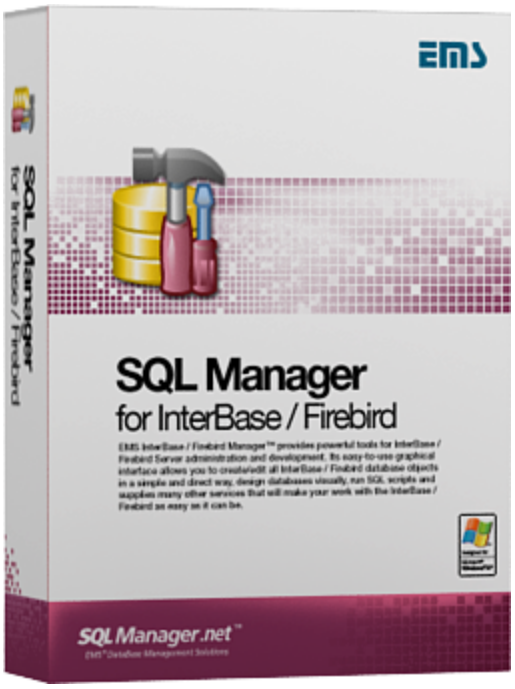
SQL Manager.net™

EMS® Software Development



SQL Manager for InterBase/Firebird User's Manual

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SQL Manager for InterBase/Firebird
User's Manual

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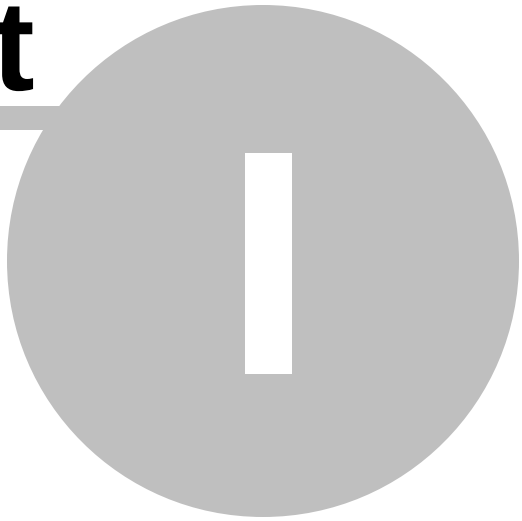
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Part



1 Welcome to SQL Manager for IB/FB!

EMS SQL Manager for InterBase/Firebird is a powerful tool for InterBase/Firebird database server administration and development. **SQL Manager for InterBase/Firebird** works with InterBase versions up to 2020 and Firebird versions up to 4.0, and supports all InterBase and Firebird latest features. It offers plenty of powerful tools for experienced users to satisfy all their needs. **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

- Compatibility with Firebird server versions up to 5.0 and InterBase server versions up to 15
- Support of Unicode data
- Rapid database management and navigation
- Easy management of all InterBase and Firebird objects with Unicode supporting editors
- Advanced data manipulation tools
- Effective security management
- Excellent visual and text tools for query building
- Impressive data export and import capabilities
- Database Designer to handle database structure in a few clicks
- Easy-to-use wizards performing InterBase and Firebird services
- Powerful tools to make your work with InterBase and Firebird as easy as it can be
- Report designer with clear in use report construction wizard
- Handy interface with dark schema support

Product information

Homepage	https://www.sqlmanager.net/products/ibfb/manager
Support Ticket System	https://www.sqlmanager.net/support
Register online at	https://www.sqlmanager.net/products/ibfb/manager/buy

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1.1 What's new

Version	Release date
SQL Manager for **InterBase/Firebird** 6.2.4	February 27, 2026

What's new in SQL Manager for InterBase/Firebird 6.2.4?

- Fixed window scaling when dragging between monitors with different DPI settings.
- The auto-complete list for table columns now displays their data type.
- Added record number display in the Data grid.
- Search in the Data editor is now case-insensitive.
- The input field in the Debugger changed from single-line to multi-line.
- Objects can now be added to Favorites via the context menu.
- Host aliases are now displayed in the Execute script editor.
- Fixed template in the Purge database service.
- Fixed XLSX data preview in the Import data wizard.
- Other bug fixes and performance improvements.

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1.2 System requirements

System requirements for SQL Manager for InterBase/Firebird

- 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
- 512 Mb RAM or more; 1024 Mb or more recommended
- 200 Mb of available HD space for program installation
- InterBase/Firebird client library. Its bit depth must be the same as the program's.
- Possibility to connect to any local or remote InterBase/Firebird server
- Supported InterBase and Firebird server versions: InterBase - up to 15; Firebird - up to 5.0

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1.3 Feature Matrix

The **FREE** *Lite version* of **SQL Manager for InterBase/Firebird** 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 InterBase/Firebird** you can activate 748 a 30-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 748.

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

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1.4 Installation

If you are **installing SQL Manager for InterBase/Firebird for the first time** on your PC:

- download the **SQL Manager for InterBase/Firebird** distribution package from the download page available at our site;
- unzip the downloaded file to any local directory, e.g. *C:\unzipped*;
- run *IbManagerFullSetup.exe* (**Full** version) or *IbManagerLiteSetup.exe* (**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 **upgrade an installed copy of SQL Manager for InterBase/Firebird** to the latest version:

- download the **SQL Manager for InterBase/Firebird** distribution package from the download page available at our site;
- unzip the downloaded file to any local directory, e.g. *C:\unzipped*;
- close **SQL Manager** application if it is running;
- run *IbManagerFullSetup.exe* (**Full** version) or *IbManagerLiteSetup.exe* (**Lite** version) from the local directory and follow the instructions of the installation wizard.

You can update **SQL Manager** via SQL Manager Direct 932.

See also:

SQL Manager FAQ 26

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1.5 Registration

All purchases are provided by **PayPro Global** registration service. The **PayPro Global** order process is protected via a secure connection and makes on-line 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 Franks by Credit Card (Visa, MasterCard/ EuroCard, American Express, Diners Club), Bank/Wire Transfer.

If you want to review your order information, or you 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 purchase you will be able to immediately download the registration keys. Also you will receive a copy of registration keys by email. Please make sure to enter a valid email address in 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 InterBase/Firebird (Business license) + 1-Year Maintenance*	Register Now!
EMS SQL Manager for InterBase/Firebird (Business license) + 2-Year Maintenance*	
EMS SQL Manager for InterBase/Firebird (Business license) + 3-Year Maintenance*	
EMS SQL Manager for InterBase/Firebird (Non-commercial license) + 1-Year Maintenance*	
EMS SQL Manager for InterBase/Firebird (Non-commercial license) + 2-Year Maintenance*	
EMS SQL Manager for InterBase/Firebird (Non-commercial license) + 3-Year Maintenance*	
EMS SQL Manager for InterBase/Firebird (Trial version)	Download Now!
EMS SQL Manager for InterBase/Firebird Freeware	Download Now!

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

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

After your maintenance expires you will not be able to update your software or get technical support. To protect your investments and have your software up-to-date, you need to renew your maintenance.

See also:

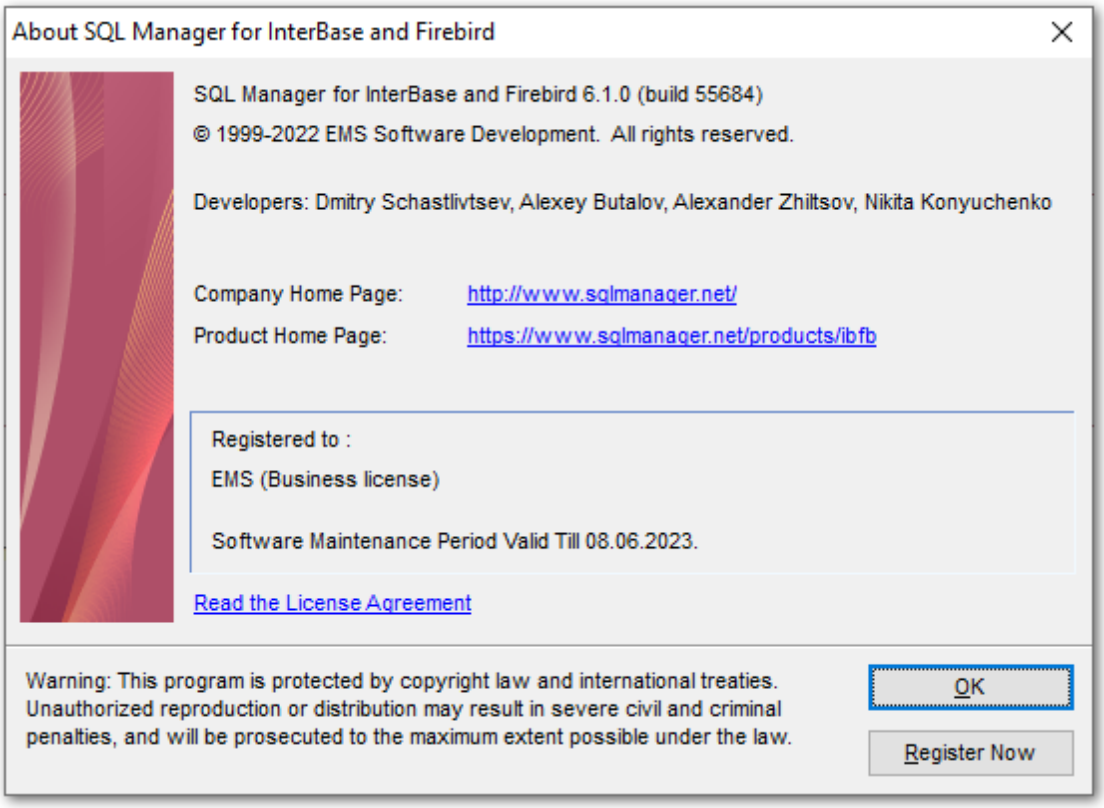
How to register SQL Manager 24

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1.6 How to register SQL Manager

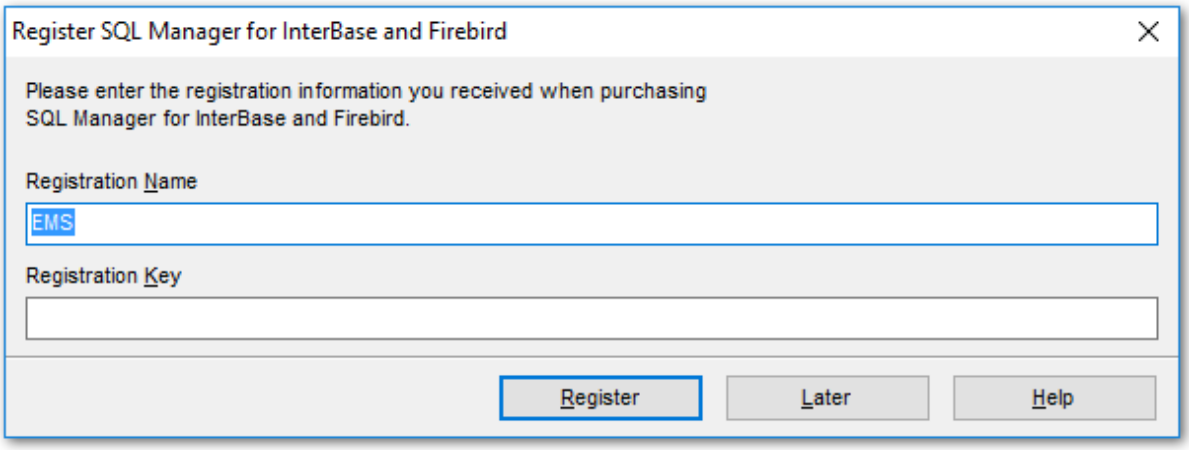
EMS If you have not registered your copy of **SQL Manager for InterBase/Firebird** yet, you can do it by pressing the **Register Now** button and entering your registration information in the **Register SQL Manager for InterBase/Firebird** dialog.



To register your newly purchased copy of **EMS SQL Manager for InterBase/Firebird**, 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 InterBase/Firebird** dialog (use the **Help | About** menu item to open this dialog).

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See also:

Registration 22

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1.7 EMS SQL Manager FAQ

Please read this page attentively if you have questions about **EMS SQL Manager for InterBase/Firebird**.

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Product questions

Q: What is EMS SQL Manager for InterBase/Firebird?

A: **EMS SQL Manager for InterBase/Firebird** is a powerful tool for InterBase/Firebird administration and development. **SQL Manager for InterBase/Firebird** works with Firebird server versions up to 4.0 and InterBase server versions up to 2020, and supports all of the latest InterBase/Firebird features. It offers plenty of powerful tools for experienced users to satisfy all their needs. **SQL Manager for InterBase/Firebird** 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.

Q: What is the difference between Full/Lite editions of EMS SQL Manager for InterBase/

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Firebird?
A: These editions of **SQL Manager** differ in price and features. To register **SQL Manager for InterBase/Firebird**, see the Purchase page, and to learn about the difference in features please go to our Feature Matrix page 20.

Q: What do I need to start working with EMS SQL Manager for InterBase/Firebird?
A: First of all, you must have an opportunity to connect to some local or remote InterBase/Firebird server. Besides, you need your workstation to satisfy the system requirements 19 of **SQL Manager for InterBase/Firebird**.

Q: What is the difference between the Export/Import functions in SQL Manager and the Data Export/Import utilities?
A: The Data Export/Import for InterBase/Firebird utilities include some additional features which are not available in SQL Manager, such as:
- export/import data from/to several tables simultaneously;
- export/import data from/to tables selected from different databases on one host;
- a 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 SQL Manager and the SQL Query for InterBase/Firebird utility?
A: First of all, SQL Query for InterBase/Firebird 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 easier work.

Q: What is the difference between the Extract Database function in SQL Manager for InterBase/Firebird and the DB Extract for InterBase/Firebird standalone utility?
A: The DB Extract for InterBase/Firebird utility includes some additional features which are not available in SQL Manager, such as:
- extracting metadata and/or data from several databases on one host;
- a console application for performing extract in one-touch;
- faster extraction speed.

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Common questions

Q: I can't modify DDL. Why?
A: The DDL tab of the **SQL Manager** editors is read-only. It displays object structure as SQL text and reflects the operations you perform over the object under other editor tabs. To modify an object, you can copy the text to the clipboard and edit it using Execute Script Editor 544. For more details refer to Viewing object DDL structure 894.

Q: How can I customize data formats in grid?
A: You can customize all display formats: integer, float, date, time and datetime using the Color & Formats 794 page of the Environment Options 744 dialog.

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 SQL Manager for InterBase/Firebird?
A: The Database Registration Info 115 dialog provides the Logs 134 section where you can enable logging metadata changes performed over the database and/or SQL queries

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executed in Query data 331.

Q: When I create database objects, their names are always converted to lower case. How I can prevent it?

A: Please try to switch off the "Convert created objects' names to lower case" option within the Object Editors 780 section of the Environment Options 744 dialog.

Q: I am trying to create a report in Report Designer, but I can't get access to the table data: 'Band data source' list is empty.

A: It is recommended to use Create Report wizard 581 which is run by right-clicking the Reports node in DB Explorer 63 and selecting the 'New Report...' context menu item. The wizard will create all necessary data sources.

If you still want to use Report Designer 589, to get the data source in a report, you need to add database and query components 592 to the report.

Q: How can I speed up my work with large tables?

A: For your convenience and to speed up your work, the Data Grid 374 allows customizing a number of data display parameters. Here are the most important of them (accessible through the Grid | Data Options 790 section of the Environment Options 744 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. The 'Select only' mode restricts the maximum number of records returned after the query. A man cannot 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 the default mode. When in this mode, enabling the 'Use SQL sorting in data view' and 'Use SQL filter in data view' options comes really helpful.
- *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.
- *Use SQL sorting in data view*. With this option enabled, when the user sets data sorting, a new request is sent to the server, and the result is shown anew in the Grid. Enabling this option is very helpful with the 'Select only' mode enabled, but it increases the traffic. When this option is disabled, sorting is made on the client computer without any references to the server but only loaded data are sorted. That is, if you set 'Select only 1,000 records', then only these records will be sorted.
- *Use SQL filter in data view*. With this option enabled, the data will be sorted on the server to which a new request is sent, and the result will be shown anew in the Grid. Enabling this option is also helpful when the 'Select only' mode is on, but it increases the traffic. When this option is disabled, the filtering is made on the client computer without any references to the server but only loaded data are filtered. That is, if you set 'Select only 1,000 records', then only these records will be filtered.

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
- *Use SQL sorting in data view* – ON

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- *Use SQL filter in data view* – ON

Q: I have a table with appr. 1000 records only, and a large number of fields. Opening this table on the 'Data' tab takes too much time.
A: You need to set the Grid Mode 790 for the table to 'Load Visible Rows'. Please right click within the table grid 200 and select the 'Grid Mode' | 'Load Visible Rows' context menu item.

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Export/Import questions

Q: I'm trying to export data from a table, but BLOB fields are not exported.
A: Fields of type BLOB are not exported by default. You should select these fields manually at the Selecting fields for export 448 step.

Q: What is the difference between the "Extract Database" and "Export as Execute Script" functions?
A: Export as SQL Script 519 is intended for exporting table data that will be inserted into a database system other than InterBase/Firebird. Use Extract Database Wizard 552 to copy metadata and/or data to a database on InterBase/Firebird afterwards.

Q: How can I change the default directory where exported data are saved?
A: Follow the steps below to change the default directory:
1. Right-click the database alias in DB Explorer 63 and select the 'Database Registration Info...' context menu 53 item (you can also find this item in the 'Database' main menu 890) to open the Database Registration Info 115 dialog.
2. Proceed to the Directories 133 section within the dialog.
3. Set the 'Default directory for Export Data'.

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

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1.8 Other EMS Products

Quick navigation

MySQL 30 | Microsoft SQL Server 31 | PostgreSQL 32 | InterBase / FireBird 32 | Oracle 33 | IBM DB2 34 | Tools & components 35

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.

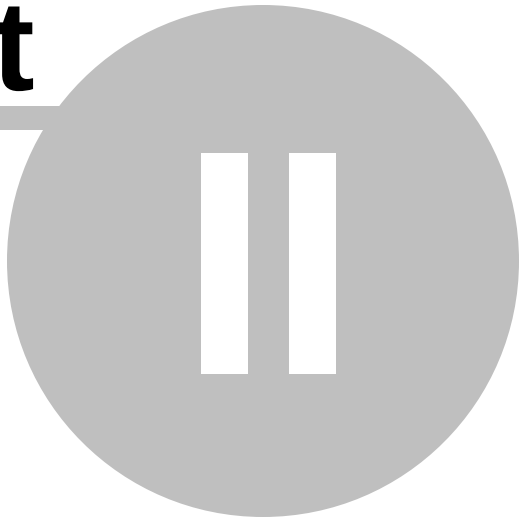


Advanced Localizer for RAD Studio VCL
Advanced Localizer for RAD Studio VCL is an indispensable component for Delphi for adding multilingual support to your applications.

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Part



2 Getting Started

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

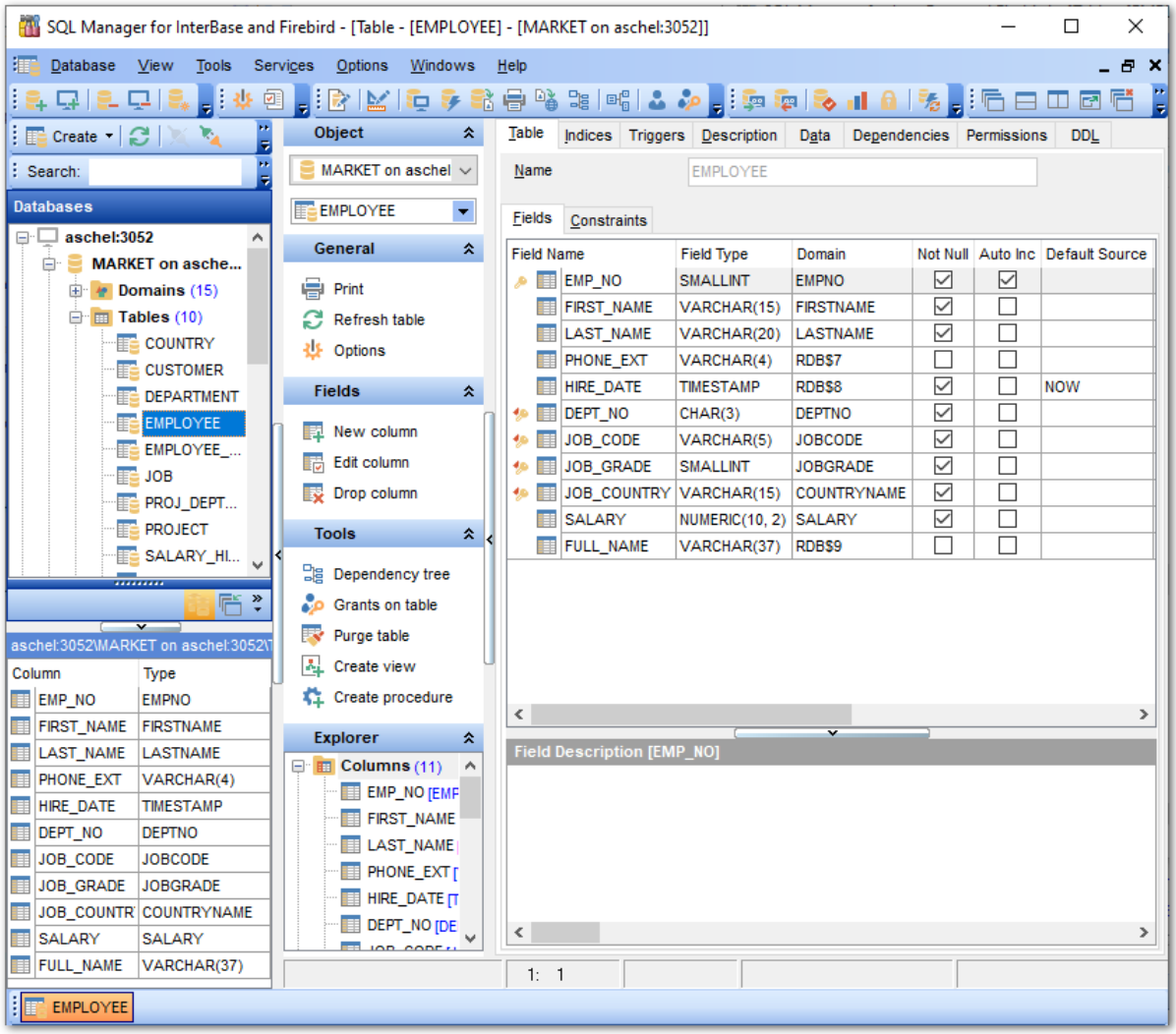
The succeeding chapters of this document are intended to inform you about the tools implemented in **SQL Manager for InterBase/Firebird**. Please see the instructions below to learn how to perform various operations in the easiest way.

- Selecting style and language 40
- How the application looks when you start it for the first time 42
- Using Desktop Panel 44
- Database navigation 46
- Working with database objects 49
- Using context menus 51
- Working with child windows 58

See the How to... 846 chapter to view brief instructions on how to perform some operations on databases, database objects, etc.

Enjoy your work with EMS SQL Manager for InterBase/Firebird!

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See also:

Database Explorer 63
Database Management 87
Database Objects Management 163
Query Management Tools 329
Data Management 369
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719

External Tools 840
How to... 846

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2.1 Selecting style and language

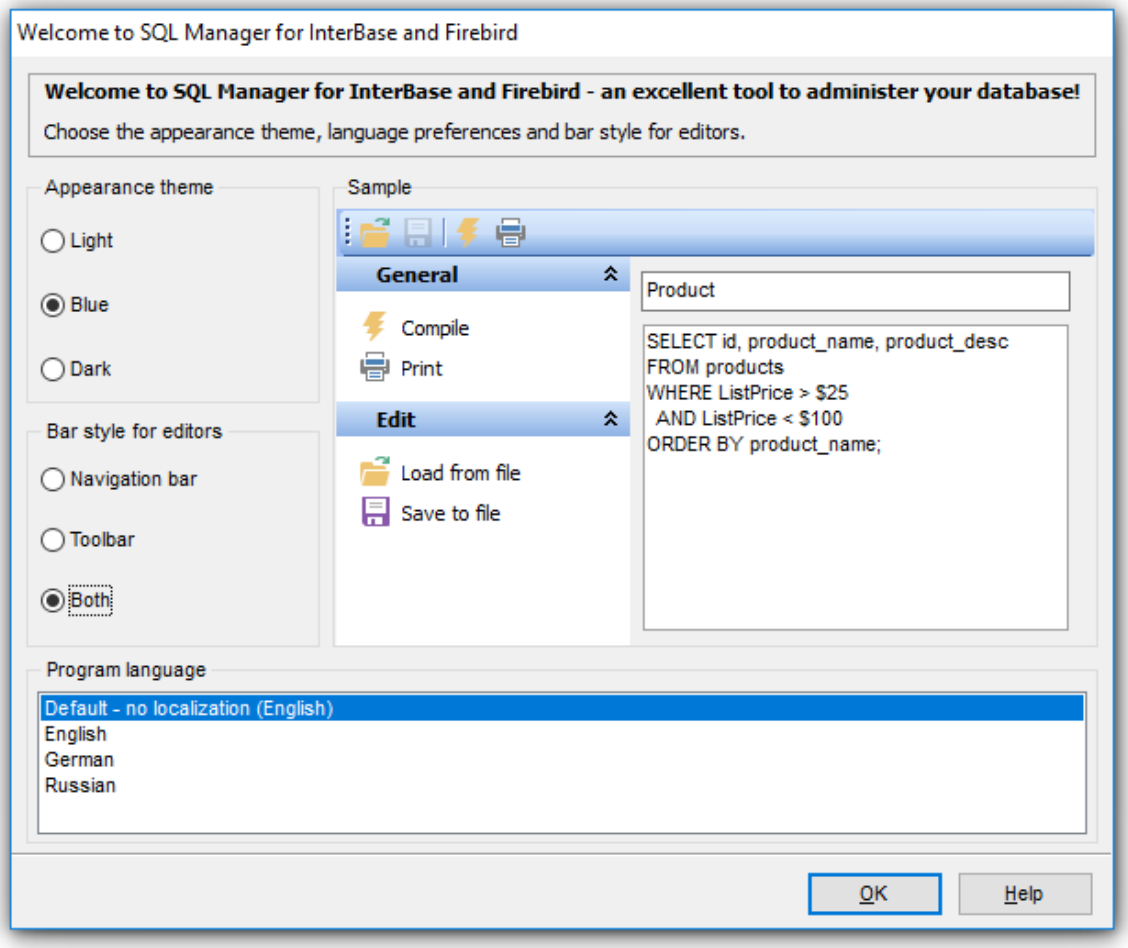
Before you start SQL Manager for the first time, you have to choose the appearance style and the interface language. You can change these settings any time using the Environment Options 751 dialog to configure environment style and the language.

Appearance theme
Select the main color theme for the application: Light, Blue or Dark.

Bar style for editors
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.

Sample
See the example of selected options for interface.



See also:
First time started 42

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Using Desktop Panel 44
Database navigation 46
Working with database objects 49
Using context menus 51
Working with windows 58

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2.2 First time started

This is how **SQL Manager for InterBase/Firebird** looks when you start it for the first time. Use the Desktop panel 44 to fulfill any of common tasks: Create a new database 100, Manage existing database(s) 107, and several tasks that do not require database registration, i.e. Execute script 544, accessing the **reference system** or using available **Internet resources**.

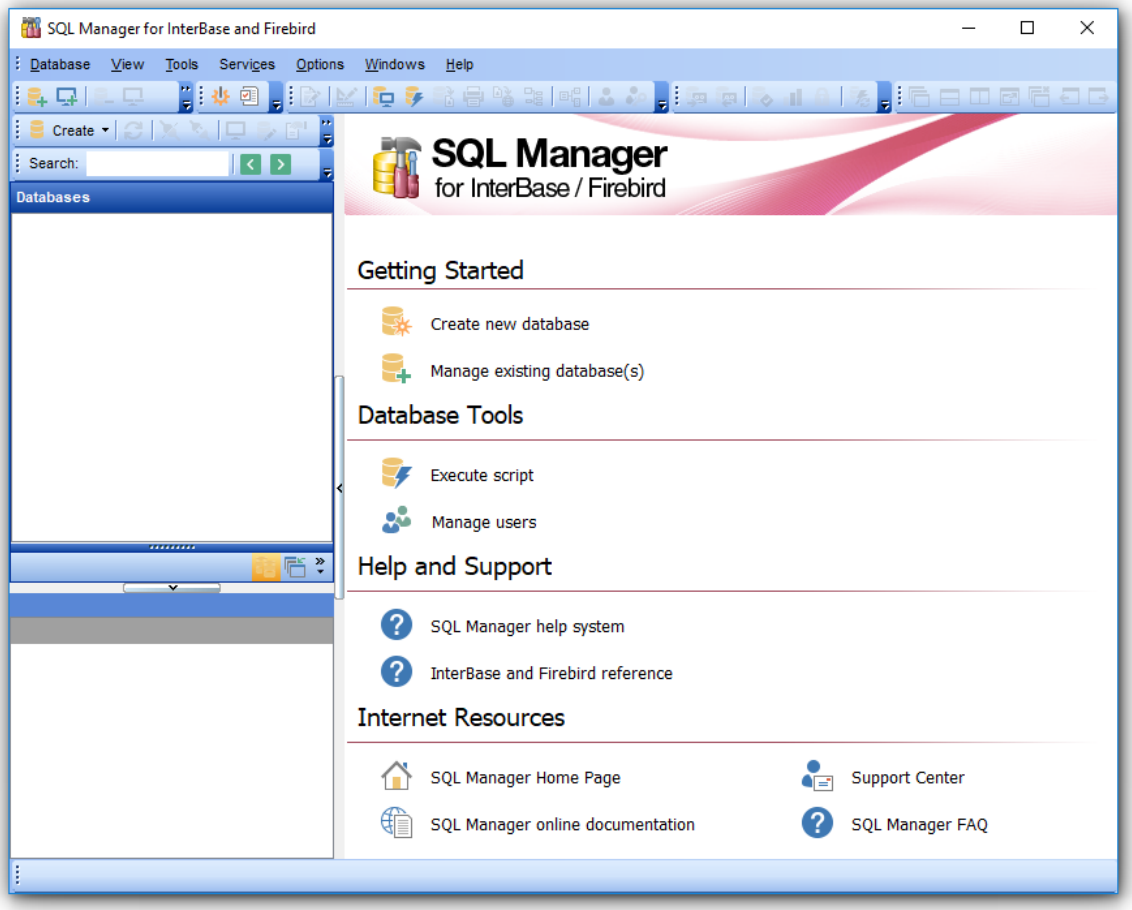
The main menu 890 allows you to perform various **Database** operations, open To-Do List 921 and activate/deactivate Database Explorer 63, SQL Assistant 80 and various toolbars 892 within the **View** menu, manage your databases using items of the **Tools** and **Services** menus, customize 743 the application using the **Options** menu, manage **SQL Manager Windows** using Window List 923 and other tools, and access Registration 22 information and product documentation, update 932 the product to the latest version using the corresponding items available within the **Help** menu.

To start working with your InterBase/Firebird server, you should first register the host using Register Host wizard 90. After that you need to register one or several databases using Register Database Wizard 107.

By default the corresponding **Register Host**, **Register Database** buttons are available on the toolbar 892 and within the **Database** menu.

When the database connection settings are specified, you can set connection to your database and proceed to Database navigation 46, Database Objects management 163, working with SQL queries 329 and other tools of **SQL Manager**.

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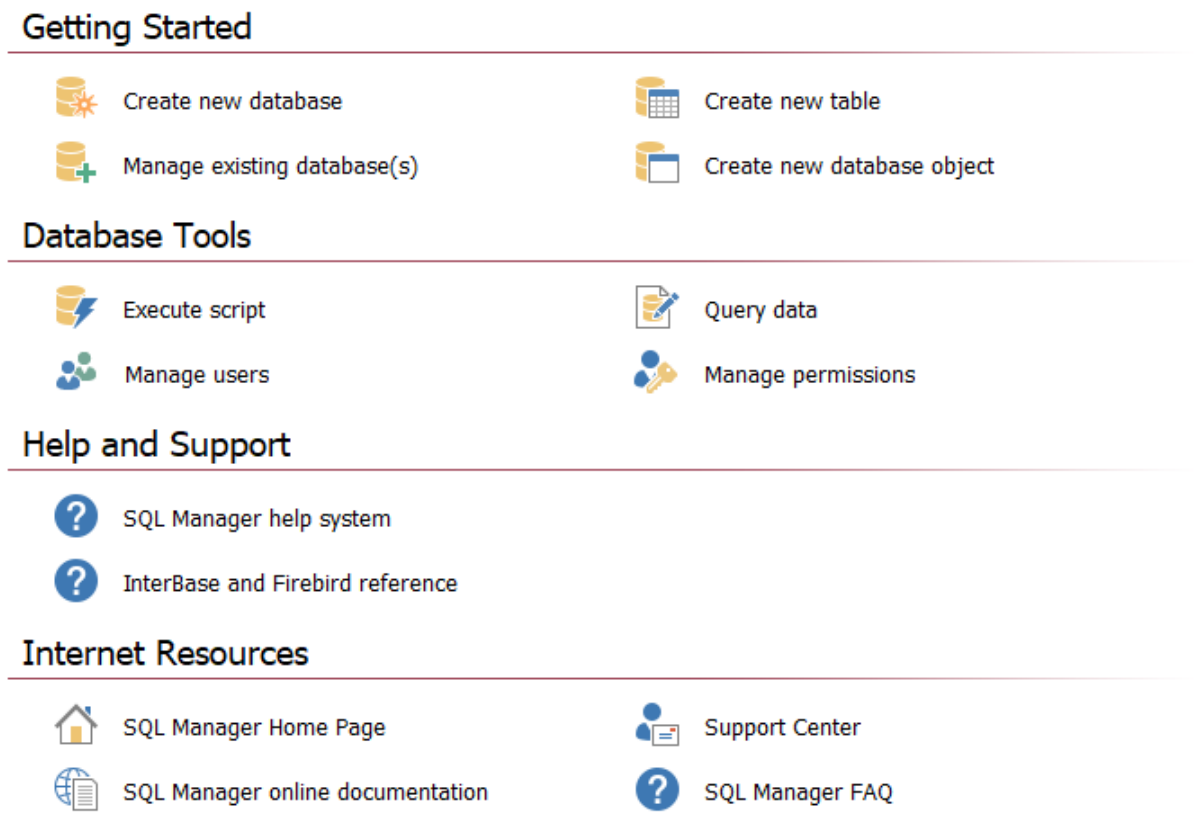
See also:

Selecting style and language 40
Using Desktop Panel 44
Database navigation 46
Working with database objects 49
Using context menus 51
Working with windows 58

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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 InterBase/Firebird**. 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 100 a new InterBase/Firebird database

Register 107 existing database(s) to operate them afterwards in **SQL Manager**

Create a new table within the current database using the New Table 180 window (this item is available if there is at least one active database connection)

Create a new database object 165 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 544 editor

Query data 331 (this item is available if there is at least one active database connection)

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 Manage Users allows you to create new or edit existing users using User Manager[722]

 Manage permissions on database objects to InterBase/Firebird users using Grant Manager[734] (this item is available if there is at least one active database connection)

Help and Support

 Show this help file

 Show **InterBase and Firebird** help file

Internet Resources

 Visit **SQL Manager** Home Page

 Browse **SQL Manager** online documentation

 Go to Technical Support Center

 Look through the Frequently Asked Questions[26] page

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See also:

Selecting style and language[40]
First time started[42]
Database navigation[46]
Working with database objects[49]
Using context menus[51]
Working with windows[58]

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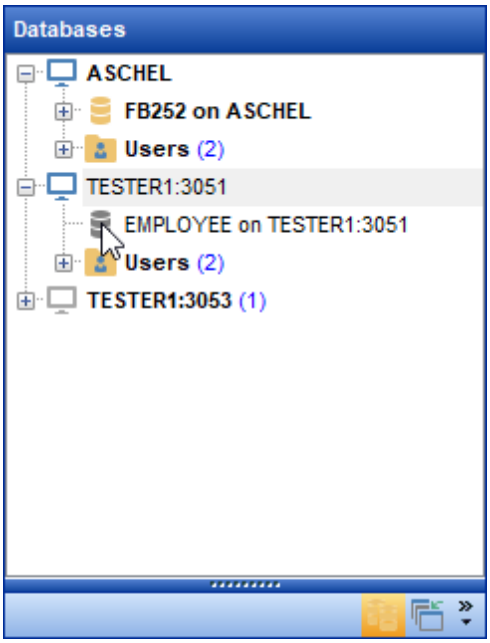
2.4 Database navigation

After you have registered the required database(s), the corresponding alias(es) appear in the DB Explorer 63 tree on the left. If the **Show Hosts** option is checked on the Environment Options 744 | DB Explorer 753 page, the host nodes are also displayed in the tree (alternatively, you can use the **Show Hosts** item of the Database context menu 53, or the drop-down menu of the **View Mode** toolbar 83 button for the same purpose).



DB Explorer 63 displays all registered hosts and databases. Connected/disconnected hosts and databases can be easily distinguished in the tree: aliases of disconnected hosts and databases are grayed out.

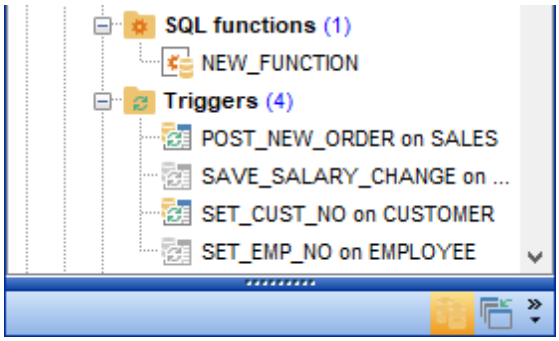
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To connect 67 to a database, simply double-click its alias (or select the database alias in DB Explorer 63 and press **Enter**). If the connection is successful, the database node expands into a tree of objects.

Now you can navigate within the database objects. Use SQL Assistant 80 to get extended information about the currently selected object.

For your convenience objects having different status (e.g. enabled/disabled) and valid/ invalid objects are displayed with different icons in Database Explorer 63.



See also:

Selecting style and language 40
First time started 42
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Working with database objects 49
Using context menus 51
Working with windows 58

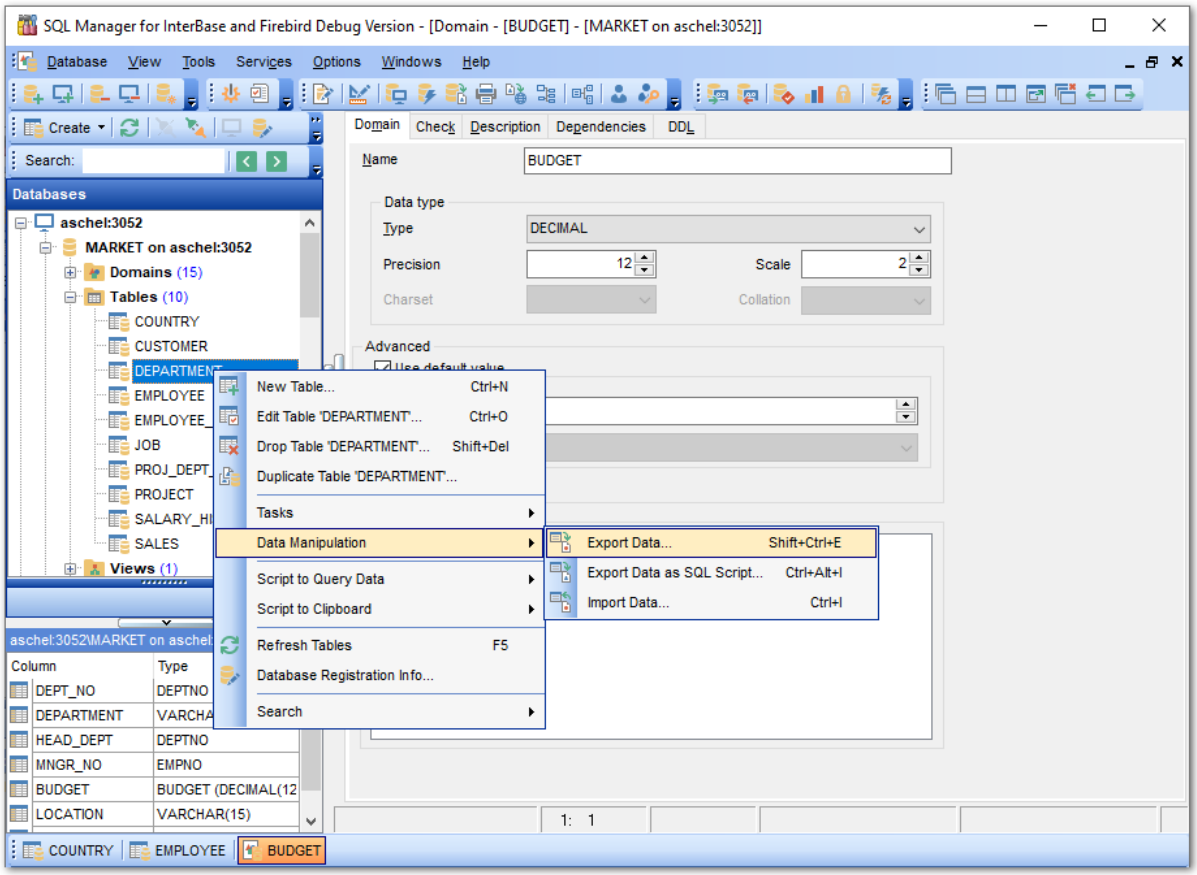
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2.5 Working with database objects

The nodes of the DB Explorer 63 tree allow you to access objects of the selected database 163. If InterBase/Firebird 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 56 which allows you to perform various *operations over the selected object or database*.



If you want to use the DB Explorer 63 tree for working with **table subobjects** (fields, indexes, Foreign keys, etc.), check the **Show table subobjects** option which is available within the **General options** group of the Environment Options 744 | DB Explorer 753 page (you can also use the **Show Table Subobjects** menu item in the drop-down menu of the **View Mode** toolbar 83 button for the same purpose.)



See also:
Selecting style and language 40

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First time started 42
Using Desktop Panel 44
Database navigation 46
Using context menus 51
Working with windows 58

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2.6 Using context menus

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

Select an object in DB Explorer 63 and right-click its alias to open the context menu.

- Host context menu 52
- Database context menu 53
- Object context menu 56

See also:

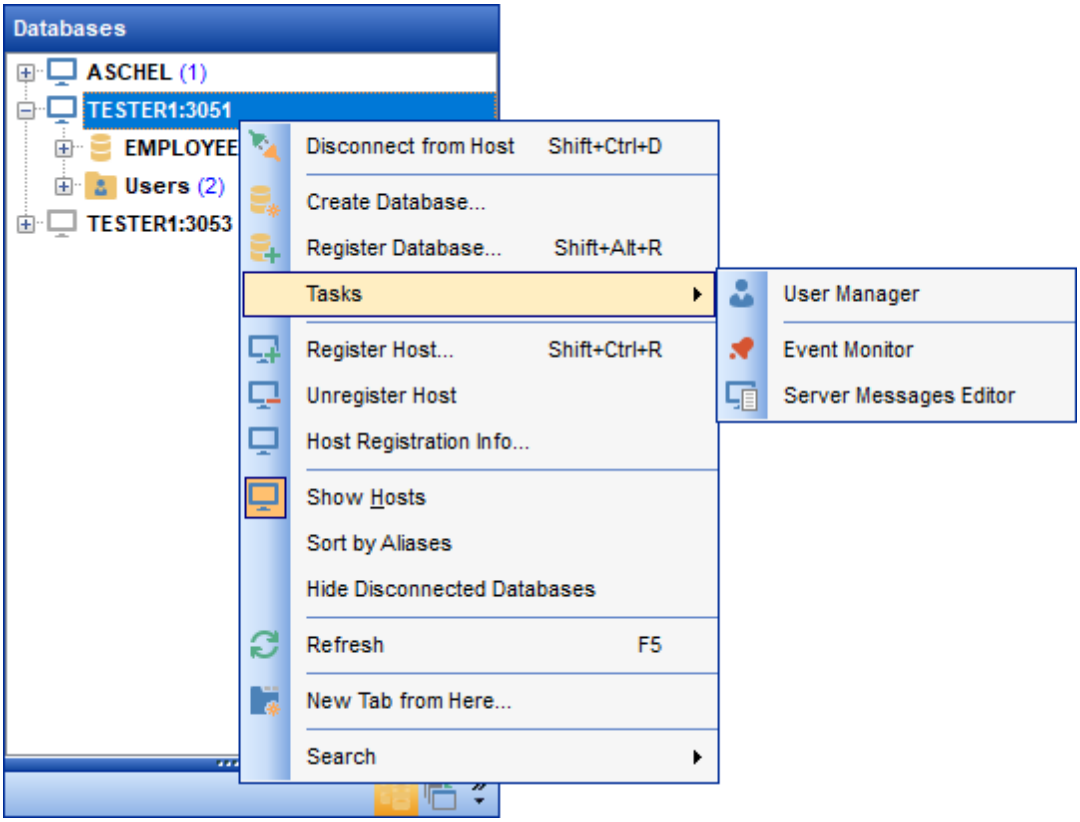
Selecting style and language 40
First time started 42
Using Desktop Panel 44
Database navigation 46
Working with database objects 49
Working with windows 58

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2.6.1 Host context menu

The **context menu of a host** in the DB Explorer 63 tree allows you to:

- connect 88 / disconnect 88 to/from host;
- create a new database 100 at the selected host;
- register a new database using Register Database Wizard 107;
- access server tools 659 available in the **Tasks** submenu;
- register a new host using Register Host Wizard 90;
- unregister 87 the selected host;
- view/edit the selected host properties within the Host Registration Info 153 dialog;
- configure representation of hosts and databases in Database Explorer 63;
- create a new tab for the selected host to access it through this tab quickly 73 and/or manage the existing tab;
- search 78 for an object within the tree.



Tasks submenu allows you to:

- manage users 722;
- launch Event Monitor 627;
- view and edit server messages using Server Messages Editor 633.

See also:

Database context menu 53

Object context menu 56

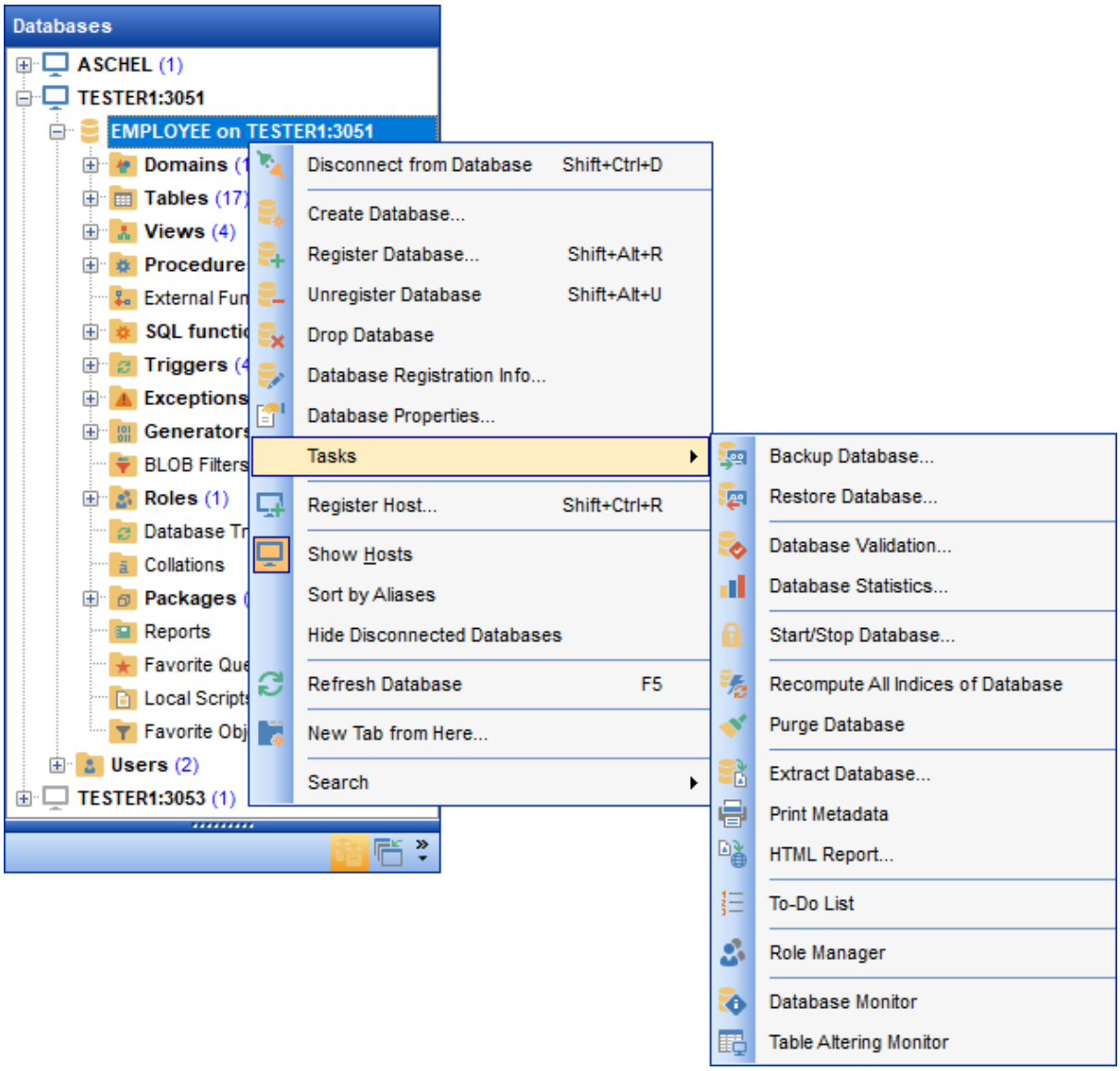
© 1999-2026 EMS Software Development

2.6.2 Database context menu

The **context menu of a registered database** in the DB Explorer 63 tree allows you to:

- connect 67 to the selected database (if connection to the database is not active yet);
- disconnect 88 from the selected database (if connection to the database has been already activated);
- create a new database 100 at the host where the selected database resides;
- register a new database using Register Database Wizard 107;
- unregister 87 the selected database;
- drop 87 the selected database;
- view/edit the selected database registration information within the Database Registration Info 115 dialog;
- view/edit the Database properties 138;
- access database tools 534 available in the **Tasks** submenu;
- register a new host using Register Host Wizard 90;
- configure representation of hosts and databases in Database Explorer 63;
- refresh the selected database;
- create a new tab for the selected database to access it through this tab quickly 73 and/or manage the existing tab;
- search 78 for an object within the tree.

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Tasks submenu allows you to:

- backup database 660 using the wizard;
- restore database 671 using the wizard;
- validate database 688;
- retrieve database statistics 694;
- start/stop database 700;
- recompute all indices of a database;
- purge a database 713;
- extract database 552 objects and/or data to an Execute Script;
- print metadata 570;
- generate html report 574 of the selected objects;
- create to-do list 921;
- manage roles 730 and their privileges;

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launch Table Altering Monitor 630.

See also:

Host context menu 52

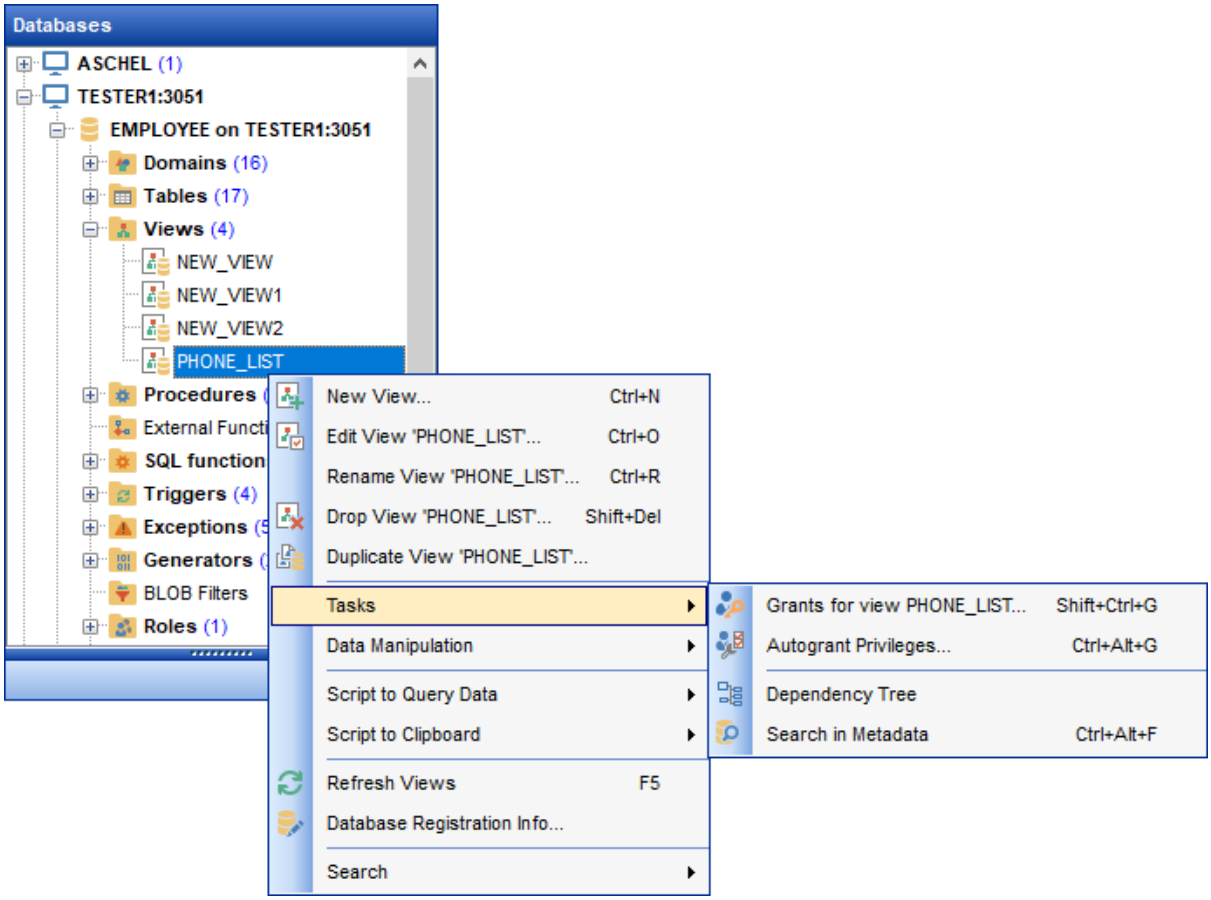
Object context menu 56

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2.6.3 Object context menu

The **context menu of an object** (e.g. *table* or *view*) in the DB Explorer 63 tree allows you to:

- create 165 a new database object of the same type;
- edit 163 the selected object in its editor;
- rename 163 the selected object;
- drop 163 the selected object from the database;
- duplicate 167 the selected object (create a new object with the same DDL 894 structure and properties as the selected object has);
- access common **Tasks** applied to this object;
- perform data manipulation 444 operations (for tables 179 and views 243);
- define grants 734 for the selected object;
- generate the object script and open it in editor 331;
- generate the database 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 115 dialog (for database objects 163);
- create a new tab for the selected object to access it through this tab quickly 73 and/or manage the existing tab;
- search 78 for an object within the tree.



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See also:

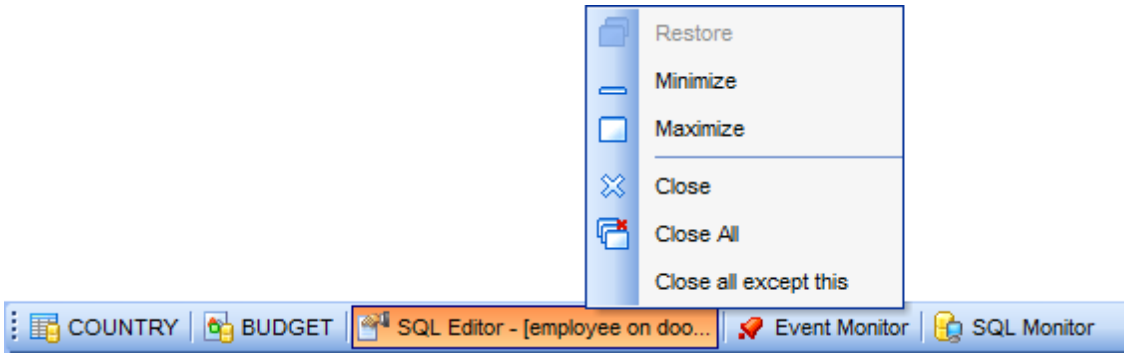
Host context menu 52
Database context menu 53

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2.7 Working with windows

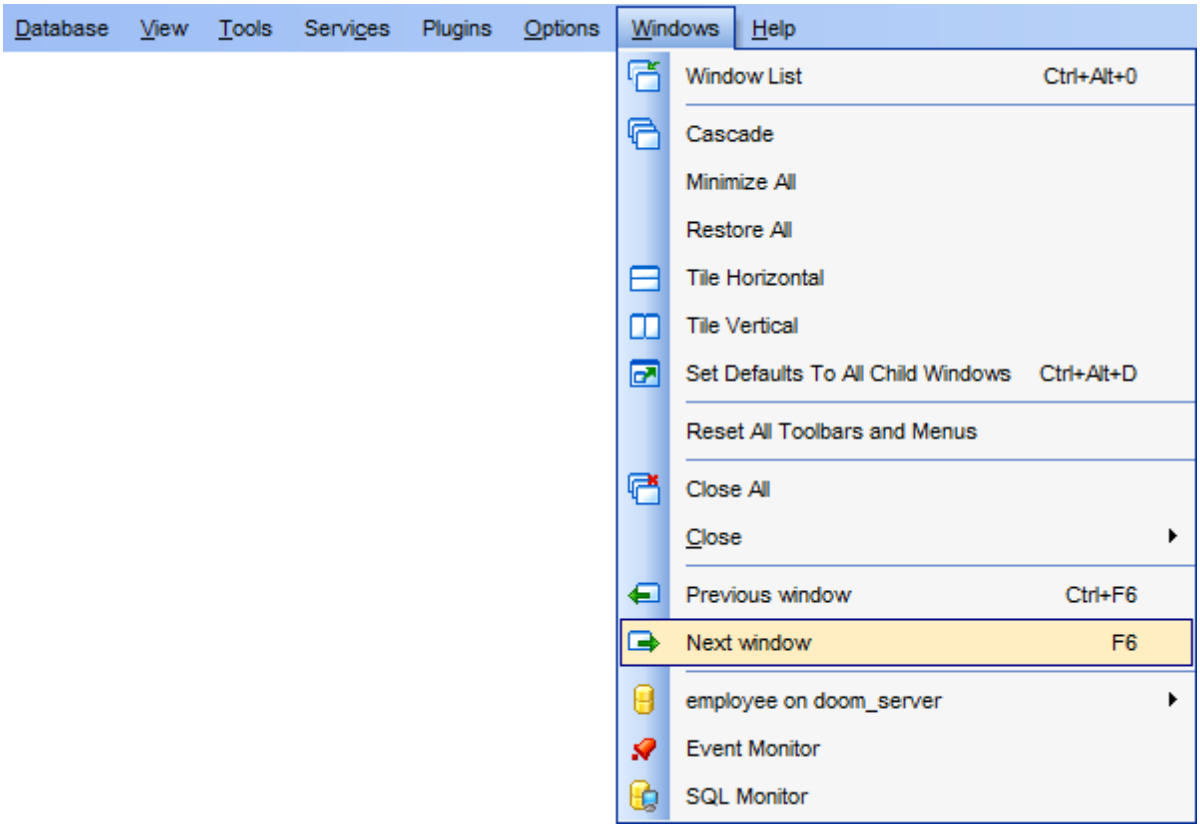
The **Windows Toolbar** of **SQL Manager** allows you to switch between child windows easily, like in Windows Task Bar.

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.

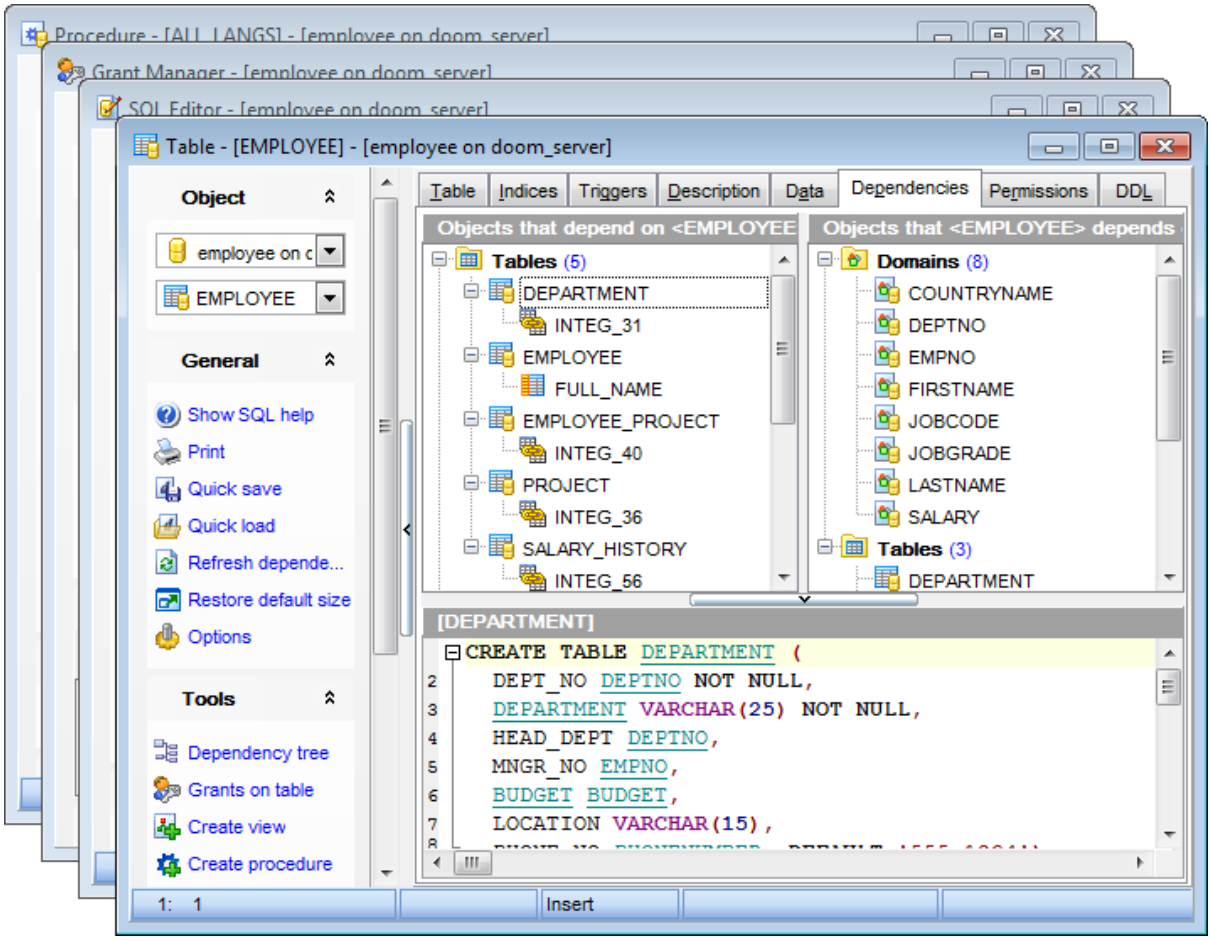
The **Windows** menu facilitates your work with **SQL Manager** windows.



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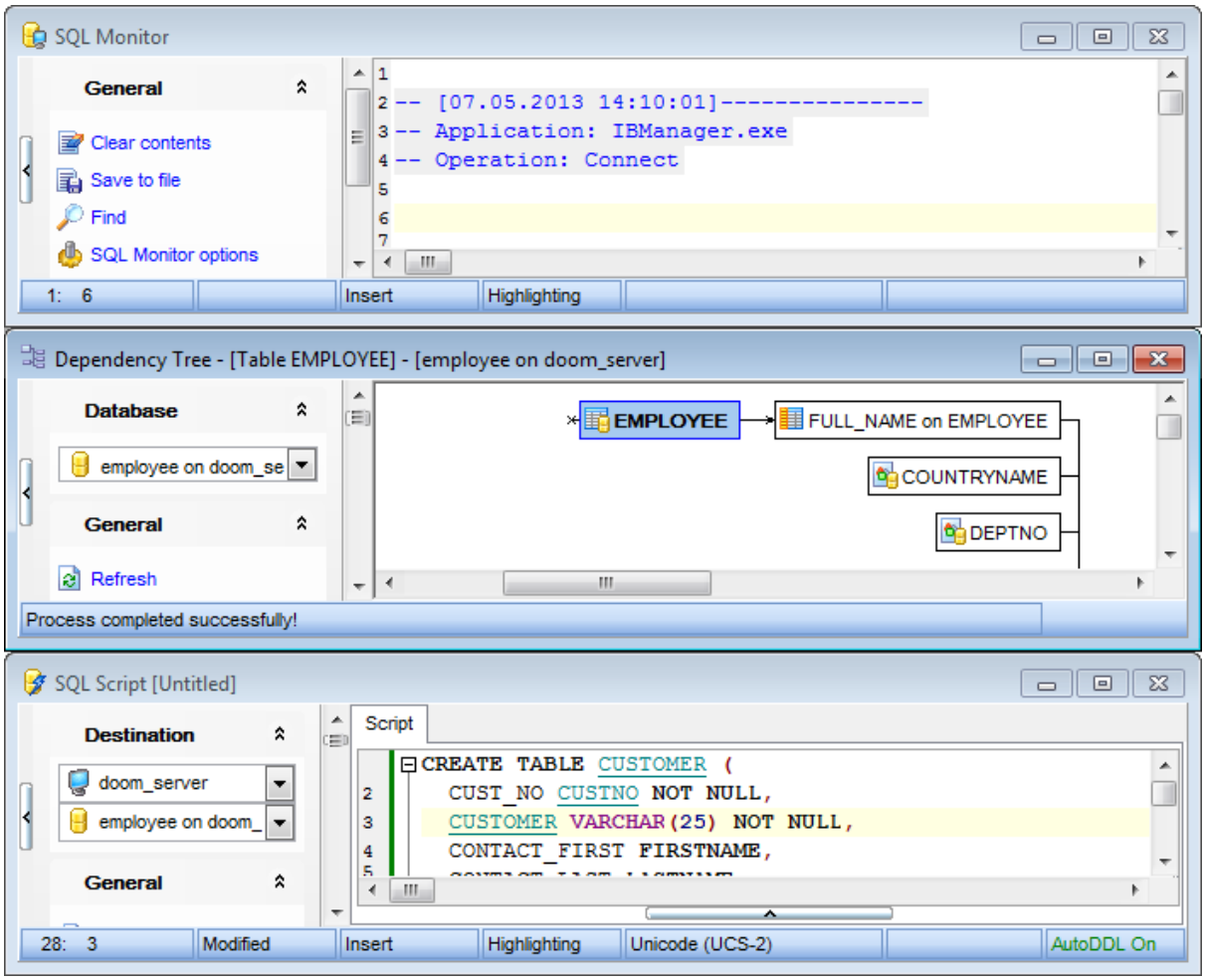
The **Windows** menu allows you to:

- view the Windows List 923 within the corresponding tab 73 of DB Explorer;
- set all current windows *cascade*:



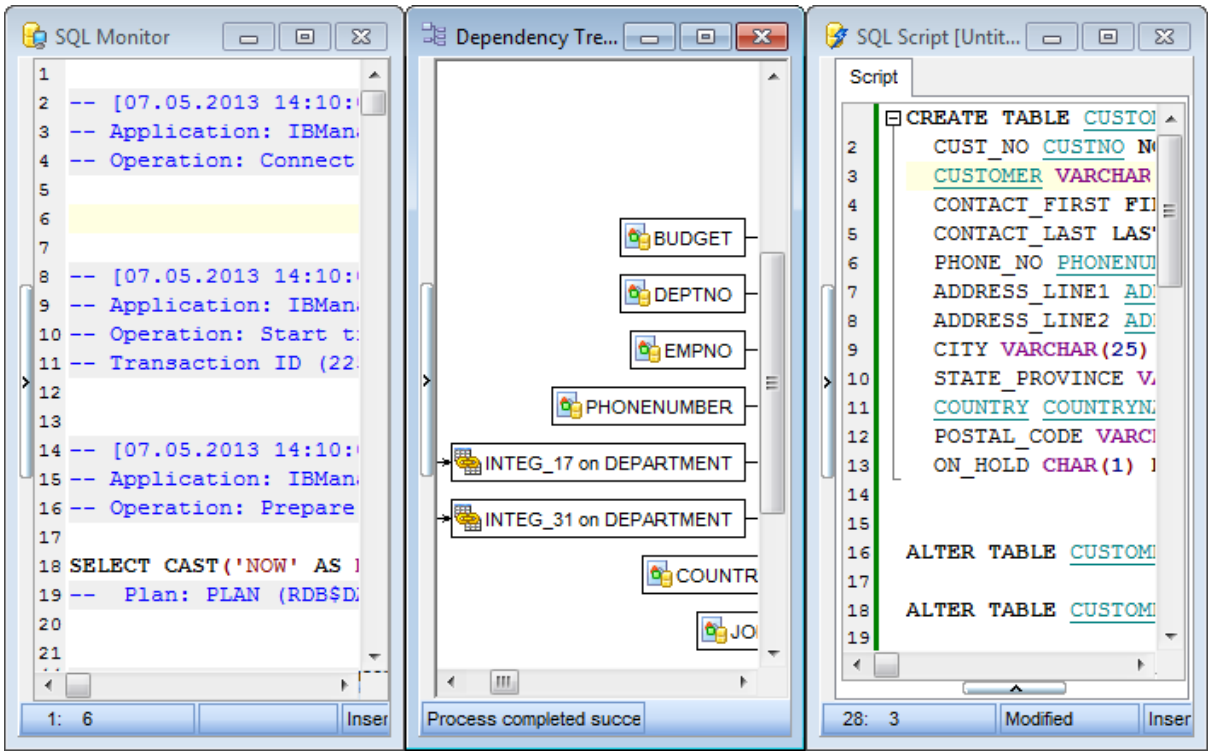
- minimize all windows;
- restore all windows;
- tile all current windows *horizontally*:

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- tile all current windows *vertically*:

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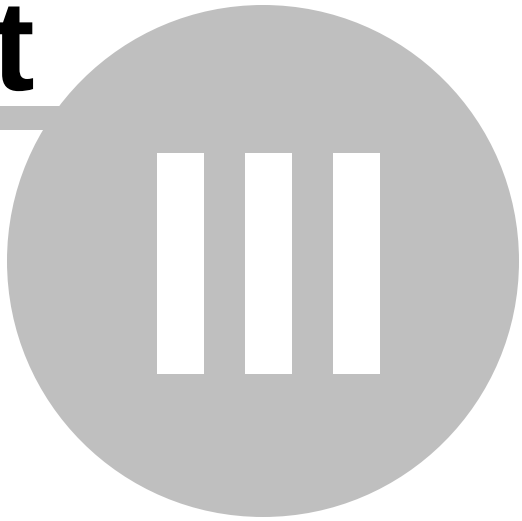
- set defaults to all windows;
- reset all toolbars and menus 924;
- close all windows;
- close all editors of the specified object type (can be selected from the submenu);
- switch to the previous window;
- switch to the next window;
- activate one of currently opened windows.

See also:

Selecting style and language 40
First time started 42
Using Desktop Panel 44
Database navigation 46
Working with database objects 49
Using context menus 51

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Part



3 Database Explorer

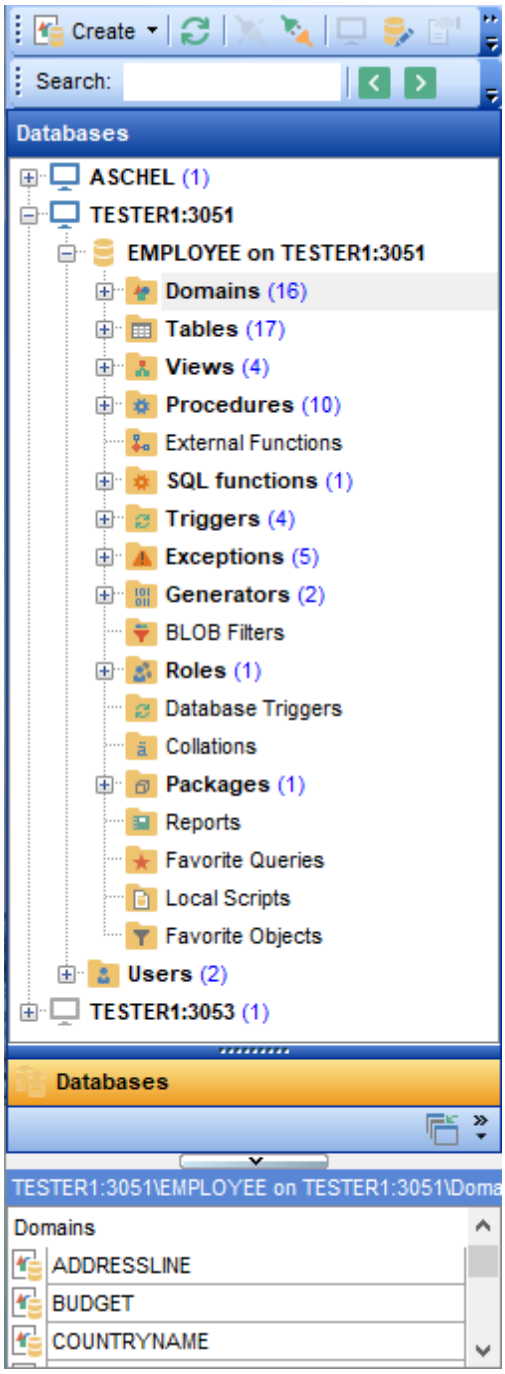
Database Explorer (or **DB Explorer**) is the basic window of **SQL Manager for InterBase/Firebird** for navigation 46 within databases and working with database objects. The tree-like structure of DB Explorer allows you to manage the databases, database objects and perform other everyday operations quickly and easily.

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

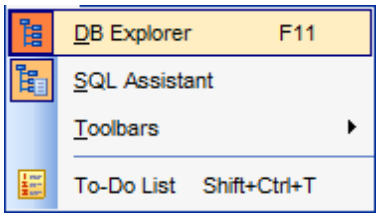
- Managing database registration info 66
- Connecting to databases and hosts 67
- Performing basic operations upon database objects 69
- Selecting multiple objects 71
- Navigating database objects using multiple tabs 73
- Easy access to recently opened objects 75
- Managing favorite objects 76
- Searching within the tree 78
- Viewing extended information about database objects 80
- Configuring Database Explorer 82
- Managing Favorite queries 85

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.

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To view/hide the Database Explorer window, use the **View | DB Explorer** main menu 890 item or press the **F11** key.



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Use the *Ctrl+Shift+C* shortcut 940 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:

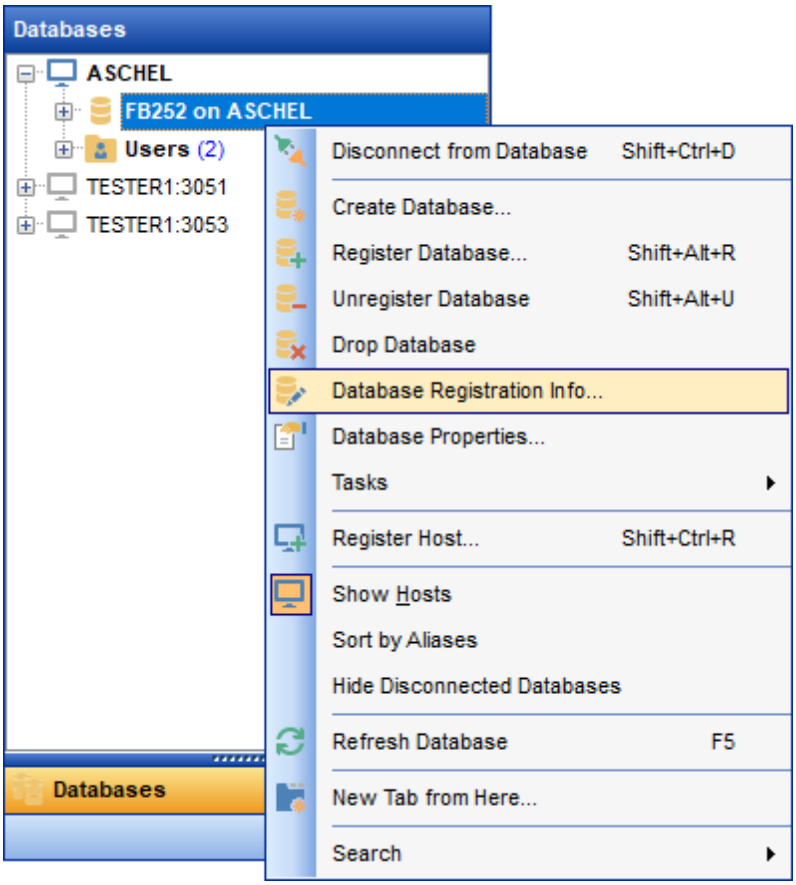
Getting Started 37
Database Management 87
Database Objects Management 163
Query Management Tools 329
Data Management 369
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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3.1 Managing database registration info

After you have created and/or registered your database in **SQL Manager for InterBase/Firebird**, you can perform a number of operations with the database using the context menu 53.

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 115 dialog.



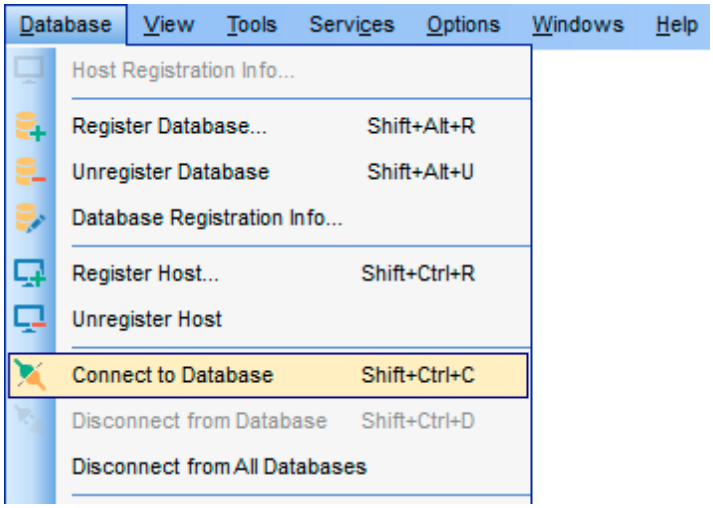
See also:

Register Database 107
Database Registration Info 115
Database Properties 138

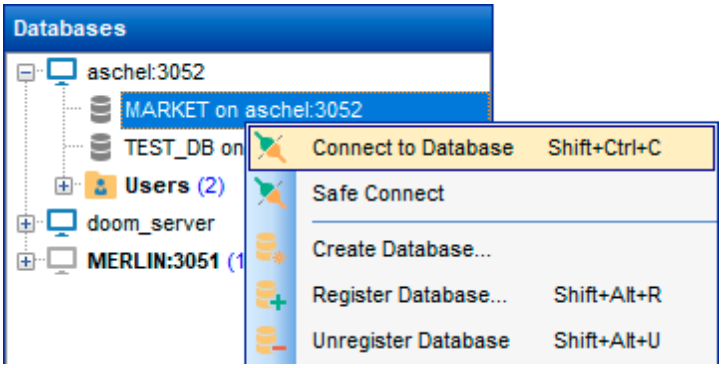
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3.2 Connecting to databases and hosts

When the InterBase/Firebird host is registered[90], and the database registration[107] is complete, you can establish connection[88] to your database.

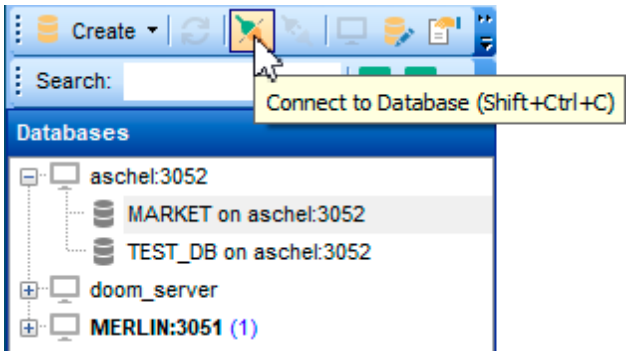


The simplest way to connect to a database is to double-click its alias in the Database Explorer[63] tree. The same operation can be performed by selecting the **Connect to Database** or **Safe Connect** item of the database context menu[53], or by using the **Database | Connect to Database** main menu[890] item.
Safe Connect provides a secure connection to the database using the isc_dpb_no_db_triggers parameter.

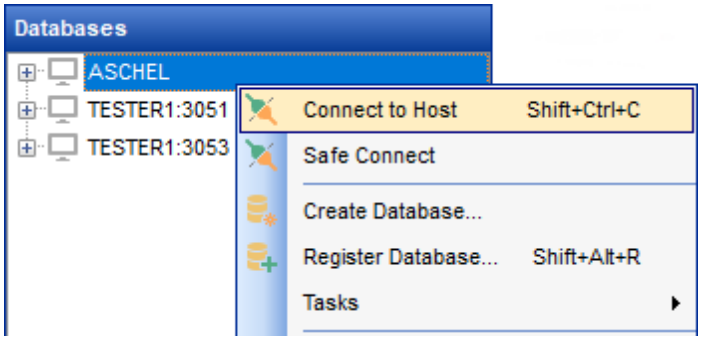


Alternatively, you can use the *Shift+Ctrl+C* shortcut[940], the **Connect to Database** (**Connect to Host**), or the **Safe Connect** toolbar[82] buttons.

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Before working with server-scoped objects and services, a host connection[88] must be established by selecting the **Connect to Host** item of the host context menu[52], or by using the **Database | Connect to Host** main menu[890] item.



See also:

Register Database[107]

Database Registration Info[115]

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3.3 Operations with database objects

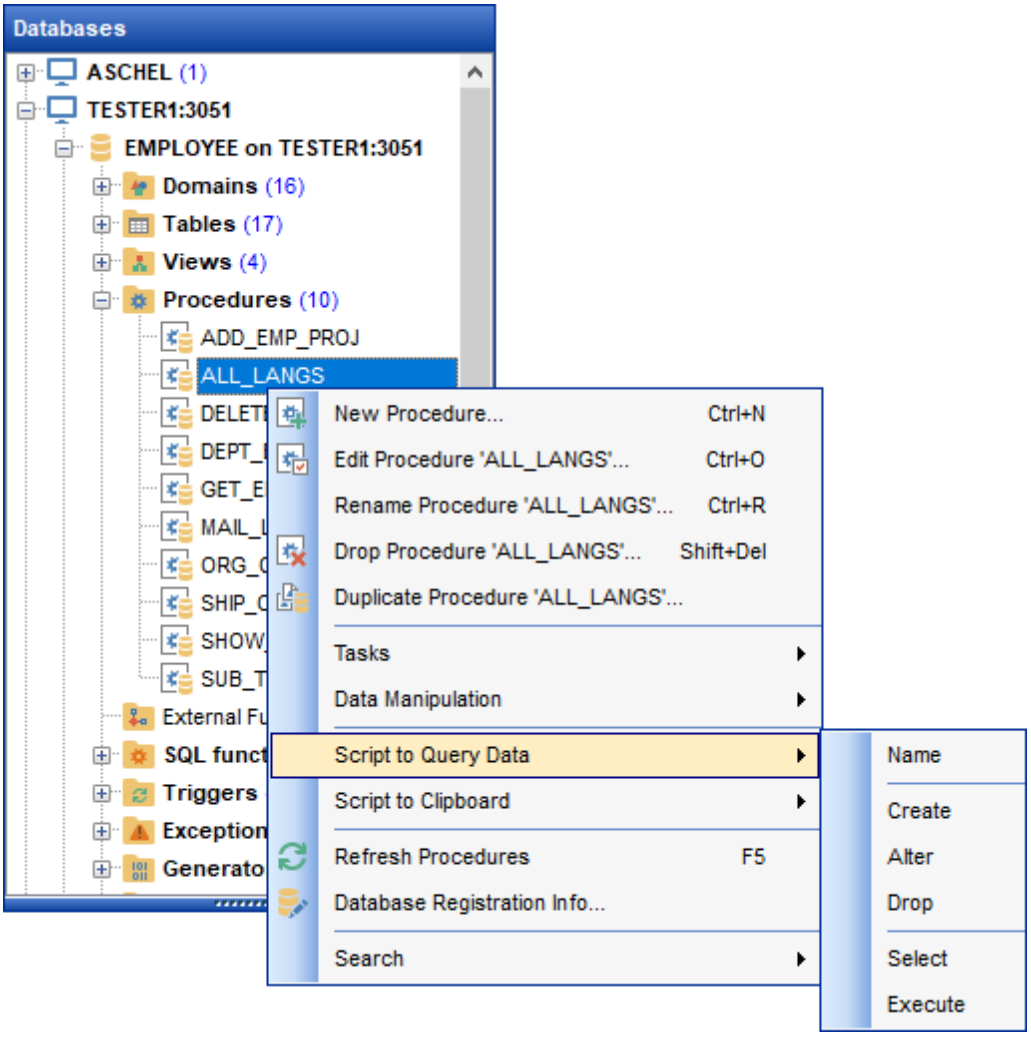
Database Explorer allows you to perform various operations with database objects[163].

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[56] 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);
- 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**.

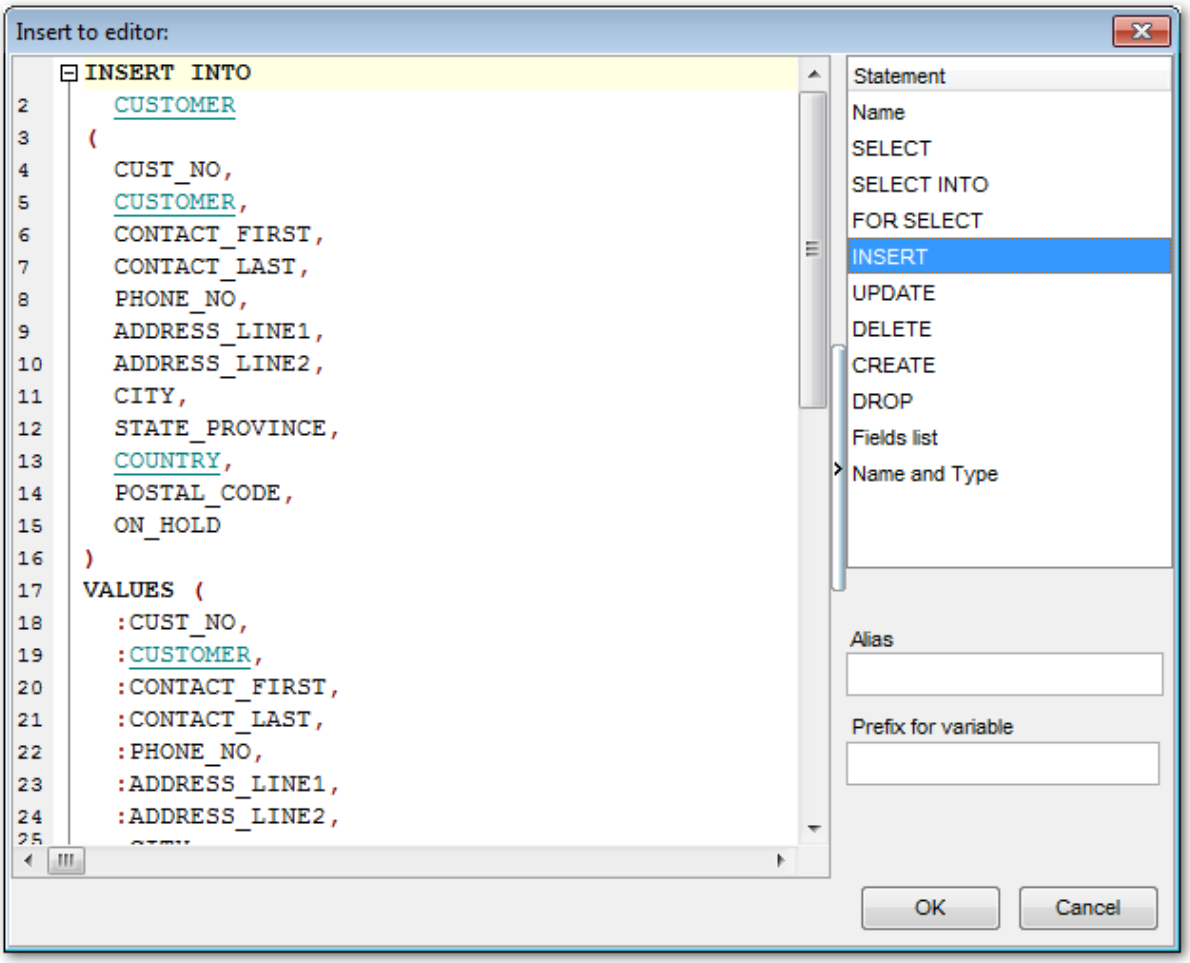


Using drag-and-drop operations you can add objects to Query Data editor[331], Query Designer[348] or Execute Script Editor[544]. For your convenience the **Insert to editor** dialog

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is implemented. The dialog allows you to specify the **statement** to be inserted into the editor: *Name*, *SELECT*, *INSERT*, *UPDATE*, *DELETE*, *CREATE*, *ALTER*, *DROP*, *Fields 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 334).



See also:

Database Objects Management 163
Query Editor 331
Selecting multiple objects 71

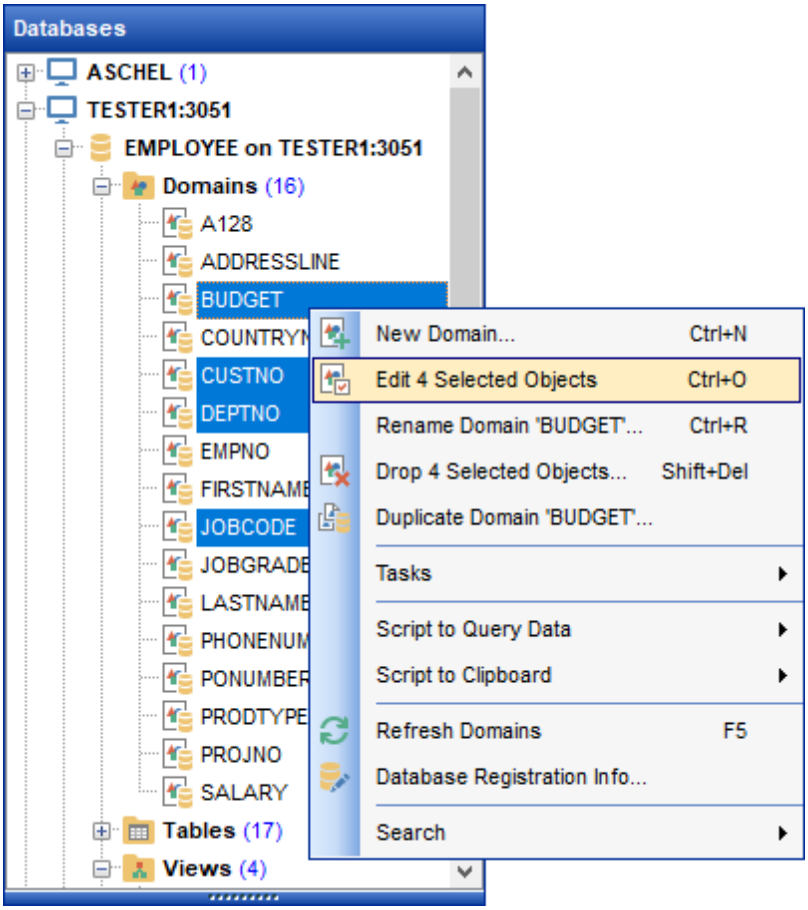
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3.4 Selecting multiple objects

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 163 a new database object of the same type;
- edit the selected objects;
- drop the selected objects;
- perform other operations with the first of the selected objects (see Operations with database objects 69).



Hint: You can move several objects to your projects 76: just drag and drop the selected objects to the previously created subfolder within the **Favorite Objects** node of **DB Explorer**.

See also:

Operations with database and server objects 69
Database Objects Management 163
Managing projects 76

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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.

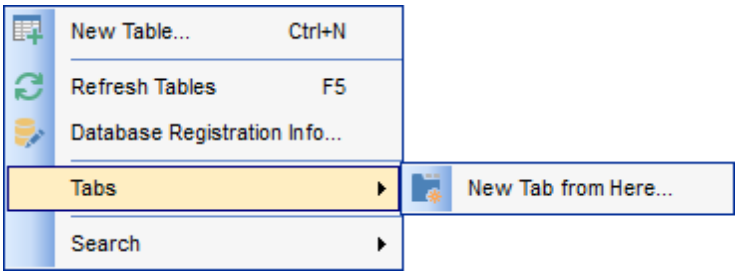
You can use tabs when you wish to work with a particular node of the DB Explorer tree only: with a group of objects, or with a specific database Favorite Objects 76 folder. Creating such tabs will minimize scrolling within large trees, you only need to switch between them with a single click on the corresponding 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 83 menu, the **New Tab from Here...** item will not be available for tables, since none of them will be a tree node anymore.

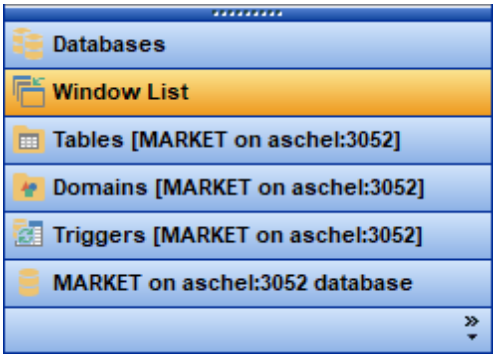


The specified tabs can be displayed in either of the two views:

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



- as *tabs* with captions:



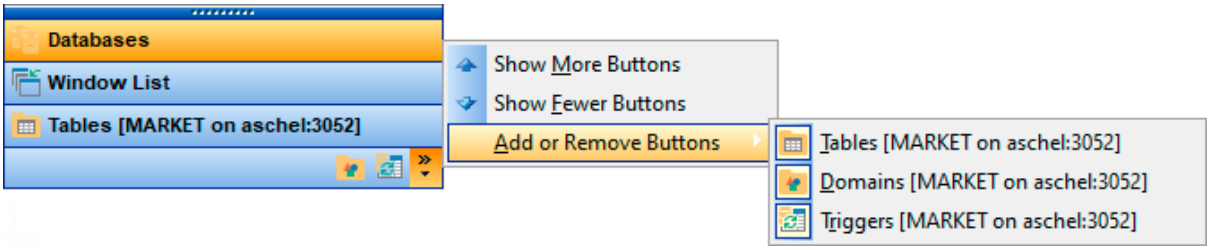
© 1999-2026 EMS Software Development

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 892 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 943:

- *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:

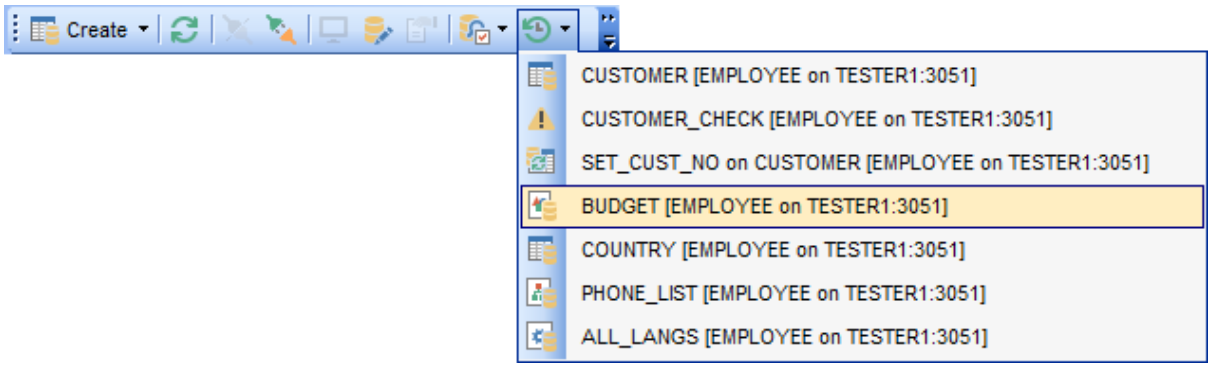
Managing Favorite Objects 76
Windows List 923
Database Objects Management 163

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3.6 Recently opened objects

Use the **Recent Objects** button available on the DB Explorer toolbar 82 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 890 item, proceed to the **Tools | DB Explorer** section within the **Environment Options** dialog, and set the **Recent objects count** option value (see Environment Options 744 for details).

See also:

Database Objects Management 163

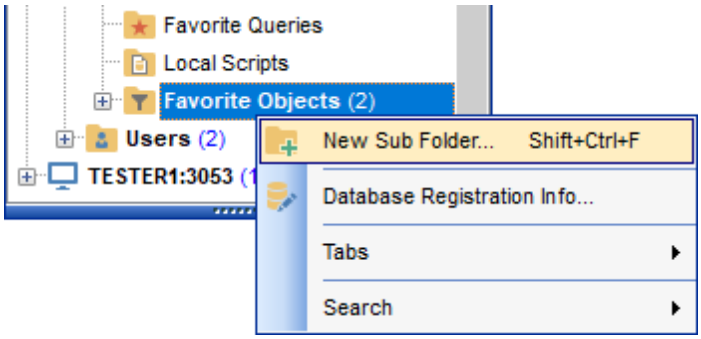
Environment Options 744

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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.

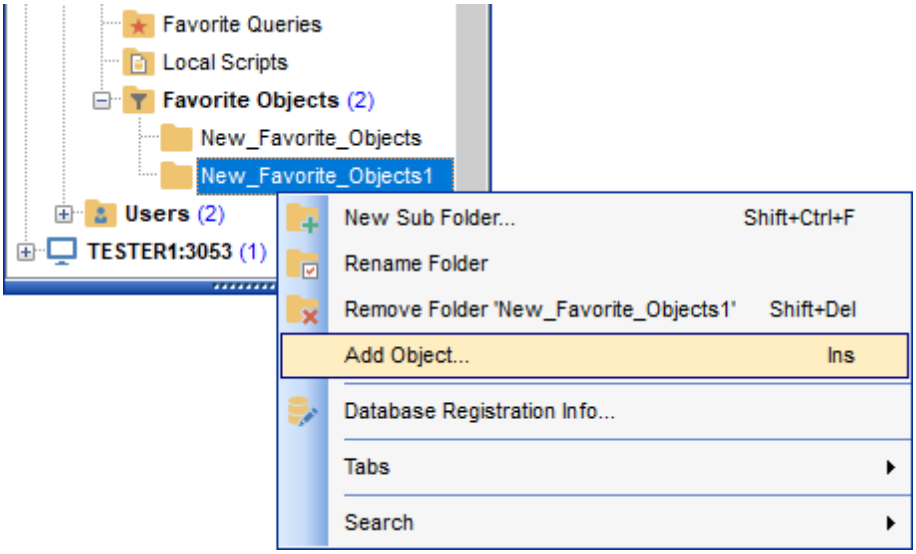
You can also create a separate tab for your project. See Using tabs for database navigation 73 section for details.



Creating favorite objects folders

In order to create a new folder:

- create a folder (if necessary, you can create subfolders inside the project folder) by right-clicking the **Projects** 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 folder:

- extent the **Favorite Objects** node in DB Explorer;
- drag an object (or multiple objects) from the database tree to the project folder

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or

- right-click the project folder and select the **Add Object...** context menu item, or use the *Ins* key;
- use the Select Object 939 dialog to specify objects to be added to the project folder.

Removing objects from the folder

In order to remove an object from the folder:

- right-click the object and select the **Remove <object_name> from Favorite Objects** context menu item, or use the *Shift+Ctrl+Del* shortcut 940;
- confirm removing in the dialog window.

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

See also:

Using tabs for database navigation 73

Select Object dialog 939

Database Objects Management 163

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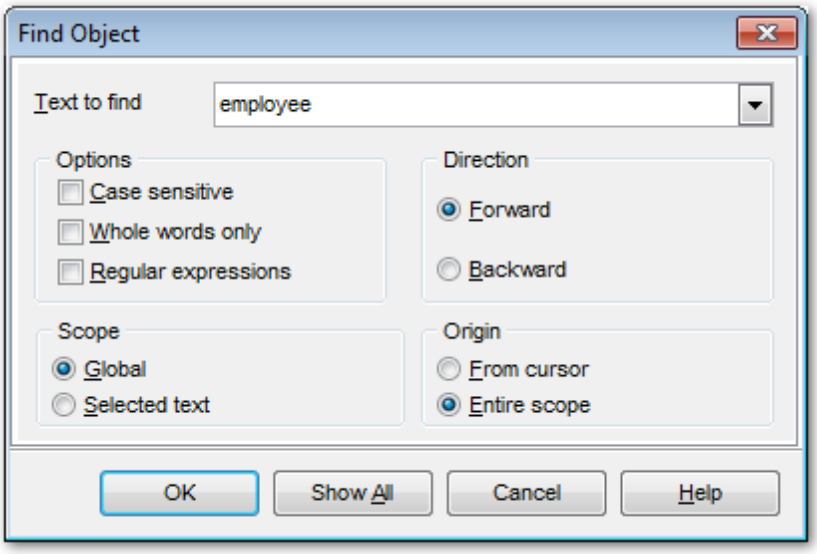
3.8 Searching within the tree

SQL Manager for InterBase/Firebird 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:

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 51 item, or use the ***Ctrl+F.***



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 909 page.

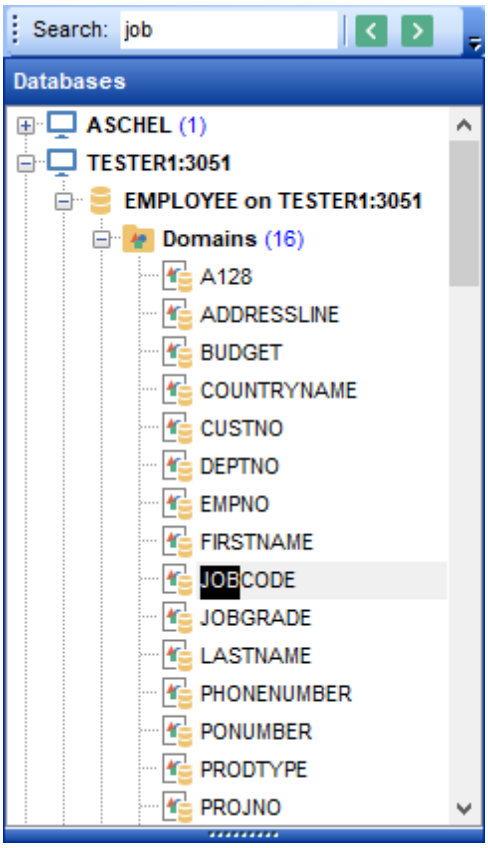
Note: You can specify whether the search will be performed within the entire tree or within the currently selected node only: toggle search mode using the **Search by categories** button on the Search Panel 82, or use the corresponding option available in the Tools | DB Explorer 753 section of the Environment Options 744 dialog.

Search Panel

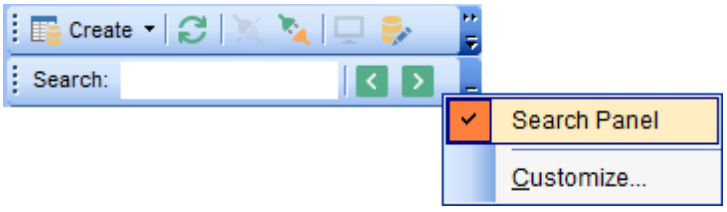
Type in the first letters in the edit-box, and the corresponding object will be highlighted in the tree, as displayed in the picture below. The buttons allow you to define the search direction. The button toggles searching by category. Use the **Start-with** button (available in customizing the toolbar) to search for the objects staring with the input text.

.

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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.



You can customize search options to your needs in Environment options 755.

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

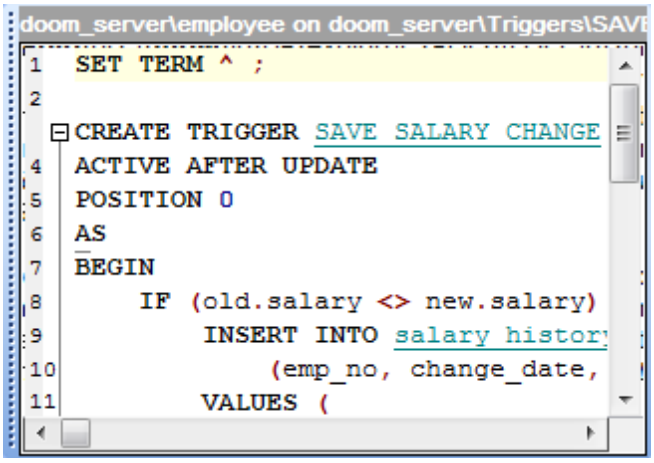
See also:

Find Text dialog 909

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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[163]. Depending on the current selection in DB Explorer, the SQL Assistant area displays additional information pertaining to the selected object.



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.

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. *fields* 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[83] 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 Fields*, *Show Primary Keys*, *Show Uniques*, *Show Foreign Keys*, *Show Checks*, *Show Indexes*, *Show Triggers*, *Show DDL*, *Show Description* (for tables); *Show Fields*, *Show Triggers*, *Show DDL*, *Show Description* (for views).

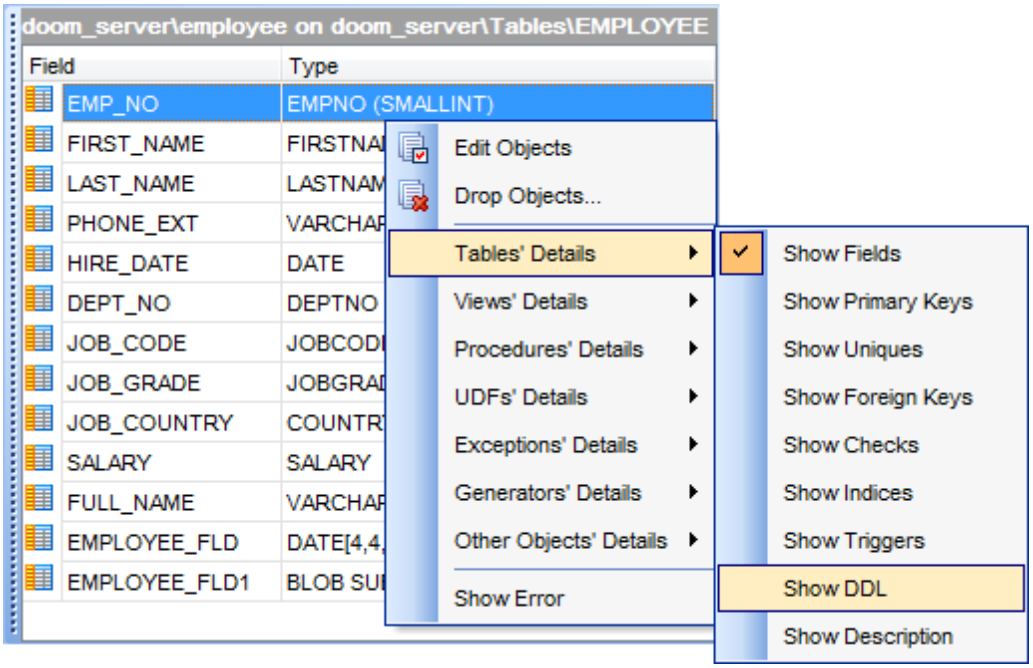
If you select a **procedure** or a **user-defined function** in DB Explorer, SQL Assistant lists its parameters by default. Use the **Procedure Details** / **UDF Details | Show...** context menu item within the SQL Assistant area to define the content of SQL Assistant when a procedure or a user-defined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

If you select an **exception** in DB Explorer, SQL Assistant lists its text by default. Use the **Exception Details** context menu item within the SQL Assistant area to define the content of SQL Assistant when an exception is selected in DB Explorer. Possible values are: *Show Text*, *Show DDL*, *Show Description*.

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If you select a **generator** in DB Explorer, SQL Assistant lists its value by default. Use the **Generator Details** context menu item within the SQL Assistant area to define the content of SQL Assistant when a generator is selected in DB Explorer. Possible values are: *Show Value*, *Show DDL*.

Selecting other objects in **DB Explorer** displays the DDL definition in **SQL Assistant** by 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[329] quickly. You can drag-and-drop object aliases to the Query Editor[331], Query Designer[348] or Execute Script Editor[544] working area, in the same way as this operation[69] is performed in **Database Explorer**.

See also:

Database Objects Management[163]

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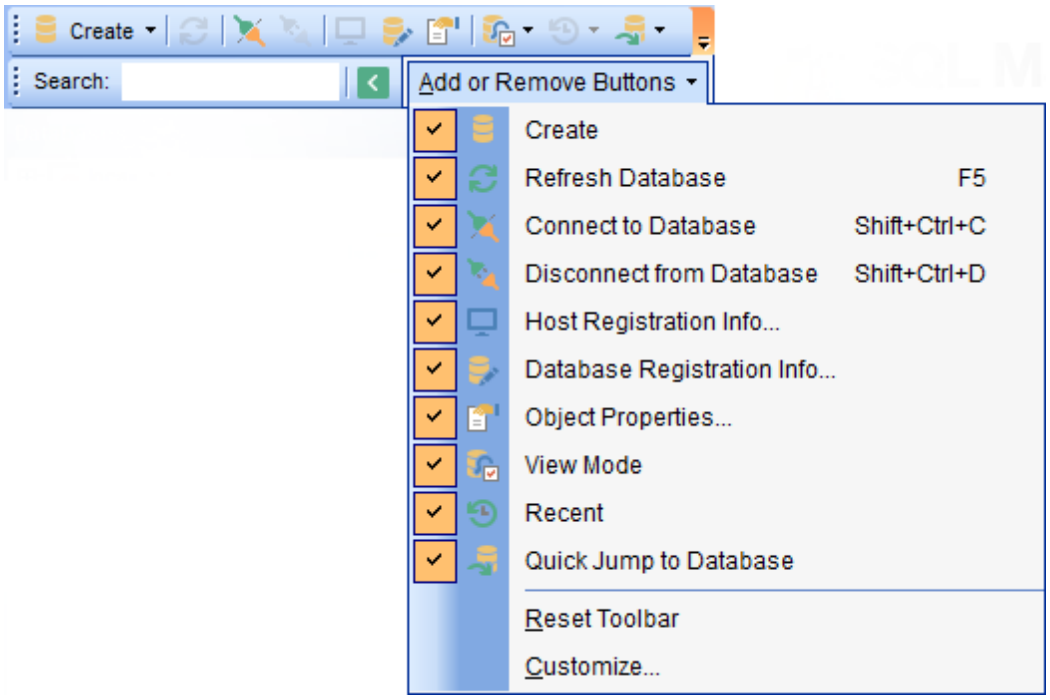
3.10 Configuring Database Explorer

Configuring DB Explorer toolbar

The toolbar[892] 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[163] a new object;
- refresh the current tree branch;
- connect[67] to a database;
- disconnect[88] from a database;
- view the selected object properties;
- configure Database Explorer using the View Mode[83] menu;
- view the list of recently opened objects[75];
- jump to any of registered databases quickly.

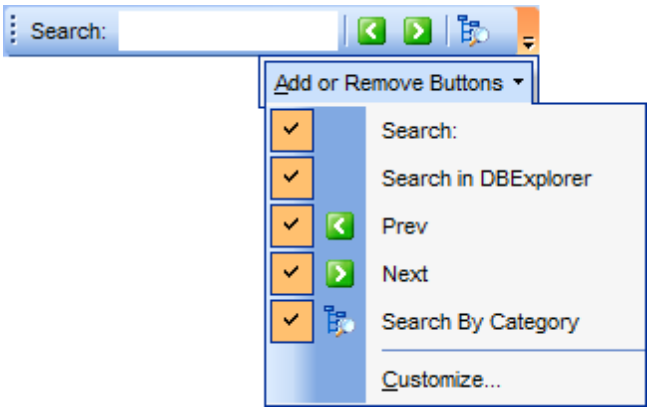
Click **More buttons...** on the right side of the toolbar and use the **Add or Remove Buttons** popup menu items to define the set of actions available in the toolbar. To customize[924] the toolbar, select the **Add or Remove Buttons | Customize...** item from the popup menu.



Configuring the Search Panel

Click **More buttons...** on the right side of the Search Panel[78] and use the **Add or Remove Buttons** popup menu items to define the set of the panel elements. To customize[924] the panel, select the **Add or Remove Buttons | Customize...** item from the popup menu.

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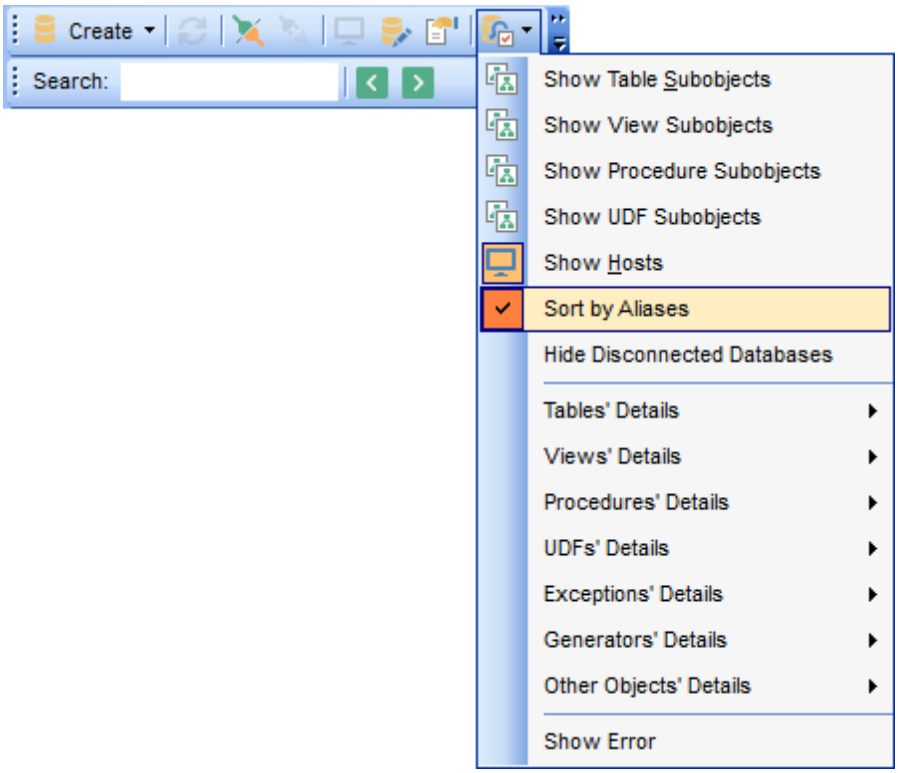
Using View Mode menu

Use the **View Mode** toolbar[82] 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[179];
- show/hide view subobjects as child nodes of views[243];
- show/hide procedure subobjects as child nodes of procedures[254];
- show/hide UDF subobjects as child nodes of UDFs[273];
- show/hide host nodes for registered databases[107];
- sort the list of databases by their aliases in the DB Explorer tree;
- show/hide disconnected databases[67];
- configure table/view/procedure/UDF/exception/generator/other objects' details for the SQL Assistant[80] area;
- show/hide error.

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Use the DB Explorer 753 section of the Environment Options 744 dialog (**Options | Environment Options...**) to see more options to configure **Database Explorer**.

See also:

Customize toolbars and menus 924

DB Explorer options 753

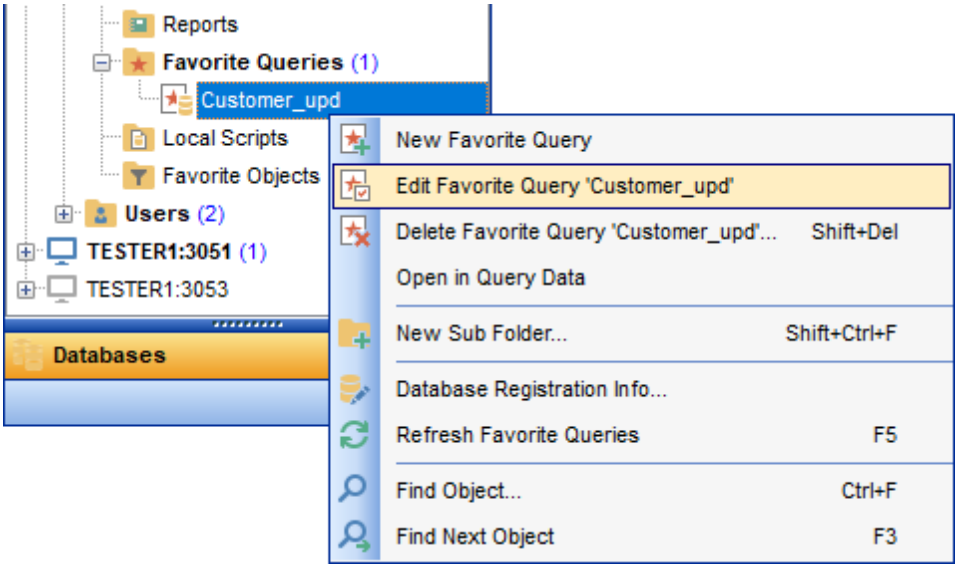
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3.11 Managing Favorite queries

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 346, open any of the existing queries in Query Editor 331 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 73 section for details.

See also:

Using tabs for database navigation 73

Favorites editor 346

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Part



4 Database Management

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

Registering Hosts

- select the **Database | Register Host...** main menu 890 item or use the corresponding **Register Host** toolbar 892 button

or

- right-click any host alias and select the **Register Host...** context menu 52 item in the DB Explorer 63 tree;
- set all the necessary options using Register Host wizard 90 which guides you through the entire process of host registration.

Unregistering Hosts

- select the host to unregister in the DB Explorer 63 tree;
- select the **Database | Unregister Host** main menu 890 item or use the corresponding **Unregister Host** toolbar 892 button

or

- right-click the host alias and select the **Unregister Host** context menu 52 item in the DB Explorer 63 tree;
- confirm unregistering in the corresponding dialog window.

Creating Databases

- select the **Database | Create Database** main menu 890 item or use the corresponding **Create Database** toolbar 892 button;
- set all the necessary options using Create Database wizard 100 which guides you through the entire process of creating a new database.

Dropping Databases

- select the database to drop in the DB Explorer 63 tree;
- select the **Database | Drop Database** main menu 890 item;
- confirm dropping in the corresponding dialog window.

Registering Databases

- select the **Database | Register Database...** main menu 890 item or use the corresponding **Register Database** toolbar 892 button

or

- right-click any database alias and select the **Register Database...** context menu 53 item in the DB Explorer 63 tree;
- set all the necessary options using Register Database wizard 107 which guides you through the entire process of database registration.

Unregistering Databases

- select the database to unregister in the DB Explorer 63 tree;
- select the **Database | Unregister Database** main menu 890 item or use the corresponding **Unregister Database** toolbar 892 button

or

- right-click the database alias and select the **Unregister Database** context menu 53

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item in the DB Explorer 63 tree;
- confirm unregistering in the corresponding dialog window.

Connecting to Hosts

- select the host to connect to in the DB Explorer 63 tree;
- select the **Database | Connect to Host** main menu 890 item or use the corresponding **Connect to Host** toolbar 892 button

or

- right-click the host and select the **Connect to Host** context menu 52 item in the DB Explorer 63 tree.

Disconnecting from Hosts

- select the host to disconnect from in the DB Explorer 63 tree;
- select the **Database | Disconnect from Host** main menu 890 item or use the corresponding **Disconnect from Host** toolbar 892 button

or

- right-click the host and select the **Disconnect from Host** context menu 52 item in the DB Explorer 63 tree.

Connecting to Databases

- select the database to connect to in the DB Explorer 63 tree;
- select the **Database | Connect to Database** main menu 890 item or use the corresponding **Connect to Database** toolbar 892 button

or

- right-click the database alias and select the **Connect to Database** context menu 53 item in the DB Explorer 63 tree.

Disconnecting from Databases

- select the database to disconnect from in the DB Explorer 63 tree;
- select the **Database | Disconnect from Database** main menu 890 item or use the corresponding **Disconnect from Database** toolbar 892 button

or

- right-click the database alias and select the **Disconnect from Database** context menu 53 item in the DB Explorer 63 tree.

Viewing and Editing Database Registration Info

- select the database or any of its objects in the DB Explorer 63 tree;
- select the **Database | Database Registration Info...** main menu 890 item

or

- right-click the database alias or any of its objects and select the **Database Registration Info...** context menu 53 item in the DB Explorer 63 tree.

Viewing and Editing Database Properties

- select the database in the DB Explorer 63 tree;
- right-click the database and select the **Database Properties...** context menu 53 item or use the corresponding **Properties** toolbar 892 button

Viewing and Editing Host Registration Info

- select the host in the DB Explorer 63 tree;
- select the **Database | Host Registration Info...** main menu 890 item

or

- right-click the host alias and select the **Host Registration Info...** context menu 52

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item in the DB Explorer 63 tree.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**Yes**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

See also:

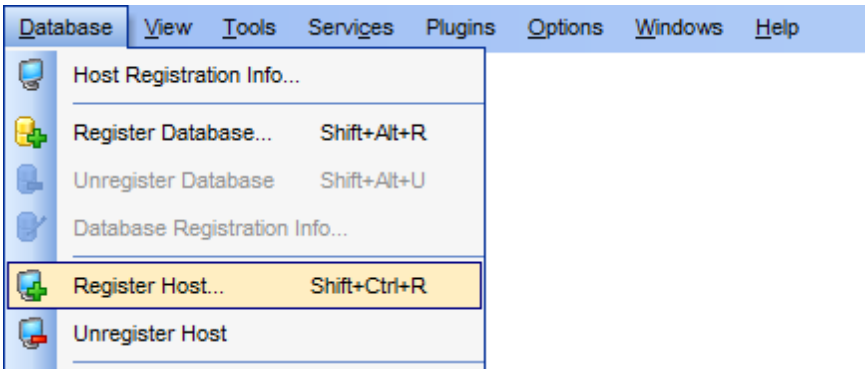
Getting Started 37
Database Explorer 63
Database Objects Management 163
Query Management Tools 329
Data Management 369
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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4.1 Register Host wizard

Register Host wizard allows you to register a host in **SQL Manager for InterBase/Firebird**.

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



- Setting connection parameters
- SSH tunneling parameters
- Setting specific options

See also:

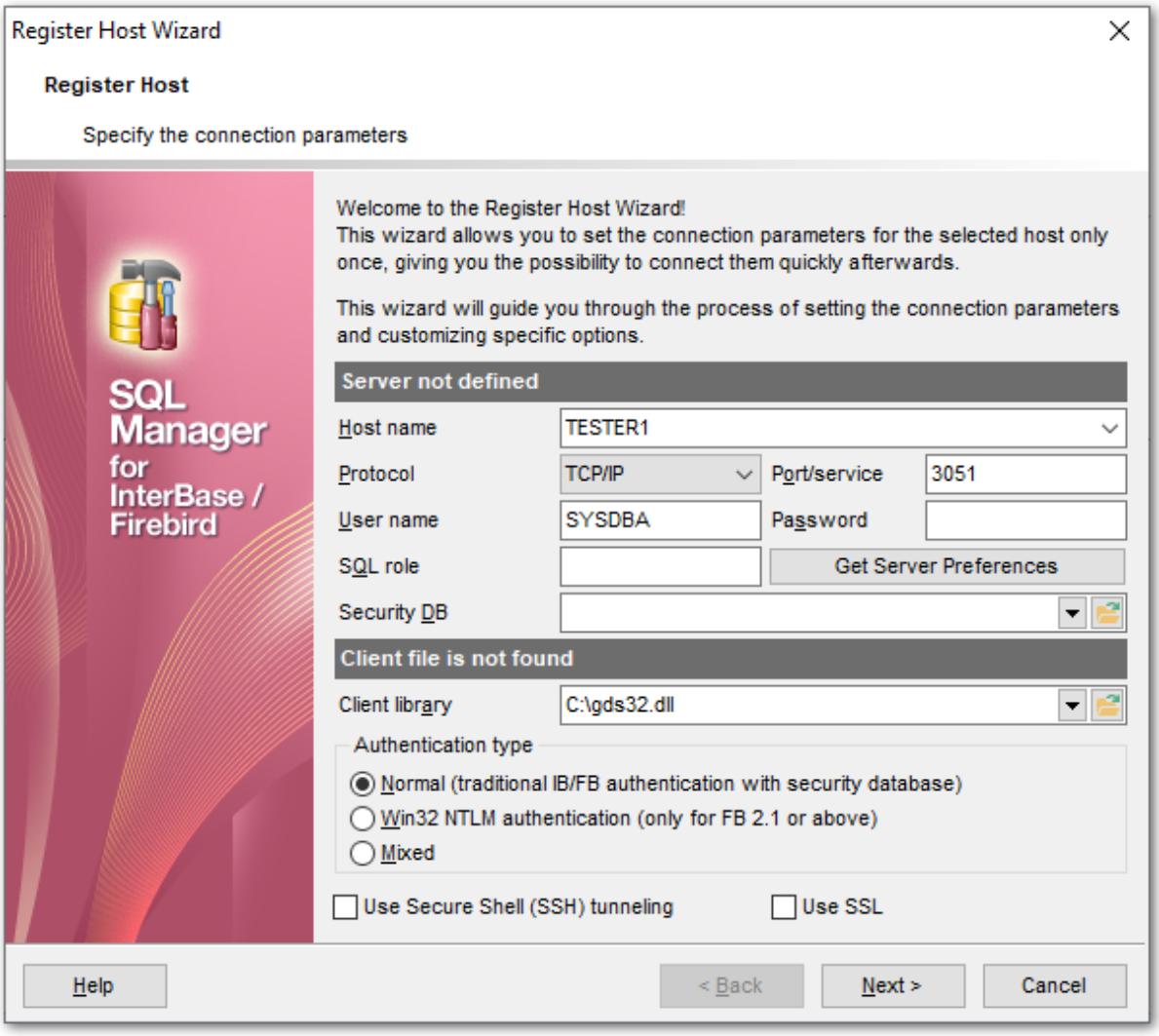
Register Database wizard

Host Registration Info

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4.1.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the new host using the controls available in the **Server** and **Client** areas.



Server
In this section you need to define connection parameters.

Host name
Type in, or use the drop-down list to specify the host name of the InterBase/Firebird server.

Protocol
Use the drop-down list to select the communication protocol to be used for the connection. Possible values are: *Local*, *TCP/IP*, *Novell SPX*, *NetBEUI*, *Embedded*.

Port/service
Use this field to specify a port or service to connect through. By default it is "gds_db" for InterBase and port 3050 for Firebird.

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Afterwards you must specify valid authorization info to access the target InterBase/ Firebird server: **User name** and **Password**.
The default superuser name is 'SYSDBA' with password 'masterkey'.

You can also define the user role in **SQL role** field.

Pressing the **Get Server Preferences** button allows the program to do the following actions automatically:

- get server version (when done the version will be displayed in the title of the section);
- define security database if possible (a few servers do not allow such an operation);
- detect client library according to the server version (also shows the version in the corresponding section title) from the following folders (from all successful results the program chooses the one that best corresponds to the server version):
  - the folder specified in the **Client Library** field;
  - the server home folder and subfolders (server must be local and home folder must be specified);
  - the root folder of **SQL Manager**;
  - the folders associated with the Path environment variable;
  - \Windows and \Windows\System32;
- set authentication type.

Note: This operation may take a few time if you are getting server preferences for the first time.

Security DB
Authorized InterBase/Firebird users are stored in a **security database**. Each InterBase/Firebird server has its own security database, which means that a user definition is bound to the server where it is stored. The security database also stores an encrypted password for each user.
Type in or use the  button to specify the path to the security database. The drop-down list contains the previously specified security databases.

Client
In this section you can specify the client settings.

Client library
Client library provides the conduit between the API or object library an application uses to communicate with the DB server and the networking protocols used to exchange data with the network.
Type in or use the  button to specify the path to the client library. For successful connection to the server it is crucial to use the appropriate client library - the one that is compatible with the server you are using: *gds32.dll* for InterBase and *fbclient.dll* for Firebird. Please note that the client library file must be located on your local machine (e.g. in the directory where the application is installed). The drop-down list contains the previously specified client libraries.
Hint: Automatic search for the library is performed upon pressing the **Get Server Preferences** button.

Authentication type
This group is only available in case you connect to Firebird 2.1 or higher. Specify the preferable type of server authentication to be used for the connection:

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Normal (traditional IB/FB authentication with security database)
The user must identify him/herself with a Firebird username and password, which the server checks against the security database. The Firebird security database is named *security2.fdb*. For user authentication it has a table named RDB$USERS that stores the new hashed passwords.

Win32 NTLM authentication (only FB 2.1 or above)
NTLM credentials are based on data obtained during the interactive Windows logon process. The user is automatically identified by his OS account name. In this case login name will consist of the server name that performed authentication and user name.

Mixed
The user either supplies a Firebird username and password, or is logged in with his OS account name.

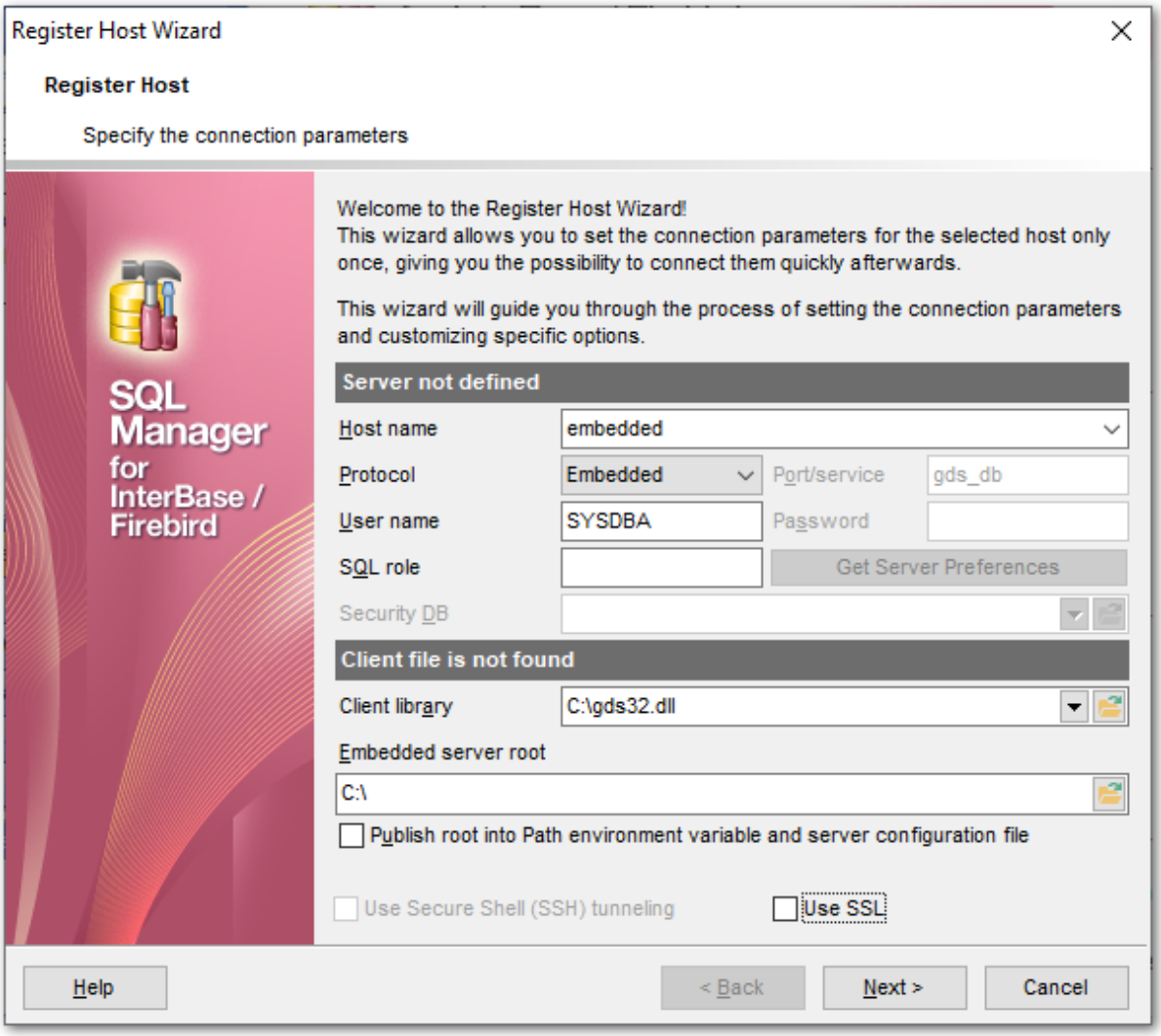
Note: In Firebird 2.1, if **Authentication type** is *Win32 NTLM* or *Mixed*, Windows administrators automatically receive SYSDBA privileges in all databases, including the security database.

Use Secure Shell (SSH) tunneling
Select this option to establish connection to an intermediate SSH server and forward all InterBase/Firebird commands through the secure tunnel.
If this option is checked, you should set tunneling parameters at the SSH tunneling parameters 96 step of the wizard.

Use SSL
Enable this option to connect via an encrypted channel.
If this option is checked, you should set tunneling parameters at the SSL parameters 97 step of the wizard.

If **Embedded** is selected in the **Protocol** drop-down list, you need to specify embedded server connection 719 properties.

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Host name
Type in, or use the drop-down list to specify the host name of the embedded server.

Client library
Type in or use the button to specify the path to the client library for the embedded server. The drop-down list contains the previously specified client libraries.

Firebird Embedded Server is intended to work with embedded databases. It consists of one *.*dll* file - *fbembed.dll*. This is a special client library that includes the server itself. When an application links to this library it loads the server and allows direct access to any database that is accessible on the local computer. This version of the server does not use a security database. The user name specified during the "logon" (no password authentication occurs) is used to manage user access to database objects (via SQL permissions) but if that user name is SYSDBA (or the owner of the database) then unrestricted access is possible.

Embedded server root
In Firebird 2.1 (and lower) the embedded server root is a directory where the executable

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file *fbguard.exe* is stored.
In Firebird 2.5 it is a directory that contains *fbembed.dll* file.

An embedded server locks a database file for its own exclusive use after successful connection. This means that you cannot access the same database from multiple embedded server processes simultaneously (or from any other servers, once an embedded server has locked the file).

☑ **Publish root into Path environment variable and server configuration file**
Select this option to add the path specified in the *Embedded server root* field to the 'Path' environment variable and server configuration file.

If you want to use the local utilities (eg, gbak.exe) then you need to rename the library fbembed.dll to fbclient.dll, and place utilities into the folder where embedded server libraries are located.

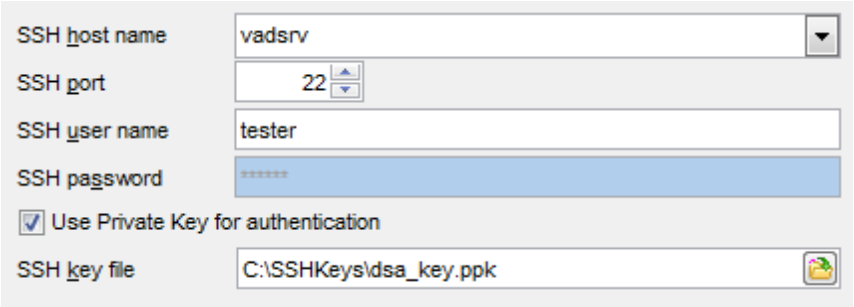
Click the **Next** button to proceed to Setting specific options 98 for the host being registered, to the SSH tunneling parameters 96 step of the wizard (if the **Use Secure Shell (SSH) tunneling** option is enabled for the host), or to the SSL parameters 97 step of the wizard (if the **Use SSL** option is enabled).

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4.1.2 SSH tunneling parameters

Use this step to set SSH tunneling parameters.

Note: This step is only available if the **Use Secure Shell (SSH) tunneling** option was selected at the previous 91 step.



Specify **SSH Host name**, **SSH port**, **SSH user name**, **SSH password**, the path to the **SSH key file** (if necessary) in the corresponding boxes.

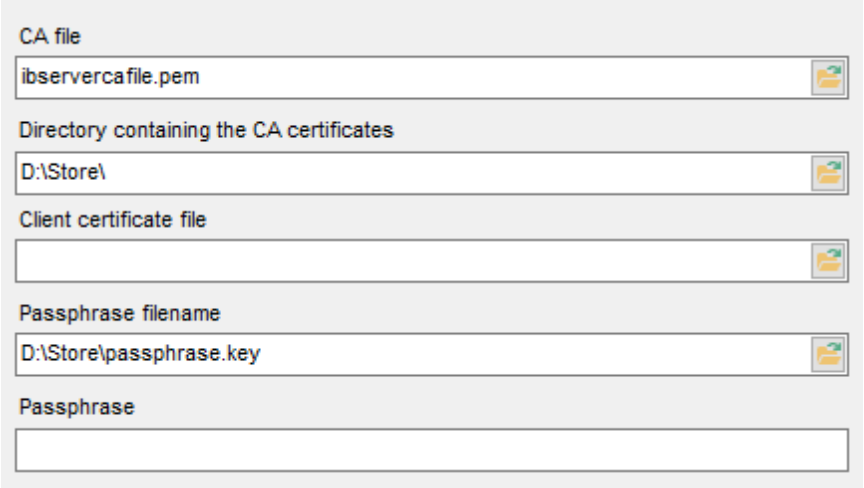
See SSH connection properties 928 for details.

Click the **Next** button to proceed to the Setting specific options 98 step of the wizard.

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4.1.3 SSL parameters

SSL preferences allows you to connect to the server via encrypted channel for increased security.



Client certificate
Set the full path to the SSL certificate on the client machine.

Passphrase file
Set the full path to the file containing the key passphrase.

Passphrase
Input passphrase password.

CA file
Specify the name of the certificate authority file.

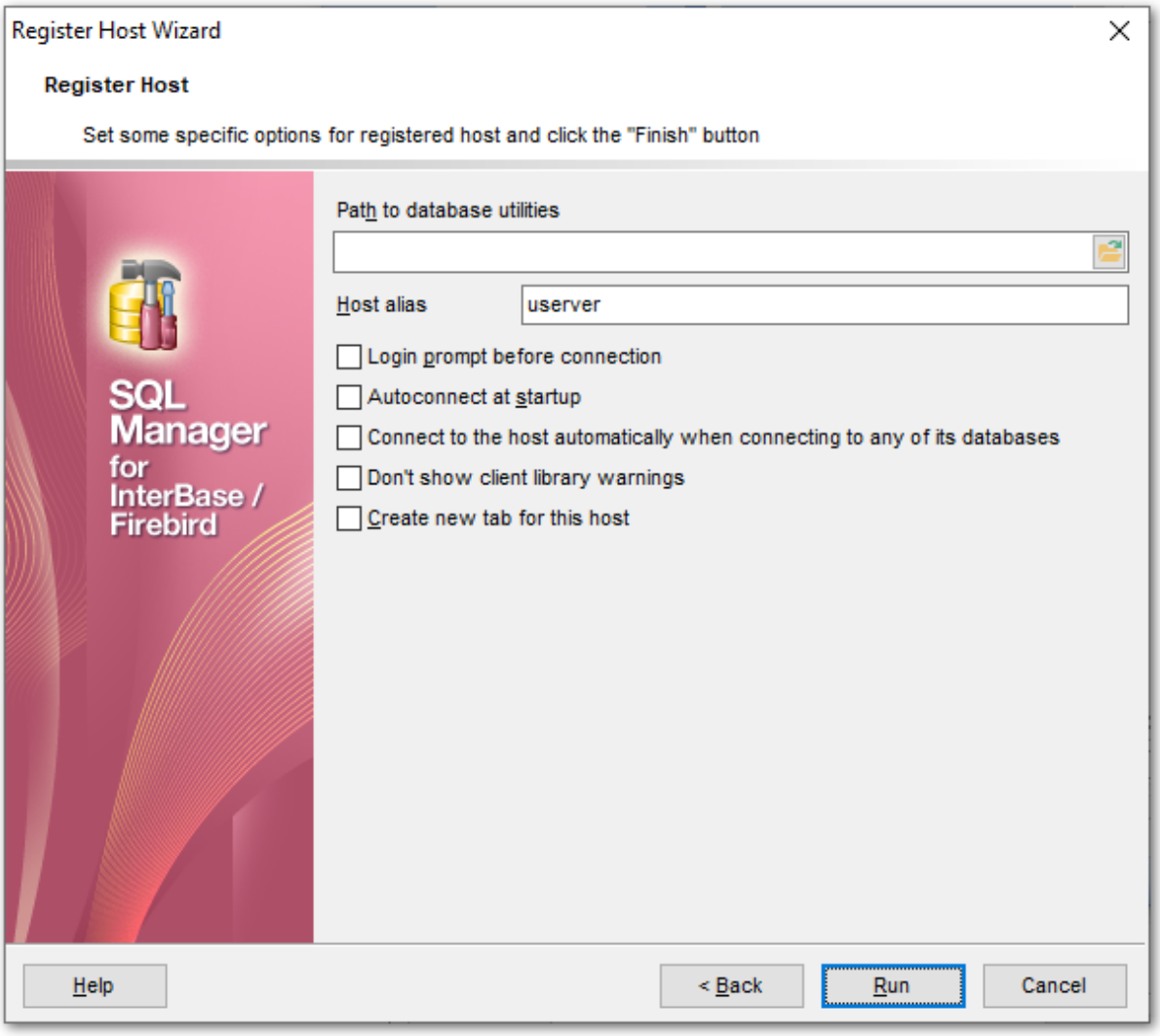
CA path
Set the path for the location of the certificate authority file.

Click the **Next** button to proceed to the Setting specific options 98 step of the wizard.

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4.1.4 Setting specific options

This step of the wizard allows you to set some **specific options** for the host being registered.



Path to database utilities
Type in or use the button to specify the path to InterBase/Firebird database utilities.

Host alias
Set the alias for the current host to be displayed in the DB Explorer.

Login prompt before connection
Enables **SQL Manager for InterBase/Firebird** to prompt 935 for user name and password each time you connect 67 to the host.

Autoconnect at startup
With this option set, connection to the registered host is established automatically at application startup.

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Connect to the host automatically when connecting to any its database
With this option set, the application connects to the host automatically when connection to any of its databases is established.

Don't show client library warnings
Turn this option on to skip the message of client library version incompatibility.

Create new tab for this host
If this option is checked, the host will be displayed within a separate tab 73 in DB Explorer 63.

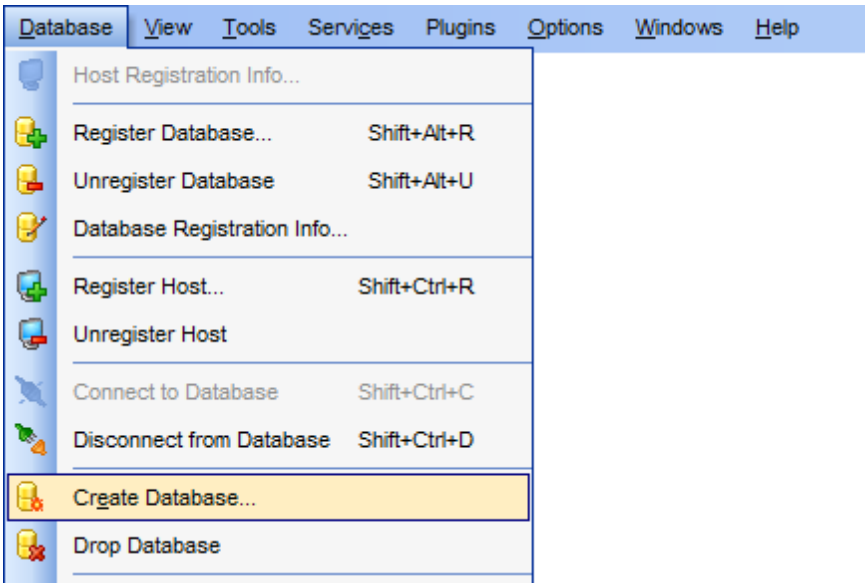
Click the **Finish** button when done to start working with the newly registered host in **SQL Manager for InterBase/Firebird**.

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4.2 Create Database wizard

Create Database wizard allows you to create a new database on your InterBase/Firebird host.

To start the wizard, select the **Database | Create Database...** main menu 890 item, or use the **Create Database** button on the main toolbar 892.



- Selecting host 101
- Specifying database parameters 103
- Defining database files 105
- Viewing result SQL statement 106

See also:

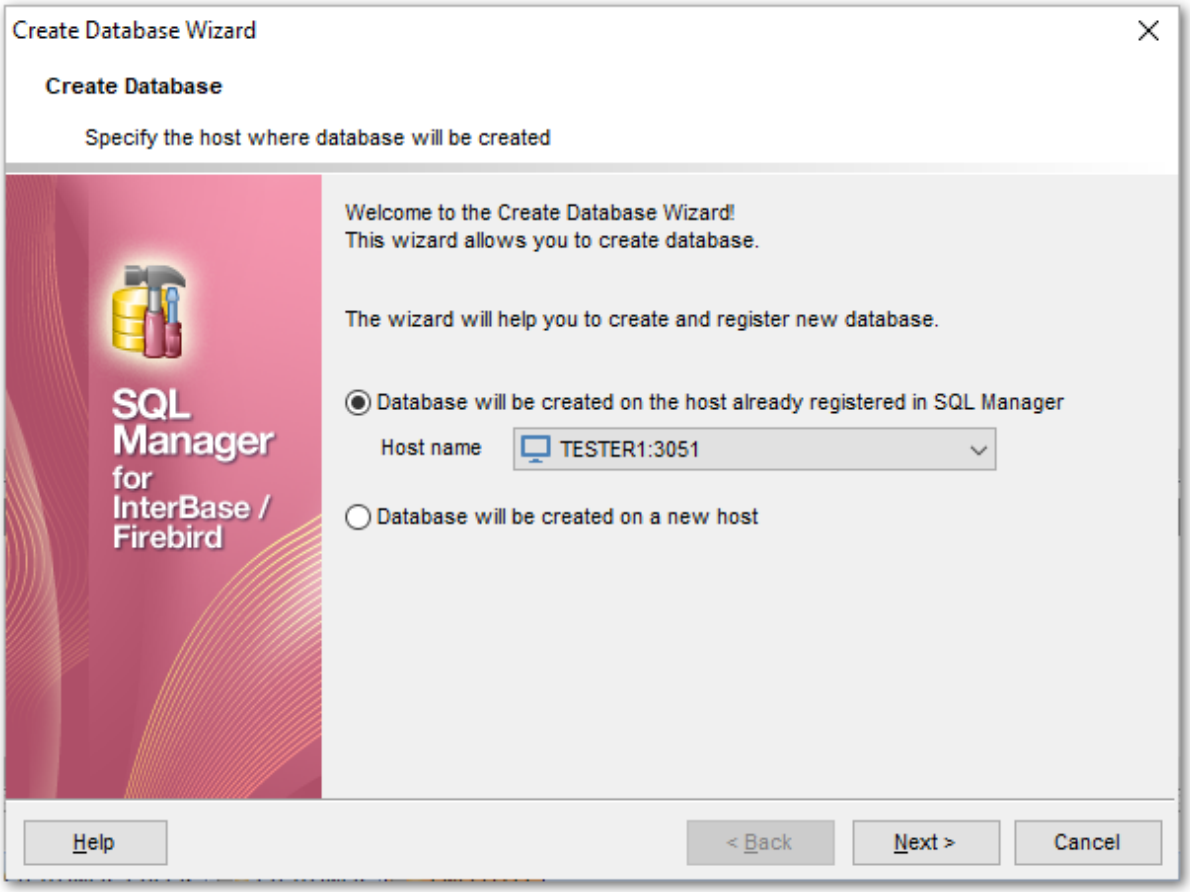
Register Database wizard 107
Database Registration Info 115
Database Properties 138

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4.2.1 Selecting host

Use this step of the wizard to select the host for the database to be created.

Switch to **Database will be created on a new host** if you need to register a new host and create a database. The database will be registered on this host.



Host name
Use the drop-down list of registered 87 hosts to select the one where the new database will reside.

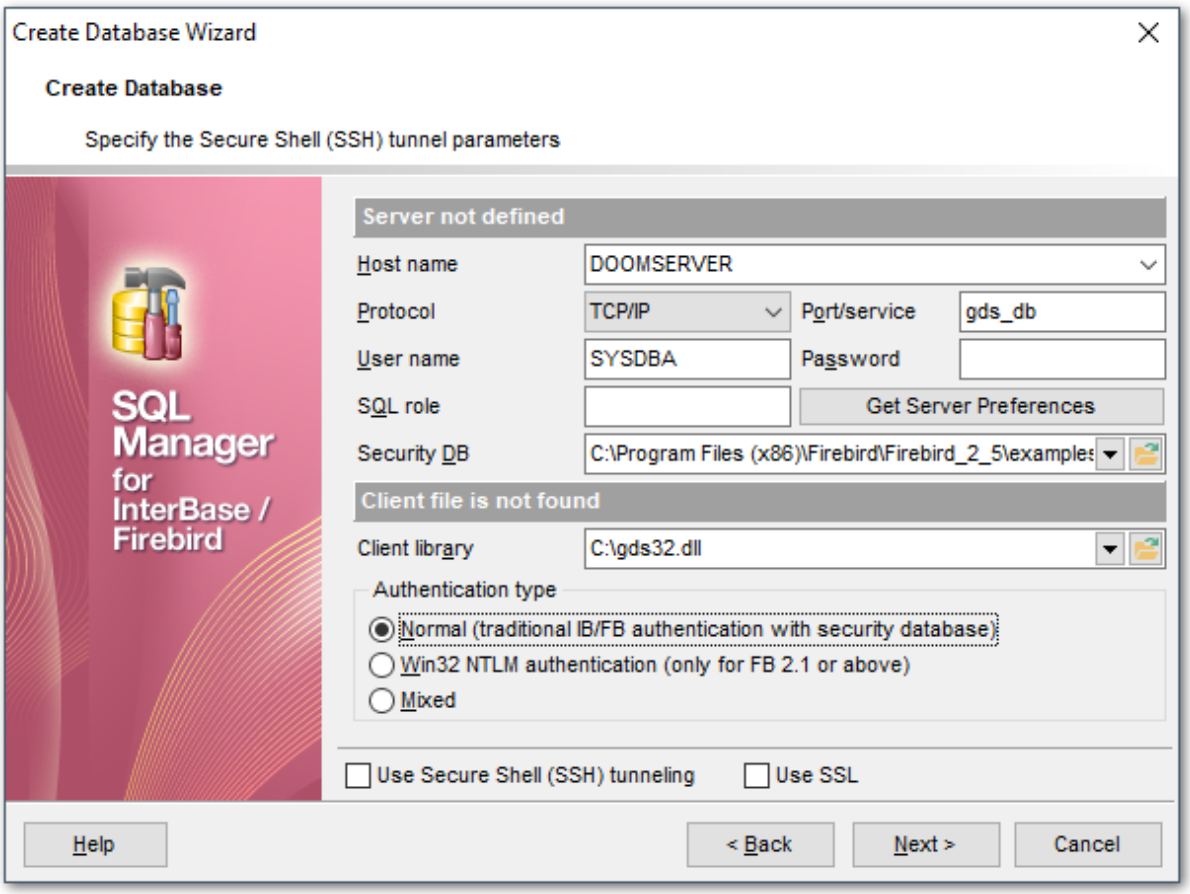
Click the **Next** button to proceed to the Setting connection properties 103 step of the wizard.

See also:
Register Host wizard 90

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4.2.2 Setting connection parameters

If at the first step you indicated that the server is not registered, then at the second step you will need to specify the connection parameters to the server.
Use this step of the wizard to set the necessary **connection parameters** for the database in the corresponding boxes.



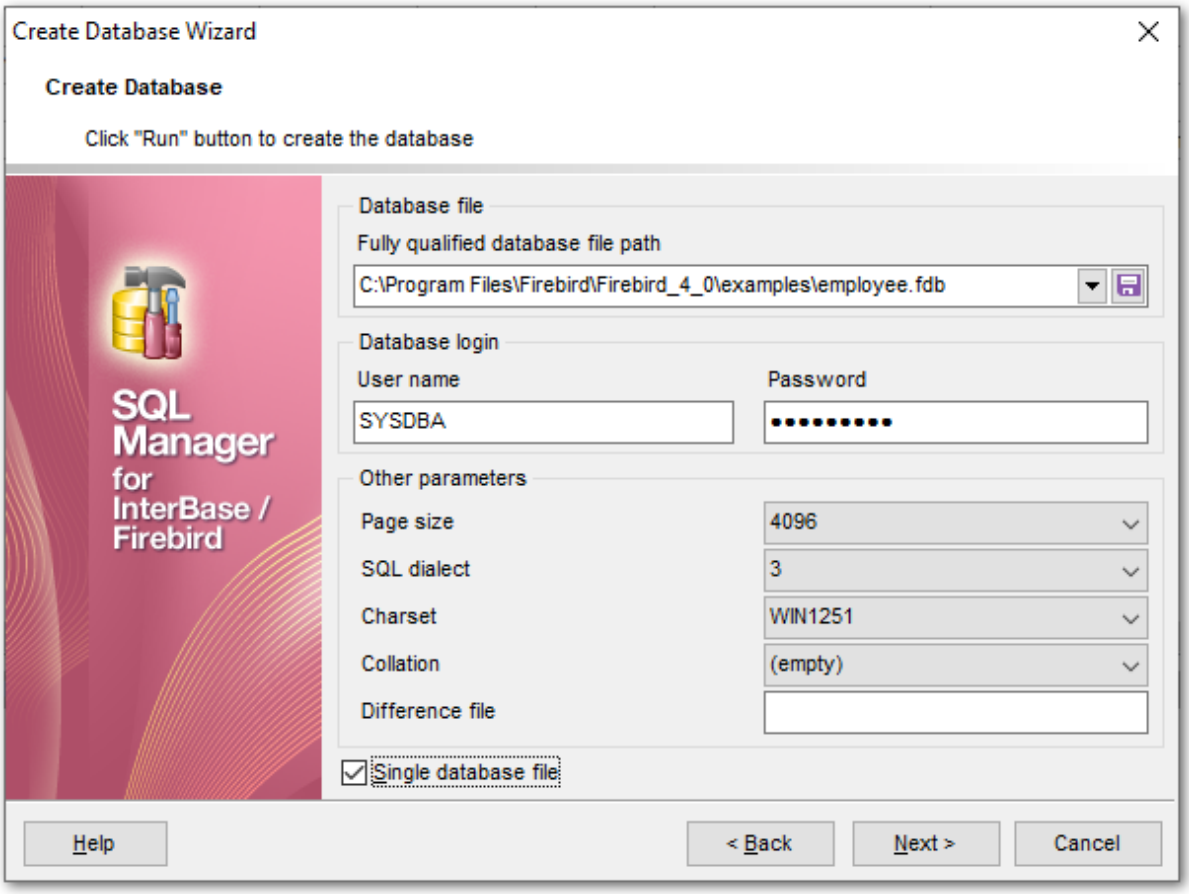
Set the server connection parameters and client configuration in the corresponding boxes: *host name*, *protocol*, *port/service*, *user name*, *password*, etc.
For more details refer to the Setting connection parameters 91 step of **Register Host wizard**.

When you are done, click the **Next** button to proceed to the Specifying database parameters 103 step of the wizard.

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4.2.3 Specifying database parameters

Use this step of the wizard to set the necessary **connection parameters** for the database being created.



Database file

Fully qualified database file path

This field requires new database file specification, including full name of the database file. Type in or use the button to specify the path to the database file. The drop-down list contains the previously specified paths.

Database login

User name

Specify a user[719] name (checked against valid user name and password combinations in the security database[719] on the server where the database will reside).

Password

Specify the password (checked against valid user name and password combinations in the security database[719] on the server where the database will reside).

Other parameters

Page size

Size (in *bytes*) for database pages. Possible values are *1024*, *2048*, *4096* (default), or

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8192.

SQL dialect
Declares the SQL Dialect for database access.

SQL dialect	Used for
1	InterBase 5.5 and earlier compatibility
3	InterBase 6.0; allows you to use delimited identifiers, exact numerics, and DATE, TIME, and TIMESTAMP datatypes

Charset
Use the drop-down list to select the default character set for the database, i.e. the character set used by the server for string (CHAR, VARCHAR, text Blob) columns in the database when no other character set information is provided.

Collation
Select the appropriate sorting option in this list.

Difference file
Optional clause specifying the path and name for the file delta that stores any mutations to the database file after it has been switched to the "copy-safe" mode.

☑ **Single database file**
If you want to store your new database in several files, uncheck this option. By default this option is checked, it means that the database is stored in one file only.

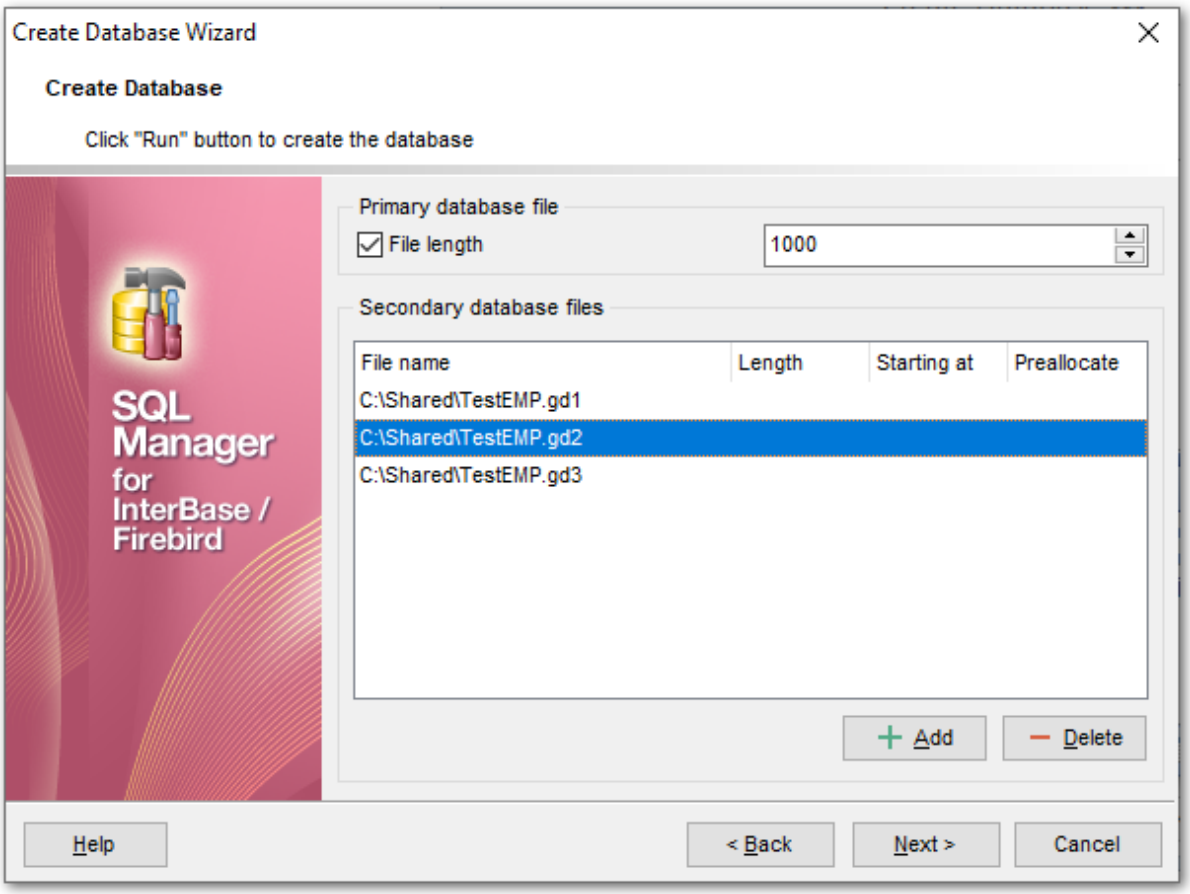
Click the **Next** button to proceed to the Defining database files 105 step of the wizard, or to the Viewing result SQL statement 106 step, depending on the **Single database file** option selection.

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4.2.4 Defining database files

Specify the parameters of the database single and secondary files.

Note: This step is skipped if you checked the ☑ **Single Database File** option on the previous step.



Primary database file

☑ **File length**

Enable this option to set the length of the primary database file (the file defined at the previous step[103]). This number indicates when the new database file will be started.

Secondary database files

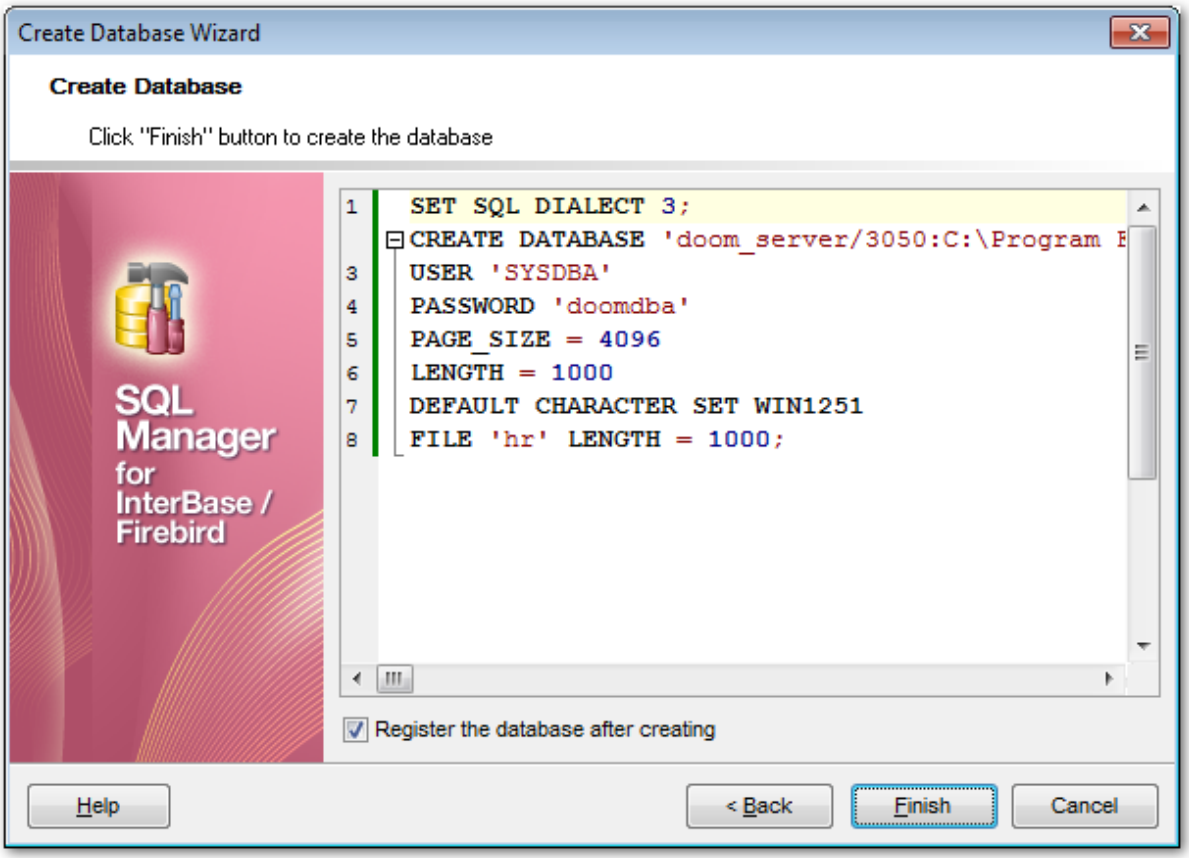
This group allows you to define one or more secondary database files.
Click the ***Add*** button to add a new file, input its name in the **File name** field, set its length (**secondary file length** indicates where the next file will be started), or the **starting at** value (if you haven't set the previous file length) and click the **Add** button. The file is added to the file list.

Click the **Next** button to proceed to Viewing result SQL statement[106].

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4.2.5 Viewing result SQL statement

View the result *CREATE DATABASE* statement issued for the new database creation. For more information see Compile window 906.



If the ☑ **Register the database after creating** option is checked, the Database Registration Info 115 dialog will appear.

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4.3 Register Database wizard

Register Database Wizard allows you to register a single database.

To start the wizard, select the **Database | Register Database...** main menu 890 item, or use the **Register Database** button on the main toolbar 892. You can also use the *Shift+Alt+R* shortcut 940 for the same purpose.

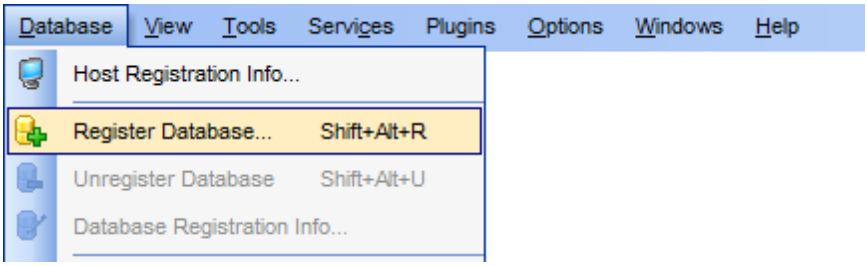
- Selecting host 108

Database is located on a registered host:

- Setting connection parameters 109

Database is located on a new host:

- Setting connection parameters 111
- Setting specific options 112



See also:

Create Database wizard 100

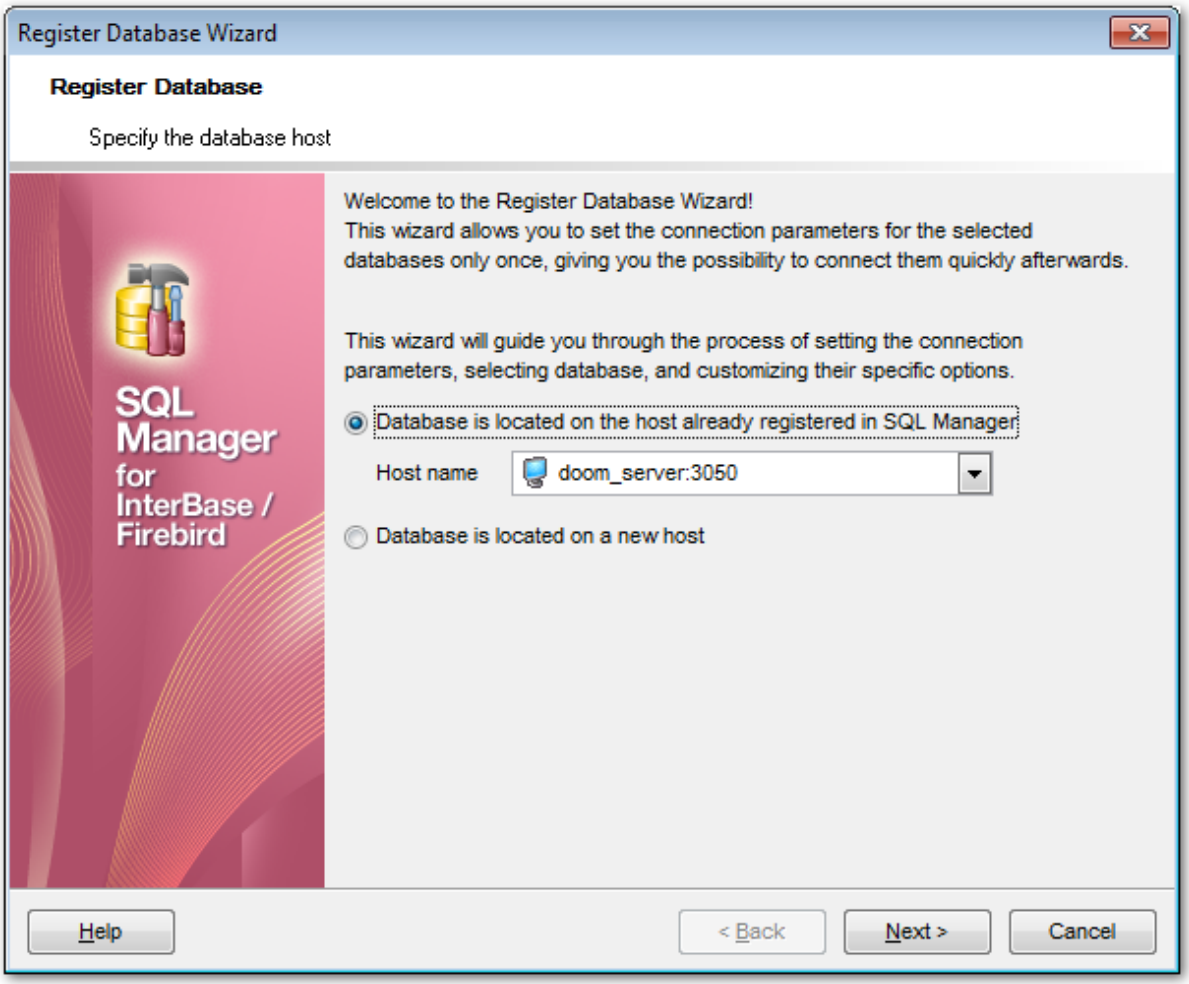
Database Registration Info 115

Database Properties 138

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4.3.1 Selecting host

At this step you need to select the **host** on which the database is located: choose whether the database to be registered is located on a *host already registered* in **SQL Manager**, or whether a *new host* should be registered for the database in the application.



Database is located on the host already registered in SQL Manager
This option indicates that the database being registered resides on a registered 90 host. Use the **Host name** drop-down list to select the required host.

Database is located on new host
This option indicates that the database being registered resides on a non-registered host.

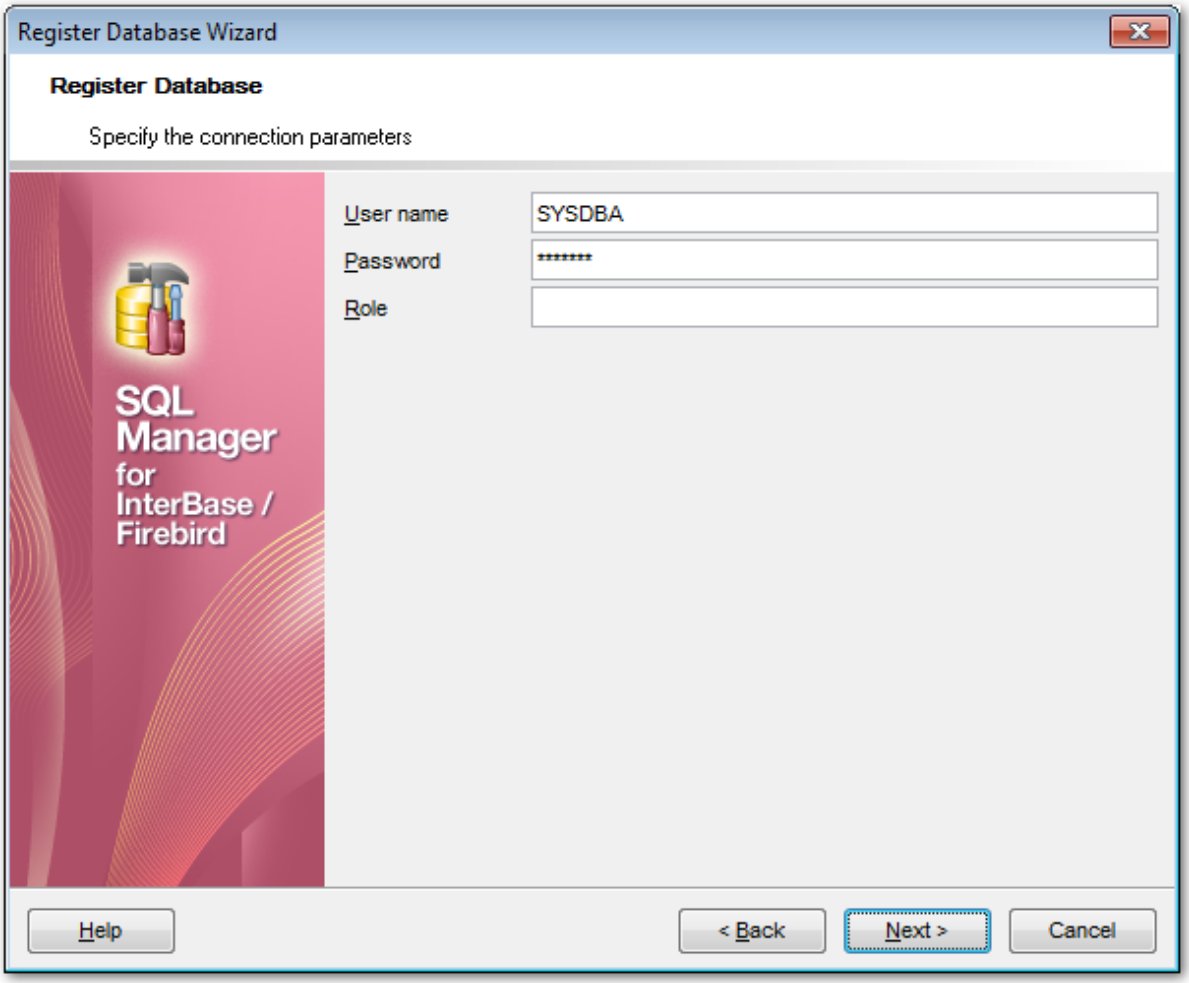
Click the **Next** button to proceed to setting connection parameters 109 for database on a registered host, or to setting connection parameters 111 for database on a new host, depending on your selection at this step.

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4.3.2 Database on a registered host

4.3.2.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the database in the corresponding boxes.



User name
Checks the user[719] name against valid user name and password combinations in the security database[719] on the server where the database resides.

Password
Checks the password against valid user name and password combinations in the security database[719] on the server where the database resides.

Role
Specify the SQL role[719] that you adopt on connection to the database. You must have previously been granted membership[733] in the role to gain the privileges of that role.

For more details see the Setting connection parameters[91] step of **Register Host wizard**.

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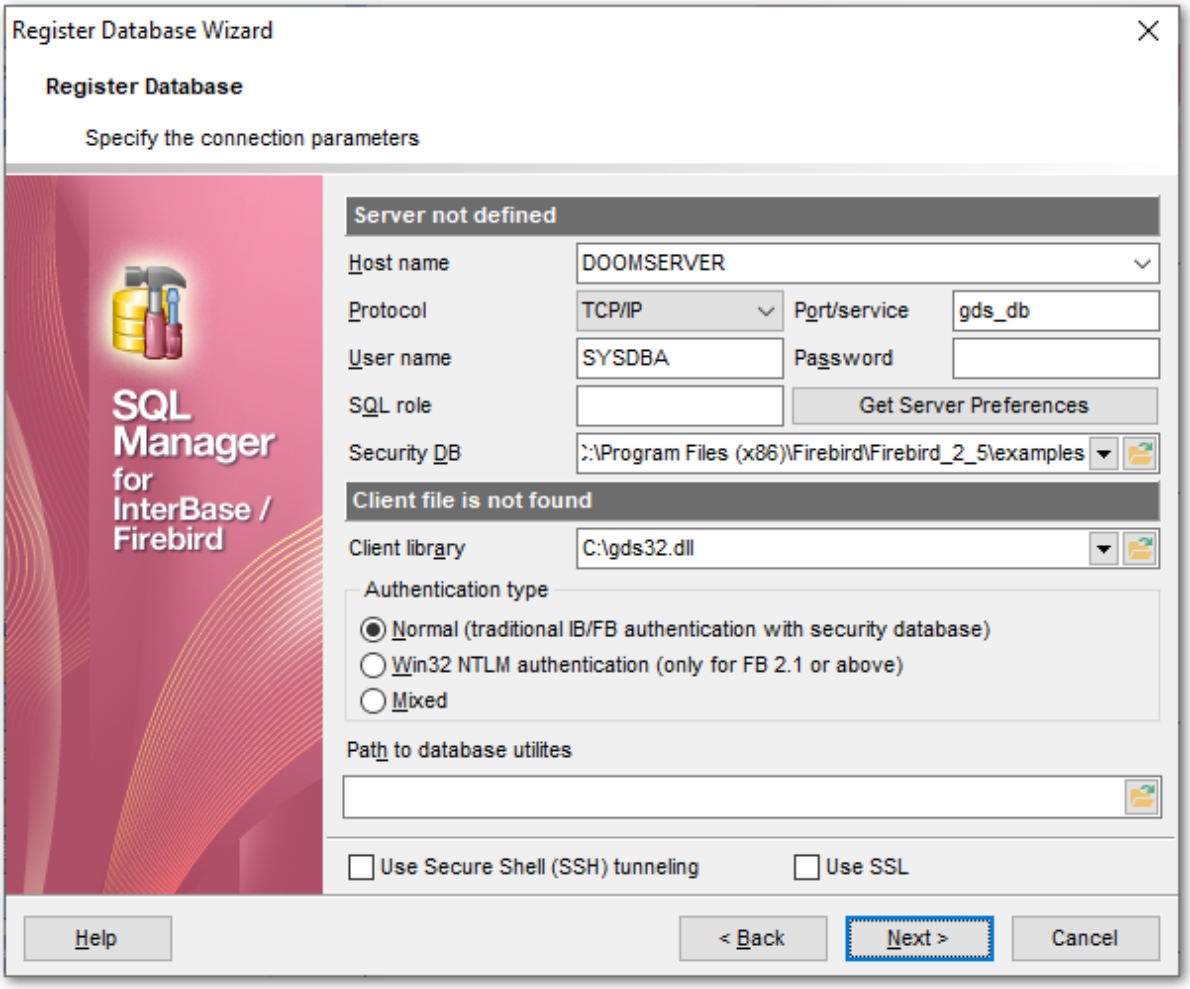
When you are done, click the **Next** button to proceed to the Setting specific options 112 step of the wizard.

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4.3.3 Database on a new host

4.3.3.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the database in the corresponding boxes.



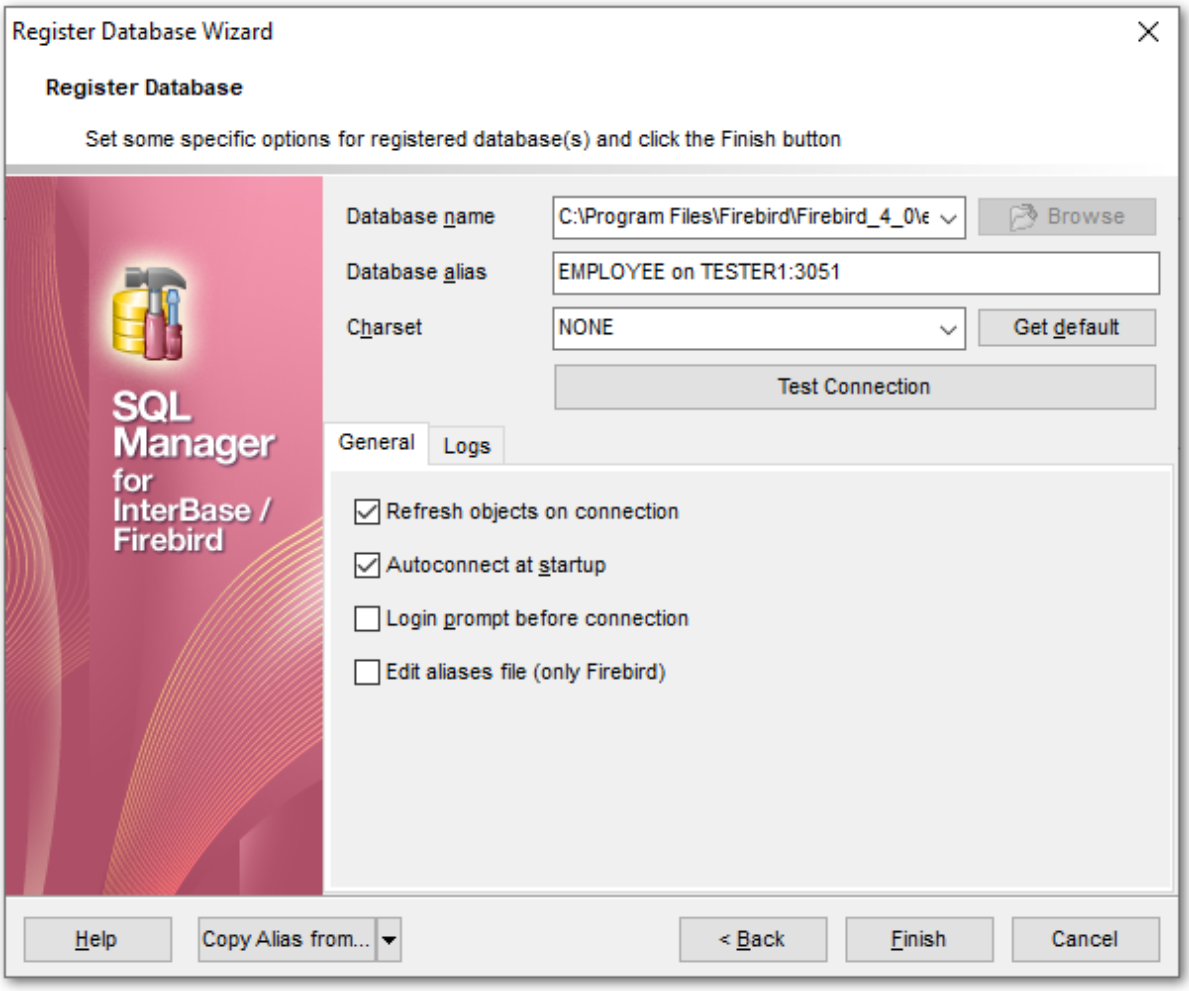
Set the server connection parameters and client configuration in the corresponding boxes: *host name*, *protocol*, *port/service*, *user name*, *password*, etc.
For more details refer to the Setting connection parameters[91] step of **Register Host wizard**.

When you are done, click the **Next** button to proceed to the Setting specific options[112] step of the wizard.

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4.3.4 Setting specific options

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



Database name
Type in or use the **Browse** button to specify the path to the database file (**.gdb*, **.ib* for InterBase or **.fdb* for Firebird). The drop-down list contains the previously specified paths.

Database alias
Enter the alias to be used to display the database in DB Explorer 63 and **SQL Manager** tools. By default, a database alias generated by the application has the following format: *<database_name> on <host_name_or_address>[:<port>]*

Charset
Specify an active character set to use for subsequent database attachments. The **Get default** button applies the default character set which was specified on creation 87 of the database.

Click **Test Connection** to check availability of the database at the moment. If connection

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is successful, you will get the *'Connected!'* message; otherwise an error message will be returned.

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

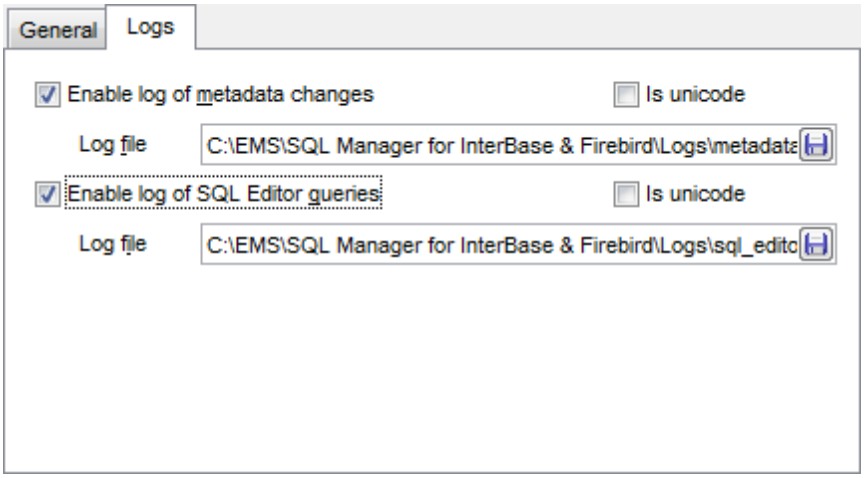
Font charset
Specify the character set to be used to display data in the grid 374.

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.

Autoconnect at startup
With this option set, connection 67 to the registered database is established automatically at application startup.

Login prompt before connection
Enables **SQL Manager for InterBase/Firebird** to prompt 935 for user name and password each time you connect 67 to the database.

Edit aliases file (only Firebird)
This option allows editing local Firebird server aliases file.



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 Editor 331 queries in a file.

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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.

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

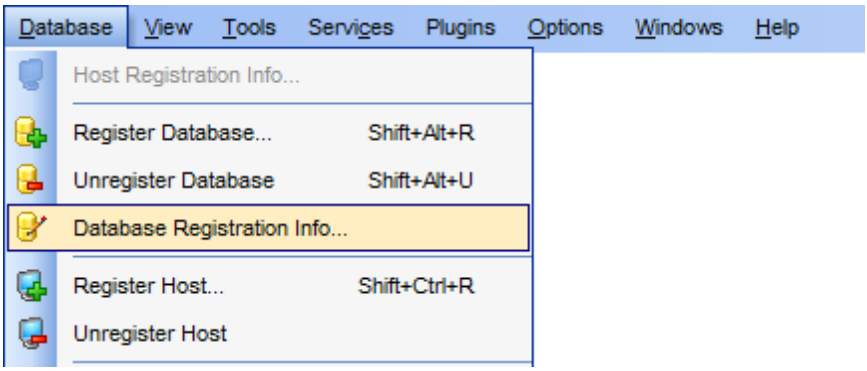
Click the **Finish** button when done to start working with the newly registered database in **SQL Manager for InterBase/Firebird**.

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4.4 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 63 tree, then select the **Database | Database Registration Info...** main menu 890 item, or right-click the database alias in DB Explorer 63 and use the **Database Registration Info...** context menu item. You can also use the **Database Registration Info...** button on the main toolbar 892.



- Editing connection properties 116
- Setting common database options 118
- Setting display options 120
- Setting options for system objects 122
- Setting grid and data options 124
- Defining transactions 129
- Defining events 131
- Setting default directories 133
- Setting log options 134
- Find Option 136

See also:

Register Database wizard 107

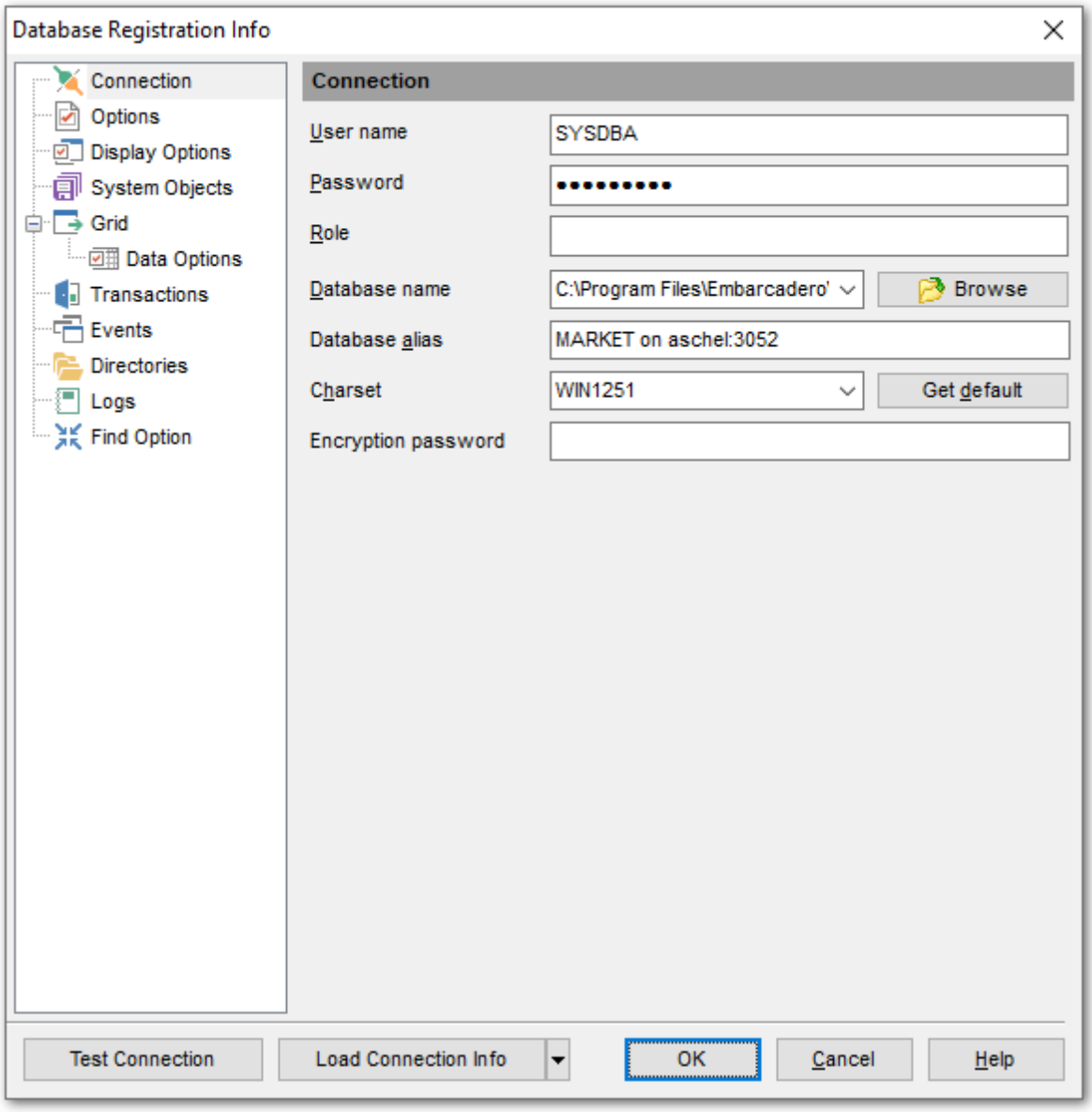
Create Database wizard 100

Database Properties 138

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4.4.1 Connection

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



User name
If necessary, edit the user[719] name used to access the database.

Password
If necessary, edit the password used to authenticate the user.

Role
Specify the SQL role[719] that you adopt on connection to the database. You must have previously been granted membership[733] in the role to gain the privileges of that role.

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Database name
Type in or use the **Browse** button to specify the path to the database file (*.gdb, *.ib for InterBase or *.fdb for Firebird). The drop-down list contains the previously specified paths.

Database alias
Enter the alias to be used to display the database in DB Explorer 63 and **SQL Manager** tools. By default, a database alias generated by the application has the following format: *<database_name> on <host_name_or_address>[:<port>]*

Charset
Specify an active character set to use for subsequent database attachments. The **Get default** button applies the default character set which was specified on creation 87 of the database.

Encryption password
Allows to connect to the InterBase server databases using System Encryption Password.

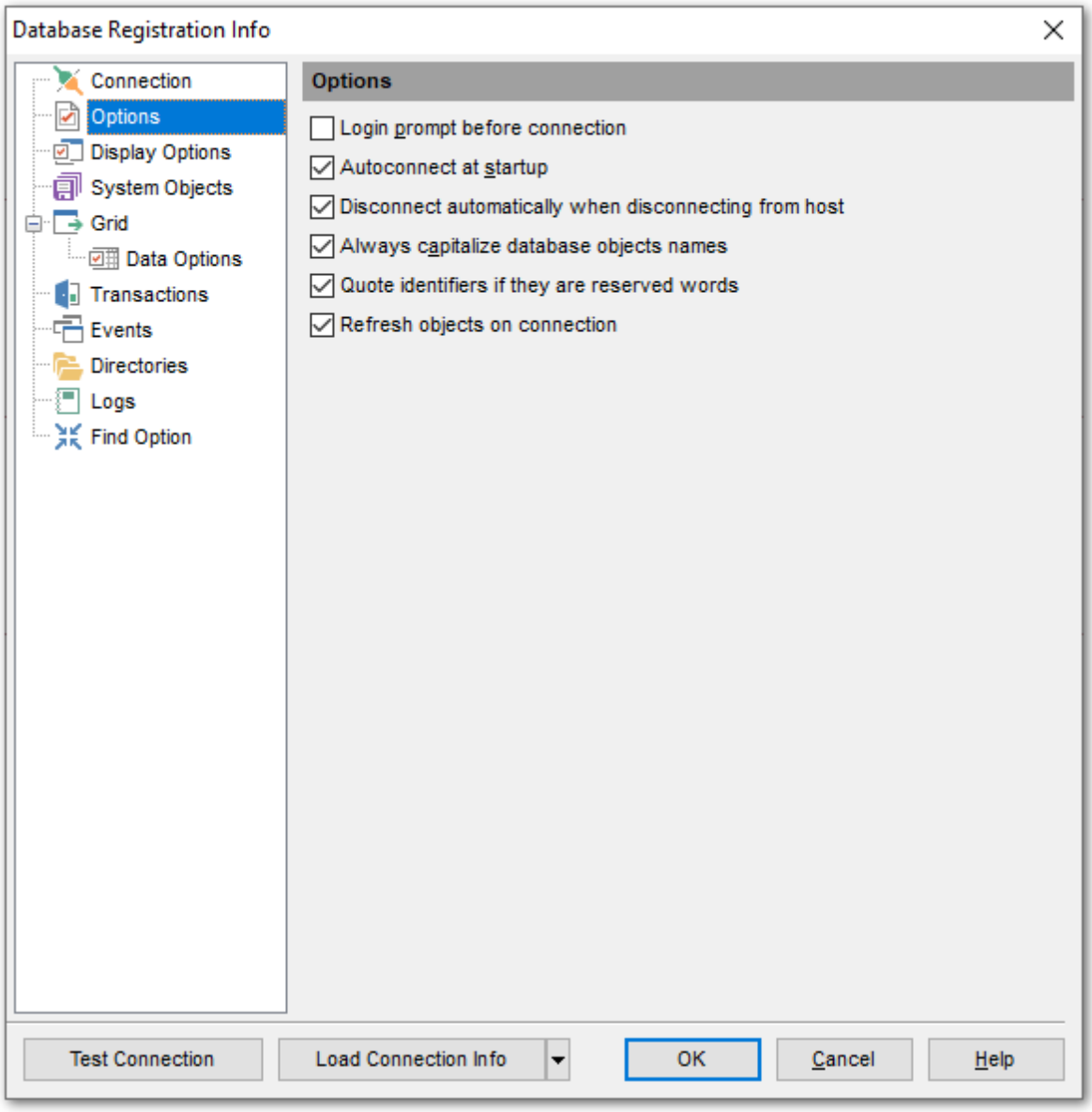
Once you have specified the connection properties, you can check whether it is possible to establish connection to the database: click the **Test Connect** button for this purpose. If connection is successful, you will get the *'Connected!'* message; otherwise an error message will be returned.

The **Load Connection Info** menu allows you to select the alias of a previously registered database and use it for the newly created/configured database.

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4.4.2 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 InterBase/Firebird** to prompt 935 for user name and password each time you connect 67 to the database.

Autoconnect at startup
Check this option to specify that **SQL Manager for InterBase/Firebird** automatically

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establishes connection to the registered database at application startup.

Disconnect automatically when disconnecting from host
When this option is enabled, the application disconnects from the database automatically upon disconnection from the host.

Always Capitalize database object names
If this option checked, **SQL Manager for InterBase/Firebird** automatically capitalizes all database object names. Recommended for working with InterBase 5.x.

Quote identifiers if they are reserved words
If this option is checked, then the quotation marks are added automatically to all the identifiers, spelled as InterBase reserved words.

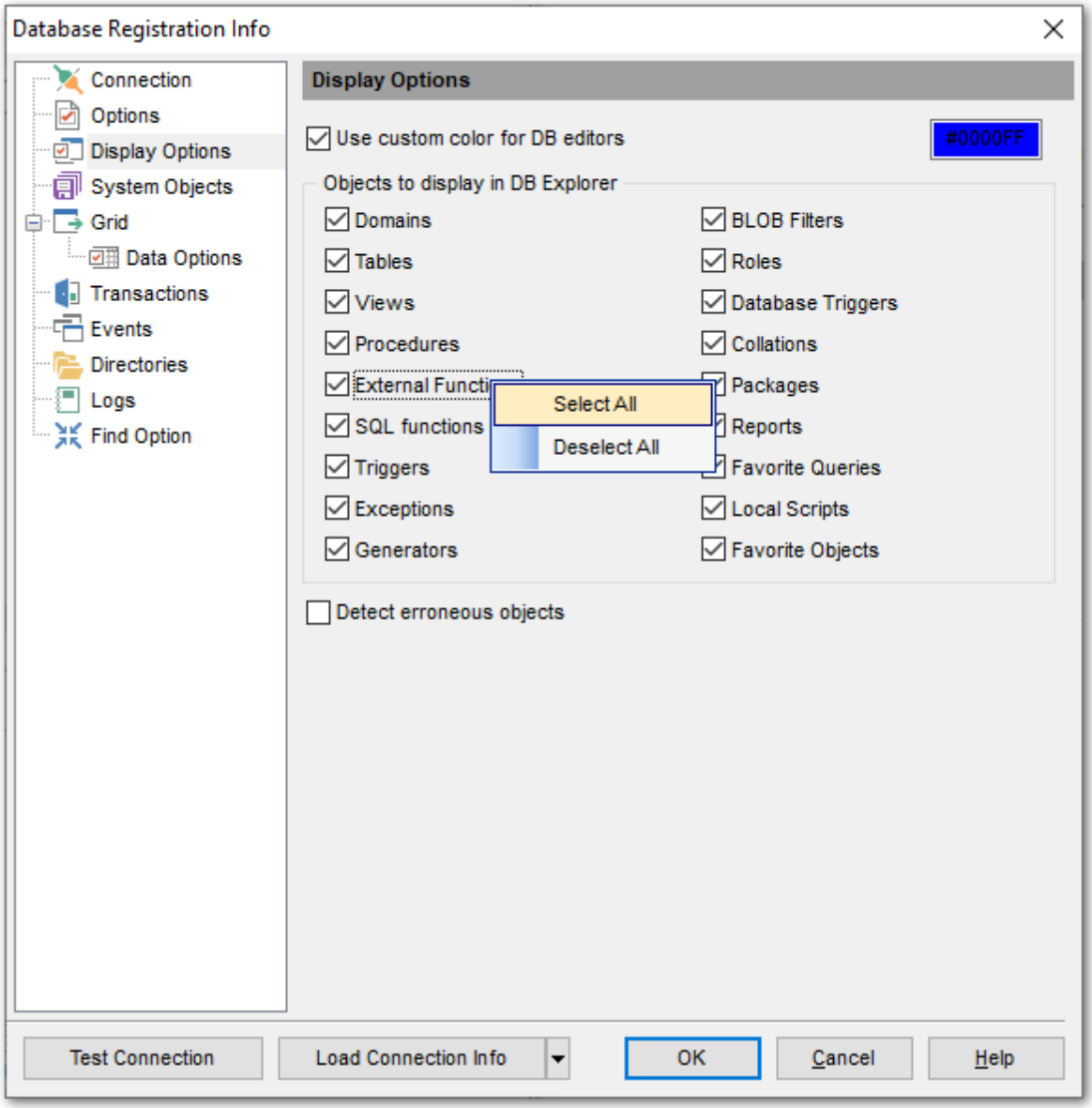
Refresh objects on connection
This option allows you to enable/disable refreshing objects on connection to the database. It is highly recommended to uncheck this option if your database contains many objects or if connection to the database is slow.

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4.4.3 Display options

The **Display Options** section of the **Database Registration Info** dialog allows you to specify which objects[163] will be displayed in the Database Explorer[63] tree.

Use custom color for DB editors
With this option checked the text color for editor tabs is black. To apply user font color uncheck 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.

Detect erroneous objects
If this option is selected, invalid objects are detected in the process of database navigation[46] and marked out with a red cross in DB Explorer[63].

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See also:

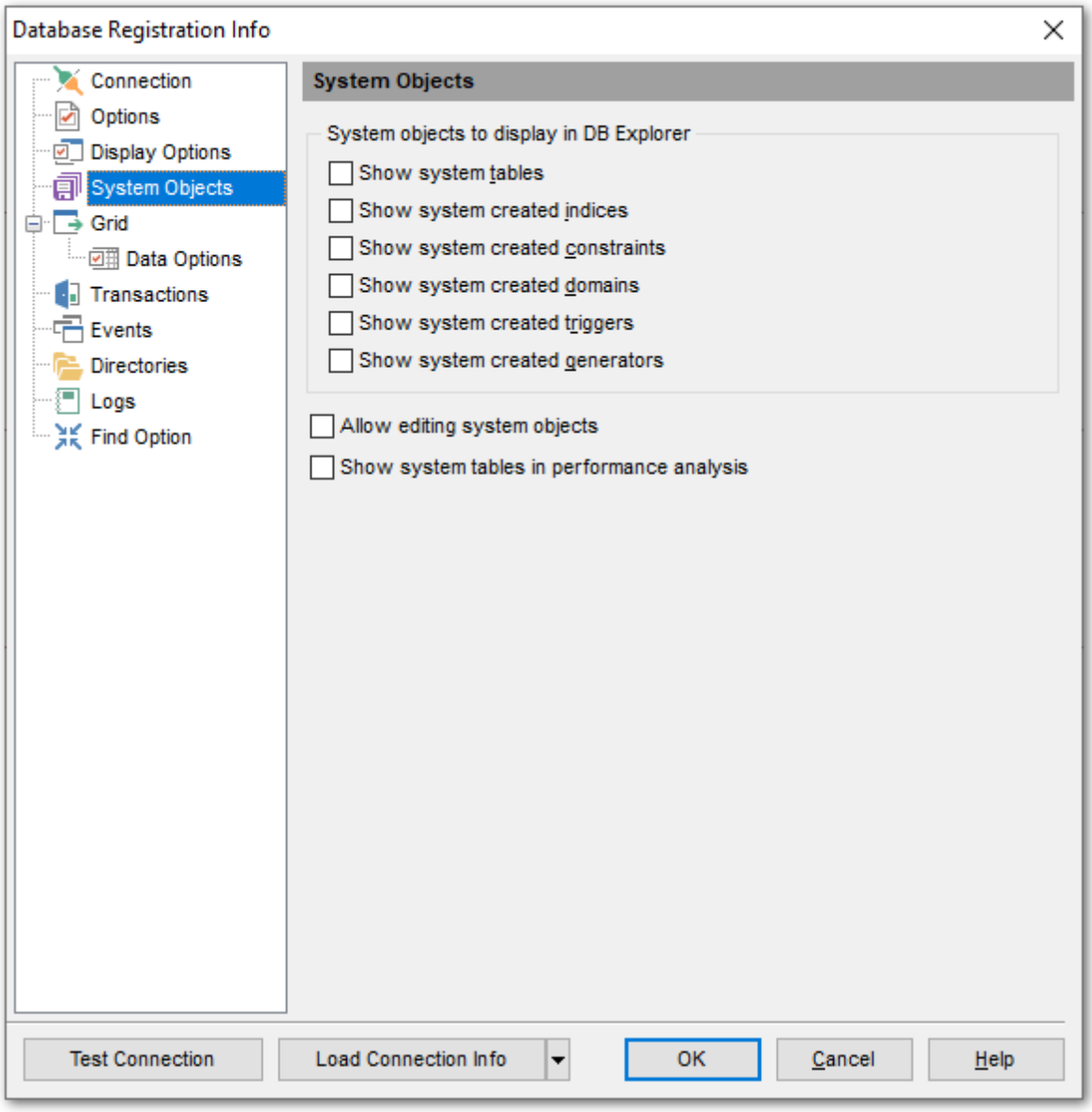
Database Objects Management 163

Database Explorer 63

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4.4.4 System objects

The **System objects** section of the **Database Registration Info** dialog allows you to specify which system objects will be displayed in the Database Explorer 63 tree.



System objects to display in DB Explorer

Show system tables
This option specifies whether system tables 179 are displayed in DB Explorer 63 or not.

Show system created indexes
This option specifies whether system indexes 226 are displayed in DB Explorer 63 or not.

Show system created constraints

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This option specifies whether system constraints 217 are displayed in DB Explorer 63 or not.

Show system created domains
This option specifies whether system domains 173 (i.e. the domains having names starting with 'RDB$') are displayed in DB Explorer 63 or not.

Show system created triggers
This option specifies whether system triggers 282 (created automatically by the server for implementation of the 'CHECK VALUE...' restrictions) are displayed in DB Explorer 63 or not.

Show system created generators
This option specifies whether system generators 294 (i.e. the generators having names starting with 'RDB$') are displayed in DB Explorer 63 or not.

For your convenience the *Select All* and *Deselect All* functions are implemented in the **context menu** of the option group.

Allow editing system objects
When this option is enabled, you can edit triggers 282 for system tables 179 and views 243.

Show system tables in performance analysis
Enable the option to include system tables in performance analysis 903.

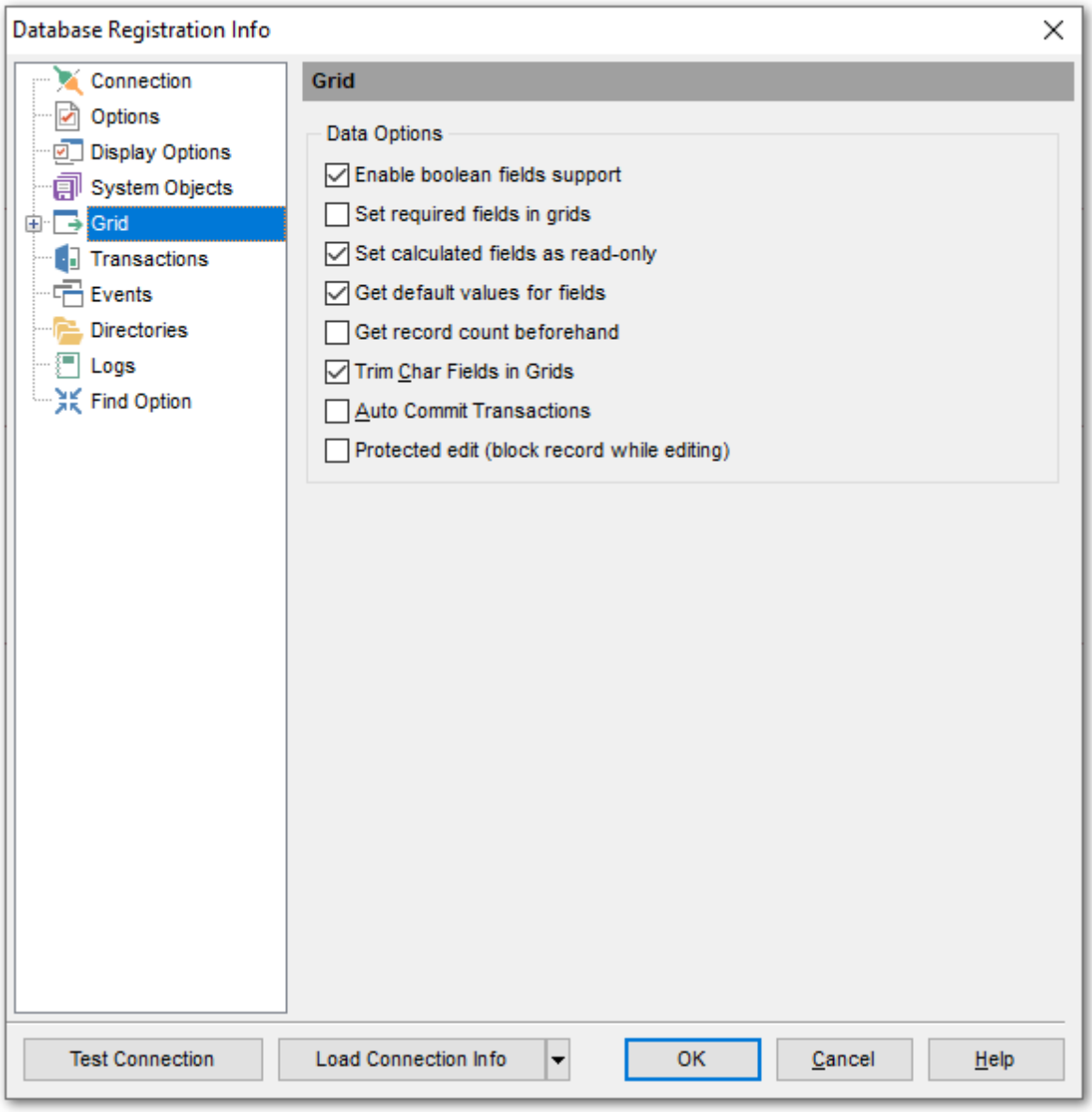
See also:

Database Objects Management 163
Database Explorer 63

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4.4.5 Grid

The **Grid** section of the **Database Registration Info** dialog allows you to adjust the default grid mode settings.



Enable boolean fields support
If this option is checked, boolean fields are supported in data grid 374.

Set required fields in grids
If this option is checked, you have to set values for all the NOT NULL table fields.

Set calculated fields as read-only
If this option is checked, calculated field values cannot be edited.

Get default values for fields

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If this option is checked, **SQL Manager** will automatically get the default field values from the database server.

Get record count beforehand
If this option is checked, **SQL Manager** automatically calculates the number of records in table or query. Corresponding information is displayed in the status bar.

Trim Char Fields in Grids
If this option is checked, the final spaces in fields of the CHAR type are trimmed during the editing process.

Auto Commit Transactions
If this option is checked, **SQL Manager** automatically commits transactions, otherwise you have to do it manually.

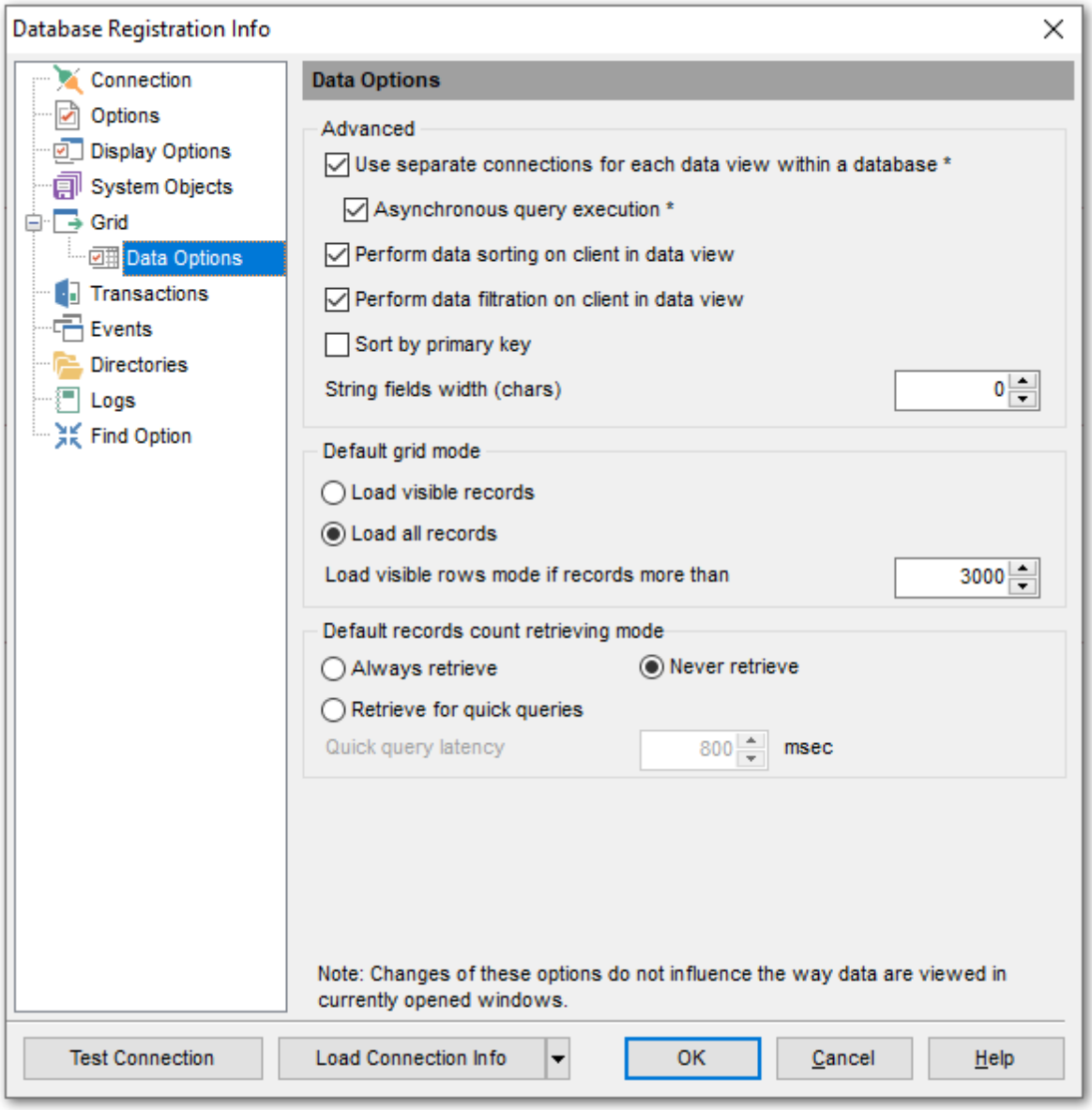
Protected edit (block record while editing)
If this option is checked, **SQL Manager** blocks the record you are editing, so that other users cannot edit this record. This helps to avoid conflicts of collective access to the database.

See also:
Data View 370

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4.4.5.1 Data options

The **Data Options** section of the **Database Registration Info** dialog allows you to define options for data view[370]. These options will be applied only to this database. Default settings for newly registered databases can be defined on the Grid | Data Options[790] page of the Environment Options[744] dialog.



Advanced

Use separate connections for each data view within a database
Select this option to use a separate connection for each data view[370] within a database. Disabling this option is recommended if maximum allowed number of connections is too low.

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Asynchronous query execution
Check this option to allow executing queries in background mode (asynchronously). Note that this option is only available when the *Use separate connections for each data view within a database* option is enabled.

Perform data sorting on client in data view
If enabled, the data are sorted by **SQL Manager for InterBase/Firebird** (on the client side). If this option is disabled, the data are sorted on InterBase/Firebird server with the help of the *ORDER BY* clause used in SQL query.

Perform data filtration on client in data view
If enabled, the data are filtered by **SQL Manager for InterBase/Firebird** (on the client side).
If disabled, SQL filter is used in data view 370. In this case filtering is performed on the InterBase/Firebird server with the help of the *WHERE* clause used in SQL query.

With the **Perform data sorting on client in data view** option enabled, sorting is performed by means of the grid. Otherwise a click on the column header for sorting causes reloading all table data with the selected field in the *ORDER BY* expression of the *SELECT* statement.
If the table contains a huge amount of records and the **Select only N records** mode (see the **Default limit options in table and view editors** group) is used, this mode is more preferable (e.g. all the records having values starting with "A" will be displayed, and not those which were in originally opened N records).

All above-mentioned is related to the **Perform data filtration on client in data view** option as well. If the filter is applied to a table containing a great number of records, it is strongly recommended to enable this option - in this case the filter will be applied to all table/view records, not only to those which are displayed at the present moment.

Sort by primary key
When enabled, the option allows sorting data by the primary key 217 on opening the data grid 374.

String fields width (chars)
Using this option you can limit string fields width that may improve performance on large datasets.

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

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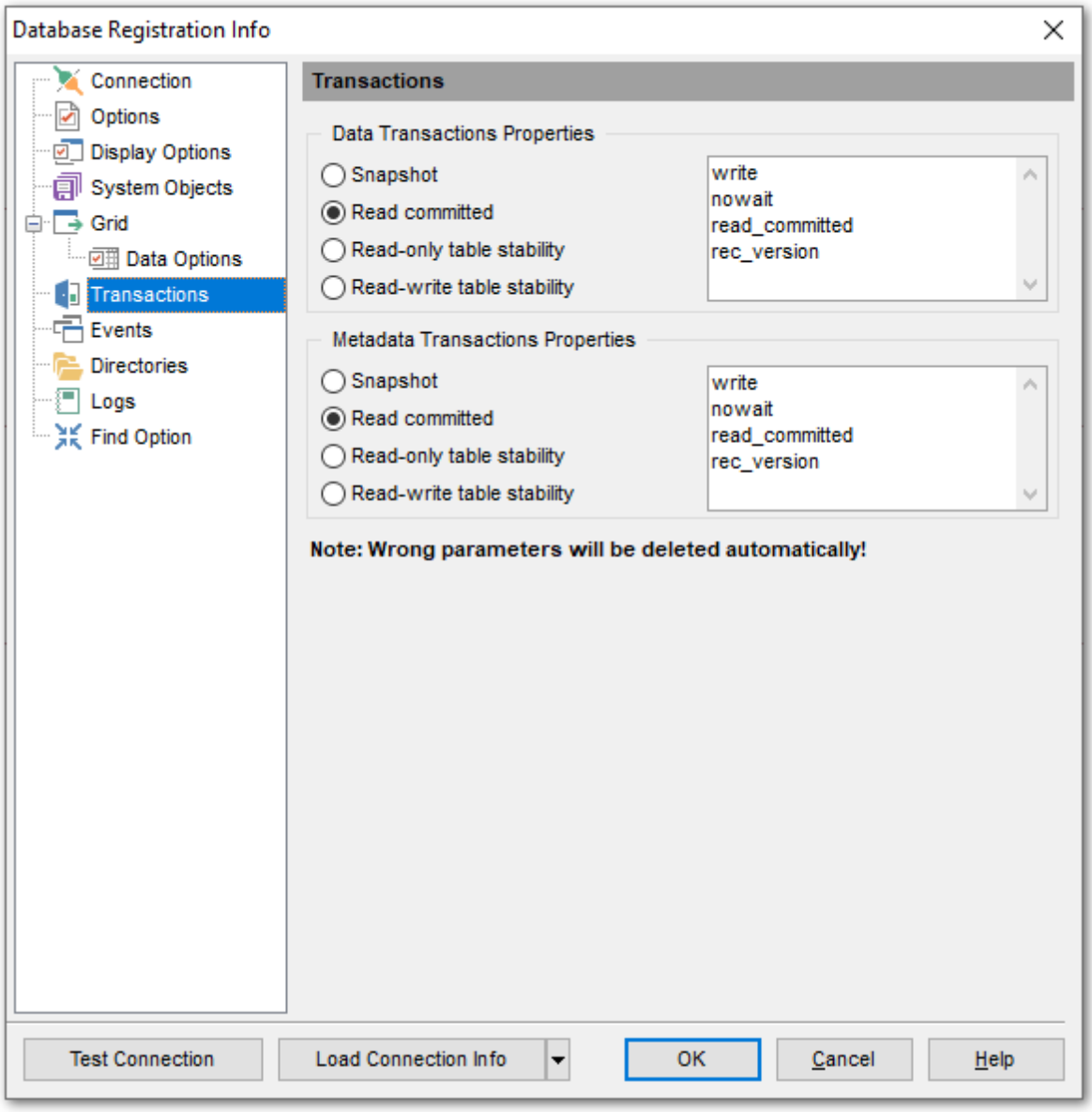
grid buffers. In this mode opening the tables with many records may take a very long time. But in this case you have some advantages: e.g. in the filter drop-down list the column headers are displayed with the values for quick filter; it is possible to open several sublevels at the same time when viewing 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 383 of the grid).

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.

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4.4.6 Transactions

The **Transactions** section of the **Database Registration Info** dialog allows you to set the isolation level for data and metadata. Isolation level determines how a transaction interacts with other simultaneous transactions accessing the same tables.



Data Transactions Properties | Metadata Transactions Properties

Snapshot
Provides a repeatable-read view of the database at the moment the transaction starts. Changes made by other simultaneous transactions are not visible. Snapshot table stability provides a repeatable read of the database by ensuring that transactions cannot write to tables, though they may still be able to read from them.
Read committed

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Enables transactions to see the most recently committed changes made by other simultaneous transactions. It can also update rows as long as no update conflict occurs. Uncommitted changes made by other transactions remain invisible until committed.

- **Read-only table stability**

Defines the 'read-only' access mode when the transactions are only allowed selecting data from the table.

- **Read-write table stability**

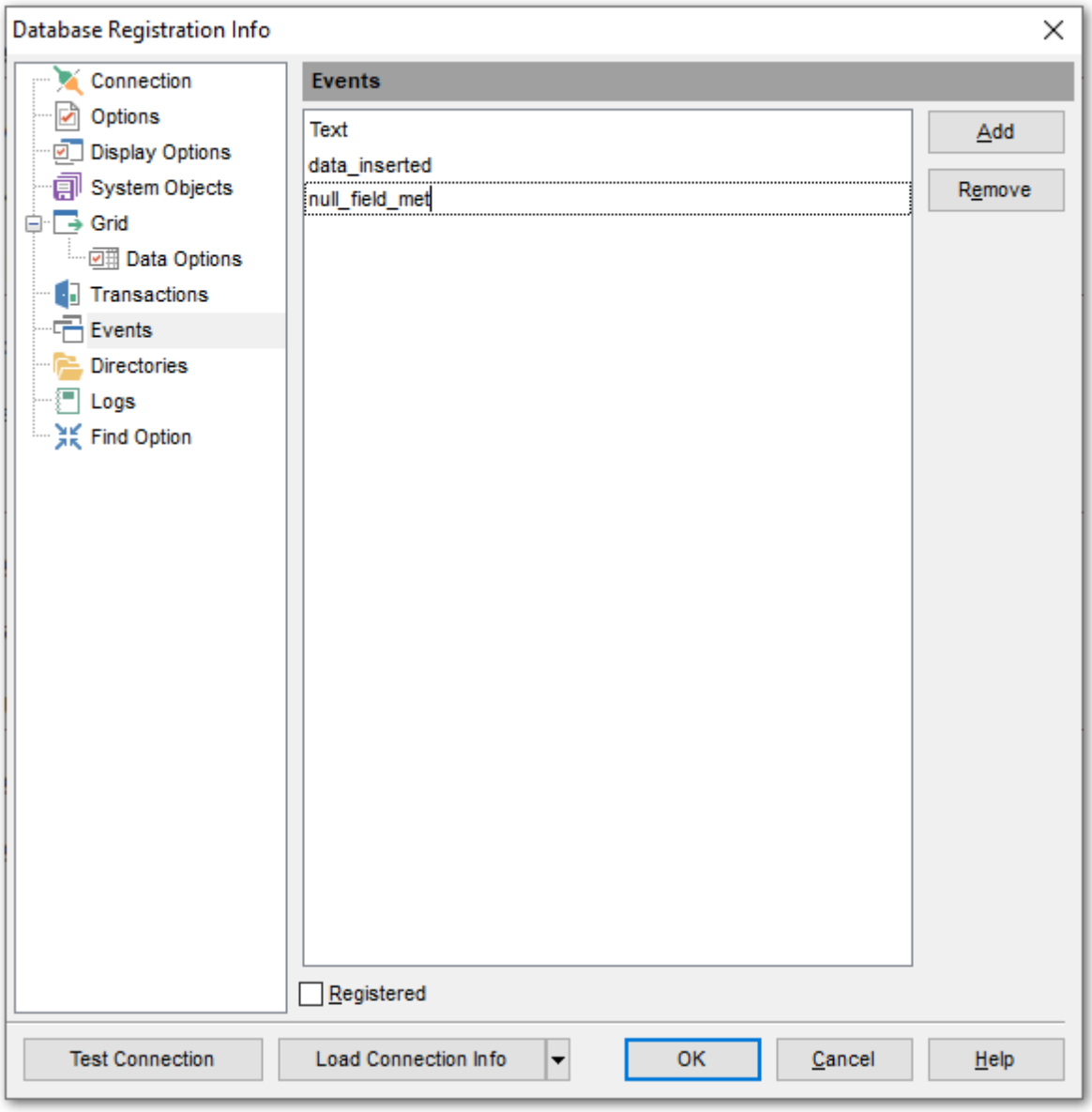
Defines the read-write access mode when the transactions are allowed to select, insert, update and delete data from the table.

