data 432

Items of the **Navigation bar** are also available on the **ToolBar** of **DDL Trigger Editor**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

5.4.11.2 Setting DDL trigger properties

Use the **DDL Trigger** tab of **DDL Trigger Editor** to configure/view server-scoped DDL trigger properties.

Name
Enter a name for the new DDL trigger, or modify the name of the DDL trigger being edited.



Enabled
Enables/disables the trigger immediately after it is created. A disabled trigger still exists as an object in the server, but does not fire.

Encrypted
If this option is selected, the text of the *CREATE TRIGGER* statement is encrypted.

Execute as
Specify the security context under which the trigger is to be executed: *Caller*, *Self* or *Login* (select which login687 account should be used to validate permissions on any server objects that are referenced by the trigger).

Code Source

Select the trigger code source: it can be a direct set of SQL statements or an external procedure call from a .NET assembly.

Event type
This group is available for SQL Server 2008. Specifies trigger type:
- *Server level*
- *Logon*

Events
This area lists the DDL events as groups. The trigger will fire after execution of any data definition language event selected in this list. Set the corresponding flag next to an event or event group name.

SQL statements or assembly method
This area allows you to set the trigger conditions and actions. Trigger conditions specify additional criteria that determine whether the tried DDL statements cause the trigger actions to be performed.
The trigger actions take effect when the DDL operation is performed.

5.4.12 Server roles

SQL Server provides server-level roles to help you manage the permissions on a server. These roles are security principals that group other principals. Server-level roles are server-wide in their permissions scope.
Fixed server roles are provided for convenience and backward compatibility. Assign more specific permissions whenever possible.
SQL Server provides nine fixed server roles. The permissions that are granted to the fixed server roles cannot be changed. Beginning with SQL Server 2012, you can create user-defined server roles and add server-level permissions to the user-defined server roles.

Server Role Editor allows you to define server role properties. It opens automatically when you create a new server role and is available on editing an existing one.

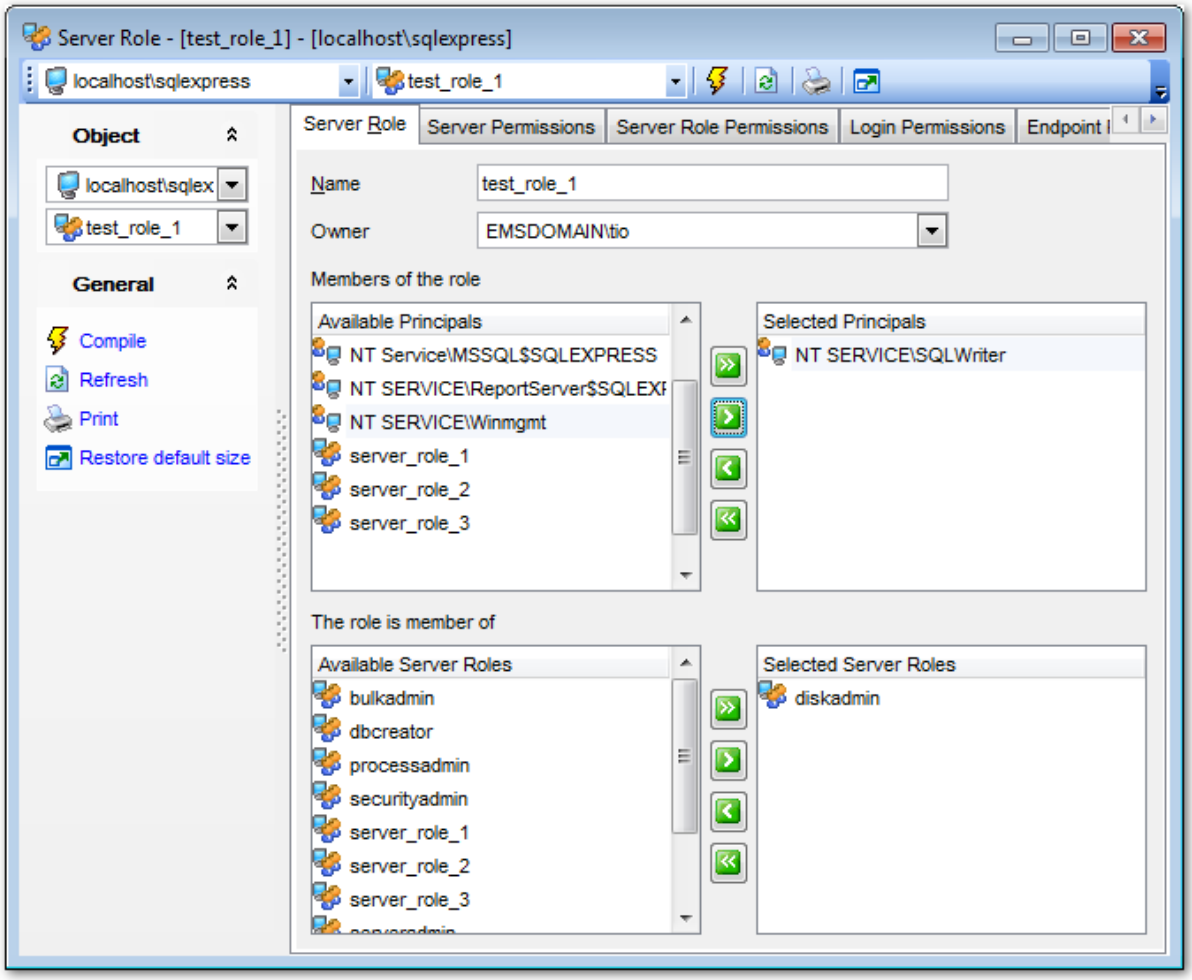
To open a server role in **Server Role Editor**, double-click it in the DB Explorer 65 tree or in the Server Role Manager 699. Alternatively, you can right-click the server role alias and select the **Edit Server Role** context menu item.

- Setting server role parameters 422
- Defining server permissions 423
- Defining server role permissions 424
- Defining login permissions 425
- Defining endpoint permissions 426

See also:
Server Role Manager 699

5.4.12.1 Setting server role parameters

Use the **Server Role** tab of **Server Role Editor** to specify server role properties and membership.



Name
Enter a name for the new server role, or view the name of the server role being edited.

Owner
Use the drop-down list to select the owner of the server role (the name of a server login 359).

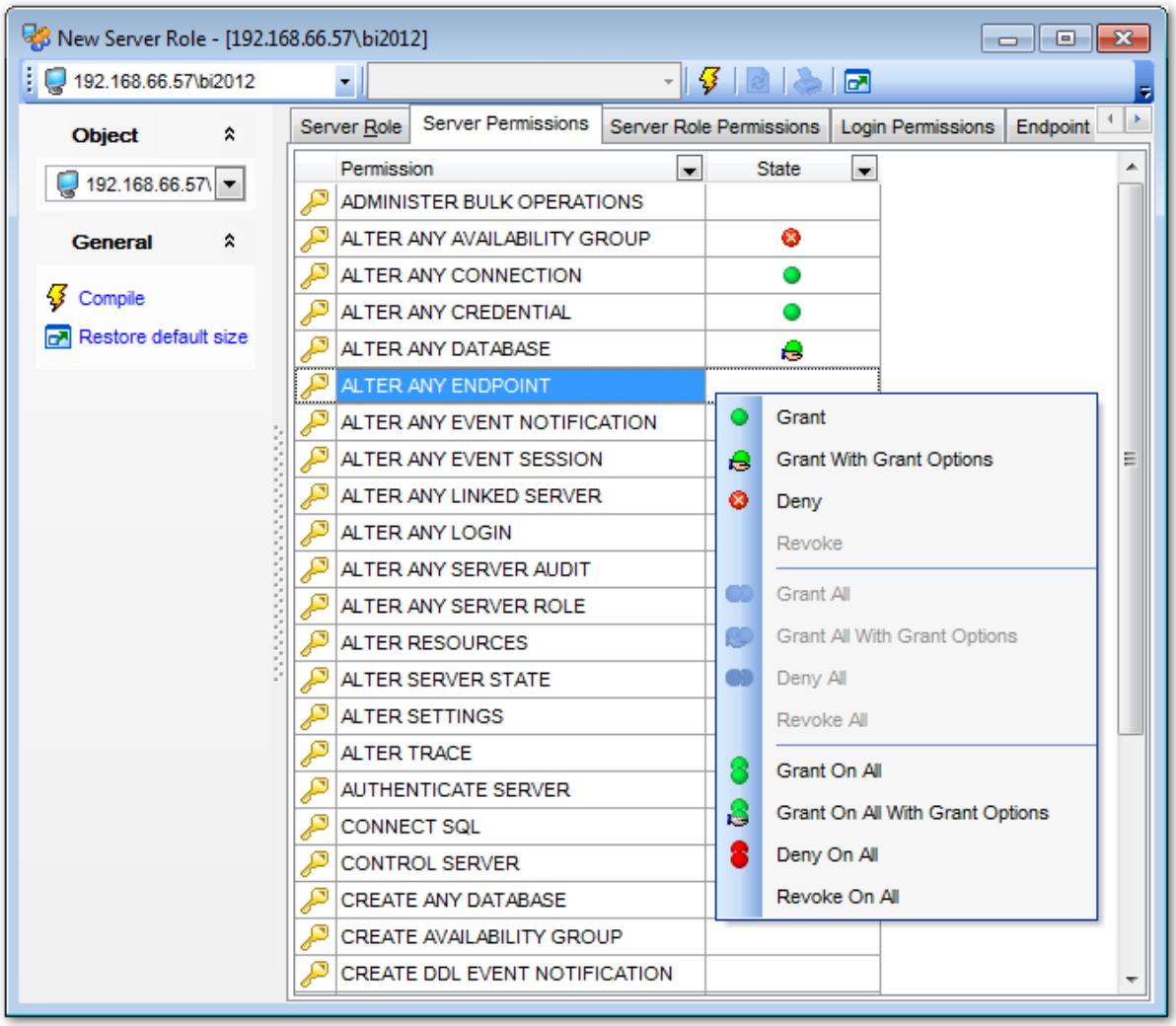
Members of the role
Add members to the role, i.e. add the logins 359 (or other server roles) that will inherit the permissions of the server role.
To add a login, you need to move it from the **Available Principals** list to the **Selected Princpals** list. Use the buttons or drag-and-drop operations to move the logins from one list to another.

The role is member of

Define role membership, i.e. select the server role(s) the current server role will be a member of. The selected server roles determine the tasks that can be performed through the current server role.
To select a server role, you need to move it from the **Available Server Roles** list to the **Selected Server Roles** list. Use the buttons or drag-and-drop operations to move the roles from one list to another.

5.4.12.2 Defining server permissions

This tab allows you to grant **Server permissions** to the server role.



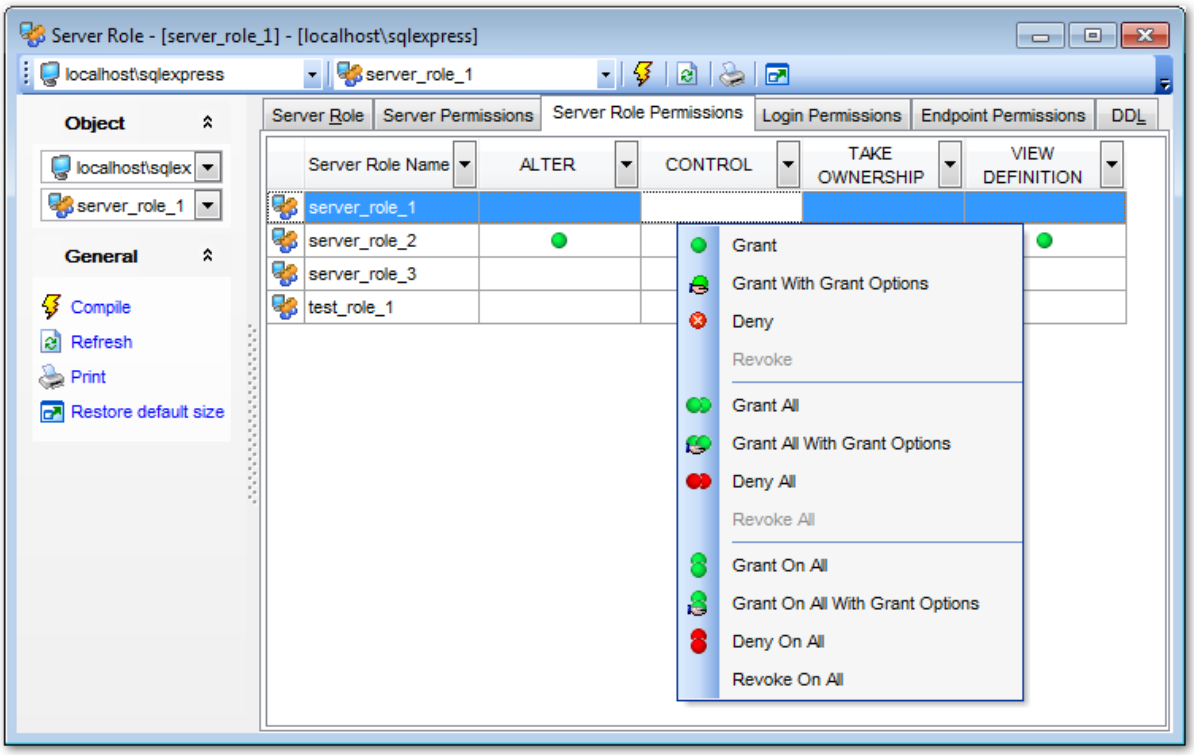
The **Permission** column contains the list of server permissions that can be granted to the server role: *CONNECT SQL*, *SHUTDOWN*, *CREATE ANY DATABASE*, *CREATE ENDPOINT*, *ALTER ANY LOGIN*, *ALTER ANY CREDENTIAL*, *ALTER ANY LINKED SERVER*, *ALTER ANY CONNECTION*, etc.

Right-click a cell within the **State** column to grant a permission to the server role. The

context menu of a cell allows you to:
- grant a permission to the server role;
- grant a permission (with Grant Option) to the server role;
- deny a permission to the server role;
- revoke a previously granted or denied permission;
- grant all permissions to the server role;
- grant all permissions (with Grant Option) to the server role;
- deny all permissions to the server role;
- revoke all previously granted or denied permissions.

5.4.12.3 Defining server role permissions

This tab allows to define **Server role permissions** to the current server role.

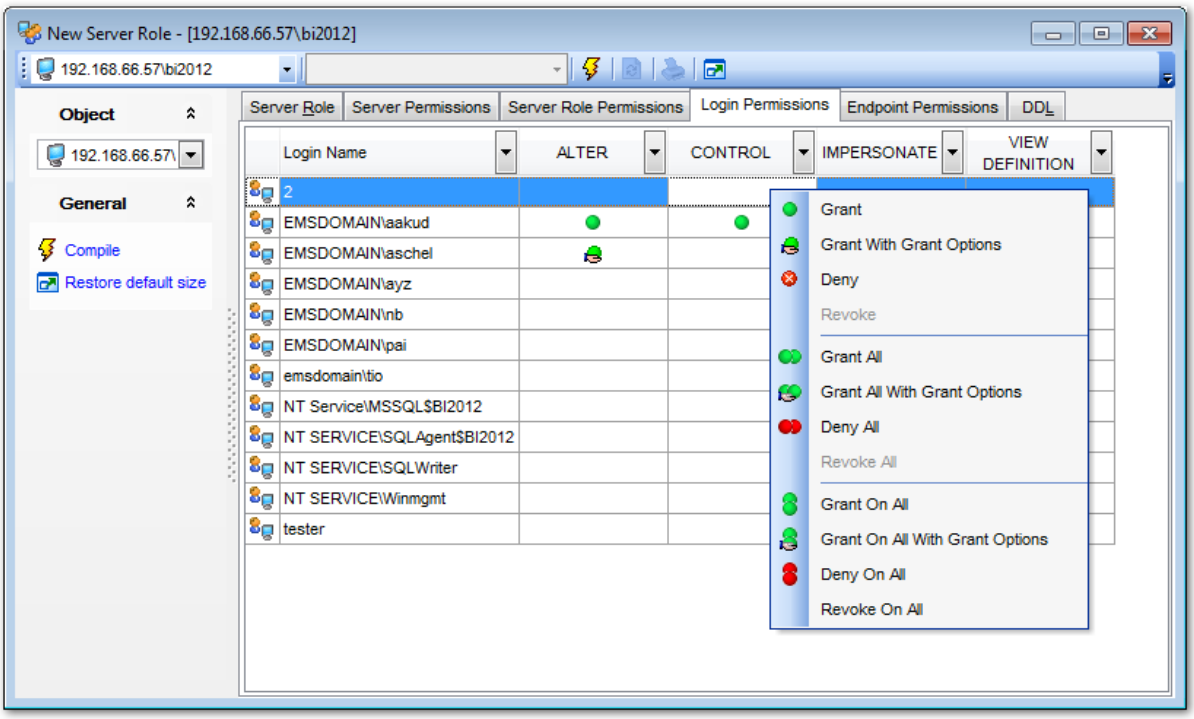


The **Server Role Name** column contains the list of server roles; each subsequent column corresponds to the permission which can be granted on the selected server role: *ALTER, CONTROL, TAKE OWNERSHIP, VIEW DEFINITION*.
Right-click a cell to grant a specific permission on a certain server role. To grant a permission on a server role, you should find the object in the **Server Role Name** list and the column with the corresponding permission. The context menu of a cell allows you to:
- grant a permission on the server role to the current server role;
- grant a permission (with Grant Option) on the server role to the current server role;
- deny a permission on the server role to the current server role;
- revoke a previously granted or denied permission;
- grant all permissions on the server role to the current server role;
- grant all permissions (with Grant Option) on the server role to the current server role;
- deny all permissions on the server role to the current server role;

- revoke all previously granted or denied permissions;
- grant a permission on all server role to the current server role;
- grant a permission (with Grant Option) on all server role to the current server role;
- deny a permission on all server role to the current server role;
- revoke a previously granted or denied permission on all server role.

5.4.12.4 Defining login permissions

This tab allows you to define **Login permissions** to the server role.



The **Login Name** column contains the list of server logins 359; each subsequent column corresponds to the permission which can be granted on the selected login: *ALTER*, *CONTROL*, *IMPERSONATE*, *VIEW DEFINITION.*

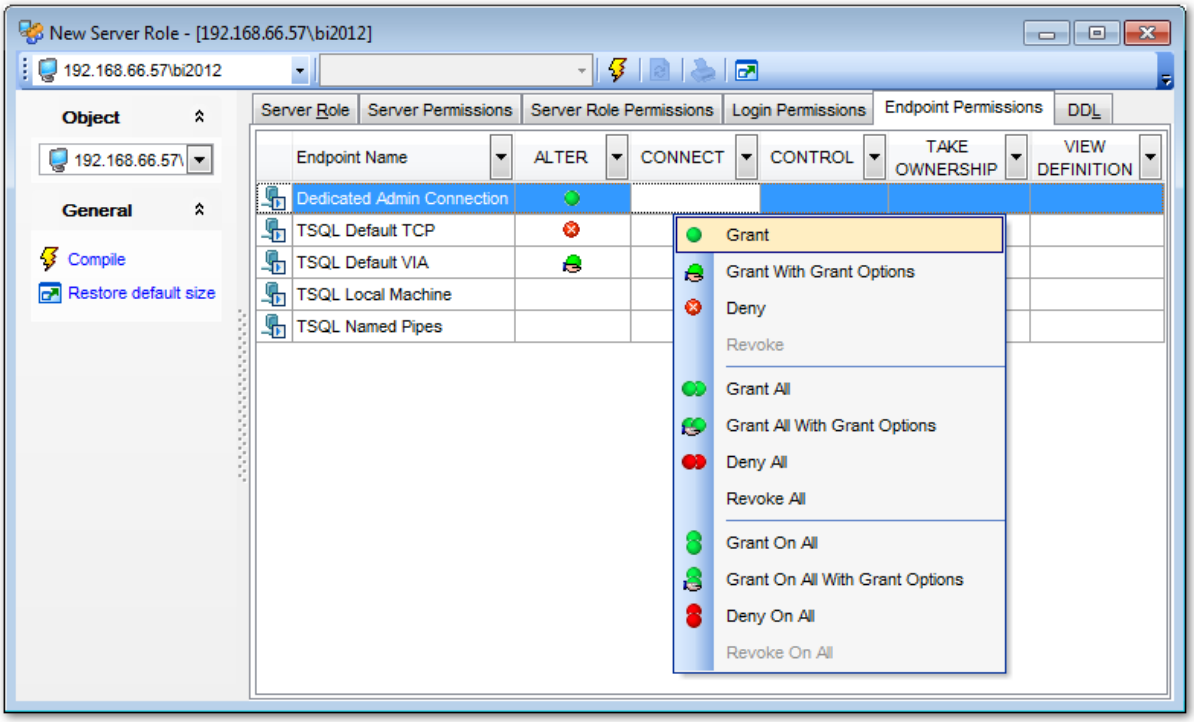
Right-click a cell to grant a specific permission on a certain login. To grant a permission on an login, you should find the object in the **Login Name** list and the column with the corresponding permission. The context menu of a cell allows you to:

- grant a permission on the login to the server role;
- grant a permission (with Grant Option) on the login to the server role;
- deny a permission on the login to the server role;
- revoke a previously granted or denied permission;
- grant all permissions on the login to the server role;
- grant all permissions (with Grant Option) on the login to the server role;
- deny all permissions on the login to the server role;
- revoke all previously granted or denied permissions;
- grant a permission on all logins to the server role;
- grant a permission (with Grant Option) on all logins to the server role;
- deny a permission on all logins to the server role;

- revoke a previously granted or denied permission on all logins.

5.4.12.5 Defining endpoint permissions

This tab allows you to grant **Endpoint permissions** to the server role.



The **Endpoint Name** column contains the list of server endpoints 408; each subsequent column corresponds to the permission which can be granted on the selected endpoint: *ALTER*, *CONNECT*, *CONTROL*, *TAKE OWNERSHIP*, *VIEW DEFINITION*.

Right-click a cell to grant a specific permission on a certain endpoint. To grant a permission on an endpoint, you should find the object in the **Endpoint name** list and the column with the corresponding permission. The context menu of a cell allows you to:

- grant a permission on the endpoint to the server role;
- grant a permission (with Grant Option) on the endpoint to the server role;
- deny a permission on the endpoint to the server role;
- revoke a previously granted or denied permission;
- grant all permissions on the endpoint to the server role;
- grant all permissions (with Grant Option) on the endpoint to the server role;
- deny all permissions on the endpoint to the server role;
- revoke all previously granted or denied permissions;
- grant a permission on all endpoints to the server role;
- grant a permission (with Grant Option) on all endpoints to the server role;
- deny a permission on all endpoints to the server role;
- revoke a previously granted or denied permission on all endpoints

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5.4.13 DTS Packages

In SQL Server 2000, **Data Transformation Services** (**DTS**) is a component built to take data from one OLE DB data source, perform certain operations and store it in a destination OLE DB data source. DTS consists of **packages** which define a particular set of work that forms a logical work item. **DTS Packages** contain multiple connections to data sources, tasks to be performed, workflows. Examples of tasks include copying data from source to destination connections, transforming data from a source connection and placing the transformed data in the destination connection, executing a set of Microsoft ActiveX scripts or Transact-SQL statements against a connection.

In SQL Server 2005 (and higher), **Integration Services** (**SSIS**) packages are provided for data warehousing purposes.

SQL Manager for SQL Server provides running **Data Transformation Services** (**DTS**) packages that were developed by using SQL Server 2000 tools. These can be run in SQL Server 2005 and higher, alongside **Integration Services** (**SSIS**) packages.

Importing DTS Packages

To import DTS Package:

- right-click **DTS Package** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **Tasks** | **Import DTS Package...** item from the context menu 57.

Exporting DTS Packages

To export DTS Package:

- right-click **DTS Package** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **Tasks** | **Export DTS Package...** item from the context menu 57.

Running DTS Packages

To run DTS Package:

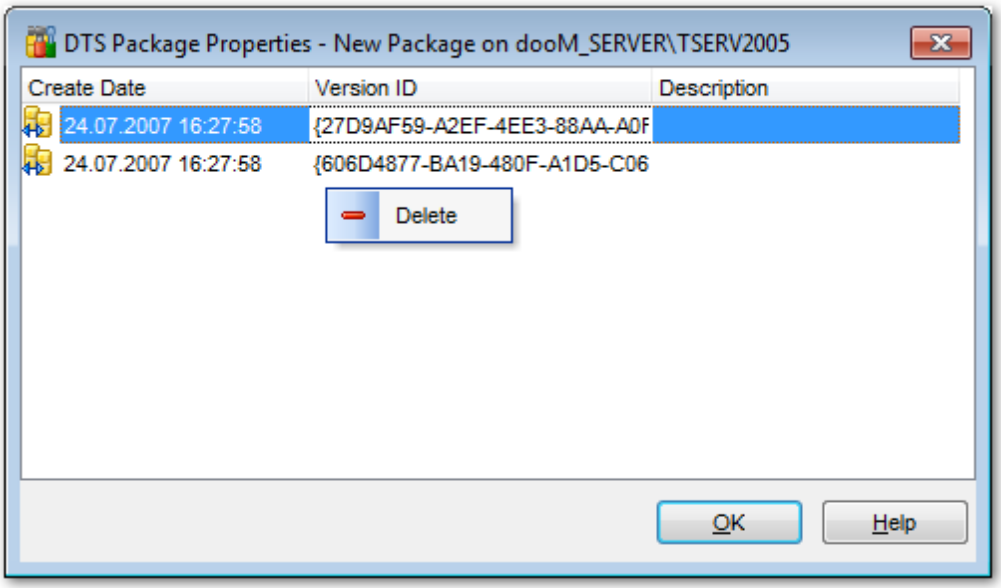
- right-click any object in the **DTS Package** node (within the **Server Objects** branch) in the DB Explorer 65 tree and select the **Tasks** | **Run DTS Package...** item from the context menu 57.

To import, export, run **DTS Packages** you can also use the **context menu** and the **Navigation bar** of DTS Packages manager 840. You can view package properties in the DTS Package properties 427 dialog.

5.4.13.1 DTS Package properties

The **DTS Package Properties** dialog allows you to browse the **DTS package** common information.

To open the dialog, right-click the DTS package in DB Explorer 65 and select the **DTS Package Properties...** context menu item.



The dialog displays common properties pertaining to the DTS package: *Create Date*, *Version ID*, *Description*.

Part VI

6 Query Management Tools

When using SQL Manager for SQL Server, you are provided with two basic tools you may need to manage your SQL queries: Query Data 432 for editing SQL query text directly and Design Query 448 for building queries visually. Find the list of common SQL query management operations below.

Creating New Queries

In order to create a new query in *Query Data*:

- select the **Tools | Query Data** main menu 951 item or use the corresponding toolbar 953 button;
- click the **Add new query** item of the Navigation bar 432;
- edit the query text within the **Edit** tab of Query Data 432.

In order to create a new query in Design *Query*:

- select the **Tools | Design Query** main menu 951 item or use the corresponding toolbar 953 button;
- build the query visually within the **Builder** tab of Design Query 448.

Editing Queries

In order to open a query in *Query Data*:

- select the **Tools | Query Data** main menu 951 item or use the corresponding toolbar 953 button;
- use the numbered tabs at the bottom of the editor window to switch between previously edited queries. The last edited query is displayed automatically on opening the editor;
- edit the query text within the **Edit** tab of Query Data 432.

In order to open a query in *Design Query*:

- select the **Tools | Design Query** main menu 951 item or use the corresponding toolbar 953 button;
- the last edited query is displayed automatically on opening Design Query;
- to load a previously saved diagram, click the **Load diagram** item of the Navigation bar 448;
- to load a query from an **.sql* file, open the **Edit** tab and click the **Load SQL** button of the Navigation bar;
- edit the query visually within the **Builder** and/or the **Edit** tabs of Design Query 448.

In order to load a query from an **.sql* file:

- select the **Tools | Query Data** main menu 951 item or use the corresponding toolbar 953 button;
- click the **Load from file** item of the Navigation bar 432;
- browse for the query file using the **Open SQL File** dialog;
- edit the query text within the **Edit** tab of Query Data 432.

Executing Queries

In order to execute a query:

- *create a new query* or *open an existing one*;

- click the **Execute** item of the Navigation bar 432 or use the *F9* hot-key to execute the query;
- view/edit the returned data within the **Results** tab of Query Data 432.

Saving Queries

In order to save a query:

- *create a new query* or *open an existing one*;
- click the **Save to file** Navigation bar 432 item (in *Query Data*) or the **Save SQL** Navigation bar 448 item (in *Design Query*), or use the *Ctrl+S* shortcut 986 to save the query using the **Save as...** dialog;
- click the **Save diagram** Navigation bar 448 item in Design Query 448 to save the designed diagram;

or

- use the **Save all** Navigation bar 432 item in Query Data 432 if you need to save all the queries to one file.

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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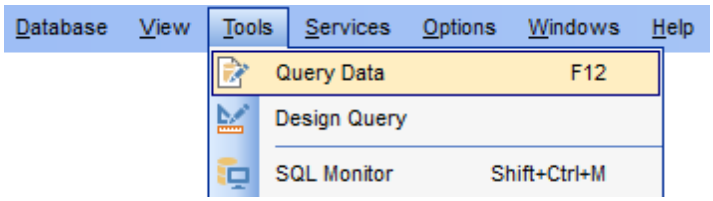
6.1 Query Data

Query Data is the basic tool of SQL Manager for SQL Server for creating and executing queries. The tool allows you to create and edit the SQL text of a query, prepare and execute queries and view the results of query execution.

To open Query Data, select the **Tools | Query Data** main menu 951 item or use the corresponding toolbar 953 button. You can also use the *F12* shortcut 986 for the same purpose.
To open **New Query Data** use the *Shift+F12 shortcut.*



- Using Navigation bar and Toolbar 432
- Working with Query Data area 435
- Using the context menu 436
- Viewing query plan 438
- Using object links 440
- Executing queries and viewing results 440
- Viewing query logs 442
- Favorites editor 445
- Merging queries 446

See also:

Design Query 448

Query parameters 465

Execute Script 625

Editor Options 905

6.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Query Data**.

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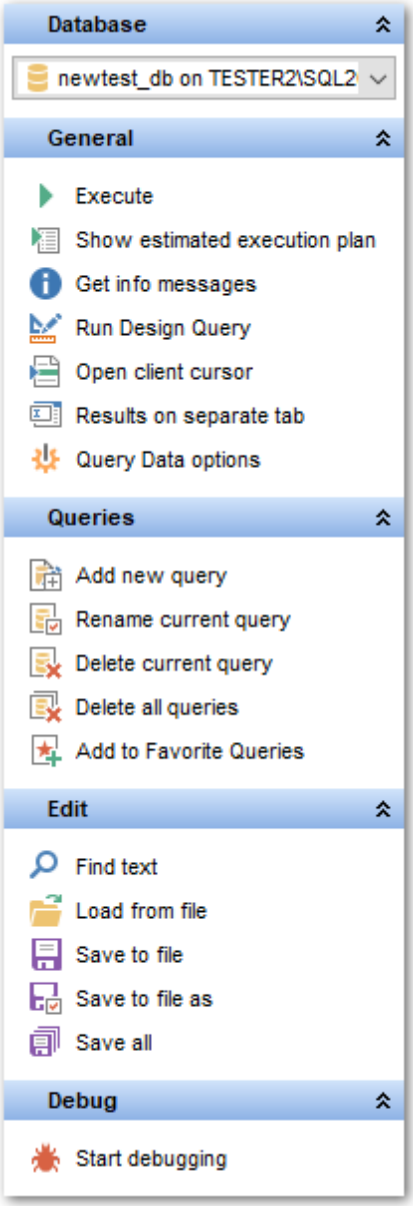


The **Navigation bar** of **Query Data** allows you to:

Database

select a database for the query

General

execute the current query

view estimated query execution plan 438

show/hide information messages

run Design Query 448 to design the query as a diagram

open cursor on client (server) side. If the server cursor is selected then the query dataset is processed with server resources, otherwise it's processed on the client side.

switch the results representation mode: *on Edit tab* or *on separate tab*
configure Query Data within the Tools | Query Data 873 page of the Environment Options 854 dialog
restore the default size and position of the editor window

Queries

add a new query (note that the current query text will not be lost)
rename the current query
delete the query
delete all queries from the editor
edit the query text using Favorites editor 445 and add the query to the Favorite Queries 92 list

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with queries:

Edit

activate the Find Text 961 dialog
load a query from an **.sql* file using the **Open SQL File** dialog
save the query to an **.sql* file
save the query to an **.sql* file using the **Save as...** dialog
save all queries to an **.sql* file

Logs

activate the Find Text 961 dialog
save the query log to a file
clear logs

Data Management

commit transaction
rollback transaction
export the returned dataset using Export Data Wizard 537
export the returned dataset as SQL script using the Export as SQL Script 599 wizard
import data 577

Debug

debug the code using the Debug T-SQL 443 tool

Items of the **Navigation bar** are also available on the **ToolBar** of **Query Data**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

See also:

Working with Query Data area 435
Viewing query plan 438

Executing queries 440
Viewing query logs 442
Favorites editor 445

6.1.2 Working with Query Data area

The **Editor area** of Query Data is available within the **Edit** tab and is provided for working with SQL queries in text mode.

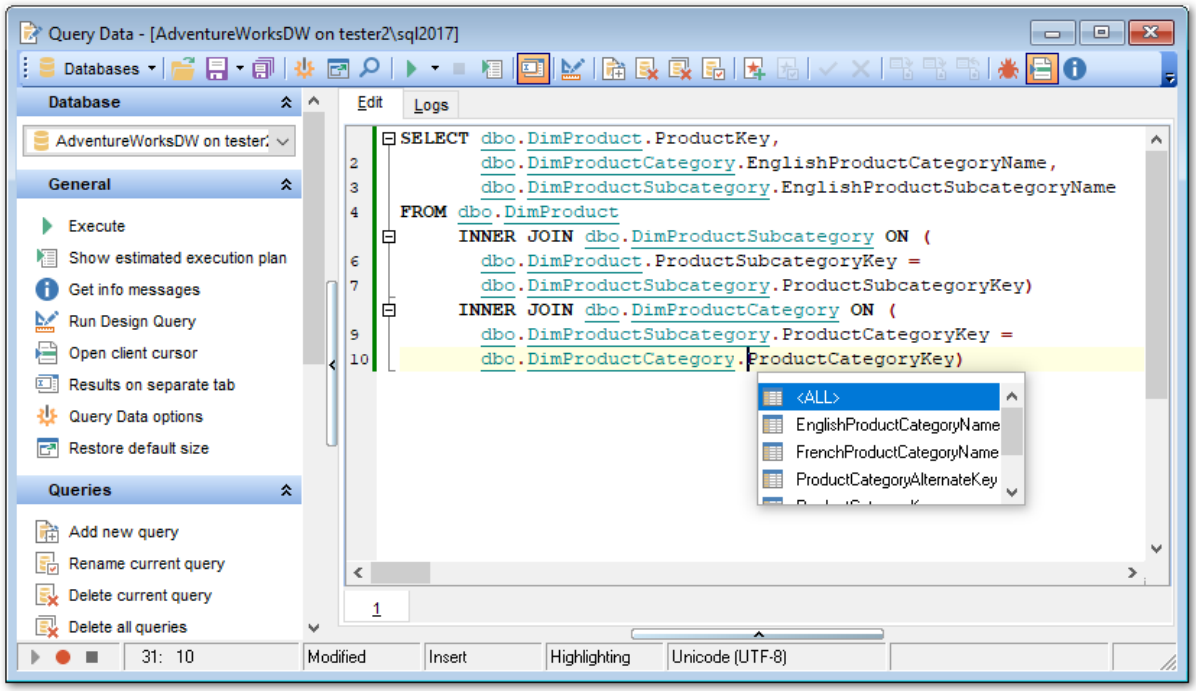
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented:

- using object links 440 allowing you to open the object in the associated editor;
- ability to display line numbers;
- code folding for statements and clauses;
- customizable margins and gutters;
- formatting code for better representation

and more.

If necessary, you can enable/disable or customize most of Query Data features using the Editor Options 905 dialog.

The example of code completion is illustrated in the picture below. You can set the delay within the Quick code 912 section of the Editor Options 905 dialog or activate the completion list manually by pressing the *Ctrl+Space* shortcut 986.



For your convenience the possibility to use **macros** is implemented.
To *start recording* a macro, click the ● **Record** button available in the status bar area, or use the *Shift+Ctrl+R* shortcut.

To *stop recording*, click the ■ **Stop** button, or use the *Shift+Ctrl+R* shortcut.
To *call* the recorded macro, use the ▶ **Play** button, or use the *Shift+Ctrl+P* shortcut.

Hint: To paste input parameters 261 of a procedure 257 quickly, use the *Ctrl+Shift+P* shortcut 986 after the procedure name.

Hint: To use a keyboard template 930, type the template name and press the *Ctrl+J* shortcut 986: the text associated with the template will be inserted automatically.

If necessary, you can **print** the SQL text of your query using the corresponding item of the context menu 436.

See also:

Using Navigation bar and Toolbar 432
Using the context menu 436
Editor Options 905
Keyboard Templates 930
Favorites editor 445
Find Text dialog 961
Replace Text dialog 963

6.1.3 Using the context menu

The **context menu** of Query Data area contains execution commands, most of the standard text-processing functions (*Cut*, *Copy*, *Paste*, *Select All*) and functions for working with the query as a whole, e.g. you can *move the cursor to a particular line*, *change the case* of selected text, view the query *properties* or *print* the text of the query. The menu also provides the AI Assistant 721 submenu, from which you can send the query to the AI Assistant or add it to the context of your next request. Each of these operations can be also performed with the corresponding hot keys used.

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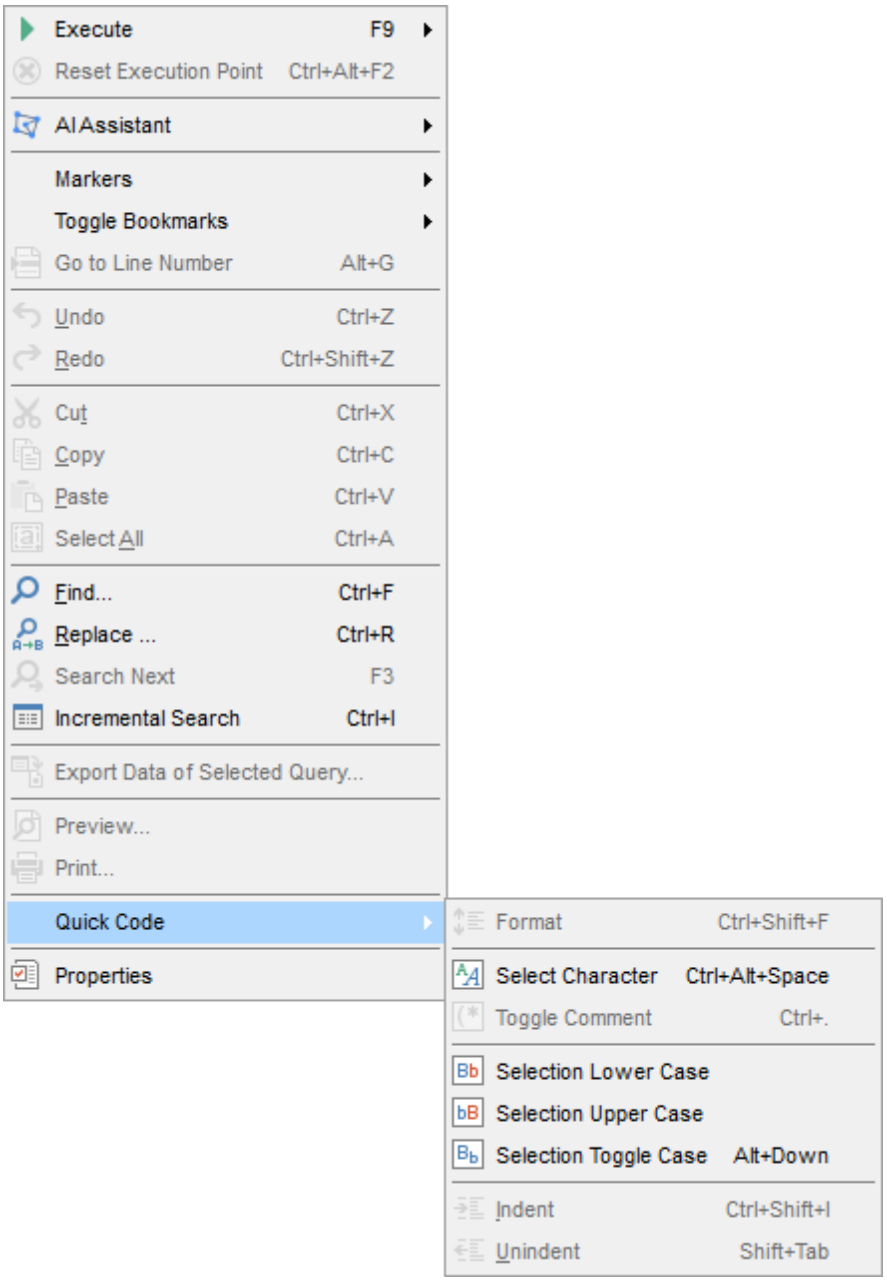


Implementation of the Find Text 961 / Replace Text 963 dialogs and Incremental search 953 bar contributes to more efficient work with the SQL code.

Find the complete list of **Query Data** context menu items below. The context menu allows you to:

- add the selected text to dictionary or correct text (see Spell checking 918 for details);
- execute the query/selected text/text under cursor, and reset execution point (if necessary);
- send the query to the AI Assistant 735 for explanation, checking, optimization or formatting, or add it to the context 730 of your next request.
- manage markers: *Drop Marker*, *Collect Marker*, *Swap Marker*;

- toggle bookmarks allowing you to navigate through the query text and jump to a line with a particular number;
- perform editing operations: *Undo/Redo*, *Cut*, *Copy*, *Paste*, *Select all*;
- perform search 961 and replace 963 operations;
- save/load a query to/from an external **.sql* file;
- perform preview/print operations;
- use the *Quick code* group allowing you to format the selected code using *SQL Formatter* to make the code easier to read, toggle comments for code fragments, change case of the selected text, indent/unindent code lines;
- add the query to the Favorite Queries 692 list;
- open the Editor Options 905 dialog.

See also:

Working with Query Data area 435

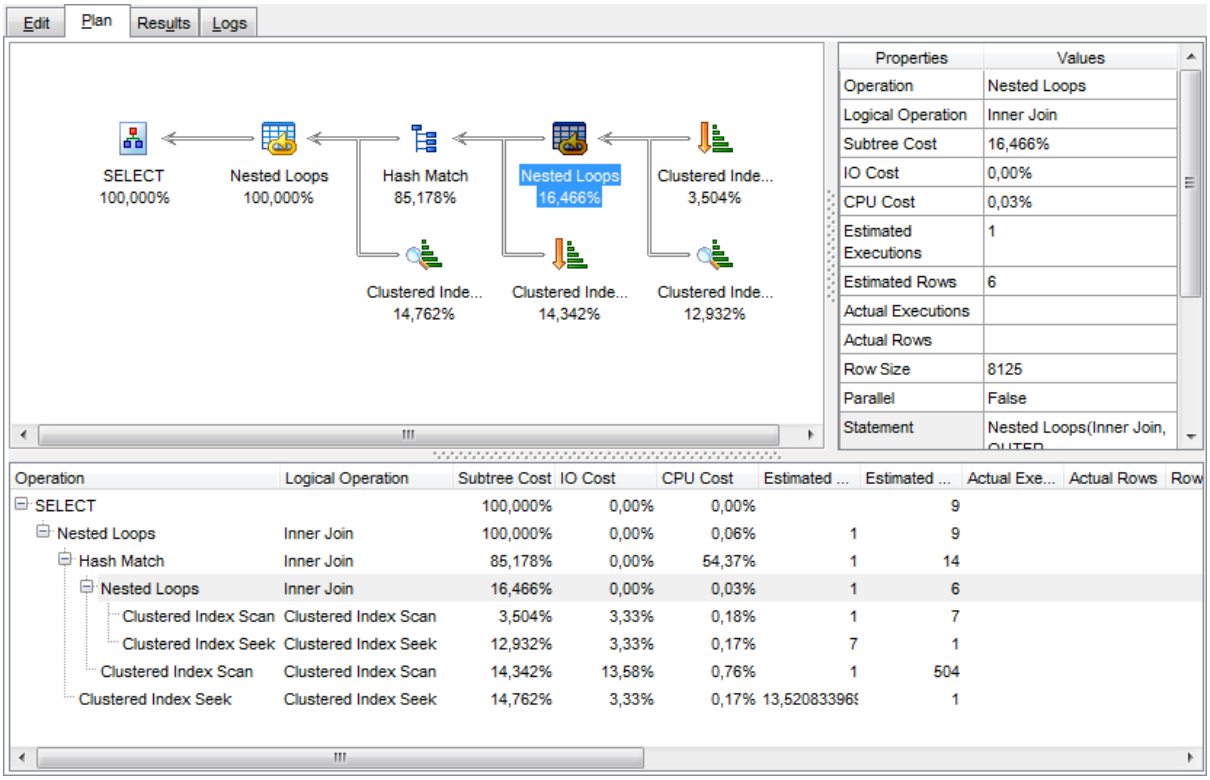
Executing queries 440

6.1.4 Viewing query plan

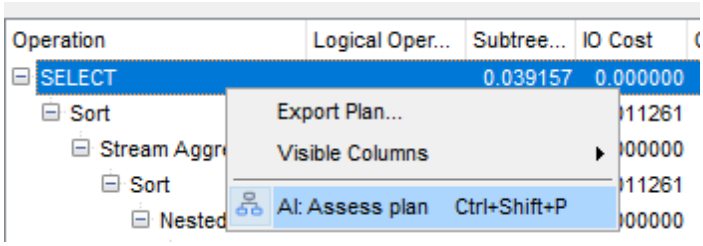
Using SQL Manager for SQL Server, you can view **the plan** for each of the queries created and executed in the application. The query plan is available within the corresponding **Plan** tab.

To view the **Plan** of a query, open the query in **Query Data** and use the **Show estimated execution plan** item of the Navigation bar 432 or toolbar 434.

The **Plan** tab allows you to view the sequence of actions performed by the database server in the process of the query execution, and the amount of system resources used for the query execution.



The **Operation** panel below displays the operations as a tree list with the following columns: *Operation*, *Logical Operation*, *Subtree Cost*, *IO Cost*, *CPU Cost*, *Estimated Executions*, *Estimated Rows*, *Actual Executions*, *Actual Rows*, *Row Size*, *Parallel*, *Statement*, *Argument*, *Defined Values*, *Output*, *Warnings*.
Right-click within the panel to display the **context menu** allowing you to configure the set of *visible columns* or export 537 the plan to any of supported formats 971. The menu also provides the **AI: Assess plan** command, which sends the plan to the AI Assistant 735 to point out bottlenecks and give recommendations.



If necessary, you can specify that the **Plan** tab appears automatically upon query execution in Query Data: select the ☑ **Show actual execution plan on query execution** option available within the Tools | Query Data 873 section of the Environment Options 854 dialog.

See also:

Query Data options 873
Executing queries 440

6.1.5 Using object links

Objects that exist in the database are highlighted in the text as hyperlinks. You can open an object in the appropriate editor by clicking the object name in the text with the *Ctrl* key pressed.

```
SELECT
  EmployeeID,
  NationalIDNumber,
  ContactID,
  LoginID,
  ManagerID,
  Title,
  BirthDate,
  MaritalStatus,
  Gender,
  HireDate
FROM
  HumanResources.Employee;
```

Please note that you can change the way highlighted objects look in the editor: use the Display | Highlight 911 section of the Editor Options 905 dialog.

See also:

Working with Query Data area 435

Editor Options 905

6.1.6 Executing queries

When all the query parameters are set, you can immediately **execute the query** in **Query Data**.

To execute a query, click the **Execute** item of the Navigation bar 432. You can also use the context menu 436 or *F9* hot key for the same purpose.

If the SQL syntax is correct, the query is executed and, in case the query statement is supposed to return data (e.g. as SELECT statement), the returned dataset appears within the **Results** tab. The position of the tab depends on the **Results on Edit tab / Results on separate tab** selection in the Navigation bar 432.

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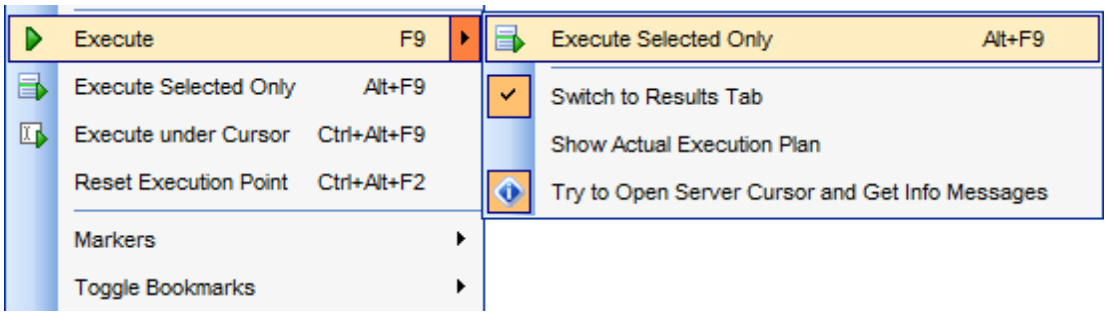
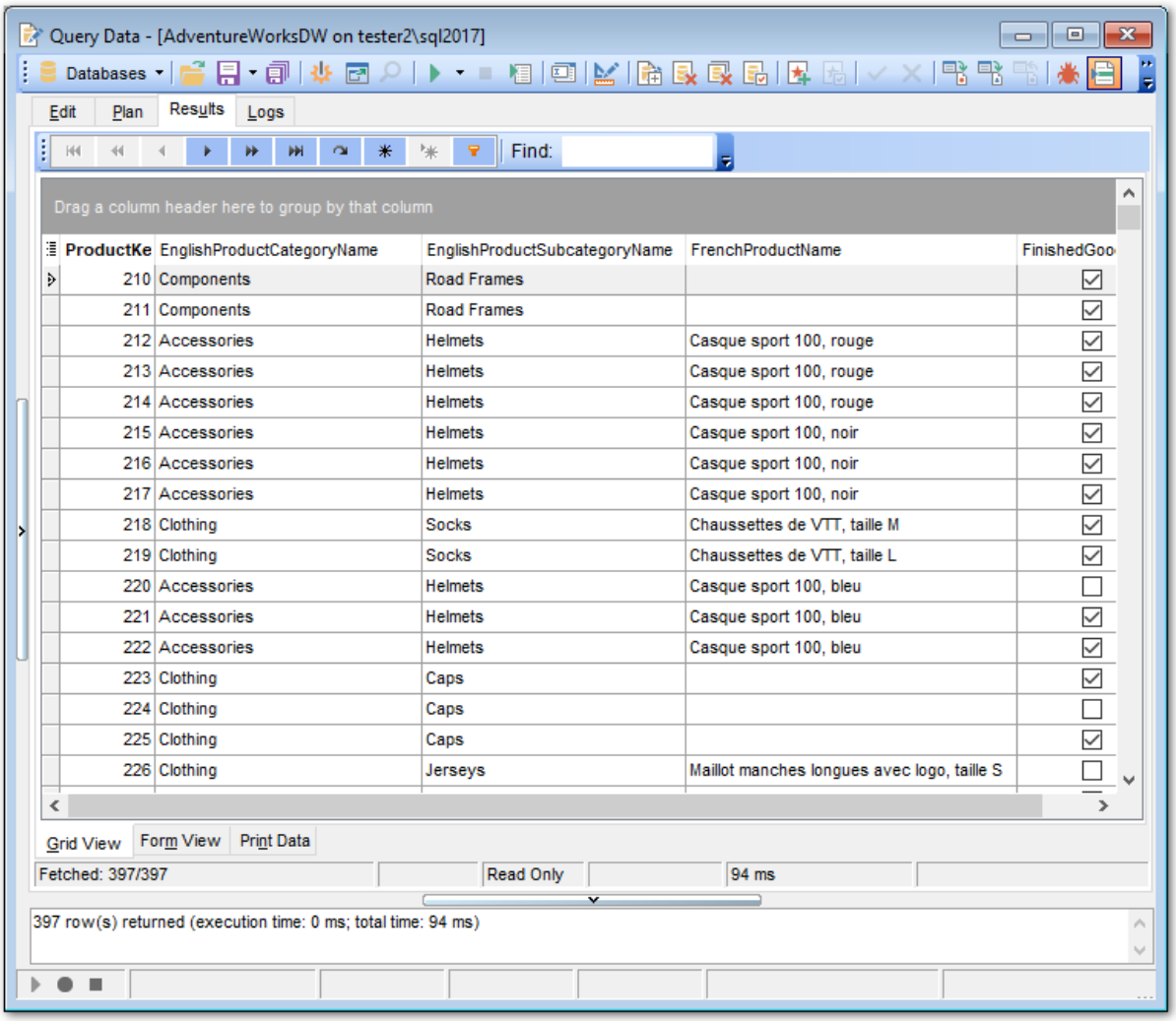
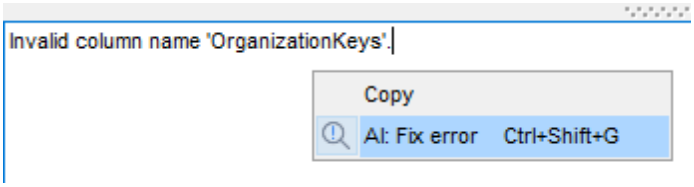


By default, data returned by a query are displayed as a grid (see Data View 469 for details). The context menu 475 of the grid allows you to Export Data 537, Export as SQL Script 599.



If SQL syntax of the query contains any errors, the query execution is stopped and the corresponding error message is displayed in the message area at the bottom of the editor window. Right-click the message to display the context menu with the **AI: Fix error** command, which sends the error together with the statement that caused it to the AI

Assistant 735 and asks it to suggest a fix.



See also:

Data View 469
Export Data 537
Export as SQL Script 599

6.1.7 Viewing query logs

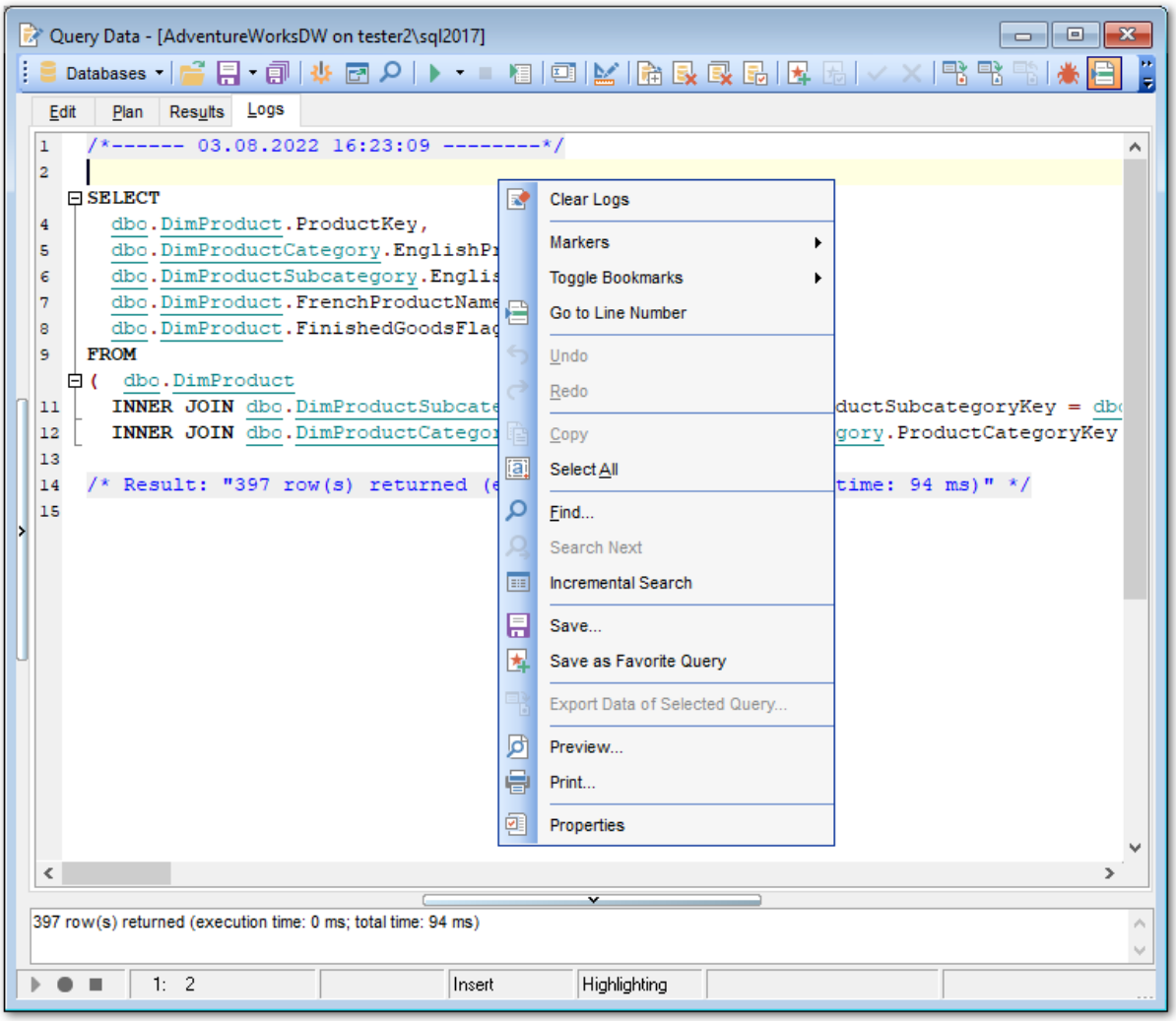
This tab allows you to view the query **log**. The log is available within the **Logs** tab of **Query Data**.

Using this tab you can view *log entries* containing the following details:

- date and time of the query execution;
- text of the query;
- number of rows fetched and fetch time, or the text of the error (if any).

Date/time and the execution result information are embedded as code comments conforming with the rules of SQL.

With the help of the **context menu** the log can be *printed*, *saved* to file or *cleared*. You can also use a number of Query Data context menu 436 generic functions.



See also:

Executing queries 440

Using the context menu 436

6.1.8 Debugging T-SQL

T-SQL Debugger is the cutting edge feature of SQL Manager for SQL Server. This tool is provided for step-by-step code debugging of SQL scripts, procedures 257, UDFs 263. Much of the power of the debugger comes from toggling breakpoints, getting variables' values, and fetching call stacks.

Note: For debugging on the remote server the host that is running the instance must be configured as follows http://msdn.microsoft.com/en-us/library/cc646024.aspx.

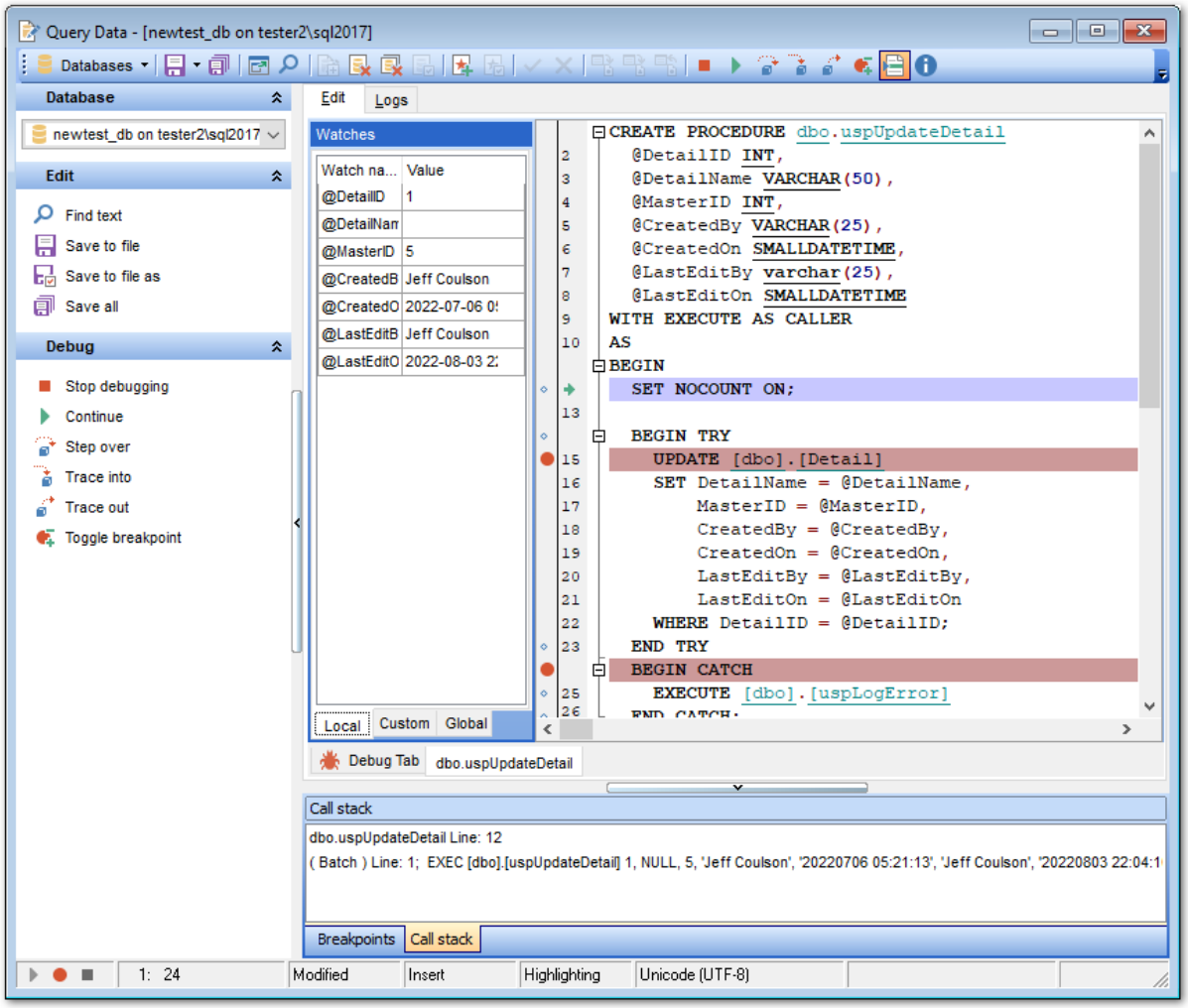
The **Edit** tab of the **T-SQL Debugger** window contains the following areas:

- the *Debug* panel of the Navigation bar 432;

- the *Watches* list;
- the *T-SQL code* area;
- the *Call stack* box;
- the *Breakpoints* list.

Note: All areas within the **Edit** tab of the **PL/SQL Code Debugger** window are dockable, i.e. you can drag an area to any location within the parent form.

The **Logs** tab of the **PL/SQL Code Debugger** window displays the debug log.



Start: this command is used to start the debugging session;
Break: this command stops the current debugging session;
Continue: use this command to continue execution up to the next breakpoint;
Step over: traces the code disregarding the object body (procedure 257, UDF 263);
Trace into: traces the code using the object body (procedure 257, UDF 263);
Trace out: traces the code up to the point of leaving the object body (procedure 257, UDF 263);
Toggle breakpoint: use this command to add/remove breakpoints;

Clear watches: allows you to clear the variables added to the **Watches** list.

The **T-SQL code** area presents the statement being debugged. All points that have been set within the code are marked with corresponding signs. Active breakpoints are highlighted red, and inactive breakpoints are highlighted green.

The **Watches** list allows you to watch (on the **Local** tab) the variables that have been declared in the code, and the value of each variable. The following attributes are listed for each watched variable:
Watch name
Value
To add custom watch proceed to the **Custom** tab and specify the watch name. You can delete the selected watch by using the *Ctrl+U* shortcut.
Use the **Global** tab to view values of the server global variables.

The **Call stack** box lists the call stacks, if applicable.

The **Breakpoints** list displays the currently toggled breakpoints. The following attributes are listed for each breakpoint:
Status
Line
Owner
Name
Using the context menu you can enable/disable the selected breakpoint or delete it.

6.1.9 Favorites editor

For your convenience the **Favorite Queries** list is implemented in SQL Manager for SQL Server. This list is available within the **Favorite Queries** node of Database Explorer 92 and allows you to store the most frequently used SQL queries in one location.

To add a query to the **Favorite Queries** list, use the **Add to Favorite Queries** Navigation bar 432 item in **Query Data**. The corresponding item is also available in the context menu 436 of Query Data working area.

You can edit any of your Favorite Queries using **Favorites editor**.

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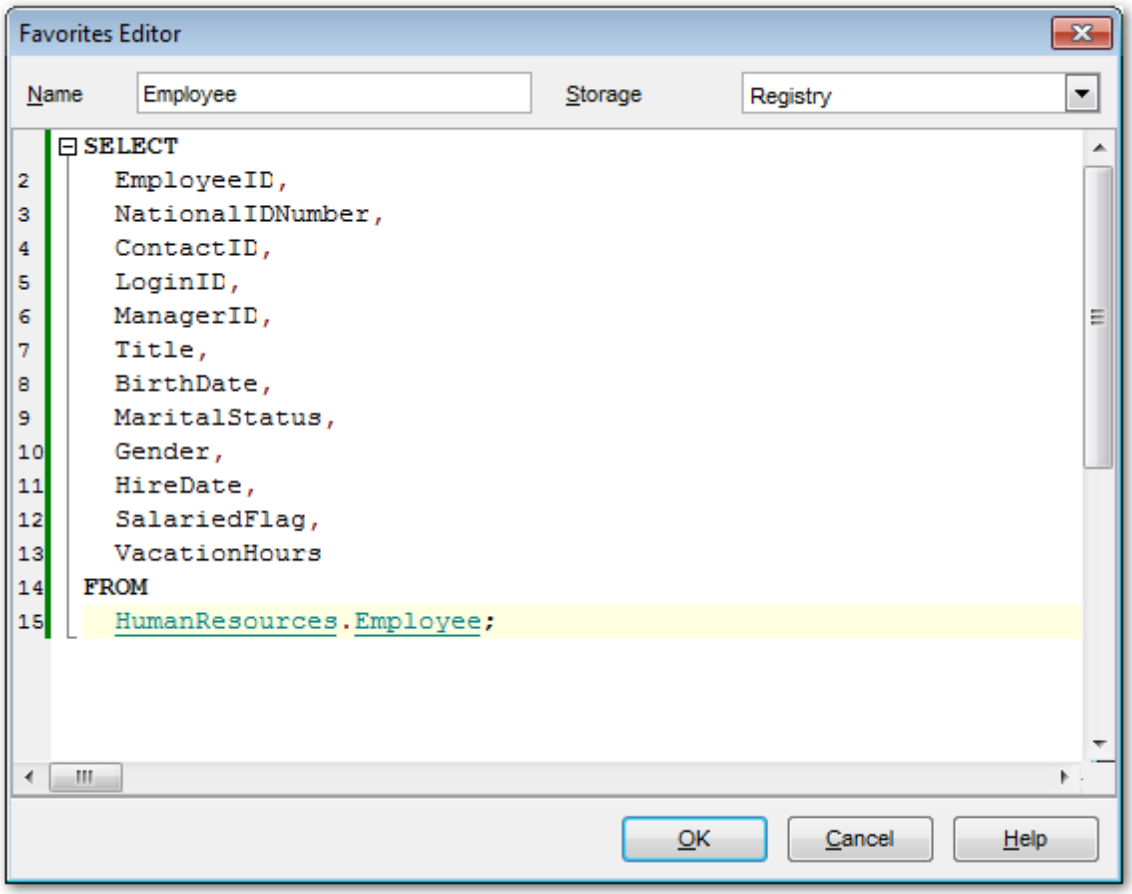


Name
Set the name of the Favorite query.

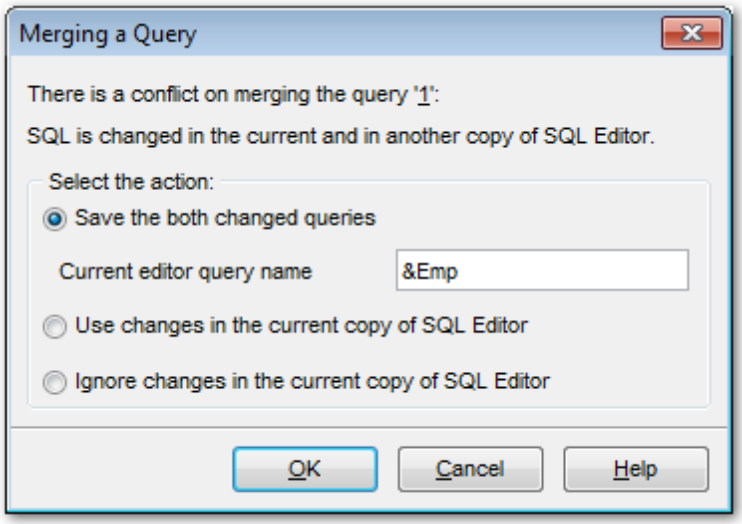
Storage
Specify where the Favorite query will be stored: in *Windows Registry* or in the *Database*.

See also:

Managing Favorite queries 92
Working with Query Data area 435

6.1.10 Merging queries

When editing the same query in several copies of Query Data 432, on attempt to close the **Query Data** window the **Merging a Query** dialog will appear like the one displayed below.



The actions offered are the following:

Save the both changed queries
The query opened in the first copy of Query Data will be saved as its original name; the query in the current copy will be saved under the name with additional postfix (by default it is *'_1'*).

Use changes in the current copy of Query Data
The query will be saved as the original name; the modifications of SQL made within the current copy of **Query Data** will be applied.

Ignore changes in the current copy of Query Data
The query will be saved as its original name; the modifications of SQL made within the current copy of **Query Data** will be ignored.

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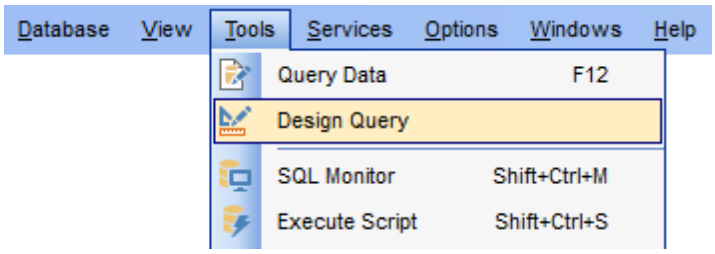
6.2 Design Query

Design Query is implemented in SQL Manager for SQL Server for building queries visually. The tool allows you to create and edit queries without deep knowledge of SQL. You can also prepare and execute queries, and view the results of their execution.

To open Design Query, select the **Tools | Design Query** main menu 951 item or use the corresponding toolbar 953 button.



- Using Navigation bar and Toolbar 448
- Working with diagram area 450
- Joining two database objects by columns 452
- Setting the selection criteria 454
- Setting output columns for selection 457
- Setting the grouping criteria 458
- Setting parameters of sorting 459
- Working with editor area 460
- Executing queries and viewing results 461
- Viewing query plan 463

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Query Data 432

Query parameters 465

6.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Design Query**.

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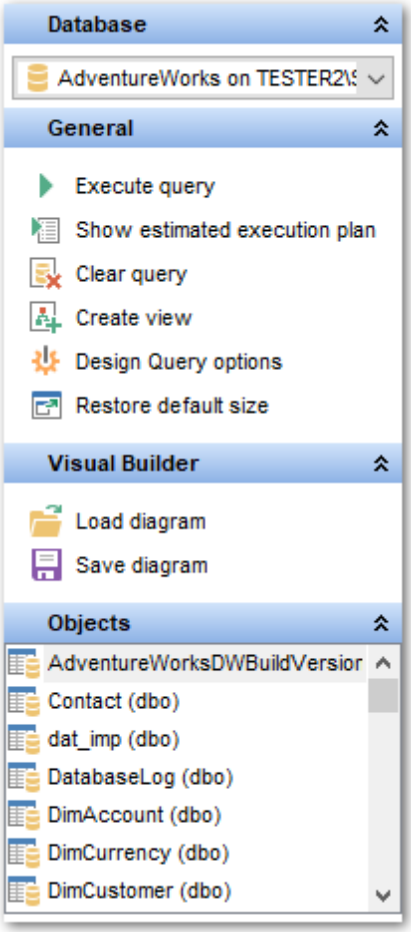


The **Navigation bar** of **Design Query** allows you to:

Database

select a database for the query

General

execute the current query
view estimated query execution plan 463
clear the query
create a view 250
configure Design Query using the Design Queryr Options 877 page of the Environment Options 854 dialog
restore the default size and position of the builder window

Objects

browse objects of the database; you can also add tables and views to the diagram using drag-and-drop operations

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with queries:

Visual Builder

load a diagram from a **.vqb* file using the **Open diagram** dialog
save the diagram to a **.vqb* file using the **Save diagram as...** dialog

Edit

load a query from an **.sql* file using the **Open SQL File** dialog
save the query to an **.sql* file

Data Management

commit transaction
rollback transaction
export the returned dataset using Export Data Wizard 537
export the returned dataset as SQL script using the Export as SQL Script 599 wizard

Items of the **Navigation bar** are also available on the **ToolBar** of **Design Query**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

See also:

Working with diagram area 450
Query execution 461

6.2.2 Working with diagram area

The main working area of **Design Query** is the diagram area available within the **Builder** tab. Here you can create a query by placing the database tables 196 and views 250 onto the area, and edit it by selecting the required data columns and setting links between objects.

To add an object to the query, you can simply drag it from the DB Explorer 73 tree to the diagram area.

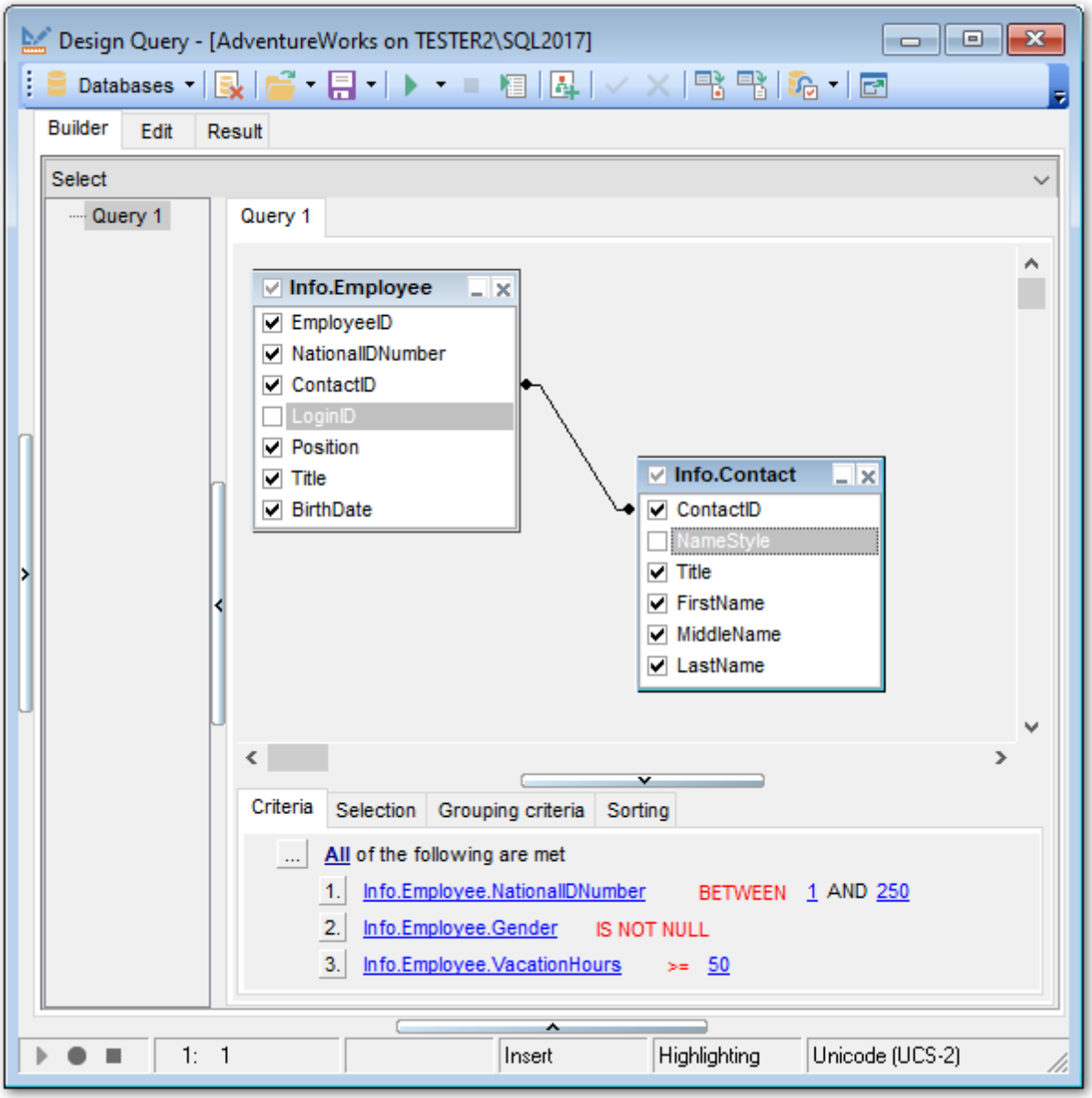
To include a column in the query, check the corresponding box located to the left from the column name in the list, or just double-click it. To include all columns of the table/view, check the box located to the left of the table/view caption. If you do not check any columns, the SQL statement is generated as *SELECT * FROM <table/view_name>*, i.e. all the columns are included in the query.

To *collapse/expand* the list of table/view columns, click the minimize/maximize button at the object caption.

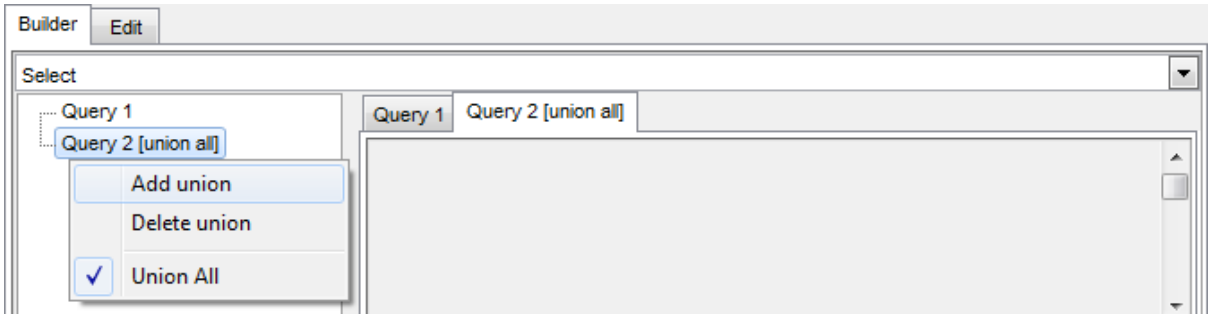
To exclude a column from the query, uncheck the respective box. In order to remove the entire table/view from the query, close it by clicking the corresponding cross-button at the object caption, or right-click the object and select **Delete** from the context menu. You can also select the object and press the **Del** key.

To edit the alias of a table/view, double-click the object caption and enter the new name,

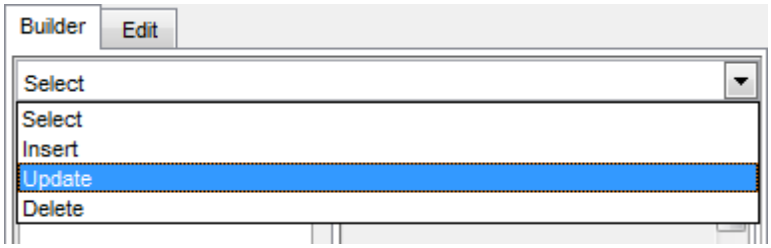
or right-click the object and select **Rename** from the context menu.



Design Query allows you to create complex queries consisting of two or more queries combined in one with the UNION operator, or add nested queries. The panel to the left of the diagram area displays the tree of subqueries.
To add a query, right-click within the tree of subqueries area and select **Add union** from the context menu. A tab for the new query will appear in the diagram area.
To remove a query from the tree, right-click the query and select **Delete union** from the context menu.
To add the *UNION ALL* operator to the query, right-click the newly added query and select the corresponding context menu item.



Note: Depending on which query type you need to execute, you can select one from the drop-down list above the tree of subqueries: *Select*, *Insert*, *Update*, or *Delete*.



See also:

Joining two objects 452
Working with the editor area 460
Query execution 461

6.2.3 Joining two objects

The **diagram area** allows you to associate two objects by their columns: this operation is performed by dragging a column from one object list to another. This will set a link between these objects by the selected columns. It is indicated by a bidirectional arrow between the linked columns.

Note: Once two or more tables related by a foreign key are added to the diagram area, the corresponding visual joining of these tables appears at the **Builder** tab and the *JOIN* statement appears under the **Edit** tab.

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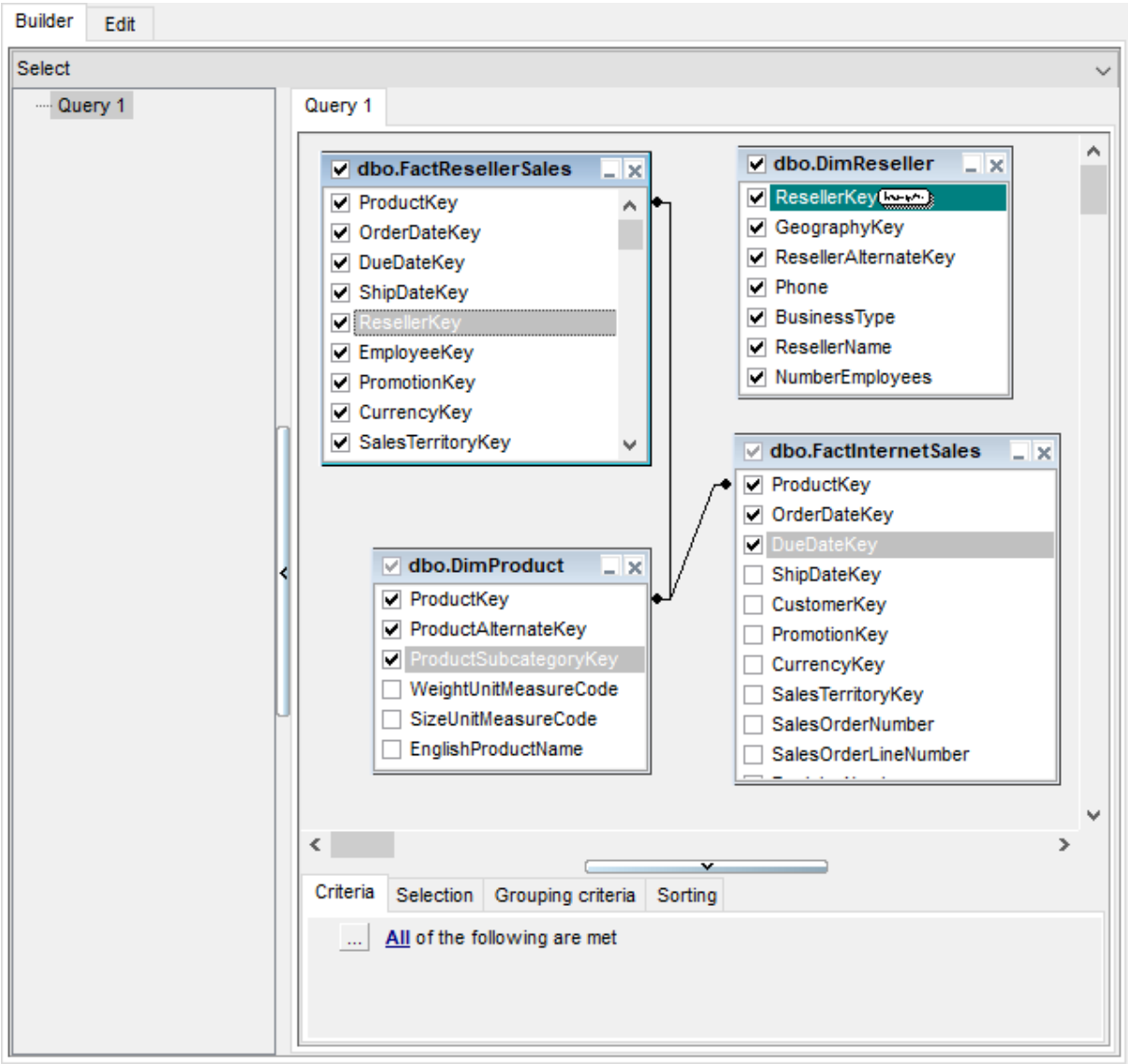
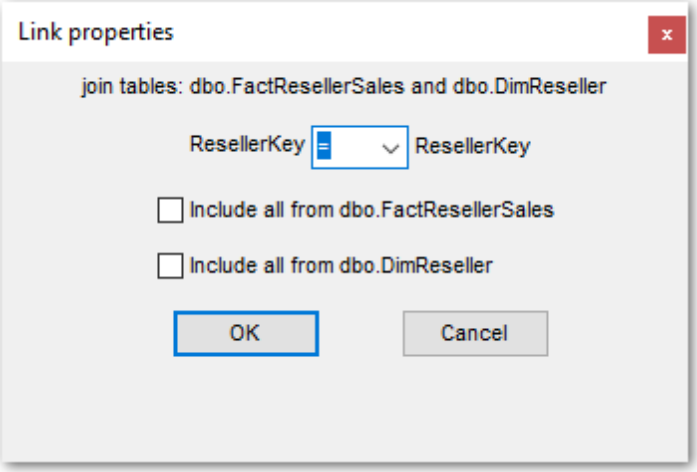


You can *view the link properties* of objects association: set the mouse cursor over the linking arrow, and a hint containing the association condition will popup after a short delay.

To edit the link properties, double-click the linking arrow or right-click it and select the **Property** popup menu item. The **Link properties** dialog allows you to change the association condition by choosing it from the drop-down list (=, >, <, >=, <=, <>).

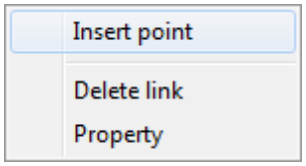


For your convenience the ☑ **Include all** option is available for each object of the association:
if the option is enabled for the left table, the *LEFT JOIN* operator will be used for the association;
if the option is enabled for the right table, the *RIGHT JOIN* operator is used for the association;
if the option is enabled for neither of the tables, the *INNER JOIN* operator is used for the association.

Click **OK** to apply the changes you have made.

To remove a link between objects, right-click the linking arrow and select the **Delete link** popup menu item.

To add a point to the link line, right-click the linking arrow and select the **Insert point** popup menu item. Using the point you can move the link line easily. The point does not cause any changes to the query, it is only used for the diagram representation and makes visual building handy and more comprehensible.

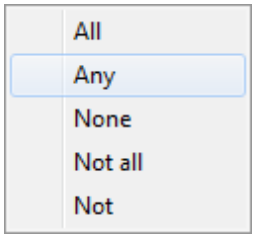


See also:
Working with diagram area 450
Setting criteria 454

6.2.4 Setting criteria

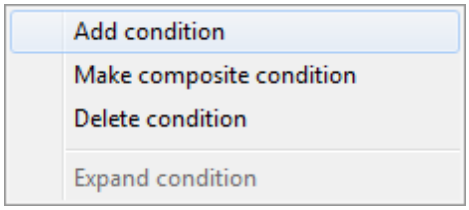
Use the **Criteria** tab to set the selection conditions.

The way the conditions are used is set in the upper string of the area (*All*, *Any*, *None* or *Not all of the following are met*). Click the green link to change it.



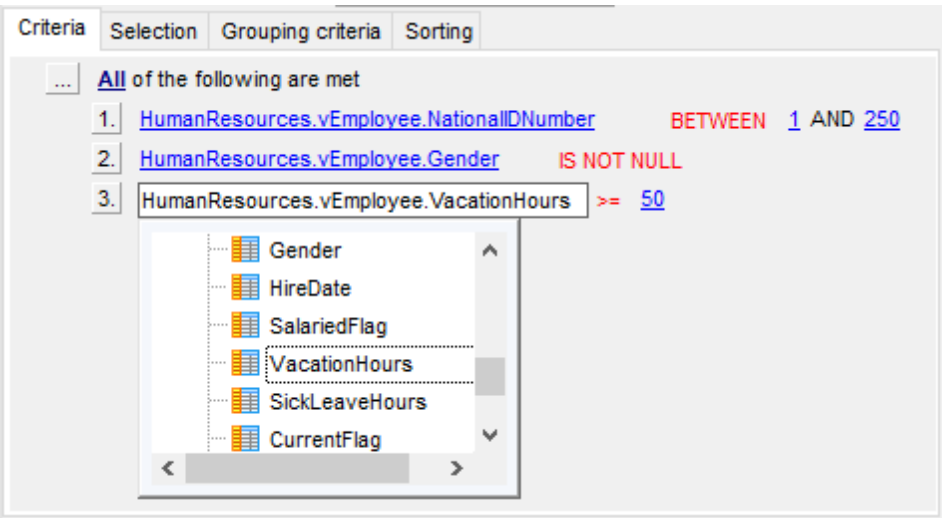
To add a condition, click the ellipsis button on the left, and select the **Add condition** popup menu item.

Edit the condition by clicking the elements of the condition pattern and setting the necessary values. Clicking the numbered button to the left of the condition string activates the popup menu which allows you to *add a new condition* at the same enclosure level, *make composite condition* by adding a new enclosure level, *delete the current condition*, *expand* or *collapse* enclosure levels of the condition (if the condition is composite).

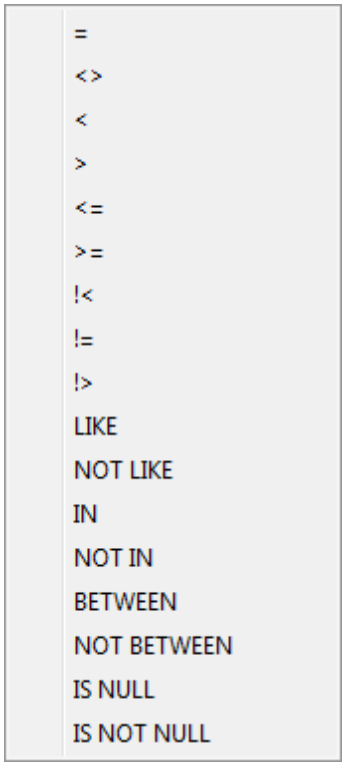


A simple condition pattern contains three elements: *an argument*, *a condition operator* and *a second argument* (if required for the condition).

Clicking each element column allows you to set its value. You can add a column by drag-and-dropping it from the working area to Criteria, Selection, Grouping criteria or Sorting tabs. When clicking an argument field, you can edit the argument as a text string: set an object name or a certain value in this field. Right-clicking the field in the edit mode activates the popup menu with the **Insert column** (also called by the *Shift+Enter* shortcut 986; this item allows you to select a column from the list of all the table columns) and **Insert query** (this item adds a nested query) items.



Clicking the condition operator field activates the popup menu from which you can select the operator you need.



See also:

Setting output columns 457
Setting grouping criteria 458
Setting sorting parameters 459

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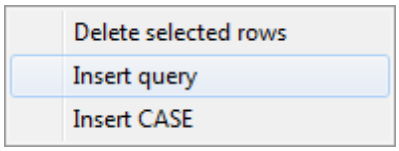
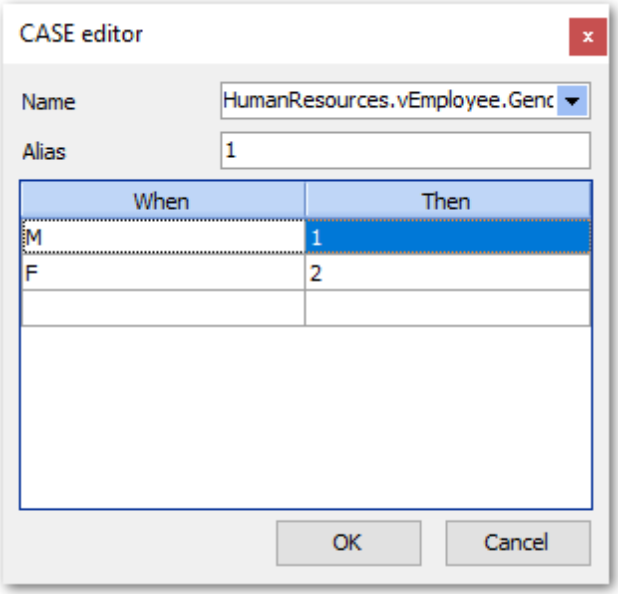
6.2.5 Setting output columns

The **Selection** tab displays the output columns of the query as a grid.

The grid allows you to edit the names of the query output columns, specify their display order and set the aggregate functions for each column. To remove a column from the list, right-click the row and select the **Delete current row** popup menu item.

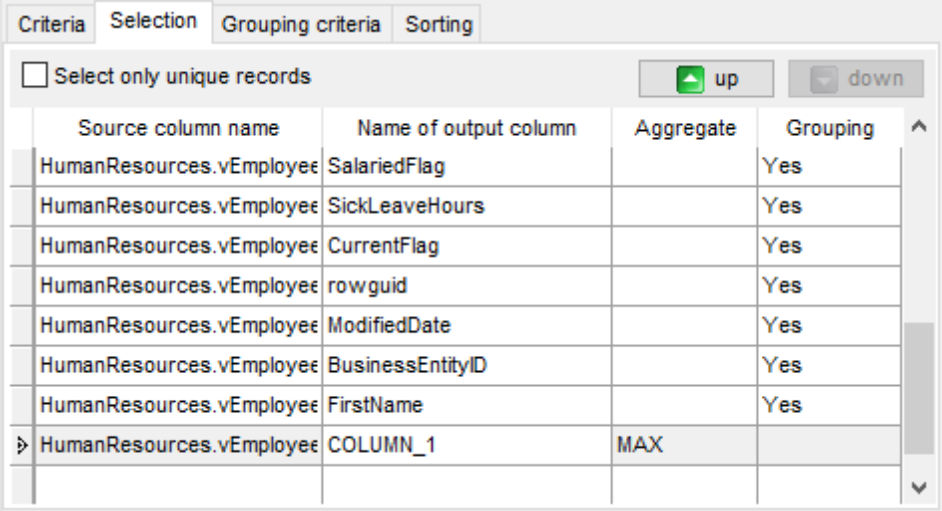


The popup menu also allows you to *insert a nested query* and add a *CASE* clause. To edit the CASE clause, use the **CASE END AS** dialog.



To change the *Source column name*, click it and then type the column name or select it from the drop-down list.
To change the *Name of output column*, set the cursor at the corresponding column and type the required column name.

To reorder columns in the list, use the buttons.



To set an aggregate function for a column, click the row within the **Aggregate** column, and then type in the function name or select one from the drop-down list (*SUM*, *MIN*, *MAX* , *AVG*, or *COUNT*).

The **Grouping** column displays the grouping state for each of the output columns.

☑ **Select only unique records**
If you check this option, the duplicate records (if any) are not included into the query result (i.e. the *DISTINCT* keyword is added to the SQL query text).

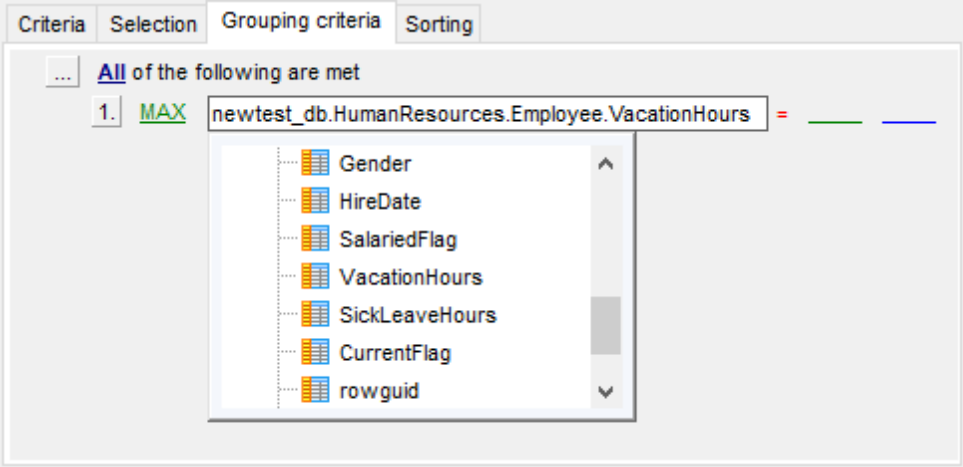
See also:

Setting criteria 454
Setting grouping criteria 458
Setting sorting parameters 459

6.2.6 Setting grouping criteria

The **Grouping criteria** tab allows you to set conditions for grouping query records.

The grouping condition pattern fields are set in the same way as those of the Criteria 454 pattern.



These conditions will be included in the *HAVING* statement of the generated SQL query.

See also:

Setting criteria 454
Setting output columns 457
Setting sorting parameters 459

6.2.7 Setting sorting parameters

The **Sorting** tab allows you to set sorting parameters for the records returned by the query.

The working area contains the **Output columns** list (at the left) which represents all fields of the objects used in the query, and the **Sorted columns** list (at the right) which contains the columns to sort records by.
To move a column from one list to another, drag the selected column or use the **Add** and **Remove** buttons: .

To change the sorting order for a sorted column, select the field in the **Sorted columns** list and move it using the **Up** and **Down** buttons.

To change the sorting direction, select the column in the **Sorted columns** list and switch the direction (*Ascending*, *Descending*) using the corresponding **A..Z**/**Z..A** button.

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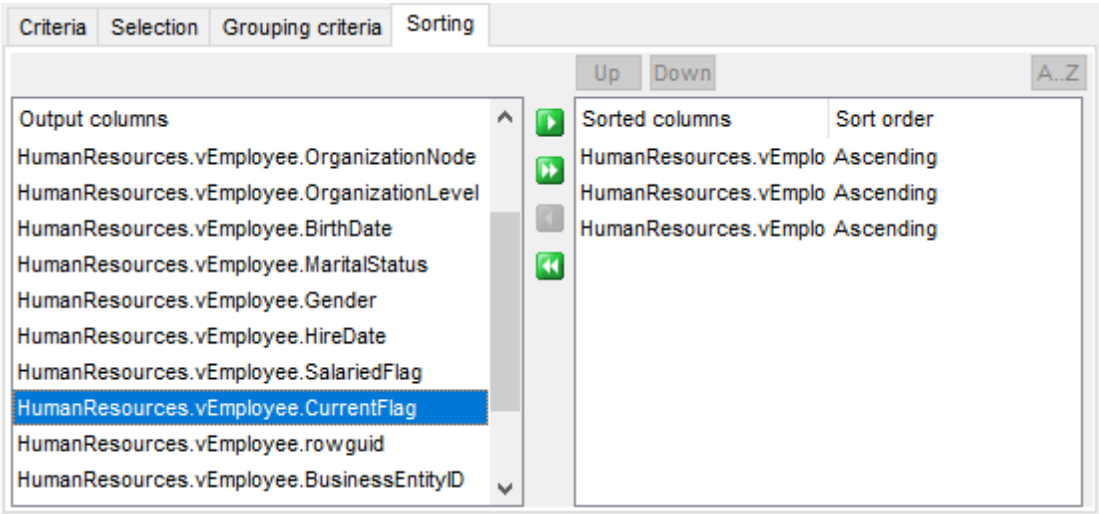


See also:

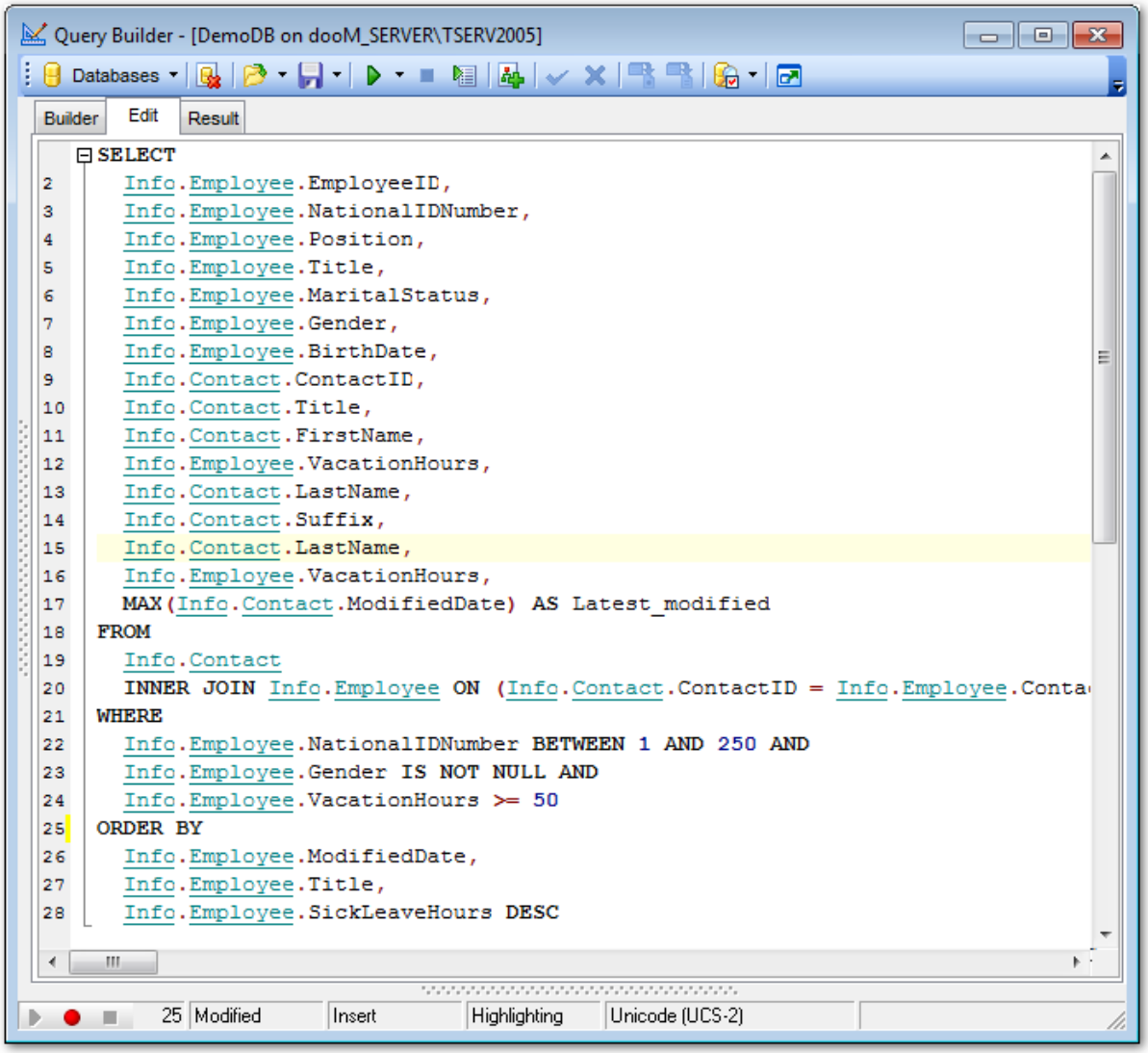
Setting criteria 454
Setting output columns 457
Setting grouping criteria 458

6.2.8 Working with the editor area

The **Editor area** of **Design Query** is available within the **Edit** tab and is provided for working directly with the SQL query text which is generated automatically while you build the query visually.

You can edit this text according to the rules of SQL, and all the changes will be displayed within the **Builder** tab respectively.

To learn more about the Query Data features available within the **Edit** tab, see Working with Query Data area 435.



See also:

Working with diagram area 450
Query execution 461
Query Data 432

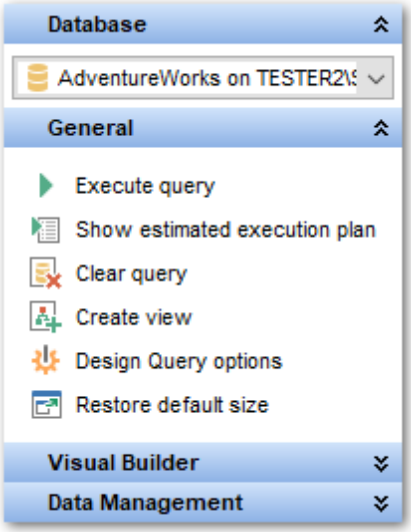
6.2.9 Query execution

When all the query parameters are set, you can immediately **execute the query** in **Design Query**.

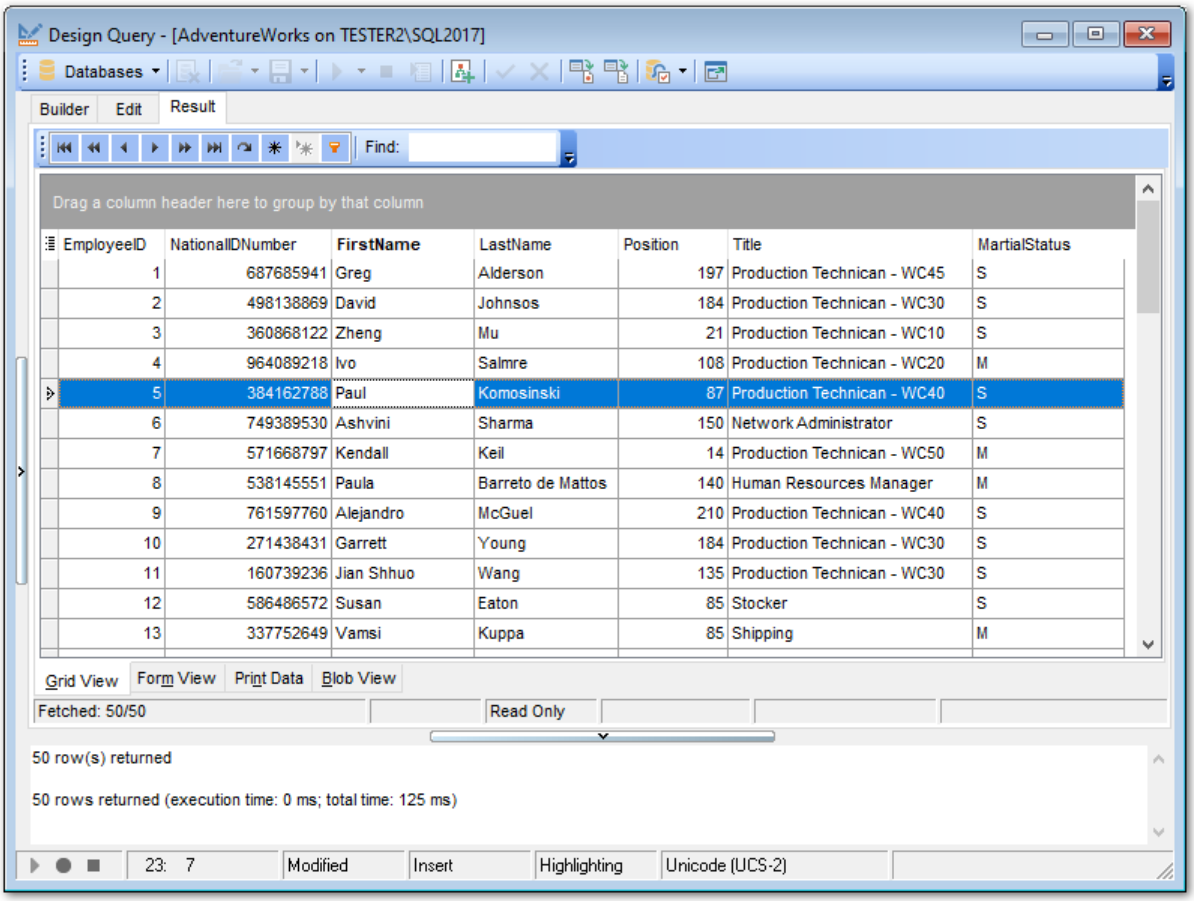
To execute a query, click the **Execute query** item of the Navigation bar 448. You can also use the *F9* hot key for the same purpose.

If the query parameters are specified correctly, the query is executed and, in case the

query statement is supposed to return data (e.g. as SELECT statement), the returned dataset appears within the **Result** tab.
If SQL syntax of the query contains any errors, the query execution is stopped and the corresponding error message is displayed in the status bar area at the bottom of the Design Query window.



By default, data returned by a query are displayed as a grid (see Data View 469 for details). The context menu 475 of the grid allows you to Export Data 537, Export As SQL Script 599.



See also:

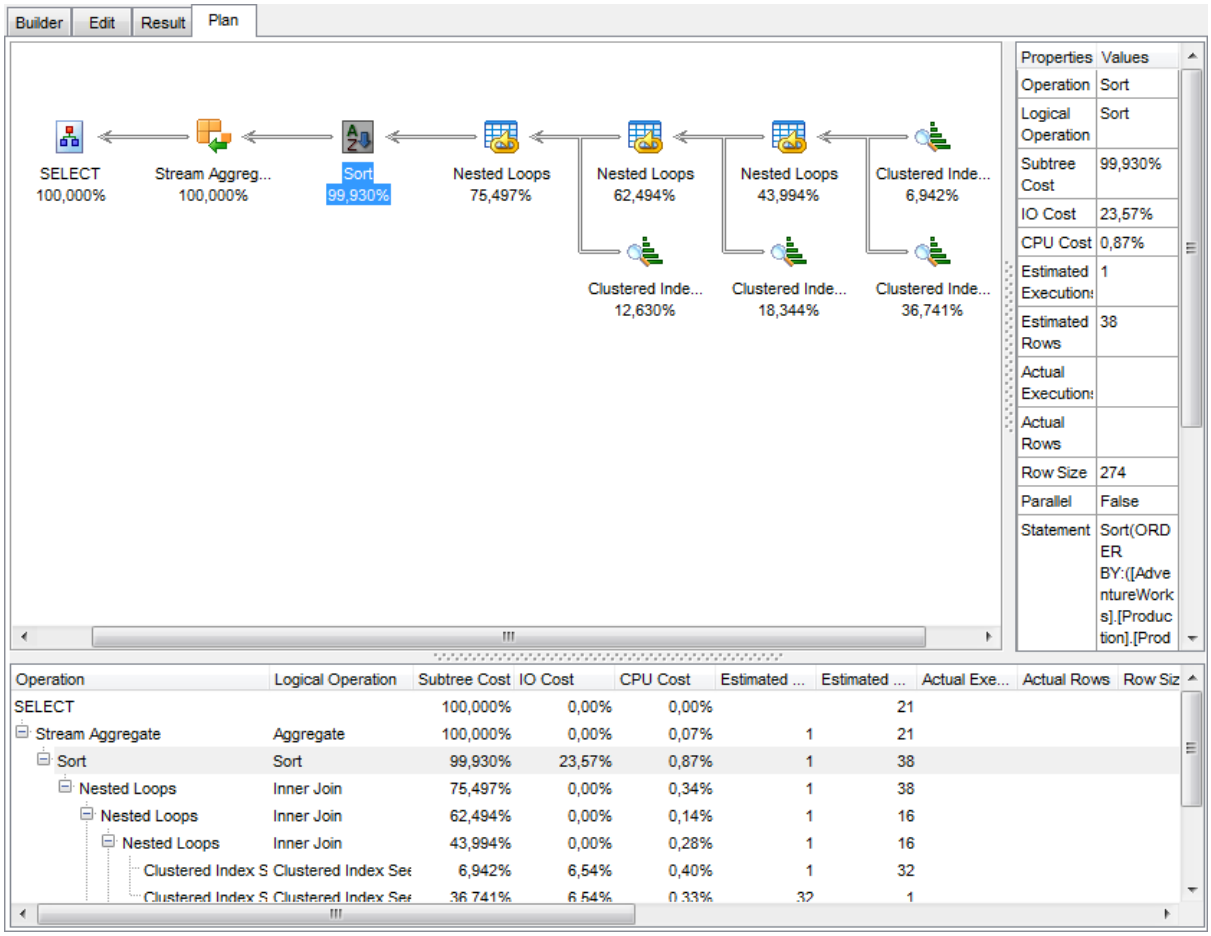
Working with diagram area 450
Working with the editor area 460
Data View 469

6.2.10 Viewing query plan

Using SQL Manager for SQL Server, you can view **the plan** for each of the queries created and executed in the application. The query plan is available within the corresponding **Plan** tab.

To view the **Plan** of a query, open **Design Query** and use the **Show estimated execution plan** item of the Navigation bar 448 or toolbar 450.

The **Plan** tab allows you to view the sequence of actions performed by the database server in the process of the query execution, and the amount of system resources used for the query execution.



If necessary, you can specify that the **Plan** tab appears automatically upon query execution in Design Query: select the ☑ **Show actual execution plan on query execution** option available within the Tools | Design Query 877 section of the Environment Options 854 dialog.

See also:

Query execution 461

6.3 Query parameters

Both Query Data 432 and Design Query 448 support parameters usage inside the query text. A parameter is a kind of variable for which a value can be specified just before the query execution. In the query text the parameter should appear as an identifier with a colon (':') at the beginning, e.g.

```
SELECT * FROM MYTABLE WHERE ID = :param1;
```

Note: The **Allow using of parameters in query text** option should be checked on the Tools 866 page of the Environment Options 854 dialog for this feature to be enabled.

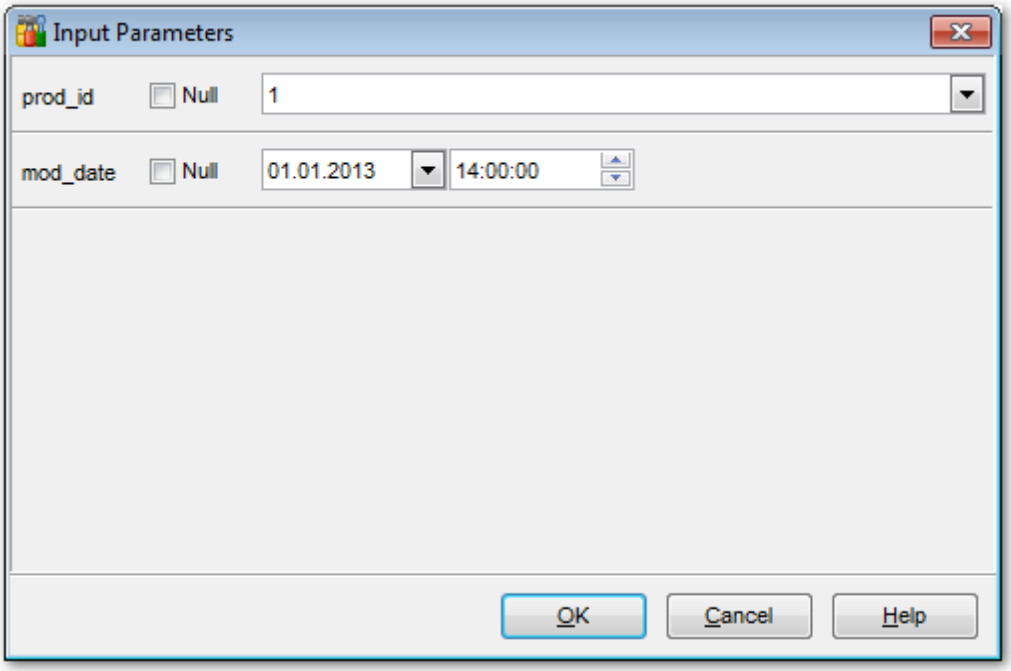
See also:

Query Data 432

Design Query 448

6.3.1 Input parameters dialog

The **Input Parameters** dialog is used to specify the query parameters as well as values of the input parameters of the query before execution.



The edit field for input parameters varies according to the column data type. For your convenience the *Calculator* and *Date editor* are implemented for *Numeric* and *Date and Time* types respectively: click the arrow-down button to call the *Calculator / Date editor* popup window.

Click **OK** button to apply the values and execute the query or click **Cancel** button to

abort execution.

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Part VII

7 Data Management

Table data and query results are displayed on the **Data** or **Results** tab of Table Editor 204, Query Data 432, Design Query 448, etc.

Data can be displayed in one of the following modes: **Grid View**, **Form View**, **Print Data**, **BLOB View**. See Data View 469 to learn more about these modes. You are also provided with a number of filtering tools 475 when working with your data.

- Data View 469
- Custom Filter 523
- Filter Builder dialog 525

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Query Management Tools 430
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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7.1 Data View

SQL Manager for SQL Server provides you with powerful tools for **viewing, editing and printing data** from tables and queries:

- table / view data are available within the **Data** tab of Table Editor 204 / View Editor 250 correspondingly;
- upon a query execution 440 the returned dataset appears within the **Result(s)** tab of Query Data 432 / Design Query 448 (in Query Data the position of the tab depends on the **Results on Edit tab / Results on separate tab** selection in the Navigation bar 432).

The data can be displayed in one of four available **modes**: *Grid View*, *Form View*, *Print Data* and *BLOB View*. The **status bar** at the bottom displays the number of records in the current dataset, the time the records were fetched by the application and the status of the records (whether the data are read-only or editable).

Please see the succeeding chapters to learn how to work with your data in the simplest and most efficient way.

- Using Navigation bar and Toolbars 469
- Grid View 471
- Form View 490
- Print Data 491
- BLOB View 511
- Applying changes 522

See also:

Custom Filter 523

Filter Builder dialog 525

Table Editor 204

View Editor 250

7.1.1 Using Navigation bar and Toolbars

When the **Data** tab (in Table Editor 204, View Editor 250) or the **Result(s)** tab (in Query Data 432, Design Query 448) is selected, the Navigation bars 951 of these tools contain the **Data Management** group which allows you to:

✔ commit transaction (if the *Use transactions in object editors, Query Data and Design Query* option is selected in the Data Options 127 section of the Database Registration Info 120 dialog)

✖ rollback transaction (if the *Use transactions in object editors, Query Data and Design Query* option is selected in the Data Options 127 section of the Database Registration Info 120 dialog)

export data 537

export data as SQL script 599

import data 577 (in *Table Editor* only)

bulk insert 608 (in *Table Editor* only)

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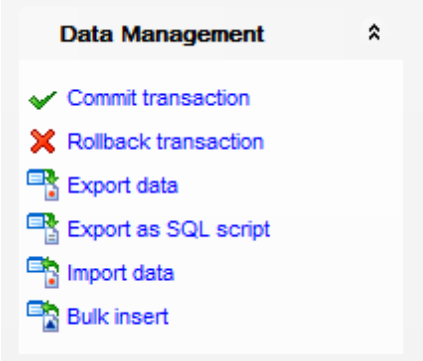


Items of the **Navigation bar** are also available on the **ToolBar**. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

The **Navigation pane** contains toolbars allowing you to:
- go to the first record of the dataset;
- go to the previous page;
- go to the previous record;
- go to the next record;
- go to the next page;
- go to the last record of the dataset;
- insert a new record (in *Table Editor* only);
- delete the selected record (in *Table Editor* only);
- edit the selected record (in *Table Editor* only);
- post522 edit (in *Table Editor* only);
- cancel edit (in *Table Editor* only);
- refresh data;
- set bookmark;
- go to saved bookmark;
- call the Filter Builder525 dialog;
- search for a string in the currently selected column data;
- show linked details table;
- specify the maximum number of records (record limit) for displaying data (in *Table Editor*, *View Editor* only);
- navigate within the dataset using the specified record limit (in *Table Editor*, *View Editor* only).

The **Toolbar** of the Print Data491 mode allows you to:
- customize the report using Report Formatter497 and the Report Options505 dialog;
- load a report from an external **.rps* file;
- save the current report to an external **.rps* file;
- print the report using the default printer;
- set printing options using the standard Print510 dialog;
- call the Page Setup492 dialog;

- show/hide report thumbnails;
- customize the Report Title 506;
- add Date and Time 508, Page Numbering 508, show/hide empty pages;
- shrink the report to the page;
- specify background color;
- zoom in/out, setup zoom 509, zoom page width, whole page, two/four/multiple pages;
- select the active page of the report;
- go to first/previous/next/last page of the report.

The **Toolbar** of the BLOB View 511 mode allows you to:

- select a BLOB column;
- select encoding (*ANSI*, *UTF-8*, *UNICODE-16*);
- load BLOB content from an external file;
- save the BLOB column content to an external file;
- cut/copy/paste selected text to/from clipboard (enabled for the *Text* and *Rich Text* tabs only);
- undo changes;
- print the text (enabled for the *Text*, *Rich Text* and *HTML* tabs only);
- select font to be applied to the selected text (enabled for the *Rich Text* tab only);
- select font size to be applied to the selected text (enabled for the *Rich Text* tab only);
- make the selected text bold/italic/underlined (enabled for the *Rich Text* tab only);
- align left/center/right (enabled for the *Rich Text* tab only);
- add/remove list bullets (enabled for the *Rich Text* tab only).

See also:

Grid View 471
Form View 490
Print Data 491
BLOB View 511
Applying changes 522
Customize toolbars and menus 976

7.1.2 Grid View

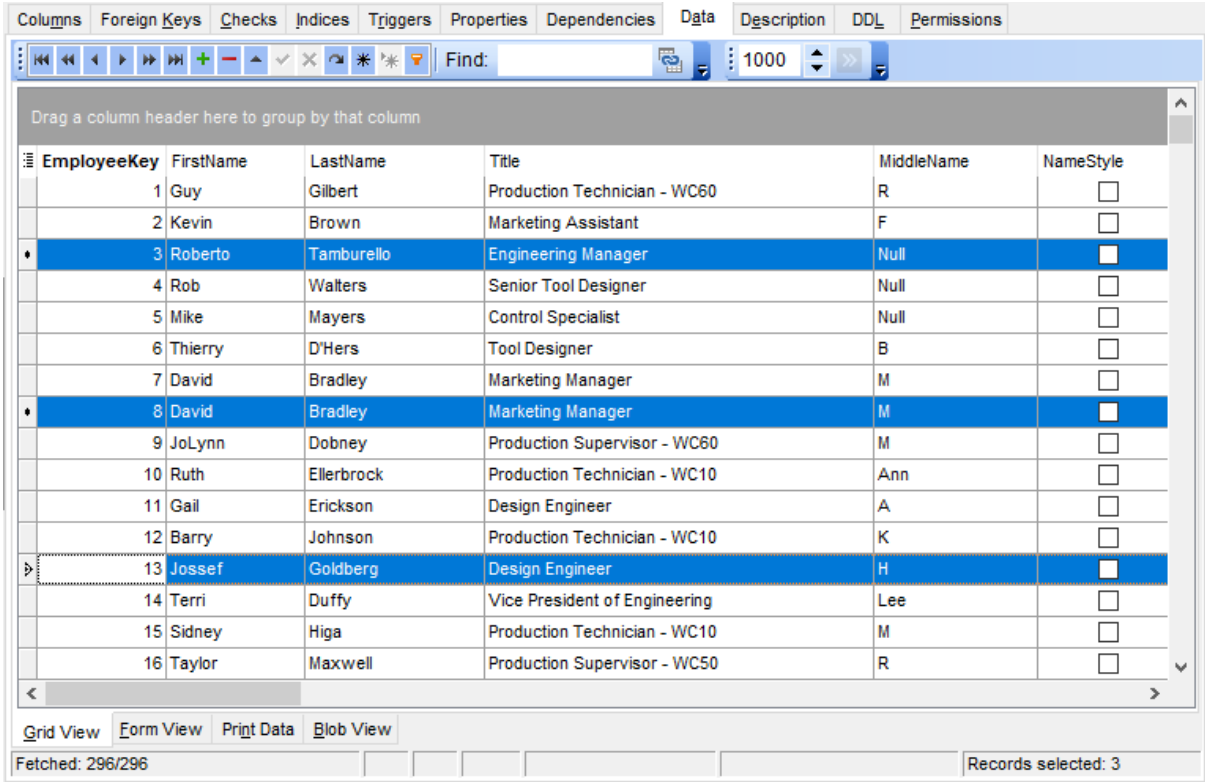
By default, data returned by a query are displayed as a grid. It is indicated by the **Grid View** tab selected on the View mode panel at the bottom of the **Results** area of the window.

When in the **Grid View** mode, the columns correspond to the fields and the rows correspond to the records.
If more convenient, you can change the order 473 of the columns by dragging their headers horizontally. Clicking the column caption sorts data by the values of this column

in the ascending or the descending mode. The navigation pane 470 at the top of the grid allows you to browse the data quickly, to insert, update and delete records, and to set a filter 475 for the records using the Filter Builder 525 dialog and other tools.

The Navigation bar 469 of the parent window, toolbars 470 and the context menu 478 of the grid provide you with a number of data management functions: Export Data 537, Import Data 577, Export as SQL Script 599 and more.

- Customizing columns 473
- Grouping data within the grid 473
- Filtering records 475
- Using the context menu 478
- Working in multi-level mode 479
- Browsing data in card view 487
- Column Summary 488
- Copying records 489



Hint: To increase the speed of opening tables and views with extremely large number of records, you can use options of the **Limit options in table and view editors** group available in the Grid | Data Options 893 section of the Environment Options 854 dialog.

See also:

Using Navigation bar and Toolbars 469

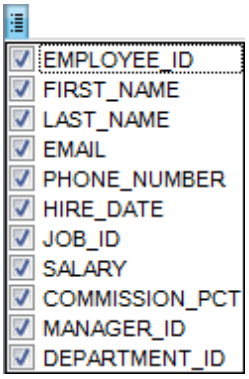
Form View 490

Print Data 491
BLOB View 511
Applying changes 522

7.1.2.1 Customizing columns

Selecting visible columns

When working in the **Grid View** mode, you can specify which columns of the current dataset will be visible. Click the button available in the top left corner of the data grid and select/deselect columns in the drop-down list to specify their visibility/invisibility.



Changing columns order

For your convenience the possibility to *change the order* of the columns in the data grid is available. To reorder columns, drag a column header horizontally to a place in between two other column headers indicated with green arrows.

See also:

Grouping data 473
Filtering records 475
Working in multi-level mode 479
Working in card view mode 487
Column Summary 488

7.1.2.2 Grouping and sorting data

In order to **sort data**, do the following:
open data at the **Data** or **Results** tab, choose the column by which you need to sort data and click the column title.
If the column was not sorted, the first click will sort it in the ascending order and the

second one - in the descending order.

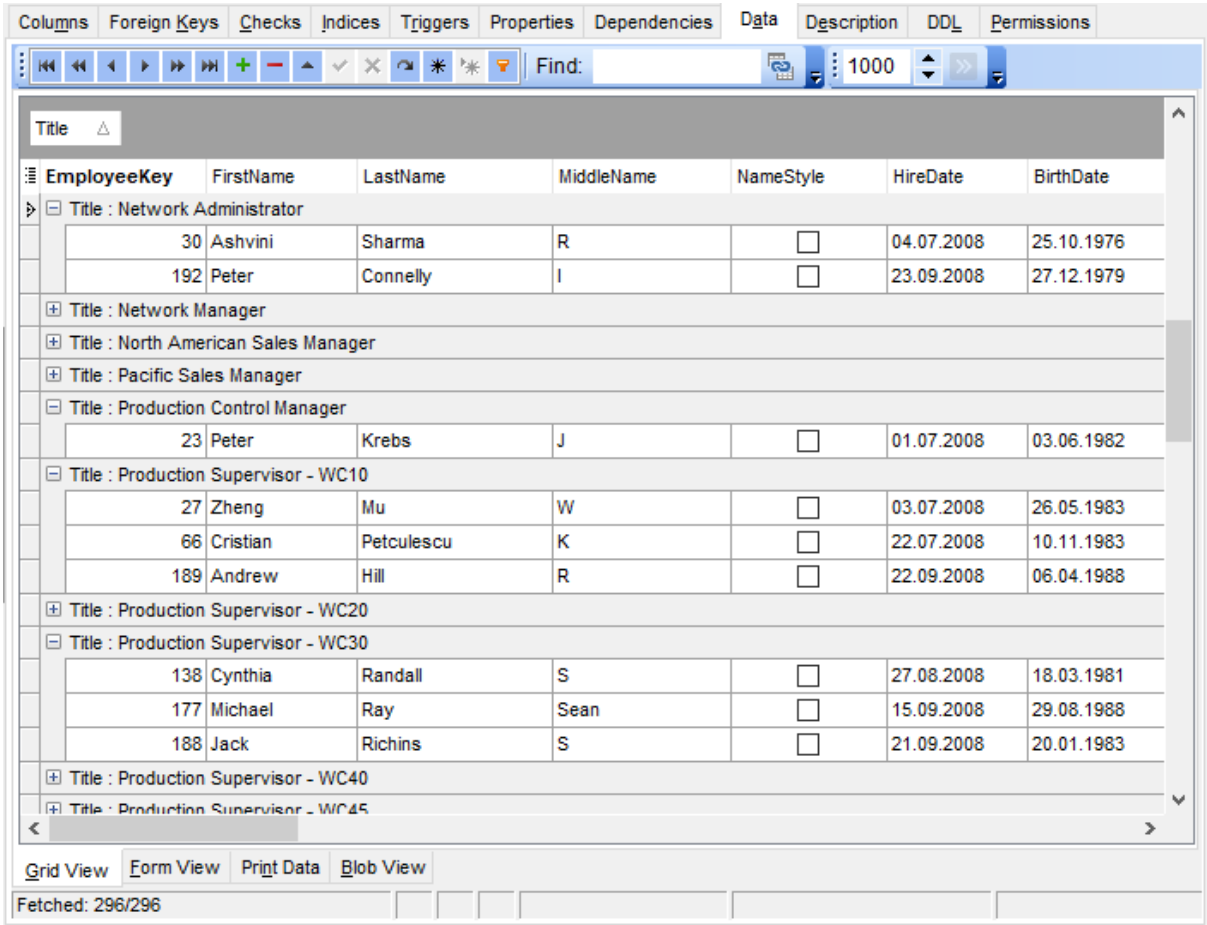
Clear Sorting
To cancel the sorting, open the context menu by right-clicking the necessary column and choose the **Clear Sorting** item, or press the *Ctrl* button and click the column title.

If necessary, you can **group the data in grid** by any of the columns.

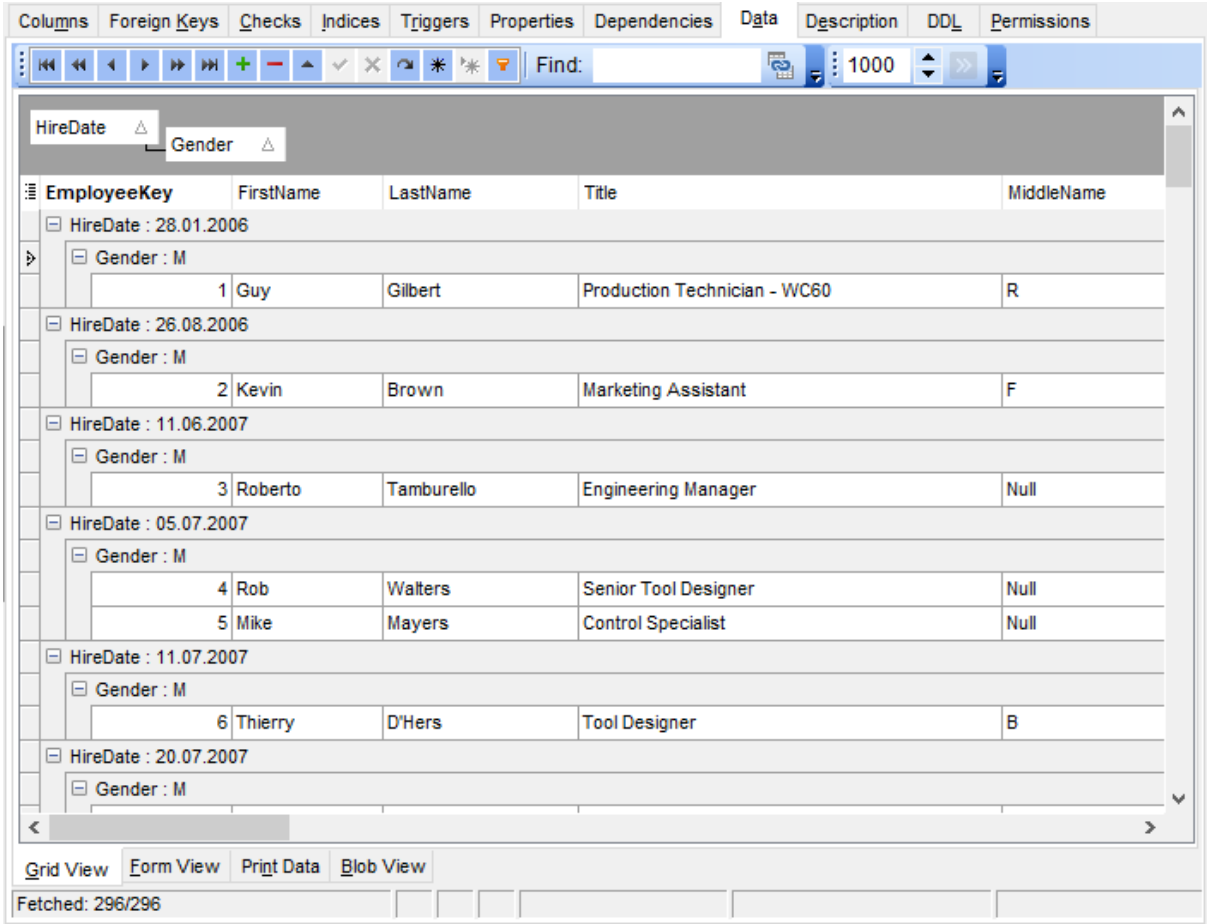
This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. In order to display this area, select the ☑ **Show "Group by" box** option available in the Grid 891 section of the Environment Options 854 dialog.

When grouping by a column is applied to the grid, all the records are displayed as subnodes to the grouping row value as displayed in the screenshot below. The grouping row can contain the column summary information specified in the **Group header** group of the Column Summary 488 dialog.

To reverse grouping, just drag the column header back.
Hint: While dragging the column header back, you can also change the column position 473
.



If necessary, you can group data by two or more columns. In this case column headers are displayed hierarchically, and data are grouped by these columns in the order the column headers appear in the **Group by** area.



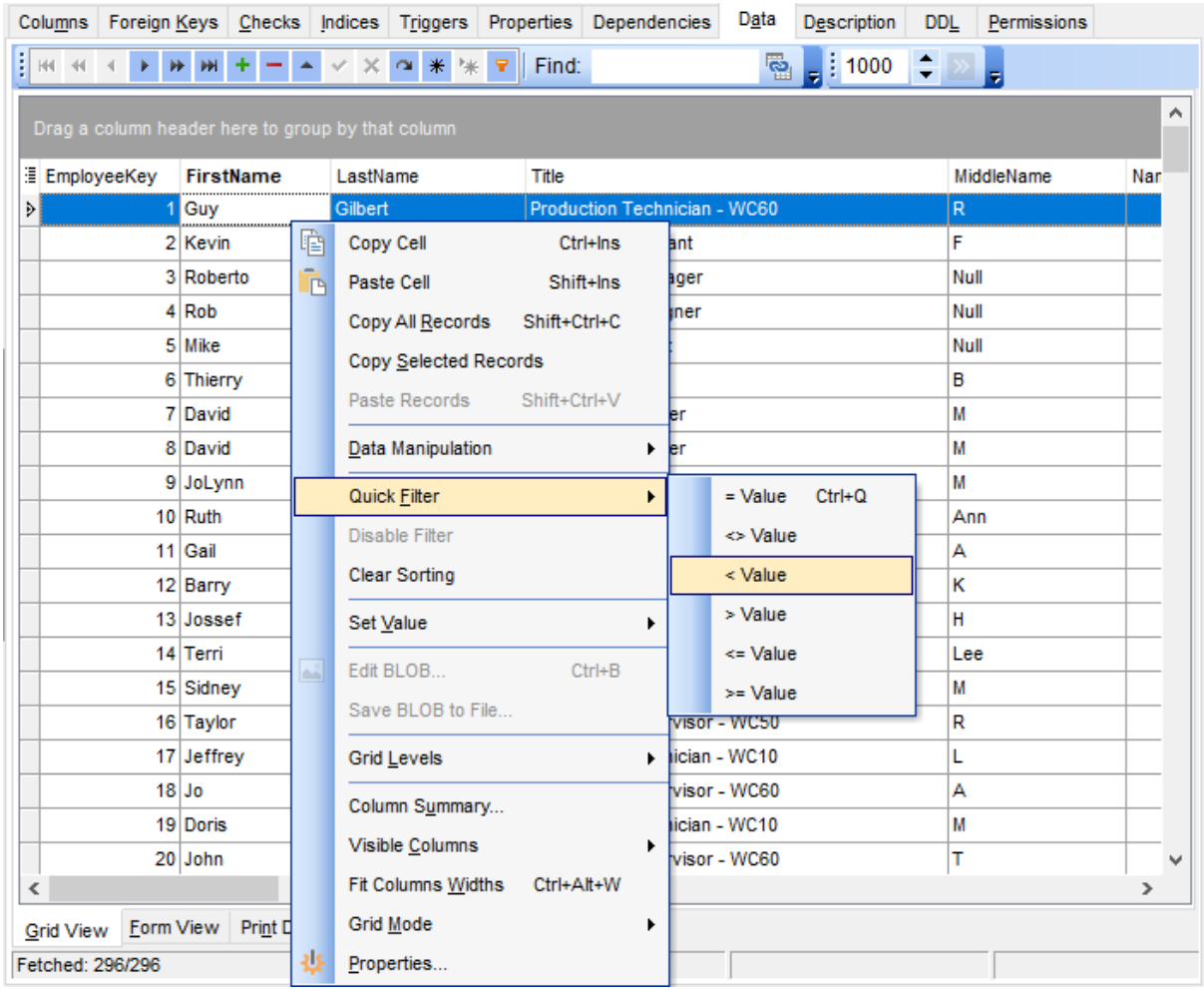
See also:

Customizing columns 473
Filtering records 475
Working in multi-level mode 479
Working in card view mode 487
Column Summary 488

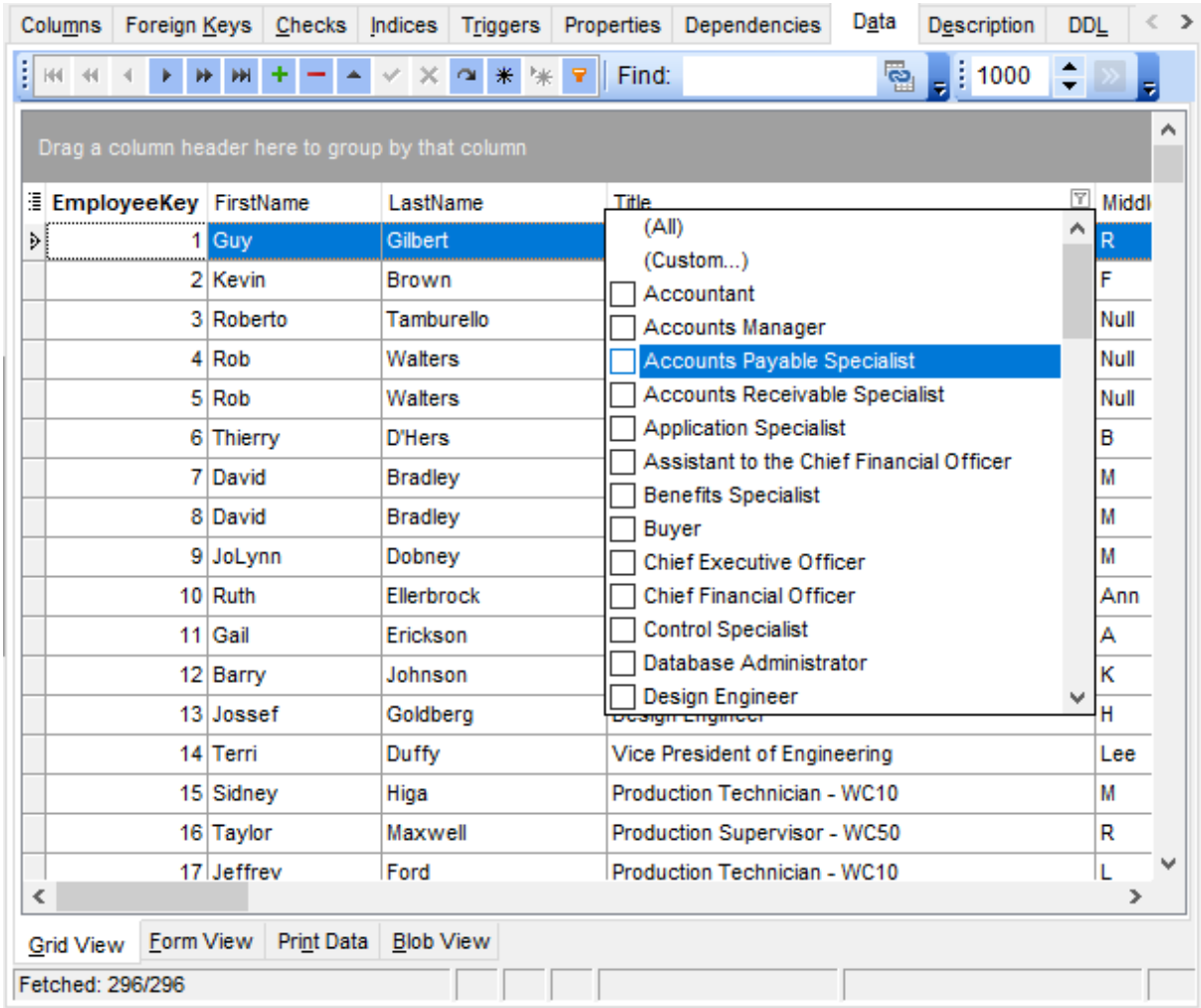
7.1.2.3 Filtering records

A number of **filtering** facilities are implemented in the grid for your convenience. You can filter records in the grid in either of the following ways:

- right-click a row and select the **Quick Filter** context menu item to filter records by the current value of the selected column;



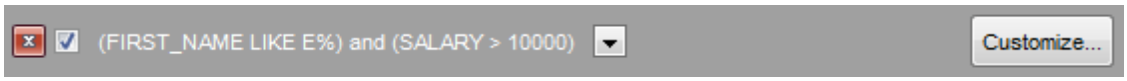
- click the Arrow-Down button next to the column caption to display the drop-down list and select any of the column values to filter records by this value of the selected column;



or

- click the Arrow-Down button next to the column caption to display the drop-down list, then select the **Custom** item and build a simple filter using the Custom Filter 523 dialog;
- use the **Set filter** button on the navigation pane 470 to invoke the Filter Builder 525 dialog and create a composite filter using the dialog.

After the filter is set, the gray **filtering panel** becomes visible at the bottom of the grid. This panel allows you to see the active filtering condition and easily enable or disable it using the checkbox on the left. The Arrow-down button opens the drop-down menu which allows you to browse the filter history for this dataset.
If necessary, you can click the **Customize...** button on the right to customize your filter and add more complicated filtering conditions within the Filter Builder 525 dialog.



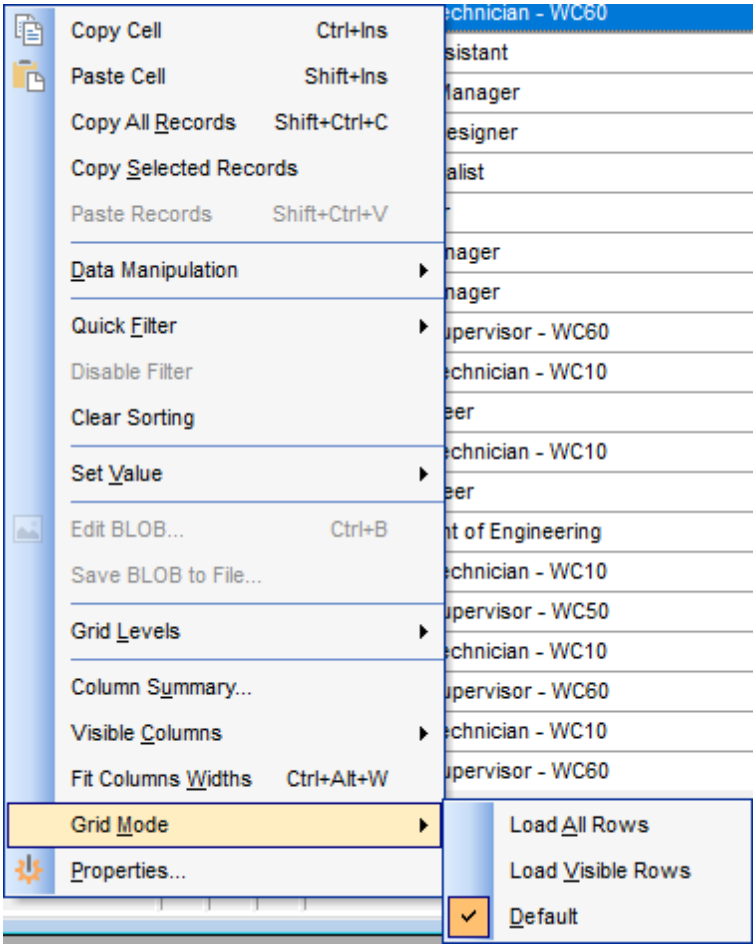
To remove the current filter, click the **Close** button.

See also:

Customizing columns 473
Grouping data 473
Custom Filter 523
Filter Builder dialog 525

7.1.2.4 Using the context menu

The **context menu** of the grid is aimed at facilitating your work with data: you can perform a variety of operations using the context menu items:



- copy the selected cell value to Windows clipboard;
- paste the clipboard content to the currently selected cell;
- copy/paste multiple records;
- data manipulation: Export Data 537 from the table, Import Data 577 to the table, Export Data as SQL Script 599, Bulk Insert 608;
- set/disable Quick Filter 475;
- clear sorting;
- set a value for the selected cell: *NULL*, *Empty string* (for string columns), *Now* (for

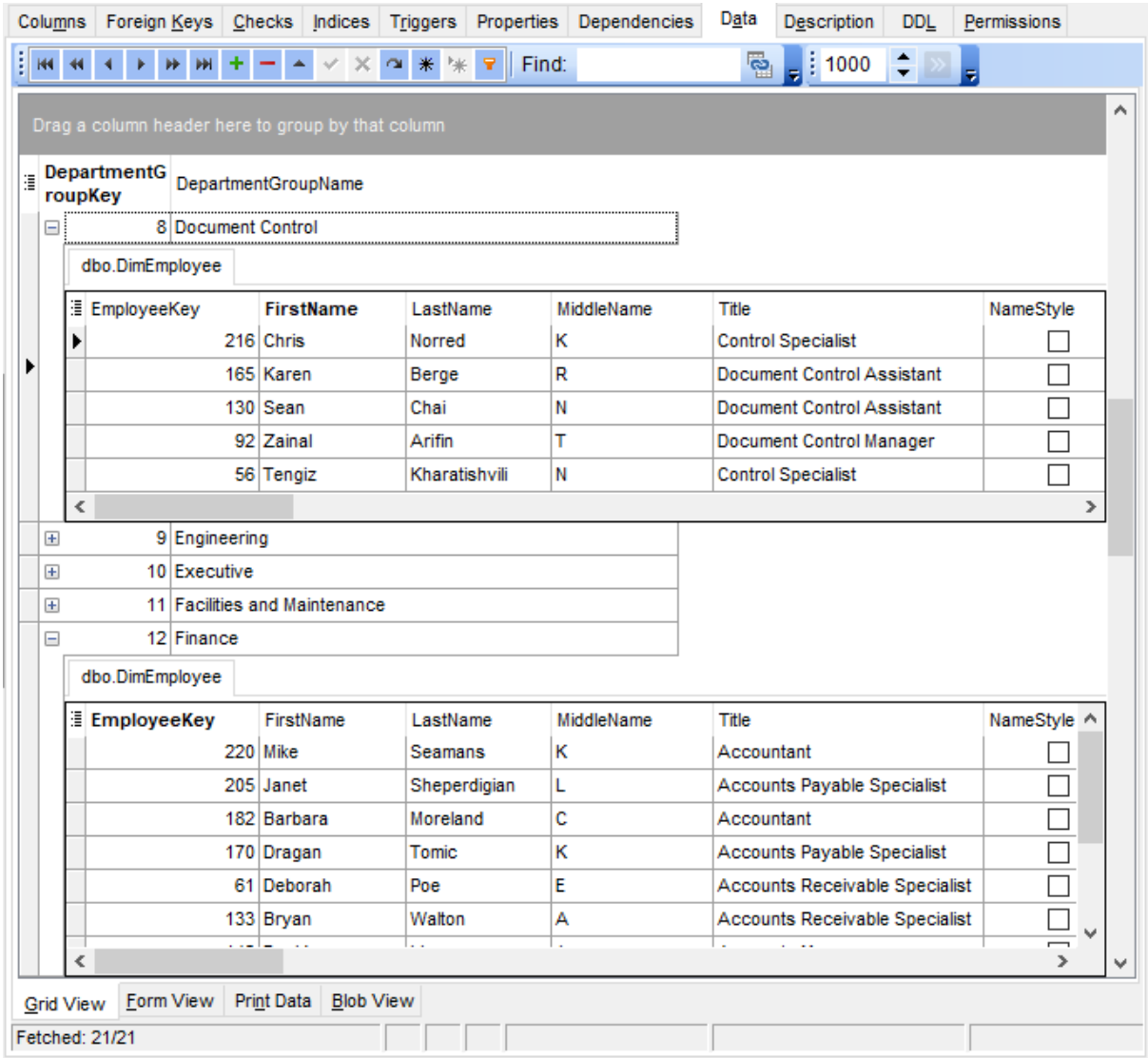
TIME columns), *"Zero"* (for DATE columns);
- edit the BLOB value or save the BLOB to file using BLOB viewer/editor 511;
- show linked details (automatically add grid levels 479 on the basis of existing foreign keys)
- expand/collapse grid levels 479 and navigate within the tabs;
- manage grid levels: add a new grid level 480, delete the current grid level (this item is enabled only when the detail level exists and is currently focused);
- switch to the Card View 487 mode;
- view Column Summary 488;
- select visible/invisible columns of the dataset;
- fit column width for better representation;
- specify the grid mode: *Load All Rows*, *Load Visible Rows*, *Default*;
- view/edit grid properties 891.

Note: If the ☑ **Show editor immediately** and ☑ **Always show editor** options on the Environment options | Grid 891 tab are checked then the context menu of a grid can be evoked by selecting the necessary cell and right-clicking the table header. Otherwise, right-clicking the cell evokes the cell editing menu.

7.1.2.5 Working in multi-level mode

One of unique features of SQL Manager for SQL Server is the ability to work with data in multi-level mode to view and modify data in several related tables simultaneously.

To manage grid levels, right-click the grid and select the **Grid Levels** context menu 478 group. Items of this group allow you to:
- add a new grid level using Create Grid Level Wizard 480;
- delete the current grid level;
- switch between the ordinary *Table View* and the Card View 487 modes.



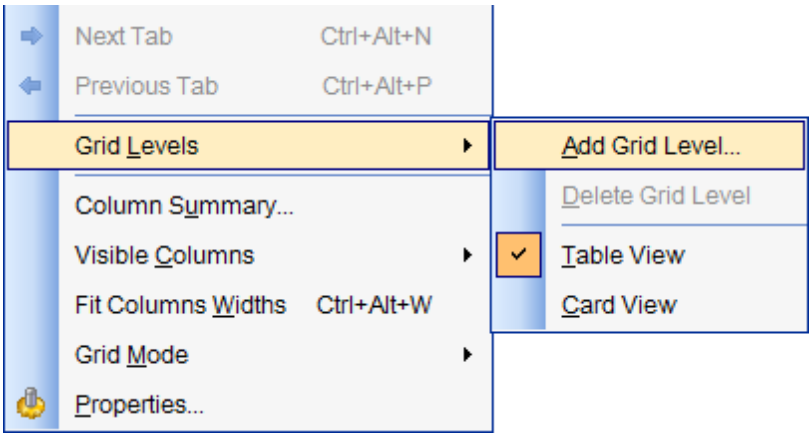
See also:

Using the context menu 478
Create Grid Level wizard 480

7.1.2.5.1 Create Grid Level wizard

Create Grid Level Wizard allows you to add a new detail level to the grid in order to get master-detail representation of your data.

To start the wizard, right-click the grid, select the **Grid Levels** context menu 478 group and proceed to the **Add Grid Level...** item within this group.

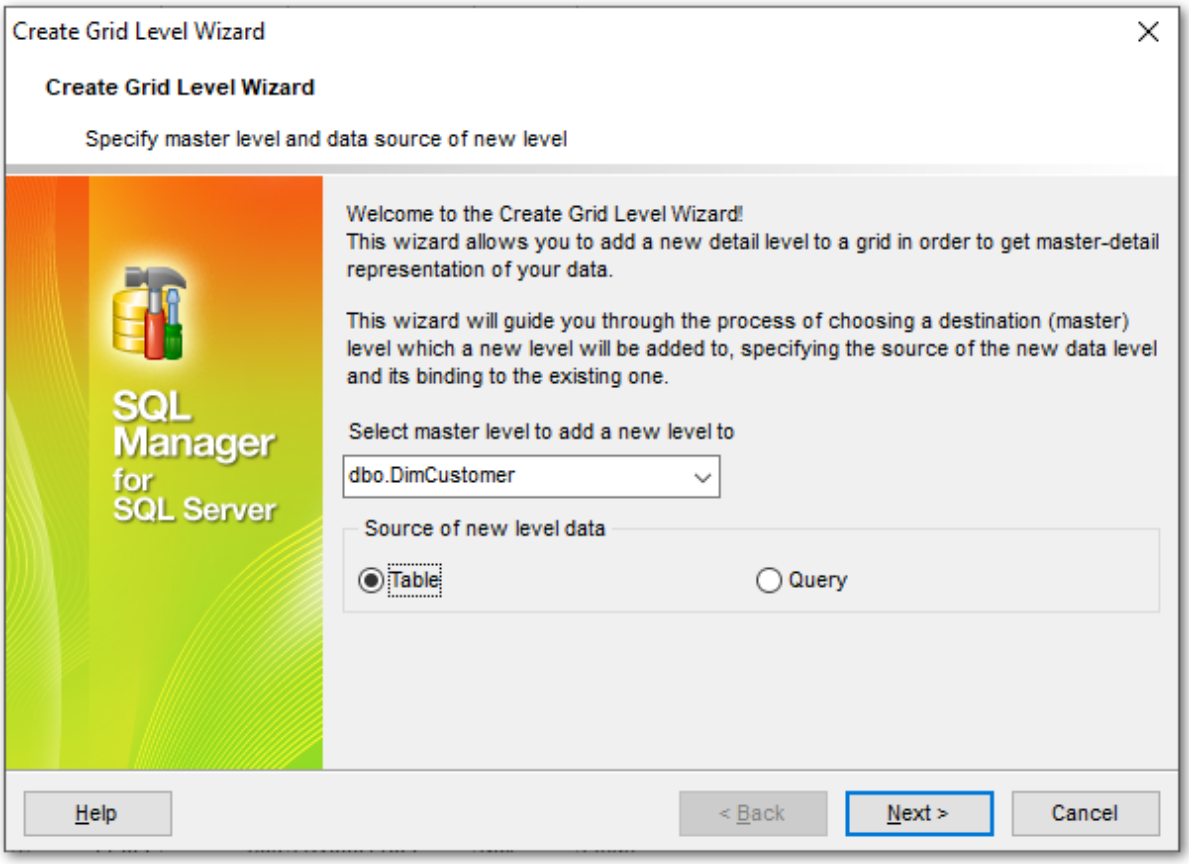


- Specifying master level 481
- Selecting source table 482
- Binding master and detail levels 484
- Query parameterization 485
- Setting additional parameters 486

7.1.2.5.1.1 Specifying master level

Use the drop-down list to select the table of the **master level** to which a new level will be added.

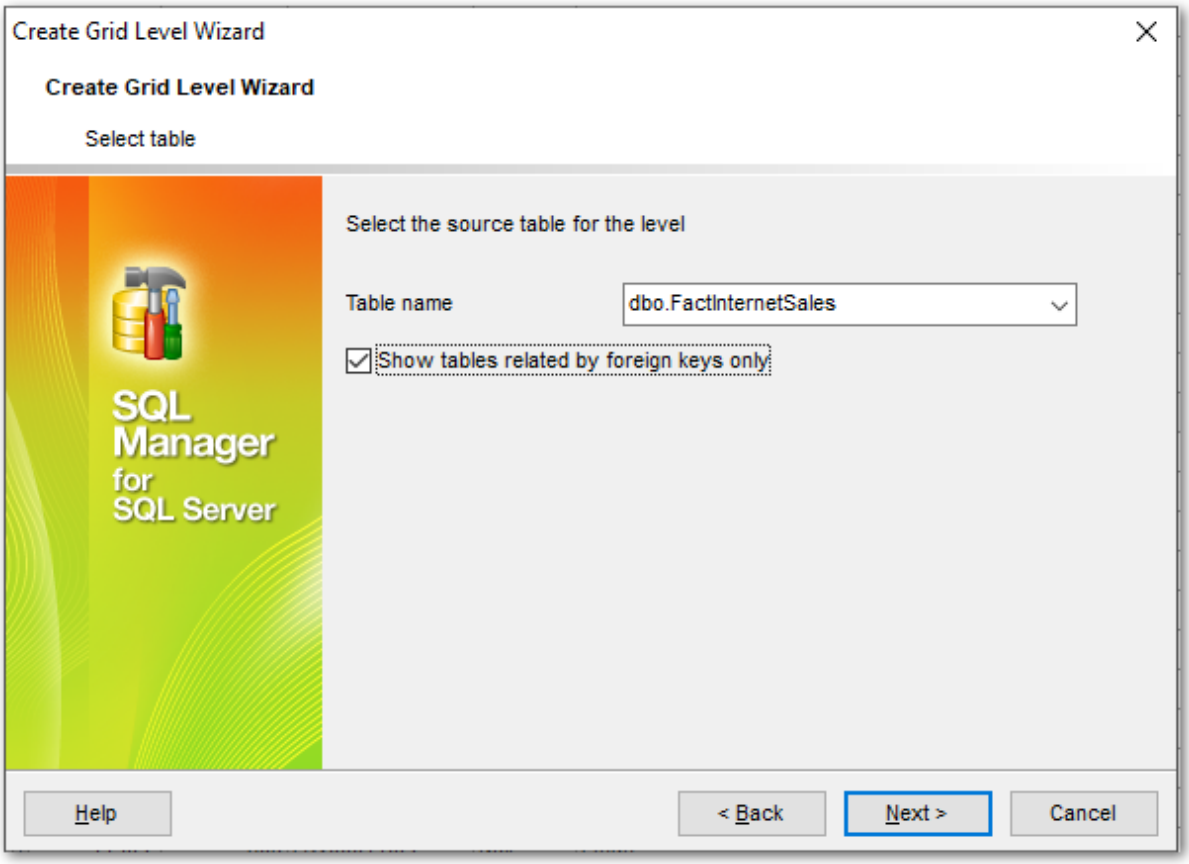
Source of new level data
Select the source type of the new level data: *Table* or *Query*.



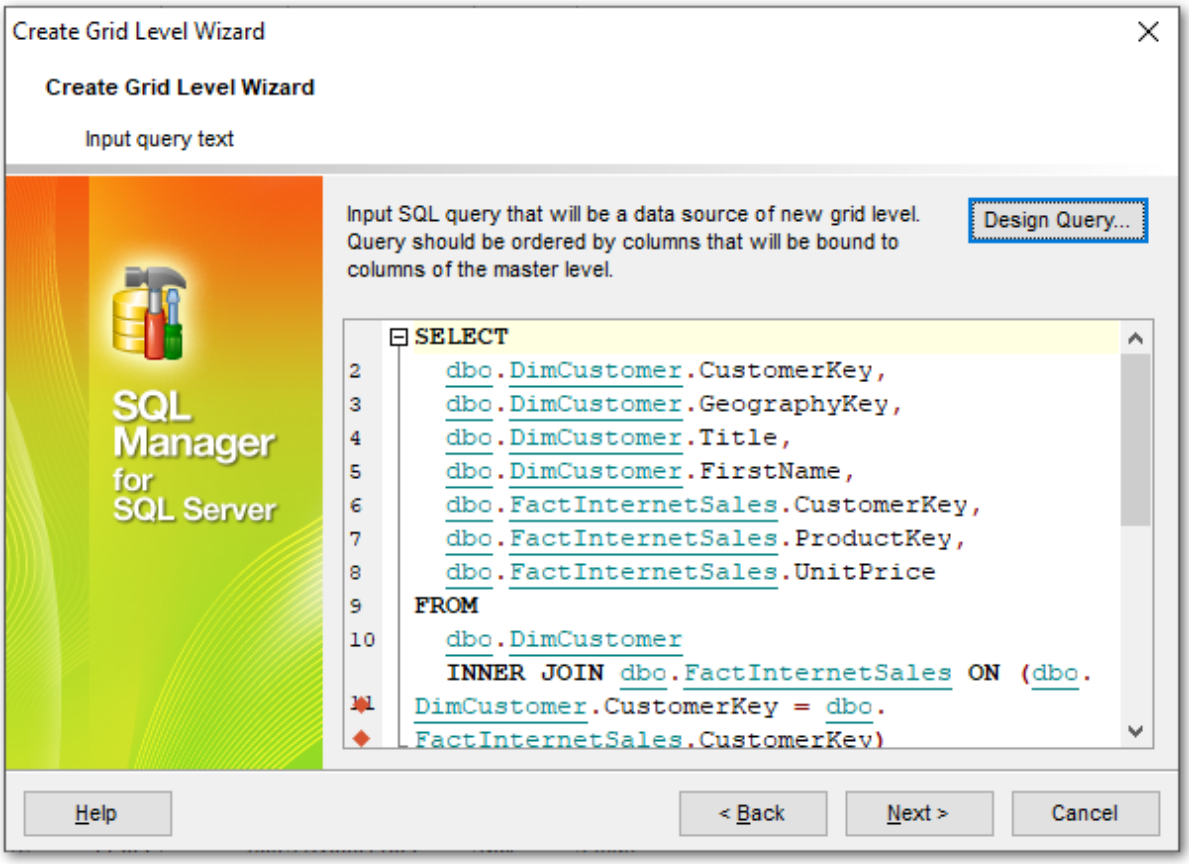
Click the **Next** button to proceed to the Defining source for detail level 482 step to select a table for the detail level or input a query, depending on whether the **Table** or the **Query** option has been selected.

7.1.2.5.1.2 Defining source for detail level

If the **Table** option has been selected at the previous step 481, you should now specify a table for the detail view using the **Table name** drop-down list. Set the **Show tables related by foreign keys only** option to narrow the list of tables by including only tables linked by Foreign keys.



If the **Query** option has been selected at the previous step 481, you should now enter a query that will be used as the source of the new grid level. If necessary, you can use Design Query 448 to build the SQL query visually.



Click the **Next** button to proceed to the Binding master and detail levels 484 step of the wizard.

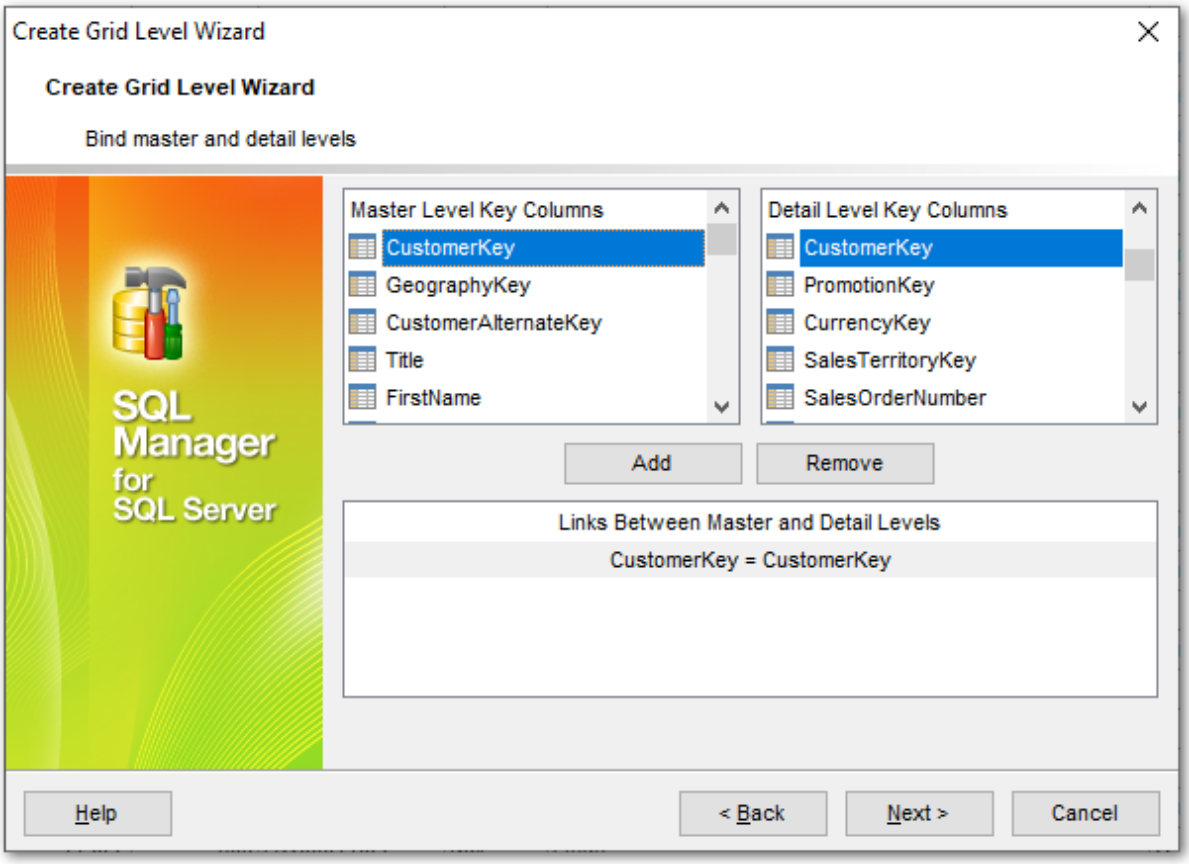
7.1.2.5.1.3 Binding master and detail levels

Define pairs of columns to link the Master Level and the Detail Level data sources:

- select a column in the **Master Level Key Columns** list;
- select a corresponding column in the **Detail Level Key Columns** list;
- click **Add** to set correspondence between the selected columns.

The newly created correspondences are listed in the **Links Between Master and Detail Levels** area. If necessary, you can delete any correspondence using the the **Remove** button.

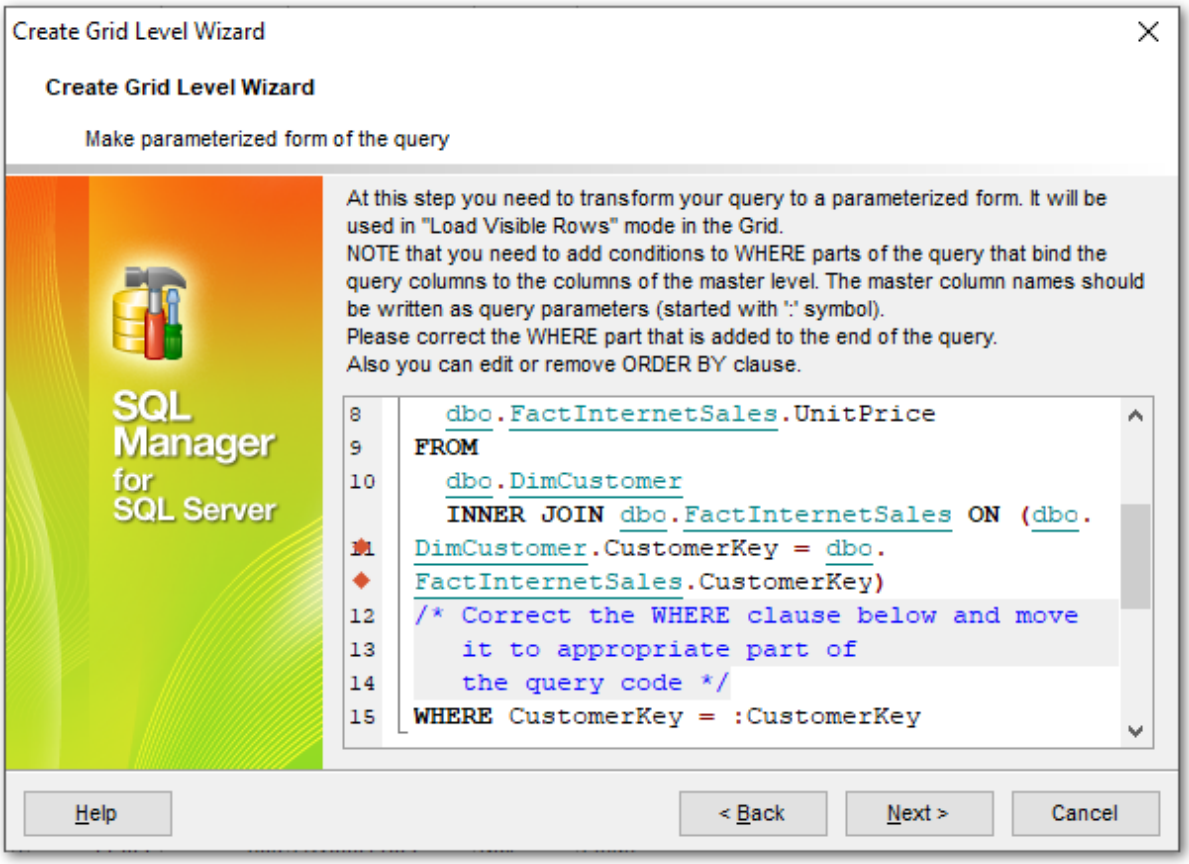
The **From Foreign Key...** menu is available if the ☑ **Show tables related by foreign keys only** option has been selected at the previous step 482. This menu allows you to select the foreign key 225 to be used for identifying master-detail levels (if the table has more than one foreign key relation).



Click the **Next** button to proceed to the Setting additional parameters 486 step or to the Query parameterization 485 step of the wizard if **Query** was selected at the Specifying master level 481 step of the wizard.

7.1.2.5.1.4 Query parameterization

If **Query** was selected at the Specifying master level 481 step of the wizard, you should now transform the query to a parameterized form that will be used in the 'Load visible rows' Grid Mode (see the Grid | Data Options 893 section of the Environment Options 854 dialog to get more information about grid modes offered by SQL Manager).

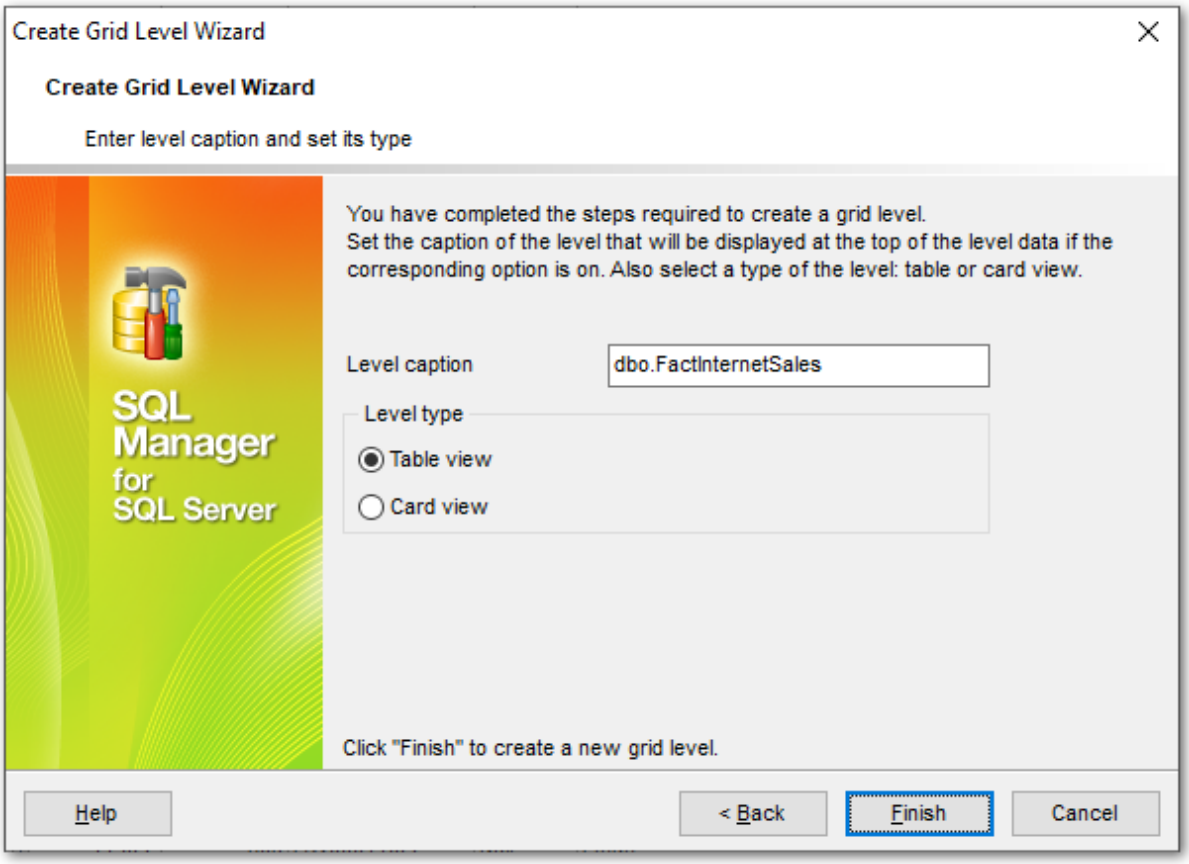


Click the **Next** button to proceed to the Setting additional parameters 486 step of the wizard.

7.1.2.5.1.5 Setting additional parameters

Level caption
Set the caption to be used for the new level in the grid.

Level type
Select the type of view you wish to be applied to the grid level: *Table view* or *Card view*.

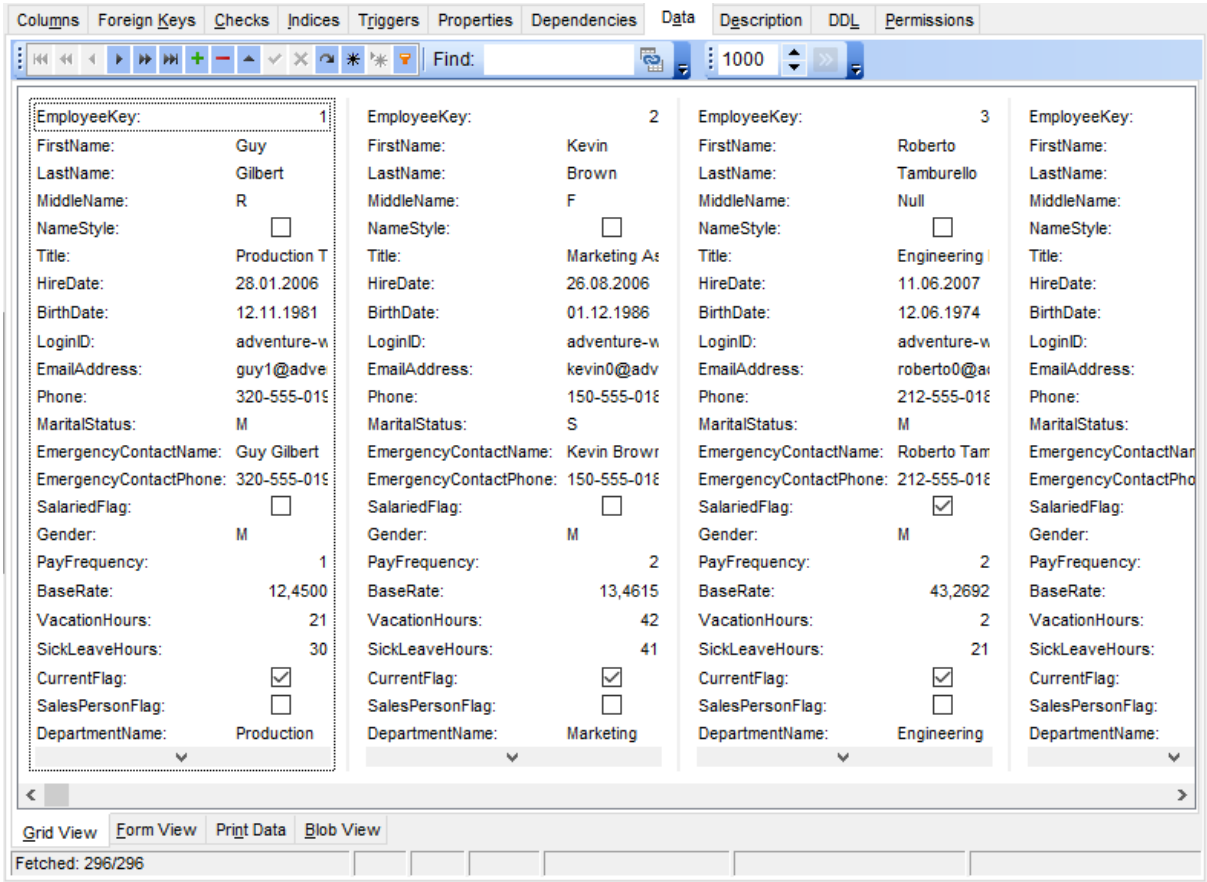


When you are done, click the **Finish** button to complete the operation.

7.1.2.6 Working in card view mode

Depending on your preferences, you can represent data in the **Table View** or in the **Card View** modes.

To switch to the **Card View** mode of data representation, right-click the grid, expand the **Grid Levels** context menu 478 group and select the **Card View** item within this group.

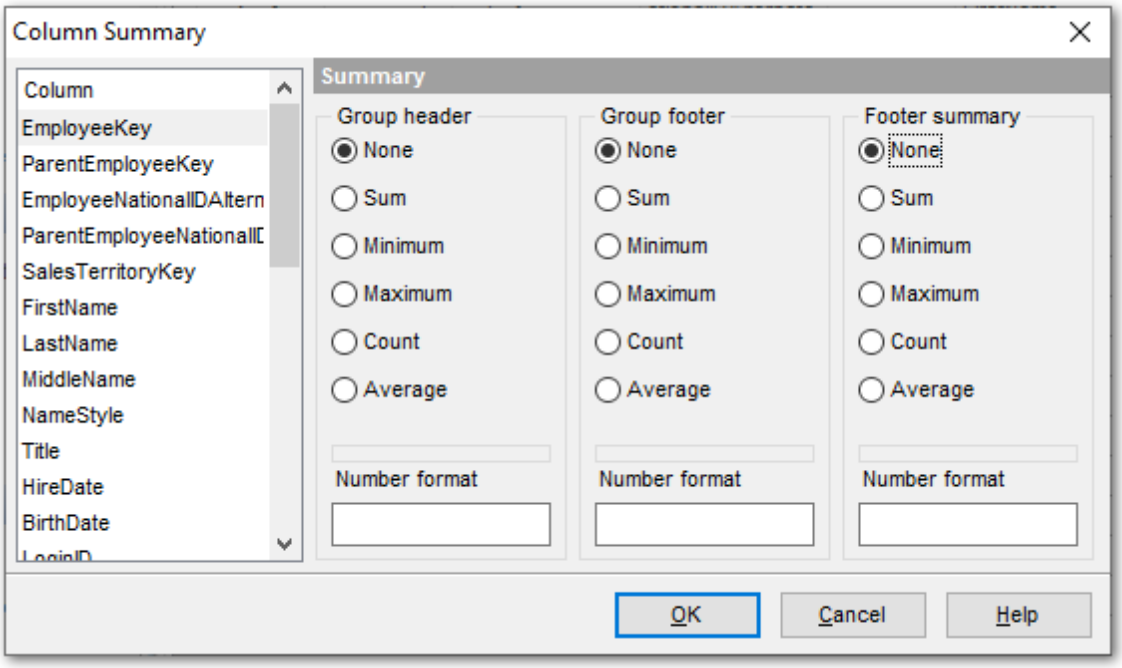


See also:

Using the context menu 478

7.1.2.7 Column Summary

If necessary, you can select the **Column Summary...** context menu 478 item to open the **Column Summary** dialog which allows you to set the summary for each particular column that will be displayed in the grid *footer*, *group header* and *group footer* areas.



The **Column** list displays all columns of the dataset. Select a column and specify which information should be displayed in the grid as summary for this column:

- *None*
- *Sum* (for numeric types only)
- *Minimum* (for numeric and date/time types only)
- *Maximum* (for numeric and date/time types only)
- *Count*
- *Average* (for numeric types only)

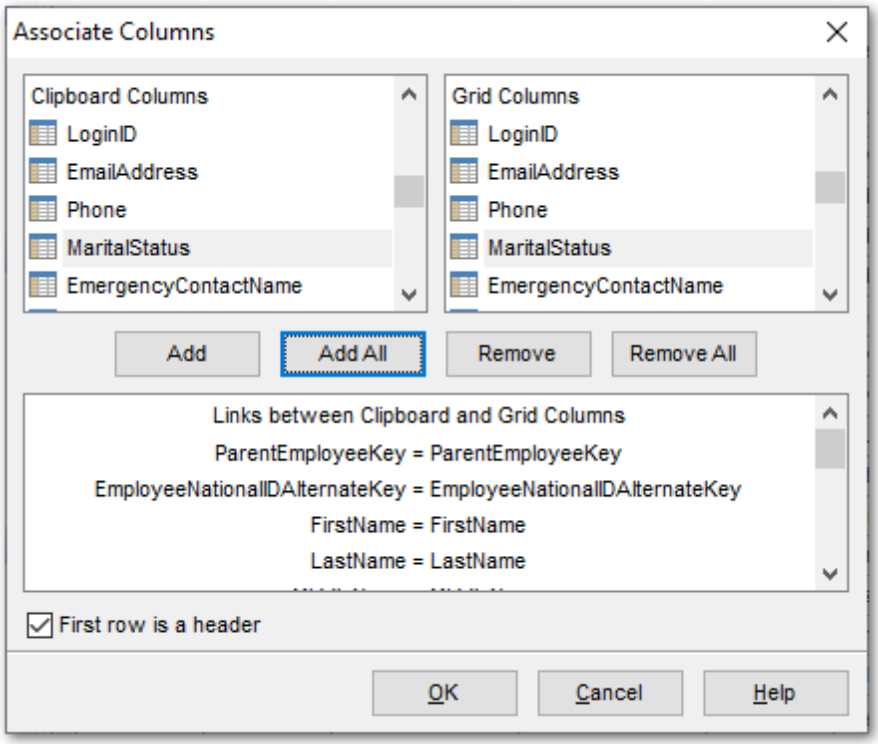
Use the **Number format** edit boxes in each group to specify the preferable format 966 for summary info representation.

See also:

Using the context menu 478

7.1.2.8 Copying records

When you copy several records to clipboard and paste them into the grid, you are offered to set correspondence between columns of the clipboard and columns of the target SQL Server table using the **Associate Columns** dialog.



The **Clipboard Columns** and **Grid Columns** lists display the source and target dataset columns respectively. Set correspondence between the source clipboard columns and the table columns:

- select a source clipboard column in the **Clipboard Columns** list;
- select the corresponding column the target table in the **Grid Columns** list;
- click the **Add** button to set correspondence between the selected columns;
- the pair of columns appears in the **Links between...** list below;
- repeat the operation for all the columns you need copy.

Use the **Add All** button to add all columns to the **Links between...** list on the basis of their order.

To remove a correspondence, select the pair of columns in the **Links between**... list and press the **Remove** button.
To remove all correspondences, press the **Remove All** button.

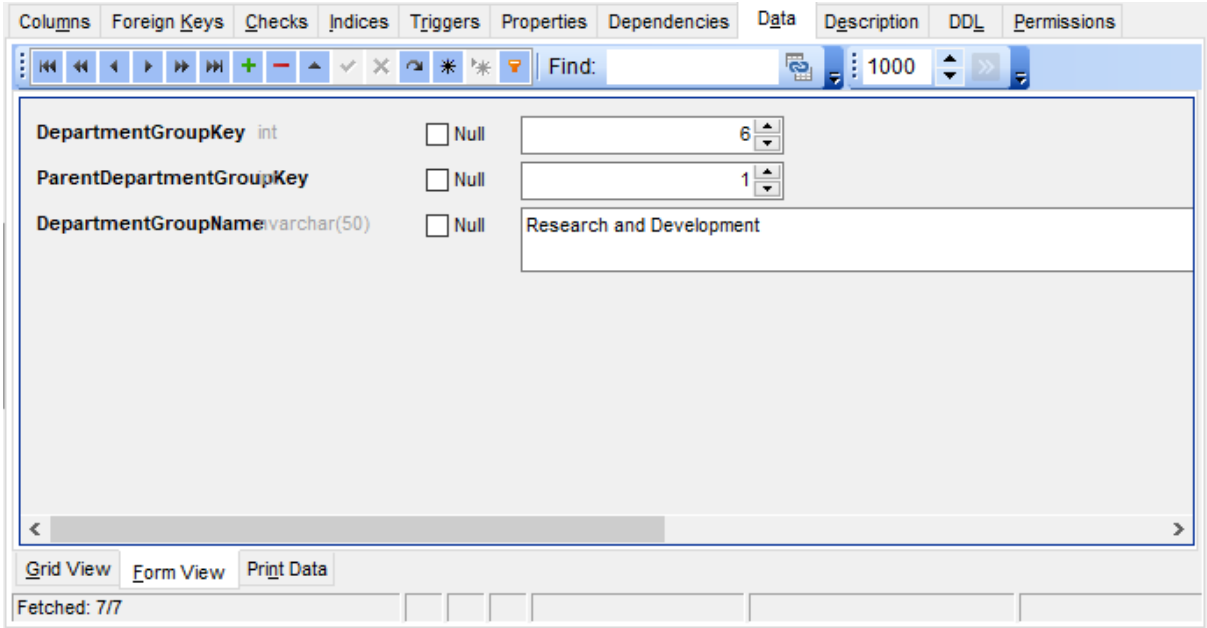
☑ **First row is a header**
This option specifies that the first row of the associated columns will be taken as the column header.

7.1.3 Form View

The **Form View** tab allows you to view data as a form. To activate this type of data view, select the **Form View** tab on the View mode panel at the bottom of the window.

The form displays the current record: column names on the left and the corresponding

values on the right. If the columns are available for editing, you can edit the record directly on this form. The navigation pane 470 at the top of the form allows you to browse the data quickly, to insert, update and delete records, and to set a filter for the records using the Filter Builder 525 dialog.



Each row has a ☑ **Null** checkbox which allows you to clear the column value and set it to NULL (if the column is nullable).

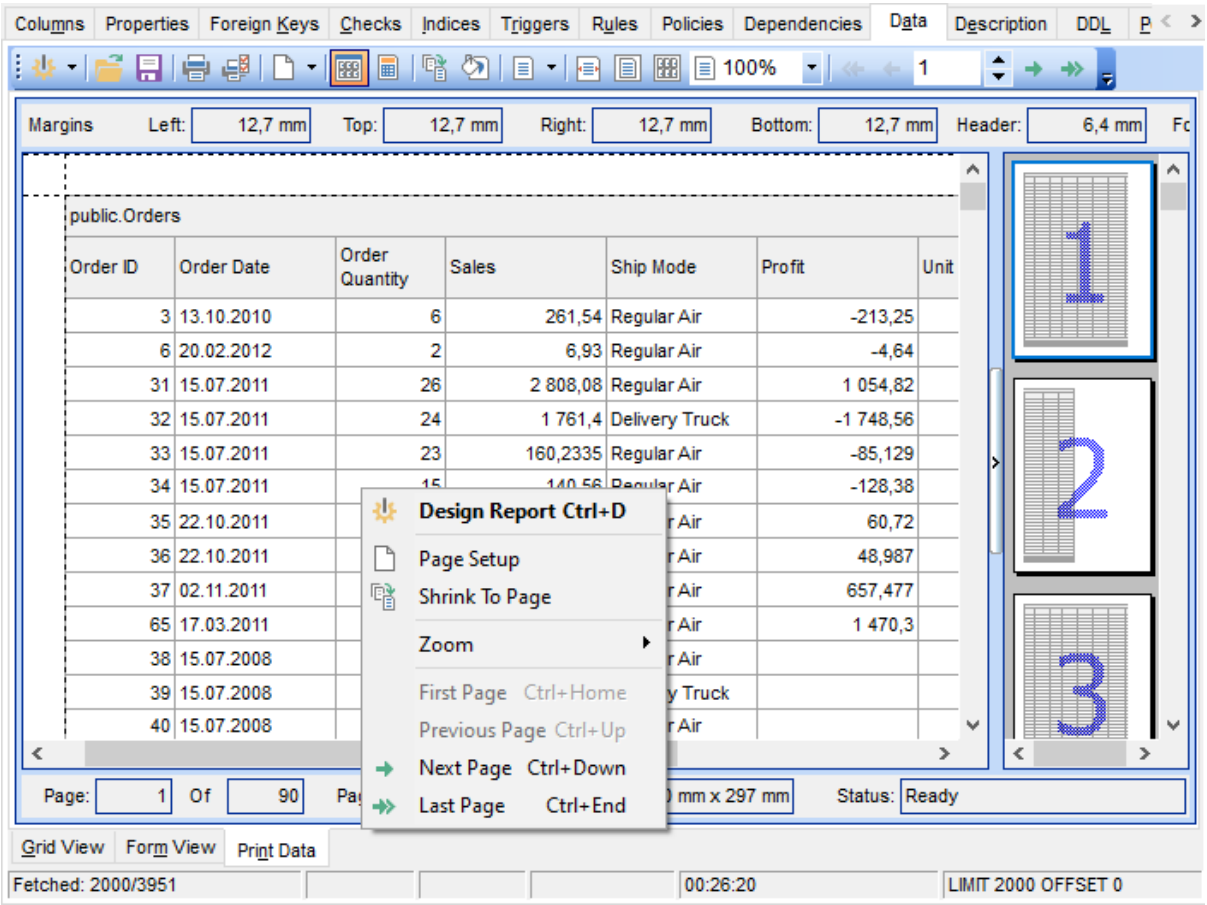
See also:

Using Navigation bar and Toolbars 469
Grid View 471
Print Data 491
BLOB View 511
Applying changes 522

7.1.4 Print Data

Using the **Print Data** tab you can view data in the way they are printed, in WYSIWYG mode.

When in **Print Data** mode, you are provided with a powerful *context menu* and toolbar 470 allowing you to design a report, change the view scope, save reports and load previously saved ones, set report options 505, and specify a number of printing 510 parameters using Report Formatter 497 and the Page Setup 492 dialog.



Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Using Navigation bar and Toolbars 469
Grid View 471
Form View 490
BLOB View 511
Applying changes 522

7.1.4.1 Page Setup

The **Page Setup** dialog allows you to specify a number of settings pertaining to the report page.

To open the dialog, use the **Page Setup** button available on the toolbar 470.

Use the following tabs of the **Page Setup** dialog:

- Page 493
- Margins 494
- Header/Footer 495
- Scaling 497

When you are done, you can click the **Print...** button at the bottom to call the Print 510 dialog.

