Software Projects and Innovations

Tariscope 4.x

User's Guide

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Contents

Purpose

This document is intended for users of the **Tariscope Enterprise 4.x** and **Tariscope Provider 4.x** editions. Further in the text, if there is no need to clarify the edition, the **Tariscope** name is used. This guide describes all features of the Tariscope applications except the Tariscope configuration and maintenance.

The Tariscope configuration and maintenance are described in the **Tariscope 4.x. Administrator's guide**.

Introduction

There are two editions of the Tariscope system: Tariscope Enterprise and Tariscope Provider.

The Tariscope Enterprise edition is a call accounting software for companies that have one or a group of PBXs.

The Tariscope Provider edition is a telecom billing system for telecommunications service providers.

Further in the text, if there is no need to clarify the edition, the **Tariscope** name is used.

The Tariscope system:

- provides a collection of information about calls from various data sources, such as a serial port, Ethernet port using TCP, UDP, FTP, and SFTP, local and remote folders, databases, etc.;
- collects information on Internet use from a range of data transmission equipment using NetFlow (version 5, 9), IPFIX, rFlow protocols;
- processes the received information with a definition of the subscriber who made or received a call, with a call and data traffic rating;
- carries out a search of the desired information about the calls or received / transmitted data using filters of different levels of complexity;
- creates reports with text and graphic information;
- assesses telephone traffic for routes, trunks (lines), or subscribers;
- includes a customer account management (only for the Tariscope Provider edition);
- compares the results of the Tariscope rating with the results of rating from your telecom service provider;
- interacts with other systems, for example, hotel, accounting, CRM, and others;
- manages telecommunications equipment using money or time limits on the volume of calls made or the use of Internet services;
- gives a customer (subscriber) access via the Web interface to get information about the customer (subscriber) account, call details, data traffic and allows an issue to be sent to get help or obtain information, etc.

The Tariscope user must possess certain skills in the telephony services provided to subscribers (customers) and / or the Internet services.

Chapter 1 Getting started with Tariscope

Getting started with Tariscope the Tariscope administrator must perform the following actions:

- to install Tariscope;
- to activate Tariscope;
- to configure Tariscope.

These actions do not describe in the document. How to install, activate, and configure Tariscope, see in the document “Tariscope 4.x. Administrator’s guide”.

Chapter 2 Tariscope applications

The Tariscope system contains the following applications that can be used by the Tariscope user:

- the **Tariscope** program;
- the **Report Designer** program,
- **Tariscope Personal Area**.

The **Tariscope** program provides the performance of the main functions of the Tariscope user:

- browsing information on completed calls, sorting, filtering, and highlighting for certain categories of calls;
- browsing information on IP traffic;
- a creation of reports with text and graphic information;
- processing previously stored call logs;
- an import of calls data from telecom service providers into the database;
- a comparison of the results of the Tariscope rating with the results of rating from your telecom service provider;
- a call re-rating;
- charging telecommunication services to customers' accounts (only for the Tariscope Provider edition);
- a print of data of the views for calls or IP traffic;
- an export of data of the views for calls or IP traffic and reports into external files of the following formats: Excel, Access, HTML, CSV, PDF;
- an assessment of telephone traffic for routes, trunks (lines), or subscribers;
- Subscriber Data Management;
- configuring Tariscope.

The **Report Designer** program allows you to edit the Tariscope report forms or create the own report forms. In addition, the Tariscope system supports a generation of the Report Definition Language (RDL) reports.

Tariscope Personal Area allows a subscriber (customer) using Web interface:

- to view information about the subscriber's calls, IP traffic, and their costs;
- to view information about calls of a subscriber group if the subscriber has appropriate rights;
- to set a category for any call, for example: Private, Business, Partner, etc.;
- to view and edit personal information;
- to view his account status;
- to execute payments for telecommunications services;
- to get different documents such as calls reports, invoices, agreements, etc.;
- to find a required area code;
- to find a required phone number in the corporate telephone directory;
- to send an issue to the Tariscope administrator.

The Personal Area is accessible on a computer, tablet or smartphone.

Chapter 3 The Tariscope program

3.1 Purpose

The Tariscope program is a main program of the Tariscope system. It allows you to analyze calls data and IP traffic, manage customer accounts (this feature is only available to the Tariscope Provider edition), and configure the Tariscope system.

The main features of the Tariscope program enumerate in Chapter 2.

3.2 System requirements

To work with the Tariscope program you need a computer with the following parameters or above:

- CPU 1,5 GHz or higher;
- Memory: 2 GB or higher;
- Hard disk space: 100 GB or higher;
- Operating system: Windows 10/8.1/8/7/2012 R2/2012/2018 R2/2008 (Microsoft).

The computer must have .Net Framework 4.5.2, which is included in the Tariscope installation package.

Basically, the computer parameters are determined by the Tariscope database volume, with which it is supposed to work, and the required processing speed of data.

3.3 Installation

The Tariscope program can be installed with other Tariscope applications on the same computer. If you want to install the Tariscope program separately, during the installation, select the **Client applications only or Tariscope version update** check box. A description of the Tariscope installation, refer to the document: "Tariscope 4.x. Administrator's Guide".

3.4 The interface of the program

After the initial start of the Tariscope program, the Tariscope Initial Configuration Wizard is started. A description of the Tariscope Initial Configuration Wizard is given in "Tariscope 4.x. Administrator's Guide".

At start of the program the **Connect to Tariscope server** window appears as shown in Figure 3.4.1.

In the **Server name** box, type a computer name or its IP address where the Tariscope server was installed. If the Tariscope server works on the same computer, you can type "(local)" or "." in the box.

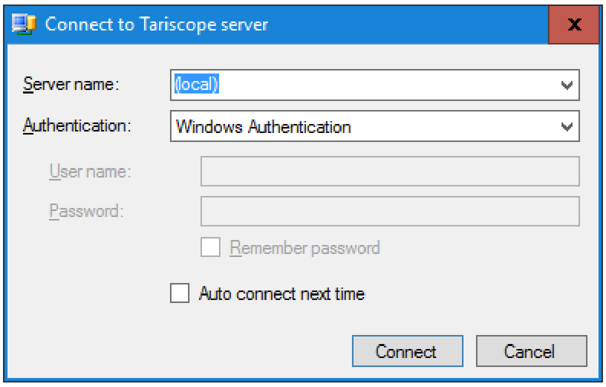

Figure 3.4.1

In the **Authentication** list, select from the following options:

- **Windows Authentication**,
- **SQL Server Authentication**.

For the first option does not require a user name and password. The authentication is performed by the name and password used to connect to the Windows.

When you select the **SQL Server Authentication**, you must type a user name and password. By default, in the system the **sa** user with password: **Tariscope123** is used. The Tariscope administrator can change these parameters or create new users.

If at the next starts of the program, you do not wish to specify the parameters each time in this window, select the **Auto connect next time** check box. **Not recommended** to select this check box if several users have an access to the computer.

Click **Connect**.

After the connection to the Tariscope server the Tariscope window will be as shown in Figure 3.4.2.

The window contains the following sections:

- Menu,
- Toolbar,
- Views.

A view means a separate program tab that displays a certain kind of information. The **Welcome** and **Output** views are displayed in the Figure 3.4.2.

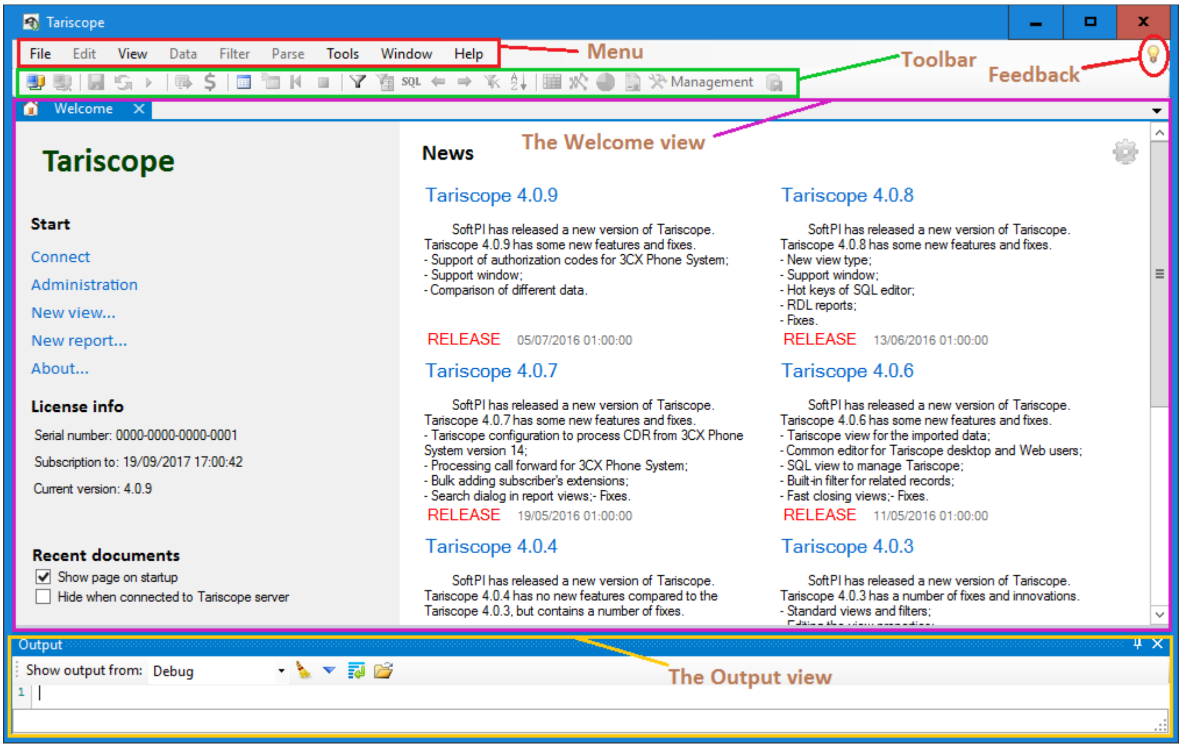

Figure 3.4.2

Not all menu items are available in some operational modes of the program. The menu contains the following main menu items:

- **File**. This item provides a connection and disconnection to / from the Tariscope server as well as opening a file, print and export of a view data.
- **Edit**. This item allows you to find, copy and paste data, to use bookmarks.
- **View**. This item allows opening data views, filter views, the output view or the search view.
- **Data**. This item provides a creation of a new data view, report or diagram (chart), sorting data, and setting parameters of any view.
- **Filter**. The item allows you to set filter conditions to data and save them for future application.
- **Parse**. The item allows you: to process call data from a previously saved CDR log; to import call data into Tariscope from an external file received from a telecom provider; to compare the results of call rating made by Tariscope with the results of call rating from a provider; to rerate CDR data; to remove duplicates from the call table; to clear charges of subscribers.
- **Tools**. The menu item allows you: to archive calls data; to start the Tariscope Report Designer or Tariscope Management programs; to start the Tariscope mode that allows working with subscribers' accounts; to configure the program parameters.
- **Window**. The menu item provides the ability to switch between the Tariscope views.
- **Help**. The menu item provides an access to the help information and allows activating the program.

The toolbar contains a set of icons which provide a quick access to a specific function.

The menu items and the corresponding keyboard shortcuts, a list of all the icons of toolbar and their brief description are listed in Table 3.1.

Table 3.1

First menu level	Second menu level	Keyboard shortcut	Toolbar icon	Description
File	Connect Tariscope	Ctrl+W		Provides a connection to the Tariscope server.
	Disconnect	Ctrl+D		Provides a disconnection from the Tariscope server.
	Open file	Ctrl+O		Provides opening an external file.
	Save	Ctrl+S		It allows you to save a file or a view data.
	Save as	Ctrl+Alt+S		It allows you to save a file or a view data with a new name.
	Export			Provides an export of a view in an external file of the following formats: PDF, HTML, Text, and Excel.
	Print	Ctrl+Alt+P		Provides a print of a view or file.
	Print preview			The item allows you to preview data before printing.
	Exit	Alt+F4		It provides an exit from the program.
Edit	Undo	Ctrl+Z		The item erases the last change done to the document.
	Redo	Ctrl+Y		The item performs an action again that has been deleted by an undo function.
	Cut	Ctrl+X		The item allows you to cut the selected data.
	Copy	Ctrl+C		The item allows you to copy the selected data.
	Paste	Ctrl+V		The item allows you to paste the selected data.
	Select all	Ctrl+A		Selects all data of the view
	Find	F3		The item allows you to select all data of a document.
	Go to	Ctrl+Alt+G		The item allows you to go to a specific row of the table.
	Copy table	Ctrl+Alt+C		The item provides a copy of the table.
	Bookmark	Ctrl+Alt+B		A bookmark is set on a selected row of the table. The bookmark is highlighted in blue.
	Previous bookmark	Ctrl+Alt+P		The focus returns from the current bookmark to the previous bookmark in the table.
	Next bookmark	Ctrl+Alt+N		The focus is set on the next bookmark in the table.
	Clear bookmarks			The item clears all bookmarks in the table.
View	Data views	F6		Displays a new view that contains a list of the built-in and saved views.
	Filters	F7		Displays a new view that contains a list of the built-in and saved filters.
	Output			Displays the **Output** view that contains the Tariscope log.
	Start page			Displays the **Welcome** page.
	Other windows			The item contains submenu included the following items: **Related records**. Displays the **Related records** view. It contains the related call records that appear when a call transfer, conference or similar functions are used.

				Search. Displays the **Search** view where a list of records, which is a result of the **Find** function, is displayed.
Data	New data view	Ctrl+N		The item provides a creation of a data view for calls, services or IP traffic.
	New report	F9		The item provides a creation of a new report.
	Traffic measurement			The item provides a creation of a chart of call traffic.
	New chart			The item provides a creation of a chart on the view data.
	Back to saved document	F10		If you have applied a filter to the view data, the item allows you to return to the saved data.
	Save as default	Ctrl+Alt+D		The item allows you to save the view parameters as default. In future when you create a new view these parameters will be applied.
	Refresh	F5		The item allows you to refresh the view data.
	Run	Ctrl+F5		The item starts SQL query from the open specific file.
	Stop	Shift+F5		The item allows stopping the Tariscope process such as a parsing, rating and so on.
	Sort			This item provides a sorting by any field of the table or a group of table fields.
	View fields			The item allows you to select fields that will be displayed in the table.
	Coloring	Ctrl+J		The item allows you to highlight rows in color depending on their data.
	Rows limit	Ctrl+R		The item provides setting a limit on the row number, which will be displayed in the table.
	Data source			Shows a table name that is displayed in the view.
	View style			Allows you to configure a font and background color for the view.
Filter	Filter	Ctrl+F		The item allows you to set filter conditions using a graphic interface.
	Save filter	Ctrl+F7		The item allows you to save the current filter conditions.
	SQL filter	Ctrl+Alt+F	SQL	The item opens a window that allows you to create a SQL query of any complexity.
	Filter by selection	Ctrl+Alt+O		Filtering is performed on the value of selected cell of the table.
	Exclude selection	Ctrl+Alt+I		Filtering is performed, at which the data sampling excludes records that contain values similar to a value of the current table cell.
	Previous filter	Ctrl+Z		The conditions of the previous filter are applied to the view.
	Next filter	Ctrl+Alt+Z		The conditions of the next filter are applied to the view.
	Clear filter	Ctrl+M		The item allows clearing all filter conditions.
Parse	Transfer	Ctrl+P		Data from a CDR file are processed and saved into the Tariscope database.
	Compare			Performs a comparison of Tariscope call rating with call rating of the telecom service provider.
	Import calls and services			Call details and service details are imported from external files into the Tariscope database.
	Rate	Ctrl+T	$	Call rating is performed for records of the view.

	Recalculate month			Performs clearing charged services for the current month and the calls costs of this month. After this Tariscope performs the charging of service costs and calls costs. The entered payments from customers aren't cleared. This function does not work when the restriction feature is used.
	Charge services for month			Performs charging of services for month (only for the Tariscope Provider edition).
	Clear charge			Resets subscribers' costs. Applicable when using the restriction feature.
	Find duplicate records			Finds and removes duplicate records from a view of calls.
Tools	Archive	Ctrl+Shift+B		Allows you to archive or delete records from the call table.
	Report Designer			Allows you to start Tariscope Report Designer.
	Tariscope Management	F8		Opens the **Tariscope Management** tab when you can configure the Tariscope parameters.
	Subscriber accounting	F4		Opens the **Account** tab, which allows you to get customer's account state, generate reports for the customers, type information about customers' payments.
	Options			Allows you to set the program parameters.
Windows	Lock layout			This item locks the layout in its current position.
	Close	Ctrl+F4		Closes the active tab.
	List of windows			Displays a list of the opened tabs (windows).
Help	Contents	F1		Opens the **Knowledge base** page of the Tariscope site.
	Support			Displays contacts for support.
	Activate			Starts the Activation wizard.
	About			Displays information about the program.

The work in the Tariscope program is executed in views. There are the following types of the views:

- Call views. They display tables with calls data.
- IP views. They display tables with data about IP traffic.
- Service views. They display tables with data about services.
- The **Management** view. It allows configuring the Tariscope system.
- The **Accounts** view. It provides **Subscriber Data Management**.
- The **Comparison** view. It allows comparing results of the Tariscope call rating with results call rating of telecom service provider.
- The **Welcome** view. It displays a list of links and news about the Tariscope system.
- The **File** view. It allows editing an external file.
- A view that contains a list of call, IP traffic and service views that were saved in the system.
- A view that contains a list of filters that were saved in the system.
- Report views. These views contain the Tariscope reports.
- The **Output** view. It contains the program log.

- The **Search** view. It contains a list of row numbers that satisfy conditions of the search.
- Several working views: to parsing CDR, call rating and so on.

You can place these views in any order on the program window. To do this, set focus on the header of a view, press the left mouse button, drag and drop the view in the desired place of the program. An example of location of the views is shown in Figure 3.4.3.

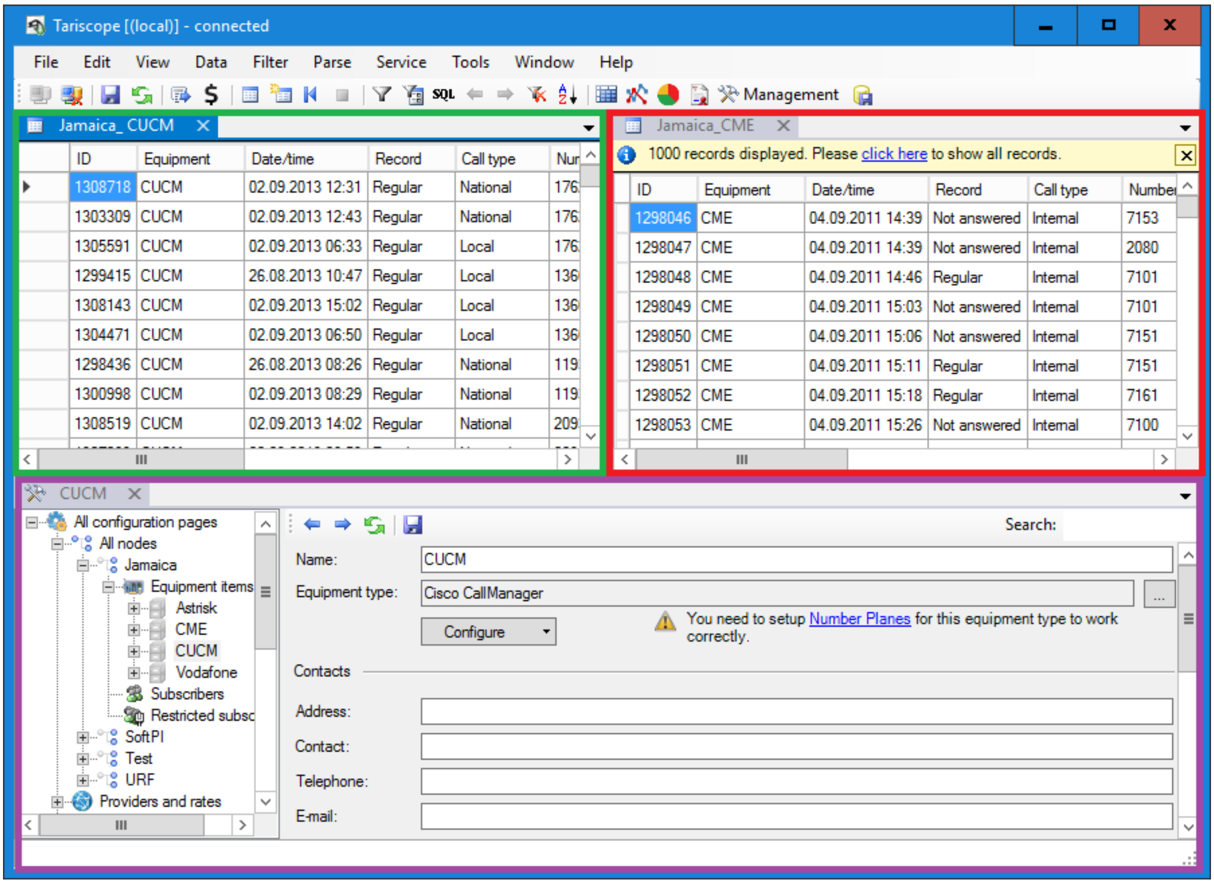

Figure 3.4.3

This feature can be useful in the following cases:

- for comparison of data from two views or reports;
- for simultaneous monitoring of the various data sources;
- for simultaneous opening of a subscriber (customer) account and his call information,
- and in other cases.

In fact, you have a dashboard. This is especially effective when working on a big screen. The Tariscope user can determine the number, location, and size of the views displayed on the screen.

The views, where the lists of views and filters are displayed, can be located outside of the program window.

The first view, which the Tariscope user sees after the program start, is the **Welcome** view. An example of this view is shown in Figure 3.4.4.

It displays a list of links providing a quick access to a desired operating mode and the Tariscope news.

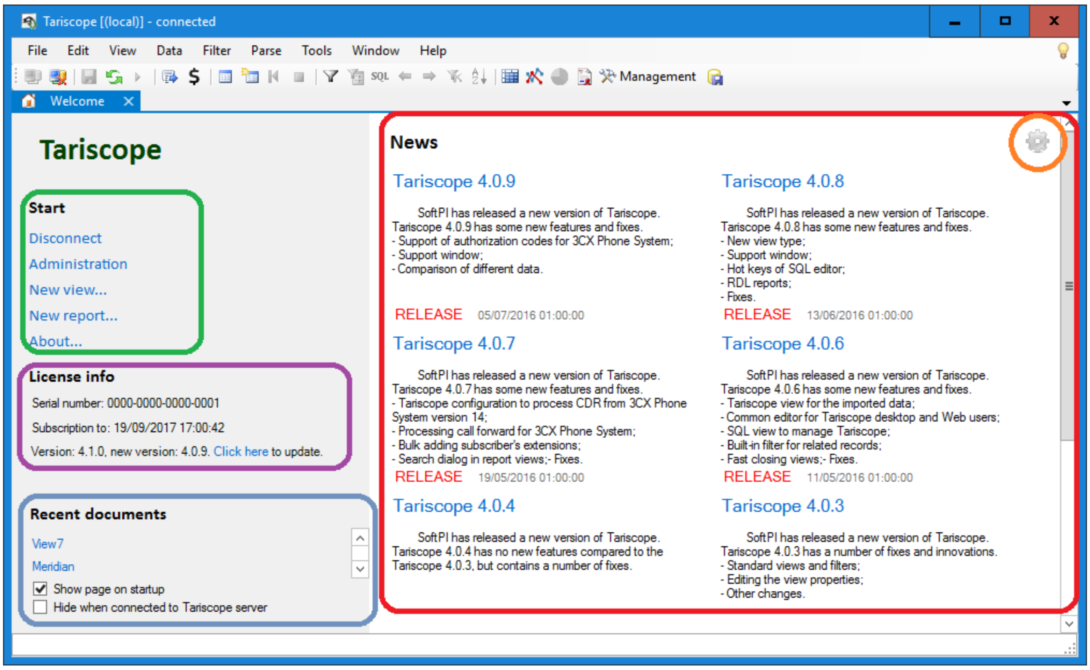

Figure 3.4.4

On the left side of the **Welcome** view the three sections are displayed:

- **Start**. It contains links to quickly select the desired mode.
- **License info**. It displays information about the Tariscope license.
- **Recent documents**. This section contains a list of the recent Tariscope documents.

The **Start** section contains the following links:

- **Connect / Disconnect**. Provides a connection to the Tariscope server or disconnection from it.
- **Administration**. The link opens the **Management** view where you can configure and manage Tariscope.
- **New view**. The link allows opening a new view with information about calls, IP traffic or services.
- **New report**. The link allows generating a new report.
- **About**. Displays information about the Tariscope program.