Note: **SQL Manager** automatically deletes wrong parameters, if any.

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4.4.7 Events

The **Events** section of the **Database Registration Info** dialog allows you to specify what alerters should be taken into account (which event messages should be displayed in Event Monitor627).



Add the strings of event messages (the ones set in event alerters) using the **Add** and **Remove** buttons. Check ☑ **Registered** to register the event in Event Monitor627.

Example:
You need to get notification when some event takes place. For this purpose you can use the instruction like *POST_EVENT 'event_name'* inside a procedure254 or trigger282 body:

```
BEGIN
```

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```
  /* Statements... */
  POST_EVENT 'NULL_field_met';
  /* Statements... */
END
```

When the statements are executed the notifications will appear in the Events Monitor[629] window.

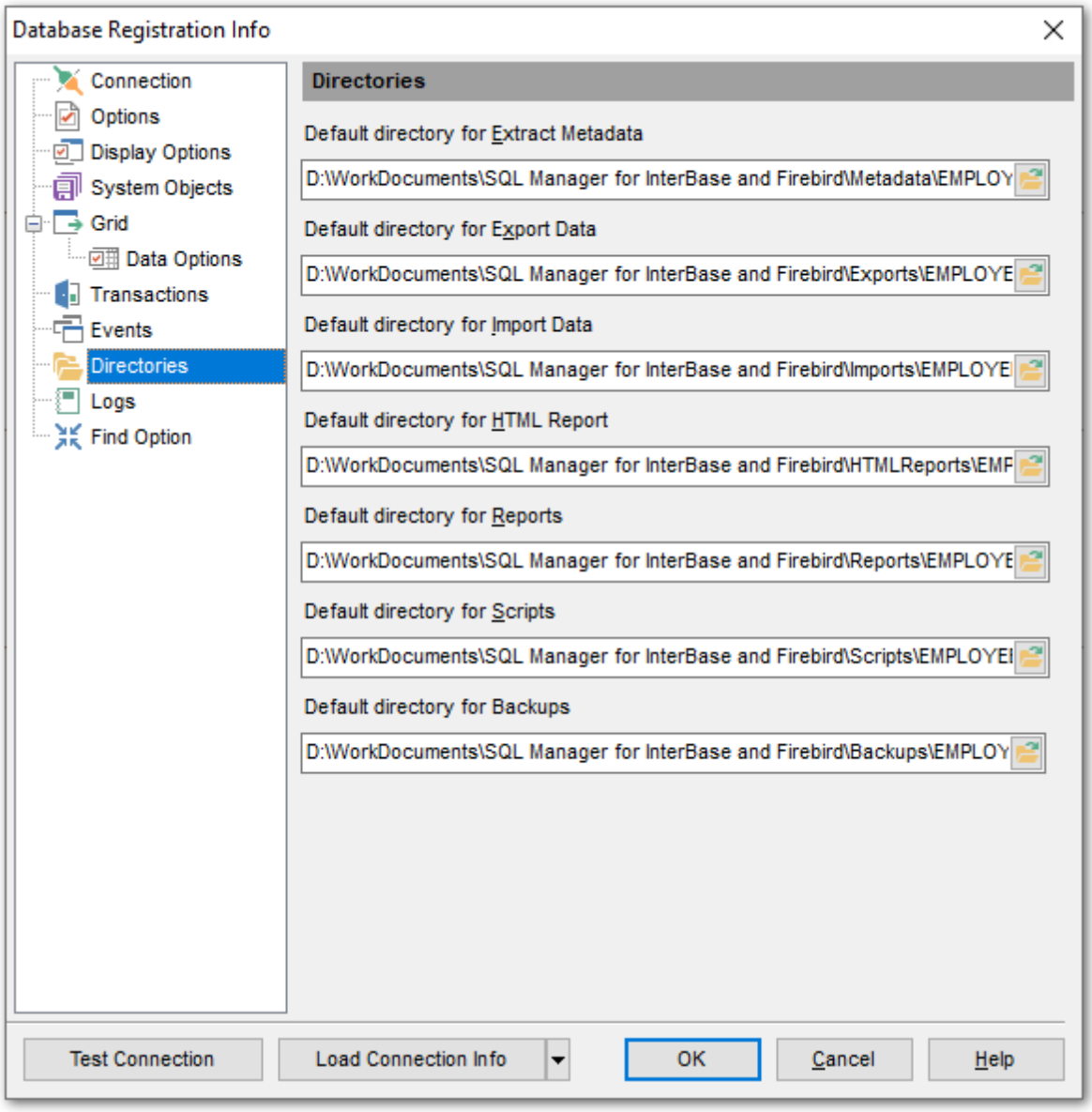
See also:

Event Monitor[627]

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4.4.8 Directories

The **Directories** section of the **Database Registration Info** dialog allows you to set the directories to be used by default for database extract 552, data export 445, data import 493, saving HTML reports 574, creating reports 581, saving scripts 544, backup 660 operations.

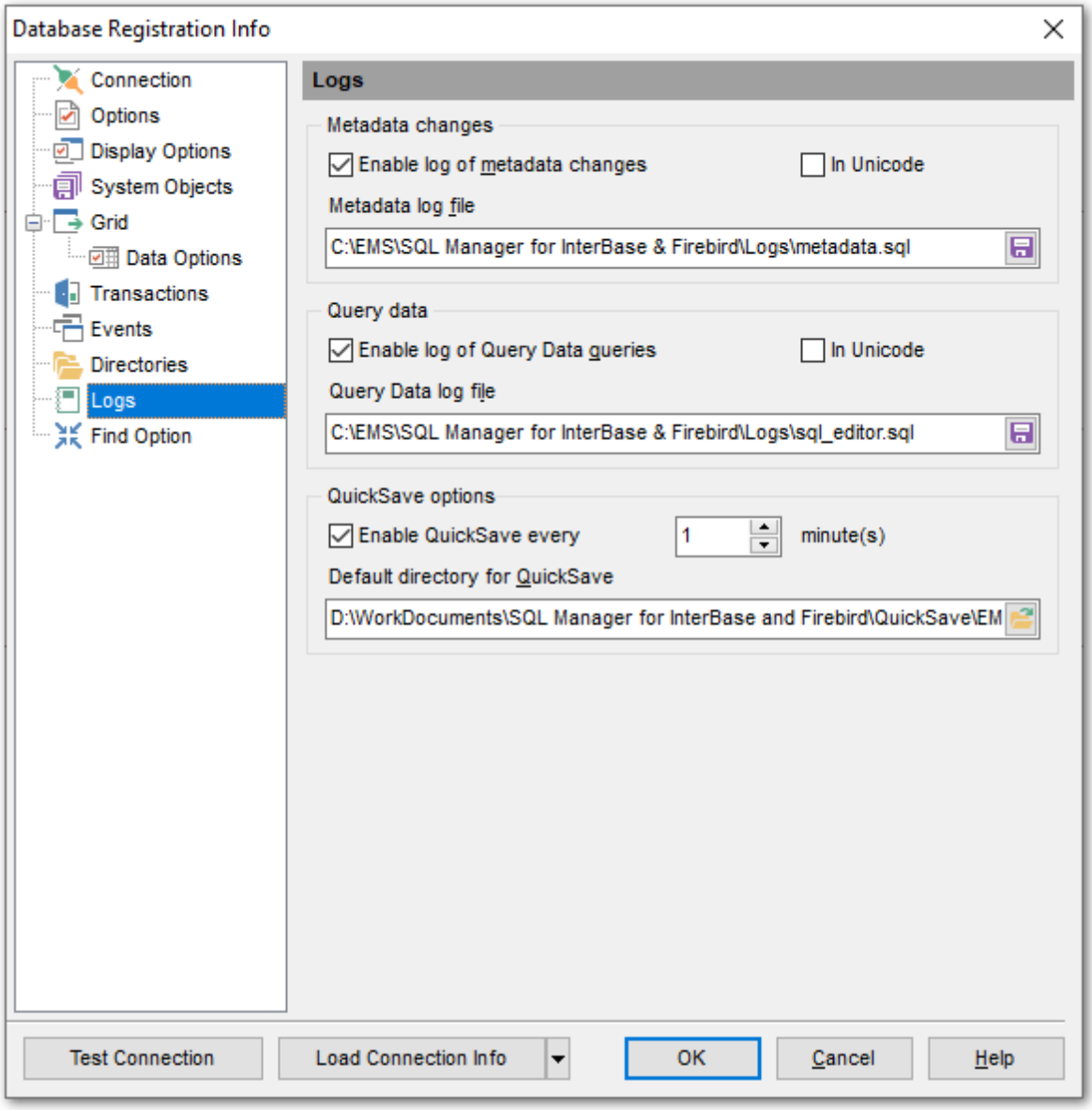


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4.4.9 Logs

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

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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 queries 331 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.

QuickSave options

Options of this group allow you to set up the Quick save / Quick load 930 feature - automatic saving the DDL and location of database objects using the quick-saving cache.

Enable QuickSave every ... Minute(s)
Check this option to enable quick saving 930 recurrently after the specified time interval (in *minutes*).

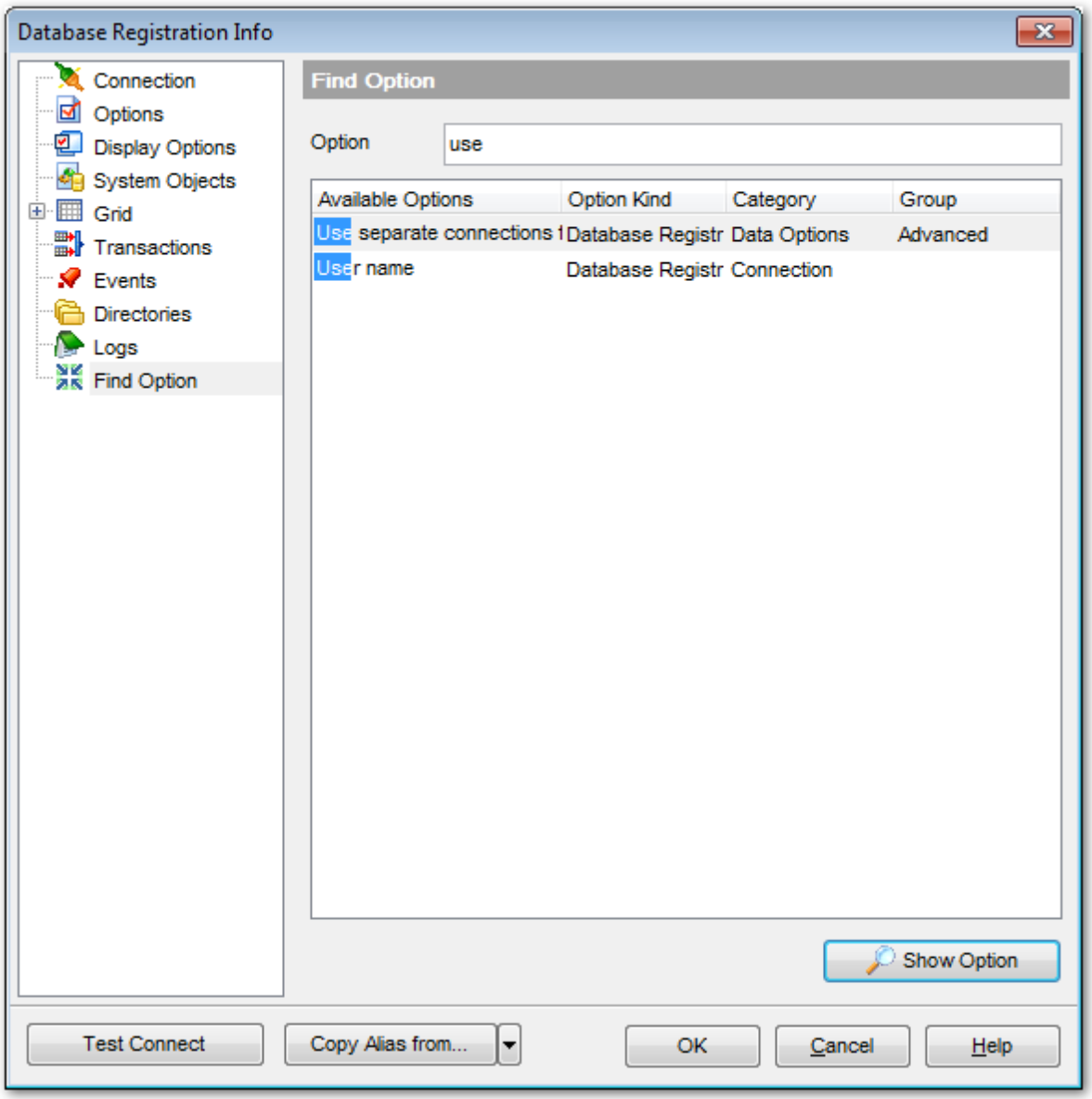
Default directory for QuickSave
Type in or use the button to specify the directory for the quick-saving cache.

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4.4.10 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.
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

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required option is marked with an animated  icon.

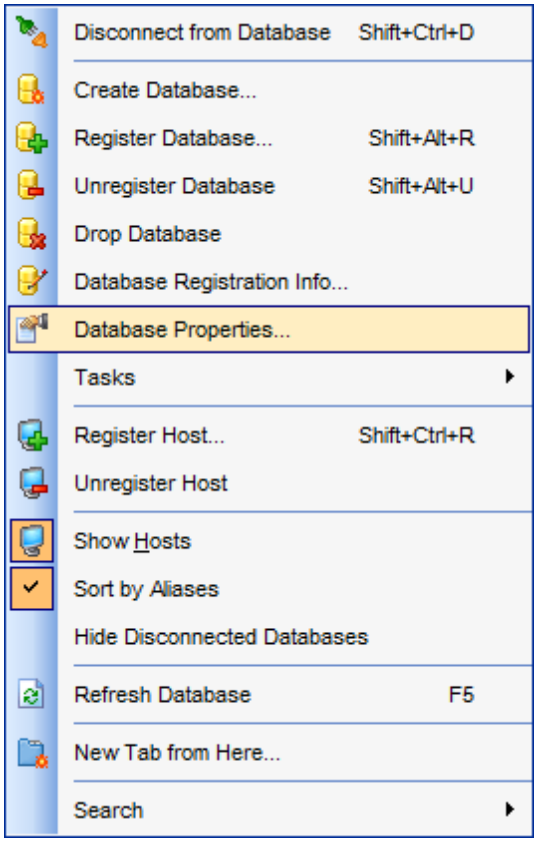
© 1999-2026 EMS Software Development

4.5 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 63 and select the **Database Properties...** context menu 53 item, or use the **Properties** button on the DB Explorer toolbar 82.

A number of database properties that determine the characteristics can be set for each database. These options are unique to each database and do not affect other databases.



- Info 139
- General 142
- Active users 145
- Description 147
- Secondary Files 149
- Find Option 837

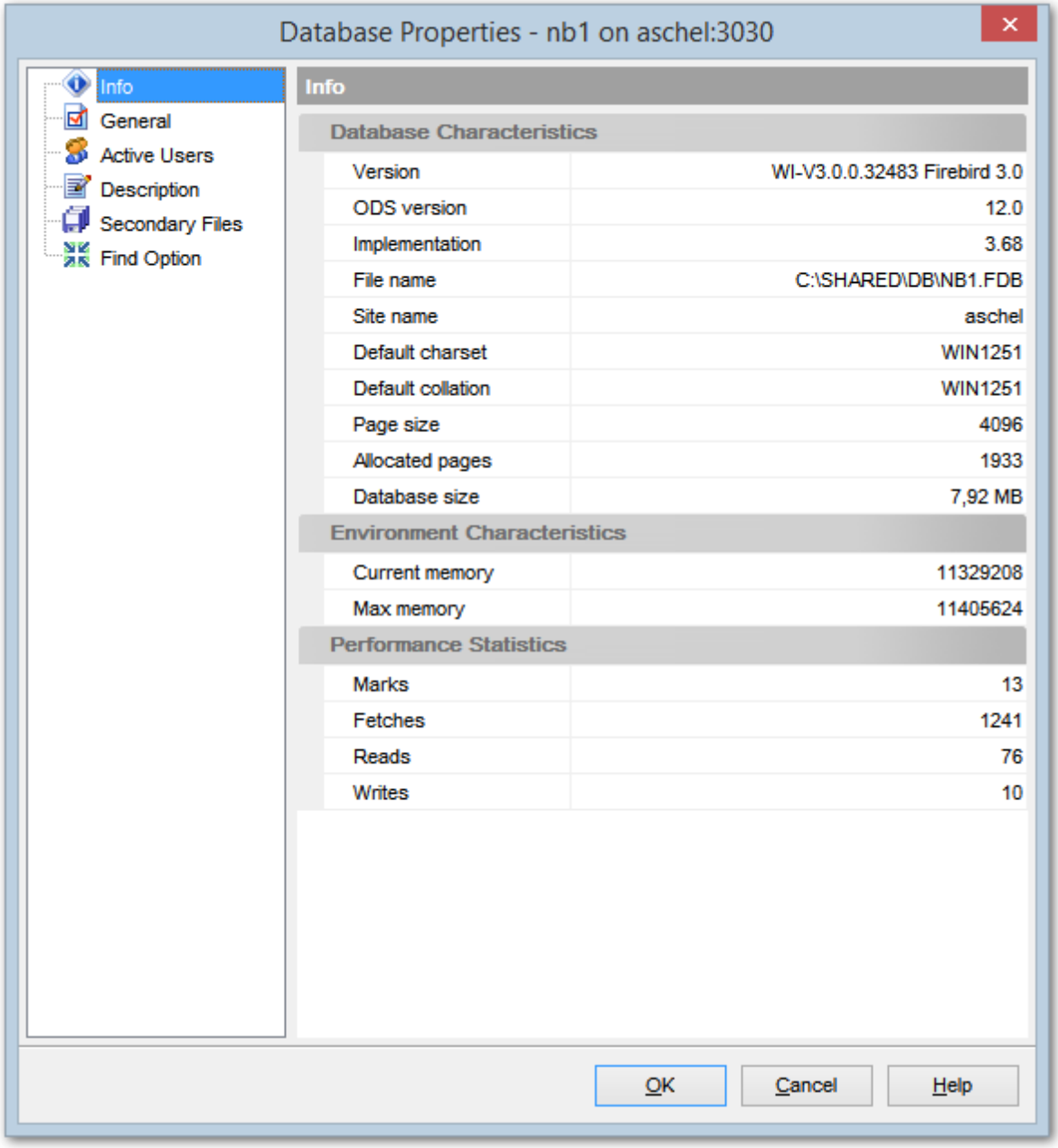
See also:

Register Database wizard 107
Create Database wizard 100
Database Registration Info 115

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4.5.1 Info

The **Info** section of the **Database Properties** displays the summary about database properties. The dialog allows you to view info about database file, charset, memory characteristics and performance statistics.



Database Characteristics

Version
Database version info.

ODS version
On-disk structure version used by the database.

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Implementation
Version of the implementation.

File name
Full database file name.

Site name
Database host name.

Default charset
Default charset for the database. It can be changed at General tab 142.

Default collation
Default collation for the database.

Page size
Database page size (in bytes).

Allocated pages
Number of pages in the database.

Database size
Size of the database (in Mb).

Environment Characteristics

Current memory
The amount of memory in use, in bytes.

Max memory
The maximum number of bytes used by the database.

Performance Statistics

Marks
Count of database pages marked

Fetches
Count of database pages fetched

Reads
Count of database pages read

Writes
Count of database pages written

See also:

General 142
Active users 145
Description 147
Secondary Files 149

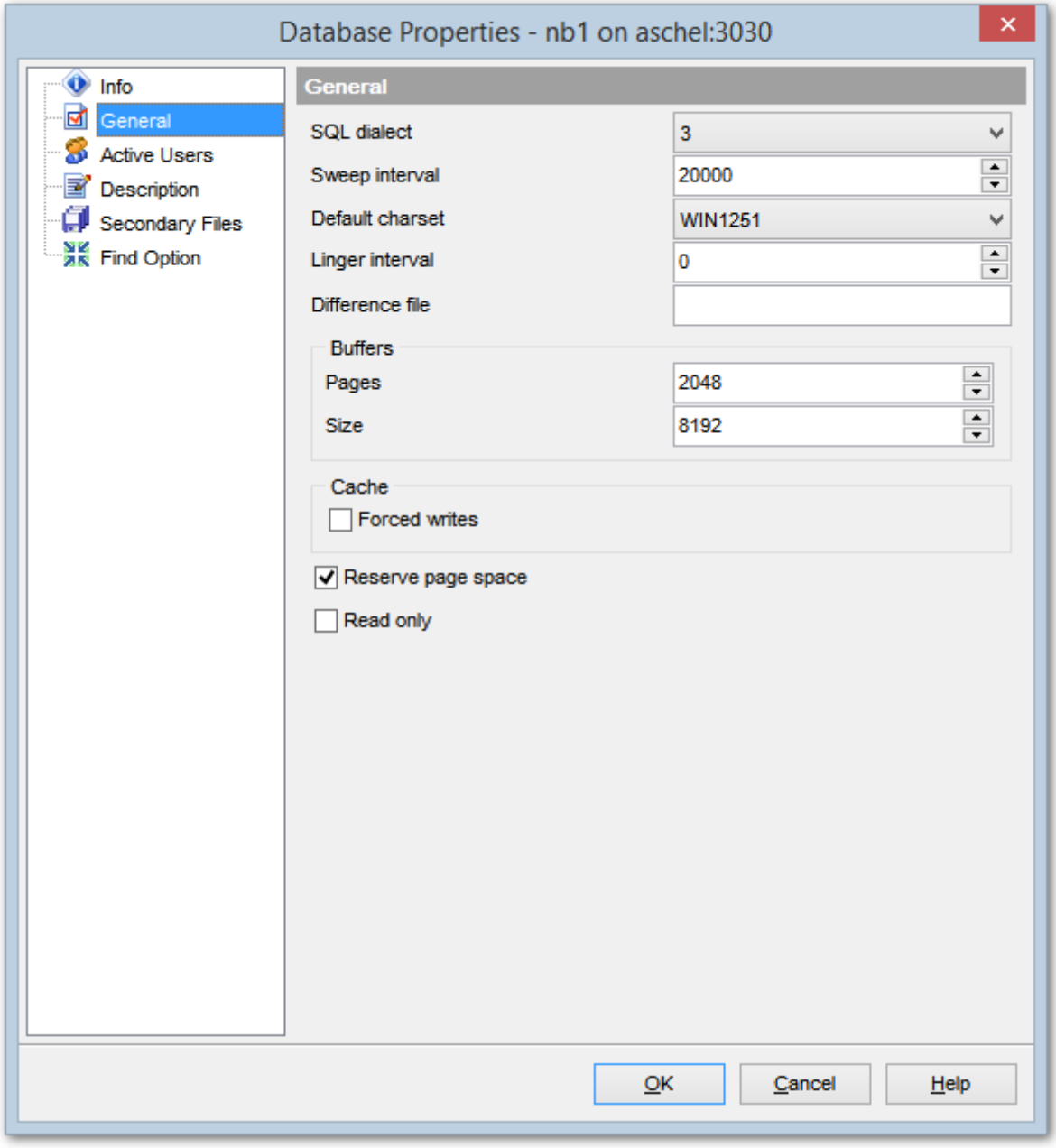
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Find Option 151

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4.5.2 General

The **General** section of the **Database Properties** dialog allows you to view/edit the general database properties. The list of available options depends on the server type and version.



SQL dialect
SQL dialect used. Possible values are: *1*, *3*.

Sweep interval
Number of transactions after executing which automatic garbage collection is carried out.

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Reclaim interval
The interval in seconds. It determines how often the garbage collector thread will run to release memory from unused procedures, triggers, and internal system queries back to InterBase memory heap.

Default charset
Default charset used for the database.

Linger interval
Interval in seconds, which allows the server to keep the database open for a period after the last attachment is closed.

Difference file
File path and name for DIFFERENCE files (.delta files).

Buffers

Pages
Number of database pages per database.

Size
Page size (in kilobytes).

Cache

☑ **Forces writes**
Enables/disables the mode of forced writing data on disk.

☑ **Group commit**
Enables/disables transactions to be committed by a background cache writer thread.

☑ **Linger interval**
Enables/disables interval in seconds, which allows the server to remain active after all users have disconnected.

☑ **Flush interval**
Enables/disables database flush.

Embedded User Authentication

☑ **Use Embedded User Authentication**
Specifies whether Embedded User Authentication 719 is used for the database or not.

☑ **Enabled**
Enables/disables Embedded User Authentication 719.

☑ **Reserve page spaces**
Enables space reservation.

☑ **Read only**
Enables/disables read-only mode for the database.

See also:
Info 139

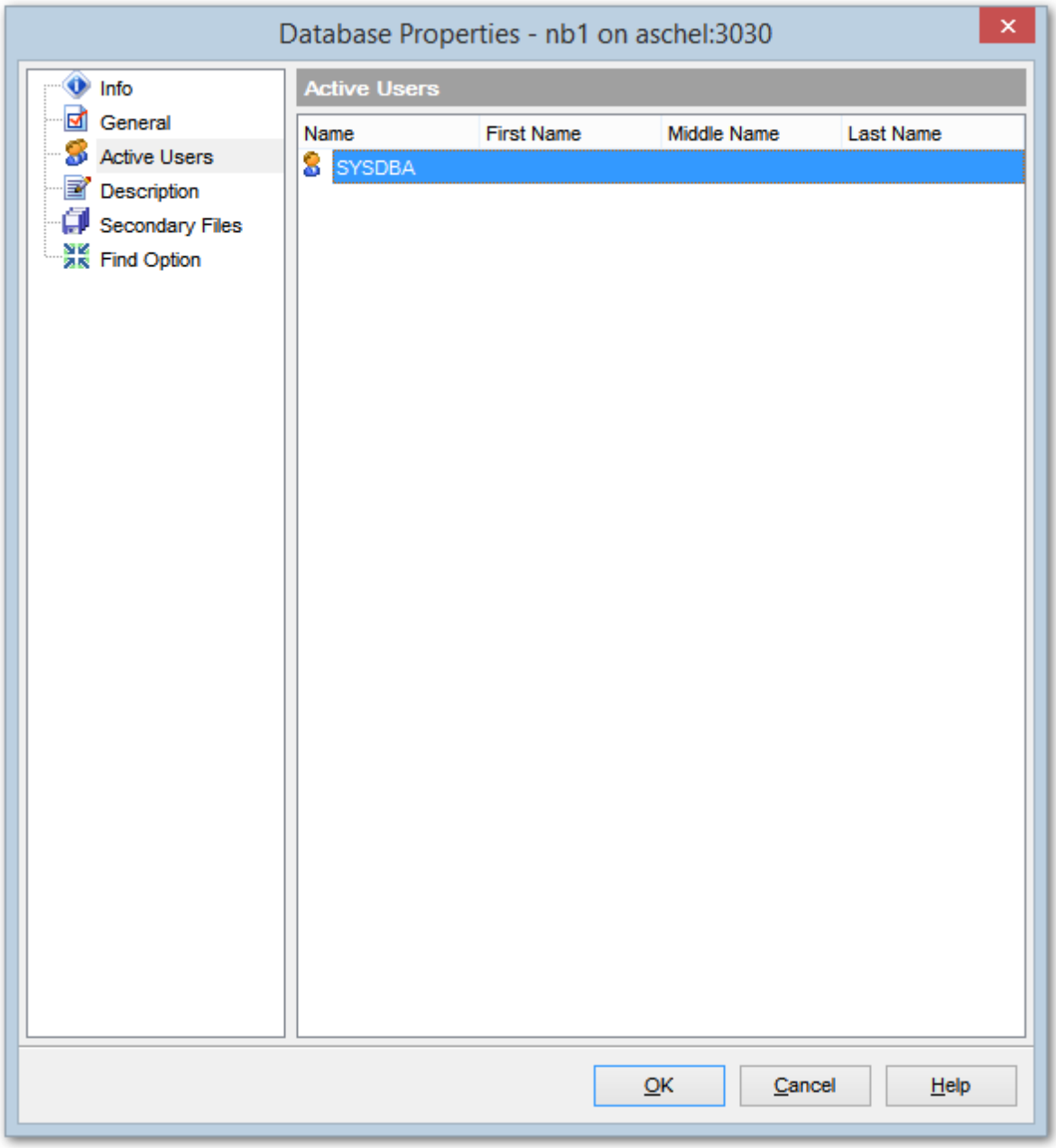
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Active users 145
Description 147
Secondary Files 149
Find Option 151

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4.5.3 Active users

The **Active Users** section of the **Database Properties** dialog displays the list of currently active database users[719].



See also:

Info[139]
General[142]
Description[147]
Secondary Files[149]

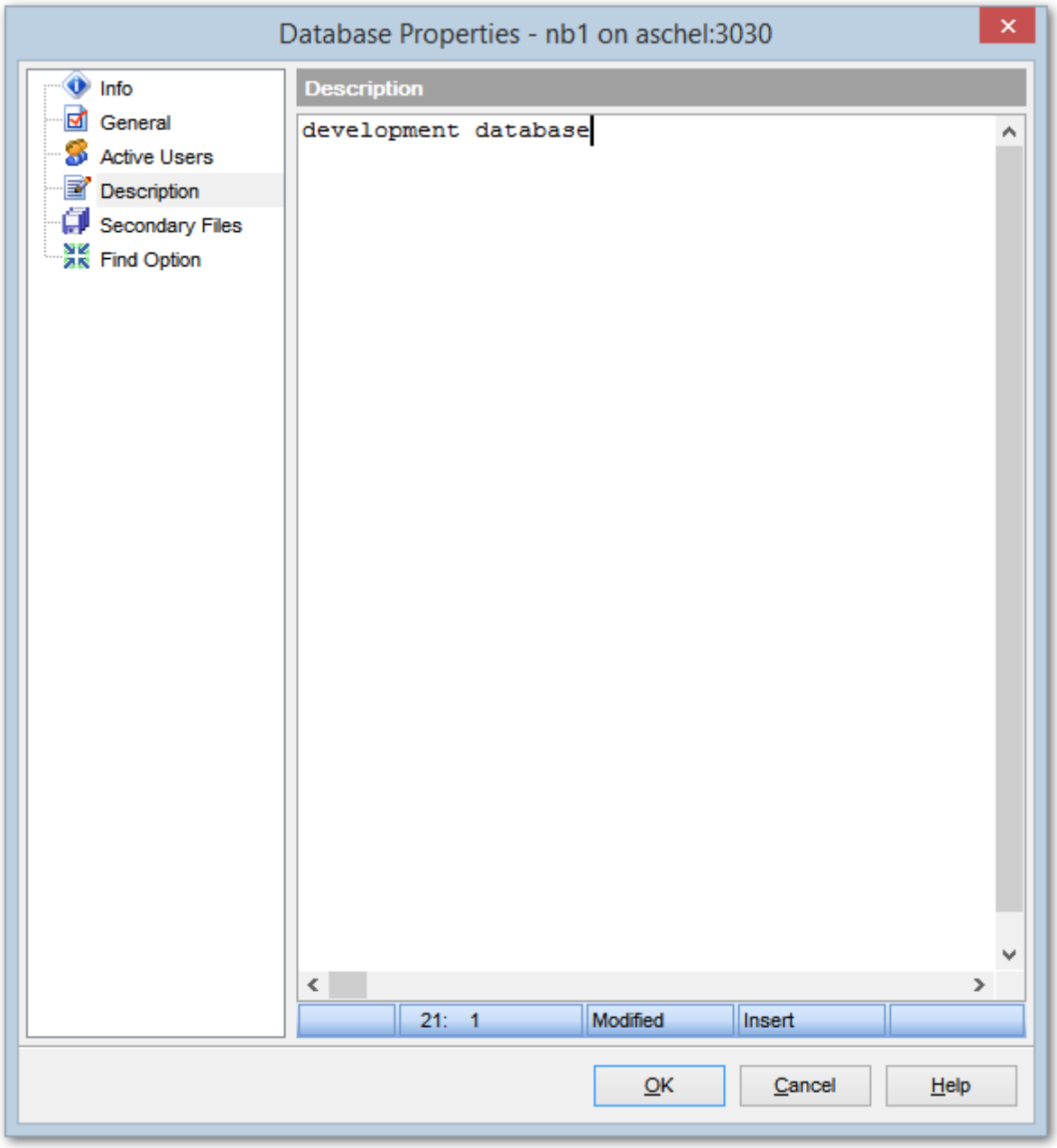
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Find Option 151

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4.5.4 Description

The **Description** section of the **Database Properties** dialog allows you to view/edit optional text to be used as description of the database.



See also:

Info 139
General 142
Active users 145
Secondary Files 149

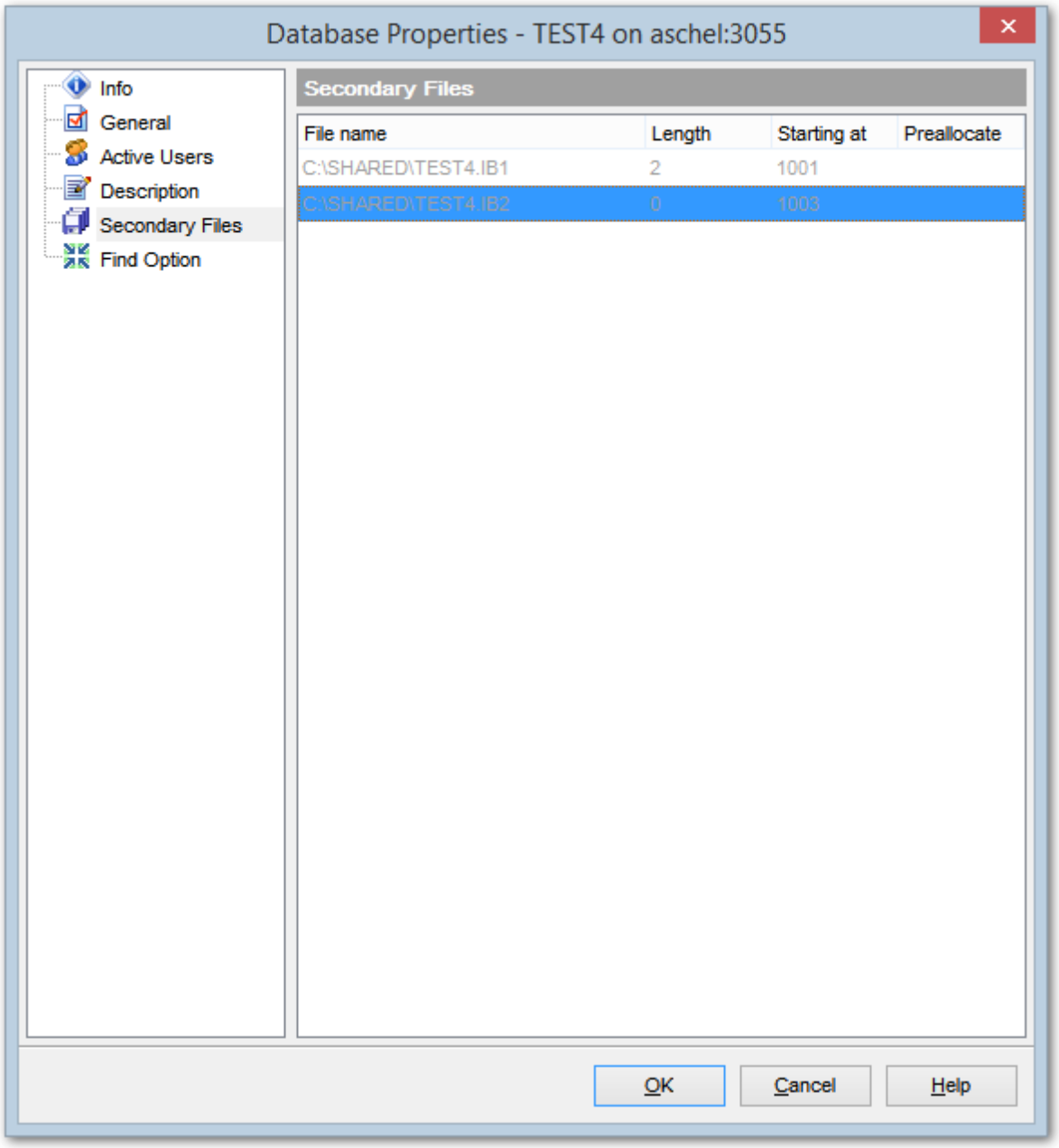
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Find Option 151

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4.5.5 Secondary Files

The **Secondary Files** section allows you to view database secondary file(s).



Length value specifies the maximum size of the secondary database file, in pages.

Starting at value specifies the database page number at which the next secondary database file should start.

Preallocate value specifies additional database space for the new file.

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See also:

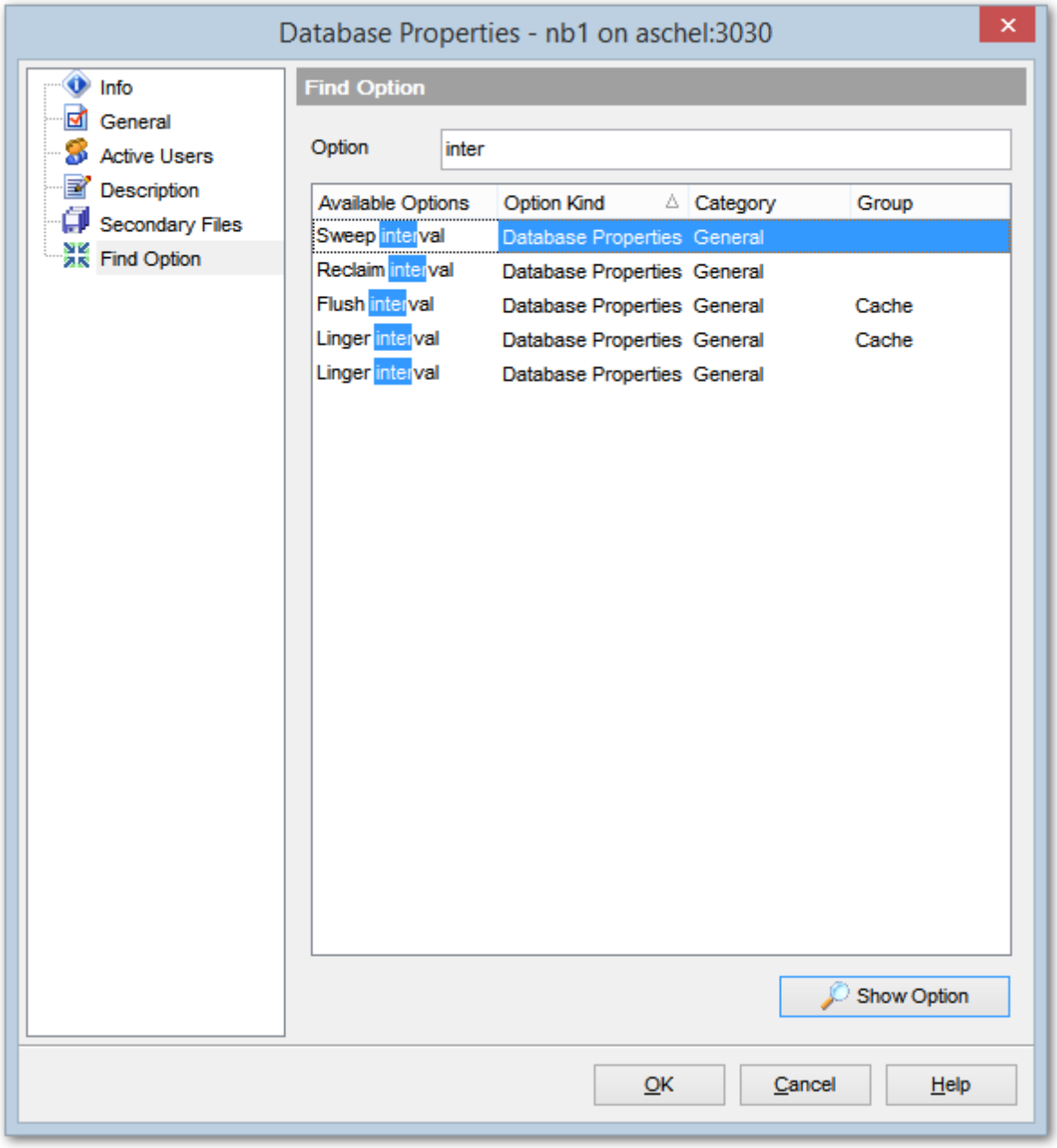
Info 139
General 142
Active users 145
Description 147
Find Option 151

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4.5.6 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.

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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.

See also:

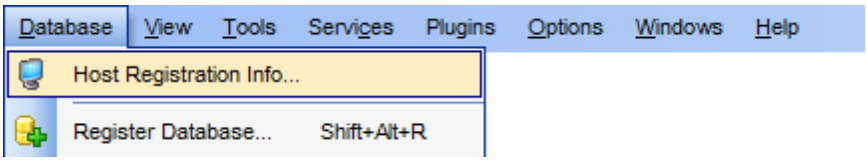
Info 139
General 142
Active users 145
Description 147
Secondary Files 149

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4.6 Host Registration Info

Use the **Host Registration Info** dialog to view and edit the registration properties of the host.

To open the dialog, select the **Database | Host Registration Info...** main menu 890 item, or right-click the host in the DB Explorer 63 tree, and select the **Host Registration Info...** context menu 52 item.



- Connection properties 154
- Host options 156
- SSH tunneling 158
- SSL parameters 160
- Find Option 837

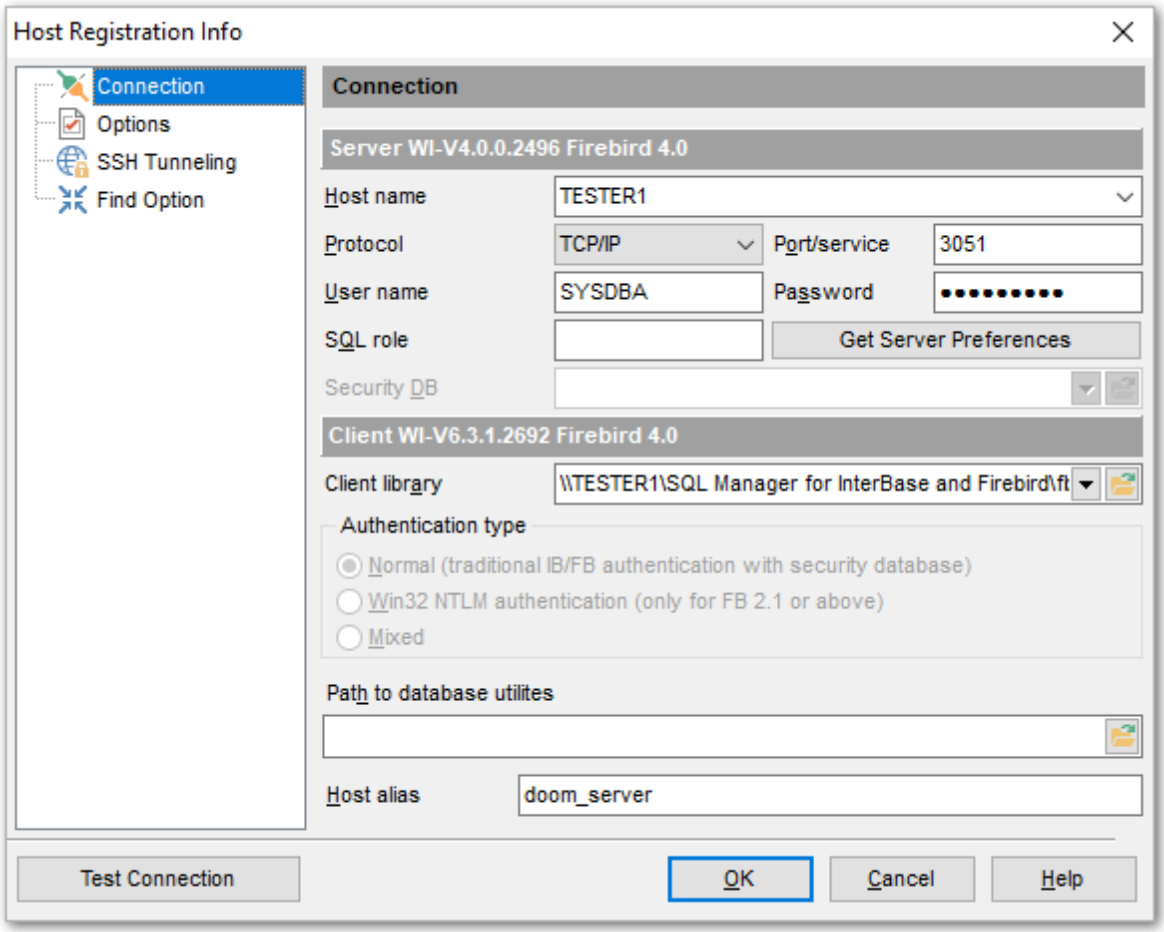
See also:

Register Host wizard 90

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4.6.1 Connection

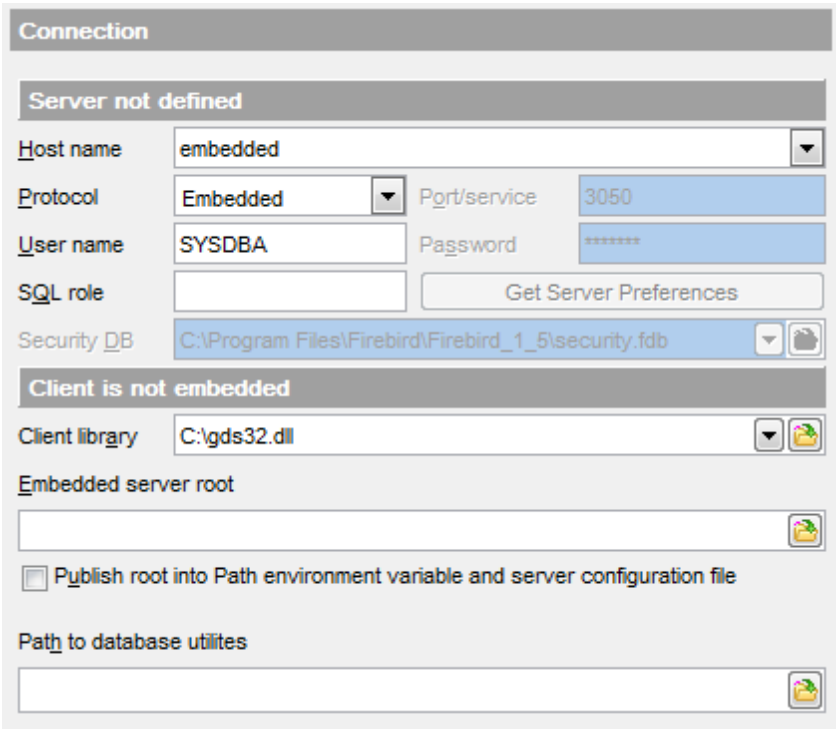
The **Connection** section of the **Host Registration Info** dialog allows you to view and edit connection parameters for the host.



Set the server connection parameters and client configuration in the corresponding boxes: *host name*, *protocol*, *port/service*, *user name*, *password*, etc.
For more details refer to the Setting connection parameters 91 step of **Register Host wizard**.

In case an **embedded server** (a server with Embedded User Authentication 719) is used, some connection options are disabled, and the **Connection** section of the **Host Registration Info** dialog looks slightly different.
For more details see setting embedded server connection parameters 93.

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Note: Backup[660] and Restore[671] of a database located on the Embedded[719] host is only possible via local tools. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file at the folder specified at the **Path to database utilities** field.

Set the alias in the for the current host in the **Host alias** field to be displayed in the DB Explorer.

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

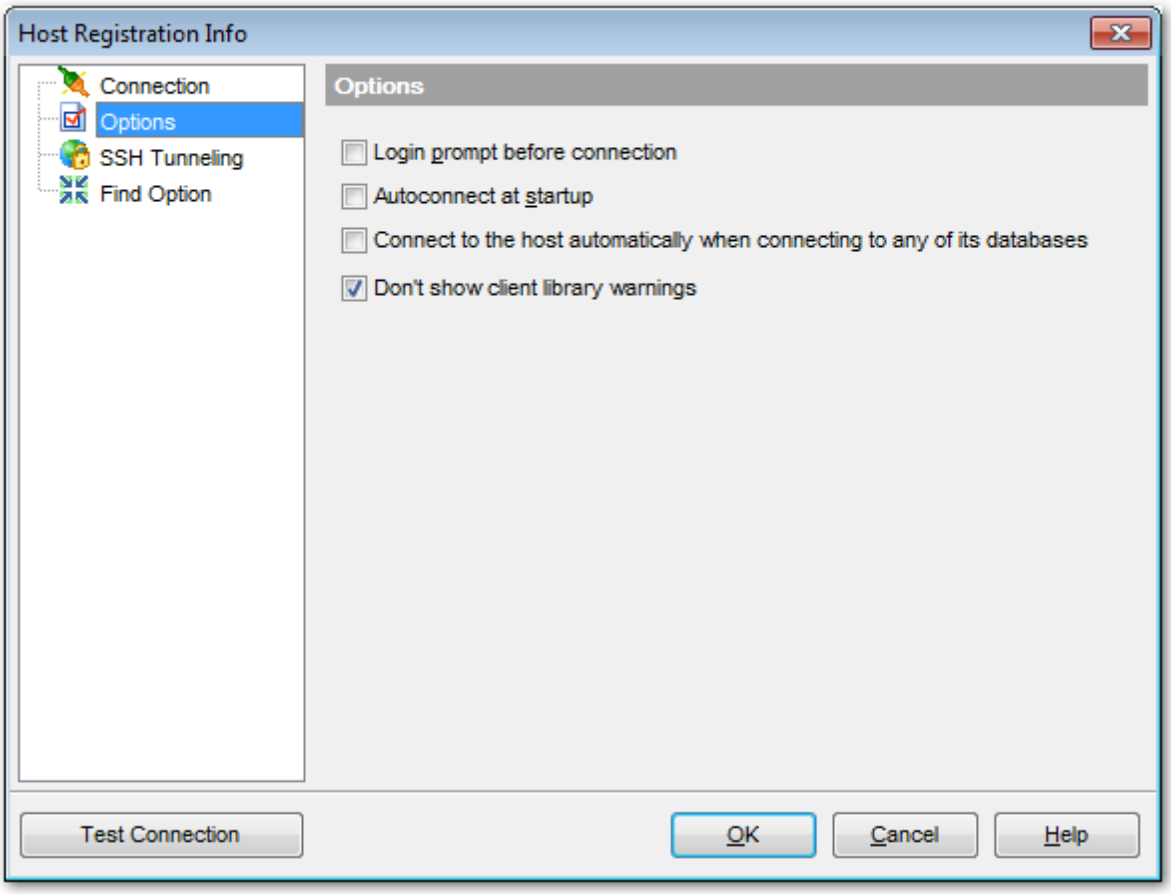
See also:

Common host options[156]
SSH tunneling[158]
Find Option[161]

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4.6.2 Common host options

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



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

☑ **Login prompt before connection**
Enables **SQL Manager for InterBase/Firebird** to prompt 935 for user name and password each time you connect 67 to the host.

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

☑ **Connect to the host automatically when connecting to any its database**
With this option set, the application connects to the host automatically when connection to any of its databases is established.

☑ **Don't show client library warnings**
Turn this option on to skip the message of client library version incompatibility.

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See also:

Connection 154
SSH tunneling 158
Find Option 161

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4.6.3 SSH tunneling

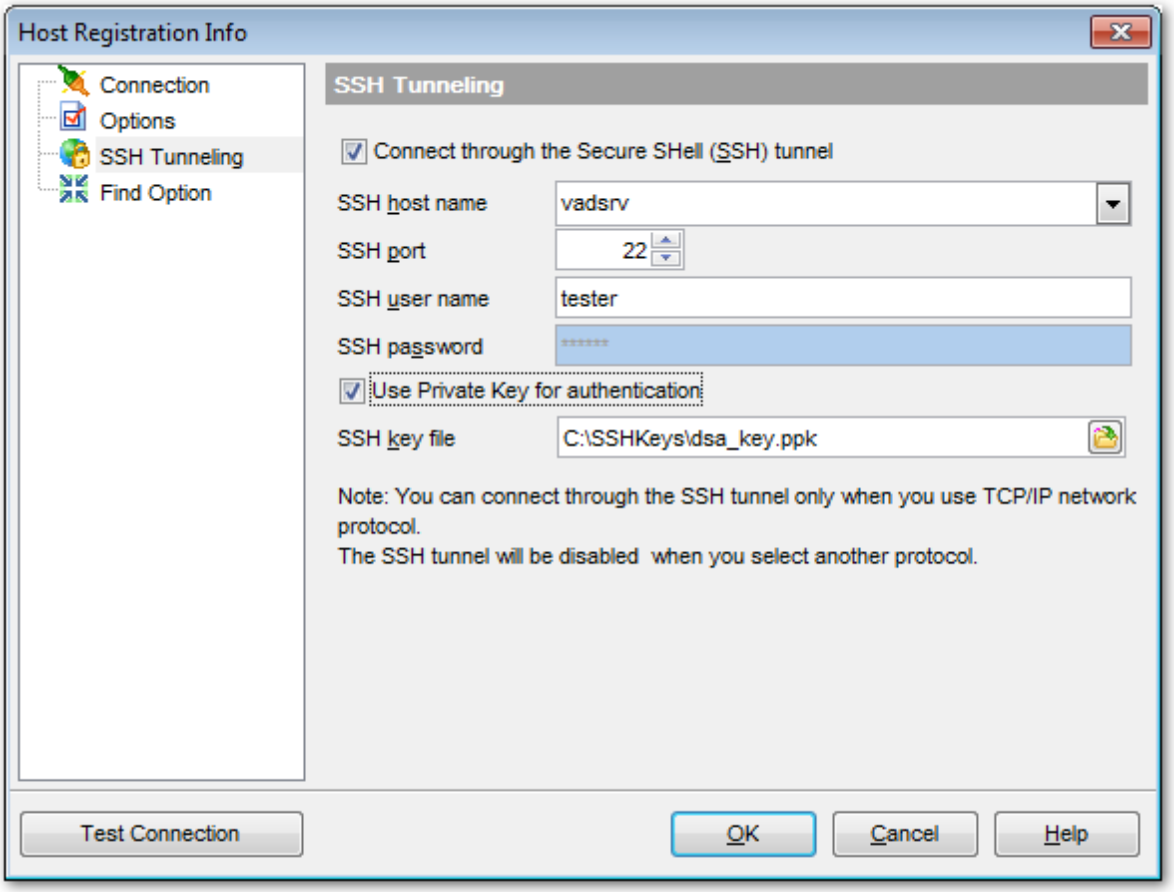
The **SSH Tunneling** section of the **Host Registration Info** dialog allows you to enable/disable SSH tunneling for connection to the host and its databases, and set all the necessary SSH tunneling parameters. Note that SSH tunneling is only available when the TCP/IP protocol is used.

Connect through the Secure Shell (SSH) tunnel
Select this option to establish connection to an intermediate SSH server and forward all InterBase/Firebird commands through the secure tunnel.

Specify **SSH Host name**, **SSH port**, **SSH user name**, **SSH password**, the path to the **SSH key file** (if necessary) in the corresponding boxes.

See SSH connection properties[928] for details.

Note: InterBase/Firebird host name on the Connection[154] page should be set relatively to the SSH server in this case. For example, if both InterBase/Firebird and SSH servers are located on the same computer, you should specify *localhost* as **Host name** instead of the server's external host name or IP address.



See also:
Connection[154]

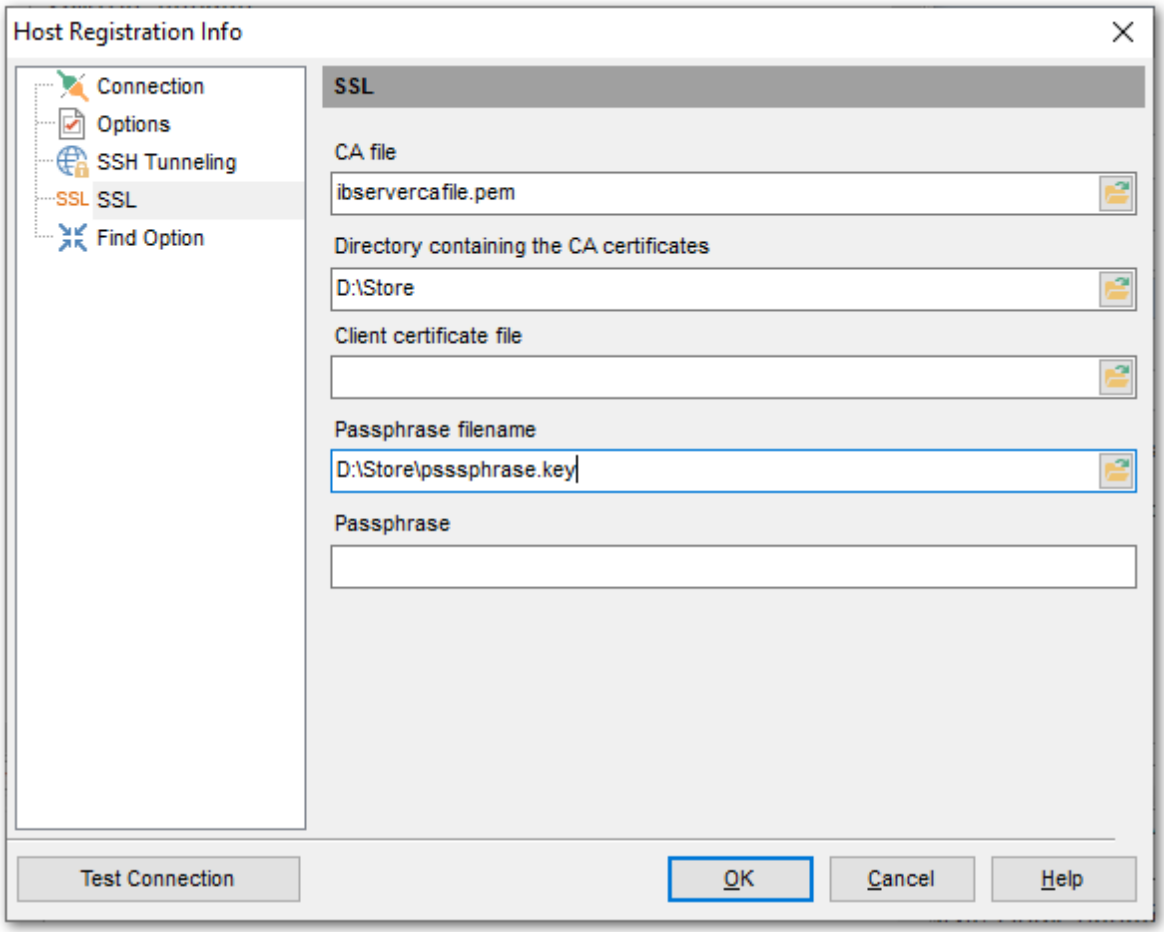
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Common host options 156
Find Option 161

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4.6.4 SSL parameters

SSL preferences allows you to connect to the server via encrypted channel for increased security.



Client certificate
Set the full path to the SSL certificate on the client machine.

Passphrase file
Set the full path to the file containing the key passphrase.

Passphrase
Input passphrase password.

CA file
Specify the name of the certificate authority file.

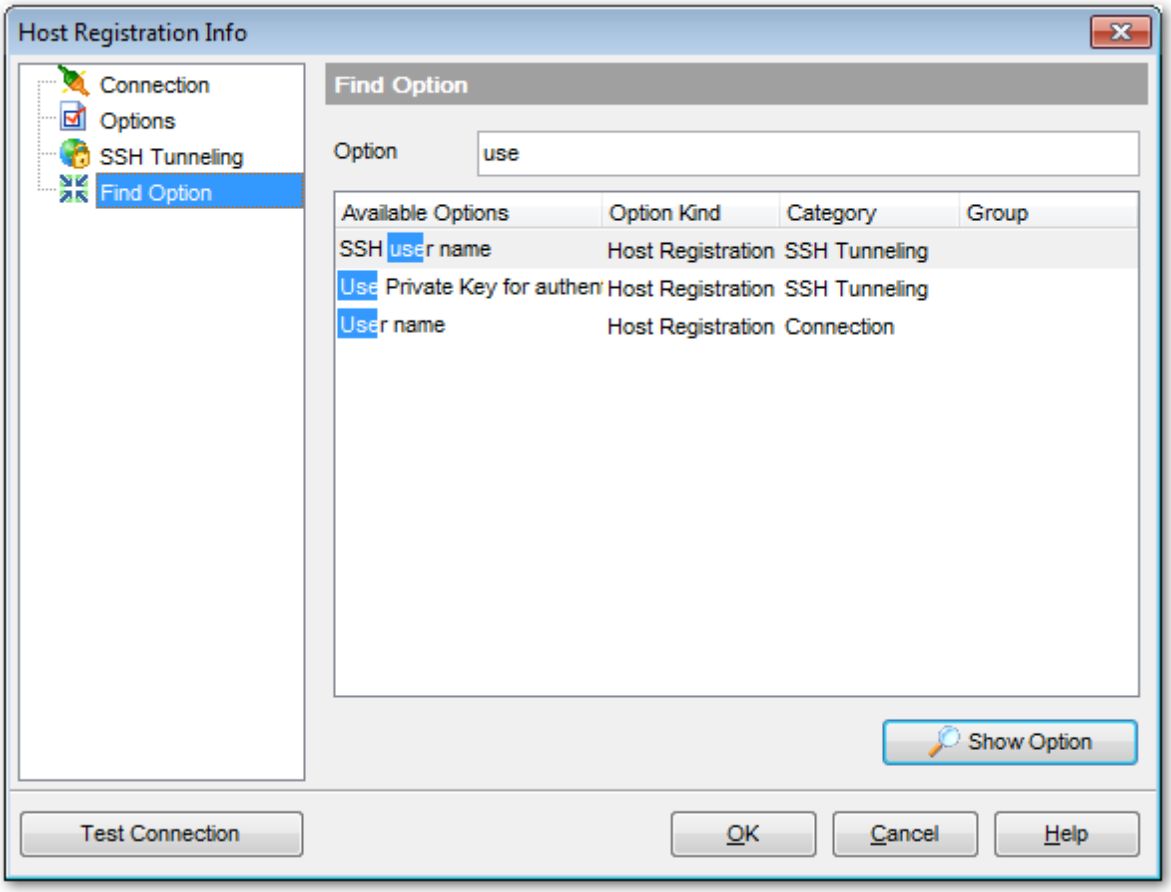
CA path
Set the path for the location of the certificate authority file.

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4.6.5 Find Option

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

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



The **Available options** area lists all options of the Host Registration 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:

Connection 154
Common host options 156
SSH tunneling 158

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Part V

5 Database Objects

SQL Manager for InterBase/Firebird provides powerful tools to manage **database objects**.

To obtain detailed information concerning InterBase/Firebird database objects, refer to the official InterBase/Firebird server documentation.

Note: Before working with database objects in **SQL Manager for InterBase/Firebird** you should connect to the database 67 first.

Creating Database Objects

- select the **Database | New Object...** main menu 890 item;
- select the type of object within the New Object 165 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 51 item of the DB Explorer 69 tree or using the *Ctrl+N* shortcut 940.

Editing Database Objects

- select the database object in the DB Explorer 63 tree;
- right-click the object to call its context menu 56 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

- select the object to rename in the DB Explorer 63 tree;
- right-click the object and select the **Rename <object type> <object name>...** item from the context menu 56;
- edit the object name using the **Rename Object...** dialog.

Note: This operation is possible for all objects except for tables 179.

Dropping Database Objects

- select the database object in the DB Explorer 69 tree;
- right-click the object to call its context menu 56 and select the **Drop <object type> <object name>** context menu item;
- confirm dropping in the dialog window.

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 890 or Toolbar 892 of the object editor.

See also:

Getting Started 37
Database Explorer 63
Database Management 87
Query Management Tools 329

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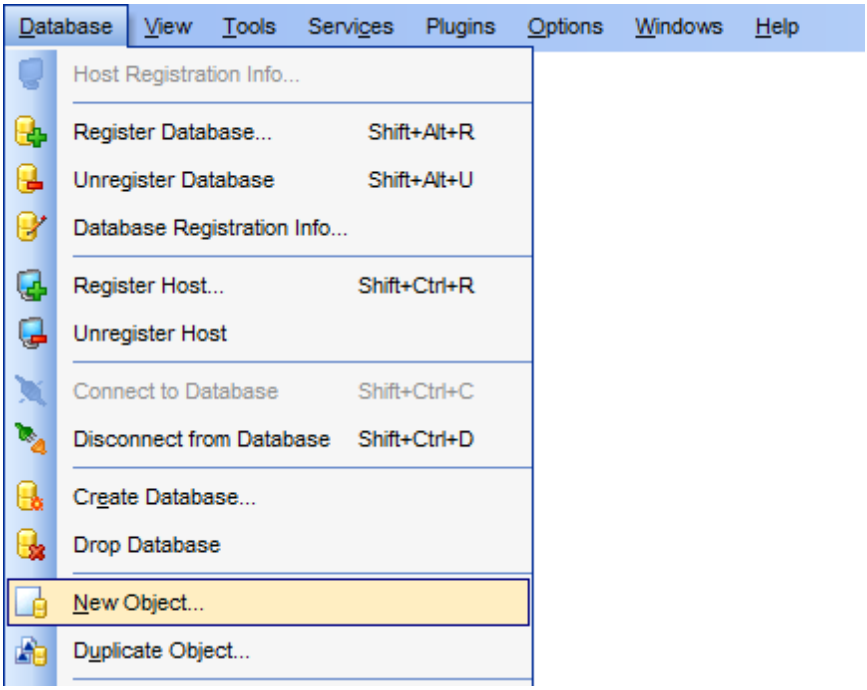
Data Management 369
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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5.1 New Object

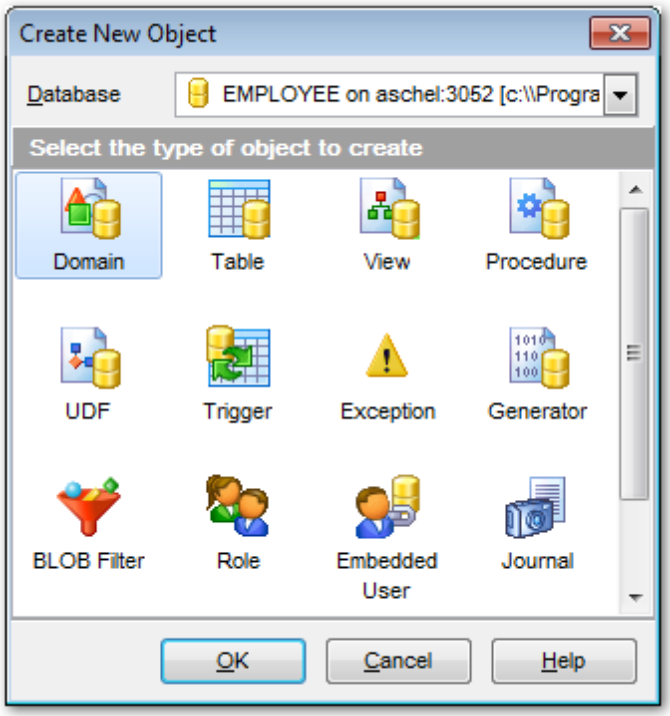
The **Create New Object** dialog allows you to select the type of the object to be created and run the appropriate wizard or editor.

To open the dialog, select the **Database | New Object...** main menu 890 item.



Use the **Database** drop-down list to select the alias of the database 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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See also:

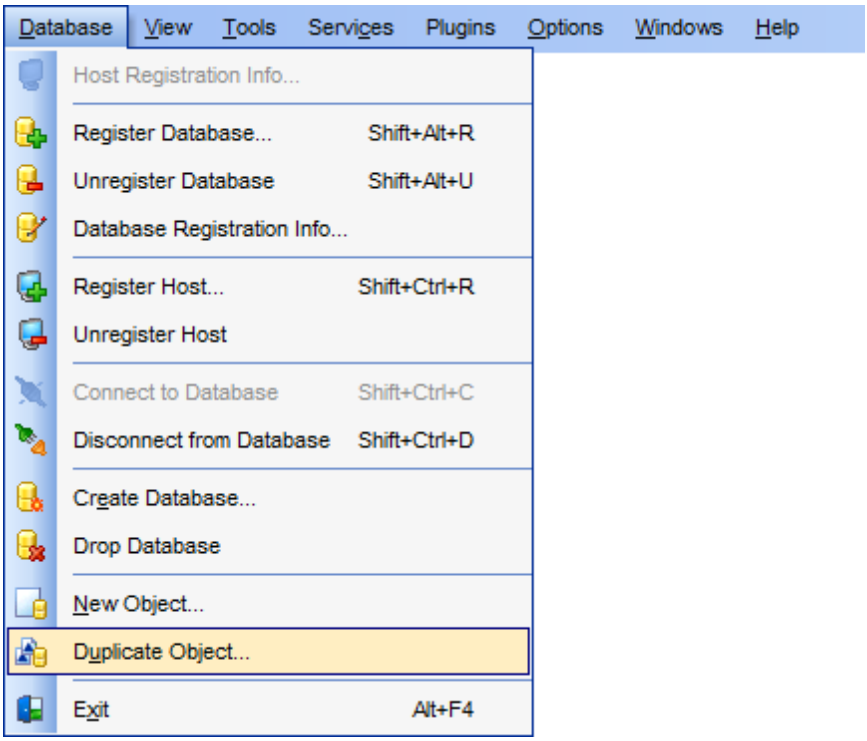
Operations with database and server objects 69
Duplicate Object Wizard 167

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5.2 Duplicate Object Wizard

Use the **Duplicate Object Wizard** to create a new database 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 890 item, or right-click an object of the desired type in the DB Explorer 63 tree and use the **Duplicate <object type> <object name>...** context menu 56 item.



- Selecting the source database 168
- Selecting object to duplicate 169
- Selecting destination database 170
- Specifying object details 171
- Viewing the new object's definition 172

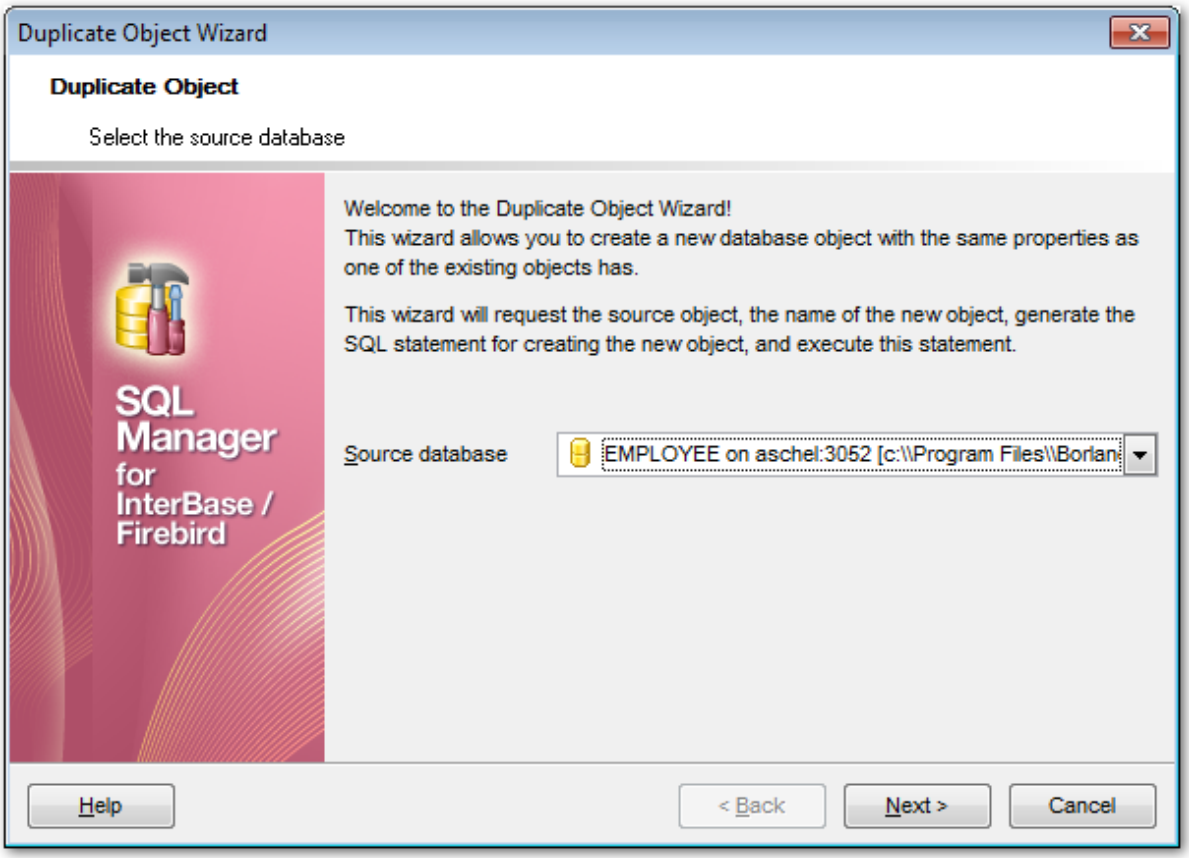
See also:

New Object dialog 165

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5.2.1 Selecting the source database

This step of the wizard allows you to select the **source database** containing the source object to be duplicated.



Click the **Next** button to proceed to the Selecting object to duplicate 169 step of the wizard.

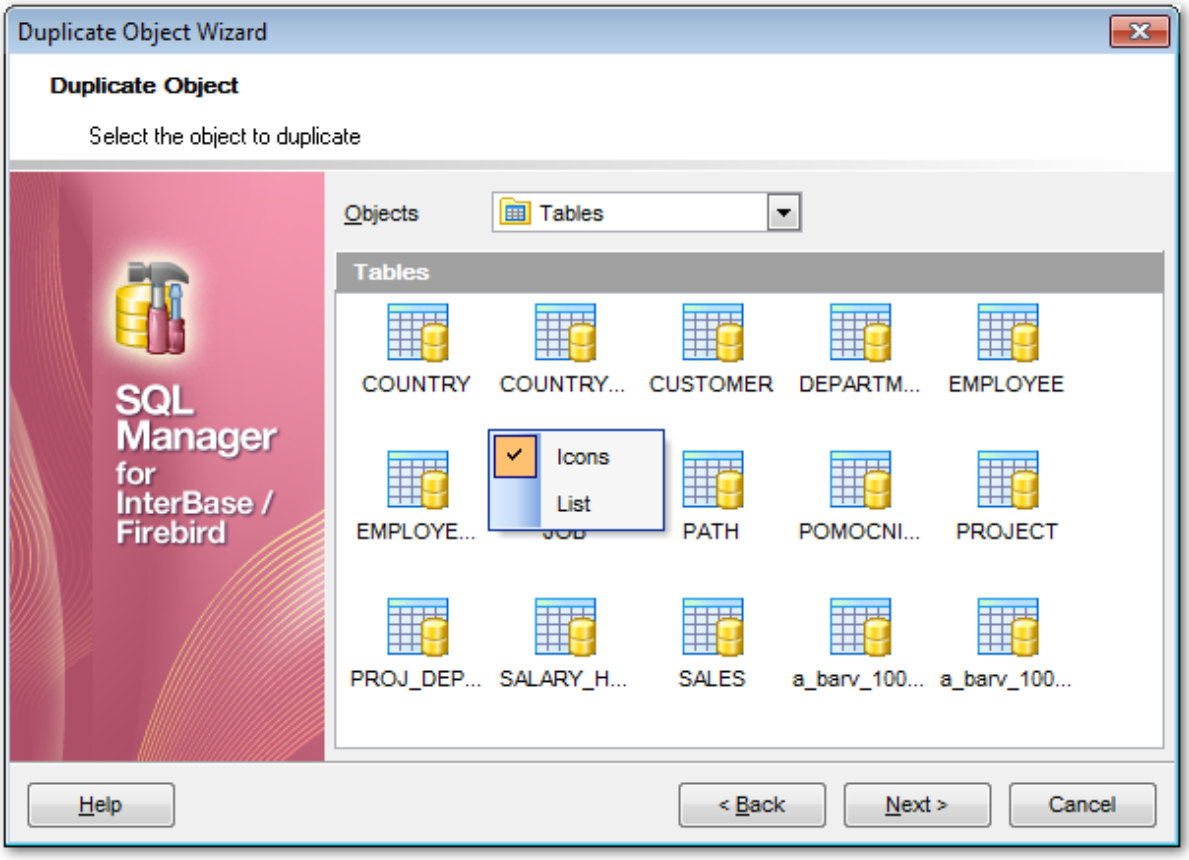
© 1999-2026 EMS Software Development

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 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*.



Click the **Next** button to proceed to the Selecting destination database[170] step of the wizard.

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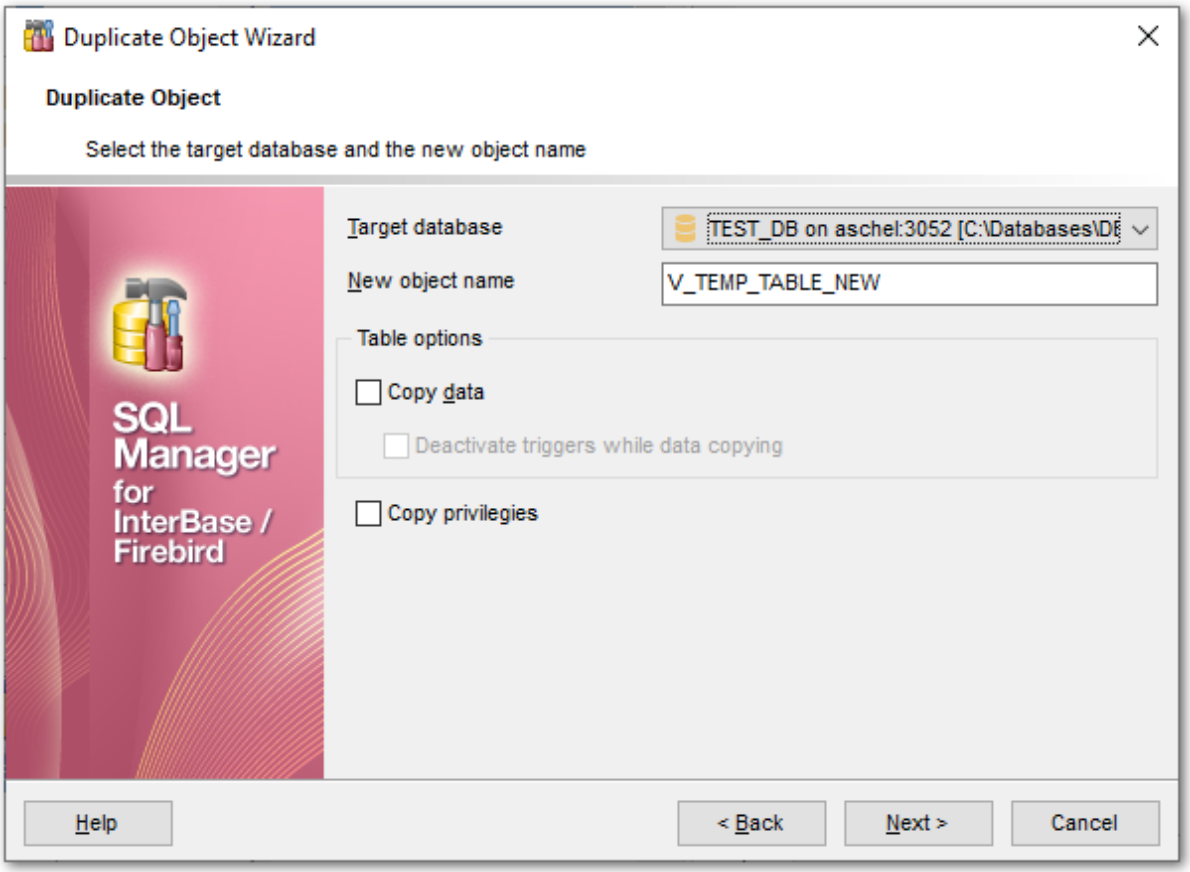
5.2.3 Selecting destination database

Select the **target database** to create the new object in, set the **name** of the new database object.

Table options

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

☑ **Deactivate triggers while data copying**
Disables object triggers firing while copying data.



☑ **Copy privileges**
Defines whether the privileges on the object should be copied as well (displaying the option depends on the object type).

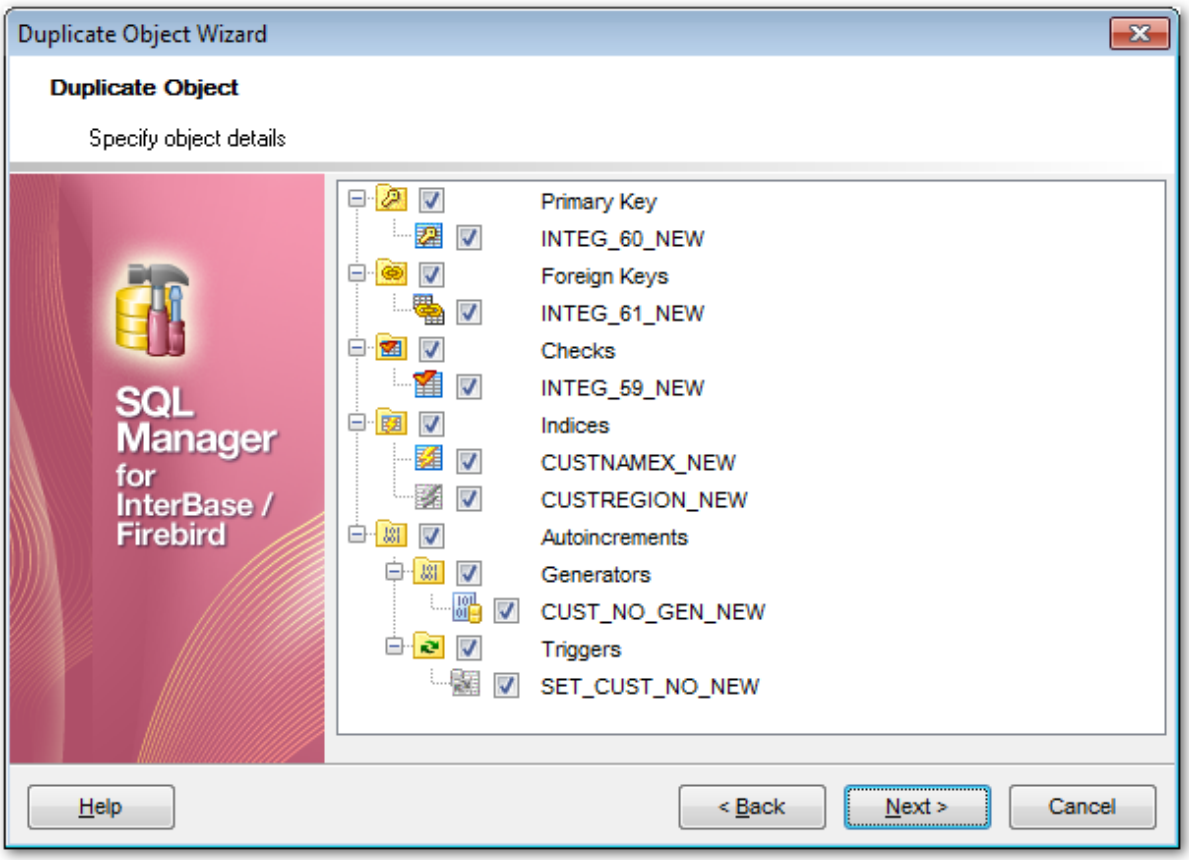
Click the **Next** button to proceed to the Specifying object details 171 step of the wizard.

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5.2.4 Specifying object details

Specify **object details** (subobjects, dependent objects) to be duplicated in the target object.

Note: Availability of this step depends on the type of object being duplicated.

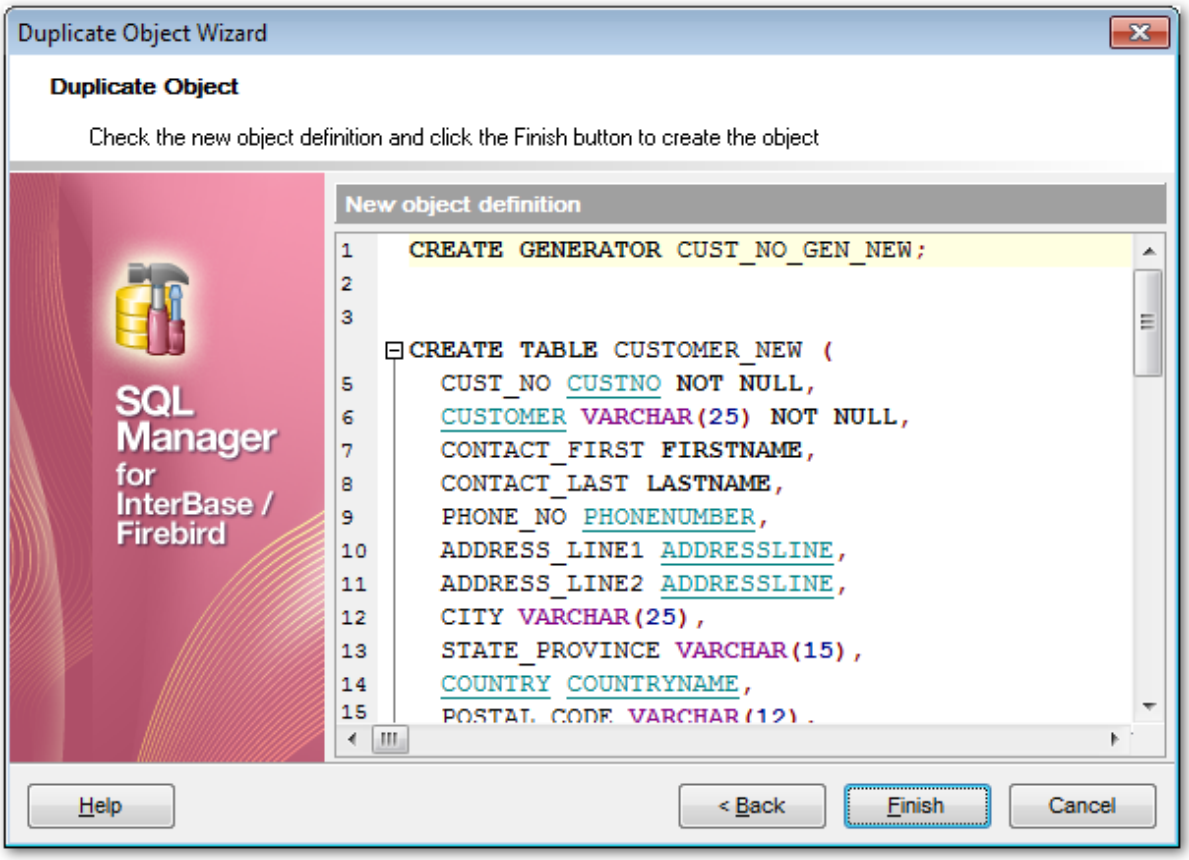


Click the **Next** button to proceed to the Modifying the new object's definition 172 step of the wizard.

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5.2.5 Viewing the new object's definition

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



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

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5.3 Domains

A **Domain** is a column definition template, global to the database, upon which actual column definitions in tables[179] may be based.
If there are columns[201] in the database table or in several database tables having the same properties, it is useful to describe such column type and its behavior as a domain, and then correspond each of these columns to this domain.

Domain Editor allows you to define domain properties. It opens automatically when you create a new domain and is available on editing an existing one.

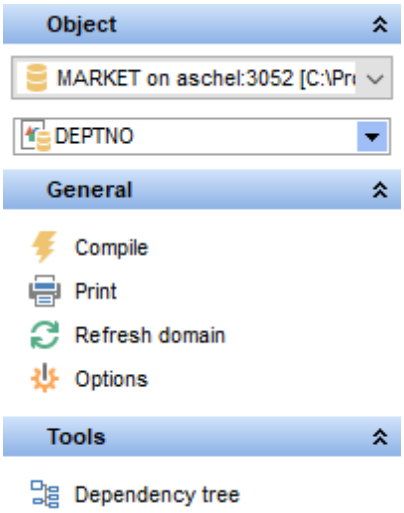
To open a domain in **Domain Editor**, double-click it in the DB Explorer[63] tree.

- Using Navigation bar and Toolbar[174]
- Creating/editing domain[176]
- Defining domain check[178]
- Browsing object dependencies[896]
- Editing object description[895]
- Viewing DDL definition[894]

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5.3.1 Using Navigation bar and Toolbar

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



Object
select a database
select a domain for editing

General
compile 906 the domain (if it is being created/modified)
show SQL help
set printing options 573 to print metadata 570 of the domain
view the dependency tree 536 for the domain
save the object using the Quick Save 930 feature
load the object from buffers using the Quick Load 930 feature
refresh the content of the active tab
open the object editor preferences.

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 domain:

Array dimensions
add an array dimension
insert an array dimension
delete the selected array dimension
move the selected array dimension up
move the selected array dimension down

Description
save object description 895 to file
copy description 895 to clipboard

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DDL

 save DDL[894] to file

 open DDL[894] in Execute Script[544]

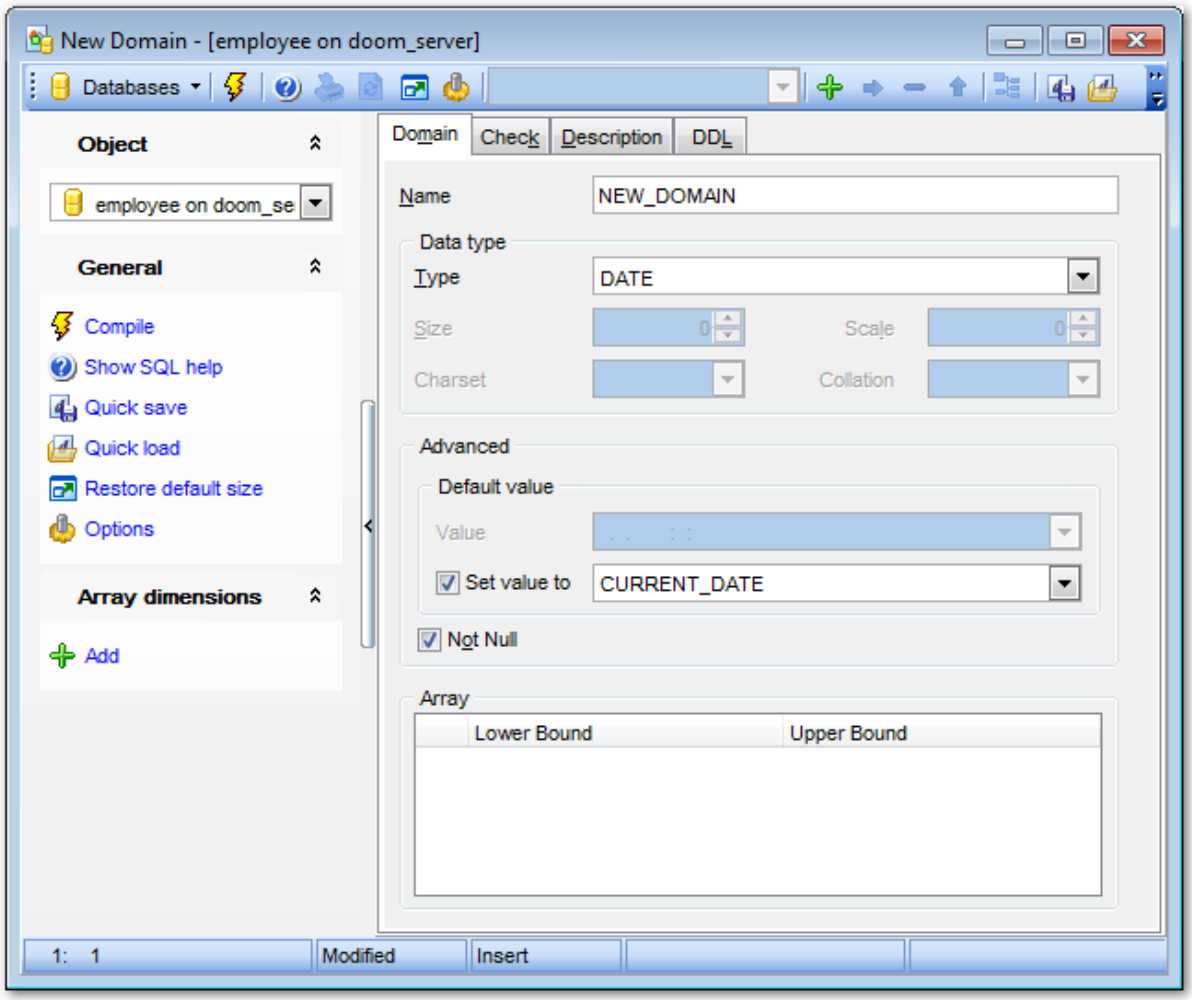
Items of the **Navigation bar** are also available on the **ToolBar** of **Domain Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.3.2 Creating/editing domain

Use the **Domain** tab of **Domain Editor** to create/edit a domain and specify its definition.

Name
Enter a name for the new domain, or modify the name of the domain being edited.



Data type
Select the underlying *data type* of the domain from the drop-down list, and set its *length*, *scale*, *charset*, *collation*, *segment size*, *subtype* (for BLOB data type: *0* - N/A data, *1* - text data, *2* - BLR (Binary Language Representation) data, etc.), if required for the selected data type.

Advanced

Default value
This specifies a default value for columns based on the domain. If no default value is specified, then the default value is the null value.

Value

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Type in the preferable default value for a domain. The data type of the default expression must match the data type of the domain.

Set value to
Use the drop-down list to select the default value for domain of the selected datatype.

Not Null
If enabled, specifies that values of this domain are not allowed to be null.

Array
This area allows you to manage domain array, if necessary. Use the **Lower Bound** / **Upper Bound** spinner controls for setting array dimensions.

Right-click the area to display the context menu allowing you to *add*, *insert*, *delete* the selected array dimension, or move it *up*/*down*.

Array management tools are also available through the Navigation bar 174 and toolbar 175 of **Domain Editor**.

To compile a domain, you can use the **Compile** item available within the Navigation bar 174 or toolbar 175.

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5.3.3 Defining domain check

The **Check** tab allows you to set CHECK constraints, i.e. conditions that must be true for inserts and updates to the field, based on the current domain, e.g. *VALUE>=10*. The CHECK constraint cannot reference any domain or column.

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 334 and Using the context menu 336.

The check definition can be loaded from, and saved to, a file with the help of the appropriate items of the **Check** group of the Navigation bar 174.



See Checks 217 for details.

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5.4 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

- select the **Database | New Object...** main menu 890 item;
- select **Table** in the Create New Object 165 dialog;
- define table properties and fields using the appropriate tabs of Table Editor 185.

Hint: To create a new table, you can also right-click the **Tables** node or any object within this node in the DB Explorer 63 tree and select the **New Table...** item from the context menu 56.

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

- select the **Database | Duplicate Object...** menu item;
- follow the instructions of Duplicate Object Wizard 167.

Alternatively, you can right-click a table in the DB Explorer 63 tree and select the **Duplicate Table <table_name>...** context menu item.

Duplicate Object Wizard 167 allows you to select the database to create a new table in, and to view the result SQL statement for creating the table.

Editing Tables

To edit an existing table (manage its fields 189, indexes 197, data 200, etc.):

- select the table for editing in the DB Explorer 63 tree (type the first letters of the table name for quick search 78);
- 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 185.

Dropping Tables

- select the table to drop in the DB Explorer 63 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 940:
Ctrl+N to create a new table;
Ctrl+O to edit the selected table;
Shift+Del to drop the object from the database.

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5.4.1 New Table

The **New Table** window is a mode of Table Editor[185] that opens automatically when you create a new table (see Create table[179] for details) and allows you to create a new table, set table properties[182], and specify table fields[184].

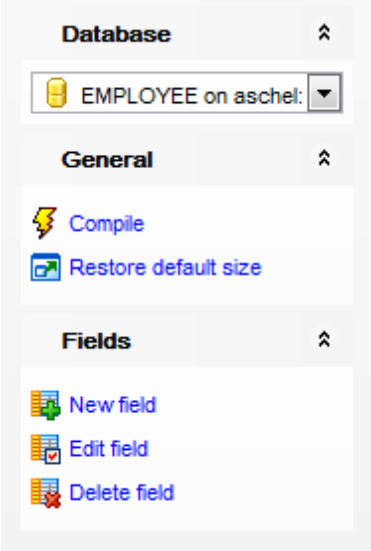
To call **Table Editor** for creating a new table, you can right-click the **Tables** node or any object within this node in the DB Explorer[63] tree and use the *Ctrl+N* shortcut[940].

- Using Navigation bar and Toolbar[181]
- Setting table properties[182]
- Specifying table fields[184]

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5.4.1.1 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 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:

Fields
add a new field
edit selected field
drop selected field(s)

DDL
save DDL to file
open DDL in Query Editor

Items of the **Navigation bar** are also available on the **ToolBar** of **Table 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.

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5.4.1.2 Setting table properties

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

Table name
Name of the table; must be unique among table and procedure[254] names in the database.

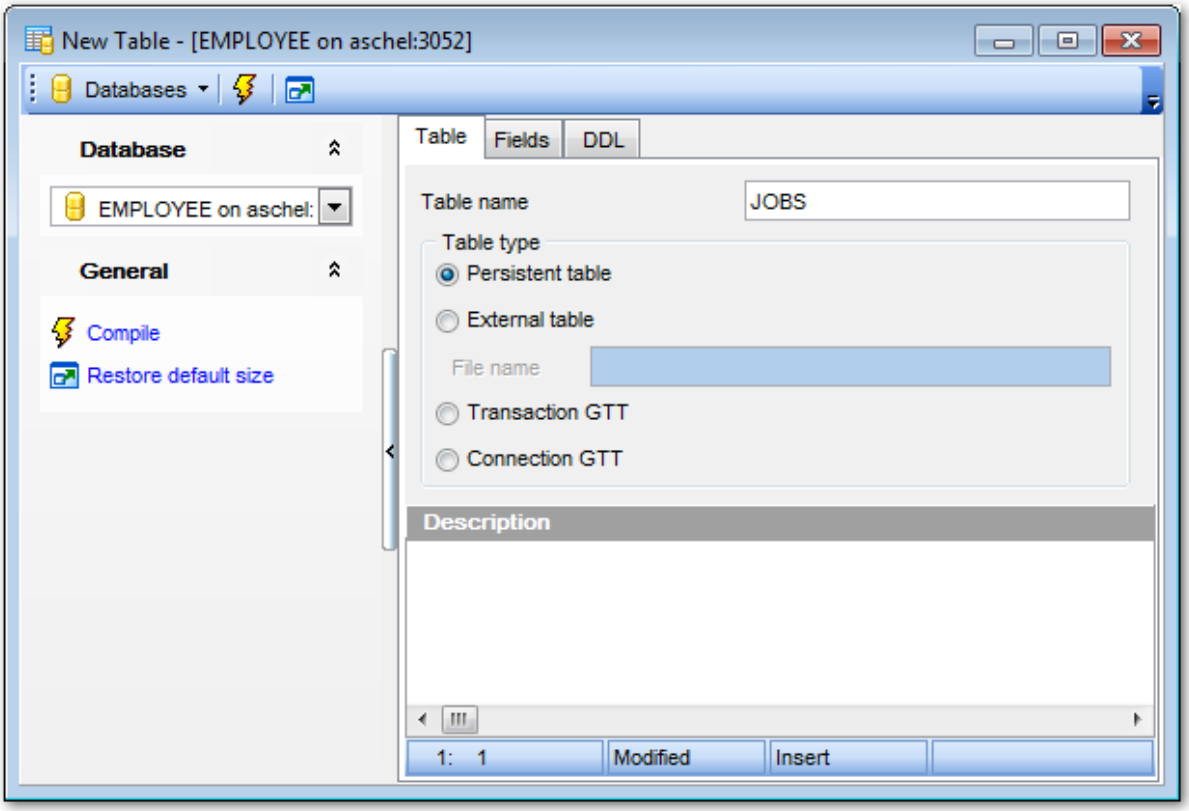


Table type
This group allows you to specify the type of the table being created.

Persistent table
Specifies a regular table with data stored in the database.

External table
Specifies that data for the table under creation resides in a table or file outside the database.

File name
Type in or use the button for complete file specification of the external file/table. The drop-down list contains the previously specified paths.

Transaction GTT
If this option is selected then Global Temporary Table records are stored until any transaction is committed within this connection session.

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Connection GTT
This option indicates that Global Temporary Table records are stored up to the termination of the session during which the records were added. Stored records visibility is restricted with this connection.

Description
This field contains any optional description for the table.

To compile the table, use the **Compile** item available within the Navigation bar[181] or toolbar[181].

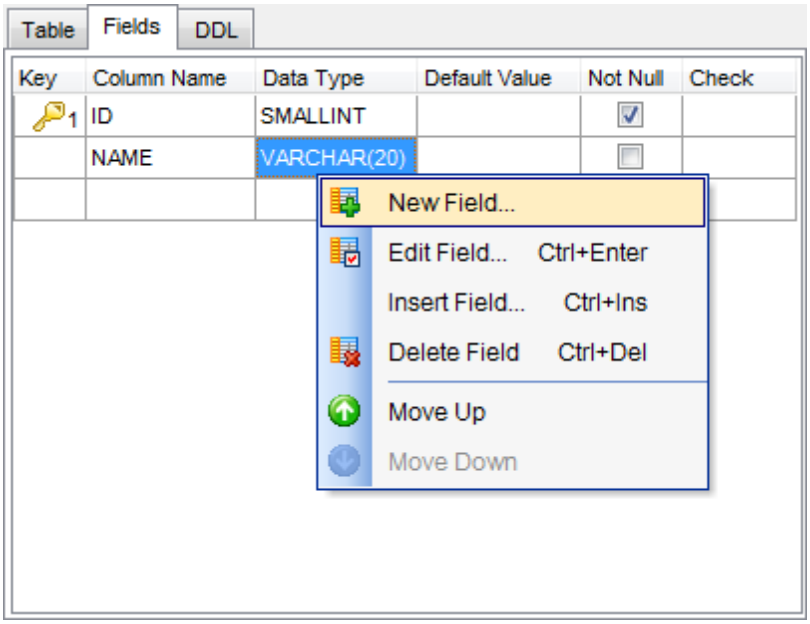
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5.4.1.3 Specifying fields

The **Fields** tab is intended for setting up table fields[201]. Double-click a field to open Field Editor[202] for editing the field.

Right-click within the **Table Fields** area to display the context menu allowing you to *insert*, *edit*, *delete*, and *reorder* fields.

Fields management tools are also available through the Navigation bar[181] of **Table Editor**.



The **Table Fields** list provides the following attributes of each field of the new table:
Key
Column Name
Data Type
Default Value
Not Null
Check

For details see Fields[201].

To compile the table, use the **Compile** item available within the Navigation bar[181].

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5.4.2 Table Editor

Table Editor is the basic **SQL Manager** tool for working with tables[179]. It opens automatically in the New table[180] mode when you create a new table and is available on editing an existing one (see Create table[179] and Edit table[179] for details).

Table Editor allows you to create, edit and drop table's fields[201], indexes[226], foreign keys[217] and other table subobjects, manage table data[200], and much more.

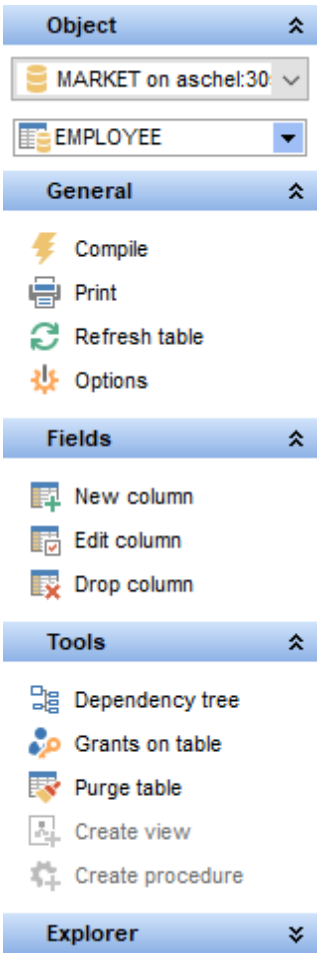
To open a table in **Table Editor**, double-click it in the DB Explorer[63] tree.

- Using Navigation bar and Toolbar[186]
- Managing fields[189]
- Managing indexes[197]
- Managing constraints[192]
- Managing triggers[198]
- Working with table data[200]
- Browsing object dependencies[896]
- Setting object permissions[897]
- Viewing DDL definition[894]

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5.4.2.1 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
- refresh the content of the active tab
- define grants[734] on the table
- set printing options[573] to print metadata[570] of the table
- save the object using the Quick Save[930] feature
- load the object from buffers using the Quick Load[930] feature
- show SQL help
- adjust Table Editor options[782]
- restore the default size and position of the editor window
- compile[906] the table (if it is being modified)

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Tools
view the dependency tree 536 for the table
create 233 a view 243 based on the table
create 237 a procedure 254 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:

Description
save object description 895 to file
copy description 895 to clipboard

Fields
add 201 a new field
edit 201 selected field
drop 201 selected field(s)

Constraints
add 217 a new primary key
edit 217 selected primary key
drop 218 selected primary key
add 218 a new foreign key
edit 218 selected foreign key
drop 218 selected foreign key(s)
add 218 a new check
edit 218 selected check
drop 219 selected check(s)
add 219 a new unique constraint
edit 219 selected unique constraint
drop 219 selected unique constraint(s)

Indexes
add 226 a new index
edit 226 selected index
drop 226 selected index(-es)

Triggers
add 231 a new trigger
edit 231 selected trigger
drop 231 selected trigger(s)

Data Management
commit transaction
rollback transaction

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export data from the table using Export Data Wizard 445
export data from the table as SQL script using Export as SQL Script Wizard 519
import data into the table using Import Data Wizard 493

Permissions

Grant
Grant with Grant Option
Revoke
Grant All
Grant All with Grant Option
Revoke All
Grant on All
Grant on All with Grant Option
Revoke on All
Add Grantee object

DDL

save DDL 894 to file
open DDL in Execute Script

Items of the **Navigation bar** are also available on the **ToolBar** of **Table Editor**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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5.4.2.2 Managing fields

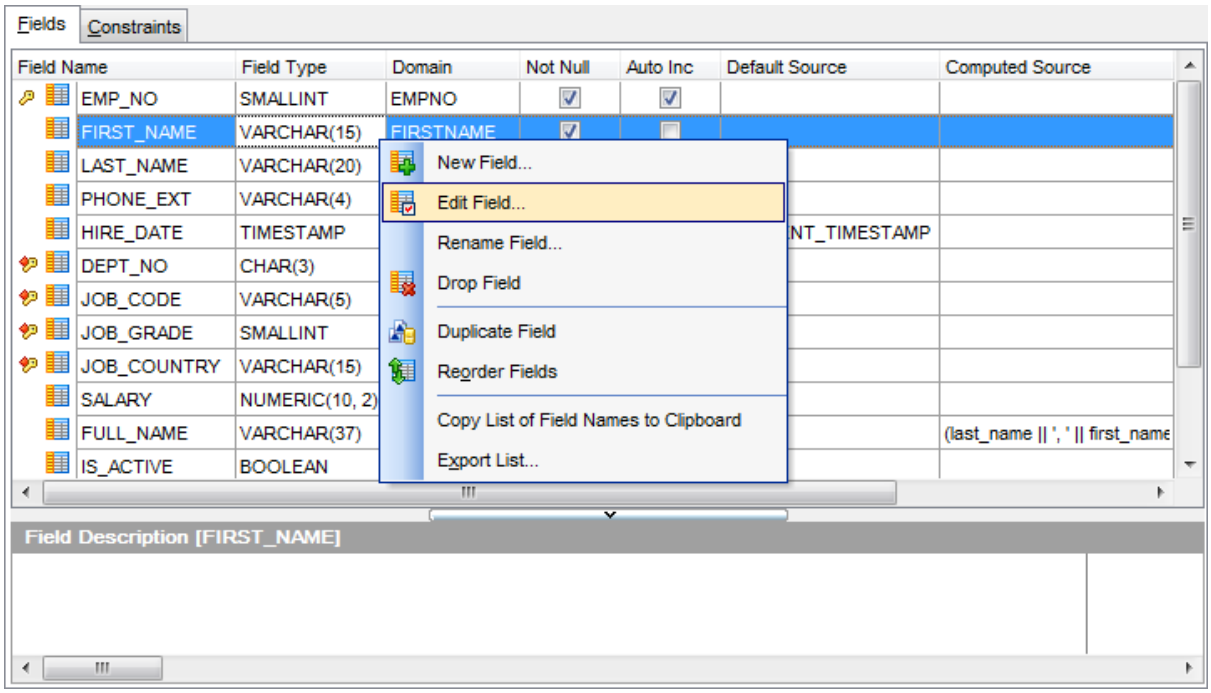
The **Fields** tab is intended for managing table fields[201].

Hint: This tab is selected by default upon opening **Table Editor** if the *Always open the fields tab* option is enabled on the Tools | Object Editors | Table Editor[782] page of the Environment Options[744] dialog.

Double-click a field to open Field Editor[202] for editing the field.

Right-click a field to display the context menu allowing you to *create* new, *edit*, *drop*, *rename*, *duplicate* the selected field, or reorder[191] fields of the table. Using the menu you can also copy to clipboard or export[445] the list of the table fields to any of supported formats[919].

Fields management tools are also available through the Navigation bar[186] and toolbar[188] of **Table Editor**.



The **Fields** list provides the following attributes of each field of the table:
Field Name
Field Type
Domain
Not Null
Default Source
Computed Source
Description

For details see Fields[201].

If necessary, you can also use the **Field Description** area to supply a *description* for each field.

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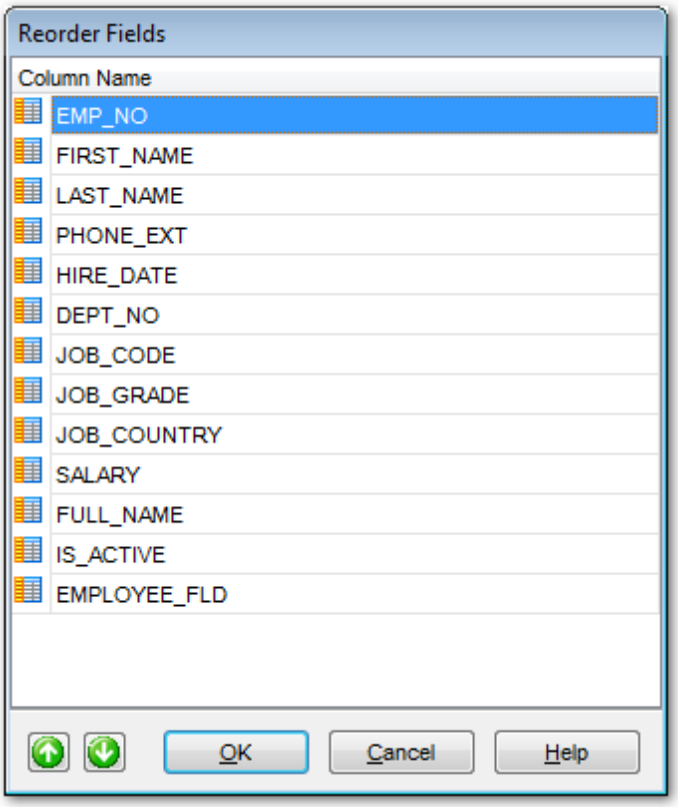
5.4.2.3 Changing fields order

The **Reorder Fields** dialog allows you to change the fields order in the table.

To open this dialog, open the table in **Table Editor**, proceed to the Fields 189 tab there, right-click within the **Fields** list and select the **Reorder Fields** item from the context menu.

The fields are displayed in the **Column name** list in the current order.

To change the fields order, use the  buttons or drag-and-drop operations within the list. Click the **OK** button and compile the table to view the modification script in the Compile 906 window and apply changes.



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5.4.2.4 Managing constraints

The **Constraints** tab of **Table Editor** allows you to manage table data integrity constraints:

- PRIMARY KEY 193
- FOREIGN KEY 194
- CHECK 195
- UNIQUE 196

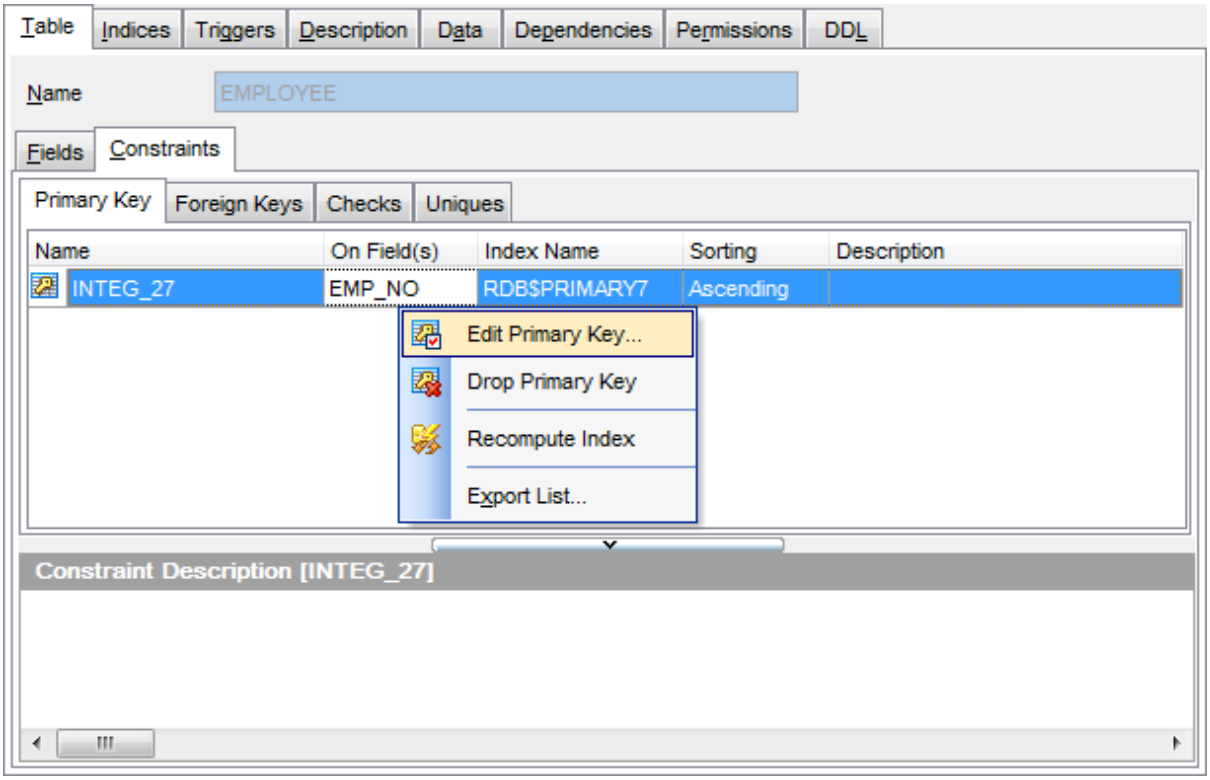
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5.4.2.4.1 Primary keys

The **Primary Key** tab is provided for managing table PRIMARY KEY 217 constraints. Double-click a primary key to open Constraints Editor 220 for editing the primary key 221.

Right-click a primary key to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected primary key. Using the menu you can also *recompute* the underlying index and export 445 the list of keys to any of supported formats 919.

Keys management tools are also available through the Navigation bar 186 of **Table Editor**.



The **Keys** list provides the following attributes of primary key of the table:
Name
On Field(s)
Index Name
Sorting

For details see Primary keys 217.

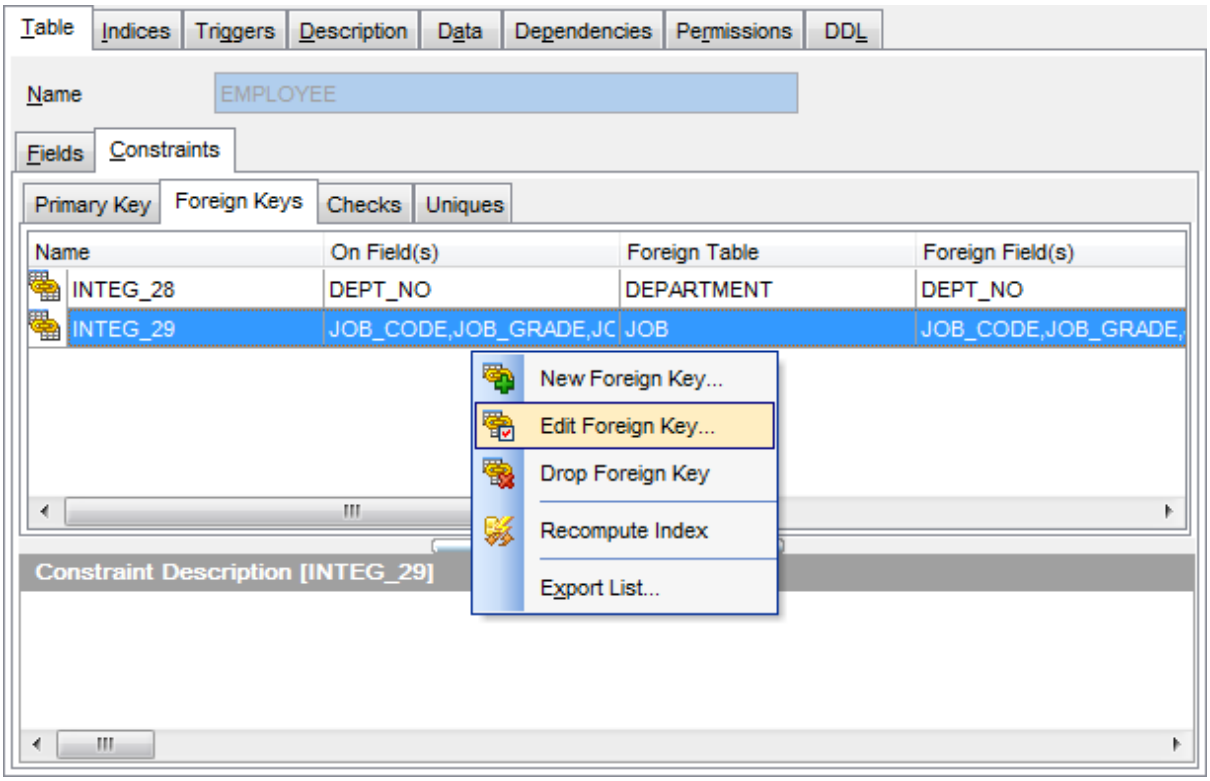
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5.4.2.4.2 Foreign keys

The **Foreign Keys** tab is provided for managing table FOREIGN KEY 217 constraints. Double-click a foreign key to open Constraints Editor 220 for editing the foreign key 222.

Right-click a Foreign key to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected Foreign key. Using the menu you can also export 445 the list of the table Foreign keys to any of supported formats 919.

Foreign keys management tools are also available through the Navigation bar 186 of **Table Editor**.



The **Foreign Keys** list provides the following attributes of each Foreign key of the table:
Name
On Field(s)
Foreign Table
Foreign Field(s)
Index Name
Sorting

For details see Foreign keys 217.

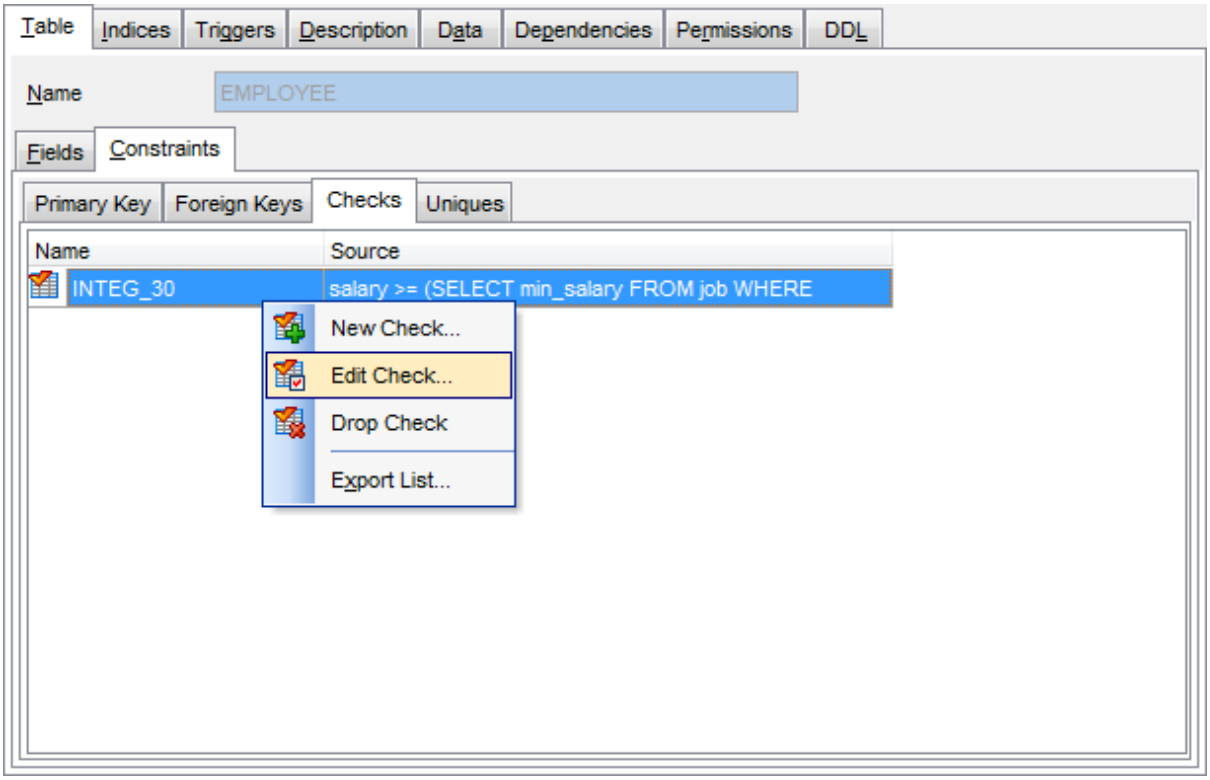
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5.4.2.4.3 Checks

The **Checks** tab is provided for managing table CHECK 217 constraints. Double-click a check to open Constraints Editor 220 for editing the check 224.

Right-click a check to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected check. Using the menu you can also export 445 the list of the table checks to any of supported formats 919.

Checks management tools are also available through the Navigation bar 186 of **Table Editor**.



The **Checks** list provides the following attributes of each check constraint of the table:
Name
Source

For details see Checks 217.

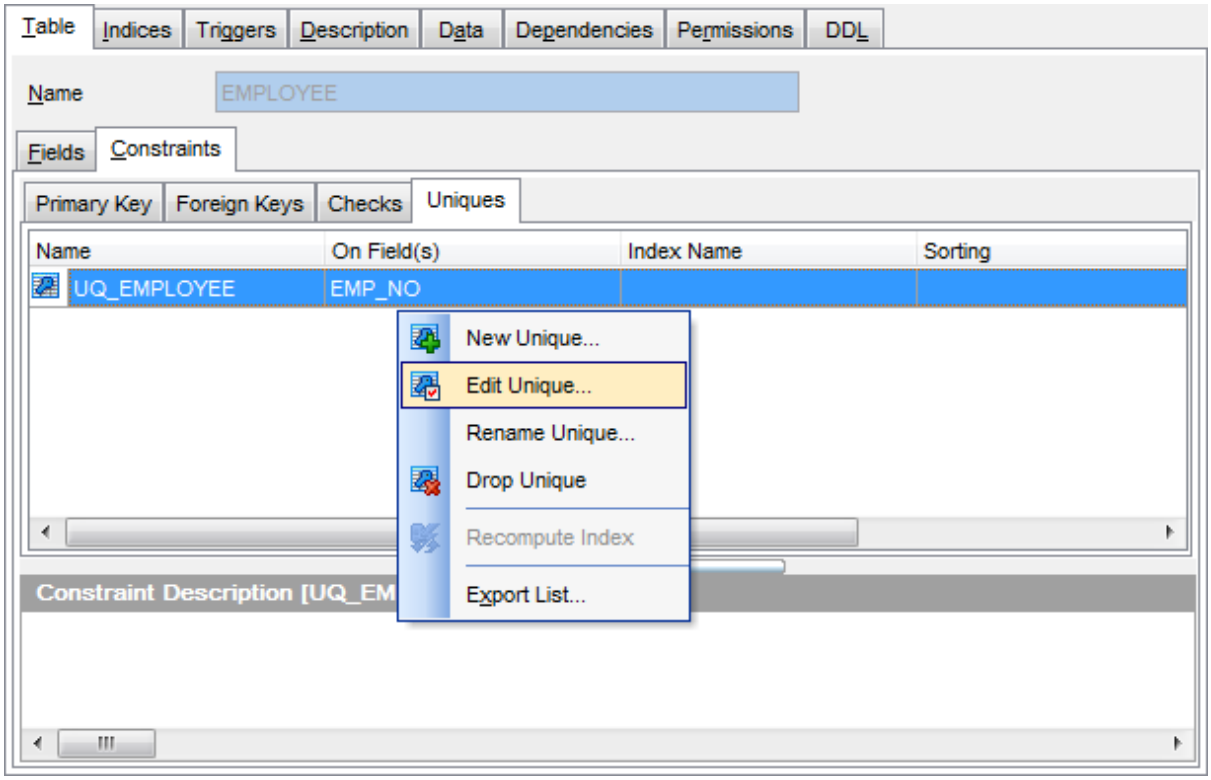
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5.4.2.4.4 Unique constraints

The **Uniques** tab is provided for managing table UNIQUE 217 constraints. Double-click a key to open Constraints Editor 220 for editing the unique constraint 225.

Right-click a key to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected unique key. Using the menu you can also *recompute* the underlying index and export 445 the list of the table unique keys to any of supported formats 919.

Keys management tools are also available through the Navigation bar 186 of **Table Editor**.



The **Uniques** list provides the following attributes of each unique constraint of the table:
Name
On Field(s)
Index Name
Sorting
Description

For details see Unique constraints 217.

If necessary, you can also use the **Constraint Description** area to supply a *description* for each unique constraint.

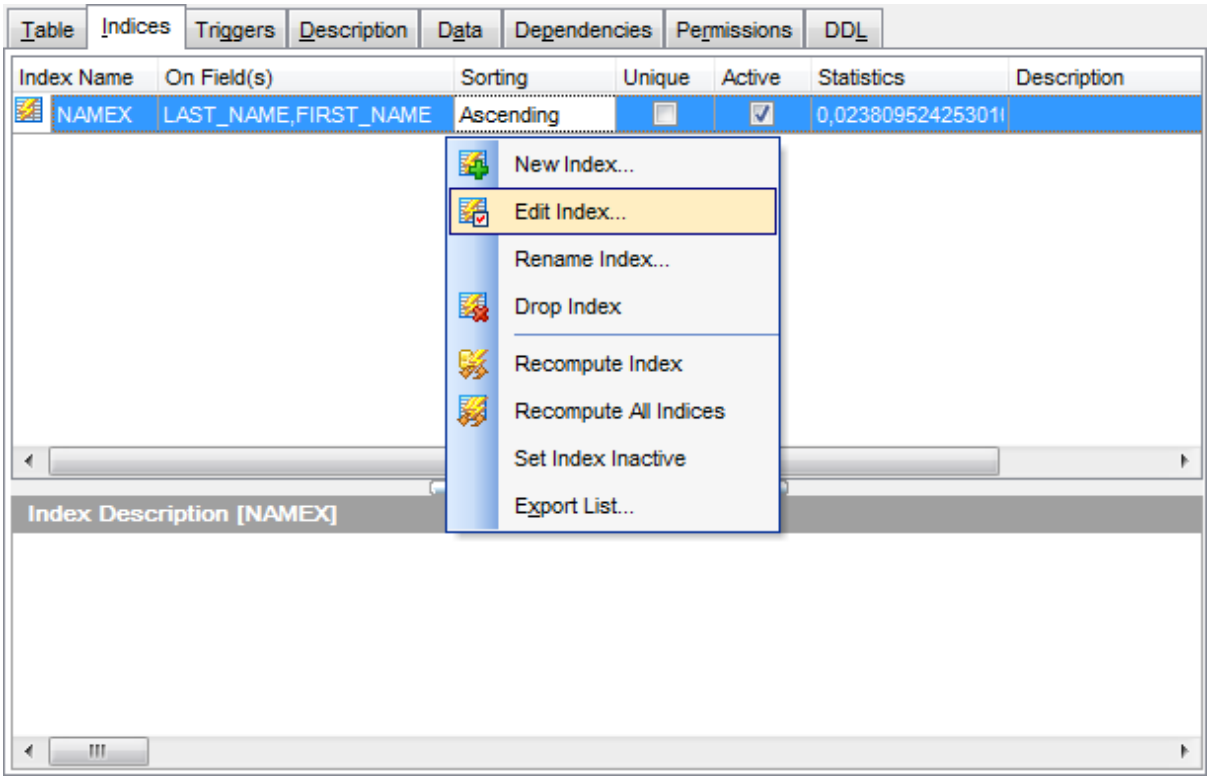
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5.4.2.5 Managing indices

The **Indexes** tab is provided for managing table indexes[226]. Double-click an index to open Index Editor[227] for editing the index.

Right-click an index to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected index. Using the menu you can also *recompute* selected or all indexes, set the index *active/inactive*, and export[445] the list of the table indexes to any of supported formats[919].

Indexes management tools are also available through the Navigation bar[186] of **Table Editor**.



The **Indexes** list provides the following attributes of each index of the table:
Index Name
On Field(s)
Sorting
Unique
Active
Statistics
Description

For details see Indexes[226].

If necessary, you can also use the **Index Description** area to supply a *description* for each index.

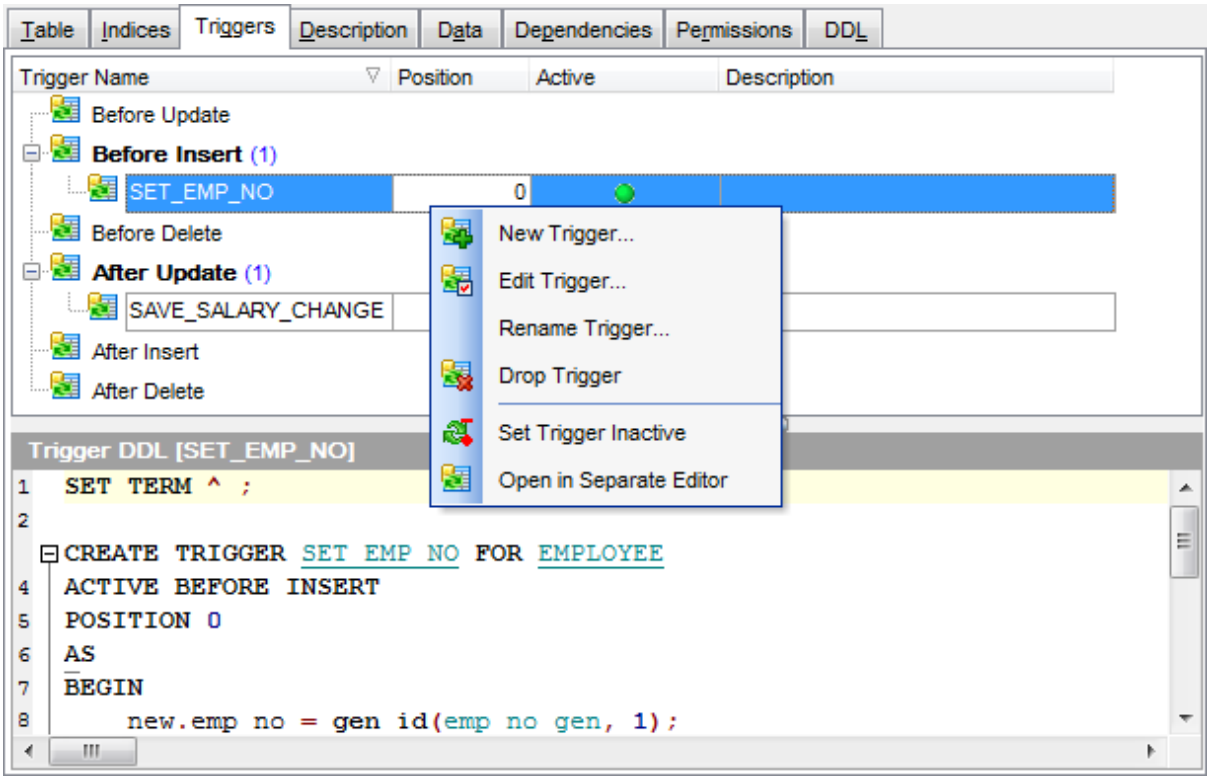
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5.4.2.6 Managing triggers

The **Triggers** tab is provided for managing table triggers[231]. Double-click a trigger to open Trigger Editor[232] for editing the trigger.

Right-click the area to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected trigger. Using the menu you can also set the trigger *active/inactive*, and open the selected trigger in a separate Trigger Editor[231].

Triggers management tools are also available through the Navigation bar[186] of **Table Editor**.



The **Triggers** list provides the following attributes of each trigger of the view:
Trigger Name
Position
Active
Description

On this tab all triggers are grouped into categories:

- *Before Insert*
- *After Insert*
- *Before Update*
- *After Update*
- *Before Delete*
- *After Delete*

The trigger definition is displayed in the **Trigger DDL** window.

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Use the context menu or items on a toolbar to manage triggers:
- add 231 a new trigger
- edit 231 selected trigger
- drop 231 selected trigger(s)
- set trigger active/inactive
- open selected trigger in a Trigger Editor 282

For details see Triggers 282.

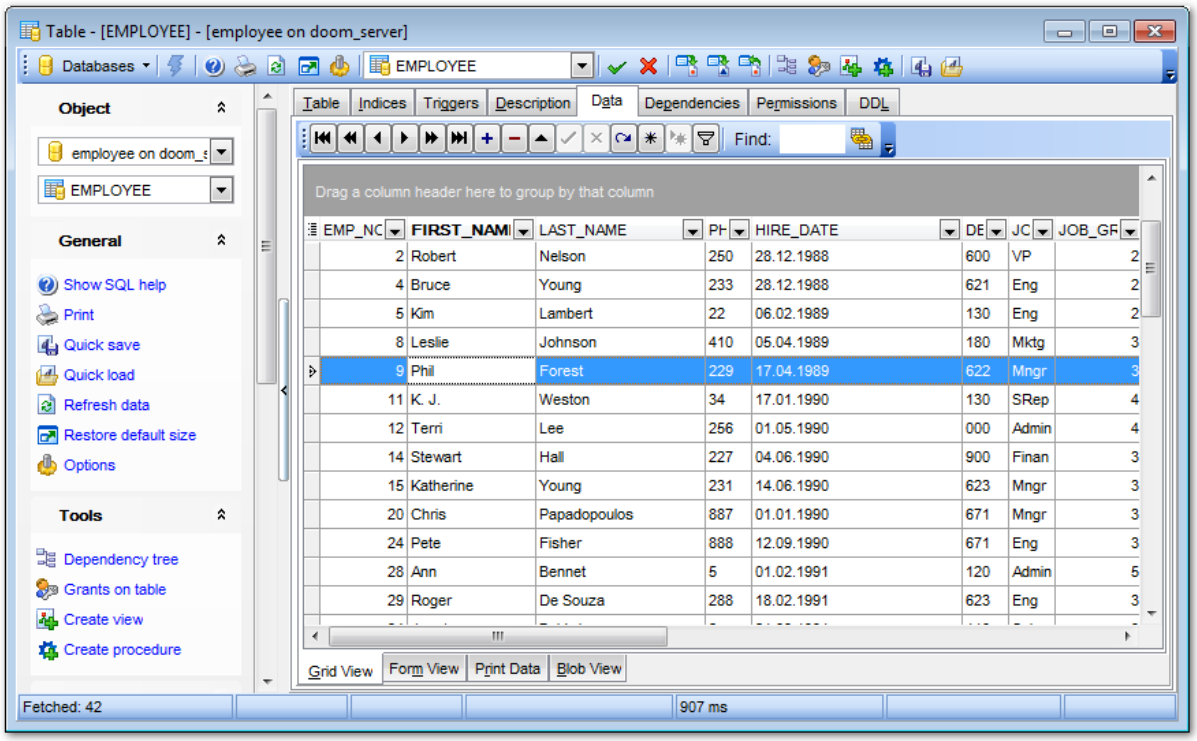
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5.4.2.7 Working with table data

The **Data** tab displays the table data as a grid by default (see Data View 370 for details). The context menu of this tab allows you to Export Data 445, Import Data 493, Export as SQL Script 519.

Data management tools are also available through the Navigation bar 186 of **Table Editor**.

While working with data, you are provided with a number of filtering 380 and grouping 377 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:

Working with view data 253

5.4.3 Fields

Table fields are managed within the **Fields** tab of Table Editor[185].

Creating Fields

- open the table in Table Editor[185];
- proceed to the **Fields** tab there;
- right-click the tab area and select the **New Field...** context menu item, or press the *Ins* key;
- define the field properties using the Field Editor[202] dialog.

Editing Fields

To edit an existing table field:

- open the table in Table Editor[185];
- proceed to the **Fields** tab there;
- right-click the field and select the **Edit Field <field_name>...** context menu item, or simply double-click the field;
- edit the field properties using the Field Editor[202] dialog.

To change the name of a field:

- open the table in Table Editor[185];
- proceed to the **Fields** tab there;
- right-click the field to rename and select the **Rename Field <field_name>...** item from the context menu;
- edit the field name using the **Rename Object...** dialog.

To change the order of table fields:

- open the table in Table Editor[185];
- proceed to the **Fields** tab there;
- right-click a field and select the **Reorder Fields** context menu item;
- edit fields' order using the Reorder Fields[191] dialog.

Dropping Fields

- open the table in Table Editor[185];
- proceed to the **Fields** tab there;
- right-click the field and select the **Drop Field <field_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

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5.4.3.1 Field Editor

Field Editor allows you to specify field definition and set field properties. It opens automatically when you create a new field and is available on editing an existing one (see Create field 201 and Edit field 201 for details).

To open a field in **Field Editor**, double-click it in the DB Explorer 63 tree, or use the **Edit Field...** item of the context menu within the Fields 189 tab of Table Editor 185.

- Setting field name and type 203
- Options for domain-based field 205
- Options for field of standard data type 207
- Defining array 208
- Specifying 'COMPUTED BY' expression 210
- Setting field defaults 211
- Defining autoincrement 212
- Setting field checks 216
- Editing object description 895
- Viewing DDL definition 894

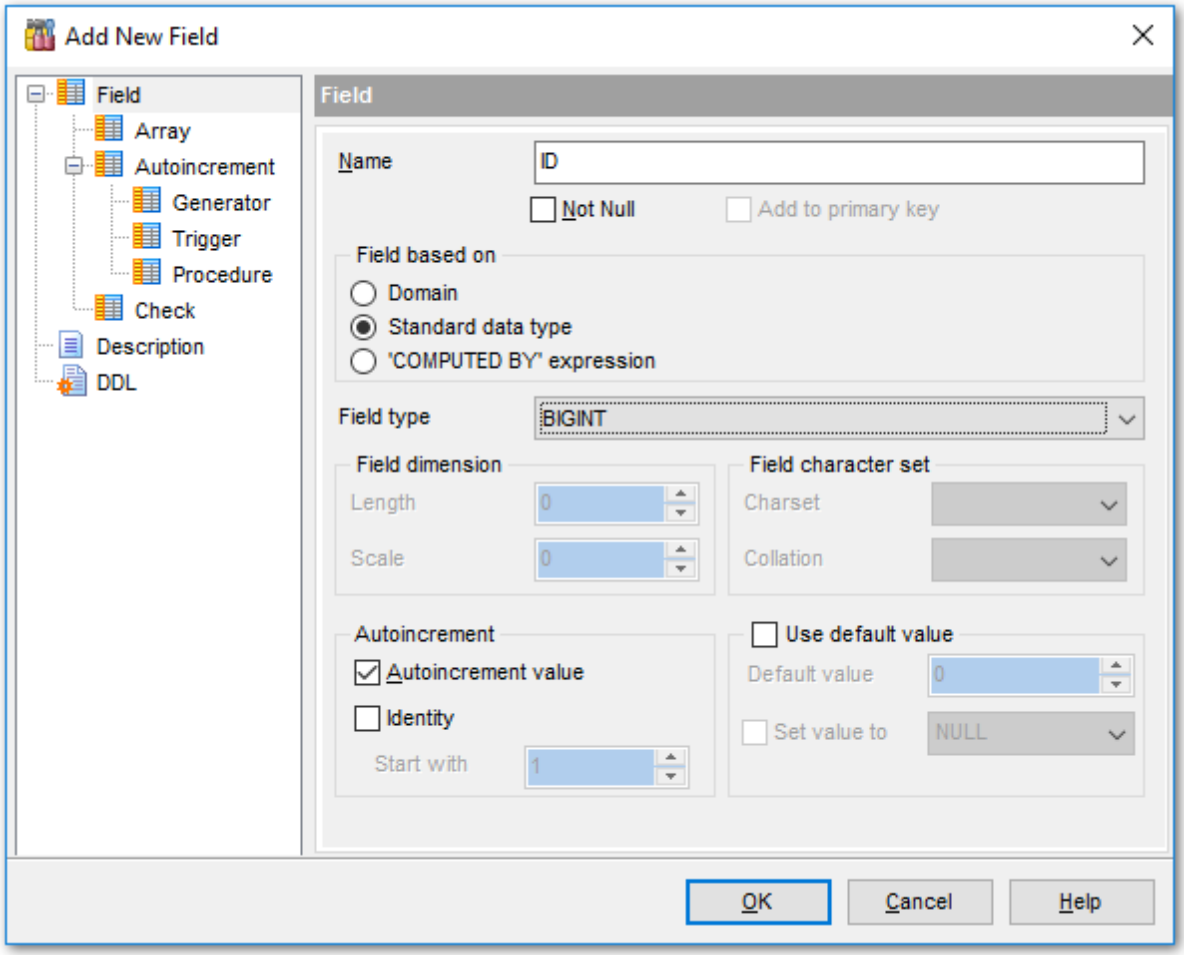
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5.4.3.1.1 Setting field name and type

Column
Enter a name for the new field, or modify the name of the field being edited. Note that the name of a field must be unique among all the field names in the table.

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.

Add to primary key
Check this option to include the field into the primary key 217. Note that if a field is included into a primary key, it also gets the **Not Null** attribute enabled.



Field based on
This group allows you to select the source type for the field being created/edited. It can be one of existing domains 173, a standard (built-in) InterBase/Firebird data type (e.g. INTEGER, DATE or CHAR), or a 'COMPUTED BY' expression (if you want to calculate the field value using values of other fields).

Domain
Specifies that the field is based on a domain previously created in the database.

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If this option is selected, you should set options for domain-based field 205.

Standard Data type
Specifies that the field is based on a standard data type.
If this option is selected, you should set options for field of standard data type 207.

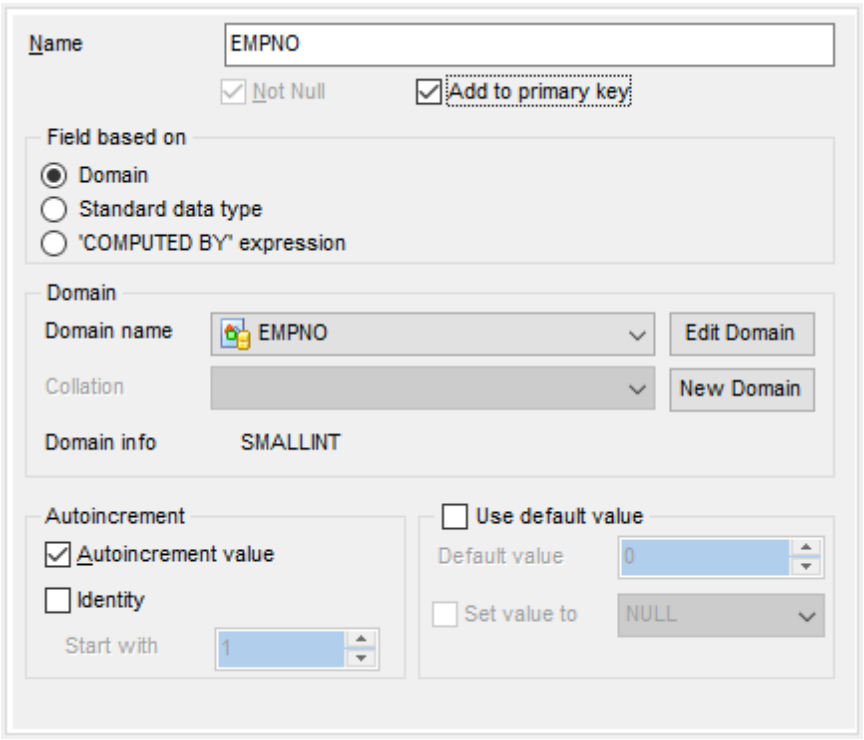
'COMPUTED BY' expression
Specifies that the value of the field's data is calculated from an expression at runtime, and therefore storage space is not allocated in the database.
If this option is selected, you should specify 'COMPUTED BY' expression 210.

Support IB6/FireBird syntax
This option is only available on editing an existing field. Select this option to enable support of InterBase 6.0 / FireBird syntax.

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5.4.3.1.2 Options for domain-based field

If you select the *Domain* option of the **Field based on** group indicating that the field being created/edited is based on a domain[173], you should specify **domain-specific options**.



Domain

Domain name
Use the drop-down list of existing domains[173] to select the domain to be used for the field.

Autoincrement value and **Identity**
These options are only available if the selected domain is based on a numeric data type. For details see Defining autoincrement[212].

Collation
This setting is only available if the selected domain is based on a string data type. Use the drop-down list to select the collation order to be used for string data stored in the column.

To edit[173] the selected domain using Domain Editor[173], click the **Edit Domain** button. To create[173] a new domain for the field using Domain Editor[173], click the **New Domain** button.

Domain info
This group allows you to view basic information on the selected domain.

Use default value
Enable this option to specify the value this field will take by default. For details see

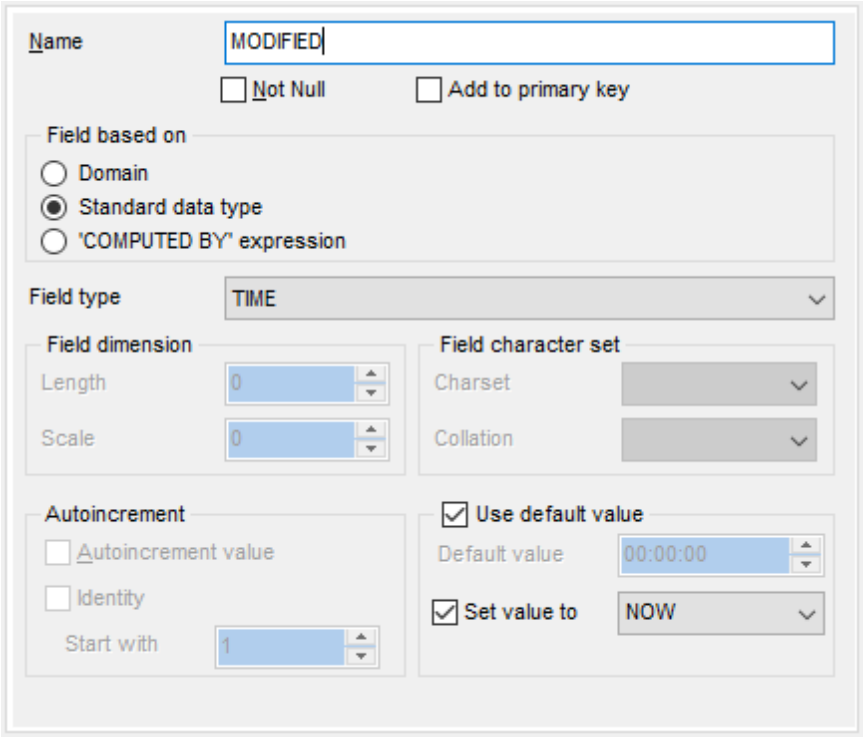
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Setting field defaults 211.

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5.4.3.1.3 Options for field of standard data type

If you select the *Standard data type* option of the **Field based on** group indicating that the field being created/edited is based on a standard InterBase/Firebird data type, you should specify **options** for the data type.



Field type
Use the drop-down list of ANSI SQL data types to select the one to be applied for the field.

☑ **Autoincrement value** and ☑ **Identity**
Use these options to setup autoincrement 212 field properties.

Field dimension
For NUMERIC and DECIMAL data types set digit **precision** (digits of precision to store, *1* to *18*) and **scale** (number of decimal places that can be stored, *1* to *18*) in the appropriate boxes; for CHAR and VARCHAR set **length** (in characters), for BLOB data type set **segment size** and **subtype**.

Field character set
Use this group to set the column **character set** and **collation order**.

String (CHAR, VARCHAR, text Blob) columns of InterBase/Firebird can use different character sets. A **character set** defines the symbols that can be entered as text in a column, and it also defines the maximum number of bytes of storage necessary to represent each symbol. A number of **character sets** can be used to store InterBase/Firebird data, and the server allows comparisons according to a variety of **collations**.

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The column character set and collation are treated by the server in the following way:

- If both **Character Set** *X* and **Collation** *Y* are specified, then character set *X* and collation *Y* will be applied
- If **Character Set** *X* is specified without **Collation**, then character set *X* and its default collation will be applied
- Otherwise, the database character set (see the Connection 116 section of the Database Registration Info 115 dialog) and its default collation are used

Charset
Use the drop-down list to select the character set for the column.

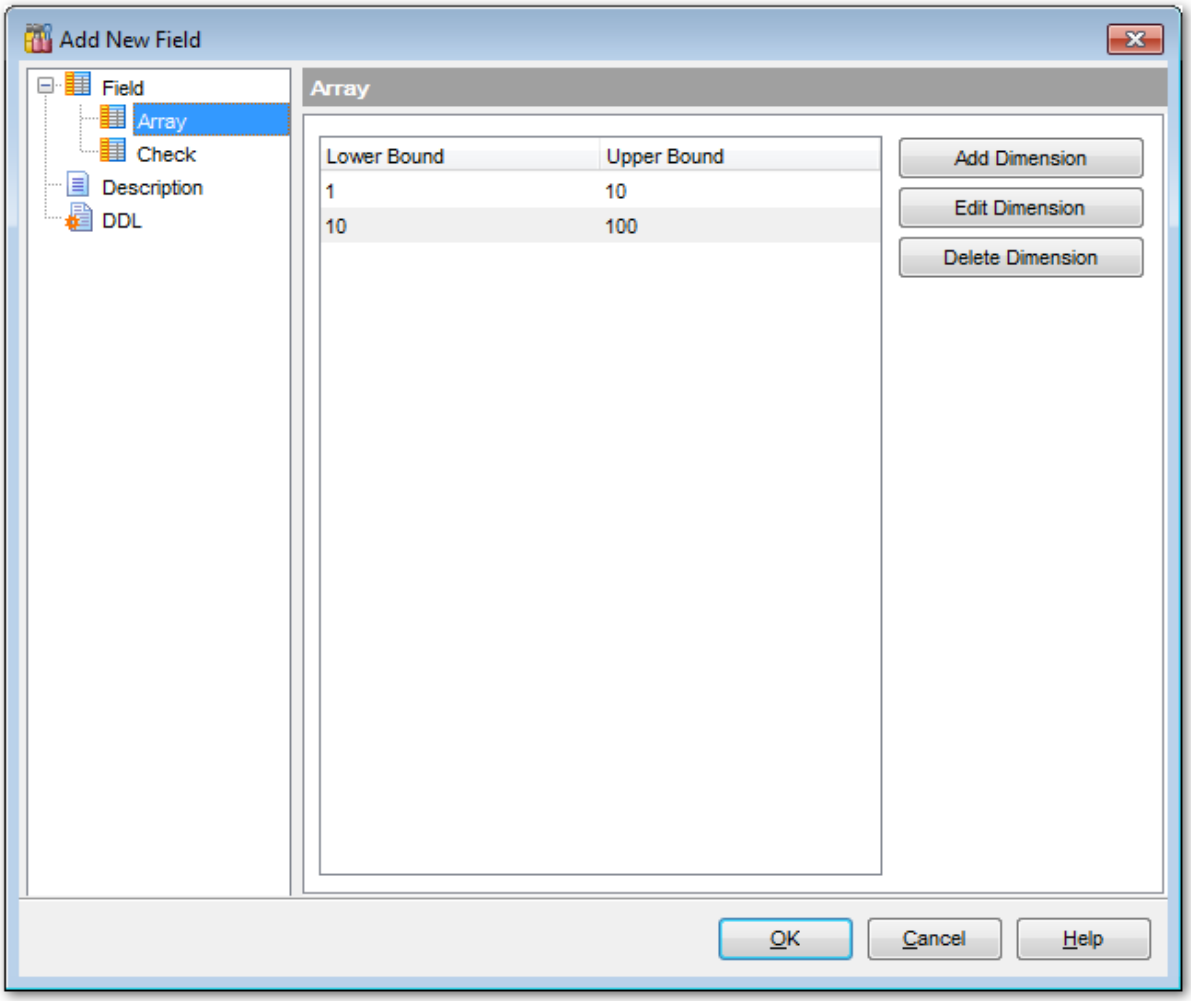
Collation
Use the drop-down list to specify the collation order to be used for string data stored in the column.

☑ **Use default value**
Enable this option to specify the value this field will take by default. For details see Setting field defaults 211.

5.4.3.1.3.1 Defining array

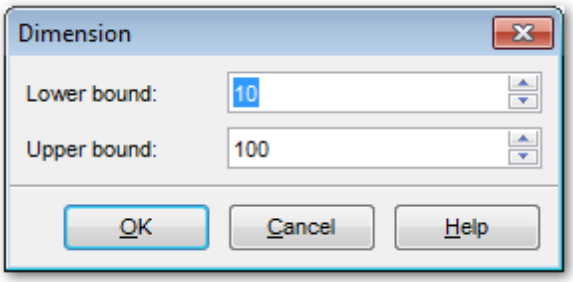
A field can be an **array** of one of standard data types (except BLOB). To set array parameters, specify the data type 207 and then select the **Array** tab of the dialog.

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To *add*/*edit* an array dimension, click the **Add Dimension** / **Edit Dimension** button to call the **Dimension Editor** dialog.

Use the spinner controls of the dialog to set the **lower**/**upper bounds**.

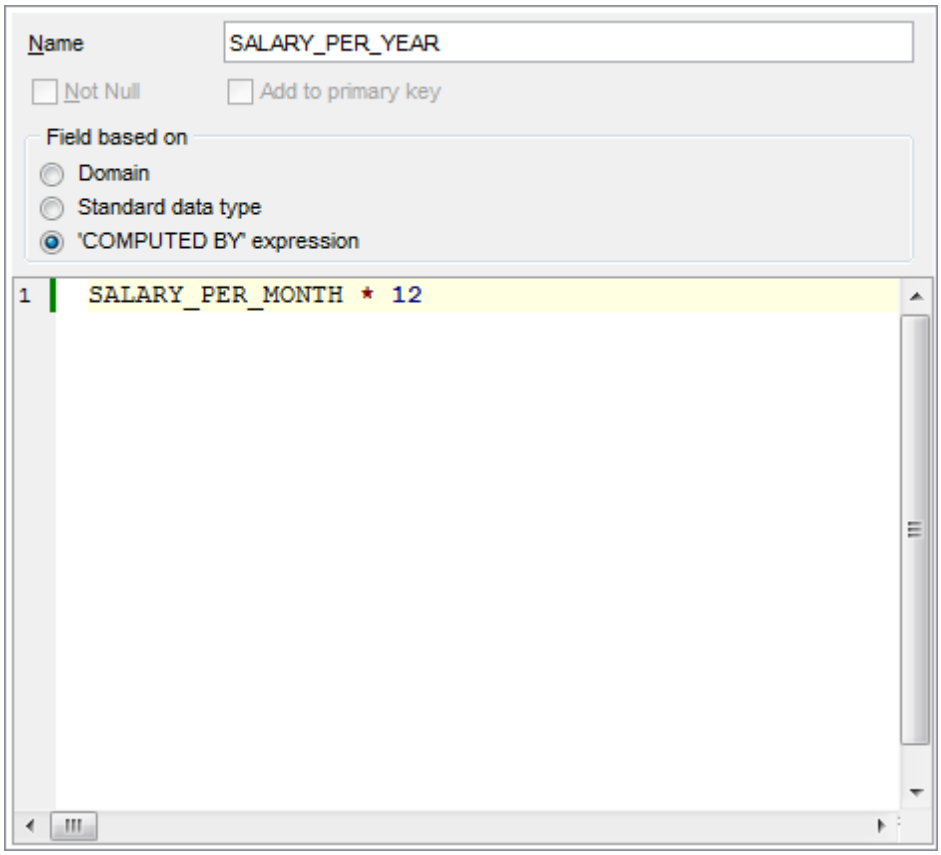


To *delete* a dimension, select one in the list and click the **Delete Dimension** button.

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5.4.3.1.4 Specifying 'COMPUTED BY' expression

If you select the *'COMPUTED BY' expression* option of the **Field based on** group indicating that values of the field being created/edited will be calculated according to an expression, you should specify the **'COMPUTED BY' expression** in the editable area below.



Set the expression to be used for calculation, e.g.
*(OLD_SALARY + OLD_SALARY * PERCENT_CHANGE / 100)*

Note the following:

- the expression can be any arithmetic expression valid for the data types in the expression;
- any columns referenced in the expression must exist before they can be used in expression;
- the expression cannot reference BLOB columns;
- the expression must return a single value, and cannot return an array.

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 334 and Using the context menu 336.

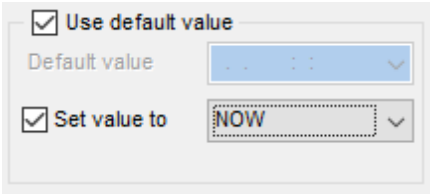
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5.4.3.1.5 Setting field defaults

The **Use default value** group allows you to define the default value for the column, i.e. the value that is entered when no other entry is made

To activate the group, enable the **Use default value** option.

Use the provided controls to specify the default field value.



Default value
Type in the preferable default value for a domain. The data type of the default expression must match the data type of the field:

- for *integral* (*SMALLINT*, *INTEGER*) and *floating-point* (*FLOAT*, *NUMERIC*, *DOUBLE PRECISION*, *DECIMAL*) data types, use the spinner control to specify the necessary value;
- for *string* data types (*CHAR*, *VARCHAR*), use the editable area to input the necessary text;
- for *temporal* data types (*DATE*, *TIME*), type in or click the arrow-down button to call the *Date editor* popup window and set the required date value.

Set value to
Use the drop-down list to select the default value for a field of the selected datatype.

Note that the default value set for the field based on a domain 205 in the **Field Default** group of **Field Editor** will override the corresponding value set for the domain 173.

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5.4.3.1.6 Defining autoincrement

For *SMALLINT* and *INTEGER* fields, **Field Editor** provides you with an ability to specify autoincrement. A generator[294], a trigger[282] and/or a procedure[254] wrapper can be created to implement the autoincrement property for the field being created/edited.

To *enable* the autoincrement property, select the ☑ **Autoincrement value** option.

- Defining generator[212]
- Defining trigger[213]
- Defining procedure[214]

To *disable* the autoincrement property, deselect the ☑ **Autoincrement value** option. The tree on the left will change - the **Disable** node will appear under the **Autoincrement** branch. Switch to the **Disable** page, and select the objects to be dropped with the help of the corresponding flags:

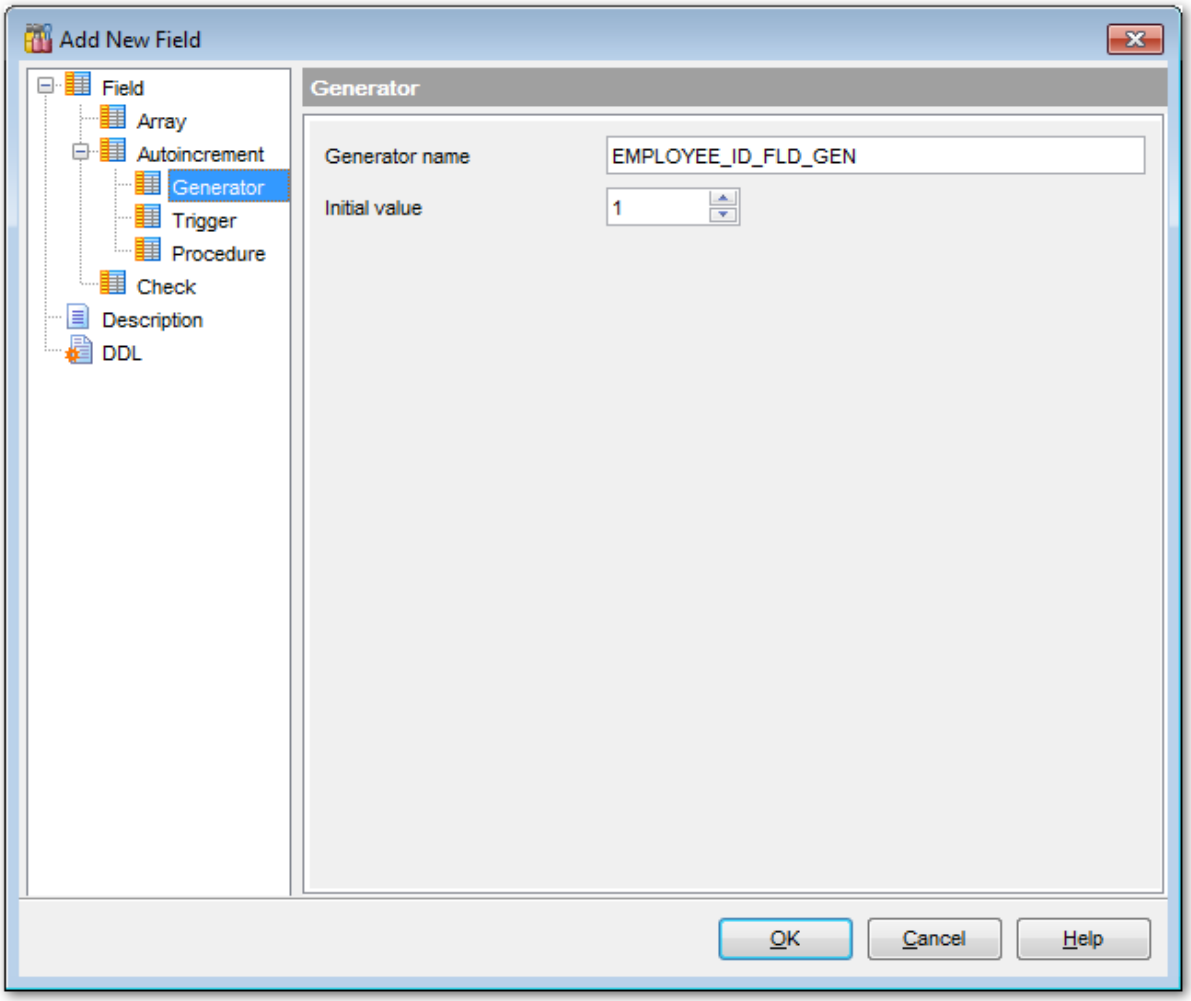
☑ *Drop generator*
☑ *Drop trigger*
☑ *Drop procedure wrapper*

Since Firebird 3.0 it is possible to define the IDENTITY field property to enable autoincrement abilities of the field. Select the ☑ **Identity** option to switch on identity and set the initial sequence value in the **Start with** field. Please note that it is not possible to use **Identity** and **Autoincrement value** options at the same time because they provide with the same feature.

5.4.3.1.6.1 Defining generator

The **Generator** page allows you to specify properties of the generator[294] to be created along with the autoincrement field.

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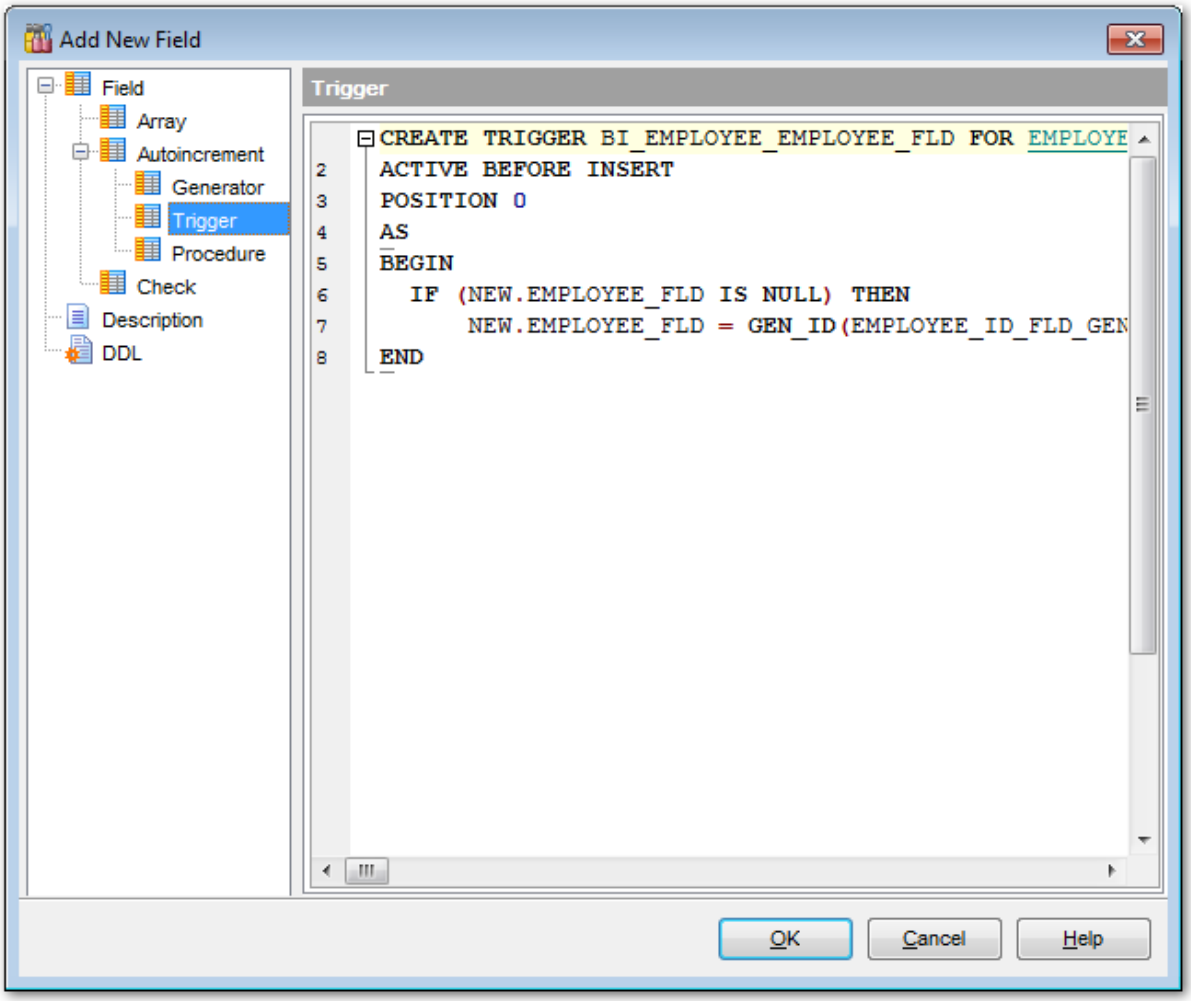
Generator name
Defines the name of the generator to be created.

Initial value
Sets the initial value for the generator.

5.4.3.1.6.2 Defining trigger

The **Trigger** page allows you to specify properties of the trigger[282] to be created along with the autoincrement field.

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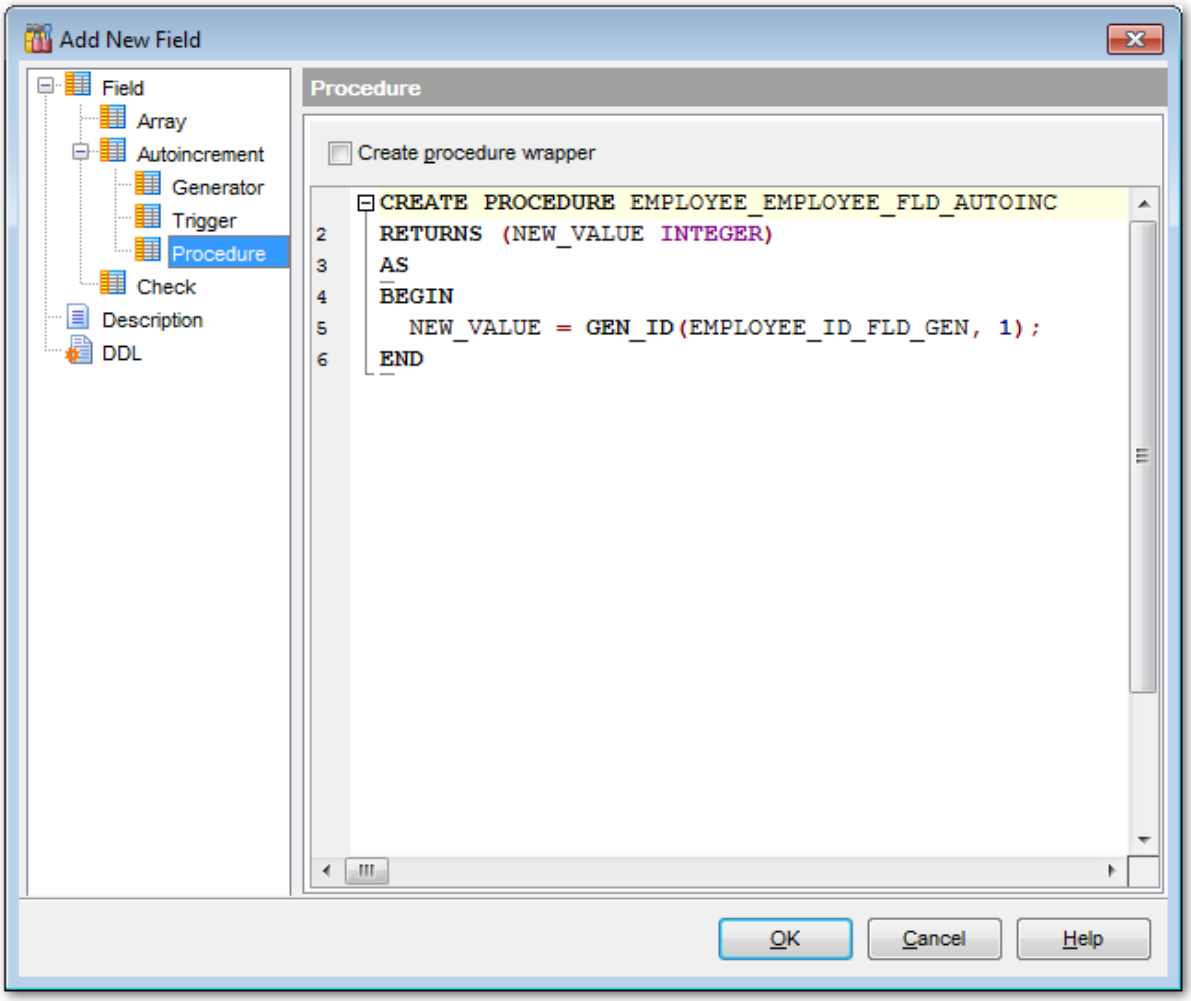
Trigger definition
A block of statements in InterBase procedure and trigger language bracketed with BEGIN and END.

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 334 and Using the context menu 336.

5.4.3.1.6.3 Defining procedure

The **Procedure** page allows you to specify properties of the procedure 254 wrapper to be created along with the autoincrement field.

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Create procedure wrapper
Enable the option to create a procedure wrapper. Procedure wrapper returns a new generator value and can be used instead of GEN_ID for a specific generator.

Procedure definition
A block of statements in InterBase procedure and trigger language bracketed with BEGIN and END.

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 334 and Using the context menu 336.

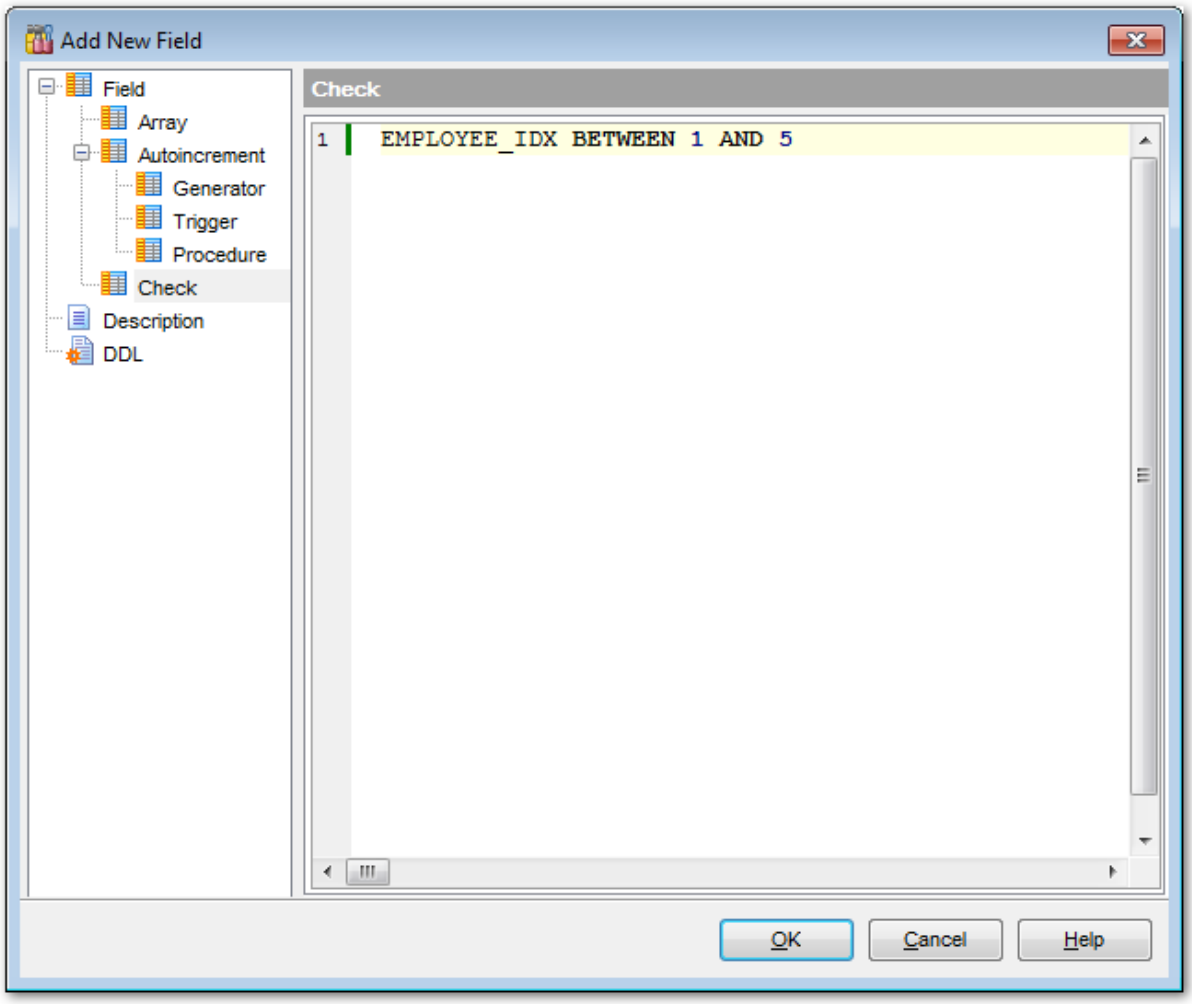
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5.4.3.1.7 Setting field check

The **Check** page allows you to set CHECK constraints, i.e. conditions that must be true for inserts and updates to the field, e.g. *VALUE>=10* or *MIN_SALARY < MAX_SALARY*. An attempt to enter a new value in the column fails if the value does not meet the specified check condition.

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 334 and Using the context menu 336.

Note that the check value set for the field based on a domain 205 in the **Check** section of **Field Editor** will override the corresponding value set for the domain 173.



See Checks 217 for details.

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5.4.4 Table Constraints

Constraints let you define the way the server automatically enforces the integrity of a database. Constraints define rules regarding the values allowed in columns and are the standard mechanism for enforcing integrity.

A **PRIMARY KEY** constraint designates a column as the Primary key of a table. A composite primary key designates a combination of columns as the primary key.

Table primary keys are managed within the **Constraints | Primary Key** tab of Table Editor 185.

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 **Constraints | Foreign Keys** tab of Table Editor 185.

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 **Constraints | Checks** tab of Table Editor 185.

A **UNIQUE** constraint prevents insertion or updating of duplicate values into table columns.

Table unique keys are managed within the **Constraints | Uniques** tab of Table Editor 185.

Creating Primary Keys

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the tab area and select the **New Primary Key...** context menu item, or press the *Ins* key;
- define the primary key properties using the Constraints Editor 220 dialog.

Editing Primary Keys

To edit an existing primary key:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the primary key and select the **Edit Primary Key <PK_name>** context menu item, or simply double-click the primary key;
- edit the primary key properties using the Constraints Editor 220 dialog.

To change the name of a primary key:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the primary key to rename and select the **Rename Primary Key <PK_name>...** item from the context menu;

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- edit the primary key name using the **Rename Object...** dialog.

Dropping Primary Keys

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the primary key and select the **Drop Primary Key <PK_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

Creating Foreign Keys

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then 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 Constraints Editor 220 dialog.

Editing Foreign Keys

To edit an existing Foreign key:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the Foreign key and select the **Edit Foreign Key <FK_name>...** context menu item, or simply double-click the Foreign key;
- edit the Foreign key properties using the Constraints Editor 220 dialog.

To change the name of a Foreign key:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the Foreign key to rename and select the **Rename Foreign Key <FK_name>...** item from the context menu;
- edit the Foreign key name using the **Rename Object...** dialog.

Dropping Foreign Keys

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the Foreign key and select the **Drop Foreign Key <FK_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

Creating Checks

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the tab area and select the **New Check...** context menu item, or press the *Ins* key;
- define the check properties using the Constraints Editor 220 dialog.

Editing Checks

To edit an existing check:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then 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 Constraints Editor 220 dialog.

To change the name of a check:

- open the table in Table Editor 185;

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- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the check to rename and select the **Rename Check <check_name>...** item from the context menu;
- edit the check name using the **Rename Object...** dialog.

Dropping Checks

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the check and select the **Drop Check <check_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

Creating Unique Keys

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the tab area and select the **New Unique...** context menu item, or press the *Ins* key;
- edit the unique key properties using the Constraints Editor 220 dialog.

Editing Unique Keys

To edit an existing unique key:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the unique key and select the **Edit Unique <unique_name>...** context menu item, or simply double-click the unique key;
- edit the unique key properties using the Constraints Editor 220 dialog.

To change the name of a unique key:

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the unique key to rename and select the **Rename Unique <unique_name>...** item from the context menu;
- edit the unique key name using the **Rename Object...** dialog.

Dropping Unique Keys

- open the table in Table Editor 185;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the unique key and select the **Drop Unique <unique_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

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5.4.4.1 Constraints Editor

Constraints Editor is a tool for working with table constraints[217]. It opens automatically when you create a new constraint and is available on editing an existing one (see Create Primary Key[217], Edit Primary Key[217], Create Foreign Key[218], Edit Foreign Key[218], Create Unique Key[219], Edit Unique Key[219], Create Check[218], Edit Check[218] for details).

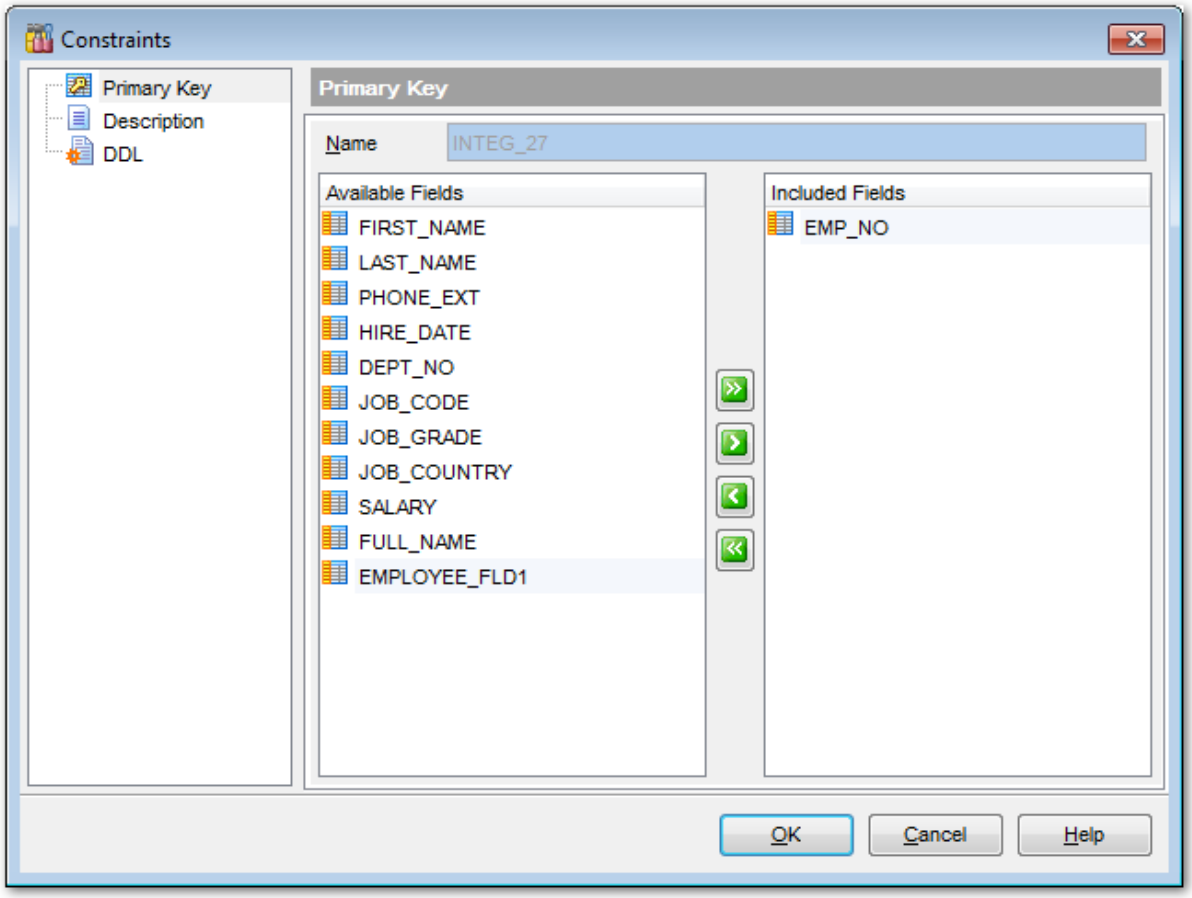
To open **Constraints Editor** for viewing/editing *primary key*, *foreign key*, *check*, *unique* constraints of a table, open the table in Table Editor[185], proceed the **Constraints** tab, then to the sub-tab of the constraint you need, and double-click it in the list.

- Creating/editing primary key[221]
- Creating/editing foreign key[222]
- Creating/editing check[224]
- Creating/editing unique key[225]
- Editing object description[895]
- Viewing DDL definition[894]

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5.4.4.1.1 Creating/editing primary key

The **Primary Key** section of the **Constraints** dialog allows you to specify PRIMARY KEY constraint definition.



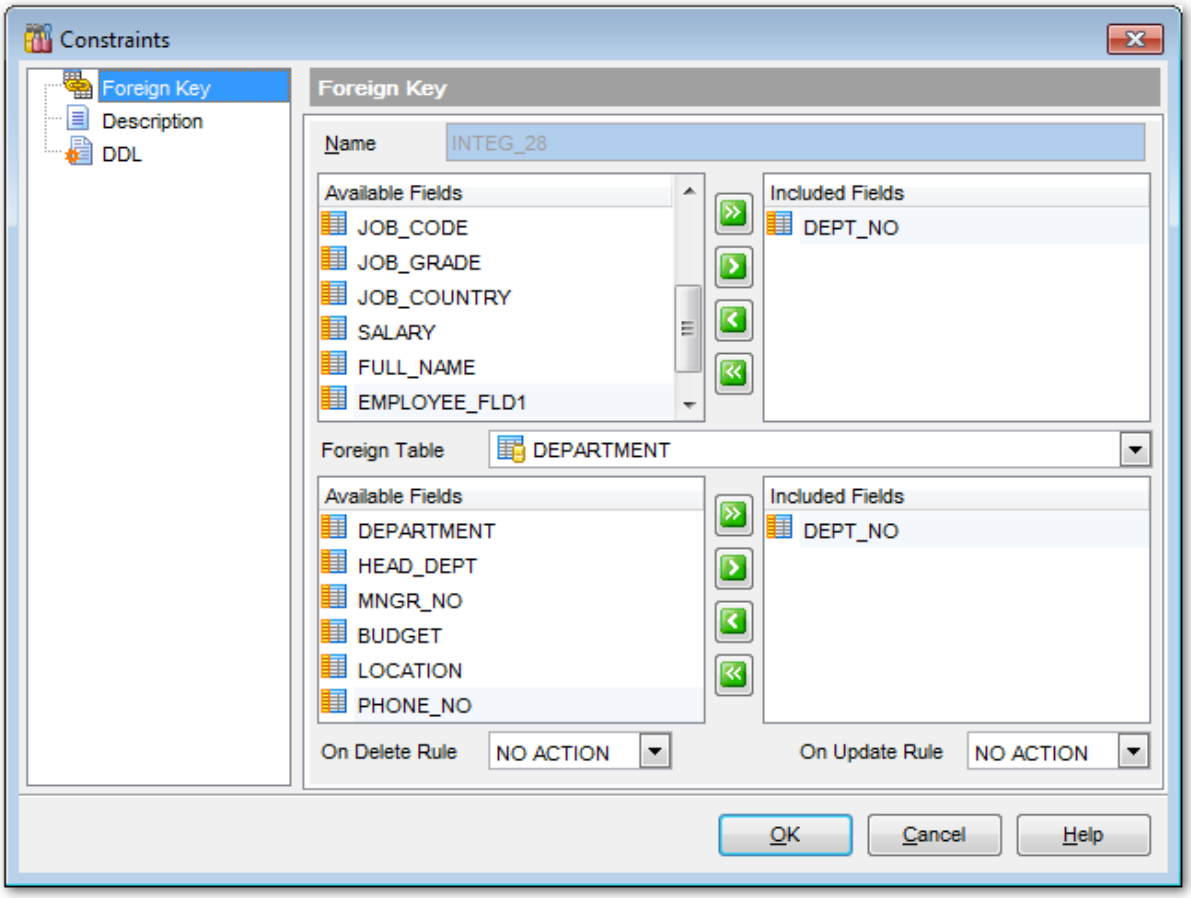
Name
Name of the PRIMARY KEY constraint; the constraint name must be unique within the table.

Fields for primary key
To include field(s) in the primary key, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.

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5.4.4.1.2 Creating/editing foreign key

The **Foreign Key** section of the **Constraints** dialog allows you to specify FOREIGN KEY constraint definition.



Name
Name of the FOREIGN KEY constraint; the constraint name must be unique within the table.

The **Table Fields** area allows you to select Foreign key field(s).
To select a field, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.

Foreign Table
Use the drop-down list to select the foreign table.

The **Foreign Table Fields** area allows you to select the field(s) of the Foreign table.
To select a field, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.

If the referenced column(s) are changed frequently, it may be wise to add an index to the

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foreign key column so that referential actions associated with the foreign key column were performed more efficiently. See Indexes 226 for details.

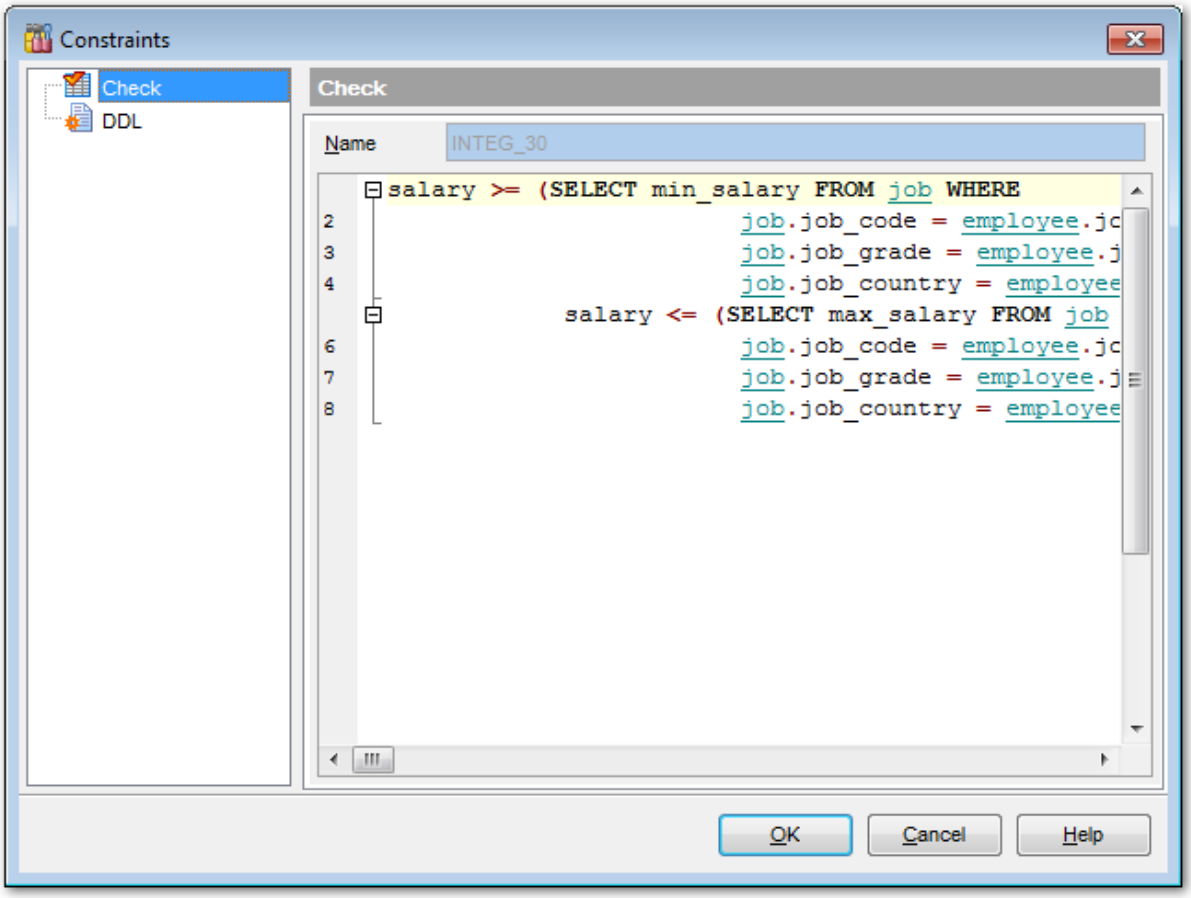
On Delete rule / **On Update rule**
Set rules to change a foreign key whenever the referenced primary key changes.

- *NO ACTION*
  Does not change the foreign key column(s); may cause the primary key update to fail due to referential integrity checks. 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 in effect when the referential integrity constraint is defined. When the default for a foreign column changes after the referential integrity constraint is defined, the change does not have an effect on the default value used in the referential integrity constraint.

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5.4.4.1.3 Creating/editing check

The **Check** section of the **Constraints** dialog allows you to specify CHECK constraint definition.



Name
Name of the CHECK constraint; the constraint name must be unique within the table.

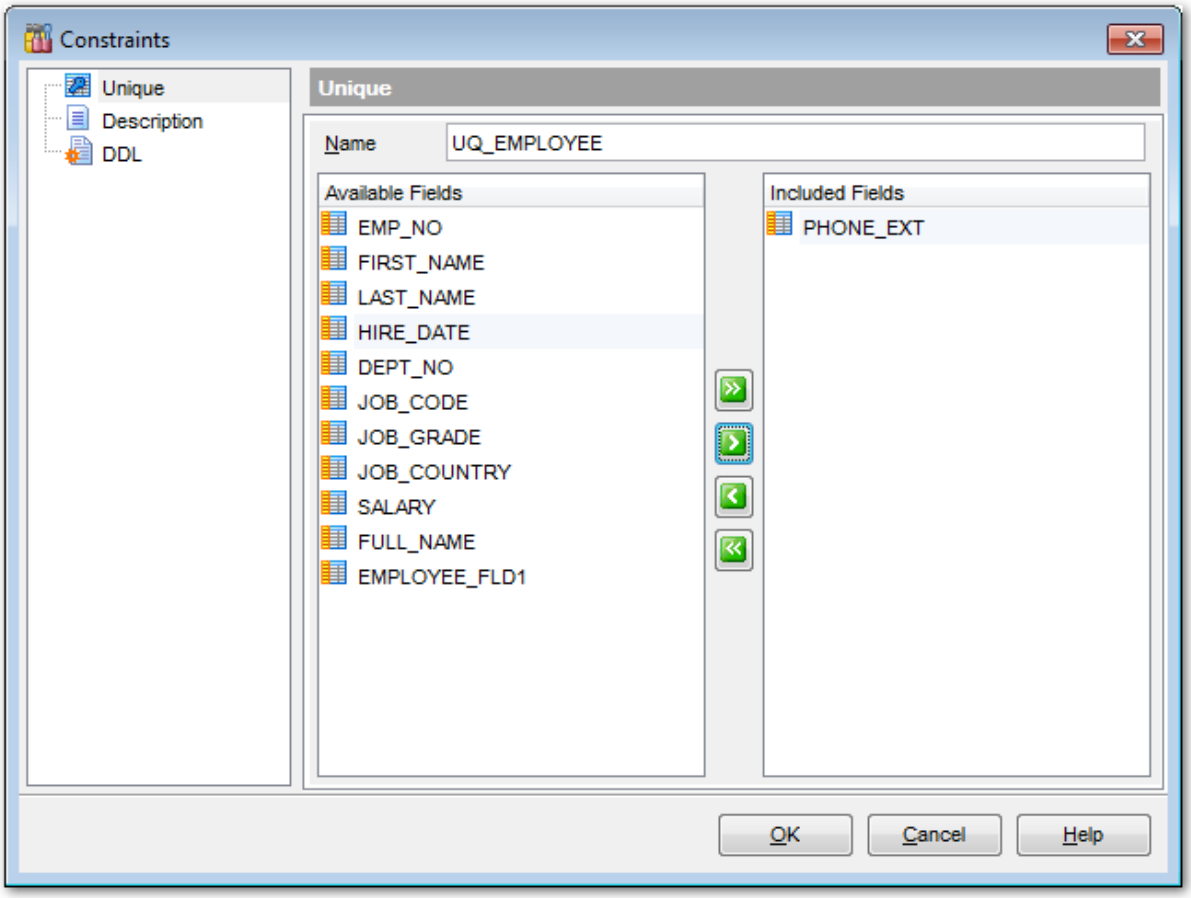
Check Constraint Text
Set CHECK constraints, i.e. conditions that must be true for inserts and updates to the table, e.g.
PERCENT_CHANGE BETWEEN -50 AND 50
An attempt to enter a new value in the table fails if the value does not meet the specified check condition.

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 334 and Using the context menu 336.

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5.4.4.1.4 Creating/editing unique key

The **Unique** section of the **Constraints** dialog allows you to specify UNIQUE constraint definition.



Name
Name of the UNIQUE constraint; the constraint name must be unique within the table.

Fields for unique key
To include field(s) in the unique key, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.

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5.4.5 Indices

Table indexes are managed within the **Indices** tab of Table Editor[185].

Creating Indices

- open the table in Table Editor[185];
- 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[227] dialog.

Editing Indices

To edit an existing table index:

- open the table in Table Editor[185];
- proceed to the **Indices** tab there;
- right-click the index and select the **Edit Index <index_name>...** context menu item, or simply double-click the index;
- edit the index properties using the Index Editor[227] dialog.

To change the name of an index:

- open the table in Table Editor[185];
- proceed to the **Indices** tab there;
- right-click the index to rename and select the **Rename Index <index_name>...** item from the context menu;
- edit the index name using the **Rename Object...** dialog.

Dropping Indices

- open the table in Table Editor[185];
- proceed to the **Indices** tab there;
- right-click the index and select the **Drop Index <index_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

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5.4.5.1 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 (see Create Index 226 and Edit Index 226 for details).

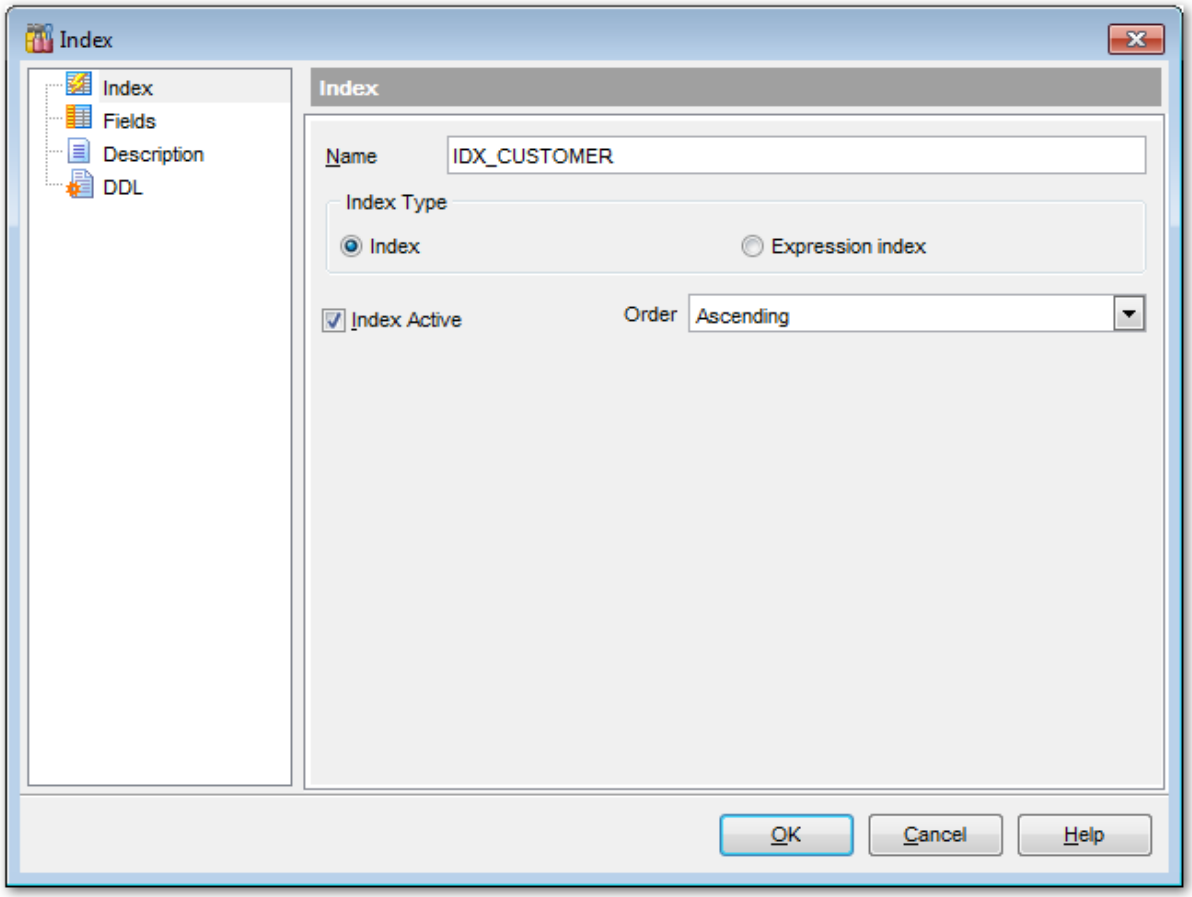
To open an index in **Index Editor**, double-click it in the DB Explorer 63 tree, or use the **Edit Index...** item of the context menu within the Indexes 197 tab of Table Editor 185.

- Specifying index properties 228
- Selecting index fields 229
- Editing index description 895
- Viewing DDL definition 894

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5.4.5.1.1 Specifying index properties

Use the **Index** page of the **Index Editor** dialog to specify common index properties.



Name
Specifies index name (if necessary, you can edit the one assigned by default).

Use the **Index type** section to define the created index type:

Index
This option indicates that the index is defined by a field or a number of fields.

Expression Index
This option indicates that index is defined by the expression from the Expression value 229 tab.

Index Active
Enables/disables the index immediately after it is created or changes applied.

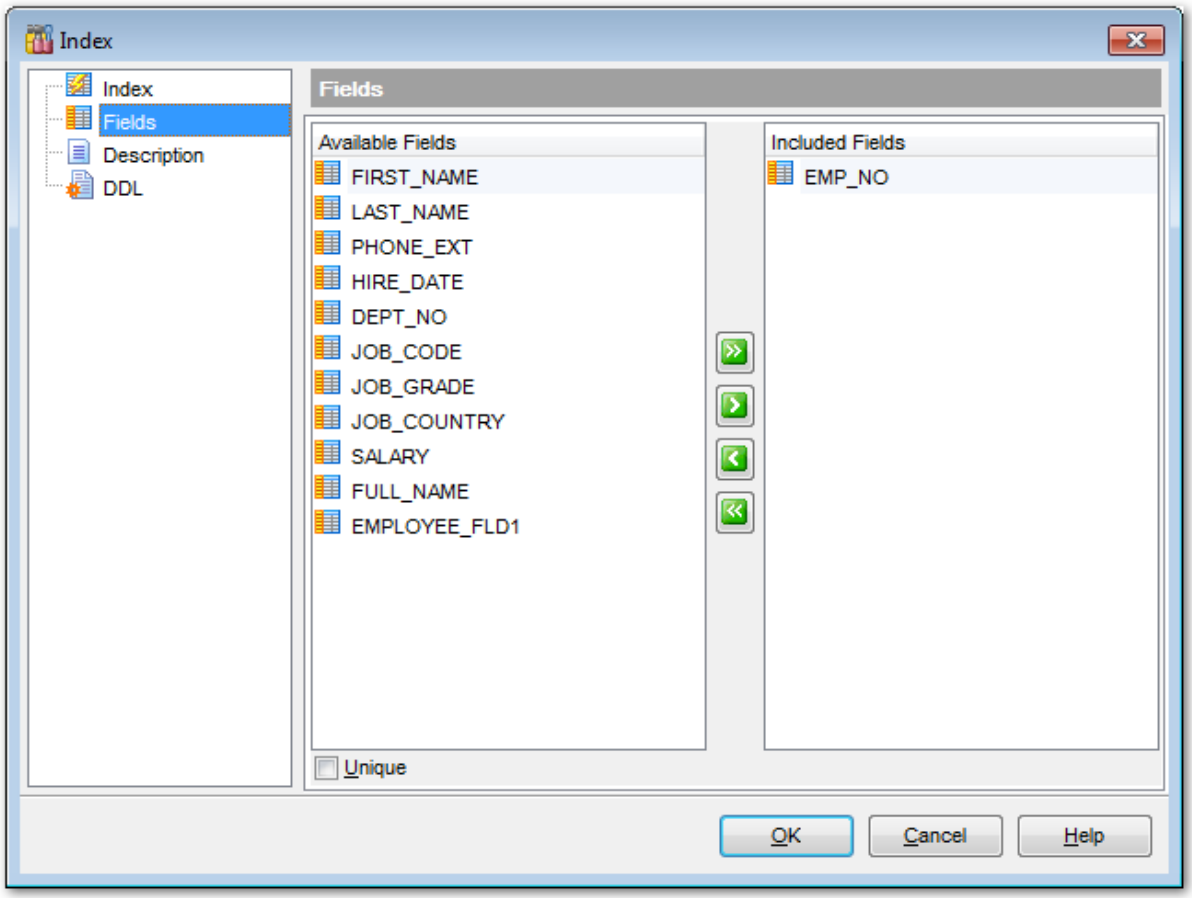
Order
Use the drop-down list to select whether the *ascending* or *descending* sorting order should be used for index columns.

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5.4.5.1.2 Selecting index fields

Use the **Fields** page of the **Index Editor** dialog to select the fields for the index.

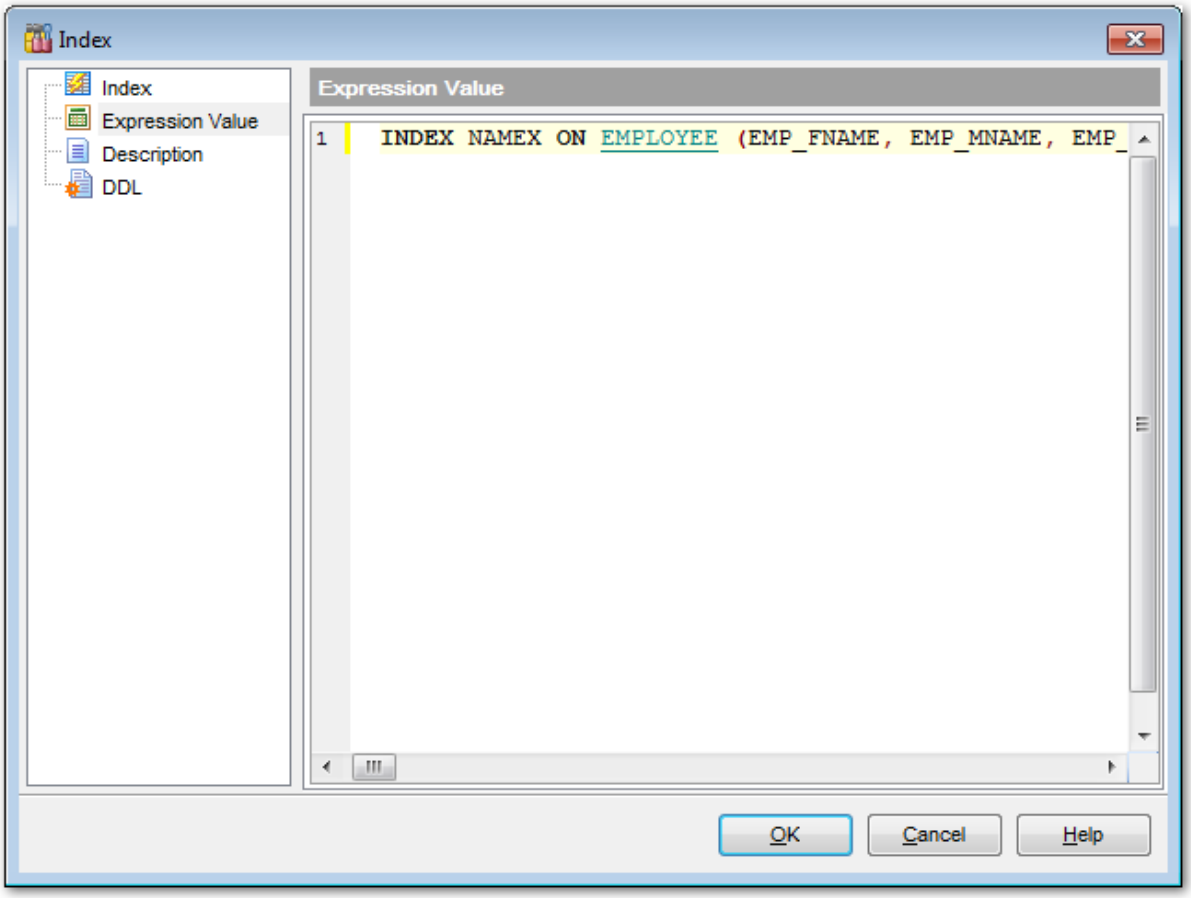
Fields for index
To include field(s) in the index, you need to move it from the **Available Fields** list to the **Selected Fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.



Unique
Check this option to prevent inserting or updating duplicate values in indexed columns.

If the **Expression Index** option was selected at the Index 228 tab then you need to define the expression at the **Expression Value** tab.

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5.4.6 Triggers

Table triggers are managed within the **Triggers** tab of the Table Editor[185].

Creating Triggers

- open the table in Table Editor[185];
- proceed to the **Triggers** tab there;
- right-click the tab area and select the **New Trigger...** context menu item, or press the *Ins* key;
- edit the trigger properties using the Trigger Editor[232] dialog.

Editing Triggers

To edit an existing trigger:

- open the table in Table Editor[185];
- 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[232] dialog.

To change the name of a trigger:

- open the table in Table Editor[185];
- proceed to the **Triggers** tab there;
- right-click the trigger to rename and select the **Rename Trigger <trigger_name>...** item from the context menu;