See also:

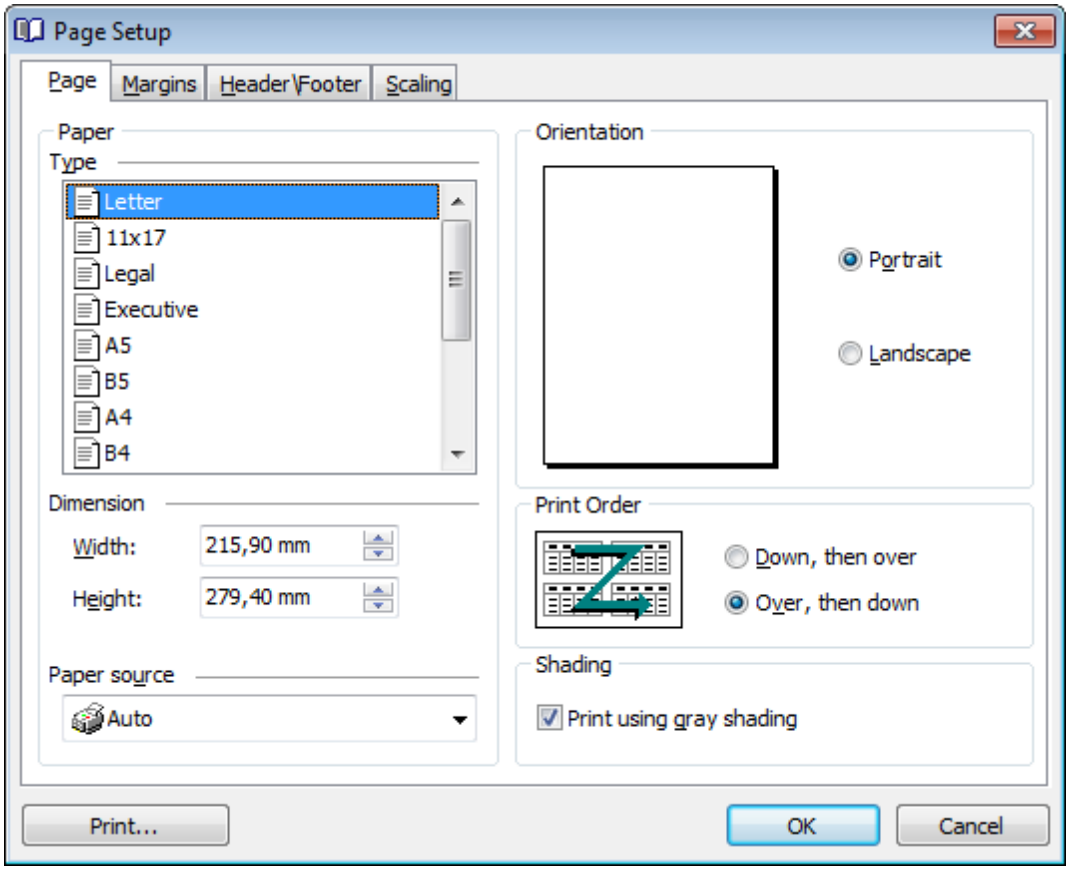
Report Formatter 497

Setting report options 505

Print dialog 510

7.1.4.1.1 Page

The **Page** tab of the **Page Setup** dialog allows you to specify the *paper*, page *orientation*, *print order* and *shading* settings.



Paper

Select one of the standard paper types in the **Type** list, or specify custom *width* and *height* using the **Dimension** group (in inches or millimeters, depending on the *unit of measure* specified in the Options 505 dialog).

Use the **Paper source** drop-down list to select the paper feed type.

Orientation

Select the preferable page orientation (your selection is illustrated in the chart on the left):
- *Portrait*
- *Landscape*

Print Order

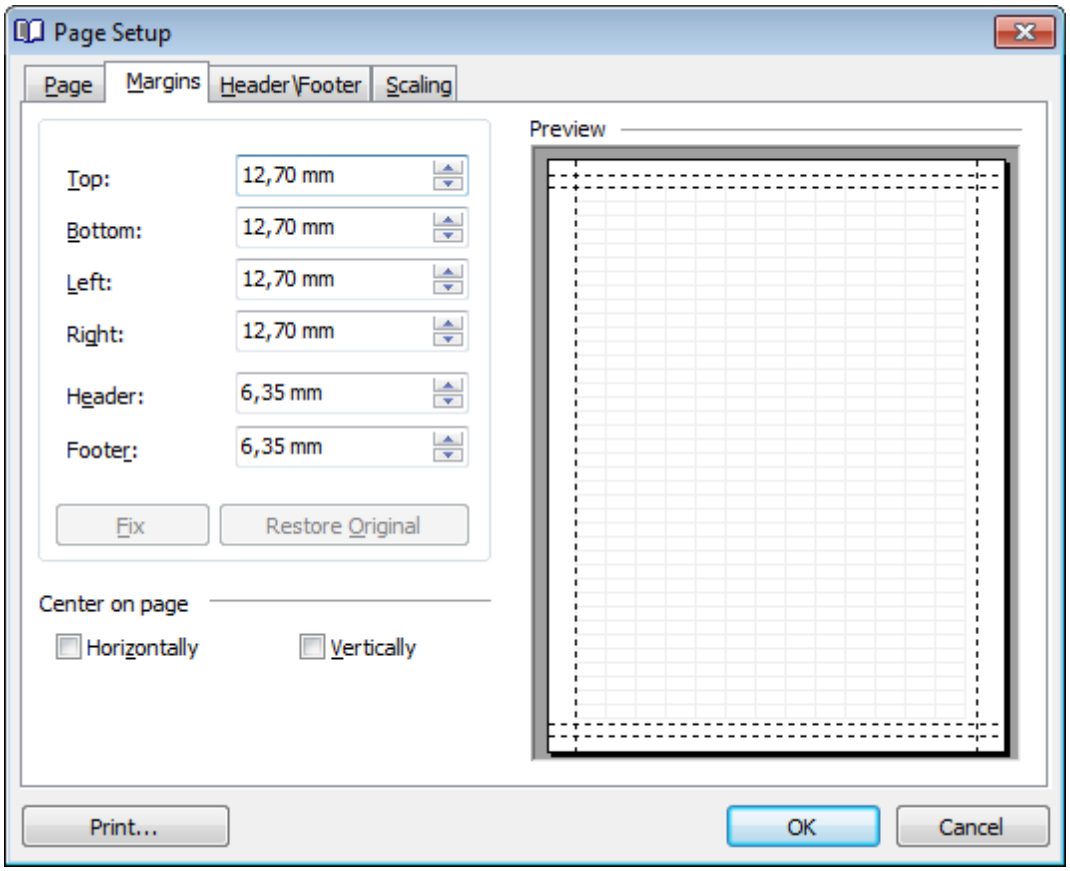
Select the preferable order for printing report pages (your selection is illustrated in the chart on the left):
- *Down, then over*
- *Over, then down*

Shading

☑ **Print using gray shading**
If this option is selected, gray shading (along with black and white) will be used for printing the report.

7.1.4.1.2 Margins

The **Margins** tab of the **Page Setup** dialog allows you to specify the size of the *margins* and *running titles*.



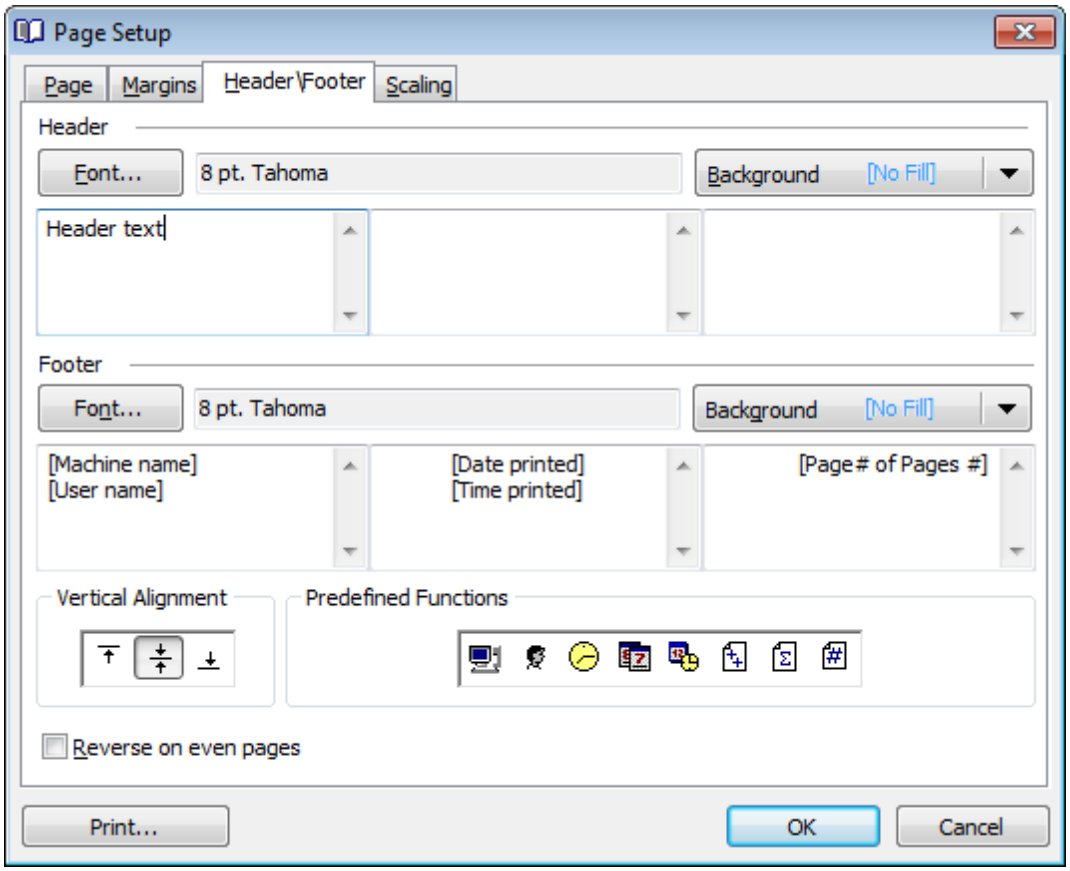
Use the spinner controls to specify the size of **top** / **bottom** / **left** / **right** margins and **header** / **footer** (in inches or millimeters, depending on the *unit of measure* specified in the Options 505 dialog). The **Preview** area on the right illustrates the changes you have made.

If you have specified an improper value, you can click the **Fix** button to correct it.
To restore the default size values, click the **Restore Original** button.

Center on page
This group allows you to specify whether the text should be centered **horizontally** and/or **vertically** on the page.

7.1.4.1.3 Header/Footer

The **Header/Footer** tab of the **Page Setup** dialog allows you to specify properties of the *header* and *footer* running titles.



Header / **Footer**

Click the **Font...** button to specify font properties using the standard **Font** dialog. The font name and size are displayed in the gray area next to the **Font...** button.
Use the **Background** drop-down list to select the background color that will be applied to the page header/footer, or to customize the color using the **Color** and **Fill Effects** dialogs.

For each of the running titles you are provided with three separate text editing fields. You can use any, all or none of the fields to enter the header and footer text.

The **Vertical Alignment** group allows you to specify vertical alignment for the header/footer text according to any of the three available patterns.

Predefined Functions
This group allows you to add the following standard functions to the header and footer:
[Machine Name]
[User Name]
[Time Printed]
[Date Printed]
[Date & Time Printed]
[Page # of Pages #]
[Total Pages]
[Page #]

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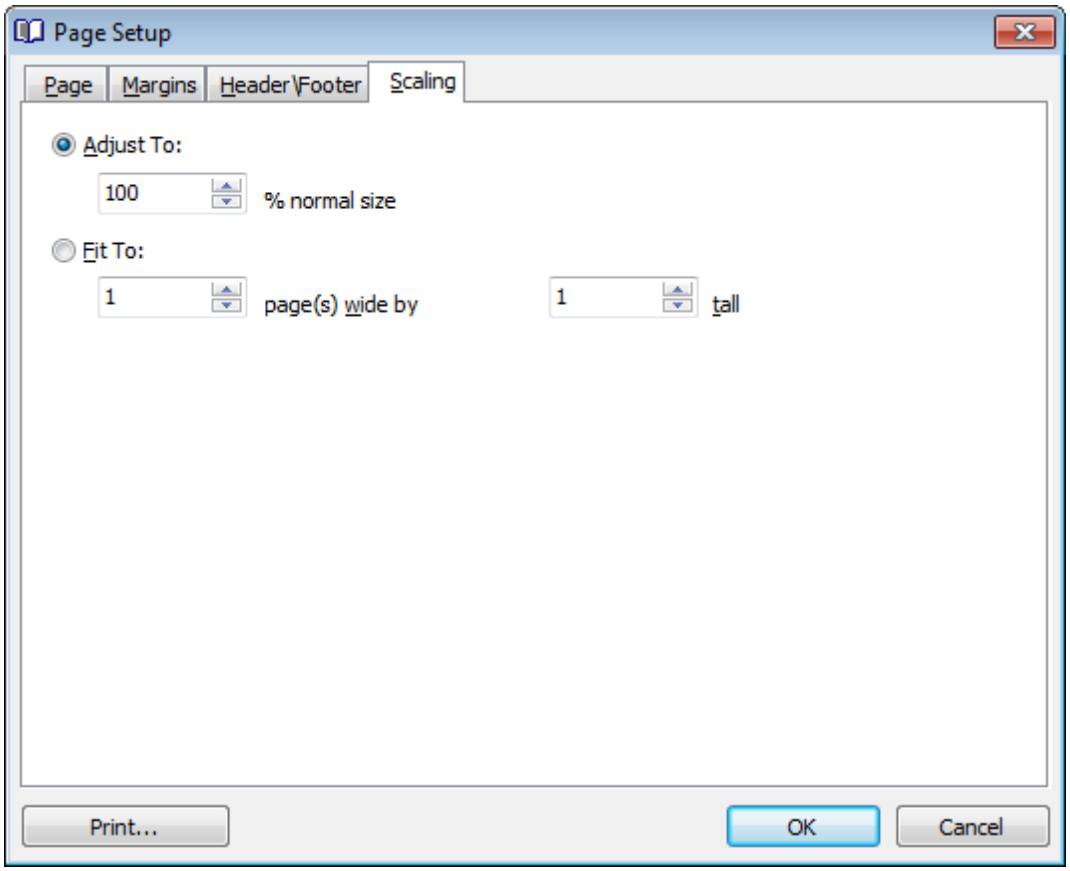
☑ **Reverse on even pages**
If this option is selected, the header and footer text will be reversed on even pages of the printing report.

7.1.4.1.4 Scaling

The **Scaling** tab of the **Page Setup** dialog allows you to specify the page *scaling* options.



Select the preferable scaling mode:

Adjust to ... % normal size
Use the spinner control to set the percentage of the regular page size to which the page size will be adjusted.

Fit to ... page(s) wide by ... tall
Use the spinner controls to set the maximum number of pages (by width and by height) on one page to fit its size.

7.1.4.2 Report Formatter

Report Formatter allows you to specify a number of settings pertaining to the printing form of the report.

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To open the tool, click the **Design Report** button available on the toolbar470, or use the *Ctrl+D* shortcut989.

Use the following tabs of the **Format Report** dialog:

- View498
- Behaviors499
- Formatting500
- Styles502
- Preview503
- Cards504
- Charts505

The **Title Properties...** button allows you to customize the report title using the Report Title506 dialog.

See also:

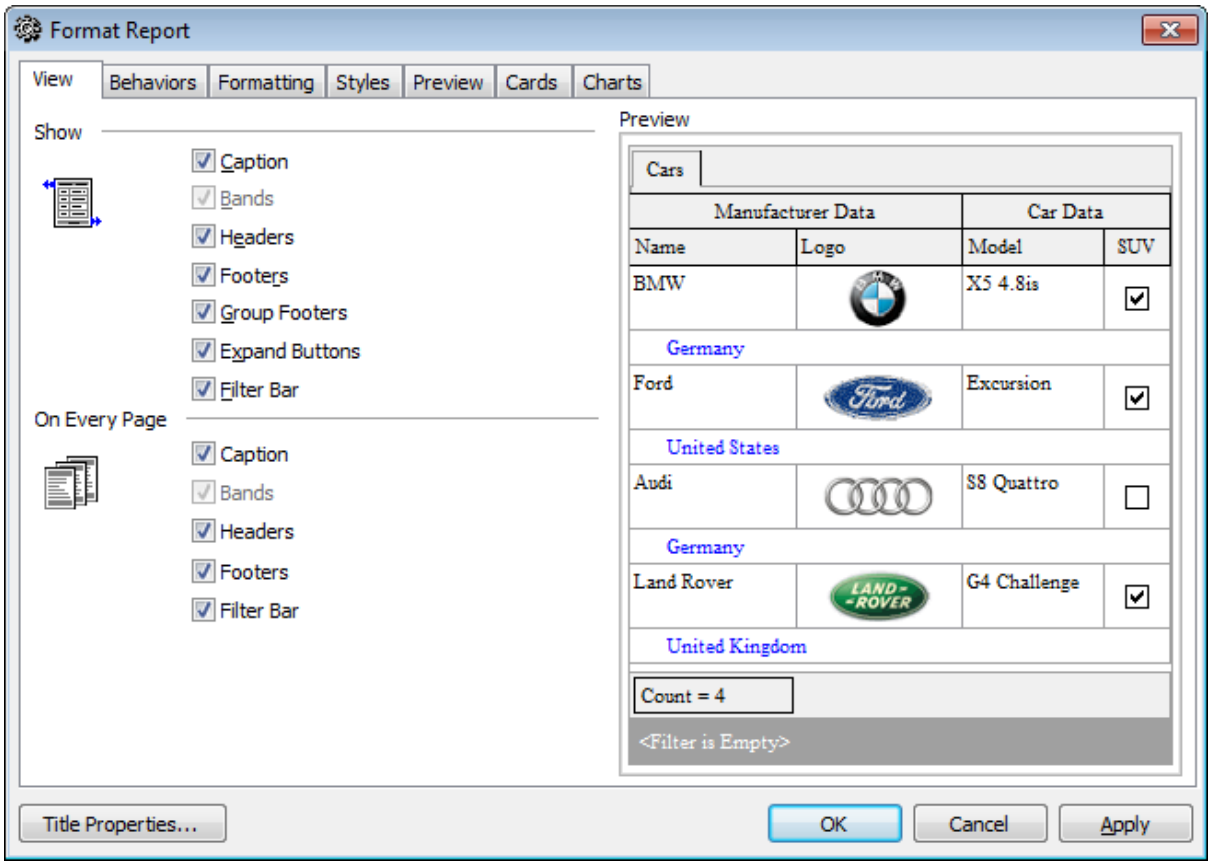
Page Setup492

Setting report options505

Print dialog510

7.1.4.2.1 View

The **View** tab of the **Format Report** dialog allows you to specify report elements to show in the report.

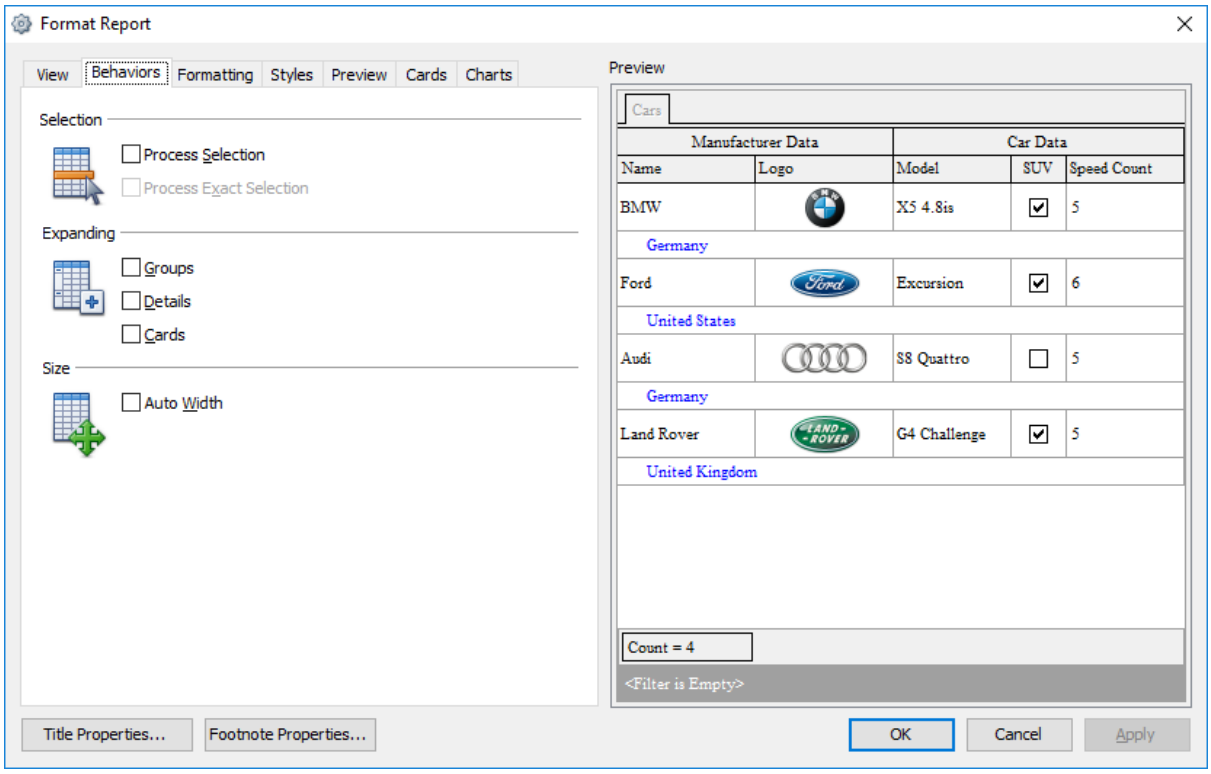


Tick off the elements to **show** in the report (*caption*, *bands*, *headers*, *footers*, *group footers*, *expand buttons*, *filter bar*) and **on every page** of the report (*caption*, *bands*, *headers*, *footers*, *filter bar*).

The **Preview** area on the right illustrates the changes you have made.

7.1.4.2.2 Behaviors

The **Behaviors** tab of the **Format Report** dialog allows you to specify the way (behavior) the report elements will appear on the printing form.



Selection

☑ **Process selection** / ☑ **Process exact selection**
Specify whether the text selection should or should not be processed (precisely) for the printing form.

Expanding

Tick off the elements to expand in the report: *groups*, *details*, *cards*.

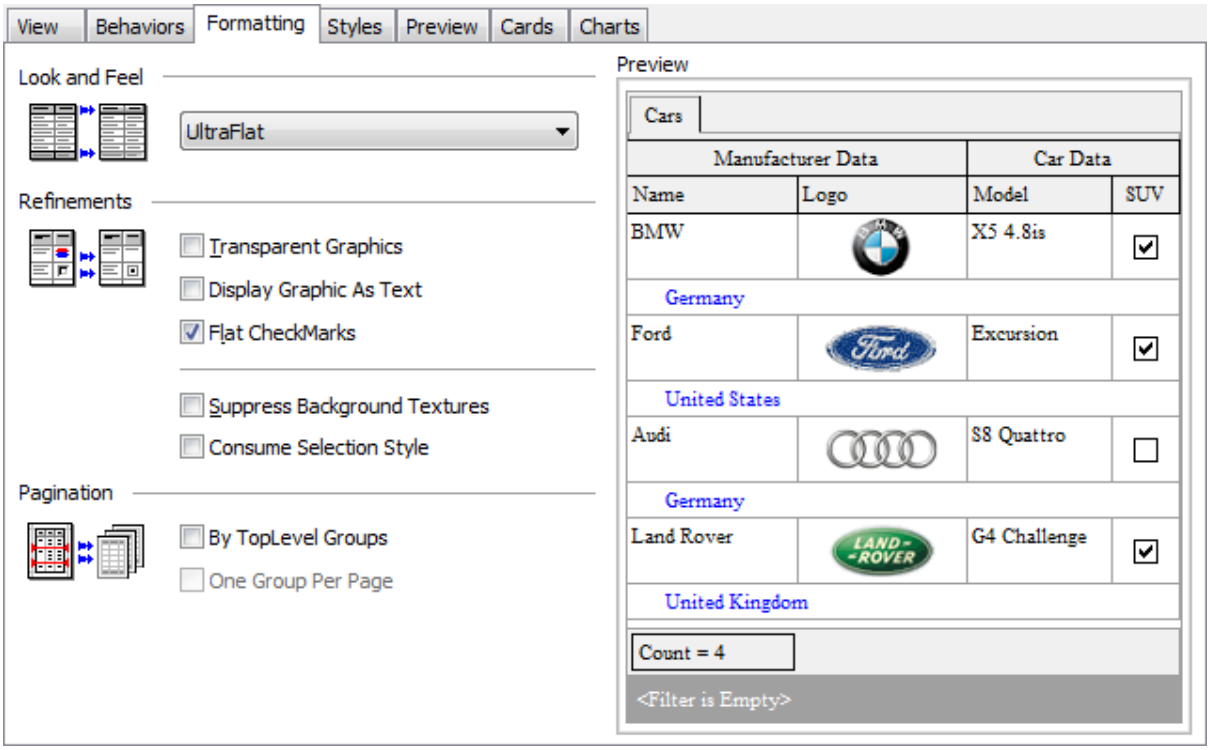
Size

☑ **Auto Width**
If this option is selected, the table will be resized automatically to fit the page by width.

The **Preview** area on the right illustrates the changes you have made.

7.1.4.2.3 Formatting

The **Formatting** tab of the **Format Report** dialog allows you to specify *Look and Feel*, *Refinements* and *Pagination* options.



Look and Feel
This setting determines the manner in which the cells are painted. Use the drop-down list to select the painting style that will be applied to the cells on the printing form:
Flat
Standard
UltraFlat

Refinements
Options of this group allow you to reduce the report size.

☑ **Transparent graphics**
If this option is selected, the images will be drawn transparent in the report.

☑ **Display graphic as text**
If this option is selected, text will be displayed instead of the images.

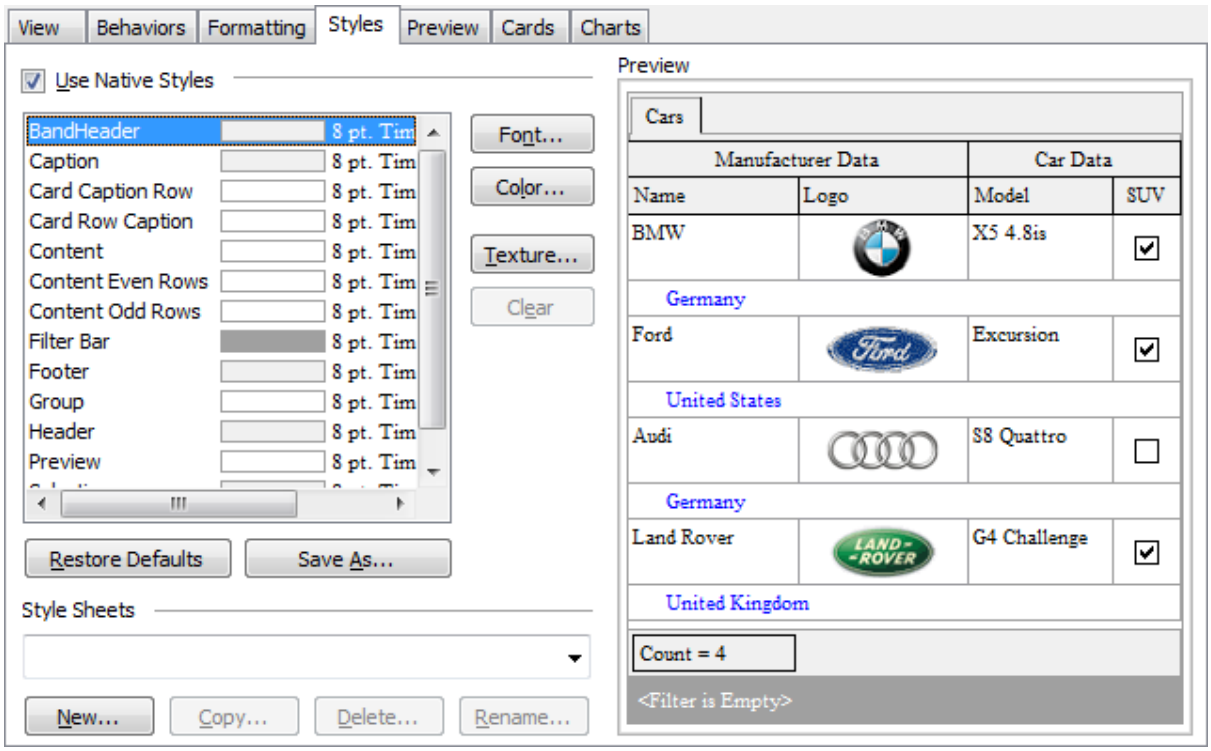
☑ **Flat CheckMarks**
If this option is selected, the checkboxes will be drawn flat.

Pagination
Specify the way pagination will be performed for the report: **By TopLevel groups** or **One group per page**.

The **Preview** area on the right illustrates the changes you have made.

7.1.4.2.4 Styles

The **Styles** tab of the **Format Report** dialog allows you to specify styles to be applied to the report elements.



Use native styles
This option determines whether the native Windows style will be applied to the report elements.

Note: The **Native style** option is currently supported for the Windows® XP operating system only.

The elements list displays the names of all report elements, with background color and font properties specified by default. You can **Use native styles** for them or customize them according to your preferences.

To edit an element, select it in the list and use the buttons to the right to edit the style for it.
Click the **Font...** button to specify font properties using the standard **Font** dialog.
Click the **Color...** button to customize the background color using the standard **Color** dialog.
Click the **Texture...** button to load an image that will be used as the texture for the element.
To rollback the changes, click the **Clear** button.
To restore the default stylesheet properties, click the **Restore Defaults** button.
If you need to save the current style sheet, you can click the **Save as...** button.

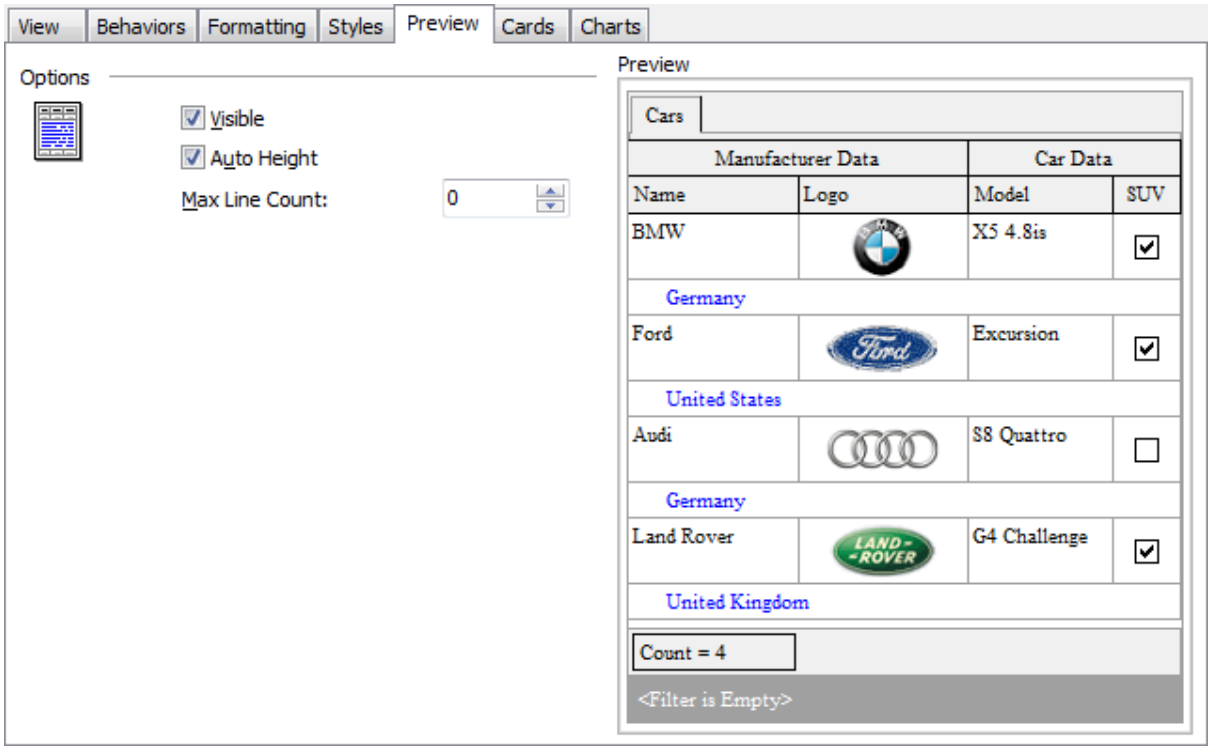
These items are also available through the **context menu** of the elements list.

Style Sheets
Use the drop-down menu to select the style sheet you need. To manage the style sheets, use the corresponding buttons below: **New...**, **Copy...**, **Delete...**, **Rename...**

The **Preview** area on the right illustrates the changes you have made.

7.1.4.2.5 Preview

The **Preview** tab of the **Format Report** dialog allows you to specify report preview options.



Visible
This option specifies visibility of the grouping rows.

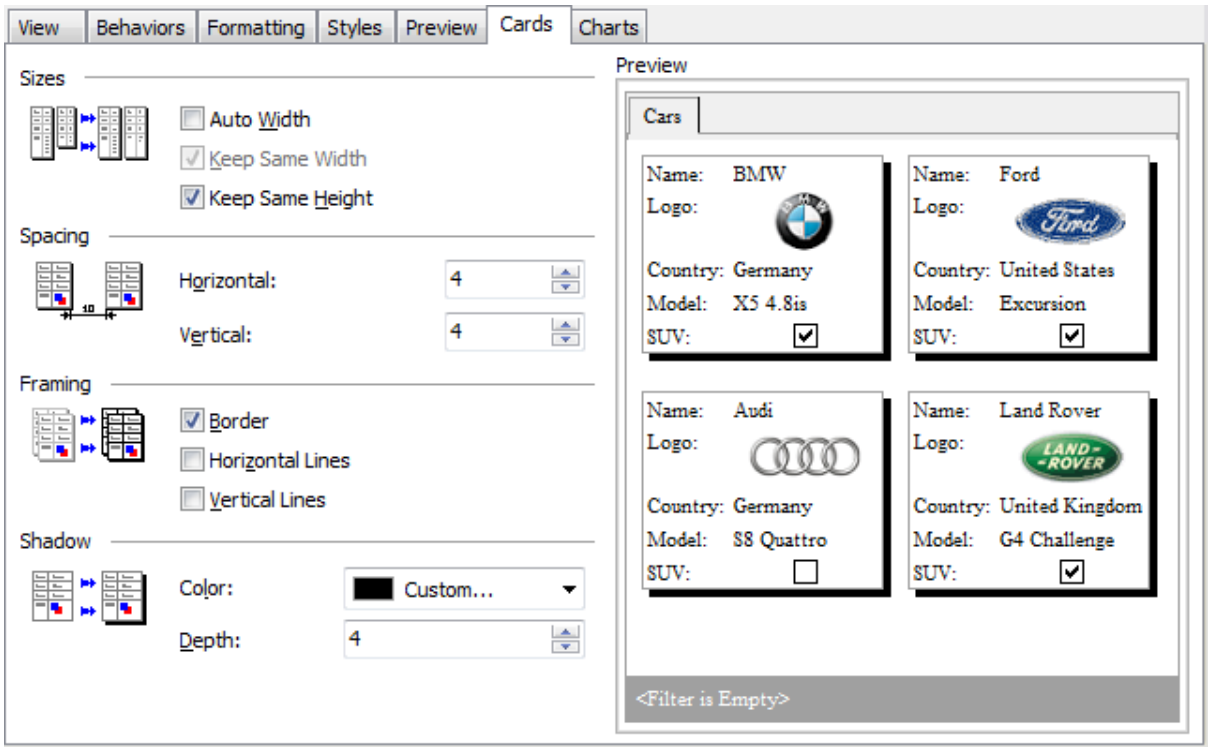
Auto height
If this option is selected, the table will be resized automatically to fit the page by height.

Max line count
Use the spinner control to specify the maximum possible number of lines.

The **Preview** area on the right illustrates the changes you have made.

7.1.4.2.6 Cards

The **Cards** tab of the **Format Report** dialog allows you to specify properties for the card view.



Sizes

☑ **Auto Width**
If this option is selected, the cards will be resized automatically to fit the page by width.

☑ **Keep same width**
Select this option to keep the card width fixed.

☑ **Keep same height**
Select this option to keep the card height fixed.

Spacing

This group allows you to specify **horizontal** and **vertical** spacing between cards.

Framing

☑ **Border**
This option specifies visibility of the card borders.

☑ **Horizontal lines**
This option specifies visibility of the horizontal lines (row delimiters) within cards.

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Vertical lines
This option specifies visibility of the vertical lines (column delimiters) within cards.

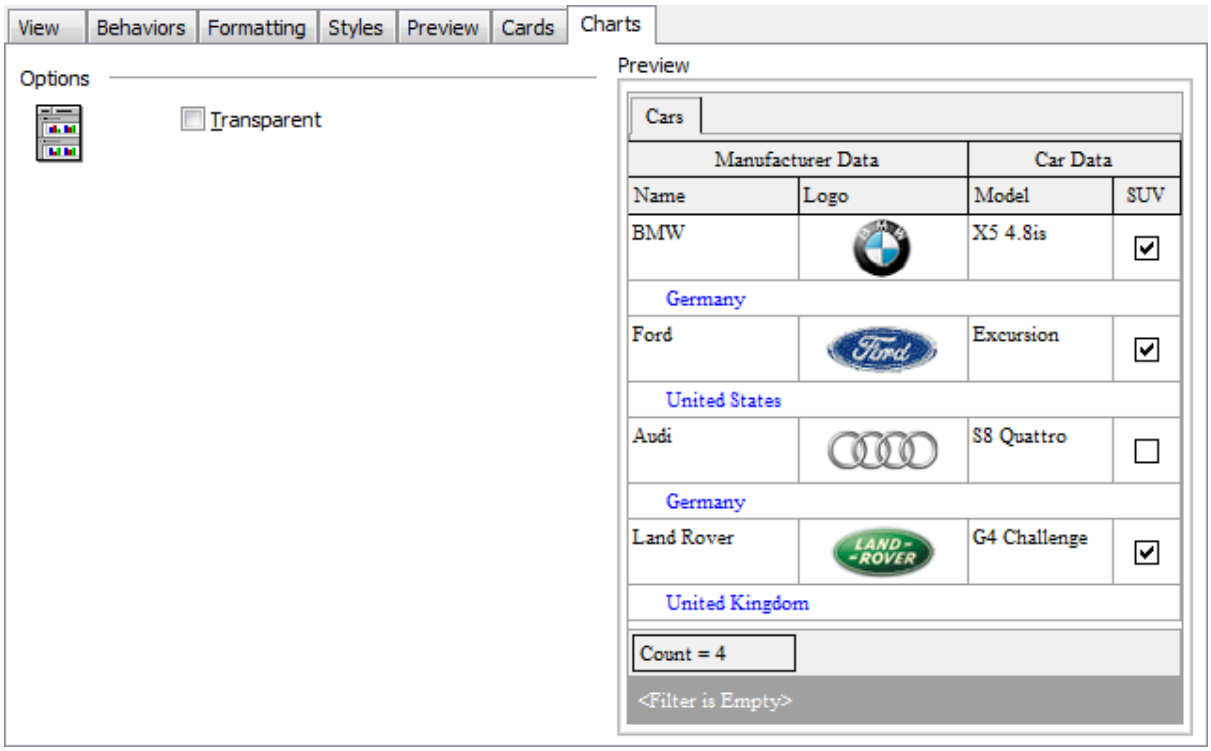
Shadow

Use the **Color** drop-down list to select the color that will be applied to the card shadows. If necessary, specify the color **depth** using the corresponding spinner control.

The **Preview** area on the right illustrates the changes you have made.

7.1.4.2.7 Charts

The **Charts** tab of the **Format Report** dialog allows you to specify options for the charts used in the report.



Transparent
If this option is selected, the charts will be drawn transparent in the report.

The **Preview** area on the right illustrates the changes you have made.

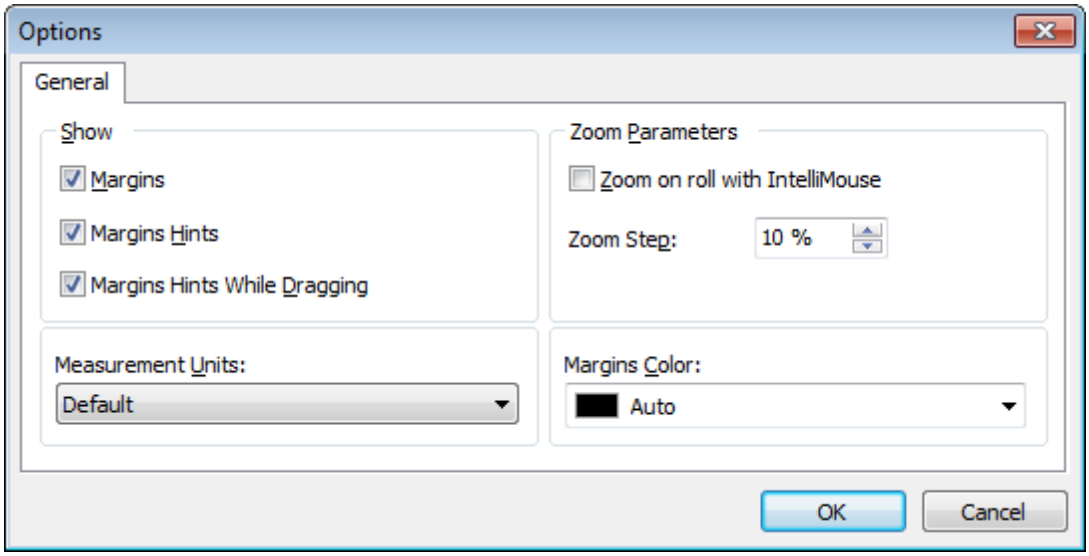
7.1.4.3 Setting report options

Options dialog

The **Options** dialog allows you to specify a number of settings pertaining to the printing

report.

To open the dialog, open the **Design Report** menu available on the toolbar 470 and select the **Preferences** item.



Show
Tick off the elements to **show** in the printing report (*margins*, *margins hints*, *margins hints while dragging*).

Use the **Measurement Units** drop-down list to select the unit of measure that will be used in report settings: *default*, *inches*, or *millimeters*.

Zoom Parameters

Zoom on roll with IntelliMouse
If this option is selected, you can zoom in/out by scrolling up/down (with a Microsoft® mouse or a compatible mouse used).

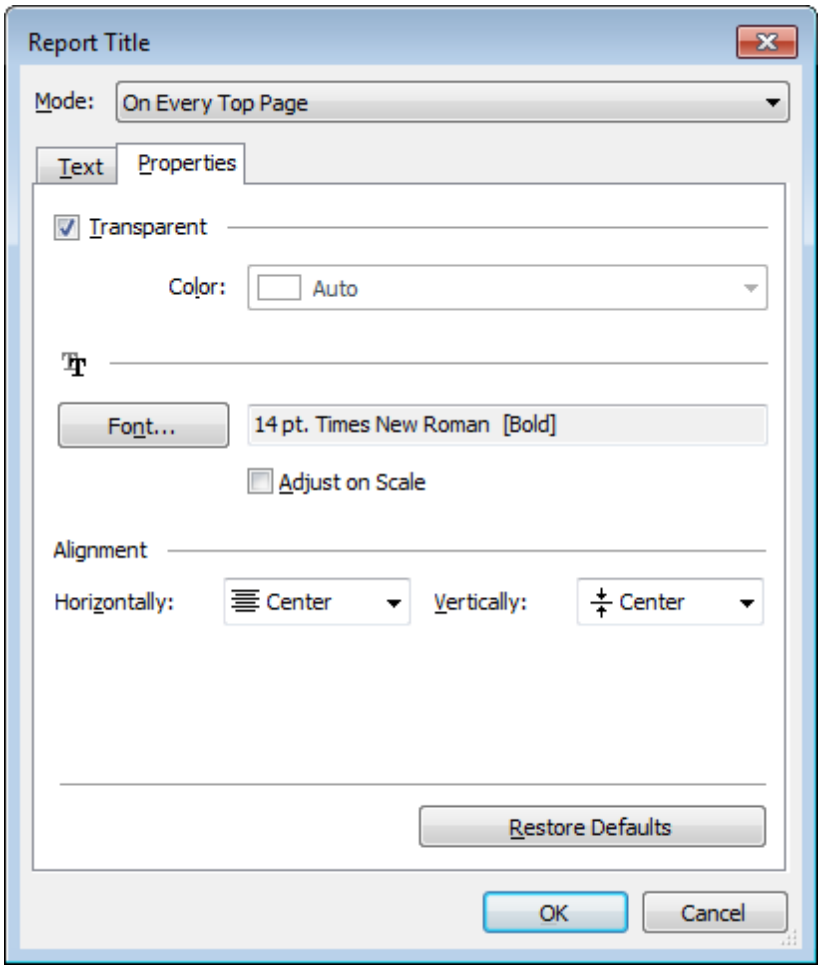
Zoom Step
Use the spinner control to specify the percentage of the original page size to be considered as one zoom step.

Use the **Margins Color** drop-down list to select the color that will be applied to the report margins.

Report Title dialog

The **Report Title** dialog allows you to specify the report title text and properties.

To open the dialog, use the **Title...** button available on the toolbar 470.



Mode
Use the drop-down list to select where the report title should be displayed *on the first page*, *on every top page*, or *not displayed* at all.

Text
Use the edit box to enter the text of the report title.

Properties

☑ **Transparent**
If this option is selected, the report title will be drawn transparent.

Use the **Color** drop-down list to select the color that will be applied to the report title (enabled if the ☑ **Transparent** option is not selected).

Click the **Font...** button to specify title font properties using the standard **Font** dialog. The font name and size are displayed in the gray area next to the **Font...** button.

☑ **Adjust on scale**
If this option is selected, the title can be adjusted on scale.

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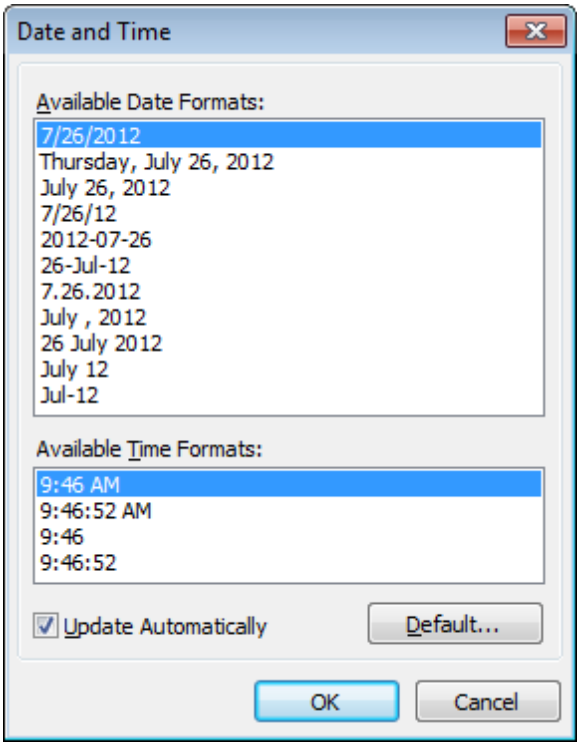
Alignment
Use the **Horizontally** drop-down list to select the type of horizontal alignment to be applied to the report title: *Left*, *Center*, or *Right*.
Use the **Vertically** drop-down list to select the type of vertical alignment to be applied to the report title: *Top*, *Center*, or *Bottom*.

To restore the default title properties, click the **Restore Defaults** button.

Date and Time dialog

The **Date and Time** dialog allows you to specify the date/time formats to be used in the report.

To open the dialog, open the **Title...** menu available on the toolbar 470 and select the **Date and Time...** item.



Select the preferable values from the **Available Date Formats** and the **Available Time Formats** lists. If necessary, you can specify that the date/time will be *updated automatically*.

To apply the default date/time format, click the **Default...** button.

Page Number Format dialog

The **Page Number Format** dialog allows you to specify the formats for page numbers to be used in the report.

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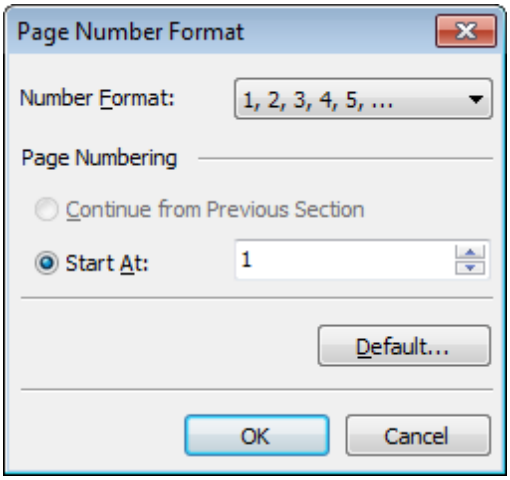
To open the dialog, open the **Title...** menu available on the toolbar and select the **Page Numbering...** item.



Select the preferable number format from the **Number Format** drop-down list.

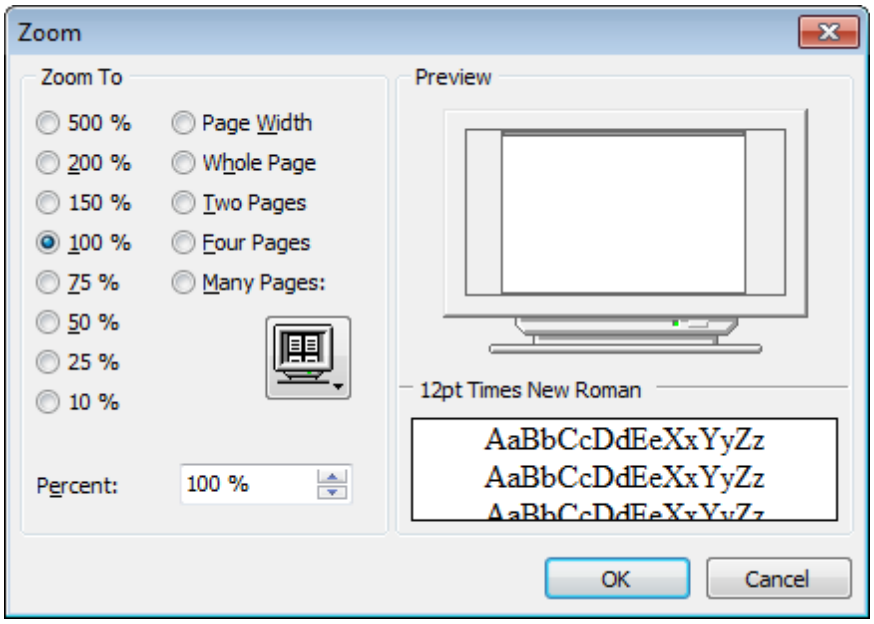
Use the **Page Numbering** section to specify whether page numbering should *continue from the previous section* (if any) or *start at the specified number*.

To set the default numbering values, click the **Default...** button.

Zoom dialog

The **Zoom** dialog allows you to zoom the report page more better representation.

To open the dialog, open the **Zoom** menu available on the toolbar and select the **Setup zoom...** item.



Select the preferable percentage of zoom value (*500%*, *200%*, *150%*, *100%*, *75%*, *50%*, *25%*, *10%*) or specify one of frequently used values:

- *Page Width*
- *Whole Page*
- *Two Pages*
- *Four Pages*
- *Many Pages* (click the chart below and select the item you need)

If necessary, you can set a custom percent value using the **Percent** spinner control below.

The **Preview** area on the right illustrates the changes you have made.

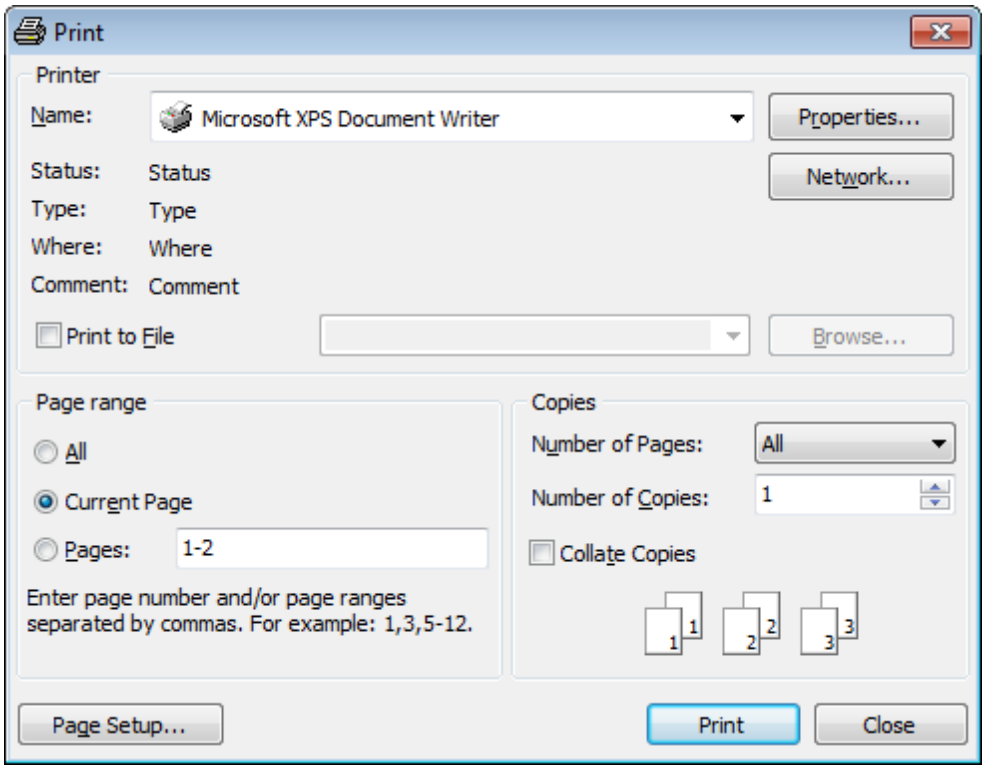
See also:

Page Setup 492
Report Formatter 497
Print dialog 510

7.1.4.4 Print dialog

The standard **Print** dialog allows you to specify printing settings for the report in groups: *printer*, *page range*, *copies*.

To open the dialog, click the **Print dialog** button available on the toolbar 470, or use the *Ctrl+P* shortcut 989.



When you are done, click the **Print** button to start printing.

If you need to change any page settings before printing, you can click the **Page Setup...** button at the bottom to call the Page Setup 492 dialog.

See also:

Page Setup 492
Report Formatter 497
Setting report options 505

7.1.5 BLOB View

SQL Manager for SQL Server provides BLOB Viewer/Editor to view and edit BLOB (Binary Large Object) fields content. The BLOB Viewer/Editor can be invoked from the data grid within Table Editor 204, Query Data 432, Design Query 448, etc.

- Navigation within the BLOB Viewer/Editor 513
- Viewing/Editing BLOB field as Hexadecimal dump 513
- Viewing/Editing BLOB field as plain Text 514
- Viewing/Editing BLOB field as Rich Text (RTF) 515
- Viewing/Editing BLOB field as Image 516
- Viewing/Editing BLOB field as HTML 517
- Viewing/Editing BLOB field as XML 518

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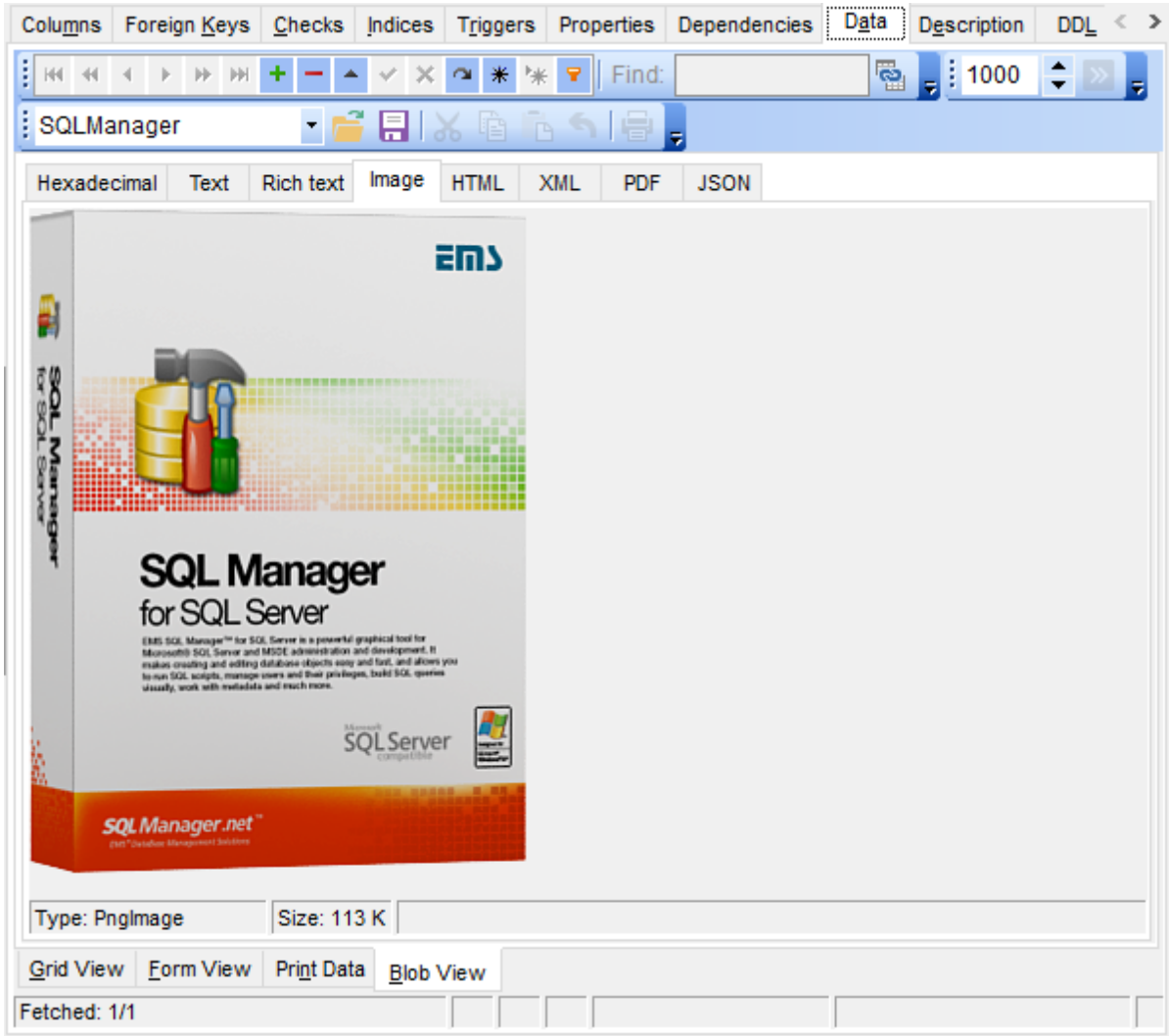
- Viewing/Editing BLOB field as PDF 520



Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Using Navigation bar and Toolbars 469
Grid View 471
Form View 490
Print Data 491

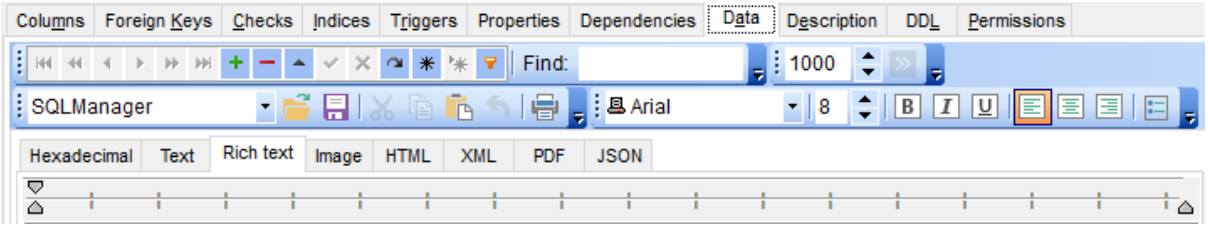
Applying changes 522

7.1.5.1 Navigation within BLOB Editor

The **BLOB Viewer/Editor** provides an ability to navigate within the records using **DB Navigation** buttons on the navigation pane 470 at the top of the viewer window.

Using items of the navigation pane 470 and the drop-down menu you can browse the data quickly, insert, update and delete records, set a filter for the records using the Filter Builder 525 dialog, load new BLOB content and save the current content to files.

The toolbar 471 allows you to switch the fields and perform a number of editing operations. The set of toolbar items depends on the current selection and view mode.



See also:

Editing as Hexadecimal 513
Editing as Text 514
Editing as Rich Text 515
Editing as Image 516
Editing as HTML 517
Editing as XML 518
Editing as PDF 520

7.1.5.2 Editing as Hexadecimal

The **Hexadecimal** tab allows you to view/edit the BLOB data as hexadecimal.

The toolbar 471 provides additional functionality for BLOB Viewer/Editor: use the **Save to file** and the **Load from file** toolbar buttons to save the hexadecimal data to a file, or load data from a file.

Use the *Ins* key to switch between the Insert and Overwrite modes.

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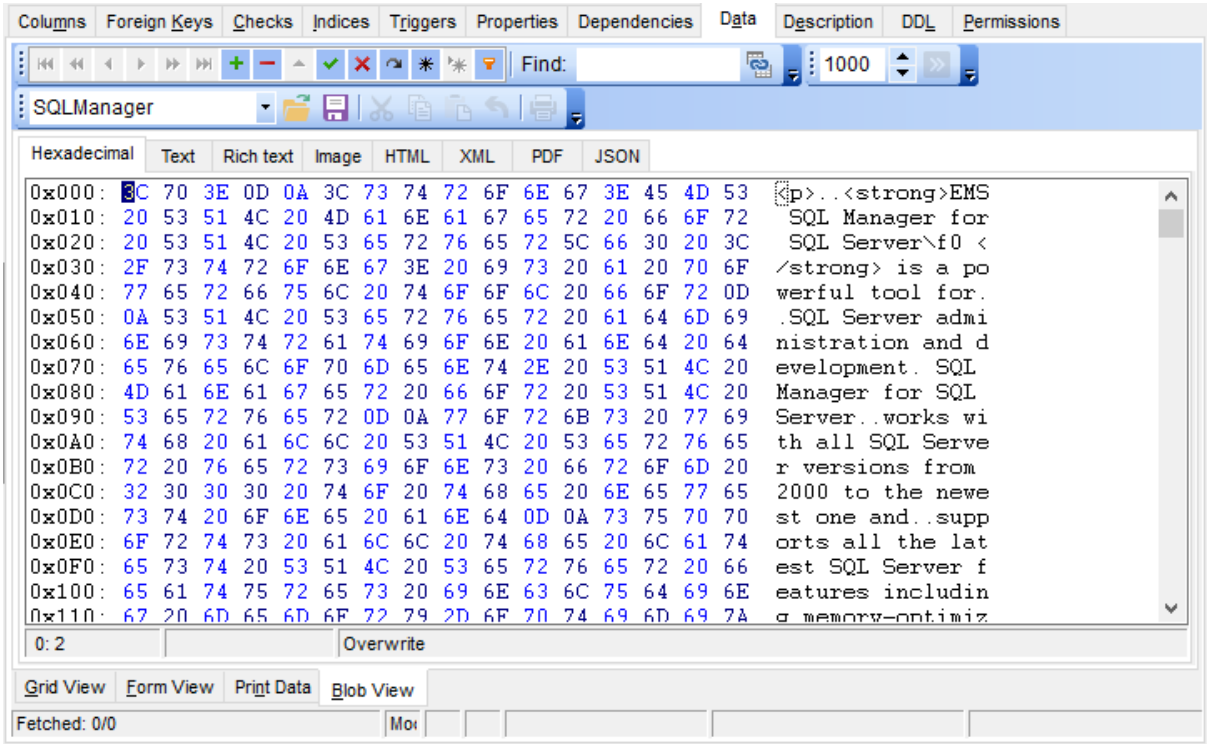


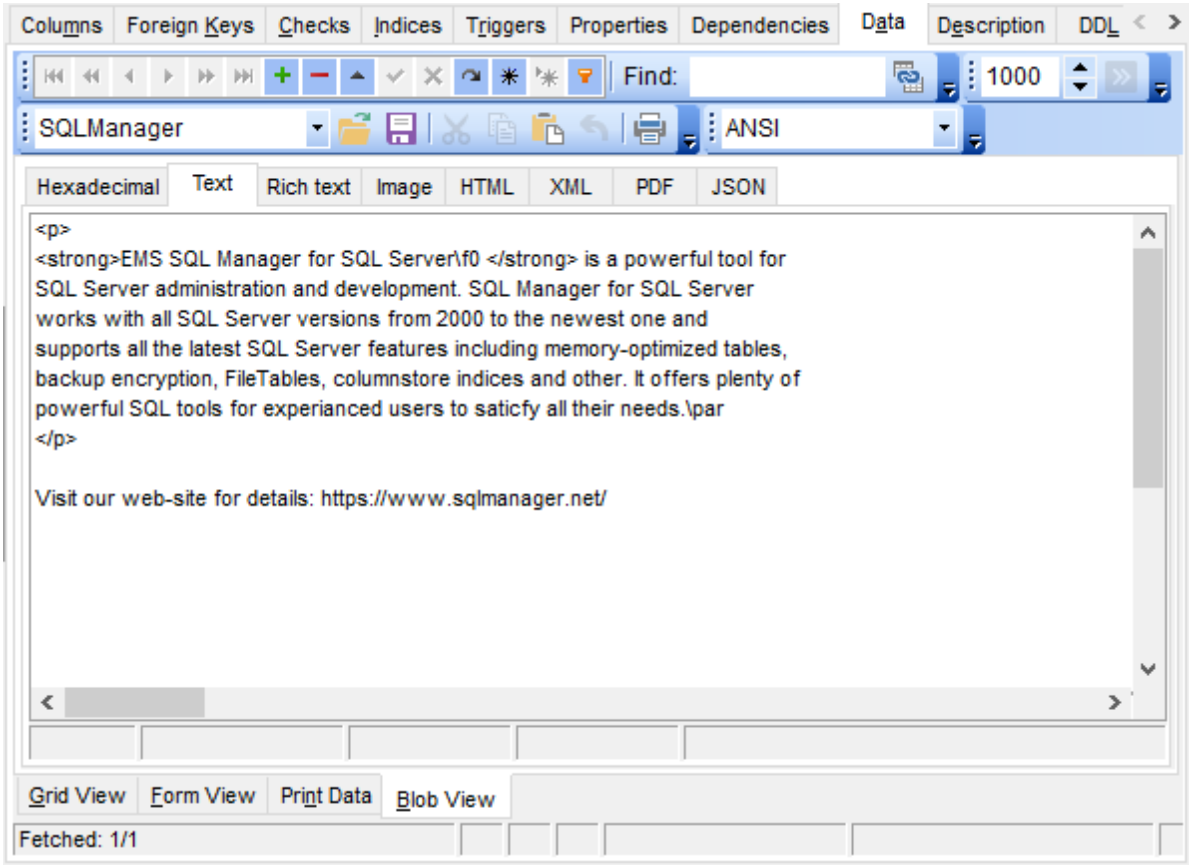
See also:

Navigation within BLOB Editor 513
Editing as Text 514
Editing as Rich Text 515
Editing as Image 516
Editing as HTML 517
Editing as XML 518

7.1.5.3 Editing as Text

The **Text** tab allows you to view/edit the BLOB data as plain text.

The toolbar 471 provides additional functionality for BLOB Viewer/Editor: use the **Save to file** and the **Load from file** toolbar buttons to save the text to a **.txt* file, or load text from a file. Additionally, you can use the *Cut*, *Copy*, *Paste*, *Select All*, *Undo*, *Word Wrap* context menu items for editing the text efficiently, and the **Print** context menu item to print the content of the **Text** tab.



See also:

Navigation within BLOB Editor 513
Editing as Hexadecimal 513
Editing as Rich Text 515
Editing as Image 516
Editing as HTML 517
Editing as XML 518

7.1.5.4 Editing as Rich Text

The **Rich Text** tab allows you to view/edit the BLOB data in Rich Text format (RTF).

The toolbar 471 provides additional functionality for BLOB Viewer/Editor: use the **Save to file** and the **Load from file** toolbar buttons to save the Rich Text to a **.rtf* file, or load text from a file. Additionally, you can use the *Cut*, *Copy*, *Paste*, *Select All*, *Undo* context menu items for editing the text efficiently, and the **Print** context menu item to print the content of the **Rich Text** tab.

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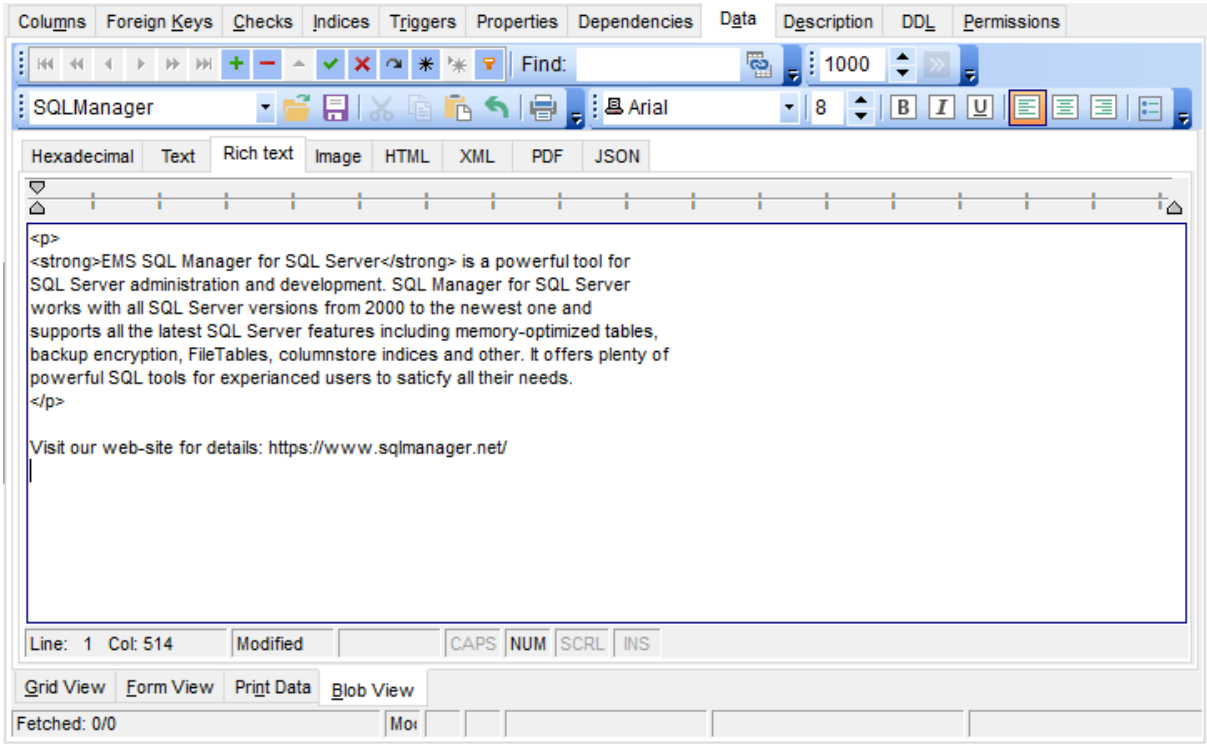


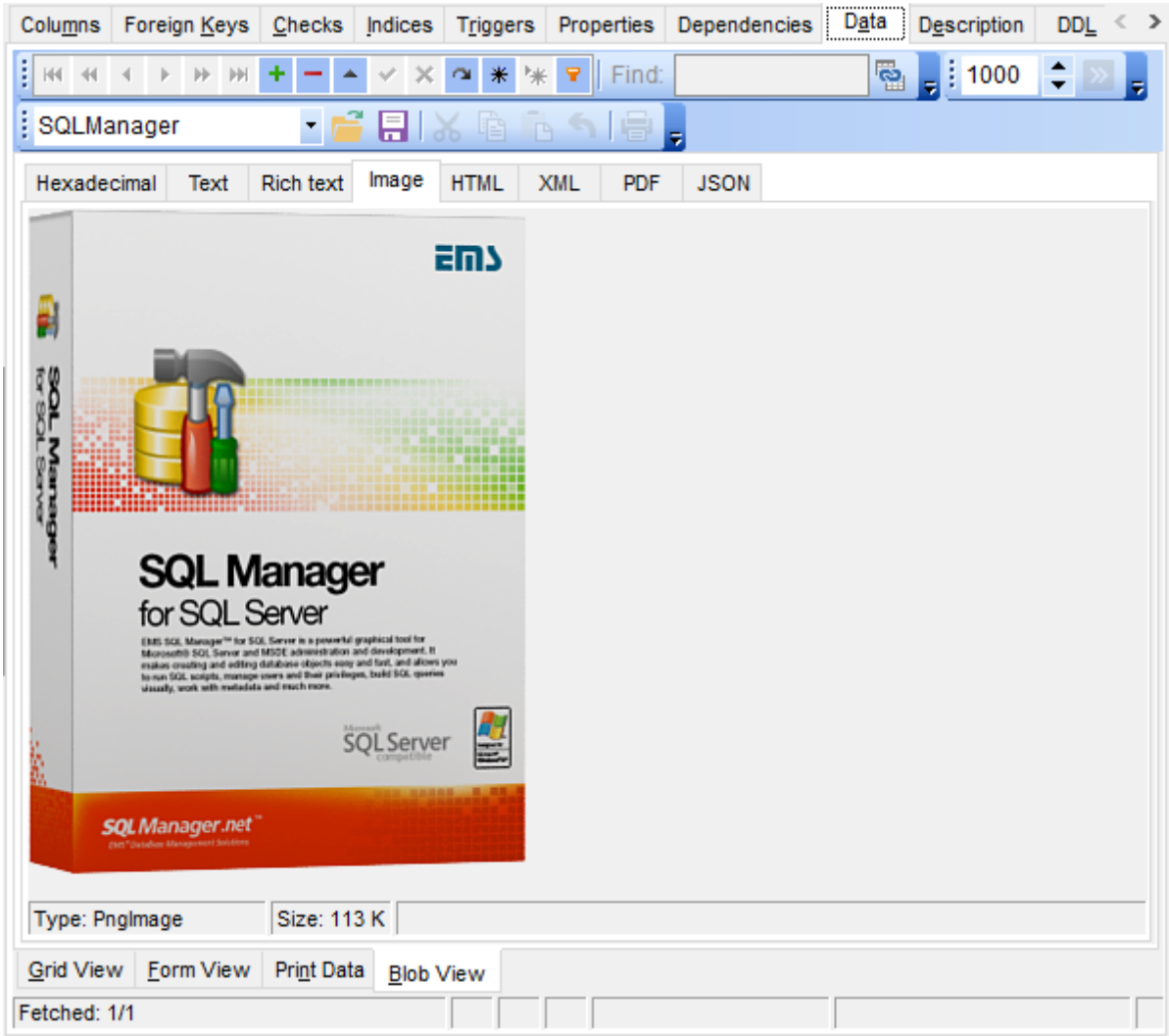
See also:

Navigation within BLOB Editor 513
Editing as Hexadecimal 513
Editing as Text 514
Editing as Image 516
Editing as HTML 517
Editing as XML 518

7.1.5.5 Editing as Image

The **Image** tab allows you to view the BLOB data as image.

The toolbar 471 provides additional functionality for BLOB Viewer/Editor: use the **Save to file** and the **Load from file** toolbar buttons to save the image to a **.png*, **.wmf*, **.ico*, **.png* or **.png* file, or load an image from a file.



See also:

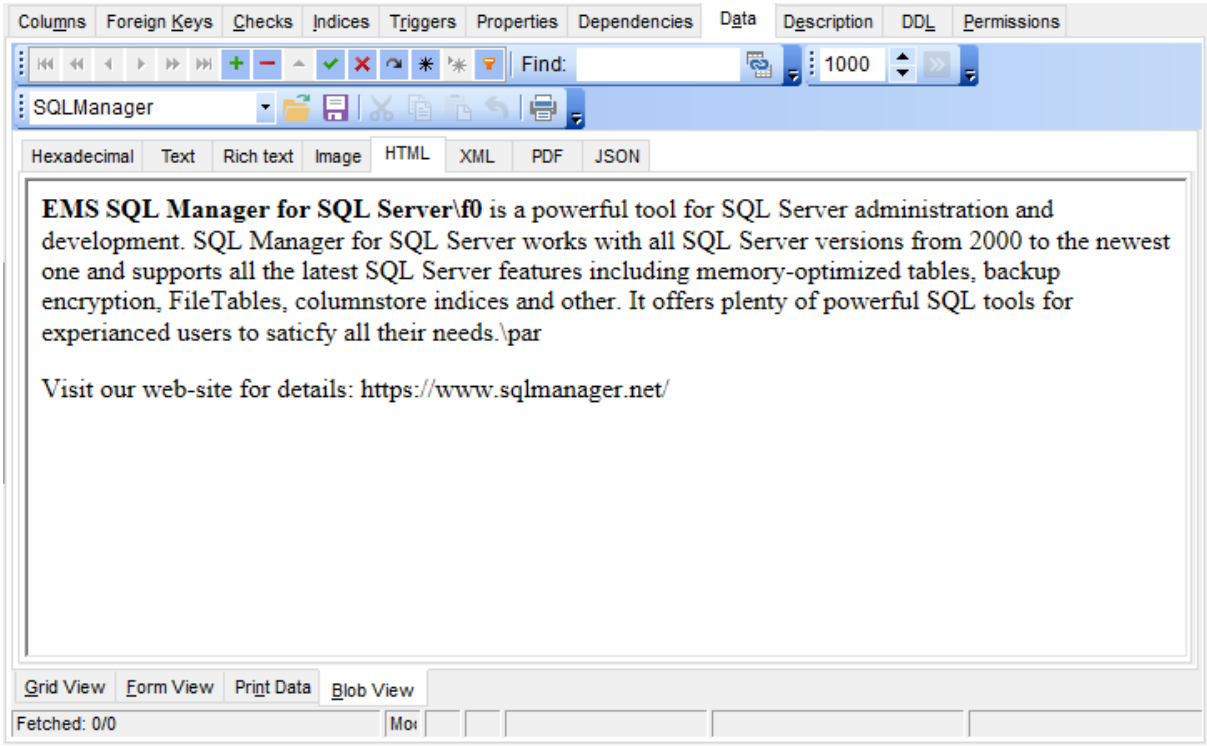
Navigation within BLOB Editor 513
Editing as Hexadecimal 513
Editing as Text 514
Editing as Rich Text 515
Editing as HTML 517
Editing as XML 518

7.1.5.6 Editing as HTML

The **HTML** tab allows you to view the BLOB data as HTML (Hyper-Text Markup Language format) - in the way this data would be displayed by your Internet browser.

The toolbar 471 provides additional functionality for BLOB Viewer/Editor: use the **Save**

to file and the **Load from file** toolbar buttons to save the content as a **.html*, or **.htm* file, or load content from a file.



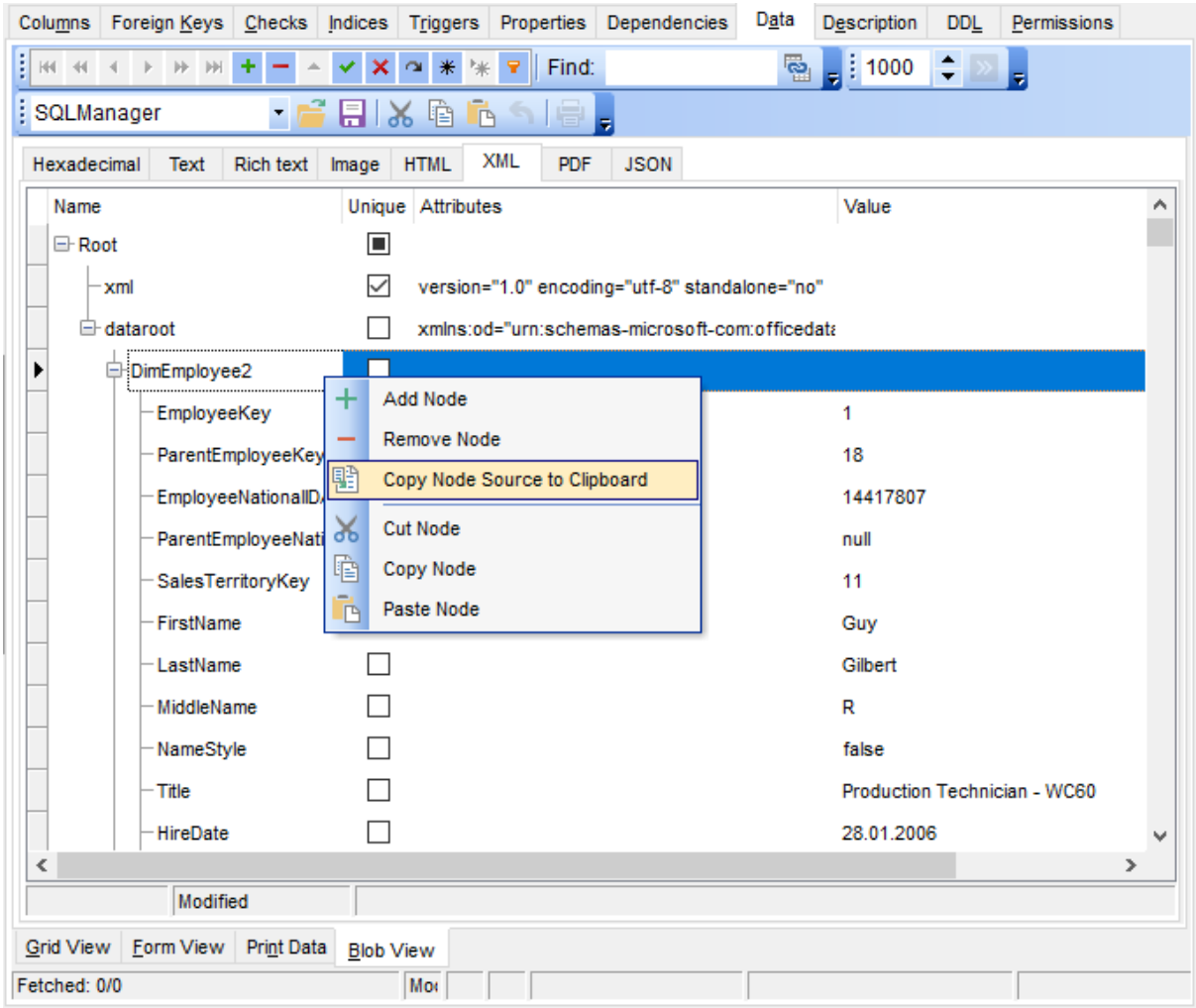
See also:

Navigation within BLOB Editor 513
Editing as Hexadecimal 513
Editing as Text 514
Editing as Rich Text 515
Editing as Image 516
Editing as XML 518

7.1.5.7 Editing as XML

The **XML** tab allows you to view/edit the XML (eXtensible Markup Language) data.

The toolbar 471 provides additional functionality for BLOB Viewer/Editor: use the **Save to file** and the **Load from file** toolbar buttons to save the content as **.xml* or load XML content from a file.



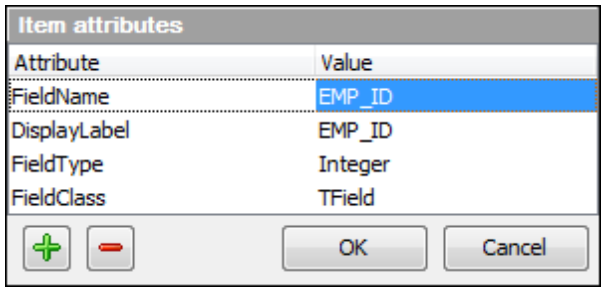
The XML content is represented as a tree-like structure consisting four editable fields: **Name**, **Unique**, **Attributes** and **Value**. You can edit data and modify the structure using drag-n-drop operations and items of the context menu.

Hint: Hold the **Shift** key when you drag-and-drop a node to insert it as a child one.

The **context menu** allows you to:

- add a node (a child node relatively to the selected one);
- remove the selected node;
- copy the selected node source to clipboard;
- cut the selected node;
- copy the selected node;
- paste a node from clipboard.

Press the **Item attributes** button in the editing mode of an **Attribute** item to add or edit attributes.



Use the buttons to add or remove an attribute. Click the required attribute name or value to edit.

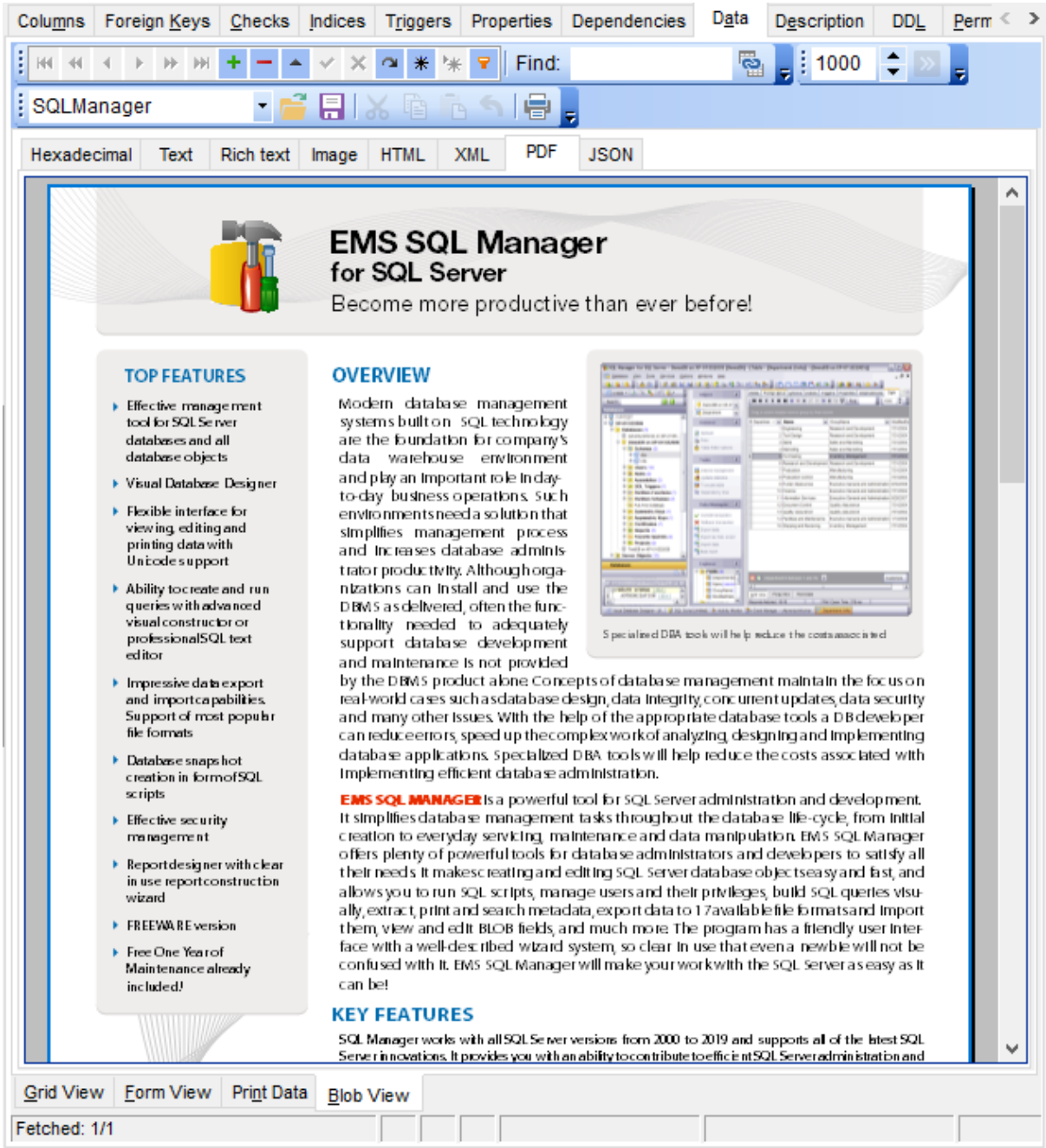
See also:

Navigation within BLOB Editor 513
Editing as Hexadecimal 513
Editing as Text 514
Editing as Rich Text 515
Editing as Image 516
Editing as HTML 517

7.1.5.8 Editing as PDF

The **PDF** tab allows you to view the BLOB data as PDF using Adobe Acrobat Reader. You need to have Adobe Acrobat Reader installed to view PDF data.

The toolbar 471 provides additional functionality for PDF Viewer/Editor: use the **Save to file** and the **Load from file** toolbar buttons to save or load the document from the file.



See also:

Navigation within BLOB Editor 513
Editing as Hexadecimal 513
Editing as Text 514
Editing as Rich Text 515
Editing as Image 516
Editing as HTML 517
Editing as XML 518

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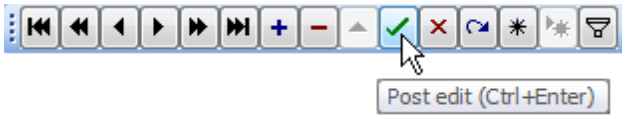
7.1.6 Applying changes

After changes are done, click the **Post Edit** button on the navigation pane 470 to apply the changes or the **Cancel Edit** button to discard the changes.



See also:

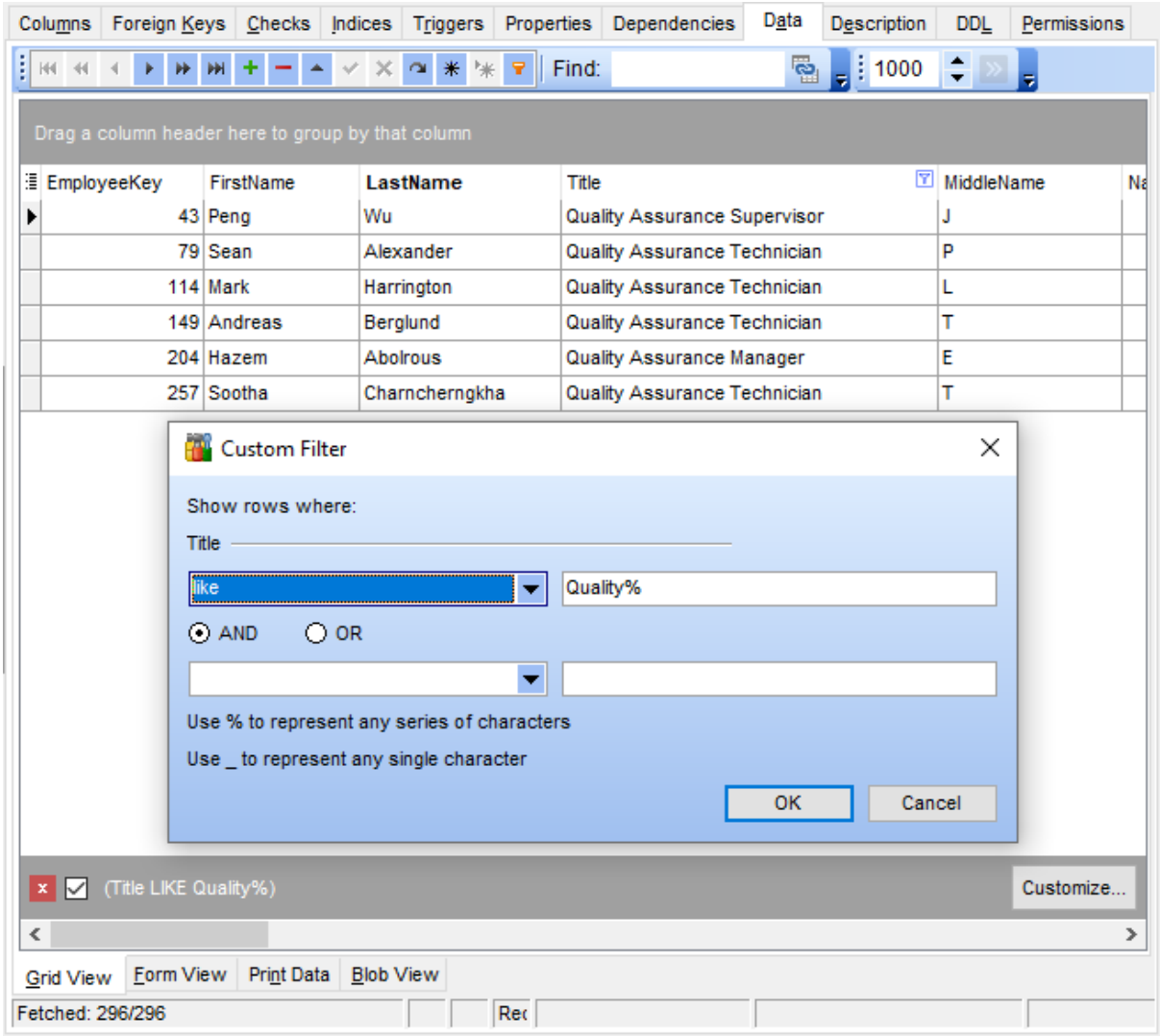
Using Navigation bar and Toolbars 469
Grid View 471
Form View 490
Print Data 491
BLOB View 511

7.2 Custom Filter

The **Custom Filter** dialog is one of the filtering 475 facilities implemented in Data View 469 for your convenience.

To open the dialog, click the Arrow-Down button next to the column caption, and select the **Custom** item from the drop-down list.

Select a logical operator for checking the column values (*like*, *is less than*, *is greater than* , etc.) and set a value to be checked by this operator in the corresponding box on the right.



If necessary, you can set the second condition and specify the relation between the two conditions: whether both of them should be satisfied (*AND*) or just any of them (*OR*). Use the '_' character to represent any single symbol, and use the '%' character to represent any series of symbols in the condition string.

See also:

Data View 469
Filter Builder dialog 525

7.3 Filter Builder dialog

The **Filter Builder** dialog is a powerful filtering 475 tool implemented in Data View 469 for your convenience.

The dialog is aimed at facilitating the procedure of creating and applying complex filter criteria for data. In addition, the tool allows you to save filter criteria to an external **.flt* file for future use.

To open the **Filter Builder** dialog, use the **Set filter** button on the navigation pane available within the Data 214 tab of Table Editor 204 and the **Result(s)** tabs of Query Data 432 and Design Query 448.

- Invoking the Filter Builder dialog 525
- Adding a new condition to the filter 526
- Setting filter criteria 527
- Setting filter operator 528
- Setting filter criteria values 529
- Adding a new group 530
- Setting group operator 531
- Applying filter conditions 532

See also:

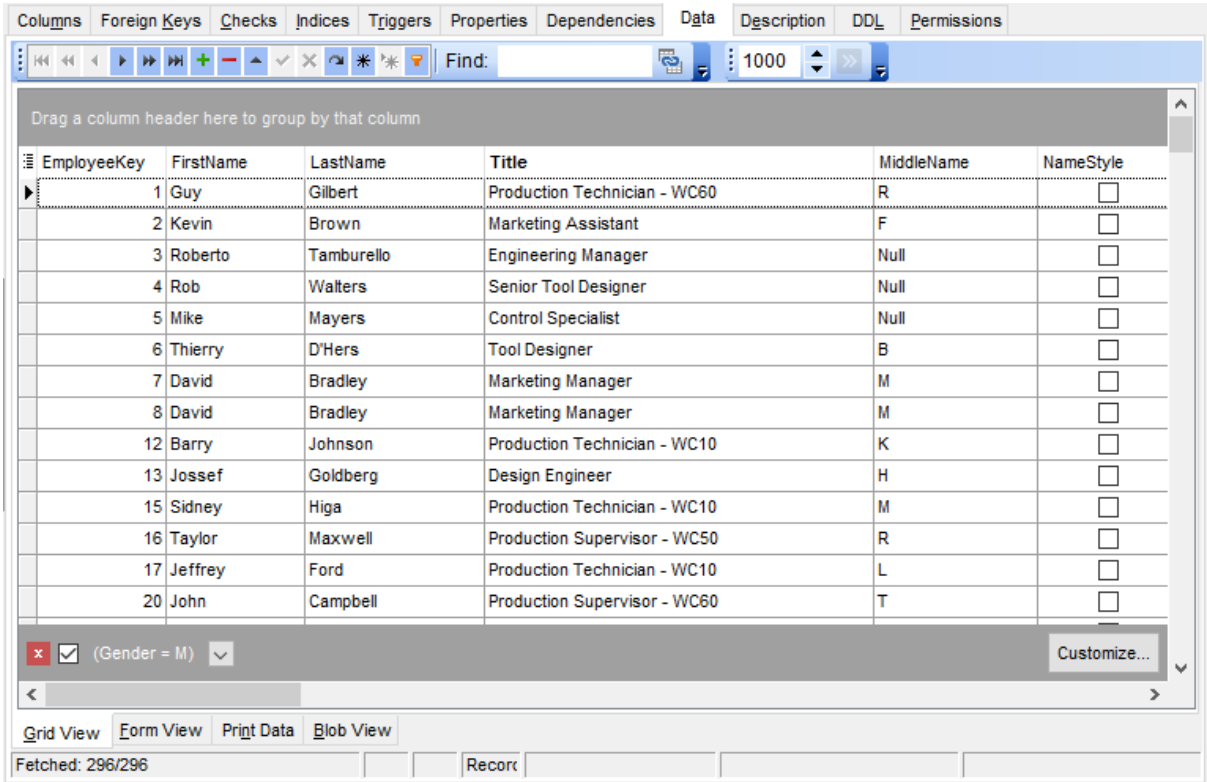
Data View 469

Custom Filter 523

7.3.1 Invoking the Filter Builder dialog

The **Filter Builder** dialog can be invoked in either of the following ways:

- if a simple filter 475 or the Custom Filter 523 is being used, click the **Customize...** button on the gray **filtering panel**;



- use the **Set filter** button on the navigation pane 470 and create a composite filter using the dialog.

The succeeding pages of this chapter are intended to illustrate usage of the **Filter Builder** dialog. Please see the instructions below to learn how to perform various operations in the easiest way.

See also:

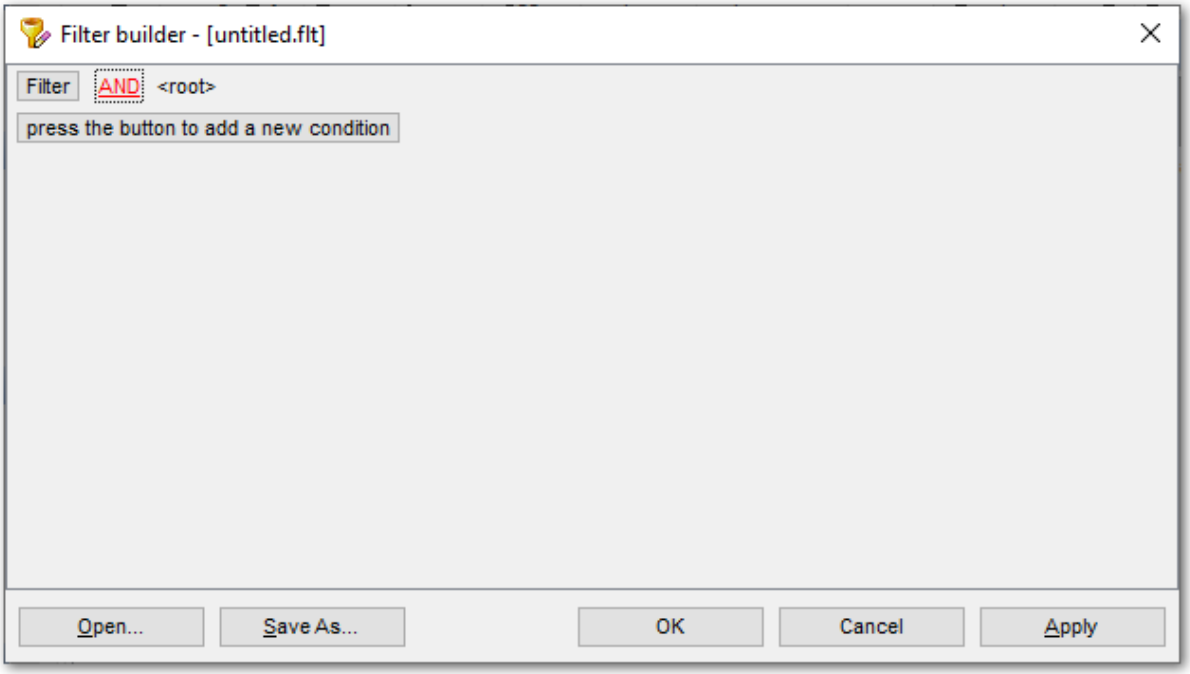
Adding a new condition 526
Setting filter criteria 527
Setting filter operator 528
Setting filter criteria values 529
Adding a new group 530
Setting group operator 531
Applying filter conditions 532

7.3.2 Adding a new condition

Suppose we need to select data from the sample table *Employee* to view the list of male engineers belonging to the *Engineering* and *Tool Design* departments that were hired

after *10/1/2007*. These criteria are applied to the *Gender*, *HireDate*, *Position* and the *DepID* columns.

Click **press the button to add a new condition** - this will add a new condition to the criteria. Alternatively, you can click the **Filter** button and select the **Add Condition** popup menu item.

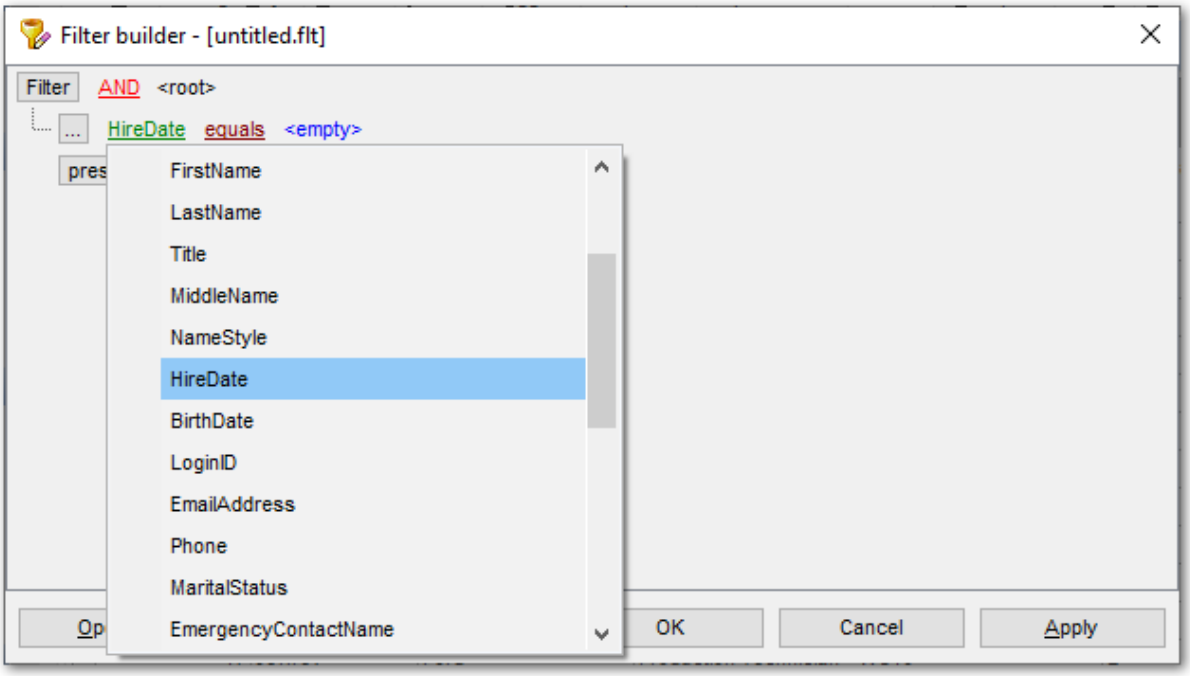


See also:

Invoking the Filter Builder dialog 525
Setting filter criteria 527
Setting filter operator 528
Setting filter criteria values 529
Adding a new group 530
Setting group operator 531
Applying filter conditions 532

7.3.3 Setting filter criteria

As we need to apply the filter criteria to the *HireDate* column, we click the column box (next to the ellipsis button) to open the drop-down list displaying the available column names and select the *HireDate* item.

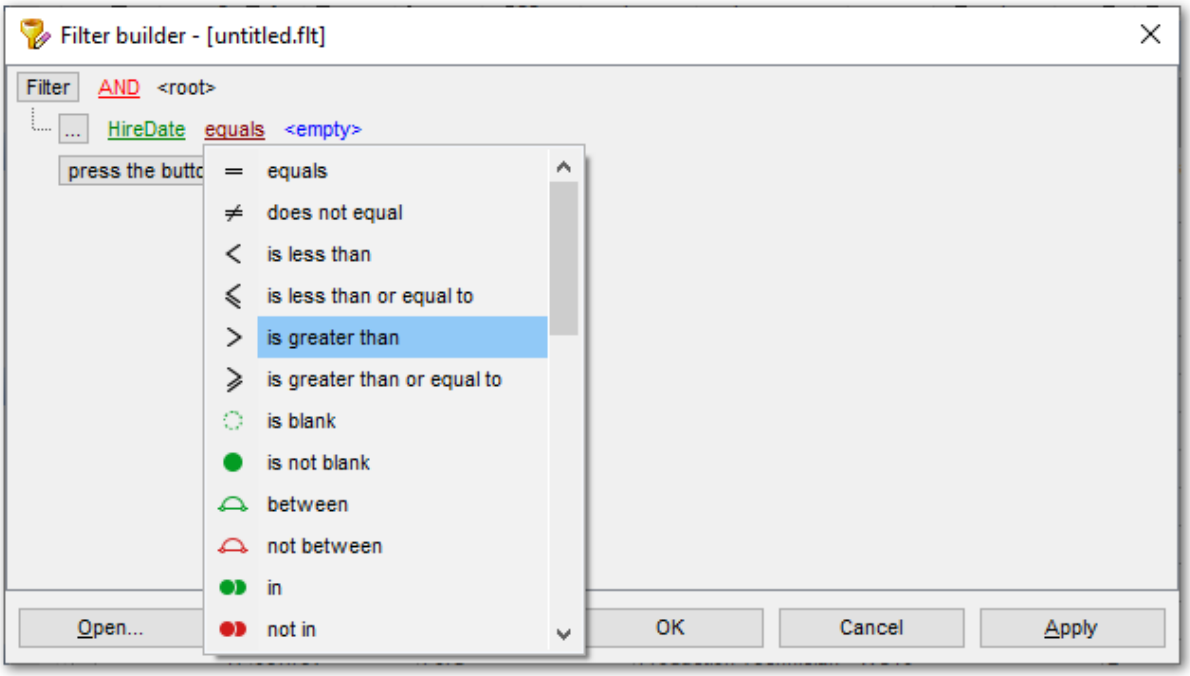


See also:

Invoking the Filter Builder dialog 525
Adding a new condition 526
Setting filter operator 528
Setting filter criteria values 529
Adding a new group 530
Setting group operator 531
Applying filter conditions 532

7.3.4 Setting filter operator

Since we need the list of employees hired after *10/1/2007*, we need to select the *IS GREATER THAN* operator from the corresponding drop-down list.



See also:

Invoking the Filter Builder dialog 525
Adding a new condition 526
Setting filter criteria 527
Setting filter criteria values 529
Adding a new group 530
Setting group operator 531
Applying filter conditions 532

7.3.5 Setting filter criteria values

Next, we need to specify value *'10/1/2007'* for the *IS GREATER THAN* operator.

Similarly, if, for example, we need to get the list of employees hired during the *9/1/2007 - 10/1/2007* term, we set the *BETWEEN* filter operator 528 (this will add two empty value boxes to specify the inclusive range for the *BETWEEN* condition) and specify the range for the operator, i.e. the *'9/1/2007'* and the *'10/1/2007'* values in the corresponding value boxes.

It is possible to set the date value **manually** by typing it in, or using the **date editor** which is activated when you click the value box.

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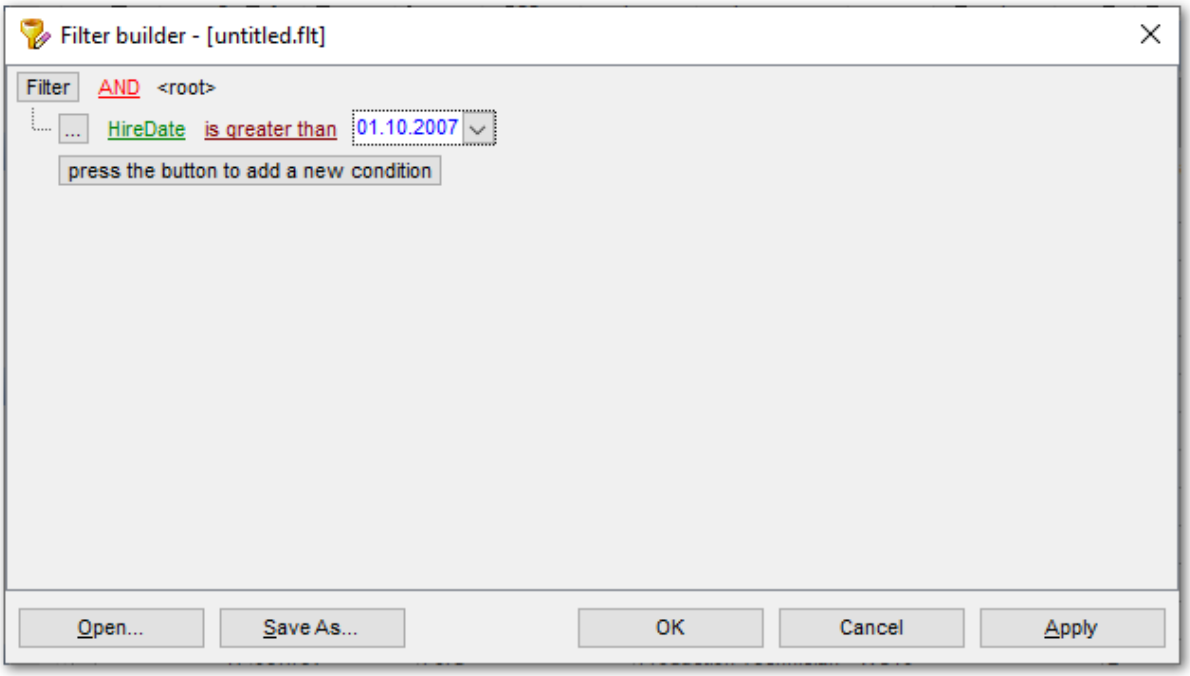


Editors used in value boxes are determined by the **data type** assigned to the corresponding columns.

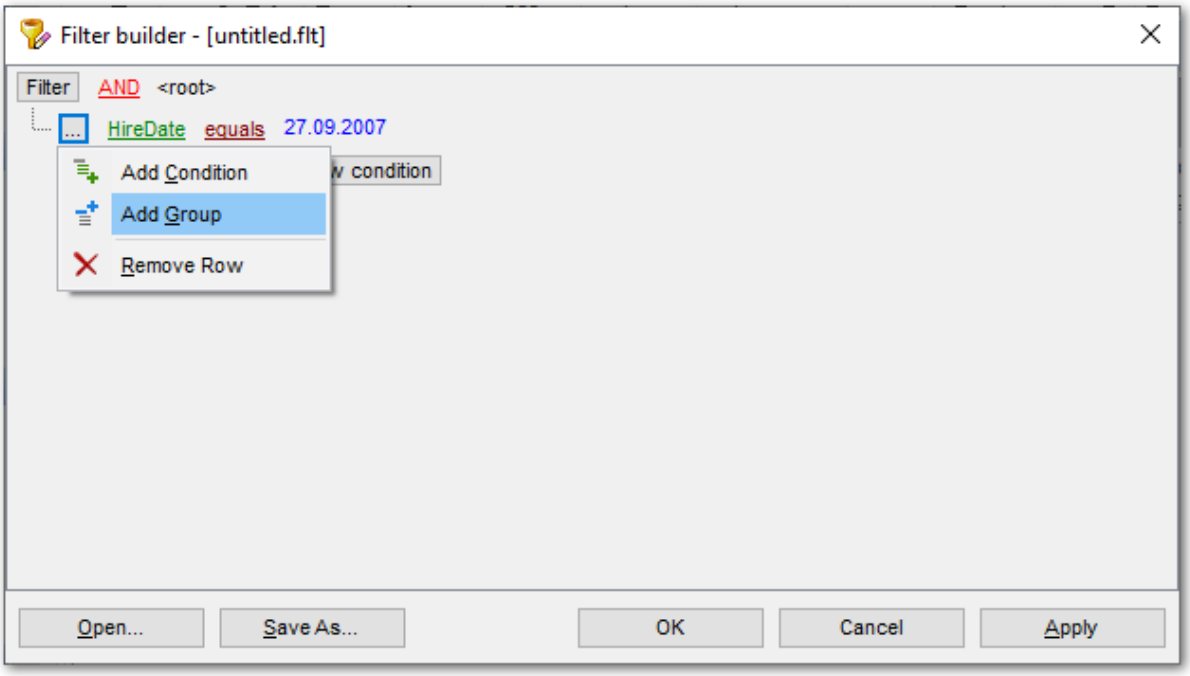
See also:

Invoking the Filter Builder dialog 525
Adding a new condition 526
Setting filter criteria 527
Setting filter operator 528
Adding a new group 530
Setting group operator 531
Applying filter conditions 532

7.3.6 Adding a new group

Since we also need to get the list of male specialists-engineers (i.e. those registered in the *Engineering* and *Tool Design* departments and having an engineering-oriented position), we can add a complex filter condition combining simple conditions with the *AND* operator. (However, in this particular case we can just add them at the same root level as for the existing condition).

If you need to add a group of conditions, click the ellipsis button for the *HIRE_DATE* condition and select the **Add Group** popup menu item.



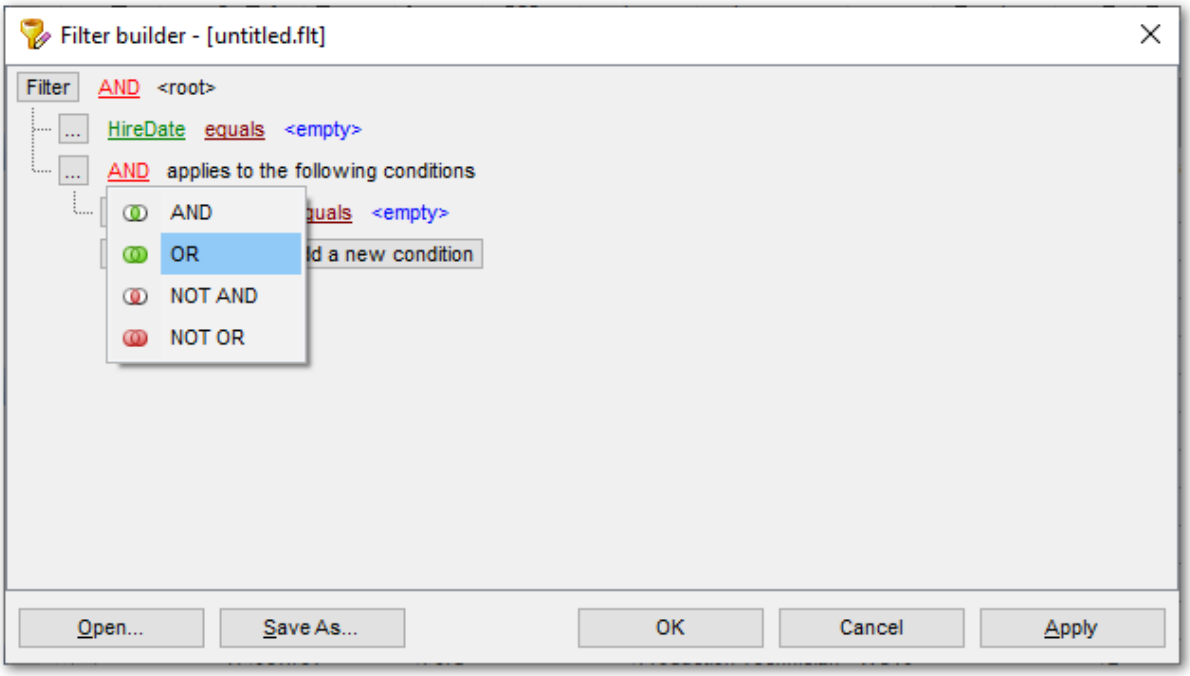
See also:

Invoking the Filter Builder dialog 525
Adding a new condition 526
Setting filter criteria 527
Setting filter operator 528
Setting filter criteria values 529
Setting group operator 531
Applying filter conditions 532

7.3.7 Setting group operator

Conditions of complex criteria can be combined with any of the four logical operators used: *AND*, *OR*, *NOT AND*, *NOT OR*.

In our case it is enough to click the **group operator** box and select the *AND* item from the drop-down menu.



See also:

Invoking the Filter Builder dialog 525
Adding a new condition 526
Setting filter criteria 527
Setting filter operator 528
Setting filter criteria values 529
Adding a new group 530
Applying filter conditions 532

7.3.8 Applying filter conditions

Suppose we have created a condition within the new group. If we need, we can add more conditions 526 at the same level and specify the required values using the value boxes. When the operation is completed, the **Filter Builder** dialog will look like in the screenshot below.

Click the **Apply** button to see the result of the filtering you have made, and click **OK** or **Cancel** to close the dialog with or without saving your filter conditions respectively.

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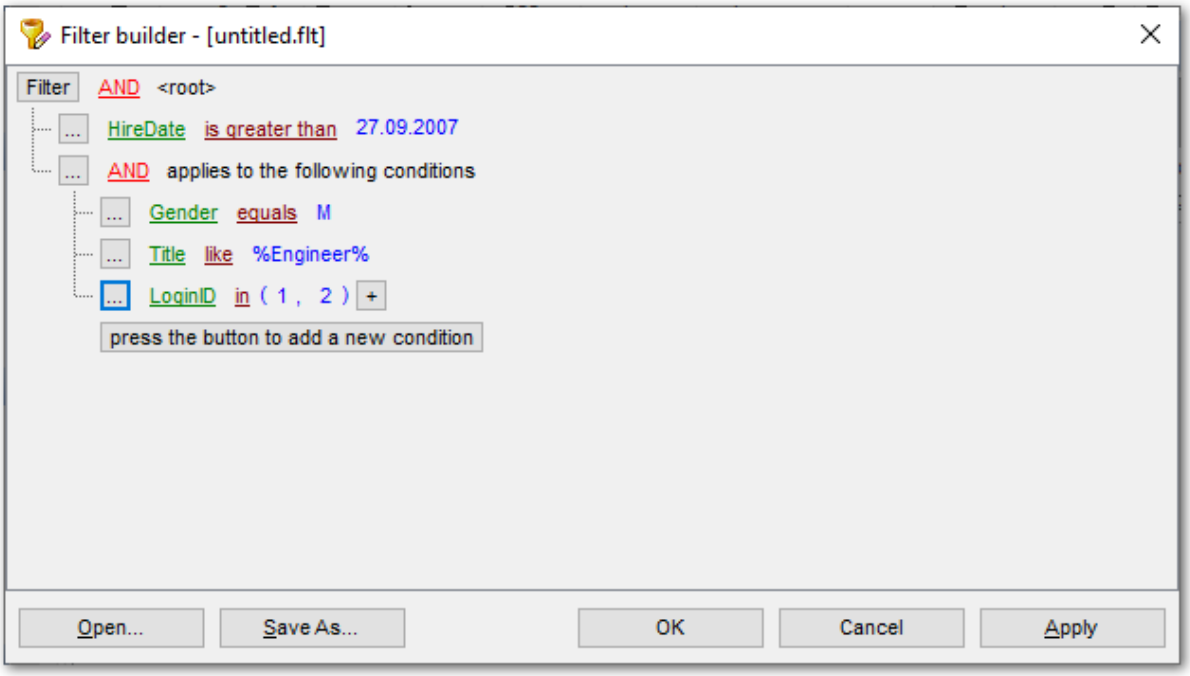

The **Filter Builder** dialog allows you to save filter criteria to and load them from external files. Clicking the **Save As...** or the **Open...** buttons activates the corresponding dialogs. Filter settings are stored in **.flt* files.
Please be informed that a column in the file is referenced by its position within a view, hence filter settings cannot be correctly restored if columns have been deleted from the view after saving the filter to a file.

See also:

Invoking the Filter Builder dialog 525
Adding a new condition 526
Setting filter criteria 527
Setting filter operator 528
Setting filter criteria values 529
Adding a new group 530
Setting group operator 531

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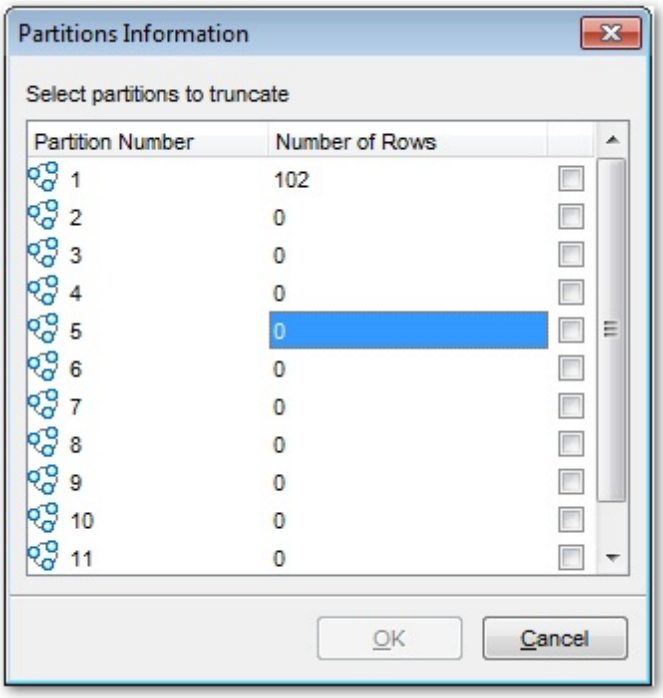
7.4 Data Truncating

In the **Data** tab of the Table Editor you can truncate data for the table or for the selected partitions.

To truncate table data select **Truncate Table** on the Tools navigation bar or Toolbar and confirm your action in the opened dialog.

Use **Truncate Table Partitions** item from the Tools navigation bar or Toolbar to open the dialog for selecting partitions to be truncated.



Select the partitions to truncate and click **OK** button.

See also:

Partition Functions 315
Partition Schemes 319

Part VIII

8 Import/Export Tools

Using SQL Manager for SQL Server you are provided with powerful tools to import and export data to/from your SQL Server database.

Export Data Wizard 537
Exports data to various supported formats including *MS Excel*, *MS Access*, *RTF*, *HTML*, *PDF* , *CSV*, *XML*, *MS Excel 2007* and more.

Import Data Wizard 577
Imports data from any of supported formats: *MS Excel*, *MS Access*, *DBF*, *TXT*, *CSV*, *XML*, *MS Excel 2007*, *MS Word 2007* and more.

Export Data as SQL Script 599
Exports data to an SQL script as a number of INSERT statements.

Bulk Insert Wizard 599
Imports data with the BULK INSERT statement used.

Using templates 970
Facilitates using import/export wizards.

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Query Management Tools 430
Data Management 468
Database Tools 617
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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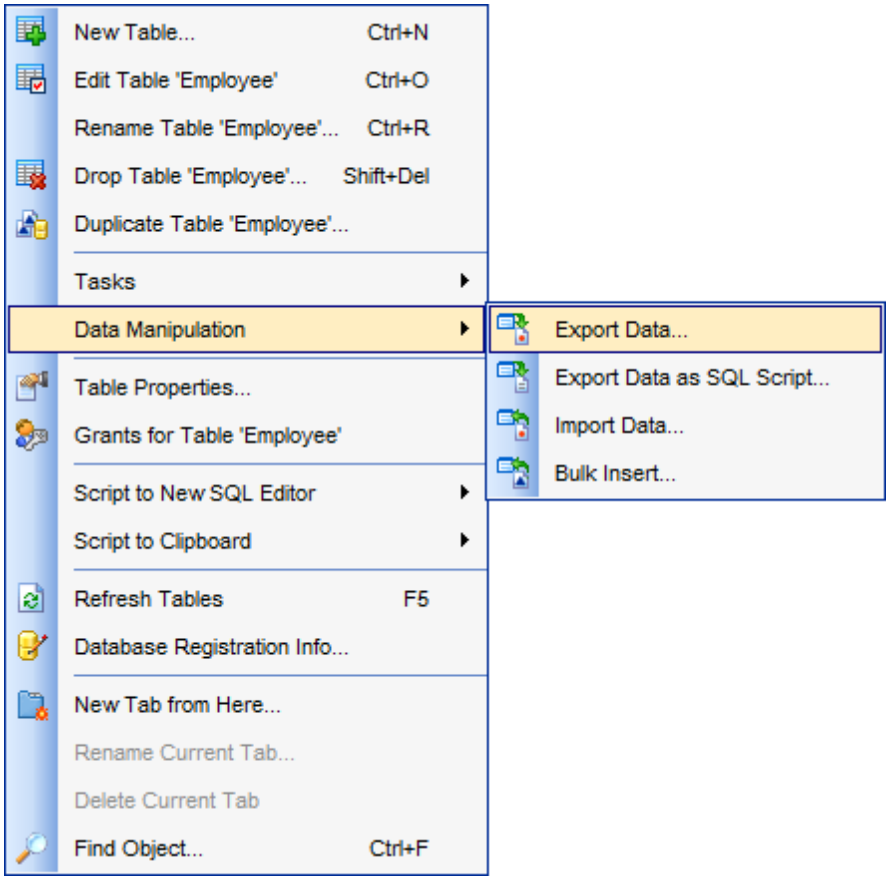
8.1 Export Data Wizard

Export Data Wizard allows you to export data from a table 196 / view 250 or from a query result to any of supported formats (*MS Excel*, *MS Access*, *MS Word*, *RTF*, *HTML*, *PDF*, *TXT*, *CSV*, *XML*, *DBF*, *MS Excel 2007*, *MS Word 2007*, etc.). You can save your settings as a template 970 any time for future use.

To start the wizard, right-click the object in DB Explorer 65, select the **Data Manipulation** context menu 57 group and proceed to the **Export Data...** item within this group.

Alternatively, you can open the **Data** tab of Table Editor 204 / View Editor 250 or the **Result (s)** tab of Query Data 432 / Design Query 448, right-click the grid 471 there, then select the **Data Manipulation** context menu 478 group and proceed to the **Export Data of <object_name>...** item within this group, or use the **Export Data** item of the Navigation bar 951.



- Setting name and format for the destination file 538
- Selecting columns for export 539
- Adjusting formats applied to exported data 540
- Setting header and footer text for the destination file 541
- Setting format-specific options 542
- Setting common export options 574

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- Exporting data 576

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Import Data Wizard 577
Export as SQL Script 599
Bulk Insert Wizard 608
Using templates 970

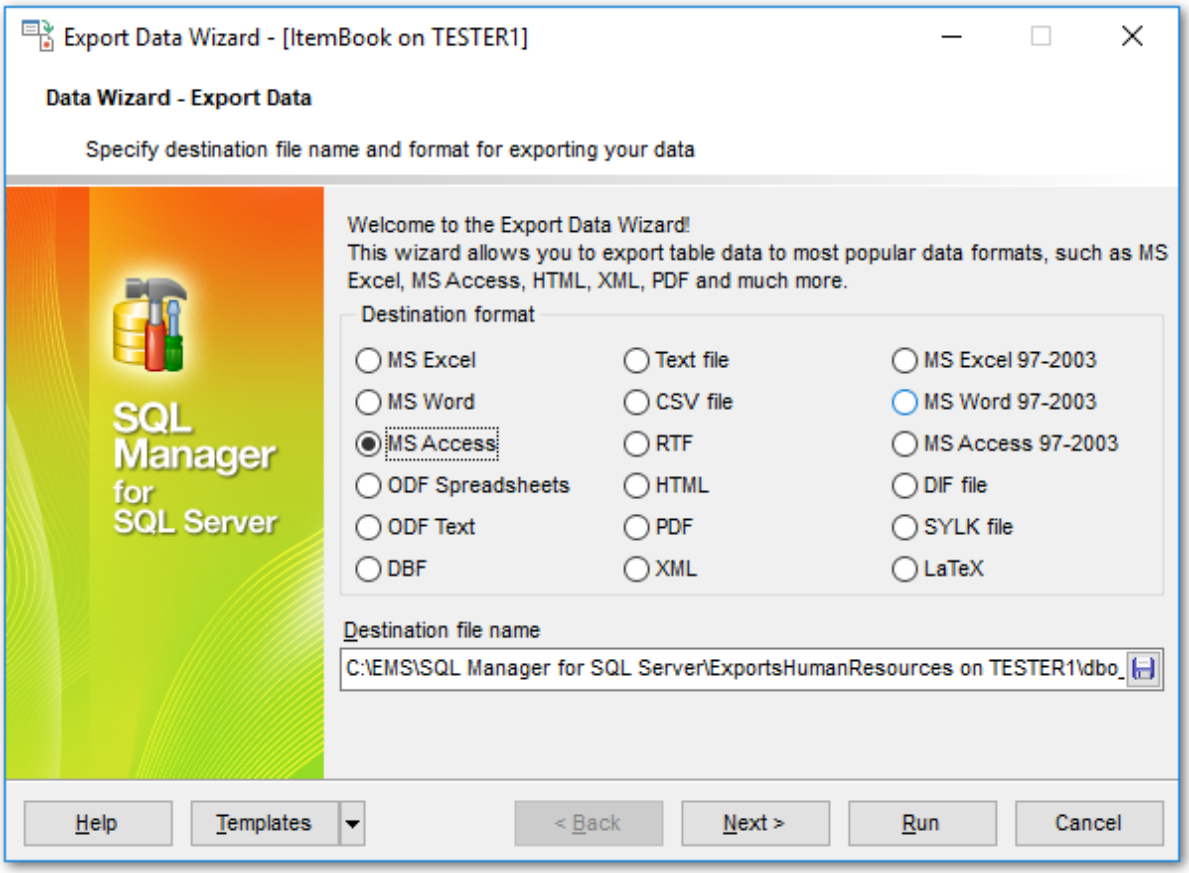
8.1.1 Setting destination file name and format

This step of the wizard allows you to select the destination file format you need to export data into.

Destination file name

Type in or use the button to specify the path to the file using the **Save as...** dialog. The file name extension changes automatically according to the selected **Destination format**.

Note: If the target file already exists, the application will show a warning 982 dialog where you can choose the action you need.

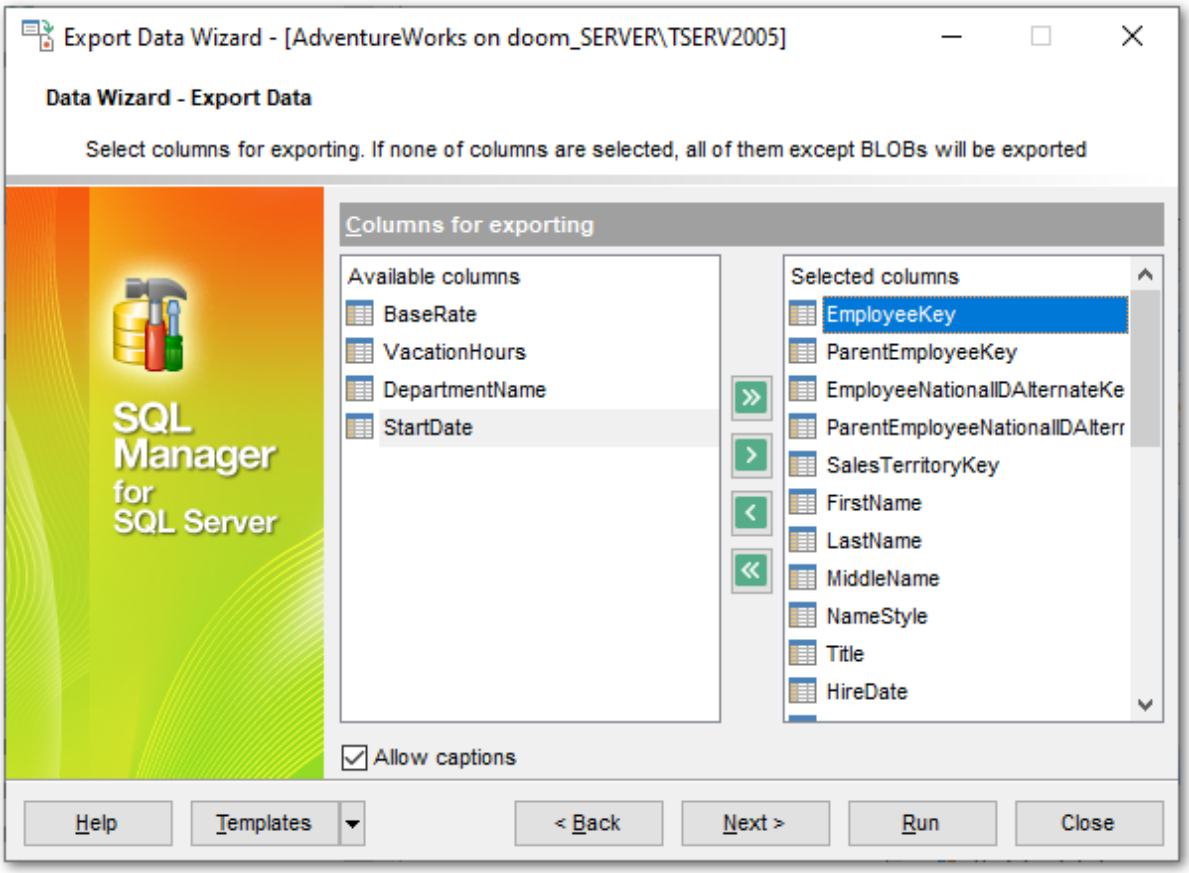


Destination format
Specify the format of the destination file. For details refer to Supported file formats 971.

Click the **Next** button to proceed to the Selecting columns for export 539 step of the wizard.

8.1.2 Selecting columns for export

This step of the wizard allows you to select the table column(s) to be exported.
To select a column, you need to move it from the **Available columns** list to the **Selected columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.



If you leave all the columns in the **Available columns** list, all columns of the table (except BLOBs) will be exported.

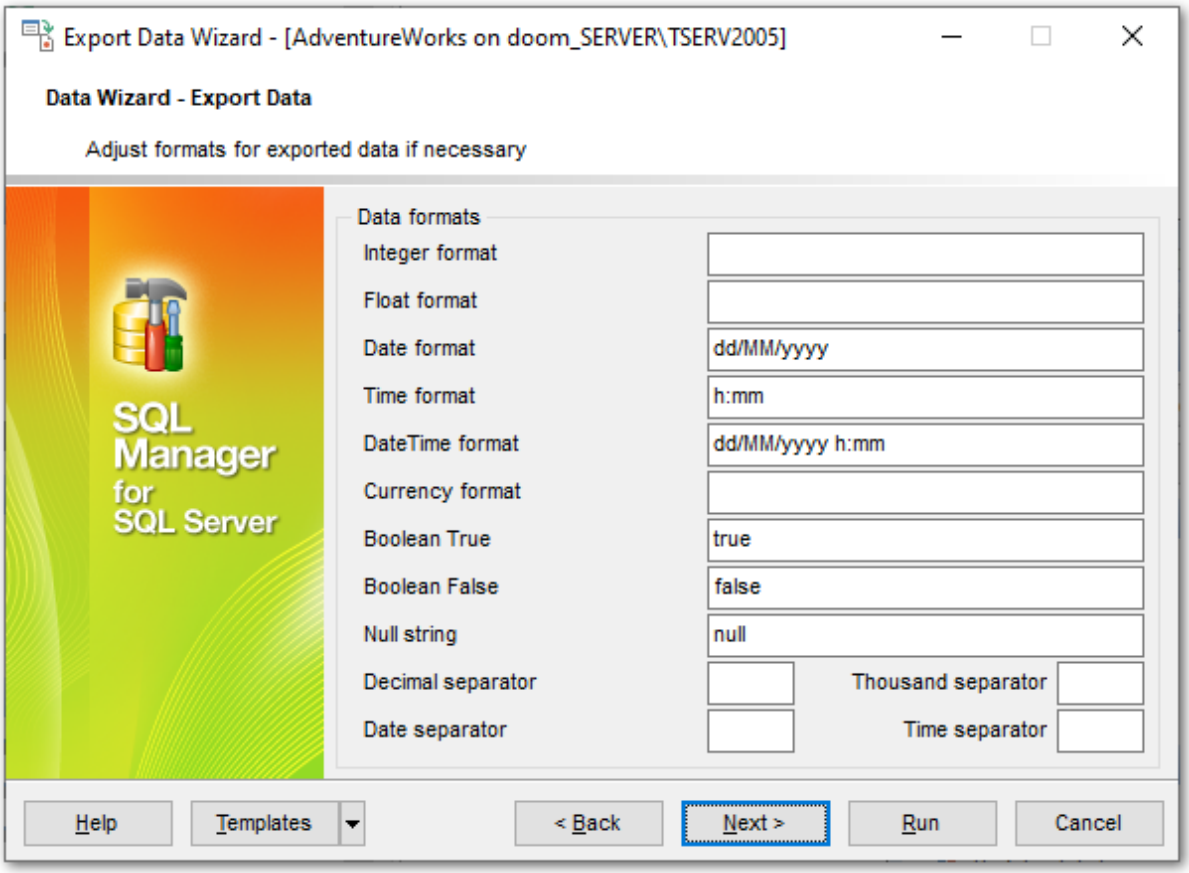
Allow captions
Check this option if you need to export the column captions as well.

Click the **Next** button to proceed to the Adjusting data formats 540 step of the wizard.

8.1.3 Adjusting data formats

This step allows you to customize formats applied to exported data.

Data formats
Edit the format masks to adjust the result format in the way you need: *Integer*, *Float*, *Date*, *Time*, *DateTime*, *Currency*, *Boolean True*, *Boolean False*, *NULL string*, *Decimal separator*, *Thousand separator*, *Date separator*, *Time separator*.



Hint: The formats used by default are specified in the Data Export 887 section of the Environment Options 854 dialog.

For more details refer to Format specifiers 966.

Click the **Next** button to proceed to the Setting header and footer 541 step of the wizard.

8.1.4 Setting header and footer

Set **Header text** and **Footer text** for the result file. This text will appear at the beginning and at the end of the result file respectively.

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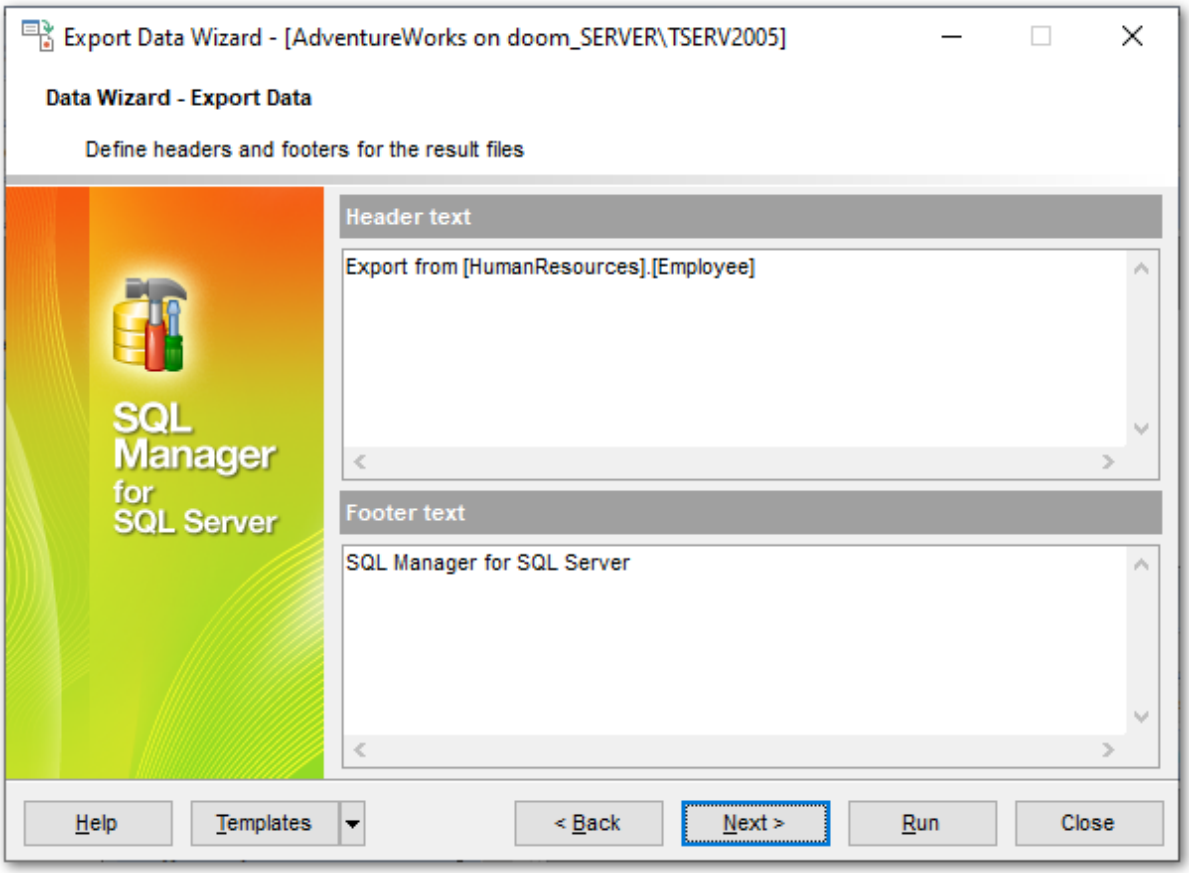


Click the **Next** button to proceed to Setting format-specific options 542.

8.1.5 Setting format-specific options

This step of the wizard allows you to customize **Format-specific options**:

- Excel 97-2003 options 542
- Access options 557
- Word 97-2003 / RTF options 558
- HTML options 561
- PDF options 566
- TXT options 568
- CSV options 568
- XML options 569
- MS Excel / ODS options 570
- MS Word / ODT options 572

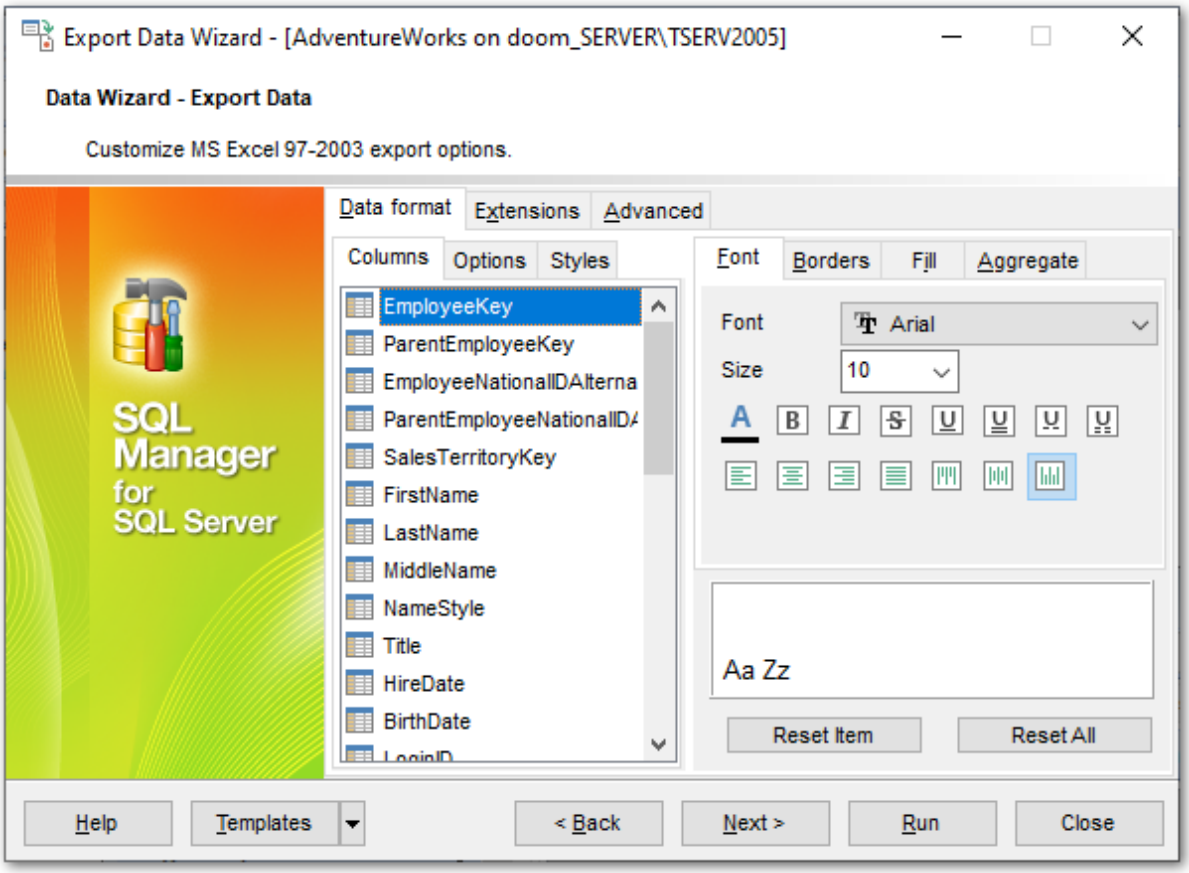
To get more information about the file formats, see the Supported file formats 971 page.

8.1.5.1 Excel 97-2003 options

This step allows you to set options for the target **MS Excel** (**.xls*) file.

You can customize **Data format**, **Extensions** and set **Advanced** options available within the corresponding tabs:

- Data format 543
- Extensions 547
- Advanced 556



When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.1.1 Data format

The **Data Format** tab contains general options which allow you to adjust the format for each kind of Excel cells. This means that you can specify such parameters as *font*, *borders*, *filling color* and *method*, etc. for each entity (such as *data column*, *header*, *footer*, *caption*, *data*, *hyperlink* and so on) separately. Also it is possible to create *styles* to make the target Excel file striped by columns or rows.

- Columns 544
- Options 546
- Styles 547

For your convenience the previews illustrating the changes are displayed in the **Sample**

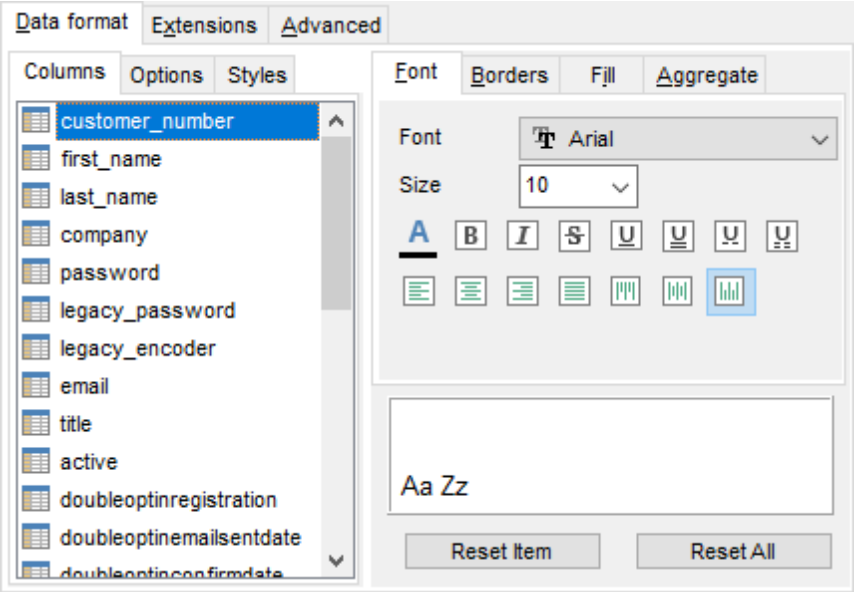
Group area on each page of **Data Format** tab.

8.1.5.1.1.1 Columns

Using the **Columns** tab you can set *font* options, *border* and *fill* options and *aggregate functions* for all the **Columns** you want to export.

The **Font** tab allows you to specify properties of the font that will be used in the output Excel file cells.

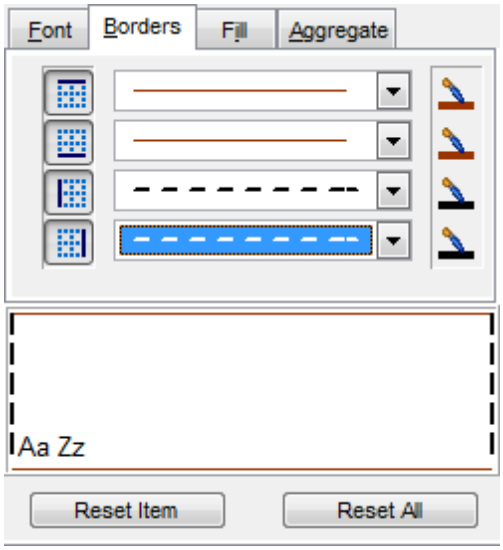
Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the output text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *strikethrough* text, set *underline* effects, specify text *horizontal* and *vertical align*.



The **Borders** tab allows you to specify properties of the borders of the output Excel file cells.

Press the buttons on the left to show/hide the borders they indicate.

Use the drop-down list for each border to select the *line type* and the button on the right to select the *line color* for each border.

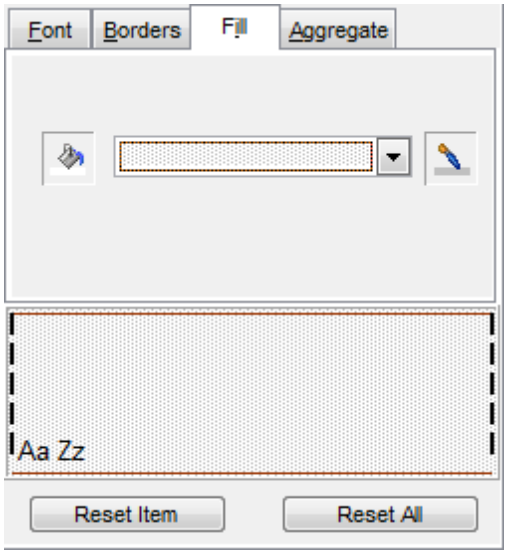


The **Fill** tab allows you to specify the fill pattern for the output Excel file cells.

Use the drop-down list to select the preferable fill pattern type.

Press the button on the left to set the background color for the fill pattern.

Press the button on the right to set the foreground color for the fill pattern.



The **Aggregate** tab allows you to specify an aggregate function for the column in the output Excel file.

Select a **function** that will be applied to the field:

- *None*
- *AVG*
- *MAX*

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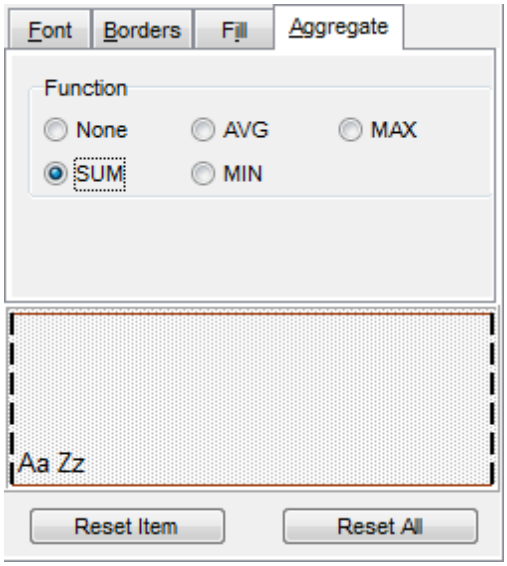
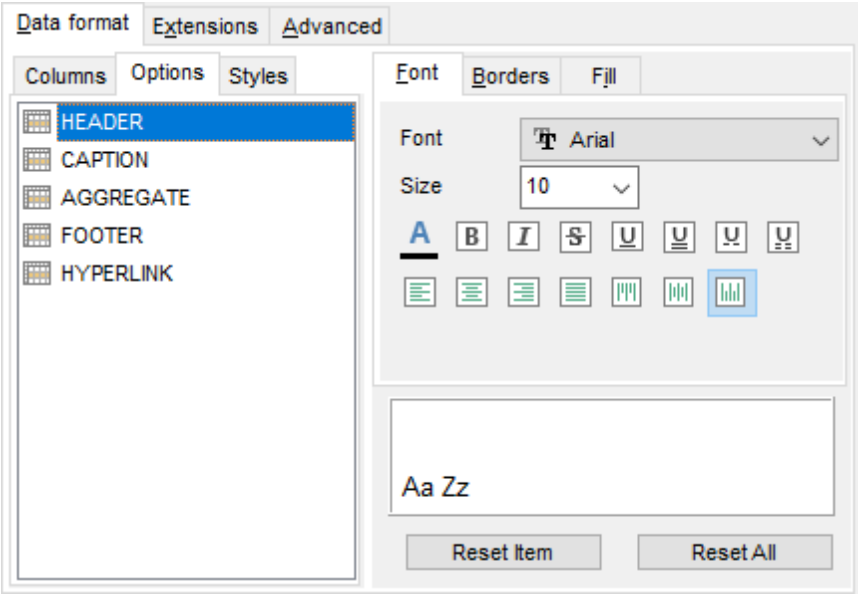
- *SUM*
- *MIN*



You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

8.1.5.1.1.2 Options

Using the **Options** tab you can set *font* options, *border* and *fill* options for all **elements** of the Excel sheet (*header*, *caption*, *footer*, *aggregates* and *hyperlinks*).



The **font**, **borders** and **fill** options are specified in the same way as for output **Columns**. For details refer to the Columns 544 page.

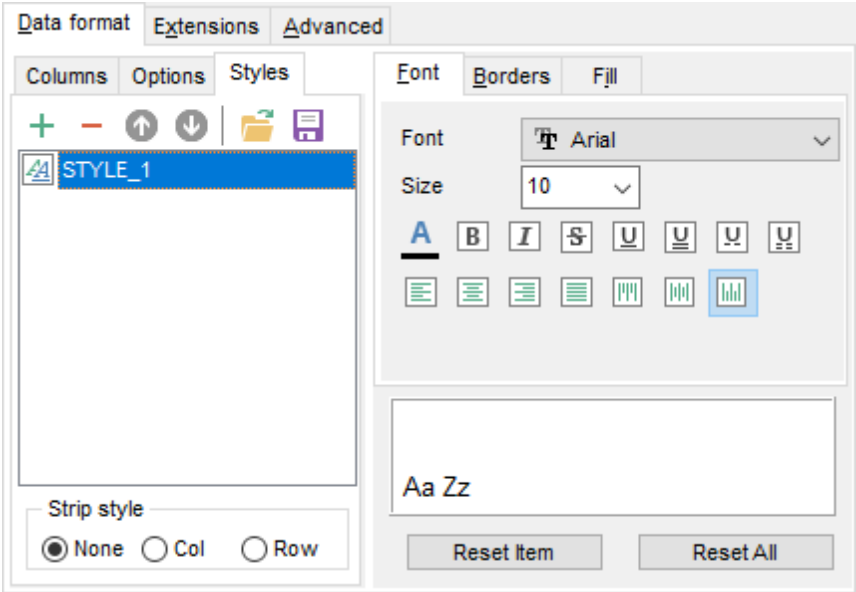
You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

8.1.5.1.1.3 Styles

Using the **Styles** tab you can make a style template: set *font* options, *border* and *fill* options and save them.

To add a style template, click the **Plus** button.
To delete a style template, select it and click the **Minus** button.
To reorder style templates in the list, use the buttons.
To load a style template, click the button.
To save the current style template, click the button.

If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).



The **font**, **borders** and **fill** options are specified in the same way as for output **Columns**. For details refer to the Columns 544 page.

You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

8.1.5.1.2 Extensions

The **Extensions** tab provides an ability to add hyperlinks 548 and notes 548 and to any cell of the target file, to specify a value of a cell, to create a chart 551 and to merge cells 555.

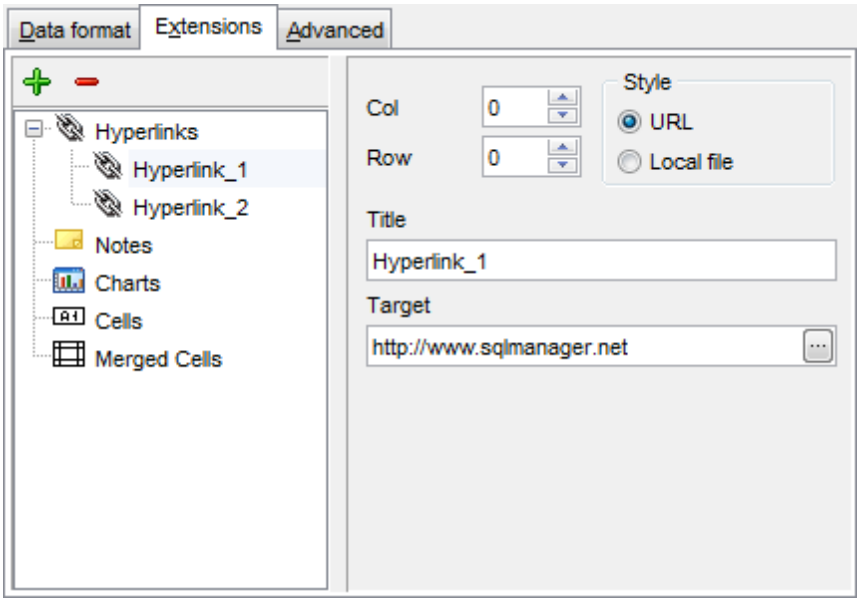
Click the **Plus** button to add an element;
click the **Minus** button to delete an element.

- Hyperlinks 548
- Notes 548

- Charts 551
- Cells 554
- Merged Cells 555

8.1.5.1.2.1 Hyperlinks

If you need to create a **hyperlink**:
- set the cell coordinates (*Col* and *Row*);
- specify whether this is a *local* link or *URL*;
- enter the *title* of the hyperlink;
- specify the *target* file location or address.



Use the **Col** and **Row** spinner controls to specify the column and row for the hyperlink in the output file.

The **Style** group allows you to select the preferable hyperlink style:
- *URL*
- *Local file* (i.e. the file is located on your local machine or on a machine in the LAN)

Use the **Title** box to specify the hyperlink name.

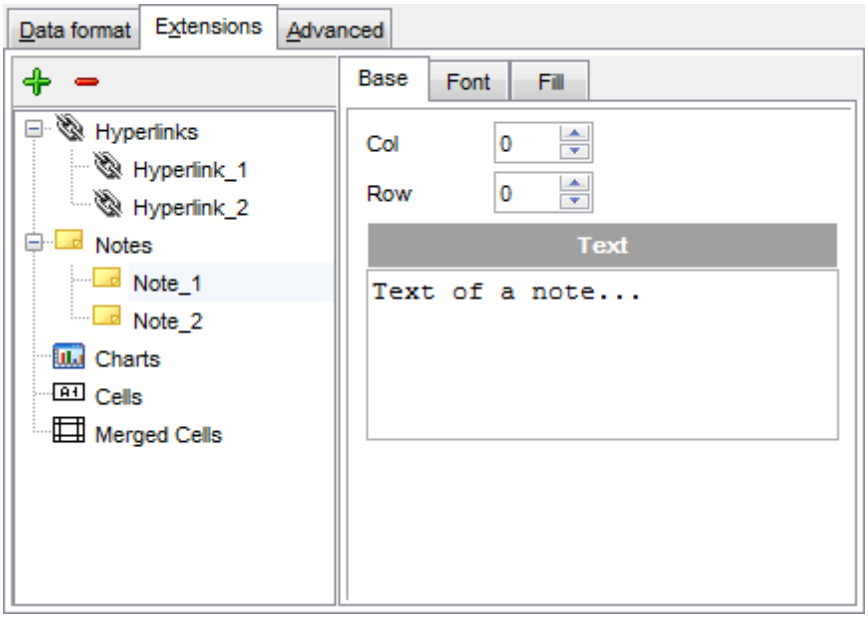
The **Target** box lets you enter the path to the target file or URL. Use the button to check whether the specified location is available.

8.1.5.1.2.2 Notes

If you need to create a **note**:
- set the cell coordinates (*Col* and *Row*);
- enter *text* of a note for the cell;
- set the *font* and *fill* properties using the corresponding tabs.

The **Base** tab allows you to specify basic properties of the note to be added to the output Excel file.

Use the **Col** and **Row** spinner controls to specify the column and row for the note in the file.
Use the edit-box below to enter the text of the note.



The **Font** tab allows you to specify properties of the font that will be used for the note.

Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the output text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *strikethrough* text, set *underline* effects, specify text *horizontal* and *vertical align*.

The **Orientation** group allows you to select the note text orientation:
- *No rotation*
- *Top to bottom*
- *Counterclockwise*
- *Clockwise*

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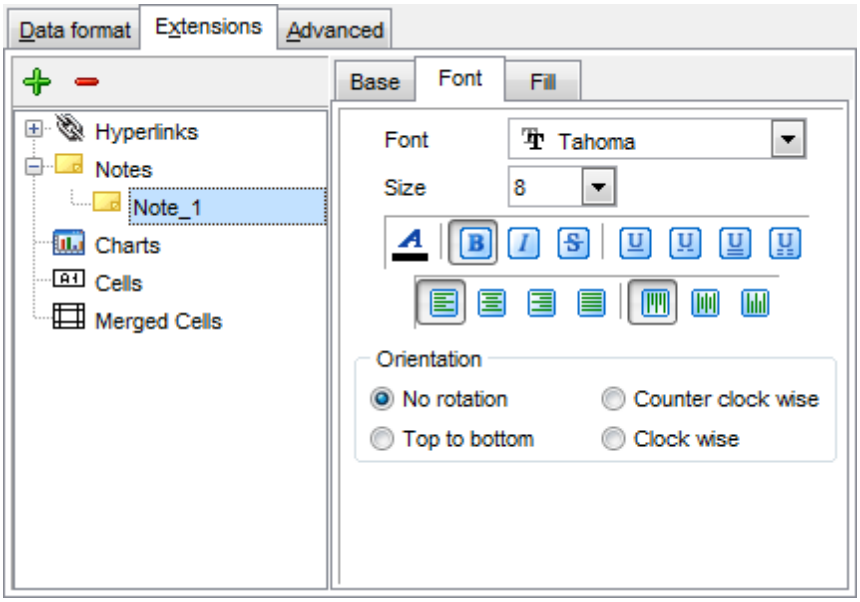

The **Fill** tab allows you to specify the fill type and transparency for the note.

The **Fill Type** group allows you to select whether the fill color will be **solid** or **gradient**:
- *Horizontal*
- *Vertical*
- *Diagonal up*
- *Diagonal down*
- *From corner*
- *From center*

Press the button to set the background color for the fill pattern.

Press the button to set the foreground color for the fill pattern.

The **Transparency** control allows you to set the transparency degree for the note. Move the slider between the **0%** and **100%** threshold values to select the required transparency value within this scope.

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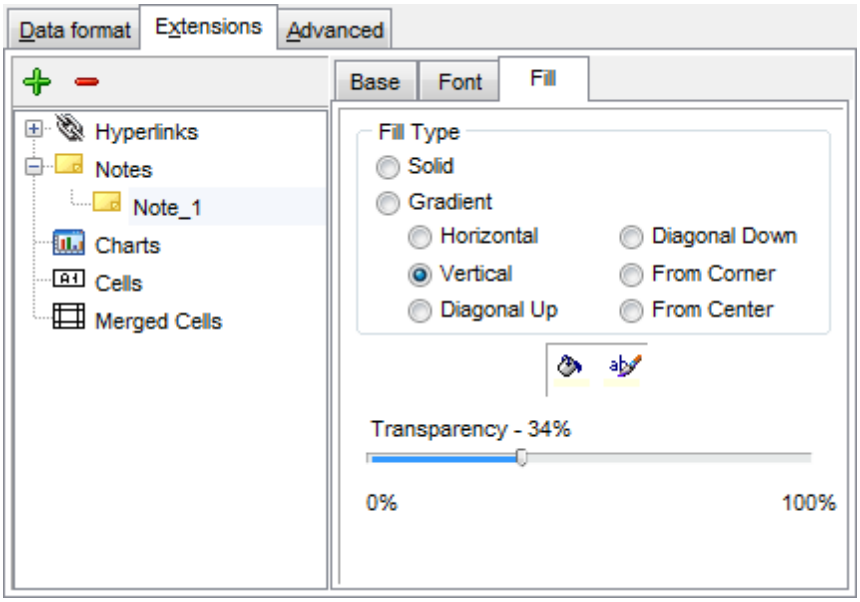


8.1.5.1.2.3 Charts

If you need to create a **chart**:

- enter the chart *title*;
- select the chart style;
- set the legend position;
- specify if you want to show the legend;
- specify if you want to set the chart color automatically;
- define the chart *position* and *category labels* using the corresponding tabs.

The **Base** tab allows you to specify basic properties of the chart to be added to the output Excel file.

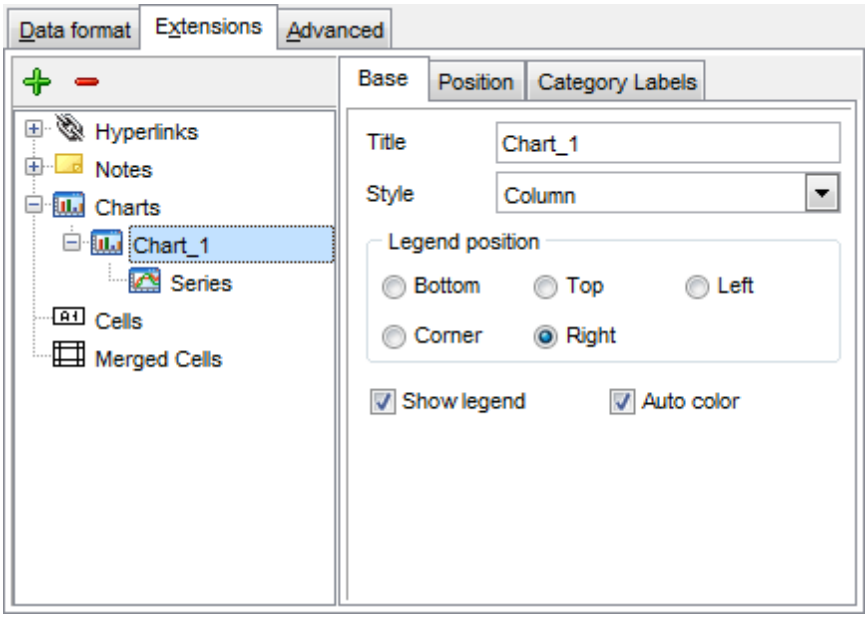
Use the **Title** box to specify the chart name.
Use the **Style** drop-down list to select the preferable chart style (*Column*, *Column 3D*, *Bar*, *Bar 3D*, *Line*, *Line Mark*, *Line 3D*, etc.).

The **Legend** position group allows you to specify position of the chart legend:

- *Bottom*
- *Top*
- *Left*
- *Corner*
- *Right*

☑ **Show legend**
This options specifies whether the chart legend will be visible or not.

☑ **Auto color**
If this option is selected, each series will be automatically differentiated with different colors on the chart, otherwise one color will be applied for all series.



The **Position** tab allows you to specify properties pertaining to the chart position on the output file sheet.

Auto
Specifies automatic position of the chart.

The **Placement** group allows you to specify the chart position relative to the data:
Bottom
Right

Use the **Left** and **Top** spinner controls to specify the spacing between the chart and data at the left and at the top respectively.
Use the **Height** and **Width** spinner controls to specify the chart *height* and *width* respectively.

Custom
Specifies absolute position of the chart (irrelative to the data). Use the spinner controls to set the coordinates you need.

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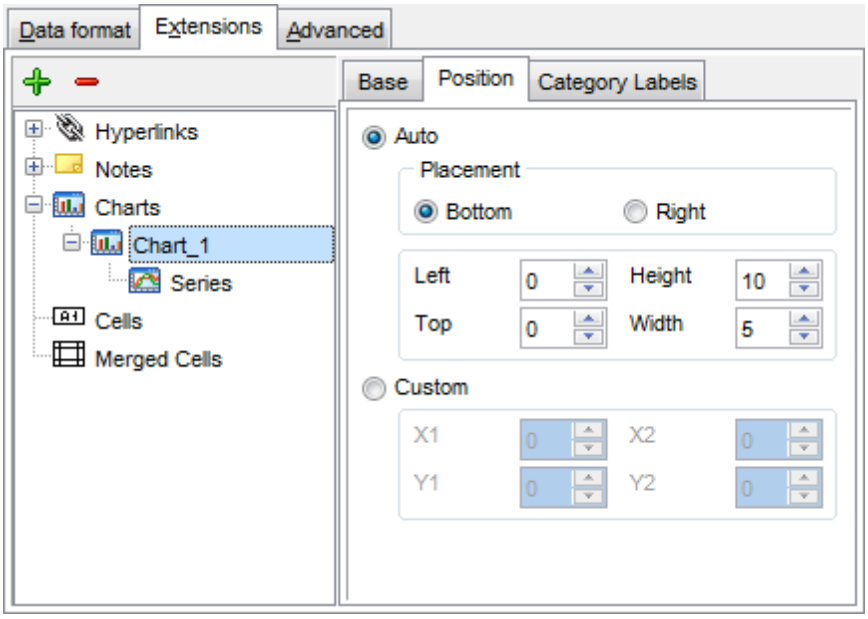
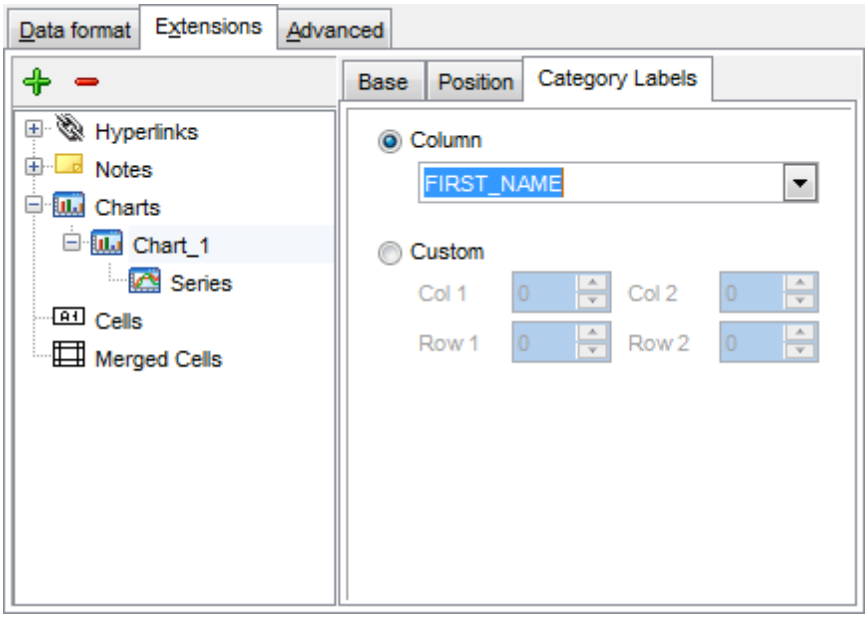


The **Category Labels** tab allows you to specify in which rows and columns the chart will be built.

Column
Use the drop-down list to select the column that will be used to take values for x-axis.

Custom
Specify the range of cells from which x-axis values will be taken. Use the spinner controls to set the range you need.



To build a chart, you also need to create **series** that will be used to take values for y-

axis. To add **series** for the chart:

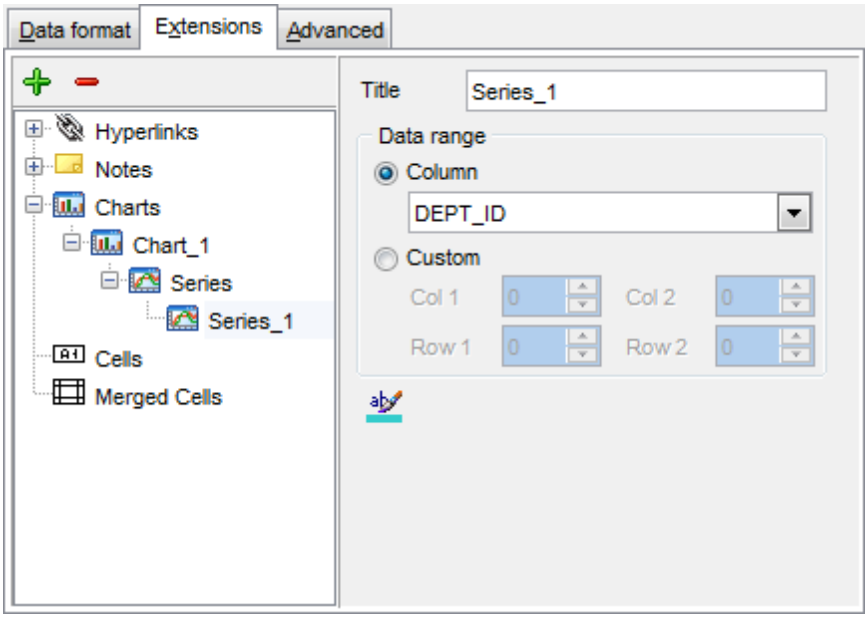
- add one or more series using the button;
- enter the *titles*;
- set data ranges (select a column from the drop-down list or set the custom range);
- define colors for all the graphs.

Use the **Title** box to specify the series name.

Data range

Column
Use the drop-down list to select the column that will be used to take values for the series.
Custom
Specify the range of cells from which the series will be formed. Use the spinner controls to set the range you need.

Press the button to set the color for the series.



8.1.5.1.2.4 Cells

If you need to add a value in a specific cell:

- set the cell coordinates (*Col* and *Row*);
- select the cell type;
- enter a *value*;
- if you are adding a numeric or a date/time value, you can set the cell *format;*
- set the *font*, *borders* and *fill* properties using the corresponding tabs.

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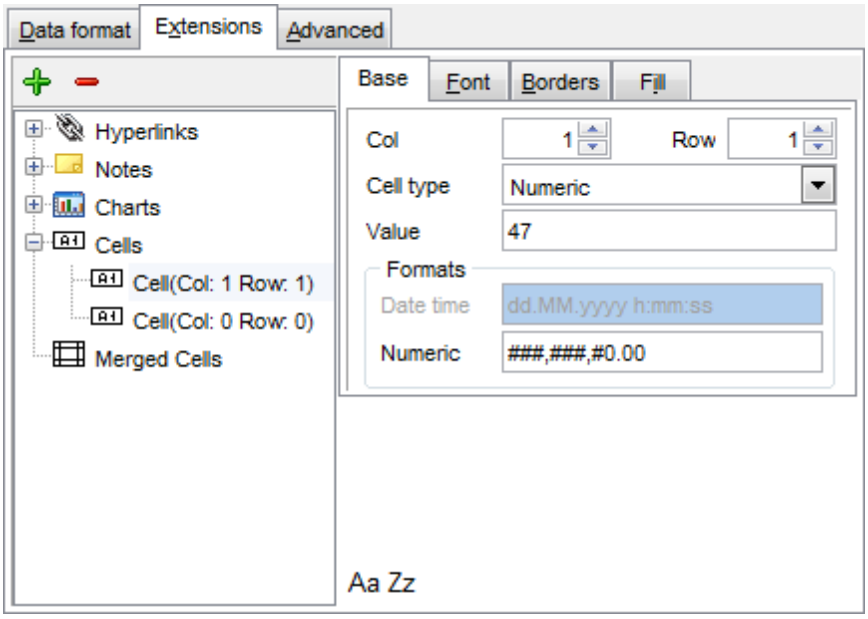


The **Base** tab allows you to specify basic properties of the cell.

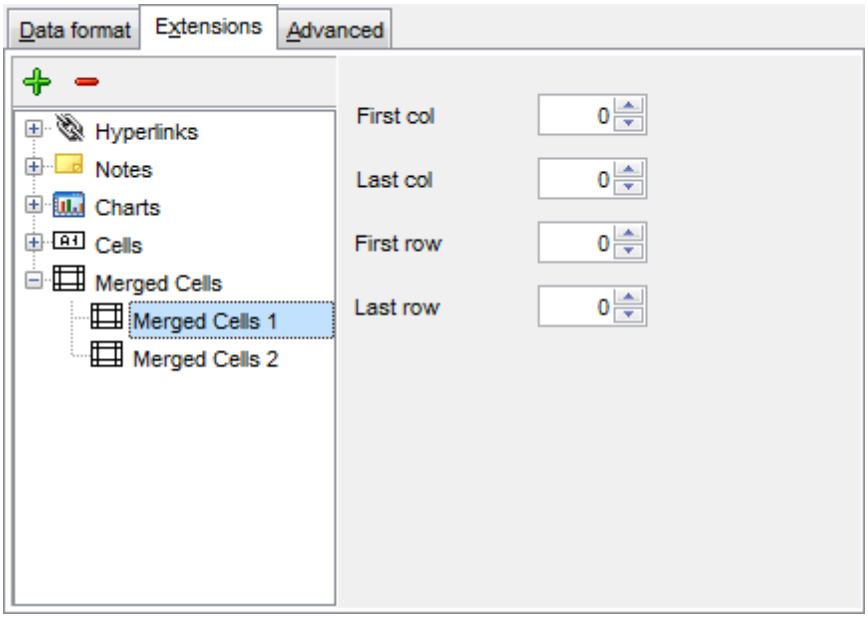
Use the **Col** and **Row** spinner controls to specify the column and row denoting the cell.
Use the **Cell** type drop-down list to select the data type for the cell (Boolean, DateTime, Numeric or String).
Set the required value in the **Value** edit box.

The **Formats** group allows you to specify data format for numeric or a date/time types.

The **font**, **borders** and **fill** options are specified in the same way as for output **Columns**. For details refer to the Columns 544 page.

8.1.5.1.2.5 Merged Cells

If you want to merge two or more cells, set the range of cell coordinates: *First col*, *Last col*, *First row*, *Last row*. Use the spinner controls to set the range you need.



8.1.5.1.3 Advanced

The **Advanced** tab allows you to set a number of advanced options to be applied to the result MS Excel file.

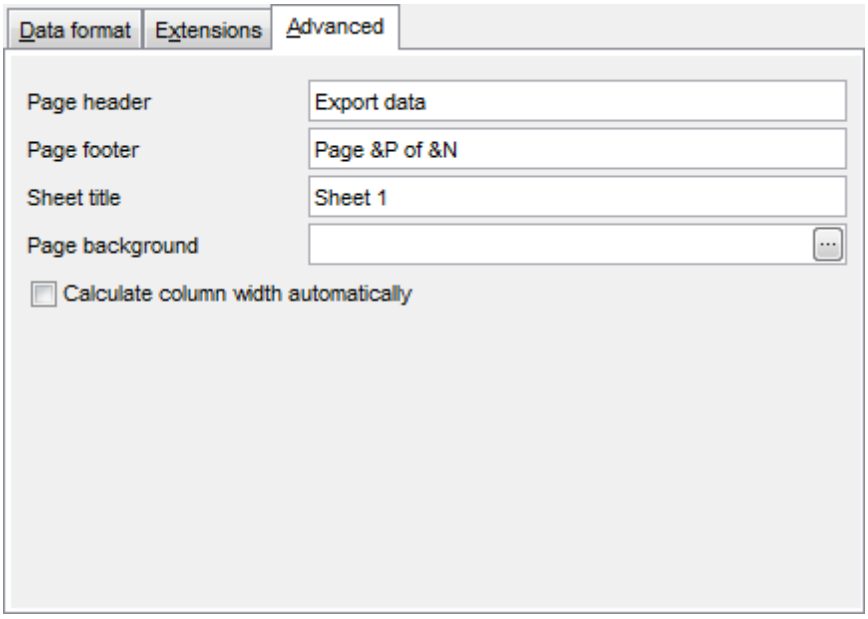
Page header
If necessary, enter some text for the page header.

Page footer
If necessary, enter some text for the page footer.

Hint: It is also possible to set macros in the **Page header** and **Page footer** fields:
&N stands for the quantity of pages;
&P - the number of the current page.

Sheet title
Specify the sheet title for the target file.

Page background
If necessary, use the **Ellipsis** button to browse for a graphical file to be applied as the page background.

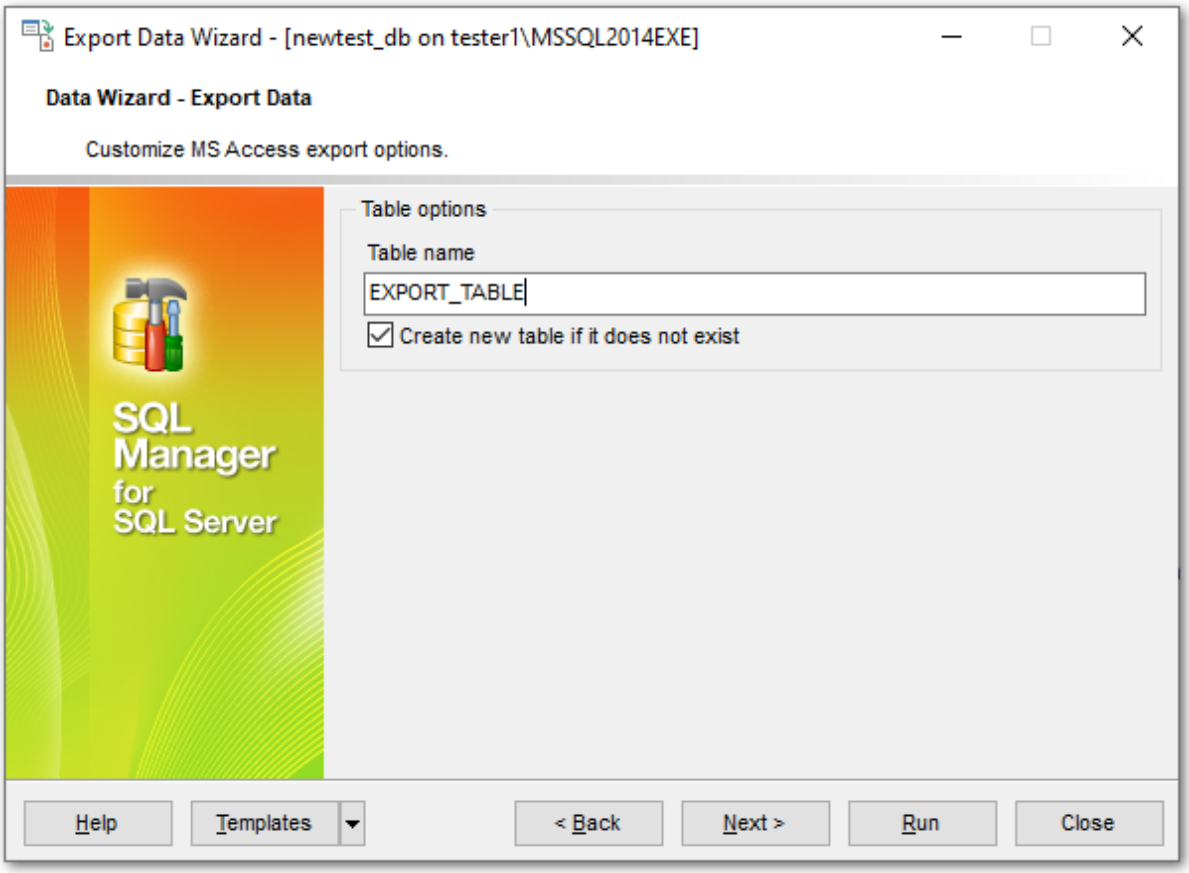


☑ **Calculate column width automatically**
This option allows the wizard to determine column width in the target file automatically according to column size.

8.1.5.2 Access options

This step allows you to set options for the target **MS Access/Access 97-2003** (*.*accdb*, *.*mdb*) file.

Set the name for the target table and specify whether the wizard should **create a new table** in the MS Access/Access 97-2003 database if it does not exist yet, or use the existing table to export data into.



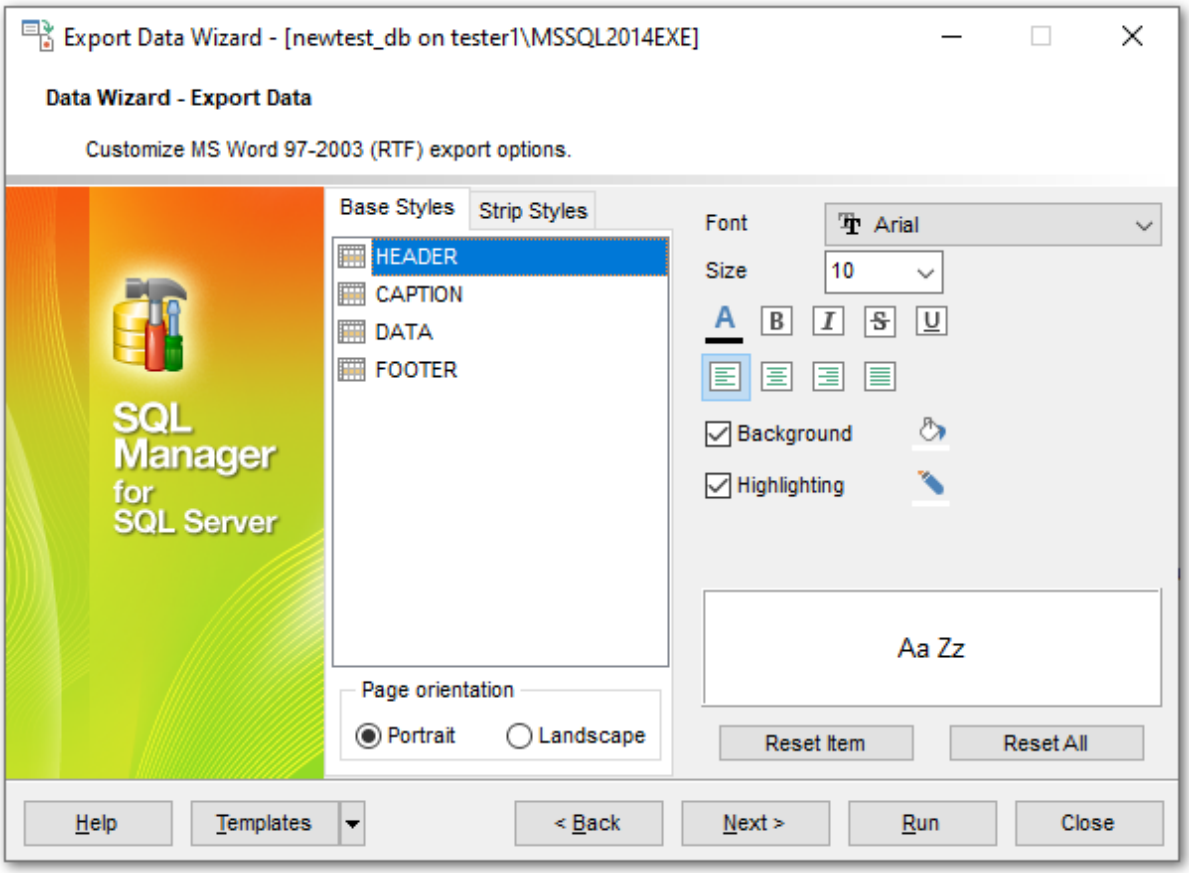
When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.3 Word 97-2003 / RTF options

This step allows you to set options for the target **MS Word** (**.doc*) and **Rich Text Format** (**.rtf*) files.

- Base Styles 559
- Strip Styles 560

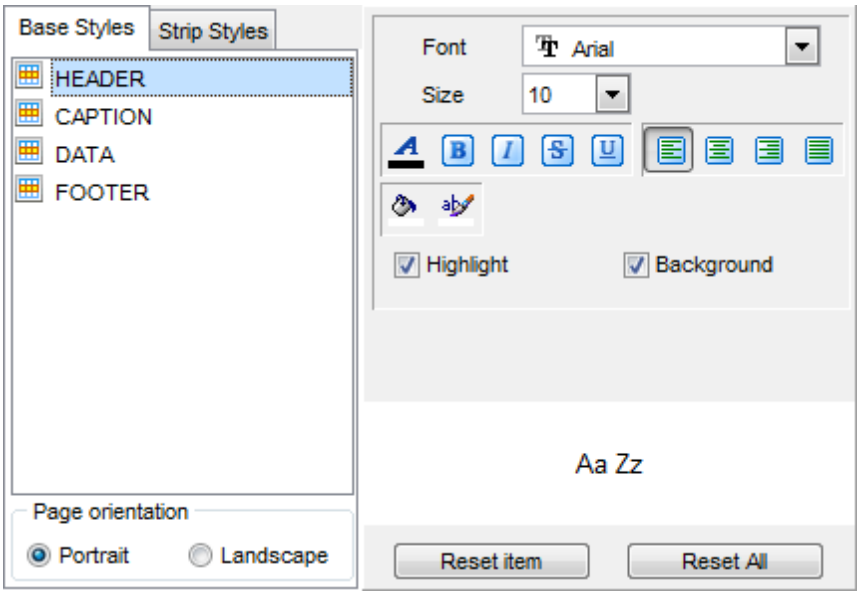
For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.



When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.3.1 Base Styles

The **Base Styles** tab contains the list of target file entities: *HEADER*, *CAPTION*, *DATA*, *FOOTER*. You can customize style options, such as *font* and *size*, *background* and *foreground colors*, *text alignment*, etc. for each of them by clicking the corresponding item in the list and setting the options in the right-side panel. You can also switch **page orientation** for the target Word/RTF file using this tab.



Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, *strikethrough* text, specify *horizontal align*.

☑ **Highlight**
Enables/disables text highlight.

☑ **Background**
Enables/disables background for text.

Press the button to set the background color for the text.
Press the button to set the highlight color for the text.

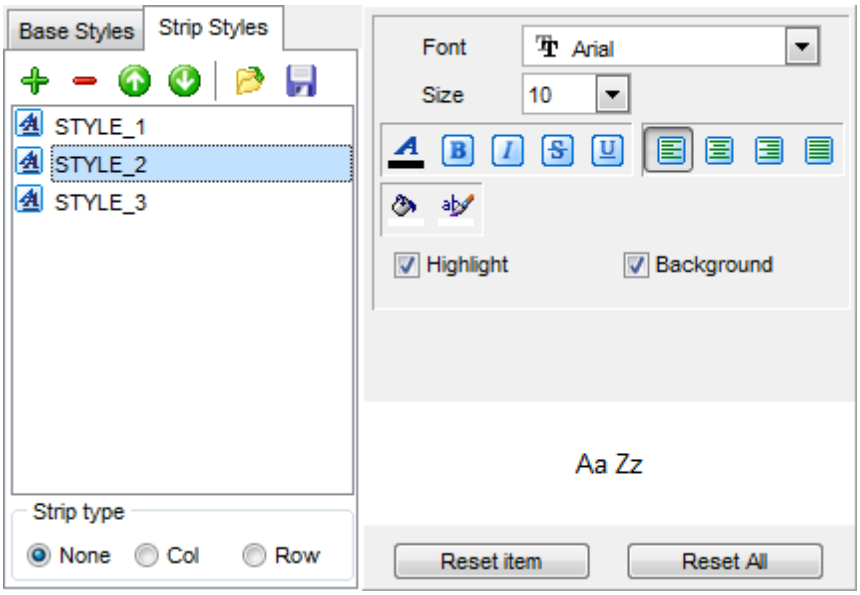
You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

8.1.5.3.2 Strip Styles

Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background* and *foreground colors*, *text alignment*, *highlight* and save them.

To add a style template, click the **Plus** button.
To delete a style template, select it and click the **Minus** button.
To reorder style templates in the list, use the buttons.
To load a style template, click the button.
To save the current style template, click the button.

If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).