The **License info** section displays:

- **Serial number** of the license.
- **Subscription to**. Displays the last date of the warranty support period.
- The number of Tariscope version and availability of a new Tariscope version.

The **Recent documents** section contains also two check boxes:

- **Show page on startup**. If you wish the **Welcome** view appears at startup, select this check box.
- **Hide when connected to Tariscope server**. To hide the Welcome view, when the program is connected to the Tariscope server, select this check box.

In the right part of the **Welcome** view, a brief summary of the latest news contained on the Tariscope site is displayed. This allows the Tariscope user to be always aware of the latest developments related to Tariscope. The news is divided on categories: articles, releases, and all. To select the desired category to displaying only it in the view, click on the icon located on the right-top corner of the view and select the category.

The Tariscope program allows to the users to have a feedback. To provide a feedback, click on the Feedback icon located in the top right corner of the program (Figure 3.4.2). The **Feedback** window appears as shown in Figure 3.4.5.

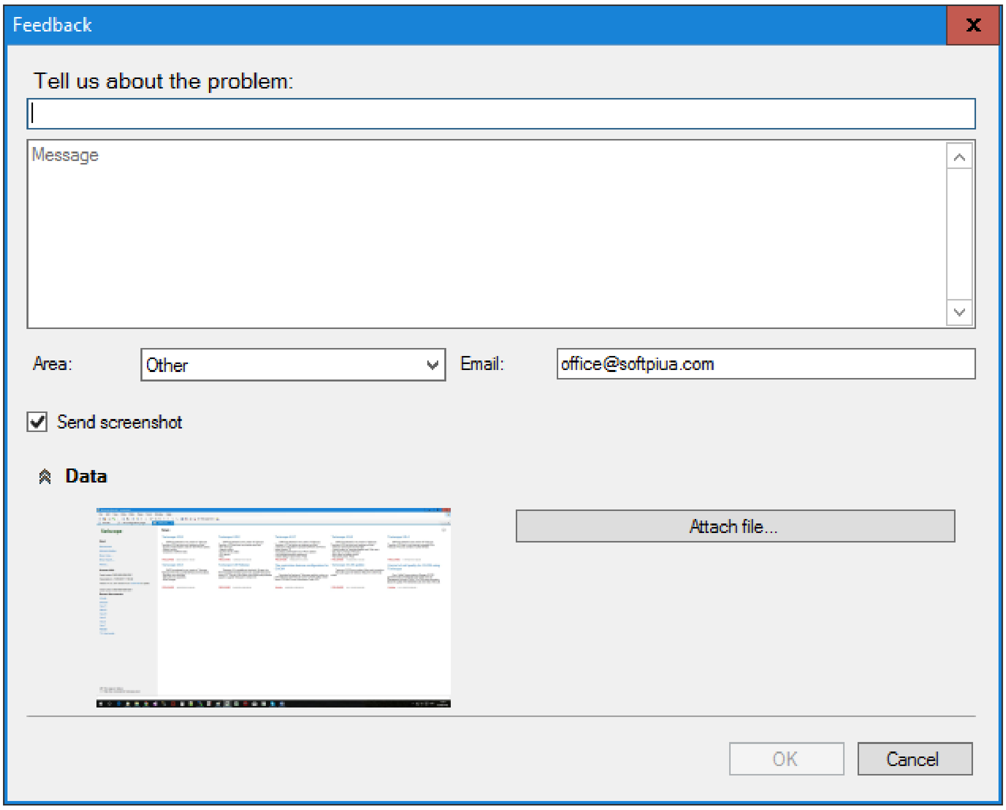

Figure 3.4.5

Type a name of your problem in the **Tell us about the problem** box.
Describe the problem in the **Message** box.
In the **Area** list, select an area related to your problem.
In the **Email** box, specify your email address.
When the **Feedback** window is opened, Tariscope creates a screenshot. To send the screenshot, select the **Send screenshot** check box. By default, the check box is selected.
If you wish to add some information, click on the **Attach file** button and select the required file that contains this information.
Click **OK**, to send your message.

3.5 Working with views for calls

Mainly the Tariscope users work with views for calls. A view for calls is a tab of the Tariscope program, in which the call data are displayed in the table form. Usually one table row corresponds to one call. For calls where a call transfer or conference were used, the call information can be contained in multiple table rows. Each view can have own parameters such as:

- **Filtering parameters**. They provide a display of only specific records, for example, the calls of only a specific subscriber, group of subscribers, calls during a specific period, etc.
- **Sorting parameters**. They allow to sort information in the table using one or a group of fields.
- **Fields of the view**. A user can set a list of fields, which will be displayed in the view.
- **Bookmarks**. You can set bookmarks for further fast search of necessary records.
- **Colorizing records**. You can set the color for specific records, in which they are displayed in the table. It allows you to quickly find required records.
- **Data grouping**. Data of a view for calls can be grouped according to some of the fields that allows you to quickly create summary reports.

3.5.1 Creating and saving a view for calls

If you have already started the process of collecting data about the calls and you want to analyze the data, create a new view for calls.

To do this, in the program menu, select **Data → New data view**, or click on the **New view** icon on the toolbar. The **Filter** window appears as shown in Figure 3.5.1.

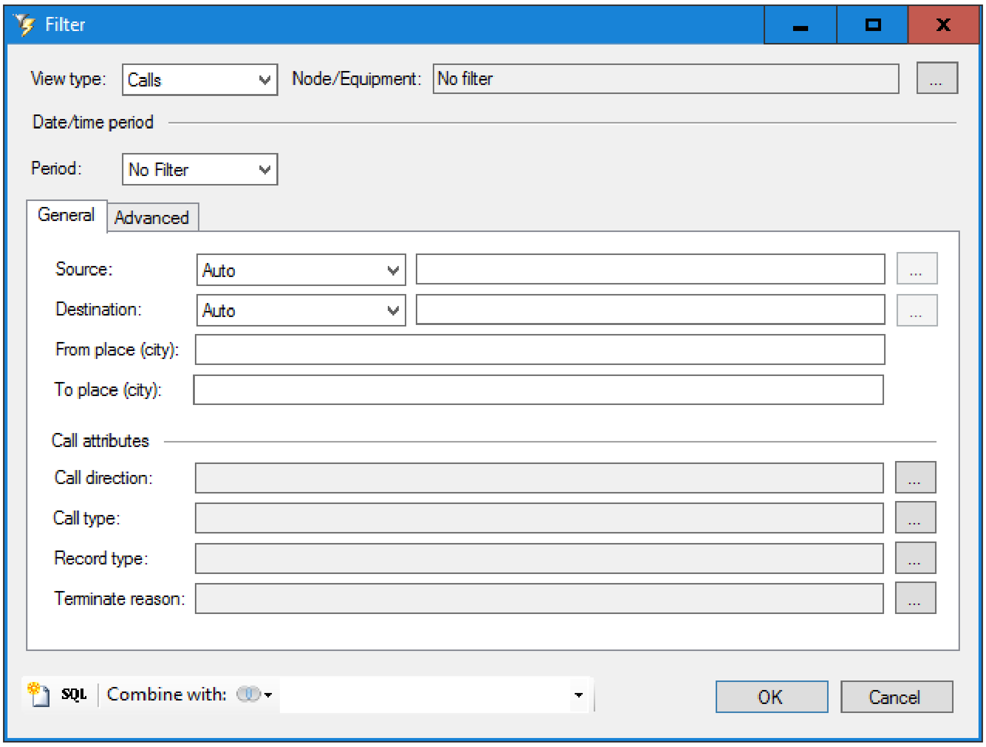

Figure 3.5.1

This window allows you to set the filter conditions before opening the view. The window allows you to specify complex filter conditions on a group of parameters, such as:

a subscriber name, name of a subscriber group, telephone system, subscriber phone number, call destination, call type, time period, and others.

In this section, we will not consider filtering options in detail. They will be considered in the following sections.

At the same time, we note that a telephone system and time period are frequently selected when creating a new view.

At first, if you wish to create a view for calls, keep the **Calls** item in the **View type** list.

To select a telephone system, click on the '…' button located on the right from the **Node/Equipment** box. The **Equipment selection** window appears where all telecommunications nodes and all telephone systems are displayed. Select the desired items and click **OK**.

To select a time period, click on the **Period** list and choose a desired item.

To apply the filter conditions, click **OK** in the **Filter** window.

You may skip the **Filter** window by clicking on the **OK** button (Figure 3.5.1). If necessary, you can specify the filter conditions later. However, if you plan to set any filter conditions in the view, we recommend to set them at this stage, since filtering reduces the number of records displayed, and thus speeds up the process displaying them.

After you have set the filter parameters, click **OK**. A new view will be created for which the system assigns a name, for example: **View1**, if it is a first view. You can replace this name by any other name. To do this, right-click on the view name. In the appeared menu, select the **Rename** item. Type a new name.

You can create a next new view with another filter parameters and so on.

All views are automatically saved by the system. But if after creating the view, you have made some changes in it, saving these changes will depend on the program settings. To check the program settings, select in the program menu: **Tools** → **Options**. The **Options** window opens as shown in Figure 3.5.2.

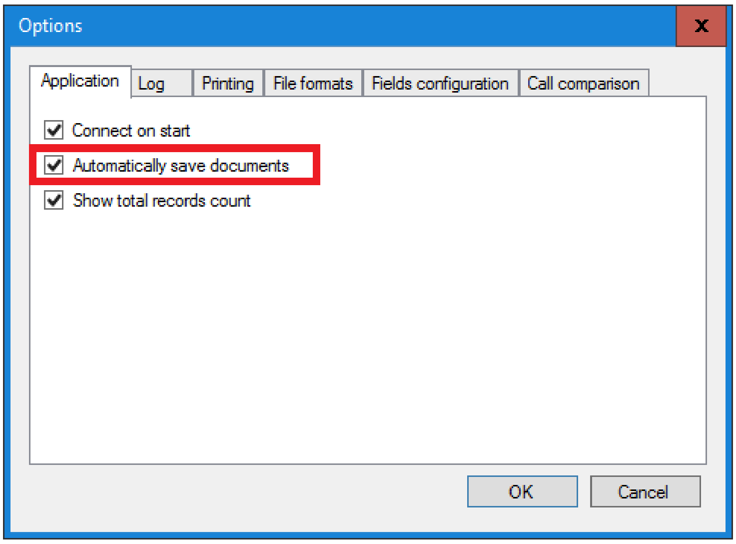

Figure 3.5.2

To automatically save changes in a view, select the **Automatically save documents** check box, and click **OK**.

3.5.2 Management of the views

The Tariscope program allows you to manage the Tariscope views. In the Tariscope menu, select **View** → **Data views** or click on the **Views** icon on the toolbar. The **Views** view appears that contains a list of the built-in views and views created by the Tariscope users. An example of the view is shown in Figure 3.5.3.

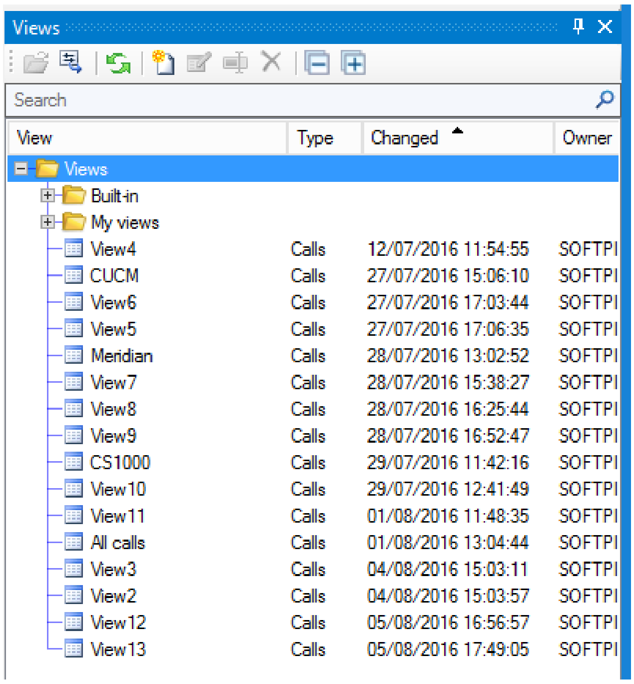

Figure 3.5.3

The view contains a list of views for calls, IP traffic, and services. A view type is displayed in the **Type** column. The view also contains the following columns:

- **View**. Displays a folder name or view name.
- **Changed**. Displays the date and time when a view was changed.
- **Owner**. Displays a user name who created or changed a view.
- **Sort fields**. Displays a list of fields that are used to sort data in the view.
- **Coloring**. Displays the conditions of coloring in the view.
- **Group by fields**. If grouping is applied in the view, the column displays a field that is used for grouping.
- **Bookmark count**. Displays a number of bookmarks that the view contains.
- **Field count**. Displays a number of fields that the view displays.
- **Main filter**. Displays the main filter that is applied to the view.
- **Filter**. Displays the additional conditions of filtering that are applied to the view.

By default, the view displays the following columns: **Type**, **View**, **Changed**, **Owner**.

Views can be grouped in folders. The folders may contain subfolders. You can drag and drop any view from one folder to another folder. Tariscope includes the **Built-in** folder that contains a list of widely used views.

To open any view, double-click on the view name, or select the view, and click on the **Open view** icon on the toolbar.

To create a new view, click on the **New view** icon on the toolbar. The **Filter** window opens as shown in Figure 3.5.1. Specify the filter conditions for the new view and click **OK**.

You can edit all view parameters. To do this, select a desired view, and click on the **Edit view** icon on the toolbar. The **View configuration** window appears as shown in Figure 3.5.4.

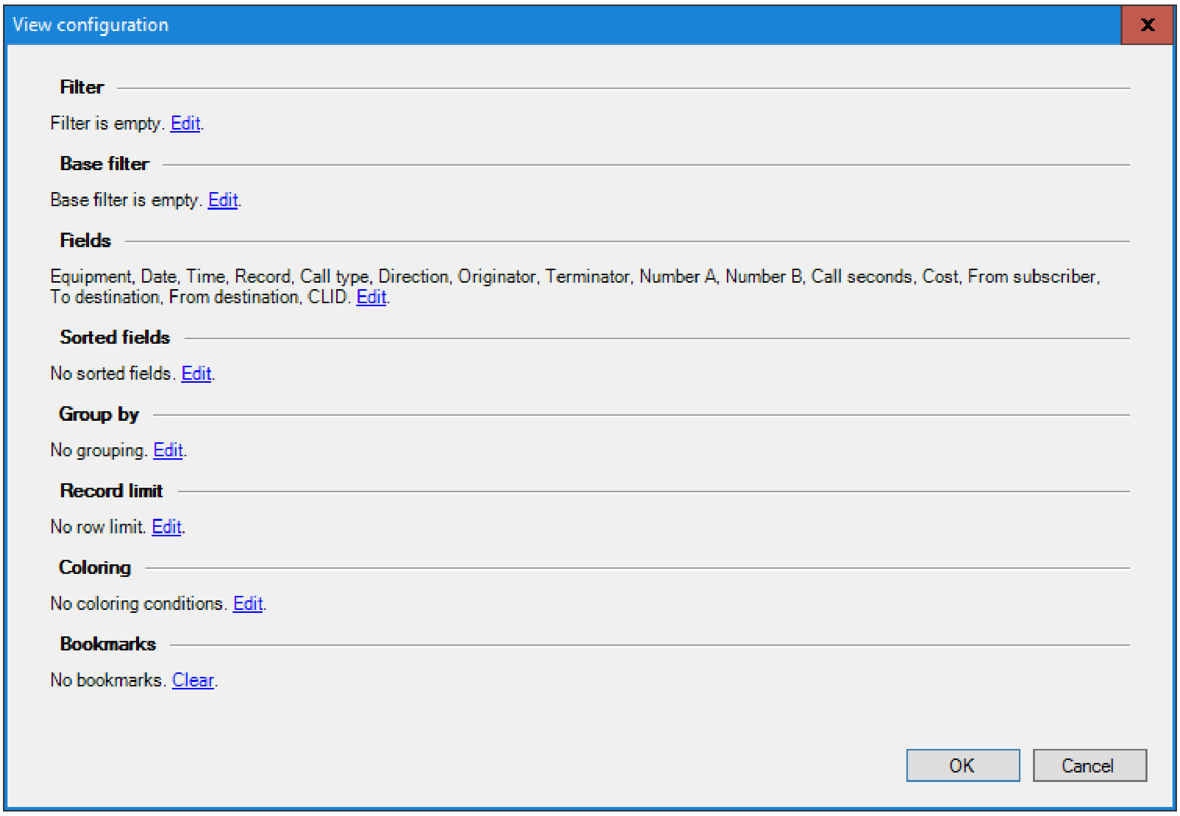

Figure 3.5.4

The window contains a list of view parameters. To edit the required view parameter, click on the appropriate **Edit** link. The special window will be opened where you should make changes.

If you have opened view and want to quickly find it in the view list, for example, to change its parameters, click on the **Select view** icon on the toolbar. The focus will be set on this view name.

To rename the view, select the desired view, and click on the **Rename** icon on the toolbar. Type a new name.

To delete a view, select the view, and click on the **Remove** icon on the toolbar. In the window that appears, confirm deleting the view.

There are two pop-up menu in the **Views** view. The first menu appears when you right-click on the header of the table. The menu contains the following items:

- **Filtering**. When you select this item, the submenu appears that contains a list of views. Select the required views.

- A list of the columns. Select or clear desired columns.

The second menu appears when you right-click in any place of the table except of the header. This menu contains the following items:
- **Open**. Opens the selected view.
- **Refresh**. Refreshes information about views.
- **Add view**. Allows adding a new view.
- **Edit view**. Allows you to edit parameters of a selected view.
- **Add folder**. Allows creating a new folder for views.
- **Rename**. Allows you to rename a selected view.
- **Delete**. Allows you to delete a selected view.
- **Export to Excel**. Exports information about views to the Excel format.
- **Export to HTML**. Exports information about views to the HTML format.
- **Export to CSV**. Exports information about views to the CSV format.
- **Export to PDF**. Exports information about views to the PDF format.

To quickly find a desired view in the list, type the view name in the search box.

3.5.3 Fields of a view for calls

A view for calls contains a list of fields, which can be displayed or hidden in the header of calls table. A list of all fields and their brief description are shown in Table 3.2.

Table 3.2

Field name	Description
Access code	Displays an access code, CDP steering code or trunk access code depending on the PBX and the route selection.
Auth code	Displays an authorization code which was used to make this call.
Call second	Displays a call duration expressed in seconds.
Call type	Displays call types that are listed in the Table 3.4.
Called party	Displays a subscriber's name who received a call, if information about the subscriber has been entered in Tariscope.
Calling party	Displays a subscriber's name who made a call, if information about this subscriber has been entered in Tariscope.
Category	Displays a category name which the Tariscope administrator has defined for the specific call type.
CLID	CLID means Calling Line Identification. It displays the telephone number of a subscriber who made the call.
Cost	Displays a call cost.

Cost 2	Displays a call cost, which is calculated using the rate of the secondary provider.
Date	Displays a date of beginning of the call. If the information on year is missing in CDR data, the year is taken from the current date of the computer.
Date/time	Displays a date and time of beginning of the call. If the information on year is missing in CDR data, the year is taken from the current date of the computer.
Days	Displays a part of the total call duration in days.
Dial number	Displays the dialed number with access code, or without it, depending on whether it is present, and information about it has been entered when configuring routes in Tariscope.
Direction	Displays a direction of the call. For example: Outgoing, incoming, or internal.
DNIS	DNIS means Dial Number Identification. The field is present only for incoming calls. It displays the dialed number.
Duration	Displays a call duration.
End of calls	Displays a date and time of end of the call.
Equipment	Displays an equipment name.
From destination	For incoming, transit long distance, or international calls, this field displays a city name from which call was made. For incoming or transit calls from network of mobile operator this field displays a mobile operator name.
From group	This field is applied only for outgoing or local calls. It displays a subscriber group name to which a subscriber who made the call belongs.
From subscriber	Displays a subscriber's name who made the call.
Hold time	Displays a time when the call was on hold.
ID	Displays an identifier of the record.
Node	Displays a node name.
Number A	Displays a telephone number from which the call was made.
Number B	Displays a telephone number on which the call was made.
Originator	Depending on call type (internal, outgoing, incoming, conference, or transit), this field may contain a directory number of subscriber or number of attendant console from which the call was made, route number and trunk from which call was received, the conference number. A route number and trunk are shown in the form of: Lxxxyyyy, where L - sign of route / trunk, xxx - route number, yyy - trunk number in the route.
Originator Aux. ID	The field contains an additional information that allows defining an originator of the call.
Original CLID	CLID means Calling Line Identification. The field displays the telephone number of a subscriber who made call in those form as it was in the original call detail record.
Original dialed number	Displays the original dialed number that was in the original call detail record.
Parent call ID	If this record is a part of call such as a Call Transfer or Conference, the field displays ID of the parent record for this call.
Project code	Displays a project code which has been applied during the call.

Rate	Displays a rate value that has been used to calculate the cost of the call.
Record	Displays a record type. A list of record types you can see in the Table 3.3.
Release cause	Displays a description of Call Termination Cause.
Ring time	Displays a ringing time for incoming calls.
Terminator	Depending on call type (internal, outgoing, incoming, conference, or transit), this field may contain a directory number of subscriber or number of attendant console where the call was made, route number and trunk through which the call was made, or conference number. A route number and trunk are shown in the form of: Lxxxyyyy, where L - sign of route / trunk, xxx – a route number, yyy – a trunk number in the route.
Terminator Aux. ID	The field contains an additional information that allows defining a terminator of the call.
Time	Displays a time of beginning of the call.
To destina-tion	The fields is applied to outgoing calls. It displays a city name where the call was made.
To group	This field is applied only for incoming or local calls. It displays a group name to which a subscriber who received the call belongs.

A list of record types, which are used in the Tariscope system, and their descriptions are shown in Table 3.3.

Table 3.3

Record type	Description
ACD	The type is assigned to calls which were received by Automatic Call Distribution system.
ACDConference	The type is assigned to calls which were received by Automatic Call Distribution system and included in conference.
ACDTransfer	The type is assigned to calls which were received by Automatic Call Distribution system and transferred to another subscriber.
Conference	The type is assigned to the conference calls.
Imported	The type is assigned to calls that were imported in the Tariscope database from data of a service provider.
NotAnswered	The type is assigned to the outgoing, incoming, and internal calls which were not answered.
Realtime	The type is assigned to calls for which call information was received in the real time. Usually it is a beginning of call, a moment when call was answered, etc.
Regular	The type is assigned to outgoing, incoming, and internal calls that were answered.
TextMessage	The type is assigned to calls where text messages are passed.
Transfer	The type is assigned to calls for which the call transfer was applied.
Unknown	The type is assigned to calls that do not belong to other record types.

VoIP	The type is assigned to VoIP calls, if CDR data contains a special label for such calls.

A list of call types, which are used in the Tariscope system, are shown in Table 3.4.

Table 3.4

Call type	**Description**
CallStart	The type is assigned to the first part of a call that is monitored in the real time.
Corporate	The type is assigned to calls that are made between different telephone systems of a corporation.
Incoming	The type is assigned to incoming calls.
International	The type is assigned to outgoing international calls.
Internal	The type is assigned to internal calls.
Local	The type is assigned to local calls.
Mobile	The type is assigned to outgoing calls on telephone numbers of a mobile network operator.
MMS	The type is assigned to calls that are used to transfer MMS.
National	The type is assigned to outgoing long distance calls.
NotOverride	The type is assigned to calls that were imported and which cannot be changed.
SMS	The type is assigned to calls that are used to transfer SMS.
Transit	The type is assigned to transit calls.
Unknown	The type is assigned to calls that do not belong to other call types.

Tariscope user can analyze only those fields in the program which are necessary in the current moment.

To hide unnecessary fields, move the cursor on the title of the required column and right-click. The menu appears where you should select the **Hide field** item.

To display previously hidden field, move the cursor anywhere on the title of the table and right-click. The menu appears. Select the **Select fields** item. The **Select fields** window appears which contains all the fields listed in Table 3.2. An example of the window is shown in Figure 3.5.5.

Select the desired check boxes from the list. Accordingly, to hide a field, clear its check box. In this window you can also change the display order of fields by using buttons located on the right of the window. Click **OK**.

You can change the order of the fields directly in the table. To do this, move cursor to a column header, click and hold the left mouse button, drag the column to a desired position. Then release the mouse button.