- edit the trigger name using the **Rename Object...** dialog.

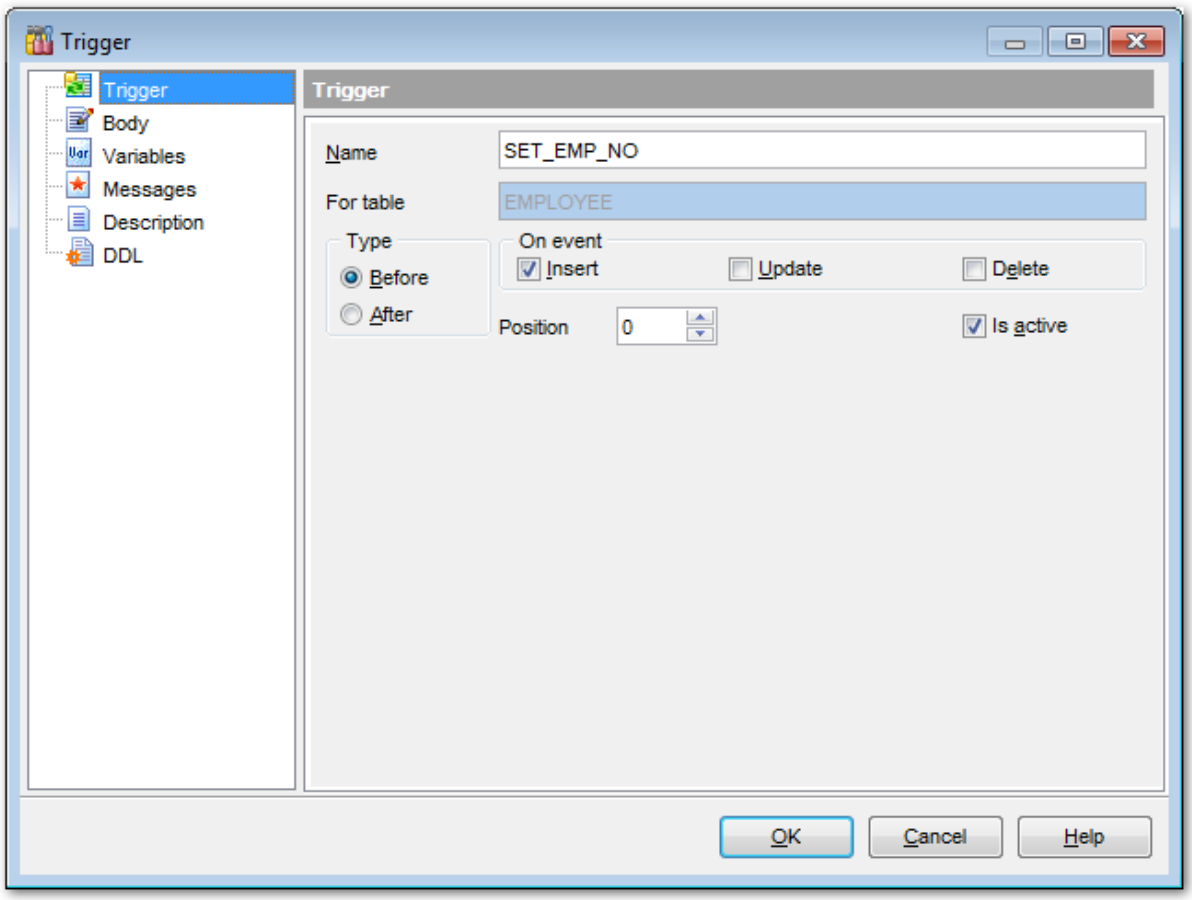
Dropping Triggers

- open the table in Table Editor[185];
- proceed to the **Triggers** tab there;
- right-click the trigger and select the **Drop Trigger <trigger_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

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5.4.6.1 Trigger Editor

Trigger Editor allows you to set properties for a new trigger or edit an existing trigger.



For details see Trigger Editor 282 | Creating/editing trigger 286, Managing trigger messages 289.

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5.4.7 Creating table-based objects

5.4.7.1 View from Table

SQL Manager for InterBase/Firebird provides you with an ability to create an updatable view from a table and set its properties using the **Create View from Table** dialog.

To open the dialog, right-click the table in DB Explorer and select the **Tasks | Create View...** context menu 56 item, or open the table in Table Editor 185 and use the **Create View** item of the Navigation bar 186.

- Options 234
- View info 235
- View triggers 236

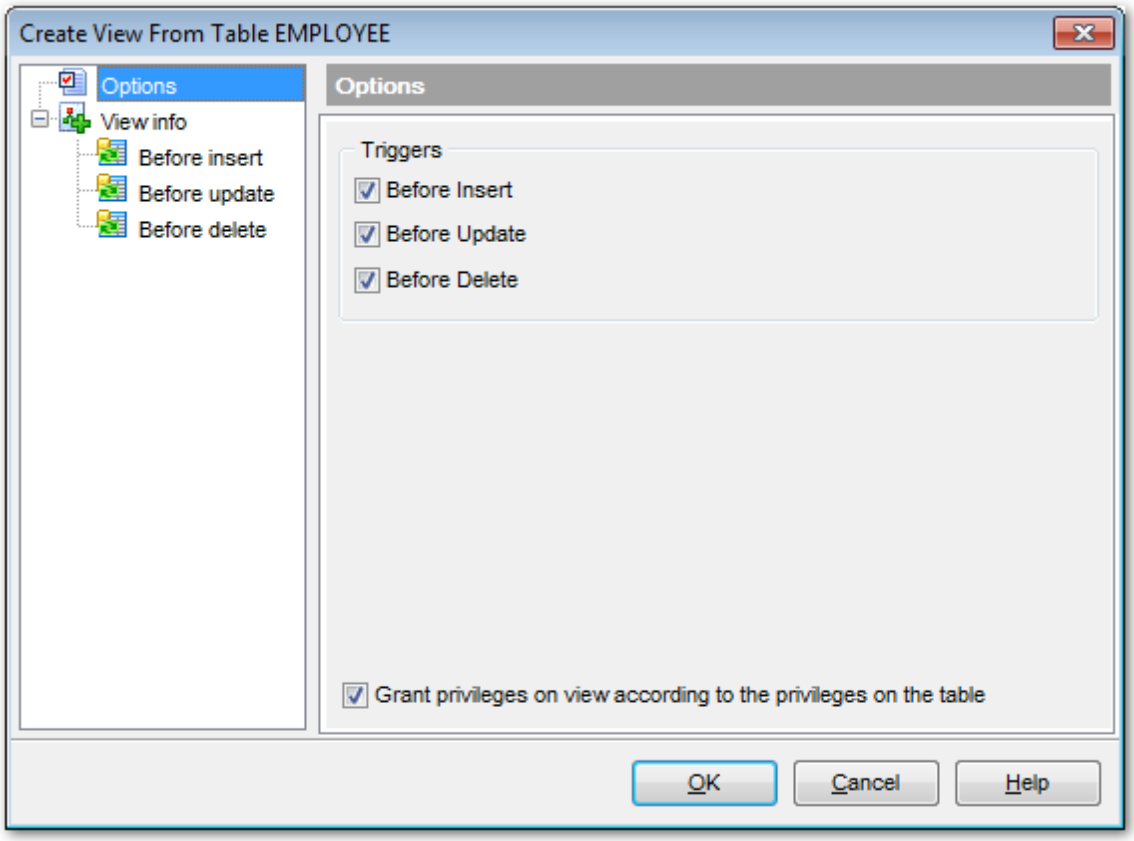
See also:

SIUD Procedures from Table 237

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5.4.7.1.1 Options

The **Options** section of the **Create View from Table** dialog allows you to specify common options for the view being created.



Triggers

Select trigger[231] type(s) to be created for the view with the help of the corresponding flags:

- ☑ *Before Insert*
- ☑ *Before Update*
- ☑ *Before Delete*

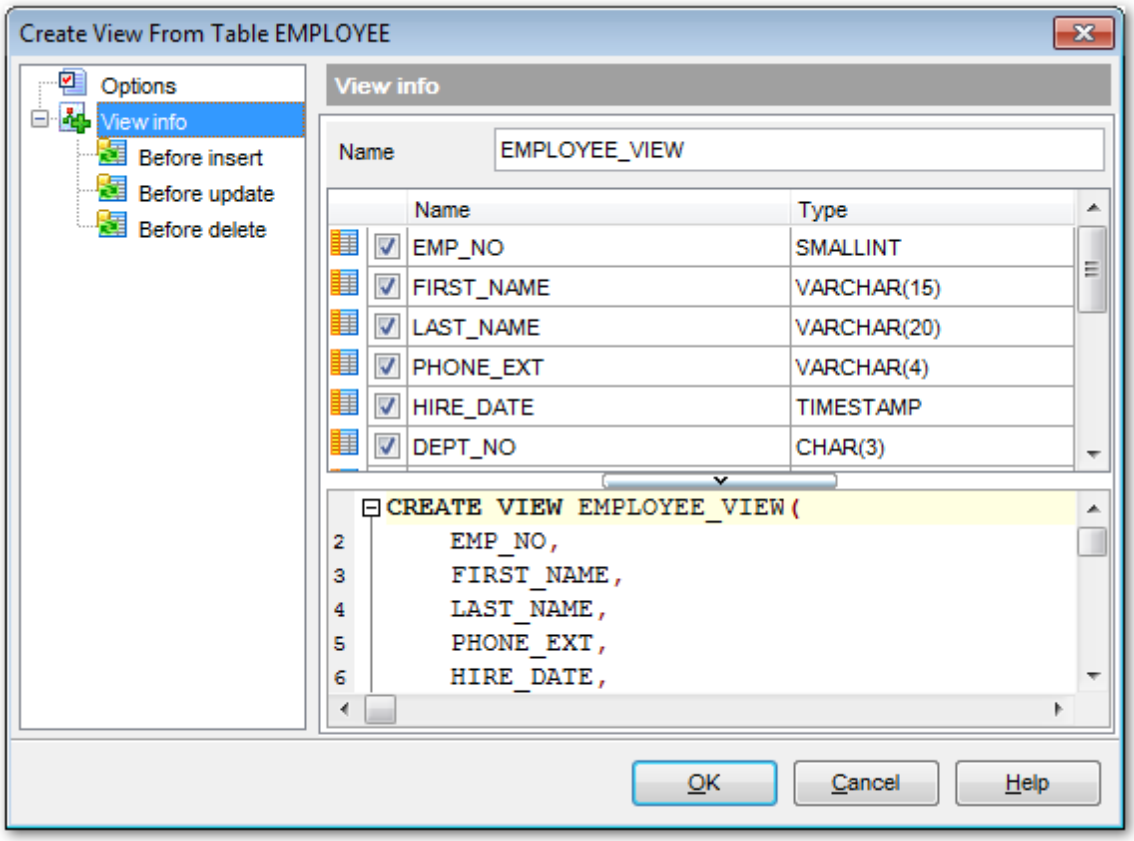
☑ **Grant privileges on view according to the privileges on the table**

Enable the option grant[734] the same privileges on the view as granted on the source table.

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5.4.7.1.2 View info

The **View info** section of the **Create View from Table** dialog provides the definition of the view generated from the table.



Name
Specifies view name (if necessary, you can edit the one assigned by default).

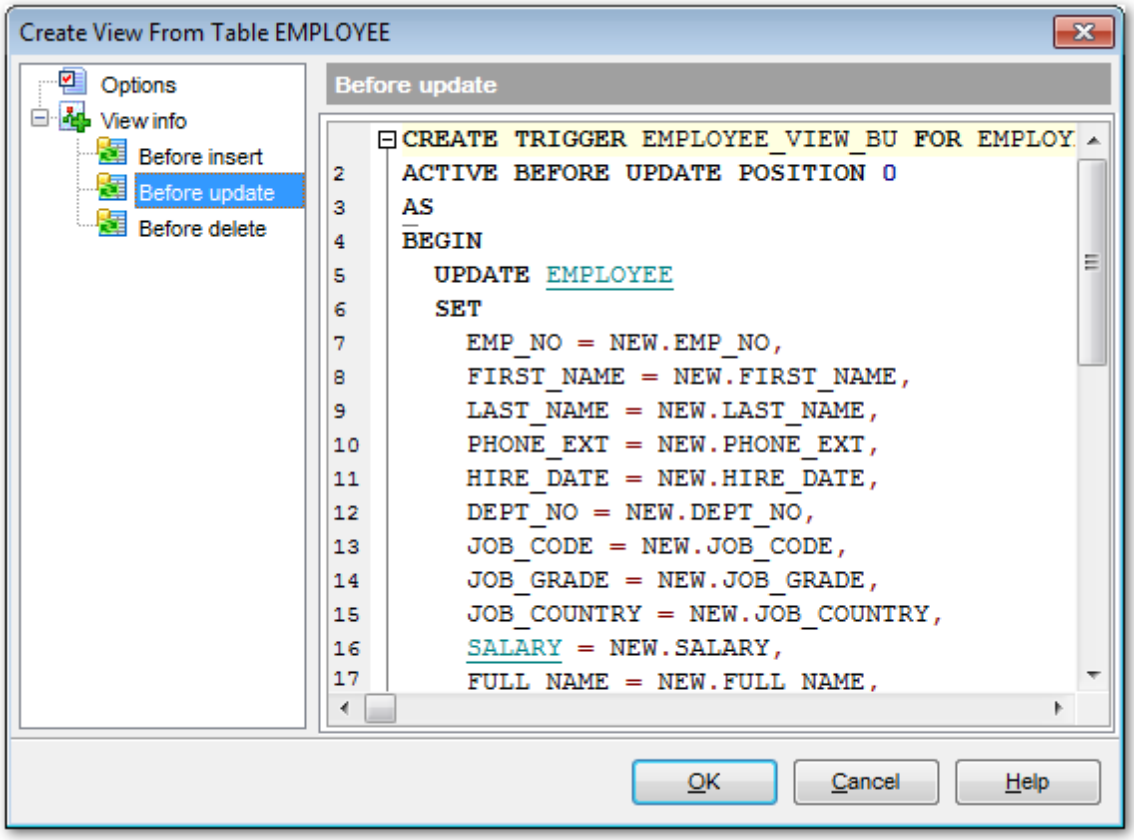
The **Fields** list displays view fields as specified in the *fields clause* and the *AS clause* of the view definition.
The list provides the following attributes of each field:
Name
Type
To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** 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 view definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes.
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 334 and Using the context menu 336.

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5.4.7.1.3 View triggers

The **Before insert** / **Before update** / **Before delete** pages allow you to specify definitions for corresponding triggers generated for the view. The set of available sections is determined by selection in the **Triggers** group of the Options 234 page.



Edit the block of statements within the BEGIN / END pair according to your needs.
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 334 and Using the context menu 336.

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5.4.7.2 Procedures from Table

SQL Manager for InterBase/Firebird provides you with an ability to create SELECT/ INSERT/UPDATE/DELETE procedures from a table and set their properties using the **Create Procedures from Table** dialog.

To open the dialog, right-click the table in DB Explorer and select the **Tasks | Create SIUD Procedures...** context menu 56 item, or open the table in Table Editor 185 and use the **Create Procedure** item of the Navigation bar 186.

- Options 238
- SELECT procedure 239
- INSERT procedure 240
- UPDATE procedure 241
- DELETE procedure 242

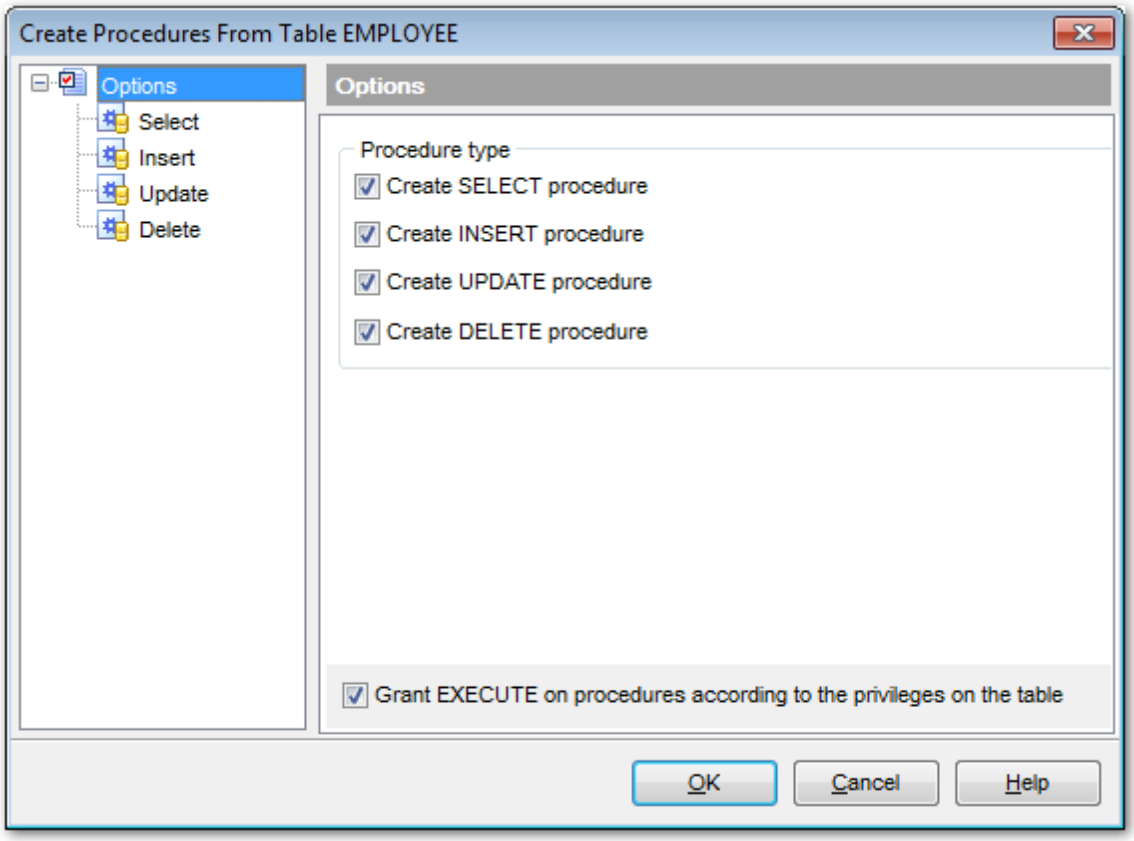
See also:

View from Table 233

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5.4.7.2.1 Options

The **Options** section of the **Create Procedures from Table** dialog allows you to specify common options for the procedures being created.



Procedure type

Select procedure[231] type(s) to be created with the help of the corresponding flags:

- ☑ *Create SELECT procedure*
- ☑ *Create INSERT procedure*
- ☑ *Create UPDATE procedure*
- ☑ *Create DELETE procedure*

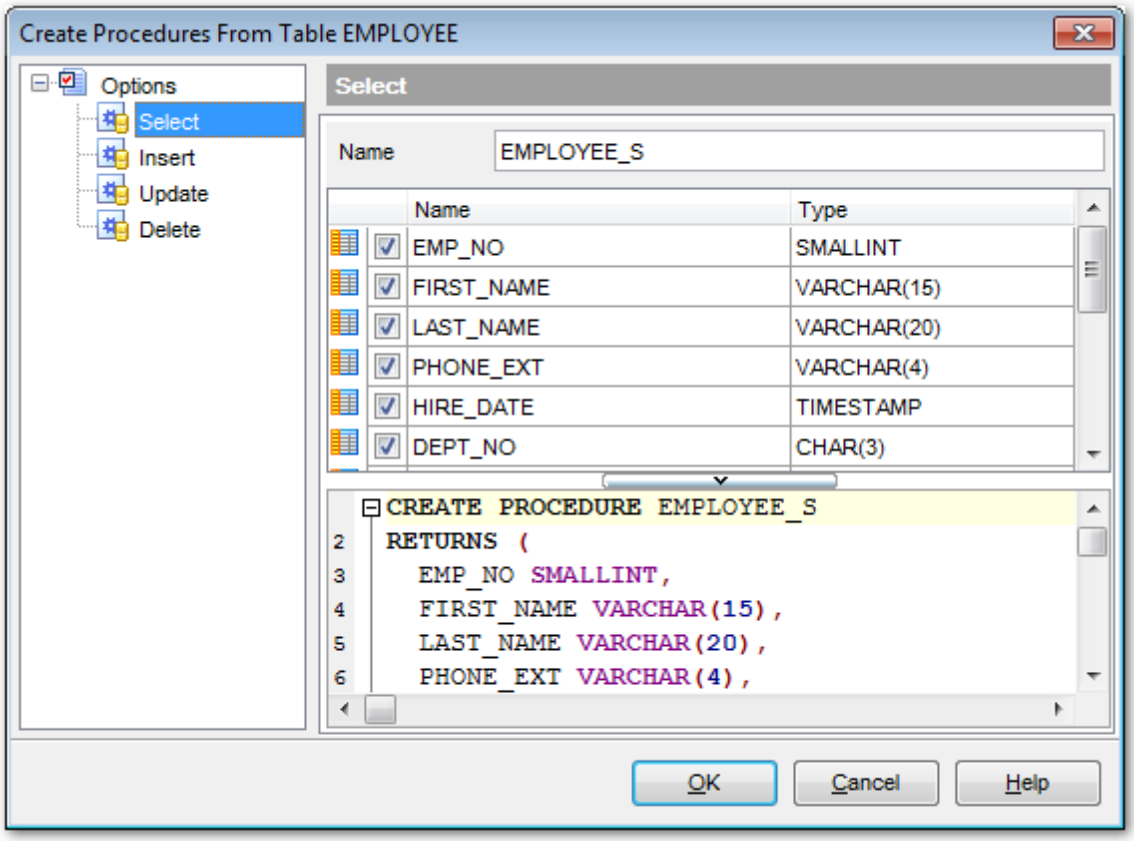
☑ **Grant EXECUTE on procedures according to the privileges on the table**

Enable the option to grant[734] the EXECUTE privileges on the procedure(s) as it is granted on the source table.

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5.4.7.2.2 SELECT procedure

The **Select** section of the **Create Procedures from Table** 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).

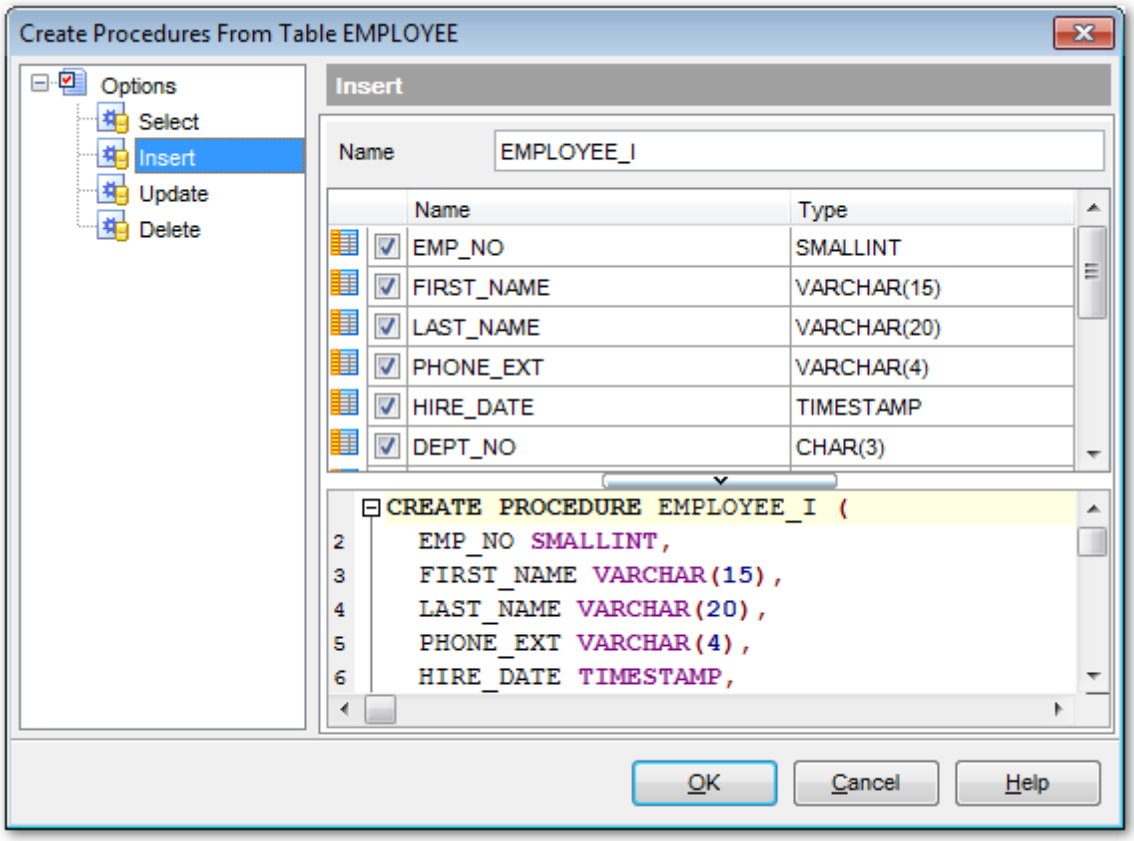
The **Fields** list displays fields as specified in the *fields clause* of the procedure definition. The list provides the following attributes of each field:
Name
Type
To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.
For your convenience 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 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 334 and Using the context menu 336.

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5.4.7.2.3 INSERT procedure

The **Insert** section of the **Create Procedures from Table** 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).

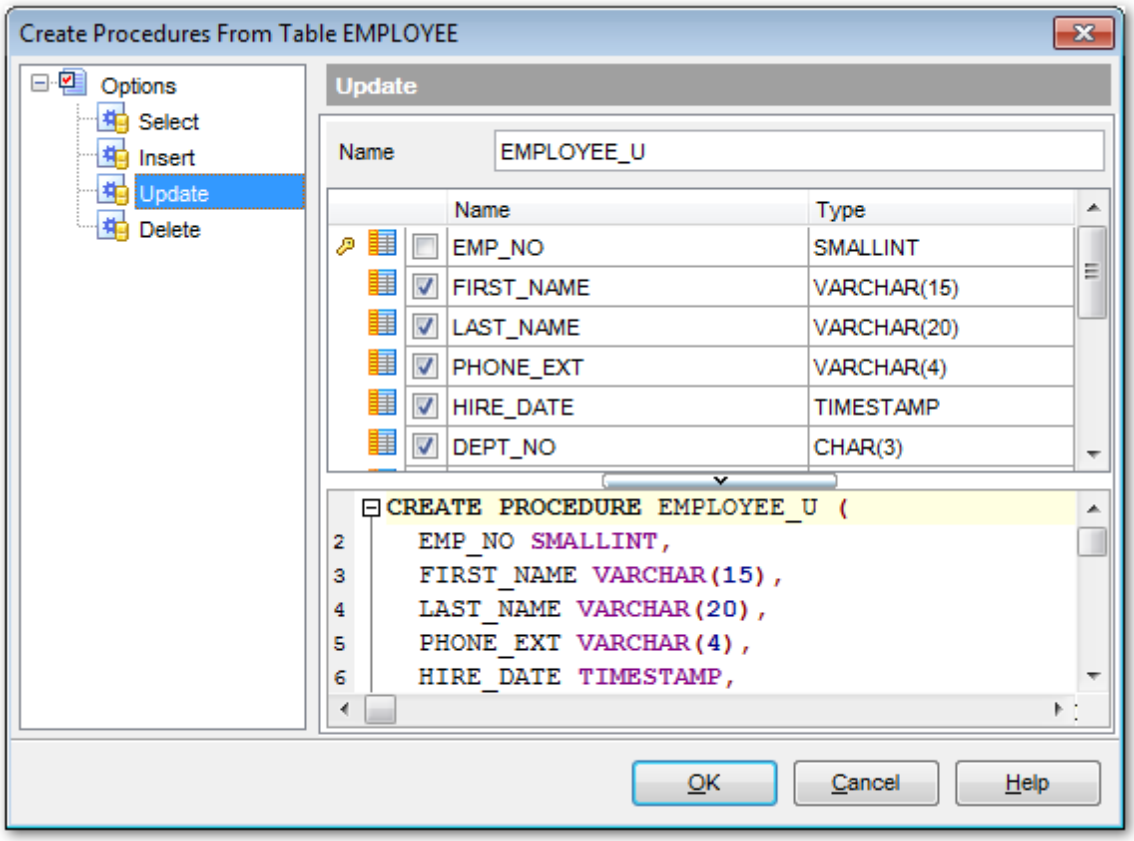
The **Fields** list displays fields as specified in the *fields clause* of the procedure definition. The list provides the following attributes of each field:
Name
Type
To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.
For your convenience 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 334 and Using the context menu 336.

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5.4.7.2.4 UPDATE procedure

The **Update** section of the **Create Procedures from Table** 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).

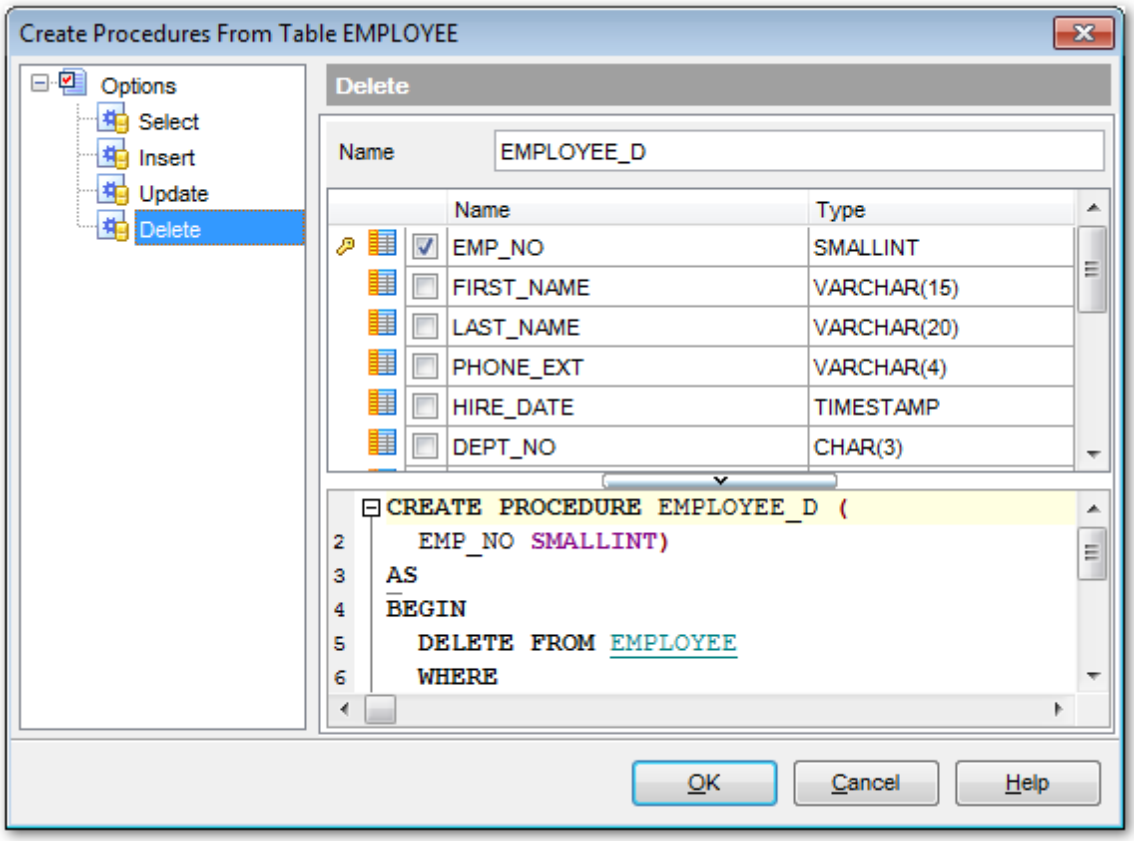
The **Fields** list displays fields as specified in the *fields clause* of the procedure definition. The list provides the following attributes of each field:
Name
Type
To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.
For your convenience 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 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 334 and Using the context menu 336.

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5.4.7.2.5 DELETE procedure

The **Delete** section of the **Create Procedures from Table** 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 334 and Using the context menu 336.

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5.5 Views

A **View** is a logical table based on one or more tables[179] 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[179]) 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.

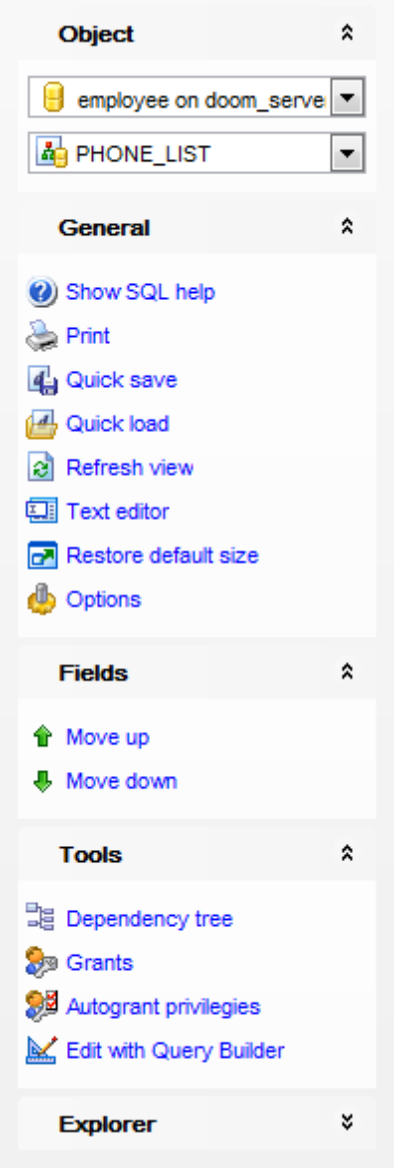
To open a view in **View Editor**, double-click it in the DB Explorer[63] tree.

- Using Navigation bar and Toolbar[244]
- Creating/editing view[247]
- Managing common properties and fields[249]
- Managing triggers[250]
- View plan[252]
- Working with data[253]
- Editing object description[895]
- Browsing object dependencies[896]
- Setting object permissions[897]
- Viewing DDL definition[894]

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5.5.1 Using Navigation bar and Toolbar

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



Object
select a database
select a view for editing

General
compile 906 the view (if it is being created/modified)
show SQL help
set printing options 573 to print metadata 570 of the view

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save the object using the Quick Save 930 feature
load the object from buffers using the Quick Load 930 feature
refresh the content of the active tab
toggle *Text* / *Visual* editor modes
restore the default size and position of the editor window
adjust Visual Mode Editors options 783

Tools

view the dependency tree 536 for the view
set autogrant privileges for the view
define grants 734 on the view
edit the view query using Query Designer 348

Explorer

browse the view 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 view:

Triggers

add 231 a new trigger
edit 231 selected trigger
drop 231 selected trigger(s)
set trigger active/inactive
open selected trigger in a Trigger Editor 282

Description

save object description 895 to file
copy description 895 to clipboard

Data Management

commit transaction
rollback transaction
export data from the view using Export Data Wizard 445
export data from the view as SQL script using Export as SQL Script Wizard 519
import data into the view using Import Data Wizard 493

Permissions

Grant
Grant with Grant Option
Revoke
Grant All
Grant All with Grant Option
Revoke All
Grant on All
Grant on All with Grant Option
Revoke on All
Add grantee object

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DDL

 save DDL[894] to file

 open DDL[894] in Execute Script[544]

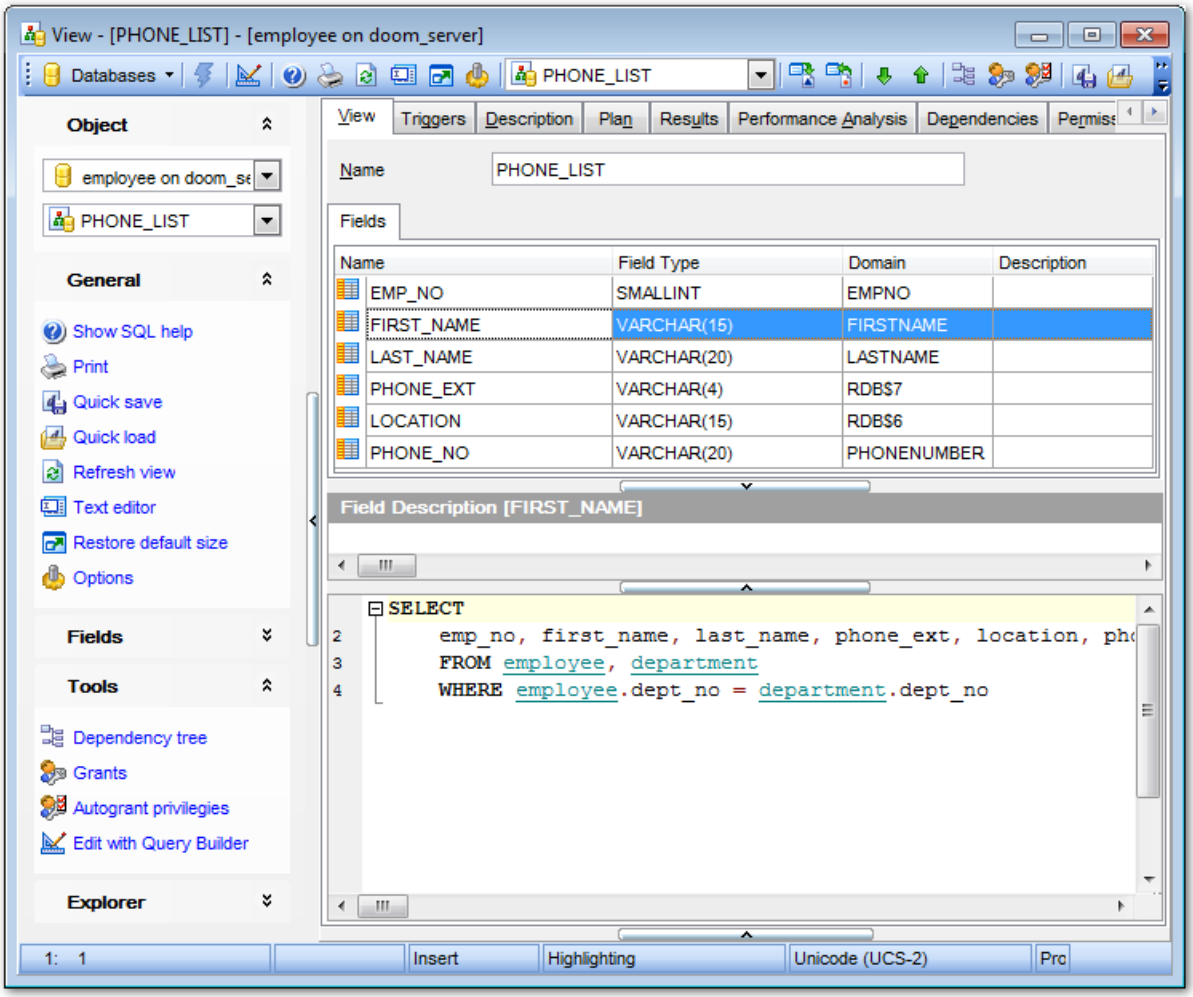
Items of the **Navigation bar** are also available on the **ToolBar** of **View Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.5.2 Creating/editing view

Use the **Object** tab of **View Editor** to create/edit a view and specify its definition.

View Editor provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the Navigation bar[244] and toolbar[246].



When in the **Text editor** mode, you can use the editor area to specify the view definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile 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[334] and Using the context menu[336].

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

Name
Enter a name for the new view, or modify the name of the view being edited.

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The **Fields** list provides the following attributes of each field of the view:
Name
Field Type
Domain
Description

If necessary, you can also use the **Field Description** area to supply a *description* for each field.

The lower area allows you to specify the *AS* clause of the view definition. When editing the view, you can edit the definition using the editor area to make appropriate changes, and recompile the view.

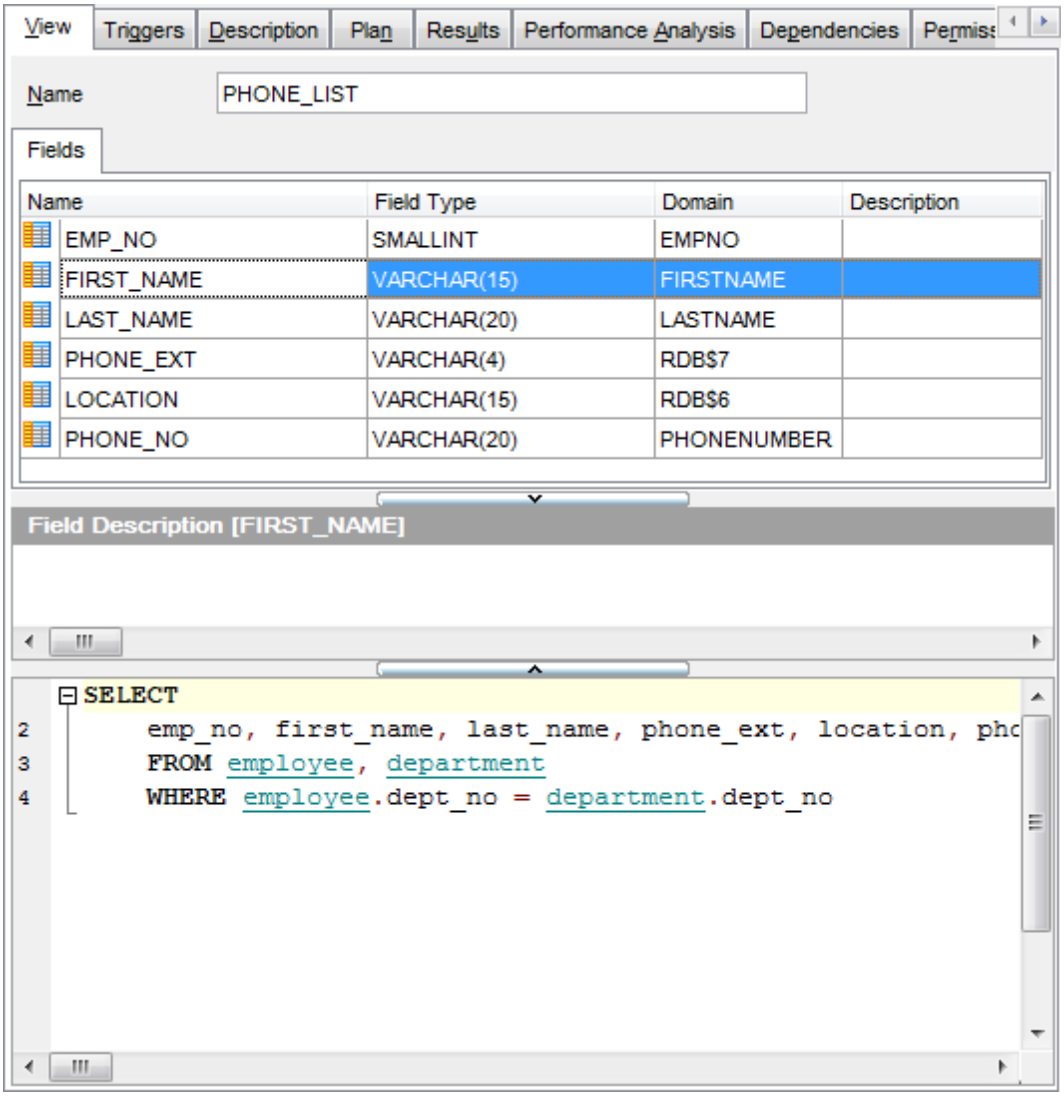
Note: When you edit the query of the *AS* clause, all the changes you make are processed by the **View Editor** precompiler, and the list of fields is formed automatically.

To compile a view, you can use the **Compile** item available within the Navigation bar 244 or toolbar 246.

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5.5.3 Managing fields

The **Fields** tab is provided for viewing fields represented in the view.



The **Fields** list provides the following attributes of each field of the view:
Name
Field Type
Domain
Description

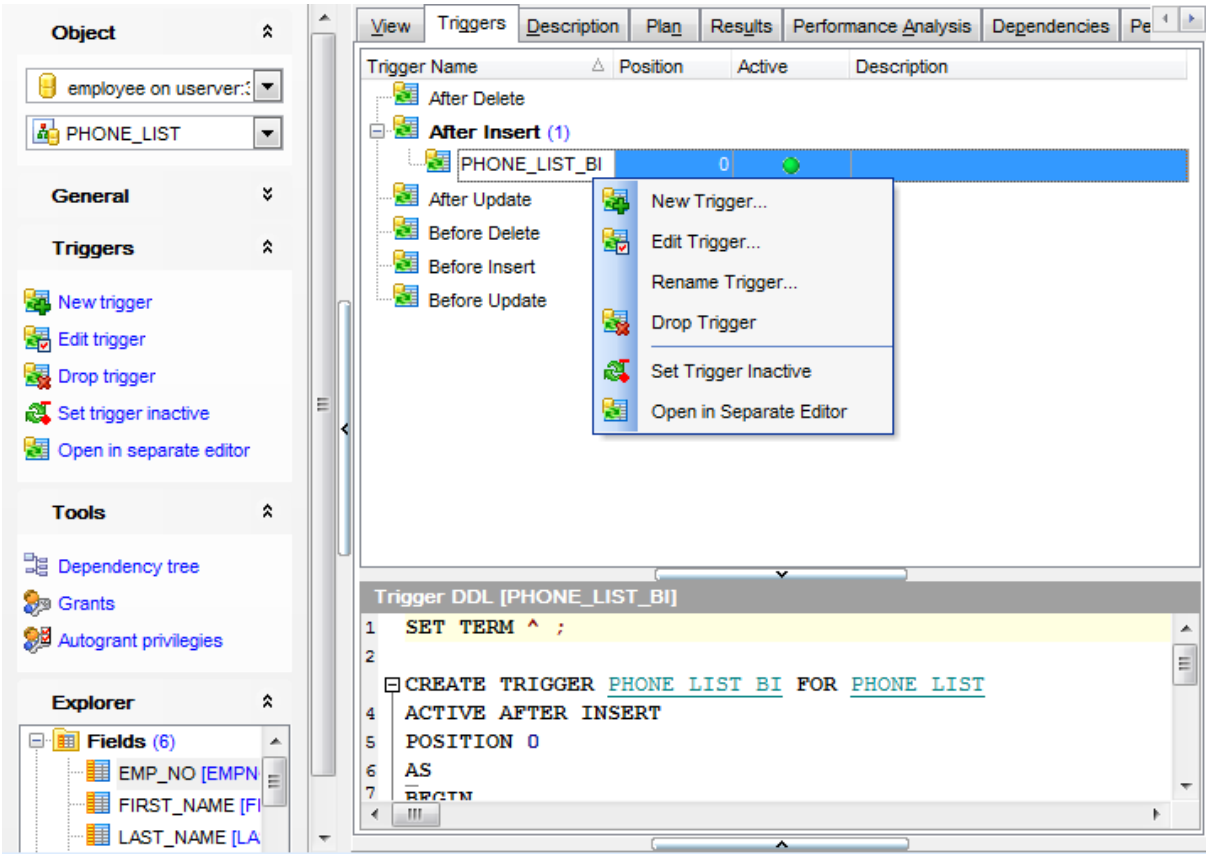
If necessary, you can also use the **Field Description** area to supply a *description* for each field.

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5.5.4 Managing triggers

The **Triggers** tab is provided for managing triggers represented in the view. Double-click a trigger to open Trigger Editor[282] for editing the trigger.

Right-click the area to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected trigger. Using the menu you can also set the trigger *active/inactive*, and open the selected trigger in a separate Trigger Editor[282].



The **Triggers** list provides the following attributes of each trigger of the view:
Trigger Name
Position
Active
Description

On this tab all triggers are grouped into categories:

- *Before Insert*
- *After Insert*
- *Before Update*
- *After Update*
- *Before Delete*
- *After Delete*

The trigger definition is displayed in the **Trigger DDL** window.

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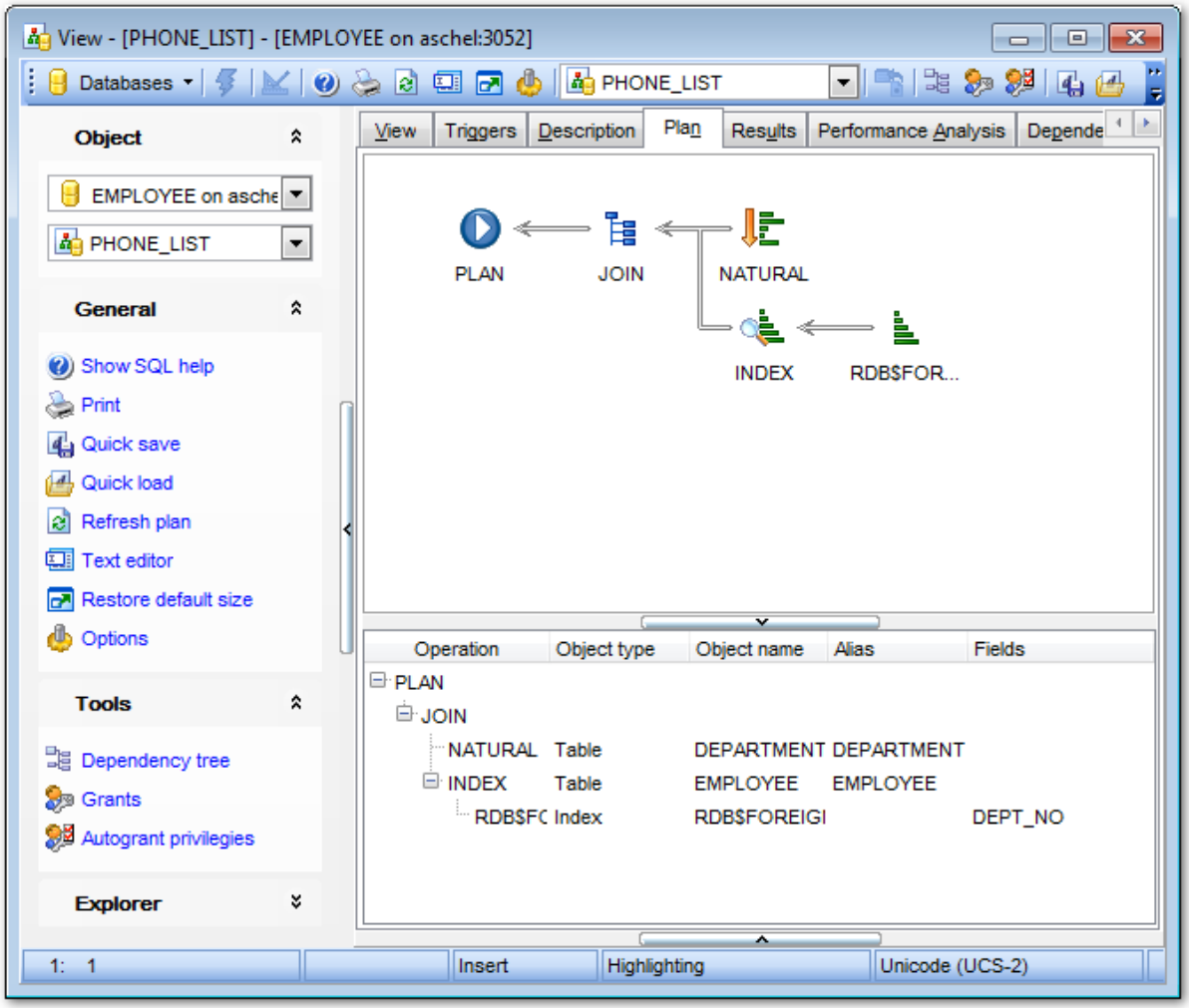
Use the context menu or items on a toolbar to manage triggers:
- add 231 a new trigger
- edit 231 selected trigger
- drop 231 selected trigger(s)
- set trigger active/inactive
- open selected trigger in a Trigger Editor 282

For details see Triggers 282.

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5.5.5 View plan

The **Plan** tab is provided for your convenience to see the plan of the query implied by the view.



See Query plan[338] for details.

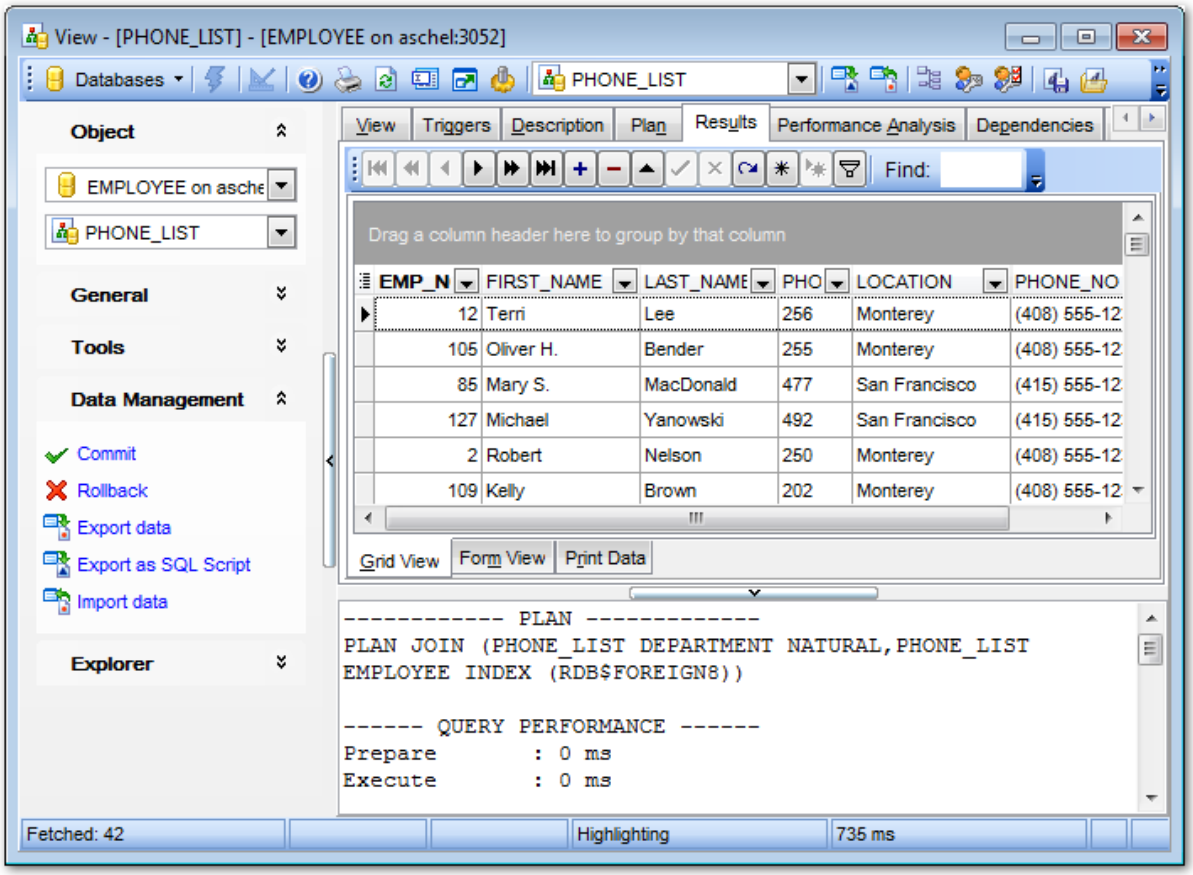
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5.5.6 Working with data

The **Results** tab displays the view data as a grid by default (see Data View 370 for details). The context menu of this tab and the Navigation bar 244 allow you to Export Data 445, Import Data 493, Export as SQL Script 519.

While working with view data, you are provided with a number of filtering 380 and grouping 377 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 369 tools are also available through the Navigation bar 244 and toolbar 246 of **View Editor**.



In the bottom pane of this tab you can see brief statistics concerned query execution.

See also:
Data View 370

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5.6 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.

A **Stored procedure** is a self-contained program written in InterBase procedure and trigger language, and stored as part of a database's metadata. Stored procedures can be invoked directly from applications, or can be substituted for a table 179 or view 243 in a *SELECT* statement. Stored procedures can receive input parameters 901 from and return values to applications and can execute 261 on the server.

Creating Procedures

- select the **Database | New Object...** main menu 890 item;
- select **Procedure** in the Create New Object 165 dialog;
- define procedure properties using the appropriate tabs of Procedure Editor 256.

Hint: To create a new procedure, you can also right-click the **Procedures** node or any object within this node in the DB Explorer 63 tree and select the **New Procedure...** item from the context menu 56.

To create a new procedure with the same properties as one of existing procedures has:

- select the **Database | Duplicate Object...** main menu 890 item;
- follow the instructions of Duplicate Object Wizard 167.

Alternatively, you can right-click a procedure in the DB Explorer 63 tree and select the **Duplicate Procedure <procedure_name>...** context menu item.

Duplicate Object Wizard 167 allows you to select the database to create a new procedure in, and to view the result SQL statement for creating the procedure.

Editing Procedures

To edit an existing procedure:

- select the procedure for editing in the DB Explorer 63 tree (type the first letters of the procedure name for quick search 78);
- right-click the object and select the **Edit Procedure <procedure_name>** context menu item, or simply double-click the procedure;
- edit procedure definition using the appropriate tabs of Procedure Editor 256.

To change the name of a procedure:

- select the procedure to rename in the DB Explorer 63 tree;
- right-click the procedure alias and select the **Rename Procedure <procedure_name>...** item from the context menu 56;
- edit the procedure name using the **Rename Object...** dialog.

Executing Procedures

- select the procedure to execute in the DB Explorer 63 tree (type the first letters of the procedure name for quick search 78);
- right-click the object and select the **Edit Procedure <procedure_name>...** context menu item, or simply double-click the procedure;
- execute the procedure using the **Execute Procedure** Navigation bar item of Procedure Editor 256.

Debugging Procedures

- select the procedure to debug in the DB Explorer 63 tree (type the first letters of the procedure name for quick search 78);
- right-click the object and select the **Tasks | Debug** context menu item, or open 254

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the procedure in Procedure Editor 256 and click the **Debug procedure** item on the Navigation bar 257 or toolbar 258;
- use tools provided by Procedure/Trigger Debugger 263 to debug the procedure.

Dropping Procedures

- select the procedure to drop in the DB Explorer 63 tree;
- right-click the object and select the **Drop Procedure <procedure_name>...** context menu item;
- confirm dropping in the dialog window.

Note: If more convenient, you can also use the following shortcuts 940:
Ctrl+N to create a new procedure;
Ctrl+O to edit the selected procedure;
Ctrl+R to rename the procedure;
F9 to execute the procedure;
Shift+Ctrl+F9 to debug the procedure;
Shift+Del to drop the object from the database.

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5.6.1 Procedure Editor

Procedure Editor allows you to create a 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 (see Create procedure 254 and Edit procedure 254 for details).

To open a stored procedure in **Procedure Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 257
- Creating/editing procedure 259
- Specifying input parameters 901
- Executing procedure 261
- Browsing object dependencies 896
- Editing object description 895
- Viewing object operations 902
- Setting object permissions 897
- Viewing DDL definition 894

See also:

Procedure/Trigger Debugger 263

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5.6.1.1 Using Navigation bar and Toolbar

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

Object
- select a database
- select a procedure for editing

General
- compile 906 the procedure (if it is being created/modified)
- execute 261 the procedure
- show SQL help
- set printing options 573 to print metadata 570 of the procedure
- save the object using the Quick Save 930 feature
- load the object from buffers using the Quick Load 930 feature
- refresh the content of the active tab
- toggle *Text* / *Visual* editor modes
- restore the default size and position of the editor window
- adjust Visual Mode Editors options 783

Tools
- view the dependency tree 536 for the procedure
- define grants 734 on the procedure
- set autogrant privileges for the procedure
- debug the procedure using Procedure/Trigger Debugger 263

Explorer
- browse the procedure parameters and variables 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 procedure:

Input Parameters / **Output Parameters** / **Variables** / **Cursors**
- append a new input parameter / output parameter / variable / cursor
- insert a input parameter / output parameter / variable / cursor
- delete the selected input parameter / output parameter / variable / cursor
- move the selected input parameter / output parameter / variable / cursor up
- move the selected input parameter / output parameter / variable / cursor down

Permissions
- Grant
- Grant with Grant Option
- Revoke
- Grant All
- Grant All with Grant Option
- Revoke All
- Grant on All
- Grant on All with Grant Option

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Revoke on All
Add grantee object

Description
save object description[895] to file
copy description[895] to clipboard

DDL
save DDL[894] to file
open DDL[894] in Execute Script[544]

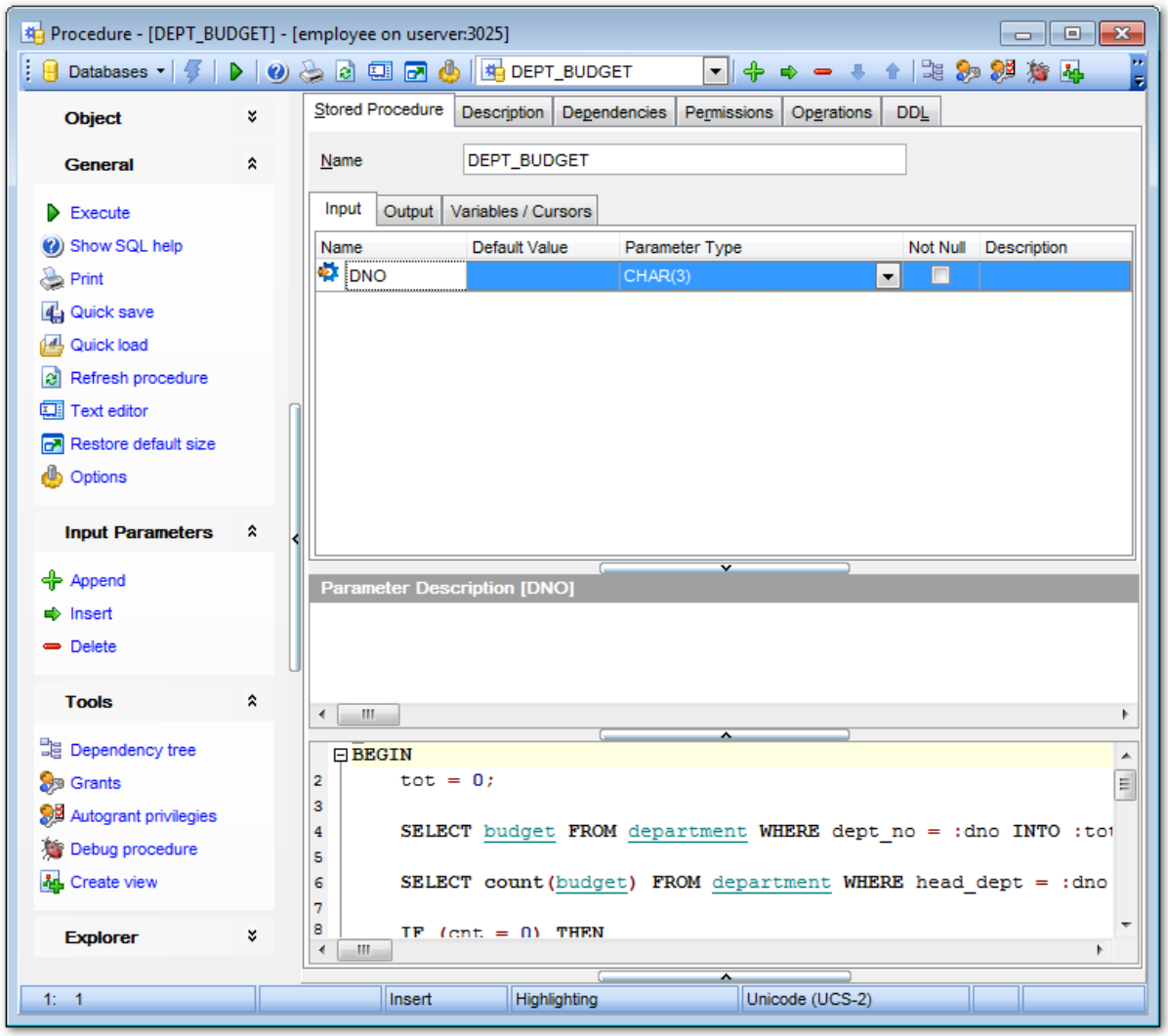
Items of the **Navigation bar** are also available on the **ToolBar** of **Procedure Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.6.1.2 Creating/editing procedure

Use the **Stored Procedure** tab of **Procedure Editor** to view and edit the stored procedure definition.

Procedure Editor provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the Navigation bar[257] and toolbar[258].



When in the **Text editor** mode, you can use the editor area to specify the procedure definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the procedure.

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[334] and Using the context menu[336].

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

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Name
Enter a name for the new procedure, or modify the name of the procedure being edited. Note that procedure name must be unique among procedure 254, table 179 and view 243 names in the database.

The Parameters and variables 898 area allows you to manage *input parameters*, *output parameters*, *variables* and *cursors* at the corresponding tabs.

The lower area allows you to specify the procedure body, i.e. an optional list of local variables and their data types and a block of statements in InterBase procedure and trigger language, bracketed by *BEGIN* and *END*. When editing the procedure, you can edit its body using the editor area to make appropriate changes, and recompile the procedure.

To compile a procedure, you can use the **Compile** item available within the Navigation bar 257 or toolbar 258.

See also:

Managing parameters 898

Specifying input parameters 901

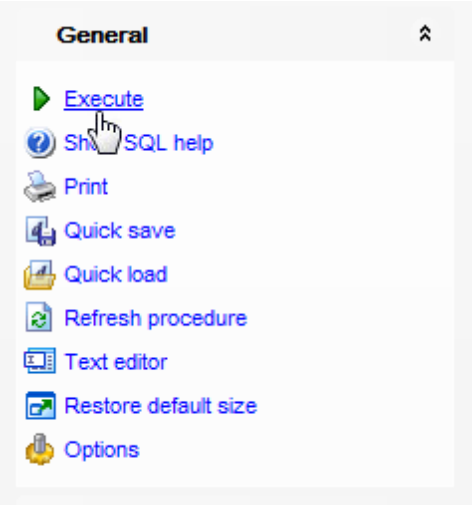
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5.6.1.3 Executing procedure

Procedure Editor provides an ability to execute procedures. Click the **Execute** item of the Navigation bar[257] or use the corresponding toolbar[258] button to execute the procedure.

If the procedure has input parameters, **SQL Manager** allows you to specify the values for these parameters in the Input Parameters[901] dialog which appears just before execution.

The result of the successfully executed procedure, as well as the error message in case of execution failure, appears in the message panel at the bottom of the **Procedure Editor** window.



Note: If any unsaved changes are applied to the stored procedure being currently edited, the execution of the procedure is impossible unless changes are saved through the **Compile** item of the **Navigation bar**.

See also:

Specifying input parameters[901]

Procedure Editor[256]

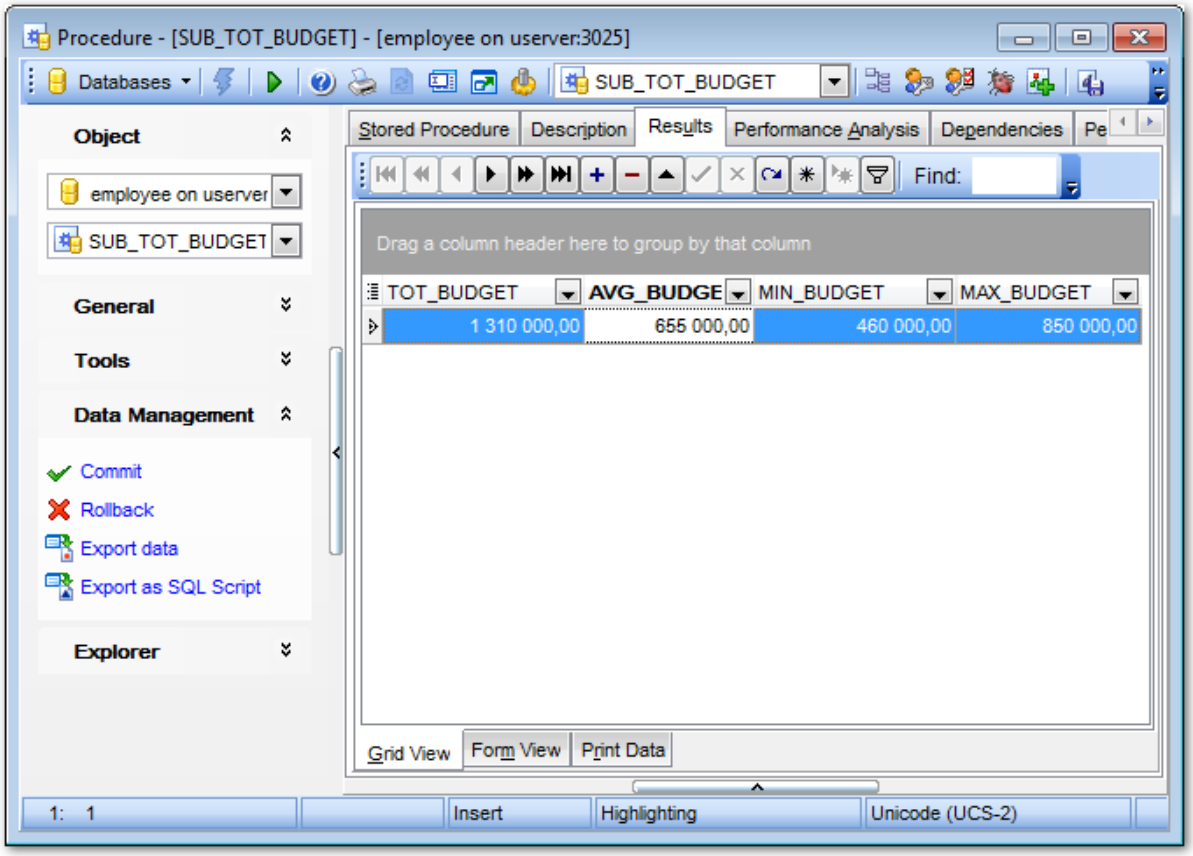
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5.6.1.4 Working with data

The **Data** tab displays the procedure data as a grid by default (see Data View 370 for details). The context menu of this tab and the Navigation bar 244 allow you to Export Data 445, Import Data 493, Export as SQL Script 519.

While working with procedure data, you are provided with a number of filtering 380 and grouping 377 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 369 tools are also available through the Navigation bar 257 and toolbar 258 of **Procedure Editor**.



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5.6.2 Procedure/Trigger Debugger

To fix the errors in the procedure[254] or trigger[282] code and to optimize the procedure/ trigger work, you can debug the procedure/trigger step-by-step before compilation, using the **Procedure/Trigger Debugger**.

To activate the debugger, open the procedure in Procedure Editor[256], or the trigger in Trigger Editor[282], then click the **Debug procedure** / **Debug trigger** button on the toolbar[892] or use the corresponding item of the Navigation bar[890]. You can also use the *Shift+Ctrl+F9* shortcut[940] for the same purpose.

- Using Navigation bar and Toolbar[264]
- Debugging procedure/trigger[266]
- Browsing debug information[268]

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[20] page.

See also:

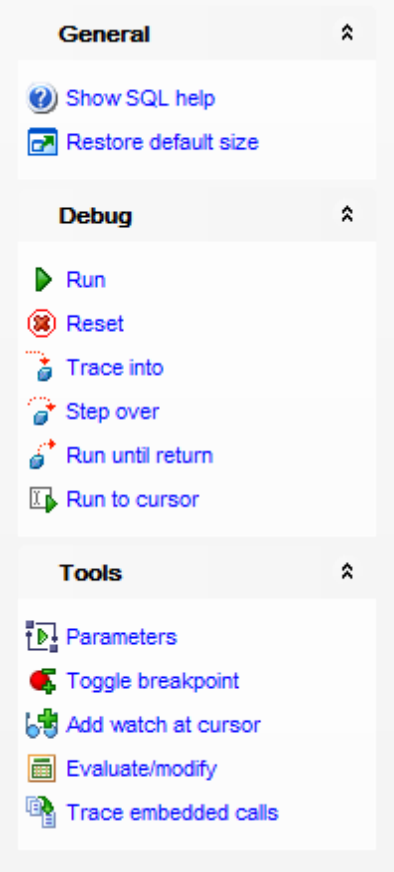
Procedure Editor[256]

Trigger Editor[282]

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5.6.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Procedure/Trigger Debugger**.



General

show SQL help
restore the default size and position of the debugger window

Debug

run the procedure/trigger
reset procedure/trigger execution
trace into a procedure that is called from the current procedure
step over the procedure that is called from the current procedure
run the procedure until return to the upper-level procedure
run the procedure/trigger to the cursor position

Tools

commit retaining
open the Input Parameters 901 dialog
toggle breakpoint at the current statement
add watch 268 at cursor

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evaluate/modify 268 a variable
toggle tracing embedded calls

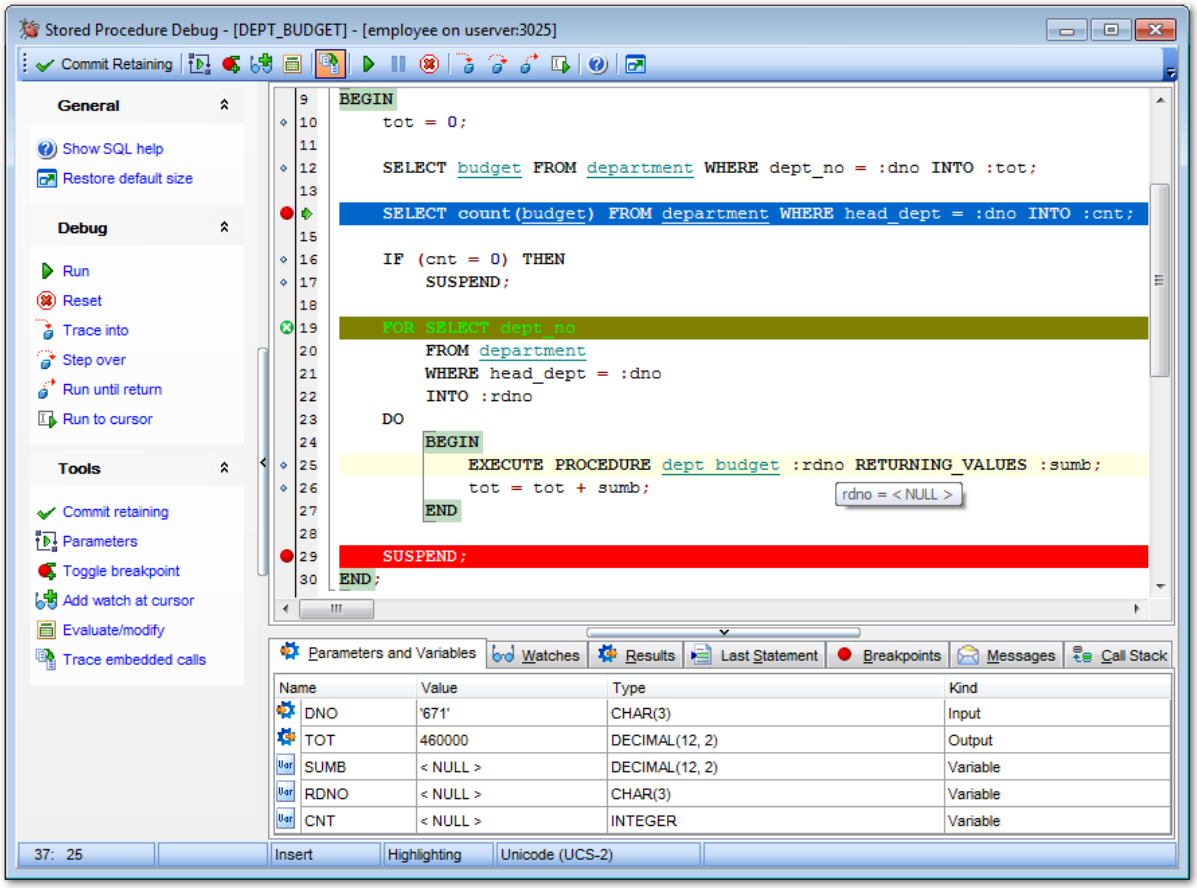
Items of the **Navigation bar** are also available on the **ToolBar** of **Procedure/Trigger Debugger**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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5.6.2.2 Debugging procedure/trigger

The working area allows you to view the text of procedure/trigger definition.

The red spots (●) at the left of the workspace and red highlight stand for enabled breakpoints[270];
the green spots (⊗) and green highlight stand for disabled breakpoints[270];
the green arrow (➡) and blue highlight indicate the currently executed statement.



For your convenience the following shortcuts[940] are implemented:

- To start executing the procedure step-by-step, press **F8**.
- To trace into a procedure that is called from the current procedure, press **F7**.
- To reset the procedure execution, press the **Ctrl+F2** key combination.
- To add/remove a breakpoint to/from the current statement, press the **Ctrl+F8** key combination.
- To run the procedure (to the end or to the next breakpoint), press **F9**.

Set mouse cursor over a parameter to see a **hint** with its current value.

Hint: Click an embedded procedure (or any other object) name with the *Ctrl* key pressed to open the object in its editor. For details see Using object links[340].

The lower area of the **Procedure/Trigger Debugger** window allows you to browse *parameters and variables*, *watches*, *results*, *last statement*, *breakpoints*, *messages*, *call*

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stack. For details see Browsing debug information 268.

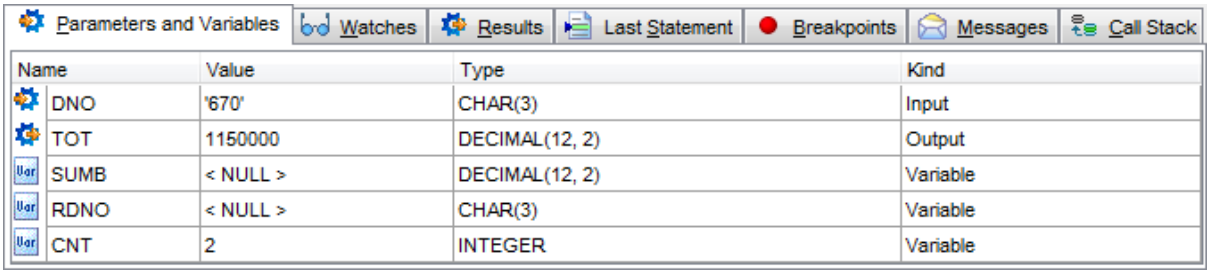
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5.6.2.3 Browsing debug information

Use tabs at the bottom of the debugger window to view miscellaneous debug information.

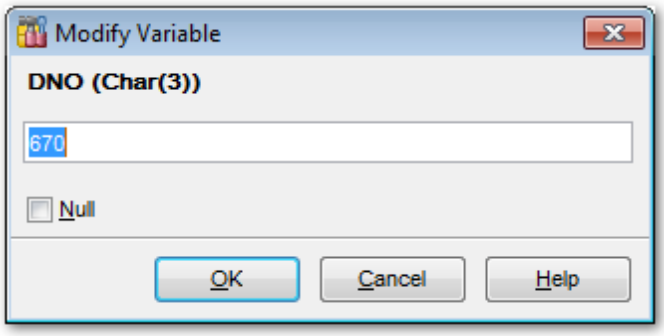
Parameters and Variables

This tab displays the list of procedure input and output parameters and variables (distinguished by respective icons) with their values and types.



Name	Value	Type	Kind
DNO	'670'	CHAR(3)	Input
TOT	1150000	DECIMAL(12, 2)	Output
SUMB	< NULL >	DECIMAL(12, 2)	Variable
RDNO	< NULL >	CHAR(3)	Variable
CNT	2	INTEGER	Variable

Double-click an item in the list to call the **Modify Variable** dialog allowing you to set the parameter/variable value.



Use the edit control to specify a value for the variable, or select the **Null** option.

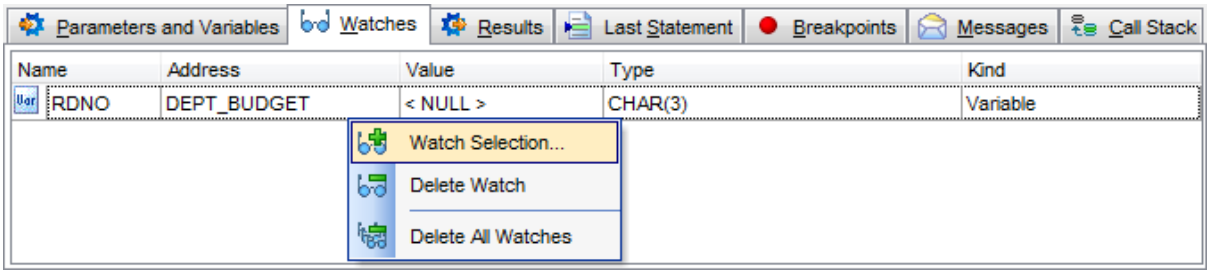
The controls vary according to the data type of the variable being edited:

- for *integral* data types (*SMALLINT*, *INTEGER*), use the spinner control to specify the necessary value
- for *floating-point* data types (*FLOAT*, *NUMERIC*, *DOUBLE PRECISION*, *DECIMAL*), type in or click the arrow-down button to call the *Calculator* popup window and set the necessary value
- for *string* data types (*CHAR*, *VARCHAR*), use the editable area to input the necessary text
- for *temporal* data types (*DATE*, *TIME*), type in or click the arrow-down button to call the *Date editor* popup window and set the required date value

Watches

Use this tab to manage watches for parameters and variables declared in the procedure being currently debugged.

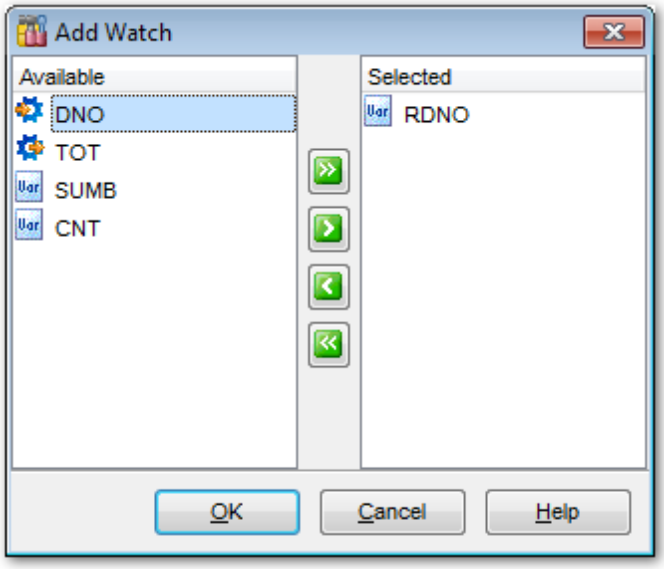
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The **Watches** list provides the following attributes of each parameter/variable of the procedure:
Name
Address (the name of the procedure to which the parameter or variable belongs)
Value
Type
Kind

Right-click an item in the list to call the **context menu** allowing you to *select watches* using the **Add Watch** dialog, to *delete* the selected watch, or to *delete all* watches.

The **Add Watch** dialog allows you to select the parameters and variables to add watch for.

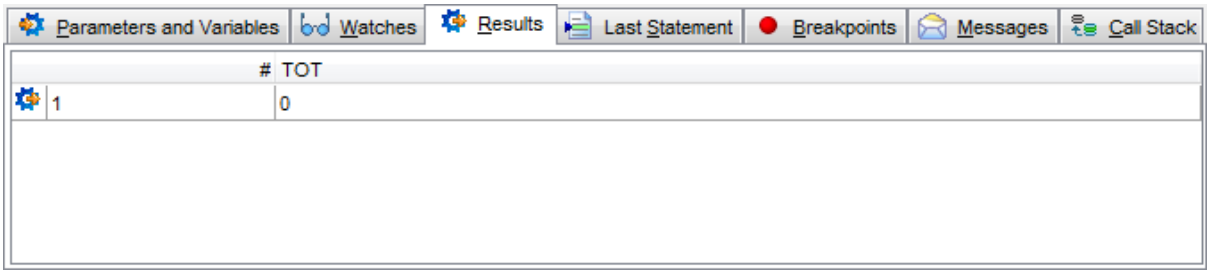


To select a parameter/variable, you need to move it from the **Available** list to the **Selected** list. Use the buttons or drag-and-drop operations to move the parameters and variables from one list to another.

Results

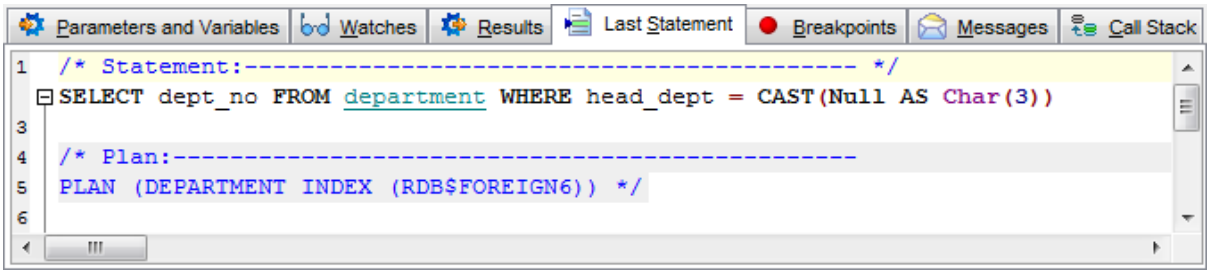
If the procedure is supposed to return any results, this tab displays the intermediate execution results.

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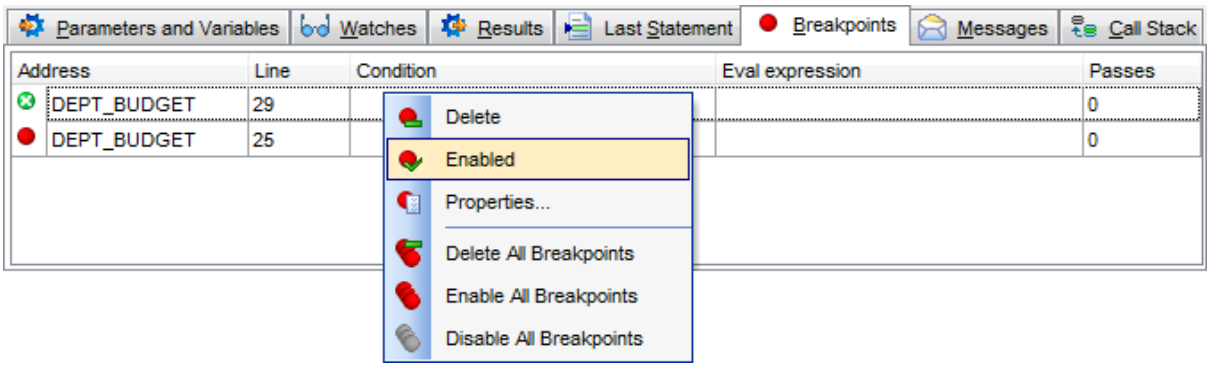
Last Statement

This tab displays the last executed statement, the statement execution plan and other information such as execution time.



Breakpoints

This tab displays the breakpoints set in the procedure.

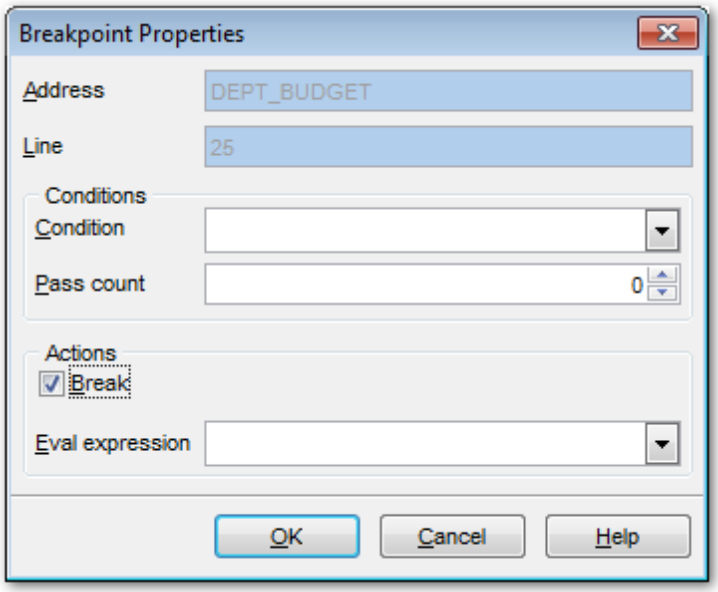


The **Breakpoints** list provides the following attributes of each breakpoint of the procedure:
Address (the name of the procedure to which the breakpoint belongs)
Line (the line number where the breakpoint is set)
Condition
Eval expression
Passes (the number of times the execution has already passed through the breakpoint)

Right-click an item in the list to call the **context menu** allowing you to *enable/disable*, to specify properties using the **Breakpoint Properties** dialog, to *delete* the selected breakpoint, or to *delete all* breakpoints.

The **Breakpoint Properties** dialog allows you to view/edit properties for each breakpoint 270 set in the procedure.

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Conditions

Condition

This field should contain the correct SQL statement returning a boolean value. The execution will stop at this breakpoint if the statement is true, and skip the breakpoint if it is false.

Pass count

Specify the number of passes for the breakpoint before the execution stops.

Actions

Break

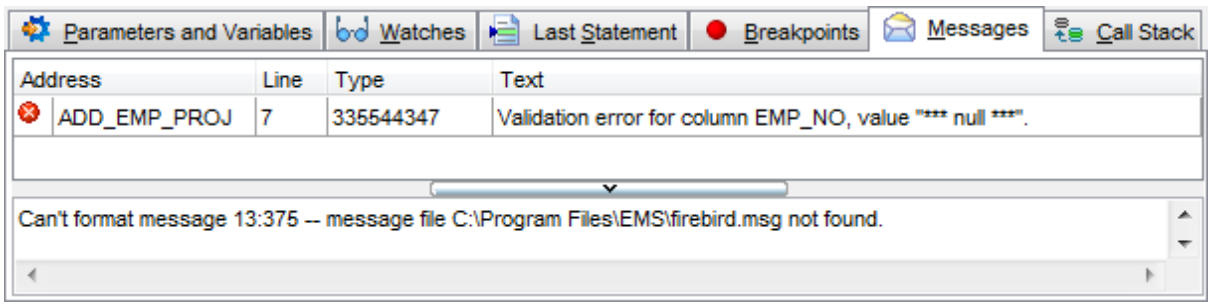
Enable the option to stop execution at this breakpoint.

Eval expression

Specify the correct SQL statement to evaluate some expression when passing through this point.

Messages

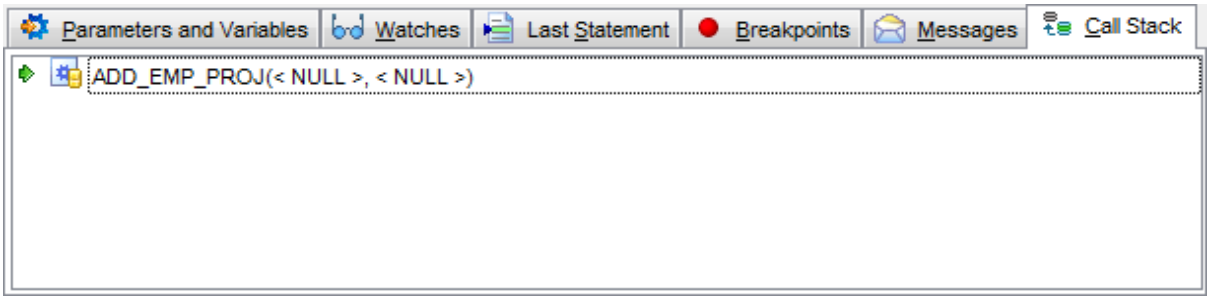
This tab displays various messages and errors received from the debugger after execution (if any).



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Call Stack

Use this tab to see the stack (ordered log) of the procedure calls.



The parameters with which the procedure has been called are listed in the brackets after the procedure name.

A double-click on an item under the Breakpoints 270, Messages 271 and Call Stack 272 tabs leads to the corresponding call.

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5.7 External Functions

An **External function** is a database function written entirely in a host language to perform data manipulation tasks not directly supported by InterBase/Firebird. It's executed on the server.

External functions give you the ability to create your own functions (like *count*) and integrate them in the database itself. Each external function is arranged as a function belonging to DLL. Thus, one dynamically loaded library consists of at least one function.

External Function Editor allows you to define user-defined function properties. It opens automatically when you declare a new user-defined function and is available on editing an existing one.

To open an external function **External Function Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 274
- Creating/editing external function 275
- Browsing object dependencies 896
- Editing object description 895
- Viewing DDL definition 894

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5.7.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **External function editor**.

Object
- select a database
- select an external function for editing

General
- compile 906 the external function (if it is being created/modified)
- show SQL help
- set printing options 573 to print metadata 570 of the external function
- save the object using the Quick Save 930 feature
- load the object from buffers using the Quick Load 930 feature
- refresh the content of the active tab
- adjust Object Editors options 780
- restore the default size and position of the editor window

Tools
- view the dependency tree 536 for the external function

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 external function:

Input Arguments
- append a new input argument
- insert an input argument
- delete the selected input argument
- move the selected input argument up
- move the selected input argument down

Description
- save object description 895 to file
- copy description 895 to clipboard

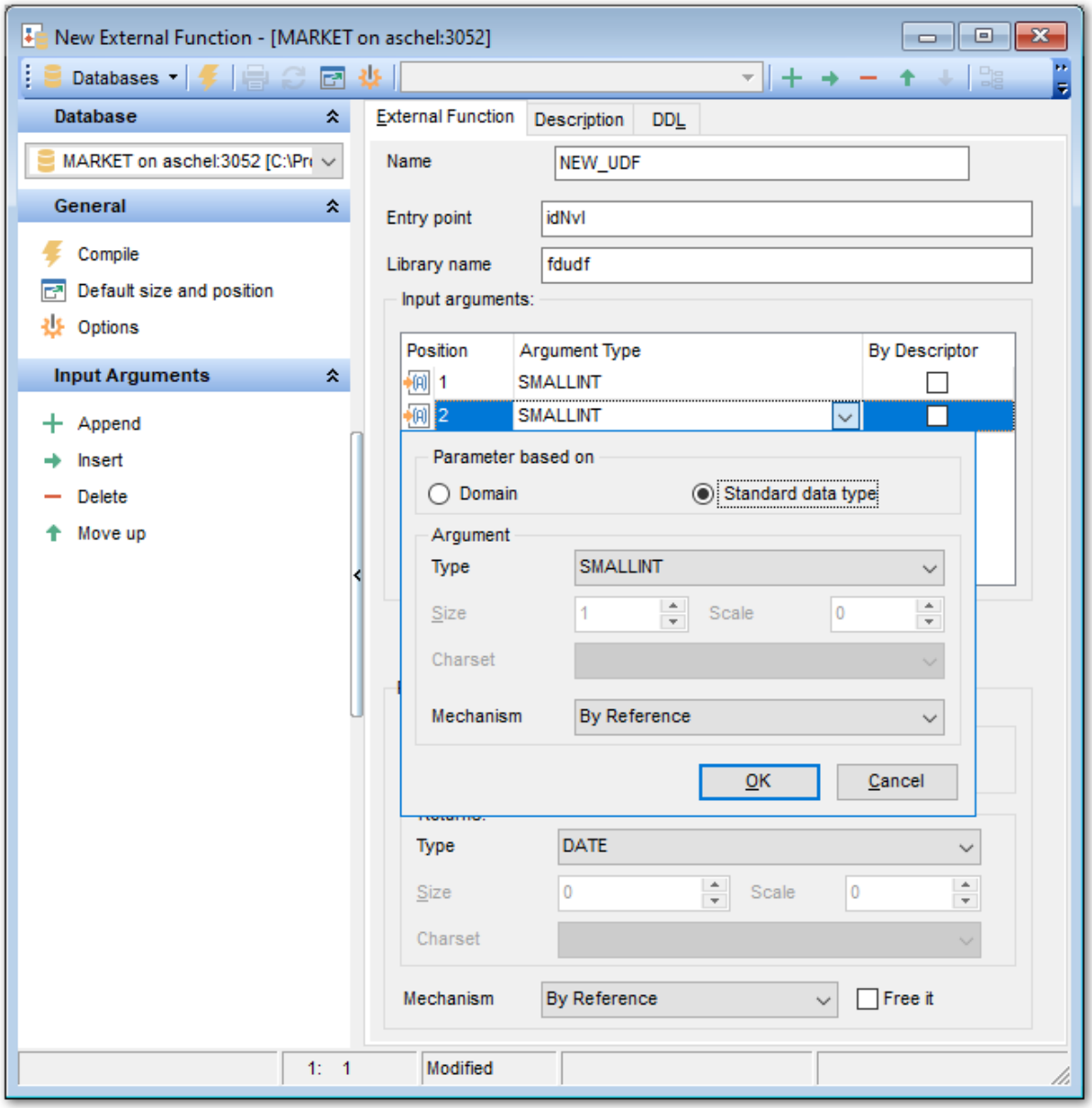
DDL
- save DDL 894 to file
- open DDL 894 in Execute Script 331

NOTE: Items of the **Navigation bar** are also available on the **ToolBar** of **UDF Editor**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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5.7.2 Creating/editing external functions

Use the **External Function** tab of **External Function Editor** to view and edit external functions.



Name
Name of the external function to use in the SQL statements, or modify the name of the external function being edited (this name can be different from the name of the function specified as **Entry point**).

Entry point
Name of the external function in the source code as stored in the library that is referenced by the external function (*ENTRY_POINT*).

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Library name
File name identifying the library that contains the external function (*MODULE_NAME*).

Input arguments
This group is provided for managing the list of input arguments passed to the external function.

Right-click the area to display the context menu allowing you to *append*, *insert*, *delete* the selected argument, or move it *up/down*.

Arguments management tools are also available through the Navigation bar 274 and toolbar 274 of **External Function Editor**.

Use the dropdown button to open Data Type Editor 898 which allows you to define input argument data type properties.

Returns
This group allows you to select the *data type / domain* and set *properties* specific for this data type / domain. For details see Managing parameters 898.

By
Use the drop-down list to select the way to pass the return value – *by value, by reference or by descriptor.*

☑ **Free it**
This option frees memory of the return value after the external function finishes running (*FREE_IT*).

To compile an external function, you can use the **Compile** item available within the Navigation bar 274 or toolbar 274.

See also:
Managing parameters 898

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5.8 SQL Functions

An **SQL function** is a program (the function body) that can be invoked by using zero or more input values (arguments) to a single value (the result). A Function can be stored as a database object providing reusable code.

SQL Function Editor allows you to define user-defined function properties. It opens automatically when you declare a new user-defined function and is available on editing an existing one.

To open an **SQL Function Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 278
- Creating/editing SQL function 280
- Managing parameters\arguments\variables 898
- Specifying input parameters 901
- Browsing object dependencies 896
- Setting object permissions 897
- Editing object description 895
- Viewing DDL definition 894

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5.8.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **SQL Function editor**.

Object
- select a database
- select an SQL function for editing

General
- execute the current SQL Function
- compile 906 the SQL function (if it is being created/modified)
- show SQL help
- set printing options 573 to print metadata 570 of the SQL function
- save the object using the Quick Save 930 feature
- load the object from buffers using the Quick Load 930 feature
- refresh the content of the active tab
- switches between Text and Visual editor modes
- adjust Object Editors options 780
- restore the default size and position of the editor window

Tools
- view the dependency tree 536 for the SQL function
- define grants 734 on the SQL Function
- set autogrant privileges for the SQL Function
- debug the SQL Function using Debugger 263
- create 233 a view 243 based on the SQL Function

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 SQL function:

Input Arguments
- append a new input argument
- insert an input argument
- delete the selected input argument
- move the selected input argument up
- move the selected input argument down

Export list - use it to export 445 the arguments list to the specified format

Description
- save object description 895 to file
- copy description 895 to clipboard

DDL
- save DDL 894 to file
- open DDL 894 in Execute Script 544

NOTE: Items of the **Navigation bar** are also available on the **ToolBar** of **UDF Editor**. To

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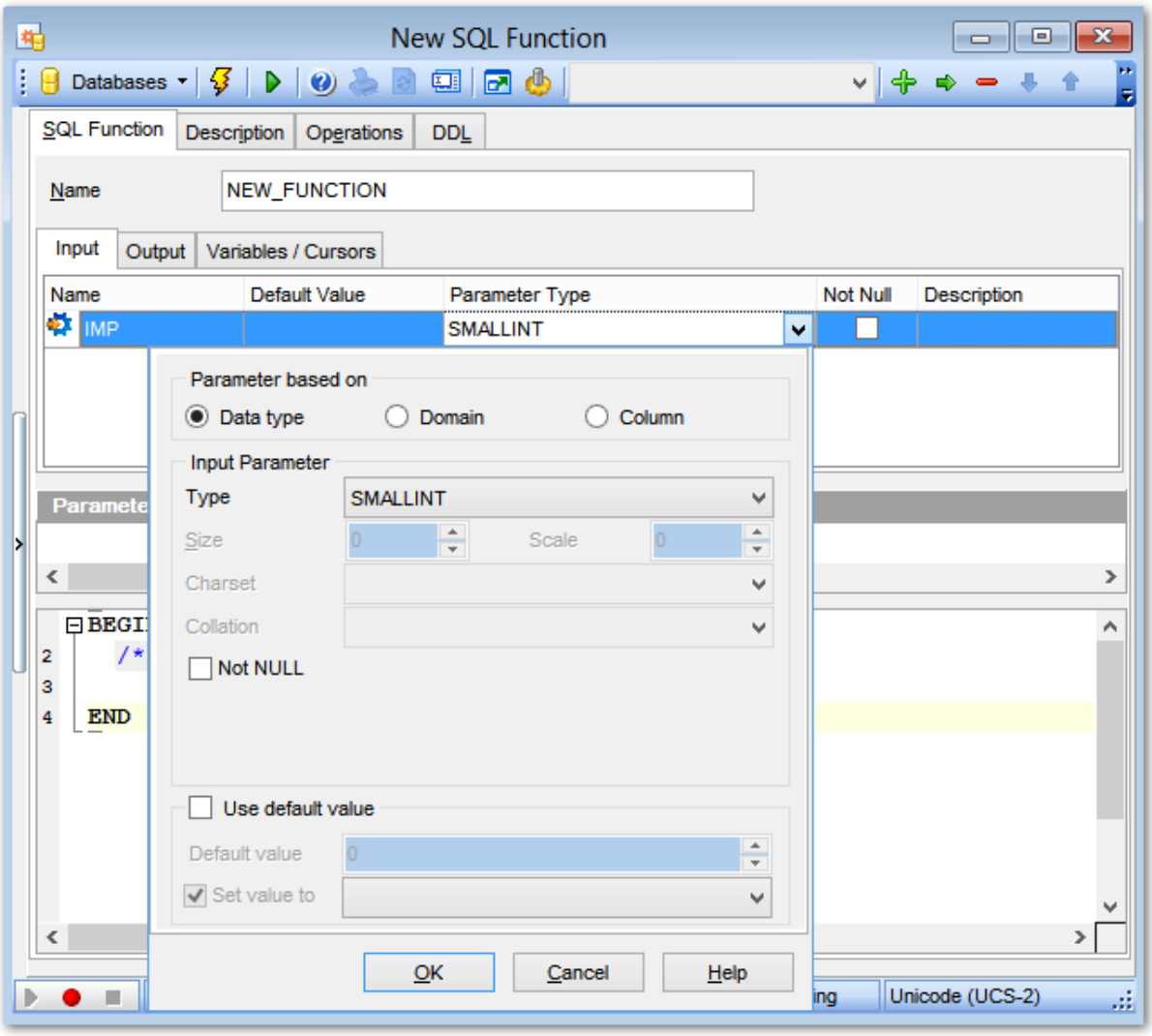
enable the toolbar, open the Environment Options dialog, proceed to the Windows section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar) in the **Bar style for child forms** group.

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5.8.2 Creating/editing SQL Functions

Use the **SQL Function** tab of **SQL Function Editor** to view and edit SQL functions.

Name
Name of the SQL function.



Input parameters

This group is provided for managing the list of input parameters passed to the SQL function.

The **Input parameters** list provides the following attributes of each input arguments of the SQL function:
Name, Default value, Parameter type, Not Null attribute and Description.

Click the arrow-down button to call Data Type Editor[898] for setting properties of the parameter data type. It allows you to select the source type for the argument being created/edited. It can be one of existing domains[173], a standard InterBase/Firebird data

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type or a column.

Output parameters

This group is provided for managing the list of output parameters passed to the SQL function.

The **Output parameters** list provides the following attributes of each input arguments of the SQL function:
Name, Parameter type, Not Null attribute.

Click the arrow-down button to call Data Type Editor for setting properties of the parameter data type. It allows you to select the source type for the argument being created/edited. It can be one of existing domains 173, a standard InterBase/Firebird data type or a column.

Variables/Cursors

This group allows you to select the source type for the return parameter being created/edited. It can be one of existing domains 173 or a standard InterBase/Firebird data type. For detailed information see Managing parameters 898.

The lower area allows you to specify the function body.

To compile an SQL Function use the **Compile** item available within the Navigation bar 274 or toolbar 274.

See also:

Managing parameters 898

Specifying input parameters 901

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5.9 Triggers

A **Trigger** is an object in the database that is invoked when a particular SQL statement is run. In InterBase/Firebird, a trigger is a self-contained program associated with a table or view that automatically performs an action (fires) in response to a DML operation (when a row in the table or view is inserted, updated, or deleted).

Trigger Editor allows you to define trigger properties. It opens automatically when you create a new trigger and is available on editing an existing one.

To open a trigger in **Trigger Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 283
- Creating/editing trigger 286
- Browsing object dependencies 896
- Editing object description 895
- Viewing object operations 902
- Viewing DDL definition 894

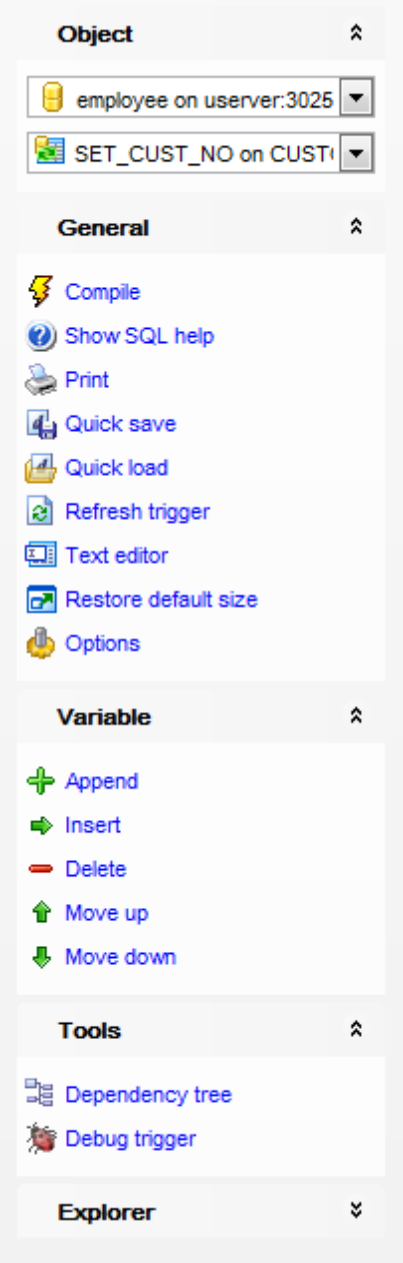
See also:

Procedure/Trigger Debugger 263

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5.9.1 Using Navigation bar and Toolbar

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



Object
select a database
select a trigger for editing

General
compile the trigger (if it is being created/modified)

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show SQL help
set printing options[573] to print metadata[570] of the trigger
save the object using the Quick Save[930] feature
load the object from buffers using the Quick Load[930] feature
refresh the content of the active tab
toggle *Text* / *Visual* editor modes
adjust Visual Mode Editors options[783]
restore the default size and position of the editor window

Tools

view the dependency tree[536] for the trigger
set autogrant privileges for the trigger
debug the trigger using Procedure/Trigger Debugger[263]

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:

Variable

append a new variable
insert a variable
delete the selected variable
move the selected variable up
move the selected variable down

Message

append a new message
insert a message
delete the selected message
move the selected message up
move the selected message down

Permissions

Grant
Grant with Grant Option
Revoke
Grant All
Grant All with Grant Option
Revoke All
Grant on All
Grant on All with Grant Option
Revoke on All
add a grantee object

Description

save object description[895] to file
copy description[895] to clipboard

DDL

save DDL[894] to file

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open DDL[894] in Execute Script[544]

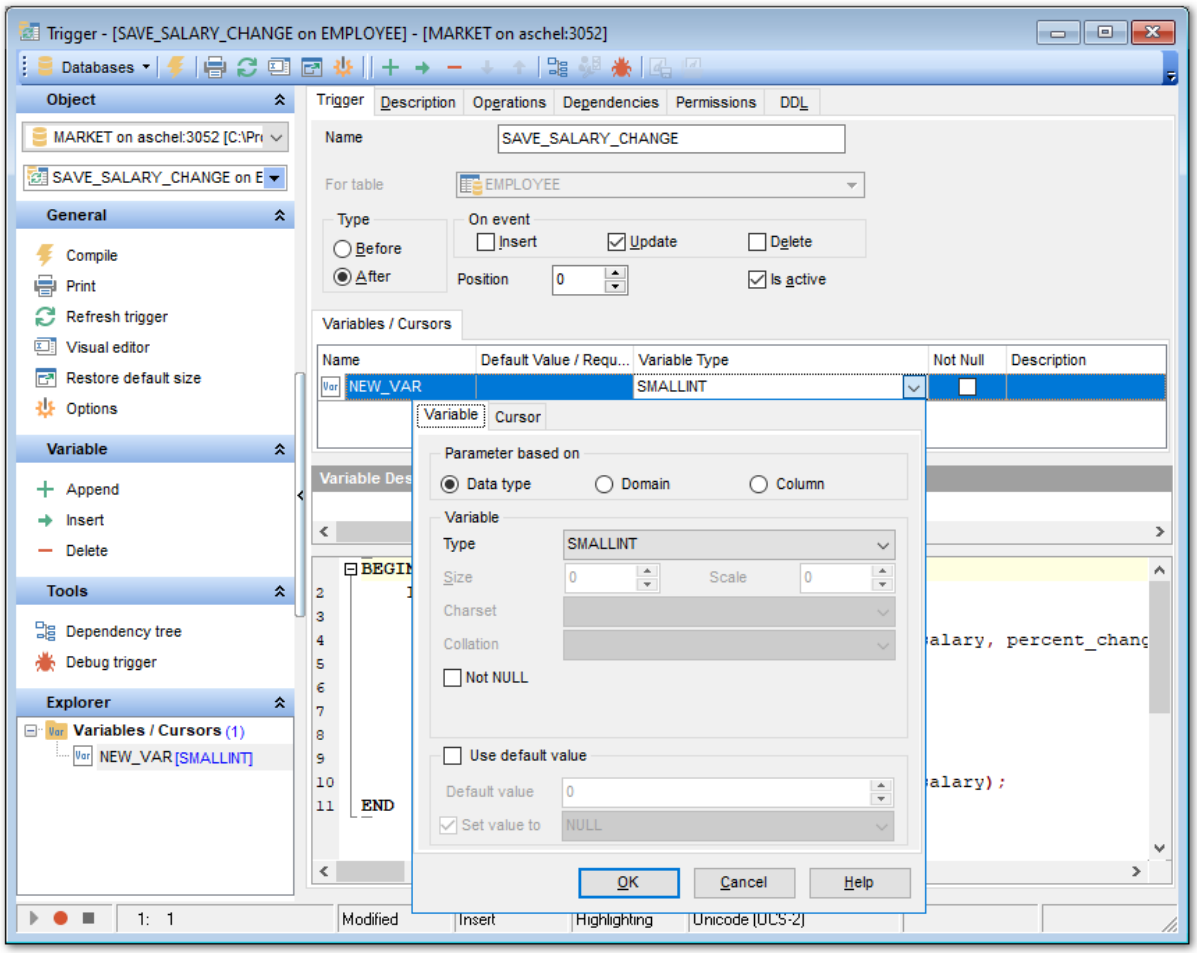
Items of the **Navigation bar** are also available on the **ToolBar** of **Trigger Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.9.2 Creating/editing trigger

Use the **Trigger** tab of **Trigger Editor** to view and edit the trigger definition.

Trigger Editor provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the Navigation bar[283] and toolbar[285].



When in the **Text editor** mode, you can use the editor area to specify the trigger definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the trigger.

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[334] and Using the context menu[336].

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

Name
Enter a name for the new trigger, or modify the name of the trigger being edited. Note that trigger name must be unique in the database.

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For table
The drop-down list of tables[179] and views[243] allows you to select the table or view on which the trigger is executed.

Type
Select the trigger behavior type:
Before
This selection specifies that the trigger is fired before the triggering SQL statement.
After
This selection specifies that the trigger is fired only when all operations specified in the triggering SQL statement have executed successfully.

On event
Specify the data modification statement(s) that activate the trigger when it is tried against this table or view:
Insert
Update
Delete

Position
Defines the order of firing triggers on the same event. Lower-number triggers fire first, thus trigger with the default position (0) will be the first trigger to fire.

Is active
Activates/deactivates the trigger immediately after it is created. A disabled (inactive) trigger still exists as an object in the database, but does not fire.

Variables
This group is provided for managing the list of local variables declared and used only in the trigger.

The **Variables** list provides the following attributes of each variable used in the trigger:
Name (name of the variable, unique for variables within the trigger)
Default Value (a default value for the variable)
Variable Type (the data type of the variable, click the arrow-down button to call **Data Type Editor** for setting properties of the variable data type)
Description (description of the variable)

Right-click the area to display the context menu allowing you to *append*, *insert*, *delete* the selected variable, or move it *up*/*down*.

Variables management tools are also available through the Navigation bar[283] and toolbar[285] of **Trigger Editor**.

The **Data Type Editor** popup window allows you to define variable data type properties.

Parameter based on
This group allows you to select the source type for the variable being created/edited. It can be one of existing domains[173], a standard InterBase/Firebird data type or a column.

Data type
Specifies that the parameter is based on a standard data type.

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Domain
Specifies that the parameter is based on a domain[173] previously created in the database. Note that creating parameters based on a domain is only available for Firebird 2.1 and later.
Column
Specifies that the parameter is based on a field.

Variable
This group allows you to select the *data type* / *domain* / *column* and set *properties* specific for this data type / domain / column. For details see Domain options[205], Options for standard data type[207].

Cursors
This group is provided for managing the list of cursors declared to define sets of rows that can be retrieved using the cursor.

The **Cursors** list provides the following attributes of each cursor used in the trigger:
Name (cursor name)
Query (the SELECT query that determines which rows to retrieve, click the arrow-down button to call **Query Data editor** for editing the query text)
Description (description of the cursor)

The **Query Data** popup window allows you to specify the SELECT query.

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[334] and Using the context menu[336].

If more convenient, you can click the button to call Query Designer[348] for building the query visually.

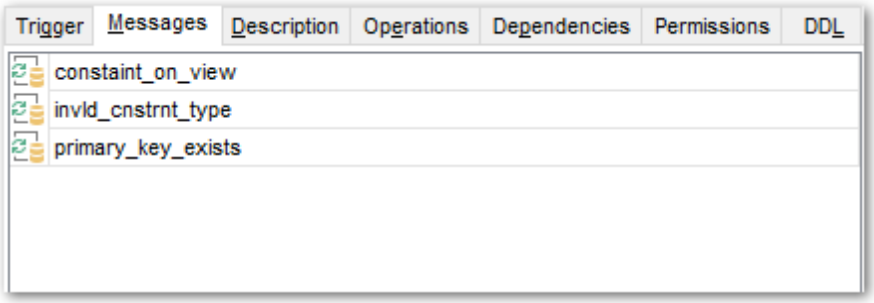
The lower area allows you to specify the trigger body, i.e. an optional list of local variables and their data types and a block of statements in InterBase procedure and trigger language, bracketed by *BEGIN* and *END*. These statements are performed when the trigger fires. When editing the trigger, you can edit its body using the editor area to make appropriate changes, and recompile the trigger.

To compile a trigger, you can use the **Compile** item available within the Navigation bar[283] or toolbar[285].

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5.9.3 Managing trigger messages

The **Messages** tab is provided for displaying the list of trigger messages associated with the system trigger.



See also:

System objects 122

5.10 Exceptions

Exceptions are user-defined errors and messages for use in stored procedures 254 and triggers 282.

When raised by a trigger or a stored procedure, the exception:
- terminates the trigger or procedure in which it was raised and undoes any actions performed (directly or indirectly) by it;
- returns an error message to the calling application.

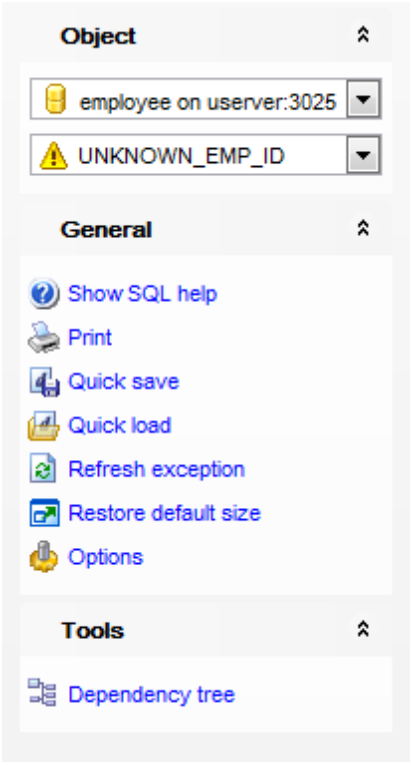
Exception Editor allows you to define exception properties. It opens automatically when you create a new exception and is available on editing an existing one.

To open an exception in **Exception Editor**, double-click it in the DB Explorer 63 tree.
- Using Navigation bar and Toolbar 291
- Creating/editing exception 293
- Browsing object dependencies 896
- Editing object description 895
- Viewing DDL definition 894

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5.10.1 Using Navigation bar and Toolbar

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



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

Object
- select a database
- select an exception for editing

General
- compile 906 the exception (if it is being created/modified)
- show SQL help
- set printing options 573 to print metadata 570 of the exception
- save the object using the Quick Save 930 feature
- load the object from buffers using the Quick Load 930 feature
- refresh the content of the active tab
- adjust Object Editors options 780
- restore the default size and position of the editor window

Tools
- view the dependency tree 536 for the exception

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

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exception:

Description
save object description[895] to file
copy description[895] to clipboard

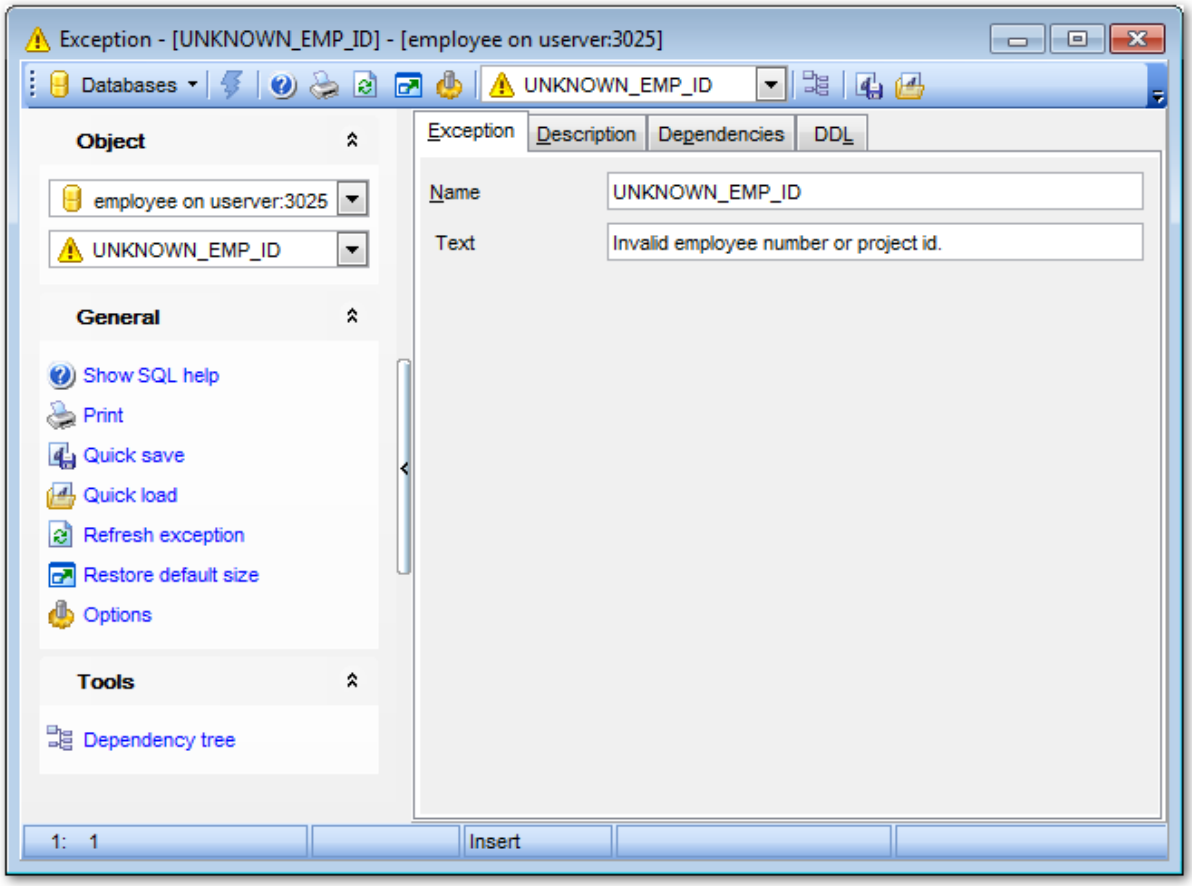
DDL
save DDL[894] to file
open DDL[894] in Execute Script[544]

Items of the **Navigation bar** are also available on the **ToolBar** of **Exception Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.10.2 Creating/editing exception

Use the **Exception** tab of **Exception Editor** to view and edit the exception definition.



Name
Enter a name for the new exception, or modify the name of the exception being edited. Note that exception name must be unique among exception names in the database.

Text
Text of the message displayed when the exception is raised. The maximum allowed string length is 78 characters.

To compile an exception, you can use the **Compile** item available within the Navigation bar 291 or toolbar 292.

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5.11 Generators

A **Generator** is a sequential number that can be automatically inserted in a column. A generator is often used to ensure a unique value in a PRIMARY KEY 217, such as an invoice number, that must uniquely identify the associated row.

Generator Editor allows you to define generator properties. It opens automatically when you create a new generator and is available on editing an existing one.

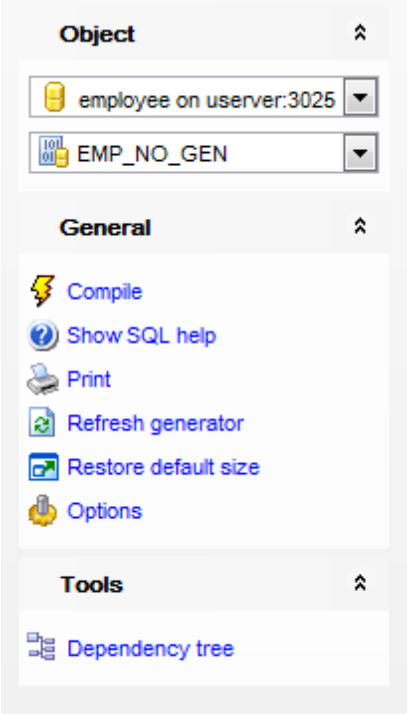
To open a generator in **Generator Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 295
- Creating/editing generator 297
- Browsing object dependencies 896
- Viewing DDL definition 894

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5.11.1 Using Navigation bar and Toolbar

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



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

Object
select a database
select a generator for editing

General
compile 906 the generator (if it is being created/modified)
show SQL help
set printing options 573 to print metadata 570 of the generator
refresh the content of the active tab
adjust Object Editors options 780
restore the default size and position of the editor window

Tools
view the dependency tree 536 for the generator

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 generator:

DDL

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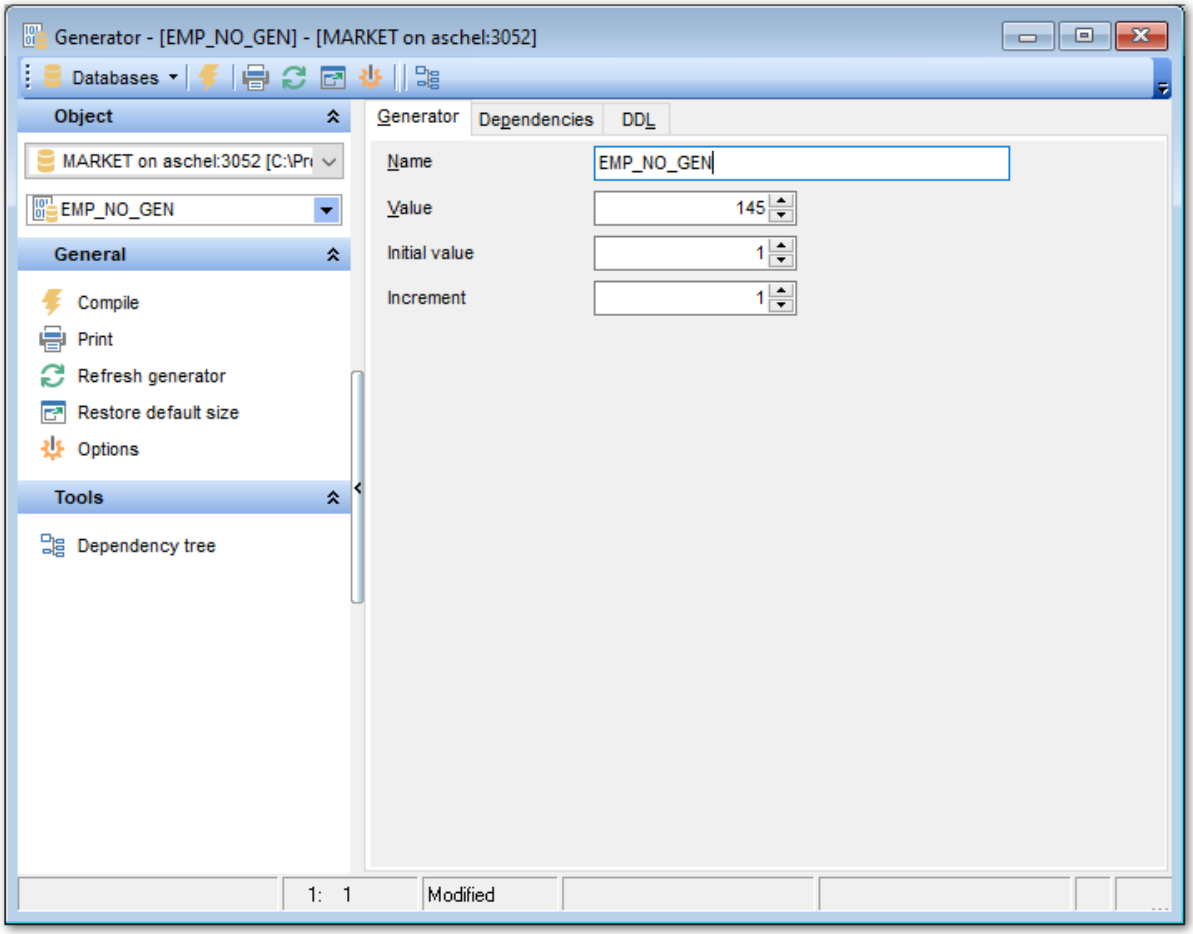
 save DDL[894] to file
 open DDL[894] in Execute Script[547]

Items of the **Navigation bar** are also available on the **ToolBar** of **Generator Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.11.2 Creating/editing generator

Use the **Generator** tab of **Generator Editor** to view and edit the generator definition.



Name
Enter a name for the new generator, or modify the name of the generator being edited. Note that generator name must be unique among generator names in the database.

Value
Use the spinner control to set a starting value for the generator.

Initial value
Start value of the generator.

Increment
Allows to specify an increment for the next value.

To compile a generator, you can use the **Compile** item available within the Navigation bar 295 or toolbar 296.

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5.12 BLOB Filters

A *Binary Large Object* (or *BLOB*) is a collection of binary data stored as a single entity in a database management system. BLOBs are typically images, audio or other multimedia objects, though sometimes binary code is stored as a BLOB.

BLOB filters are routines for Blobs. They translate Blob data from one type to another, i. e. they allow the contents of Blob subtype X to be displayed as subtype Y, or vice versa. These filters are ideal tools for certain binary operations, such as the compression and translation of Blobs, depending upon the application requirements.

Blob filters are written in the same way that UDFs 273 are written, and are generally part of standard libraries, just as UDFs are.

BLOB Filter Editor allows you to define BLOB filter properties. It opens automatically when you declare a new BLOB filter and is available on editing an existing one.

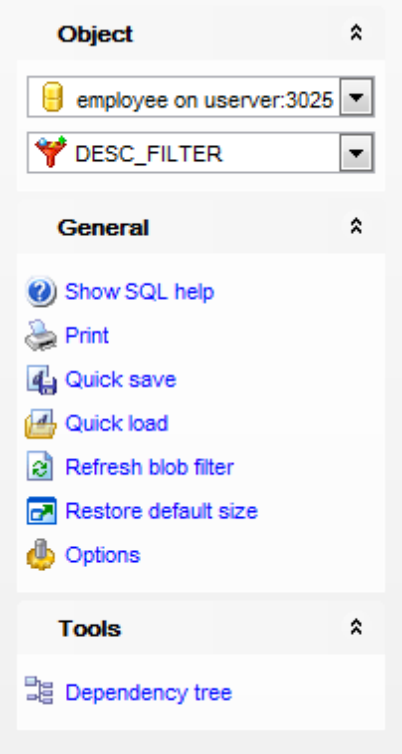
To open a BLOB filter in **BLOB Filter Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 299
- Creating/editing BLOB Filter 301
- Browsing object dependencies 896
- Editing object description 895
- Viewing DDL definition 894

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5.12.1 Using Navigation bar and Toolbar

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



The **Navigation bar** of **BLOB Filter Editor** allows you to:

Object
- select a database
- select a BLOB filter for editing

General
- compile 906 the BLOB filter (if it is being created/modified)
- show SQL help
- set printing options 573 to print metadata 570 of the BLOB filter
- save the object using the Quick Save 930 feature
- load the object from buffers using the Quick Load 930 feature
- refresh the content of the active tab
- adjust Object Editors options 780
- restore the default size and position of the editor window

Tools
- view the dependency tree 536 for the filter

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 BLOB

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filter:

Description
save object description[895] to file
copy description[895] to clipboard

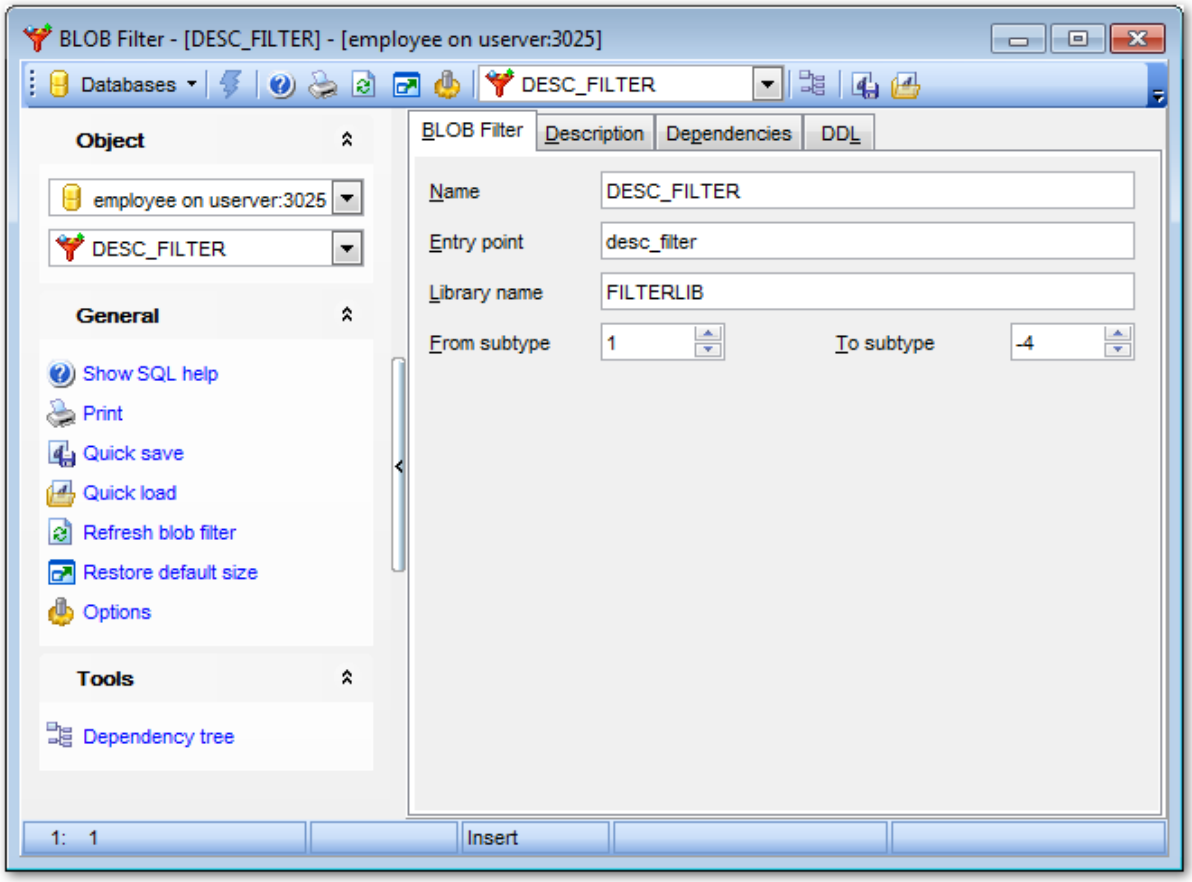
DDL
save DDL[894] to file
open DDL[894] in Execute Script[547]

Items of the **Navigation bar** are also available on the **ToolBar** of **BLOB Filter Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.12.2 Creating/editing BLOB Filter

Use the **BLOB Filter** tab of **BLOB Filter Editor** to view and edit the BLOB filter definition.



Name
Enter a name for the new filter to use in the SQL statements, or modify the name of the filter being edited. Note that filter name must be unique among filter names in the database.

Entry point
Name of the BLOB filter in the source code as stored in a linked library (*ENTRY_POINT*).

Library name
File name identifying the object module in which the filter is stored (*MODULE_NAME*).

Each filter declared to the database should have a unique combination of *input type* and *output type* integer values. The server provides a built-in type of 1, for handling text. User-defined types are expressed as negative values.

From subtype
Indicates the Blob subtype from which data is to be converted (*INPUT_TYPE*).

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To subtype
Indicates the Blob subtype into which data is to be converted (*OUTPUT_TYPE*).

To compile a BLOB filter, you can use the **Compile** item available within the Navigation bar[299] or toolbar[300].

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5.13 Journals

Database **Journaling** improves VLDB management and facilitates disaster recovery. When journaling is enabled, all transaction changes are safely recorded on durable storage before the transaction is committed. This guarantees the ACID properties of a transaction (the database industry standards for Atomicity, Consistency, Isolation, and Durability).

A **Journal archive** is the set of destination directories that will hold the current set of **journal** files for a particular database. The purpose of the journal archive is to support long-term database recovery.

Note that **Journaling** is only available on the Server Edition of InterBase 2009 and higher.

Creating Journal

To create a journal:
- select the **Database | New Object...** main menu 890 item;
- select **Journal** in the Create New Object 165 dialog;
- define journal properties using the appropriate tabs of Journal Editor 305.

Hint: To create a journal, you can also right-click the **Journal** node in the DB Explorer 63 tree and select the **Create Journal** item from the context menu.

After the journaling configuration is set, to archive 309 a database or journal files to the archive:
- select the **Database | New Object...** main menu 890 item;
- select **Journal** in the Create New Object 165 dialog;
- follow instructions of Backup Database 660 wizard.

Hint: To archive a database or journal files, you can also right-click the **Journal** node in the DB Explorer 63 tree and select the **New Journal...** item from the context menu.

Viewing Journal

To view journal configuration:
- right-click the **Journal** node in the DB Explorer 63 tree and select the **View Journal** context menu item, or simply double-click the node;
- view journal journaling configuration using the appropriate tabs of Journal Editor 305.

Sweeping Journal

To sweep 309 archives until the sequence number:
- right-click the archive with the required sequence number within the **Journal** node in the DB Explorer 63 tree and select the **Tasks | Sweep Until...** context menu item;
- confirm sweeping in the dialog window.

Dropping Journal

To drop 309 a journal:
- right-click the **Journal** node in the DB Explorer 63 tree and select the **Drop Journal** context menu item;
- confirm dropping in the dialog window.

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Note: If more convenient, you can also use the following shortcuts 940:
Ctrl+N to create a journal.

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5.13.1 Journal Editor

Journal Editor allows you to define journal properties. It opens automatically when you create a new journal and is available on editing an existing one (see Create journal 303 and Edit journal 303 for details).

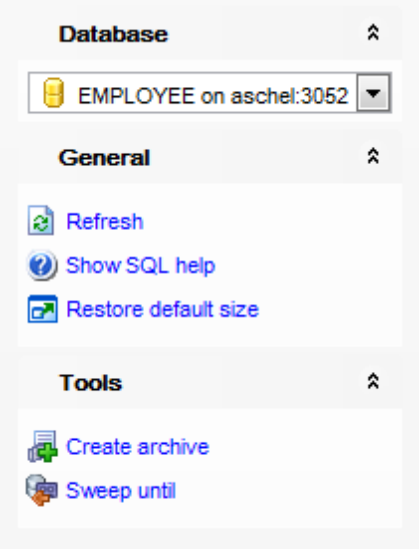
To open a journal in **Journal Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 306
- Creating/viewing journal 307
- Viewing DDL definition 894

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5.13.1.1 Using Navigation bar and Toolbar

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



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

General
- compile the journal configuration (if it is being initially set)
- show SQL help
- adjust Object Editors options 780
- restore the default size and position of the editor window

Tools
- create database backup
- sweep backups until current sequence

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 journal:

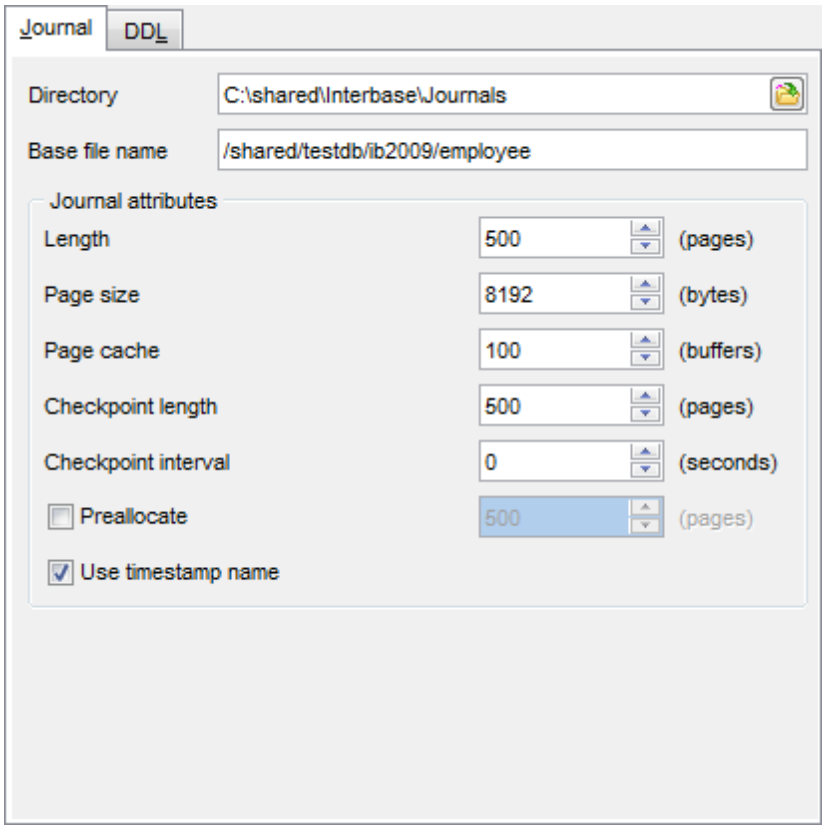
DDL
- save DDL 894 to file
- open DDL 894 in Execute Script 547

Items of the **Navigation bar** are also available on the **ToolBar** of **Journal Editor**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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5.13.1.2 Creating/viewing journal

The **Journal** tab of **Journal Editor** allows you to set options that control the journaling configuration of the database.



Directory
Type in or use the button to specify the full path to the journal file.

Base file name
Enter the base file name of the journal file.

Journal attributes

Length
Specifies the number of pages that will be written to the journal file before initiating a rollover to a new journal file. A single journal file is limited to 2GB in size.

Page size
Determines the size (in *bytes*) of a journal page. A journal page size must be at least twice the size of a database page size. If a journal page size of less is specified, it will be rounded up to twice the database page size and a warning will be returned.

Page cache
Determines the number of journal buffers that will be allocated. The size of each buffer is the same as the journal page size.

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Checkpoint length
Determines the number of journal pages to be written before initiating a database checkpoint.

Checkpoint interval
Determines the number of seconds between database checkpoints.

Note: If both **Checkpoint length** and **Checkpoint interval** are specified, whichever event occurs first will initiate a database checkpoint.

☑ **Preallocate**
Use this option to reserve specified amount (in pages) of disk space for the journal.

☑ **Use timestamp name**
Determines whether or not the file creation timestamp will be appended to the base journal file name. If this option is enabled, the base journal file name will be appended with a timestamp of the form:
<YYYY>_<MM>_DD>T<hh>_<mm>_ss>Z.<sequence-number>.journal

To execute *CREATE JOURNAL* with the specified parameters and *CREATE JOURNAL ARCHIVE*, you can use the **Compile** item available within the Navigation bar 306 or toolbar 306.

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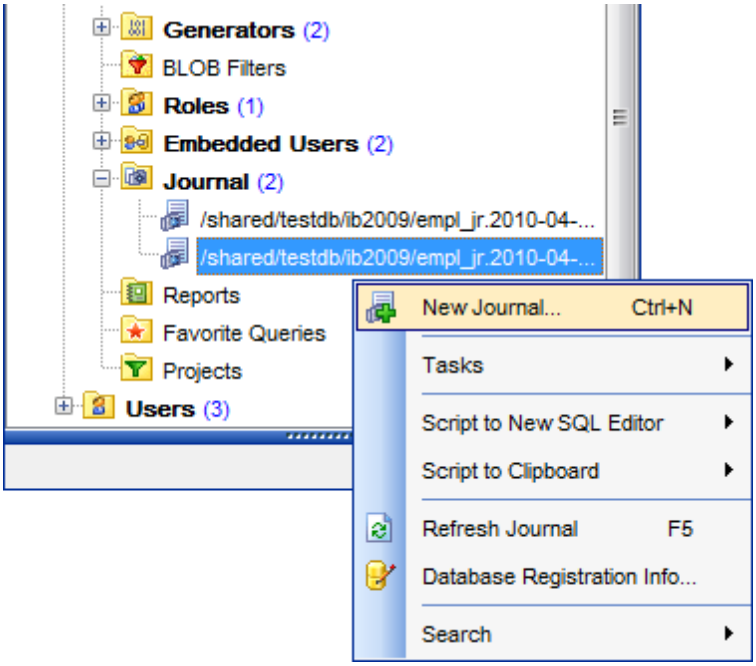
5.13.2 Journal management

All journal archive items within the **Journals** node are denoted by an archive sequence number that corresponds to the order in which the items were created in the archive.

Creating new backup archives

As the number of journal files grows in the archive, when you have not created more recent archived database dumps, the time that you will need to recover a database from the archive also grows. Therefore, it is a good practice to periodically create additional database dumps in the archive.

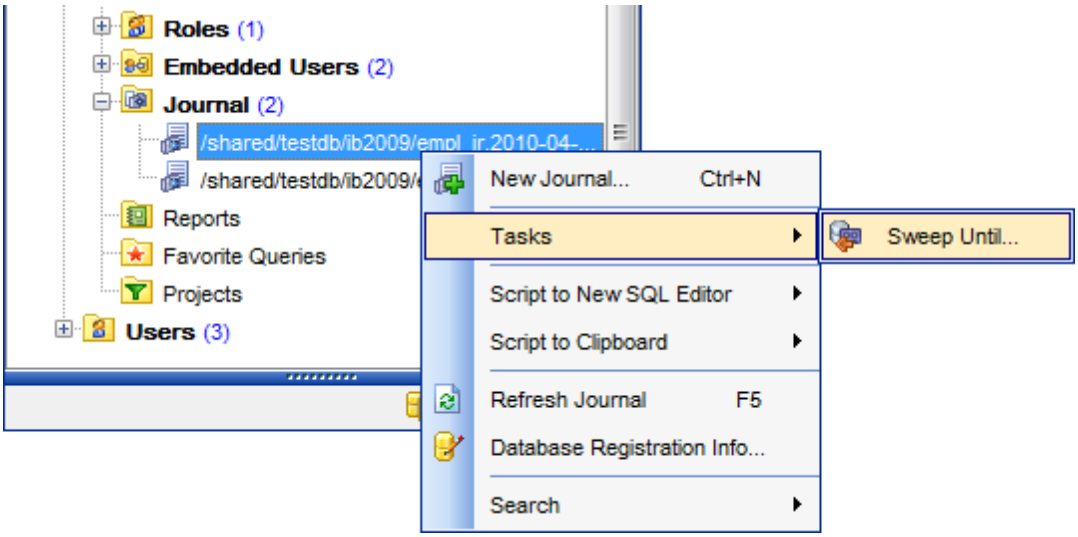
To create a new backup archive, right-click the **Journal** node and select the **New Journal...** item from the context menu. Backup Database 660 wizard will guide you through the process of creating a new backup.



Sweeping

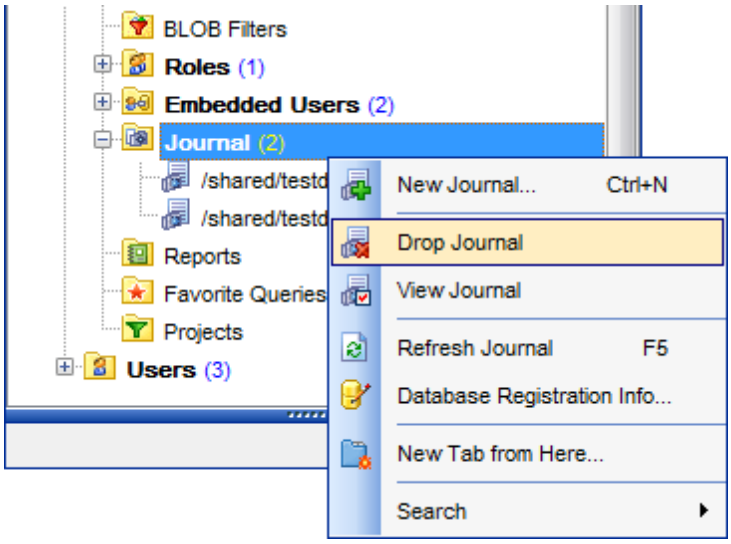
The archive may grow in storage size infinitely, as the database and the current journal files are continually archived. To garbage-collect archive items less than an archive sequence number, right-click the archive with the required sequence number within the **Journal** node in the DB Explorer 63 tree and select the **Tasks | Sweep Until...** item from the context menu.

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Dropping journal

Dropping journal disables journal archiving for the database. It causes all journal files and database file dumps to be deleted in all journal archive directories. To drop the journal, right-click the **Journal** node and select the **Drop Journal** context menu item.



Viewing journal

Created journals can be opened to view. The appeared dialog allows all the operations described above except dropping journal 310. This how this dialog looks:

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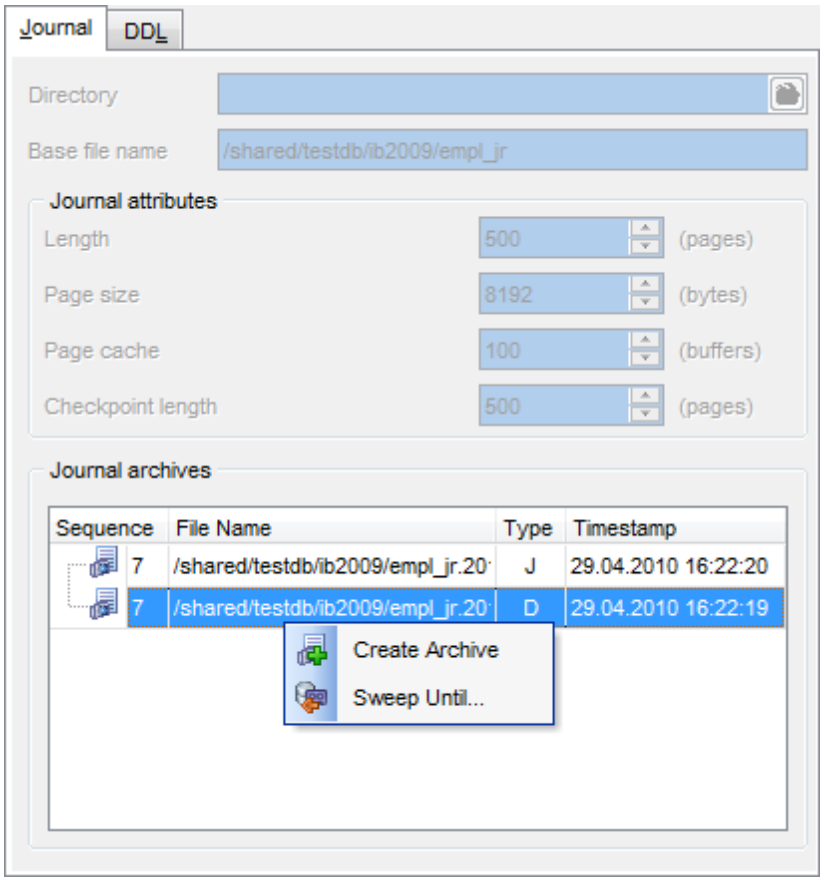


Table provides information about sequences. You can create new archive[309] or sweep backups[309] using corresponding context menu or navigation bar items.

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5.14 Database Triggers

A **Database trigger** is a PSQL module that is executed when a connection-level or transaction-level event occurs.

Database triggers are used only for centralized, global operations that should be fired for the triggering statement, regardless of which user or database application issues the statement.

Note that **Database triggers** are only available on Firebird 2.1 and higher.

Database Trigger Editor allows you to define database trigger properties. It opens automatically when you create a new database trigger and is available on editing an existing one.

To open a database trigger in **Database Trigger Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 313
- Creating/editing DB Trigger 315
- Browsing object dependencies 896
- Editing object description 895
- Viewing object operations 902
- Setting object permissions 897
- Viewing DDL definition 894

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5.14.1 Using Navigation bar and Toolbar

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

Object
- select a database
- select a database trigger for editing

General
- compile 906 the database trigger (if it is being created/modified)
- show SQL help
- set printing options 573 to print metadata 570 of the database trigger
- save the object using the Quick Save 930 feature
- load the object from buffers using the Quick Load 930 feature
- refresh the content of the active tab
- toggle *Text* / *Visual* editor modes
- adjust Visual Mode Editors options 783
- restore the default size and position of the editor window

Tools
- view the dependency tree 536 for the database trigger
- define grants 734 on the database trigger
- set autogrant privileges for the database trigger
- debug the database trigger using Procedure/Trigger Debugger 263

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 database trigger:

Variable
- append a new variable
- insert a variable
- delete the selected variable
- move the selected variable up
- move the selected variable down

Message
- append a new message
- insert a message
- delete the selected message
- move the selected message up
- move the selected message down

Permissions
- add a grantee object

Description
- save object description 895 to file

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copy description[895] to clipboard

DDL

save DDL[894] to file