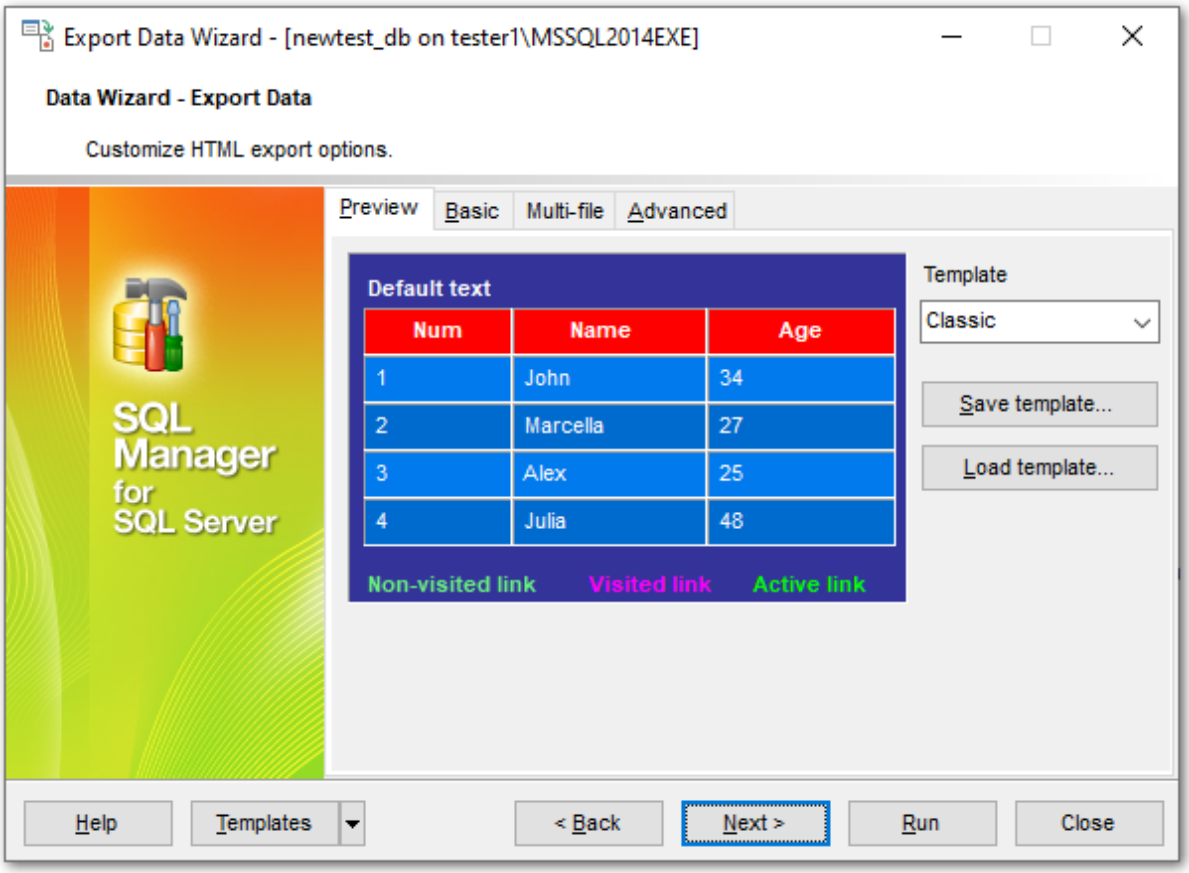


You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

8.1.5.4 HTML options

This step allows you to set options for the target **HTML** (**.html*) file.

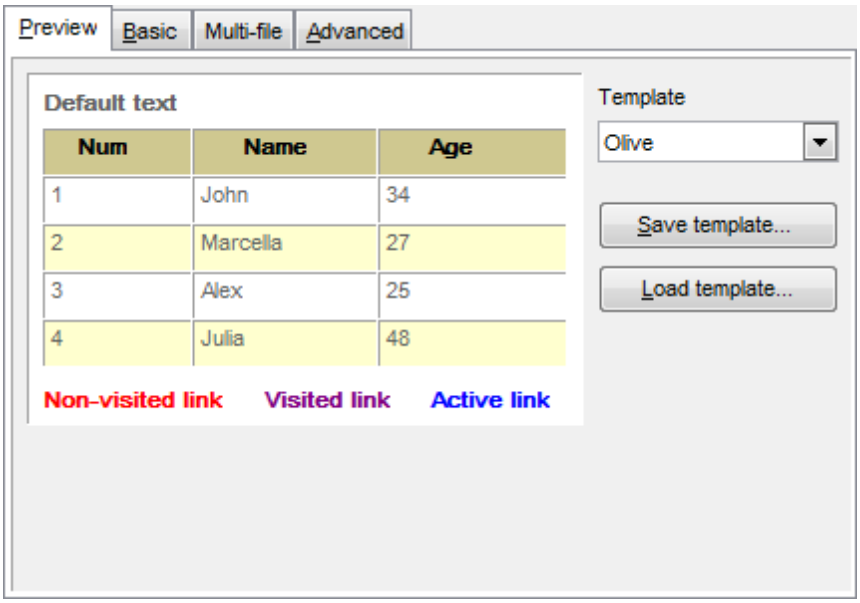
- Preview 562
- Basic 563
- Multi-file 564
- Advanced 565



When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.4.1 Preview

The **Preview** tab allows you to customize the style that will be applied to the target HTML file using a number of built-in templates provided in the **Templates** drop-down list.



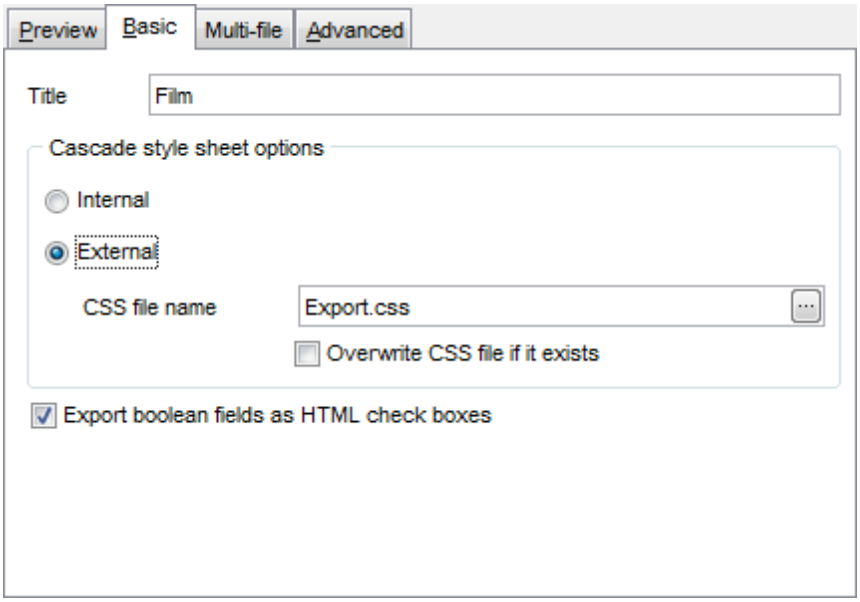
You can select any of the pre-defined templates and customize it by clicking objects in the preview panel, and save the settings as a custom template using the **Save template...** button. Use the **Load template...** button to load a previously saved custom template from your hard disk.

Click on an element of the table to select the color that will be applied for this element (*background*, *font*, *header row*, *odd row*, *even row*, *non-visited link*, *visited link*, *active link*).

8.1.5.4.2 Basic

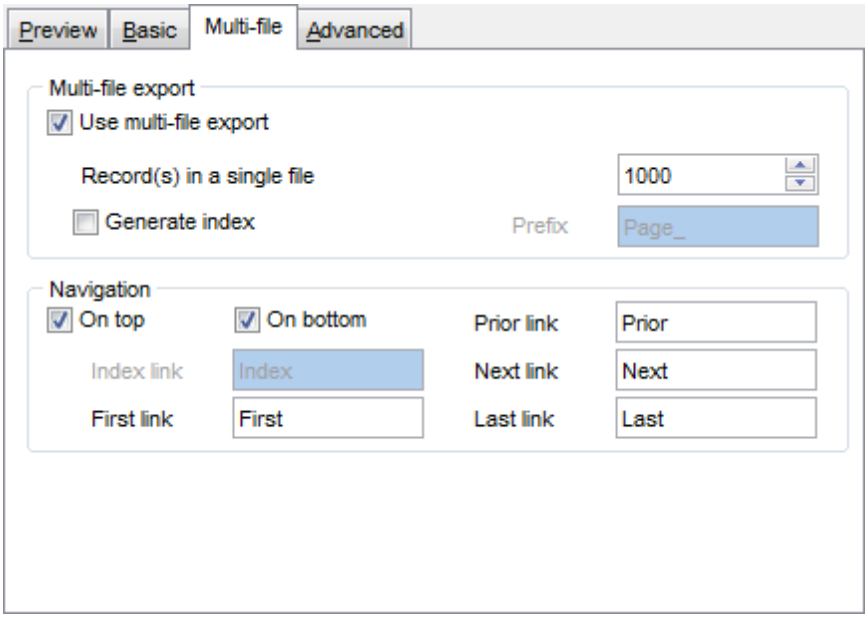
The **Basic** tab allows you to specify the basic parameters of target HTML file:

- specify the title of the result file;
- select whether the cascade style sheet (CSS) should be internal or external (the **Ellipsis** button to browse for a **.css* file);
- determine whether boolean fields of the table should be exported as HTML check boxes.



8.1.5.4.3 Multi-file

The **Multi-file** tab provides you with an ability to split the target HTML file into several separate files. This tab allows you to specify the *record count* for a single file, set an option *to generate an index HTML file*, and add an ability to navigate between the exported files.



Multi-file export

☑ **Use multi-file export**
Enables/disables the multi-file export feature.

Record(s) in a single file
Use the spinner control to specify the number of records to be exported into each of the files.

☑ **Generate index**
Specifies that an index file containing links to all the data files will be generated. Use the edit-box next to the checkbox to set a name for the index file.

Navigation
This group allows you to specify properties for navigation elements, i.e. the elements that provide quick access to pages of the multi-file document. Navigation is implemented as a set of hyperlinks.

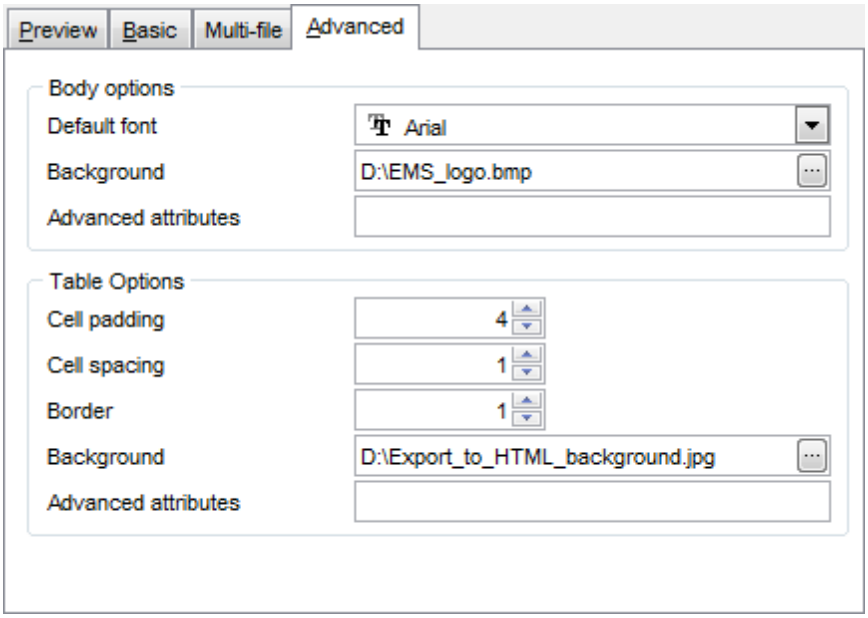
☑ **On top**
Specifies that the hyperlinks will be placed at the top of the page.

☑ **On bottom**
Specifies that the hyperlinks will be placed at the bottom of the page.

Use the **Index link**, **First link**, **Prior link**, **Next link** and **Last link** boxes to specify captions for the corresponding navigation elements.

8.1.5.4.4 Advanced

The **Advanced** tab allows you to set a number of advanced options to be applied to the result HTML file.



Body options

Default font

Use the drop-down list to select the font that will be used in the result file by default.

Background
If necessary, use the **Ellipsis** button to browse for a graphical file to be applied as the page background.

Table options

Use the spinner controls to specify common table options: **cell padding**, **cell spacing**, **border**.

Background
If necessary, use the **Ellipsis** button to browse for a graphical file to be applied as the table background.

It is also possible to define **advanced attributes** for both the HTML body and table.

8.1.5.5 PDF options

This step allows you to set options for the target **PDF** (**.pdf*) file.

Fonts
This group of options allows you to customize fonts for the *header*, *caption*, *data*, *footer* of the result file.

Use the **Base font name** and **Font encoding** drop-down lists to select the preferable font (*Helvetica*, *Courier*, *Times Roman*, etc.) and encoding (*Standard*, *WinANSI*, *MacRoman*, *PDFDoc*) respectively, and the **Font size** spinner control to specify the font size.

Click the **Font color...** button to select the color to be applied to the font.

For your convenience the preview illustrating the changes is displayed in the **Sample** area.

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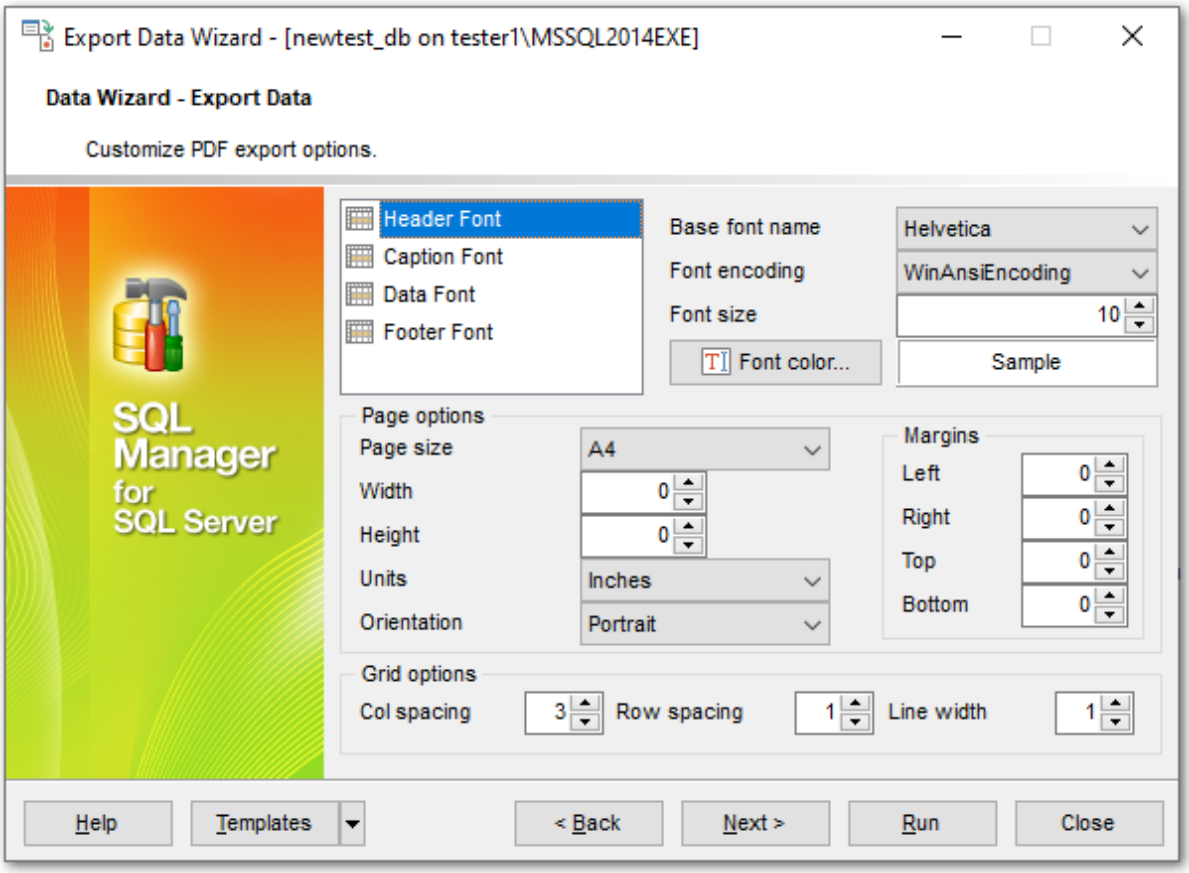


Page options

Use the **Page size** drop-down list to select one of the standard page formats (*Letter*, *Legal*, *A3*, *A4*, etc.).
Use the **Width** and **Height** spinner controls to specify the page *width* and *height* respectively.
Use the **Units** drop-down list to select the unit of measure that will be used in report settings: *inches*, *millimeters*, or *dots*.
Use the **Orientation** drop-down list to select the preferable page orientation: *portrait* or *landscape*.

Margins
Use the **Left**, **Right**, **Top**, **Bottom** spinner controls to specify the corresponding page margins for the output PDF file.

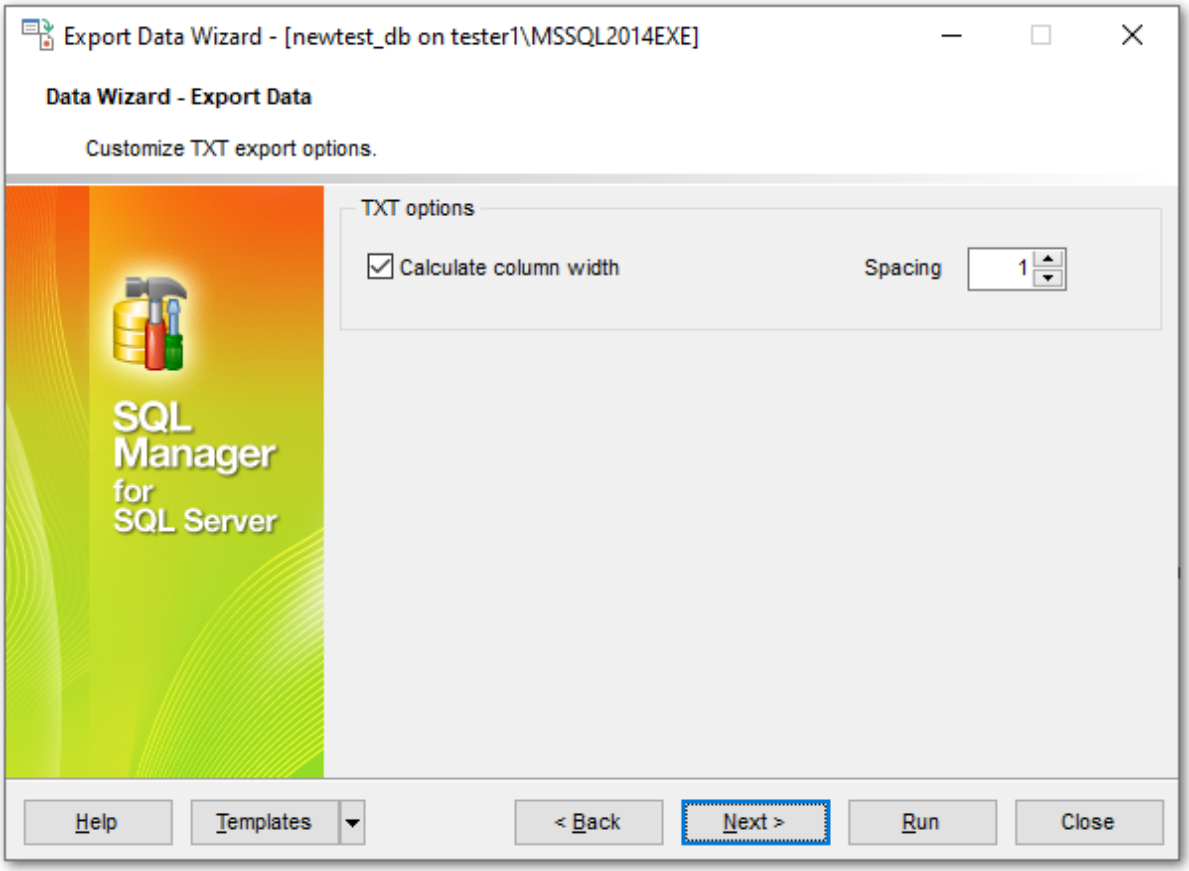
Grid options
Use the **Col spacing**, **Row spacing**, **Line width** spinner controls to specify spacing for grid columns, rows, and grid line width respectively.

When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.6 TXT options

This step allows you to set options for the target **text** (**.txt*) file.

Set the **Calculate column width** option on if you want each column of the target file to be adjusted to the maximum number of characters in it. The **Spacing** option specifies the number of spaces between columns in the target file.



When you are done, click the **Next** button to proceed to Setting common export options 574.

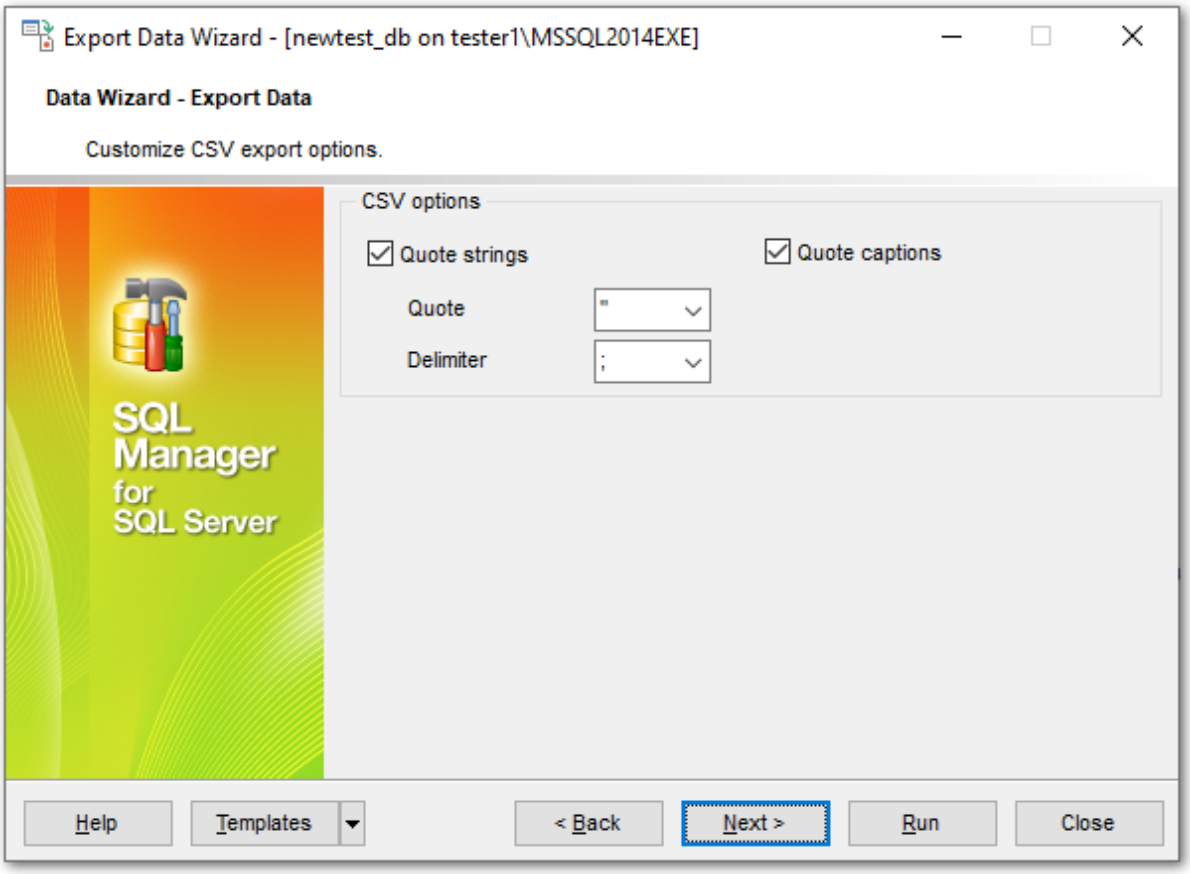
8.1.5.7 CSV options

This step allows you to set options for the target **CSV** (**.csv*) file.

☑ **Quote strings**
Check this option to apply quoting for string values in the target file.

☑ **Quote captions**
Check this option to apply quoting for captions in the target file.

Specify the column separator using the **Delimiter** drop-down list and the preferable quote character using the **Quote** drop-down list.



When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.8 XML options

This step allows you to set options for the target **XML** (**.xml*) file.

Specify XML document encoding in the **Encoding** edit box and set the **Standalone** option on if you intend to create a standalone XML document (*standalone="yes"*).

XML type
Select the type of the result XML document: *Datapacket 2.0* or *Access*.
Conversion between generic XML documents and documents of the *XML-Datapacket (CDS)* format can be performed with the help of XML Mapper by Borland®.

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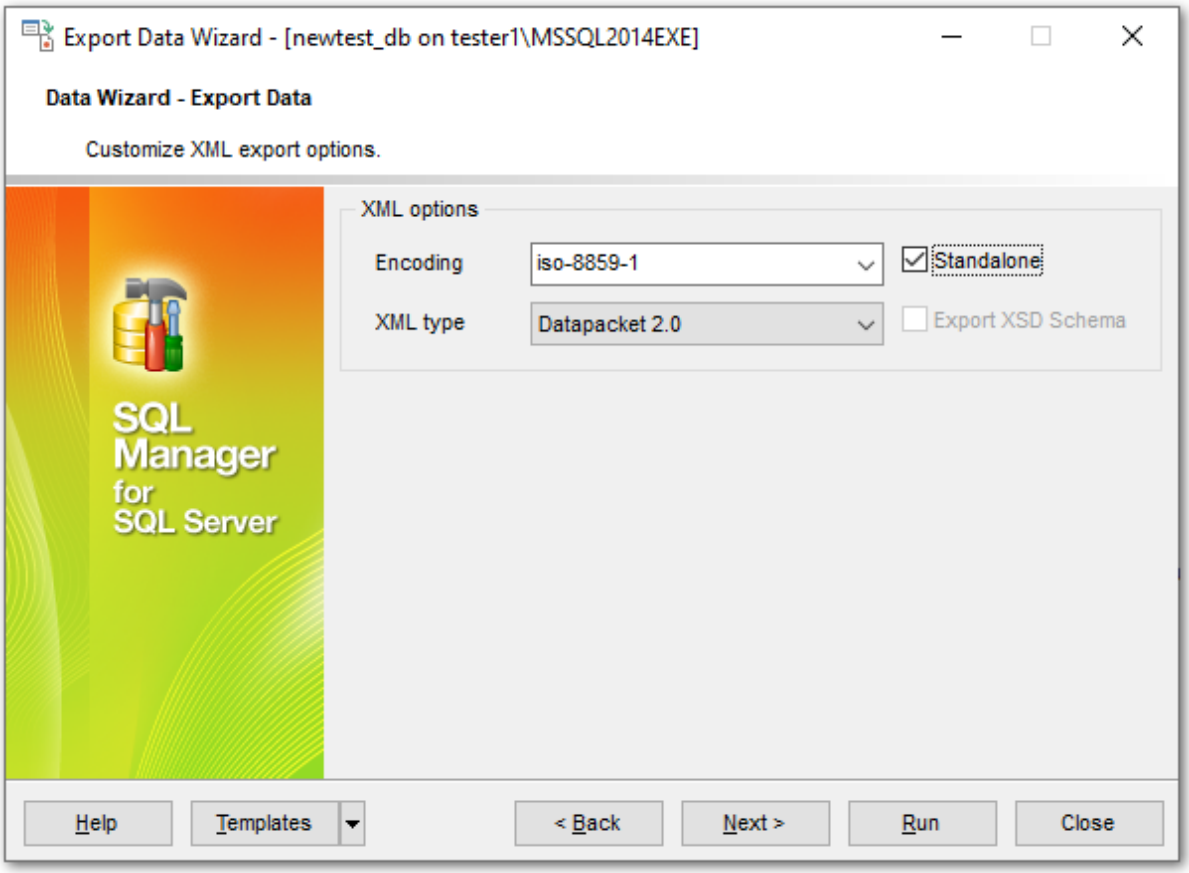


When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.9 MS Excel / ODS options

This step allows you to set options for the target **MS Excel 2007** (**.xlsx*) or **ODF Spreadsheets** (**.ods*) file.

Using the **Base Styles** tab you can set *font* and *border* options for all **elements** of the Excel 2007 / ODS sheet (*HEADER*, *CAPTION*, *DATA*, *FOOTER*). You can customize style options, such as *font* and *size*, *background* and *foreground colors*, *text alignment*, etc. for each of them by clicking the corresponding item in the list and setting the options in the right-side panel.

If necessary, you can also specify the **sheet name** for the target Excel 2007 / ODS file.

Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, specify *horizontal* and *vertical align*.

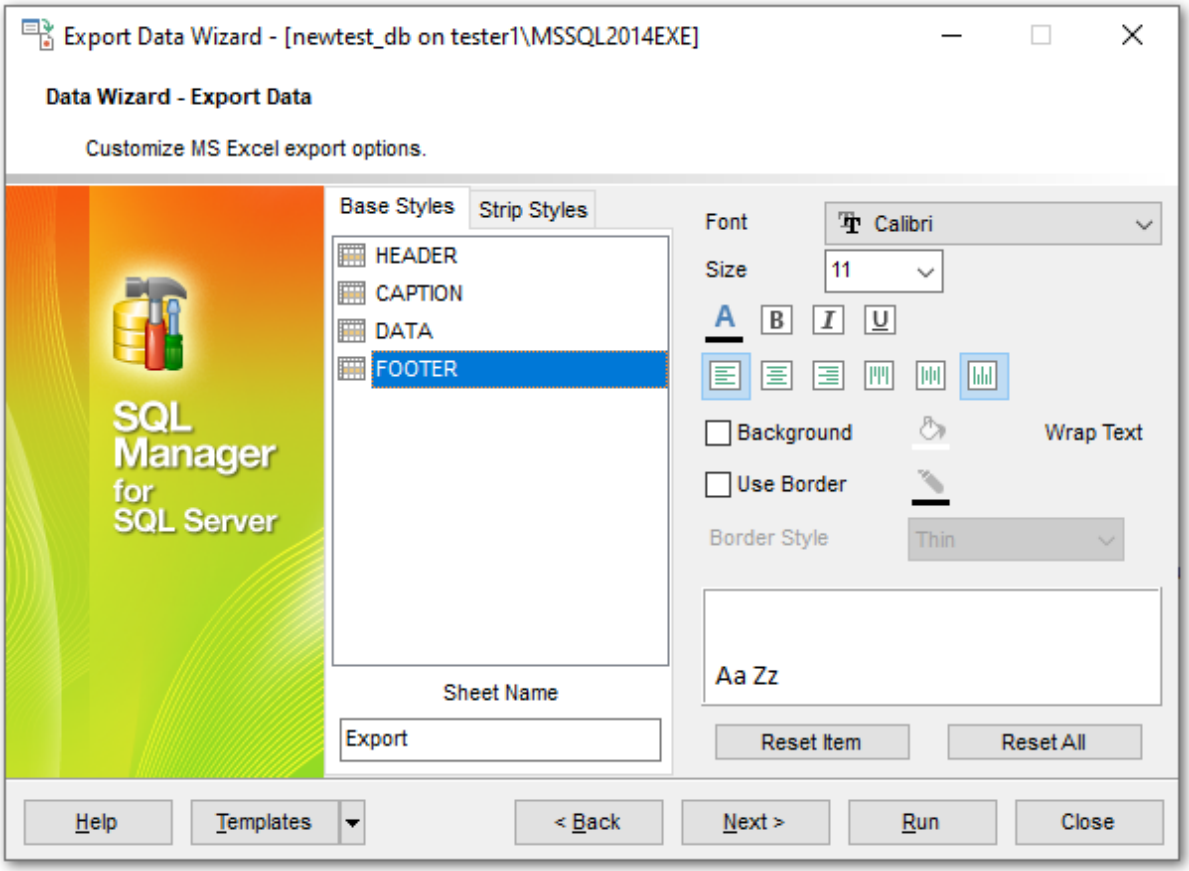
☑ **Background**
Enables/disables background for text.

Press the button to set the background color for the text.
Press the **Wrap Text** button to enable/disable the text wrapping feature.

Use border
Enables/disables borders in the output file.

Press the button to set the color to be applied to the borders.
Use the **Border Style** drop-down list to select the preferable style that will be used for borders (*thin*, *dashed*, *dashdot*, *dotted*, etc.).

For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.

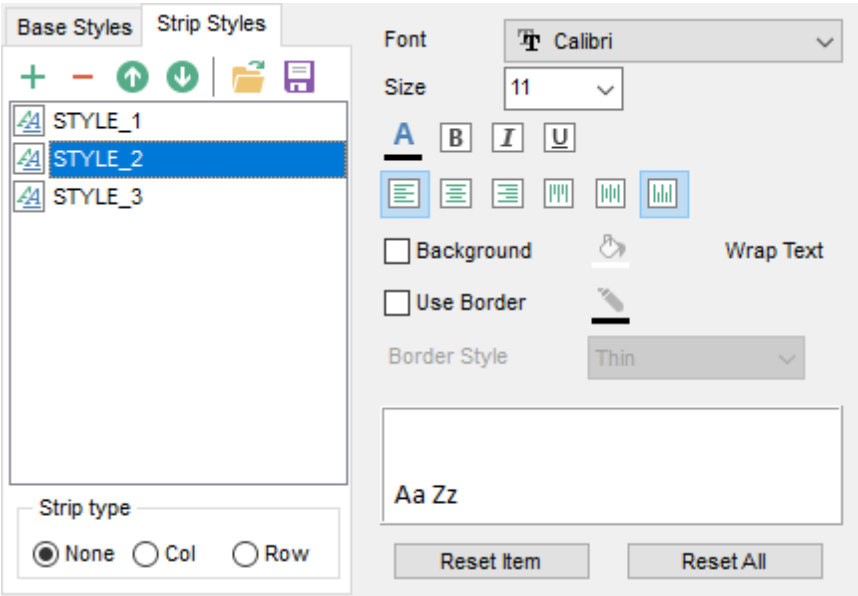


Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background color*, *text alignment*, *wrap text* options and save them.

To add a style template, click the **Plus** button.
To delete a style template, select it and click the **Minus** button.
To reorder style templates in the list, use the buttons.
To load a style template, click the button.
To save the current style template, click the button.

If you have created or loaded more than one style template, they can be ignored, or

used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).



You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.5.10 MS Word / ODT options

This step allows you to set options for the target **MS Word 2007** (**.docx*) or **ODF text** (**.odt*) file.

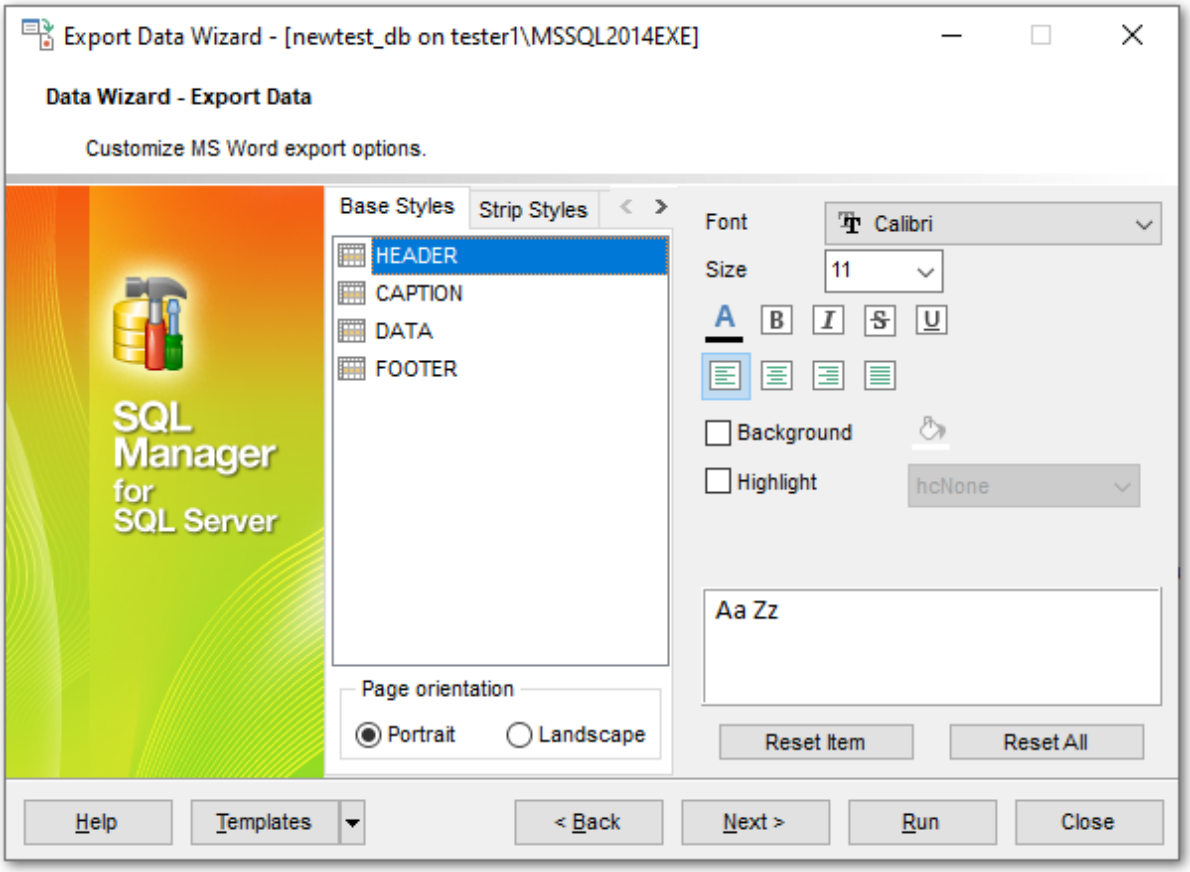
Using the **Base Styles** tab you can set *font* options for all **elements** of the Word 2007 / ODT document (*HEADER*, *CAPTION*, *DATA*, *FOOTER*). You can customize style options, such as *font* and *size*, *background* and *foreground colors*, *text alignment*, text *highlight*, etc. for each of them by clicking the corresponding item in the list and setting the options in the right-side panel.

Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, *strikethrough* text, specify *horizontal align*.

☑ **Background**
Enables/disables background for text.
Press the button to set the background color for the text.

☑ **Highlight**
Enables/disables text highlight.
If this option is enabled, you should select the preferable highlight color from the drop-down list.

For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.



Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background color*, *text alignment*, *highlight* options and save them.

To add a style template, click the **Plus** button.
To delete a style template, select it and click the **Minus** button.
To reorder style templates in the list, use the buttons.
To load a style template, click the button.
To save the current style template, click the button.

If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).

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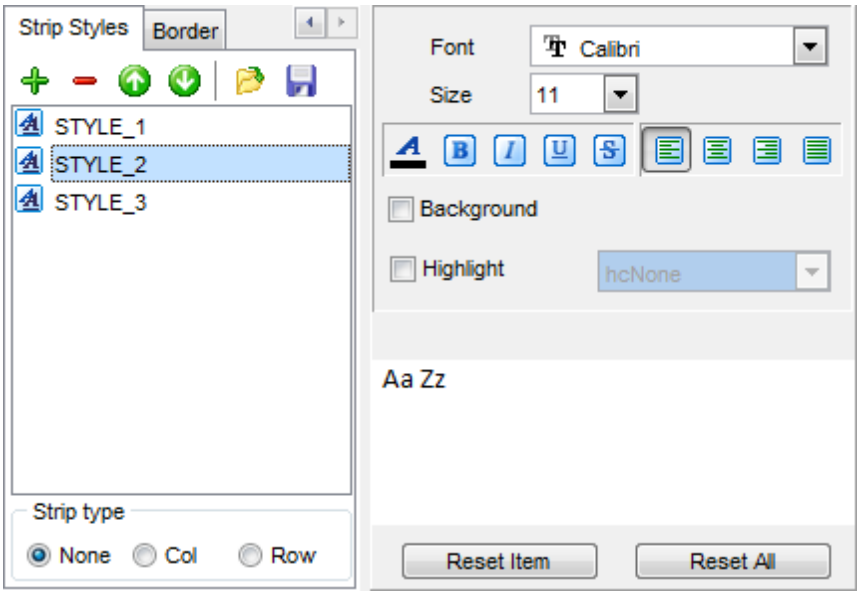
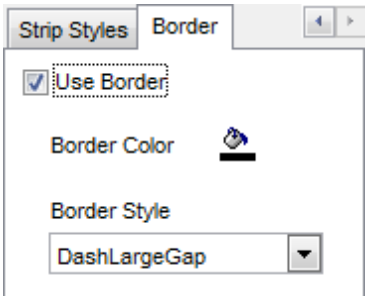


You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

Using the **Border** tab you can enable borders in the result Word 2007 / ODT document and customize them.

☑ **Use border**
Enables/disables borders in the output file.

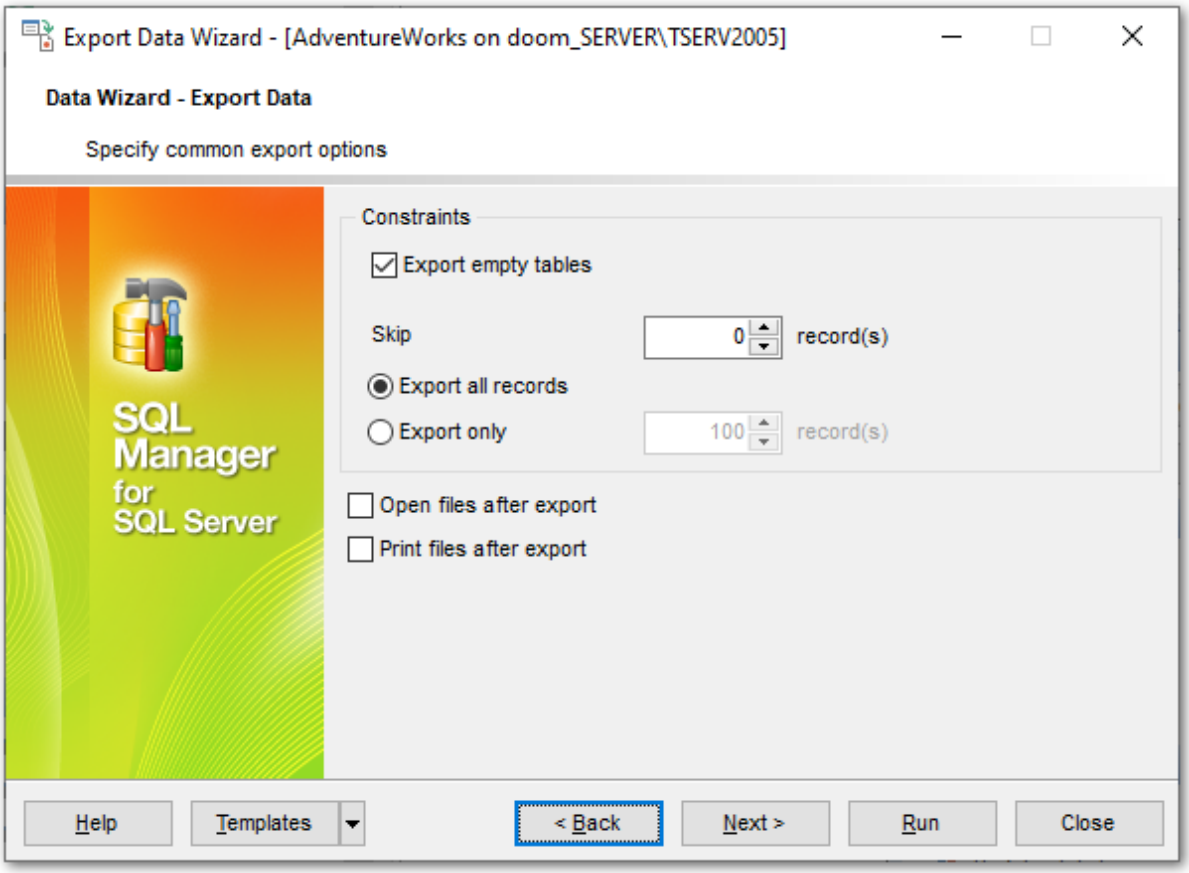
Press the button to set the color to be applied to the borders.
Use the **Border Style** drop-down list to select the preferable style that will be used for borders (*single*, *thick*, *double*, *hairline*, etc.).



When you are done, click the **Next** button to proceed to Setting common export options 574.

8.1.6 Setting common export options

Use this step of the wizard to set common export options. The detailed description of these options is given below.



Export empty tables
If checked, you can export the table even if it does not contain any data.

Skip ... record(s)
Specifies the number of records to be skipped before export starts.

Export all records
Specifies that all records of the table will be exported.

Export only ... record(s)
Specifies the number of records to be exported.

Open files after export
If this option is checked, the result file will be opened with the currently associated program after the export operation is completed.

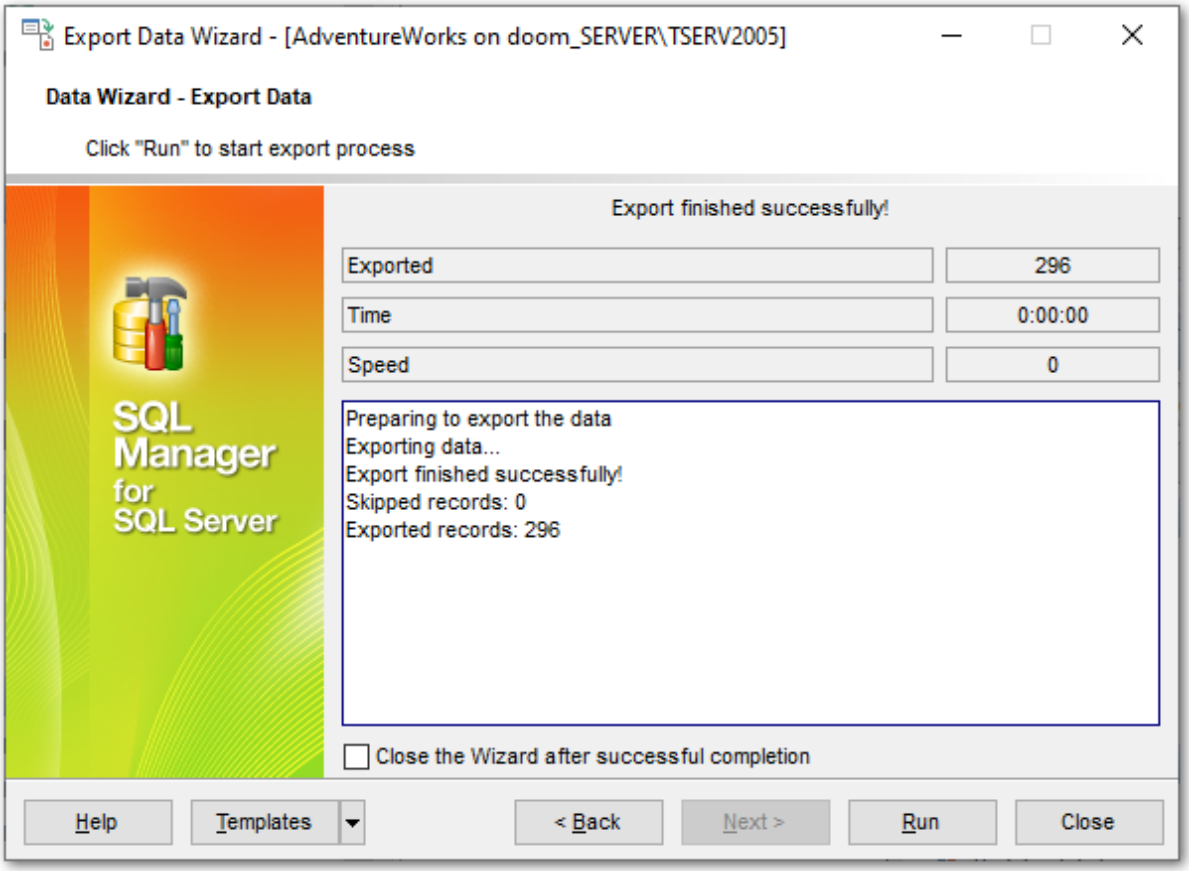
Print files after export
If this option is checked, the result file will be sent to the default printer after the export operation is completed.

When you are done, click the **Next** button to proceed to the last step 576 of the wizard.

8.1.7 Exporting data

This step of the wizard is intended to inform you that all export options have been set, and you can start the export process.

The log area allows you to view the log of operations and errors (if any).



☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the export process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to run the export process.

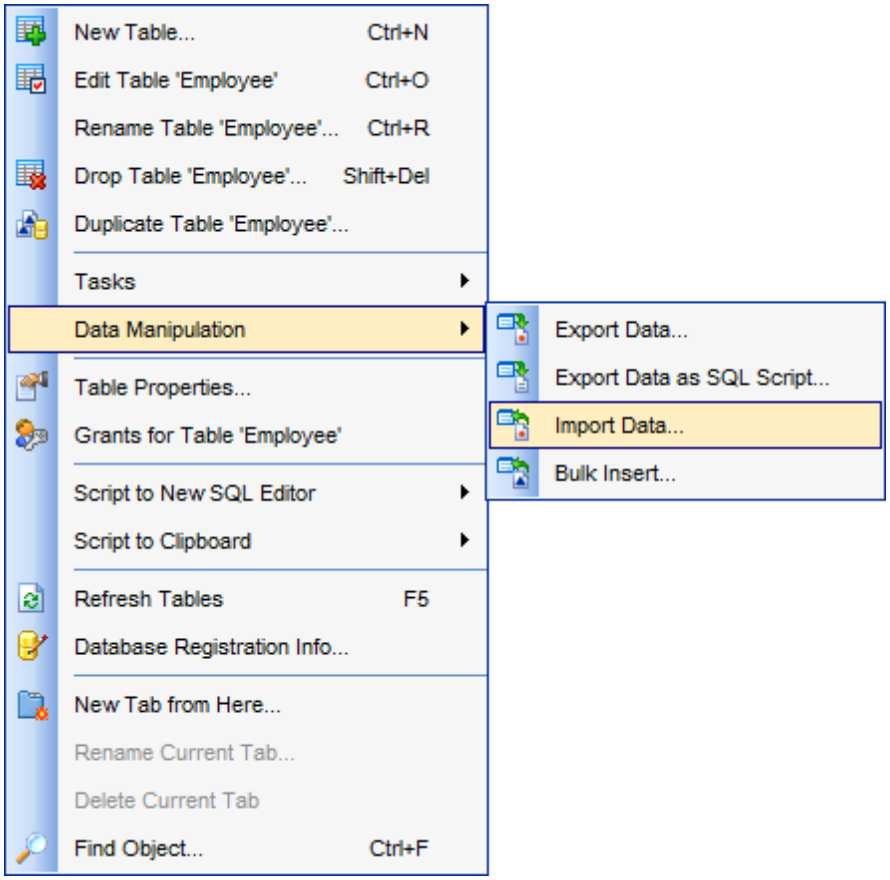
After the operation is completed, you can view the number of *exported* records, elapsed *time*, estimated export *speed*, and the *log* of operations and errors (if any).

8.2 Import Data Wizard

Import Data Wizard allows you to import data to a table 196 / view 250 from any of supported formats (*MS Excel*, *MS Access*, *DBF*, *XML*, *TXT*, *CSV*, *HTML*, *MS Excel 2007*, *MS Word 2007*, *ODF*). You can save your settings as a template 970 any time for future use.

To start the wizard, right-click the table/view in DB Explorer 65, select the **Data Manipulation** context menu 57 group and proceed to the **Import Data...** item within this group.

Alternatively, you can open the **Data** tab of Table Editor 204 / View Editor 250, right-click the grid 471 there, then select the **Data Manipulation** context menu 475 group and proceed to the **Import Data to <object_name>...** item within this group, or use the **Import Data** item of the Navigation bar 951.



- Setting source file name and format 578
- Selecting the source to import data from 579
- Setting correspondence between the source and target columns 580
- Adjusting common data formats 590
- Setting advanced column formats 591
- Setting import mode and data write type 593
- Customizing common import options 596
- Importing data 598

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Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

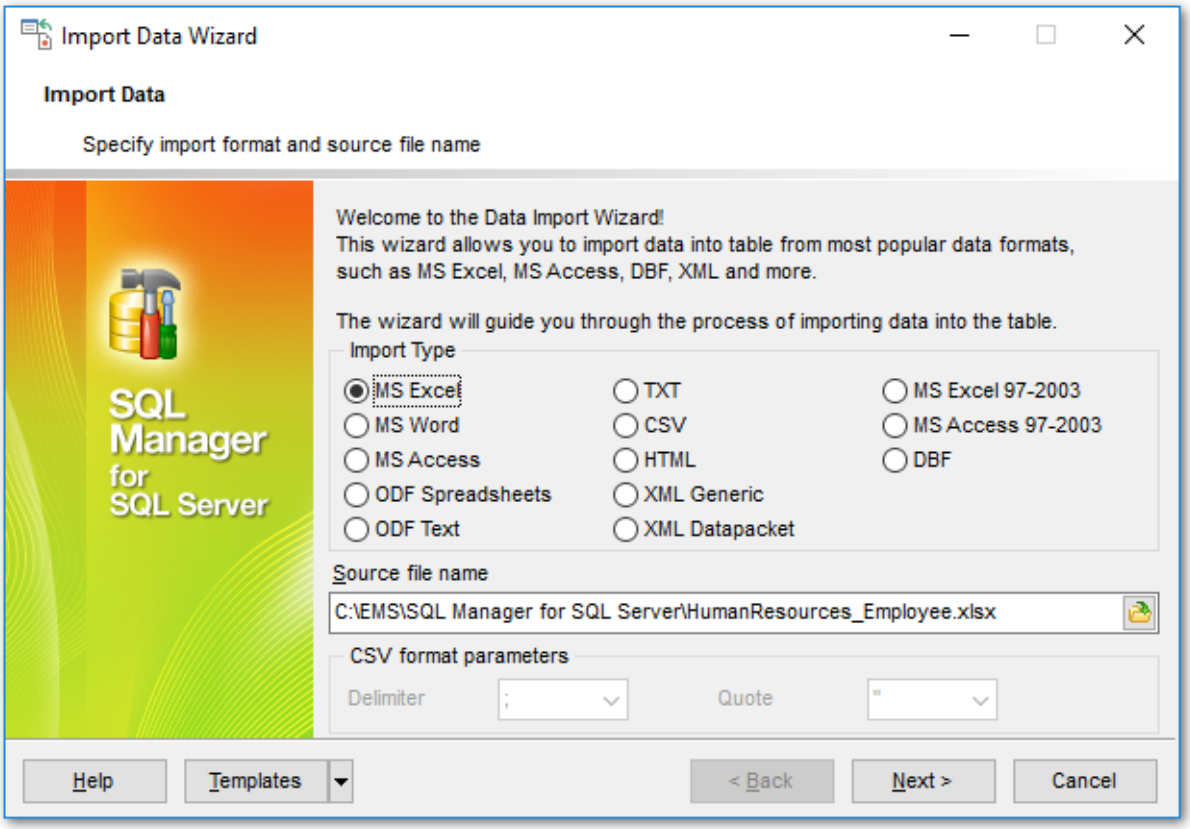
Export Data Wizard 537
Export as SQL Script 599
Bulk Insert Wizard 608
Using templates 970

8.2.1 Selecting source file name and format

This step of the wizard allows you to select the source file format you need to import data from.

Source file name

Type in or use the button to specify the path to the file using the **Open file...** dialog. The file name extension changes automatically according to the selected **Import Type**.



Import Type
Specify the format of the source file. For details refer to Supported file formats 971.

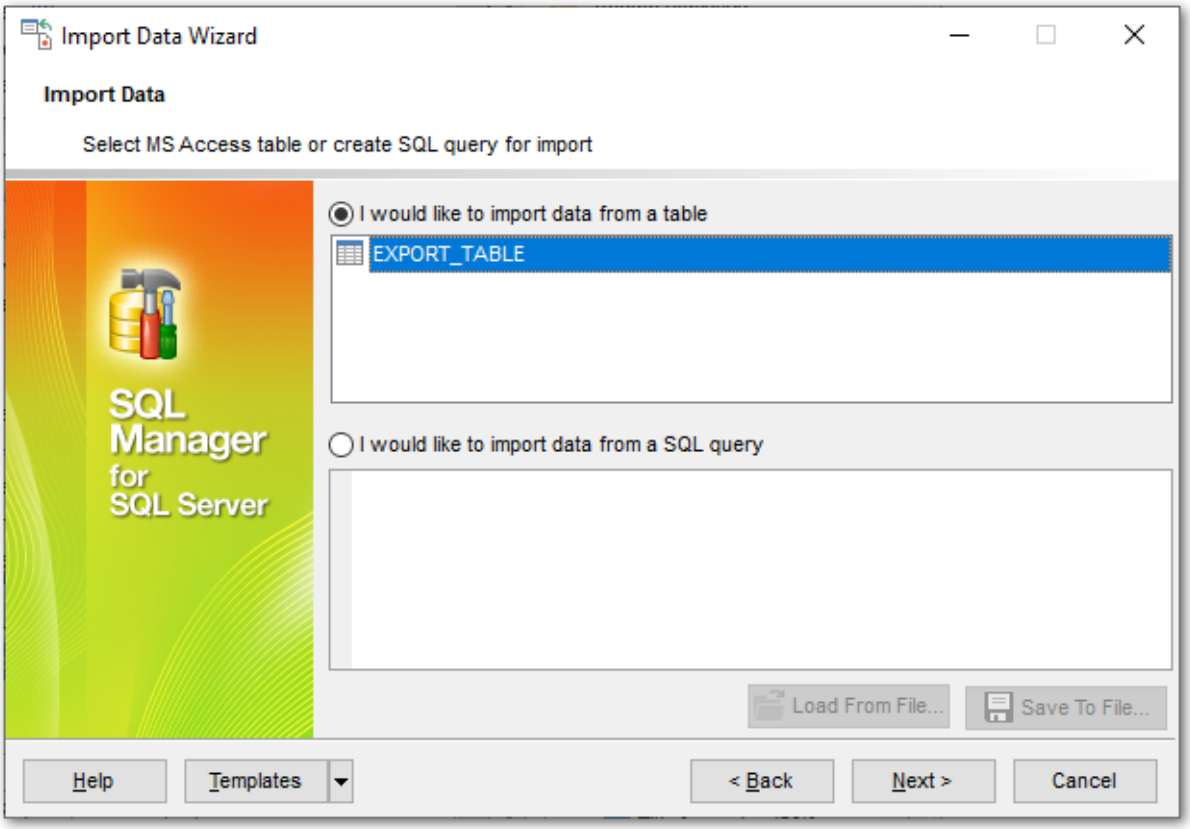
CSV format parameters
For CSV 585 import you should define **Delimiter** and **Quote** settings using the corresponding drop-down lists.

Click the **Next** button to proceed to the Setting columns correspondence 580 step or to the Selecting data source 579 step of the wizard if you have selected **MS Access** as the source file format.

8.2.2 Selecting data source

This step of the wizard is only available when you are importing data from *MS Access*. Select a **table** from the table list or input a **query** in the corresponding text boxes to specify the data source.

If you choose a query as the data source, you also can load a SQL query from a **.sql* file or save the current query text to a file using the **Load from File...** and the **Save to File...** buttons correspondingly.



Click the **Next** button to proceed to the Setting columns correspondence 580 step of the wizard.

8.2.3 Setting columns correspondence

This step of the wizard allows you **to set correspondence** between columns of the source file and columns of the target SQL Server table.

- MS Excel 97-2003 580
- MS Access / DBF / XML Datapacket 583
- TXT 584
- CSV 585
- HTML 586
- XML Generic 588
- MS Excel / Word, ODF 589

To get more information about the file formats, see the Supported file formats 971 page.

8.2.3.1 Excel 97-2003

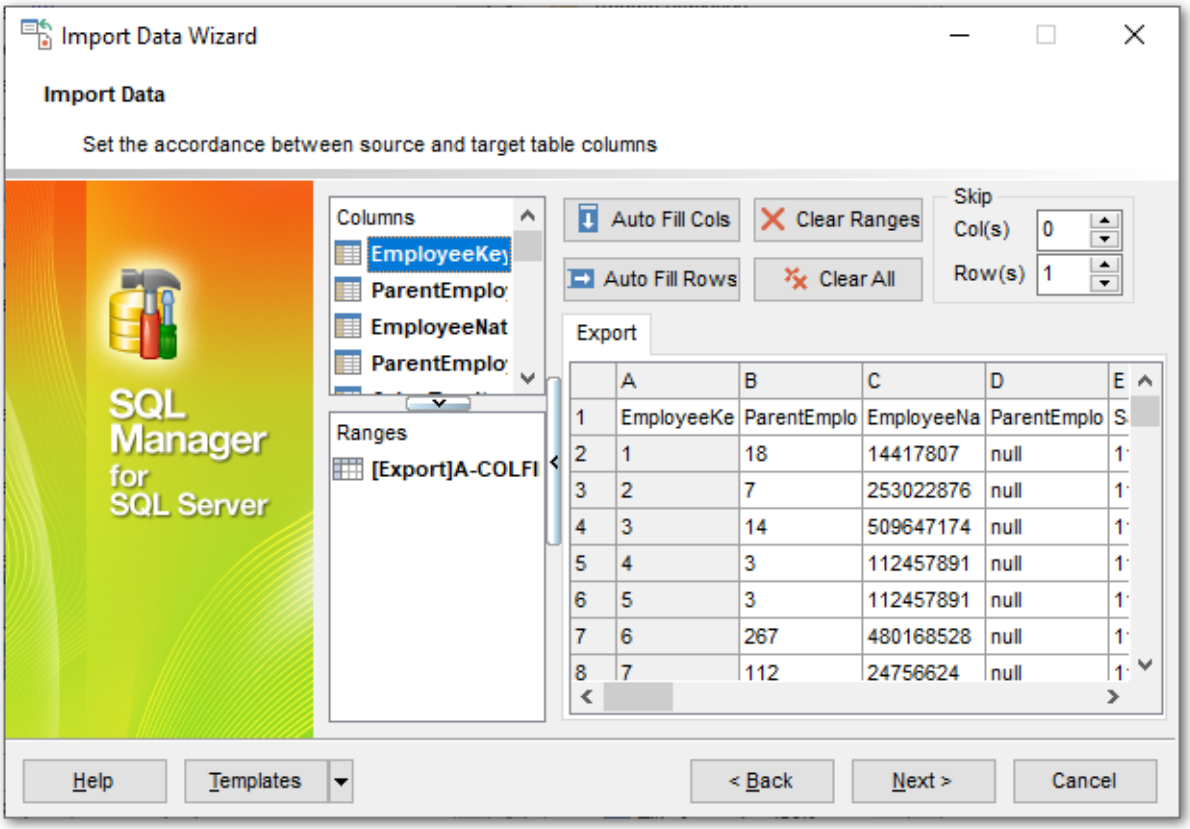
Specify ranges in the grid for the target and source columns:

- select a column of the target SQL Server table in the **Columns** list;
- proceed to the **Sheet** grid: click a column caption to select the whole column or click the row number to select the whole row;

- the selected column/row of the source file gets green highlight, and a new range indicating the source and target columns correspondence appears in the **Ranges** list;
- repeat the operation for all the columns you need to be included in the import process.

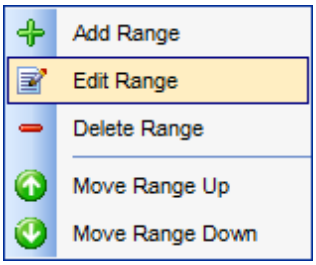
If the source Excel file and the destination SQL Server table have the same order of columns or rows, you can use the **Auto Fill Cols** or the **Auto Fill Rows** buttons to set correspondence between them automatically.

If necessary, you can choose to **skip** a defined number of the source file columns and/or rows using the **Col(s)** and **Row(s)** spinner controls of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).



To clear ranges for a column, select the column in the Columns list and press the **Clear Ranges** button.
To clear all ranges specified for the target table columns, press the **Clear All** button.

Right-click a range in the **Ranges** list to call its popup menu. Using the popup menu you can *add* or *edit* ranges manually, *remove* them or change their *order*.



The **Range** dialog allows you to edit the data range for import manually.

Range Type
Use the drop-down list to select whether a *column*, a *row*, or a *cell* of the source Excel file will be mapped to the target table column.
Depending on the selected range type you should specify the column (e.g. *B*), the row (e.g. *2*) or the cell (e.g. *A2*).

Start / **Finish**
These groups allow you to set the precise data range for import: select **Where data started** / **finished** or use the spinner control to specify the **start**/**finish row** (or **start**/**finish column**).

Direction
Use this group to select the direction for importing data of the specified range: *Down* or *Up*.

Sheet
Use this group to define whether the specified range will be taken from the **default** Excel sheet or from a **custom** sheet (select **sheet number** or **sheet name** using the corresponding drop-down lists).

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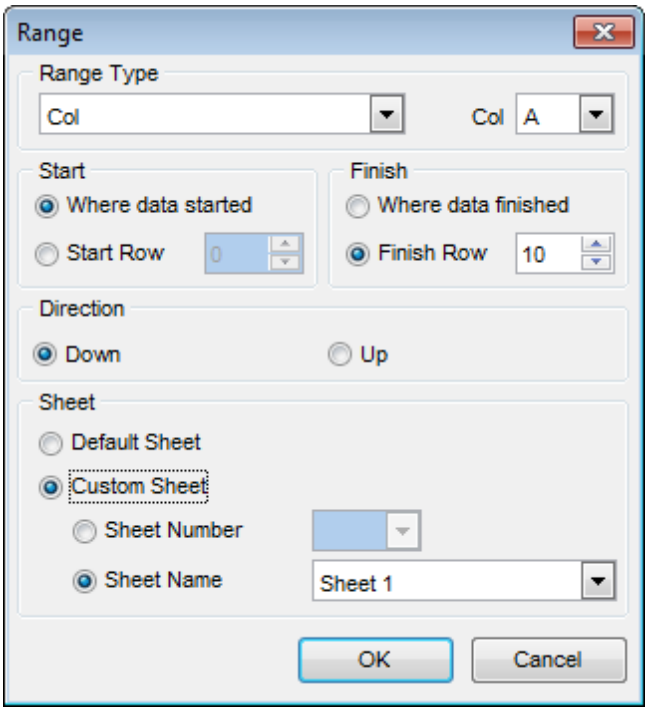


Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

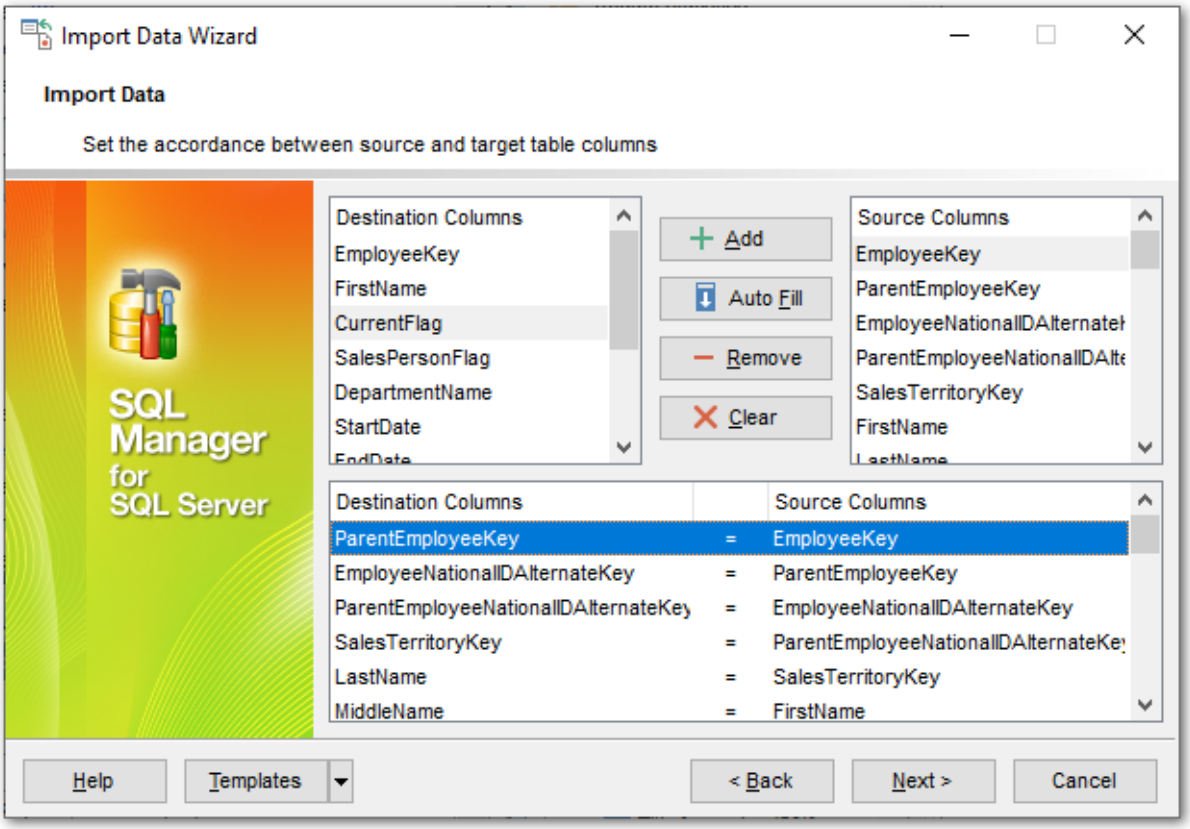
8.2.3.2 Access/DBF/XML Datapacket

Set correspondence between the source MS Access columns and the target SQL Server table columns:

- select a column of the target SQL Server table in the **Destination Columns** list;
- select the corresponding column of the source MS Access table in the **Source Columns** list;
- click the **Add** button to set correspondence between the selected columns;
- the pair of columns appears in the list below;
- repeat the operation for all the columns you need to be included in the import process.

Use the **Auto Fill** button to set correspondence between the source and target columns automatically on the basis of their order.

When importing data from a DBF file, the additional **Skip deleted records** option appears. Selecting this checkbox allows you to skip records marked for deletion.



To remove a correspondence, select the pair of columns in the list below and press the **Remove** button.
To remove all correspondences, press the **Clear** button.

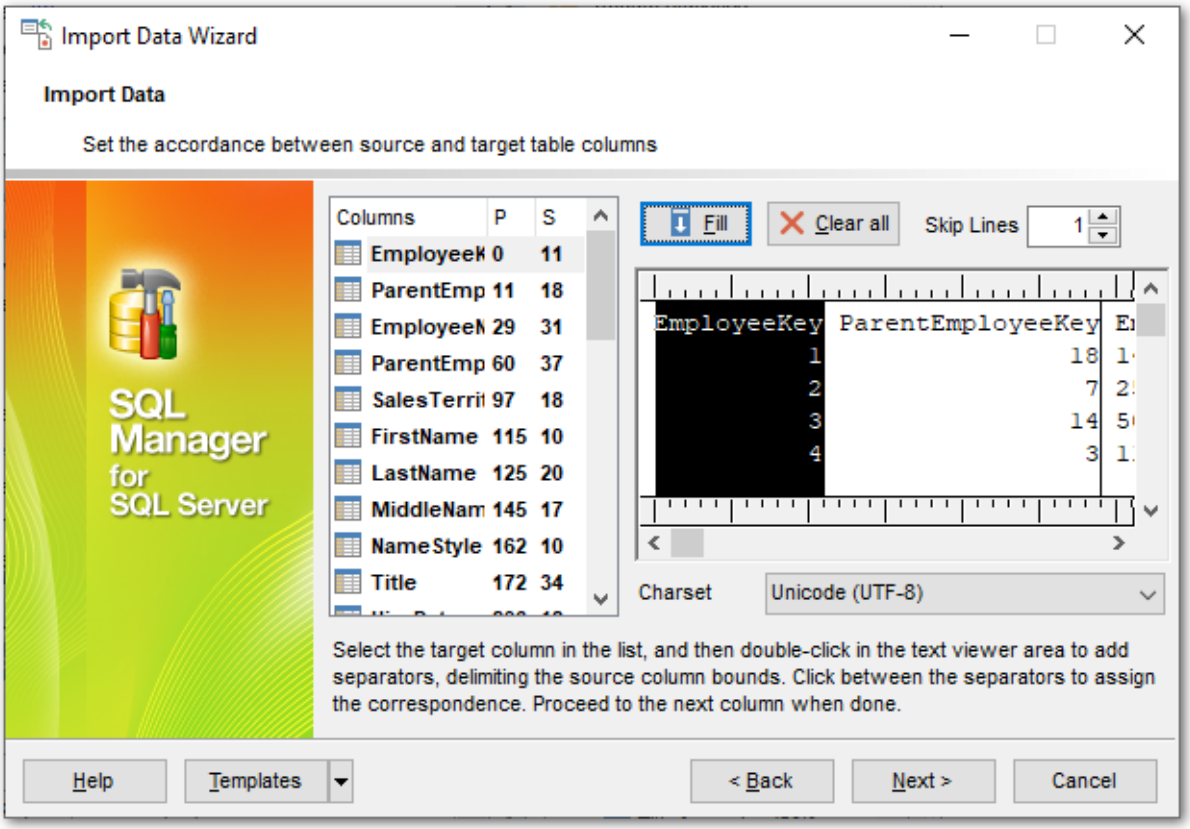
Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

8.2.3.3 TXT

Set correspondence between the source text file columns and the target SQL Server table columns:

- select a column of the target SQL Server table in the **Columns** list;
- double-click in the text viewer area to add vertical separators delimiting the source column bounds;
- click the area between the separators to assign the column to the selected target table column - the selected source column gets black highlight;
- repeat the operation for all the columns you need to be included in the import process.

If necessary, you can choose to **skip** a defined number of the source file lines using the **Skip Lines** spinner control (e.g. if you need to exclude column headers from the imported data range).



To clear all correspondences, press the ✖ **Clear** button.

Note: if you cannot see the content of the source text file properly, you should select the appropriate Charset to be used for processing data.

Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

8.2.3.4 CSV

Set correspondence between the target table columns and the source CSV file columns:

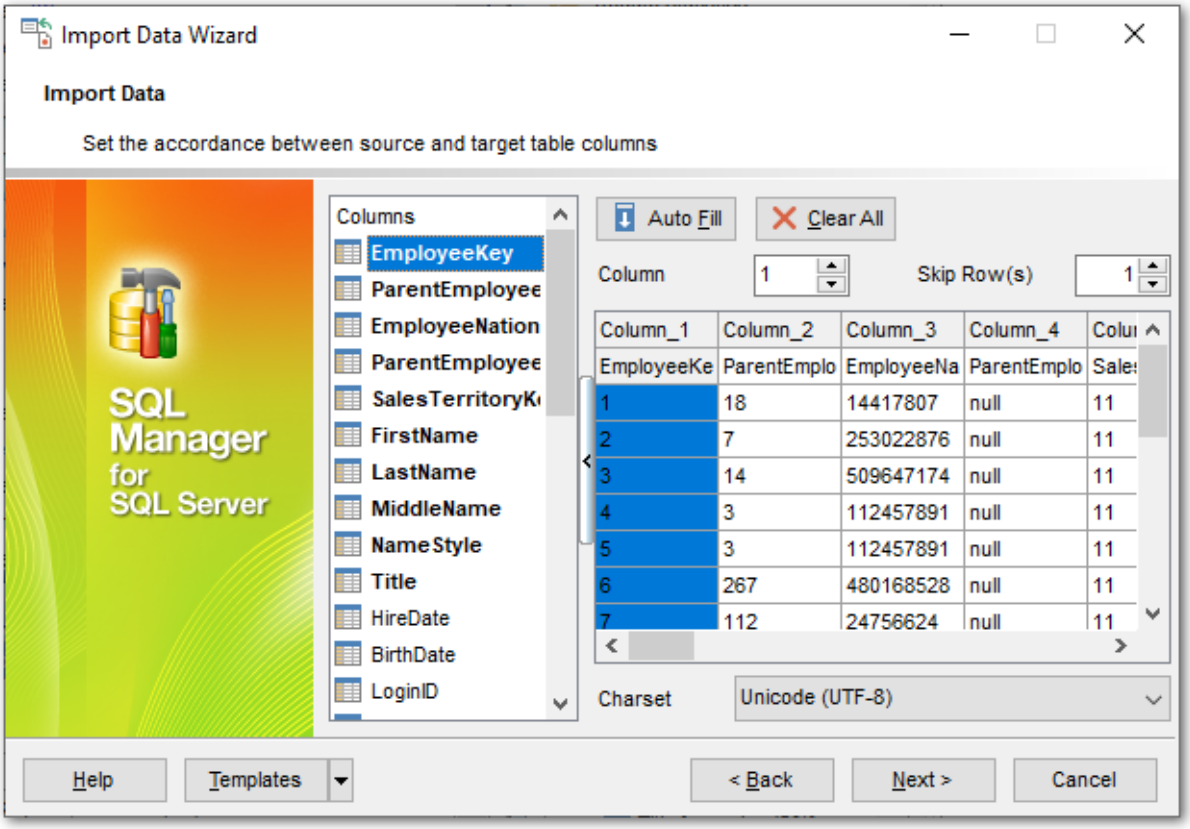
- select a column of the target SQL Server table in the **Columns** list;
- proceed to the source grid viewer area: click a caption to assign the column to the selected target table column;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the columns you need to be included in the import process.

If the source CSV file and the destination SQL Server table have the same order of columns, you can use the **Auto Fill** button to set correspondence between them automatically.

Note that the CSV delimiter is specified at the Selecting source file name and format 578 step of the wizard.

The **Col(s)** control indicates the currently selected source file column. You can also use this spinner control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file rows using the **Row(s)** spinner control of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).



To remove a correspondence, select the column in the **Columns** list and press the ✖ **Clear** button.

Note: if you cannot see the content of the source text file properly, you should select the appropriate **Charset** to be used for processing data.

Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

8.2.3.5 HTML

Set correspondence between the target table columns and the source HTML file columns:

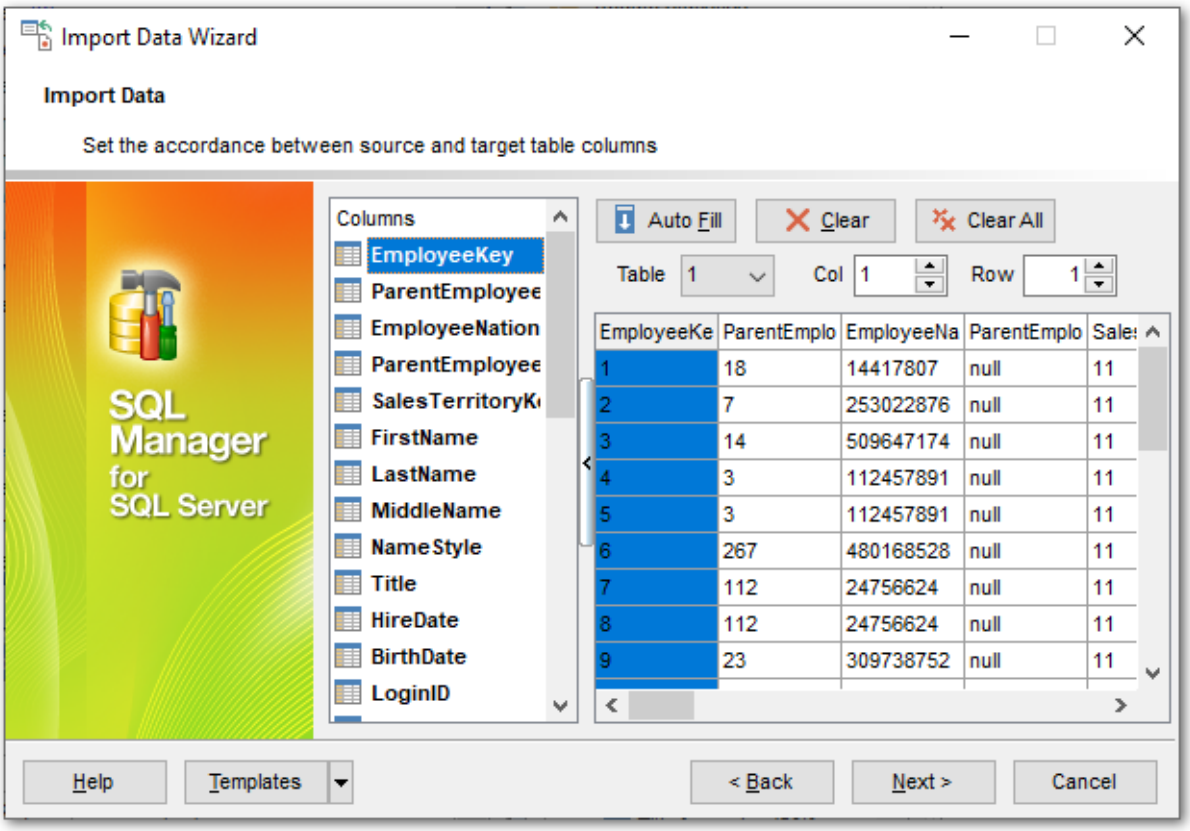
- select a column of the target SQL Server table in the **Columns** list;
- proceed to the source grid viewer area: select the **Table** from which you intend to import data and click a column to assign the column to the selected target table column;

- the selected column of the source file gets gray highlight;
- repeat the operation for all the columns you need to be included in the import process.

If the source HTML file and the destination SQL Server table have the same order of columns, you can use the **Auto Fill** button to set correspondence between them automatically.

The **Col** control indicates the currently selected source file column. You can also use this spinner control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file rows using the **Row** spinner control of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).



To remove a correspondence, select the column in the **Columns** list and press the **Clear** button.
To remove all correspondences, press the **Clear All** button.

Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

8.2.3.6 XML Generic

In order to set mapping of a Generic XML document, you should enter the relative **XPath** (the path must be specified in the XPath format). Press the **Fill Grid** button to get the grid filled with text and attribute values of the selected node.

Note: if the source XML document contains huge amount of data, building the tree may take a long time.

Set correspondence between the source XML file columns and the target SQL Server table columns:

- select a column of the target SQL Server table in the **Columns** list;
- proceed to the source grid viewer area: click a column to assign the column to the selected target table column;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the columns you need to be included in the import process.

You can use the **Auto Fill** button to set correspondence between the source and target columns automatically according to their order (mapping is started from the first attribute value in this case).

The **Col(s)** control indicates the currently selected source file column. You can also use this spinner control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file lines using the **Row(s)** spinner control of the **Skip** group (e.g. if you need to exclude node headers from the imported data range).

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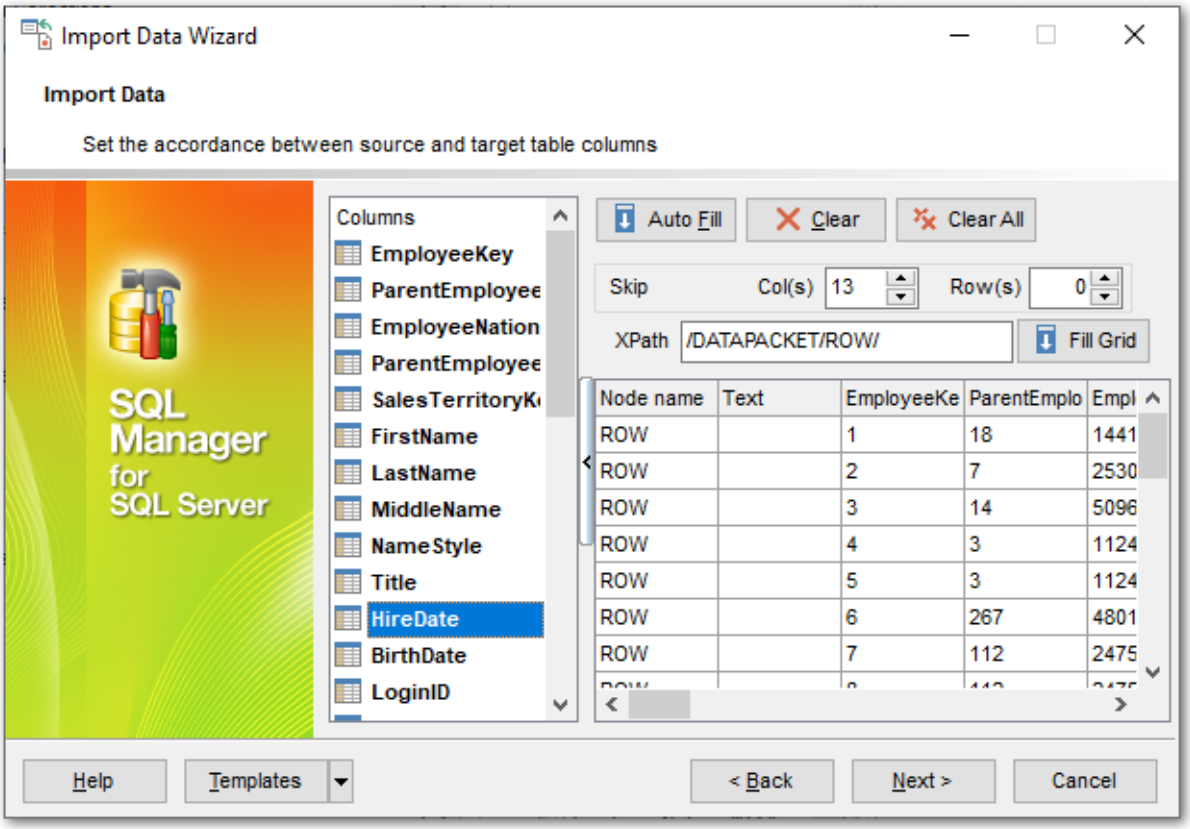


To remove a correspondence, select the column in the **Columns** list and press the ✖ **Clear** button.
To remove all correspondences, press the **Clear All** button.

Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

8.2.3.7 MS Excel/Word, ODF

Specify ranges in the grid for the target and source columns:

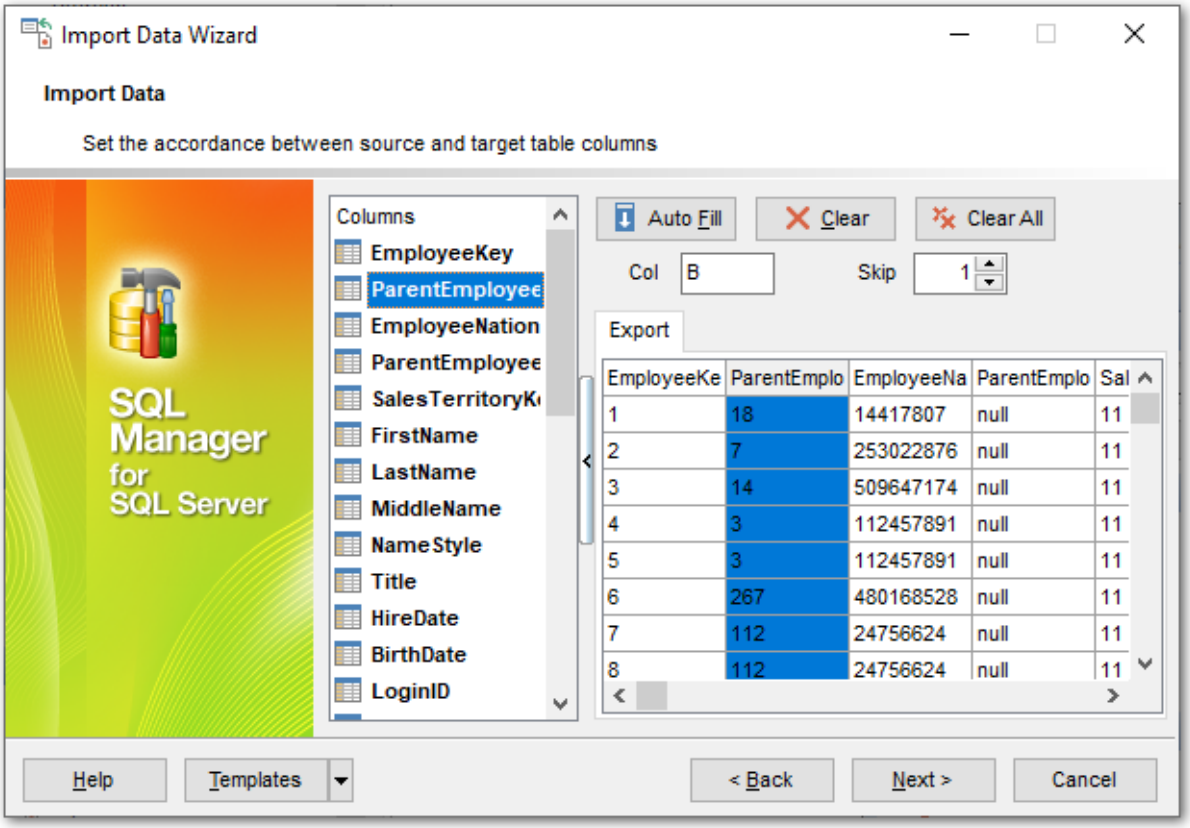
- select a column of the target SQL Server table in the **Columns** list;
- proceed to the **Sheet** grid: click a column to assign the column to the selected target table column;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the columns you need to be included in the import process.

If the source file and the tiodestination SQL Server table have the same order of columns, you can use the **Auto Fill** button to set correspondence between them automatically.

The **Col** control indicates the currently selected source file column. You can also use this control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file rows using the

Skip spinner control (e.g. if you need to exclude column headers from the imported data range).



To remove a correspondence, select the column in the Columns list and press the **Clear** button.
To remove all correspondences, press the **Clear All** button.

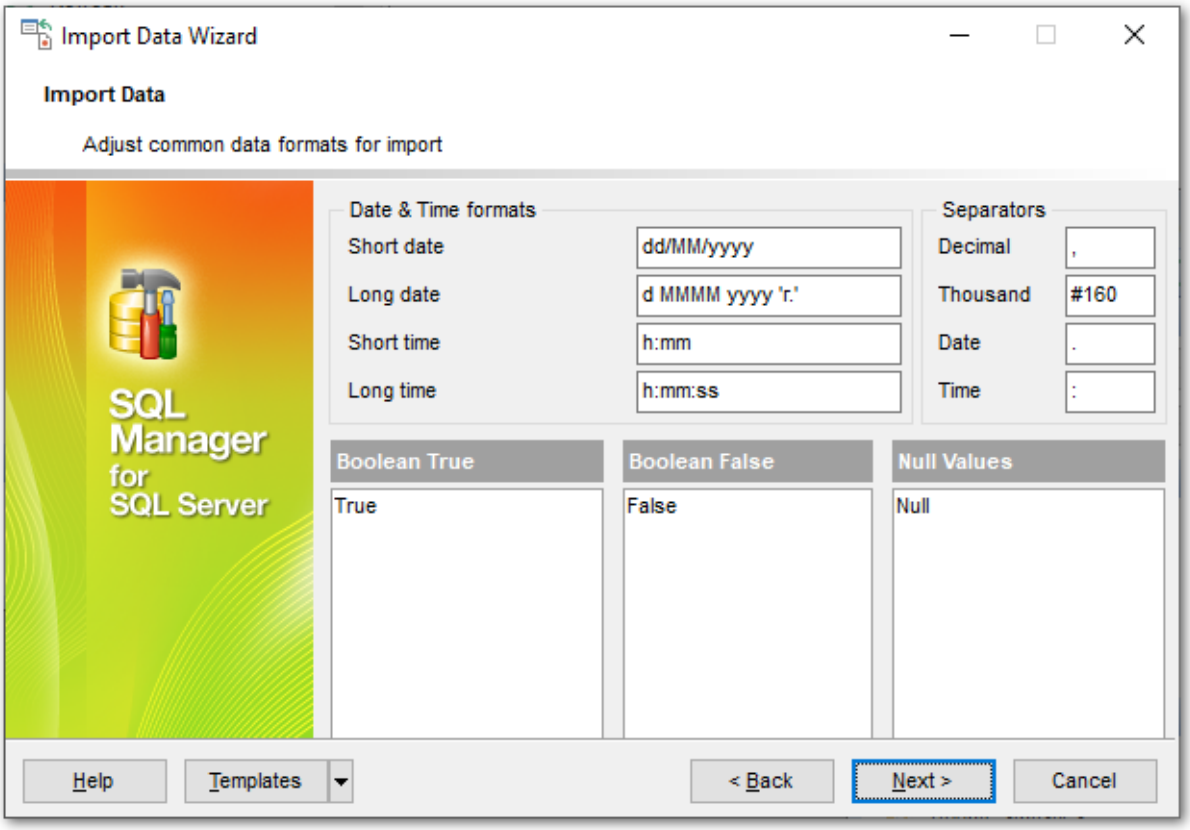
Click the **Next** button to proceed to the Adjusting data formats 590 step of the wizard.

8.2.4 Adjusting data formats

This step of the wizard provides a number of options for setting common formats for all imported data:

Date & Time formats: *Short date*, *Long date*, *Short time*, *Long time*;
Separators: *Decimal*, *Thousand*, *Date*, *Time*;
Boolean True (specify the text that will be displayed for the boolean *TRUE* values);
Boolean False (specify the text that will be displayed for the boolean *FALSE* values);
NULL values (specify the text that will be displayed for the *NULL* values).

For more information refer to the Format specifiers 966 page.

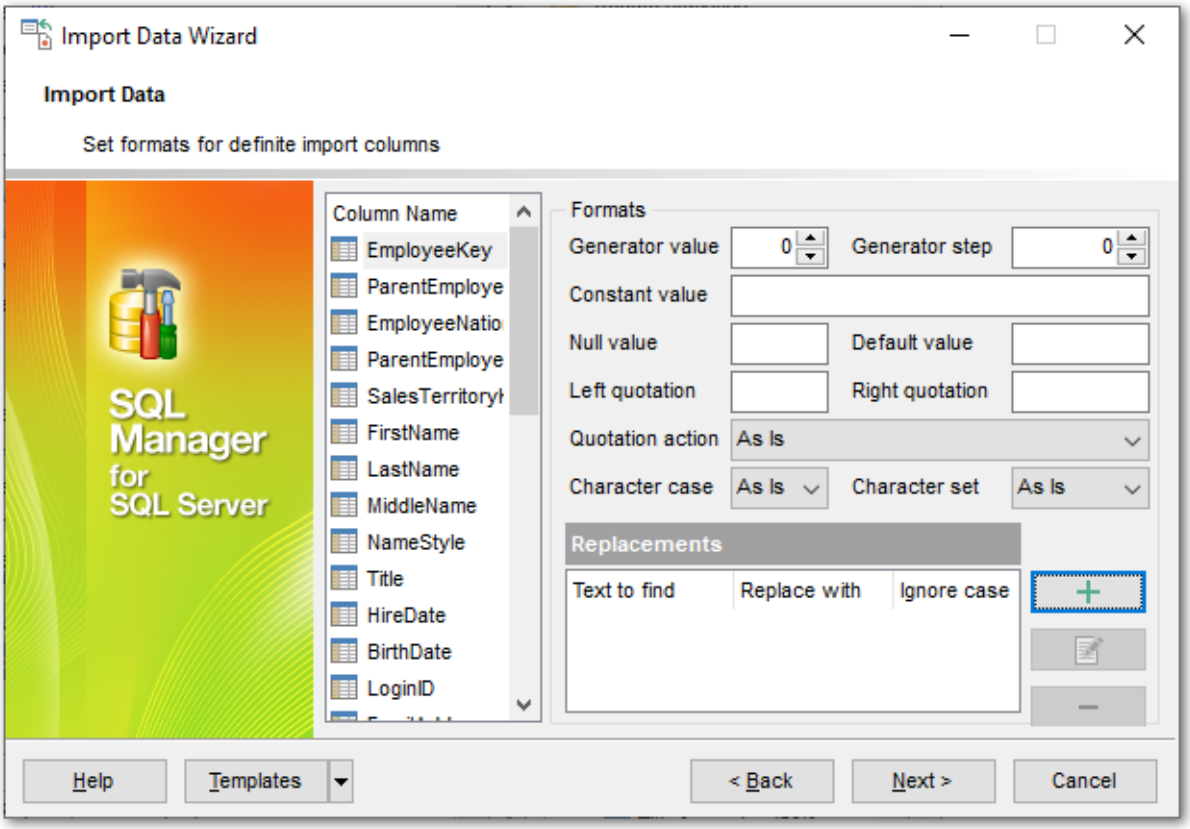


Click the **Next** button to proceed to the Setting advanced column formats 591 step of the wizard.

8.2.5 Setting advanced column formats

This step of the wizard allows you to set **formats** each column separately.

Select a column in the list and adjust **format options** that will be applied to this column only.



Specify **Generator value** and **Generator step** for incremental data generation into the specified column, or enter a **Constant value** which will be set for all records in the field.

Specify the **NULL value** which will be used for the records where the value is NULL.

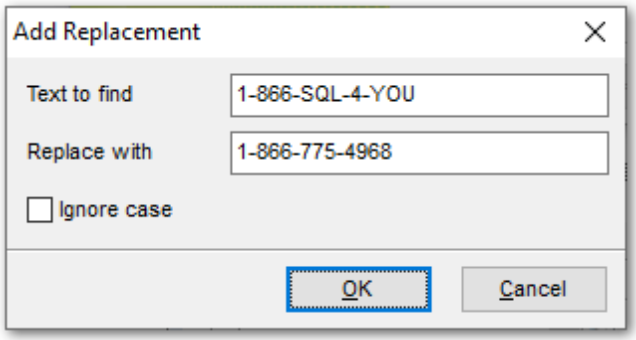
If necessary, specify the **default value**.

Use the **Left** / **Right quotation** edit boxes to specify left/right quotation marks.
Use the **Quotation action** drop-down list to select whether the quotation marks should be *added*, *removed*, or left *'As is'*.

Use the **Character case** drop-down list to select the case that will be used for string values of the column: *Upper*, *Lower*, *UpperFirst*, *UpperFirstWord*, or *'As is'*.

Use the **Character set** drop-down list to select which charset will be used for string data in the column: *ANSI*, *OEM*, or *As is*.

The **Replacements** area allows you to set the text you need to be replaced during data import into the selected column. Press the **Plus** button to specify a new replacement options using the **Add Replacement** dialog.



To edit a replacement, click the **Edit** button.
To remove a replacement, click the **Minus** button.

When you are done, click the **Next** button to proceed to the Setting import mode 593 step of the wizard.

8.2.6 Setting import mode

This step of the wizard allows you to define the records processing mode as *Insert All*, *Insert New*, *Update*, *Update or Insert*, *Delete*, *Delete or Insert* mode:

- **Insert all**: all records from the source file are inserted into the tables irrespective of whether any records exist in the destination table or not
- **Insert new**: already existing records are skipped, and new records are inserted into the destination table
- **Update**: all existing records are updated from the source file
- **Update or insert**: already existing records are updated and new records are inserted into the destination table
- **Delete**: already existing records are deleted
- **Delete or insert**: existing records are deleted and new records are inserted into the destination table

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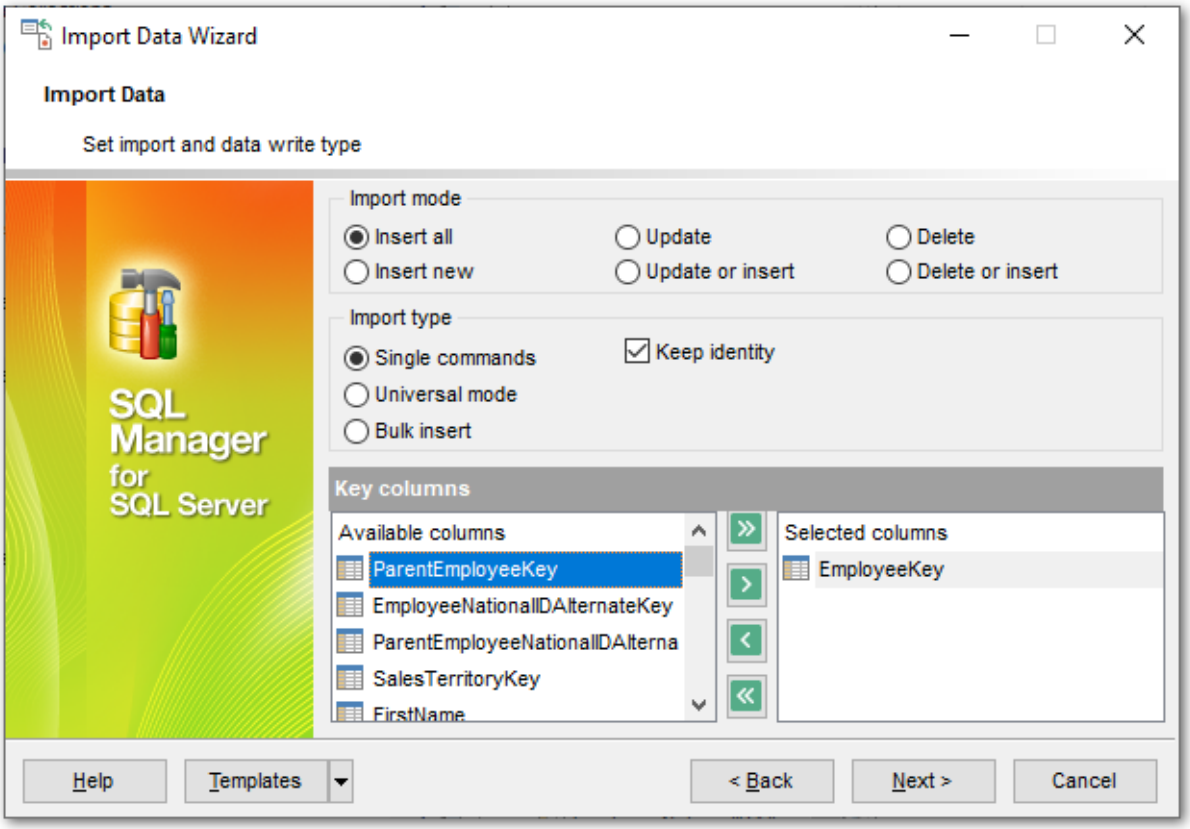

Here is an **example** of some import modes offered by Import Data Wizard:

All import modes (except for the **Insert All** mode) are based on key values information. In order to perform import operations with these modes used, you need to have matches between the source file key column(s) and the destination table key column(s).
For example, your source file contains three rows with the key values *1*, *2*, *3*, and your destination table contains three rows with the key values *1*, *2*, *4*.

Destination table

ID	DATA
1	a
2	b
4	f

Source file data

	A	B
1	1	c
2	2	d
3	3	e

If you use the **Insert new** import mode, in this case only the row with key value *3* will be inserted into the destination table.
If you use the **Update** import mode, then the rows with key values *1*, *2* will be updated.
If you use the **Update or insert** import mode, then rows *1*, *2* will be updated and the row with key value *3* will be inserted.
It is applied to all other import modes, except for the **Insert all** mode. For all these modes (except for the **Insert all** mode) it is obligatory to select the primary key columns. This column (or columns) is used as key column to identify specific data in the target database.

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Insert new

ID	DATA
1	a
2	b
3	e
4	f

Update

ID	DATA
1	c
2	d
4	f

Update or insert

ID	DATA
1	c
2	d
3	e
4	f

Delete

ID	DATA
4	f

Delete or insert

ID	DATA
3	e
4	f

The key columns for these operations are defined in the **Key columns** area.

Single commands / **Universal mode** / **Bulk insert** type
The *Single commands* import mode is performed with the Single Commands method used and serves to generate and execute single SQL commands on the server, whereas the *Bulk insert* mode uses native commands for a particular server: *BULK INSERT* for Microsoft® SQL Server™. With the help of the *Single commands* import mode your data can be imported considerably faster as compared to the *Universal* mode which is used for backward compatibility.

☑ **Keep identity**
This option specifies that the values for an identity column are present in the file being imported.

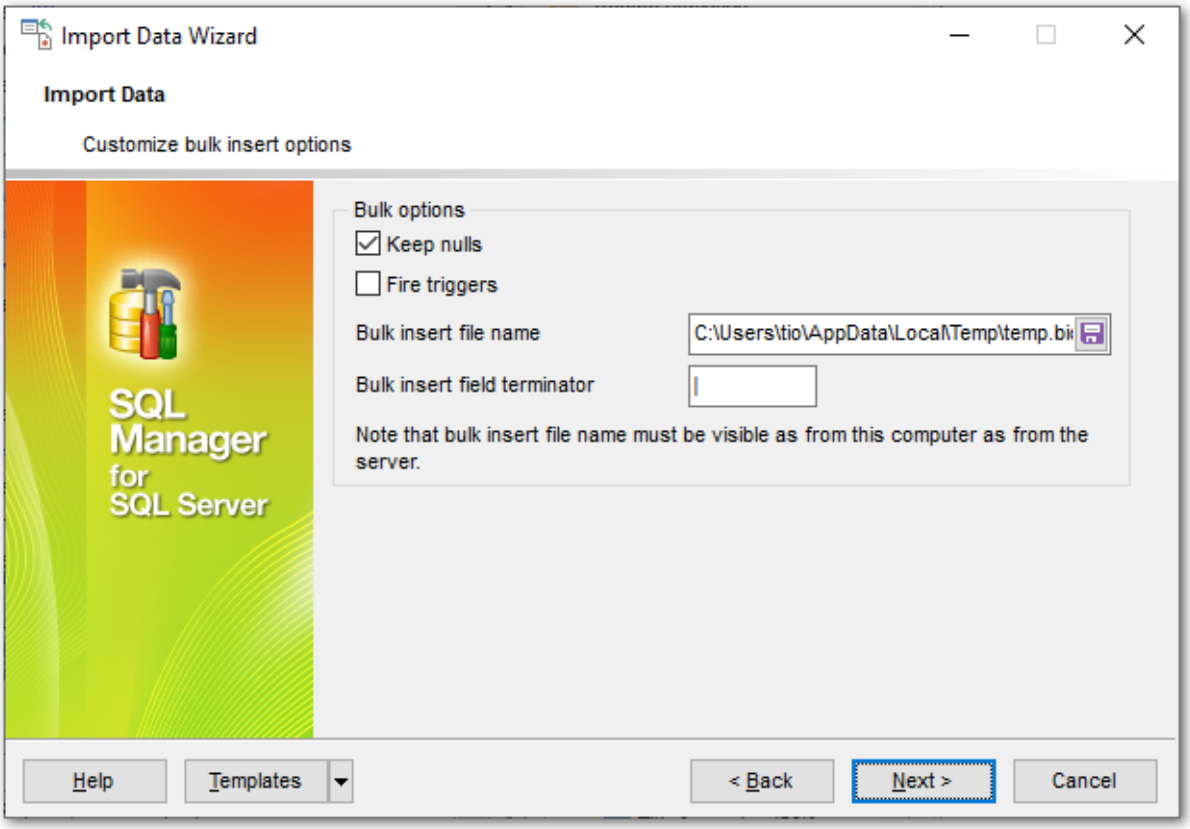
Use **Import mode** to select whether to insert all records, or to update/delete existing ones. Note that for updating/deleting existing records in the target table you should move its key columns from the **Available columns** list to the **Selected columns** list.

The **Key columns** area allows you to select the columns of the table to be used as the key columns for the import process.
To select a column, you need to move it from the **Available columns** list to the **Selected columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

Click the **Next** button to proceed to the Customizing common options 596 step or to the Customizing bulk insert options 595 step of the wizard if you have selected **Bulk insert** as the import type.

8.2.7 Customizing bulk insert options

Use this step of the wizard to set bulk insert options. The detailed description of these options is given below.



Keep nulls
This option specifies that NULL columns should retain a null value during the bulk copy operation, rather than have any default values for the columns being inserted.

Fire triggers
This option specifies that any insert triggers defined on the destination table will execute during the bulk copy operation.

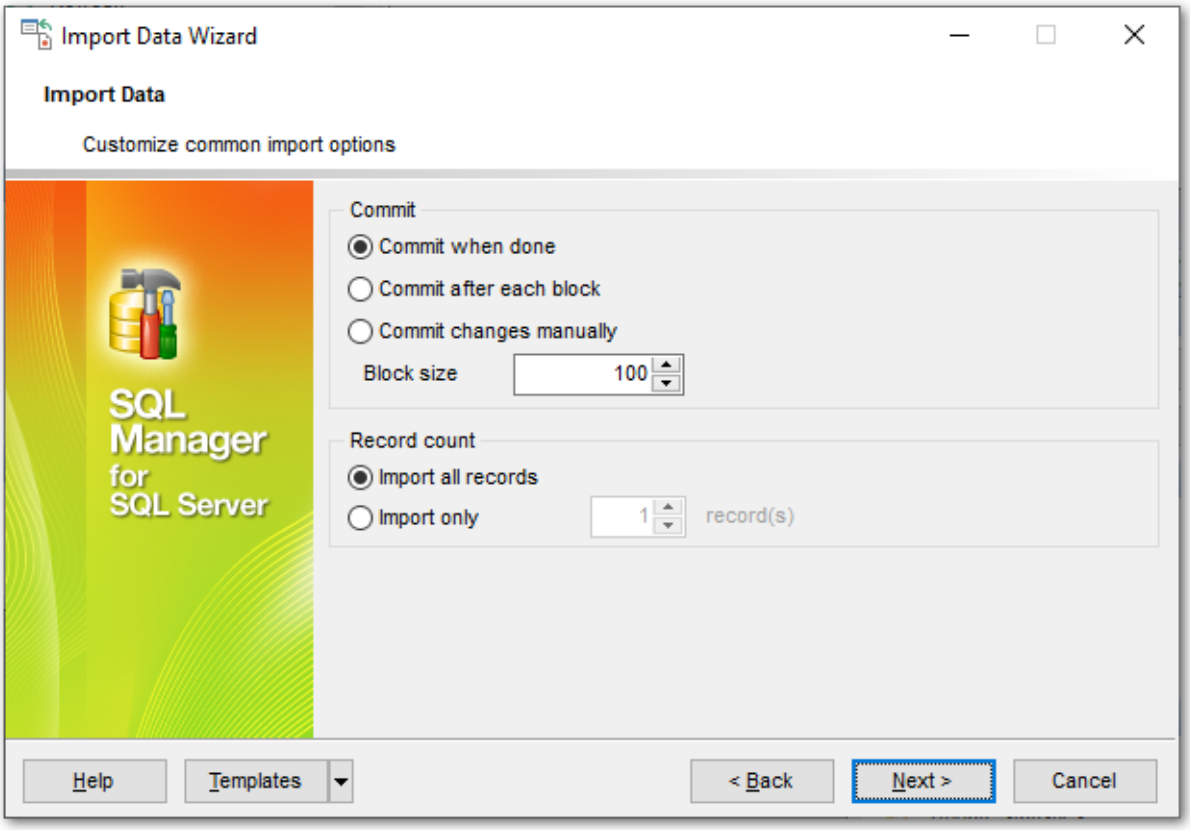
Bulk insert file name
Type in or use the button to specify the name and path to the bulk insert file name using the **Save As...** dialog. If *data_file* is a remotely stored file, specify the Universal Naming Convention (UNC) name.

Bulk insert field terminator
Specify the field terminator to be used for *char* and *varchar* data types.

When you are done, click the **Next** button to proceed to the Customizing common options 596 step of the wizard.

8.2.8 Customizing common options

Use this step of the wizard to set common import options. The detailed description of these options is given below.



Commit

Commit when done
Commits the transaction when all records are imported.

Commit after each block
Inserts the *COMMIT* statement after a defined number of records.

Commit changes manually
Select this option if you intend to commit the transaction manually.

Block size
Use the spinner control to define the number of records in each committed block.

Record count

Import all records
Specifies that all records of the source file will be imported.

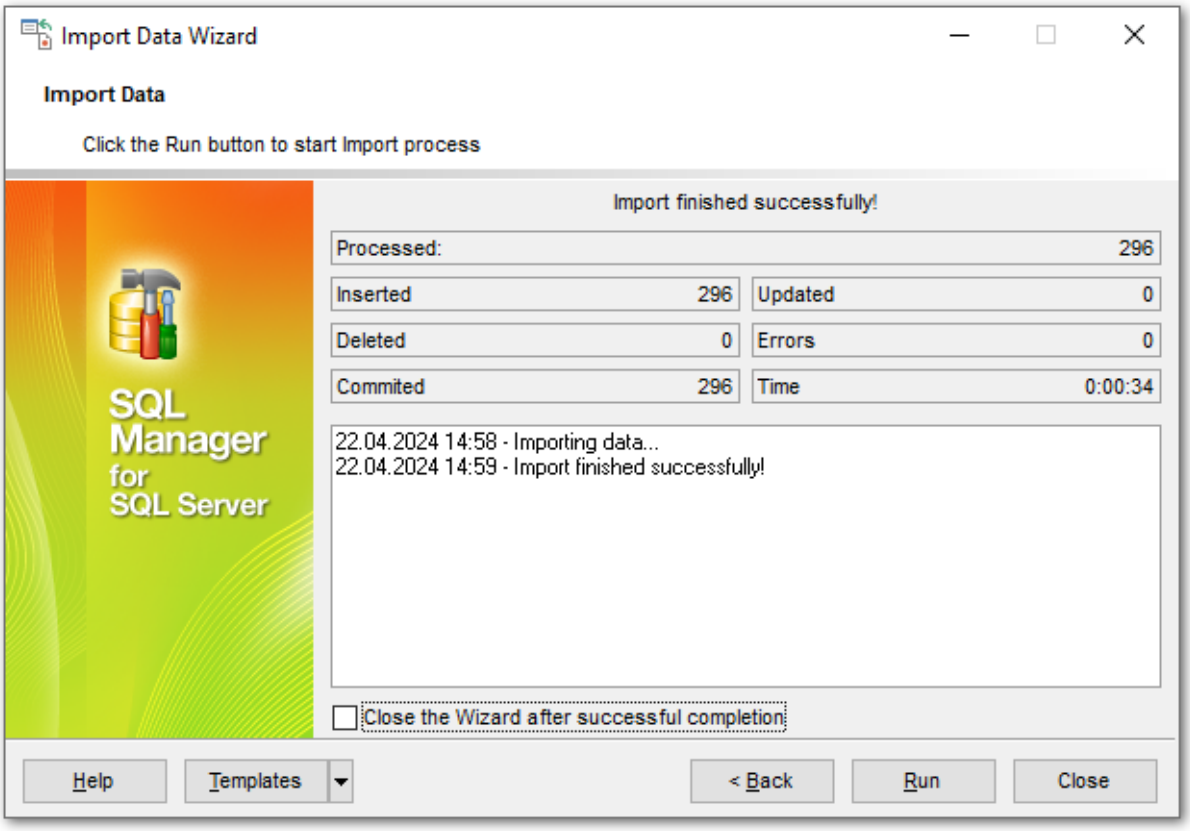
Import only ... record(s)
Specifies the number of records to be imported.

When you are done, click the **Next** button to proceed to the last step 598 of the wizard.

8.2.9 Importing data

This step of the wizard is intended to inform you that all import options have been set, and you can start the import process.

The log area allows you to view the log of operations and errors (if any).



☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the import process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to run the import process.

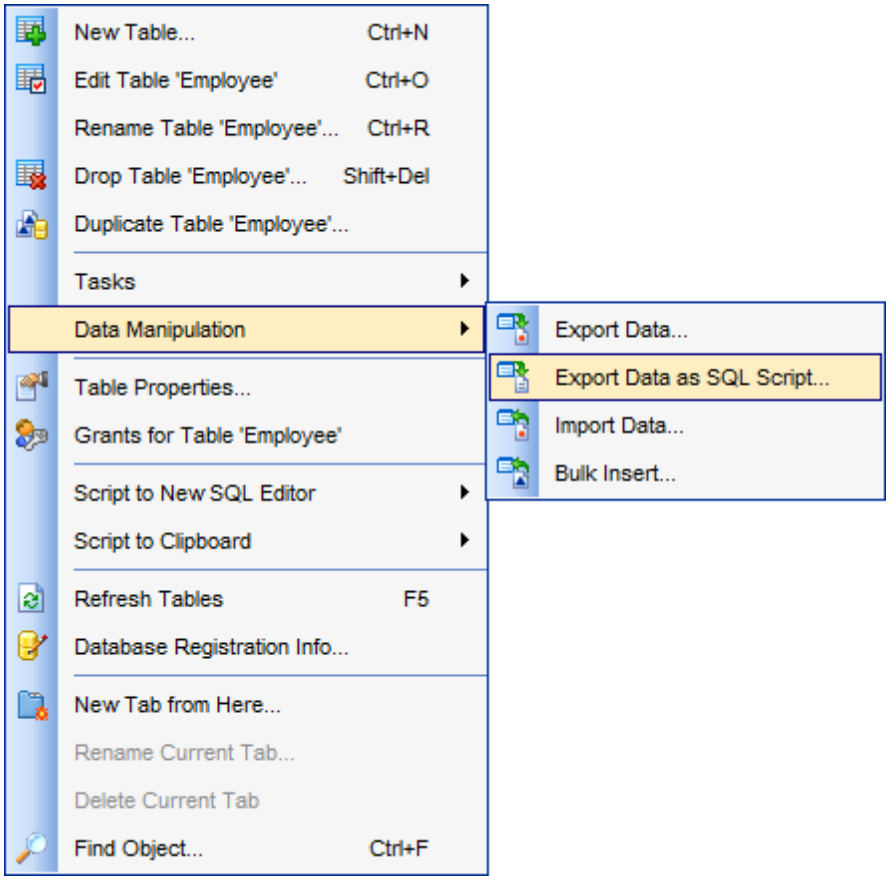
After the operation is completed, you can view the total number of *processed* records, the number of *inserted/updated/deleted* records, the number of *committed* records, the number of *errors*, elapsed *time*, and the *log* of operations and errors (if any).

8.3 Export as SQL Script

Export as SQL Script Wizard allows you to export data from a table 196 / view 250 or from a query result to SQL script as a number of INSERT statements. You can save your settings as a template 970 any time for future use.

To start the wizard, right-click the object in DB Explorer 65, select the **Data Manipulation** context menu 57 group and proceed to the **Export Data as SQL Script...** item within this group.

Alternatively, you can open the **Data** tab of Table Editor 204 / View Editor 250 or the **Result (s)** tab of Query Data 432 / Design Query 448, right-click the grid 471 there, then select the **Data Manipulation** context menu 475 group and proceed to the **Export <object_name> as SQL Script...** item within this group, or use the **Export as SQL Script** item of the Navigation bar 951.



- Selecting destination DBMS 600
- Setting destination file name 601
- Setting BLOB options 602
- Selecting column to export 603
- Editing the result table definition 604
- Setting export options 605
- Exporting as SQL Script 606

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Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

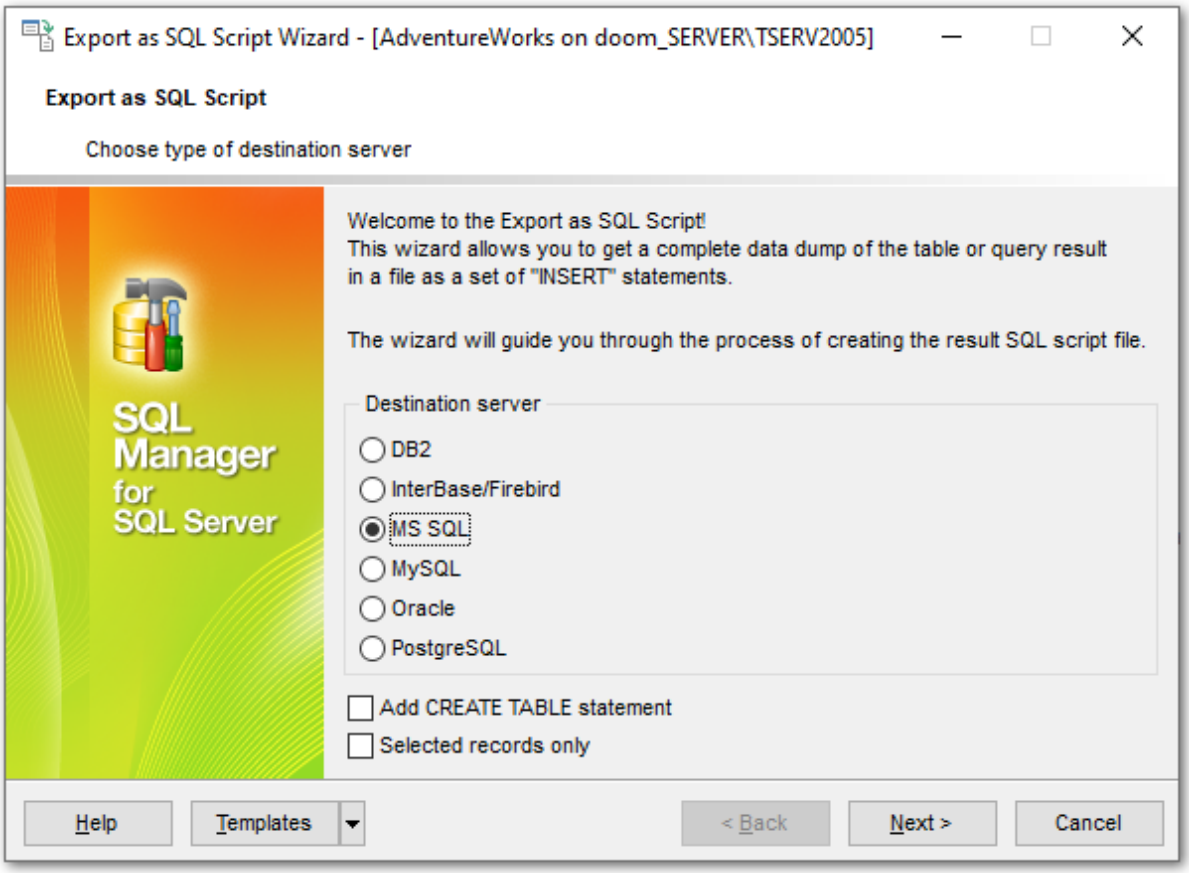
Export Data Wizard 537
Import Data Wizard 577
Bulk Insert Wizard 608
Using templates 970

8.3.1 Selecting destination DBMS

™

This step of the wizard allows you to define the **destination server** you need to export data for. The result script will be generated in compliance with the specifications of the selected DBMS:

- *DB2*
- *InterBase/Firebird*
- *Microsoft® SQL Server*
- *MySQL*
- *Oracle*
- *PostgreSQL*



Add CREATE TABLE statement
Check this option to add the *CREATE TABLE* statement to the result script.

Click the **Next** button to proceed to the Setting destination file name 601 step of the wizard.

8.3.2 Setting destination file name

Specify whether the result script will be loaded to Execute Script 625 or saved to a file.

File name
Type in or use the button to specify the path to the file and the file name.

If necessary, select the **File charset** using the corresponding drop-down list.

Enter the **Table name** and the **Schema name** to be included in the result SQL script. Schema name should only be specified for the DBMS in which this object is implemented.

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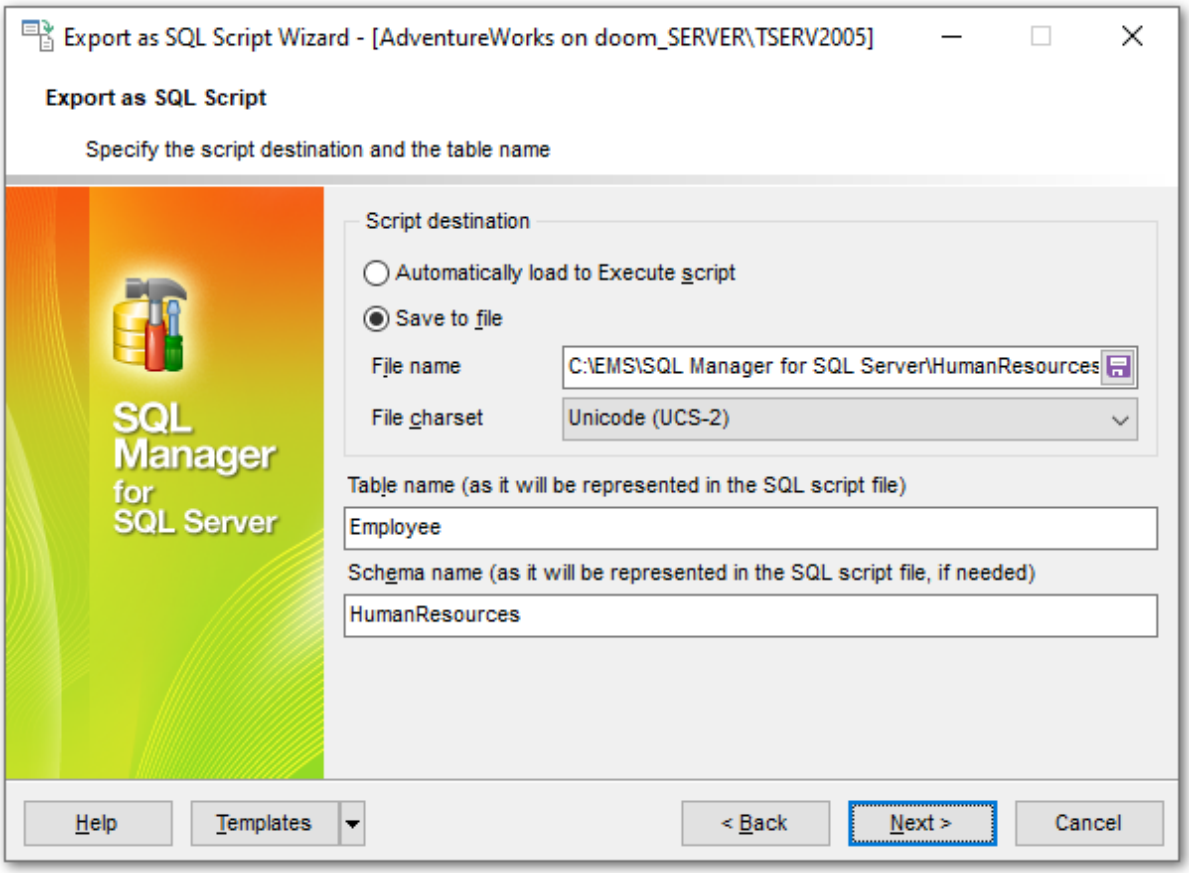


Click the **Next** button to proceed to the Setting BLOB options 602 step of the wizard.

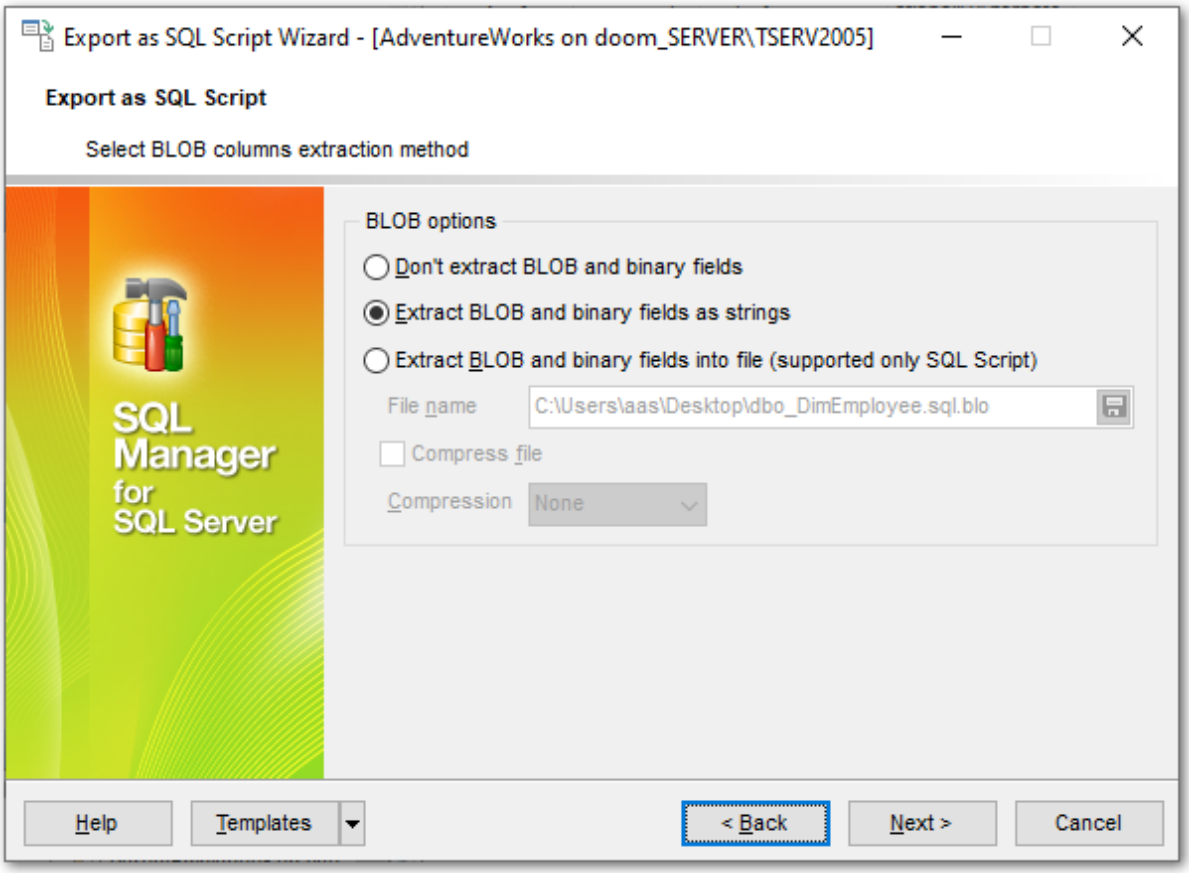
8.3.3 Setting BLOB options

BLOB options

In this group of options you can determine whether BLOB and binary fields are *not to be extracted*, *extracted as strings*, or *extracted into a separate file* (available for *DB2*, *InterBase/Firebird*, *MS SQL*, *Oracle* destination servers 600). If the latter is selected, you also need to specify the **File name** (the **.blo* file where the BLOB data will be stored) and the location of the file on your local machine using the button.

Compress file
Check this option if you wish to compress the file containing BLOB data.

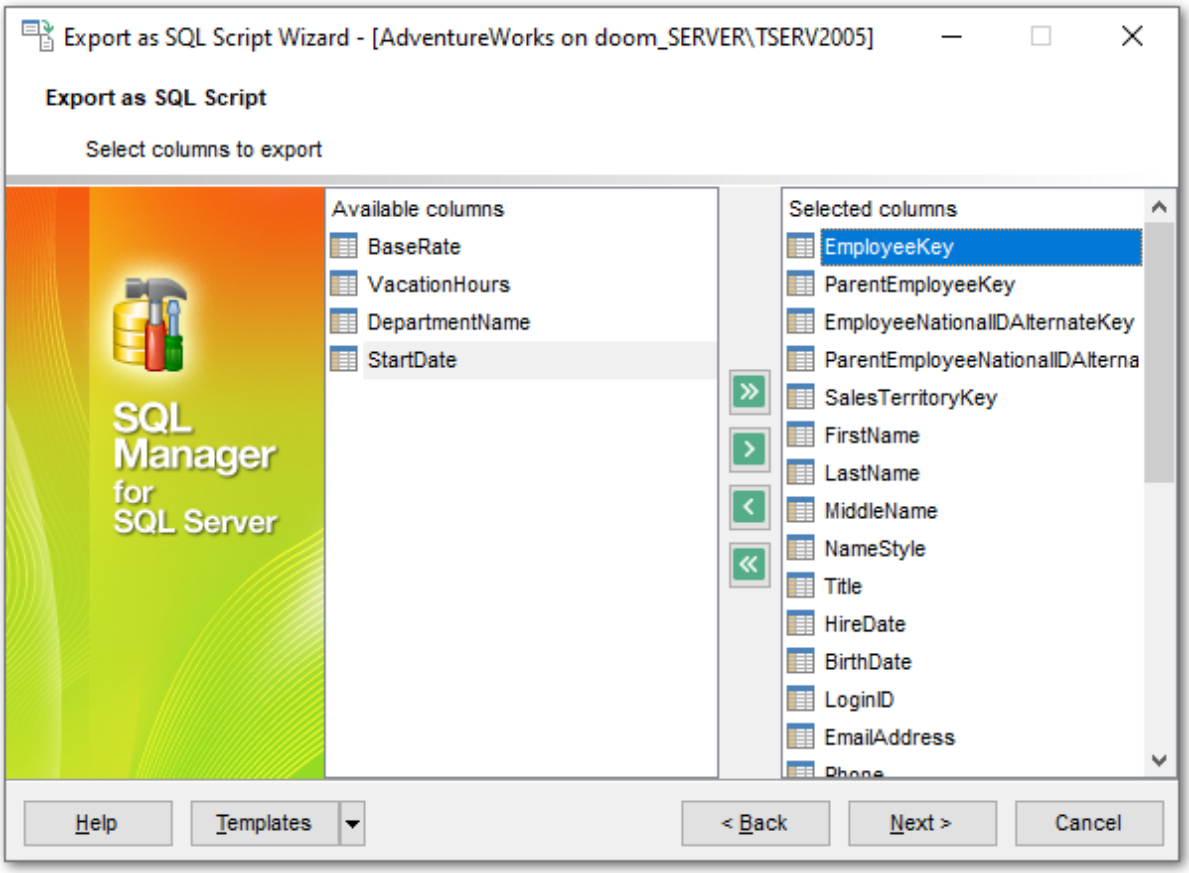
Compression
Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.



Click the **Next** button to proceed to the Selecting columns to export 603 step of the wizard.

8.3.4 Selecting columns to export

This step of the wizard allows you to select the table column(s) to be exported to SQL script.
To select a column, you need to move it from the **Available columns** list to the **Selected columns** list. Use the buttons or drag-and-drop operations to move the columns from one list to another.

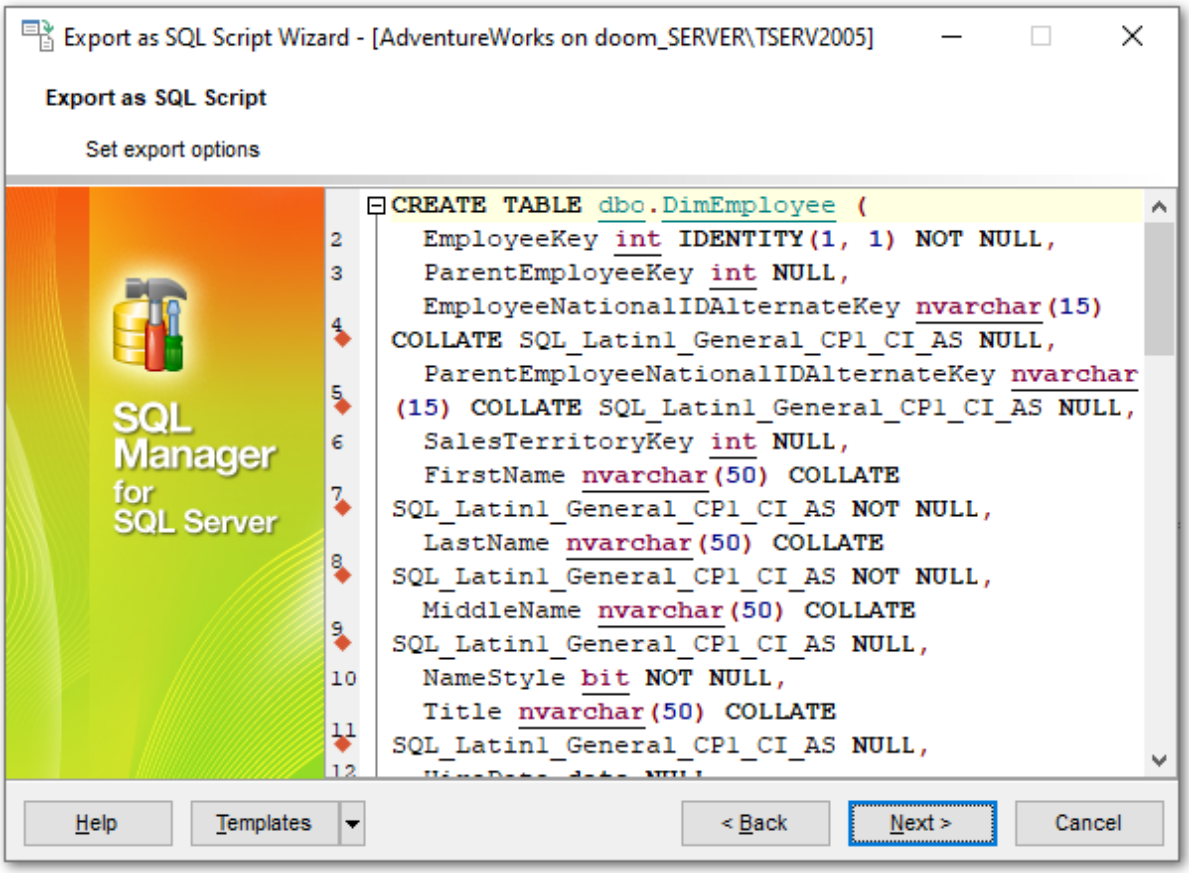


Click the **Next** button to proceed to the Editing table definition 604 step of the wizard.

8.3.5 Editing table definition

This step is available only if the **Add CREATE TABLE statement** option was checked on the Selecting destination DBMS 600 step of the wizard. It allows you to view/edit the SQL script for creating the table.

For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.



Click the **Next** button to proceed to the Setting export options 605 step of the wizard.

8.3.6 Setting export options

Specify common export options according to your needs.

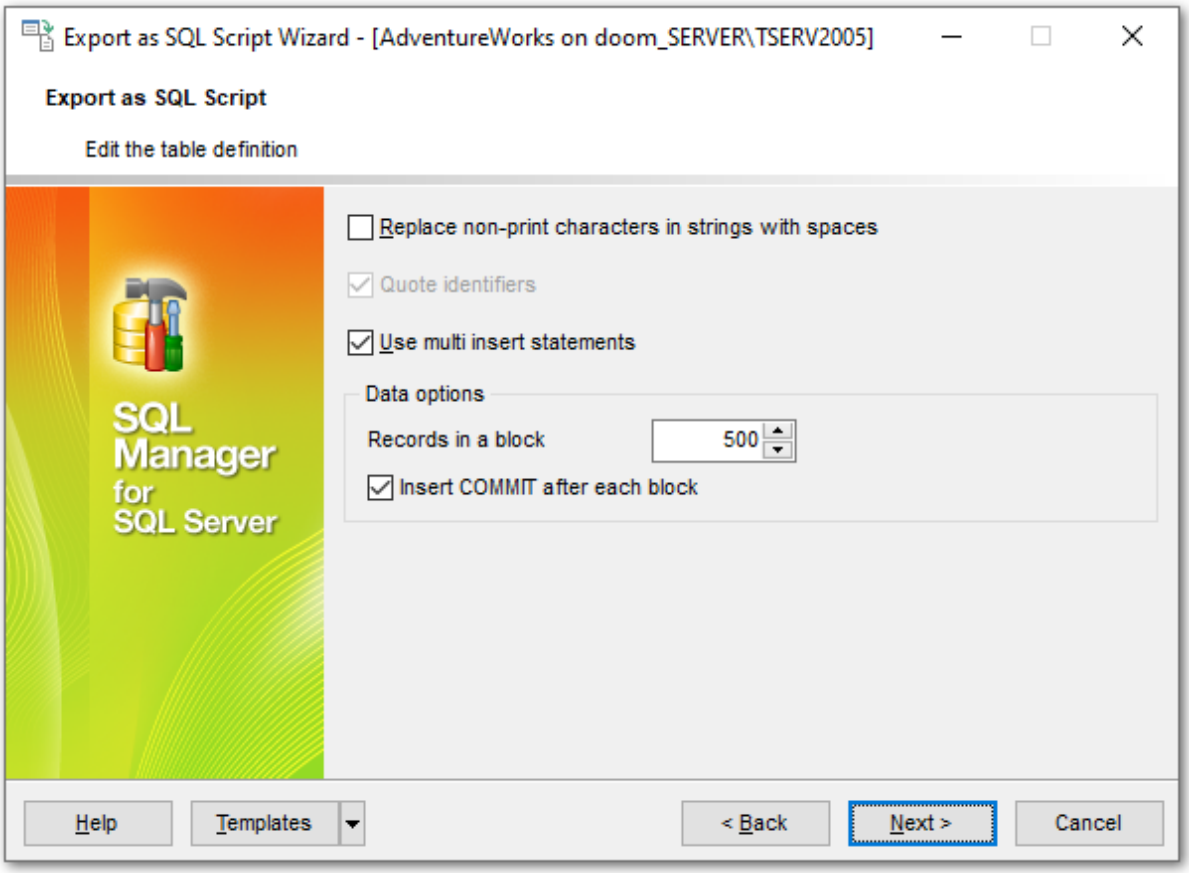
If necessary, you can choose to ☑ **Replace non-print characters in strings with spaces**.

☑ **Quote identifiers** - setting brackets in the statements.

☑ **Use multi insert statements** - script with multiple inserts.

Records in block
Use the spinner control to define the number of records in each committed block.

☑ **Insert COMMIT after each block**
Check this option to add the *COMMIT* statement after a defined number of records.

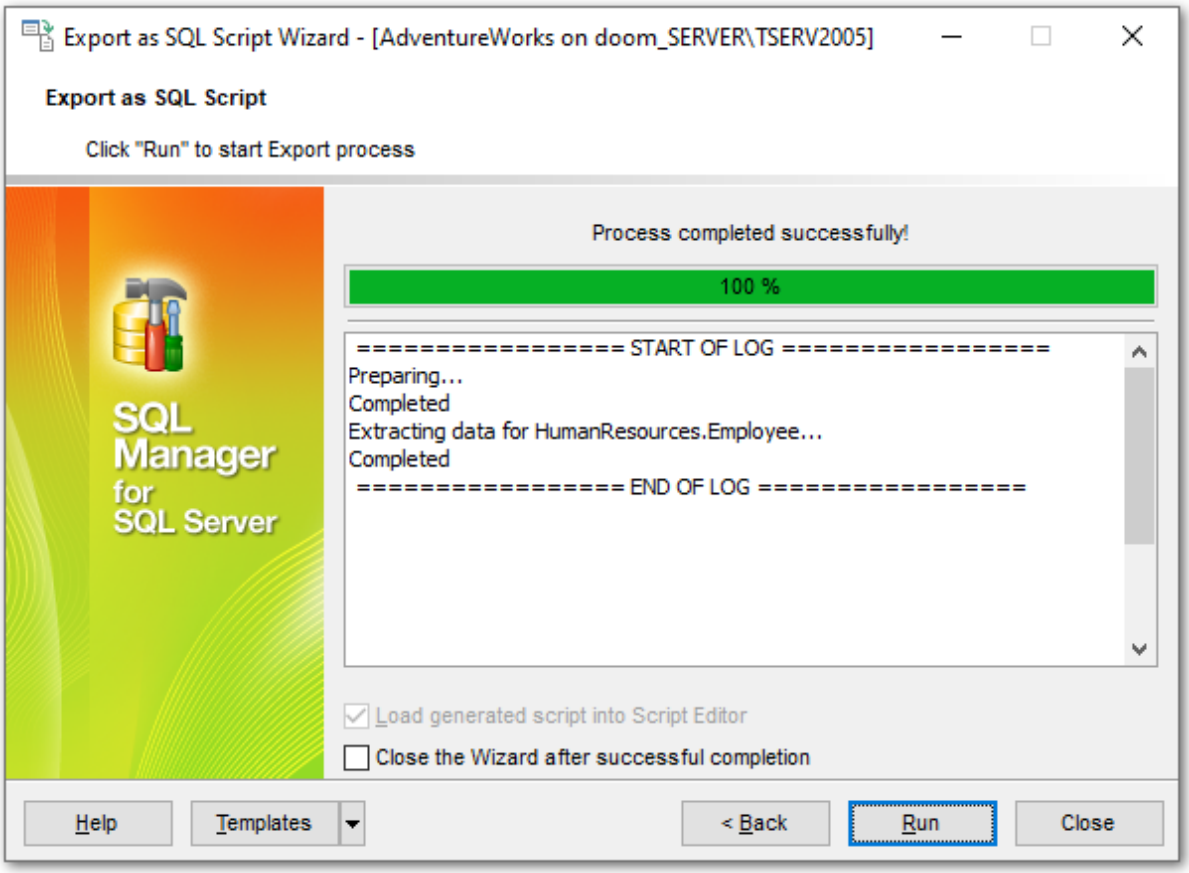


Click the **Next** button to proceed to Exporting as SQL Script 606.

8.3.7 Exporting as SQL Script

This step of the wizard is intended to inform you that all export options have been set, and you can start the export as SQL script process.

The log area allows you to view the log of operations and errors (if any).



☑ **Load generated script into Script Editor**
Check this option to load the result script to Execute Script 625.

☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the export process is completed.

If necessary, you can save a template 970 for future use.

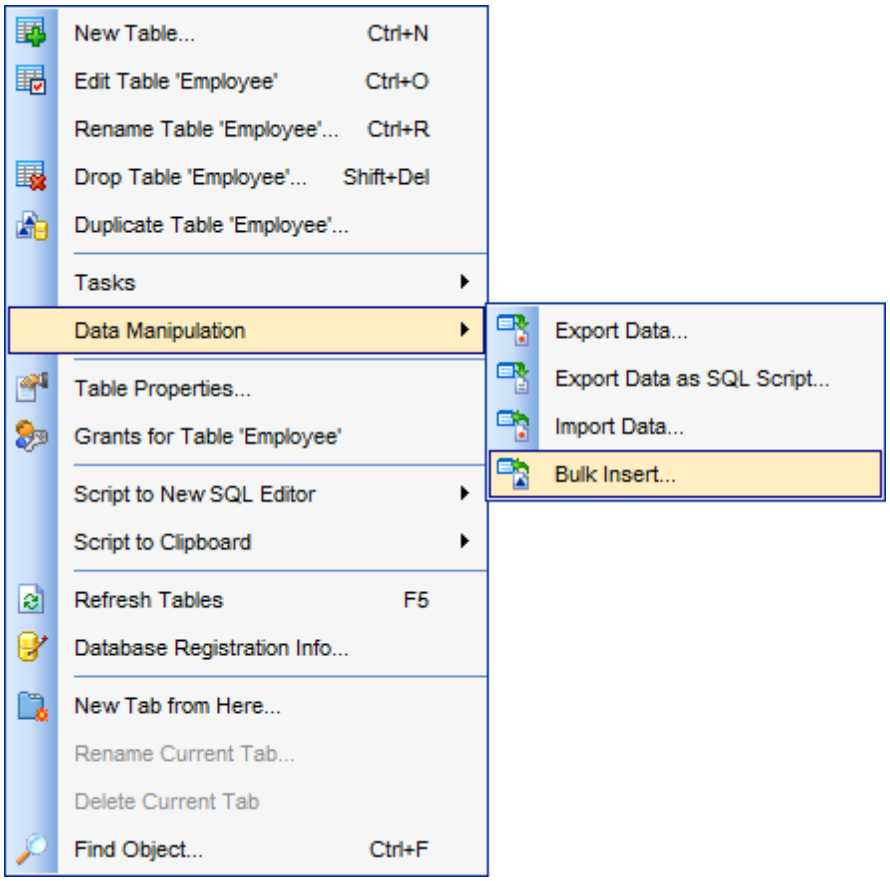
Click the **Finish** button to run the export as SQL script process.

8.4 Bulk Insert Wizard

Bulk Insert Wizard allows you to use the Transact-SQL *BULK INSERT* statement to load a data file into a database table / view in a user-specified format. This statement copies data from a file to a table, appending the records to already existing data in the table. The file must be accessible to the server and the filename must be specified from the point of view of the server. You can save your settings as a template any time for future use.

To start the wizard, right-click the table/view in DB Explorer, select the **Data Manipulation** context menu group and proceed to the **Bulk Insert...** item within this group.

Alternatively, you can open the **Data** tab of Table Editor / View Editor, right-click the grid there, then select the **Data Manipulation** context menu group and proceed to the **Bulk Insert to <object_name>...** item within this group, or use the **Bulk Insert** item of the Navigation bar.



- Selecting a table or view and the data file
- Setting bulk insert options
- Customizing data file format
- Viewing the result SQL statement
- Running bulk insert

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Export Data Wizard 537
Import Data Wizard 577
Export as SQL Script 599
Using templates 970

8.4.1 Selecting a table or view and the data file

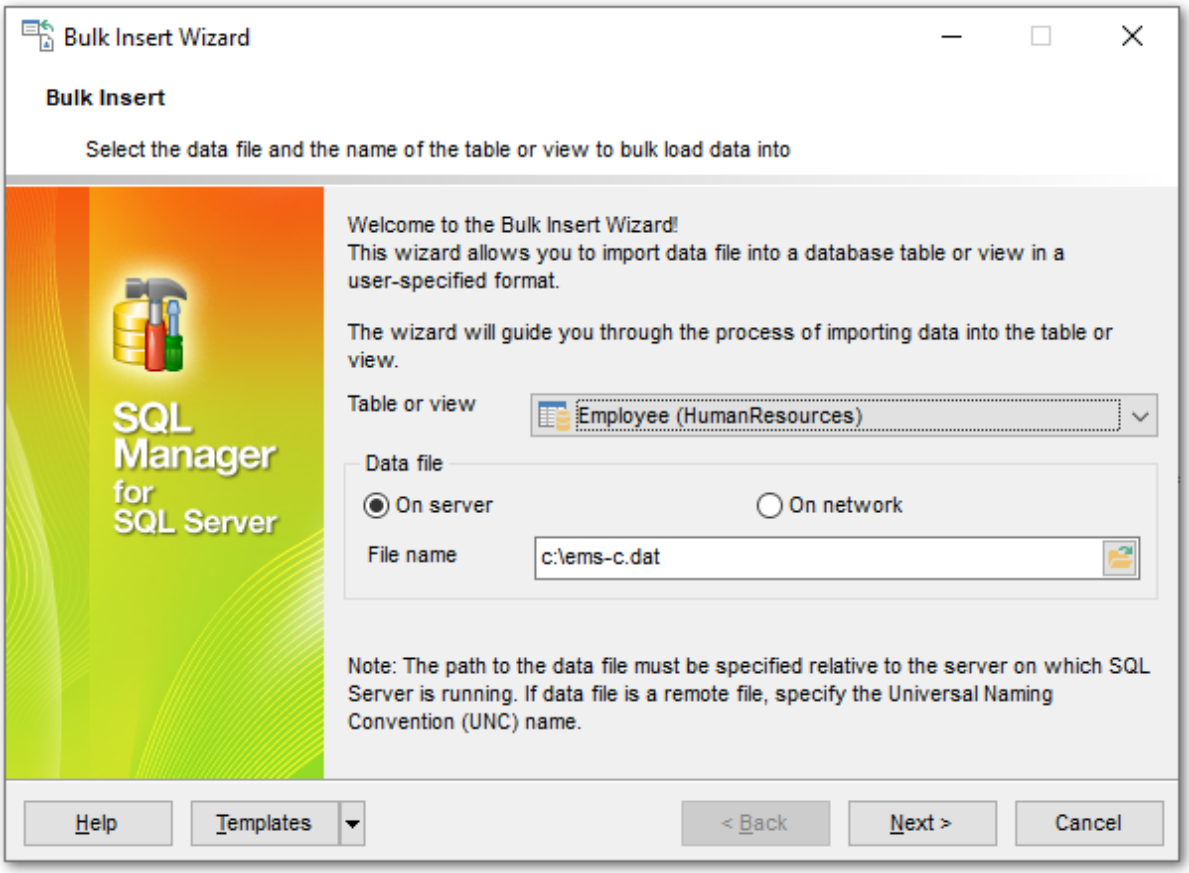
This step of the wizard allows you to select the target table 196 (or view 250) and specify the data file that contains data to load into the specified table or view.

Table or view
Use the drop-down list to select the target table or view.

Data file

Select whether the data file is located *on the server* or *in the network*. Note that it is obligatory to specify a valid path from the server on which SQL Server is running. If the data file is a remote file, you should specify the Universal Naming Convention (UNC) name.

File name
Type in or use the button to specify the full path to the data file for bulk insert using the **Open file...** dialog.



Click the **Next** button to proceed to the Setting bulk insert options 610 step of the wizard.

8.4.2 Setting bulk insert options

Data file type
Use this drop-down list to select the data file type value to be used to perform the load operation. Possible data file type values are: *char*, *native*, *widechar* and *widenative*.

Batch size (rows)
Specify the number of rows in a batch. Each batch is copied to the server as one transaction. If this operation fails, SQL Server commits or rolls back the transaction for every batch.

Kilobytes per batch
Specify the approximate number of kilobytes (KB) of data in each batch.

Rows per batch
This value indicates the number of rows in each batch.

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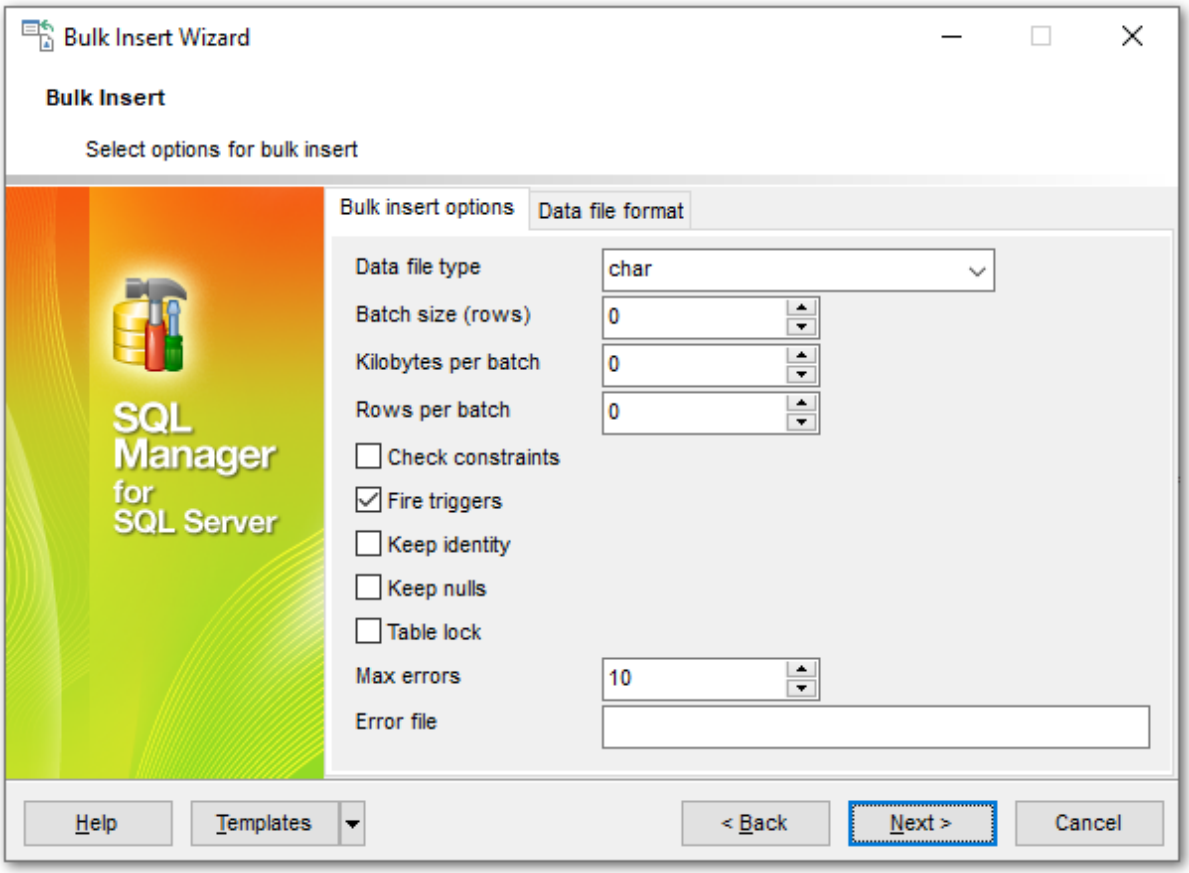

Check constraints
Enable this option to specify that all constraints on the target table or view must be checked during the bulk insert operation. If disabled, any CHECK constraints are ignored, and after the operation the constraint on the table is marked as not-trusted. This might be necessary if the input data contains rows that violate constraints.
Note: *UNIQUE*, *PRIMARY KEY*, *FOREIGN KEY* and *NOT NULL* constraints are always enforced.

Fire triggers
Use this option to specify that any insert triggers defined on the destination table execute during the bulk load operation. If triggers are defined for *INSERT* operations on the target table, they are fired for every completed batch.

Keep identity
Use this option to specify that identity value or values in the imported data file are to be used for the identity column. If this option is not checked, the identity values for this column are verified but not imported, and SQL Server automatically assigns unique values based on the seed and increment values specified during table creation.

Keep nulls
Use this option to specify that empty columns should retain a null value during the bulk load operation, instead of having any default values for the columns inserted.

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Table lock
Use this option to specify that a table-level lock is acquired for the duration of the bulk load operation. Holding a lock for the duration of the bulk load operation reduces lock contention on the table and may significantly improve performance.

Max errors
Specifies the maximum number of syntax errors allowed in the data before the bulk insert operation is canceled. Each row that cannot be imported by the bulk load operation is ignored and counted as one error.
Note: This option is not applied to constraint checks and to converting *money* and *bigint* data types.

Error file
Specify the file used to collect rows that have formatting errors and cannot be converted to an OLEDB rowset. These rows are copied into this error file from the data file "as is". The error file is created when the command is executed.

Click the **Next** button to proceed to the Customizing data file format 612 step of the wizard.

8.4.3 Customizing data file format

Code page
Use this drop-down list to select the code page of the data in the data file: *ACP*, *OEM* or *RAW*. This option is relevant only if the data contains *char*, *varchar* or *text* columns with character values greater than *127* or less than *32*.

- **ACP**: columns are converted from the ANSI/Microsoft Windows code page (ISO 1252) to the SQL Server code page
- **OEM**: columns are converted from the system OEM code page to the SQL Server code page
- **RAW**: no conversion is performed

Field terminator
Use the drop-down list to specify the field terminator to be used for *char* and *widechar* data files: *tab character (\t)*, *comma (,)* or *semicolon (;)*.

Row terminator
Use the drop-down list to select the row terminator to be used for *char* and *widechar* data files: *newline character (\n)* or *return character (\r)*.

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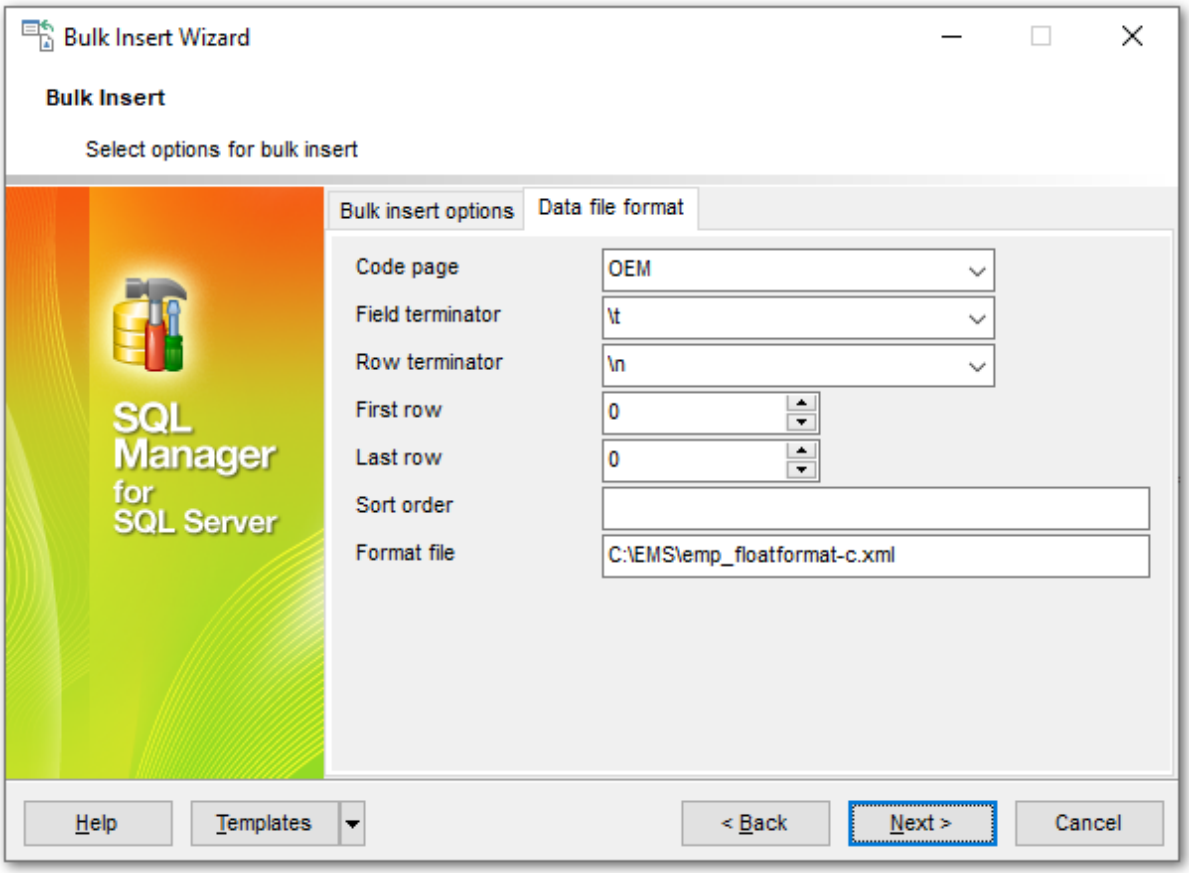


First row
Specify the number of the first row to load.

Last row
Specify the number of the last row to load. If this parameter is set to 0, the last row to load is the last row in the specified data file.

Sort order
{ column_name [ASC | DESC] } [,... n]
This string specifies the way the data in the data file are sorted. Bulk insert operation performance is improved in case the data are sorted according to the clustered index on the table. The column names supplied must be valid columns in the destination table. By default, the bulk insert operation assumes the data file is unordered.

Format file
Specify the full path of a format file. A format file describes the data file. The format file should be used in the following cases:

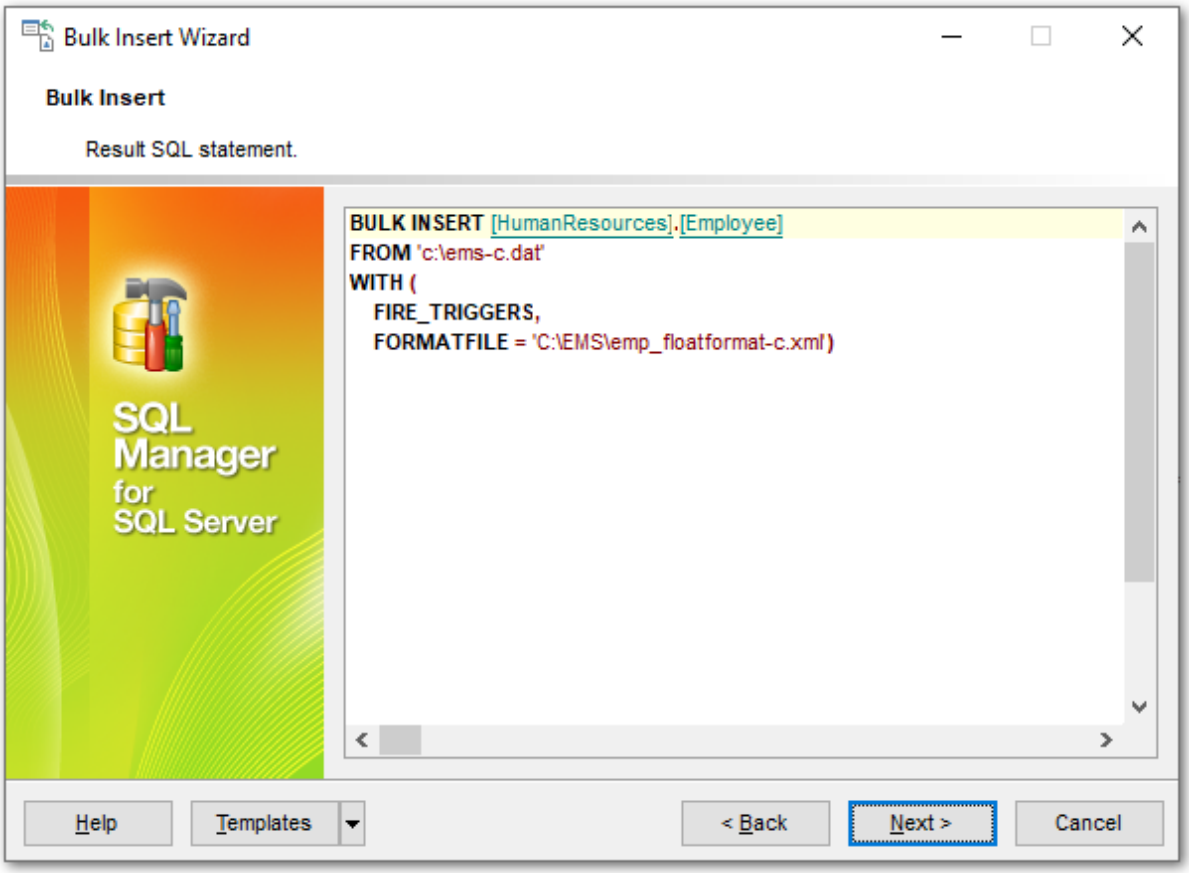
- The data file contains greater or fewer columns than the table 196 or view 250
- The columns are in a different order
- The column delimiters vary
- There are other changes in the data format

Click the **Next** button to proceed to the Viewing the result SQL statement 614 step of the wizard.

8.4.4 Viewing the result SQL statement

This step of the wizard allows you to browse **the result SQL statement**.

If necessary, you can edit the definition of the new object.



When you are done, click the **Next** button to proceed to the last step 614 of the wizard.

8.4.5 Running bulk insert

This step of the wizard is intended to inform you that all bulk insert options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).

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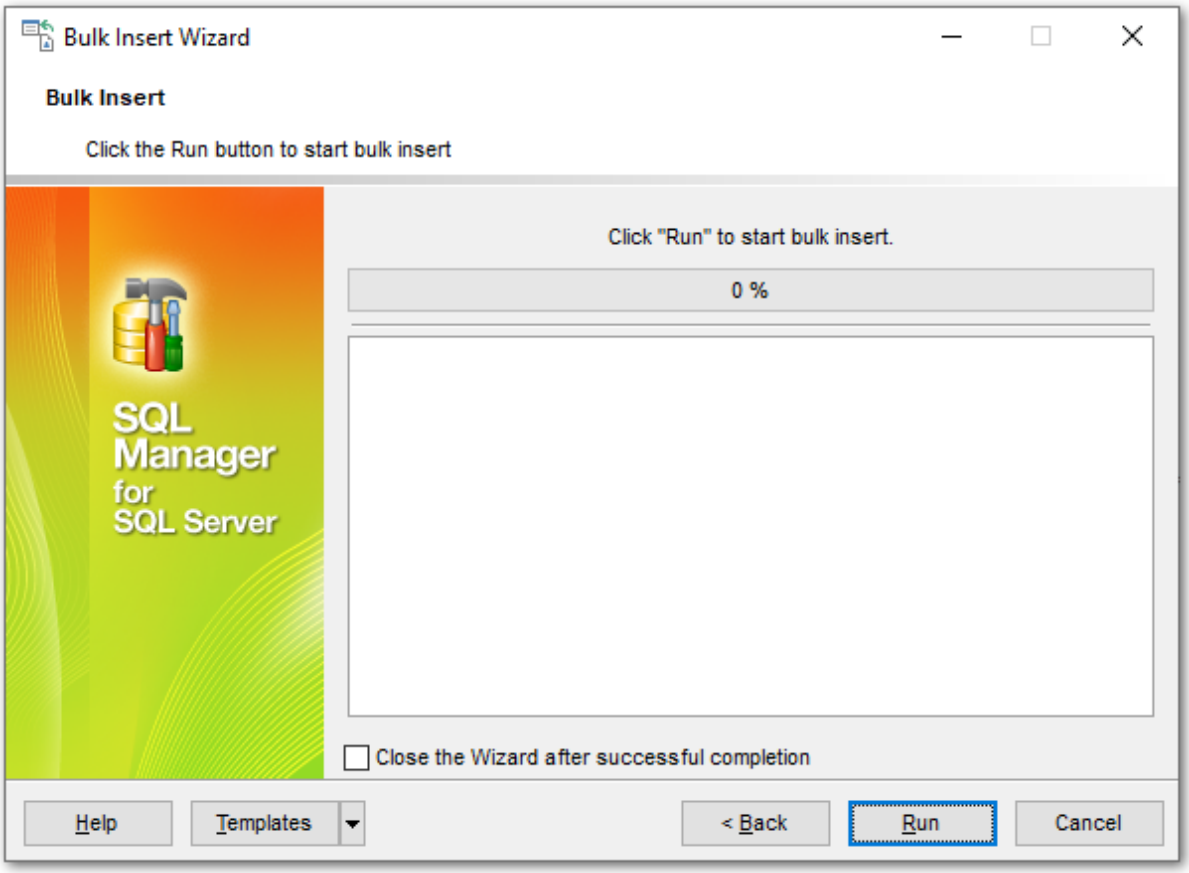

☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the bulk insert process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to run the bulk insert process.

Part IX

9 Tools

SQL Manager for SQL Server provides a number of powerful tools that allow you to perform various operations over your databases.
The following *common database tools* are available in SQL Manager for SQL Server:

Dependency Tree 618
Allows you to view all the object dependencies in one diagram.

Visual Database Designer 701
Allows you to lay out your database schema visually.

Execute Script 625
Executes SQL scripts in the database.

Extract Database Wizard 632
Extracts the table metadata and/or data to an SQL script which can be executed later on another machine to restore the database structure and/or data.

Print Metadata 649
Creates powerful metadata reports in the WYSIWYG mode ready for printing.

HTML Report 657
Creates powerful metadata reports in the HTML format.

Reports management 665
Tools for efficient management of reports: creating, editing, viewing, printing.

SQL Monitor 622
Displays all the SQL statements executed while working in SQL Manager for SQL Server.

Using templates 970
Facilitates using SQL Manager wizards.

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Server Tools 742
Personalization 853
External Tools 945
How To... 991

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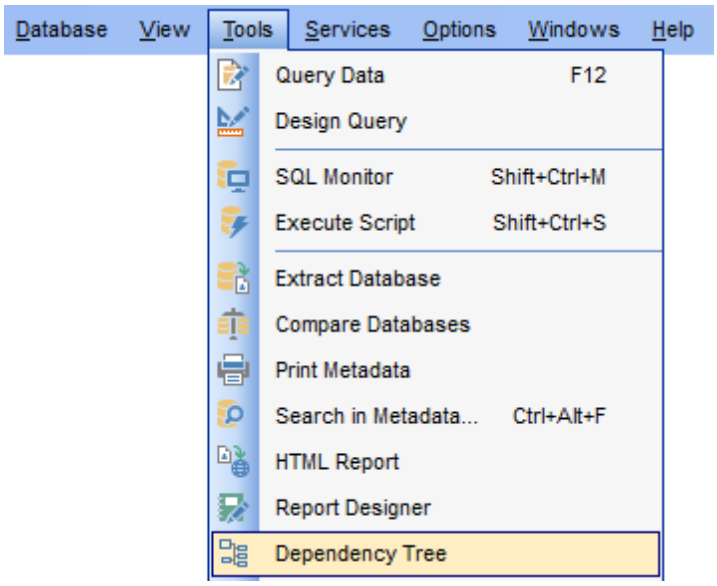
9.1 Dependency Tree

The **Dependency Tree** tool allows you to view all the object dependencies in one diagram.

To call the **Dependency Tree** window, select the **Tools | Dependency Tree** main menu 951 item, or use the **Dependency Tree** button on the main toolbar 953.



- Using Navigation bar and Toolbar 618
- Viewing dependency tree 620

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Database and Server Objects Management 182

9.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Dependency Tree**.

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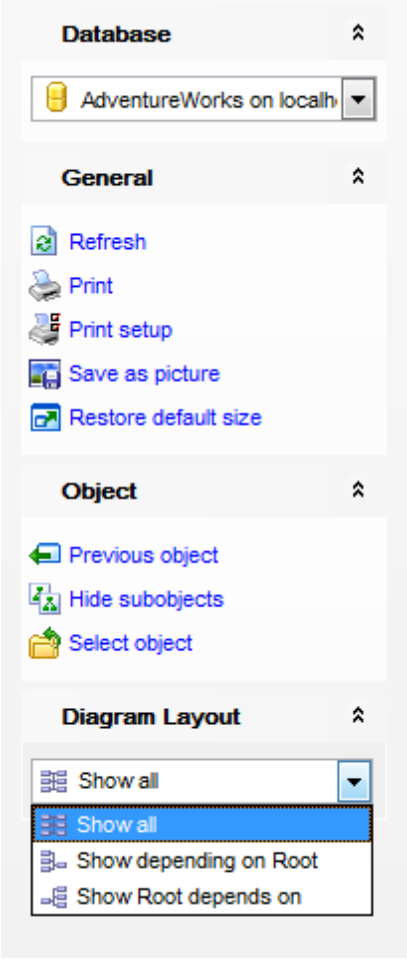


The **Navigation bar** of the **Dependency Tree** window allows you to:

Database

select a database for browsing object dependencies

General

refresh the currently displayed dependency tree
print the diagram
set printing options using the **Print Setup** dialog
save the current diagram as a picture
restore the default size and position of the window

Object

navigate by switching to the previous object
navigate by switching to the next object
show/hide subobjects
select 620 a root object

Diagram layout

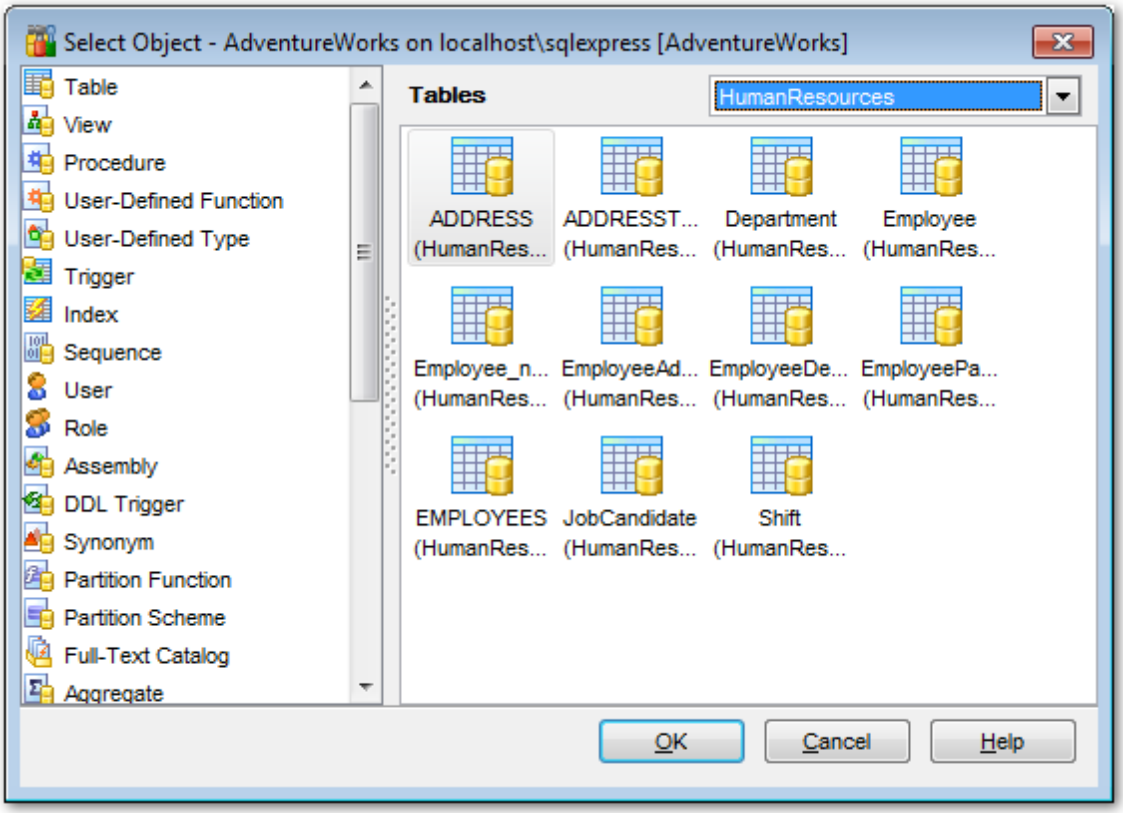
show all objects
show objects depending on Root
show Root depends on objects

Items of the **Navigation bar** are also available on the **ToolBar** of the **Dependency Tree** window. To enable the toolbar, open the Environment Options dialog, proceed to the Windows section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar) in the **Bar style for child forms** group.

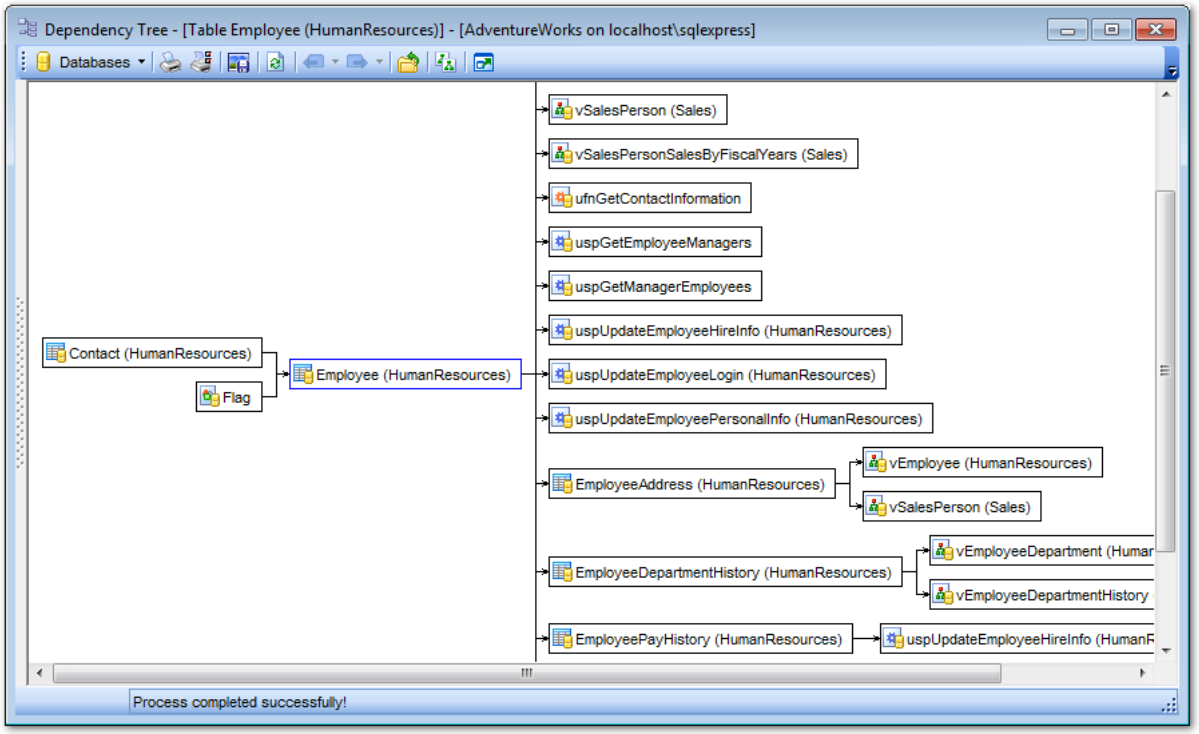
Hint: Items of the **Object** pane of the **Navigation bar** are also available in the context menu of the **Dependency Tree** area.

9.1.2 Viewing dependency tree

To view dependencies of an object, click the **Select object** Navigation bar item. Then select the required object in the **Select Object** dialog window. The dependency tree will appear in the main area of the window.



While the tree of dependencies is being built, the progress bar is displayed in the status area at the bottom of the window.



The *root* object is marked out with a blue frame.

The objects that *the root object depends on* are located to the left of the root object. The objects that *depend on the root object* are located to the right of the root object.

Object dependencies are denoted as regular arrows from the left to the right (->). A *cyclic dependency* (i.e. when the object already has some other depending object(s)) is denoted as a line ending with a cross (-x).

You can switch between objects by selecting them in the diagram. The selected object becomes the root object. To make an object root, you can also right-click it in the diagram area and select **Set as Root** from the **context menu**. The context menu of an object also allows you to *edit* it using the corresponding editor.

The history of selected root objects is also available: you can move back and forward through this history using the **Previous object** and the **Next object** links on the Navigation bar 618 or toolbar 620.

Hint: To show/hide subobjects (e.g. table triggers 240, foreign keys 225), click the **Show subobjects** / **Hide subobjects** item on the Navigation bar 618.

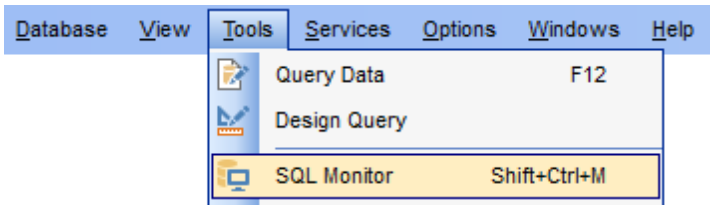
See also:

Select Object dialog 985

9.2 SQL Monitor

SQL Monitor allows you to view the log of all operations performed over databases and database objects in SQL Manager for SQL Server. The content of the window is read-only.

To open the **SQL Monitor** window, select the **Tools | SQL Monitor** main menu 951 item, or use the *Shift+Ctrl+M* shortcut 986.

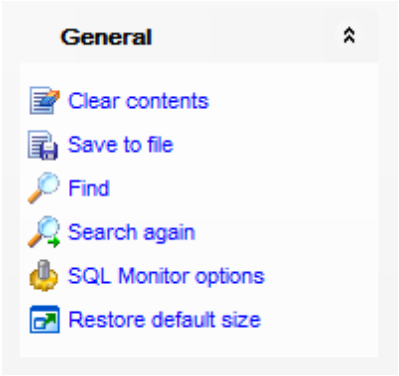


- Using Navigation bar and Toolbar 622
- Working with SQL Monitor 623

See also:
SQL Monitor options 874

9.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **SQL Monitor**.



The **Navigation bar** of **SQL Monitor** allows you to:

General
clear the content of the window
save the content to a **.txt* file using the **Save as...** dialog
search for a string using the Find Text 961 dialog
search again

configure SQL Monitor using the SQL Monitor 874 section of the Environment Options 854 dialog
restore the default size and position of the window
specify that the window is displayed on top of other child windows

Items of the **Navigation bar** are also available on the **ToolBar** of **SQL Monitor**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

9.2.2 Working with SQL Monitor

The working area of **SQL Monitor** lists the log of database operations and SQL queries as items, each consisting of 3 parts: *Executed* (the date and time of the operation), *Operation* (SQL statement sent to the server), *Result* (the result of the operation).

Items of the **context menu** of SQL Monitor area provide access to various functions for working with the window content. The context menu contains standard text-processing functions (*Copy*, *Select All*), spelling checking 918 and functions for working with the content as a whole, e.g. you can set *markers*, *move the cursor to a particular line*, *save* the content to a file or as a favorite query 92, configure the editor using the properties 905 item or *preview/print* the content. Most of these operations can be also performed with the corresponding hot keys 986 used.

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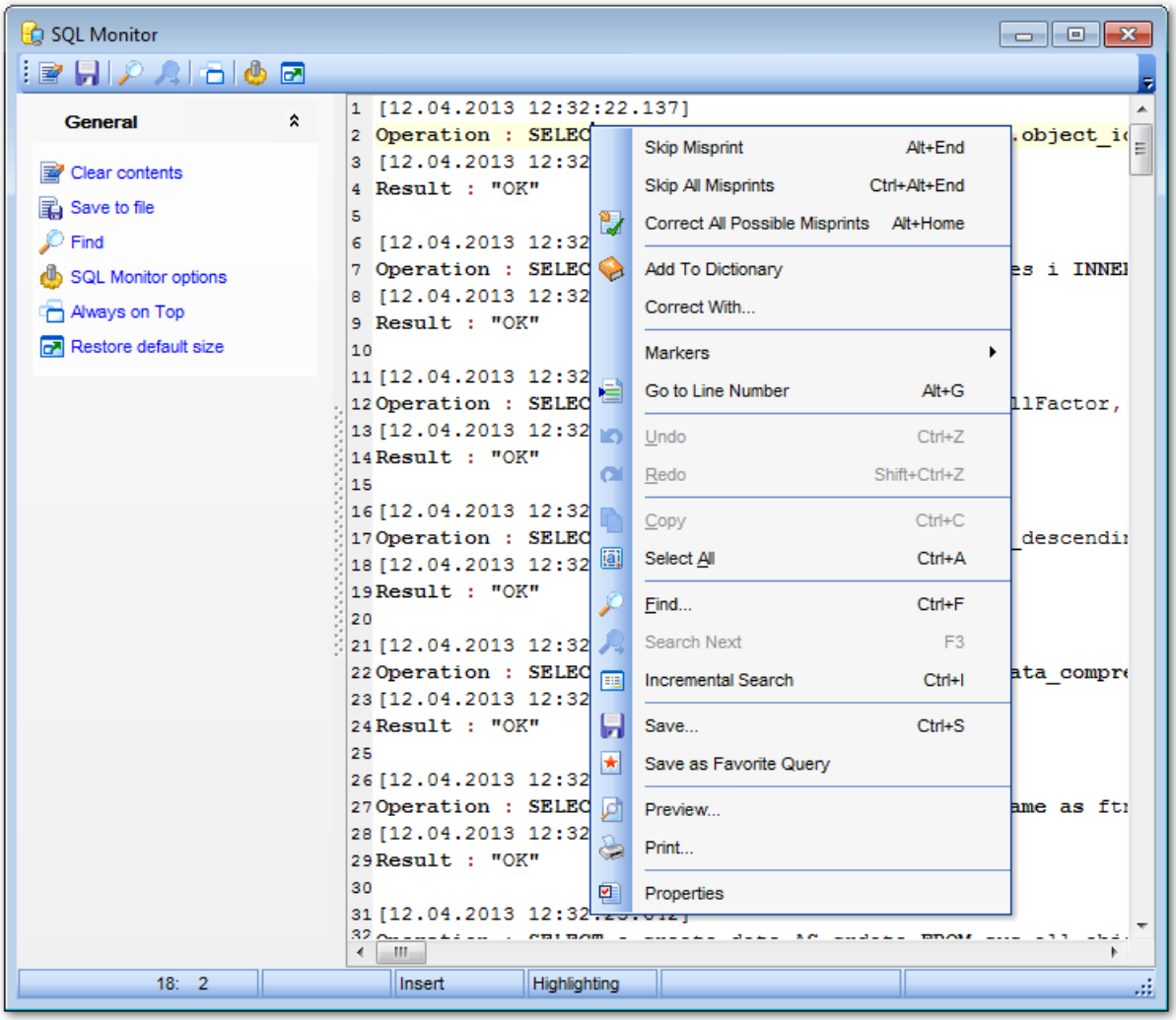
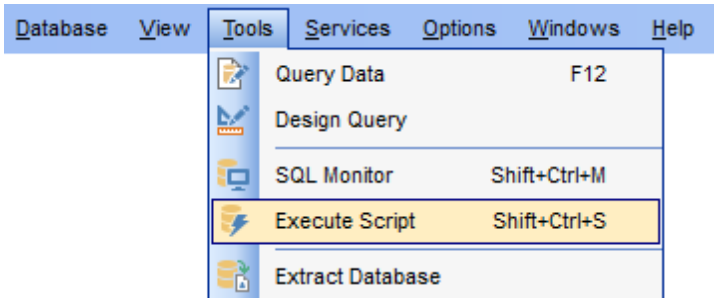


Implementation of the Find Text 961 dialog and Incremental search 953 bar contributes to more efficient work with the content of SQL Monitor.

9.3 Execute Script

Using **Execute Script** editor you can view, edit and execute SQL scripts.

To open Execute Script editor, select the **Tools | Execute Script** main menu 951 item or use the corresponding toolbar 953 button. You can also use the *Shift+Ctrl+S* shortcut 986 for the same purpose.



In the script area you can view and edit the SQL script text. For your convenience syntax highlight and code completion features are implemented.

- Using Navigation bar and Toolbar 625
- Working with Execute Script area 627
- Using Script Explorer 629
- Script execution 630

Note: Execute Script does not show results returned upon SELECT queries execution. Please use Query Data 432 for that purpose instead.

See also:

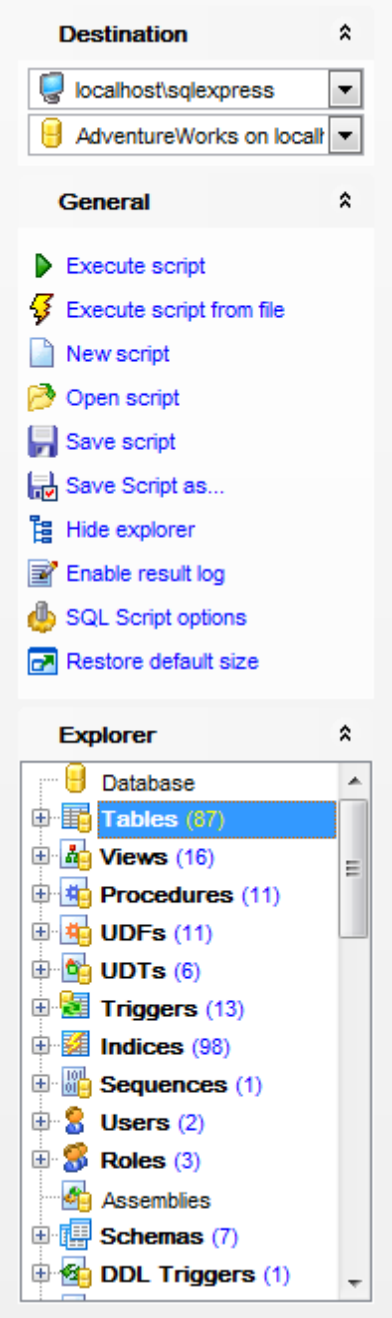
Query Data 432

Execute Script options 875

Editor Options 905

9.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Execute Script**.



The **Navigation bar** of **Execute Script** allows you to:

Destination

select a host

select a database for the script

General

execute 630 the current script

execute a script from file

create a new script
load a script from an *.sql file using the **Open Script** dialog
save the current script
save the script to an *.sql file using the **Save as...** dialog
hide/show SQL Explorer 629
enable/disable result log
configure Execute Script within the Script Options 875 section of the Environment Options 854 dialog
restore the default size and position of the editor window

Explorer
browse the tree objects used in the script using the Script Explorer 629 pane

Items of the **Navigation bar** are also available on the **ToolBar** of **Execute Script**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

See also:
Working with Execute Script area 627
Using Script Explorer 629
Script execution 630

9.3.2 Working with Execute Script area

The **Editor area** of Execute Script is provided for efficient working with SQL scripts in text mode.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented:
- sending a query to the AI Assistant 721 or attaching it to the context of your next request;
- using object links 440 allowing you to open the object in the associated editor;
- ability to display line numbers;
- code folding for statements and clauses;
- customizable margins and gutters;
- formatting code for better representation

and more.

The **context menu** of Execute Script area contains execution 630 commands, commands for sending the query to the AI Assistant 735 for explanation, checking, optimization, or formatting or for adding it to the context 730 of your next request, most of the standard text-processing functions (*Cut*, *Copy*, *Paste*, *Select All*), spelling checking 918 and functions for working with the script as a whole, e.g. you can enable/disable *parsing*, toggle *bookmarks* and *comments*, *move the cursor to a particular line*, *change the case* of selected text, *load/save* the content from/to a file or save as a favorite query 92, configure 905 the editor using the **Properties** item or *preview/print* the text of the script. Most of these operations can be also performed with the corresponding hot keys 986 used.