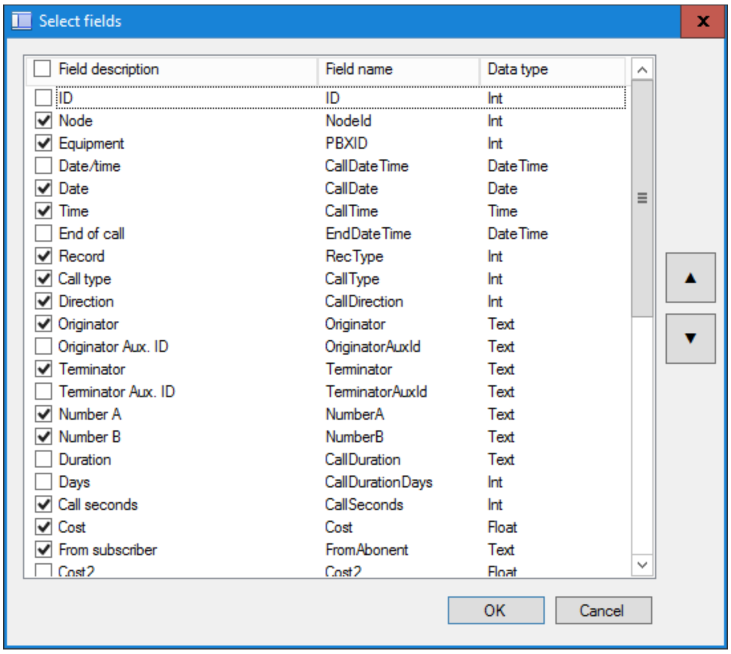

Figure 3.5.5

Tariscope can save all CDR data for some telephone systems such as Cisco Unified Communications Manager (CUCM), Cisco CallManager Express (CME), CS 1000, and Meridian 1 (Avaya, Nortel). All CDR fields for these PBXs are save in the special tables of the Tariscope database. To get information about all CDR fields, select a desired record or group of records in the Tariscope view, and right-click. In the appeared menu, select the **Record details** item. As a result, information about all CDR fields is displayed in the **Call details** view. An example of the window is shown in Figure 3.5.6.

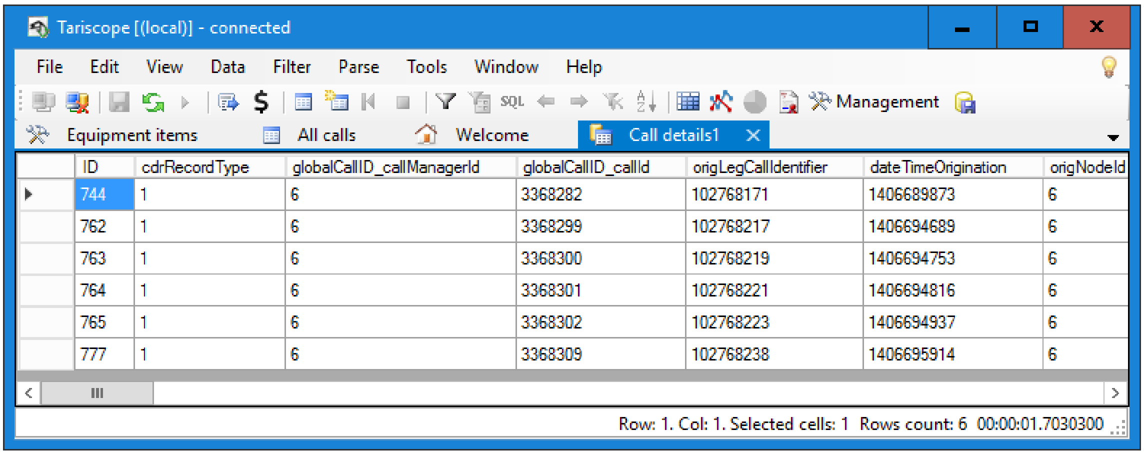

Figure 3.5.6

The column names of the window are the same as a vendor uses in CDR.

3.5.4. Fields of a view for services

A view for services is created the same way as a view for calls. You should select in the menu: **Data** -> **New data view**. The **Filter** view appears as shown in Figure 3.5.1 where in the **View type** list, select the **Services** item. The view for services is opened. It contains a list of all services that were set in the system. Usually, this view is useful only for users of the Tariscope Provider edition. The table of the view contains columns where information about the fields that are listed in Table 3.5.

Table 3.5

Field	Description
Bank authority	A bank name which is used to payments for the service.
Charge	A value of charge for the provided service.
Description	A description of the service.
Equipment	An equipment name where the subscriber is served.
From date	A date from which the service is charged to the subscriber.
ID	An identifier of the current record.
ID2	An identifier of the current service in the subscriber database.
Node	A telecommunication node to which the subscriber belongs.
Number	Subscriber's DN.
Payment	A value of the payment for the service.
Record date	The date of the current record.
Service code	A code that was assigned to this service.
Service ID	An identifier of the service in the service list.
Service name	A name of the service.
Service period	The period when the service was provided.
Service usage count	For the service such as calls of a specific type this field displays number of seconds for the service period.
Subscriber ID	An identifier of subscriber for which the service was provided.
Subscriber name	A subscriber name.
To date	The date before which the service was provided.

A view for services has the same features to work with the fields as a view for calls. To specify a list of the fields to display, right-click on the header of the table. The **Select fields** window appears as shown in Figure 3.5.7.

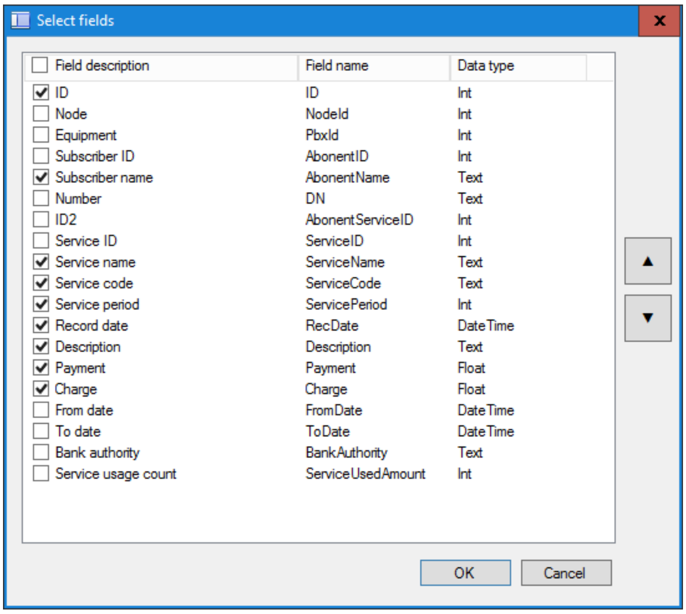

Figure 3.5.7

3.5.5 Fields of a view for IP traffic

Tariscope provides a collection of information about IP traffic from network devices which support NetFlow, IPFIX, or rFlow. To analyze this information, the view for IP traffic is used. A view for IP traffic is created the same way as a view for calls. You should select in the menu: **Data → New data view**. The **Filter** view appears as shown in Figure 3.5.1 where in the **View type** list, select the **IPv4 Traffic** item, and click **OK**. The view for IP traffic appears. A list of fields of the view is shown in Table 3.6.

Table 3.6

Field	Description
Date/time	Displays a date and time of the beginning of IP session.
Destination	Displays an IP address of IP traffic destination.
Destination port	Displays an IP port of the IP traffic destination.
Equipment	Displays an IP device name from which IP traffic was collected.
ID	Displays an identifier of the record.
Protocol	Displays an IP protocol that was used for this IP session.
Session duration	Displays a session duration.
Source IP	Displays an IP port of the IP traffic source.
Source port	Displays an IP port of the IP traffic source.

A view for IP traffic has the same features to work with the fields as a view for calls. To specify a list of the fields to display, right-click on the header of the table. The **Select fields** window appears as shown in Figure 3.5.8.

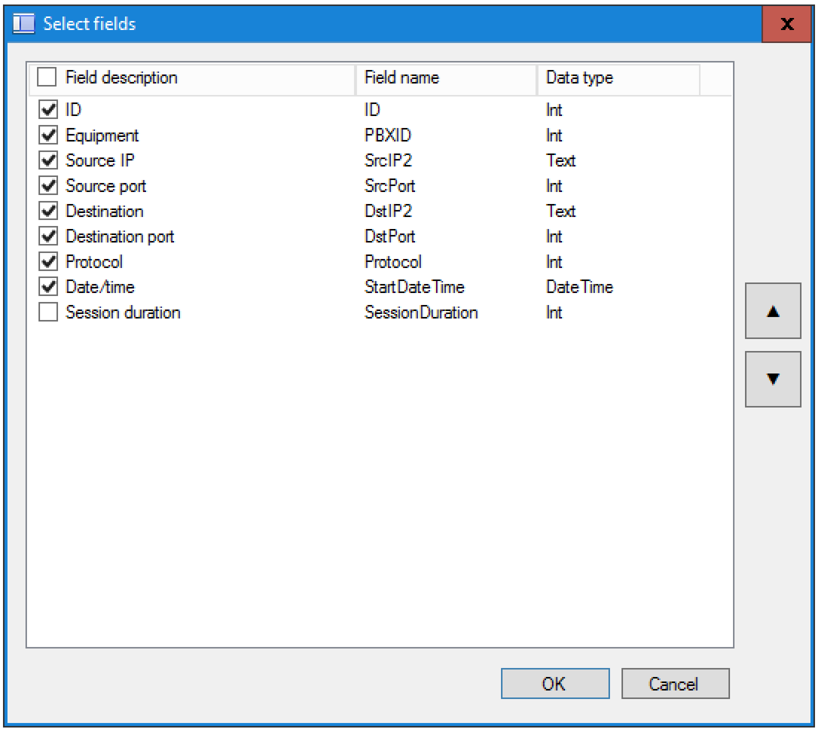

Figure 3.5.8

3.5.6 Search of information in a view. Bookmarks

To find a desired information in a view of calls, select in the menu: **Edit** → **Find**. The **Find** window appears as shown in Figure 3.5.9.

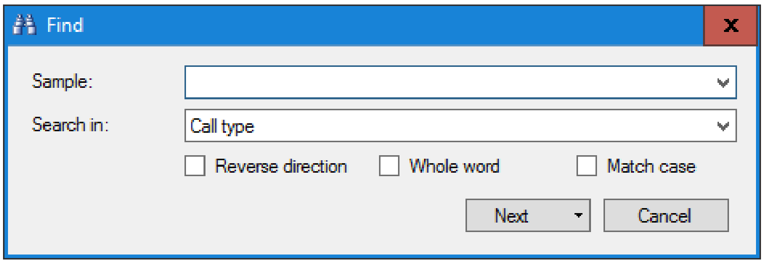

Figure 3.5.9

If, before opening the window, the focus was located in a required column, then the name of that column will be automatically displayed in the **Search in** list. In Figure 3.5.6 the focus was located in the **Call type** column. If you want to search for in all columns, select the **All** value in the **Search in** list.

In the **Sample** box, type a whole value or its part.

To search for a value that completely corresponds to the value of the **Sample** box, select the **Whole word** check box.

If you want the search to be case sensitive, select the **Match case** check box.

To execute the search in the reverse direction, select the **Reverse direction** check box.

Click **Next**, if you wish to find the first value that corresponds to the desired value.

If you wish to get all records that contains the desired value, click on the right part of the **Next** button, and in the appeared menu, select the **All** item. The **Search** view appears where the results of the search will be displayed. An example of the **Search** view is shown in Figure 3.5.10.

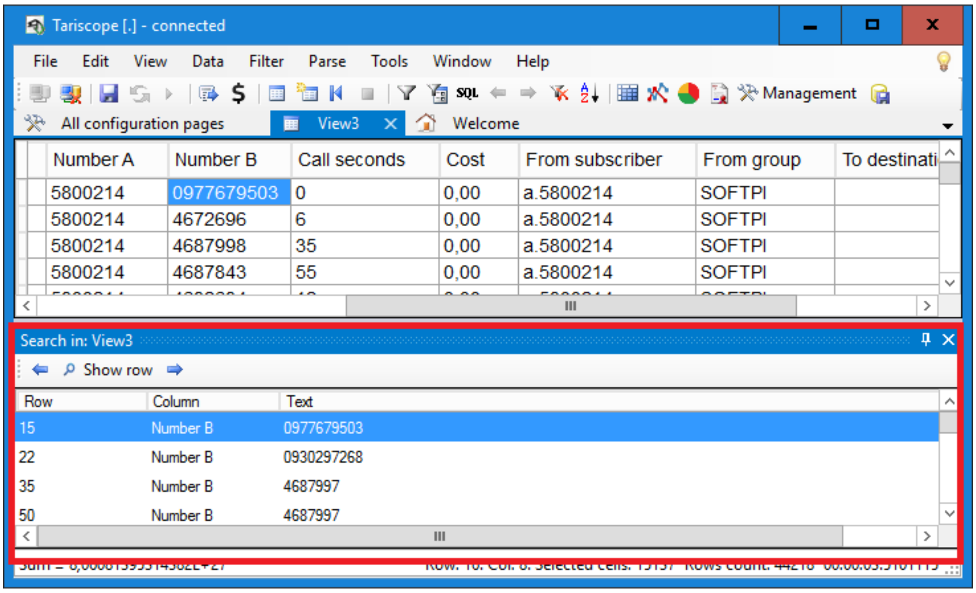

Figure 3.5.10

There are three columns in the **Search** view:

- **Row**. Displays the row number, which contains the search result.
- **Column**. Displays the column name that contains the search result.
- **Text**. Displays the value that corresponds to the search conditions.

Select a desired result in the **Text** column and, click on the **Show row** icon on the toolbar of the view or double-click on the selected row. In the view for calls the focus moves to the corresponding entry.

Another option for searching information in the views is a filtering. This feature allows you to select only those records of calls that meet the conditions of the filtering. It is the most powerful search engine, which searches for on various combinations of view fields. The filtering is discussed in the next section.

If you know a line number of a desired record, this information displays on the right side of the bottom line of the program window, then to move to the line, select in the program menu: **Edit → Go to**. The **Go to** window appears. Enter the line number and click **OK**. Focus will move to the desired line.

Bookmarks

If you have found the required row in the table of calls, you can set a bookmark on this row for a quick search of this row in future. To set bookmark on a row, select the row. In the program menu, select: **Edit → Bookmark**. Or, right-click and in the appeared menu, select the **Bookmark** item. The font color for this row will become blue.

Searching for a desired bookmark can be done in two ways:

- Right-click anywhere in the table and in the appeared menu, select the **Next bookmark** or **Previous bookmark** item.
- In the program menu, select: **Edit → Next bookmark** or **Previous bookmark**.

To delete a bookmark, move to this row, right-click and in the appeared menu, select the **Bookmark** item.

To delete all bookmarks, select in the program menu: **Edit → Clear bookmarks**.

3.5.7 Data filtering

The Tariscope program offers you several options of data filtering:

- an inclusion or exclusion of call records that contain the selected cell of the table;
- a creation of filter conditions using the advanced filter;
- a creation of filter conditions using SQL query;
- a creation of filter conditions using all mentioned above options.

The detailed description of various options of filtering data is considered in the following sections.

3.5.8 Filter by selection and Exclude selection

The simplest way to filter the information in a view for calls is a selection of records that have the same value in a column or exclusion of records that have the same value in a column.

To select records with the same value in a column:

- find, for example, using the search feature, the table cell that contains the required information;
- right-click and in the appeared menu, select the **Filter by selection** item.

As a result, the view will contain only those records of calls where values are the same as in the selected cell.

You can repeat these actions by applying them to the different columns of the view.

If you want to return the table of calls to its previous state, on the toolbar, click the **Previous filter** icon or, select the menu: **Filter → Previous filter**. The view returns its previous state.

In order to exclude records that have the same value in a column of the table:

- find, for example, using the search feature, the table cell that contains the required information;
- right-click and in the appeared menu, select the **Exclude selection** item.

As a result, all records, which had the same value as the selected value, will be excluded.

To return the table of calls to its previous state, on the toolbar, click the **Previous filter** icon.

The main advantage of this filtering method is an ability to quickly apply a filter condition. The disadvantage is a complexity in creating complex filtering conditions.

3.5.9 Advanced filter

The next filtering feature with increasing opportunities of filtering than features discussed in the previous section, is the advanced filter. To use this feature, click on the **Filter** icon on the toolbar, or select the menu: **Filter → Filter**. The **Filter** window appears, as shown in Figure 3.5.11. This window appears also when you create a new view.

If you create a new view, the Filter window provides a choice of a view type:

- for calls,
- for services,
- for IP traffic.

To select a view type, in the **View type** list, select a desired option.

If you apply this filter to a specific view, the **View type** list is inactive.

If Tariscope is used for multiple telecommunications nodes or multiple telephone systems, to select records for a desired node or telephone system, click on the "**...**" button located on the right of the **Node/Equipment** box. As a result, the **Equipment selection** window appears, the example of which is shown in Figure 3.5.12.

In the window, select the check boxes of nodes or telephone systems which you want to filter out, and click **OK**.

If necessary to quickly clear all selected check boxes in the window, click on the **Uncheck all** link.

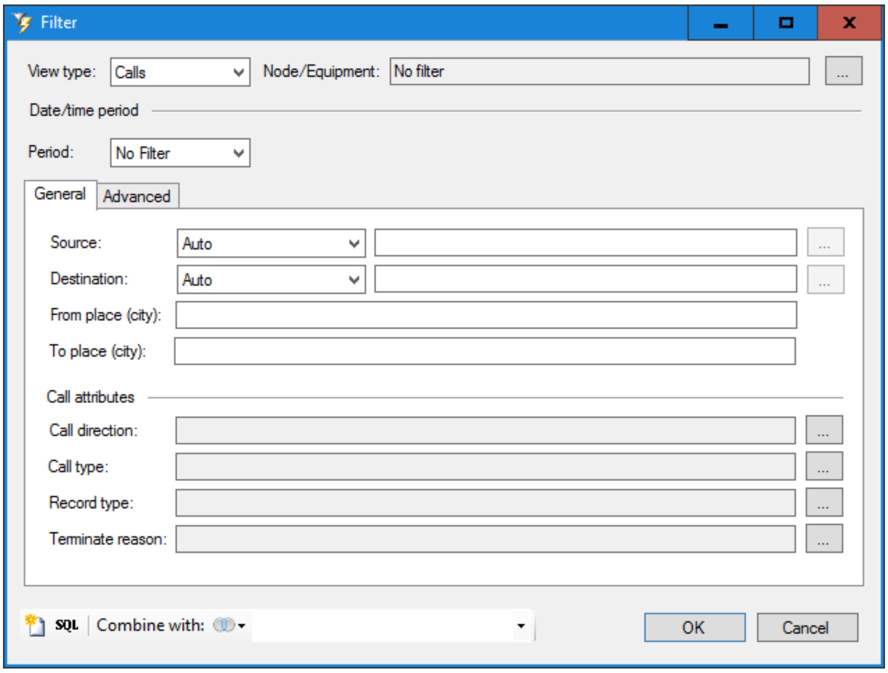

Figure 3.5.11

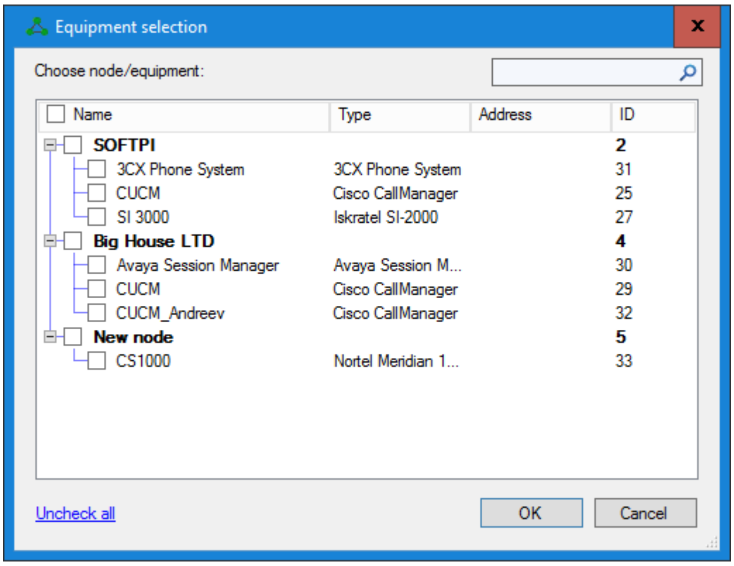

Figure 3.5.12

In the **Filter** window (Figure 3.5.11) in the **Period** list, select a time period, if you wish to filter out calls during a specific time period. The **Period** list contains the following options:

- **No filter**.
- **Today**.
- **Yesterday**.
- **This week**.
- **Previous week**.
- **This month**.
- **Previous month**.
- **This year**.
- **Previous year**.
- **Custom month**.
- **Custom year**.
- **Custom period**.

When you select the **Custom month** option, two additional lists appear in the **Filter** window: **Year** and **Month** which are used for selection of a desired month.

When you select the **Custom year** option, the **Year** list appears in the **Filter** window, where you must specify a desired year.

When you select the **Custom period** option, the **From** and **To** calendar list appear in the **Filter** window. You should specify dates and times which are the beginning of the filtering period and the end of the filtering period. You can specify values only for one of these lists. If you have set values for the **From** list, Tariscope will filter out data from the specified date and time till the current moment. If you have set values for the **To** list, Tariscope will filter out data from the first date in the database till the specified date and time.

On the **General** tab of the **Filter** window you can set the following filter conditions.

The **Source** list allows to select an originator of calls. The list contains the following parameters:

- **Auto**.
- **Extension**.
- **External number**.
- **Subscriber**.
- **Group**.
- **Route, trunk, gateway**.
- **List**.

Let's look at each of these parameters.

Auto. Type the desired value in the box located on the right from the **Source** list. The system will automatically find all combinations of the entered characters, which can be in a subscriber’s name or description of the area codes. The result of the search will be displayed in a list. The example of this is shown in Figure 3.5.13.

As you see in Figure 3.5.13, the "Sm" characters were entered. As a result, the system displays a list of data where "sm" characters are found. Then you can select a desired value from the list or continue the input to decrease a number of items in the list.

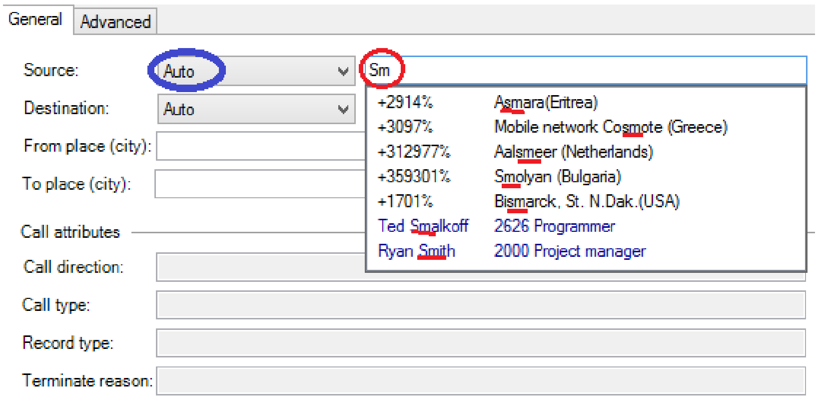

Figure 3.5.13

Extension. This choice allows you to find the call initiator using his phone number (extension). If you start entering digits, for example, "333", then a list of subscribers or area codes appear where this combination of digits are found. An example of this is shown in Figure 3.5.14.

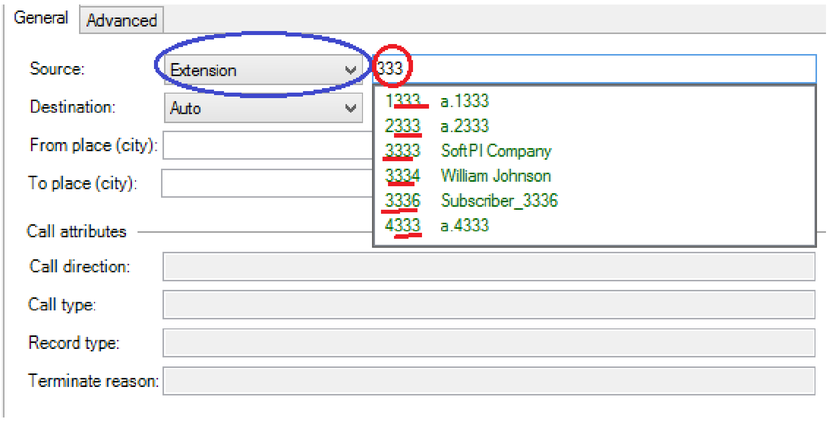

Figure 3.5.14

Then you can select a desired value from the list or continue the input to decrease a number of items the list.