open DDL[894] in Execute Script[547]

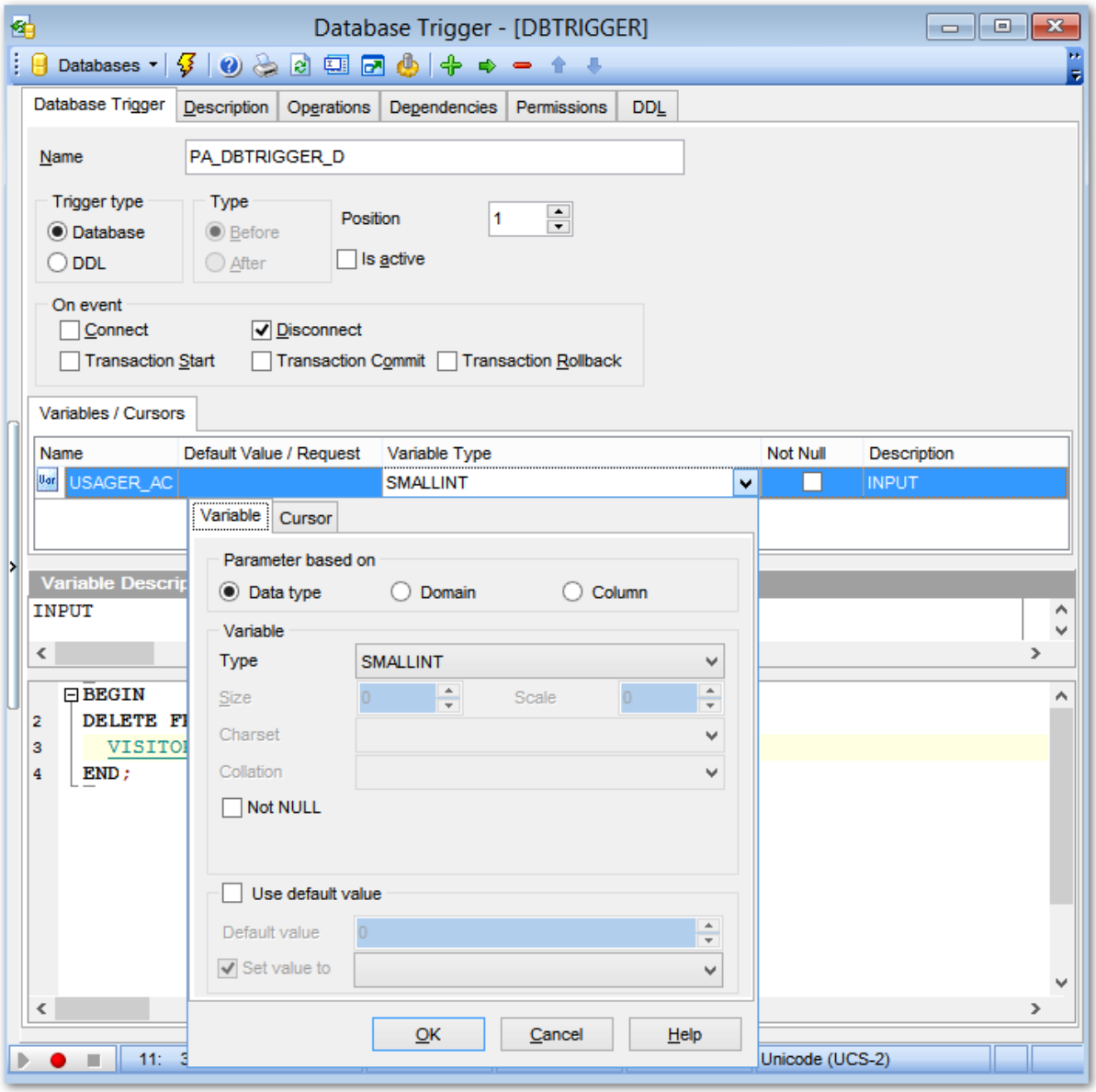
NOTE: Items of the **Navigation bar** are also available on the **ToolBar** of **Database Trigger Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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5.14.2 Creating/editing DB Trigger

Use the **Database Trigger** tab of **Database Trigger Editor** to view and edit the database trigger definition.

Database Trigger Editor provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the Navigation bar[313] and toolbar[314].



When in the **Text editor** mode, you can use the editor area to specify the database trigger definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the database trigger.

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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 334 and using the context menu.

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

Name
Enter a name for the new database trigger, or modify the name of the trigger being edited. Note that database trigger name must be unique in the database.

Trigger type
Database
The trigger is created for the *database event*. Use the **On event** group to specify the triggering event

DDL
The trigger is executed only when committing the transaction in which the affected DDL command runs. Check the required DDL statement(s) from the **On event** group.

On event
If the *Database* trigger has been selected:
Connect
- Database connection established
- A transaction is started
- Triggers are fired - uncaught exceptions rollback the transaction, disconnect the attachment and are returned to the client
- The transaction is committed

Disconnect
- A transaction is started
- Triggers are fired - uncaught exceptions rollback the transaction, disconnect the attachment and are swallowed
- The transaction is committed
- The attachment is disconnected

Transaction Start
- Triggers are fired in the newly user created transaction - uncaught exceptions are returned to the client, and the transaction is rolled back

Transaction Commit
- Triggers are fired in the committing transaction - uncaught exceptions rollback the triggers savepoint, the commit command is aborted, and the exception is returned to the client

Transaction Rollback
Triggers are fired in the rollback of the transaction - changes done will be rolled back together with the transaction; exceptions are swallowed.

If the *DDL* trigger type has been selected the list of available DDL statements is displayed.

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Position
Defines the order of firing database triggers on the same event. Lower-number triggers fire first, thus trigger with the default position (0) will be the first trigger to fire.

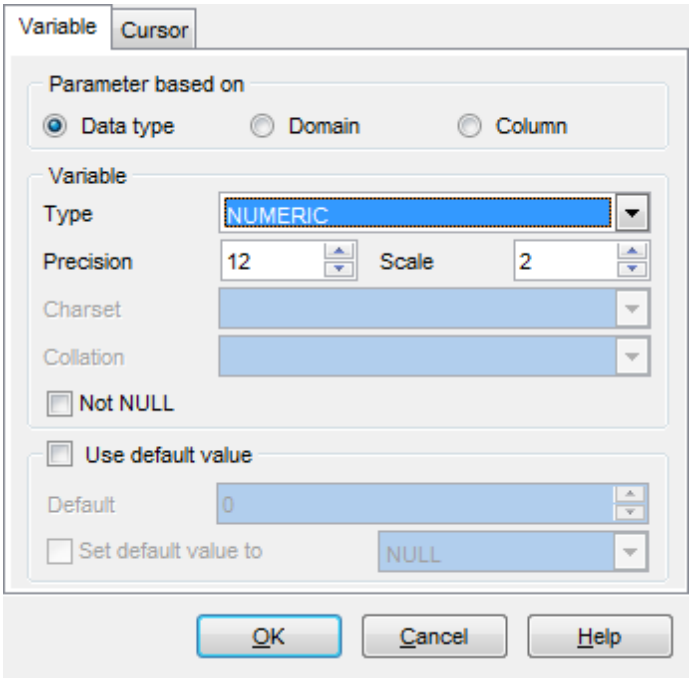
Is active
Activates/deactivates the database trigger immediately after it is created. A disabled (inactive) trigger still exists as an object in the database, but does not fire.

Variables
This group is provided for managing the list of local variables declared and used only in the database trigger.

Parameter based on
This group allows you to select the source type for the variable being created/edited. It can be one of existing domains, a standard InterBase/Firebird data type or a column.

Data type
Specifies that the parameter is based on a standard data type.
Domain
Specifies that the parameter is based on a domain previously created in the database. Note that creating parameters based on a domain is only available for Firebird 2.1 and later.
Column
Specifies that the parameter is based on a field.

Data type

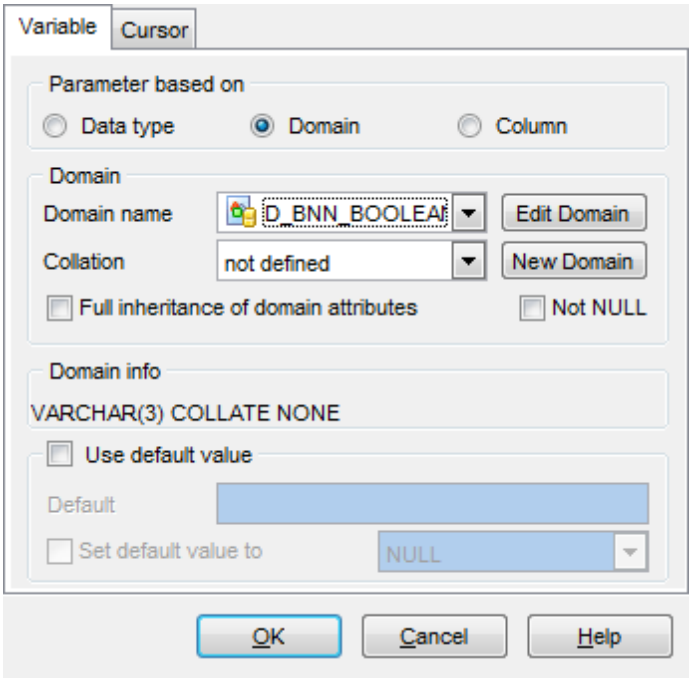


Variable

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For NUMERIC and DECIMAL data types set digit **precision** (digits of precision to store, *1* to *18*) and **scale** (number of decimal places that can be stored, *1* to *18*) in the appropriate boxes; for CHAR and VARCHAR set **length** (in characters), for BLOB data type set **segment size** and **subtype**. You can also set the variable **character set** and **collation order** within this group.

Domain

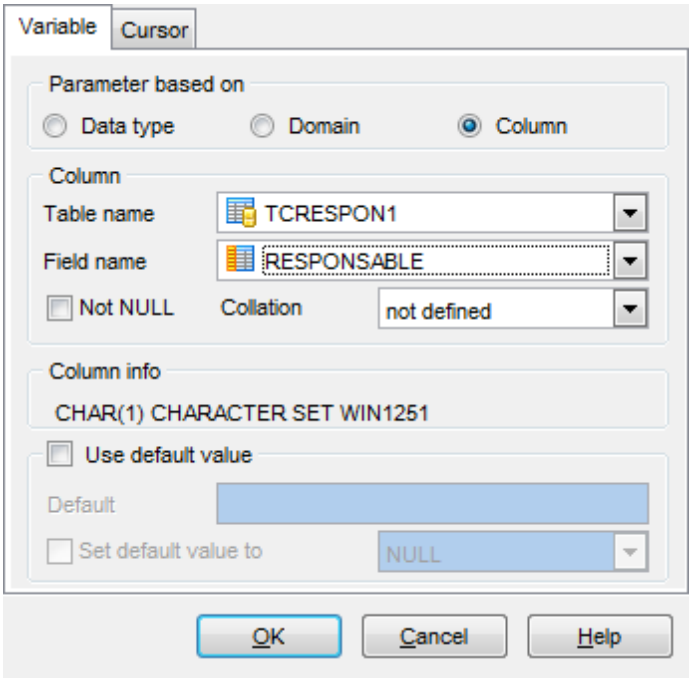


Use the **Domain** drop-down list of existing domains to select the domain to be used for the variable. The collation drop-down list is only available if the selected domain is based on a string data type. Use this drop-down list to select the collation order to be used for string data stored in the variable.

To edit the selected domain using Domain Editor, click the **Edit Domain** button. To create a new domain for the field using Domain Editor, click the **New Domain** button.

Column

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Column group contains **Table name** and **Field name** drop-down lists that can be used to define the the column variable should be based on. Within the **Collation** drop-down list you can set the collation order.

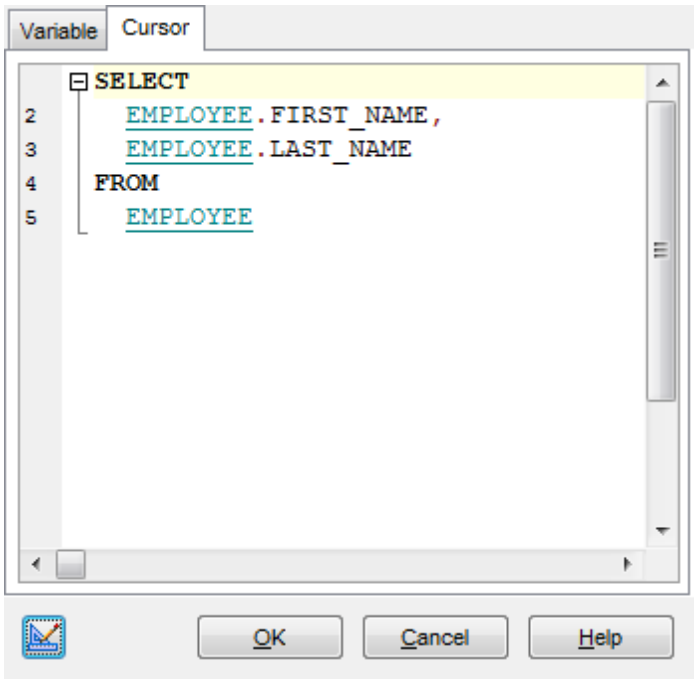
The **Not NULL** and **Use default value** options are common for all types.

Not NULL
This option indicates if a variable can contain NULL values.

Use default value
With this option you can set the default variable value.

Cursors
This group is provided for managing the list of cursors declared to define sets of rows that can be retrieved using the cursor.

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For details refer to Creating/editing trigger[286].

The lower area allows you to specify the trigger body, i.e. an optional list of local variables and their data types and a block of statements in InterBase procedure and trigger language, bracketed by *BEGIN* and *END*. These statements are performed when the trigger fires. When editing the trigger, you can edit its body using the editor area to make appropriate changes, and recompile the trigger.

To compile a database trigger, you can use the **Compile** item available within the Navigation bar[313] or toolbar[314].

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5.15 Collations

A **Collation** is an object in the database that set comparison rules for text data in the database. The collation must already be present on your system (typically in a library file) and must be properly registered in a .conf file in the intl subdirectory of your Firebird installation. You may also base the collation on one that is already present in the database.

Collation Editor allows you to define collation properties. It opens automatically when you create a new collation and is available on editing an existing one.

To open a collation in **Collation Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 322
- Creating/editing collation 323

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5.15.1 Using Navigation bar and Toolbar

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

Object

select a database

select a collation for editing

General

compile 906 the collation (if it is being created/modified)

set printing options 573 to print metadata 570 of the collation

refresh the content of the active tab

adjust Visual Mode Editors options 783

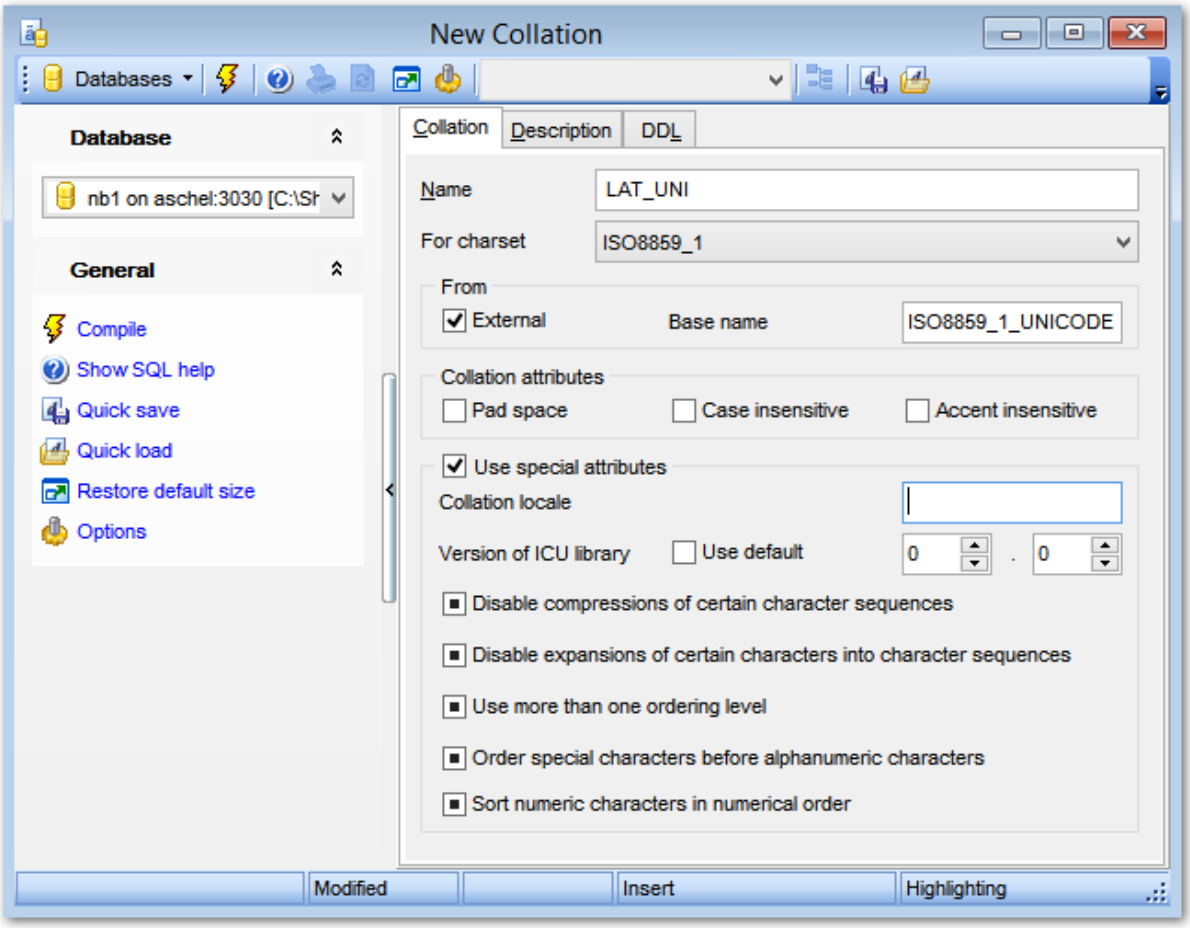
restore the default size and position of the editor window

NOTE: Items of the **Navigation bar** are also available on the **ToolBar** of **Database Trigger Editor**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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5.15.2 Creating/editing collation

Use the **Collation** tab of **Collation Editor** to view and edit the collation definition.



Name
Enter a name for the new collation, or modify the name of the collation being edited.

For charset
Use the dropdown list to select the charset present in the database.

From

Select the collation from the existing ones in **Base name,** or check the ☑ **External** option and specify the name manually. The name should strongly correspond to the collation existing in $fbroot/intl/fbintl.conf file.

Collation attributes

☑ **Pad space**
Set this option ON to exclude pad spaces.

☑ **Case insensitive**
Set this option ON not to consider case in collations.

☑ **Accent insensitive**

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Set this option ON not to consider accents in collations.

Set the ☑ **Use special attributes** flag to add specific attributes to the collation.

Specify the **Collation locale** manually. It required to specify the exact **Version of ICU library** to use, or switching on the ☑ **Use default** option**.**

☑ **Disable compression of certain character sequence**
Use this option to disable compression of certain character sequence. Compressions cause certain character sequences to be sorted as atomic units.

☑ **Disable expansions of certain characters into character sequences**
Use this option to treat certain characters as a sequence of characters and sort accordingly.

☑ **Use more than one ordering level**
Use this option to enable multi-level sorting.

☑ **Order special characters before alphanumeric characters**
Use this option to sort special characters before alphanumeric ones.

☑ **Sort numeric characters in numerical order**
Use this option to enable natural sorting order.

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5.16 Packages

A **package** is a group of procedures and functions managed as one entity.

Note that **Packages** are only available on Firebird 3.0 and higher.

Package Editor allows you to define package properties and content. It opens automatically when you create a new package and is available on editing an existing one.

To open a package in **Package Editor**, double-click it in the DB Explorer 63 tree.

- Using Navigation bar and Toolbar 326
- Creating/editing package 327

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5.16.1 Using Navigation bar and Toolbar

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

Object

select a database
select a package for editing

General

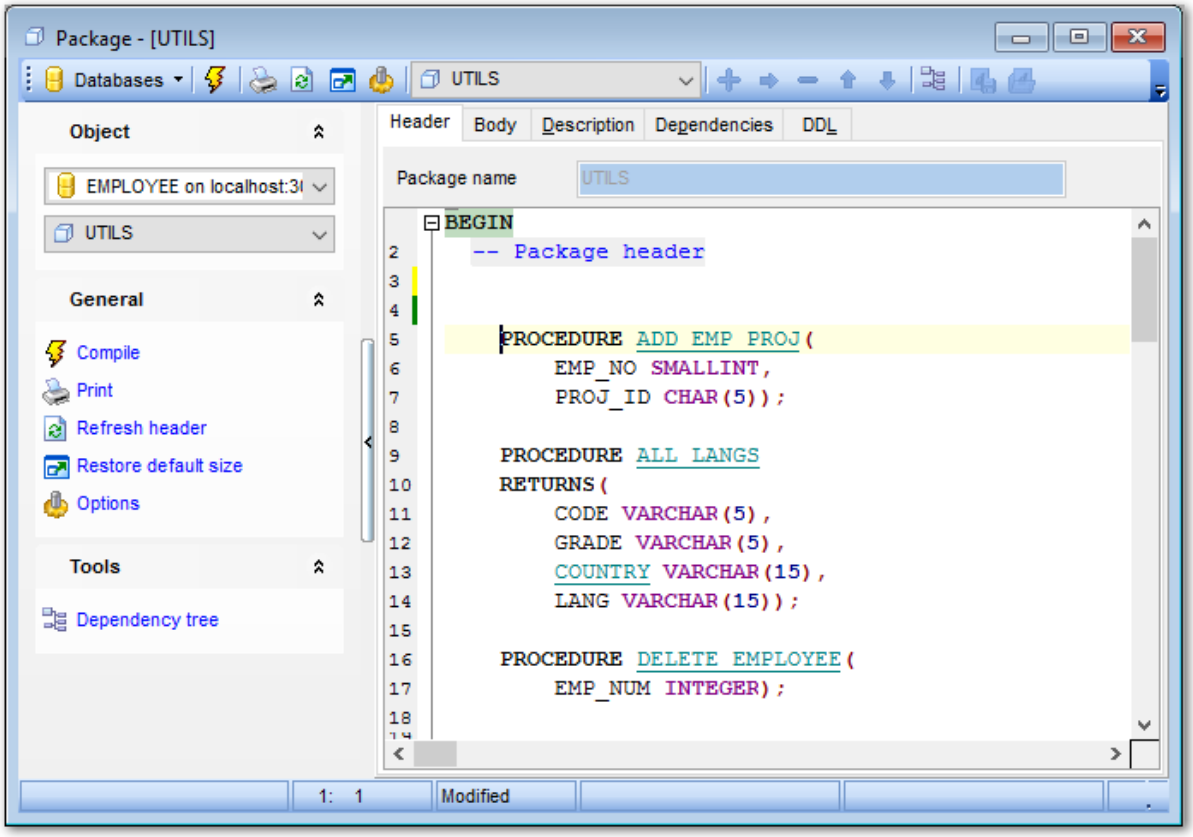
compile 906 the package (if it is being created/modified)
set printing options 573 to print metadata 570 of the package
refresh the content of the active tab
adjust Visual Mode Editors options 783
restore the default size and position of the editor window

NOTE: Items of the **Navigation bar** are also available on the **ToolBar** of **Package Editor**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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5.16.2 Creating/editing package

Use the **Header** and **Body** tabs of **Package Editor** to view and edit the package definition.



Package name
Enter a name for the new package. The name of the existing package cannot be modified.

Specify the package header definition in the text editor area. The body of the package can be defined in the text area at the **Body** tab.

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Part



6 Query Tools

When using **SQL Manager for InterBase/Firebird**, you are provided with two basic tools you may need to manage your SQL queries: Query Data 331 for editing SQL query text directly and Query Designer 348 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 890 item or use the corresponding toolbar 892 button;
- click the **Add new query** item of the Navigation bar 332;
- edit the query text within the **Edit** tab of Query Data 331.

In order to create a new query in *Query Designer*:

- select the **Tools | Query Designer** main menu 890 item or use the corresponding toolbar 892 button;
- build the query visually within the **Builder** tab of Query Designer 348.

Editing Queries

In order to open a query in *Query Data*:

- select the **Tools | Query Data** main menu 890 item or use the corresponding toolbar 892 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 331.

In order to open a query in *Query Designer*:

- select the **Tools | Query Designer** main menu 890 item or use the corresponding toolbar 892 button;
- the last edited query is displayed automatically on opening Query Designer;
- to load a previously saved diagram, click the **Load diagram** item of the Navigation bar 349;
- 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 Query Designer 348.

In order to load a query from an **.sql* file:

- select the **Tools | Query Data** main menu 890 item or use the corresponding toolbar 892 button;
- click the **Load from file** item of the Navigation bar 332;
- browse for the query file using the **Open SQL File** dialog;
- edit the query text within the **Edit** tab of Query Data 331.

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 332 or use the *F9* hot-key to execute the query;
- view/edit the returned data within the **Results** tab of Query Data 331.

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Saving Queries

In order to save a query:

- *create a new query* or *open an existing one*;
- click the **Save to file** Navigation bar 332 item (in *Query Data*) or the **Save SQL** Navigation bar 349 item (in *Query Designer*), or use the *Ctrl+S* shortcut 940 to save the query using the **Save as...** dialog;
- click the **Save diagram** Navigation bar 349 item in Query Designer 348 to save the designed diagram;

or

- use the **Save all** Navigation bar 332 item in Query Data 331 if you need to save all the queries to one file.

See also:

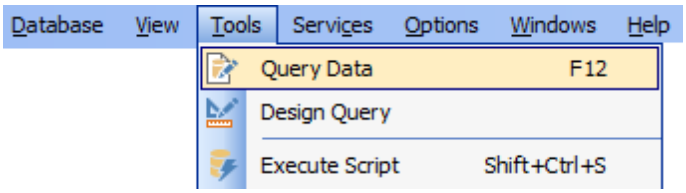
Getting Started 37
Database Explorer 63
Database Management 87
Database Objects Management 163
Data Management 369
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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6.1 Query Data

Query Data is the basic tool of **SQL Manager for InterBase/Firebird** 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 editor select the **Tools | Query Data** main menu 890 items or use the corresponding toolbar 892 button. You can also use *F12* shortcut 940 for the same purpose.



- Using Navigation bar and Toolbar 332
- Working with query 334
- Using the context menu 336
- Viewing query plan 338
- Using object links 340
- Executing queries and viewing results 341
- Viewing query logs 344
- Favorites editor 346
- Viewing performance analysis 903

See also:

Query Designer 348

Query parameters 366

Execute Script Editor 544

Editor Options 804

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6.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Query Data**.

Database
- select a database for the query

General
- toggle AutoDDL
- execute the current query
- execute selected code only
- execute code under cursor
- prepare query for execution
- view estimated query execution plan 338
- run Query Designer 348 to design the query as a diagram
- configure Query Data within the Tools | Query Data 758 page of the Environment Options 744 dialog
- switch the results representation mode: *on Edit tab* or *on separate tab*
- show SQL help
- create a view 243 based on the query
- create a procedure 254 based on the query
- 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
- remove the query
- remove all queries from the editor
- edit the query text using Favorites editor 346 and add the query to the Favorite Queries 85 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 909 dialog
- load a query from an **.sql* file using the **Open SQL File** dialog
- save the query to an **.sql* file
- save all queries to an **.sql* file

Logs
- activate the Find Text 909 dialog
- save the query log to a file
- clear logs

Data Management
- commit transaction

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rollback transaction
export the returned dataset using Export Data Wizard 445
export the returned dataset as SQL Script using the Export as SQL Script 519 wizard
import data 493

Items of the **Navigation bar** are also available on the **ToolBar** of **Query Data**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

See also:

Working with query 334
Viewing query plan 338
Executing queries 341
Viewing query logs 344
Favorites editor 346

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6.1.2 Working with queries

The **Editor area** of Query Data is available within the **Edit** tab and is provided for working with SQL queries in text mode.

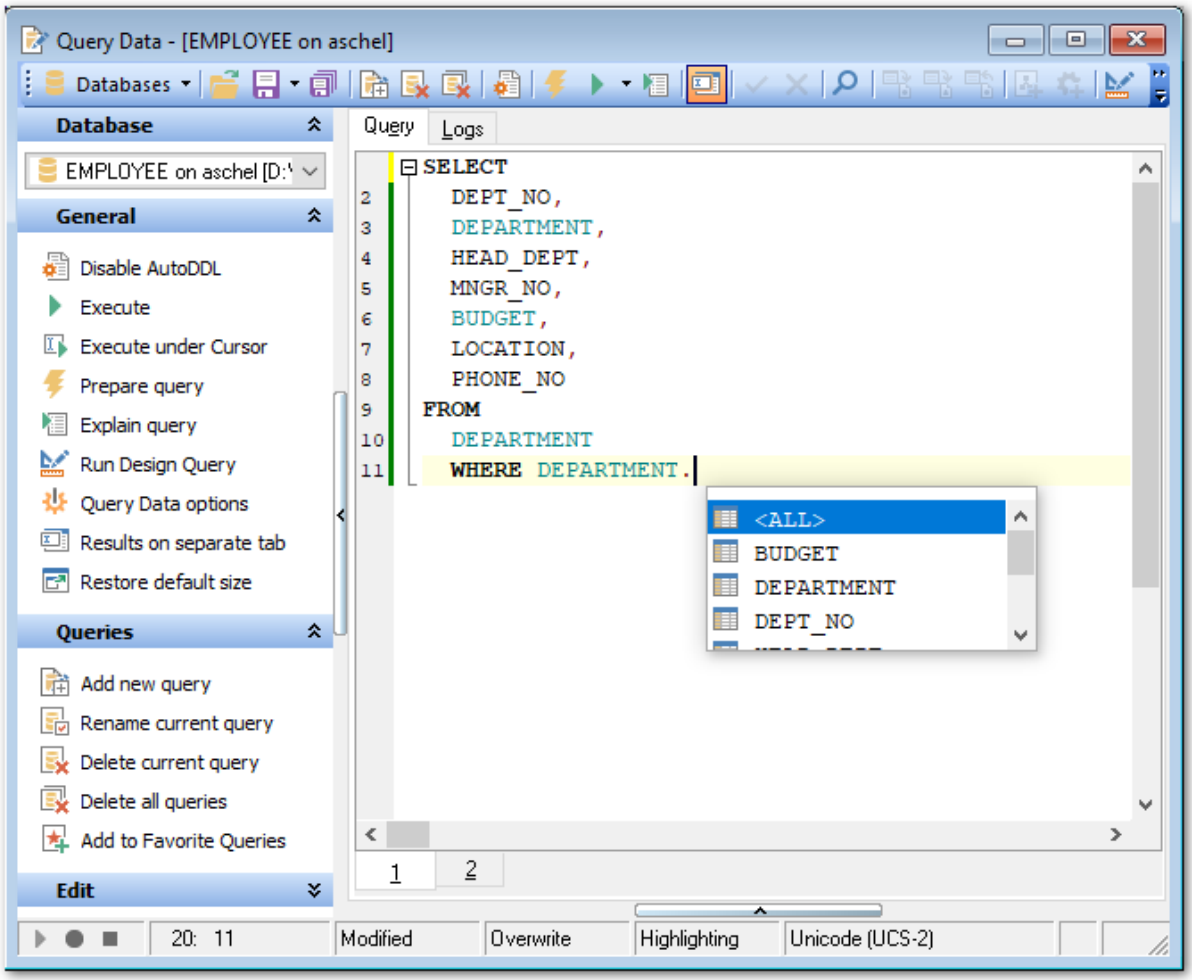
For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented:

- using object links[340] 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[804] dialog.

The example of code completion is illustrated in the picture below. You can set the delay within the Quick code[813] section of the Editor Options[804] dialog or activate the completion list manually by pressing the *Ctrl+Space* shortcut[940].



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Hint: To use a keyboard template[833], type the template name and press the *Ctrl+J* shortcut[940]: 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[336].

See also:

Using Navigation bar and Toolbar[332]
Using the context menu[336]
Editor Options[804]
Keyboard Templates[833]
Favorites editor[346]
Find Text dialog[909]
Replace Text dialog[911]

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6.1.3 Using the context menu

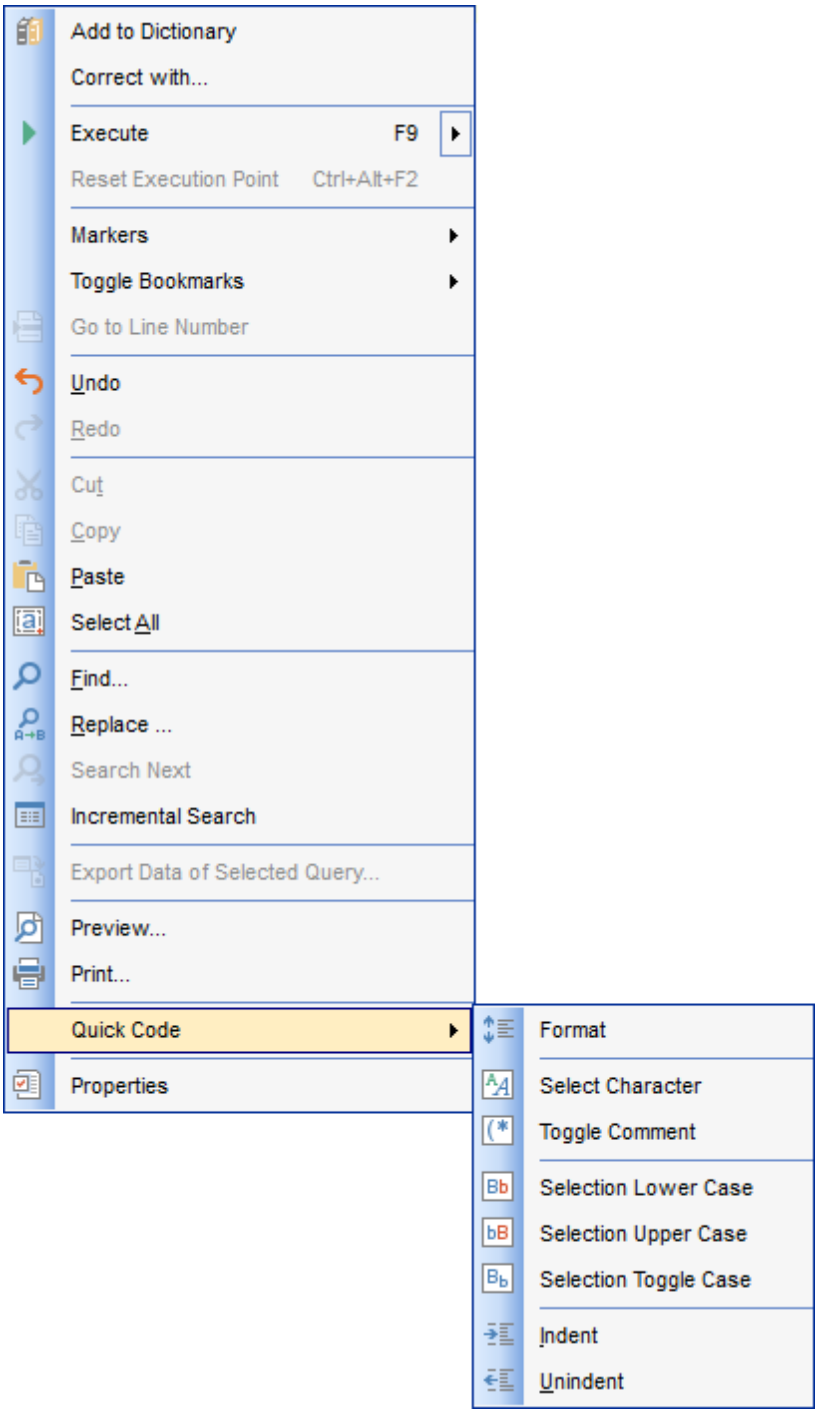
The **context menu** of Query Data area contains execution commands, most of the standard text-processing functions (*Cut*, *Copy*, *Paste*, *Select All*) and functions for working with the query as a whole, e.g. you can *move the cursor to a particular line*, *change the case* of selected text, view the query *properties* or *print* the text of the query. Each of these operations can be also performed with the corresponding hot keys used.

Implementation of the Find Text 909 / Replace Text 911 dialogs and Incremental search 893 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 820 for details);
- execute the query/selected text/text under cursor, and reset execution point (if necessary);
- 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 909 and replace 911 operations;
- export data of selected query;
- 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;
- open the Editor Options 804 dialog.

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See also:

Working with query 334
Executing queries 341

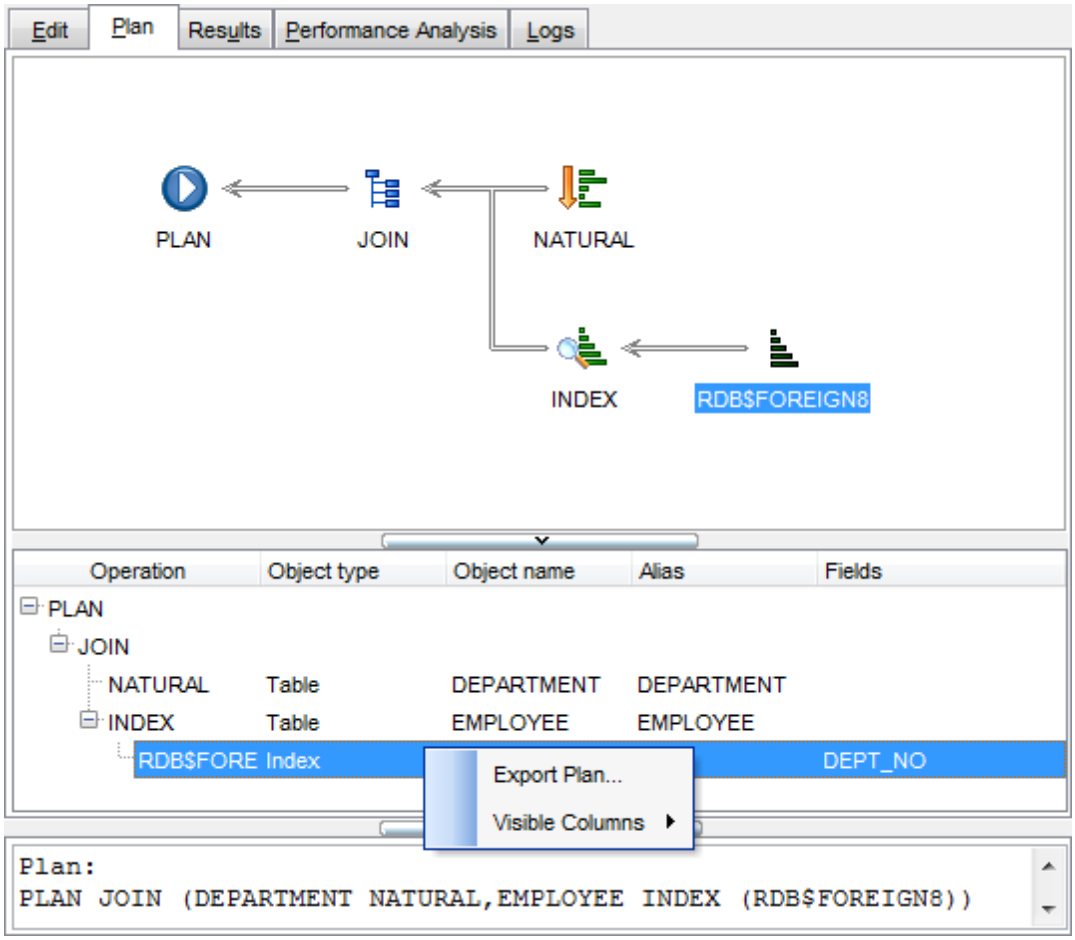
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6.1.4 Viewing query plan

Using **SQL Manager for InterBase/Firebird**, 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 **Explain query** item of the Navigation bar[332] or toolbar[333].

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*, *Object type*, *Object name*, *Alias*, *Fields*.
Right-click within the panel to display the **context menu** allowing you to configure the set of *visible columns* or export[445] the plan to any of supported formats[919].

If necessary, you can specify that the **Plan** tab appears automatically upon query execution in Query Data: select the ☑ **Explain query on execution** option available within the Tools | Query Data[758] section of the Environment Options[744] dialog.

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See also:

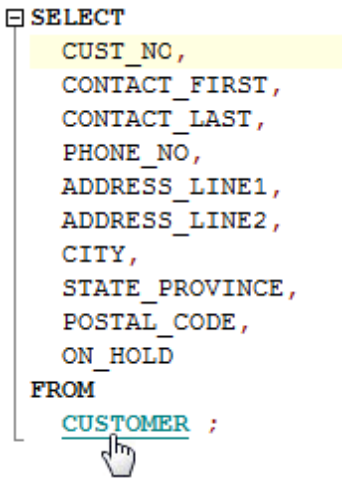
Query Data options 758

Executing queries 341

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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.



Please note that you can change the way highlighted objects look in the editor: use the Display | Highlight 811 section of the Editor Options 804 dialog.

See also:

Working with query 334
Editor Options 804

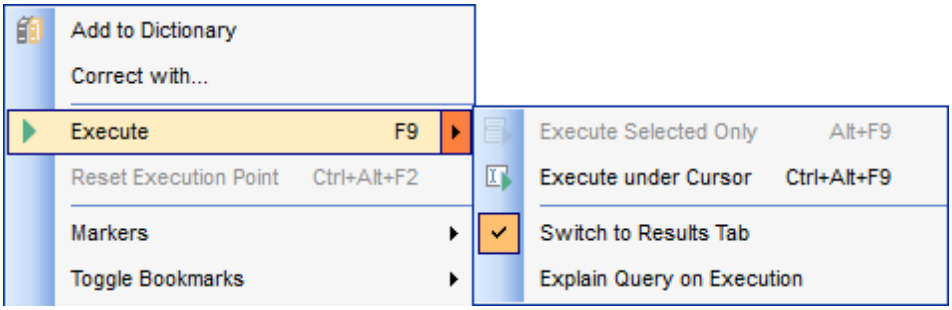
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6.1.6 Executing queries

When all the query parameters are set, you can immediately **execute the query** in **Query Data**.

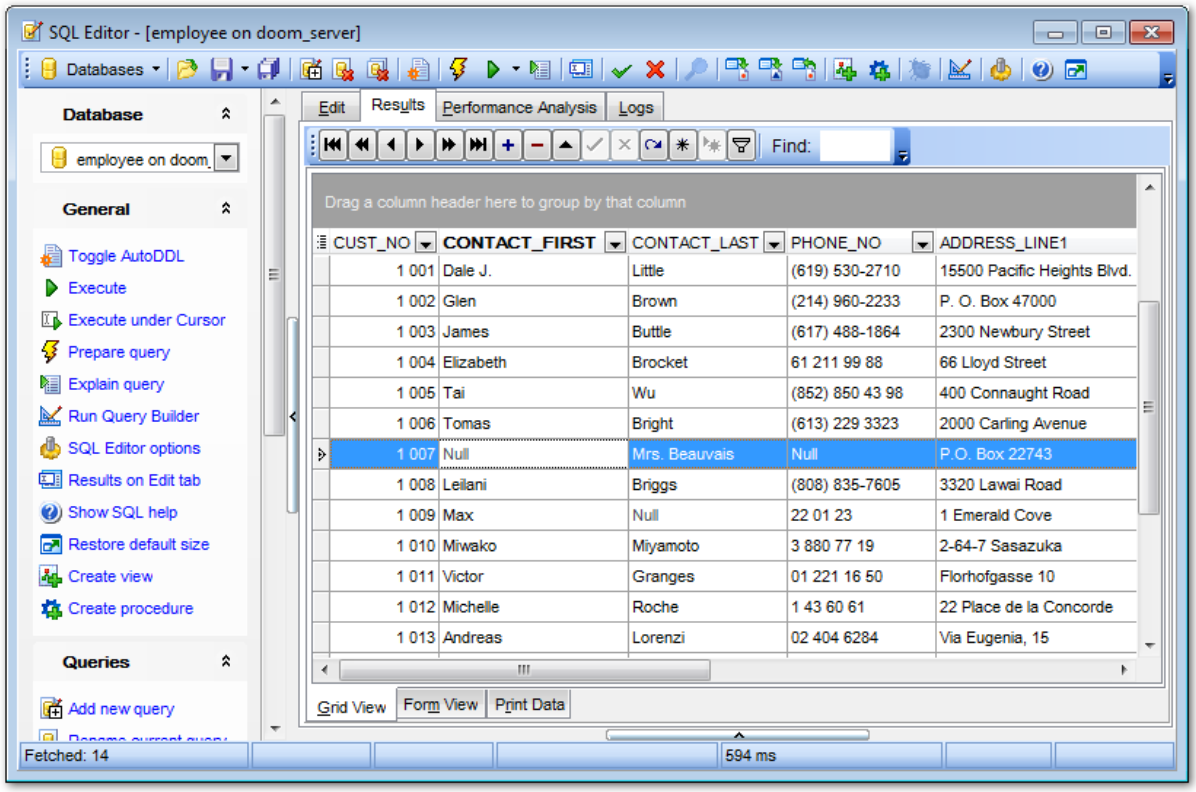
To execute a query, click the **Execute** item of the Navigation bar[332]. You can also use the context menu[336] or *F9* hot key for the same purpose.

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[332].
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 editor window.



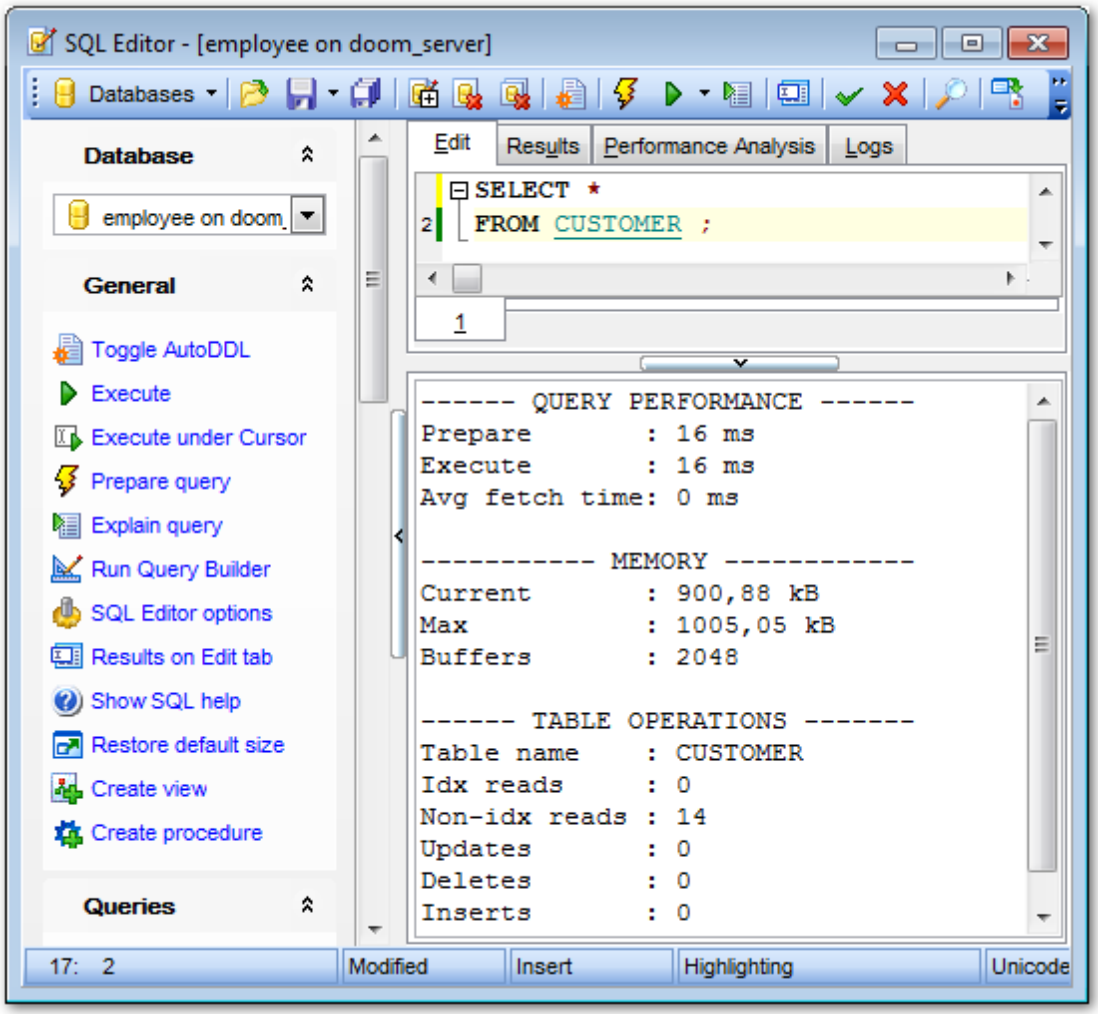
By default, data returned by a query are displayed as a grid (see Data View[370] for details). The context menu[383] of the grid allows you to Export Data[445], Export as SQL Script[519].

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You can see brief statistics concerned query execution. Expand the bottom pane for this purpose.

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See also:

Data View 370

Export Data 445

Export as SQL Script 519

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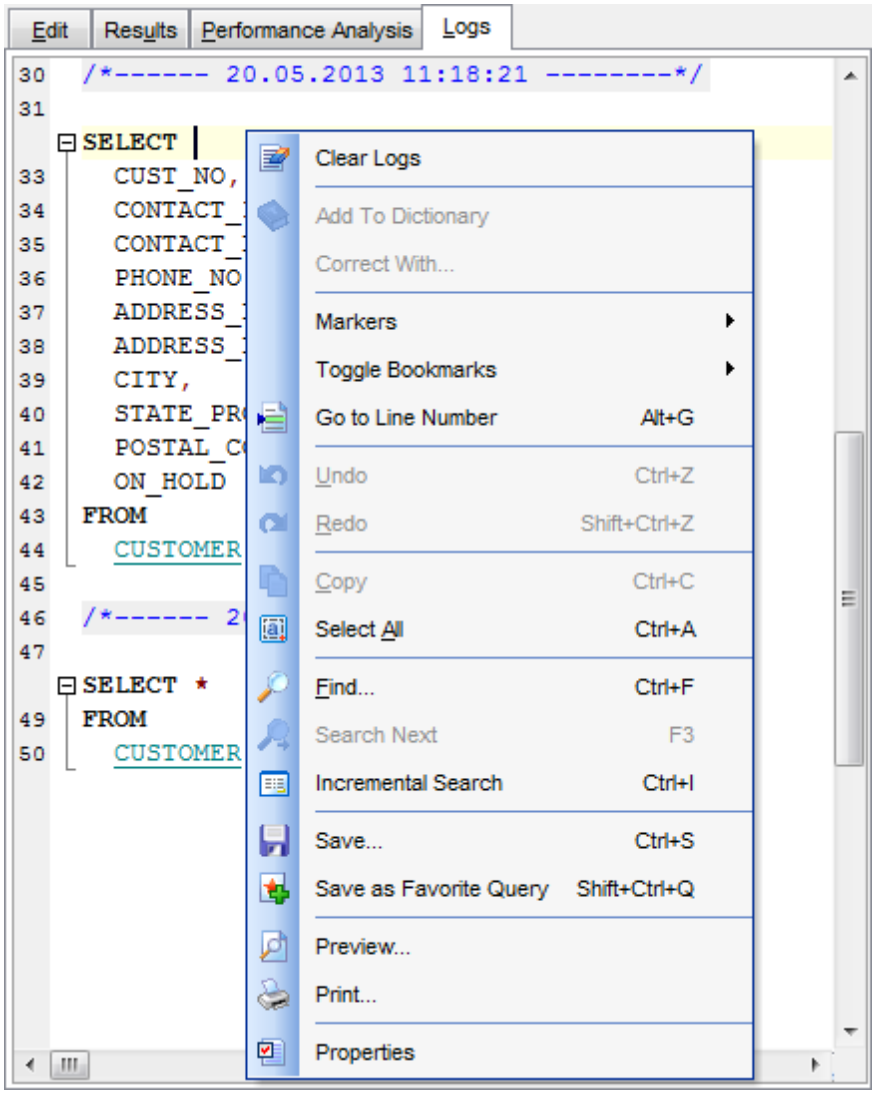
6.1.7 Viewing query logs

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[336] generic functions.



See also:

Executing queries[341]

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Using the context menu 336

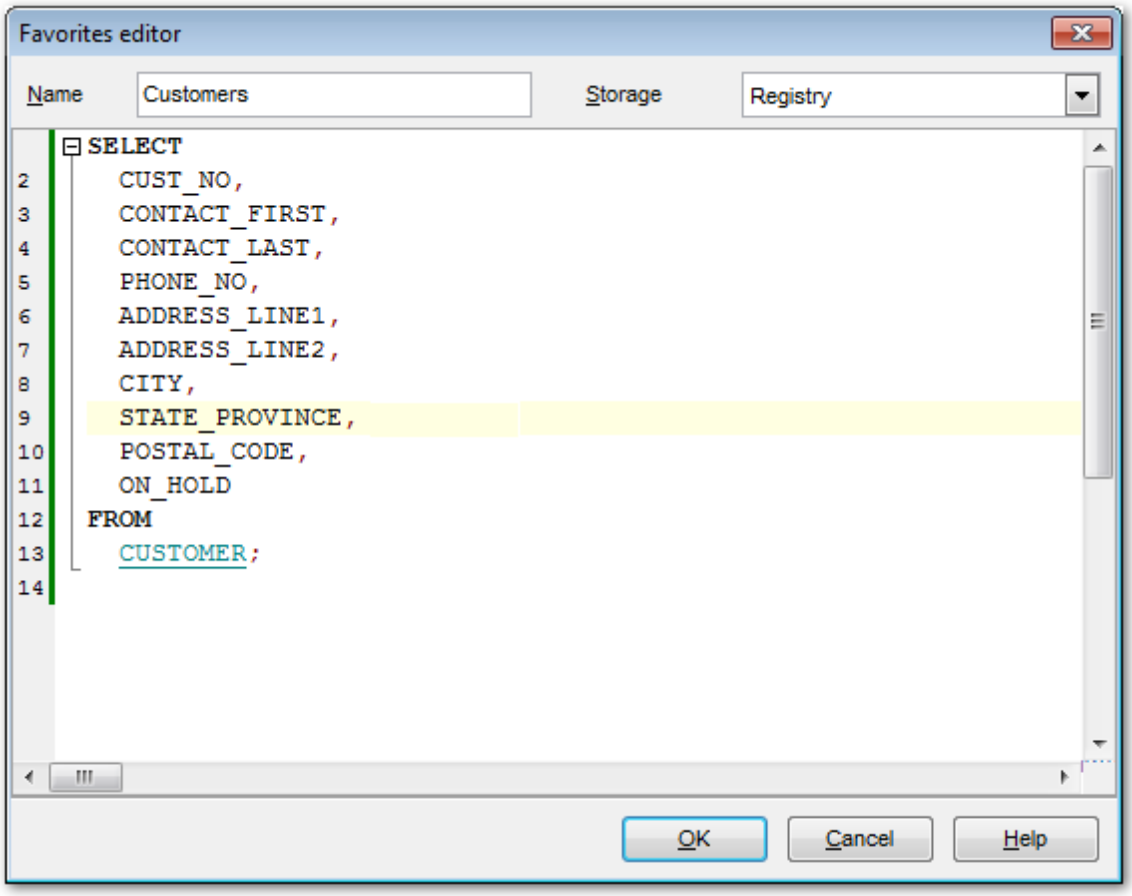
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6.1.8 Favorites editor

For your convenience the **Favorite Queries** list is implemented in **SQL Manager for InterBase/Firebird**. This list is available within the **Favorite Queries** node of Database Explorer 85 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 332 item in **Query Data**. The corresponding item is also available in the context menu 336 of Query Data working area.

You can edit any of your Favorite Queries using **Favorites editor**.



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 85
Working with query 334

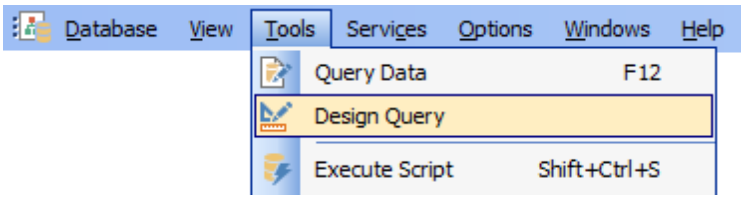
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6.2 Design Query

Query Designer is implemented in **SQL Manager for InterBase/Firebird** 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 Query Designer select **Tools | Design Query** main menu 890 items or use the corresponding toolbar 892 buttons.



- Using Navigation bar and Toolbar 349
- Working with diagram area 351
- Joining two database objects by fields 354
- Setting the selection criteria 356
- Setting output fields for selection 358
- Setting the grouping criteria 360
- Setting parameters of sorting 361
- Working with editor area 362
- Executing queries and viewing results 363
- Viewing query plan 365
- Viewing performance analysis 903

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 20 page.

See also:

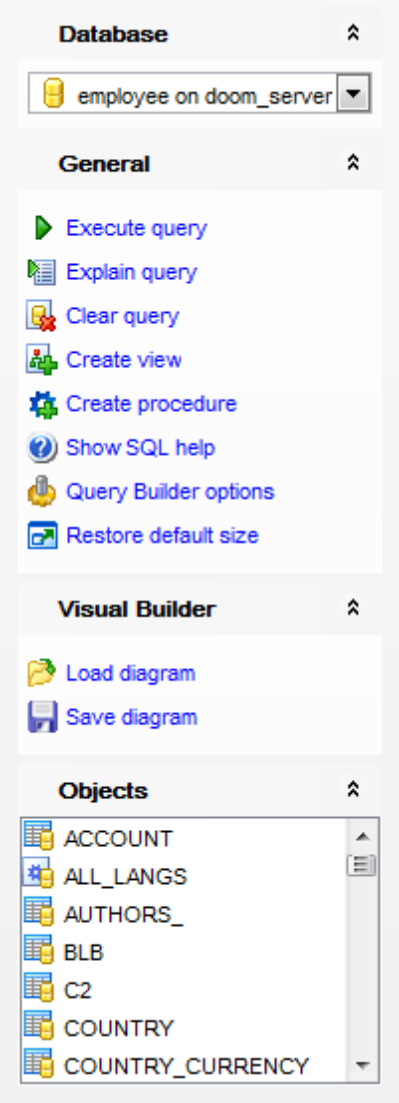
Query Data 331

Query parameters 366

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6.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Query Builder**.



The **Navigation bar** of **Query Builder** allows you to:

Database
select a database for the query

General
execute the current query
view estimated query execution plan 365
clear the query
create a view 243 based on the query
create a procedure 254 based on the query

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show SQL help
configure Query Builder using the Query Builder Options 765 page of the Environment Options 744 dialog
restore the default size and position of the builder window

Objects

browse objects of the database; you can also add tables, views and procedures 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 445
export the returned dataset as SQL Script using the Export as SQL Script 519 wizard

Items of the **Navigation bar** are also available on the **ToolBar** of **Query Builder**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

See also:

Working with diagram area 351
Query execution 363

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6.2.2 Working with diagram area

The main working area of **Query Designer** is the diagram area available within the **Builder** tab. Here you can create a query by placing the database tables[179] and views[243] onto the area, and edit it by selecting the required data fields and setting links between objects.

To add an object to the query, you can simply drag it from the DB Explorer[69] tree to the diagram area.

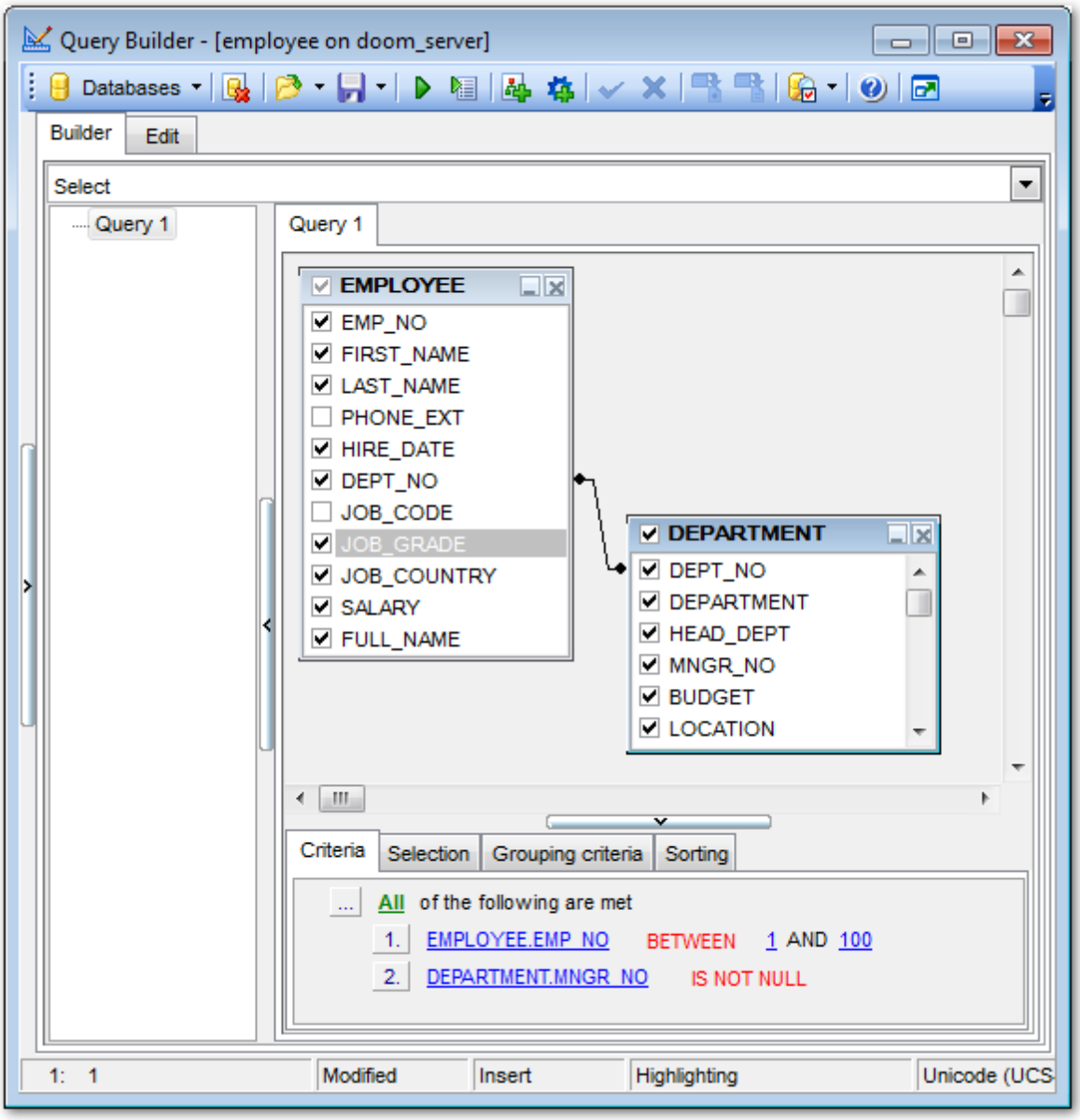
To include a field in the query, check the corresponding box located to the left from the field name in the list, or just double-click it. To include all fields of the table/view, check the box located to the left of the table/view caption. If you do not check any fields, the SQL statement is generated as *SELECT * FROM <table/view_name>*, i.e. all the fields are included in the query.

To *collapse/expand* the list of table/view fields, click the minimize/maximize button at the object caption.

To exclude a field 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.

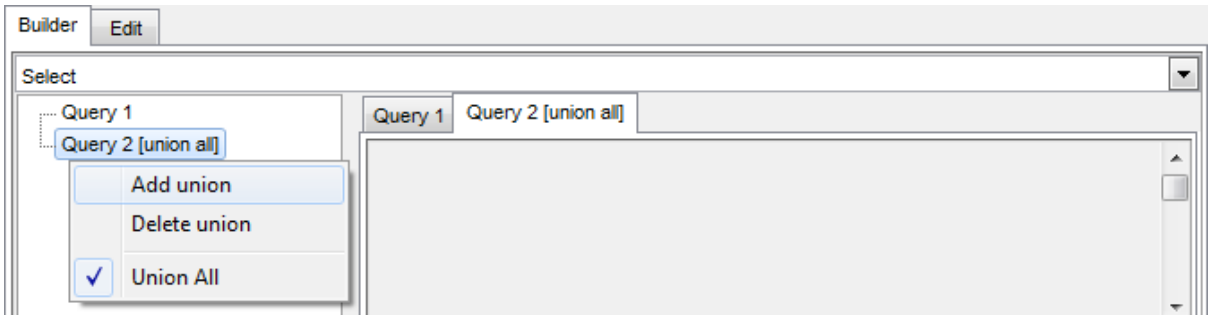
To edit the alias of a table/view, double-click the object caption and enter the new name, or right-click the object and select **Rename** from the context menu.

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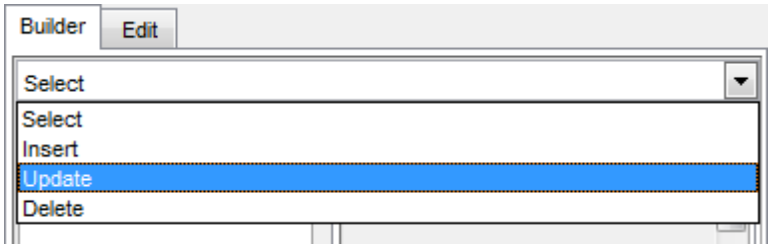


Query Designer allows you to create complex queries consisting of two or more queries combined in one with the *UNION* operator, or add nested queries. The panel to the left of the diagram area displays the **tree of subqueries**.
To add a query, right-click within the **tree of subqueries** area and 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.

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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:

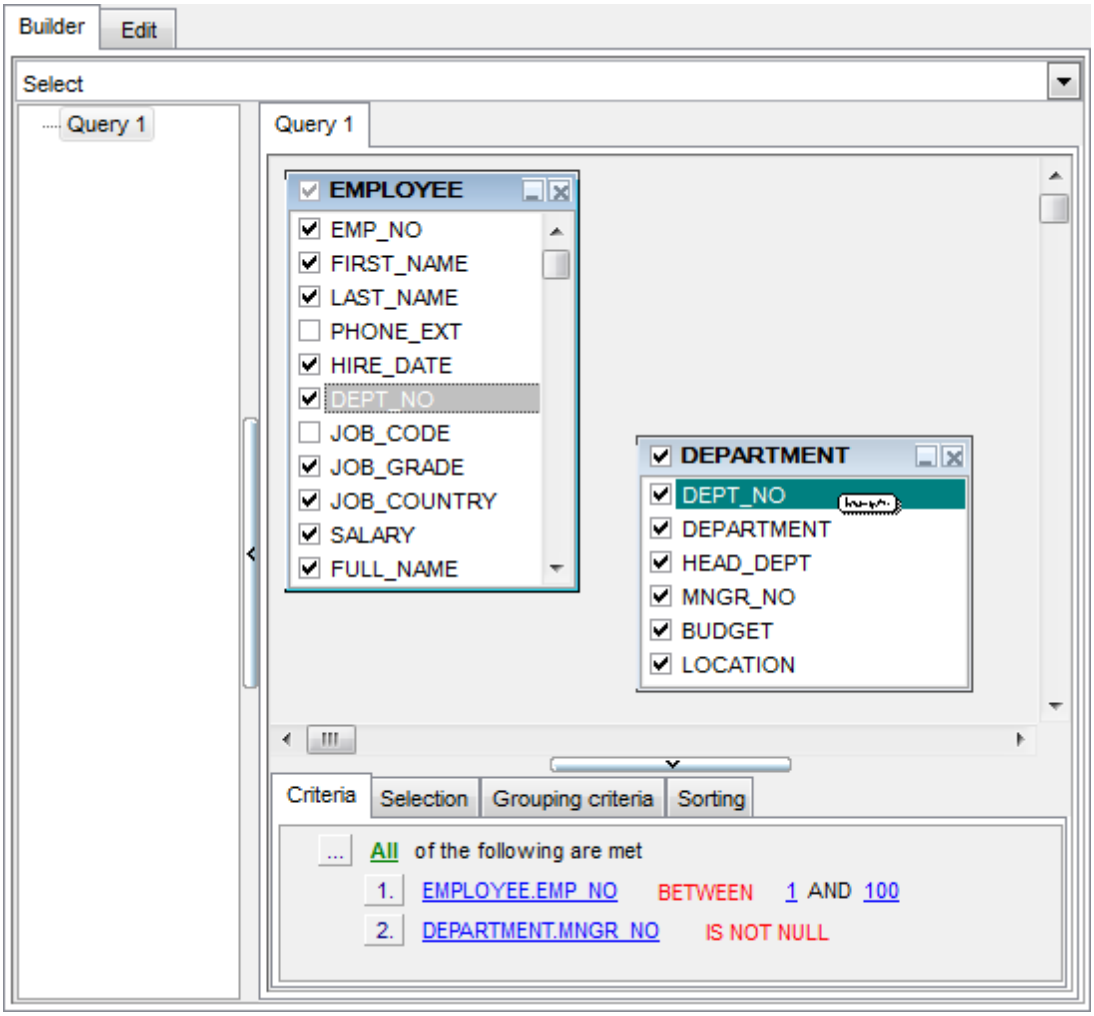
Joining two objects 354
Working with the editor area 362
Query execution 363

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6.2.3 Joining two objects

The **diagram area** allows you to associate two objects by their fields: this operation is performed by dragging a field from one object list to another. This will set a link between these objects by the selected fields. It is indicated by a bidirectional arrow between the linked fields.

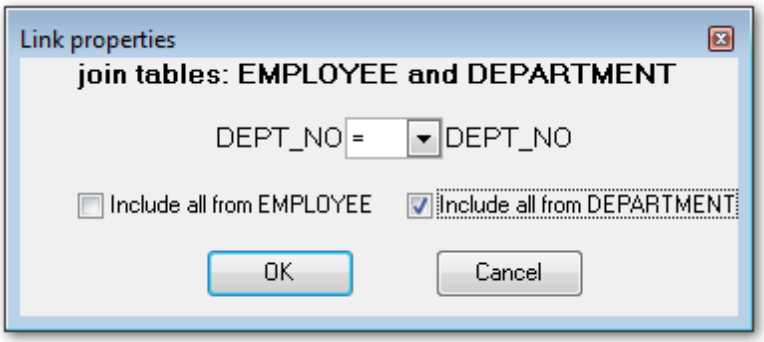
Note: Once two or more tables related by a foreign key are added to the diagram area, the corresponding visual joining of these tables appears at the **Builder** tab and the *JOIN* statement appears under the **Edit** tab.



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 (=, >, <, >=, <=, <>).

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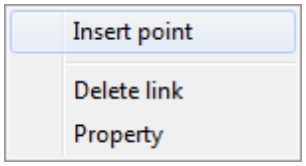


For your convenience the **Include all** option is available for each object of the association:
if the option is enabled for the left table, the *LEFT JOIN* operator will be used for the association;
if the option is enabled for the right table, the *RIGHT JOIN* operator is used for the association;
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:

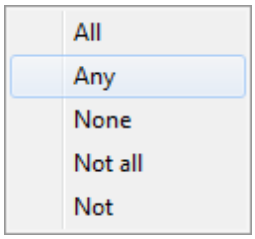
Working with diagram area 351
Setting criteria 356

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6.2.4 Setting criteria

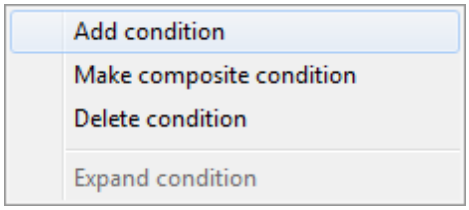
Use the **Criteria** tab to set the selection conditions.

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.

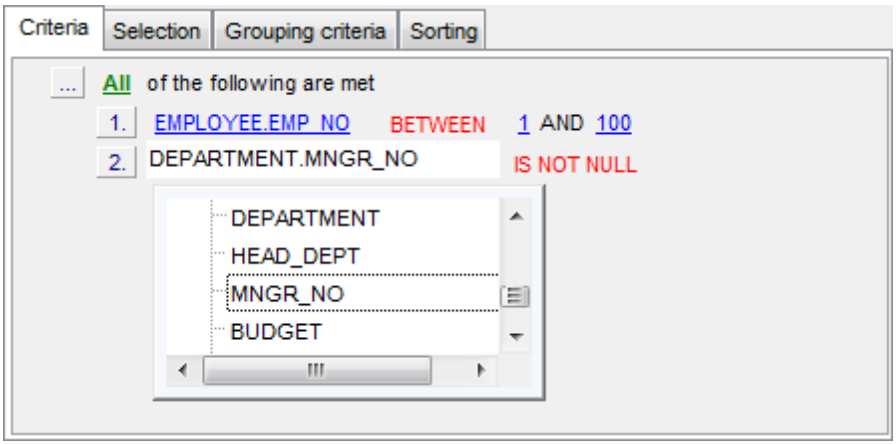
Edit the condition by clicking the elements of the condition pattern and setting the necessary values. Clicking the numbered button to the left of the condition string activates the popup menu which allows you to *add a new condition* at the same enclosure level, *make composite condition* by adding a new enclosure level, *delete the current condition*, *expand* or *collapse* enclosure levels of the condition (if the condition is composite).



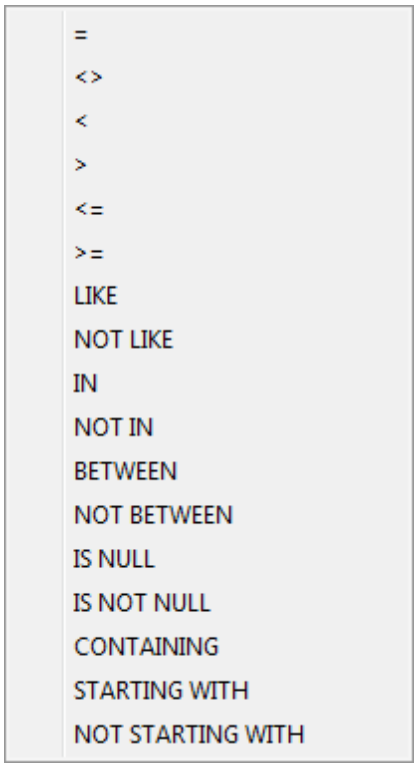
A simple condition pattern contains three elements: *an argument*, *a condition operator* and *a second argument* (if required for the condition).

Clicking each element field allows you to set its value. You can add a field 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 field** (also called by the *Shift+Enter* shortcut 940; this item allows you to select a field from the list of all the table fields) and **Insert query** (this item adds a nested query) items.

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Clicking the condition operator field activates the popup menu from which you can select the operator you need.



See also:

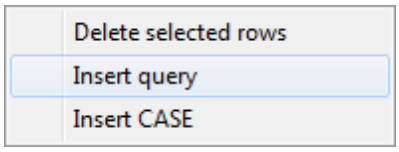
Setting output fields 358
Setting grouping criteria 360
Setting sorting parameters 361

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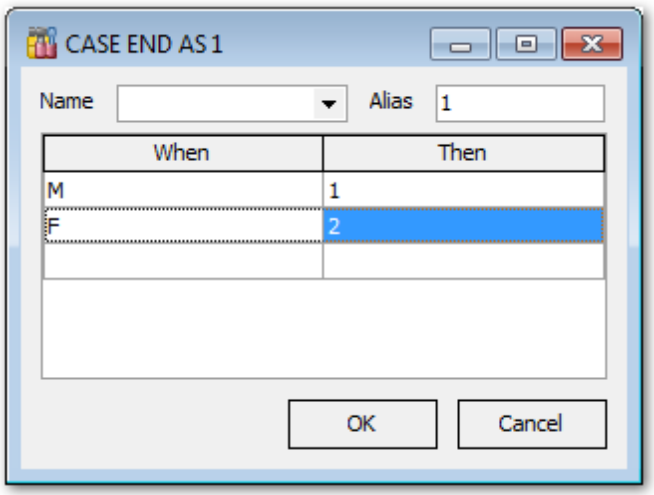
6.2.5 Setting output fields

The **Selection** tab displays the output fields of the query as a grid.

The grid allows you to edit the names of the query output fields, specify their display order and set the aggregate functions for each field. To remove a field from the list, right-click the field row and select the **Delete current row** popup menu item.



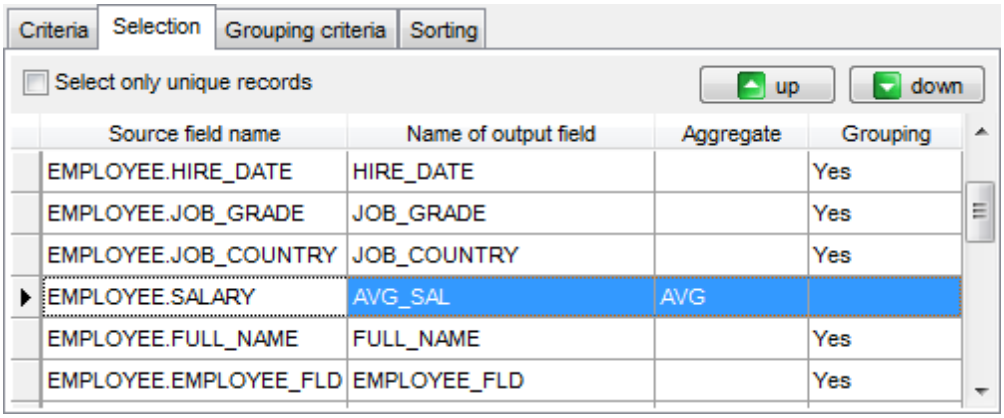
The popup menu also allows you to *insert a nested query* and add a *CASE* clause. To edit the CASE clause, use the **CASE END AS** dialog.



To change the *input query field*, click it and then type the field name or select it from the drop-down list.
To change the *output query field* name, set the cursor at the corresponding column and type the required field name.

To reorder fields in the list, use the buttons.

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To set an aggregate function for a field, click the field 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 fields.

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:

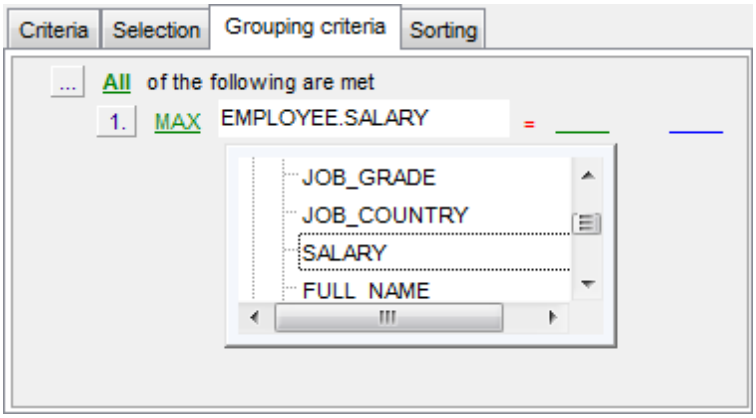
Setting criteria 356
Setting grouping criteria 360
Setting sorting parameters 361

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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 356 pattern.



These conditions will be included in the *HAVING* statement of the generated SQL query.

See also:

Setting criteria 356

Setting output fields 358

Setting sorting parameters 361

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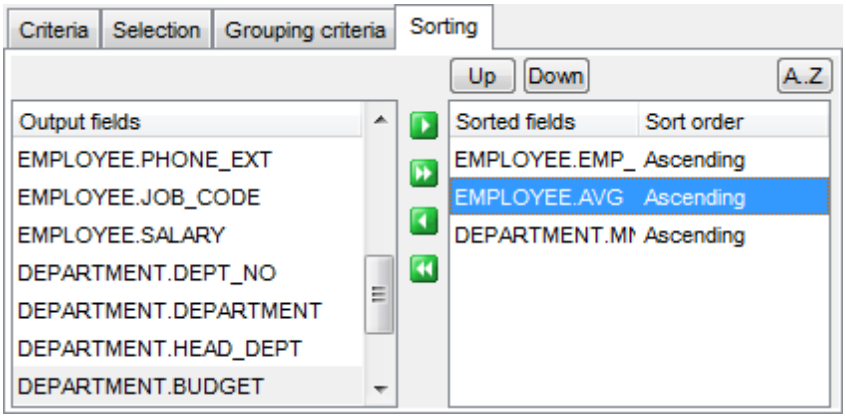
6.2.7 Setting sorting parameters

The **Sorting** tab allows you to set sorting parameters for the records returned by the query.

The working area contains the **Output fields** list (at the left) which represents all fields of the objects used in the query, and the **Sorted fields** list (at the right) which contains the fields to sort records by.
To move a field from one list to another, drag the selected field or use the **Add** and **Remove** buttons:  .

To change the sorting order for a sorted field, select the field in the **Sorted fields** list and move it using the **Up** and **Down** buttons.

To change the sorting direction, select the field in the **Sorted fields** list and switch the direction (*Ascending*, *Descending*) using the corresponding **A..Z**/**Z..A** button.



See also:

Setting criteria 356
Setting output fields 358
Setting grouping criteria 360

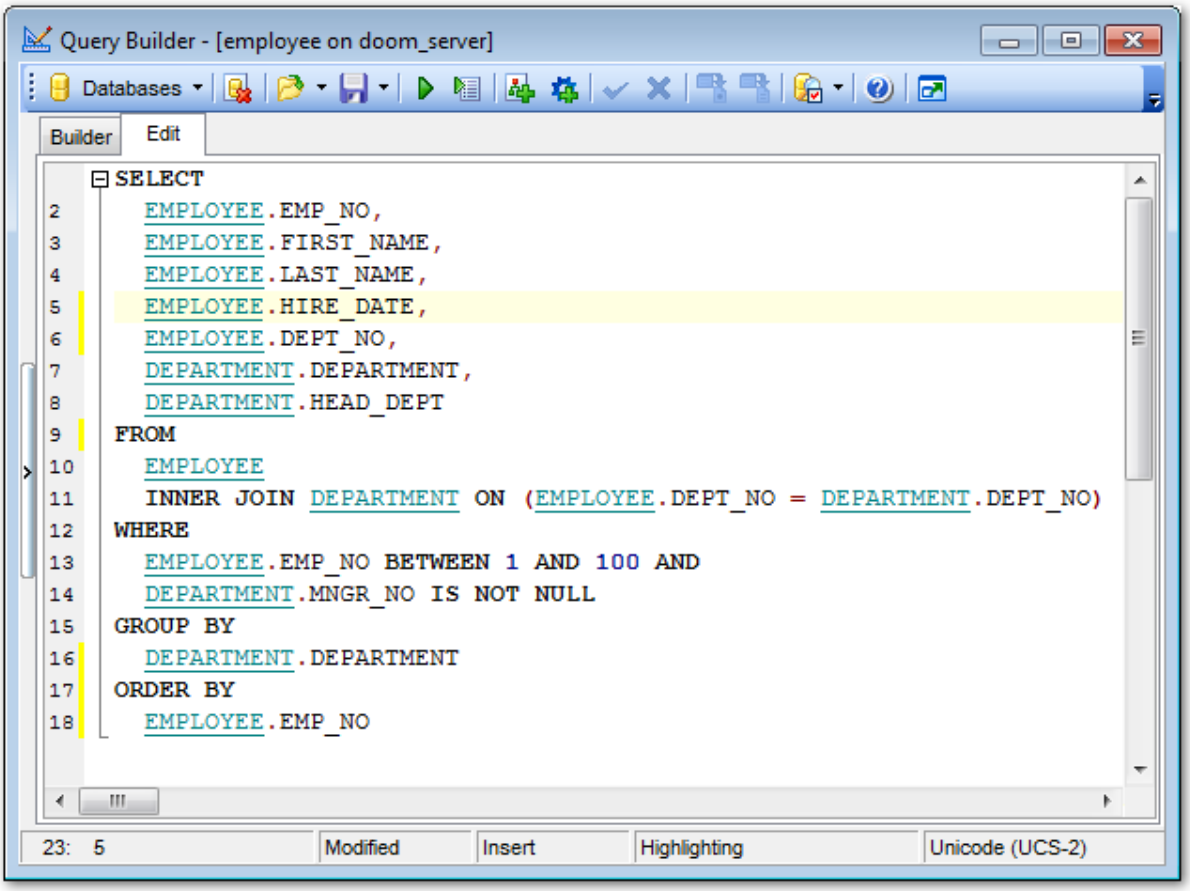
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6.2.8 Working with the editor area

The **Editor area** of **Query Designer** 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 334.



See also:

Working with diagram area 351
Query execution 363
Query Data 331

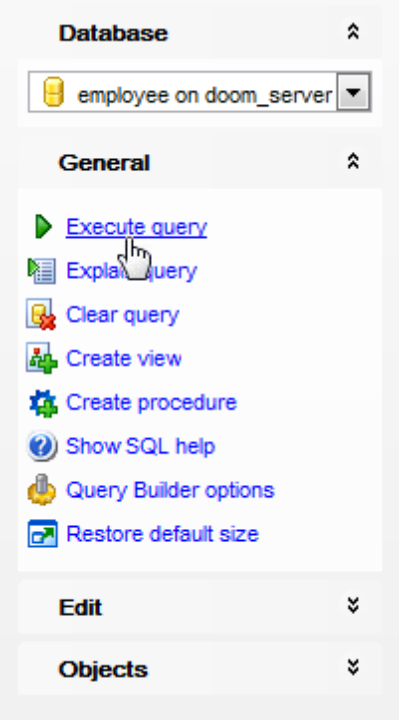
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6.2.9 Query execution

When all the query parameters are set, you can immediately **execute the query** in **Query Designer**.

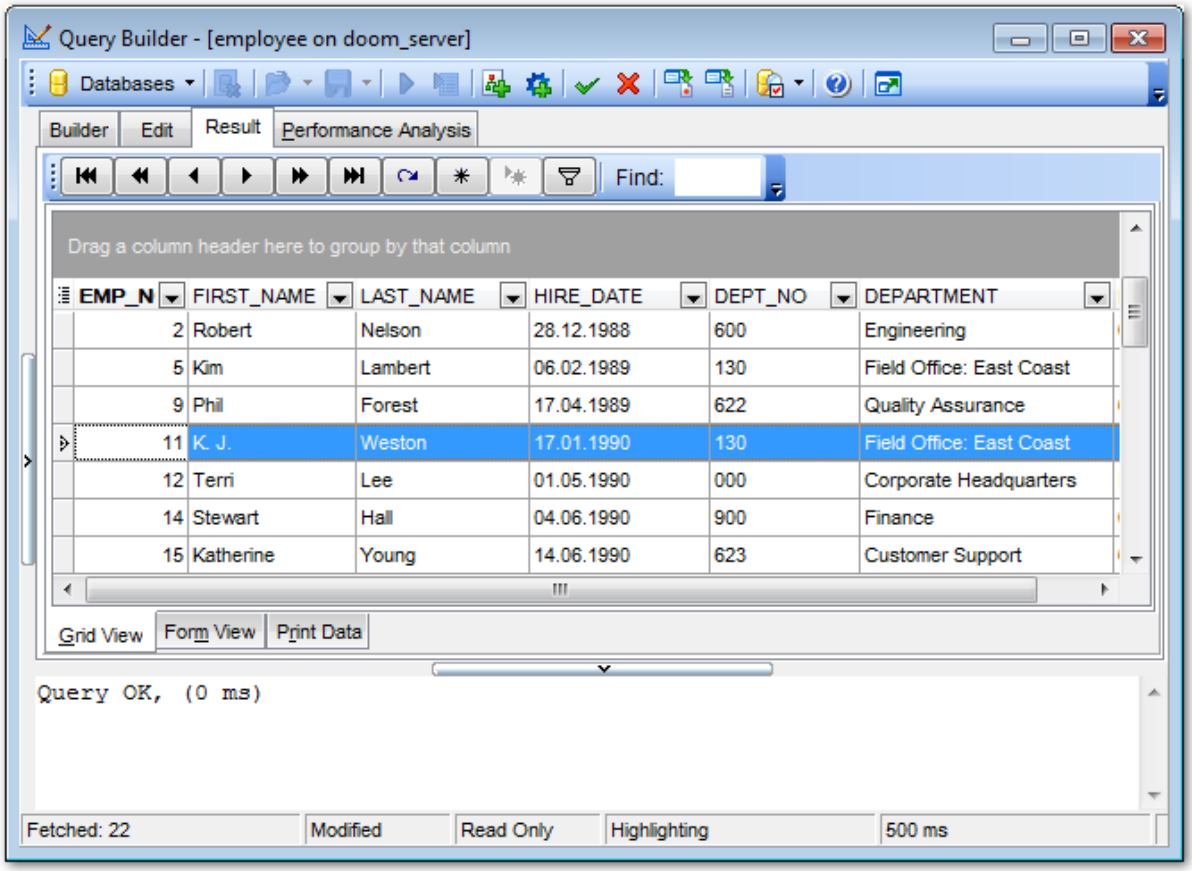
To execute a query, click the **Execute query** item of the Navigation bar[349]. You can also use the *F9* hot key for the same purpose.

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 Query Builder window.



By default, data returned by a query are displayed as a grid (see Data View[370] for details). The context menu[380] of the grid allows you to Export Data[445], Export As SQL Script[519].

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See also:

Working with diagram area 351
Working with the editor area 362
Data View 370

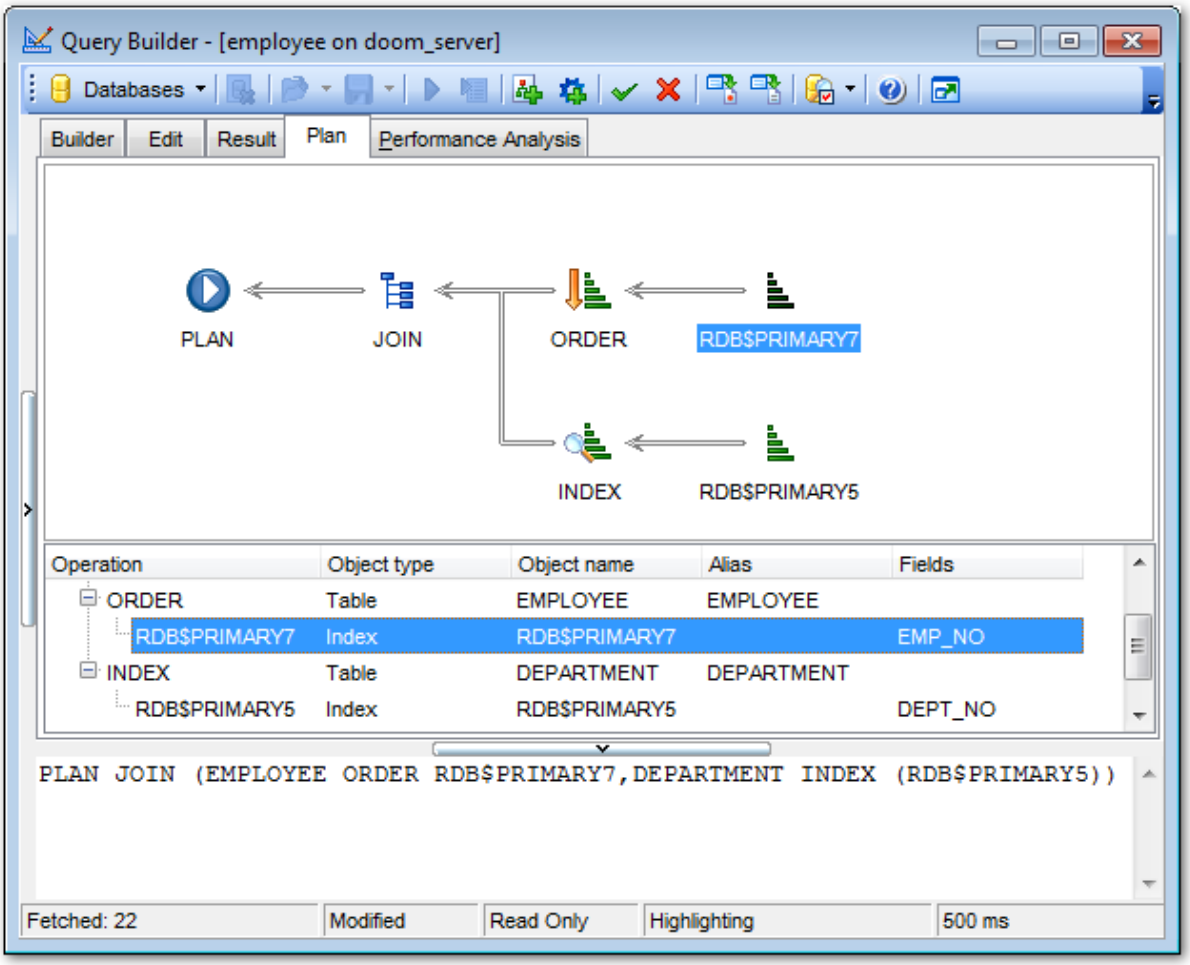
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6.2.10 Viewing query plan

Using **SQL Manager for InterBase/Firebird**, 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 **Query Builder** and use the **Explain query** item of the Navigation bar[349] or toolbar[350].

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.



See also:

Query execution[363]

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6.3 Query parameters

Both Query Data 331 and Query Designer 348 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 757 page of the Environment Options 744 dialog for this feature to be enabled.

See also:

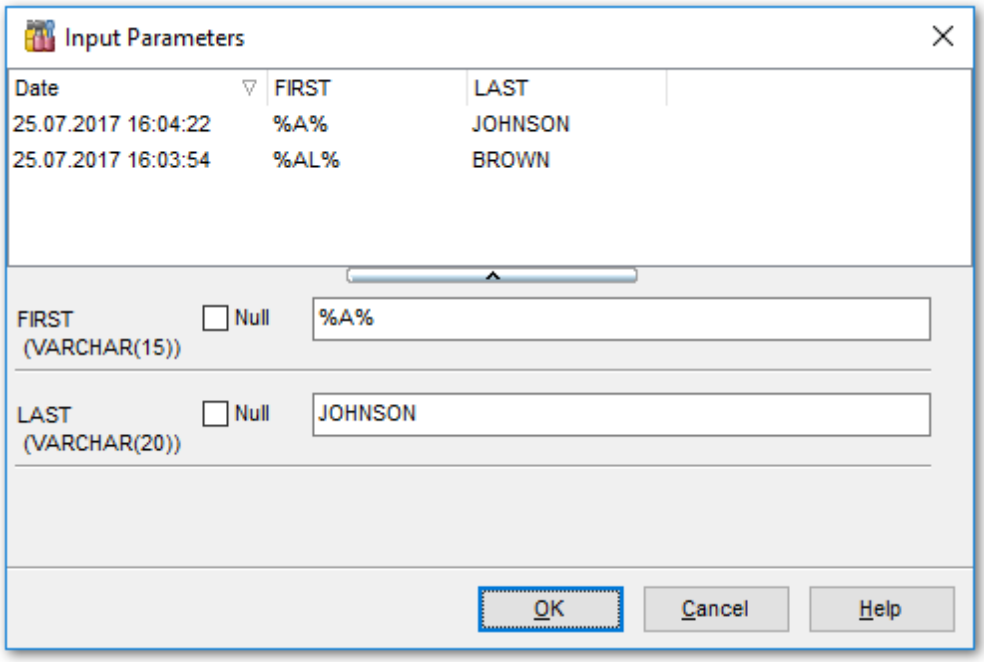
Query Data 331

Query Designer 348

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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 field data type. For your convenience the *Calculator* and *Date editor* are implemented for *floating-point* (*FLOAT*, *NUMERIC*, *DOUBLE PRECISION*, *DECIMAL*) and *temporal* (*DATE*, *TIME*) types respectively: click the arrow-down button to call the *Calculator* / *Date editor* popup window.

Also you can choose the recently used set of values in the table at the top of the window. To apply values from the table just double-click its row.

Click **OK** button to apply the values and execute the query or click **Cancel** button to abort execution.

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Part



7 Data Management

Table data and query results are displayed on the **Data** or **Results** tab of Table Editor 185, Query Data 331, Query Designer 348, etc.

Data can be displayed in one of the following modes: **Grid View**, **Form View**, **Print Data**, **BLOB View**. See Data View 370 to learn more about these modes. You are also provided with a number of filtering tools 380 when working with your data.

- Data View 370
- Custom Filter 432
- Filter Builder dialog 434

See also:

Getting Started 37
Database Explorer 63
Database Management 87
Database Objects Management 163
Query Management Tools 329
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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7.1 Data View

SQL Manager for InterBase/Firebird 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 185 / View Editor 243 correspondingly;
- upon a query execution 341 the returned dataset appears within the **Result(s)** tab of Query Data 331 / Query Builder 348 (in Query Data the position of the tab depends on the **Results on Edit tab / Results on separate tab** selection in the Navigation bar 332).

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 371
- Grid View 374
- Form View 396
- Print Data 397
- BLOB View 423
- Applying changes 431

See also:

Custom Filter 432

Filter Builder dialog 434

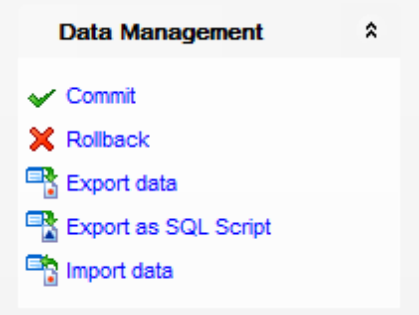
Table Editor 185

View Editor 243

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7.1.1 Using Navigation bar and Toolbars

Data Management



- commit transaction
- rollback transaction
- export data 445
- export data as SQL script 519
- import data 493 (in *Table Editor*, *View Editor* only)

Tools

- view the dependency tree 536 for the table
- define grants 734 on the table
- create a view 243 on the table
- purge 715 table data
- create procedure 254 based on the table

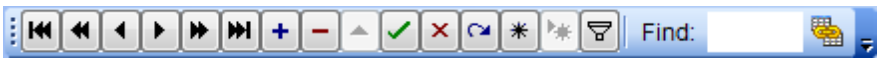
NOTE: Items of the **Navigation bar** are also available on the **ToolBar**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) 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);
- post 431 edit (in *Table Editor* only);
- cancel edit (in *Table Editor* only);
- refresh data;
- set bookmark;
- go to saved bookmark;
- call the Filter Builder 434 dialog;
- search for a string in the currently selected column data;

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- enable multi-level mode[385] to display data of the table(s) related by a foreign key[217] (in *Table Editor* only).



The **Toolbar** of the Print Data[397] mode allows you to:
- customize the report using Report Formatter[406] and the Report Options[417] 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 Print[422] dialog;
- call the Page Setup[399] dialog;
- show/hide report thumbnails;
- customize the Report Title[417];
- add Date and Time[419], Page Numbering[419], show/hide empty pages;
- shrink the report to the page;
- specify background color;
- zoom in/out, setup zoom[420], 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;
- show linked details (automatically add grid levels on the basis of existing foreign keys).



The **Toolbar** of the BLOB View[423] 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[374]
Form View[396]
Print Data[397]
BLOB View[423]
Applying changes[431]
Customize toolbars and menus[924]

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7.1.2 Grid View

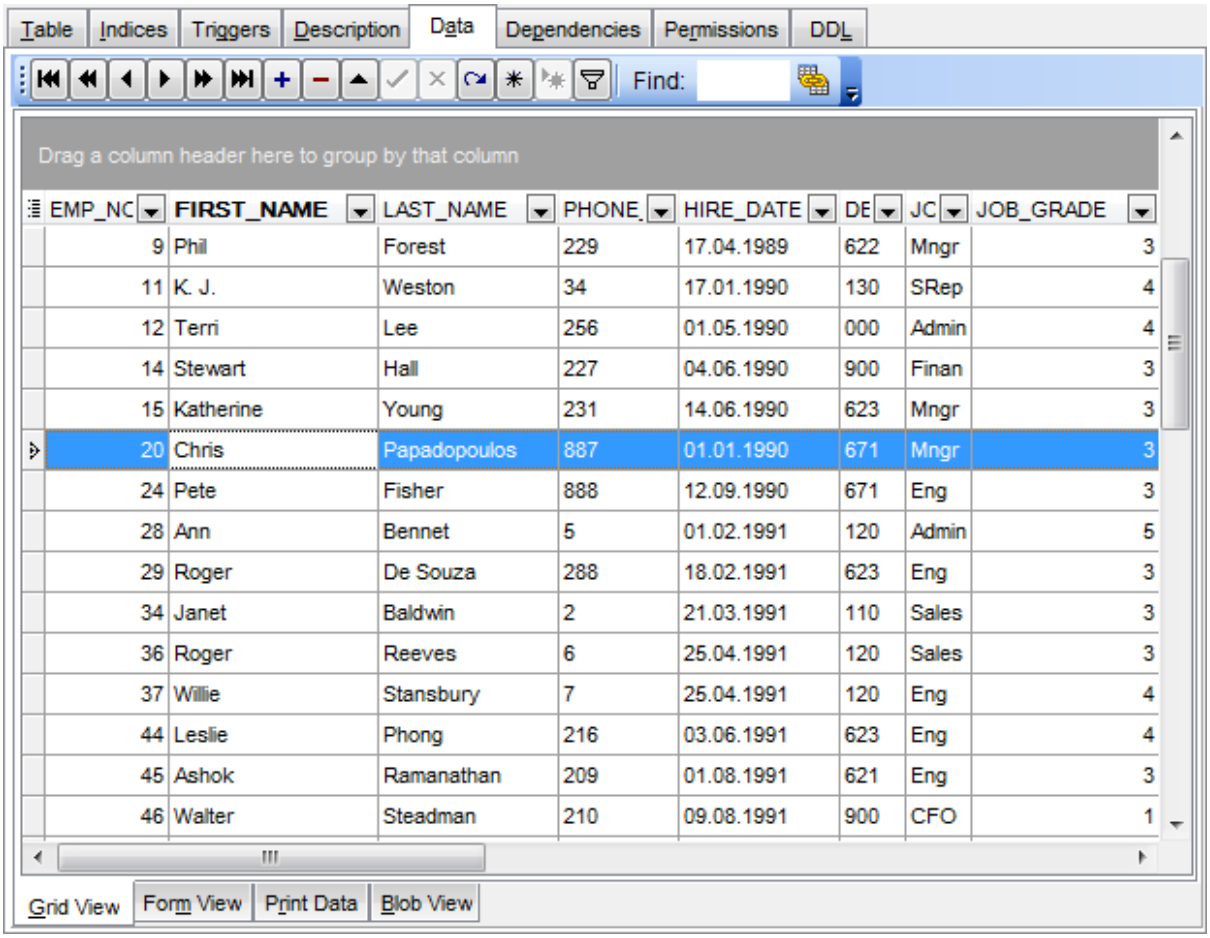
By default, data returned by a query are displayed as a grid. It is indicated by the **Grid View** tab selected on the View mode panel at the bottom of the **Results** area of the window.

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[376] 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[371] at the top of the grid allows you to browse the data quickly, to insert, update and delete records, and to set a filter[380] for the records using the Filter Builder[434] dialog and other tools.

The Navigation bar[371] of the parent window, toolbars[372] and the context menu[383] of the grid provide you with a number of data management functions: Export Data[445], Import Data[493], Export as SQL Script[519] and more.

- Customizing columns[376]
- Grouping data within the grid[377]
- Filtering records[380]
- Using the context menu[383]
- Working in multi-level mode[385]
- Browsing data in card view[393]
- Column Summary[394]
- Copying records[395]

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See also:

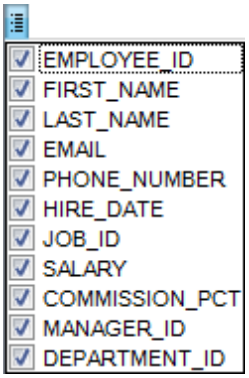
Using Navigation bar and Toolbars 371
Form View 396
Print Data 397
BLOB View 423
Applying changes 431

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7.1.2.1 Customizing columns

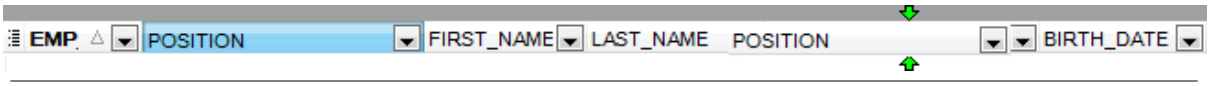
Selecting visible columns

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 377
Filtering records 380
Working in multi-level mode 385
Working in card view mode 393
Column Summary 394

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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.

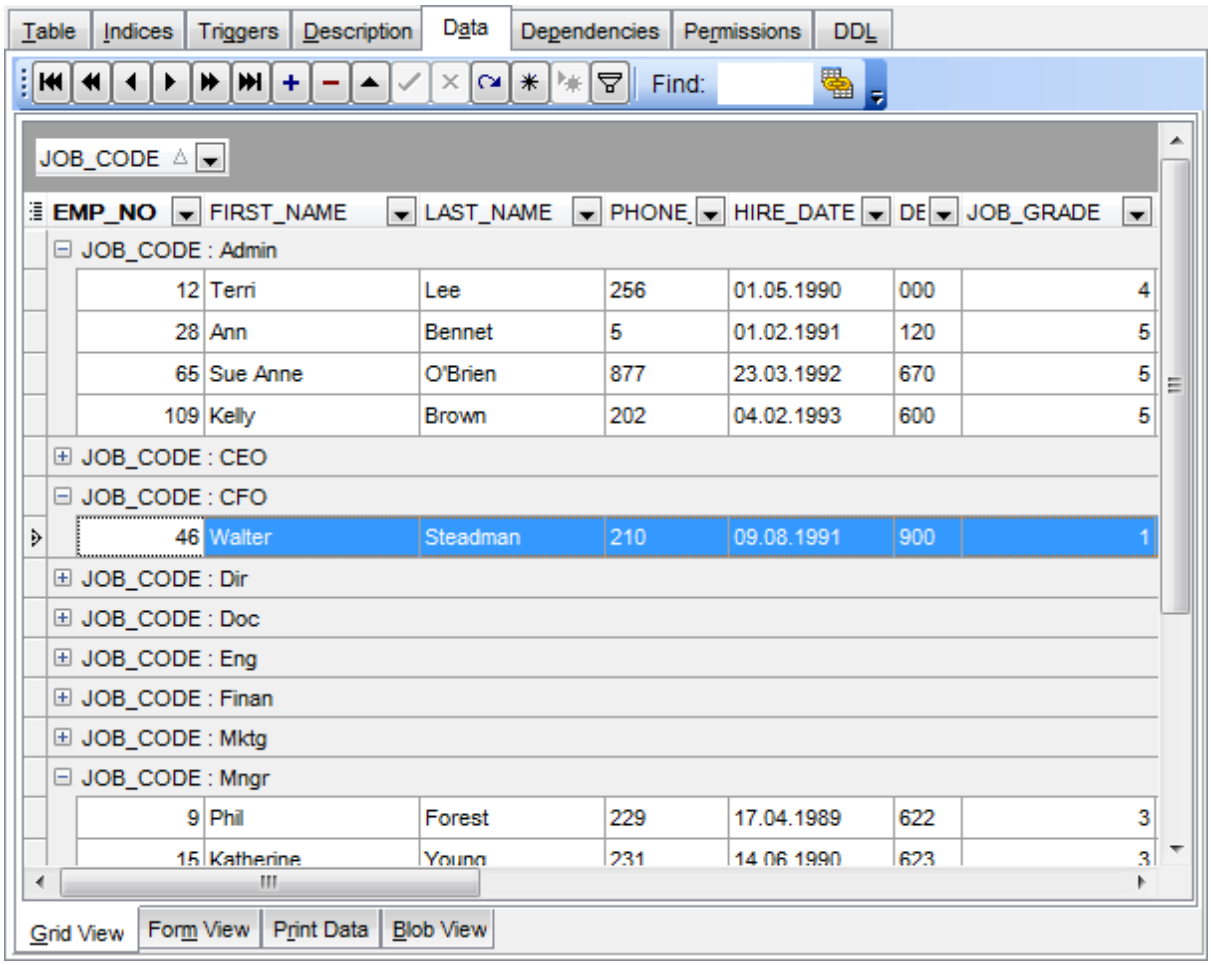
If necessary, you can **group the data in grid** by any of the columns.

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 787 section of the Environment Options 744 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 394 dialog.

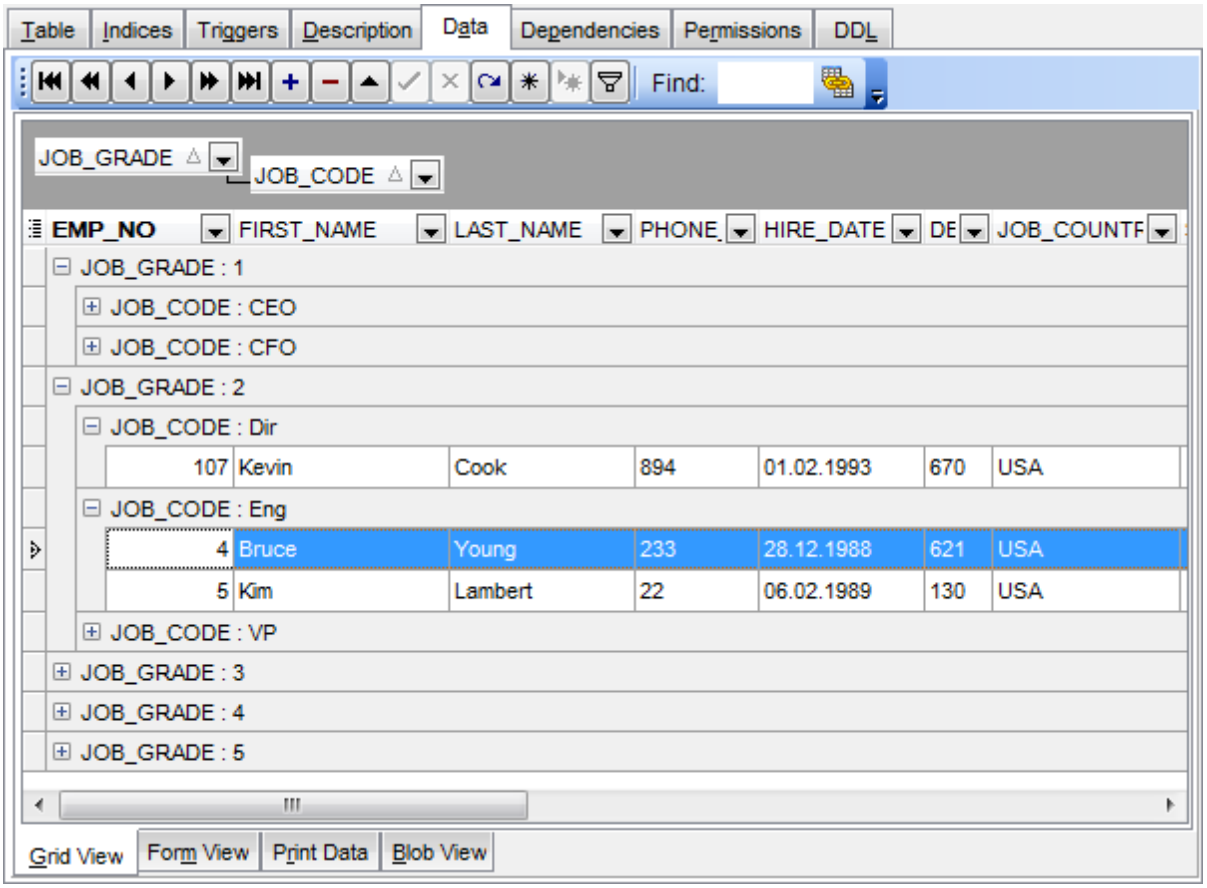
To reverse grouping, just drag the column header back.
Hint: While dragging the column header back, you can also change the column position 376 .

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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.

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See also:

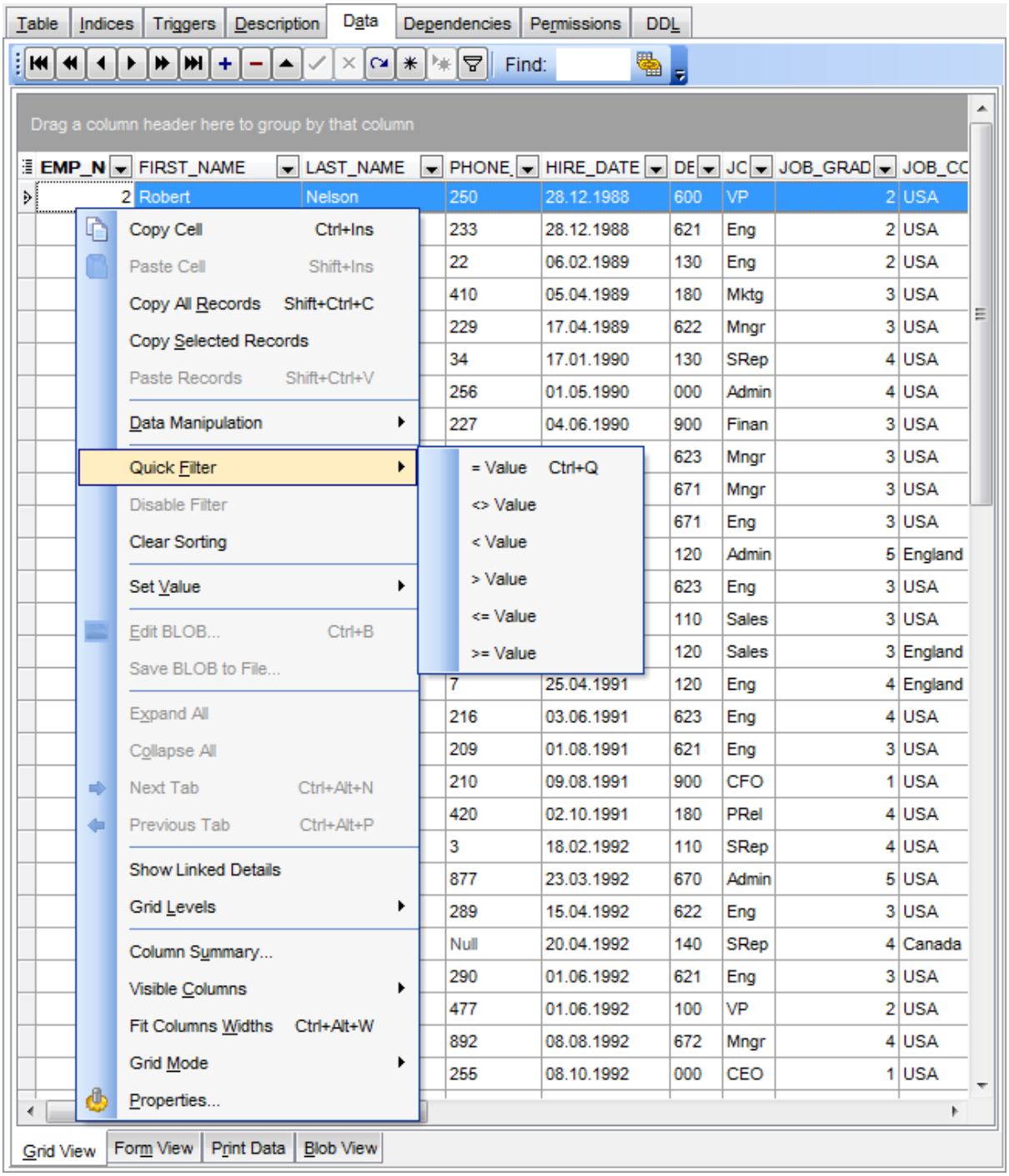
Customizing columns 376
Filtering records 380
Working in multi-level mode 385
Working in card view mode 393
Column Summary 394

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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:

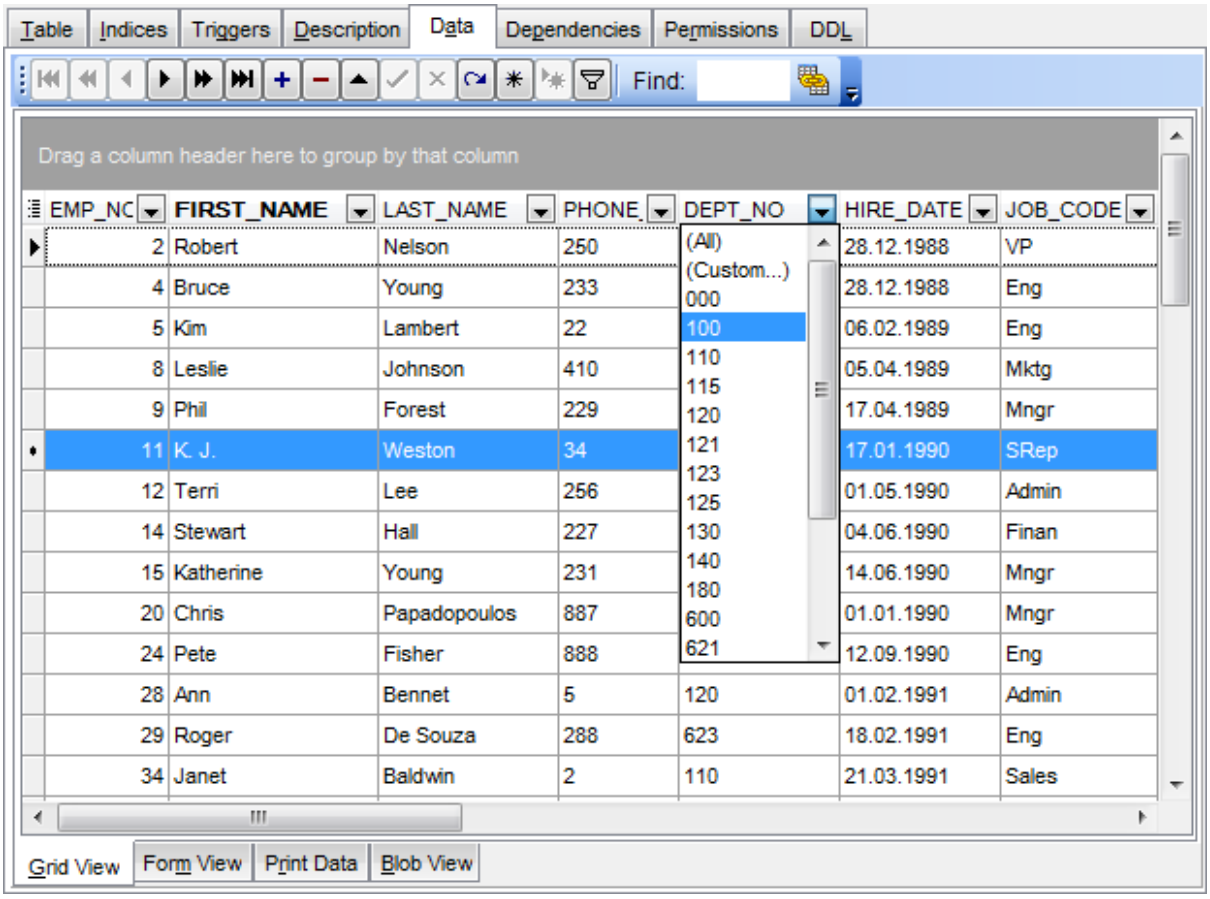
- right-click a row and select the **Quick Filter** context menu item to filter records by the current value of the selected column;



- click the Arrow-Down button next to the column caption to display the drop-down list

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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[432] dialog;
- use the **Set filter** button on the navigation pane[371] to invoke the Filter Builder[434] 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[434] dialog.



To remove the current filter, click the **Close** button.

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See also:

Customizing columns 376
Grouping data 377
Custom Filter 432
Filter Builder dialog 434

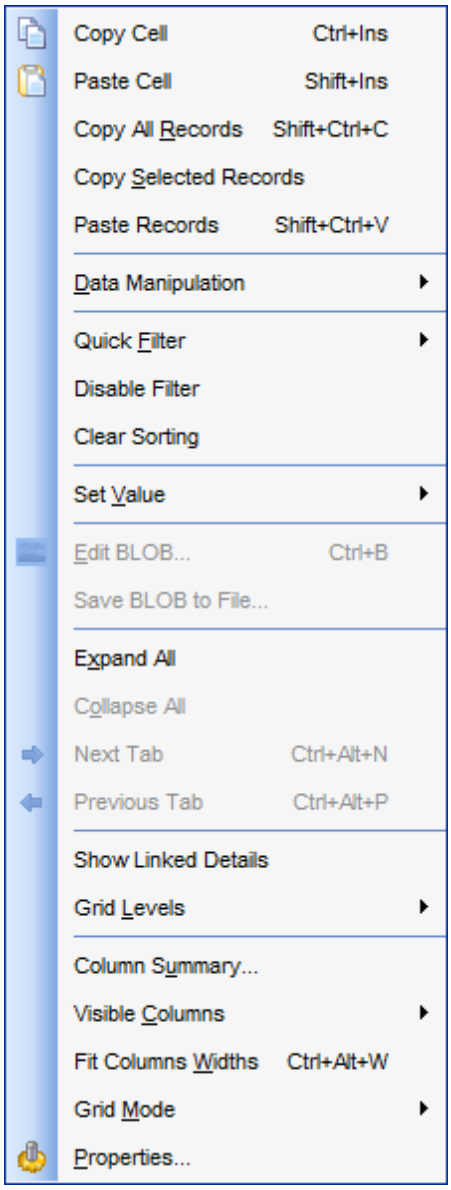
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7.1.2.4 Using the context menu

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 445 from the table, Import Data 493 to the table, Export Data as SQL Script 519;
- set/disable Quick Filter 380;
- clear sorting;
- set a value for the selected cell: *NULL*, *Empty string* (for string fields), *Now* (for TIME fields), *"Zero"* (for DATE fields);
- edit the BLOB value or save the BLOB to file using BLOB viewer/editor 423;
- show linked details (automatically add grid levels on the basis of existing foreign keys)
- expand/collapse grid levels 385 and navigate within the tabs;
- manage grid levels: add a new grid level 386, delete the current grid level (this item is enabled only when the detail level exists and is currently focused);
- switch to the Card View 393 mode;
- view Column Summary 394;
- 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 787.

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Note: If the ☑ **Show editor immediately** and ☑ **Always show editor** options on the Environment options | Grid 787 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.

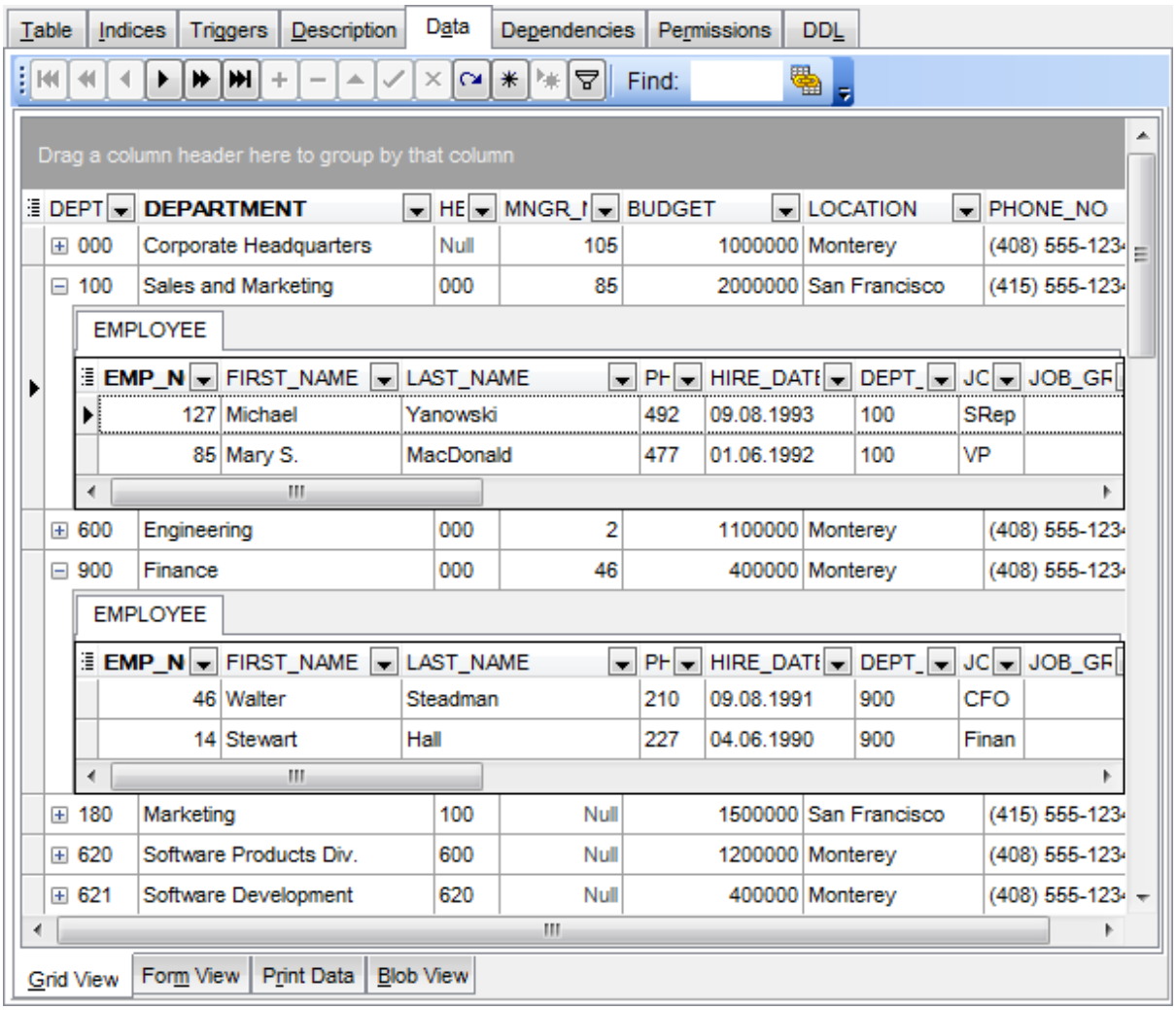
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7.1.2.5 Working in multi-level mode

One of unique features of **SQL Manager for InterBase/Firebird** 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 383 group. Items of this group allow you to:

- add a new grid level using Create Grid Level Wizard 386;
- delete the current grid level;
- switch between the ordinary *Table View* and the Card View 393 modes.



See also:

Using the context menu 383

Create Grid Level wizard 386

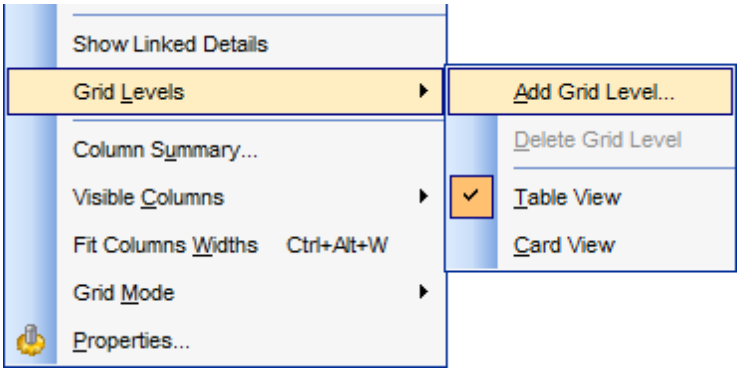
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7.1.2.5.1 Create Grid Level wizard

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 383 group and proceed to the **Add Grid Level...** item within this group.

- Specifying master level 386
- Selecting source table 387
- Binding master and detail levels 389
- Query parameterization 390
- Setting additional parameters 391



See also:

Working in multi-level mode 385

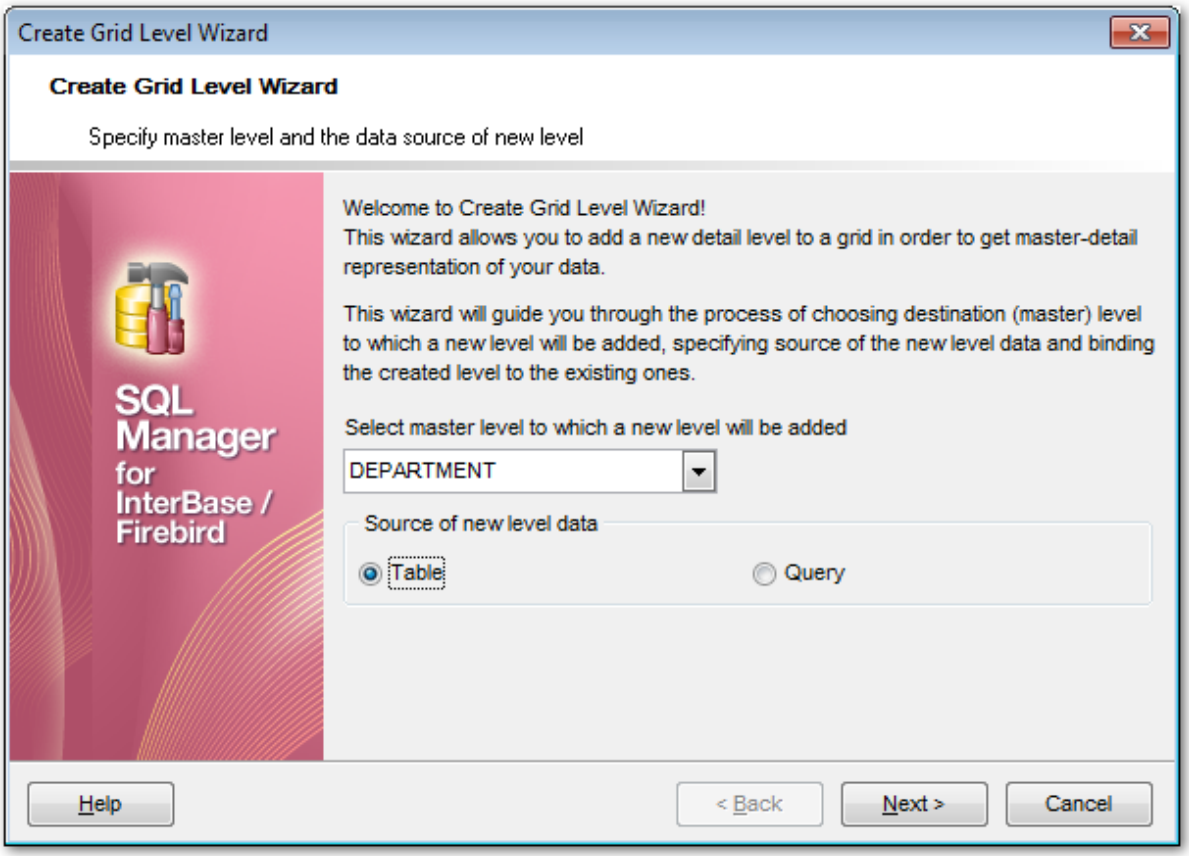
7.1.2.5.1.1 Specifying master level

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*.

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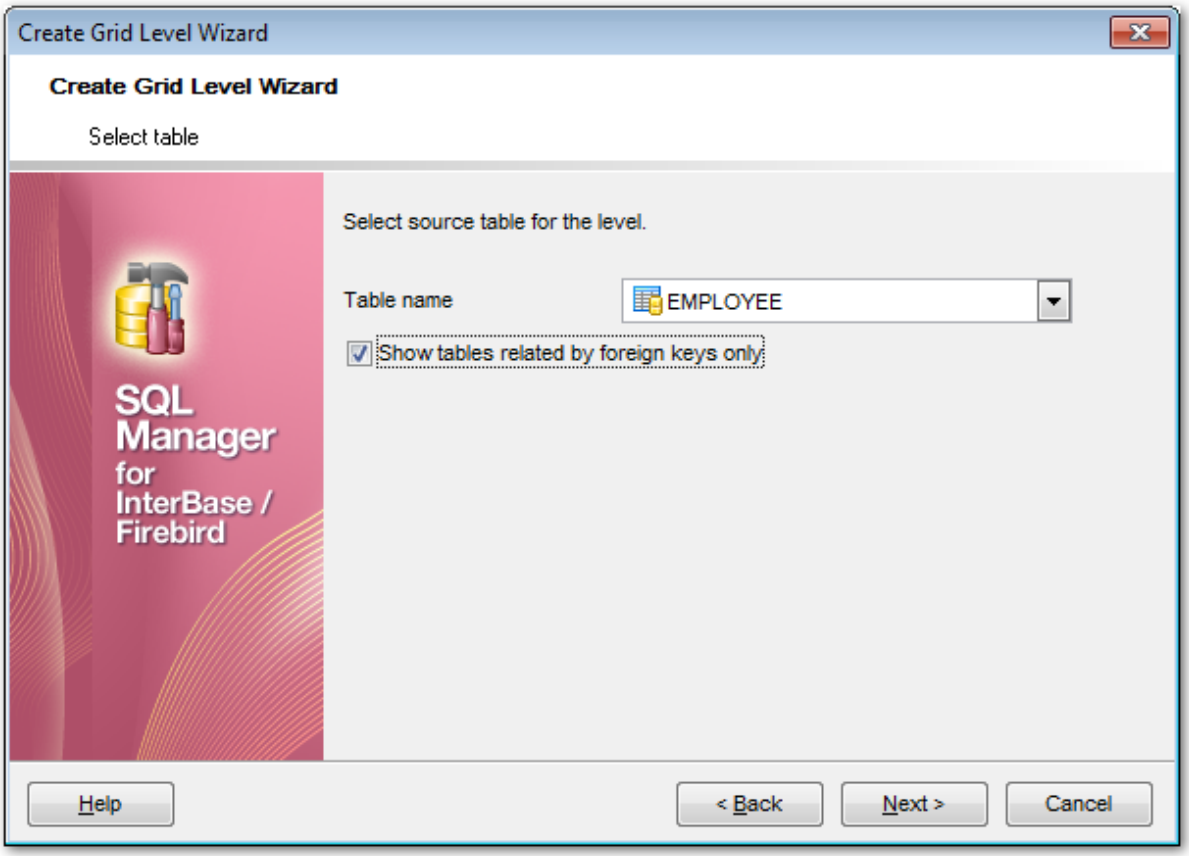


Click the **Next** button to proceed to the Defining source for detail level 387 step to select a table for the detail level or input a query, depending on whether the **Table** or the **Query** option has been selected.

7.1.2.5.1.2 Defining source for detail level

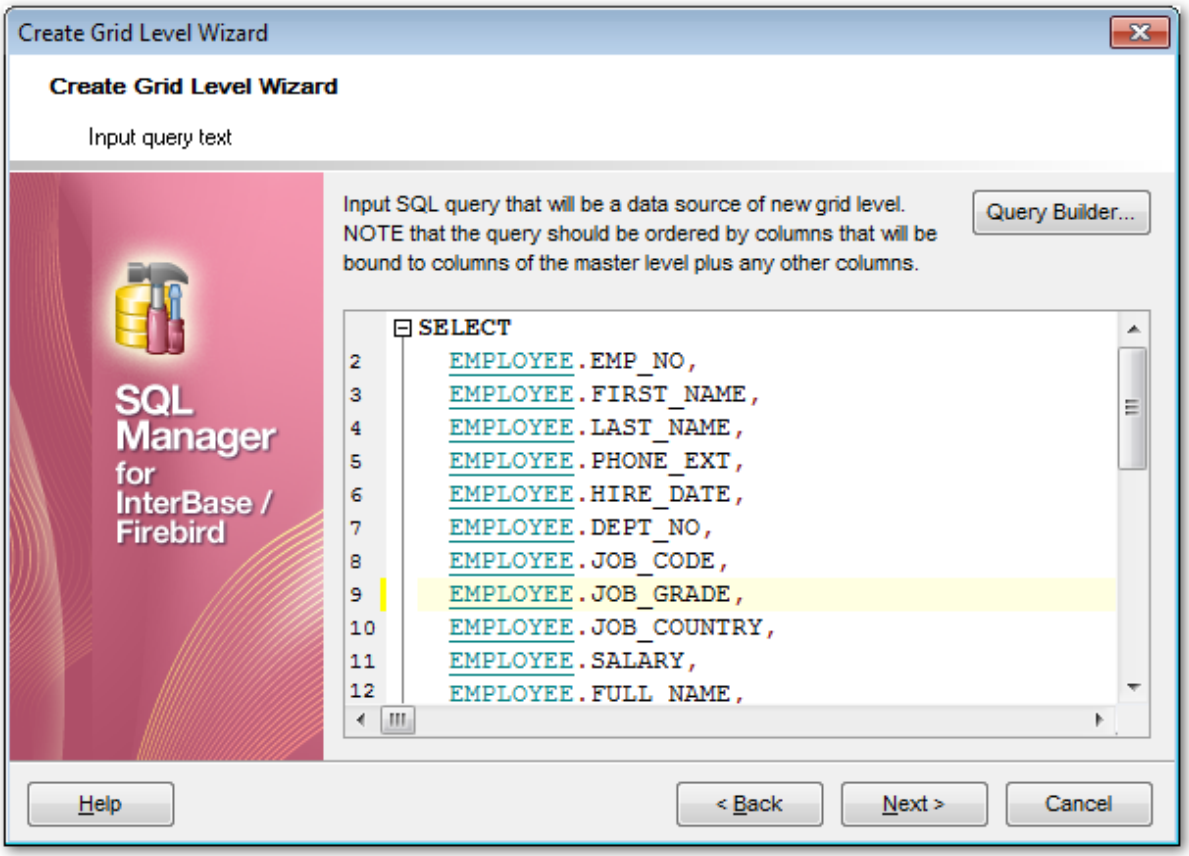
If the **Table** option has been selected at the previous step 386, you should now specify a table for the detail view using the **Table name** drop-down list. Set the **Show tables related by foreign keys only** option to narrow the list of tables by including only tables linked by Foreign keys.

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If the **Query** option has been selected at the previous step[386], you should now enter a query that will be used as the source of the new grid level. If necessary, you can use Query Builder[348] to build the SQL query visually.

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Click the **Next** button to proceed to the Binding master and detail levels 389 step of the wizard.

7.1.2.5.1.3 Binding master and detail levels

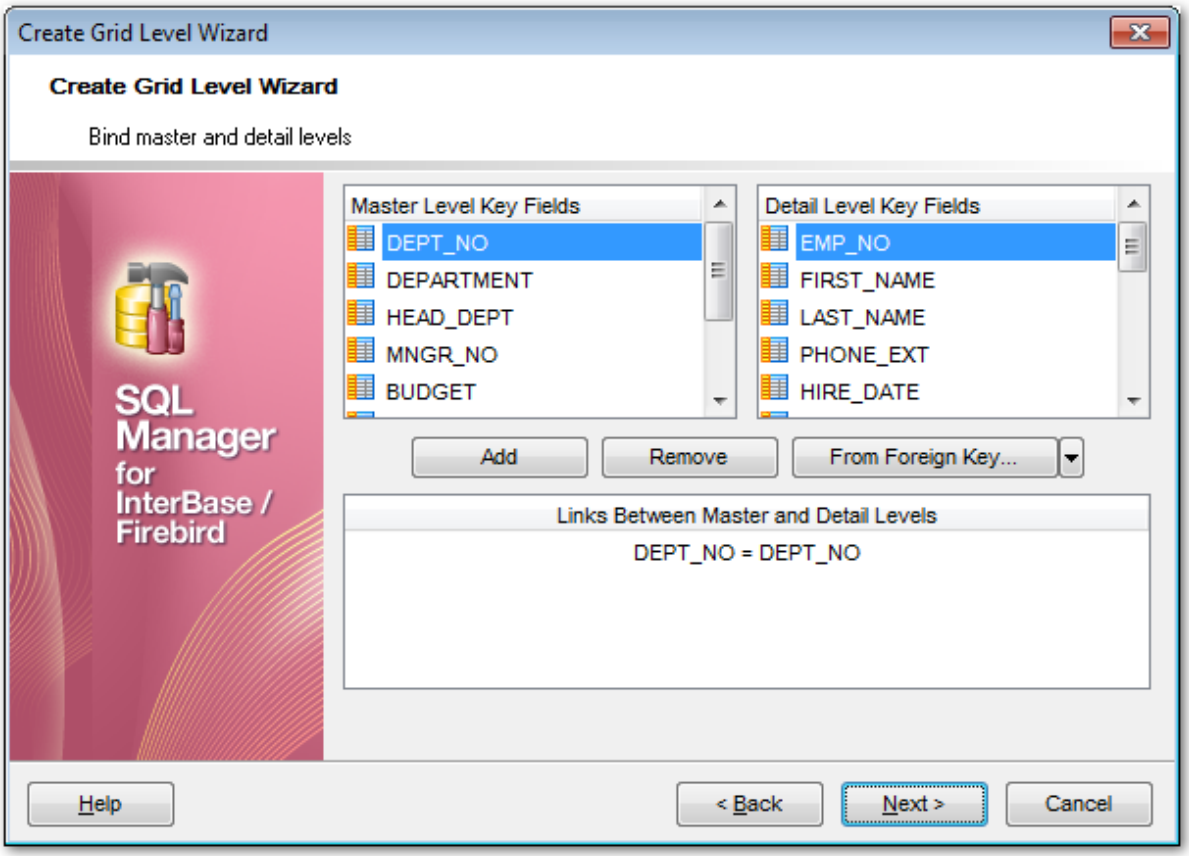
Define pairs of fields to link the Master Level and the Detail Level data sources:

- select a field in the **Master Level Key Fields** list;
- select a corresponding field in the **Detail Level Key Fields** list;
- click **Add** to set correspondence between the selected fields.

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 387. This menu allows you to select the foreign key 217 to be used for identifying master-detail levels (if the table has more than one foreign key relation).

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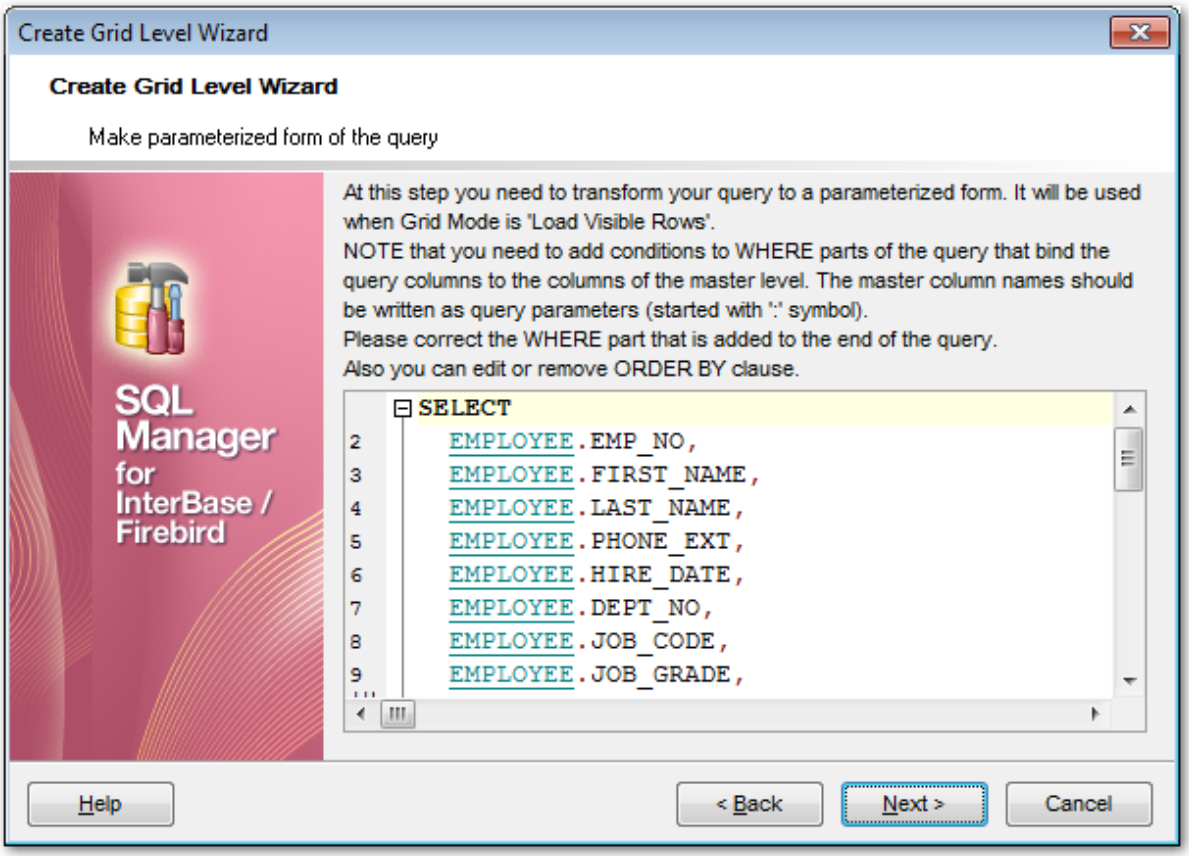


Click the **Next** button to proceed to the Setting additional parameters 391 step or to the Query parameterization 390 step of the wizard if **Query** was selected at the Specifying master level 386 step of the wizard.

7.1.2.5.1.4 Query parameterization

If **Query** was selected at the Specifying master level 386 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 790 section of the Environment Options 744 dialog to get more information about grid modes offered by **SQL Manager**).

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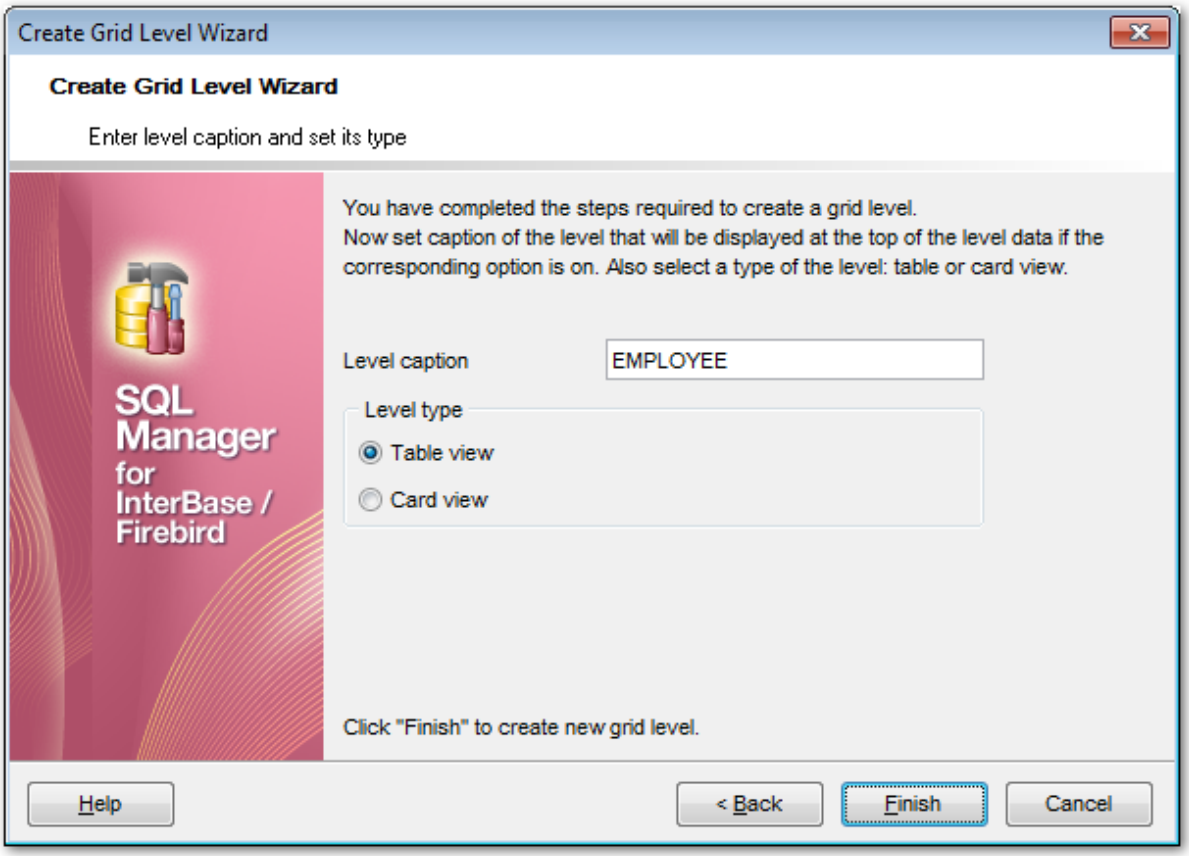
Click the **Next** button to proceed to the Setting additional parameters 391 step of the wizard.

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*.

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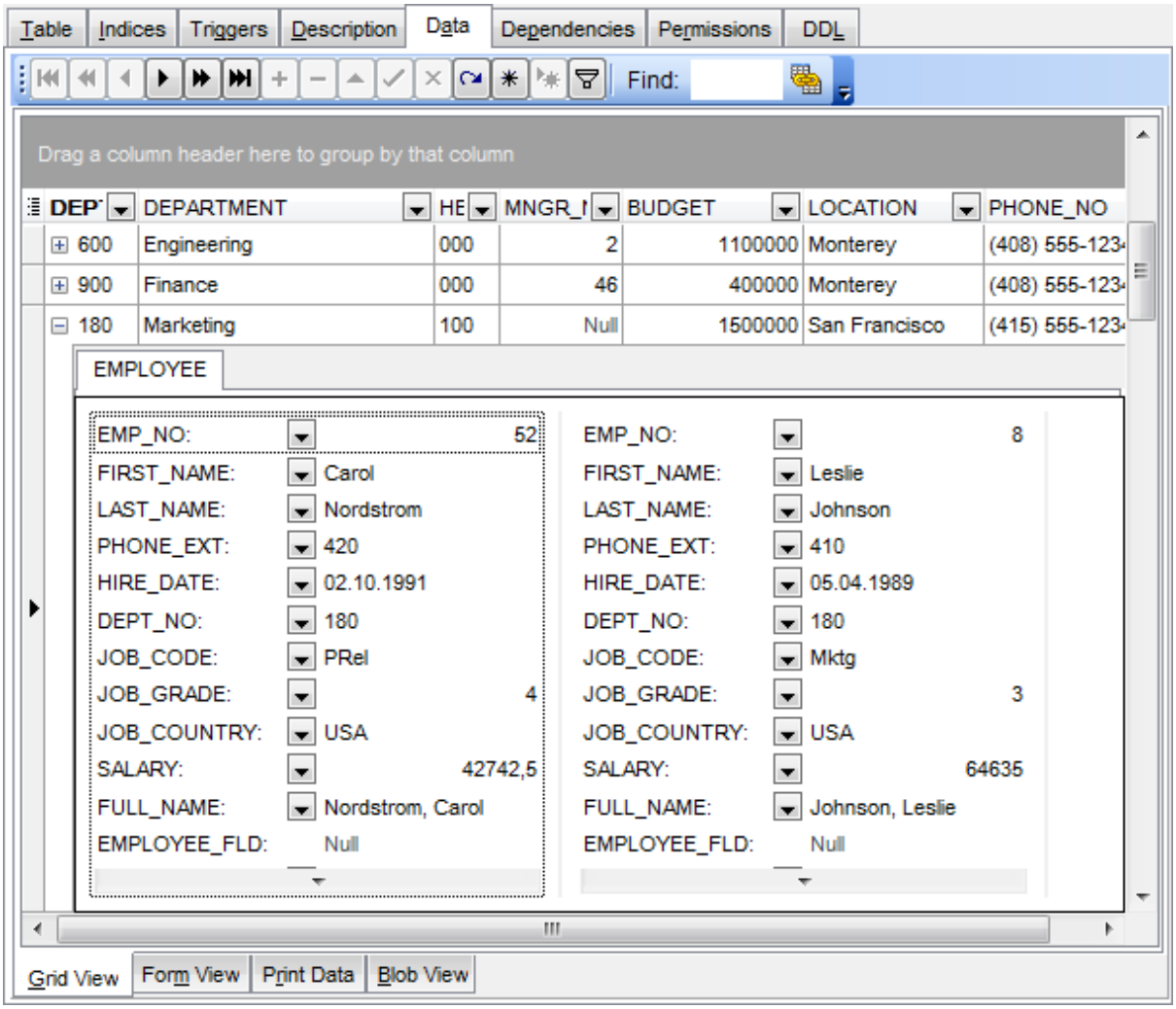
When you are done, click the **Finish** button to complete the operation.

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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 group and select the **Card View** item within this group.



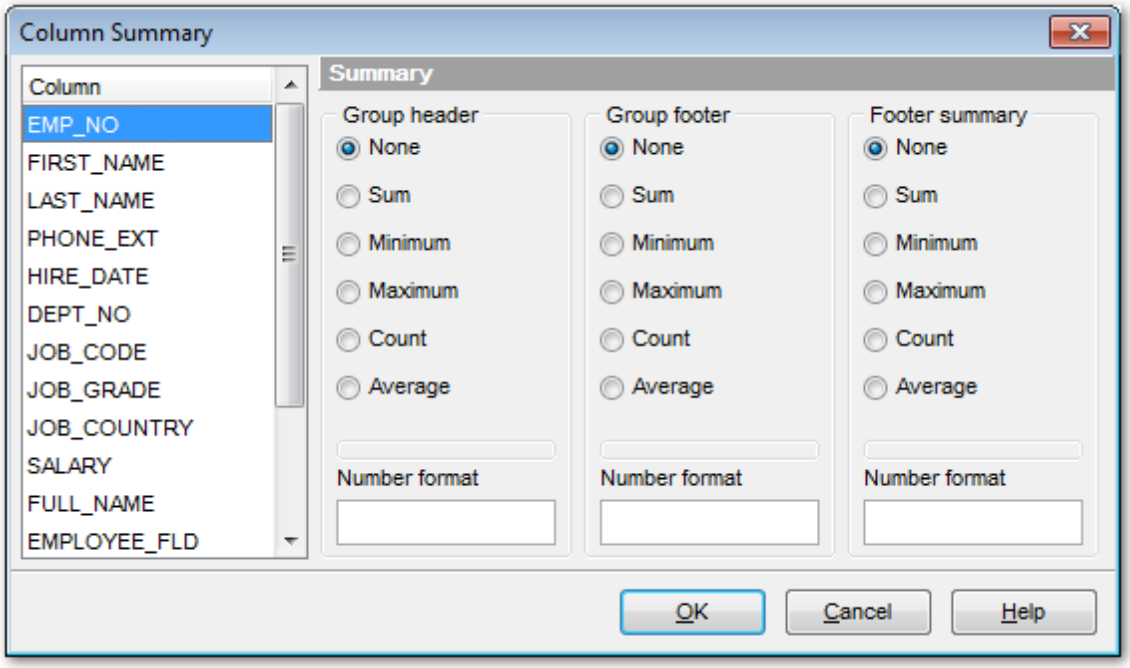
See also:

Using the context menu

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7.1.2.7 Column Summary

If necessary, you can select the **Column Summary...** context menu 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. Column Summary information displayed in the *group footer* and *group header* areas is available for grouped data.



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 for summary info representation.

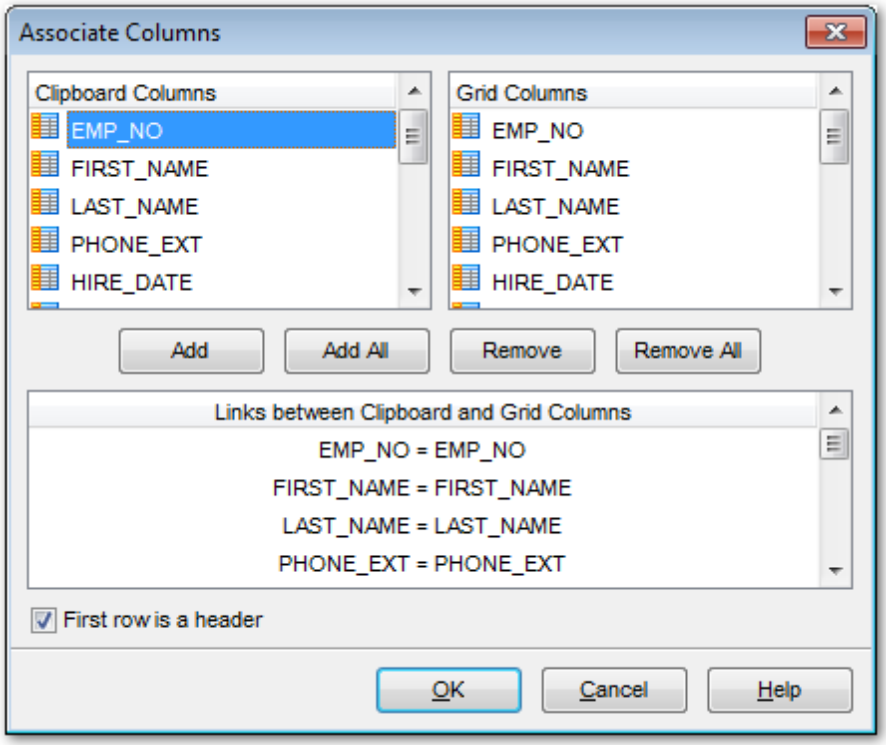
See also:

Using the context menu

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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 fields of the target InterBase/Firebird 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 field 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.

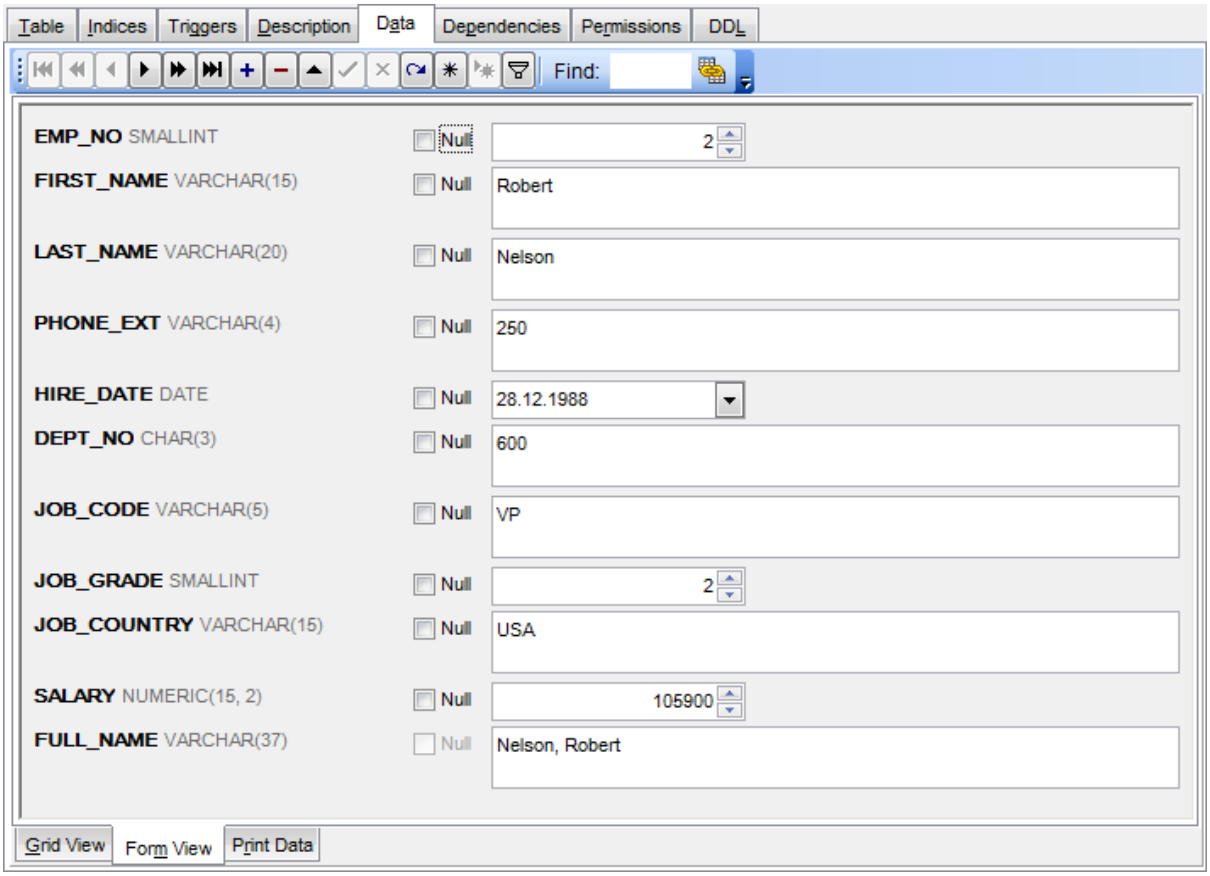
☑ **First row is a header**
This option specifies that the first row of the associated columns will be taken as the column header.

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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: field names on the left and the corresponding values on the right. If the fields are available for editing, you can edit the record directly on this form. The navigation pane[371] 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[434] dialog.



Each field has a ☑ **Null** checkbox which allows you to clear the field value and set it to NULL (if the field is nullable).

See also:

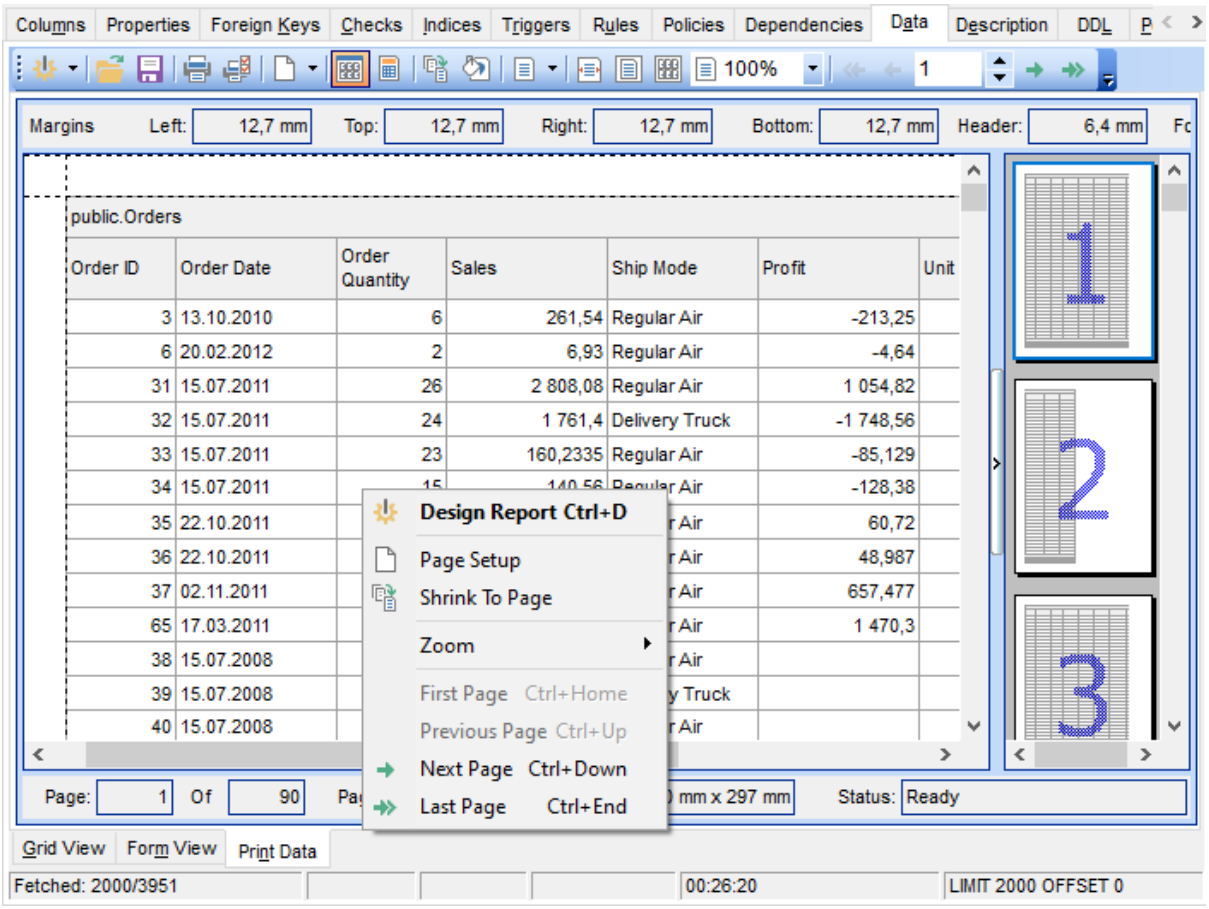
Using Navigation bar and Toolbars[371]
Grid View[374]
Print Data[397]
BLOB View[423]
Applying changes[431]

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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[372] allowing you to design a report, change the view scope, save reports and load previously saved ones, set report options[417], and specify a number of printing[422] parameters using Report Formatter[406] and the Page Setup[399] 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[20] page.

See also:

Using Navigation bar and Toolbars[371]

Grid View[374]

Form View[396]

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BLOB View 423
Applying changes 431

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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[372].

Use the following tabs of the **Page Setup** dialog:

- Page[400]
- Margins[402]
- Header/Footer[403]
- Scaling[405]

When you are done, you can click the **Print...** button at the bottom to call the Print[422] dialog.

See also:

Report Formatter[406]

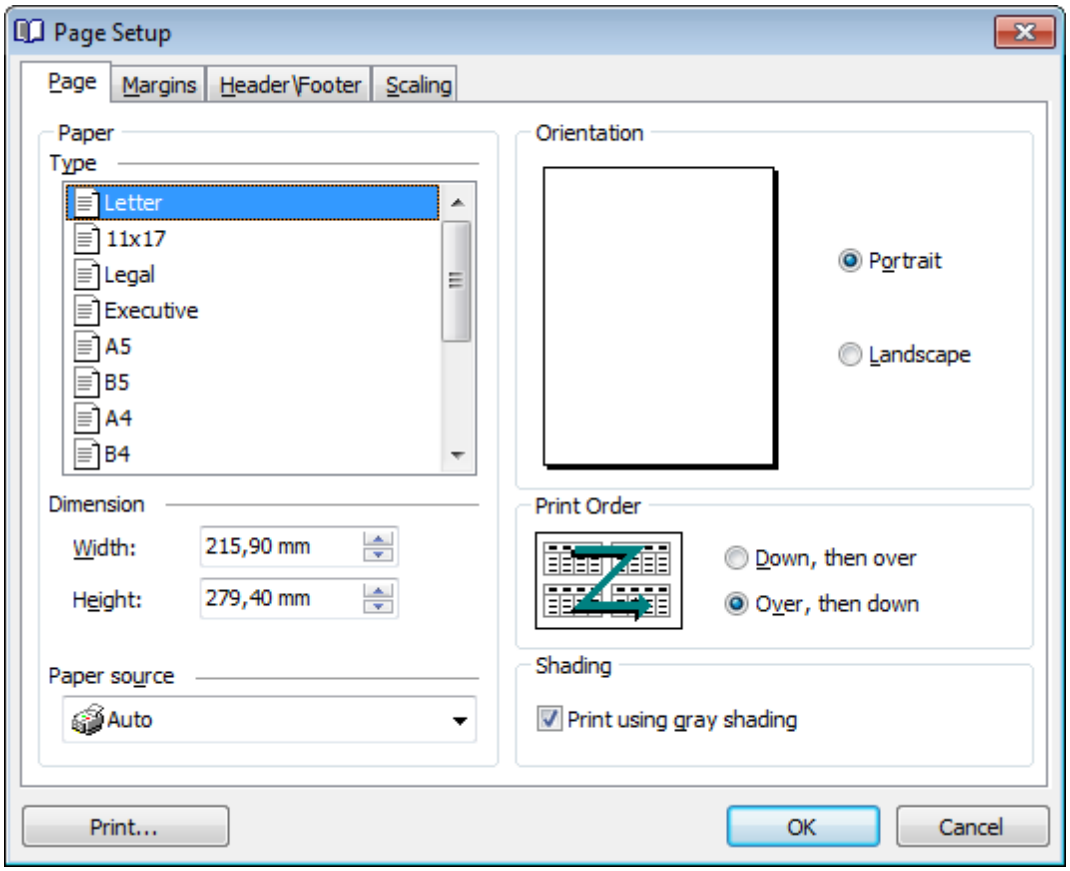
Setting report options[417]

Print dialog[422]

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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 417 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):

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- *Down, then over*
- *Over, then down*

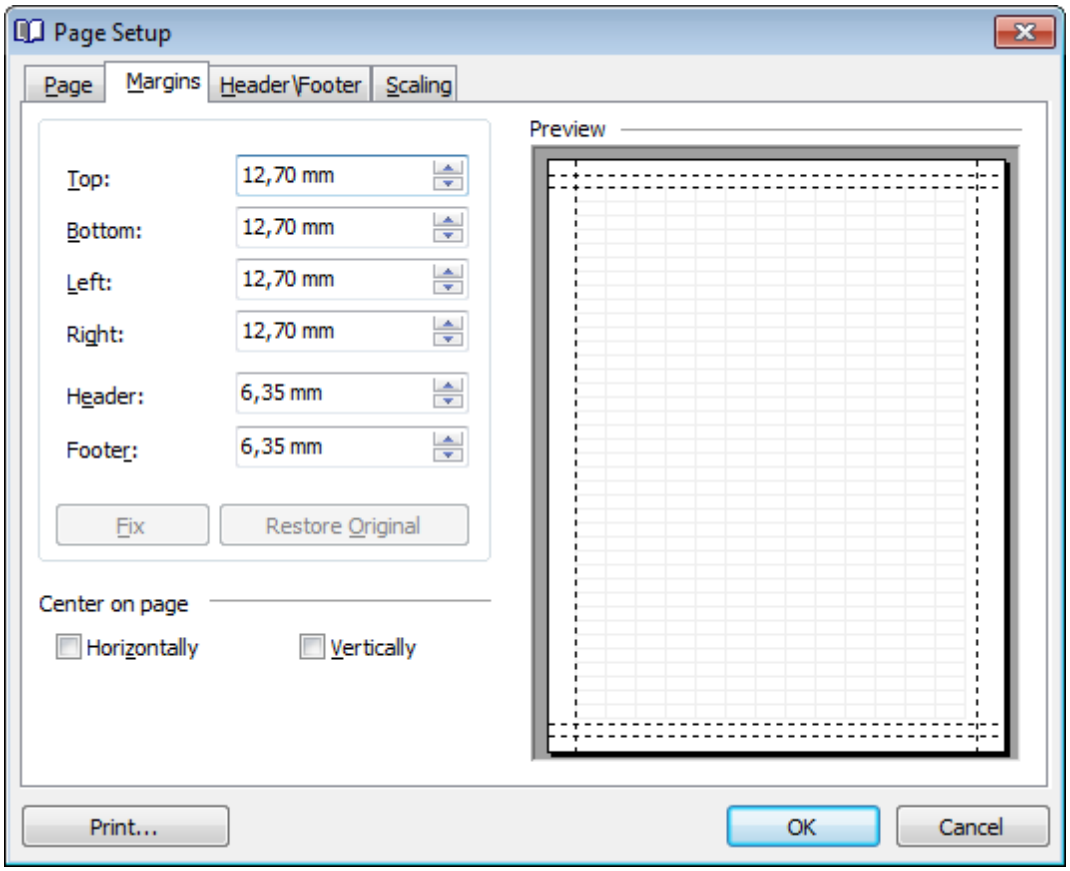
Shading

Print using gray shading
If this option is selected, gray shading (along with black and white) will be used for printing the report.

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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 417 dialog). The **Preview** area on the right illustrates the changes you have made.

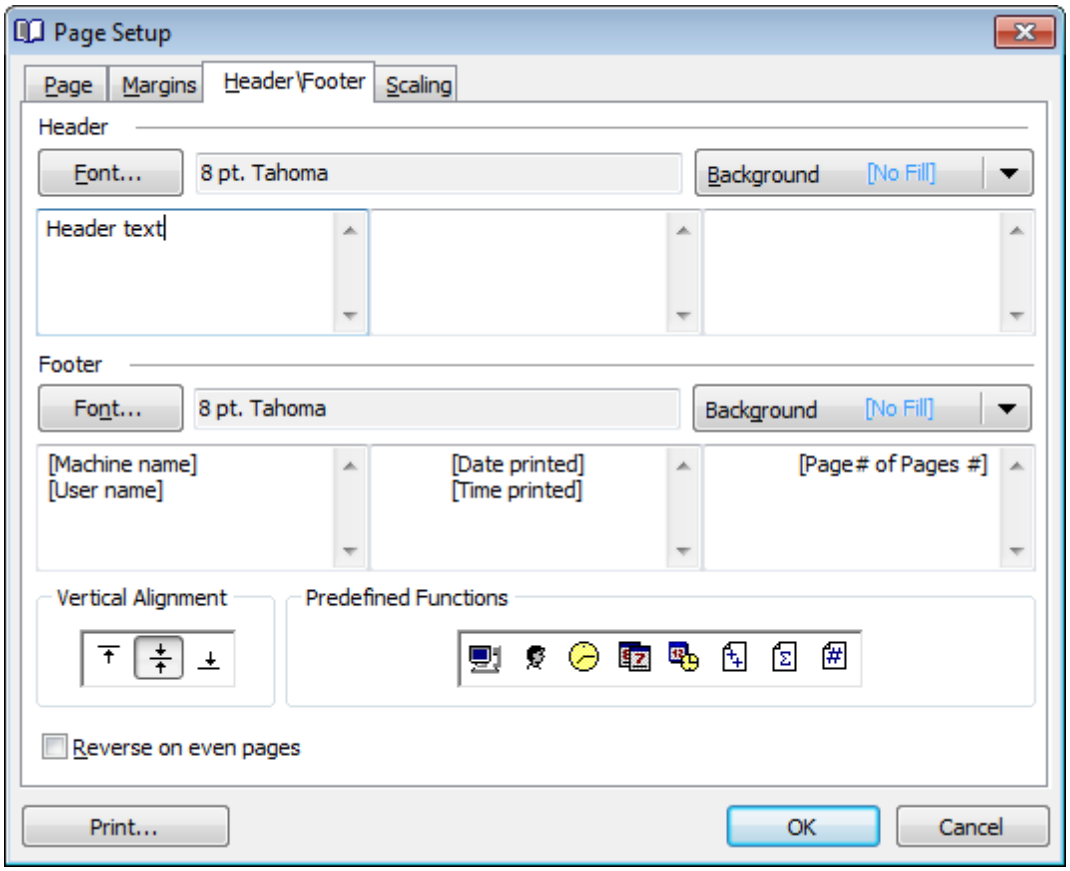
If you have specified an improper value, you can click the **Fix** button to correct it.
To restore the default size values, click the **Restore Original** button.

Center on page
This group allows you to specify whether the text should be centered **horizontally** and/or **vertically** on the page.

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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]

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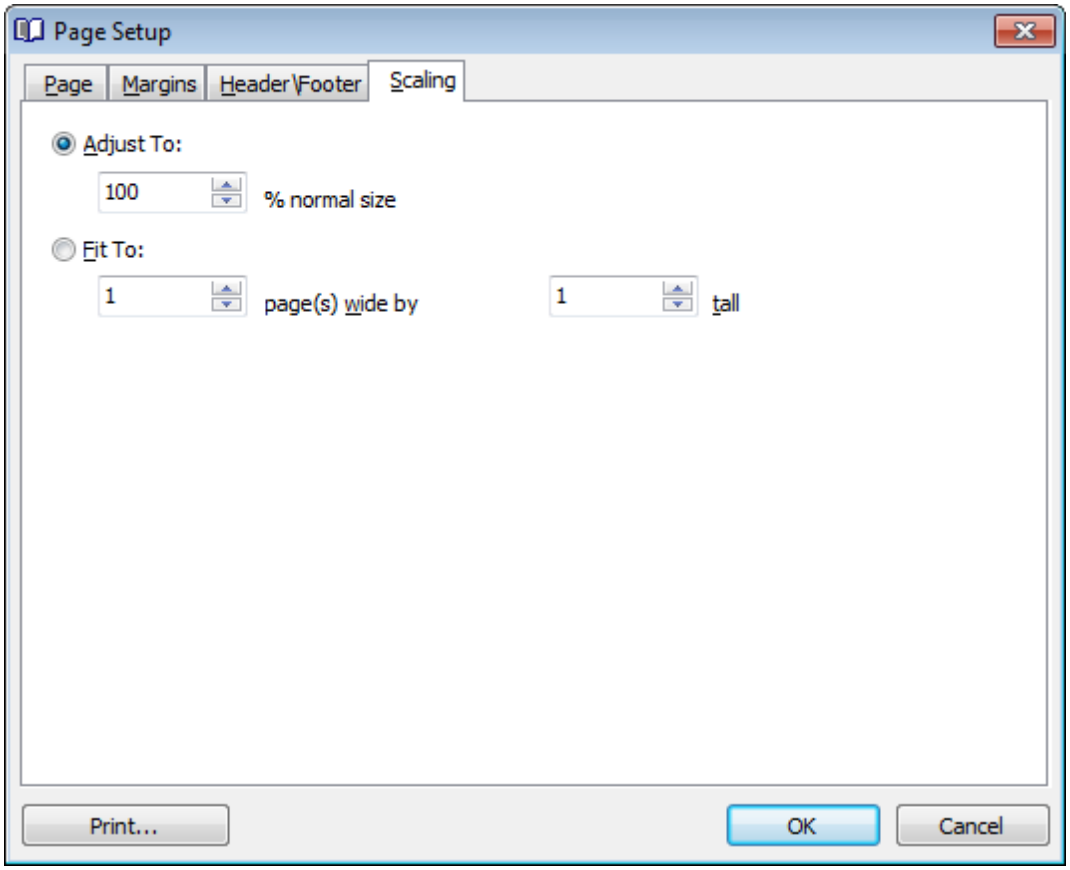
[Date Printed]
[Date & Time Printed]
[Page # of Pages #]
[Total Pages]
[Page #]

Reverse on even pages
If this option is selected, the header and footer text will be reversed on even pages of the printing report.

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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.

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7.1.4.2 Report Formatter

Report Formatter allows you to specify a number of settings pertaining to the printing form of the report.

To open the tool, click the  **Design Report** button available on the toolbar[372], or use the *Ctrl+D* shortcut[942].

Use the following tabs of the **Format Report** dialog:

- View[407]
- Behaviors[408]
- Formatting[409]
- Styles[411]
- Preview[413]
- Cards[414]
- Charts[416]

The **Title Properties...** button allows you to customize the report title using the Report Title[417] dialog.

See also:

Page Setup[399]

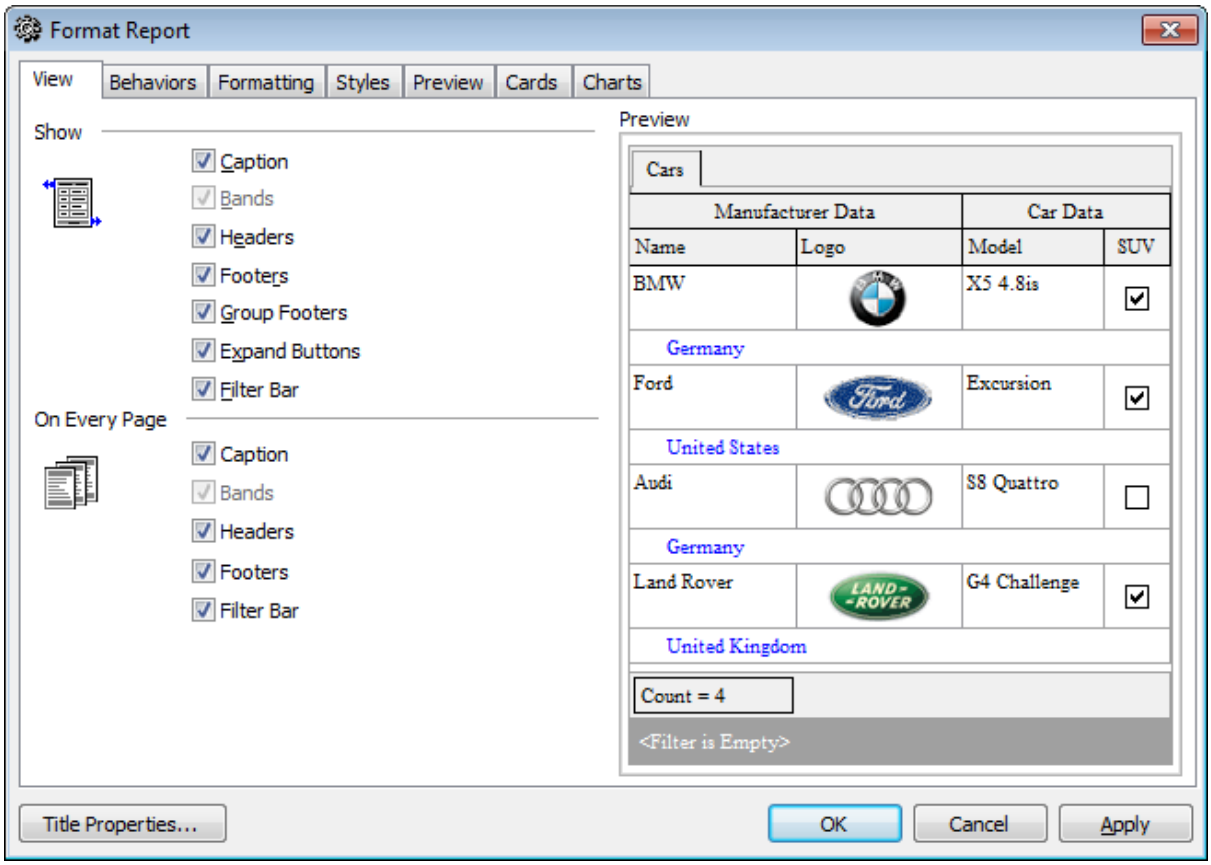
Setting report options[417]

Print dialog[422]

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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.



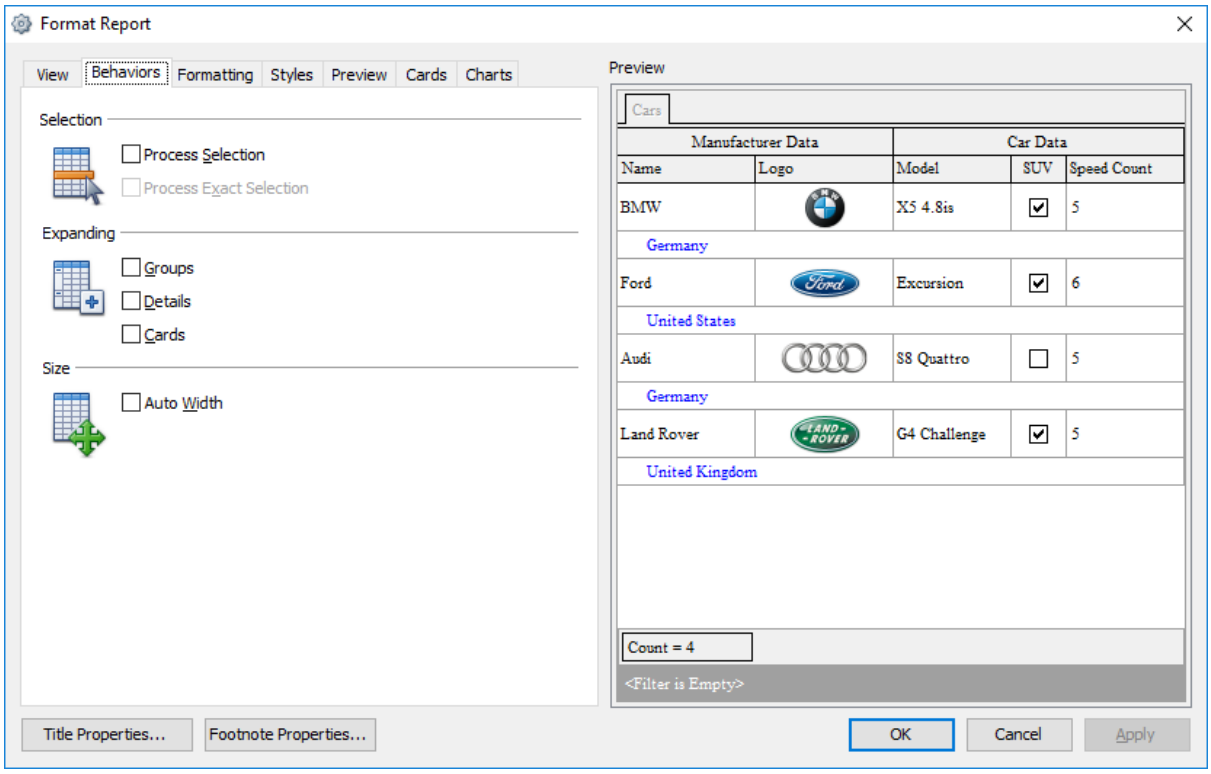
Tick off the elements to **show** in the report (*caption*, *bands*, *headers*, *footers*, *group footers*, *expand buttons*, *filter bar*) and **on every page** of the report (*caption*, *bands*, *headers*, *footers*, *filter bar*).

The **Preview** area on the right illustrates the changes you have made.

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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

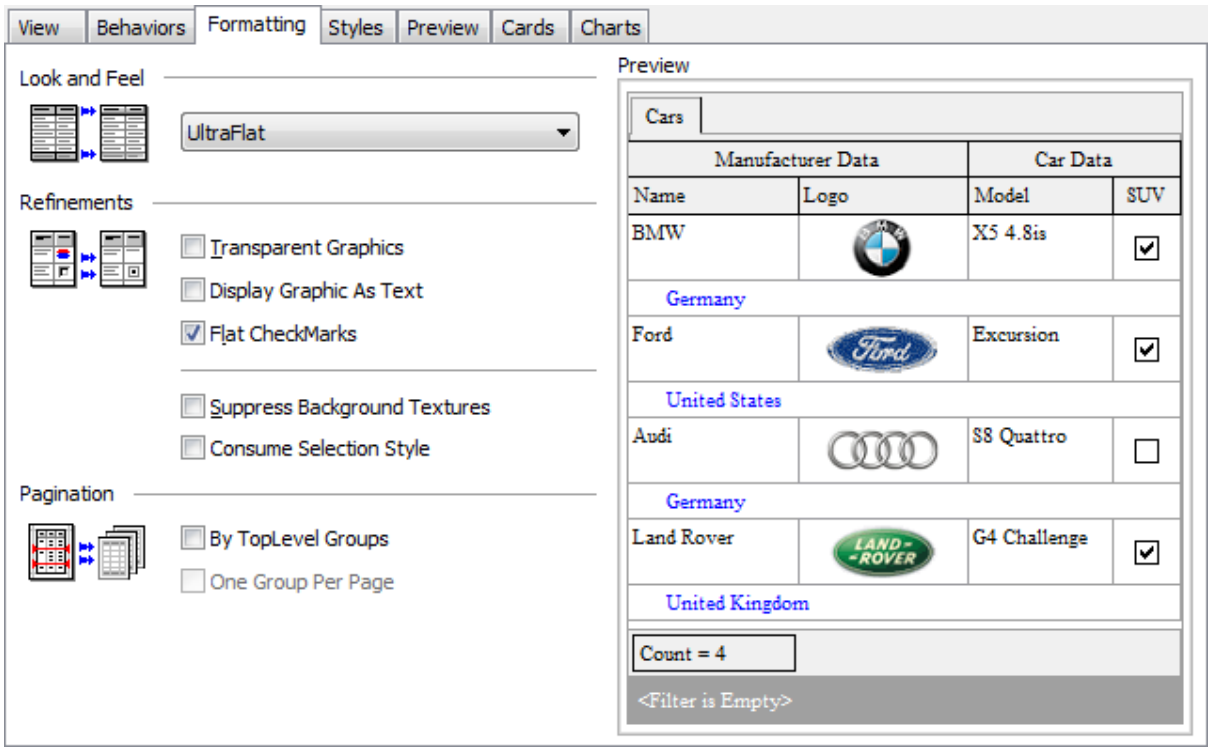
Auto Width
If this option is selected, the table will be resized automatically to fit the page by width.

The **Preview** area on the right illustrates the changes you have made.

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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**.

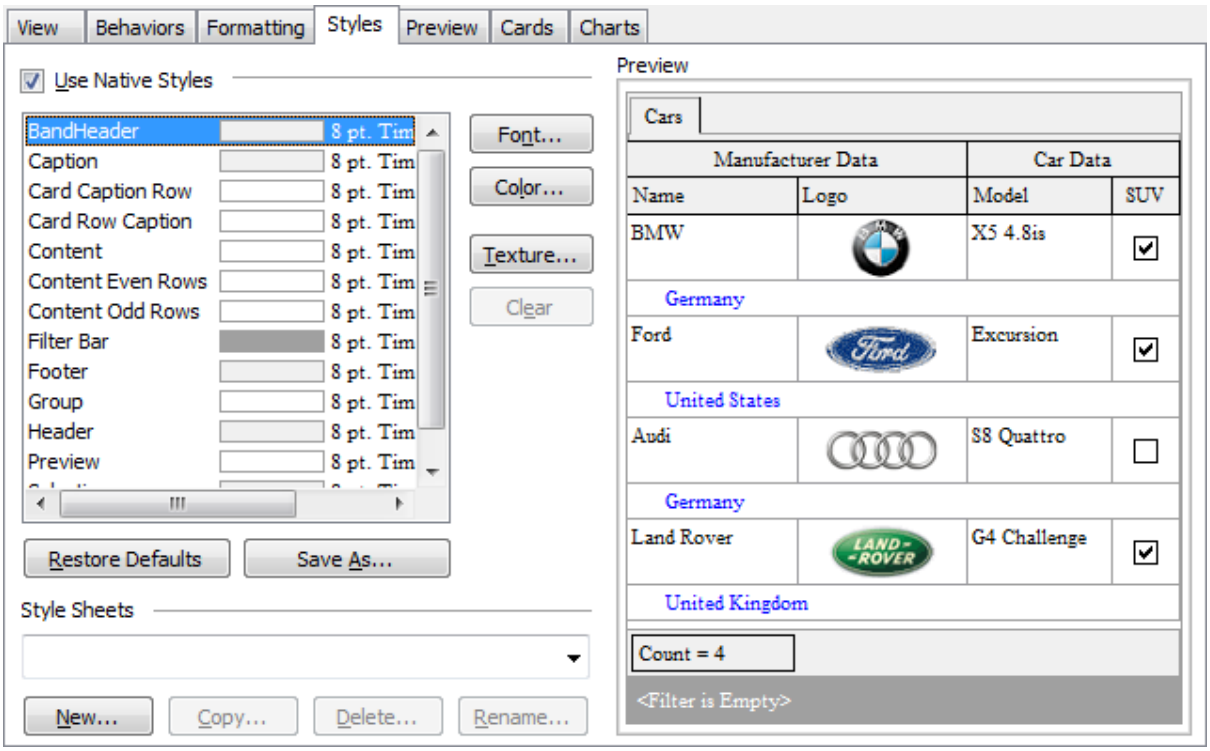
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The **Preview** area on the right illustrates the changes you have made.

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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.

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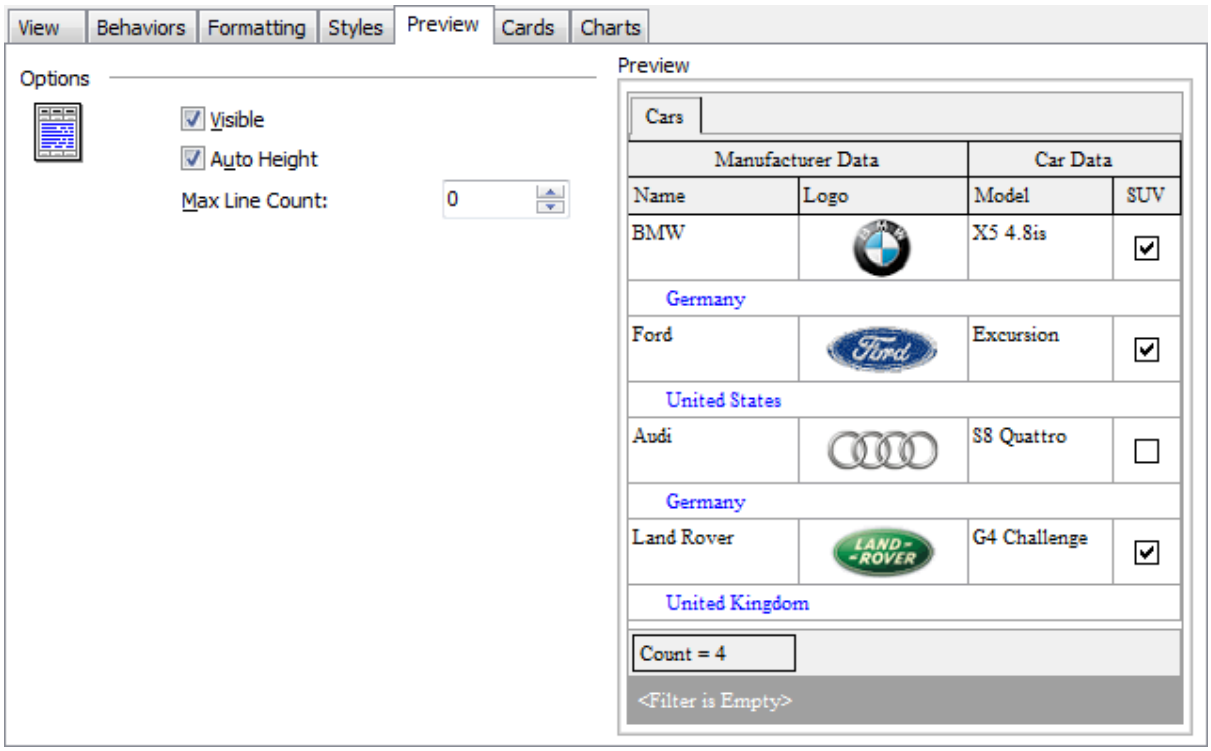
Style Sheets
Use the drop-down menu to select the style sheet you need. To manage the style sheets, use the corresponding buttons below: **New...**, **Copy...**, **Delete...**, **Rename...**

The **Preview** area on the right illustrates the changes you have made.

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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.

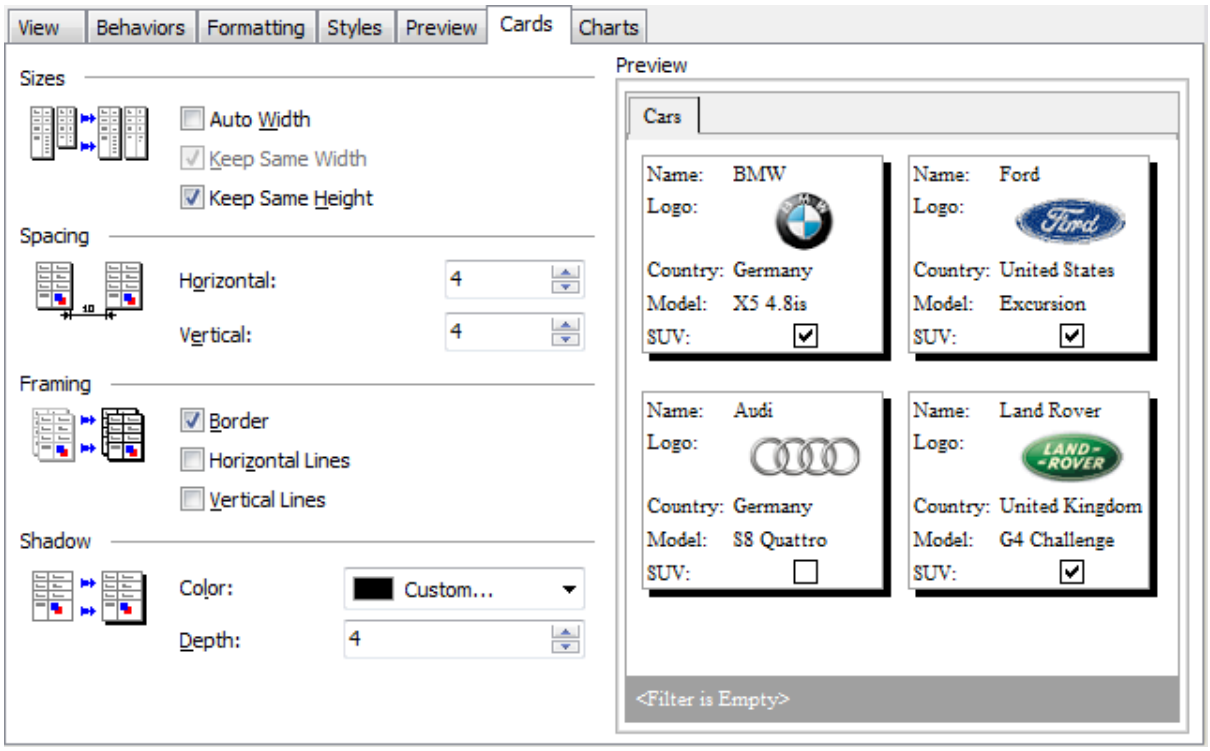
Max line count
Use the spinner control to specify the maximum possible number of lines.

The **Preview** area on the right illustrates the changes you have made.

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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

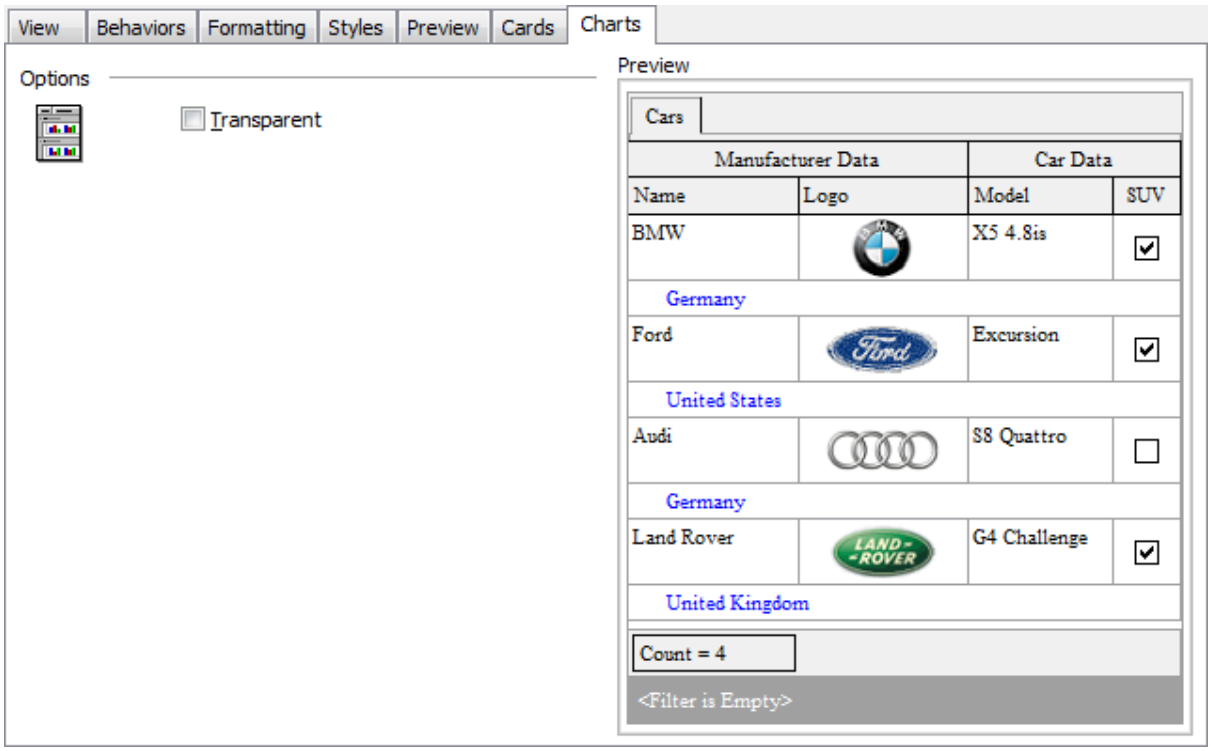
Use the **Color** drop-down list to select the color that will be applied to the card shadows. If necessary, specify the color **depth** using the corresponding spinner control.

The **Preview** area on the right illustrates the changes you have made.

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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.

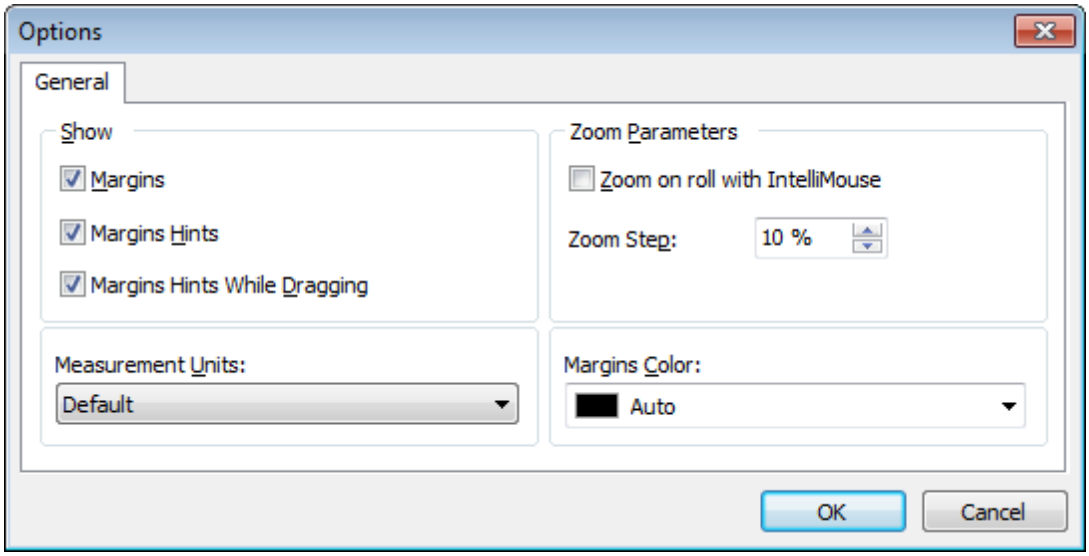
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7.1.4.3 Setting report options

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 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.

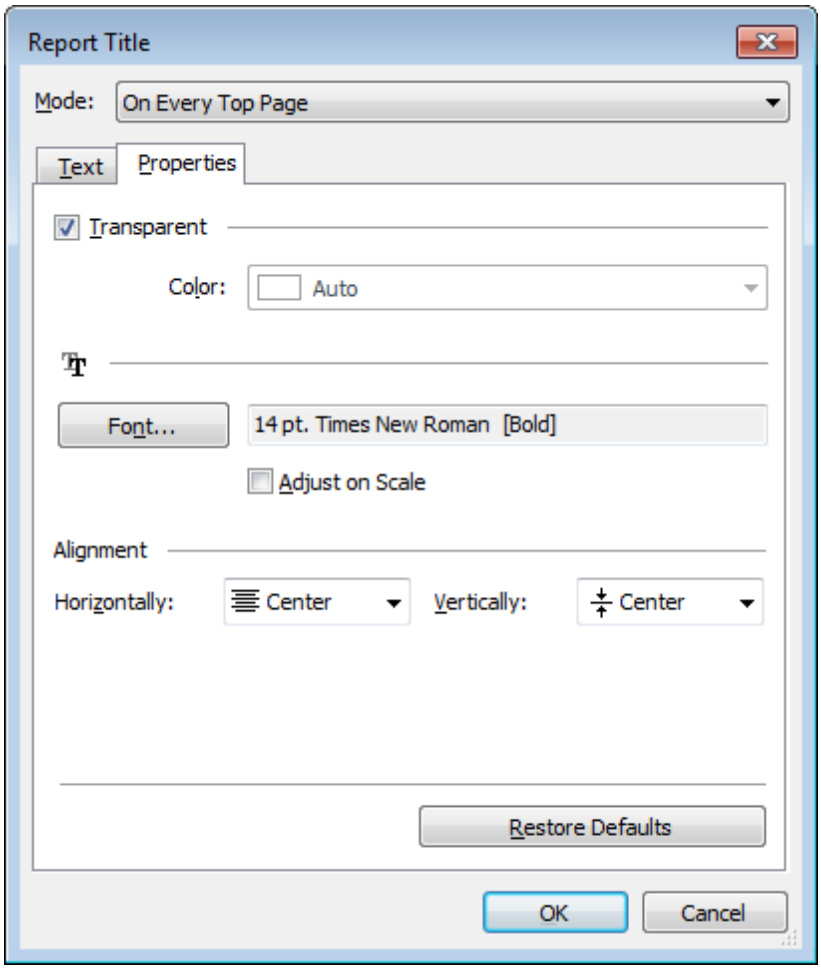
Use the **Margins Color** drop-down list to select the color that will be applied to the report margins.

Report Title dialog

The **Report Title** dialog allows you to specify the report title text and properties.

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To open the dialog, use the **Title...** button available on the toolbar[372].



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.

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Adjust on scale
If this option is selected, the title can be adjusted on scale.

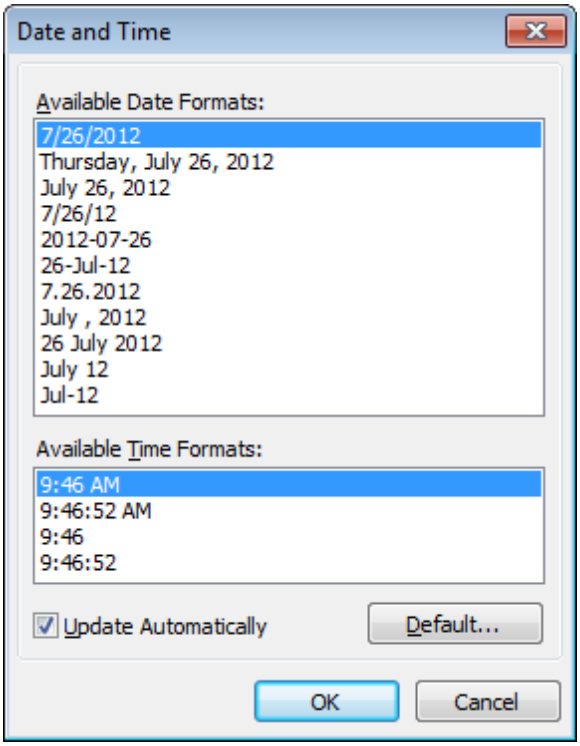
Alignment
Use the **Horizontally** drop-down list to select the type of horizontal alignment to be applied to the report title: *Left*, *Center*, or *Right*.
Use the **Vertically** drop-down list to select the type of vertical alignment to be applied to the report title: *Top*, *Center*, or *Bottom*.

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 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*.

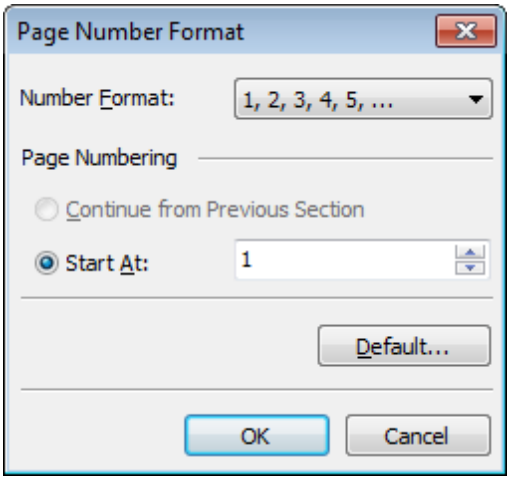
To apply the default date/time format, click the **Default...** button.

Page Number Format dialog

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The **Page Number Format** dialog allows you to specify the formats for page numbers to be used in the report.

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*.

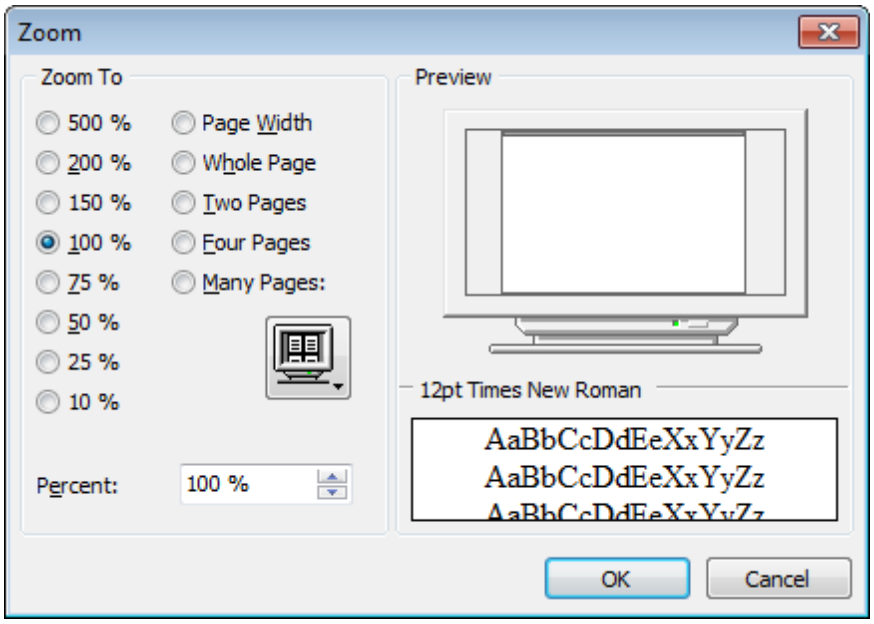
To set the default numbering values, click the **Default...** button.

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.

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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:

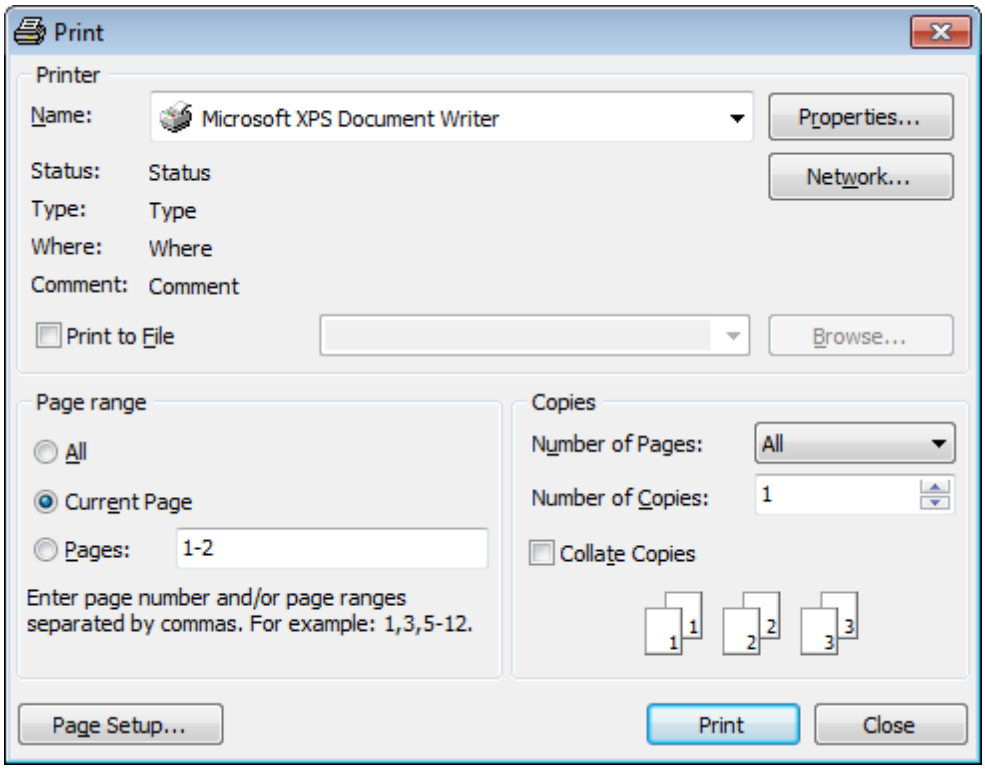
Page Setup 399
Report Formatter 406
Print dialog 422

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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[372], or use the *Ctrl+P* shortcut[942].



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[399] dialog.

See also:

Page Setup[399]

Report Formatter[406]

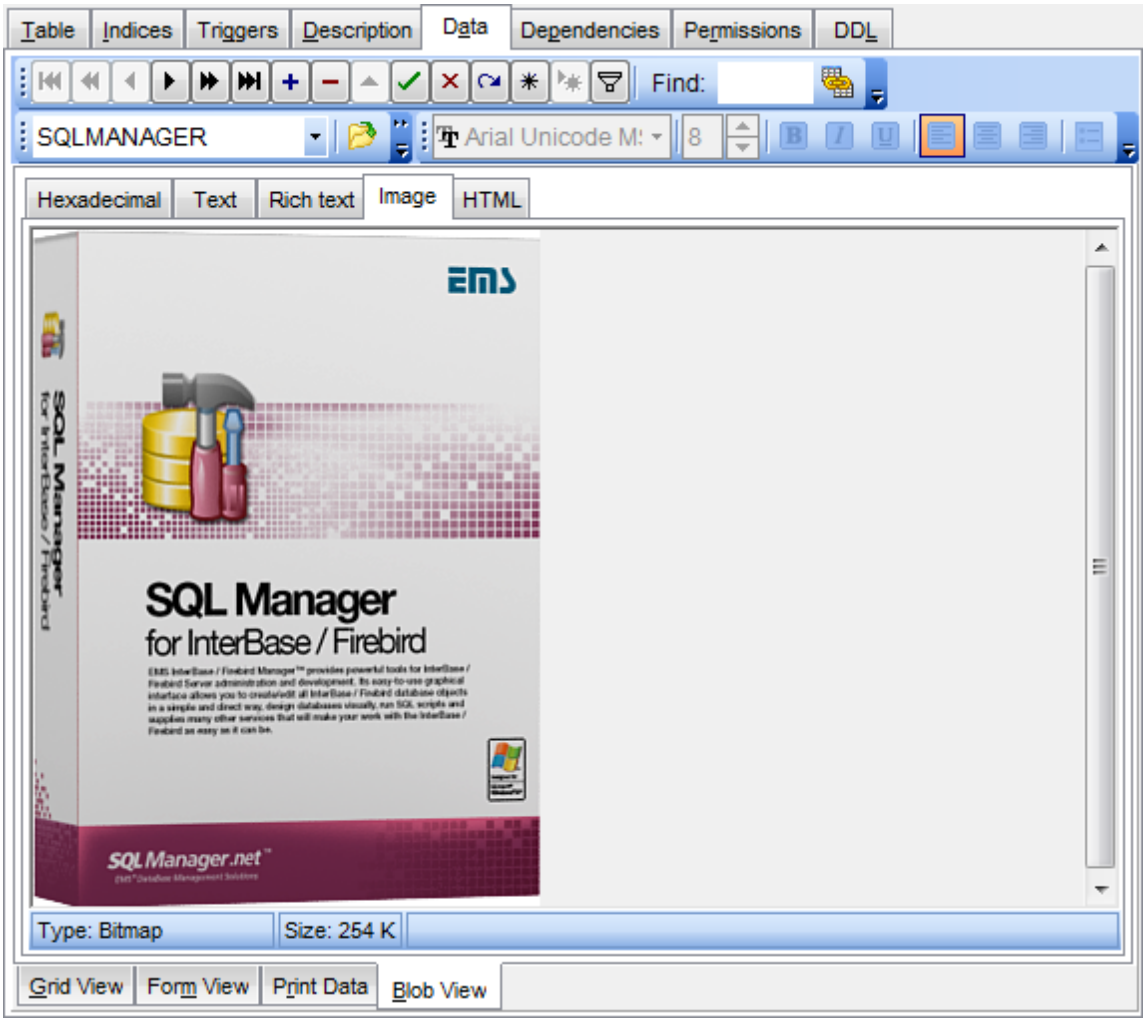
Setting report options[417]

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7.1.5 BLOB View

SQL Manager for InterBase/Firebird 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[185], Query Data[331], Query Designer[348], etc.

- Navigation within the BLOB Viewer/Editor[425]
- Viewing/Editing BLOB field as Hexadecimal dump[426]
- Viewing/Editing BLOB field as plain Text[427]
- Viewing/Editing BLOB field as Rich Text (RTF)[428]
- Viewing/Editing BLOB field as Image[429]
- Viewing/Editing BLOB field as HTML[430]



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[20] page.

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See also:

Using Navigation bar and Toolbars 371
Grid View 374
Form View 396
Print Data 397
Applying changes 431

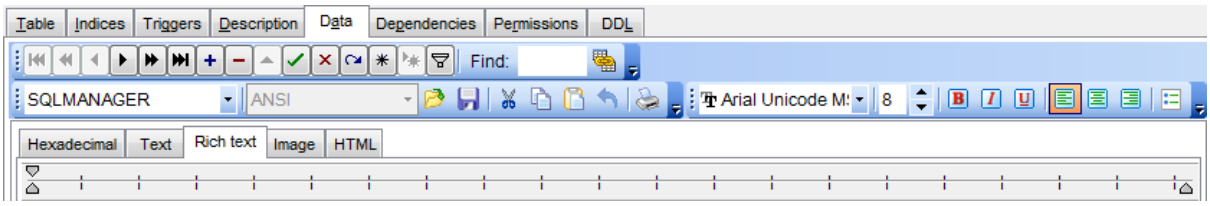
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7.1.5.1 Navigation within BLOB Editor

The **BLOB Viewer/Editor** provides an ability to navigate within the records using **DB Navigation** buttons on the navigation pane[371] at the top of the viewer window.

Using items of the navigation pane[371] 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[434] dialog, load new BLOB content and save the current content to files.

The toolbar[372] 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[426]
Editing as Text[427]
Editing as Rich Text[428]
Editing as Image[429]
Editing as HTML[430]

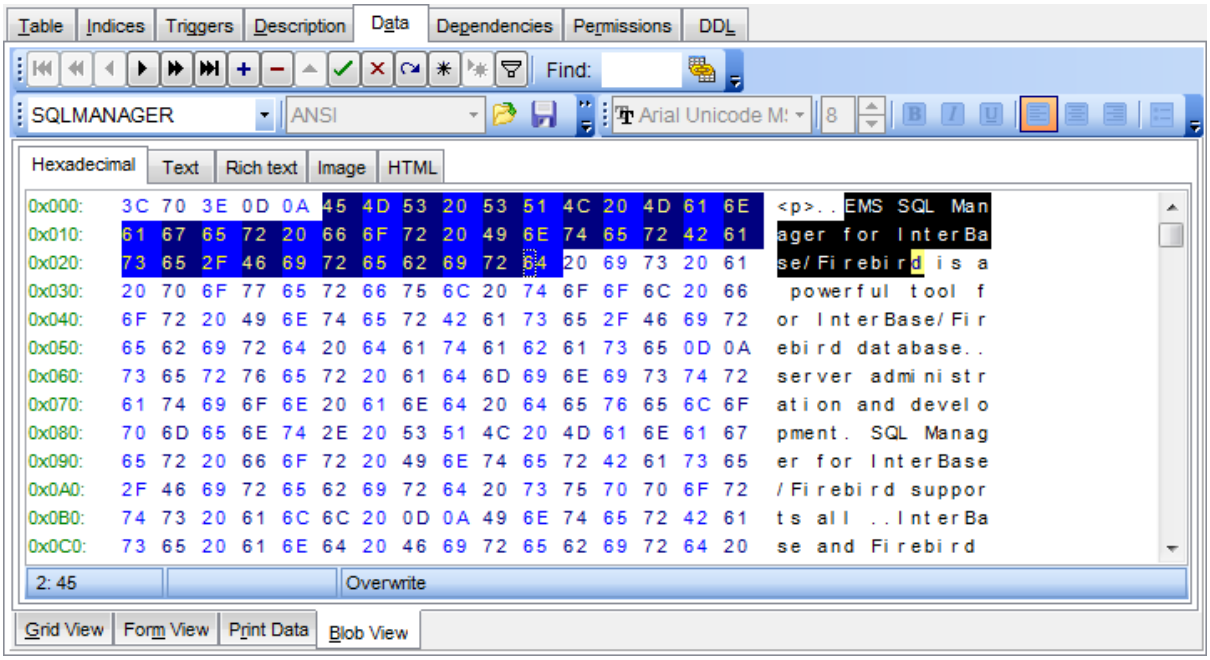
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7.1.5.2 Editing as Hexadecimal

The **Hexadecimal** tab allows you to view/edit the BLOB data as hexadecimal.

The toolbar[372] 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.



See also:

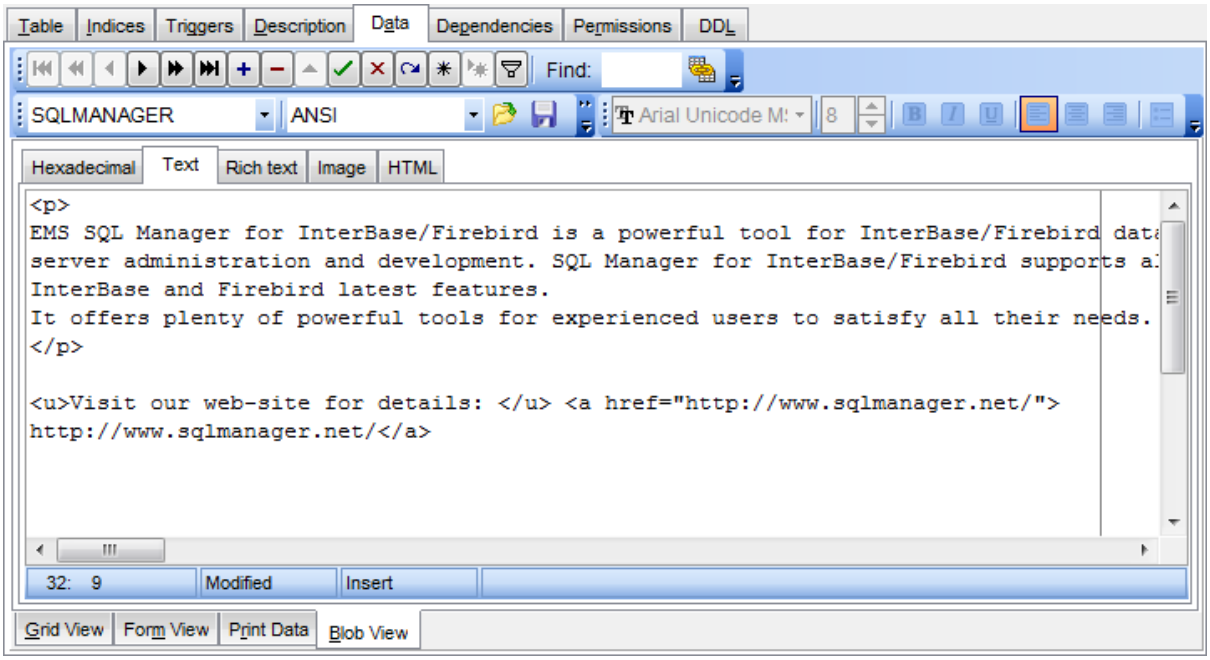
Navigation within BLOB Editor[425]
Editing as Text[427]
Editing as Rich Text[428]
Editing as Image[429]
Editing as HTML[430]

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7.1.5.3 Editing as Text

The **Text** tab allows you to view/edit the BLOB data as plain text.

The toolbar[372] 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:

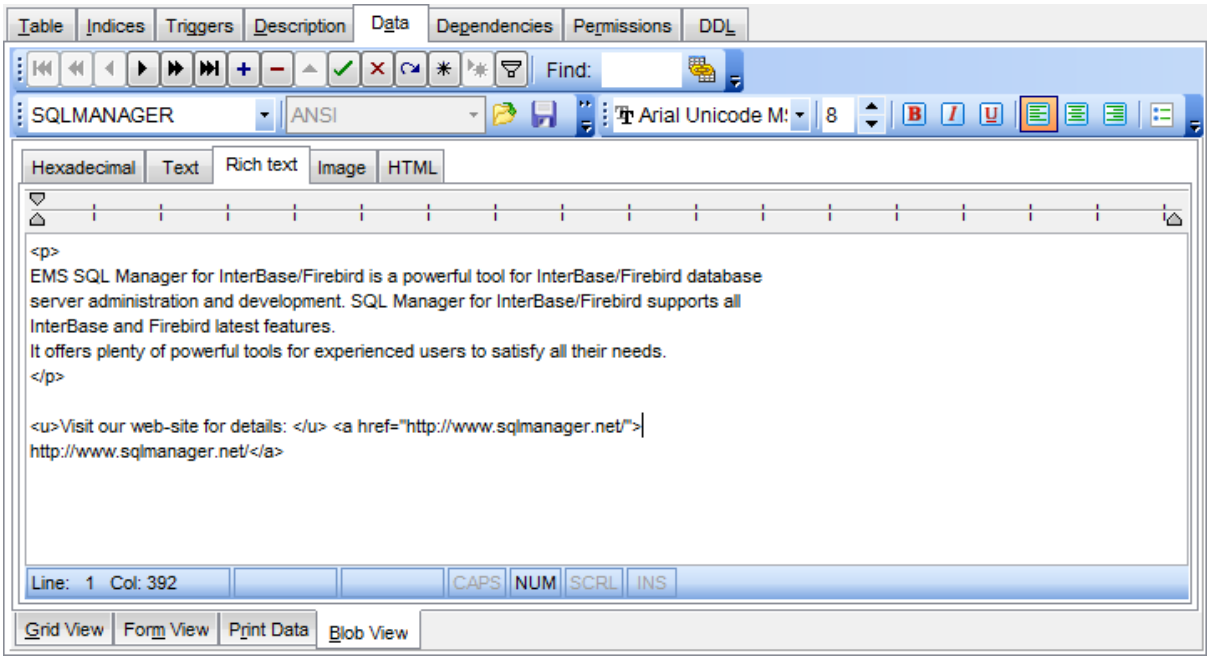
Navigation within BLOB Editor[425]
Editing as Hexadecimal[426]
Editing as Rich Text[428]
Editing as Image[429]
Editing as HTML[430]

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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[372] 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.



See also:

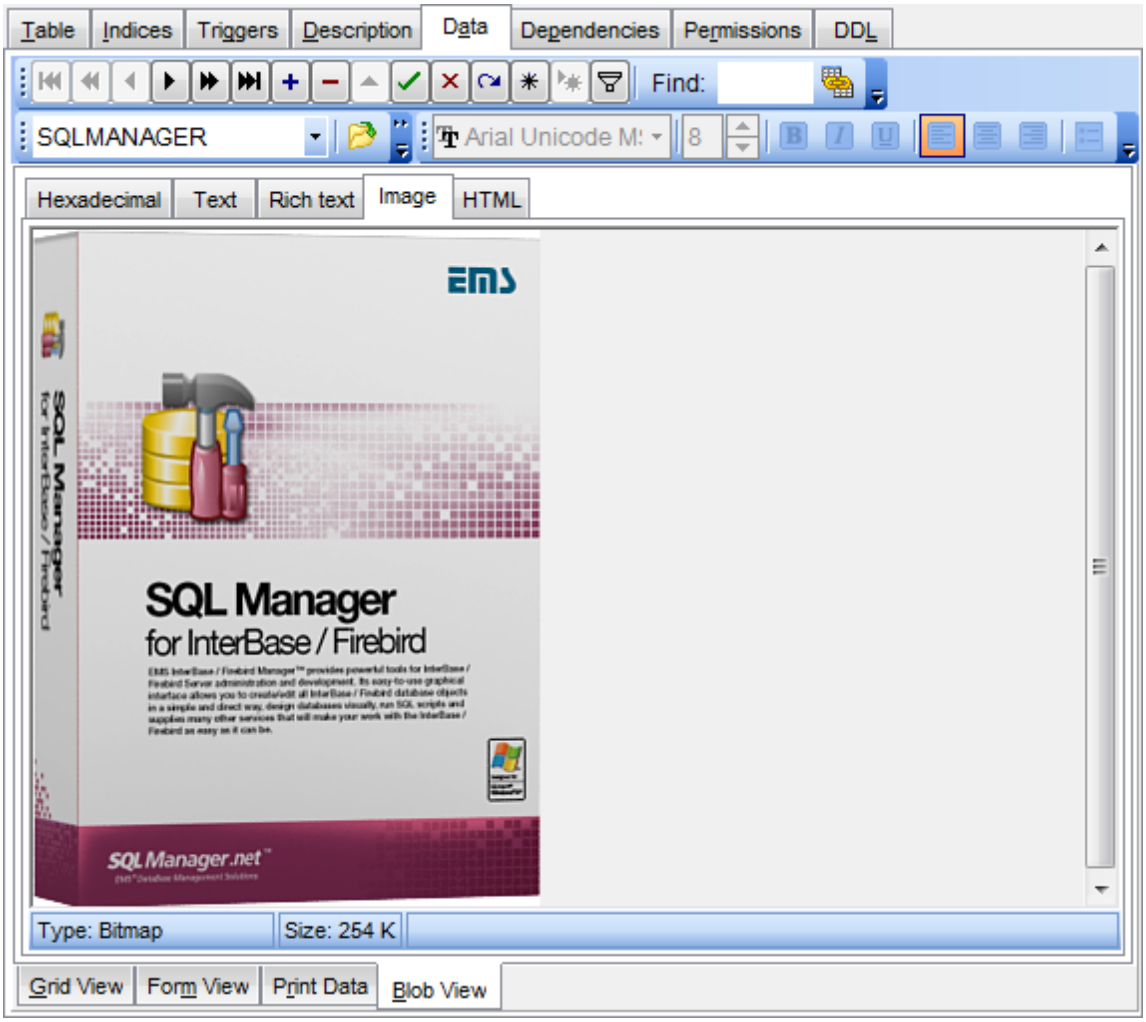
Navigation within BLOB Editor[425]
Editing as Hexadecimal[426]
Editing as Text[427]
Editing as Image[429]
Editing as HTML[430]

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7.1.5.5 Editing as Image

The **Image** tab allows you to view the BLOB data as image.

The toolbar[372] 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* or **.jpg* file, or load an image from a file.



See also:

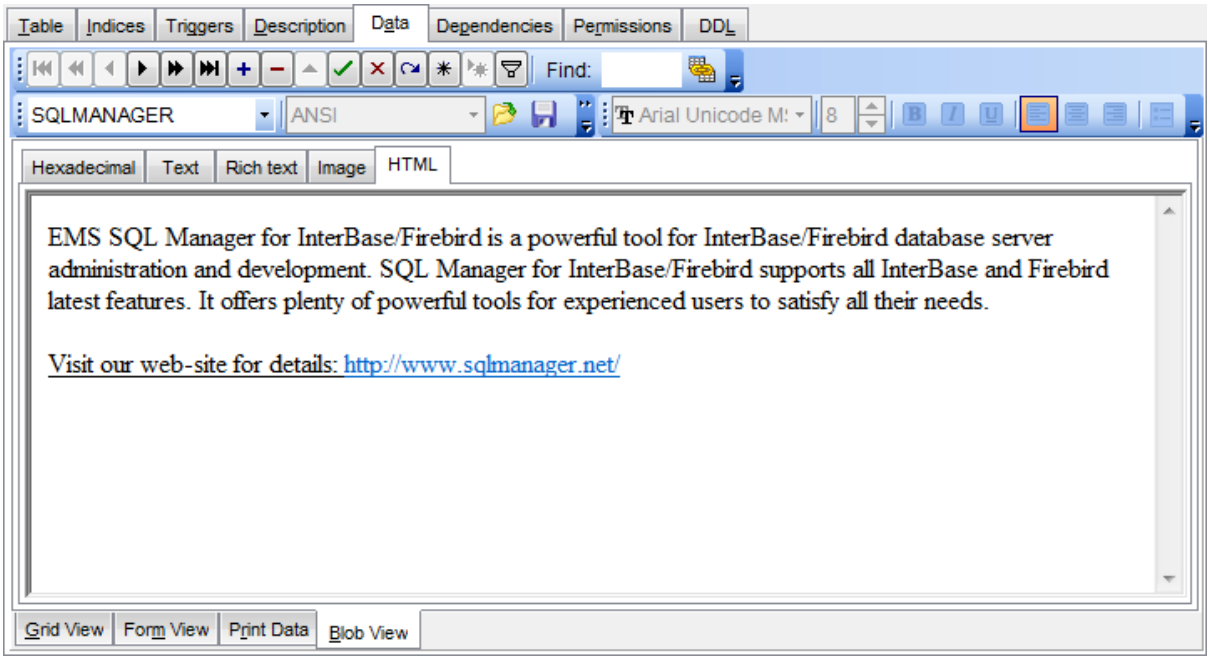
Navigation within BLOB Editor[425]
Editing as Hexadecimal[426]
Editing as Text[427]
Editing as Rich Text[428]
Editing as HTML[430]

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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[372] 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.



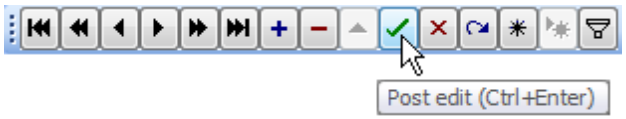
See also:

Navigation within BLOB Editor[425]
Editing as Hexadecimal[426]
Editing as Text[427]
Editing as Rich Text[428]
Editing as Image[429]

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7.1.6 Applying changes

After changes are done, click the **Post Edit** button on the navigation pane[371] to apply the changes or the **Cancel Edit** button to discard the changes.



See also:

Using Navigation bar and Toolbars[371]
Grid View[374]
Form View[396]
Print Data[397]
BLOB View[423]

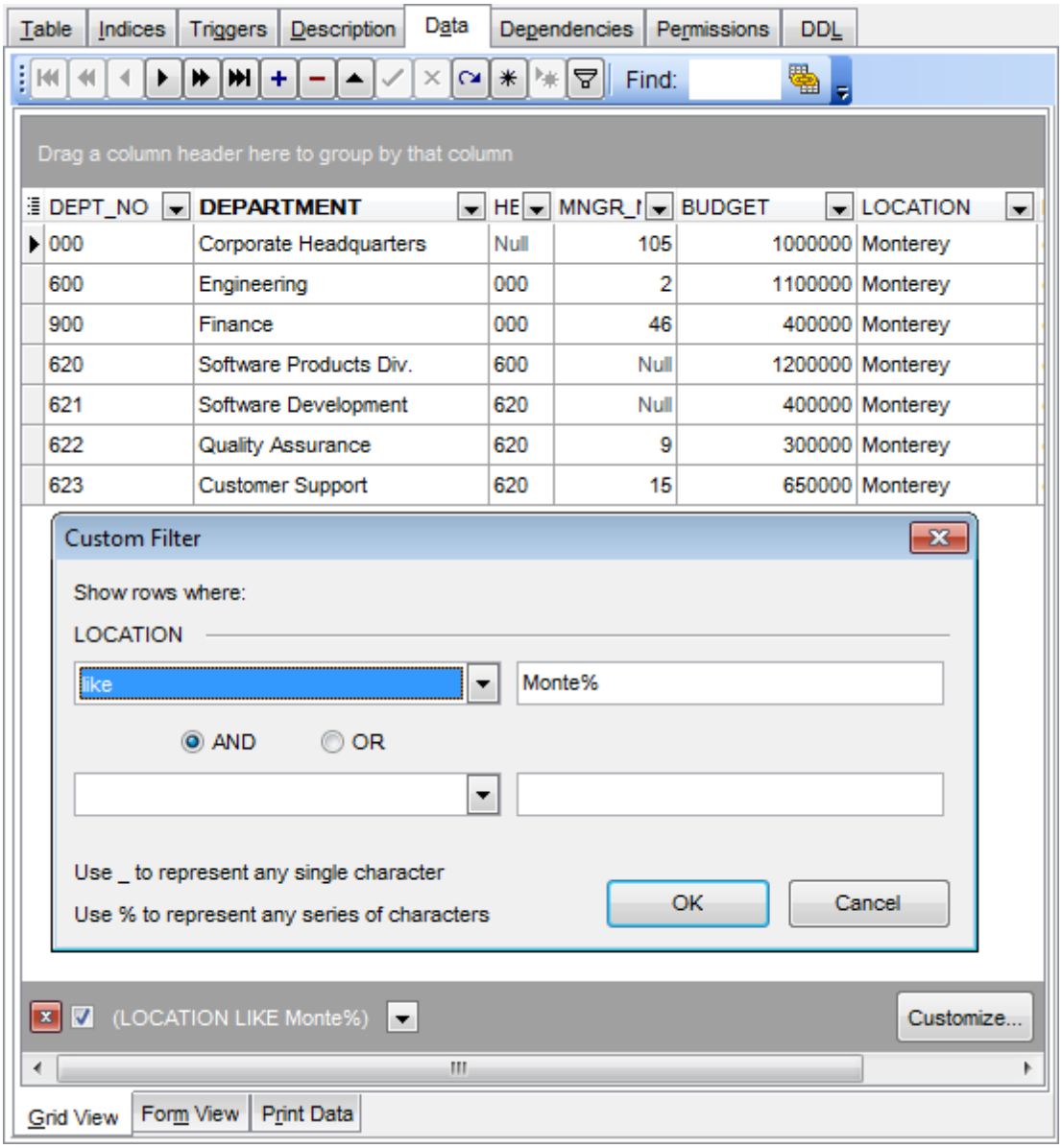
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7.2 Custom Filter

The **Custom Filter** dialog is one of the filtering 380 facilities implemented in Data View 370 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

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any series of symbols in the condition string.

See also:

Data View 370

Filter Builder dialog 434

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7.3 Filter Builder dialog

The **Filter Builder** dialog is a powerful filtering[380] tool implemented in Data View[370] 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[200] tab of Table Editor[185] and the **Result(s)** tabs of Query Data[331] and Query Builder[348].

- Invoking the Filter Builder dialog[435]
- Adding a new condition to the filter[436]
- Setting filter criteria[437]
- Setting filter operator[438]
- Setting filter criteria values[439]
- Adding a new group[440]
- Setting group operator[441]
- Applying filter conditions[442]

See also:

Data View[370]

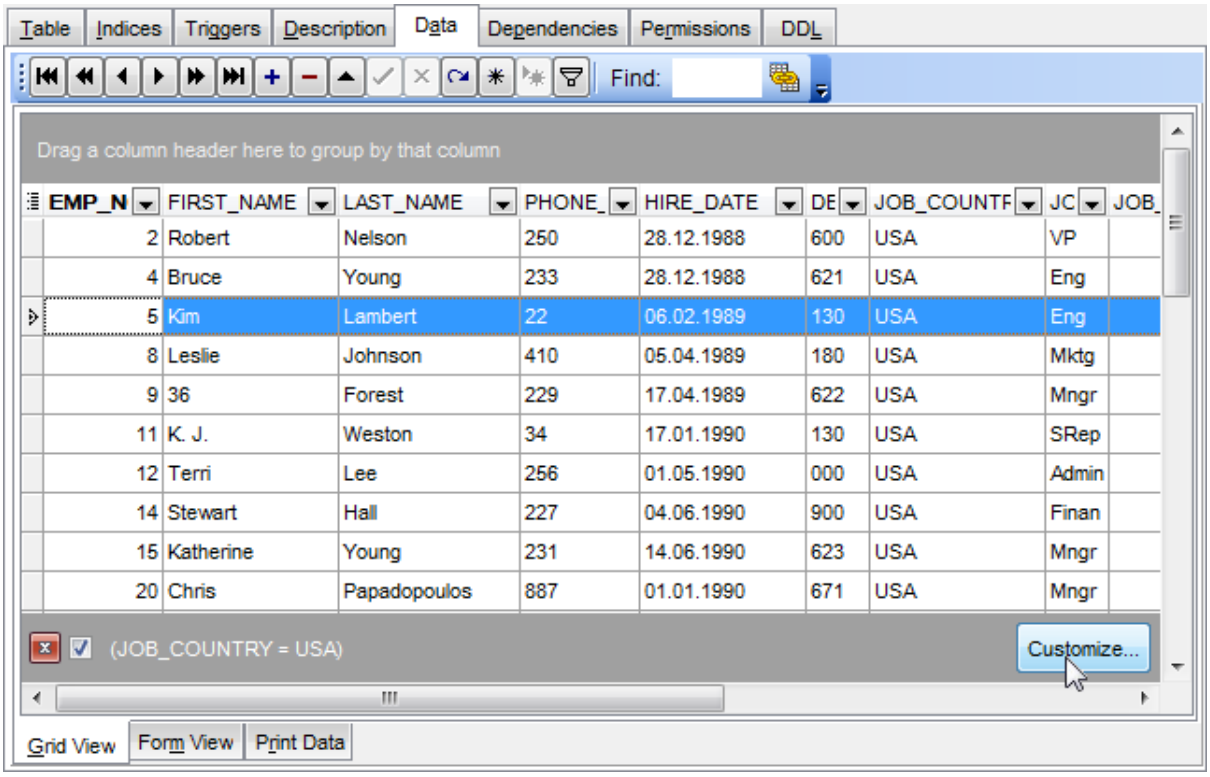
Custom Filter[432]

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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[380] or the Custom Filter[432] is being used, click the **Customize...** button on the gray **filtering panel**;



- use the **Set filter** button on the navigation pane 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:

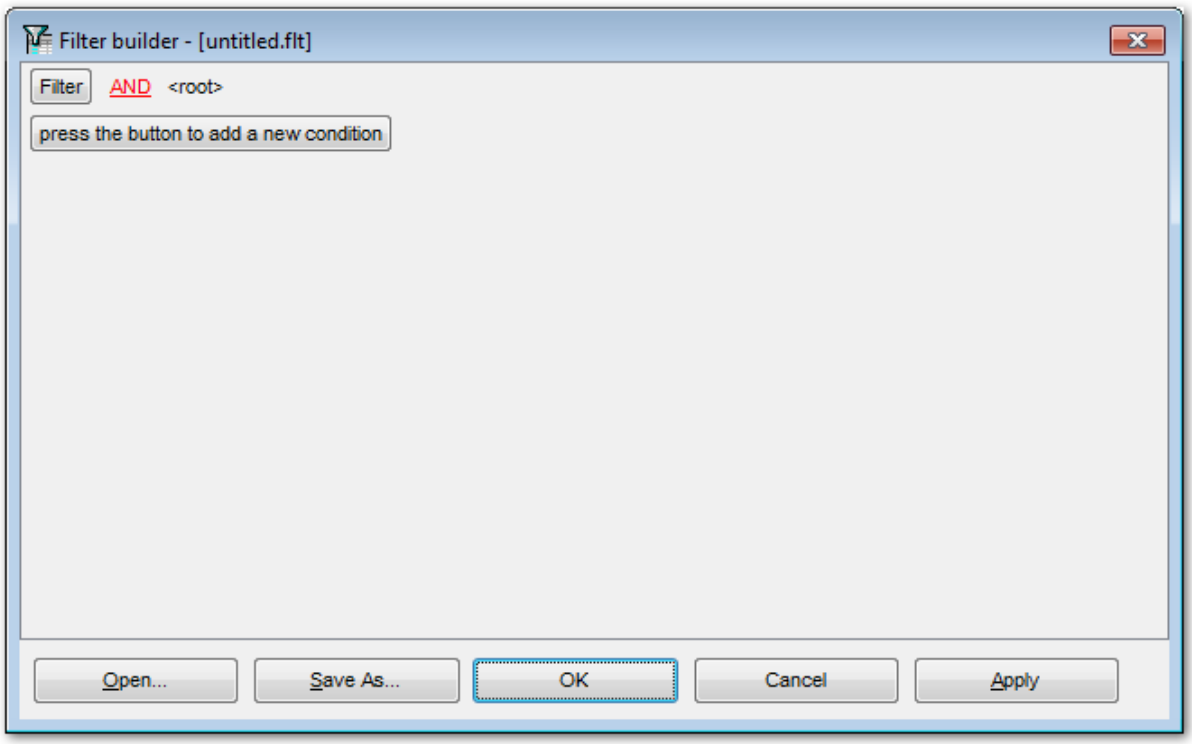
Adding a new condition[436]
Setting filter criteria[437]
Setting filter operator[438]
Setting filter criteria values[439]
Adding a new group[440]
Setting group operator[441]
Applying filter conditions[442]

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7.3.2 Adding a new condition

Suppose we need to select data from the sample table *EMPLOYEE* to view the list of IT specialists hired after 6/15/2009. These criteria are applied to the *HIRE_DATE*, the *DEPT_ID* and the *POSITION* fields.

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.



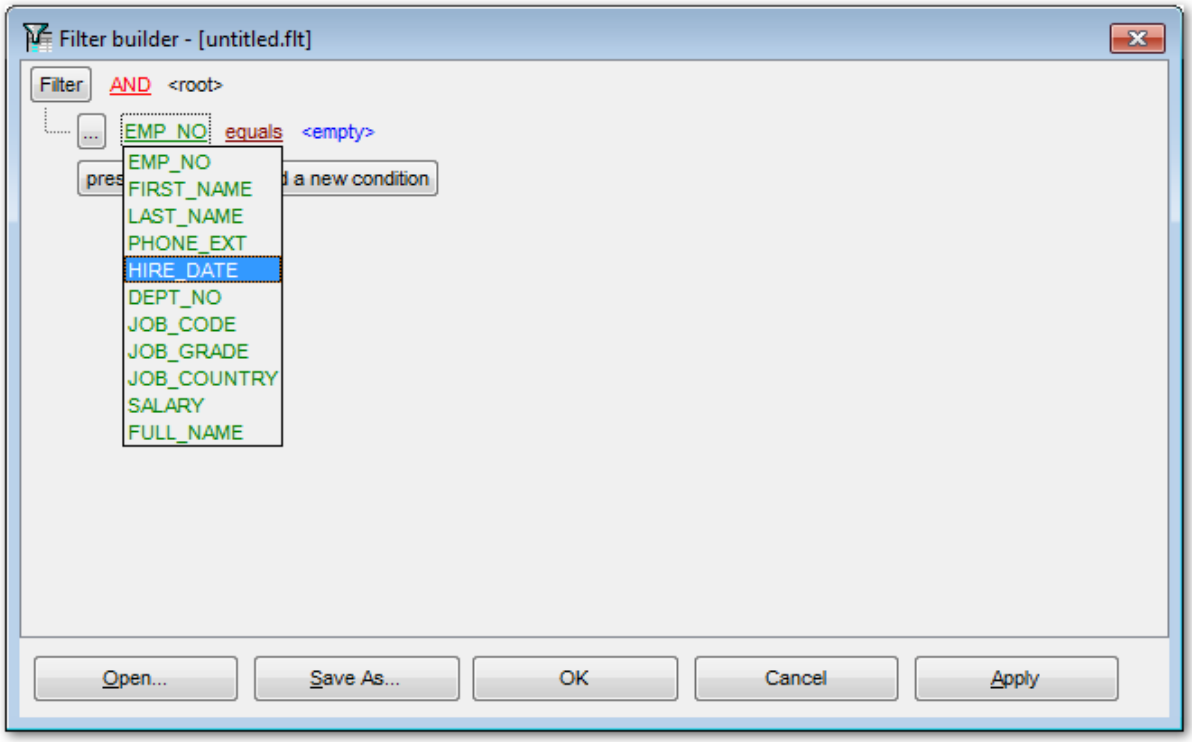
See also:

Invoking the Filter Builder dialog 435
Setting filter criteria 437
Setting filter operator 438
Setting filter criteria values 439
Adding a new group 440
Setting group operator 441
Applying filter conditions 442

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7.3.3 Setting filter criteria

As we need to apply the filter criteria to the *HIRE_DATE* field, we click the column box (next to the ellipsis button) to open the drop-down list displaying the available column names and select the *HIRE_DATE* item.



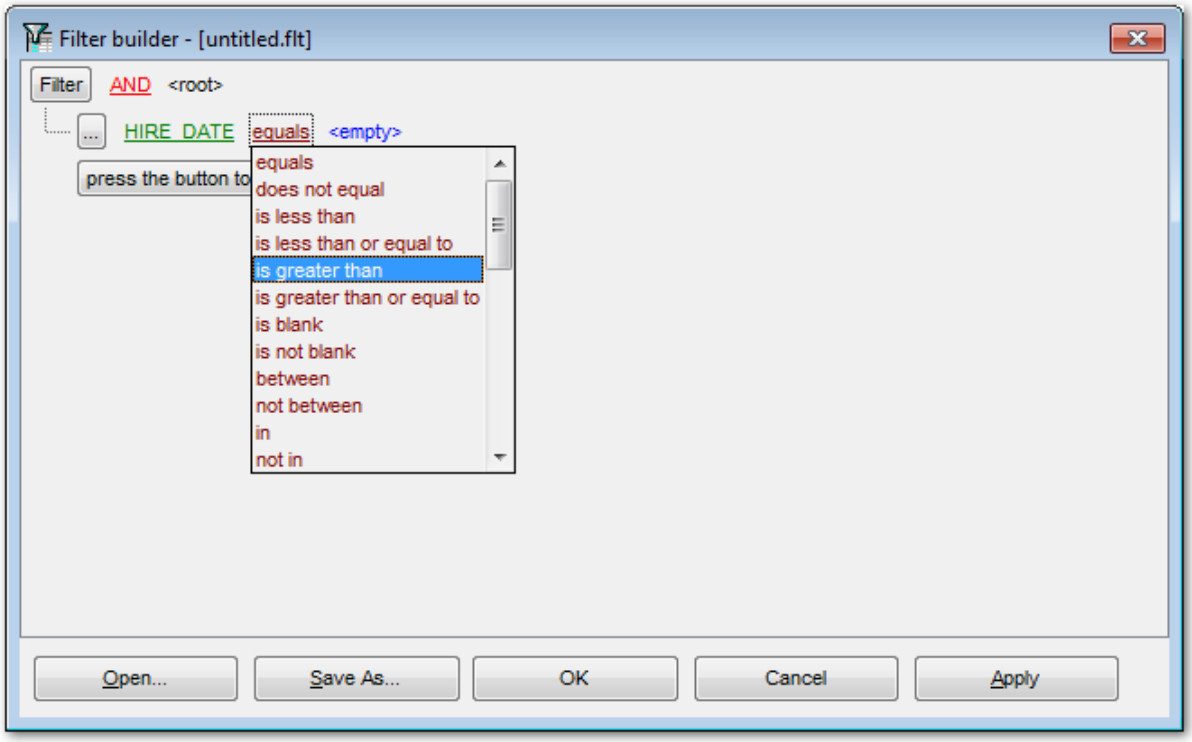
See also:

Invoking the Filter Builder dialog 435
Adding a new condition 436
Setting filter operator 438
Setting filter criteria values 439
Adding a new group 440
Setting group operator 441
Applying filter conditions 442

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7.3.4 Setting filter operator

Since we need the list of employees hired after *6/15/2009*, we need to select the *IS GREATER THAN* operator from the corresponding drop-down list.



See also:

Invoking the Filter Builder dialog 435
Adding a new condition 436
Setting filter criteria 437
Setting filter criteria values 439
Adding a new group 440
Setting group operator 441
Applying filter conditions 442

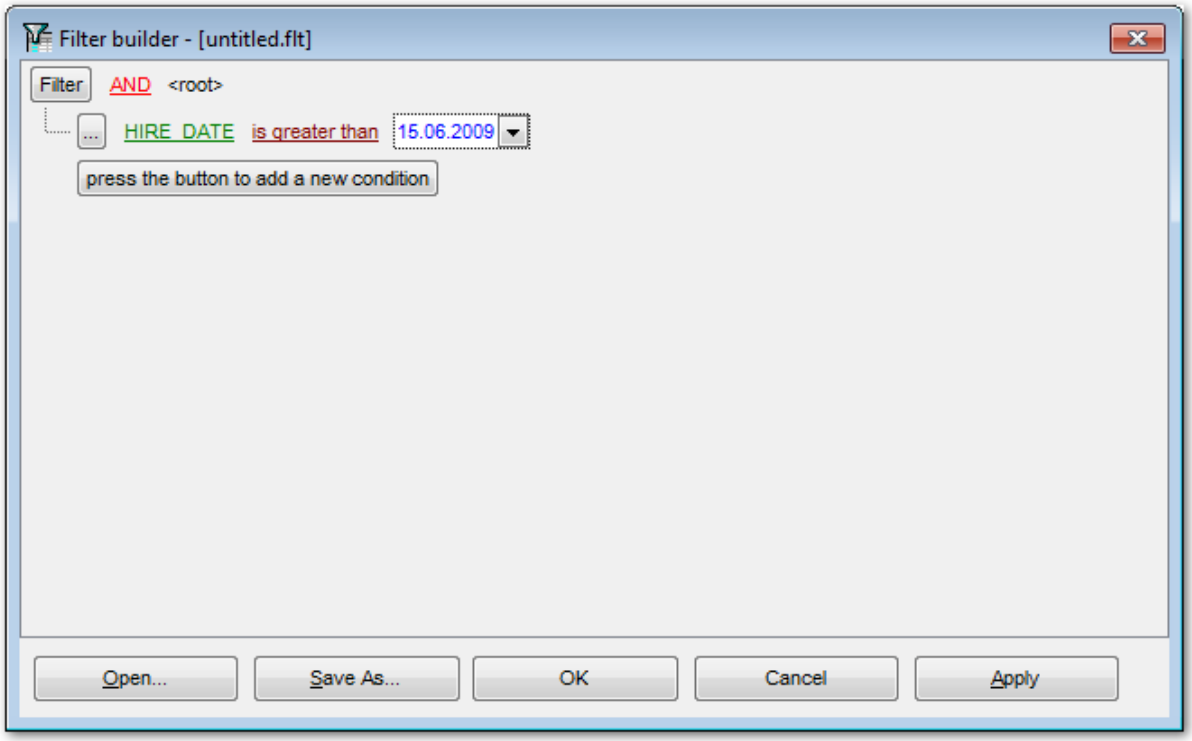
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7.3.5 Setting filter criteria values

Next, we need to specify value *'6/15/2009'* for the *IS GREATER THAN* operator.

Similarly, if, for example, we need to get the list of employees hired during the *6/15/2008 - 6/15/2009* term, we set the *BETWEEN* filter operator[438] (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 *'6/15/2008'* and the *'6/15/2009'* values in the corresponding value boxes.

It is possible to set the date value **manually** by typing it in, or via the **date editor** which is activated when you click the value box.



Editors used in value boxes are determined by the **data type** assigned to the corresponding columns.

See also:

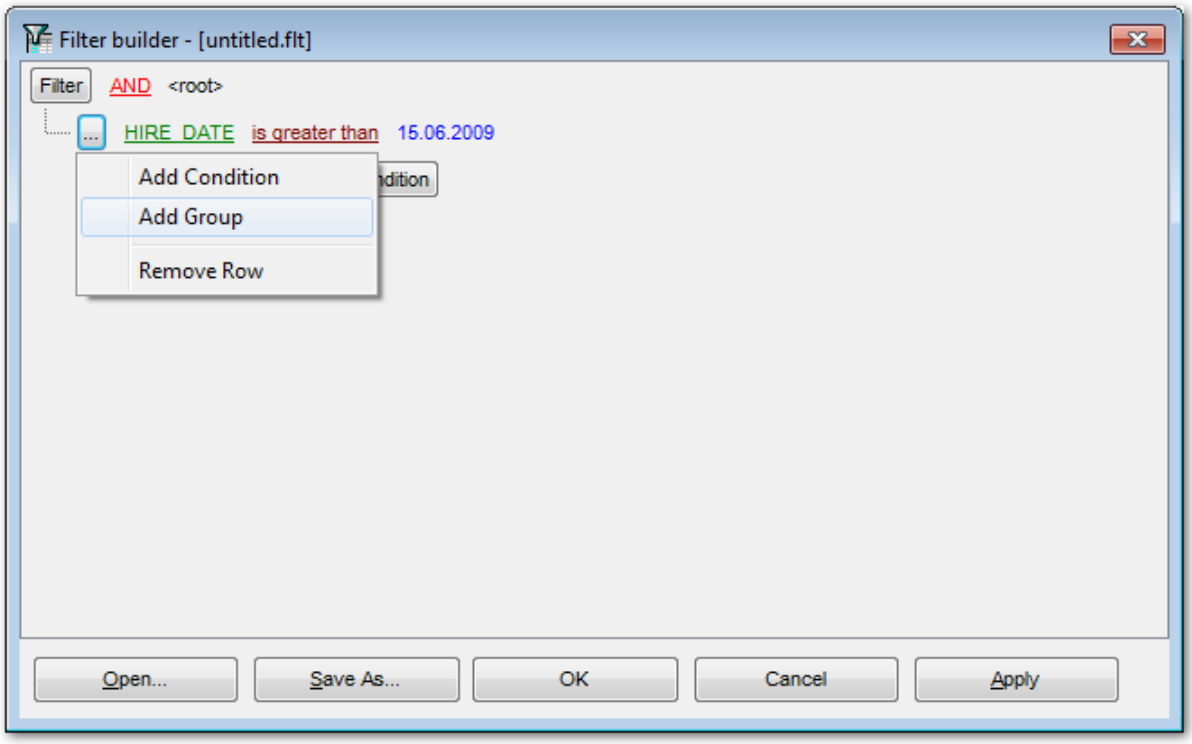
Invoking the Filter Builder dialog[435]
Adding a new condition[436]
Setting filter criteria[437]
Setting filter operator[438]
Adding a new group[440]
Setting group operator[441]
Applying filter conditions[442]

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7.3.6 Adding a new group

Since we also need to get the list of IT specialists (i.e. those registered in a department and having an IT-oriented job), we can add a complex filter condition combining simple conditions with the *AND* operator (however, in this particular case we can just add them on 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:

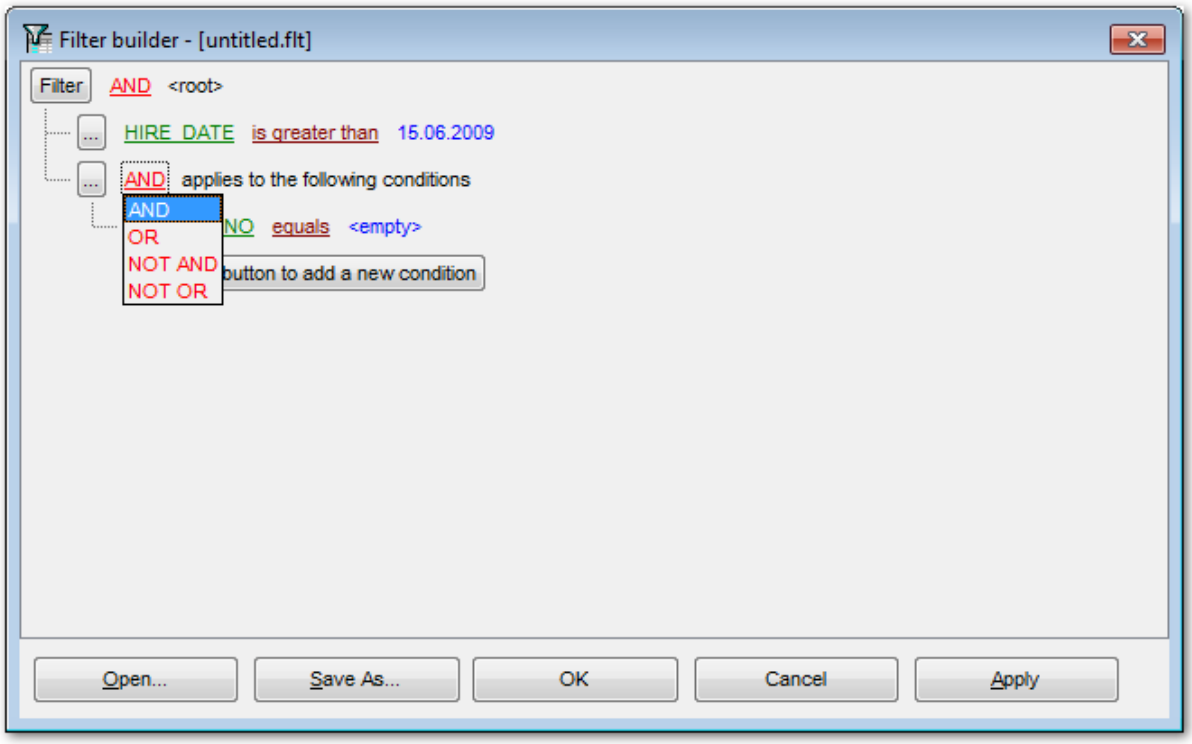
Invoking the Filter Builder dialog 435
Adding a new condition 436
Setting filter criteria 437
Setting filter operator 438
Setting filter criteria values 439
Setting group operator 441
Applying filter conditions 442

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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:

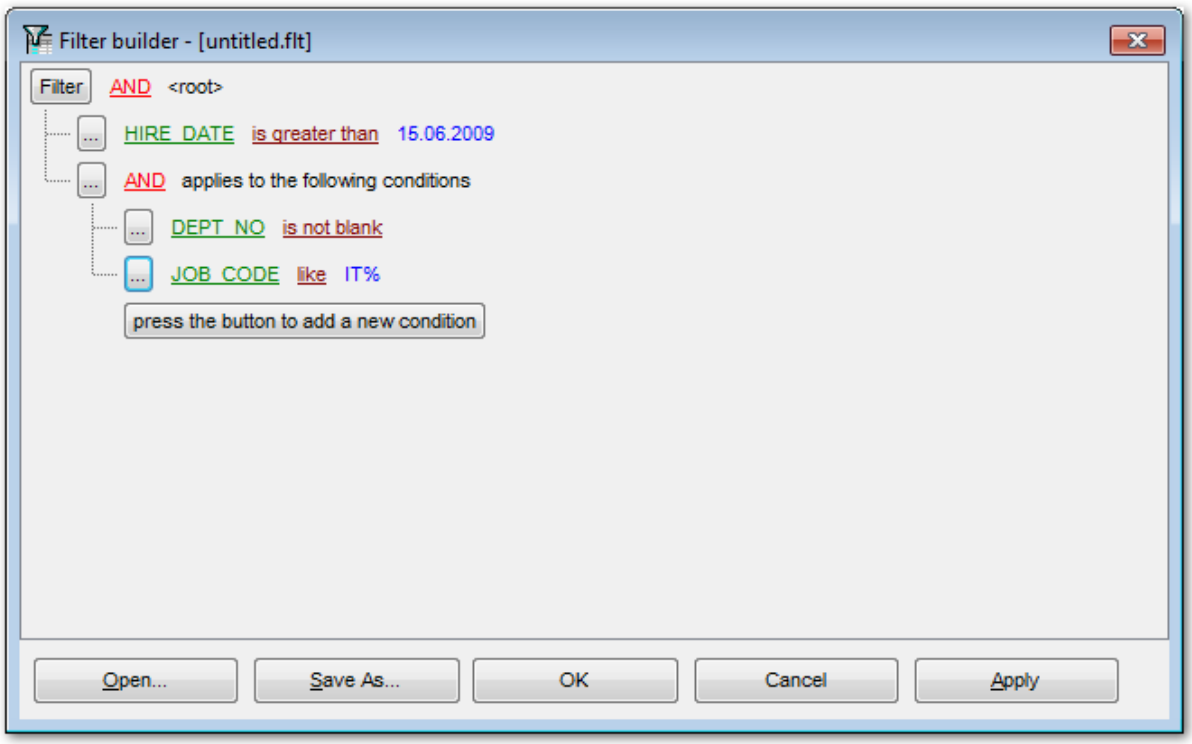
Invoking the Filter Builder dialog 435
Adding a new condition 436
Setting filter criteria 437
Setting filter operator 438
Setting filter criteria values 439
Adding a new group 440
Applying filter conditions 442

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7.3.8 Applying filter conditions

Suppose we have created a condition within the new group. If we need, we can add more conditions[436] 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.



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[435]
Adding a new condition[436]
Setting filter criteria[437]
Setting filter operator[438]
Setting filter criteria values[439]
Adding a new group[440]
Setting group operator[441]

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Part



8 Import/Export Tools

Using **SQL Manager for InterBase/Firebird** you are provided with powerful tools to import and export data to/from your InterBase/Firebird database.

Export Data Wizard 445
Exports data to various supported formats including *MS Excel*, *MS Access*, *RTF*, *HTML*, *PDF*, *CSV*, *XML*, and more.

Import Data Wizard 493