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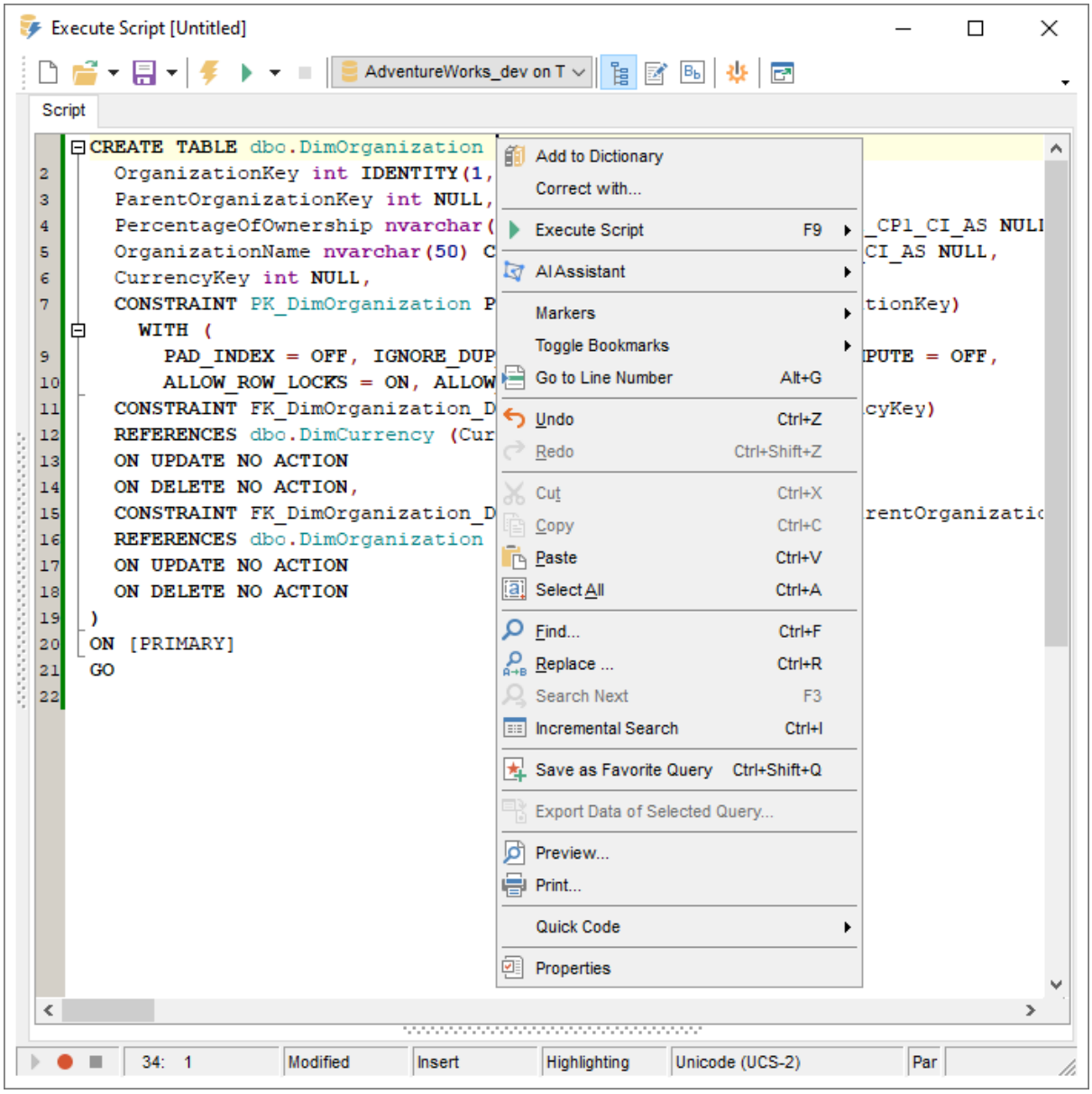
Implementation of the Find Text 961 / Replace Text 963 dialogs and Incremental search 953 bar contributes to more efficient work with the SQL code.



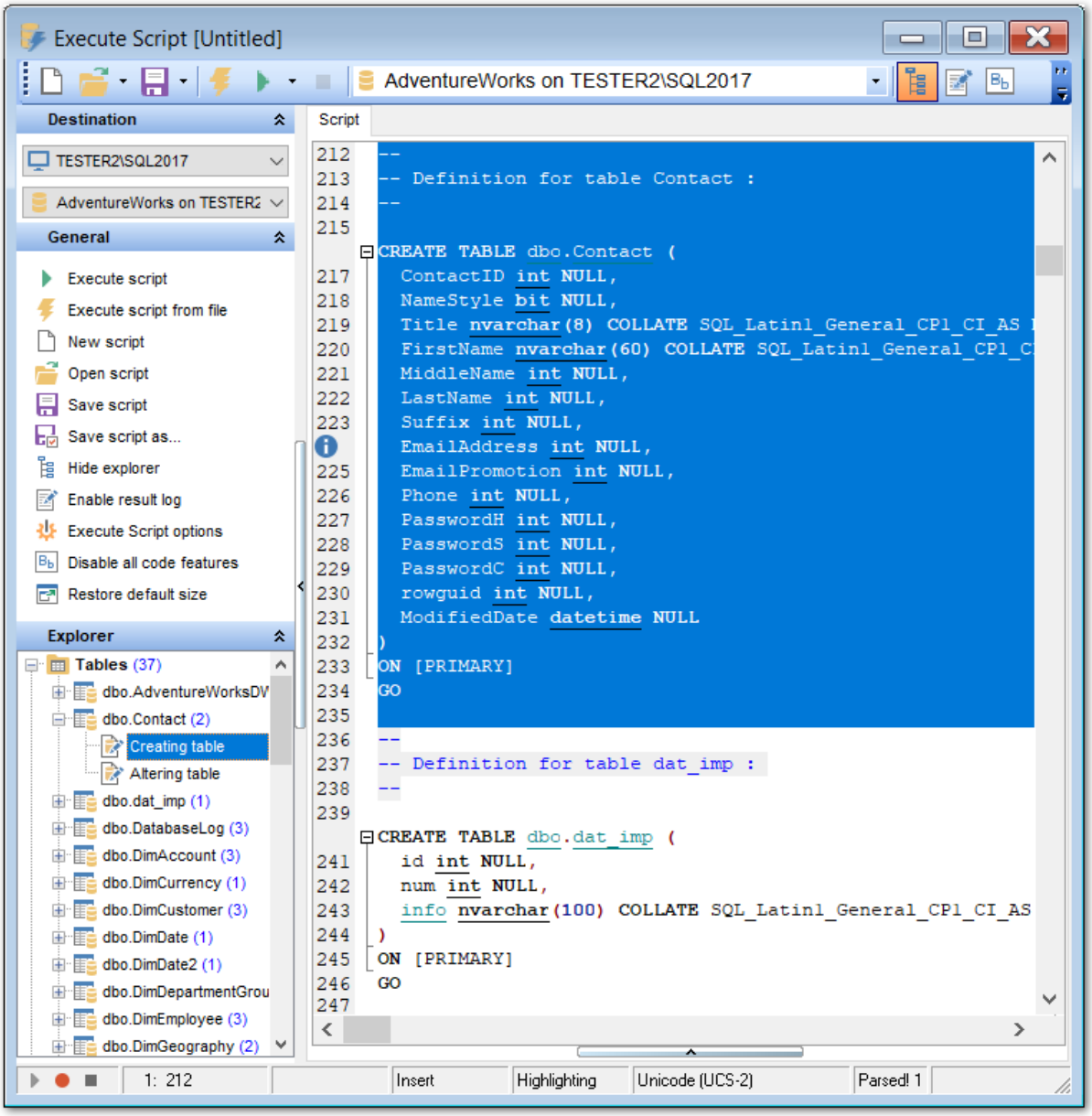
For your convenience the possibility to use **macros** is implemented.
To *start recording* a macro, click the ● **Record** button available in the status bar area, or use the *Shift+Ctrl+R* shortcut.
To *stop recording*, click the ■ **Stop** button, or use the *Shift+Ctrl+R* shortcut.
To *call* the recorded macro, use the ▶ **Play** button, or use the *Shift+Ctrl+P* shortcut.

See also:

Using Navigation bar and Toolbar 625
Using Script Explorer 629
Script execution 630
Managing Favorite queries 92
Execute Script options 875

9.3.3 Using Script Explorer

The **Explorer** group on the Navigation bar 625 displays the tree of objects, used in the current script and allows you to get to the required script fragment quickly by clicking the object in the tree.



Hint: When you click a node in the **Script Explorer** tree, the corresponding SQL statement is highlighted in the editor area. If you double-click a node, the corresponding SQL statement is highlighted, and the current focus is switched to the editor area (the cursor appears after the highlighted statement).

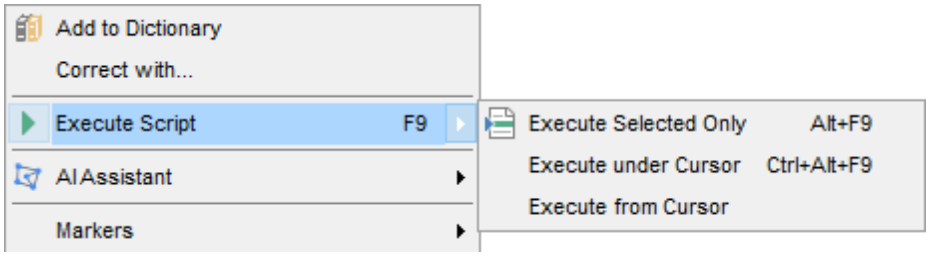
See also:

Using Navigation bar and Toolbar 625
Working with Execute Script area 627
Database and Server Objects Management 182

9.3.4 Script execution

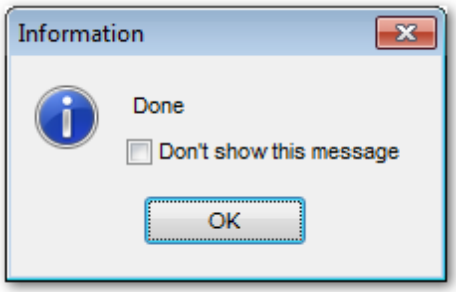
When all the script parameters are set, you can immediately **execute the script** in **Execute Script**.

To execute a script, click the **Execute script** item of the Navigation bar 625 or toolbar 627 . You can also use the context menu 627 or *F9* hot key for the same purpose.



Note: If the **Execute selected text separately** option (see the Tools | Execute Script 875 section of the Environment Options 854 dialog) is enabled (by default) and a text fragment is currently selected, only this fragment is executed when you click *Execute script* on the Navigation bar 625 or press *F9*. If this option is disabled, the whole script is executed, but you can still execute the selected fragment using the corresponding *Execute Selected Only* item of the context menu 627 or by pressing *Ctrl+F9*.

If the SQL syntax is correct, the script is executed and the *'Done!'* information message appears.



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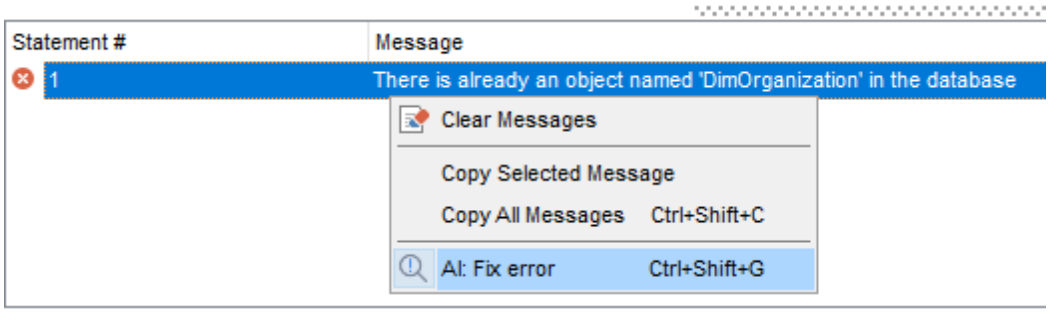
If the syntax contains errors or script cannot be executed, the corresponding error message is displayed in the status bar area at the bottom of the editor window. Right-click the message to display the context menu with the **AI: Fix error** command, which sends the error together with the statement that caused it to the AI Assistant 735 and asks it to suggest a fix.



Hint: When you select an item from the error list (in the status bar area), the corresponding SQL statement is highlighted in the editor area. If you double-click an item, the corresponding SQL statement is highlighted, and the current focus is switched to the editor area (the cursor appears after the highlighted statement).

Note: **Execute Script** does not show results returned upon SELECT queries execution. Please execute 440 such queries in Query Data 432 to see the result dataset.

See also:

Using Navigation bar and Toolbar 625
Working with Execute Script area 627
Using Script Explorer 629

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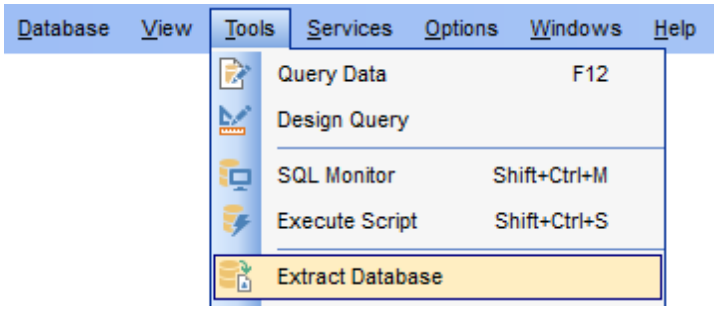
9.4 Extract Database Wizard

Extract Database Wizard allows you to extract database objects and/or data to an SQL script, e.g. for backup purposes.

To start the wizard, select the **Tools | Extract Database...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Extract Database...** item from the context menu 55.



- Selecting a database for extraction 632
- Specifying destination file name 633
- Setting extraction mode 634
- Setting BLOB options 635
- Selecting objects for metadata extraction 636
- Selecting objects for data extraction 638
- Customizing script options 639
- Start of extraction process 641
- Using templates 970

See also:

Execute Script 625

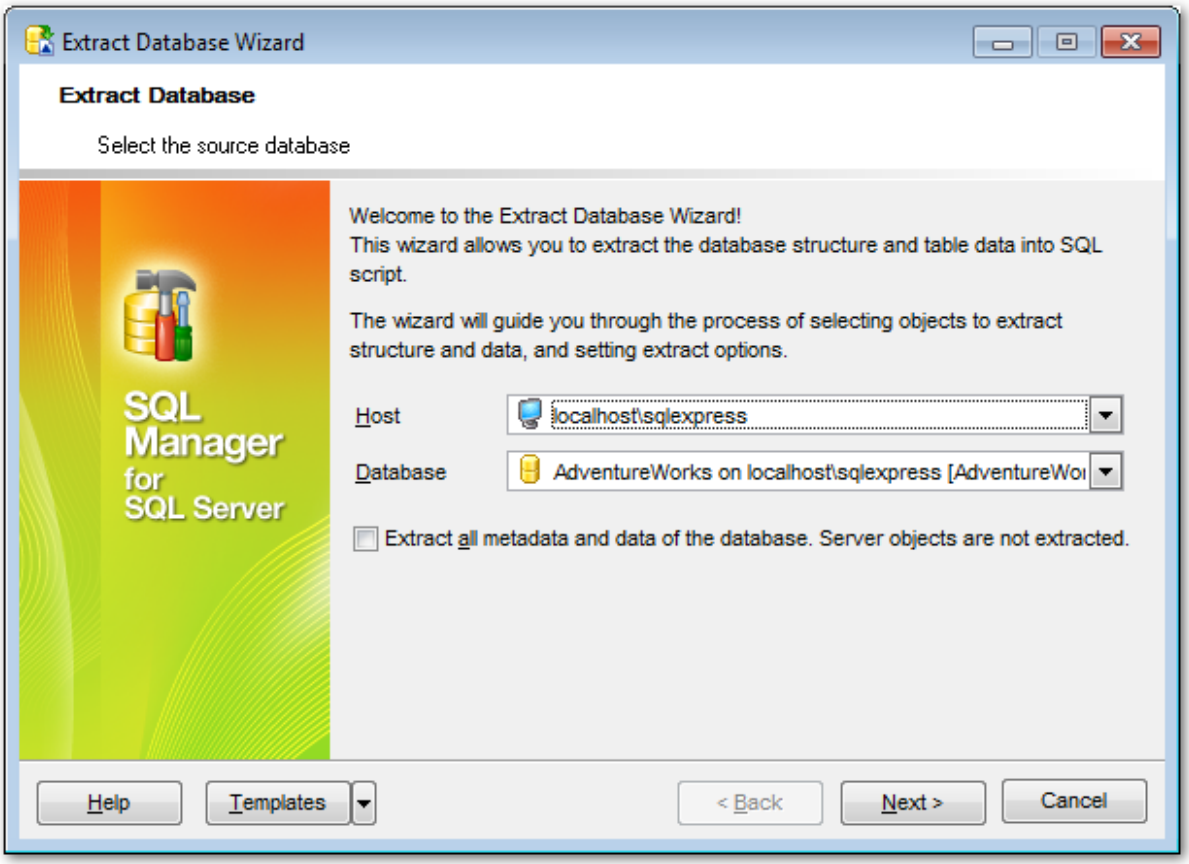
Database Objects Management 182

Using templates 970

9.4.1 Selecting source database

This step of the wizard allows you to select the **source database** from which metadata and/or data are to be extracted.

If necessary, check the ☑ **Extract all metadata and data of the database** option to simplify the wizard.



Click the **Next** button to proceed to the Specifying destination file name 633 step of the wizard.

9.4.2 Specifying destination file name

Script destination

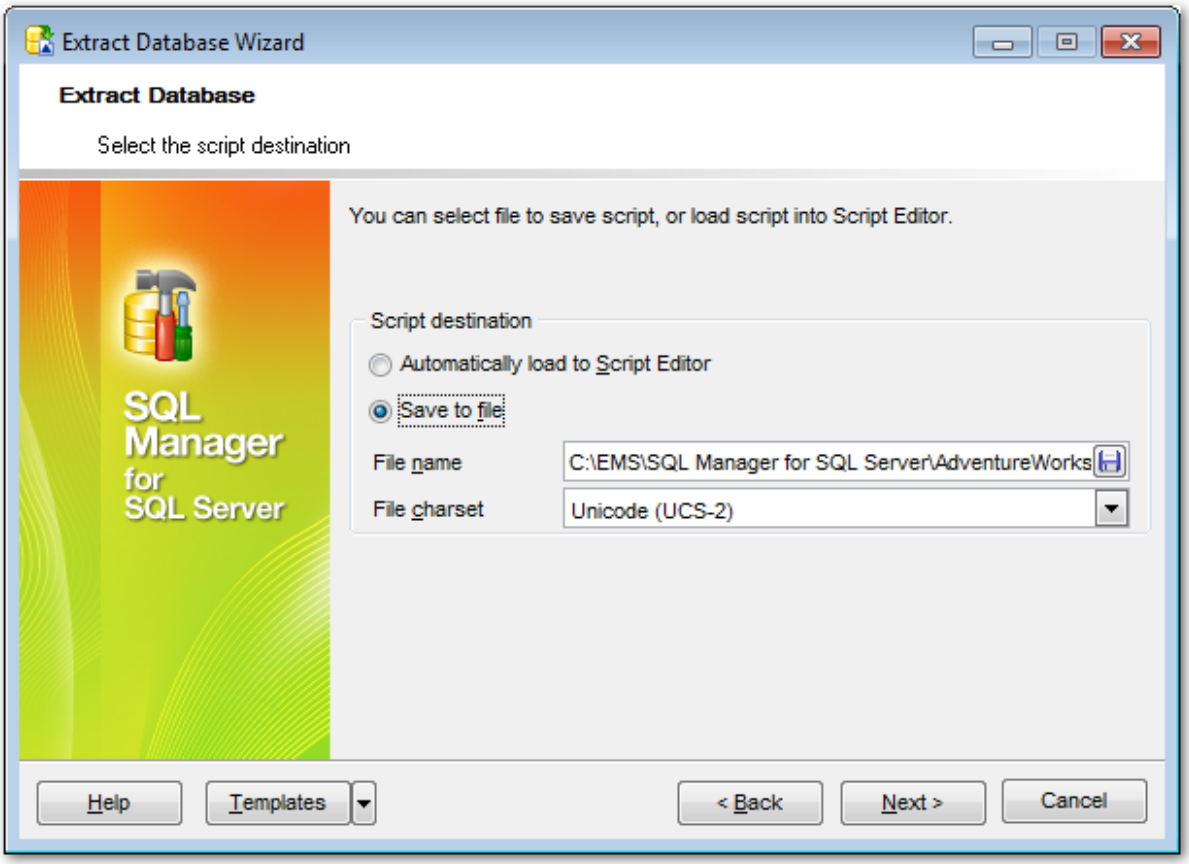
This group of options allows you to specify whether the result SQL script will be automatically loaded to Execute Script 625 or saved into a file.

File name

Set a name for the result **.sql* file and type in or use the **Save as...** button to specify the path to this file on your local machine or on a machine in the LAN.

File charset

If necessary, use the drop-down list to select the character set to be applied to the output file.

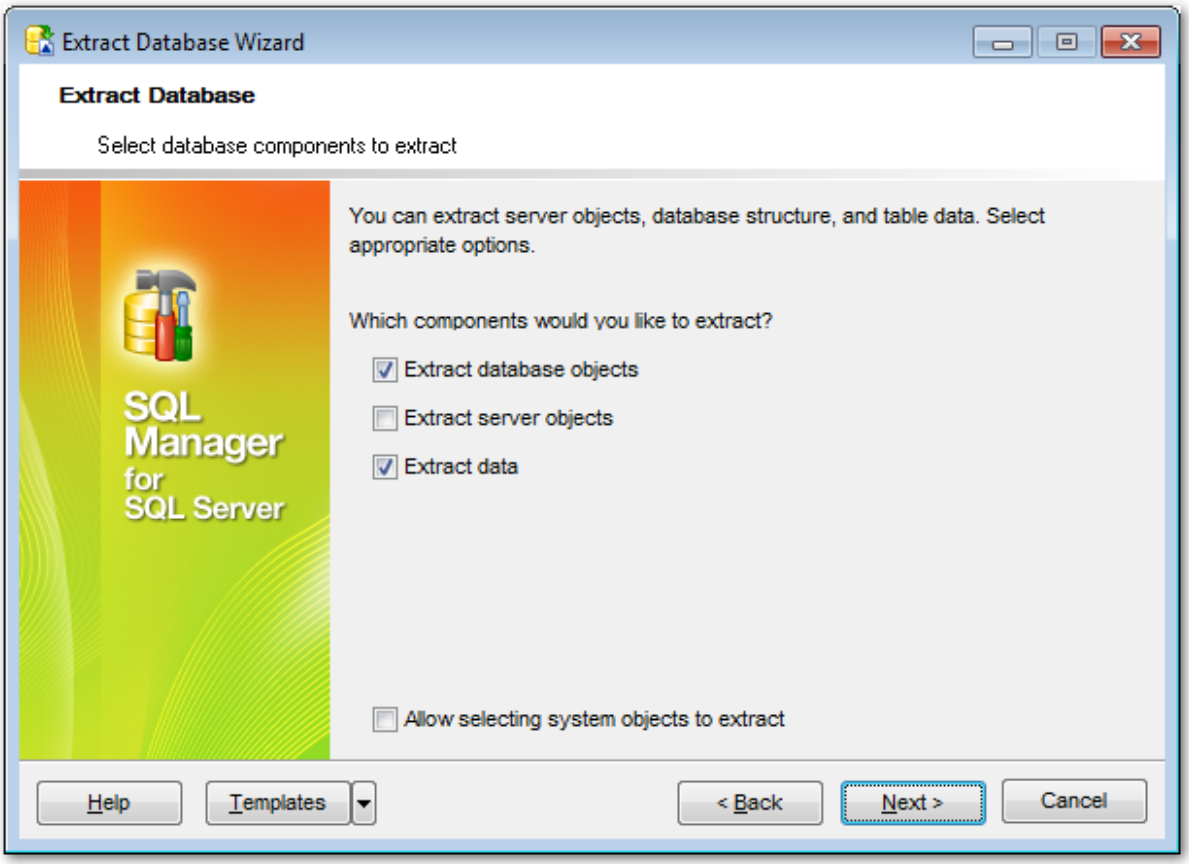


Depending on whether you have checked the ☑ **Extract all metadata and data of the database** option at the Selecting source database 632 step, upon pressing the **Next** button you will either proceed to the next step of the wizard 634, or you will be immediately forwarded to the Setting BLOB options 635 step, and then to the Customizing script options 639 step of the wizard.

9.4.3 Setting extraction mode

This step allows you to specify the **extraction mode**: choose whether *database objects*, *server objects* and/or *data* only are to be extracted.

To make system objects available for extraction, use the ☑ **Allow selecting system objects to extract** option.



Click the **Next** button to proceed to the Setting BLOB options 635 step of the wizard.

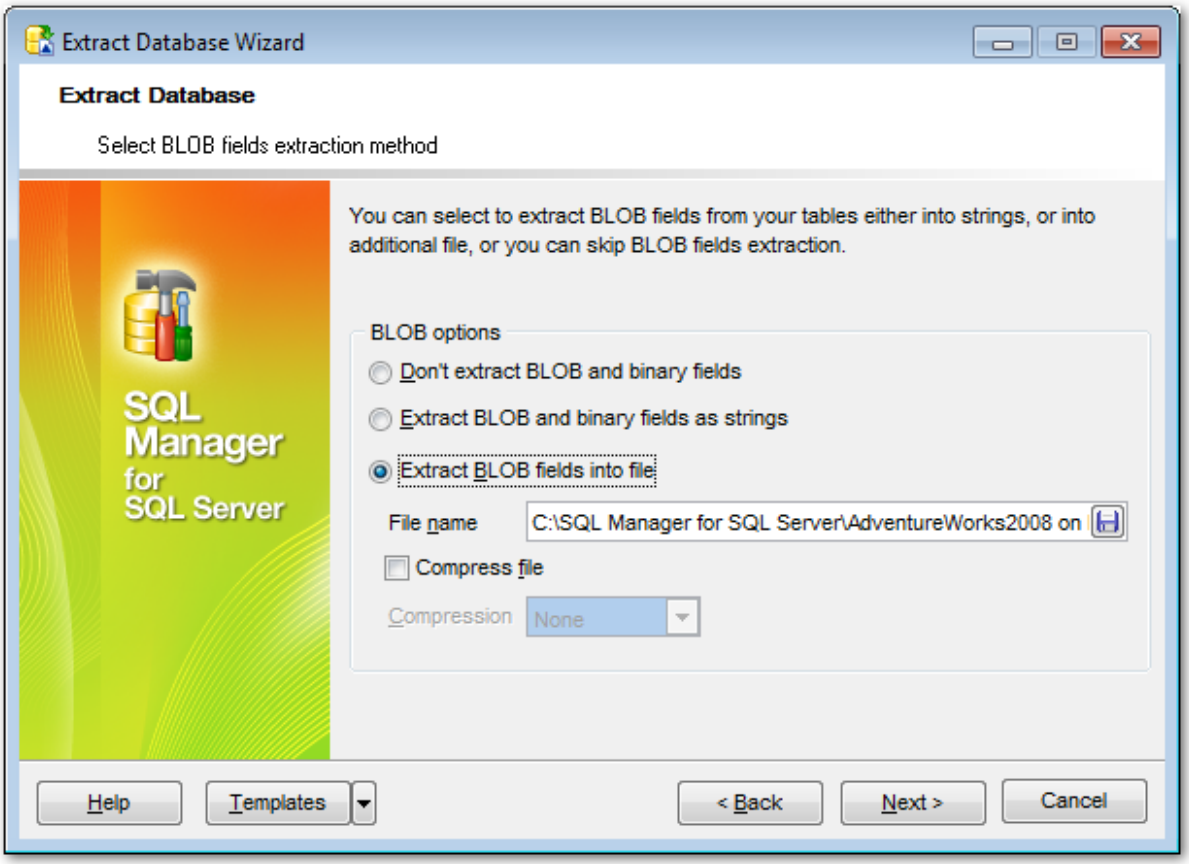
9.4.4 Setting BLOB options

BLOB options

In this group of options you can determine whether BLOB fields are *not to be extracted*, *extracted as strings*, or *extracted into a separate file*. If the latter is selected, you also need to specify the **File name** (the **.blo* file where the BLOB data are to be stored) and the location of the file on your local machine using the **Save as...** button.

Compress file
Check this option if you wish to compress the file containing BLOB data.

Compression
Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.



Note: If you choose to **Extract BLOB fields into file** then afterwards the result SQL file can be restored only by using the SQL Manager for SQL Server Execute Script 625 tool.

Click the **Next** button to proceed to Selecting objects for structure extraction 636.

9.4.5 Selecting objects for structure extraction

This step of the wizard allows you to **select objects for metadata extraction**.

Note that this step is only available if the **Extract all metadata and data of the database** option was unchecked when selecting the source database 632.

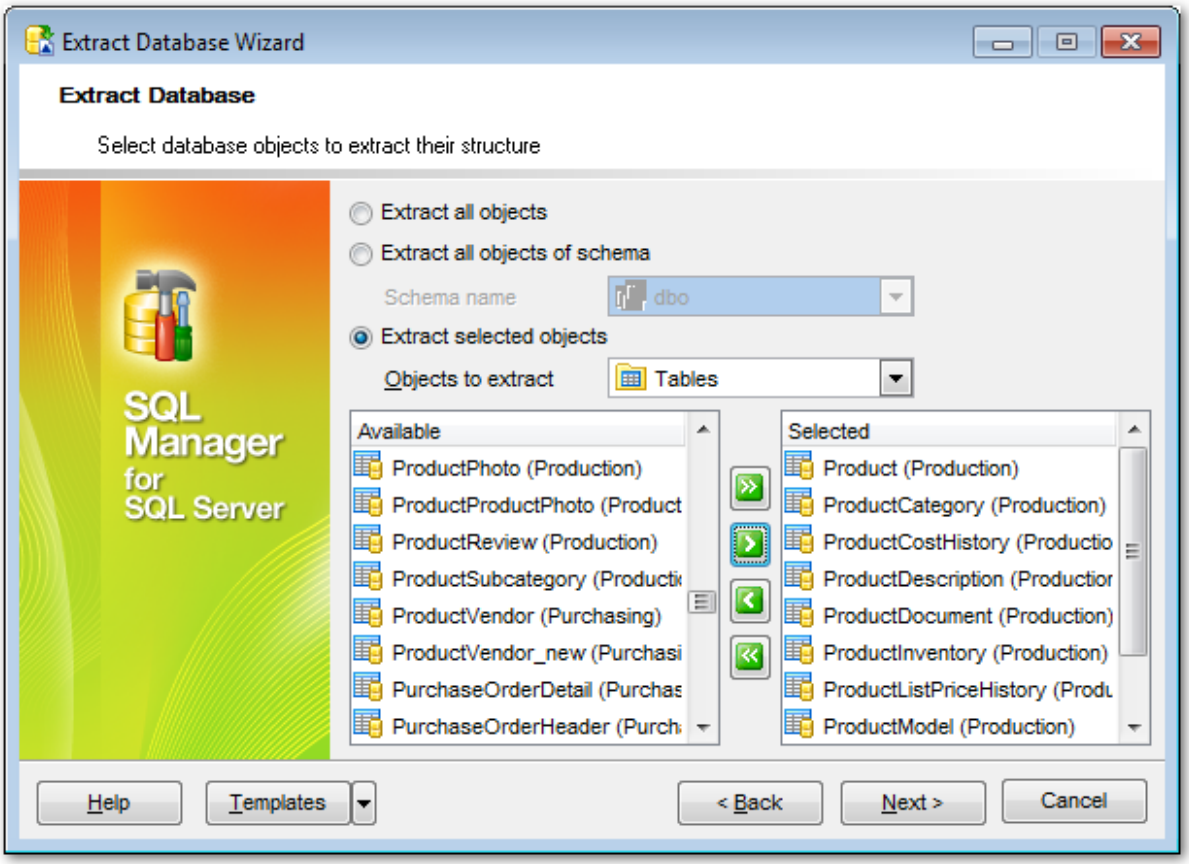
Extract all objects
Adds all objects of the database to structure extraction process.

Extract all objects of schema...
Adds all objects of a schema to structure extraction process.

Schema name
Use the drop-down list to select the schema to extract all objects from.

Extract selected objects
Adds only selected objects to structure extraction process.

Objects to extract
Use the drop-down list to select the type of objects to be extracted.
To select an object, you need to move it from the **Available** list to the **Selected** list. Use the buttons or drag-and-drop operations to move the objects from one list to another.



Click the **Next** button to proceed to Selecting objects for data extraction 638.

9.4.6 Selecting server objects for extraction

This step of the wizard allows you to **select objects for metadata extraction**.

Note that this step is only available if the **Extract all metadata and data of the database** option was unchecked when selecting the source database 632.

Extract all objects
Adds all objects of the database to structure extraction process.

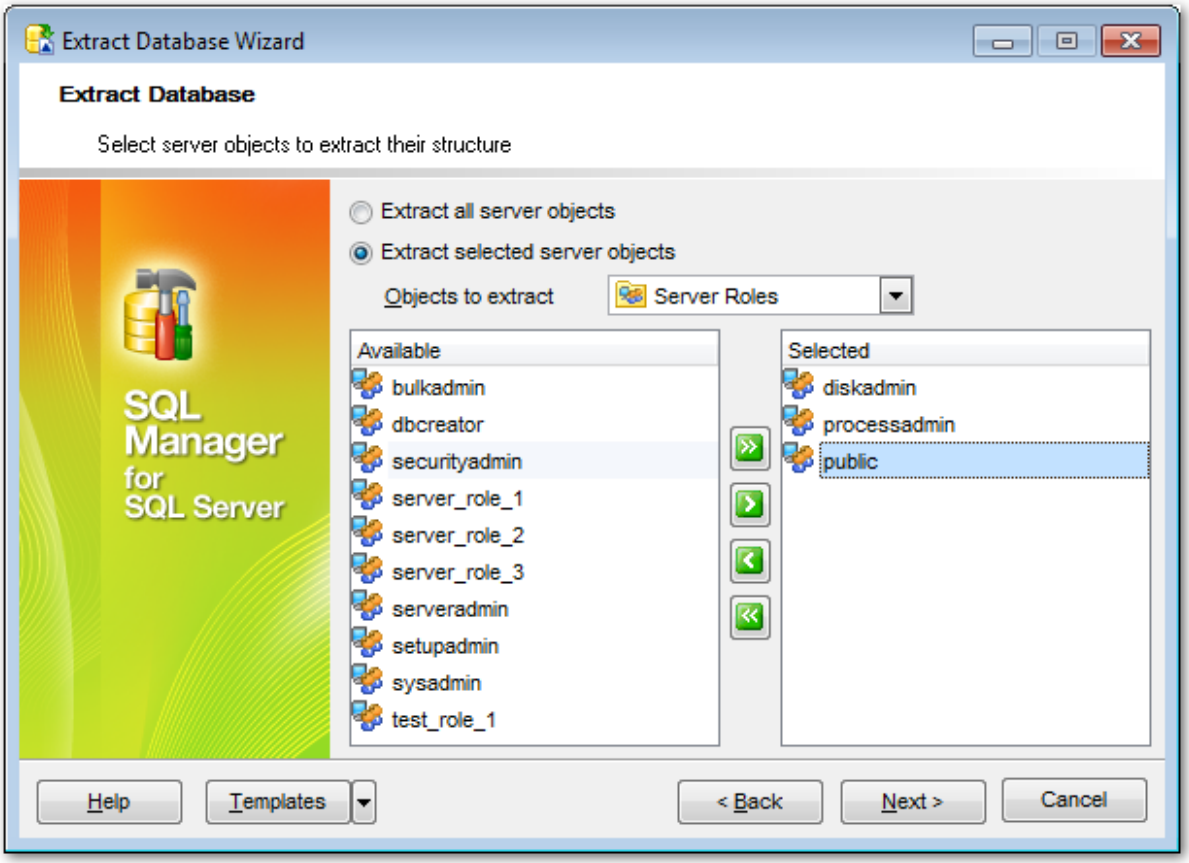
Extract all objects of schema...
Adds all objects of a schema to structure extraction process.

Schema name

Use the drop-down list to select the schema to extract all objects from.

Extract selected objects
Adds only selected objects to structure extraction process.

Objects to extract
Use the drop-down list to select the type of objects to be extracted.
To select an object, you need to move it from the **Available** list to the **Selected** list. Use the buttons or drag-and-drop operations to move the objects from one list to another.



Click the **Next** button to proceed to Selecting objects for data extraction 638.

9.4.7 Selecting objects for data extraction

This step of the wizard allows you to **select tables for data extraction**.

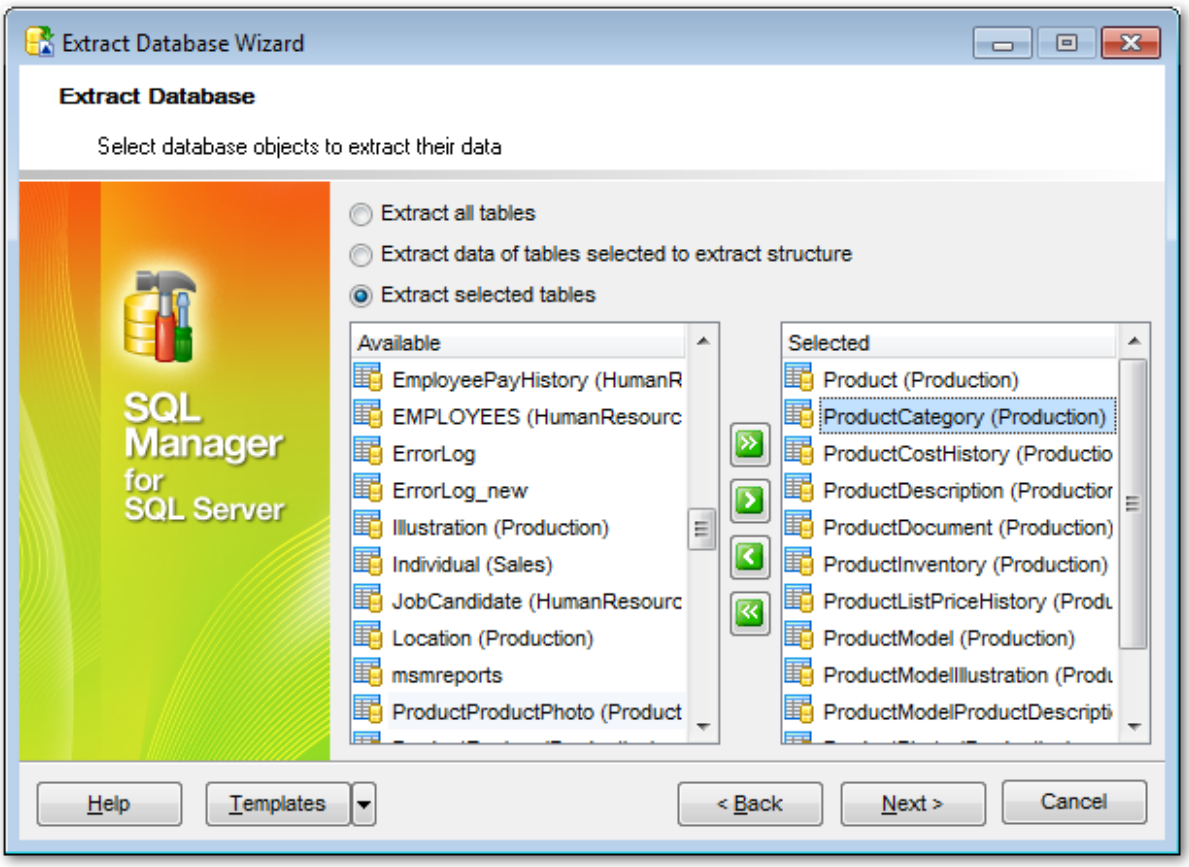
Note that this step is only available if the **Extract all metadata and data of the database** option was unchecked when selecting the source database 632.

Extract data of the selected tables
Adds only selected tables to data extraction process.
To select a table, you need to move it from the **Available** list to the **Selected** list. Use

the buttons or drag-and-drop operations to move the tables from one list to another.

Extract data of all tables
Adds all tables of the database to data extraction process.

Extract data of tables selected on the previous step
Adds only the tables selected for metadata extraction 636.



Click the **Next** button to proceed to the Customizing script options 639 step of the wizard.

9.4.8 Customizing script options

This step allows you to customize common **script options** and **data options** for the extraction process.

Script options

Generate "CREATE DATABASE" statement
Check this option to add the *CREATE DATABASE* statement to the result script.

Generate DROP statements
Check the option to add the *DROP* statements for the extracted objects in the result

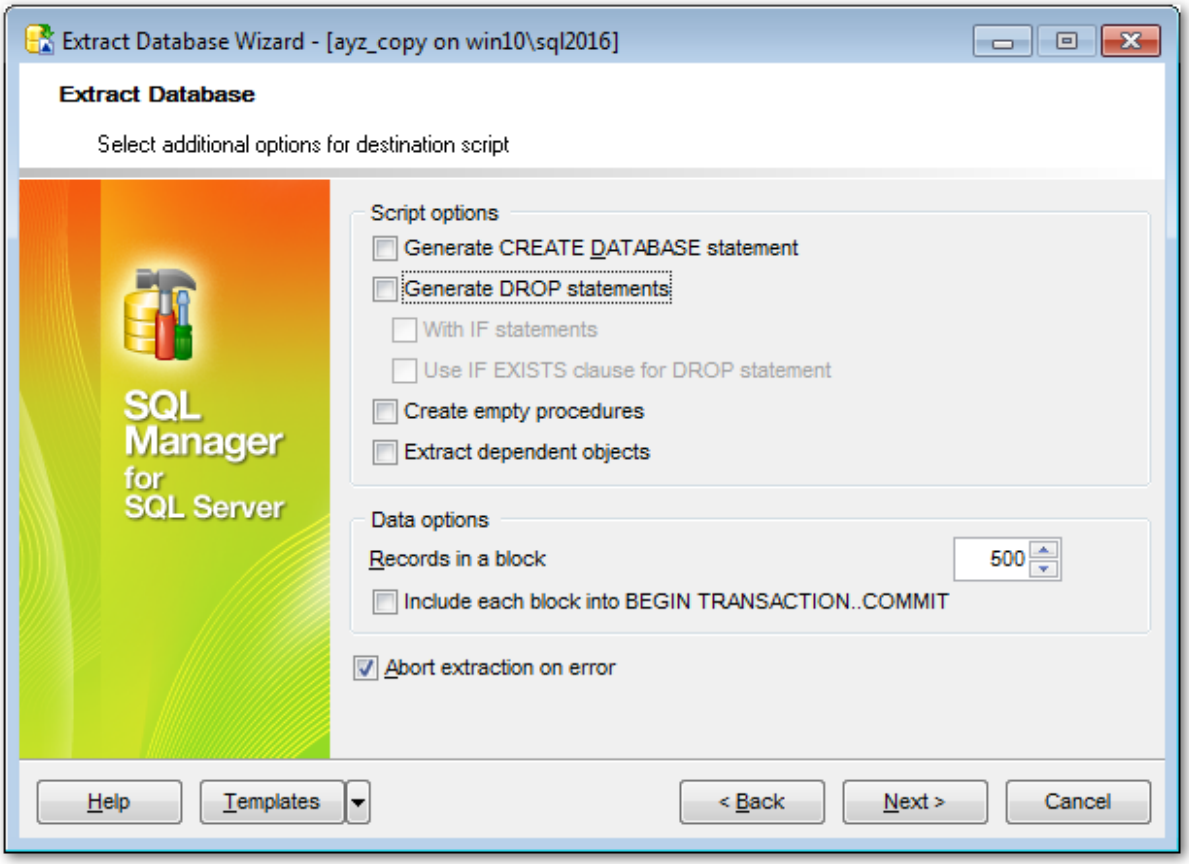
script.

☑ **With IF statements**
Check this option to add the *IF* keyword to the *DROP* statements in the result script.

☑ **Use IF EXISTS clause for DROP statement**
Check this option to add the *IF EXISTS* clause to the *DROP* statements in the result script, if available.

☑ **Create empty procedures**
This option specifies whether procedures with empty bodies are included in the result script or not.

☑ **Extract dependent objects**
This option determines objects' dependencies 957 usage in the extraction process. Check the option to extract all objects that the selected objects depend on.



Data options

Records in a block / ☑ Insert "COMMIT" statement after each block
These controls allow you to define whether the *COMMIT* statement is added to the script or not, and to specify the number of records in each block to be supplemented with this statement.

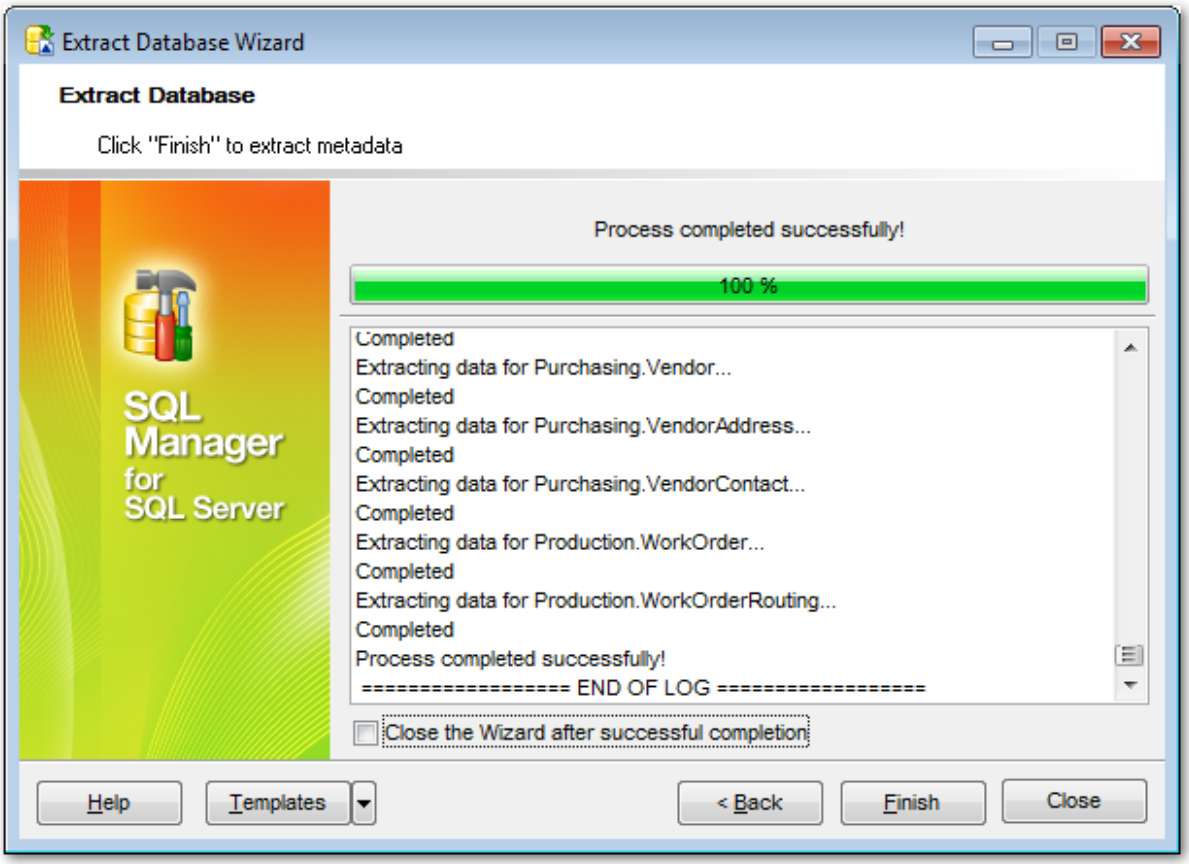
☑ **Abort extraction on error**
This option determines whether the extraction process should be stopped or forced to continue if an error occurs.

Click the **Next** button to proceed to the last 641 step of the wizard.

9.4.9 Start of extraction process

This step of the wizard is intended to inform you that all extraction options have been set, and you can start the extraction process.

The log area allows you to view the log of operations and errors (if any).



☑ **Close the wizard after successful completion**
If this option is selected, the wizard is closed automatically when the extraction process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to run the extraction process.

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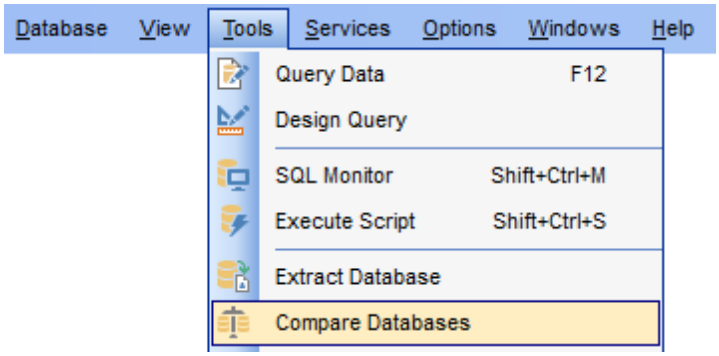
9.5 Database Comparer Wizard

Compare Databases Wizard creates an SQL script that provides database structure synchronization. To launch the wizard use the **Tools | Compare Databases...** item of the main menu 951.



- Selecting source database 643
- Selecting target database 644
- Selecting type of the synchronization script 645
- Defining options for the destination script 646
- Performing operation 647

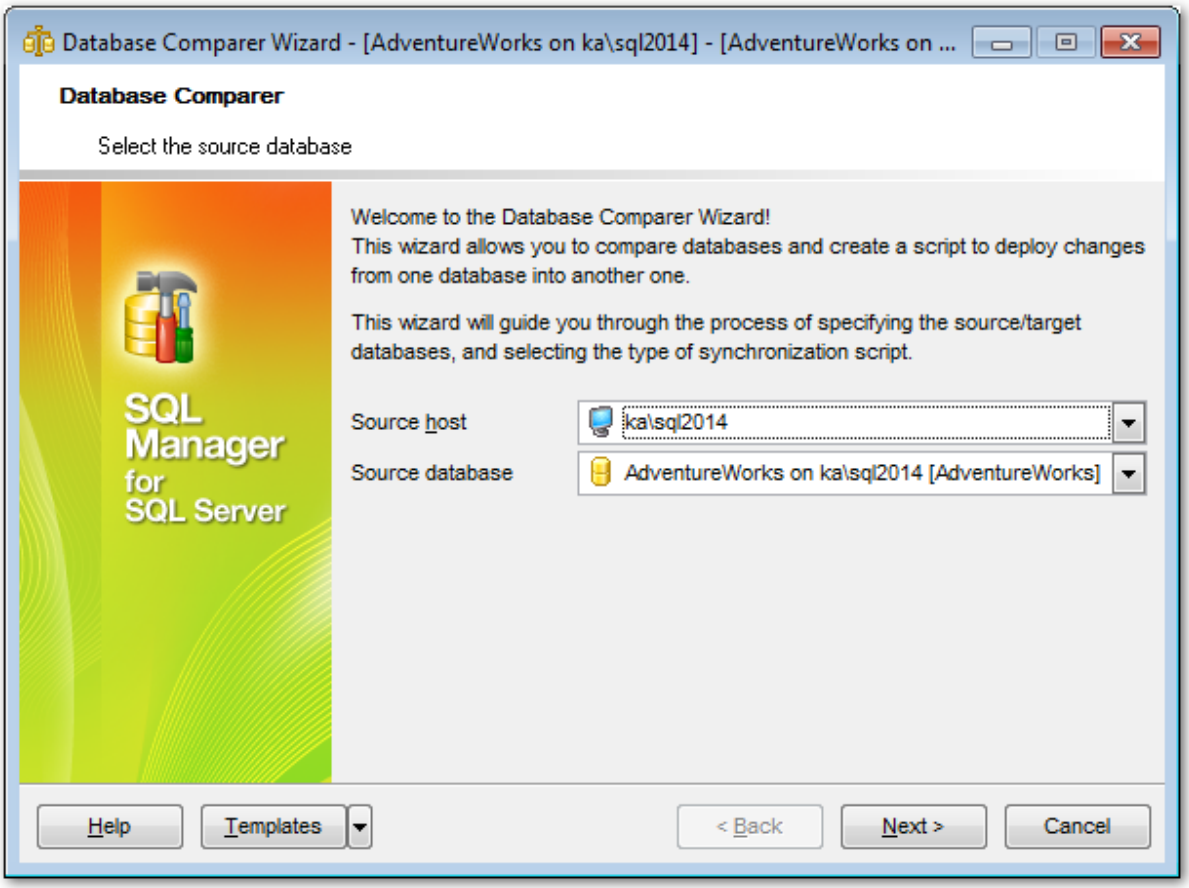
Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 24 page.

9.5.1 Selecting source database

Use this step to define source database for comparing.



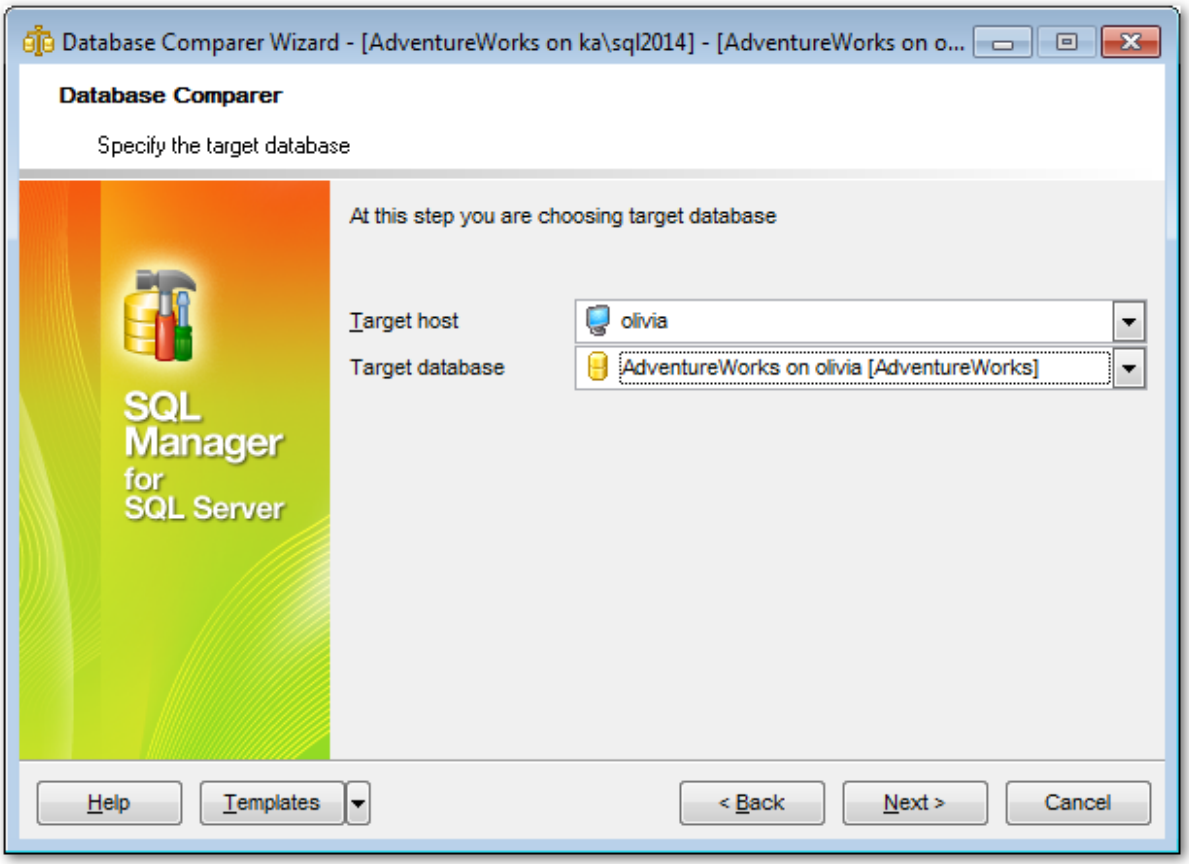
Source host
Define host where source database is located.

Source database
Select source database from the drop-down list.

Click the **Next** button to proceed to the Selecting target database 644 step.

9.5.2 Selecting target database

Use this step to define target database for comparing.



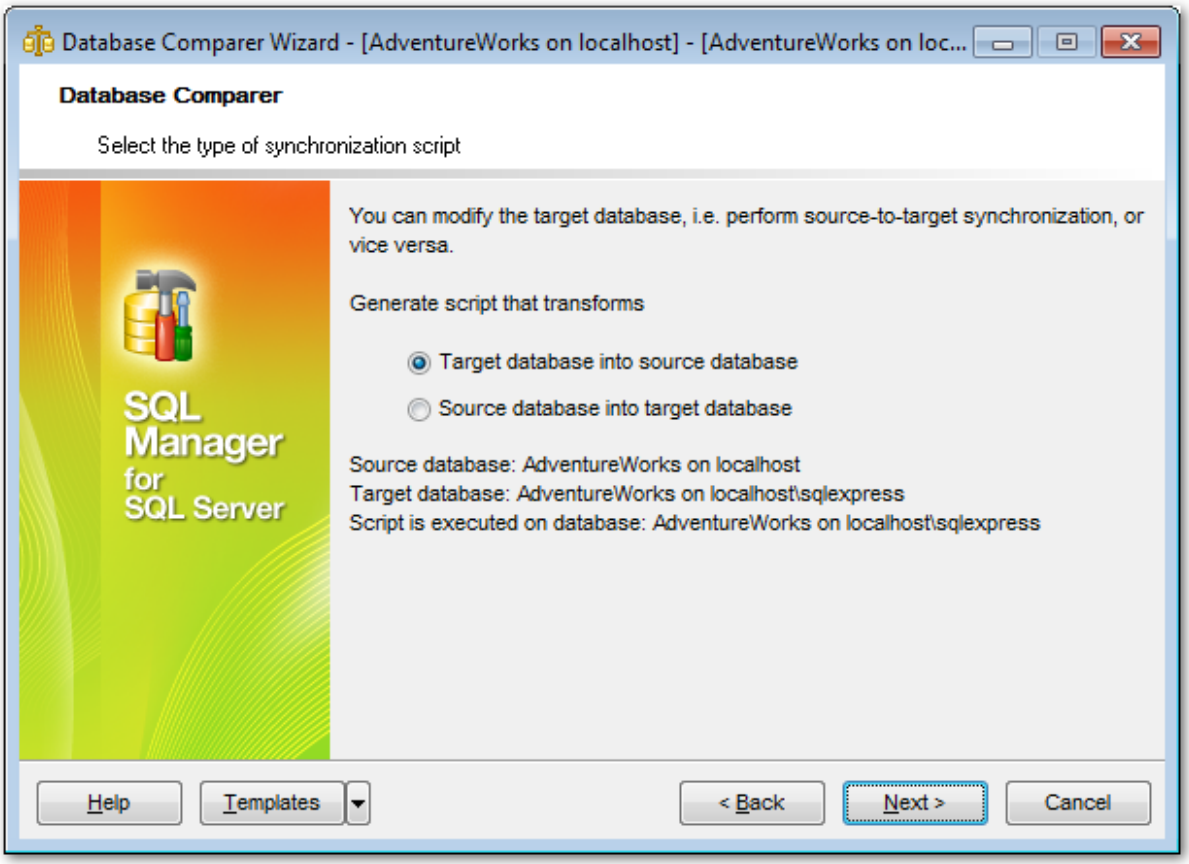
Target host
Define host where target database is located.

Target database
Select target database from the drop-down list.

Click the **Next** button to proceed to the Selecting type of the synchronization script 645 step.

9.5.3 Selecting type of synchronization script

Specify the direction of the selected databases comparing.



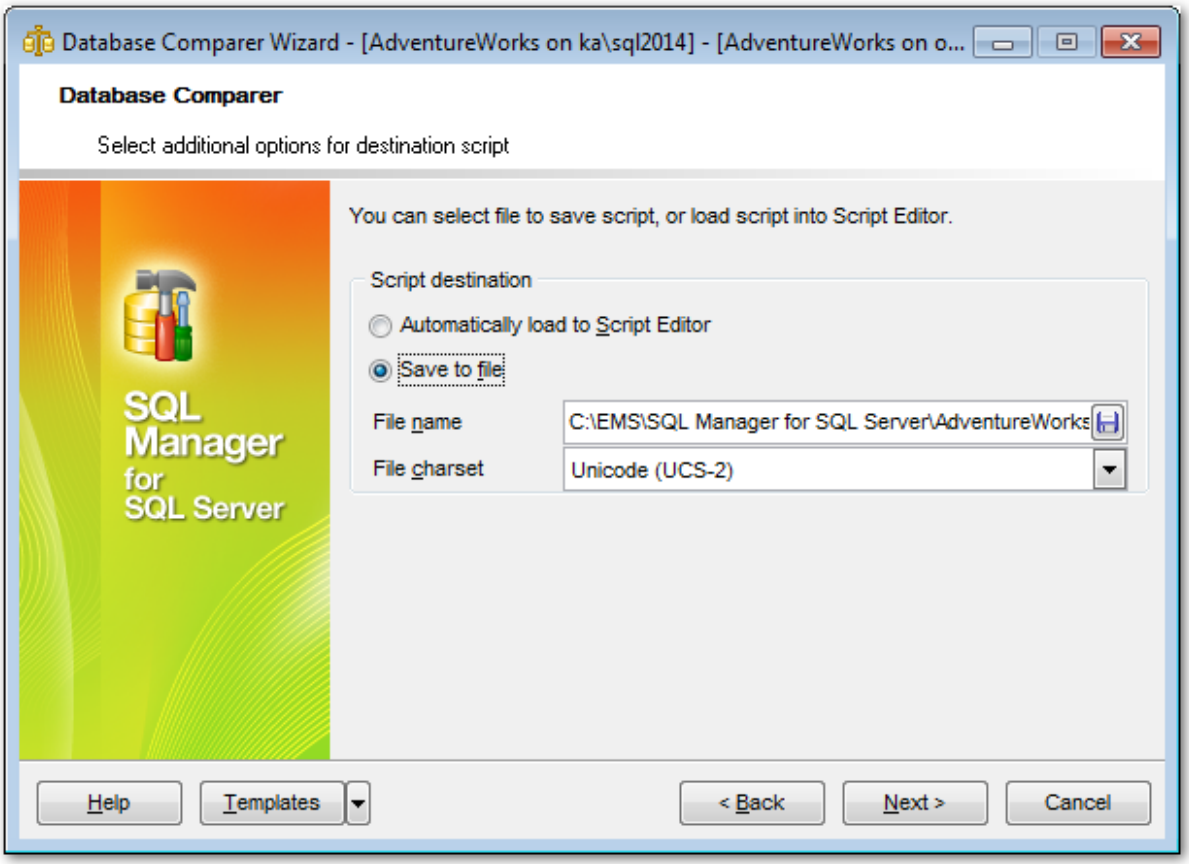
Target database into source database
Enables reverse comparing: the synchronization script will contain statements which make the target 692 database identical to the source 690 one.

Source database into target database.
Enables direct comparing: the synchronization script will contain statements which make the source 690 database identical to the target 692 one.

Click the **Next** button to proceed to the Defining options concerned destination script 646 step.

9.5.4 Defining options for destination script

Use this step to define additional option for destination script.



Automatically load to Script Editor
With this option is enabled, the synchronization script will not be saved. It will be loaded to Execute Script 625.

Save to file
Use this option if you need to save the synchronization script to a file.

File name
Defines the name of the file to save the synchronization script to. Click the **Save** button to locate file using the standard dialog or type the file name and it's location manually.

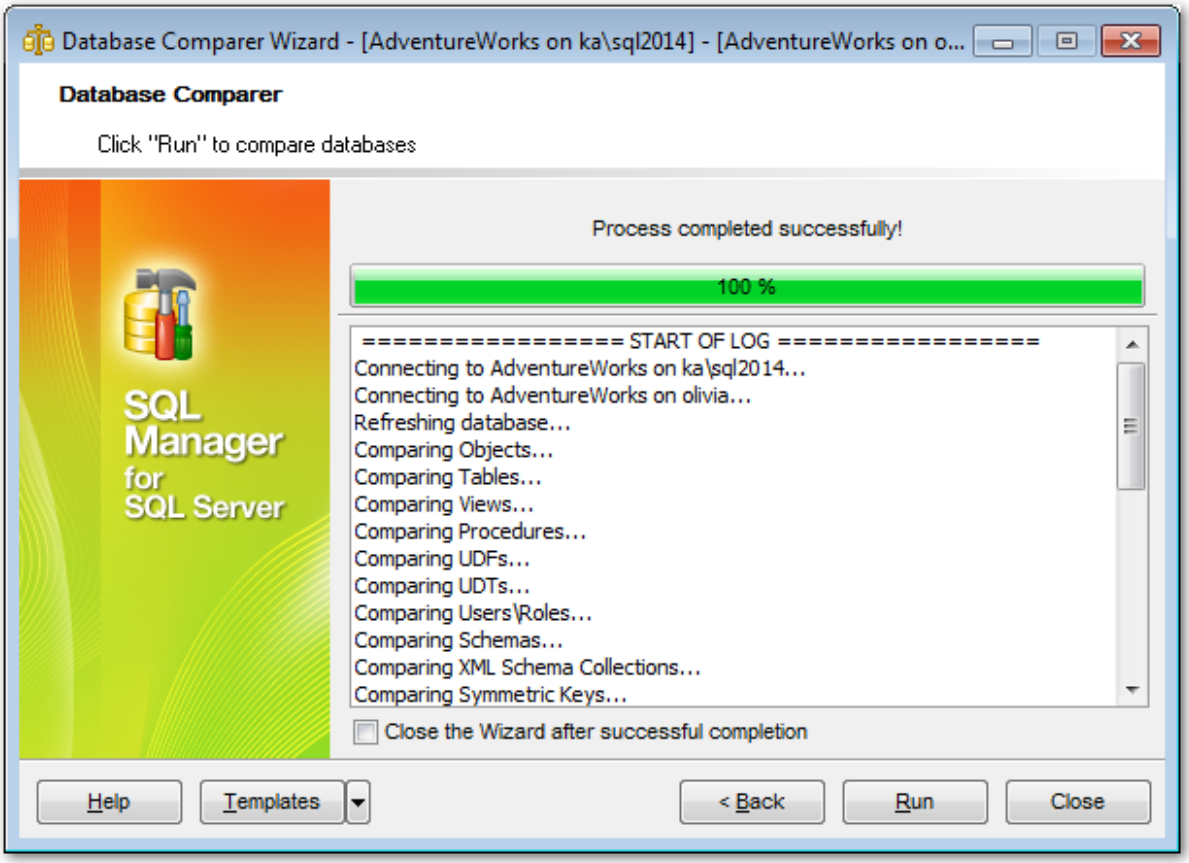
File charset
Specified character set will be used when saving the script to file.

Click the **Next** button to proceed to the Performing operation 647 step.

9.5.5 Performing operation

This step of the wizard is intended to inform you that all necessary options have been set, and you can start comparing databases.

The log area allows you to view the log of operations and errors (if any).



☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the process is completed. If the option is disabled then you can repeat the operation with the same or redefined parameters.

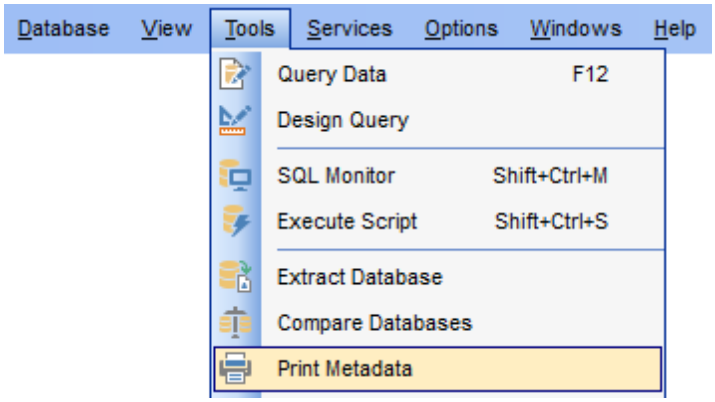
Click the **Run** button to run the backup database operation.

Use the templates 970 button to save current settings to template or to restore settings from an existing template.

9.6 Print Metadata

Print Metadata allows you to generate and print metadata reports of any database/ server object(s).

To open the window, select the **Tools | Print Metadata** main menu 951 item, or use the **Print Metadata** button on the main toolbar 953. Alternatively, you can right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Print Metadata** item from the context menu 55.



- Using Navigation bar and Toolbar 649
- Printing options 651
- Print Preview 652

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Database and Server Objects Management 182

Print Metadata options 887

9.6.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Print Metadata**.

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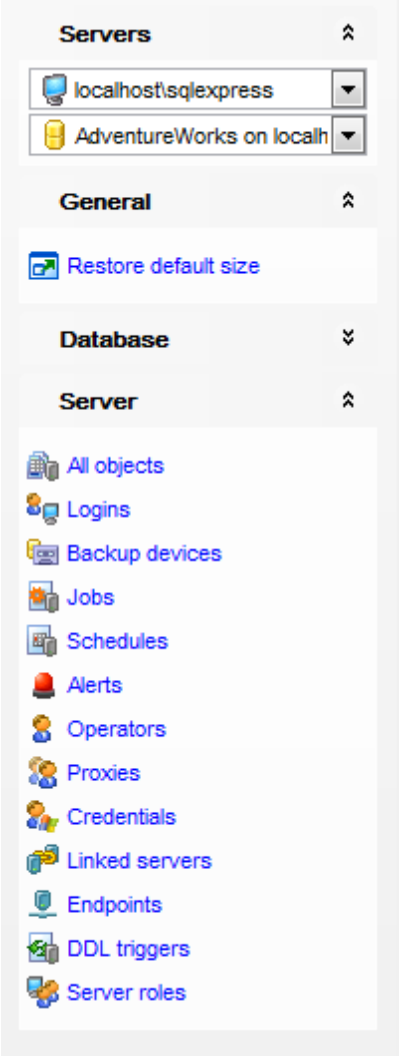


The **Navigation bar** of the **Print Metadata** window allows you to:

Servers

select a server instance for the printing report
select a database for the printing report

General

print metadata of the selected object(s)
preview 652 the printing report
restore the default size and position of the window

Database

✓ filter database objects by type

Server

✓ filter server objects by type

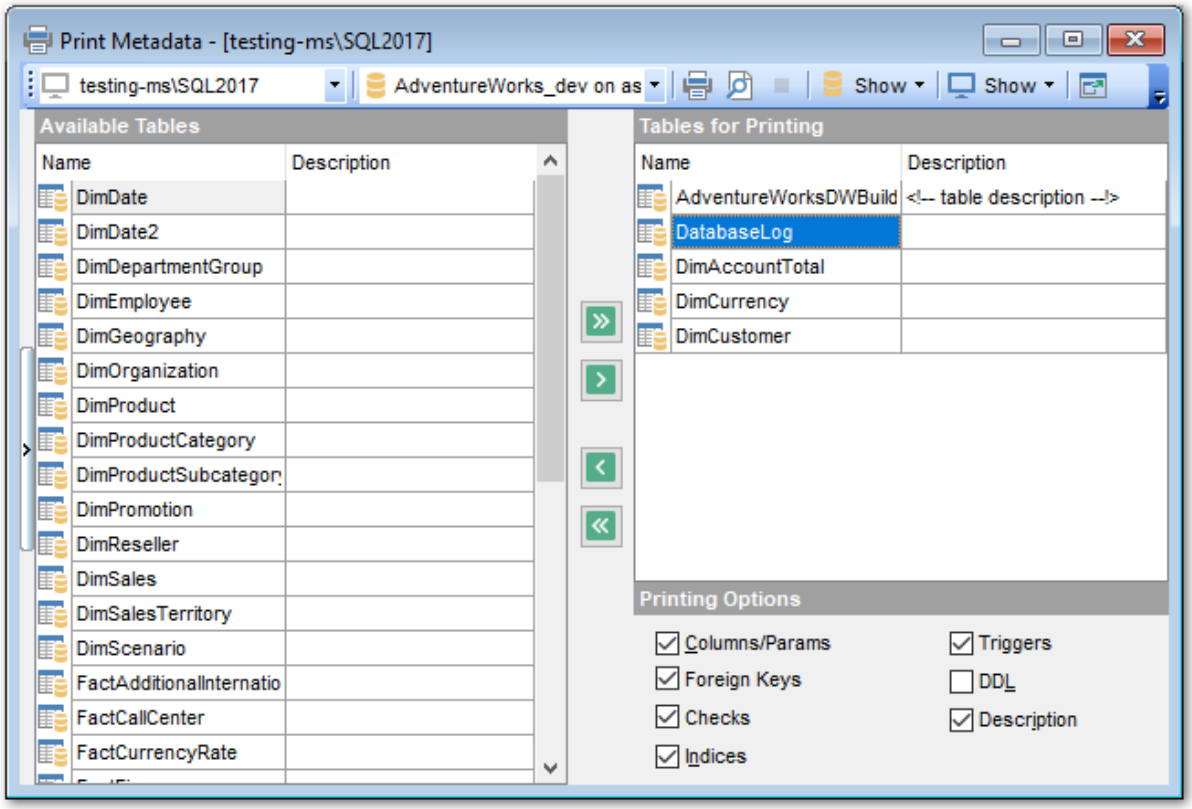
Items of the **Navigation bar** are also available on the **ToolBar** of the **Print Metadata** window. To enable the toolbar953, open the Environment Options854 dialog, proceed to the Windows858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar951) in the **Bar style for child forms** group.

9.6.2 Printing options

The **Print Metadata** window allows you to select the database objects for printing metadata.
To select an object, you need to move it from the **Available objects** list to the **Objects for printing** list. Use the buttons or drag-and-drop operations to move the objects from one list to another.

After you select one or several objects, the **Printing Options** pane appears at the bottom.

Printing Options
Select an object in the **Objects for printing** list and specify items to be included into the printing report: *DDL*, *Description* (for all database objects), *Columns/Params*, *Foreign Keys*, *Checks*, *Indexes*, *Triggers* (for tables).

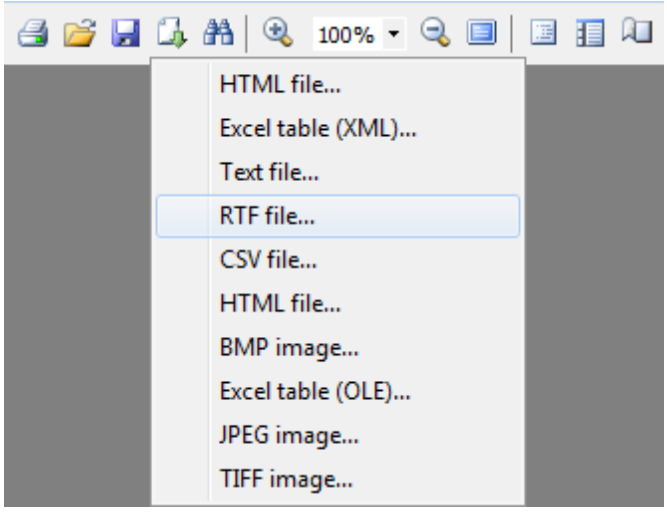


See also:

Using Navigation bar and Toolbar 649
Print Preview 652

9.6.3 Print Preview

You can **make a preview** of the printing report and **print metadata** for objects of the selected type using the corresponding items of the Navigation bar 649 (or toolbar 651).



The toolbar 953 of the **Preview** window allows you to:

- start printing the report;
- open a previously saved printing report;
- save the current report to an external **.fp3* file;
- export the preview content to any of the available formats: *HTML file*, *Excel file*, *Text file*, *RTF file*, *CSV file*, *HTML file*, *BMP image*, *Excel table (OLE)*, *JPEG image*, *TIFF image* (use the **Export** button for this purpose);
- search for text within the printing report;
- adjust zoom options;
- enable/disable printing report outline;
- enable/disable printing report thumbnails;
- specify page settings;
- edit the page using Report Designer 671;
- navigate within the printing report pages;
- close the **Preview** window.

See also:

Using Navigation bar and Toolbar 649
Printing options 651

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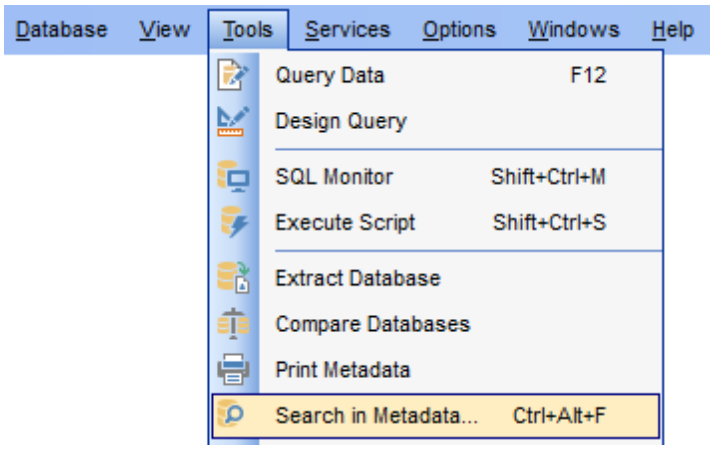
9.7 Search in Metadata

The **Search in Metadata** tool is implemented for quick search within the scope of database metadata. The tools allows you to set various search conditions and view the results.

To launch the **Search in Metadata** tool, select the **Tools | Search in Metadata** main menu 951 item, or use the *Ctrl+Alt+F* shortcut 986.



- Using Navigation bar and Toolbar 653
- Setting search conditions 655
- Viewing search results 656

Availability:

Full version (for Windows) **Yes**

Lite version (for Windows) **No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Database Objects Management 182

9.7.1 Using navigation bar and toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Search in Metadata**.

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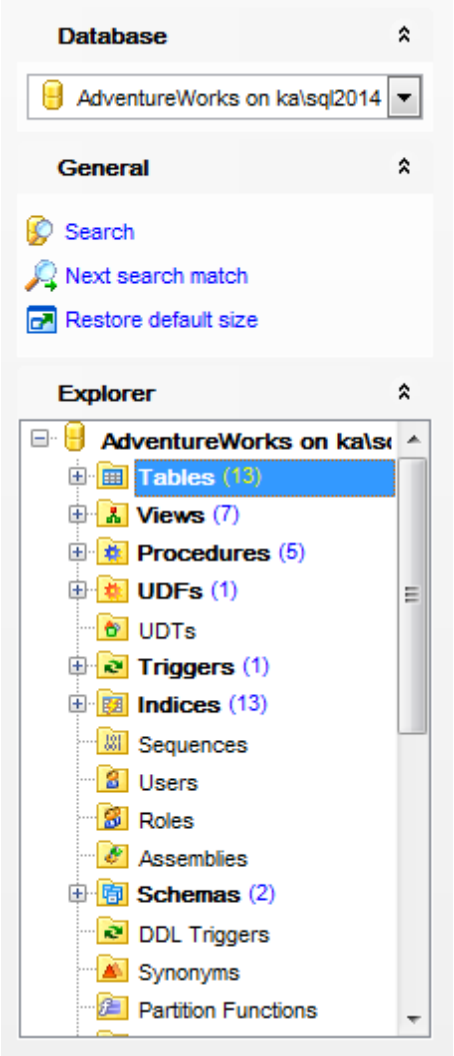


The **Navigation bar** of the **Search in Metadata** tool allows you to:

Database

select a database for searching

General

set search conditions 655
- go to next search match
restore the default size and position of the window

Explorer

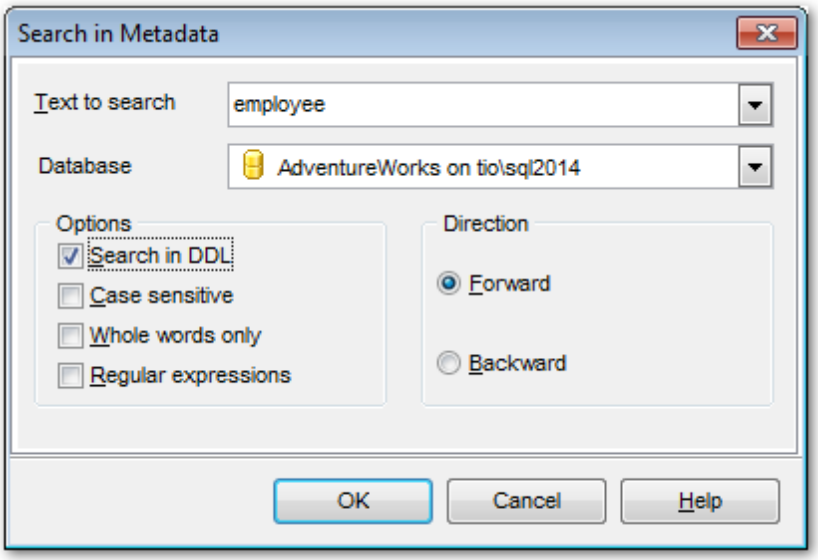
browse the tree of found database objects

Items of the **Navigation bar** are also available on the **ToolBar** of the **Search in Metadata** tool. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar

only) or ◉ *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

9.7.2 Setting search condition

The **Search in Metadata** dialog allows you to set search conditions. It opens each time the **Search in Metadata** tool is launched.



Text to search
Enter a search string in this box. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered search strings.

Database
Use the drop-down list to select a database for the search operation.

Options
☑ **Search in DDL**
Check this option to search for the specified text in full object DML statements. If the option is unchecked, the quick search is made in object names only.

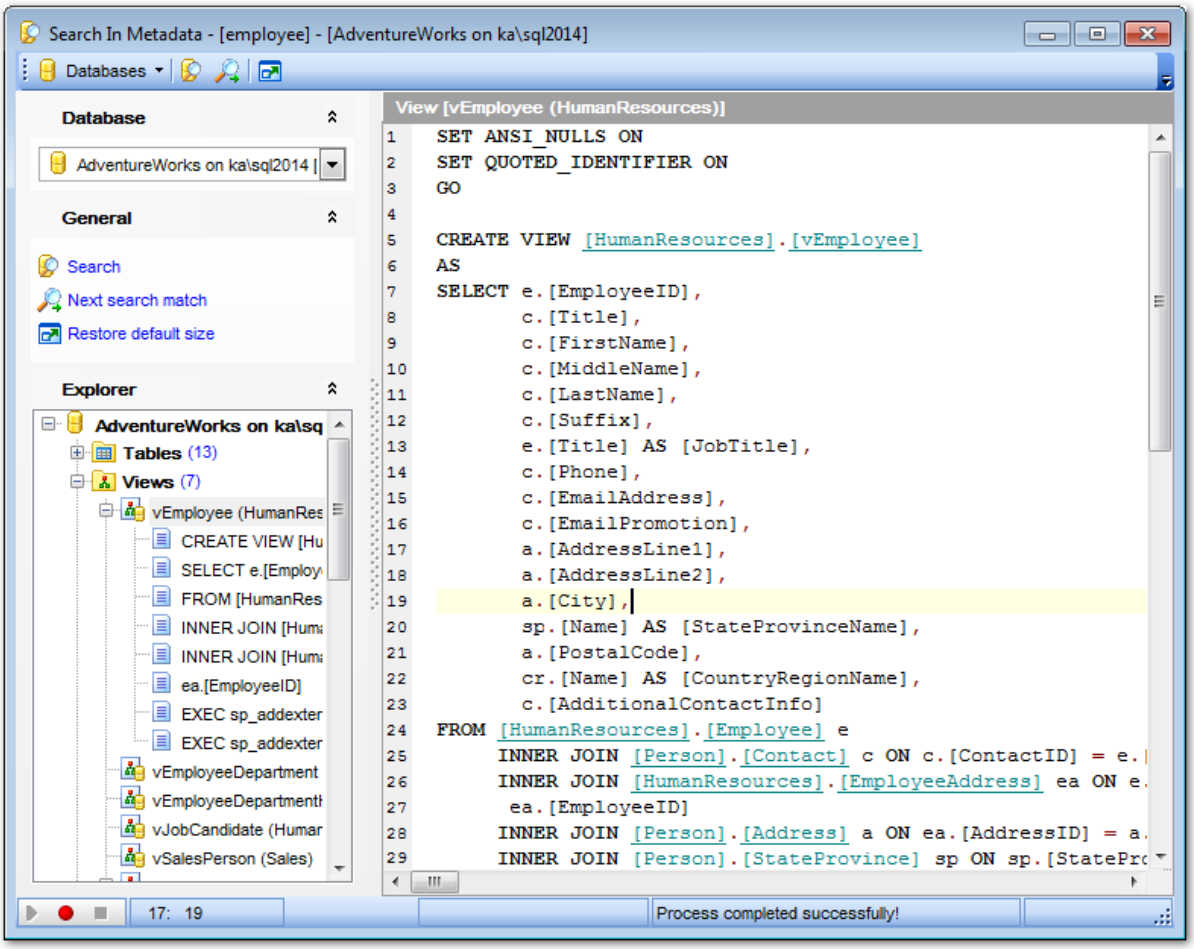
Other search options are similar to those provided by the **Find Text** dialog. For detailed description of the search options refer to the Find Text dialog 961 page.

When all the options are set, click OK. The **Search in Metadata [search string]** report window will display the search progress and results 656.

See also:
Find Text dialog 961

9.7.3 Viewing search result

The **Search in Metadata** window allows you to view the search progress and results fetched from the database.



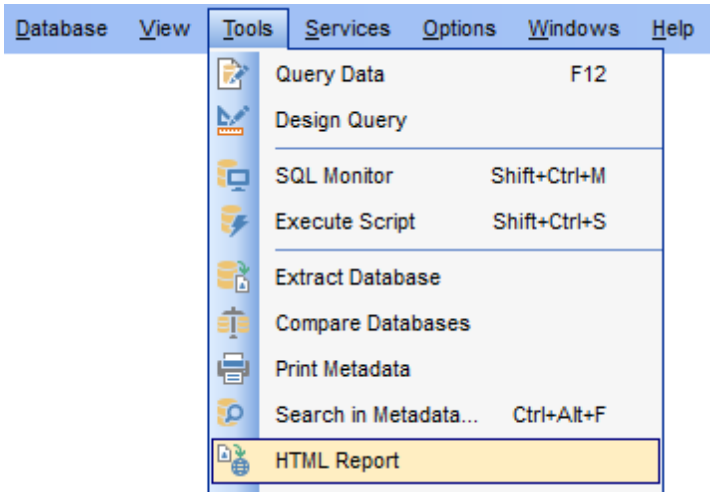
After the search is complete, the **Explorer** group on the Navigation bar 653 displays the tree of database objects in which the search string is found, and allows you to view metadata of the required object or its fragment quickly by clicking enclosed object branches in the tree.

The **Object <object_name>** area is provided for viewing metadata of the objects, with the search string highlighted.
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see Working with Query Data area 435 and Using the context menu 436.

9.8 HTML Report Wizard

HTML Report wizard allows you to generate a detailed HTML report of the selected database objects.

To start **HTML Report Wizard**, select the **Tools | HTML Report** main menu 951 item, or use the **HTML Report** button on the main toolbar 953. Alternatively, you can right-click the database alias in the DB Explorer 65 tree and select the **Tasks | HTML Report...** item from the context menu 55.



- Selecting database and directory 658
- Selecting object types 658
- Specifying CSS for HTML report 660
- Setting additional report options 662
- Creating HTML report 663
- Using templates 970

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Database and Server Objects Management 182

Using templates 970

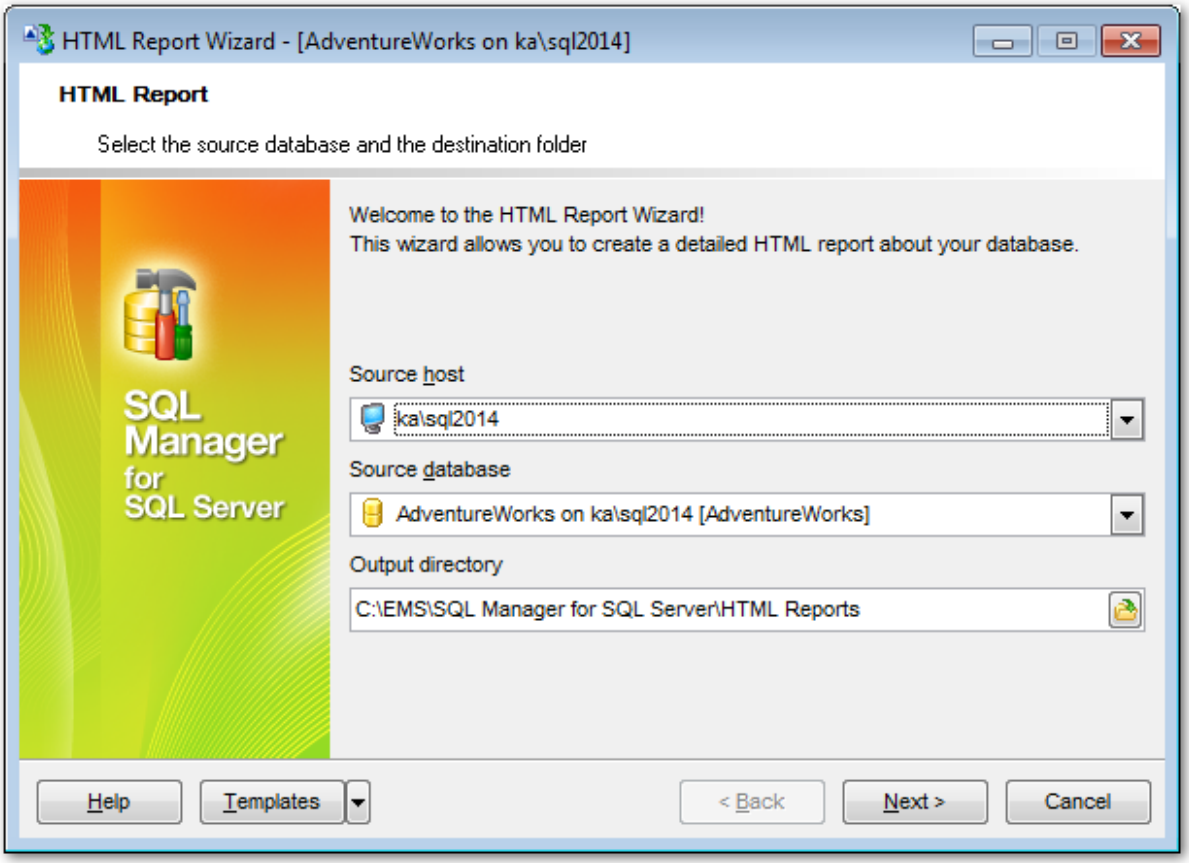
9.8.1 Selecting database and directory

At this step of the wizard you should select the **source database** and **output directory** for the HTML report.

Source host
Define host where source database is located.

Source database
Use the drop-down list of registered 114 and connected 70 databases to select the source database for the report.

Output directory
Type in or use the button to specify the path to the output directory for the result HTML files using the **Browse for Folder** dialog.

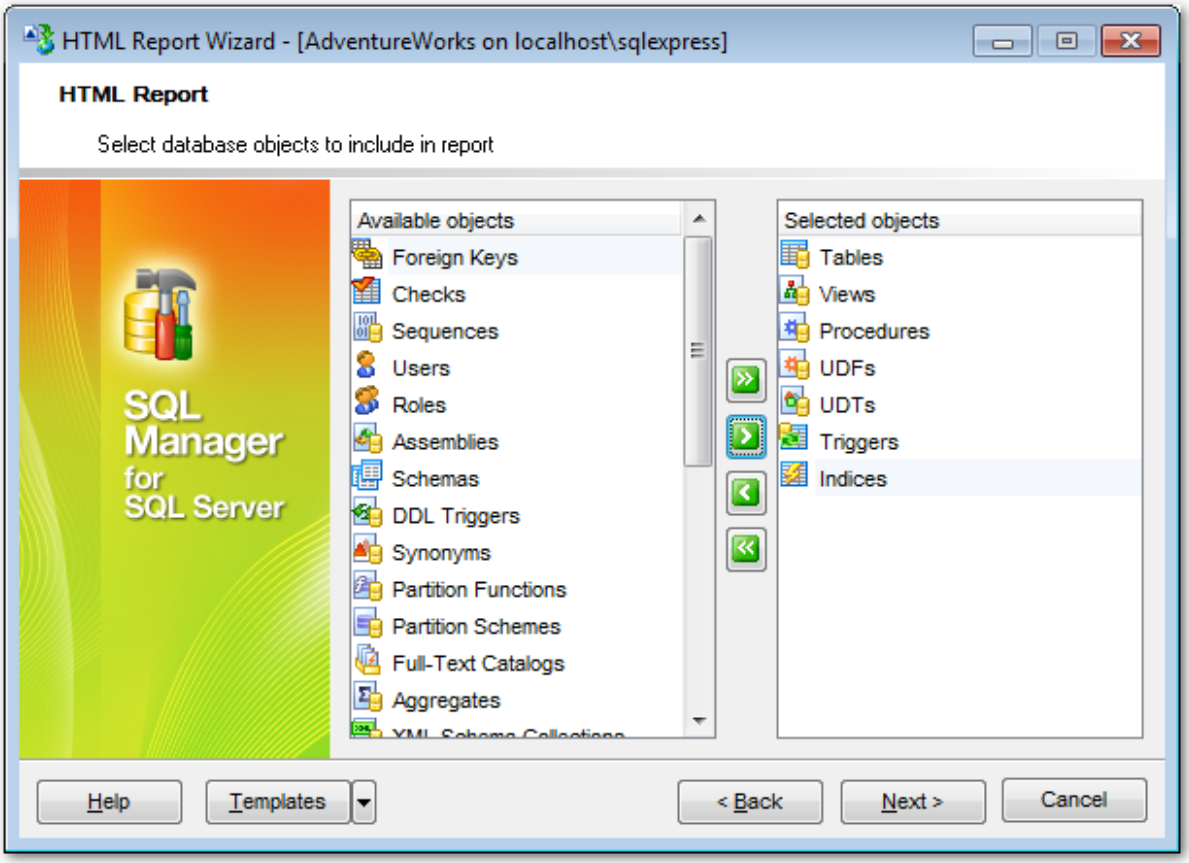


Click the **Next** button to proceed to the Selecting object types 658 step of the wizard.

9.8.2 Selecting object types

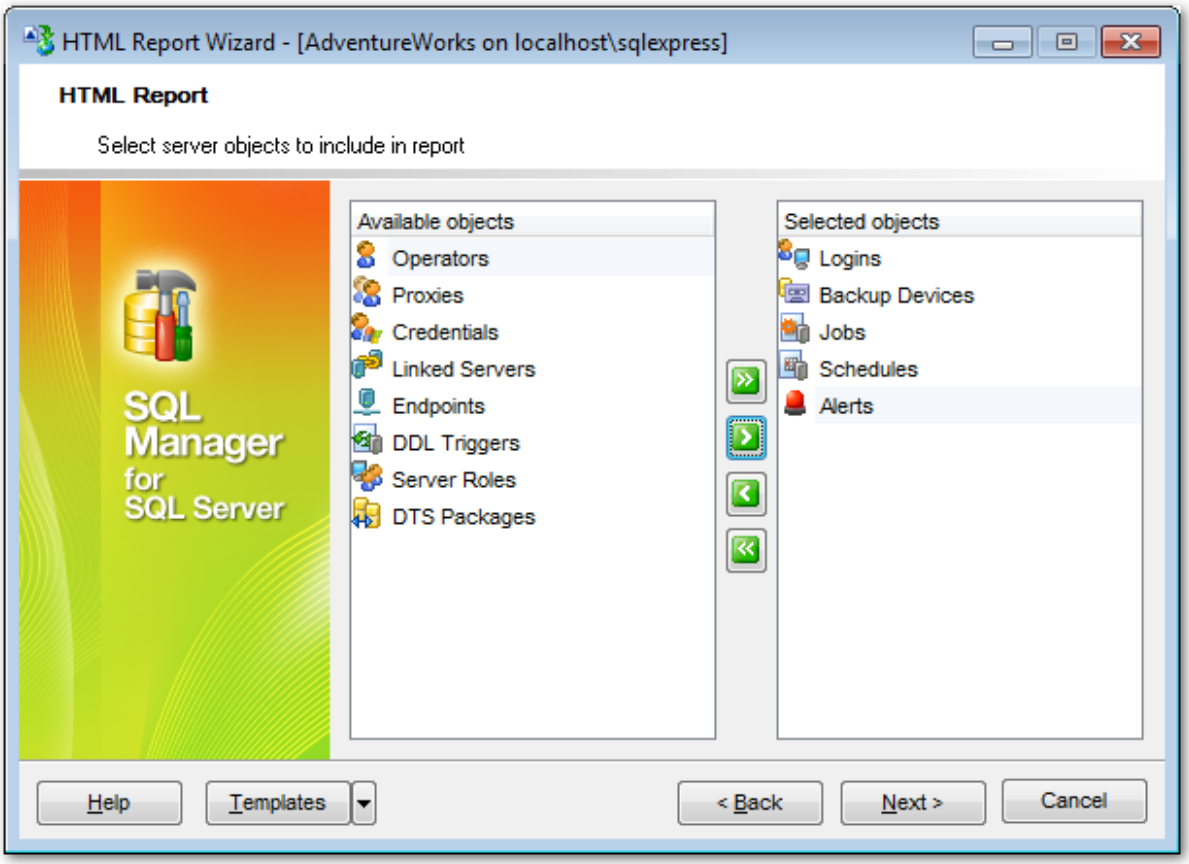
Use this step of the wizard to select *the types of database objects* to be included in the result HTML report.

To select a database object, you need to move it from the **Available objects** list to the **Selected objects** list. Use the buttons or drag-and-drop operations to move the objects from one list to another.



Click the **Next** button to proceed to the next step allowing you to select *the types of server objects* to be included in the result HTML report.

To select a server object, you need to move it from the **Available objects** list to the **Selected objects** list. Use the buttons or drag-and-drop operations to move the objects from one list to another.

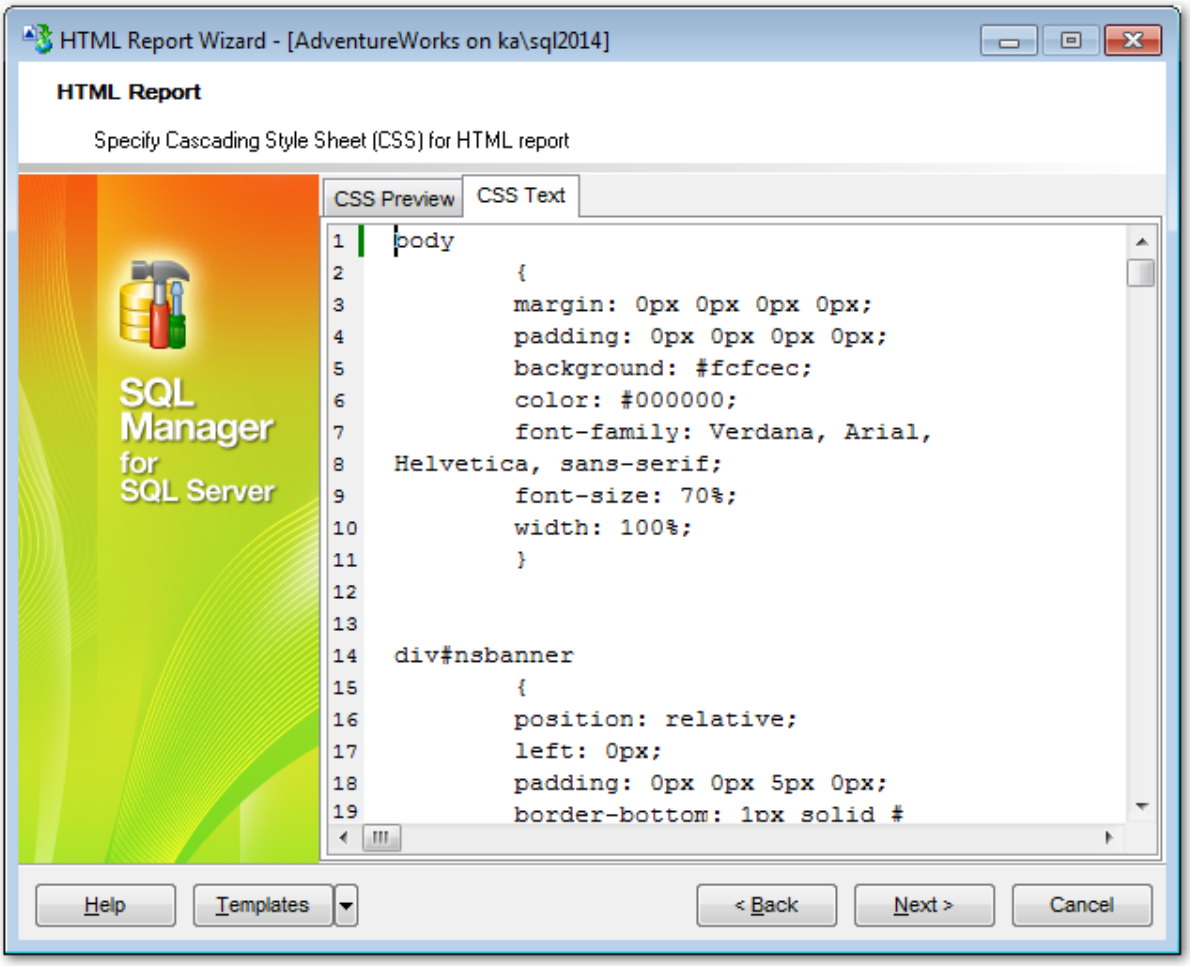


Click the **Next** button to proceed to the Specifying CSS 660 step of the wizard.

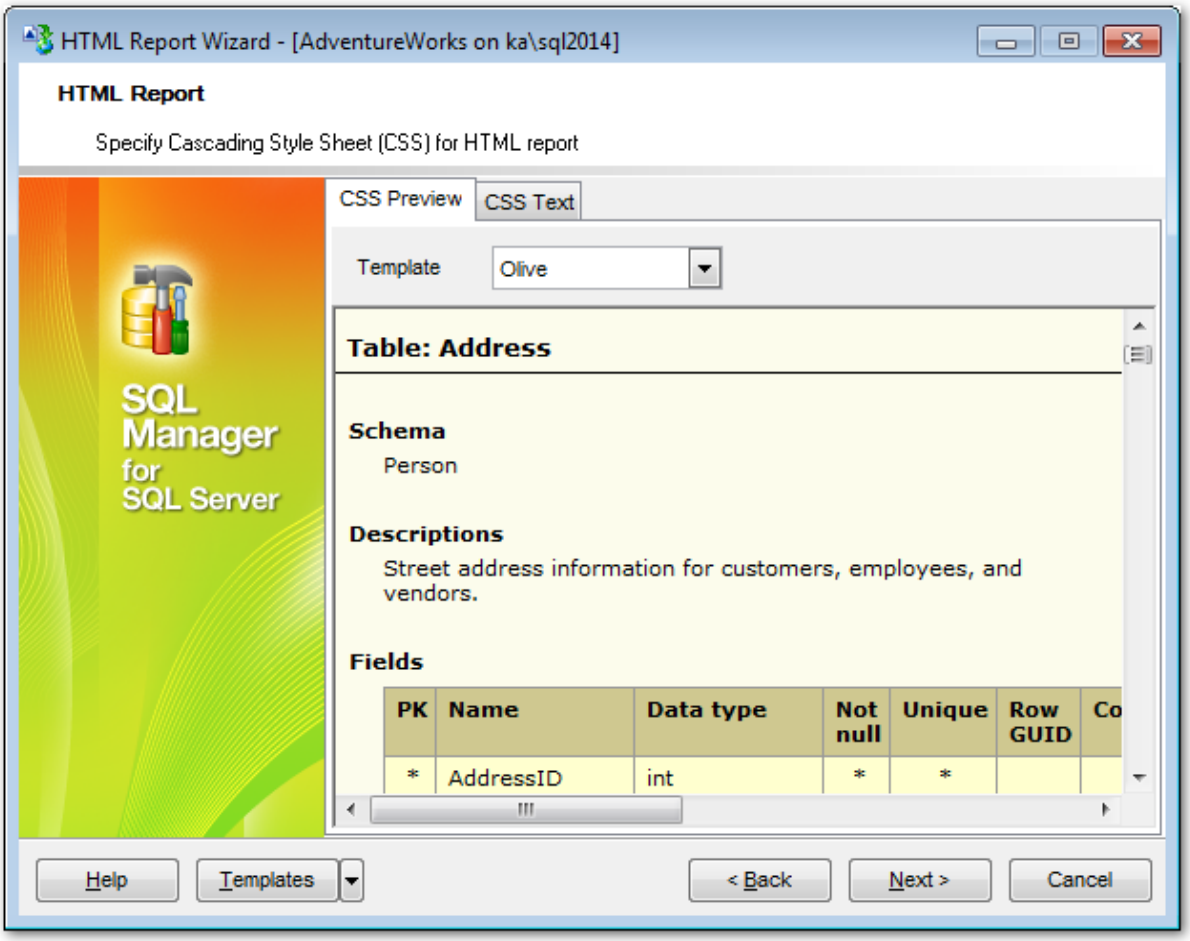
9.8.3 Specifying CSS

This step of the wizard allows you *to edit the CSS (Cascading Style Sheet) file* that will be used by the result HTML report.

On the *CSS Text* Tab you can edit the CSS file.



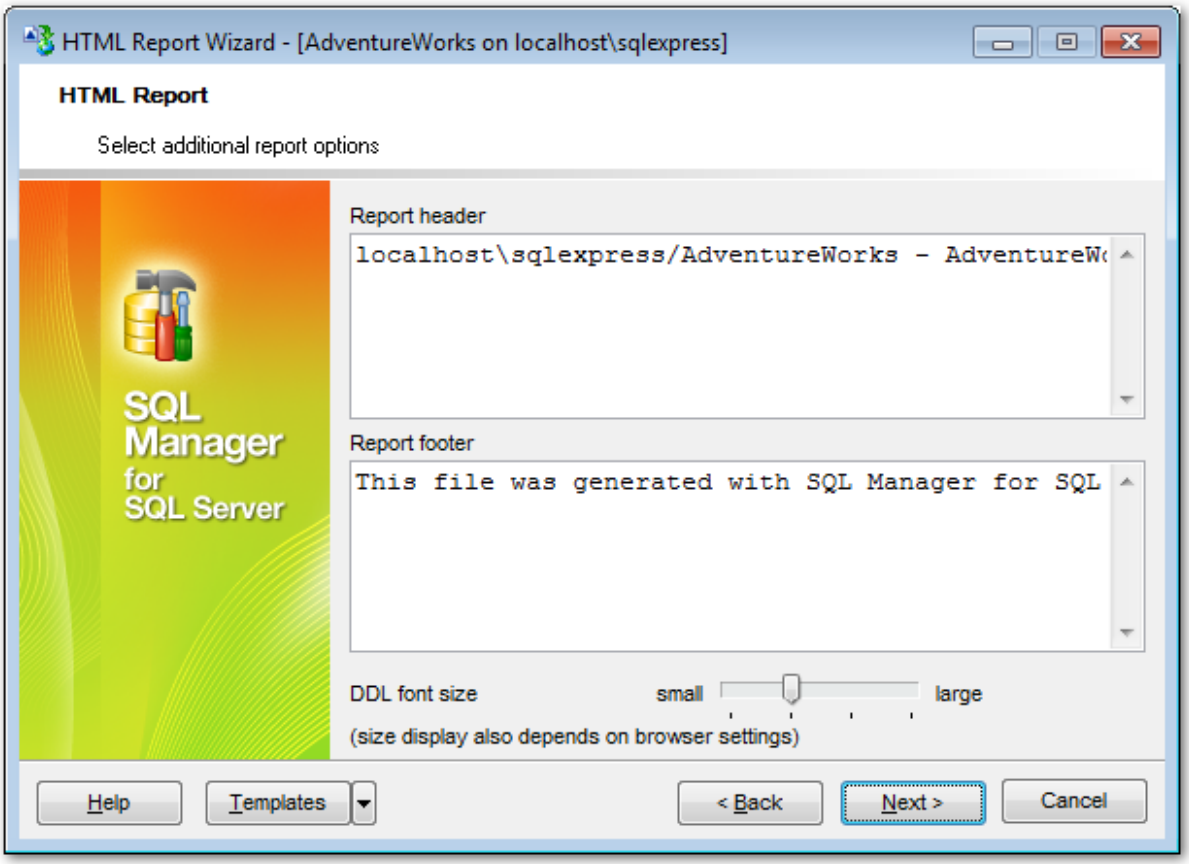
The *CSS Preview* tab allows you to view the HTML report with the defined style.
You can select one of the pre-installed templates from the **Templates** drop-down list or select the Custom template and edit it on the *CSS Text* tab.



Click the **Next** button to proceed to the Setting additional report options 662 step of the wizard.

9.8.4 Setting additional report options

Use this step of the wizard to set additional HTML report options.



If necessary, you can set optional text to **Report header** and **Report footer** of the result HTML report. For your convenience the default header and footer text is already available. If necessary, you can edit this text according to your needs.

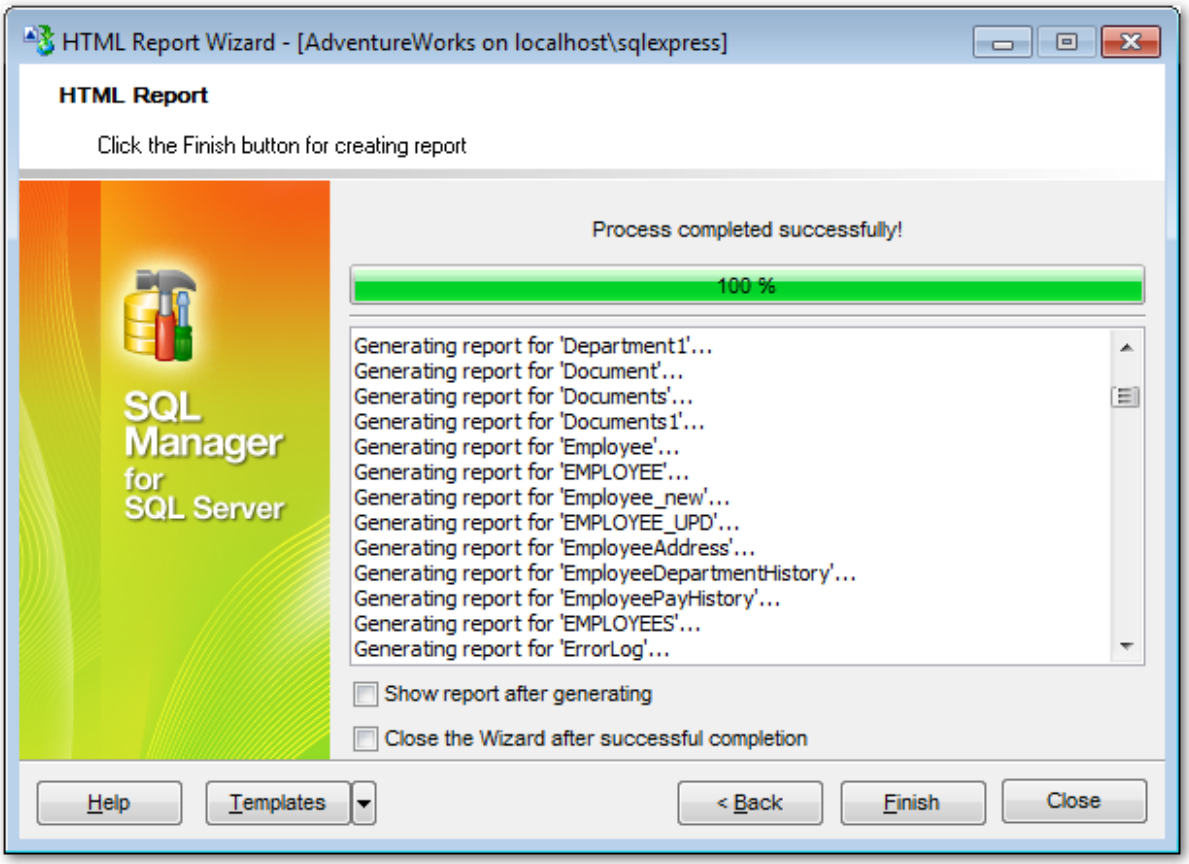
DDL font size
This control allows you to set the font size for the DDL section. Move the slider between the **small** and **large** threshold values to select the required font size value within this scope. Note that the text size also depends on your browser settings.

Click the **Next** button to proceed to Creating HTML report 663.

9.8.5 Creating HTML report

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



☑ **Show report after generating**
This option opens the result report in your default browser after generating.

☑ **Close the wizard after successful completion**
If this option is selected, the wizard is closed automatically when the creating HTML report process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to run the process.

9.9 Reports management

SQL Manager for SQL Server provides several tools for efficient *reports management*:

Create Report Wizard 665
This tool is used to simplify the process of creating reports.

Report Designer 671
It is a basic tool for creating powerful reports.

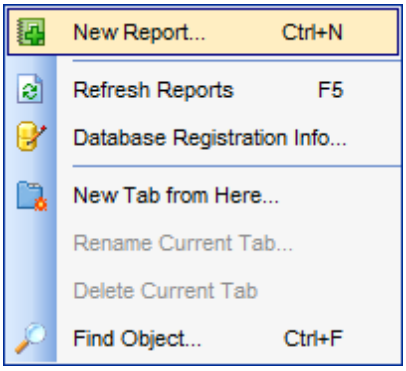
Report Viewer 683
Allows you to view created reports.

Reports can be stored either in the database (table *msmreports* will be created to store them) or in a directory on your hard drive specified on the Directories 125 page of the Database Registration Info 120 dialog.

9.9.1 Create Report Wizard

Using **Create Report Wizard** you can create a report containing required datasets, bands and fields on them, with a definite report style applied.

To start the wizard, select the **Database | New Object...** main menu 951 item, then select **Report** in the Create New Object 184 dialog. Alternatively, you can right-click the **Reports** node of the DB Explorer 65 tree and select the **New Report...** item from the context menu 57.



- Specifying report name and options 666
- Selecting report bands 667
- Selecting report style 668
- Specifying paper settings 669
- Specifying margins 669
- Specifying other page settings 670

Availability:

Full version (for Windows)	**Yes**
Lite version (for	**No**

Windows)
Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:
Report Designer 671
Report Viewer 683

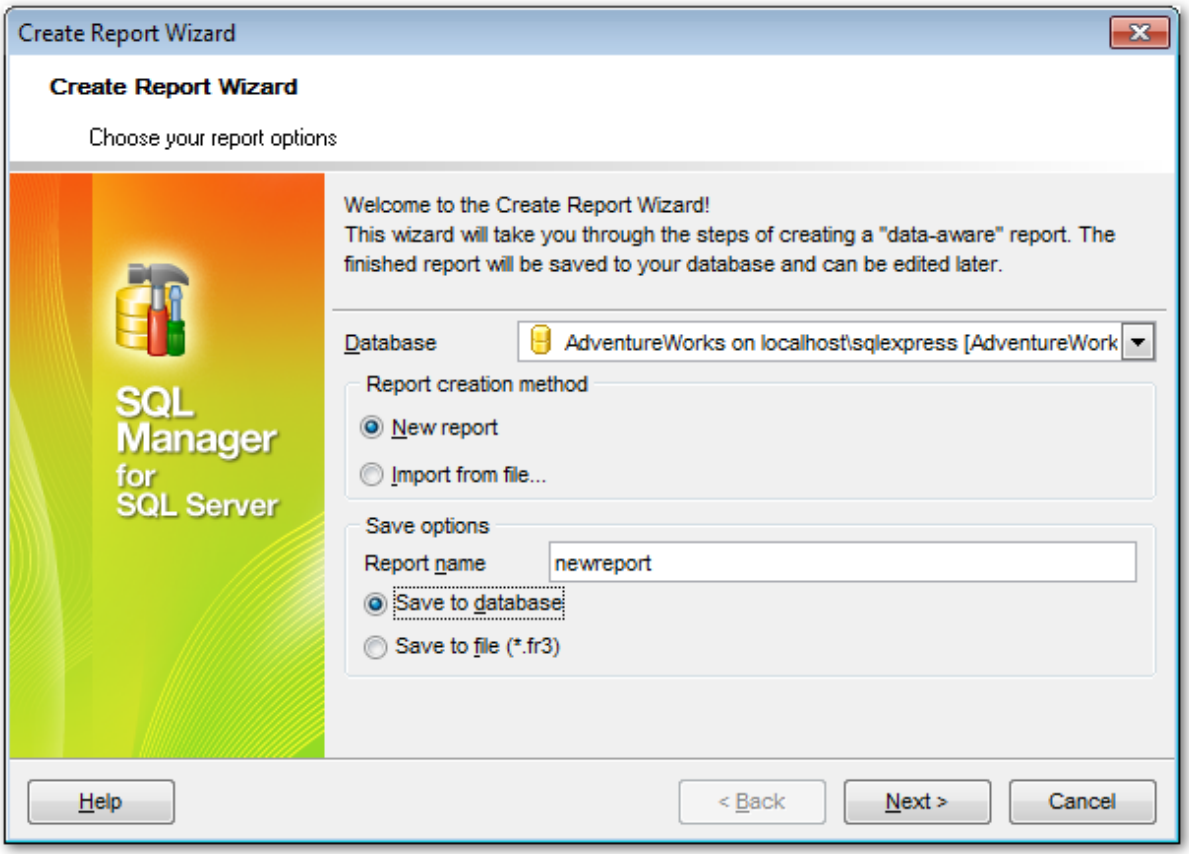
9.9.1.1 Specifying database name and report options

Select the source **database** for adding a report and choose the action you need to perform: either *create a new report* or *import an existing report from file*.

Set the **name** for the new report and specify the save options for it:

Save to database
The report will be created on the server inside the database.

Save to file
If this option is selected, the report will be saved as a **.fr3* file to the directory specified on the Directories 125 page of the Database Registration Info 120 dialog.

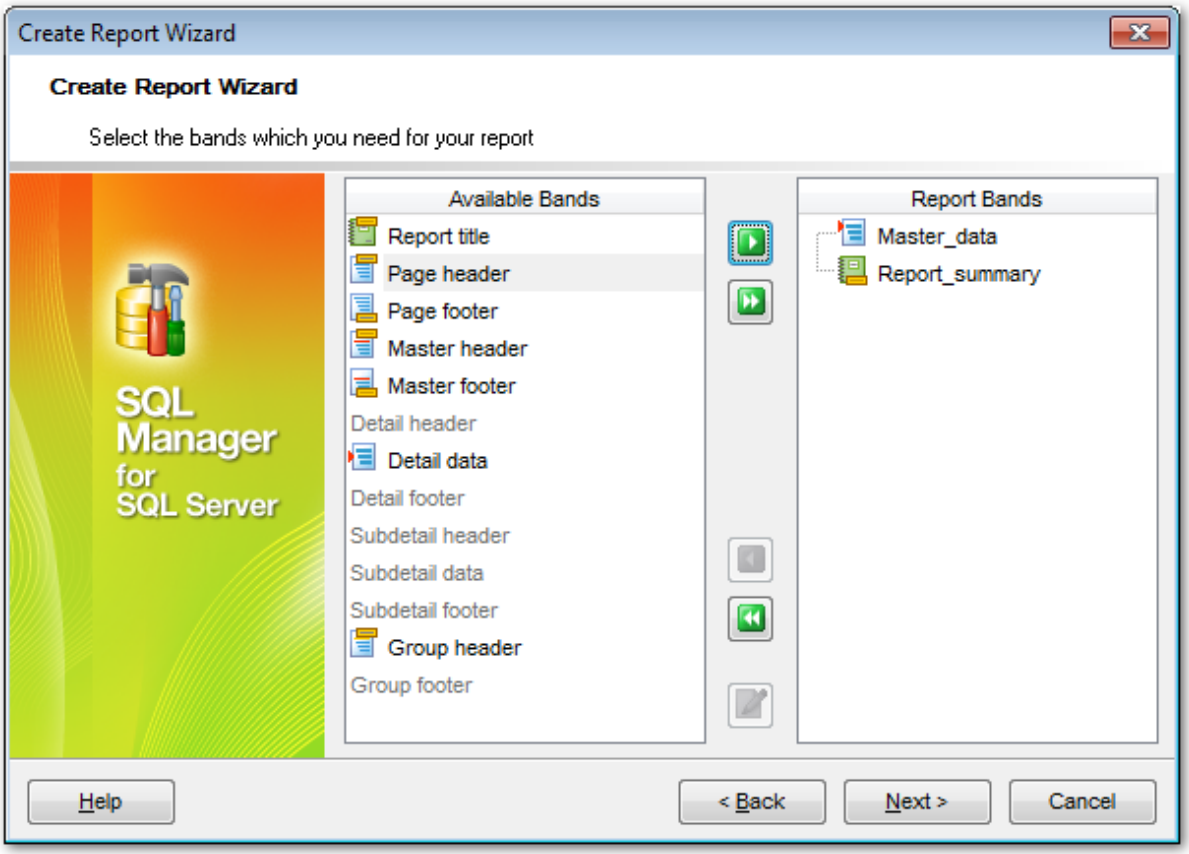


Click the **Next** button to proceed to the Selecting report bands 667 step of the wizard.

9.9.1.2 Selecting report bands

This step of the wizard allows you to select the bands to be included in the report. To select a band, you need to move it from the **Available Bands** list to the **Report Bands** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.

Use the **Edit** button to create datasets for 'data' bands using Design Query 448.



Brief information about bands functionality is listed below. See **FastReport Help** for more information.

Name	Functionality
Report title	*Prints once at the beginning of report*
Report summary	*Prints once at the end of report*
Page header	*Prints at the top of each page*
Page footer	*Prints at the bottom of each page*
Master header	*Prints at the beginning of master list*

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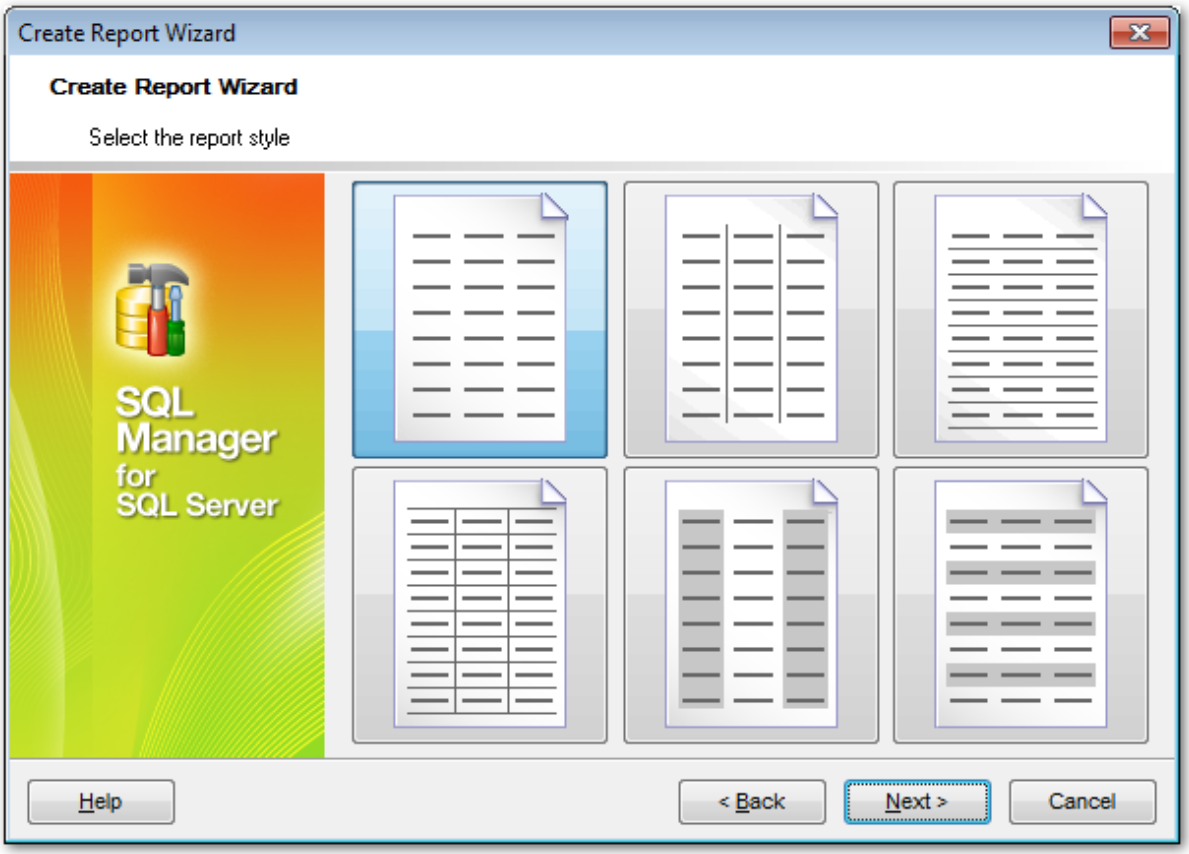
Master data	*Data rows of master list*
Master footer	*Prints at the end of master list*
Detail header	*Prints at the beginning of detail list*
Detail data	*Data rows of detail list*
Detail footer	*Prints at the end of detail list*
Subdetail header	*Prints at the beginning of subdetail list*
Subdetail data	*Data rows of subdetail list*
Subdetail footer	*Prints at the end of subdetail list*
Group header	*Prints at the beginning of each group*
Group footer	*Prints at the end of each group*

Click the **Next** button to proceed to the Selecting report style 668 step of the wizard.

9.9.1.3 Selecting report style

Select the report style by clicking one of the images illustrating the styles available for the report.



Click the **Next** button to proceed to the Specifying paper settings 669 step of the wizard.

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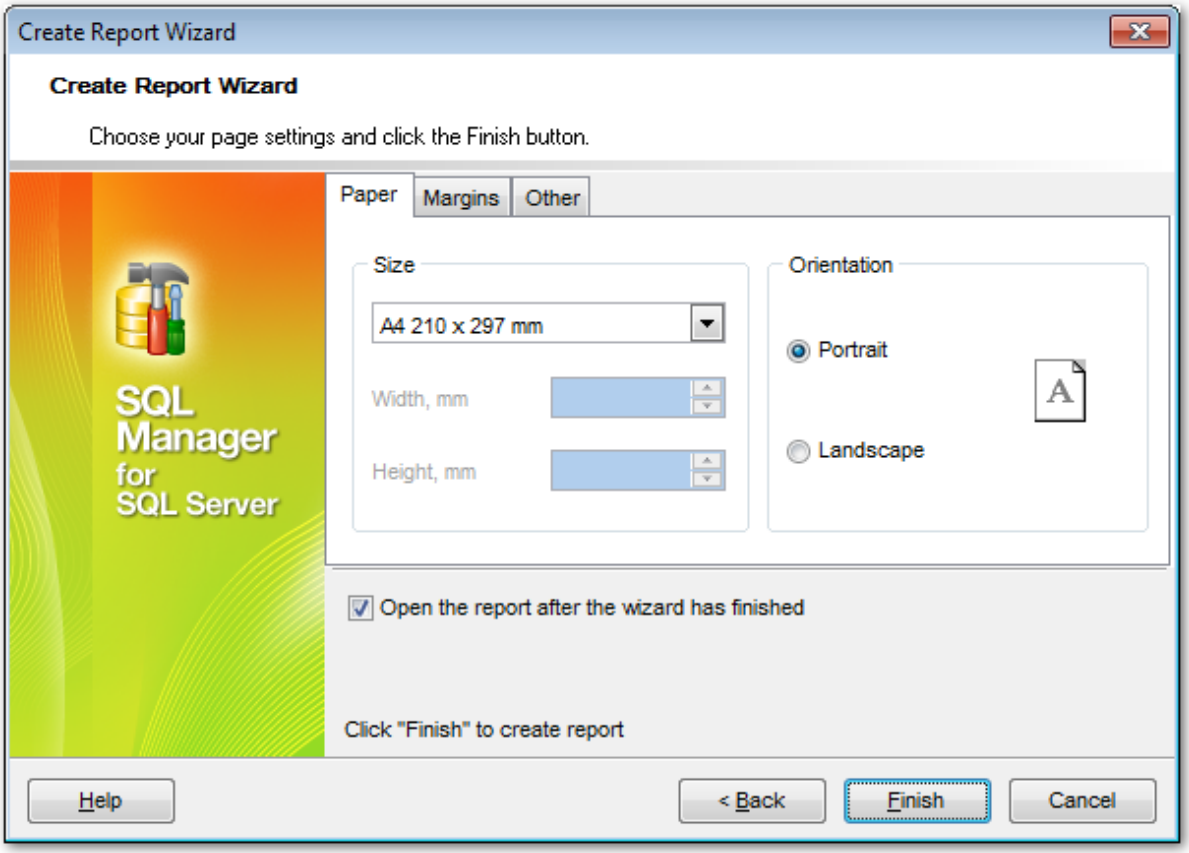
9.9.1.4 Specifying page settings

9.9.1.4.1 Specifying paper settings

Specify report options: paper *size* and *orientation*, page margins 669, other settings 670.



Use the **Margins** tab to specify margins 669 for the result report.

☑ **Open the report after the wizard has finished**
If this option is checked, the report will be opened in Report Designer 671 after generating.

When you are done, click the **Finish** button to run the report generation process.

9.9.1.4.2 Specifying margins

☑ **Stretch to print area**
If this option is checked, the size of report is adjusted to the print area. If this option is unchecked, you can specify the *left*, *right*, *top* and *bottom* margins (in millimeters).

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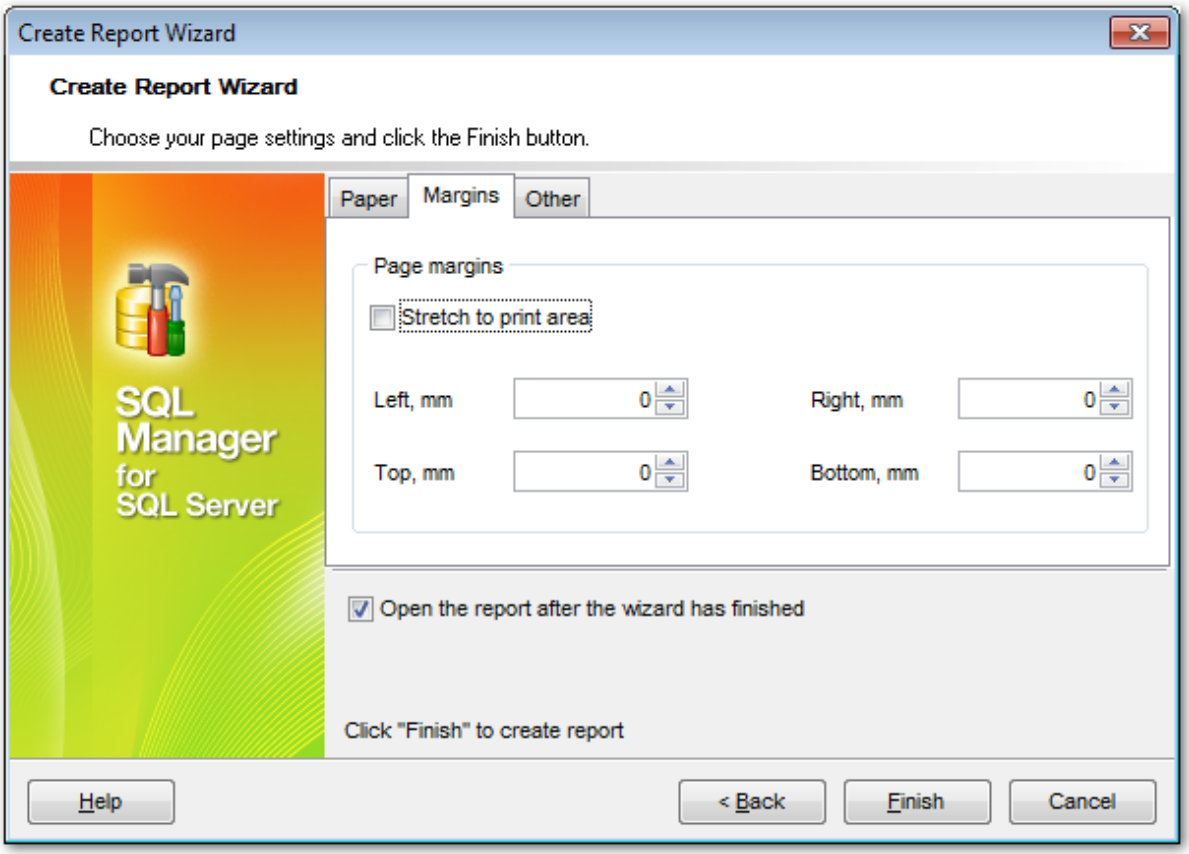


Use the **Other** tab to specify other page settings 670 for the result report.

☑ **Open the report after the wizard has finished**
If this option is checked, the report will be opened in Report Designer 671 after generating.

When you are done, click the **Finish** button to run the report generation process.

9.9.1.4.3 Specifying other page settings

Options

☑ **Print to previous page**
This option allows to use white space on a previous page. This option can be used in case when a report template consists of several pages or when printing batch (composite) reports.

☑ **Two-pass report**
If this option is selected, report's formation will be performed in two steps. During the first pass, a report is formed, and is divided into pages, but the result is not saved anywhere. During the second pass a standard report formation with saving a result in the stream is performed.

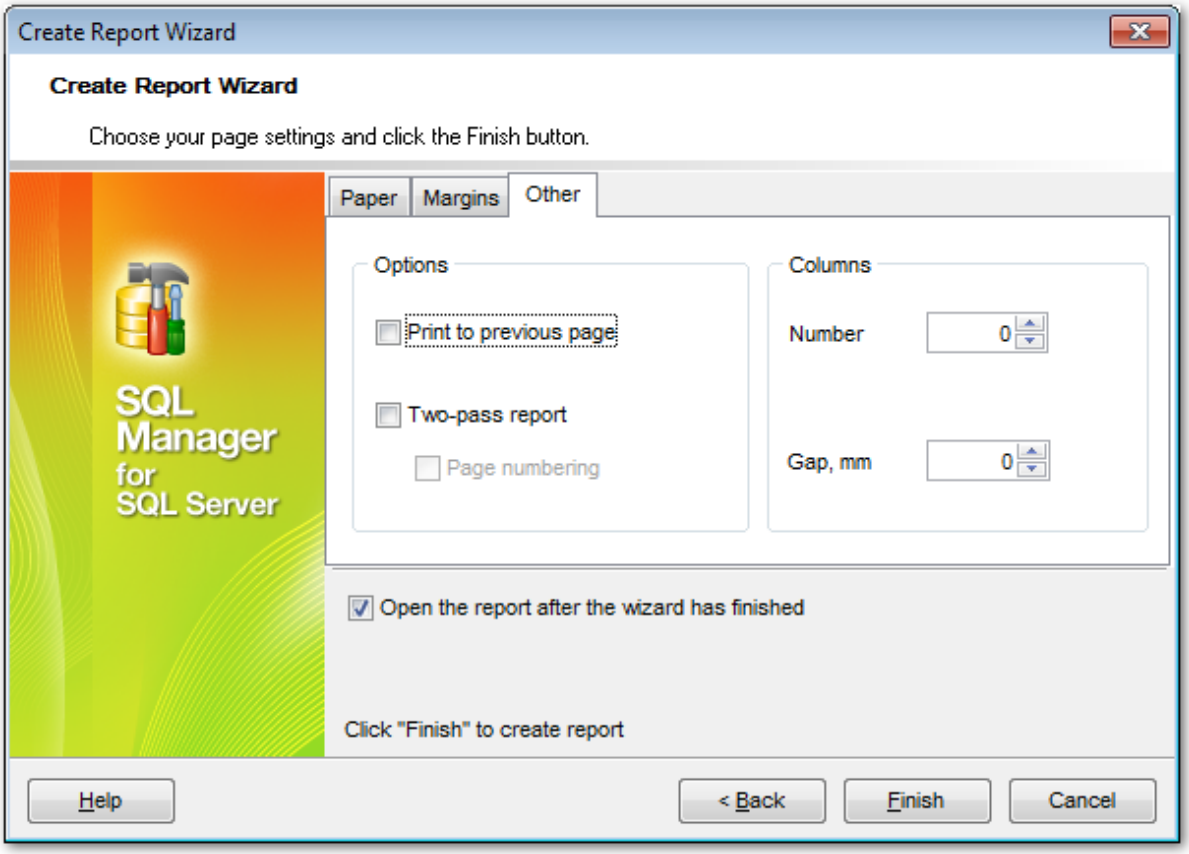
☑ **Page numbering**

This option allows to print a page numbers.

Columns

Number
This parameter specifies the number of columns for multi-column reports' printing.

Gap, mm
This parameter specifies the width of the gap between columns.



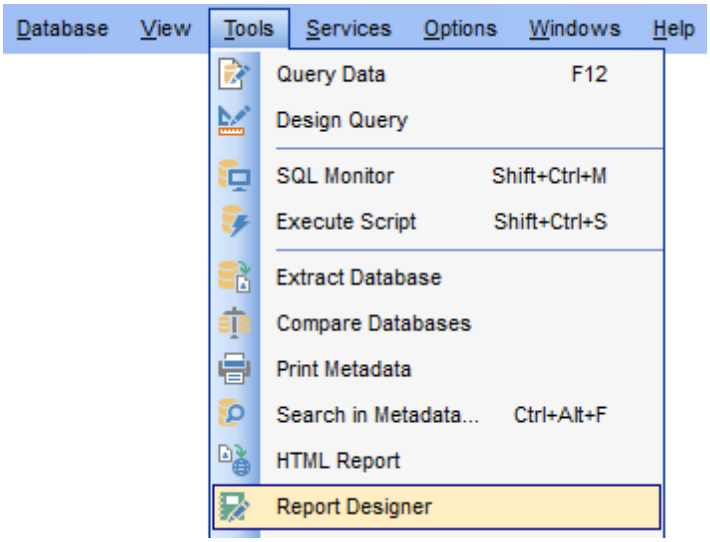
☑ **Open the report after the wizard has finished**
If this option is checked, the report will be opened in Report Designer 671 after generating.

When you are done, click the **Finish** button to run the report generation process.

9.9.2 Report Designer

Report Designer allows you to create and edit reports. This tool can be opened after completion of Create Report Wizard 665 to design a new report.
To edit an already existing project, use the appropriate Navigation bar 684 item of Report Viewer 683.

This module is provided by Fast Reports, Inc. (http://www.fast-report.com) and has its own help system. Press the **F1** key in the **Report Designer** to call the **FastReport** help.



Please find the instructions on how to create a simple report in the **Report Designer** below:

- Adding dialog form 682
- Adding database and query components 676
- Adding report data 678
- Viewing the report 680
- Saving the report 681

Note: The **Object Inspector** which allows you to edit report object properties, can be shown/hidden by pressing the **F11** key.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Create Report Wizard 665

Report Viewer 683

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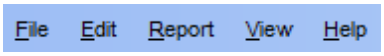
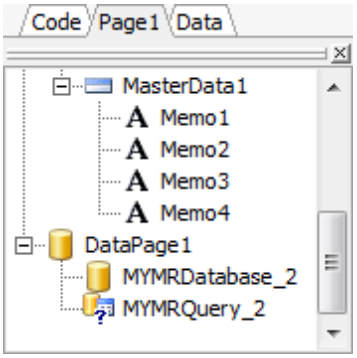
9.9.2.1 Basic elements

Report designer's working area consists of the following elements: *Main menu*673, *Report Tree*673, *Data Tree*673, *Workspace*674 and *Object inspector*674.

Main menu

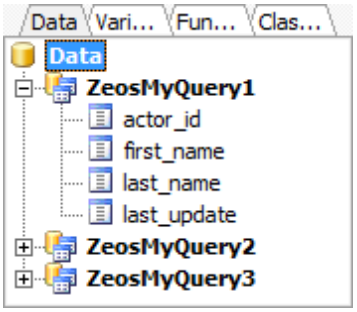


Report Tree
This element is located by default in the top left part of the window. You can view report structure as a tree.



Report tree has the following tabs you can switch between: *Code*, *Data*, *Page* and *Dialog Page*.
Code
Allows working with the report script.
Data
Displays data structure of the report.
Page
Displays printing form of the report.
Form
Displays dialog form of the report.

Data Tree
This element is located by default in the bottom left part of the window. Structure of the data defined with the **ADOTable** and **ADOQuery** is displayed here as a tree.



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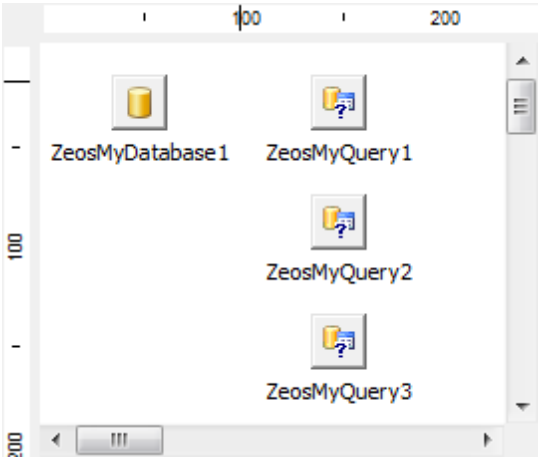
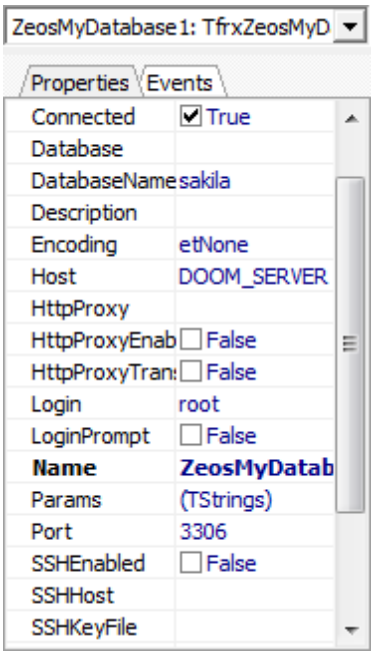
Workspace
Main working space is located in the center of the window.



Object Inspector
Allows viewing and changing properties of the selected object. By default this element is located in the right part of the window.



Note: **Object Inspector** can be opened by pressing the **F11** keyboard button.

9.9.2.1.1 Toolbars

Common toolbars are located in the top part of the window.

Depending on the tab selected in the Report Tree 673 elements of the side toolbar can differ.

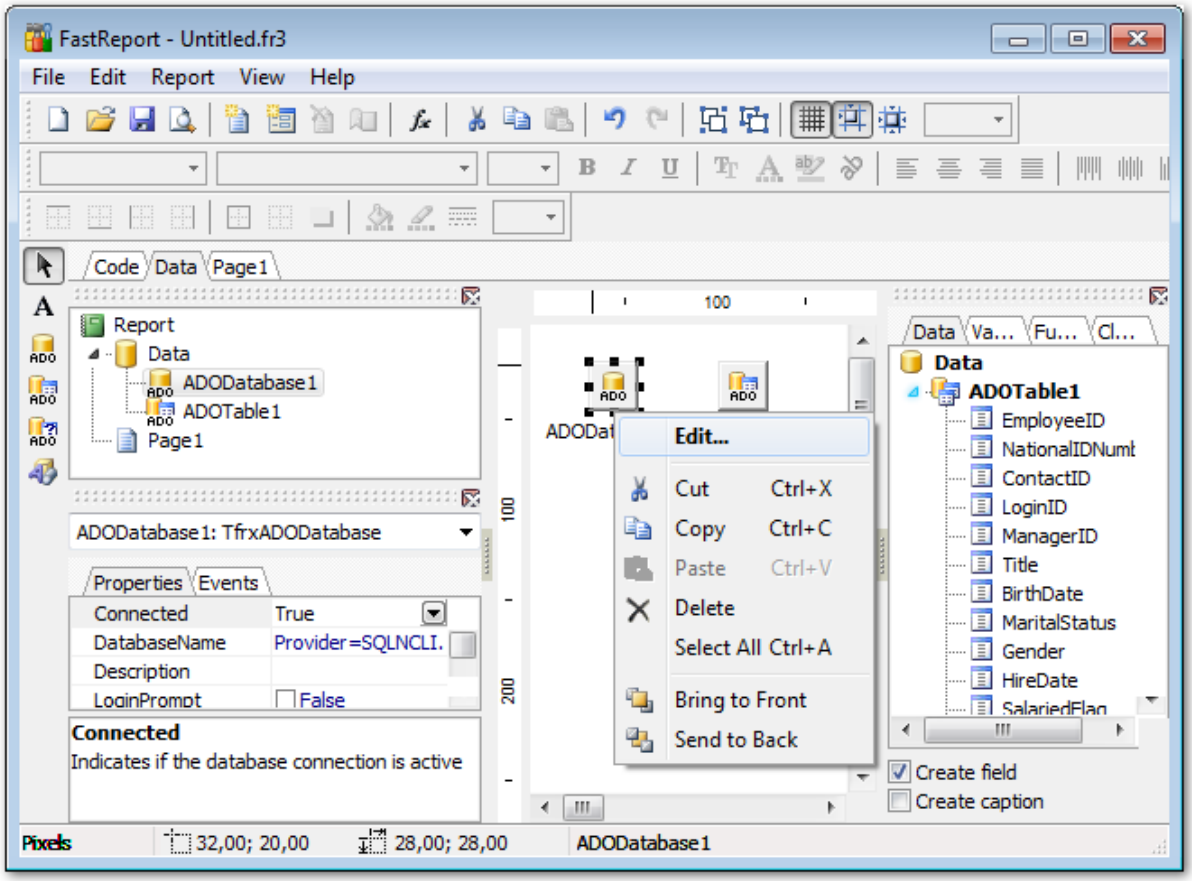
For **Data** tab:

For **Page** tab:

For **DialogPage** tab:

9.9.2.2 Adding database and query components

To start working with report you need to define data source.



Adding database component

In order to add the *Database* component:

- proceed to the **Data** tab of Report tree 673;
- pick the **ADO Database** component on the toolbar (on the left);
- click within the working area - the corresponding *ADODatabase1* icon appears in the area;
- use the Edit item of the component context menu item;
- in the appeared window define database connection parameters using the connection string or the standard windows dialog window that can be opened by pressing the ellipsis button. **SQL Native Client** should be specified as data provider;
- make sure that the **Connected** property value in the Object Inspector 673 is set to *True*.

Adding table component

In order to add the *Table* component:

- proceed to the **Data** tab of Report tree 673;
- pick the **ADOTable** component on the toolbar (on the left);
- click within the working area - the corresponding *ADOTable1* icon appears in the area;
- Define the following options in the Object Inspector 673: *Database* (select any defined **ADODatabase**) and *TableName* (select a table from the connected database). Once TableName is specified, all columns from this table are displayed in the Data Tree 673.

Adding query component

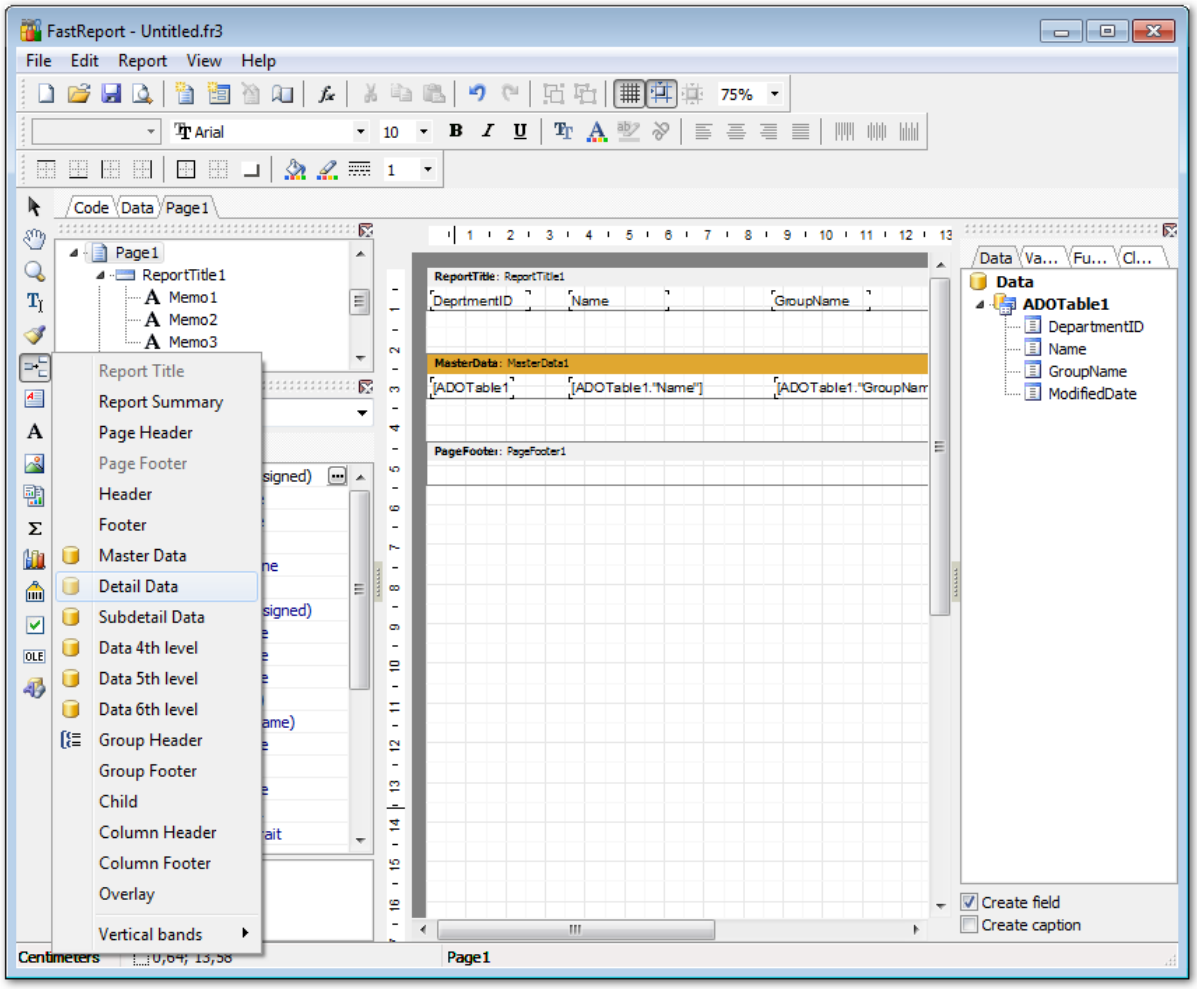
In order to add the *Query* component:
- proceed to the **Data** tab of Report tree 673;
- pick the **ADO Query** component on the toolbar (on the left);
- click within the working area - the corresponding *ADOQuery1* icon appears in the area;
- use the Object Inspector to define the following properties: **Database** (select any defined **ADODatabase**) and **SQL** (press the ellipsis button to open Query Data where you can define query text).

See also:

Adding dialog form 682
Adding report data 678
Viewing the report 680
Saving the report 681

9.9.2.3 Adding report components

To start working with the printing form of the report proceed to the **Page** tab of the Report Tree 673.



You can customize report view using bands. Each band can define specified data.

Adding bands

In order to add a band to the report:

- proceed to the **Page1** tab of Report Tree 673;
- pick the **Insert Band** component on the toolbar (on the left);
- select the band to be added to the report;
- click within the working area - the corresponding element appears in the area;
- set element properties within the **Properties Inspector**.

Each band appears in the Report Tree 673 as a node.

Table and report data should be added as **Master Data** and column headers as **Group Header**.

Adding report data

In order to add data to the report:

- proceed to the **Data** tab within the panel on the right side of the window;

- pick a field within the **Data** tree and drag it to the working area;
- add all necessary elements one by one using drag-and-drop operation for each of them.

See also:

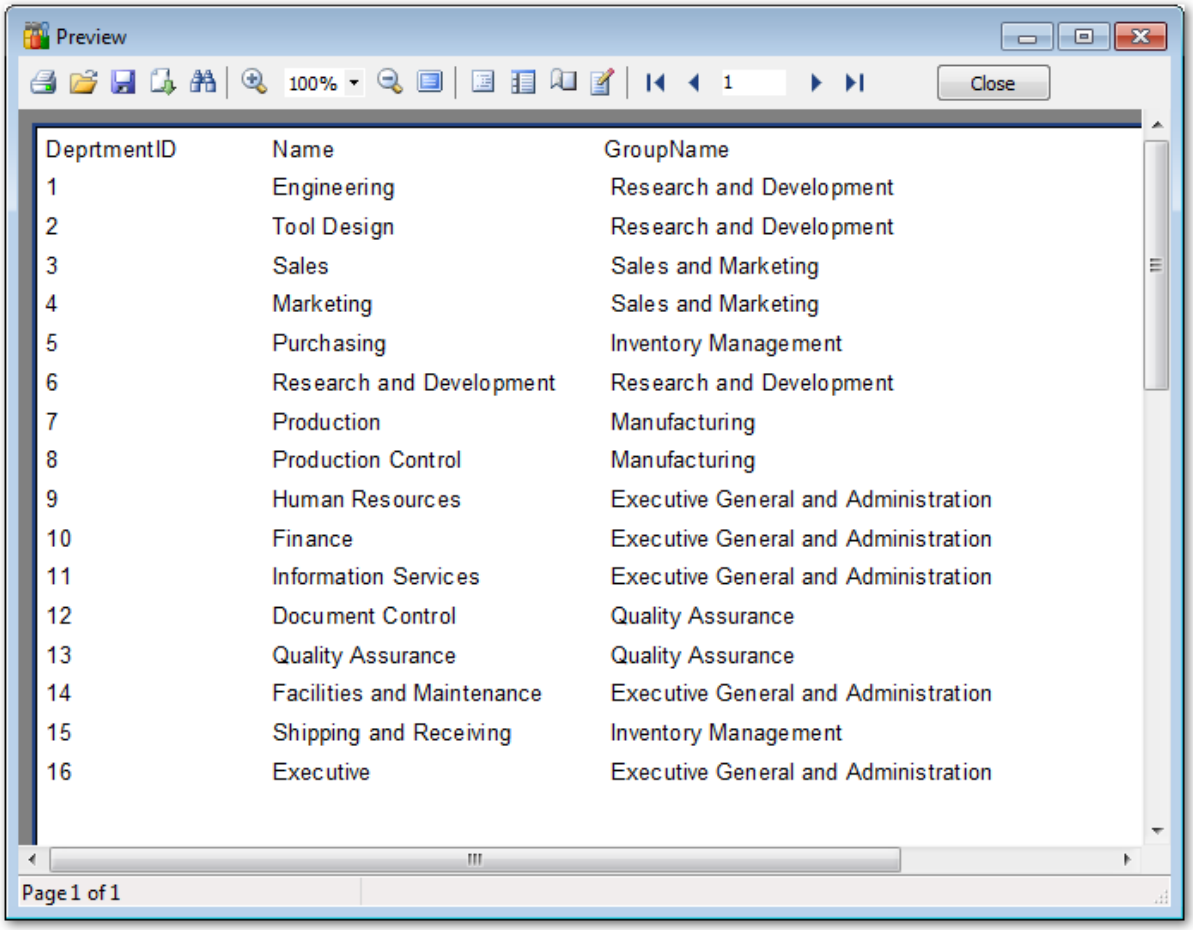
Adding dialog form 682
Adding database and query components 676
Viewing the report 680
Saving the report 681

9.9.2.4 Viewing the report

Viewing the report

To preview the newly created report, select the **File | Preview** main menu item or use the corresponding **Preview** toolbar button. You can also use the *Ctrl+P* shortcut 986 for the same purpose. This mode allows you to view, edit and print the result report.

To print the report, use the **Print** toolbar button or the corresponding context menu item.



DeprtmentID	Name	GroupName
1	Engineering	Research and Development
2	Tool Design	Research and Development
3	Sales	Sales and Marketing
4	Marketing	Sales and Marketing
5	Purchasing	Inventory Management
6	Research and Development	Research and Development
7	Production	Manufacturing
8	Production Control	Manufacturing
9	Human Resources	Executive General and Administration
10	Finance	Executive General and Administration
11	Information Services	Executive General and Administration
12	Document Control	Quality Assurance
13	Quality Assurance	Quality Assurance
14	Facilities and Maintenance	Executive General and Administration
15	Shipping and Receiving	Inventory Management
16	Executive	Executive General and Administration

It is also possible to preview/print the report using Report Viewer 683.

To export report

- press the **Export** button at the report viewer toolbar;
- select needed file format to export report into;
- specify file name and location in the appeared dialog.

See also:

Adding dialog form 682
Adding database and query components 676
Adding report data 678
Saving the report 681

9.9.2.5 Saving the report

When all report parameters are set, you can save the report to an external **.fr3* file on your local machine or on a machine in the LAN.

To save the report, select the **File | Save** main menu item or use the corresponding **Save Report** toolbar button. You can also use the *Ctrl+S* shortcut 986 for the same purpose.

If necessary, you can add the report to the database using Create Report Wizard 665 and perform preview/print operations using Report Viewer 683.

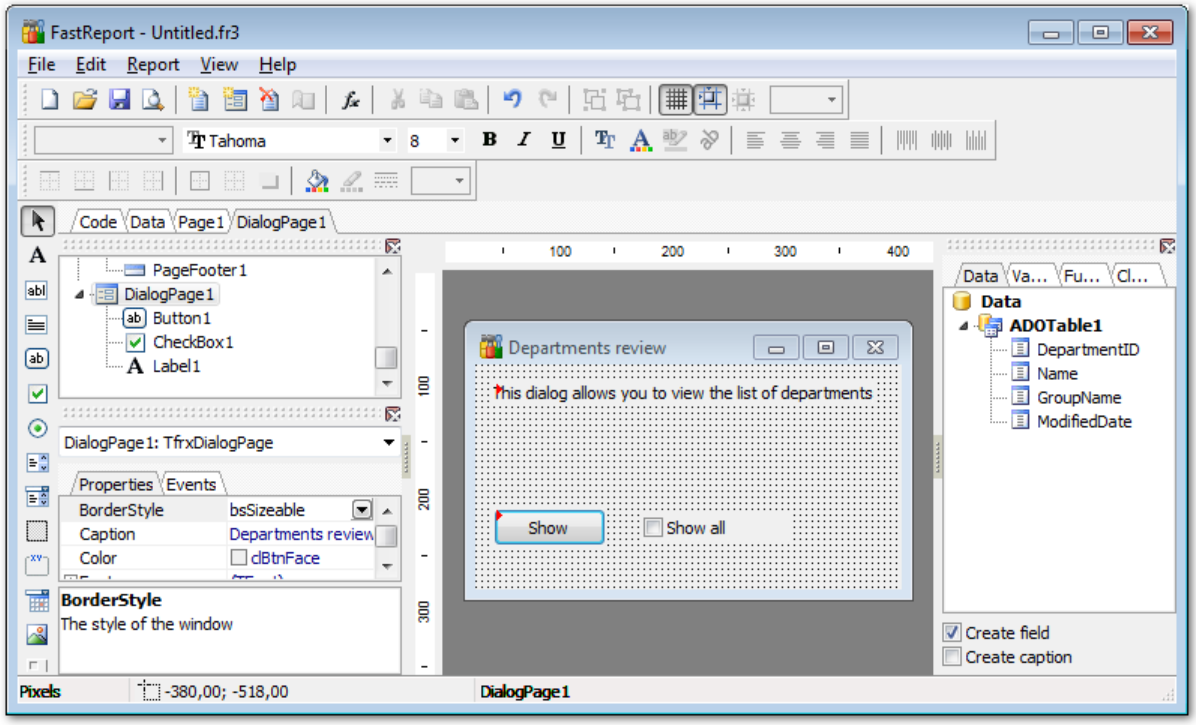
See also:

Adding dialog form 682
Adding database and query components 676
Adding report data 678
Viewing the report 680

9.9.2.6 Adding dialog form

To add a dialog form, select the **File | New Dialog** main menu item in **Report Designer**.

The new dialog appears within the *DialogPage1* tab of the designer. Use the available RAD tools to add necessary interface elements to the dialog.



To call the dialog, proceed to the **Code** tab and supply the corresponding statement (PascalScript), e.g.

```
begin
DialogPage1.ShowModal;
```

```
end.
```

Using the **Language** drop-down list you can select the script language to be used for the event handler: *PascalScript* (by default), *C++Script*, *BasicScript*, *JScript*.

For instance, the following C++ Script code can be used as the handler for the *OnClick* event of the 'Show' button to open ADOQuery 678:

```
{
 ADOQuery1.Active = true;
}
```

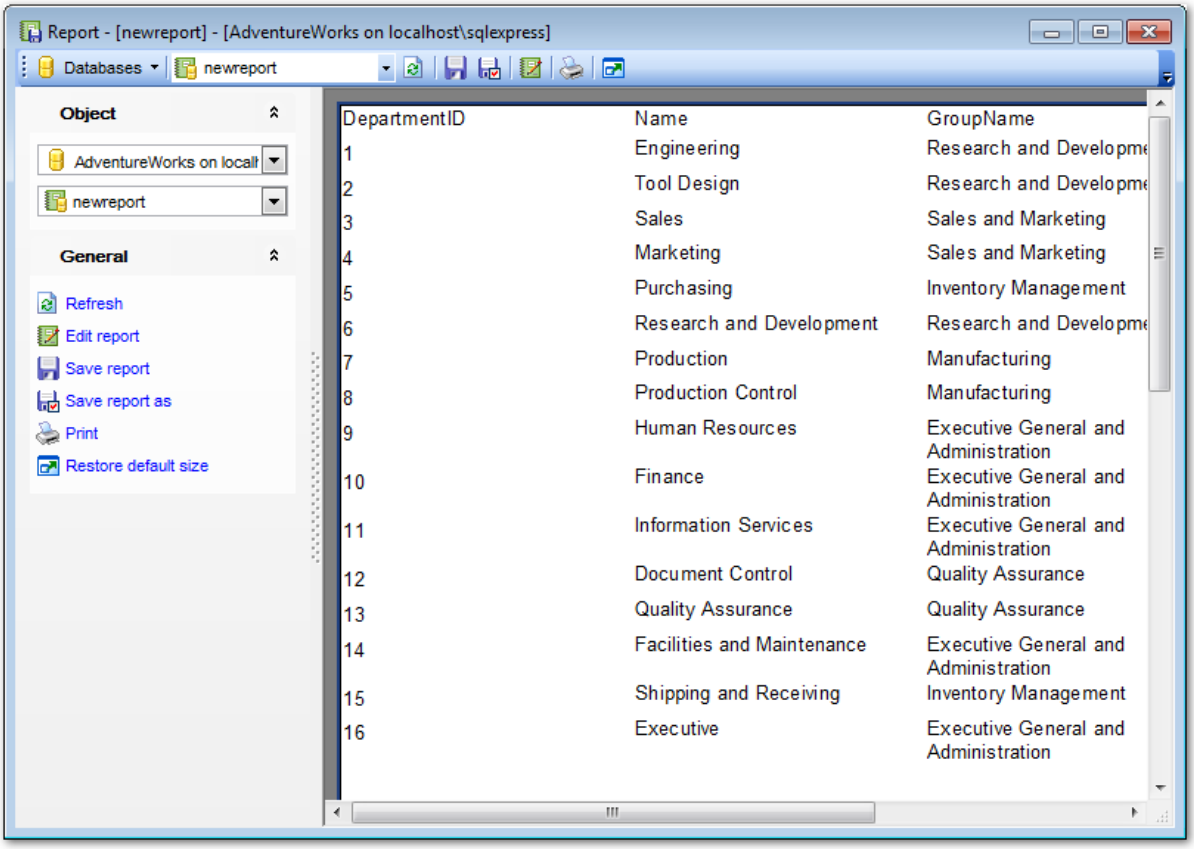
See also:

Adding database and query components 676
Adding report data 678
Viewing the report 680
Saving the report 681

9.9.3 Report Viewer

Using **Report Viewer** you can view, edit, save and print reports.

Possible report operations are described on the Using Navigation bar and Toolbar 684 page.



Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

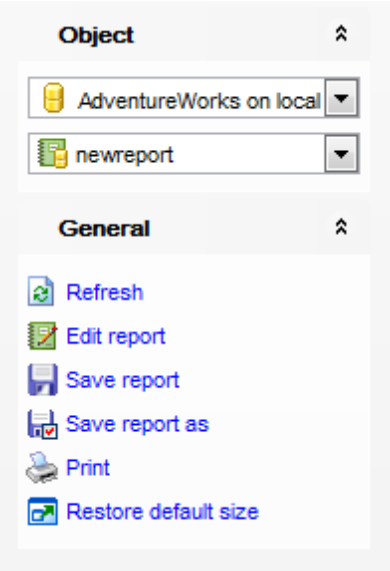
See also:

Create Report Wizard 665

Report Designer 671

9.9.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Report Viewer**.



The **Navigation bar** of **Report Viewer** allows you to:

Object

select a database

select a report for viewing

General

refresh the content of the window

edit report using Report Designer 671

save the current report

save the report to a **.fr3* file using the **Save as...** dialog
print the report
restore the default size and position of the viewer window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Report Viewer** window. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

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9.10 Server-level principals

Principals are individuals, groups, and processes that can request SQL Server resources.

SQL Manager for SQL Server provides management tools for the following *server-level security principals*:

Logins 687
Allows you to manage SQL Server logins.

Server Roles Manager 699
Allows you to manage SQL Server roles.

Adding Logins

In order to add a new login:

- select the **Tools | Login Manager** main menu 951 item or use the corresponding toolbar button to open Login Manager 687;
- select the **Add login...** item of the **context menu** or within the **Navigation bar**;
- define login properties and permissions using Login Editor 359

or

- right-click the **Logins** node (**Server Objects**) or any object within this node in DB Explorer 65 and select the **New Login** context menu item, or use the *Ctrl+N* shortcut 986;
- define login properties and permissions using Login Editor 359.

Editing Login Properties

In order to edit an existing login:

- select the **Tools | Login Manager** main menu 951 item or use the corresponding toolbar button to open Login Manager 687;
- select the **Edit login...** item of the **context menu** or within the **Navigation bar**;
- edit the login properties and permissions using Login Editor 359

or

- right-click the **Logins** node (**Server Objects**) or any object within this node in DB Explorer 65 and select the **Edit Login <object_name>** context menu item, or use the *Ctrl+O* shortcut 986;
- edit the login properties and permissions using Login Editor 359.

Deleting Logins

In order to delete an existing login:

- select the **Tools | Login Manager** main menu 951 item or use the corresponding toolbar button to open Login Manager 687;
- right-click the login to delete and select the **Delete Login** item of the **context menu** or within the **Navigation bar**;
- confirm deleting in the dialog window

or

- right-click the login to delete within the **Logins** node (**Server Objects**) in DB Explorer 65 and select the **Drop Login <object_name>** context menu item, or use the *Shift+Del* shortcut 986;

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- confirm deleting in the dialog window

Allocating Server Roles

In order to allocate server roles to logins:

- select the **Tools | Server Roles** main menu 951 item or use the corresponding toolbar button;
- select a server role, and add logins to the Server Role Members list using Server Roles Manager 699.

See also:

Server Log Viewer 846
Activity Monitor 849
Resource Governor 842

9.10.1 Logins

Microsoft® SQL Server™ uses two ways to validate connections to SQL Server databases:
Windows Authentication which uses Windows-level principals
and
SQL Server Authentication which uses logins to validate the connection.

A **login** is an indivisible principal which is used to connect to the server and use its resources.

- Login Manager 687
- Login Editor 359

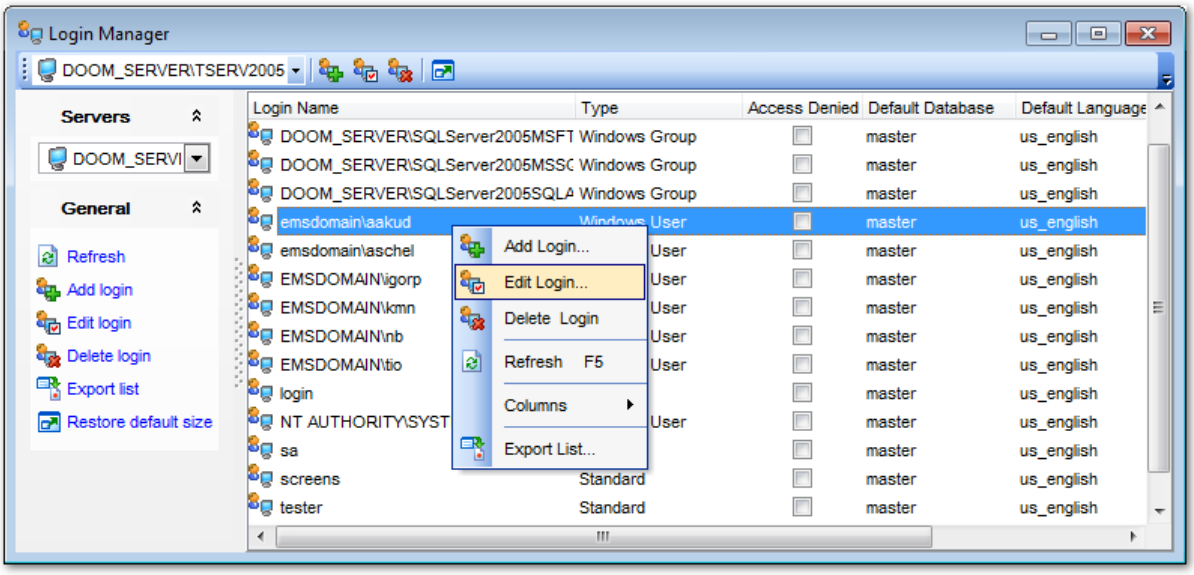
See also:

Server Roles 699

9.10.1.1 Login Manager

The **Login Manager** allows you to browse the list of existing logins on each of available instances of SQL Server, and manage them efficiently.

To launch the tool, select the **Tools | Login Manager** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Logins** item from the context menu 54.



The list displays the existing logins as a grid with the following columns: *Login Name*, *Type* , *Access Denied*, *Default Database*, *Default Language*, *Create Date*, *Update Date*.

Right-click an item within the list to call the **context menu** allowing you to *create* a new server login and specify its properties using Login Editor 359, *edit*, *delete* the selected login, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of logins to any of supported output file formats 971.

Logins management tools are also available through the **Navigation bar** of the **Login Manager**.

See also:

Login Editor 359

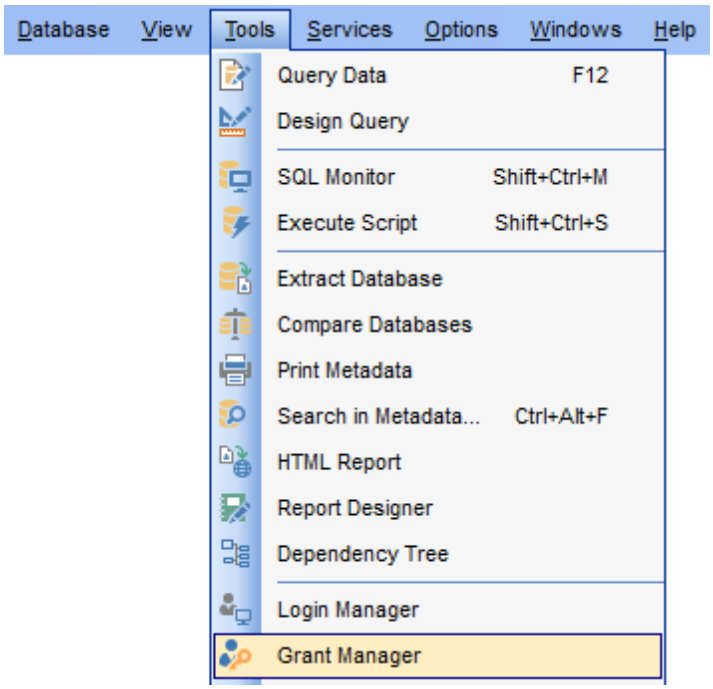
Server Roles 699

9.10.2 Grant Manager

Grant Manager allows you to set the user access grants for certain database objects 182 : schemas 193, tables 196, views 250, procedures 257, synonyms 280, aggregates 283, XML schema collections 286, assemblies 309, etc.

'Global' user privileges define the user access rights to all the database objects on the server. Granting privileges on the selected database objects allows a user to perform the defined operation over the selected objects.

To open **Grant Manager**, select the **Tools | Grant Manager** main menu 951 item.



- Using Navigation bar, Toolbar and context menu 690
- Setting object permissions 692
- Managing column permissions 694
- Filtering objects in list 695
- Setting database permissions 696
- Viewing effective permissions 698

Managing grants

To define grants on database objects:

- select the **Tools | Grant Manager** main menu 951 item, or use the corresponding toolbar button to open **Grant Manager**;
- select the object type using the drop-down list on the toolbar;
- select a User 300 or Role 306 from the **Privileges for** pane of the Navigation bar 690;
- edit user 300/role 306 privileges using **Grant Manager**

or

- right-click an object within the **Users**/**Roles** node in DB Explorer 65 and select the **Grants for <object_name>** context menu item;
- edit user 300/role 306 privileges using Grant Manager 692

See also:

Login Manager 687
Server Roles 699
User Editor 300
Role Editor 306

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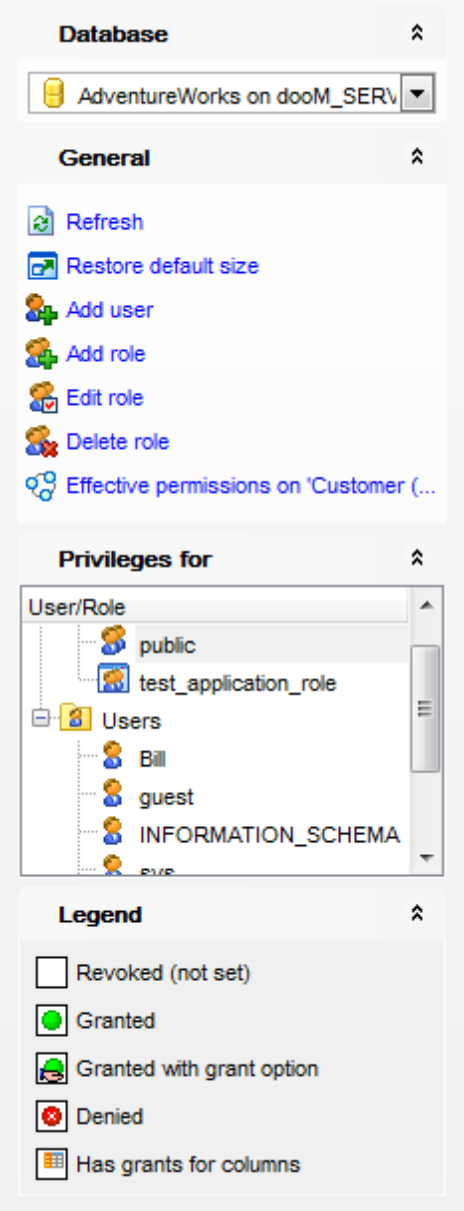
Login Editor 359

9.10.2.1 Using Navigation bar, Toolbar and context menu

The **Navigation bar**, **Toolbar** and **context menu** provide quick access to tools implemented in **Grant Manager**.



The **Navigation bar** of **Grant Manager** allows you to:

Database

select a database for grants management

General

refresh the content of the window
call User Editor 300 to add a new database user
call User Editor 300 to edit an existing user
delete a database user
call Role Editor 306 to add a database role
call Role Editor 306 to edit an existing database role
delete a database role
view effective permissions 698 on the object
restore the default size and position of the window

Privileges for

select an existing database user 300/role 306 to grant privileges to

Legend

view the legend

Items of the **Navigation bar** are also available on the **ToolBar** of **Grant Manager**. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

The **context menu** is aimed at facilitating your work: you can perform a variety of operations using context menu items.

The **context menu** of **Grant Manager** allows you to:

- grant a permission on a securable to the selected principal;
- grant a permission (with Grant Option) on a securable to the selected principal;
- deny a permission on a securable to the selected principal;
- revoke a previously granted or denied permission;
- grant all permissions on a securable to the selected principal;
- grant all permissions (with Grant Option) on a securable to the selected principal;
- deny all permissions on a securable to the selected principal;
- revoke all previously granted or denied permissions on a securable;
- grant a permission on all objects to the selected principal;
- grant a permission (with Grant Option) on all objects to the selected principal;
- deny a permission on all objects to the selected principal;
- revoke a previously granted or denied permission on all objects;
- apply sorting of objects in grid (by type);
- apply sorting of objects in grid (by name);
- view effective permissions 698 on the object.

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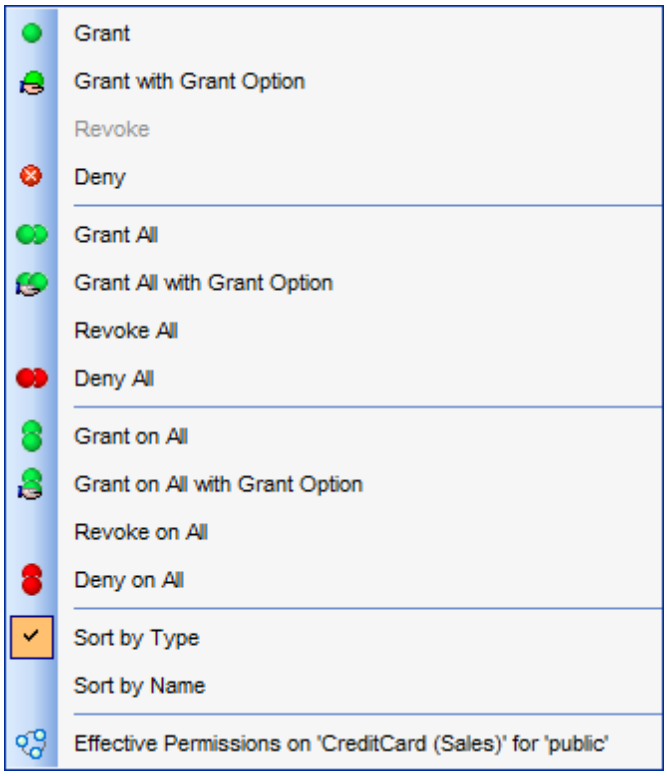


See also:

Setting object permissions 692
Managing column permissions 694
Filtering objects in list 695
Setting database permissions 696
Viewing effective permissions 698

9.10.2.2 Managing database-specific privileges

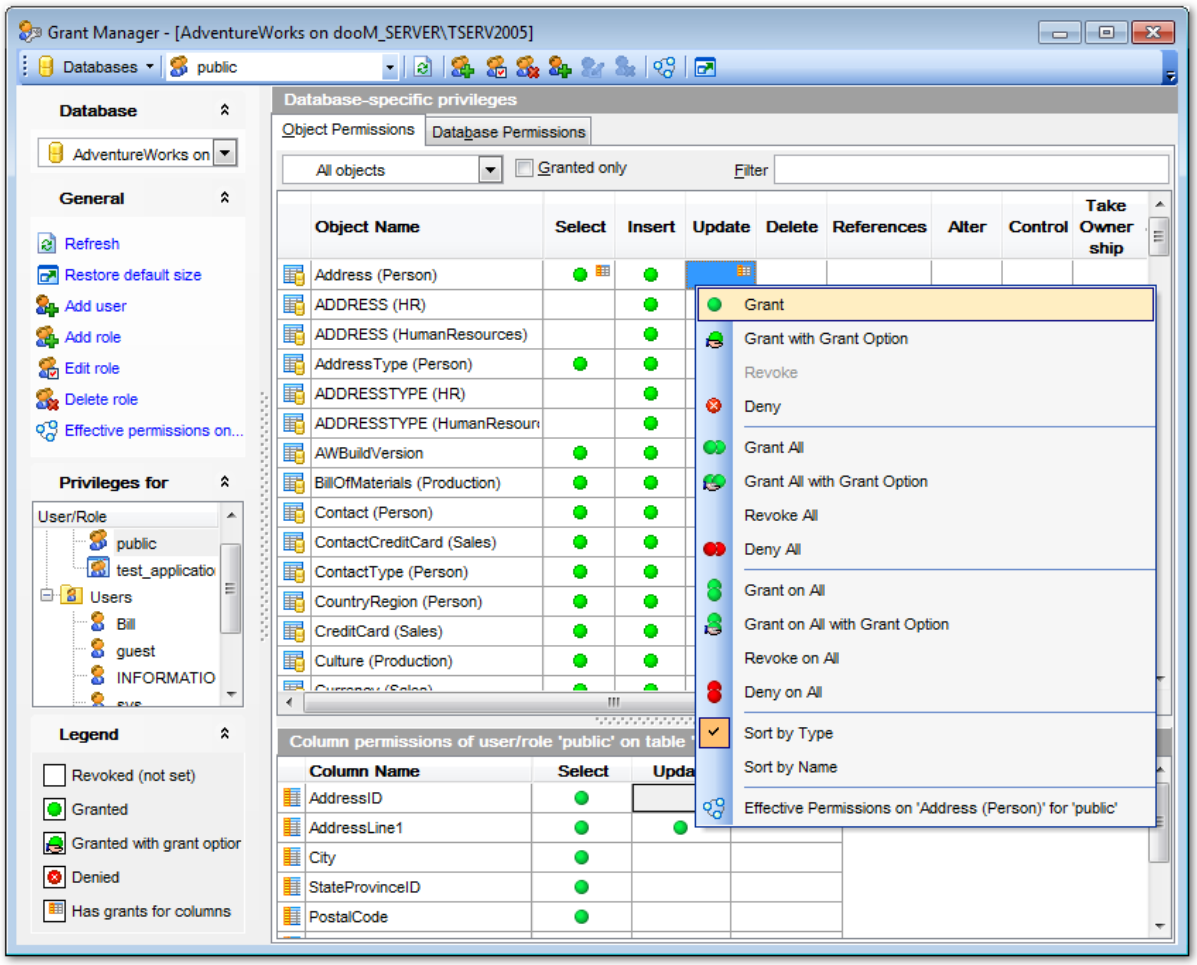
9.10.2.2.1 Object permissions

The **Object Permissions** tab allows you to define privileges on specified database objects.

To edit the privileges of a user 300/role 306 on an object of a database, select the database using the **Database** panel of the Navigation bar 690, then select a *user* or *role* from the **Privileges for** list available within the Navigation bar 690 or toolbar 691. Then select the type of objects to be displayed in the main working window using the combo-box at the top.

The **Object Name** column contains the list of objects of the selected type; each subsequent column corresponds to the permission which can be granted on the selected object:
Select, *Insert*, *Update*, *Delete*, *References*, *Alter*, *Control*, *Take ownership*, *View definition* (for tables 196, views 250);

Alter, *Control*, *Take ownership*, *View definition*, *Execute* (for procedures 257);
References, *Alter*, *Control*, *Take ownership*, *View definition*, *Execute* (for UDFs 263);
References, *Control*, *Take ownership*, *View definition*, *Execute* (for UDTs 268);
Select, *Insert*, *Update*, *Delete*, *Control*, *Take ownership*, *View definition*, *Execute* (for synonyms 280);
Alter, *Control*, *Take ownership*, *View definition*, *Execute* (for aggregates 283, XML schema collections 286);
Select, *Insert*, *Update*, *Delete*, *References*, *Alter*, *Control*, *Take ownership*, *View definition*, *Execute* (for schemas 193);
Alter, *Control*, *View definition*, *Impersonate* (for users 300);
Alter, *Control*, *Take ownership*, *View definition* (for roles 306);
References, *Alter*, *Control*, *Take ownership*, *View definition*, *Execute* (for assemblies 309);
References, *Alter*, *Control*, *Take ownership*, *View definition* (for full-text catalogs 322, symmetric keys 327, asymmetric keys 330, certificates 334, message types 339, contracts 342, queues 294, services 345, routes 348, remote service bindings 351).



The list of objects can be configured in several ways: you can specify that only granted objects 695 are displayed in the grid, or define an object name to filter 695 the objects by that name.

Right-click a cell to grant a specific permission on a certain object. To grant a permission on an object, you should find the object in the **Object Name** list and the column with the corresponding permission. Note that the cells that are highlighted gray do not admit to setting grants for an obvious reason (e.g. you cannot execute a table). The context menu 691 of a cell contains possible permissions that can be granted:

- *Grant*
- *Grant with Grant Option*
- *Deny* (prevents the principal from inheriting the permission through its group or role memberships)
- *Revoke* (removes a previously granted or denied permission)
- *Grant All*
- *Grant All with Grant Option*
- *Deny All*
- *Revoke All*
- *Grant on All*
- *Grant on All with Grant Option*
- *Deny on All*
- *Revoke on All*

Hint: You can also assign privileges by double-clicking the respective cell - in this case the grant status is changed in the following order: *Grant -> Grant with Grant Option -> Deny -> Revoke*.

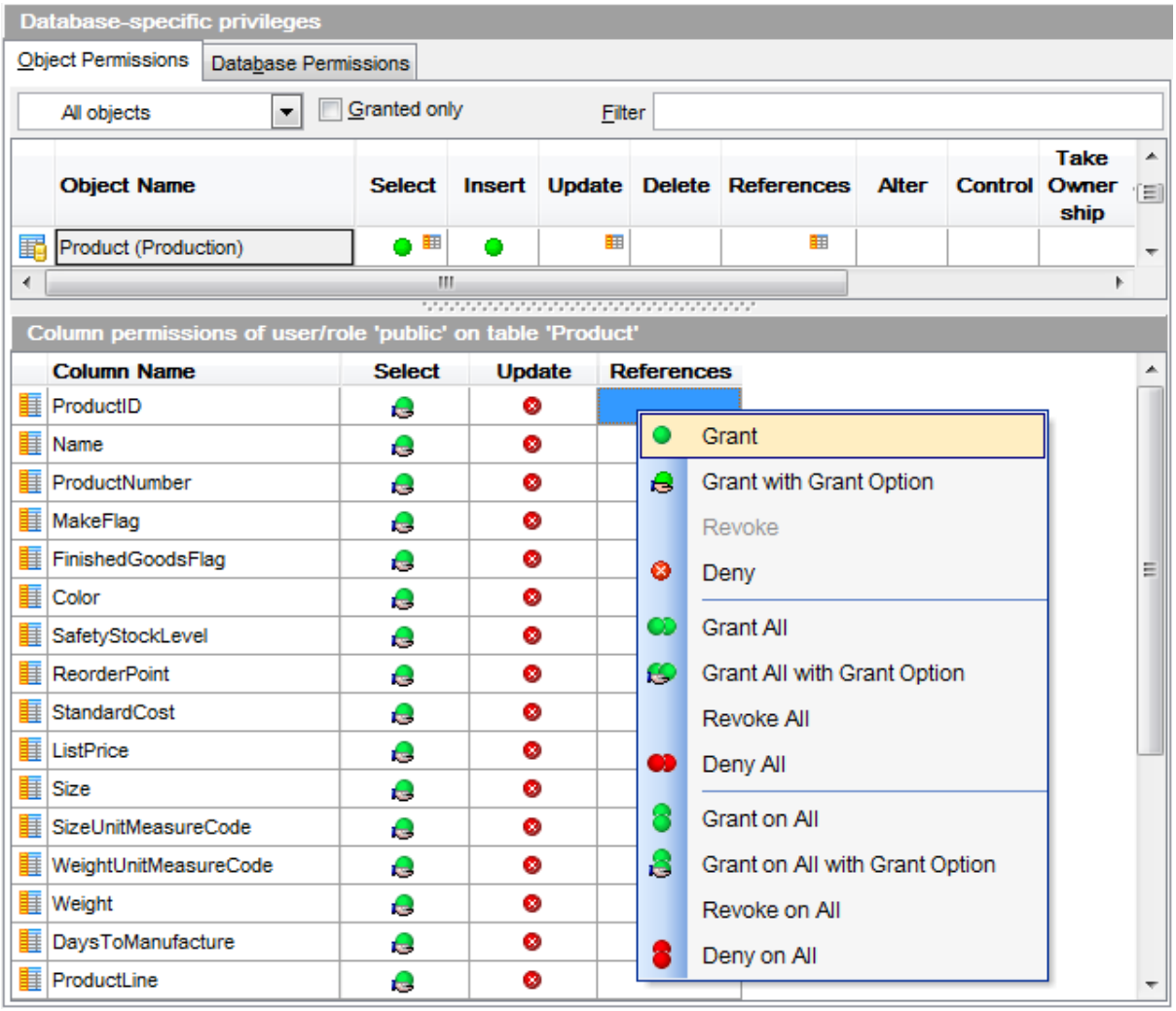
See also:

Using Navigation bar, Toolbar and context menu 690
Managing column permissions 694
Filtering objects in list 695
Setting database permissions 696
Viewing effective permissions 698

9.10.2.2.2 Managing column permissions

The **Column permissions of user/role <principal_name> on <securable_name>** area displays the grid with table/view columns and the privileges that can be granted to the selected user 300 or role 306.

Use items of the context menu 691 to grant/deny/revoke permissions on columns.



If permissions on a column have been defined (for a *table* or *view*), the corresponding permission cell of the table/view contains a specific icon .

See also:

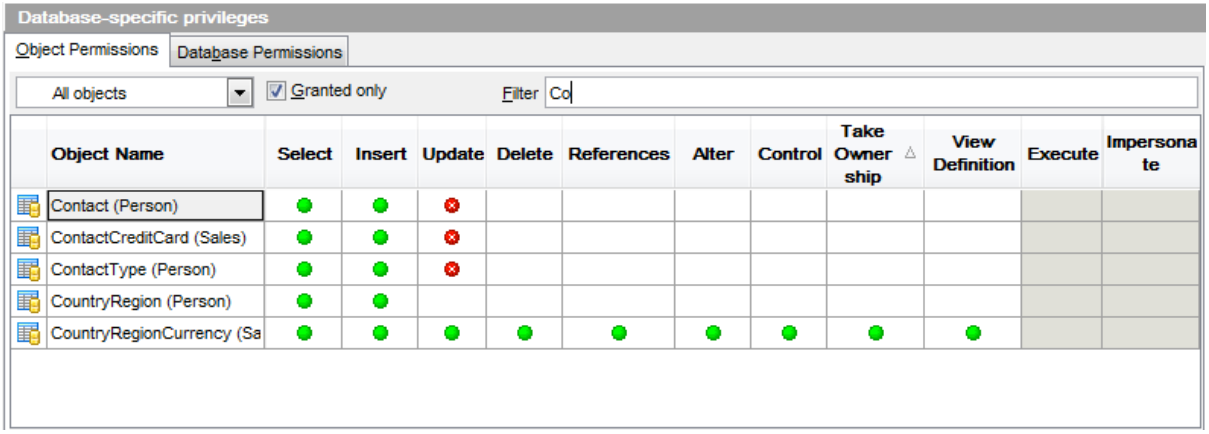
Using Navigation bar, Toolbar and context menu 690
Setting object permissions 692
Filtering objects in list 695
Setting database permissions 696
Viewing effective permissions 698

9.10.2.2.3 Filtering objects in list

In large databases with huge amount of objects it may be difficult to find the required object. For this purpose you are provided with several tools for *filtering objects in list*:

- the **Object type** control: select the required object type from the drop-down list (e.

g. *Tables*);
- the **Filter** panel: enter a character string to filter the object names by that string (note that the filter is case-sensitive);
- the ☑ **Granted only** option: check this option to display objects with at least one granted operation.



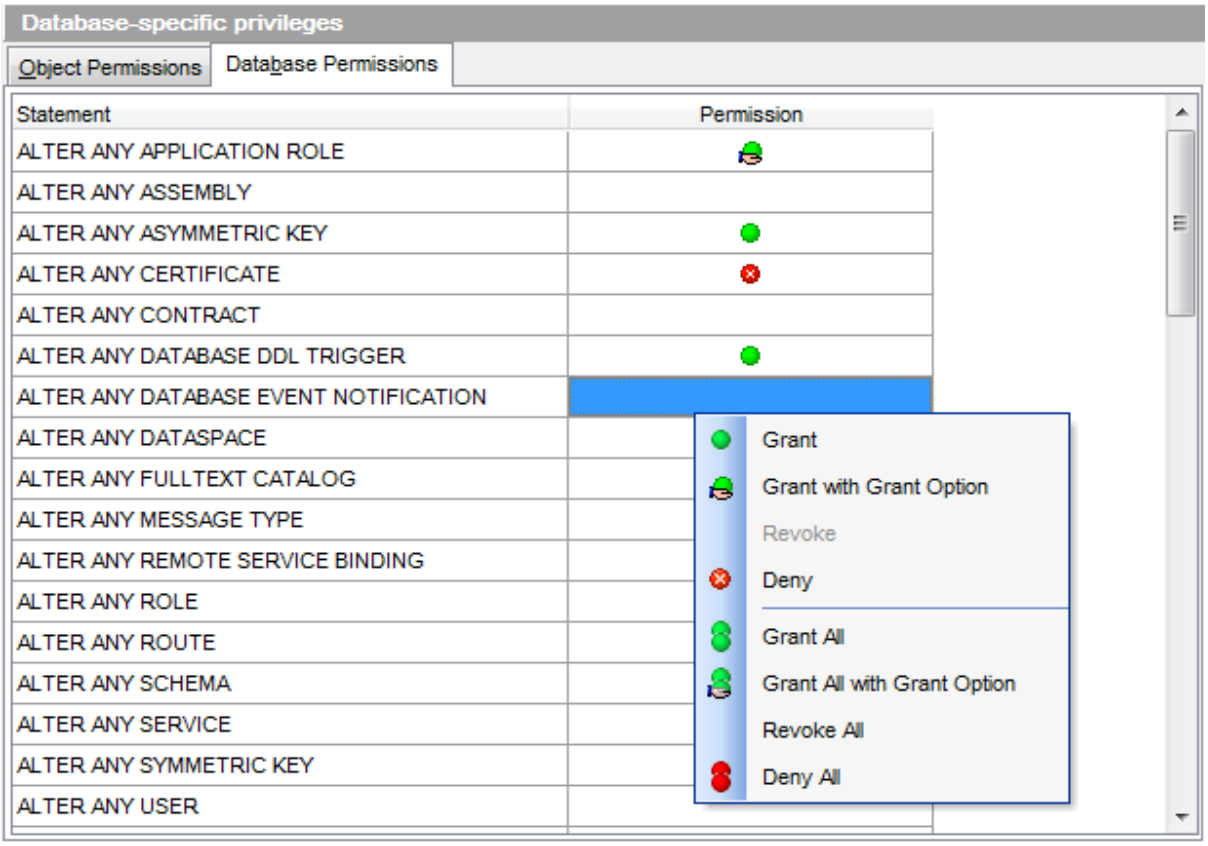
See also:

Using Navigation bar, Toolbar and context menu 690
Setting object permissions 692
Managing column permissions 694
Setting database permissions 696
Viewing effective permissions 698

9.10.2.2.4 Database permissions

The **Database Permissions** tab allows you to define privileges on execution of statements within the specified database.