If in the **Source** list you have selected the **Extension** item, you can also click on the "..." button located on the right from the list. The **Choose subscriber** window appears. An example of the window is shown in Figure 3.5.15.

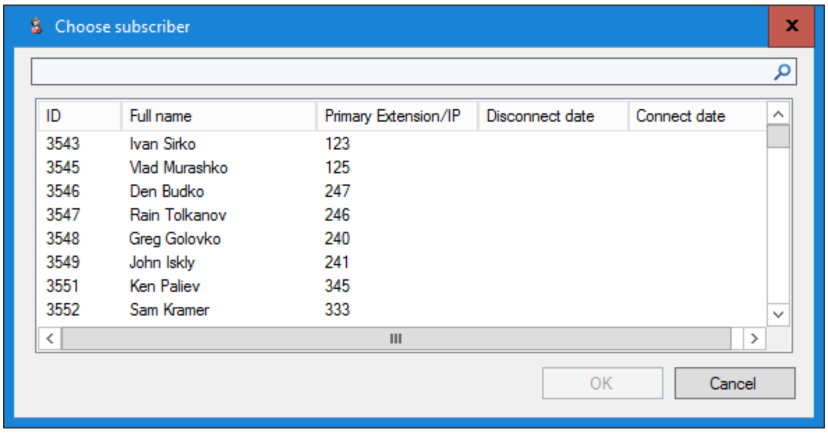

Figure 3.5.15

This window has a number of features to the search of the desired subscriber.

Firstly, you can find a desired subscriber visually scrolling through the list.

Secondly, you can enter a desired parameter, such as a telephone number or name of a subscriber in the search bar. As a result, in the **Choose subscriber** window will be displayed records that match the search criteria. An example of such results is shown in Figure 3.5.16.

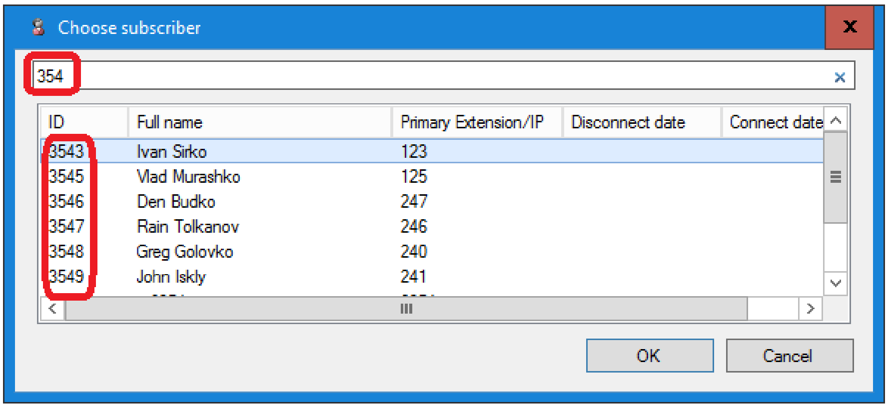

Figure 3.5.16

Thirdly, you can use a filtration in this window. To do this:

- Determine a column by the value of which filtering will be performed. For example, let it be the **Full name** column.
- Right-click on the header of this column. Menu appears as shown in Figure 3.5.17.
- Click on the **Filtering** item. A submenu appears, an example of which is shown in Figure 3.5.18. Note that this submenu is different depending on which column is used and from the values of this column. This submenu contains items that are one or the first few characters of the column values.
- Select required items in the submenu and click **Apply**.

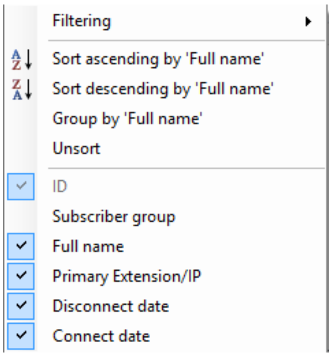

Figure 3.5.17

As a result, records will be selected, which match to filter conditions, in the **Choose subscriber** window. From these records, select a desired record and click **OK**.

External number. This choice means that incoming calls made from this external number will be selected. In the **Source** box, type a desired external telephone number. You can specify the search on the part of the telephone number. For example, external phone numbers of calls from Kiev to subscribers of your telephone system located in Ukraine begin from 044 in the Tariscope database. Therefore, to search all incoming calls from Kiev, type: 044%, where % is a sign of the template.

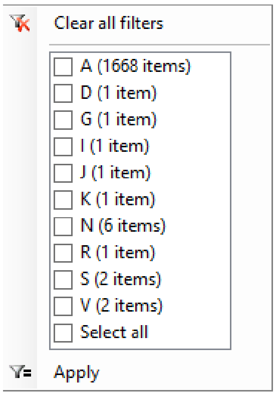

Figure 3.5.18

Subscriber. This choice means that a search of calls that has made by a specific subscriber will be performed. An input or selection of a desired subscriber is completely analogous to that described for the **Extension** option.

Group. This choice means that a search of calls that have made by subscribers of a specific group will be performed. As described above, you can specify a desired group using an input of a group name or choice of the group in the **Select group** window shown in Figure 3.5.19. The choice of a desired group in this window is similar to a search of subscriber in the **Choose subscriber** window, which is described above.

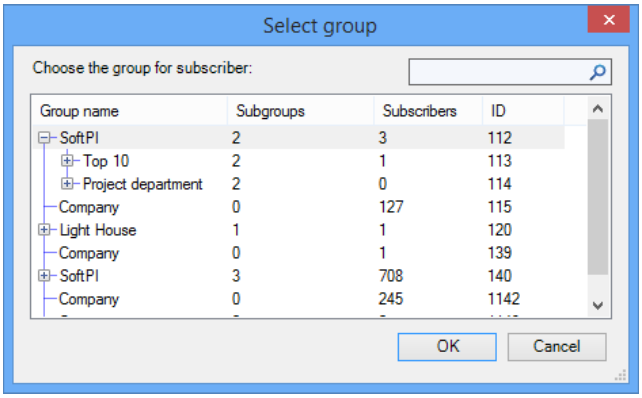

Figure 3.5.19

Route, trunk, gateway. This choice means that it will be performed a search for incoming calls that have been received through a specific gateway, route, or trunk. To search a desired gateway, route, or trunk, type its name in the **Source** box, or click on the "…" button and, select a desired value in the **Choose gateways and trunks** window.

List. This choice means that it will be performed a search for calls that have been made from telephone numbers that belong to this list and values of which are located in the **Number A** column of the table of calls. Type the list of telephone numbers separated by commas. For example, to search calls made from extensions 4000, 4005, and 0441234567, type: 4000,4005,0441234567.

The **Destination** list of the **General** tab (Figure 3.5.11) allows you to select a call terminator. An input of parameters, its choice is completely analogous to that is described for the **Source** position.

If you need a search for calls with a specific call originator and call terminator, you can combine the **Source** and **Destination** positions using one of the logical operations: AND, OR. An example of such filter settings is shown in Figure 3.5.20.

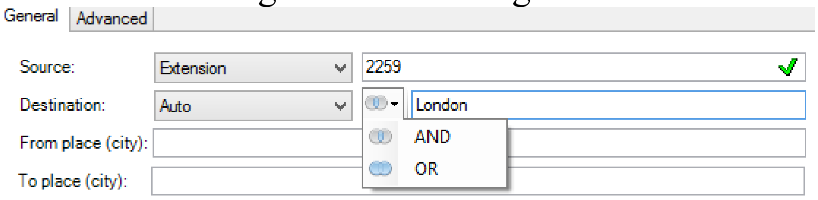

Figure 3.5.20

If you select the **AND** operator for this example, the filtering conditions will mean that all calls made from the extension of 2259 to London will be selected.

If you select the **OR** operator for this example, the filtering conditions will mean that calls made from the extension of 2259 or calls made to London will be selected.

The **From place (city)** box of the **General** tab (Figure 3.5.11) allows you to find incoming calls made from a specific place (city) or from telephone numbers of specific mobile provider. Type a desired city name in the box. You can type a template. To specify a template, use the percentage symbol (%). For example, you are interested in all incoming calls made from the New York region. If the Tariscope database contains the city names for these area codes, then you should type: %New York%

The **To place (city)** box of the **General** tab (Figure 3.5.11) allows you to find outgoing calls made to subscribers in a specific city or to telephone numbers of a specific mobile provider. Type a desired city name in the box. You can type a template. To specify a template, use the percentage symbol (%). For example, you are interested in all long-distance calls made to Germany. If the Tariscope database contains the name of this country, you can type the following template: %Germany%

The **General** tab contains also the **Call attributes** section that allows you to specify the following parameters for search of calls:

- **Call direction**.
- **Call type**.
- **Record type**.
- **Terminate reason**.

The **Call direction** parameter provides a search of calls made in a certain direction. To set a value of this parameter, click the "..." button that leads to appearance of the **Choose items** window shown in Figure 3.5.21.

In the window, select check boxes for those directions that are of interest, and click **OK**. If you need all items, click the **Check all** link. If the call direction is not specified, it is assumed that all destinations are selected.

To quickly clean of all selected items, click on the **Uncheck All** link.

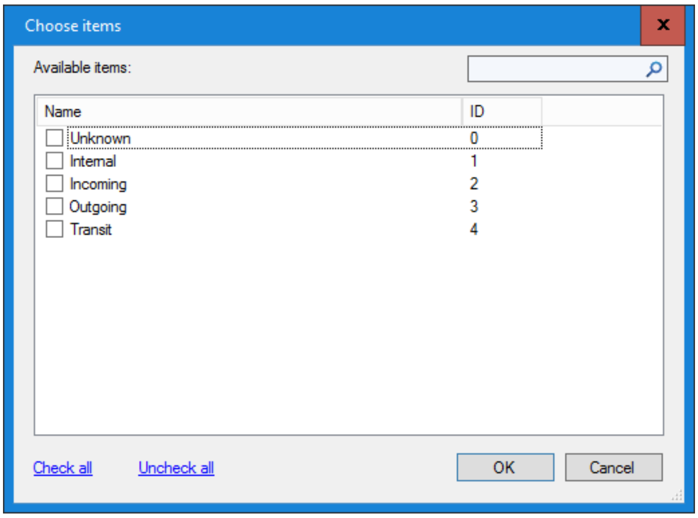

Figure 3.5.21

The **Call type** parameter allows you to select records only with specific call types. To select the call types, click on the "…" button. The **Choose items** window appears as shown in Figure 3.5.22.

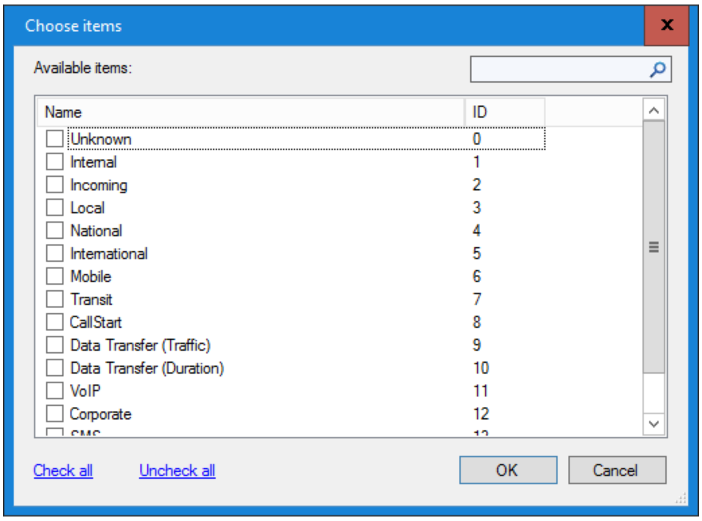

Figure 3.5.22

In the window, select check boxes for those call types that are of interest, and click **OK**. If you need all items, click the **Check all** link. If the **Call type** parameter is not specified, it is assumed that all call types are selected.

The **Record type** parameter allows you to select records only for specific record types. To select the record types, click on the "…" button. The **Choose items** window appears as shown in Figure 3.5.23.

In the window, select check boxes for those record types that are of interest, and click **OK**. If you need all items, click the **Check all** link. If the **Record type** parameter is not specified, it is assumed that all record types are selected.

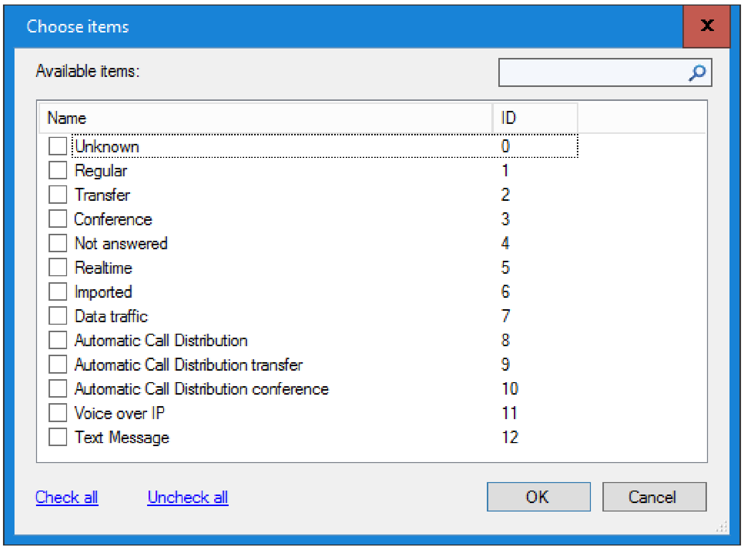

Figure 3.5.23

The **Terminate reason** parameter allows you to select only those calls which were completed with a specific termination code. To choose the desired codes, click on the "…" button located on the right from the **Terminate reason** box. The **Choose items** window appears as shown in Figure 3.5.24.

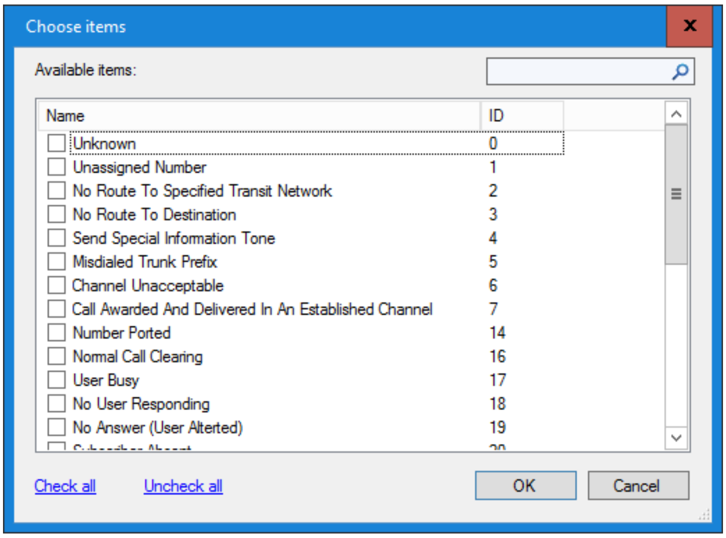

Figure 3.5.24

In the window, select check boxes with desired termination codes, and click **OK**. If you need all items, click the **Check all** link. If the **Terminate reason** parameter is not specified, it is assumed that all terminate reasons are selected.

Besides the main filtering options, the **Filter** window allows you to specify a number of additional parameters. To do this, select the **Advanced** tab. The **Filter** window will be as shown in Figure 3.5.25. The tab allows you to set the following filter parameters:

- **Auth code**. You can specify an authentication code if it was used.
- **Project code**. You can set this parameter if it is used and consisted in CDR data.

- **Category**. You can filter out records on the category names if they were entered in Tariscope.
- **Cost from … to**. These parameters allow specifying a range of call costs.
- **Day type**. Defines a day type when call was made: Workday, Holiday, Saturday, Sunday.
- **Time of day**. The parameter allows specifying a time period during which the calls should be selected.
- **Duration**. Defines a time range of a call duration.
- **TTA**. (Time To Answer). TTA is a time period when the ring tone sounds. You can set these parameters in case if your telephone system generates such information.

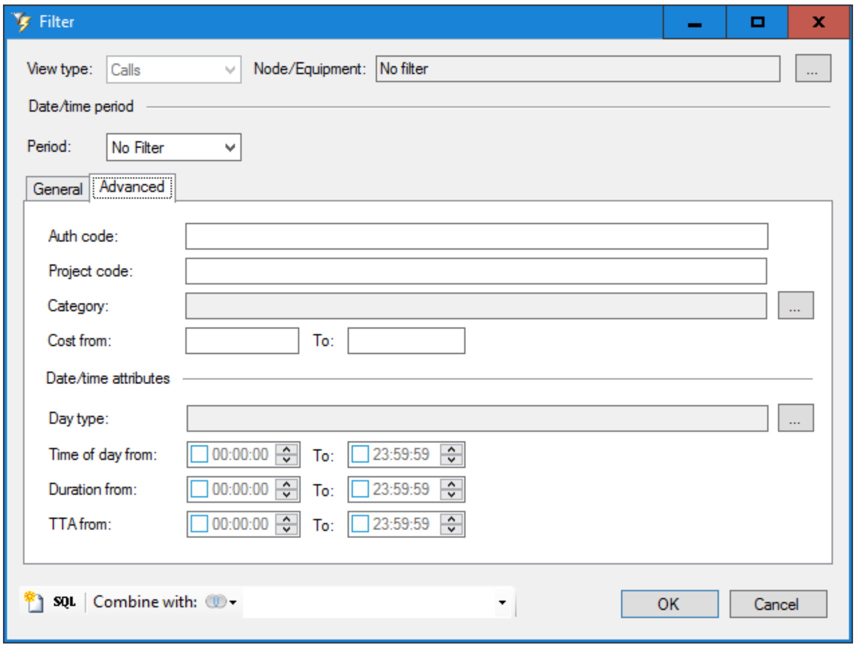

Figure 3.5.25

Type the desired values in the following boxes: **Auth code**, **Project code**, **Cost**.

Selection of the filtering parameters for the **Category** and **Day type** items are performed from the additional windows that are invoked by clicking on the "…" buttons located on the right of these positions.

Selection of time ranges for the **Time of day**, **Duration** and **TTA** items are performed by selecting check boxes in a desired position and specifying the desired values.

After setting of the filtering parameters on the **General** and **Advanced** tabs, draw attention on the value of the **Combine with** list located in the bottom line of the **Filter** window (Figure 3.5.25).

By default, the value of the list is empty. This means that as filter conditions are used only parameters which was set in the window. The list contains the permanent and custom options. The permanent options are following:

- **Base filter of view**. These are the base filtering parameters that were set for the current view. If you select this item, it means that the filter conditions of the **Filter** window will be combined with the filter conditions of the base filter.
- **Current filter of view**. Select this item, if you want to combine the current filter conditions of the view with the filter conditions of the Filter window.

If you have saved filters in Tariscope, they and pre-set filters will be displayed in the list as custom options.

If you select any option in the list, the filtering parameters specified in the **Filter** window will be combined with the filtering parameters of the selected option using logical operator. By default, the **AND** operator is set. You can choose other logical operators such as: **OR**, **AND NOT**.

To view how looks the SQL query of the **Filter** window before applying its parameters, click on the **SQL** icon located on the bottom line of the window filter. An example of the **Filter** window after clicking the **SQL** icon is shown in Figure 3.5.26.

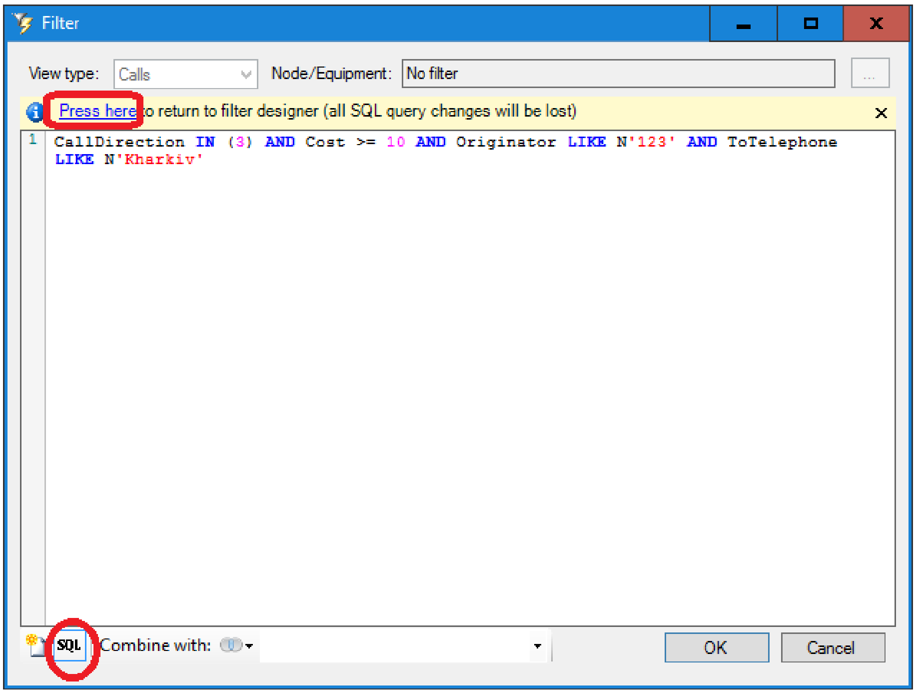

Figure 3.5.26

This window displays a portion of the SQL query that is located in a query after the **WHERE** operator. Tariscope defines the syntax of the query and for the convenience it displays the various its parts in different colors.

In order to return from this form of the **Filter** window to its normal form, click on **SQL** icon or on the **Press here** link.

You can change the SQL query. But the changes will not be saved, if you return to the normal form of the **Filter** window.

If you wish to quickly clear all filtering parameters of the **Filter** window, click on the **Clear filters** icon located on the left part of the bottom line of the window.

To apply the filter parameters which were set in the **Filter** window, click **OK**. As a result, the current view will display calls that match the filtering conditions.

If you wish to cancel the filtering parameters in the view and return the view to the state before applying the filter, on the toolbar, click on the **Previous filter** icon or select in the menu: **Filter** → **Previous filter**. If you a few times changed the filter conditions, you can change these filter clicking on the icons: **Previous filter** and **Next filter**.

Consider the following example of using of the advanced filter. For example, you need to obtain information about all long-distance (national) and international calls of William Johnson where the call duration is more than 2 minutes.

To do this, we set the following parameters on the **General** tab of the **Filter** window:

- If you remember the phone number of William Johnson, in the **Source** box when it has the **Auto** option in the list, type the phone number. If you do not remember the phone number, in the **Source** list, select the **Subscriber** value, click on the "..." button and in the **Choose subscriber** window, select William Johnson, as described above.
- Click on the "…" button of the **Call type** position and select values: **National** and **International**.

The **Filter** window will look as shown in Figure 3.5.27.

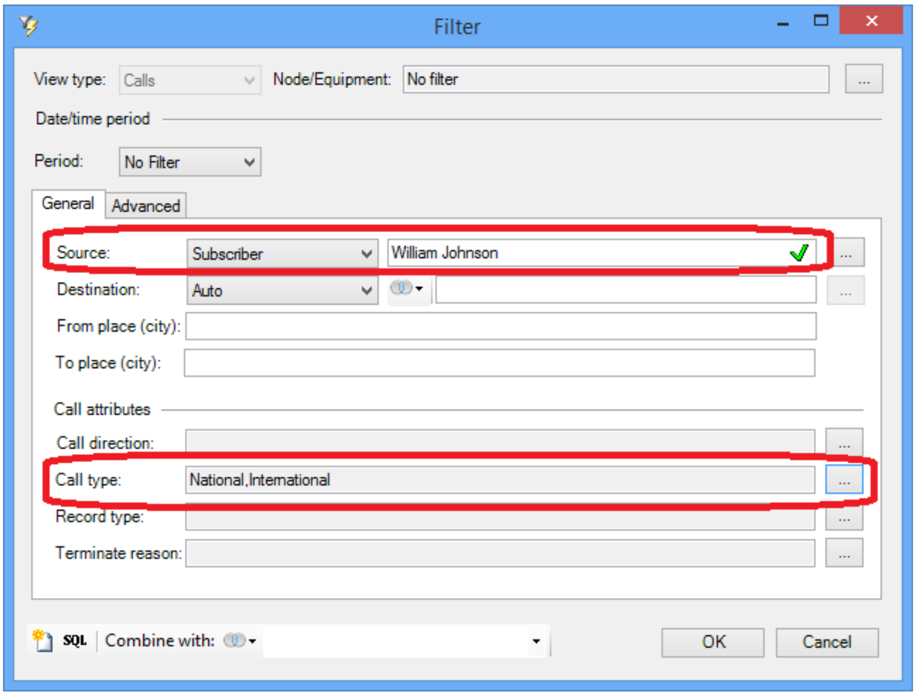

Figure 3.5.27

Go to the **Advanced** tab.