Imports data from any of supported formats: *MS Excel*, *MS Access*, *DBF*, *TXT*, *CSV*, *XML*, and more.

Export Data as SQL Script 519
Exports data to an SQL script as a number of INSERT statements.

Using templates 918
Facilitates using import/export wizards.

See also:

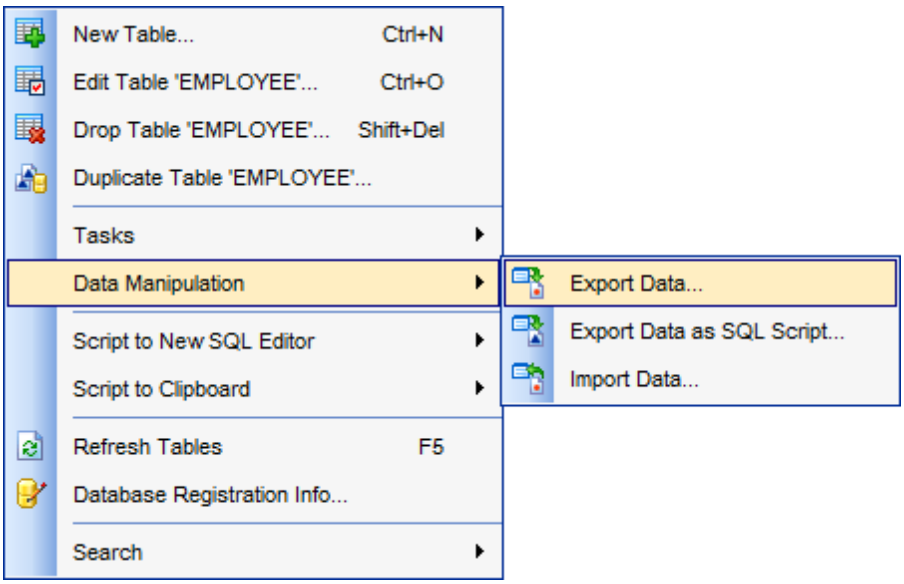
Getting Started 37
Database Explorer 63
Database Management 87
Database Objects Management 163
Query Management Tools 329
Data Management 369
Database Tools 534
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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8.1 Export Data Wizard

Export Data Wizard allows you to export data from a table 179 / view 243 or from a query result to any of supported formats (*MS Excel*, *MS Access*, *MS Word*, *RTF*, *HTML*, *PDF*, *TXT*, *CSV*, *XML*, *DBF*, etc.). You can save your settings as a template 918 any time for future use.

To start the wizard, right-click the object in DB Explorer 63, select the **Data Manipulation** context menu 56 group and proceed to the **Export Data...** item within this group.



Alternatively, you can open the **Data** tab of Table Editor 185 / View Editor 243 or the **Result (s)** tab of Query Data 331 / Query Builder 348, right-click the grid 374 there, then select the **Data Manipulation** context menu 383 group and proceed to the **Export Data of <object_name>...** item within this group, or use the **Export Data** item of the Navigation bar 890.

- Setting name and format for the destination file 447
- Selecting fields for export 448
- Adjusting formats applied to exported data 449
- Setting header and footer text for the destination file 450
- Setting format-specific options 451
- Setting common export options 490
- Exporting data 492

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 20 page.

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See also:

Import Data Wizard 493
Export as SQL Script 519
Using templates 918

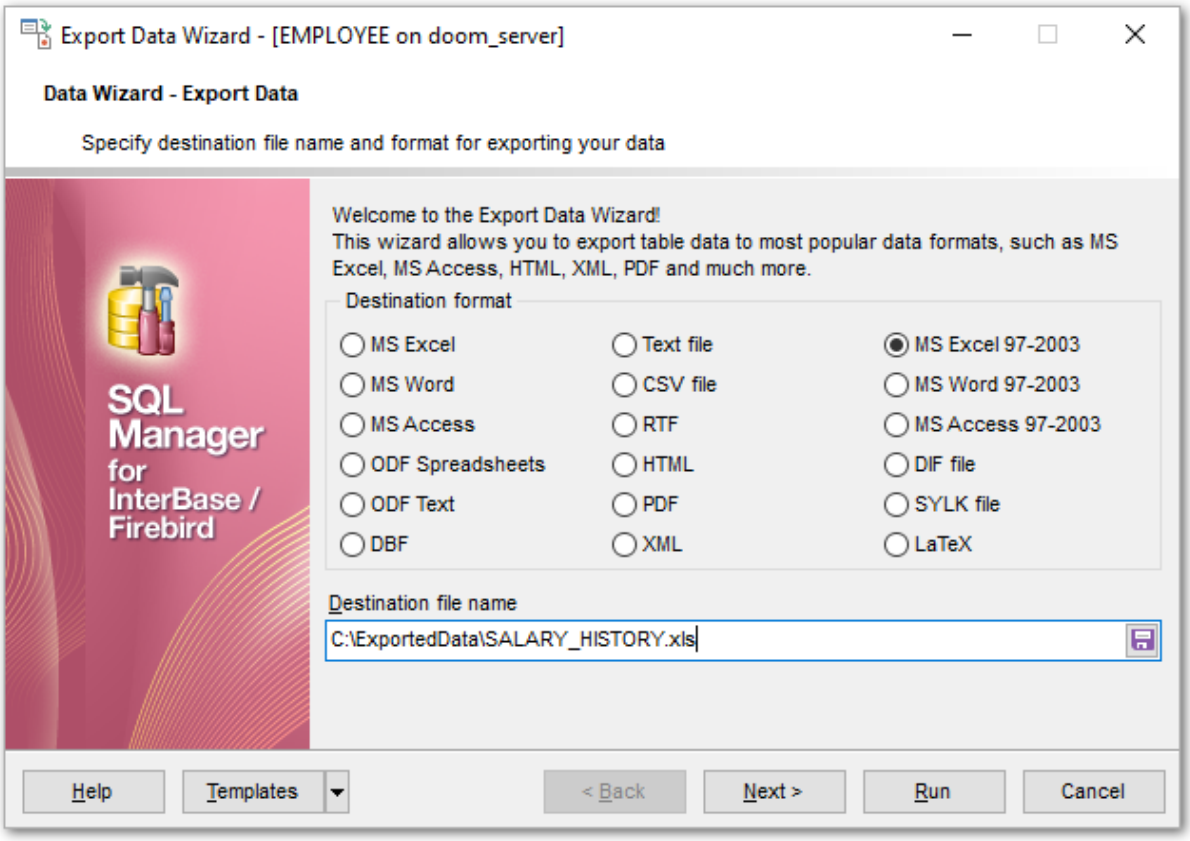
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8.1.1 Setting destination file name and format

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[937] dialog where you can choose the action you need.



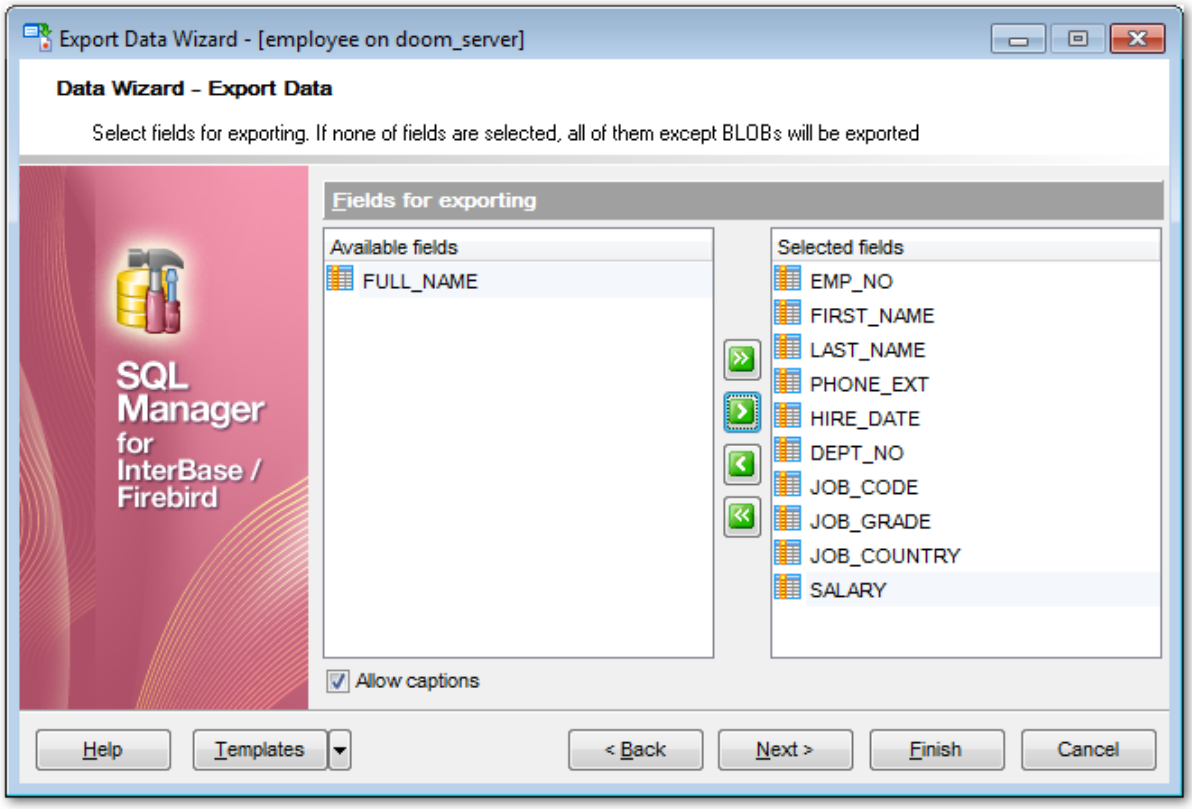
Destination format
Specify the format of the destination file. For details refer to Supported file formats[919].

Click the **Next** button to proceed to the Selecting fields for export[448] step of the wizard.

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8.1.2 Selecting fields for export

This step of the wizard allows you to select the table field(s) to be exported.
To select a field, you need to move it from the **Available fields** list to the **Selected fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.



If you leave all the fields in the **Available fields** list, all fields of the table (except BLOBs) will be exported.

Allow captions
Check this option if you need to export the field captions as well.

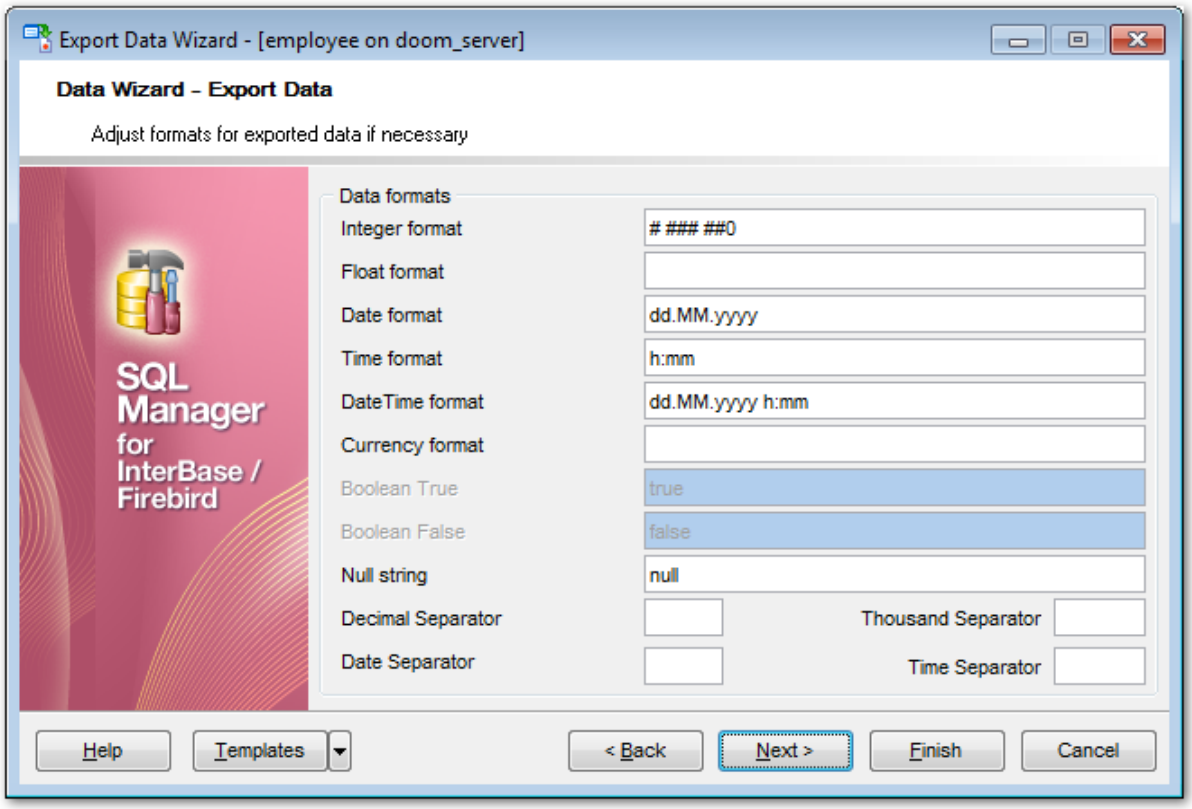
Click the **Next** button to proceed to the Adjusting data formats 449 step of the wizard.

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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 779 section of the Environment Options 744 dialog.

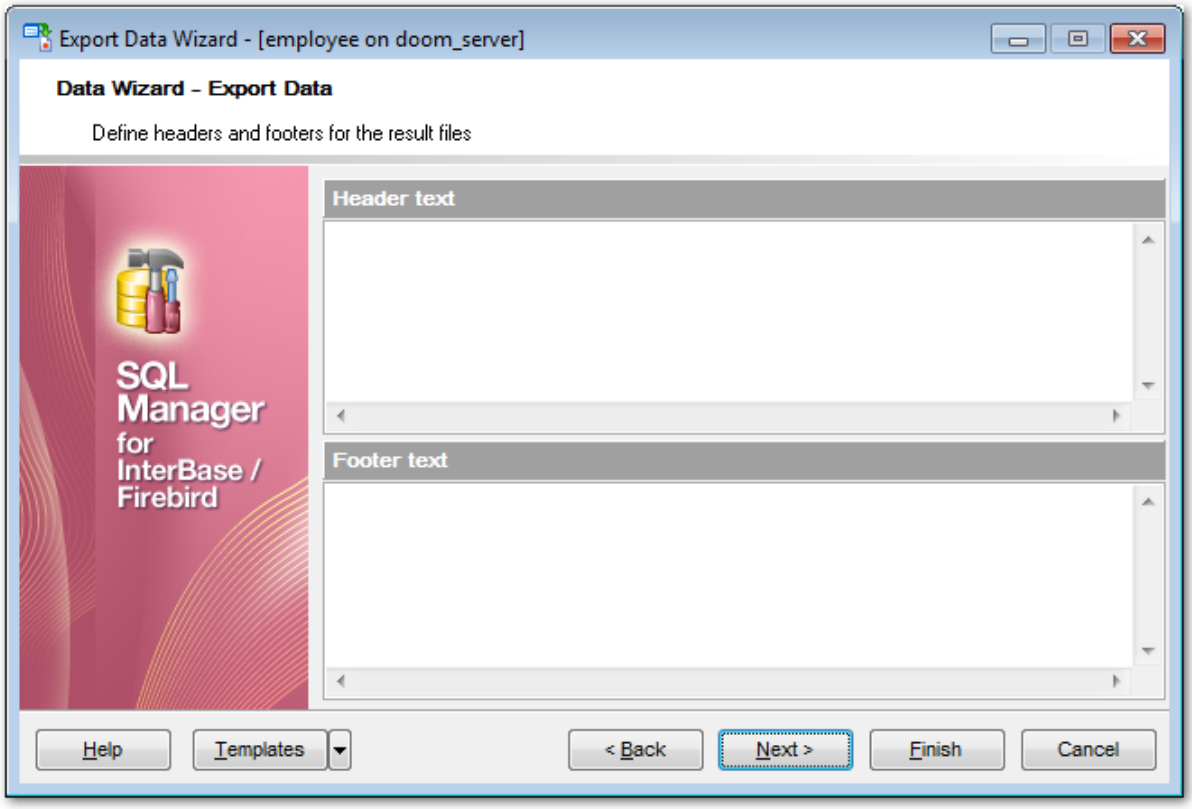
For more details refer to Format specifiers 914.

Click the **Next** button to proceed to the Setting header and footer 450 step of the wizard.

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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.



Click the **Next** button to proceed to Setting format-specific options 451.

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8.1.5 Setting format-specific options

This step of the wizard allows you to customize **Format-specific options**:

- Excel 97-2003 options 452
- Access 97-2003 options 468
- Word 97-2003 / RTF options 469
- HTML options 472
- PDF options 478
- TXT options 480
- CSV options 481
- XML options 482
- MS Excel / ODS options 483
- Access options 486
- MS Word / ODT options 487

To get more information about the file formats, see the Supported file formats 919 page.

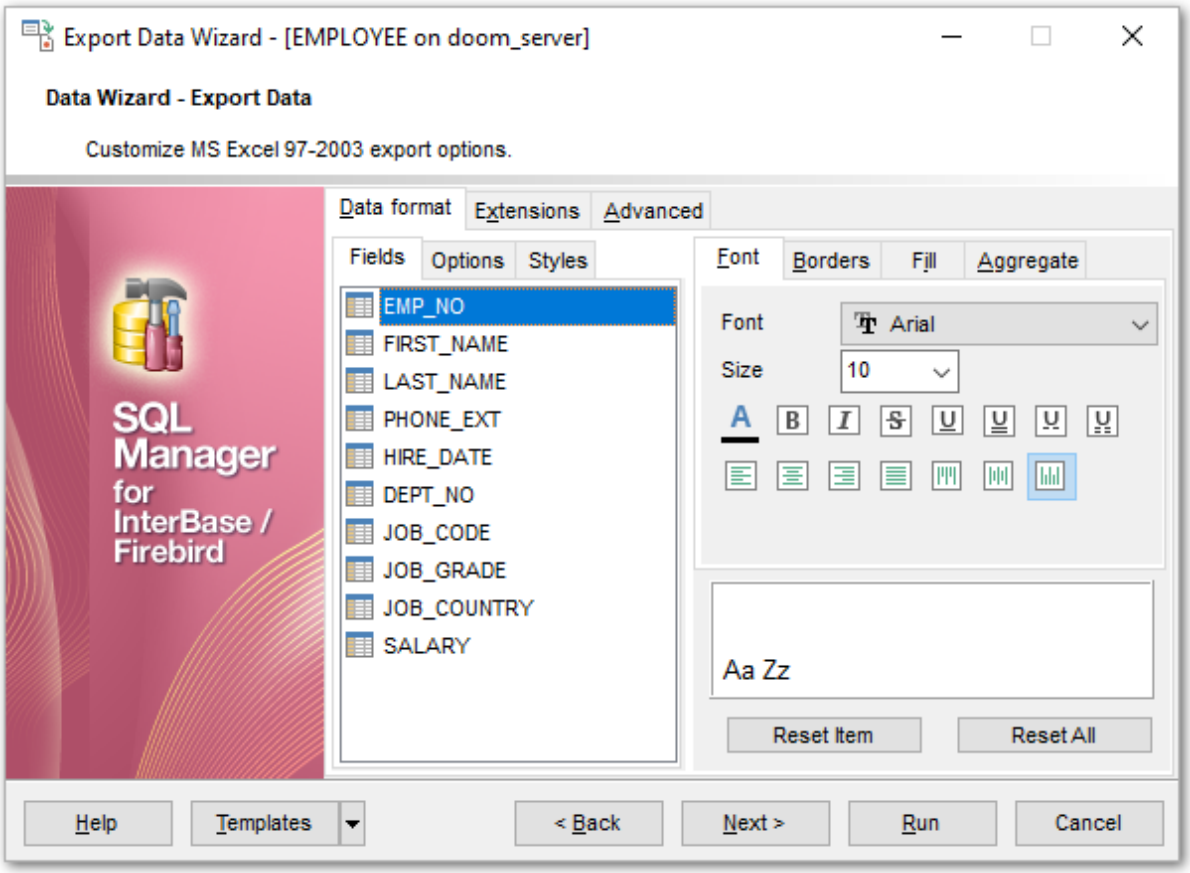
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8.1.5.1 Excel 97-2003 options

This step allows you to set options for the target **MS Excel 97-2003** (*.xls) file.

You can customize **Data format**, **Extensions** and set **Advanced** options available within the corresponding tabs:

- Data format 453
- Extensions 458
- Advanced 467



When you are done, click the **Next** button to proceed to Setting common export options 490.

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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 field*, *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.

- Fields 453
- Options 455
- Styles 456

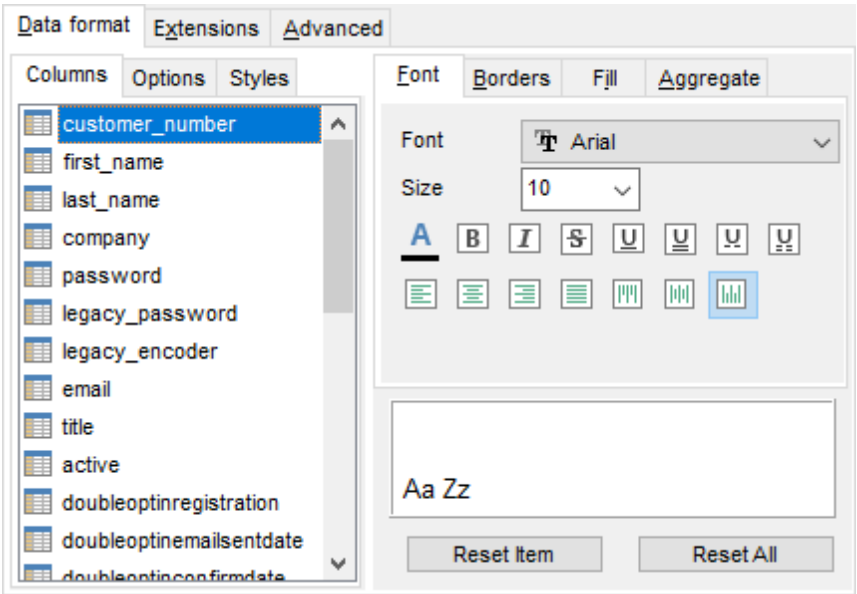
For your convenience the previews illustrating the changes are displayed in the **Sample Group** area on each page of **Data Format** tab.

8.1.5.1.1.1 Fields

Using the **Fields** tab you can set *font* options, *border* and *fill* options and *aggregate functions* for all the **fields** 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*.

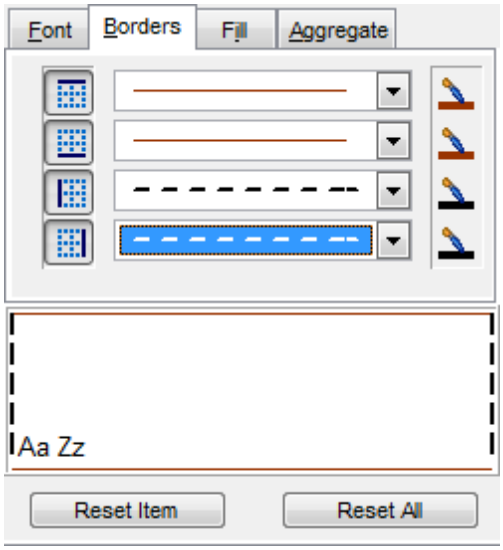


The **Borders** tab allows you to specify properties of the borders of the output Excel file cells.

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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.

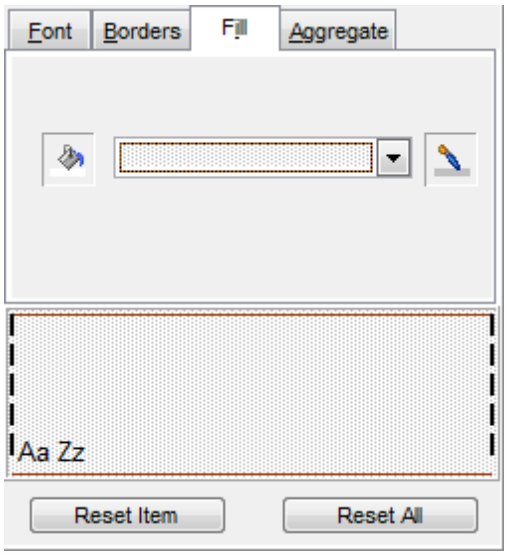


The **Fill** tab allows you to specify the fill pattern for the output Excel file cells.

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.

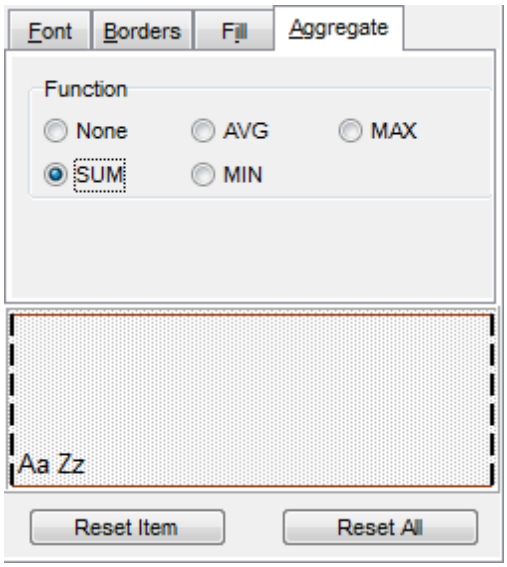


The **Aggregate** tab allows you to specify an aggregate function for the field in the

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output Excel file.

Select a **function** that will be applied to the field:
- *None*
- *AVG*
- *MAX*
- *SUM*
- *MIN*

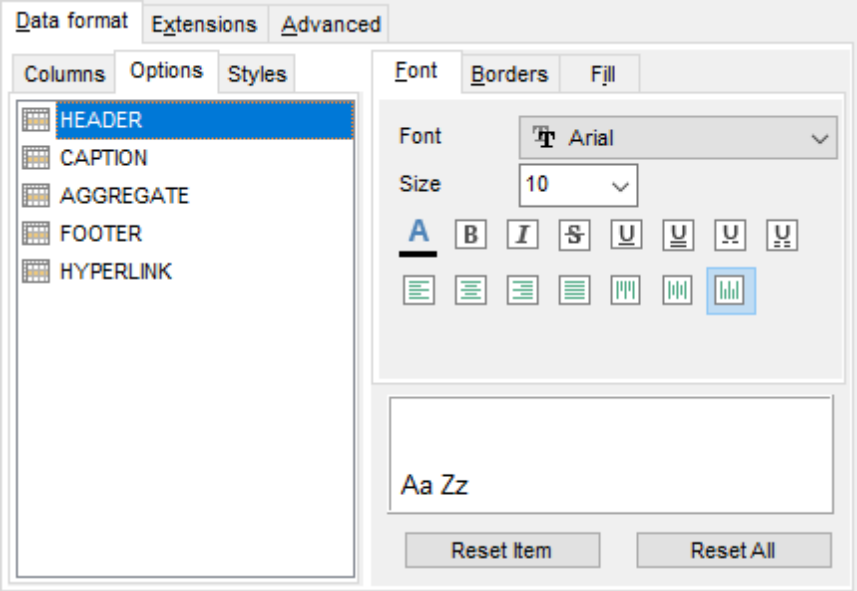


You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

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*).

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The **font**, **borders** and **fill** options are specified in the same way as for output **Fields**. For details refer to the Fields[453] page.

You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

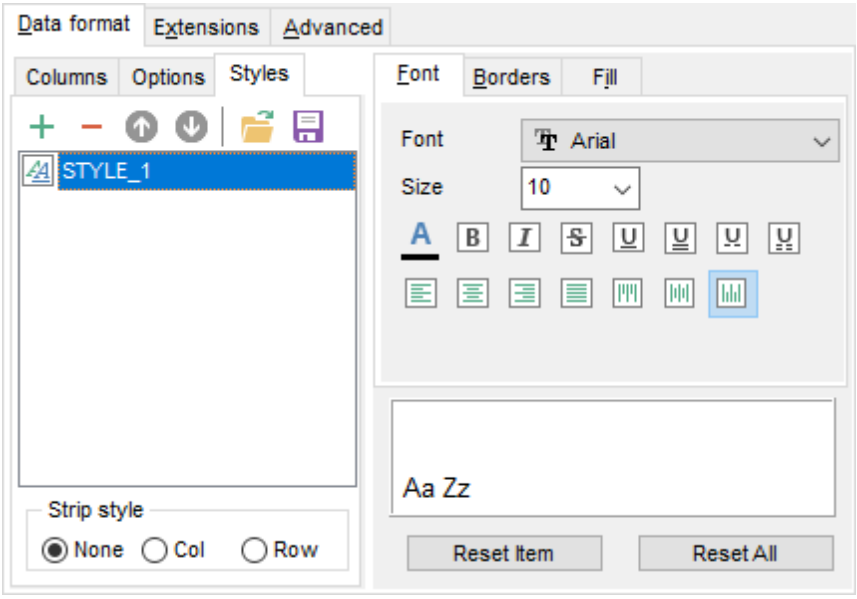
8.1.5.1.1.3 Styles

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).

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The **font**, **borders** and **fill** options are specified in the same way as for output **Fields**. For details refer to the Fields 453 page.

You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

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8.1.5.1.2 Extensions

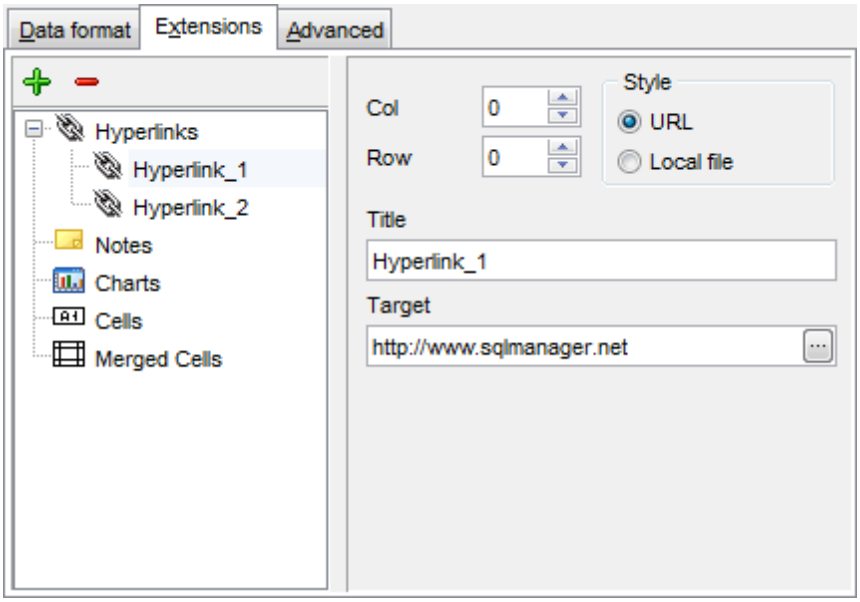
The **Extensions** tab provides an ability to add hyperlinks[458] and notes[459] and to any cell of the target file, to specify a value of a cell, to create a chart[461] and to merge cells[465].

Click the **Plus** button to add an element;
click the **Minus** button to delete an element.

- Hyperlinks[458]
- Notes[459]
- Charts[461]
- Cells[464]
- Merged Cells[465]

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

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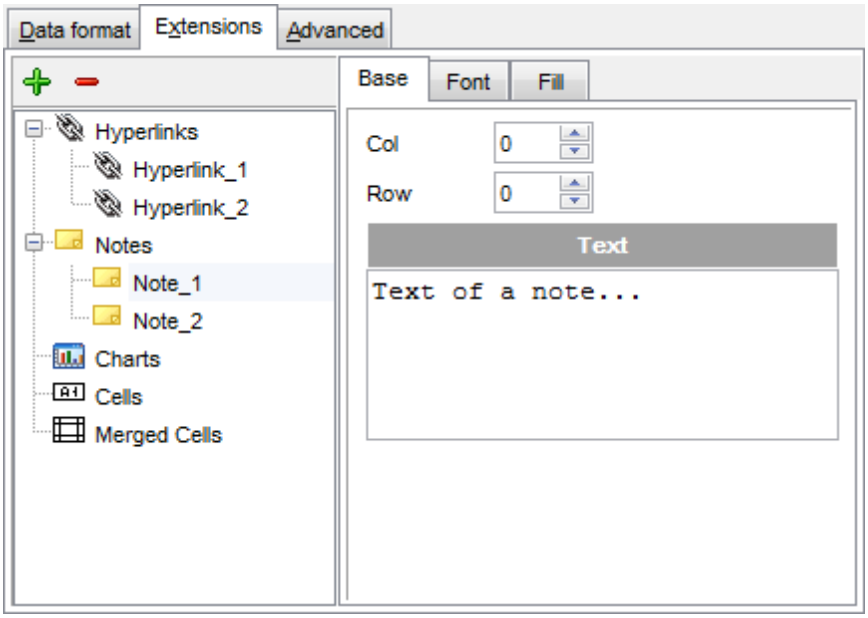
check whether the specified location is available.

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.

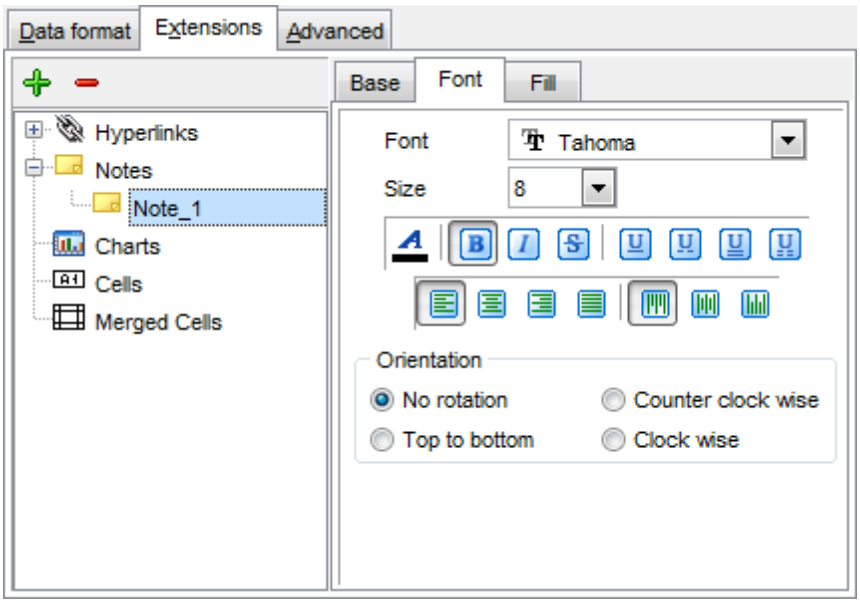


The **Font** tab allows you to specify properties of the font that will be used for the note.

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.

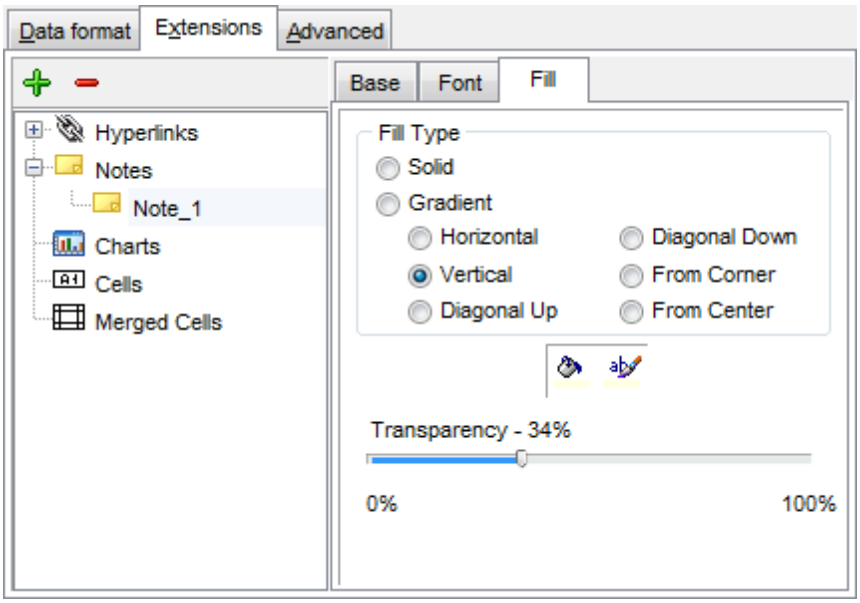
The **Fill Type** group allows you to select whether the fill color will be **solid** or **gradient**:
- *Horizontal*
- *Vertical*
- *Diagonal up*
- *Diagonal down*
- *From corner*
- *From center*

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.

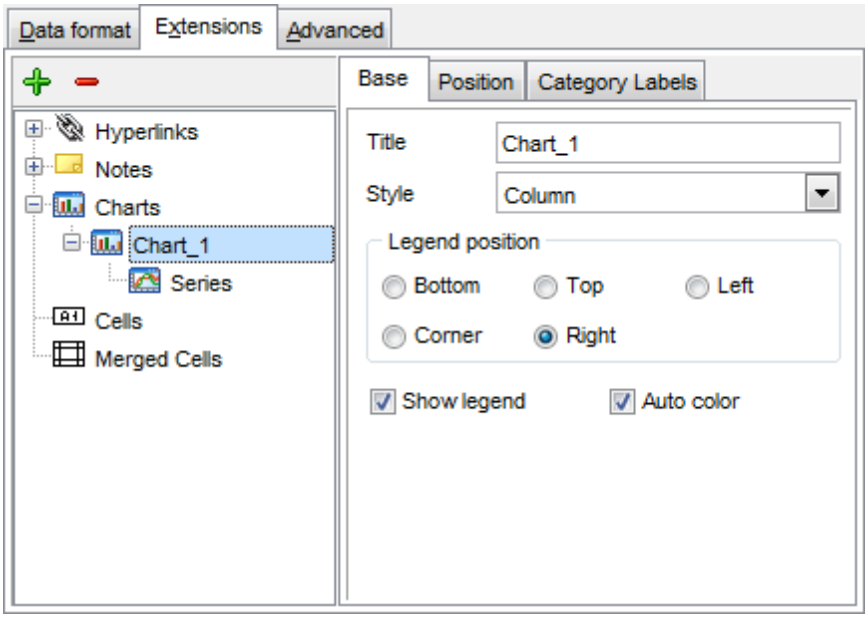
Use the **Title** box to specify the chart name.
Use the **Style** drop-down list to select the preferable chart style (*Column*, *Column 3D*, *Bar*, *Bar 3D*, *Line*, *Line Mark*, *Line 3D*, etc.).

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.

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The **Position** tab allows you to specify properties pertaining to the chart position on the output file sheet.

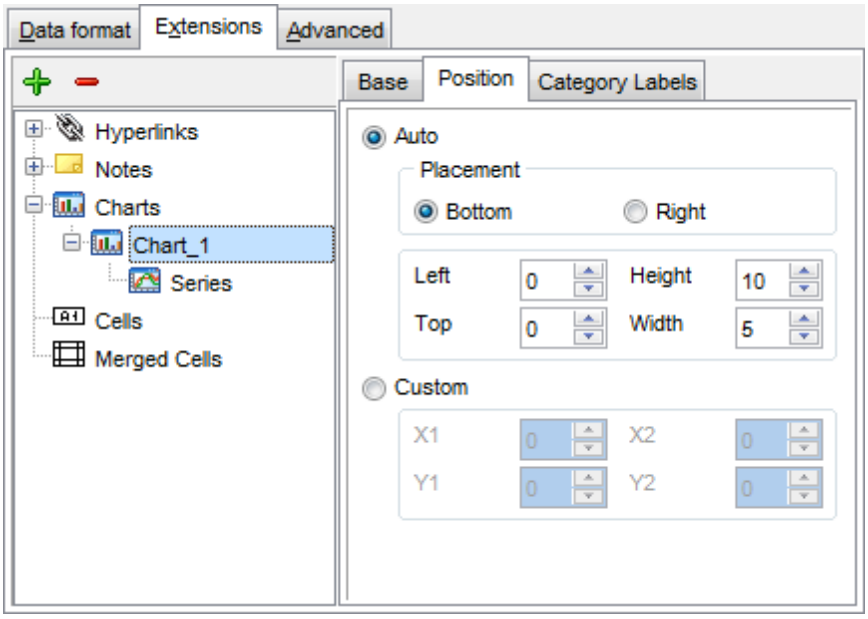
Auto
Specifies automatic position of the chart.

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.

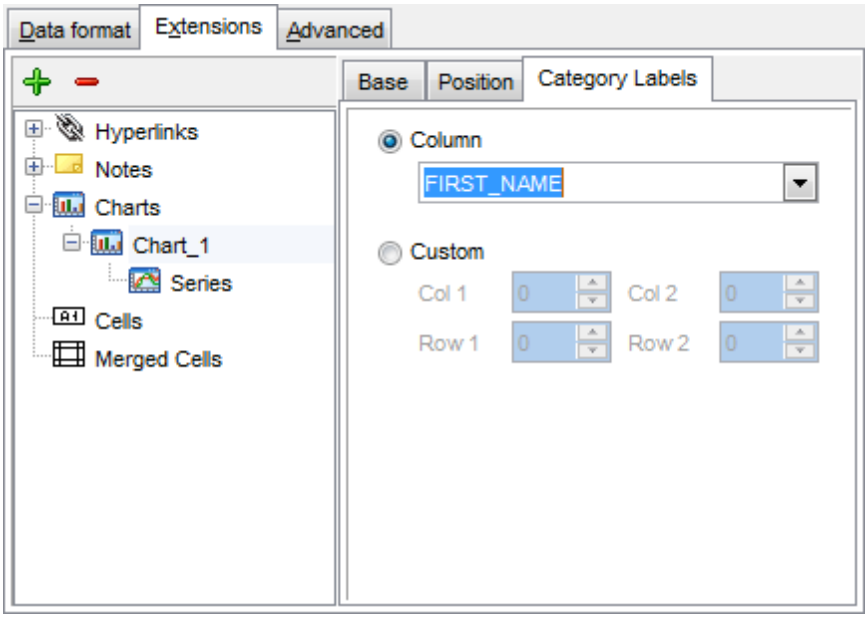
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The **Category Labels** tab allows you to specify in which rows and columns the chart will be built.

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-

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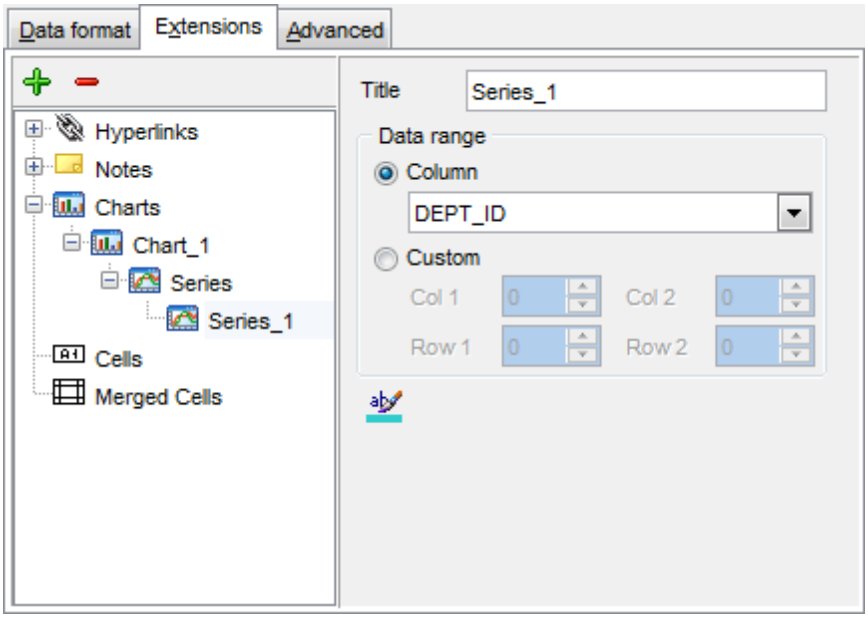
axis. To add **series** for the chart:
- add one or more series using the + button;
- enter the *titles*;
- set data ranges (select a column from the drop-down list or set the custom range);
- define colors for all the graphs.

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.

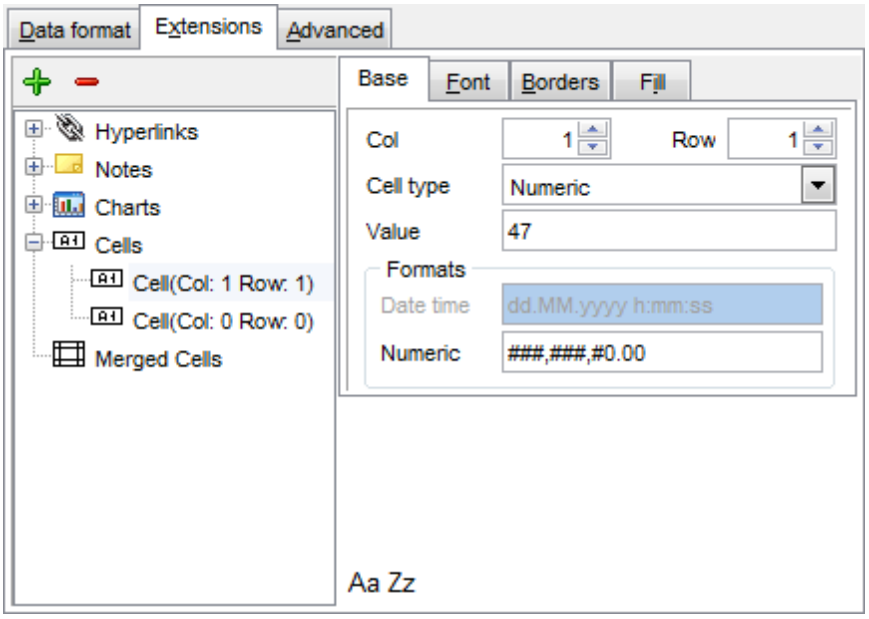
Press the button to set the color for the series.



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.

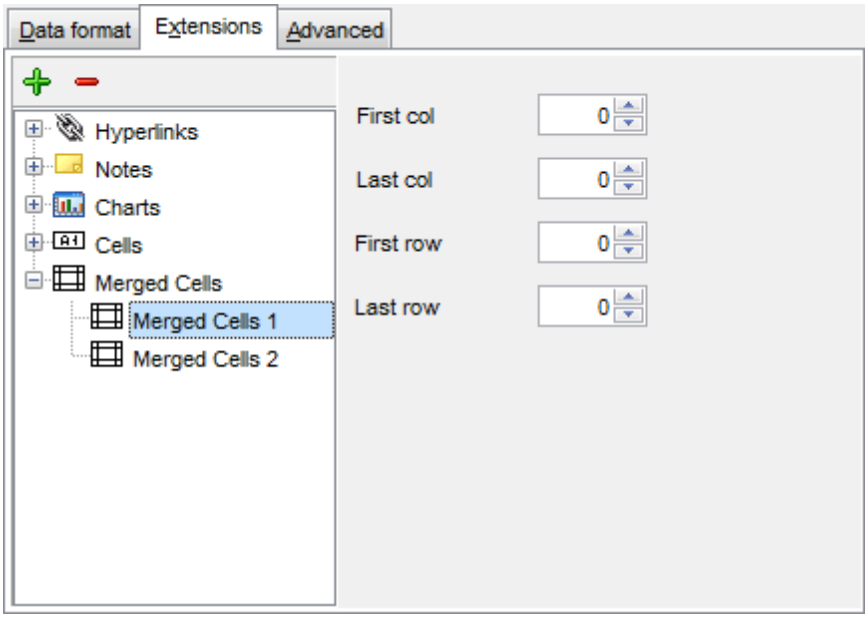
The **Formats** group allows you to specify data format for numeric or a date/time types.

The **font**, **borders** and **fill** options are specified in the same way as for output **Fields**. For details refer to the Fields 453 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.

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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.

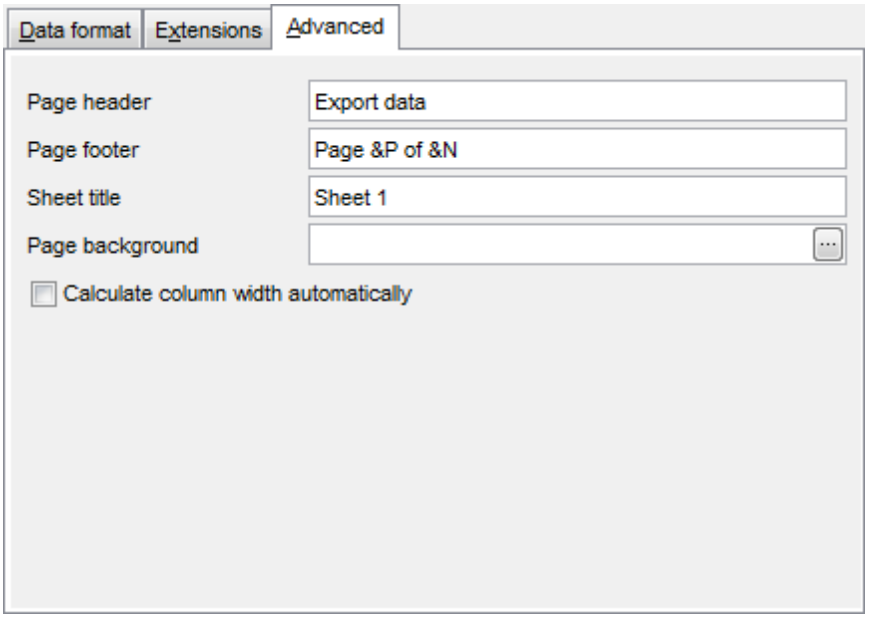
Page header
If necessary, enter some text for the page header.

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.



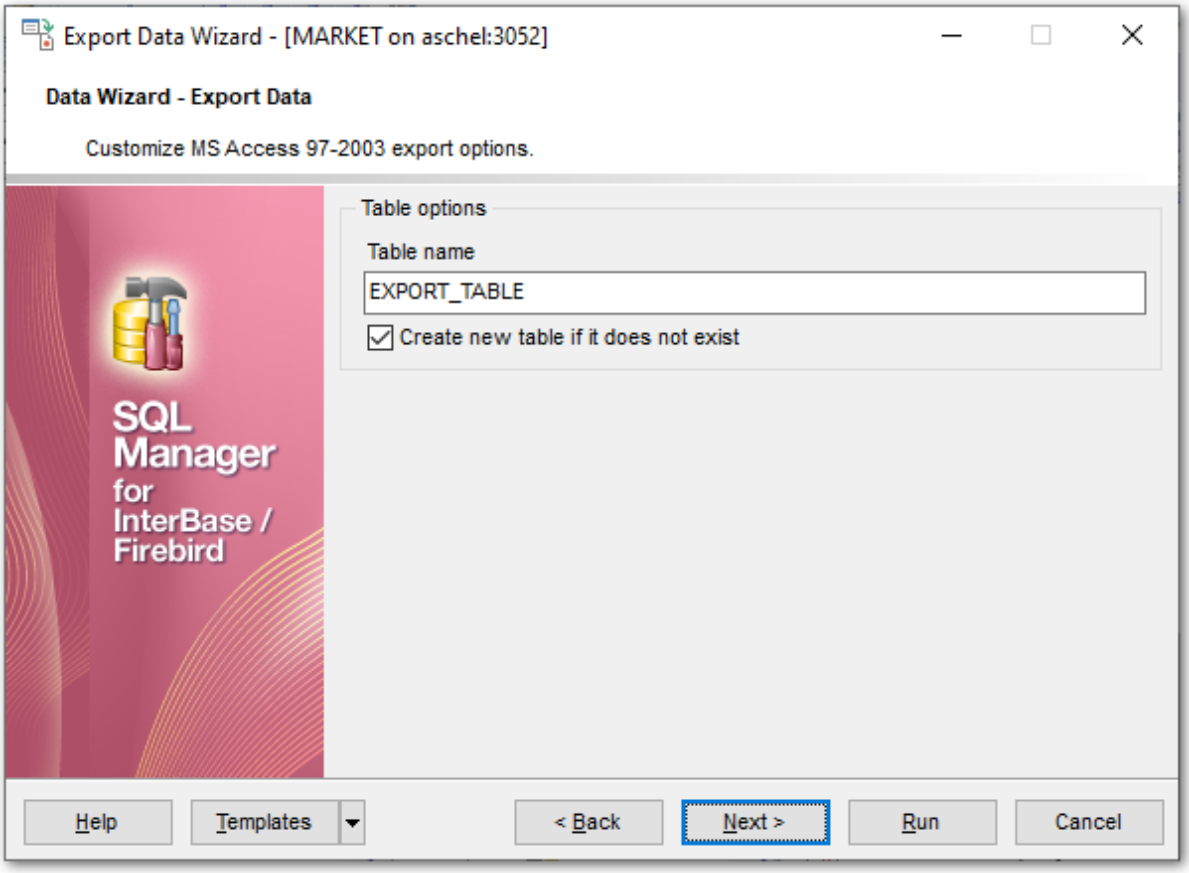
Calculate column width automatically
This option allows the wizard to determine column width in the target file automatically according to column size.

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8.1.5.2 Access 97-2003 options

This step allows you to set options for the target **MS Access** (*.mdb) file.

Set the name for the target table and specify whether the wizard should **create a new table** in the MS Access 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 490.

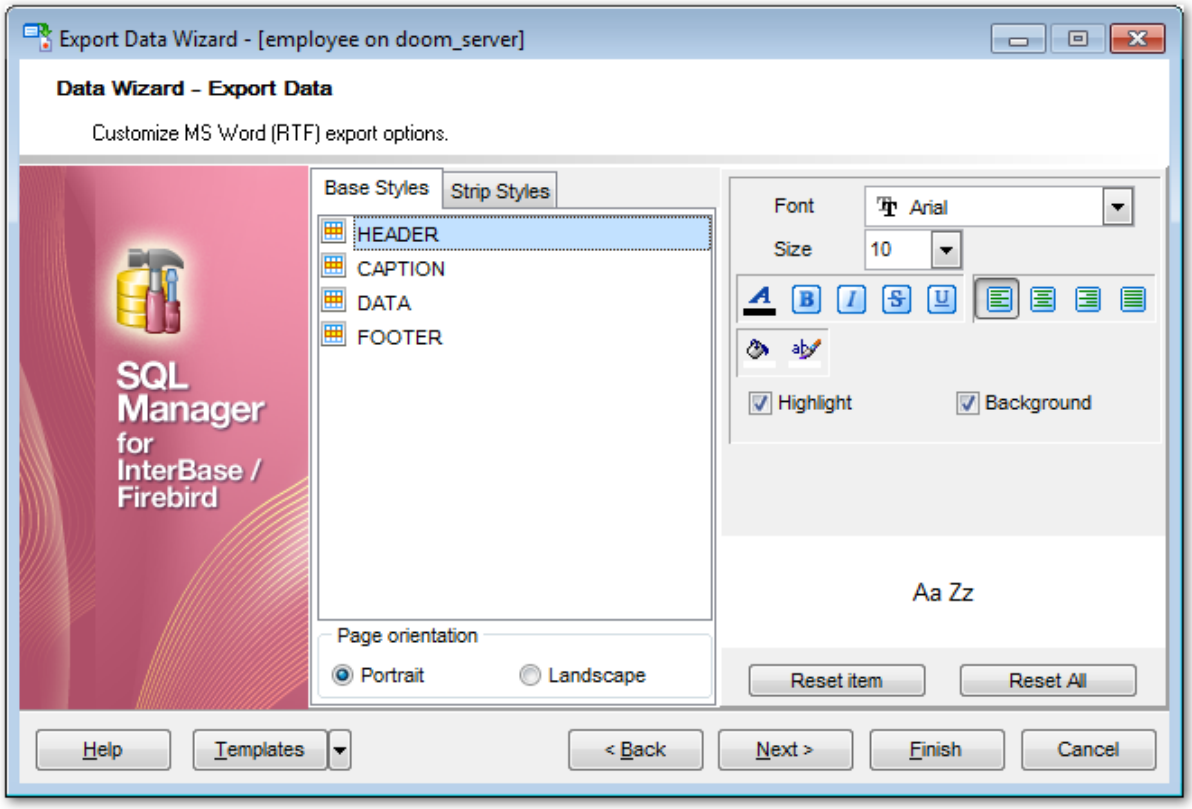
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8.1.5.3 Word 97-2003 / RTF options

This step allows you to set options for the target **MS Word 97-2003** (**.doc*) and **Rich Text Format** (**.rtf*) files.

- Base Styles 470
- Strip Styles 471

For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.

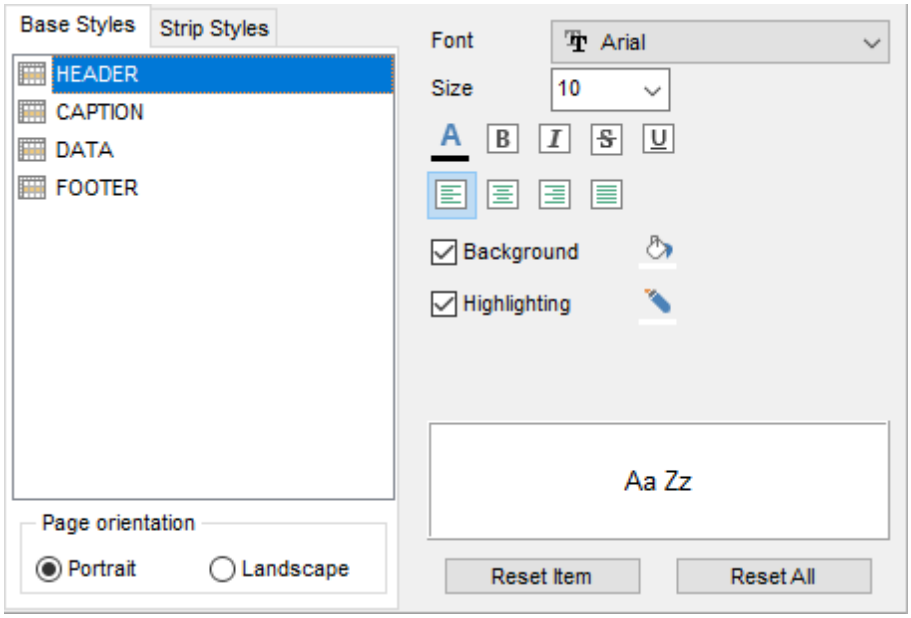


When you are done, click the **Next** button to proceed to Setting common export options 490.

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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.

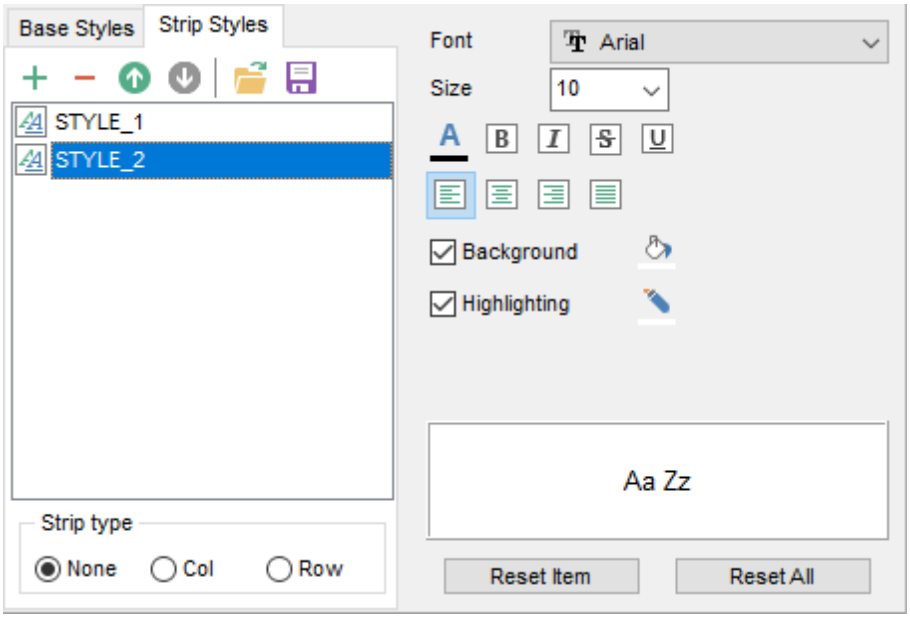
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8.1.5.3.2 Strip Styles

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).



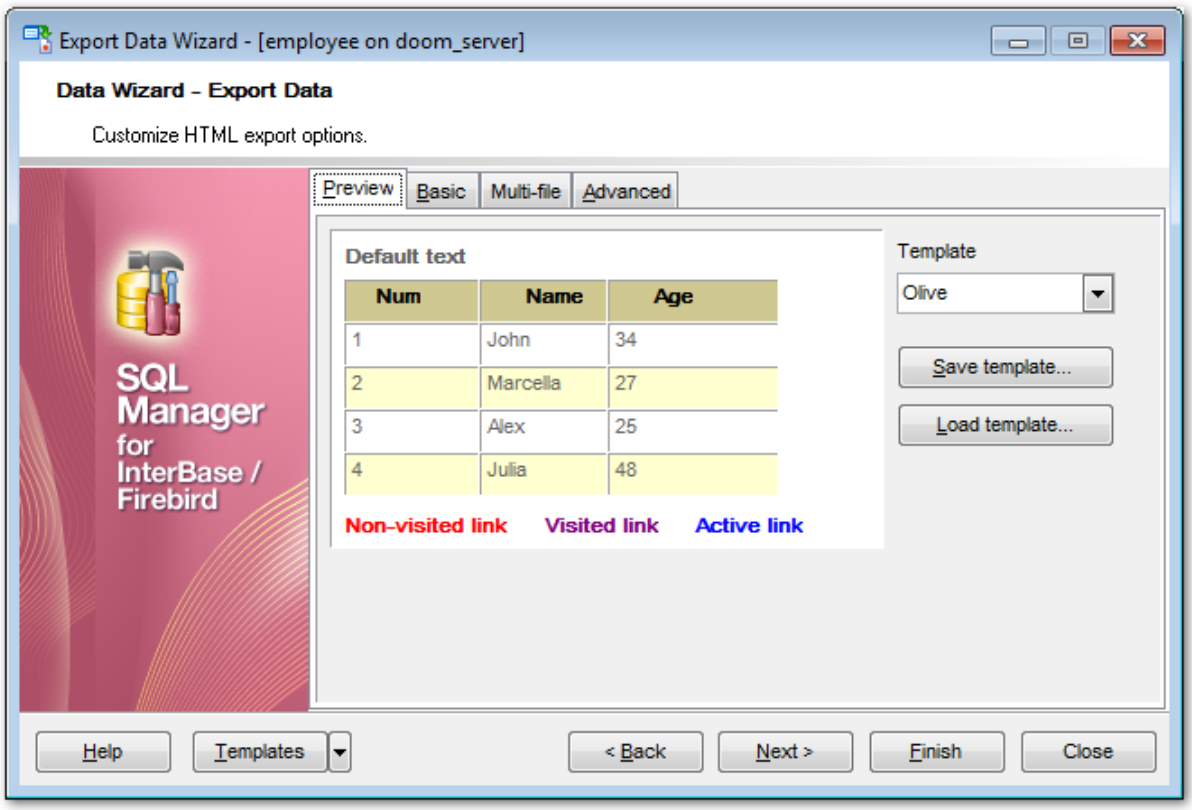
You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

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8.1.5.4 HTML options

This step allows you to set options for the target **HTML** (**.html*) file.

- Preview 473
- Basic 474
- Multi-file 475
- Advanced 477

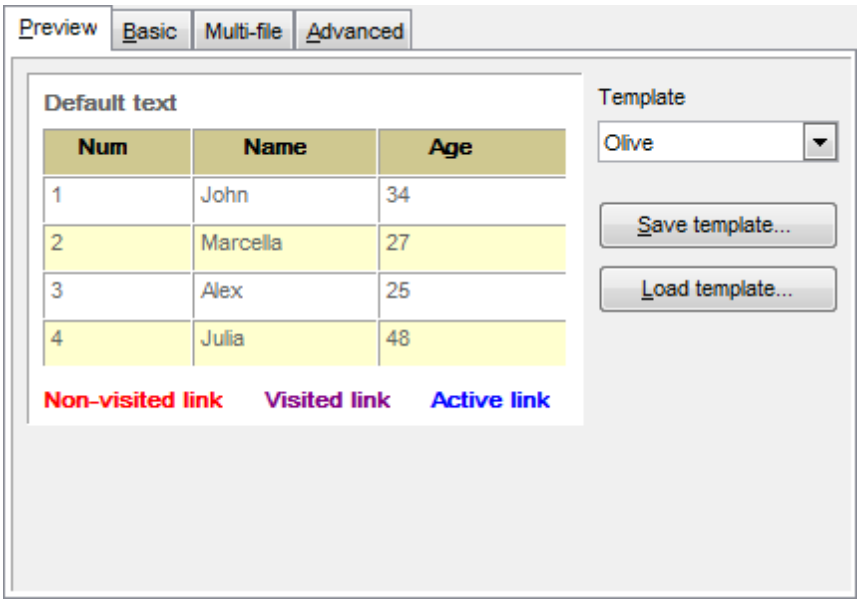


When you are done, click the **Next** button to proceed to Setting common export options 490.

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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.

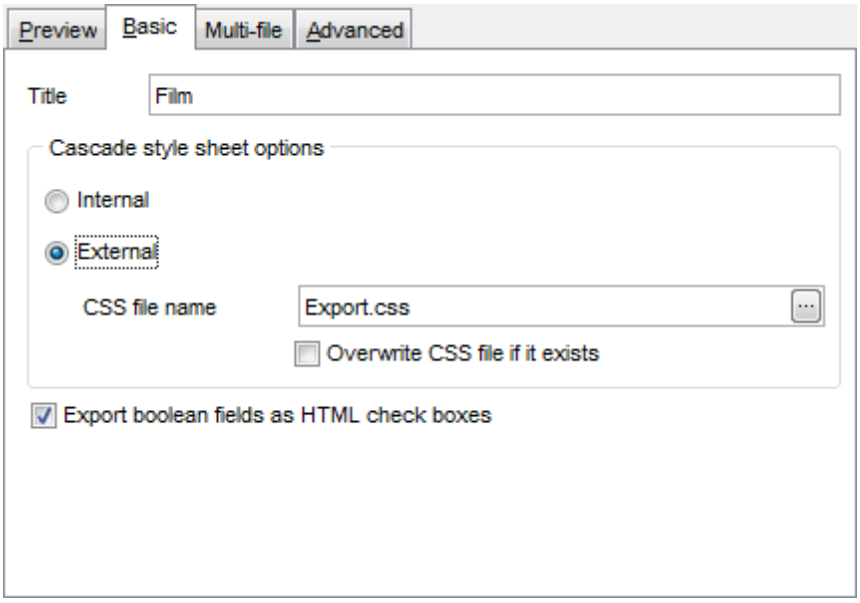
Click on an element of the table to select the color that will be applied for this element (*background*, *font*, *header row*, *odd row*, *even row*, *non-visited link*, *visited link*, *active link*).

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8.1.5.4.2 Basic

The **Basic** tab allows you to specify the basic parameters of target HTML file:

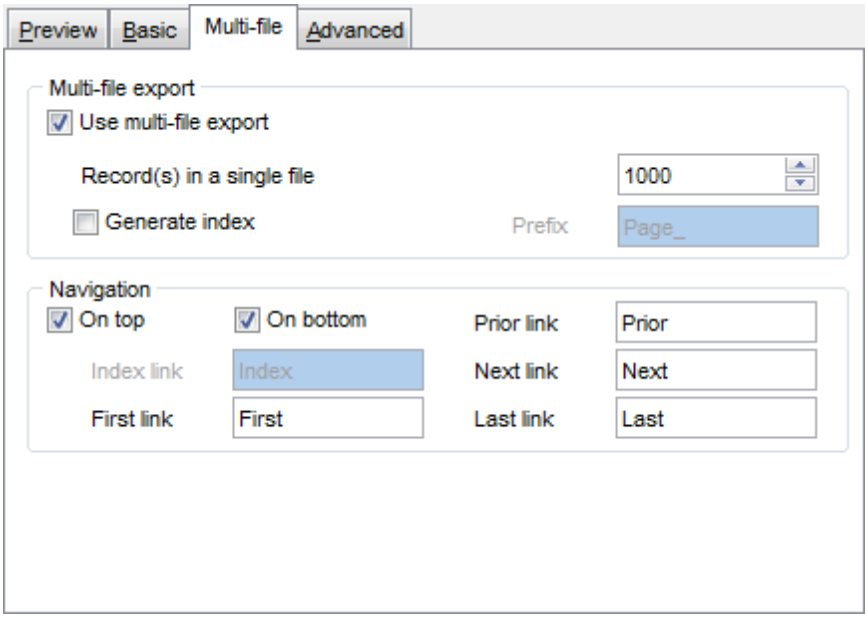
- specify the title of the result file;
- select whether the cascade style sheet (CSS) should be internal or external (the **Ellipsis** button to browse for a **.css* file);
- determine whether boolean fields of the table should be exported as HTML check boxes.



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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

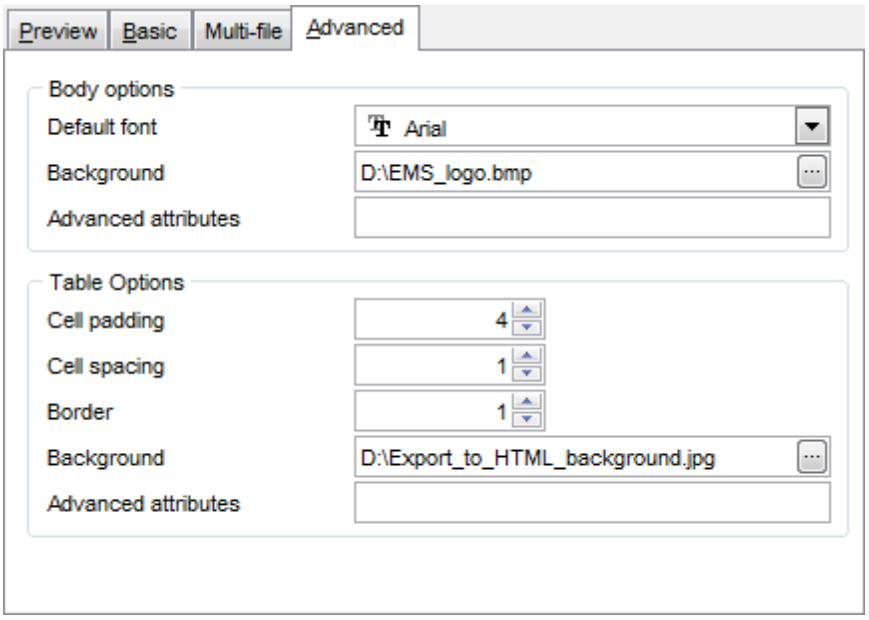
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captions for the corresponding navigation elements.

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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.

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8.1.5.5 PDF options

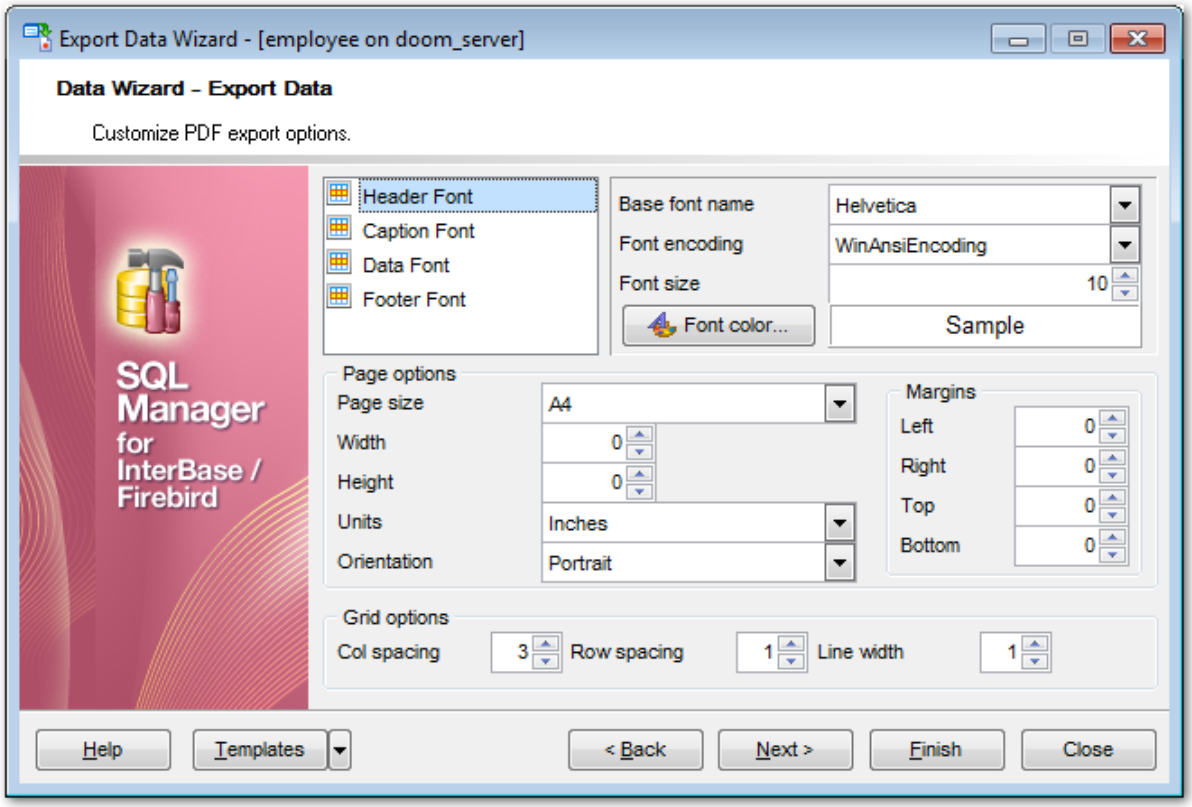
This step allows you to set options for the target **PDF** (**.pdf*) file.

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.



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*.

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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.

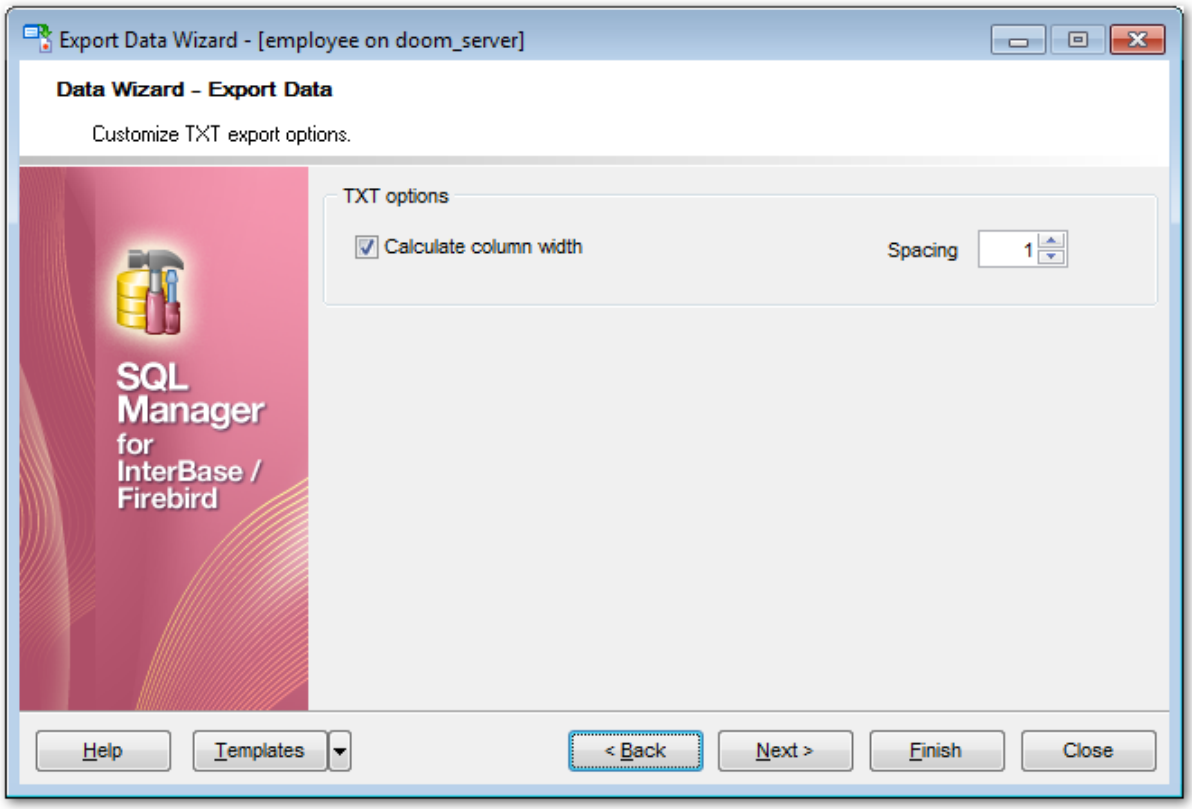
When you are done, click the **Next** button to proceed to Setting common export options 490.

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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 490.

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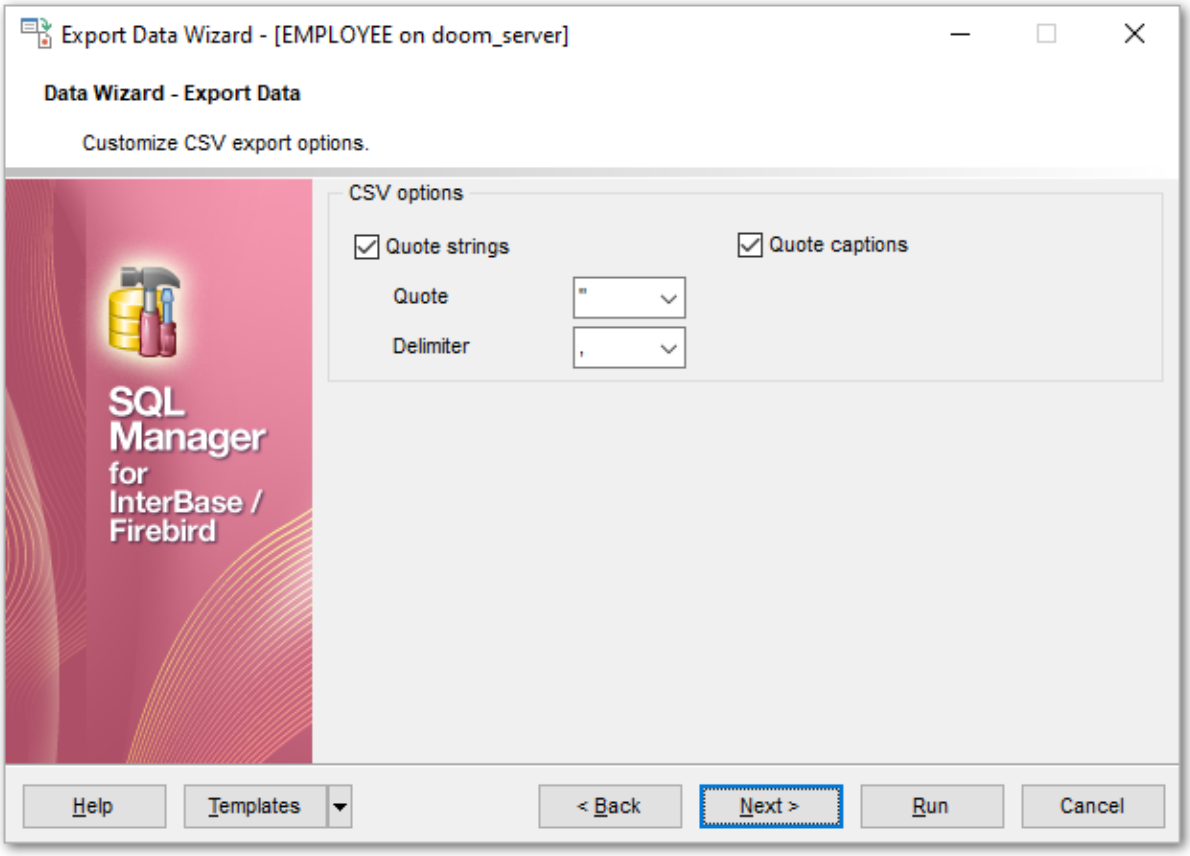
8.1.5.7 CSV options

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 **Comma** 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 490.

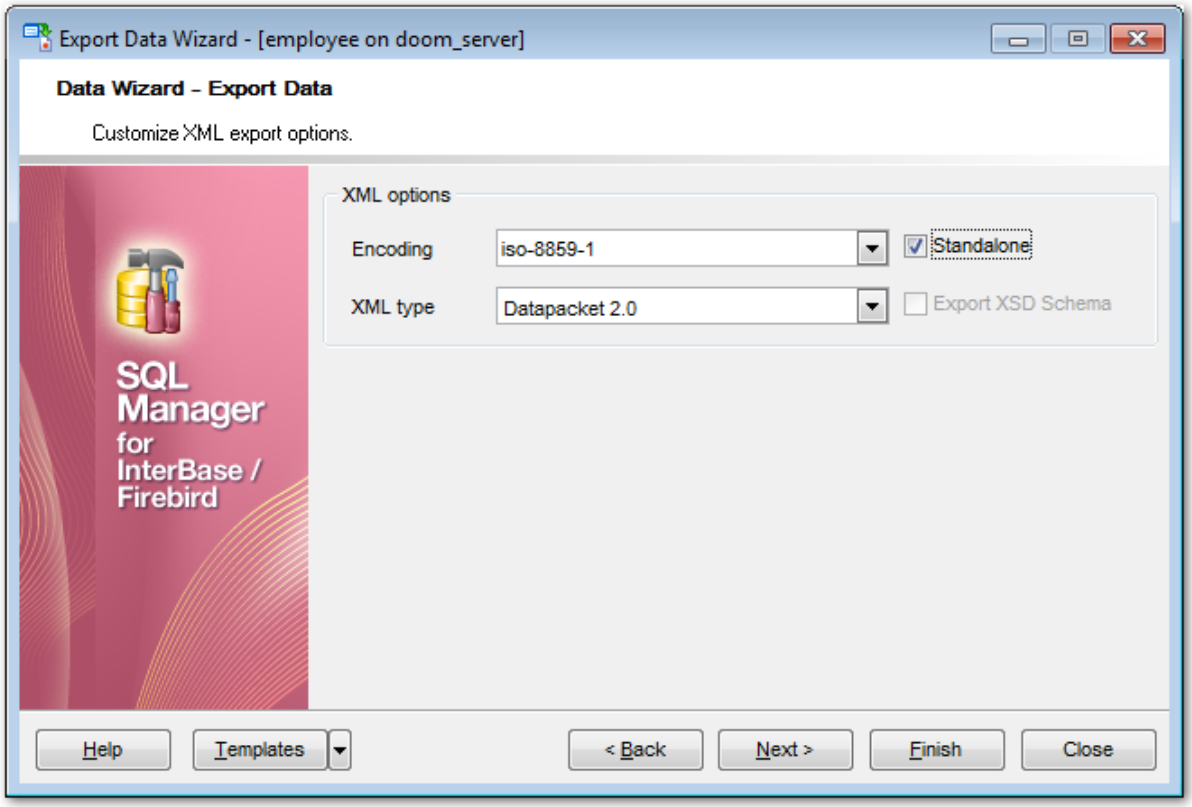
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8.1.5.8 XML options

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®.



When you are done, click the **Next** button to proceed to Setting common export options 490.

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8.1.5.9 MS Excel / ODS options

This step allows you to set options for the target **MS Excel** (**.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.

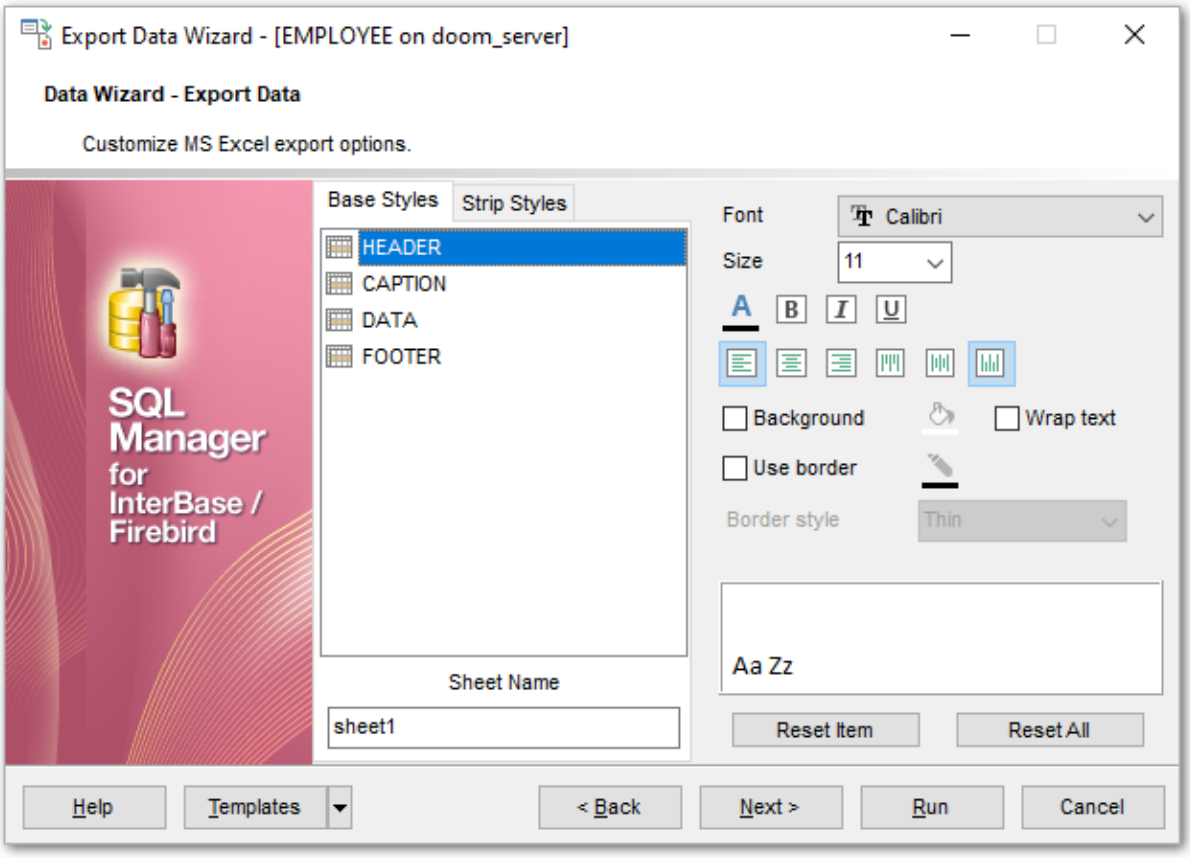
Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, specify *horizontal* and *vertical align*.

☑ **Background**
Enables/disables background for text.

Press the  button to set the background color for the text.
☑ The **Wrap Text** button enables/disables the text wrapping feature.

For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.

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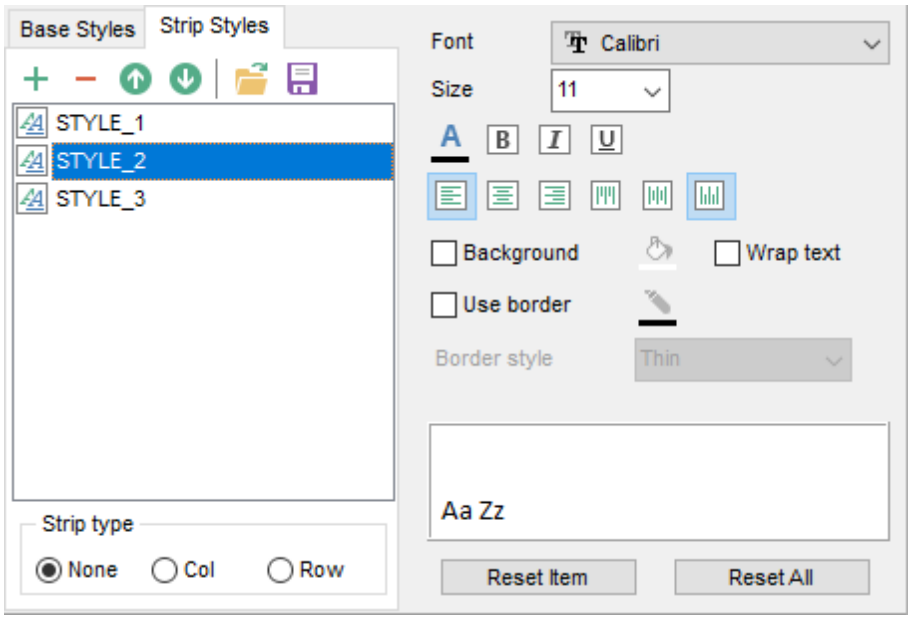


Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background color*, *text alignment*, *wrap text* options and save them.

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).

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You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

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.).

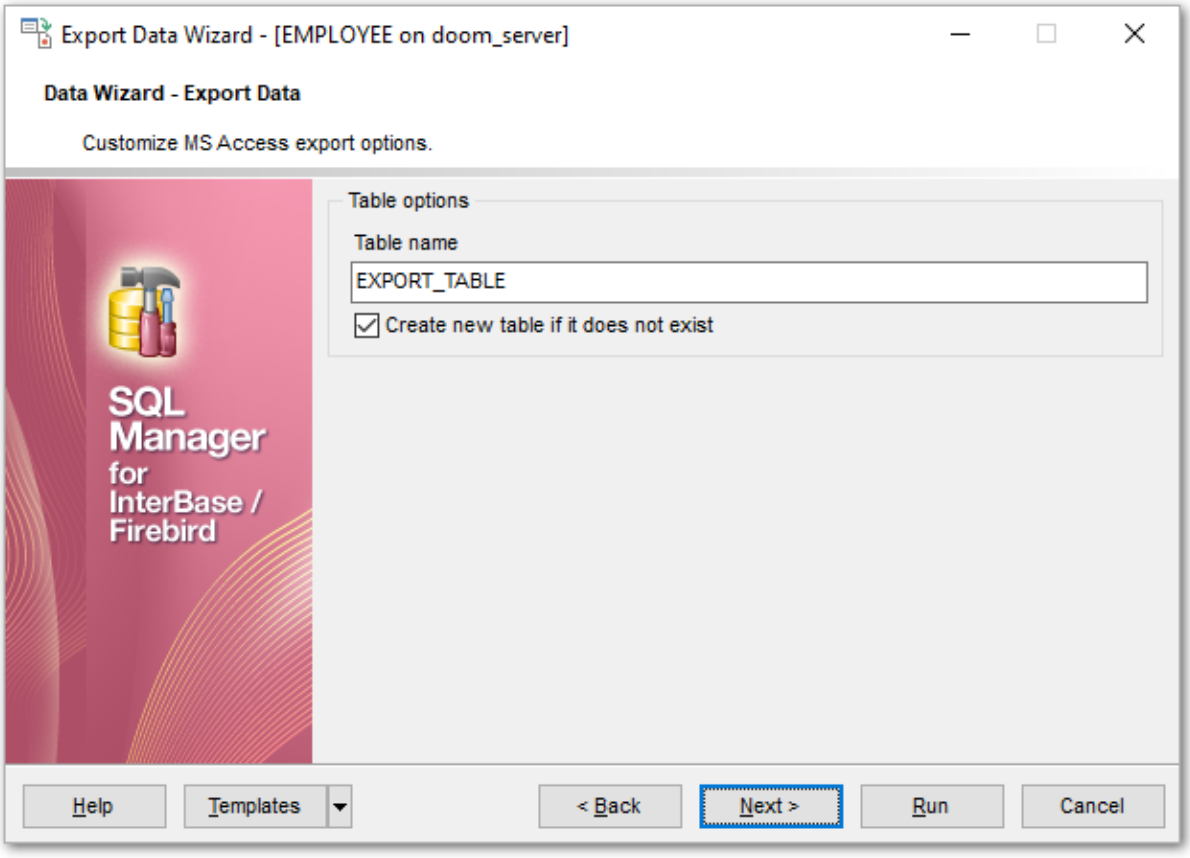
When you are done, click the **Next** button to proceed to Setting common export options 490.

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8.1.5.10 Access options

This step allows you to set options for the target **MS Access** (**.accdb*) file.

Set the name for the target table and specify whether the wizard should **create a new table** in the MS Access 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 490.

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8.1.5.11 MS Word / ODT options

This step allows you to set options for the target **MS Word** (*.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.

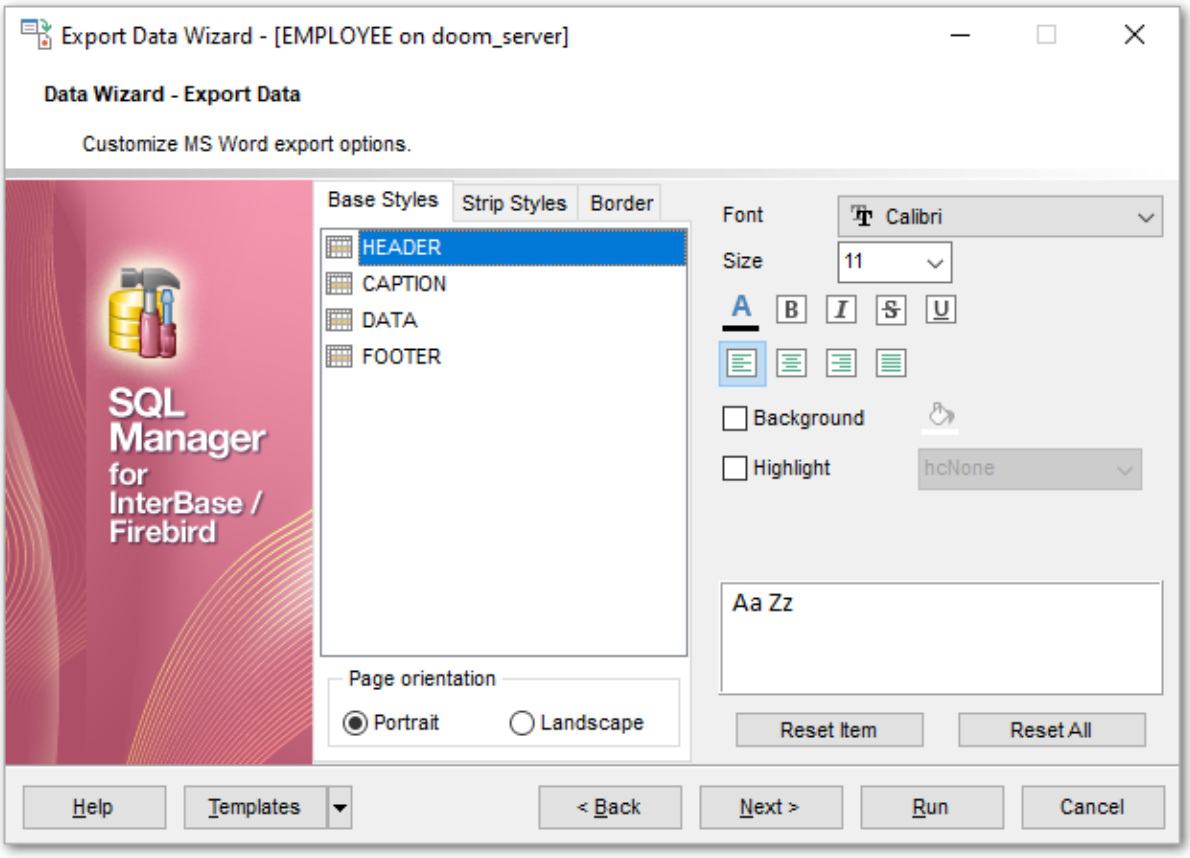
Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.
Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, *strikethrough* text, specify *horizontal align*.

☑ **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.

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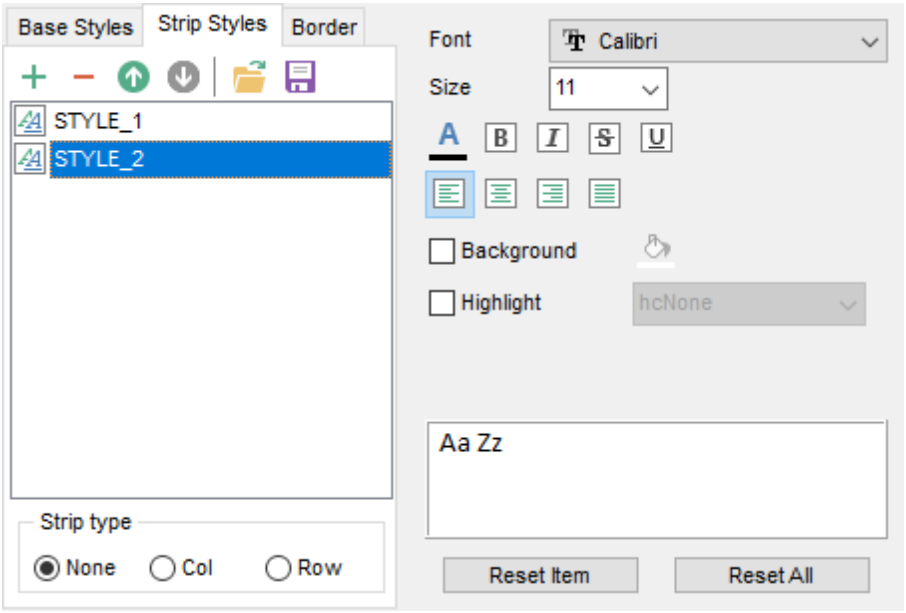


Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background color*, *text alignment*, *highlight* options and save them.

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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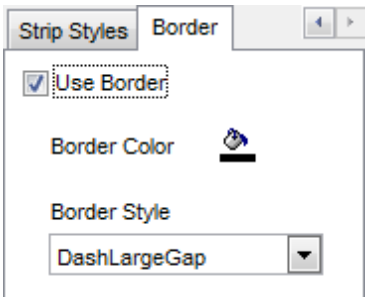


You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

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.).

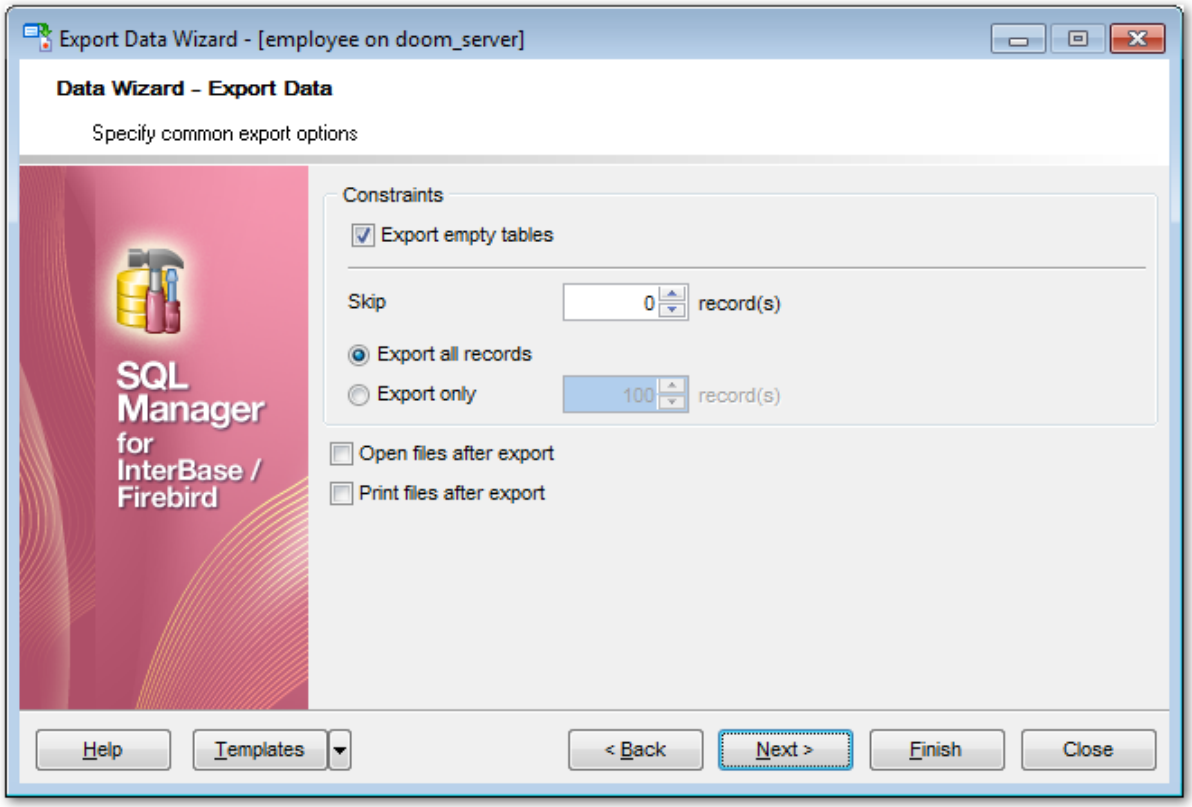


When you are done, click the **Next** button to proceed to Setting common export options 490.

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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 492 of the wizard.

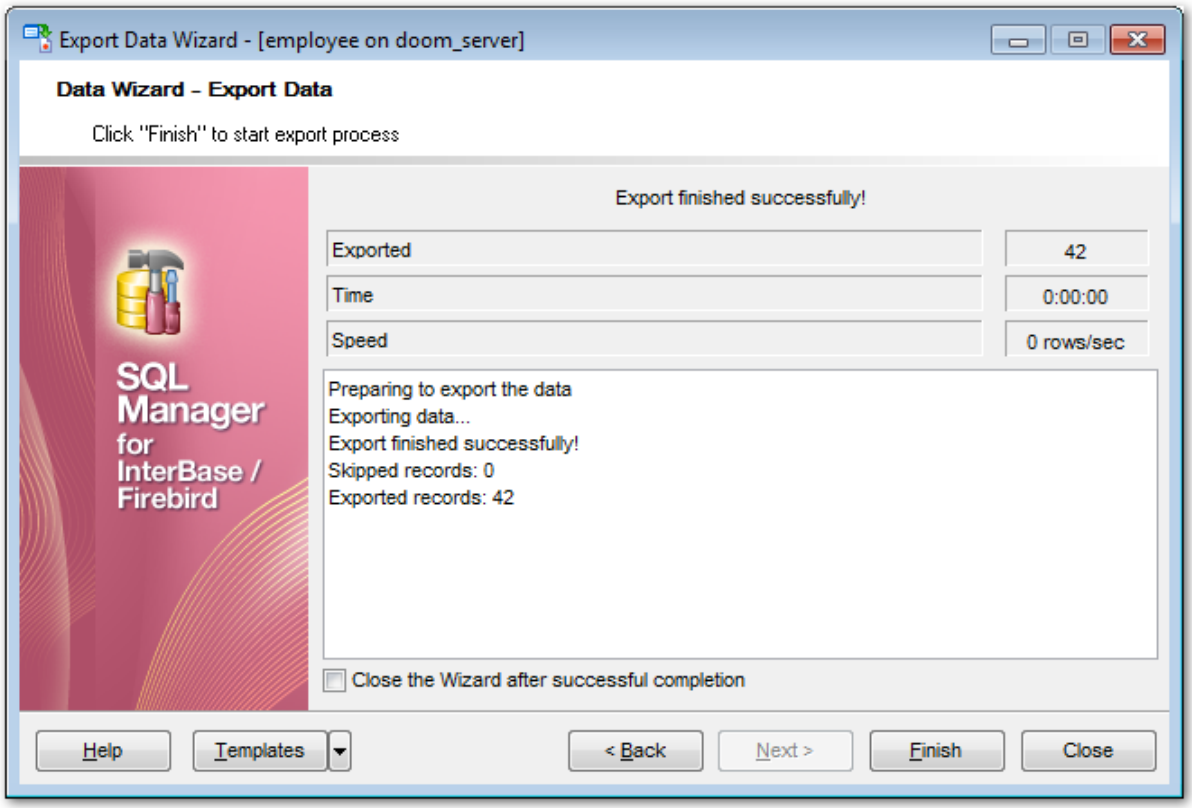
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8.1.7 Exporting data

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[918] for future use.

Click the **Finish** button to run the export process.

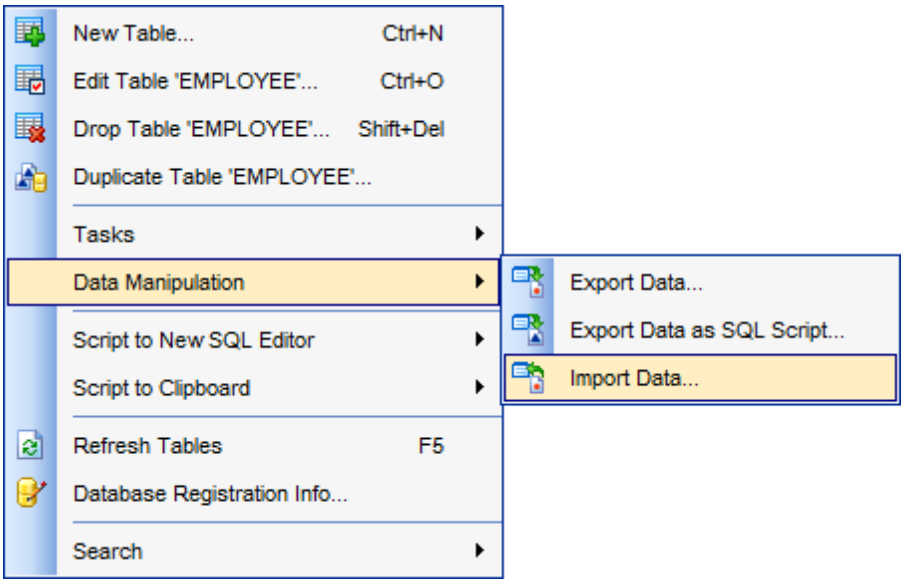
After the operation is completed, you can view the number of *exported* records, elapsed *time*, estimated export *speed*, and the *log* of operations and errors (if any).

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8.2 Import Data Wizard

Import Data Wizard allows you to import data to a table 179 / view 243 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 918 any time for future use.

To start the wizard, right-click the table/view in DB Explorer 63, select the **Data Manipulation** context menu 56 group and proceed to the **Import Data...** item within this group.



Alternatively, you can open the **Data** tab of Table Editor 185 / View Editor 243, right-click the grid 374 there, then select the **Data Manipulation** context menu 383 group and proceed to the **Import Data to <object_name>...** item within this group, or use the **Import Data** item of the Navigation bar 890.

- Setting source file name and format 495
- Selecting the source to import data from 496
- Setting correspondence between the source and target fields 497
- Adjusting common data formats 511
- Setting advanced field formats 512
- Setting import mode and data write type 514
- Customizing common import options 516
- Importing data 518

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 20 page.

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See also:

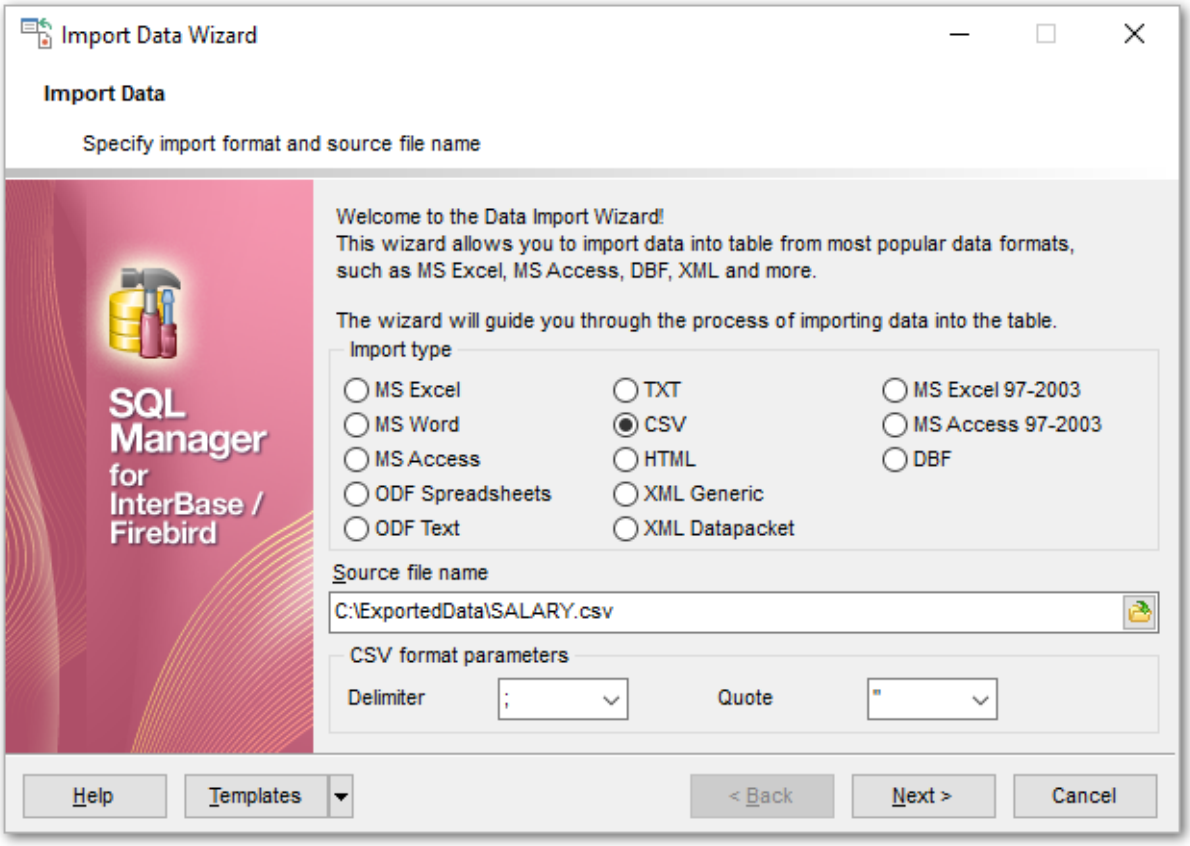
Export Data Wizard 445
Export as SQL Script 519
Using templates 918

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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 919.

CSV format parameters
For CSV 503 import you should define **Delimiter** and **Quote** settings using the corresponding drop-down lists.

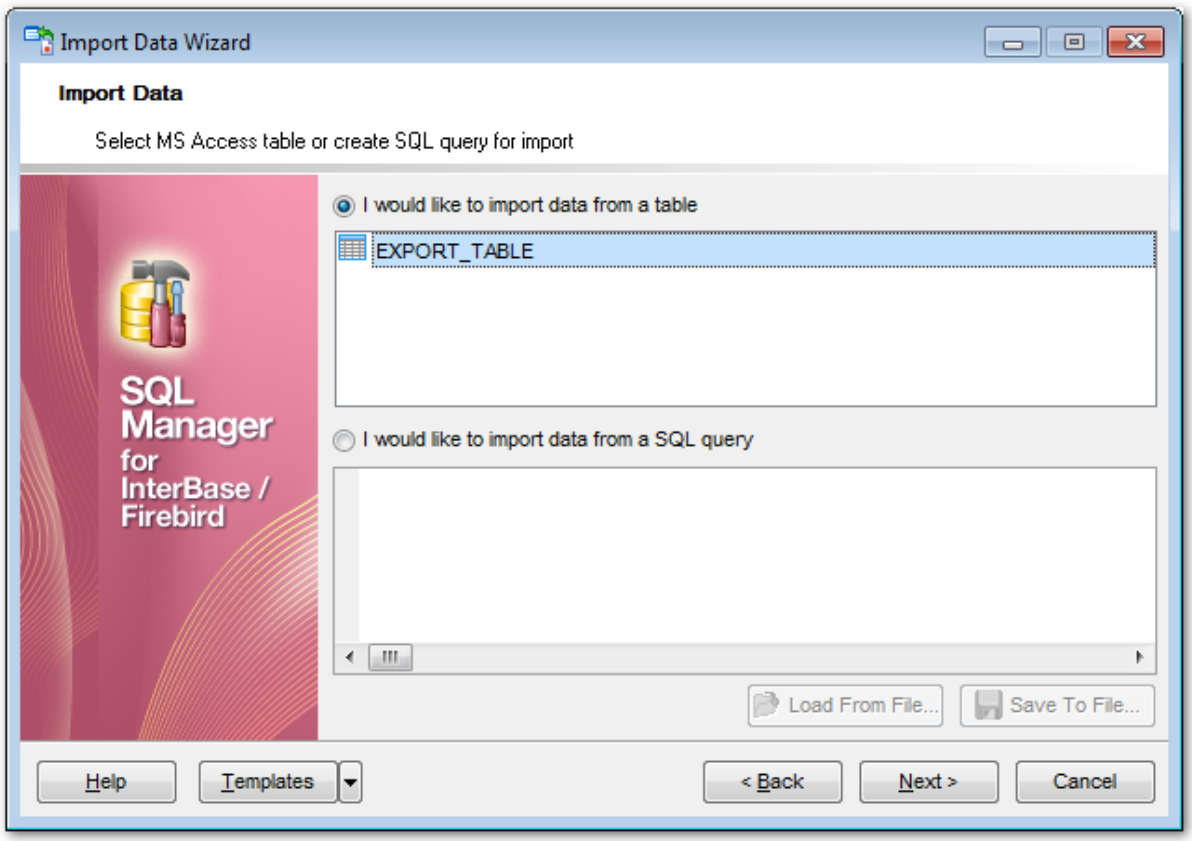
Click the **Next** button to proceed to the Setting fields correspondence 497 step or to the Selecting data source 496 step of the wizard if you have selected **MS Access** as the source file format.

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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 fields correspondence 497 step of the wizard.

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8.2.3 Setting fields correspondence

This step of the wizard allows you **to set correspondence** between columns of the source file and fields of the target InterBase/Firebird table.

- MS Excel 97-2003 498
- MS Access / DBF / XML Datapacket 501
- TXT 502
- CSV 503
- HTML 505
- XML Generic 507
- MS Excel / Word, ODF 509

To get more information about the file formats, see the Supported file formats 919 page.

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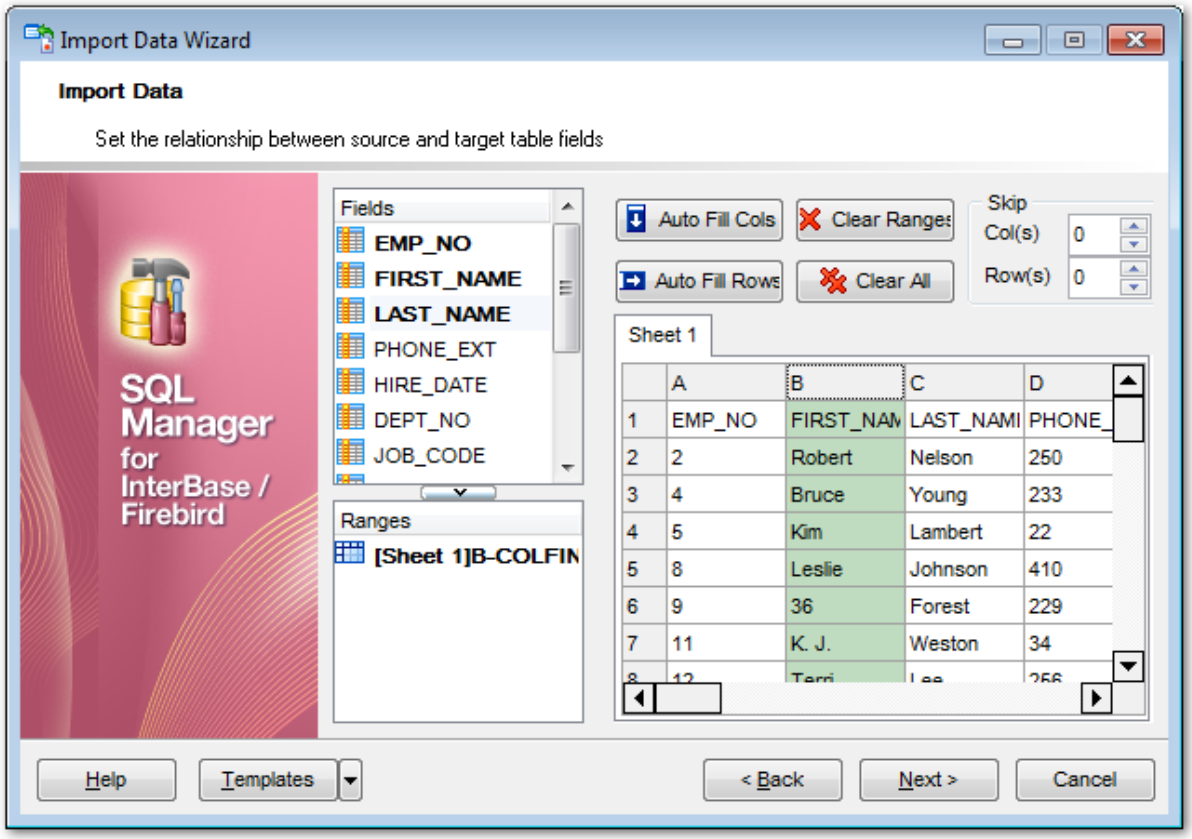
8.2.3.1 Excel 97-2003

Specify ranges in the grid for the target and source fields:

- select a field of the target InterBase/Firebird table in the **Fields** 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 fields correspondence appears in the **Ranges** list;
- repeat the operation for all the fields you need to be included in the import process.

If the source Excel file and the destination InterBase/Firebird 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.

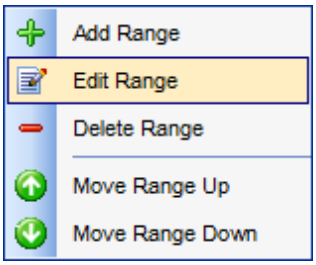
If necessary, you can choose to **skip** a defined number of the source file columns and/or rows using the **Col(s)** and **Row(s)** spinner controls of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).



To clear ranges for a field, select the field in the **Fields** list and press the **Clear Ranges** button.
To clear all ranges specified for the target table fields, 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*.

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The **Range** dialog allows you to edit the data range for import manually.

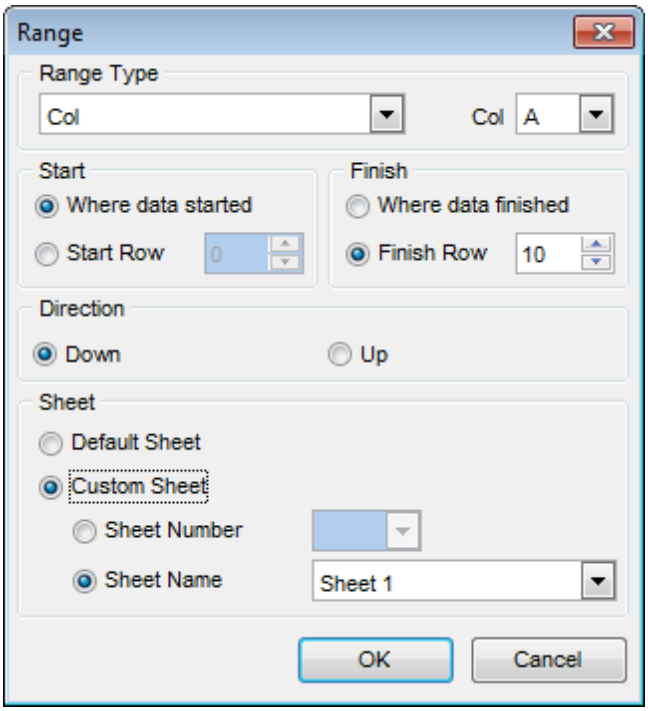
Range Type
Use the drop-down list to select whether a *column*, a *row*, or a *cell* of the source Excel file will be mapped to the target table field.
Depending on the selected range type you should specify the column (e.g. *B*), the row (e. g. *2*) or the cell (e.g. *A2*).

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 511 step of the wizard.

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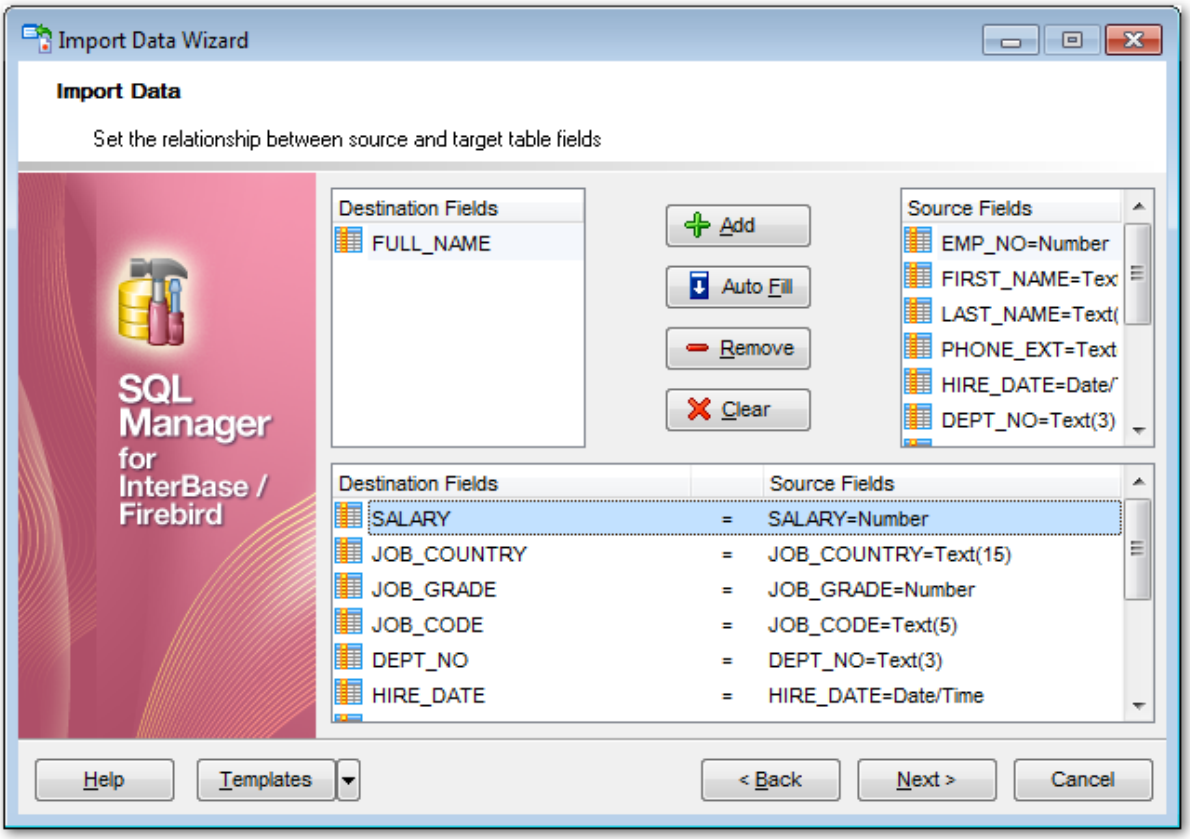
8.2.3.2 Access/DBF/XML Datapacket

Set correspondence between the source MS Access fields and the target InterBase/ Firebird table fields:

- select a field of the target InterBase/Firebird table in the **Destination Fields** list;
- select the corresponding field of the source MS Access table in the **Source Fields** list;
- click the **Add** button to set correspondence between the selected fields;
- the pair of fields appears in the list below;
- repeat the operation for all the fields you need to be included in the import process.

Use the **Auto Fill** button to set correspondence between the source and target fields 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 fields 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 511 step of the wizard.

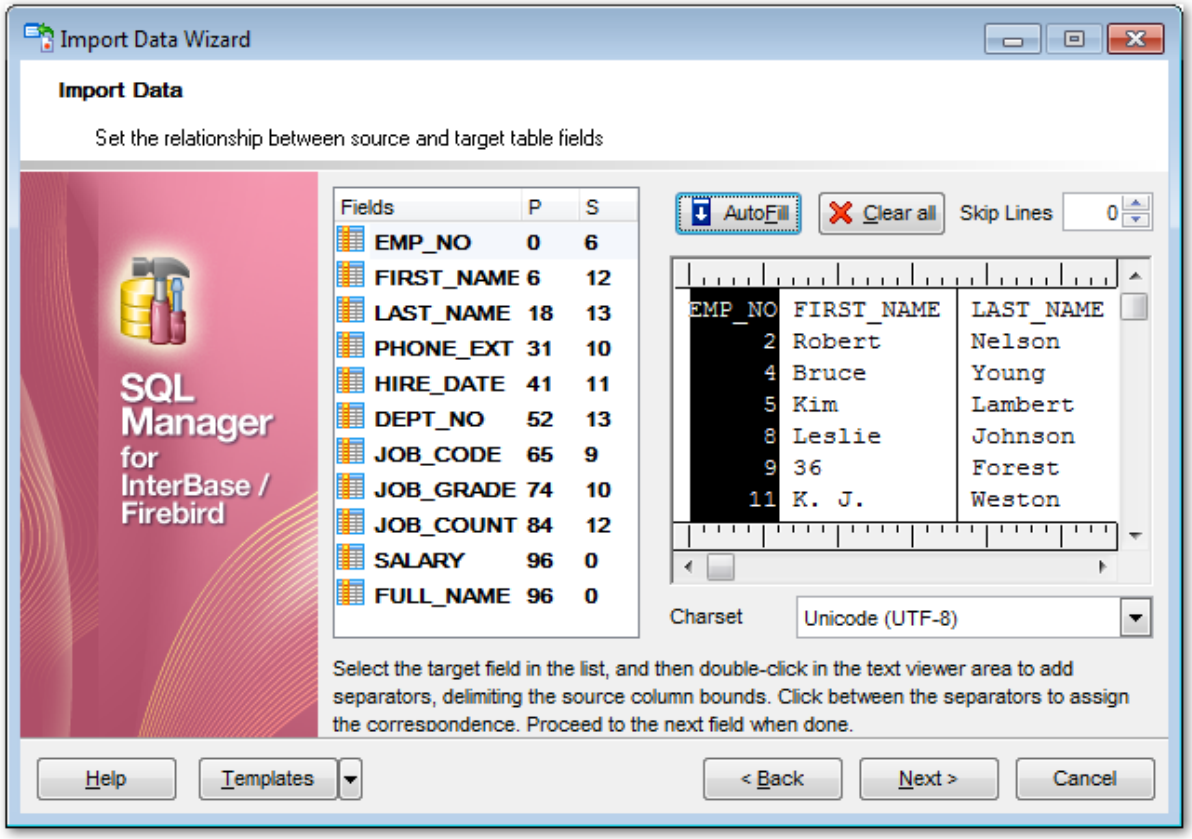
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8.2.3.3 TXT

Set correspondence between the source text file columns and the target InterBase/ Firebird table fields:

- select a field of the target InterBase/Firebird table in the **Fields** 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 field - the selected source column gets black highlight;
- repeat the operation for all the fields 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 511 step of the wizard.

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8.2.3.4 CSV

Set correspondence between the target table fields and the source CSV file columns:

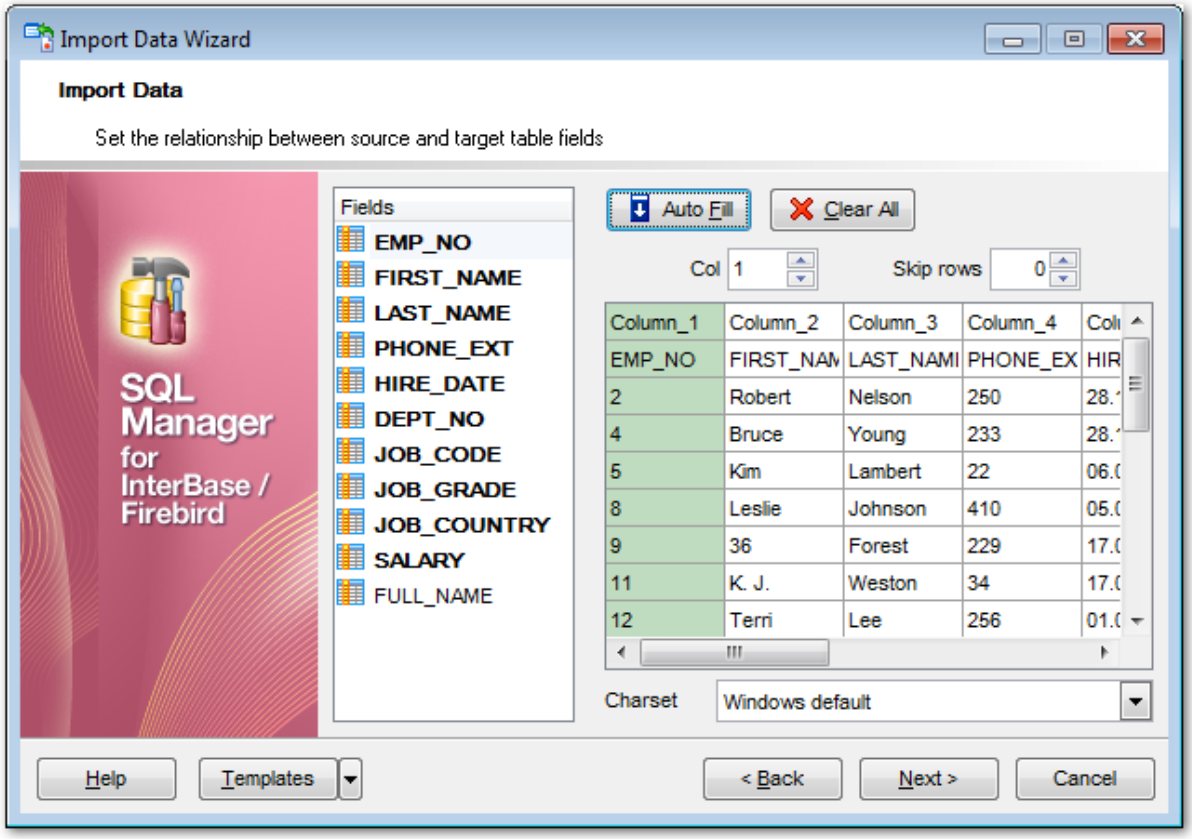
- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the source grid viewer area: click a caption to assign the column to the selected target table field;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the fields you need to be included in the import process.

If the source CSV file and the destination InterBase/Firebird 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 495 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 field in the **Fields** list and press the **Clear**

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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 511 step of the wizard.

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8.2.3.5 HTML

Set correspondence between the target table fields and the source HTML file columns:

- select a field of the target InterBase/Firebird table in the **Fields** 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 field;
- the selected column of the source file gets green highlight;
- repeat the operation for all the fields you need to be included in the import process.

If the source HTML file and the destination InterBase/Firebird 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 field in the **Fields** list and press the **Clear** button.
To remove all correspondences, press the **Clear All** button.

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Click the **Next** button to proceed to the Adjusting data formats 511 step of the wizard.

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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 InterBase/ Firebird table fields:

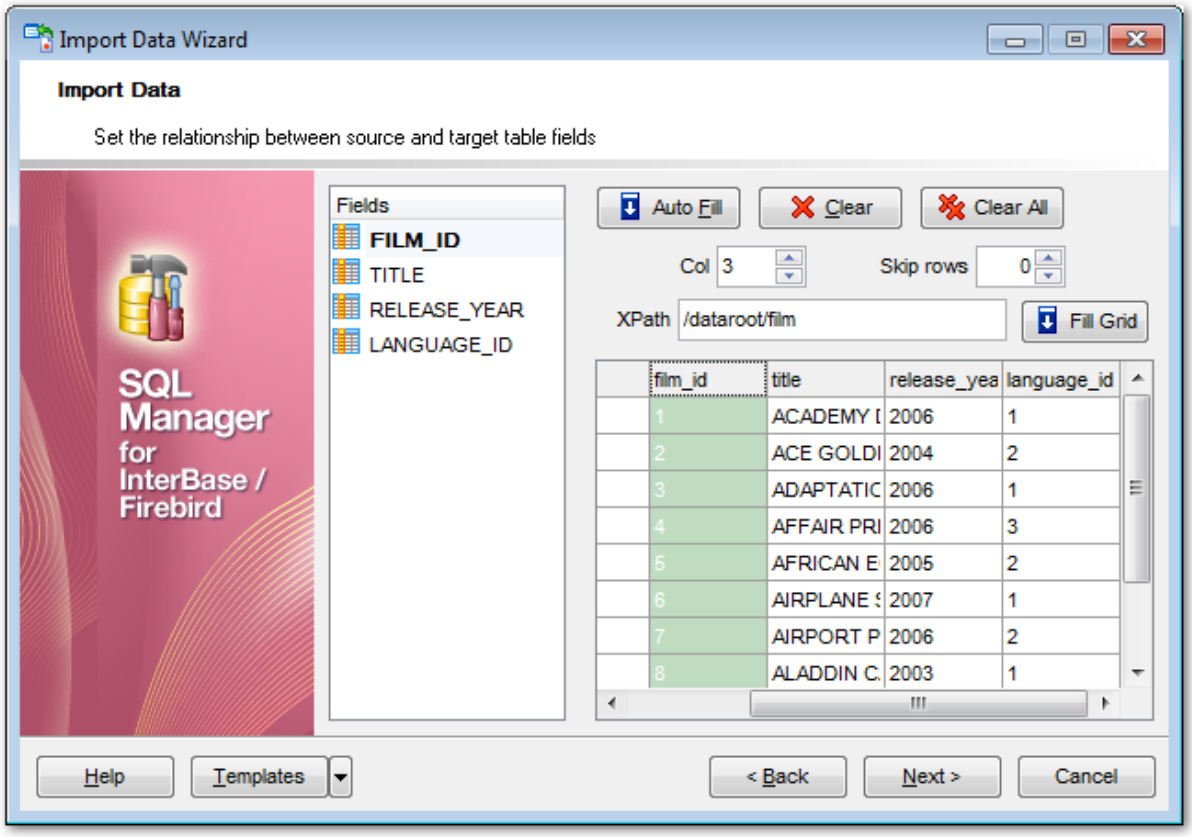
- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the source grid viewer area: click a column to assign the column to the selected target table field;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the fields you need to be included in the import process.

You can use the **Auto Fill** button to set correspondence between the source and target fields 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 field in the **Fields** 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 511 step of the wizard.

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8.2.3.7 MS Excel/Word, ODF

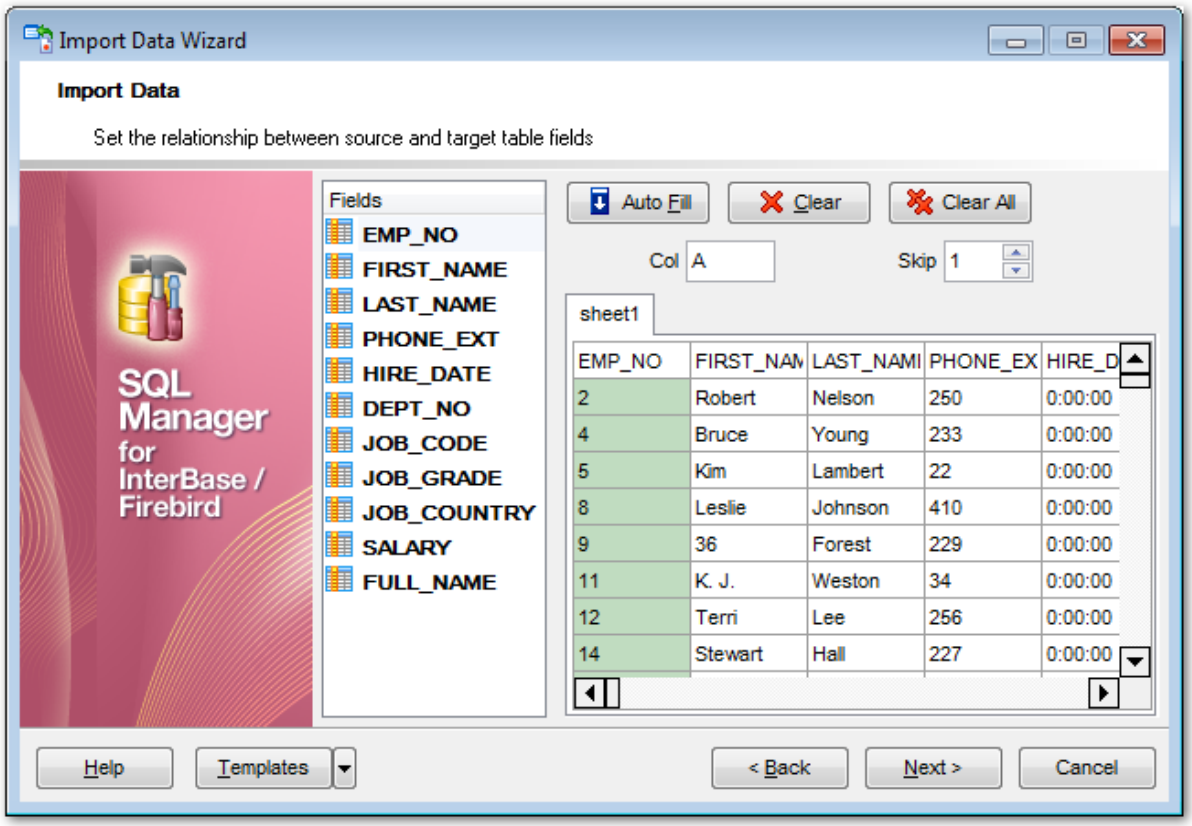
Specify ranges in the grid for the target and source fields:

- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the **Sheet** grid: click a column to assign the column to the selected target table field;
- the selected column of the source file gets green highlight;
- repeat the operation for all the fields you need to be included in the import process.

If the source file and the destination InterBase/Firebird 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 field in the **Fields** list and press the **Clear** button.
To remove all correspondences, press the **Clear All** button.

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Click the **Next** button to proceed to the Adjusting data formats 511 step of the wizard.

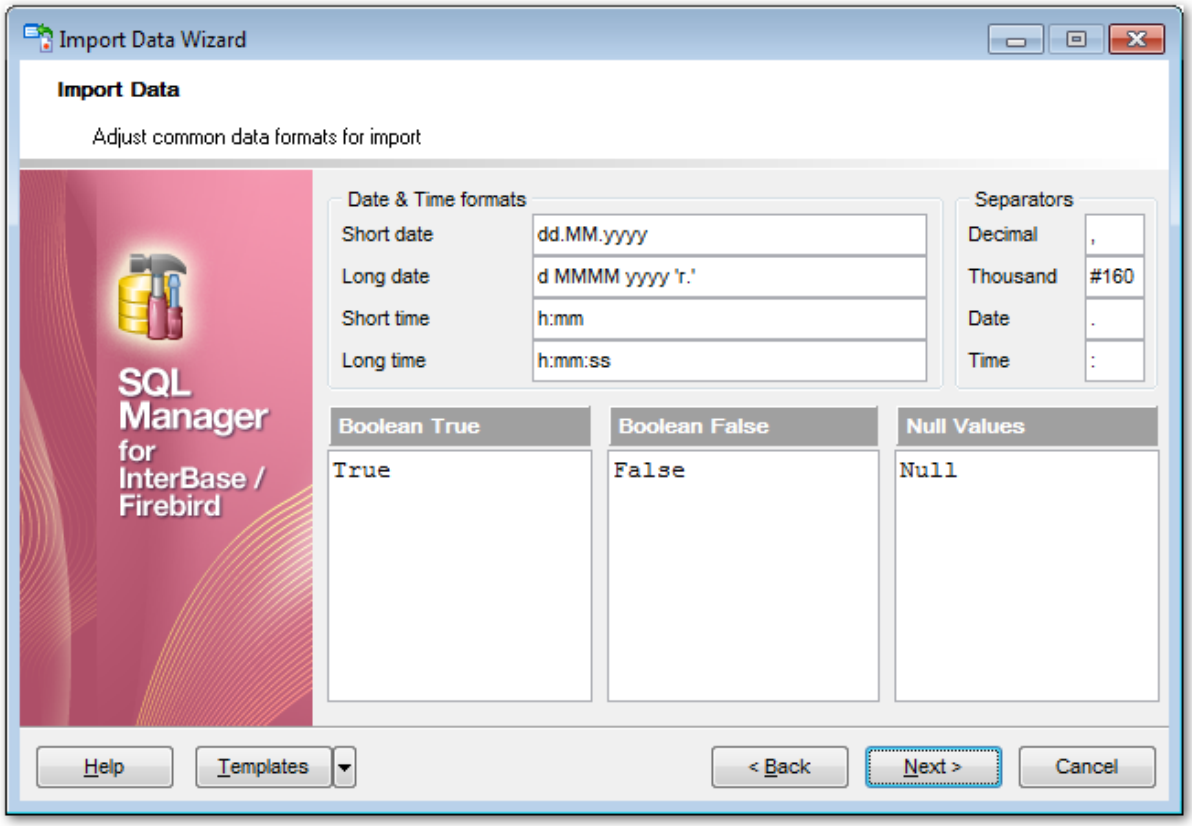
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8.2.4 Adjusting data formats

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 914 page.



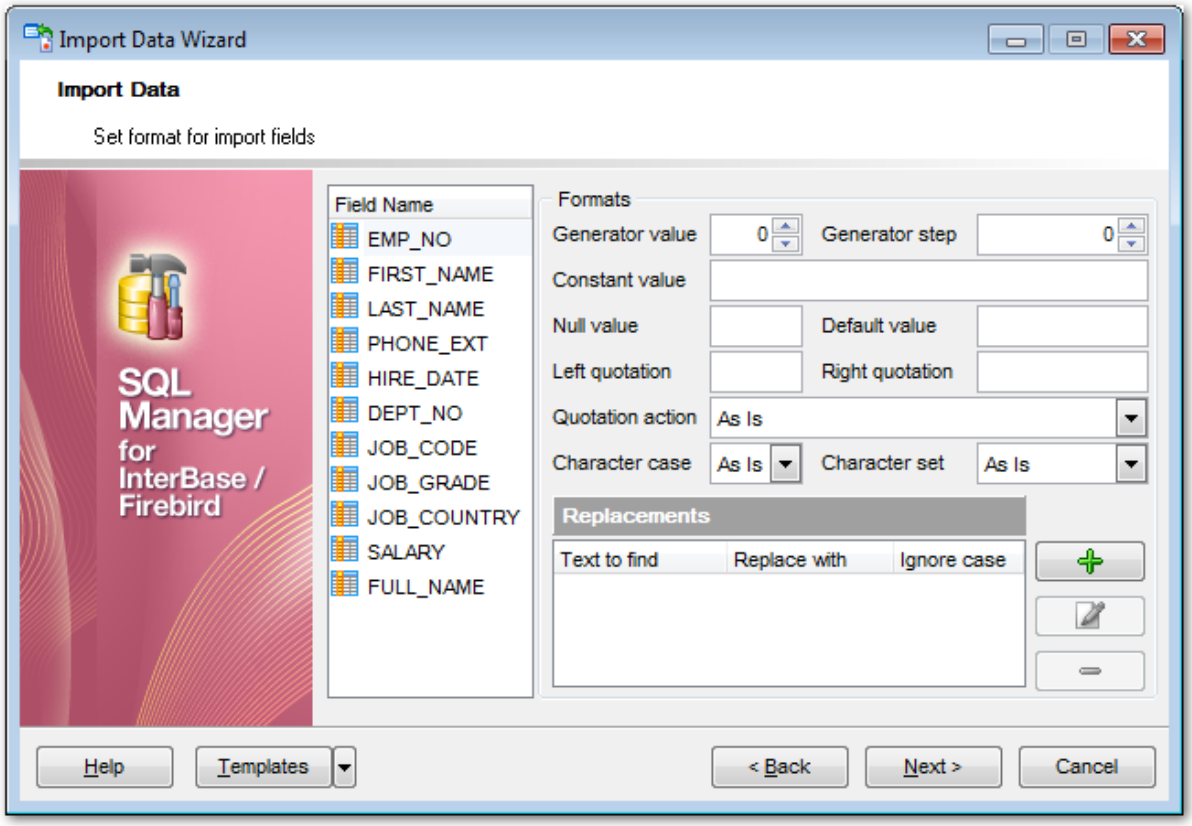
Click the **Next** button to proceed to the Setting advanced field formats 512 step of the wizard.

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8.2.5 Setting advanced field formats

This step of the wizard allows you to set **formats** each field separately.

Select a field in the list and adjust **format options** that will be applied to this field only.



Specify **Generator value** and **Generator step** for incremental data generation into the specified field, 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**.

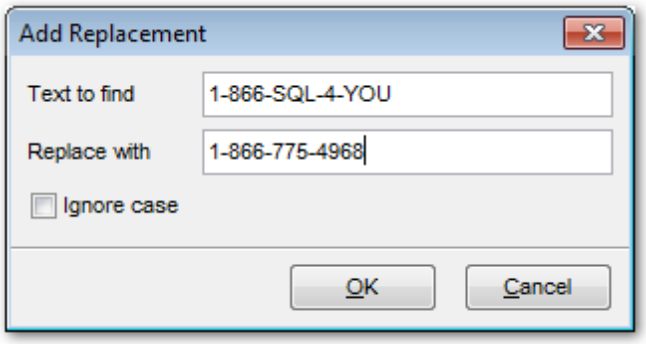
Use the **Left** / **Right quotation** edit boxes to specify left/right quotation marks.
Use the **Quotation action** drop-down list to select whether the quotation marks should be *added*, *removed*, or left *'As is'*.

Use the **Character case** drop-down list to select the case that will be used for string values of the field: *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 field: *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 field. Press the **Plus** button to specify a new replacement options using the **Add Replacement** dialog.

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To edit a replacement, click the **Edit** button.
To remove a replacement, click the **Minus** button.

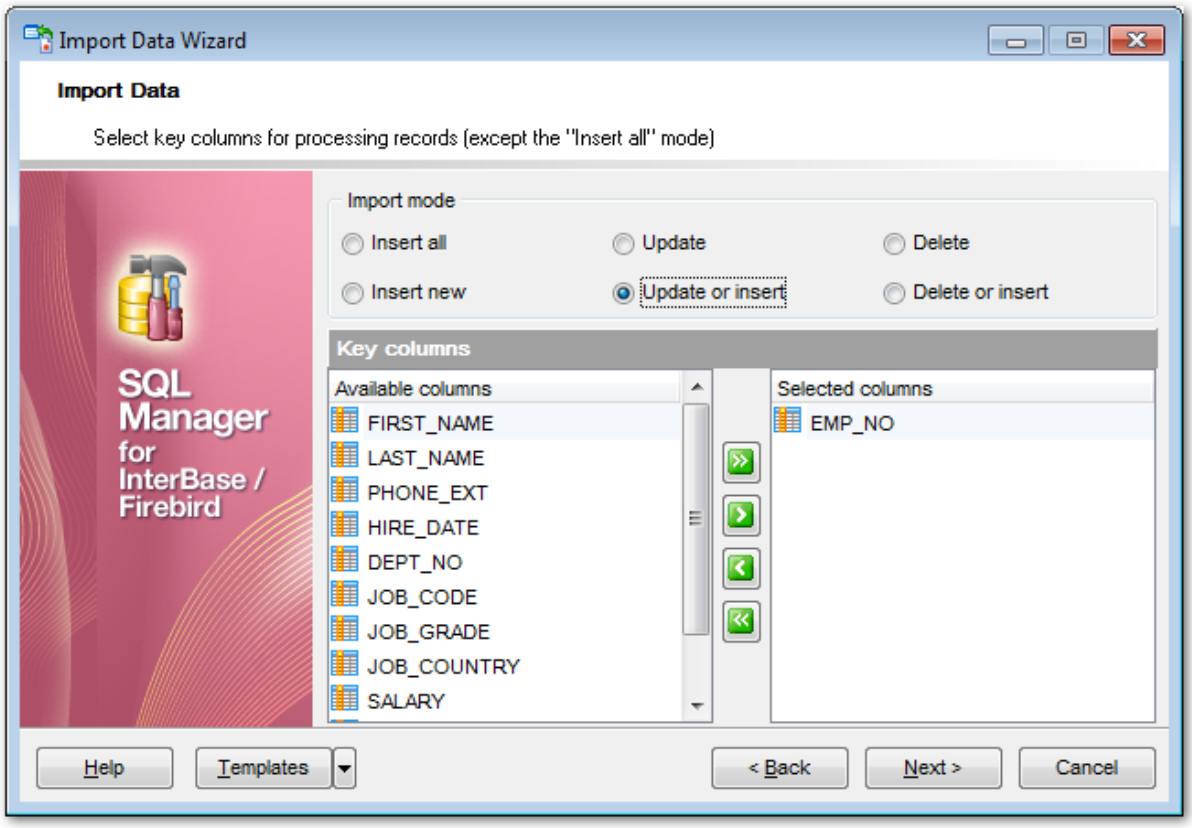
When you are done, click the **Next** button to proceed to the Setting import mode 514 step of the wizard.

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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

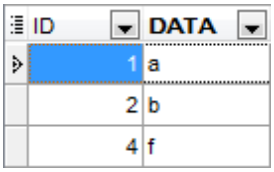


Here is an **example** of some import modes offered by Import Data Wizard:

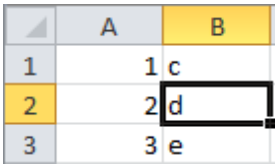
All import modes (except for the **Insert All** mode) are based on key values information. In order to perform import operations with these modes used, you need to have matches between the source file key column(s) and the destination table key field(s).
For example, your source file contains three rows with the key values *1*, *2*, *3*, and your destination table contains three rows with the key values *1*, *2*, *4*.

Destination table	**Source file data**

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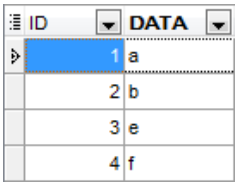
ID	DATA
1	a
2	b
4	f



	A	B
1	1	c
2	2	d
3	3	e

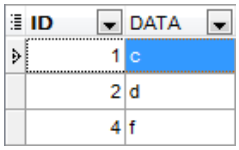
If you use the **Insert new** import mode, in this case only the row with key value *3* will be inserted into the destination table.
If you use the **Update** import mode, then the rows with key values *1*, *2* will be updated.
If you use the **Update or insert** import mode, then rows *1*, *2* will 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 fields. This field (or fields) is used as key field to identify specific data in the target database.

Insert new



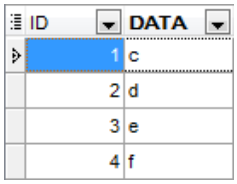
ID	DATA
1	a
2	b
3	e
4	f

Update



ID	DATA
1	c
2	d
4	f

Update or insert



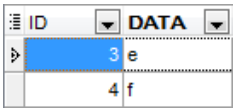
ID	DATA
1	c
2	d
3	e
4	f

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.

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.

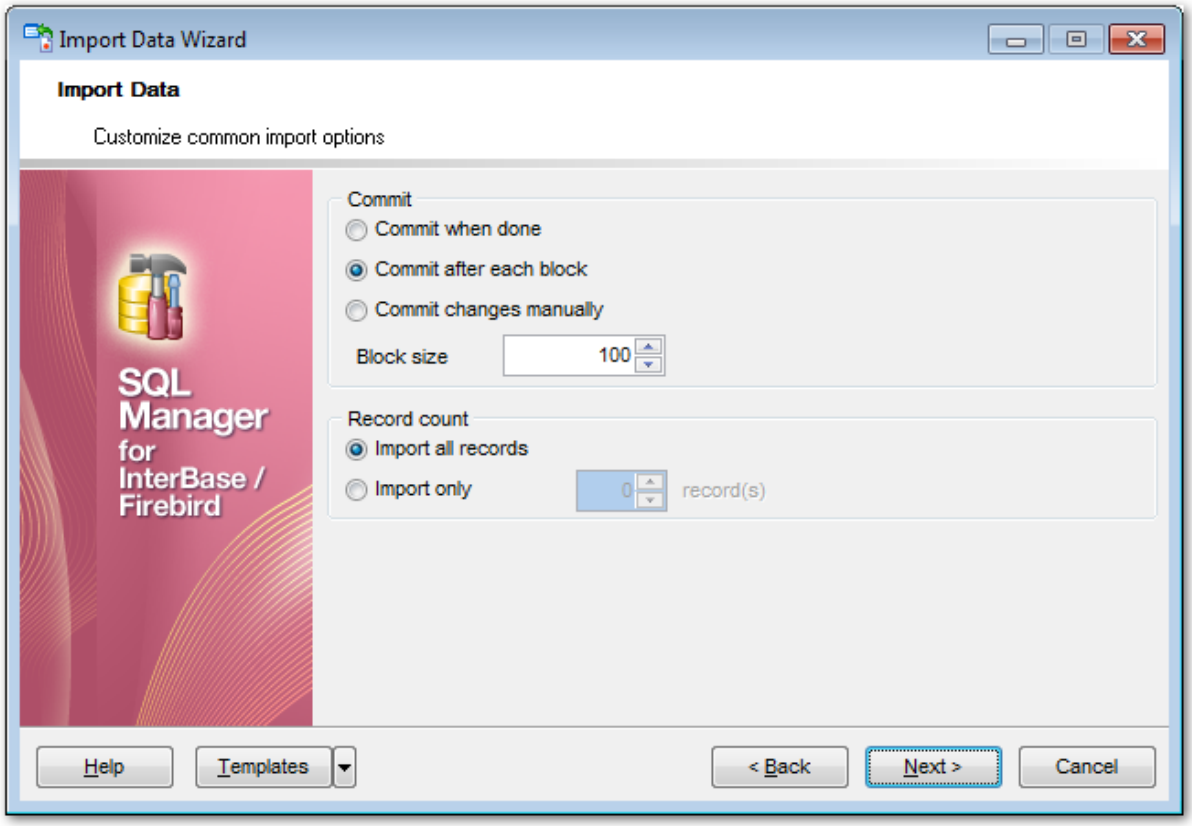
The **Key columns** area allows you to select the fields of the table to be used as the key fields for the import process.
To select a field, you need to move it from the **Available columns** list to the **Selected columns** list. Use the  buttons or drag-and-drop operations to move the fields from one list to another.

When you are done, click the **Next** button to proceed to the Customizing common options 516 step of the wizard.

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8.2.7 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 518 of the wizard.

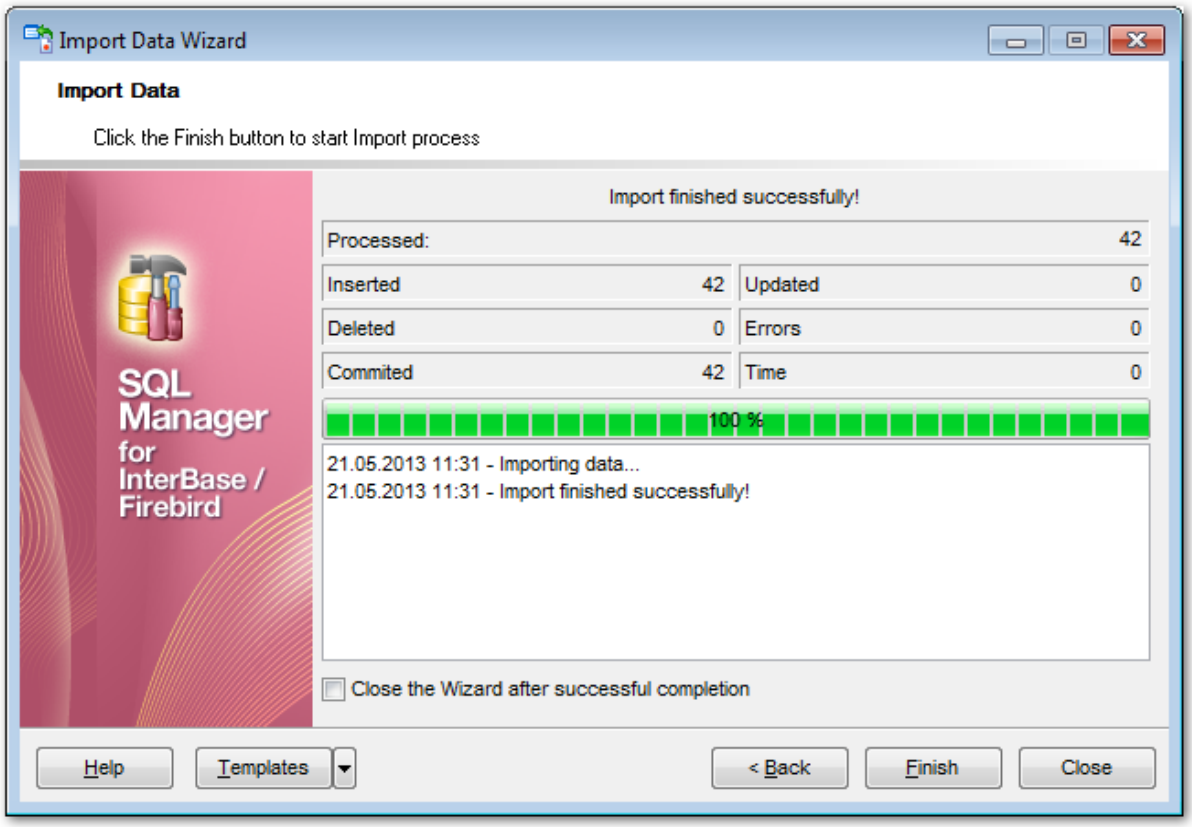
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8.2.8 Importing data

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[918] for future use.

Click the **Finish** button to run the import process.

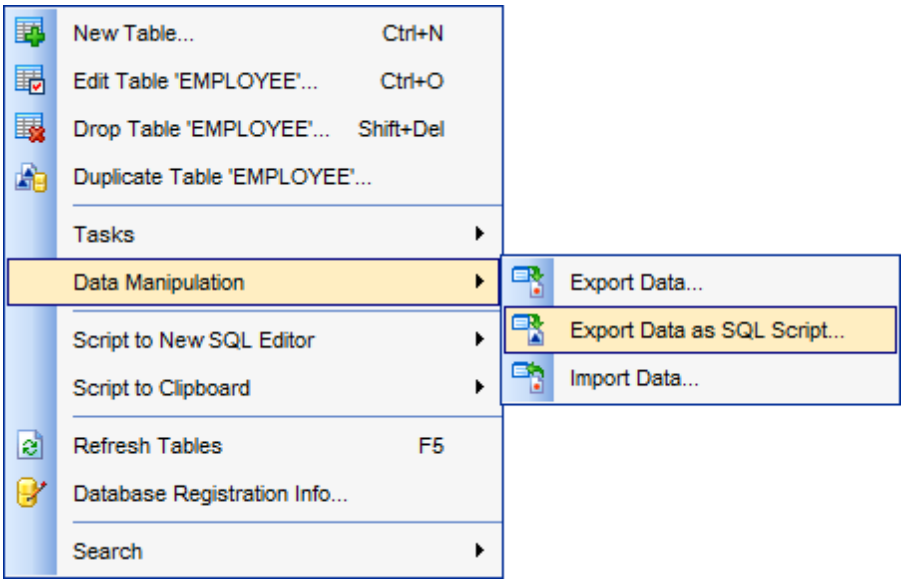
After the operation is completed, you can view the total number of *processed* records, the number of *inserted/updated/deleted* records, the number of *committed* records, the number of *errors*, elapsed *time*, and the *log* of operations and errors (if any).

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8.3 Export as SQL Script

Export as SQL Script Wizard allows you to export data from a table / view or from a query result to SQL script as a number of INSERT statements. You can save your settings as a template any time for future use.

To start the wizard, right-click the object in DB Explorer, select the **Data Manipulation** context menu group and proceed to the **Export Data as SQL Script...** item within this group.



Alternatively, you can open the **Data** tab of Table Editor / View Editor or the **Result (s)** tab of Query Data / Query Builder, right-click the grid there, then select the **Data Manipulation** context menu 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.

- Selecting destination DBMS
- Setting destination file name
- Setting BLOB options
- Selecting field to export
- Editing the result table definition
- Setting export options
- Exporting as SQL Script

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 page.

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See also:

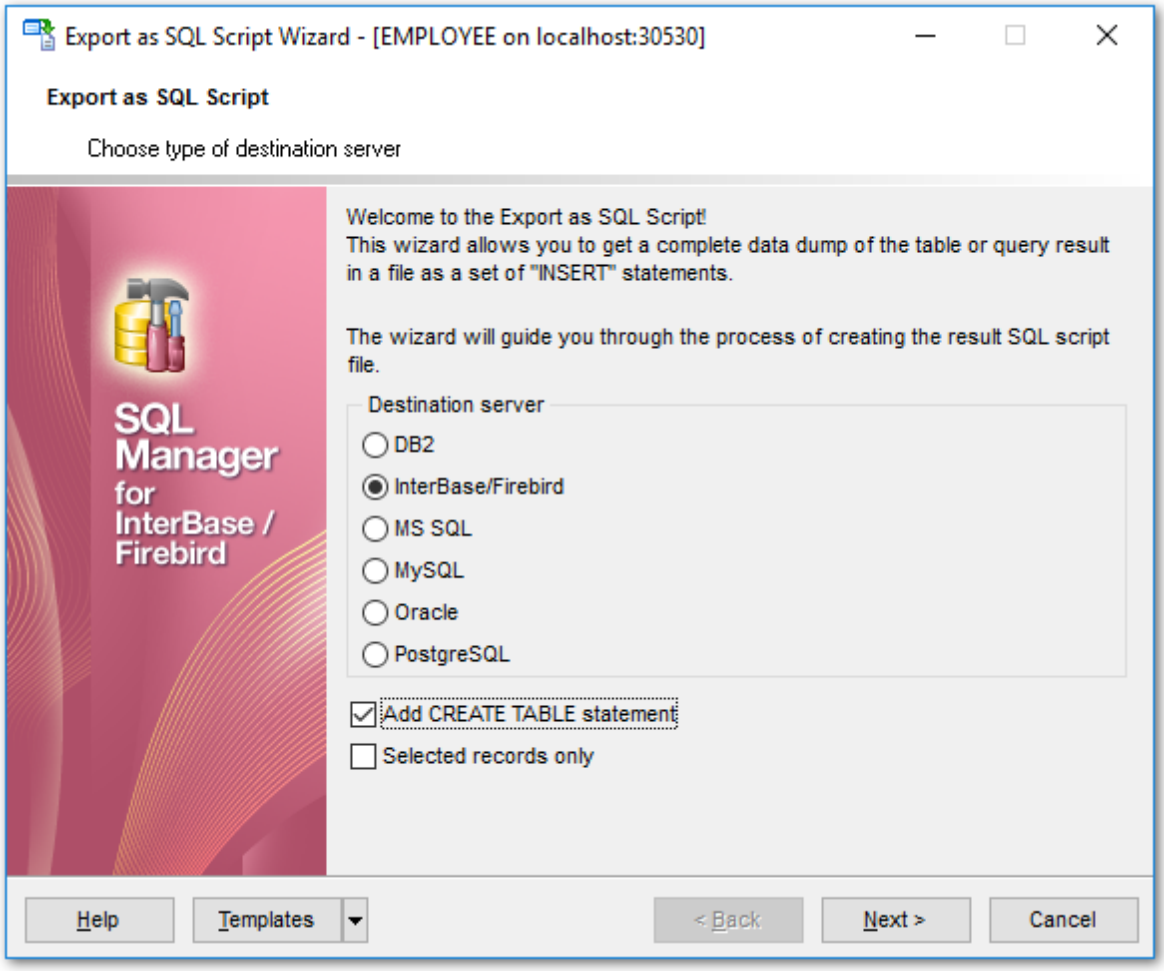
Export Data Wizard 445
Import Data Wizard 493
Using templates 918

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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.

Selected records only
This option is visible if the **Export as SQL Script** wizard is opened from the **Data/Results** grid view. If the option is checked only selected rows will be exported.

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Click the **Next** button to proceed to the Setting destination file name 523 step of the wizard.

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8.3.2 Setting destination file name

Specify whether the result script will be loaded to Execute Script Editor 544 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.

Compression options

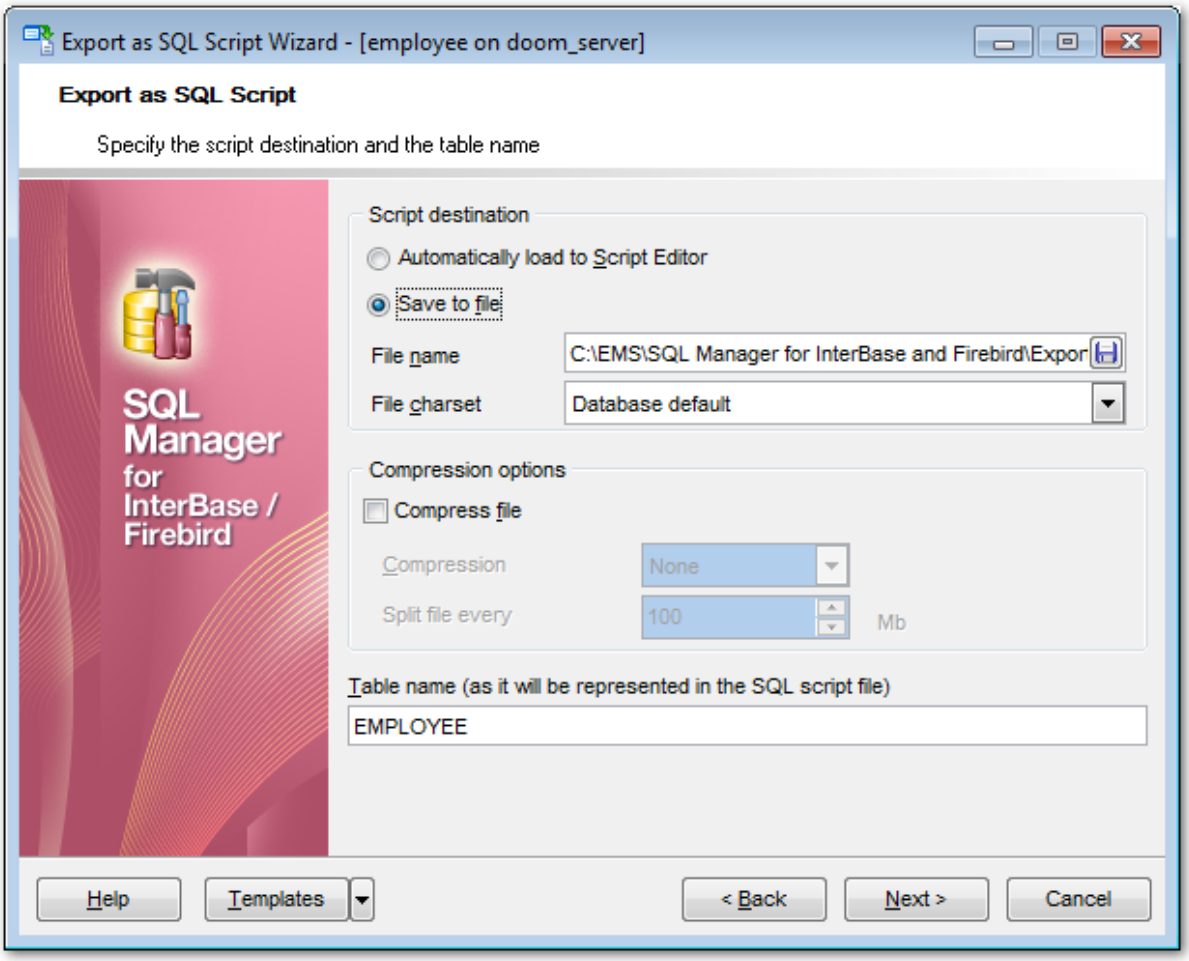
Compress file
Check this option if you wish to compress the output file.

Compression
Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.

Split file every ... Mb
Specify the size (in *megabytes*) of each part the output file will be split into.

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 525 step of the wizard.

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8.3.3 Setting BLOB options

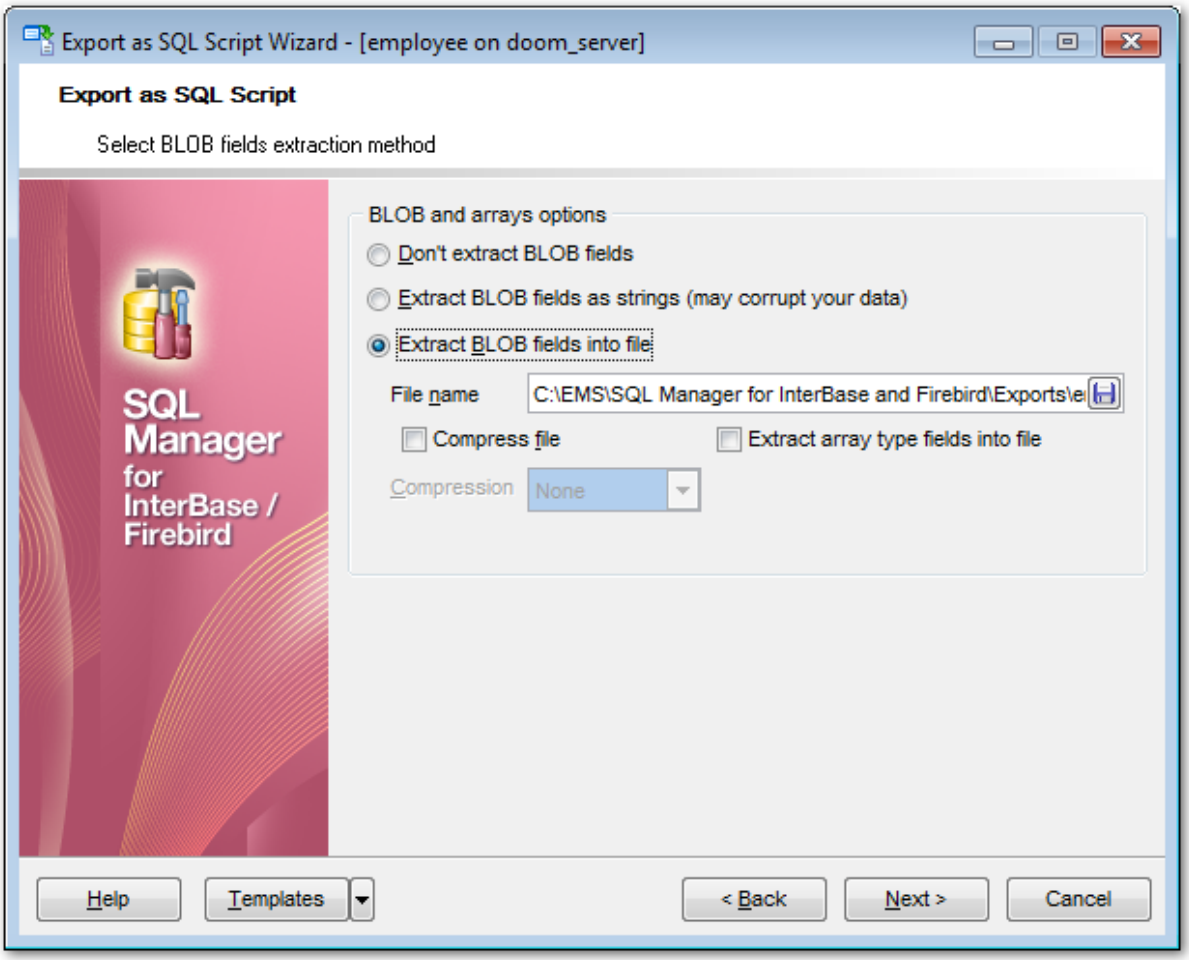
BLOB and arrays options

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* (available for *DB2*, *InterBase/Firebird*, *MS SQL*, *Oracle* destination servers 521). 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.

Extract array type fields into file
Check this option if you wish fields of array type to be dumped into the file.

Compression
Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.



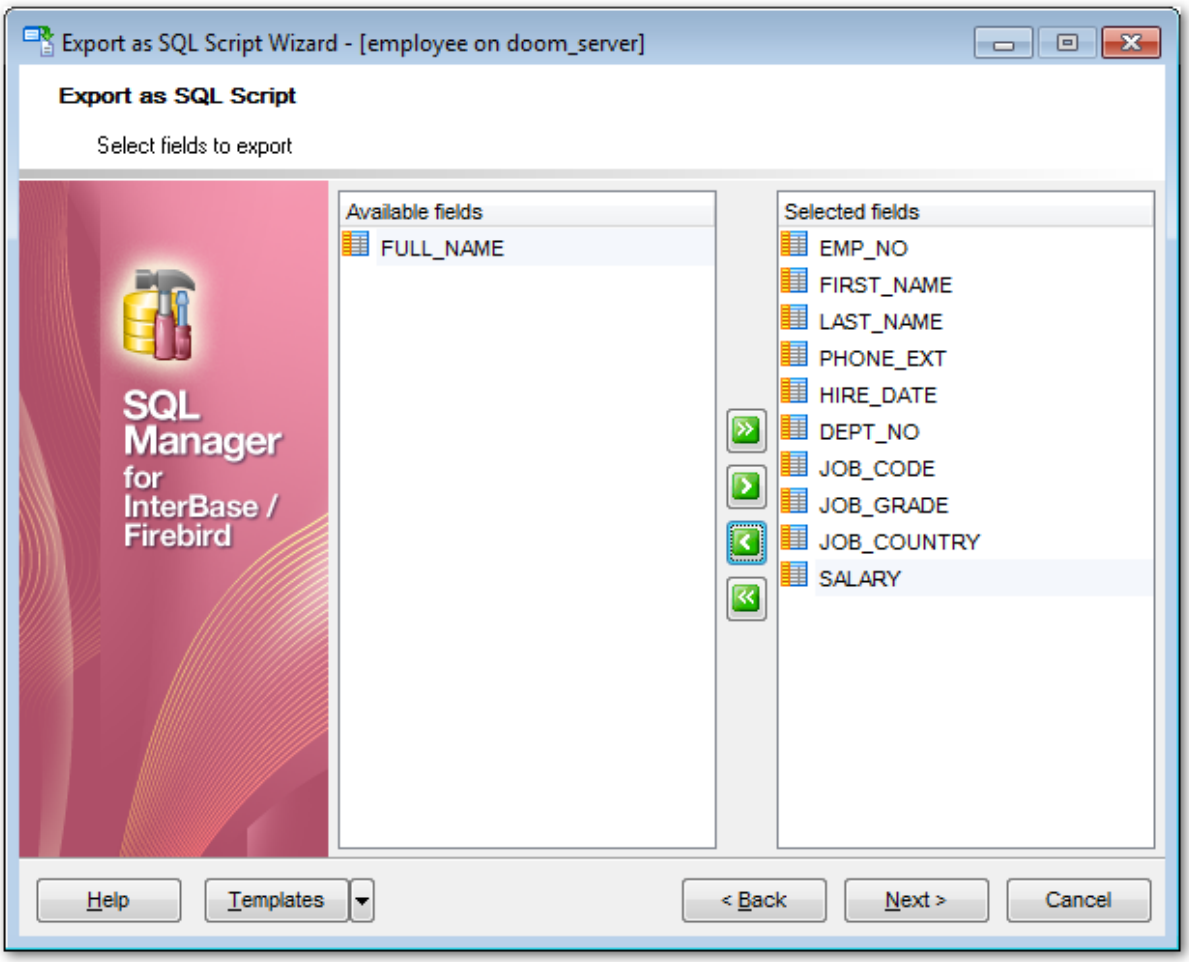
© 1999-2026 EMS Software Development

Click the **Next** button to proceed to the Selecting fields to export 527 step of the wizard.

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8.3.4 Selecting fields to export

This step of the wizard allows you to select the table field(s) to be exported to SQL script.
To select a field, you need to move it from the **Available fields** list to the **Selected fields** list. Use the buttons or drag-and-drop operations to move the fields from one list to another.



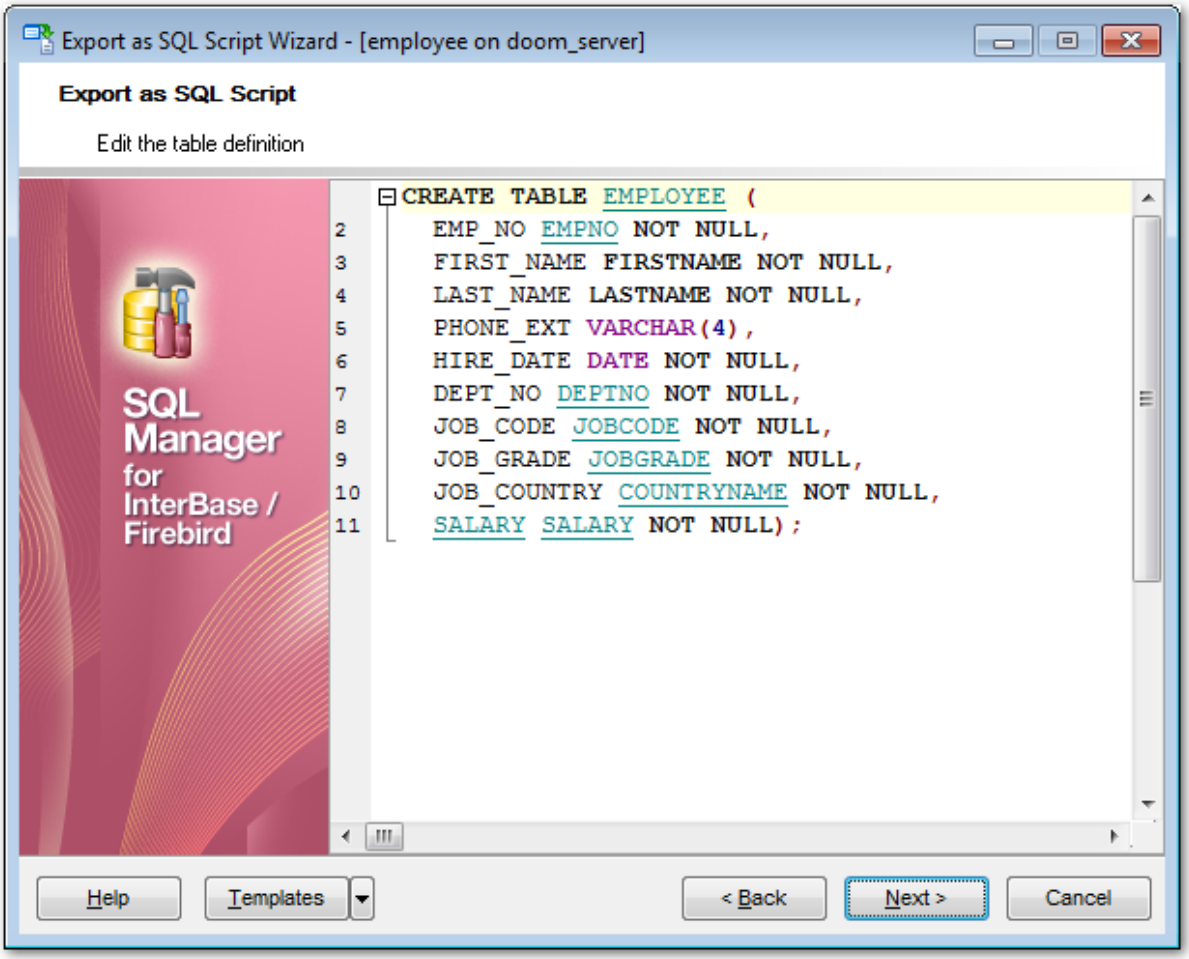
Click the **Next** button to proceed to the Editing table definition 528 step of the wizard.

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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 521 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 334 and Using the context menu 336.



Click the **Next** button to proceed to the Setting export options 529 step of the wizard.

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8.3.6 Setting export options

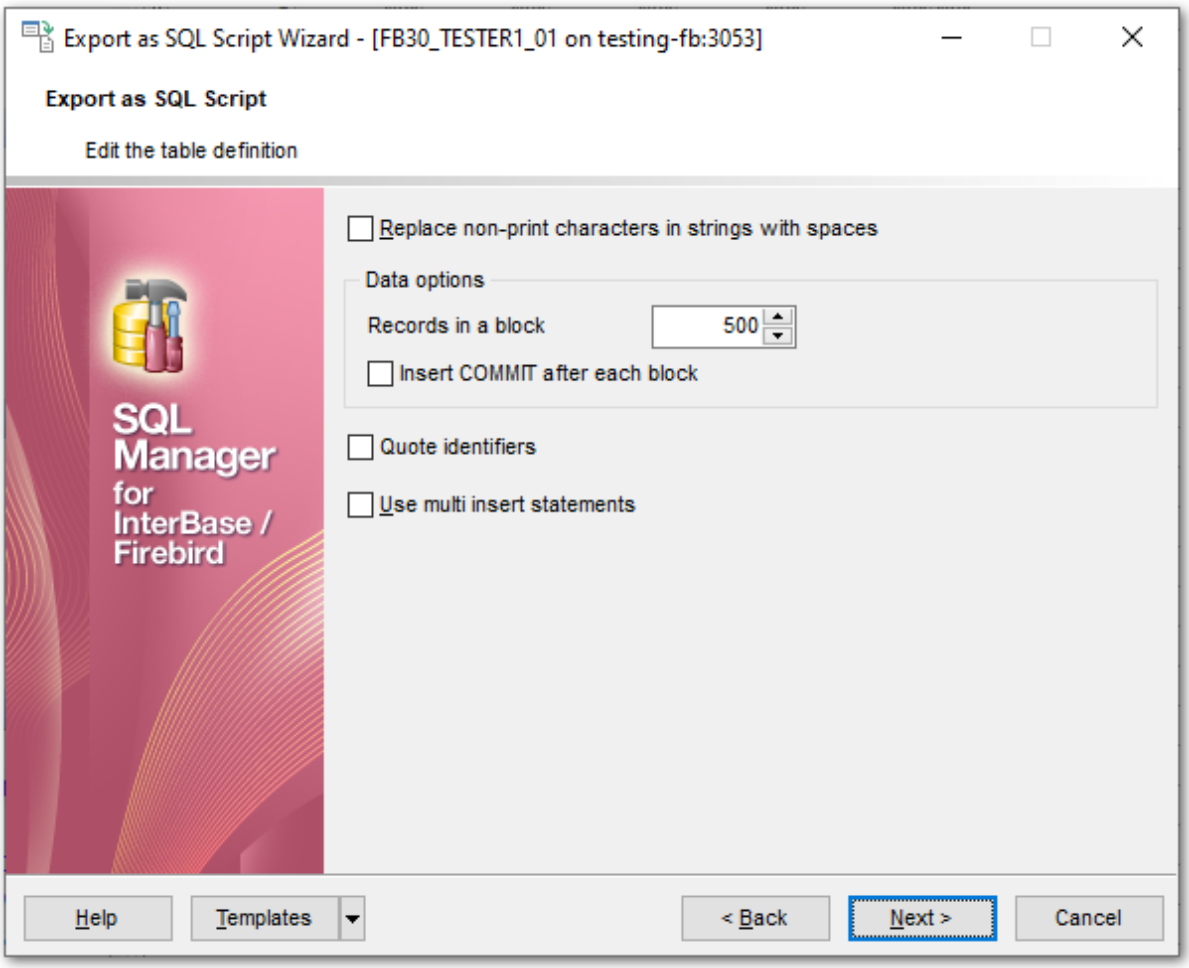
Specify common export options according to your needs.

If necessary, you can choose **to replace non-print characters in strings with spaces**.

Data options

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.



☑ **Quote identifiers**
Quotes will be added to the script, if you enable this option.

☑ **Use multi insert statements**
Enable to generate multiple rows in a single command.

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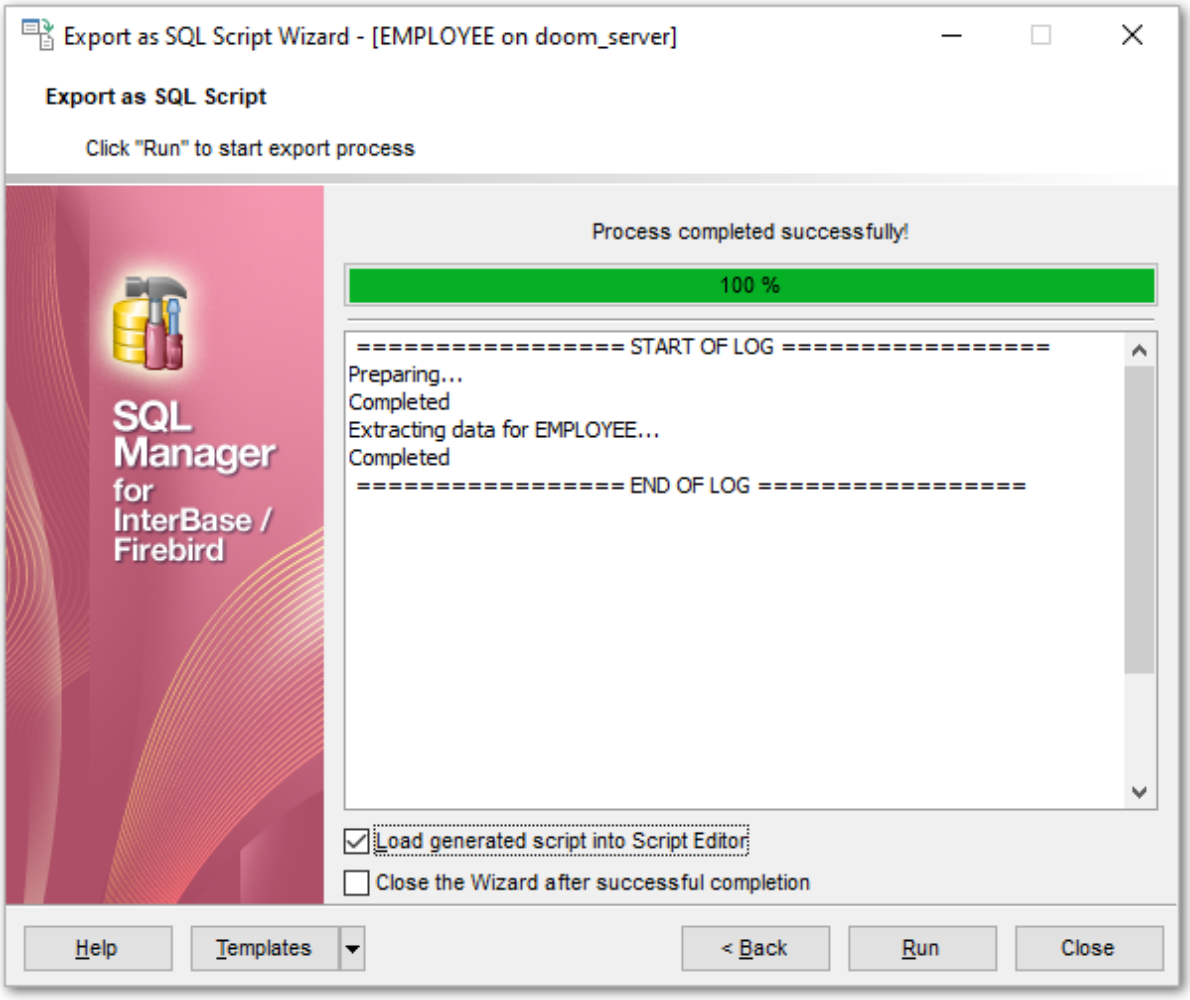
Click the **Next** button to proceed to Exporting as SQL Script 531.

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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 Editor[544].

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[918] for future use.

Click the **Finish** button to run the export as SQL script process.

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Part



9 Database Tools

SQL Manager for InterBase/Firebird provides graphical interface for a number of database maintenance operations. The following *services* are available in SQL Manager:

Dependency Tree 536
Allows you to view all the object dependencies in one diagram.

SQL Monitor 541
Displays all the SQL statements executed while working in **SQL Manager for InterBase/Firebird**.

Execute Script Editor 544
Executes SQL scripts in the database.

Extract Database Wizard 552
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.

Compare Databases 564
Compares databases metedata and generates SQL script which can be executed later on another machine to synchronize the databases structure.

Print Metadata 570
Creates powerful metadata reports in the WYSIWYG mode ready for printing.

HTML Report 574
Creates powerful metadata reports in the HTML format.

Reports management 580
Tools for efficient management of reports: creating, editing, viewing, printing.

Search in Metadata 608
Provides quick search for a string within the scope of database metadata.

Database Monitor 613
Displays various statistics on database in general and database activities.

Event monitor 627
Allows you to view event 131 notifications.

Table Altering Monitor 630
Allows you to view the number of changes in table and view metadata.

Server Messages Editor 633
Allows you to view and edit server messages.

Database Designer 638
Allows you to lay out your database schema visually.

Using templates 918
Facilitates using **SQL Manager** wizards.

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See also:

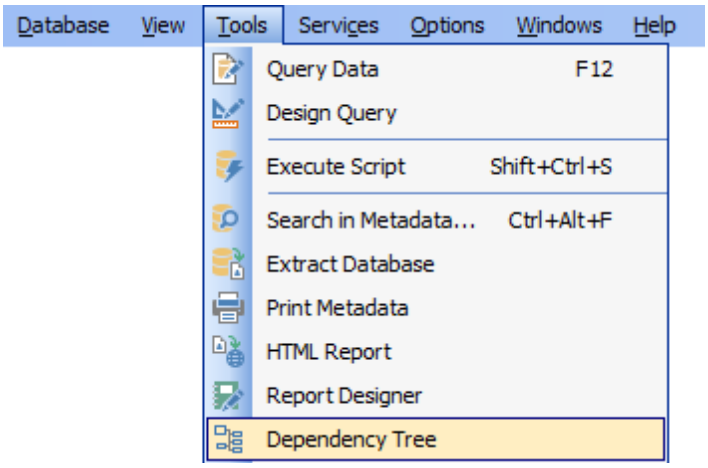
Getting Started 37
Database Explorer 63
Database Management 87
Database Objects Management 163
Query Management Tools 329
Data Management 369
Import/Export Tools 444
Services 659
Security management 719
Options 743
External Tools 840
How To... 846

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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 890 item, or use the **Dependency Tree** button on the main toolbar 892.



- Using Navigation bar and Toolbar 537
- Viewing dependency tree 539

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 20 page.

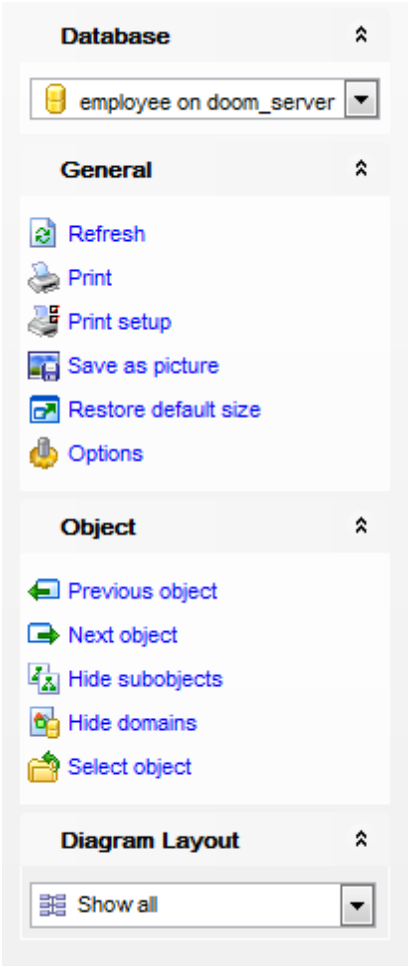
See also:

Database Objects Management 163

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9.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Dependency Tree**.



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
edit dependency tree options
restore the default size and position of the window

Object
navigate by switching to the previous object
navigate by switching to the next object

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show/hide subobjects
show/hide domains 173
select 539 a root object

Diagram Layout

show all objects
show objects depending on the Root object
show objects the Root object depends on

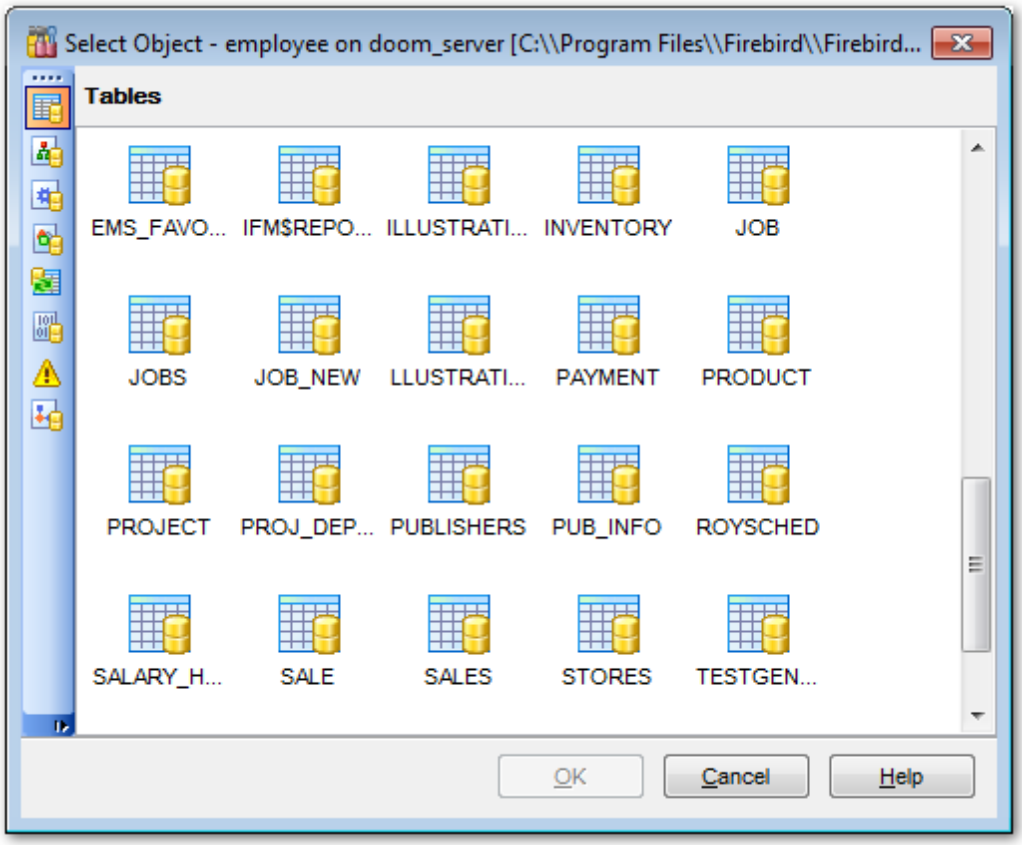
Items of the **Navigation bar** are also available on the **ToolBar** of the **Dependency Tree** window. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) 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.

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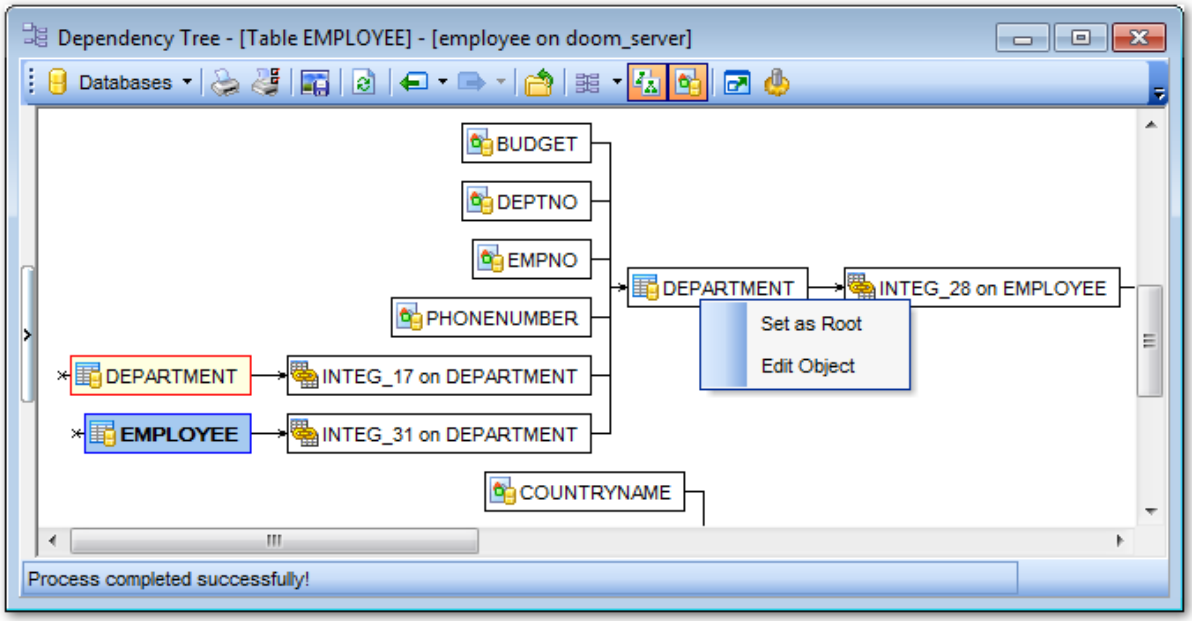
9.1.2 Viewing dependency tree

To view dependencies of an object, click the **Select object** Navigation bar[537] 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[892] is displayed in the status area at the bottom of the window.

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The *root* object is marked out in blue.

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 537 or toolbar 538.

Hint: To show/hide subobjects (e.g. table triggers 231, foreign keys 217), click the **Show subobjects** / **Hide subobjects** item on the Navigation bar 537.

See also:

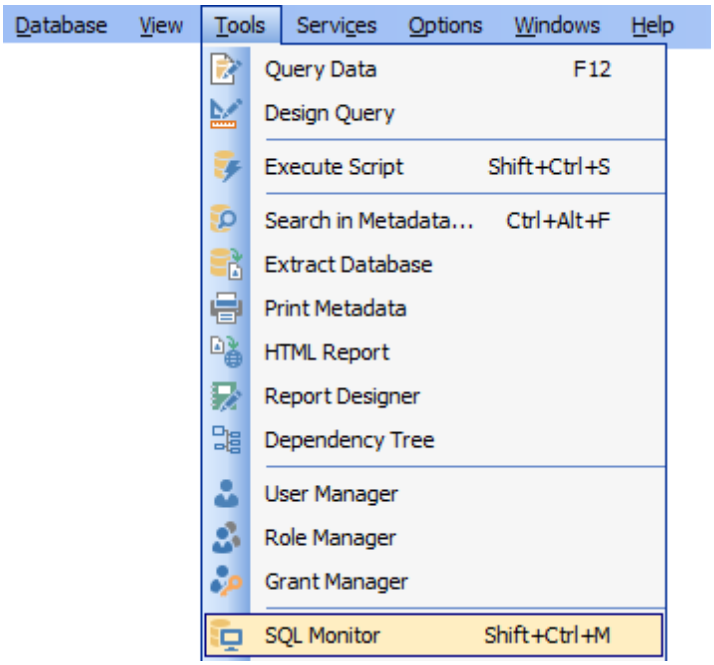
Select Object dialog 939

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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 InterBase/Firebird**. The content of the window is read-only.

To open the **SQL Monitor** window, select the **Tools | SQL Monitor** main menu 890 item, or use the *Shift+Ctrl+M* shortcut 940.



- Using Navigation bar and Toolbar 542
- Working with SQL Monitor 543

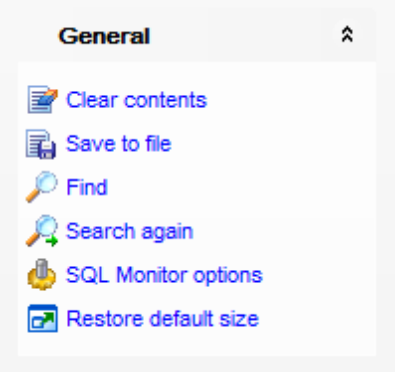
See also:

SQL Monitor options 761

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9.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **SQL Monitor**.



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 909 dialog
search again
configure SQL Monitor using the SQL Monitor 761 section of the Environment Options 744 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 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

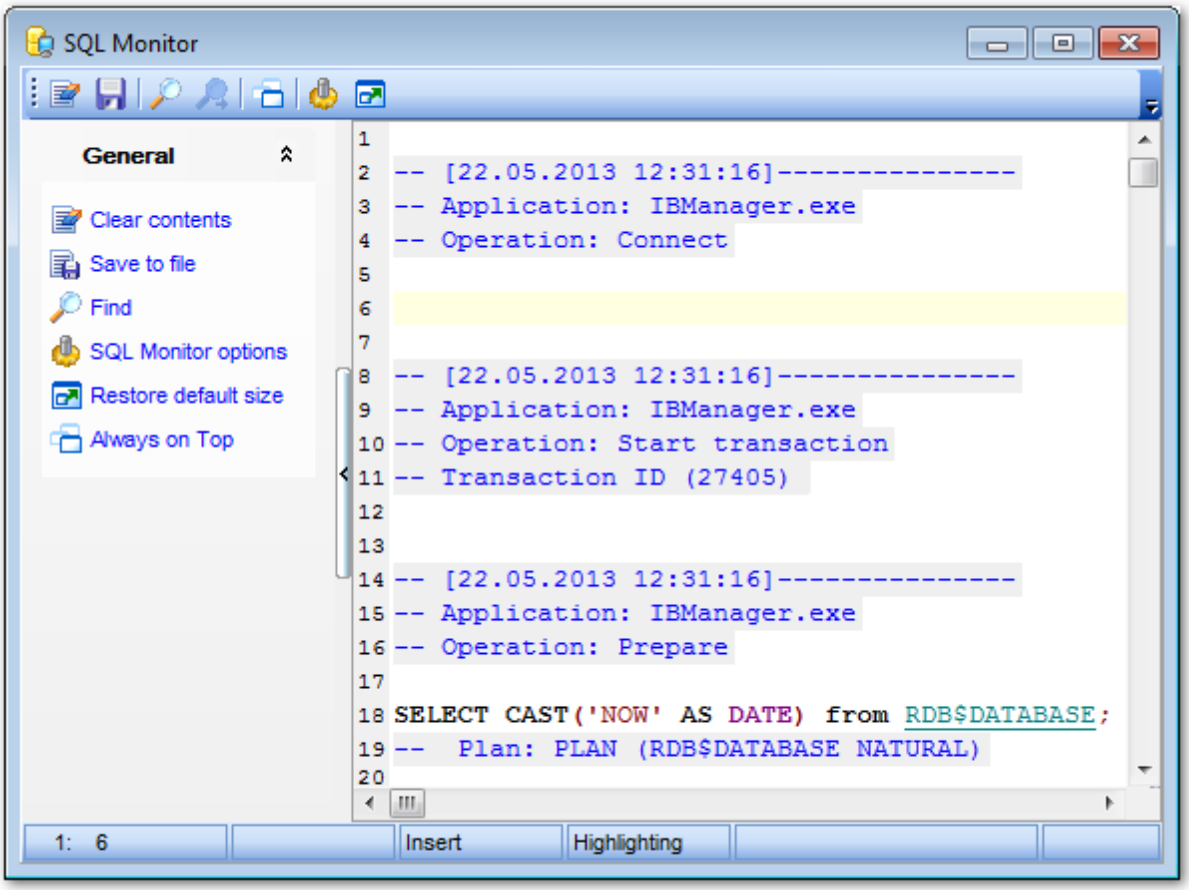
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9.2.2 Working with SQL Monitor

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[820] 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[85], configure the editor using the properties[805] item or *preview/print* the content. Most of these operations can be also performed with the corresponding hot keys[940] used.

Implementation of the Find Text[909] dialog and Incremental search[893] bar contributes to more efficient work with the content of SQL Monitor.

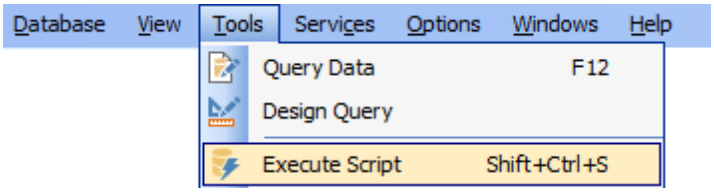


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9.3 Execute Script

Using **Execute Script Editor** you can view, edit and execute SQL scripts.

To open Execute Script Editor, select the **Tools | Execute Script** main menu 890 items or use the corresponding toolbar 892 button. You can also use the *Shift+Ctrl+S* shortcut 940 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 545
- Working with Execute Script editor area 547
- Using Script Explorer 549
- Script execution 550

Note: **SQL Script editor** does not show results returned upon SELECT queries execution. Please use Query Data 331 for that purpose instead.

See also:

Query Data 331

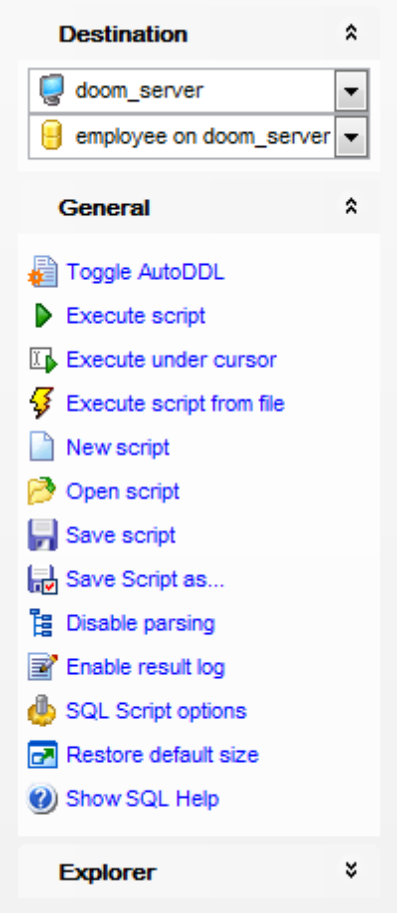
SQL Script options 763

Editor Options 804

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9.3.1 Using Navigation bar and Toolbar

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



Destination

select a host

select a database for the script

General

toggle AutoDDL

execute 550 the current script

execute selected code only

execute code under cursor

execute a script from file

create a new script

load a script from an **.sql* file using the **Open SQL Script** dialog

save the current script

save the script to an **.sql* file using the **Save as...** dialog

enable/disable parsing of SQL code

enable/disable result log

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configure SQL Script Editor within the Script Options[763] section of the Environment Options[744] dialog
show SQL help
restore the default size and position of the editor window

Explorer
browse the tree objects used in the script using the Script Explorer[549] pane

Items of the **Navigation bar** are also available on the **ToolBar** of **SQL Script Editor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

See also:

Working with Execute Script editor area[547]
Using Script Explorer[549]
Script execution[550]

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9.3.2 Working with SQL Script editor area

The **Editor area** of SQL 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:

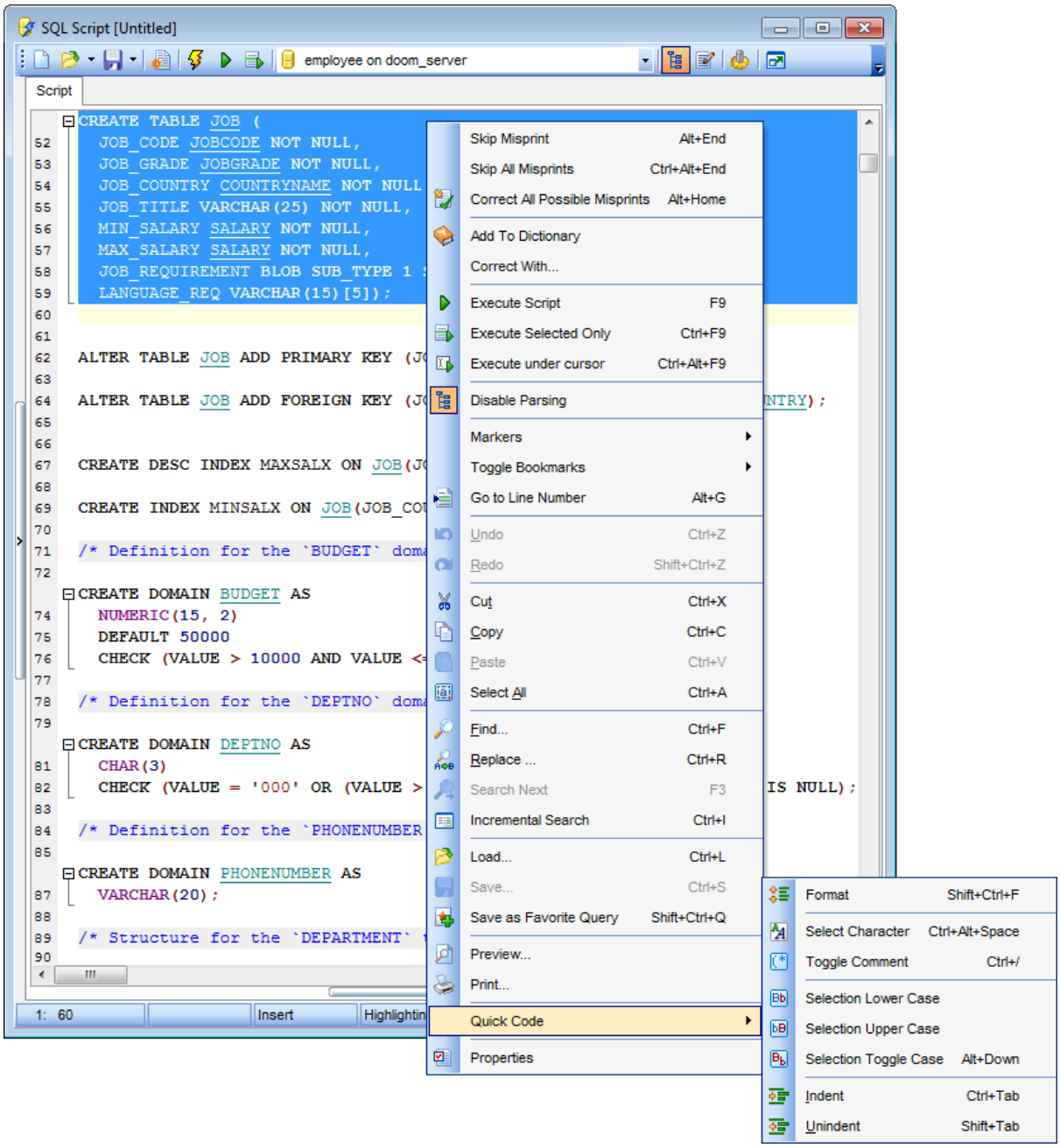
- using object links 340 allowing you to open the object in the associated editor;
- ability to display line numbers;
- code folding for statements and clauses;
- customizable margins and gutters;
- formatting code for better representation

and more.

The **context menu** of Execute Script Editor area contains execution 550 commands, most of the standard text-processing functions (*Cut*, *Copy*, *Paste*, *Select All*), spelling checking 820 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 85, configure 805 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 940 used.

Implementation of the Find Text 909 / Replace Text 911 dialogs and Incremental search 893 bar contributes to more efficient work with the SQL code.

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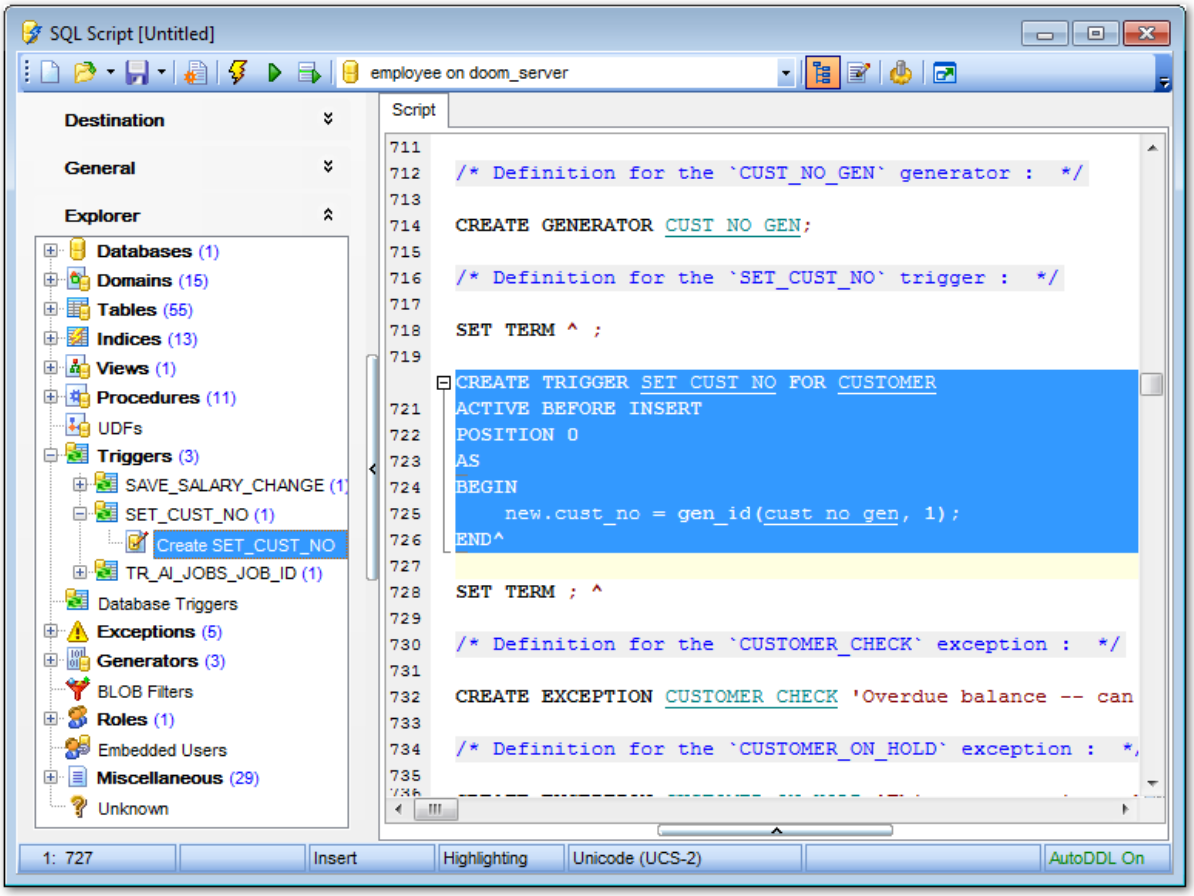
See also:

Using Navigation bar and Toolbar 545
Using Script Explorer 549
Script execution 550
Managing Favorite queries 85
Execute Script options 763

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9.3.3 Using Script Explorer

The **Explorer** group on the Navigation bar[545] 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[545]

Working with Execute Script editor area[547]

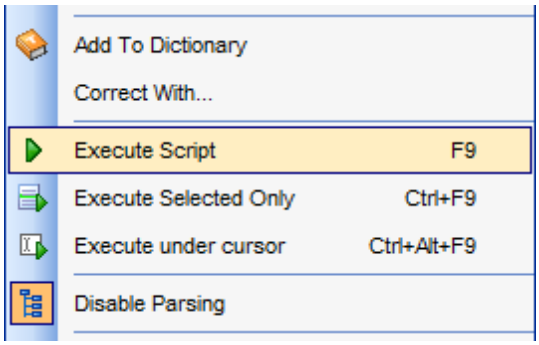
Database Objects Management[163]

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9.3.4 Script execution

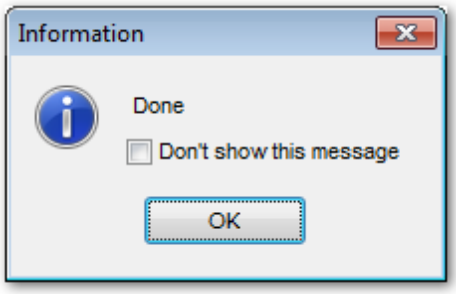
When all the script parameters are set, you can immediately **execute the script** in **Execute Script Editor**.

To execute a script, click the **Execute script** item of the Navigation bar or toolbar. You can also use the context menu or *F9* hot key for the same purpose.



Note: If the **Execute selected text separately** option (see the Tools | Execute Script section of the Environment Options 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 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 or by pressing *Ctrl+F9*.

If the SQL syntax is correct, the script is executed and the *'Done!'* information message appears.



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.

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 Editor** does not show results returned upon SELECT queries execution. Please execute such queries in Query Data to see the result dataset.

See also:

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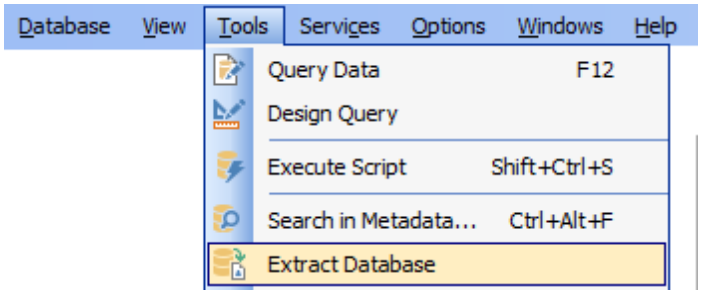
Using Navigation bar and Toolbar 545
Working with Execute Script editor area 547
Using Script Explorer 549

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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 890 item, or right-click the database alias in the DB Explorer 63 tree and select the **Tasks |** **Extract Database...** item from the context menu 53.



- Selecting a database for extraction 553
- Specifying destination file name 554
- Setting extraction mode 556
- Setting BLOB options 557
- Selecting objects for metadata extraction 559
- Selecting objects for data extraction 560
- Customizing script options 561
- Start of extraction process 563
- Using templates 918

See also:

Execute Script Editor 544

Database Objects Management 163

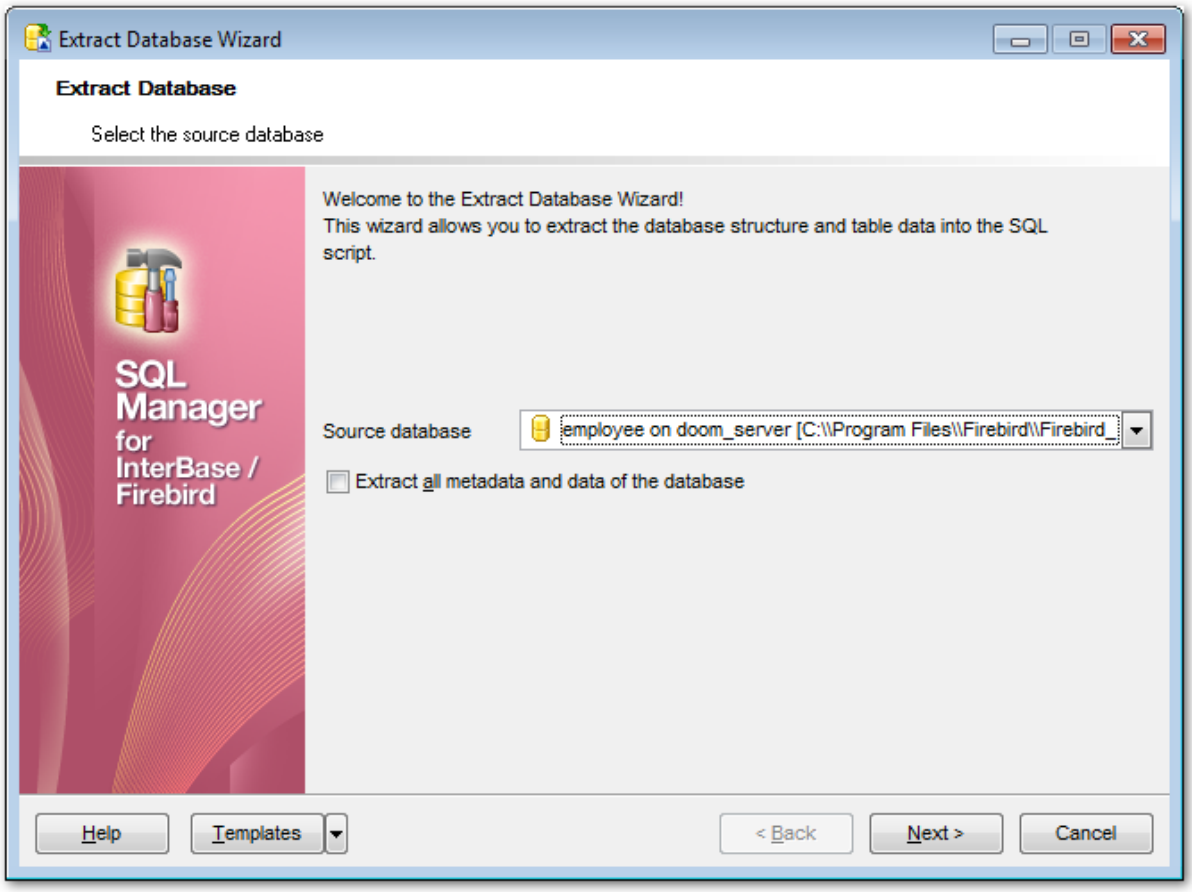
Using templates 918

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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 554 step of the wizard.

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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 Editor 544 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.

Compression options

Compress file

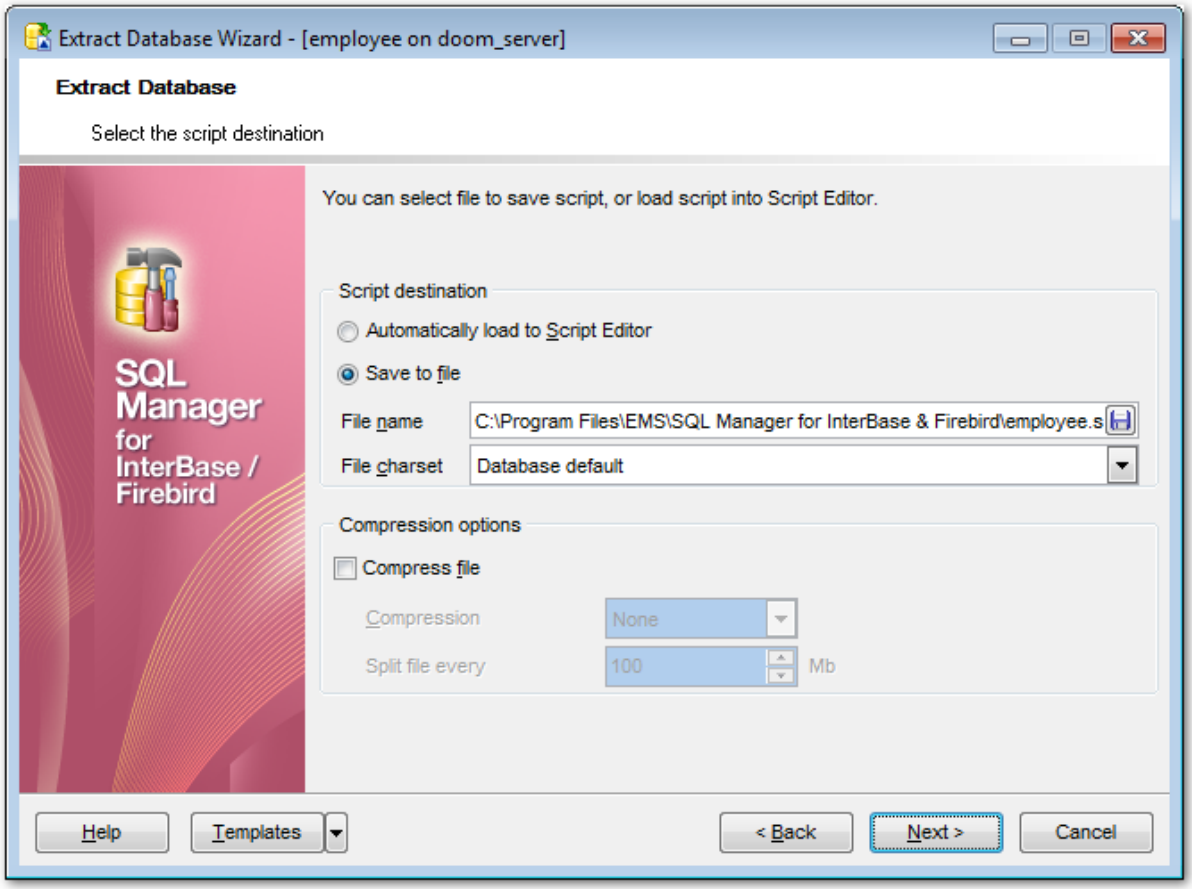
Check this option if you wish to compress the output file.

Compression

Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.

Split file every ... Mb

Specify the size (in *megabytes*) of each part the output file will be split into.



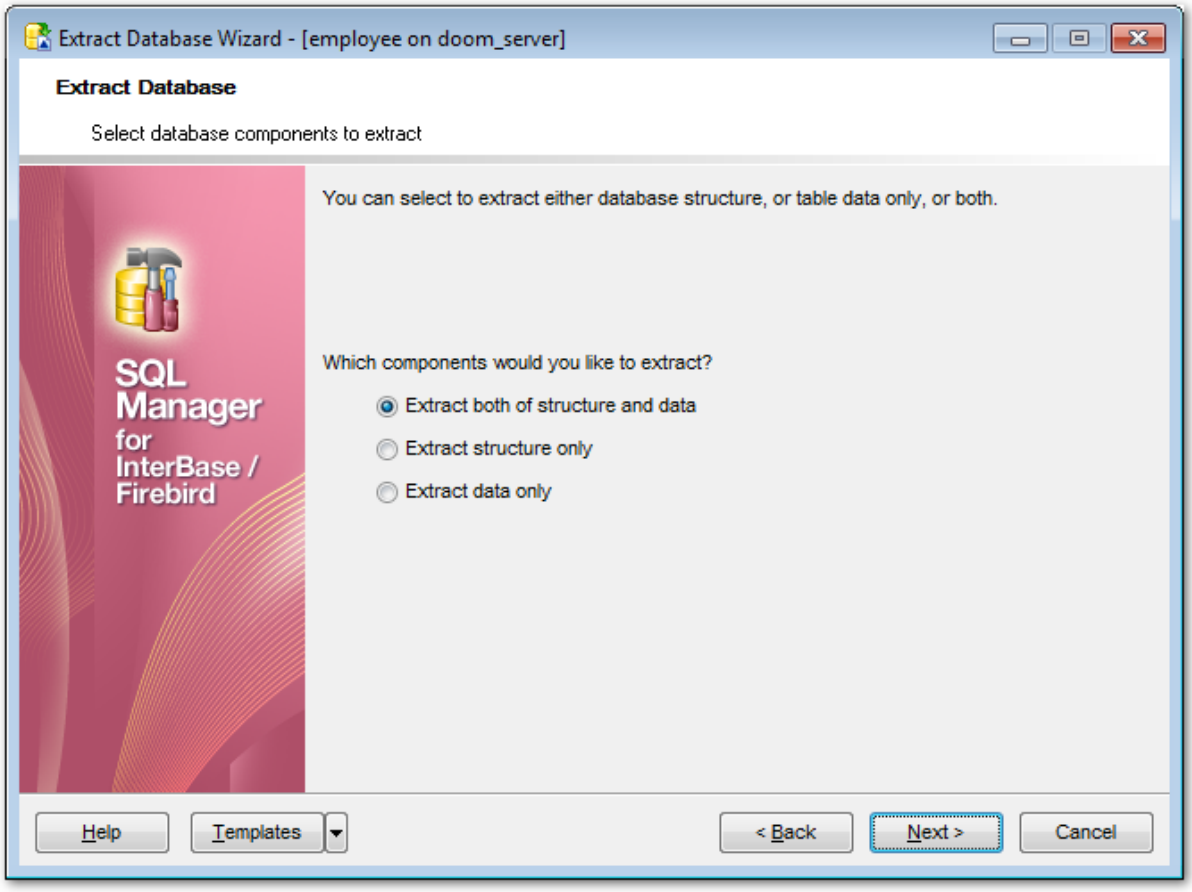
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Depending on whether you have checked the **Extract all metadata and data of the database** option at the Selecting source database 553 step, upon pressing the **Next** button you will either proceed to the next step of the wizard 556, or you will be immediately forwarded to the Setting BLOB options 557 step, and then to the Customizing script options 561 step of the wizard.

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9.4.3 Setting extraction mode

This step allows you to specify the **extraction mode**: choose whether *structure only*, *data only* or *both* are to be extracted.



Click the **Next** button to proceed to the Setting BLOB options 557 step of the wizard.

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9.4.4 Setting BLOB options

BLOB and arrays options

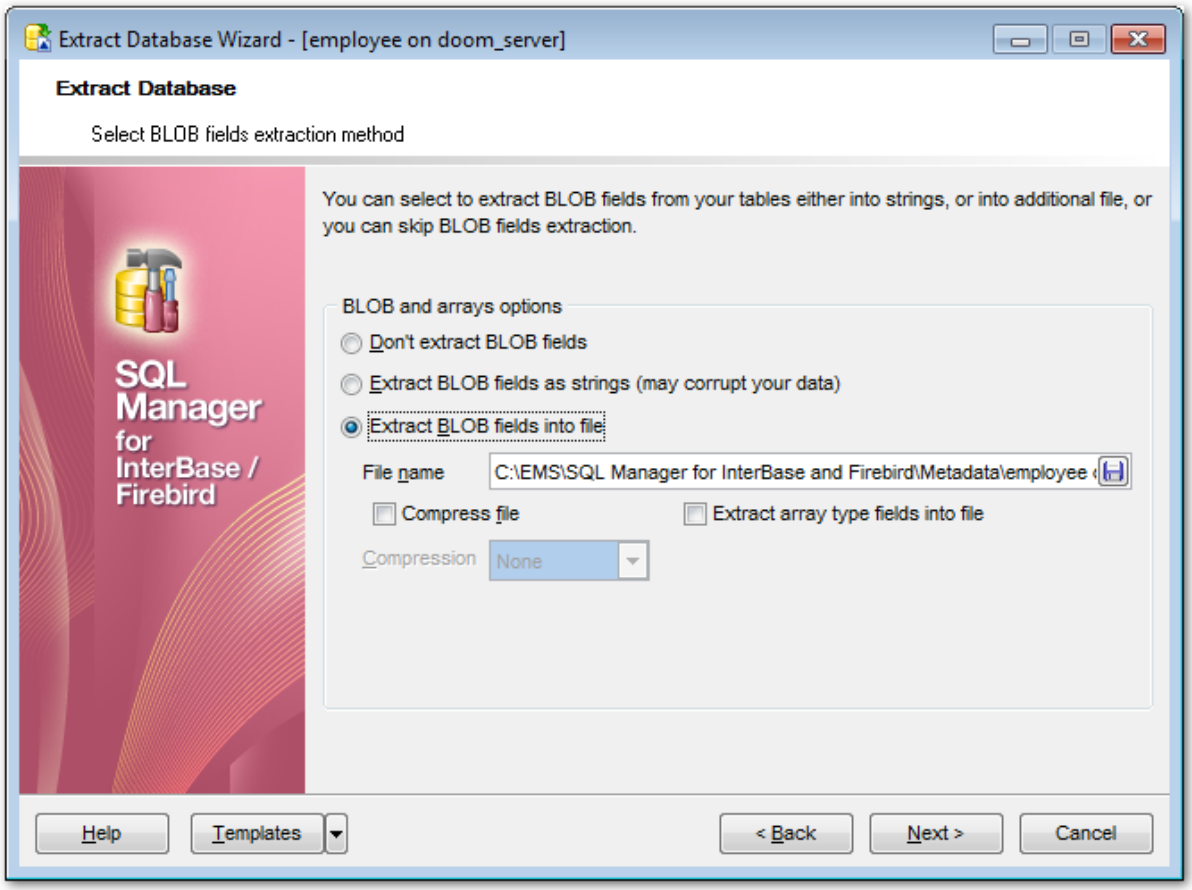
In this group of options you can determine whether BLOB fields are *not to be extracted*, *extracted as strings* (should be used in case BLOB fields contain only text data), or *extracted into a separate file*. If the latter is selected, you also need to specify the **File name** (the **.blo* file where the BLOB data are to be stored) and the location of the file on your local machine using the **Save as...** button.

Note: *Extracting BLOB fields as strings* can lead to the inability to execute an SQL query because the query length is limited to 64K.

Compress file
Check this option if you wish to compress the file containing BLOB data.

Extract array type fields into file
Check this option if you wish fields of array type to be dumped into the file.

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

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file can be restored only by using the SQL Manager for InterBase/Firebird Execute Script 544 tool.

Click the **Next** button to proceed to Selecting objects for structure extraction 559.

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9.4.5 Selecting objects for structure extraction

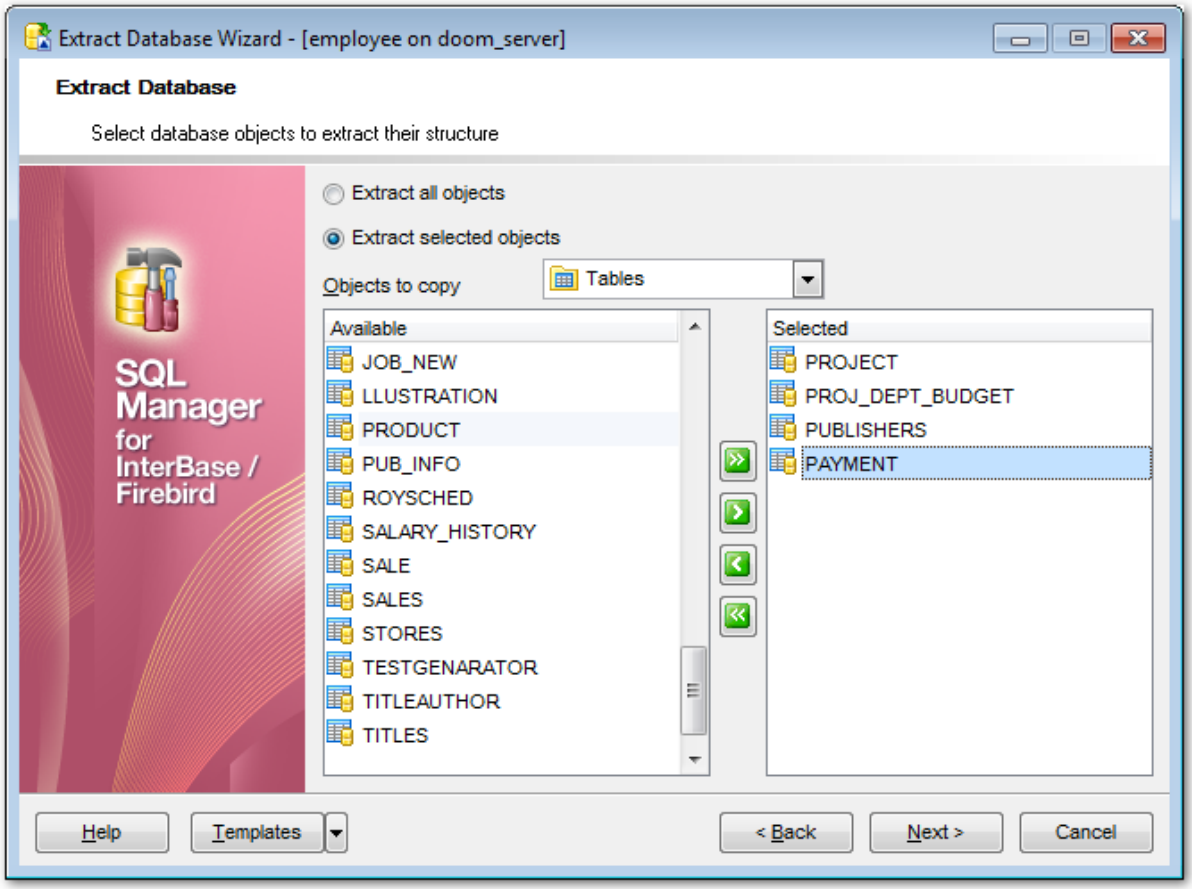
This step of the wizard allows you to **select objects for metadata extraction**.

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 553.

Extract all objects
Adds all objects of the database to structure extraction process.

Extract selected objects
Adds only selected objects to structure extraction process.

Objects to copy
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 560.

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9.4.6 Selecting objects for data extraction

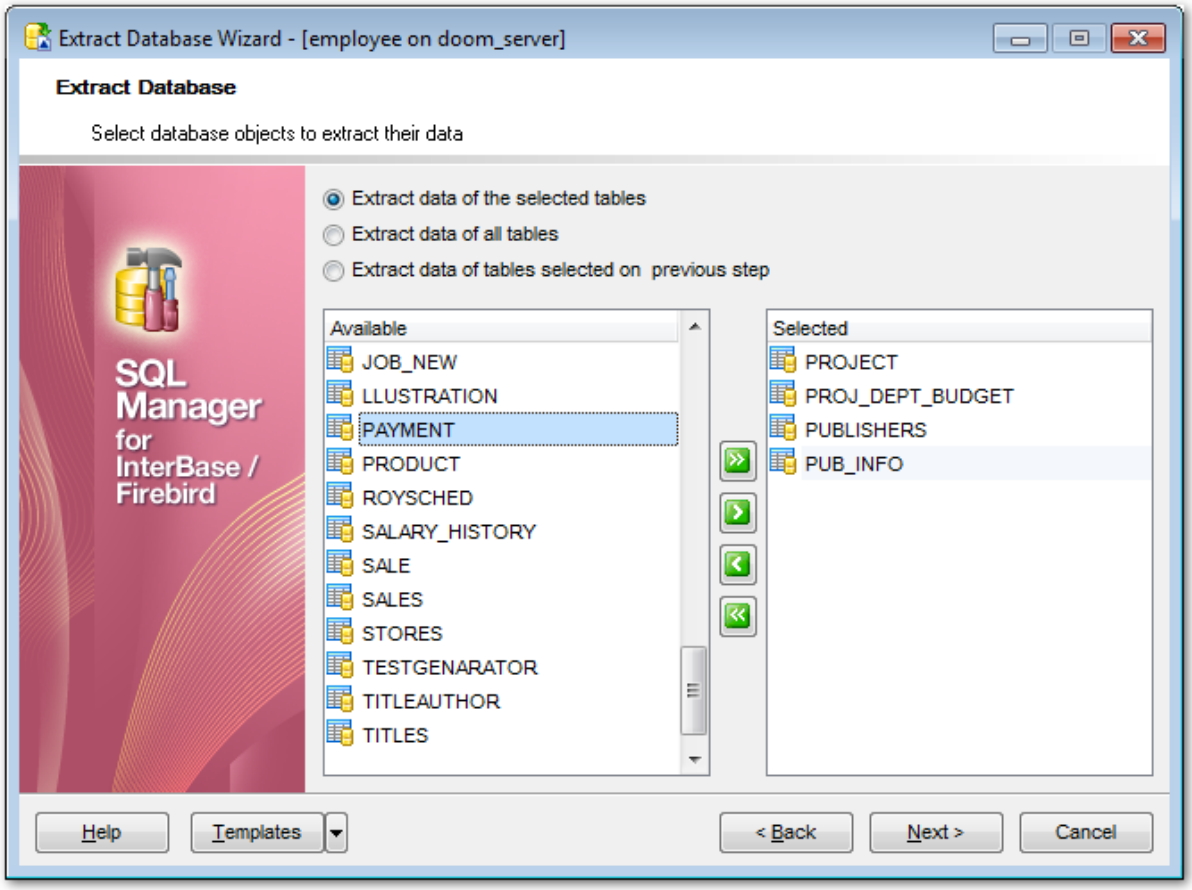
This step of the wizard allows you to **select tables for data extraction**.

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 553.

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 559.



Click the **Next** button to proceed to the Customizing script options 561 step of the wizard.

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9.4.7 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 "CONNECT DATABASE" statement**
Check this option to add the *CONNECT DATABASE* statement to the result script.

☑ **Include Password in "CONNECT" and "CREATE DATABASE" statements**
Check this option to add the *PASSWORD* clause to the *CONNECT / CREATE DATABASE* statements in the result script.

☑ **Generate "CREATE JOURNAL" statement**
When this option is enabled, the CREATE JOURNAL statement will be created in the script.

☑ **Generate "DROP" statements for objects**
Check the option to add the *DROP* statements for the extracted objects in the result script.

☑ **Generate "SET AUTO DDL" statement**
Check this option to add the *SET AUTO DDL* statement, and select whether *SET AUTO DDL ON* or *SET AUTO DDL OFF* is to be used in the result script.

☑ **Set generators**
Check this option to add the *SET GENERATOR* statements to the result script.

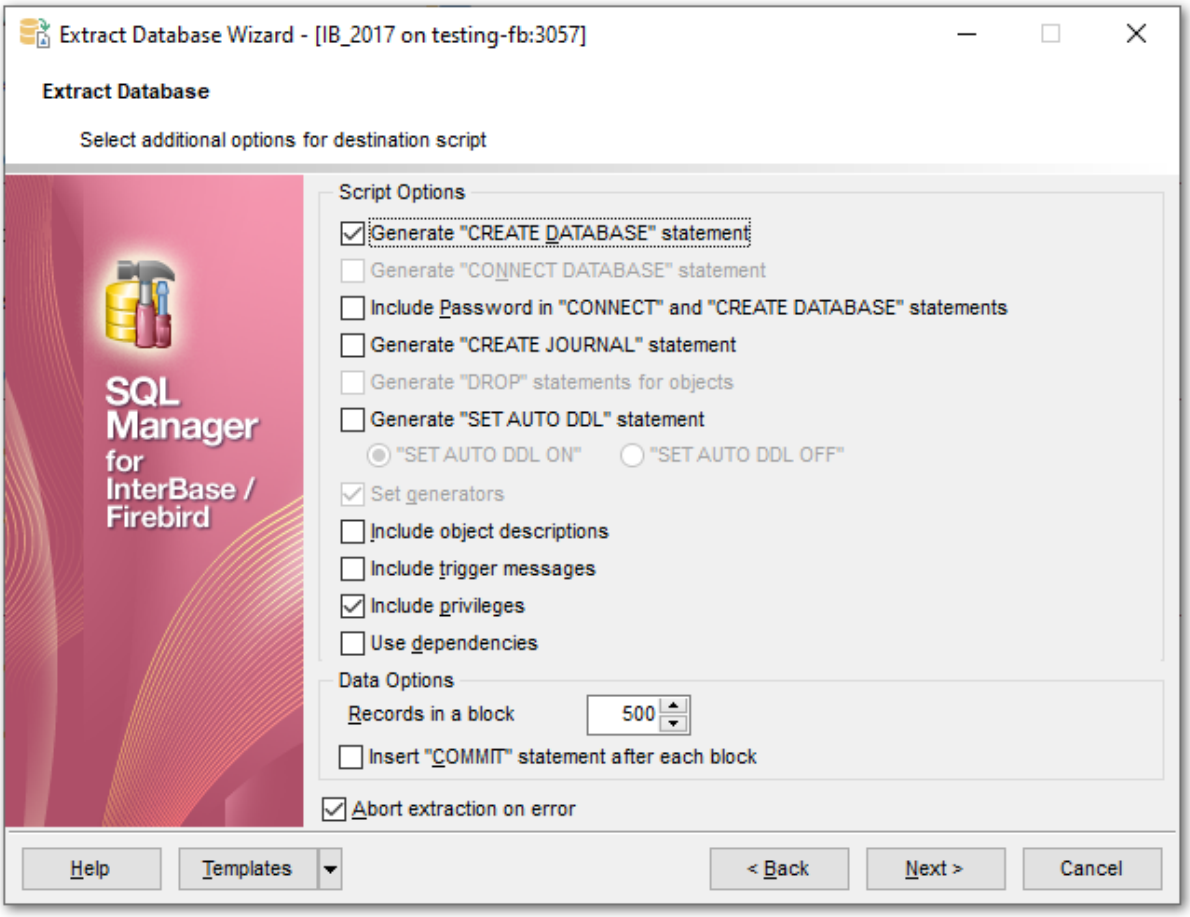
☑ **Include object descriptions**
This option specifies whether object descriptions[895] will be included in the result script or not.

☑ **Include trigger messages**
This option specifies whether trigger messages[289] will be included in the result script or not.

☑ **Include privileges**
This option specifies whether granted[734] privileges will be included in the result script or not.

☑ **Use dependencies**
This option determines objects' dependencies[896] usage in the extraction process. Check the option to extract all objects that the selected objects depend on.

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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.

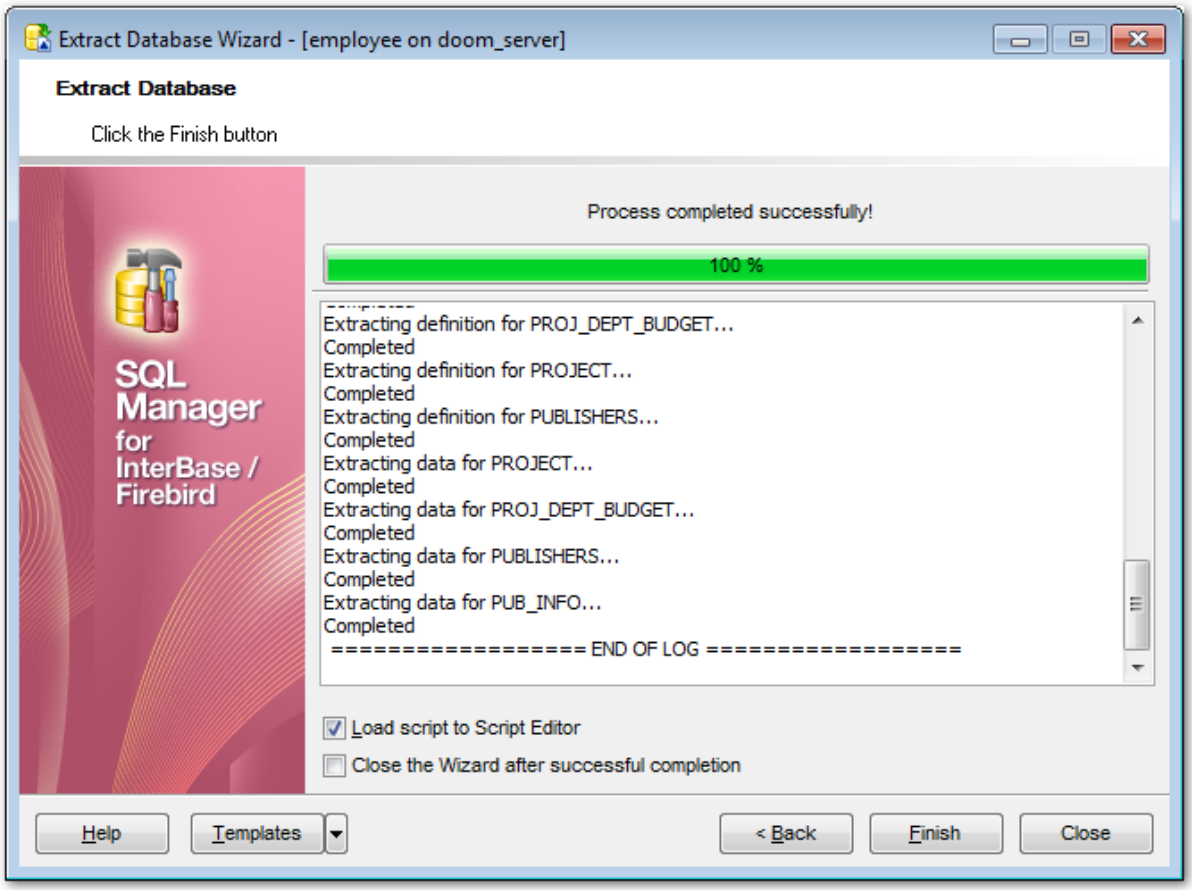
Click the **Next** button to proceed to the last 563 step of the wizard.

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9.4.8 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).



Load script to Script Editor
Check this option to load the result script to Execute Script Editor[544].

Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the extraction process is completed.

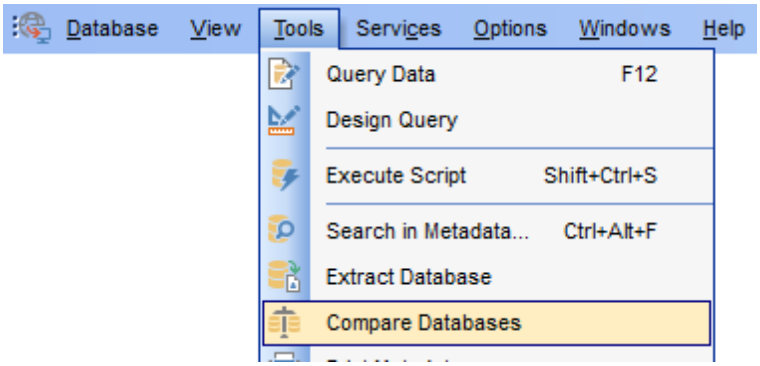
If necessary, you can save a template[918] for future use.

Click the **Finish** button to run the extraction process.

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9.5 Compare Databases

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.



Selecting source database 565
Selecting target database 566
Selecting type of synchronization script 567
Selecting additional options 568
Comparing databases 569

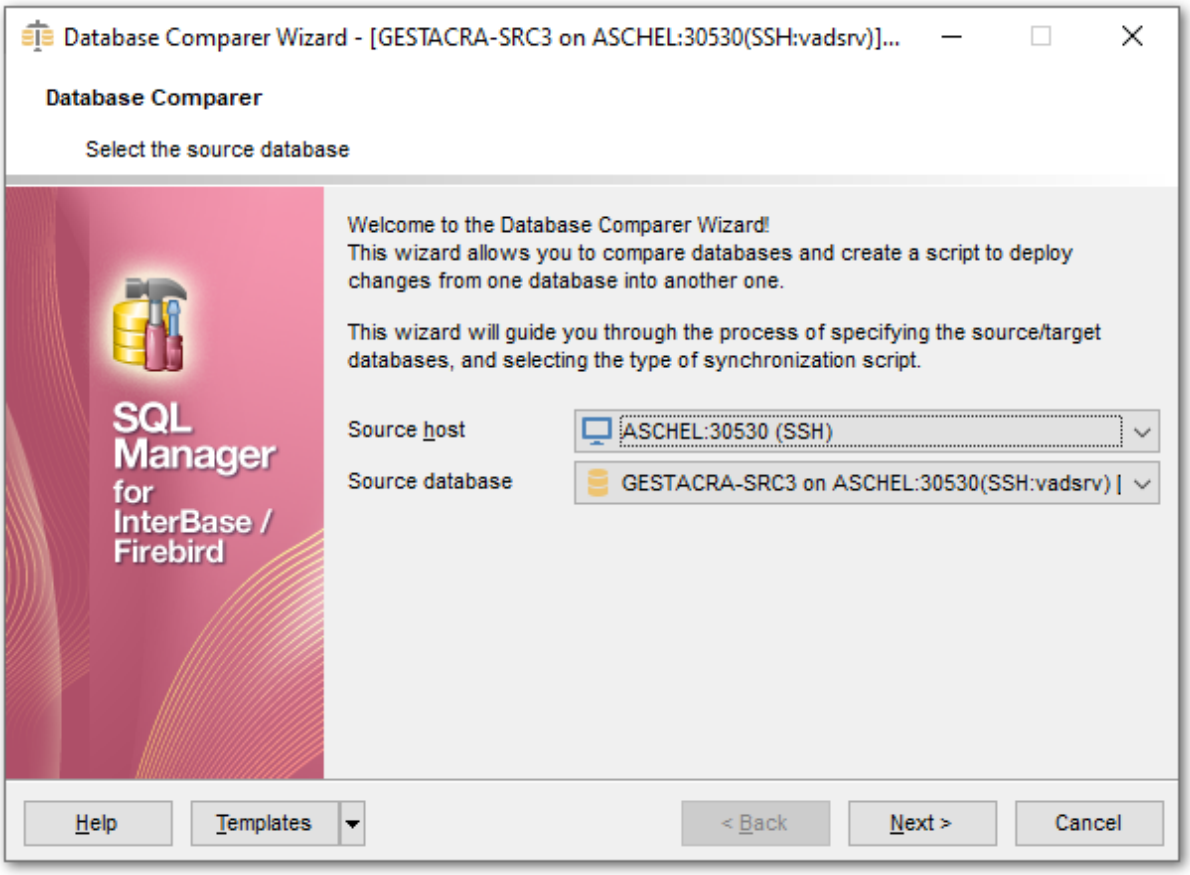
See also:

Execute Script Editor 544
Database Objects Management 163
Using templates 918

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9.5.1 Selecting source database

Use this step to define source database for comparing.



Source host
Defines host where source database is located.

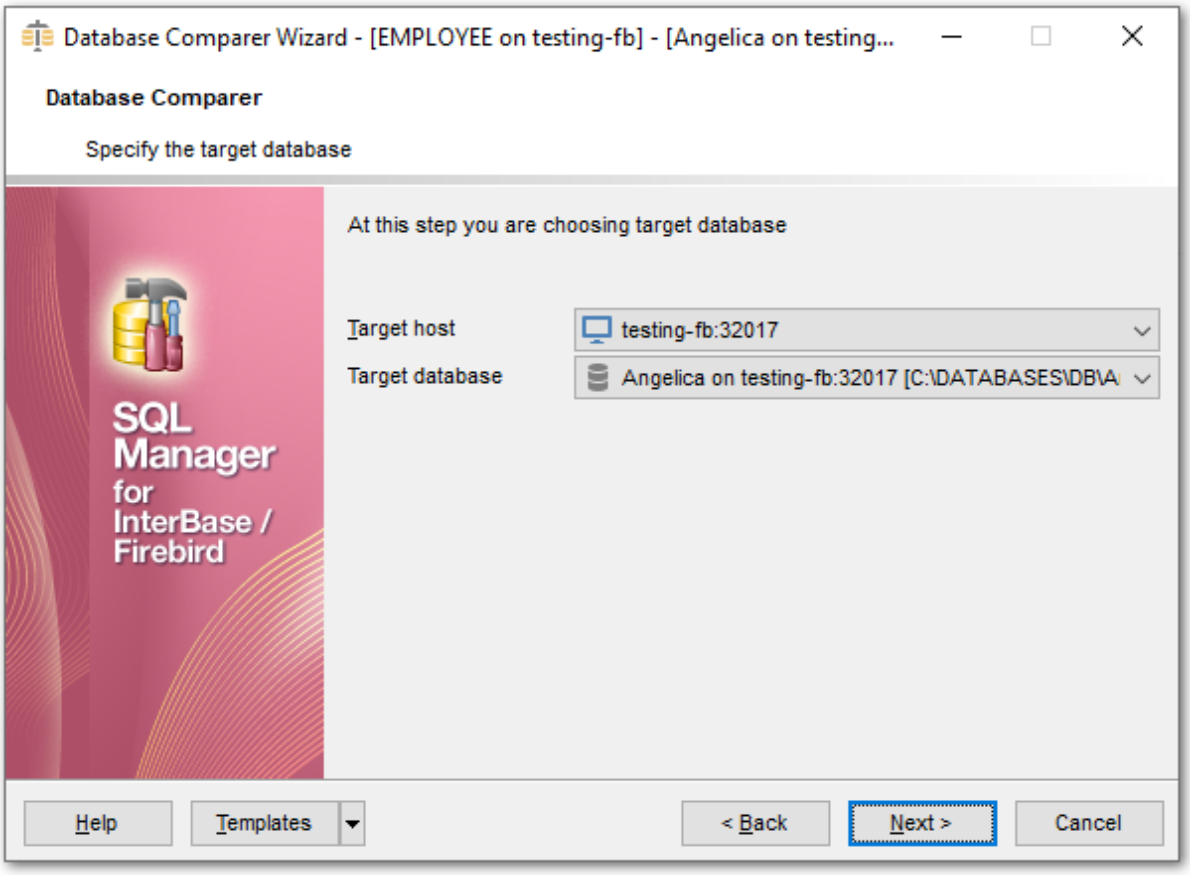
Source database
Select source database from the drop-down list.

Click the **Next** button to proceed to the Selecting target database 566 step of the wizard.

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9.5.2 Selecting target database

Use this step to define target database for comparing.



Target host
Defines host where target database is located.

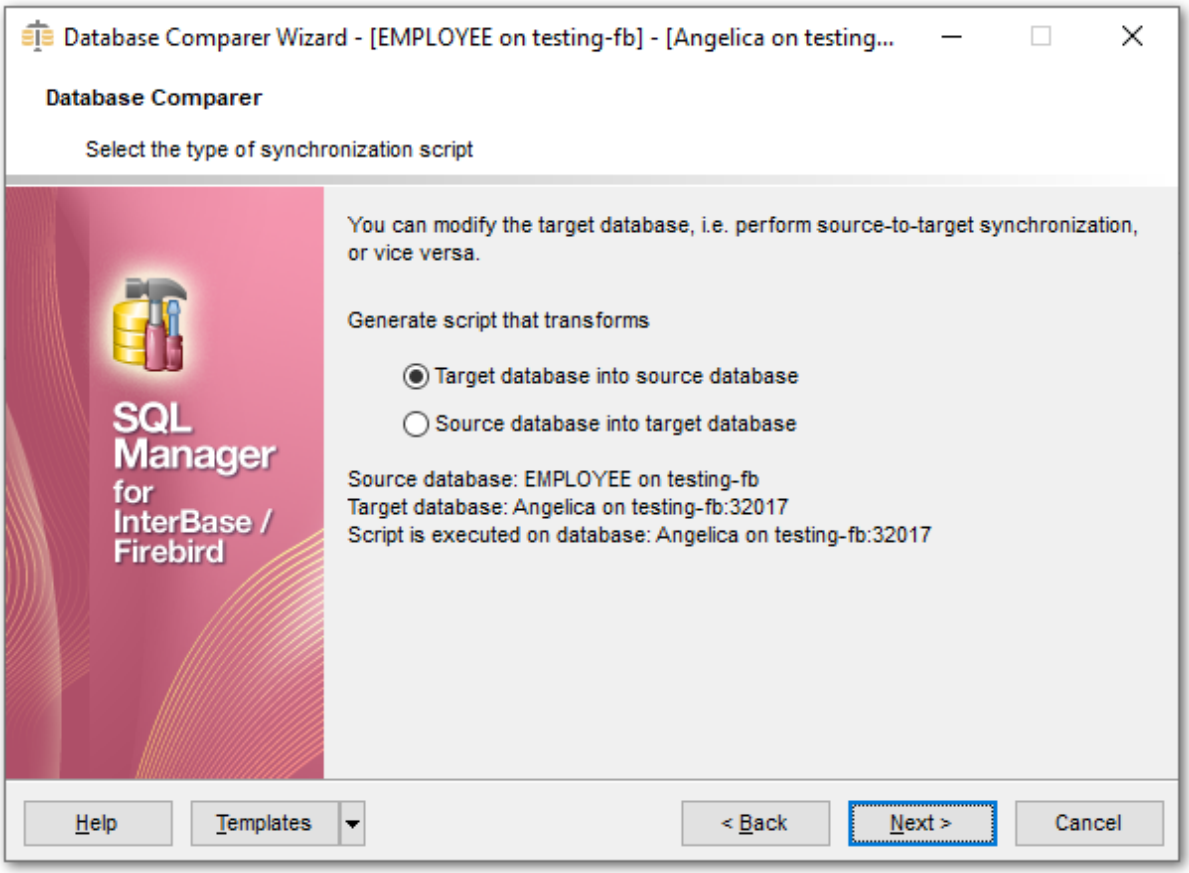
Target database
Select target database from the drop-down list.

Click the **Next** button to proceed to the Selecting type of synchronization script 567 step of the wizard.

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9.5.3 Selecting type of synchronization script

Specify the direction of comparing selected database.



Target database into source database
Enables reverse comparing: the synchronization script will contain statements which make the target 617 database identical to the source 615 one.

Source database into target database.
Enables direct comparing: the synchronization script will contain statements which make the source 615 database identical to the target 617 one.

Click the **Next** button to proceed to the Selecting additional options 568 step of the wizard.

Use the templates 918 button to save current settings to template or to restore settings from an existing template.

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9.5.4 Selecting additional options

Script destination

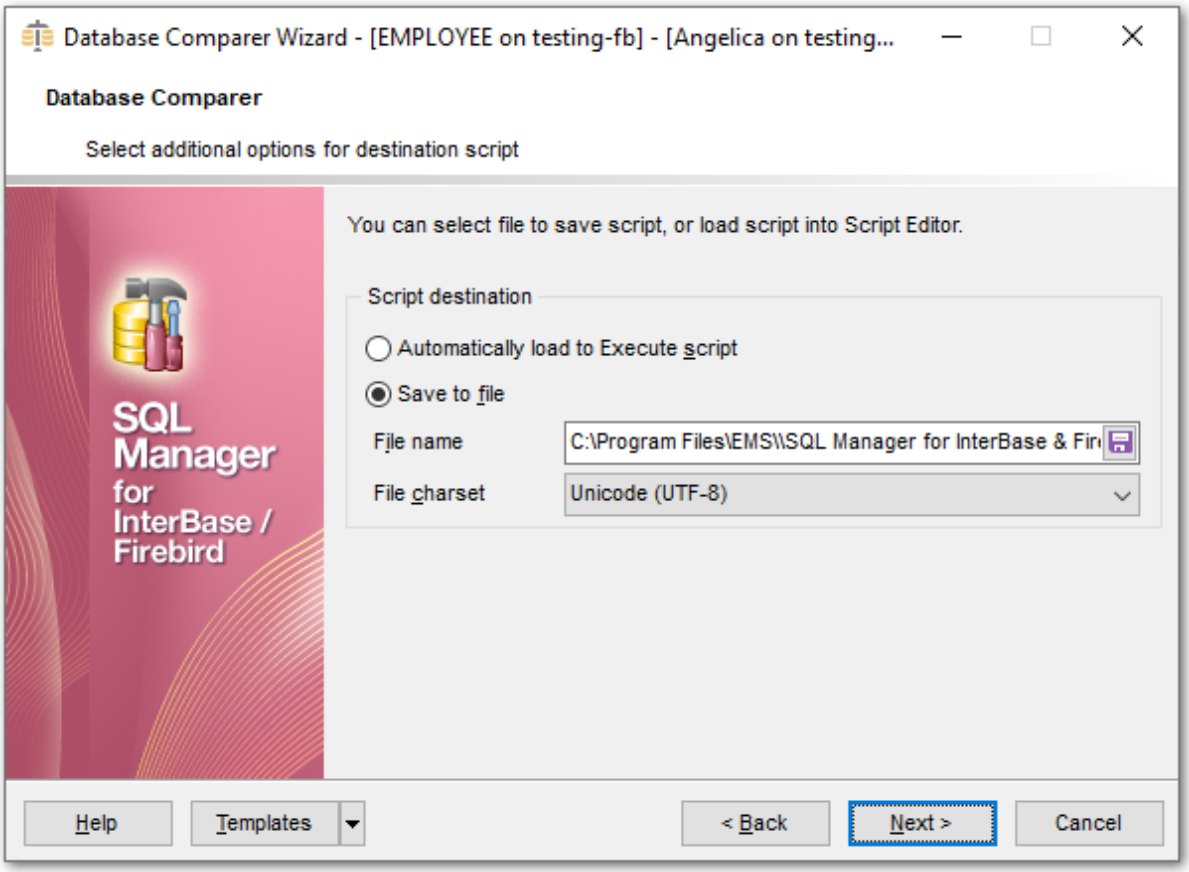
This group of options allows you to specify whether the result SQL script will be automatically loaded to Execute Script Editor 544 or saved into a file.

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.



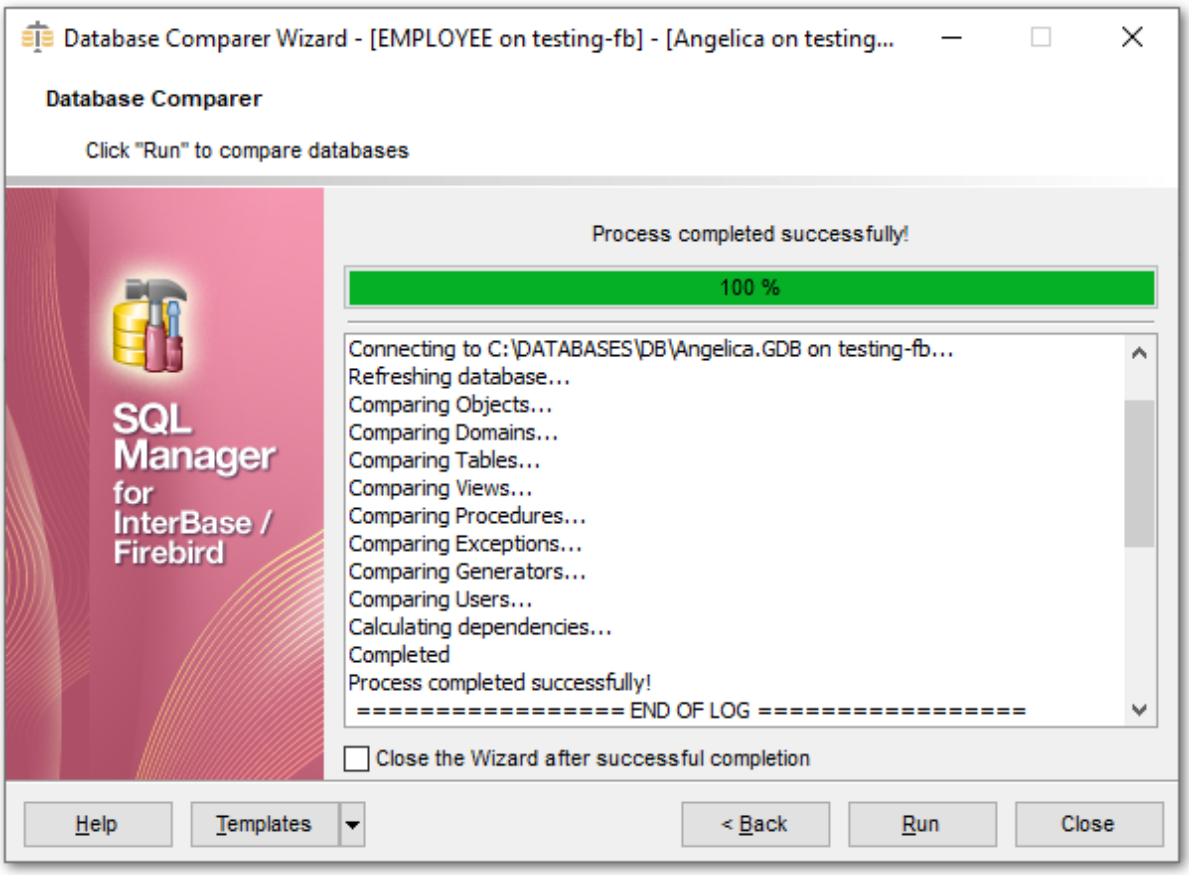
Click the **Next** button to proceed to the last 569 step of the wizard.

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9.5.5 Comparing databases

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[918] for future use.

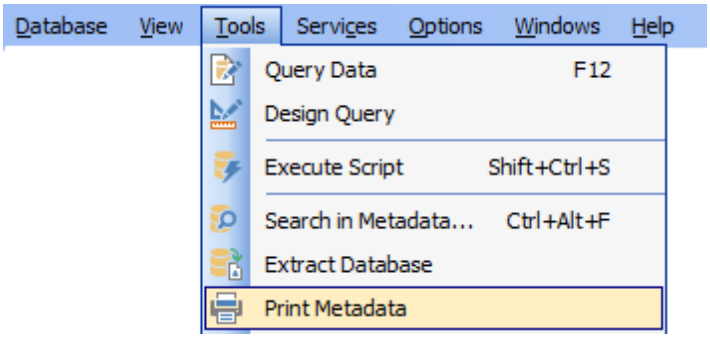
Click the **Run** button to run the extraction process.

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9.6 Print Metadata

Print Metadata allows you to generate and print metadata reports of any database object(s).

To open the window, select the **Tools | Print Metadata** main menu 890 item, or use the **Print Metadata** button on the main toolbar 892.



- Using Navigation bar and Toolbar 571
- Selecting objects 572
- Printing options 573
- Print Preview 603

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 20 page.

See also:

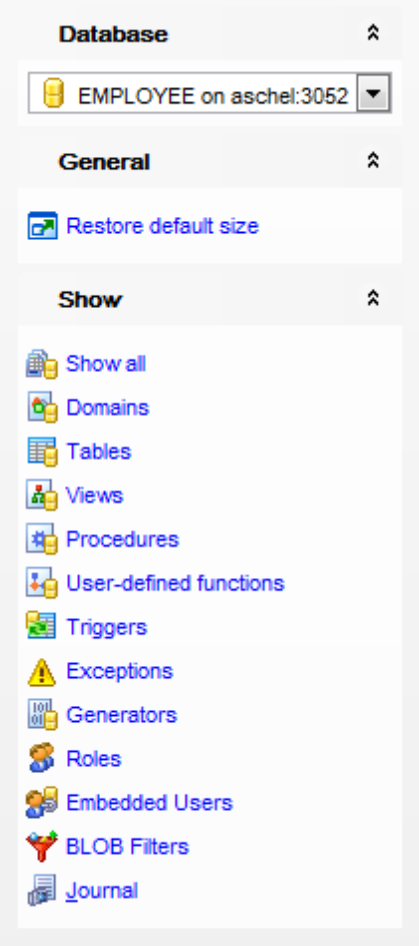
Database Objects Management 163

Print Metadata options 775

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9.6.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Print Metadata**.



Database
select a database for the printing report

General
print metadata of the selected object(s)
preview 603 the printing report
restore the default size and position of the window

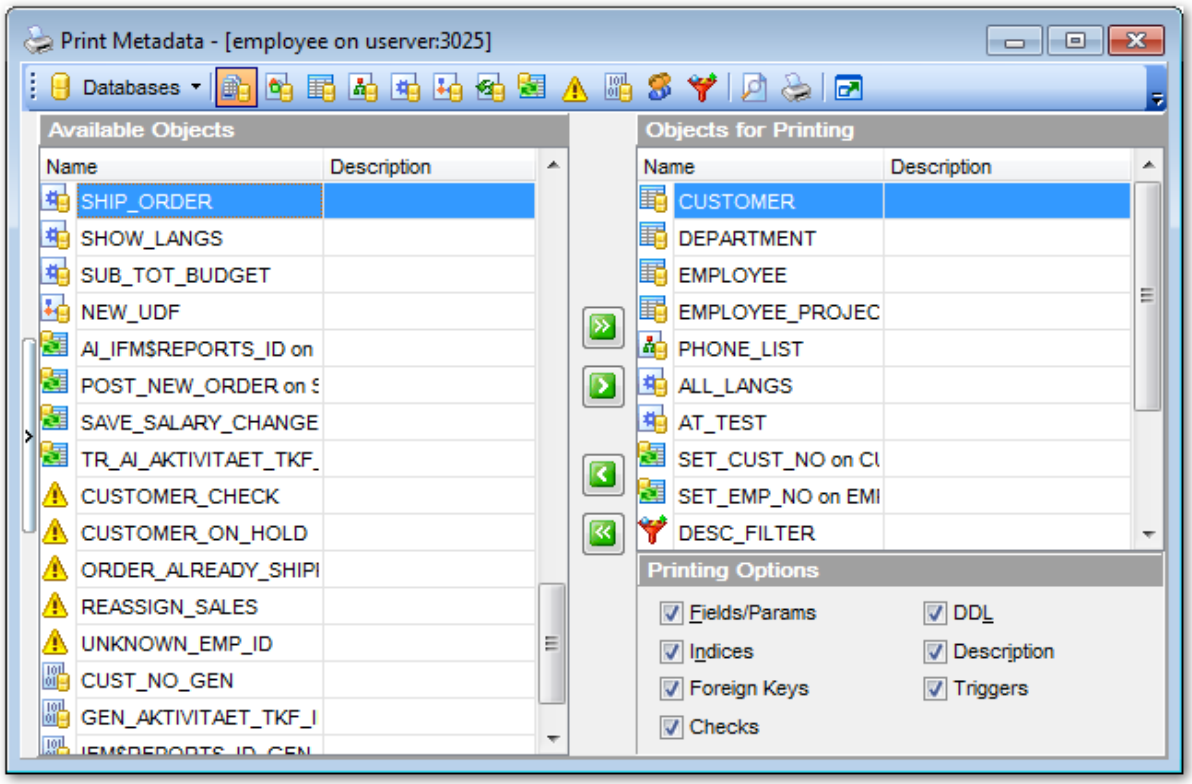
Show
✓ filter database objects available in the Available Objects 572 list by type

Items of the **Navigation bar** are also available on the **ToolBar** of the **Print Metadata** window. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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9.6.2 Selecting objects

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.



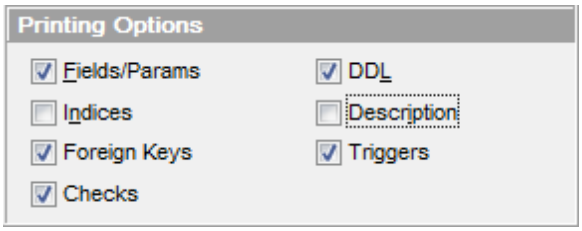
After you select one or several objects, the **Printing Options** pane appears at the bottom. Select an object in the **Objects for Printing** list and specify items to be included into the printing report. For details see Printing options 573.

Note: You can **preview** the printing report and **print** metadata for objects of the selected type using the corresponding items of the Navigation bar 571 (or toolbar 571). For details see Report Viewer 601.

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9.6.3 Printing options

The **Printing Options** area is available in the bottom right corner of the **Print Metadata** window. It is also available within a separate **Printing options** dialog when called from a Navigation bar[890] or toolbar[892] of an object editor.



Categories for printing
Use this group to specify items to be included into the printing report: *Fields/Params*, *Indexes*, *Foreign keys*, *Checks*, *DDL*, *Description*, *Triggers* (availability of the items depends on the object).

Click the **Print** button to call the standard **Print** dialog to set printer configuration and start printing the report.

Click the **Preview** button to call the Report Viewer[603] dialog to preview the report.

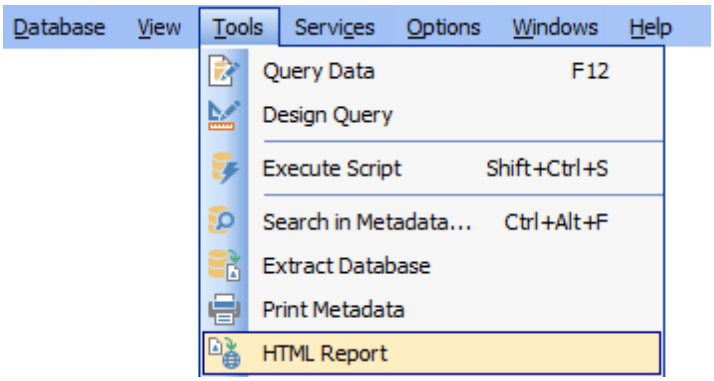
Click the **Design** button to call Report Designer[589] to edit the report.

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9.7 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 890 item, or use the **HTML Report** button on the main toolbar 892. Alternatively, you can right-click the database alias in the DB Explorer 63 tree and select the **Tasks | HTML Report...** item from the context menu 53.



- Selecting database and directory 575
- Selecting object types 576
- Specifying CSS for HTML report 577
- Setting additional report options 578
- Creating HTML report 579
- Using templates 918

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 20 page.

See also:

Database Objects Management 163

Using templates 918

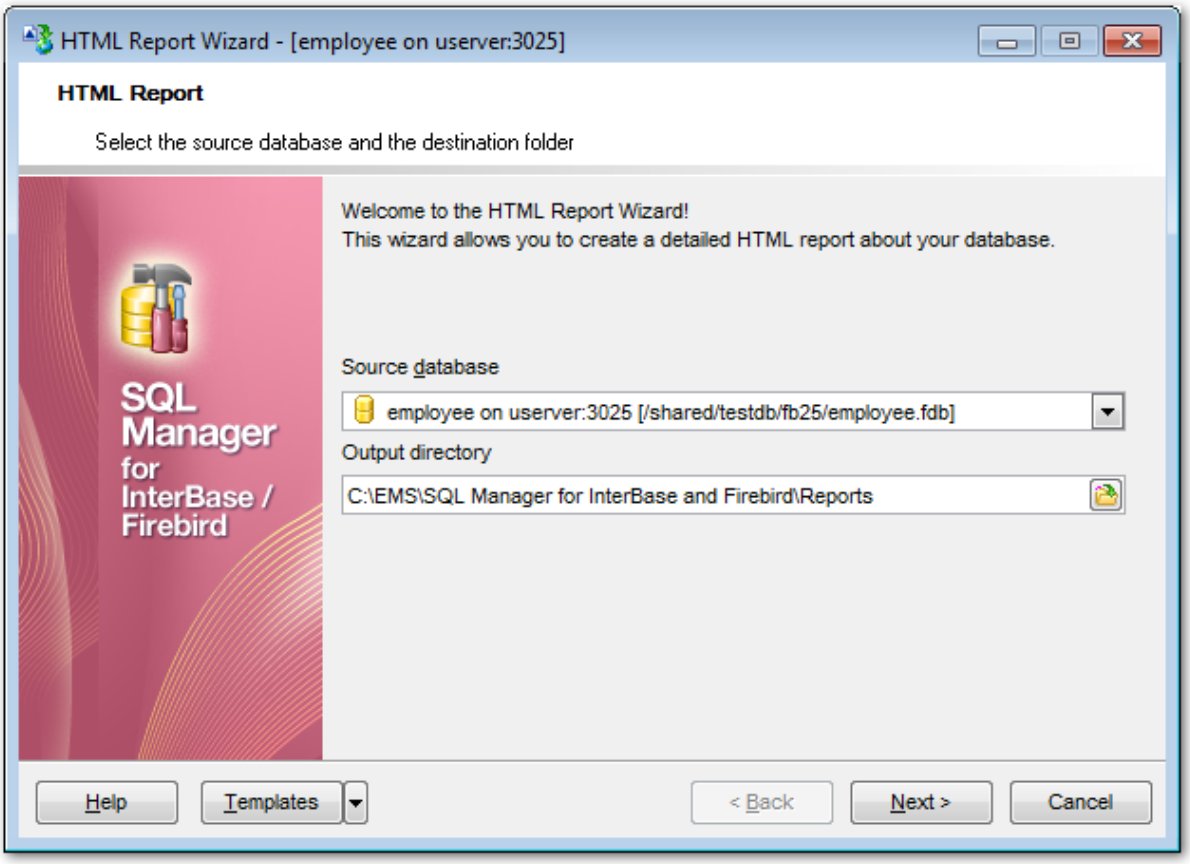
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9.7.1 Selecting database and directory

At this step of the wizard you should select the **source database** and **output directory** for the HTML report.

Source database
Use the drop-down list of registered[107] and connected[67] 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.

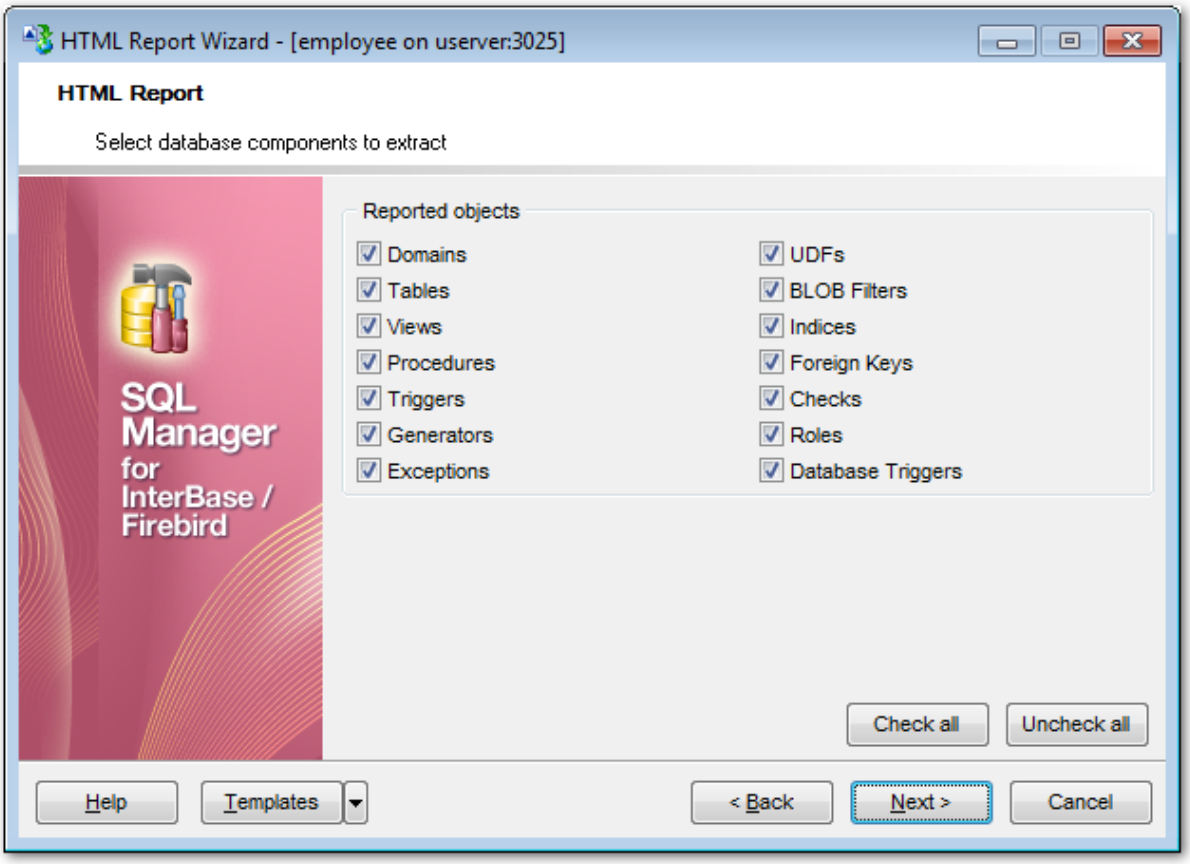


Click the **Next** button to proceed to the Selecting object types[576] step of the wizard.

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9.7.2 Selecting object types

Use this step of the wizard to select *the types of objects* to be included in the result HTML report.



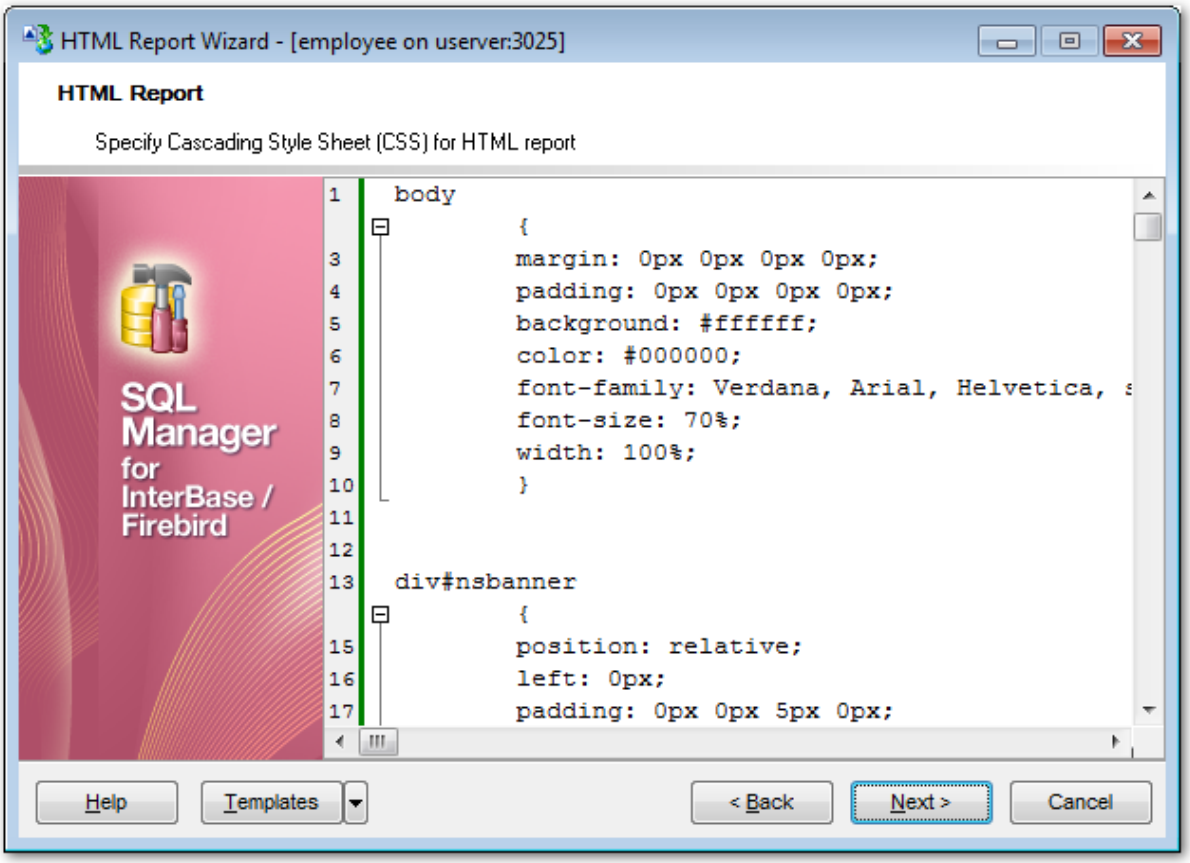
For your convenience the *Check All* and *Unckeck All* buttons are implemented at the bottom of the objects list area.

Click the **Next** button to proceed to the Specifying CSS 577 step of the wizard.

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9.7.3 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.

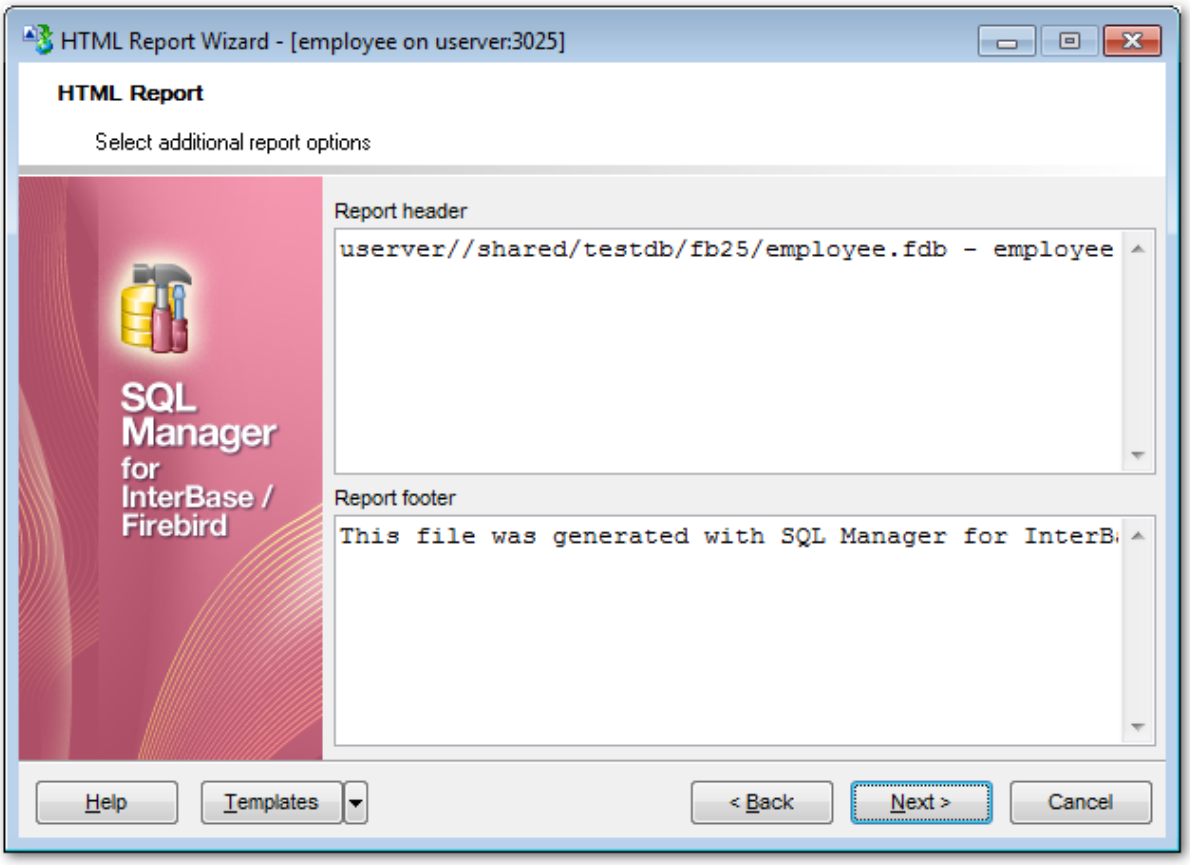


Click the **Next** button to proceed to the Setting additional report options 578 step of the wizard.

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9.7.4 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.

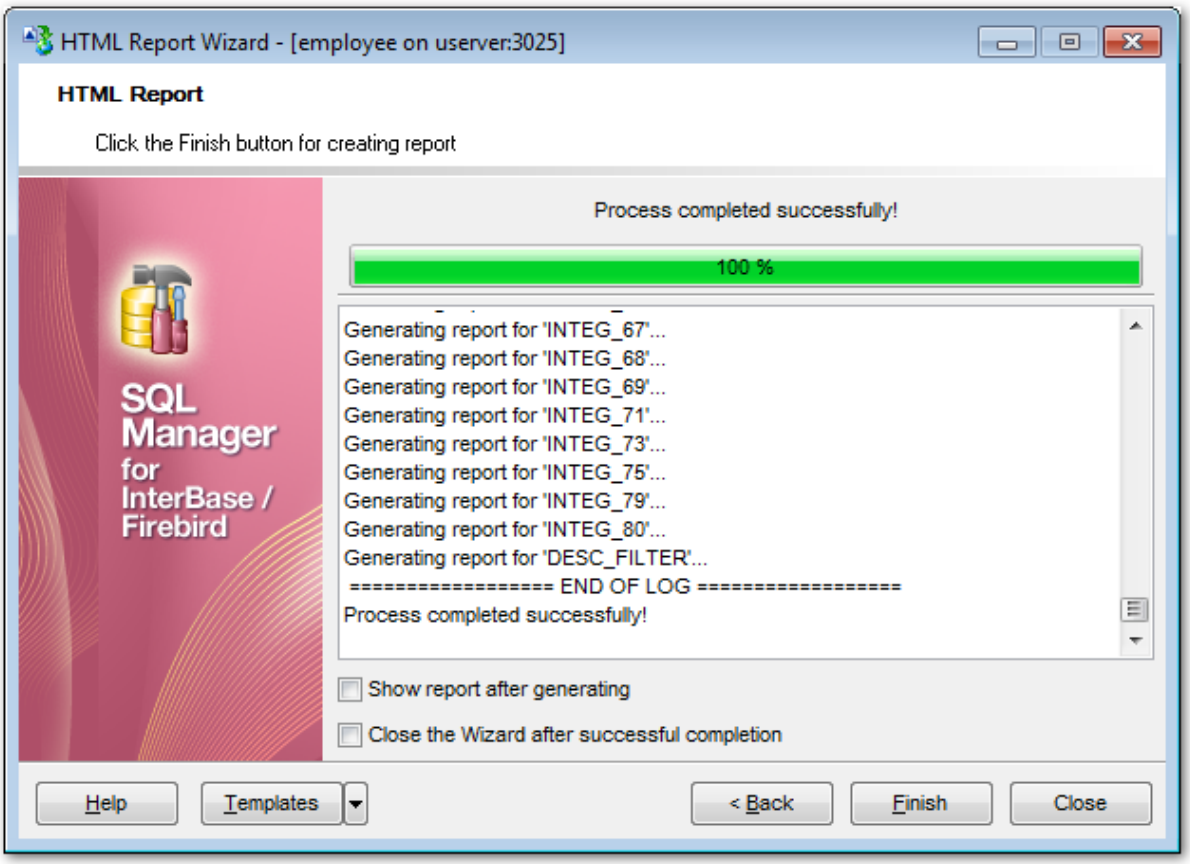
Click the **Next** button to proceed to Creating HTML report 579.

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9.7.5 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[918] for future use.

Click the **Finish** button to run the process.

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9.8 Reports management

SQL Manager for InterBase/Firebird provides several tools for efficient *reports management*:

Create Report Wizard 581
This tool is used to simplify the process of creating reports.

Report Designer 589
It is a basic tool for creating powerful reports.

Report Editor 598
Allows you to manage created reports.

Report Viewer 601
Allows you to preview reports before printing and export them to other formats.

Reports can be stored either in the database (table *IFM$REPORTS* will be created to store them) or in a directory on your hard drive specified on the Directories 133 page of the Database Registration Info 115 dialog.

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9.8.1 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 890 item, then select **Report** in the Create New Object 165 dialog. Alternatively, you can right-click the **Reports** node of the DB Explorer 63 tree and select the **New Report...** item from the context menu 56.



- Specifying report name and options 582
- Selecting report bands 583
- Selecting report style 585
- Specifying paper settings 586
- Specifying margins 587
- Specifying other page settings 588

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 20 page.

See also:

Report Designer 589

Report Editor 598

Report Viewer 601

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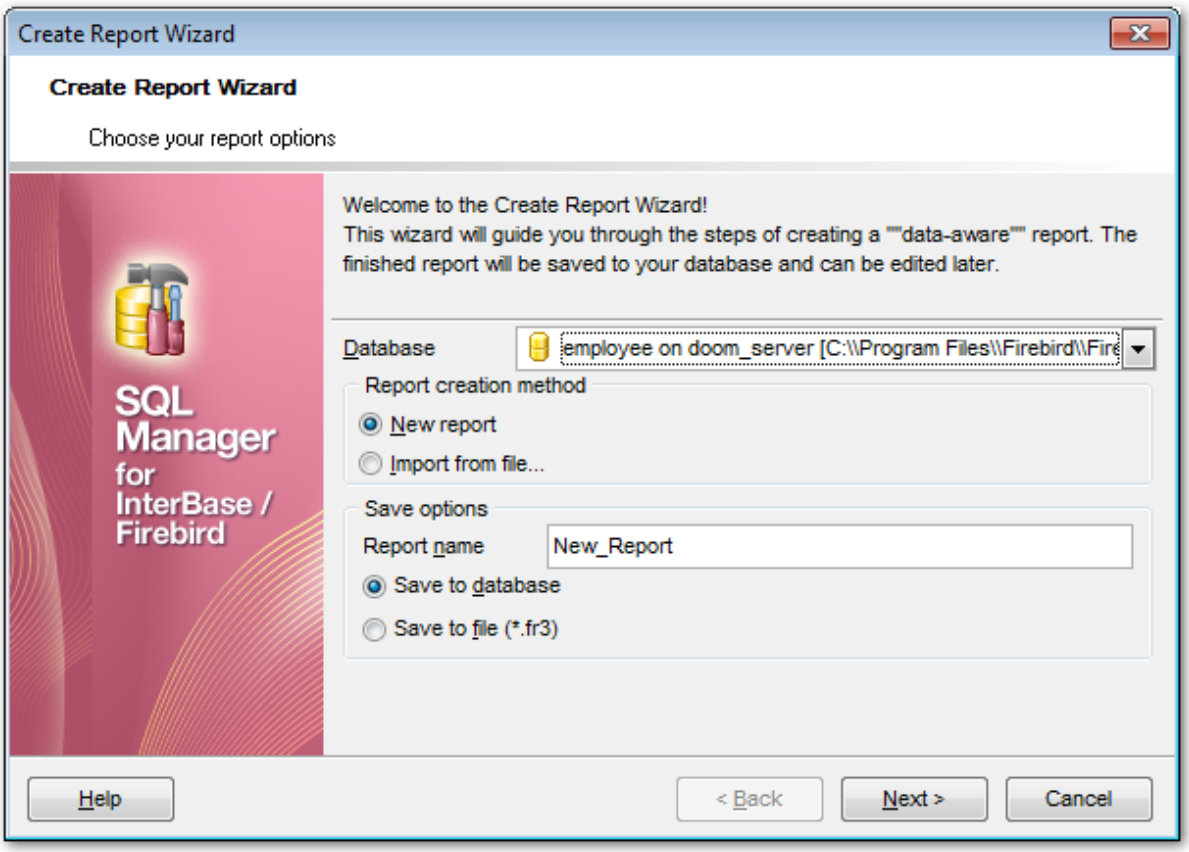
9.8.1.1 Specifying database name and report options

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[133] page of the Database Registration Info[115] dialog.



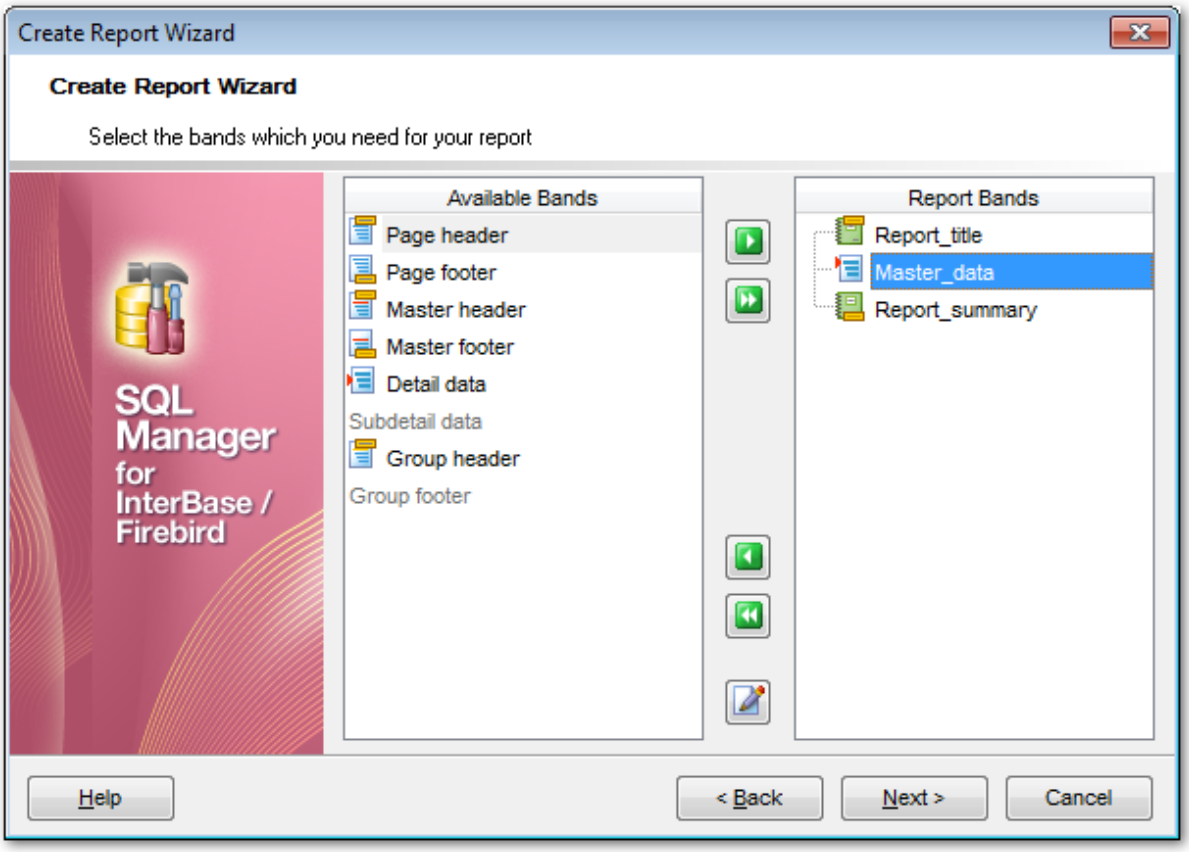
Click the **Next** button to proceed to the Selecting report bands[583] step of the wizard.

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9.8.1.2 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 Query Builder[348].



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*
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*

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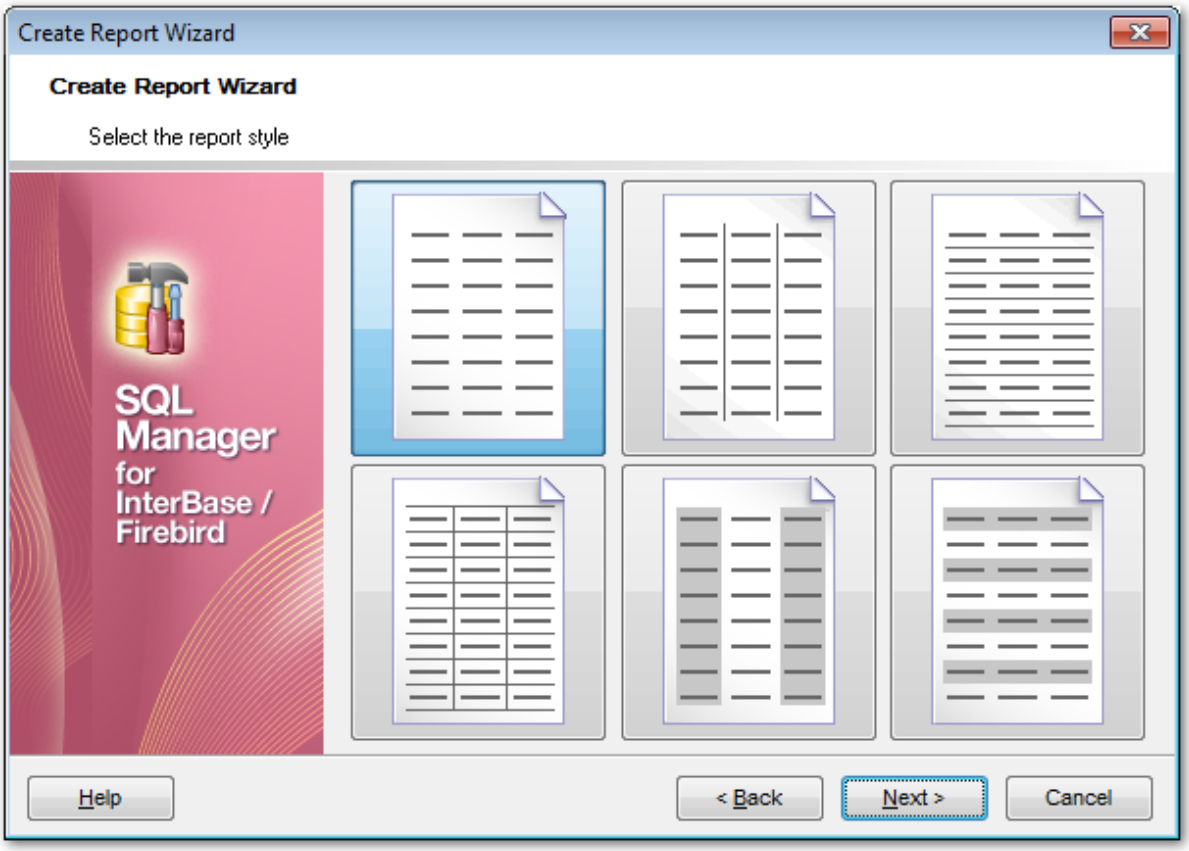
Detail data	*Data rows of detail list*
Detail footer	*Prints at the end of detail list*
Subdetail header	*Prints at the beginning of subdetail list*
Subdetail data	*Data rows of subdetail list*
Subdetail footer	*Prints at the end of subdetail list*
Group header	*Prints at the beginning of each group*
Group footer	*Prints at the end of each group*

Click the **Next** button to proceed to the Selecting report style 585 step of the wizard.

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9.8.1.3 Selecting report style

Select the report style by clicking one of the images illustrating the styles available for the report.



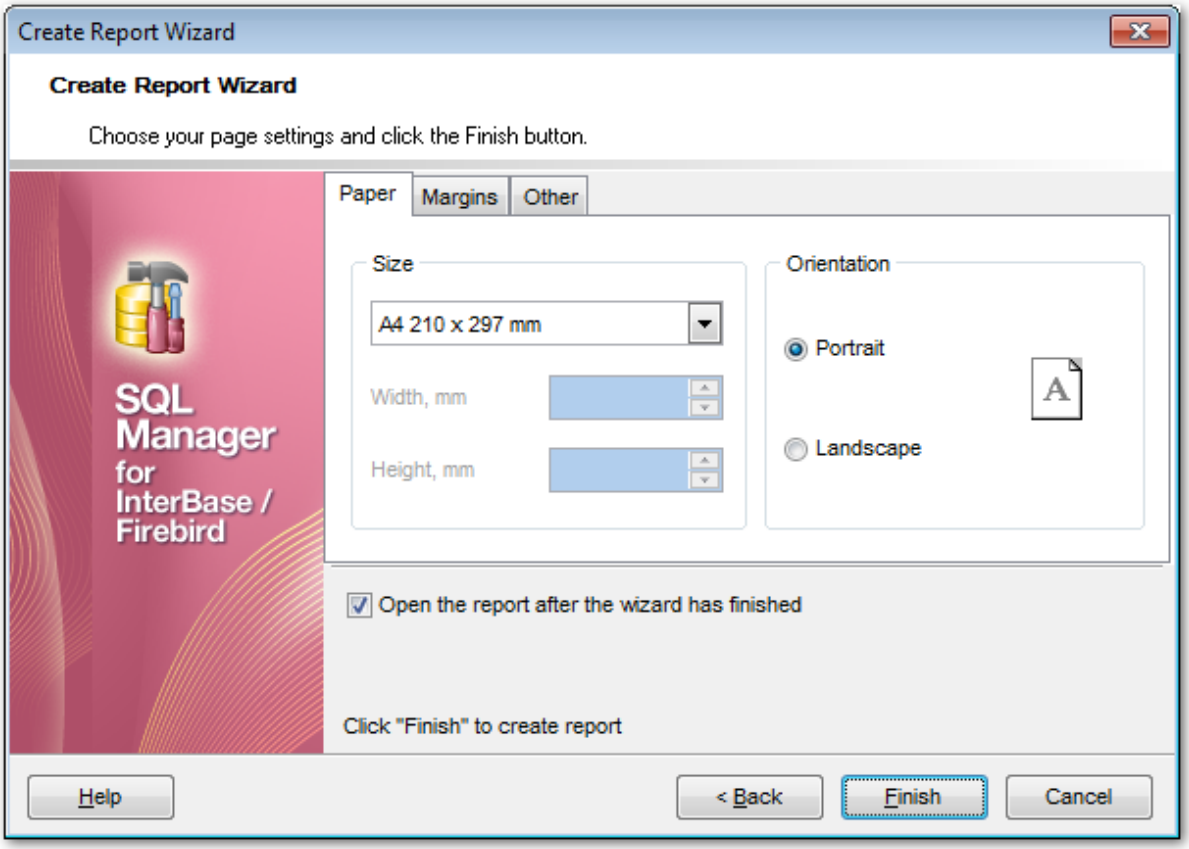
Click the **Next** button to proceed to the Specifying paper settings 586 step of the wizard.

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9.8.1.4 Specifying page settings

9.8.1.4.1 Specifying paper settings

Specify report options: paper *size* and *orientation*, page margins[587], other settings[588]. For details see Page settings[605].



Use the **Margins** tab to specify margins[587] 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[589] after generating.

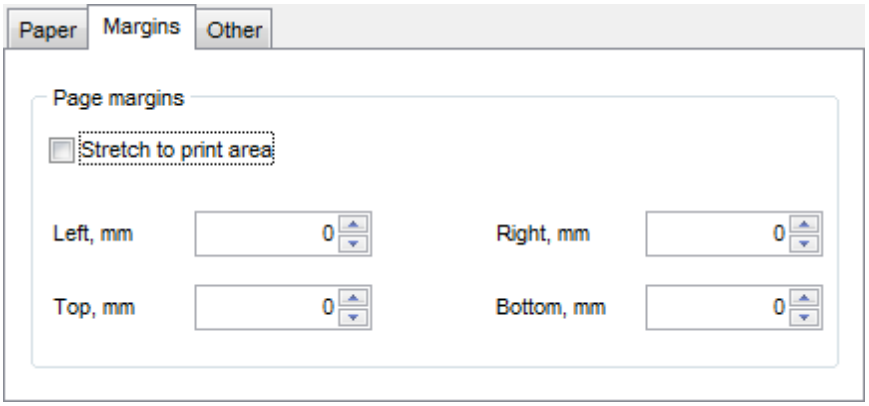
When you are done, click the **Finish** button to run the report generation process.

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9.8.1.4.2 Specifying margins

Page 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).



Use the **Other** tab to specify other page settings[588] 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[589] after generating.

When you are done, click the **Finish** button to run the report generation process.

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9.8.1.4.3 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.

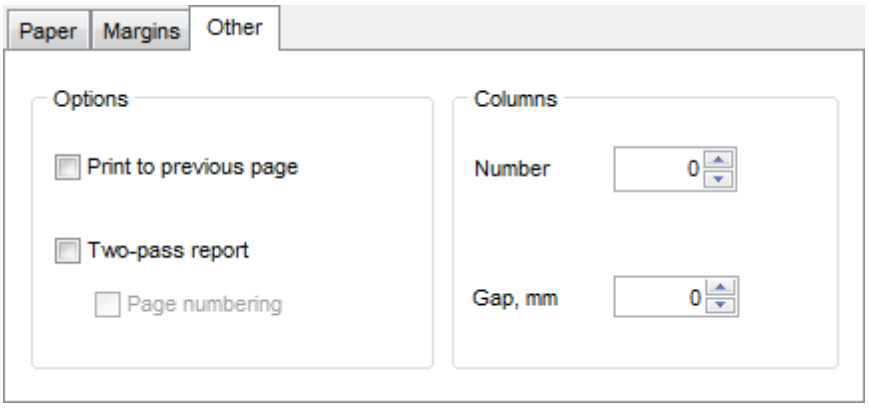
Two-pass report
If this option is selected, report's formation will be performed in two steps. During the first pass, a report is formed, and is divided into pages, but the result is not saved anywhere. During the second pass a standard report formation with saving a result in the stream is performed.

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.



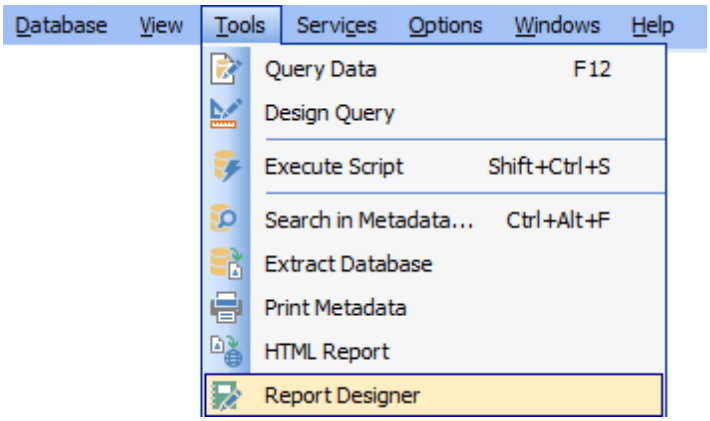
Open the report after the wizard has finished
If this option is checked, the report will be opened in Report Designer[589] after generating.

When you are done, click the **Finish** button to run the report generation process.

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9.8.2 Report Designer

Report Designer allows you to create and edit reports. This tool can be opened after completion of Create Report Wizard 581 to design a new report.
To edit an already existing project, use the appropriate Navigation bar 599 item of Report Editor 598.



This module is provided by Fast Reports, Inc. (http://www.fast-report.com) and has its own help system. Press **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 590
- Adding database and query components 592
- Adding report data 595
- Report Preview 603
- Saving the report 597

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 20 page.

See also:

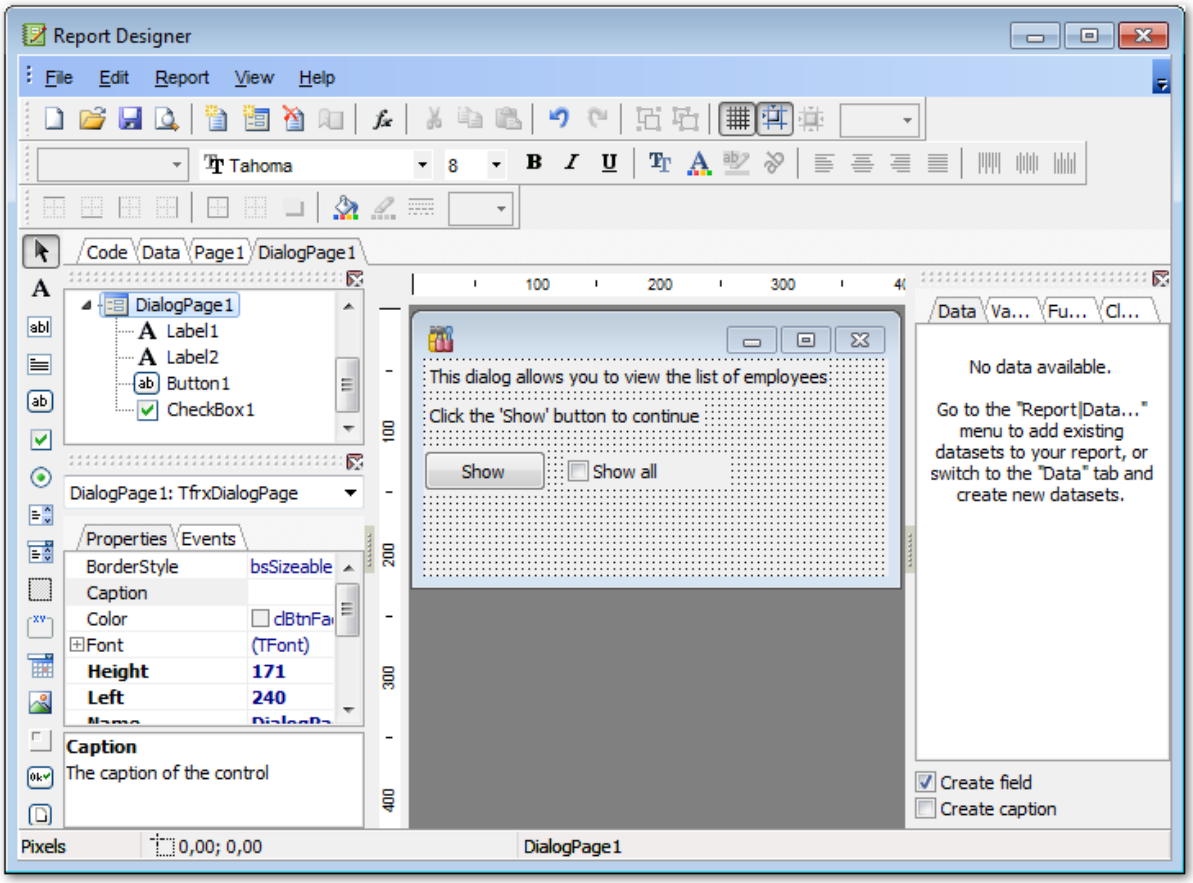
Create Report Wizard 581
Report Editor 598
Report Viewer 601

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9.8.2.1 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 FIBQuery[592]:

```
{
 FIBQuery1.Active = true;
}
```

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See also:

Adding database and query components 592
Adding report data 595
Saving the report 597

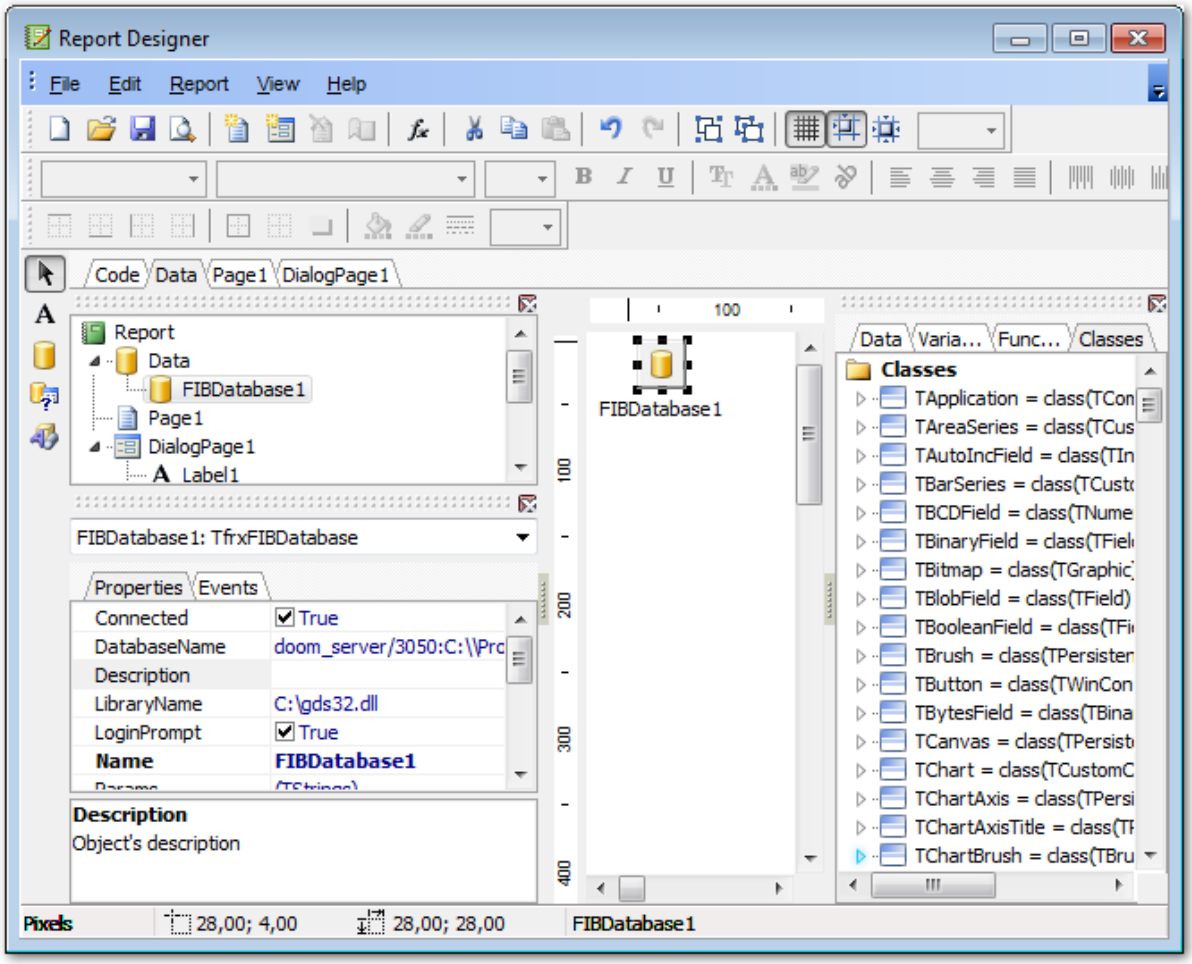
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9.8.2.2 Adding database and query components

Adding database component

In order to add the *Database* component:

- proceed to the **Data** tab of **Report Designer**;
- pick the **Database** component on the toolbar (on the left);
- click within the working area - the corresponding *FIBDatabase1* icon appears in the area;
- set the database name and authorization parameters within the **Properties Inspector** .



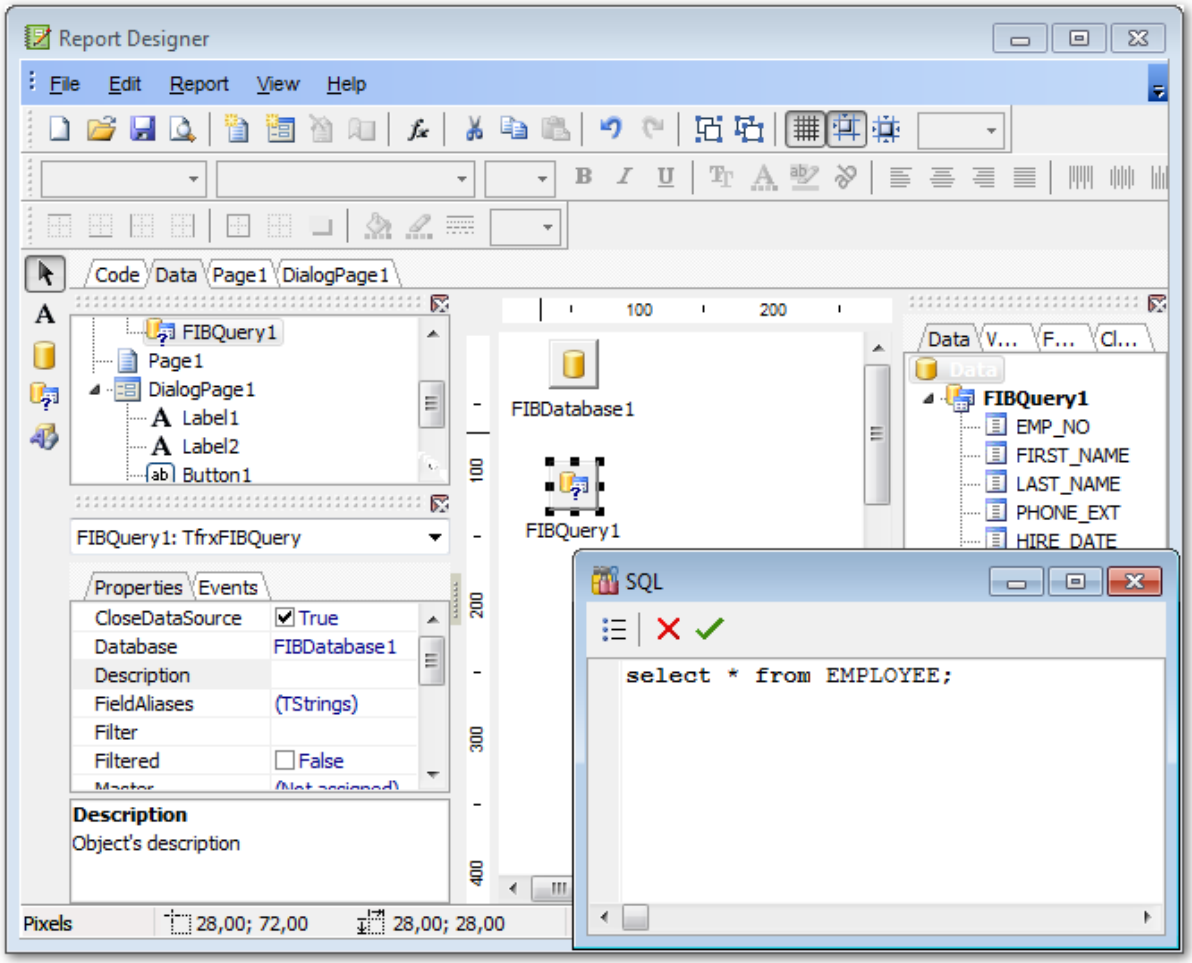
Adding query component

In order to add the *Query* component:

- proceed to the **Data** tab of **Report Designer**;
- pick the **Query** component on the toolbar (on the left);
- click within the working area - the corresponding *FIBQuery1* icon appears in the area;
- set the database name and authorization parameters within the **Properties Inspector** ;

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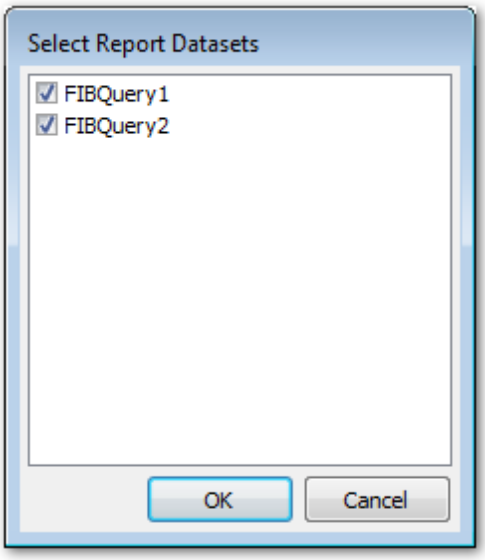
- double-click the *FIBQuery1* icon to open the **SQL** window;
- input the SQL query that returns the required dataset and click the button;
- repeat the operation if you wish to add other query components to the report.



Note: The **Properties Inspector** panel which allows you to edit report object properties can be shown/hidden by pressing the **F11** key.

Using the above given steps you can create as many queries as you need. In order to select a dataset returned by a query, select the **Report | Data...** main menu item of **Report Designer** to call the **Select Report Datasets** dialog. Pick the required query within the dialog and press **OK**.

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See also:

Adding dialog form 590
Adding report data 595
Saving the report 597

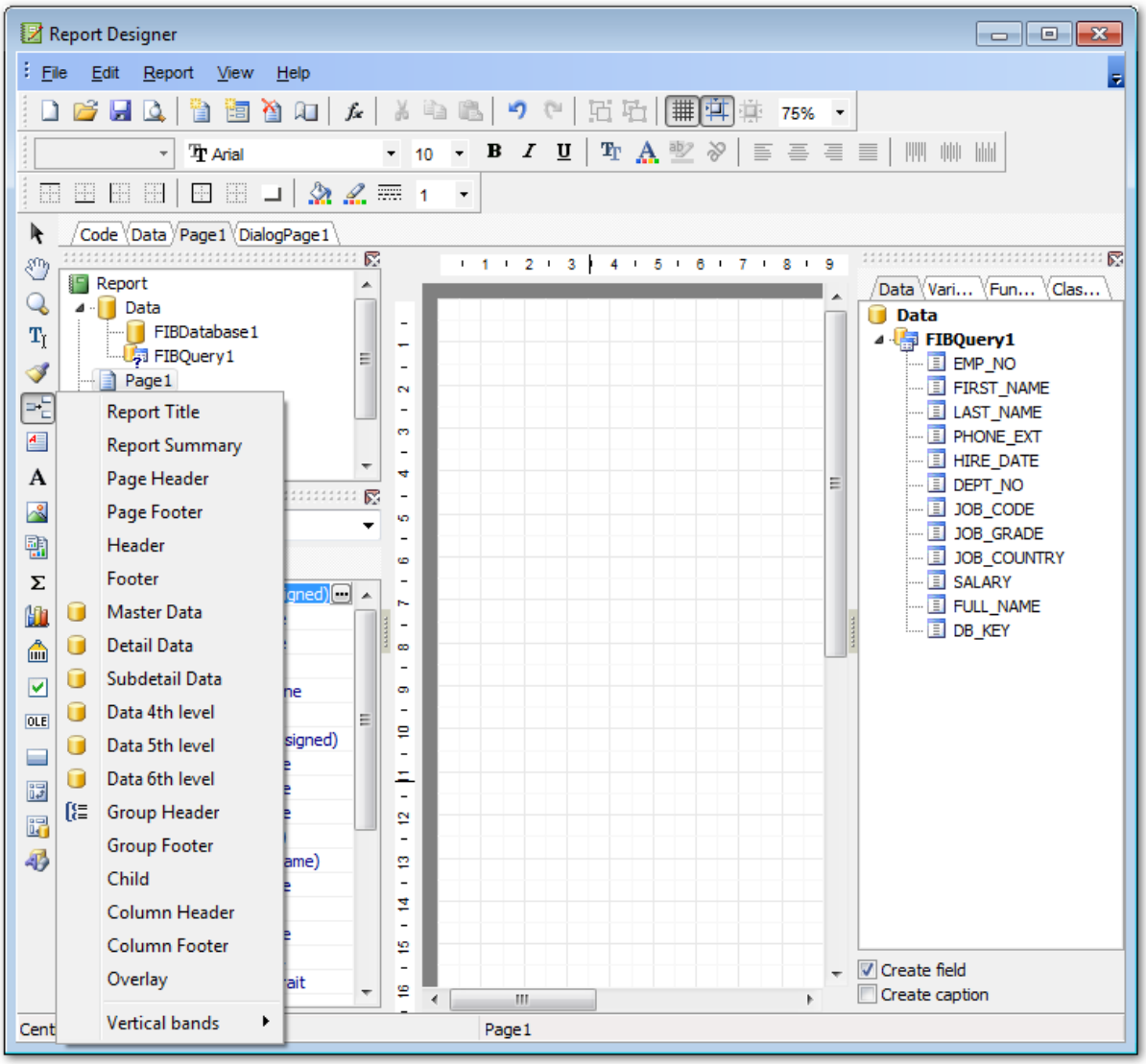
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9.8.2.3 Adding report data

Adding bands

In order to add a band to the report:

- proceed to the **Page1** tab of **Report Designer**;
- 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**.



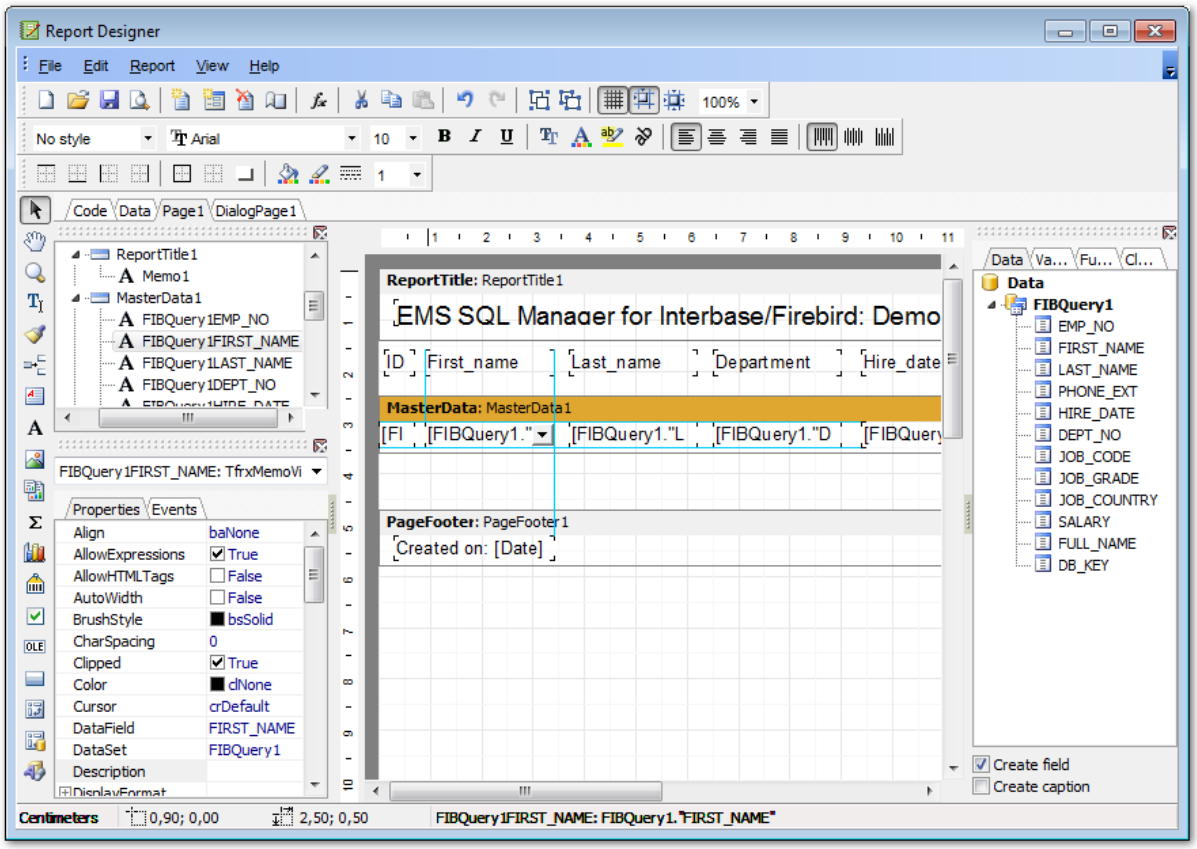
Adding report data

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;

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- add all necessary elements one by one using drag-and-drop operation for each of them.



Note: The **Properties Inspector** panel which allows you to edit report object properties can be shown/hidden by pressing the **F11** key.

Note: 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 940 for the same purpose. For details see Report Viewer 601.

See also:

Adding dialog form 590

Adding database and query components 592

Saving the report 597

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9.8.2.4 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[940] for the same purpose.

If necessary, you can add the report to the database using Create Report Wizard[581] and perform preview/print operations using Report Editor[598].

See also:

Adding dialog form[590]

Adding database and query components[592]

Adding report data[595]

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9.8.3 Report Editor

Report Editor allows you to view, edit, save and print reports.

To open a report in **Report Editor**, double-click it in the DB Explorer 63 tree, or right-click it and select the **Edit Report <report_name>...** item from the context menu 56.

- Using Navigation bar and Toolbar 599
- Viewing Report 600

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 20 page.

See also:

Create Report Wizard 581

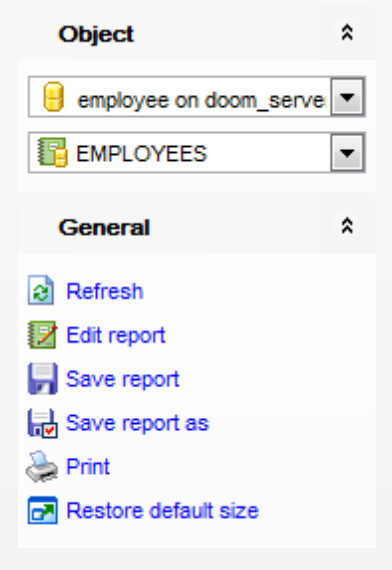
Report Designer 589

Report Viewer 601

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9.8.3.1 Using Navigation bar and Toolbar

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



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

Object
select a database
select a report

General
refresh the content of the window
edit report using Report Designer 589
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

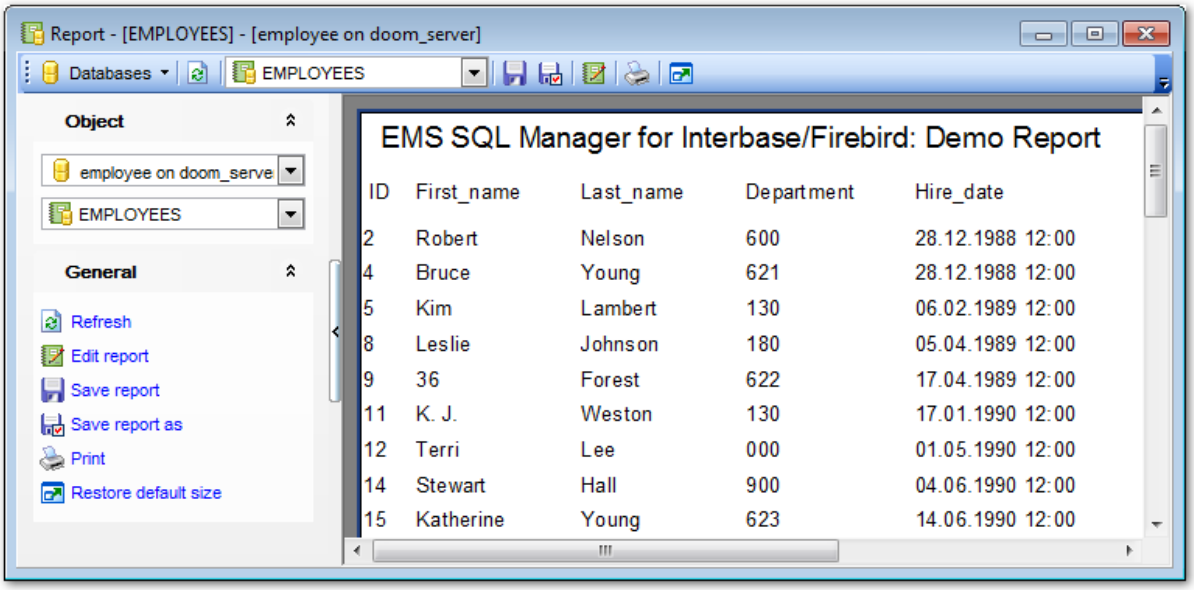
Items of the **Navigation bar** are also available on the **ToolBar** of the **Report Editor** window. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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9.8.3.2 Viewing Report

The main window of **Report Editor** allows you to view the specified report.

Possible report operations are available through the Navigation bar[599] and toolbar[599] of the editor window.



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9.8.4 Report Viewer

Report Viewer allows you to preview reports generated in **SQL Manager** before printing and export them to other formats.

This module is provided by Fast Reports, Inc. (http://www.fast-report.com) and has its own help system. For more information refer to the *Fast Report User Manual* (*FRUserManual.chm*) distributed with the program.

The tool opens automatically when a **Preview** item is used in Print Metadata 570 or Report Designer 589.

- Using Toolbar and context menu 602
- Working with Report Viewer 603
- Page settings 605
- Sending Report by E-mail 607

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 20 page.

See also:

Create Report Wizard 581

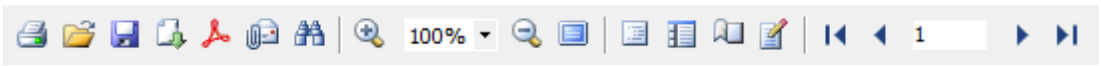
Report Designer 589

Report Editor 598

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9.8.4.1 Using Toolbar and context menu

The **Toolbar** and **context menu** provide quick access to tools implemented in **Report Viewer**.



The **Toolbar** of **Report Viewer** allows you to:
- print the report
- save the current report to an external **.fp3* file
- call a menu allowing you to export 606 the preview content to any of the available formats: *PDF file*, *HTML file*, *RTF file*, *Excel table (OLE)*, *Excel table (XML)*, *BMP image*, *JPEG image*, *TIFF image*, *GIF image*, *E-mail*, *CSV file*, *Text file*, *Open Document Spreadsheet*, *Open Document Text*, *Text (matrix printer)*
- specify Export to PDF options
- specify Send by E-mail 607 options
- search for text within the report content
- zoom in
- zoom out
- enable/disable full screen view
- enable/disable report outline
- enable/disable report thumbnails
- specify page settings 605
- navigate to the first page of the report
- navigate to the previous page of the report
- navigate to the next page of the report
- navigate to the last page of the report

Items of the **Toolbar** are also available in the **context menu** of the **Report Viewer** window. To open the menu, right-click in the working area of the viewer.

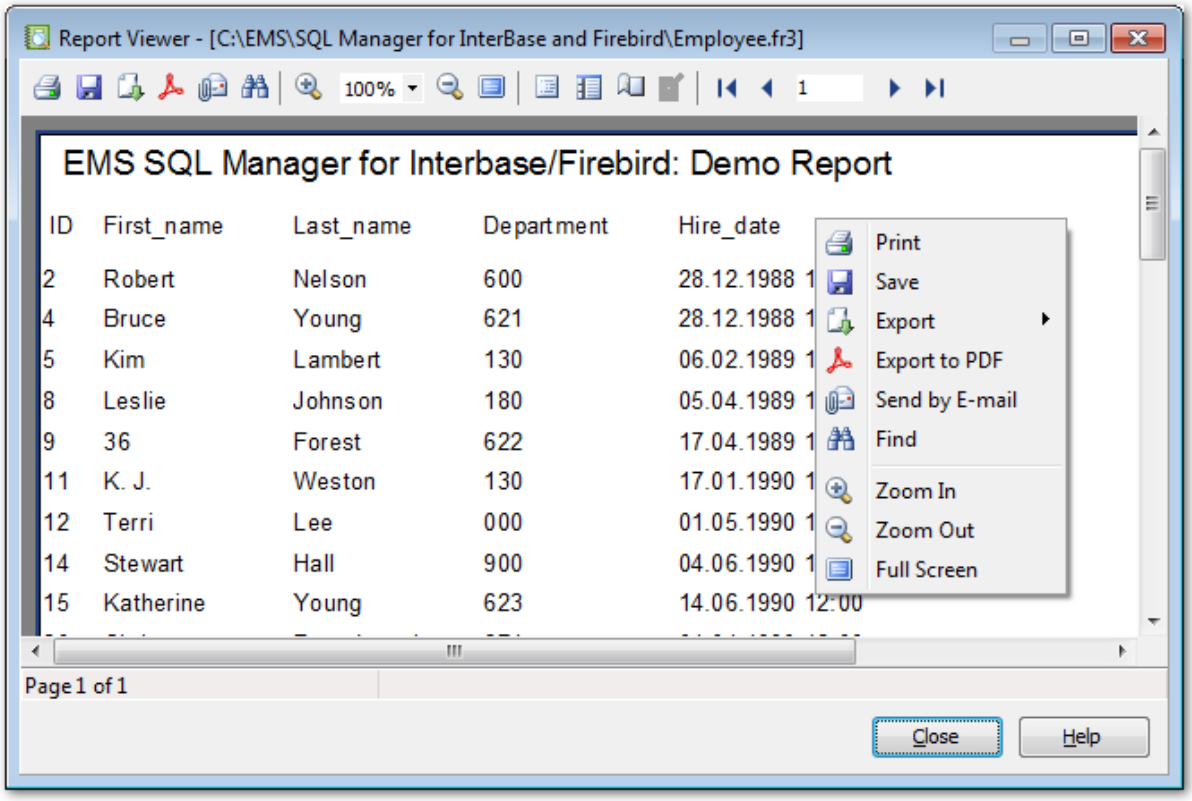
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9.8.4.2 Working with Report Viewer

Report Viewer provides a quick preview of data and metadata reports generated in **SQL Manager**:

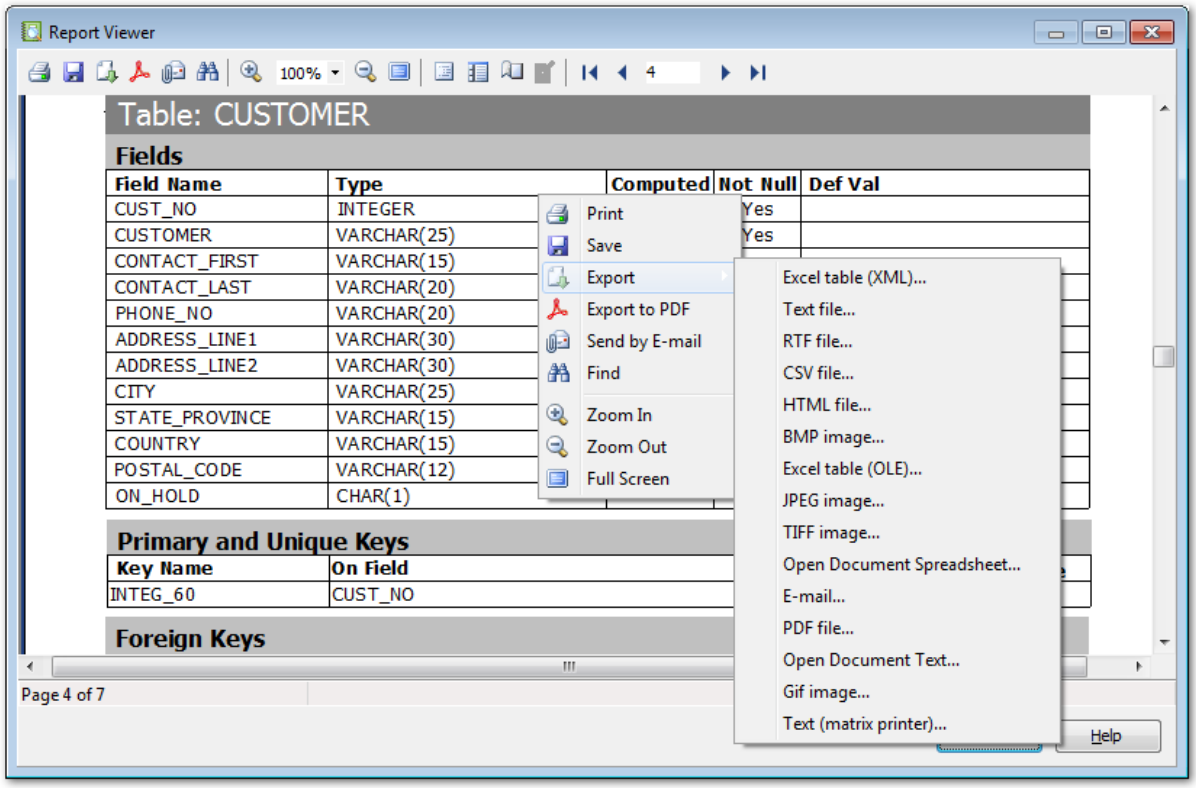
- Viewing data report 603
- Viewing metadata report 603

Data Report
The screenshot below illustrates viewing data reports generated with the Report Designer 589 tool.



Metadata Report
The screenshot below illustrates viewing metadata reports generated with the Print Metadata 570 tool.

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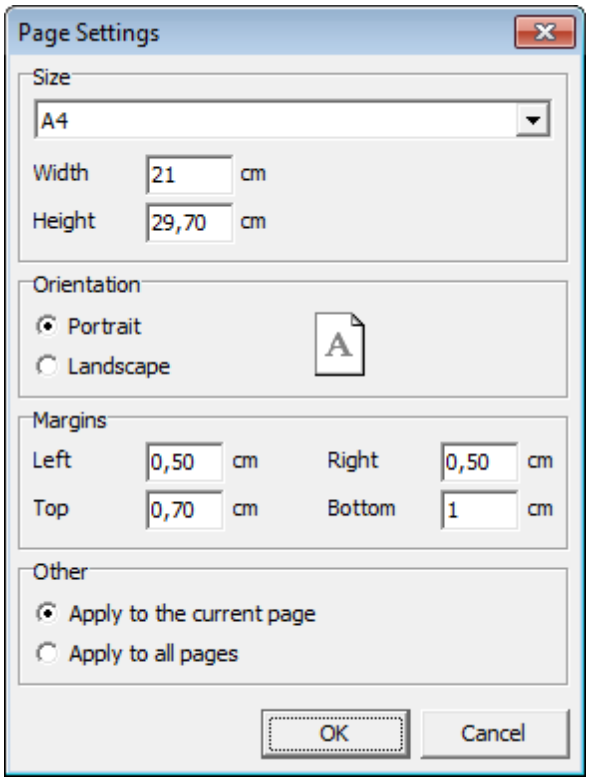


Note: **Report Viewer** tools are available through the toolbar[602] and context menu[602] of the preview area.

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9.8.4.3 Page settings

The **Page Settings** dialog allows you to configure page *size*, *orientation*, *margins*, and *other* settings.



Size
Select one of the standard paper types from the drop-down list, or specify custom *width* and *height* using the corresponding controls below (in centimeters).

Orientation
Select the preferable page orientation (your selection is illustrated in the chart on the right):
- *Portrait*
- *Landscape*

Margins
Use this group to specify the *left*, *right*, *top* and *bottom* margins (in centimeters).

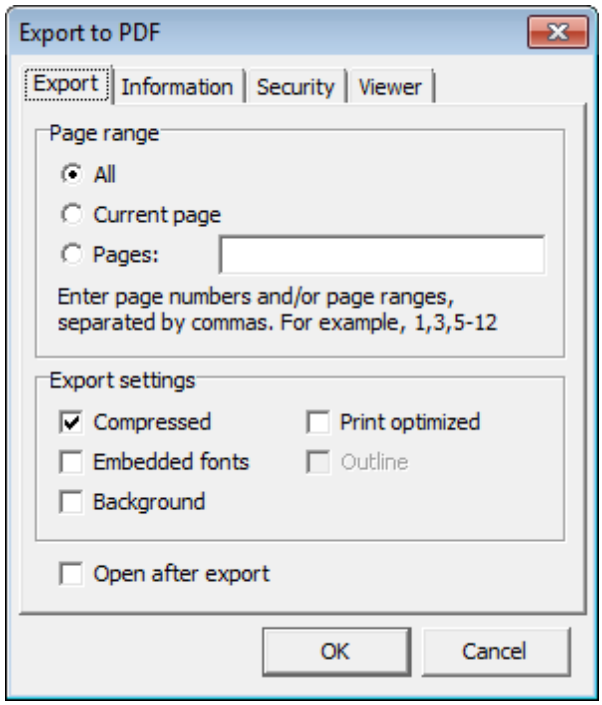
Other
Select the scope the settings are to be applied to:
- *Apply to the current page*
- *Apply to all pages*

For more information refer to the *Fast Report User Manual* distributed with the program.

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9.8.4.4 Exporting report content

The **Export** dialog allows you to configure *page range* and a number of *output format settings*.



Page range
This group allows you to specify which report pages are to be exported:
- *All*
- *Current page*
- *Specified pages* (you should input page number(s) and/or page range(s) in the edit box)

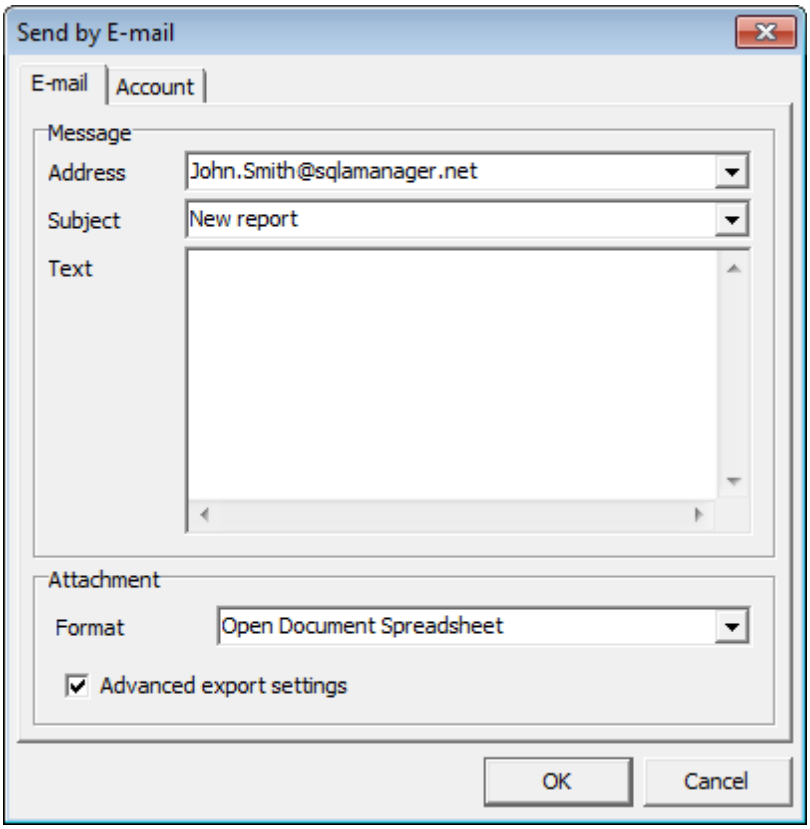
Format-specific settings
These settings vary according to the specified output format: *PDF file*, *HTML file*, *RTF file*, *Excel table (OLE)*, *Excel table (XML)*, *BMP image*, *JPEG image*, *TIFF image*, *GIF image*, *E-mail*, *CSV file*, *Text file*, *Open Document Spreadsheet*, *Open Document Text*, *Text (matrix printer)*.

For more information refer to the *Fast Report User Manual* distributed with the program.

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9.8.4.5 Sending by E-mail

The **Send by E-mail** dialog allows you to send a report by e-mail in any supported format.



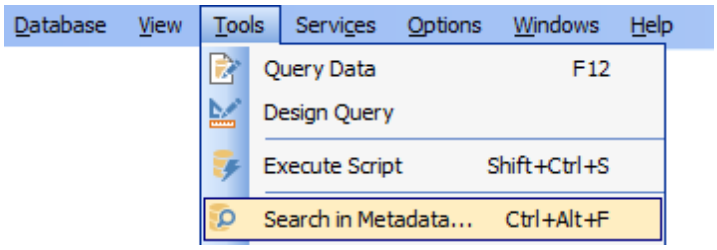
For more information refer to the *Fast Report User Manual* distributed with the program.

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9.9 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 890 item, or use the *Ctrl+Alt+F* shortcut 940.



- Using Navigation bar and Toolbar 609
- Setting search conditions 611
- Viewing search results 612

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 20 page.

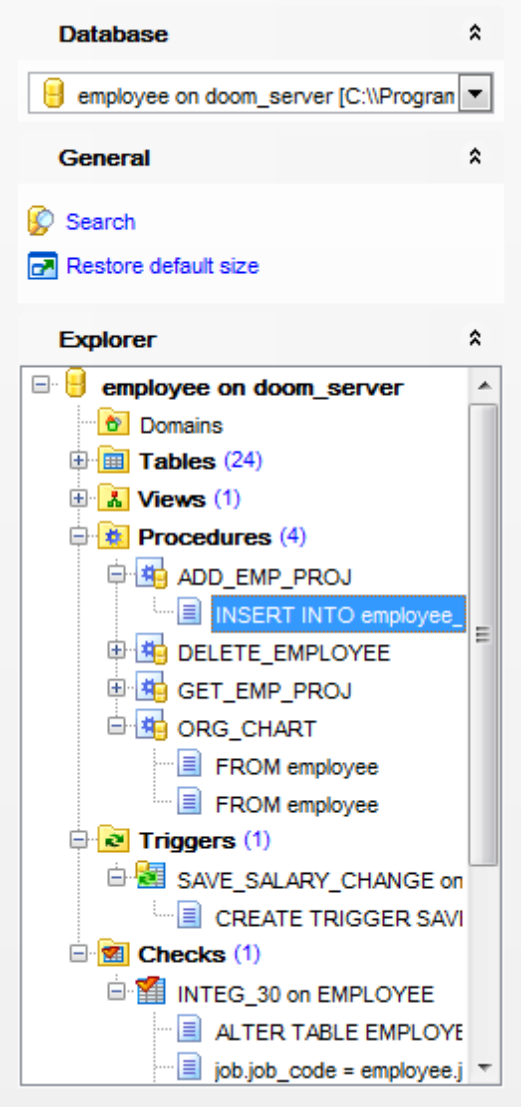
See also:

Database Objects Management 163

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9.9.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Search in Metadata**.



The **Navigation bar** of the **Search in Metadata** tool allows you to:

Database
select a database for searching

General
set search conditions 611
restore the default size and position of the window

Explorer
browse the tree of found database objects

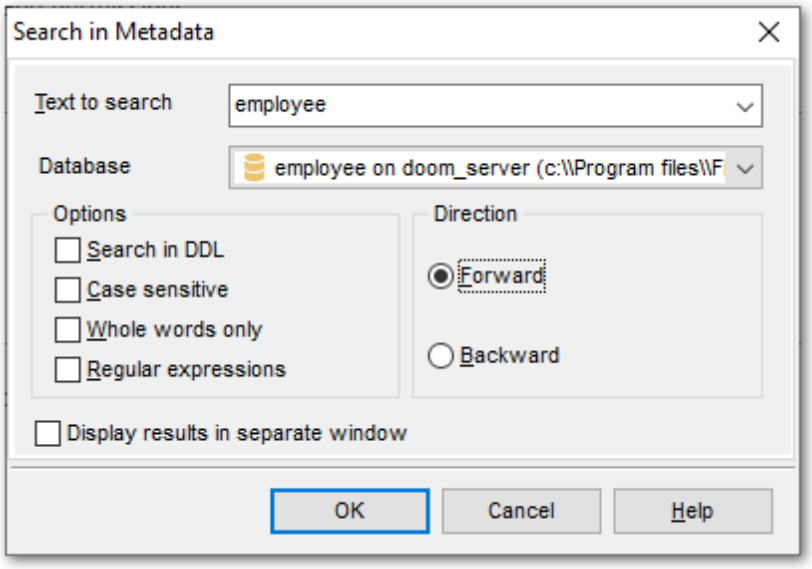
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Items of the **Navigation bar** are also available on the **ToolBar** of the **Search in Metadata** tool. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select ◉ *Toolbar* (if you need the toolbar only) or ◉ *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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9.9.2 Setting search conditions

The **Find in metadata** dialog allows you to set search conditions. It opens each time the **Search in Metadata** tool is launched.



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.

Database
Use the drop-down list to select a database for the search operation.

Options
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 909 page.

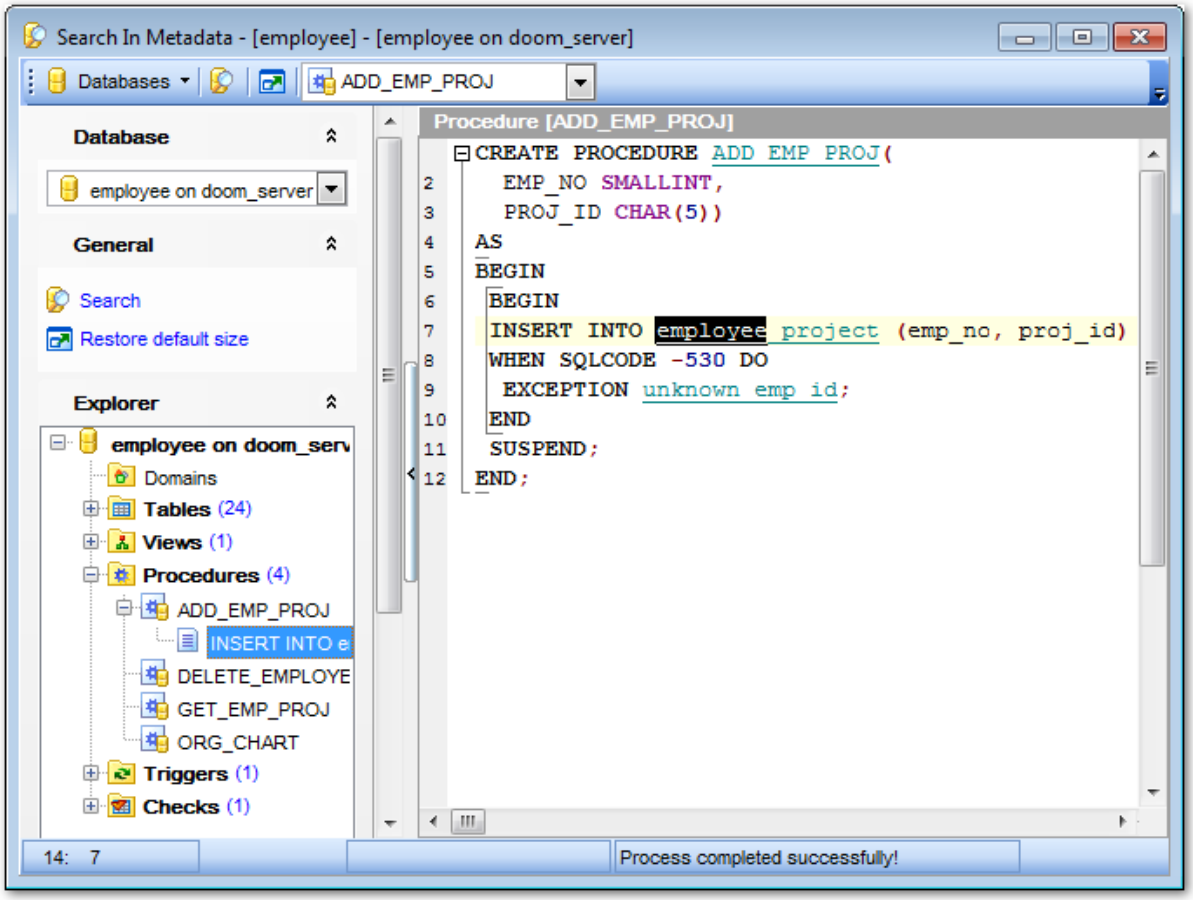
When all the options are set, click OK. The **Search in Metadata [search string]** report window will display the search progress and results 612.

See also:
Find Text dialog 909

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9.9.3 Viewing search results

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[609] 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[334] and Using the context menu[336].

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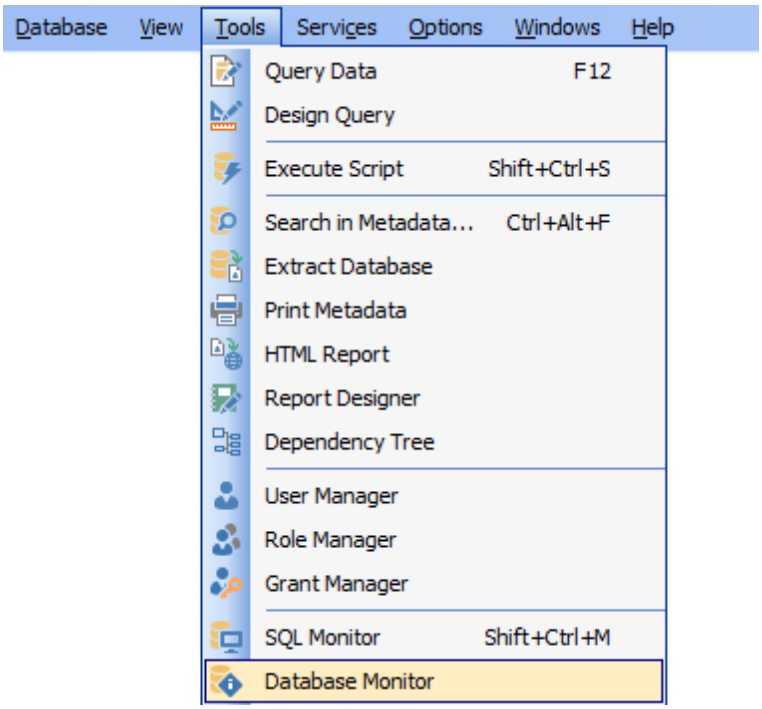
9.10 Database Monitor

Database Monitor allows you to get actual information about the database and its activities.

Use **Database Monitor** to monitor database activities in real-time and to terminate/ shutdown processes (when possible) to troubleshoot related issues. Collected information is arranged by sections available within the corresponding tabs.

This feature is available only for InterBase 7 (and higher) and Firebird 2.1 (in ODS 11.1 and higher) InterBase/Firebird versions.

To launch the tool, select the **Tools | Database Monitor** main menu 890 item, or right-click the database alias in the DB Explorer 63 tree and select the **Tasks | Database Monitor** item from the context menu 53.



- Using Navigation bar and Toolbar 615
- Database overview 617
- Viewing transactions 618
- Viewing statements 619
- Viewing users 620
- Viewing call stack (Firebird only) 622
- Viewing procedures (InterBase only) 623
- Viewing relations (InterBase only) 624
- Viewing triggers (InterBase only) 625
- Memory usage (InterBase only) 626

Availability:
Full version (for **Yes**

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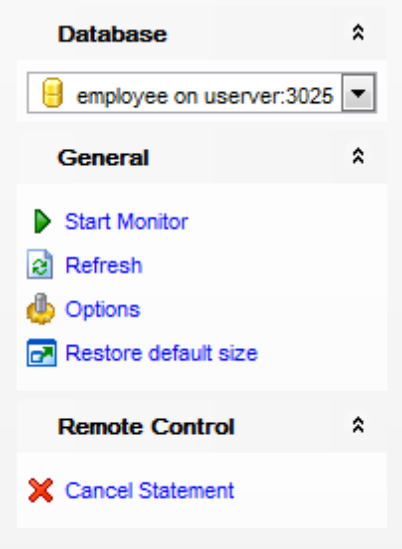
Windows)	
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

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9.10.1 Using Navigation bar and Toolbar

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



The **Navigation bar** of the **Database Monitor** window allows you to:

Database
select a database for monitoring

General
edit database monitor options 776
start/resume monitoring
pause monitoring
restore the default size and position of the 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 tool:

Remote Control
commit transaction (at the Transactions 618 tab)
rollback transaction (at the Transactions 618 tab)
cancel statement (at the Statements 619 tab)
shutdown user (at the Users 620 tab)
cancel current operation (at the Users 620 tab)

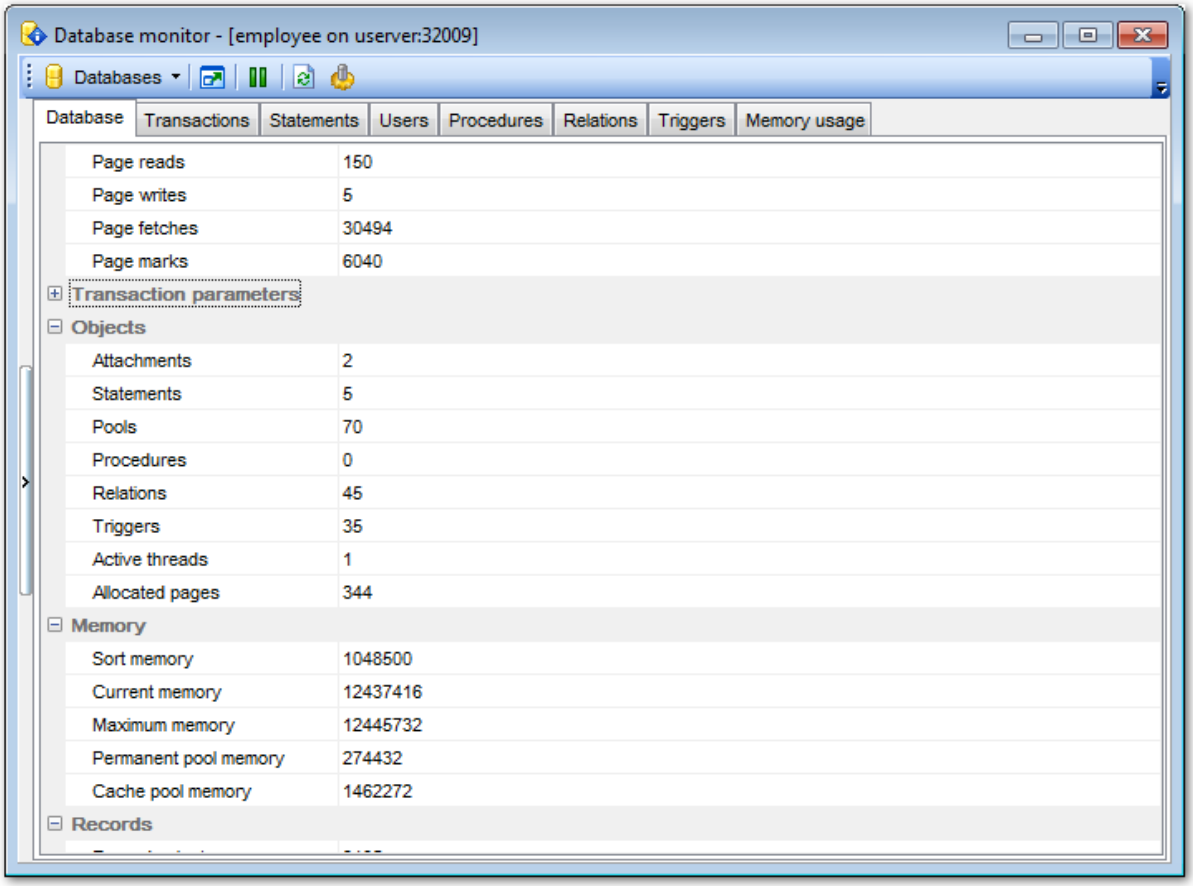
Items of the **Navigation bar** are also available on the **ToolBar** of the **Database Monitor** window. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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9.10.2 Database overview

The **Database** tab of **Database Monitor** allows you to get the general overview of the database.

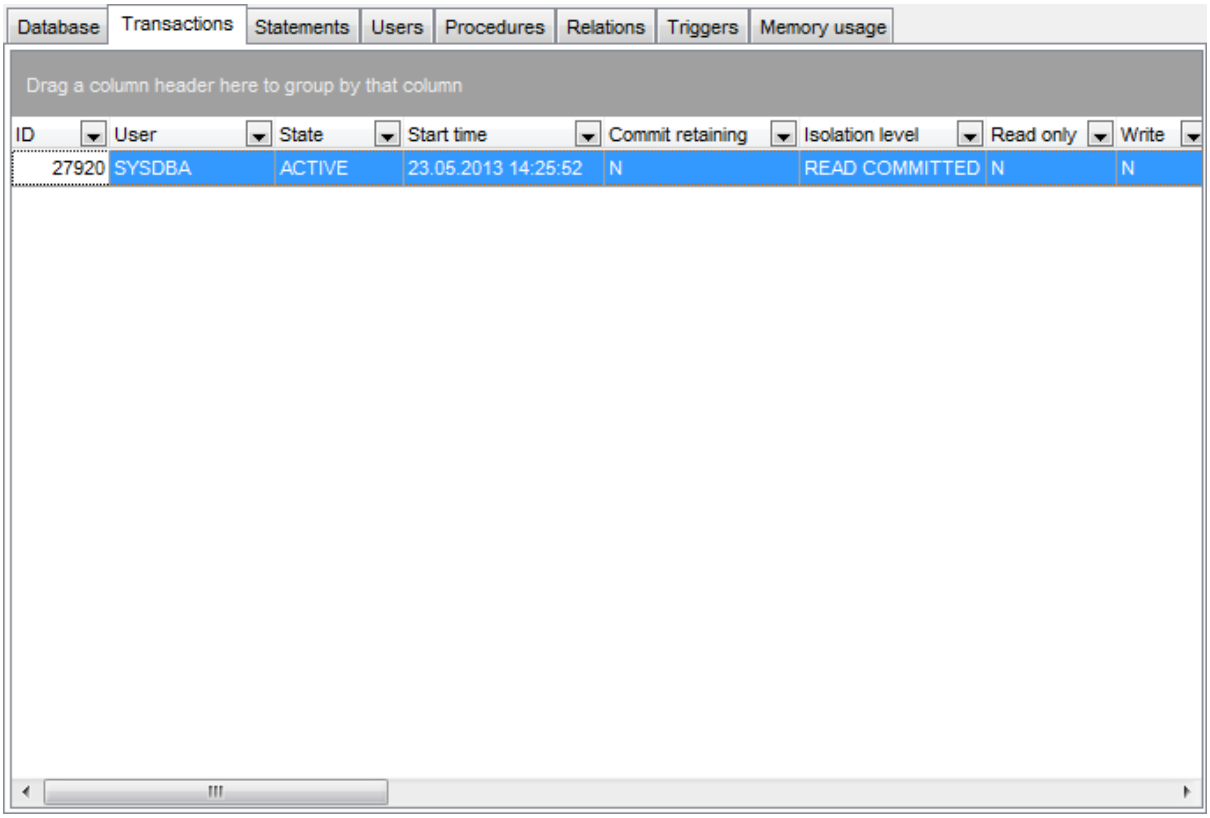


The working area consists of the following sections:
Database parameters (*database path*, *database ID*, *sweep interval*, *sweep active*, *sweep relation*, *sweep records*, *state*, *page reads*, *page writes*, *page fetches*, *page marks*)
Transaction parameters (*transactions*, *transaction commits*, *transaction rollbacks*, *transaction prepares*, *transaction deadlocks*, *transaction conflicts*, *transaction waits*, *next transaction*, *oldest interesting*, *oldest active*, *oldest snapshot*, *cache buffers*, *cache free writes*, *cache precedence*, *cache free waits*, *cache latch waits*)
Objects (*attachments*, *statements*, *pools*, *procedures*, *relations*, *triggers*, *active threads*, *allocated pages*)
Memory (*sort memory*, *current memory*, *maximum memory*, *permanent pool memory*, *cache pool memory*)
Records (*record selects*, *record inserts*, *record updates*, *record deletes*, *record purges*, *record expunges*, *record blackouts*)

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9.10.3 Viewing transactions

The **Transactions** tab of **Database Monitor** allows you to view the list of transactions in the database (currently active or in limbo).



The list displays the transactions as a grid with the following columns:
ID, *User*, *State*, *Start time*, *Commit retaining*, *Isolation level*, *Read only*, *Write*, *No wait*, *Snapshot*, *Pool memory*, *Quantum*, *Savepoint records*, *Page reads*, *Page writes*, *Page fetches*, *Page marks*, *Record selects*, *Record inserts*, *Record updates*, *Record deletes*, *Record purges*, *Record expunges*, *Record backouts* (for InterBase);
ID, *User*, *State*, *Start time*, *Protocol*, *Remote address*, *Isolation mode*, *Lock timeout*, *Read only*, *Auto commit*, *Auto undo* (for Firebird).
If more convenient, you can change the order[376] of the columns by dragging their headers horizontally.

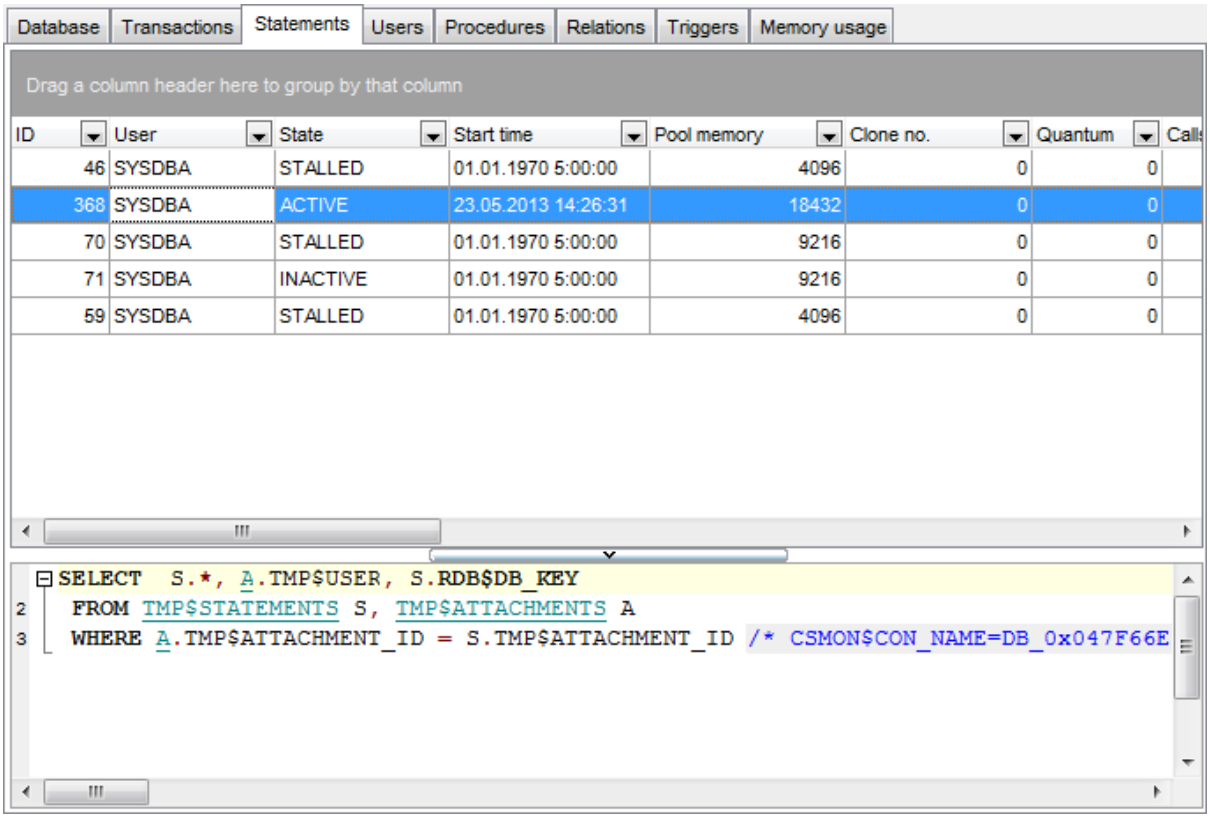
Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

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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9.10.4 Viewing statements

The **Statements** tab of **Database Monitor** allows you to view the list of statements being currently executed in the database.



The window consists of two basic areas: **Statement List** and **Statement Text**.

The **Statement List** area displays the statements as a grid with the following columns: *ID*, *User*, *State*, *Start time*, *Protocol*, *Remote address*.
If more convenient, you can change the order[376] 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.

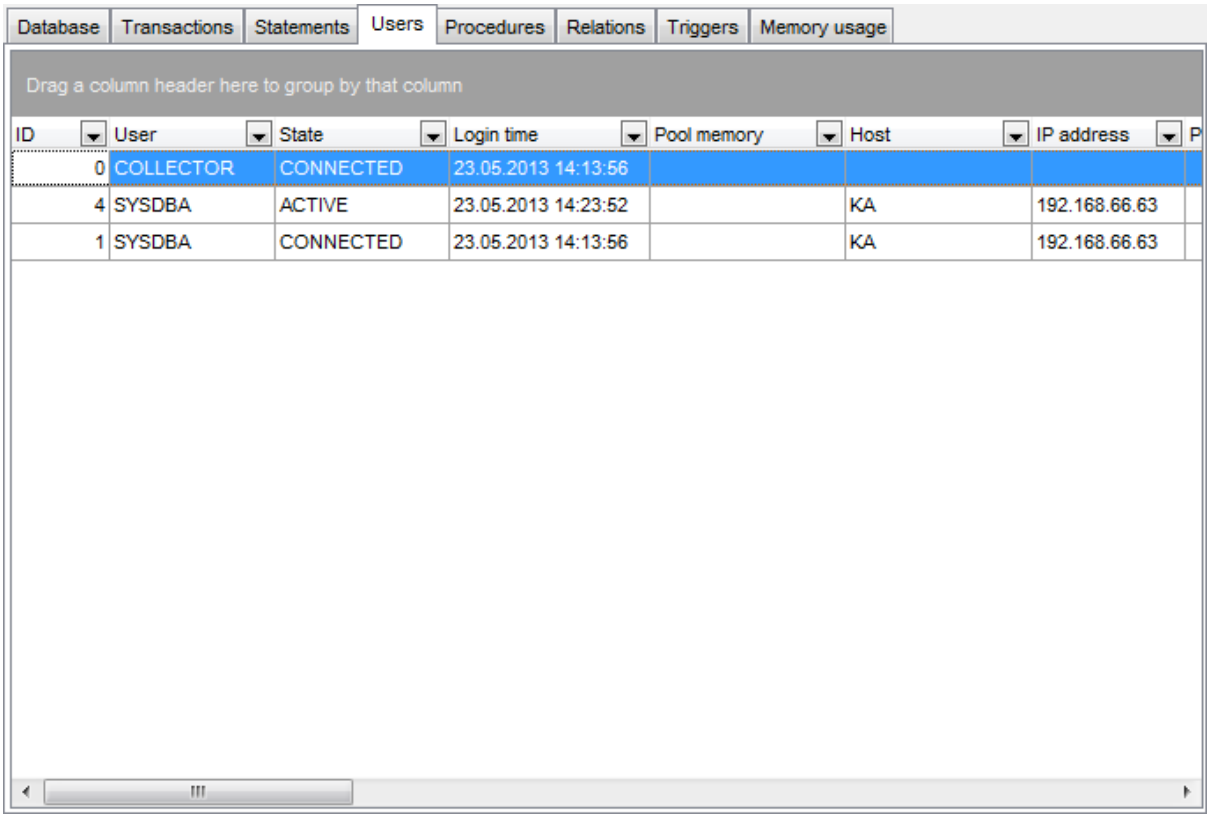
The **Statement Text** area displays the corresponding *SELECT* statement used to get data from system tables.

Statements management tools are available through the Navigation bar[615] and toolbar[615] of **Database Monitor**.

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9.10.5 Viewing users

The **Users** tab of **Database Monitor** allows you to view the list of users[719] logged in since the current connection was opened.



The list displays the users as a grid with the following columns:
ID, *User*, *State*, *Login time*, *Pool memory*, *Host*, *IP address*, *Process ID*, *Quantum*, *Priority*, *Compiled statements*, *Active transactions*, *Active sorts*, *DB key ID*, *Page reads*, *Page writes*, *Page fetches*, *Page marks*, *Record selects*, *Record inserts*, *Record updates*, *Record deletes*, *Record purges*, *Record expunges*, *Record backouts* (for InterBase);
ID, *User*, *Role*, *State*, *Login time*, *Server PID*, *Remote PID*, *State*, *Remote protocol*, *Remote address*, *Charset ID*, *Garbage collection*, *Compiled statements*, *Active transactions*, *Active sorts*, *DB key ID*, *Page reads*, *Page writes*, *Page fetches*, *Page marks*, *Record selects*, *Record inserts*, *Record updates*, *Record deletes*, *Record purges*, *Record expunges*, *Record backouts* (for Firebird).
If more convenient, you can change the order[376] 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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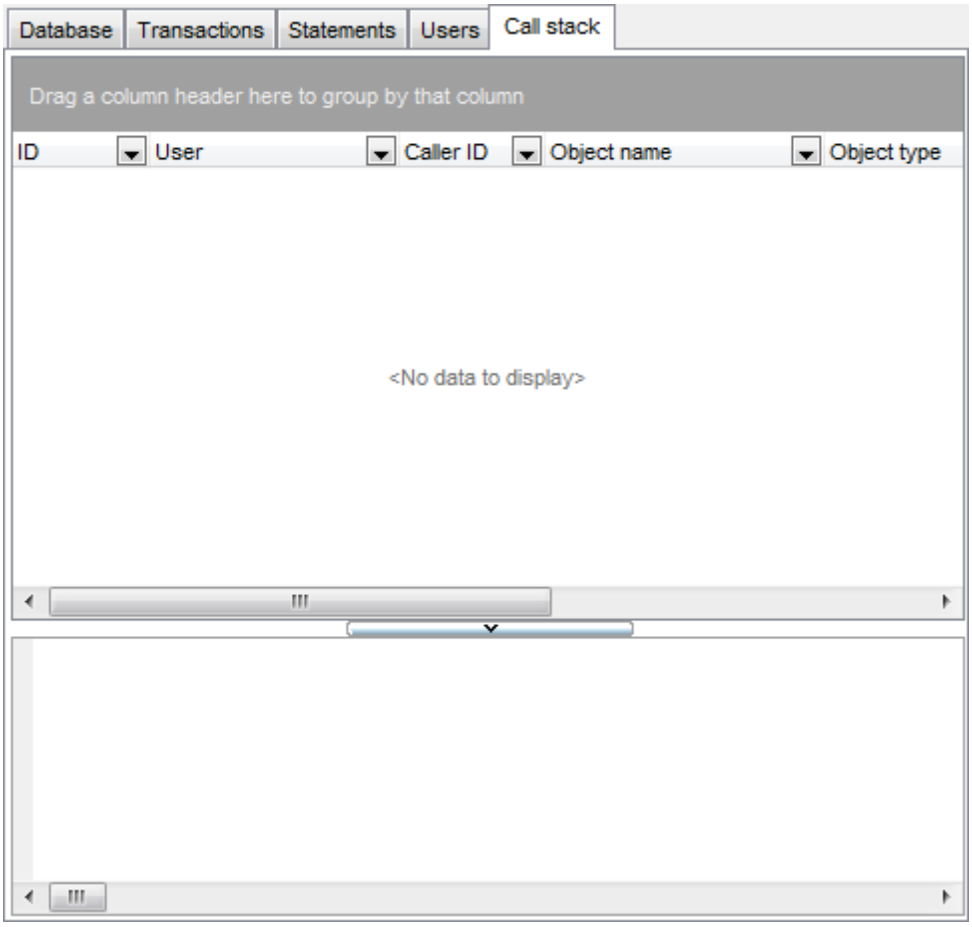
Users management tools are available through the Navigation bar[615] and toolbar[615] of **Database Monitor**.

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9.10.6 Viewing call stack

The **Call stack** tab of **Database Monitor** allows you to view the call stack for the database.

Note: This tab is available for Firebird databases only.



The list displays the call stack as a grid with the following columns:
ID, *User*, *Caller ID*, *Object name*, *Object type*, *Start time*, *Source line*, *Source column*.
If more convenient, you can change the order[376] 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.

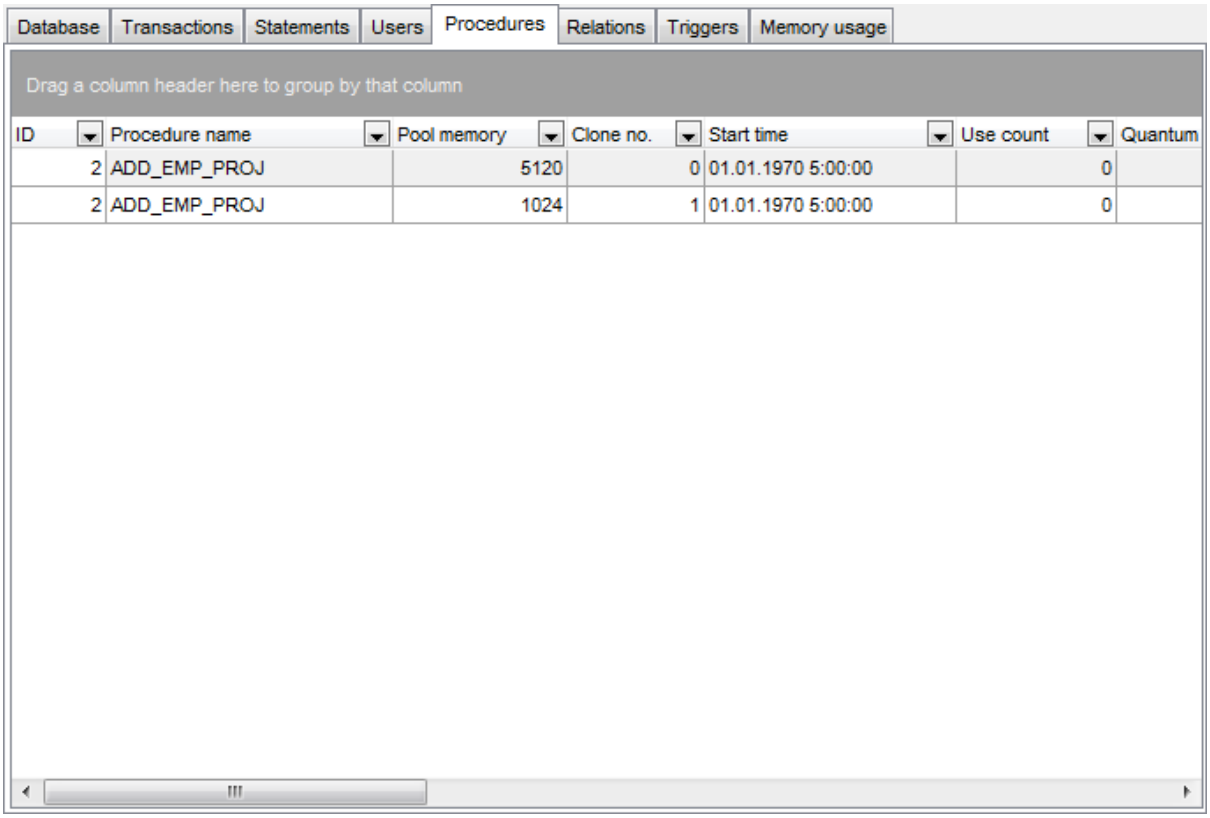
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

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9.10.7 Viewing procedures

The **Procedures** tab of **Database Monitor** allows you to view the procedures[254] executed in the database since the current connection was opened.

Note: This tab is available for InterBase databases only.



The list displays the procedures as a grid with the following columns:
ID, *Procedure name*, *Pool memory*, *Clone no.*, *Start time*, *Use count*, *Quantum*.
If more convenient, you can change the order[376] 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.

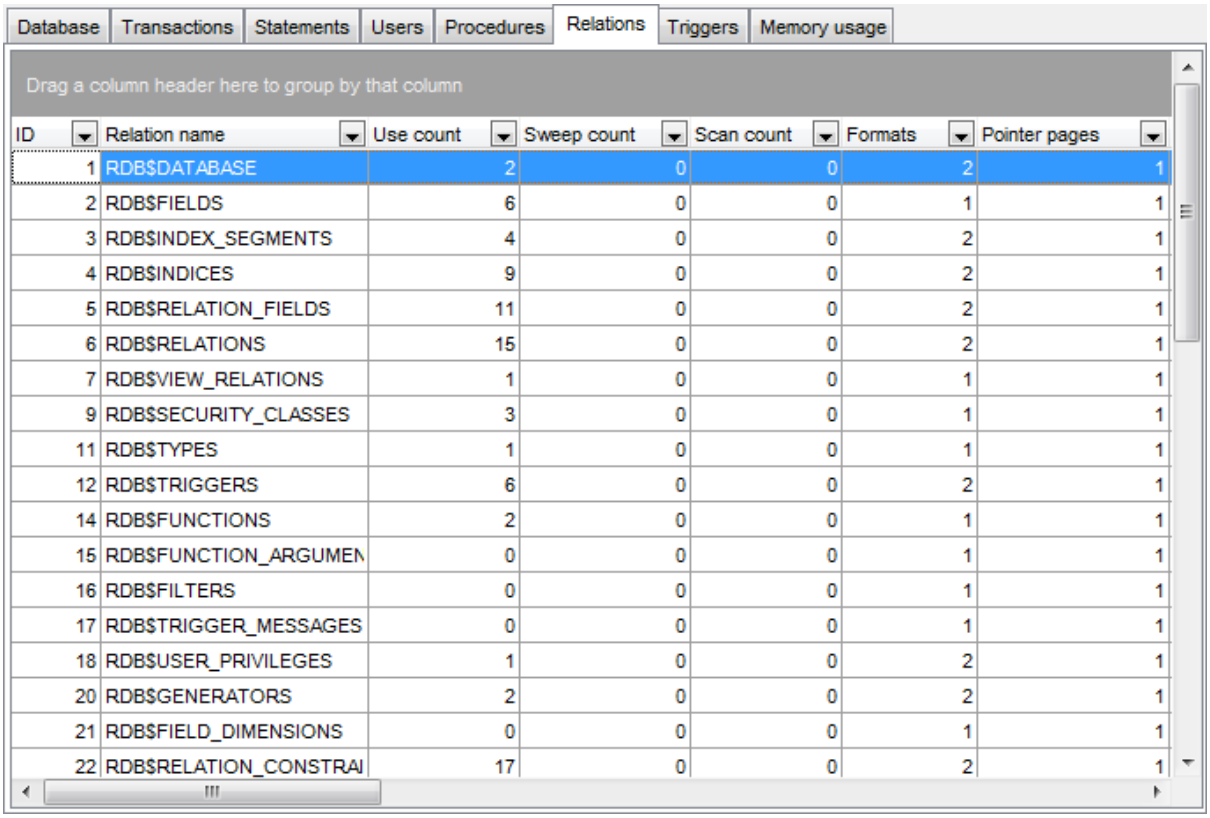
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

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9.10.8 Viewing relations

The **Relations** tab of **Database Monitor** allows you to view some of the characteristics of tables[179] and views[243] in the database.

Note: This tab is available for InterBase databases only.



ID	Relation name	Use count	Sweep count	Scan count	Formats	Pointer pages
1	RDB$DATABASE	2	0	0	2	1
2	RDB$FIELDS	6	0	0	1	1
3	RDB$INDEX_SEGMENTS	4	0	0	2	1
4	RDB$INDICES	9	0	0	2	1
5	RDB$RELATION_FIELDS	11	0	0	2	1
6	RDB$RELATIONS	15	0	0	2	1
7	RDB$VIEW_RELATIONS	1	0	0	1	1
9	RDB$SECURITY_CLASSES	3	0	0	1	1
11	RDB$TYPES	1	0	0	1	1
12	RDB$TRIGGERS	6	0	0	2	1
14	RDB$FUNCTIONS	2	0	0	1	1
15	RDB$FUNCTION_ARGUMEN	0	0	0	1	1
16	RDB$FILTERS	0	0	0	1	1
17	RDB$TRIGGER_MESSAGES	0	0	0	1	1
18	RDB$USER_PRIVILEGES	1	0	0	2	1
20	RDB$GENERATORS	2	0	0	2	1
21	RDB$FIELD_DIMENSIONS	0	0	0	1	1
22	RDB$RELATION_CONSTRAI	17	0	0	2	1

The list displays the relations as a grid with the following columns:
ID, *Relation name*, *Use count*, *Sweep count*, *Scan count*, *Formats*, *Pointer pages*, *Data pages*, *Garbage collect pages*, *Page reads*, *Page writes*, *Page fetches*, *Page marks*, *Indexed selects*, *Sequential selects*, *Record inserts*, *Record updates*, *Record deletes*, *Record purges*, *Record expunges*, *Record backouts*.
If more convenient, you can change the order[376] 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.

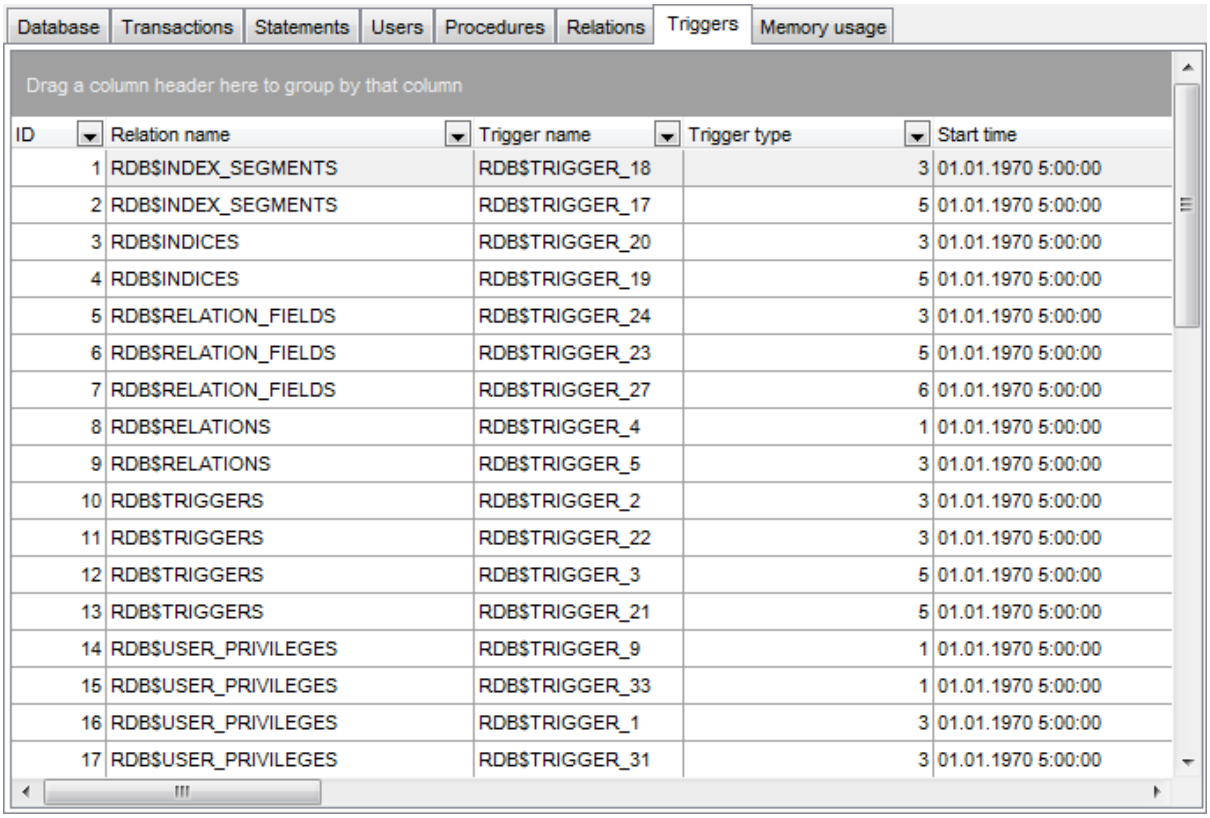
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

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9.10.9 Viewing triggers

The **Triggers** tab of **Database Monitor** allows you to view the triggers[282] defined in the database.

Note: This tab is available for InterBase databases only.



ID	Relation name	Trigger name	Trigger type	Start time
1	RDB$INDEX_SEGMENTS	RDB$TRIGGER_18	3	01.01.1970 5:00:00
2	RDB$INDEX_SEGMENTS	RDB$TRIGGER_17	5	01.01.1970 5:00:00
3	RDB$INDICES	RDB$TRIGGER_20	3	01.01.1970 5:00:00
4	RDB$INDICES	RDB$TRIGGER_19	5	01.01.1970 5:00:00
5	RDB$RELATION_FIELDS	RDB$TRIGGER_24	3	01.01.1970 5:00:00
6	RDB$RELATION_FIELDS	RDB$TRIGGER_23	5	01.01.1970 5:00:00
7	RDB$RELATION_FIELDS	RDB$TRIGGER_27	6	01.01.1970 5:00:00
8	RDB$RELATIONS	RDB$TRIGGER_4	1	01.01.1970 5:00:00
9	RDB$RELATIONS	RDB$TRIGGER_5	3	01.01.1970 5:00:00
10	RDB$TRIGGERS	RDB$TRIGGER_2	3	01.01.1970 5:00:00
11	RDB$TRIGGERS	RDB$TRIGGER_22	3	01.01.1970 5:00:00
12	RDB$TRIGGERS	RDB$TRIGGER_3	5	01.01.1970 5:00:00
13	RDB$TRIGGERS	RDB$TRIGGER_21	5	01.01.1970 5:00:00
14	RDB$USER_PRIVILEGES	RDB$TRIGGER_9	1	01.01.1970 5:00:00
15	RDB$USER_PRIVILEGES	RDB$TRIGGER_33	1	01.01.1970 5:00:00
16	RDB$USER_PRIVILEGES	RDB$TRIGGER_1	3	01.01.1970 5:00:00
17	RDB$USER_PRIVILEGES	RDB$TRIGGER_31	3	01.01.1970 5:00:00

The list displays the triggers as a grid with the following columns:
ID, *Relation name*, *Trigger name*, *Trigger type*, *Start time*, *Trigger sequence*, *Order*, *Operation*, *Clone no.*, *Quantum*, *Invocations*, *Pool memory*, *Page reads*, *Page writes*, *Page fetches*, *Page marks*, *Record inserts*, *Record updates*, *Record deletes*, *Record purges*, *Record expunges*, *Record backouts*.
If more convenient, you can change the order[376] 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.

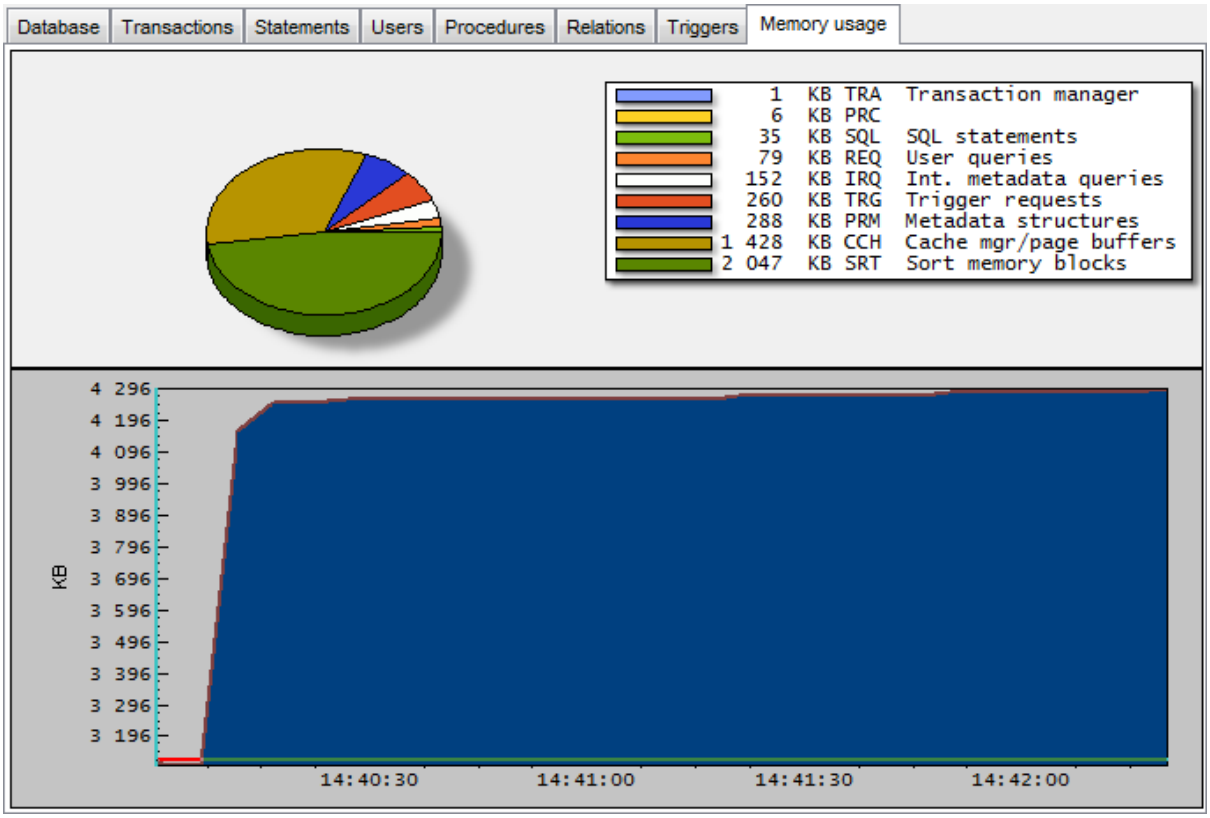
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

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9.10.10 Memory usage

The **Memory usage** tab of **Database Monitor** provides information on memory usage in the database.

Note: This tab is available for InterBase databases only.



The diagram area provides visual representation of memory usage.

The **pie diagram** in the upper area represents the percentage of memory pool allocated for each of the following:
TRA (Transaction manager)
DYN
SQL (SQL statements)
REQ (User queries)
IRQ (Int. metadata queries)
TRG (Trigger requests)
PRM (Metadata structures)
SRT (Sort memory blocks)
CCH (Cache mgr/page buffers)

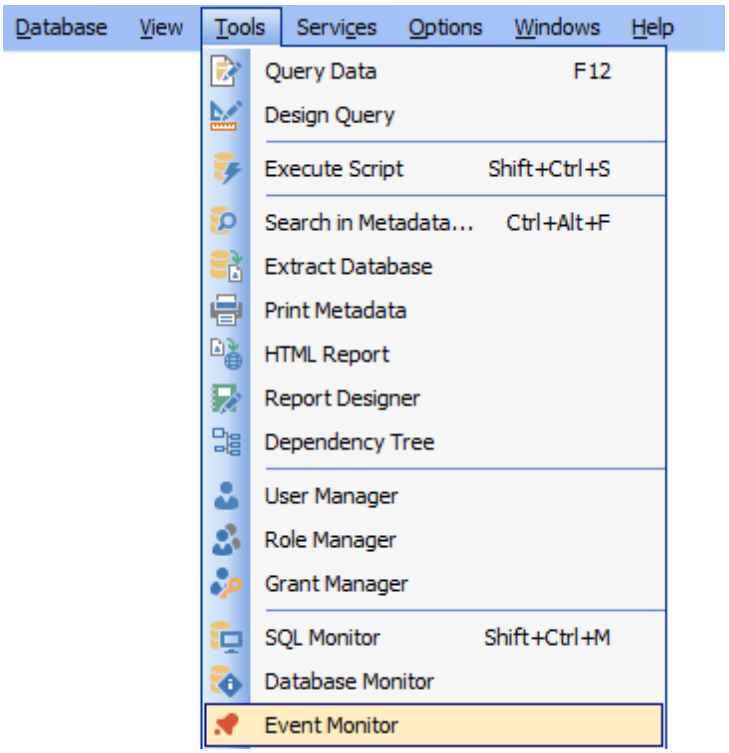
The **chart** in the lower area represents the memory pool usage history in progress:
the *ordinate* defines memory amount (in *KB*);
the *abscissa* defines time intervals.

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9.11 Event Monitor

Event Monitor allows you to see the notifications made by event alerters. *Event alerters* are messages passed from the database to an application; enables applications to receive asynchronous notification of database changes.

To launch the tool, select the **Tools | Event Monitor** item from the main menu 890.



- Using Navigation bar and Toolbar 628
- Working with Event Monitor 629

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 20 page.

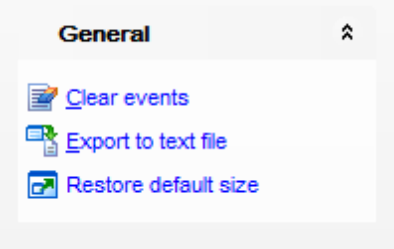
See also:

Events 131

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9.11.1 Using Navigation bar and toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Event Monitor**.



General

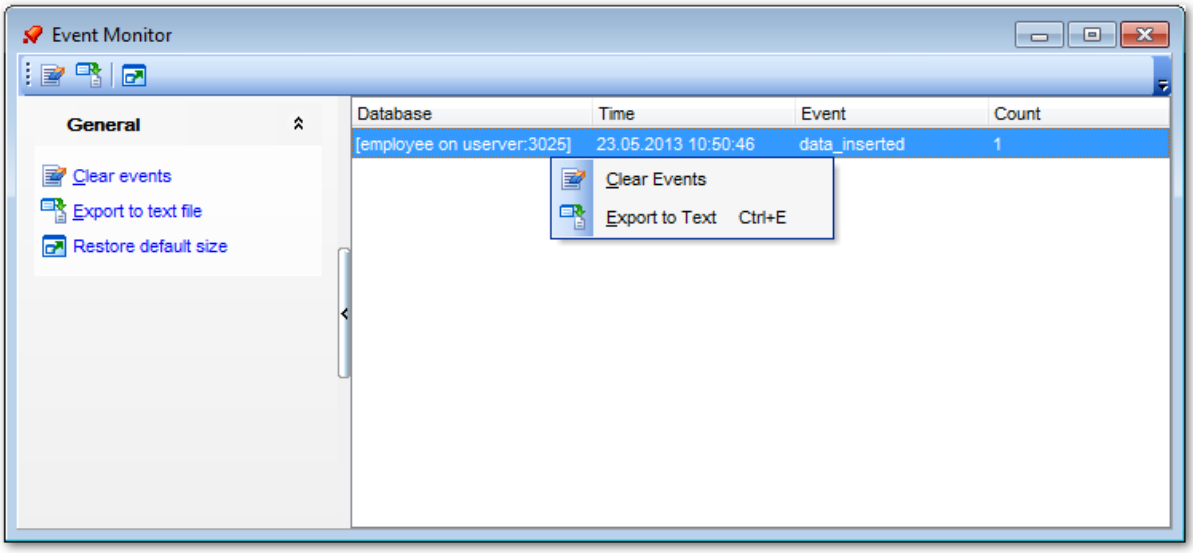
clear the list of events
export the list of events to a **.txt* file
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of **Event Monitor**. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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9.11.2 Working with Event Monitor

The working area of **Event Monitor** lists the events that were defined[131] for the database and then posted.



The list displays the events as a grid with the following columns: *Database*, *Time*, *Event*, *Count*.
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 *clear* the list of events, or export the list to a **.txt* file. These operations can also be performed with the corresponding hot keys[940] used.

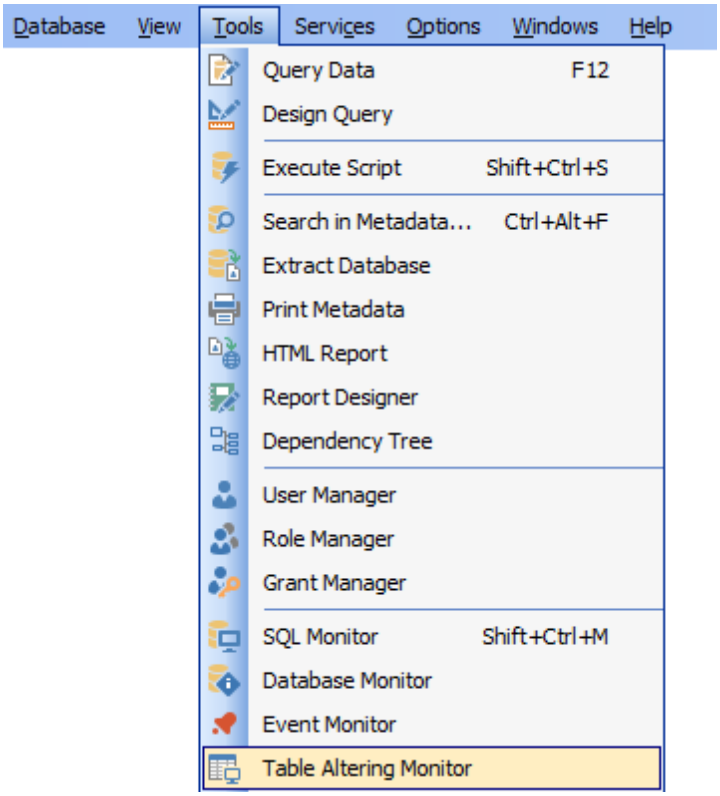
Event management tools are also available through the Navigation bar[628] of **Event Monitor**.

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9.12 Table Altering Monitor

Table Altering Monitor allows you to view the number of metadata changes in tables[179] and views[243] of the database. InterBase/Firebird allows editing a table or a view metadata up to 255 times, after reaching this limit backup[660] and restore[671] are recommended for the database.

To launch the tool, select the **Tools | Table Altering Monitor** main menu[890] item, or right-click the database alias in the DB Explorer[63] tree and select the **Tasks | Table Altering Monitor** item from the context menu[53].



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[20] page.

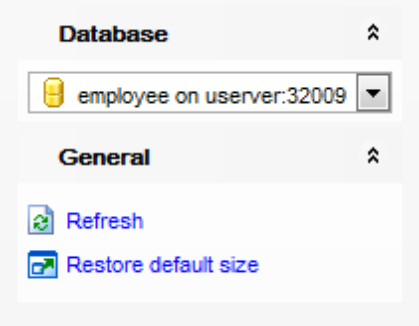
See also:

Tables[179]

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9.12.1 Using Navigation bar and Toolbar

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



The **Navigation bar** of the **Table Altering Monitor** window allows you to:

Database
select a database for browsing table and view metadata changes

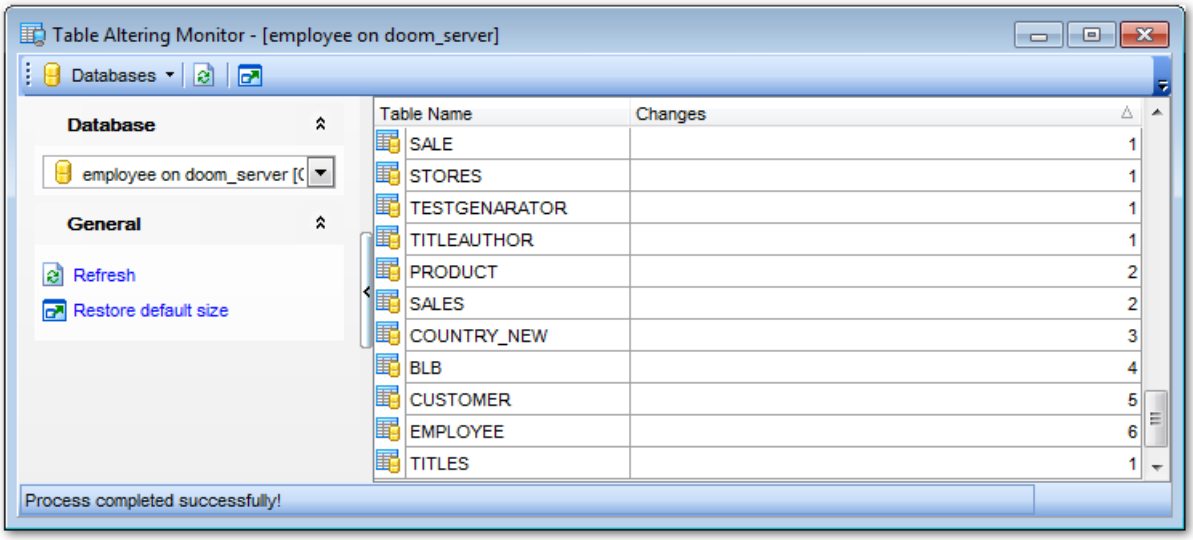
General
refresh the currently displayed list
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Table Altering Monitor** 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.

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9.12.2 Working with Table Altering Monitor

The working area of the **Table Altering Monitor** window lists all tables and views of the database and the number of changes made to them.



See also:

Using Navigation bar and Toolbar 631

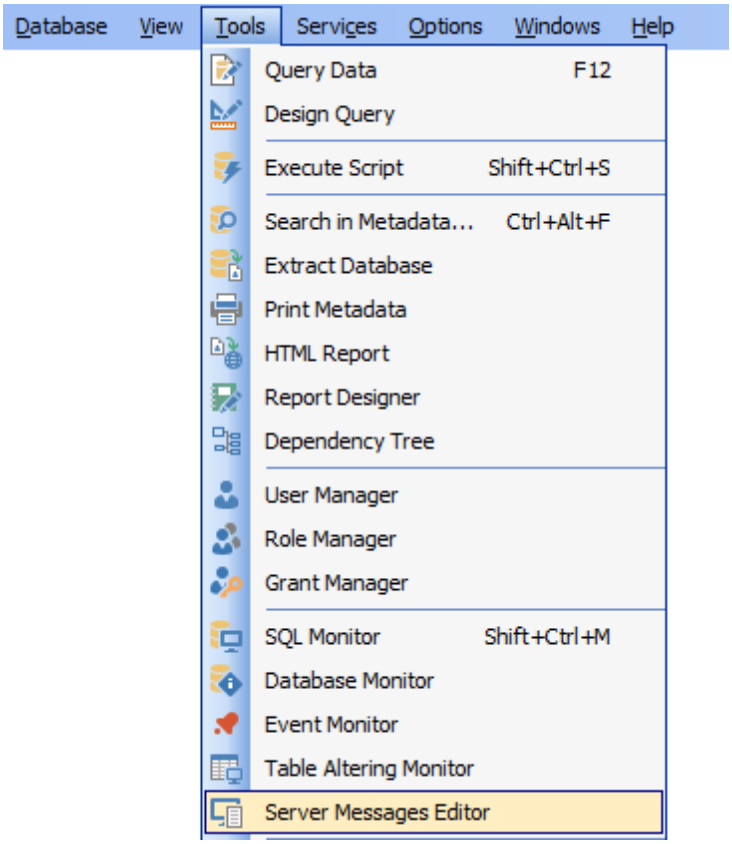
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9.13 Server Messages Editor

Server Messages Editor allows you to view and edit system messages of InterBase/ Firebird server.

It may be useful when there is a need to find a certain message, edit a standard server message according to your preferences, or translate messages into your native language.

To launch the tool, select the **Tools | Server Messages Editor** item from the main menu 890.



- Using Navigation bar and Toolbar 634
- Working with server messages 635
- Go to Message Number dialog 636
- Editing Server Messages 637

Availability:

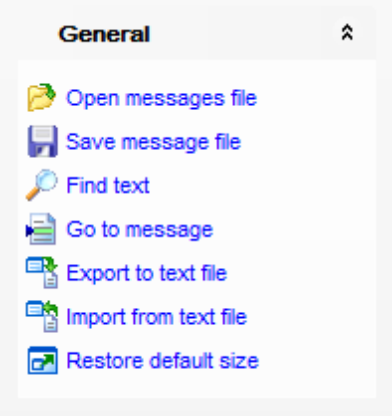
Full version (for Windows)	**Yes**
Lite version (for Windows)	**No**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

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9.13.1 Using Navigation bar and Toolbar

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



The **Navigation bar** of the **Server Messages Editor** window allows you to:

General

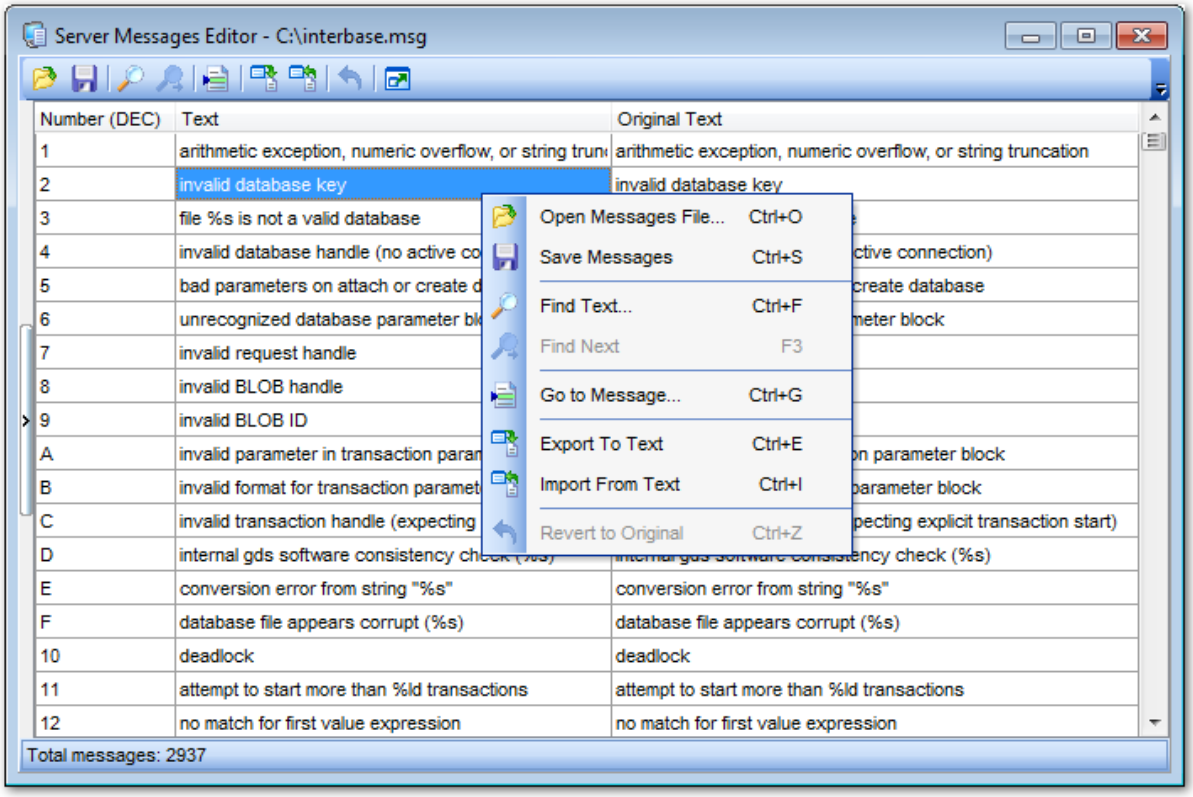
- load server messages from a **.msg* file using the **Open** dialog
- search for a string using the Find Text 909 dialog
- search again
- open the Go to Message Number 636 dialog
- export the list of messages to a **.txt* file
- import the list of messages from a **.txt* file
- restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Server Messages Editor** window. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select ◉ *Toolbar* (if you need the toolbar only) or ◉ *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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9.13.2 Working with server messages

The working area of **Server Messages Editor** lists InterBase/Firebird server messages.



The list displays the server messages as a grid with the following columns: *Number*, *Text*, *Original Text*. If more convenient, you can change the order[376] of the columns by dragging their headers horizontally.

Click the *Number* column caption to toggle the *DEC/HEX* notation-specific representation modes.

Double-click an idem in the list to edit[637] the underlying message.

Right-click an item within the list to call the **context menu** allowing you to *open* a **.msg* file, *save* current changes, *find text / search again* using the Find Text[909] dialog, *go to a message* with specified number[636], and *export/import* the list of messages to/from a **.txt* file, *revert* the selected message to original (i.e. undo changes).

Server message management tools are also available through the Navigation bar[634] of **Server Messages Editor**.

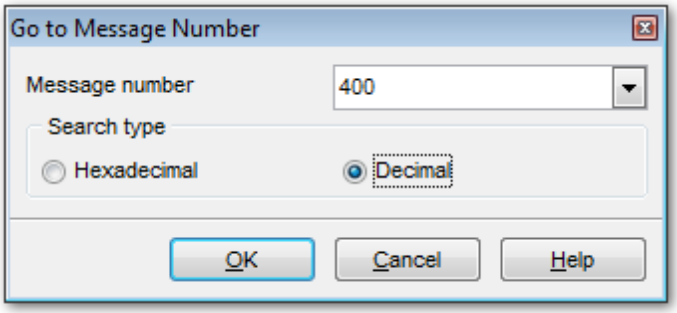
The status bar area displays the total messages count loaded from the file.

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9.13.3 Go to Message Number dialog

The **Go to Message Number** dialog allows you to jump to the message with a certain number.

To call this dialog, select the corresponding items on the Navigation bar[634], toolbar[634], or *context menu* of the working area[635] of **Server Messages Editor**.



Message number
Input the number of the message you need. The drop-down list contains the previously specified values.

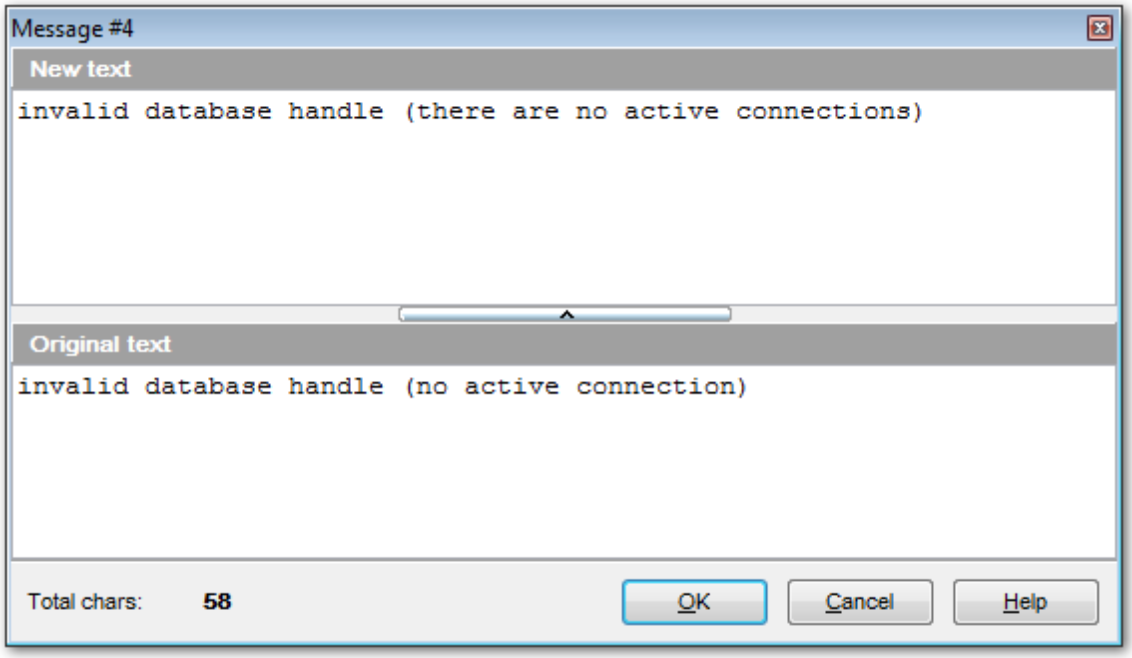
Search type
Select a number notation to be used in the message search operation:
- *Hexadecimal*
- *Decimal*

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9.13.4 Editing Server Messages

The **Message #<message_no>** dialog allows you to view and edit message text.

To call this dialog, double-click the message you need in the working area[635] of **Server Messages Editor**.



The **New text** area displays the message text with currently made changes. The content of this area is editable.
The **Original text** area displays the original message text. The content of this area is read-only.

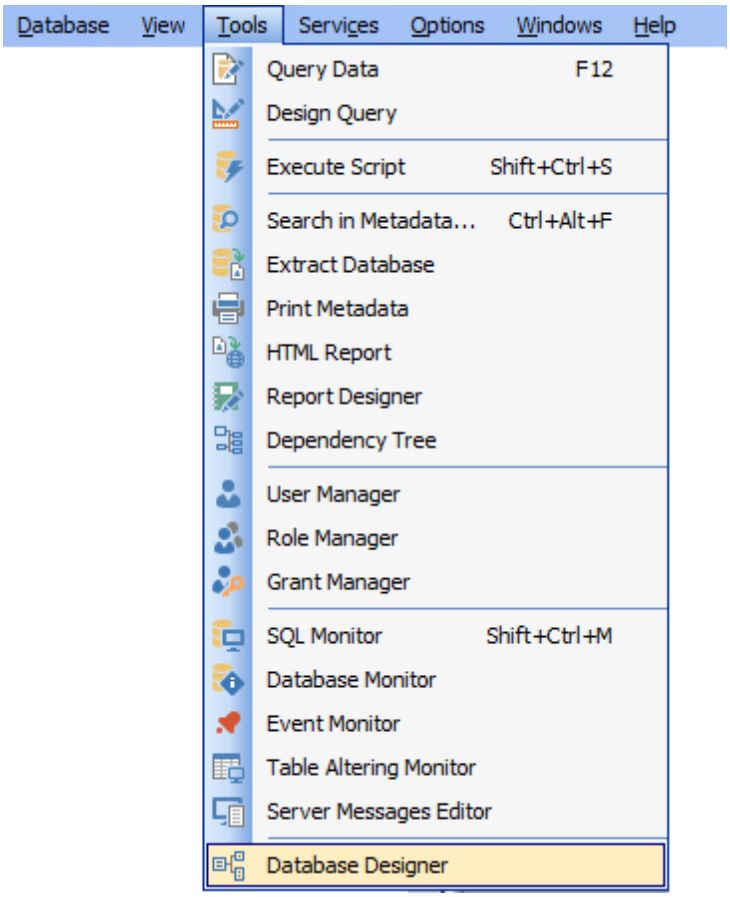
The **Total chars** value at the bottom stands for the total characters count in the **New text** area.

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9.14 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 fields, 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 890 item, or use the **VDBD** button on the main toolbar 892.



- Using Navigation bar and Toolbars 640
- Using Diagram Navigator and DB Objects pane 643
- Using context menus 645
- Adding/removing objects to/from diagram 647
- Creating new objects 648
- Creating relations 649
- Working with diagram pages 650
- Reverse engineering 651
- Printing diagram 652
- Saving/loading diagram 656
- Setting diagram options 657

Availability:
Full version (for **Yes**

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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 20 page.

See also:

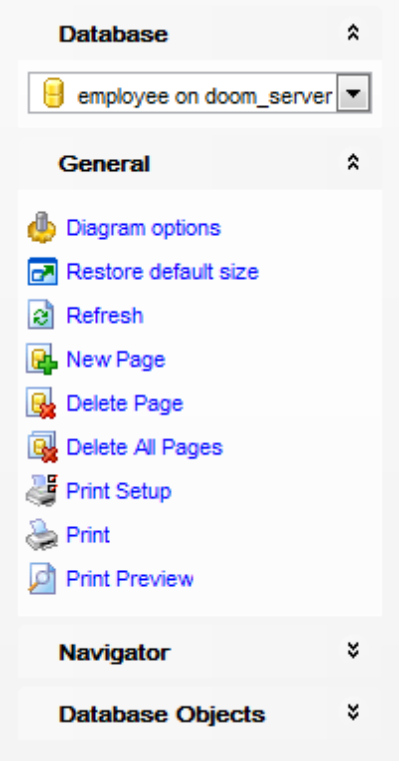
Database Objects Management 163

Database Designer options 771

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9.14.1 Using Navigation bar and Toolbars

The **Navigation bar** and **Toolbars** provide quick access to tools implemented in **Database Designer**.



The **Navigation bar** of **Database Designer** allows you to:

Database
select a database for building the diagram

General
edit diagram options 657
restore the default size and position of the window 638
refresh objects in the diagram
add a new page
delete the current page
delete all pages
set printing options using the **Print Setup** dialog
preview the diagram
print the diagram

Navigator
use Diagram Navigator 643

Database Objects

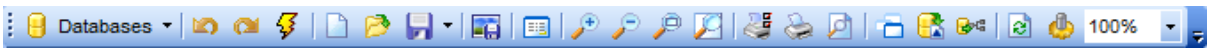
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search for objects in the diagram using the Database Objects pane
add objects to the diagram using the Database Objects pane

The **Toolbars** of **Database Designer** provide quick access to most tools for working with diagrams.
To enable the toolbars, open the Environment Options dialog, proceed to the Windows section there and select *Toolbar* (if you need the toolbars only) or *Both* (if you need both the toolbars and the Navigation bar) 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, tools for printing diagram, etc.) allowing you to:

- select the database for building the diagram;
- create a new diagram;
- open an existing diagram;
- save the current diagram to a **.ibd* file;
- save the current diagram as an image;
- adjust diagram zoom for optimal representation: *zoom in*, *zoom out*;
- open the Print Setup dialog;
- print the diagram;
- show Print Preview;
- arrange objects in the diagram;
- extract metadata of all objects in the diagram and load the script to Execute Script Editor;
- perform Reverse Engineering;
- refresh objects in the diagram;
- view/edit diagram options;
- 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 allowing you to:

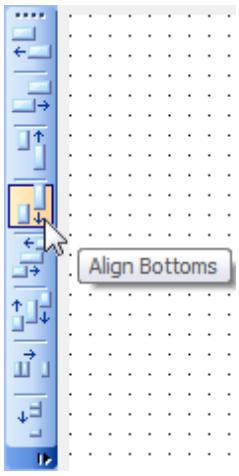
- *add* a new page;
- *delete* the current page;
- *delete all* pages.



The **Alignment Palette** (by default, the toolbar is located on the left side of the diagram area) allows you to:

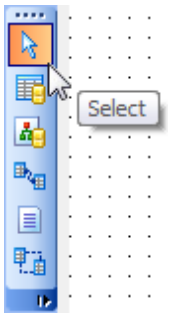
- align left/right edges of selected objects;
- align tops/bottoms of selected objects;
- align horizontal/vertical centers of selected objects;
- space selected objects equally horizontal/vertical.

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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[648] (a *table*, a *view*, or a *comment*);
- create a new relation[649].



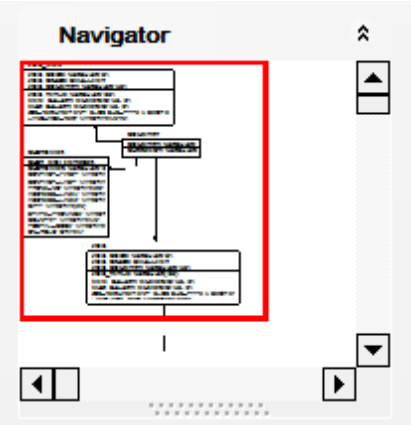
See also:

Using Diagram Navigator and DB Objects pane[643]
Using context menus[645]
Adding/removing objects to/from diagram[647]
Creating new objects[648]
Creating relations[649]
Working with diagram pages[650]
Reverse engineering[651]
Printing diagram[652]
Saving/loading diagram[656]
Setting diagram options[657]

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9.14.2 Using Diagram Navigator and DB Objects pane

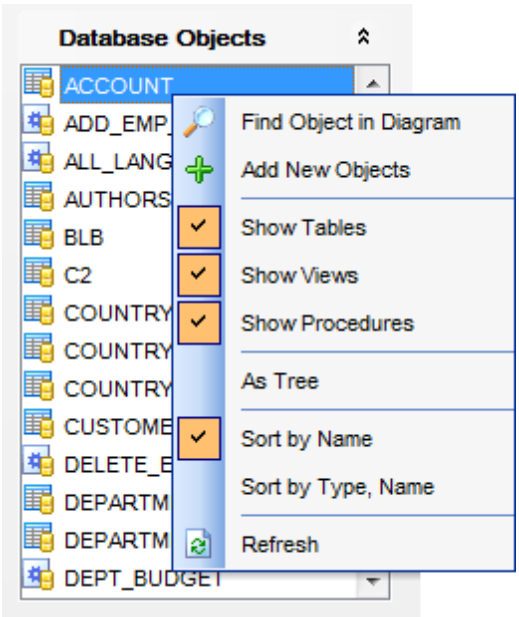
To navigate within the large diagram, use the **Navigator** tool available on the Navigation bar[640]. It allows you to see the whole diagram in a reduced scale and to perform a number of operations over the diagram objects.



A mouse click in the **Navigator** area sets the center of the visible diagram area. The area currently visible in the main diagram area[638] 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[638]: add[647]/remove[647], create[648] new objects, move objects within the diagram and perform other operations.

The **Database Objects** pane available on the Navigation bar[640] allows you to browse the list of available database objects[163] that can be added to the diagram.



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Select and drag an object to the diagram area or double-click it to add 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;
specify whether *tables* are to be displayed;
specify whether *views* are to be displayed;
specify whether *procedures* are to be displayed;
toggle objects representation mode: *as a tree / as a list*;
select the sorting mode applied to the objects in the list: *by name / by type, name*;
refresh the list.

See also:

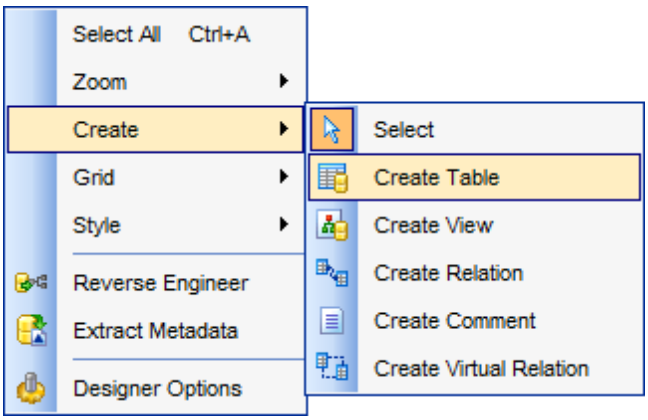
Using Navigation bar and Toolbars
Adding/removing objects to/from diagram
Creating new objects
Creating relations
Working with diagram pages

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9.14.3 Using context menus

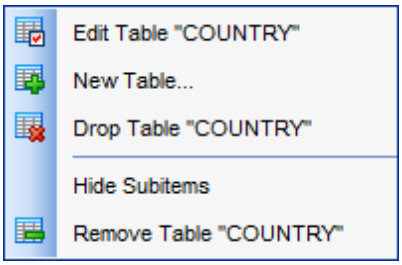
The **context menu** of the diagram area contains a number of items available in the Navigation bar[640] and toolbars[641] and allows you to:

- select all objects in the diagram area;
- 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[648], relation[649], or comment[648];
- configure the grid[657]: *draw grid*, *snap to grid*;
- adjust the diagram style[657]: *draw primary key fields separately*, *draw entities icons*, *draw attributes icons*, *draw only names of entities*, *draw foreign key names*;
- perform Reverse Engineering[651];
- extract metadata of the diagram objects to Execute Script Editor[544];
- view/edit diagram options[657].



The **context menu** of an entity contains items for working with the object and allows you to:

- edit[163] the object using its editor (Table Editor[185], View Editor[243]);
- create[648] a new object using its editor (New table[180], View Editor[243]);
- drop[163] the object from the database;
- show/hide object subitems;
- remove[647] the object from the diagram.

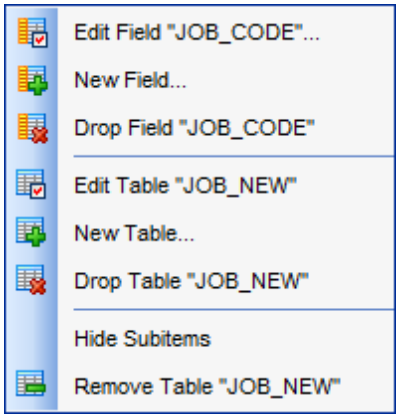


The **context menu** of a field contains items for working with the object and its fields and allows you to:

- edit[201] the selected field using its editor (Field Editor[202]);
- create[201] a new field;
- drop[201] the selected field;

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- edit 163 the object using its editor (Table Editor 185, View Editor 243);
- create 648 a new object using its editor (New table 180, View Editor 243);
- drop 163 the object from the database;
- show/hide object subitems;
- remove 647 the object from the diagram.



See also:

Using Navigation bar and Toolbars 640
Adding/removing objects to/from diagram 647
Creating new objects 648
Creating relations 649

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9.14.4 Working with diagram objects

9.14.4.1 Adding/removing objects to/from diagram

To *add* an object to the diagram:

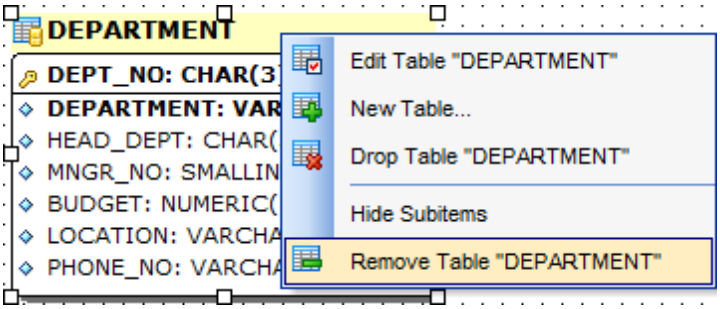
- drag it from the Database Explorer 63 tree to the diagram area 638

or

- drag it from the Database Objects 643 pane (available on the Navigation bar 640) to the diagram area 638 or simply double-click this object in the list.

To add objects by Reverse engineering 651, 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 645, or just press the **Del** key.



See also:

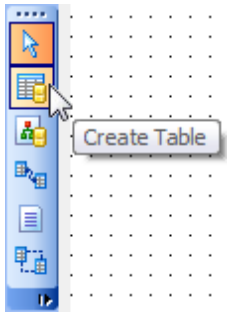
Using Navigation bar and Toolbars 640
Using Diagram Navigator and DB Objects pane 643
Using context menus 645
Creating new objects 648
Creating relations 649
Reverse engineering 651
Database Objects Management 163

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9.14.4.2 Creating objects

To create 163 a new object using Database Designer:

- press the **Create table** button on the New object toolbar 642;
- click the desired point on the diagram to place the new object at;
- specify object properties using its editor (New table 180, View Editor 243).



Hint: To create a new object, you can also select the corresponding item from the context menu 645. The context menus also allow you to edit 163 and drop 163 database objects.

See also:

Using Diagram Navigator and DB Objects pane 643

Adding/removing objects to/from diagram 647

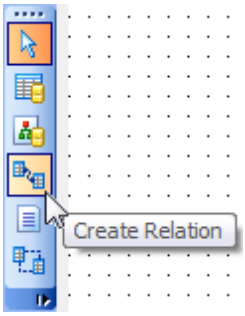
Creating relations 649

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9.14.4.3 Creating relations

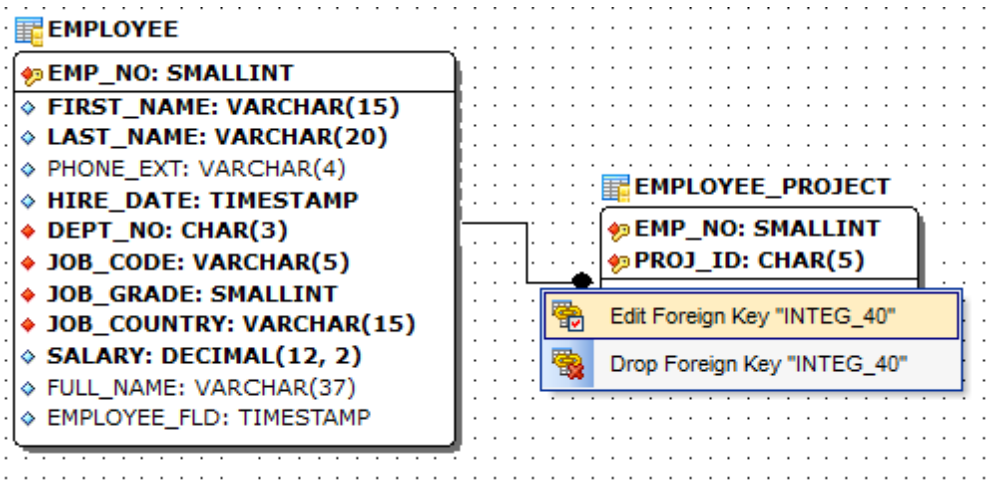
To establish a new relation (which is the foreign key 217 in terms of database management):

- press the **Create relation** button on the New object toolbar 642;
- click the entity where the referential constraint should be created;
- click the referred entity;
- specify new foreign key properties using Foreign key Editor 222.



Hint: To create a relation, you can also use the corresponding item of the context menu 645.

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 218 the foreign key using Foreign key Editor 220 or drop 218 the foreign key from the database.



See also:

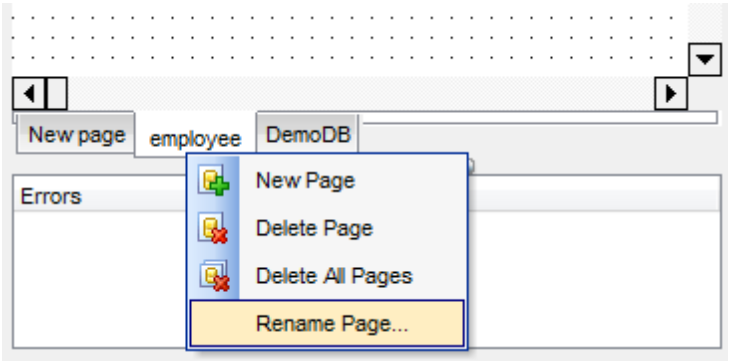
Using Diagram Navigator and DB Objects pane 643
Adding/removing objects to/from diagram 647
Creating new objects 648

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9.14.5 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[641] of Database Designer.

See also:

Using Diagram Navigator and DB Objects pane[643]

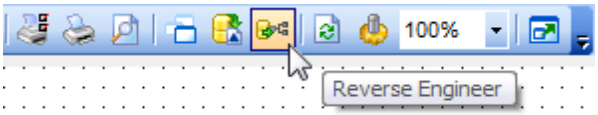
Adding/removing objects to/from diagram[647]

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9.14.6 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[641], or use the corresponding item of the context menu[645].



See also:

Using Navigation bar and Toolbars[640]

Using Diagram Navigator and DB Objects pane[643]

Adding/removing objects to/from diagram[647]

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9.14.7 Printing diagram

Database Designer allows you to print and preview the diagram.

To preview the diagram:

- press the **Print Preview** button on the toolbar[641];
- preview the diagram using the Print Preview[653] window.

To setup print options:

- press the **Print Setup** button on the toolbar[641], or use the corresponding link on the Navigation bar[640];
- set printing options using the Print Setup[654] dialog and press **OK**.

To print the diagram:

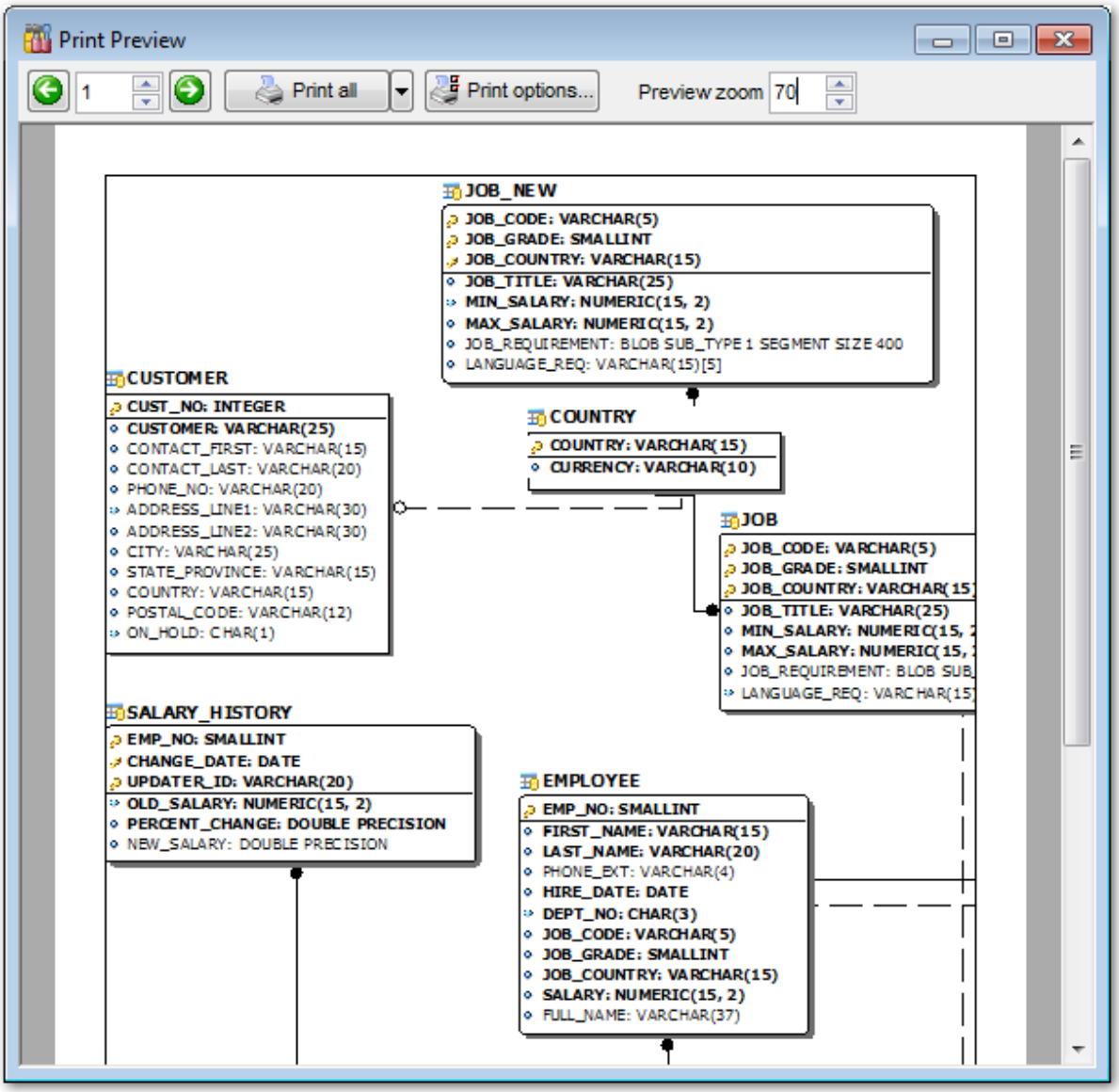
- press the **Print** button on the toolbar[641];
- set printing options using the Print Setup[654] dialog and press the **Print** button.

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9.14.7.1 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 654 dialog.
If necessary, specify the **preview zoom** according to your preferences.
Click the **Print all** button to start printing.



See also:

Print Setup dialog 654

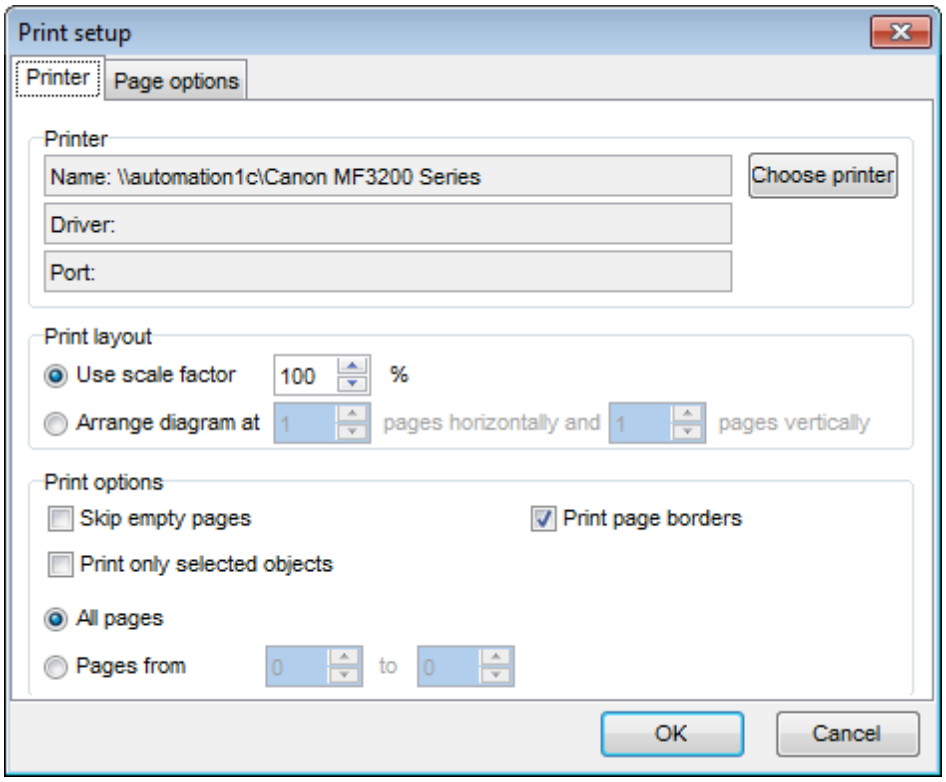
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9.14.7.2 Print Setup dialog

The **Print Setup** dialog of **Database Designer** provides two tabs for setting printing options: **Printer** and **Page options**.

The **Printer** tab of the **Print Setup** dialog allows you to:

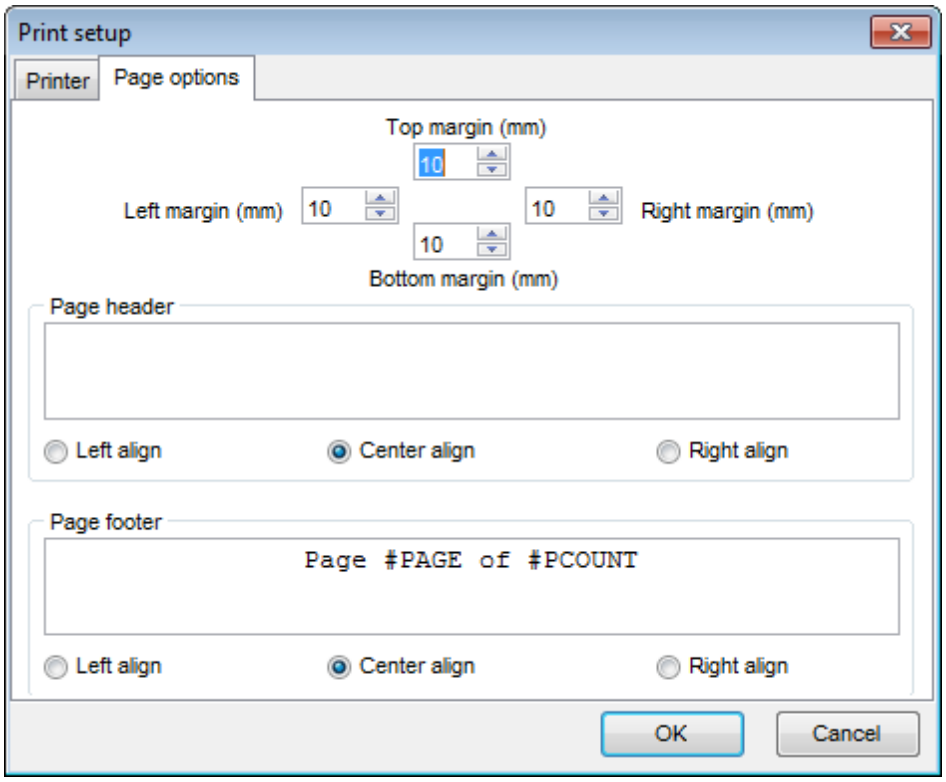
- specify the printer (use the **Choose printer** button to select a printer which is not set by default on your system; the *name*, *driver*, *port* fields display the selected printer details);
- specify print layout: print using a defined *scale factor* or arrange diagram at a defined number of pages 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*.

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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 653

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9.14.8 Saving/loading diagram

Use the **Save Diagram** and the **Open Diagram** buttons on the main toolbar[641] to save the diagram as a **.ibd* 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[641].

See also:

Using Navigation bar and Toolbars[640]
Using Diagram Navigator and DB Objects pane[643]
Using context menus[645]
Adding/removing objects to/from diagram[647]

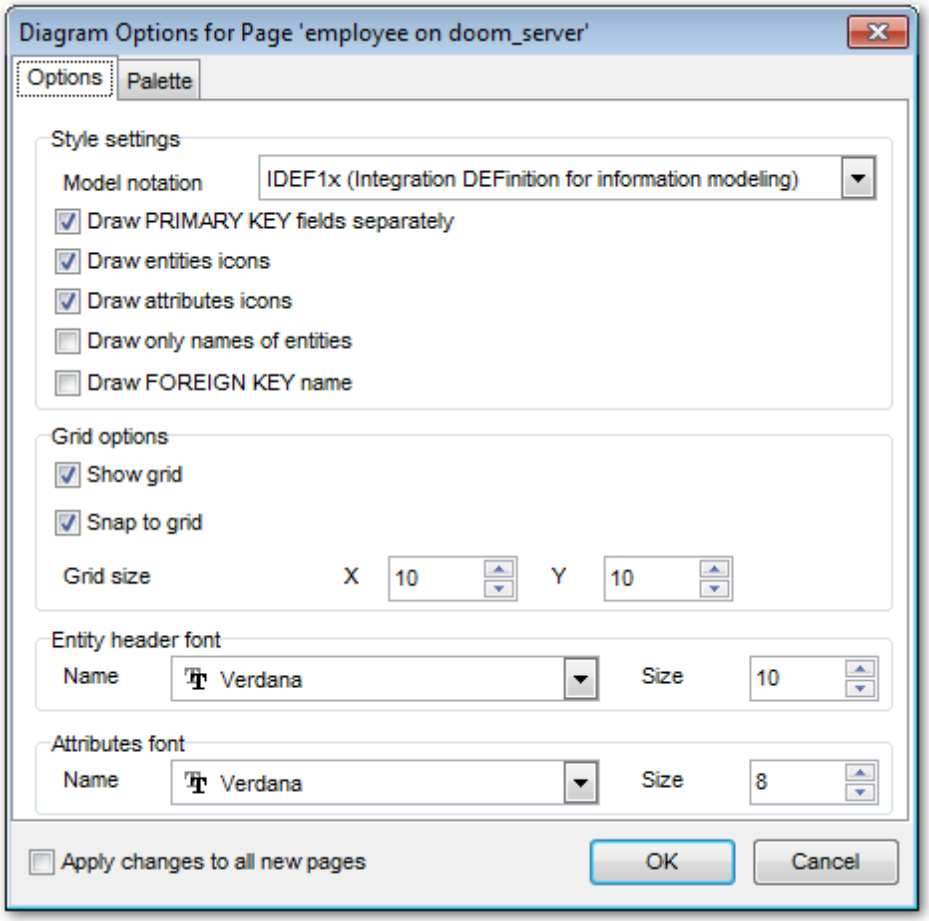
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9.14.9 Setting diagram options

Using the **Diagram Options** dialog you can setup the behavior and look of each diagram page.

To open this dialog, use the **Diagram options** item of the Navigation bar[640] or on the main toolbar[641], or select the corresponding item from the context menu[645].

See detailed description of each option on the Database Designer[771] page of the Environment Options[744] dialog.



Apply changes to all new pages
If this option is selected, the current settings will be applied to all newly created pages of Database Designer.

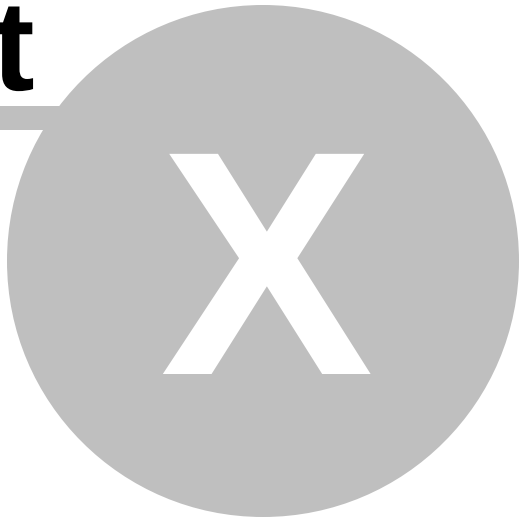
See also:

Using Diagram Navigator and DB Objects pane[643]

Database Designer options[771]

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Part



10 Services

SQL Manager for InterBase/Firebird provides graphical interface for a number of database maintenance operations. The following *specific database tools* are available in **SQL Manager for InterBase/Firebird**:

Backup Database Wizard 660
Creates backup copies of databases.

Restore Database Wizard 671
Restores databases from previously created backups.

Database Validation 688
Validates the database, verifies the integrity of data structures.

Database Statistics 694
Collects statistics on a specified database.

Start/Stop database 700
Provides the ability to turn a database to a single-user mode (shutdown) and bring a database back online.

Rebuild Database Indexes 706
Recomputes or rebuilds database indexes.

Purge Database 713
Clears the data of the selected tables.

To obtain detailed information concerning specific InterBase/Firebird database maintenance services, refer to the official server documentation.

See also:

Getting Started 37
Database Explorer 63
Database Management 87
Database Objects Management 163
Query Management Tools 329
Data Management 369
Import/Export Tools 444
Database Tools 534
Security management 719
Options 743
External Tools 840
How To... 846

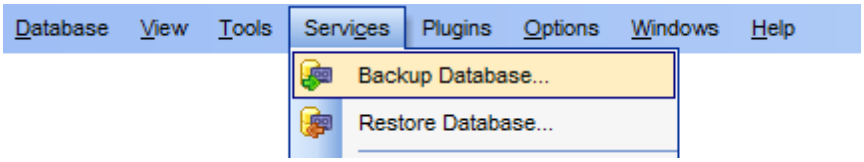
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10.1 Backup Database

Backup Database Wizard allows you to perform the database backup operation on your InterBase/Firebird system.

This operation is used to create a full backup copy of a database, an archive backup, or an incremental backup (online dump for InterBase 2009 and higher) of a database.

To run the wizard, select the **Services | Backup Database** main menu 890 item, or right-click the database alias in the DB Explorer 63 tree and select the **Tasks | Backup Database** context menu 53 item.



- Selecting database and backup type 661
- Full Backup options 663
- Archive Backup options 665
- Incremental Backup options 666
- Setting general backup options 668
- Running backup 670

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 20 page.

See also:

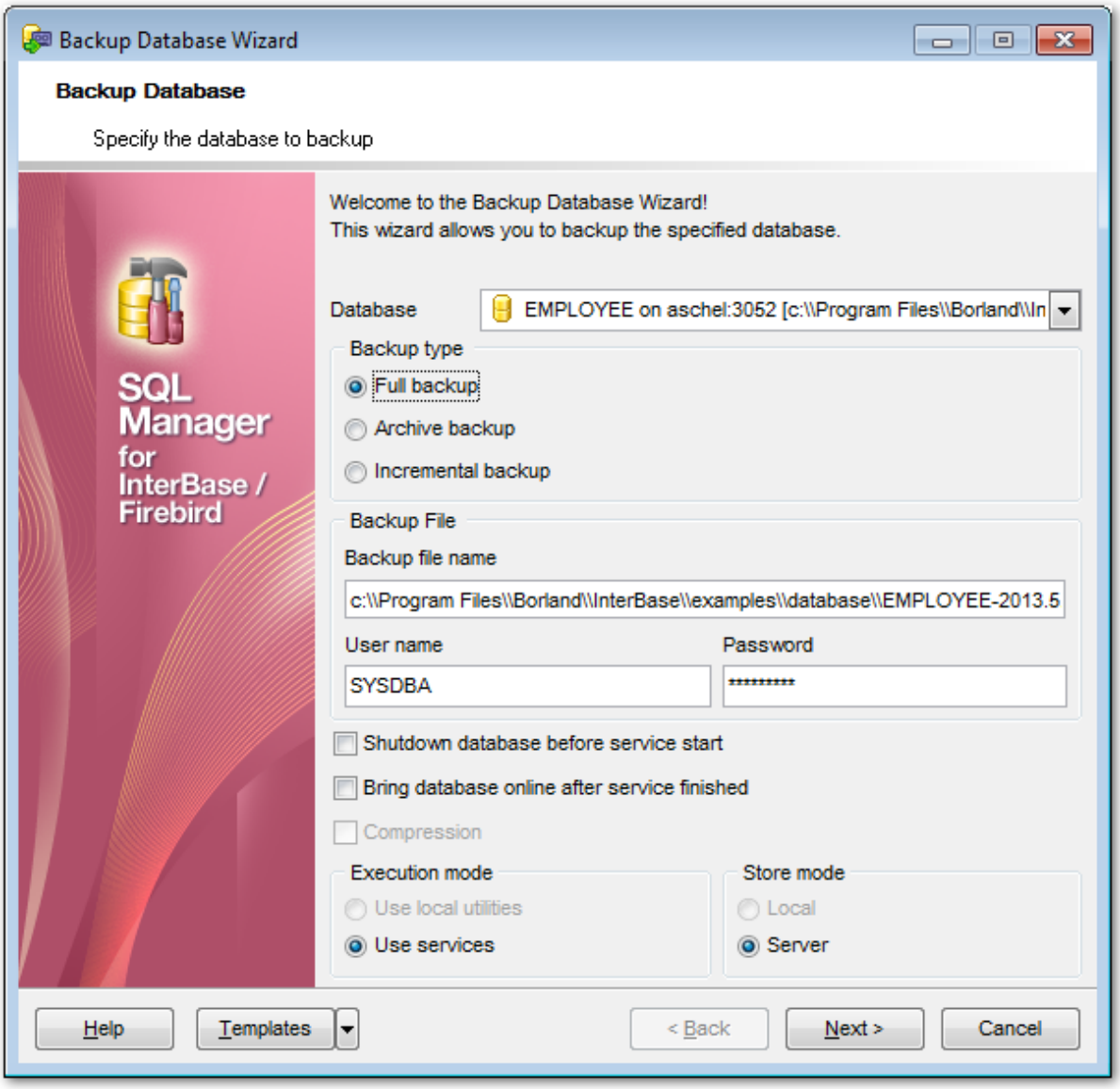
Restore Database 671

Using templates 918

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10.1.1 Selecting database and backup type

This step of the wizard allows you to specify the **database** name, **backup type**, **backup file**, **user name** / **password**, and options specific for the selected backup type.



Database
Use the drop-down list to select the database to backup.

Backup type

Full backup
Specifies that all the data of the database are copied. For details see Full Backup options 663.

Archive backup
This type is available only in InterBase. Use this type to backup the database journals.

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For details see Archive Backup options 665.

Incremental backup
This is a physical backup mechanism. It backs up the physical pages of the database to "dump" files. The incremental backup feature ensures that the output dump files represent the on-disk state of the database as of the instant the online dump was started, so transaction and page consistency are maintained in the process. For details see Incremental Backup options 666.

Note that the *archive backup* and *incremental backup* types are only available in InterBase 2009 and Firebird 2.0 and higher versions.

Backup File

Backup file name
Specify the path and name of the output backup file. It is possible to insert date and time variables in this field. This is helpful if unique backup name required. You can save template with backup file name containing variables to ease further backup operations. The following variables can be used: *[Timestamp]*, *[Date]*, *[Time]*.
Usage example: 'C:\Backups\my_database[Timestamp].GBK'.
Note: Variables value format is defined by system settings.

You must also specify **User name** and **Password** in the corresponding boxes. This user name and password will be needed afterwards to access the backup file.

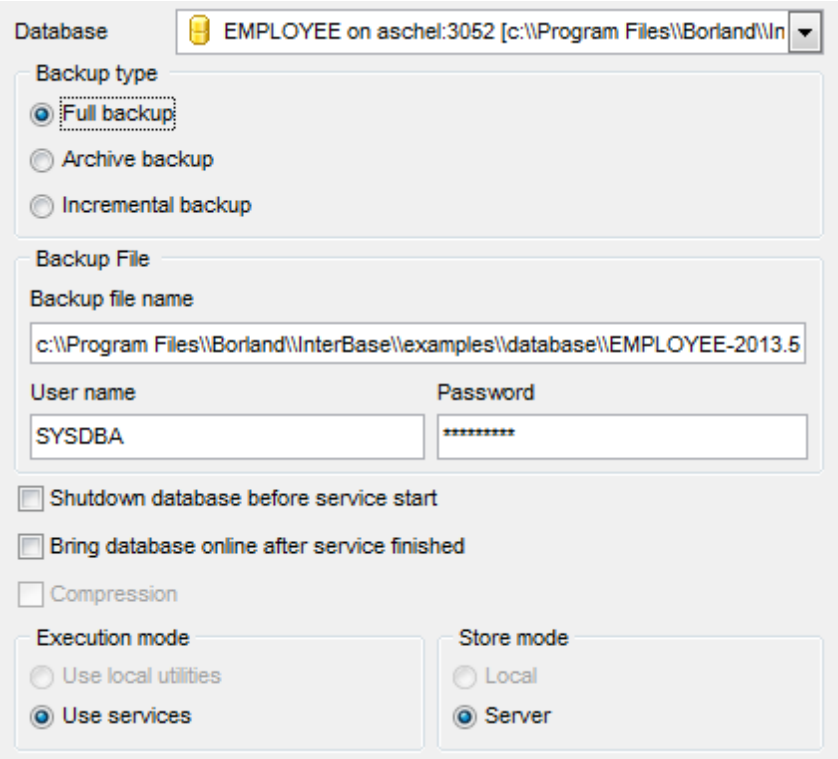
Click the **Next** button to proceed to the Setting backup options 668 step (for **Full Backup**), or to Running backup 670 (for **Archive Backup**, **Incremental Backup**).

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10.1.2 Backup type-specific options

10.1.2.1 Full Backup options

If **Full backup** is specified as the backup type[661], you need to set full backup options.



Shutdown database before service start
Select this option to shutdown the database before running backup[670]. For details see Start/Stop Database[700].

Bring database online after service finished
Select this option to bring the database online after running backup[670]. For details see Start/Stop Database[700].

Compression
If this option is selected, the backup file will be compressed by the application. This option is available only if the backup file is located on the local computer.
Note: You can use compressed backup files as the source in Restore Database Wizard[671].

Execution mode
Use local utilities
Select this option to backup the database using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection[154] page of the Host Registration Info[153] dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.

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Use services
Select this option to use the server services for the backup operation.

Note: Backup of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

Store mode

Local
Select this option to store the backup file on the local machine. This mode is available only when you select **Use local utilities** in the **Execution mode** group.

Server
Select this option to store the backup file on the server machine.

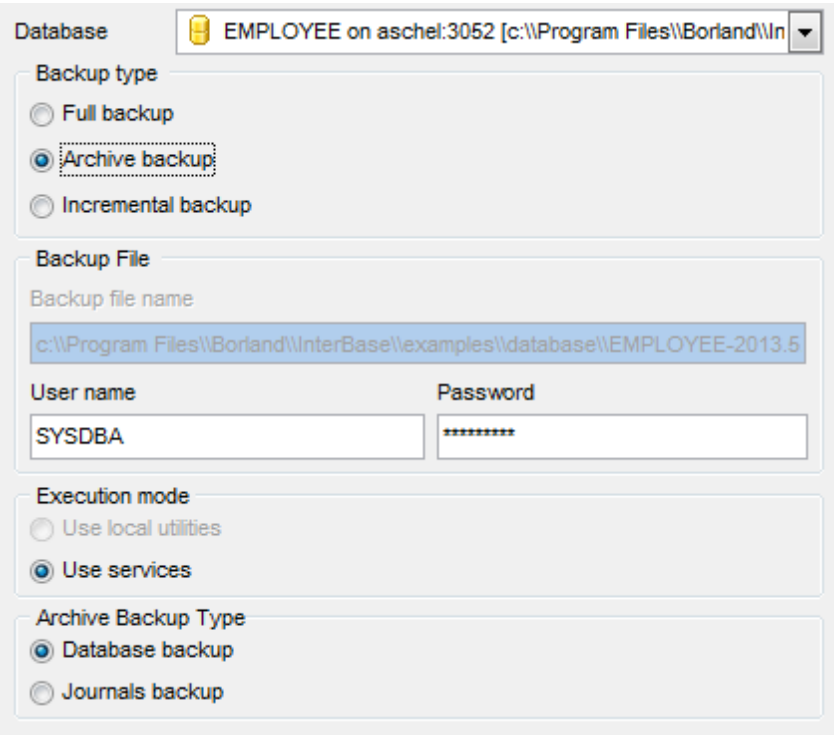
See also:

Archive Backup options 665
Incremental Backup options 666

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10.1.2.2 Archive Backup options

If **Archive Backup** is specified as the backup type[661], you need to set specific archive backup options.



Execution mode

Use local utilities
Select this option to backup the database using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection[154] page of the Host Registration Info[153] dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.

Use services
Select this option to use the server services for the backup operation.

Archive Backup Type

Database backup
Select this option to backup the database.

Journals backup
Select this option to backup the journal archive[303].

See also:

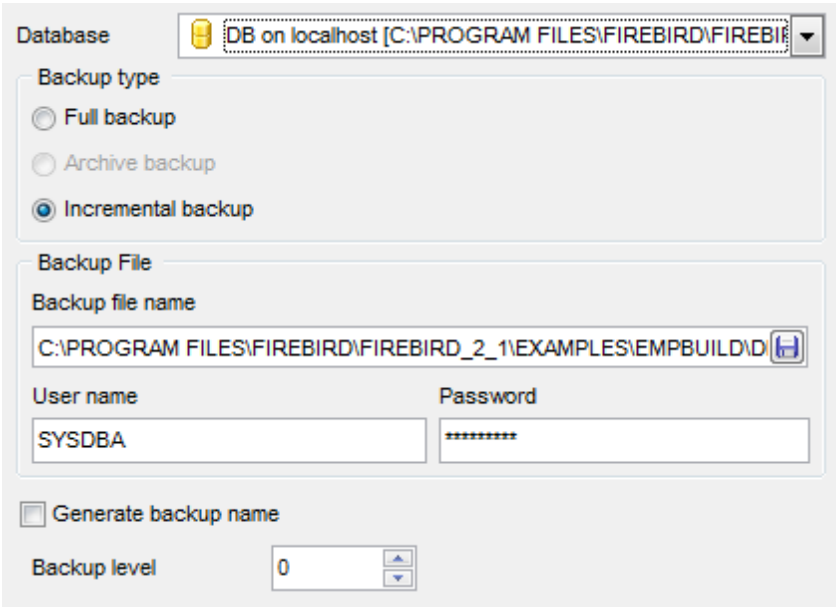
Full Backup options[663]

Incremental Backup options[666]

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10.1.2.3 Incremental Backup options

If **Incremental backup** is specified as the backup type[661], you need to set specific incremental backup (Online Dump) options.



Execution mode

Use local utilities
Select this option to backup the database using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection[154] page of the Host Registration Info[153] dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.

Use services
Select this option to use the server services for the backup operation.

Overwrite old file
This option is available only for Interbase 2009 or higher. If you enable this option, the utility will completely overwrite the old backup file. Otherwise the new backup file will contain only changes relatively to the previous backup.

Generate backup name
Check this option if you need backup file name to be generated automatically.

Backup level
Specify the level of the backup. Note that you cannot make a level *n* backup if level *n-1* backup of this database does not exist in backup history. Only level *0* backup can be created without any restrictions.

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Note: This option is only available for Firebird 2.0 or higher. The option is available if the location of the utilities is specified in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog, and *nbackup.exe* file exists in this directory. Moreover, the server must be registered locally.

See also:

Full Backup options 663

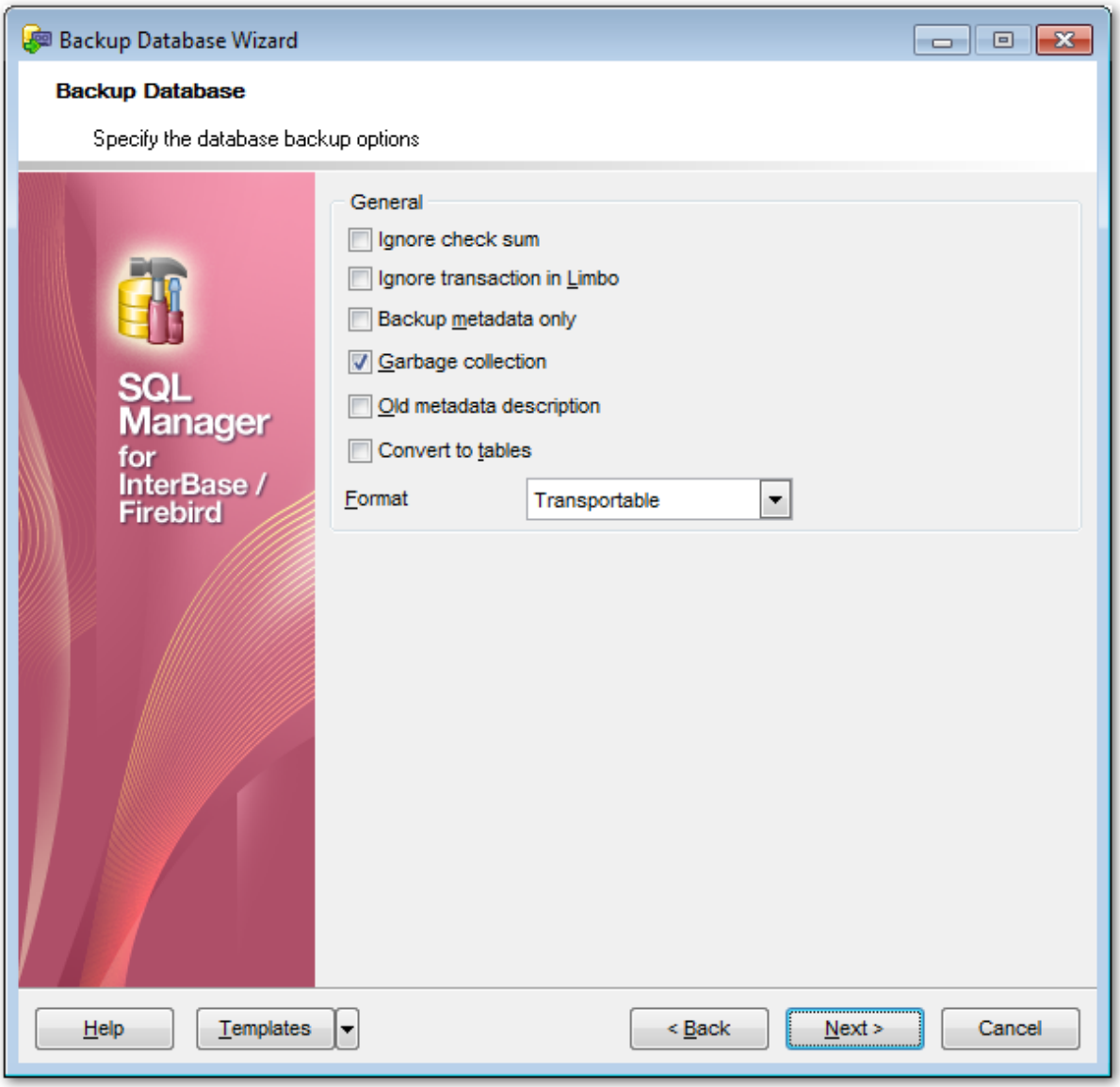
Archive Backup options 665

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10.1.3 Setting backup options

This step of the wizard allows you to set the general backup options.

Note: This step is only available if **Full backup** is specified as the backup type[661].



General

Ignore check sum

If this option is selected, wrong check sums of the database header pages where the database connection properties are stored, are ignored in the backup operation.

Ignore transaction in Limbo

If this option is selected, transactions in limbo, i.e. transactions that cannot be defined as executed or aborted, are ignored in the backup operation.

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Backup metadata only
If this option is selected, only database metadata are saved in the backup file.

Garbage collection
If this option is selected, garbage collection is executed in the backup operation.

Old metadata description
If this option is selected, old metadata descriptions are included into the reserve database.

Convert to tables
This option converts the database data to tables in the backup operation.

Format
Select the data format for the reserve database: *Transportable* (the database can be then moved from one platform to another) or *Non-Transportable*.

Shutdown Mode
This group appears if the **Shutdown database before service start** option has been enabled at the first step 661. The following shutdown modes are available:
- *Forced*
- *Deny new transactions*
- *Deny new attachments*

For details see Setting shutdown options 703.

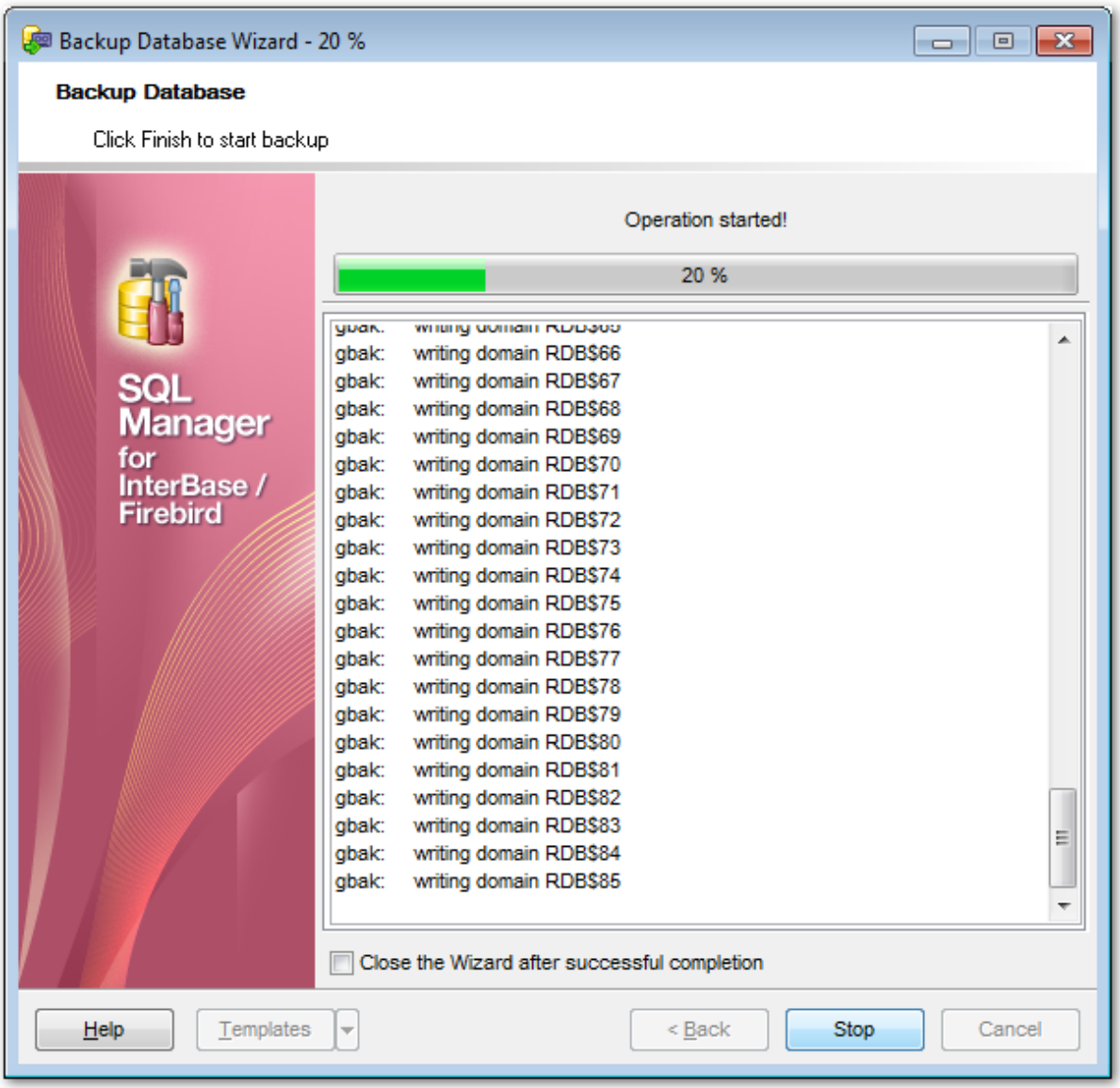
Click the **Next** button to proceed to Running backup 670.

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10.1.4 Running backup

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).



Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the backup process is completed.

If necessary, you can save a template[918] for future use.

Click the **Finish** button to run the process.

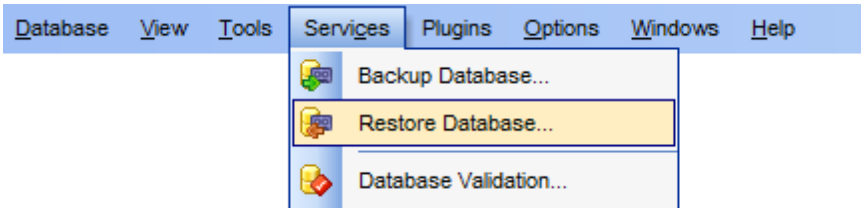
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10.2 Restore Database

Restore Database Wizard allows you to perform the database restore operation on your InterBase/Firebird system.

This operation is used to rebuild a damaged or corrupted database that has been backed up using Backup Database Wizard 660. The restored database is in the same state it was in when the backup copy was made. A database can be overwritten with a different image, and a backup image can be restored to a new database.

To run the wizard, select the **Services | Restore Database** main menu 890 item, or right-click the database alias in the DB Explorer 63 tree and select the **Database Operations | Restore Database** context menu 53 item.



- Selecting restore type 672
- Restore from Full Backup 674
- Restore from Incremental Backup 677
- Restore from Journal Archive 680
- Restore Online Dump 682
- Setting general restore options 684
- Running restore 686

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 20 page.

See also:

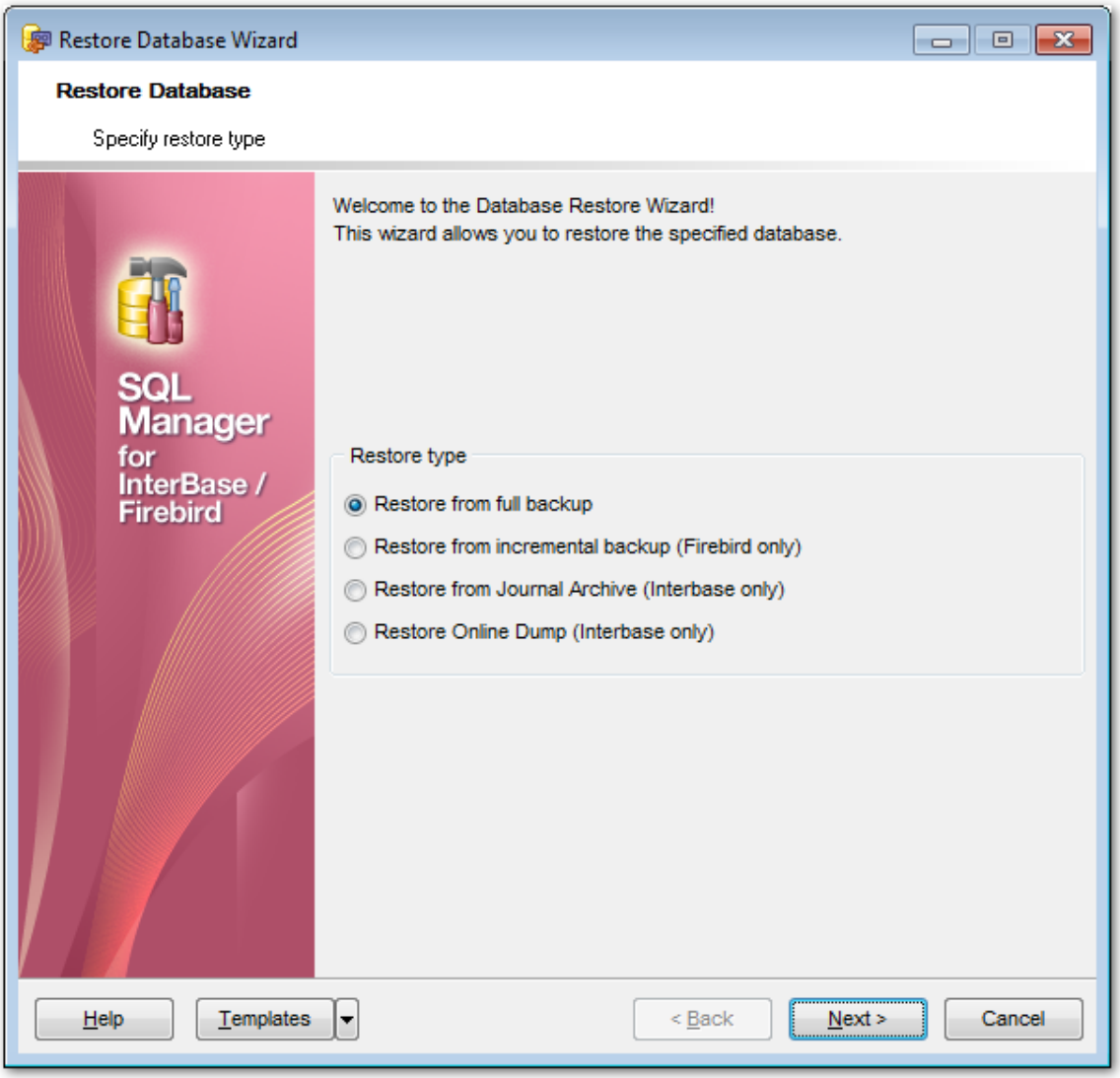
Backup Database 660

Using templates 918

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10.2.1 Selecting restore type

This step of the wizard allows you to specify the **restore type**.



Restore type

Restore from full backup
Specifies that the database will be restored from a full backup 663.

Restore from incremental backup (Firebird only)
Specifies that the database will be restored from an incremental backup 666.

Restore from Journal Archive (InterBase only)
Specifies that the database will be restored from a journal archive backup 665.

Restore from Online Dump (InterBase only)
Specifies that the database will be restored from an online dump 666.

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Note: You can restore the database from a backup copy, located on the Embedded server, only with the help of local utilities. The 'fbembed.dll' library of the embedded server must be renamed to 'fbclient.dll' and located in the directory with the gbak.exe utility. The icudt30.dll, icuin30.dll and icuuc30.dll libraries must be also located in this directory.
You can specify the directory with the gbak.exe utility in the **Path to database utilities** field on the Connection 154 tab in the Host Registration Info 153 dialog.

Click the **Next** button to proceed to the next step which varies depending on the selected restore type:

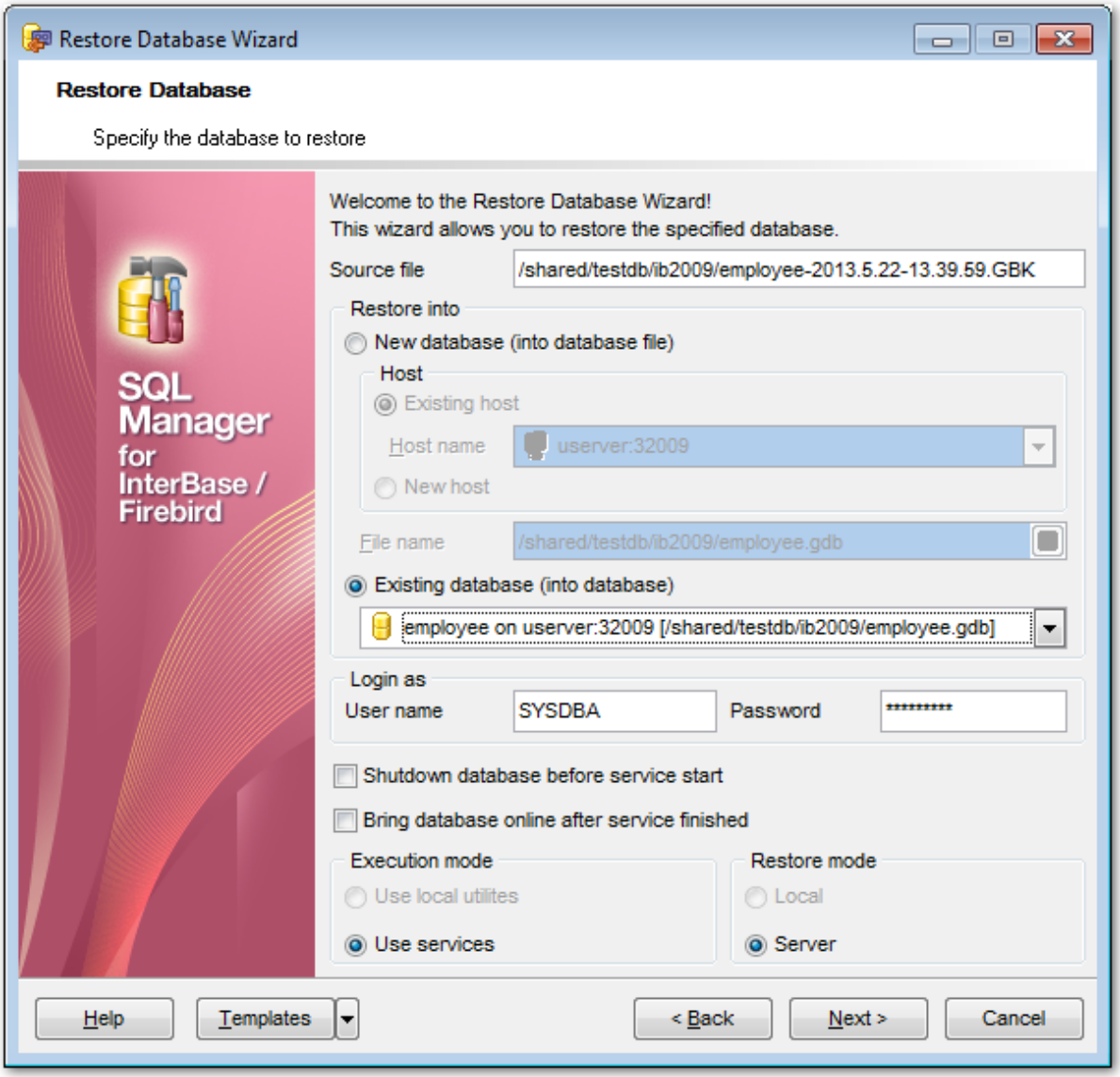
- Restore from Full Backup 674
- Restore from Incremental Backup 677
- Restore from Journal Archive 680
- Restore Online Dump 682

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10.2.2 Restore type-specific options

10.2.2.1 Restore from Full Backup

If **Restore from full backup** is specified as the restore type[672], you need to set restore from full backup[663] options.



Source file

Type in or use the button to specify the backup file from which the restore operation should be performed.

Restore into

Specify the database into which you want to restore one from the source file.

New database (into database file)

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Select this option to create a new database to restore the backup into.

Host
This group allows you to define the host on which the new database will be located.

Existing host
Specifies that the database to be created will reside on an existing (already registered 87) host. Use the **Host name** drop-down list to select the host for the new database.

New host
Specifies that the database to be created will reside on a new host. If this option is selected, you will need to specify new host options at the next step. For details see Setting connection parameters 91, SSH tunneling parameters 96.

Existing database (into database)
Select this option to restore the backup into an existing (already registered 87) database. Select the necessary database from the drop-down list, and use the **Login as** group to specify the *User name* and *Password* to access the database.

Shutdown database before service start
Select this option to shutdown the database before running restore 686. For details see Start/Stop Database 700.

Bring database online after service finished
Select this option to bring the database online after running restore 686. For details see Start/Stop Database 700.

Execution mode
Use local utilities
Select this option to restore the database using local utilities.

Use services
Select this option to use the server services for the restore operation.

Note: Restore of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

Restore mode
Local
Select this option to store the restore file on the local machine. This mode is available only when you select **Use local utilities** in the **Execution mode** group.

Server
Select this option to store the restore file on the server machine.

See also:
Restore from Incremental Backup 677
Restore from Journal Archive 680
Restore Online Dump 682

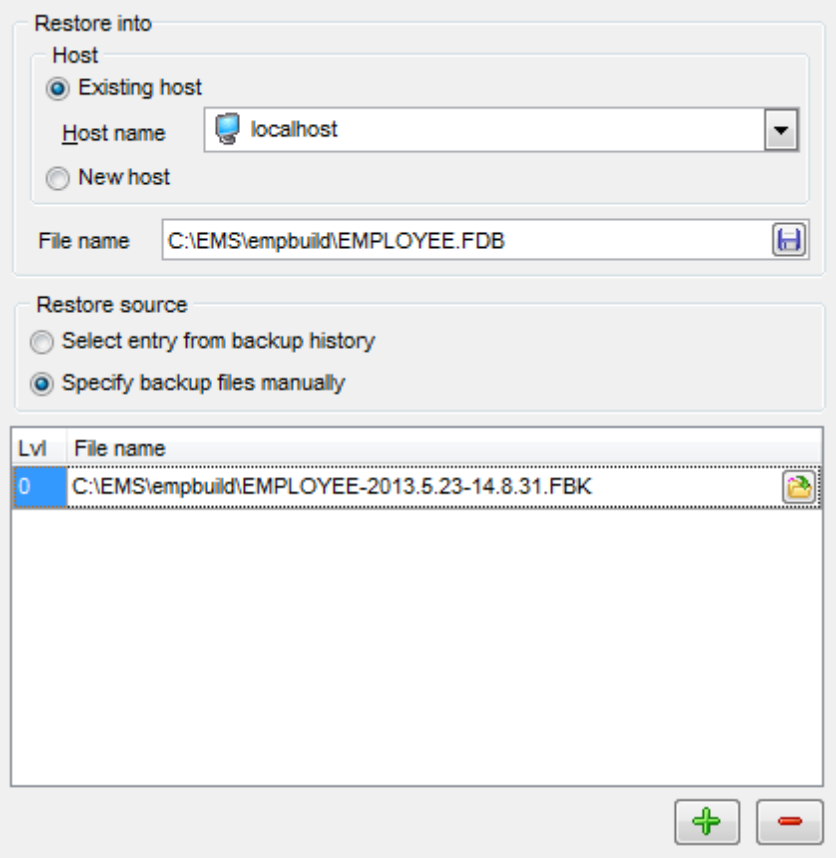
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10.2.2.2 Restore from Incremental Backup

If **Restore from incremental backup** is specified as the restore type[672], you need to set restore from incremental backup[666] options.

Note: This restore type is only available for Firebird version 2.0 or higher.



Restore into

This group allows you to define the target host onto which the incremental backup will be restored.

Existing host

Specifies that the database will be restored onto an existing (already registered[87]) host. Use the **Host name** drop-down list to select the host for the restored database.

New host

Specifies that the database will be restored onto a new host. If this option is selected, you will need to specify new host options at the next step. For details see Setting connection parameters[91].

File name

Type in or use the button to specify the database location and name (*.FDB).

Restore source

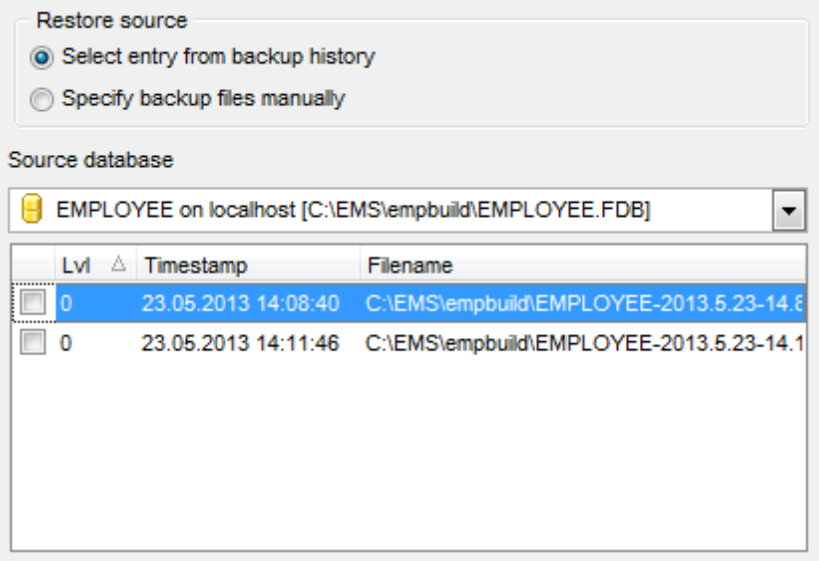
This group allows you to select the restore source file(s) from the backup history or

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specify them manually.

Select entry from backup history

Indicates that the backup file(s) will be selected from the the backup history.



Select the **Source database** from the drop-down list to get its backup history that will be displayed in list below.

Note: Only local Firebird databases can be found in the drop-down list.

The list displays the backup history items as a grid with the following columns: *Level*, *Timestamp*, *Filename*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

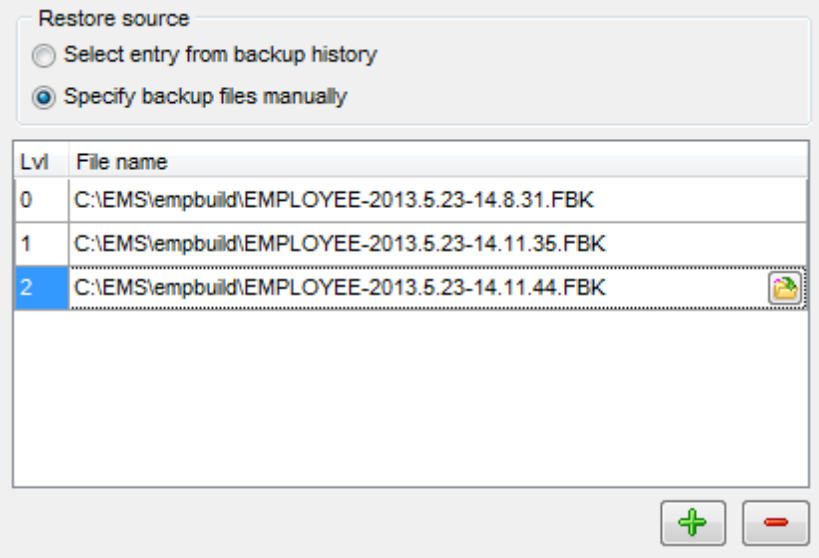
Check/uncheck the boxes in the first column to select/deselect items.

Note: Levels of the selected backups must form a continuous range with *0* and *n* as boundaries with step *1* (*0*,*1*,*2*,*3*...*n-1*,*n*).

Specify backup files manually

Indicates that the backup file(s) will be specified manually.

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The area below allows you to select source files for incremental restore manually. Use the buttons to add and remove files. Type in or use the button to specify file location and name.

See also:

Restore from Full Backup 674

Restore from Journal Archive 680

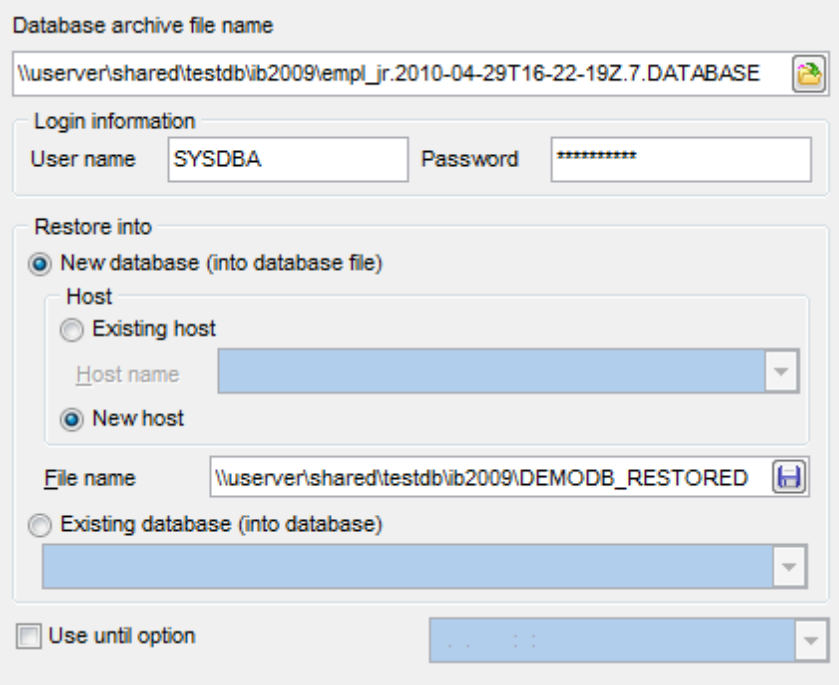
Restore Online Dump 682

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10.2.2.3 Restore from Journal Archive

If **Restore from Journal Archive** is specified as the restore type[672], you need to set restore from journal archive backup[665] options.

Note: This restore type is only available for InterBase 2009 or higher.



Database archive file name
Type in or use the button to specify the database archive file (*.DATABASE) from which the restore operation should be performed.

Login information
Specify the *User name* and *Password* to access the backup archive file.

Restore into
Specify the database into which you want to restore one from the source file.
New database (into database file)
Select this option to create a new database to restore the backup into.

Host
This group allows you to define the host on which the new database will be located.
Existing host
Specifies that the database to be created will reside on an existing (already registered[87]) host. Use the **Host name** drop-down list to select the host for the new database.

New host
Specifies that the database to be created will reside on a new host. If this option is selected, you will need to specify new host options at the next step. For details see Setting connection parameters[91].

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Existing database (into database)
Select this option to restore the backup into an existing (already registered 87) database. Select the necessary database from the drop-down list.

Use until option
Select this option to set the date and time before which the database with changes done is to be restored.
For your convenience the *Date editor* is implemented for inputting the timestamp: click the arrow-down button to call the *Date editor* popup window.

See also:

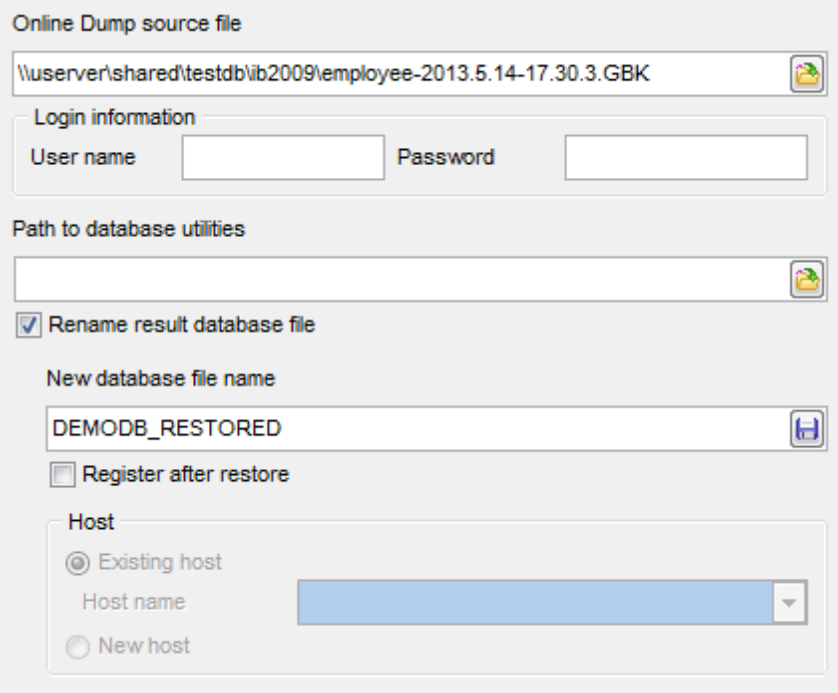
Restore from Full Backup 674
Restore from Incremental Backup 677
Restore Online Dump 682

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10.2.2.4 Restore Online Dump

If **Restore from Online Dump** is specified as the restore type[672], you need to set restore from incremental backup (online dump)[666] options.

Note: This restore type is only available for InterBase 2009 or higher.



Online Dump source file

Type in or use the button to specify the Online Dump file (*.GBK) from which the restore operation should be performed.

Login information

Specify the *User name* and *Password* to access the source file.

Path to database utilities

Type in or use the button to specify the path to the database utilities.

Rename result database file

If the option is disabled, the database will be restored into the original one. Enable this option to restore the backup into a new database.

New database file name field

Type in or use the button to specify the database location and name (*.GDB).

Register after restore

If this option is selected, the newly restored database will be registered[87] in the application.

Host

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This group allows you to define the host where the database will be located.

Existing host
Specifies that the database will reside on an existing (already registered 87) host. Use the **Host name** drop-down list to select the host for the restored database.

New host
Specifies that the database will reside on a new host. If this option is selected, you will need to specify new host options at the next step. For details see Setting connection parameters 91.

See also:

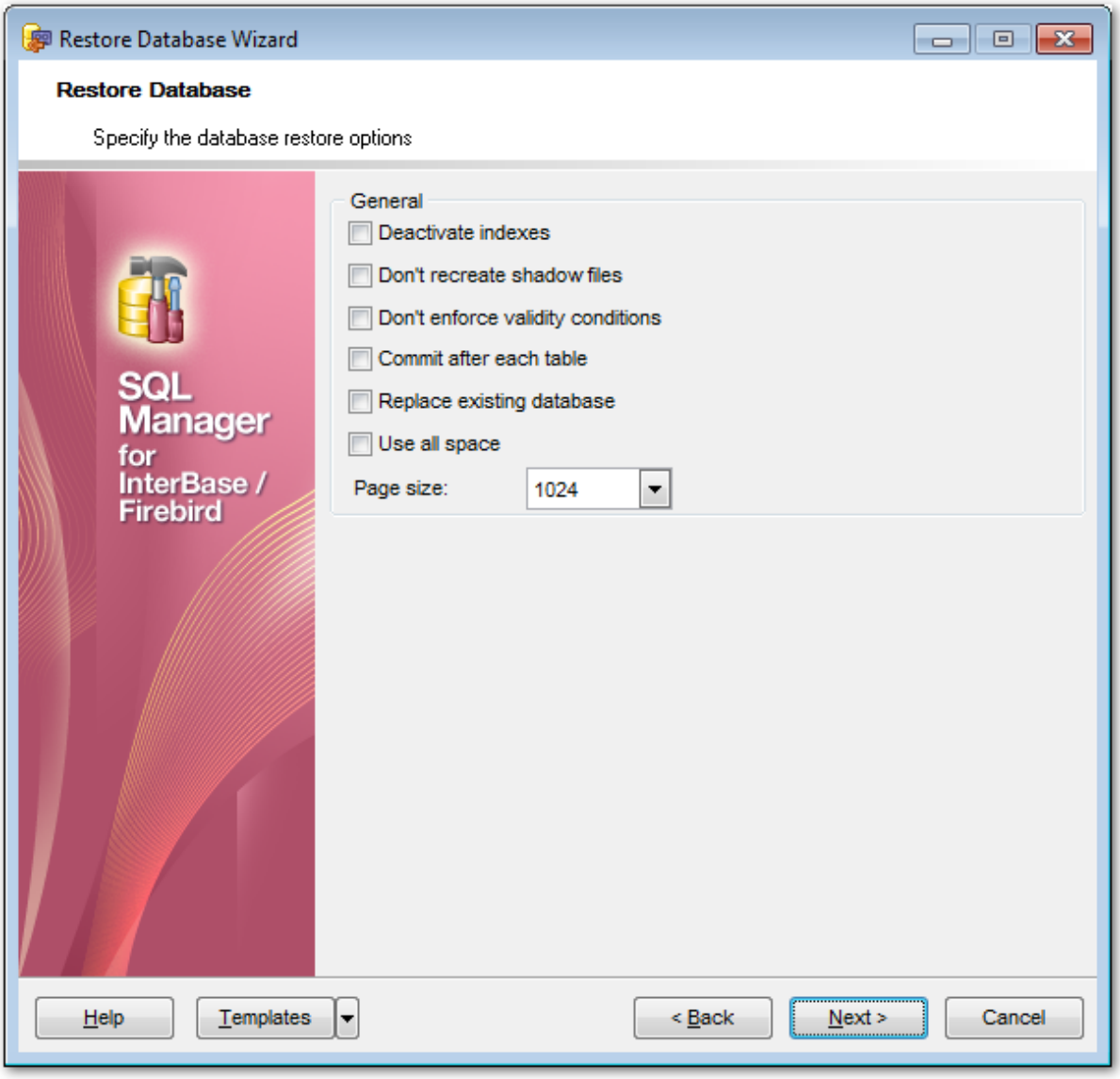
Restore from Full Backup 674
Restore from Incremental Backup 677
Restore from Journal Archive 680

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10.2.3 Setting restore options

This step of the wizard allows you to set the general restore options.

Note: This step is only available if **Restore from full backup** is specified as the restore type[672].



Deactivate indexes
If this option is selected, database indexes are deactivated while restoring.

Don't recreate shadow files
If this option is selected, shadow files are not recreated while restoring.

Don't enforce validity conditions
If this option is selected, database validity conditions are not restored.

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Commit after each table
If this option is selected, **SQL Manager** commits work after restoring each table.

Replace existing database
If this option is selected, the restored database replaces an existing one.

Use all space
Restores database with 100 per cent fill ratio on each data page, instead of the default 80 per cent fill ratio.

Page size
Use the drop-down list to specify the database page size (in *bytes*). Possible values are: *1024*, *2048*, *4096*, *8192*, *16384*.

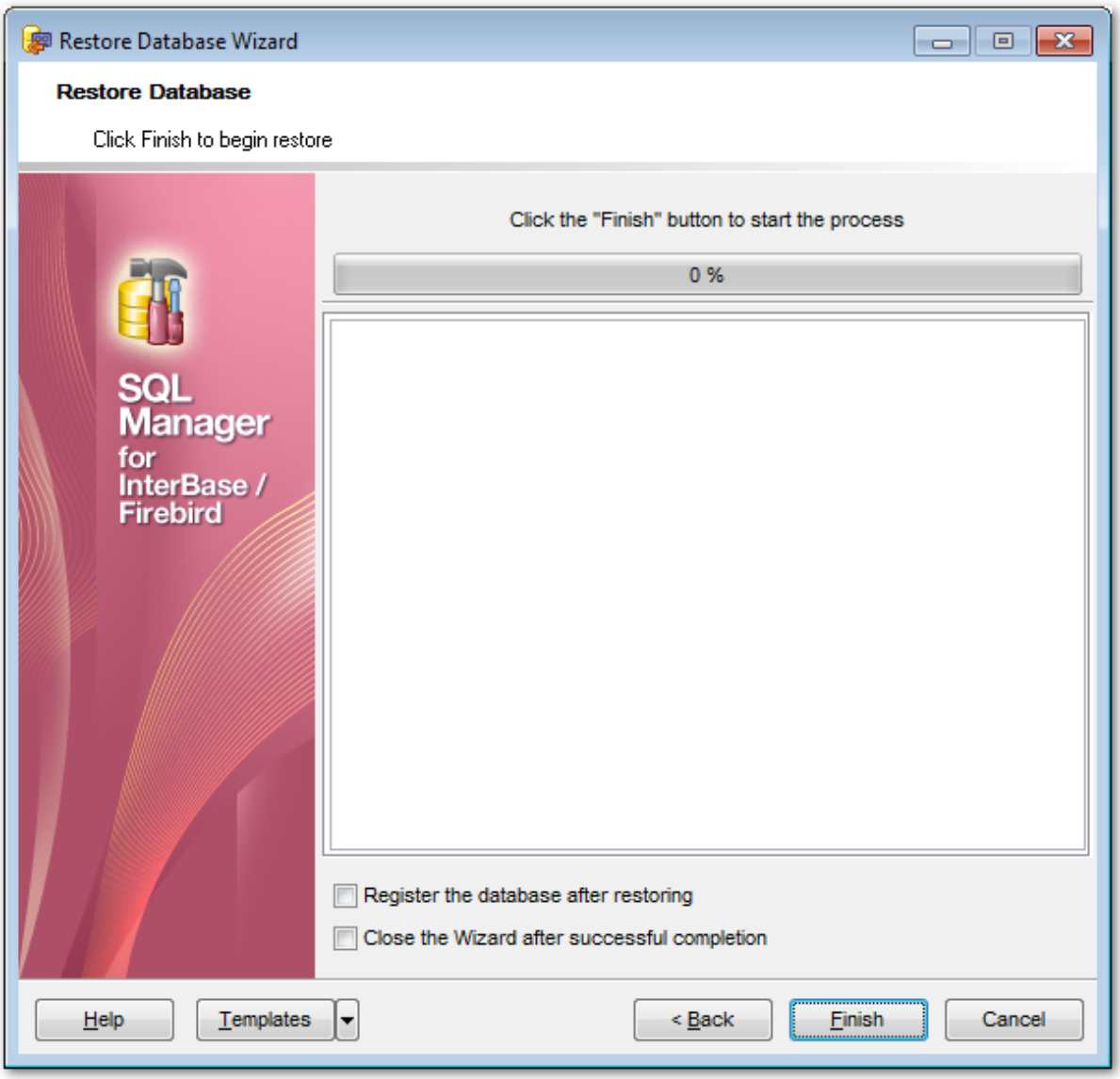
Click the **Next** button to proceed to Running restore 686.

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10.2.4 Running restore

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).



Register the database after restoring
If this option is selected, the newly restored database will be registered[87] in **SQL Manager** automatically.

Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the restore process is completed.

If necessary, you can save a template[918] for future use.

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Click the **Finish** button to run the process.

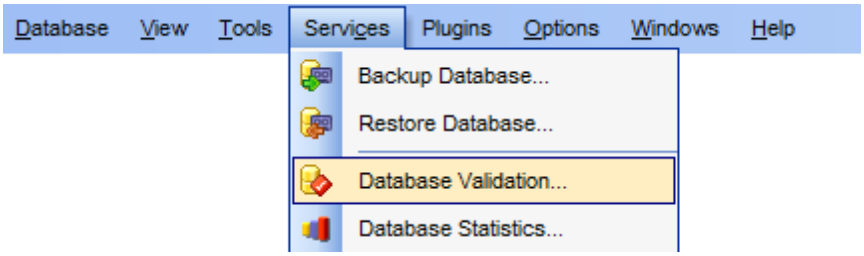
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10.3 Database Validation

Database Validation Wizard allows you to validate databases for verifying the integrity of data structures.

A database should be validated:
- whenever a database backup 660 is unsuccessful;
- whenever an application receives a "corrupt database" error;
- periodically, to monitor for corrupt data structures or misallocated space;
- any time when data corruption is suspected.

To run the wizard, select the **Services |** **Database Validation...** main menu 890 item, or right-click the database alias in the DB Explorer 63 tree and select the **Tasks |** **Database Validation...** context menu 53 item.



- Selecting database and execution mode 689
- Setting validation options 691
- Running database validation 693

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 20 page.

See also:

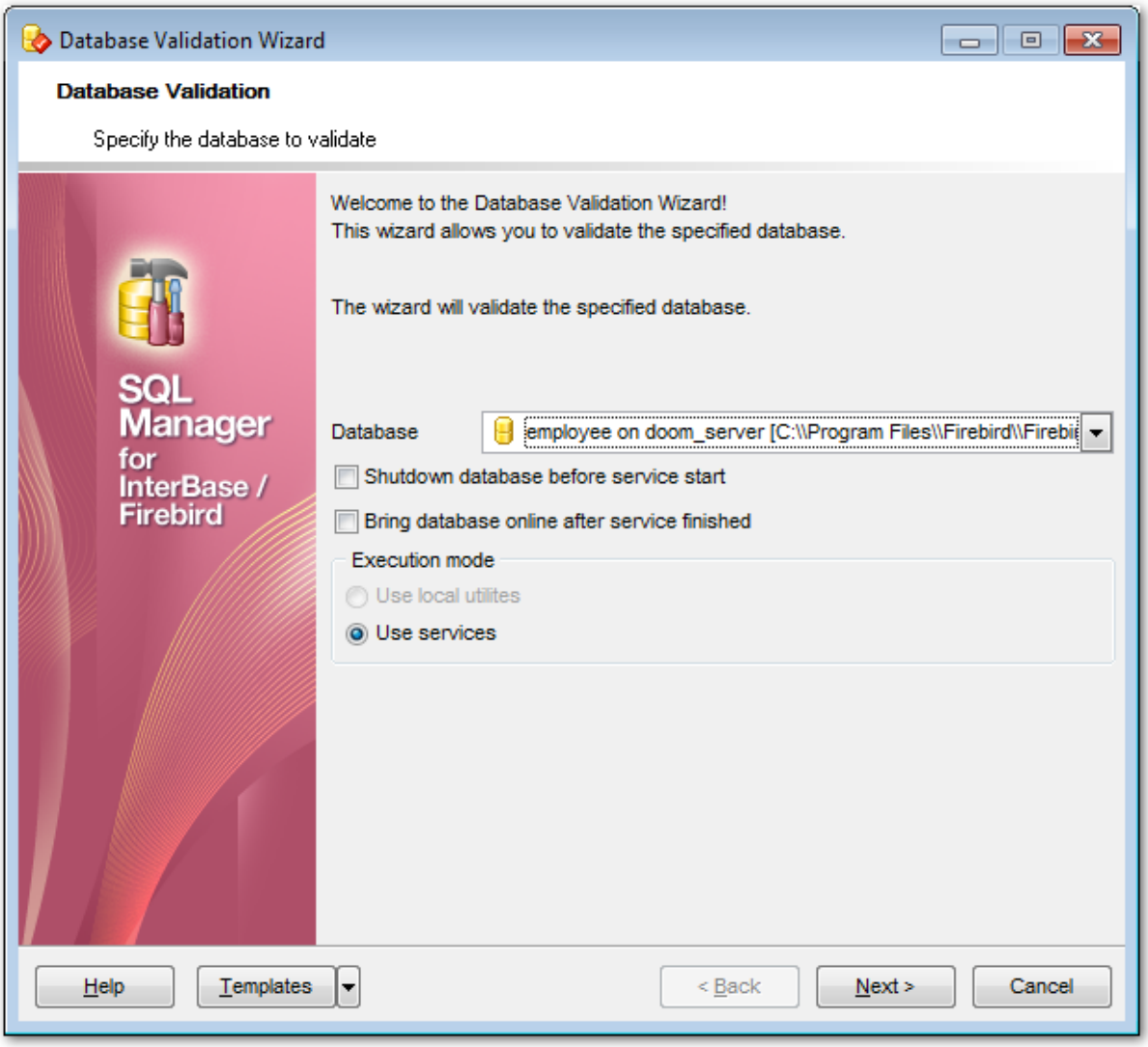
Start/Stop Database 700

Using templates 918

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10.3.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name, shutdown / bring online **options**, and **execution mode**.



Database
Use the drop-down list to select the database to be validated.

☑ **Shutdown database before service start**
Select this option to shutdown the database before Running database validation[693]. For details see Start/Stop Database[700].

☑ **Bring database online after service finished**
Select this option to bring the database online after Running database validation[693]. For details see Start/Stop Database[700].

Execution mode
◉ **Use local utilities**

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Select this option to validate the database using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

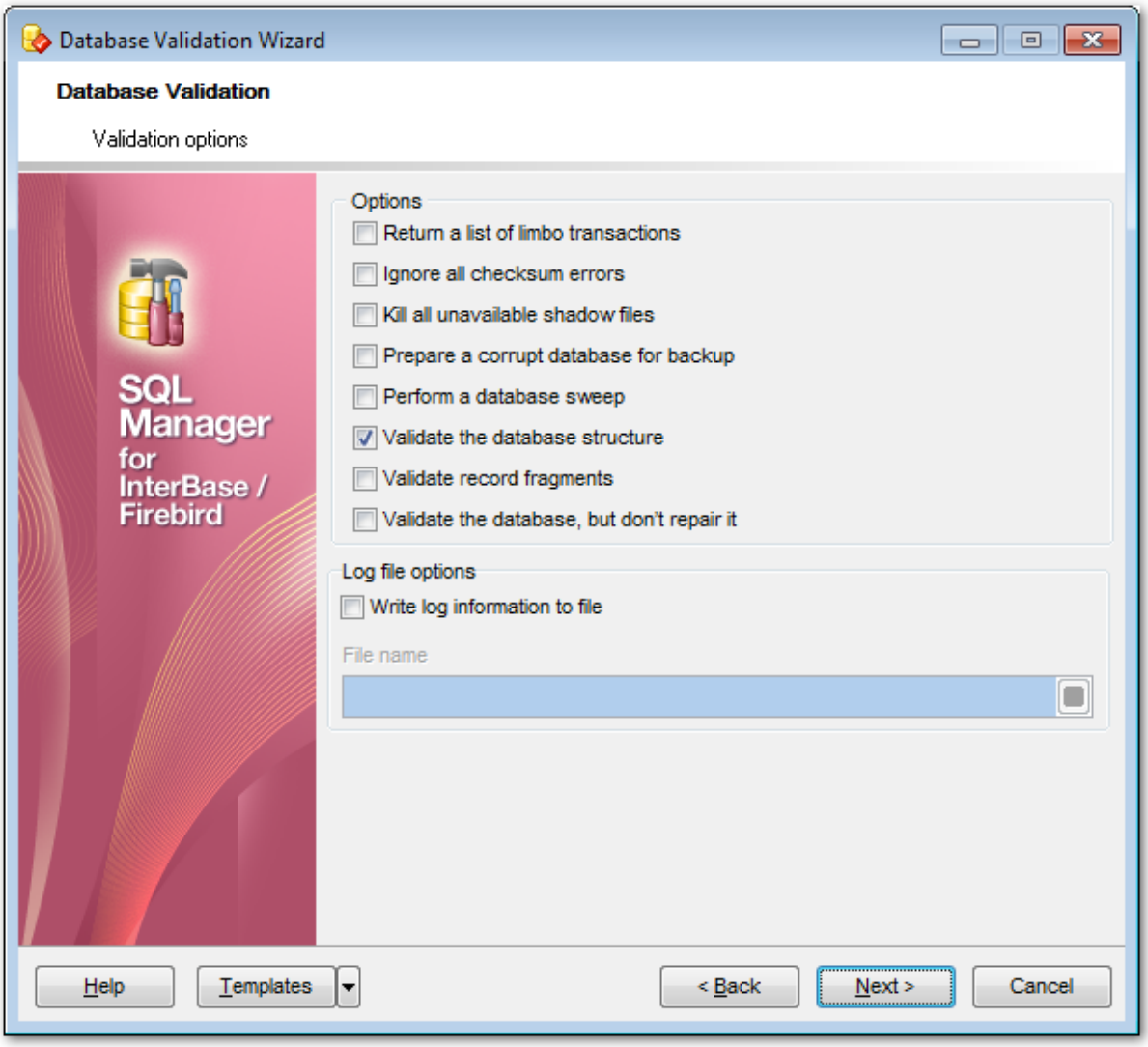
Use services
Select this option to use the server services for the database validation operation.

Click the **Next** button to proceed to the Setting validation options 691 step of the wizard.

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10.3.2 Setting validation options

This step of the wizard allows you to set the general validation options.



Options

Return a list of limbo transactions
If this option is selected, the database is checked on transactions in limbo, i.e. the transactions that cannot be defined as executed or aborted.

Validate the database, but don't repair it
Enables the "Read Only" mode of validation. By default, validating a database updates it, if necessary. Check this option to prevent updating.

Ignore all checksum errors
If this option is selected, all checksum errors are ignored.
A checksum is a page-by-page analysis of data to verify its integrity. A bad checksum means that a database page has been randomly overwritten (e.g. due to a system crash).

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Kill all unavailable shadow files
If this option is selected, server drops the shadows which cannot be used.

Prepare a corrupt database for backup
Performs total cleaning of the corrupt database, preparing the database for backup 660.

Perform a database sweep
Removes all outdated records.

Validate the database structure
Repairs corrupt or misallocated structures.

Validate record fragments
Releases unassigned record fragments.

Log file options

Write log information to file
Check this option if you wish to log validation process to an external file.

File name
This field is enabled if the **Write log information to file** option is selected. Type in or use the **Save as** button to specify the path to the **.log* file to store the database validation logs.

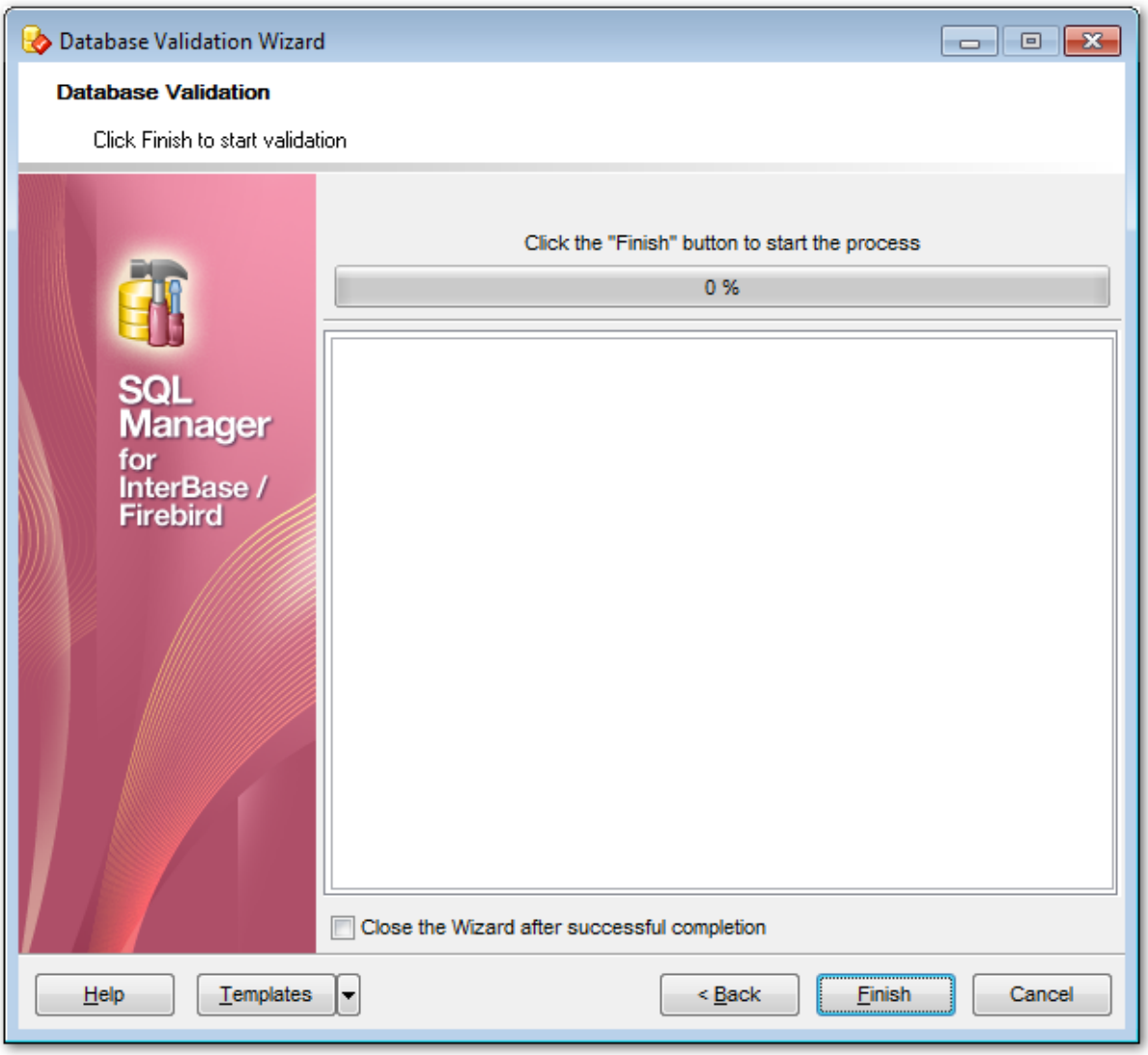
Click the **Next** button to proceed to Running database validation 693.

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10.3.3 Running database validation

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).



Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the validation process is completed.

If necessary, you can save a template[918] for future use.

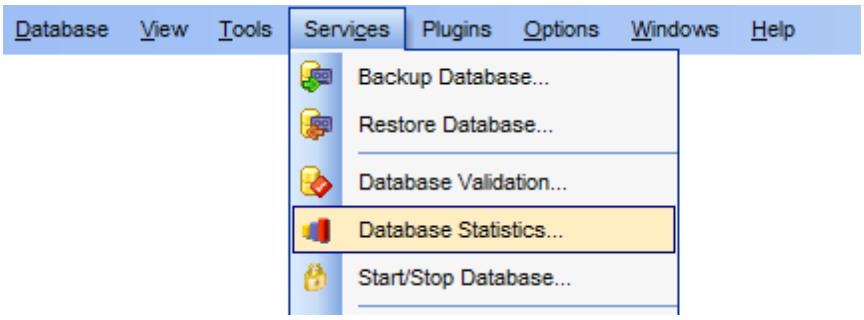
Click the **Finish** button to run the process.

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10.4 Database Statistics

Database Statistics Wizard allows you to retrieve database statistics.

To run the wizard, select the **Services | Database Statistics...** main menu 890 item, or right-click a table in the DB Explorer 63 tree and select the **Table Services | Database Statistics...** context menu 53 item.



- Selecting database and execution mode 695
- Setting statistics options 697
- Running statistics collection 699

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 20 page.

See also:

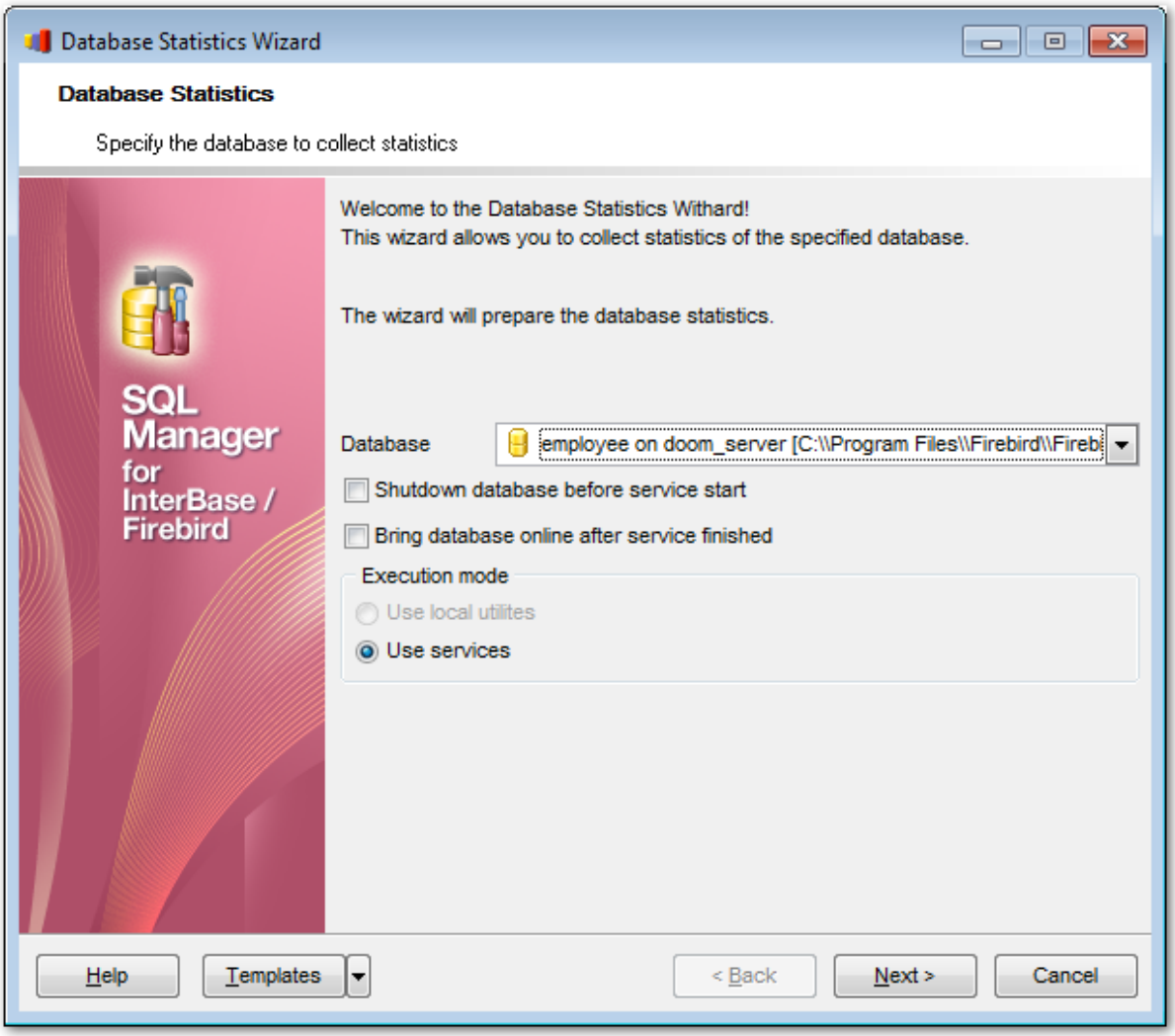
Start/Stop Database 700

Using templates 918

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10.4.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name, shutdown / bring online **options**, and **execution mode**.



Database
Use the drop-down list to select the database for collecting statistics.

☑ **Shutdown database before service start**
Select this option to shutdown the database before Running statistics collection 699. For details see Start/Stop Database 700.

☑ **Bring database online after service finished**
Select this option to bring the database online after Running statistics collection 699. For details see Start/Stop Database 700.

Execution mode
◉ **Use local utilities**

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Select this option to collect database statistics using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

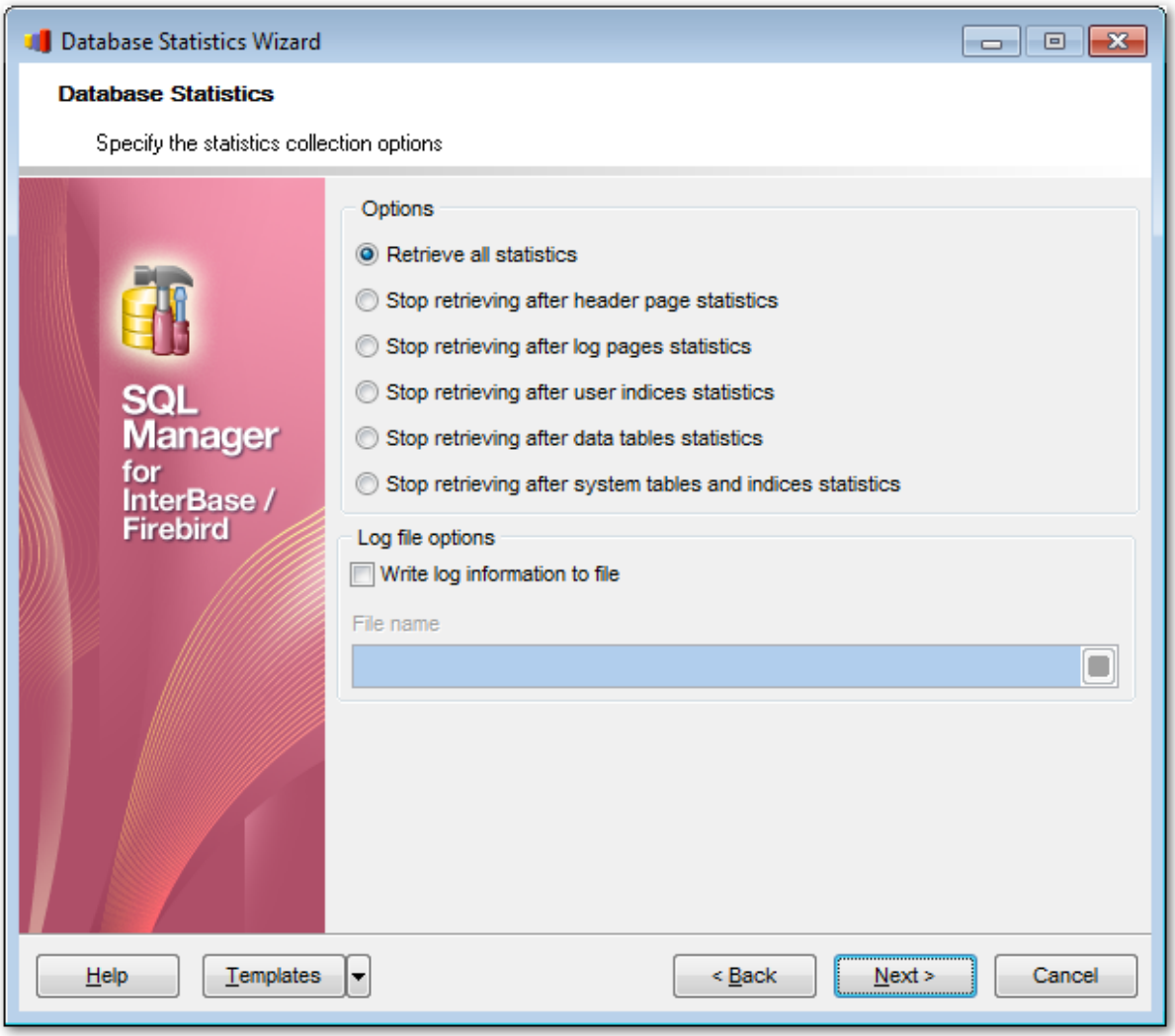
Use services
Select this option to use the server services for the database statistics operation.

Click the **Next** button to proceed to the Setting statistics options 697 step of the wizard.

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10.4.2 Setting statistics options

This step of the wizard allows you to set the general statistics collection options.



Options

This group allows you to select what kind of statistics is to be collected:

- *Retrieve all statistics*
- *Stop retrieving after header page statistics*
- *Stop retrieving after log pages statistics*
- *Stop retrieving after user indexes statistics*
- *Stop retrieving after data tables statistics*
- *Stop retrieving after system tables and indexes statistics*

Log file options

Write log information to file

Check this option if you wish to log statistics collection to an external file.

File name

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This field is enabled if the **Write log information to file** option is selected. Type in or use the **Save as** button to specify the path to the **.log* file to store the database statistics collection logs.

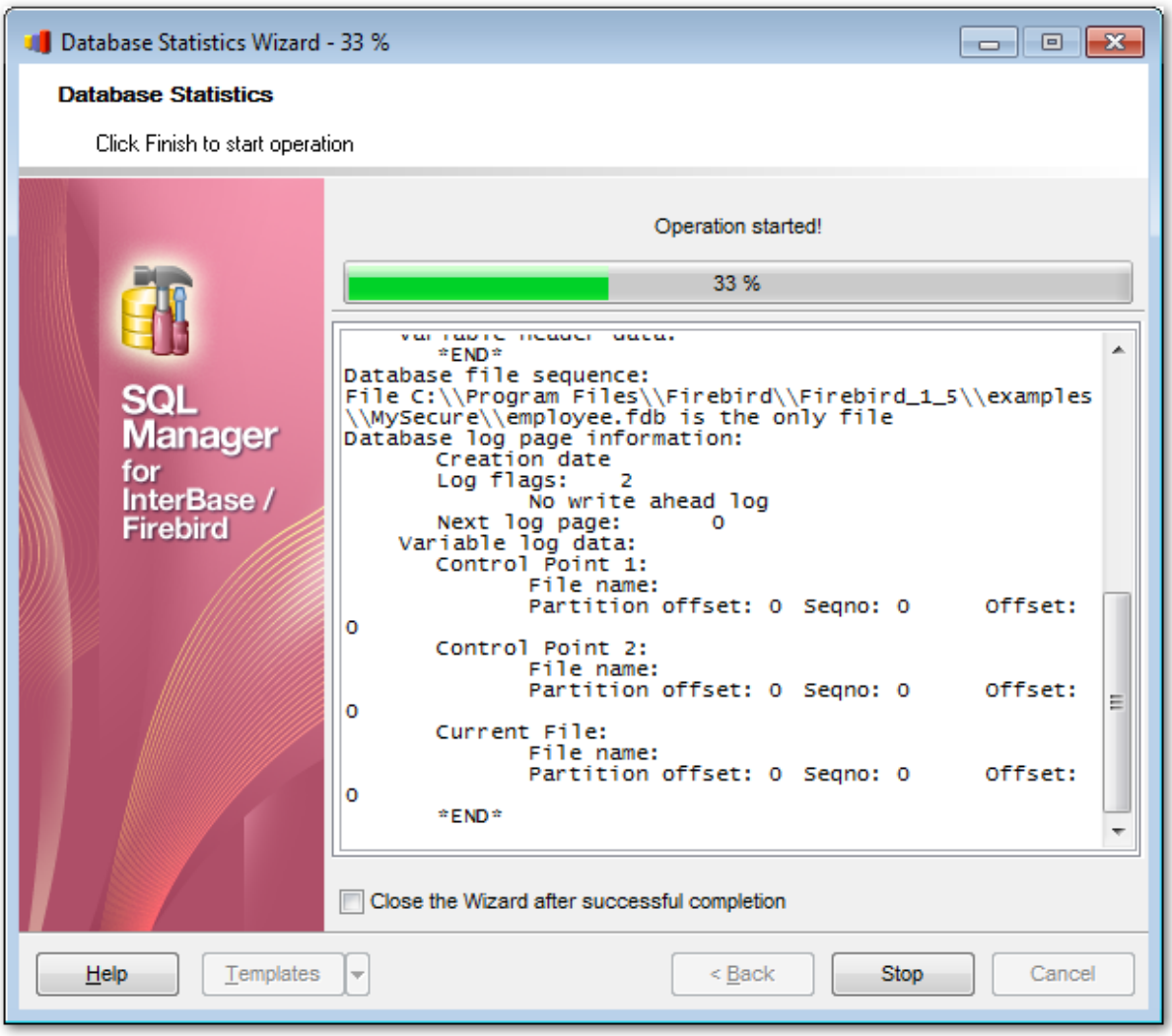
Click the **Next** button to proceed to Running statistics collection 699.

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10.4.3 Running statistics collection

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).



Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the statistics collection process is completed.

If necessary, you can save a template 918 for future use.

Click the **Finish** button to run the process.

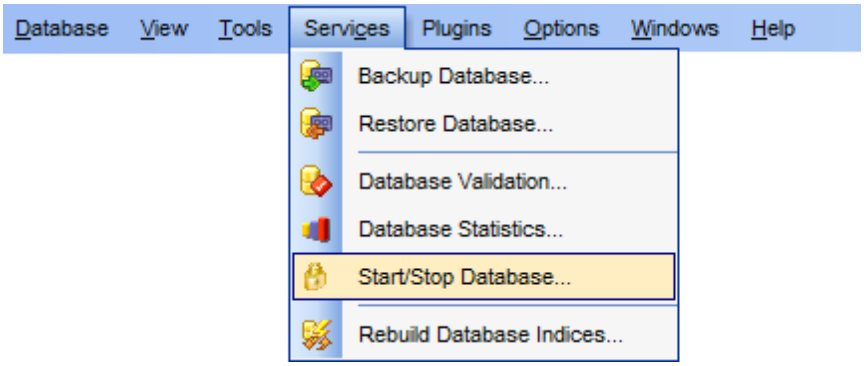
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10.5 Start/Stop Database

Start/Stop Database Wizard allows you to shutdown (to switch to the one-user database connection mode) and to bring database online back again.

Maintaining a database often involves shutting it down. The user who shuts down the database then has exclusive access to the database.
After a database is shut down, it must be restarted (brought back online) before users can access it.

To run the wizard, select the **Services | Start/Stop Database...** main menu 890 item, or right-click a table in the DB Explorer 63 tree and select the **Table Services | Start/Stop Database...** context menu 53 item.



- Selecting database and execution mode 701
- Setting shutdown options 703
- Running Bring Online / Shutdown Database 705

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 20 page.

See also:

Using templates 918

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10.5.1 Selecting database and execution mode

This step of the wizard allows you to specify the **operation**, **database** name, and **execution mode**.



Operations

Bring database online
Specifies that the specified database will be brought online (restarted).

Shutdown database
Specifies that the specified database will be shut down (switched to the one-user database connection mode).

Database
Use the drop-down list to select the database to shut down / bring online.

Execution mode

Use local utilities
Select this option to shut down / bring database online using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

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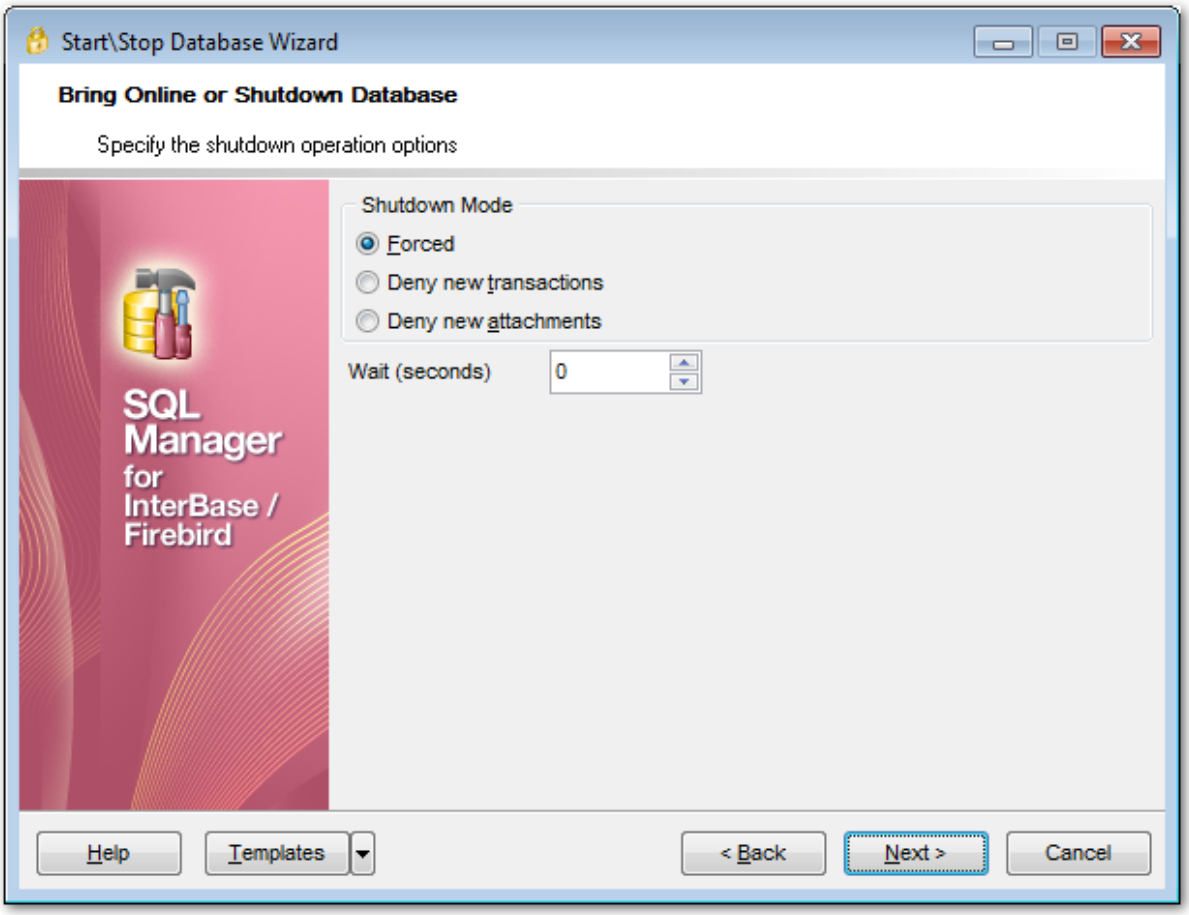
Use services
Select this option to use the server services for the shutdown / bring online operation.

Click the **Next** button to proceed to the Shutdown database options 703 step (for the **Shutdown database** mode), or to Running Bring Online / Shutdown Database 705 (for the **Bring database online** mode).

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10.5.2 Setting shutdown options

This step of the wizard allows you to set the general shutdown database options.



Shutdown Mode

Forced
In this mode all the transactions, still active by the stated time, are forcedly aborted and all the users are forcedly disconnected.

Deny new transactions
In this mode all the transactions must be executed by the stated time. Starting of any new transactions is blocked. If there are some transactions still active by the stated time, database shutdown is not executed.

Deny new attachments
In this mode all the active user attachments must finish their work by the stated time. If there are some attachments still active by the stated time, database shutdown is not executed.

Wait (seconds)
Time to wait for the shutdown to execute (in *seconds*).

Click the **Next** button to proceed to Running Bring Online / Shutdown Database 705.

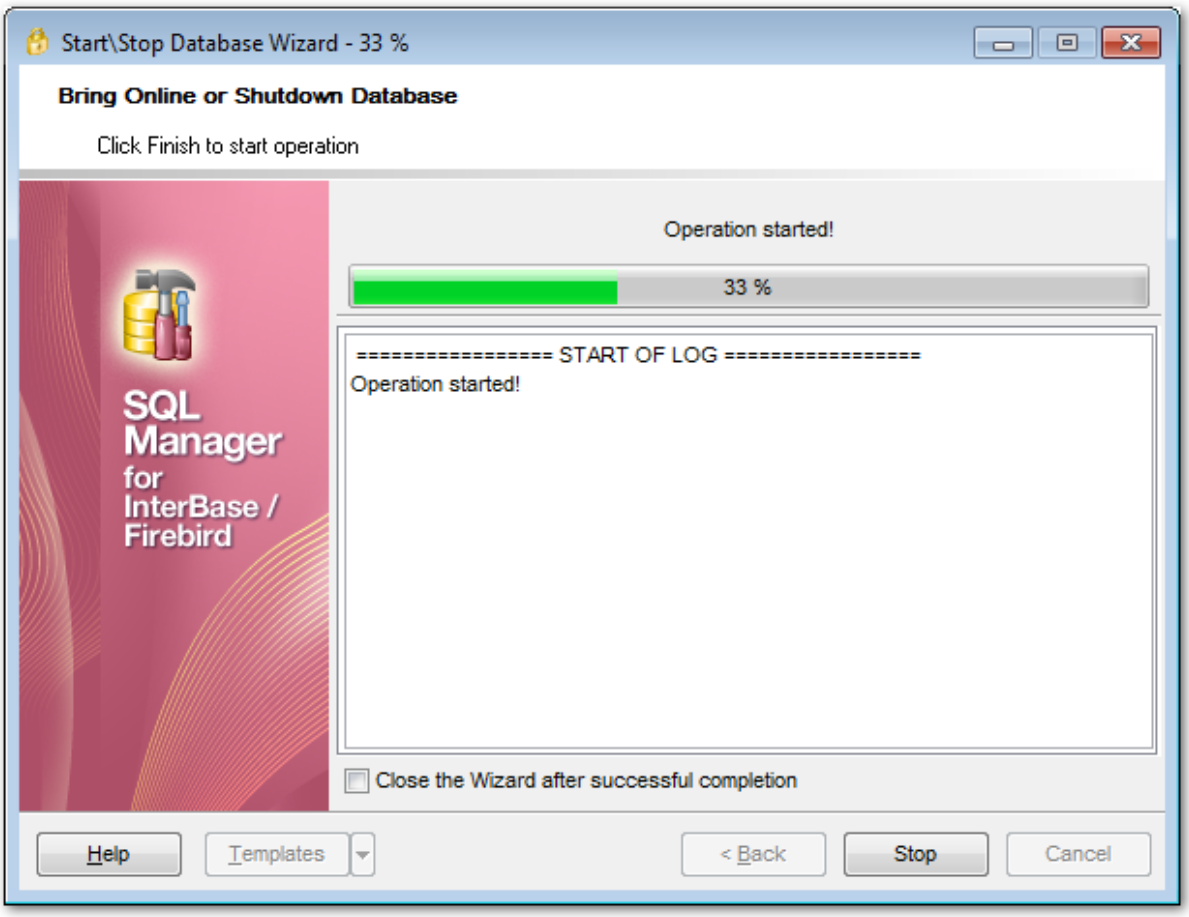
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10.5.3 Running Bring Online / Shutdown Database

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).



Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the bring online / shutdown process is completed.

If necessary, you can save a template[918] for future use.

Click the **Finish** button to run the process.

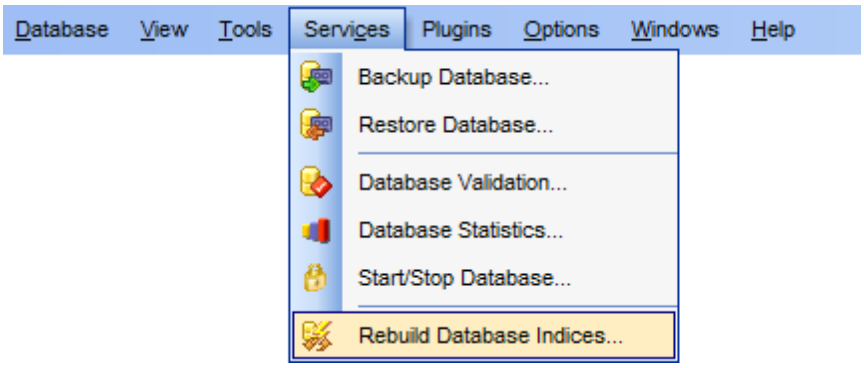
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10.6 Rebuild Database Indices

Rebuild Indexes Wizard allows you to recompute or rebuild indexes 226.

To improve index performance, one should consider *recomputing* or *rebuilding* database indexes.
Recomputing index selectivity is performed through *SET STATISTICS*. Index selectivity is a calculation, based on the number of distinct rows in a table, that is made by the optimizer when a table is accessed. It is cached in memory, where the optimizer can access it to calculate the optimal retrieval plan for a given query.
Rebuilding an index consists in making it inactive, then active with sequential calls to *ALTER INDEX*. Deactivating an index is exactly like dropping 226 it, except that the index definition remains in the database. Activating an index creates a new index structure.

To run the wizard, select the **Services | Rebuild Database Indexes...** main menu 890 item, or right-click a table in the DB Explorer 63 tree and select the **Table Services | Rebuild All Indexes of Database** context menu 53 item.



- Selecting database and execution mode 707
- Selecting action for indexes 709
- Selecting indexes 711
- Recomputing/rebuilding indexes 712

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 20 page.

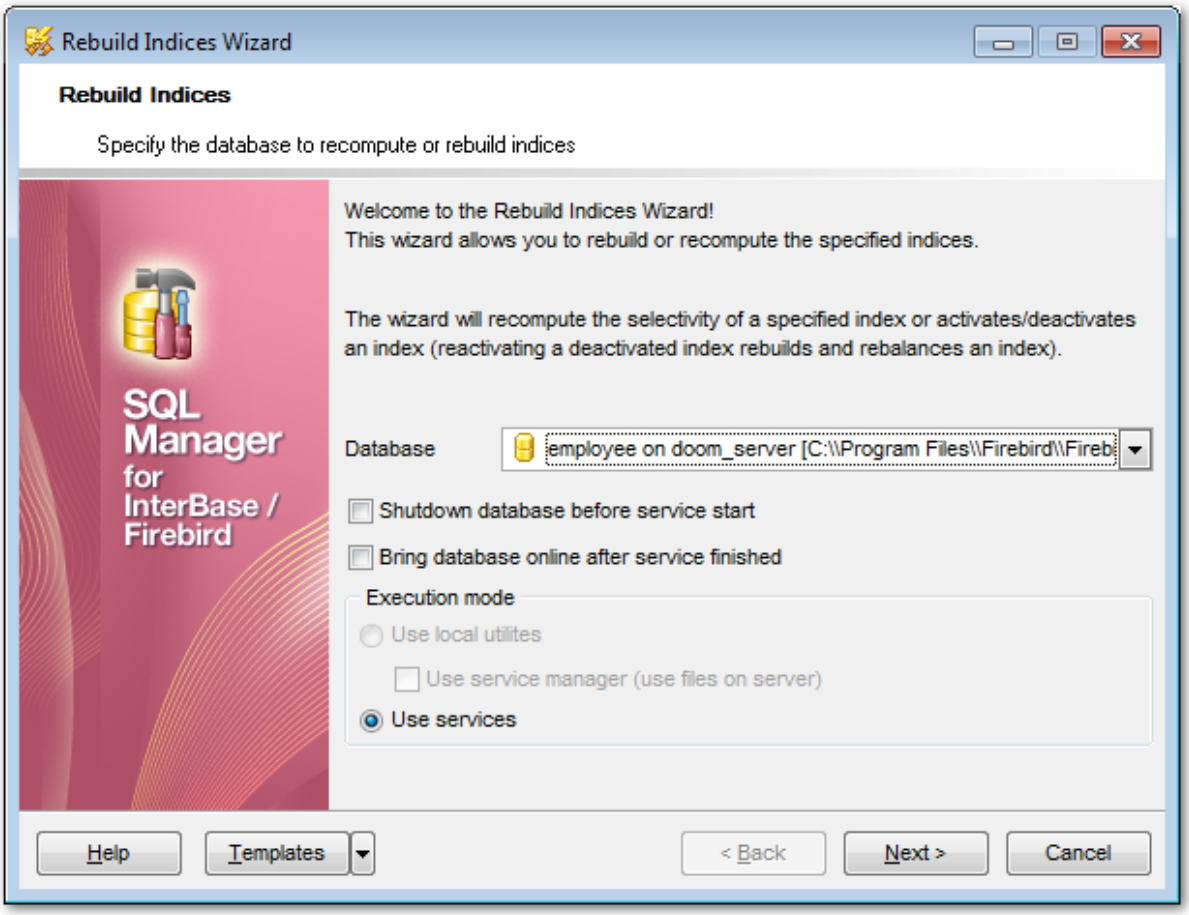
See also:

Start/Stop Database 700
Indices 226
Using templates 918

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10.6.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name, shutdown / bring online **options**, and **execution mode**.



Database
Use the drop-down list to select the database for recomputing/rebuilding indexes.

☑ **Shutdown database before service start**
Select this option to shutdown the database before Recomputing/rebuilding indexes 712.
For details see Start/Stop Database 700.

☑ **Bring database online after service finished**
Select this option to bring the database online after Recomputing/rebuilding indexes 712.
For details see Start/Stop Database 700.

Execution mode
◉ **Use local utilities**
Select this option to recompute/rebuild indexes using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

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Use service manager (use files on server)
If this option is selected, the recomputing/rebuilding indexes will be performed with the service manager used.

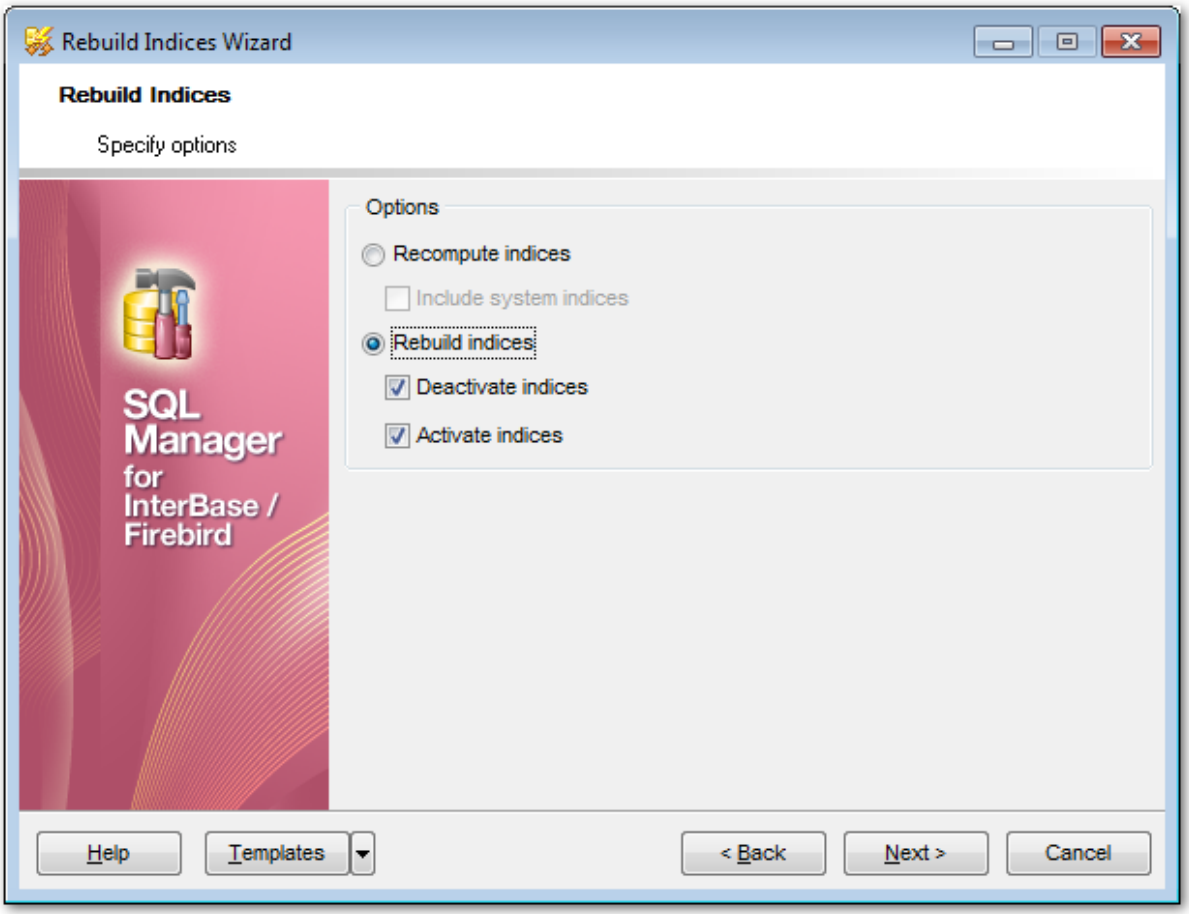
Use services
Select this option to use the server services for the recomputing/rebuilding indexes operation.

Click the **Next** button to proceed to the Selecting action for indexes 709 step of the wizard.

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10.6.2 Selecting action for indexes

This step of the wizard allows you to select the **action** for database indexes and set the action-specific **options**.



Options

Recompute indices
Specifies *SET STATISTICS* to be executed for recomputing database indexes.

Include system indexes
If this option is selected, system indexes will be recomputed as well.

Rebuild indexes
Specifies deactivating/activating database indexes through *ALTER INDEX*.

Deactivate indexes
If this option is selected, database indexes will be deactivated (*ALTER INDEX ... INACTIVE*)

Activate indexes
If this option is selected, database indexes will be activated (*ALTER INDEX ... ACTIVE*).

Click the **Next** button to proceed to the Selecting indexes 711 step of the wizard.

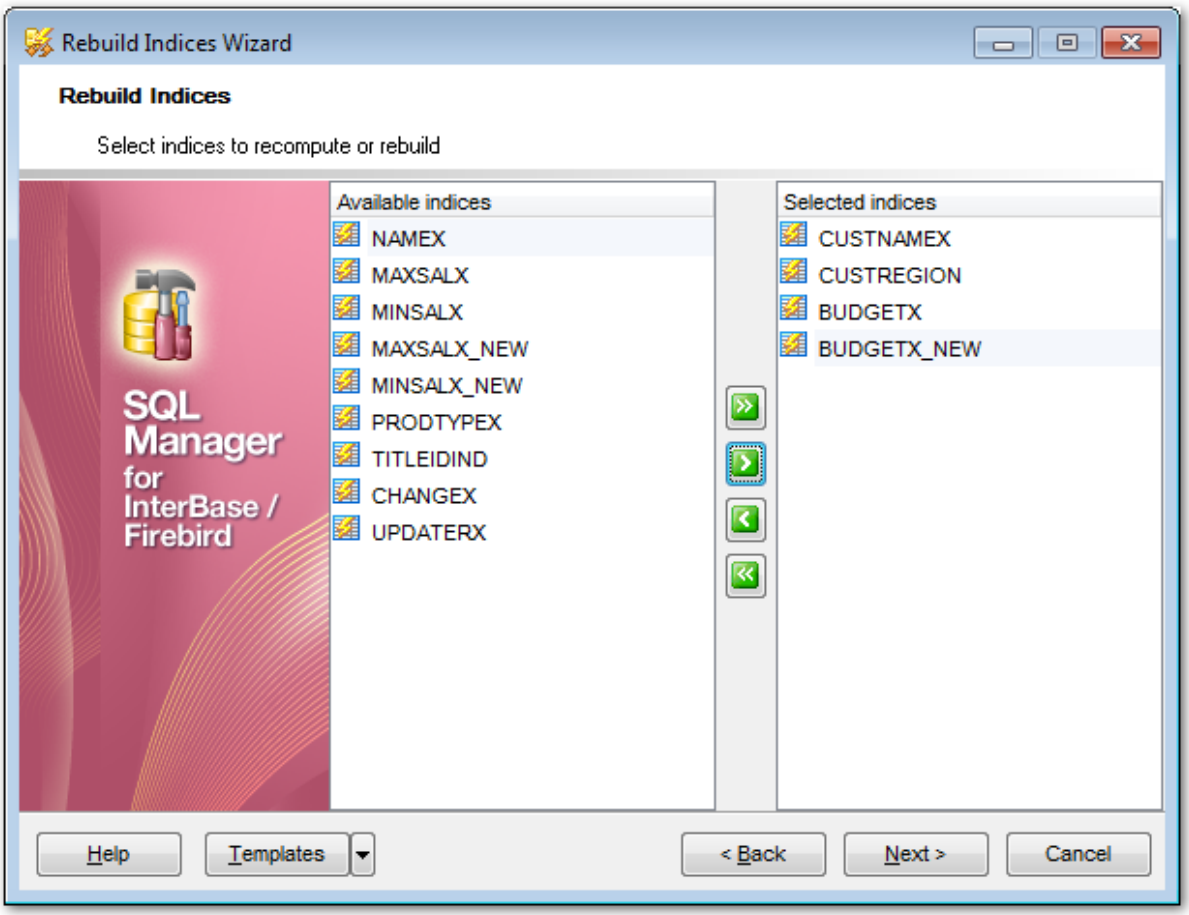
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10.6.3 Selecting indexes

This step of the wizard allows you to **select indexes** for management.

To select an index, you need to move it from the **Available Indexes** list to the **Selected Indexes** list. Use the buttons or drag-and-drop operations to move the indexes from one list to another.



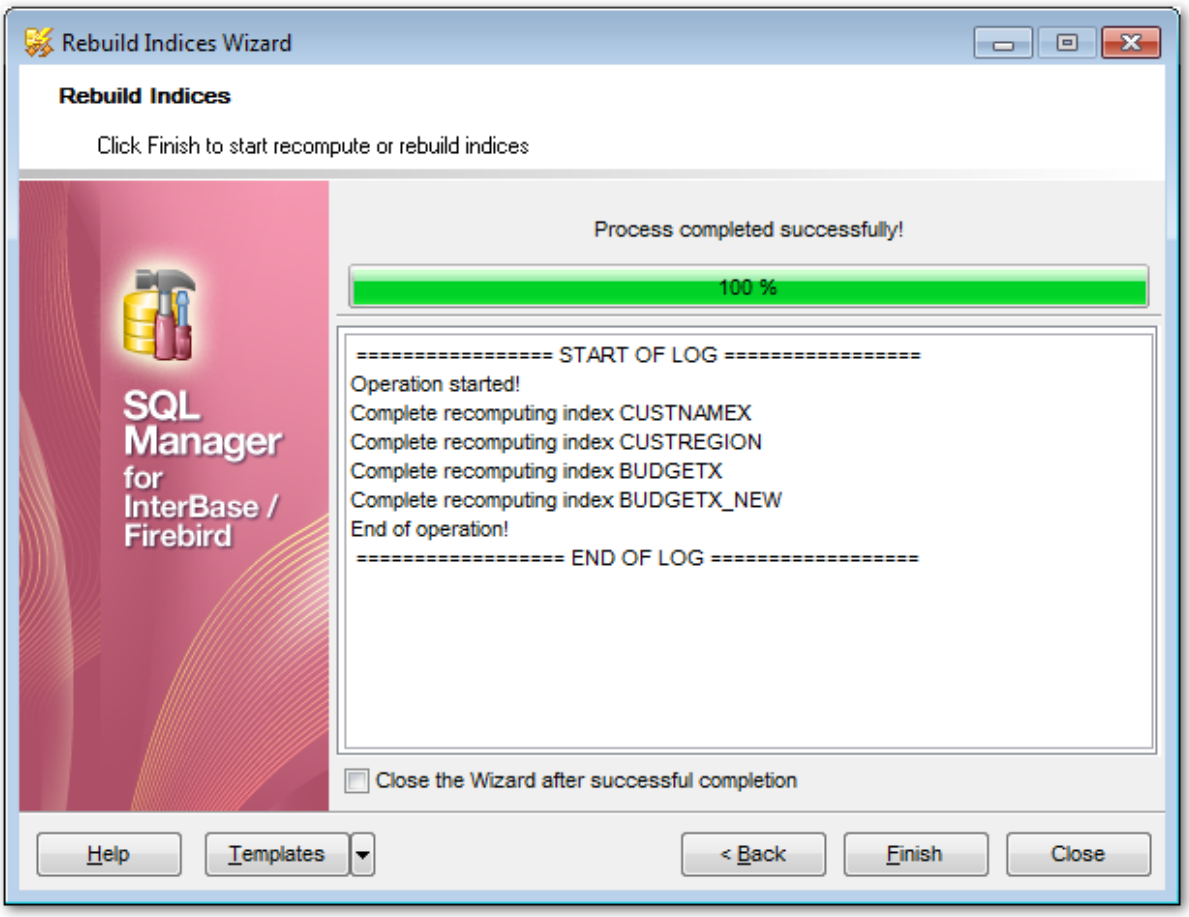
Click the **Next** button to proceed to Recomputing/rebuilding indexes 712.

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10.6.4 Recomputing/rebuilding indexes

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).



Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the backup process is completed.

If necessary, you can save a template[918] for future use.

Click the **Finish** button to run the process.

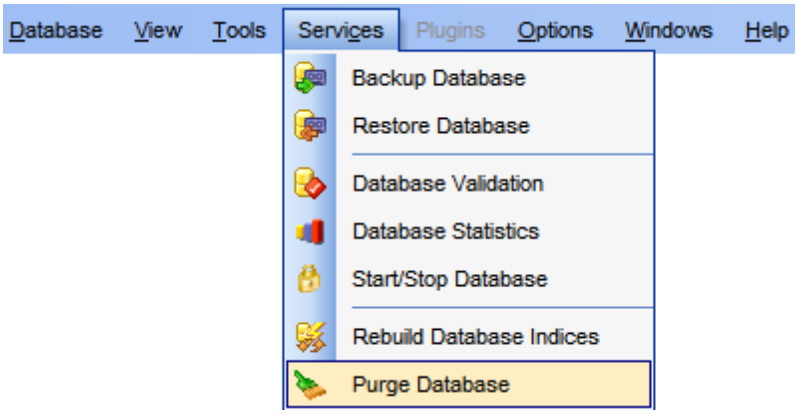
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10.7 Purge Database

Purge Database Wizard allows you to delete data from the selected tables.

To run the wizard

select **Services |** **Purge database...** from the main menu
or right-click a table in the DB Explorer 63 tree and select the **Tasks |** **Purge table...** context menu item.



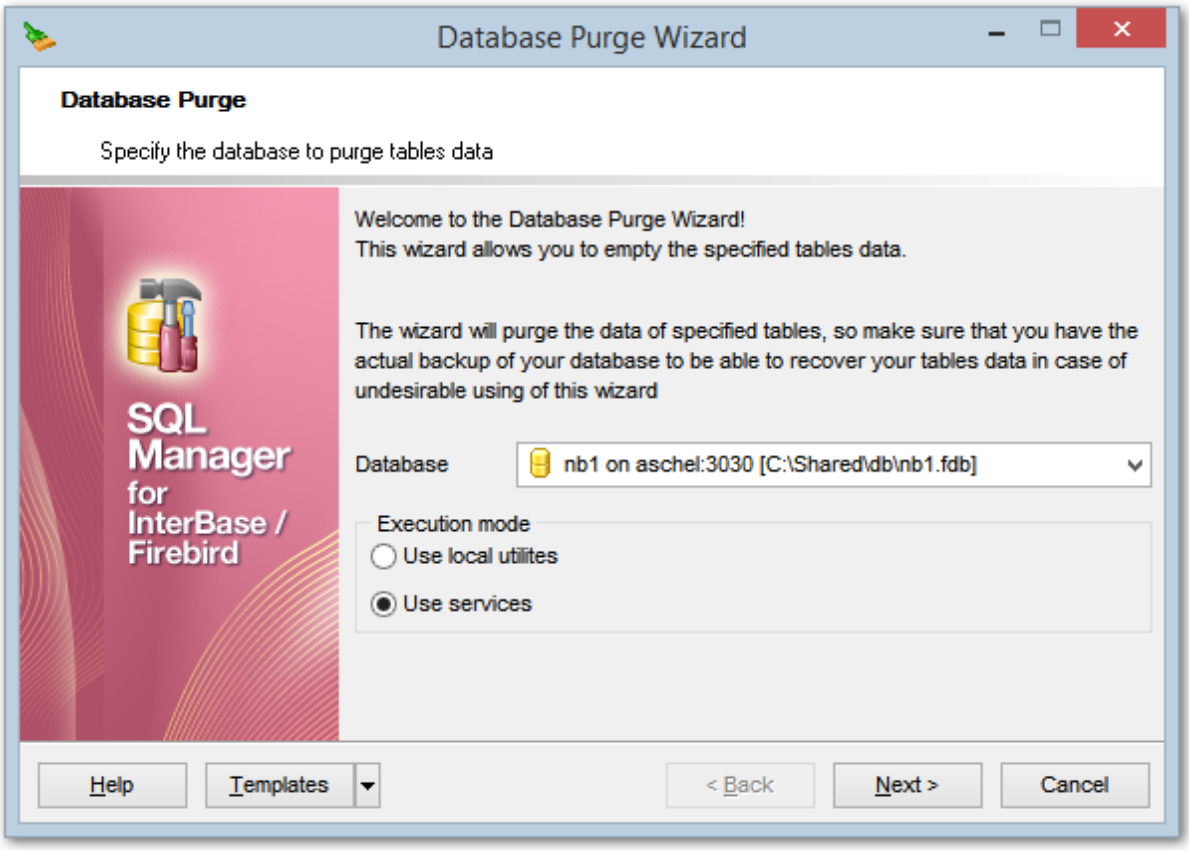
- Selecting database and execution mode 714
- Selecting options for data deleting 715
- Selecting tables to purge data 716
- Running purging operation 717

Availability:
Full version **Yes**
Lite version **No**
Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

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10.7.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name and set **execution mode**.



Database
Use the drop-down list to select the database for purging data.

Execution mode
Use local utilities
Select this option to purge tables using local utilities.
Note: To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

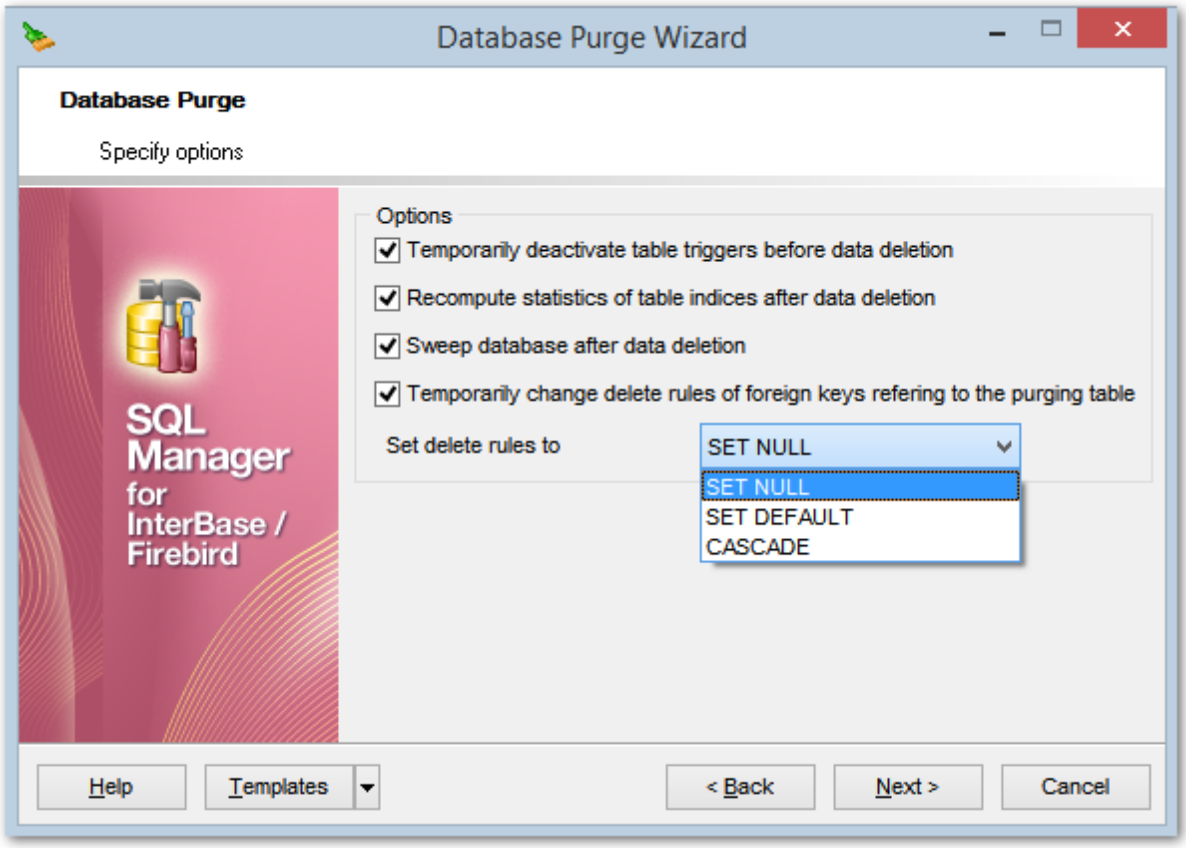
Use services
Select this option to use the server services for database purging.

Click **Next >** to proceed to the Selecting options for data deleting 715 step.

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10.7.2 Selecting options for data deleting

This step of the wizard allows you to select the options and rules for deleting data.



Temporarily deactivate table triggers before data deletion
Use this option to disable triggers before deleting data. After the data has been deleted, the trigger will be automatically activated.

Recompute statistics of table indices after data deletion
Use this option to recompute statistics after deleting data.

Sweep database after data deletion
Use this option to sweep the database after deleting data.

Temporarily change delete rules of foreign keys referring to the purging table
Use this option to change delete rules for foreign keys linked to the selected tables. You can choose the new rule: *SET NULL*, *SET DEFAULT* or *CASCADE*.

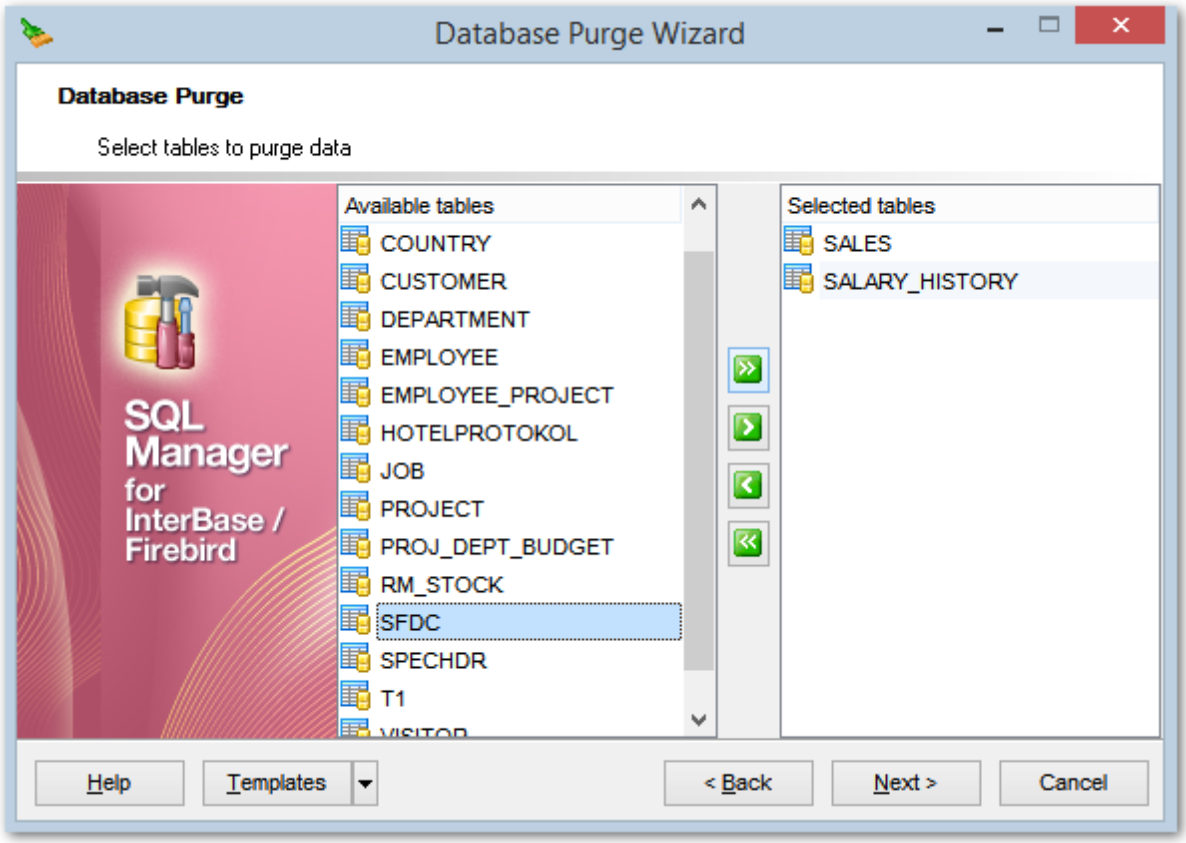
Click **< Back** to go back to Selecting database and execution mode 714 step or **Next >** to proceed to the Selecting tables to purge data 716 step.

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10.7.3 Selecting tables to purge data

This step of the wizard allows you to **select tables** for purging data.

To select a table, you need to move it from the **Available tables** list to the **Selected tables** list using the buttons or drag-and-drop operations.



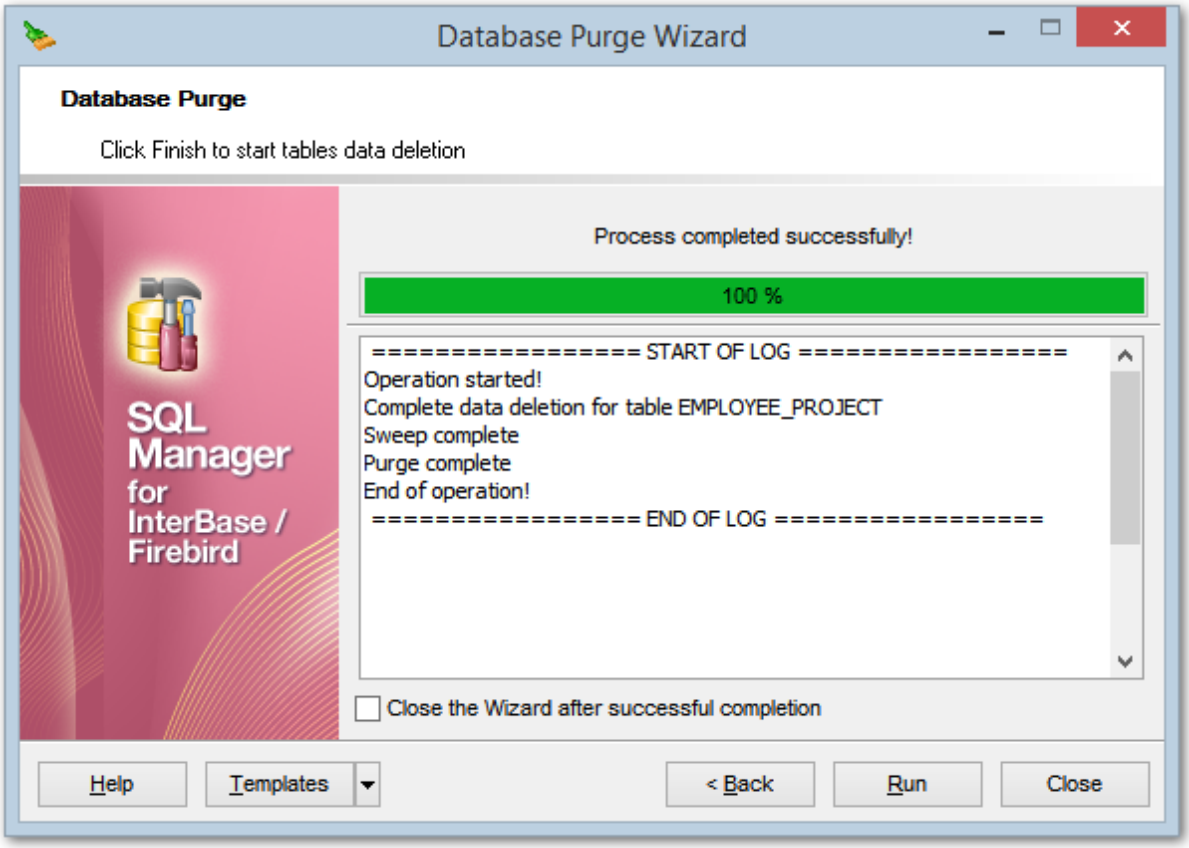
Click **< Back** to go back to Selecting options for data deleting 715 step or **Next >** to proceed to the Running purging operation 717 step.

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10.7.4 Running purging operation

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).



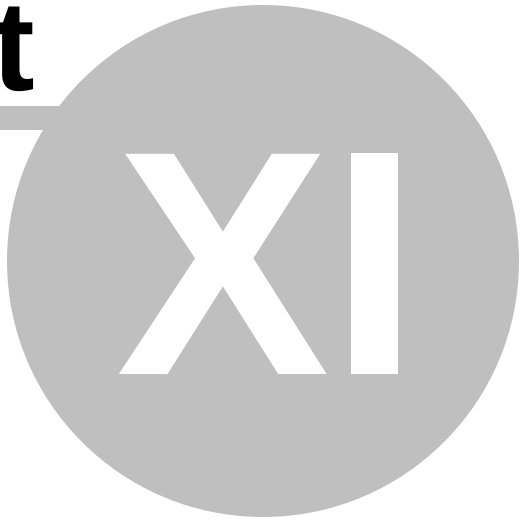
Close the wizard after successful completion
If this option is selected, the wizard is closed automatically when the backup process is completed.

If necessary, you can save a template[918] for future use.

Click the **Finish** button to run the process or click **< Back** to go back to Selecting tables to purge data[716] step.

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Part



11 Security management

Security for InterBase/Firebird relies on a central security database[92] for each server host. This database contains a record for each legitimate user[719] who has permission to connect[88] to databases and services on that host. Each record includes the user login name and the associated encrypted password. The entries in this security database apply to all databases on the server host.

InterBase/Firebird manages database access permissions using the concept of **users**:
- *SYSDBA* (a special user account that can bypass normal SQL security and perform tasks such as database backups[660] and shutdowns[700]; this is the only authorized user initially; the default password for the user is *masterkey*);
- other users (other users on a per-server basis created by *SYSDBA*)

Embedded Database User Authentication is supported by InterBase 7.5 and later versions of InterBase.
Embedded User Authentication stores user name / password accounts in the database. This overrides the server-wide security database for user authentication. Only the database owner is allowed to administer embedded user authentication against a database. A normal user may alter the password for their user account.
Note: There are issues related to database backup[660]/restore[671] performed under embedded users. For details refer to the official InterBase documentation.

InterBase/Firebird implements features for assigning SQL privileges to groups of users. **SQL roles** are implemented on a per-database basis, and the implementation includes the following:
- a role is declared[720];
- privileges on database objects[163] are assigned[721] to the role with the help of Grant Manager[734];
- role members[733] are defined;
- the role name is specified on the Connection[116] page of the Database Registration Info[115] dialog.

A user[719] can belong to only one role per connection to the database and cannot change role while connected. To change role, the user must disconnect[88] and reconnect[88], specifying a different role name.

SQL Manager for InterBase/Firebird provides tools for efficient management of InterBase/Firebird users and SQL roles:

User Manager[722]
A tool for managing InterBase/Firebird server users.

User Editor[725]
A tool for editing InterBase/Firebird server users.

Role Manager[730]
A tool for managing InterBase/Firebird database roles.

Members of Role[733]
A tool for defining InterBase/Firebird database role members.

Grant Manager[734]

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Allows you to manage grants on your InterBase/Firebird database objects.

Adding Users

- select the **Tools | User Manager** main menu 890 item or use the corresponding toolbar 892 button to open User Manager 722;
- select the **Add User...** item from the **context menu** or within the Navigation bar 723;
- define user properties and membership using User Editor 725.

Editing Users

- select the **Tools | User Manager** main menu 890 item or use the corresponding toolbar 892 button to open User Manager 722;
- right-click and select the **Edit User...** item from the **context menu** or within the Navigation bar 723;
- edit the user properties and membership using User Editor 725.

Deleting Users

- select the **Tools | User Manager** main menu 890 item or use the corresponding toolbar 892 button to open User Manager 722;
- right-click the user to delete and select the **Delete User** item from the **context menu** or within the Navigation bar 723;
- confirm deleting in the dialog window.

Adding Roles

- select the **Database | New Object...** main menu 890 item;
- select **Role** in the Create New Object 165 dialog;
- define role name and confirm new role declaration in the dialog window

or

- select the **Tools | Role Manager** main menu 890 item to open Role Manager 730;
- right-click and select the **Add Role...** item from the **context menu** or within the Navigation bar 731;
- define role name and confirm new role declaration in the dialog window.

Hint: To create a new role, you can also right-click the **Roles** node or any object within this node in the DB Explorer 63 tree and select the **New Role...** item from the context menu 56.

To create a new role with the same properties as one of existing roles has:

- select the **Database | Duplicate Object...** main menu 890 item;
- follow the instructions of Duplicate Object Wizard 167.

Alternatively, you can right-click a role in the DB Explorer 63 tree and select the **Duplicate Role 'role_name'...** context menu item.

Duplicate Object Wizard 167 allows you to select the database to create a new role in, and to view the result SQL statement for creating the role.

Editing Role Members

- select the **Tools | Role Manager** main menu 890 item to open Role Manager 730;
- select the **Edit role members** item within the Navigation bar 731, or double-click a role in the list;
- edit the role members using the Members of Role 733 dialog.

Deleting Roles

- select the **Tools | Role Manager** main menu 890 item to open Role Manager 730;
- right-click the role to delete and select the **Delete Role** item from the **context menu**

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or within the Navigation bar[731];
- confirm deleting in the dialog window.

Managing Privileges

- select the **Tools | Grant Manager** main menu[890] item, or use the corresponding  toolbar[892] button to open Grant Manager[734];
- select the object type using the drop-down list on the toolbar[735];
- select a *user*, a *role*, a *view*, a *trigger*, or a *procedure* from the **Privileges for** list available within the Navigation bar[735];
- edit the grantee's privileges using Grant Manager[734]

or

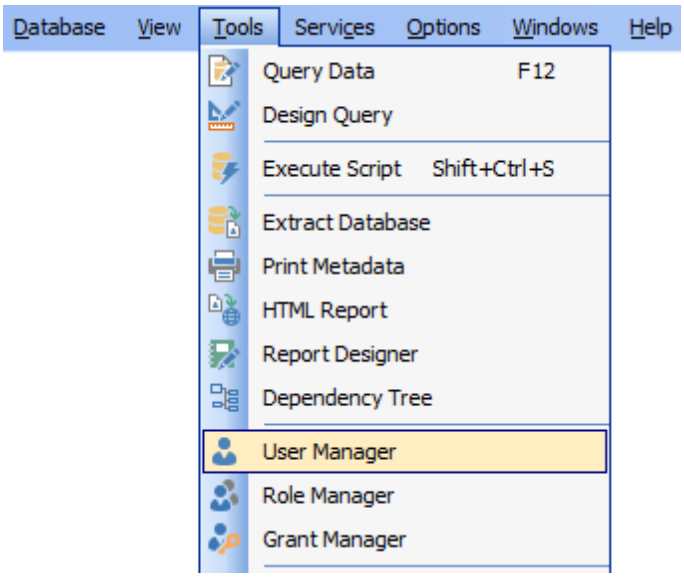
- right-click an object in DB Explorer[63] and select the **Tasks | Grants for <object_name>** item from the context menu[56];
- edit privileges using Grant Manager[734].

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11.1 User Manager

User Manager allows you to browse the list of existing InterBase/Firebird users, and manage them efficiently.

To launch the tool, select the **Tools | User Manager** main menu 890 item, or right-click the host alias in the DB Explorer 63 tree and select the **Tasks | User Manager** item from the context menu 52.



Note: You should register the server host with Register Host Wizard 90 before using this tool.

See also:

Grant Manager 734

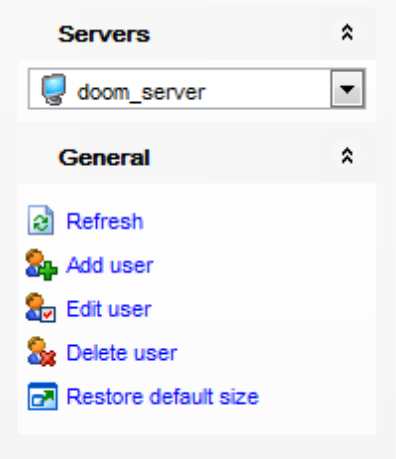
Role Manager 730

Embedded User Editor 727

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11.1.1 Using Navigation bar and Toolbar

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



The **Navigation bar** of the **User Manager** window allows you to:

Servers
select a server host for managing users
select a database on the host for managing embedded users (if Embedded User Authentication[719] is enabled for the server)

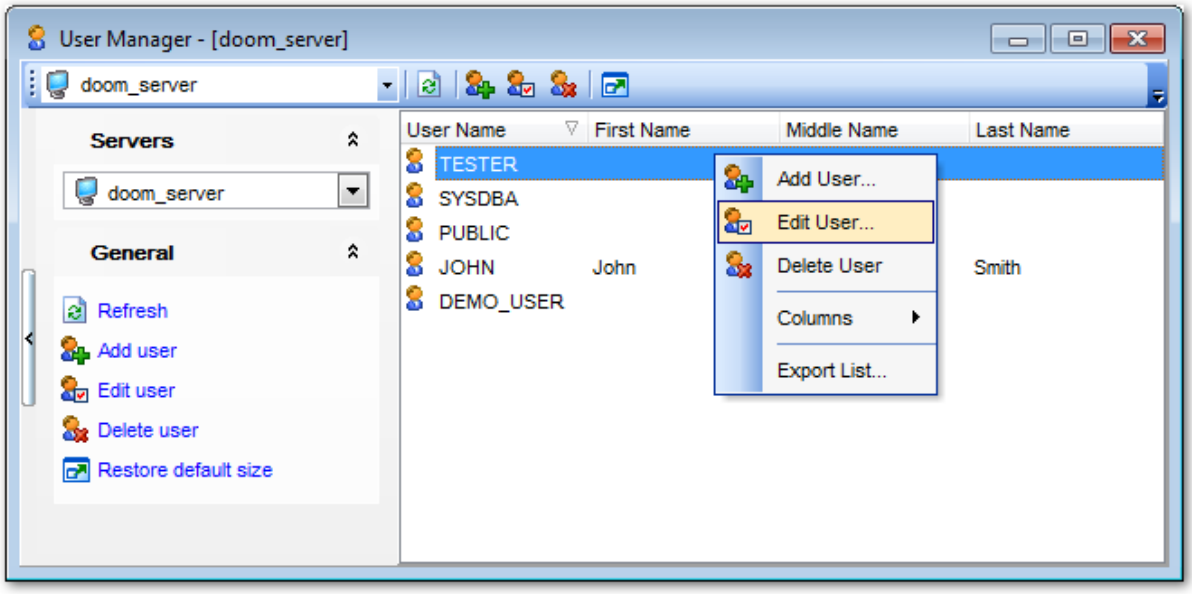
General
refresh the currently displayed list of users
add[720] a new *user*
edit[720] the selected *user*
delete[720] the selected *user*
restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **User Manager** window. To enable the toolbar[892], open the Environment Options[744] dialog, proceed to the Windows[751] section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar[890]) in the **Bar style for child forms** group.

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11.1.2 Managing users

If you are not connected to the database server yet, select the server host from the **Servers** drop-down list on the Navigation bar[723] and you will be prompted for connection confirmation.



The list displays the existing users as a grid with the following columns: *User Name*, *First Name*, *Middle Name*, *Last Name*.

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 *add* a new user and specify its properties using User Editor[725], *edit*, *delete* the selected user, or show/hide columns of the list. Using the context menu you can also export[445] the list of users to any of supported output file formats[919].

Users management tools are also available through the Navigation bar[723] and toolbar[723] of **User Manager**.

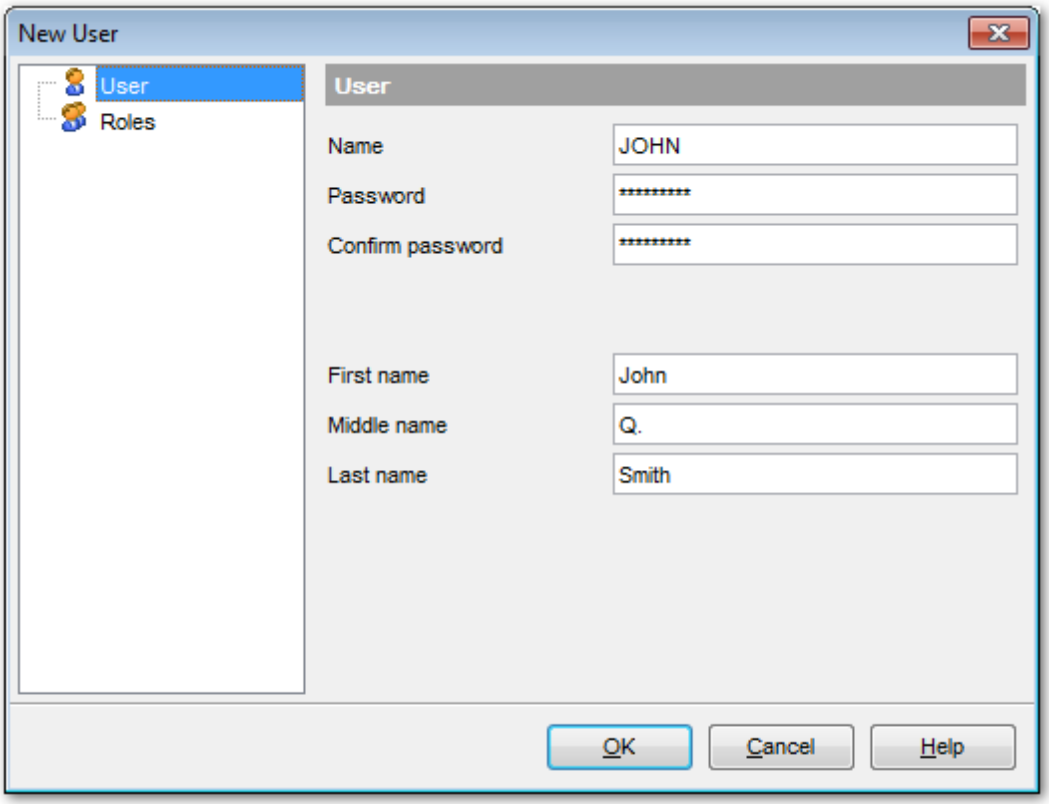
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11.1.3 User Editor

The **User Editor** dialog window allows you to view/edit users.

To open the dialog, click **Add User** / **Edit User** on the Navigation bar[723] or toolbar[723] of User Manager[722], or right-click and select the **Add User...** / **Edit User...** item from the **context menu**. Alternatively, you can just double-click the user for editing.

User
This page allows you to specify user name, password and personal info for the user being created/edited.



Name
Enter a name for the new user, or view the name of the user being edited.
Note: User name is significant to 31 characters and is not case sensitive.

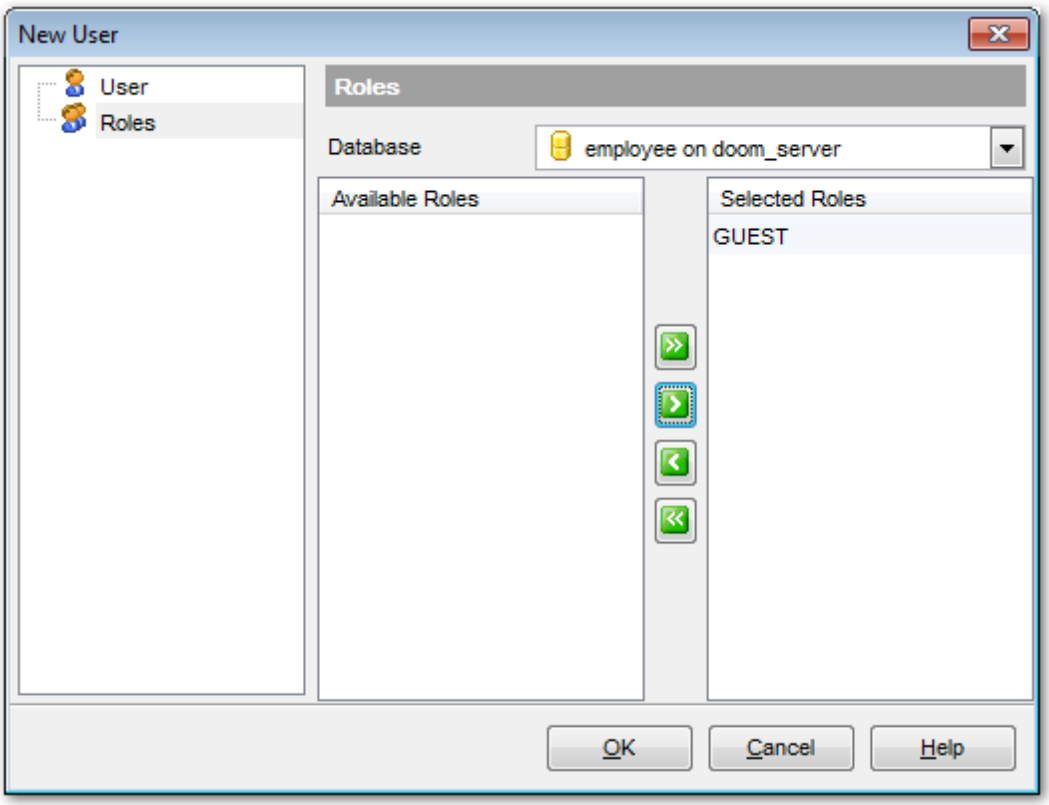
Password / **Confirm password**
Set a password by which the user will be identified in the server.
Note: Password is significant to 8 characters and is case sensitive.

First name / **Middle name** / **Last name**
Specify user's real name (as opposed to login name): first name, middle name, last name.

Roles
This page allows you to select the role[719] the user being created/edited will have

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privileges of.



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 objects from one list to another.

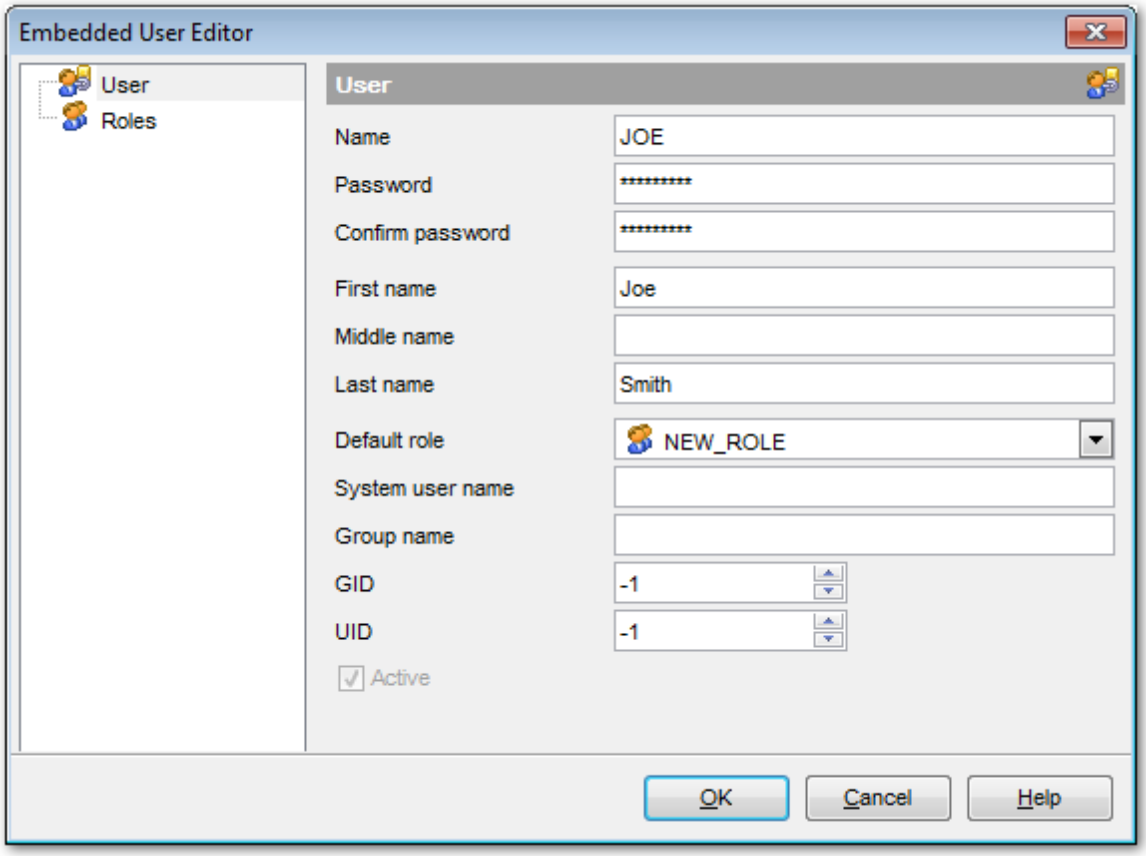
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11.2 Embedded User Editor

The **Embedded User Editor** dialog window allows you to view/edit embedded users.

To open an embedded user in **Embedded User Editor**, double-click it in the DB Explorer tree.

User
This page allows you to specify embedded user name, password, personal info, default role and specific settings for the embedded user being created/edited.



Name
Enter a name for the new embedded user, or view the name of the embedded user being edited.
Note: Embedded user name is significant to 31 characters and is not case sensitive.

Password / **Confirm password**
Set a password by which the embedded user will be identified in the database.
Note: Password is significant to 8 characters and is case sensitive.

First name / **Middle name** / **Last name**
Specify embedded user's real name (as opposed to login name): first name, middle name, last name.

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Default role
Use the drop-down list to select the role[719] the embedded user being created/edited will have privileges of (by default).

System user name
Enter the name of the system user.

Group name
Enter the name of the group the embedded user will belong to.

GID
Optional GroupID. Currently not used by InterBase.

UID
Optional UserID. Currently not used by InterBase.

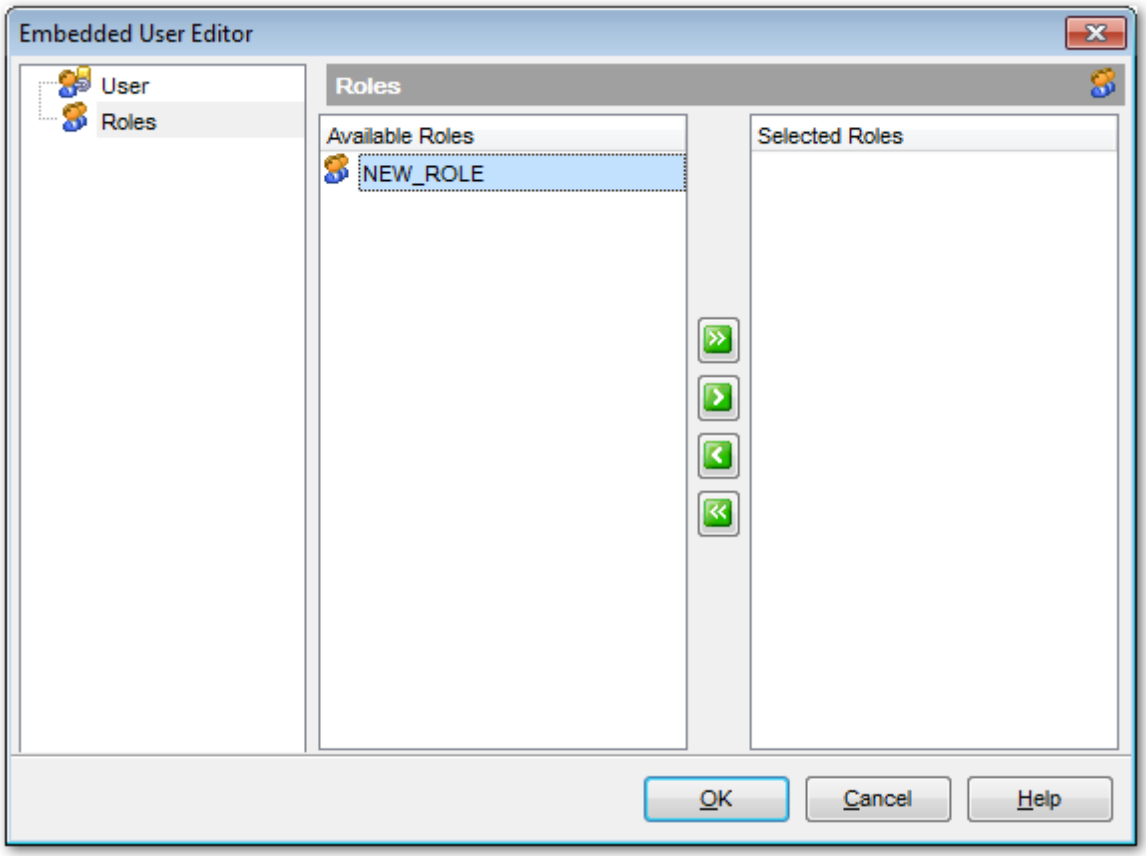
☑ **Active**
This option activates/deactivates the embedded user.

☑ **Database Owner**
If this option is selected, the embedded user is the database owner (*rdb$user_privilege = 1*).

Roles

This page allows you to select the role[719] the embedded user being created/edited will have privileges of.

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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 objects from one list to another.

See also:

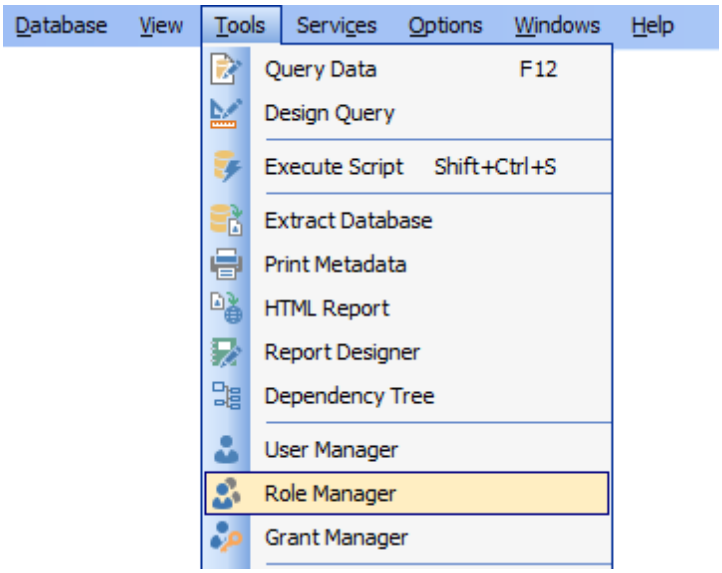
User Manager 722
Role Manager 730
Grant Manager 734

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11.3 Role Manager

Role Manager allows you to browse the list of existing SQL roles, and manage them efficiently.

To launch the tool, select the **Tools | Role Manager** main menu 890 item, or right-click the database alias in the DB Explorer 63 tree and select the **Tasks | Role Manager** item from the context menu 53.



See also:

User Manager 722

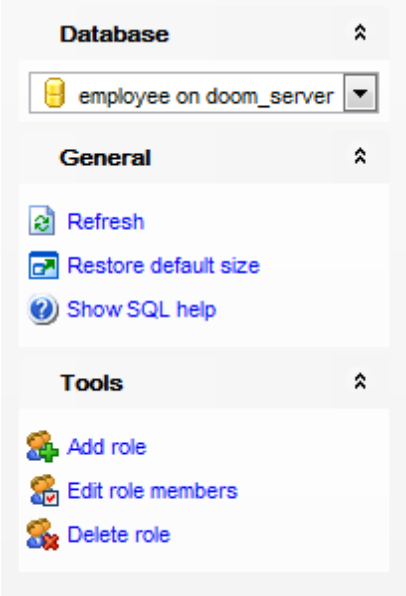
Embedded User Editor 727

Grant Manager 734

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11.3.1 Using Navigation bar and Toolbar

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



The **Navigation bar** of the **Role Manager** window allows you to:

Database
select a database for managing roles

General
refresh the currently displayed list of roles
show SQL help
restore the default size and position of the window

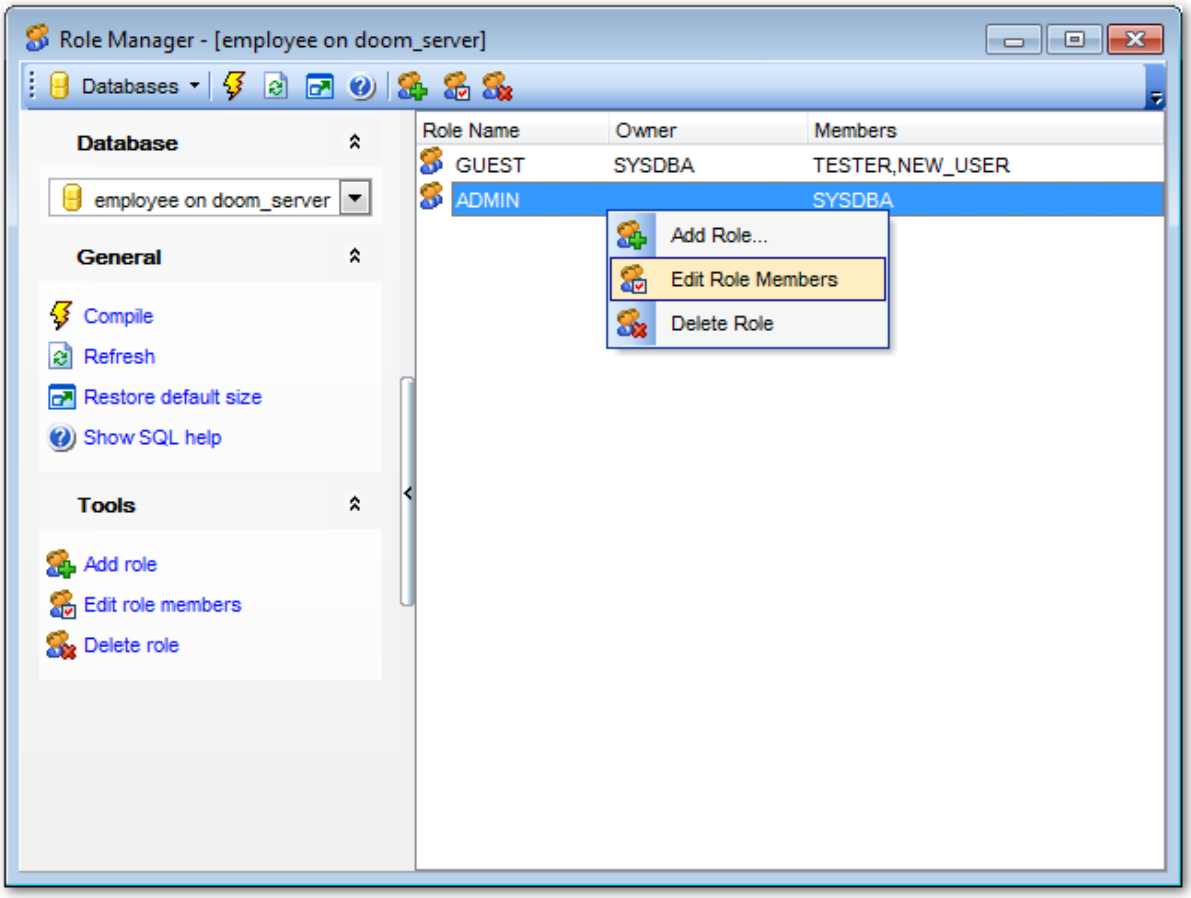
Tools
add 720 a new *role*
edit 720 the selected *role members*
delete 720 the selected *role*

Items of the **Navigation bar** are also available on the **ToolBar** of the **Role Manager** window. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

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11.3.2 Managing roles

To browse the list of roles, select the database from the **Database** drop-down list on the Navigation bar[731].



The list displays the existing roles as a grid with the following columns: *Role Name*, *Owner*, *Members*.

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 *add* a new role, *delete* the selected role, or *refresh* the list.

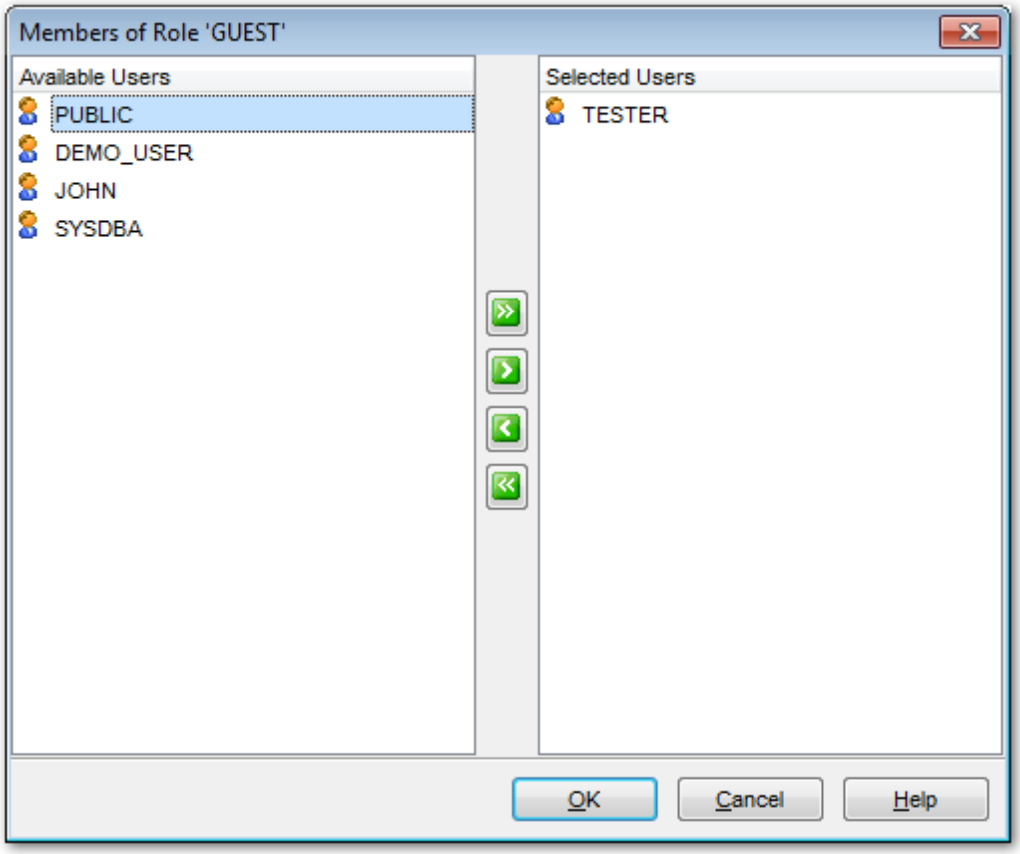
Roles management tools are also available through the Navigation bar[731] and toolbar[731] of **Role Manager**.

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11.3.3 Defining role members

The **Members of Role** dialog allows you to select the users to which the role will be assigned, i.e. the existing users to be added as members of the role being edited.

To open the dialog, click **Edit role members** within the Navigation bar[731] or toolbar[731] of Role Manager[730], or double-click a role in the list.



To select 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.

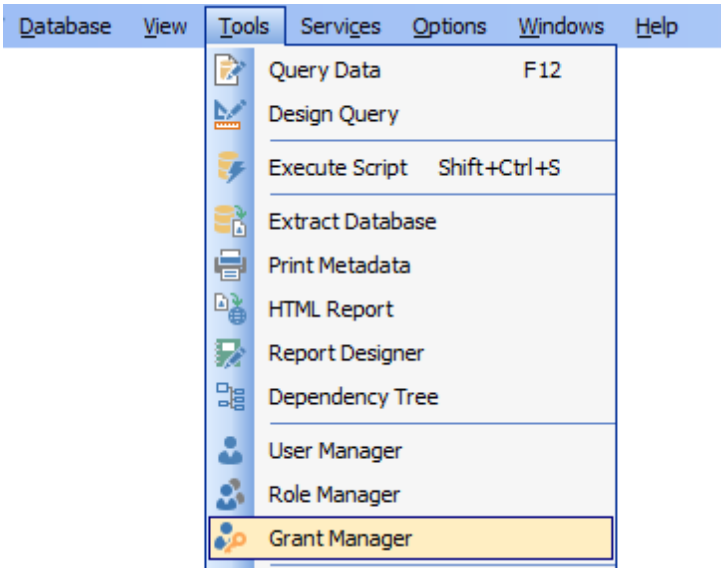
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11.4 Grant Manager

Grant Manager allows you to set the user access grants on certain database objects: tables[179], views[243], procedures[254], etc. Granting privileges on the selected database objects allows a user to perform the defined operation over the objects.

Connecting to a database does not automatically include privileges to modify or even view data stored within that database. Privileges must be granted explicitly; users[719] cannot access any database objects until they have been granted privileges.

To open **Grant Manager**, select the **Tools | Grant Manager** main menu item.



- Using Navigation bar, Toolbar and context menu[735]
- Managing database-specific privileges[737]
- Managing DDL grants[739]
- Managing column permissions[740]
- Filtering objects in list[741]

See also:

User Manager[722]

Embedded User Editor[727]

Role Manager[730]

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11.4.1 Using Navigation bar, Toolbar and context menu

The **Navigation bar**, **Toolbar** and **context menu** provide quick access to tools implemented in **Grant Manager**.

Database
select a **database** for grants management

General
compile 906 changes in privileges
refresh the content of the window
restore the default size and position of the window

Tools
Grant - grant a permission on an object to the selected grantee (user/role/view/trigger/procedure);
Revoke - revoke a previously granted permission;
Grant with GRANT Option -grant a permission (with GRANT Option) on an object to the selected grantee (user/role/view/trigger/procedure);
Grant All -grant all permissions on an object to the selected grantee (user/role/view/trigger/procedure);
Revoke All -revoke all previously granted permissions on an object;
Grant All with GRANT Option - grant all permissions (with GRANT Option) on an object to the selected grantee (user/role/view/trigger/procedure);
Grant on All - grant a permission (with GRANT Option) on all objects to the selected grantee (user/role/view/trigger/procedure);
Revoke on All - revoke a previously granted permission on all objects;
Grant on All with GRANT Option
Grant All on All - grant all permissions (with GRANT Option) on all objects to the selected grantee (user/role/view/trigger/procedure)
Revoke All on All -revoke all previously granted permissions on all objects;

Privileges for
select an existing database user 719/role 719/view 243/trigger 282/procedure 254 to grant privileges to

Legend
view the legend

NOTE: Items of the **Navigation bar** are also available on the **ToolBar** of **Grant Manager**. To enable the toolbar 892, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child forms** group.

See also:
Managing database-specific privileges 737
Managing DDL grants 739
Managing column permissions 740
Filtering objects in list 741

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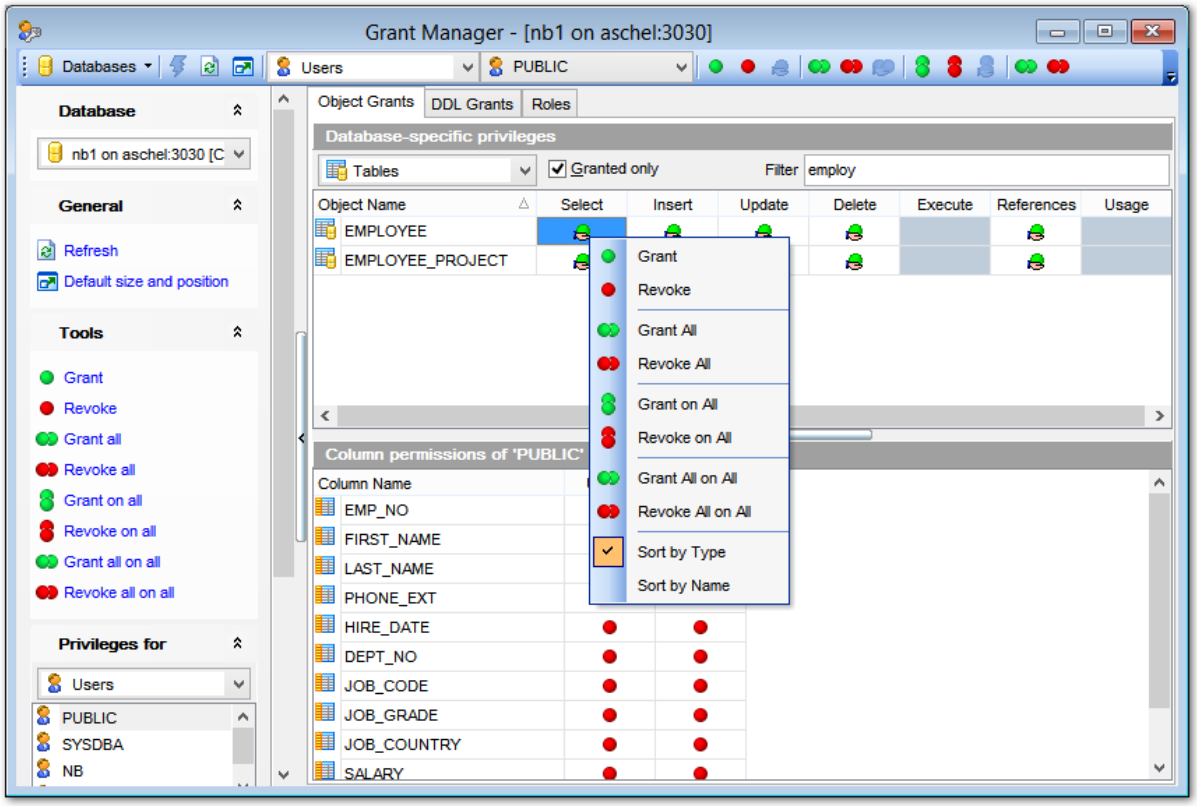
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11.4.2 Managing database-specific privileges

This window allows you to define privileges on database objects and grant privileges to a user719, role719, view243, trigger282, or procedure254.

To edit the privileges of a user719/role719/view243/trigger282/procedure254 on an object of a database, select the database using the **Database** pane of the Navigation bar735, then select a *user*, a *role*, a *view*, a *trigger*, or a *procedure* from the **Privileges for** list available within the Navigation bar735. Then select the type of objects to be displayed in the main working window using the drop-down list 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:
SEL, *INS*, *UPD*, *DEL*, *References* (for tables179, views243);
Execute (for procedures254);
Usage (for exceptions290 and generators294).



The list of objects can be configured in several ways: you can specify that only granted objects741 are displayed in the grid, or define an object name to filter741 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. The context menu735 of a cell contains possible permissions that can be granted:
- *Grant*

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- *Revoke* (removes a previously granted permission)
- *Grant with GRANT Option*
- *Grant All*
- *Revoke All*
- *Grant All with GRANT Option*
- *Grant on All*
- *Revoke on All*
- *Grant on All with GRANT Option*
- *Grant All on All*
- *Revoke All on All*

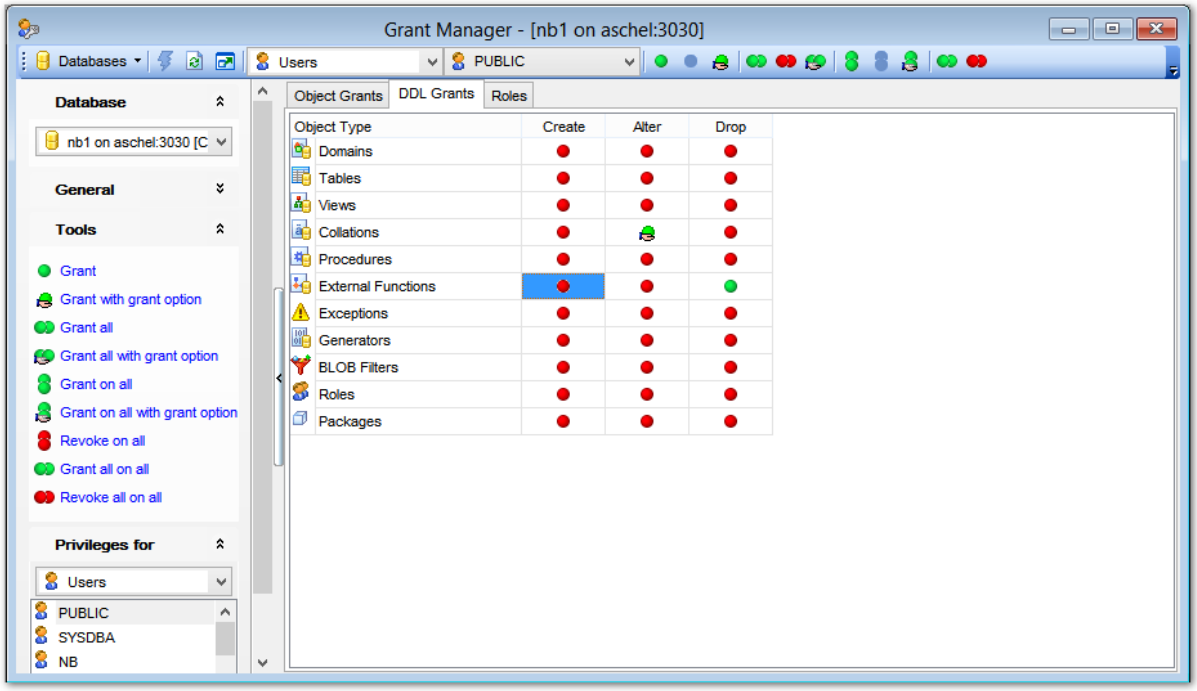
See also:

Using Navigation bar and context menu 735
Managing column permissions 740
Filtering objects in list 741

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11.4.3 Managing DDL grants

This tab allows you to define DDL grants (Create, Alter, Drop) for different object types to a user[719], role[719], view[243], trigger[282], or procedure[254].



Right-click a cell to grant a specific permission on a certain object type. The context menu of a cell contains possible permissions that can be granted:

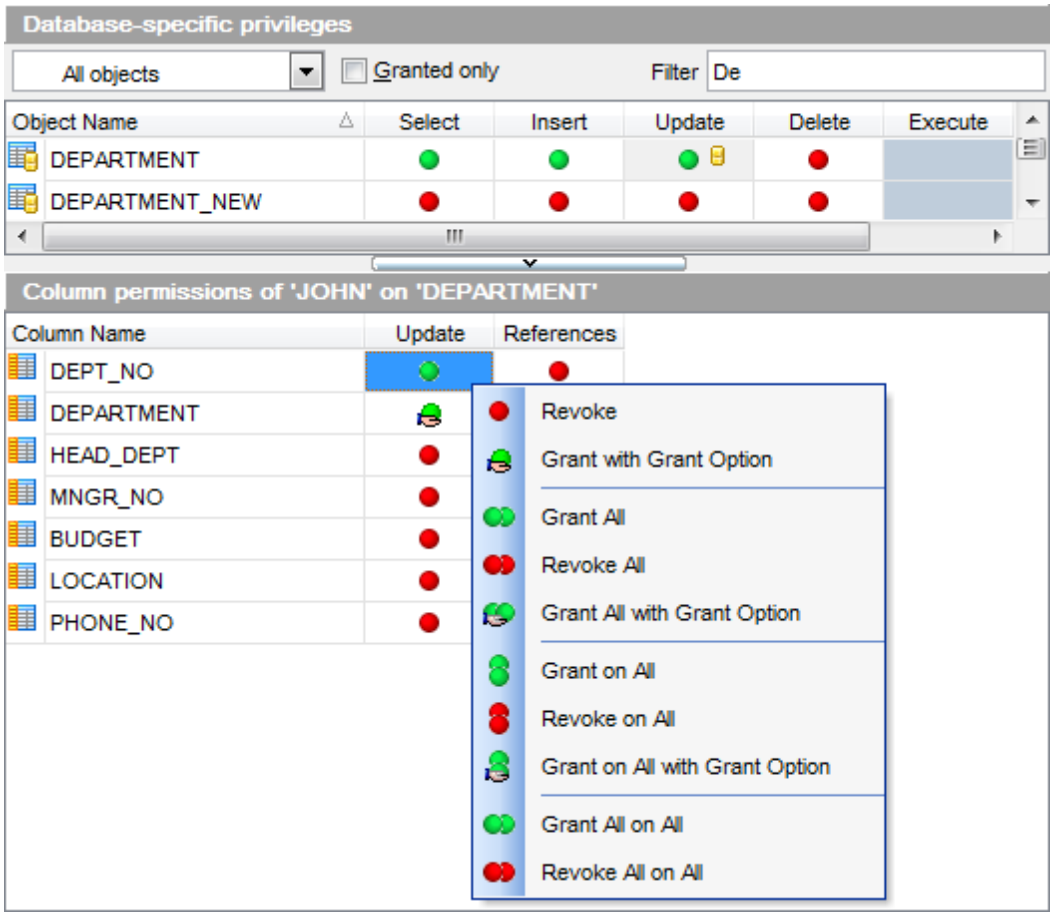
- *Grant*
- *Revoke* (removes a previously granted permission)
- *Grant with GRANT Option*
- *Grant All*
- *Revoke All*
- *Grant All with GRANT Option*
- *Grant on All*
- *Revoke on All*
- *Grant on All with GRANT Option*
- *Grant All on All*
- *Revoke All on All*

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11.4.4 Managing column permissions

The **Column permissions of <grantee_name> on <object_name>** area displays the grid with table/view columns and the privileges that can be granted to the selected *user*, *role*, *view*, *trigger*, or *procedure*.

Use items of the context menu[735] to grant/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[735]

Managing database-specific privileges[737]

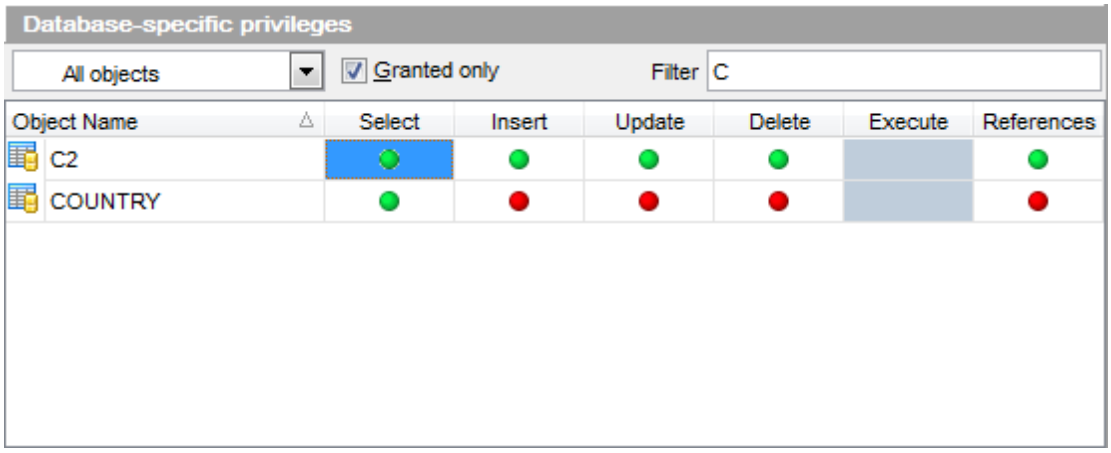
Filtering objects in list[741]

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11.4.5 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;
- 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 735
Managing database-specific privileges 737
Managing column permissions 740

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Part



12 Options

SQL Manager for InterBase/Firebird 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 744
- Editor Options 804
- Save Settings 823
- Localization 828
- Keyboard Templates 833
- Object Templates 835

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** 823 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:

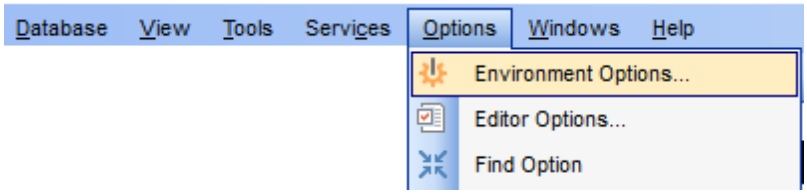
Getting Started 37
Database Explorer 63
Database Management 87
Database Objects Management 163
Query Management Tools 329
Data Management 369
Import/Export Tools 444
Database Tools 534
Services 659
Security management 719
External Tools 840
How To... 846

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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 890 item, or use the **Environment Options** button on the main toolbar 892.



Preferences 746
Full mode activation 748
Confirmations 749
Appearance 751
DB Explorer 753
Search 755
SQL Assistant 756
Tools 757
Query Data 758
SQL Monitor 761
Execute Script 763
Design Query 765
Style & Color 767
Database Designer 771
Extract Database 774
Print Metadata 775
Database Monitor 776
Dependencies 777
Data Export 779
Object Editors 780
Table Editor 782
Visual Mode Editors 783
Fonts 785
Grid 787
Data Options 790
Print Data 793
Color & Formats 794
Advanced 796
Column Options 798
Localization 800
Global Shortcuts 802
Find Option 803

See also:

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Editor Options 804

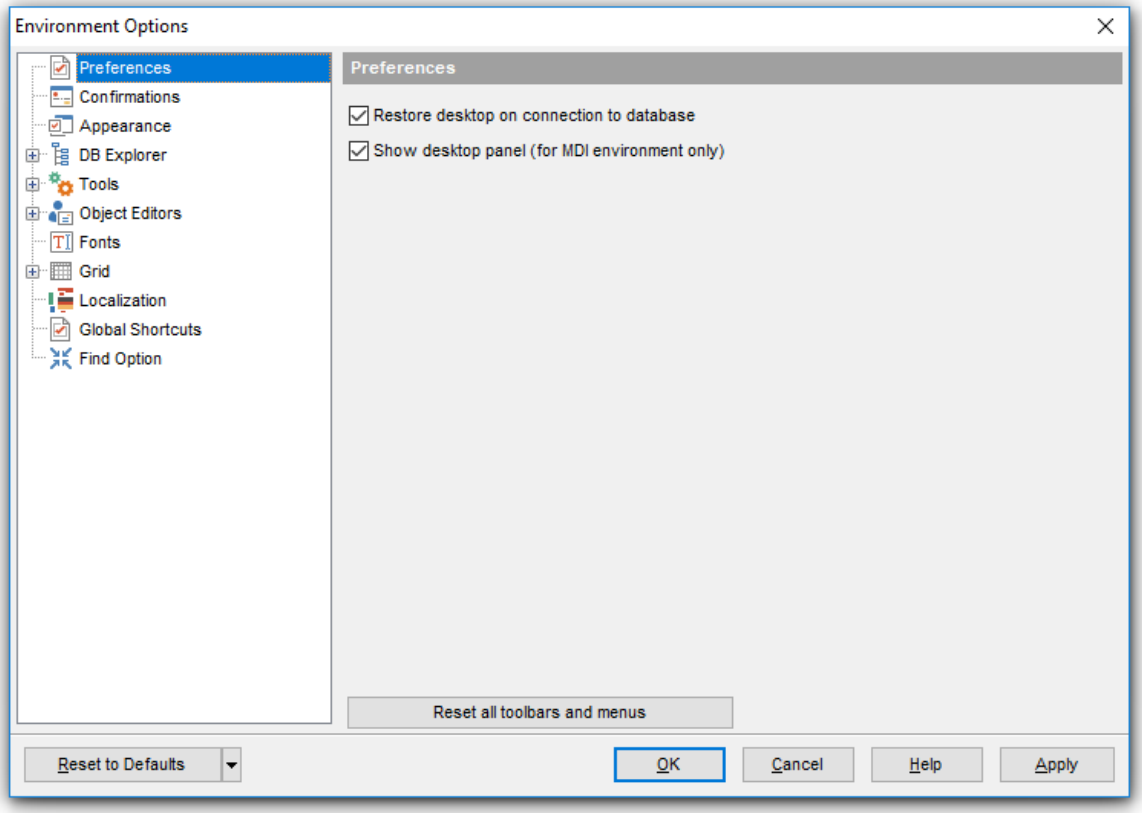
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12.1.1 Preferences

☑ **Restore desktop on connect**
This option determines whether the previously opened windows and their positions should be restored upon connection to the database.

☑ **Show desktop panel** (for MDI Environment style only)
Displays Desktop Panel[44] when no child windows are open.

☑ **Show Full Version features**
This option is available in the Lite version of **SQL Manager**. When selected, a 30-day period of fully-functional usage is activated[748].



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 with items allowing you to discard all changes and reset options of the *current category* or of *all categories* to their defaults.

See also:
Confirmations[749]
Tools[757]

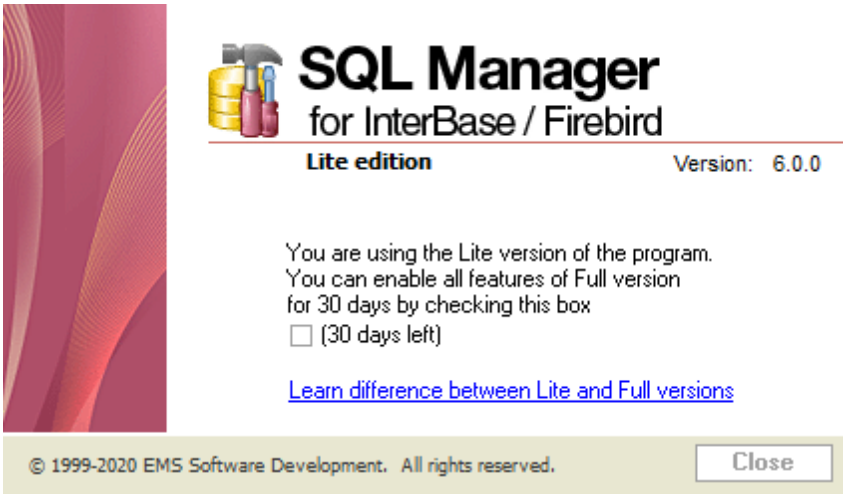
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Fonts 785
Grid 787
Localization 800
Find Option 803

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12.1.1.1 Full mode activation

Note that when using **the FREE Lite version of SQL Manager for InterBase/Firebird** (which contains functional limitations) you can activate a 30-day period of fully-functional usage. During this period you will get the splash screen displaying the number of days left every time you start the application. After the period expires, you will be able to continue using the Lite version.



To activate *the 30-day Full version mode*, please enable the **Show Full Version features** option available on the Preferences 746 page of the **Environment Options** dialog (note that this option is only available in the Lite version of **SQL Manager**).

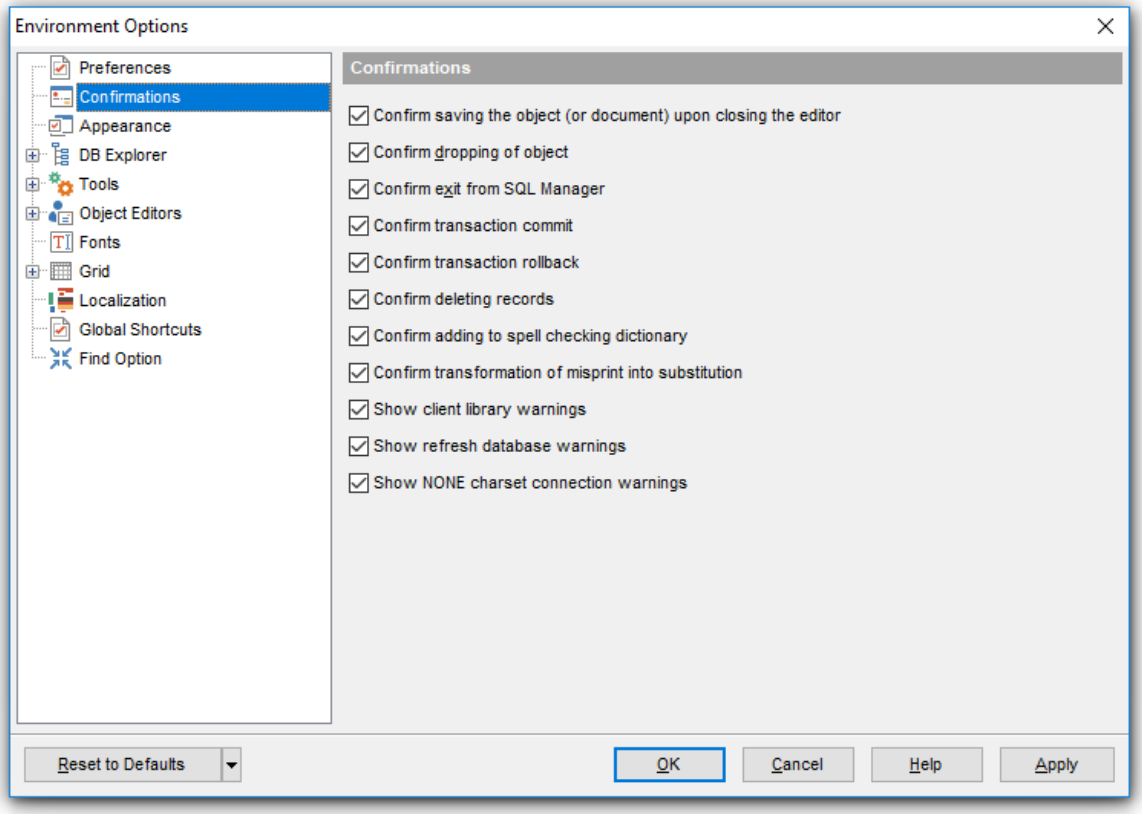
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12.1.2 Confirmations

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[163] 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 transaction commit
If this option is checked, the program requires confirmation on attempt to commit a transaction.

Confirm transaction rollback
If this option is checked, the program requires confirmation on attempt to rollback a transaction.

Confirm deleting records
This option enables/disables a confirmation dialog for deleting records.

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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 820).

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 820).

Show client library warnings
If this option is selected, the application displays warnings returned by the client library used for connection.

Show refresh database warnings
If this option is selected, the application displays warnings received upon refreshing a database.

Show NONE charset connection warnings
If this option is selected, the application displays warnings upon connection with *NONE* charset specified.

Confirm successful compilation
This option enables/disables the Compile 906 window.

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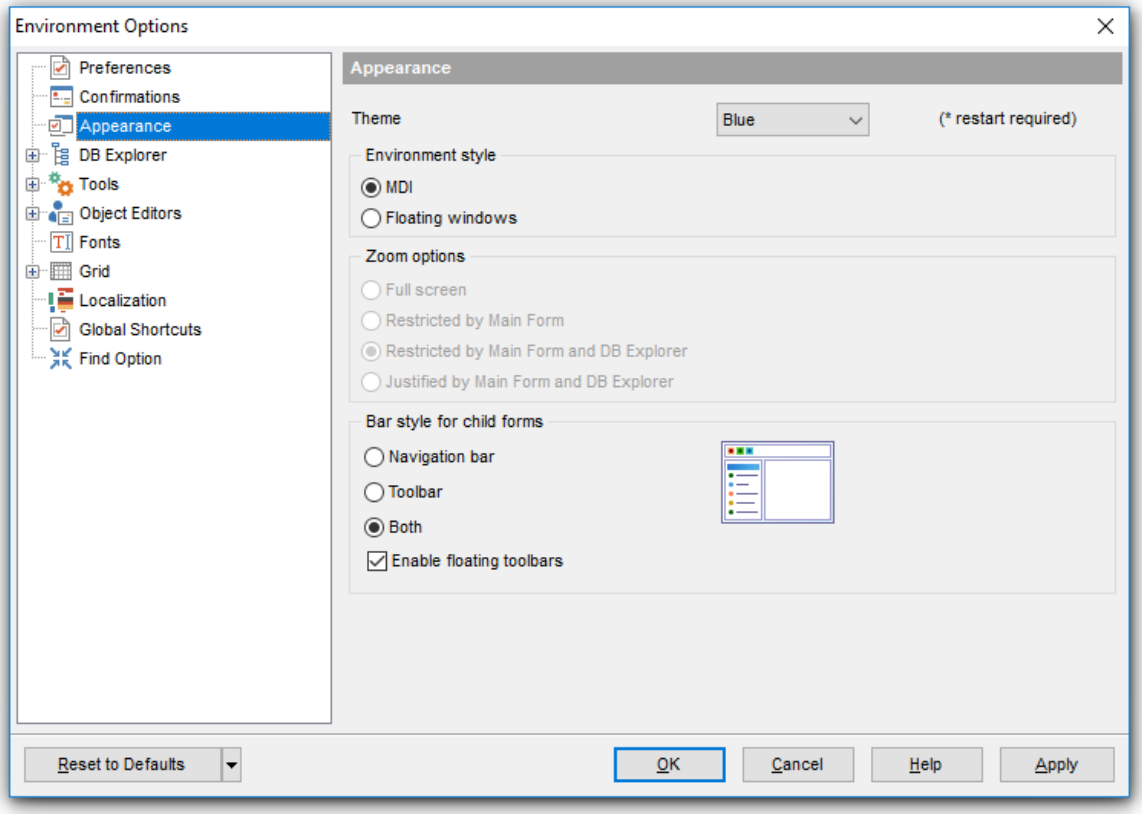
12.1.3 Appearance

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 185, Query Data 331, 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 DB Explorer

General options

Show hosts in DB Explorer
Shows/hides hosts in the DB Explorer 63 tree.

Show table subobjects
Shows/hides table 179 subobjects (fields, indexes, etc.) in the DB Explorer 63 tree.

Show procedure subobjects
Toggles displaying stored procedure 254 subobjects (input/output parameters) in the DB Explorer 63 tree.

Show UDF subobjects
Toggles displaying UDF 273 subobjects in the DB Explorer 63 tree.

Ping hosts
Checking the host for availability.

Sort by aliases
Use this option to apply sorting registered databases by their aliases in the DB Explorer 63 tree.

Rename objects by editing in place
Allows you to edit object names in DB Explorer 63 by selecting any object and clicking its alias one more time.

Auto expand navigation pane
If this option is checked, the list of navigation tabs in DB Explorer is expanded automatically on program launch.

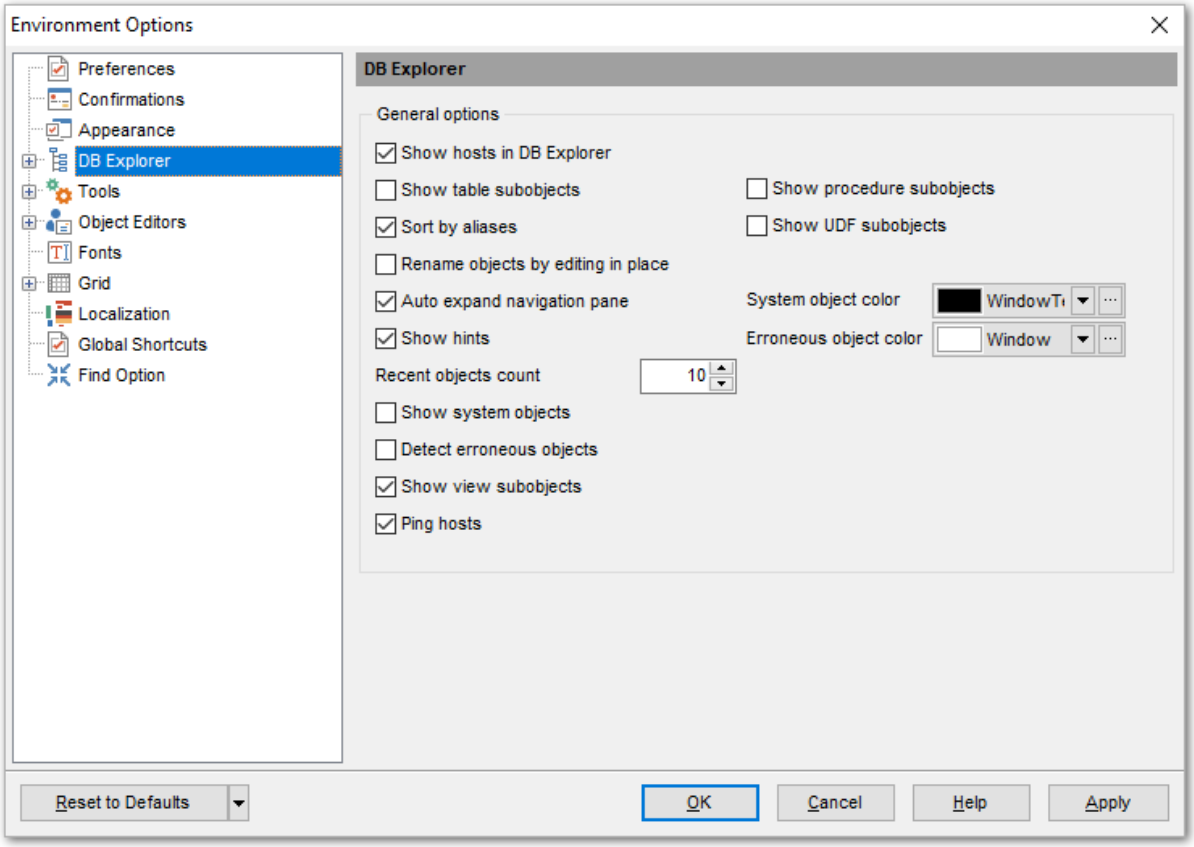
Show hints
The option enables/disables hints for objects in the DB Explorer 63 tree.

Select colors for ***system objects / erroneous objects*** from the **System object color** / **Erroneous object color** drop-down lists. If you select the **Default** item, the default color will be applied.

Note: When setting colors, select an item from the drop-down list or click the ellipsis button to select a color using the **Color** dialog where you can specify the required color from the palette.

Recent objects count
Defines the number of objects displayed within the Recent 75 menu of the DB Explorer 63.

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Show system objects
Shows/hides system objects (having names starting with *RDB$*) in the DB Explorer tree.

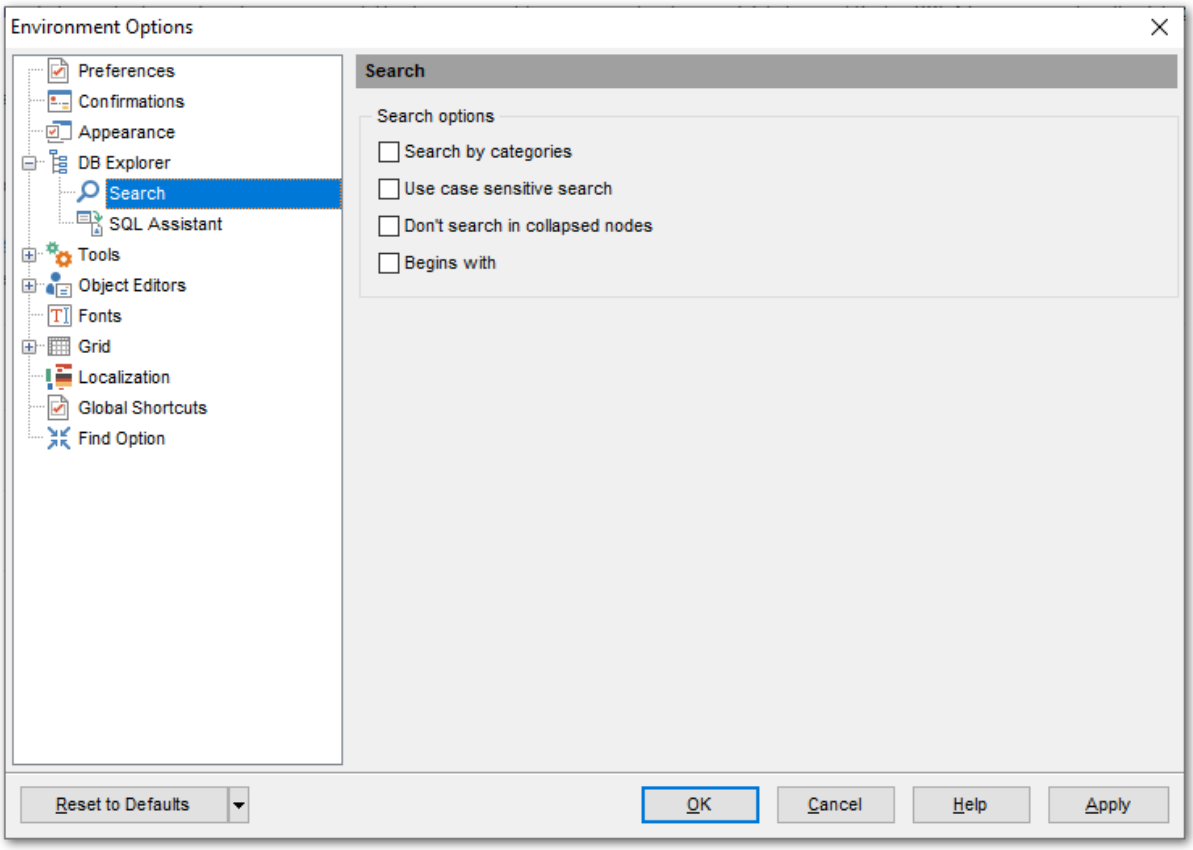
Detect erroneous objects
Enables/disables displaying the objects with "broken" DDL with different icons in the tree.

Show view subobjects
Toggles displaying view subobjects in the DB Explorer tree.

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12.1.4.1 Search

Use these options to adjust search settings for the search string 78 in DB Explorer.



Search by categories
Enable this option to only search in category names. Use this option to quickly access the object node. You can use the corresponding button on the Search toolbar in DB Explorer to quickly toggle the option.

Use case sensitive search
Enable this option to differentiate uppercase characters from lowercase ones using the Search Panel 78.

Don't search in collapsed nodes
Enable this option to restrict searching in the collapsed nodes in DB Explorer.

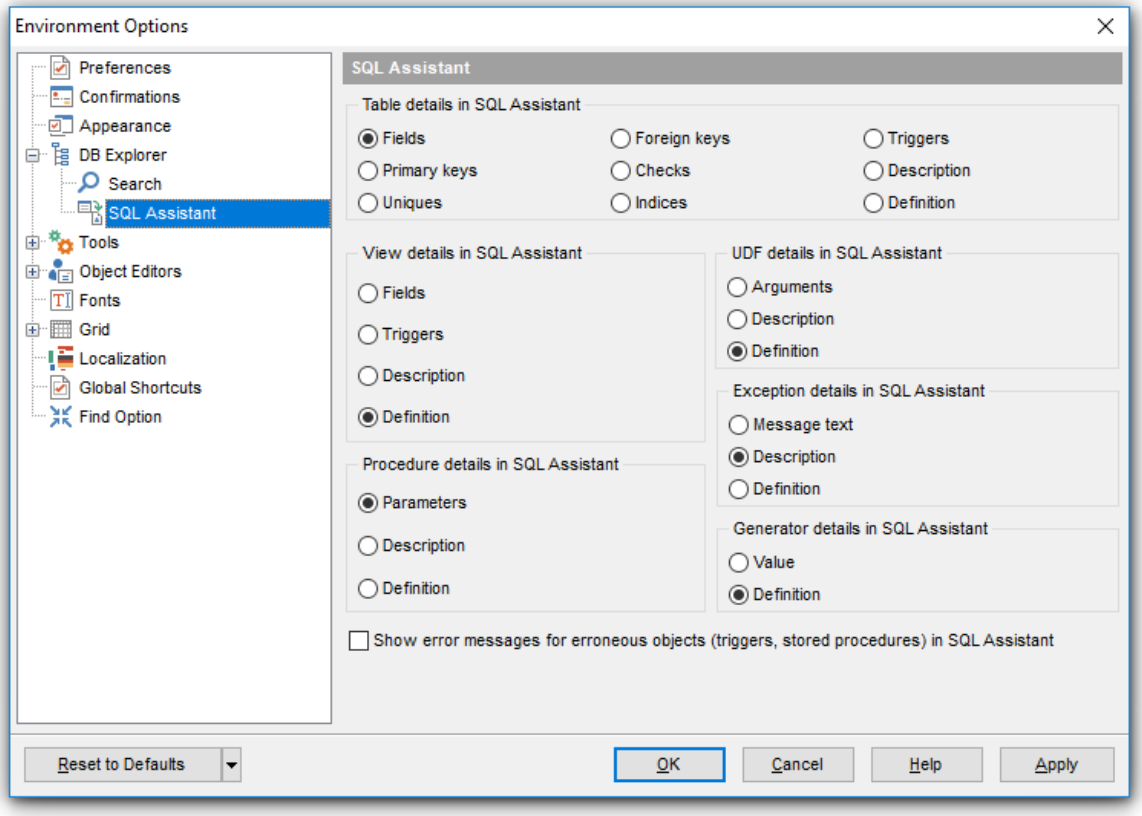
Begins with
Enable this option to search for the names starting with the specified text only.

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12.1.4.2 SQL Assistant

Table / **View** / **Procedure** / **UDF** / **Exception** / **Generator details in SQL Assistant**
These options switch the SQL Assistant 80 mode for displaying details for InterBase/Firebird objects 163 selected in the DB Explorer 63 tree:
for tables 179: *fields*, *primary keys*, *uniques*, *Foreign keys*, *checks*, *indexes*, *triggers*, *description* or *definition*;
for views 243: *fields*, *triggers*, *description* or *definition*;
for procedures 254: *parameters*, *description* or *definition*;
for UDFs 273: *arguments*, *description* or *definition*;
for exceptions 290: *message text*, *description* or *definition*;
for generators 294: *value* or *definition*.

If necessary, you can specify to ☑ **Show error messages for erroneous objects (triggers, stored procedures) in SQL Assistant**.

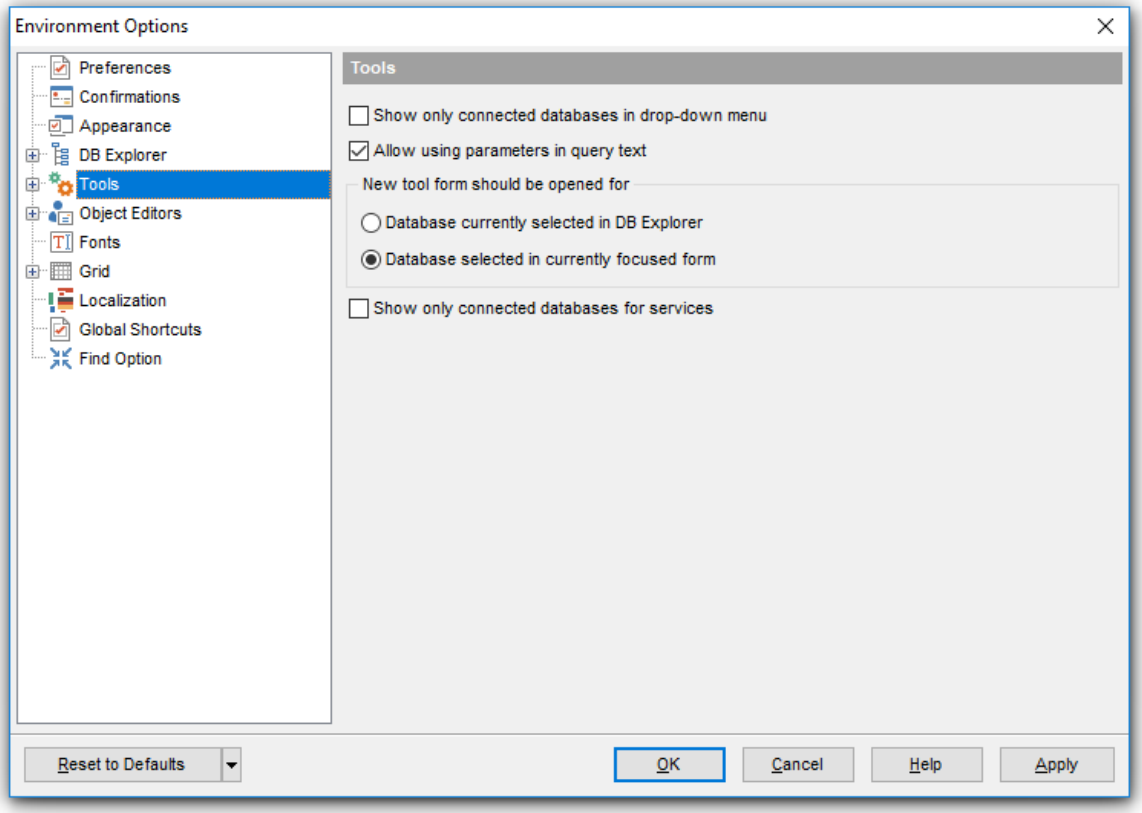


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12.1.5 Tools

Show only connected databases in drop-down menu
If this option is checked, only connected 67 databases are displayed in drop-down menus of such tools as Query Builder 348, Script editor 544, etc.

Allow using parameters in query text
This feature allows you to specify different values within a query in a popup dialog 367 just before the query execution. Use the colon (':') character before an identifier (e.g. :P1) to specify a parameter within the query.



New tool form should be opened for
Use this group to specify the database to open new editors for:
- *Database currently selected in DB Explorer*
- *Database selected in currently focused form*

Show only connected databases for services
If this option is checked, only connected 67 databases are displayed in services such as Backup Database 660, Restore Database 671, etc.

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12.1.5.1 Query Data

Explain query on execution
If this option is checked, the query plan[338] is displayed automatically upon query execution in Query Data[331].

Show result for each query
With this option checked, when you execute[341] two or more queries, the result of each query will be displayed one by one. Otherwise, only the result of the last query will be displayed.

Execute selected text separately
Check this option to allow execution[341] of the selected statement separately.

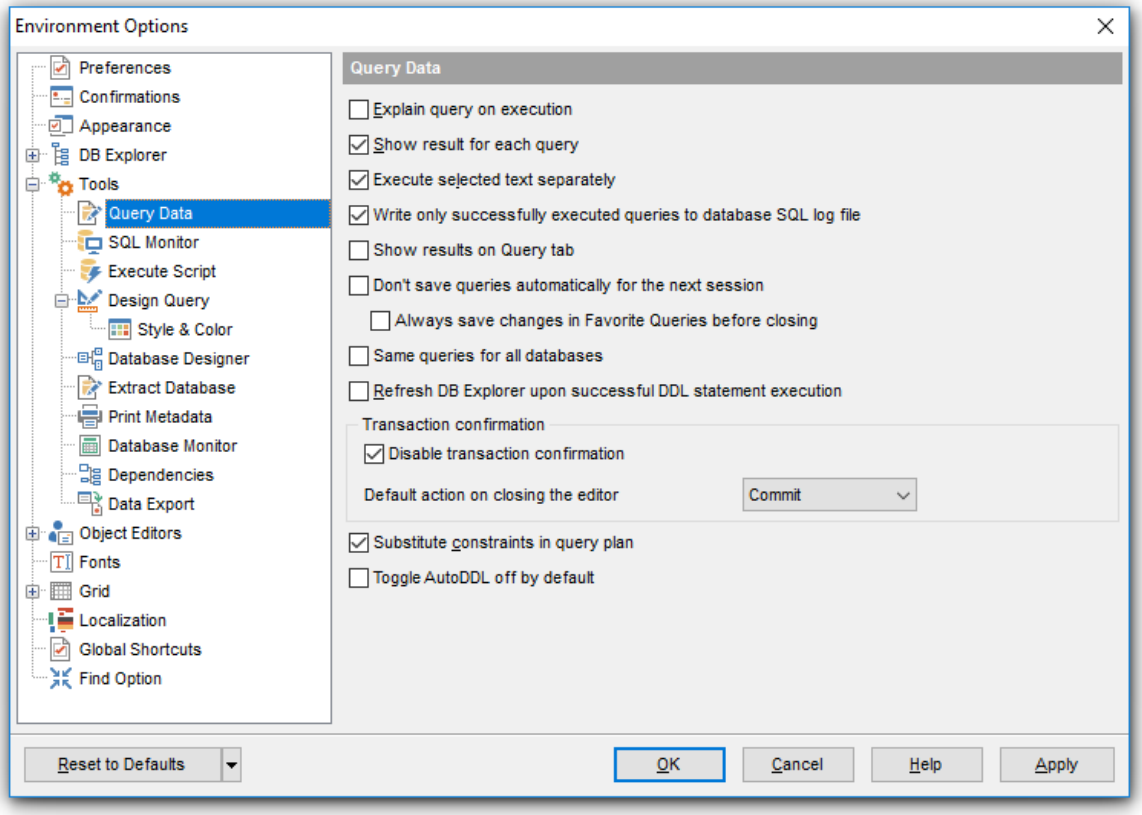
Write only successfully executed queries to database SQL log file
If this option is checked, unsuccessful queries will not be saved to the Query Data log file (see Setting log options[134] in the Database Registration Info[115] dialog).

Show results on Query tab
If this option is checked, the **Results** tab is displayed as a separate tab.

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 sessions of application.

Always save changes in Favorite Queries before closing
This option enables/disables saving changes in SQL queries marked as Favorite[85] automatically upon closing the editor.

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Same queries for all databases
With this option enabled, Query Data[331] 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[63] is refreshed each time a DDL statement is executed[341] successfully in Query Data[331].

Transaction confirmation

Disable transaction confirmation
If this option is checked, no transaction confirmation will be required on closing Query Designer[348] and Query Data[331]. Specify the **default action** (*Commit* or *Rollback*) and this action will be performed automatically each time when you close the editor.

Substitute constraints in query plan
If this option is checked, natively used constraints are substituted with indexes in the query plan[338].

Toggle AutoDDL off by default
Toggles the default mode (on/off) for automatic committing of each statement.

See also:

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Query Data 331

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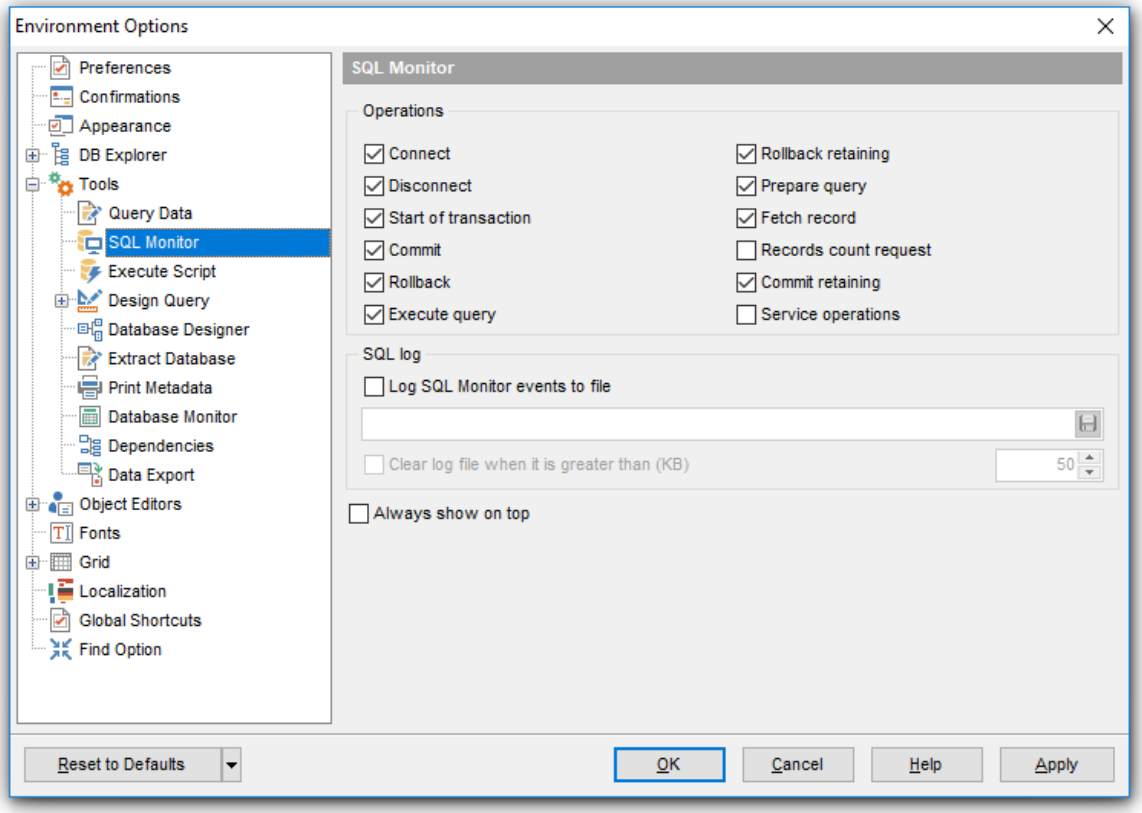
12.1.5.2 SQL Monitor

Operations

This group allows you to specify which operations will be monitored by the application: *connect*, *disconnect*, *start of transaction*, *commit*, *commit retaining*, *service operations*, *rollback*, *rollback retaining*, *execute query*, *prepare query*, *fetch record*.

SQL log

This group of options allows you to enable logging of all SQL Monitor[541] 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).



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[541] window in the foreground permanently.

See also:

SQL Monitor[541]

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12.1.5.3 Execute Script

Abort script on error
If this option is checked, script execution is aborted if an error occurs.
Note: Errors of *CONNECT* and *CREATE DATABASE* statements abort script execution anyway.

Show statements explorer
With this option checked, Execute Script Editor[544] parses the loaded script to enable fast navigation in the Script Explorer[549] tree.

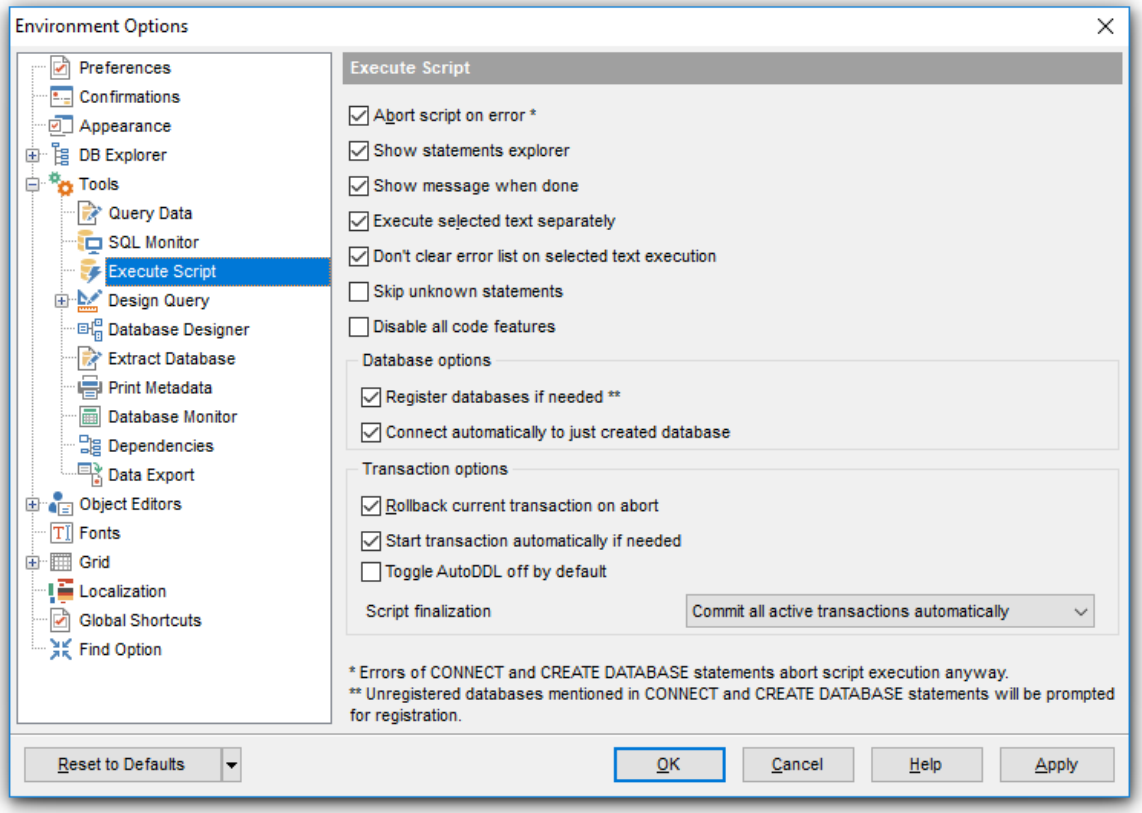
Show message when done
Displays a message box on finishing script execution.

Execute selected text separately
Check this option to allow execution[341] of the selected statement separately.

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.

Skip unknown statements
Skips unknown statements on script execution.

Disable all code features in Execute Script
Disables syntax highlighting and code folding to speed up processing of script.



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Database options

Register databases if needed

If the option is enabled, the Database Registration Info 115 dialog will be displayed automatically after successful *CREATE DATABASE* or *CONNECT* script execution.
Note: Unregistered databases mentioned in the *CONNECT* and *CREATE DATABASE* statements will be prompted for registration.

Connect automatically to just created database

Enable this option to automatically connect to just created database in DB Explorer.

Transaction options

Rollback current transaction on abort

This option evokes automatic rollback of the current transaction when script execution is aborted (due to an error or if interrupted by user).

Start transaction automatically if needed

Enable this option to automatically start transaction on execution.

Toggle AutoDDL off by default

Toggles the default mode (on/off) for automatic committing of each statement.

Script finalization

Commit all active transactions automatically

All transactions are committed automatically after the script has been executed.

Ask user to select required action

The user is prompted to commit or abort transaction after the script has been executed.

See also:

Execute Script Editor 544

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12.1.5.4 Design Query

General options

Allow SELECT queries only
When this option is checked, the *INSERT*, *UPDATE* and *DELETE* statements are not allowed in Query Builder.

Select condition row
Displays the selected condition in different rows on the **Criteria** and **Grouping Criteria** tabs of Query Builder.

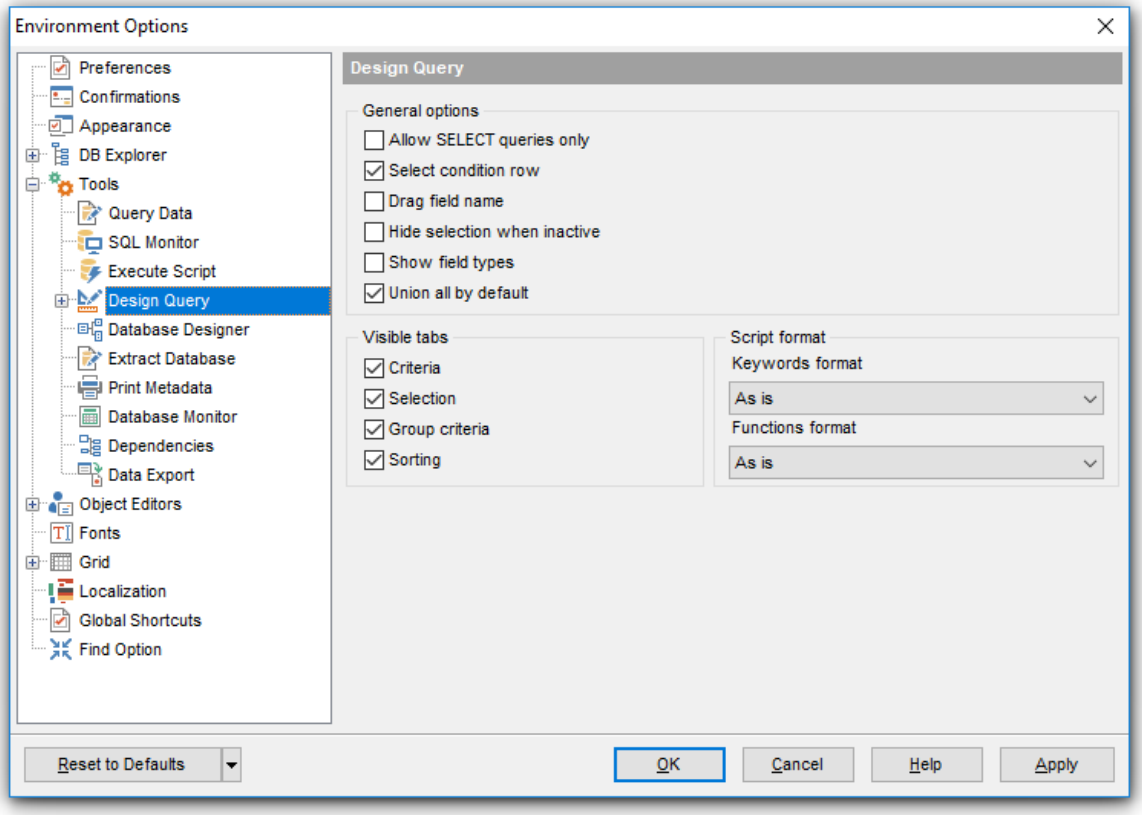
Drag field name
Displays the dragged field name in the **Builder** area.

Hide selection when inactive
Hides the selection when the Query Builder window is inactive.

Show field types
Displays the field data type next to the field name in the table box.

Union all by default
Check this option to use the *UNION ALL* expression in Query Builder 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.

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Visible tabs

These options specify which Query Builder[348] 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[362] 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 **Query Builder** objects by using Style & Color[767].

See also:

Query Builder[348]

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12.1.5.4.1 Style & Color

Style

These options specify the way various Query Builder[348] elements look: the **Condition button**: *Flat*, *3DLook*, *Raised*; **object borders**: *Bump*, *Etched*, *Raised*, *Sunken*.

Flat objects

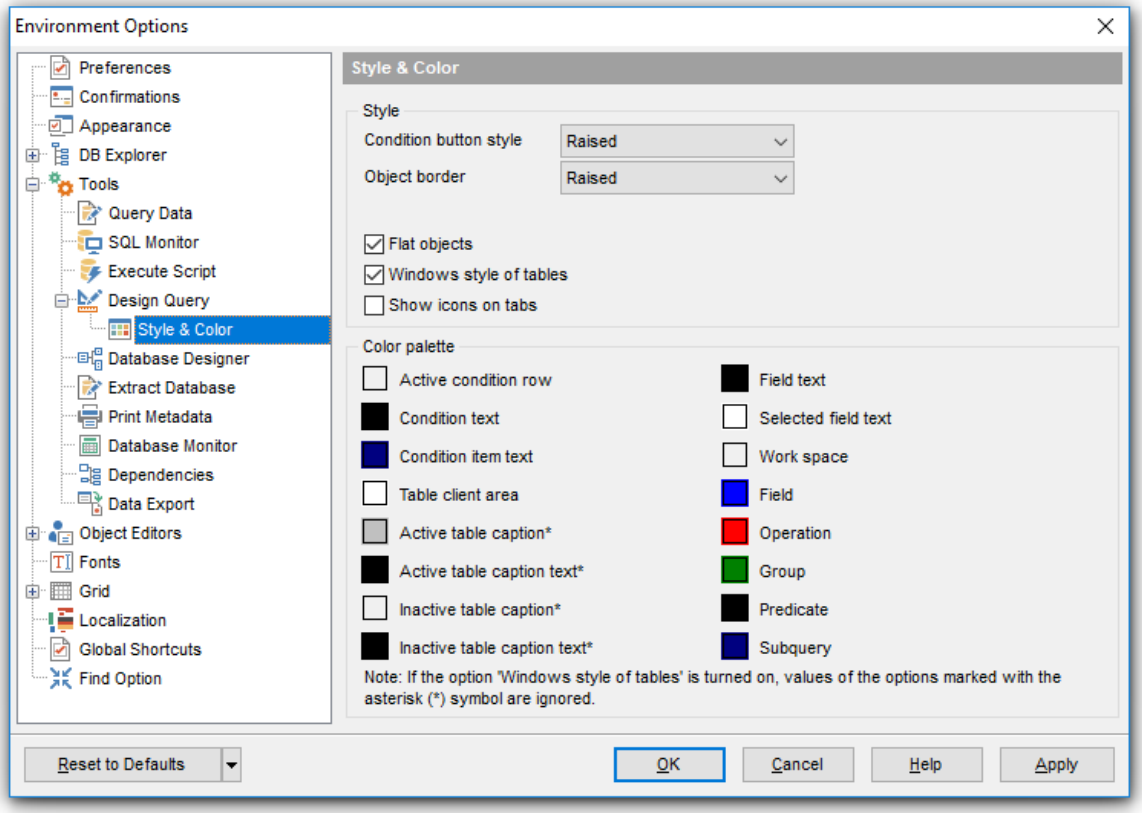
This option sets the flat appearance of objects in Design Query[348].

Windows style of tables

This option determines the appearance of tables in the Builder tab.

Show icons on tabs

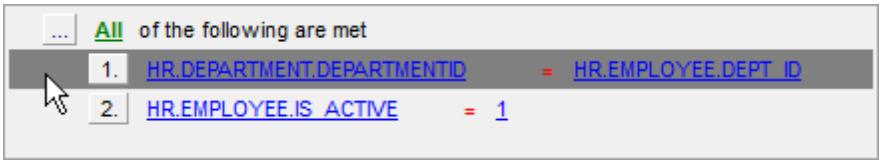
With this option selected, you can see icons next to the tab names in Design Query[348].



Color palette

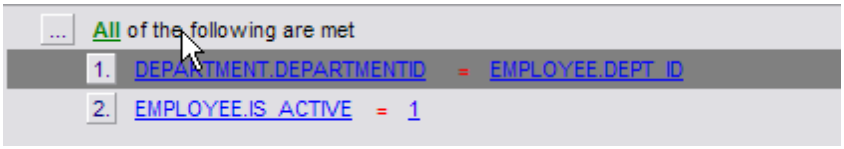
These options define the colors of various Query Builder[348] elements.

Active condition row (at the Criteria[356] and Grouping criteria[360] tabs):



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Condition text (at the Criteria 356 and Grouping criteria 360 tabs):



Condition item text (at the Criteria 356 and Grouping criteria 360 tabs):

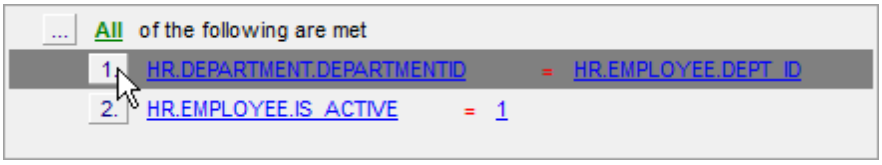
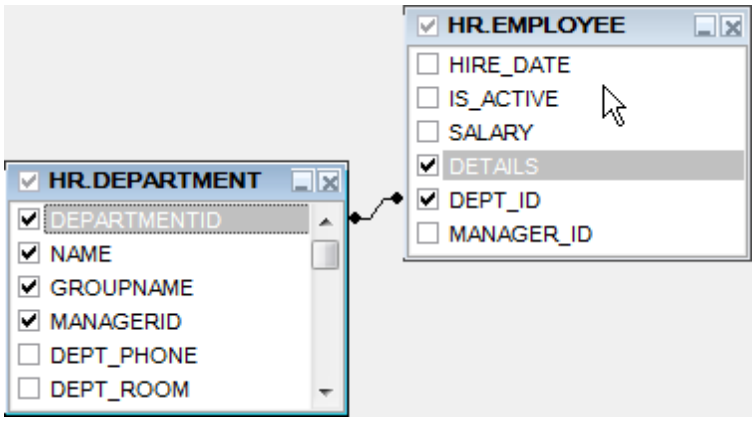
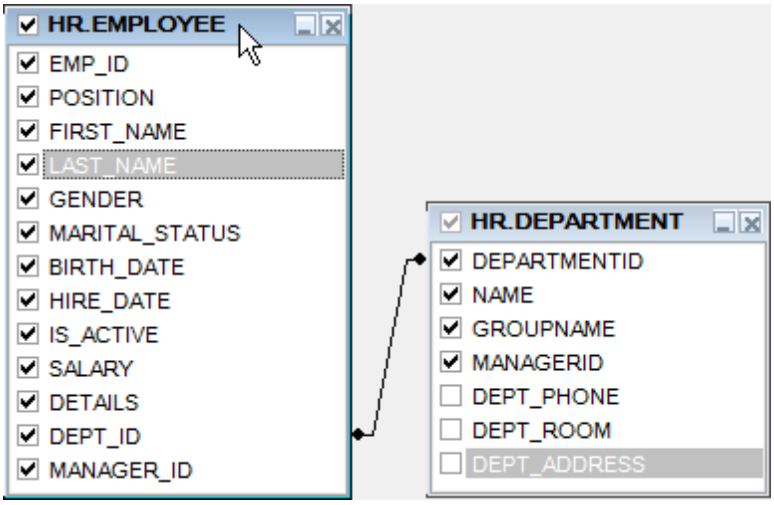


Table client area (in the diagram area 351):

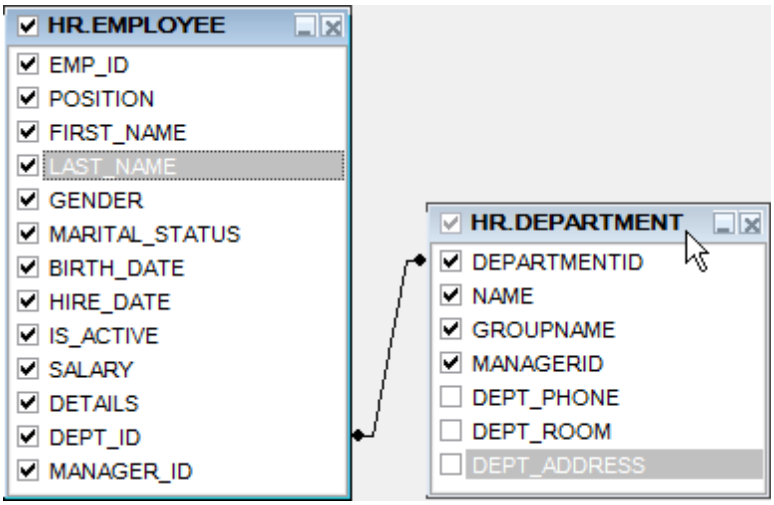


Active table caption (in the diagram area 351):

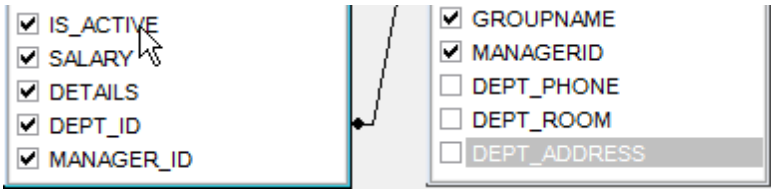


Inactive table caption (in the diagram area 351):

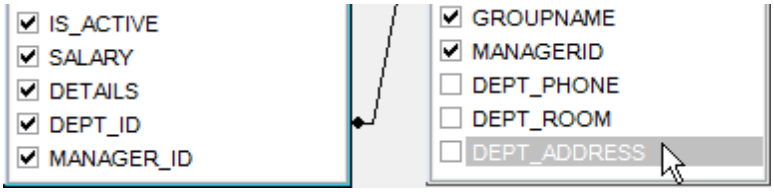
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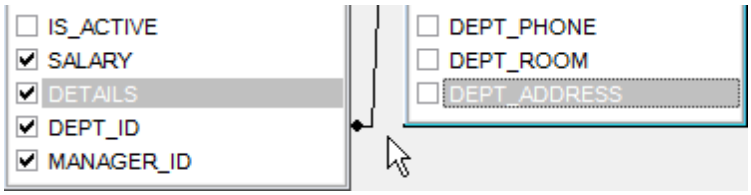
Field text (in the diagram area[351]):



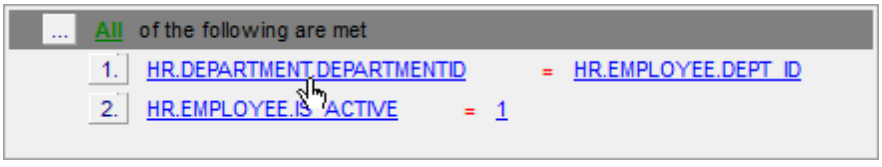
Selected field text (in the diagram area[351]):



Work space (in the diagram area[351]):

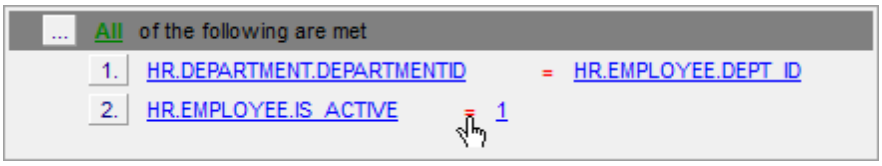


Field (at the Criteria[356] and Grouping criteria[360] tabs):



Operation (at the Criteria[356] and Grouping criteria[360] tabs):

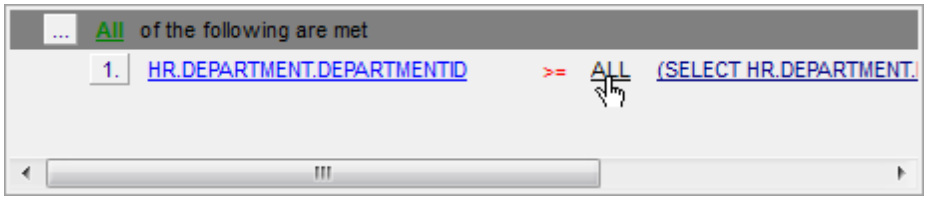
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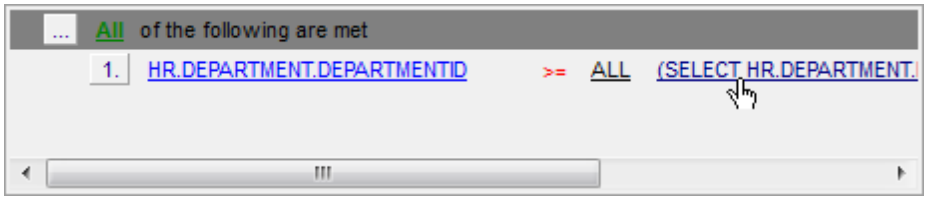
Group (at the Grouping criteria 360 tab):



Predicate (at the Criteria 356 and Grouping criteria 360 tabs when a subquery 352 is used):



Subquery (at the Criteria 356 and Grouping criteria 360 tabs when a subquery 352 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.

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12.1.5.5 Database Designer

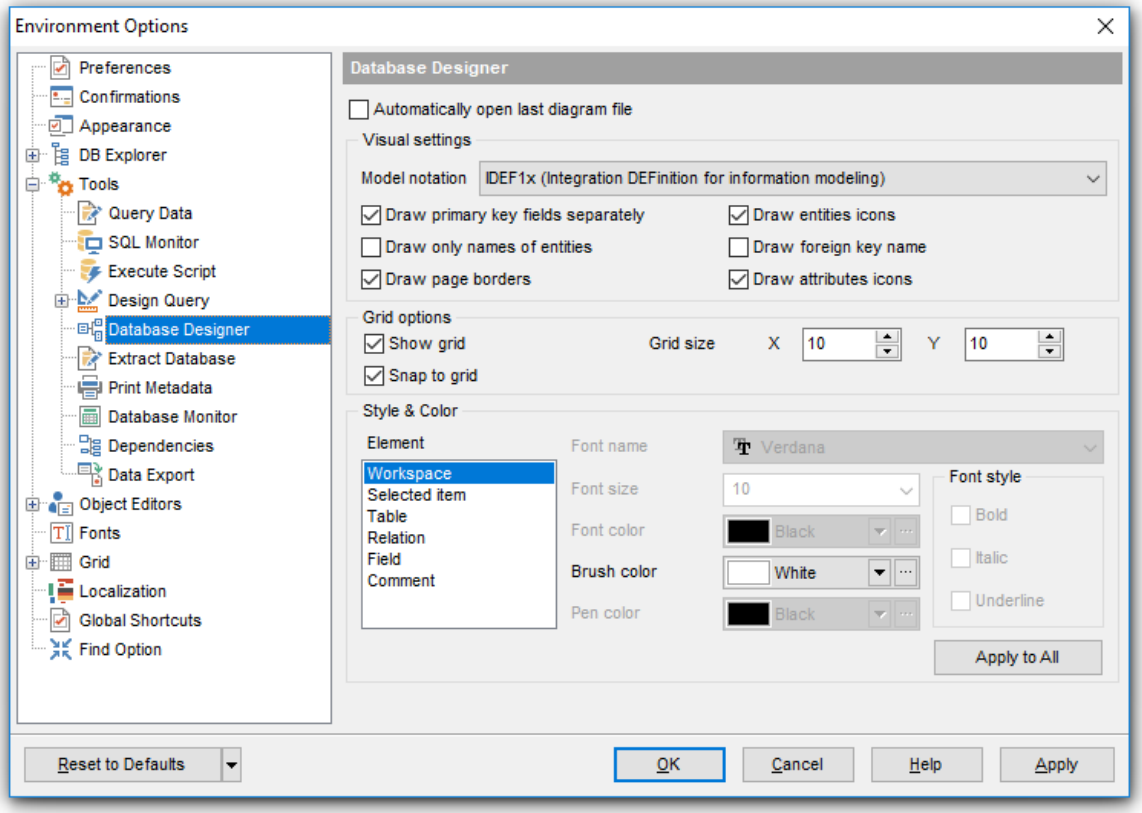
Automatically open last diagram file
Enable this option to load the last opened diagram file on starting the Database Designer.

Visual settings

Model notation
When you work in Database Designer[638], you can choose one of the following modeling notations:

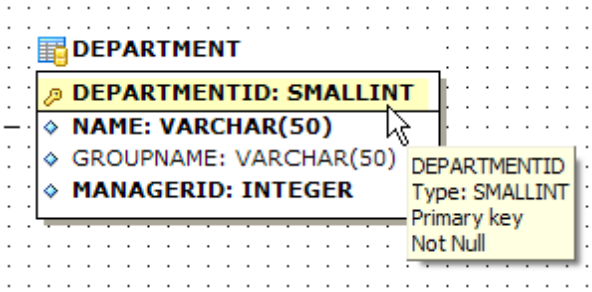
- Integration DEFinition for Information Modeling (IDEF1X);
- Information Engineering (IE).

The *IDEF1X* and *IE* notations use different symbols to represent relationships between entities (and tables).

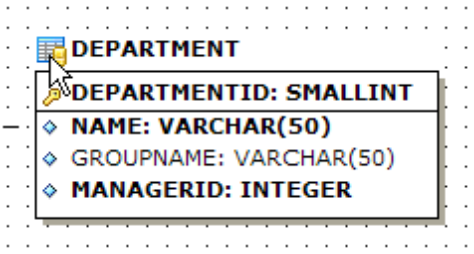


Draw PRIMARY KEY fields separately
Separates Primary key fields from other fields with a horizontal line.

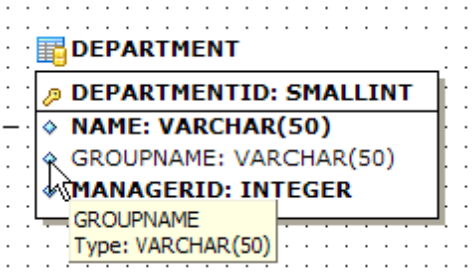
© 1999-2026 EMS Software Development



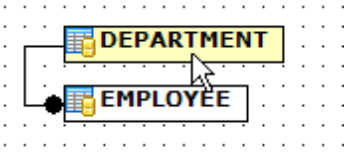
Draw entities icons
Displays icons at the left of each entity header according to its type.



Draw attributes icons
Displays icons at the left of each attribute according to its type (Primary key, Foreign key, ordinary field).

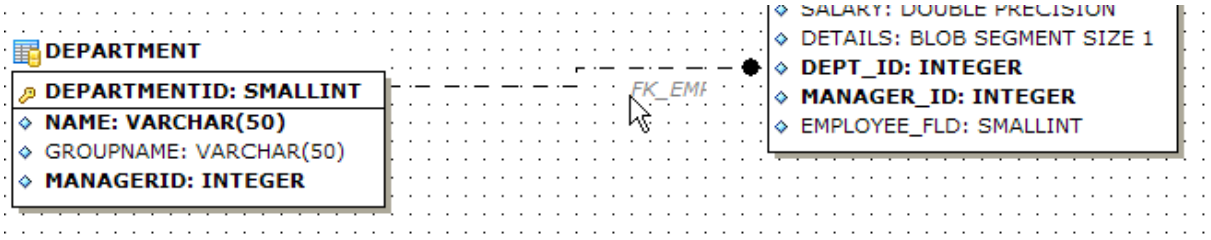


Draw only names of entities
Displays only entity headers, fields are hidden.



Draw FOREIGN KEY name
Displays foreign key names for the corresponding relations.

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Draw page borders
Displays borders of the page on the diagram.
If y

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.

Style & Color

This section helps you to customize the default view of the diagram objects.

Select the **Element type** from the list: *Workspace*, *Selected item*, *Table*, *Relation*, *Field*, *Comment* and set the required options for it, including color or font properties. Use the **Apply to all** button to apply the changes to all elements.

See also:

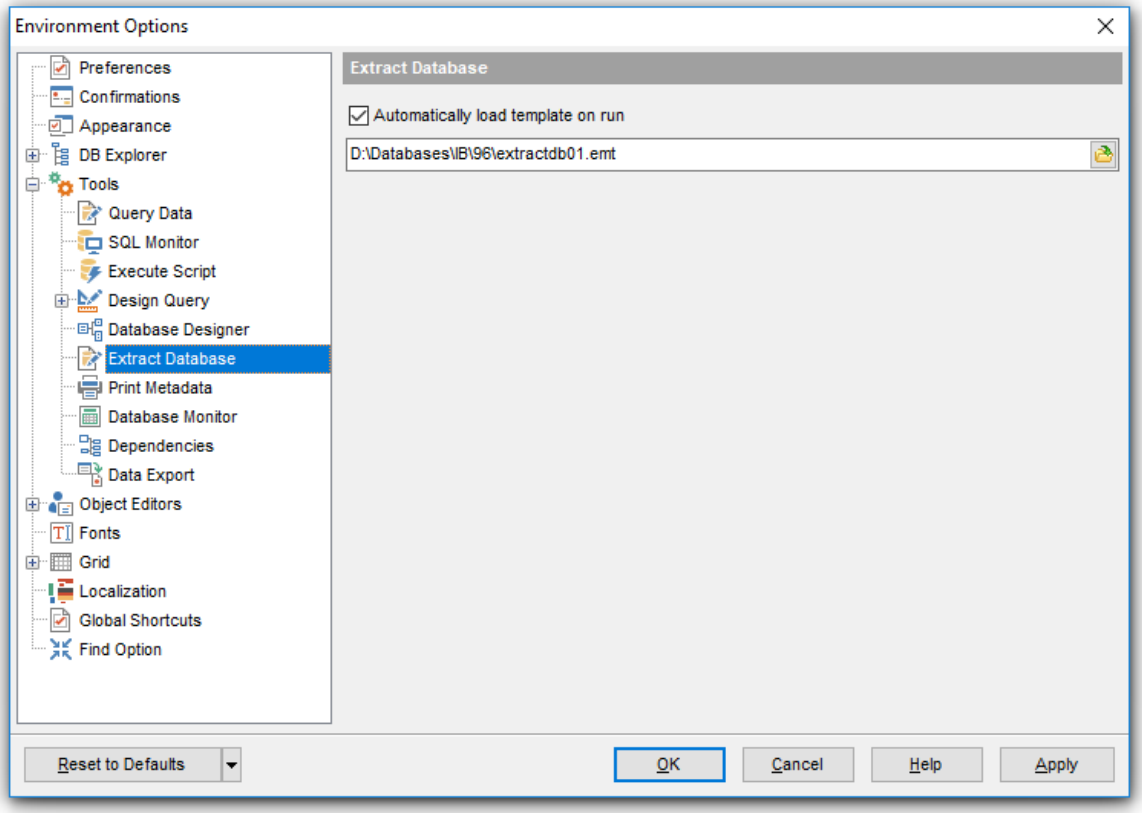
Database Designer 638

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12.1.5.6 Extract Database

This page allows you to customize settings of the Extract Database 552 wizard.

Automatically load template on run
Check this option to specify that a template 918 file will be automatically loaded on running the Extract Database 552 wizard.
Type in or use the button to specify the path to the **.emt* file to be used by the wizard.



See also:
Extract Database 552

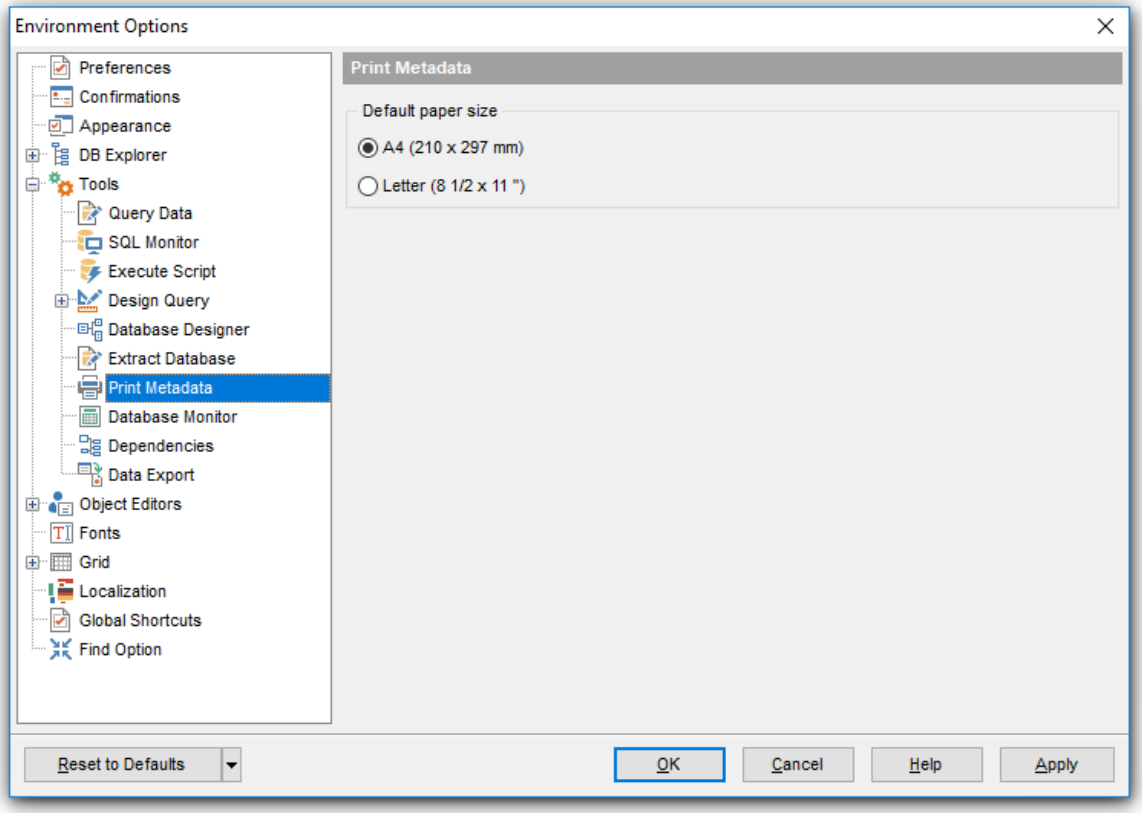
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12.1.5.7 Print Metadata

Default paper size

Define the default paper size for reports created with the Print Metadata 570 tool used:

- *A4* (210 x 297 mm)
- *Letter* (8 1/2 x 11 ")



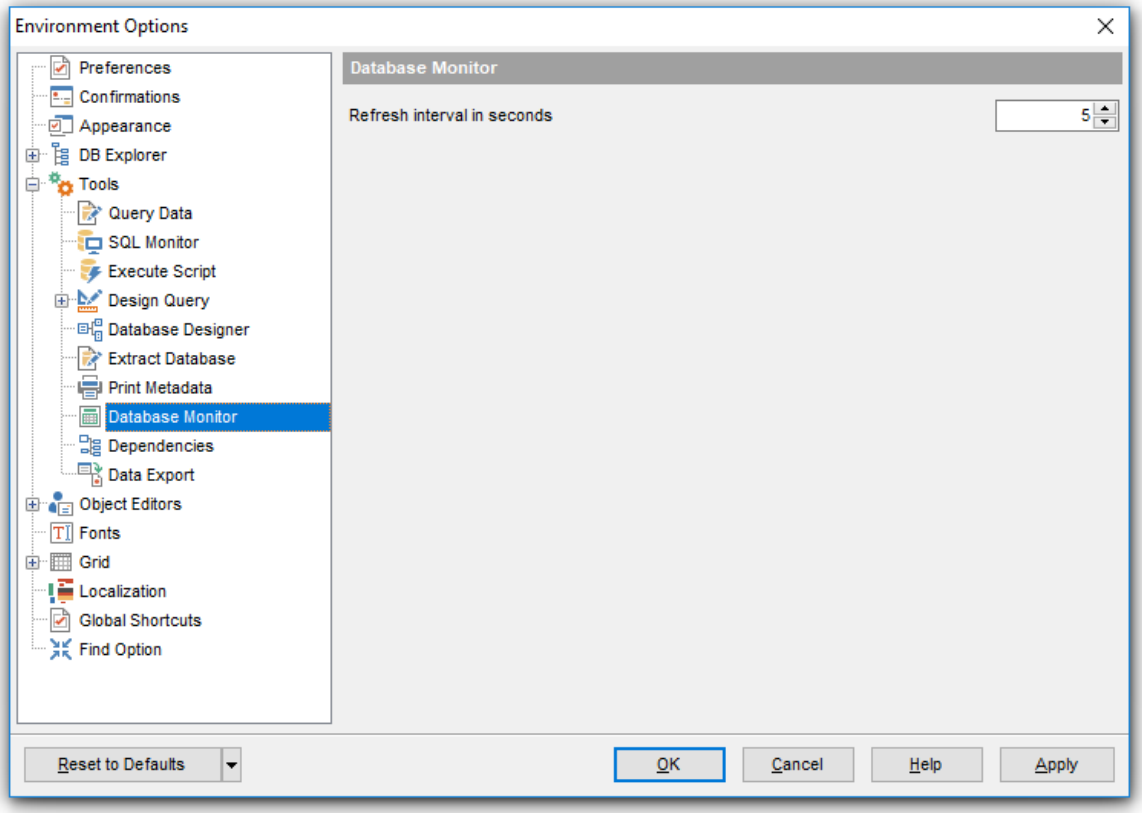
See also:

Print Metadata 570

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12.1.5.8 Database Monitor

This section allows you to set preferences pertaining to the Database Monitor[613] tool.



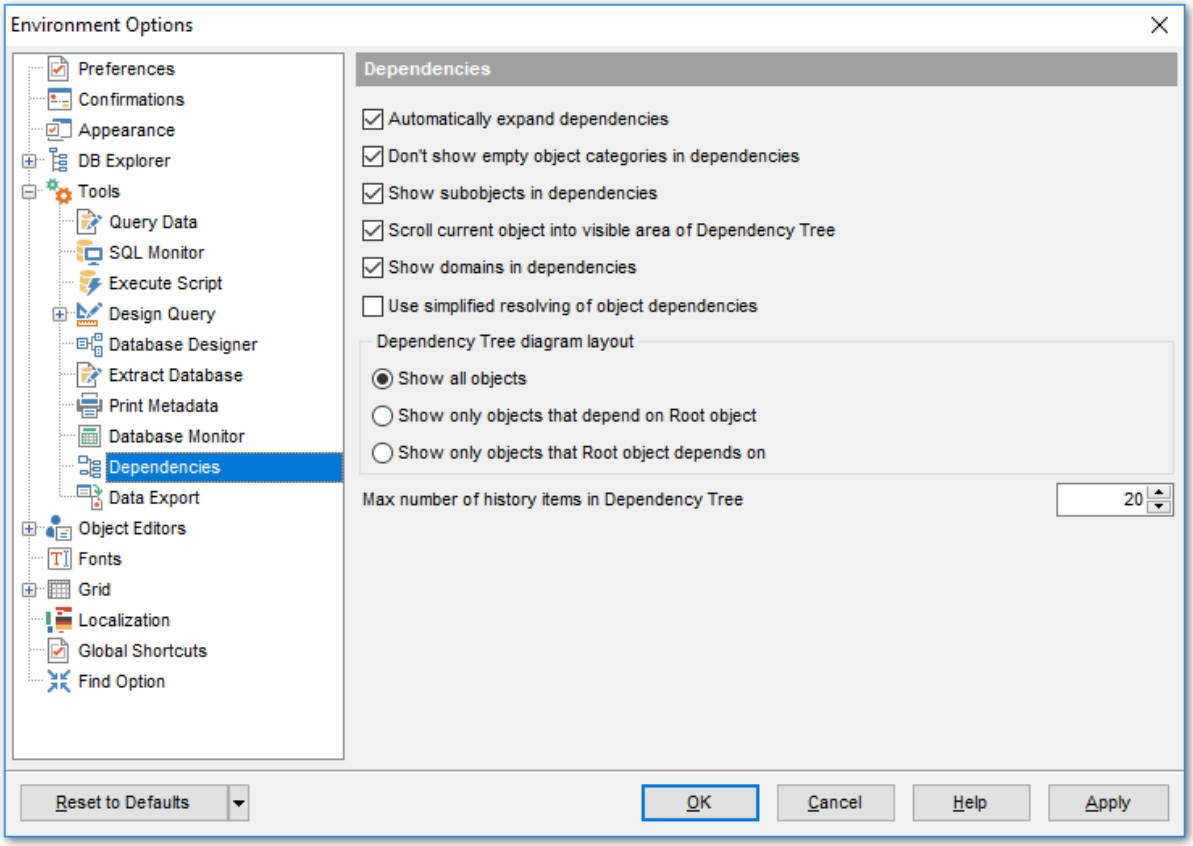
Refresh interval in seconds
Set the refresh interval (in *seconds*) for collecting information by **Database Monitor**.

See also:
Database Monitor[613]

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12.1.5.9 Dependencies

This section allows you to set preferences pertaining to the Dependencies 896 tab of object editors and the Dependency Tree 536 tool.



Automatically expand dependencies
Set this option to expand the tree of dependent objects automatically on opening the Dependencies 896 tab of an object editor.

Don't show empty object categories in dependencies
Set this option to hide empty objects categories in the trees of dependent objects.

Show subobjects in dependencies
Set this option to show subobjects of dependent objects.

Scroll current object into visible area of Dependency Tree
Set this option to scroll the Root (currently selected) object to the visible area of the Dependency Tree 536 working area.

Show domains in dependencies
Set this option to show domains 173 in Dependency Tree 536.

Use simplified resolving of object dependencies
Set this option to disable parsing while fetching object dependencies.

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Dependency Tree diagram layout

This group allows you to specify which objects are to be displayed in Dependency Tree[536] :

- *Show all objects*
- *Show only objects that depend on the Root object*
- *Show only objects that the Root object depends on*

Max number of history items in Dependency Tree

Set the maximum number of history items to be saved in Dependency Tree[536] tool.

Note: Navigation through history items is performed by using the **Previous object** / **Next object** items of the Navigation bar[537].

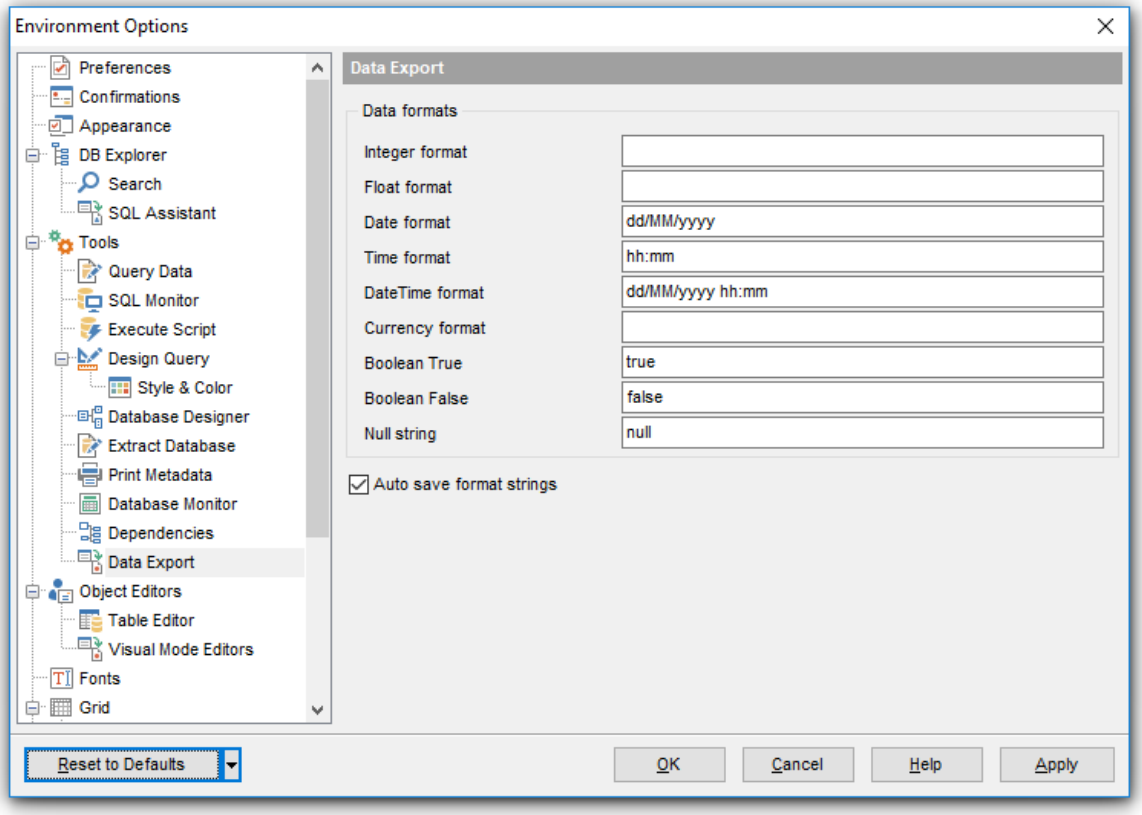
See also:

Dependency Tree[536]

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12.1.5.10 Data Export

This page allows you to customize formats applied to exported 445 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.

If more convenient, you can click the **Set defaults** button to apply default data formats.

These settings can also be specified at the Adjusting data formats 449 step of Export Data Wizard 445.
Fore more details see Format specifiers 914.

See also:
Export Data Wizard 445

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12.1.6 Object Editors

Show privileges in objects DDL
Toggles displaying the script fragment for setting grants at the DDL[894] tab of object editors.

Show description in objects DDL
Toggles displaying the script fragment for setting description at the DDL[894] tab of object editors.

Automatically show Object Explorer*
Enables/disables the *Object Explorer* panel within the *Navigation bar* of Table Editor[185] and Procedure Editor[256].

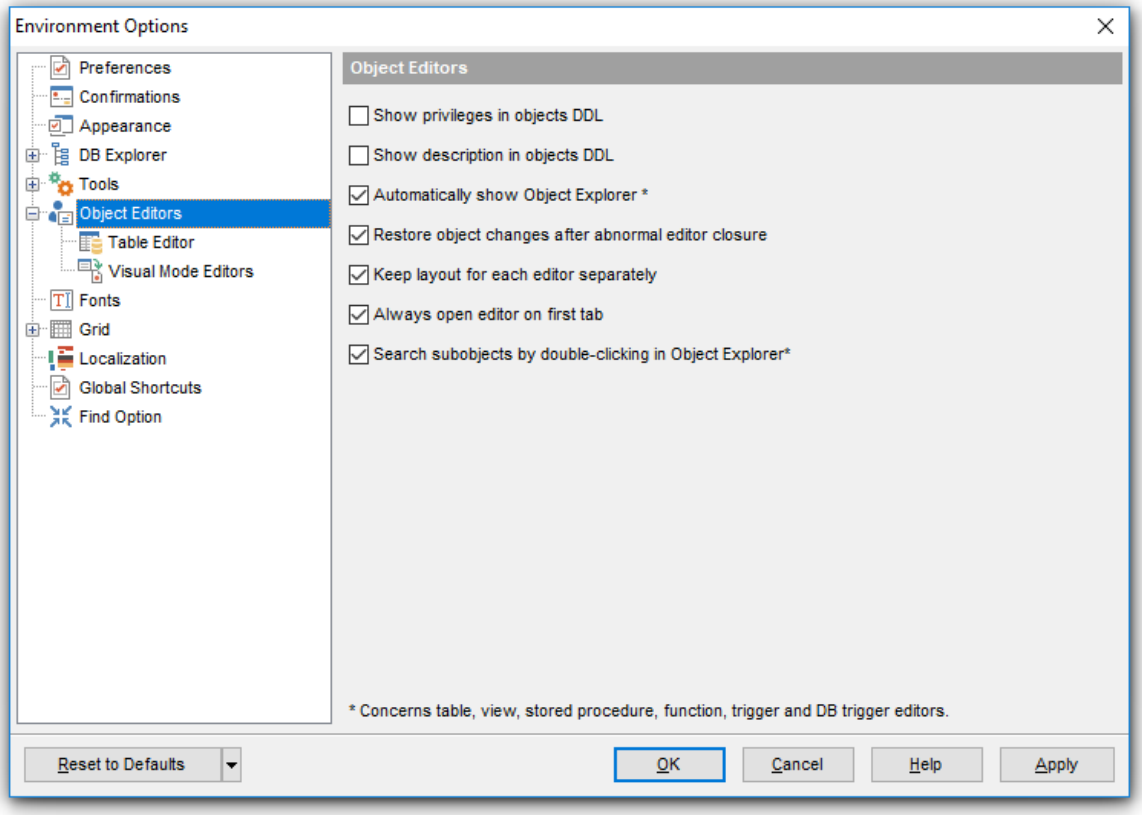
Restore the object changes after abnormal closure of editor
Select this option if you wish changes made to an object in its editor to be restored from internal buffers unexpected interruption of the editor occurs.

Keep layout for each editor separately
If the option is enabled, layout (mode) is kept for each editor separately.

Always open the Edit tab
If this option is checked, the **Edit** tab is activated by default on opening an object in its editor.

Search subobjects by double click in Object Explorer*
If this option is checked, you may open subobjects on the appropriate tab by double click in the Object Explorer panel within the Navigation bar of Table Editor[185] and Procedure Editor[256].

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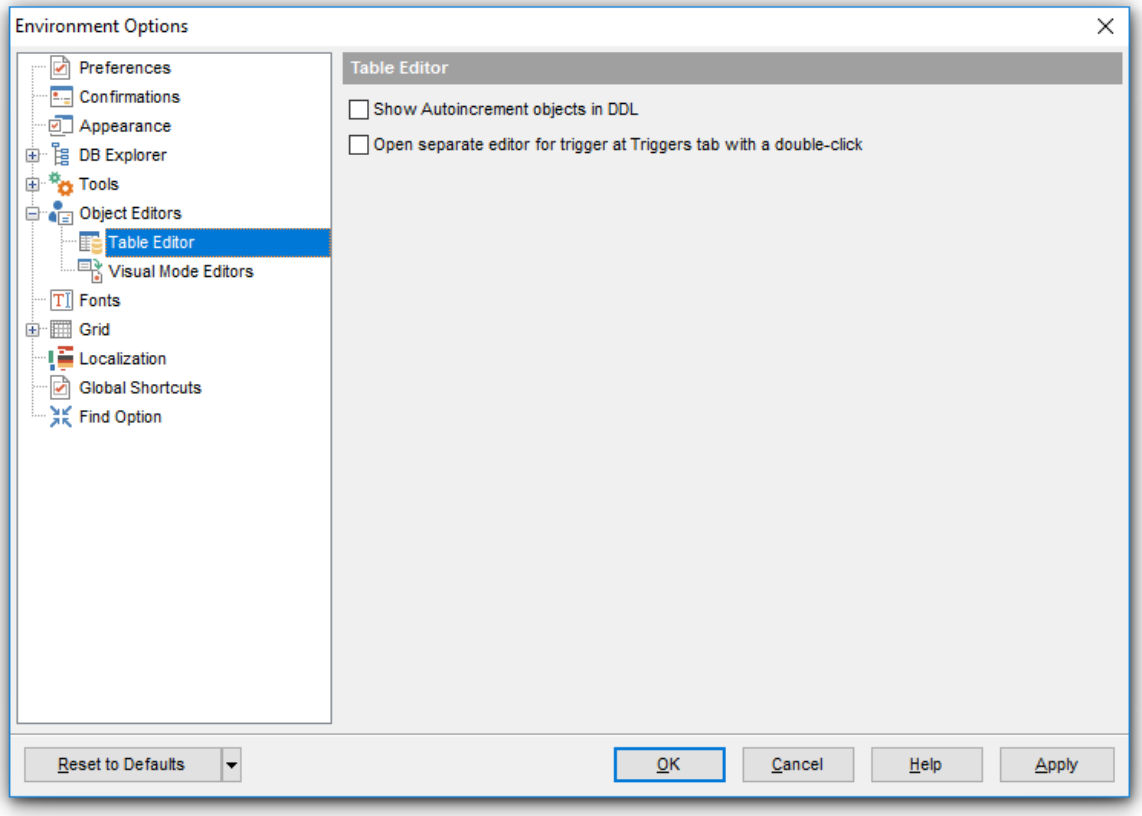
* Regarding table 185, view 243, stored procedure 256, trigger 282 and DB trigger 312 editors.

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12.1.6.1 Table Editor

Show Autoincrement objects in DDL
If this option is selected, definition of objects used for the Autoincrement[212] property implementation will be displayed in table DDL[894].

Open separate editor for trigger at Triggers tab with a double-click
If this option is selected, a separate Trigger Editor[282] will be opened when a trigger is double-clicked under the Triggers[198] tab of Table Editor[185].



See also:
Table Editor[185]

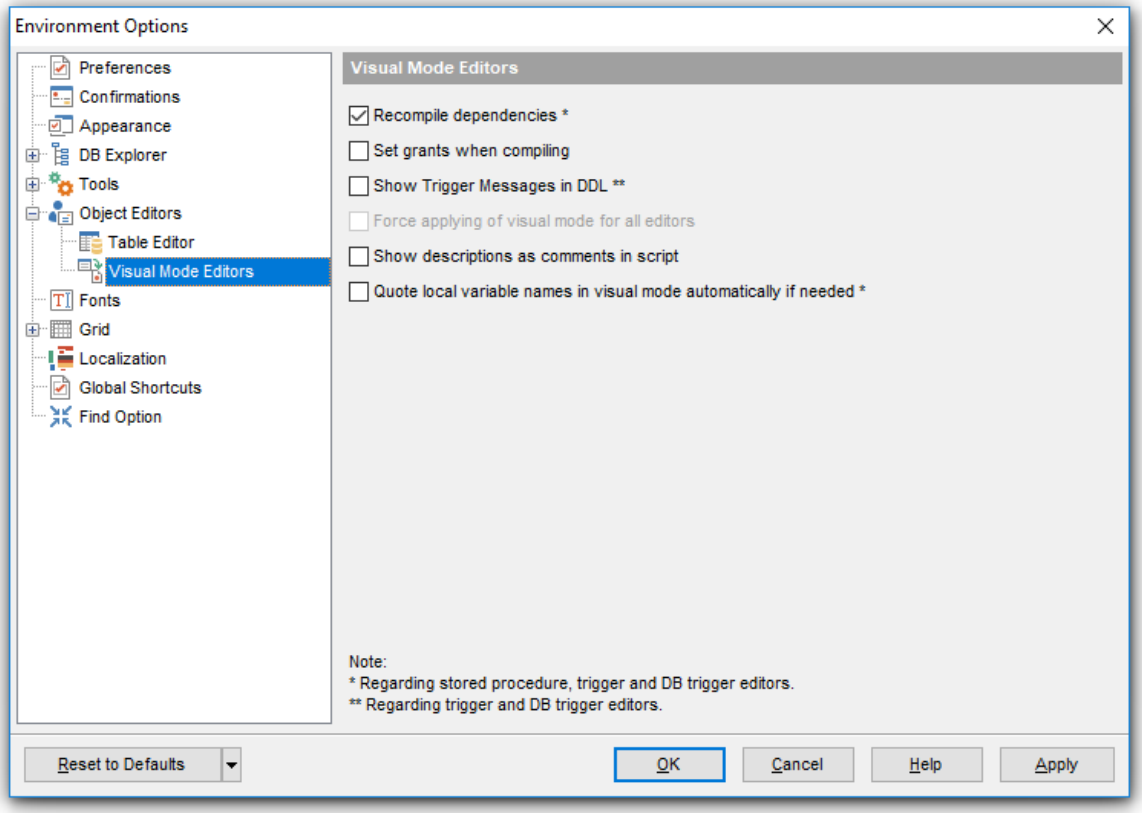
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12.1.6.2 Visual Mode Editors

Recompile dependencies
If the option is selected, the objects that refer to the current object are recompiled[907].

Set grants when compiling
This option allows you to set grants[734] on the object automatically when compiling[906] the object.

Show Trigger Messages in DDL
Toggles displaying the script fragment for setting trigger messages[289] at the DDL[894] tab of the trigger editors.



Force applying of visual mode for all editors
Enables visual mode for all editors. This option is unavailable if **Keep layout for each editor separately** option is ON at Object Editors[780] options.

Show descriptions as comments in script
Toggles displaying object descriptions[895] as comments in scripts generated for the objects.

Quote local variable names in visual mode automatically if needed.
If this option is enabled, the local variable names are quoted automatically if they are entered in lowercase. This option is working correctly if the *Always capitalize database objects names* option on the Common options[118] tab in the Database Registration Info[115]

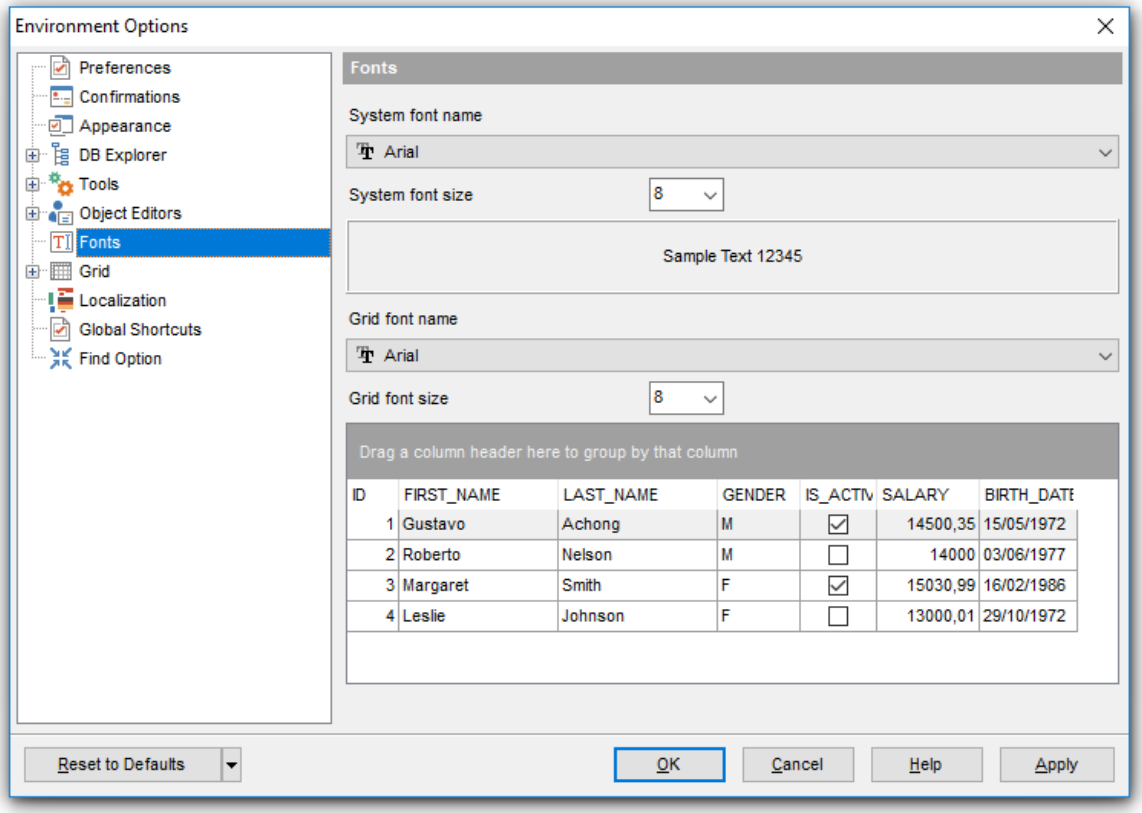
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dialog is not enabled.

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12.1.7 Fonts

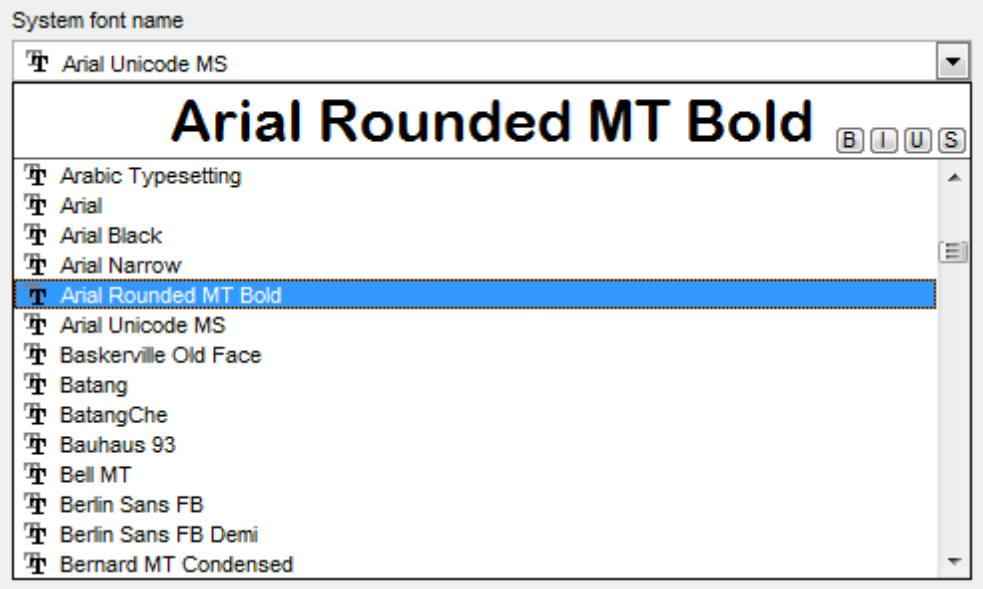
This section of the **Environment Options** dialog allows you to specify fonts used in the application.



System font name

Defines the font used by **SQL Manager for InterBase/Firebird**. Select the font name from the drop-down list of available system fonts.

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System font size
Select the required size for the system font.

The box below displays the *sample text* with the selected font applied.

Grid font name
Defines the font used in the Data grid 374. Select the font name from the drop-down list of available fonts.

System font size
Select the required size for the grid font.

The grid below displays the *sample grid* with the selected font applied.

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12.1.8 Grid

General options

Striped grids
Displays the odd grid rows in a different color defined by the **Strip** option available on the Color & Formats 794 page.

Show editor immediately
Allows editing the cell value right after the cell is clicked.

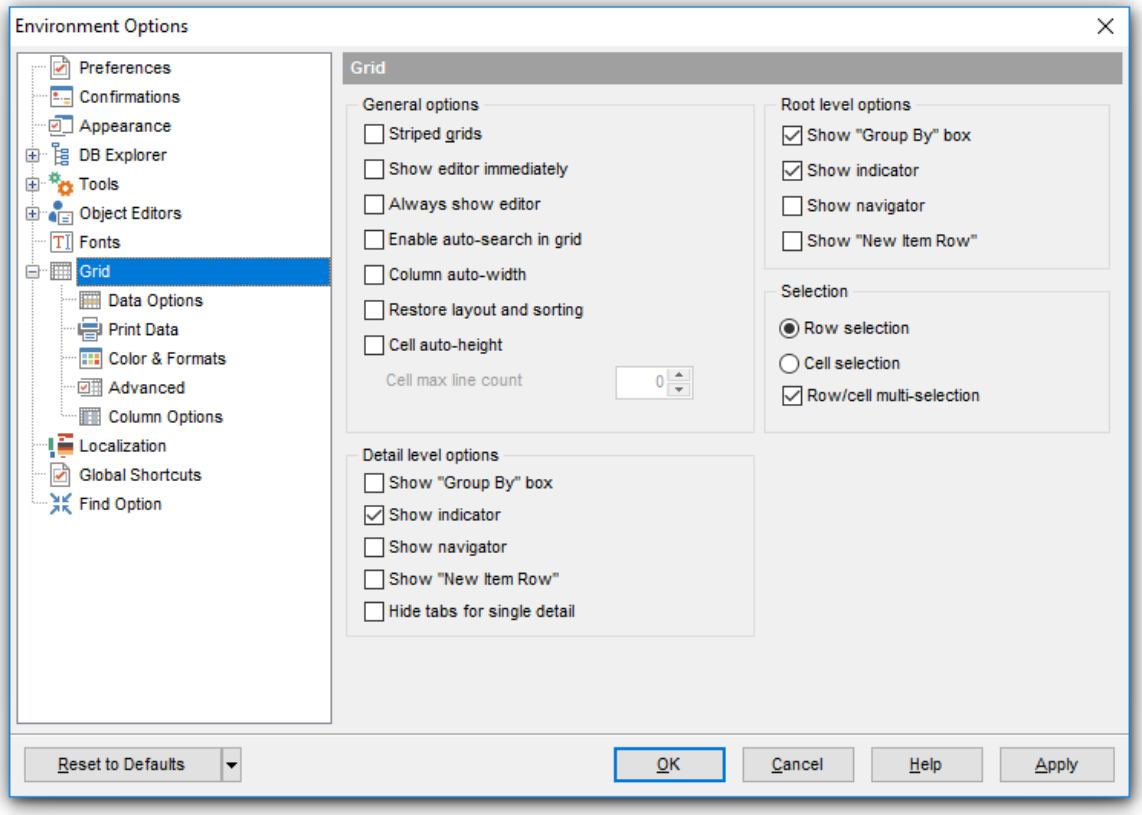
Always show editor
Set this option to make the cell editors always active.

Enable auto-search in grid
If this option is checked, the cursor is automatically forwarded to the closest match when you start typing.

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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Root level options

These options are applied to the main view[385] of the grid. See Grid View[374] for details. The options are described in the **Detail level options** list below.

Detail level options

These options are applied to the detail view[385] of the grid. See Grid View[374] for details.

Show "Group by" box

Displays the gray area above the column caption allowing one to group[377] data in the grid.

Show indicator

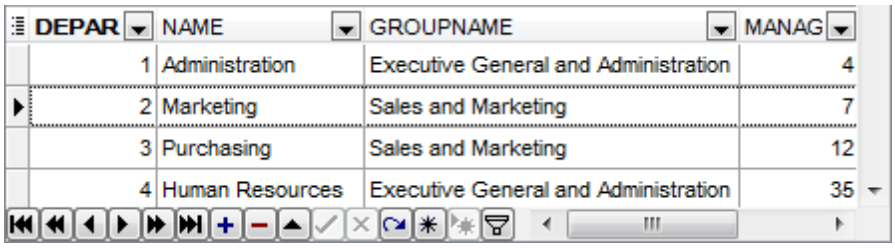
Activates/deactivates the row indicator pane at the left.

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[371] at the top of the grid. The navigator is available at the bottom of detail level view.

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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 374

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12.1.8.1 Data Options

Advanced

☑ **Use separate connections for each data view within a database**
Select this option to use a separate connection for each data view[370] within a database. Disabling this option is recommended if maximum allowed number of connections is too low.

☑ **Asynchronous query execution**
Check this option to allow executing queries in background mode (asynchronously). Note that this option is only available when the *Use separate connections for each data view within a database* option is enabled.

☑ **Perform data sorting on client in data view**
If enabled, the data are sorted by **SQL Manager for InterBase/Firebird** (on the client side). If this option is disabled, the data are sorted on InterBase/Firebird server with the help of the *ORDER BY* clause used in SQL query.

☑ **Perform data filtration on client in data view**
If enabled, the data are filtered by **SQL Manager for InterBase/Firebird** (on the client side).
If disabled, SQL filter is used in data view[370]. In this case filtering is performed on the InterBase/Firebird server with the help of the *WHERE* clause used in SQL query.

With the **Perform data sorting on client in data view** option enabled, sorting is performed by means of the grid. Otherwise a click on the column header for sorting causes reloading all table data with the selected field in the *ORDER BY* expression of the *SELECT* statement.
If the table contains a huge amount of records and the **Select only N records** mode (see the **Default limit options in table and view editors** group) is used, this mode is more preferable (e.g. all the records having values starting with "A" will be displayed, and not those which were in originally opened N records).

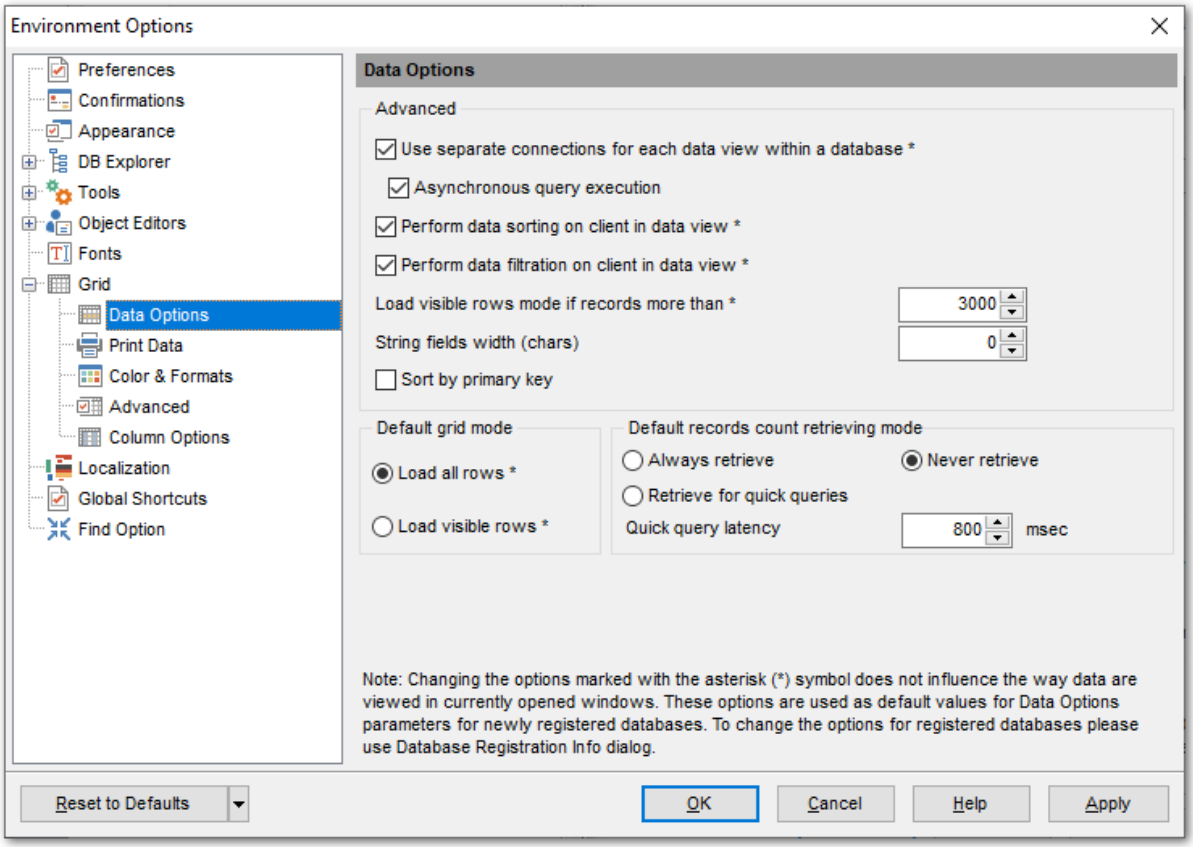
All above-mentioned is related to the **Perform data filtration on client in data view** option as well. If the filter is applied to a table containing a great number of records, it is strongly recommended to enable this option - in this case the filter will be applied to all table/view records, not only to those which are displayed at the present moment.

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 fields width (chars)
Using this option you can limit string fields width that may improve performance on large datasets.

☑ **Sort by primary key**
When enabled, the option allows sorting data by the primary key[217] on opening the data grid[374].

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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.
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[383] of the grid).

Default records count retrieving mode

Always retrieve

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Use this mode to get record count always.

Never retrieve
This mode disables retrieving record counting.

Retrieve for quick queries
Use this mode to retrieve records count if it takes less time than specified at the **Quick query latency** field below.

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 126 dialog.

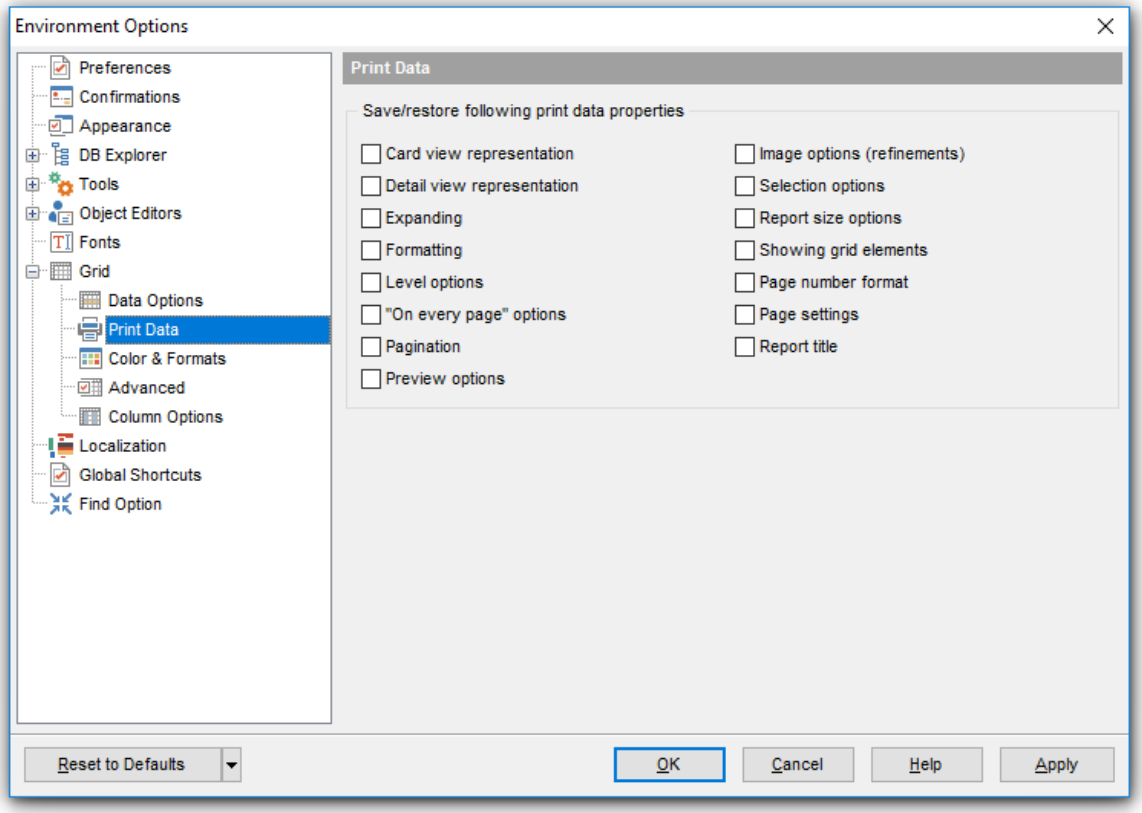
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12.1.8.2 Print Data

Save/restore following print data properties

These options specify which Print Data[397] 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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12.1.8.3 Color & Formats

Display formats

Integer fields
Defines the format for displaying *SMALLINT*, *INTEGER* and *BIGINT* fields.

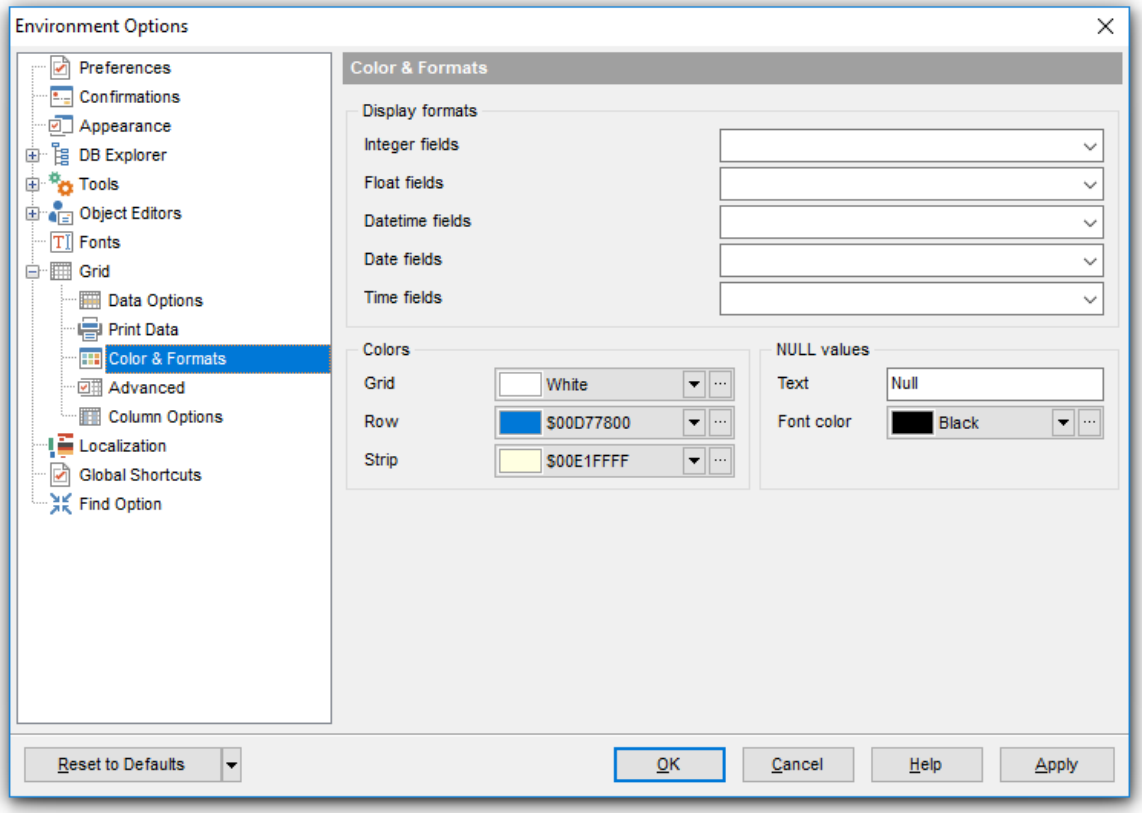
Float fields
Defines the format for displaying *FLOAT*, *DOUBLE PRECISION* and *DECIMAL* fields.

Datetime fields
Defines the format for displaying *TIMESTAMP* fields.

Date fields
Defines the format for displaying *DATE* fields.

Time fields
Defines the format for displaying *TIME* fields.

For more information refer to the Format specifiers 914 page.



Colors

Options of this group allow you to set colors for basic grid 374 elements. Use the ellipsis button to open the **Color** dialog allowing you to select the required color from the palette.

Grid

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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 787 page).

NULL values

Text
Defines the text that stands for NULL values in grid 374.

Font color
Defines the font color for displaying NULL values in the grid 374. Use the ellipsis button to open the **Color** dialog allowing you to select the required color from the palette.

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12.1.8.4 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.

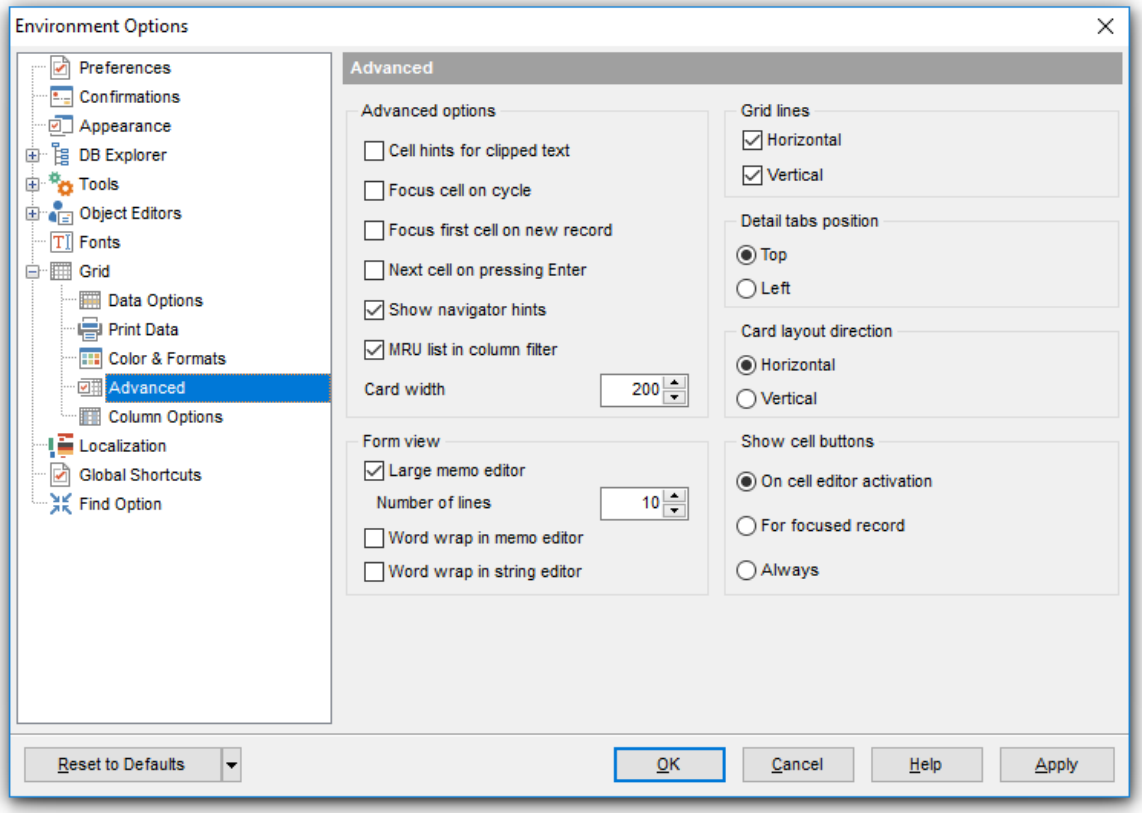
Focus first cell on new record
Determines whether the focus moves to the first cell of a newly created row.

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.

Card width
Defines the width of the card used in Card View 393 mode.



Form view

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Large memo editor
Enables large editors on the Form view 396. Set the **number of lines** for text-typed fields.

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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12.1.8.5 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.

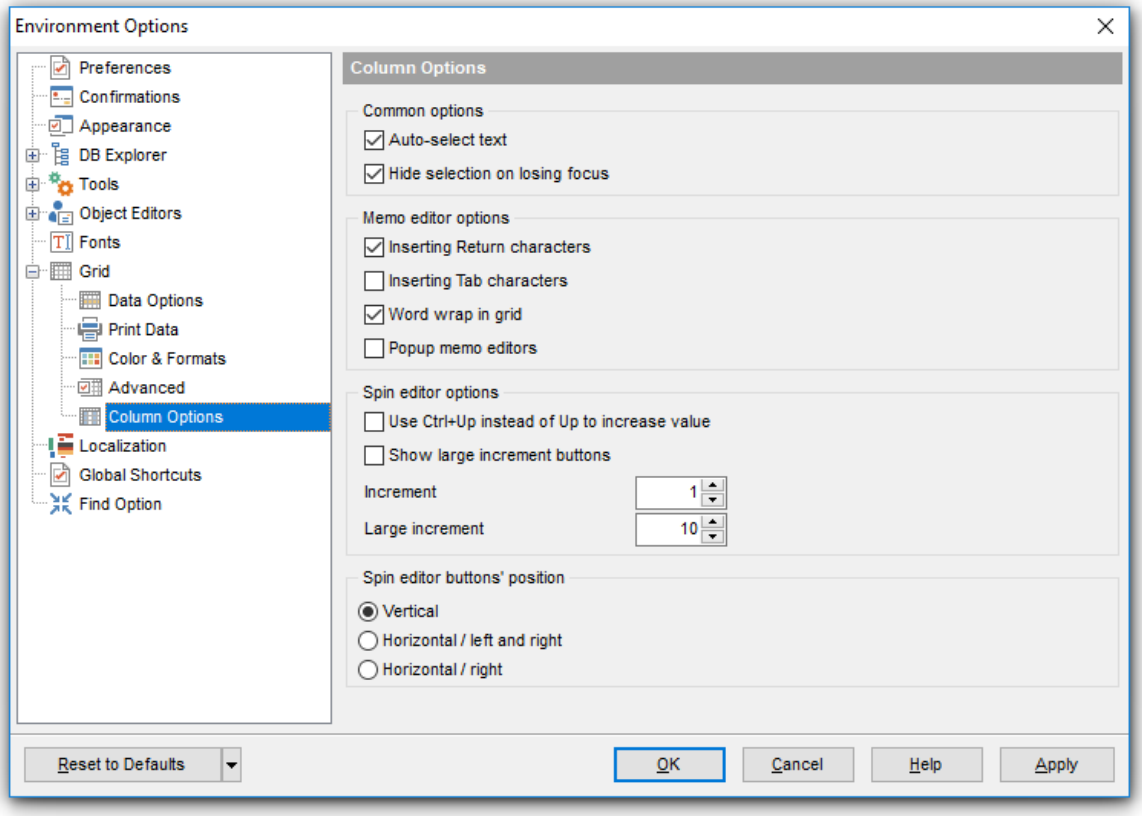
Memo editor options

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

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Allows you to use *Ctrl+Up* and *Ctrl+Down* key combinations for editing spinner values (for INTEGER field 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*.

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12.1.9 Localization

The **Localization** section of the **Environment Options** dialog is provided for managing the localization files of **SQL Manager for InterBase/Firebird**.

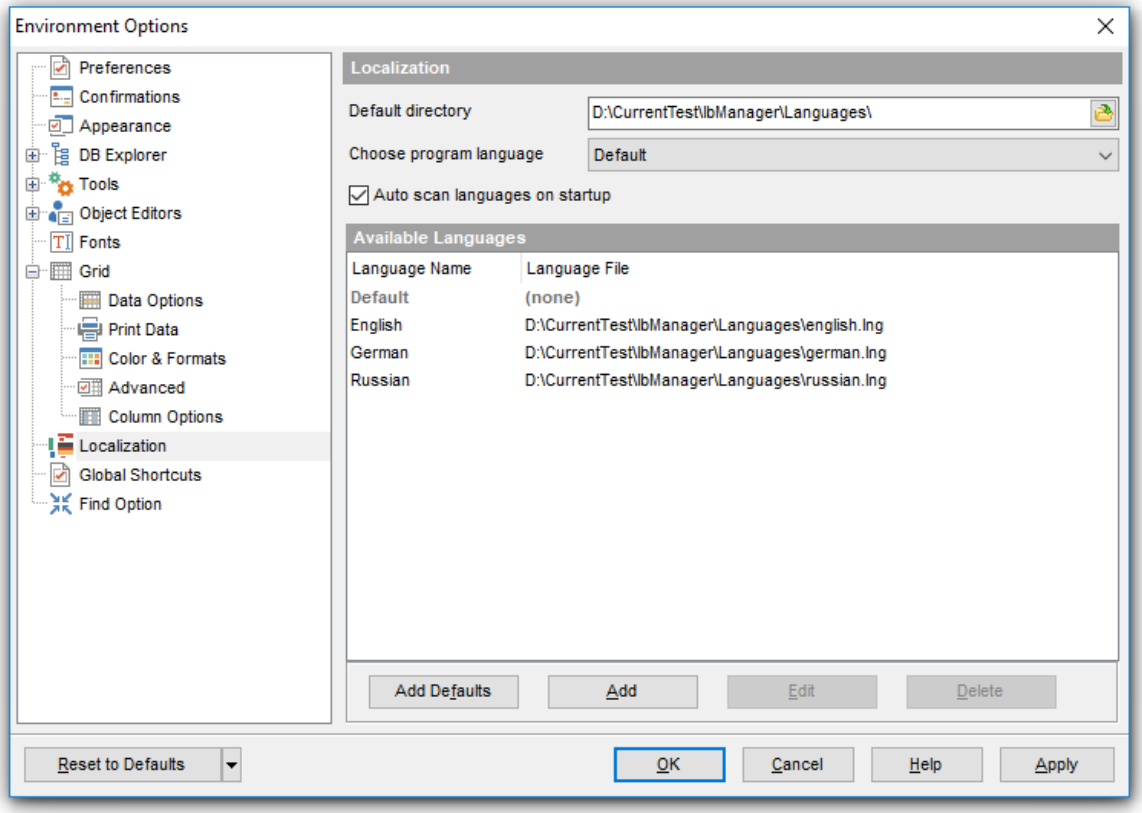
You can create your own **.lng* files similar to those available in the *%program_directory %\Languages* folder, add them to the list of available languages and set the new language as the program interface language.

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.



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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 917 dialog where you can specify your own localization file and set the language name.

Edit
Opens the Edit language 917 dialog where you can change the language name or select another localization file for the specified language.

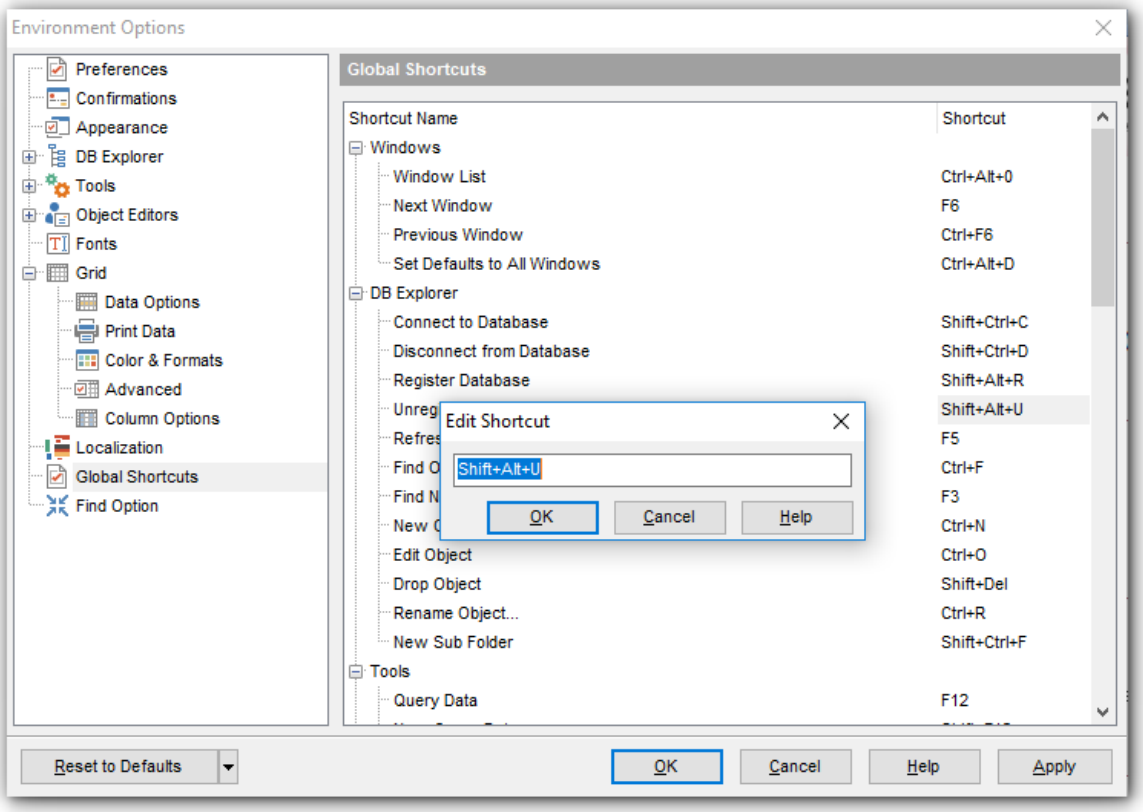
Delete
Removes the selected language from the **Available languages** list (without confirmation).

See also:
Localization 828

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12.1.10 Global Shortcuts

This section allows you to view/edit shortcuts for most needed actions when working with SQL Manager for InterBase/Firebird.



To edit a shortcut, select the required action click the ellipsis button and press the preferred key combination to assign it with the action.

See also:

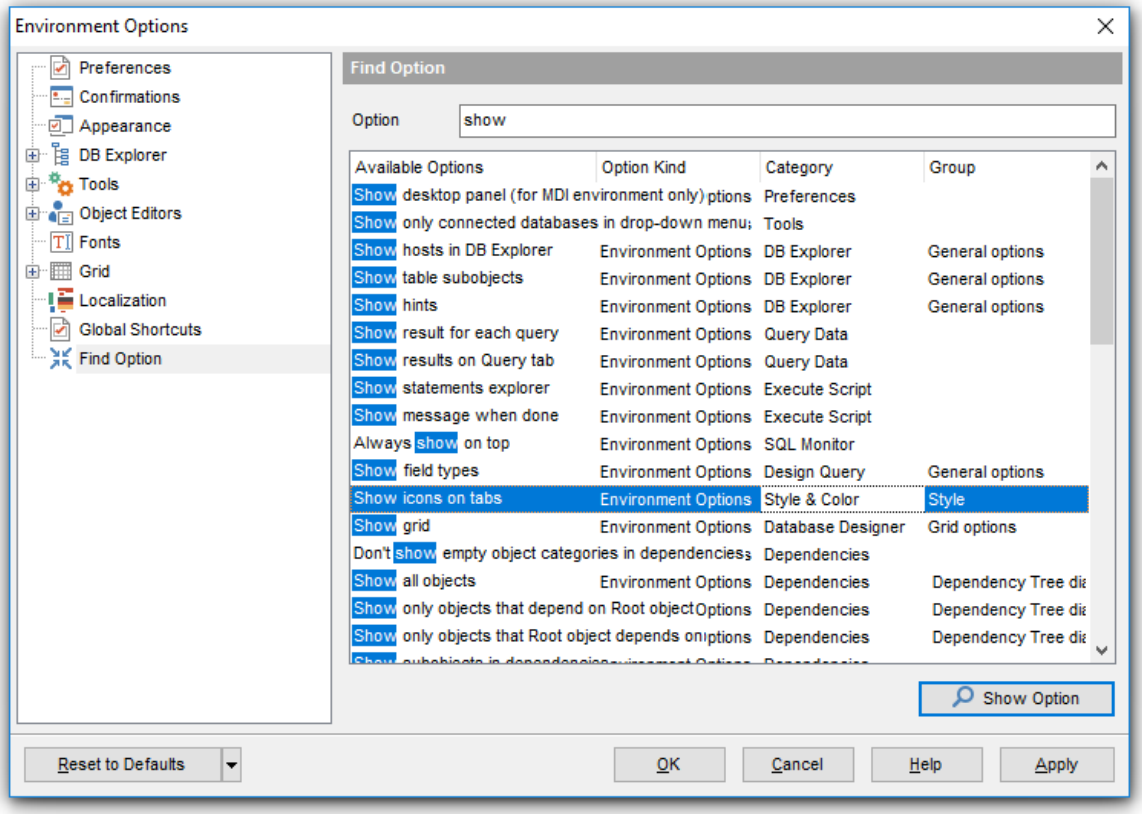
Key Mapping 818
Keyboard Templates 833

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12.1.11 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*.



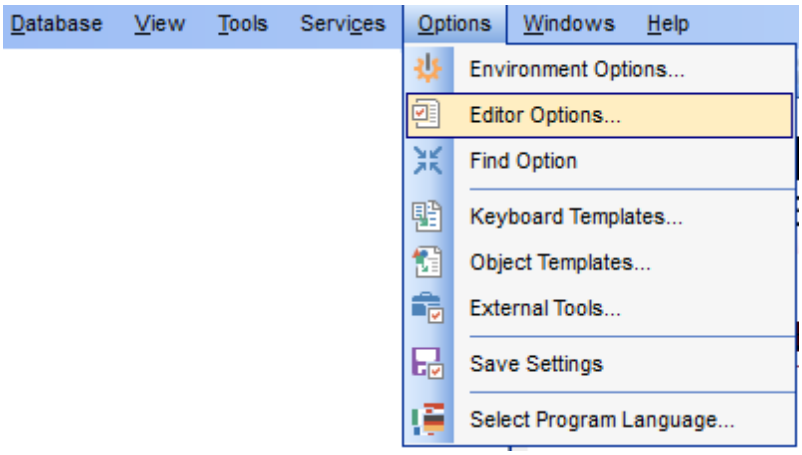
The **Available options** area lists all options of the *Environment Options* category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.
Select the required option in the list and click **Show Option** to open the corresponding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

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12.2 Editor Options

Editor Options allow you to set the parameters of viewing and editing SQL statements within Query Data 331 and other SQL editing tools of the **SQL Manager** application.

To open the **Editor Options** window, select the **Options | Editor Options...** main menu 890 item, or use the **Editor Options** button on the main toolbar 892.



General 805
Display 809
SQL Formatter 815
Key Mapping 818
Spell Checking 820
Find Option 822

See also:

Environment Options 744

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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 909 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 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.

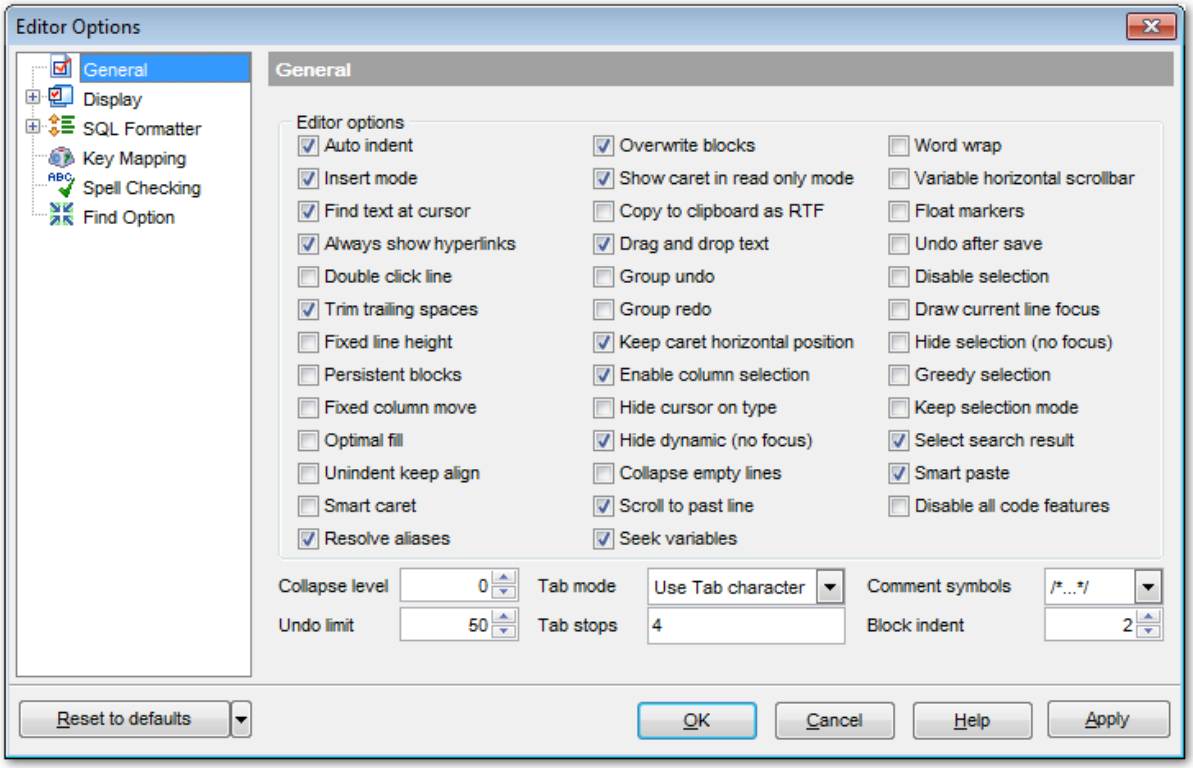
Optimal fill
Check this option to enable optimal algorithm of filling text content in the working area of the editor.

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 Rich Text 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.

Keep caret horizontal position (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 past line (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.

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 disregarding the currently selected keyboard language.

Disable all code features

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This option disables code completion, code folding, highlight and all options that are set on the Code Completion 813 page. For options that are set on the Highlight 811 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.

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12.2.2 Display

Default editor fonts

Use these options to set the *font* and *size* used in the editor.

Show only fixed-width fonts
Use this option to display only fonts with fixed width 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.

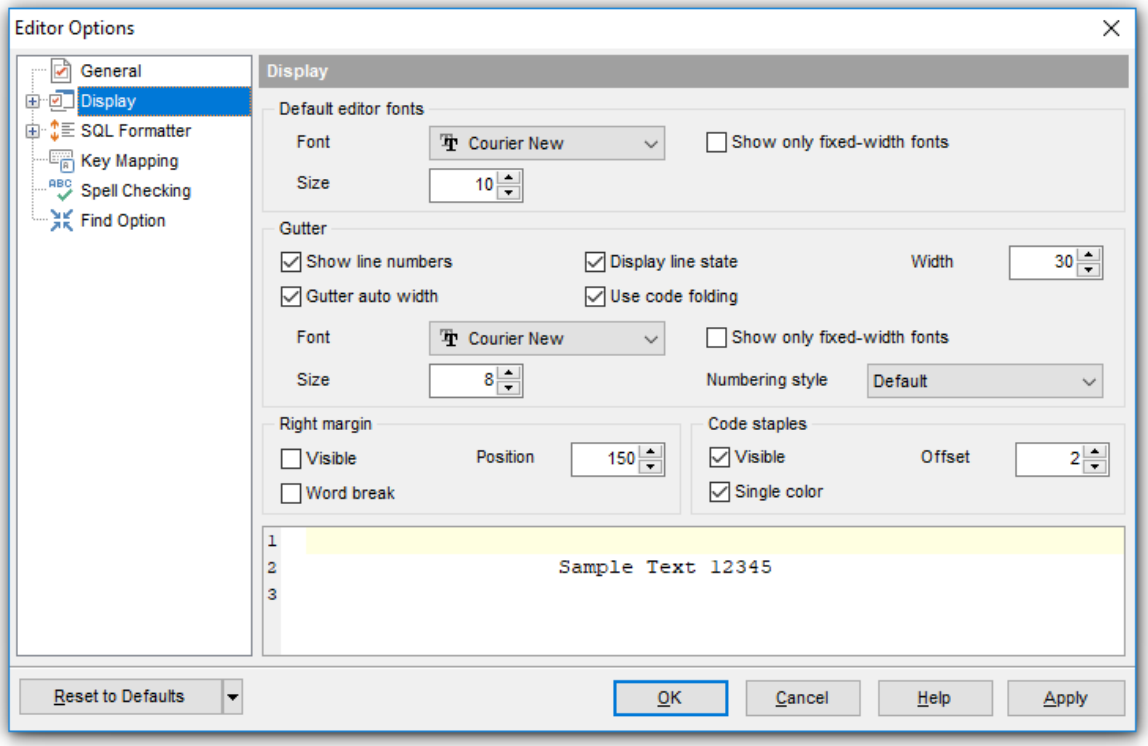
Use code folding
Check this option to enable to code folding feature of Query data.

Width
Defines the gutter width in the editor window.

Use these options to set the *Font*, *Size* and *Numbering style* used in the gutter.

Show only fixed-width fonts
Use this option to display only fonts with fixed width in the **Font** dialog.

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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.

Color
Defines the color of the right margin in the editor window. Select an item from the drop-down list or click the ellipsis button to select a color using the **Color** dialog where you can specify the required color from the palette.

Code staples

Visible
Makes the code staples visible in the editor window.

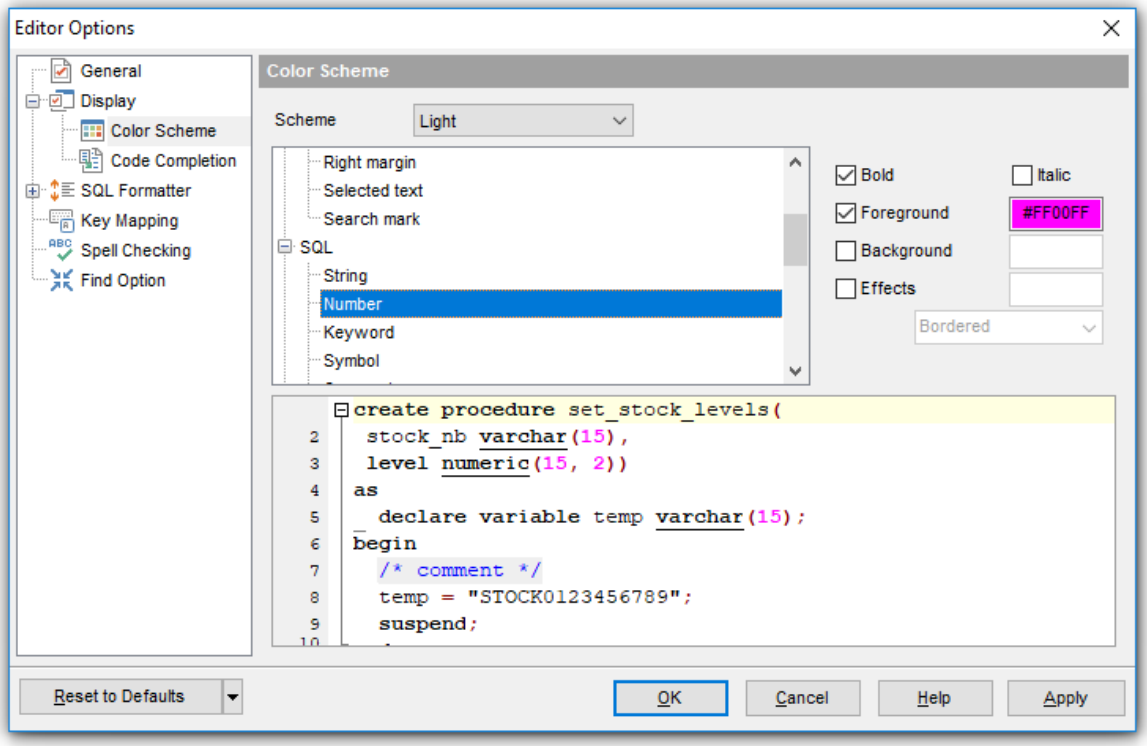
Single color
Check the option to apply a single color for code staples.

Offset
Specify the offset value for code staples.

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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 813

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12.2.2.2 Code Completion

The **Code Completion** section of the **Editor Options** dialog allows you to specify the **automatic features**, **fonts**, **styles**, **foreground** and **background colors**, **borders** and other attributes of the text used by the editor to display objects for 'quick code': *tables*, *indices*, *fields*, *foreign keys*, *procedures*, *functions*, *views*, *etc.*

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**). The popup list will appear after a period of time defined by the **Delay** option.

Delay
Using this option you can change the time after which completion variants popup.

Sensitivity
This option allows you to set the number of characters to be typed before code completion is activated.

☑ **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.

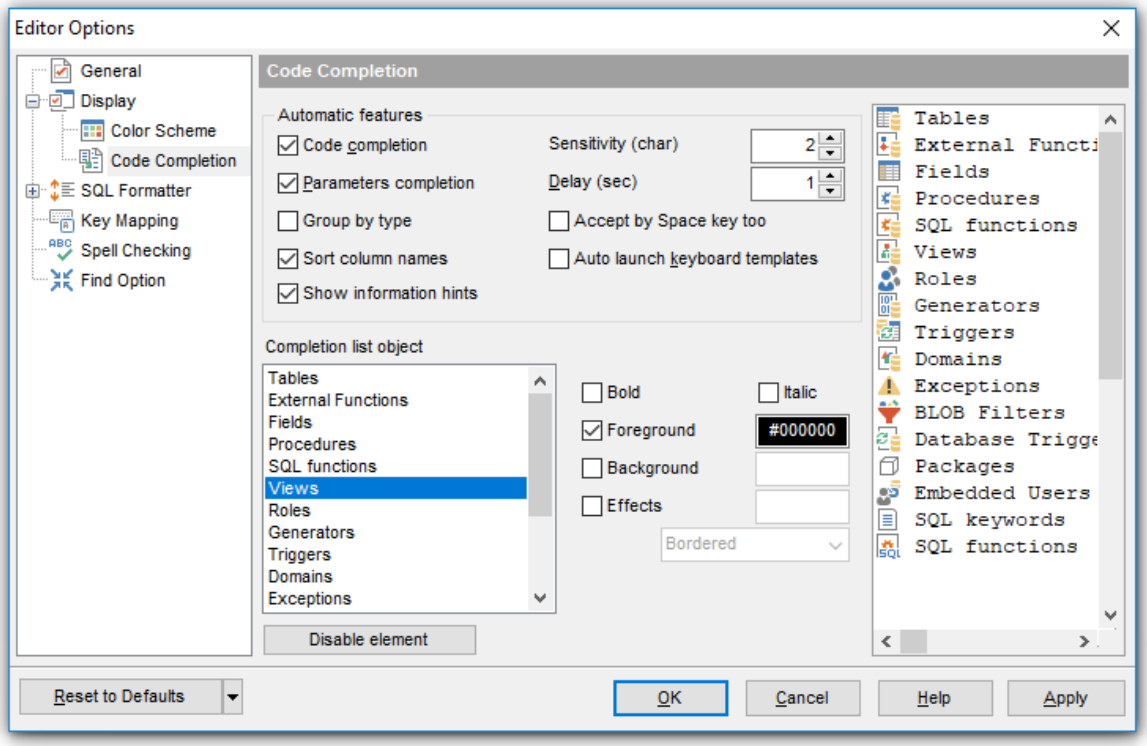
☑ **Sort column names**
Enable this option to force sorting for field names.

☑ **Show information hints**
This option enables/disables information hints for variants offered by *code completion* feature.

☑ **Auto launch keyboard templates**
Allows you to use keyboard templates for faster typing frequently used expressions (see Keyboard Templates 833).

☑ **Accept by Space key too**
Enables selecting the completion item with Space key.

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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:

Highlight 811

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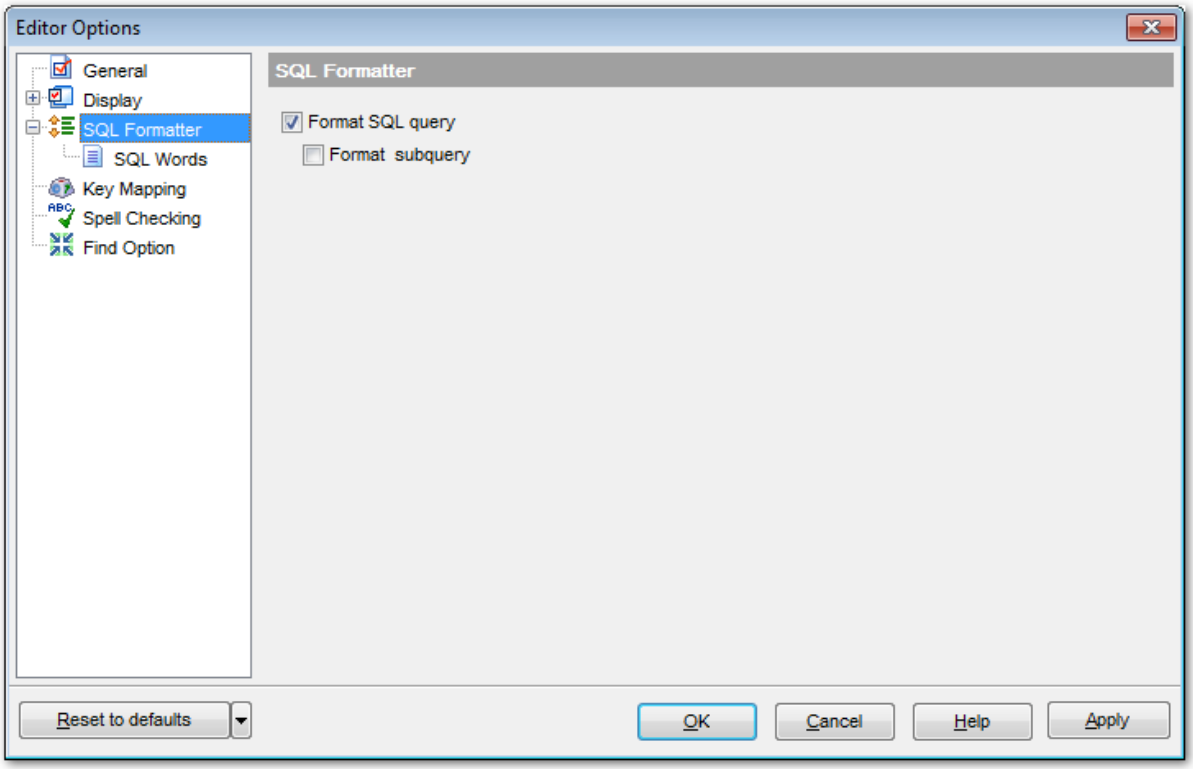
12.2.3 SQL Formatter

SQL Formatter is a feature implemented in SQL Manager for InterBase/Firebird and is a useful tool for formatting SQL queries and scripts, making SQL statements easy to read. SQL Formatter is introduced in Query Data 331, Execute Script 544 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 331

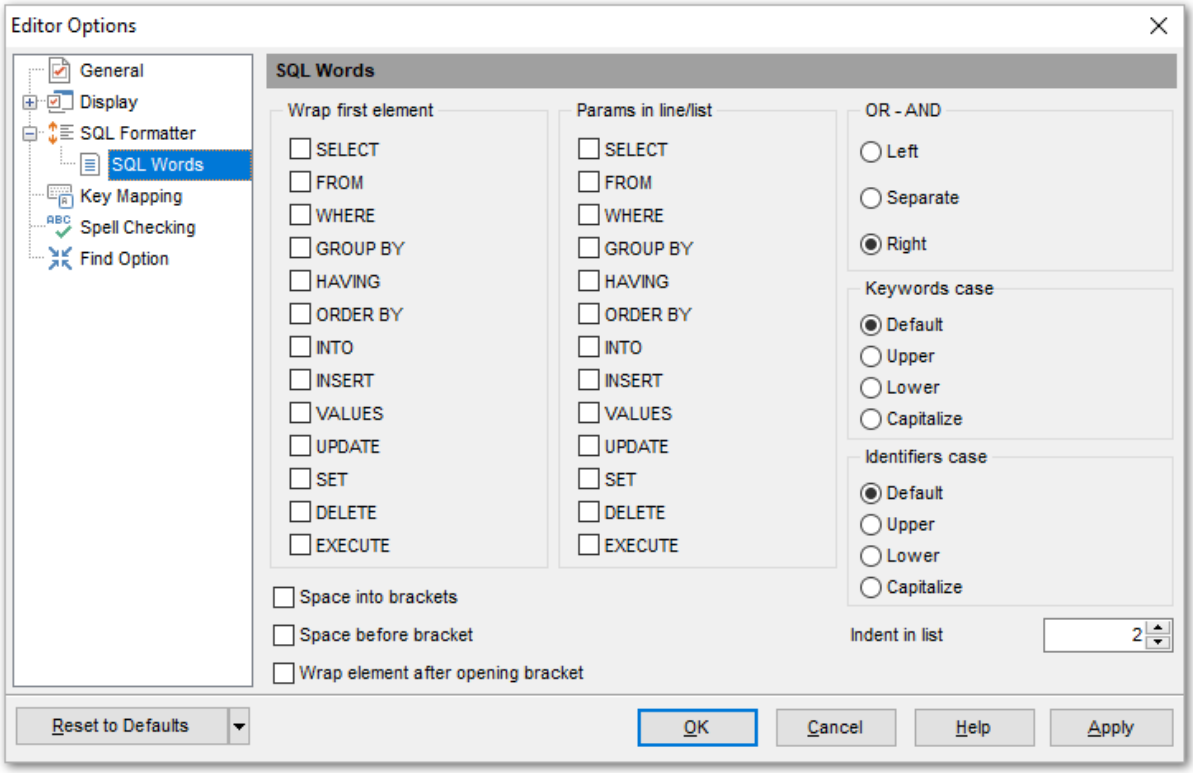
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12.2.3.1 SQL Words

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
```