To edit the database permissions of a user 300/role 306, select the database using the **Database** panel of the Navigation bar 690, then select a *user* or *role* from the **Privileges for** list available within the Navigation bar 690 or toolbar 691.



Right-click a cell next to the required statement to grant its execution privilege to the selected user 300 or role 306. The context menu 691 of a cell contains possible permissions that can be granted:

- *Grant*
- *Grant with Grant Option*
- *Revoke* (removes a previously granted permission)
- *Deny*
- *Grant All*
- *Grant All with Grant Option*
- *Revoke All*
- *Deny All*

See also:

Using Navigation bar, Toolbar and context menu 690

Setting object permissions 692

Managing column permissions 694

Filtering objects in list 695

Viewing effective permissions 698

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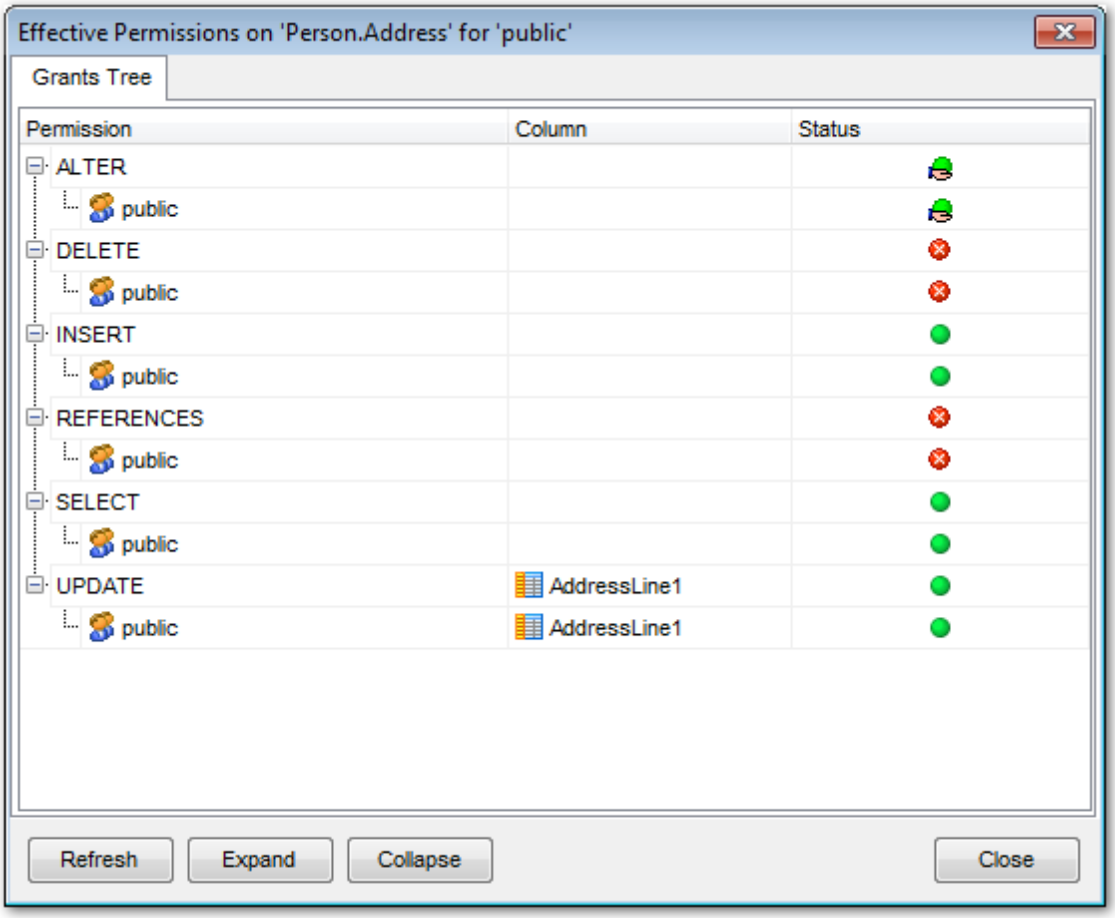
9.10.2.3 Viewing effective permissions

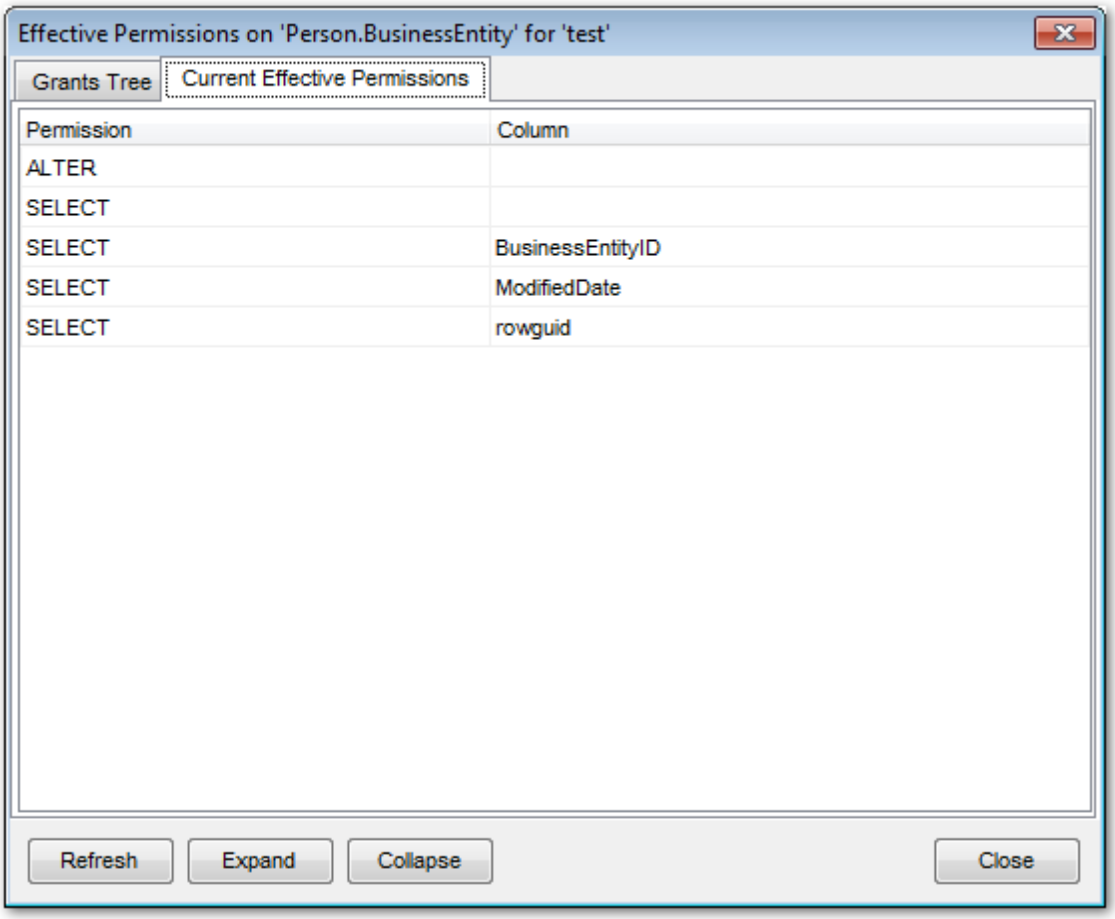
An **effective permission** is the one which is:

- granted directly to the principal, and not denied, or
- implied by a higher-level permission held by the principal and not denied, or
- granted to or held by, a role 306 or group of which the principal is a member, and not denied.

The **Grants Tree** tab of the **Effective Permissions** dialog displays the entire list of permissions granted to the user and its role on a definite object in the form of a tree. For your convenience the **Refresh**, **Expand**/**Collapse** buttons are available at the bottom of the dialog window.



The **Current Effective Permissions** tab of the **Effective Permissions** dialog displays a list of the permissions effectively granted to the specified principal on a definite object.



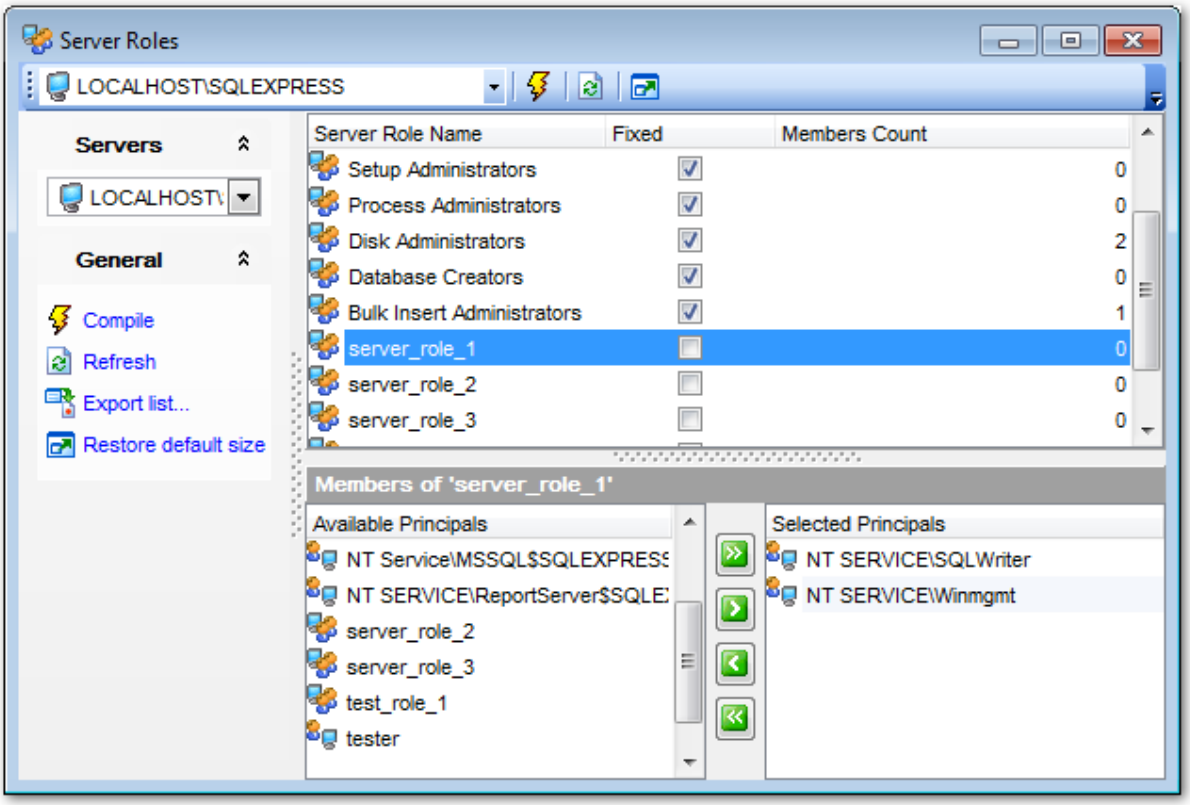
See also:

Using Navigation bar, Toolbar and context menu 690
Setting object permissions 692
Managing column permissions 694
Filtering objects in list 695
Setting database permissions 696

9.10.3 Server Roles

The **Server Roles manager** allows you to browse the list of SQL Server **roles**, and to define login membership 364 for each of the roles.

To launch the tool, select the **Tools | Server Roles** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Server Roles** item from the context menu 54.



The upper list displays the server roles as a grid with the following columns: *Server Role Name*, *Members Count*.

Right-click an item within the list to call the **context menu** allowing you to *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of server roles to any of supported output file formats 971.

Server roles management tools are also available through the **Navigation bar** of the **Server Roles manager**.

The lower area allows you to define login membership, i.e. to select the logins 687 that will belong to the selected server role. The server roles determine the tasks that can be performed through the selected login 687.

To select a login, you need to move it from the **Available Logins** list to the **Server Role Members** list. Use the buttons or drag-and-drop operations to move the logins from one list to another.

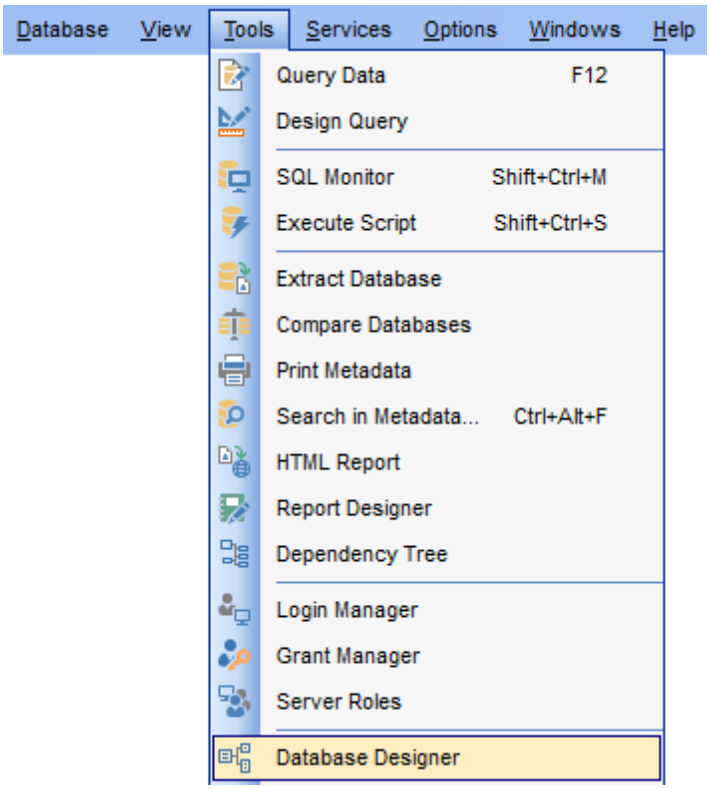
See also:

Logins 687

9.11 Database Designer

Database Designer is provided for visual presentation of databases, database objects and relations between objects. It also allows you to create, edit and drop tables and table columns, set relations between tables and perform other operations you may need to achieve your purpose.

To open the designer, select the **Tools | Database Designer** main menu 951 item, or use the **Database Designer** button on the main toolbar 953.



- Using Navigation bar and Toolbars 702
- Using Diagram Navigator and DB Objects pane 706
- Using context menus 707
- Adding/removing objects to/from diagram 709
- Incremental search 710
- Creating new objects 710
- Creating relations 711
- Working with diagram pages 712
- Reverse engineering 713
- Printing diagram 714
- Saving/loading diagram 717
- Setting diagram options 718

Availability:

Full version (for Windows)	**Yes**

Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

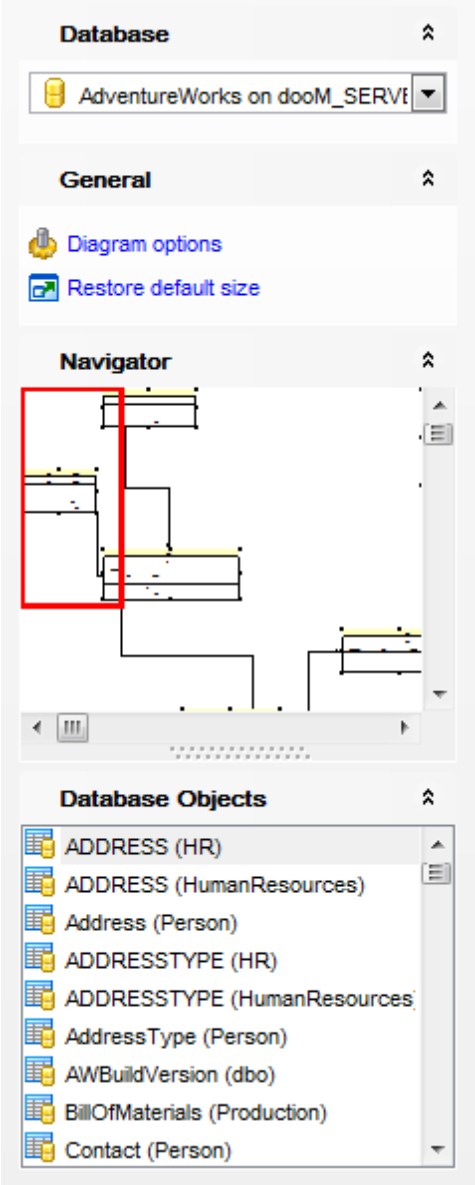
See also:

Database Objects Management 182

Database Designer options 883

9.11.1 Using Navigation bar and Toolbars

The **Navigation bar** and **Toolbars** provide quick access to tools implemented in **Visual Database Designer**.



The **Navigation bar** of **Visual Database Designer** allows you to:

Database

select a database for building the diagram

General

edit diagram options 718
restore the default size and position of the window 701
refresh objects in the diagram

Navigator

✓ use Diagram Navigator 706

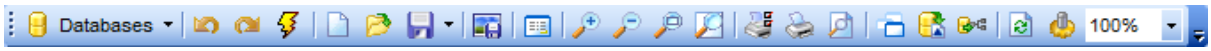
Database Objects

search 710 for objects in the diagram using the Database Objects 706 pane
add 709 objects to the diagram using the Database Objects 706 pane

The **Toolbars** of **Visual Database Designer** provide quick access to most tools for working with diagrams.
To enable the toolbars 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbars only) or *Both* (if you need both the toolbars and the Navigation bar 951) in the **Bar style for child forms** group.

The **main toolbar** (by default, the toolbar is located at the top of the diagram area) contains a number of tools (including items of the **Navigation bar**, context menu 707, tools for printing diagram 714, etc.) allowing you to:

- select the database for building the diagram;
- create a new diagram;
- open 717 an existing diagram;
- save 717 the current diagram to a **.msd* file;
- save 717 the current diagram as an image;
- activate the Incremental search 710 panel;
- adjust diagram zoom for optimal representation: *zoom in*, *zoom out*, *fit model*;
- switch cursor mode: *select / select rectangle to fit*;
- open the Print Setup 715 dialog;
- print 714 the diagram;
- show Print Preview 714;
- arrange objects in the diagram;
- extract metadata of all objects in the diagram and load the script to Execute Script 625 ;
- perform Reverse Engineering 713;
- refresh objects in the diagram;
- view/edit diagram options 718;
- specify a predefined zoom value;
- restore the default size and position of the window.



The **Pages** toolbar (by default, the toolbar is located at the top of the diagram area) contains tools for working with diagram pages 712 allowing you to:

- *add* a new page;
- *delete* the current page;
- *delete all* pages.

The **Alignment Palette** (by default, the toolbar is located on the left side of the diagram area) allows you to:

- align left/right edges of selected objects;

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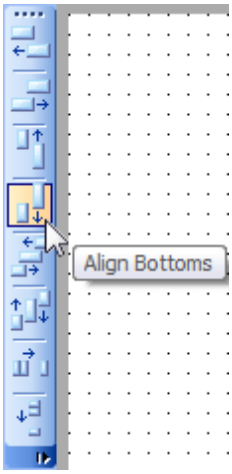
- align tops/bottoms of selected objects;
- align horizontal/vertical centers of selected objects;
- space selected objects equally horizontal/vertical.



The **New object** toolbar (by default, the toolbar is located on the left side of the diagram area) allows you to:

- set the cursor mode to *Select*;
- create a new object 710 (*table, view, function, procedure or comment*);
- create a new relation 711.

See also:

Using Diagram Navigator and DB Objects pane 706
Using context menus 707
Adding/removing objects to/from diagram 709
Incremental search 710
Creating new objects 710
Creating relations 711
Working with diagram pages 712
Reverse engineering 713
Printing diagram 714
Saving/loading diagram 717

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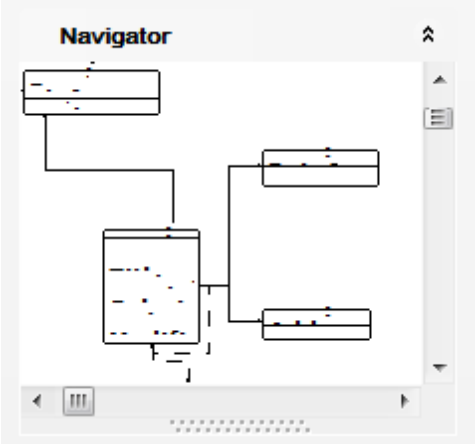
Setting diagram options 718

9.11.2 Using Diagram Navigator and DB Objects pane

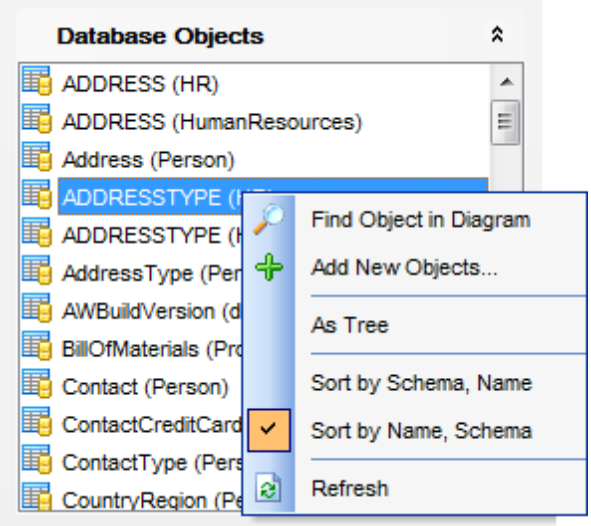
To navigate within the large diagram, use the **Navigator** tool available on the Navigation bar 702. It allows you to see the whole diagram in a reduced scale and to perform a number of operations over the diagram objects.



A mouse click in the **Navigator** area sets the center of the visible diagram area. The area currently visible in the main diagram area is outlined in a red bounding rectangle.

Using the **Navigator** you can work with the diagram objects in the same way as in the main diagram area: add 709/remove 709, create 710 new objects, move objects within the diagram and perform other operations.

The **Database Objects** pane available on the Navigation bar 702 allows you to browse the list of available database objects 182 that can be added to the diagram.



Select and drag an object to the diagram area or double-click it to add 709 the object to the diagram.

Right-click an item within the list to call the **context menu** allowing you to:
find the selected object in the diagram (if the object is found, it will be highlighted in the diagram area);
add new objects to the diagram by Reverse engineering 713;
toggle objects representation mode: *as a tree / as a list*;
select the sorting mode applied to the objects in the list: *by schema, name / by name, schema*;
refresh the list.

See also:

Using Navigation bar and Toolbars 702
Adding/removing objects to/from diagram 709
Creating new objects 710
Creating relations 711
Working with diagram pages 712

9.11.3 Using context menus

The **context menu** of the diagram area contains a number of items available in the Navigation bar 702 and toolbars 704 and allows you to:

- select all objects in the diagram area;
- select headers of all objects;
- select all columns of all objects;
- adjust diagram zoom for optimal representation: *zoom in*, *zoom out*, *select rectangle to fit*, *fit model*, specify a predefined *zoom* value;
- set the cursor mode to *Select* or create a new table 710, view 250, procedure 257, function 263, relation 711, or comment 710;
- configure the grid 718: *draw grid*, *snap to grid*;
- adjust the diagram style 718: *draw primary key columns separately*, *draw entities icons*, *draw attributes icons*, *draw only names of entities*, *draw foreign key names*;
- perform Reverse Engineering 713;
- extract metadata of the diagram objects to Execute Script 625;
- view/edit diagram options 718.

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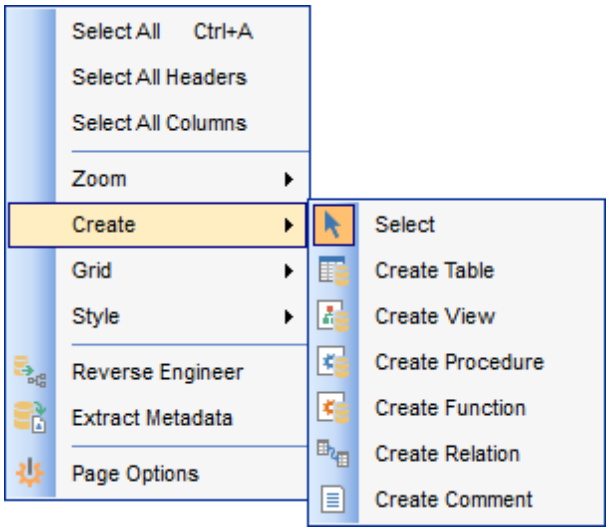
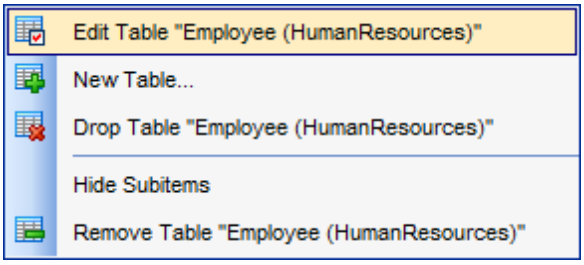


The **context menu** of an entity contains items for working with the object and allows you to:

- edit 182 the object using its editor;
- create 710 a new object using its editor;
- drop 182 the object from the database;
- show/hide object subitems;
- remove 709 the object from the diagram.



The **context menu** of a column contains items for working with the object and its columns and allows you to:

- edit 217 the selected column using its editor (Column Editor 218);
- create 217 a new column;
- drop 217 the selected column;
- edit 182 the object using its editor;
- create 710 a new object using its editor;
- drop 182 the object from the database;
- show/hide object subitems;
- remove 709 the object from the diagram.

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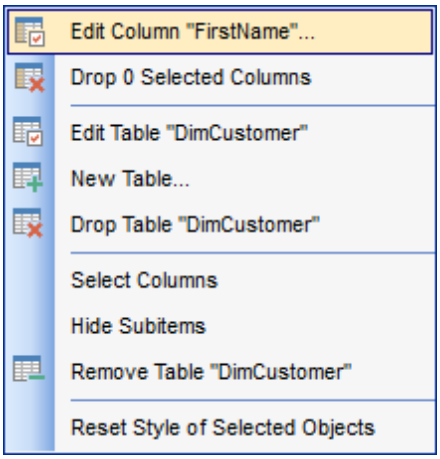


See also:

Using Navigation bar and Toolbars 702
Adding/removing objects to/from diagram 709
Incremental search 710
Creating new objects 710
Creating relations 711

9.11.4 Working with diagram objects

9.11.4.1 Adding/removing objects to/from diagram

To *add* an object to the diagram:

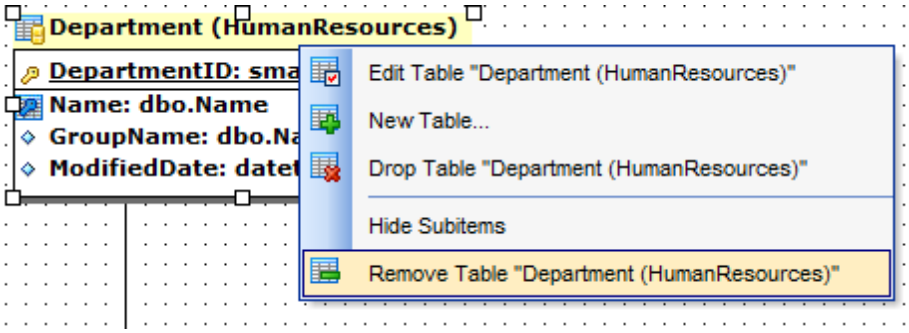
- drag it from the Database Explorer 65 tree to the diagram area (the whole schema can be dragged)

or

- drag it from the Database Objects 706 pane (available on the Navigation bar 702) to the diagram area or simply double-click this object in the list.

To add objects by Reverse engineering 713, you can right-click within the **Database Objects** list and select the **Add new objects...** context menu item.

To remove an object from the diagram, select it in the diagram area, then right-click its title and choose the **Remove <object_name>** item from the context menu 708, or just press the **Del** key.



See also:

Using Navigation bar and Toolbars 702
Using Diagram Navigator and DB Objects pane 706
Using context menus 707
Creating new objects 710
Creating relations 711
Reverse engineering 713
Database Objects Management 182

9.11.4.2 Incremental search

To **search** for an object within the diagram:

- right-click the required object in the Database Objects 706 pane and select the **Find Object in Diagram** item from the context menu

or

- click the **Incremental Search** button on the main toolbar 704 or use the *Ctrl+F* shortcut 986 to activate the Incremental Search 953 panel in the status bar area of the designer window.

Type a string in the edit-box, and the object having the name with the closest match will be highlighted in the diagram area.

See also:

Using Diagram Navigator and DB Objects pane 706

9.11.4.3 Creating objects

To create 182 a new object using Visual Database Designer:

- press on of the **Create** buttons: **Create table**, **Create view**, **Create function**, **Create procedure** on the New object toolbar 705;
- click the desired point on the diagram to place the new object at;
- specify object properties using its editor.

Hint: To create a new object, you can also select the corresponding item from the context menu 707. The context menus also allow you to edit 182 and drop 182 database objects.

See also:

Using Diagram Navigator and DB Objects pane 706
Adding/removing objects to/from diagram 709
Incremental search 710
Creating relations 711

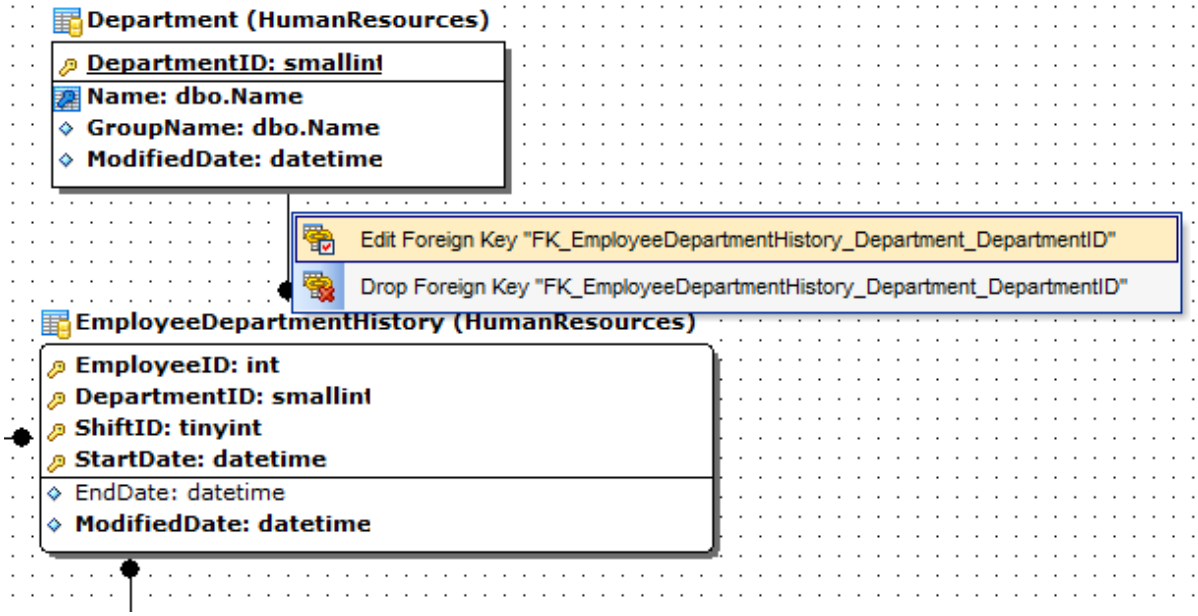
9.11.4.4 Creating relations

To establish a new relation (which is the foreign key 225 in terms of database management):

- press the **Create relation** button on the New object toolbar 705;
- click the entity where the referential constraint should be created;
- click the referred entity;
- specify new foreign key properties using Foreign key Editor 226.

Hint: To create a relation, you can also use the corresponding item of the context menu 707.

Once the relation is created, it is displayed as a line between two entities in the diagram area. The style the line is drawn is determined by the diagram notation.
The **context menu** of this line allows you to edit 225 the foreign key using Foreign key Editor 226 or drop 226 the foreign key from the database.



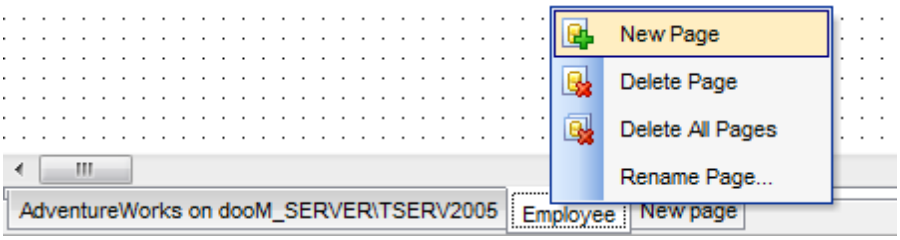
See also:

Using Diagram Navigator and DB Objects pane 706
Adding/removing objects to/from diagram 709
Incremental search 710
Creating new objects 710

9.11.5 Working with diagram pages

You can create several **pages** in one diagram to split the model into several subject groups, e.g. for better comprehension.

To manage diagram pages, right-click on the tabs at the bottom of the diagram area and select the required popup menu items for *adding*, *deleting* and *renaming* pages.



Hint: Page management items are also available on the Pages toolbar 704 of Visual Database Designer.

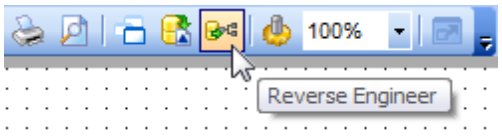
See also:

Using Diagram Navigator and DB Objects pane 706
Adding/removing objects to/from diagram 709

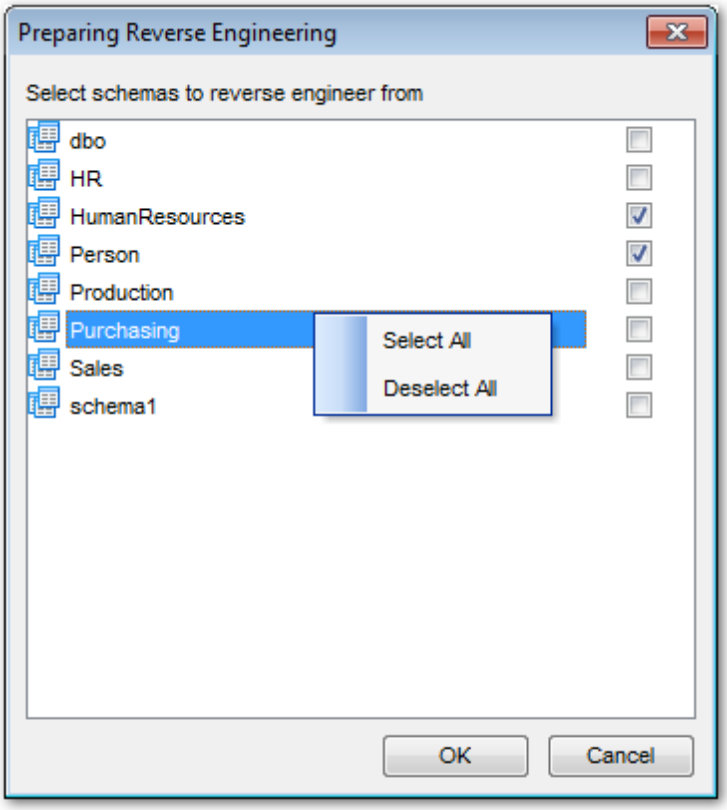
9.11.6 Reverse engineering

The **reverse engineering** operation builds relationship diagram on the basis of the current database's structure. The objects are arranged automatically within the diagram model.

To start the reverse engineering process, press the **Reverse Engineer** button on the main toolbar 704, or use the corresponding item of the context menu 707.



The **Preparing Reverse Engineering** dialog allows you to select schemas 193 containing objects to reverse engineer.



For your convenience the *Select All* and *Deselect All* items are available in the context menu of the schemas list.

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See also:

Using Navigation bar and Toolbars 702
Using Diagram Navigator and DB Objects pane 706
Adding/removing objects to/from diagram 709

9.11.7 Printing diagram

Visual Database Designer allows you to print and preview the diagram.

To preview the diagram:

- press the **Print Preview** button on the toolbar 704;
- preview the diagram using the Print Preview 714 window.

To setup print options:

- press the **Print Setup** button on the toolbar 704, or use the corresponding link on the Navigation bar 702;
- set printing options using the Print Setup 715 dialog and press **OK**.

To print the diagram:

- press the **Print** button on the toolbar 704;
- set printing options using the Print Setup 715 dialog and press the **Print** button.

9.11.7.1 Print Preview

The **Print Preview** dialog allows you to see the diagram layout in WYCIWYG mode before it will be printed.

Use the navigation buttons or the spinner control to navigate within the preview pages.
Click the **Print options...** button to call the Print Setup 715 dialog.
If necessary, specify the **preview zoom** according to your preferences.
Click the **Print all** button to start printing.

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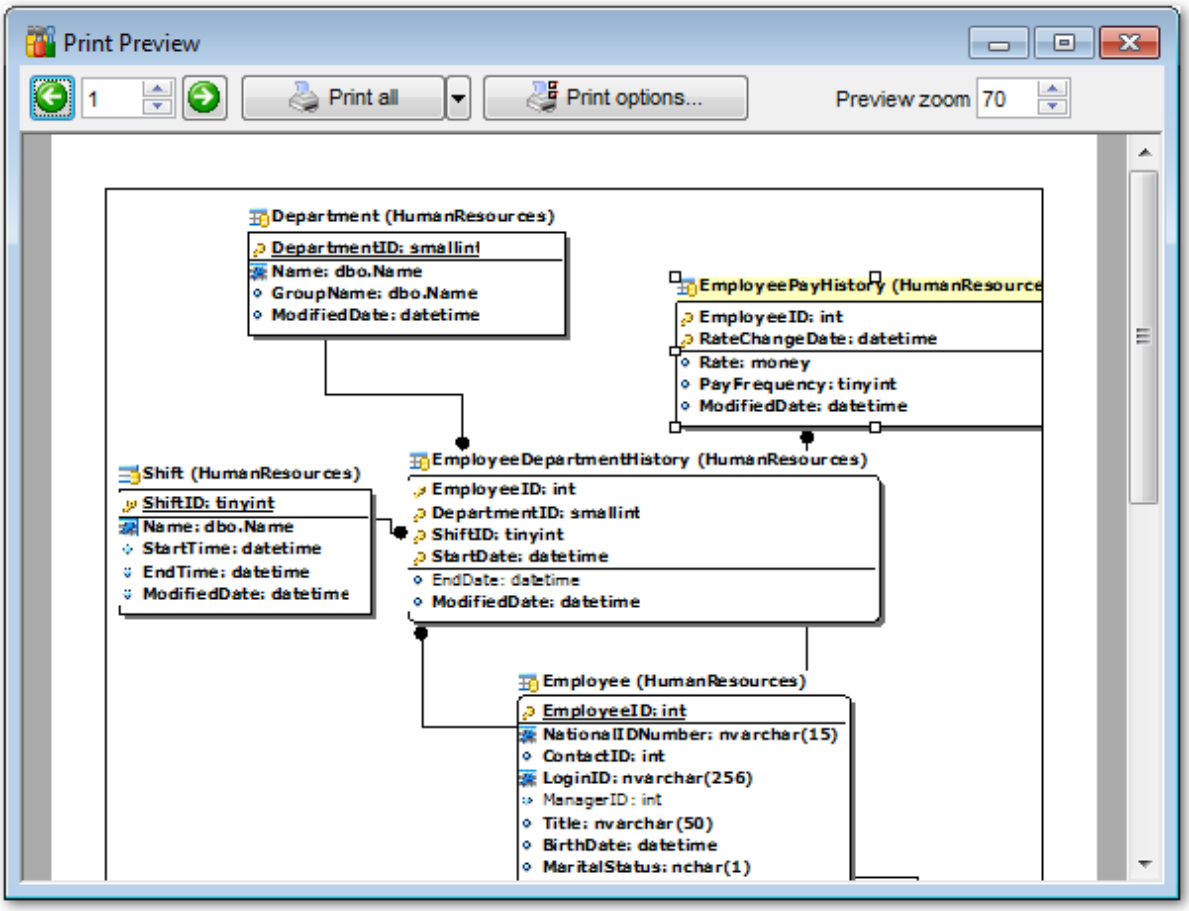


See also:

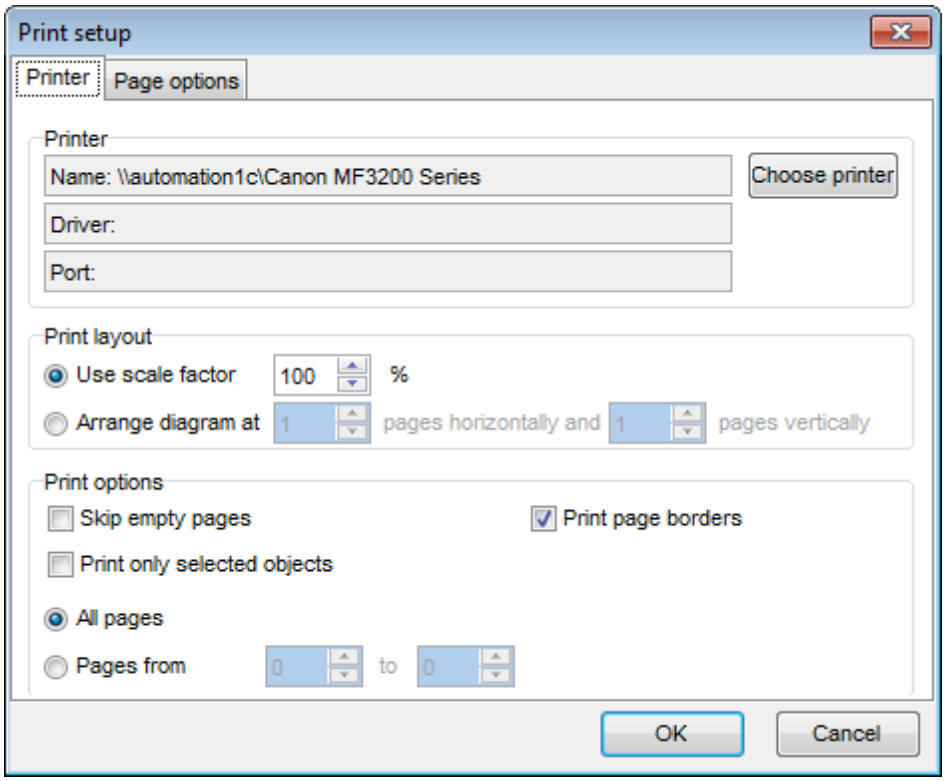
Print Setup dialog 715

9.11.7.2 Print Setup dialog

The **Print Setup** dialog of **Visual Database Designer** provides two tabs for setting printing options: **Printer** and **Page options**.

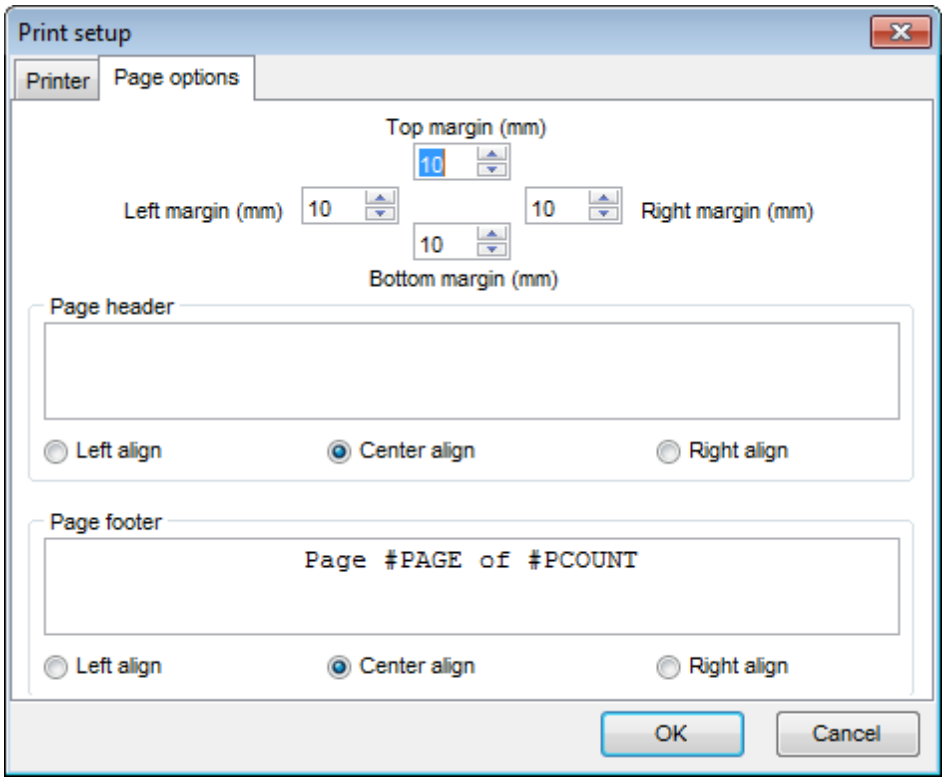
The **Printer** tab of the **Print Setup** dialog allows you to:

- specify the printer (use the **Choose printer** button to select a printer which is not set by default on your system; the *name*, *driver*, *port* fields display the selected printer details);
- specify print layout: print using a defined *scale factor* or arrange diagram at a defined number of pages horizontally and vertically;
- set other print options.



The **Page options** tab of the **Print Setup** dialog allows you to:

- specify page margins (in millimeters): *Top margin*, *Bottom margin*, *Left margin*, *Right margin*;
- specify **Page header** and **Page footer**: enter the header/footer running titles *text*, set left/center/right *align*.



Hint: It is also possible to set macros in the **Page header** and **Page footer** fields:
#PCOUNT stands for the quantity of pages;
#PAGE - the number of the current page;
#DATE denotes the current date;
#TIME denotes the current time.

See also:
Print Preview 714

9.11.8 Saving/loading diagram

Use the **Save Diagram** and the **Open Diagram** buttons on the main toolbar 704 to save the diagram as a **.msd* file for future use or to load the previously saved diagram.

If necessary, you can save the diagram as an image: click the **Save as Picture** button on the on the main toolbar 704.

See also:

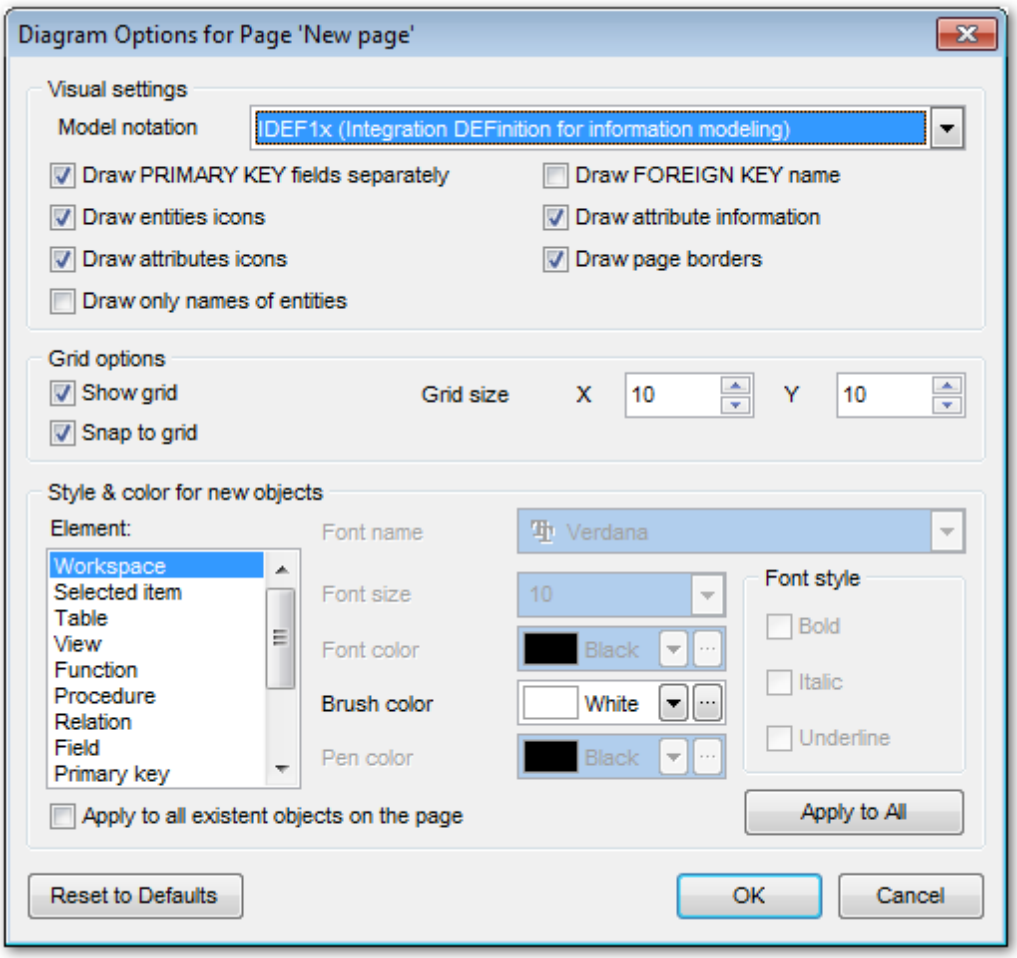
Using Navigation bar and Toolbars 702
Using Diagram Navigator and DB Objects pane 706
Using context menus 707
Adding/removing objects to/from diagram 709

9.11.9 Setting diagram options

Using the **Diagram Options** dialog you can setup the behavior and look of each diagram page.

To open this dialog, use the **Page options** item of the Navigation bar 702 or on the main toolbar 704, or select the corresponding item from the context menu 707.

See detailed description of each option on the Database Designer 883 page of the Environment Options 854 dialog.



☑ **Apply changes to all existent objects on the page**
If this option is selected, the current settings will be applied to all objects of the page.

See also:

Using Diagram Navigator and DB Objects pane 706
Database Designer options 883

Part X

10 AI Assistant

The AI Assistant is a chat panel built into SQL Manager for SQL Server. It helps you write SQL queries from a plain-language description, track down and fix errors, explain and optimize existing code, format queries and assess execution plans.

Note: SQL Manager for SQL Server does not come with a model of its own. Before you can use the assistant, register an *LLM provider* on the Endpoints tab 861.

Overview 722
The assistant panel: its position, layout and visibility.

Chat view 725
Messages, replies and code blocks you can copy or insert into an editor.

Input field and status bar 727
Message input, model selection and the context size indicator.

Context 730
Data sent to the assistant along with your request, and how to add it.

Tokens 734
Measuring context size: what a token is and how it is counted.

AI Assistant commands 735
Built-in actions that send a request with a ready-made prompt.

Confirm Changes window 737
Comparing current and suggested text before applying the assistant's changes.

Chat history 739
Reopening earlier conversations and managing saved chats.

Assistant options are collected in the AI Assistant 859 section of the **Environment Options** dialog: LLM providers, prompt templates, chat history and context settings.

Availability:

Full version	**Yes**
Lite version	**No**

See also:
AI Assistant options 859

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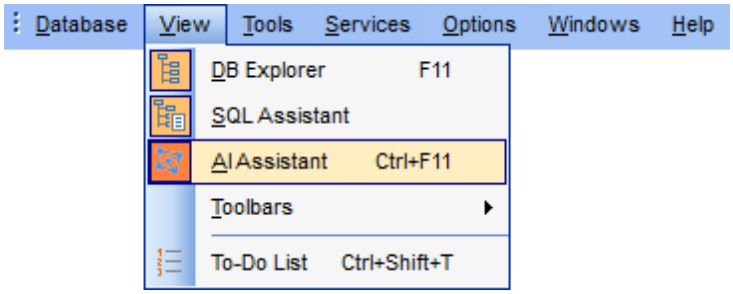
10.1 Overview

The AI Assistant panel is docked at the right side of the program window and is shown by default. To hide the panel or show it again, use the **View | AI Assistant** main menu item, or click the dotted area in the middle of the splitter between the panel and the working area.



You can drag the splitter to adjust the width of the AI Assistant panel.
Hiding the panel or switching to another tab of the application does not interrupt the conversation or a request in progress.

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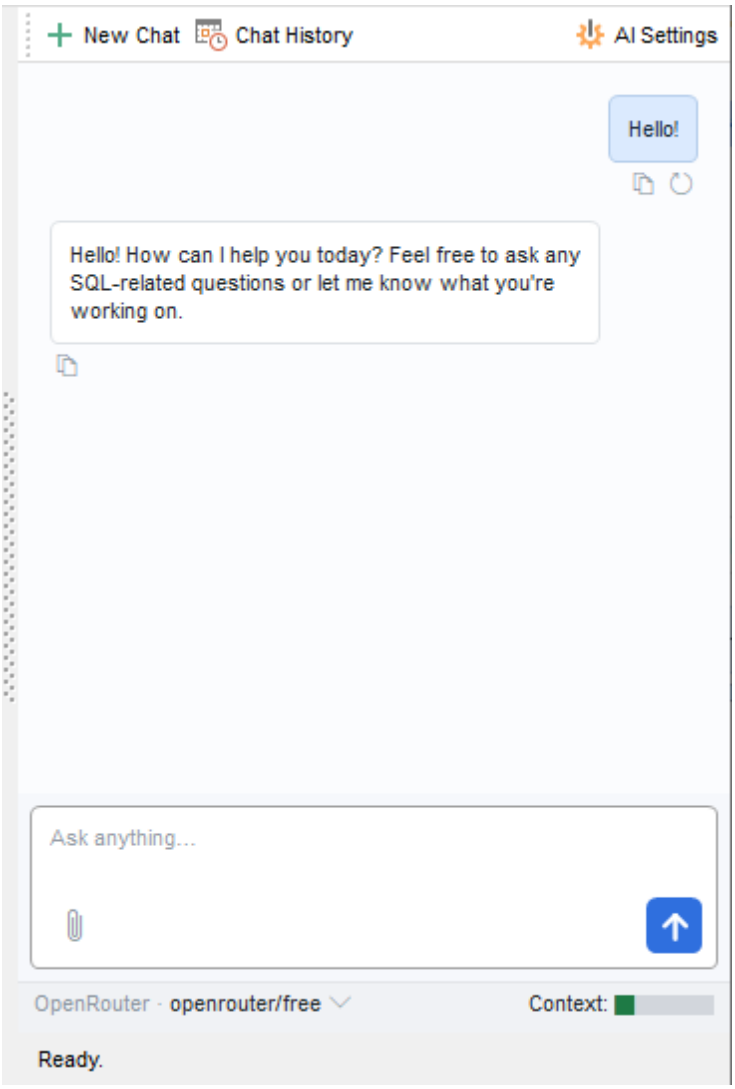


The following buttons are available at the top of the panel:

- **New Chat** — start a new chat. The current conversation is saved to history (provided Keep chat history 859 is selected), and the chat view, the collected context and any typed text are cleared.
- **Chat History** — open the Chat history 739 window.
- **AI Settings** — open the AI Assistant 859 section of the Environment Options dialog.

Most of the panel is occupied by the chat view 725 — your messages and the assistant's replies in the order they appear. The input field 727 is located below the chat view, with the status bar 727 underneath showing the active provider, the selected model and the context 730 size indicator.

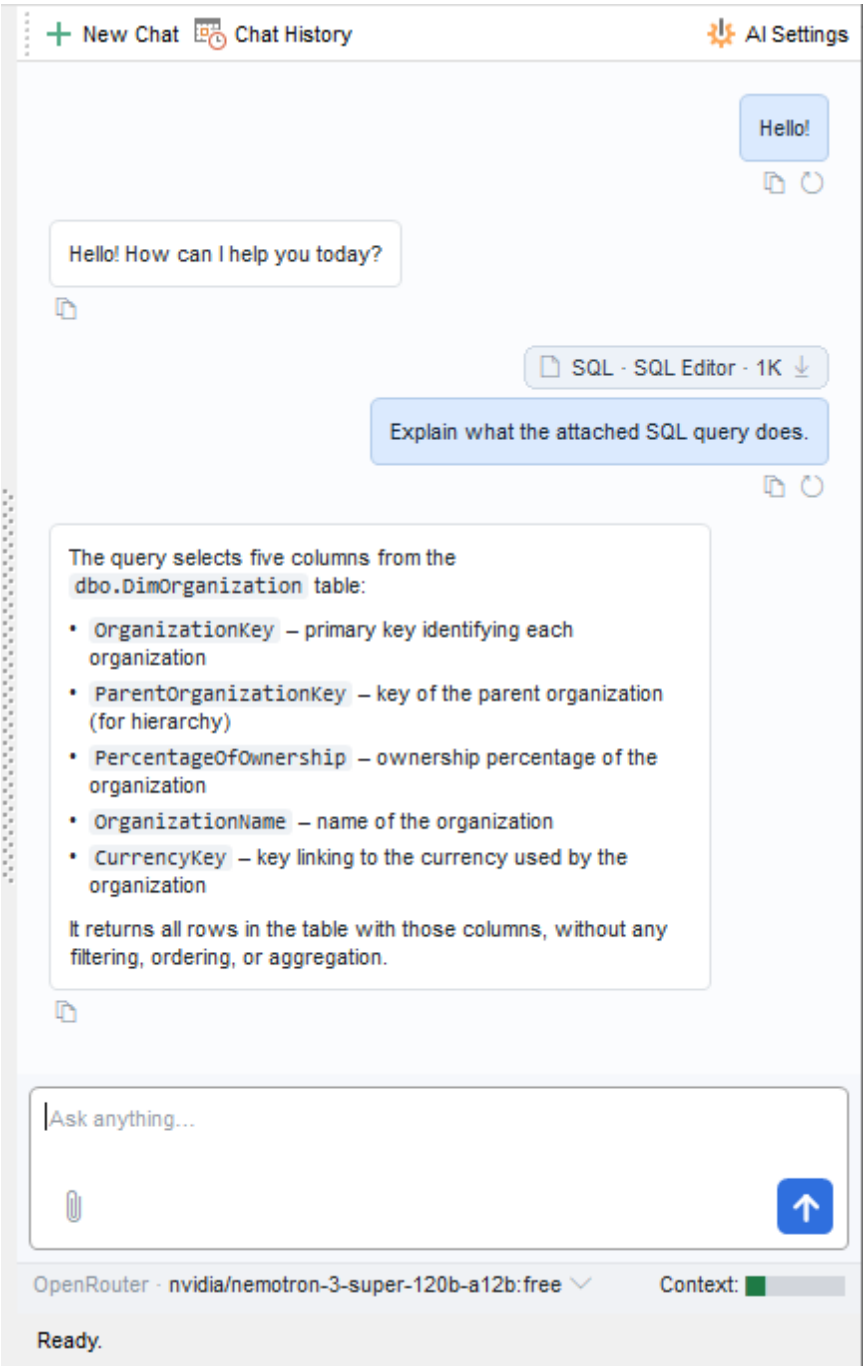
The status of the assistant is shown at the bottom of the panel.

See also:
AI Assistant 721
Chat view 725

Input field and status bar 727

10.2 Chat view

The chat view takes up most of the assistant panel, showing your messages and the assistant's replies in the order they appear. Your messages are aligned to the right, the assistant's replies to the left. Any context 730 attached to a message is shown as chips above it.

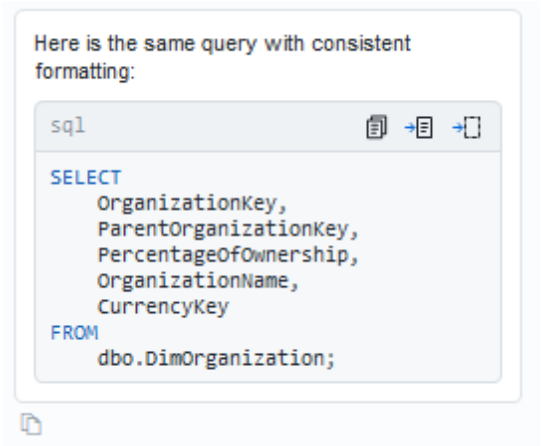


Each of your messages has a regenerate button below it: it resends the same request with the same context. The previous reply is kept, and the new one is added to the end

of the chat view. Below every message — both yours and the assistant's replies — there is a copy button that copies the whole text of the message to the clipboard.

While the assistant is preparing a reply, an animated AI Assistant icon is displayed. If the request fails, a message explaining the reason appears instead. The chat view scrolls down to each new message automatically.

Code fragments in the assistant's replies are shown in separate blocks.



The block header displays the code language along with the following buttons:

- **Copy to clipboard** — copy the code fragment to the clipboard.
- **Insert to active editor** — insert the code fragment into the active editor window. The button is available if the active window contains a code editor and the Allow paste into active editor 859 option is selected. If the fragment would replace the text selected in the editor or the statement containing the cursor, the Confirm Changes 737 window opens. If the cursor is outside any statement, the fragment is inserted at the cursor position without a preview.
- **Insert to new editor** — insert the code fragment into a new Query Data 432 tab.

Long code blocks are collapsed to the first 20 lines, with an *Expand/Collapse* button at the bottom of the block. The copy and insert buttons always work with the entire text of the block. Long lines are not wrapped and can be scrolled horizontally. You can also select text inside a block and copy it with *Ctrl+C* or with the *Copy* context menu item, which appears only when text is selected.

Replies from the assistant can also contain tables. If a table is wider than the panel, a horizontal scroll bar appears below it. In tables and code blocks you can scroll horizontally with *Shift+mouse wheel*.

See also:
AI Assistant 721
Context 730
Input field and status bar 727
Confirm Changes window 737

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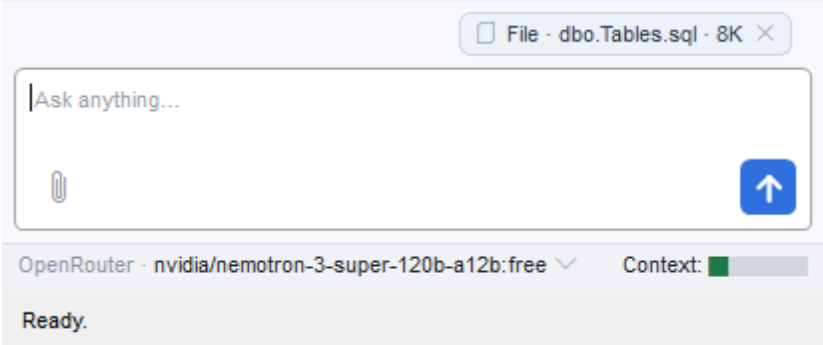
10.3 Input field and status bar

Input field

The input field is located at the bottom of the assistant panel.



To send a request, press **Enter** or click the send button at the right edge of the field. To start a new line within the request, press **Shift+Enter**.

When the input field is empty, the **Up** and **Down** arrow keys let you browse the requests already sent in the current conversation, from the most recent to the earliest; the selected request appears in the input field. Browsing stops as soon as you edit the text, send the request, click anywhere in the field or in the chat view, or press **Esc**; **Esc** also clears the text that was placed into the field. Identical requests sent one after another (after a reply has been regenerated, for example) appear only once while browsing.

The paperclip button attaches a text file to the request. The maximum file size is set by the Attached file size limit 864, K tokens 864 option. Only text files can be attached: the program examines the contents of the file rather than its extension, so a binary file such as an archive, an image, a PDF or an executable is rejected even if it has been renamed.

The context chips 730 above the input field show the data that will be sent with your next request. You can remove any chip before sending.

While the assistant is preparing a reply, the send button is replaced with the **Stop** button. The input field stays active: you can type your next request, but **Enter** neither sends it nor stops the assistant. The only way to stop generation is to click **Stop** — whatever you have typed stays in the field.

Status bar

Below the input field, the status bar shows which model the assistant is using (*Provider · model*). To change the active provider, use the Endpoints 861 tab of the **Environment Options** dialog. To change the model without opening the options, click the model name — the **Select model** window opens.

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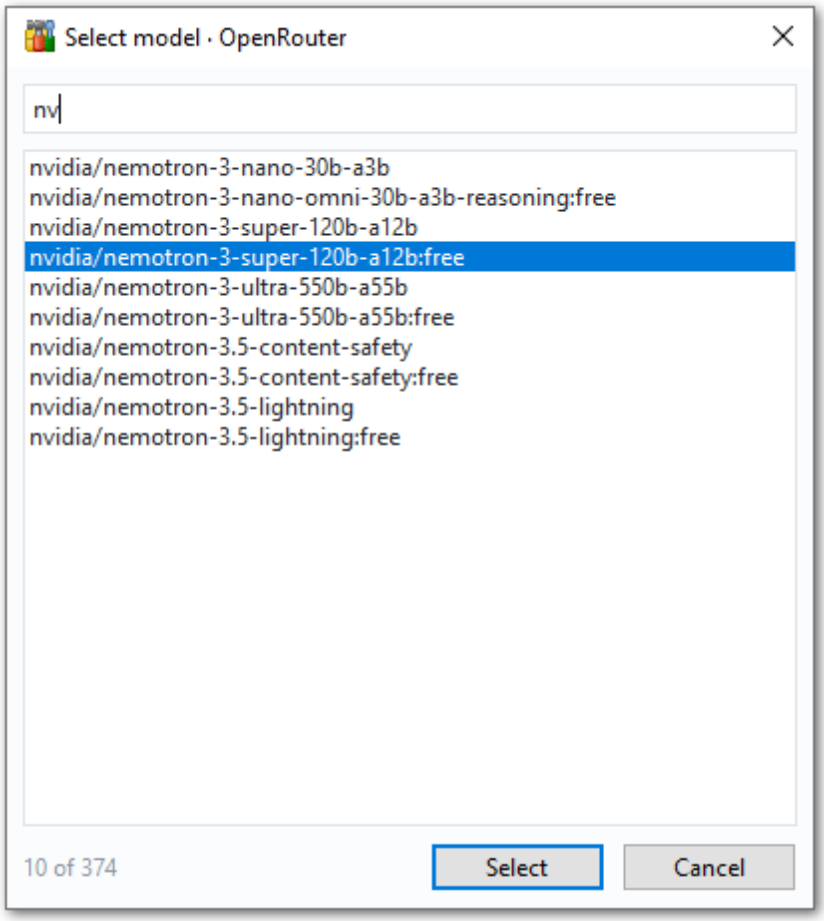

This window lists the models available from the selected LLM provider 861. Use the filter box at the top to narrow the list; the number of matching models is shown below it.

To select a model, click **Select**, press **Enter** or double-click a model in the list. To close the window without any changes, click **Cancel**, press **Esc** or click the window close button.

The model you select is used until you restart the program or select another one; the default model set for the provider on the Endpoints 861 tab remains unchanged. Changing the model does not reset the current conversation — you can switch models midway, and the assistant continues with the full conversation history.

On the right, a context size indicator shows the size of the context accumulated over the whole conversation. The value is recalculated after each request and does not include unsent context chips 730 or the request you are typing.

The appearance of the indicator depends on the Warning threshold, K tokens 864 option. If a threshold is set, the indicator is displayed as a bar of five segments, each representing 20% of the threshold: the bar is green up to three segments, orange at four and red at five. The exact context size 734 is shown in the tooltip. If the threshold is 0, the indicator shows the context size as text instead.

Exceeding the threshold does not prevent a request from being sent — the indicator only

warns you that the context is getting large. See Tokens 734 for details on how the context size is calculated.

A status line at the bottom of the panel shows the current state of the assistant.

See also:
AI Assistant 721
Chat view 725
Context 730
Endpoints 861
Context (Environment options) 864

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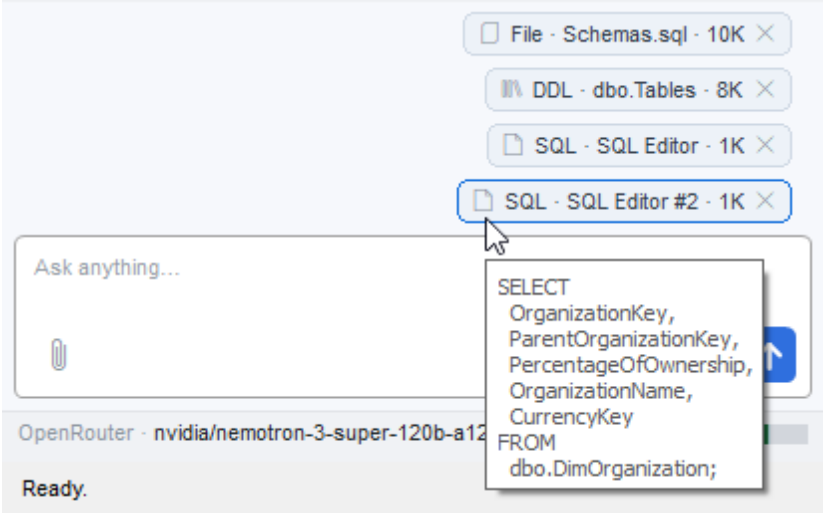
10.4 Context

Context is the data sent to the assistant together with your request: an SQL query, the DDL of database objects, an error message, an execution plan or a file you have attached. Nothing is sent to the assistant unless you add it to the context. The context you provide has a direct effect on how useful the answer is.

Each item of context appears as a chip above the input field, showing the data type, the source and the size in tokens — for example, *DDL · dbo.Tables · 8K*. The type tells you what has been attached: *SQL* for a query fragment, *DDL* for a description of database objects, *File* for an external file, *Error* for an error message and *Plan* for an execution plan. To see what a chip holds, point to it with the mouse: the tooltip shows the first few lines of its contents.



Chips accumulate above the input field until you send the message. If you attach several chips of the same type with the same name, the labels are numbered #2, #3 and so on. To remove a chip before sending, click the cross on the chip. The *New Chat* button removes all unsent chips.

Once the message has been sent, the chips remain in the chat view above the message they were attached to, where they can no longer be changed or removed. To save the contents of a sent chip to a file, click the chip.

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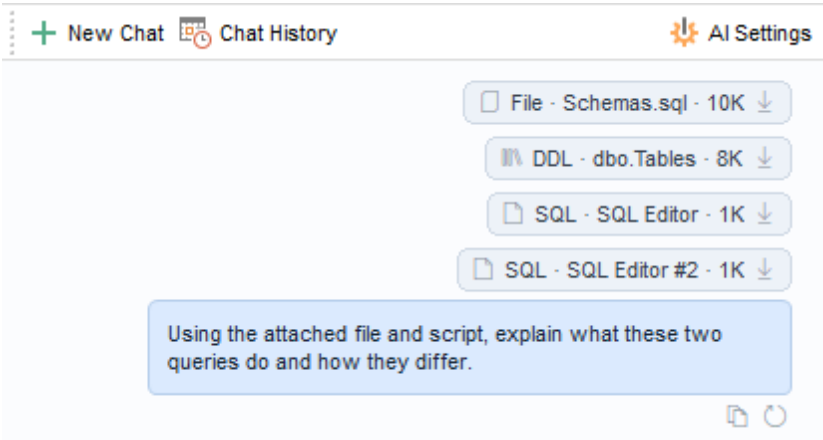


Note: Only metadata — the DDL of database objects — goes into the context. The data stored in those objects is never included.

Hint: Chip sizes are given in tokens 734 rather than bytes — the unit a model uses to measure text. The total context accumulated over the conversation is shown in the status bar 727.

To learn how to add data to the context, see Adding context 731.

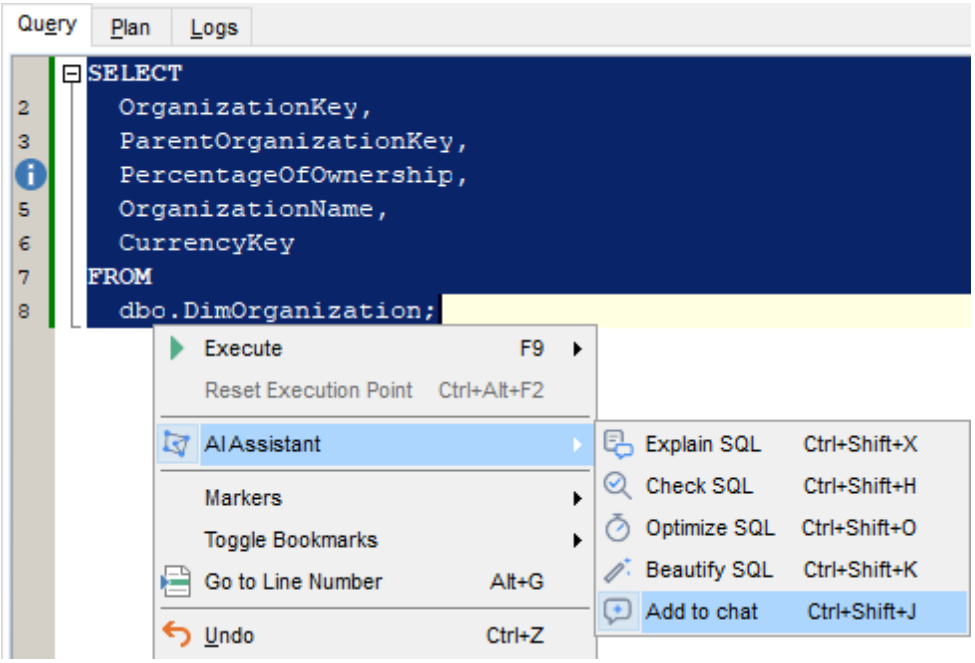
See also:
AI Assistant 721
Chat view 725
Context (options) 864
Adding context 731

10.4.1 Adding context

There are several ways to add data to the context: the context menu of the editors, the context menu of the Database Explorer, the paperclip button in the assistant panel, and AI Assistant commands.

- **Editors**

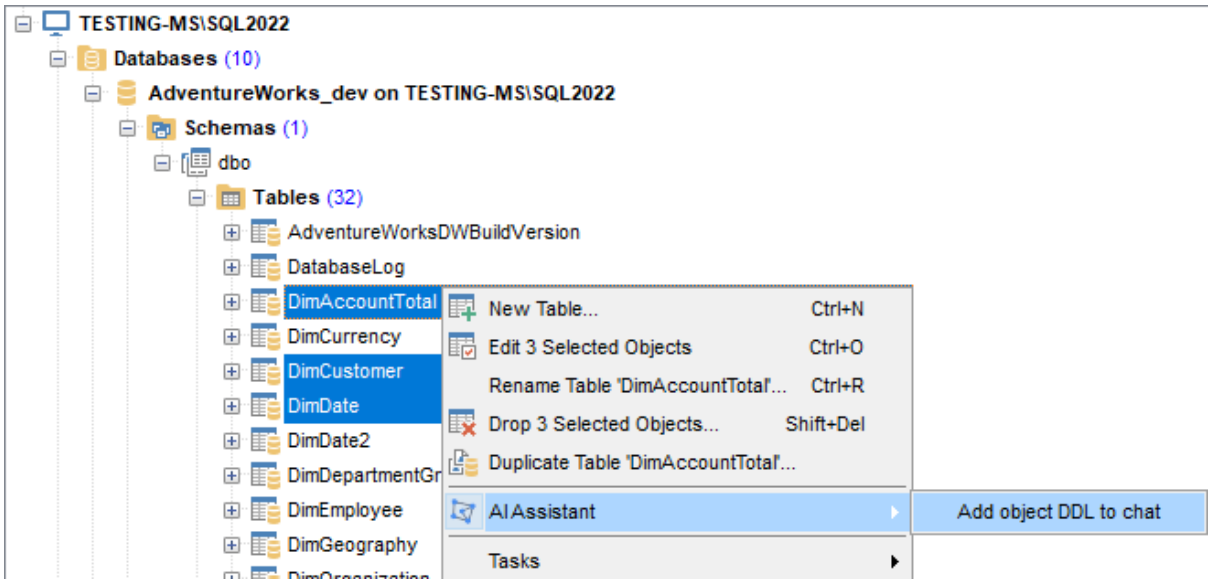
The *AI Assistant | Add to chat* item is available in the context menu of Query Data 432 and the SQL Script editor 625. The item adds the selected code fragment to the context. If nothing is selected and the cursor is inside a statement, that statement is selected automatically and added in full.



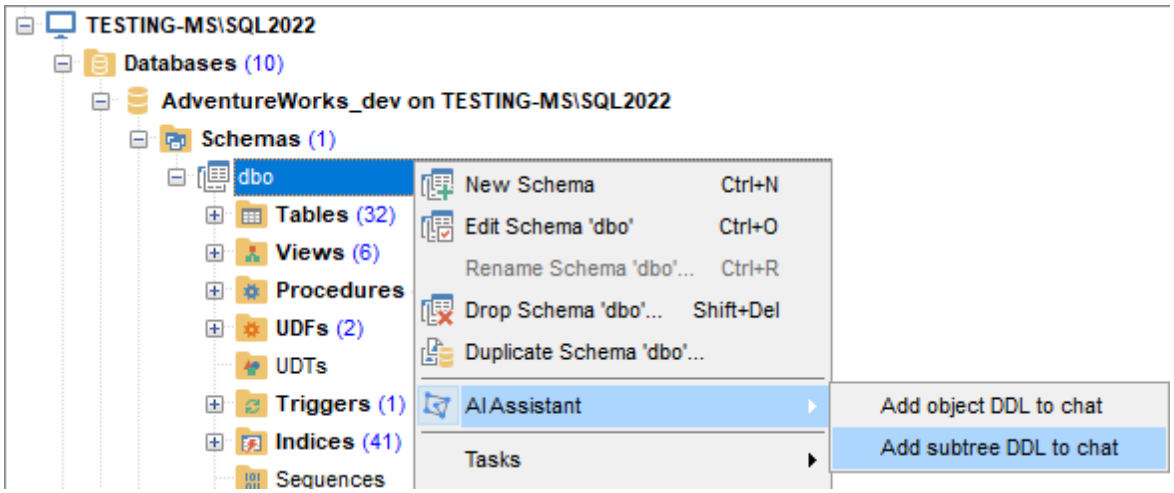
In the editors of views, procedures, UDFs, triggers and DDL triggers, the *AI Assistant* submenu is available in the working area that holds the object text. *Add to chat* adds the selected fragment to the context. If nothing is selected, the whole text in the area is added.

- **Database Explorer**

The context menu of the Database Explorer 65 provides the *AI Assistant* submenu. The items available depend on the type of node.



Add object DDL to chat — attaches the DDL of the selected object. The item is available for a database, a schema and individual objects, including a multiple selection. The filters set on the Context 864 tab do not apply: the DDL is sent in full.



Add subtree DDL to chat — attaches the DDL of every object located below the selected node in the tree. The item is available for a database, the Schemas node, a schema and object nodes. What goes into the metadata snapshot is set on the Context 864 tab: both the *Object types* and *Details* groups apply to a database, the Schemas node and a schema, while an object node uses *Details* only.

- **The paperclip button** in the input field 727 attaches a text file. The maximum file size is set by the Attached file size limit, K tokens 864 option.

- **AI Assistant commands** 735 attach the context automatically: the SQL fragment when you explain, check, optimize or format a query; the error message and the statement that caused it when you fix an error; the plan when you assess an execution plan.

The menu items — *Add to chat*, *Add object DDL to chat* and *Add subtree DDL to chat* — and the *paperclip button* only attach data as chips; you write the request yourself. *AI Assistant commands* send the request straight away, with the attached context and a ready-made prompt template 863.

10.5 Tokens

A token is the unit that language models use to measure the amount of text. Everything you send to the assistant is split into tokens: the text of your request, SQL fragments, descriptions of database objects, error messages, execution plans and the contents of attached files.

All the limits in the AI Assistant options 864 are measured in tokens: the maximum size of an attached text file, the context size warning threshold and the maximum size of a metadata snapshot. Sizes are never given in kilobytes.

Only the model knows the exact number of tokens. It counts them while processing the request, and the assistant shows the resulting value in the status bar 727.

Until a request is sent, the number of tokens can only be estimated: the assistant works out the size of unsent chips and metadata snapshots based on an average conversion rate. The actual value may be higher or lower.

Context 730 builds up over the whole conversation: each new request carries the entire conversation so far, including all the context chips. The number of tokens therefore grows as you go on, even if your requests are short. The current value is shown by the context size indicator in the status bar 727.

The indicator compares the accumulated number of tokens with the value set by the Warning threshold, K tokens 864 option, changing color as the limit gets closer. This is only a warning: exceeding it does not prevent a request from being sent.

Note: Requests to a model are billed by the number of tokens sent and received, and output tokens are usually several times more expensive than input ones. Since every new request carries the whole conversation, the longer it goes on, the more tokens you pay for at each step — the cost grows faster than the number of messages.

If the context has grown too large, start a new chat: the *New Chat* button clears the accumulated context. To make a single request smaller, remove the context chips 730 you do not need before sending, or trim the metadata snapshot with the options on the Context 864 tab of the **Environment Options** dialog.

Hint: To keep the cost down, start a new chat whenever the subject changes, and do not attach more metadata than the task requires.

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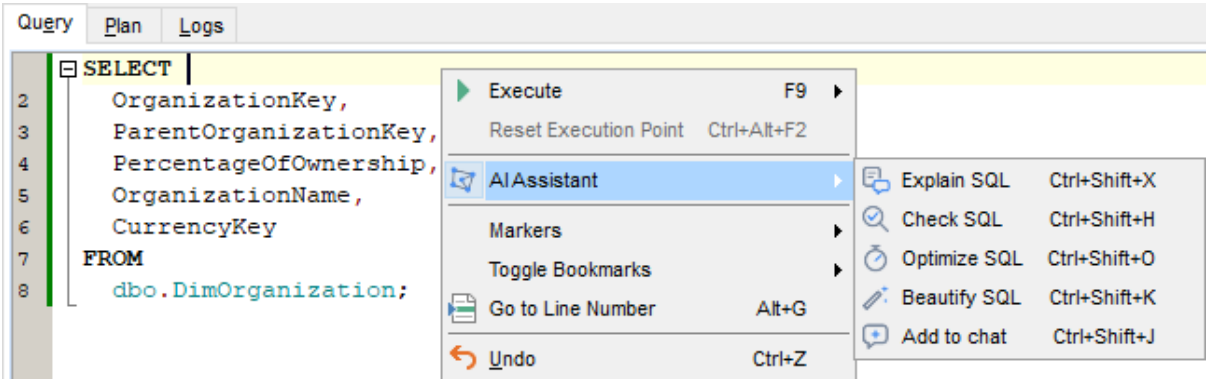
10.6 AI Assistant commands

AI Assistant commands let you send a request without writing it in the input field 727: the data goes to the assistant straight away, together with a ready-made prompt template 863.

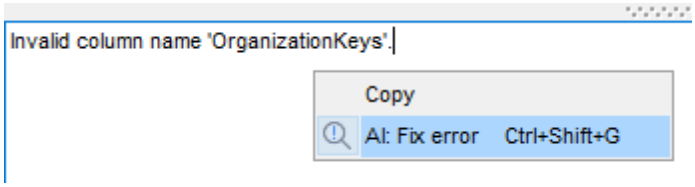
There are six commands in all. Four of them are in the *AI Assistant* submenu, available in Query Data 432, the SQL Script editor 625 and the editors of views, procedures, UDFs, triggers and DDL triggers.



- **Explain SQL** — asks the assistant to explain what the query does;
- **Check SQL** — asks the assistant to check the query for correctness, security issues and adherence to best practices;
- **Optimize SQL** — asks the assistant to suggest optimizations and explain each change;
- **Beautify SQL** — asks the assistant to format the query without changing its meaning.

The fragment is attached according to the same rules as when you add context manually — see Adding context 731 for details.

Unlike the commands, the **Add to chat** item in the same submenu only attaches the SQL fragment; you write the request yourself.



- **Fix error** — asks the assistant to find the cause of an error and suggest a fix. The command is available in the context menu of the message area in Query Data 432, the SQL Script editor 625 and the procedures and UDFs editors. It is also available in the Changing Metadata 959 window. The error message is sent together with the statement that caused it.

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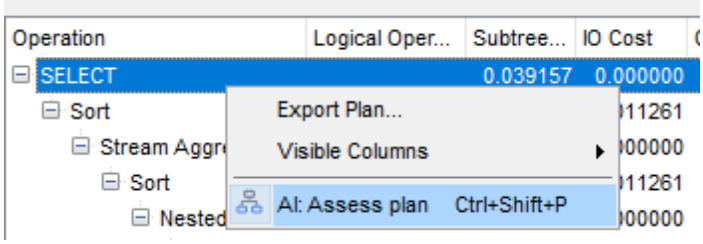


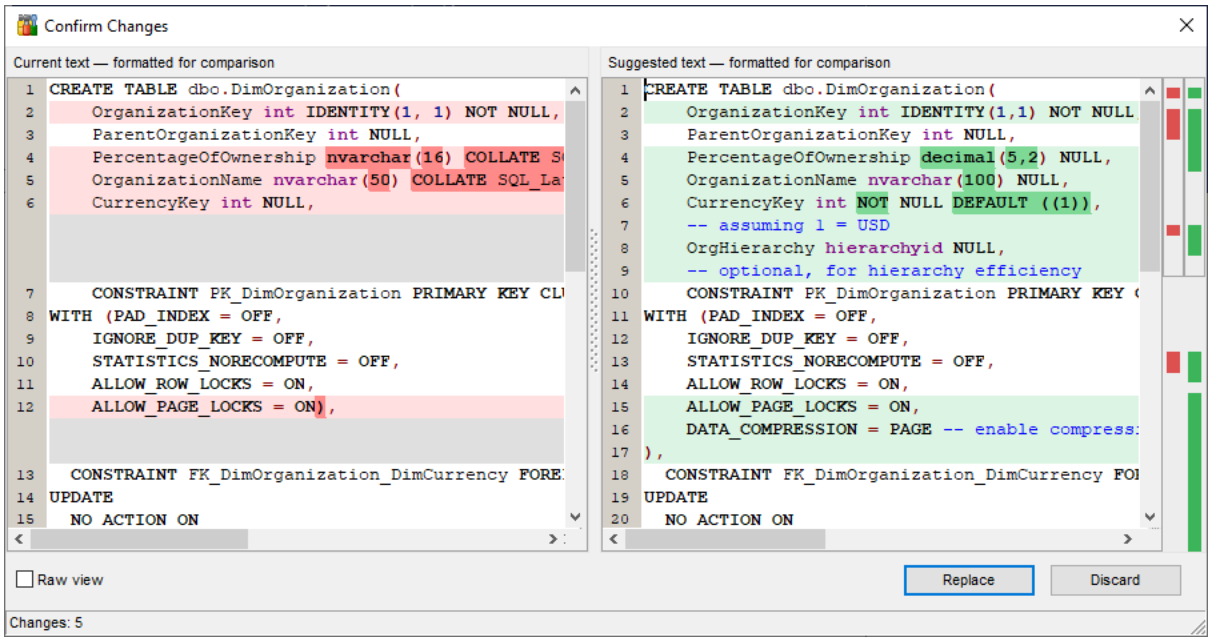
- **Assess plan** — asks the assistant to review the execution plan of a query: point out bottlenecks and give recommendations. The command is available in the context menu of the Plan tab 438 in Query Data.

The prompt templates used by the commands can be edited on the Templates 863 tab.

See also:
AI Assistant 721
Context 730
Templates 863

10.7 Confirm Changes window

The **Confirm Changes** window opens when you insert a code fragment from the assistant's reply into the active editor (the **Insert to active editor** 725 button) — but only if the fragment would replace the text selected in the editor or the statement containing the cursor. If the cursor is outside any statement, the fragment is inserted at the cursor position and the window does not appear. The window also does not open if the suggested fragment is identical to the text already in the editor.



The window shows two panes: *Current text* on the left, with the text currently in the editor, and *Suggested text* on the right, with the fragment suggested by the assistant. Lines in both panes are numbered, and the panes scroll together. Syntax highlighting, font and color scheme follow the editor options 909. The suggested text is read-only — you cannot edit the assistant's reply before inserting it — but you can select and copy text in both panes.

The text in the editor and the reply from the assistant may be formatted differently, so the program reformats both before comparing them; the reply itself is inserted into the editor unchanged. When this happens, the pane headers say *formatted for comparison*. Select the ☑ **Raw view** check box to compare the texts exactly as they are written. If the texts differ only in formatting and the query itself is unchanged, this is reported in the status bar at the bottom of the window.

Differences are highlighted in color: deleted lines in red in the left pane, added lines in green in the right one. A changed line is highlighted on both sides, red for the current version and green for the suggested one. Within a changed line, the color covers whole elements of the query — identifiers, keywords, literals — rather than individual characters. Where a line is missing on one side, an empty placeholder appears without a line number.

Two navigation bars run along the right edge of the window: the left one for the current text, the right one for the suggested text. The marks on them show where the differences are, and clicking a mark scrolls both panes to that difference. The total

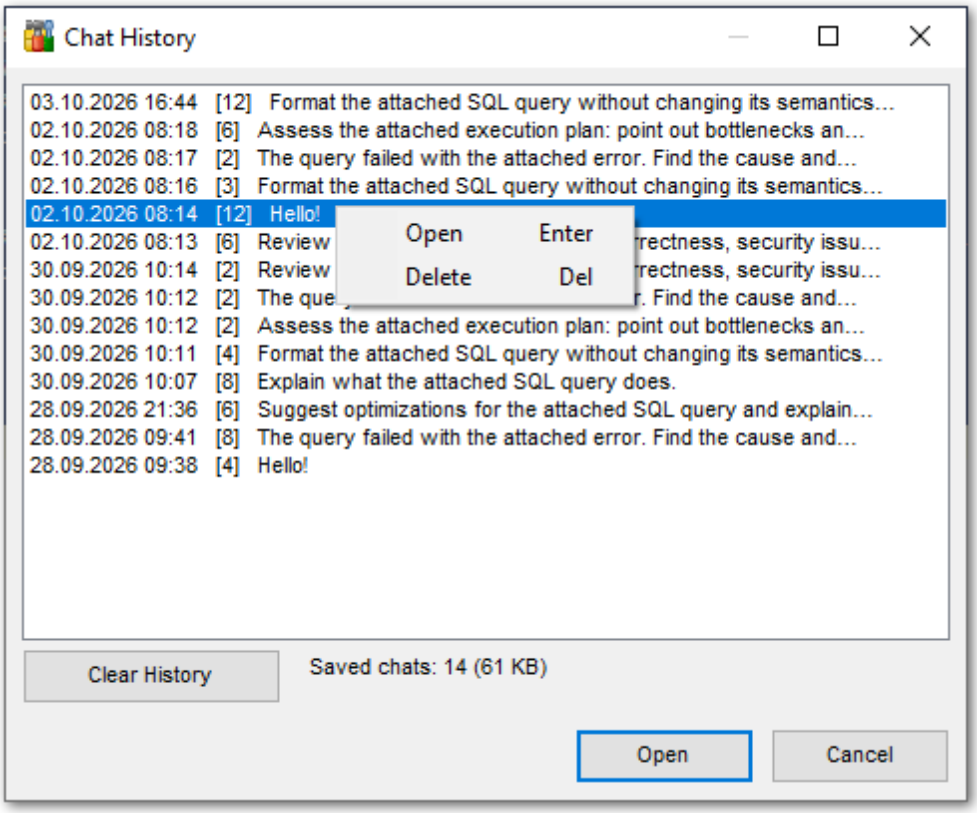
number of differences is shown in the status bar at the bottom of the window.

Click **Replace** to substitute the assistant's text for the fragment in the editor; the inserted text stays selected. To undo a replacement, press **Ctrl+Z**. Click **Discard** or press **Esc** to close the window and leave the editor untouched.

See also:
AI Assistant 721
Chat view 725

10.8 Chat history

Click the *Chat History* button on the assistant panel 722 to open the **Chat History** window. It lists all the saved conversations with the AI Assistant, sorted by the date of the last message, from the newest to the oldest. For each conversation you can see the date and time of the last message, the number of messages in square brackets, and a title based on the first message.



To open a chat, double-click a row in the list, click **Open**, press **Enter** or select **Open** from the context menu. The messages appear in the chat view 725 and you can carry on with the conversation. Before the selected chat is opened, the current one is saved to history — provided the ☑ Keep chat history 859 option is selected.

To delete a chat from the history, press **Del** or select **Delete** from the context menu. You will be asked to confirm the deletion.

The **Clear History** button deletes the whole saved history; this also requires confirmation. To the right of the button you can see how many chats are stored and how much space they take up. The chat currently open in the assistant panel is not deleted. The *Clear chat history* button in the AI Assistant options 859 has the same effect.

The **Cancel** button closes the window without opening a chat.

How the chat history is stored and cleared is set on the AI Assistant 859 tab of the **Environment Options** dialog.

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See also:
AI Assistant 721
Overview 722
AI Assistant (options) 859

Part XI

11 Services

SQL Manager for SQL Server provides a number of powerful tools for working with your database server.

Server-level principals 686
Tools for managing server-level security principals

Server Log Viewer 846
A convenient tool to browse the server logs

Activity Monitor 849
A convenient tool to get information about connections and the locks that they hold

Resource Governor 842
A tool for managing SQL Server workload and resources

SQL Manager for SQL Server provides graphical user interface for most SQL Server objects and native services.

The following *tools for SQL Server objects and services management* are available in SQL Manager for SQL Server:

Backup Devices 770
Provides tools for working with backup devices: Backup devices manager 770, Backup Device properties 772.

Database Snapshots 833
Provides tools for working with database snapshots: Snapshots manager 833, Snapshot properties 834.

Linked Servers 836
Provides tools for working with linked servers: Linked servers manager 837, Linked Server Editor 404.

DTS Packages 839
Provides tools for working with DTS packages: DTS Packages manager 840, DTS Package properties 427.

Jobs 811
Provides tools for working with jobs: Jobs manager 813, Job Editor 373.

Job History 814
Provides a convenient tool to browse the list of recent jobs: Job History 815.

Alerts 817
Provides tools for working with alerts: Alerts manager 819, Alert Editor 386.

Operators 820
Provides tools for working with operators: Operators manager 822, Operator Editor 392.

Shared Schedules 823

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Provides tools for working with schedules: Shared schedules manager 825, Schedule Editor 382.

Proxies 826
Provides tools for working with proxies: Proxies manager 829, Proxy Editor 397.

Credentials 401
Provides a powerful tool for working with credentials: Credential Editor 401.

Endpoints 408
Provides a powerful tool for working with endpoints: Endpoint Editor 408.

DDL Triggers 418
Provides a powerful tool for working with DDL triggers: DDL Trigger Editor 418.

Target Servers 830
Provides a convenient tool for target servers management: Target Servers manager 831

SQL Manager for SQL Server provides graphical interface for a number of database maintenance operations. The following *specific database tools* are available in SQL Manager:

Attach Database Wizard 774
Allows you to attach an existing database to the instance of Microsoft® SQL Server™.

Detach Database Wizard 779
Allows you to detach a database from the instance of Microsoft® SQL Server™.

Backup Database Wizard 745
Creates backup copies of entire databases, transaction logs and files/filegroups.

Restore Database Wizard 759
Restores entire databases, transaction logs and files/filegroups from previously created backups.

Shrink Database Wizard 784
Reduces data and transaction log files.

Indices Management Wizard 789
Allows you to reorganize, rebuild, and disable indexes.

Statistics Update Wizard 795
Updates database statistics.

Check Database Wizard 802
Checks the allocation, structural, and logical integrity of all database objects.

Grant Manager 688
Allows you to grant/revoke privileges on database objects.

Using templates 970
Facilitates using SQL Manager wizards.

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See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Database Tools 617
Personalization 853
External Tools 945
How To... 991

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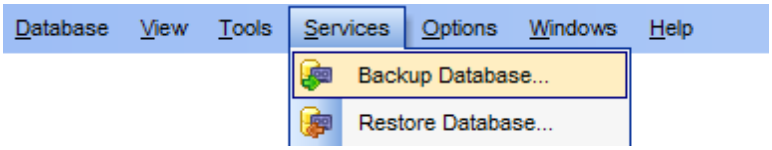
11.1 Backup Database

Backup Database Wizard allows you to perform the database backup operation on your SQL Server system (the *BACKUP DATABASE* Transact-SQL statement is issued).

This operation is used to create a backup copy of an entire database, transaction log or files/filegroups.

To run the wizard, select the **Services | Backup Database...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Backup Database...** item of the context menu 55.



- Selecting database to backup 745
- Setting backup type and options 746
- Selecting database files to backup 748
- Selecting backup devices 748
- Setting schedule options 756
- Setting media options 751
- Setting advanced backup options 753
- Setting data transfer and/or transaction log backup options 754
- Running database backup 757

See also:

Restore Database 759

Using templates 970

11.1.1 Selecting database to backup

This step of the wizard allows you to specify the **host**/**instance** containing the database for backup.

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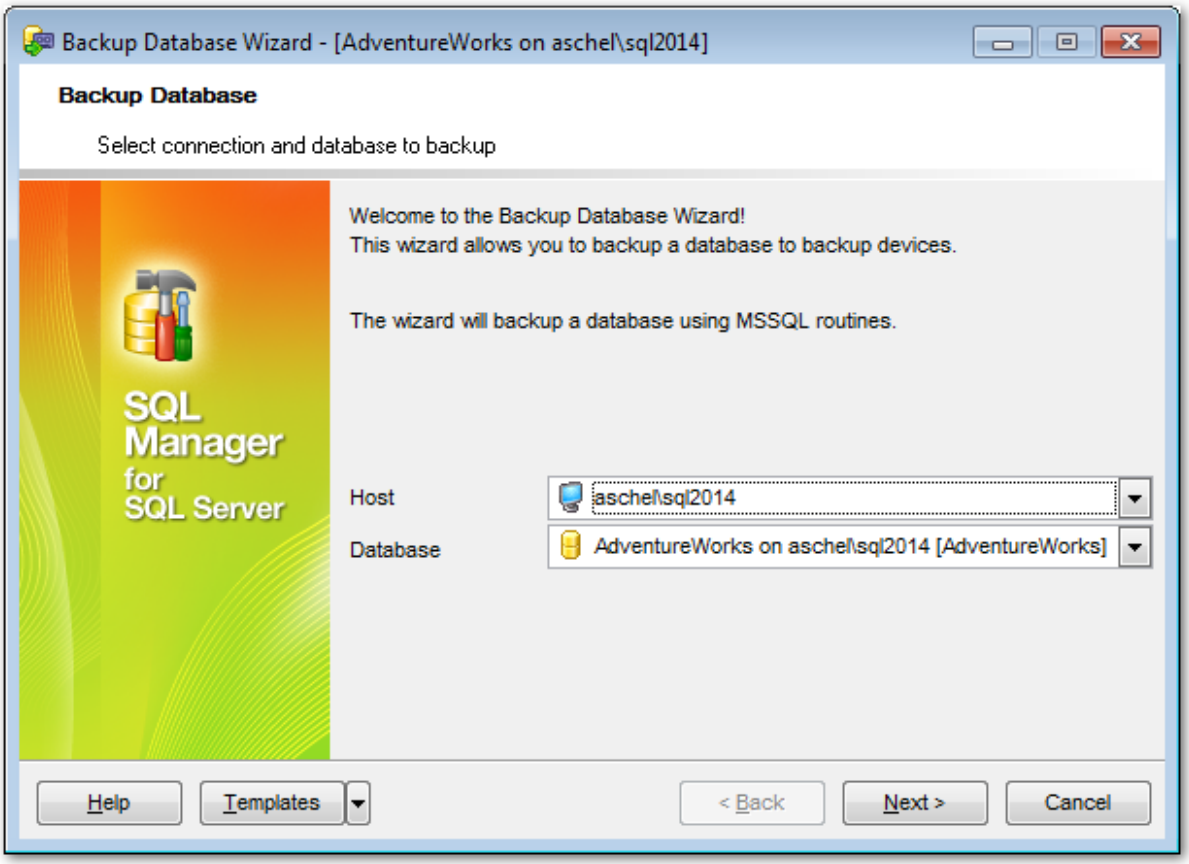


Host
Type in or use the drop-down list to select the host/instance where the database resides.

Database
Use the drop-down list of all registered databases on the selected host to specify the database to backup.

Click the **Next** button to proceed to the Setting backup type and options 746 step of the wizard.

11.1.2 Setting backup type and options

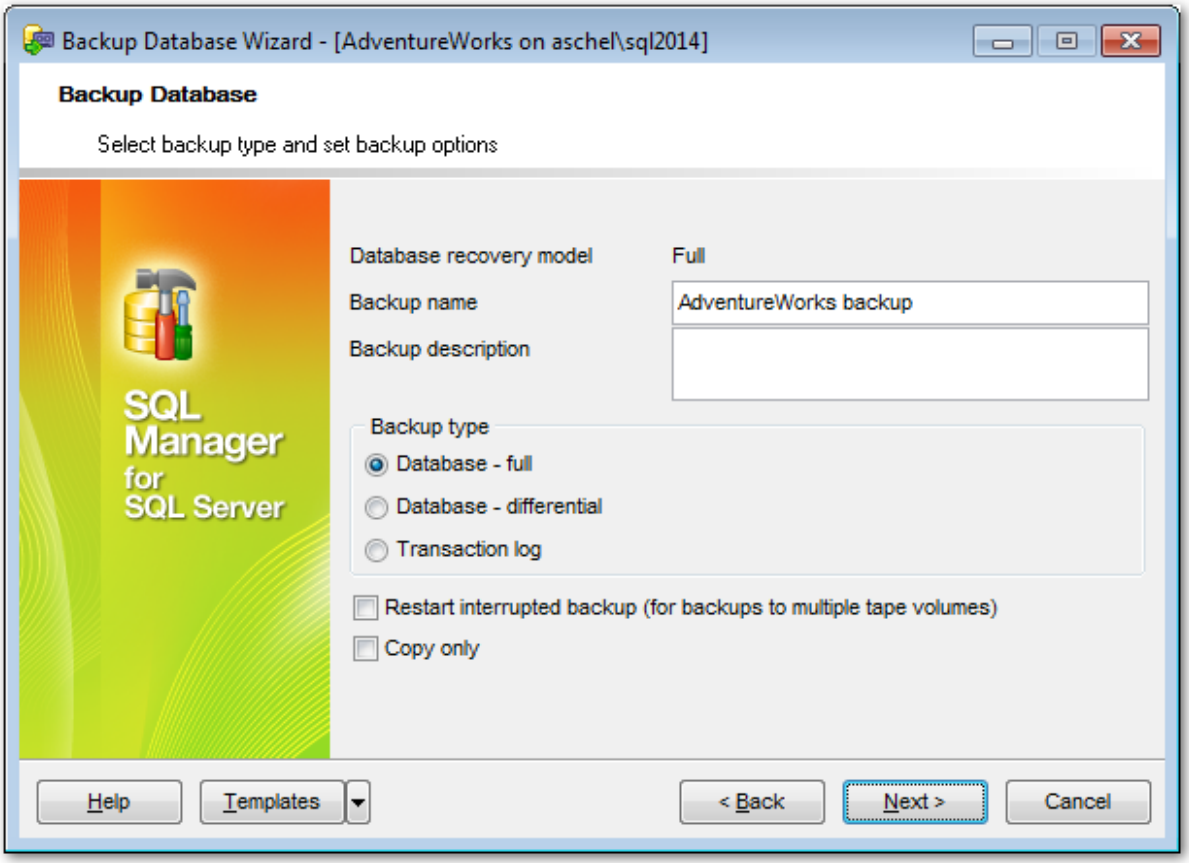
This step of the wizard allows you to set up basic **options** pertaining to the database backup operation.

Database recovery model
This label displays the recovery model defined for the database.

Backup name
Enter a name for the current backup.

Backup description

Enter any optional text to describe the backup operation.



Backup type

Use this parameter to define the backup type:
Database - full (a full database backup which backs up the entire database including the transaction log)
Database - differential (a differential backup which records only the changes made to the data in the database after the last full database backup)
Transaction log (a sequence of log backups provided for a continuous chain of transaction information to support recovery forward from database, differential, or file backups)

Restart interrupted backup
Specifies that SQL Server restarts an interrupted backup operation. This option may save time because it restarts the backup operation from the point it was last interrupted.
Note: This option can only be used for backups directed to tape media and for backups that span multiple tape volumes. A restart operation never occurs on the first volume of the backup.

Copy only
This option specifies that the backup does not affect the normal sequence of backups. A copy-only backup does not affect the overall backup and restore procedures for the

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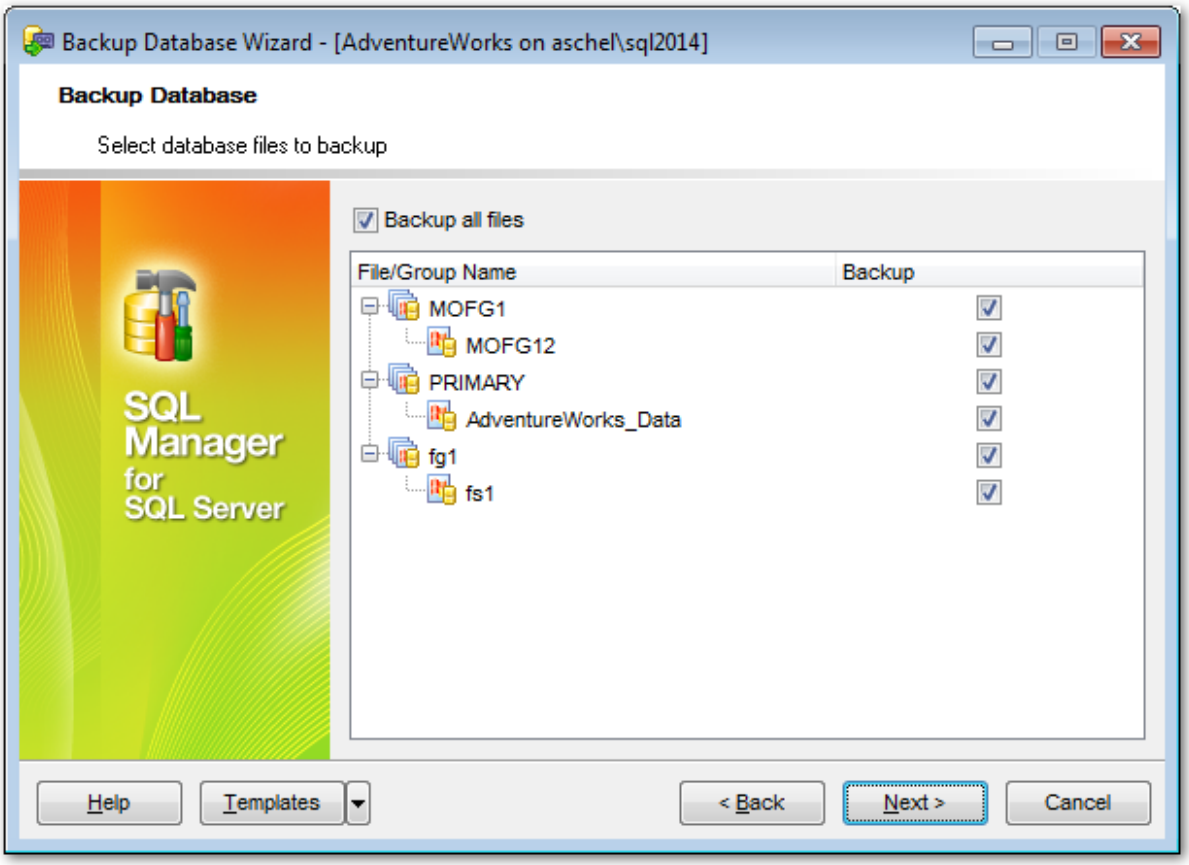
database. You can create a copy-only backup for any type of backup.

Click the **Next** button to proceed to the Selecting database files to backup 748 step of the wizard.

11.1.3 Selecting database files to backup

This step allows you to **select files** of the database to backup.

To add a file to the backup, select it in the list and set the respective flag in the **Backup** column.
To add all files to the backup, check the ☑ **Backup all files** option.



Click the **Next** button to proceed to the Selecting backup devices 748 step of the wizard.

11.1.4 Selecting backup devices

Use this step of the wizard to specify the **devices** to backup the database to. Note that all the selected backup devices must be of the same type.

To add a device, click the **Add Item** button and select a media type from the menu.

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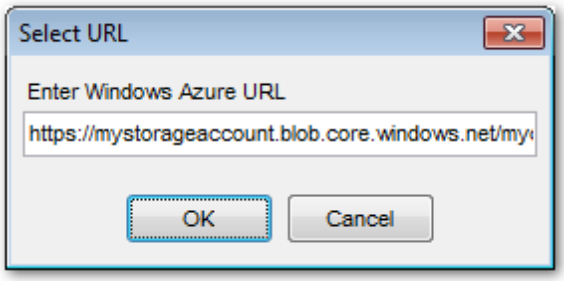
Alternatively, you can use the context menu of the **Backup Device** list area for the same purpose. Select the required backup device using the corresponding dialog.

To remove a device from the list, select it and click the **Delete Item** button.

To browse the selected device, click the **Device Content** button.

Using the **Add Item** menu and items of the context menu you can also *create a new device* and specify its properties using the New Logical Backup Device 372 dialog, *add a file*, *a tape* or *set mirroring* of backup media.

For backups performed on the SQL Server 2014 adding *Windows Azure URL* is possible as well.



The URL format is used for creating backups to the Windows Azure Blob storage service.

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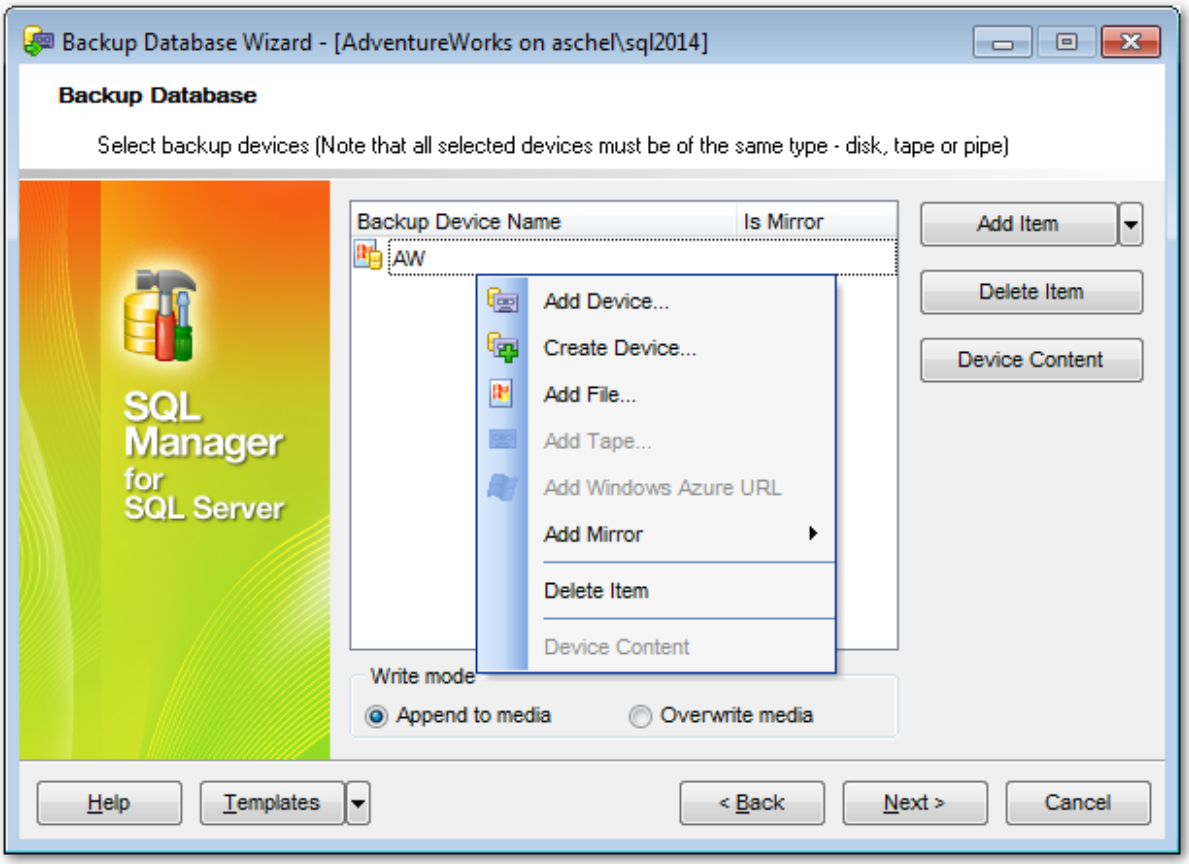


Disk backup devices are files on hard disks or other disk storage media are the same as regular operating system files. Referring to a disk backup device is the same as referring to any other operating system file. You can define disk backup devices on a local disk of a server, or on a remote disk on a shared network resource, and they can be as large or as small as needed. The maximum file size is the free disk space available on the disk.

Tape backup devices are used in the same way as disk devices, but the tape device must be connected physically to the computer running an instance of SQL Server, and if a tape backup device is filled during the backup operation, but more data still needs to be written, SQL Server prompts for a new tape and continues the backup operation. To back up SQL Server data to tape, use a tape backup device or tape drive supported by the Microsoft Windows platform. Additionally, use only the tapes recommended by the drive manufacturer for the specific tape drive.

Write mode

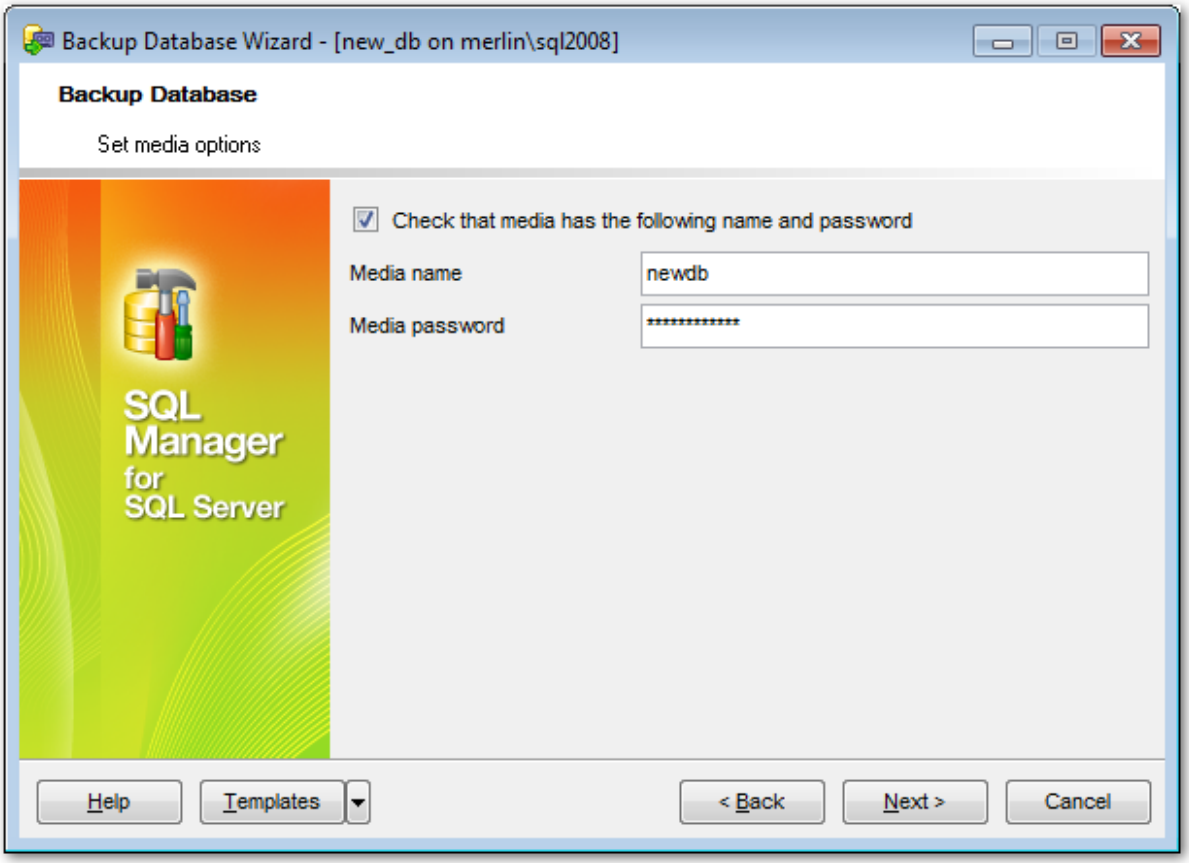
Append to media / Overwrite media
Select whether the media should be appended or overwritten during the backup operation.

Click the **Next** button to proceed to the Setting schedule options 756 step of the wizard.

11.1.5 Setting media options

This step is only available if the **Append to media** option was selected on the Setting backup type and options 746 step of the wizard.

At this step you can specify whether the application should check the name and password combination for the media. To enable this feature, check the corresponding option and enter a **name** and a **password** for the media.



The following step is only available if the **Overwrite media** option is selected on the Setting backup type and options 746 step of the wizard.

At this step you can set a number of options pertaining to the media being overwritten.

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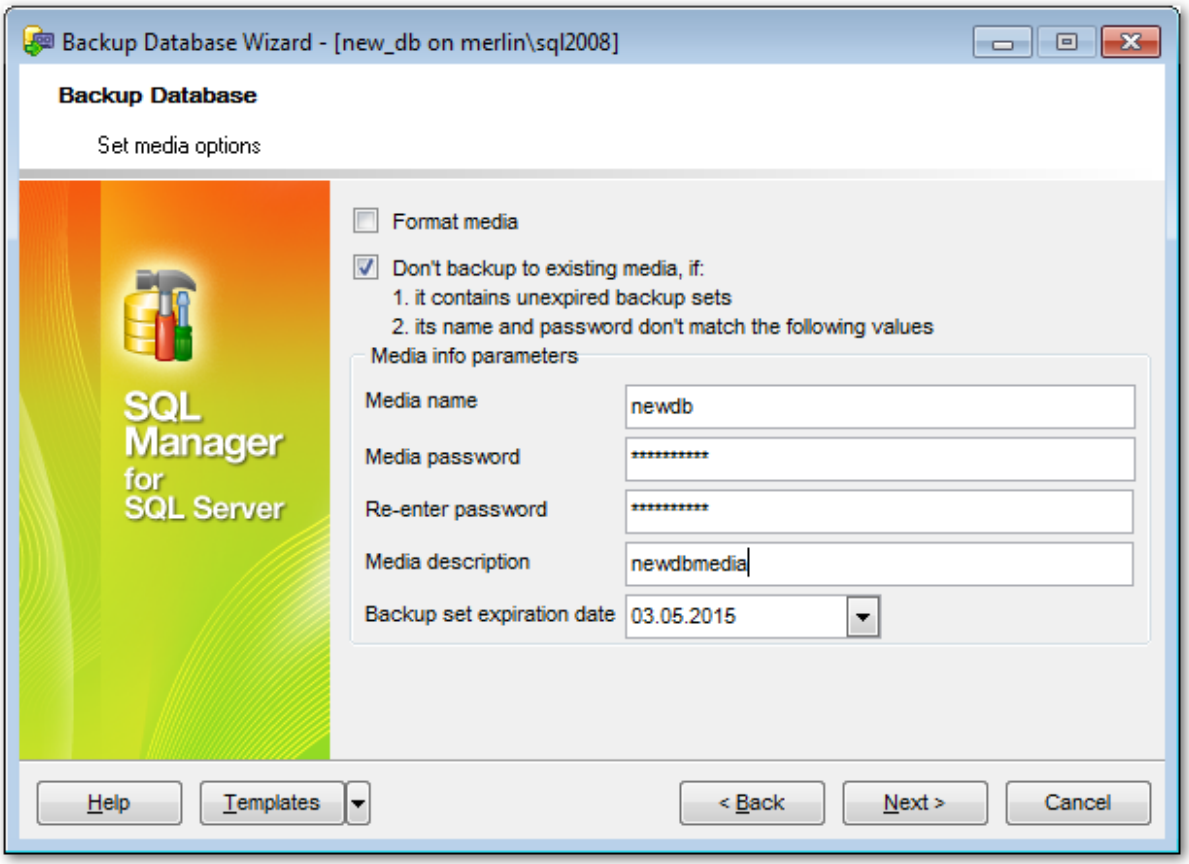


Format media
Specifies that the media header should be written on all volumes used for this backup operation. Any existing media header is overwritten. This option invalidates the entire media contents, ignoring any existing content.
NB: Use this option carefully. Formatting one backup device or medium renders the entire media set unusable. For example, if a single tape belonging to an existing striped media set is initialized, the entire media set is rendered useless.

Don't backup to existing media if...
If the option is selected, the media will be first examined for any existing unexpired backup sets and for the correctness of the password. If the password is incorrect or the media contains any unexpired backup sets, the current media will not be used for backup.

Media name
Enter the name of the media.

Media password
Enter the password for the media.

Re-enter password
Repeat the password to avoid misprints.

Media description

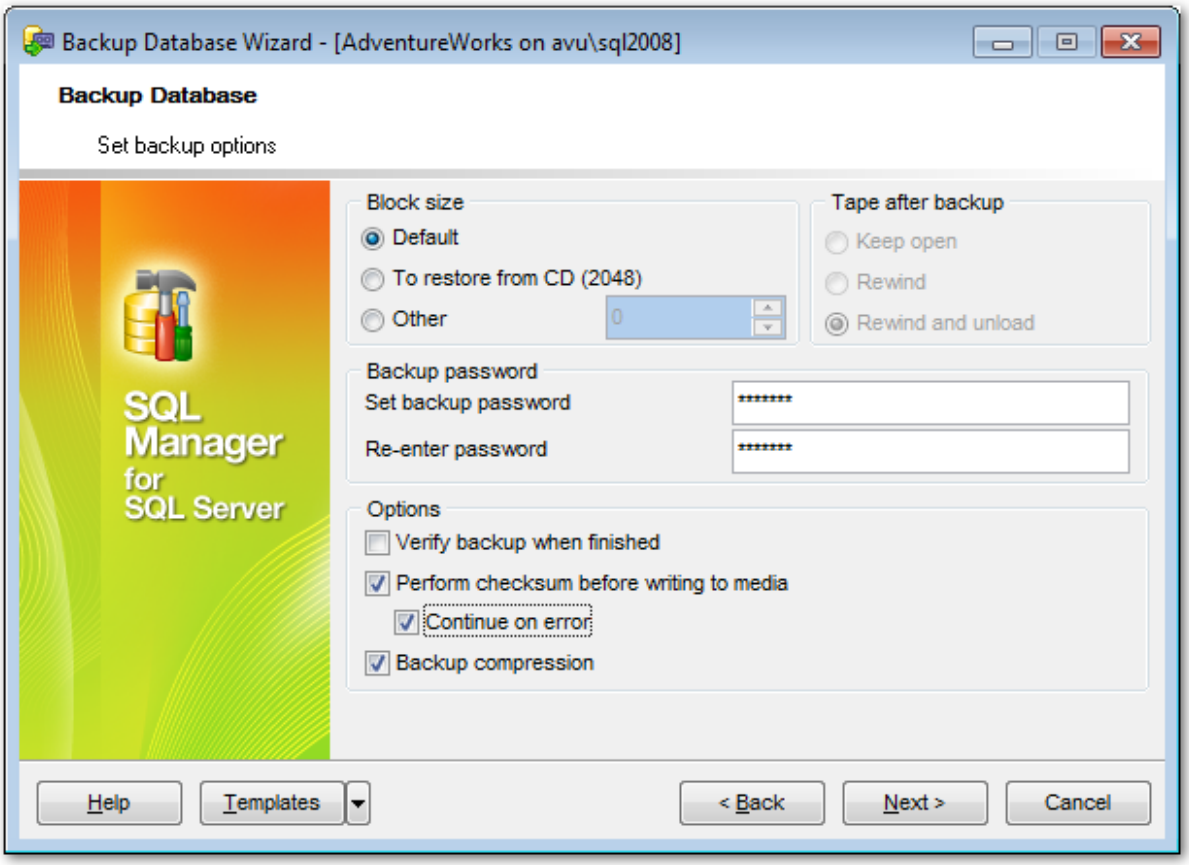
Supply any optional text to describe the media.

Backup set expiration date
Define expiration date for the current backup set.

Click the **Next** button to proceed to the Setting advanced backup options 753 step of the wizard.

11.1.6 Setting advanced media options

This step offers **advanced options** that may be useful for the database backup operation.



Block size
Define the size of a data block. Possible values are: *Default*, *To restore from CD* (2048), *Other* (i.e. you can specify an arbitrary value).

Tape after backup
Specify whether the tape should be *rewound*, *rewound and unloaded*, or *kept open* when the backup operation is completed.

If necessary, you can set a password for the backup: enter the password twice in the

respective edit fields.

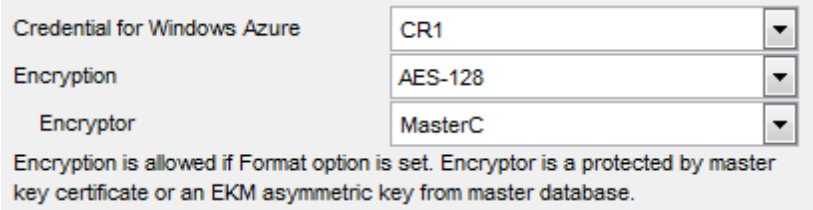
☑ **Verify backup when finished**
Check this option to enable backup verification.

☑ **Perform checksum before writing to media**
This option enables/disables checksum verification before writing to the backup media.

☑ **Continue on error**
This option determines whether the backup operation will be stopped or forced to continue if an error occurs.

☑ **Backup compression**
Defines the values that are used to specify the backup compression option.

For backups performed on SQL Server 2014 and higher the following options are available as well.



Credential for Windows Azure
This field is available only when creating a backup to the Windows Azure Blob storage service. Use the drop-down list to select the credential 401 for accessing the Windows Azure storage.

Encryption
Use this drop-down list to specify encryption for a backup. You can specify an encryption algorithm to encrypt the backup with or specify <No encryption> to not have the backup encrypted.

Note: Encryption option is allowed only if the ☑ **Format media** option has been set on the previous step 751.

Encryptor
If you choose to encrypt you also have to specify the encryptor. Encryptors can be a master key certificate 334 or an EKM asymmetric key 330 from a master database.

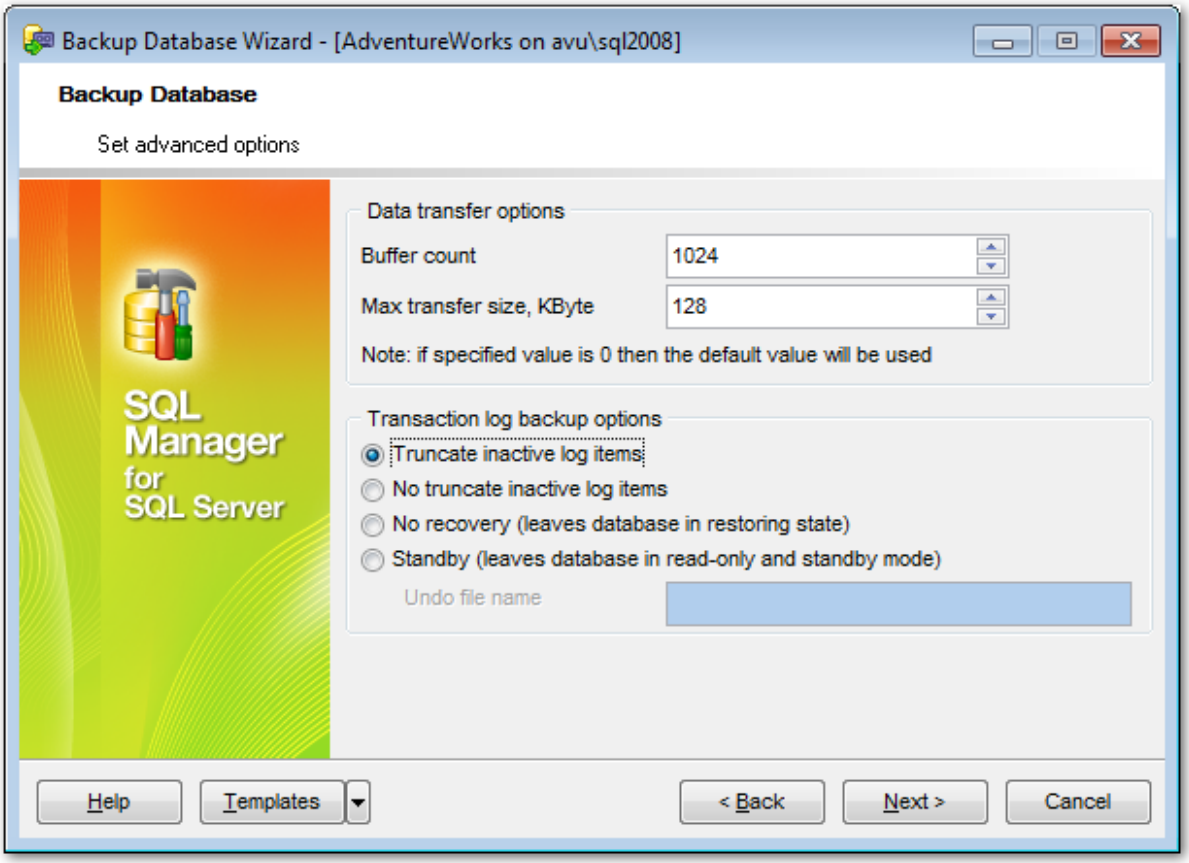
When you are done, click the **Next** button to proceed to the Setting data transfer and/or transaction log backup options 754 step of the wizard.

11.1.7 Setting data transfer and/or transaction log backup options

This step offers some **additional options** that may be useful for setting up database backup operation: *data transfer options* and/or *transaction log backup options*.

Data transfer options

(only displayed for SQL Server 2008 and higher)



Buffer count
Specifies the total number of I/O buffers to be used for the backup operation.

Max transfer size
Specifies the largest unit of transfer in bytes to be used between SQL Server and the backup media.

Note: If *0* is specified (by default), the default values will be used.

Transaction log backup options
(only displayed if the *Transaction log* is selected at the Setting backup type and options 746 step).

Truncate inactive log items
The log is truncated after all the records within one or more virtual log files become inactive.

No truncate inactive log items
Specifies that the log not be truncated and causes the Database Engine to attempt the backup regardless of the state of the database. This option allows backing up the log in

situations where the database is damaged.

No recovery (leaves database in restoring state)
Backs up the tail of the log and leaves the database in the RESTORING state. This is useful when failing over to a secondary database or when saving the tail of the log before a restore operation.

Standby (leaves database in read-only and standby mode)
Backs up the tail of the log and leaves the database in a read-only and STANDBY state. Using standby mode requires a standby file, specified by **Undo file name**.

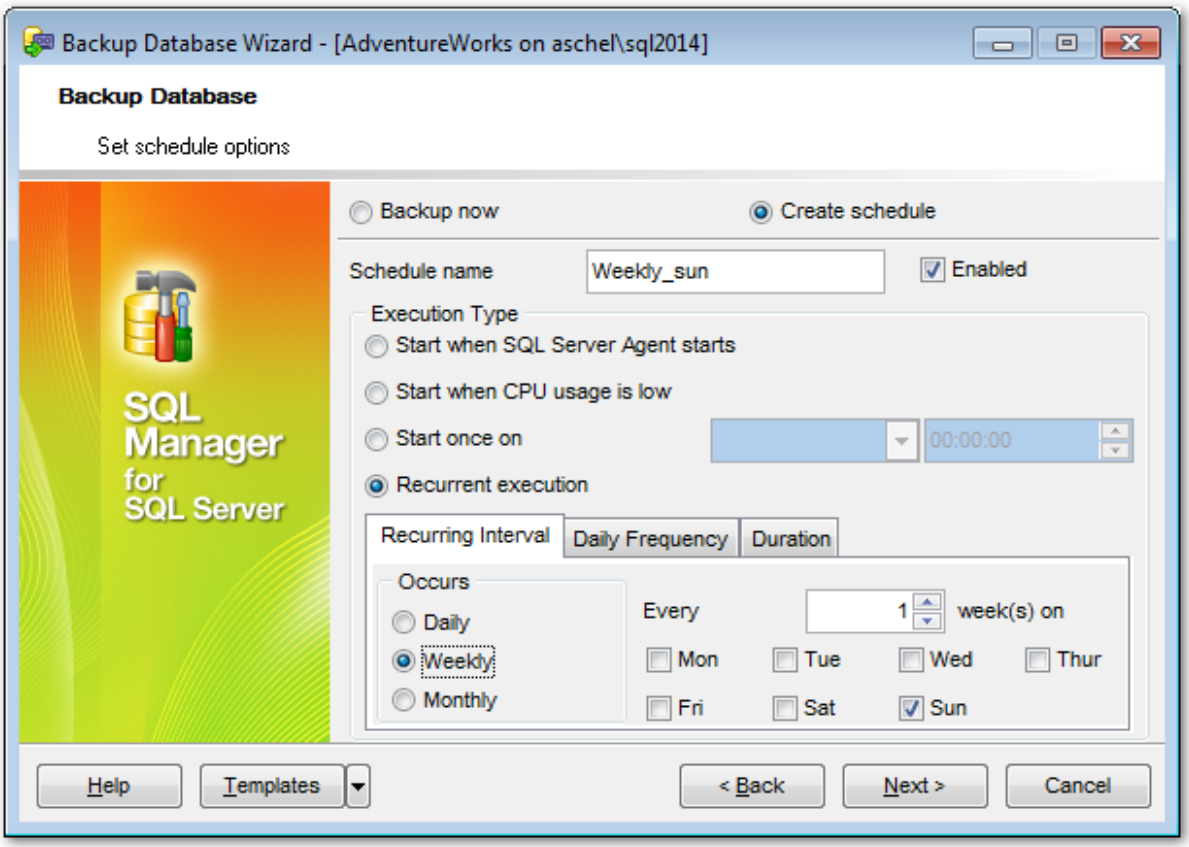
When you are done, click the **Next** button to proceed to the last step 757 of the wizard.

11.1.8 Setting schedule options

Using this step you can create a **scheduled** backup by selecting the **Create schedule** option and defining the scheduling parameters.

Schedule name
Enter a name of the new backup schedule.

Enabled
Check this option to enable the scheduled backup immediately after its creation.



Execution Type

This panel allows you to define the execution behavior of the schedule:

Start when SQL Server Agent starts
The scheduled backup operation will be started each time upon the SQL Server Agent startup.

Start when CPU usage is low
The scheduled backup operation will be started each time when the CPU usage is low.

Start once on...
The scheduled backup operation will be started only once on the defined date at the specified time.

Recurrent Execution
The scheduled backup operation will be started recurrently.

The following tabs allow you to setup the schedule routine:

Recurring Interval
This tab allows you to set the schedule recurrence periodicity in days: you can run your schedule *daily*, *weekly*, *monthly*, every several days, or on a certain day(s) of the week.

Daily Frequency
This tab allows you to set the schedule recurrence periodicity in hours: you can run your schedule once at a specified time, or run it every few hours or minutes after the specified interval.

Duration
This tab allows you to set the schedule lifetime: you can set the schedule start date and the expiration date in the respective edit fields.

Click the **Next** button to proceed to the Setting media options 751 step of the wizard.

11.1.9 Running database backup

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the backup database process.

The log area allows you to view the log of operations and errors (if any).

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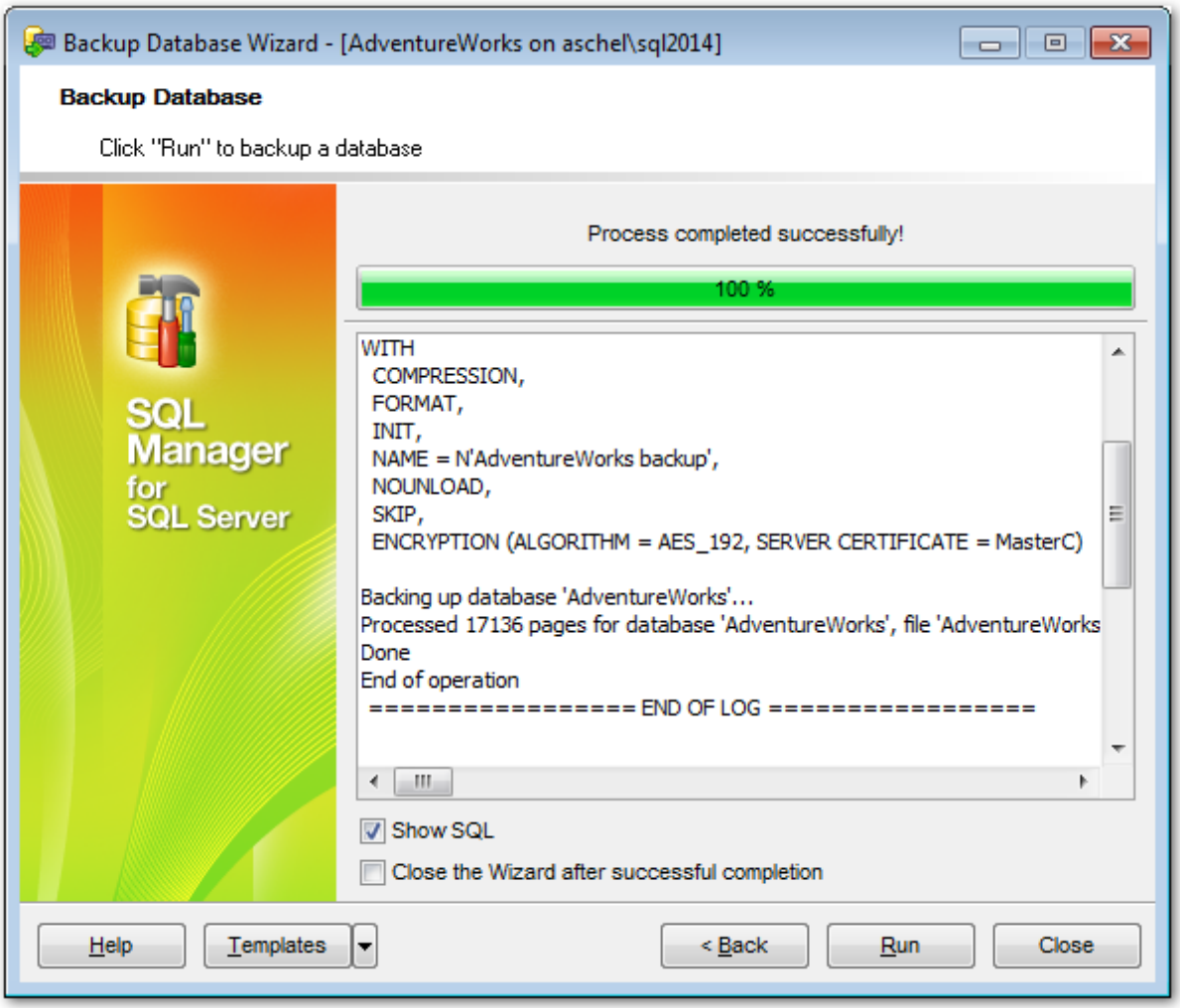


☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the process is completed.

☑ **Show SQL**
This option enables/disables SQL statements displayed within the **Operations** tab.

If necessary, you can save a template 970 for future use.

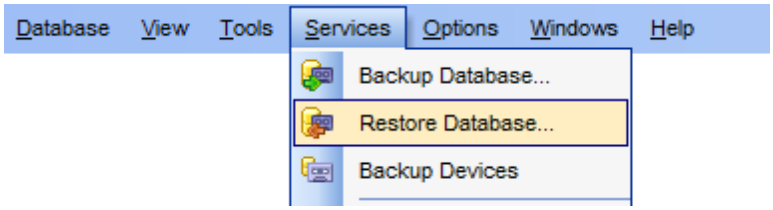
Click the **Finish** button to run the backup database operation.

11.2 Restore Database

Restore Database Wizard allows you to perform the database restore operation on your SQL Server system (the *RESTORE DATABASE* Transact-SQL statement is issued).

This operation is used to rebuild a damaged or corrupted database that has been backed up using Backup Database Wizard 745. You can restore an entire database, part of a database, specific files and filegroups, transaction logs.

To run the wizard, select the **Services | Restore Database...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Restore Database...** item of the context menu 55. Alternatively, you can right-click the **Databases** node and select the **Tasks | Restore Database...** context menu item.



- Selecting destination database 759
- Setting restore type and recovery options 761
- Selecting backup set to restore 763
- Selecting files to restore 766
- Setting advanced restore options 767
- Running database restore 768

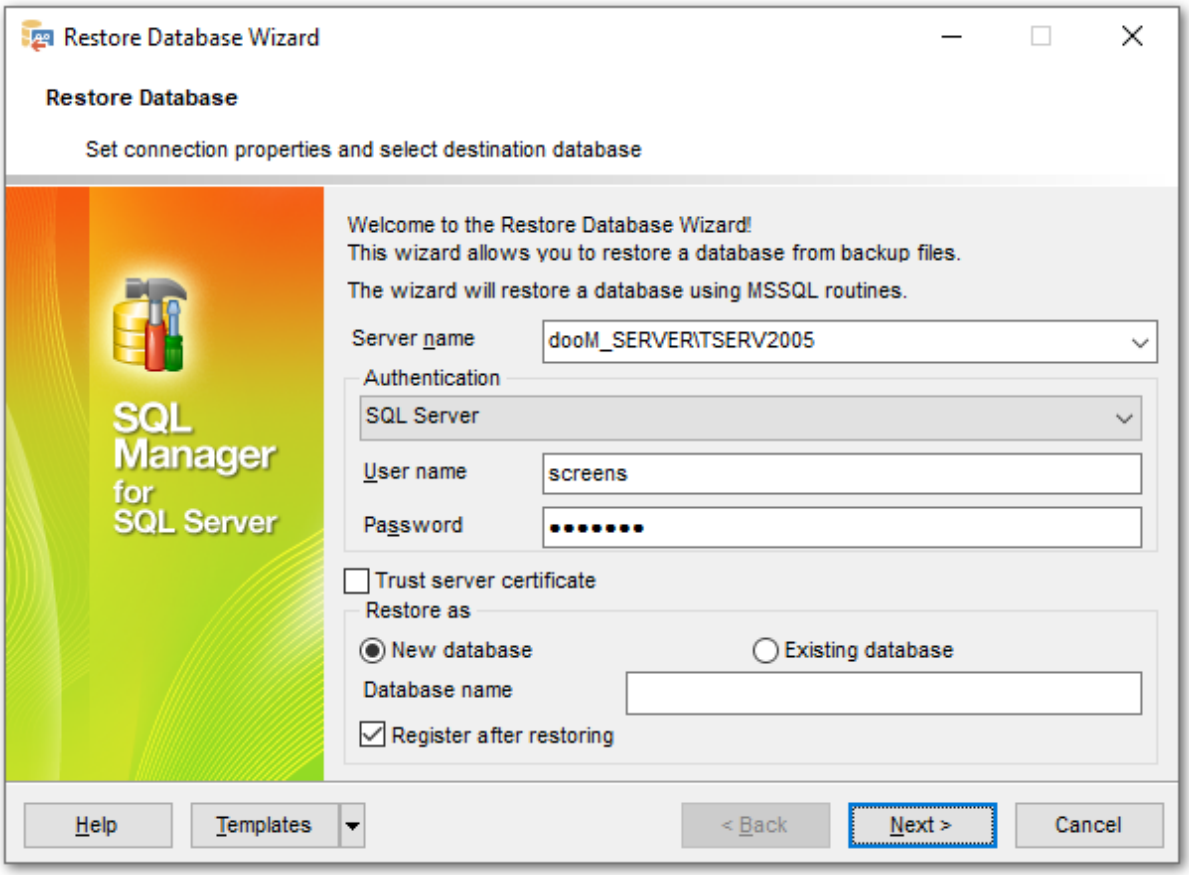
See also:

Backup Database 745

Using templates 970

11.2.1 Selecting destination database

This step of the wizard allows you to specify the **host**/**instance** to restore database, and to provide **authentication** parameters.



Server name
Type in or use the drop-down list to select the host/instance name to restore database to.

Authentication type
Specify the type of authentication to set up connection to the server.

Windows
With this option SQL Server validates the account name and password using the Windows principal token in the operating system and, and doesn't perform the identity validation.

SQL Server
Select this type if you wish to use SQL Server Authentication for the login. SQL Server Authentication stores logins and passwords in SQL Server and does not depend upon Windows. You can select SQL Server Authentication only if SQL Server Authentication has been enabled on the server.

Microsoft Intra MFA
Uses the standard interactive method with multifactor authentication option for Microsoft Entra accounts.

Microsoft Intra password
Allows specifying the username and password to the client and driver.

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User name
Specify user name for selected authentication type.

Password
Input a password.

Trust server certificate
If you use this option, the connection process skips the trust chain validation. In this case, the application connects even if the certificate can't be verified.

Restore as

Select *New database* if you want to create a new database, or select *Existing database* to restore to an existing database.

Database name
Enter a name for the new database or select the database to restore to from the drop-down list of all available databases on the specified host.

Register after restoring
This option indicates that the Database Registration Info 120 dialog for the newly restored database will appear immediately after restoring the database (you need to register the database to start working with it in SQL Manager). If you intend to register the database later, uncheck this option.

Click the **Next** button to proceed to the Setting restore type and recovery options 761 step of the wizard.

11.2.2 Setting restore type and recovery options

Use this step of the wizard to define a **restore type** and set **recovery options**.

Restore type

This group of options allows you to specify the restore type to be used for the restore operation.

Database
Full restore or differential restore of entire database or individual files and filegroups. Files and filegroups can be restored either from a file or filegroup backup operation, or from a full database backup operation.

Transaction log
Specifies that a transaction log backup will be used to restore this database. SQL Server checks the backed up transaction log to ensure that the transactions are being loaded into the correct database and in the appropriate sequence.

Recovery without restore
Select this option to execute the database recovery only.

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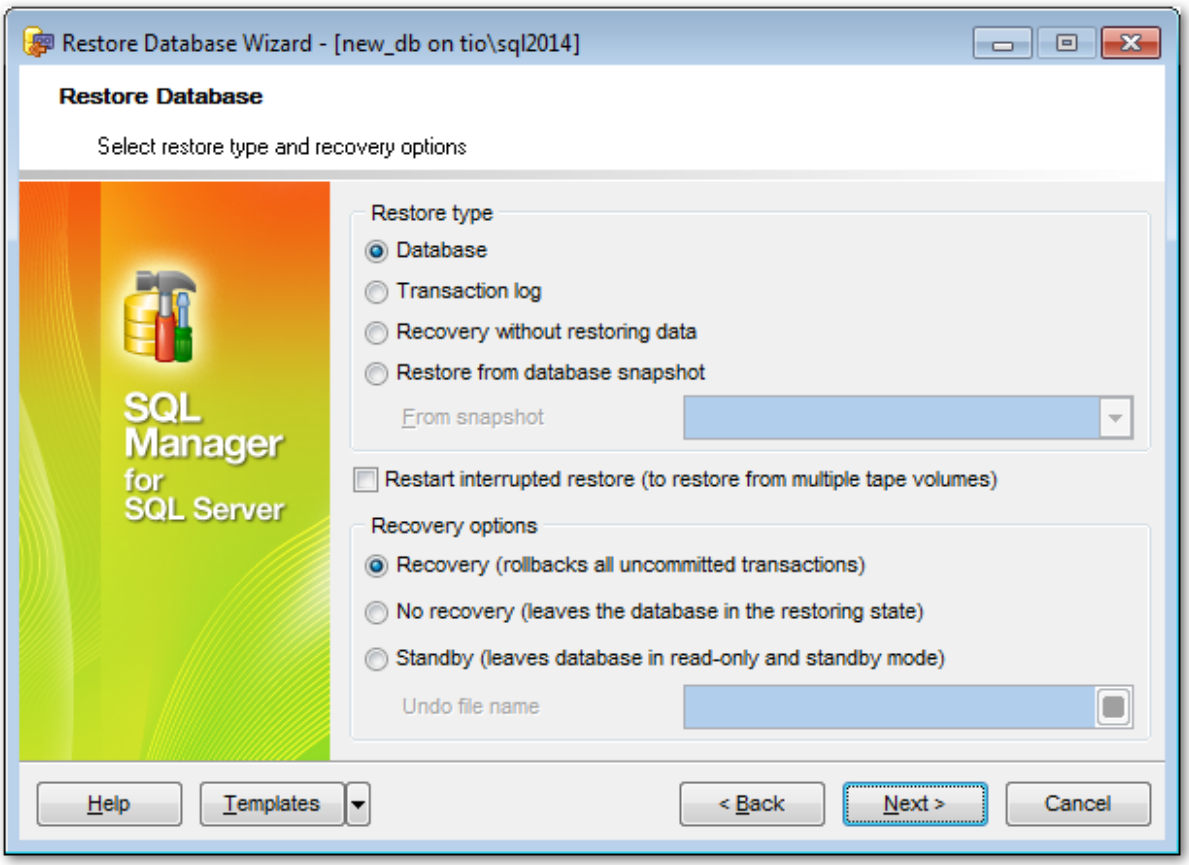
Recovery from database snapshot
Select this option to restore the database from a previously saved snapshot 833.

Restart interrupted restore
This option specifies that SQL Server should restart a restore operation that has been interrupted. The restore operation is restarted from the point it was interrupted.



Recovery options

This group of options allows you to specify the recovery options to be applied to the restore operation.

Recovery
This option specifies that the restore operation rolls back any uncommitted transactions. After the recovery process the database is ready for use.

No recovery
This option specifies that the restore operation does not roll back any uncommitted transactions.
Note: When this option is selected, the database is not usable in this intermediate, non-recovered state.
When used with a file or filegroup restore operation, this option forces the database to

remain in the restoring state after the restore operation. This is useful in either of the following situations:

- a restore script is being run and the log is always being applied;
- a sequence of file restores is used and the database is not intended to be usable between two of the restore operations.

Standby
This option allows the database to be brought up for read-only access between transaction log restores and can be used with either warm standby server situations or special recovery situations in which it is useful to inspect the database between log restores.

Undo file name
Specify the undo file name, so that the recovery effects can be undone. The size required for the undo file depends on the volume of undo actions resulting from uncommitted transactions. The same undo file can be used for consecutive restores of the same database.
NB: If free disk space is exhausted on the drive containing the specified undo file name, the restore operation stops.

Click the **Next** button to proceed to the Selecting backup set to restore 763 step of the wizard.

11.2.3 Selecting backup set to restore

At this step of the wizard you need to **select a backup media** to restore the database from.

You can specify a backup set manually by adding devices to the device list.

To add a device, click the **Add Item** button and select a media type from the menu. Select the required backup device using the corresponding dialog.

To remove a device from the list, select it and click the **Delete Item** button.

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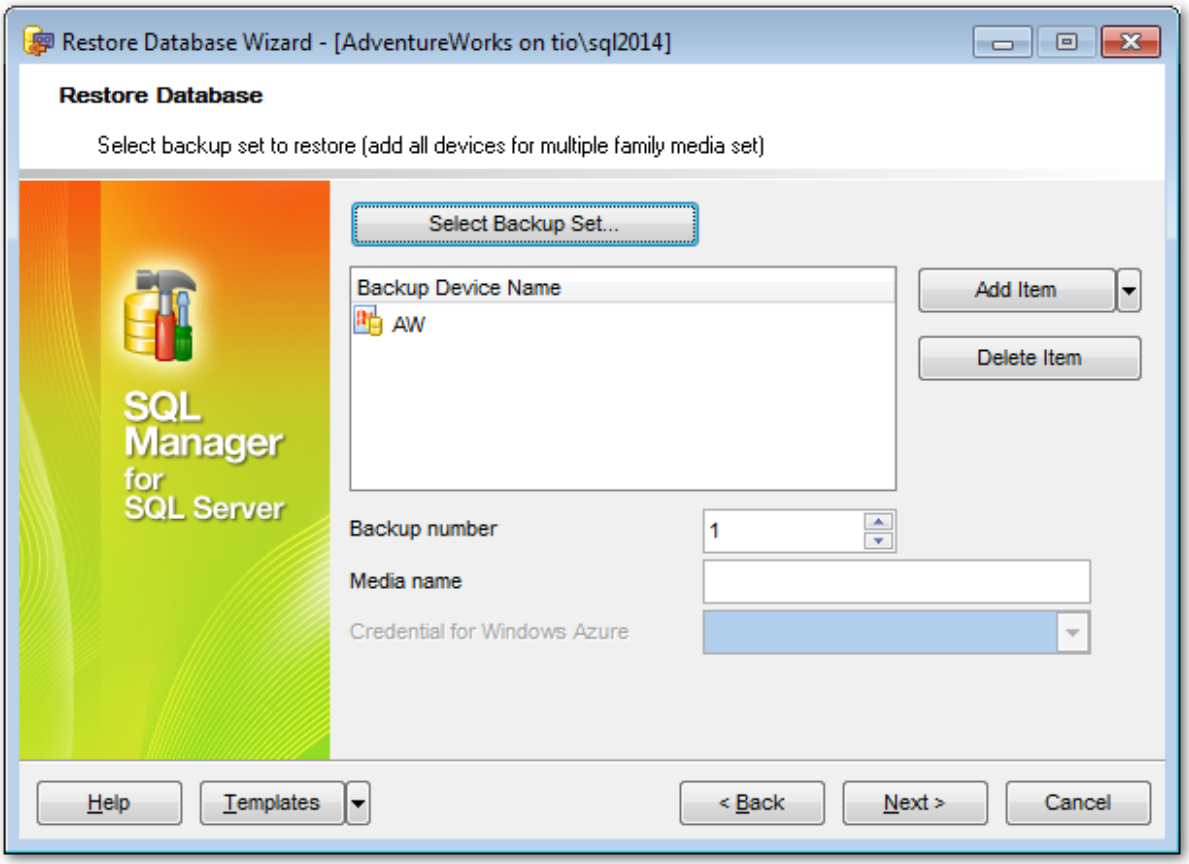
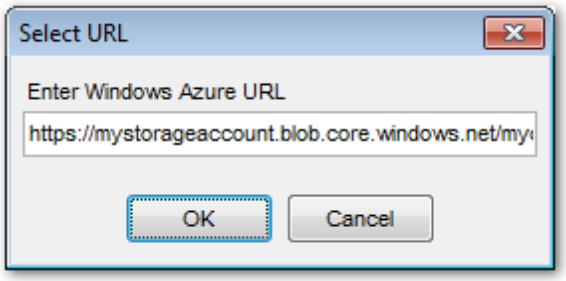


Using the **Add Item** menu you can add a *logical device*, a *file*, or a *tape*.

For restoring performed on the SQL Server 2014 adding *Windows Azure URL* is possible as well.



Specify the location and the file name for the Windows Azure Blob in the URL format.

Also you need to specify **Credential for Windows Azure** which is the credential 401 to access the storage.

Backup number
Identifies the backup set to be restored. For example, *1* indicates the first backup set on

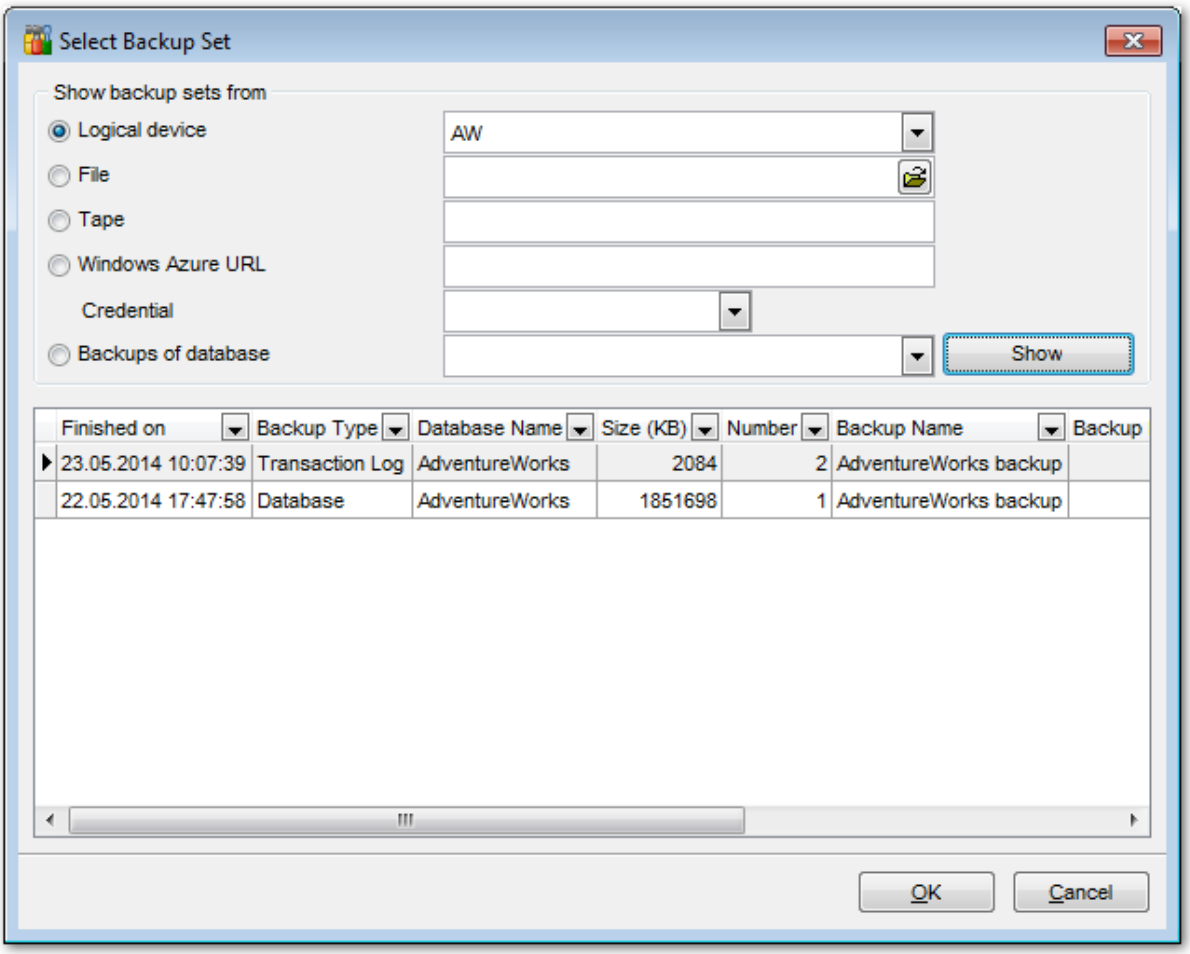
the backup medium and *2* indicates the second backup set.

Media name
Specify the name for the media. If provided, the media name must match the media name 751 on the backup volume(s); otherwise, the restore operation terminates. If no media name is given, no check for matching media name on the backup volume(s) is performed.
NB: Consistently using media names in backup and restore operations provides an extra safety check for the media selected for the restore operation.

Media password
Supply the password for the media set. If a password 751 was provided when the media set was formatted, that password must be supplied to access any backup set on that media set.

Backup password
Provide the password for the backup set. If a password 753 was provided when the backup set was created 748, the password must be supplied to perform any restore operation from the backup set.

To select a whole backup set, click the **Select Backup Set...** button and select a set in the corresponding dialog.



Click the **Next** button to proceed to the Selecting files to restore 766 step of the wizard.

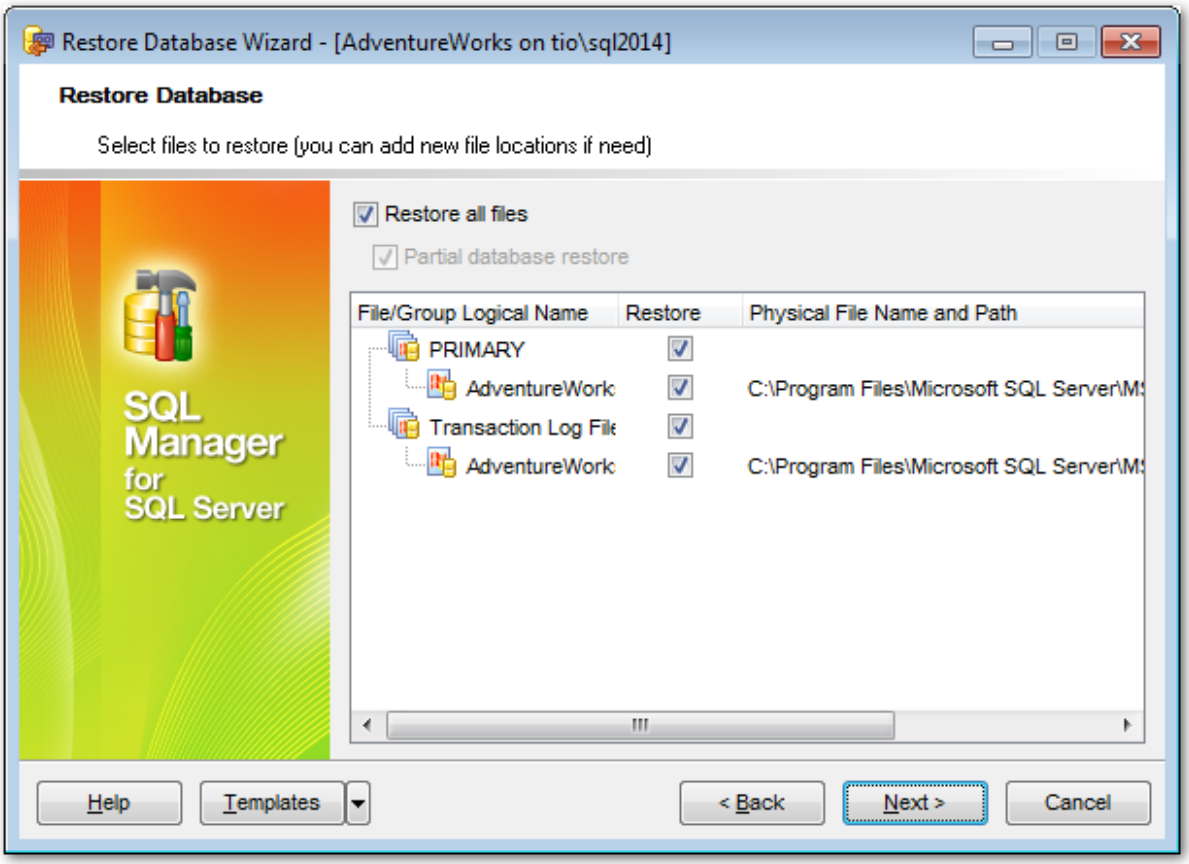
11.2.4 Selecting files to restore

This step allows you to **select files** that will be used to restore the database.

By default the application restores all files. It is indicated by the ☑ **Restore all files** option selected. To select files manually, you should uncheck this option.

To add a file to the restore, select it in the list and set the respective flag in the **Restore** column.
To add all files to the restore, check the ☑ **Restore all files** option.

You can also edit file paths by clicking the corresponding rows of the **Physical File Name and Path** column.



☑ **Partial database restore**
This option specifies a partial restore operation. Application or user errors often affect an isolated portion of the database, such as a table. Examples of this type of error include an invalid update or a table dropped by mistake. To support recovery from these events, SQL Server provides a mechanism to restore part of the database to another location so that the damaged or missing data can be copied back to the original database.

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The granularity of the partial restore operation is the database filegroup. The primary file and filegroup are always restored, along with the files that you specify and their corresponding filegroups.

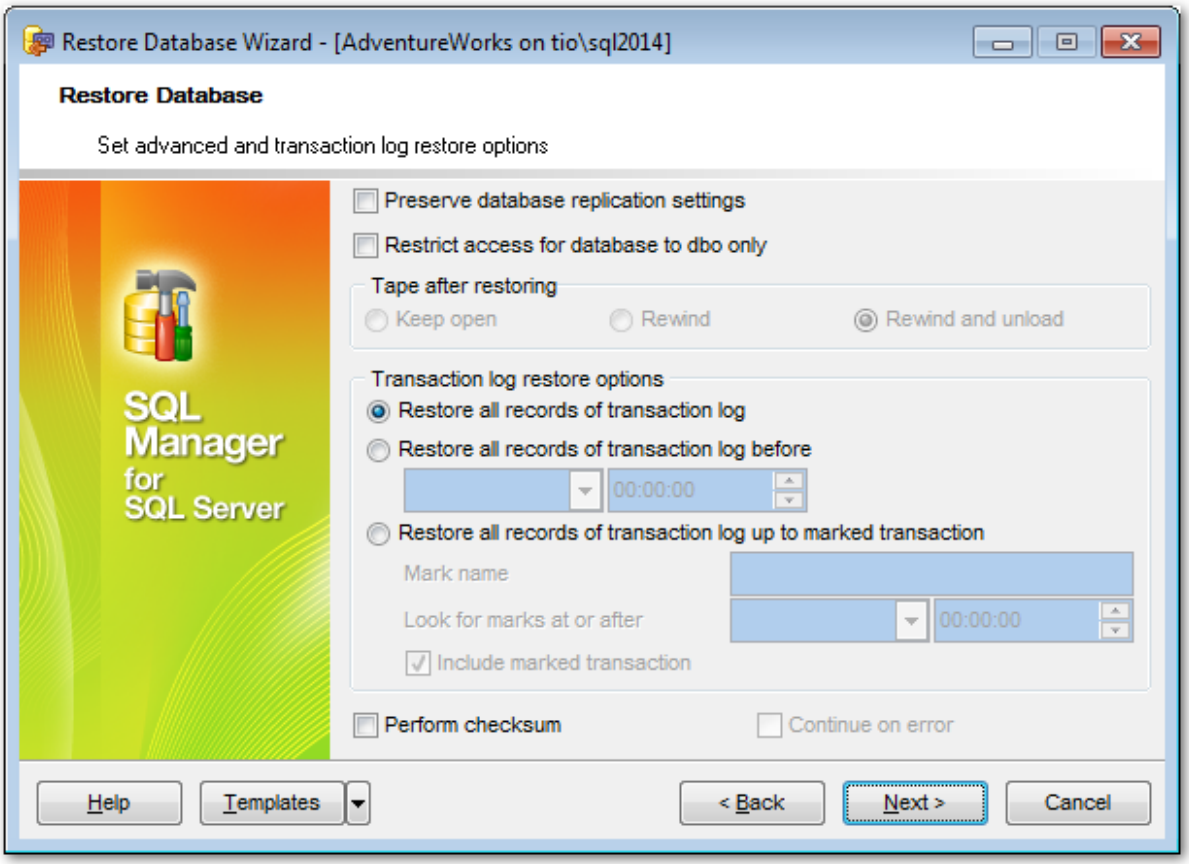
Click the **Next** button to proceed to the Setting advanced restore options 767 step of the wizard.

11.2.5 Setting advanced restore options

This step offers some **additional options** that are specific for each restoration mode.

☑ **Preserve database replication settings**
This option specifies that the replication settings are preserved upon restoration of a published database to a server other than that on which it was created. It prevents replication settings from being removed when a database or log backup is restored on a warm standby server and the database is recovered.

☑ **Restrict access for database to dbo only**
This option restricts access to the newly restored database to members of the *db_owner*, *dbcreator*, or *sysadmin* roles.



Tape after restoring
Specify whether the tape should be *rewound*, *rewound and unloaded*, or *kept open* when the restoration is completed.

Transaction log restore options
This section is available only if the **Transaction log** restore type was selected at the Setting restore type and recovery options 761 step.

Restore all records of transaction log
Select this option to make a complete restore from transaction log backup.

Restore all records of transaction log before
This option indicates that database restore is based on the transaction log records added before specified date. Pick date and specify time in the fields below.

Restore all records of transaction log up to marked transaction
Use this option to restore database to the state when marked transaction was committed.

Mark name
Specify the needed mark in the field.

Look for marks at or after
You need to define the start date time point to search for the marked transaction from.

Perform checksum
This option enables/disables checksum verification before restoring from the backup media.

Continue on error
This option determines whether the restore operation will be stopped or forced to continue if an error occurs.

When you are done, click the **Next** button to proceed to the last step 768 of the wizard.

11.2.6 Running database restore

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the restore database process.

The log area allows you to view the log of operations and errors (if any).

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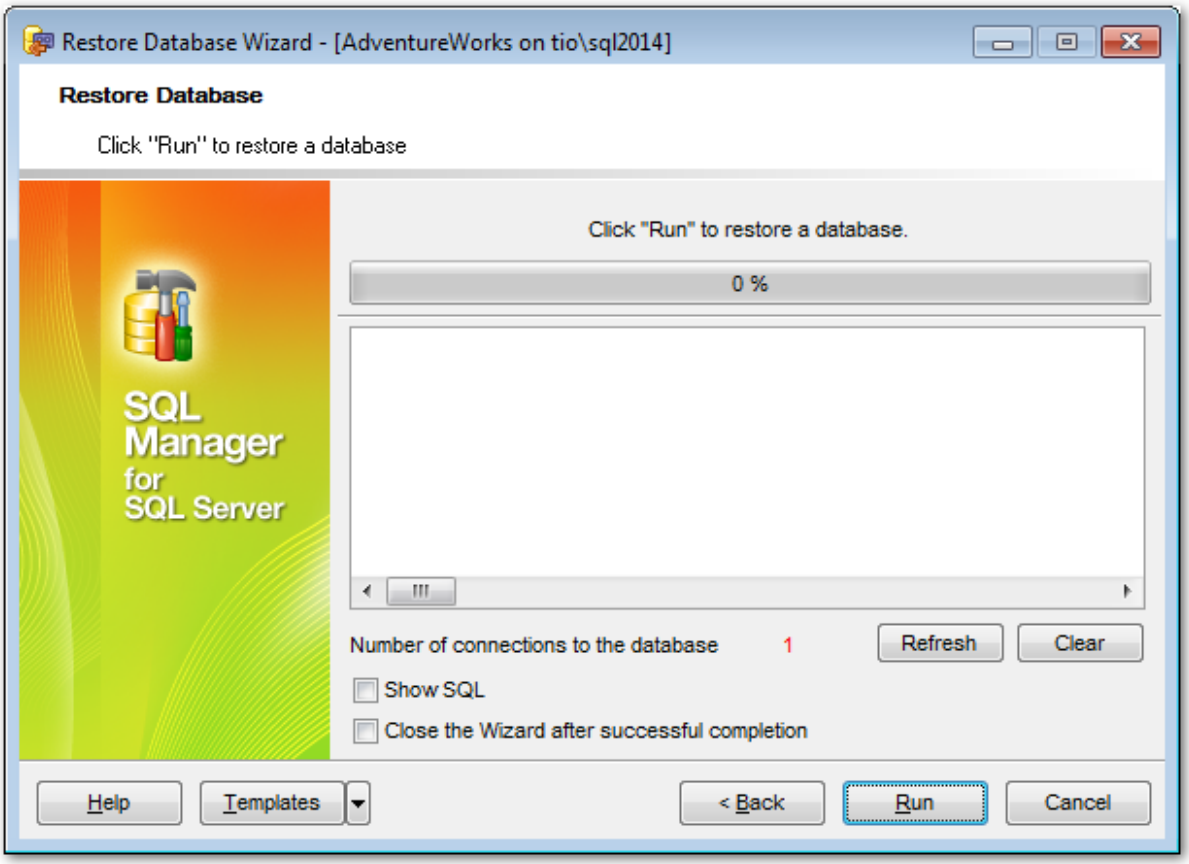

At this step of the wizard you are provided with an ability to view the **number of connections to the database**.
Click the **Refresh** button to update the number of connections to the database.
Click the **Clear** button to kill all connections to the database you need to restore.

☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the process is completed.

☑ **Show SQL**
This option enables/disables SQL statements displayed within the **Operations** tab when running database restore 768.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to run the restore database operation.

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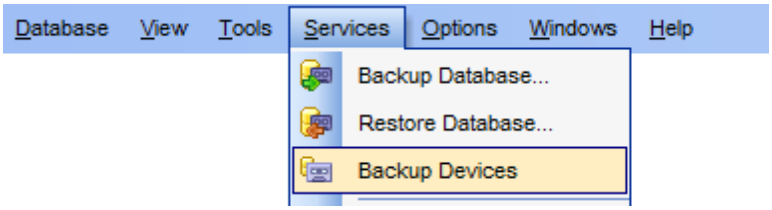
11.3 Backup Devices

A **Backup device** is a tape drive or a disk drive used in backup 745 and restore 759 operations. When creating a backup, you must select a backup device 748 where the data will be written. Microsoft SQL Server 2005 (and higher) can back up databases, transaction logs, and files to disk and tape devices.

To open a list of backup devices on a server select the **Services | Backup Devices...** main menu 951 item



- Backup devices manager 770
- Backup Device properties 772

See also:

Backup Database 745

Restore Database 759

Backup Devices 371

11.3.1 Backup devices manager

The **Backup devices manager** allows you to browse the list of SQL Server **backup devices** and manage them efficiently.

To launch the tool, select the **Services | Backup Devices** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Backup Devices** item from the context menu 54.

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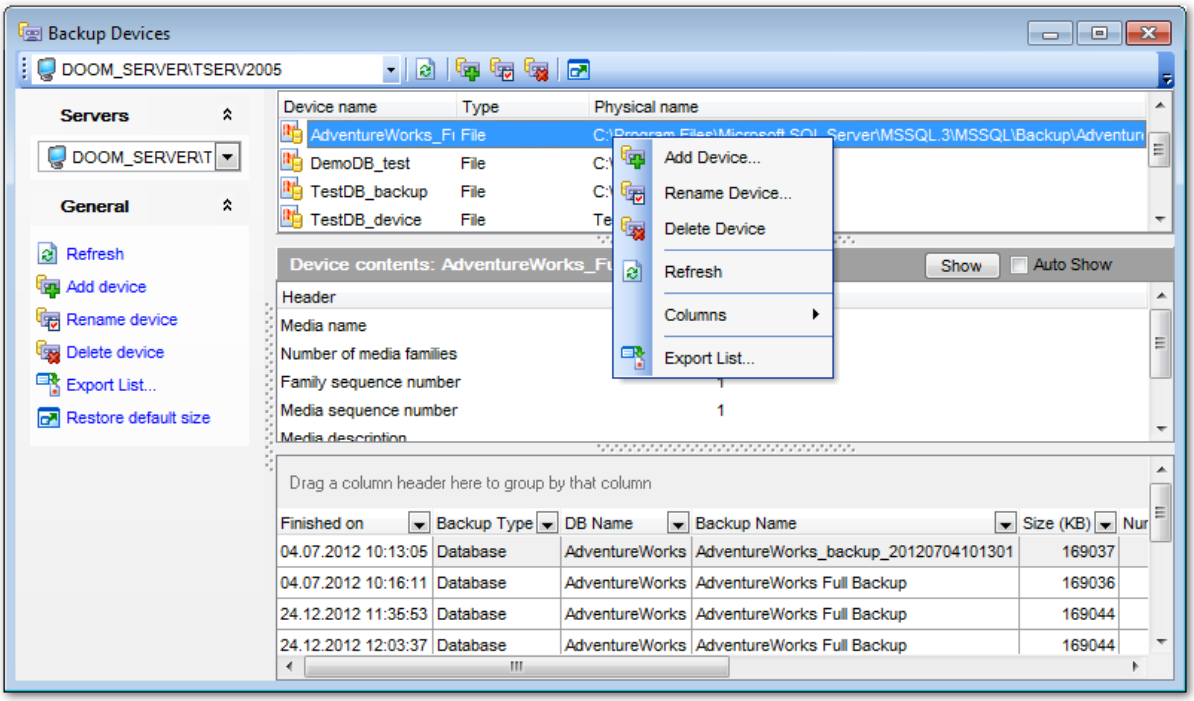


The list displays the existing backup devices as a grid with the following columns: *Device name*, *Type*, *Physical name*.

Right-click an item within the list to call the **context menu** allowing you to *create* a new backup device and specify its properties using the New Logical Backup Device 372 dialog, *rename*, *delete* the selected backup device, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of backup devices to any of supported output file formats 971.

Backup devices management tools are also available through the **Navigation bar** of the **Backup devices manager**.

The **Device contents** area allows you to view the contents of the selected backup device: *Media name*, *Number of media families*, *Family sequence number*, *Media description*.

To display the actual contents, press the **Show** button. If necessary, you can check the ☑ **Auto show** option - in this case the contents of each backup device will be retrieved upon the backup device selection in the list.

The lower list displays the backup 745 operation(s) with the following attributes:
Finished on
Backup type
DB Name
Backup Name
Size (KB)
Number
Expire on

Backup description
Device Type
Created on
Created by

If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

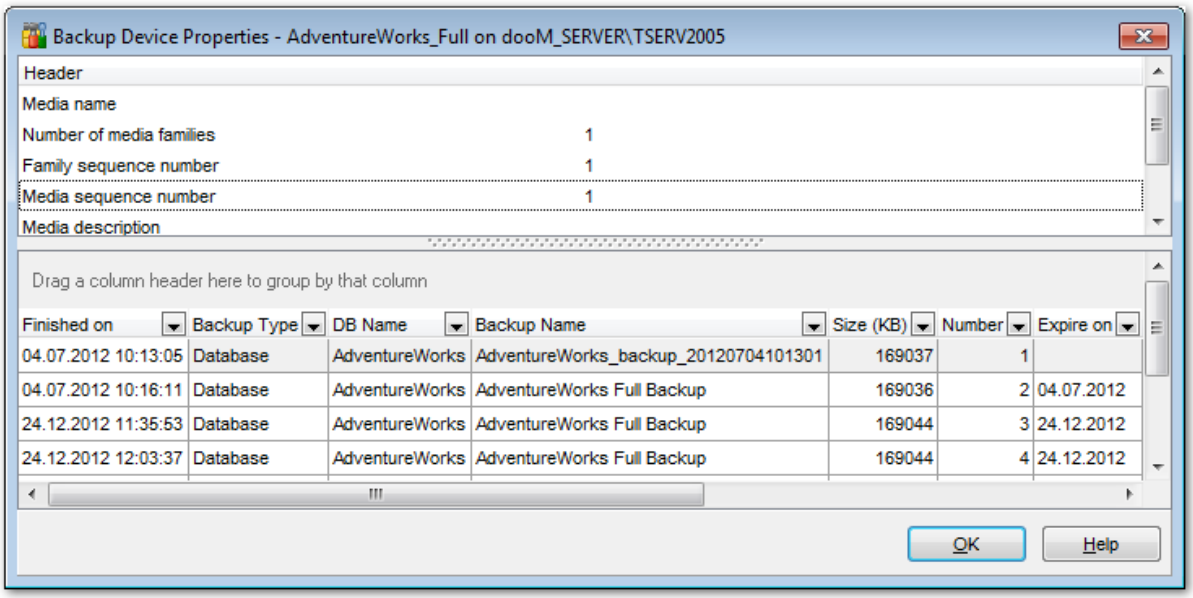
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

Hint: These properties are also available within the modal Backup Device Properties 772 dialog which is called through the **Backup Device Contents...** context menu item of the backup device alias in DB Explorer 65.

11.3.2 Backup Device properties

The **Backup Device Properties** dialog allows you to browse the **backup device** contents and the backup 745 operation(s) with this backup device used.

To open the dialog, right-click the backup device in DB Explorer 65 and select the **Backup Device Contents...** context menu item.



The **Device contents** area allows you to view the contents of the backup device: *Media name*, *Number of media families*, *Family sequence number*, *Media description*.

The lower list displays the backup[745] operation(s) as a grid with the following columns: *Finished on*, *Backup type*, *DB Name*, *Backup Name*, *Size (KB)*, *Number*, *Expire on*, *Backup description*, *Device Type*, *Created on*, *Created by*. If more convenient, you can change the order[473] of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

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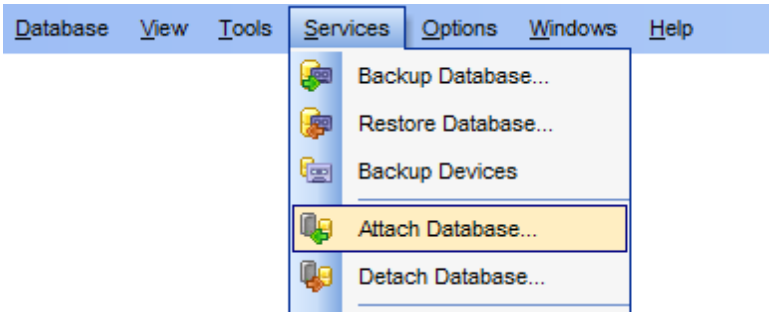
11.4 Attach Database

Attach Database Wizard allows you to attach an existing database that is made up of one or more files to the instance of Microsoft® SQL Server™ (with SQL Server routines used).

This operation is used to attach a database with the specified name and using the specified data files.

To run the wizard, select the **Services | Attach Database...** main menu 951 item, or right-click the **Databases** node in the DB Explorer 65 tree and select the **Tasks | Attach Database...** context menu item.



- Setting connection properties 774
- Defining database files and general options 776
- Attaching database 777

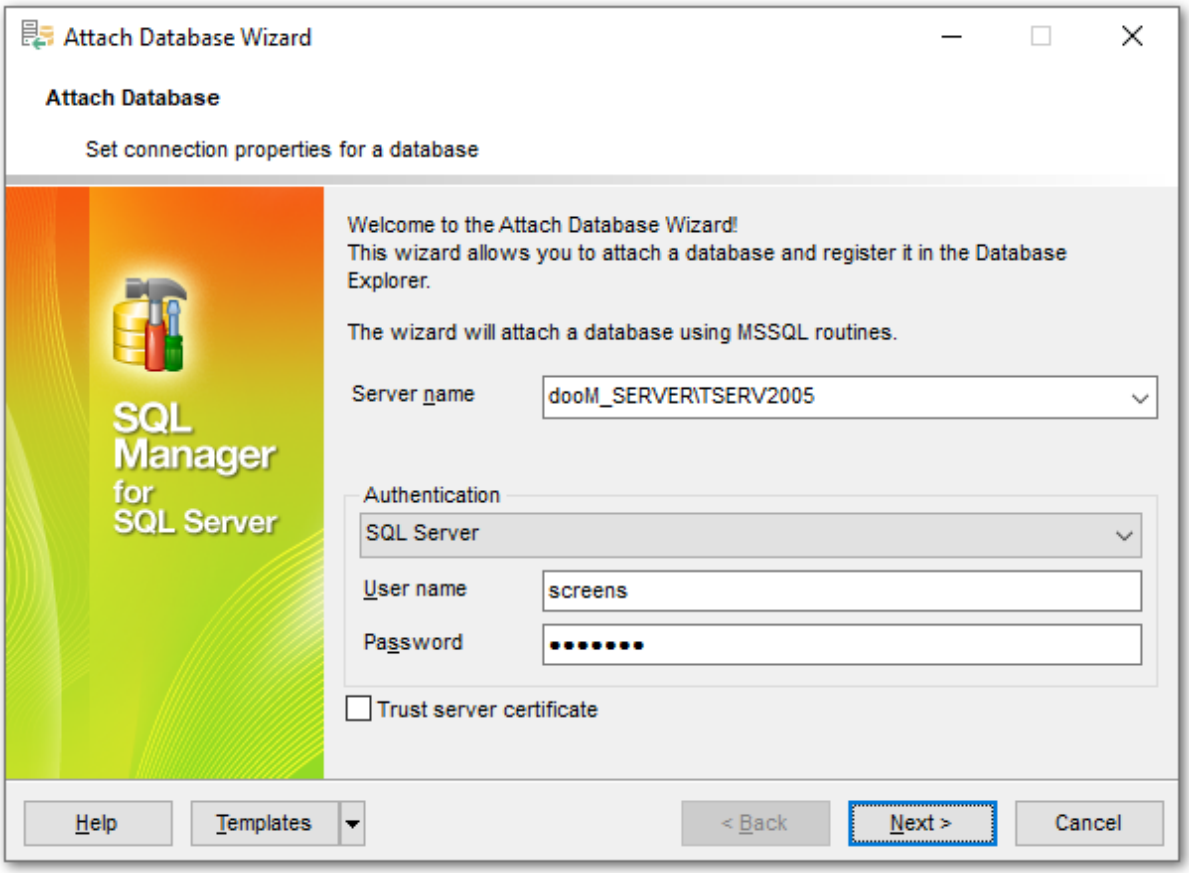
See also:

Detach Database 779

Using templates 970

11.4.1 Setting connection properties

This step of the wizard allows you to specify the **host**/**instance** to attach database to, and to provide **authentication** parameters.



Server name
Type in or use the drop-down list to select the host/instance name to attach database to.

Authentication type
Specify the type of authentication to set up connection to the server.

Windows
With this option SQL Server validates the account name and password using the Windows principal token in the operating system and, and doesn't perform the identity validation.

SQL Server
Select this type if you wish to use SQL Server Authentication for the login. SQL Server Authentication stores logins and passwords in SQL Server and does not depend upon Windows. You can select SQL Server Authentication only if SQL Server Authentication has been enabled on the server.

Microsoft Intra MFA
Uses the standard interactive method with multifactor authentication option for Microsoft Entra accounts.

Microsoft Intra password
Allows specifying the username and password to the client and driver.

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User name
Specify user name for selected authentication type.

Password
Input a password.

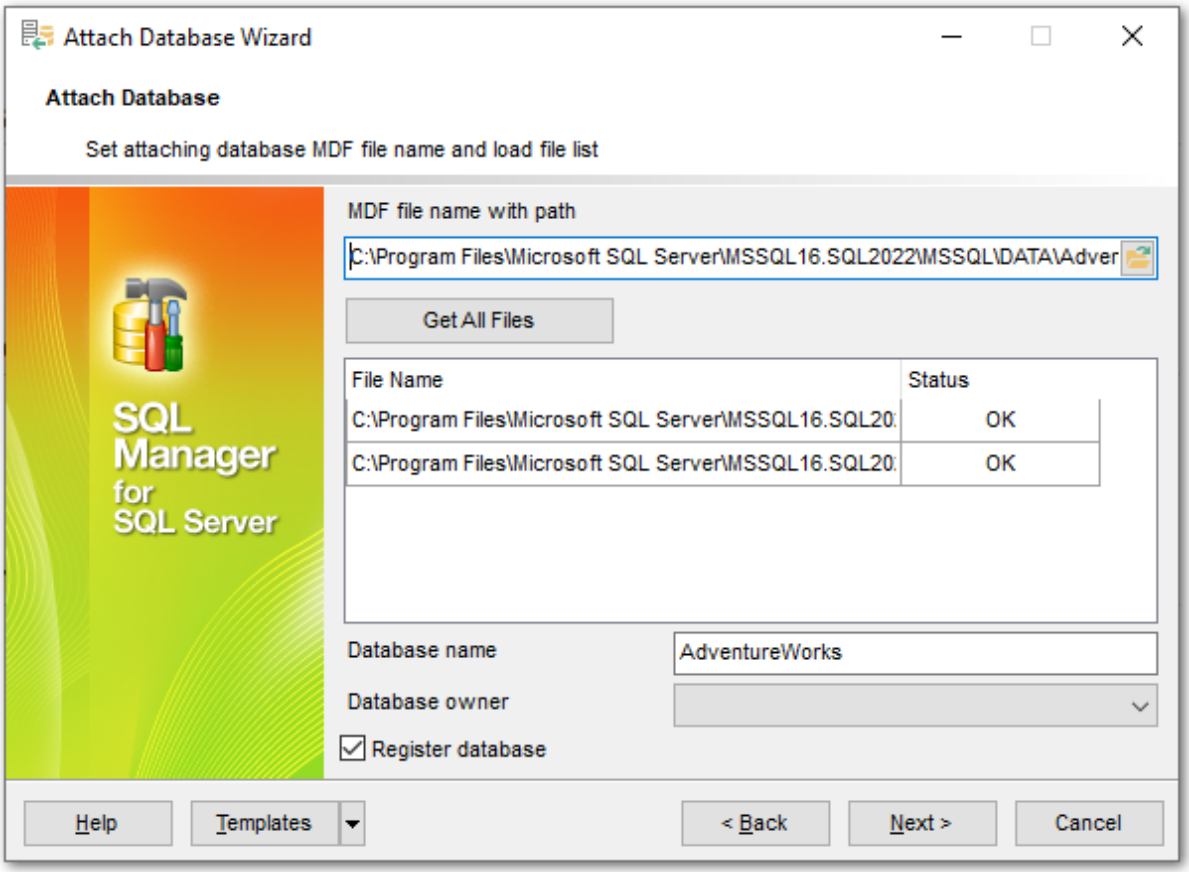
Trust server certificate
If you use this option, the connection process skips the trust chain validation. In this case, the application connects even if the certificate can't be verified.

Click the **Next** button to proceed to the Defining database files and general options 776 step of the wizard.

11.4.2 Defining database files and general options

Use this step of the wizard to **select the files** to attach to the server as a database.

MDF file name with path
Use the button to specify the path and name of the file to attach to the server. Then press the **Get All Files** button to add the database files to the file list.



Database name

Enter the name of the database to be attached.

Database owner
Use the drop-down list to select the database owner.

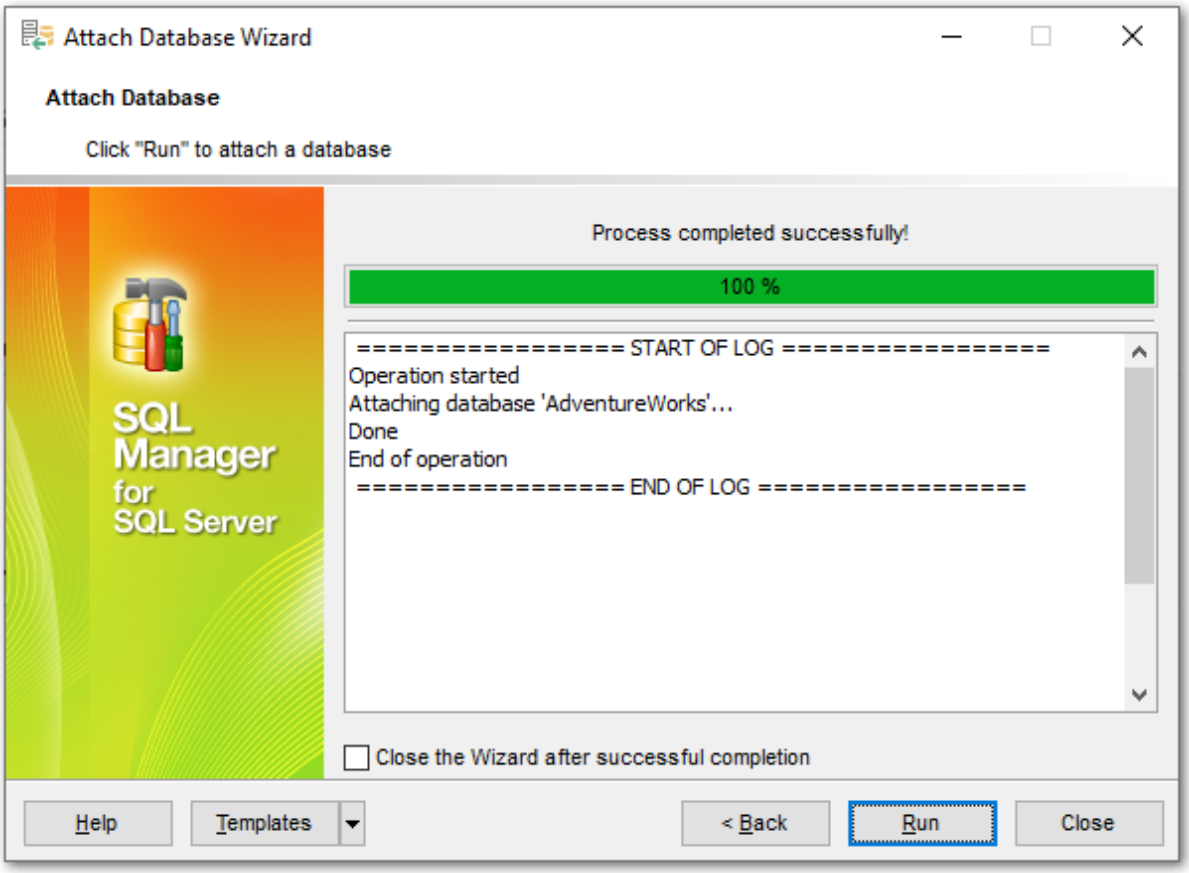
☑ **Register Database**
This option indicates that the Database Registration Info 120 dialog for the new database will appear immediately after attaching the database (you need to register the database to start working with it in SQL Manager). If you intend to register the database later, uncheck this option.