In the **Duration from** calendar box, specify the duration of calls: 0:02:00. The **Filter** window will be as shown in Figure 3.5.28.

Click **OK**. The filter conditions will be applied.

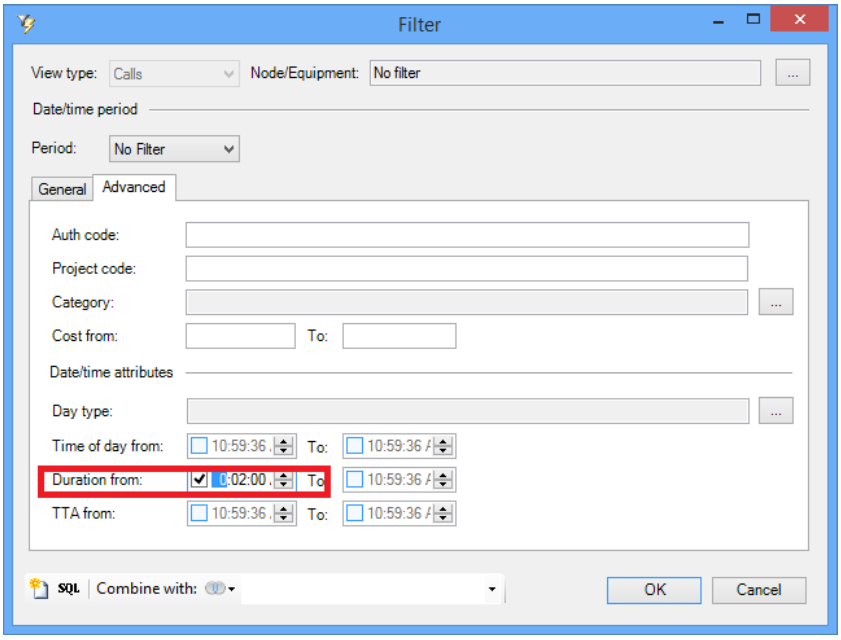

Figure 3.5.28

3.5.10 SQL queries

The most powerful tool in Tariscope for creating the filtering conditions is SQL queries. To create them in the Tariscope program, use the **SQL filter** mode which is accessible from the **Filter** menu or by clicking the **SQL filter** icon on the toolbar. After selecting this option, the **View filer** window appears, an example of which is shown in Figure 3.5.29.

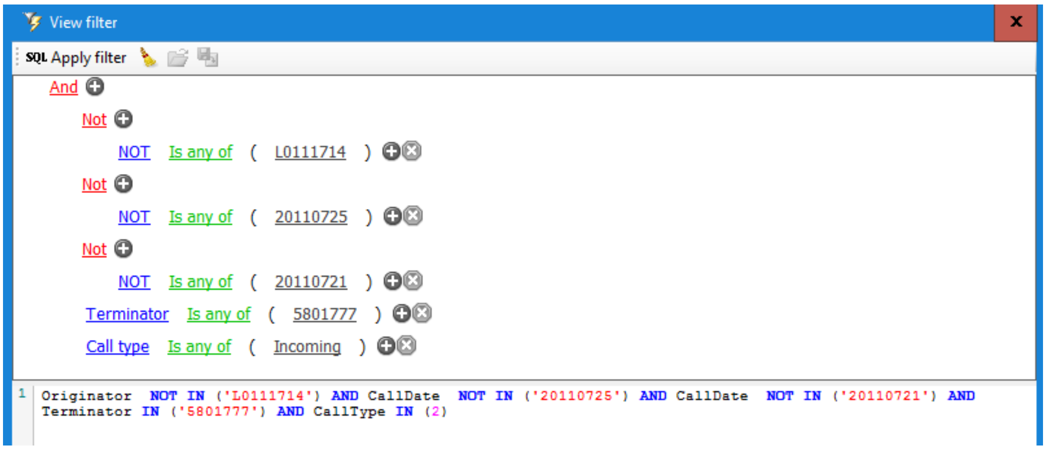

Figure 3.5.29

The **SQL filter** allows you to set an arbitrarily complex filtering settings for any fields of the call database. We recommend using this filtering method, if you cannot create a desired filter using the advanced filter, or for you is easier to write a SQL query, rather than to select the desired parameters in a graphical form. As a rule, the creating of SQL queries requires the knowledge of SQL language. But a new interface of the window allows building a huge number of such queries almost without any knowledge of the SQL language.

The **View filter** window (Figure 3.5.29) is divided on two parts. The top part provides a creation of a SQL query by selecting a desired field and operator and typing a desired value. The resulting partition of a SQL query that is contained after the **WHERE** operator is displayed in the bottom part (the **Query** box) of the window. If you well know the SQL queries, you can write a SQL query at once in the bottom part of the window.

If a view does not contain any filter conditions, the **View filter** window will be as shown in Figure 3.5.30.

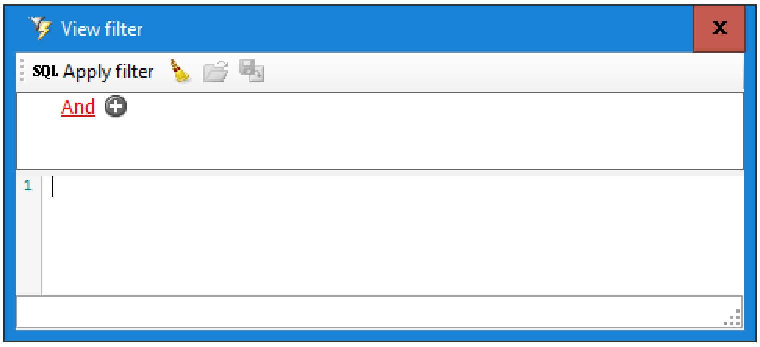

Figure 3.5.30

To add a filter condition, click on the "+" button in the window. A new row appears in the window as shown in Figure 3.5.31.

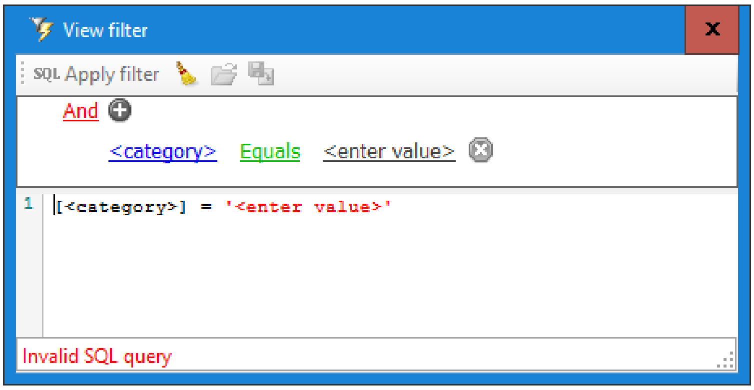

Figure 3.5.31

The row consists of three parts. In left part a field of the call database is selected. The middle part provides a selection of an operator. In the right part it should type a value for the filter condition.

Double-click on the left part of the row. The list of the fields appears. Select a desired field. A list of the fields and their descriptions, see in Table 3.2.

Click on the middle part of the row. The menu appears that contains possible operators for a SQL query. Select a desired operator. A list of possible operators is shown in Table 3.7.

Table 3.7

Operator	**Function**	**Result of query**	**Example of using**
=	Equals	Returns all records where value of field is equal to a particular set of characters entered after the operator	*Calls from subscriber with the direct number 347:* **[Originator] = '347'**
<>	Does not equals	Returns all records where value of field is not equal to a particular set of characters entered after the operator	*Calls with cost is not equal 0:* **[Cost] <> 0**

<	Is less than	Returns all records where value of field is less than value entered after operator	*Calls with duration less than 10 seconds:* **[CallSeconds] <10**
<=	Is less than or equal to	Returns all records where value of field is less than or equal to the value entered after operator	*Calls with date 09.01.2010 or earlier:* **[CallDate] <= '2010-1-9'**
>	Is greater than	Returns all records where value of field is more than value entered after operator	*Calls with cost more than 5 euro:* **[Cost] > 5**
>=	Is greater than or equal to	Returns all records where value of field is more than or equal to the value entered after operator	*Calls with cost is equal to 5 or more:* **[Cost] >= 5**
Like	Is like	Returns all records where values of fields are like to the entered pattern.	*All calls to USA:* **[ToTelephone] LIKE '%USA%'**
Not Like	Is not like	Returns all records where values of fields are not like to the entered pattern.	*All calls except calls to the India:* **[ToTelephone] NOT LIKE '%India%'**
In	Is any of	Records are filtered out, which correspond to elements of a given list	*Long-distance, international calls:* **[CallType] IN (4, 5)**
Not In	Is none of	Returns all records where the value is not equal to any values that the list contains.	*Calls from PBXs except PBXs with the following identifiers 33,27:* **NOT ([PBXID] IN (33, 27))**
Between	Is between	Returns all records where values of the specific field are between two specific values	*Calls for the period from 09.01.2006 to 31.01.2006:* **[CallDate] BETWEEN '2006-1-9' and '2006-1-31'**
Not between	In not between	Returns all records where values of the specific field aren't between two specific values	*Calls for the period except from 08.08.2016 to 17.08.2016:* **[CallDate] >= '20160808' AND [CallDate] <= '20160817'**
Is null	Is blank	Returns all records where the field value is null.	*Calls where the originator of calls is null:* **[Originator] IS NULL**
Is not null	Is not blank	Returns all records where the field value is not null.	*Calls where the originator of calls isn't null:* **[Originator] IS NOT NULL**

Double-click on the right part of the row. Depending on the selected field, the list of the possible values appears or the box for entering a desired value appears. Select or type a desired value. The bottom part of the window will display the SQL query.

To add the next filter condition, click on the "+" button in the window. A new row appears. Repeat the actions described above.

The first and second conditions are linked by a logical operator. By default, the **AND** operator is used. To change it, click on it and in the appeared menu, select a desired operator.

If you wish you can directly write a SQL query in the bottom part of the window.

Consider the example of creating a query. For example, you wish to filter out all national (long-distance) or international calls and that are longer than 10 minutes or their cost is more than 5 euro.

To create this query in the **View filter** window, click on the **And** link. In the appeared menu, select the **Add Group** item. The new **And** link and '+' button appears. Click on the second **And** link and, select **Or**. Double-click on the left part of the row and in the appeared menu, select the **Call type** item. In the middle part of the row, select the **Equals** operator. Double-click on the right part of the row and, select the **National** item. In the **Query** box, you can see the following string:

([CallType] = 4)

To add the filtering condition on international calls in the query, click on the "+" button near the **Or** link. A new row appears. Double-click on the left part of the row and, select the **Call type** item. Select the **Equals** operator. Double-click on the right part of the row and, select the **International** item. In the **Query** box, you can see the following string:

([CallType] = 4 OR [CallType] = 5)

To add the information about call duration, click on the "+" button near the **And** link. A new row appears. Double-click on the left part of the row and, select the **Duration** item. In the middle part of the row, select the **Is greater than** operator. Click on the **<enter value>** prompt and, type **00:10:00**. In the **Query** box, you can see the following string:

([CallType] = 4 OR [CallType] = 5) AND CallDuration > '00:10:00'

On the next step we add information about cost of calls. Click on the "+" button near the **And** link. A new row appears. Double-click on the left part of the row and, select the **Cost** item. In the middle part of the row, select the **Is greater than** operator. Click on the **<enter value>** prompt and, type **5**. In the **Query** box, you can see the following string:

([CallType] = 4 **OR** [CallType] = 5) **AND** [CallDuration] > '00:10:00' **AND** [Cost] > 5

Add the brackets for the expression: [CallDuration] > '00:10:00' **AND** [Cost] > 5,
and, change **AND** to **OR**. The query will be as shown below:

([CallType] = 4 **OR** [CallType] = 5) **AND** ([CallDuration] > '00:10:00' **OR** [Cost] > 5)

On the toolbar, click **SQL Apply filter**, and you will receive the required calls.

May be other options for creating the query. The correct query string, which is completely analogous to the above, would be:

((CallType = 4 OR CallType = 5) AND CallDuration > '00:10:00') OR ((CallType = 4 OR CallType = 5) AND Cost > 5) or

CallType IN (4,5) AND (CallDuration > '00:10:00' OR Cost > 5)

The last query is the most compact. It uses the **IN** operator, which in this case means that the **CallType** field includes a list of: 4, which corresponds to national calls, and 5, which corresponds to international calls.

A user, who knows the SQL, has possibility to enter a query in the **Query** box.

To quickly clear all filter conditions in the **View filter** window, click on the **Clear** icon located on the toolbar.

If it is assumed that a query has been created in the **View filter** window can be used in the future, save it. To do this, open the **View filter** window and, click on the **Save as** icon located on the toolbar.

To select the previously saved filter, open the **View filter** window and, click on the **Open** icon located on the toolbar.

3.5.11 Filter by related calls

Tariscope contains a special option of filtering for the related records in a view for calls. The related records contain information that relates to one call such as a call transfer, conference and so on. One such record displays call data about one stage of such calls.

Tariscope allows distinguishing the related records in a view. For this, right-click on the call table. In the appeared menu, select the **Highlight related records** item. When you move a focus on one of these records, a background of the records becomes grey.

There is a special view where the related records display. To invoke the view, right-click on the call table and in the appeared menu, select the **Show related records** item. When in the view for calls a focus is located on the related record, all related records are displayed in the **Related record** view.

Sometimes it is difficult to find all related records belonging to one call. For this purpose, use a filter for the related records. Select a record that belongs to one of stage of a call transfer, conference or similar calls and, right-click on the call table. In the appeared menu, select the **Filter by related calls** item. The view for calls will display all related calls that belong to the call.

3.5.12 Management of the filters

Tariscope has a filter management system that allows you to view existing filters, edit, save them, and create new filters. Also Tariscope includes pre-set filters.

To manage filters, in the menu, select **View → Filters**. The **Filters** window appears as shown in Figure 3.5.32.

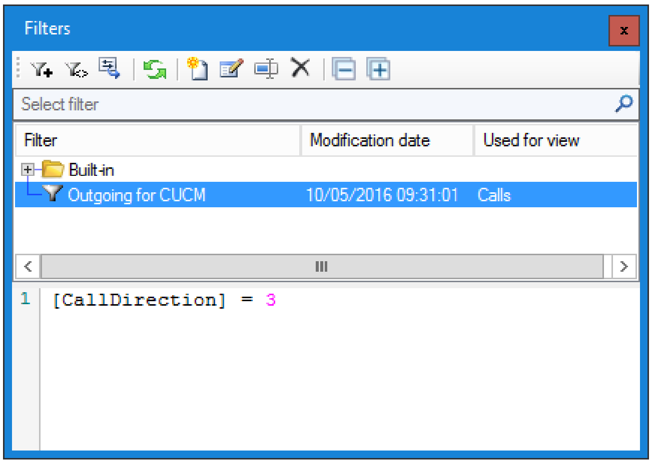

Figure 3.5.32

The **Filters** window contains a list of filters in a form of a tree, filter conditions of selected filter, toolbar and search box. In Figure 3.5.32 the **Outgoing for CUCM** filter is selected. Its filter conditions are displayed in the bottom part of the window.

The **Built-in** filter group contains a list of the most common filters. These filters are preinstalled in Tariscope. Click on the '+' near the **Built-in** group. The window will be as shown in Figure 3.5.33.

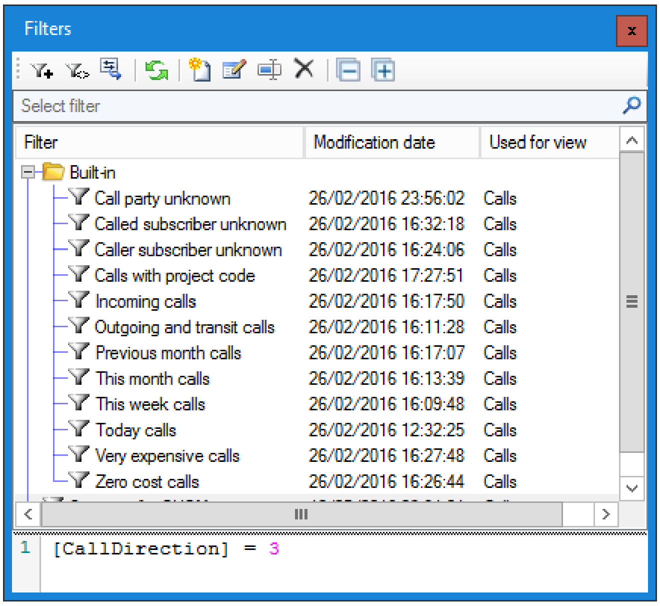

Figure 3.5.33

We briefly describe these filters.

Call party unknown. This filter provides a selection of calls where a calling party is unknown for all call types. It can be useful to find extensions that are absent in the Tariscope database.

Called subscriber unknown. This filter provides a selection of calls where a called party is unknown. It can be useful when you analyze incoming calls to find extensions that are absent in the Tariscope database.

Caller subscriber unknown. This filter provides a selection of calls where a calling party is unknown.

Calls with project codes. This filter provides a selection of calls where project codes were applied.
Incoming calls. This filter provides a selection of all incoming calls.
Outgoing and transit calls. This filter provides a selection of all outgoing and transit calls.
Previous month calls. This filter provides a selection of all calls for the previous month.
This month calls. The filter provides a selection of all calls for the current month.
This week calls. The filter provides a selection of all calls for the current week.
Today calls. The filter provides a selection of all calls that were made today.
Very expansive calls. The filter provides a selection of all calls which have a cost more than 50 units where the unit is a unit of the national currency. You can change this value.
Zero cost calls. The filter provides a selection of all calls which have the zero cost.

You can apply these filters with any different filter conditions.

The **Filters** window has a toolbar that contains the following icons:

- **Apply filter**. The icon allows applying a selected filter to a current view.
- **Apply Inverted filter**. The icon allows applying an inverted filter. For example, you have selected the **Zero cost calls** filter and, click on this icon leads to applying the filter with **NO** operator. As a result, for this example all calls that have a cost more than null will be selected.
- **Sync active filter document**. The icon allows you to synchronize the active filter of the view with data in the **Filter** window.
- **Refresh**. The icon allows you to refresh data in the window.
- **New**. The icon allows you to create a new filter for calls, services or IP traffic using SQL queries.
- **Edit**. The icon provides editing a selected filter.
- **Rename**. The icon allows you to rename a selected filter.
- **Delete**. The icon allows you to delete a selected filter.
- **Collapse all**. The icon allows you to collapse all branch of the filter tree.
- **Show all**. The icon allows you to open all branch of the filter tree.

The filter table of the window contains the following columns:

- **Name**. Displays a filter name or group name.
- **Modification date**. Displays a date when a filter was modified.
- **Used for view**. Displays a type of a view for which a filter is applied.
- **Filter**. Displays the filter conditions.

The Tariscope users often need to find data for a specific time period. Table 3.8 contains a list of such filters.

Table 3.8

Time period	Query
Current day	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'d',0) AND dbo.DateToInterval(GETDATE(),'d',0)

Yesterday	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'d',-1) AND dbo.DateToInterval(GETDATE(),'d',-1)
Current week	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'w',0) AND dbo.DateToInterval(GETDATE(),'w',0)
Previous week	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'w',-1) AND dbo.DateToInterval(GETDATE(),'w',-1)
Current month	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'m',0) AND dbo.DateToInterval(GETDATE(),'m',0)
Previous month	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'m',-1) AND dbo.DateToInterval(GETDATE(),'m',-1)
Current year	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'y',0) AND dbo.DateToInterval(GETDATE(),'y',0)
Previous year	CallDateTime BETWEEN dbo.DateFromInterval(GETDATE(),'y',-1) AND dbo.DateToInterval(GETDATE(),'y',-1)
Specific month	CallDateTime BETWEEN '**20131001** 00:00:00' AND '**20131031** 23:59:59'
Specific year	CallDateTime BETWEEN '**20130101** 00:00:00' AND '**20131231** 23:59:59'
Specific period	CallDateTime BETWEEN '**20131024 16:09:10**' AND '**20131025 16:09:10**'

Texts of queries for specific time periods (Specific month, Specific year, Specific period) in Table 3.8 are specified with particular values, which are displayed in bold. When you use these queries with your filter conditions, replace these values to desired values.

3.5.13 SQL queries for any table

Tariscope provides a possibility to execute a SQL query to any table of the Tariscope database. This possibility can be useful, for example, to check a SQL query that is used in a Tariscope report form or you have a problem with Tariscope. The feature requires the knowledge of the Tariscope database. A description of the database, see in the 'Tariscope 4.x. Database schema'.

To do this, create an empty text file with the '**sql**' extension. In the Tariscope menu, select **File → Open file**. In a list of file types, select the **SQL query (*.sql)** option as shown in Figure 3.5.34.

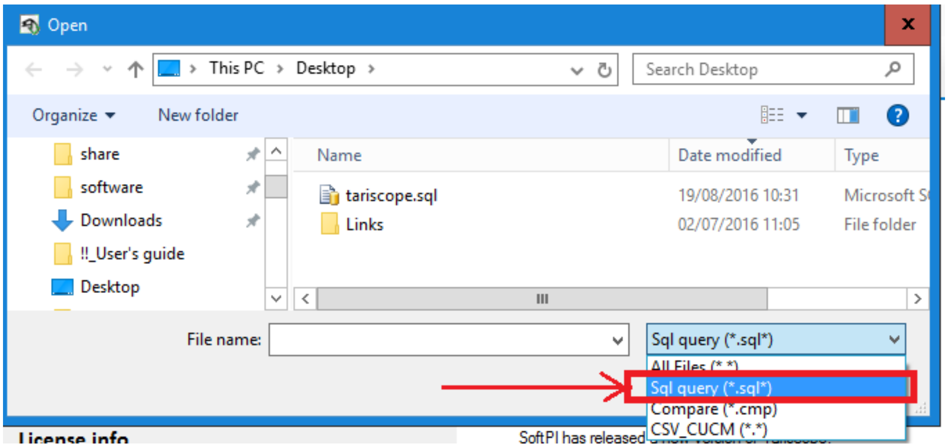

Figure 3.5.34

It is very important to set this extension.

Select a desired file. A new view is opened in Tariscope where the contents of the file will be displayed.

Write a desired SQL query or a few SQL queries in the view.

Select a desired SQL query and, click on the **Run** icon on the toolbar. An example of this is shown in Figure 3.5.35.

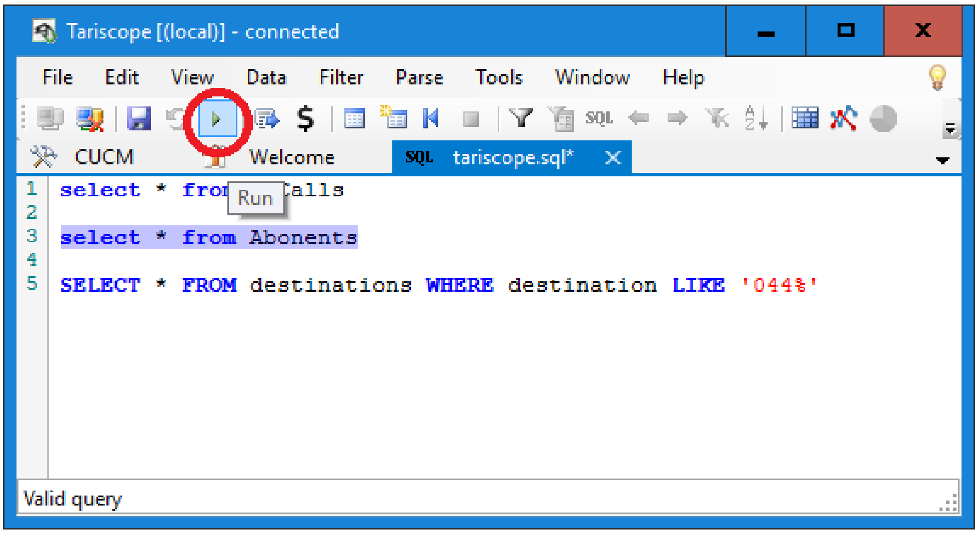

Figure 3.5.35

If the SQL query is valid, you get a result that is displayed in the **Table** tab of the view as shown in Figure 3.5.36.