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```
    ...
     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.

Wrap element after opening bracket
Transfer to a new line after opening the bracket.

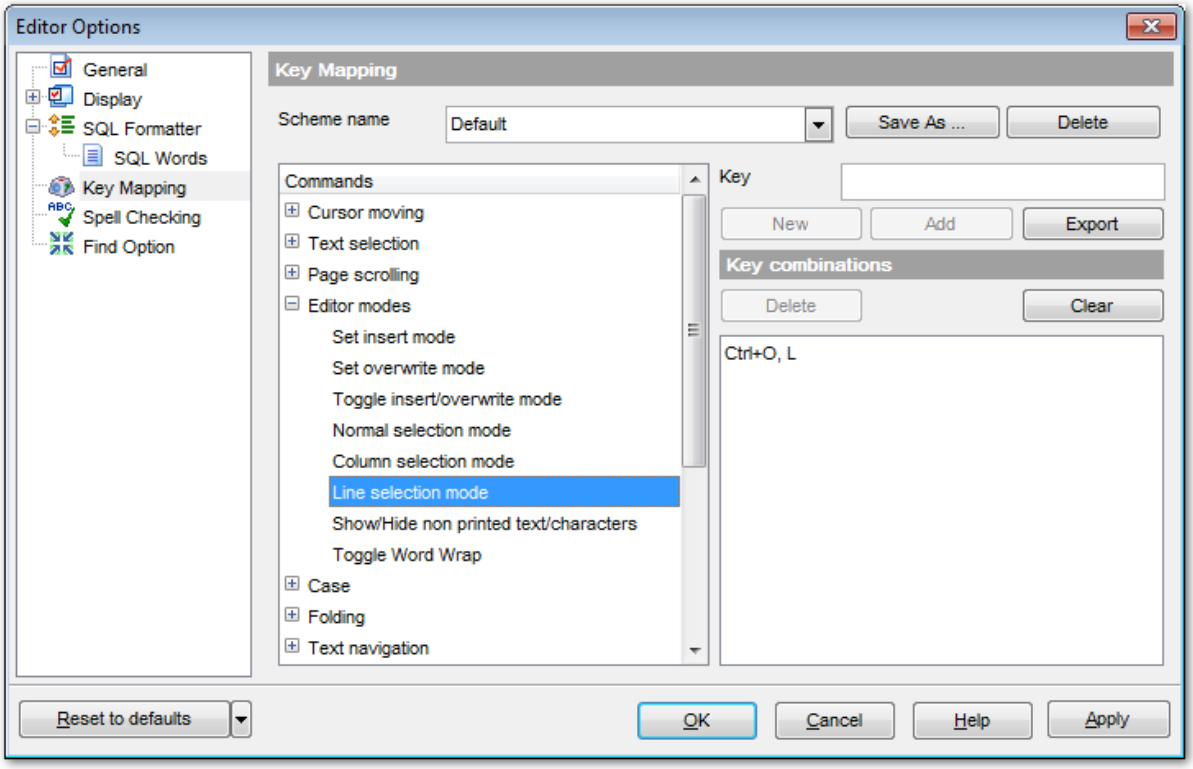
Indent in list
Sets the size of indent relatively to the previous string.