When you are done, click the **Next** button to proceed to the Attaching database 777 step of the wizard.

11.4.3 Attaching database

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the attach database process.

The log area allows you to view the log of operations and errors (if any).



☑ **Close the Wizard after successful completion**

If this option is selected, the wizard is closed automatically when the process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to complete the operation.

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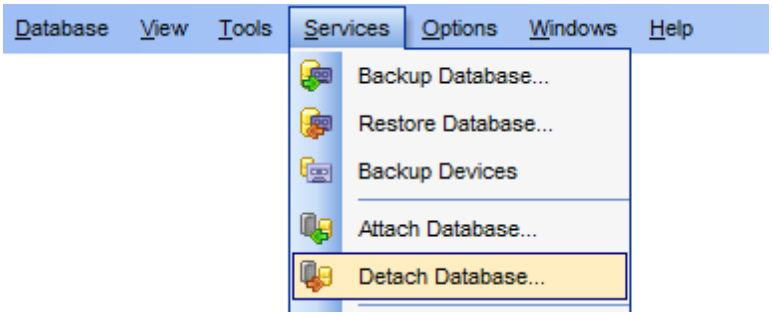
11.5 Detach Database

Detach Database Wizard allows you to detach a database from the instance of Microsoft® SQL Server™ (with SQL Server routines used).

This operation is used to detach the specified database with or without updating statistics before the database is detached.

To run the wizard, select the **Services | Detach Database...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Detach Database...** item of the context menu 55.



- Setting connection properties 779
- Selecting the database 781
- Detaching database 782

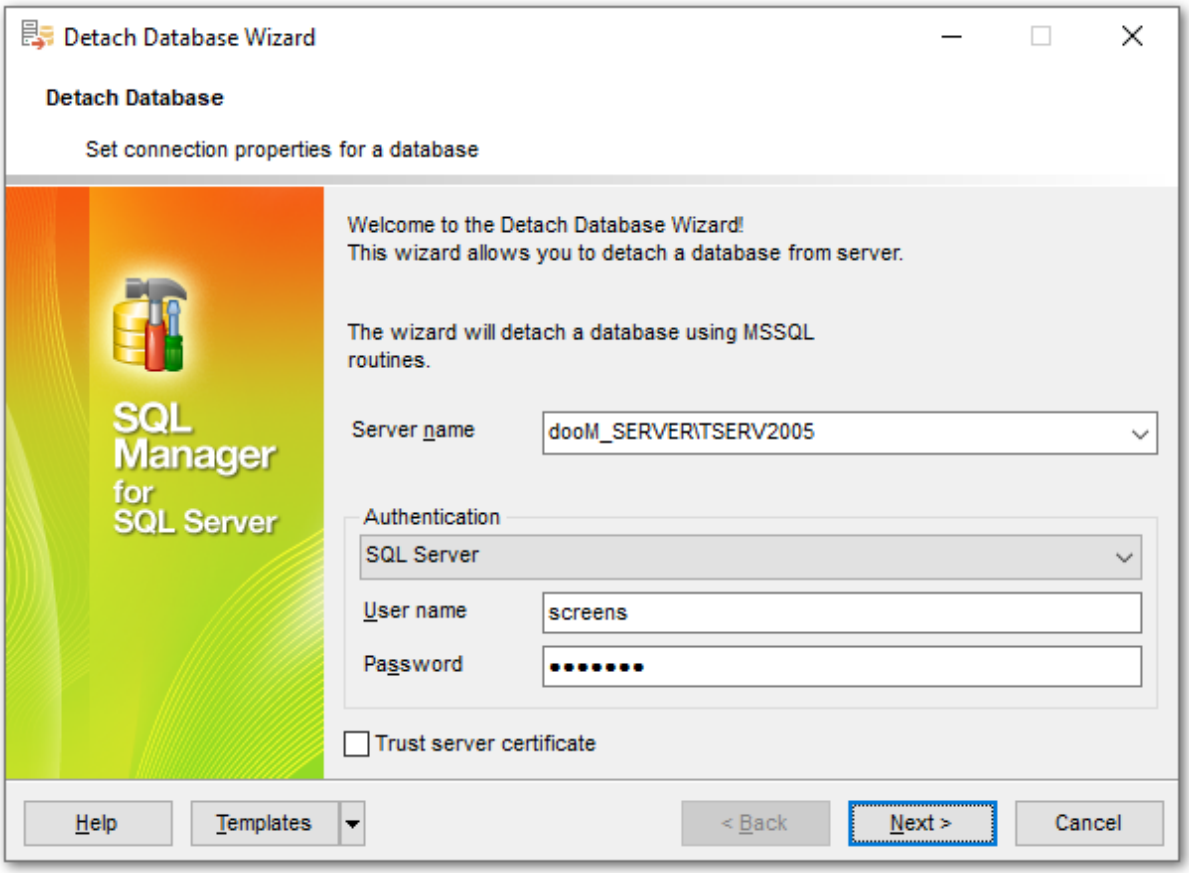
See also:

Attach Database 774

Using templates 970

11.5.1 Setting connection properties

This step of the wizard allows you to specify the **host**/**instance** to detach database from, and to provide **authentication** parameters.



Server name
Type in or use the drop-down list to select the host/instance name to detach database from.

Authentication type
Specify the type of authentication to set up connection to the server.

Windows
With this option SQL Server validates the account name and password using the Windows principal token in the operating system and, and doesn't perform the identity validation.

SQL Server
Select this type if you wish to use SQL Server Authentication for the login. SQL Server Authentication stores logins and passwords in SQL Server and does not depend upon Windows. You can select SQL Server Authentication only if SQL Server Authentication has been enabled on the server.

Microsoft Intra MFA
Uses the standard interactive method with multifactor authentication option for Microsoft Entra accounts.

Microsoft Intra password
Allows specifying the username and password to the client and driver.

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User name
Specify user name for selected authentication type.

Password
Input a password.

Trust server certificate
If you use this option, the connection process skips the trust chain validation. In this case, the application connects even if the certificate can't be verified.

Click the **Next** button to proceed to the Selecting the database 781 step of the wizard.

11.5.2 Selecting the database

At this step of the wizard you should **specify the database** to be detached from the instance of SQL Server.

Use the **Database** drop-down list to select the database to be detached.
Note that you can detach a database only if it has no active connections and it is not enabled for replication. To clear the current connections to the database, use the corresponding **Clear connections** button.

Press the **Refresh** button to get the current status of the selected database.

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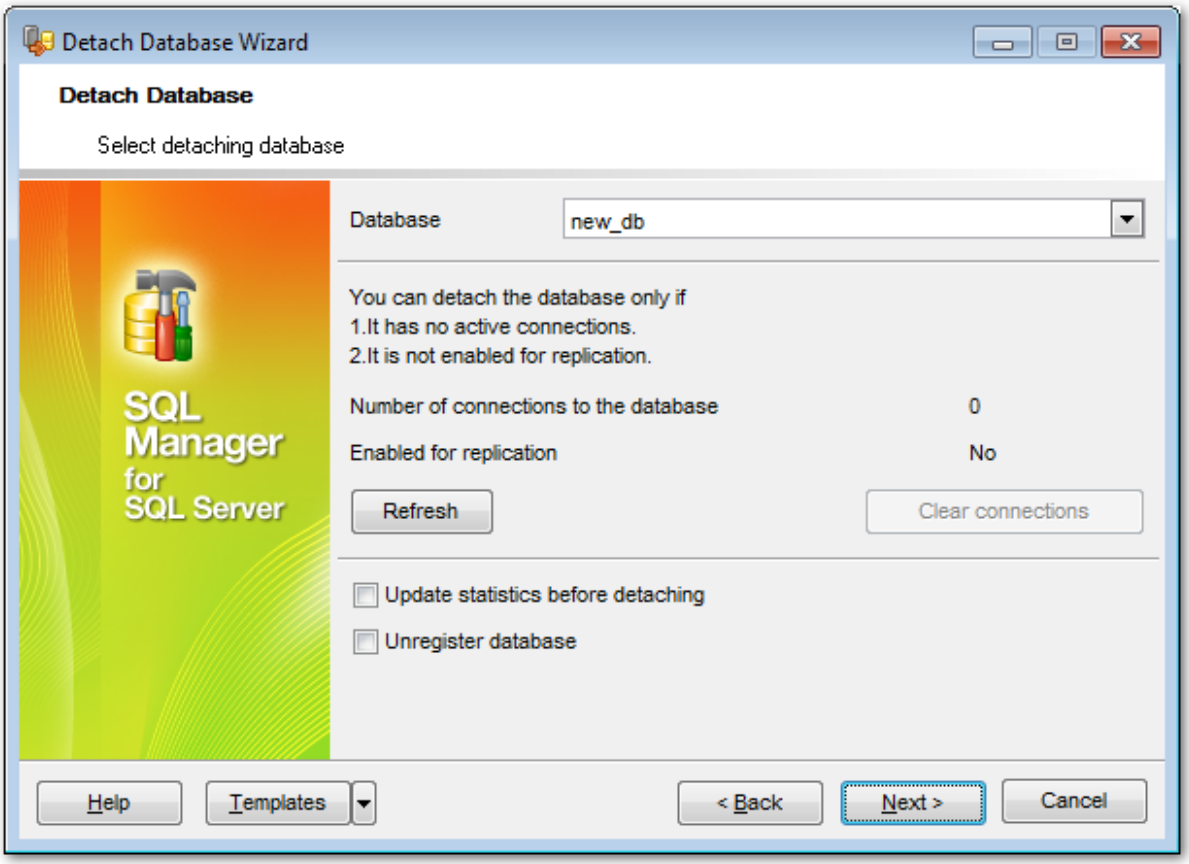

☑ **Update statistics before detaching**
Check this option to update the database statistics before detaching the database.

☑ **Unregister database**
Using this option you can unregister the database (if it has been registered 114 in SQL Manager).

When you are done, click the **Next** button to proceed to the Detaching database 782 step of the wizard.

11.5.3 Detaching database

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the detach database process.

The log area allows you to view the log of operations and errors (if any).

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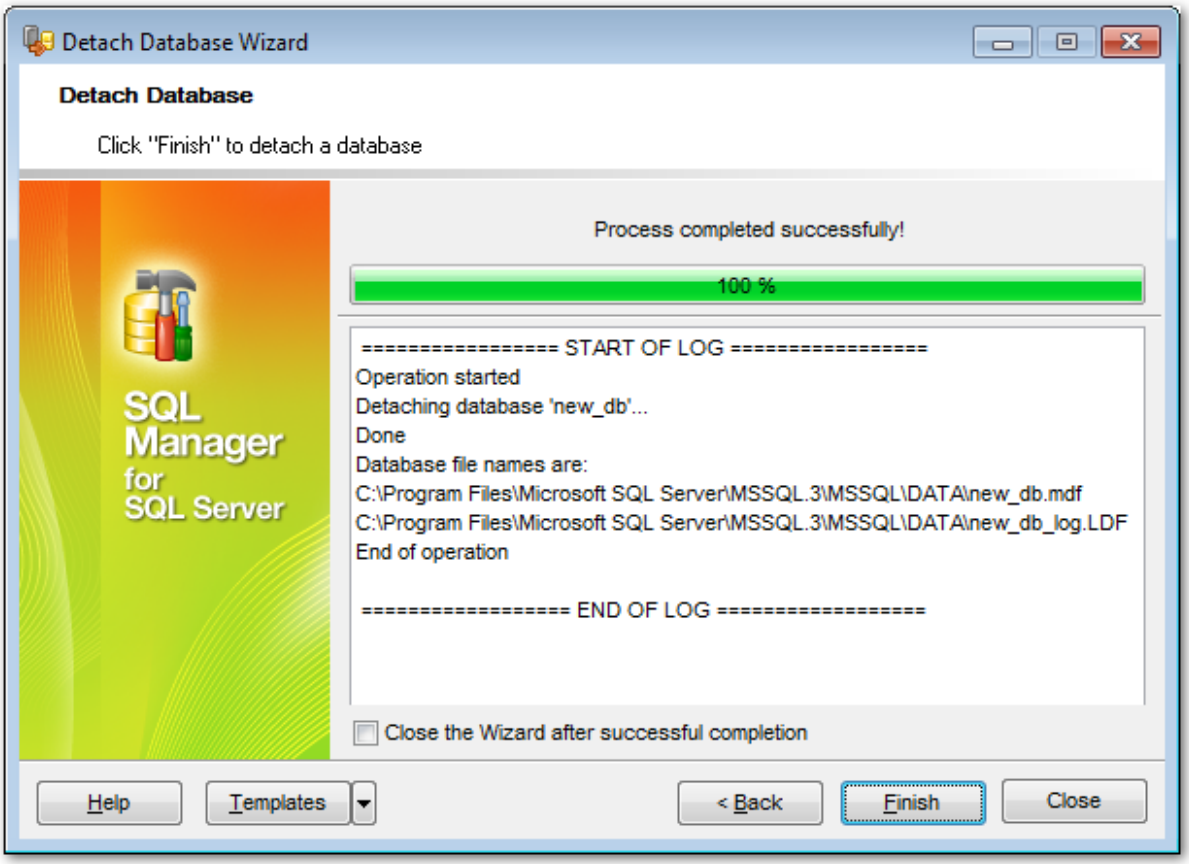


☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the process is completed.

If necessary, you can save a template 970 for future use.

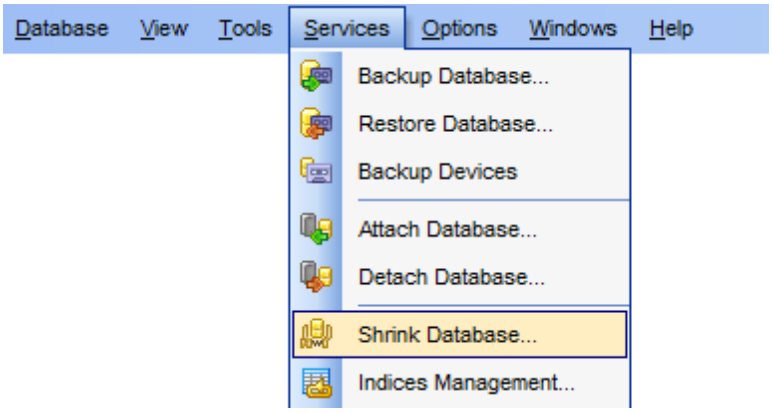
Click the **Finish** button to complete the operation.

11.6 Shrink Database

Shrink Database Wizard allows you to perform database shrinking on your SQL Server system (the *DBCC SHRINKDATABASE* and *SHRINKFILE* Transact-SQL statements are issued).

This operation is used to reduce any file within the database to remove unused pages. Both data and transaction log files can be reduced, or shrunk.

To run the wizard, select the **Services | Shrink Database...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Shrink Database...** item of the context menu 55.



- Selecting database and setting shrink mode 784
- Defining shrink action for database 785
- Defining shrink action for files 786
- Shrinking database 788

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Using templates 970

11.6.1 Selecting database and setting shrink mode

This step of the wizard allows you to specify the **host**/**instance** containing the database for shrinking, and to select the **shrink mode**.

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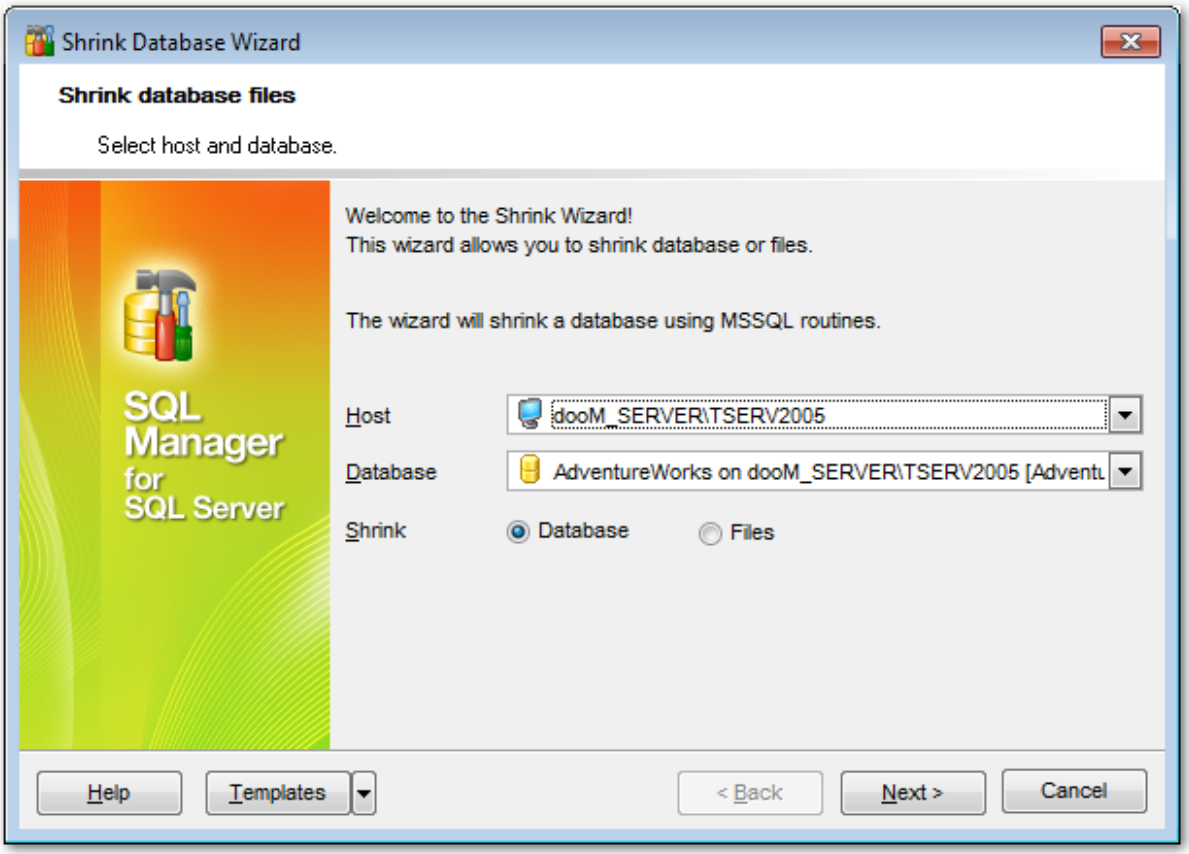

Host
Type in or use the drop-down list to select the host/instance where the database resides.

Database
Use the drop-down list of all registered databases on the selected host to specify the database to shrink.

Shrink
Select the preferable shrink mode: **Database** (*SHRINKDATABASE*) or **Files** (*SHRINKFILE*).

Click the **Next** button to proceed to the Defining shrink action for database 785 step of the wizard (if you have selected the *Database* shrink mode), or to the Defining shrink action for files 786 step (if you have selected the *Files* shrink mode).

11.6.2 Defining shrink action for database

This step of the wizard provides you with information on the **allocated** and **free space**, and allows you to specify the **shrink action** for the database.

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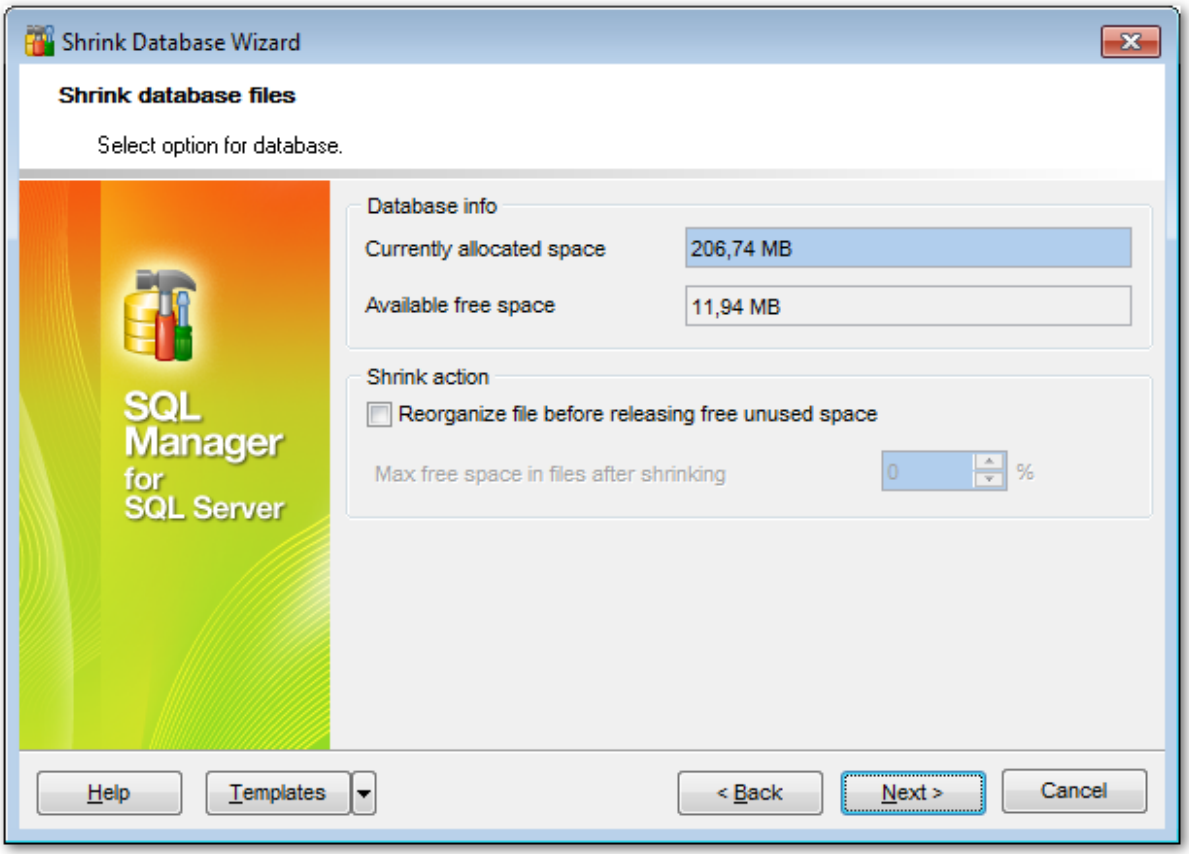


Database info

This group displays the *currently allocated space* and the *available free space* values pertaining to the database being shrunk.

Shrink action

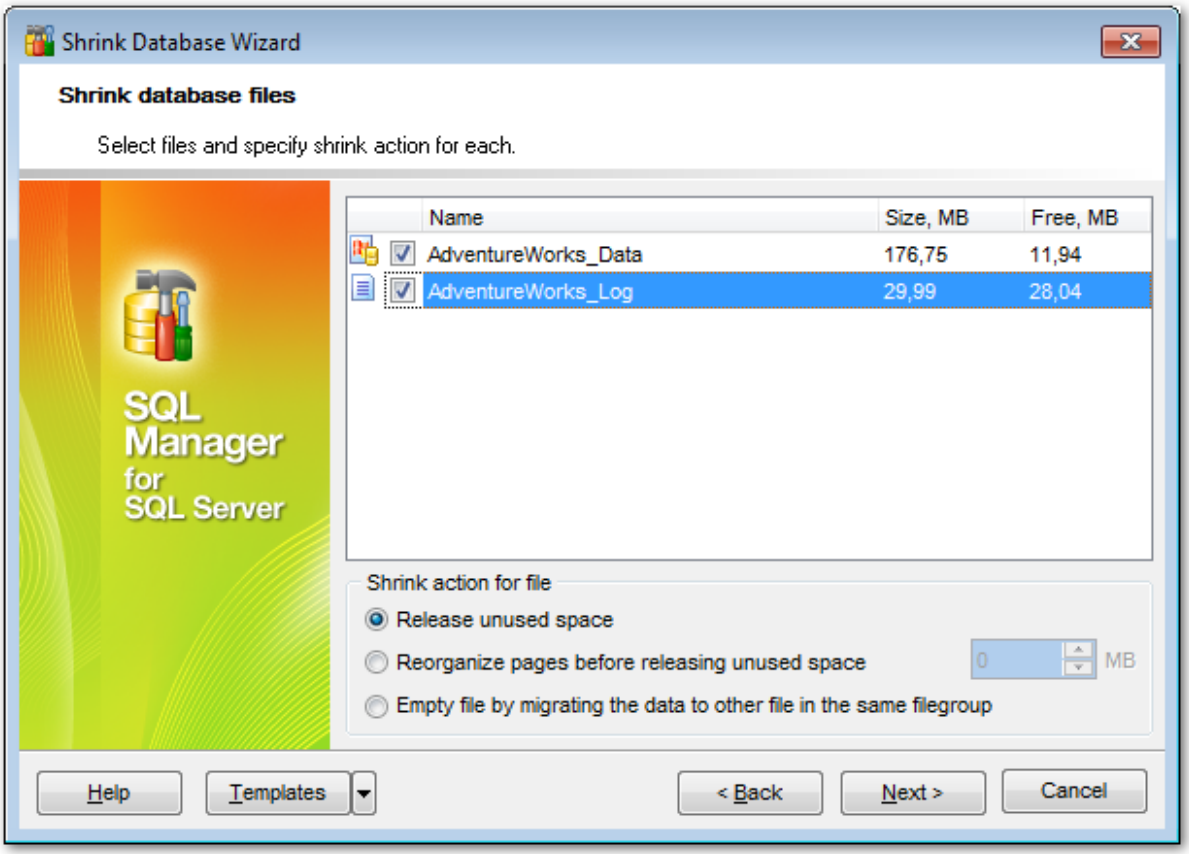
☑ **Reorganize file before releasing free unused space**
This action causes the file to be reorganized before free space is released.

Max free space in files after shrinking
Specify the percentage of free space that will be left in the database file after the database is shrunk.

When you are done, click the **Next** button to proceed to the Shrinking database 788 step of the wizard.

11.6.3 Defining shrink action for files

This step of the wizard provides you with information on the **allocated** and **free space**, and allows you to specify the **shrink action** for each of the database files.



Shrink action for file

Release unused space
The free unused space is released explicitly (default).

Reorganize pages before releasing unused space
This action causes the pages to be reorganized before unused space is released.

Empty file by migrating the data to other file in the same filegroup
This action migrates all data from the selected file to other files in the same filegroup. In this case placing data on the file is not allowed.

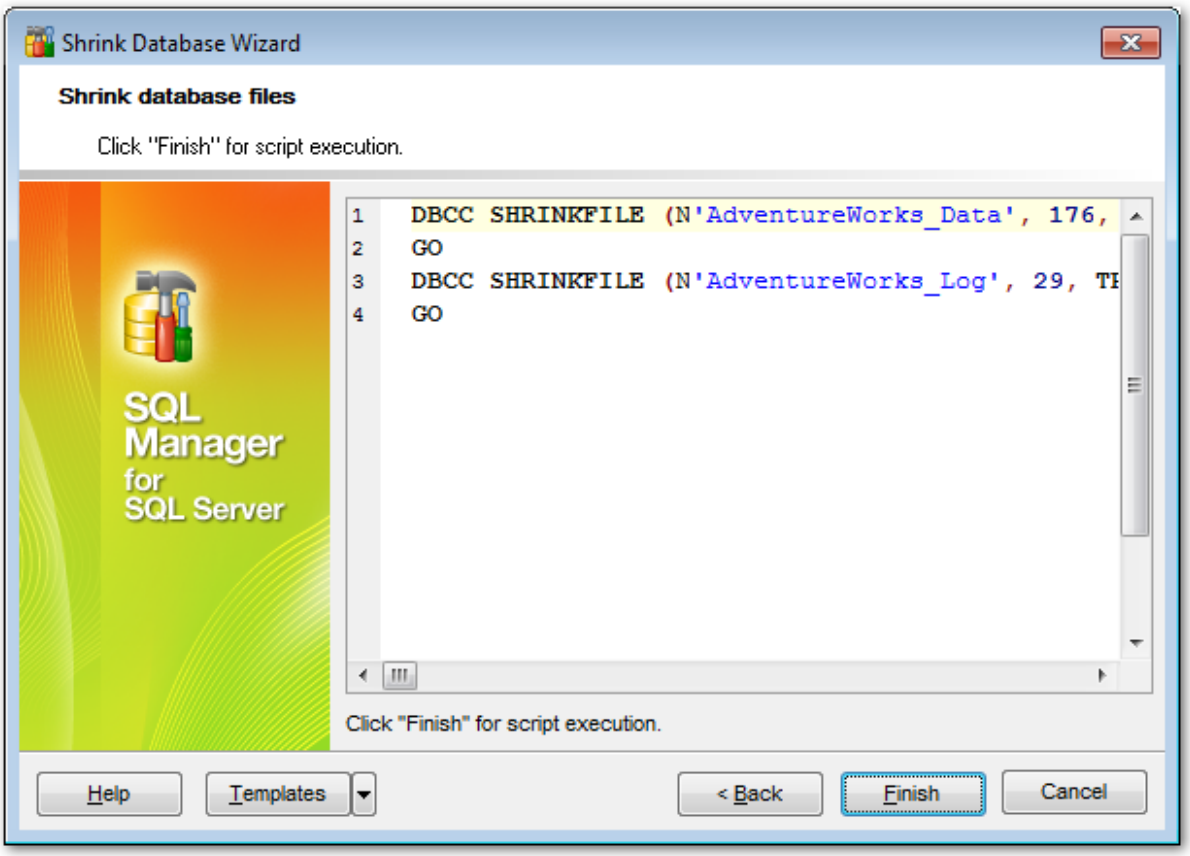
If necessary, you can change the default value of the *target_size* edit-box to enforce shrinking the file to the specified size.

When you are done, click the **Next** button to proceed to the Shrinking database 788 step of the wizard.

11.6.4 Shrinking database

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the shrink database/files process.

If necessary, you can edit the result script before execution.



If necessary, you can save a template 970 for future use.

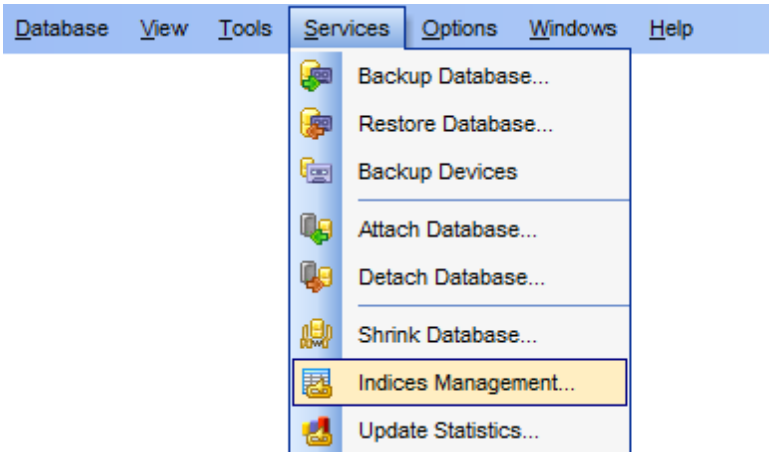
Click the **Finish** button to execute the result script and complete the operation.

11.7 Indices Management

Indices Management Wizard allows you to perform index management operations in your SQL Server database: *reorganizing*, *rebuilding*, *disabling* (the *ALTER INDEX REORGANIZE ... REBUILD ... DISABLE* Transact-SQL statements are issued).

When indexes have pages in which the logical ordering based on the key value, does not match the physical ordering inside the data file, these indexes are called *fragmented*. Highly fragmented indexes may considerably decrease query performance. Index fragmentation is remedied by either reorganizing or by rebuilding an index.

To run the wizard, select the **Services | Indices Management...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Indices Management...** item of the context menu 55.



- Selecting database for indices management 745
- Selecting tables that contain indexes 746
- Specifying actions and setting options 748
- Editing and executing the result script 748

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Indices 232

Using templates 970

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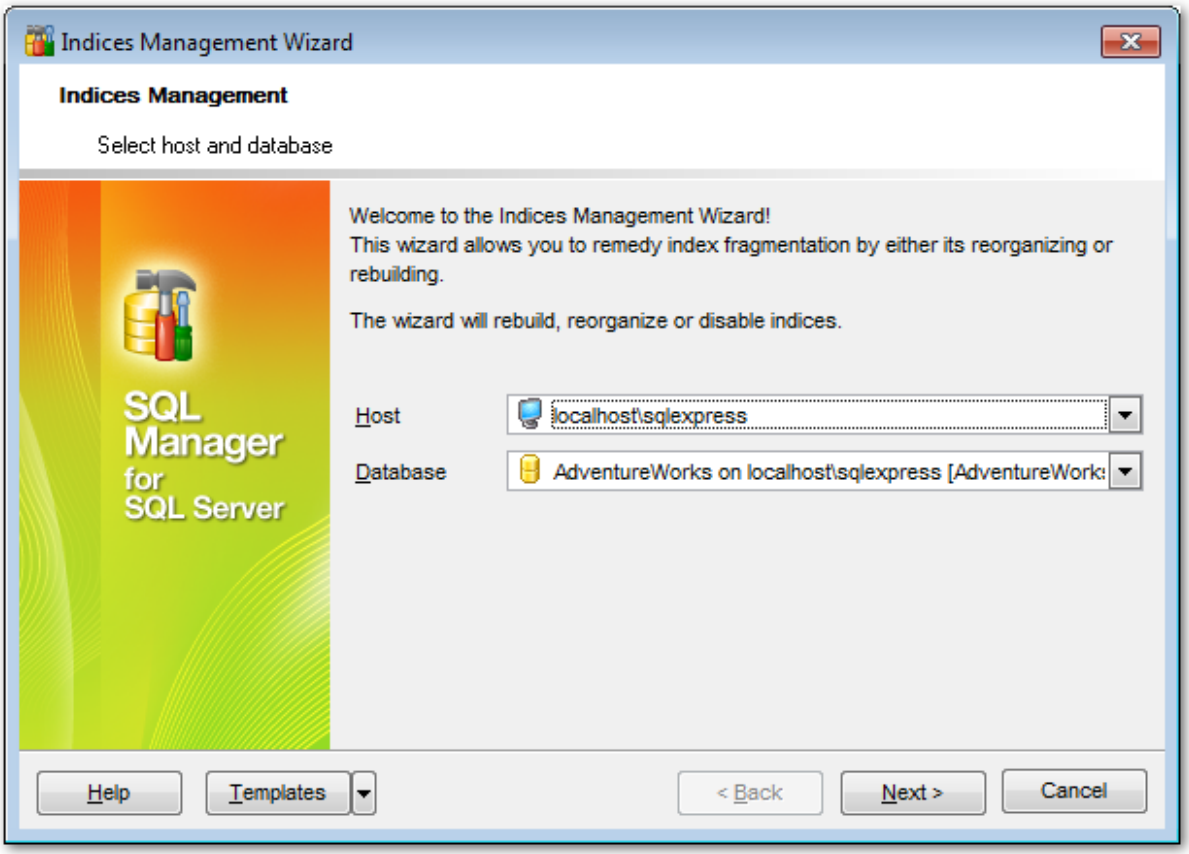
11.7.1 Selecting database for indices management

This step of the wizard allows you to specify the **host**/**instance** containing the database for indexes management.



Host
Type in or use the drop-down list to select the host/instance where the database resides.

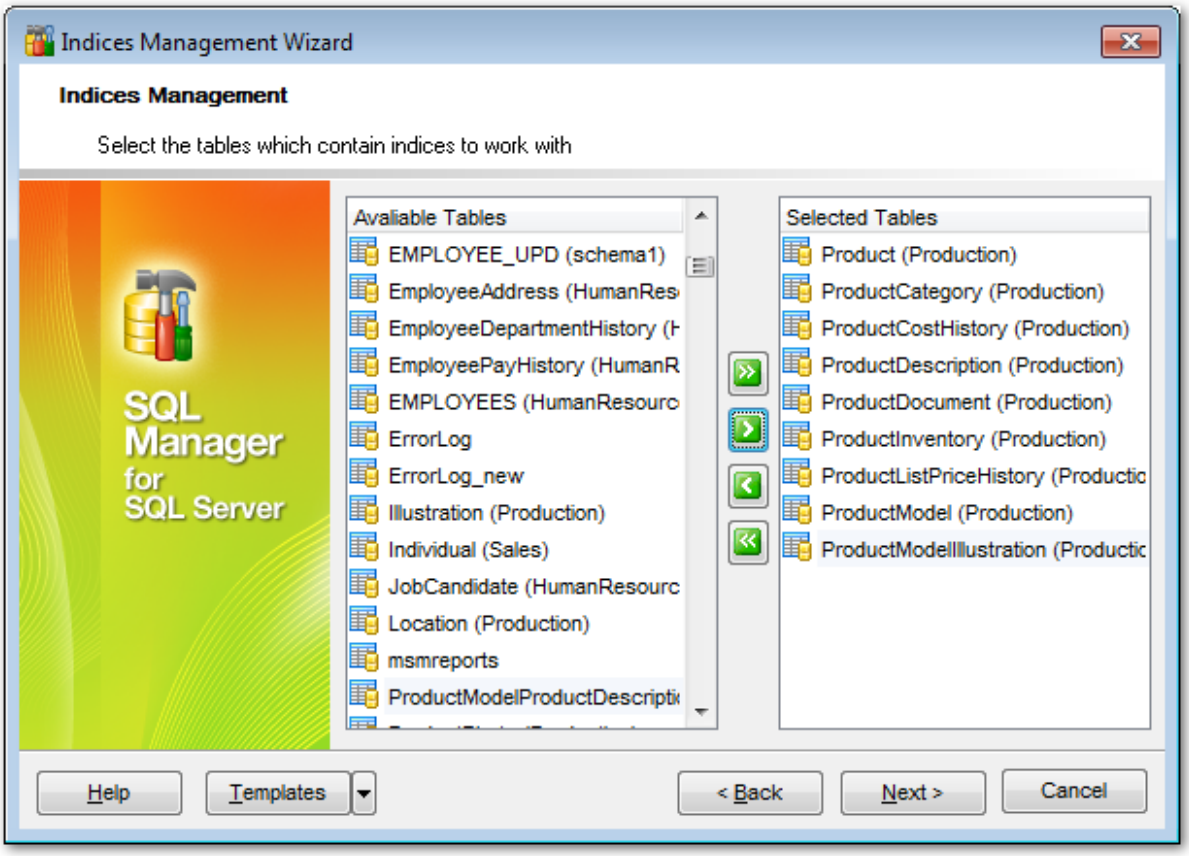
Database
Use the drop-down list of all registered databases on the selected host to specify the database to manage indexes in.

Click the **Next** button to proceed to the Selecting tables 790 step of the wizard.

11.7.2 Selecting tables

This step of the wizard allows you to **select tables** containing indexes.

To select a table, you need to move it from the **Available Tables** list to the **Selected Tables** list. Use the buttons or drag-and-drop operations to move the tables from one list to another.



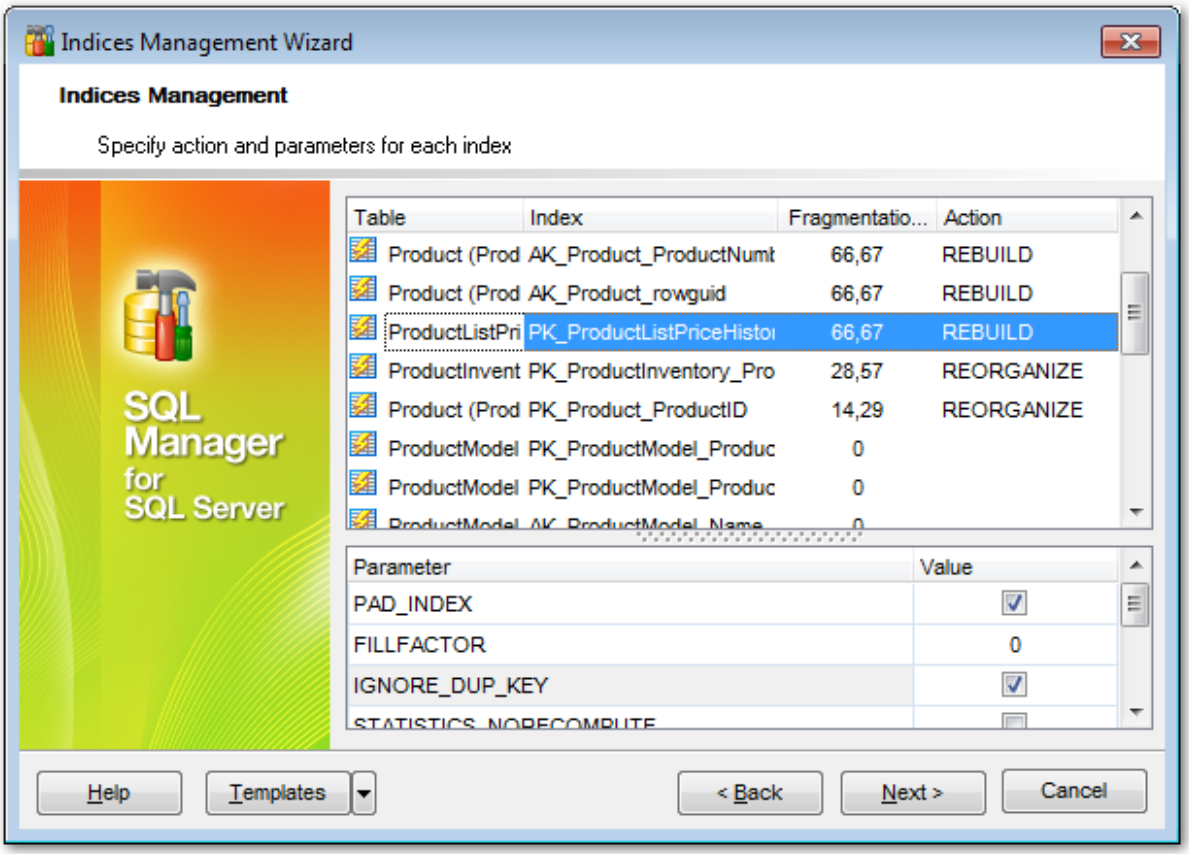
Click the **Next** button to proceed to the Specifying actions and setting options 791 step of the wizard.

11.7.3 Specifying actions and setting options

Use this step of the wizard to specify an **action** for each index and set the respective **parameters**.

The upper area lists all **indexes** of the tables selected at the previous step 790.

The **Fragmentation** column indicates the current fragmentation percentage of each index (*avg_fragmentation_in_percent*);
the **Action** column allows you to specify one of the available actions to be performed over the selected index: *REBUILD*, *REORGANIZE*, *DISABLE*.



The lower area lists the **parameters** that can be defined for the specified action (except for *DISABLE*).

- **REBUILD**:

PAD_INDEX
This parameter sets the percentage of free space in the intermediate level pages during index creation.

FILLFACTOR
This parameter sets the percentage of free space in the leaf level of each index page during index creation.

STATISTICS_NORECOMPUTE
This option specifies whether out-of-date index statistics should be automatically recomputed.

ONLINE
This option determines whether concurrent user access to the underlying table or clustered index data and any associated non-clustered indexes is allowed during index operations.

ALLOW_ROW_LOCKS
This option determines whether row locks are used in accessing index data.

ALLOW_PAGE_LOCKS

This option determines whether page locks are used in accessing index data.

MAXDOP
This parameter sets the maximum number of processors the query processor can use to execute a single index statement. Fewer processors may be used depending on the current system workload.

- **REORGANIZE**:

LOB_COMPARISON
Besides reorganizing one or more indexes, large object data types (LOBs) that are contained in the clustered index or underlying table can be compacted when an index is reorganized. The data types *image*, *text*, *ntext*, *varchar(max)*, *nvarchar(max)*, *varbinary (max)*, and *xml* are large object data types. Compacting this data can cause better disk space use.

When you are done, click the **Next** button to proceed to Editing and executing the result script 793.

11.7.4 Editing and executing the result script

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the indexes management process.

If necessary, you can edit the result script before execution.

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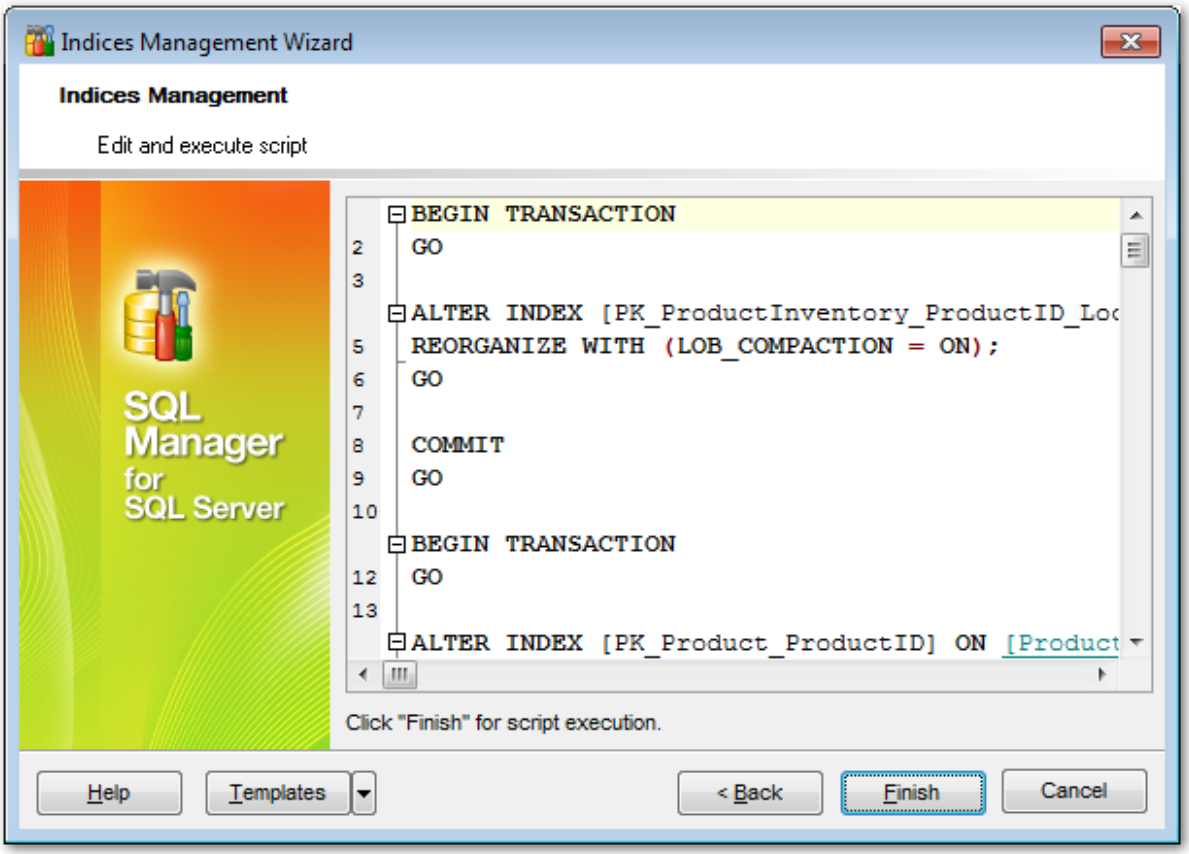


If necessary, you can save a template 970 for future use.

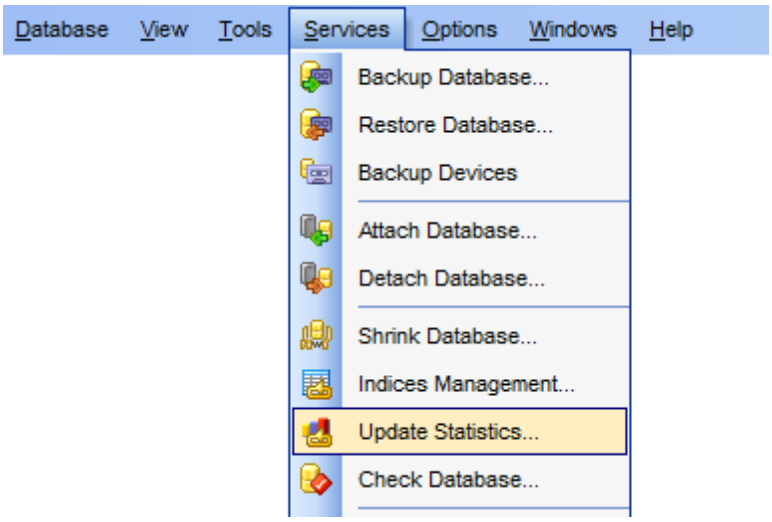
Click the **Finish** button to execute the result script and complete the operation.

11.8 Update Statistics

Statistics Update Wizard allows you to perform the update statistics operation in your SQL Server database (the *UPDATE STATISTICS* statement is issued).

This operation is used to updates the statistics for the specified table(s) and view(s).

To run the wizard, select the **Services | Update Statistics...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Update Statistics...** item of the context menu 55.



- Selecting database for statistics update 796
- Selecting tables and views 796
- Specifying update statistics options 797
- Editing and executing the result script 800
-

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Tables 196

Indices 232

Using templates 970

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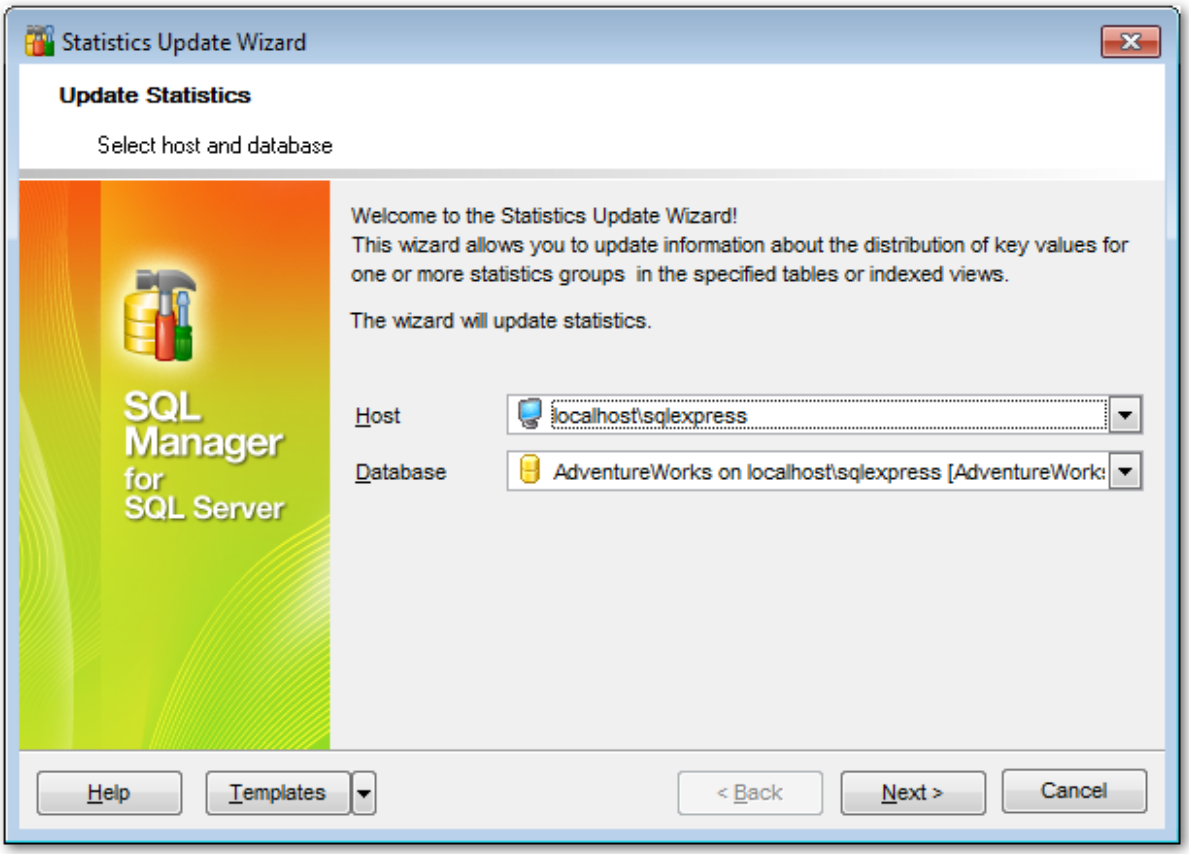
11.8.1 Selecting database for statistics update

This step of the wizard allows you to specify the **host**/**instance** containing the database for statistics update.



Host
Type in or use the drop-down list to select the host/instance where the database resides.

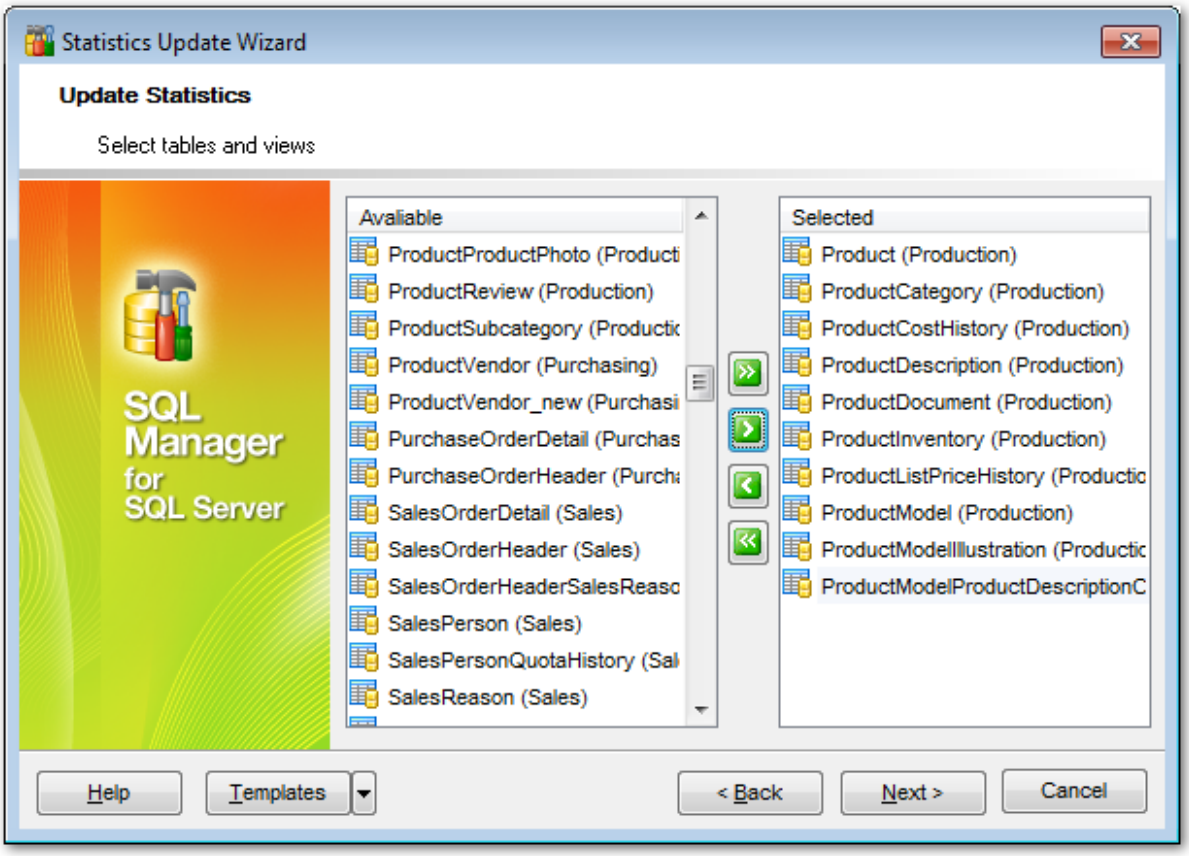
Database
Use the drop-down list of all registered databases on the selected host to specify the database to update statistics.

Click the **Next** button to proceed to the Selecting tables and views 796 step of the wizard.

11.8.2 Selecting tables and views

This step of the wizard allows you to **select tables and views** to update statistics for.

To select a table/view, you need to move it from the **Available** list to the **Selected** list. Use the buttons or drag-and-drop operations to move the objects from one list to another.



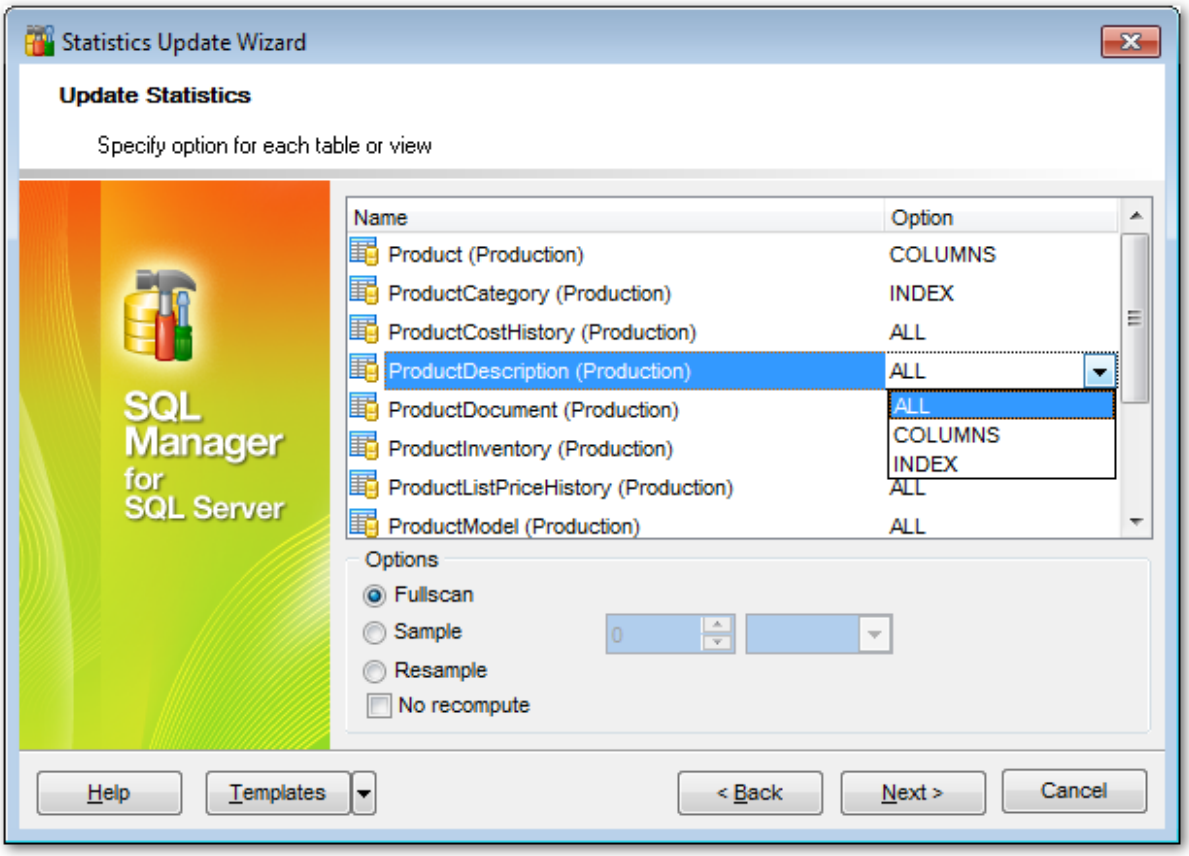
Click the **Next** button to proceed to the Specifying update statistics options 797 step of the wizard.

11.8.3 Specifying update statistics options

Use this step of the wizard to set **options** for each table/view.

The main area lists all **tables** and **views** selected at the previous step 796.

The **Option** column allows you to specify one of the available options to be applied to the selected object: *ALL*, *COLUMNS*, *INDEX*.



Options

This group allows you to set update statistics options for tables.

Fullscan
Use this option to specify that all table rows should be read to gather the statistics. This option provides the same behavior as *SAMPLE 100 PERCENT*.

Sample
This option allows you to specify the percentage of the table, or the number of rows to sample when collecting statistics for each table. When *0 PERCENT* or *ROWS* is specified, the result is an empty statistics set.

Resample
Select this option to specify that statistics will be gathered using an inherited sampling ratio for all existing statistics including indexes. If the sampling ratio creates too few rows being sampled, the Database Engine automatically corrects the sampling based on the number of existing rows in the table.

No recompute
This option specifies that automatic recomputation of the statistics that become out of date will be disabled.

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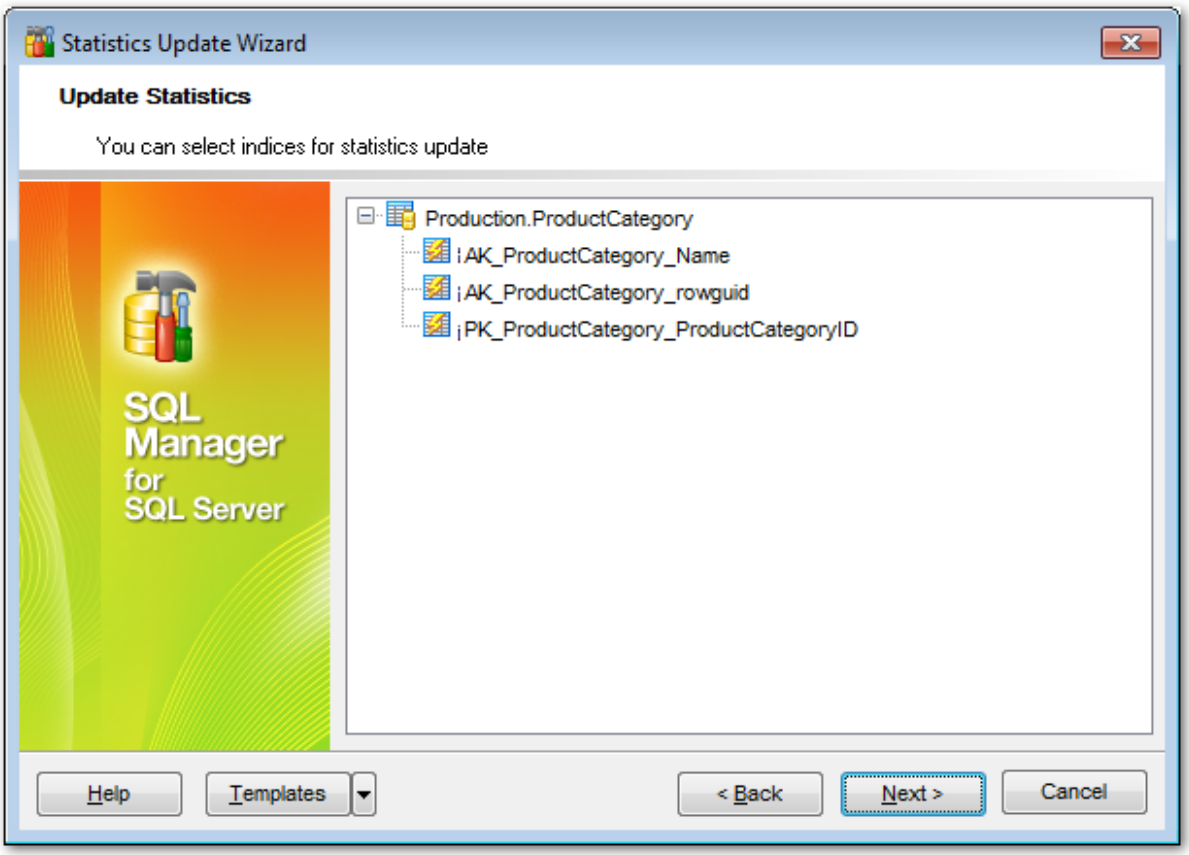
Click the **Next** button to proceed to the Selecting indexes 799 step of the wizard.

11.8.4 Browsing indices

This step of the wizard allows you to **browse indexes** to be included into the *UPDATE STATISTICS* statement. This step appears only if INDEX option was selected on the Specifying update statistics options 797 step at least for one table.

For you convenience the indexes are represented in the form of a tree with objects-containers as tree nodes.



When you are done, click the **Next** button to proceed to Selecting statistics 799 step.

11.8.5 Browsing statistics

This step of the wizard allows you to **browse statistics** to be included into the *UPDATE STATISTICS* statement. This step appears only if COLUMN option was selected on the Specifying update statistics options 797 step at least for one table.

For you convenience the statistics are represented in the form of a tree with objects-containers as tree nodes.

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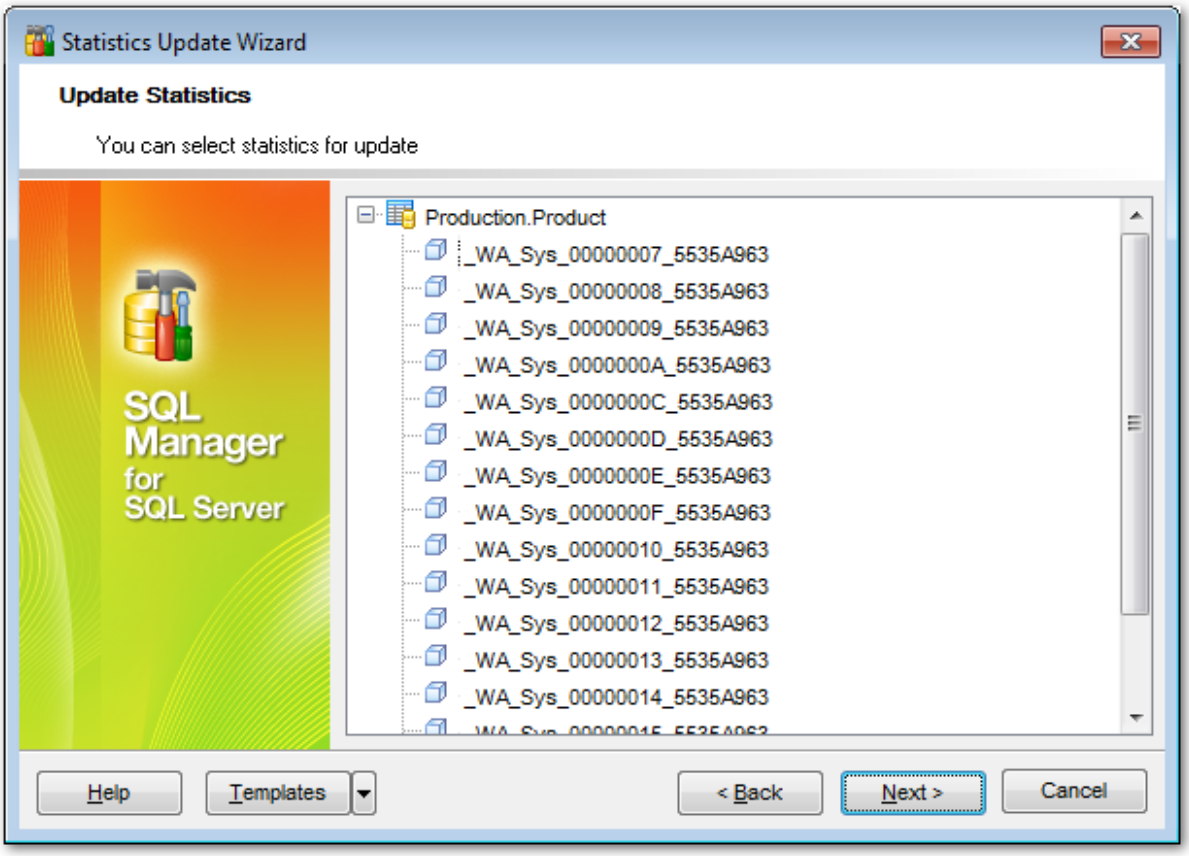
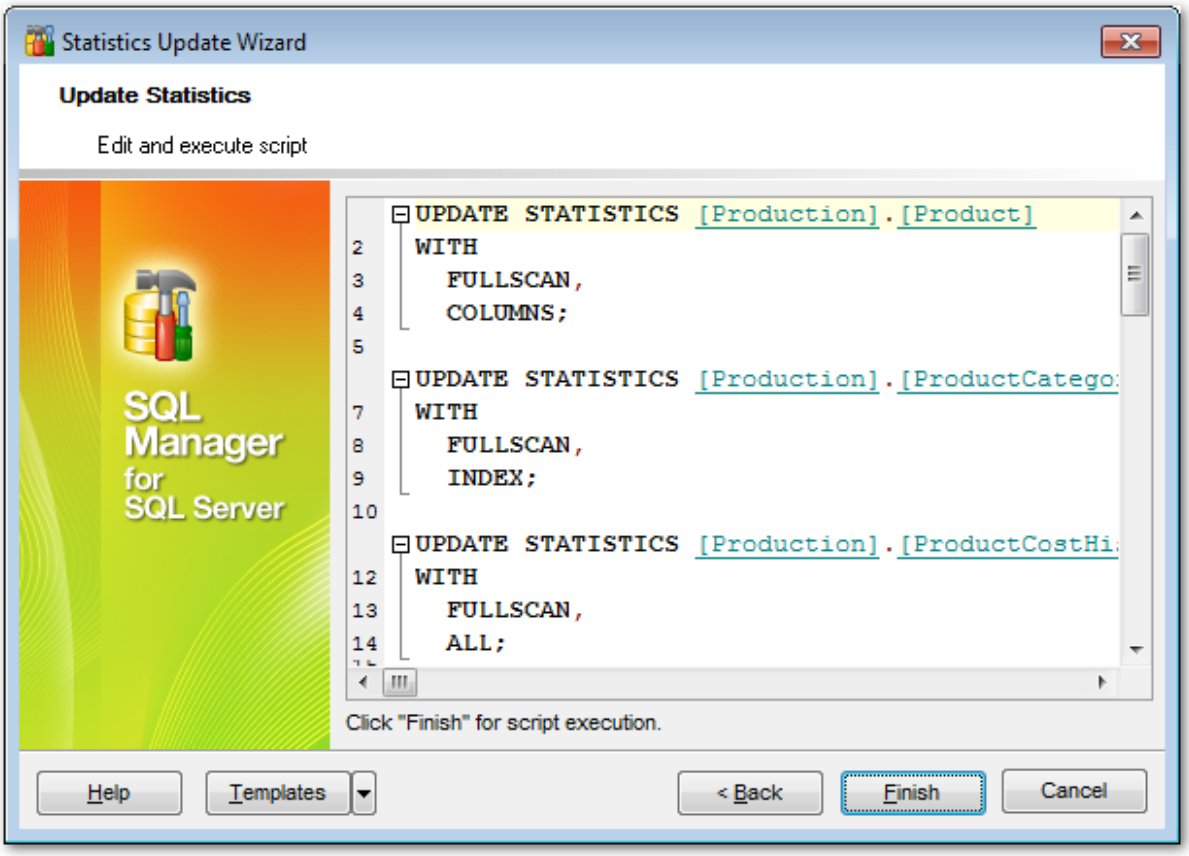


When you are done, click the **Next** button to proceed to Editing and executing the result script 800.

11.8.6 Editing and executing the result script

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the update statistics process.

If necessary, you can edit the result script before execution.



If necessary, you can save a template 970 for future use.

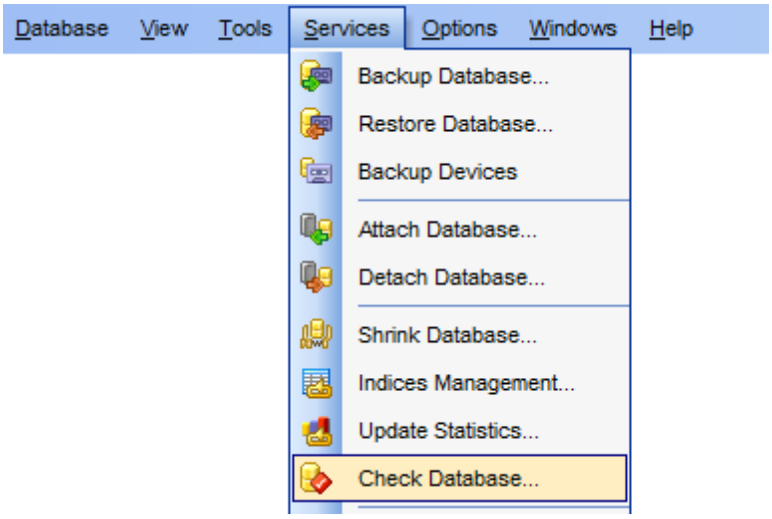
Click the **Finish** button to execute the result script and complete the operation.

11.9 Check Database

Check Database Wizard allows you to perform the check database operation on your SQL Server system (the *DBCC CHECKDB* Transact-SQL statement is issued).

This operation is used to check the allocation, structural, and logical integrity of all the objects in the specified database.

To run the wizard, select the **Services | Check Database...** main menu 951 item, or right-click the database alias in the DB Explorer 65 tree and select the **Tasks | Check Database...** item of the context menu 55.



- Selecting database to check 803
- Specifying arguments and options 803
- Editing and executing the result script 805

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

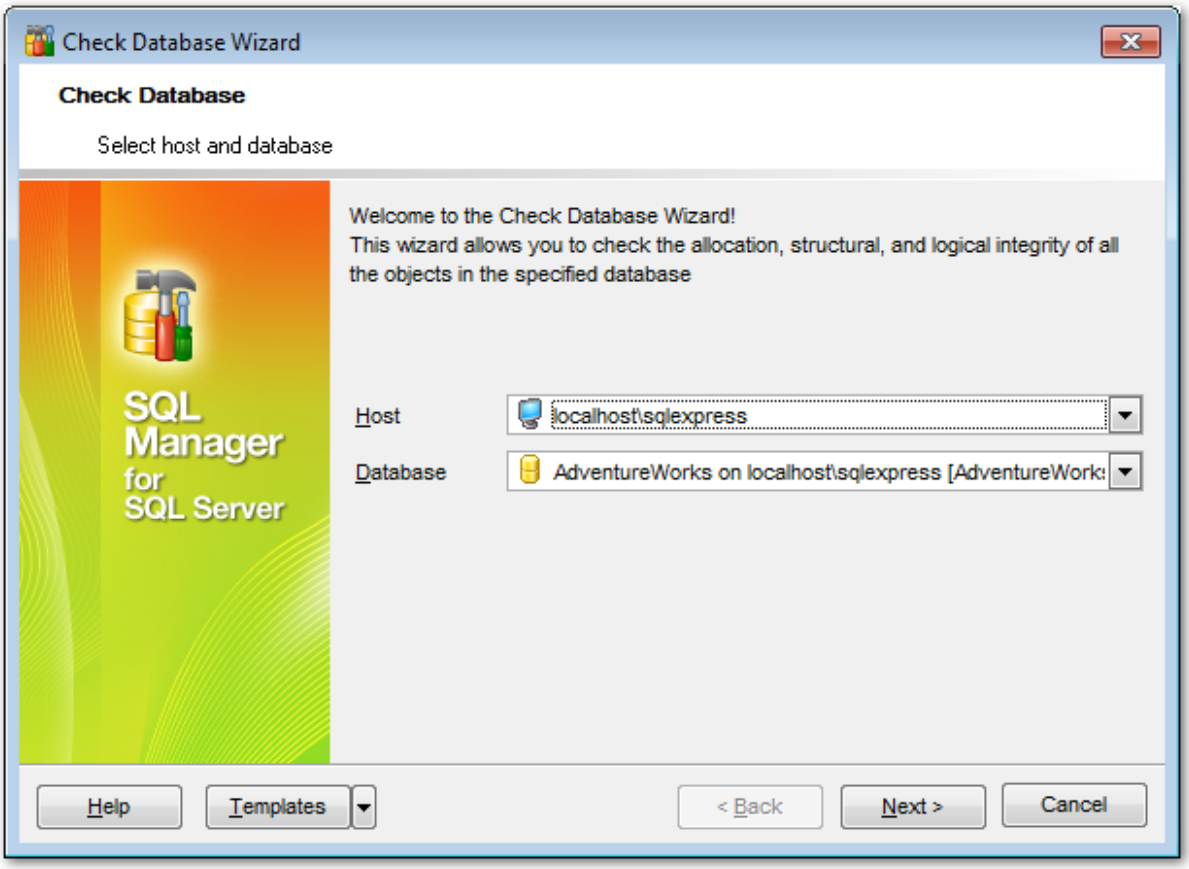
Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

Using templates 970

11.9.1 Selecting database to check

This step of the wizard allows you to select the **host**/**instance** containing the database for checking.



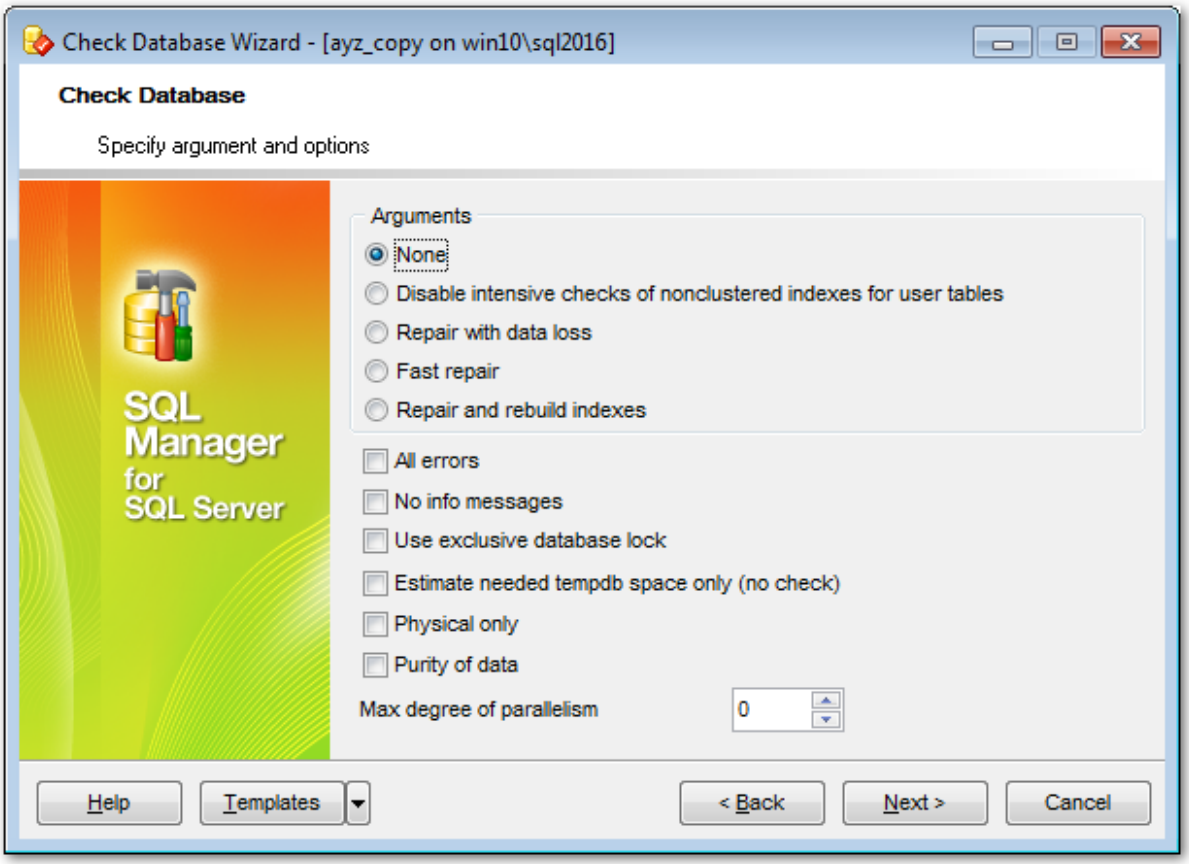
Host
Type in or use the drop-down list to select the host/instance where the database resides.

Database
Use the drop-down list of all registered databases on the selected host to specify the database to run integrity checks for.

Click the **Next** button to proceed to the Specifying arguments and options 803 step of the wizard.

11.9.2 Specifying arguments and options

Use this step of the wizard to **specify arguments** and **options** for the check database operation.



Arguments

Disable intensive checks of nonclustered indexes for user tables
This argument (*NOINDEX*) specifies that intensive checks of non-clustered indexes for user tables should not be performed; therefore, the overall execution time is decreased.

Repair with data loss
When this argument (*REPAIR_ALLOW_DATA_LOSS*) is used, all reported errors are repaired. These repairs can cause data loss.

Fast repair
This argument (*REPAIR_FAST*) enables fast repair of errors which is maintained for backward compatibility.

Repair and rebuild indexes
This argument (*REPAIR_REBUILD*) performs all repairs performed by *REPAIR_FAST* and includes time-consuming repairs such as rebuilding indexes. These repairs can be performed without risk of data loss.

Options

All errors

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This option (*ALL_ERRORMSGS*) displays an unlimited number of errors per object.

☑ **No info messages**
This option (*NO_INFOMSGS*) suppresses all informational messages.

☑ **Use exclusive database lock**
If this option (*TABLOCK*) is used, the *DBCC CHECKDB* statement obtains locks instead of using an internal database snapshot. This includes a short-term database exclusive lock.

☑ **Estimate only**
This option (*ESTIMATEONLY*) displays the estimated amount of *tempdb* space that is required to run DBCC CHECKDB with all the other specified options. The actual database check is not performed in this case.

☑ **Physical only**
This option (*PHYSICAL_ONLY*) limits the checking operation to the integrity of the physical structure of the page and record headers, the physical structure of B-trees and the allocation consistency of the database. Designed to provide a small overhead check of the physical consistency of the database, this check can also detect torn pages, checksum failures, and common hardware failures that can compromise a user's data.

☑ **Purity of data**
If this option (*DATA_PURITY*) is enabled, the *DBCC CHECKDB* statement checks the database for column values that are not valid or out-of-range.

☑ **Max degree of parallelism**
Use this option to set the degree of threads per execution. The default value for Max degree of parallelism is set to 0, this means there is no limit to the number of processors.

When you are done, click the **Next** button to proceed to Editing and executing the result script 805.

11.9.3 Editing and executing the result script

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the check database process.

If necessary, you can edit the result script before execution.

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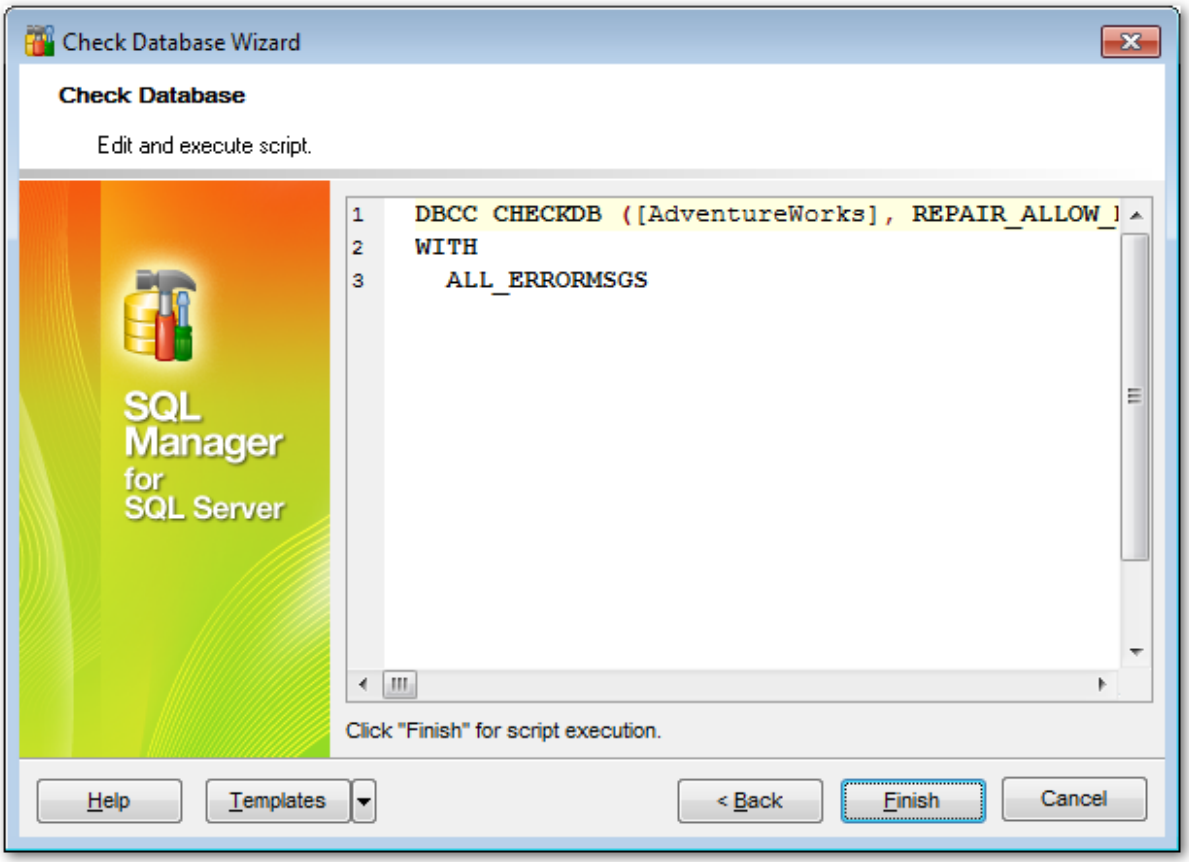


If necessary, you can save a template 970 for future use.

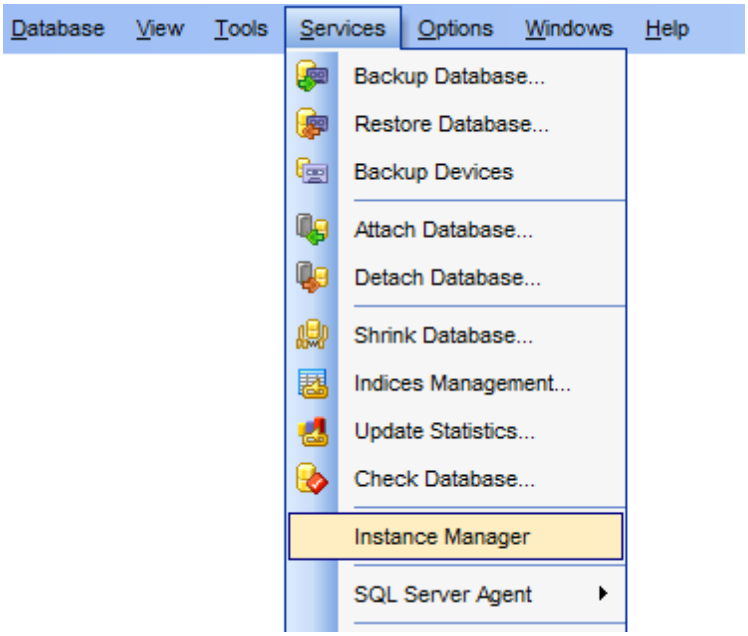
Click the **Finish** button to execute the result script and complete the operation.

11.10 Instance Manager

The **Instance Manager** tool allows you to check *SQL Server* services statuses on local and remote servers, stop or start them and configure some properties.

Note: To manage an instance you must have *Local Administrator* privileges on the host where the SQL Server service is running.

To launch this tool use the **Services | Instance Manager** item of main menu 951.



- Using Navigation bar and Toolbar 807
- Start/Stop service 808
- Configure service 809

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.10.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Instance Manager**.

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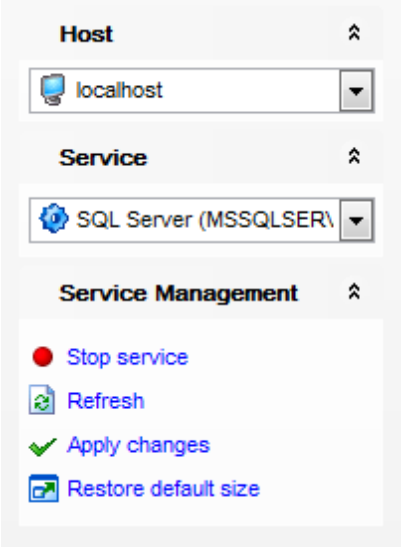


The **Navigation bar** of **Instance Manager** allows you to:

Host
select a server instance for managing services

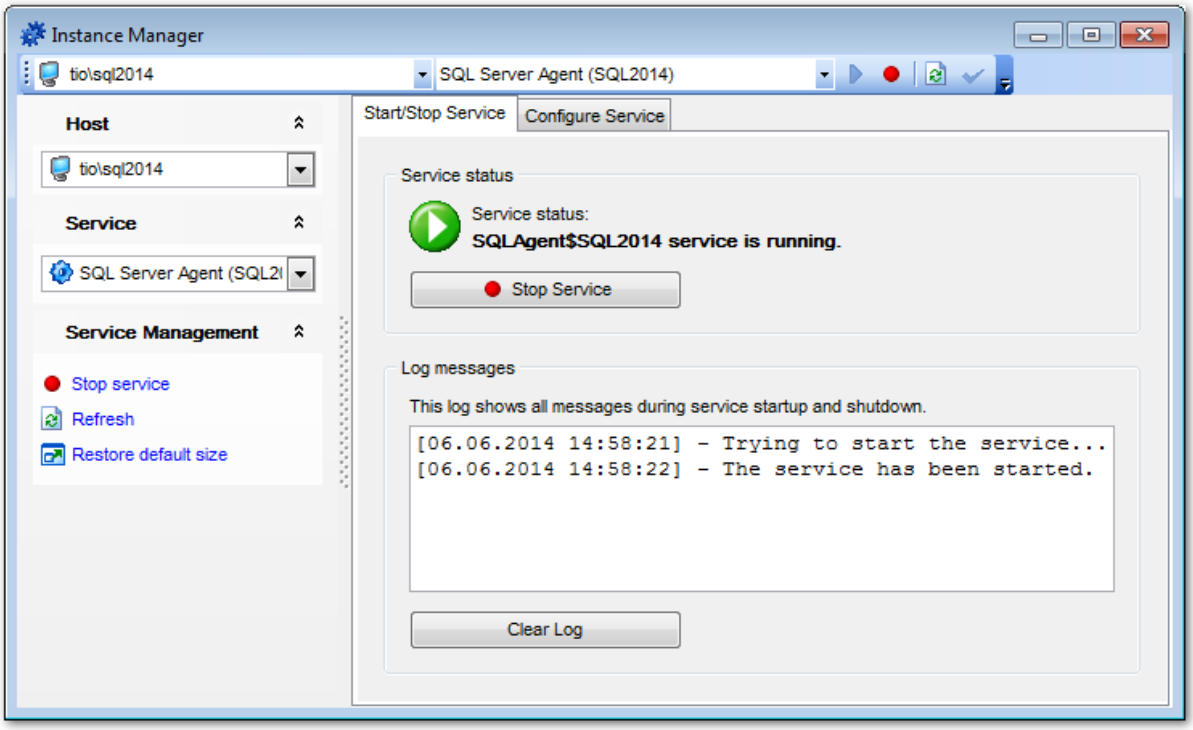
Service
select a service for configuring

Service Management
start the selected service
stop the selected service
refresh the content of the window
apply changes
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Resource Governor** window. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

11.10.2 Start/Stop Service

Use this tab to start/stop the selected service.



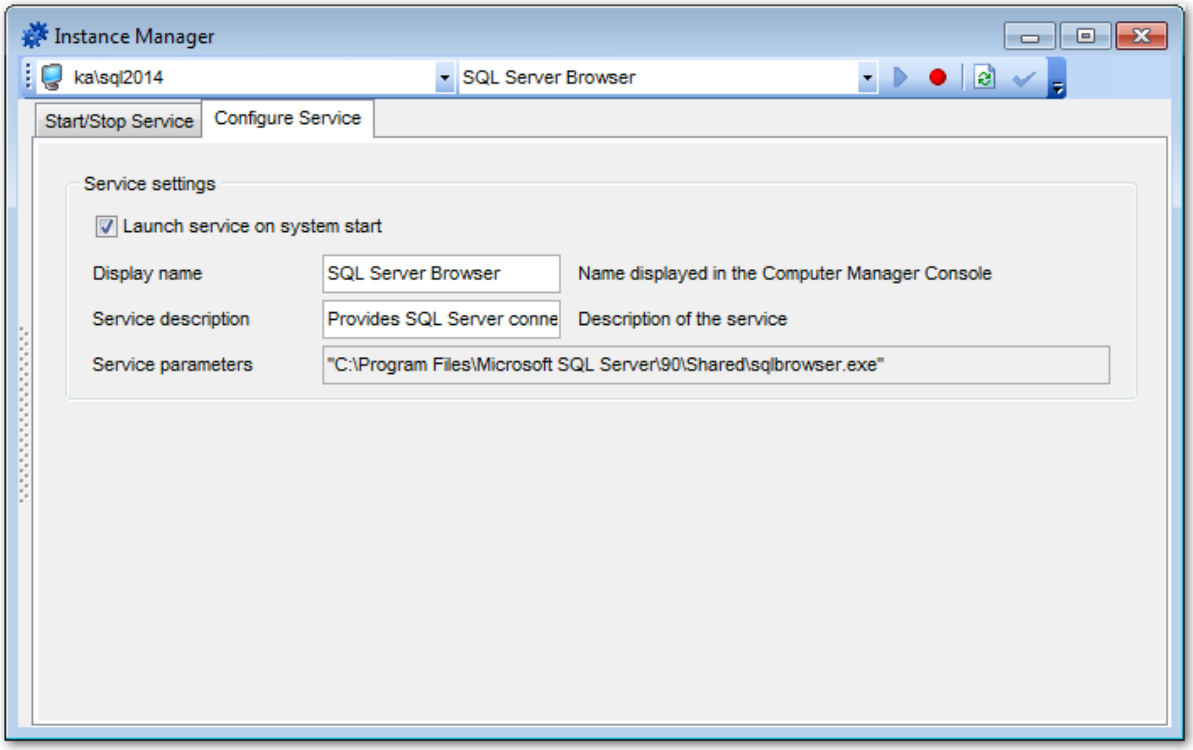
To stop/start the service click the **Stop/Start Service** button. Be aware that all users connected to the databases will be disconnected on stopping the server.

Log messages
This log shows all messages during server startup and shutdown.

Click the **Clear Log** button to clean all messages.

11.10.3 Configure Service

On the **Configure Service** tab you can set some service parameters.



Service Settings

Launch service on system start
Check this option to set the *Automatic* launch type of the selected service. If this option is unchecked then the launch type is *Manual*.

Display name
Specify the service name displayed in the Computer Management Console.

Service description
Provide the description for the selected service. This description will be displayed in the Computer Management Console.

Service parameters
In this field you can view the path to the service executable file.

To apply changes click the button on the toolbar or navigation bar.

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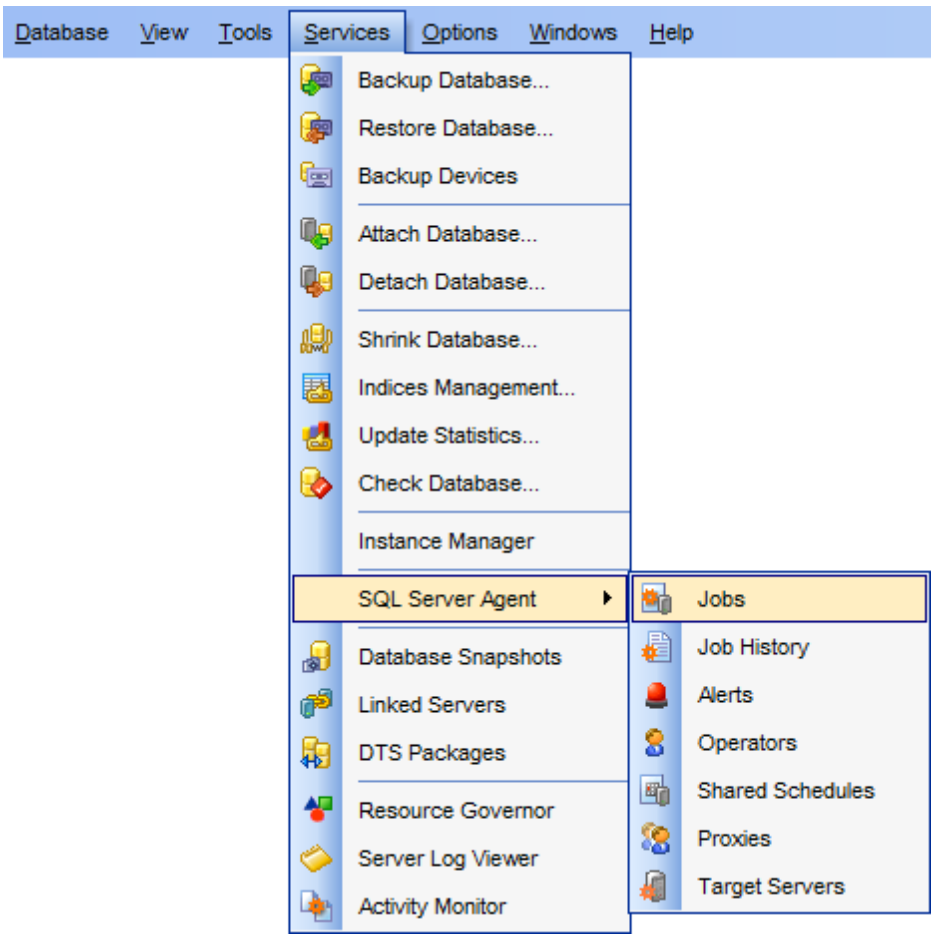
11.11 SQL Server Agent services

11.11.1 Jobs

A **job** is a specified set of operations performed sequentially by SQL Server Agent. A job can perform a wide range of activities, including running Transact-SQL scripts, command-line applications, Microsoft ActiveX scripts, Integration Services packages, Analysis Services commands and queries, or Replication tasks. Jobs can run repetitive or scheduled 823 tasks, and they can automatically notify operators 820 of job status by generating alerts 817.

SQL Server Agent **jobs** can be used to simplify SQL Server administration and make it more efficient by automating routine administrative tasks.

Before using SQL Server jobs, make sure that the **SQL Server Agent** service is running.



- Jobs manager 813
- Job Editor 373

Creating Jobs

To create a new job:
- right-click the **Jobs** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Job** item from the context menu 57;
- define job properties using the appropriate tabs of Job Editor 373.

or
- select the **Database | New Object...** main menu 951 item;
- select **Job** in the Create New Object 184 dialog;
- define job properties using Job Editor 373.

Hint: To create a new job, you can also select the **Services | SQL Server Agent | Jobs** main menu 951 item to open the **Jobs manager** and select the **Add Job...** item from the context menu or on the Navigation bar.

To create a new job with the same properties as one of existing jobs has:
- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a job in the DB Explorer 65 tree and select the **Duplicate Job <job_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new job and to edit the result SQL statement for creating the job.

Editing Jobs

To edit an existing job:
- select the job for editing in the DB Explorer 65 tree (type the first letters of the job name for quick search 85);
- right-click the object and select the **Edit Job <job_name>** context menu item, or simply double-click the job;
- edit job properties using the appropriate tabs of Job Editor 373.

To change the name of a job:
- select the Job to rename in the DB Explorer 65 tree;
- right-click the job alias and select the **Rename Job <job_name>...** item from the context menu 57;
- edit the job name using the **Rename Object...** dialog.

Dropping Jobs

To drop a job:
- select the job to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Job <job_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new job;
Ctrl+O to edit the selected job;
Ctrl+R to rename the job;
Shift+Del to drop the object.

To create, edit, rename and drop jobs, you can also use the **context menu** and the **Navigation bar** of Jobs manager 813.

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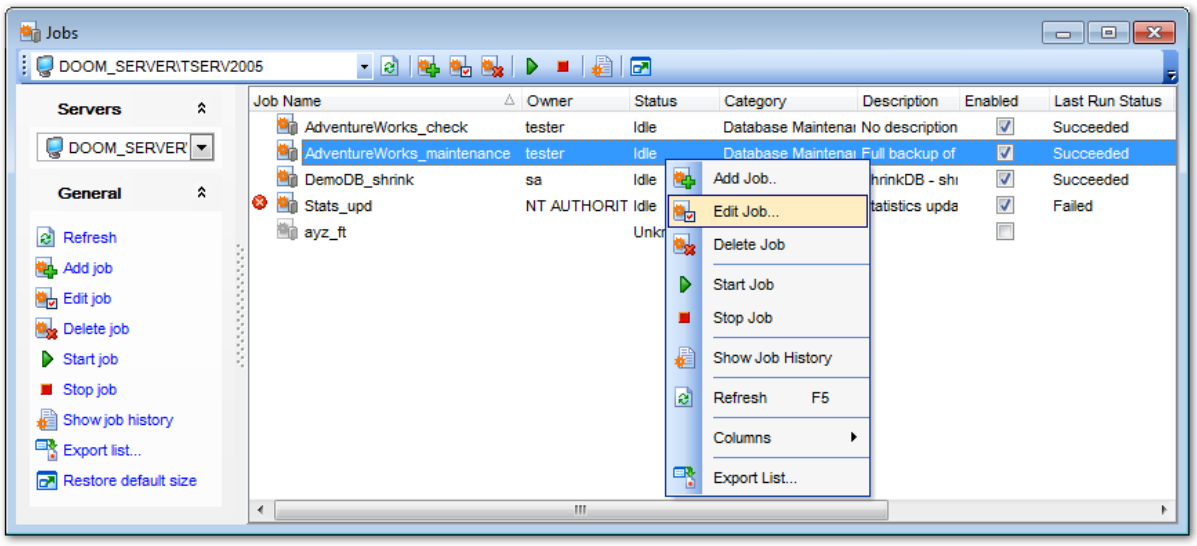
See also:
Job History 814
Job Editor 373

11.11.1.1 Jobs manager

The **Jobs manager** allows you to browse the list of **jobs** and manage them efficiently.

To launch the tool, select the **Services | SQL Server Agent | Jobs** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Jobs** item from the context menu 54.



The list displays the existing jobs as a grid with the following columns: *Job Name*, *Owner*, *Status*, *Category*, *Description*, *Enabled*, *Last Run Status*, *Last Run Date*, *Next Run Date*, *Schedules*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Hint: Enabled/disabled jobs are differentiated in the list by their icons: icons for disabled jobs are grayed out.

Note: Job events and properties are partially listed within the Job 374 tab of Job Editor 373.

Right-click an item within the list to call the **context menu** allowing you to *create* a new job and specify its properties using Job Editor 373, *start* an idle job, *stop* a running job, *edit* , *delete* the selected job, show job history 814, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of jobs to any of supported output file formats 971.

Jobs management tools are also available through the **Navigation bar** of the **Jobs manager**.

Availability:

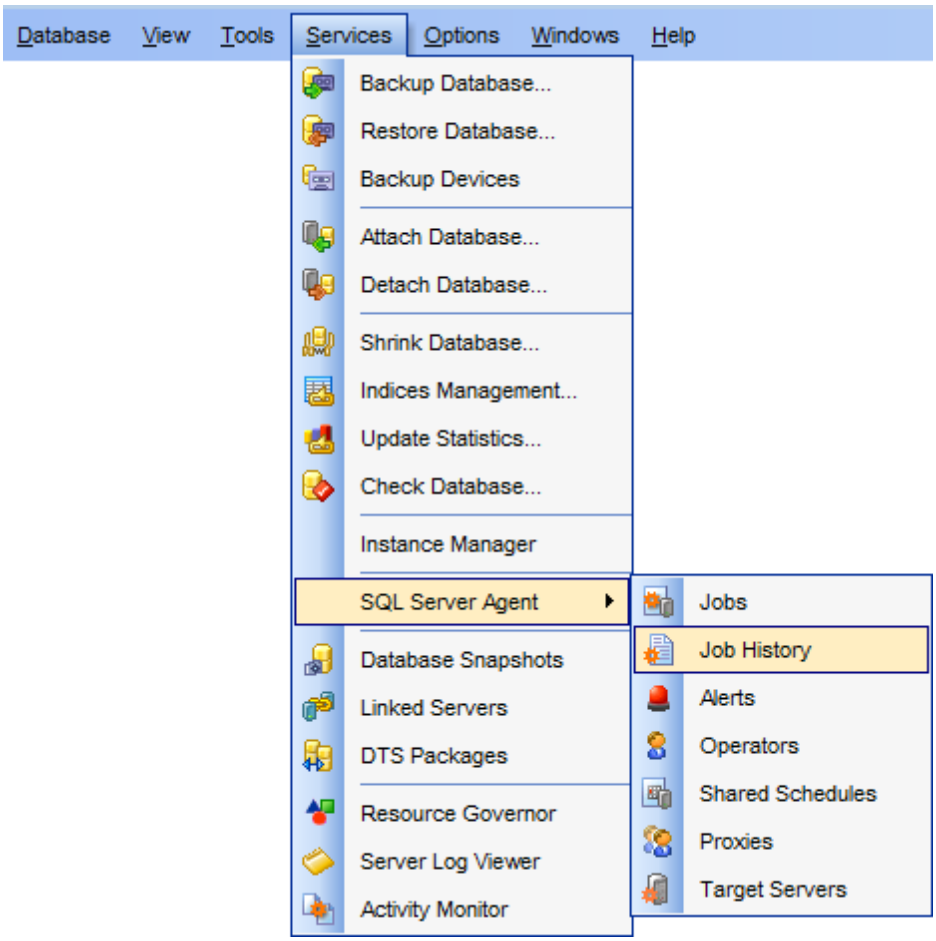
Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.11.2 Job History

The **Job History** window allows you to view the list of recent jobs 811 and the results of their execution.

Before using job history, make sure that the **SQL Server Agent** service is running.



- Viewing job history 815

- Filtering job history list 816

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

See also:

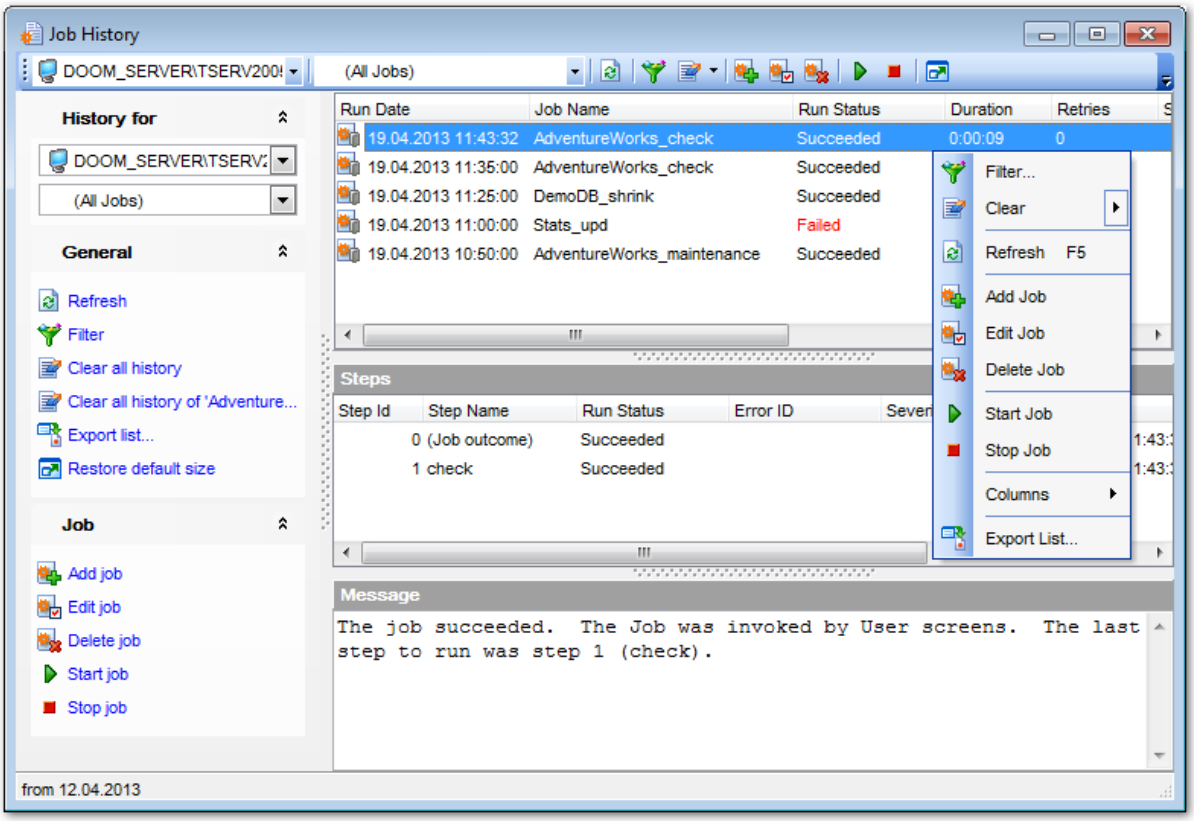
Jobs manager 813

Jobs Editor 373

11.11.2.1 Viewing job history

The **Job History** window allows you to browse the list of recently tried **jobs** and manage this list efficiently.

To launch the tool, select the **Services | SQL Server Agent | Job History** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Job History** item from the context menu 54.



The list displays the recent jobs as a grid with the following columns: *Run Date*, *Job Name*, *Run Status*, *Duration*, *Retries*, *Sent Email*, *Sent Pager*, *Net Sent*, *Server*.

Right-click an item within the list to call the **context menu** allowing you to filter jobs 816 in list, *clear* the history of all jobs or of the selected job, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the job history list to any of supported output file formats 971, add, edit and delete jobs.

Job history list management tools are also available through the **Navigation bar** of the **Job History** window.

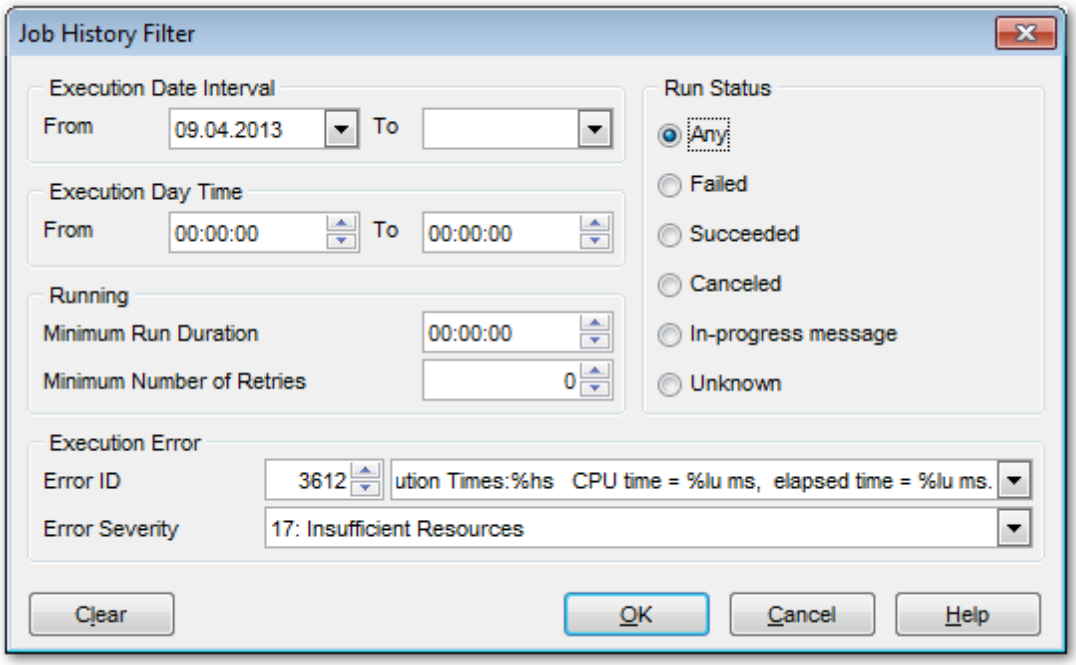
The **Steps** area displays the list of steps defined for the selected job, with the following attributes pertaining to each step: *Step ID*, *Step Name*, *Run Status*, *Error ID*, *Severity*, *Run Date*, *Duration*, *Retries*.

At the bottom of the **Job History** window the **Message** area is located. It allows you to view the details of the selected step execution.

11.11.2.2 Filtering job history list

The **Job History Filter** dialog is a filtering facility implemented in **Job History** list for your convenience.

To open the dialog, right-click within the **Job History** list and select the **Filter...** context menu item, or use the corresponding item of the **Navigation bar**.



The **Job History Filter** dialog provides the following options for flexible **Job History** list filtering:

Execution Date Interval
From ... To ...
Set the date interval criteria using the **date editor** which is activated when you click the Arrow-Down element of the combo-box.

Execution Day Time
From ... To ...
Set the day time interval criteria using the spinner controls.

Running
Minimum Run Duration
Minimum Number of Retries
Specify the minimum duration and number of job retries criteria using the spinner controls.

Run Status
Select the job run status criterion:
- *Any*
- *Failed*
- *Succeeded*
- *Canceled*
- *In-progress message*
- *Unknown*

Execution Error
This group allows you to specify criteria for the jobs that have been run with errors: *Error ID*, *Error message*, *Error Severity*.

Hint: If necessary, you can reset the current filter criteria using the **Clear** button.

11.11.3 Alerts

An **alert** is as an automated response to one or more events. You can define an alert to specify how SQL Server Agent should respond to their occurrence. An alert can respond to an event by notifying an administrator or running a job 811, or both. An alert can also forward an event to the Microsoft Windows application log on a different computer. By defining alerts, database administrators can monitor and manage SQL Server more effectively.

Before using SQL Server alerts, make sure that the **SQL Server Agent** service is running.

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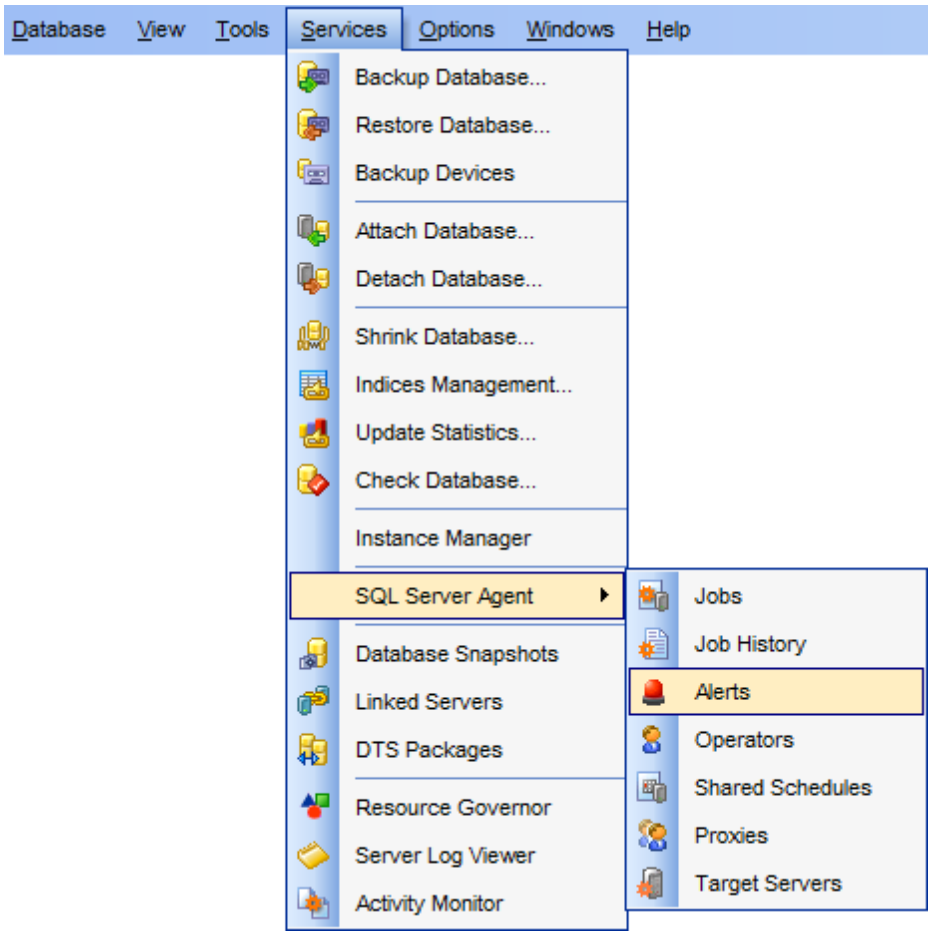


- Alerts manager 819
- Alert Editor 386

Creating Alerts

To create a new alert:
- right-click the **Alerts** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Alert** item from the context menu 57;
- define alert properties using the appropriate tabs of Alert Editor 386.

or
- select the **Database | New Object...** main menu 951 item;
- select **Alert** in the Create New Object 184 dialog;
- define alert properties using Alert Editor 386.

Hint: To create a new alert, you can also select the **Services | SQL Server Agent | Alerts** main menu 951 item to open the **Alerts manager** and select the **Add Alert...** item from the context menu or on the Navigation bar.

To create a new alert with the same properties as one of existing alerts has:
- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click an alert in the DB Explorer 65 tree and select the

Duplicate Alert <alert_name>... context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new alert and to edit the result SQL statement for creating the alert.

Editing Alerts

To edit an existing alert:
- select the alert for editing in the DB Explorer 65 tree (type the first letters of the alert name for quick search 85);
- right-click the object and select the **Edit Alert <alert_name>** context menu item, or simply double-click the alert;
- edit alert properties using the appropriate tabs of Alert Editor 386.

To change the name of an alert:
- select the alert to rename in the DB Explorer 65 tree;
- right-click the alert alias and select the **Rename Alert <alert_name>...** item from the context menu 57;
- edit the alert name using the **Rename Object...** dialog.

Dropping Alerts

To drop an alert:
- select the alert to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Alert <alert_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new alert;
Ctrl+O to edit the selected alert;
Ctrl+R to rename the alert;
Shift+Del to drop the object.

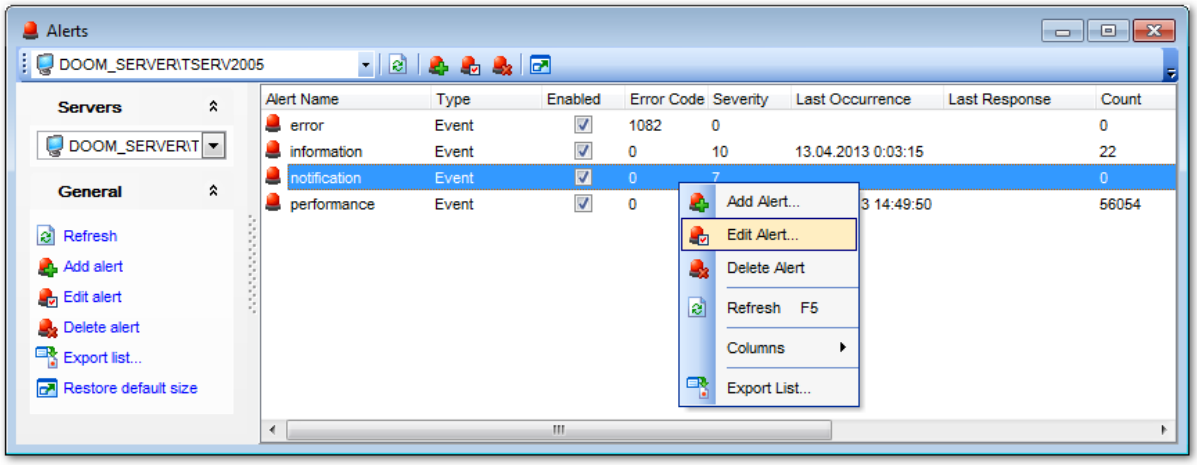
To create, edit, rename and drop alerts, you can also use the **context menu** and the **Navigation bar** of Alerts manager 819.

See also:
Alert Editor 386

11.11.3.1 Alerts manager

The **Alerts manager** allows you to browse the list of **alerts** and manage them efficiently.

To launch the tool, select the **Services | SQL Server Agent | Alerts** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Alerts** item from the context menu 54.



The list displays the alerts as a grid with the following columns: *Alert Name*, *Type*, *Enabled*, *Error Code*, *Severity*, *Last Occurrence*, *Sent Pager*, *Net Sent*, *Server*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Hint: Enabled/disabled alerts are differentiated in the list by their icons: icons for disabled alerts are grayed out.

Right-click an item within the list to call the **context menu** allowing you to *create* a new alert and specify its properties using Alert Editor 386, *edit*, *delete* the selected alert, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of alerts to any of supported output file formats 971.

Alerts management tools are also available through the **Navigation bar** of the **Alerts manager**.

Availability:

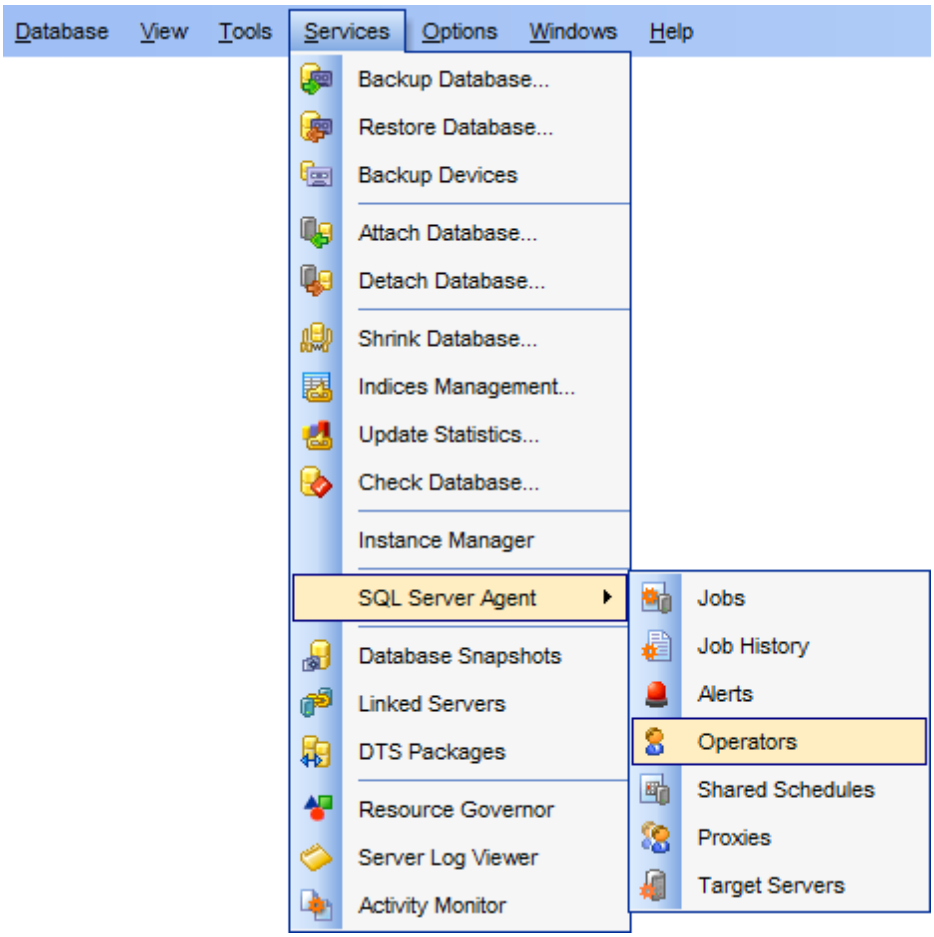
Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.11.4 Operators

An **operator** is the object that represents a single SQL Server operator. SQL Server operators receive alert 817 and job 811 status notification in response to events generated by the server. You can assign alert notifications 392 and job notifications 380 for any operator defined for the instance of SQL Server.

Before using SQL Server operators, make sure that the **SQL Server Agent** service is running.



- Operators manager 822
- Operator Editor 392

Creating Operators

To create a new operator:
- right-click the **Operators** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Operator** item from the context menu 57;
- define operator properties using the appropriate tabs of Operator Editor 392.

or
- select the **Database | New Object...** main menu 951 item;
- select **Operator** in the Create New Object 184 dialog;
- define operator properties using Operator Editor 392.

Hint: To create a new operator, you can also select the **Services | SQL Server Agent | Operators** main menu 951 item to open the **Operators manager** and select the **Add Operator...** item from the context menu or on the Navigation bar.

To create a new operator with the same properties as one of existing operators has:
- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click an operator in the DB Explorer 65 tree and select the **Duplicate Operator <operator_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new operator and to edit the result SQL statement for creating the operator.

Editing Operators

To edit an existing operator:
- select the operator for editing in the DB Explorer 65 tree (type the first letters of the operator name for quick search 85);
- right-click the object and select the **Edit Operator <operator_name>** context menu item, or simply double-click the operator;
- edit operator properties using the appropriate tabs of Operator Editor 392.

To change the name of an operator:
- select the operator to rename in the DB Explorer 65 tree;
- right-click the operator alias and select the **Rename Operator <operator_name>...** item from the context menu 57;
- edit the operator name using the **Rename Object...** dialog.

Dropping Operators

To drop an operator:
- select the operator to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Operator <operator_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new operator;
Ctrl+O to edit the selected operator;
Ctrl+R to rename the operator;
Shift+Del to drop the object.

To create, edit, rename and drop operators, you can also use the **context menu** and the **Navigation bar** of Operators manager 822.

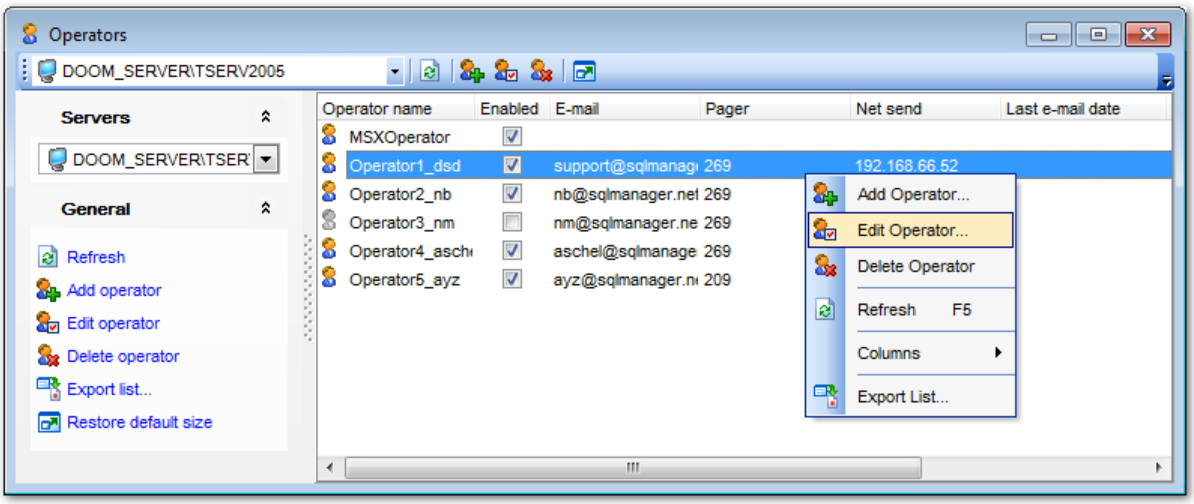
See also:

Operator Editor 392

11.11.4.1 Operators manager

The **Operators manager** allows you to browse the list of **operators** and manage them efficiently.

To launch the tool, select the **Services | SQL Server Agent | Operators** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Operators** item from the context menu 54.



The list displays the operators as a grid with the following columns: *Operator name*, *Enabled*, *E-mail*, *Pager*, *Net send*, *Last e-mail date*, *Last pager date*, *Last net send date*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Hint: Enabled/disabled operators are differentiated in the list by their icons: icons for disabled operators are grayed out.

Right-click an item within the list to call the **context menu** allowing you to *create* a new operator and specify its properties using Operator Editor 392, *edit*, *delete* the selected operator, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of operators to any of supported output file formats 971.

Operators management tools are also available through the **Navigation bar** of the **Operators manager**.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

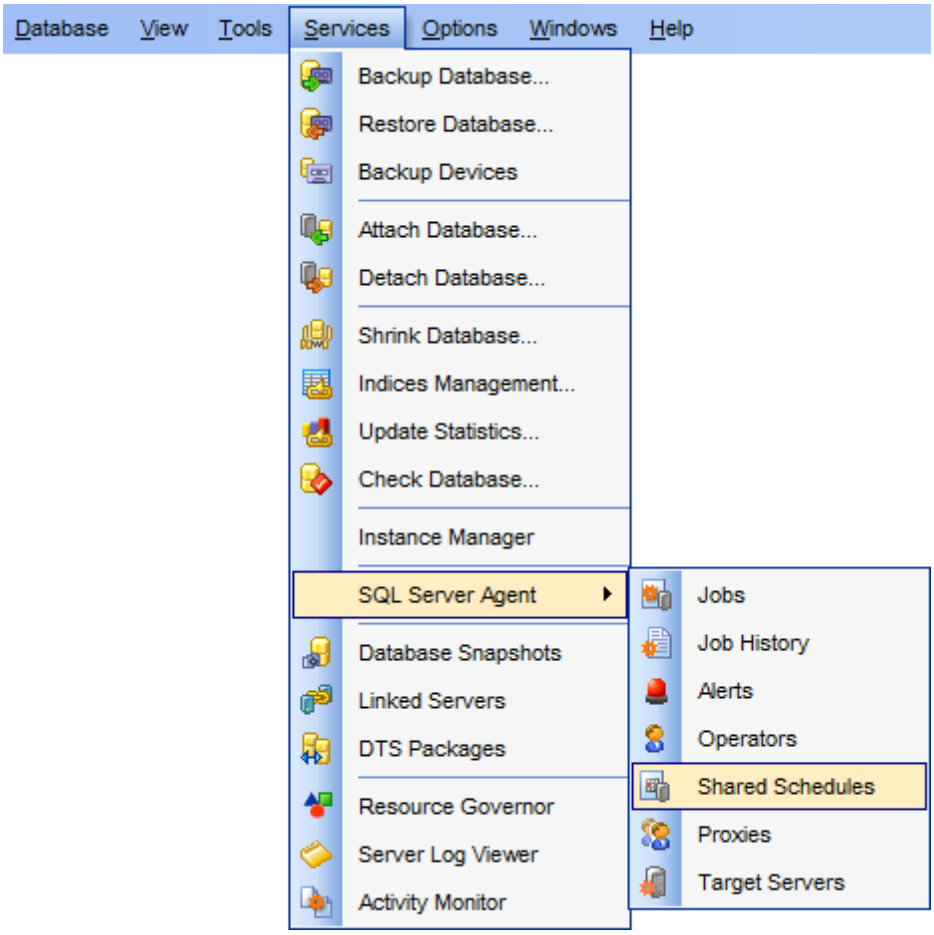
Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.11.5 Schedules

Shared schedules are multipurpose items that contain ready-to-use schedule information. You can create a shared schedule once, and then reference it in a subscription or property page when you need to specify schedule information.

Before using SQL Server schedules, make sure that the **SQL Server Agent** service is

running.



- Shared schedules manager 825
- Schedule Editor 382

Creating Schedules

To create a new schedule:
- right-click the **Schedules** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Schedule** item from the context menu 57;
- define schedule properties using the appropriate tabs of Schedule Editor 382.

or
- select the **Database | New Object...** main menu 951 item;
- select **Schedule** in the Create New Object 184 dialog;
- define schedule properties using Schedule Editor 382.

Hint: To create a new schedule, you can also select the **Services | SQL Server Agent | Shared Schedules** main menu 951 item to open the **Schedules manager** and select the **Add Schedule** item from the context menu or on the Navigation bar.

To create a new schedule with the same properties as one of existing schedules has:
- select the **Database | Duplicate Object...** menu item;

- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a schedule in the DB Explorer 65 tree and select the **Duplicate Schedule <schedule_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new schedule and to edit the result SQL statement for creating the schedule.

Editing Schedules

To edit an existing schedule:
- select the schedule for editing in the DB Explorer 65 tree (type the first letters of the schedule name for quick search 85);
- right-click the object and select the **Edit Schedule <schedule_name>** context menu item, or simply double-click the schedule;
- edit schedule properties using the appropriate tabs of Schedule Editor 382.

To change the name of a schedule:
- select the schedule to rename in the DB Explorer 65 tree;
- right-click the schedule alias and select the **Rename Schedule <schedule_name>...** item from the context menu 57;
- edit the schedule name using the **Rename Object...** dialog.

Dropping Schedules

To drop a schedule:
- select the schedule to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Schedule <schedule_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new schedule;
Ctrl+O to edit the selected schedule;
Ctrl+R to rename the schedule;
Shift+Del to drop the object.

To create, edit and drop schedules, you can also use the **context menu** and the **Navigation bar** of Shared schedules manager 825.

See also:

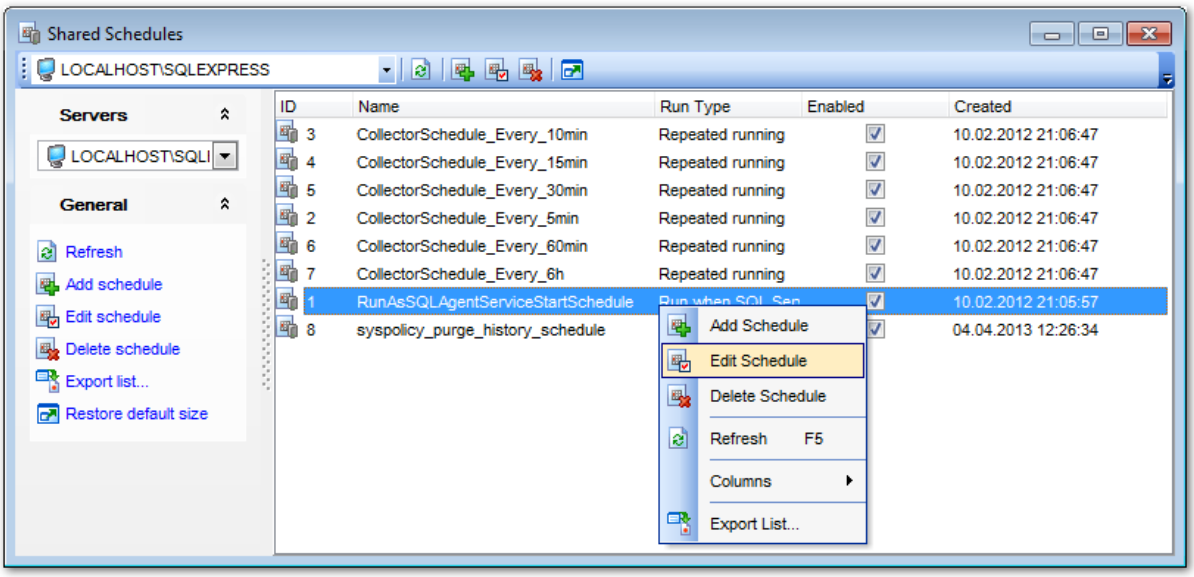
Schedule Editor 382

11.11.5.1 Shared schedules manager

The **Schedules manager** allows you to browse the list of **shared schedules** and manage them efficiently.

To launch the tool, select the **Services | SQL Server Agent | Shared Schedules** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks**

| **Shared Schedules** item from the context menu 54.



The list displays the shared schedules as a grid with the following columns: *ID*, *Name*, *Run Type*, *Enabled*, *Created*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Hint: Enabled/disabled schedules are differentiated in the list by their icons: icons for disabled schedules are grayed out.

Right-click an item within the list to call the **context menu** allowing you to *create* a new schedule and specify its properties using Schedule Editor 382, *edit*, *delete* the selected schedule, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of schedules to any of supported output file formats 971.

Schedules management tools are also available through the **Navigation bar** of the **Schedules manager**.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

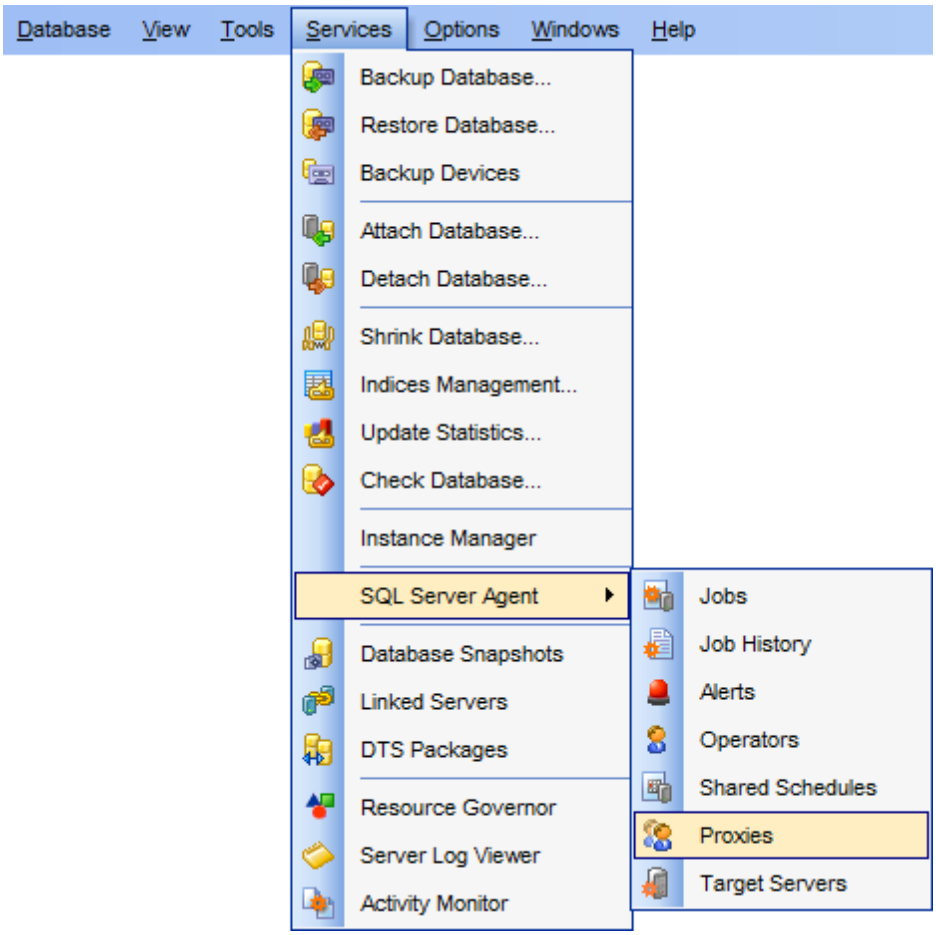
11.11.6 Proxies

A Microsoft® SQL Server Agent **proxy** defines the security context for a job 811 step. A proxy provides SQL Server Agent with access to the security credentials 401 for a

Microsoft Windows user. Each proxy can be associated with one or more subsystems. A job step 375 that uses the proxy can access the specified subsystems by using the security context of the Windows user. Before SQL Server Agent runs a job step 375 that uses a proxy, SQL Server Agent impersonates the credentials 401 defined in the proxy, and then runs the job step by using that security context.

SQL Server **proxies** can be used to help database administrators ensure that each job step runs with the minimum permissions required to perform its task.

Before using SQL Server proxies, make sure that the **SQL Server Agent** service is running.



- Proxies manager 829
- Proxy Editor 397

Creating Proxies

To create a new proxy:

- right-click the **Proxies** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Proxy** item from the context menu 57;

- define proxy properties using the appropriate tabs of Proxy Editor 397.

or

- select the **Database | New Object...** main menu 951 item;
- select **Proxy** in the Create New Object 184 dialog;
- define proxy properties using Proxy Editor 397.

Hint: To create a new proxy, you can also select the **Services | SQL Server Agent | Proxies** main menu 951 item to open the **Proxies manager** and select the **Add Proxy...** item from the context menu or on the Navigation bar.

To create a new proxy with the same properties as one of existing proxies has:

- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a proxy in the DB Explorer 65 tree and select the **Duplicate Proxy <proxy_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new proxy and to edit the result SQL statement for creating the proxy.

Editing Proxies

To edit an existing proxy:

- select the proxy for editing in the DB Explorer 65 tree (type the first letters of the proxy name for quick search 85);
- right-click the object and select the **Edit Proxy <proxy_name>** context menu item, or simply double-click the proxy;
- edit proxy properties using the appropriate tabs of Proxy Editor 397.

To change the name of a proxy:

- select the proxy to rename in the DB Explorer 65 tree;
- right-click the proxy alias and select the **Rename Proxy <proxy_name>...** item from the context menu 57;
- edit the proxy name using the **Rename Object...** dialog.

Dropping Proxies

To drop a proxy:

- select the proxy to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Proxy <proxy_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new proxy;
Ctrl+O to edit the selected proxy;
Ctrl+R to rename the proxy;
Shift+Del to drop the object.

To create, edit and drop proxies, you can also use the **context menu** and the **Navigation bar** of Proxies manager 829.

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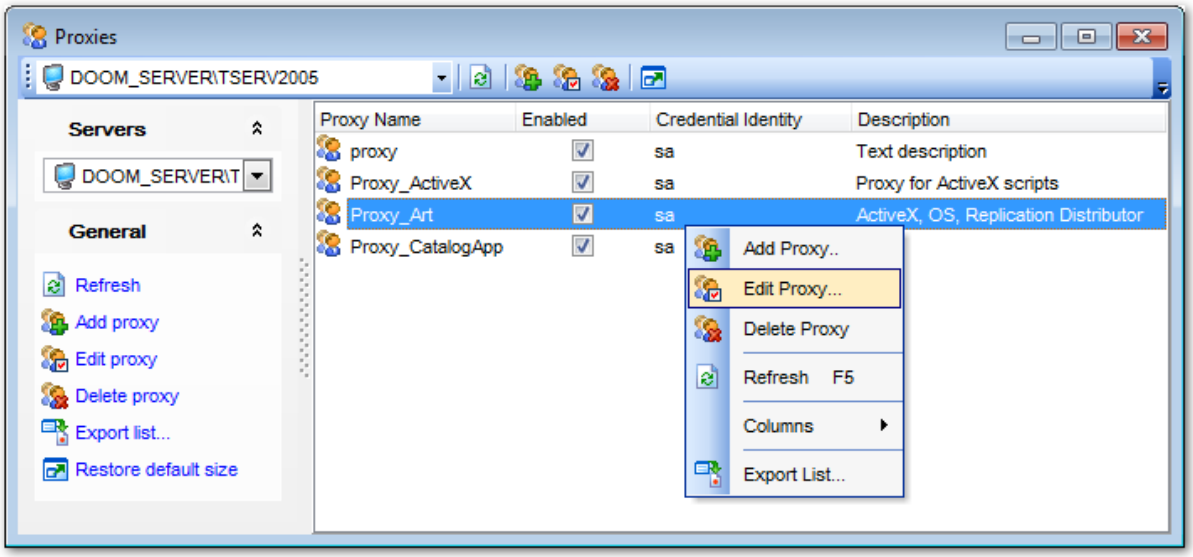
See also:
Proxy Editor 397

11.11.6.1 Proxies manager

The **Proxies manager** allows you to browse the list of **proxies** and manage them efficiently.

To launch the tool, select the **Services | SQL Server Agent | Proxies** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Proxies** item from the context menu 54.



The list displays the proxies as a grid with the following columns: *Proxy Name*, *Enabled*, *Description*, *Credential Identity*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Hint: Enabled/disabled proxies are differentiated in the list by their icons: icons for disabled proxies are grayed out.

Right-click an item within the list to call the **context menu** allowing you to *create* a new proxy and specify its properties using Proxy Editor 397, *edit*, *delete* the selected proxy, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of proxies to any of supported output file formats 971.

Proxies management tools are also available through the **Navigation bar** of the **Proxies manager**.

Availability:
Full version (for **Yes**

Windows)	
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.11.7 Target Servers

Multiserver administration which consists in automating administration across multiple instances of SQL Server is performed when there is a necessity to manage two or more servers and to schedule information flows between enterprise servers for data warehousing.

In a multiserver system, there is at least one **master server** and at least one **target server**.
A *master server* distributes jobs 811 to *target servers*, and receives events from them. A master server also stores the central copy of job definitions for jobs that are run on target servers. Target servers connect periodically to the master server to update their schedule 823 of jobs. If a new job exists on the master server, the target server downloads the job. After the target server completes the job, it reconnects to the master server and reports the status of the job.

Before using target servers, make sure that the **SQL Server Agent** service is running.

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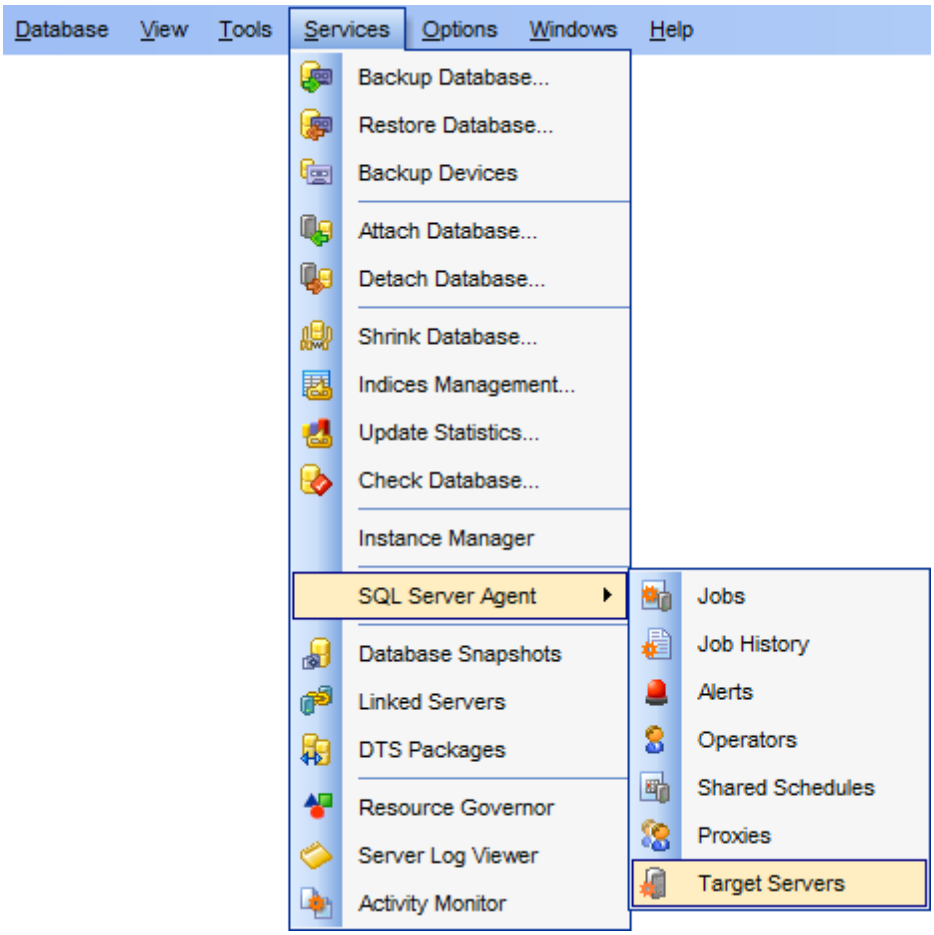


- Working with Target Servers manager 831

Availability:

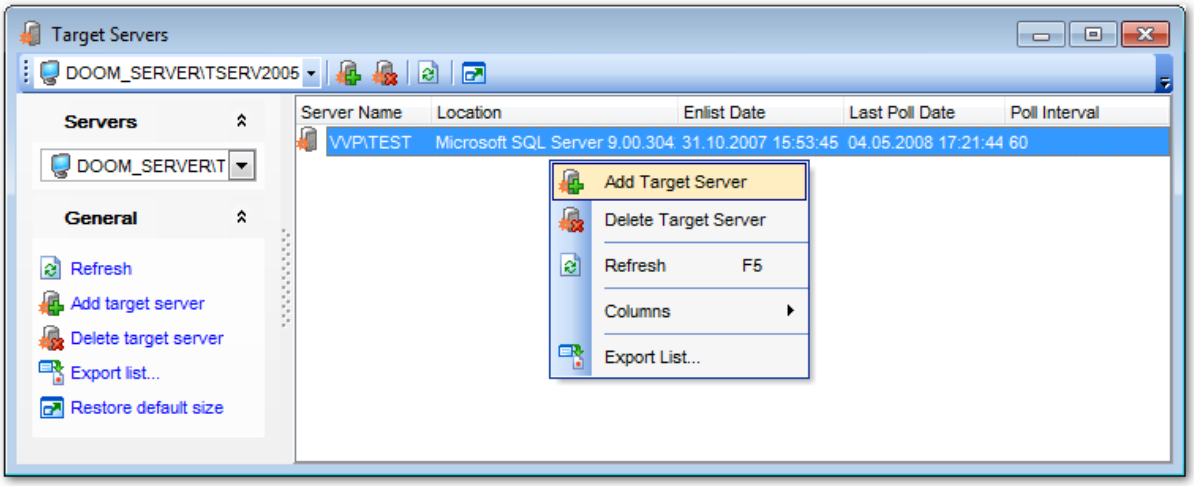
Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.11.7.1 Target Servers manager

The **Target Servers manager** is intended for easy and efficient management of target servers when multiserver administration is performed. The **Target Servers manager** allows you to browse the list of **target servers** and manage them efficiently.

To launch the tool, select the **Services | SQL Server Agent | Target Servers** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Target Servers** item from the context menu 54.



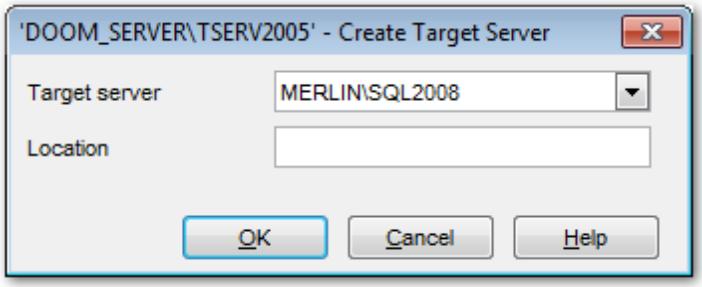
The list displays the target servers as a grid with the following columns: *Server Name*, *Location*, *Enlist Date*, *Last Poll Date*, *Poll Interval*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Right-click an item within the list to call the **context menu** allowing you to *create* a new target server using the **Add New Target Server** dialog, *delete* the selected target server, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of target servers to any of supported output file formats 971.

Target servers management tools are also available through the **Navigation bar** of the **Target Servers manager**.

The **Add New Target Server** dialog allows you to register a new target server.

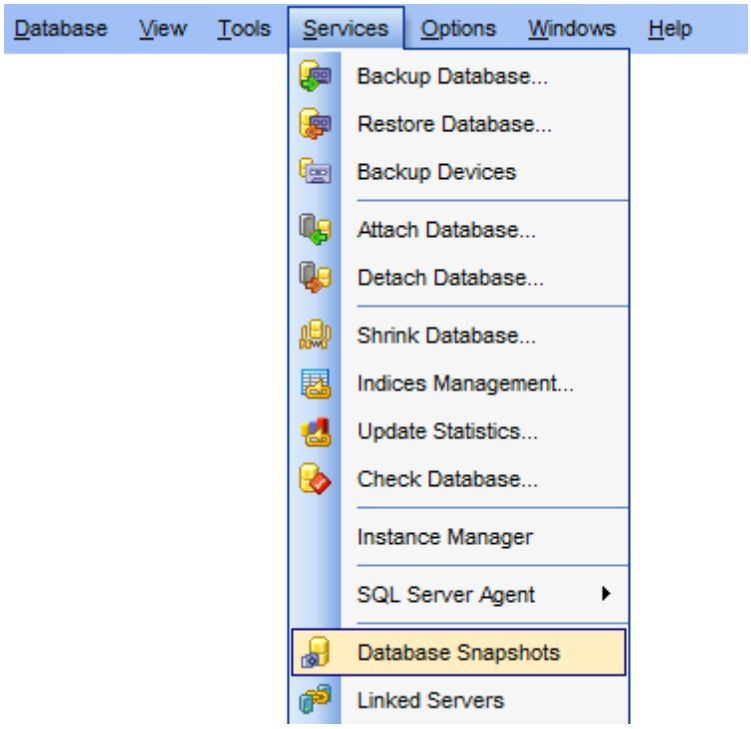


Target server
Type in or use the drop-down list to select the server instance to be registered.

Location
Specify the target server location.

11.12 Database Snapshots

Database snapshots were implemented in Microsoft® SQL Server 2005, and they are available only in the Enterprise Edition of Microsoft® SQL Server 2005 and higher.
A **Database snapshot** is a read-only, static view of a database (the source database). Multiple snapshots can exist on a source database and always reside on the same server instance as the database. Each database snapshot is transactionally consistent with the source database as of the moment of the snapshot's creation.
Snapshots can be used for reporting purposes. Also, in the event of a user error on a source database, you can revert the source database to the state it was in when the snapshot was created. Data loss is confined to updates to the database since the snapshot's creation.

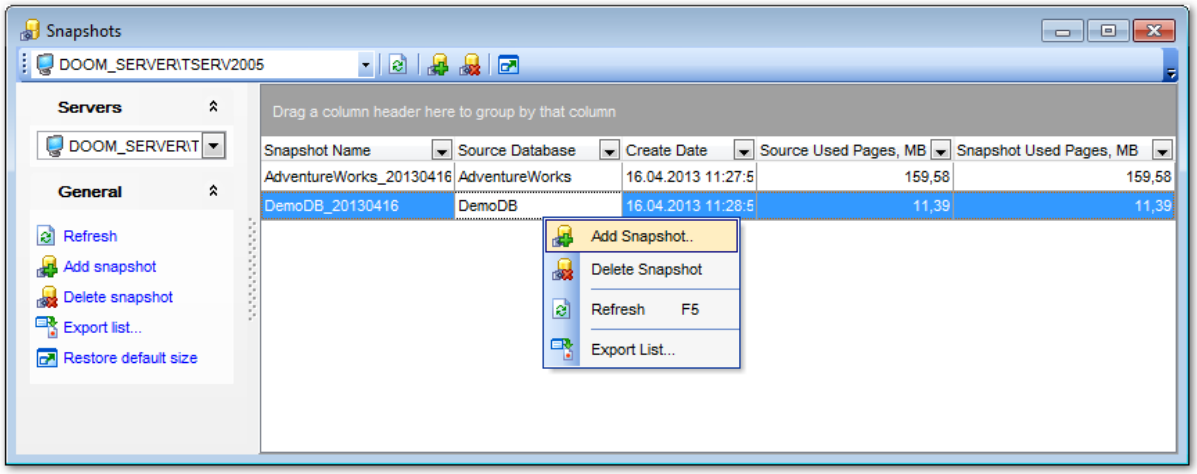


- Managing database snapshots 833

11.12.1 Managing database snapshots

The **Snapshots manager** allows you to browse the list of **database snapshots** and manage them efficiently.

To launch the tool, select the **Services | Database Snapshots** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Database Snapshots** item from the context menu 54.



The list displays the existing database snapshots as a grid with the following columns: *Snapshot Name*, *Source Database*, *Create Date*, *Source Used Pages (MB)*, *Snapshot Used Pages (MB)*. If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

Right-click an item within the list to call the **context menu** allowing you to *create* a new snapshot and specify its properties using the Add New Database Snapshot 834 dialog, *delete* the selected snapshot, or *refresh* the list. Using the context menu you can also export 537 the list of database snapshots to any of supported output file formats 971.

Database snapshots management tools are also available through the **Navigation bar** of the **Snapshots manager**.

Availability:

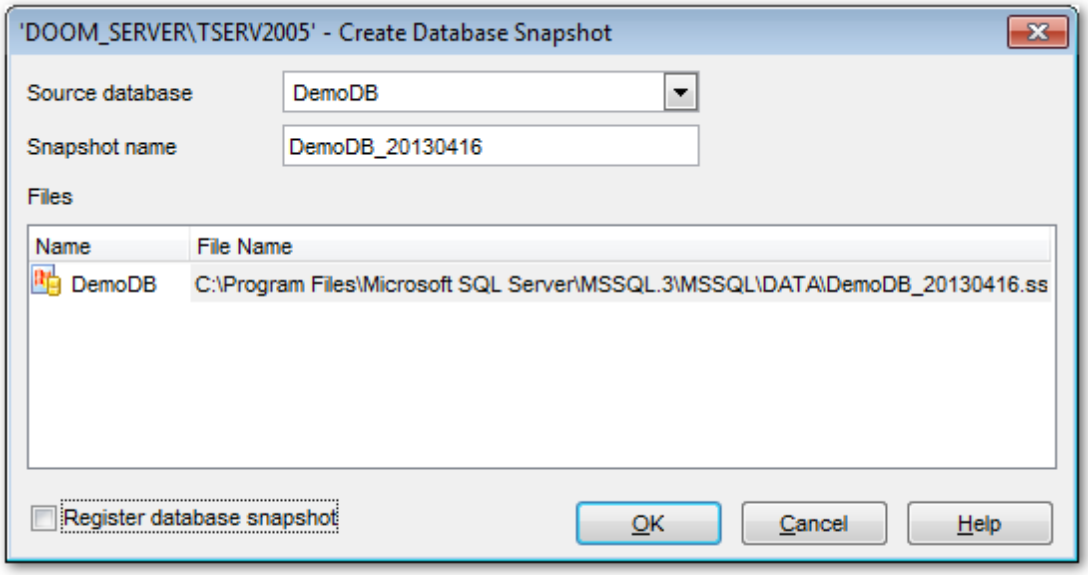
Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.12.2 Database snapshot properties

The **Add New Database Snapshot** dialog opens automatically when you create a new database snapshot and allows you to define the new snapshot parameters.

To call the dialog, right-click within the snapshots list in the Snapshots manager 833 and select the **Add Snapshot...** context menu item.



Source database
Use the drop-down list to select the source database for the new snapshot.

Snapshot name
By default, the snapshot name is generated by the application automatically on the basis of the source database name and the snapshot creation date. You can modify the name for the new snapshot, or leave the name unchanged. Note that each database snapshot requires a unique database name.

The **Files** area lists the database file(s) of the new database snapshot. The file name contains the name of the source database file and the snapshot creation date.

☑ **Register database**
This option indicates that the Database Registration Info 120 dialog for the new database will appear immediately after the database snapshot is created (you need to register the database to start working with it in SQL Manager). If you intend to register the database later, uncheck this option.

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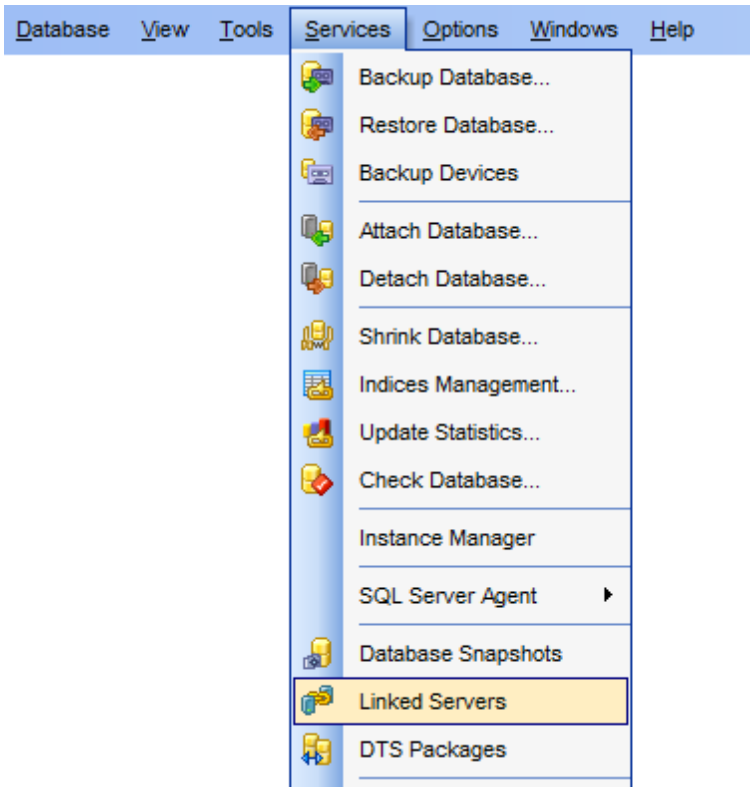
11.13 Linked Servers

A **Linked server** is a virtual server that can be defined to SQL Server 2005 (and higher) with all the information required to access an OLE DB data source. A **Linked server** configuration enables SQL Server to execute commands against OLE DB data sources on remote servers. **Linked servers** provide a number of features: remote server access; the ability to issue distributed queries, updates, commands and transactions on heterogeneous data sources; the ability to address diverse data sources universally.



- Linked servers manager 837
- Linked Server Editor 404

Creating Linked Servers

To create a new linked server:

- right-click the **Linked Servers** node (within the **Server Objects** branch) or any object within this node in the DB Explorer 65 tree and select the **New Linked Server** item from the context menu 57;
- define linked server properties using the appropriate tabs of Linked Server Editor 404.

or

- select the **Database | New Object...** main menu 951 item;
- select **Linked Server** in the Create New Object 184 dialog;
- define linked server properties using Linked Server Editor 404.

Hint: To create a new linked server, you can also select the **Services | Linked Servers** main menu 951 item to open the **Linked servers manager** and select the **Add Linked Server** item from the context menu or on the Navigation bar.

To create a new linked server with the same properties as one of existing linked servers has:
- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 186.

Alternatively, you can right-click a linked server in the DB Explorer 65 tree and select the **Duplicate Linked Server <linked_server_name>...** context menu item.

Duplicate Object Wizard 186 allows you to select the server to create a new linked server and to edit the result SQL statement for creating the linked server.

Editing Linked Servers

To edit an existing linked server:
- select the linked server for editing in the DB Explorer 65 tree (type the first letters of the Linked Server name for quick search 85);
- right-click the object and select the **Edit Linked Server <linked_server_name>** context menu item, or simply double-click the linked server;
- edit linked server properties using the appropriate tabs of Linked Server Editor 404.

Dropping Linked Servers

To drop a linked server:
- select the linked server to drop in the DB Explorer 65 tree;
- right-click the object and select the **Drop Linked Server <linked_server_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 986:
Ctrl+N to create a new linked server;
Ctrl+O to edit the selected linked server;
Shift+Del to drop the object.

To create, edit and drop linked servers, you can also use the **context menu** and the **Navigation bar** of Linked servers manager 837.

See also:
Linked Server Editor 404

11.13.1 Linked servers manager

The **Linked servers manager** allows you to browse the list of **linked servers** and manage them efficiently.

To launch the tool, select the **Services | Linked Servers** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Linked Servers** item from the context menu 54.

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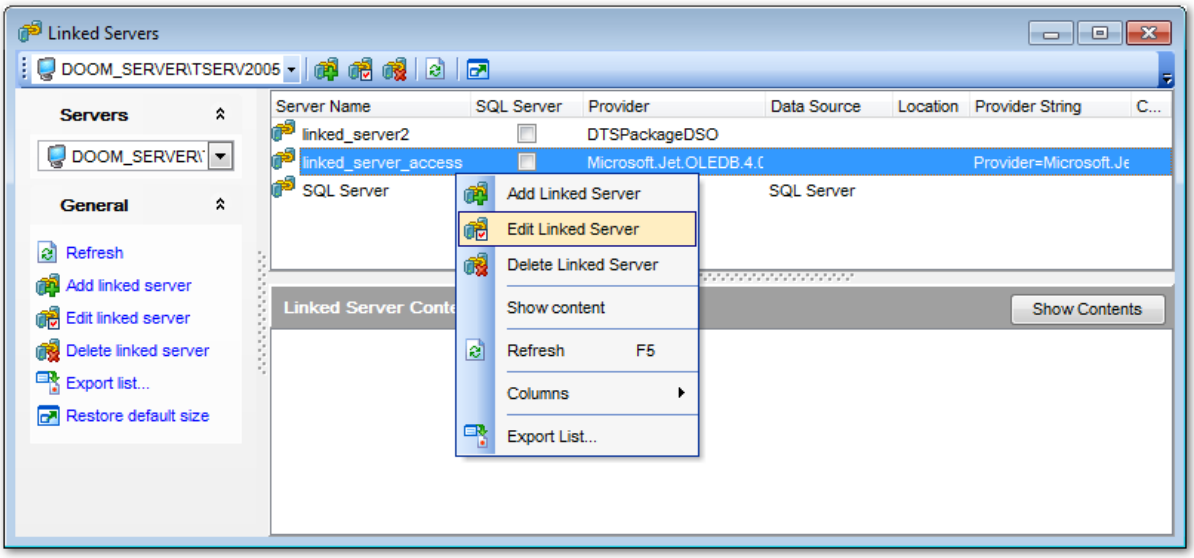


The list displays the existing linked servers as a grid with the following columns: *Server Name*, *SQL Server*, *Provider*, *Data Source*, *Location*, *Provider String*, *Catalog*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Right-click an item within the list to call the **context menu** allowing you to *create* a new linked server and specify its properties using Linked Server Editor 404, *edit*, *delete* the selected linked server, retrieve its *content*, *refresh* the list, or show/hide columns of the list. Using the context menu you can also export 537 the list of linked servers to any of supported output file formats 971.

Linked servers management tools are also available through the **Navigation bar** of the **Linked servers manager**.

To display the actual linked server contents, press the **Show Contents** button.

Hint: Linked server contents are also available within the Content 408 tab of Linked Server Editor 404.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

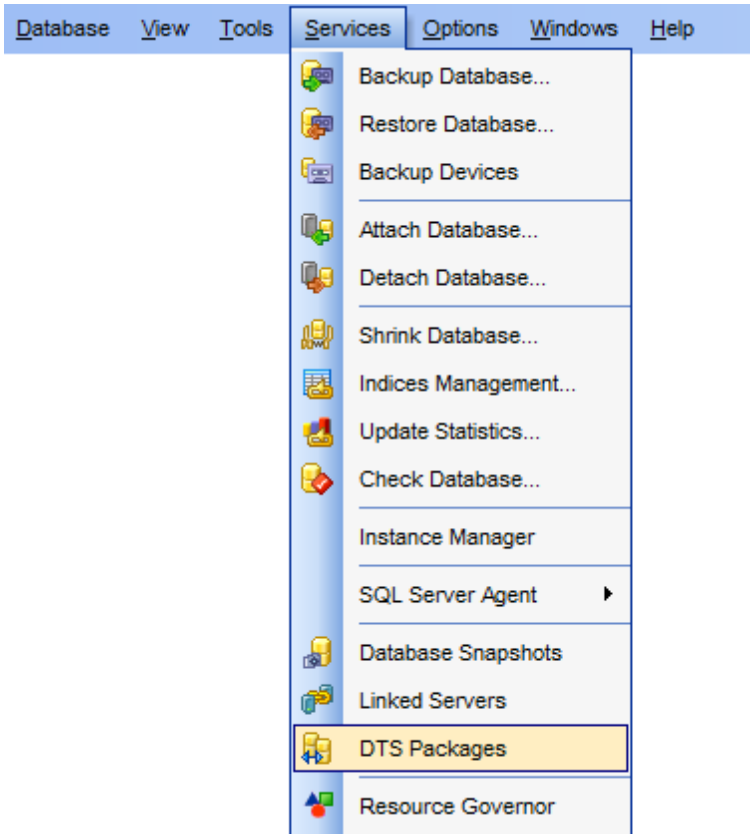
Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.14 DTS Packages

In SQL Server 2000, **Data Transformation Services** (**DTS**) is a component built to take data from one OLE DB data source, perform certain operations and store it in a destination OLE DB data source. DTS consists of **packages** which define a particular set of work that forms a logical work item. **DTS Packages** contain multiple connections to data sources, tasks to be performed, workflows. Examples of tasks include copying data from source to destination connections, transforming data from a source connection and placing the transformed data in the destination connection, executing a set of Microsoft ActiveX scripts or Transact-SQL statements against a connection.

In SQL Server 2005 (and higher), **Integration Services** (**SSIS**) packages are provided for data warehousing purposes.

SQL Manager for SQL Server provides running **Data Transformation Services** (**DTS**) packages that were developed by using SQL Server 2000 tools. These can be run in SQL Server 2005 and higher, alongside **Integration Services** (**SSIS**) packages.



- DTS packages manager 840
- DTS package properties 427

See also:

DTS Packages Editor 427

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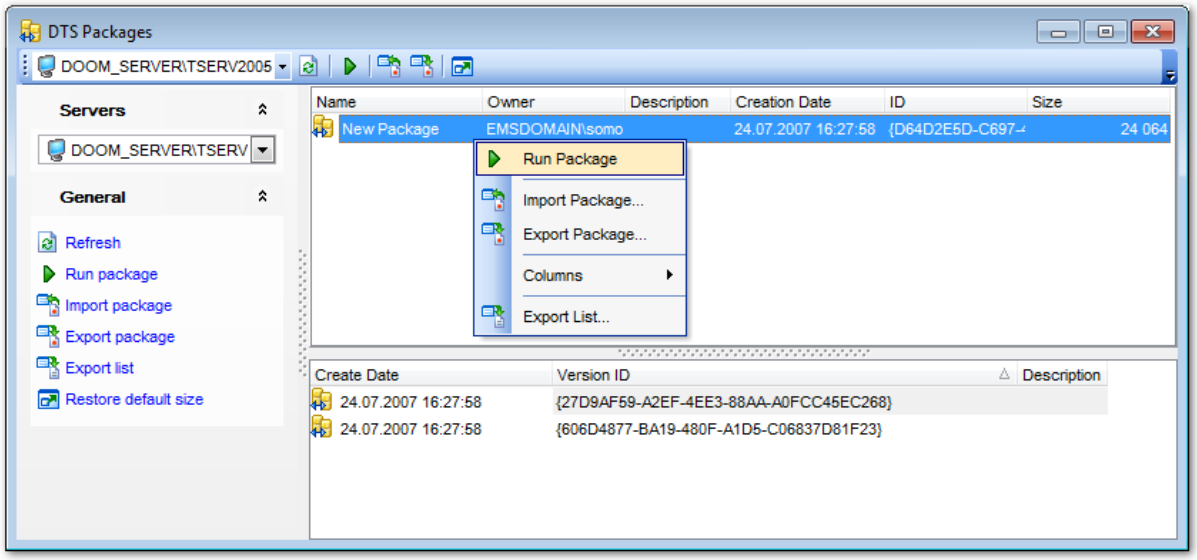
11.14.1 DTS Packages manager

The **DTS Packages manager** allows you to browse the list of **DTS packages** and manage them efficiently.

Using this tool you can include SQL Server 2000 DTS packages in SQL Server 2005 (and higher) data transformation solutions. A package can include both Execute Package tasks and Execute DTS 2000 Package tasks because each type of task uses a different version of the run-time engine.

To launch the tool, select the **Services | DTS Packages** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | DTS Packages** item from the context menu 54.



The list displays the existing DTS packages as a grid with the following columns: *Name*, *Owner*, *Description*, *Create Date*, *ID*, *Size*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Right-click an item within the list to call the **context menu** allowing you to *run* a package, *import* a package, *export* the selected DTS package, or show/hide columns of the list. Using the context menu you can also export 537 the list of DTS packages to any of supported output file formats 971.

DTS packages management tools are also available through the **Navigation bar** of the **DTS Packages manager**.

At the bottom of the **DTS Packages manager** window the info area is located. It displays common information pertaining to the selected package: *creation date*, *version ID* and *description*.

Hint: These properties are also available within the modal DTS Package properties 427 dialog which is called through the **DTS Package Properties...** context menu item of the DTS package alias in DB Explorer 65.

If you need to remove a package, right-click the package in the information area and select the **Delete** popup menu item.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

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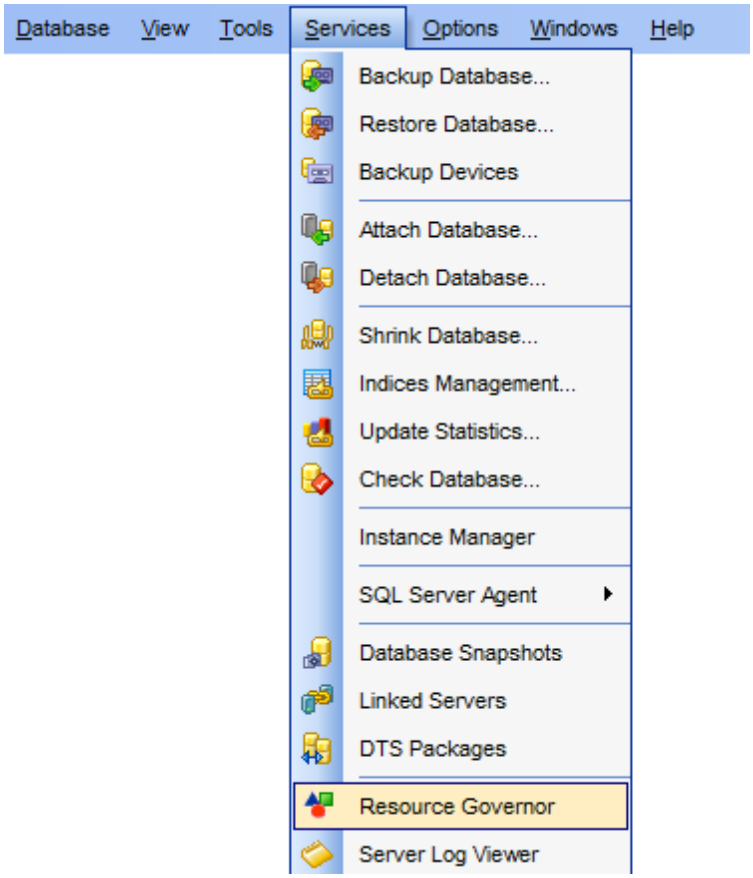
11.15 Resource Governor

Resource Governor is a tool that implements the *Resource Governor* technology introduced in SQL Server 2008 which enables you to manage SQL Server workload and resources by specifying limits on resource consumption by incoming requests.

To launch the tool, select the **Services | Resource Governor** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Resource Governor** item from the context menu 54.



- Using Navigation bar and Toolbar 843
- Working with Resource Governor 843

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.15.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Resource Governor**.

The **Navigation bar** of **Resource Governor** allows you to:

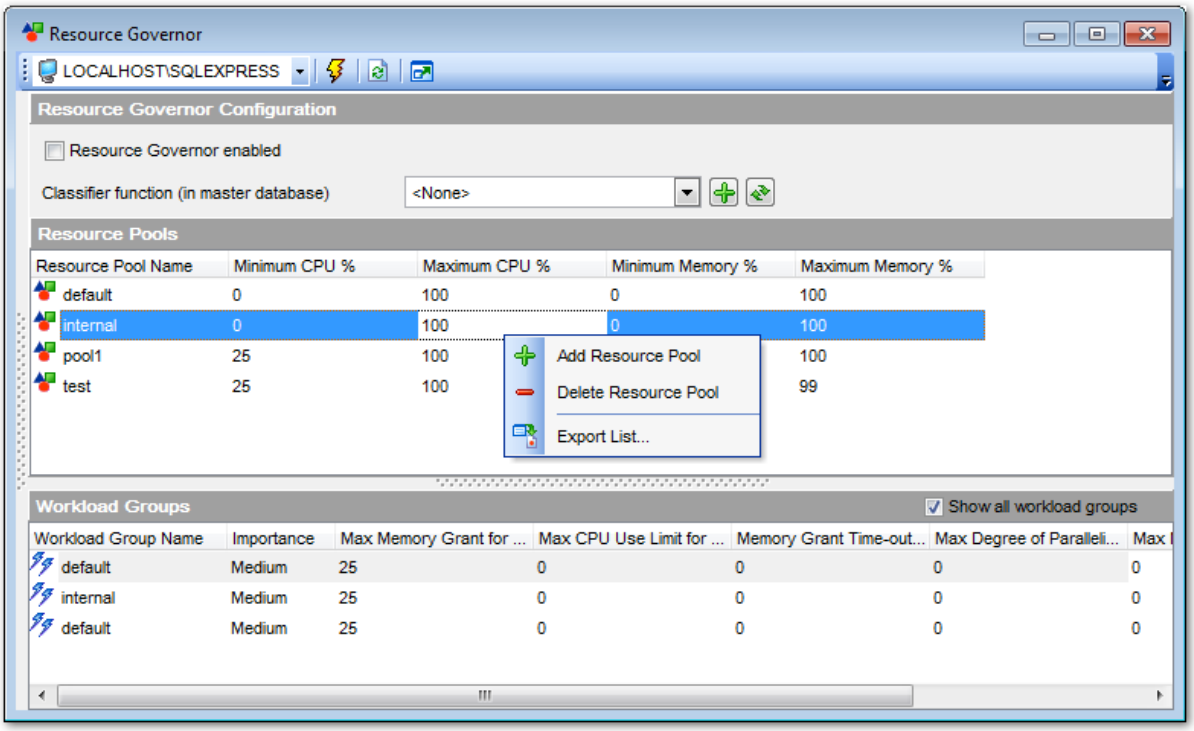
Servers
select a server instance for managing resources

General
compile changes
refresh the content of the window
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Resource Governor** window. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

11.15.2 Working with Resource Governor

The **Resource Governor** window consists of three basic areas: **Resource Governor Configuration**, **Resource Pools** and **Workload Groups**.



Resource Governor Configuration

Resource Governor enabled

This option enables/disables Resource Governor.

Classifier function

Use the drop-down list to select the user-defined function 263 whose return values will be used for classifying sessions that are then routed to the appropriate workload group.

To create a new function, click the button. To refresh the function list, click the button.

Note: If there are pending changes in Resource Governor configuration, you will need to reconfigure Resource Governor to apply these changes using the corresponding **Reconfigure** button.

The **Resource Pools** list displays the resource pools as a grid with the following columns: *Resource Pool Name*, *Minimum CPU (%)*, *Maximum CPU (%)*, *Minimum Memory (%)*, *Maximum Memory (%)*. If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

To set a value, click in the cell you need, and type in the required value, or use the spinner control for this purpose.

Right-click an item within the **Resource Pools** list to call the **context menu** allowing you to *add* a new resource pool, *delete* the selected resource pool, or export 537 the list to any of supported output file formats 971.

The **Workload Groups** list displays the workload groups as a grid with the following columns: *Workload Group Name*, *Importance*, *Max Memory Grant for Request (%)*, *Max CPU Use Limit for Request (sec)*, *Memory Grant Time-out for Request (sec)*, *Max Degree of Parallelism*, *Max Number of Requests*, *Resource Pool*. If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Show all workload groups
If this option is selected, all workload groups are displayed in the list, otherwise only those associated with the currently selected resource pool.

To set a value, click in the cell you need, and type in the required value, or use the spinner control for this purpose.
To associate a workload group with a resource pool, click in a cell of the *Resource Pool* column and select the resource pool you need from the drop-down list.

Right-click an item within the **Workload Groups** list to call the **context menu** allowing you to *add* a new workload group, *delete* the selected workload group, or export 537 the list to any of supported output file formats 971.

To apply changes, use the **Compile** item available within the Navigation bar 843 and toolbar 843.

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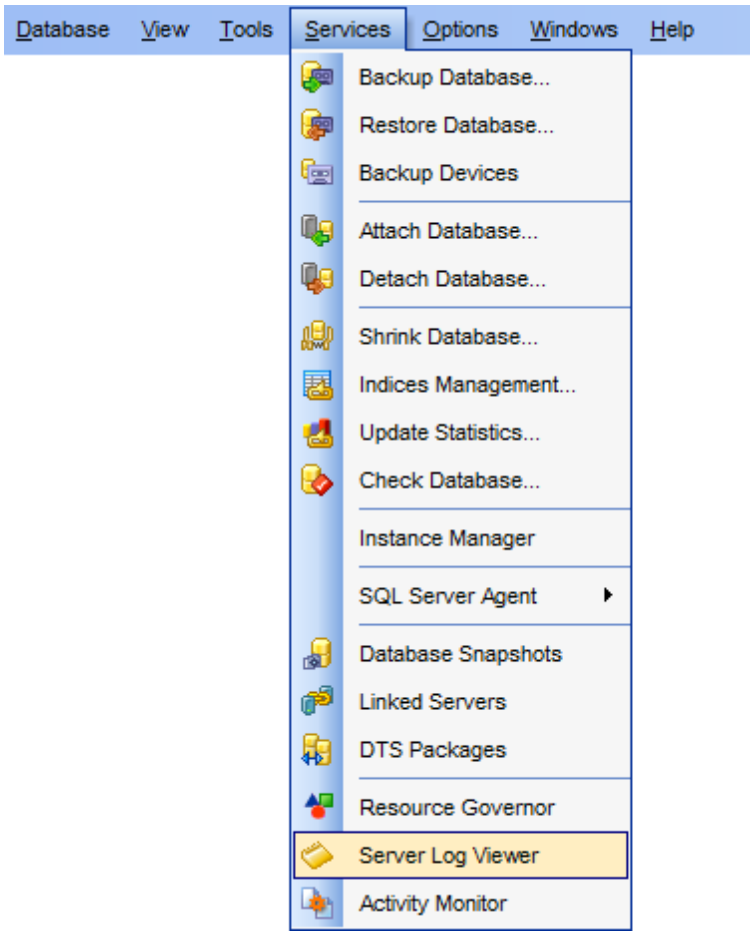
11.16 Server Log Viewer

Server Log Viewer allows you to analyze SQL Server server logs in a simple way, providing the ability to sort, filter and group log statements.

To launch the tool, select the **Services | Server Log Viewer** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Server Log Viewer** item from the context menu 54.



- Using Navigation bar and Toolbar 847
- Working with Server Log Viewer 847

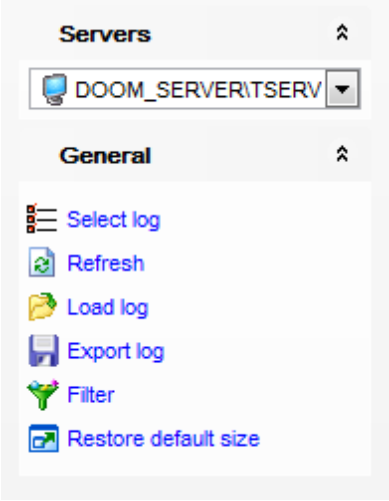
Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.16.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Server Log Viewer**.



The **Navigation bar** of **Server Log Viewer** allows you to:

Servers
select a server instance to view server logs

General
select a log
refresh the content of the window
load a log from an external **.txt* file
export log to an external **.txt* file
filter logs in the list
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Server Log Viewer** window. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

Hint: Items of the **General** pane of the **Navigation bar** are also available in the *context menu* of the **Server Log Viewer** area.

11.16.2 Working with Server Log Viewer

The **Server Log Viewer** window displays the list of server logs as a grid, and allows you to manage them efficiently.

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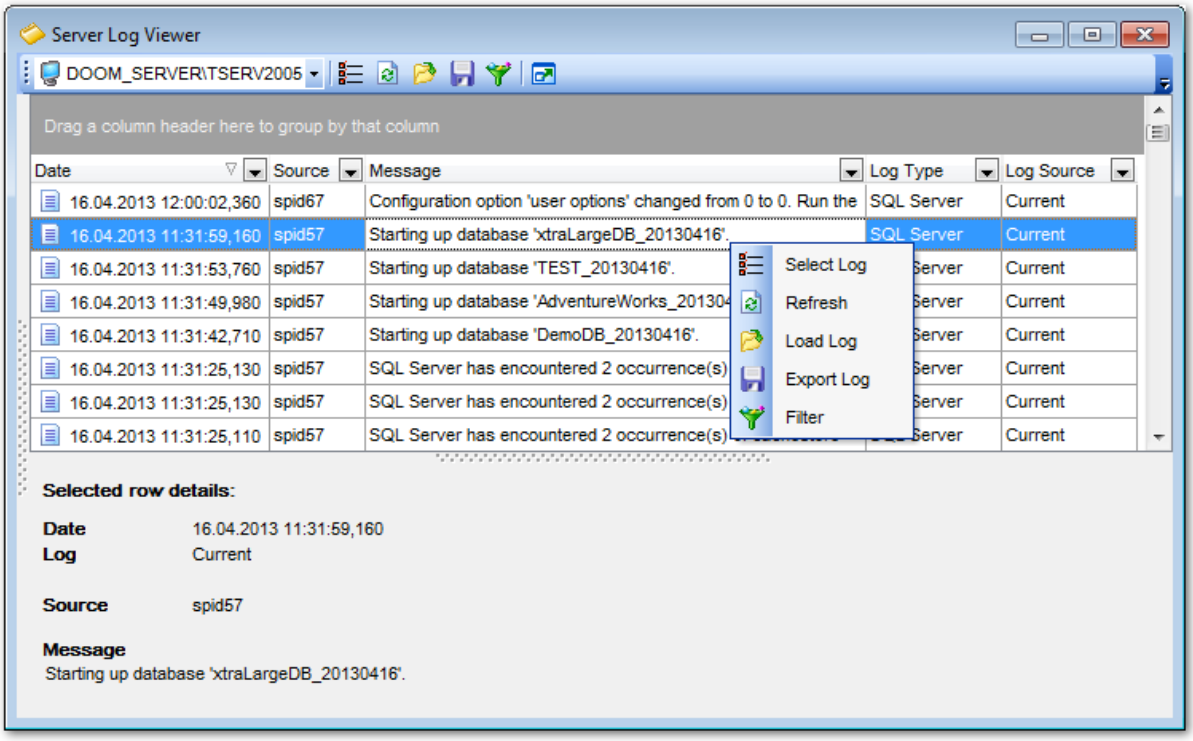


The list displays the server logs as a grid with the following columns: *Date*, *Source*, *Message*, *Log Type*, *Log Source*. If more convenient, you can change the order 473 of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

Right-click an item within the list to call the **context menu** allowing you to *select* a log, *refresh* the list, load a log, export log and filter the logs in the grid.

Server logs management tools are also available through the Navigation bar 847 and toolbar 847 of **Server Log Viewer**.

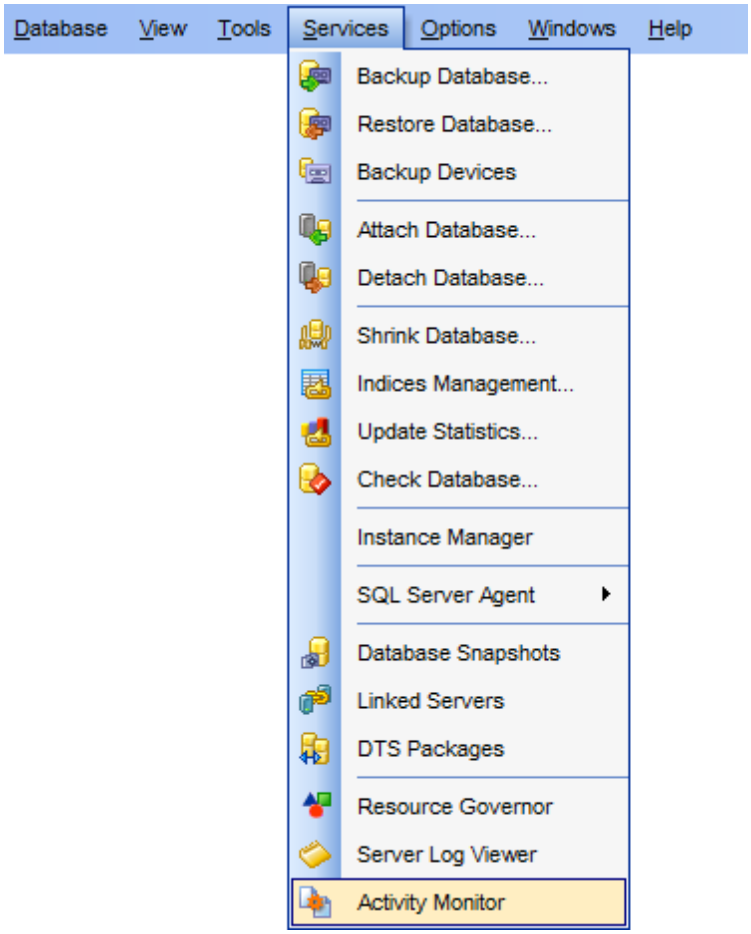
The lower area displays the following server log details:
Date
Log
Source
Message

11.17 Activity Monitor

Activity Monitor allows you to get information about users connections to the Database Engine and the locks that they hold.

Use **Activity Monitor** when troubleshooting database locking issues, and to terminate a deadlocked or otherwise unresponsive process.

To launch the tool, select the **Services | Activity Monitor** main menu 951 item, or right-click the host alias in the DB Explorer 65 tree and select the **Tasks | Activity Monitor** item from the context menu 54.



- Using Navigation bar and Toolbar 850
- Working with Activity Monitor 850

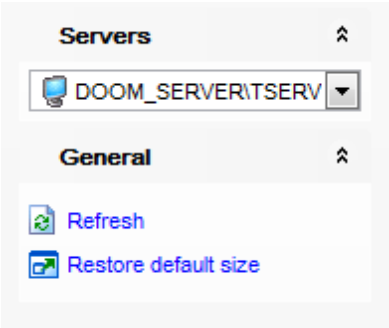
Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of SQL Manager, refer to the Feature Matrix 24 page.

11.17.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Activity Monitor**.



The **Navigation bar** of **Activity Monitor** allows you to:

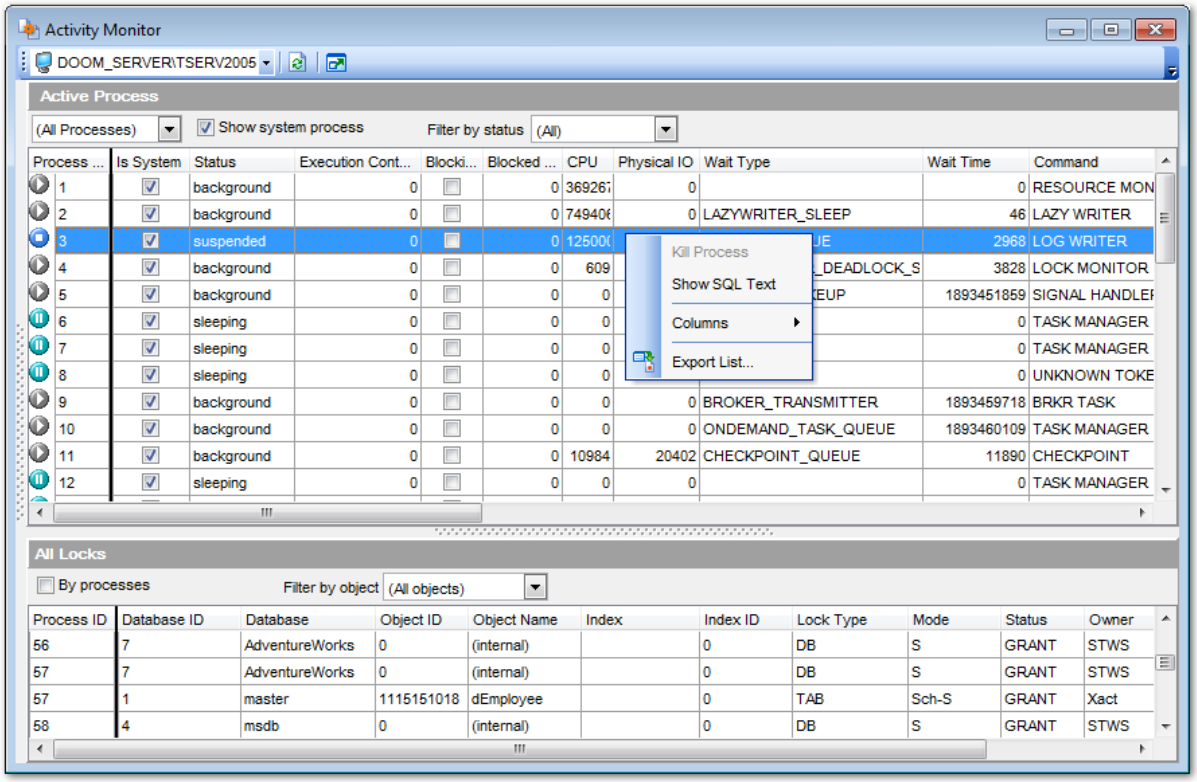
Servers
select a server instance for monitoring activity

General
refresh the content of the window
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Activity Monitor** window. To enable the toolbar 953, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

11.17.2 Working with Activity Monitor

The **Activity Monitor** window consists of two basic areas: **Active Process** and **All Locks** .



Hint: Background/suspended/sleeping processes are differentiated in the list by their icons next to the *Process ID* values.

The **Active Process** list displays the processes as a grid with the following columns: *Process ID*, *Is System*, *Status*, *ExecutionContext*, *Blocking*, *Blocked By*, *CPU*, *Physical IO*, *Wait Type*, *Wait Time*, *Command*, *Application*, *Open Transactions*, *Database*, *User*, *Net Address*, *Net Library*, *Host*, *Memory Usage*, *Login Time*, *Last Batch*.