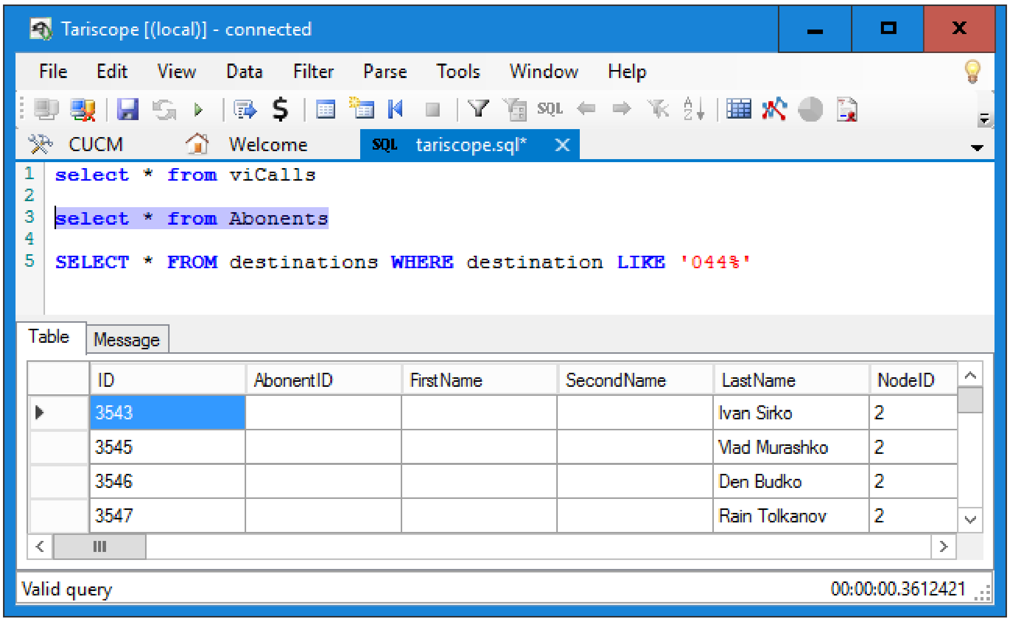

Figure 3.5.36

You can select and copy some cells of the table or the entire table. To do this, select desired cells and, right-click. In the appeared menu, select the **Copy** item.

Also you can export the table contents to a file with the following extensions: PDF, CSV, HTML or Excel. Right-click in any place of the table and in the appeared menu, select a desired option of an export.

The **Message** tab contains information about an execution of a SQL query.

If you right-click in the part of the view that contains SQL queries, a menu appears that contains the following items:

- **Run**. Starts the execution of a selected SQL query.
- **Stop**. Stops the execution of a SQL query.
- **Undo**. It erases the last change done to the document reverting it to an older state.
- **Redo**. It is the opposite of Undo. It reverses the Undo.
- **Cut**. Allows you to cut a selected data.
- **Copy**. Provides copying data to the clipboard.
- **Paste**. Provides pasting data from the clipboard.
- **Select all**. Provides a selection of the entire table.

3.5.14 Sorting data

A view for calls provides a possibility to sort the data of a table by one field or by a group of fields.

To sort the data of a column in the table, select the title of a desired column and, right-click on it. In the appeared menu, select the **Sort ascending** or **Sort descending**, depending on how you wish to sort the information.

If you need to sort by a number of fields, in the program menu, select **Data** → **Sort**, or right-click anywhere in the table header and, select **Sort**. In both cases the **Sort** window appears as shown in Figure 3.5.37.

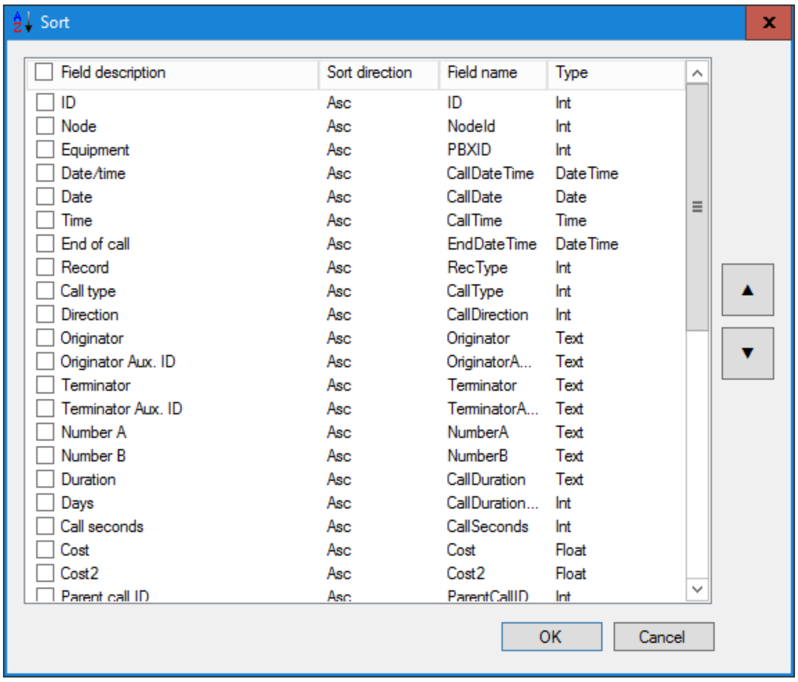

Figure 3.5.37

In the **Field description** column, select desired fields. Using the "↑" and "↓" buttons, set the order of their applying in the direction from top to bottom.

If necessary to remove any field from the list, clear the appropriate check box.

To apply sorting, click **OK**.

In order to remove all sort options, right-click on the header of the table and in the appeared menu, double-click on the **Field description** check box.

3.5.15 Grouping function

The grouping function allows you to aggregate rows displayed in a view using the specified parameters, summing up the data contained in other fields or to perform another aggregate function.

Aggregate functions can be used to the following actions:

- To sum data.
- To calculate a number of items in a group.
- To define a maximum value in a group.
- To define a minimum value in a group.
- To calculate an average value in a group.

Thus, in columns that were selected for grouping, you will see the unique data values in these columns, for example, types of calls. In all other columns, the sums or values of another aggregate function will be displayed, for example, a total duration of calls. That is, you can calculate, for example, a total duration of calls for a certain period for each subscriber, or the number of calls for each of the categories, etc. You can group data on one or more fields. For each of the fields, you can choose an aggregate function separately.

The grouping feature is accessible for a view for calls, services or IP traffic.

Open or create a desired view in the Tariscope program. Right-click on the table title. In the appeared menu, select the **Select fields** item.

Define columns that are necessary in the aggregate report. Take in the mind that the more columns you will select, the longer period of the report generation will be. In addition, most of the fields does not often make sense in an aggregated form. Therefore, we recommend leaving only those columns that are needed you.

Then you can go to the grouping. Right-click on the title of a desired column, and in the appeared menu, select **Group by → By this field**. The data will be grouped.

To undo the grouping function, right-click on the title of the column and in the appeared menu, select the **Cancel group by** item.

Consider the example of a rapid creation of a report with using the grouping function.

Example.
Let’s create a report on the costs of calls of each subscriber for the previous month.

We open a new view. In the appeared **Filter** window, we set the following filter options. In the **Period** list, we select the **Previous month** item. In the **Call type** box, we select the following types: **Local**, **National**, **International**, **Mobile**. This example of the **Filter** window is shown in Figure 3.5.38.

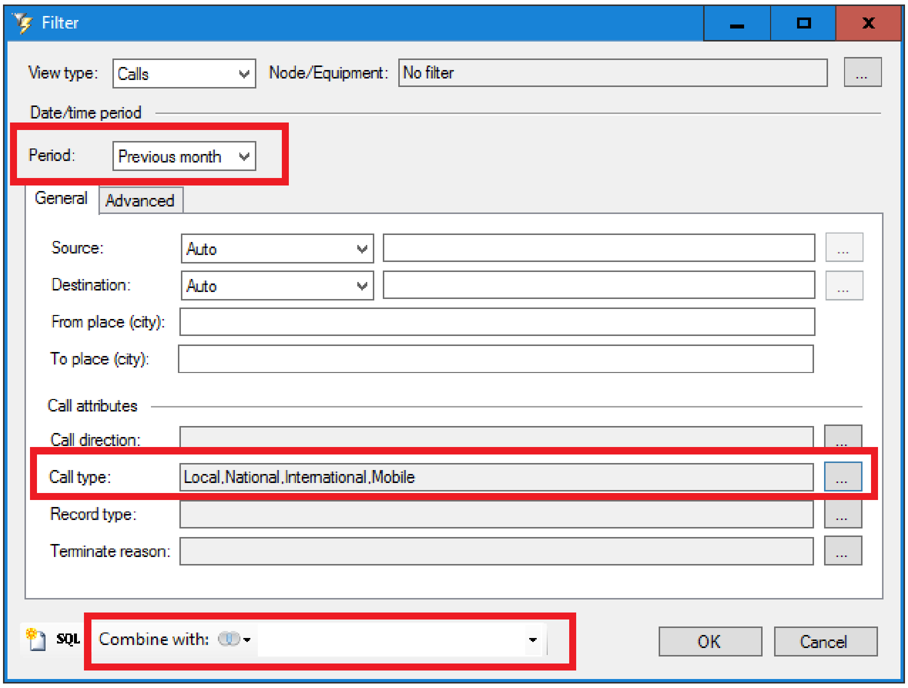

Figure 3.5.38

Click **OK**.
In the view, we choose only two fields for display: **From subscriber** and **Cost** as shown in Figure 3.5.39.

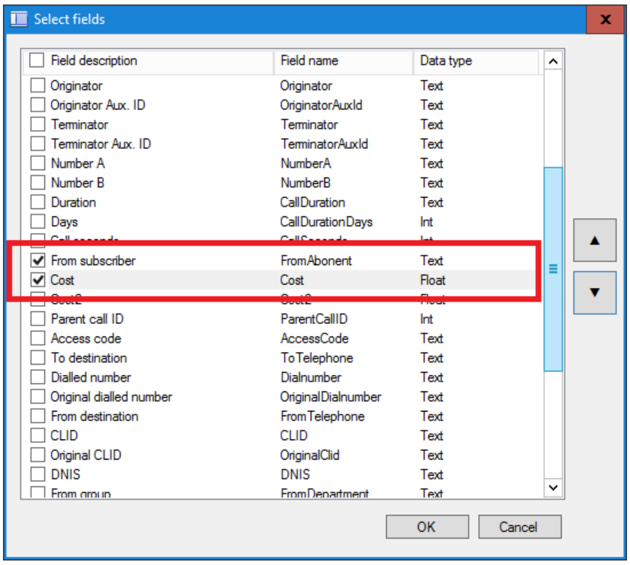

Figure 3.5.39

Click **OK**. The view will contain only these two fields.
Next, we group data by the **From subscriber** field. For the **Cost** field the aggregate function is used as shown in Figure 3.5.40.

Subscriber	Cost
a.4534	41.0200
a.4503	39.8700
a.4534	35.7000
a.4366	32.6200
a.4503	21.2400
a.4503	20.9300
a.4503	19.6200
a.4528	17.6600
a.4301	17.5000
a.4503	17.4300
a.4786	17.4200
a.4503	17.0000
a.4596	16.9000
a.4334	16.4800
a.4528	16.1200
a.4528	16.0600
a.4528	14.9200
a.4349	14.5400
a.4564	13.5800
a.4528	12.8400

Figure 3.5.40

If necessary, the data in the table can be sorted.
The result of grouping can be printed or exported to an external file.

You can use similar actions to create a wide range of different reports. But it should be borne in mind that Tariscope already contains a large number of ready-made forms of reports, so you can use these reports instead of the grouping function.

In conclusion, the knowledge of the SQL language is not required to use the grouping function. However, if you need to create more complex reports, you can use the Report Designer program, whose work is based on SQL queries. Therefore, we recall that the grouping function corresponds to the next expression of SQL: GROUP BY.
Aggregate functions used in the grouping function are translated into T-SQL functions:

- Sum: SUM(),
- Number of items in a group: COUNT(),
- Maximum value: MAX(),
- Minimum value: MIN(),
- Average value: AVG().

3.5.16 Printing and exporting data

A view for calls can be printed or exported into external files. Before printing of a view, we recommend previewing it to decide that a print format is satisfied you. If you need to change the page parameters, in the program menu, select **Tool → Options**, select the **Printing** tab.
To preview data of a view, select the menu: **File → Print preview**. The **Preview** view is opened. An example of the view is shown in Figure 3.5.41.

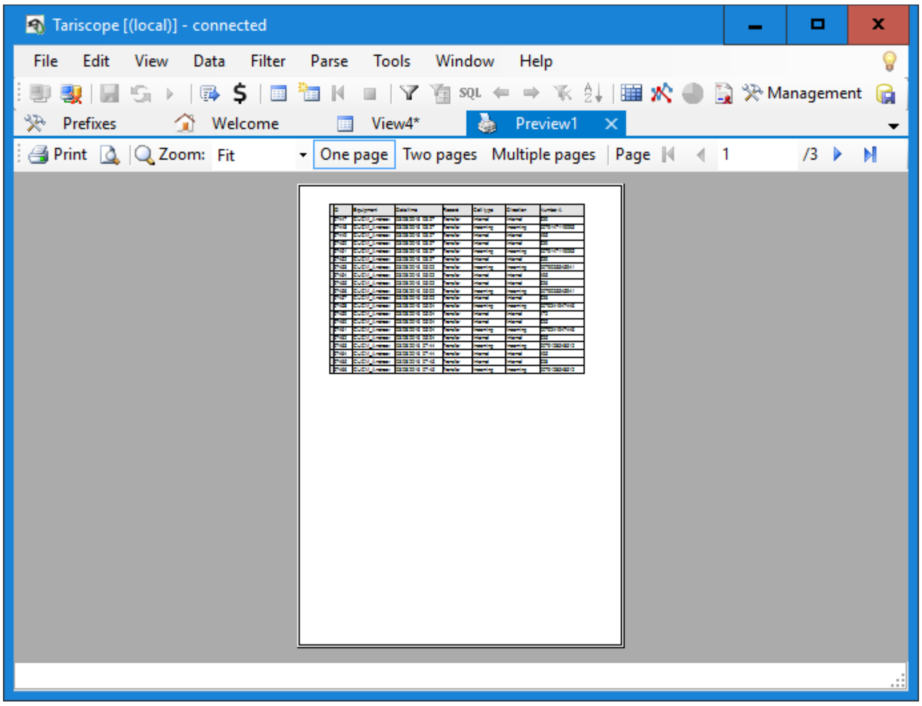

Figure 3.5.41

The toolbar of the **Preview** view contains the following icons:

- **Print**. Starts the printing.
- **Print settings**. Opens a window to specify printer parameters.
- **Zoom**. Allows to increase or decrease the contents of the view.
- **One page**. Displays one page in the view.
- **Two pages**. Displays two pages in the view.
- **Multiple pages**. Displays multiple pages in the view.

You can print data from the **Preview** view or you select in the program menu: **File** → **Print**.

To export data into an external file, select in the program menu: **File** → **Export** and in appeared submenu, choose a desired file format. You can use the following formats:

- Microsoft Excel,
- CSV,
- HTML,
- PDF.

Another option to export the information to an external file is: right-click on the table and in the appeared menu, select a desired item to export data.

3.5.17 Other features of a view for calls

A Tariscope view for calls has two menus. One of which is called by right-clicking on the header of the table (Figure 3.5.42), and another menu is called by right-clicking on any place on the table except the header (Figure 3.5.43).

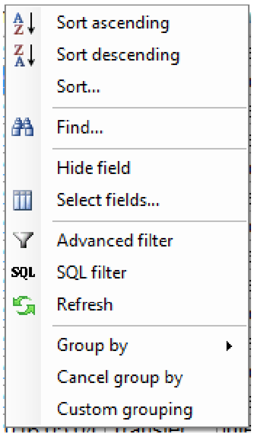

Figure 3.5.42

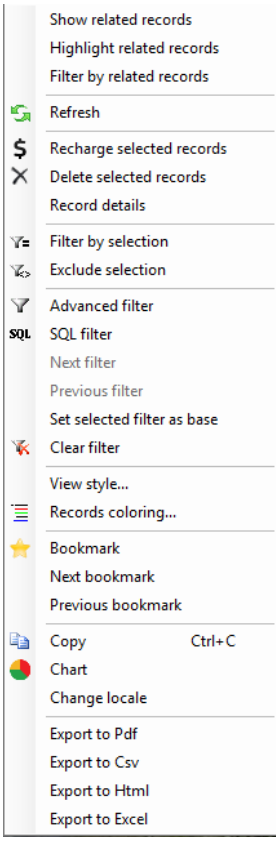

Figure 3.5.43

Most of these menu items were discussed in previous sections. There are the following features that these menu and main menu contain but they were not discussed in previous sections:

- Record coloring.
- Row limit.
- Copy.
- Recharge selected records.
- Delete selected records.
- Record details.
- View style.

3.5.18 Record coloring

This feature provides a coloring of rows with calls that match a specific parameter. This can be useful for analyzing calls. Individual colors can be set for the text and background.

To call this feature, select in the program menu: **Data** → **Coloring**, or right-click on any place of a view except for the table header and in the appeared menu, select **Records coloring**. As a result, the **Coloring** window appears as shown in Figure 3.5.44.

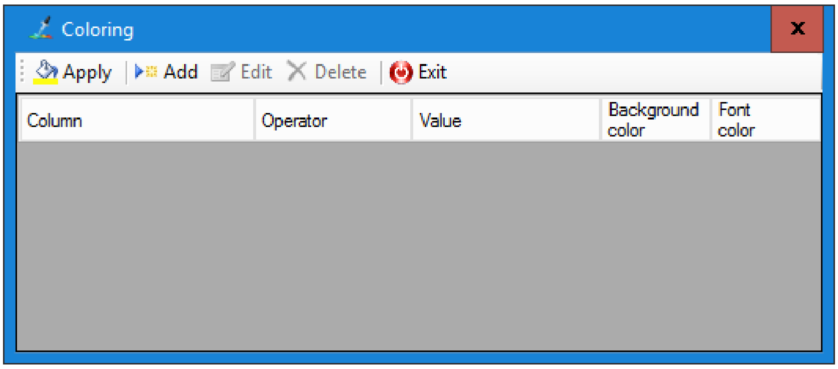

Figure 3.5.44

The toolbar of the window contains four icons:

- **Apply,**
- **Add**,
- **Edit**,
- **Delete,**
- **Exit**.

Click on the **Add** icon to add new conditions for coloring. The window appears as shown in Figure 3.5.45.

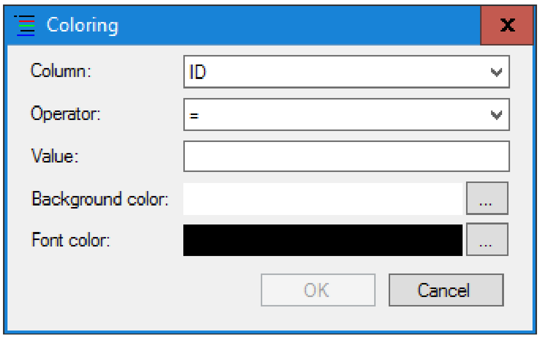

Figure 3.5.45

In the **Column** list, choose a field to which the coloring will be specified.

In the **Operator** list, select an operator which you wish to apply.

In the **Value** box, select or enter a desired value for this condition.

Click on the "…" button located right on the **Font color** box, and select a desired font color. If necessary, perform a similar action for the **Background color** box.

Click **OK**. In the **Coloring** window (Figure 3.5.44) the new row appears.

Click **Apply**. The entered conditions for the coloring will be applied to the current view. Each view can have individual coloring conditions.

If you need to change any parameters of coloring, in the **Coloring** window, choose the desired row, and click on the **Edit** icon.

If you need to delete any coloring condition, select this condition and click on the **Delete** icon.

3.5.19 Row limit

This Tariscope feature can be used to limit the number of records displayed in a view which satisfies the filtering criteria for the current view. It can be used for faster opening a view with a lot of records or when you need to create a report based on the current view. In the last case the report contains all data that meets the filter conditions for the current view, and not only those that are displayed. Anytime the user can disable the limit to display all rows.

To set limits on the number of rows that are displayed in a view, select in the program menu: **Data** → **Rows limit**. The **Record limit** window appears as shown in Figure 3.5.46.

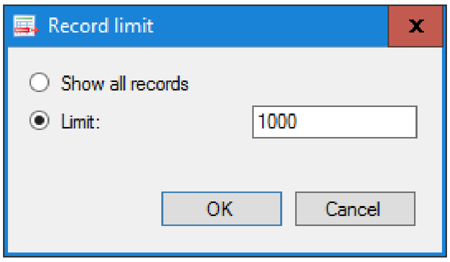

Figure 3.5.46

The window has two check boxes:

- **Show all records**.
- **Limit**.

Choose the **Limit** check box, and specify the required number of records for display. Click **OK**.

By default, the 1000 records are set in the **Limit** box. When the limit is set, the appropriate information is displayed in the top row of a view. An example of the view with such information is shown in Figure 3.5.47.

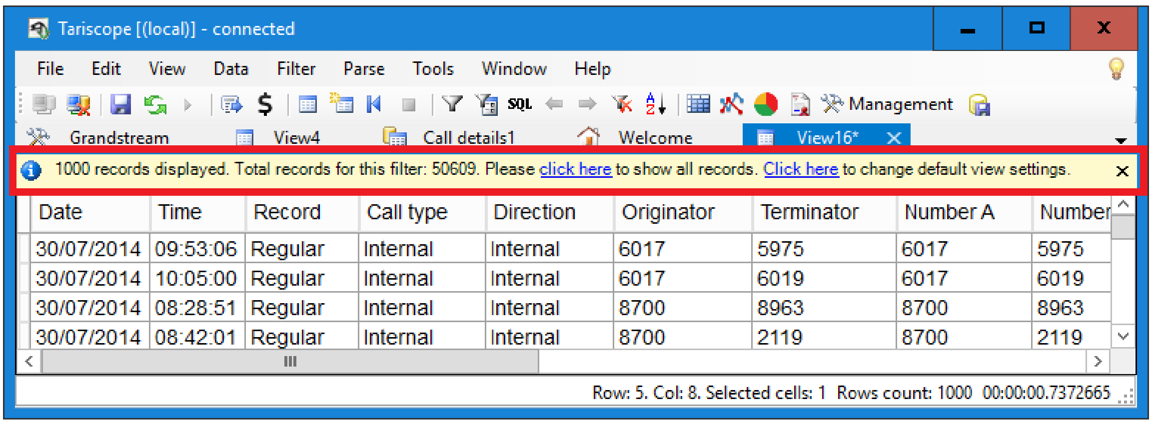

Figure 3.5.47

The information line contains information about a total number of records and a number of records that are displayed. Also there is a link that allows displaying all records.

3.5.20 Copying data

When you need to copy one or a few cells, rows of the table with call records, select theirs and right-click anywhere in the table except the header. In the appeared menu (Figure 3.5.43), select **Copy**. Another option for copying information is the selection in the main menu: **Edit → Copy**.

3.5.21 Recharge selected records

Sometimes you need to rerate one or a few calls. It can be needed, for example, when you change parameters of a rate, subscriber or currency.

To do this, select the desired records in a view for calls and right-click. In the appeared menu (Figure 3.5.43), select the **Recharge selected records** item. The selected records will be rerated.

3.5.22 Delete selected records

If you wish to delete some records from a view for calls, select the desired records and right-click. In the appeared menu (Figure 3.5.43), select the **Delete selected records** item. The selected records will be deleted.

3.5.23 Record details

A view of call contains a large list of fields. However, a number of telephone systems (telephone exchanges) can have fields that are not included in this list, but they are contained in CDR. Tariscope allows you to store information for all the fields provided by a telephone system in the database. A list of such telephone systems are specified below:

- CS1000, Meridian 1 (Avaya-Nortel);
- Cisco Unified Communications Manager (Cisco Systems);
- CallManager Express (Cisco Systems).

If the Tariscope administrator has configured the system to save all the received fields and you want to display this information for one record or a group of records in the view, select the desired call records and right-click in the table. In the menu that appears (Figure

3.5.43) select **Record details**. The **Call details** view is appeared, an example of which is shown in Figure 5.3.47.