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12.2.4 Key Mapping

For your convenience **key mapping** is provided in **SQL Manager for InterBase/Firebird**. On this page you can set the shortcuts[940] 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.



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.

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To delete a scheme, select it in the **Scheme name** drop-down list and press the **Delete** button.

See also:

Query Data 331

SQL Manager shortcuts 940

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12.2.5 Spell Checking

Spell checking is a new feature implemented in **SQL Manager for InterBase/Firebird** for your convenience.

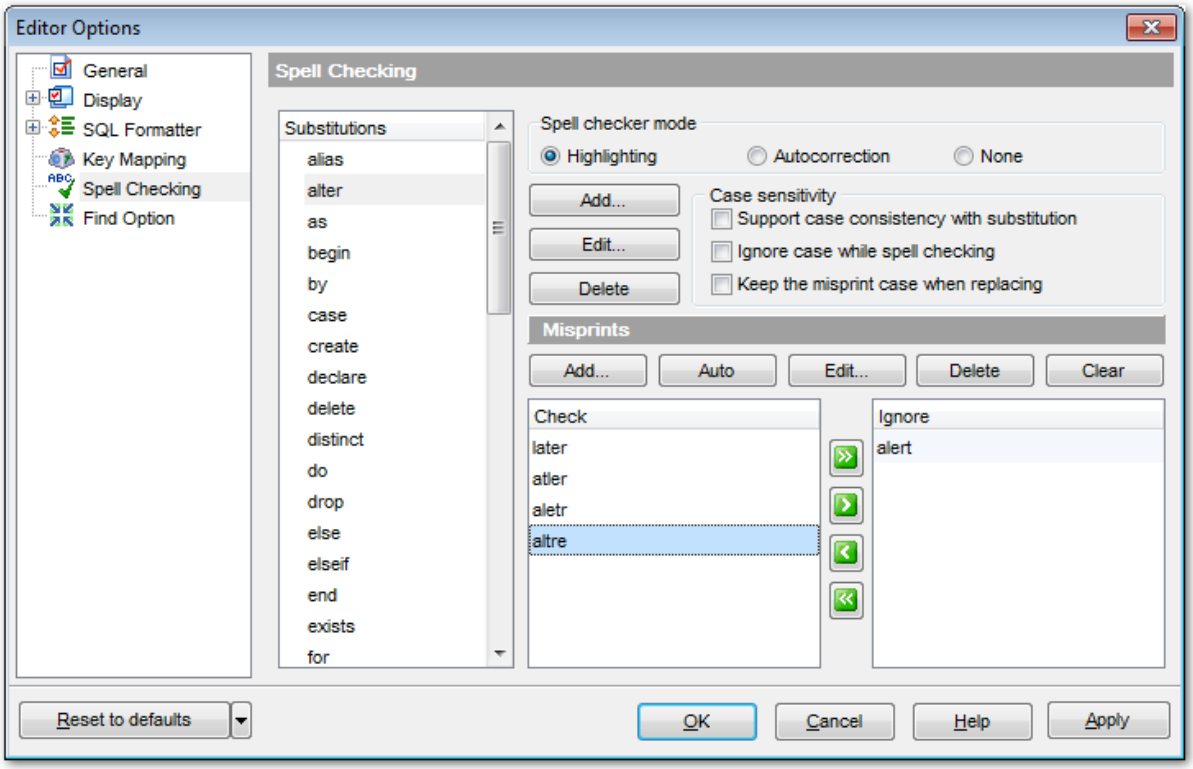
Set the necessary **Spell checker mode**:

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.

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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.

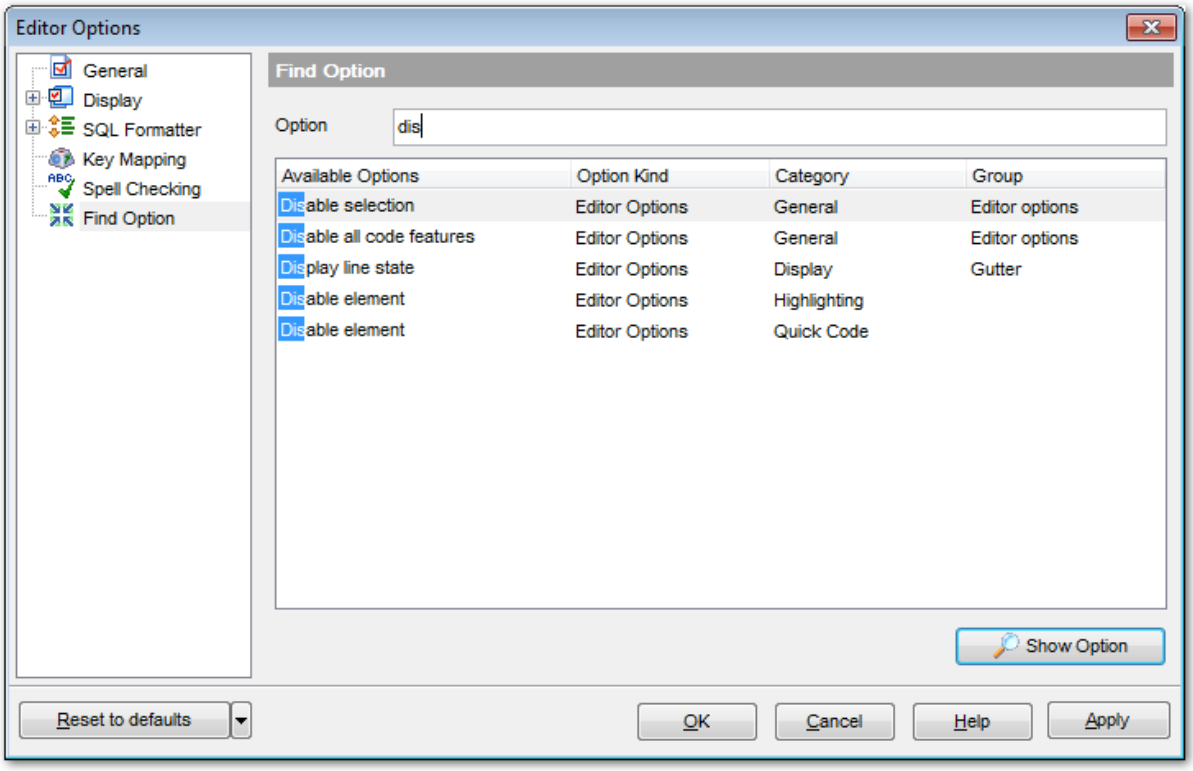
It is also possible to exclude a misprint from spell checking without deleting the misprint. This misprint will therefore remain in the vocabulary, but it will be ignored by the spelling checker.
To mark a misprint as excluded, you need to move it from the **Check** list to the **Ignore** list. Use the  buttons or drag-and-drop operations to move the misprints from one list to another.

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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*.



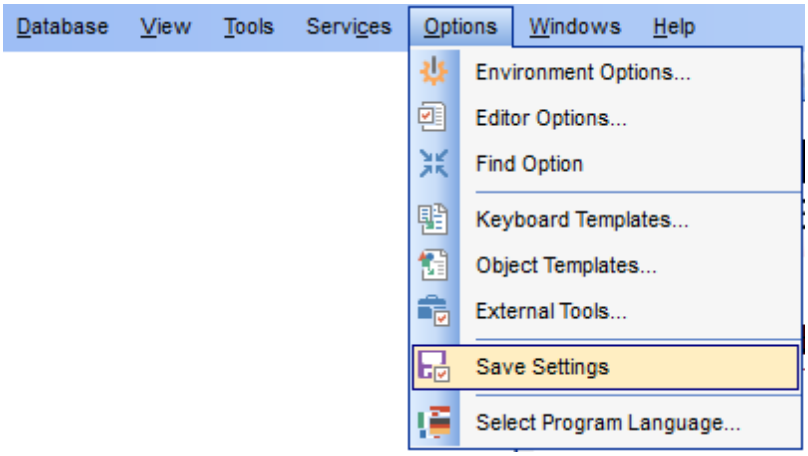
The **Available options** area lists all options of the *Editor Options* category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.
Select the required option in the list and click **Show Option** to open the corresponding section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

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12.3 Save Settings

Save Settings Wizard allows you to export the settings of **SQL Manager for InterBase/Firebird** - wholly or partially - to a single **.reg* file which can be applied afterwards to **SQL Manager for InterBase/Firebird** installed on another machine, or it can be used to backup previous settings.

To start the wizard, select the **Options | Save Settings** main menu 890 item.



- Specifying destination file 824
- Selecting settings 825
- Selecting databases 826
- Saving settings 827

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).

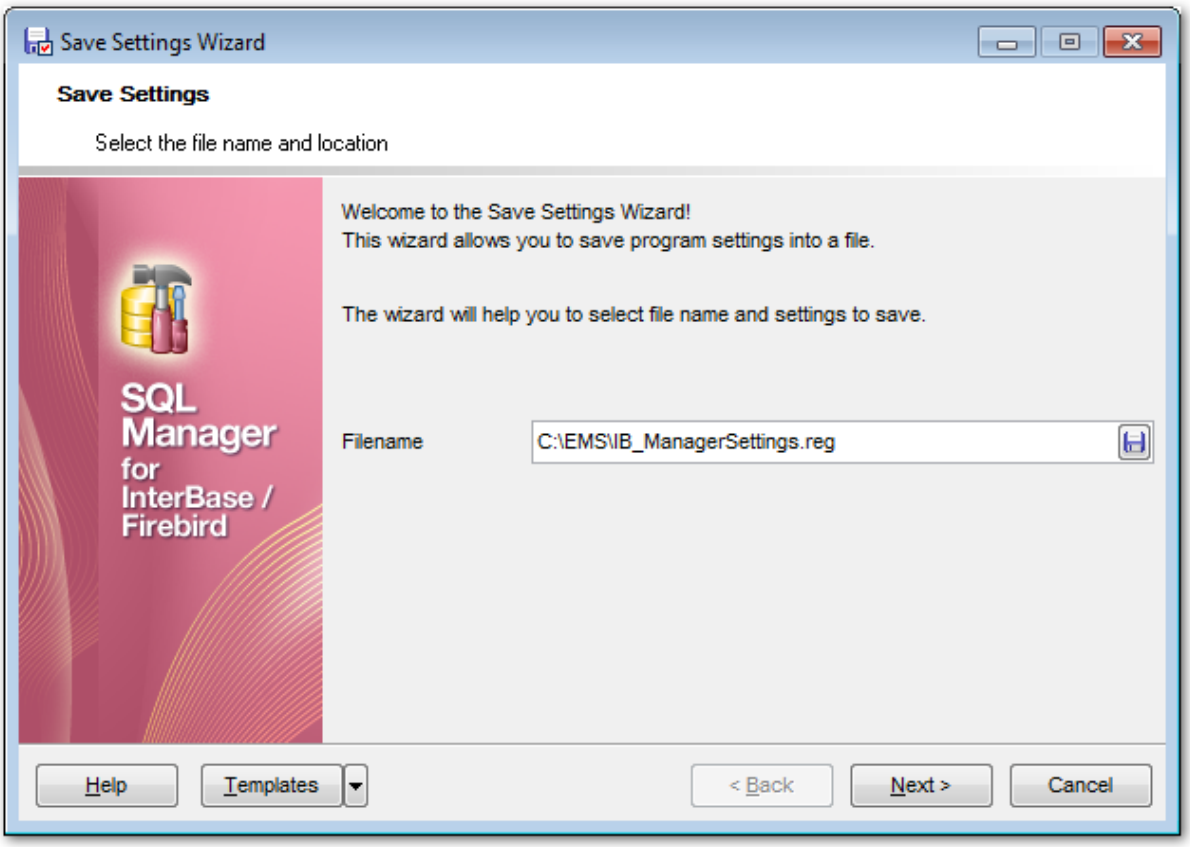
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12.3.1 Specifying destination file

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[937] dialog where you can choose the action you need.

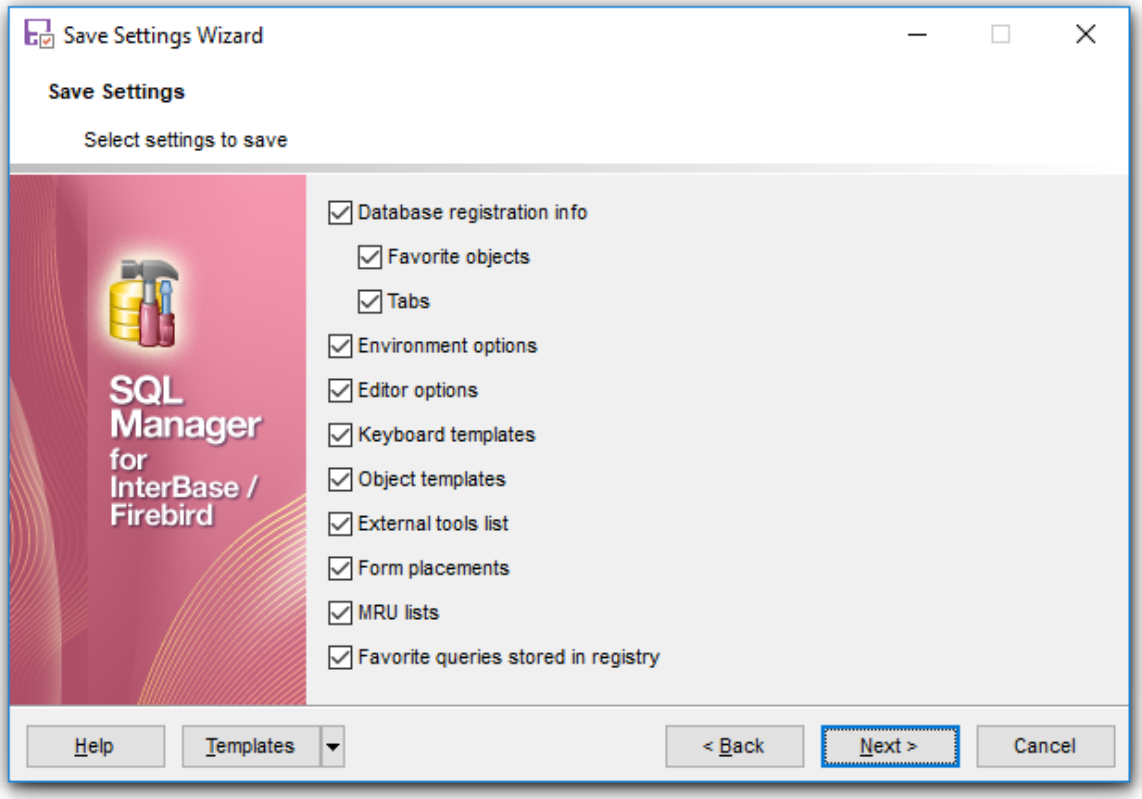


Press the **Next** button to proceed to the next step[825] of the wizard.

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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*, *Editor options*, *Keyboard templates*, *Object templates*, *External tools list*, *Form placements*, *MRU lists*, *Favorite queries*.



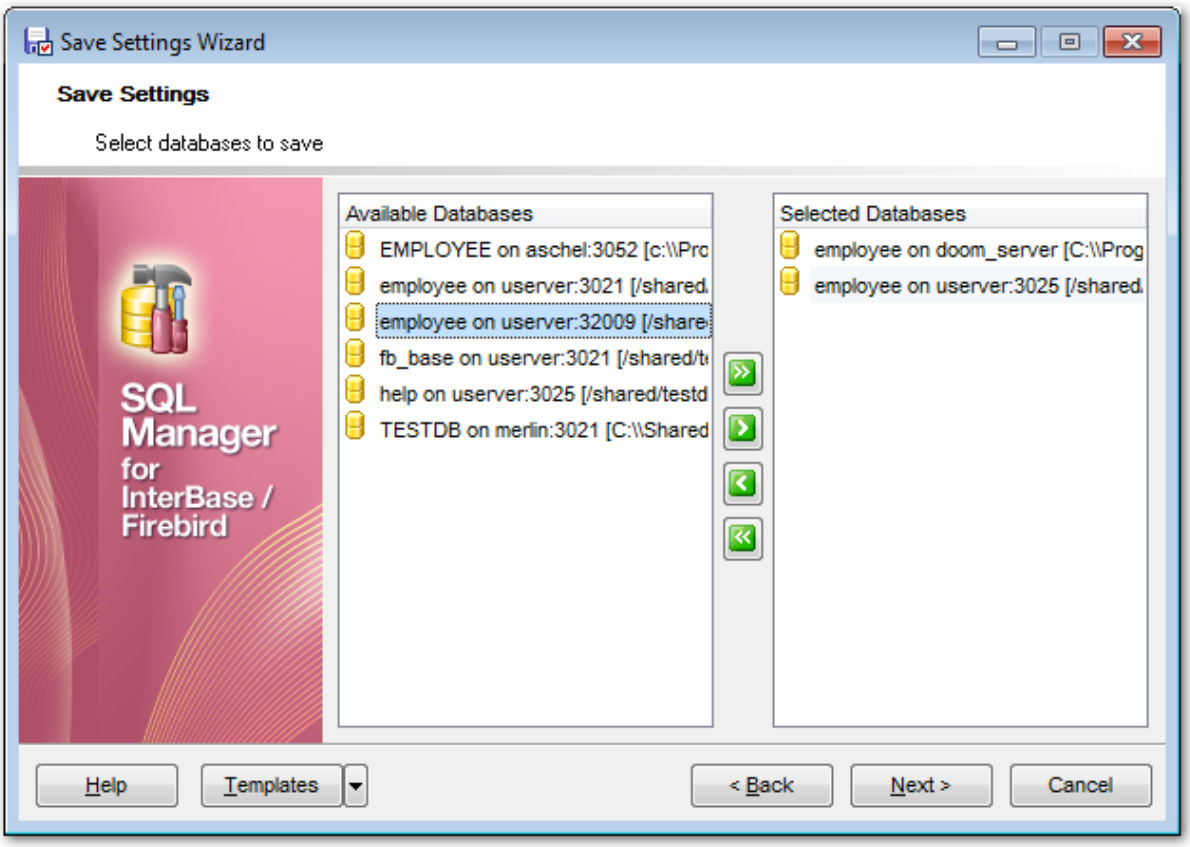
Press the **Next** button to proceed to the next step 826 of the wizard.

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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.



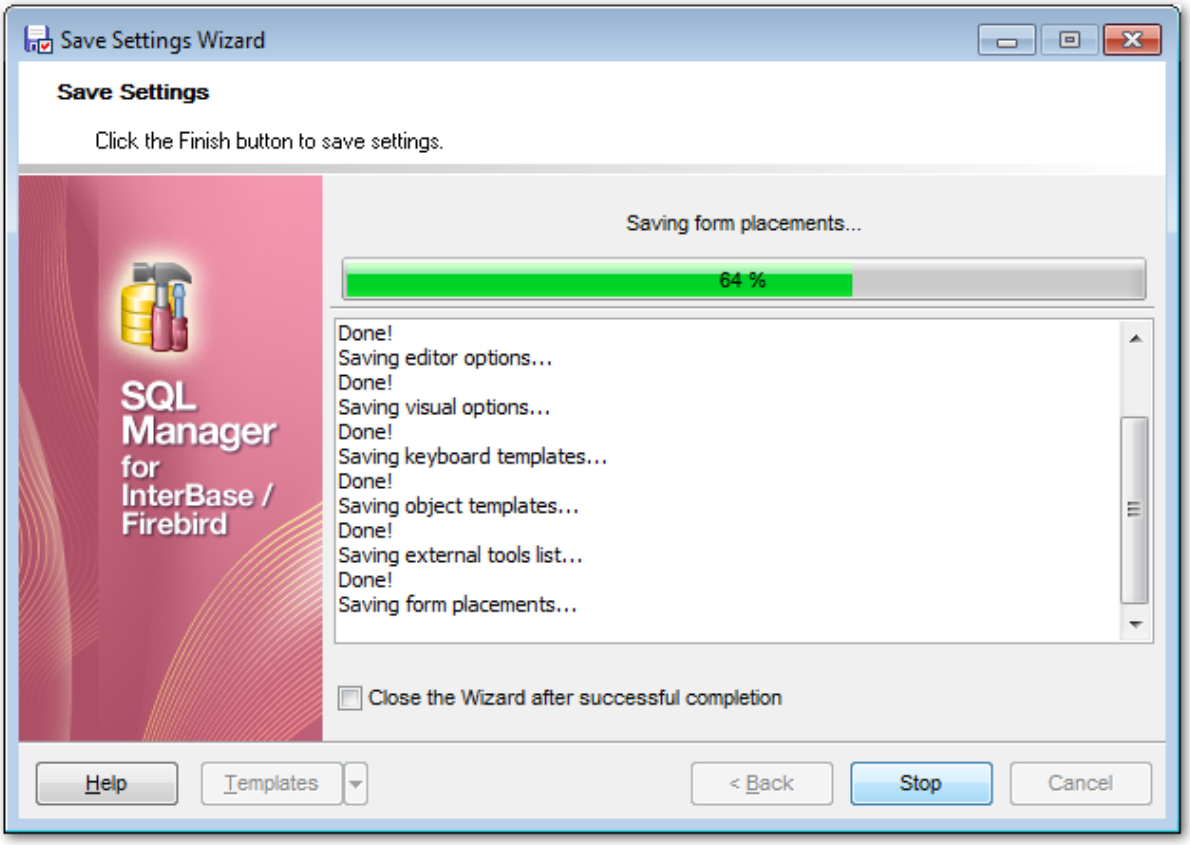
Press the **Next** button to proceed to the last step[827] of the wizard.

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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[918] for future use.

Click the **Finish** button to start saving settings.

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12.4 Localization

When using **SQL Manager for InterBase/Firebird**, 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

- select the **Options | Select Program Language...** main menu 890 item;
- select the interface language in the Select Language 831 dialog;
- click **OK** to apply the language and close the dialog.

Editing Program Localization

- open one of the program windows (e.g. Table Editor 185, Query Data 331) where you wish to edit the localization of captions and hints;
- use the *Shift+Ctrl+L* keyboard shortcut 940 to open the Localization Editor 829 window;
- edit window captions and hints as necessary;
- click the **Save** button on the toolbar 892.

Note: The Localization Editor 829 window is only available if the currently selected language is different from the default.

Creating New Localization Files

- create a new localization file similar to those located in the *%program_directory%\Languages* folder;
- select the **Options | Environment Options** main menu 890 item;
- proceed to the Localization 800 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 917 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 831 dialog or the Localization 800 section of the Environment Options 744 dialog.

See also:

Localization 800

Language Info Editor 917

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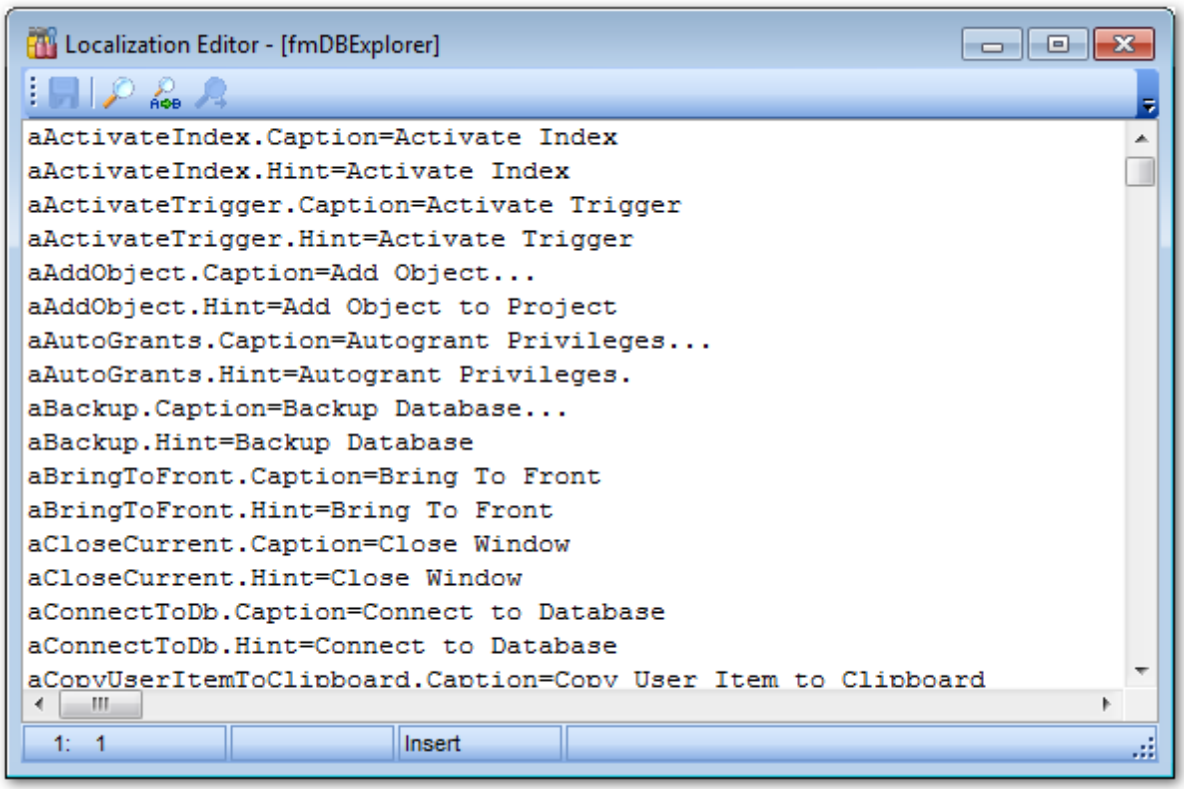
12.4.1 Localization Editor

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 940 in any child window of **SQL Manager for InterBase/Firebird**.

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 892 buttons are used to call the Find Text 909 dialog or the Replace Text 911 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 892 to apply the changes you have made.

Availability:
Full version (for **Yes**

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Windows)	
Lite version (for Windows)	**Yes**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

See also:

Select Program Language 831

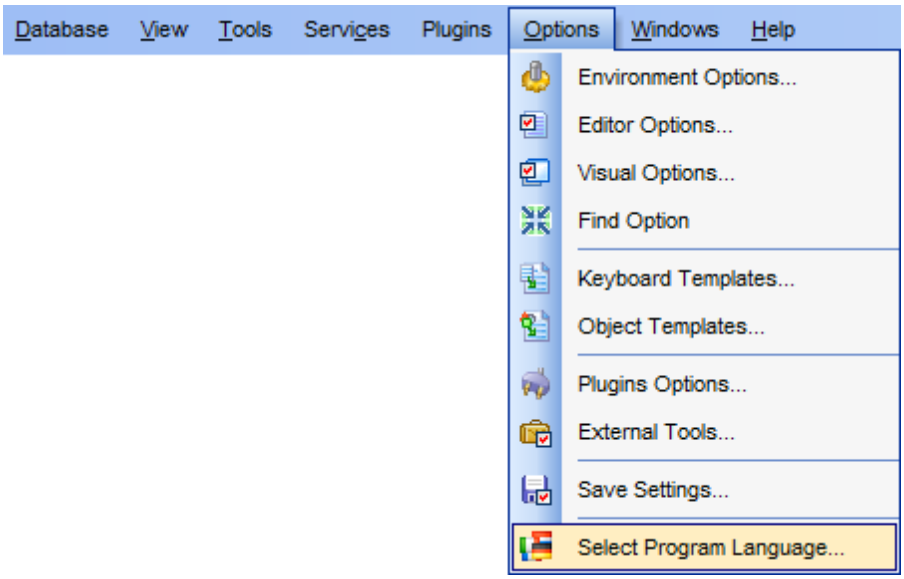
Localization 800

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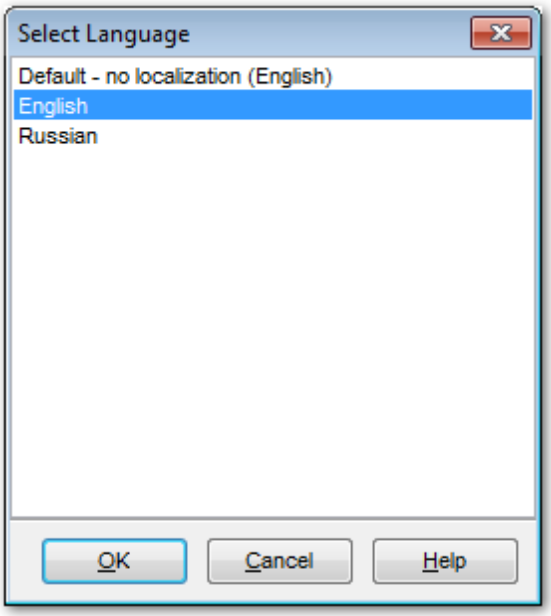
12.4.2 Select Program Language

The **Select Language** dialog allows you to select a language for **SQL Manager for InterBase/Firebird** localization.

To open this dialog, select the **Options | Select Program Language...** main menu item.



The dialog displays the list of available languages configured on the Environment Options | Localization page. Select a language from the list and click **OK** to confirm your choice and close the dialog.



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Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**Yes**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

See also:

Localization Editor 829

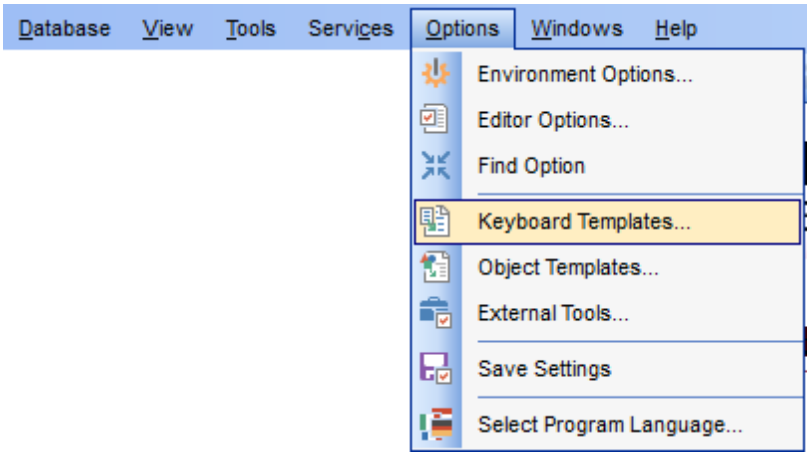
Localization 800

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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.

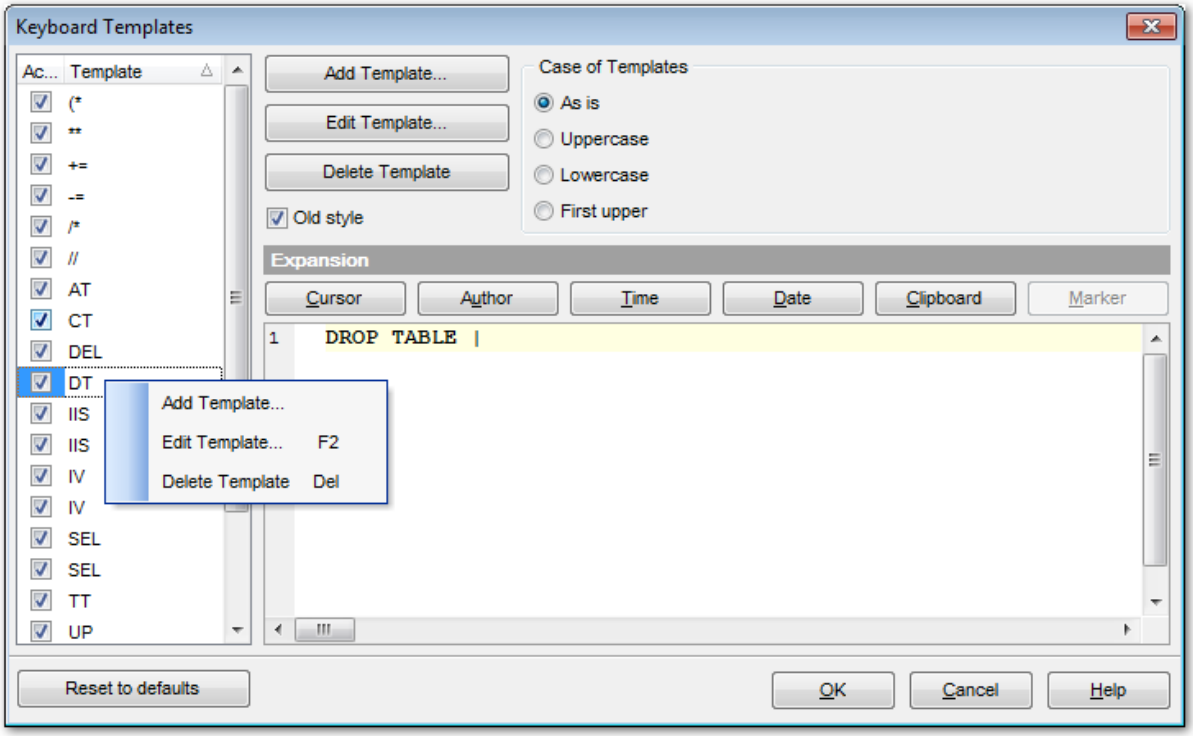
To open this window, select the **Options | Keyboard Templates...** main menu 890 item.



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.

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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 InterBase/Firebird**.

Once you have defined the templates, you can use them in Query Data 331. First of all, make sure that the ☑ **Auto launch keyboard templates** option is selected on the Code Completion 813 page of the Editor Options 804 dialog. When editing SQL text 334 in Query Data, type a template name and use the *Ctrl+J* shortcut 940: 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:

Code Completion 813

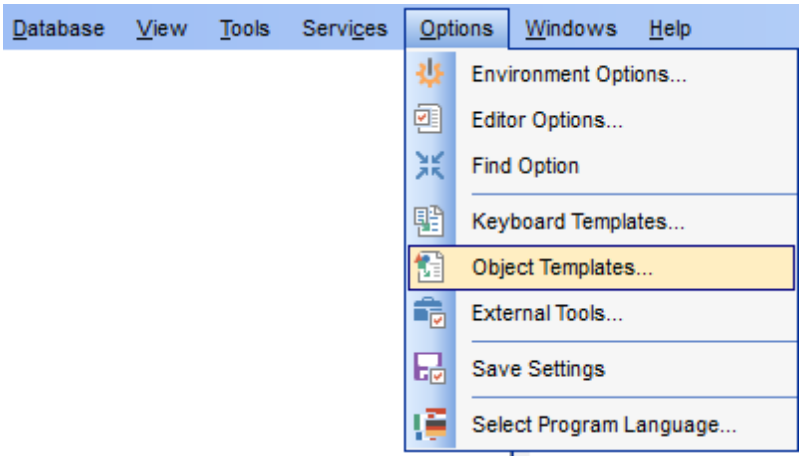
SQL Manager shortcuts 940

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12.6 Object Templates

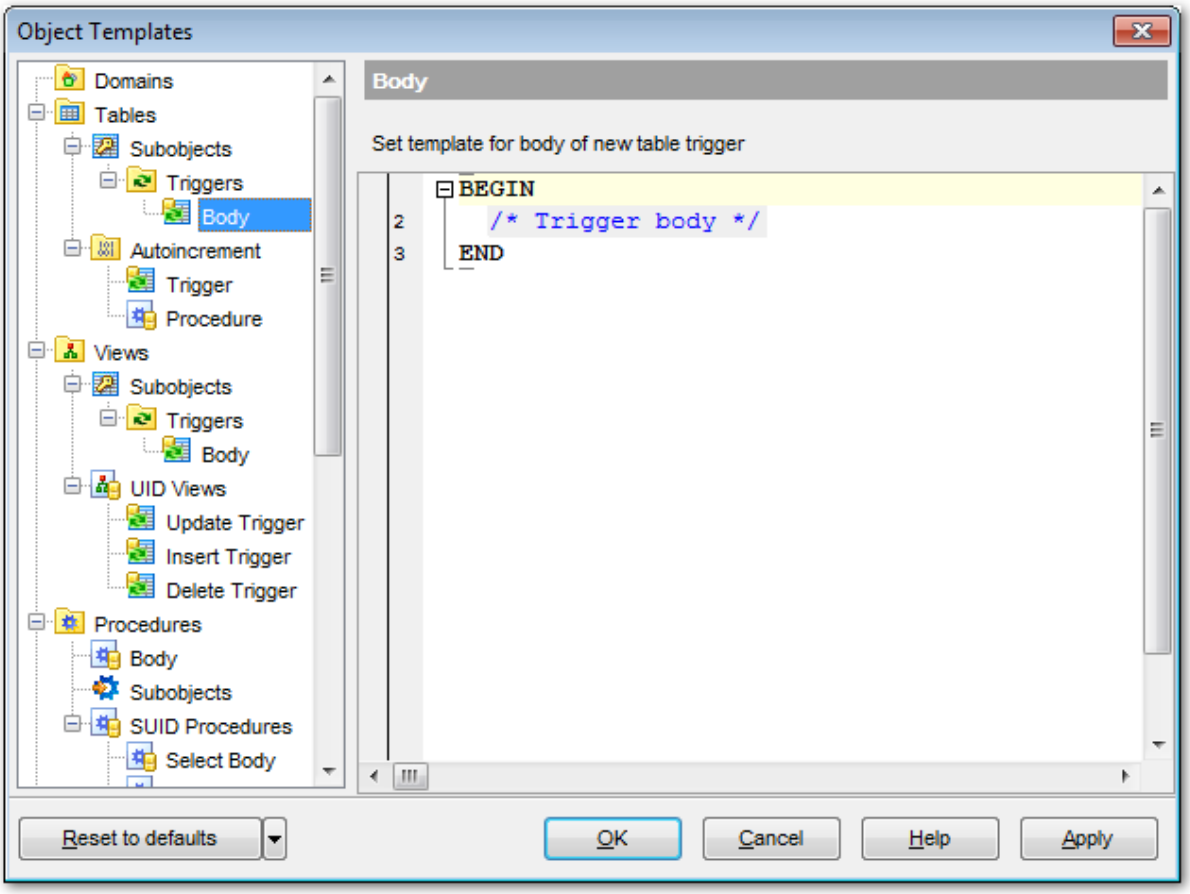
The **Object Templates** window allows you to preset the definition template for the name and/or body of an object to be created.

To open this window, select the **Options | Object Templates...** main menu 890 item.



Select an object in the tree (*Domain*, *Table*, *View*, *Procedure*, *DB Trigger*, *UDF*, *Exception*, *Generator*, *BLOB Filter*, *User*, *Embedded User*, *Role*, *Report*, *Favorite Query*, *Project*) and set its template using the editor area.

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See also:

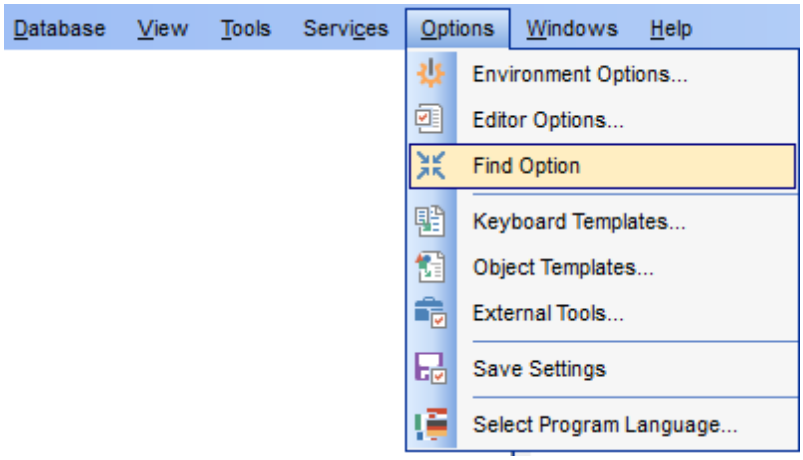
Database Objects Management 163

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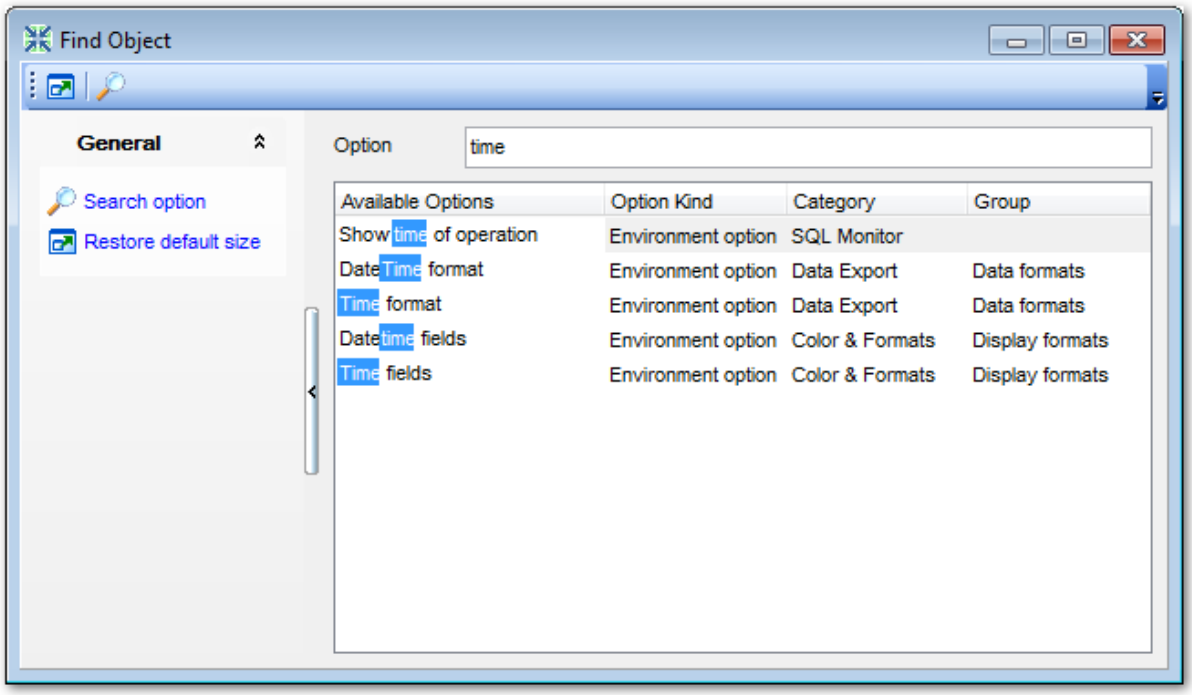
12.7 Find Option dialog

The **Find Option** dialog allows you to search for **SQL Manager** options easily.

To open this dialog, select the **Options | Find Option** main menu 890 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.

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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.

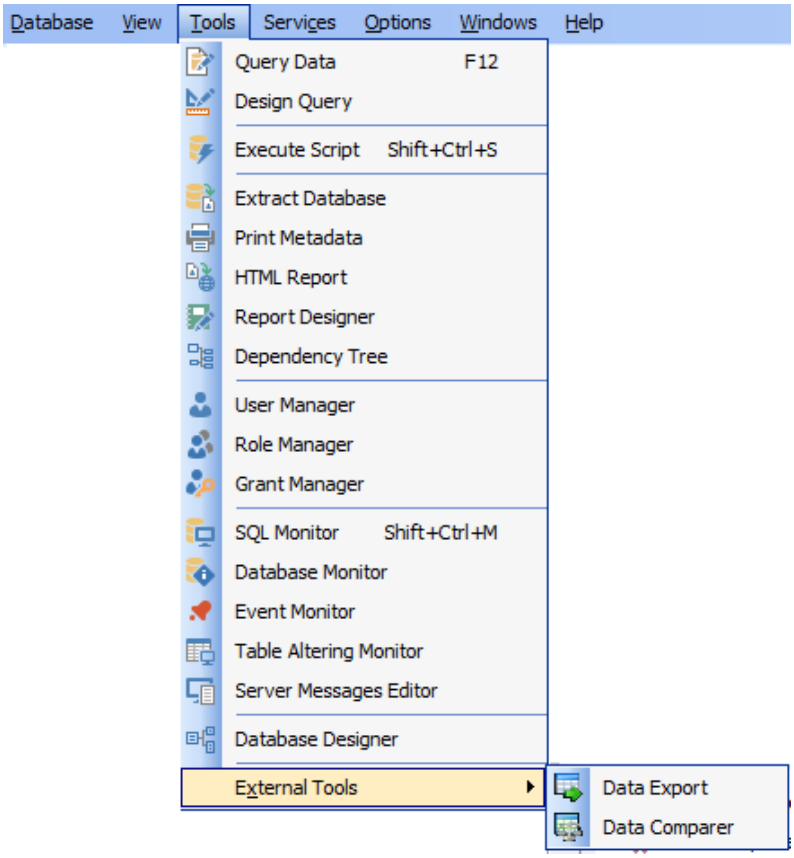
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Part XIII

13 External Tools

When using **SQL Manager for InterBase/Firebird**, you can add **external Windows applications** to make your work more efficient.

- External Tools dialog 842
- External Tool Info editor 844



Adding External Tools

- select the **Options | External Tools...** main menu 890 item;
- click the **Add...** button in the External Tools 842 dialog;
- specify parameters of the new external tool within the External Tool Info 844 editor;
- confirm adding the new external tool by clicking **OK** in the External Tool Info 844 editor and the External Tools 842 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

- select the **Options | External Tools...** main menu 890 item;
- select the tool to be removed in the **Tools** list of the External Tools 842 dialog;
- press the **Del** key or click the **Delete** button within the dialog;
- click **OK** to confirm removing the tool and closing the dialog.

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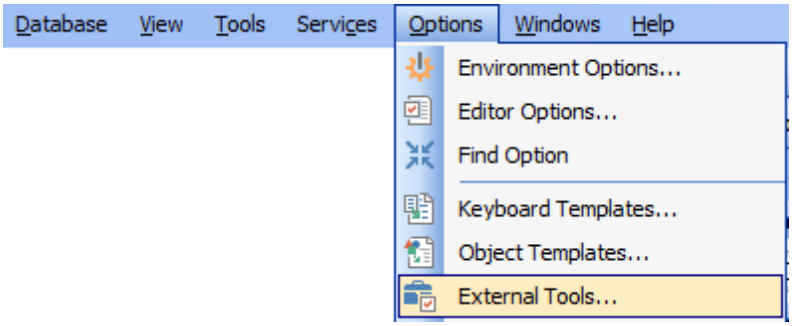
The selected tool has been removed and is no longer accessible from the **Tools | External Tools** submenu.

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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 890 item.



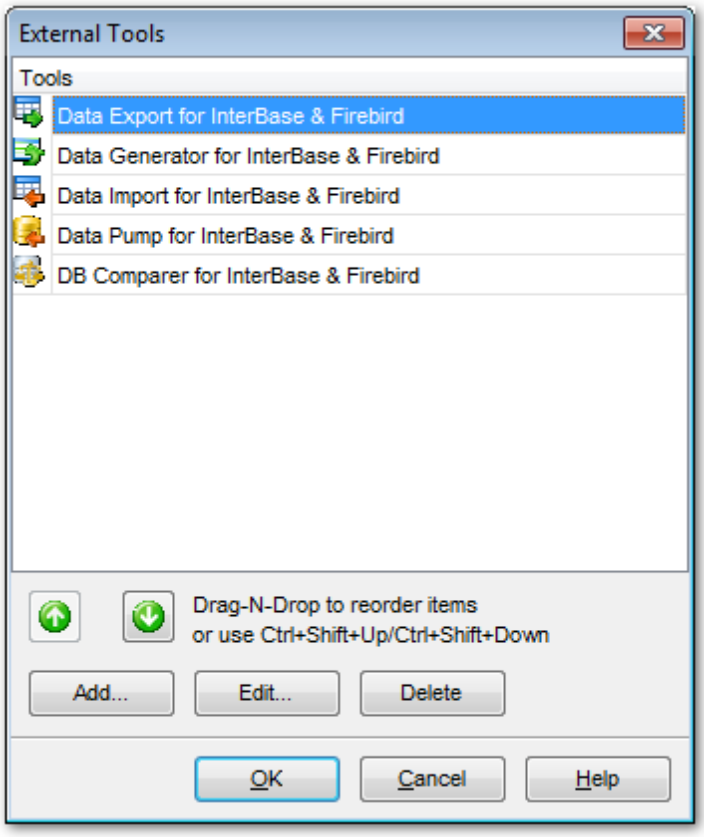
Tools
Lists all added external applications.

Add...
Opens the External Tool Info 844 editor for adding a new tool to the **Tools | External Tools** submenu.

Edit...
Opens the External Tool Info 844 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 InterBase/Firebird** 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[940]. You can also drag-and-drop items within the list box to change their positions.

Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**Yes**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix[20] page.

See also:

External Tool Info editor[844]

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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 840 and External Tools 842).

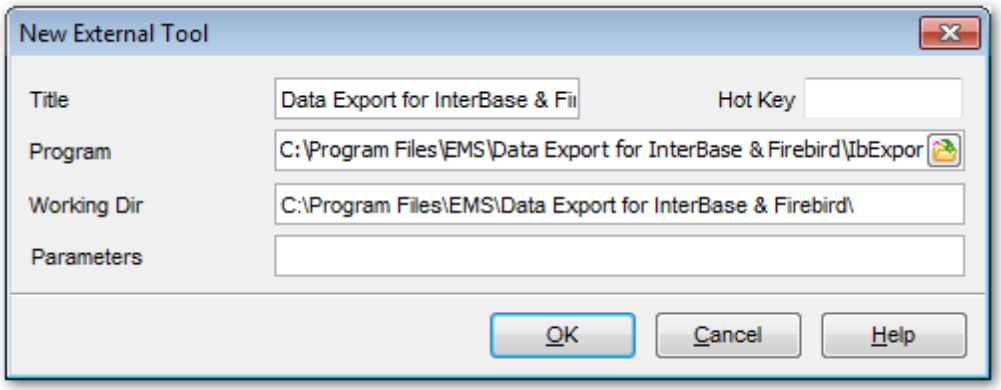
Title
Enter the title to be displayed in the **Tools | External Tools** submenu of **SQL Manager**.

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).



Availability:

Full version (for Windows)	**Yes**
Lite version (for Windows)	**Yes**

Note: To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the Feature Matrix 20 page.

See also:

External Tools dialog 842

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Part



14 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 InterBase/Firebird**.

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14.1 Work with Databases

14.1.1 Connect to a database

If a host and a database are not registered yet or you have launched SQL Manager for InterBase/Firebird for the first time and you want to connect to a database then you should do the following:

1. Launch the Register Database wizard 107 by selecting the **Database | Register Database...** main menu 890 item.
2. On the first step 108 choose *Database is located on a new host* item.
3. On the second step 111 set connection parameters for the new database.
4. On the third step 112 set options of a newly registered database: Database name, Database alias and Charset. Click **Test Connection** to check availability of the database at the moment. Then set common and log options for the database on the **General** and **Logs** tabs correspondingly.
5. The registered database is now displayed in the DB Explorer 63. To connect to the database double-click its alias or select the **Connect to Database** item of the database context menu 53.

To connect to a new database on a registered host perform the following operations:

1. Launch the Register Database wizard 107 by selecting the **Database | Register Database...** main menu 890 item.
2. On the first step 108 choose *Database is located on the host already registered in SQL Manager*.
3. On the second step 109 set the necessary parameters to connect to the already registered server: User name, Password and Role 730.

Then follow points 4 and 5 from the instruction above.

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14.1.2 Create a database

If you want to create a database, please, make sure that the host for this database has been already registered. For more details see the Register Host wizard 90.

To create a database on the registered server perform the following operations:

1. Launch the Create Database wizard 100 by selecting **Database | Create Database** main menu 890 item.
2. On the first step 101 select the host where the new database will reside.
3. On the second step 103 define the path to the database file in the **Fully qualified database file path** field, login parameters - in the **User name** and the **Password** fields. If you want to store your new database in several files, uncheck the **Single database file** option. In this case you will proceed to the Defining database files 105 step of the wizard where you are to add secondary file by inputting its name in the **File name** field (type in or use the button to specify the path to the database file), then setting its length (**secondary file length** indicates where the next file will be started) and clicking the **Add** button.
4. On the final step 106 check the **Register after creating** option in order to open the Database Registration Info 115 dialog after database creation.

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14.1.3 Edit database connection parameters

If you have made a mistake when creating[100] and registering[107] a database or the information provided is incomplete then it can be edited using the Database Registration Info[115] dialog. You can view this information both for connected or disconnected database.

To open the dialog, select the database right-click the database alias in DB Explorer[63] and use the **Database Registration Info...** context menu 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: *User name*, *Password*, *Role*, *Database name*, *Database alias*, *Charset*, *Font charset*.

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14.1.4 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 115.

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14.1.5 Design a visual database structure

To design your database visually you may use the Database Designer 638. It allows you to create, edit and drop tables and table fields, set relations between tables and perform other operations you may need to achieve your purpose.
To create a new object right-click within the Database Designer 638 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.

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14.1.6 View an ER diagram

The relationship diagram is built using the reverse engineering[651] operation.
To view an ER diagram of a scheme you should follow the steps:

1. Run Database Designer[638];
2. Click the **Reverse Engineer** button on the main toolbar[641] or use the corresponding item of the context menu[645].
3. Choose schemas to reverse engineer from.

The created diagram can be saved as a **.ibd* file (**Save Diagram** button) or as an image (**Save as Picture** button).

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14.1.7 Backup a database

A database backup is created by means of the Backup Database Wizard[660]. To launch it and set necessary backup options choose **Services | Backup Database** main menu[890] item.
Backup Database Wizard[660] allows you to make a backup on the local or remote host.

To create a local database backup:

1. Select the *Use local utilities* option in the **Execution mode** group. To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection[154] page of the Host Registration Info[153] dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.
2. Select the *Local* option in the **Store mode** group to store the backup file on the local machine.

Note: Backup of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the Connection[154] page of the Host Registration Info[153] dialog.

To create a database backup on the remote host:

1. Select the *Use services* option in the **Execution mode** group to use the server services for the backup operation.
2. Select the *Server* option in the **Store mode** group to store the backup file on the server machine.

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14.1.8 Restore a database from a backup

Use the Restore Database Wizard 671 to restore a database from a backup. To launch the wizard and set restore options choose **Services |** **Restore Database** main menu 890 item.
Restore Database Wizard allows you to restore a database from a backup that resides on a local or remote server.

To restore a database from a local host:

1. Select the *Use local utilities* option in the **Execution mode** group. To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.
2. Choose the *Local* option in the **Restore mode** group to store the restore file on the local machine.

Note: Restore of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the Connection 154 page of the Host Registration Info 153 dialog.

To restore a database from a remote host:

1. Select the *Use services* option in the **Execution mode** group to use the server services for the restore operation.
2. Choose the *Server* option in the **Restore mode** group to store the restore file on the server machine.

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14.1.9 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 552. The result script can be used to copy or restore your database.
2. Create database backups with the help of the Backup Database Wizard 660.
3. Create copies of separate database objects by using the Duplicate Object Wizard 167.

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14.1.10 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 574.
2. You can generate and print metadata 570 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 Database Designer 638 diagram as a **.ibd* file for future use. A diagram is saved with the objects XML files. If necessary, you can also save the diagram as an image.

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14.1.11 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 570 window by selecting the **Tools | Print Metadata** item of the main menu 890.
2. Mark the needed objects and define printing settings and click the **Preview** button on the navigation bar or toolbar 571.
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.

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14.1.12 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 134 window.

You can also allow automatic saving the DDL and location of database objects after the specified time interval by checking ☑ **Enable QuickSave every ... Minute(s)** option.

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14.1.13 Get an SQL dump

To get an SQL dump (an **.sql* file) of your database use the Extract Database Wizard[552] that will extract database objects and/or data to an SQL script, e.g. for backup purposes.

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14.2 Work with Database Objects

14.2.1 Group objects

If you want to group objects you can do it in one of the following ways:

Using Favorite objects (situated in the DB Explorer 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 tabs:

1. Right-click the necessary object in the DB Explorer.
2. Choose the **New Tab from Here** item of the object context menu and define the name of the tab.
3. Now your objects are stored on the separate tab of a DB Explorer.

Note: If object is not a tree node, it cannot be placed on separate tab.

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14.2.2 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 51 item.
2. Call the **Find Object** dialog by using the *Ctrl+F* shortcut 940.
3. Type in the first letters in the edit-box of the Search Panel 78, 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.

4. Launch the Search in Metadata 608 tool by selecting the **Tools | Search in Metadata** main menu 890 item, or using the *Ctrl+Alt+F* shortcut 940. After the search is complete, the **Explorer** group on the Navigation bar 609 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.

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14.2.3 View dependecies

If you want to view all the object dependencies then:
1. Use a dependencies tab in the Table Editor 185.
2. Use the Dependency Tree 536 tool.

These tools may be useful when you can't find an object that prevents your from dropping a table.

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14.2.4 Get an object DDL

In order to get an object DDL you can:

1. Right-click the object in the DB explorer 63 tree and select the **Script to New Query Data | Create** context menu item.
2. Right-click the object and select the **Edit Table <table_name>...** context menu item or double-click the table and then proceed to the DDL tab in the opened table editor window.
3. Right-click the object in the DB explorer 63 tree and select the **Data Manipulation | Export Data as SQL Script** context menu item.

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14.3 Work with Data

14.3.1 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;
3. Checking the **Never retrieve** option to disable retrieving record count for tables.

These options can be set only for the selected database on the Data Options 126 page of the Database Registration Info 115.
Default settings for newly registered databases can be defined on the Grid | Data Options 790 page of the Environment Options 744 dialog.

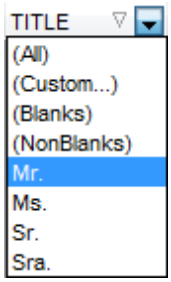
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14.3.2 Set data filter

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 in the opened submenu.

Filtering by Column

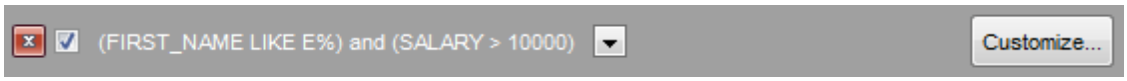


Open the drop-down list on the column title and choose a filter condition from the list.
You can set advanced conditions by using the **Custom...** menu item.
When choosing this item, the special window for setting filter conditions 380 opens.

Advanced Filtering

You can set advanced filter options by pressing the button on the toolbar 371 of the Data View and set filter parameters in the Filter Builder 434. 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 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.

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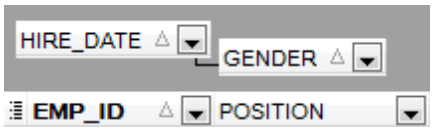
14.3.3 Sort and group data

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 car above the table.



Note: To disable grouping, drag the column title from the group bar back to the table.

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14.3.4 Export/import data

You can *export* data from a database table into an external file of any supported format 919 by means of the Export Data Wizard 445.

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 371.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data** in the Data Grid context menu 383.
3. Open the table context menu 56 in the DB Explorer 63, 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 493:

1. Open the **Data** tab, press the **Import Data** button on one of the Data View toolbar 371.
2. Open the **Data** tab, choose **Data Manipulation | Import Data** in the Data Grid context menu 383.
3. Open the table context menu 56 in the DB Explorer 63, choose the **Import Data** item.
4. Open the **Data** tab and use the shortcut **Ctrl+I**.

Note: Export and import data tolls are available in full version of SQL Manager for InterBase/Firebird only.

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14.3.5 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 and set export parameters in the opened Export as SQL Script Wizard.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data as SQL Script** in the Data Grid context menu and set export parameters in the opened Export as SQL Script Wizard.
3. Open the table context menu in the DB Explorer, choose the **Export Data as SQL Script** item and set export parameters in the opened Export as SQL Script Wizard.

Note: In order to extract table DDL (CREATE TABLE statement), check the **Add CREATE TABLE statement** box at the Step 1.

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14.3.6 Export filtered data

If you have set a filter in a Data View 370 and want to export only this data then you need to uncheck **Perform data filtration on client in data view** option on the Database Registration Info | Data Options 126 tab. In this case all the changes made by applying filters are performed on the InterBase/Firebird server with the help of the *WHERE* clause used in SQL query. Otherwise your changes will just be displayed on your client machine but data will be exported into a file without applied filters.

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14.3.7 Create an autoincrement field

To create an autoincrement field you need to check **Autoincrement value** option when specifying options 205 for domain-based fields. If the option is enabled, the autoincrement property is specified for the domain. For details see Defining autoincrement 212.

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14.3.8 Edit data of master-detail tables

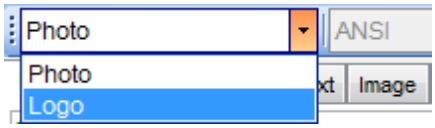
You can work with data in multi-level mode, that is you can view and modify it in several related tables simultaneously.
To manage grid levels, right-click the grid and select the **Grid Levels** context menu 383 group. Click **Add Grid Level** in the menu to run the Create Grid Level wizard 386. After the level is added you can edit data of the related tables.

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14.3.9 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[372] 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[423].

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14.3.10 Set data display format

To set the format for displaying data open the **Options |** **Environment Options** dialog from the main program menu 890, proceed to the Color & Formats 794 tab and define or choose the display format for some data types 919 in the **Display formats** section.

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14.4 Work with Queries and Scripts

14.4.1 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 63
2. Choose Script to New Query Data context menu item.
3. Select the necessary query type.

In the Query Designer

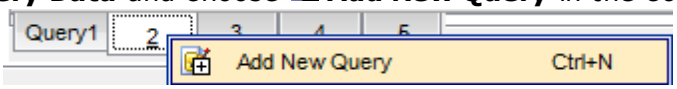
1. Open Query Designer 348.
2. On the **Builder** tab drag an object from the DB Explorer 69 tree to the diagram area.
3. Choose necessary fields to include in the query by checking the corresponding box located to the left from the field name in the list, or just by double-clicking it. To include all fields of the table/view, check the box located to the left of the table/view caption.
4. Associate two objects 354 by their fields.Drag a field from one object list to another. This will set a link between these objects by the selected fields. It is indicated by a bidirectional arrow between the linked fields.
5. Edit link properties 354. 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 Query Designer 348.

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14.4.2 Work with several queries at once

Query Data[331] 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[332].
2. Open **Query Data** and choose **Add New Query** in the context menu[336] 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[85].

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14.4.3 Save most frequently used queries

Use the Favorite Queries 85 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 346, open any of the existing queries in Query Data 331 or remove a query if you don't need it any longer.

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14.4.4 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 757.
This feature allows you to specify different values within a query in a popup dialog 367 just before the query execution. Use the colon (':') character before an identifier (e.g. :P1) to specify a parameter within the query.

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14.4.5 Export query results into file

When executing queries, their results can be displayed on the **Edit** or **Results** tab in the Data View 370.
You can copy data from database tables into an external file of any supported format 919 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 445.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data** in the Data Grid context menu 383 and define export parameters in the opened Data Export Wizard 445.
3. Open the table context menu 56 in the DB Explorer 63, choose the **Export Data** item and define export parameters in the opened Data Export Wizard 445.
4. Open the **Data** or **Results** tab and use the shortcut Ctrl+E.

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14.4.6 Execute scripts

Execute Script 544 allows you to create, view, edit and execute SQL scripts. To open Execute Script Editor select the **Tools |** **Execute Script...** main menu 890 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 544, not Query Data 331. 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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14.4.7 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 Editor 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 in Execute Script editor.

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14.4.8 Make SQL script work faster

In order to make the Execute Script work faster, you can disable some functions.

Parsing

Choose and disable the **Disable Parsing** item on one of Execute Script Editor toolbars 545.

Automatic Creation of Hierarchical Text Structure

Uncheck the **Use code folding** box at **Options** | **Editor options** in the main program menu 890.

Syntax Highlight and Code Completion for Aliases

Choose **Options** | **Editor options** in the main program menu 890, proceed to the **General** tab and uncheck the **Resolve aliases** box - the syntax highlight 811 and Code Completion 813 for aliases will be disabled.

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14.4.9 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 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 331. When editing SQL text 334 in Query Data, type a template name and use the *Ctrl+J* shortcut 940: 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 890, proceed to the Code Completion 813 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 336 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 890, proceed to the Display 809 tab and define common font and format parameters for Query Data/Execute Script.

Set Font and Query/Script Format at the Highlight tab

Choose **Options** | **Editor options** in the main program menu 890, proceed to the Highlight 811 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.

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14.4.10 View executed queries and scripts

To view all queries and scripts sent to the server you need to launch SQL Monitor[541]. 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 InterBase/Firebird during current session.

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14.5 Create a simple report in Report Designer

To create a report using Report Designer 589:

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 592.
4. Add ADOTable 592 or ADOQuery 592 object.
5. Link ADOTable 592 or ADOQuery 592 with ADODatabase 592.
6. Place database fields on the Page1. Move the required fields from Data Tree to **Band MasterData**.

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14.6 Transfer program settings

If you want to apply current program settings (wholly or partially) to SQL Manager for InterBase/Firebird installed on another machine you can save them into a single **.reg* file. This can be done by means of the Save Settings Wizard 823.

Note that 85 Favorite Queries 85 are not saved in this case. To get access to your queries from another machine please store 346 them in the database.

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14.7 Update SQL Manager

SQL Manager for InterBase/Firebird can be updated in the following ways:

1. Download the SQL Manager for InterBase/Firebird distribution package from the download page, then extract archive to the preferable directory (e.g. c:\unzipped). Close SQL Manager for InterBase/Firebird if it's opened and run *IbManagerFullSetup.exe* or *IbManagerLiteSetup.exe*.
2. Select the **Help |** SQL Manager Direct 932, then press the **Update** button. If new SQL Manager for InterBase/Firebird version is released it will be offered for downloading. Click Yes in the dialog window to update SQL Manager for InterBase/Firebird automatically.

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14.8 Report bugs and suggestions

1. Before reporting bugs and suggestions make sure you are using the latest version of the SQL Manager for InterBase/Firebird.
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, InterBase/Firebird version and program version.
4. Describe the steps to reproduce the bug in detail and illustrate them with screenshots.

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Part

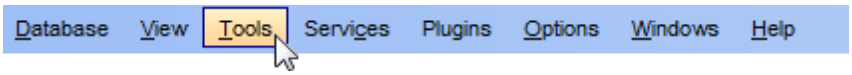


15 Appendix

15.1 Program interface

Main menu

The main menu allows you to perform various **Database** operations, open To-Do List 921 and activate/deactivate Database Explorer 63, SQL Assistant 80 and various toolbars 892 within the **View** menu, manage your databases using items of the **Tools** and **Services** menus, customize 743 the application using the **Options** menu, manage **SQL Manager Windows** using Window List 923 and other tools, and access Registration 22 information and product documentation, update 932 the product to the latest version using the corresponding items available within the **Help** menu.

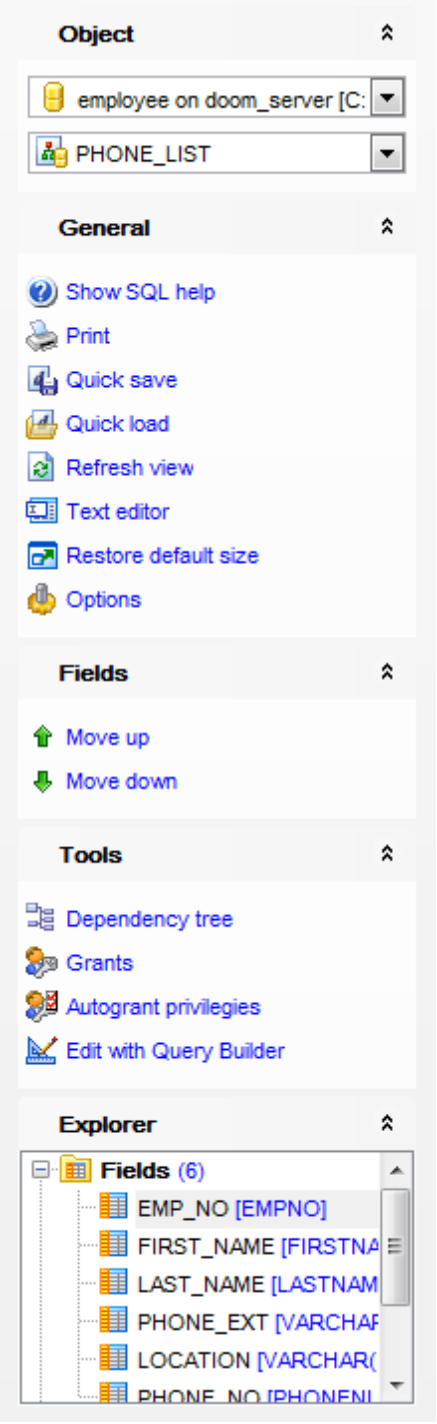


Note: To learn how to configure **SQL Manager** menus, refer to the Customize toolbars and menus 924 page.

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.

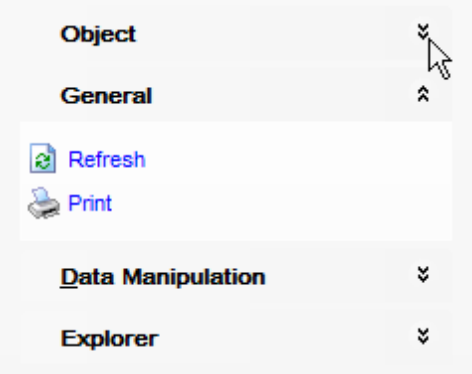
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Navigation bar panes (groups) can be **expanded**/**collapsed**. When expanded, a pane provides access to its links; when collapsed, panes are displayed as headers only.

To expand/collapse a pane, click the pane header. The icons indicate the current pane state (collapsed/expanded respectively).

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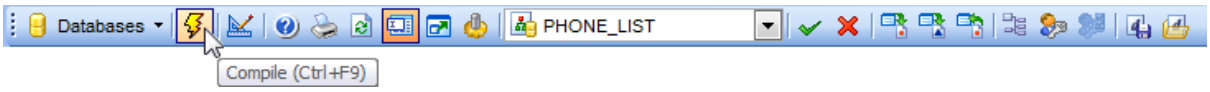


Note: Depending on the current tab selection, Navigation bars in most of the program tools expand to one or more additional panes with tab-specific actions that can be useful for working with the object or service.

Hint: Most items of the Navigation bars are also available on the Toolbars 892.

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.



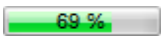
To enable the **toolbars** in **SQL Manager for InterBase/Firebird**, open the Environment Options 744 dialog, proceed to the Windows 751 section there and select *Toolbar* (if you need the toolbar only) or *Both* (if you need both the toolbar and the Navigation bar 890) in the **Bar style for child 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 924 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 544),tools (e.g. Dependency Tree 536) and wizards (e.g. Import Data Wizard 493) are supplemented with progress bars indicating the progress of lengthy operations.

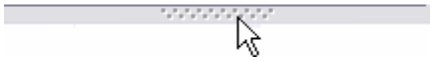


The graphic of **SQL Manager** progress bars is accompanied by a textual representation of the progress in the percent format.

Splitters

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Splitter controls are used to resize docked controls at run time. In **SQL Manager for InterBase/Firebird** the splitter controls are used on the main form, DB Explorer 63, and in program tools and editors as a separator between the working area and Navigation bars 890, status bars, etc.



Incremental Search bar

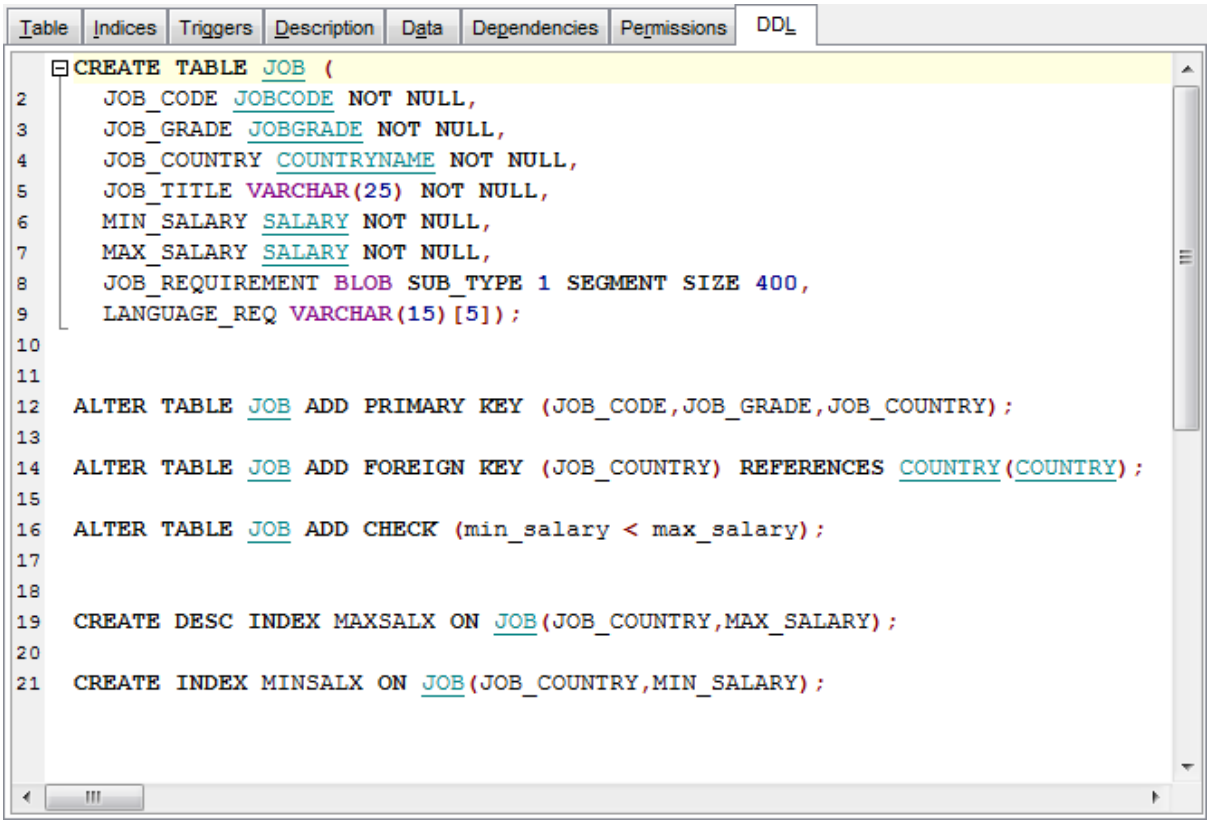
Incremental search bar is the tool which is available in the status bar area of some **SQL Manager** tools. The bar is normally called through the *Ctrl+I* shortcut 940. Type in the first letters of the search string, and the corresponding string will be highlighted in the search scope.



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15.2 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 331 or Execute Script Editor 544.

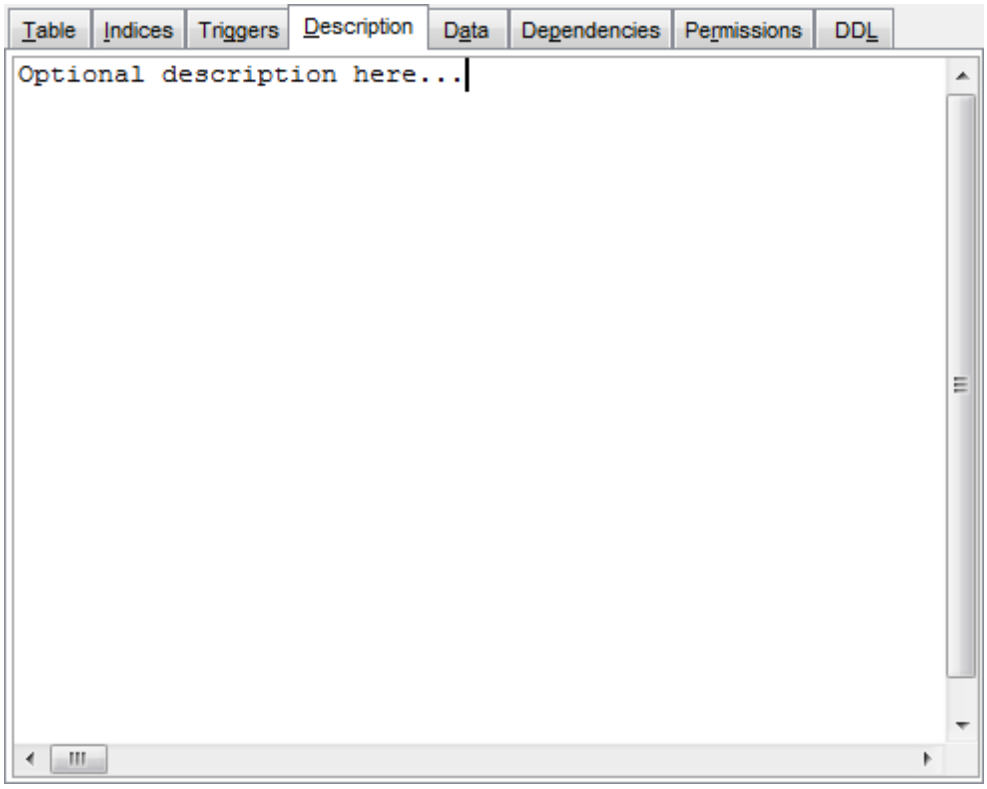


Hint: If more convenient, you can use the **Save DDL to file** and **Open DDL in Query Data** items available on the DDL pane within the Navigation bar of object editors.

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15.3 Editing object description

The **Description** tab allows you to view and edit the comment for the object (optional).



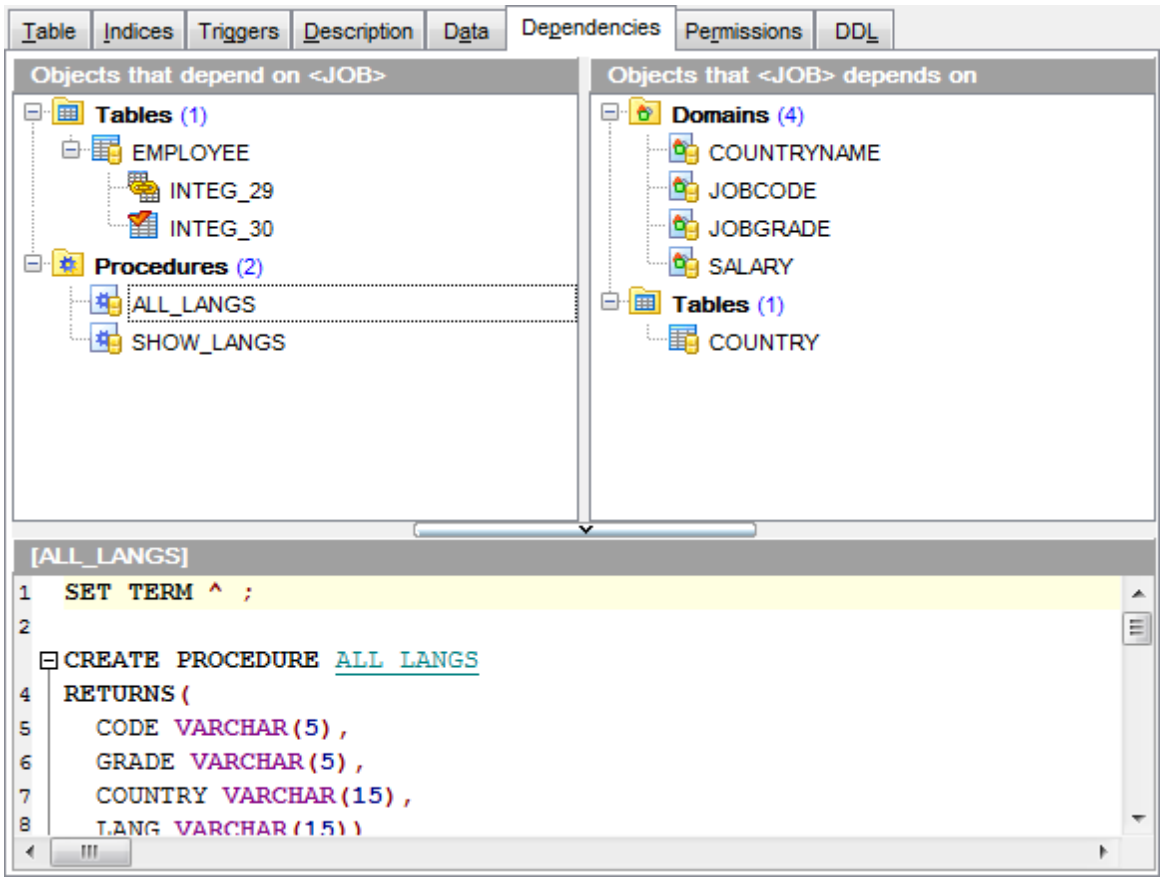
You can save changes made in this area by clicking the **Save Description** item on the Navigation bar[890].

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15.4 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.

While the tree of dependencies is built, the progress bar[892] is displayed in the status area of the editor window.



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:

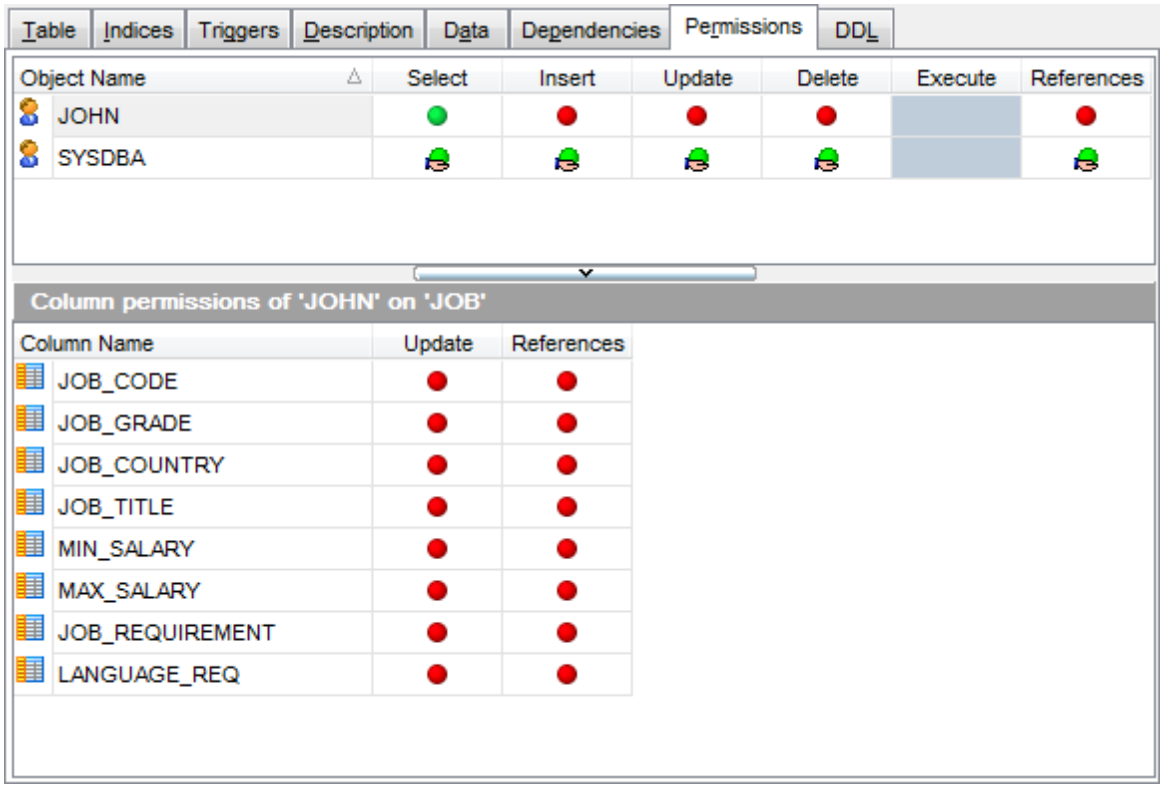
Dependency Tree[536]

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15.5 Setting object permissions

The **Permissions** tab allows you to view the permissions currently allocated for this object, and to grant permissions[737] on the object to any of the existing grantees.

Privileges on object can be assigned for procedures[254] and views[243].
Managing **column permissions** is available for tables[179] and views[243].



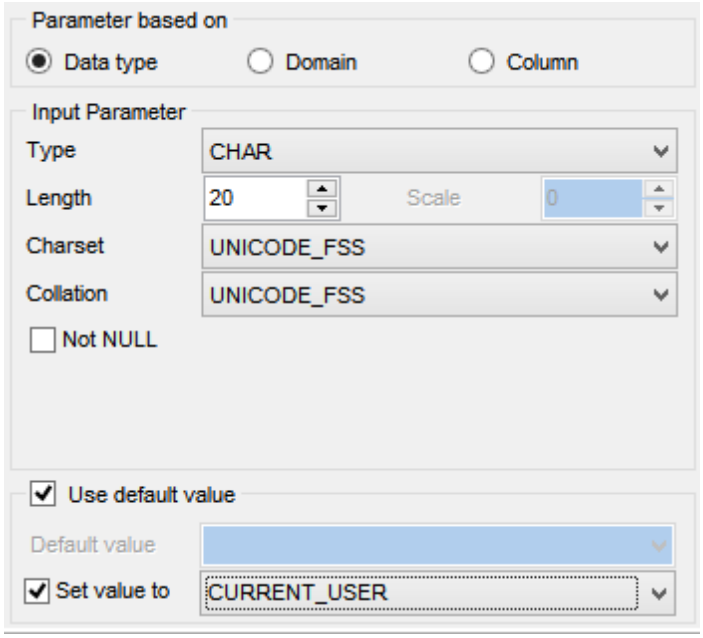
For details see Grant Manager[734].

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15.6 Managing parameter properties

Select the object to create the field type on.

Data type
Specifies that the parameter is based on a standard data type.



Type
Use the drop-down list of SQL data types to select the one to be applied for the parameter type.

For NUMERIC and DECIMAL data types set digit **precision** (digits of precision to store, *1* to *18*) and **scale** (number of decimal places that can be stored, *1* to *18*) in the appropriate boxes; for CHAR and VARCHAR set **length** (in characters), for BLOB data type set **segment size** and **subtype**.

Charset
Use the drop-down list to select the character set for the parameter type.

Collation
Use the drop-down list to specify the collation order to be used for string data.

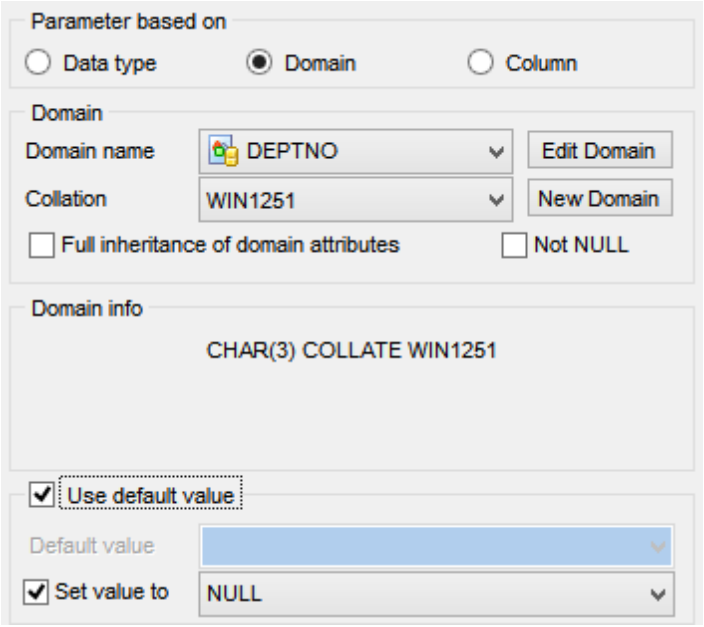
Not NULL
Enable this option to add the Not NULL attribute to the parameter.

Use default value
Enable this option to specify the value this field will take by default. For details see Setting field defaults 211.

Domain
Specifies that the parameter is based on a domain 173 previously created in the database.

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Note that creating parameters based on a domain is only available for Firebird 2.1 and later.



Domain name
Select the domain name from the list of existing domains[173].

Collation
Use the drop-down list to specify the collation order to be used for string data.

Use **Edit Domain** button to edit the domain[176] selected in **Domain name** or **New Domain** button to open Domain editor[176] for creating the new domain.

Full inheritance of domain attributes
If this option is set, the TYPE OF <domain_name> clause is generated, and data type of the domain is used.

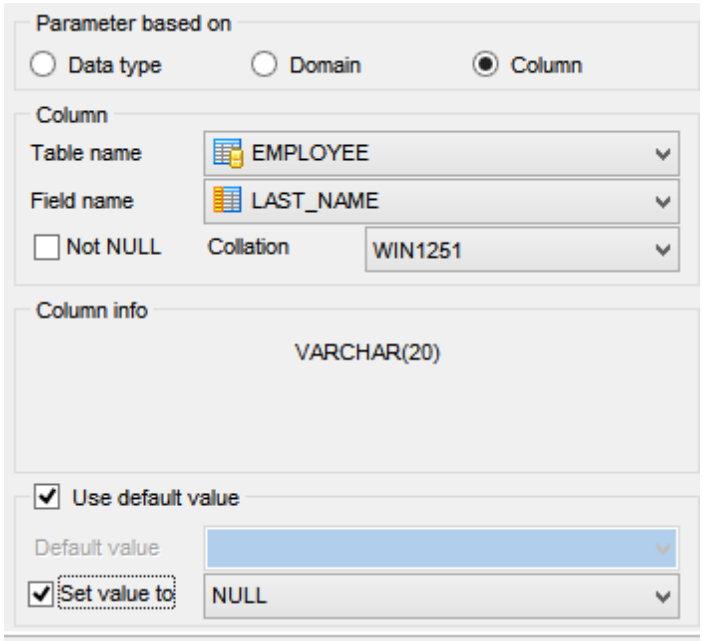
Not NULL
Enable this option to add the Not NULL attribute to the parameter.

Domain info displays the summary of the domain-based parameter: data type and size.

Use default value
Enable this option to specify the value this data type will take by default. For details see Setting field defaults[211].

Column
Specifies that the parameter is based on a field.

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-

Table name
Select the table[179] to use field type from the dropdown list.

Field name
Select the filed name from the list of table fields to create the parameter type on.

Not NULL
Enable this option to add the Not NULL attribute to the parameter.

Collation
Use the drop-down list to specify the collation order to be used for the parameter.

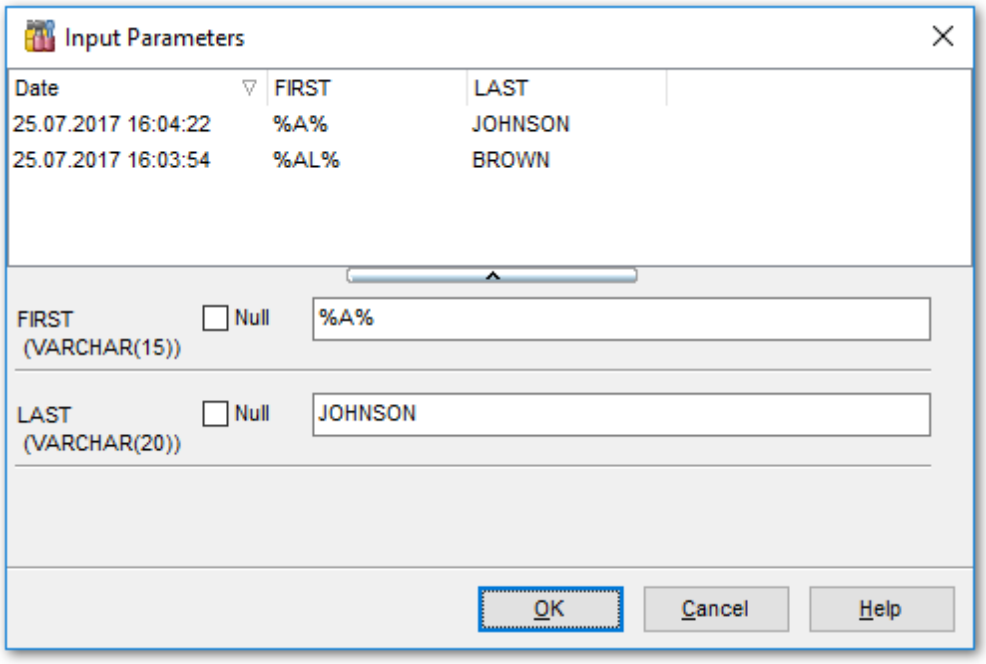
Column info displays the summary of the column-based parameter: data type and size.

Use default value
Enable this option to specify the value this data type will take by default. For details see Setting field defaults[211].

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15.7 Specifying input parameters

If the stored procedure (or function) has parameters, the **Input Parameter dialog** appears before the execution. It allows you to specify the values for all parameters. After changes are done, click the **OK** button to execute the stored procedure\function, or the **Cancel** button to abort the execution.

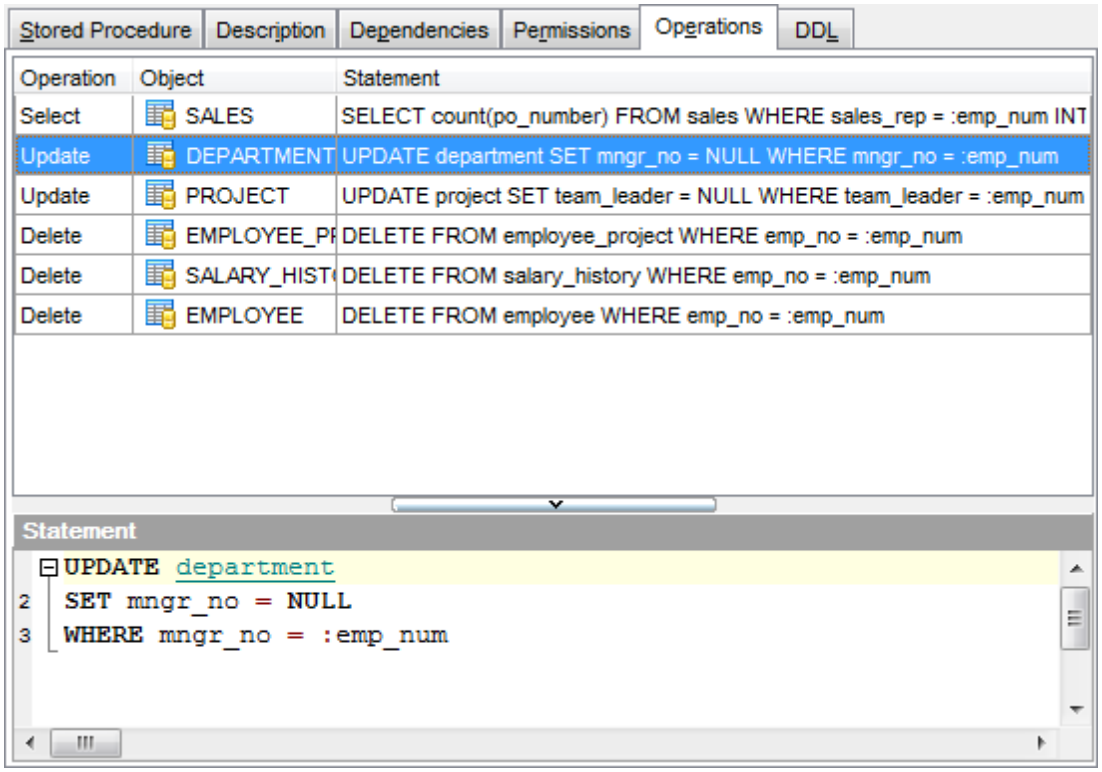


Also you can choose the recently used set of values in the table at the top of the window. To apply values from the table just double-click its row.

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15.8 Viewing object operations

The **Operations** tab of Procedure Editor 256, Trigger Editor 282, Database Trigger Editor 312 displays DML operations performed by the current procedure 254 / trigger 282 / database trigger 312 respectively. On clicking an operation in the list you get the corresponding *SELECT*, *INSERT*, *UPDATE* or *DELETE* statement displayed in the **Statement** area below.

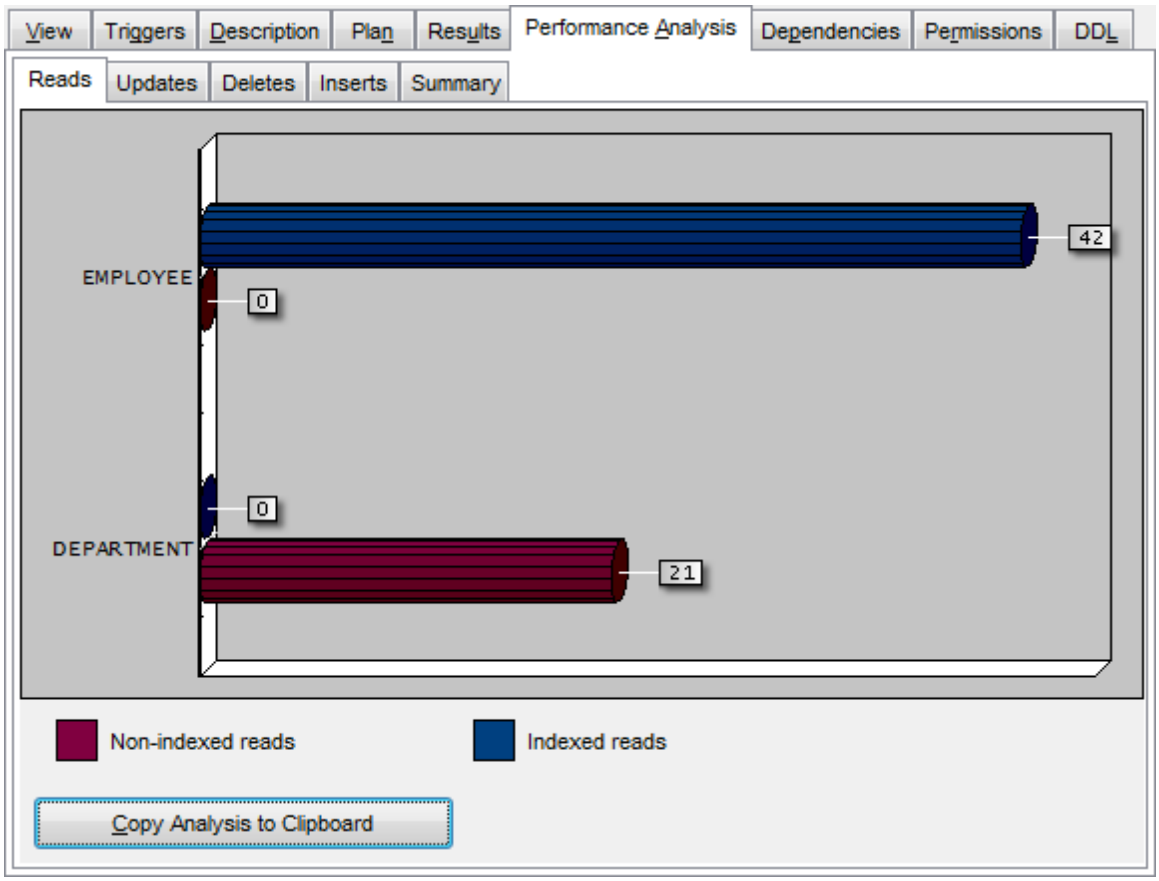


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15.9 Viewing performance analysis

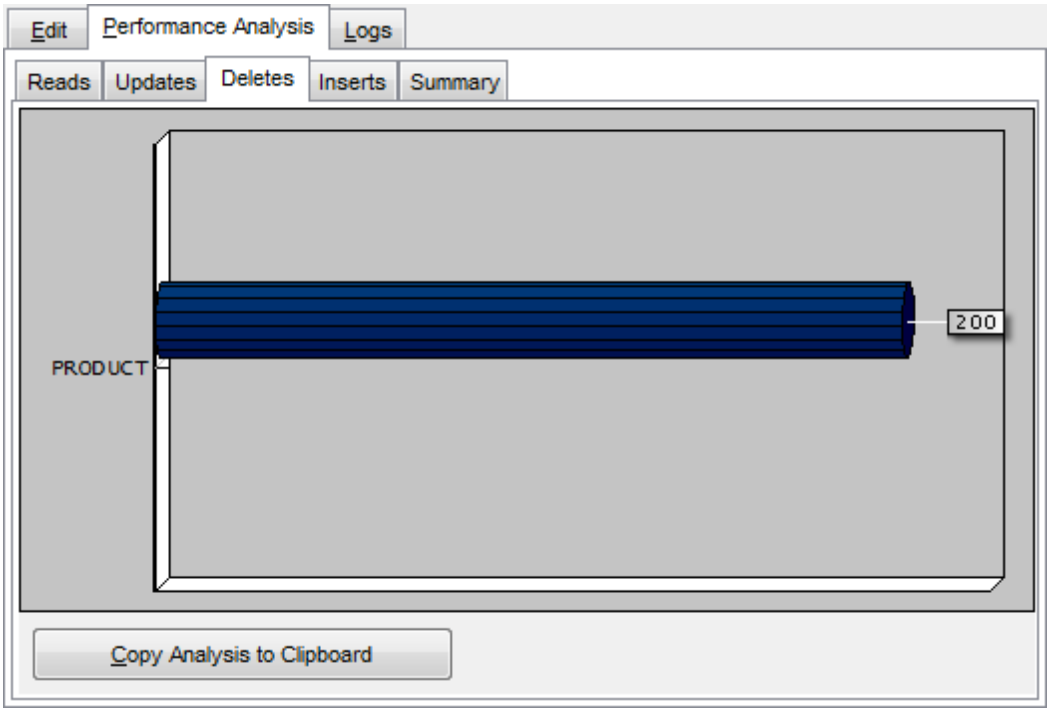
The **Performance Analysis** tab of View Editor 243, Data Editor 331, Design Query 348 editors displays the performance analysis for the query.

At the **Reads** sub-tab you can see the result of query execution. Visual comparison of indexed and with non-indexed reads is displayed on a diagram.

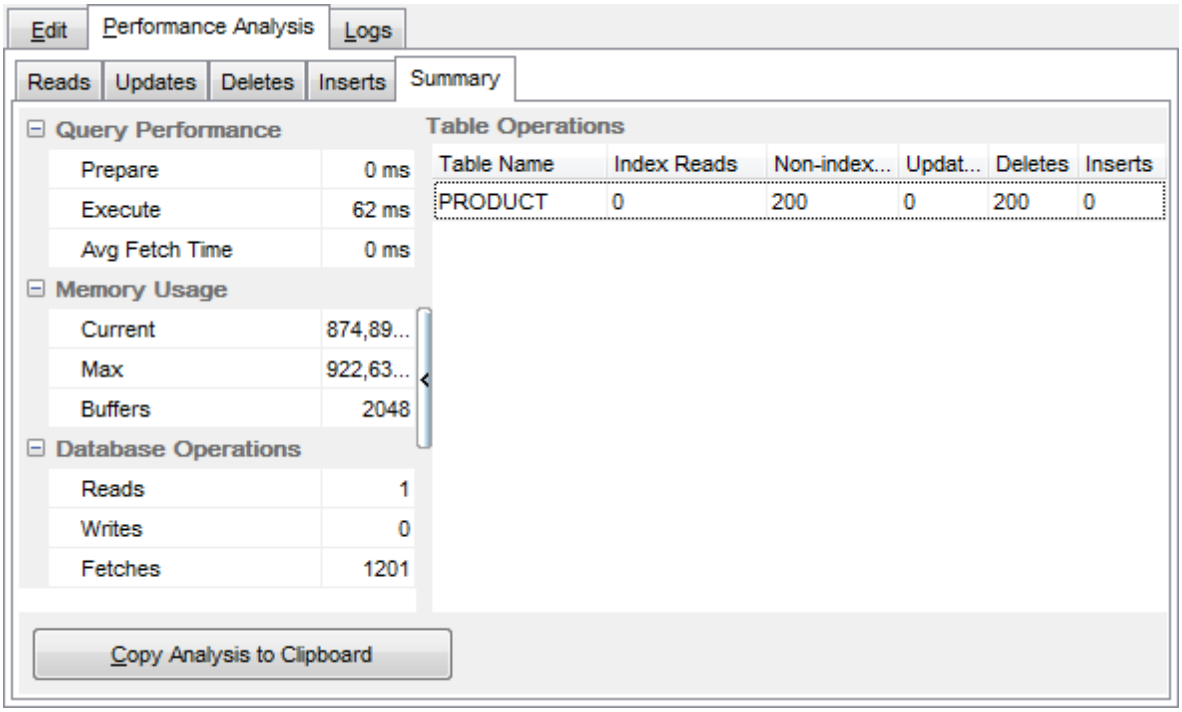


At the **Updates**, **Deletes** and **Inserts** sub-tabs you can find statistics on the corresponding *UPDATE/DELETE/INSERT* operations.

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At the **Summary** sub-tab you can view full execution statistics for the query:



The **Query time**, **Memory** and **Operations** sections display summary analysis of the query execution and can be copied to clipboard by pressing the corresponding button.

Statistics on *indexed reads* (**IR**), *non-indexed reads* (**NIR**), *updates* (**UPD**), *deletes* (**DEL**) and *inserts* (**INS**) are presented as a table.

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15.10 Compile window

The **Compile** 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.

Statement sequence
This area contains the list of operations and the result of their parsing (*successful* or *error*).

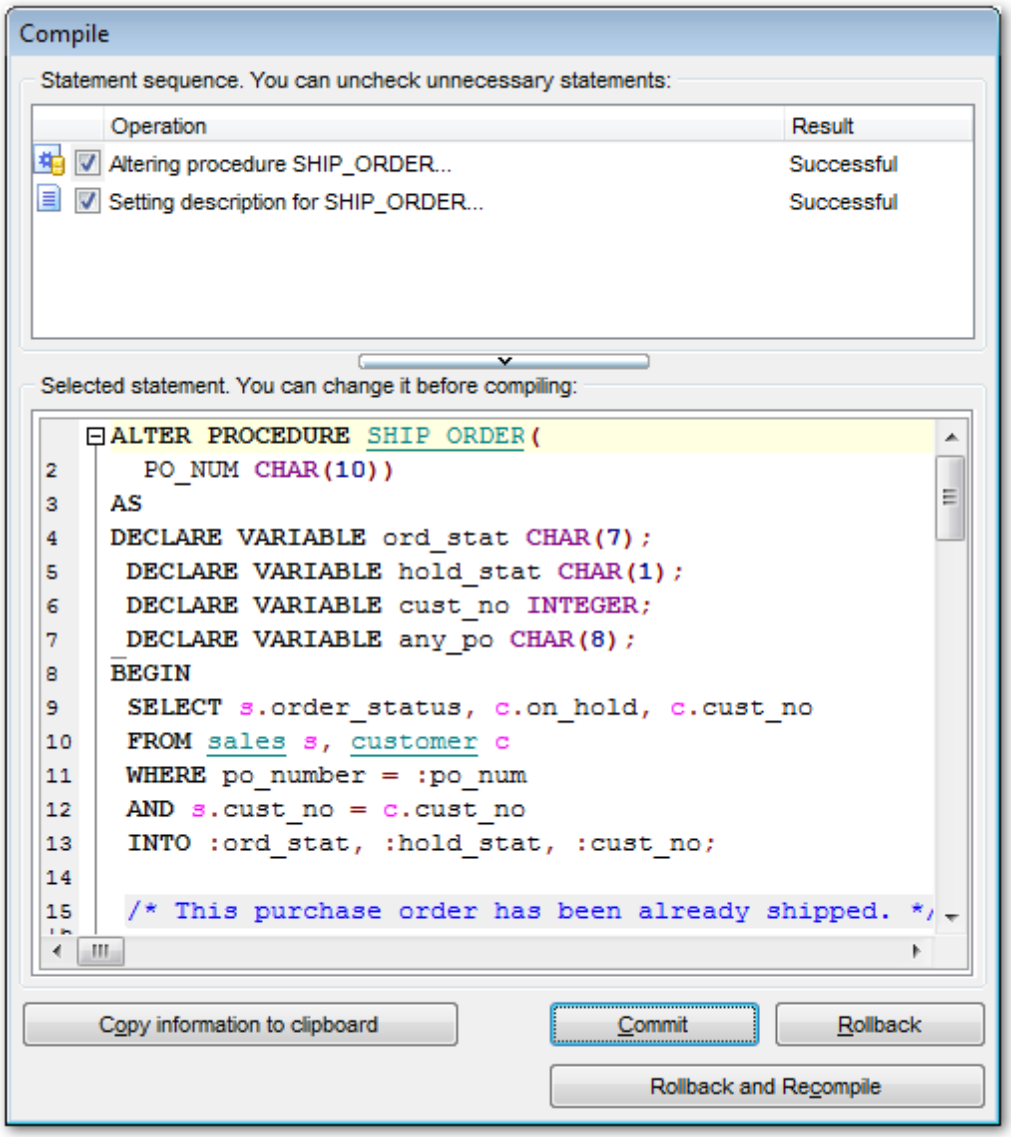
Selected statement
This area displays the SQL statement pending to be executed to perform metadata changing. In this area you can view and edit the SQL statement.
In case of a compilation error the **Error** tab also becomes visible - here you can view the error description returned by the server.

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 63).

Rollback and Recompile
This button calls for recompilation with the changes you made in the **Selected statement** editing area. Use this button after correcting the SQL statement.

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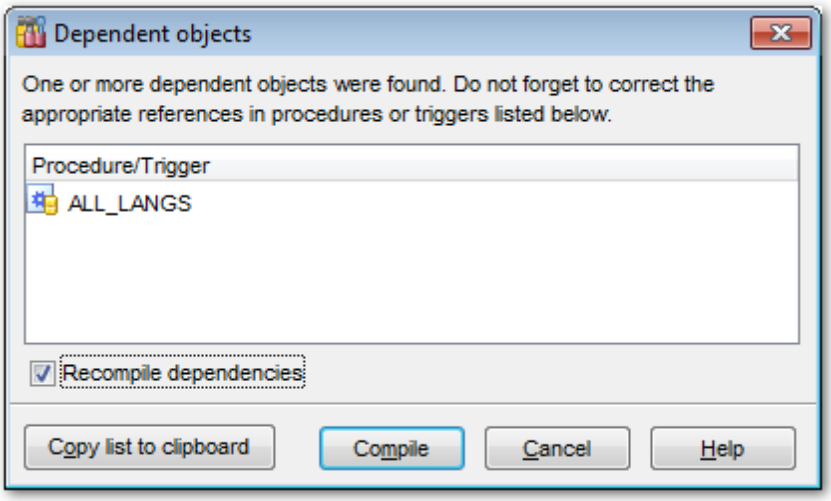


If necessary, you can **copy information to clipboard** and save it in a text editor afterwards (the button is only enabled when a compilation error occurs).

If you want this window to appear only in case of an error, uncheck the **Confirm successful compilation** option (checked by default) available within the Confirmations 749 section of the Environment Options 744 dialog.

If object compilation requires recompilation of its dependencies, the **Compile** window looks like in the screenshot below.

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15.11 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.

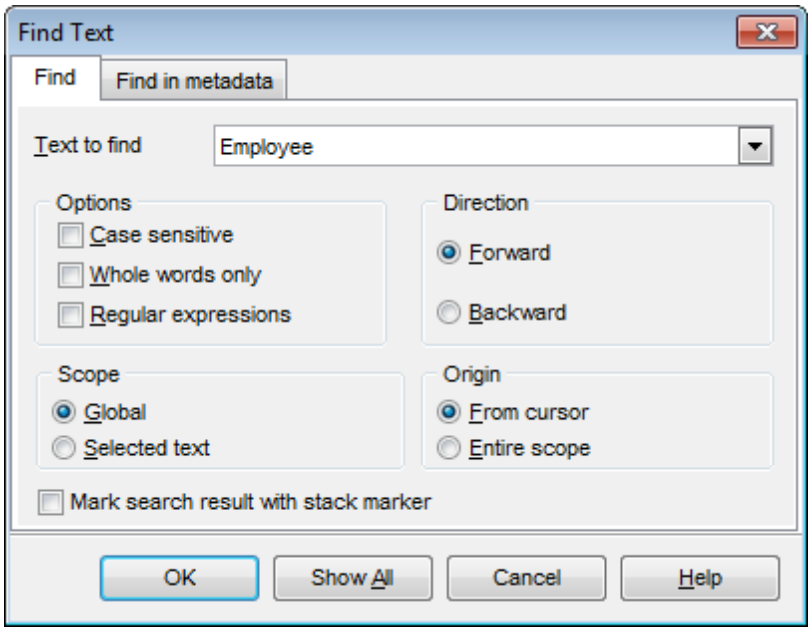
Options

Search in DDL
This option includes object definition in search scope.

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

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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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15.12 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.)

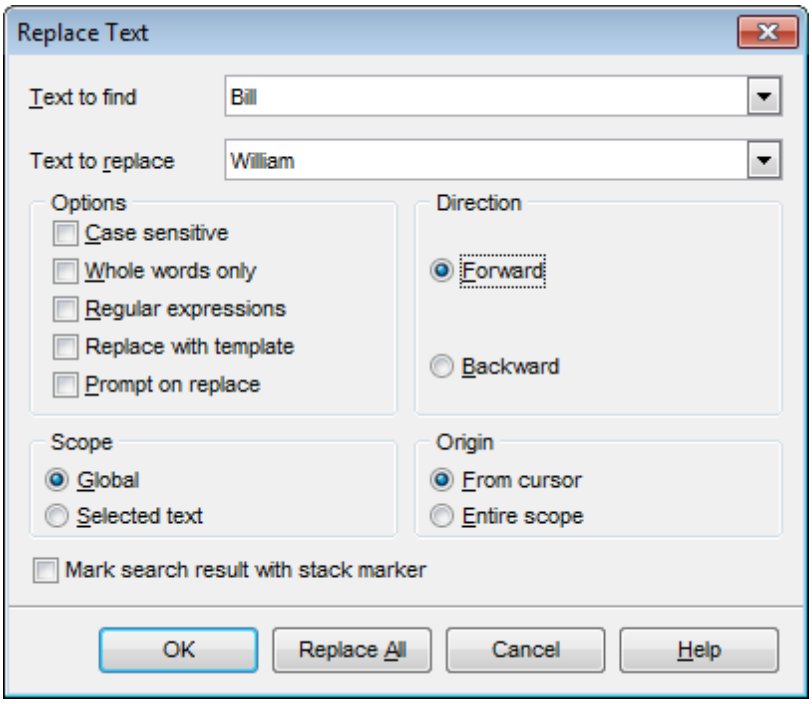
☑ **Regular expressions**
Recognizes regular expressions in the **Text to find** field.

☑ **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

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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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15.13 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
Displays the day as a full name (Sunday-Saturday) using the strings of the Long Day

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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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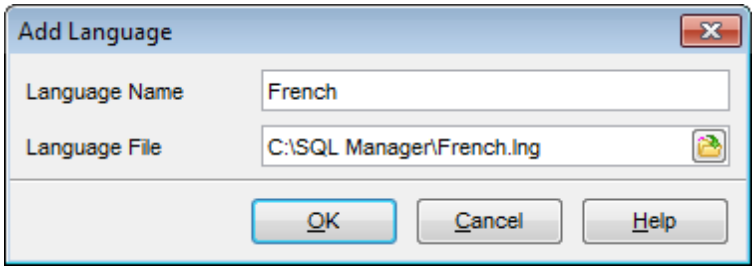
15.14 Language Info Editor

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 800).

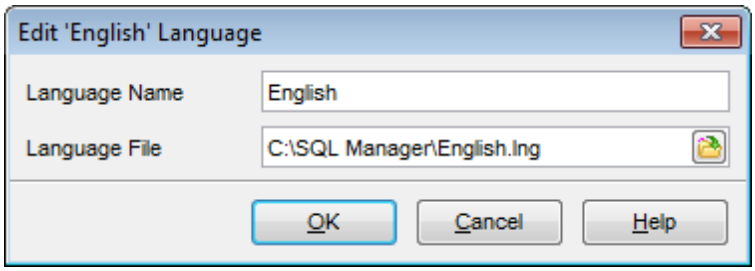
Language Name
The name of the language that is displayed in the Select Program Language 831 dialog and within the **Available Languages** list of the Environment Options | Localization 800 section.

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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15.15 Using templates

For your convenience the ability to use templates is provided by **SQL Manager for InterBase/Firebird**. 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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15.16 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 97-2003 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 (*.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 (*.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.

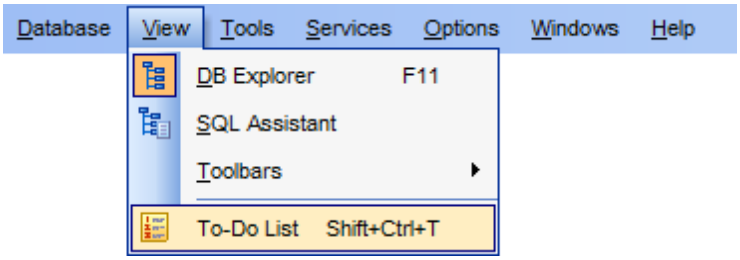
ODF text
OASIS Open Document Format for Office Applications - open document file format for word processing (*.odt) documents used by a number of applications including OpenOffice.org and KOffice.

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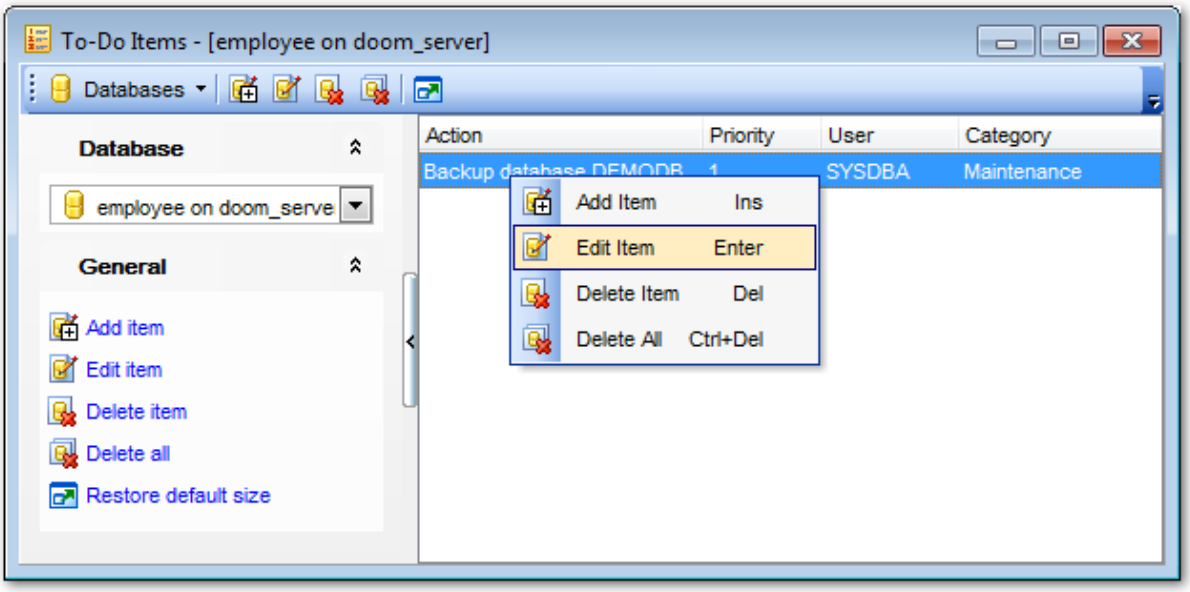
15.17 To-Do List

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 890 item, or use the *Shift+Ctrl+T* shortcut 940.



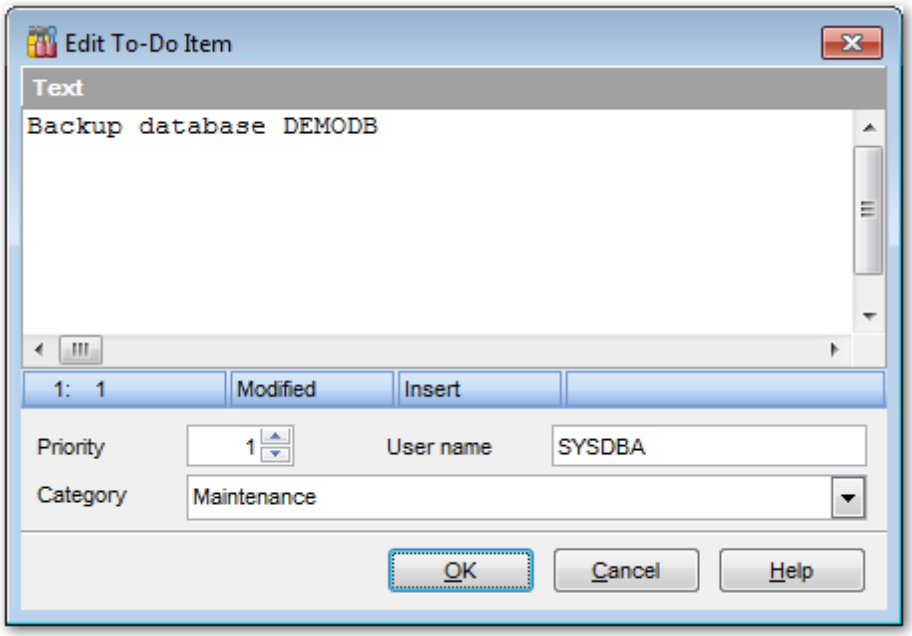
The task list is displayed in a form of a grid. Its columns (*Action*, *Priority*, *User*, *Category*) correspond to the task parameters. Click the column caption to sort the task list by the current parameter or change the sorting direction. Use the Navigation bar and context menu to *add*, *edit*, 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.

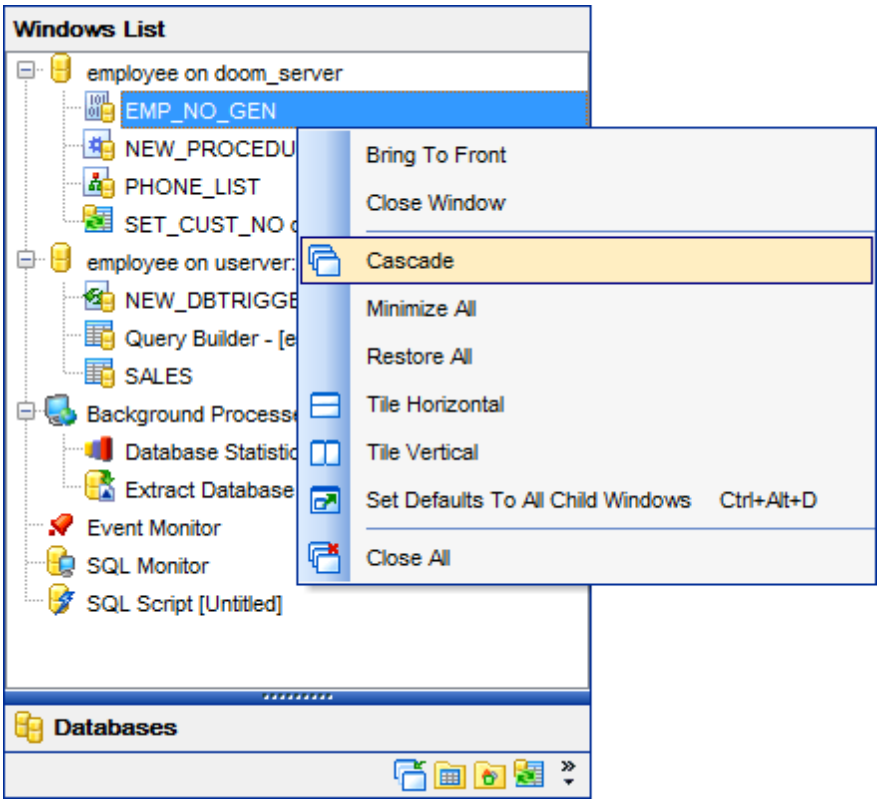
To remove all tasks from To-Do List, click the **Delete all** link of the Navigation bar, or select **Delete all** in the context menu. You can also use the *Ctrl+Del* shortcut 940 for the same purpose.

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15.18 Windows List

The **Windows List** panel allows you to browse the list of windows that are currently opened within **SQL Manager for InterBase/Firebird** IDE.

To activate this panel as a DB Explorer tab 73, select the **Windows | Window List** main menu 890 item, or use the *Ctrl+Alt+0* shortcut 943.



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.

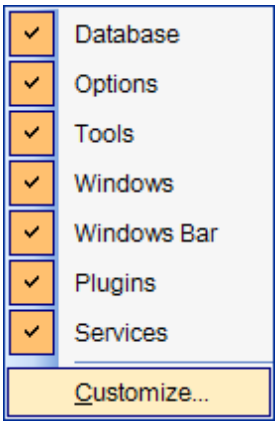
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15.19 Customize toolbars and menus

For your convenience **SQL Manager for InterBase/Firebird** 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.

To call this dialog, click **More buttons...** on the right side of any toolbar, 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

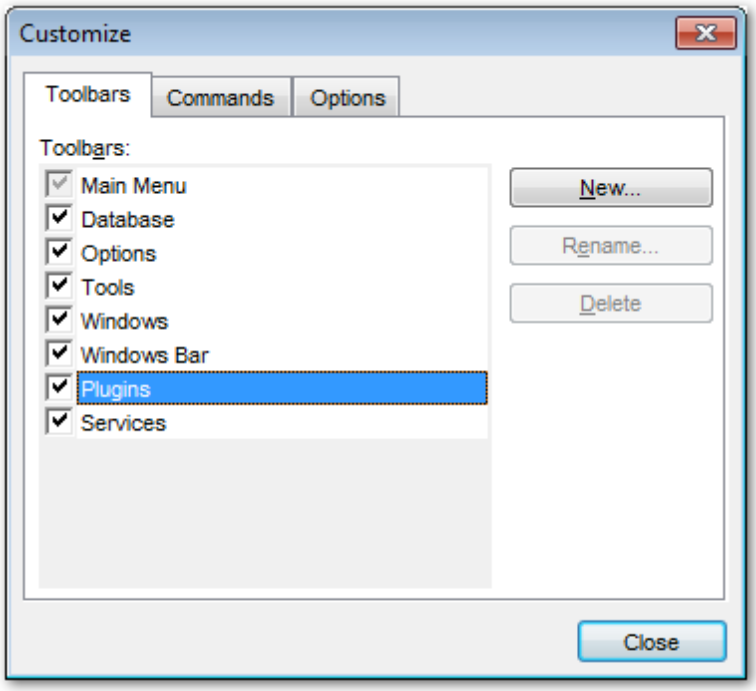
Toolbars
This list displays all currently existing toolbars of **SQL Manager** (both *default* and *user-defined* toolbars). Check/uncheck the box at a toolbar name to show/hide the toolbar.

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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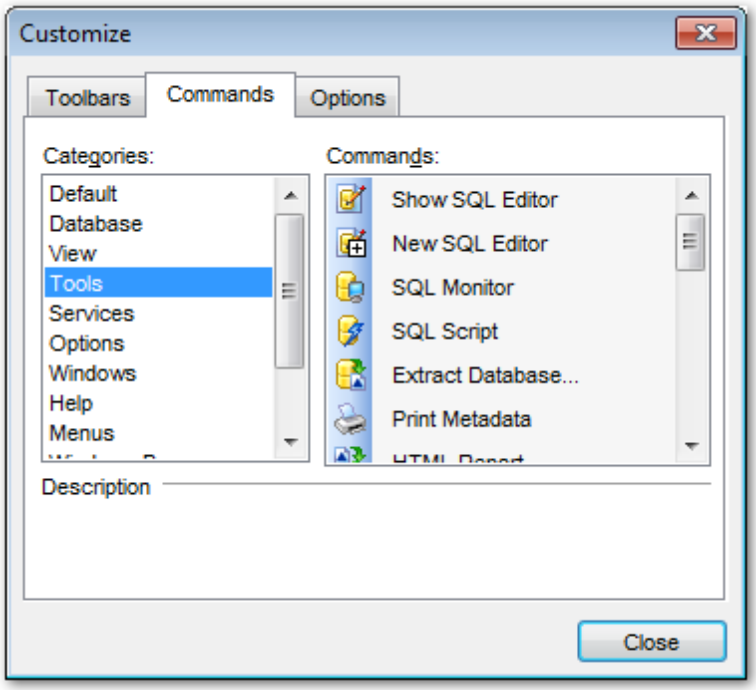


Commands

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 toolbar892 to create a button for this command.

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Options

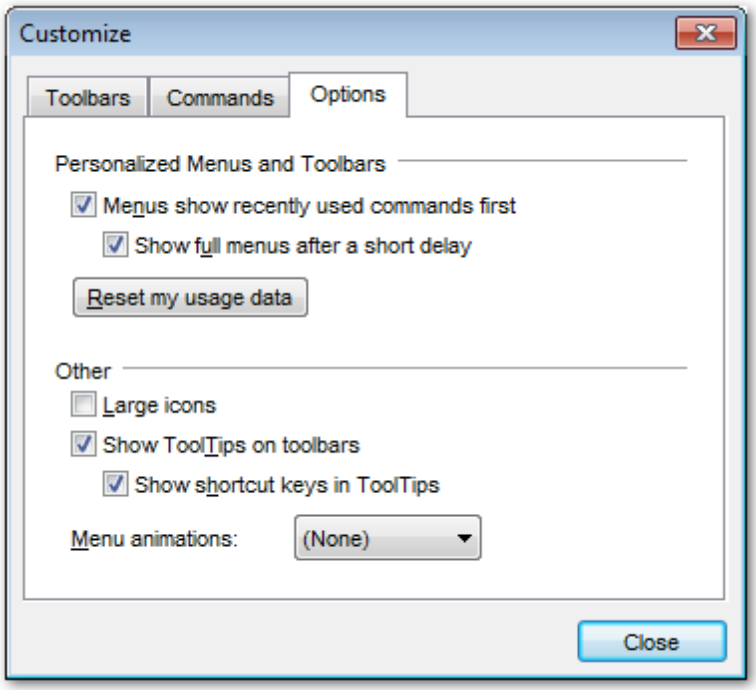
Personalized Menus and Toolbars

☑ **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 943).

Reset my usage data
Resets the lists of recently used commands in the toolbars and menus.

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Other

Large icons
This option displays larger icons on the parent window toolbars[892].

Show ToolTips on toolbars
If this option is selected, ToolTips (hints) popup when the mouse cursor is positioned over a toolbar[892] button.

Show shortcut keys in ToolTips
If this option is selected, the corresponding shortcuts[940] are displayed in ToolTips (hints) for toolbar buttons.

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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15.20 SSH tunneling options

SSH (Secure Shell Host) protocol is used to heighten computer security when working with Unix systems on the Internet. SSH uses several encryption algorithms of different reliability. The spread of SSH is also related to the fact that a number of *nix operating systems (e.g. FreeBSD) include SSH server in their standard distributions. To learn more about SSH, please visit http://openssh.org.

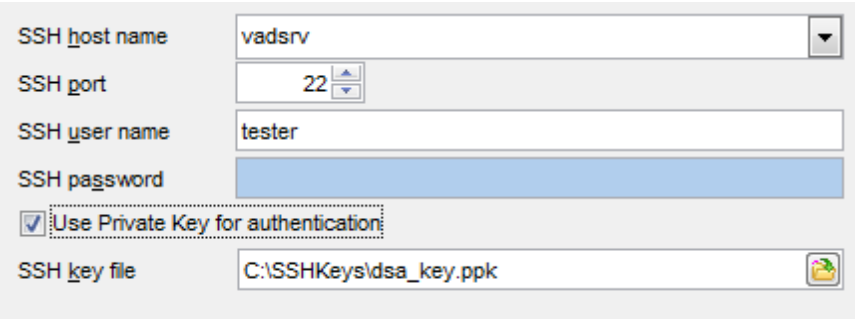
The SSH tunneling feature of **SQL Manager** is a means of ensuring secure connection to InterBase/Firebird servers when working over insecure connection channels. You can also use SSH tunnel to get access to the remote InterBase/Firebird servers when port 3306 is closed for external connections for some reasons.

The connection via SSH tunnel works in the following way.
First, a connection is established and the process of authentication between SSH client built in **SQL Manager** and remote InterBase/Firebird server is performed. Then all incoming and outgoing information between the application and InterBase/Firebird is transmitted through SSH server with the help of a communication port (regularly port 22), and SSH server transfers this information directly to InterBase/Firebird server.

To setup the connection via **SSH tunnel**, input the following values in the corresponding fields:

- **SSH host name** is the name of the host where SSH server is running
- **SSH port** indicates the port where SSH server is activated
- **SSH user name** stands for the user on the machine where SSH server is running (**Note:** it is a Linux/Windows user, not a user of InterBase/Firebird server)
- **SSH password** is the Linux/Windows user password

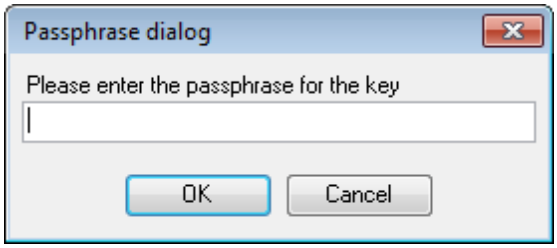
Please note that InterBase/Firebird **host name** should be set relatively to the SSH server in this case. For example, if both InterBase/Firebird and SSH servers are located on the same computer, you should specify *localhost* as **host name** instead of the server external host name or IP address.



Use Private Key for authentication
If the SSH encryption is enabled on the SSH server, a user can generate a pair of cryptographic keys (the **Private key** and the **Public key**). The **Public key** is placed on the SSH server, and the **Private key** is the part you keep secret inside a secure box that can only be opened with the correct passphrase (or an empty string as the passphrase). When you wish to access the remote system, you open the secure box with your passphrase (if any), and use the private key to authenticate yourself with the Public key on the remote Linux computer.

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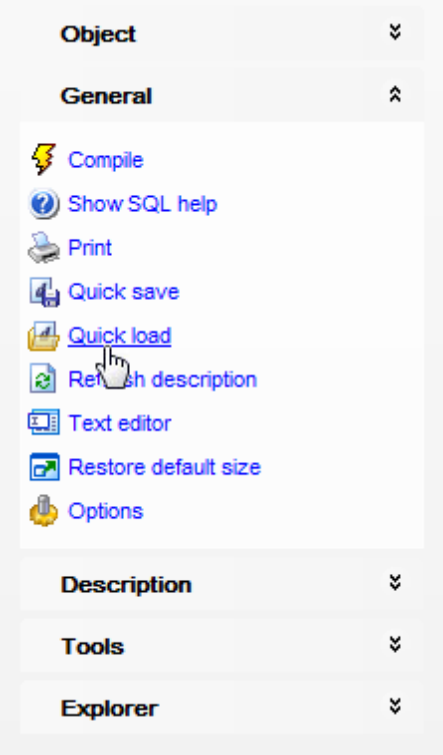
SSH Key file
Specify the location (the secure box) of the **Private key** file on your local machine.
Supported Private Key file formats are:
OpenSSH
Putty
SSH.com
Note that you need to trust your local machine not to scrape your passphrase or a copy of your Private key file while it is out of its secure box.



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15.21 Quick save / Quick load

The **Quick save** / **Quick load** features available on the Navigation bar[890] of most object editors allow you to save/load object's DDL quickly bypassing standard means by saving/ loading changes to/from from internal buffers.



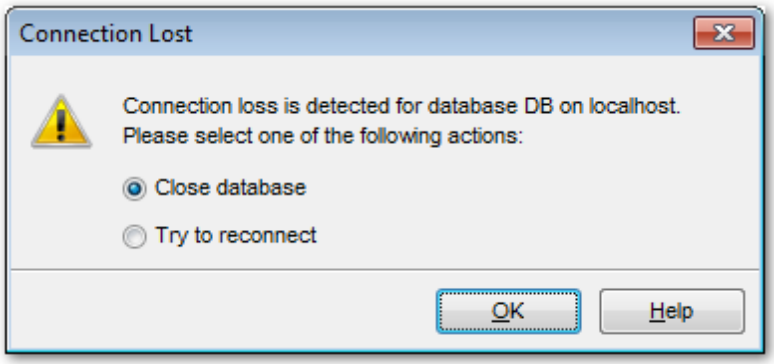
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15.22 Connection Lost dialog

When InterBase/Firebird server connection loss is detected by **SQL Manager**, the **Connection Lost** dialog is displayed. You can choose one of available options in this case:

Close database
The application closes the database, and its objects are no more displayed in DB Explorer 63 and child windows.

Try to reconnect
The application tries to reconnect to the server.

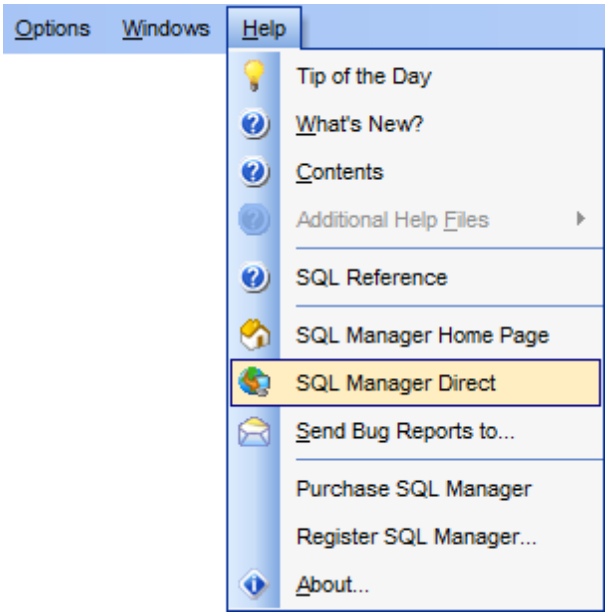


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15.23 SQL Manager Direct

SQL Manager Direct is a feature of **SQL Manager for InterBase/Firebird** which provides you with quick access to the related Internet resources and allows you to keep your **SQL Manager** version up-to-date.

To open the **SQL Manager Direct** window, select the **Help | SQL Manager Direct** item from the main menu 890.
On opening **SQL Manager Direct** or pressing the **Update** button, program checks for updates available at EMS Software Development server.



Links to sqlmanager.net resources provided by the **SQL Manager Direct** window are grouped into several sections:

- *SQL Manager for InterBase/Firebird News*
- *General Information*
- *Downloads*
- *Related Products*

Upon a link selection you will be immediately forwarded to the corresponding resource.

SQL Manager for InterBase/Firebird News
This section takes you directly to the latest EMS news column. Using the links you can get up-to-date news, product information and downloads from sqlmanager.net.

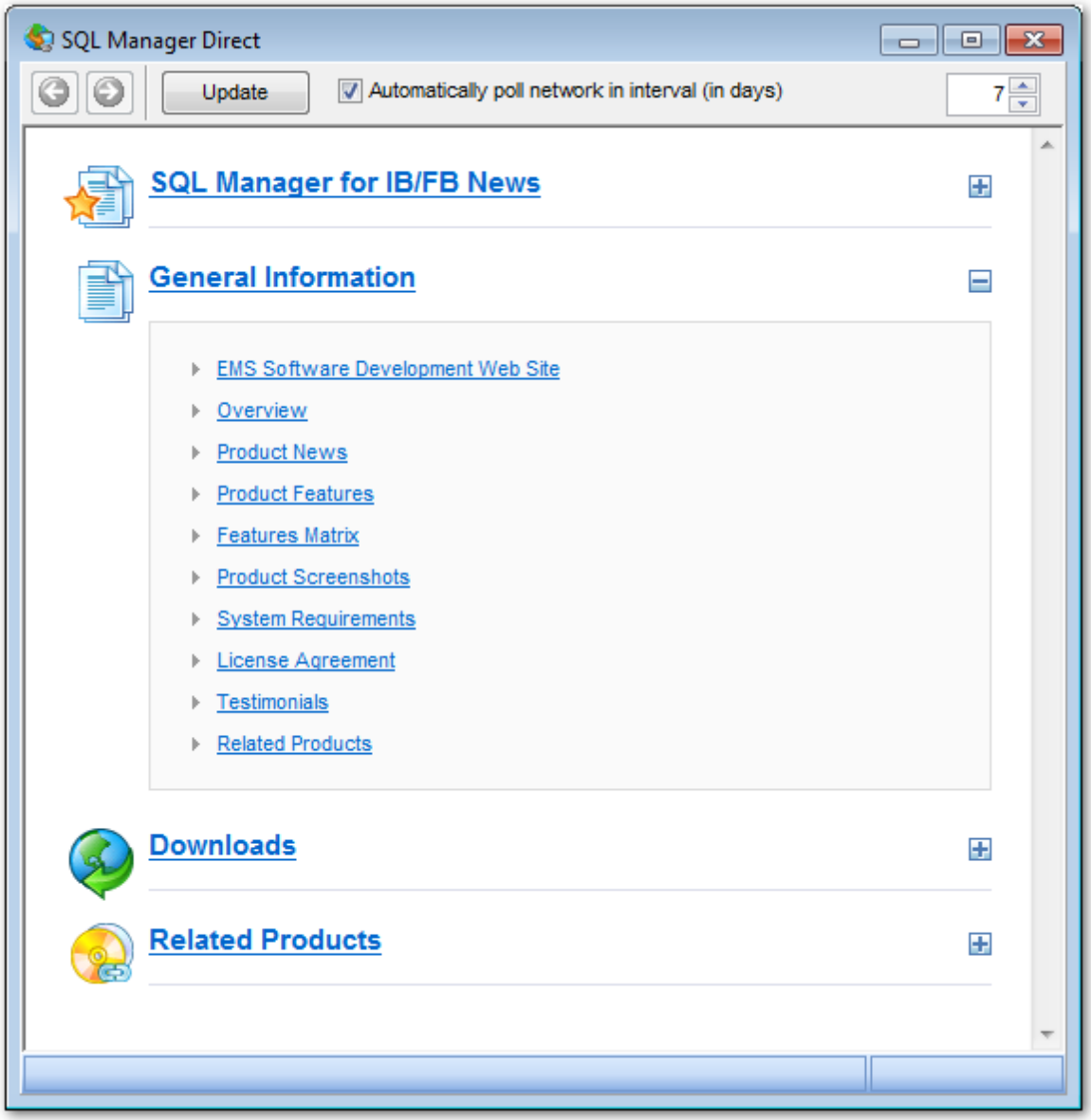
General Information
This section offers a number of links to product news, features, Feature Matrix 20, system requirements 19, testimonials and much more.

Downloads
Using links of this section you can download other product versions and documentation from the download page.

Related Products

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This section allows you to browse the list of related products developed by EMS Database Management Solutions, Inc.



Use the  buttons to navigate in the same way as you normally do it using a web browser.

Click the **Update** button to refresh the page.
If a newer version of **SQL Manager** is available on the server the program will inform you via corresponding dialog window. You can use this window to download this version.

☑ **Automatically poll network in interval (in days)**
If this option is selected, the page is refreshed automatically after the specified time interval. Use the spinner control to set the interval (in days).

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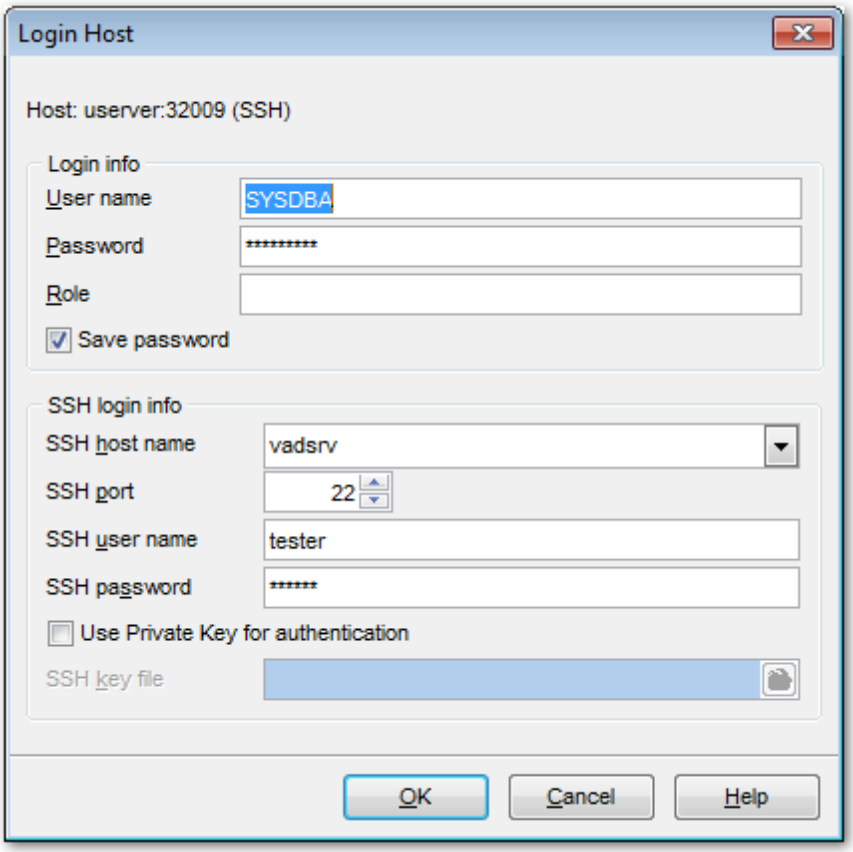
In the **Status** area at the bottom of the **SQL Manager Direct** window you can find the status of your request to the sqlmanager.net website.

Note: Internet connection settings defined at Windows Control panel affect this page displaying. If a proxy-server requiring authorization is used, then authorization parameters should be defined via dialog window, that appears on opening SQL Manager Direct page or on pressing the Update button.

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15.24 Login Host / Login Database dialogs

The **Login Host** dialog appears each time a connection request is sent to a server which requires authentication, i.e. on attempt to connect 88 to a host if no password was specified to authorize the user or if the **Login prompt before connection** option is enabled on the Options 156 page of the Host Registration Info 153 dialog.

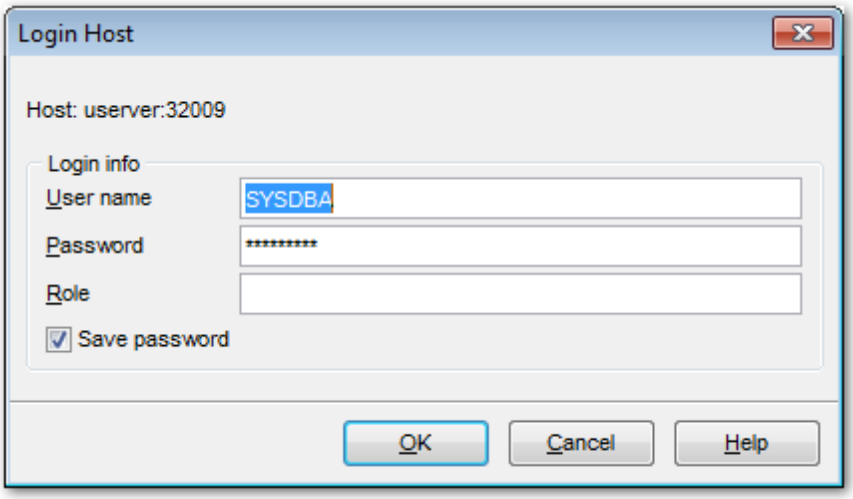


The application prompts you to specify host connection parameters 91 to access the specified host: *user name*, *password*, *role*, and SSH tunneling 96 settings (if used).

Note: The **SSH login info** group is available only if SSH tunneling 928 is used for the host connection.

The **Login Database** dialog appears each time a connection request is sent to a database which requires authentication, i.e. on attempt to connect 88 to a database if no password was specified to authorize the user or if the **Login prompt before connection** option is enabled on the Options 118 page of the Database Registration Info 115 dialog.

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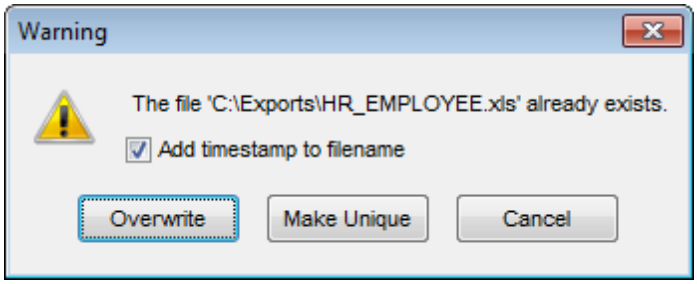
The application prompts you to specify host connection parameters 109 to access the specified database: *user name*, *password*, *role*, and SSH tunneling 96 settings (if used).

Note: The **SSH login info** group is available only if SSH tunneling 928 is used for the database connection.

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15.25 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.



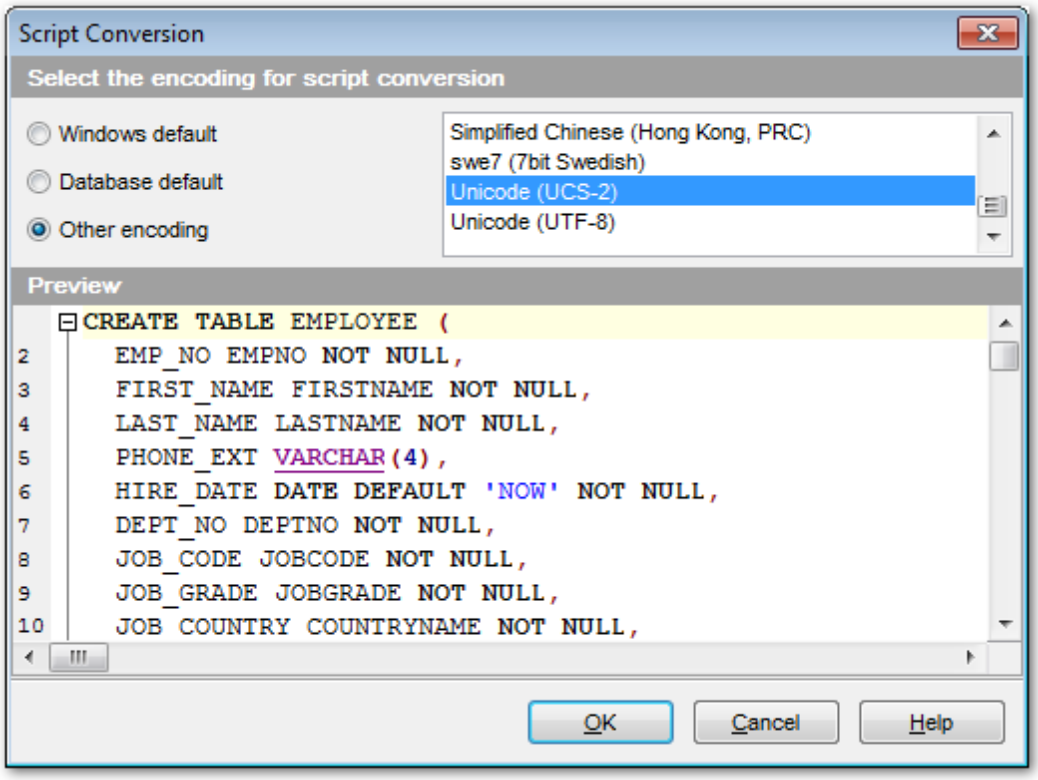
You can **Overwrite** the file, **Make** it **Unique**, or **Cancel** both and change the path or file name manually.

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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15.26 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 331, Execute Script Editor 544) 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.

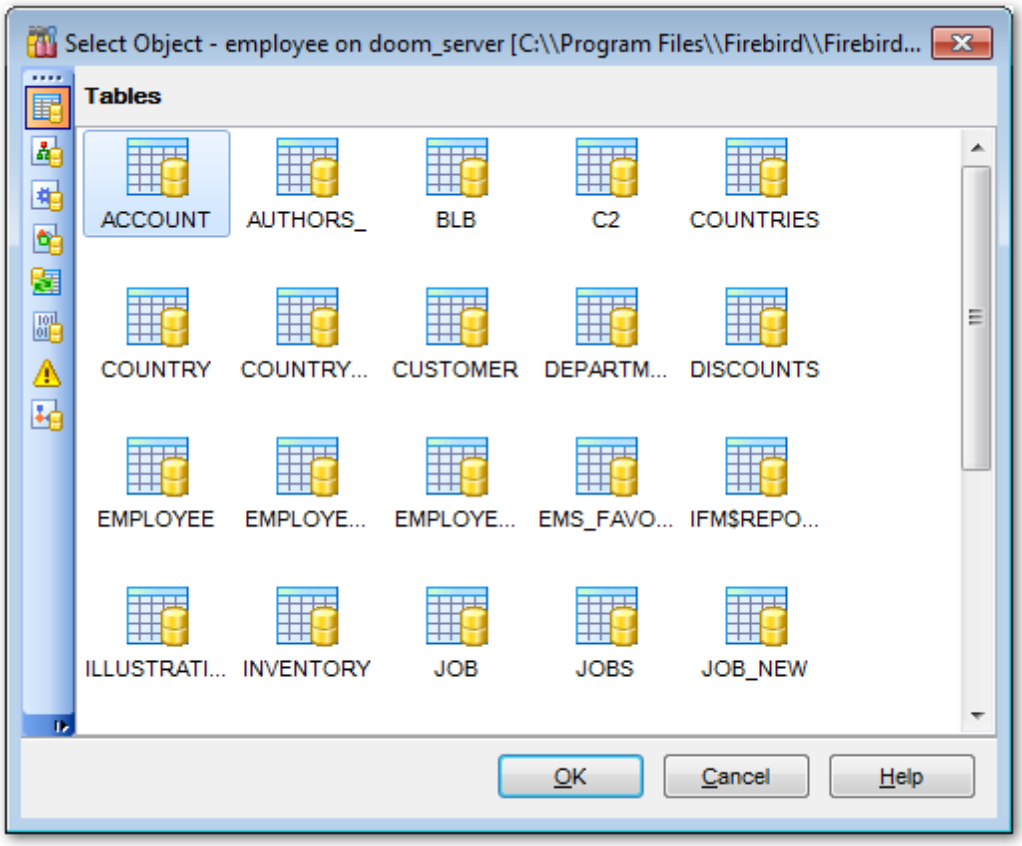
Other encoding
Allows you to select the encoding that will be used for the script conversion.

Preview
This area displays the script with the current encoding parameters applied.

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15.27 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 536 tool, or when choosing an object to be added to a Favorite Objects 76 folder.



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.

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15.28 SQL Manager shortcuts

Database management

Shift+Ctrl+R Register a InterBase/Firebird host using Register Host Wizard 90
Shift+Alt+R Register a database using Register Database Wizard 107
Shift+Alt+U Unregister the selected database
Shift+Ctrl+C Connect 67 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 63 tree branch and switch selection to the parent tree node
F9 Execute a procedure
Shift+Ctrl+F9 Debug a procedure

SQL Manager tools

F11 View/hide Database Explorer 63
Ctrl+F Search for an item in the DB Explorer 63 tree
Shift+Ctrl+T Open the To-Do List 921 window
F12 Show Query Data Editor 331
Shift+F12 Open a new instance of Query Data Editor 331
Shift+Ctrl+M Open SQL Monitor 541
Shift+Ctrl+S Open Execute Script Editor 544
Shift+Ctrl+L Open Localization Editor 829
Ins Add a new table subobject (the subobject type depends on the current tab selection)

Data Grid

Ctrl+Shift+0 Set the selected column value to NULL

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,N Go to next bookmark
Ctrl+Q,P Go to previous 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 909 dialog
Ctrl+R Replace text using the Replace Text 911 dialog
F3 Search next

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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	Load the script to an external file
Shift+Ctrl+Q	Save text as Favorite 346
Shift+Ctrl+F	Format SQL text using SQL Formatter
Alt+<symbol>	Switch to the query with *<&symbol>* in its name (Query Datacx` only)
Ctrl+J	Insert a keyboard template 333
Shift+Ctrl+F	Format SQL
Ctrl+Alt+Left	Switch to the next tab of Query Data 331
Ctrl+Alt+Right	Switch to the previous tab of Query Data 331
Ctrl+Alt+PgUp	Switch to the last tab of Query Data 331
Ctrl+Alt+PgDown	Switch to the first tab of Query Data 331
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+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
Alt+Down, Alt+Up	Toggle case of a current word
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

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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
Ctrl+Shift+Space	Call a hint listing parameters for added procedures 254 and UDFs 273
Ctrl+Alt+Space	Show character map
Ctrl+Alt+P	Show procedures 254
Ctrl+Alt+V	Show views 243
Ctrl+Alt+T	Show tables 179
Ctrl+Alt+G	Show triggers 282
Ctrl+Alt+U	Show UDFs 273
Ctrl+Alt+Enter	Show table in SQL Assistant 80
Ctrl+Alt+M	Show domains 173
Ctrl+Alt+E	Show generators 294
Ctrl+Alt+X	Show exceptions 290
Ctrl+Alt+R	Show roles 730
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+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+O,N	Normal selection mode
Ctrl+O,C	Column selection mode
Ctrl+O,L	Line selection mode
Ctrl+M; Enter; Shift+Enter	Break line at current position, move caret to a new line
Ctrl+Alt+I	Insert Tab char
F5	Toggle breakpoint
Shift+F5	Enable/disable brakpoint

Print Data View

Ctrl+O	Load a printing report from a file
Ctrl+S	Save the report to file
Ctrl+P	Open the Print 422 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 406

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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 58
Ctrl+Alt-0	Open Windows List 923
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 73 in DB Explorer
Ctrl+Shift+P	Move to the previous tab 73 in DB Explorer

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