For your convenience several filtering facilities are implemented: you can filter the rows in the **Active Process** list by process ID, by system/non-system attribute, or by status (*background*, *suspended*, *sleeping*, *running*). Use the corresponding controls in the upper area.

The **All Locks** list provides the following attributes of each lock: *Process ID*, *Database ID*, *Database*, *Object ID*, *Object name*, *Index*, *Index ID*, *Lock type*, *Mode*, *Status*, *Owner*, *Resource*.

If necessary, you can filter the rows in the **All Locks** list by processes or display all objects/internal.

Right-click an item within the **Active Process** or **All Locks** lists to call the **context menu** allowing you to *kill* a process, show *SQL text*, or show/hide columns of the list. Using the context menu you can also export 537 the list of processes to any of supported output file formats 971.

Part XII

12 Options

SQL Manager for SQL Server provides you with capabilities for flexible personalization of the application.

Please see the chapters below to learn how to use personalization tools effectively.

- Environment Options 854
- Editor Options 905
- Save Settings 921
- Localization 926
- Keyboard Templates 930
- Find Option dialog 942

The **Options** menu allows you to export all program settings to a **.reg* file for future use, e.g. when you need to move the settings to another machine (see **Save Settings** 921 for details).

Hint: Each of the SQL Manager Options dialogs is provided with the **Reset to defaults button**. You can use it either to **Reset current category** or to **Reset all categories**.

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
External Tools 945
How To... 991

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12.1 Environment Options

Environment Options allow you to customize general options of the SQL Manager application.

To open the **Environment Options** window, select the **Options | Environment Options...** main menu 951 item, or use the **Environment Options** button on the main toolbar 953.

Preferences 855
Full mode activation 856
Confirmations 856
Appearance 858
Tools 866
Timeouts 868
DB Explorer 868
Search 870
Object Editors 871
Query Data 873
SQL Monitor 874
Execute Script 875
Design Query 877
Style & Color Palette 878
Default Data Options 882
Database Designer 883
Print Metadata 887
Data Export 887
SQL Server Reference 888
Fonts 889
Grid 891
Data Options 893
Print Data 895
Color & Formats 896
Advanced 898
Column Options 900
Localization 901
Global Shortcuts 902
Find Option 903

See also:

Editor Options 905

Visual Options

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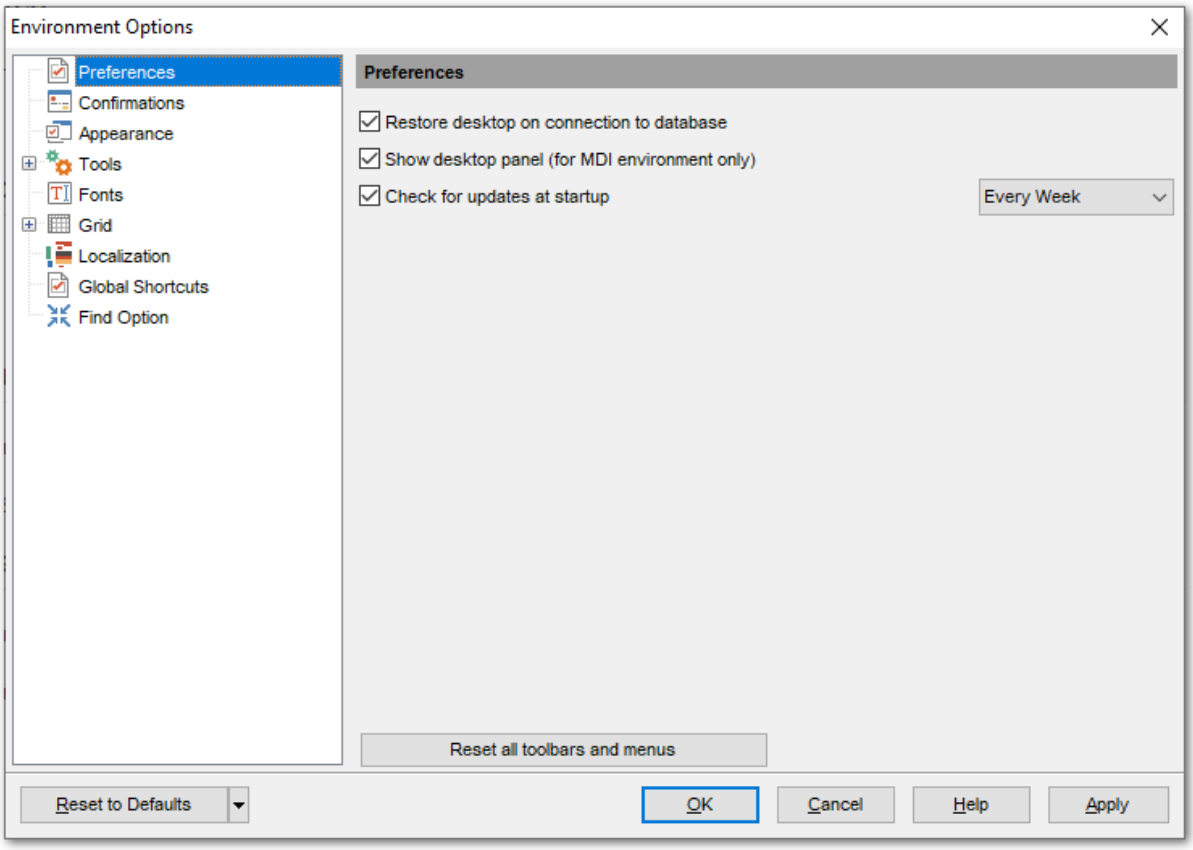
12.1.1 Preferences

☑ **Restore desktop on connection to database**
Determines whether previously opened windows and their positions should be restored upon connection to the database.

☑ **Show desktop panel** (for MDI environment only)
Displays the Desktop Panel 48 when no child windows are open.

☑ **Check for updates at startup**
Enable this option to automatically check for program updates. Use the drop-down list to specify the update check frequency: *Every Day*, *Every Week*, *Every Month*.

☑ **Show Full Version features***
This option is available in the Lite version of SQL Manager. When enabled, a 14-day period of fully-functional usage is activated 856.



If necessary, you can **reset all toolbars and menus** of the application using the corresponding button.

Hint: The **Reset to Defaults** button, which is common for all sections of the **Environment Options** dialog, opens a menu that allows you to discard changes and restore default settings — either for the *current category* or for *all categories*.

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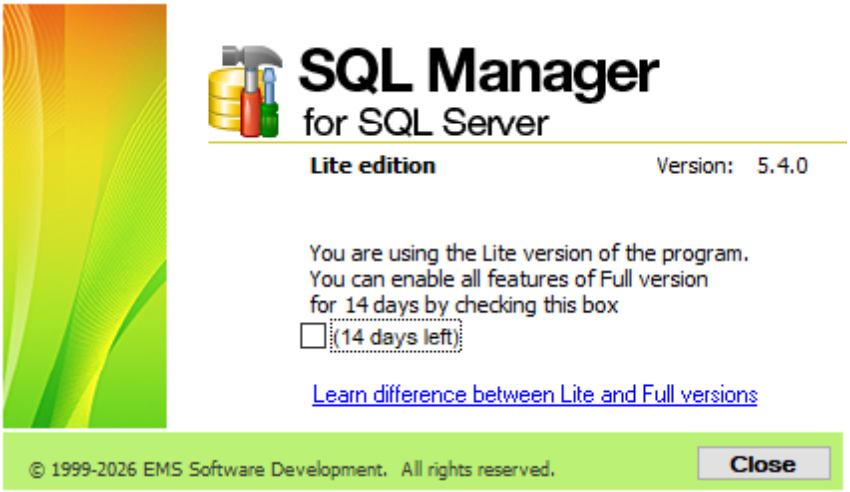
12.1.1.1 Full mode activation

Note that when using **the FREE Lite version of SQL Manager for SQL Server** (which contains functional limitations) you can activate a 14-day period of fully functional usage. During this period, a splash screen displaying the number of days remaining will appear each time you start the application. After the period expires, you can continue using the Lite version.



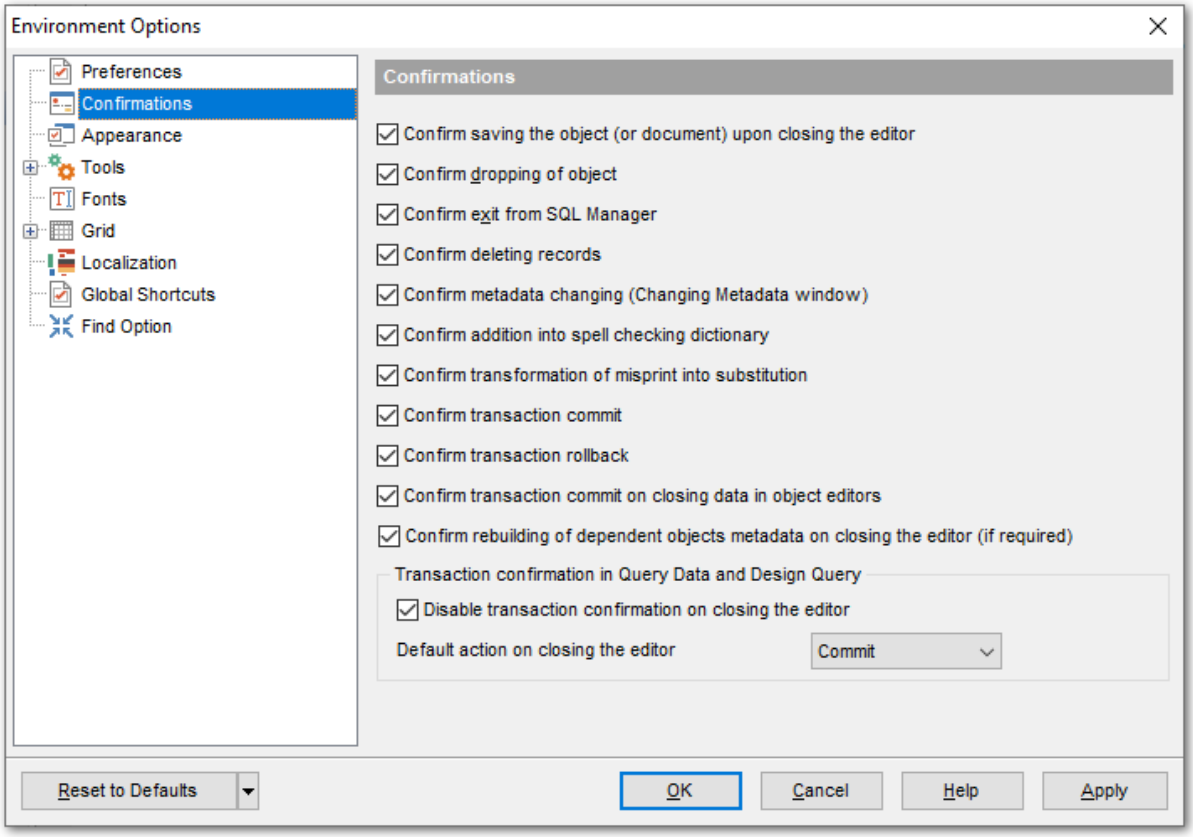
To activate *the 14-day Full version mode*, please enable the ☑ **Show Full Version features** option available on the Preferences 855 page of the **Environment Options** dialog (note that this option is only available in the Lite version of SQL Manager).

12.1.2 Confirmations

☑ **Confirm saving the object (or document) upon closing the editor**
If this option is selected, the program requires confirmation each time you want to save changes in a database object or document.

☑ **Confirm dropping of object**
If this option is selected, the program requires confirmation of dropping 182 a database object.

☑ **Confirm exit from SQL Manager**
If this option is selected, you are prompted for confirmation each time when you exit the application.



Confirm deleting records
This option enables/disables a confirmation dialog for deleting records.

Confirm metadata changing (Changing Metadata Window)
This option enables/disables the Changing Metadata 959 window.

Confirm addition into spell checking dictionary
Enable this option if you wish to be prompted for adding a word to the dictionary which is used for checking words spelling (see Spell Checking 918).

Confirm transformation of misprint into substitution
If this option is selected, you need to confirm replacing a misprinted word with a corresponding substitution word (see Spell Checking 918).

Confirm transaction commit
If this option is selected, the program requires confirmation on attempt to commit a transaction.

Confirm transaction rollback
If this option is selected, the program requires confirmation on attempt to rollback a transaction.

Confirm transaction commit on closing data in object editors
If this option is selected, the program prompts to commit the transaction upon closing the 'Data' tab in object editors.

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☑ **Confirm rebuilding of dependent objects metadata on closing the editor (if required)**
This option enables/disables a confirmation dialog for rebuilding the dependent objects after comiling.

Transaction confirmation in Query Data and Design Query

☑ **Disable transaction confirmation on closing the editor**
If this option is checked, no transaction confirmation will be required on closing Query Data 432 and Design Query 448. Specify the **default action** (*Commit* or *Rollback*) and this action will be performed automatically each time when you exit **Design Query** or **Query Data**.

12.1.3 Appearance

Theme

Select the main color theme for the application: *Light, Blue or Dark*.

Environment style

This group allows you to define the basic window environment - ◉ *MDI* (like Microsoft® Office) or ◉ *Floating windows* (like Borland® Delphi IDE).

Windows restrictions

This option allows you to set the number of editors (Table Editor 204, Query Data 432, etc.) that can be opened simultaneously.

Zoom options

This group of options is only available if **Environment Style** is set to *Floating windows environment*. It allows you to set maximization size for child windows:
◉ *Full screen*
◉ *Restricted by Main Form*
◉ *Restricted by Main Form and DB Explorer*
◉ *Justified my Main Form and DB Explorer*

Bar style for child forms

Here you can define the location of action buttons: ◉ within the *Navigation bar* (on the left) and/or ◉ on the *Toolbar*.

If necessary, you can also ☑ **Enable floating toolbars** for your application.

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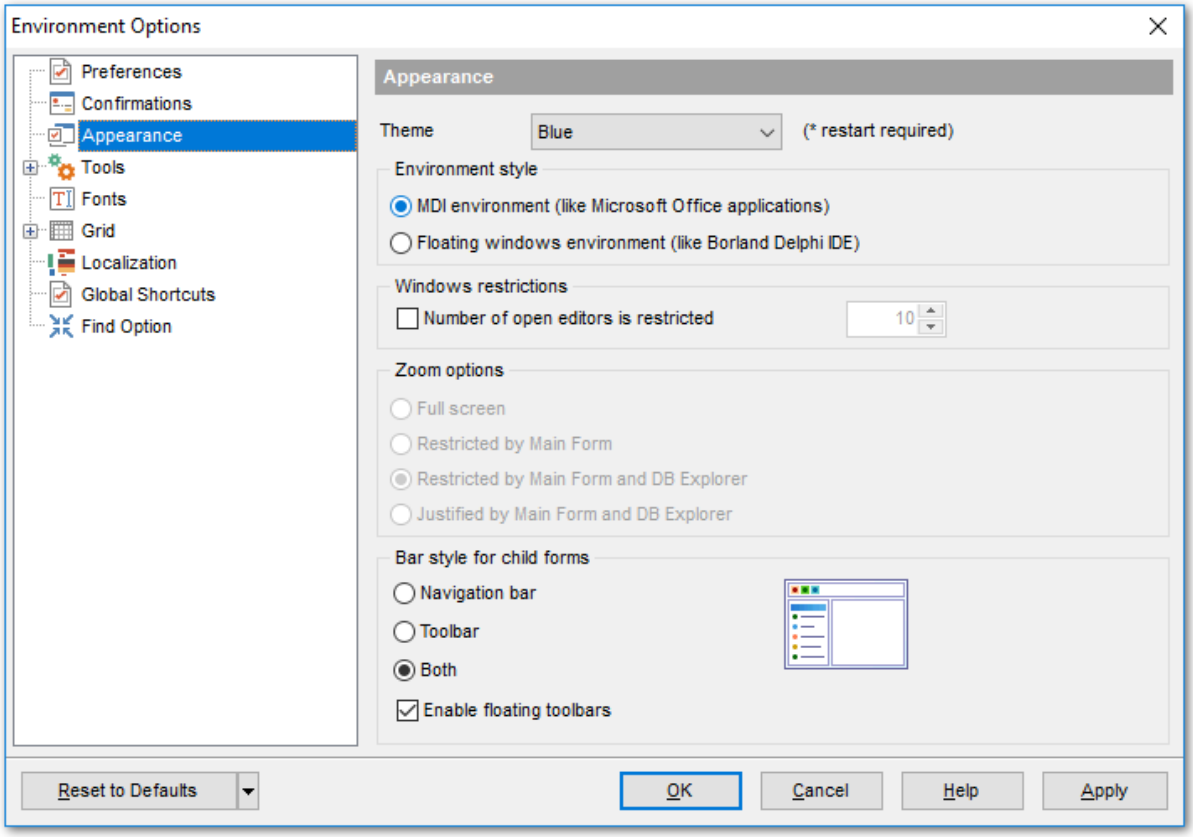
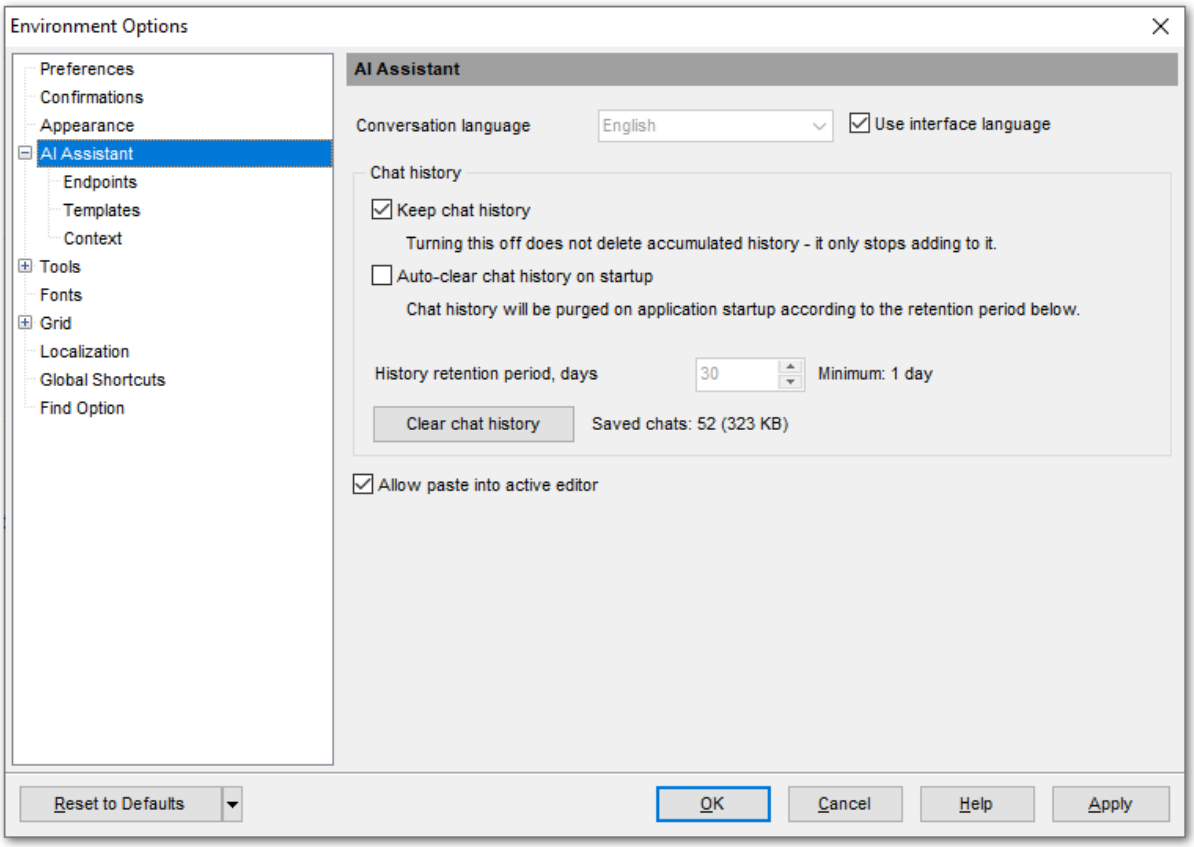


12.1.4 AI Assistant

Use the **AI Assistant** tab to set the general options of the AI Assistant in SQL Manager for SQL Server.



The **Conversation language** field defines the language of the assistant's replies. The ☑ **Use interface language** option is selected by default, so the assistant replies in the current interface language 901. To use another language, clear the check box and select the language from the drop-down list. If the language you need is not there, type its name.

Chat history

Use this group to define how the chat history 739 is stored and cleared.

☑ **Keep chat history** (selected by default) — save all conversations with the assistant to disk so that you can go back to an earlier one and carry on. Clearing this check box **does not delete** the history already saved — it simply stops growing.

☑ **Auto-clear chat history on startup** — every time the program starts, delete the chats that are older than the **History retention period**.

The **History retention period** field sets how long the chat history is kept, in days. The field is available only when the ☑ **Auto-clear chat history on startup** option is selected, and it applies only to that automatic cleanup. The minimum value is 1 day.

The **Clear chat history** button deletes the whole saved history immediately, regardless of the check boxes above and the retention period. You will be asked to confirm the deletion. The number of stored chats and the space they take up are shown to the right of the button. The chat you currently have open is not deleted.

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☑ **Allow paste into active editor** (selected by default) — lets you insert a code fragment from the assistant's reply into the active SQL editor window. When this check box is cleared, the *Insert to active editor* 725 button is unavailable; you can still insert a fragment into a new Query Data 432 tab.

Availability:

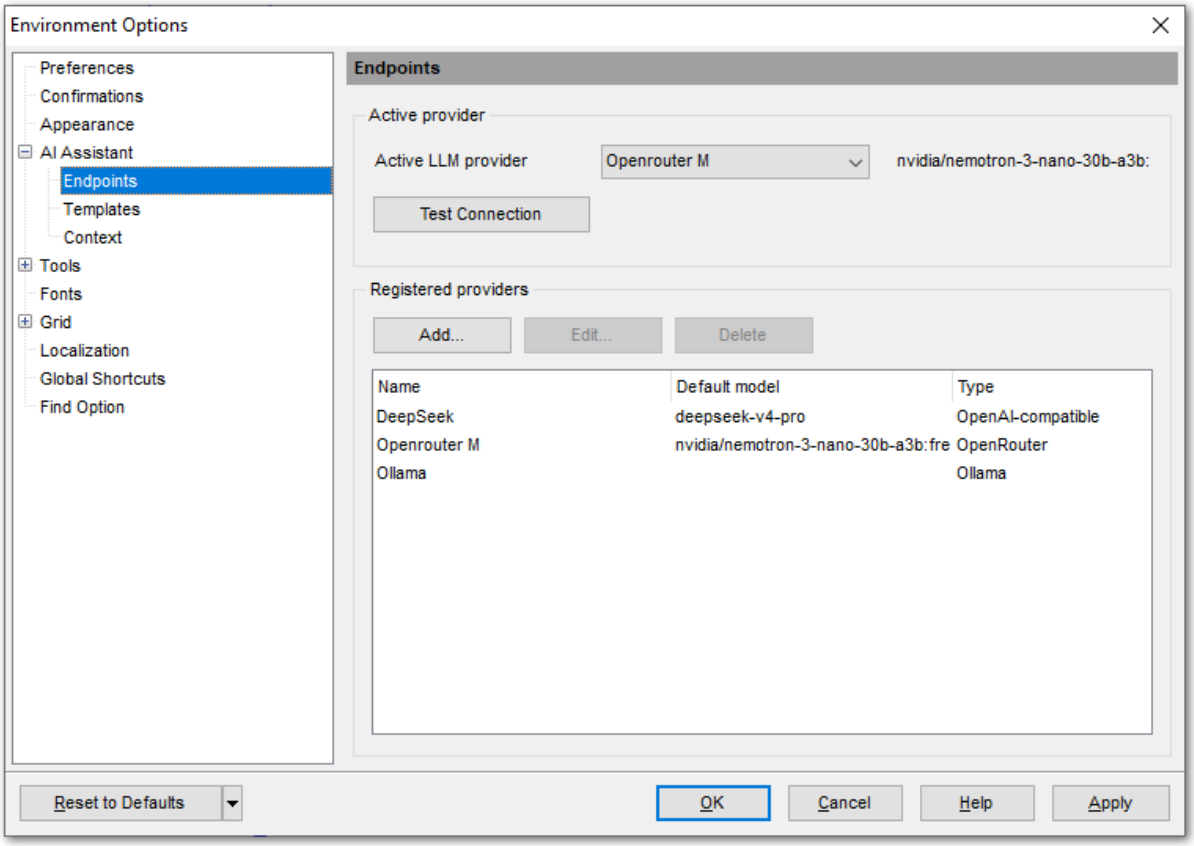
Full version	**Yes**
Lite version	**No**

See also:
Endpoints 861
Templates 863
Context 864

12.1.4.1 Endpoints

On the **Endpoints** tab, add the LLM providers that the AI Assistant works with and select the one it will use.

Note: SQL Manager for SQL Server does not come with a model of its own — the assistant works through your own provider account or a locally installed model.



Active provider

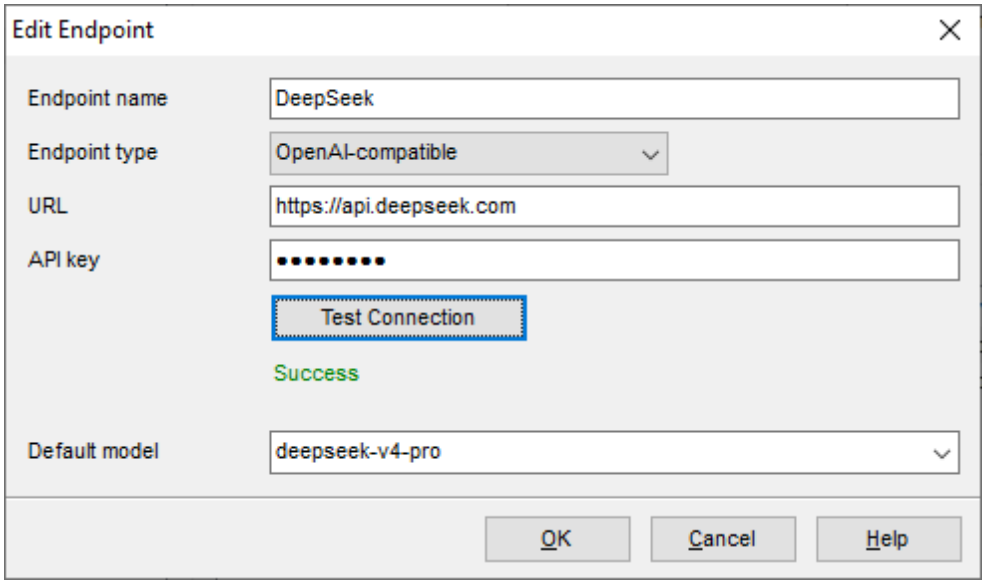
The **Active LLM provider** drop-down list shows all the registered providers. The provider's default model is displayed to the right of the list.
Click **Test Connection** to check the connection to the selected provider.

Registered providers

This group lets you register new LLM providers and manage the ones you have already added. You can register several providers and switch between them with the **Active LLM provider** drop-down list.
For each provider you can see its **Name**, **Default model** and **Type**.

To register a new LLM provider, click **Add...** and set the required options in the **Add Endpoint** window.
To edit the options of a registered provider, select it and click **Edit...**
To remove a registered provider, select it, click **Delete** and confirm the deletion.

The Add / Edit Endpoint window



In the **Endpoint name** field, type a name for the provider. The name must be unique among the registered providers.

In the **Endpoint type** drop-down list, select the provider type:
- **Ollama** — a model installed locally.
- **OpenRouter** — the OpenRouter service.
- **OpenAI-compatible** — any service that implements the OpenAI API, including an instance of LM Studio or vLLM deployed on your network.
- **Anthropic** — the Anthropic service.

The **URL** field specifies the address of the provider API. When you select a provider type, the field is filled in with a default address: *http://localhost:11434* for **Ollama** and *https://api.openai.com/v1* for **OpenAI-compatible**; both can be edited. For **OpenRouter** and **Anthropic** the address is fixed and shown for reference only.

In the **API key** field, enter the access key for the provider API. The value is masked as you type, and when you open the window again, the field shows placeholder characters

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instead.
API keys are encrypted with the Windows Data Protection API, which ties them to the current user account on the current computer.
The Save Settings 921 wizard exports registered providers only if the *AI provider endpoints* 922 check box is selected; by default it is cleared. Even then, the keys are unreadable on another computer or under a different account, so after importing such a file you will need to enter them again.

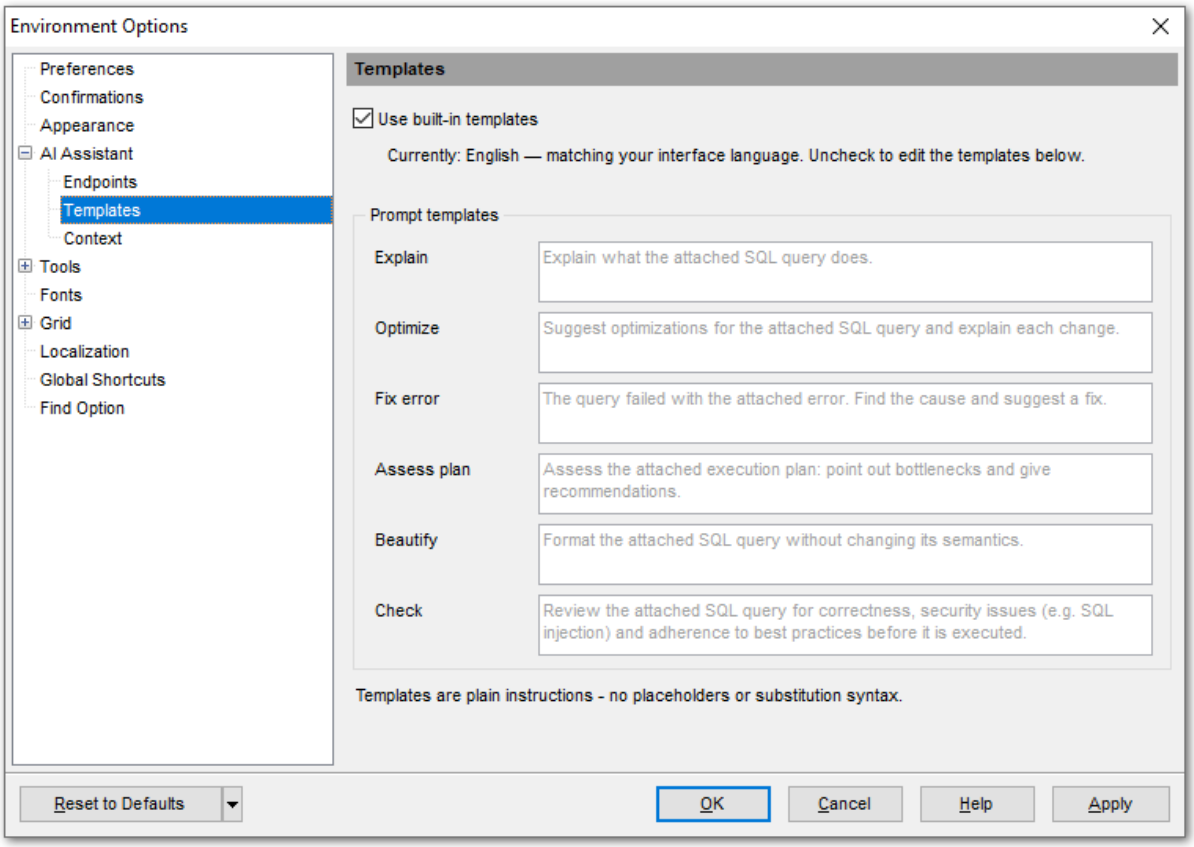
The **Test Connection** button verifies the connection and retrieves the list of available models from the provider.

The list of models becomes available after a successful connection test: use the **Default model** field to select the model for this provider, or type its name.

See also:
AI Assistant 859
Context 864

12.1.4.2 Templates

The **Templates** tab lets you define prompt templates — the instructions sent to the AI Assistant when you run one of its commands 735 from the SQL editors, the message areas or the query plan viewer. The template is sent as the text of the request, and the SQL query, error message or execution plan is attached to it.



The ☑ **Use built-in templates** option is selected by default. The built-in templates follow the interface language 901, or the one selected in the Conversation language 859 field if the program interface supports it. For any other language the English templates are used.

To edit the templates, clear the check box. You can then write the text for each of the AI Assistant commands 735 yourself. The language of these templates is up to you — they are sent to the assistant exactly as they appear in the fields of the *Prompt templates* group. Your wording is remembered and is not reset to the standard one if you turn the **Use built-in templates** option on and off again.

Prompt templates

The table below lists the commands 735 and the standard templates used for them:

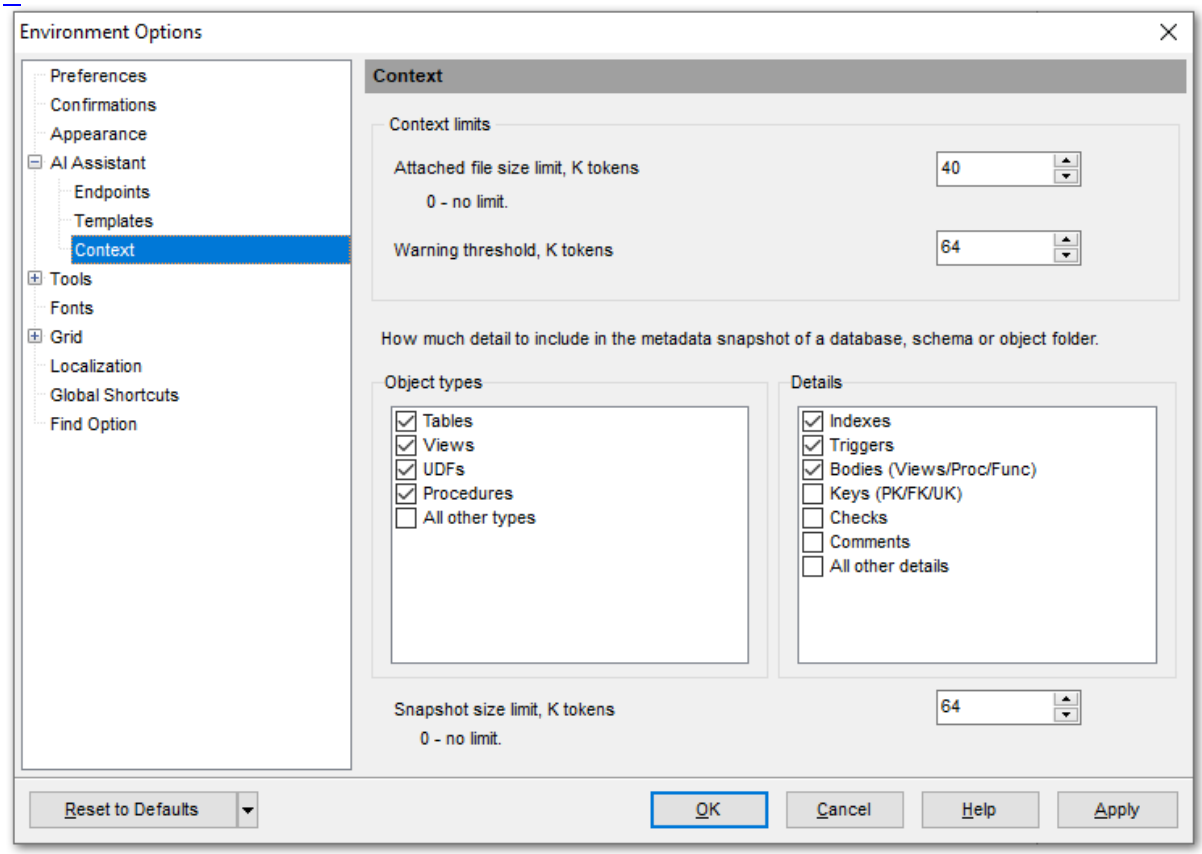
Command	Default template
Explain	Explain what the attached SQL query does.
Optimize	Suggest optimizations for the attached SQL query and explain each change.
Fix error	The query failed with the attached error. Find the cause and suggest a fix.
Assess plan	Assess the attached execution plan: point out bottlenecks and give recommendations.
Beautify	Format the attached SQL query without changing its semantics.
Check	Review the attached SQL query for correctness, security issues (e.g. SQL injection) and adherence to best practices before it is executed.

Note: A template is a plain instruction. It has no placeholders or substitution syntax: the SQL query, the error message and the execution plan are attached to the request and appear in the assistant panel as chips.

See also:
AI Assistant 859
Context 864

12.1.4.3 Context

Use the **Context** tab to define what data is sent to the AI Assistant with your request, and how much. All the limits and thresholds on this tab are measured in tokens 734.



Context limits

The **Attached file size limit, K tokens** field sets the maximum size of a text file that can be attached to a request in the assistant panel. A value of **0** removes the limit.

The **Warning threshold, K tokens** field sets the value that the context size indicator 727 in the assistant panel compares the accumulated conversation against. The indicator changes color as this value gets closer. Exceeding it does not prevent the request from being sent.

The rest of the tab defines how much detail goes into the metadata snapshot attached by the *Add subtree DDL to chat* 731 item in the Database Explorer. Two groups of filters — **Object types** and **Details** — control what the snapshot includes. These settings do not apply to objects added with the *Add object DDL to chat* 731 item: their DDL is always attached in full.

Object types

Select which object types go into the metadata snapshot:

- Tables;
- Views;
- UDFs;
- Procedures;
- Other types — any object types not listed above.

Tables, Views, UDFs and Procedures are selected by default.

This group applies when the snapshot is collected for a database, the Schemas node or a schema. If you run *Add subtree DDL to chat* on an object node, the type is already defined by the node itself and this group is ignored.

Details
Select what goes into the description of each object:
- Indexes;
- Triggers;
- Bodies (Views/Proc/Func) — view definitions and the bodies of functions and procedures;
- Keys (PK/FK/UK) — primary, foreign and unique keys;
- Checks — CHECK constraints;
- Comments — object and column comments;
- Other details — anything not listed above.

Indexes, Triggers and Bodies (Views/Proc/Func) are selected by default.

Not every detail applies to every object type: indexes and keys, for instance, are only relevant for tables.

Hint: Leaving out the object types and details you do not need for the current task makes the context smaller and may help the model concentrate on what matters. Omit something the question depends on, however, and the answer will be less accurate — so match the snapshot to the task.

The **Snapshot size limit, K tokens** field sets the maximum size of a single metadata snapshot. A value of **0** removes the limit. If a snapshot exceeds this limit, the program warns you.

Note: This limit applies to a single metadata snapshot, not to the conversation as a whole. The size of the conversation is tracked by the indicator in the status bar 727, using the threshold set by the **Warning threshold, K tokens** field.

See Context 730 and Adding context 731 for details.

See also:
AI Assistant 859
Endpoints 861
Context 730

12.1.5 Tools

Miscellaneous

☑ **Show only connected databases in drop-down menu**
If this option is checked, only connected 70 databases are displayed in drop-down menus of such tools as Design Query 448, Execute Script 625, etc.

☑ **Don't fill server lists in connection forms**
If this option is checked, the server list will be filled up with the names of most recently used servers that are stored locally in the Windows registry. Otherwise, SQL Manager will scan the network to fill in the server lists in connection forms.

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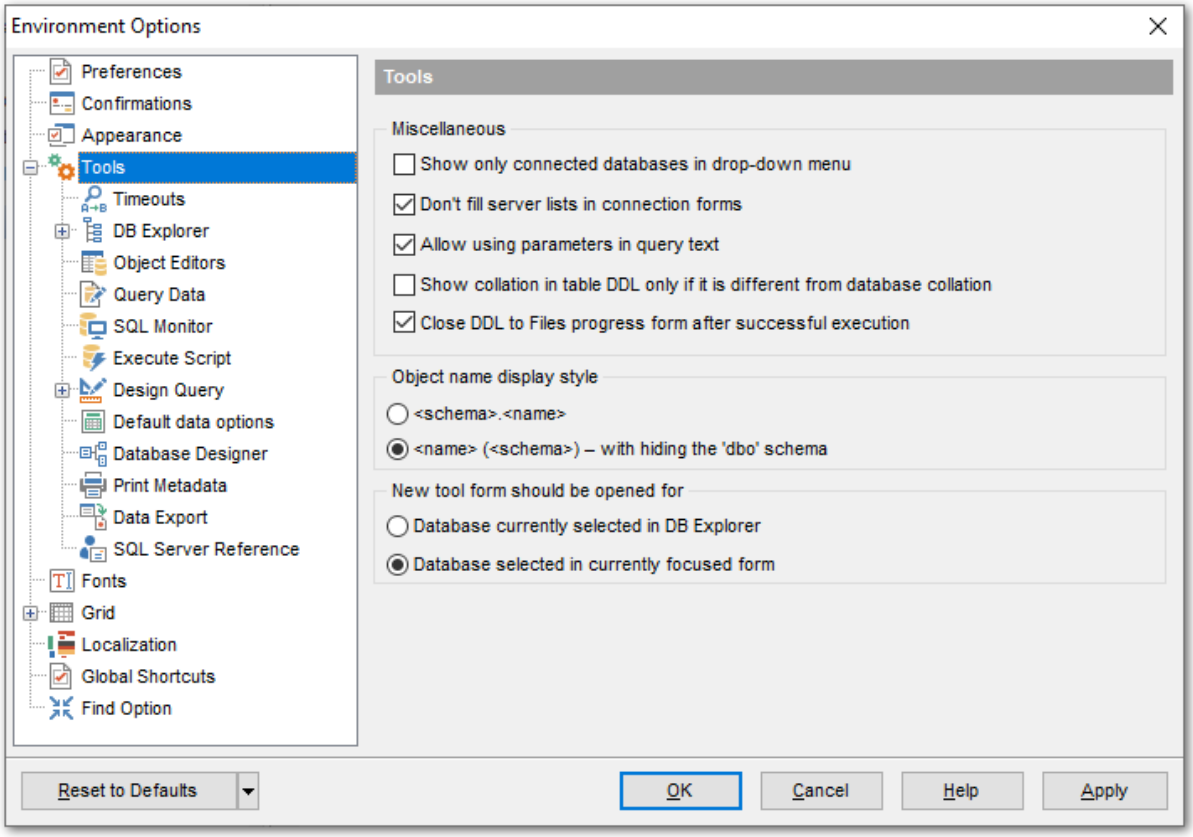
Allow using parameters in query text
This feature allows you to specify different values within a query in a popup dialog 465 just before the query execution. Use the colon (':') character before an identifier (e.g. :P1) to specify a parameter within the query.

Show collation in table DDL only if it is different from database collation
If this option is selected then collation in table DDL is not displayed in case it is equal to database collation.

Close DDL to Files progress form after successful execution
If this option is checked the Apply Changes dialog (that indicates the writing DDL to files process) is closed automatically if operation is succeeded.



Object name display style

Here you can select the format in which object names will be displayed in some object editors, headers of object editors, Select Object dialog 985, Print metadata 649.

<schema>.<name>
Display object name in the "<schema_name>.<object_name>" format.

<name> (<schema>) with hiding the 'dbo' schema
Display object name in the "<object_name> (<schema_name>)" format. 'dbo' schema name is omitted.

New tool form should be opened for

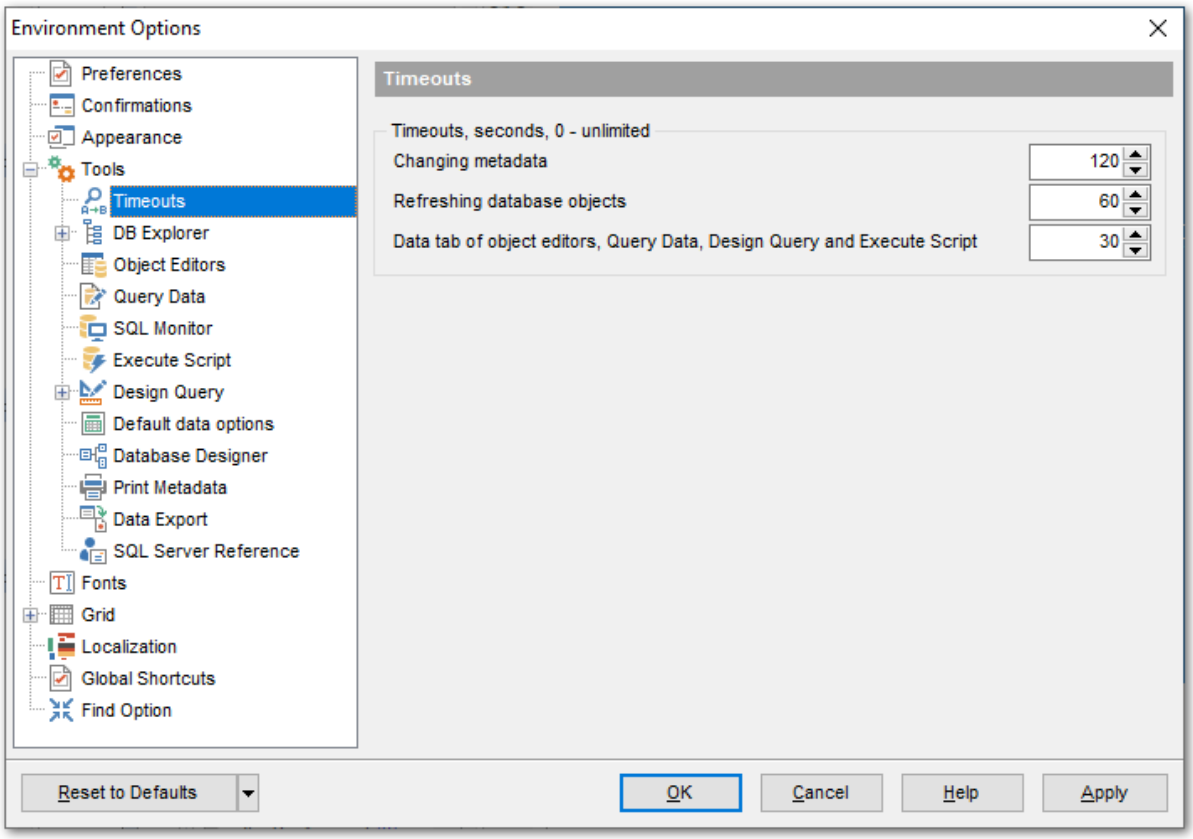
This option defines which database should be selected in the launched tool.

Database currently selected in DB Explorer
Tool will be opened with the database focused in the DB Explorer selected.

Database selected in currently focused form
Tool will be opened with the database which is selected in the current form.

12.1.5.1 Timeouts

This page allows you to set timeouts for some operations performed in SQL Manager. Timeouts are necessary for preventing program hang-up upon execution of a SQL statement due to transaction interlocking. You can set timeouts for *changing metadata*, *refreshing database objects* and *data tabs*.



Refresh of objects can also be terminated after timeout expiration if there is an active transaction that has made any changes to metadata.

12.1.5.2 DB Explorer

General options

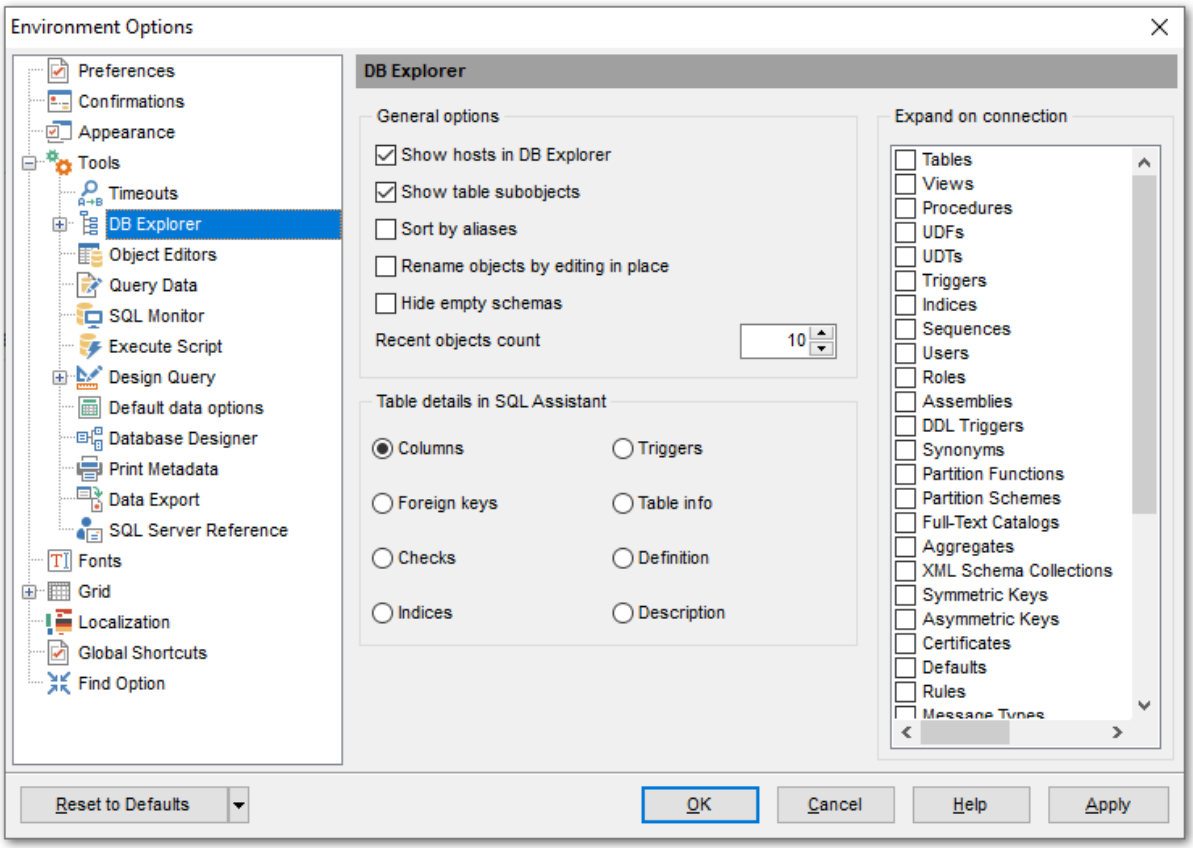
Show hosts in DB Explorer
Shows/hides database hosts in the DB Explorer 65 tree.

Show table subobjects
Shows/hides table 196 subobjects (columns, indexes, etc.) in the DB Explorer 65 tree.

Sort by aliases
Use this option to apply sorting registered hosts and databases by their aliases in the DB Explorer 65 tree.

Rename objects by editing in place
Allows you to edit object names in DB Explorer 65 by selecting any object and clicking its alias one more time.

Hide empty schemas
This option allows you to specify whether schemas 193 containing no objects will be displayed in the DB Explorer 65 tree.



Recent objects count
Defines the number of objects displayed within the Recent 82 menu of the DB Explorer 65.

Table details in SQL Assistant
These options switch the SQL Assistant 87 mode for displaying table 196 details (*columns*, *Foreign keys*, *checks*, *indexes*, *triggers*, *table info*, *definition* or *description*).

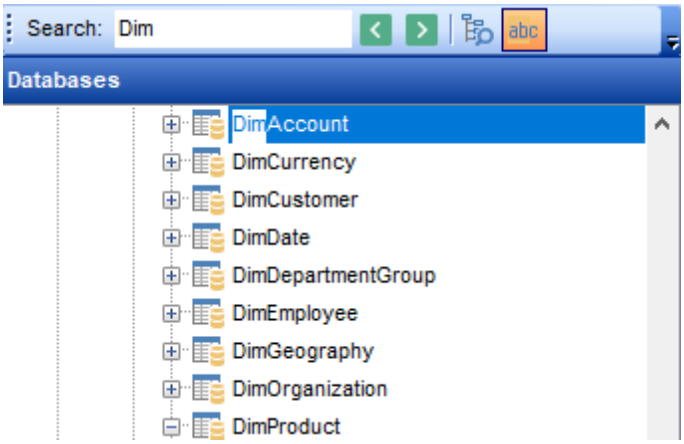
Expand on connection
This group of options allows you to specify the node(s) indicating type(s) of objects that will be expanded within DB Explorer 65 upon successful connection to the database.

See also:

Database Explorer 65

12.1.5.2.1 Search

Here you can set search options for DB Explorer search string:

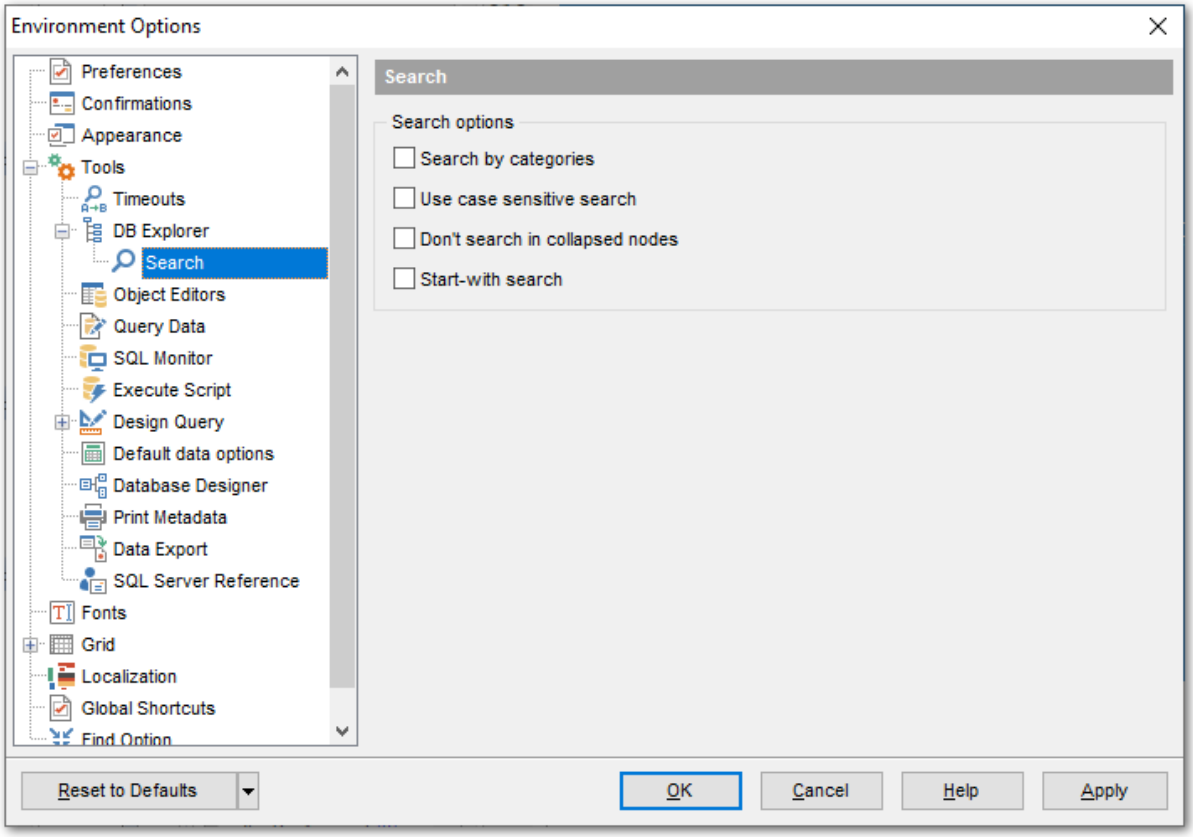


Search by categories

This option determines the search scope when the Find Item feature is used: if this option is selected, the search is performed within the currently selected category (node in the tree) only.

Use case sensitive search

If this option is selected, the search string case is considered when using the Search Panel.



Don't search in collapsed nodes

Enable the option to search within the expanded nodes only.

Start-with search

Check this option to search for objects those names begin with the defined searched string.

12.1.5.3 Object Editors

All

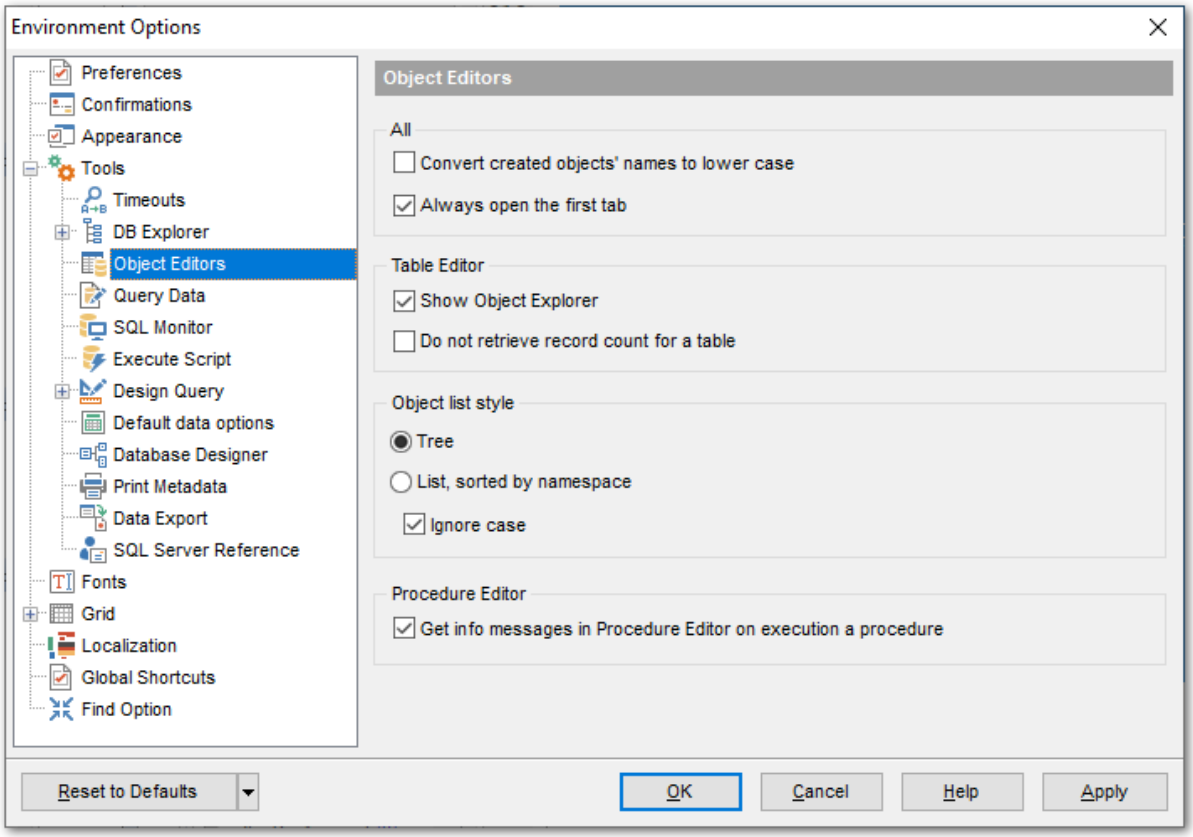
Convert created objects' names to lower case
Enable this option if you need to convert the names of all newly created objects to the lower case automatically.

Always open the first tab
If this option is checked, the first tab is activated by default on opening an object in its editor.

Table Editor

Show Object Explorer
Enables/disables the Object Explorer panel within the Navigation bar 205 of Table Editor 204.

☑ **Do not retrieve record count for a table**
Check this option to disable retrieving record count for tables (with this feature enabled, opening large tables may take much time).



Object list style

These options allow you to define the style of the combo-boxes used to select database objects (e.g. *Table or view* in Trigger Editor 241). Objects can be represented as a *tree*, a *list sorted by namespace* or a *list sorted by name*. Use the ☑ **Ignore case** option to enable/disable case sensitive sorting.

Procedure Editor

☑ **Get info messages in Procedure Editor on execution of a procedure**
This option enables/disables information messages returned upon procedure execution 262 in Procedure Editor 257.

See also:

Database and Server Objects Management 182

12.1.5.4 Query Data

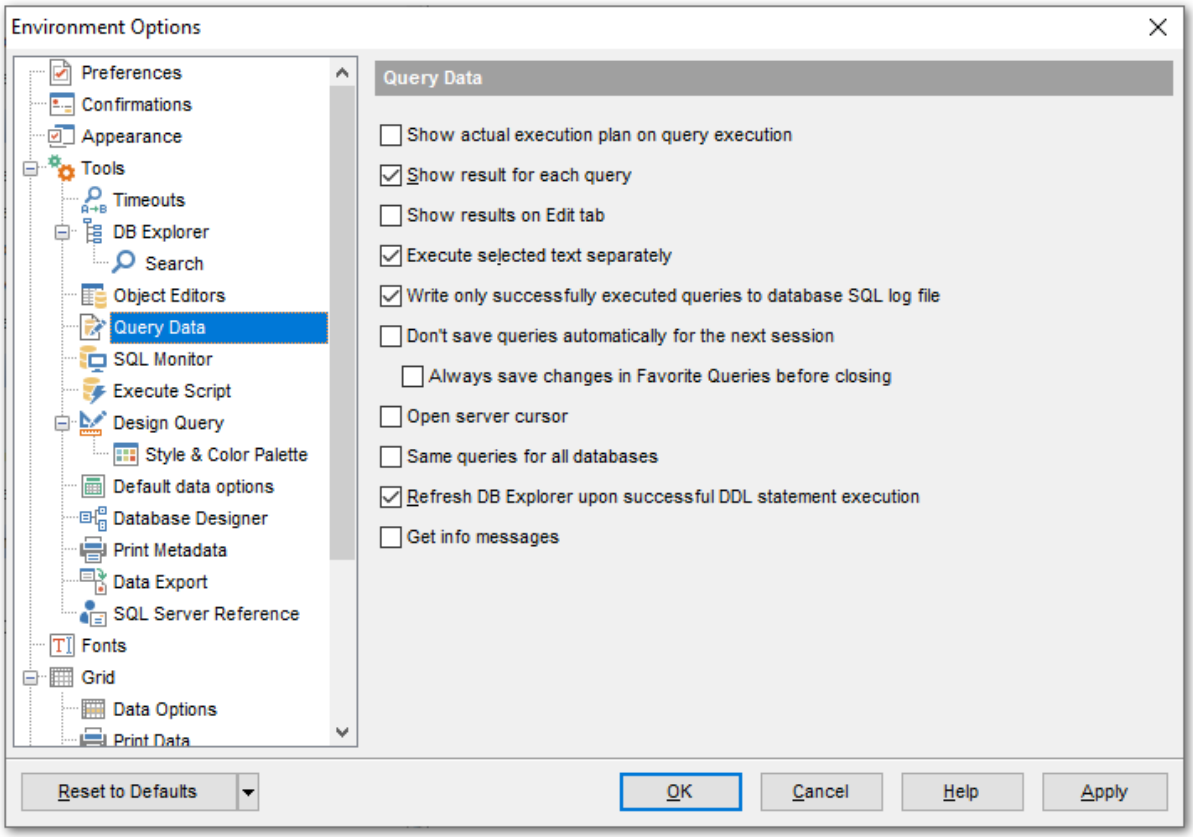
Show actual execution plan on query execution
If this option is checked, the query plan 438 is displayed automatically upon query execution in Query Data 432.

Show result for each query
With this option checked, when you execute 440 two or more queries (divided by "GO"), the result of each query will be displayed one by one. Otherwise, only the result of the last query will be displayed.

Show results on Edit tab
If this option is checked, the **Results** tab is displayed as a separate tab.

Execute selected text separately
Check this option to allow execution 440 of the selected statement separately.

Write only successfully executed queries to database SQL log file
If this option is checked, unsuccessful queries will not be saved to the Query Data log file (see Setting log options 125 in the Database Registration Info 120 dialog).



Don't save queries automatically for the next session
If this option is checked, the SQL query text will not be saved. Otherwise, it will be saved in Windows registry and will be therefore available in the next application sessions.

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Always save changes in Favorite Queries before closing
This option enables/disables saving changes in SQL queries marked as Favorite 92 automatically upon closing the editor.

Same queries for all databases
With this option enabled, Query Data 432 stores all queries in a shared repository, so that switching to another database does not cause loading queries of that database (applying this option does not affect currently opened copies of Query Data). The value of the option can be changed freely without any risk to lose the query repository content.

Refresh DB Explorer upon successful DDL statement execution
If this option is selected, the content of DB Explorer 65 is refreshed each time a DDL statement is executed 440 successfully in Query Data 432.

Open server cursor
This option determines whether the application should attempt to open server cursor. If this option is ON, the result dataset is processed with server resources, otherwise it's processed on the client side.

Get info messages
This options enables receiving of server messages and PRINT command results.

See also:
Query Data 432

12.1.5.5 SQL Monitor

SQL log
This group of options allows you to enable logging of all SQL Monitor 622 events to a file. Check the **Log SQL Monitor events to file** option, specify the path to the log file using the button, and enter a name for the **.sql* file. To clear the log file after it reaches some definite size, check the **Clear log file when it is greater than...** option and set the maximum file size (in Kilobytes).

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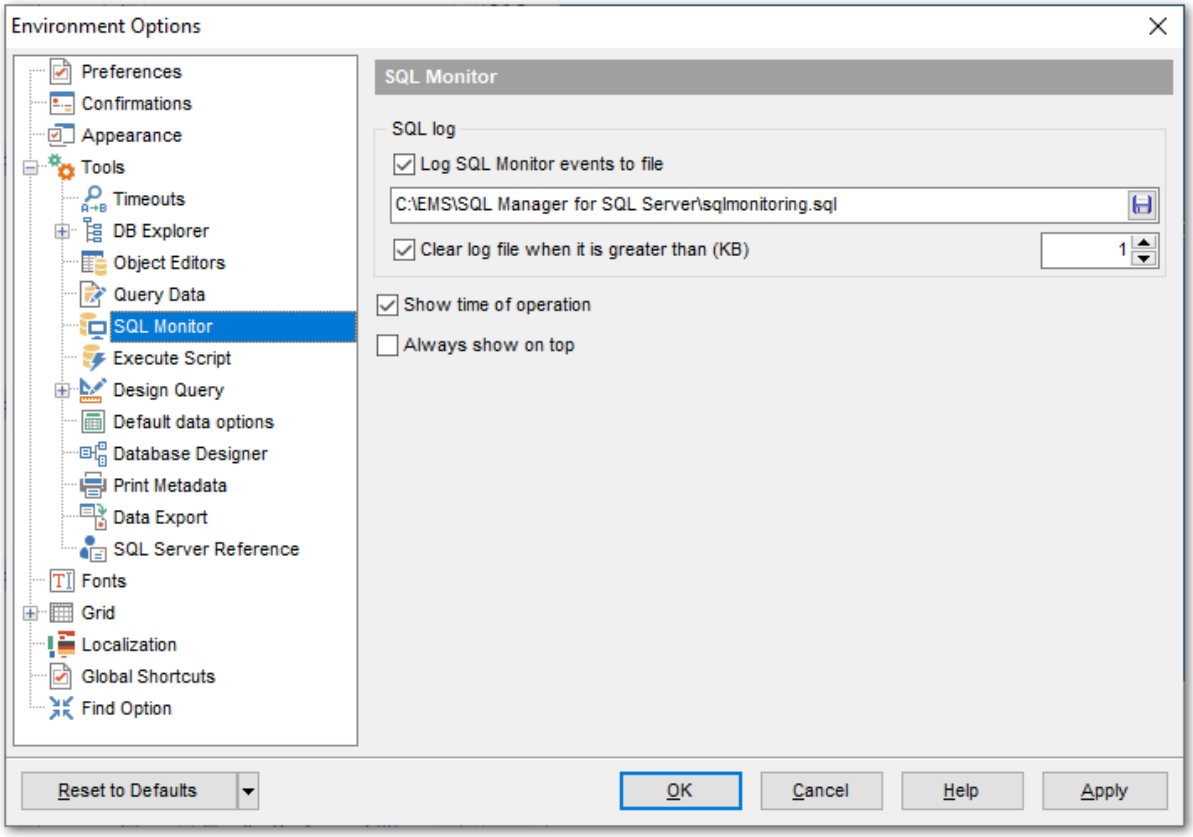


☑ **Show time of operation**
If this option is checked, the execution time of logged operations is added.

☑ **Always show on top**
Select this option if you want to display the SQL Monitor 622 window in the foreground permanently.

See also:
SQL Monitor 622

12.1.5.6 Execute Script

☑ **Abort script execution on error**
If this option is checked, script execution is aborted if an error occurs.

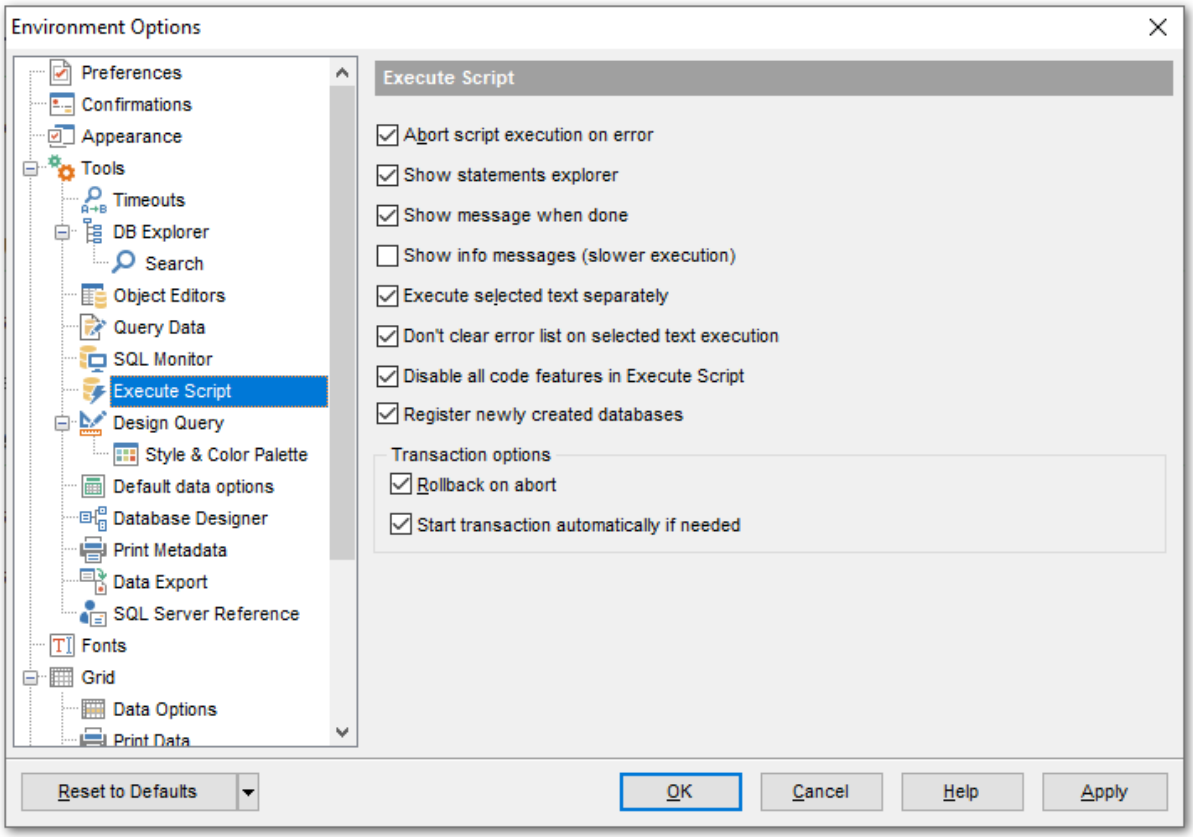
☑ **Show statements explorer**
With this option checked, Execute Script 625 parses the loaded script to enable fast navigation in the Script Explorer 629 tool.

☑ **Show message when done**
Displays a message box on finishing script execution.

Show info messages (slower execution)
Select this option to enable information messages when working with scripts. This causes slower script execution.

Execute selected text separately
If a text fragment is currently selected in Execute Script, only this fragment is executed when you click *Execute script* on the Navigation bar 625 or press *F9*. If this option is disabled, the whole script is executed, but you can still execute the selected fragment using the corresponding *Execute Selected Only* item of the context menu 627 or by pressing *Ctrl+F9*.

Don't clear error list on selected text execution
If this option is checked, the error list is not cleared upon execution of the selected statement.



Register newly created databases
If a script contains the CREATE DATABASE statement, it will be registered after script execution.

Disable all code features in Execute Script
This option disables code completion, code folding, highlight and all options that are set on the Quick Code 912 page in Execute Script. For options that are set on the Highlight 911 page, the defaults will be applied.

Transaction options

Rollback on abort

This option is only available if the Abort script on error option is checked. This option evokes automatic rollback when script execution is aborted.

Start transaction automatically if needed

If the option is enabled then transaction starts automatically after statements is executed. Otherwise, the BEGIN statement is required for transaction to start.

See also:

Execute Script 625

12.1.5.7 Design Query

General options

Allow SELECT queries only
When this option is checked, the *INSERT*, *UPDATE* and *DELETE* statements are not allowed in Design Query 448.

Select condition row
Displays the selected condition in different rows on the **Criteria** and **Grouping Criteria** tabs of Design Query 448.

Drag column name
Displays the dragged column name in the editor area.

Hide selection when inactive
Hides the selection when the Design Query 448 window is inactive.

Show column types
Displays the column data type next to the column name in the table box.

Union all by default
Check this option to use the *UNION ALL* expression in Design Query 448 by default.
The *UNION* keyword allows you to include the results of two *SELECT* statements in one resulting table.
The *ALL* parameter incorporates all rows into the results, including duplicates. If not specified, duplicate rows are removed.

Allow owner prefix for dbo objects
Adds the schema name to the table name in the 'Table' box caption (for *[dbo]* schema objects)

Show actual execution plan on query execution
If this option is checked, the query plan 463 is displayed within the corresponding tab of the Design Query 448 window.

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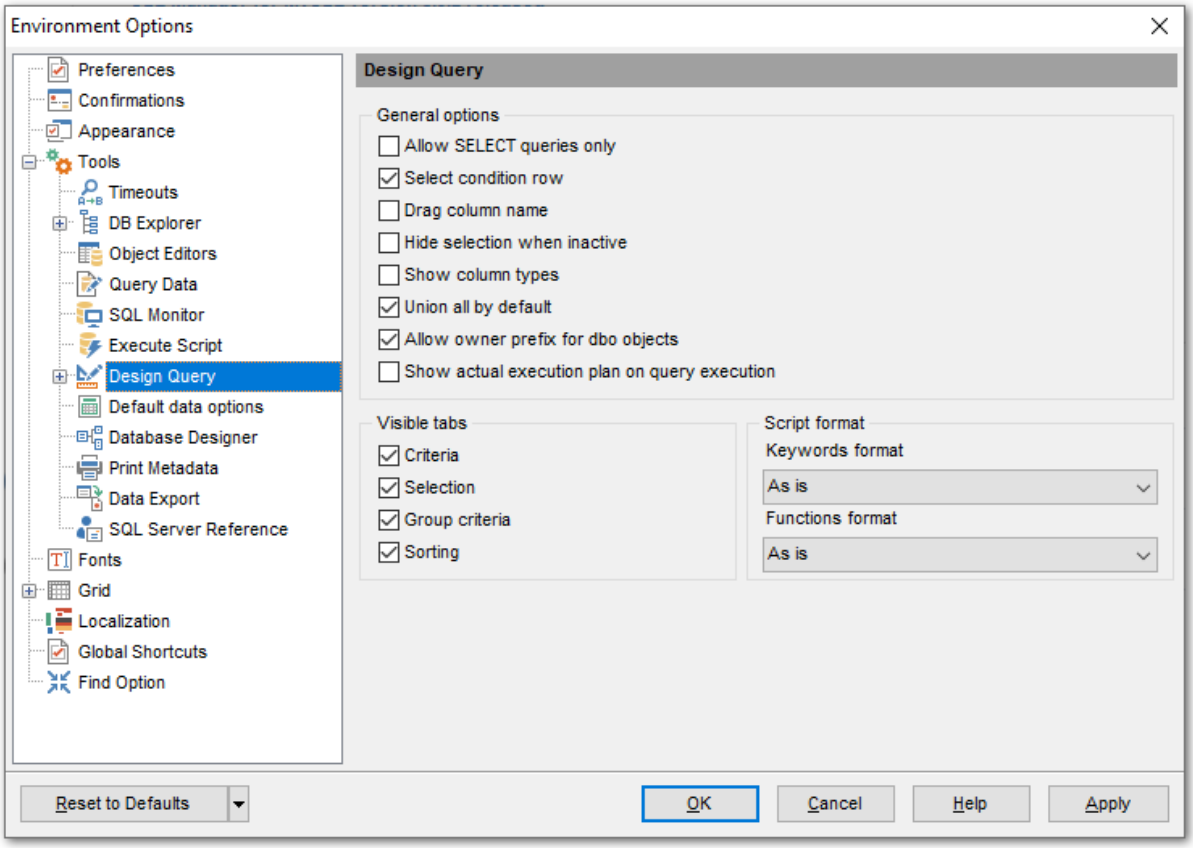


Visible tabs

These options specify which Design Query 448 tabs are available and which are not. Use the check boxes to make the corresponding tabs visible/invisible.

Script format

These options specify case formatting of keywords and functions in query text within the Edit 460 tab: *As is* keeps the original case, *Uppercase* sets all the keywords/functions to the upper case, *Lowercase* sets all the keywords/functions to the lower case, and *First upper* sets the first letters of all keywords/functions to the upper case.

Additionally, you can set styles and color for all **Design Query** objects by using Style & Color Palette 878.

See also:

Design Query 448

12.1.5.7.1 Style & Color Palette

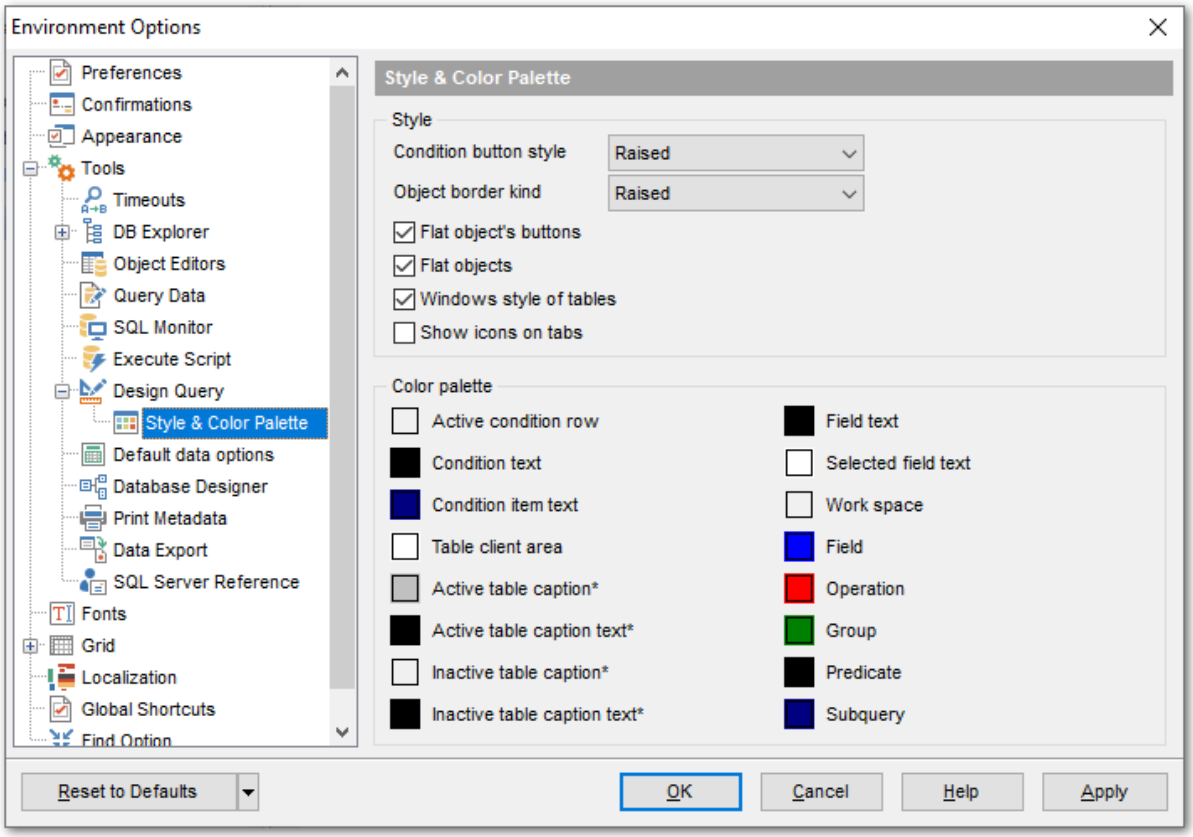
Style

These options specify the way various Design Query 448 elements look: the **Condition button**: *Flat*, *3DLook*, *Raised*; **object borders**: *Bump*, *Etched*, *Raised*, *Sunken*. If necessary, you can also specify **flatness** for objects and buttons using the corresponding

options.

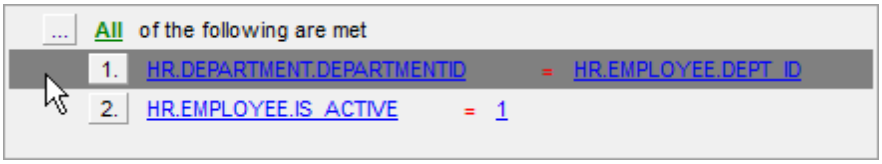
XP tables style
This option determines the appearance of non-client areas of tables in Design Query 448.

Show icons on tabs
With this option selected, you can see icons next to the tab names in Design Query 448.

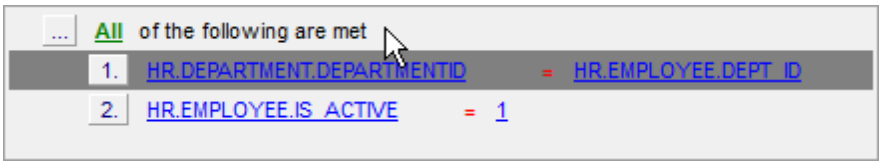


Color palette
These options define the colors of various Design Query 448 elements.

Active condition row (at the Criteria 454 and Grouping criteria 458 tabs):



Condition text (at the Criteria 454 and Grouping criteria 458 tabs):



Condition item text (at the Criteria 454 and Grouping criteria 458 tabs):

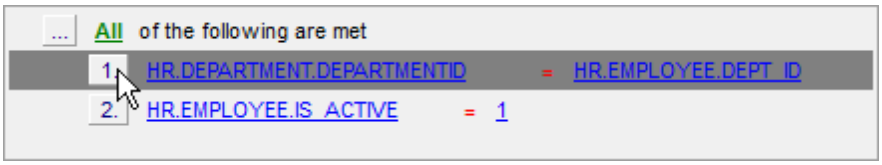
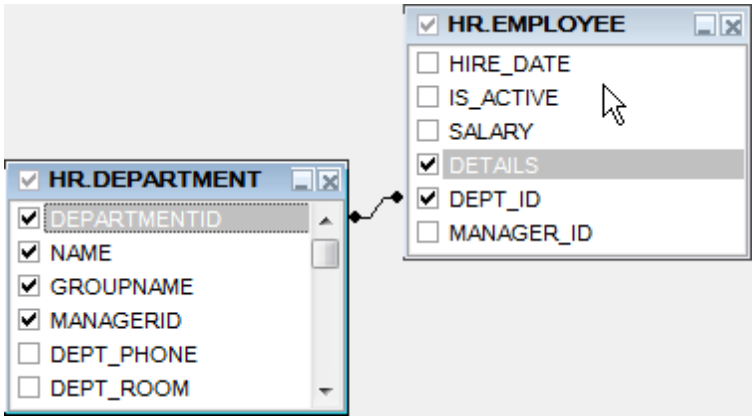
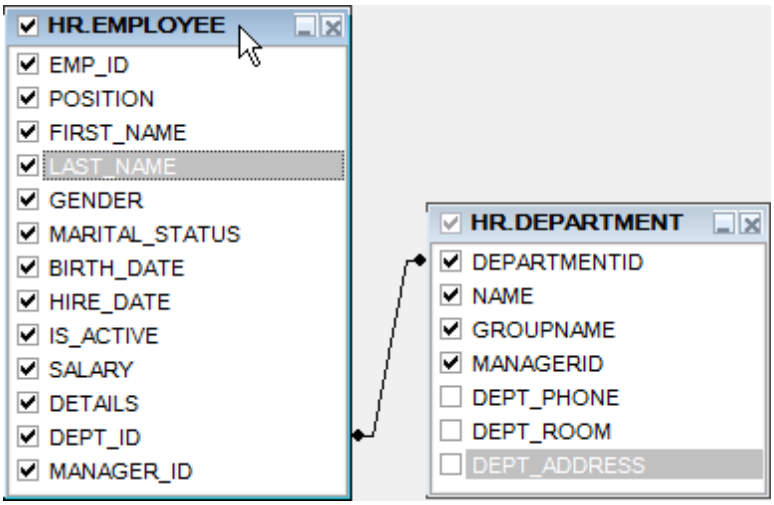


Table client area (in the diagram area 450):



Active table caption (in the diagram area 450):



Inactive table caption (in the diagram area 450):

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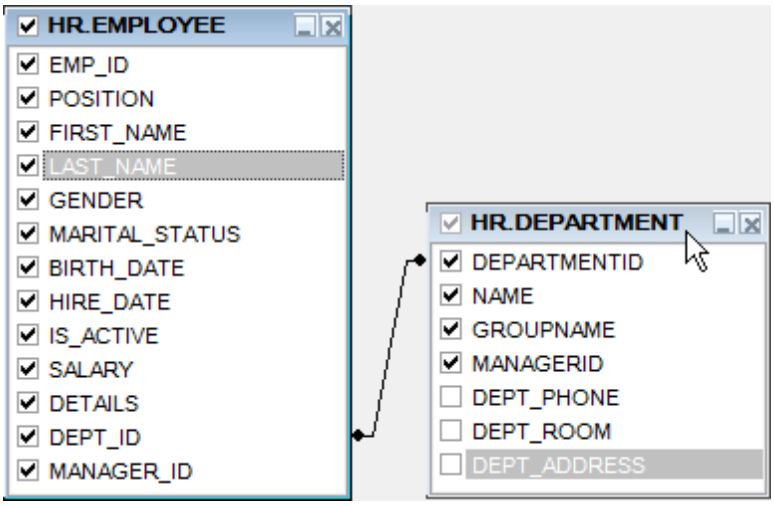
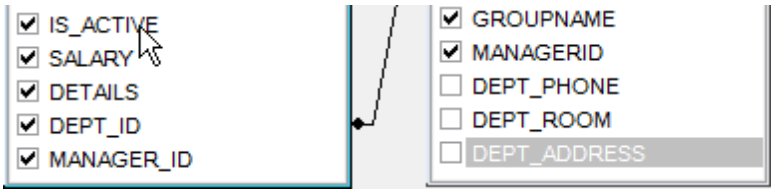
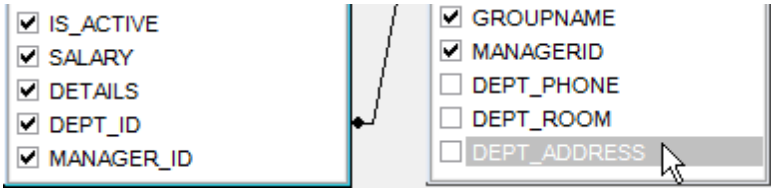


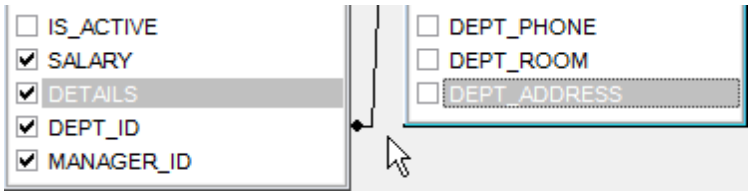
Column text (in the diagram area 450):



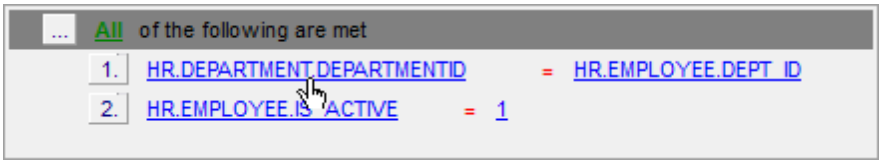
Selected column text (in the diagram area 450):



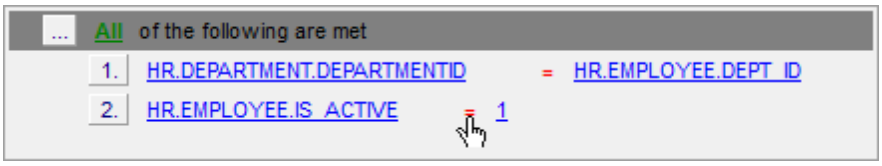
Work space (in the diagram area 450):



Column (at the Criteria 454 and Grouping criteria 458 tabs):

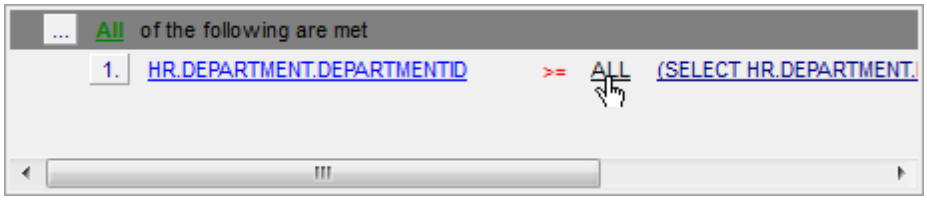


Operation (at the Criteria 454 and Grouping criteria 458 tabs):

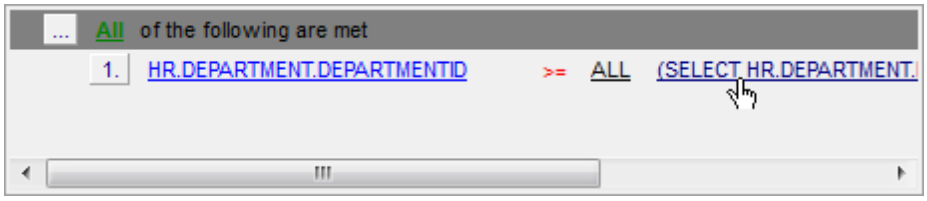


Group (at the Grouping criteria 458 tab):

Predicate (at the Criteria 454 and Grouping criteria 458 tabs when a subquery 451 is used):



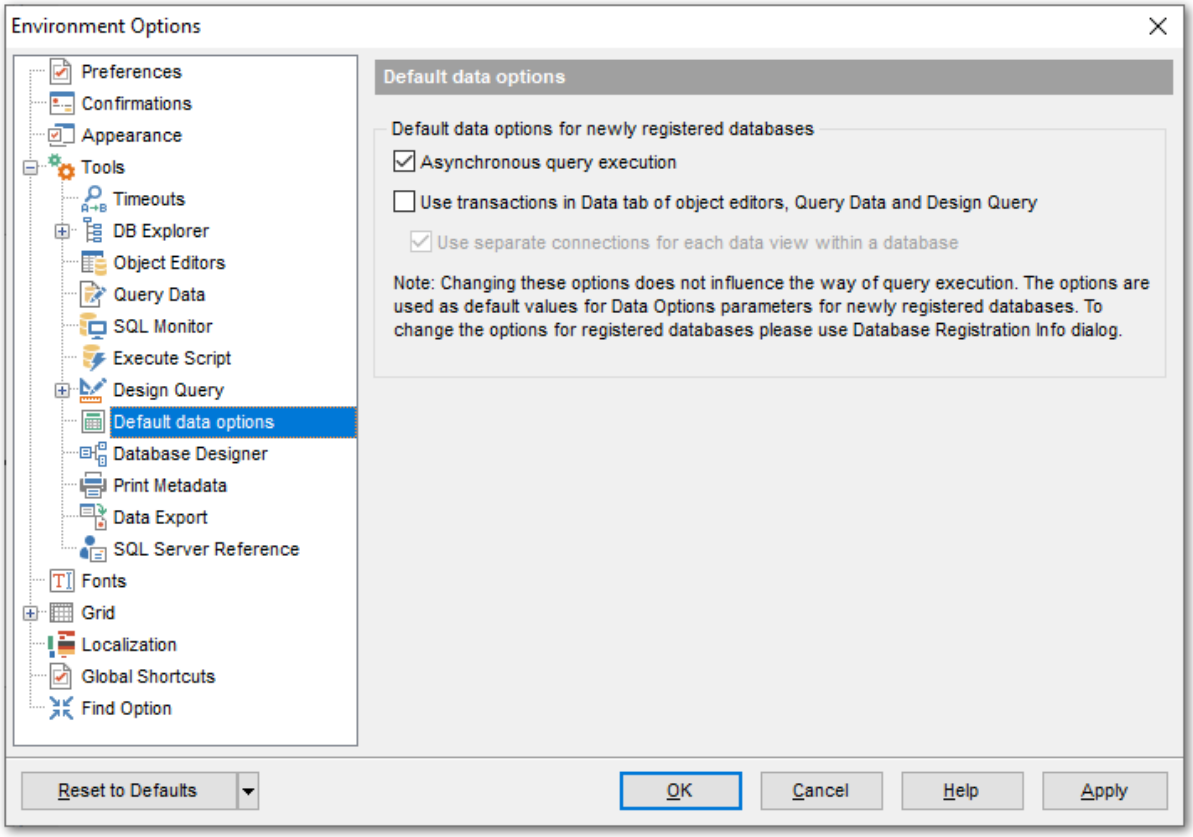
Subquery (at the Criteria 454 and Grouping criteria 458 tabs when a subquery 451 is used):



Click an item to select a color for the corresponding element using the **Color** dialog where you can specify the required color from the palette.

12.1.5.8 Default Data Options

Default data options for newly registered databases



Asynchronous query execution
Check this option to allow executing queries in background mode (asynchronously).

Use transactions in Data tab of object editors, Query Data and Design Query
If this option is enabled, a transaction is active until the 'Data' tab is closed or the 'Commit' button is pressed; all edited records are blocked until the transaction is committed. If this option is disabled, the transaction starts and is immediately committed (autocommit) on saving each record which is blocked only for a short period of time.

Use separate connections for each data view within a database
Uncheck this option to use separate connection for each data view within a database. Note that this option is only available when the *Use transactions in Data tab of object editors, Query Data and Design Query* option is enabled.

12.1.5.9 Database Designer

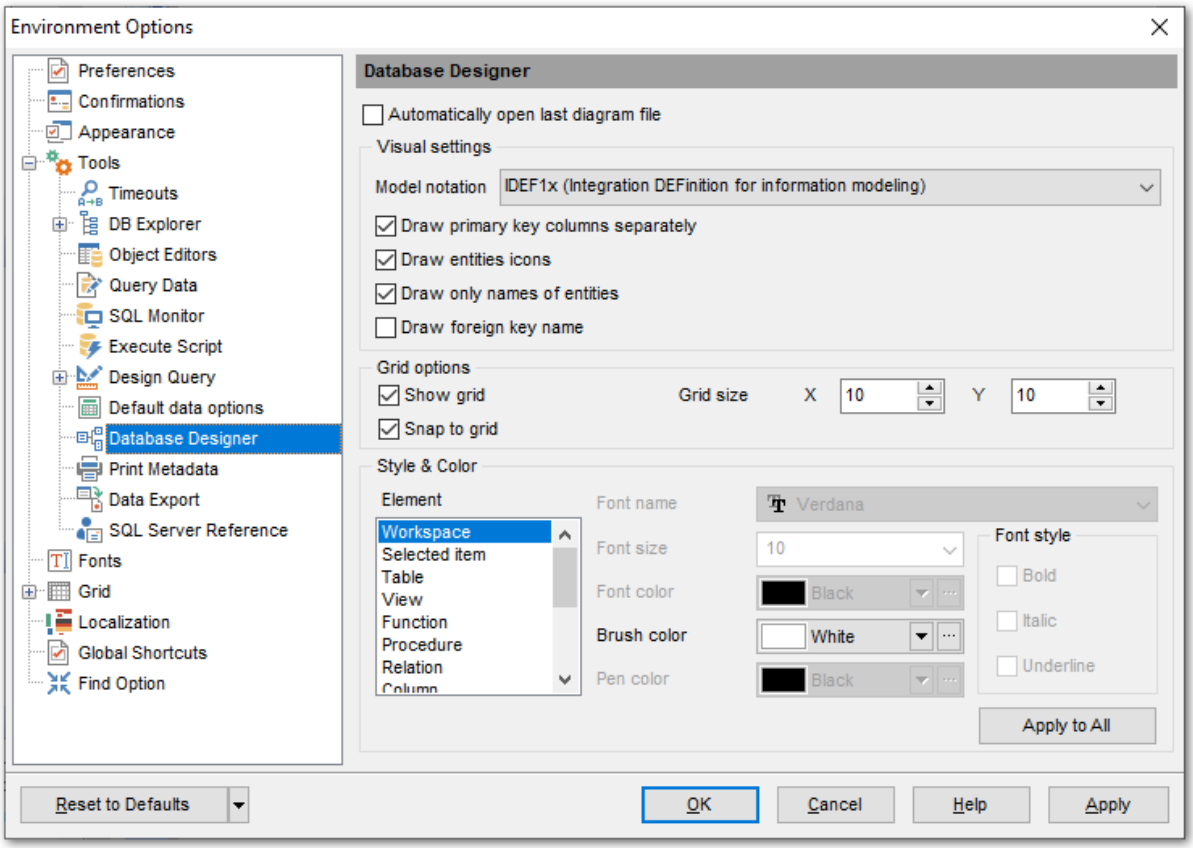
Visual settings

Automaticalliy open last diagram file
Allows to load the diagram from last loaded file.

Model notation
When you work in Database Designer 701, you can choose one of the following modeling notations:

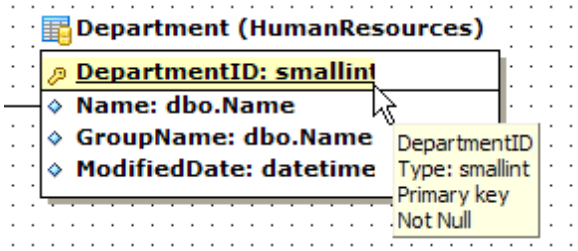
- Integration DEFinition for Information Modeling (IDEF1X);
- Information Engineering (IE).

The *IDEF1X* and *IE* notations use different symbols to represent relationships between entities (and tables).



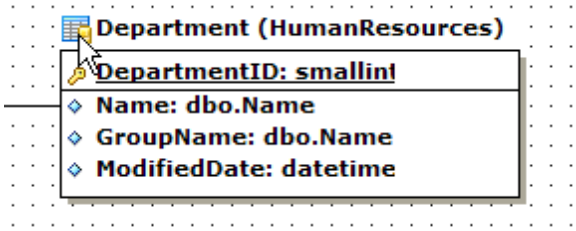
Draw PRIMARY KEY columns separately

Separates Primary key columns from other columns with a horizontal line.

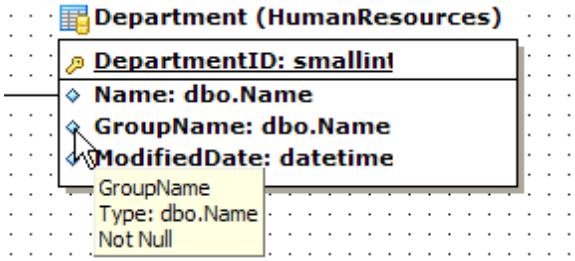


Draw entities icons

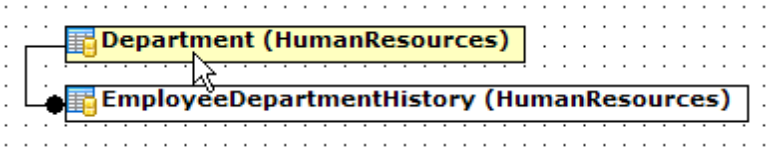
Displays icons at the left of each entity header according to its type.



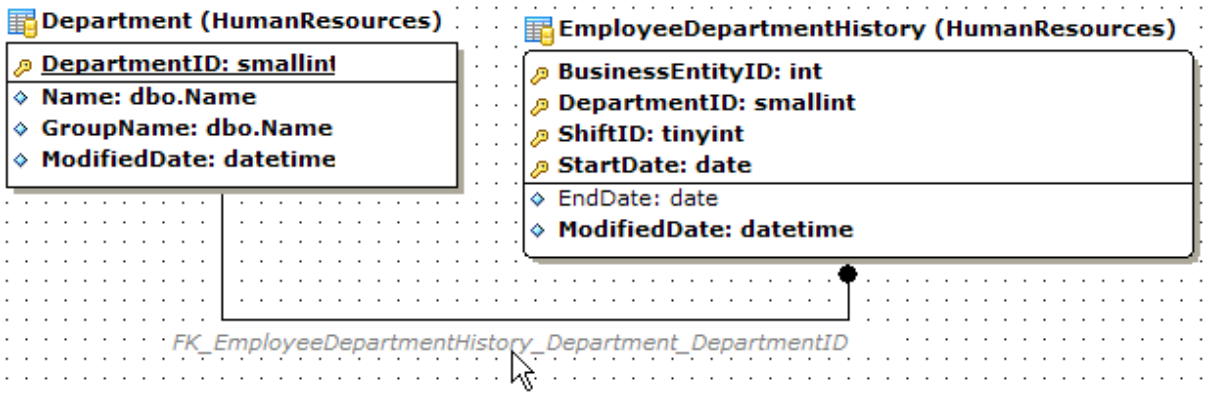
Draw attributes icons
Displays icons at the left of each attribute according to its type (Primary key, Foreign key, ordinary column).



Draw only names of entities
Displays only entity headers, columns are hidden.



Draw FOREIGN KEY name
Displays foreign key names for the corresponding relations.



Draw page borders
Displays borders on the diagram page which are the borders used when printing pages with the diagram.

Grid options

Show grid
Displays dots in the diagram area to make the grid visible.

Snap to grid
Automatically aligns entities on the form with the nearest grid line. You cannot place an entity in between grid lines.

Grid size
Sets grid spacing in pixels along the *x*- and *y*-axes. Specify a higher number to increase grid spacing.

Entity header font
Select a font type and size to display entity headers.

Attributes font
Select a font type and size to display attributes.

Additionally, you can set color for all VDBD 701 diagram objects using the **Style and Color** section.

This section allows you to customize the default appearance of the diagram.

Select a diagram element from the list:
- Workspace
- Selected item
- Table
- View
- Function
- Procedure
- Relation
- Column
- Primary key
- Unique column
- Foreign key
- Autoincrement column
- Not null column
- Comment

Then you can specify the following style settings for each element:
- *Font name*
- *Font style*
- *Font size*
- *Font color*
- *Brush color*
- *Pen color*

See also:
Visual Database Designer 701

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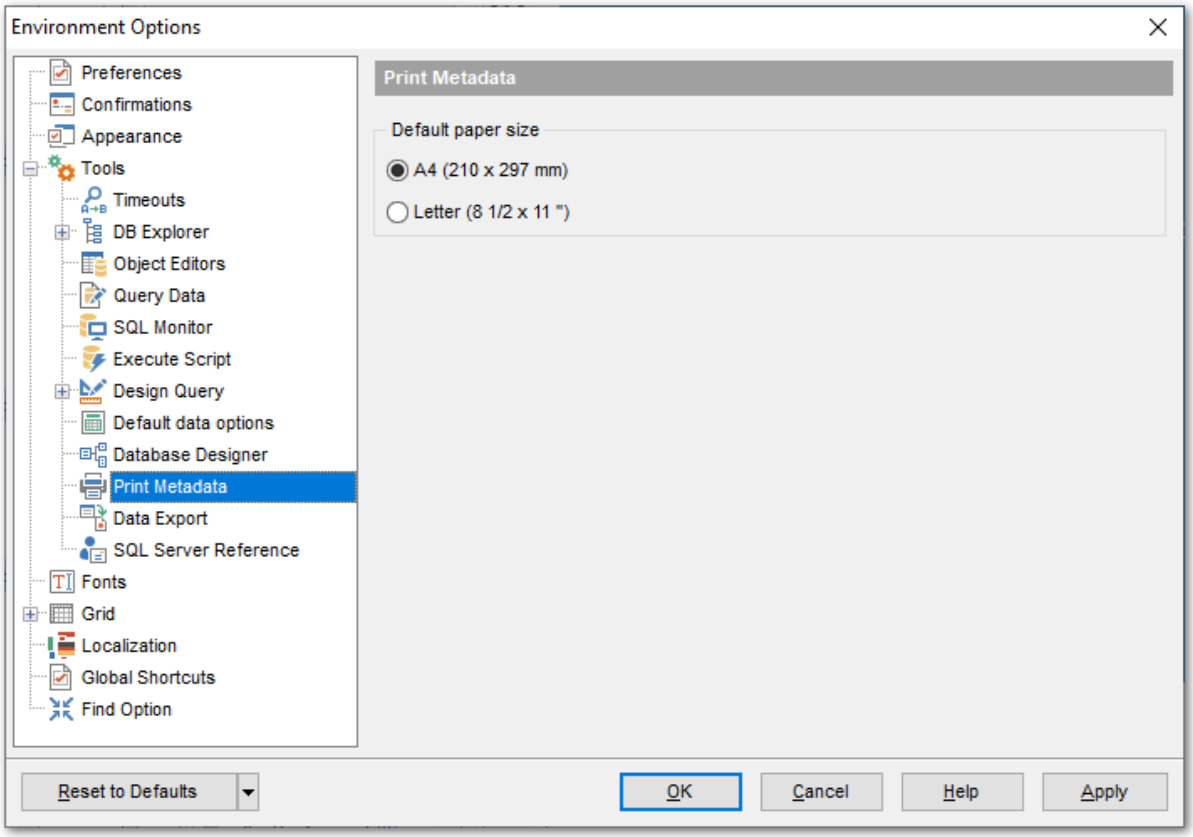
12.1.5.10 Print Metadata

Default paper size

Define the default paper size for reports created with the Print Metadata 649 tool used:
- *A4* (210 x 297 mm)
- *Letter* (8 1/2 x 11 ")

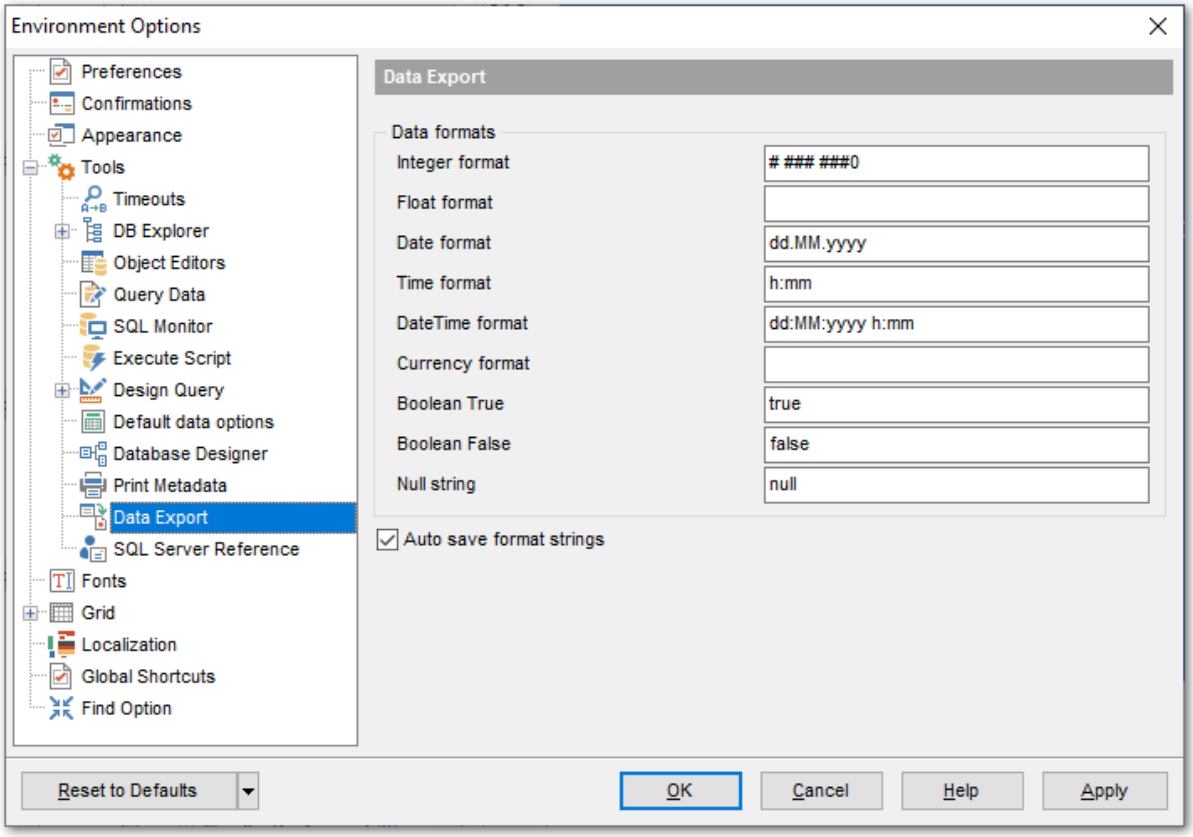


See also:

Print Metadata 649

12.1.5.11 Data Export

This page allows you to customize formats applied to exported 537 data.



Data formats
Edit the format masks to adjust the result format in the way you need: *Integer format*, *Float format*, *Date format*, *Time format*, *DateTime format*, *Currency format*, *Boolean True*, *Boolean False*, *Null string*.

Auto save format strings
Select this option to save specified format strings automatically.

These settings can also be specified at the Adjusting data formats 540 step of Export Data Wizard 537.
Fore more details see Format specifiers 966.

See also:

Export Data Wizard 537

12.1.5.12 SQL Server Reference

Using this page you can set which Microsoft® SQL Server™ reference system will be further used in SQL Manager for SQL Server:
- *Microsoft Document Explorer (SQL Server 2008 Help)*
- *Microsoft Document Explorer (SQL Server 2005 Help)*

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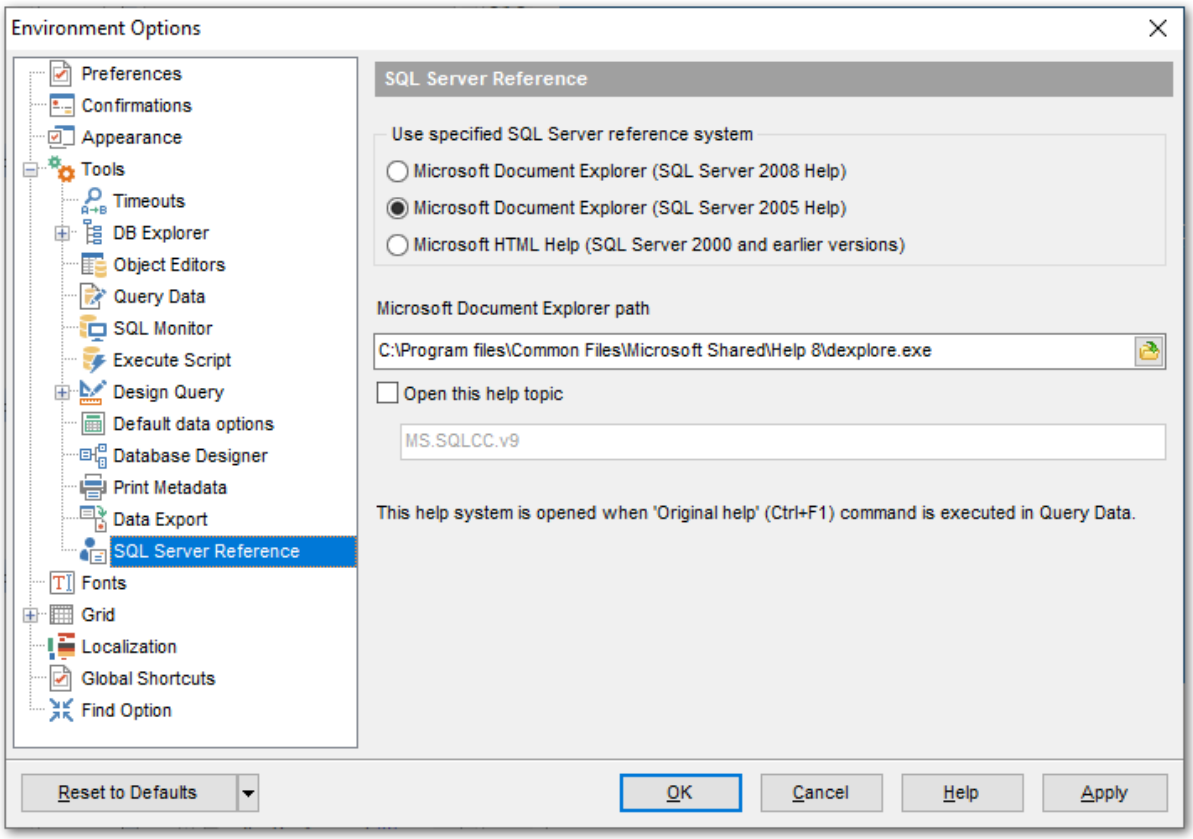
◉ *Microsoft HTML Help (SQL Server 2000 and earlier versions)*

For SQL Server 2005/2008 documentation you should also specify the location of **Microsoft Document Explorer**: use the button to browse for the file on your hard disk.

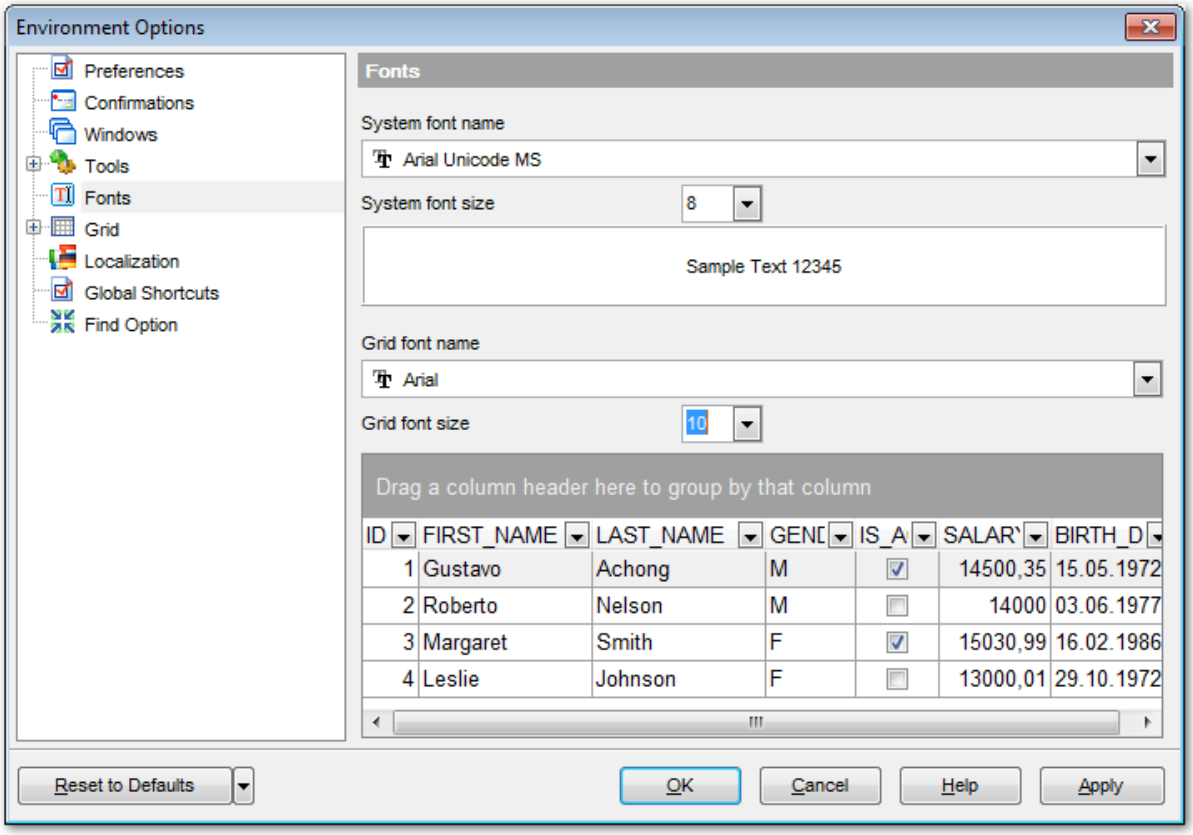


Optionally you can set the help topic to be opened by default at the help system startup. To do so, check ☑ **Open this help topic** and enter the help topic identifier in the editable area below.

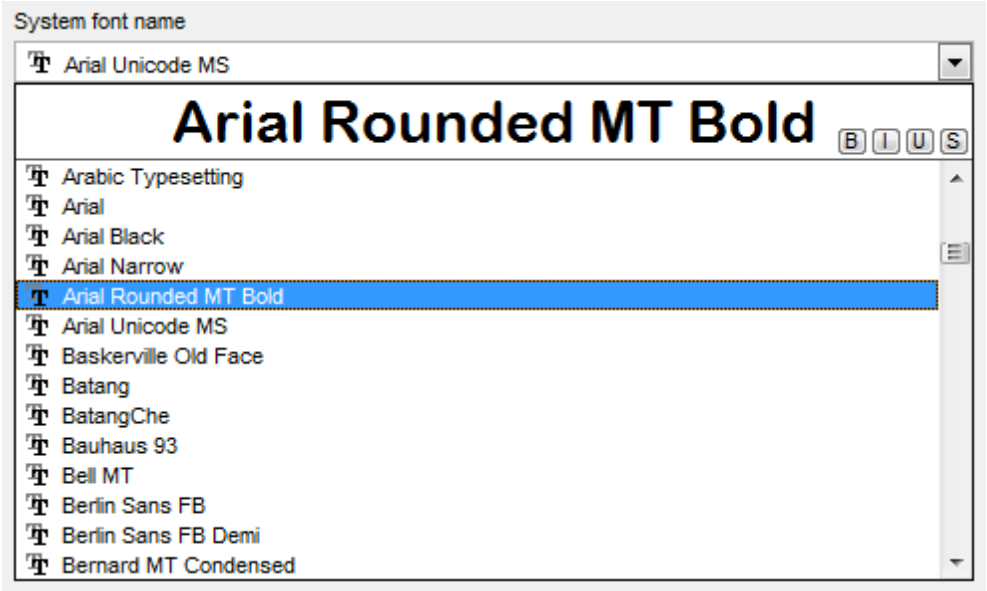
12.1.6 Fonts

This section of the **Environment Options** dialog allows you to specify fonts used in the application.

The box below displays the *sample text* with the selected font applied.



System font name
Defines the font used by SQL Manager for SQL Server. Select the font name from the drop-down list of available system fonts.



System font size
Defines the font size used by SQL Manager for SQL Server. Type in or use the drop-down list to select the required value.

Grid font name
Defines the font used for displaying data in the Data Grid 471. Select the font name from the drop-down list of available system fonts.

Grid font size
Defines the font size used for displaying data in the Data Grid 471. Type in or use the drop-down list to select the required value.

In the sample grid you can view how the data grid will look like with the configured font.

12.1.7 Grid

General options

☑ **Striped grids**
Displays the odd grid rows in a different color defined by the **Strip** option available on the Color & Formats 896 page.

☑ **Show editor immediately**
Allows editing the cell value right after the cell is clicked.

☑ **Always show editor**
Set this option to make the cell editors always active.

☑ **Enable auto-search in grid**
If this option is checked, the cursor is automatically forwarded to the closest match when you start typing.

☑ **Row multi-selection**
With this option set, multiple rows can be selected in grid 471.

☑ **Invert selection**
Determines whether a single cell within the focused row or the entire row is highlighted when focused.

☑ **Column auto-width**
With this option set, column widths are changed in order to display all columns without using the horizontal scroll bar. If the content a column is still too large to display without a need to resize the grid, then the column values are truncated and the hidden characters are replaced with an ellipsis at the end.

☑ **Cell auto-height**
If the widths of the columns are insufficient to display the full content, then text clipping occurs. Set this option to prevent this. If this option is set, the cell content is displayed in multiple lines where necessary. You can set the number of lines to display using the **Cell max line count** option.

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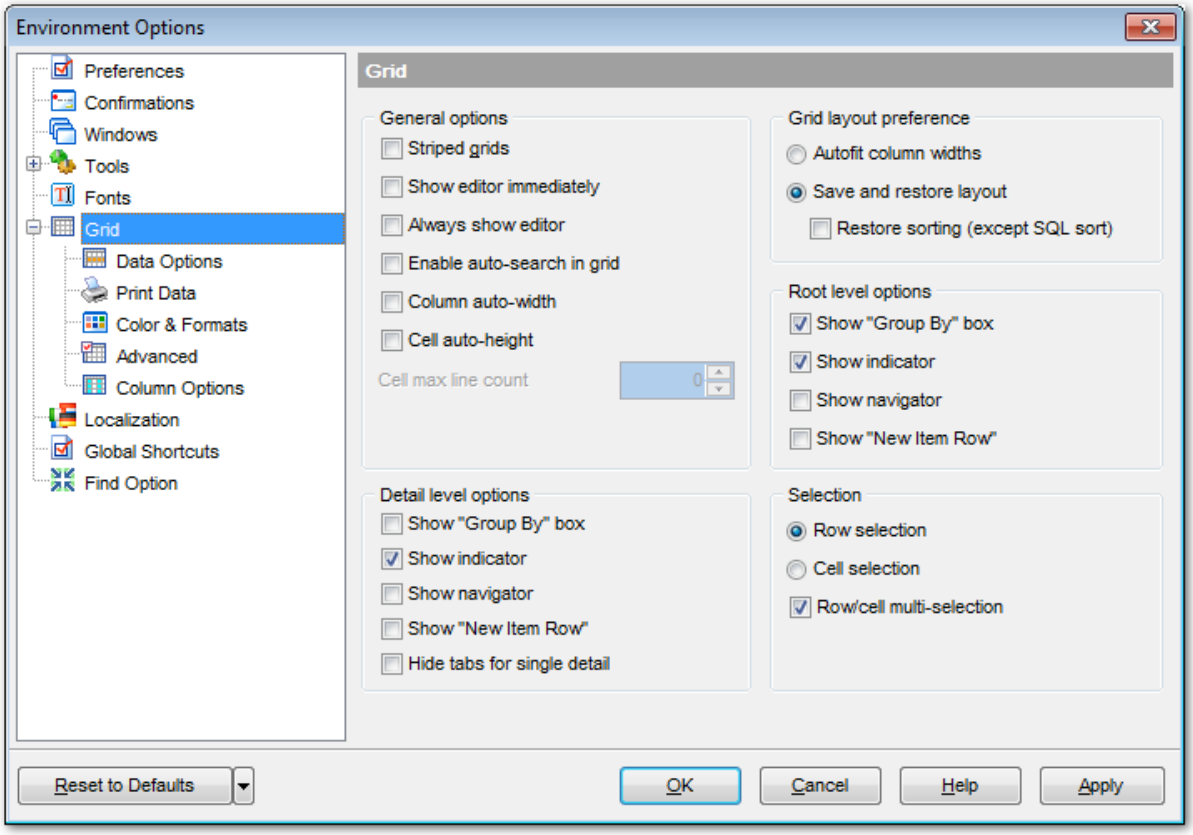


Grid layout preference

Autofit column widths
Use this option to shrink the grid columns so that the longest visible column value fits.

Save and restore layout
Use this option to keep the original grid width. Check the **Restore sorting** option to apply defaults to sorting (except for SQL sorting) as well.

Root level options

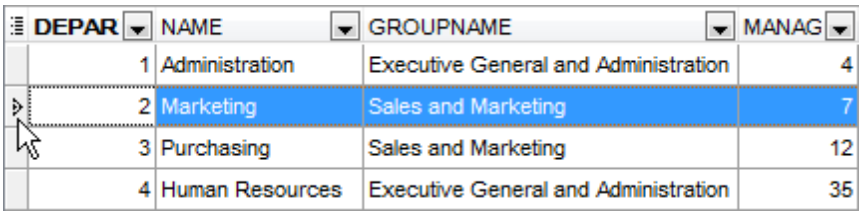
These options are applied to the main view 479 of the grid. See Grid View 471 for details.

Detail level options

These options are applied to the detail view 479 of the grid. See Grid View 471 for details.

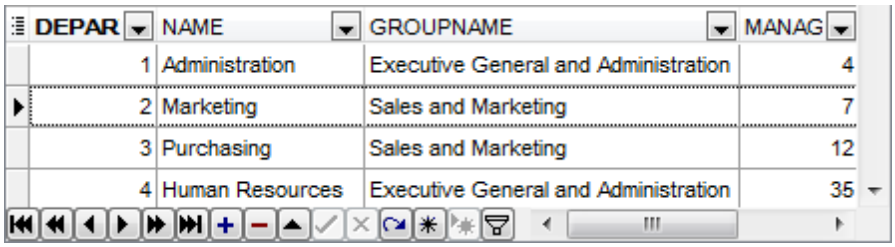
Show "Group by" box
Displays the gray area above the column caption allowing one to group 473 data in the grid.

Show indicator
Activates/deactivates the row indicator pane at the left.



DEPAR	NAME	GROUPNAME	MANAG
1	Administration	Executive General and Administration	4
2	Marketing	Sales and Marketing	7
3	Purchasing	Sales and Marketing	12
4	Human Resources	Executive General and Administration	35

☑ **Show navigator**
Activates/deactivates the data navigator similar to the navigation pane 470 at the top of the grid. The navigator is available at the bottom of detail level view.



DEPAR	NAME	GROUPNAME	MANAG
1	Administration	Executive General and Administration	4
2	Marketing	Sales and Marketing	7
3	Purchasing	Sales and Marketing	12
4	Human Resources	Executive General and Administration	35

☑ **Show "New item row"**
Displays an empty row at the bottom of a view which is a convenient way for adding data to the grid.

☑ **Hide tabs for single detail**
This option is useful when only one view is present on the detail level. When the option is enabled, the view tab is hidden.

Selection

If the ◉ **Row selection** is selected then the whole record in the table is selected in the table on clicking the cell. Otherwise, only the clicked cell is selected (◉ **Cell selection** option).

Check the ☑ **Row/cell multi-selection** option to enable the selection of multiple cells or rows in the grid with the *Shift* button.

See also:
Grid View 471

12.1.7.1 Data Options

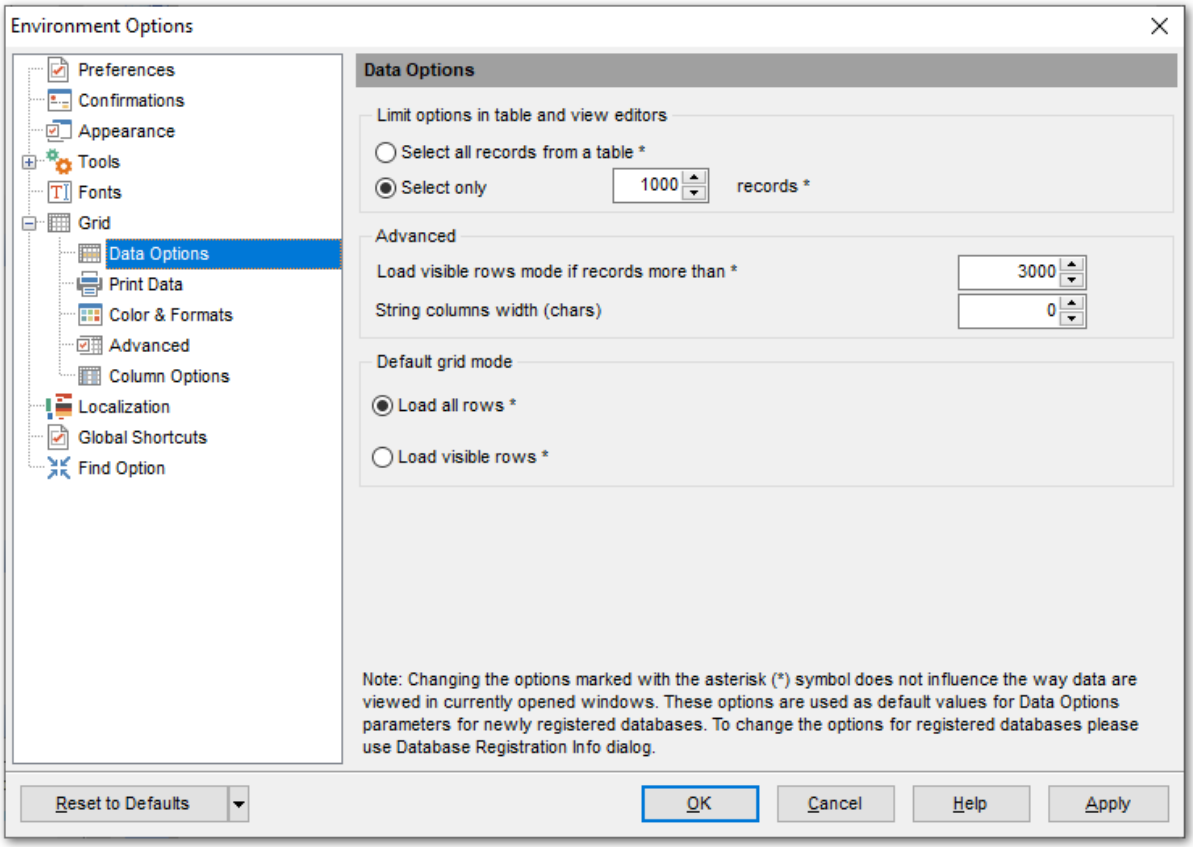
Limit options in table and view editors

Define the number of records to be selected on opening the **Data** tab of Table Editor 204 and View Editor 250:
◉ *Select all records from a table**
◉ *Select only ... records** (you should set the number of records using the corresponding spinner control)

Advanced

Load visible rows mode if records more than...*
Set this option to switch to the **Load visible rows** mode when the number of records in the dataset exceeds the specified value.

String columns width (chars)
Using this option you can limit string columns width that may improve performance on large datasets.



Default grid mode

Load all rows*
The grid loads all records from a dataset. This option increases the grid performance by reloading only changed dataset records when updating. In this mode all features (automatic sorting, filtering and summary calculations) are available.

Load visible rows*
The grid loads only a fixed number of dataset records into memory. This option minimizes dataset loading time. Automatic sorting, filtering, summary calculations are not available in this mode.

The **Default grid mode** options allow you to define the grid mode which will be used by default.

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With the **Load all rows** option enabled, when loading data, all the records are loaded into grid buffers. In this mode opening the tables with many records may take a considerable amount of time. But in this case you can make use of some advantages: in the filter drop-down list the column headers are displayed with the values for quick filtering; it is possible to open several sub-levels at the same time when viewing data in master-detail view, etc.
In case opening and other operations with an object consisting of many records takes sufficient time, the **Load visible rows** mode should be used instead. It can be set individually for each table and saved between sessions (can be set through the context menu 478 of the grid).

Note: Changing the options marked with the asterisk (*) sign does not affect the way data are viewed in currently opened windows. These options are used as default values for Data Options parameters for newly registered databases. To change the options for registered databases, please use the Database Registration Info 127 dialog.

See also:
EMS SQL Manager FAQ 32

12.1.7.2 Print Data

Save/restore following print data properties

These options specify which Print Data 491 properties will be saved between work sessions (e.g. if you tick off the *Page settings* item, those settings will be saved and stored between the sessions).

You can save/restore the following **Print Data properties**: *Card view representation*, *Detail view representation*, *Expanding*, *Formatting*, *Level options*, *"On every page" options*, *Pagination*, *Preview options*, *Image options*, *Selection options*, *Report size options*, *Showing grid elements*, *Page number format*, *Page settings*, *Report title*.

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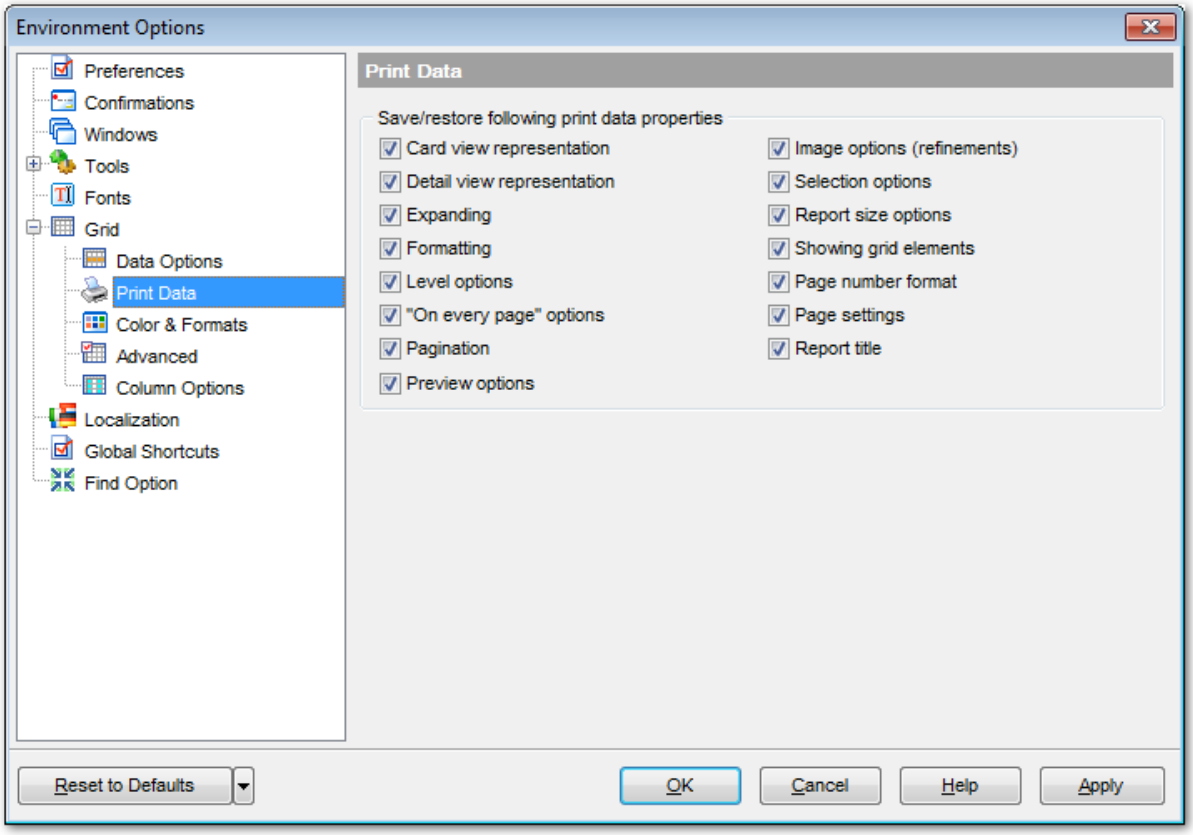


12.1.7.3 Color & Formats

Display formats

Integer columns
Defines the format for displaying *TINYINT*, *SMALLINT*, *INTEGER* and *BIGINT* columns.

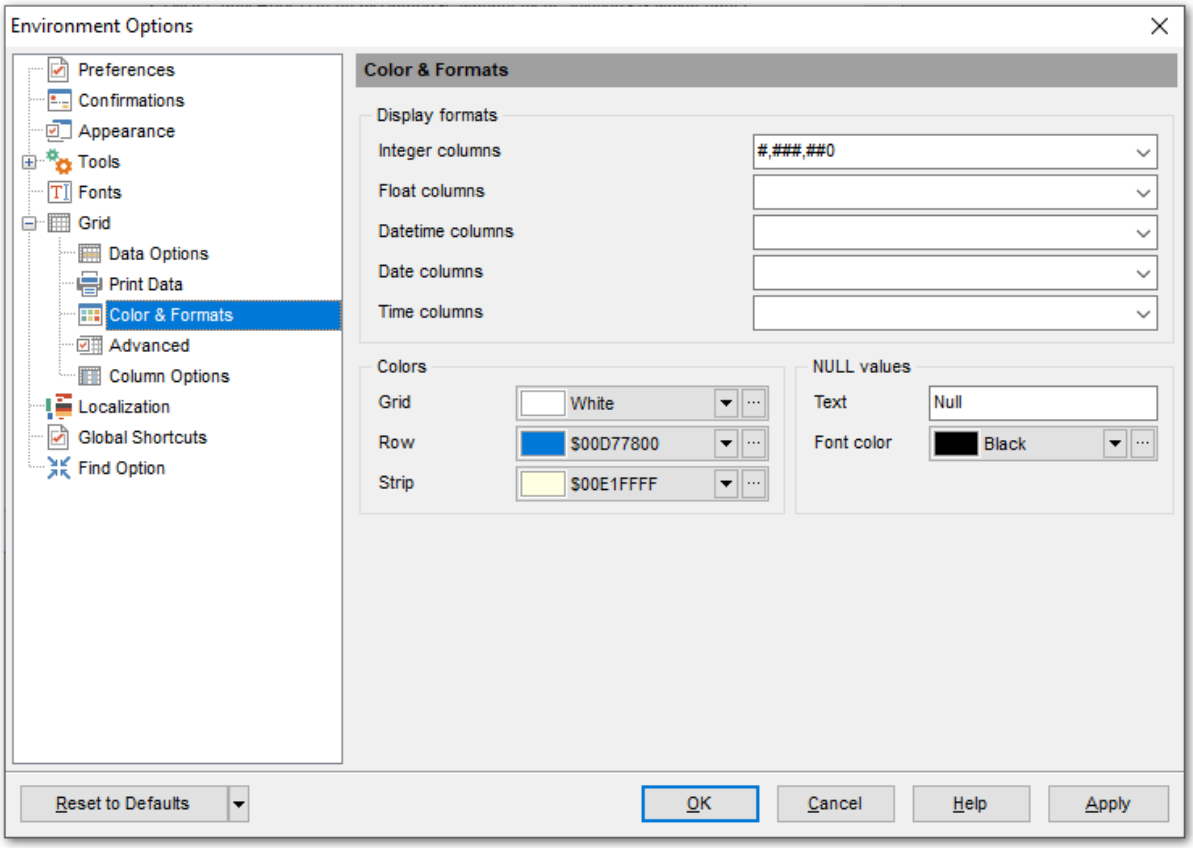
Float columns
Defines the format for displaying *FLOAT*, *DOUBLE* and *DECIMAL* columns.

Datetime columns
Defines the format for displaying *DATETIME* columns.

Date columns
Defines the format for displaying *DATE* columns.

Time columns
Defines the format for displaying *TIME* columns.

For more information refer to the Format specifiers 966 page.



Colors

Options of this group allow you to set colors for basic grid 471 elements. Use the ellipsis button to open the **Color** dialog allowing you to select the required color from the palette.

Grid
Defines the background color of the data grid.
Row
Defines the color of the selected row in the data grid.

Strip
Defines the color of the odd rows (applied if the **Striped grids** option is set on the Grid 891 page).

NULL values

Text
Defines the text that stands for NULL values in grid 471.

Font color
Defines the font color for displaying NULL values in the grid 471. Use the ellipsis button to open the **Color** dialog allowing you to select the required color from the palette.

12.1.7.4 Advanced

Advanced options

☑ **Cell hints for clipped text**
Indicates whether a hint box is displayed when hovering over a cell containing clipped text.

☑ **Focus cell on cycle**
Determines whether the focus moves to the next row after it reaches the right-most cell within the current row.

☑ **Focus first cell on new record**
Determines whether the focus moves to the first cell of a newly created row.

☑ **Next cell on pressing Enter**
Determines whether the current view columns can be navigated by using the **Enter** key.

☑ **Show navigator hints**
Indicates whether a hint box is displayed when hovering over navigation buttons.

☑ **MRU list in column filter**
Enables showing of *Most Recently Used* items when filtering columns.

☑ **Expand buttons for empty details**
Specifies whether to display expand buttons within master rows that do not have associated details.

Card width
Defines the width of the card used in Card View 487 mode.

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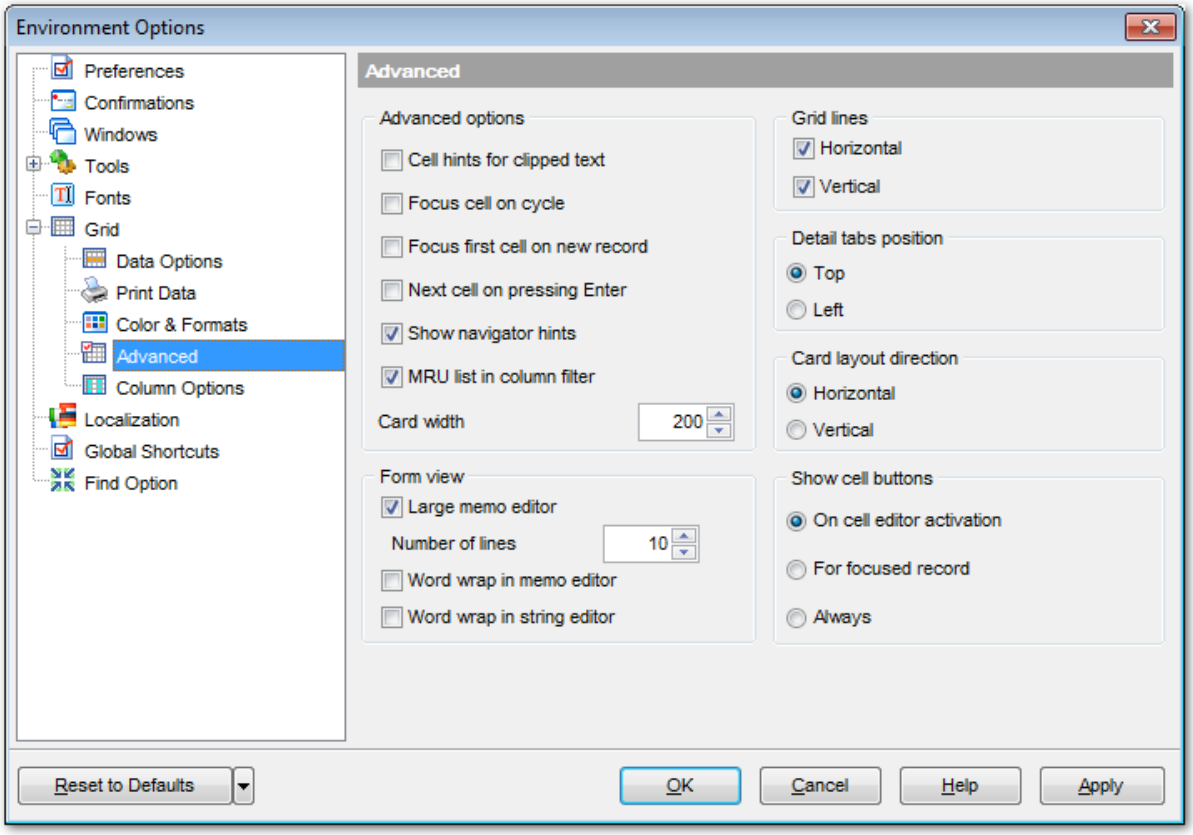

Form view

Large memo editor
Sets the number of lines for text-typed columns when viewing data in Form view 490.

Word wrap in memo editor
Determines whether long strings are wrapped within the memo editor area.

Word wrap in string editor
Determines whether long strings are wrapped within the string editor area.

Grid lines
Determines whether to display *vertical* and *horizontal* lines between cells.

Detail tabs position
Specifies the position of the tabs in detail level views: *top* or *left*.

Card layout direction
Specifies the direction of cards in Card View mode: *horizontal* or *vertical*.

Show edit buttons
Indicates when the edit buttons are displayed: *never*, *for focused record* or *always*.

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12.1.7.5 Column Options

Common options

Auto-select text
Determines whether all text within an editor is automatically selected when the editor gets focus.

Hide selection on losing focus
Determines whether the visual indication of the selected text remains when the editor loses focus.

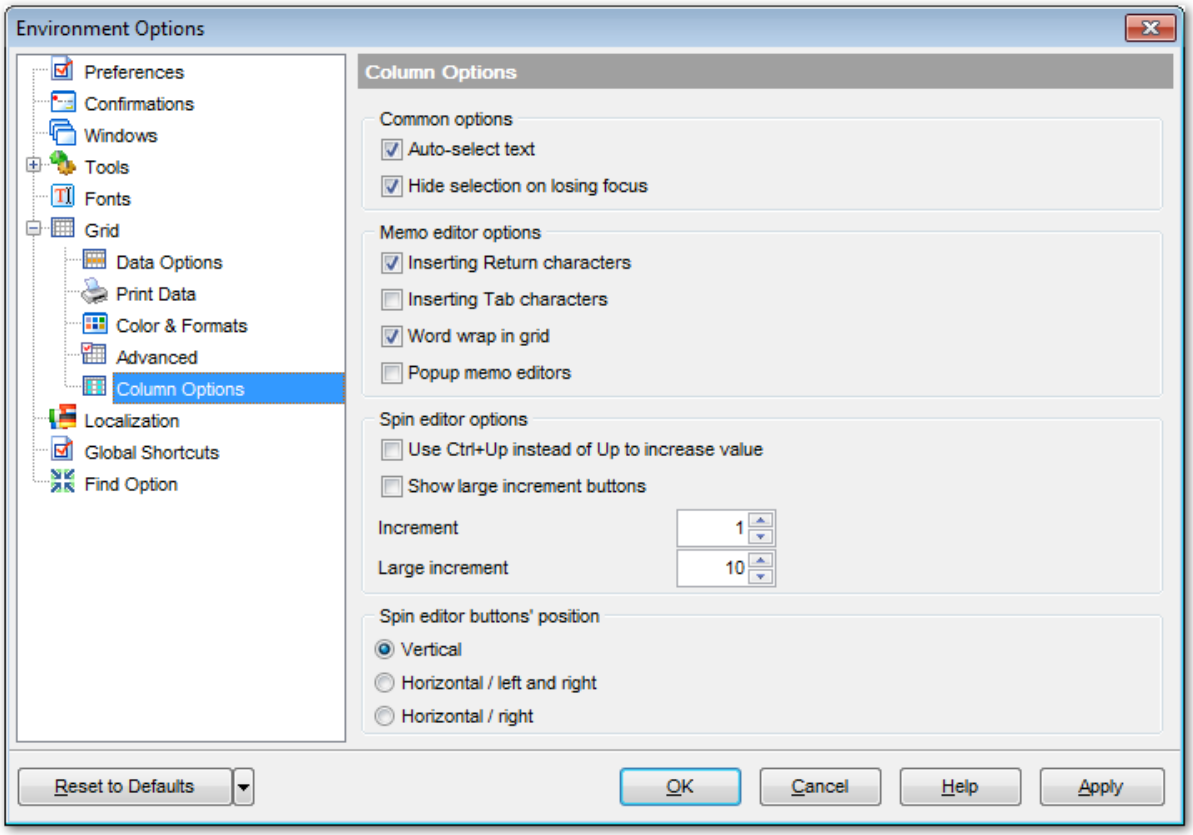
Memo editor options

Inserting Return characters
Specifies whether a user can insert return characters into text.

Inserting Tab characters
Specifies whether a user can insert tab characters into text.

Word wrap in grid
Determines whether long strings are wrapped in grid.

Popup memo editors
Turns on popup memo editors for text BLOB type fields.



Spin editor options

☑ **Use Ctrl+Up instead of Up to increase value**
Allows you to use *Ctrl+Up* and *Ctrl+Down* key combinations for editing spinner values (for *INTEGER* column values).

☑ **Show large increment buttons**
Determines whether fast buttons (for large increment) are visible within the editor.

Increment
Specifies the increment value for the spin editor (spinner control).

Large increment
Specifies the large increment value for the spin editor (spinner control).

Spin editor buttons' position
Specifies the position of spin editor (spinner control) buttons: *vertical*, *horizontal / left and right* or *horizontal / right*.

12.1.8 Localization

The **Localization** section of the **Environment Options** dialog is provided for managing the localization files of SQL Manager for SQL Server.

You can create your own **.lng* files similar to those available in the *%program_directory%\Languages* folder, add them to the list of available languages and set the new language as the program interface language.

Default directory
Use the **Explorer** button to specify the directory where the **.lng* files are to be stored by default.

Choose program language
Use the drop-down list of available languages to select the interface language to be applied to the application.

☑ **Auto scan languages on startup**
When checked, the directory with localization files will be scanned automatically at the application startup; all the languages found will be added to the list of available languages.

Available Languages
Lists all the languages available for localization and the corresponding **.lng* files. Double-click a language in the list to edit its name or the **.lng* file.

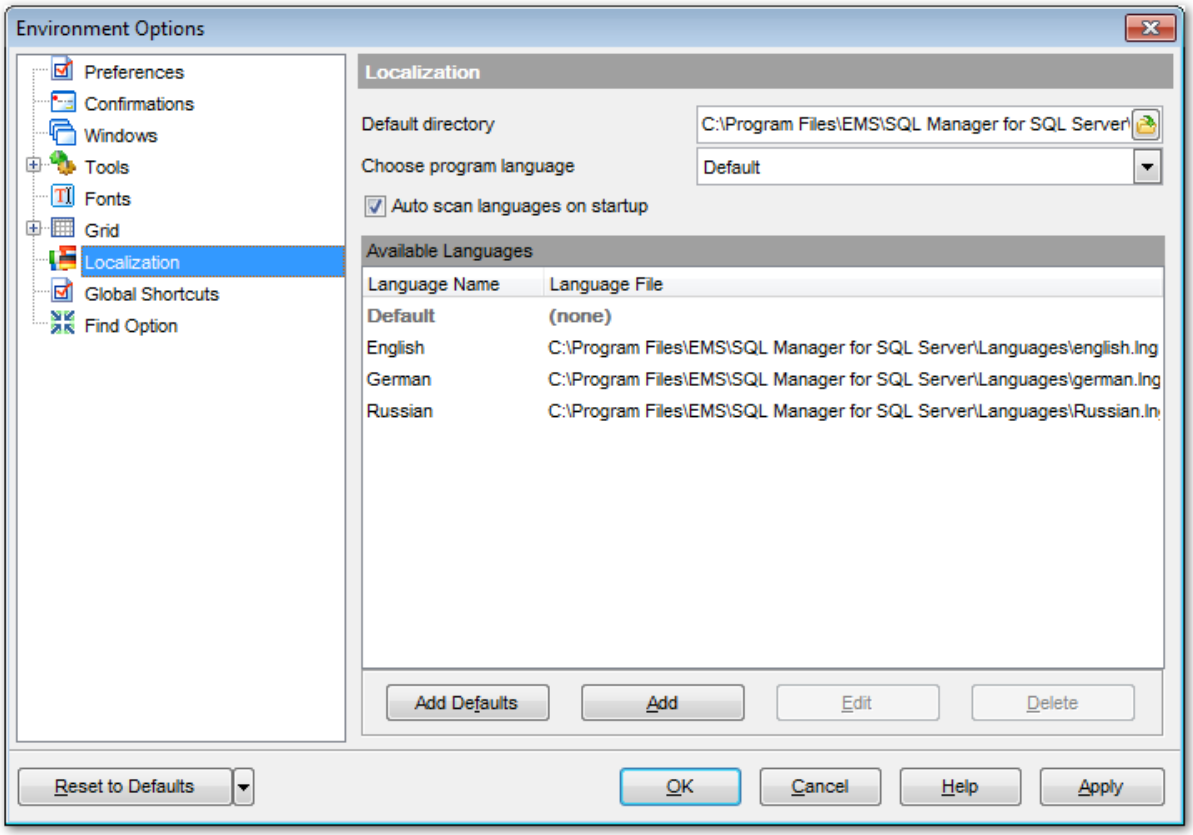
Add Defaults
This button is used to search for **.lng* files in the **Default directory** and add all of them to the **Available Languages** list.

Add
Opens the Add language 969 dialog where you can specify your own localization file and set

the language name.

Edit
Opens the Edit language 969 dialog where you can change the language name or select another localization file for the specified language.

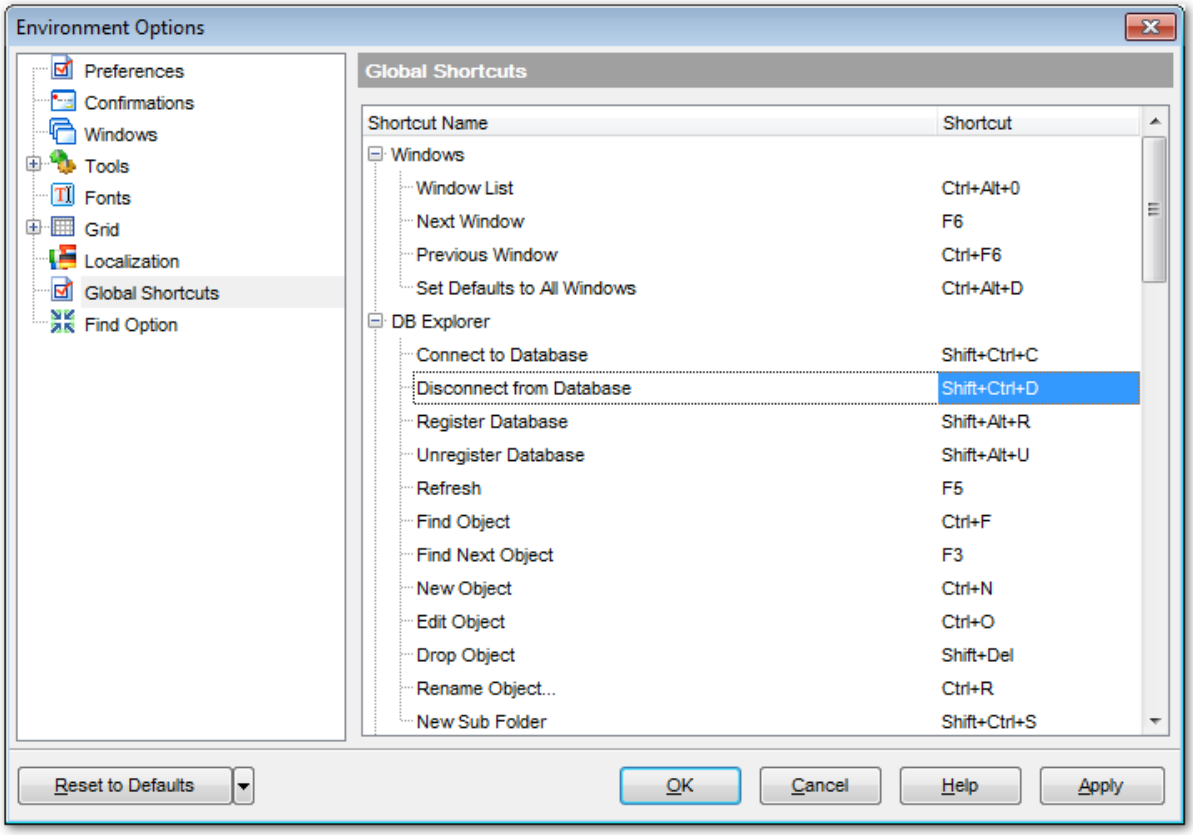
Delete
Removes the selected language from the **Available languages** list (without confirmation).



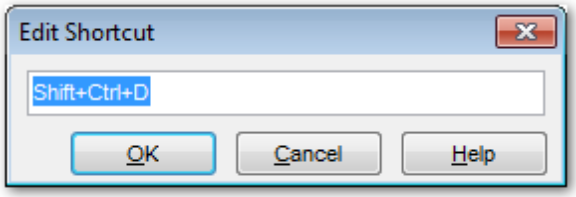
See also:
Localization 926

12.1.9 Global Shortcuts

This section allows you to view/edit shortcuts most needed actions when working with SQL Manager for SQL Server.



To edit shortcut, select the required action click the ellipsis button and press the preferred key combination to assign it with the action.

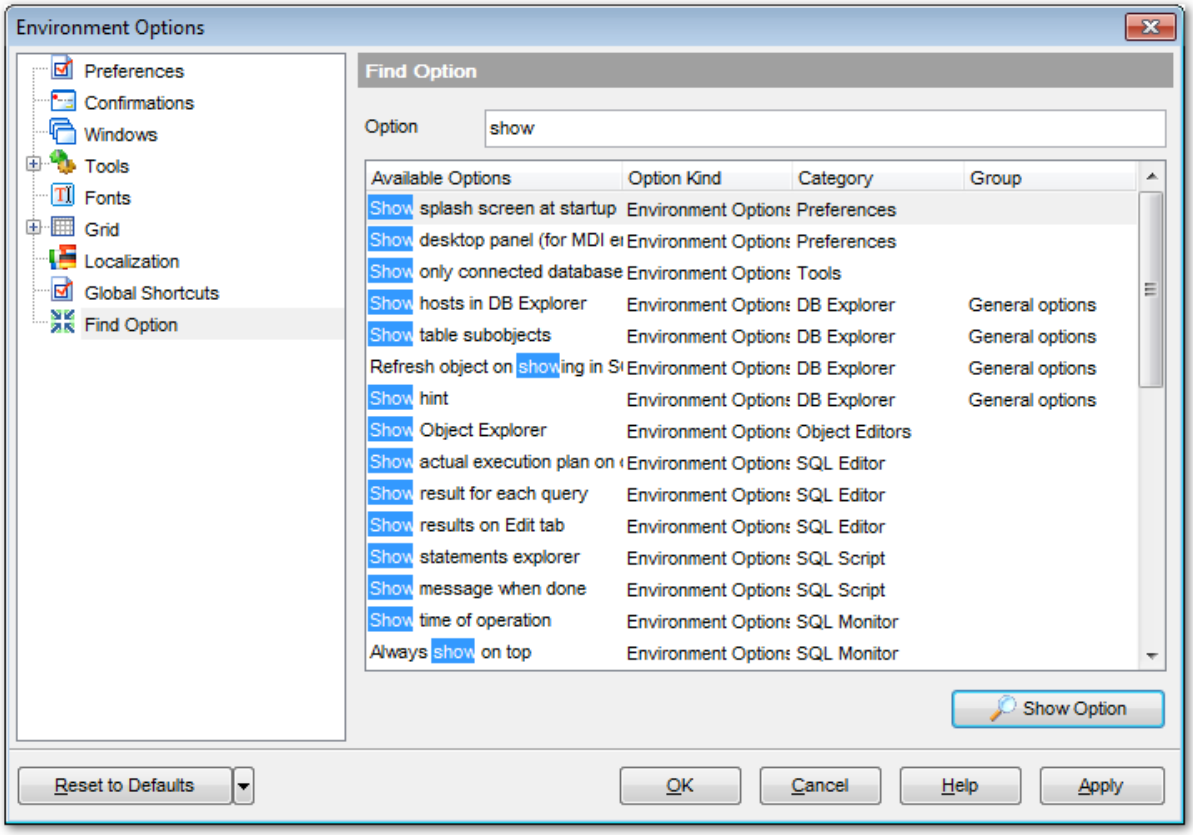


Common SQL Manager Shortcuts are listed in the SQL Manager shortcuts 986 section.

12.1.10 Find Option

The **Find Option** section allows you to search for options available within the **Environment Options** dialog easily and quickly.

Option
In this field you can enter the name of the option to search for within SQL Manager *Environment Options*.



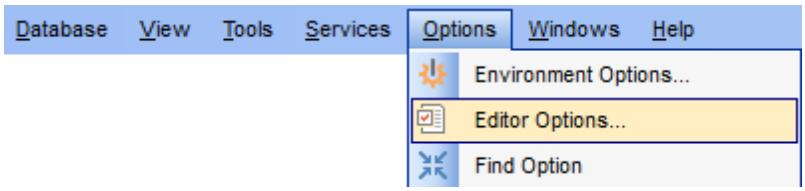
The **Available options** area lists all options of the *Environment Options* category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

Select the required option in the list and click **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated icon.

12.2 Editor Options

Editor Options allow you to set the parameters of viewing and editing SQL statements within Query Data 432 and other SQL editing tools of the SQL Manager application.

To open the **Editor Options** window, select the **Options | Editor Options...** main menu 951 item, or use the **Editor Options** button on the main toolbar 953.



- General 905
- Display 909
- SQL Formatter 914
- Key Mapping 916
- Spell Checking 918
- Find Option 919

See also:

Environment Options 854

Visual Options

12.2.1 General

Editor options

Auto indent
If this option is checked, each new indention is the same as the previous one when editing SQL text.
Indents and outdents are used in the process of text editing to make the source code easier to read.

Insert mode
If this option is checked, the insert symbols mode is on by default.

Find text at cursor
If this option is checked, the **Text to find** field in the Find Text 961 dialog is automatically filled with the text on which the cursor is set.

Always show hyperlinks
If this option is checked, hyperlinks are displayed in the editor window. To open a link, click it with the *Ctrl* key pressed.

Double click line
If this option is checked, double-clicking the line on which the cursor is set selects the

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whole line.

☑ **Trim trailing spaces**
If this option is checked, all spaces after the last symbol in line will be trimmed.

☑ **Fixed line height**
Prevents line height calculation. If this option is checked, the default line height is taken.

☑ **Persistent blocks**
Keeps marked blocks selected even when the cursor is moved with the arrow keys used, unless a new block is selected.

☑ **Fixed column move**
If this option is checked, the caret keeps its horizontal position when moved between lines.

☑ **Optimal fill**
Check this option to enable optimal algorithm of filling text content in the working area of the editor.

☑ **Unindent keep align**
Keeps align for the lines that are not indented.

☑ **Smart caret**
This option determines the caret movement (up, down, line start, line end). The caret is moved to the nearest position on the screen.

☑ **Resolve aliases**
Enables/disables the syntax highlight and code completion features for aliases.

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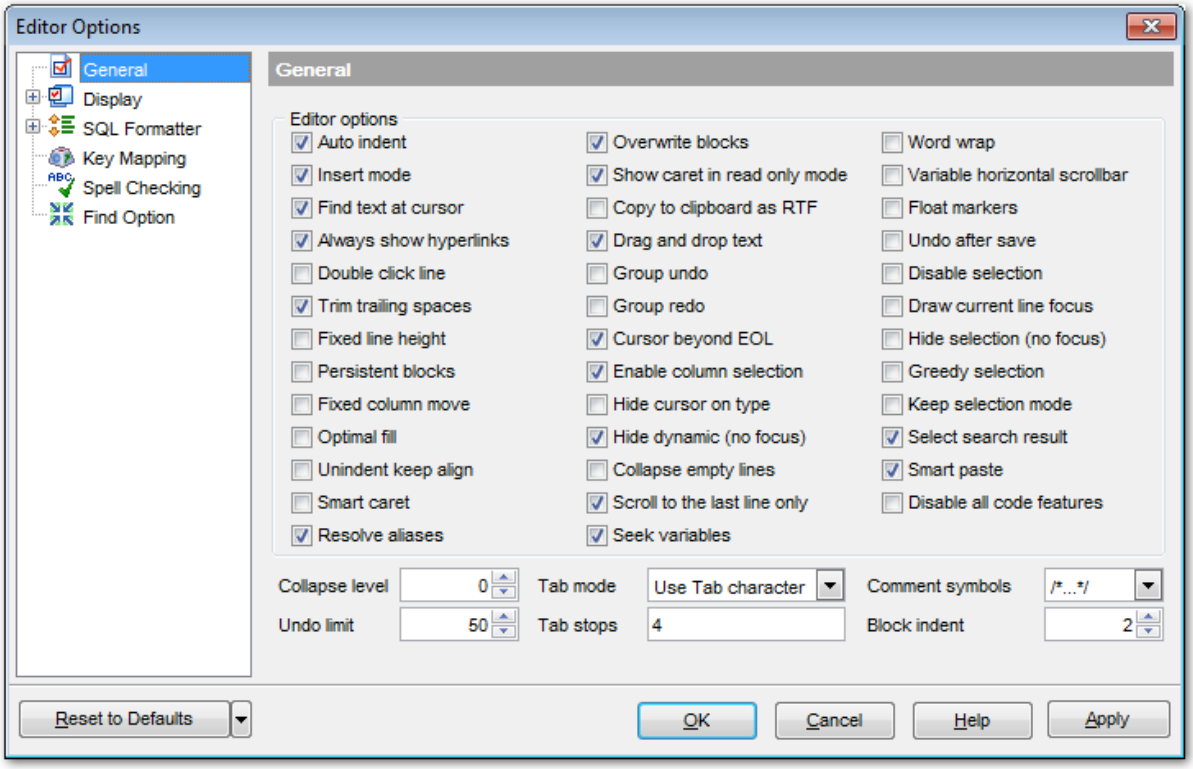

Overwrite blocks
Replaces a marked block of text with whatever is typed next. If **Persistent Blocks** is also selected, the text you enter is appended to the currently selected block.

Show caret in read only mode
Displays/hides the caret in read-only mode.

Copy to clipboard as RTF
If this option is checked, the selected text is copied in RTF format.

Drag and drop text
This option allows to drag and drop selected text.

Group undo
This option allows you to undo multiple actions of the same kind.

Group redo
This option allows you to redo multiple actions of the same kind.

Cursor beyond EOL
If this option is checked, the horizontal position of a cursor is kept. If you move the cursor (using the *Up* and *Down* arrow keys) onto a line having length less than the current cursor horizontal position, it will be positioned after the last symbol of the line.

Enable column selection
Enables/disables column selection mode.

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☑ **Hide cursor on type**
Hides/displays mouse cursor within the working area while a user is typing some text.

☑ **Hide dynamic (no focus)**
Hides dynamic highlights when an editor is not focused.

☑ **Collapse empty lines**
Collapses empty lines after a text range when this range has been collapsed.

☑ **Scroll to the last line only**
When the option is enabled, you can scroll to the last line of the text only, otherwise you can scroll to the end of the page.

☑ **Seek variables**
Disables code completion feature for variables.

☑ **Word wrap**
When on, text is wrapped at the right margin of the editor area to fit in the visible area.

☑ **Variable horizontal scrollbar**
If this option is checked, the horizontal scrollbar varies according to the current content of the editor.

☑ **Float markers**
When enabled, markers are linked to the text, and they will move with the text while the text is being edited; otherwise the markers are linked to the caret position, and stay unchanged while the text is being edited.

☑ **Undo after save**
Keeps undo buffer unchanged after saving.

☑ **Disable selection**
Disables any selection when editing.

☑ **Draw current line focus**
Draws the focus rectangle around the current line when the editor has focus.

☑ **Hide selection (no focus)**
Hides the selection when the editor loses focus.

☑ **Greedy selection**
Selects an extra column/line in column/line selection modes.

☑ **Keep selection mode**
Enables selection for caret movement commands (like in BRIEF).

☑ **Select search result**
Determines whether the search result should be selected.

☑ **Smart paste**
When this option is enabled, the editor gets both Unicode and ANSI content from the clipboard, converts them using the selected character set and selects the best text to be pasted. This allows getting correct text copied from both ANSI and Unicode applications

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disregarding the currently selected keyboard language.

☑ **Disable all code features**
This option disables code completion, code folding, highlight and all options that are set on the Quick Code 912 page. For options that are set on the Highlight 911 page, the defaults will be applied.

Collapse level
Specifies the level of text ranges that will be affected by the "Collapse all" command.

Undo limit
Defines the maximum number of changes possible to be undone.

Tab mode
Specifies the way the TAB key is processed. Possible values are: *Use tab character* (inserts a tab character); *Insert spaces* (inserts space characters); *Dialog behaviour* (when the edit control is in a dialog, the focus is switched to the next control); *Smart tab* (tabs to the first non-white space character in the preceding line).

Tab stops
Defines the tab length used when editing a text.

Comment symbols
Defines the symbols which will be used to comment code fragments.

Block indent
Specify the number of spaces to indent a marked block.

Hint: The **Reset to Defaults** button which is common for all sections of the **Editor Options** dialog opens a menu with items allowing you to discard all changes and reset options of the *current category* or of *all categories* to their defaults.

12.2.2 Display

Default editor fonts

Use these options to set the *fonts and size* used in the editor.
If the ☑ **Show only fixed-width fonts** option is checked, only fonts with fixed width are displayed in the **Font** dialog.

Gutter

☑ **Show line numbers**
If this option is checked, line numbers are displayed in the SQL text editor window.

☑ **Gutter auto width**
Enable this option to specify that the gutter width will be adjusted automatically.

☑ **Display line state**
If this option is checked, a colored line indicating the state of all altered lines in the text is displayed at the gutter of the editor window.

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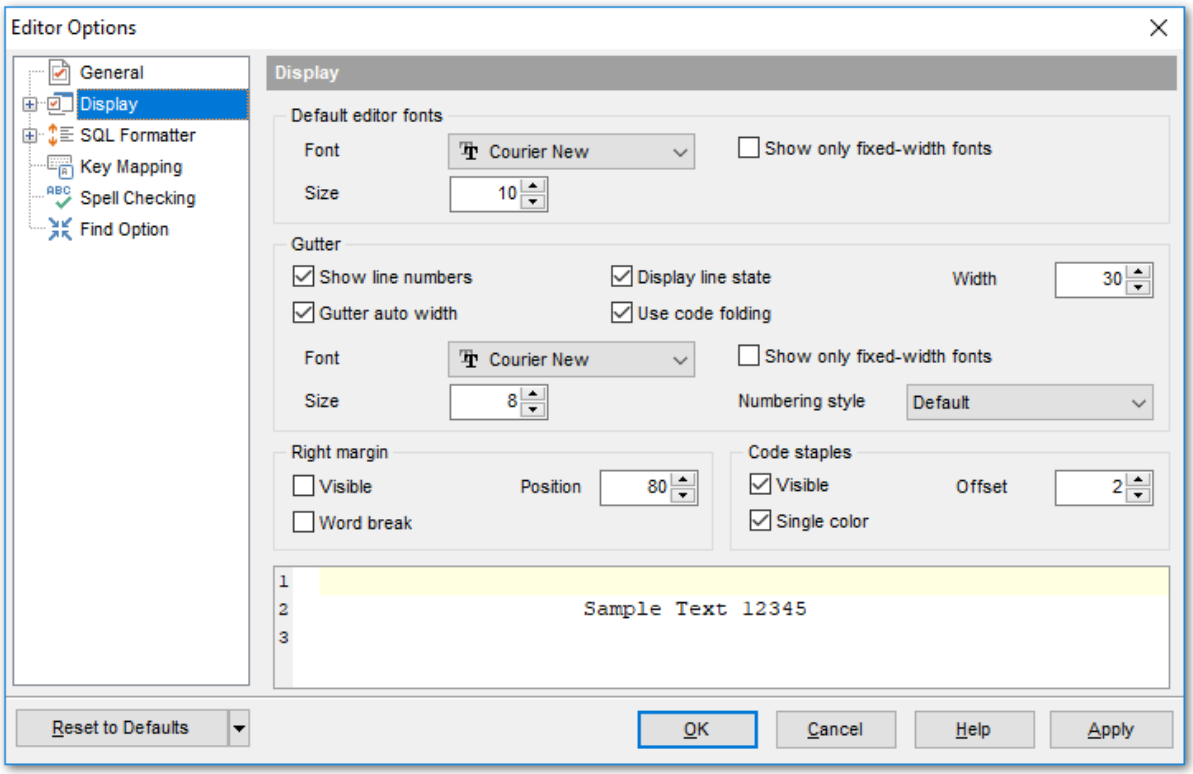
☑ **Use code folding**
Check this option to enable to code folding feature of Query Data.

Width
Defines the gutter width in the editor window.

If the ☑ **Show only fixed-width fonts** option is checked, only fonts with fixed width are displayed in the **Font** dialog.

Select the appropriate **Numbering style** from the dropdown list.



Right margin

☑ **Visible**
Makes the right text margin visible.

☑ **Word break**
Allows breaking the words at the right margin.

Position
Defines the position of the right text margin in the editor window.

Code staples

☑ **Visible**
Makes the code staples visible in the editor window.

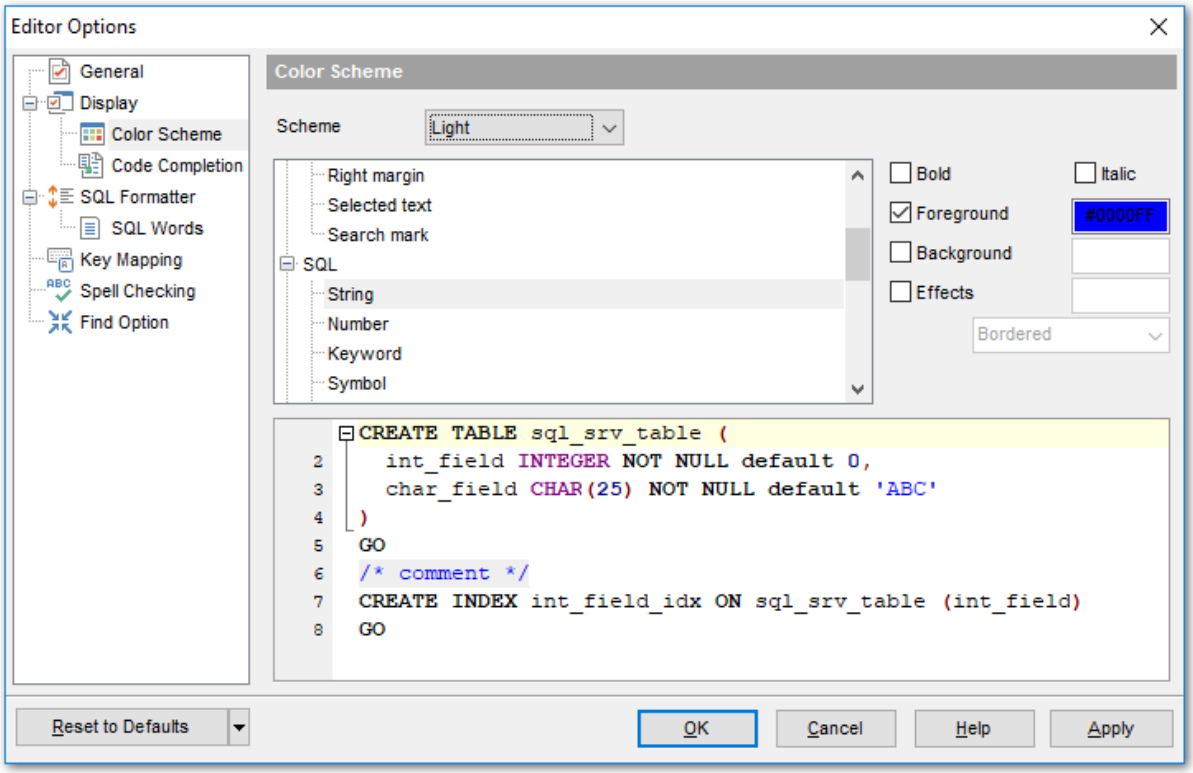
☑ **Single color**
Check the option to apply a single color for code staples.

☑ **Offset**
Specify the offset value for code staples.

12.2.2.1 Color Scheme

Scheme

Select the default color scheme for all editors: Default (Light) or Dark.



The **Element list** contains all elements available in SQL editors of the program. For your convenience the preview area (located below the Element list) illustrates the changes being made to each of the elements

Controls for changing the properties of the item selected in the Element list are located on the right. Use the following instructions for each of the elements.

☑ **Bold**

Highlights the element with bold.

Italic

Makes the element text cursive.

Foreground

Select the foreground color for the element.

Background

Select the background color for the element.

Effects

Enables additional effects for the element text.

See also:

Code Completion 912

12.2.2.2 Code Completion

Automatic features

Code completion
If this option is checked, then on typing the first word characters in the SQL text editor you will be offered some variants for the word completion in a popup list (an analogue of the **Code Insight** feature in **Delphi IDE**).

Sensitivity
This option allows you to set the number of characters to be typed before code completion is activated.

Delay
Using this option you can change the time after which completion variants popup.

Parameters completion

If this option is checked, the Delphi-like hint for key words is enabled.

Group by type
If enabled, the items in the code completion list are sorted by type, otherwise they are sorted by name.

Show information hints
This option enables/disables information hints.

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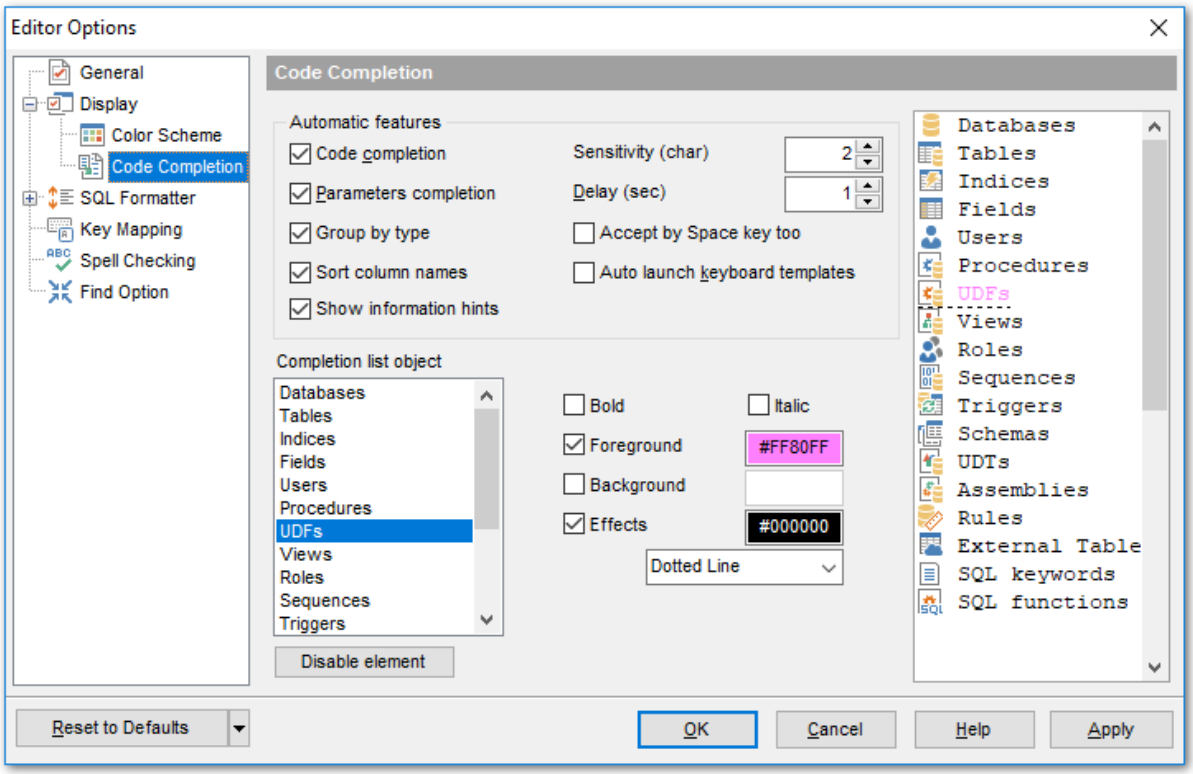
Accept by Space key too
Check this option to enable Code Completion list to close with the selected item input when pressing the space bar.

Code parameters
If this option is checked, the Delphi-like hint for key words is enabled.

Auto launch keyboard templates
Allows you to use keyboard templates for faster typing frequently used expressions (see Keyboard Templates 930).



Completion list object

The list contains all objects for which you can set quick code parameters. For your convenience the preview area (located to the right of the Completion list object list) illustrates the changes being made to each of the objects.

If you press the Disable element button, the standard settings will be applied to this object; the button text will change to Enable element. If you press this button, you will be able to change font and color attributes for this object.

Controls for changing the properties of the item selected in the Completion list object list are located on the right.

See also:

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Color Scheme 911

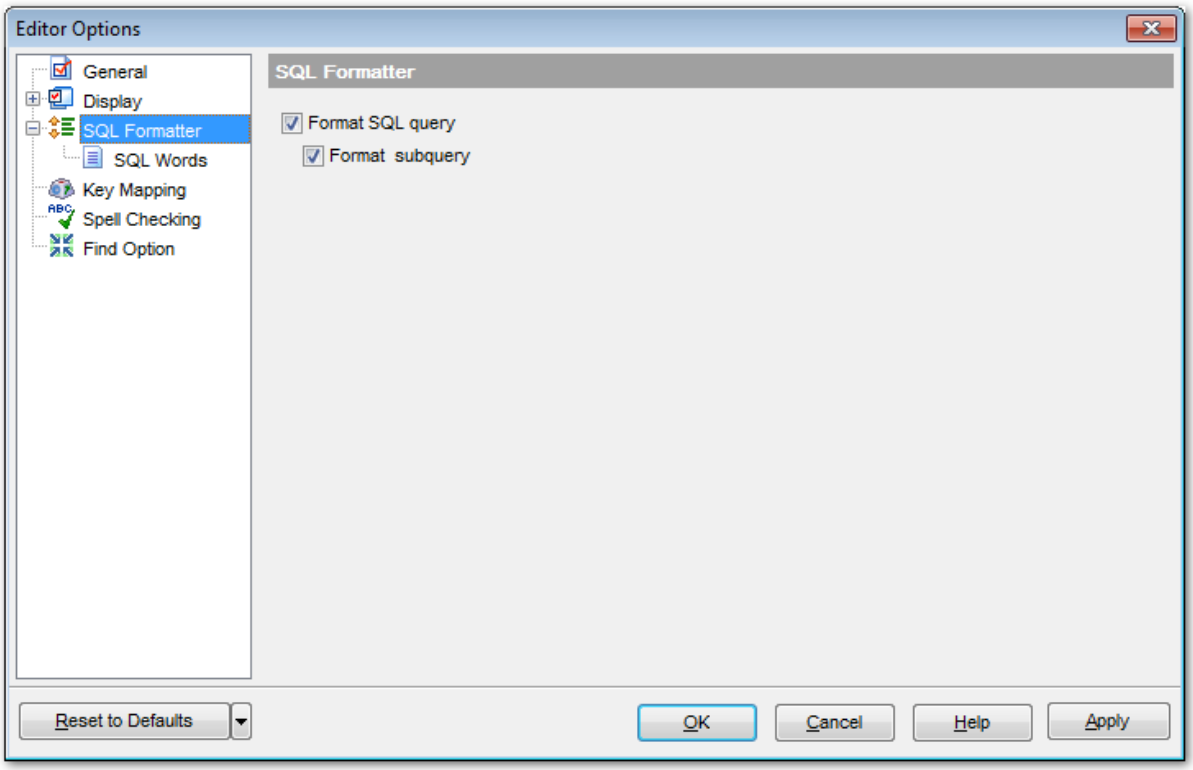
12.2.3 SQL Formatter

SQL Formatter is a feature implemented in SQL Manager for SQL Server and is a useful tool for formatting SQL queries and scripts, making SQL statements easy to read. SQL Formatter is introduced in Query Data 432, Execute Script 625 and some object editors.

The **Settings** tab of the **SQL Formatter** section allows you to enable this feature and apply SQL formatting to subqueries, if necessary.

☑ **Format SQL query**
Check this option to enable SQL formatting.

☑ **Format subquery**
Enables SQL formatting for subqueries.



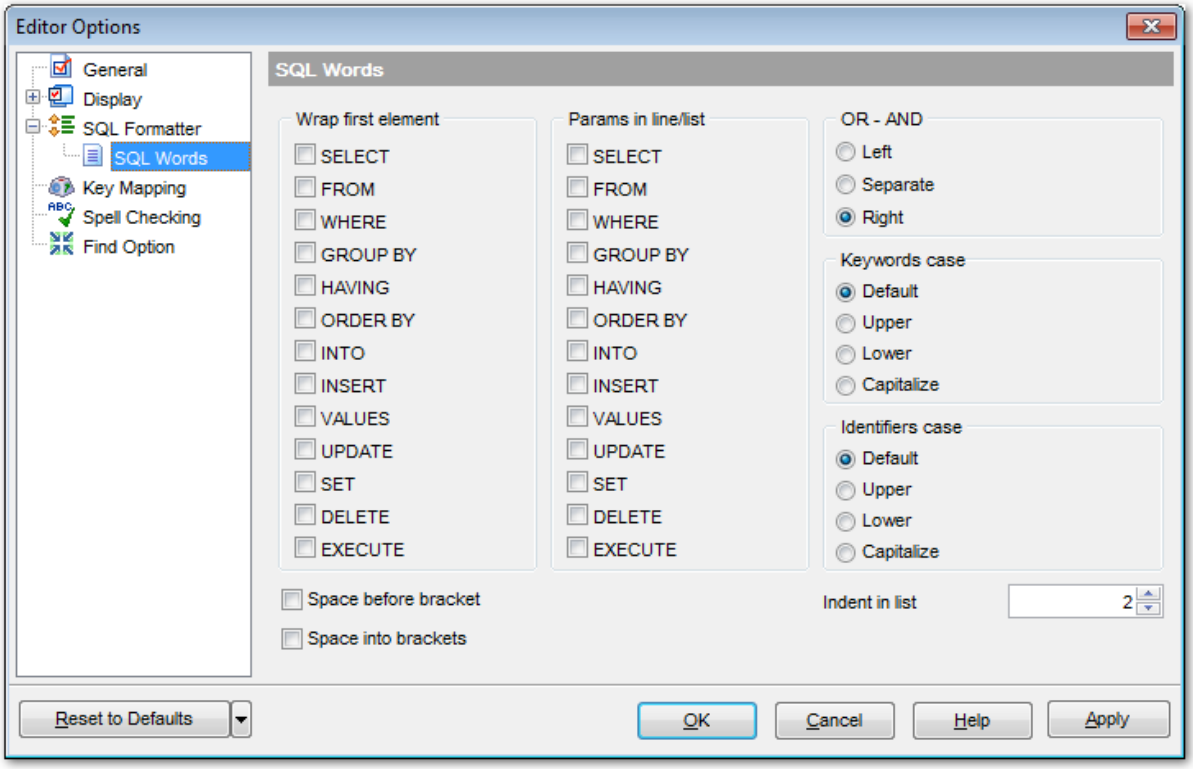
See also:
Query Data 432

12.2.3.1 SQL Words

The **SQL words** page of the **SQL Formatter** section allows you to select the key words for each action of SQL formatter and to set formatting parameters.

Wrap first element
Wraps the selected text at a specific column. Select the SQL key words after which formatting should be applied.

Params in line/list
Allows you to display the parameters followed by the defined key words in list or in line.



OR - AND
Set the placement of the AND an OR operators according to the operands followed by them. See the example below.

Left

```
WHERE
        AND ...
        AND ...
        AND ...
```

Separate

```
WHERE
        ...
```

AND
...
AND

Right

WHERE
... AND
... AND
... AND

The **Keywords case** / **Identifiers case** options allow you to define the case of the corresponding items.
You can choose *UPPER*, *lower*, *Capitalize*.
Default case means that the name of the identifier/keyword remains "AS IS".

Space before bracket
Adds a "space" character before the opening bracket and after the closing one.

Space into brackets
Adds a "space" character after the opening bracket and before the closing one.

Indent in list
Sets the size of indent relatively to the previous string.

12.2.4 Key Mapping

For your convenience **key mapping** is provided in SQL Manager for SQL Server. On this page you can set the shortcuts 986 for various commands/operations according to your needs.

Use the **Commands** list on the right to select the command for which you need to make a shortcut, then place cursor into the **Key** editor and press the key combination you find useful (use *Ctrl Alt Shift* buttons). After setting the shortcut, press the **New** button to add it to the list of existing **Key combinations**. If the specified shortcut is already assigned to another command/operation, an error message with the command/operation will be returned.

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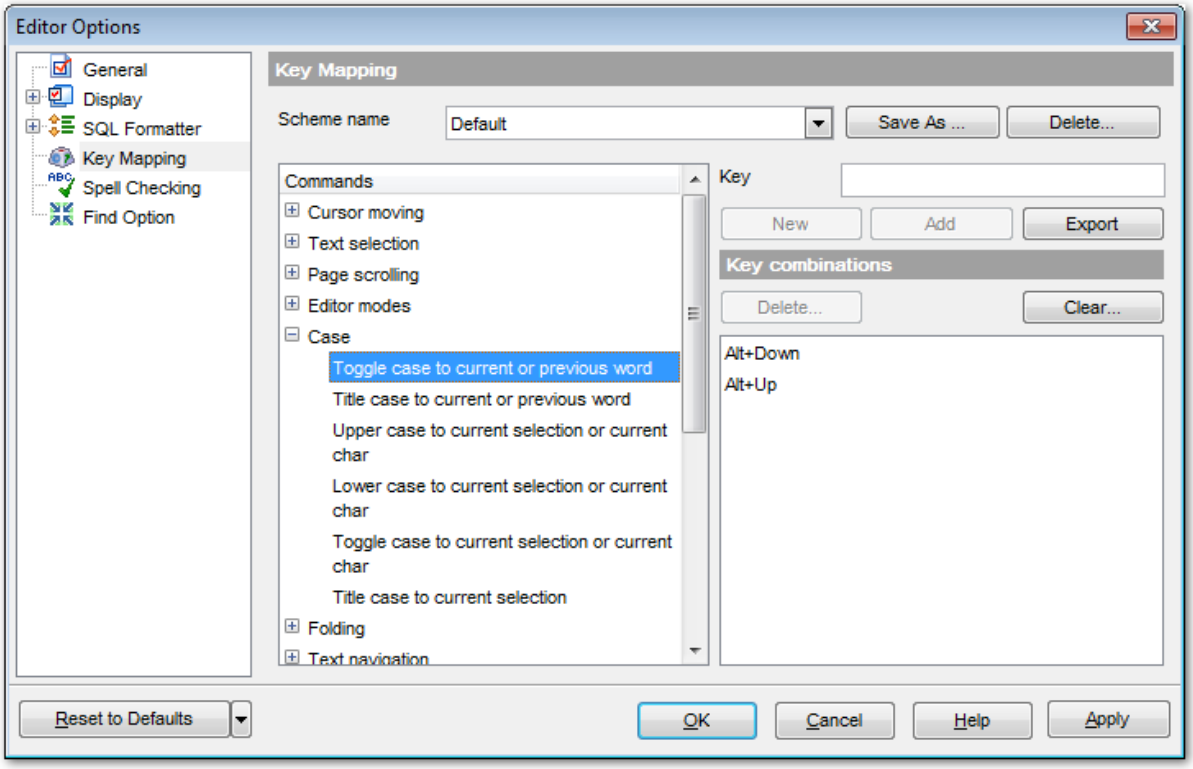


Note: It is possible to set more than one key combination for the same command/operation (e.g. *Ctrl-K*, *Ctrl-H*) using the **Add** button.

If necessary, you can export the current Key mapping list to an external file by pressing the **Export** button.

Manage the shortcuts within the Key combinations list using the **Delete** (to remove the selected item) and the **Clear** (to remove all shortcuts for this command/operation) buttons.

It is also possible to save a custom key mapping scheme, if necessary:
- set the shortcuts for the appropriate commands/operations;
- click the **Save As...** button;
- input the new scheme name in the corresponding dialog.

To delete a scheme, select it in the **Scheme name** drop-down list and press the **Delete** button.

See also:

Query Data 432
SQL Manager shortcuts 986

12.2.5 Spell Checking

Spell checking is a new feature implemented in SQL Manager for SQL Server for your convenience.