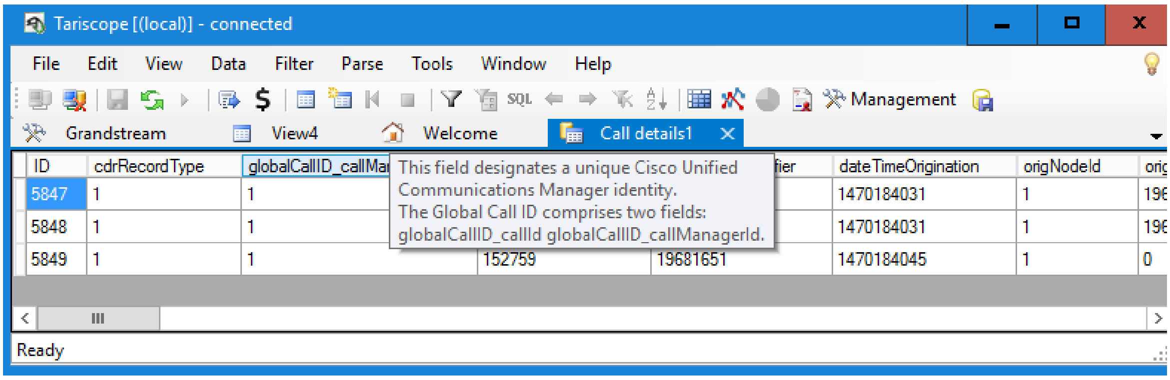

Figure 3.5.47

This view provides features that are available through context menus.

If you right-click on the table header, the menu appears that contains the following items:

- **Hide field**. The item allows you to hide a selected column.
- **Select fields**. The item allows to opening the **Select fields** window that provides a choice of desired fields and their order.

Also you can change an order of the fields using drag and drop.

When you set a focus on a column header, Tariscope displays a brief description of the field as shown in Figure 3.5.47.

If you right-click in any place of the table except the header, another menu appears that contains the following items:

- **Hide empty columns**. Allows hiding a selected column.
- **Rows as columns**. It allows turning the table so that the columns become the rows and vice versa.
- **Copy**. Provides copying data from selected cells.
- **Select all**. Provides data selection of the entire table.
- **Print preview**. Opens the **Preview** view that is described in Section 3.5.16.
- **Find**. Opens the **Find** window that is described in Section 3.5.6.
- **Bookmark**. Allows to set a bookmark on the selected record.
- **Export to PDF**. Provides an export to a file of the PDF format.
- **Export to CSV**. Provides an export to a file of the CSV format.
- **Export to HTML**. Provides an export to a file of the HTML format.
- **Export to Excel**. Provides an export to a file of the Excel format.
- **Filter by selection**. Provides a filtering by a value of the selected cell.
- **Exclude selection**. Provides a filtering when rows that include a value of the selected cell are excluded.
- **Clear filter**. Provides clearing filter conditions.

In this window, the Tariscope user can explore information that was not included in the view for calls.

It is recommended for a complete analysis of these data to create a desired report form using **Report Designer** that is included in Tariscope or **Microsoft SQL Server Report Builder**.

3.5.24 View style

Tariscope allows a user to set an individual style for any Tariscope view. To do this, select a desired view and right-click on any place except the table header. The menu appears that is shown in Figure 3.5.43. Select the **View style** item. The **Table view settings** window appears as shown in Figure 3.5.48.

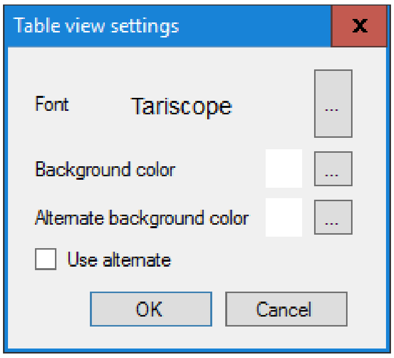

Figure 3.5.48

To change a view font, click on the "…" button located near the **Font** box. The **Font** window appears. Set the desired parameters.

To change a background color, click on the "…" button located near the **Background color** box. The **Color** window appears. Select a desired color.

To better distinguish different row in the table, you can set an alternate background color. In this case the main background color will be applied for first row of the table, the alternate background color will be applied for second row, and so on. Click on the "..." button located near the **Alternate background color** box. The **Color** window appears. Select a desired color.

To apply the alternate background color, select the **Use alternate** check box.

Click **OK**. The settings of the **Table view settings** window will be applied to the view.

3.6 Reports

The Tariscope user has two ways to create reports in Tariscope:

1. You can print or export data of any Tariscope view or create diagrams. Hereafter, we will call such reports as "**simple reports**". You can create a simple report using data from:
    - views for calls,
    - views for IP traffic,

- view for services,
- table of subscribers,
- table of rates,
- and others.

You can create diagrams only for views for calls, services, and IP traffic. A generation of simple reports is executed by an initialization of the following modes: printing, creation of diagrams or data export. Prior to creating such reports, the user can filter out the necessary data, perform sorting by several criteria, perform grouping data for specific fields of the view. Creating such reports is considered in Section 3.5.

2. You can use a report form. A generation of reports can be initiated manually by the user or formed automatically on a predetermined schedule using the Tariscope Tasks mode. The Tariscope system includes about 100 report forms. Supports the report forms that are created in Tariscope using the **Report Designer** program or created by using the Microsoft Report Builder program. The Tariscope user can edit any report form or create your own report form.

The use of report forms allows you to build almost any desired report in tabular or graphical form on any data contained in the Tariscope database. These report forms are based on SQL queries to the database. They can contain scripts for an additional data processing and support formatting output. The report forms allow you to insert graphics such as your company logo, signature, etc.

To generate reports, you can use the following ways:

- in the menu of the Tariscope program, select: **Data → New report**;
- If you are the user of the Tariscope Provider edition, select in the menu: **Tool → Subscriber accounting**. In the appeared **Account** view, select a desired customer (subscriber), and click on the **New report** icon on the toolbar;
- in the Tariscope menu, select **Tools → Tariscope management**. In the appeared **All configuration pages**, click on the **Tariscope Tasks** in the configuration tree. On the **Tariscope Tasks** page, click on the **Configure** link, and add a task to generate a report. On this page you can configure a schedule and other parameters of the report, which will be generated automatically at a specific time. Tariscope can automatically send a report by email. See the description of the page configuration in “Tariscope 4.x. Administrator’s guide”.

The report forms are grouped. A group name corresponds to the folder name where files with the report forms are stored. The Tariscope user depending on the format of the report form can edit any report form or create a new report form. The Report Designer program or Microsoft Report Builder can be used for this purpose.

To create a report on calls, open a view for calls. If necessary, specify filter conditions. Select **Data → New report** or the corresponding icon on the toolbar. The **Choose report** window appears as shown in Figure 3.6.1.

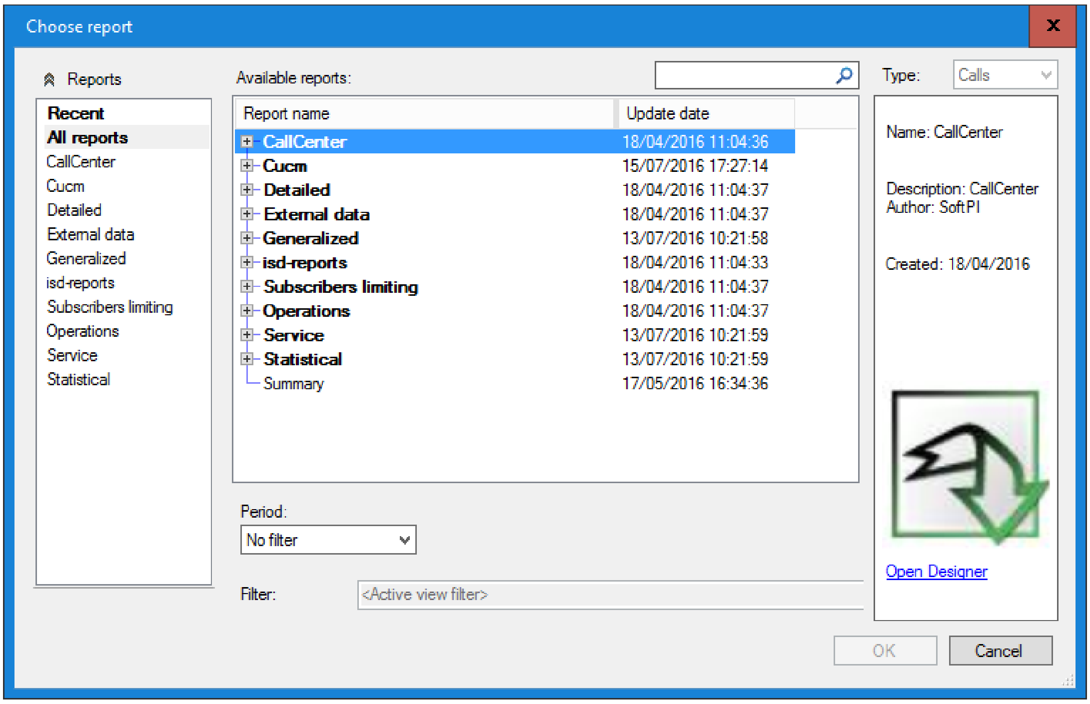

Figure 3.6.1

This window has the following partitions:

- Reports,
- Available reports,
- Period,
- Filter,
- Search,
- Type,
- Variables,
- Information.

The **Reports** partition contains a list of groups with report forms. The **Recent** group contains 20 last reports which were generated by the user regardless of to which group these forms are belonged. A choice of a group in this partition leads to the display of a list of report forms included in the group in the **Available reports** partition. If you select the **All reports** group, a report tree is displayed in the **Available report** partition. This example is shown in Figure 3.6.1.

The **Search** partition located on the right from the **Available reports** name allows you to quickly search a desired report form by its name or part of its name. An example of the search of '*categories*' is shown in Figure 3.6.2.

If the **All reports** group was selected in the **Reports** partition, the **Available reports** partition displays report forms of all groups in a form of tree. To open a specific group of report forms in the **Available reports** partition, click on the plus symbol located on the left of a group name. Then, select a desired report.

If you have selected a report form, the **Information** partition displays the report data that contain the following information: a report name, description, author, creation date, and screenshot. An example on such information is shown in Figure 3.6.3. If you click on the screenshot, it will be zoomed in.

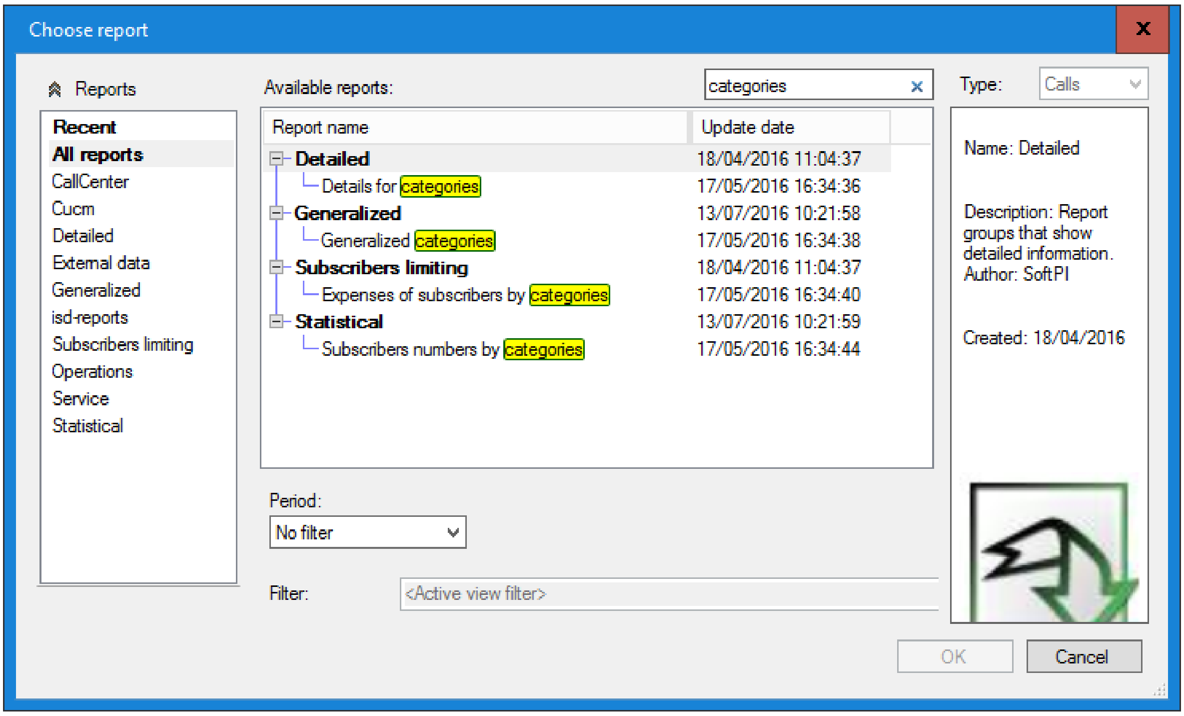

Figure 3.6.2

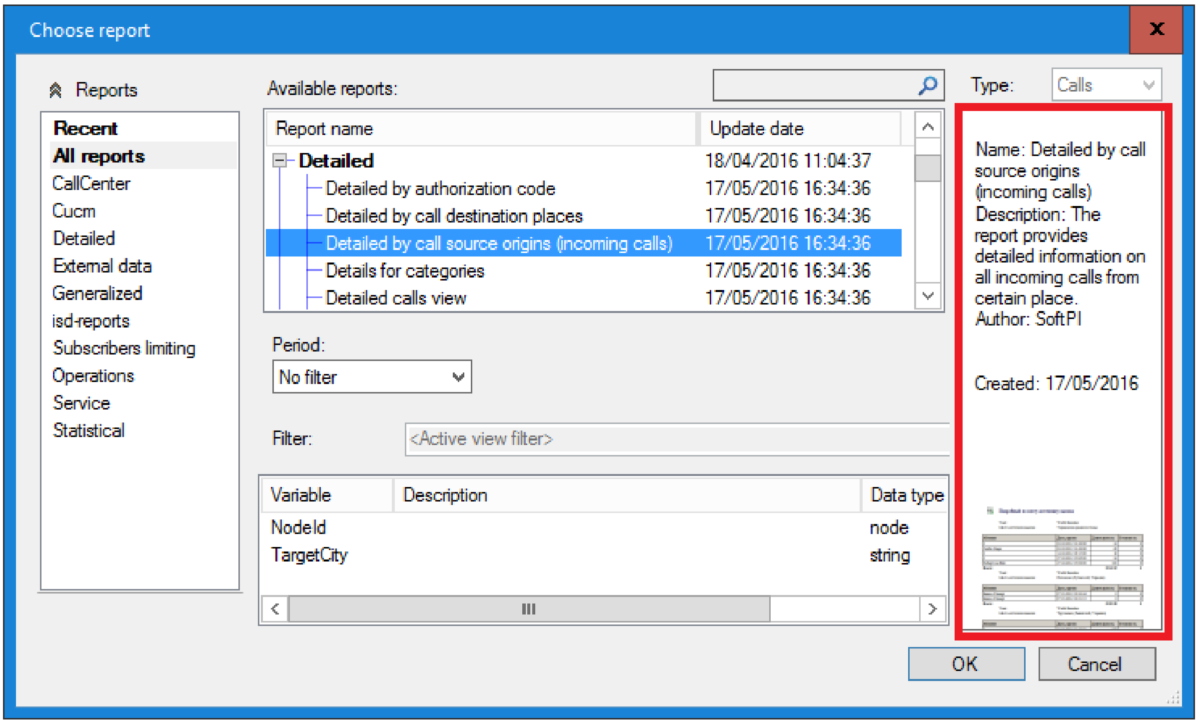

Figure 3.6.3

The **Period** list allows you to set a time period which will applied to select data of the report. The options include:

- **No filter** (by default). All data on a view will be used for the report.
- **Month**. Leads to opening the **Year** and **Month** lists that allows you to select a desired month.

- **Year**. Leads to opening the **Year** list that allows you to select a desired year.
- **Custom period**. Leads to opening the **From** and **To** calendar boxes that allow you to select a desired period.

The **Filter** list allows specifying filter conditions from a previously saved filters. The default value is **Active view filter**. It means that for the report will be used the data, which are displayed in the current view. If you need periodically create a report, for example, for different groups of subscribers, we recommend you to create and save appropriate filters. And when you need a specific report, you should only select a name of the corresponding filter in this window.

The **Variables** partition is displayed only in case when variables are used in the reports. The partition displays a list of variables used in such report and allows specifying particular values for them. An example of the **Choose report** window for report form with variables is shown in Figure 3.6.3. This partition located in the bottom of the window is a table containing the following columns:

- **Variable**. Displays a variable name.
- **Data type**. Displays a variable type.
- **Value**. Allows you to specify a value of the variable.
- **Description**. Displays a variable description.

To set a value of a specific variable, click in the appropriate cell of the **Value** column. Depending on the variable type, you can enter the data into the cell or additional window that opens where you can select a desired value.

After you specify all required data, click **OK**. As a result, a new view with name as the report title will be opened in the Tariscope program. The view displays the report. An example of such view is shown in Figure 3.6.4.

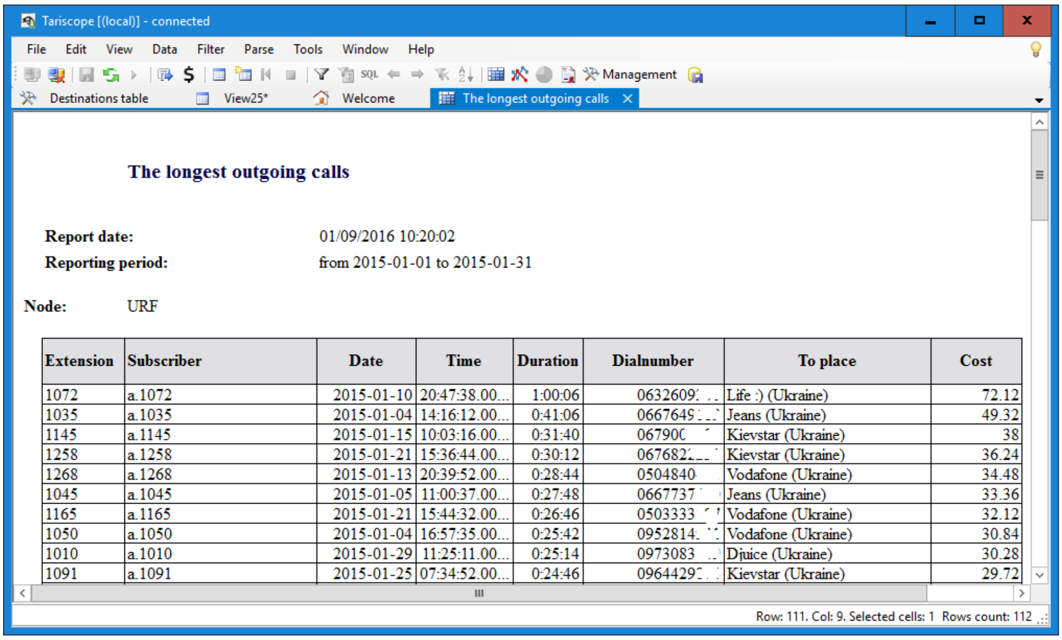

Figure 3.6.4

A report view contains a menu that appears when you right-click on the view. There are the following items in the menu:

- **Copy**. Allows copying a selected cell of report table.
- **Find**. A choice of the items leads to appear the **Find** window (Figure 3.5.9). It allows to specify data you need. A description of the window, see in the Section 3.5.6.
- **Print**. Allows printing a report.
- **Export to Excel**. Allows exporting a report to the Excel file.
- **Export to PDF**. Allows exporting a report to the PDF file.
- **Export to HTML**. Allows exporting a report to the HTML file.
- **Export to text**. Allows exporting a report to the text file.

If you have any problems with a report, open the **Output** view. To do this, in the program menu, select **View → Output**. The **Output** window appears where in the **Show output from** list, select the **Report** items. Information about results of building the report is displayed in the window. It contains SQL queries, which were performed to generate the report, and errors, if they have appeared. The Tariscope user can edit a report form to avoid the errors. Use the Tariscope Report Designer or Microsoft Report Builder depending on what tool was used to create the report form.

If data for the report has been changed or you have changed the report form, click **F5** on the keyboard or the **Refresh** icon on the toolbar to update the report.

A list of report forms that Tariscope includes is shown in Table 3.9.

Table 3.9

#	Report name	Description
Generalized reports		
1	Calls grouped by the dialed numbers-2	The report displays summary data on outgoing calls of each subscriber. The data in the report is grouped by the telephone numbers that have been dialed by subscribers.
2	Communication providers	The report displays the generalized data on the calls made through certain communication providers.
3	Equipment summary	The report allows you to get information about using different communication equipment.
4	Generalized by authorization code, ordered by price	The report displays the generalized data on the calls with an authorization code.
5	Generalized by call destination cities	The report displays summary data on the cost of calls in certain locations.
6	Generalized by call destination countries	The report displays summary data on the cost of calls to certain countries.
7	Generalized by call sources	The report displays summary data grouped by call sources (cities, countries).
8	Generalized by communication equipment	The report displays summary data on the different types of calls made through a specific telephone system for a selected time period.
9	Generalized by groups	The report displays the generalized data on the calls that are made by subscriber groups of the first, second, and third levels.

10	Generalized by groups of 2,3 levels	The report displays the generalized data on the calls that are made by subscriber groups of the second and third levels.
11	Generalized by mobile operators	The report displays call information grouped on mobile operators.
12	Generalized by the sources of incoming calls	The report displays summary data for each source telephone number.
13	Generalized calls grouped by the dialed numbers	The report displays summary data on outgoing calls of each subscriber. The data are grouped by the dialed telephone numbers.
14	Generalized calls grouped by authorization codes	The report displays the generalized data on the calls made using an authorization code.
15	Generalized categories	The report displays summary data on outgoing calls to phone numbers assigned to a certain category.
16	Generalized data on the groups of the 2nd level	The report displays the generalized data on the calls that are made by subscriber groups of the second level.
17	Generalized for all groups	The report displays the generalized data on the calls that are made by subscriber groups of all levels.
18	Generalized groups and subscribers	The report displays generalized data on all subscriber groups and subscribers.
19	Node charges per day	The report displays the telecommunication node charges per day.
20	Nodes summary	The report displays summary data on the different types of calls made through different telecommunications nodes for a selected period of time.
21	Routes and gateways	The report displays summary data on calls made via specific routes (channels or lines) or gateways.
22	Subscribers (extended)	The report displays subscriber charges for different call types.
23	Subscribers (ordered by extensions)	The report displays total charges regardless of the type of call (local, toll and the like) for each subscriber for the selected time period. The information is ordered by the subscribers' extensions.
24	Subscribers (ordered by name)	The report displays calls data of all subscribers that are ordered by the subscriber's name.
25	Subscribers expenses per day	This report displays the cost of telephone calls per subscriber for each day of the selected time period.
26	Subscribers expenses per month	The report displays a total cost of telephone calls for each subscriber for the chosen month.
27	Subscribers summary charges	The report displays summary charges of subscribers.
28	Termination reasons of subscribers (incoming calls)	The report displays summary data on terminate reasons of incoming calls to each subscriber.
29	Termination reasons of subscribers (outgoing calls)	The report displays summary data on terminate reasons of outgoing calls to each subscriber.
30	The costs of communication by months	The report displays the generalized cost of telephone calls, each node communication, and PBXs for each month.
31	The number of days with processed calls	The report displays data on the number of calls during each day of the selected time period.
32	Trunks (channels)	The report displays the generalized data on the calls made through each trunk (channel), which is connected to PSTN.
Detailed reports		
1	Detailed by authorization code	The report provides detailed information on all the calls made with the use of authorization codes.

2	Detailed by call destination places	The report provides detailed information on all calls made to certain destinations or on mobile operators.
3	Detailed by call source origins (incoming calls)	The report provides detailed information on all incoming calls from a certain place.
4	Detailed by subscribers, ordered by numbers	The report provides detailed information on each subscriber. Displays all the calls made by a subscriber, which are grouped according to the call type. In the report information on subscribers is ordered by internal telephone numbers (extensions) in ascending order.
5	Detailed calls view	The report provides details on calls.
6	Detailed group-subscribers	The report provides detailed information on the cost of each call and each subscriber that belongs to groups of 1-3 levels.
7	Detailed in groups (3 levels)	The report provides detailed information on the cost of calls of each subscriber and each caller group of 1, 2, and 3 levels.
8	Detailed of single group	The report provides detailed information on the call costs of subscribers belonging to the groups of the 1st and 2nd levels.
9	Detailed on calls to mobile operators	The report provides detailed information on all calls made to the phone numbers of mobile operators. The output information is grouped by mobile operators.
10	Detailed on subscribers (with project codes)	The report provides detailed information on all calls of each subscriber. The calls are grouped by the call type. Displays information on a project code for those calls where it was used.
11	Detailed on subscribers, ordered by name	The report provides detailed information on each subscriber. Displays all the calls made by a subscriber. Calls are grouped by the call type. In the report information on subscribers is ordered by name in ascending order.
12	Detailed by project codes	The report provides detailed information on all calls made with the use of a project code.
13	Details by the destinations of outgoing calls	The report provides detailed information on all calls made on a certain destination (city or mobile operator).
14	Details for calling numbers (incoming calls)	The report provides detailed information on all incoming calls. The information is grouped by telephone numbers.
15	Details for categories	The report provides detailed information on all the calls to phone numbers that belong to special categories.
Statistical reports		
1	Daily cost (chart)	The report provides information on costs of all days and builds a chart.
2	Departments with the largest duration of calls	The report provides information on subscriber groups with the largest durations of calls.
3	Departments with the largest number of calls	The report provides information on subscriber groups with the largest number of calls.
4	Groups of subscribers with the largest cost of calls (chart)	The report allows you to get information on 20 subscriber groups with the largest cost of calls and builds a chart.
5	Groups of subscribers with the largest duration of calls (chart)	The report allows you to get information on 20 subscriber groups with the largest duration of calls and builds a chart.
6	Groups of subscribers with the largest number of calls (chart)	The report allows you to get information on 20 subscriber groups with the largest number of calls and builds a chart.
7	Subscribers numbers by categories	The report provides information on number of subscribers and extensions by the following categories: service, personal entity, and legal entity.
8	Subscribers with the largest charges for calls (chart)	The report allows you to get information on 20 subscribers with the largest charges for calls. A chart is built.