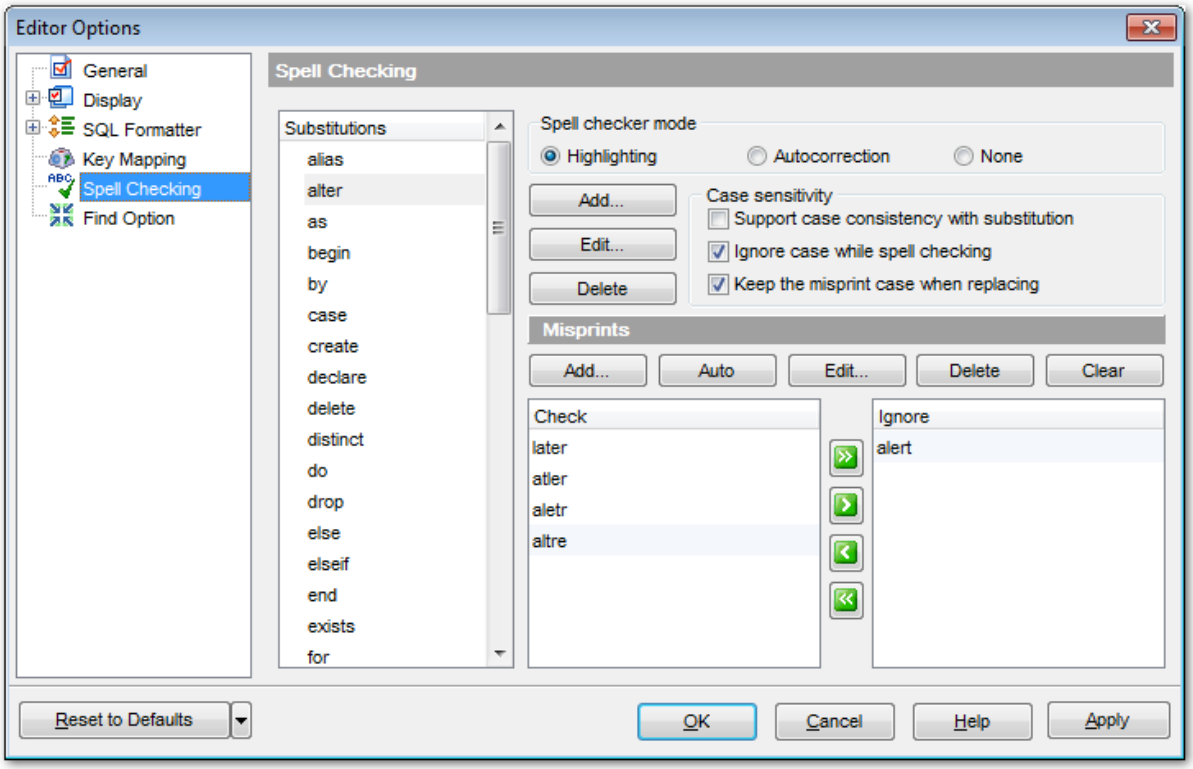
Set the necessary **Spell checker mode**:

Highlighting
In this mode incorrectly spelled and misprinted words are highlighted in the editor.

Autocorrection
In this mode incorrectly spelled and misprinted words are replaced with the corresponding words from the **Substitutions** list automatically.

None
In this mode the spelling checker is disabled.

Use the **Add...** button to add a new item to the **Substitutions** list, the **Edit...** button to alter the selected substitution, and the **Delete** button to remove the selected substitution from the spelling checker vocabulary.



Case sensitivity

Support case consistency with substitution
If this option is selected, the spelling checker uses the case of words-substitutions when performing a replacement.

☑ **Ignore case while spell checking**
Check this option to disable case checking.

☑ **Keep the misprint case when replacing**
Check this option if you do not wish to change the case of the replaced word.

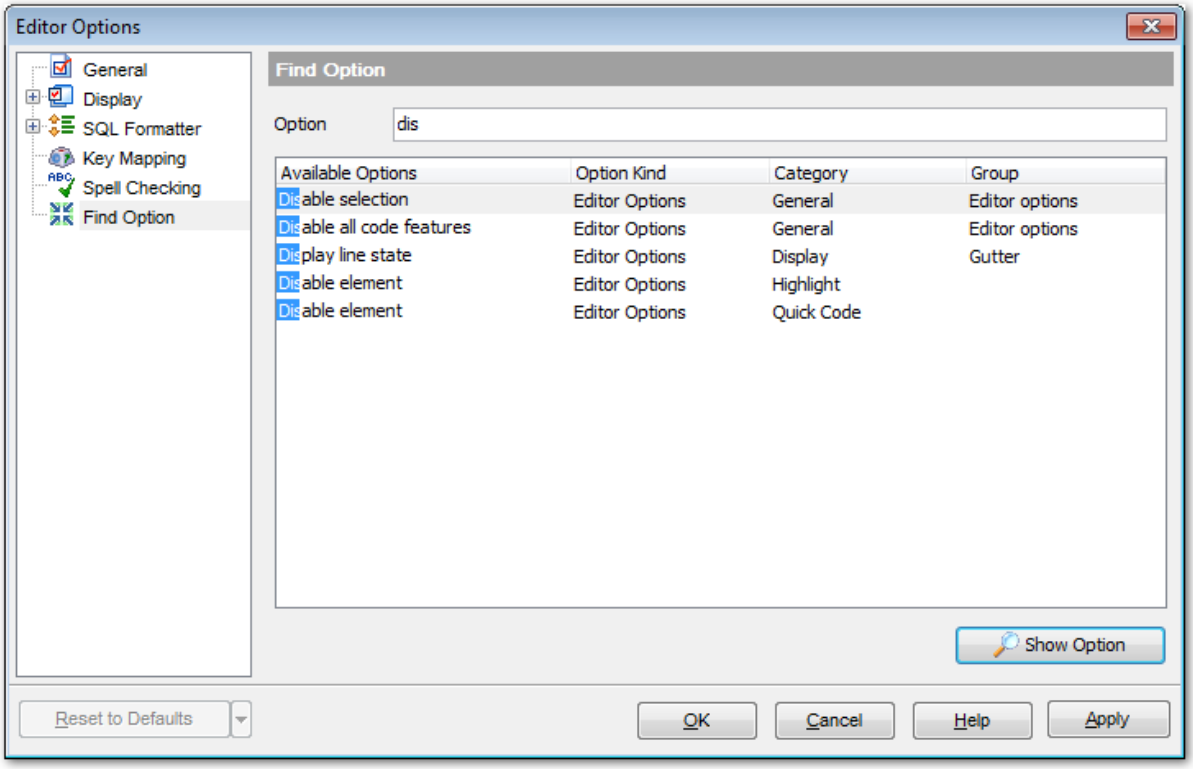
Misprints
Controls of this group allow you to manage the spelling checker vocabulary: use the **Add...** button to add a new misprint to the vocabulary, the **Auto** button to use the default list of misprints, the **Edit...** button to change the selected misprint, the **Delete** button to remove the selected misprint from the vocabulary, and the **Clear** button to empty the list of misprints for the currently selected substitution.

It is also possible to exclude a misprint from spell checking without deleting the misprint. This misprint will therefore remain in the vocabulary, but it will be ignored by the spelling checker.
To mark a misprint as excluded, you need to move it from the **Check** list to the **Ignore** list. Use the buttons or drag-and-drop operations to move the misprints from one list to another.

12.2.6 Find Option

The **Find Option** section allows you to search for options available within the **Editor Options** dialog easily and quickly.

Option
In this field you can enter the name of the option to search for within SQL Manager *Editor Options*.



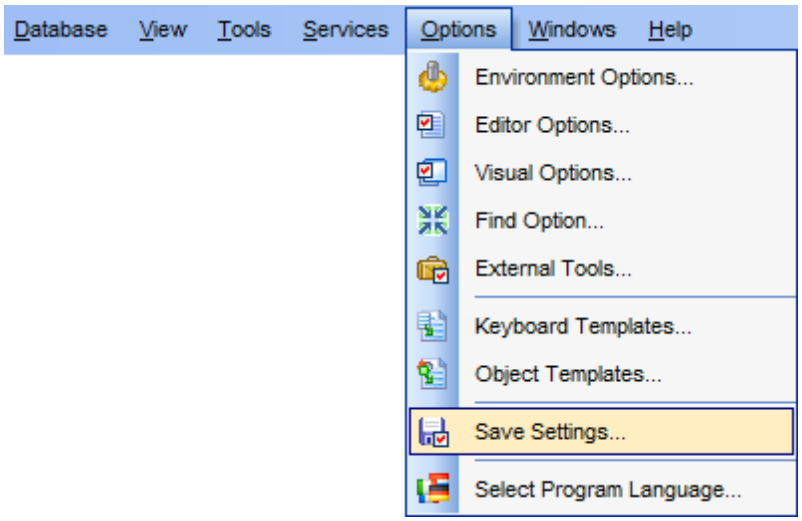
The **Available options** area lists all options of the *Editor Options* category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

Select the required option in the list and click **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated icon.

12.3 Save Settings

Save Settings Wizard allows you to export the settings of SQL Manager for SQL Server - wholly or partially - to a single **.reg* file which can be applied afterwards to SQL Manager for SQL Server installed on another machine, or it can be used to backup previous settings.

To start the wizard, select the **Options | Save Settings** main menu 951 item.



- Specifying destination file 921
- Selecting settings 922
- Selecting databases 923
- Saving settings 924

To apply saved settings you need to open the created **.reg* file, then press the OK button in the window appeared. All settings will be applied automatically (they will be added in the Windows Registry).

12.3.1 Specifying destination file

This step of the wizard allows you to specify the location of the destination file.

Filename
Use the button to set the path to the **.reg* file where the application settings are to be saved.

Note: If the target file already exists, the application will show a warning 982 dialog where you can choose the action you need.

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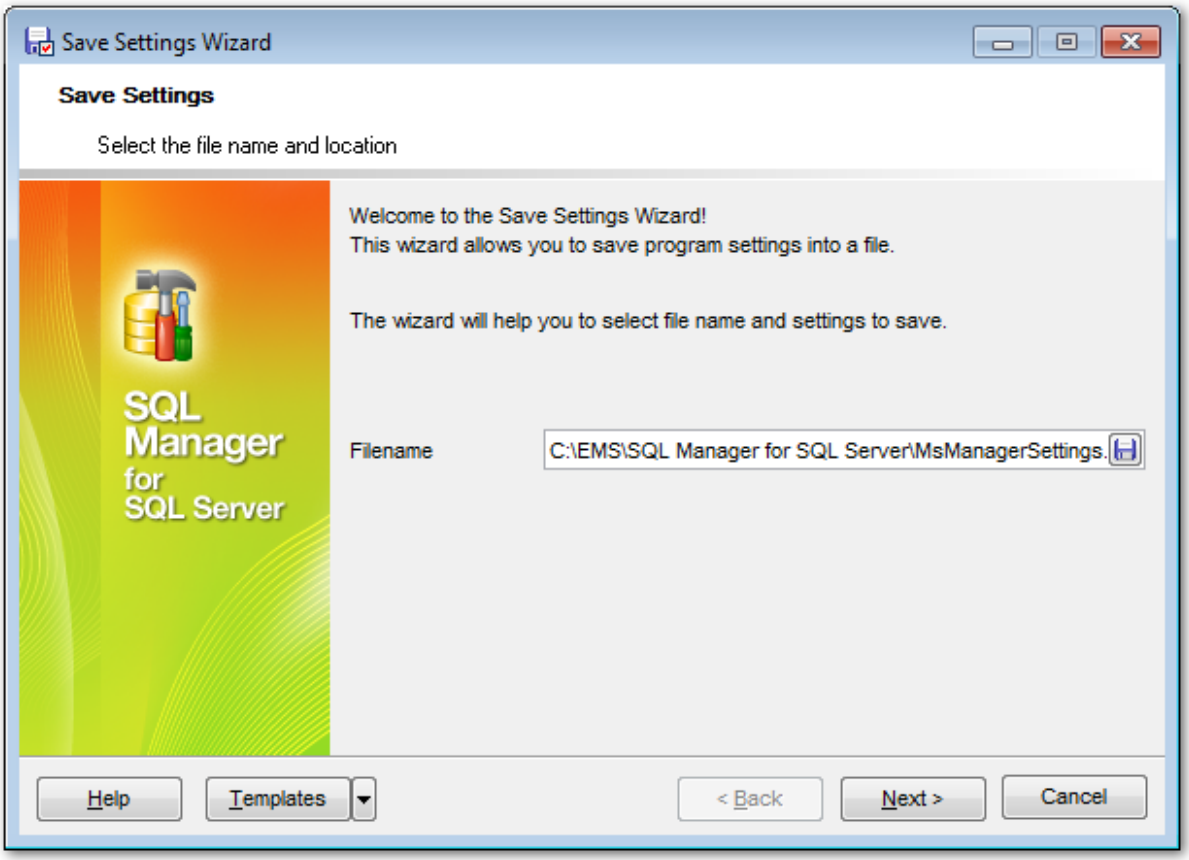

Press the **Next** button to proceed to the next step 922 of the wizard.

12.3.2 Selecting settings

This step of the wizard allows you to specify the information you need to be saved to the result file: *Database registration info*, *Favorite objects*, *Tabs*, *Environment options*, *AI provider endpoints*, *Editor options*, *Custom templates*, *External tools list*, *Form data*, *MRU lists*, *Favorite queries*.

Note: API keys for LLM providers 861 are stored encrypted by the *Windows Data Protection API*, which ties them to the current user account on the current computer. Registered providers are saved to the settings file only if the *AI provider endpoints* option is selected (it is cleared by default). Even then, the keys are exported in a form that cannot be read on another computer or under a different account, so after importing such a file you will need to enter the keys again.

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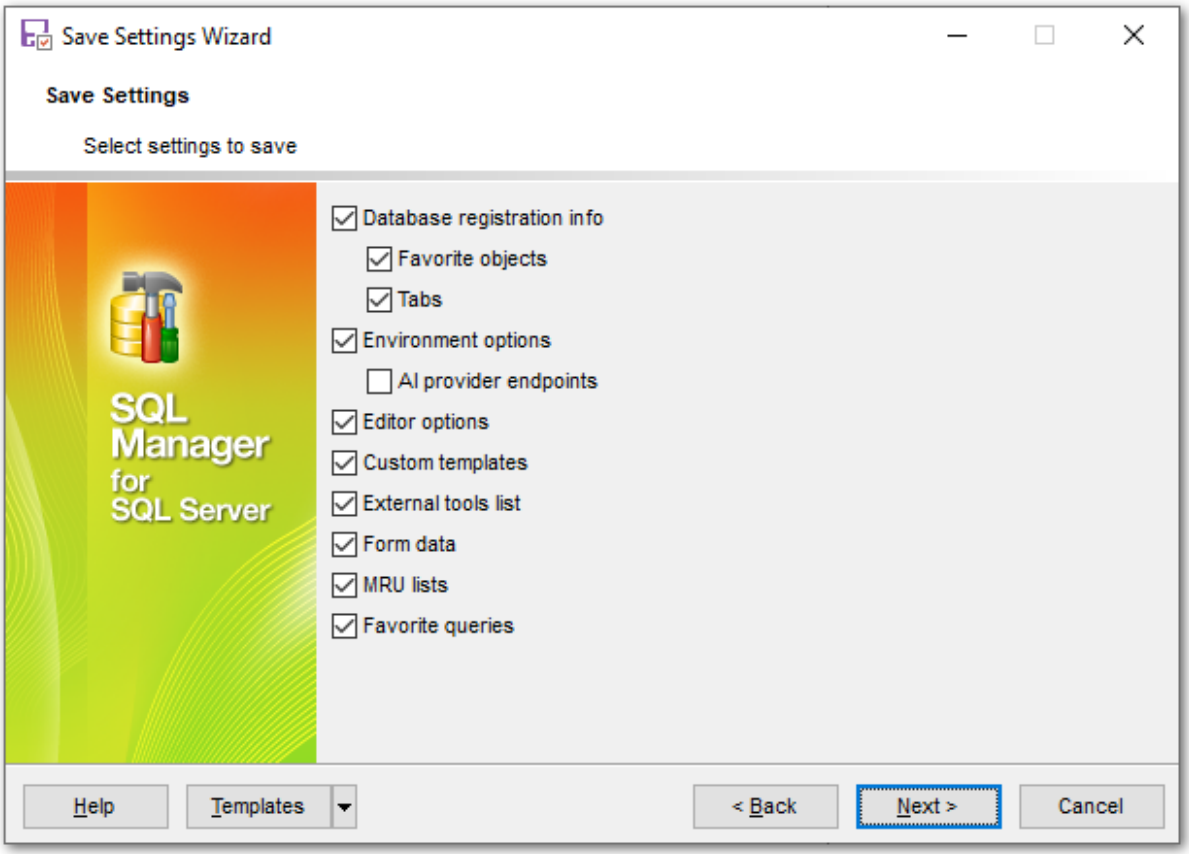
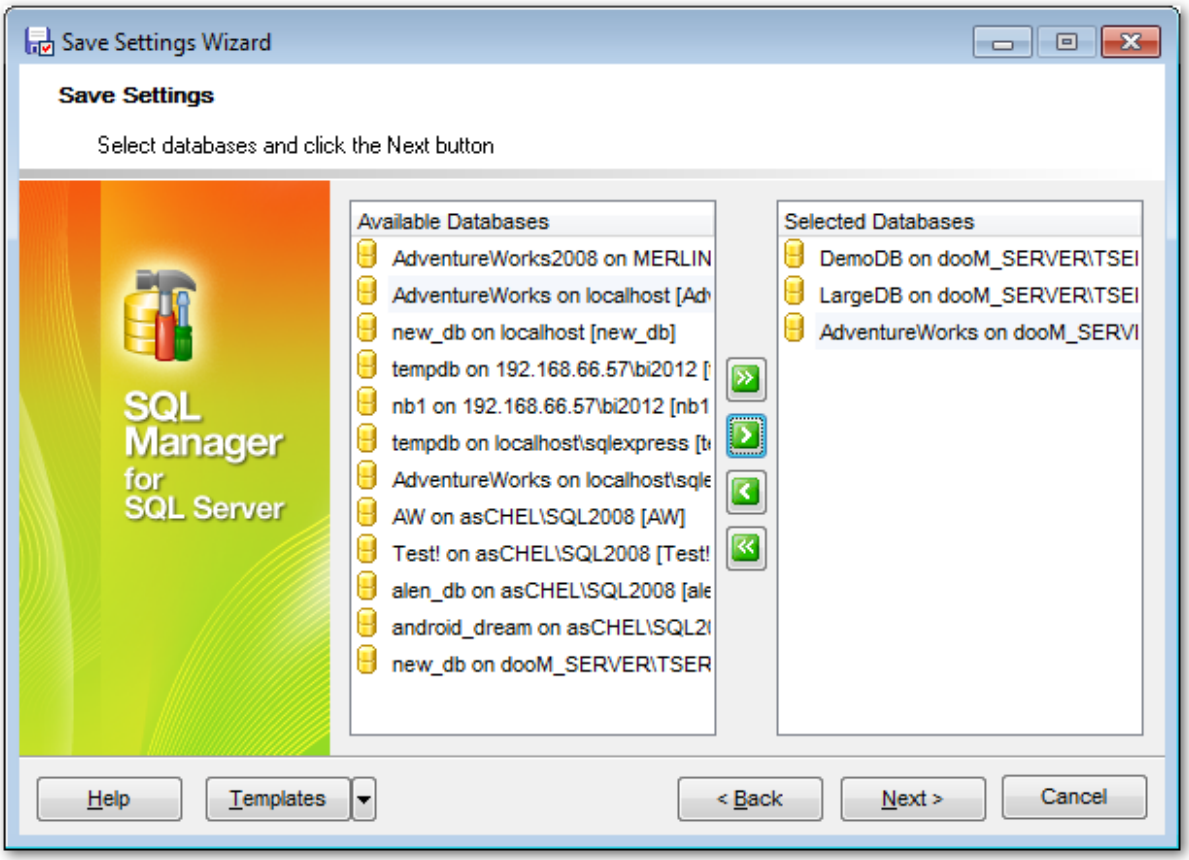


Press the **Next** button to proceed to the next step 923 of the wizard.

12.3.3 Selecting databases

This step of the wizard allows you to select the database(s) to save the registration settings.

To select a database, you need to move its alias from the **Available Databases** list to the **Selected Databases** list. Use the buttons or drag-and-drop operations to move the databases from one list to another.

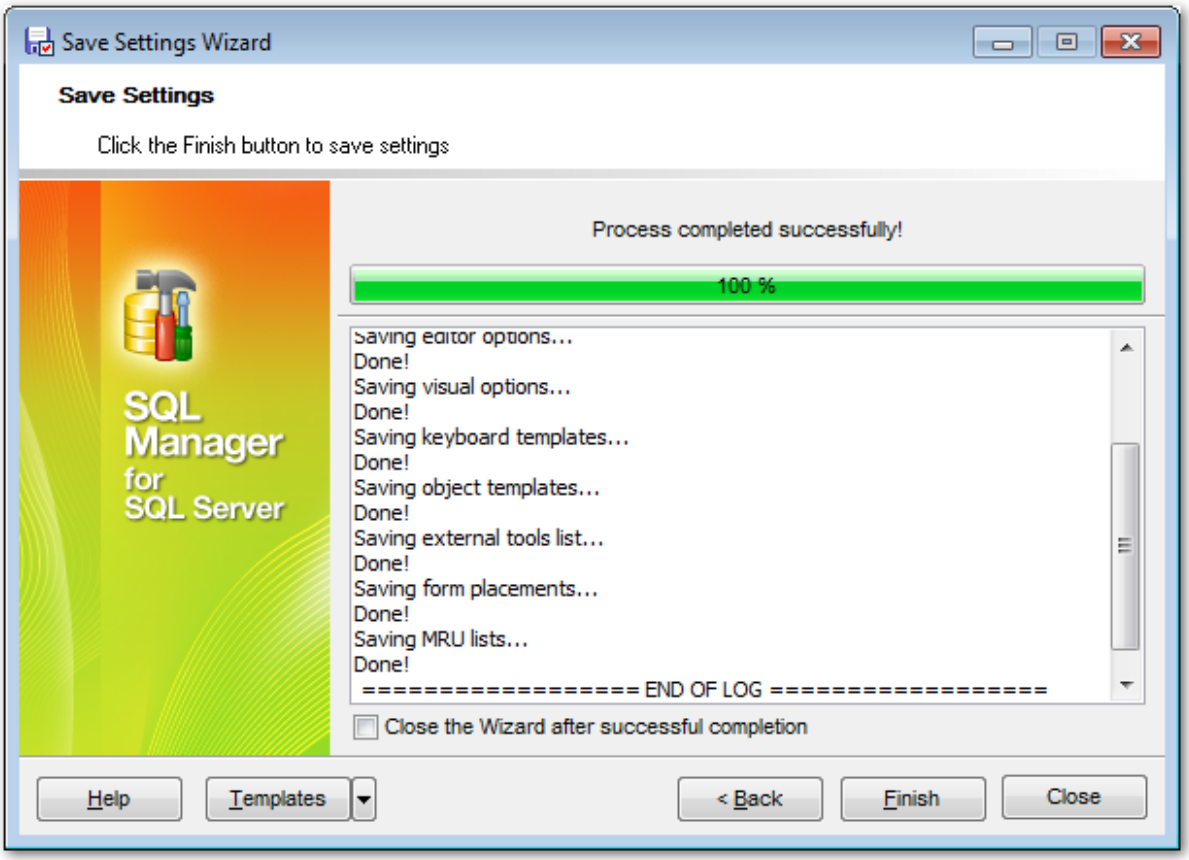


Press the **Next** button to proceed to the last step 924 of the wizard.

12.3.4 Saving settings

This step of the wizard is intended to inform you that the saving settings operation has been configured, and the wizard is ready to save the application settings to the specified file.

The log area allows you to view the log of operations and errors (if any).



☑ **Close the Wizard after successful completion**
If this option is selected, the wizard is closed automatically when the export process is completed.

If necessary, you can save a template 970 for future use.

Click the **Finish** button to start saving settings.

12.4 Localization

When using SQL Manager for SQL Server, your are provided with multi-language interface support. You can change the program language, specify the directories for your localization files easily, edit existing localizations and create your own localization files.

Changing Program Language

In order to select the program interface language:
- select the **Options | Select Program Language...** main menu 951 item;
- select the interface language in the Select Language 928 dialog;
- click **OK** to apply the language and close the dialog.

Editing Program Localization

In order to edit the interface localization:
- open one of the program windows (e.g. Table Editor 204, Query Data 432) where you wish to edit the localization of captions and hints;
- use the *Shift+Ctrl+L* keyboard shortcut 986 to open the Localization Editor 926 window;
- edit window captions and hints as necessary;
- click the **Save** button on the toolbar 953.

Note: The Localization Editor 926 window is only available if the currently selected language is different from the default.

Creating New Localization Files

In order to create a new localization file:
- create a new localization file similar to those located in the *%program_directory%\Languages* folder;
- select the **Options | Environment Options** main menu 951 item;
- proceed to the Localization 901 section of the **Environment Options** dialog;
- click the **Add** button;
- set the language name and the path to the new **.lng* file within the Language Info Editor 969 dialog.

The new language is added to the list of available languages. Now you can set it as the interface language using the Select Program Language 928 dialog or the Localization 901 section of the Environment Options 854 dialog.

See also:

Localization 901

Language Info Editor 969

12.4.1 Localization Editor

The **Localization Editor** window allows you to edit the captions and hints of any SQL Manager window, if the selected program language is different from the default one.

To call this window, use the *Shift+Ctrl+L* shortcut 986 in any child window of SQL Manager

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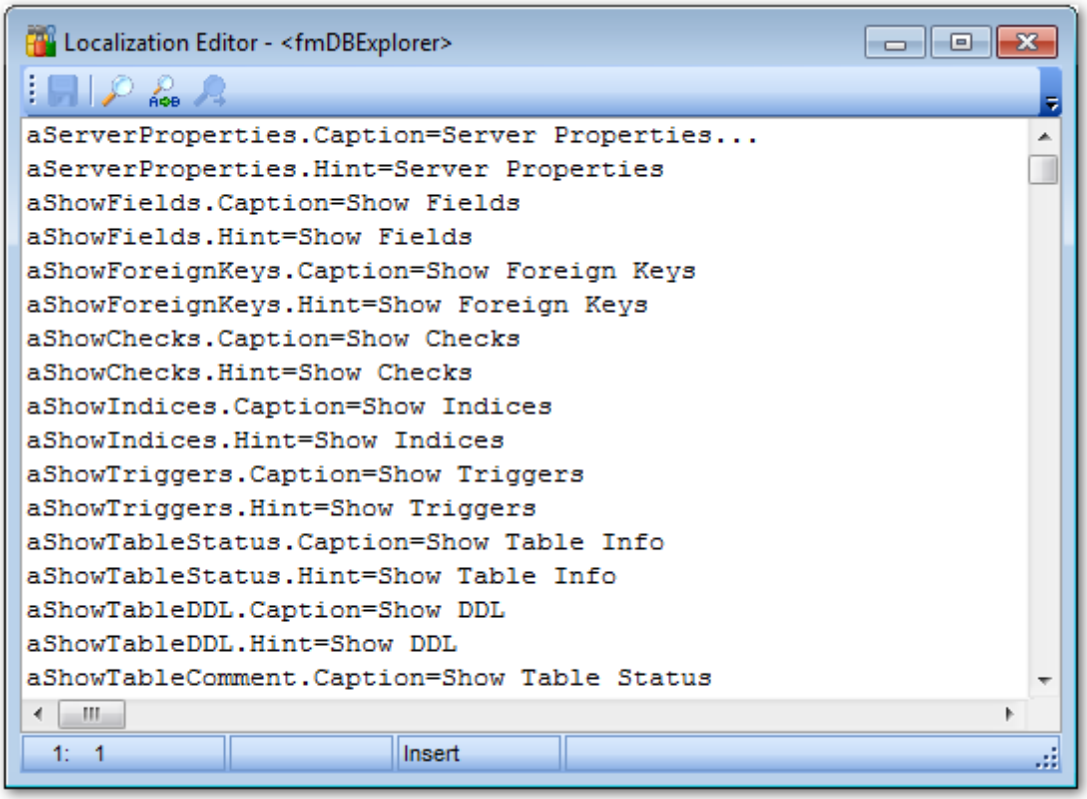
for SQL Server.

The working area of the window contains the element names and the corresponding strings divided by the "**=**" character. These strings are what you see in the program as menu items, window captions, button hints, etc. Edit them to change the program appearance. Be careful and do not edit the identifiers that stand before the "**=**" character - this will not produce any effect.

For your convenience the **Find** and **Replace** features are provided - the corresponding toolbar 953 buttons are used to call the Find Text 961 dialog or the Replace Text 963 dialog respectively. The **Search Again** button enables the repeated search for the text that was last searched.



When you are done with editing, click the **Save** button on the toolbar to apply the changes you have made.

See also:

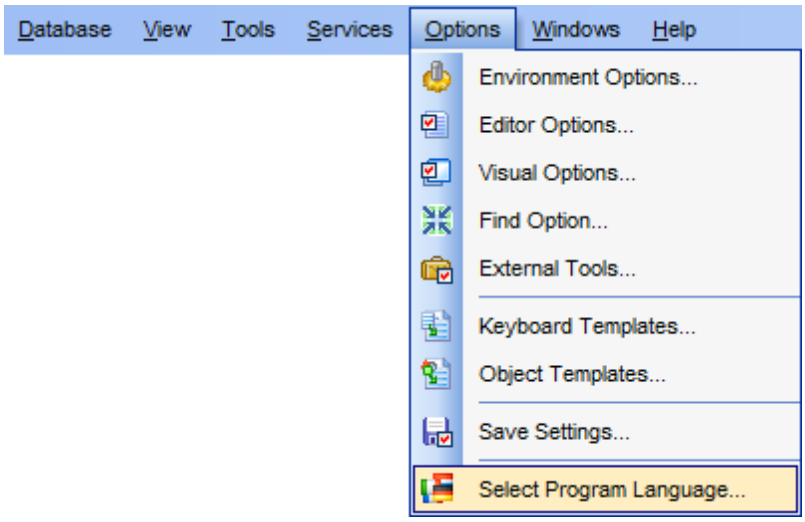
Select Program Language 928

Localization 901

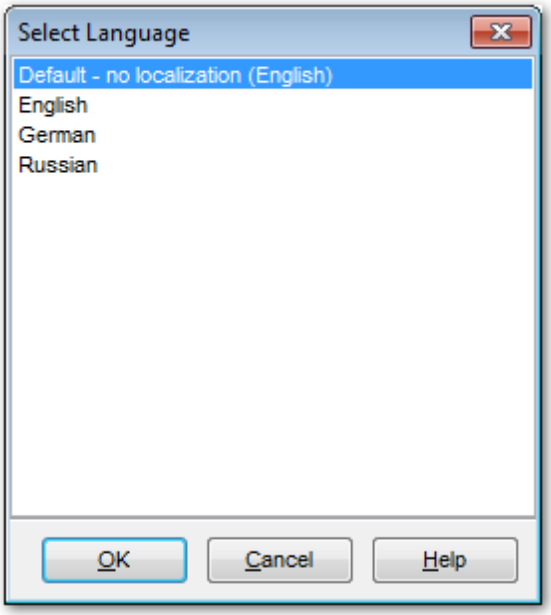
12.4.2 Select Program Language

The **Select Language** dialog allows you to select a language for SQL Manager for SQL Server localization.

To open this dialog, select the **Options | Select Program Language...** main menu 951 item.



The dialog displays the list of available languages configured on the Environment Options | Localization 901 page. Select a language from the list and click **OK** to confirm your choice and close the dialog.



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See also:

Localization Editor 926
Localization 901

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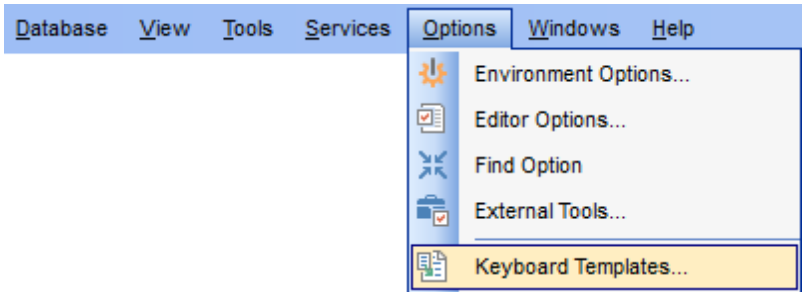
12.5 Keyboard Templates

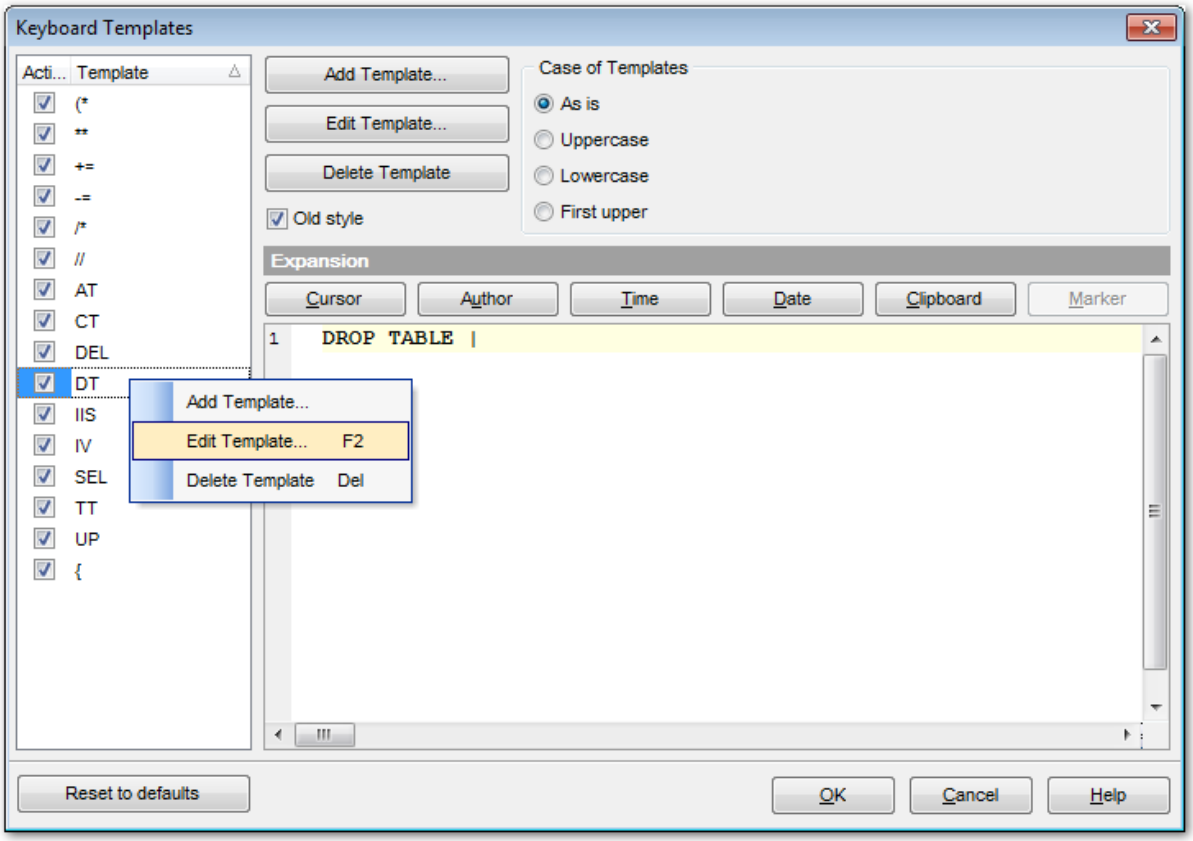
The **Keyboard Templates** window allows you to create new keyboard templates for quicker typing regularly used expressions and to edit the existing ones.

To open this window, select the **Options | Keyboard Templates...** main menu 951 item.



To add a new keyboard template, click the **Add Template...** button, set the template name and define the template expression. In the upper right area of the window you can change the **case** of the template expression (*As is*, *Uppercase*, *Lowercase*, *First upper*).

You can deactivate an existing template by selecting it from the list on the left and removing the **Active** flag of the template.



If necessary, you can also edit the template name using the **Edit Template...** button, delete the template using the **Delete Template** button or edit the template expression within the **Expansion** area of the window. For faster editing you can use the *Cursor*, *Author*, *Time*, *Date*, *Clipboard*, *Marker* buttons.

Hint: Add/edit/delete template items are also available in the *context menu* of the template list on the right.

☑ **Old style**
This option specifies whether the selected keyboard template expansion should conform to the template specifications used in the earlier versions of SQL Manager for SQL Server.

Once you have defined the templates, you can use them in Query Data 432. First of all, make sure that the ☑ **Auto launch keyboard templates** option is selected on the Quick Code 912 page of the Editor Options 905 dialog. When editing SQL text 435 in Query Data, type a template name and use the *Ctrl+J* shortcut 986: the text associated with the template (**Expansion**) will be inserted automatically.

Hint: The **Reset to defaults** button which is available at the bottom of the **Keyboard Templates** dialog allows you to discard all changes and restore the settings to their defaults.

See also:

Quick Code 912

SQL Manager shortcuts 986

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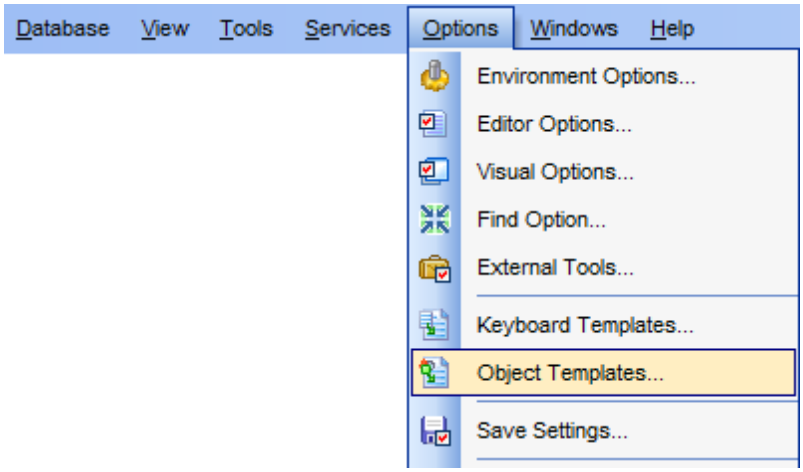
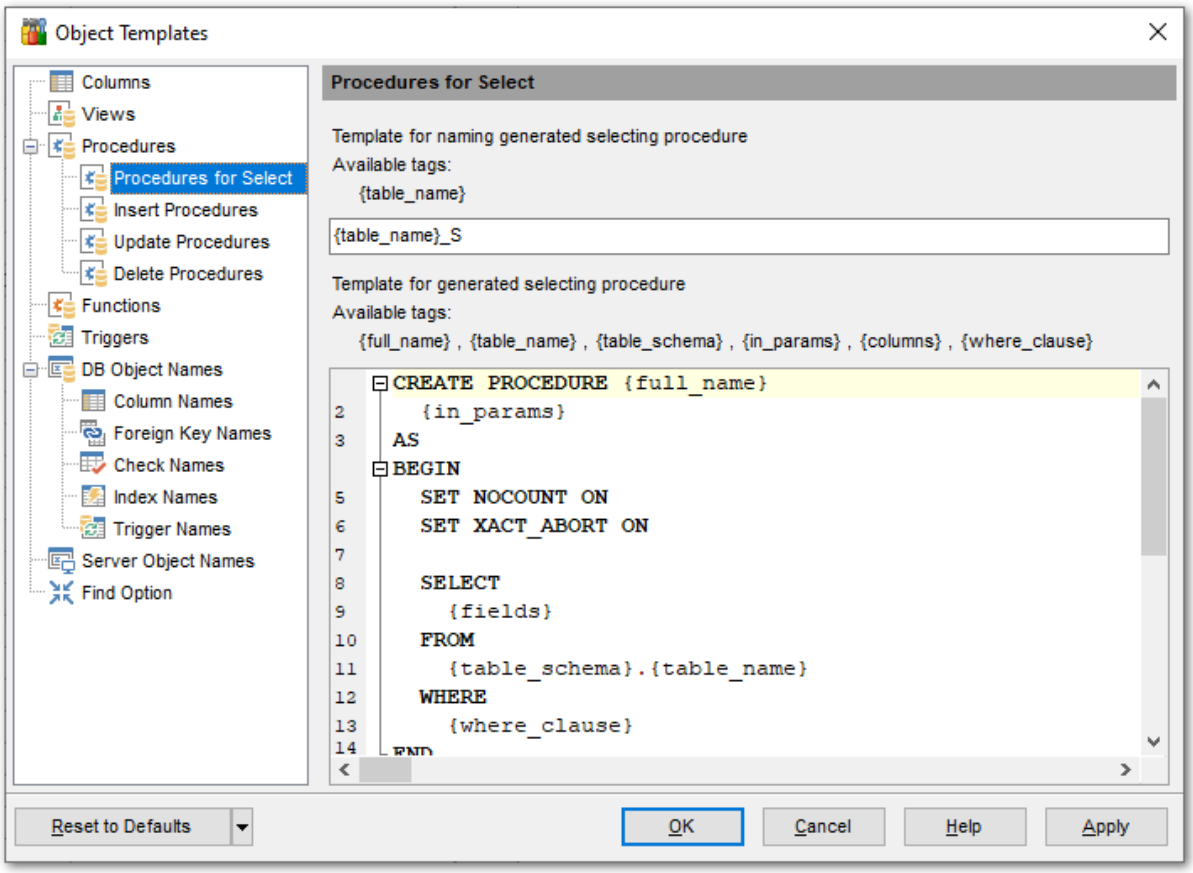
12.6 Object Templates

The **Object Templates** window allows you to preset the definition template for the name and/or body of an object to be created.

To open this window, select the **Options | Object Templates...** main menu 951 item.



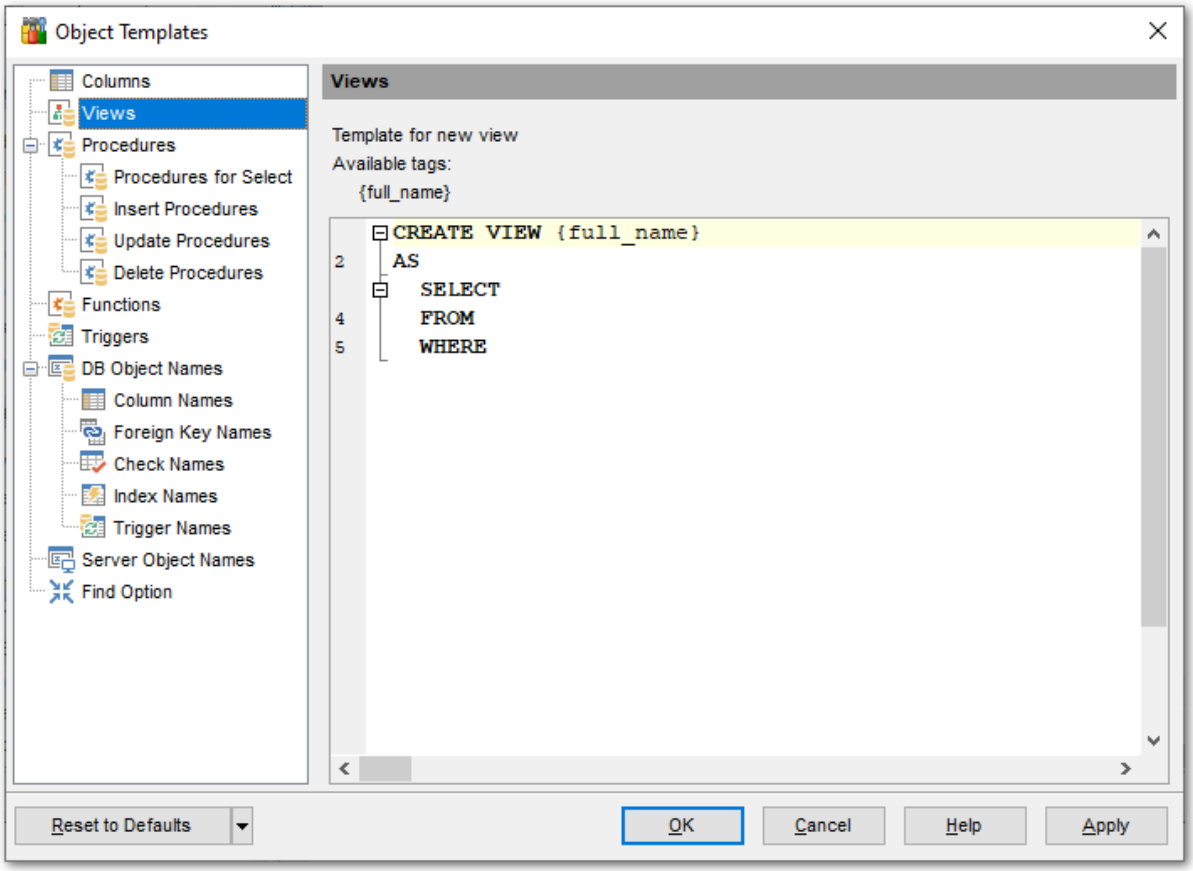
Select an object in the tree and set its template using the editor area.



Columns - template is defined within the common form of the Column Editor 218;
Views - set the template of a new view 933;
Procedures - set the template of a new procedure 933;
Procedures for Select - set the template for select procedure 934 created from table;
Insert Procedures - set the template for insert procedure 934 created from table;
Update Procedures - set the template for update procedure 934 created from table;
Delete Procedures - set the template for delete procedure 934 created from table;
Functions - set the template of a new function 933;
Triggers - template is defined within the common form of the Trigger Editor 241;
DB Object Names - set the template for the name of a newly created database object 935;
Server Object Names - set the template for the name of a newly created server object 941.

12.6.1 Views/Functions/Procedures templates

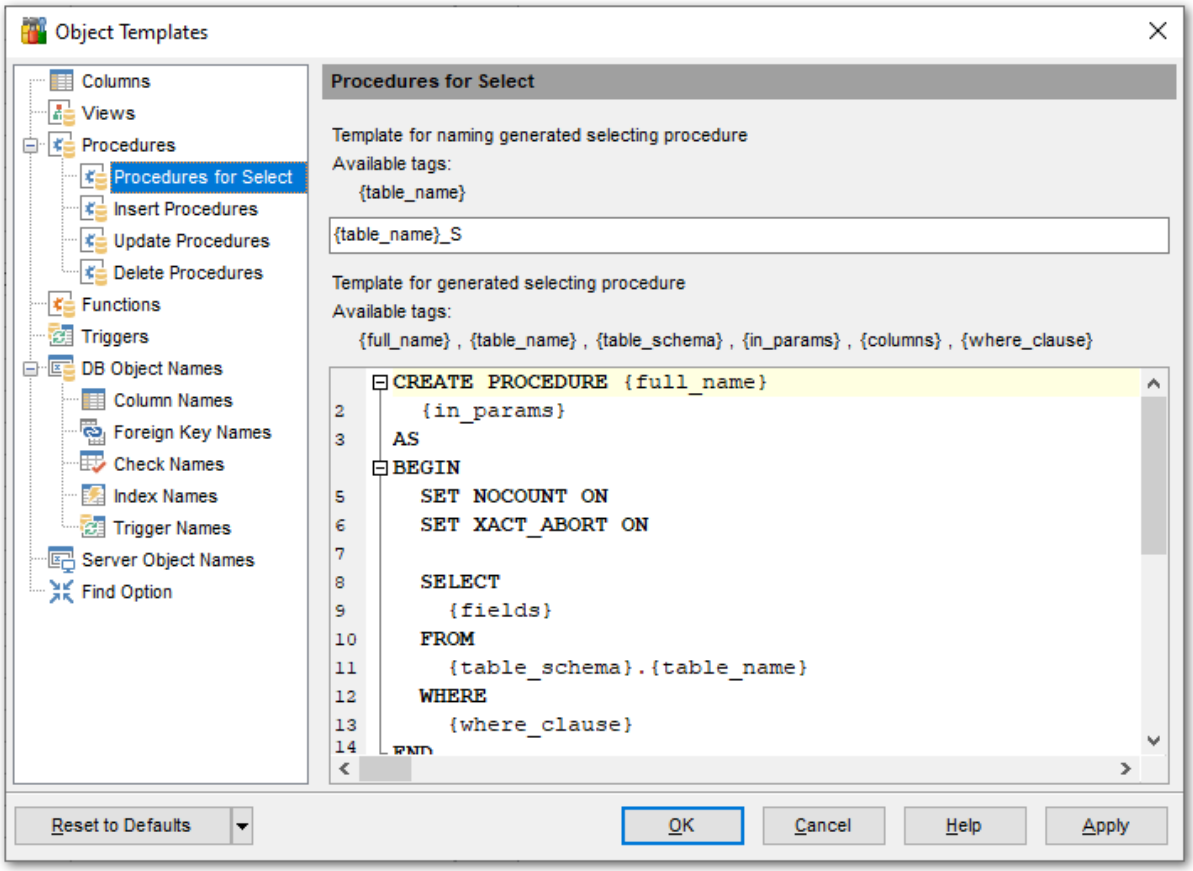
For Views 250, Procedures 257 and Functions 263 templates you can set the default definitions within the *Views*, *Procedures* and *Functions* tabs correspondingly.



For the name of an object being created you can use the *{full_name}* tag which stands for the *[schema_name].[object_name]*.
Click the tag to insert it at the cursor position.
Object names templates are defined within the DB Object Names 935 tab.

12.6.2 SIUD Procedures templates

For Select 246, Insert 247, Update 249 and Delete 250 procedures created from table 245 templates can be defined within the corresponding tabs of the Object Templates window.



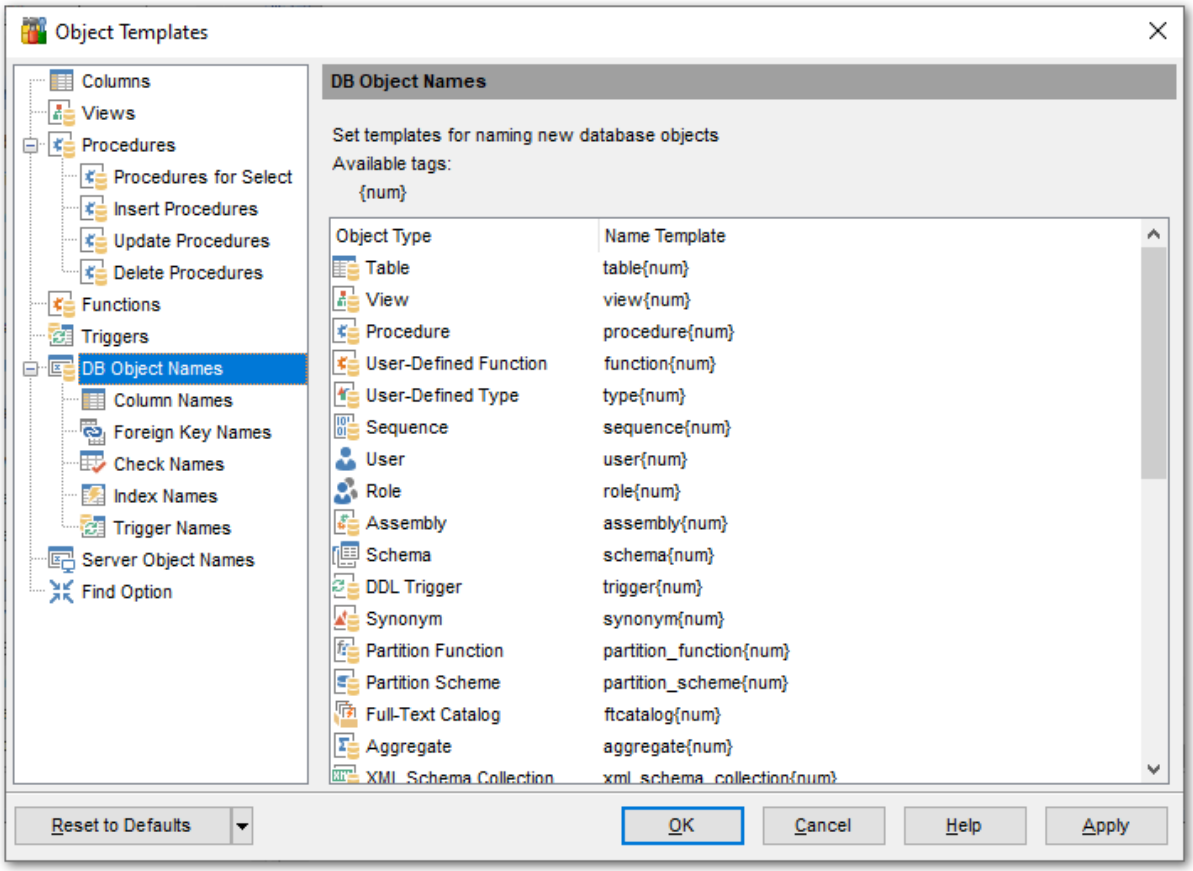
For each procedure type you can define the name template of the generated procedure. The available for naming *{table_name}* tag stands for the name of the table from which the procedure is being created.

Within the procedure editor window you are to specify the template for procedure definition. The following tags can be used:
{full_name} - stands for *[schema_name].[procedure_name]*;
{table_name} - name of the table from which the procedure is being created;
{table_schema} - schema which contains the table;
{in_params} - input parameters of the procedure;
{columns} (for select, insert procedures) - list of table *columns*;
{where_clause} (for select, update, delete procedures) - where clause of the select/update/delete statement;
{values} (for insert procedure) - values to be inserted in the table;
{set_clause} (for update procedure) - set clause used in the update statement.

Click the tag to insert it at the cursor position.
Object names templates are defined within the DB Object Names 935 tab.

12.6.3 Database Object Names

On the **DB Object Names** tab you can define templates for names of the newly created database objects 191.

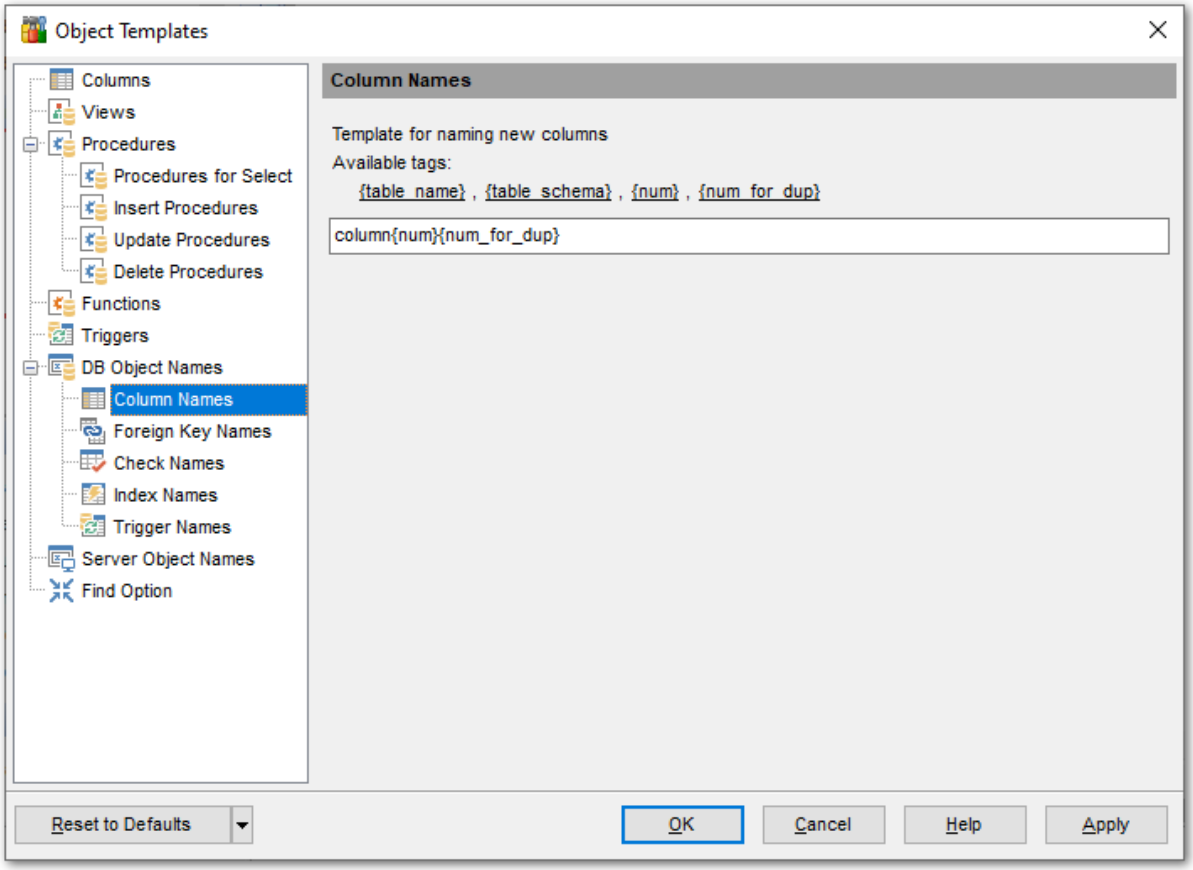


Select the **Object Type** and define its **Name Template**. You can use the *{num}* tag which stands for the ordinal number of the newly created object.

Click the tag to insert it at the cursor position.

12.6.3.1 Column Names

Use the **Column Names** tab to set the template for the name of the newly created column 218.

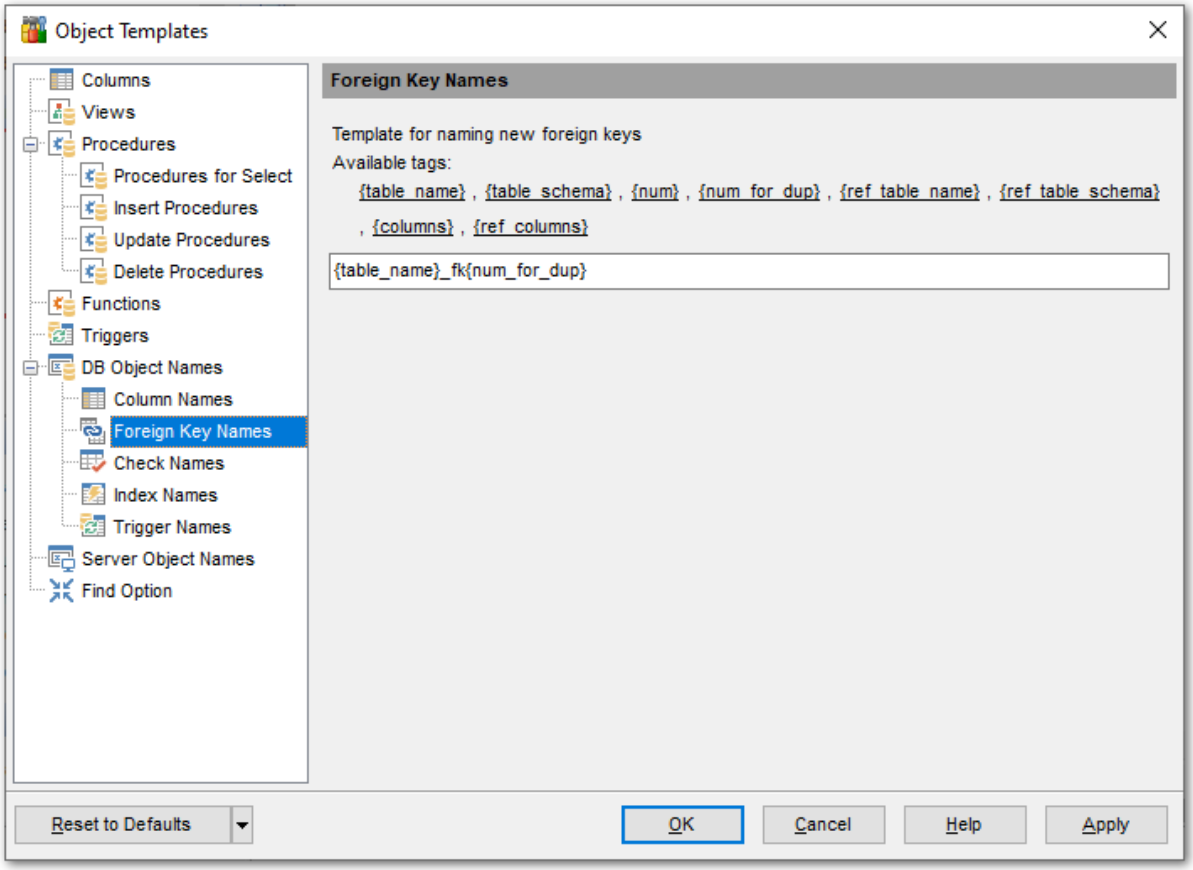


The following tags are available:
{table_name} - the name of the table in which the column is created;
{table_schema} - the name of the schema that contains the table;
{num} - the ordinal number of a column with the same name;
{num_for_dup} - the number of a column which is applied if the column with the same name (without an ordinal number) already exists.

Click the tag to insert it at the cursor position.

12.6.3.2 Foreign Key Names

Use the **Foreign Key Names** tab to set the template for the name of the newly created foreign key 226.

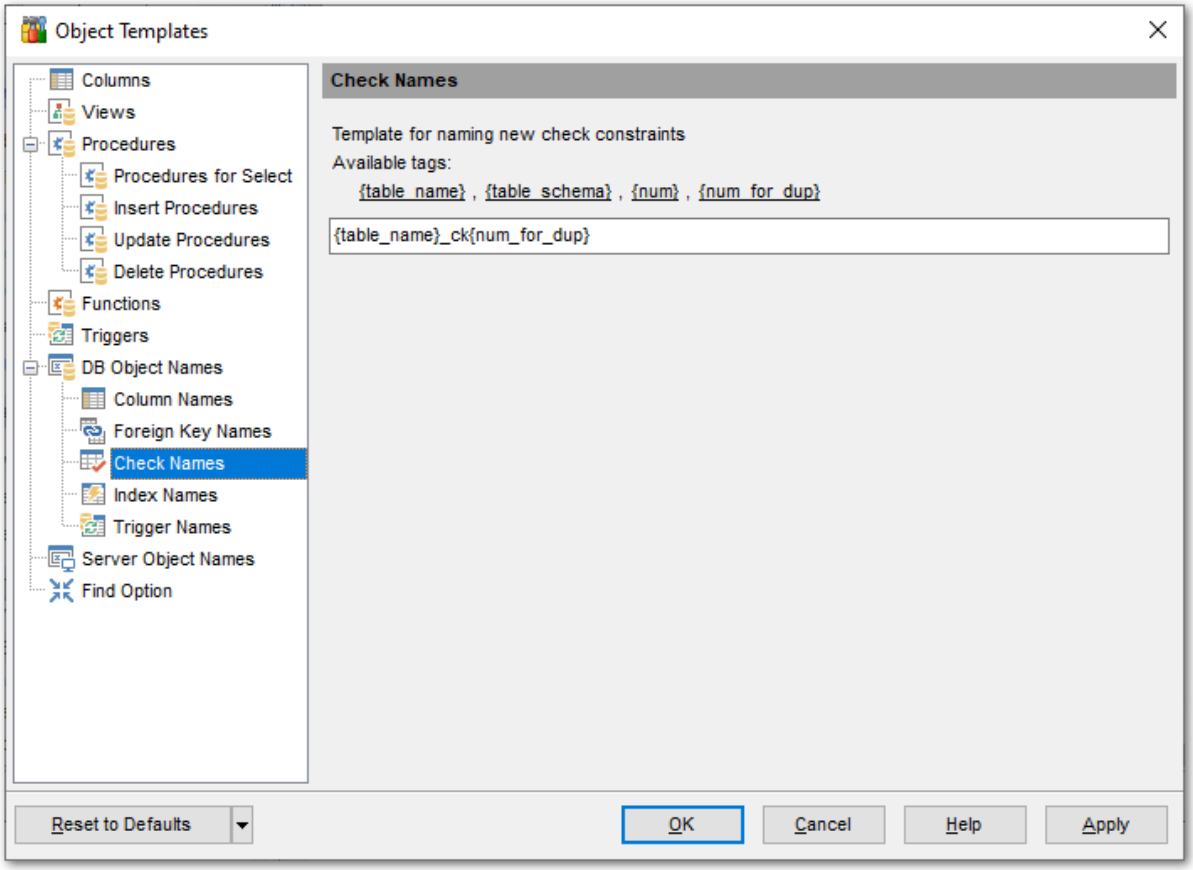


The following tags are available:
{table_name} - the name of the table in which the foreign key is created;
{table_schema} - the name of the schema that contains the table;
{num} - the ordinal number of a foreign key with the same name;
{num_for_dup} - the number of a foreign key which is applied if the foreign key with the same name (without an ordinal number) already exists;
{ref_table_name} - the name of the table which is referenced using the foreign key (foreign table name);
{ref_table_schema} - the name of the schema containing the table referenced by the foreign key;
{columns} - names of columns on which the foreign key is created;
{ref_columns} - the name of the column referenced by the foreign key.

Click the tag to insert it at the cursor position.

12.6.3.3 Check Names

Use the **Check Names** tab to set the template for the name of the newly created check 230.

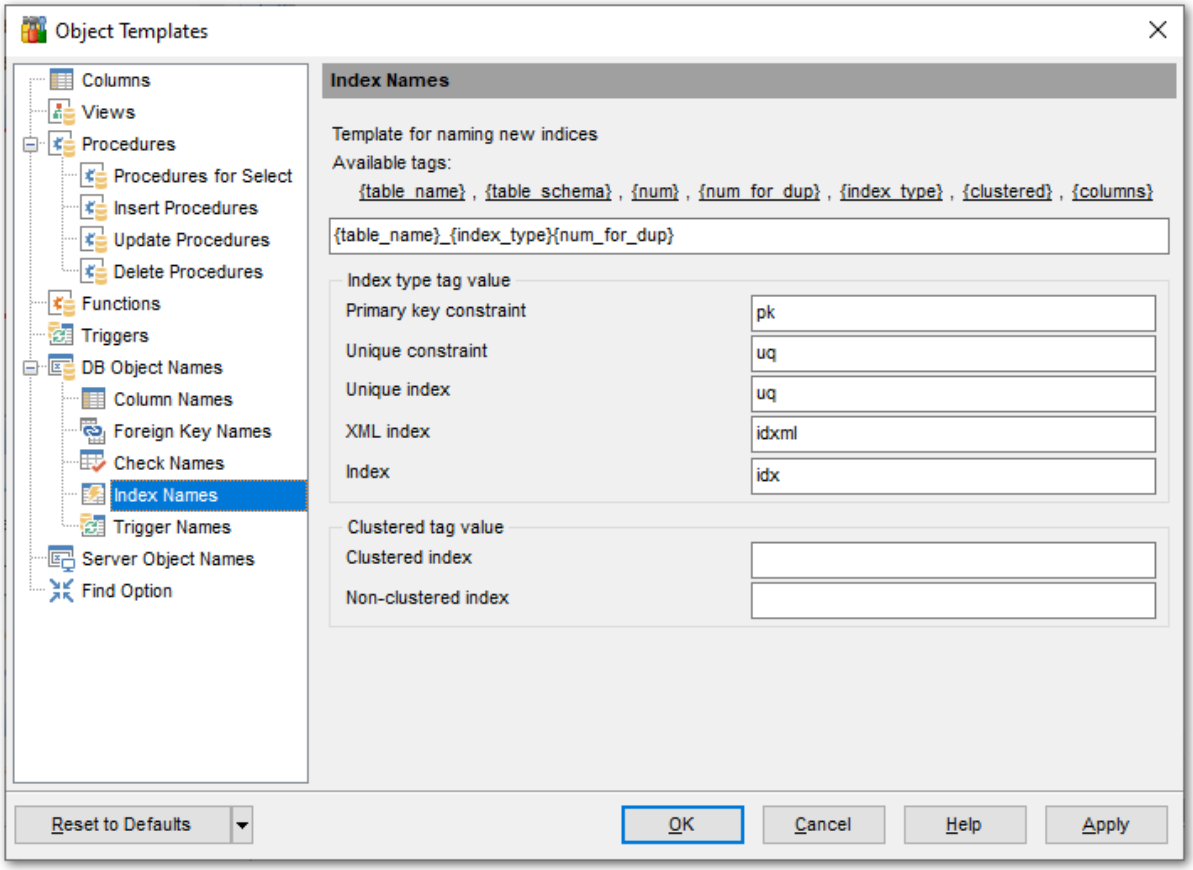


The following tags are available:
{table_name} - the name of the table in which the check is created;
{table_schema} - the name of the schema that contains the table;
{num} - the ordinal number of a check with the same name;
{num_for_dup} - the number of a check which is applied if the check with the same name (without an ordinal number) already exists.

Click the tag to insert it at the cursor position.

12.6.3.4 Index Names

Use the **Index Names** tab to set the template for the name of the newly created index 232.



The following tags are available:
{table_name} - the name of the table in which the index is created;
{table_schema} - the name of the schema that contains the table;
{num} - the ordinal number of an index with the same name;
{num_for_dup} - the number of an index which is applied if the index with the same name (without an ordinal number) already exists;
{index_type} - tag value of the index type which is defined in the **Index type tag value**;
{clustered} - tag value that which defines if the index is clustered (tag value is specified in the **Clustered tag value**);
{columns} - names of columns on which the index is created.

Click the tag to insert it at the cursor position.

Index type tag value

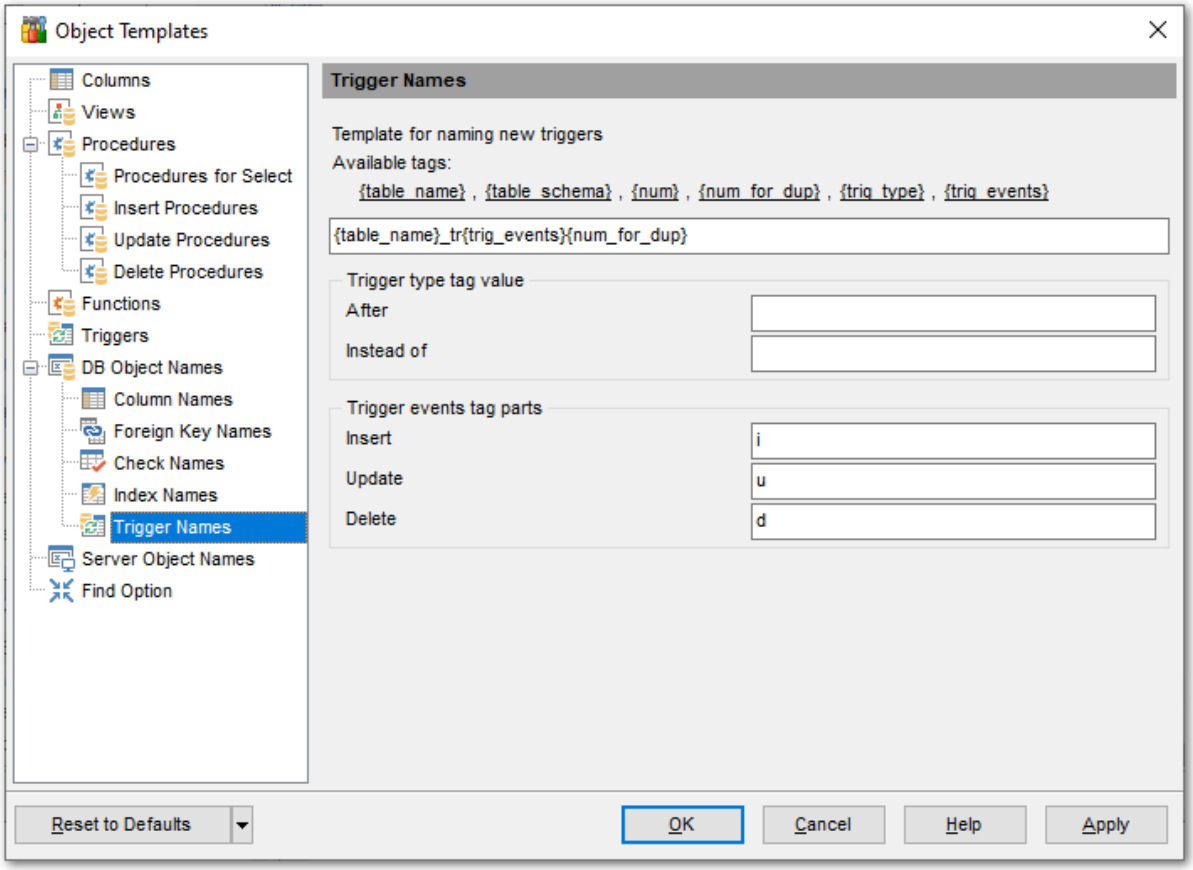
Here you can specify templates for **tags** added to default names of several index types: *Primary key constraint*, *Unique constraint*, *Unique index*, *XML index*, *Clustered*, *Index*.

Clustered tag value

Here you can specify templates which will be applied for *clustered* and *non-clustered* indices.

12.6.3.5 Trigger Names

Use the **Trigger Names** tab to set the template for the name of the newly created trigger[241].



The following tags are available:
{table_name} - the name of the table in which the trigger is created;
{table_schema} - the name of the schema that contains the table;
{num} - the ordinal number of a trigger with the same name;
{num_for_dup} - the number of a trigger which is applied if the trigger with the same name (without an ordinal number) already exists;
{trig_type} - tag value of the trigger type which is defined in the **Trigger type tag value**;
{trig_events} - tag value of the trigger events which are defined in the **Trigger events tag parts**.

Click the tag to insert it at the cursor position.

Trigger type tag value

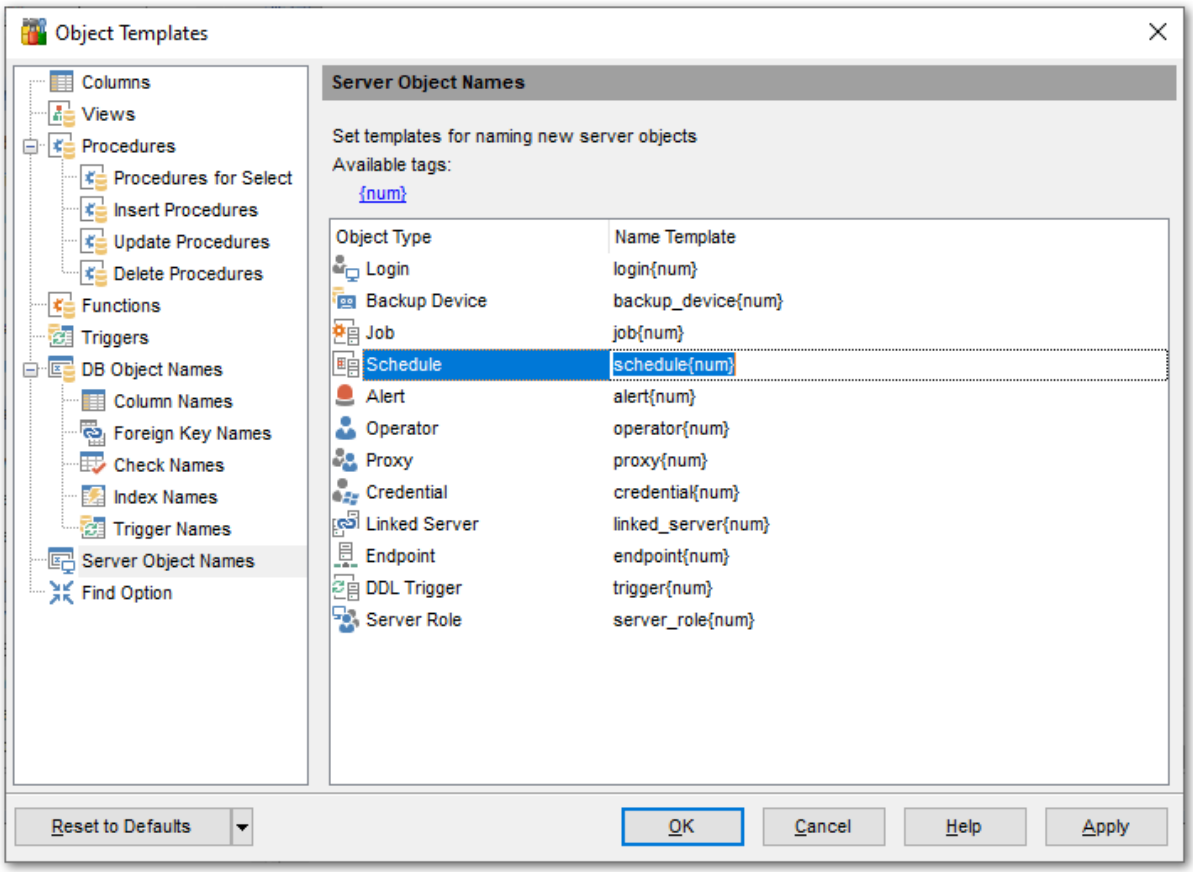
Here you can specify templates for trigger type tags added to default names of *After* and *Instead of* trigger types.

Trigger events tag parts

Here you can specify templates for trigger events tag parts added to trigger events: *Insert*, *Update*, *Delete*.

12.6.4 Server Object Names

On the **Server Object Names** tab you can define templates for names of the newly created server objects 358.



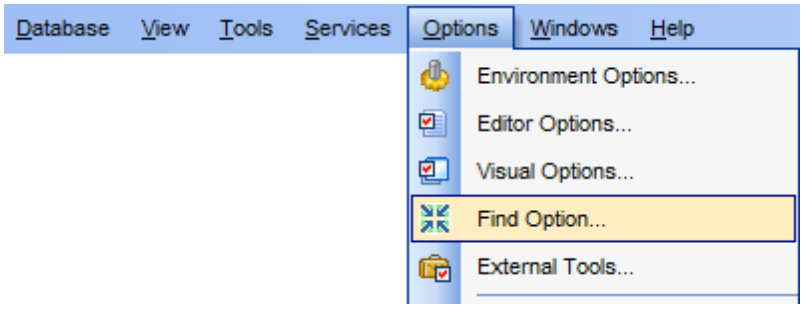
Select the **Object Type** and define its **Name Template**. You can use the *{num}* tag which stands for the ordinal number of the newly created object.

Click the tag to insert it at the cursor position.

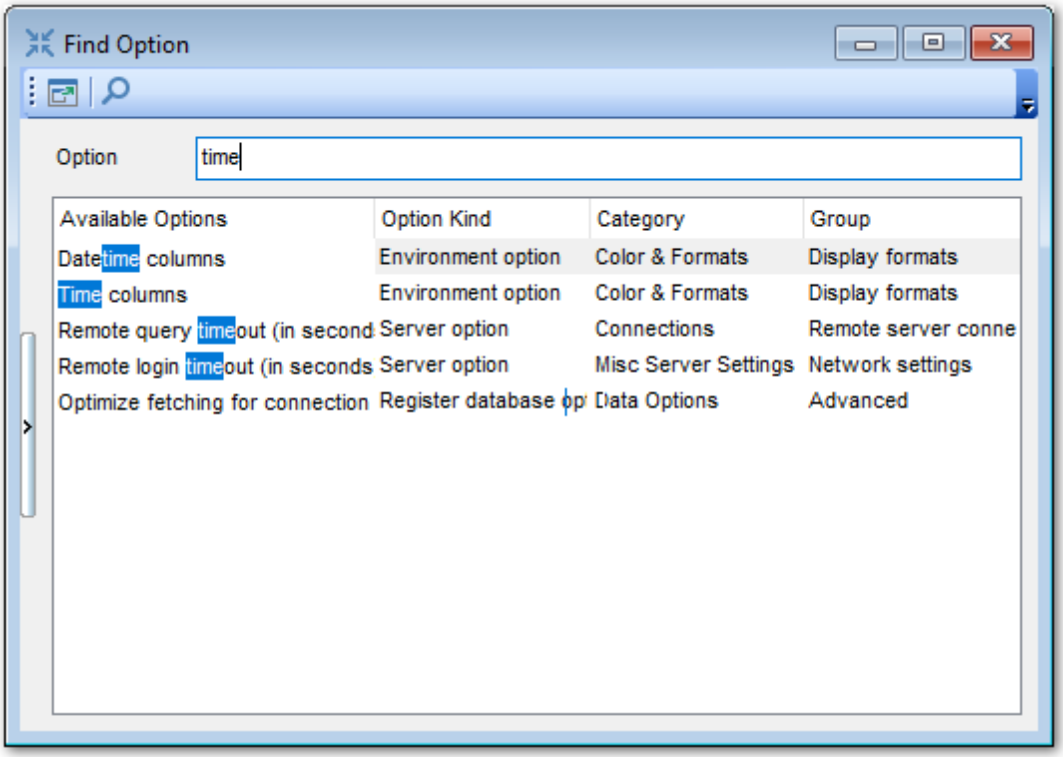
12.7 Find Option dialog

The **Find Option** dialog allows you to search for SQL Manager options easily.

To open this dialog, select the **Options | Find Option** main menu 951 item.



Option
In this field you can enter the name of the option to search for within the entire set of SQL Manager options.



The **Available options** area lists all options by categories according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location. Select the required option in the list and click **Show Option** to open the corresponding dialog where you can view/edit the value of this option. For your convenience the required option is marked with an animated icon.

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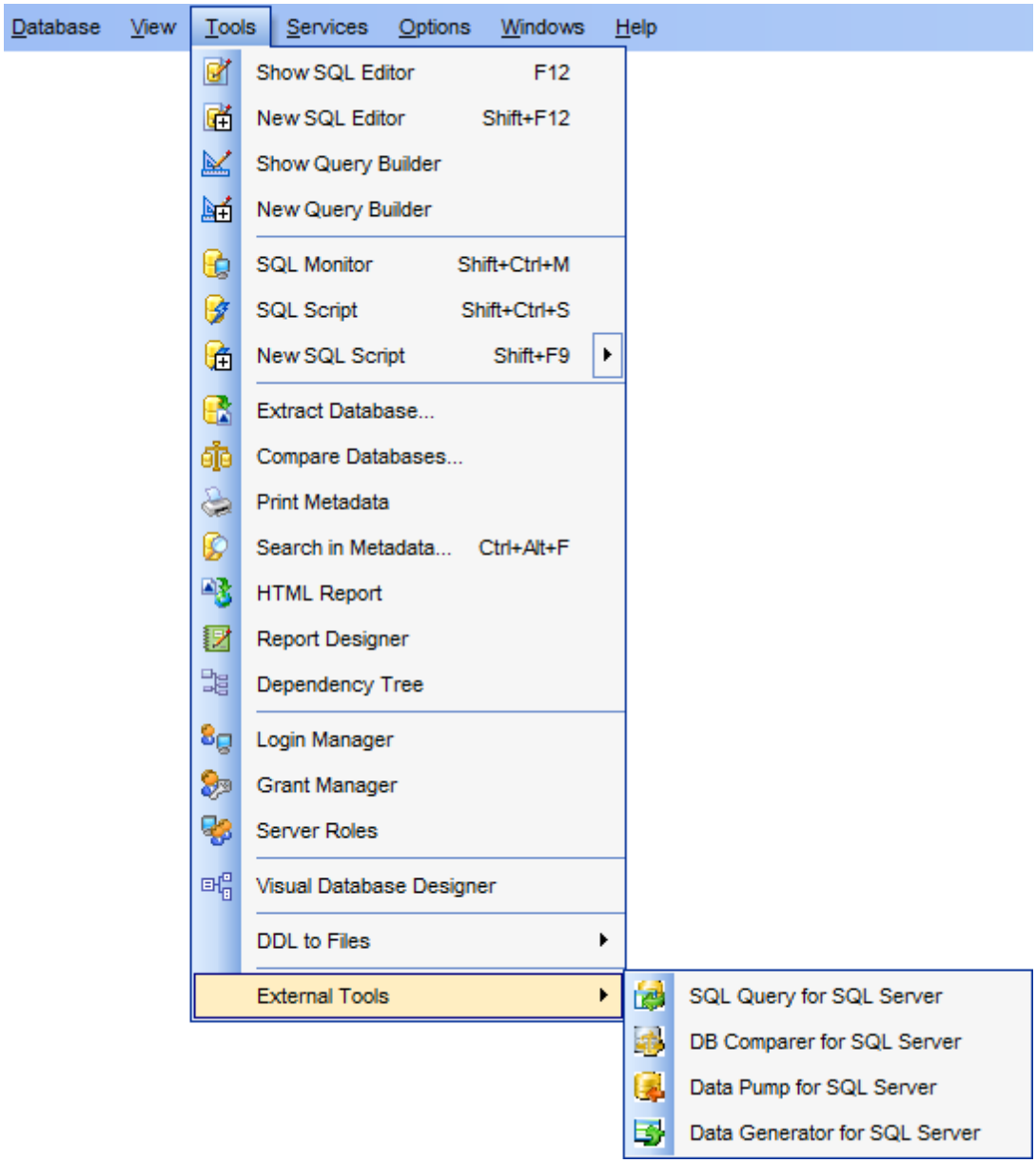
Part XIII

13 External Tools

When using SQL Manager for SQL Server, you can add **external Windows applications** to make your work more efficient.

- External Tools dialog 947
- External Tool Info editor 949



Adding External Tools

In order to add an external program:

- select the **Options | External Tools...** main menu 951 item;

- click the **Add...** button in the External Tools 947 dialog;
- specify parameters of the new external tool within the External Tool Info 949 editor;
- confirm adding the new external tool by clicking **OK** in the External Tool Info 949 editor and the External Tools 947 dialog.

This adds the icon and the title of the application you have selected to the **Tools | External Tools** submenu. Now you can run this tool quickly without closing SQL Manager.

Removing External Tools

In order to remove an external program:

- select the **Options | External Tools...** main menu 951 item;
- select the tool to be removed in the **Tools** list of the External Tools 947 dialog;
- press the **Del** key or click the **Delete** button within the dialog;
- click **OK** to confirm removing the tool and closing the dialog.

The selected tool has been removed and is no longer accessible from the **Tools | External Tools** submenu.

See also:

Getting Started 42
Database Explorer 65
Database Management 96
Database Objects Management 182
Query Management Tools 430
Data Management 468
Import/Export Tools 536
Database Tools 617
Server Tools 742
Personalization 853
How To... 991

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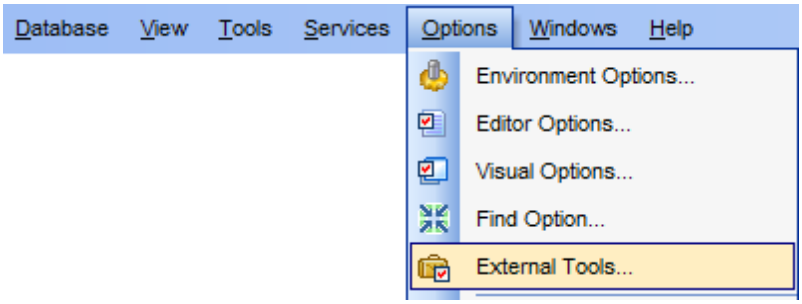
13.1 External Tools dialog

The **External Tools** dialog allows you to manage the list of external applications which can be easily run from within SQL Manager environment.

To open this dialog, select the **Options | External Tools...** main menu 951 item.



Tools
Lists all added external applications.

Add...
Opens the External Tool Info 949 editor for adding a new tool to the **Tools | External Tools** submenu.

Edit...
Opens the External Tool Info 949 editor for editing the title, the hot key, the path to the executable file, the working directory and execution parameters of the tool currently selected in the **Tools** list.

Delete
Removes the selected tool from the list of SQL Manager for SQL Server external tools.

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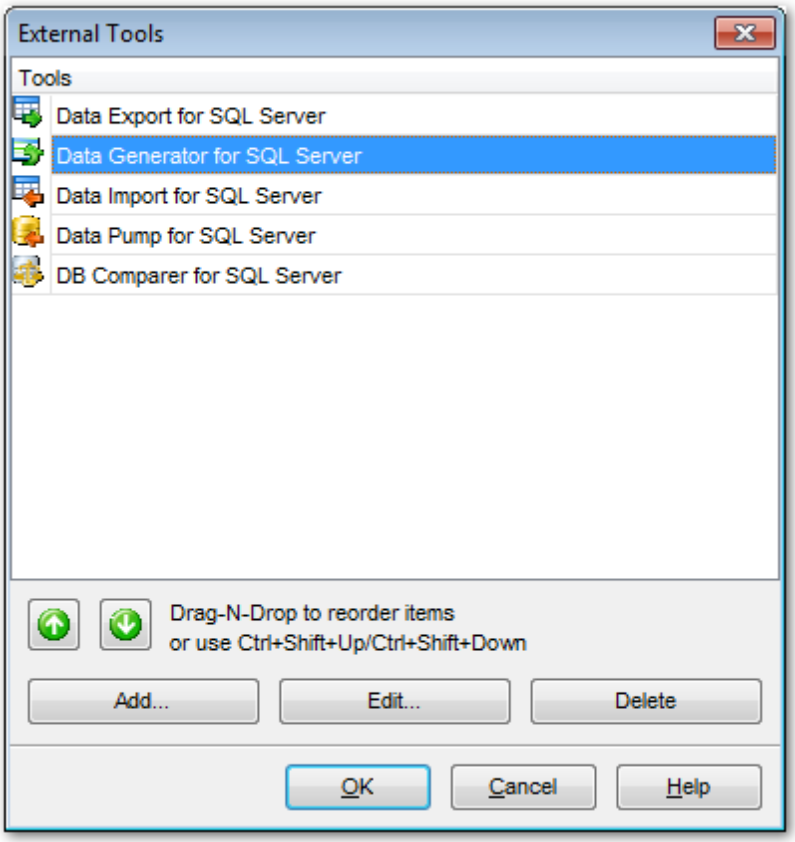


To change the order of tools in the list, use the arrow buttons at the bottom area of the dialog, or use the *Ctrl+Shift+Up* / *Ctrl+Shift+Down* shortcuts 986. You can also drag-and-drop items within the list box to change their positions.

See also:

External Tool Info editor 949

13.2 External Tool Info editor

The **External Tool Info** editor allows you to set common parameters of running added external programs from within SQL Manager environment. This dialog is used both when adding external tools and editing their parameters (see Add External Tool 945 and External Tools 947).

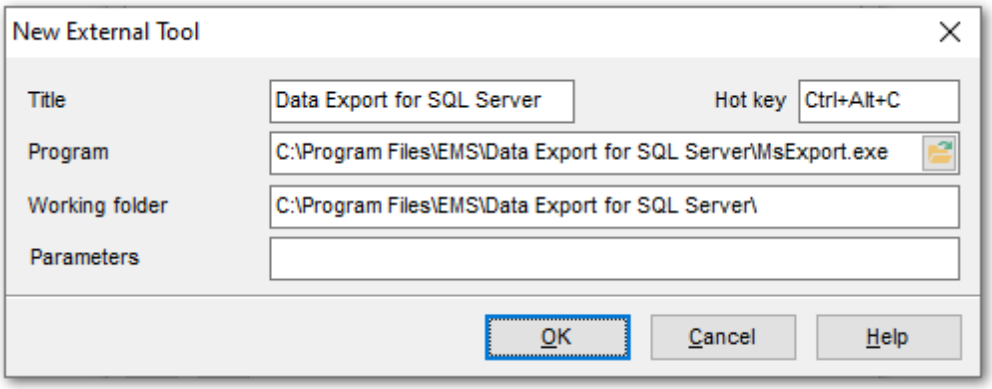
Title
Enter the title to be displayed in the **Tools | External Tools** submenu of SQL Manager.

Hot Key
Press a key or a key combination to set it as a hot key for running the tool.

Program
Use the **Explorer** button to specify the path to the **.exe* file of the external program.

Working Dir
Set the default working directory of the program.

Parameters
This box stores parameters for the program execution (if required).



See also:
External Tools dialog 947

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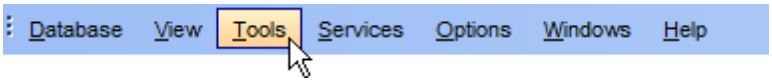
Part XIV

14 Appendix

14.1 Program interface

Main menu

The main menu allows you to perform various **Database** operations, open To-Do List 973 and activate/deactivate Database Explorer 65, SQL Assistant 87 and various toolbars 953 within the **View** menu, manage your databases using items of the **Tools** and **Services** menus, customize 853 the application using the **Options** menu, manage SQL Manager **Windows** using Window List 975 and other tools, view the Tip of the Day and access Registration 26 information and product documentation, update 980 the product to the latest version using the corresponding items available within the **Help** menu.



Note: To learn how to configure SQL Manager menus, refer to the Customize toolbars and menus 976 page.

Navigation bars in object editors and program tools

Navigation bars are interface elements that enable users to quickly locate tools they need. Navigation bar items are displayed within a group with the help of links. A typical Navigation bar of SQL Manager contains links to commonly accessed tools (*refresh*, *print*, *restore default size* of the window), *options* pertaining to the editor or tool, and specific tools.

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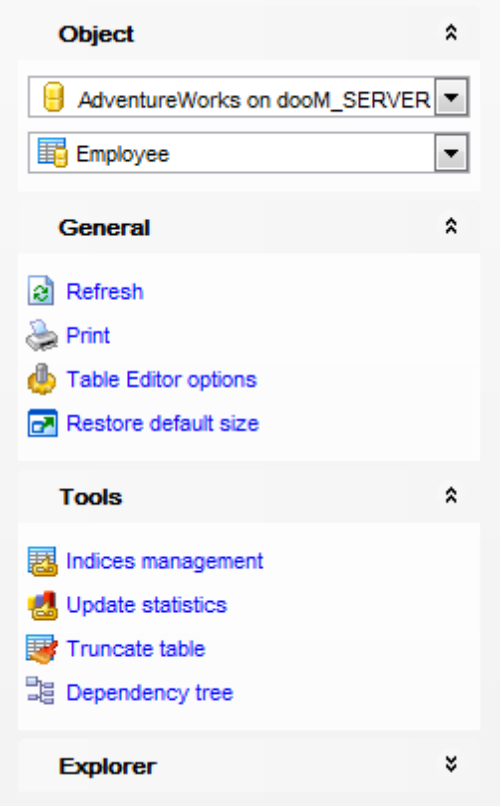
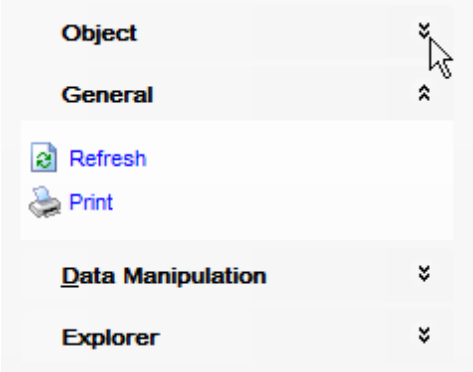


Navigation bar panes (groups) can be **expanded**/**collapsed**. When expanded, a pane provides access to its links; when collapsed, panes are displayed as headers only.
To expand/collapse a pane, click the pane header. The icons indicate the current pane state (collapsed/expanded respectively).



Note: Depending on the current tab selection, Navigation bars in most of the program tools expand to one or more additional panes with tab-specific actions that can be useful for working with the object or service.

Note: To configure the Navigation bars, you can use the Navigation bar section of the Visual Options dialog.

Hint: Most items of the Navigation bars are also available on the Toolbars 953.

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Toolbars in the main program window, object editors and program tools

A **toolbar** is a horizontal row or vertical column of selectable image buttons that give the user a constantly visible reminder of and an easy way to select certain application functions. Most SQL Manager editors and tools are supplemented with toolbars.

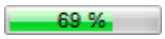
To enable the **toolbars** in SQL Manager for SQL Server, open the Environment Options 854 dialog, proceed to the Windows 858 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 951) in the **Bar style for child forms** group.

Hint: Most SQL Manager toolbars are dockable, i.e. you can place a toolbar to any available location within the parent window.

To learn how to configure toolbar items, refer to the Customize toolbars and menus 976 page.

Progress bars

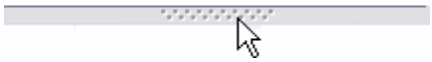
A **progress bar** is an interface element that conveys the progress of a task or service. Several SQL Manager editors (e.g. Execute Script 625),tools (e.g. Dependency Tree 618) and wizards (e.g. Import Data Wizard 577) are supplemented with progress bars indicating the progress of lengthy operations.



The graphic of SQL Manager progress bars is accompanied by a textual representation of the progress in the percent format.

Splitters

Splitter controls are used to resize docked controls at run time. In SQL Manager for SQL Server the splitter controls are used on the main form, DB Explorer 65, and in program tools and editors as a separator between the working area and Navigation bars 951, status bars, etc.



Incremental Search bar

Incremental search bar is the tool which is available in the status bar area of some SQL Manager tools. The bar is normally called through the *Ctrl+I* shortcut 986. Type in the first letters of the search string, and the corresponding string will be highlighted in the search scope.

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Search:

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14.2 Viewing object DDL structure

The **DDL** (Data Definition Language) tab displays the SQL statement for creating the object with all its subobjects, if any. This text is read-only. If you want to change the object definition, use the appropriate editor tabs instead, or copy the text to the Windows Clipboard to paste it in the Query Data 432 or Execute Script 625.

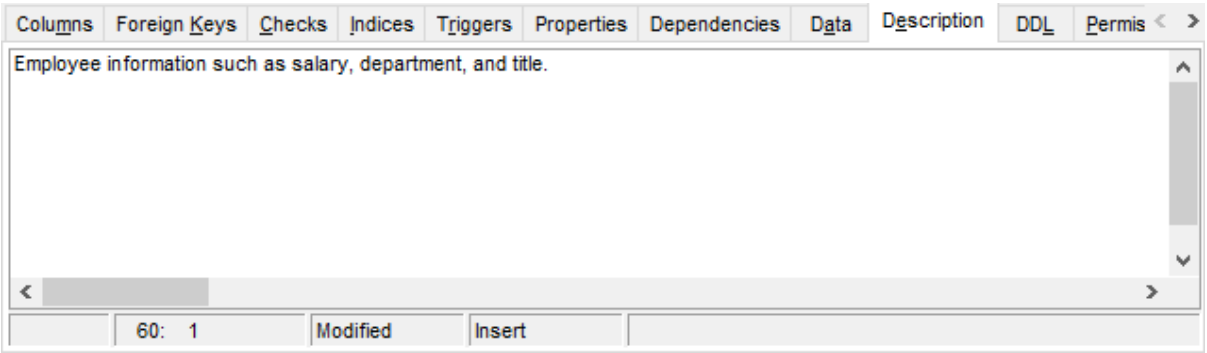
Columns | Foreign Keys | Checks | Indices | Triggers | Properties | Dependencies | Data | Description | DDL | Permissions

```
CREATE TABLE dbo.DimEmployee (
  EmployeeKey int IDENTITY(1, 1) NOT NULL,
  ParentEmployeeKey int NULL,
  EmployeeNationalIDAlternateKey nvarchar(15) COLLATE SQL_Latin1_General_CP1_CI_AS NUL
  ParentEmployeeNationalIDAlternateKey nvarchar(15) COLLATE SQL_Latin1_General_CP1_CI_
  SalesTerritoryKey int NULL,
  FirstName nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
  LastName nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
  MiddleName nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  NameStyle bit NOT NULL,
  Title nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  HireDate date NULL,
  BirthDate date NULL,
  LoginID nvarchar(256) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  EmailAddress nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  Phone nvarchar(25) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  MaritalStatus nchar(1) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  EmergencyContactName nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  EmergencyContactPhone nvarchar(25) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  SalariedFlag bit NULL,
  Gender nchar(1) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  PayFrequency tinyint NULL,
  BaseRate money NULL,
  VacationHours smallint NULL,
  SickLeaveHours smallint NULL,
  CurrentFlag bit NOT NULL,
  SalesPersonFlag bit NOT NULL,
  DepartmentName nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  StartDate date NULL,
  EndDate date NULL,
  Status nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
  EmployeePhoto varbinary(max) NULL,
  DepartmentID int NULL,
  CONSTRAINT PK_DimEmployee_EmployeeKey PRIMARY KEY CLUSTERED (EmployeeKey)
    WITH (
      PAD_INDEX = OFF, IGNORE_DUP_KEY = OFF, STATISTICS_NORECOMPUTE = OFF,
      ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON),
  CONSTRAINT FK_DimEmployee_DimEmployee FOREIGN KEY (ParentEmployeeKey)
  REFERENCES dbo.DimEmployee (EmployeeKey)
  ON UPDATE NO ACTION
  ON DELETE NO ACTION,
```

Hint: If more convenient, you can use the **Save DDL to file** and **Open DDL in Query Data** items available on the DDL pane within the Navigation bar 951 of object editors.

14.3 Editing object description

The **Description** tab allows you to view and edit the comment for the object (optional).



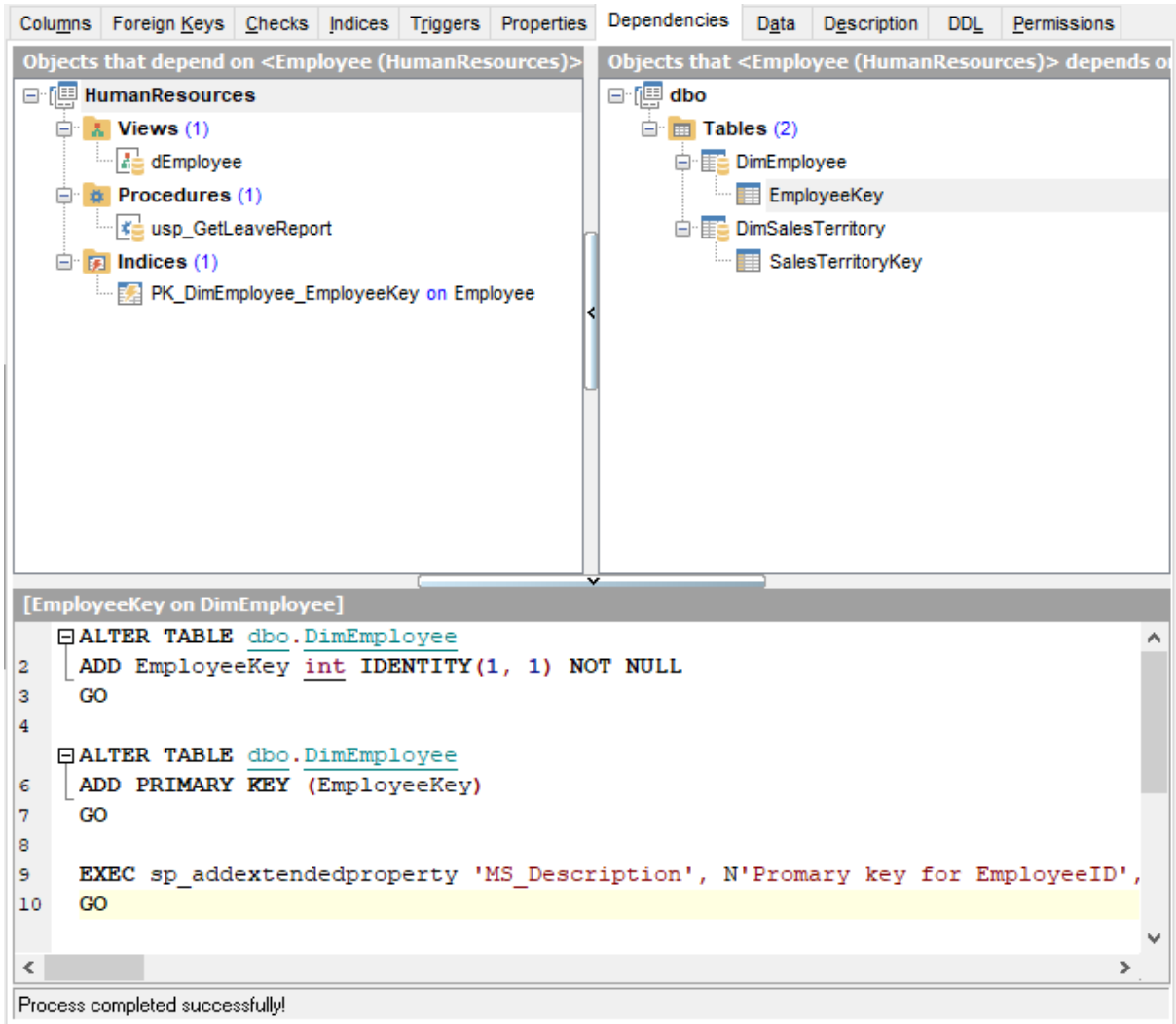
You can save changes made in this area by clicking the **Save Description** item on the Navigation bar[951].

If the changes have not been saved, on attempt to select another tab of the editor you will be prompted for an action whether changes in the object description should be saved or discarded.

Note: Changing object description is performed by means of *sp_updateextendedproperty 'MS_Description'*.

14.4 Browsing object dependencies

The **Dependencies** tab allows you to view objects that depend on the object being edited, and the objects that the edited object depends on.



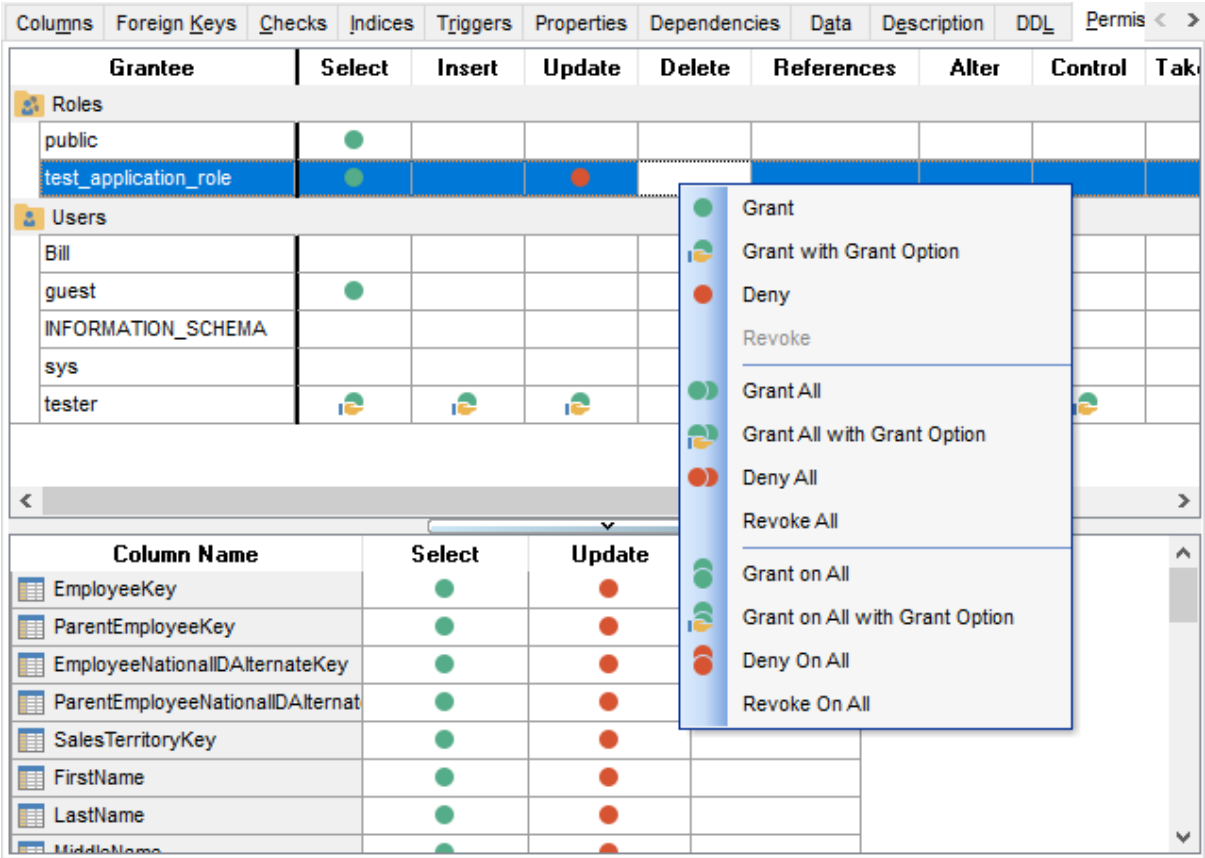
Hint: To open a dependent object or a depending object in its editor, you can simply double-click the object alias in the **Objects that <object_name> depends on** and **Objects that depend on <object_name>** lists.

See also:

Dependency Tree 618

14.5 Setting object permissions

The **Permissions** tab allows you to view the permissions currently allocated for this object, and to grant permissions 692 on the object to any of the existing principals.

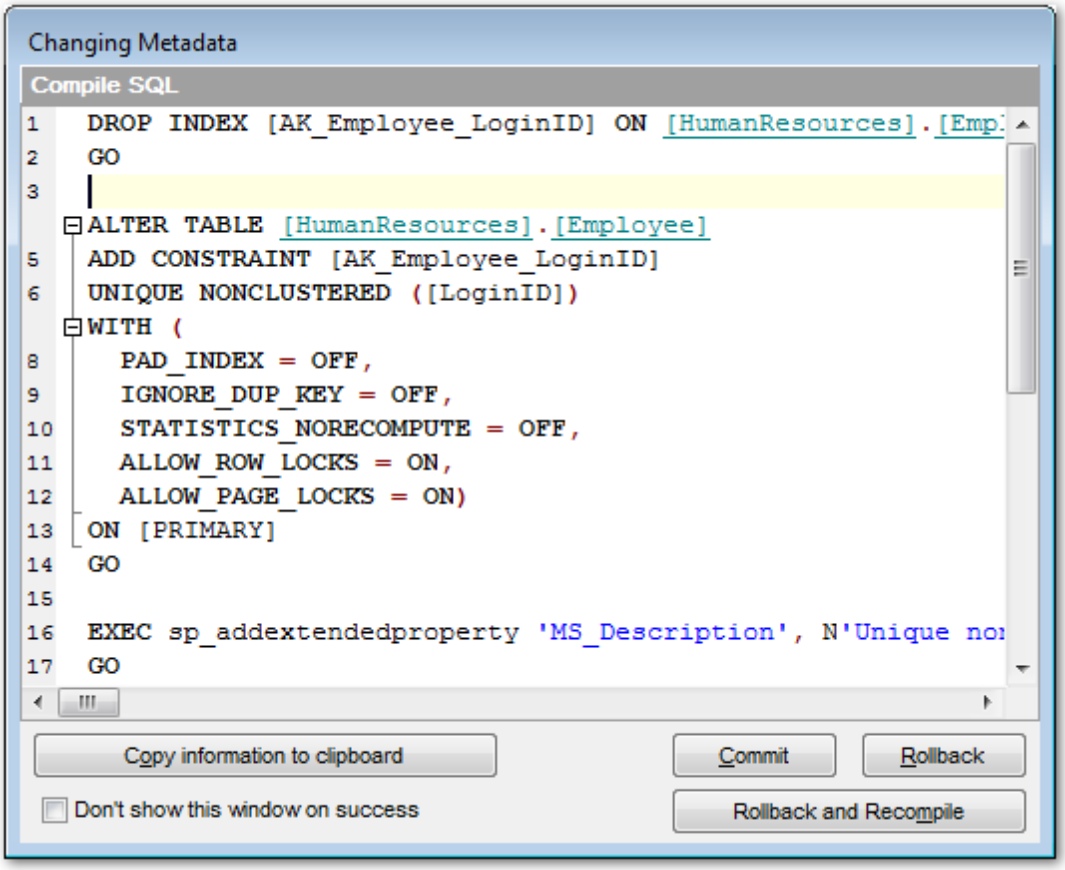


For details see Grant Manager 688.

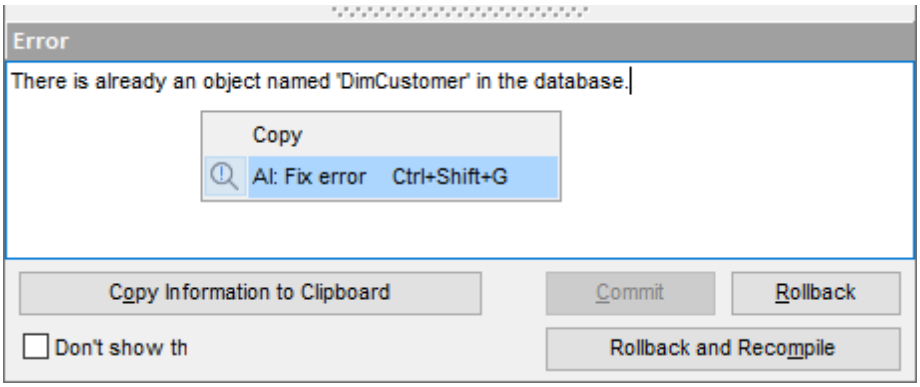
14.6 Changing Metadata window

The **Changing Metadata** window is used to trace the errors and edit SQL statements during their compilation. The compilation window appears each time metadata is changed, both when the compilation is successful and when there are compilation errors. To hide this window for successful metadata changes, select the ☑ **Don't show this window on success** option.

Compile SQL
This area displays the SQL statement pending to be executed to perform metadata changing. In this area you can view and edit the SQL statement.



In case of a compilation error the **Error** tab also becomes visible - here you can view the error description returned by the server. The context menu of the Error area provides the **AI: Fix error** item: the AI Assistant 721 receives the error text together with the statement that caused it and suggests a fix.



Commit
This button starts execution of the statement(s). Click it to commit the current transaction. This button is available only if there were no errors in compilation.

Rollback
This button cancels the script execution and allows you to return to the previous stage (editor window or DB Explorer 65).

Rollback and Recompile
This button calls for recompilation with the changes you made in the **Compile SQL** area. Use this button after correcting the SQL statement.

If necessary, you can **copy information to clipboard** and save it in a text editor afterwards (the button is only enabled when a compilation error occurs).

If you want this window to appear only in case of an error, uncheck the ☑ **Confirm metadata changing (Changing Metadata Window)** option (checked by default) available within the **Confirmations** section of the Environment Options 854 dialog.

14.7 Find Text dialog

The **Find Text** dialog is provided for quick and flexible searching for specified text within the working area of SQL Manager editors.

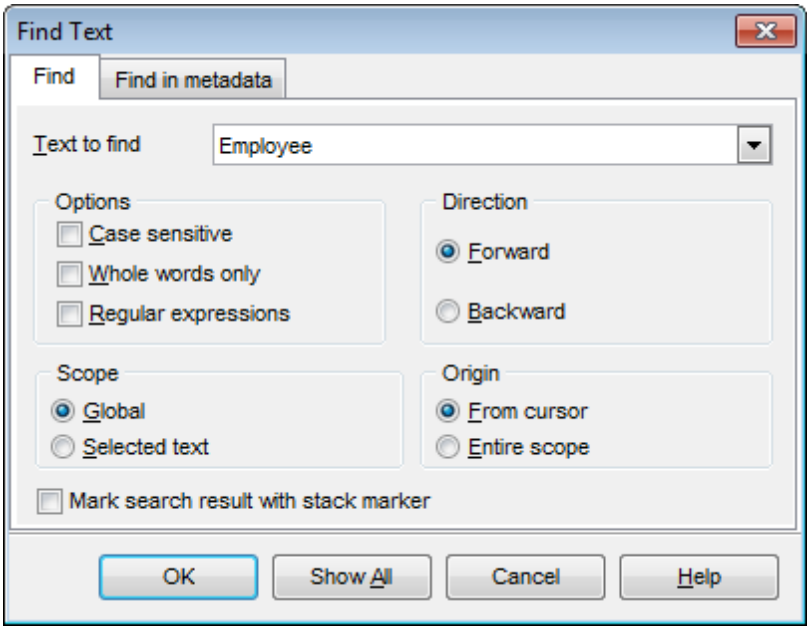
Text to find
Enter a search string in this box. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered search strings.

Options

Case sensitive
This option can be used to differentiate uppercase characters from lowercase ones during the search process.

Whole words only
Use this option to search for words only (with this option off, the search string might be found within longer words.)

Regular expressions
Recognizes regular expressions in the **Text to find** field.
For example, you can type "empl*" to search for metadata containing the "empl" substring; enter "^emp" to search for words starting with "emp" or "^emp|emp$" to search for the string "emp" at the beginning or at the end of the string.
Note: The syntax of regular expressions that can be used in the **Text to find** field is similar to that used in Perl regular expressions. Comprehensive information about it can be found at http://perldoc.perl.org/perlre.html#Regular-Expressions.



Direction

Forward
Searches from the current position to the end of the working area.

Backward

Searches from the current position to the beginning of the working area.

Scope

Global
Searches within the entire working area, in the direction specified by the *Direction* setting.

Selected text
Searches only within the currently selected text, in the direction specified by the *Direction* setting. You can use the mouse or block commands to select a block of text.

Origin

From cursor
The search starts at the cursor's current position, and then proceeds either forward to the end of the scope, or backward to the beginning of the scope depending on the *Direction* setting.

Entire scope
The search covers either the entire block of selected text or the entire script (no matter where the cursor is in the Editor area) depending upon the *Scope* options.

Mark search result with stack marker
The option toggles marking search results. If this option is selected, stack markers are set at all search positions - this makes it possible to jump from one marker (search result) to another within the text.

Click the **Show All** button to highlight every occurrence of the search string.

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14.8 Replace Text dialog

The **Replace Text** dialog is provided for searching and replacing text within the working area of SQL Manager editors.

Text to find
Enter a search string in this box. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered search strings.

Text to replace
This box allows you to enter a string to replace the search string. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered strings. To replace the search string with an empty string, leave this input box blank.

Options

☑ **Case sensitive**
This option can be used to differentiate uppercase characters from lowercase ones during the search process.

☑ **Whole words only**
Use this option to search for words only (with this option off, the search string might be found within longer words.)

☑ **Regular expressions**
Recognizes regular expressions in the **Text to find** field.

☑ **Replace with template**
This option requires the **Regular expressions** option selection.
Enable this option to use regular expressions in the **Text to replace** field. Expression used in this field will be applied to each string that matches the **Text to find** expression.

Note: The syntax of regular expressions that can be used in the **Text to find** and the **Text to replace** fields is similar to that used in Perl regular expressions. Comprehensive information about it can be found at http://perldoc.perl.org/perlre.html#Regular-Expressions.

☑ **Prompt on replace**
Check this option if you wish to be prompted before replacing upon each occurrence of the search string. When this option is off, the search string is replaced automatically.

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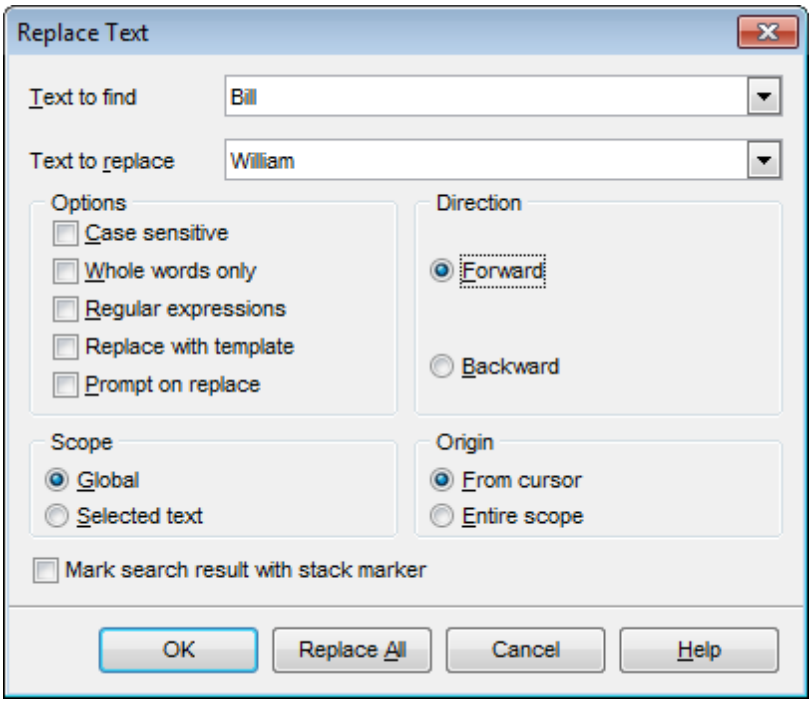

Direction

Forward
Searches and replaces from the current position to the end of the working area.

Backward
Searches and replaces from the current position to the beginning of the working area.

Scope

Global
Searches and replaces within the entire working area, in the direction specified by the *Direction* setting.

Selected text
Searches and replaces only within the currently selected text, in the direction specified by the *Direction* setting. You can use the mouse or block commands to select a block of text.

Origin

From cursor
The search and replace process starts at the cursor's current position, and then proceeds either forward to the end of the scope, or backward to the beginning of the scope depending on the *Direction* setting.

Entire scope
The search and replace process covers either the entire block of selected text or the entire script (no matter where the cursor is in the Editor area) depending upon the *Scope* options.

Mark search result with stack marker
The option toggles marking search results. If this option is selected, stack markers are set

at all search positions - this makes it possible to jump from one marker (search result) to another within the text.

Click the **Replace All** button to replace every occurrence of the search string. If you have checked the **Prompt on replace** option, the confirmation dialog box appears upon each occurrence of the search string.

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14.9 Format specifiers

The following format specifiers are supported in the format string:

Float/Integer format

0
Digit place holder. If the value being formatted has a digit in the position where the '0' appears in the format string, then that digit is copied to the output string. Otherwise, a '0' is stored in that position in the output string.

#
Digit placeholder. If the value being formatted has a digit in the position where the '#' appears in the format string, then that digit is copied to the output string. Otherwise, nothing is stored in that position in the output string.

.
Decimal point. The first '.' character in the format string determines the location of the decimal separator in the formatted value; any additional '.' characters are ignored.

,
Thousand separator. If the format string contains one or more ',' characters, the output will have thousand separators inserted between each group of three digits to the left of the decimal point. The placement and number of ',' characters in the format string does not affect the output, except to indicate that thousand separators are wanted.

E+
Scientific notation. If any of the strings 'E+', 'E-', 'e+', or 'e-' are contained in the format string, the number is formatted using scientific notation. A group of up to four '0' characters can immediately follow the 'E+', 'E-', 'e+', or 'e-' to determine the minimum number of digits in the exponent. The 'E+' and 'e+' formats cause a plus sign to be output for positive exponents and a minus sign to be output for negative exponents. The 'E-' and 'e-' formats output a sign character only for negative exponents.

Date/Time format

c
Displays the date using the format using the Short Date Format, followed by the time using the Long Time Format. The time is not displayed if the date-time value indicates midnight precisely.

d
Displays the day as a number without a leading zero (1-31).

dd
Displays the day as a number with a leading zero (01-31).

ddd
Displays the day as an abbreviation (Sun-Sat) using the strings of the Short Day Names.

dddd

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Displays the day as a full name (Sunday-Saturday) using the strings of the Long Day Names.

ddddd
Displays the date using the Short Date Format.

dddddd
Displays the date using the Long Date Format.

e
Displays the year in the current period/era as a number without a leading zero (Japanese, Korean and Taiwanese locales only).

ee
Displays the year in the current period/era as a number with a leading zero (Japanese, Korean and Taiwanese locales only).

g
Displays the period/era as an abbreviation (Japanese and Taiwanese locales only).

gg
Displays the period/era as a full name. (Japanese and Taiwanese locales only).

m
Displays the month as a number without a leading zero (1-12). If the m specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.

mm
Displays the month as a number with a leading zero (01-12). If the mm specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.

mmm
Displays the month as an abbreviation (Jan-Dec) using the strings given of the Short Month Names.

mmmm
Displays the month as a full name (January-December) using the strings of the Long Month Names.

yy
Displays the year as a two-digit number (00-99).

yyyy
Displays the year as a four-digit number (0000-9999).

h
Displays the hour without a leading zero (0-23).

hh
Displays the hour with a leading zero (00-23).

n
Displays the minute without a leading zero (0-59).

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nn
Displays the minute with a leading zero (00-59).

s
Displays the second without a leading zero (0-59).

ss
Displays the second with a leading zero (00-59).

z
Displays the millisecond without a leading zero (0-999).

zzz
Displays the millisecond with a leading zero (000-999).

t
Displays the time using the Short Time Format.

tt
Displays the time using the Long Time Format.

am/pm
Uses the 12-hour clock for the preceding h or hh specifier, and displays 'am' for any hour before noon, and 'pm' for any hour after noon. The am/pm specifier can use lower, upper, or mixed case, and the result is displayed accordingly.

a/p
Uses the 12-hour clock for the preceding h or hh specifier, and displays 'a' for any hour before noon, and 'p' for any hour after noon. The a/p specifier can use lower, upper, or mixed case, and the result is displayed accordingly.

ampm
Uses the 12-hour clock for the preceding h or hh specifier, and displays the contents of the TimeAMString global variable for any hour before noon, and the contents of the TimePMString global variable for any hour after noon.

/
Displays the date separator character using the Date Separator.

:
Displays the time separator character using the Time Separator.

'xx'/"xx"
Characters enclosed in single or double quotes are displayed as-is, and do not affect formatting.

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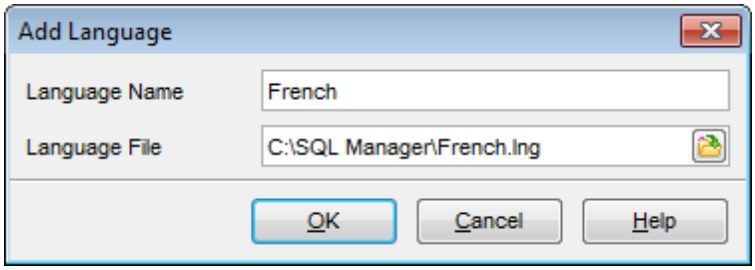
14.10 Language Info Editor

The **Language Info Editor** dialog allows you to set the language name and specify the corresponding **.lng* localization file. This dialog is opened when you add or edit a language (see Environment Options | Localization 901).

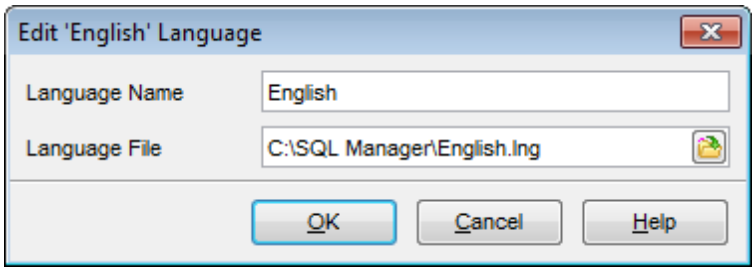
Language Name
The name of the language that is displayed in the Select Program Language 928 dialog and within the **Available Languages** list of the Environment Options | Localization 901 section.

Language File
The **.lng* file containing the translated string resources. See the *%program_directory%\Languages* folder to find already existing localization files.

Adding a language
The *Add language* dialog allows you to specify your own localization file and set the language name.



Editing a language
The *Edit language* dialog allows you to change the language name or select another localization file for the specified language.



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14.11 Using templates

For your convenience the ability to use templates is provided by SQL Manager for SQL Server. A template is a named collection of wizard options stored in a file.

Instead of performing a long chain of routine steps all the time you can save all the options of the wizard for future use as a template file. Select the **Templates | Save Template** drop-down menu item, specify the template file name and set an optional comment for the template file.
When starting the wizard next time, you can load the template by selecting the **Templates | Load Template** drop-down menu item.

Note that saving/loading of templates is possible at any step of the wizard.

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14.12 Supported file formats

MS Excel 97-2003
The most popular e-table format used by Microsoft® Excel (*.xls). The result files are fully compatible with Microsoft® Excel versions 97-2000, 2003 and XP.

MS Access 97-2003
File of Microsoft® Access format (*.mdb) with an ADO connection used.

MS Word 97-2003
One of the most popular text processing formats used by Microsoft® Word (*.doc). The result files are fully compatible with Microsoft® Word versions 97-2000, 2003 and XP.

RTF
Rich Text Format (*.rtf) supported by many text processing programs (e.g. WordPad).

HTML
Hyper Text Markup Language file format (*.html, *.htm), complete compatibility with HTML 4.0 specification.

PDF
A standard format in electronic publishing (*.pdf).

Text file
Plain text file format (*.txt).

CSV file
Comma-Separated Value file format (*.csv).

DIF file
Data Interchange File (*.dif) format.

SYLK
Symbolic Links (*.slk) file format.

Note: all the text formats including *Text file*, *CSV*, *DIF*, *SYLK* are usually used as working or interchange formats.

LaTeX
A specific file format (*.tex) which is a popular (especially among mathematicians and physicists) macroextension of *TeX* pack developed by D.Knut.

XML
A markup language for documents containing structured information (*.xml).

DBF
Database file format (*.dbf) used by dBASE and a number of xBASE applications.

MS Excel
The contemporary e-table format used by Microsoft® Excel 2007 (*.xlsx). The result files are fully compatible with Microsoft® Excel 2007.

MS Access

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File of Microsoft® Access 2007 format (*.accdb) with an ADO connection used.

MS Word
The contemporary text processing format used by Microsoft® Word 2007 (*.docx). The result files are fully compatible with Microsoft® Word 2007.

ODF Spreadsheets
OASIS Open Document Format for Office Applications - open document file format for spreadsheets (*.ods) used by a number of applications including OpenOffice.org and KOffice.

ODF text
OASIS Open Document Format for Office Applications - open document file format for word processing (*.odt) documents used by a number of applications including OpenOffice.org and KOffice.

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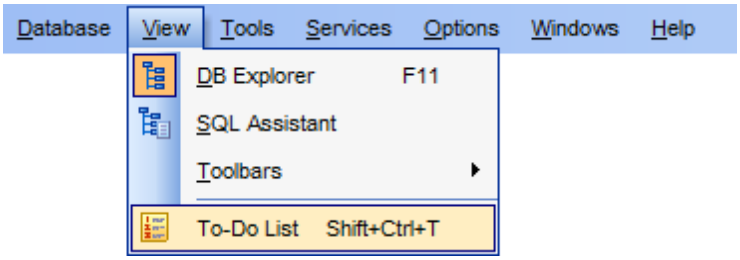
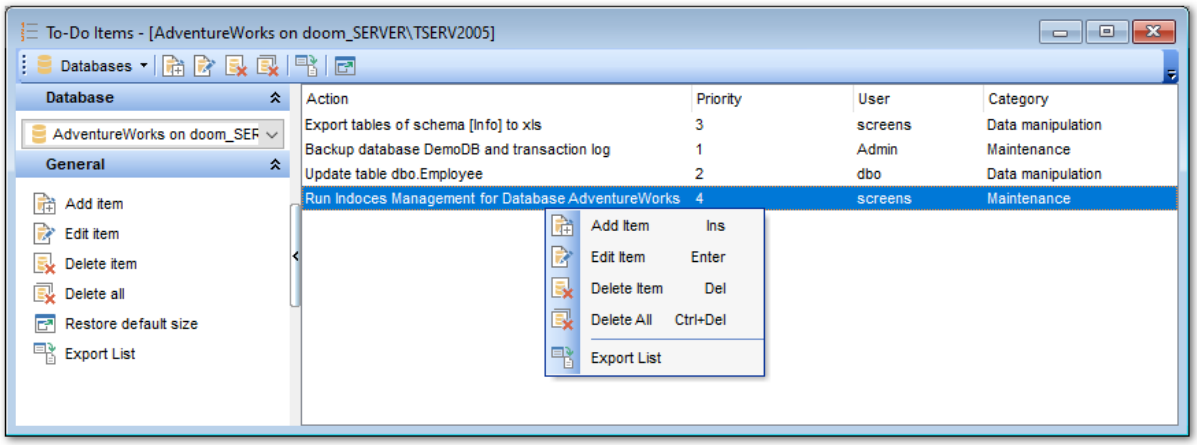
14.13 To-Do List

The **To-Do List** window allows you to make up a list of tasks for the database.

To call this window, select the **View | To-Do List** main menu 951 item, or use the *Shift+Ctrl+T* shortcut 986.



The task list is displayed in a form of a grid. Its columns (*Action*, *Priority*, *User*, *Category*) correspond to the task parameters. Click the column caption to sort the task list by the current parameter or change the sorting direction. Use the Navigation bar and context menu to *add*, *edit*, and *delete* to-do items.



Database
Select the database to apply the task list to. When switching between the databases you can view different task lists.

To add a task to this list, click the **Add Item** link on the Navigation bar, or select **Add Item** from the context menu. You can also use the *Ins* key for the same purpose. Define the task parameters and click **OK** to add the new task to the list.

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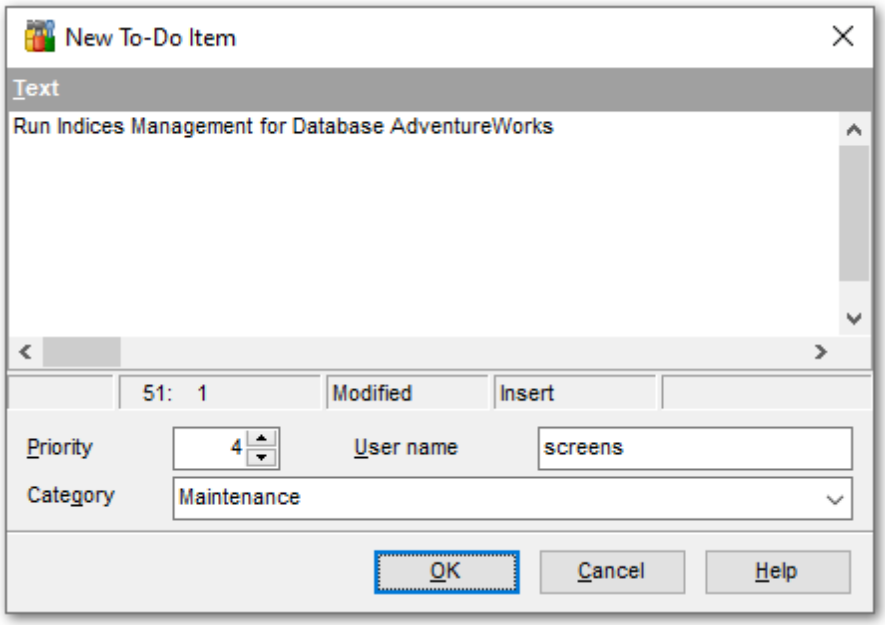


Text
Optional text to describe the task.

Priority
Set a numeric value to indicate the priority of the task.

User Name
The database User name this task is applied to.

Category
Set a category for the task. Using categories may be useful for grouping tasks.

To modify a task, select the task in the list and click the **Edit Item** link of the Navigation bar, or select **Edit Item** in the context menu. You can also use the *Enter* key for the same purpose.

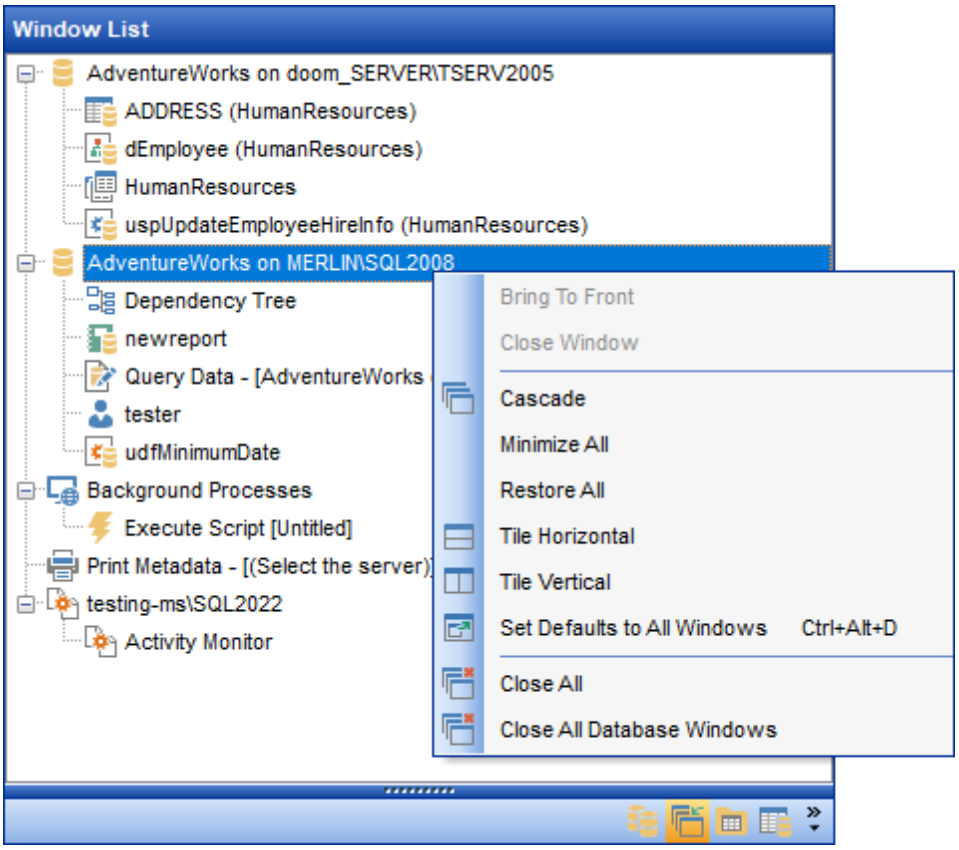
To remove a task, select the task in the list and click the **Delete Item** link of the Navigation bar, or select **Delete Item** in the context menu. You can also use the *Del* key for the same purpose.

To remove all tasks from To-Do List, click the **Delete all** link of the Navigation bar, or select **Delete all** in the context menu. You can also use the *Ctrl+Del* shortcut 986 for the same purpose.

14.14 Windows List

The **Windows List** panel allows you to browse the list of windows that are currently opened within SQL Manager for SQL Server IDE.

To activate this panel as a DB Explorer tab 79, select the **Windows | Window List** main menu 951 item, or use the *Ctrl+Alt+0* shortcut 989.



If necessary, you can right-click within the list area to call the **popup menu** which allows you to bring a window to foreground, close windows one by one or in groups, and to arrange the windows according to your preferences.

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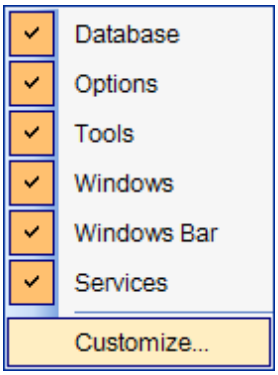
14.15 Customize toolbars and menus

For your convenience SQL Manager for SQL Server provides **toolbars** and **menus** that you can customize, so the commands you use frequently are readily available and easily identifiable.

The **Customize** dialog allows you to create and personalize SQL Manager menus and toolbars 953.

To call this dialog, click **More buttons...** on the right side of any toolbar 953, then click **Add or Remove Buttons** and select **Customize...** from the drop-down menu. Alternatively, you can right-click any toolbar and select the **Customize...** popup menu item.



Toolbars

Toolbars
This list displays all currently existing toolbars of SQL Manager (both *default* and *user-defined* toolbars). Check/uncheck the box at a toolbar name to show/hide the toolbar.

New...
Use this button to add a new user-defined toolbar to the **Toolbars** list. Set a name for the newly created toolbar and dock it by dragging it to any permitted location within the application window.

Rename...
Use this button to rename the selected user-defined toolbar.

Delete
Use this button to delete the selected user-defined toolbar.

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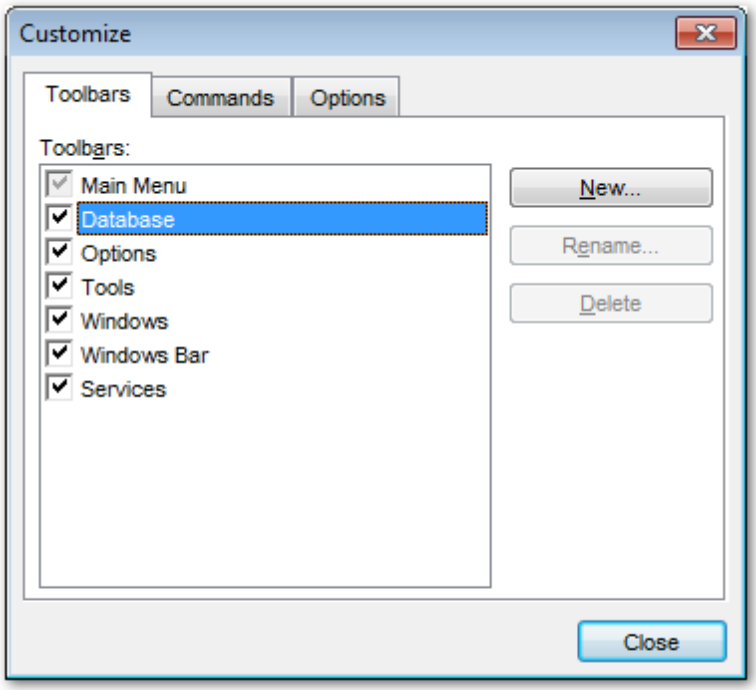
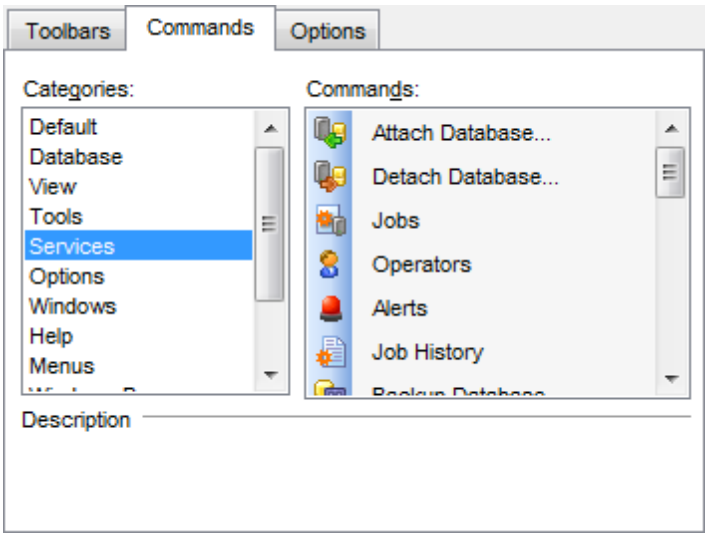


Commands

This tab allows you to browse the list of all commands available within the menus and toolbars of the application window. Selecting categories in the **Categories** list displays commands of the selected category (e.g. 'Database' or 'Tools') in the **Commands** list.

If necessary, you can pick a command and drag it to any toolbar 953 to create a button for this command.



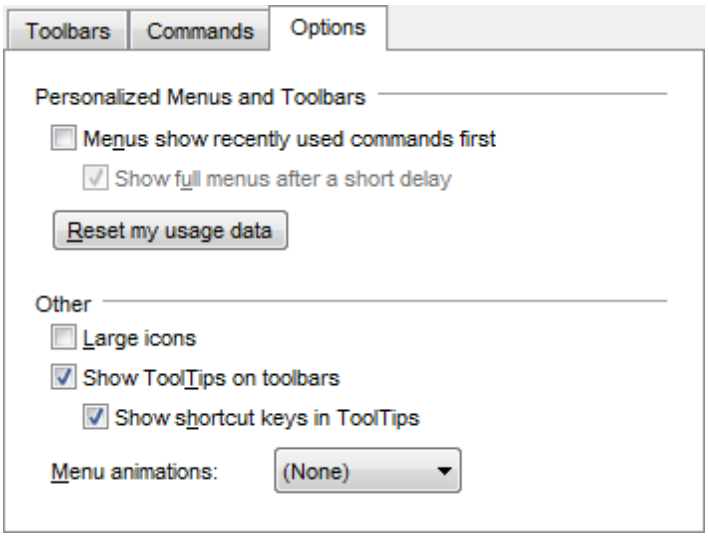
Options

Personalized Menus and Toolbars

☑ **Menus show recently used commands first**
This option determines whether the most frequently used items will be placed in menus at first position.
If this option is enabled, frequently used menu items are "promoted" and displayed higher on the list. Unused and infrequently used menu items are visually suppressed and appear "collapsed".

☑ **Show full menus after a short delay**
This option is available only if the **Menus show recently used commands first** option is selected.
If this option is enabled, infrequently used menu items (if they appear "collapsed") will be automatically expanded after a delay upon setting mouse cursor (or upon selection with the *Up/Down* keys) on the bottom of the menu. Otherwise, the menu expands only after clicking its bottom-most button (or using the *Ctrl+Down* shortcut 989).

Reset my usage data
Resets the lists of recently used commands in the toolbars and menus.



Other

☑ **Large icons**
This option displays larger icons on the parent window toolbars 953.

☑ **Show ToolTips on toolbars**
If this option is selected, ToolTips (hints) popup when the mouse cursor is positioned over a toolbar 953 button.

☑ **Show shortcut keys in ToolTips**
If this option is selected, the corresponding shortcuts 986 are displayed in ToolTips (hints) for toolbar buttons.

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Menu animations
Use the drop-down list to specify the menu animation effects:
None (no animation)
Random (random choice: *Unfold*, *Slide*, *Fade*)
Unfold (unfolding menus)
Slide (sliding menus)
Fade (menus fade in when appearing)

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14.16 Check for updates

SQL Manager for SQL Server can be updated in the following ways:

1. Download the SQL Manager for SQL Server distribution package from the download page, then extract archive to the preferable directory (e.g. c:\unzipped). Close SQL Manager for SQL Server if it's opened and run *MsManagerFullSetup.exe* or *MsManagerLiteSetup.exe*.
2. Select the **Help | Check for Updates**, then press the **Update** button. If new SQL Manager for SQL Server version is released it will be offered for downloading. Click Yes in the dialog window to update SQL Manager for SQL Server automatically.

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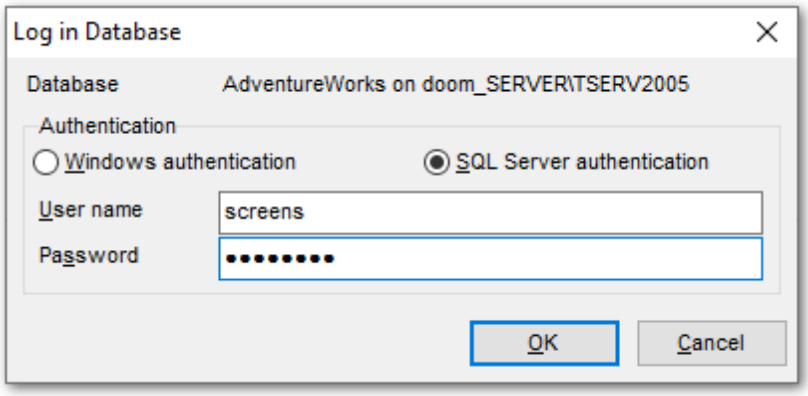
14.17 Database Login dialog

The **Log in Database** dialog appears on attempt to connect 97 to a database if the **Login prompt before connection** option is enabled on the Options 122 page of the Database Registration Info 120 dialog.



Specify *authentication* type and *user name / password* (if necessary) and click **OK** to start working with the database.

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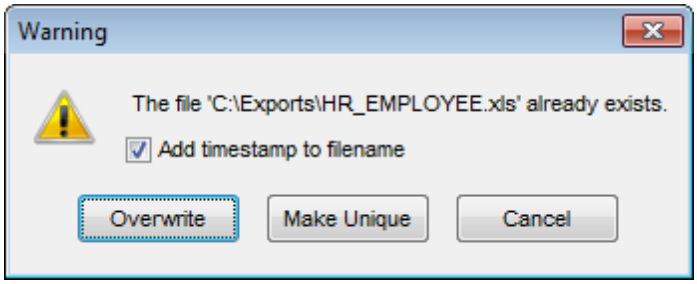
14.18 Overwriting existing output file

If a file having the same name as specified for an output file generated by SQL Manager already exists, a warning dialog is displayed.



You can **Overwrite** the file, **Make it Unique**, or **Cancel** both and change the path or file name manually.

The application makes the file unique by adding the current timestamp to the specified file name if the ☑ **Add Timestamp to filename** option is enabled, or by adding a simple numeric postfix to the file name if this option is disabled.

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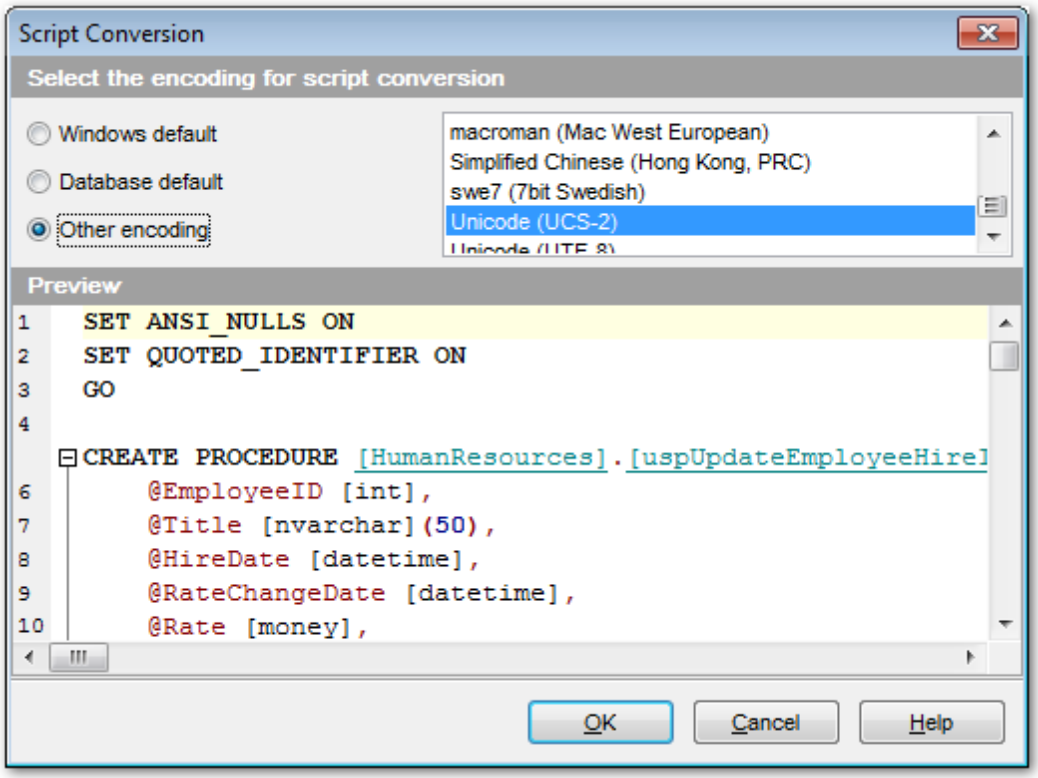
14.19 Script conversion

The **Script conversion** dialog allows you to select encoding to be used for script conversion upon loading script to one of SQL Manager editors (Query Data 432, Execute Script 625) from an external file.



Windows default
Specifies that the standard Windows encoding will be used for the script conversion.

Database default
Specifies that the default encoding of the database will be used for the script conversion.

Other encoding
Allows you to select the encoding that will be used for the script conversion.

Preview
This area displays the script with the current encoding parameters applied.

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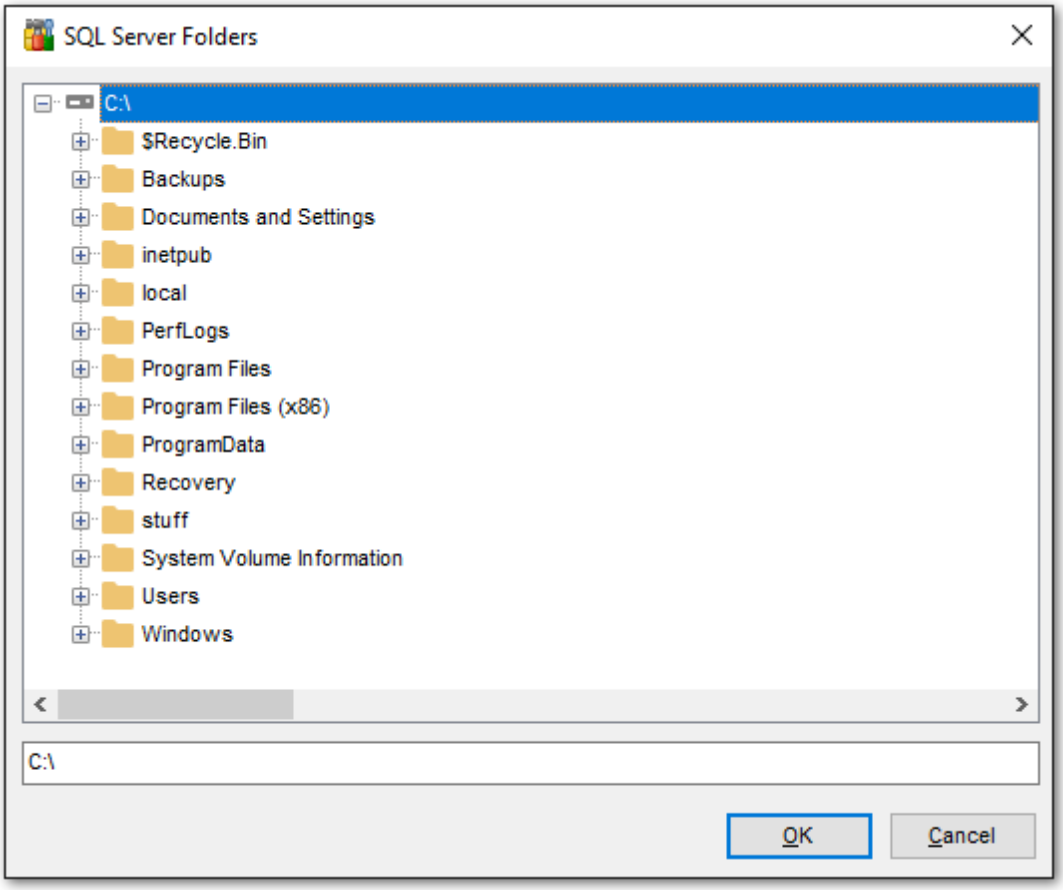
14.20 SQL Server Folders

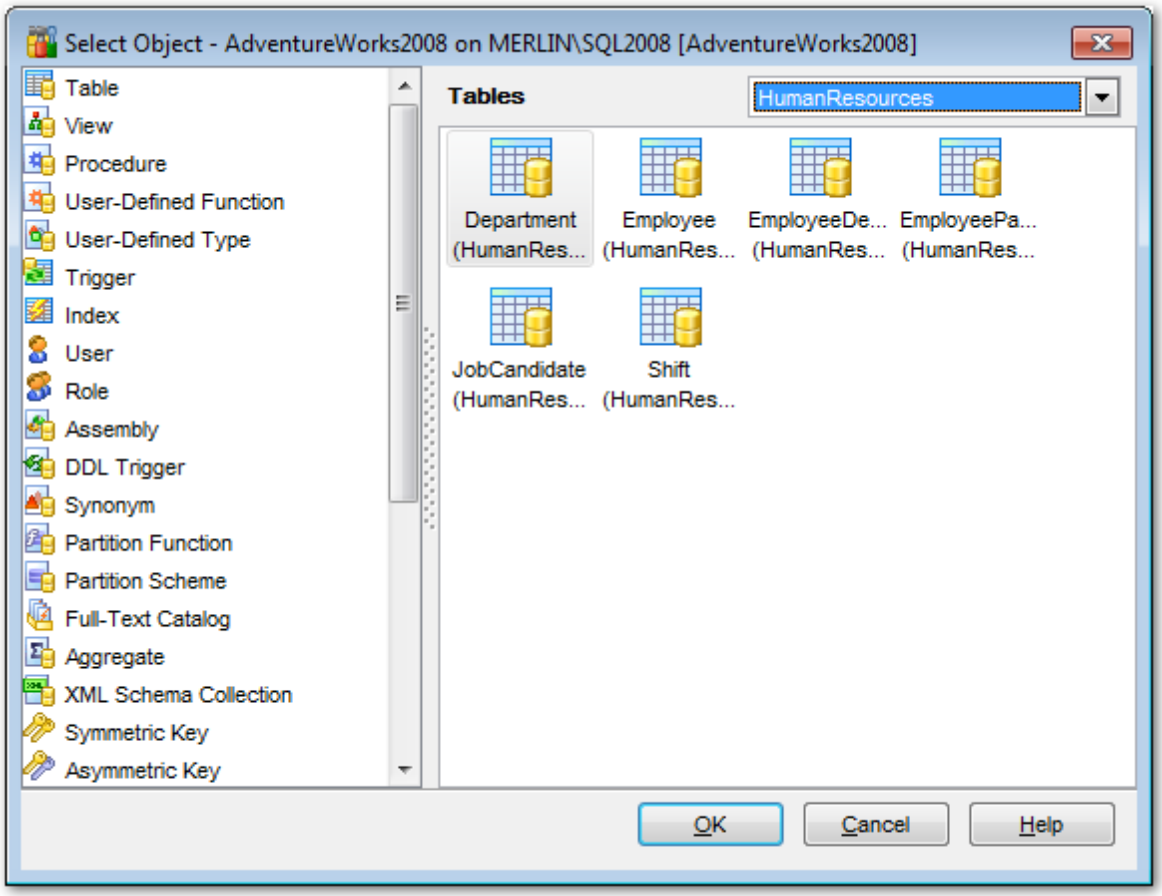
SQL Server Folders dialog allows you to browse directories on the server.



This dialog is accessible from the Database properties | Filestream files and filegroups 158, Server Properties | Database Settings 175 and Full-text catalog editor 324.

14.21 Select Object dialog

The **Select Object** dialog appears each time the application requests a database object selection, e.g. upon a root object selection for the Dependency Tree 618 tool, or when choosing an object to be added to a project 83.



First select the object type in the list on the left-hand side of the window. Pick the object you need and click **OK** the apply your selection.

14.22 SQL Manager shortcuts

Database management:

Shift+Alt+R	Register a database using Register Database Wizard 114
Shift+Alt+U	Unregister the selected database
Shift+Ctrl+C	Connect 70 to a database
Shift+Ctrl+D	Disconnect from a database

Database objects management:

Ctrl+N	Create a new object (the object type depends on the current selection)
Ctrl+O	Edit the selected object in its editor
Ctrl+R	Rename the selected object
Shift+Del	Drop the selected object
Ctrl+Shift+C	Collapse the current DB Explorer 65 tree branch and switch selection to the parent tree node

SQL Manager tools:

F11	View/hide Database Explorer 65
Ctrl+F	Search for an item in the DB Explorer 65 tree
Shift+Ctrl+T	Open the To-Do List 973 window
F12	Show Query Data 432
Shift+F12	Open a new instance of Query Data 432
Shift+Ctrl+M	Open SQL Monitor 622
Shift+Ctrl+S	Open Execute Script 625
Shift+Ctrl+L	Open Localization Editor 926
Ins	Add a new table subobject (the subobject type depends on the current tab selection)
Ctrl+I	Start incremental search 953

Query Data and Execute Script (fixed and default):

F9	Execute query/script
Alt+F9	Execute selected only
Ctrl+Alt+F9	Execute under cursor
Ctrl+Alt+F2	Reset execution point (Query Data only)
Shift+Ctrl+<digit>	Toggle bookmark *#<digit>*
Ctrl+<digit>	Go to bookmark *#<digit>*
Ctrl+Q	Go to next bookmark
F2	Drop marker to current position
Ctrl+Z; Alt+BkSp	Undo
Shift+Ctrl+Z; Shift+Alt+BkSp	Redo
Ctrl+F	Search for text using the Find Text 961 dialog
Ctrl+R	Replace text using the Replace Text 963 dialog

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F3	Search next
Ctrl+I	Start incremental search
Alt+G	Go to line number (an input number dialog prompts for the number)
Ctrl+L	Load a script from an external file
Ctrl+S	Save the script to an external file
Ctrl+F1	Show original help SQL Server Books Online
Shift+Ctrl+F	Format the SQL text using SQL Formatter
Alt+<symbol>	Switch to the query with *<&symbol>* in its name (Query Data only)
Ctrl+J	Insert a keyboard template 930
Ctrl+D	Toggle query results display mode (at the Edit tab or at a separate one)
Ctrl+Alt+Left	Switch to the next tab of Query Data 432
Ctrl+Alt+Right	Switch to the previous tab of Query Data 432
Ctrl+Alt+PgUp	Switch to the last tab of Query Data 432
Ctrl+Alt+PgDown	Switch to the first tab of Query Data 432
Shift+Ctrl+Left	Select the previous word
Shift+Ctrl+Right	Select the next word
Shift+Home	Select text to the beginning of the line
Shift+End	Select text to the end of the line
Shift+PageUp	Select one page up
Shift+PageDown	Select one page down
Shift+Ctrl+PageUp	Select text to the first line on the page
Shift+Ctrl+PageDown	Select text to the last line on the page
Shift+Ctrl+Home	Select text to the absolute beginning
Shift+Ctrl+End	Select text to the absolute end
Shift+Alt+Left	Select column symbol-by-symbol to the left
Shift+Alt+Right	Select column symbol-by-symbol to the right
Shift+Alt+Up	Select column upwards
Shift+Alt+Down	Select column downwards
Shift+Ctrl+Alt+Left	Select column word-by-word to the left
Shift+Ctrl+Alt+Right	Select column word-by-word to the right
Shift+Alt+Home	Select column to the first char of line
Shift+Alt+End	Select column to the last char of line
Shift+Alt+PageUp	Select column to the beginning of the page
Shift+Alt+PageDown	Select column to the end of the page
Shift+Ctrl+Alt+Home	Select column from the current cursor position to the beginning of the first line
Shift+Ctrl+Alt+End	Select column from the current cursor position to the beginning of the last line
Ctrl+Up	Scroll up one line with cursor position unchanged
Ctrl+Down	Scroll down one line with cursor position unchanged

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Alt+Down, Alt+Up	Toggle case of a current word
Ctrl+Alt+Up	Toggle case to upper of a current selection or char
Ctrl+Alt+Down	Toggle case to lower of a current selection or char
Ctrl+G,Ctrl+F	Collapse block at current line
Ctrl+G,Ctrl+E	Expand block at current line
Ctrl+G,Ctrl+M	Collapse all blocks in the text
Ctrl+G,Ctrl+P	Expand all blocks in the text
Ctrl+=	Collapse/expand the nearest block
Esc	Collect marker (jump back)
Shift+Esc	Swap marker to current position
Shift+Ctrl+B	Jump to matching bracket (change range side)
Shift+Ctrl+I	Indent selected block
Shift+Ctrl+U; Shift+Tab	Unindent selected block
Ctrl+/	Comment/uncomment selected block
Ctrl+Space	Show code completion
Shift+Ctrl+Space	Show code parameters
Ctrl+Alt+Space	Show character map
Ctrl+Alt+T	Show tables
Ctrl+Alt+V	Show views
Ctrl+Alt+M	Show synonyms
Ctrl+Alt+G	Show defaults
Ctrl+Alt+L	Show rules
Ctrl+Alt+H	Show users
Ctrl+Alt+A	Show assemblies
Ctrl+Alt+Y	Show UDTs
Ctrl+Alt+W	Show SQL keywords
Ctrl+Alt+N	Show SQL functions
Ctrl+C; Ctrl+Ins	Copy selection to Clipboard
Ctrl+X; Shift+Del	Cut selection to Clipboard
Ctrl+V; Shift+Ins	Paste Clipboard to current position
Ctrl+Del	Delete current selection
Ctrl+T	Delete from cursor to the next word
Ctrl+BkSp	Delete from cursor to the beginning of the word
Ctrl+B	Delete from cursor to the beginning of the line
Shift+Ctrl+Y	Delete from cursor to the end of the line
Ctrl+Y	Delete the current line
Ctrl+M; Enter; Shift+Enter	Break line at current position, move caret to a new line
Ctrl+Alt+I	Insert Tab char
Shift+Ctrl+P	Play macro
Shift+Ctrl+R	Start macro recording
Alt+End	Skip misprint
Ctrl+Alt+End	Skip all misprints
Alt+Home	Correct all misprints

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Print Data View:

Ctrl+O	Load a printing report from a file
Ctrl+S	Save the report to file
Ctrl+P	Open the Print 510 dialog
Ctrl+Home	Go to the first page
Ctrl+Up	Go to the previous page
Ctrl+Down	Go to the next page
Ctrl+End	Go to the last page
Ctrl+D	Open Report Formatter 497
Ctrl+	Zoom 100%
Ctrl+0	Zoom page width
Ctrl+1	Whole page
Ctrl+2	Two pages
Ctrl+4	Four pages
Ctrl+W	Widen to source width
Ctrl+M	Show/hide margins
Ctrl+K	Set background color for the report

Working with windows, menus and tabs:

Ctrl+Tab	Switch to the next tab 60
Ctrl+Alt+0	Open Windows List 975
Ctrl+Alt+D	Set defaults to all windows
Ctrl+F6	Switch to the previous window
F6	Switch to the next window
Ctrl+W	Close the active window
Ctrl+Down	Expand a collapsed menu
Ctrl+Shift+N	move to the next tab 79 in DB Explorer
Ctrl+Shift+P	move to the previous tab 79 in DB Explorer

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Part XV

15 How To...

The succeeding pages of this chapter are intended to provide you with brief instructions on how to perform this or that operation correctly using **SQL Manager for SQL Server**.

Work with Databases

Connect to a database 993
Create a database 993
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Design a visual database structure 994
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Restore a database from a backup 995
Create a database copy 995
Document a database 995
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Reduce database size 996
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15.1 Work with Databases

15.1.1 Connect to a database

If you want to connect to a database that has not been registered yet then perform the following operations:

1. Launch the Register Database wizard 114 by selecting the **Database | Register Database...** main menu 951 item.
2. If a host where the database is located has not been registered yet then type in its name in the **Server name** field on the first step 114 of the wizard. Otherwise, select the necessary host from the drop-down list.

Note: To register several databases at once uncheck the **Register a single database** option. In this case you will proceed to the Selecting databases 116 step of the wizard where you are to define databases you want to be registered.

3. On the last step 117 of the wizard set database name and specify specific options.
4. The registered database(s) is/are now displayed in the DB Explorer 65. To connect to the database double-click its alias or select the **Connect to Database** item of the database context menu 55.

15.1.2 Create a database

To create a database on the registered server perform the following operations:

1. Launch the Create Database wizard 99 by selecting **Database | Create Database** main menu 951 item.
2. On the first step 99 specify a name for a newly created database.
3. On the second step 100 set the necessary **connection parameters** for the database being created. Use the corresponding boxes and options: *Server name*, *Authentication*, *User name* and *Password*.
4. Define the data files and transaction log files on the third 104 and the fourth 104 steps correspondingly. The primary data file is the starting point of the database and points to the other files in the database. The recommended file name extension for primary data files is **.mdf*. Log files hold all the log information that is used to recover the database. The recommended file name extension for log files is **.ldf*. If you use the SQL Server 2008 (or higher) then define filestream files and filegroups on the next step 107. FILESTREAM enables the application to store unstructured data (such as text documents, images, videos, etc.) on the file system.
5. On the next step 108 set recovery model and collation. A *recovery model* is a database property that controls the basic behavior of backup and restore operations for a database. Collation controls the way string values are sorted.
6. Click the **Finish** button to view the result SQL statement. If you have checked the **Register After Creating** box on the first step of the wizard 99 then the Database Registration Info 120 dialog will appear after creating a new database.

15.1.3 Edit database connection parameters

If you have made a mistake when creating 99 and registering 114 a database or the information provided is incomplete then it can be edited using the Database Registration Info 120 dialog. You can view this information both for connected or disconnected database.

To open the dialog, select the database or any of its objects in the DB Explorer 65 tree,

then select the **Database | Database Registration Info...** main menu 951 item, or right-click the database alias in DB Explorer 65 and use the **Database Registration Info...** context menu 55 item.

The connection parameters can be changed on the **Connections** tab of the dialog. Here you can define or redefine the following properties in the corresponding boxes: *Server name*, *User name*, *Password*, *Database name*, *Database alias*, *Font charset* and *OLE DB Provider*.

15.1.4 Make work with a database faster

If your database contains too many objects or if a connection to the database is slow you can increase work speed by uncheking the **Refresh objects on connection** option when registering database or editing the Database Registration Info 122.
Also you can uncheck the **Restore desktop on connect** option in the Preferences 855 section of the Environment Options 854.

15.1.5 Design a visual database structure

To design your database visually you may use the Visual Database Designer 701. It allows you to create, edit and drop tables and table columns, set relations between tables and perform other operations you may need to achieve your purpose.
To create a new object right-click within the diagram area and then choose the **Create** item of the context menu. After that a new object will appear on a diagram.
After you have finished designing your diagram you can click a Compile button to create this structure physically.

15.1.6 View an ER diagram

The relationship diagram is built using the reverse engineering 713 operation.
To view an ER diagram of a scheme you should follow the steps:

1. Run Visual Database Designer 701;
2. Click the **Reverse Engineer** button on the main toolbar 704 or use the corresponding item of the context menu 707.
3. Choose schemas to reverse engineer from.

The created diagram can be saved as a **.msd* file (**Save Diagram** button) or as an image (**Save as Picture** button).

15.1.7 Backup a database

A database backup is created by means of the Backup Database Wizard 745. To launch it choose **Services | Backup Database** main menu 951 item.
Using this wizard you can define the necessary backup parameters and options, such as the database for backup, backup type (*Full*, *Differential* or *Transaction log*), files of the database to backup, physical or logical devices, media options (*append* or *overwrite* media), data transfer and/or transaction log options and others.

You can also choose to create a backup now or create a schedule to run a database backup automatically.

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15.1.8 Restore a database from a backup

Use the Restore Database Wizard 759 to restore a database from a backup. To launch the wizard and set restore options choose the **Services | Restore Database** main menu 951 item.
Using this wizard you can define the necessary restore parameters, such as database to restore, restore type (*Database*, *Transaction log*, *Recovery without restore* or *Recovery from database snapshot*), recovery options, backup media to restore a database from, database files, and some other options.

15.1.9 Create a database copy

In order to create a copy of the whole database or of separate objects you can:

1. Extract DB objects structure and data into SQL script using the Extract Database Wizard 632. The result script can be used to copy or restore your database. If the **Generate CREATE DATABASE statement** option was not checked while customizing script options 639 then you need to create a database before performing the extract script. It is better to execute a script from file using the Execute Script 625.
2. Create a database backup with the help of the Backup Database Wizard 745. Then run the Restore Database Wizard 759 and select the *New database* as a destination database.
3. Create copies of separate database objects by using the Duplicate Object Wizard 186.

15.1.10 Document a database

There are several ways to document a database:

1. You can generate a detailed HTML report of the selected database objects using HTML Report Wizard 657.
2. You can generate and print metadata 649 reports of any database object(s). Generated reports can be exported to any of the available formats: HTML file, Excel file, Text file, RTF file, CSV file, HTML file, BMP image, Excel table (OLE), JPEG image, TIFF image.
3. You can save the Visual Database Designer 701 diagram as a *.msd file for future use. A diagram is saved with the objects XML files. If necessary, you can also save the diagram as an image.

15.1.11 Save metadata reports to file

To save a metadata report in a file of any supported format (**.txt*, **.csv*, **.pdf*, **.html*) you should do the following:

1. Open the Print Metadata 649 window by selecting the **Tools | Print Metadata** item of the main menu 951.
2. Mark the needed objects and define printing settings and click the **Preview** button on the navigation bar or toolbar 649.
3. In the opened Preview window click **Export** and select from the drop-down list the needed file format for report saving. When done, specify file name and location.

15.1.12 Log database changes

If you want to perform metadata changes logging and SQL query logging you need to:

1. Check the **Enable log of metadata changes** and specify the path to the **.sql* file to store the metadata logs.
2. Check the **Enable log of Query Data queries** and specify the path to the **.sql* file

to store the logs of SQL queries: date/time of query execution, SQL text, execution result or errors (if any).

This can be done in the Database Registration Info | Logs 125 window.

15.1.13 Get an SQL dump

To get an SQL dump (an **.sql* file) of your database use the Extract Database Wizard 632 that will extract database objects and/or data to an SQL script, e.g. for backup purposes.

15.1.14 Reduce database size

Database size reducing can be done by means of the Shrink Database Wizard 784. It allows reducing the size of data files and log files in the specified database. This operation is used to reduce any file within the database to remove unused pages. Both data and transaction log files can be reduced.

Note: You can shrink a database only if there are no active connections to this database and it is now involved in the replication.

15.1.15 Transfer database from one server to another

Source Server is a server where a database is located.
Target Server is a server to which the database should be moved.

If versions of the source and target servers are the same

You can transfer a database in one of the following ways:

1. Copy database files from the source server directory to the target server directory. This can be done without SQL Manager for SQL Server. Then attach to explore the complete list of the files for copying use the Data files 152, Log files 154 and Filestream files and filegroups 158 sections of the Database Properties 137 dialog.
2. Create a full backup of a database using the Backup Database Wizard 745 and save it to the **file** (this option is set at the step of selecting backup devices 748), copy the backup file to any directory of the target server to which the server has read access and then restore the database to a new one using the Restore Database Wizard 759 (this option is set at the step of selecting destination database 759 step).

Note: To perform file copying you need to stop the server or perform the detach database 779 operation and then the attach database 774 operation. Both actions will cause the temporary database offline state.

If versions of the source and target servers are different

Extract database objects structure and data into Execute Script using the Extract Database Wizard 632 and execute the script for the target server using Execute Script 625.

Note: If you choose not to use the CREATE DATABASE statement during the script execution, you should create a new database before executing a script at the target server.

Note: If versions of the source and target servers are different, in most cases you will have to edit the script manually for it to be executed successfully.

Note: To transfer databases from other formats or servers to the SQL Server, use our

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EMS Data Pump for SQL Server tool.

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15.2 Work with Database Objects

15.2.1 Group objects

If you want to group objects you can do it in one of the following ways:

Using projects 83 (situated in the DB Explorer 65 tree):

1. Click create **New Sub Folder** in the **Favorite Objects** folder using the corresponding item of the context menu
2. Define its name and drag-and-drop necessary objects there or use the **Add Object** item of the created folder context menu. Pick the objects to add to folder from the appeared dialog.

Using DB Explorer 65 tabs:

1. Right-click the necessary object in the DB Explorer 65.
2. Choose the **New Tab from Here** item of the object context menu 57 and define the name of the tab.
3. Now your objects are stored on the separate tab of a DB Explorer 65.

Note: If object is not a tree node, it cannot be placed on separate tab.

15.2.2 Find objects

In order to search for objects you need you can:

1. Call the **Find Object** dialog by right-clicking the **Database** alias, any database object group nodes or objects in the **DB Explorer** tree and select the **Find Object...** context menu 54 item.
2. Call the **Find Object** dialog by using the *Ctrl+F* shortcut 986.
3. Type in the first letters in the edit-box of the Search Panel 85, and the corresponding object will be highlighted in the tree, as displayed in the picture below.

Note: Objects among which the search is performed should be updated and the object node should be expanded.

15.2.3 View dependecies

If you want to view all the object dependencies then:

1. Use a dependencies tab 957 in the Table Editor 204.
2. Use the Dependency Tree 618 tool.

These tools may be useful when you can't find an object that prevents your from dropping a table.

15.2.4 Get an object DDL

Просмотреть DDL объекта можно одним из следующих способов:

1. Дважды щелкните по объекту, чтобы открыть редактор объекта, затем перейдите на вкладку DDL 955.
2. Выберите **Script to Query Data | Create** в контекстном меню объекта.

Для редактирования DDL объекта можно открыть в редакторе запросов 432, нажав на панели инструментов **Open DDL in Query Data**.

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15.2.5 Store objects definitions in VCS

If you want your objects to be under version control system, perform the following steps.

1. Proceed to the DDL to Files 129 tab of the Database Registration Info 120 dialog and enable the ☑ **Write object definition to a file after compilation** option.
2. Define the directory which will be used for storing object file names in the **Root folder for storing object definitions** field. In order to make files be under version control this directory must be a working copy.
3. Choose object types and add files for storing objects definitions using the Options for storing object definitions 132 and Object file names 133 correspondingly. These files can be added to version control system.
4. Use the following fields of the DDL to Files 129 tab to define version control system commands on actions performed with objects files:
   - **OS command after creating a file**
     Enter any command that will be executed after a file with object definition is created.
     If you are using version control system then, for example, the following command can be entered: *svn add {file_name}* (for Subversion revision control system) where *{file_name}* stands for the respective newly created name of a file with object definition.

   - **OS command before updating a file**
     Enter any command that will be executed before a file with object definition is updated.
     If you are using version control system then, for example, the following command can be entered: *ss checkout {file_name} -C-* (for Visual Source Safe revision control system) where *{file_name}* stands for the respective name of a file with object definition being updated.

   - **OS command after deleting a file**
     Enter any command that will be executed after a file with object definition is deleted.
     If you are using version control system then, for example, the following command can be entered: *svn del {file_name}* (for Subversion revision control system) where *{file_name}* stands for the respective name of a file with object definition being deleted.

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15.3 Work with Data

15.3.1 View tables with many records

If your table contains a lot of records you can minimize dataset loading time by:
1. Setting the number of records to be selected;
2. Enabling **Load visible records** in order to load only a fixed number of dataset records into memory.

These options can be set only for the selected database on the Data Options 127 page of the Database Registration Info 120.
Default settings for newly registered databases can be defined on the Grid | Data Options 893 page of the Environment Options 854 dialog.

You can set the maximum number of visible records in the **Record Limit** counter

located on the Data View toolbar. Press **Enter** or click the data grid to apply changes.

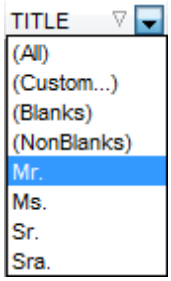
If the number of records exceeds the maximum number, the **Fetch all** button becomes active. It allows viewing all records in a table.
Use the Grid Mode tab of the Data View context menu 478 to set the display mode. You can choose among the *Load All Rows*, *Load Visible Rows* and *Default* modes.

15.3.2 Set data filter

Quick Filtering (by the current value in a cell)

Open the context menu of the needed column and choose the **Quick Filter** item. Then choose a filter condition 475 in the opened submenu.

Filtering by Column



Open the drop-down list on the column title and choose a filter condition from the list.
You can set advanced conditions by using the **Custom...** menu item.
When choosing this item, the special window for setting filter conditions 523 opens.

Advanced Filtering

You can set advanced filter options by pressing the button on the toolbar 469 of the Data View and set filter parameters in the Filter Builder 525. Apply the set conditions by pressing the **Apply** button.

If a filter is set for a table, the special bar appears in the lower part of the table where

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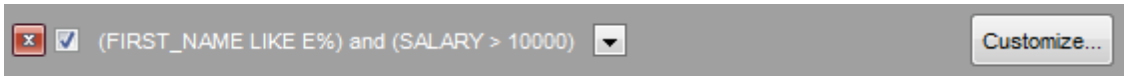
you can see filter conditions and the history of filter changes opened by pressing the drop-down list.



Disable Filtering
To cancel filtering, open the context menu of the column and choose the **Disable filter** item.
Or press the button on the filter toolbar.

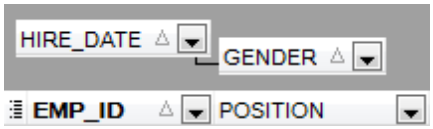
15.3.3 Sort and group data

In order to sort data, do the following:

1. Open data at the **Data** or **Results** tab.
2. Choose the column by which you need to sort data and click the column title.
3. If the column was not sorted, the first click will sort it in the ascending order and the second one - in the descending order.

Note: To cancel the sorting, open the context menu by right-clicking the necessary column and choose the **Clear Sorting** item, or press the *Ctrl* button and click the column title.

To enable grouping, drag the column title to the special grouping bar above the grid.



Note: To disable grouping, drag the column title from the group bar back to the table.

15.3.4 Export/import data

You can *export* data from a database table into an external file of any supported format 971 by means of the Export Data Wizard 537.

There are several ways to launch Export Data Wizard:

1. Open the **Data** or **Results** tab, press **Export Data** on one of the Data View toolbars 469.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data** in the Data Grid context menu 478.
3. Open the table context menu 57 in the DB Explorer 65, choose the **Data Manipulation | Export Data** item.
4. Open the **Data** or **Results** tab and use the shortcut **Shift+Ctrl+E**.

You can import data from external sources into a table or view using Import Data Wizard 577:

1. Open the **Data** tab, press the **Import Data** button on one of the Data View toolbar 469.
2. Open the **Data** tab, choose **Data Manipulation | Import Data** in the Data Grid

context menu 478.

3. Open the table context menu 57 in the DB Explorer 65, choose the **Import Data** item.
4. Open the **Data** tab and use the shortcut **Ctrl+I**.

Note: Export and import data tools are available in full version of SQL Manager for SQL Server only.

15.3.5 Export data as SQL Script

You can export data from a database table into SQL script with INSERT INTO statements in one of the following ways:

1. Open the **Data** or **Results** tab, press the **Export Data as SQL Script** on one of the **Data View** toolbars 469 and set export parameters in the opened Export as SQL Script Wizard 599.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data as SQL Script** in the Data Grid context menu 478 and set export parameters in the opened Export as SQL Script Wizard 599.
3. Open the table context menu 57 in the DB Explorer 65, choose the **Data Manipulation | Export Data as SQL Script** item and set export parameters in the opened Export as SQL Script Wizard 599.

Note: In order to extract table DDL (CREATE TABLE statement), check the **Add CREATE TABLE statement** box at the Step 1 600.

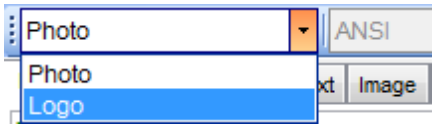
15.3.6 Edit data of master-detail tables

You can work with data in multi-level mode, that is you can view and modify it in several related tables simultaneously.
To manage grid levels, right-click the grid and select the **Grid Levels** context menu 478 group. Click **Add Grid Level** in the menu to run the Create Grid Level wizard 480. After the level is added you can edit data of the related tables.

15.3.7 Add image to table

If you want to add an image to a table then do the following:

1. Open the table on the Data tab.
2. Go to the BLOB View section (the navigation buttons are located in the bottom part of the window) and then proceed to the Image tab.
3. If there are several BLOB fields, choose the required field from the Select BLOB Column drop-down list on the toolbar of the Blob View tab 471 and press the **Load from File** button on the same toolbar.
4. Choose the needed image file in the appeared dialog.



Note: Adding images to table is possible only if table contains at least one BLOB field 511.

15.3.8 Set data display format

To set the format for displaying data open the **Options | Environment Options** dialog from the main program menu 951, proceed to the Color & Formats 896 tab and define or choose the display format for some data types in the **Display formats** section.

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15.4 Work with Queries and Scripts

15.4.1 Create SQL statements rapidly

There are two options for creating SQL queries rapidly:

In the DB Explorer

1. Right-click a table in the DB Explorer 65
2. Choose Script to New Query Data context menu item.
3. Select the necessary query type.

In the Design Query

1. Open Design Query 448.
2. On the **Design Query** tab drag an object from the DB Explorer 73 tree to the diagram area.
3. Choose necessary columns to include in the query by checking the corresponding box located to the left from the column name in the list, or just by double-clicking it. To include all columns of the table/view, check the box located to the left of the table/view caption.
4. Associate two objects 452 by their columns. Drag a column from one object list to another. This will set a link between these objects by the selected columns. It is indicated by a bidirectional arrow between the linked columns.
5. Edit link properties 452. Double-click the linking arrow or right-click it and select the **Property** popup menu item. The **Link properties** dialog allows you to change the association condition by choosing it from the drop-down list.
6. You can view and edit your SQL statement on the **Edit** tab of the Design Query 448.

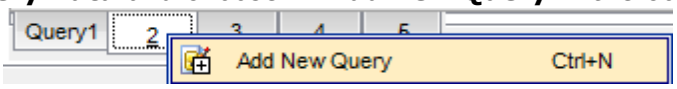
15.4.2 Control a query productivity

You can view a query productivity on the query plan 438. It allows you to view the sequence of actions performed by the database server in the process of the query execution, and the amount of system resources used for the query execution.
To view the **Plan** of a query, open the query in **Query Data** and use the **Show estimated execution plan** item of the Navigation bar 432 or toolbar 434.
If necessary, you can specify that the **Plan** tab appears automatically upon query execution in Query Data 432: select the **Show actual execution plan on query execution** option available within the Tools | Query Data 873 section of the Environment Options 854 dialog.

15.4.3 Work with several queries at once

Query Data 432 provides a possibility to open and edit several queries. You can create tabs in the lower part of the **Query Data**, each tab may contain a separate query. There are several ways for creating tabs:

1. Open **Query Data** and choose **Add New Query** on one of the toolbars 432.
2. Open **Query Data** and choose **Add New Query** in the context menu 436 of the existing tab.



3. Use the shortcut **Ctrl + N**.

Note: Each tab can be renamed and any query can be added to Favorite Queries 92.

15.4.4 Save most frequently used queries

Use the Favorite Queries 92 feature to store your most frequently used SQL queries. To access the list of your favorite queries you can use the **Favorite Queries** node of DB Explorer or create a separate tab for your Favorite queries.

Using the context menu you can create a new Favorite query or edit an existing one using Favorites editor 445, open any of the existing queries in Query Data 432 or remove a query if you don't need it any longer.

15.4.5 Execute queries with parameters

If you want to use queries with parameters then you should check **Allow using parameters in query text** option in the Environment Options | Tools 866.
This feature allows you to specify different values within a query in a popup dialog 465 just before the query execution. Use the colon (':') character before an identifier (e.g. :P1) to specify a parameter within the query.

15.4.6 Export query results into file

When executing queries, their results can be displayed on the **Edit** or **Results** tab in the Data View 469.
You can copy data from database tables into an external file of any supported format 971 in one of the following ways:

1. Open the **Data** or **Results** tab, press **Export Data** on one of the Data View toolbars and define export parameters in the opened Data Export Wizard 537.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data** in the Data Grid context menu 478 and define export parameters in the opened Data Export Wizard 537.
3. Open the table context menu 57 in the DB Explorer 65, choose the **Export Data** item and define export parameters in the opened Data Export Wizard 537.
4. Open the **Data** or **Results** tab and use the shortcut Ctrl+E.

15.4.7 Execute scripts

Execute Script 625 allows you to create, view, edit and execute SQL scripts. To open Execute Script select the **Tools | Execute Script...** main menu 951 item. This tool is intended for work with a great number of SQL statements and with scripts that are stored in files. For instance, you can execute a script directly from a file without loading it to the Editor window. This reduces memory usage. However Execute Script allows just to estimate whether the execution of script statements will be successful, but it does not return query result.

Note: To execute SQL scripts you should use Execute Script 625, not Query Data 432. The latter is intended for creating, editing and executing SQL statements. It also provides a possibility to view query result, perform various operations with it (data import, data export, etc.) and manage transactions.

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15.4.8 Execute a large SQL script

If you need to execute a large SQL script it's not necessary to load it from file to the Execute Script 625 window as it can take a lot of time. Instead you can execute script directly from **.sql*, **.zsql* or **.txt* file. In order to do this click the **Execute script from file** button of the Navigation bar and Toolbar 625 in Execute Script 625.

15.4.9 Make SQL script work faster

In order to make the SQL script work faster, you can disable some functions.

Parsing
Choose and disable the **Hide explorer** item on one of Execute Script toolbars 625.

Automatic Creation of Hierarchical Text Structure
Uncheck the **Use code folding** box in the Display 909 section of the **Editor options**.

Syntax Highlight and Quick Code for Aliases
Choose **Options** | **Editor options** in the main program menu 951, proceed to the General 905 tab and uncheck the **Resolve aliases** box - the syntax highlight 911 and quick code 912 for aliases will be disabled.

15.4.10 Customize work with Query/Script text

To customize work with a query/script text you may:

Use Internal Link
This means that the name of the object existing on a database is highlighted in a query/script text. Such an object can be opened by holding the *Ctrl* key and clicking the object with a mouse.

Add Text Template
Keyboard templates 930 allow you to type regularly used expressions and edit the existing ones quicker. Once you have defined the templates, you can use them in Query Data 432. When editing SQL text 435 in Query Data, type a template name and use the *Ctrl+J* shortcut 986: the text associated with the template will be inserted automatically.

Use Automatic Completion (Object List)
You can call the autocompletion list by starting entering the first characters of the text and using the shortcut *Ctrl + Space*.

Customize Autocompletion List
Choose **Options | Editor** options in the main program menu 951, proceed to the Quick Code 912 tab and define the list and quick code parameters.

Apply Automatic Formatting of Query/Script
Choose **Quick Code | Format** in the Query Data/Execute Script context menu 436 or the *Shift+Ctrl+F* shortcut to apply automatic formatting.

Set Font and Query/Script Format at the Display tab
Choose **Options | Editor Options** in the main program menu 951, proceed to the Display 909 tab and define common font and format parameters for Query Data/Execute Script.

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Set Font and Query/Script Format at the Highlight tab
Choose **Options | Editor Options** in the main program menu 951, proceed to the Highlight 911 tab and define font options for each element.
Note: If some font parameters are defined on the **Highlight** tab, they will be applied to the query/script text and not the ones defined on the **Display** tab.

15.4.11 View executed queries and scripts

To view all queries and scripts sent to the server you need to launch SQL Monitor 622. It will show you the log of database operations and SQL queries as items, each consisting of 3 parts: *Executed* (the date and time of the operation), *Operation* (SQL statement sent to the server), *Result* (the result of the operation).

Note: SQL Monitor only displays scripts and queries executed in SQL Manager for SQL Server during current session.

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15.5 Create a simple report in Report Designer

To create a report using Report Designer 671:

1. Select the **Tools | Report Designer** main menu item.
2. In the opened **Report Designer** select the **File | New Report** main menu item, or click the **New Report** item of the navigation bar. The following objects will be added to the newly created report: **ReportTitle**, **MasterData** and **PageFooter**.
3. Connect to data source 676.
4. Add ADOTable 676 or ADOQuery 676 object.
5. Link ADOTable 676 or ADOQuery 676 with ADODatabase 676.
6. Place database fields on the Page1. Move the required fields from Data Tree 673 to **Band MasterData**.

15.6 Create a scheduled job

SQL Server provides a possibility to run jobs automatically without user interaction, i.e. you can define event or date to start the job.
A job can be scheduled by creating a new schedule for the job, or by attaching an existing schedule to the job.

There are two ways to create a new schedule

- right-click the **Schedules** node (within the **Server Objects** branch) in the DB Explorer 65 tree and select the **New Schedule** item from the context menu 57 and configure schedule options in the Schedule Editor 823.
- right-click the **Jobs** node (within the **Server Objects** branch) in the DB Explorer 65 tree and select the **New Job** item from the context menu 57. In the Job Editor 811 when Managing job schedules 379 right-click within the work area to call the **context menu** and select the **Add Schedules...** item. Configure parameters of the new schedule in the **New Schedule** dialog.

To attach an existing schedule right-click the **Jobs** node (within the **Server Objects** branch) in the DB Explorer 65 tree and select the **New Job** item from the context menu 57 . In the Job Editor 811 when Managing job schedules 379 right-click within the work area to call the **context menu** and select the **Add Existing Schedule** item. Then choose the necessary schedule from the list.

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15.7 Transfer program settings

If you want to apply current program settings (wholly or partially) to SQL Manager for SQL Server installed on another machine you can save them into a single **.reg* file. This can be done by means of the Save Settings Wizard 921.

Note: Favorite Queries 92 are not saved in this case. To get access to your queries from another machine please store 445 them in the database. To save a favorite query in a database select the *Database* from the drop-down list in the **Storage** field when creating or editing a favorite query.

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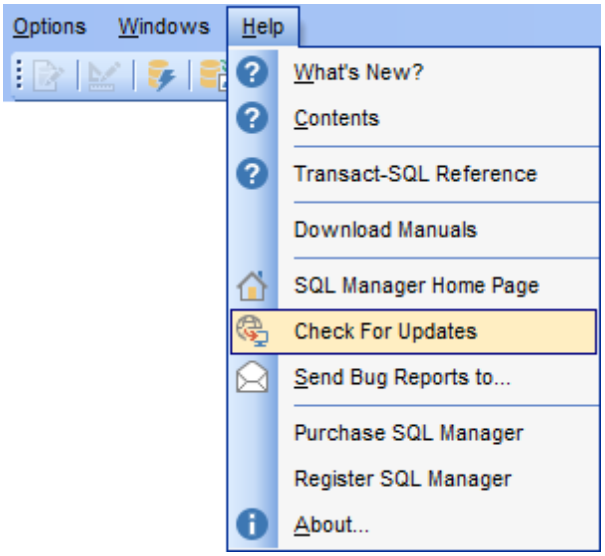
15.8 Update SQL Manager

SQL Manager for SQL Server can be updated in the following ways:

1. Download the SQL Manager for SQL Server distribution package from the download page, then extract archive to the preferable directory (e.g. c:\unzipped). Close SQL Manager for SQL Server if it's opened and run *MsManagerFullSetup.exe* or *MsManagerLiteSetup.exe*.
2. Select the **Help | Check for Updates**. If new SQL Manager for SQL Server version is released it will be offered for downloading. Click Yes in the dialog window to update SQL Manager for SQL Server automatically.



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15.9 Report bugs and suggestions

1. Before reporting bugs and suggestions make sure you are using the latest version of the SQL Manager for SQL Server.
2. If so then you may contact us via Members Area on http://www.sqlmanager.net/, via **Help** main menu or by sending an email to support@sqlmanager.net.
3. Please, don't forget to mention your OS version, SQL Server version and program version.
4. Describe the steps to reproduce the bug in detail and illustrate them with screenshots.

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