9	Subscribers with the largest number of calls (chart)	The report allows you to get information on 20 subscribers with the largest number of calls. A chart is built.
10	Subscribers with the largest total duration of calls (chart)	The report allows you to get information on 20 subscribers with the largest total duration of calls. A chart is built.
11	Summary report on equipment (chart)	The report allows you to get summary report on telephone systems. A chart is built.
12	A change of number of subscribers and services	The report provides information on a change of number of subscribers and services.
13	The longest outgoing calls	The report provides information on the longest outgoing calls.
14	The most expensive calls	The report provides information on the most expensive calls.
15	The most expensive calls (chart)	The report allows you to get information on 20 the most expensive calls. The report contains a chart.
16	The most expensive departments	The report provides information on subscriber groups with the most expensive costs for calls.
17	The most expensive subscribers	The report provides information on subscribers with the most expensive costs for calls.
18	The most long-lasting calls (chart)	The report allows you to get information on 20 with the longest calls. A chart is built.
Operations		
1	Assessment of services for the past month	The operation charges periodic services for all subscribers for the past month. The services can be, for example, a month fee, web hosting, etc. We recommend you to use the appropriate mode of the Tariscope program instead of this operation.
2	Change the duration of a call	The operation allows you to change the duration of a particular call and recalculate the cost of the call.
3	Charge all periodic services for the current month	The operation executes charging periodic services (for example, month fee, web hosting, etc.) for the current month.
4	Cleaning charges of on-line billing	The operation cleans charges of the on-line rating.
5	Cleaning charges of services per month	The operation allows you to delete all periodic charges (a month fee, web hosting, etc.) to all subscribers for the selected month.
6	Cleaning charges on-line billing and call data	The operation allows you to delete charging call costs to all subscribers for the selected month. Periodic and manual services are not deleted.
7	Clear all data for month	The operation allows you to delete information about calls on all the telecommunications nodes for the selected month and clear appropriate charges to the subscribers' accounts.
8	Clearing accounts of subscribers except for payments and allocation	The operation clears subscribers' accounts except the subscribers' payments and charges are made manually with the description "recalculate".
9	Merge nodes	The operation allows you to move all the data of telephone systems and subscribers from one node to another.
10	Recalculation of charges on-line charging for monthly subscriber	The operation performs a comparison of the cost of urban, long-distance, and international calls and calls to mobile operators for a particular subscriber for the chosen month with appropriate amounts credited to the account of the subscriber. In case of differences the subscriber's account is recalculated.
11	Reset charges for subscriber (restriction feature)	Charges for telephone calls are reset when the restriction feature is used.
12	Transfer calls and their costs to another subscriber	The operation transfers all calls that are in view, and their costs to another subscriber.

13	Calculation for services of selected month	The operation calculates periodic services for a selected month.
Provider reports		
1	Classification of subscribers per month	The report generates information about charges, payments and debts of all subscribers in a given month.
2	Envelope	Allows printing an envelope.
3	Internet traffic per month	Allows getting Information about Internet traffic of a specific subscriber.
4	Invoice A4	A generic invoice report.
5	Invoice A4 2 pages	A generic invoice report with call details on the second page.
6	Receipt	Allows getting a receipt for a subscriber.
7	Subscriber calls details	Allows getting details on calls of a selected subscriber.
8	Subscriber information	The report provides information on charges, payments, and balances of a particular subscriber for the chosen period.
9	The analysis of overdue payments	The report provides information on overdue payments on 0, 30, 60, and 180 days.
10	The envelope without recipient data	Allows printing on an envelope without recipient.
Service reports		
1	Database summary	The report provides summary information on the Tariscope database.
2	No extensions in the subscribers' database	The report provides information on extensions that there are in call table but is absent in the subscribers' table.
3	Free numbering capacity of PBX	The report provides information on a free numbering capacity of a telephone system.
4	Summary	The report provides a summary information on the Tariscope server.
Service subreports		
1	Adds all the numbers from the list in the database of subscribers	Adds all the numbers from the list in the subscribers' database.
2	Appends a number in the database of subscribers	Appends an extension to the subscribers' database.
3	Available extensions in range	Displays a list of available extensions in a selected range.
Call Center reports		
1	Call center summary for a period of time	The report provides a summary information for a certain time period.
2	Detailed operator logins	The report is intended for 3CX Phone System. It shows a beginning and end of session when operator uses *62/*63 dial codes to login/logout queue.
3	Operator stats for a period of time	The report provides statistics on calls of an operator for a period of time.
4	Operators group for a period of time	The report provides statistics on calls of operators' group for a period of time.
CUCM reports		
1	CUCM Jitter	The report provides information on jitters in VoIP calls based on CMRs.
2	CUCM K-factor data	The report allows analyzing K-factor data from CRMs.
3	CUCM Latency	The report provides information on latency in VoIP calls based on CMRs.
4	CUCM Lost packets	The report provides information on lost packets in VoIP calls based on CMRs.

Subscribers limiting		
1	Expenses of subscribers by categories	Provides information on expenses of subscribers by categories when the restriction feature was used.
2	Restricted subscribers	Provides a list of restricted subscribers.
External data		
1	All services	The report contains all charged services for a certain period of time. Charges are grouped by service name.

If you wish that Tariscope automatically generate reports by schedule, use the **Tariscope Tasks** configuration page from the Tariscope Management mode. A description of the configuration page, see in the “Tariscope 4.x. Administrator’s guide”.

3.7 Views for charts

The reports discussed in Section 3.6 can contain both text and graphical information. At the same time, the Tariscope program has a separate **Chart** function that allows you to quickly create a chart based on the data of views for calls.

Consider creating a chart based on the following example. We wish to know the distribution of the costs of all subscribers on long-distance calls.

We open a view for calls. Using the filtering we select only long-distance calls.

Since we are interested in the distribution of costs of all subscribers, we hide all columns of the view except the **To destination** and **Cost** columns. Then we group information by the **To destination** field. We sort the data by the **Cost** column. The view will be as shown in Figure 3.7.1.

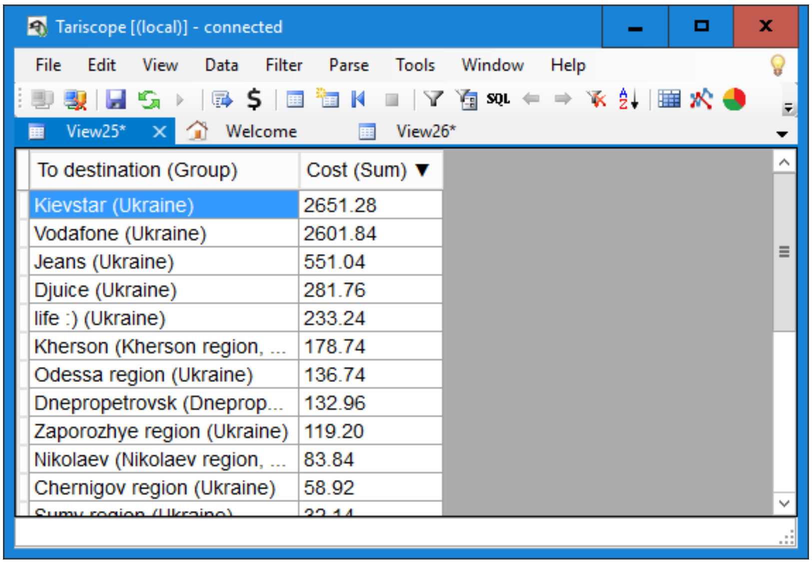

Figure 3.7.1

Since we are interested in the basic costs on calls, we select only first ten cells in the **Cost** column. Then we select in the program menu: **Data → New chart** or we can click on the **Chart** icon on the toolbar. The **Chart settings** window appears as shown in Figure 3.7.2.

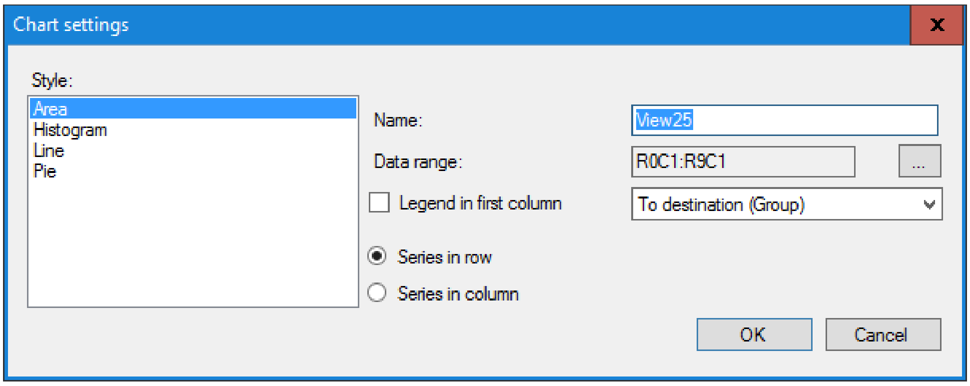

Figure 3.7.2

The **Style** list allows you to select a desired style from the following options:

- Area;
- Histogram;
- Line;
- Pie.

In the **Name** box, the user can change a chart name that is offered by default.

The **Data range** box displays the selected cells of the table. You can change the range. To do this, click on the '...' button located on the right from the box. The **Select range** window appears where you should select a desired cell range.

The **Legend in first column** list displays the column name, which is used as a legend in the chart. You can change a default value.

The **Series in row** and **Series in column** check boxes allows setting a type of displaying the legend.

We select the **Pie** style for our example and get the chart as shown in Figure 3.7.3.

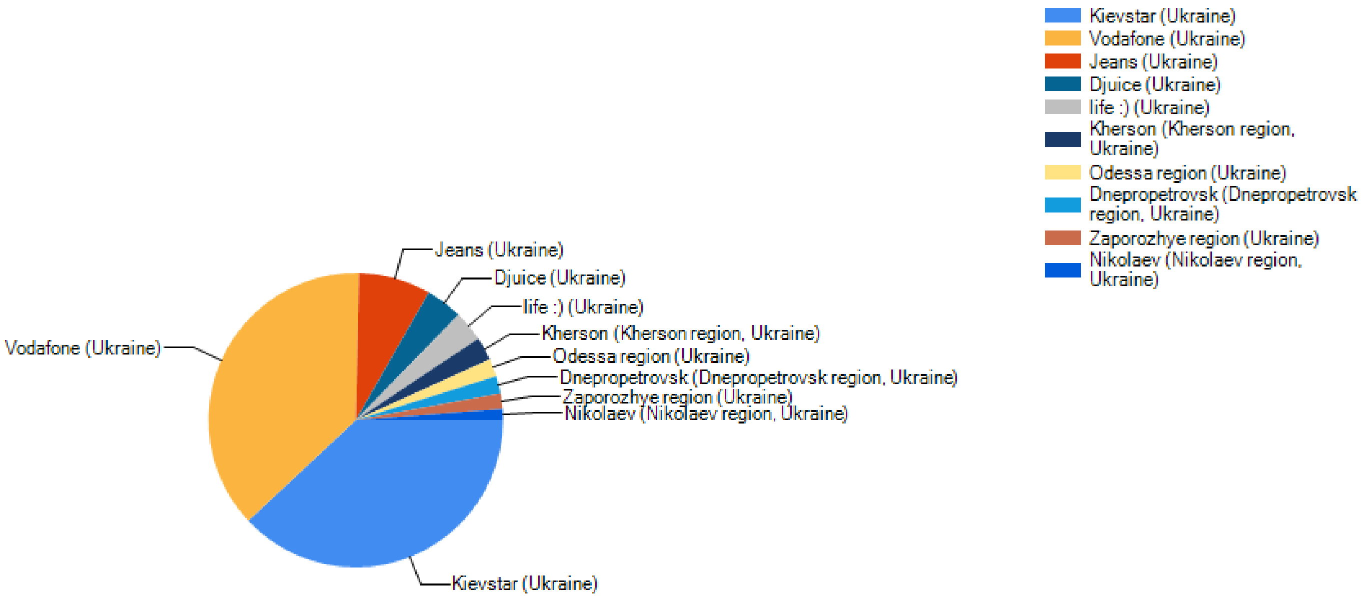

Figure 3.7.3

A view for charts allows to save the chart as a picture. To do this, click on the **Save as** icon on the toolbar of the view.

Also you can print a chart. To do this, click on the **Print** icon on the toolbar of the view.

3.8 Processing a CDR file

CDR is an abbreviation of 'Call Detail Record'. Vendors of some PBXs use the other abbreviations for such data, for example, SMDR and so on.

If you have a CDR log with information about made calls generated by the Tariscope system or in any other way, then you can run processing this data to place them into the Tariscope database.

It is assumed that all the necessary settings for processing such information has already been made. How to configure the system, see the following document: "Tariscope 4.x. Administrator's Guide".

In the menu of the Tariscope program, select **Parse → Transfer**. The **Parse calls** view opens in the program and at the same time the **Equipment selection** window opens, examples of which are shown in Figure 3.8.1.

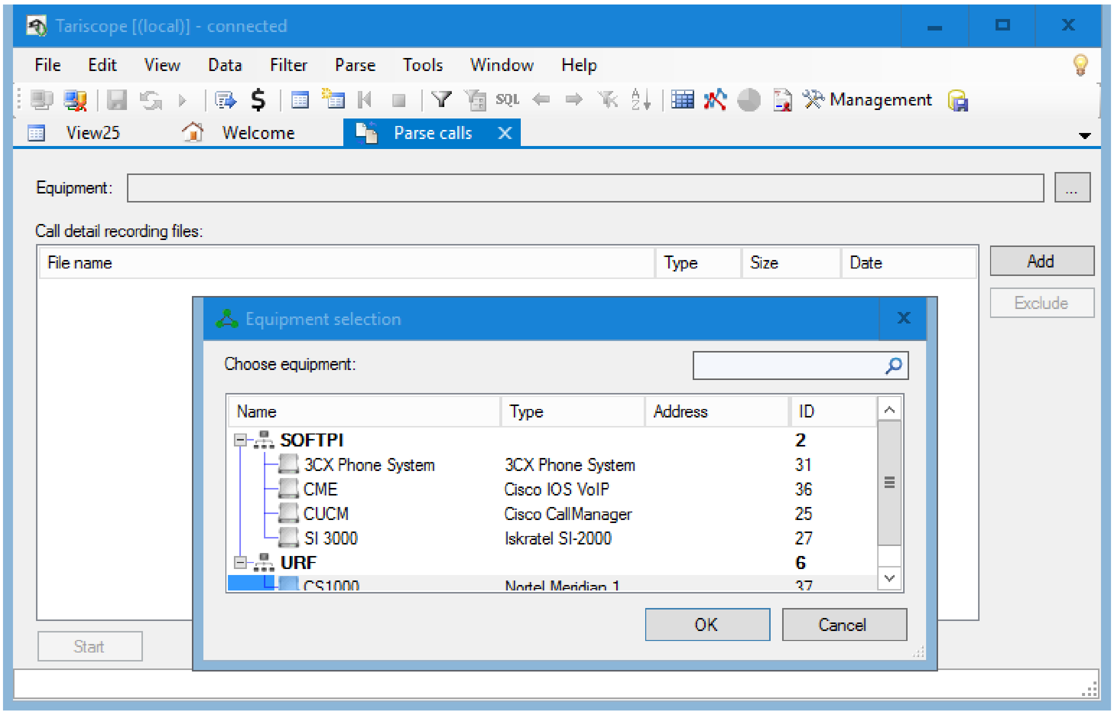

Figure 3.8.1

In the **Equipment selection** window, select a telephone system, the data from which will be processed, and click **OK**. A name of the selected telephone system will be displayed in the **Equipment** box of the **Parse calls** view. If the telephone system was selected by mistake, click the "..." button to the right of the **Equipment** box and select a desired PBX.

Select the CDR files that you wish to process. To do this, click the **Add** button. The **Open** window appears. Select one or more CDR files. The selected files will be added to the **Call detail recording files** list.

If you need to delete some of the files from this list, select them and click on the **Exclude** button.

To start the processing files, click the **Start** button. For some PBXs, which have no information about the year in the CDR data, the **Choose year** window appears where you should select the year to which the data are related. The processing is started. Depending on the file size, the computer's performance and workload the processing may take some time. Details of the processing, such as the number of the processed records, the execution time, the projected time of processing are displayed in the view. An example of this view during processing is shown in Figure 3.8.2.

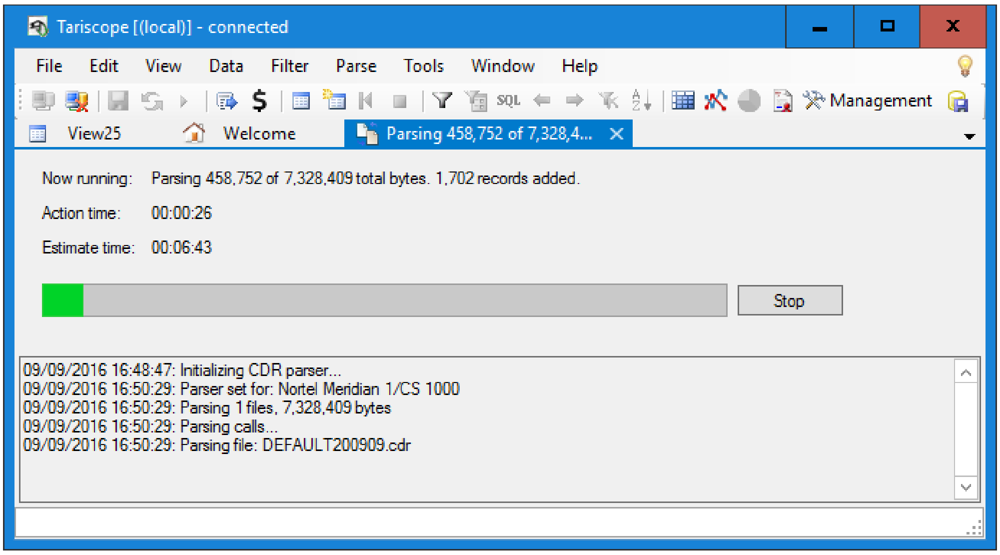

Figure 3.8.2

After completion of the processing, the **Show parsed calls** link is appeared. Click this link to open a new view, in which a filter is applied to display only the processed records.

Keep in the mind, if you process the same CDR file twice, records for calls from the file will be doubled. Select **Parse → Find duplicate records**, to eliminate the duplicated records.

3.9 Call rating

When you use the Tariscope Observer service to process CDR data or process a CDR file as it is described in the previous section, the automatic call rating is performed. The rating is performed effectively, if there is enough information, that is Tariscope was properly configured.

In the case that all or part of call records were not rated, you need to find the reason of this and perform re-rating of the entire database or selected records.

The main reasons that the call cost are absent are the following ones:

1. The lack of all required data about a subscriber in the Tariscope database. An indication of this is the absence of the subscriber name in the **From subscriber** column of a view.
2. A rating plan has not been set for a subscriber.

3. The connection date of a subscriber is later than the date of the call which does not have the cost.
4. The route parameters, through which the call was performed, had not been configured:

- There is an access code is in the view but it has not been set in Tariscope. In this case, values on the **To destination** column for long-distance, international calls, and calls on the phone numbers of mobile operators are empty.
- The service provider, the parameters of which should be applied for the rating, has not been specified in Tariscope.

5. The area code, which was used in the call, is absent in the Tariscope database. You can see this situation in the view for call. In this case the city name or mobile operator name is absent in the **To destination** column. If there is the required phone code in Tariscope, check availability of a rate for this area code.

To quickly execute the re-rating, we recommend:

- If you need to re-rate a group of records or a single record, select desired records of the call table and right-click. Menu appears. Select the **Recharge selected records** item.
- If you want to re-rate all calls of a view, select in the program menu: **Parse** → **Rate**.

In the last case the **Recharge calls** view is opened and at the same time the **Action parameters** window appears as shown in Figure 3.9.1.

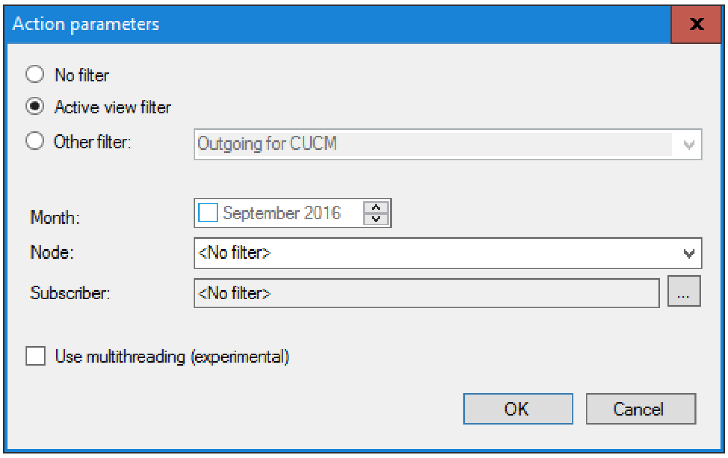

Figure 3.9.1

This window allows you to set a filter for the view. As mentioned above we recommend you always use a filter if it was not set earlier in the view, or if you want to rerate not all calls of the database. By default, the **Action parameters** window offers the option of the **Active view filter**. If this option is not satisfied you, you can select the other options:

- **No filter**. All data of the call database will be rerated.
- **Another filter**. This choice makes active the list with names of previously created and saved filters. Select a desired filter from the list.

There are the following additional filter conditions:

- **Month**. You can choose a desired month and year from the **Month** calendar box.
- **Node**. You can choose a desired telecommunications node in the **Node** list.

- **Subscriber**. You can choose a desired subscriber. To do this, click on the "..." button located on the right from the **Subscriber** box and select a subscriber in the **Choose subscriber** window.

To expedite the processing, select the **Use multithreading** check box.

Click **OK**. The process of the rating starts. After the end of the process, go to the required view and refresh it. To refresh data, click **F5** or select the appropriate icon on the toolbar.

If you are a telecom service provider and use the Tariscope Provider edition, you can rerate data for a particular month with the possibility of simultaneous charging of all periodic services. To do this, select in the program menu: **Parse** → **Recalculate month**. The **Recharge all month** view is opened and at the same time the **Action parameters** window appears as shown in Figure 3.9.2.

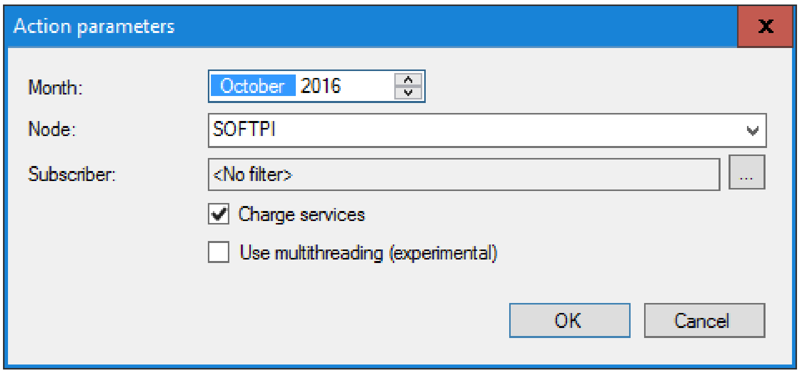

Figure 3.9.2

In the **Month** calendar box, select a desired month and year for which calls will be recalculated.

In the **Node** list, select a telecommunications node for which the recalculating will be performed.

If you need to recalculate calls of a specific subscriber, click on the "…" button located on the right from the **Subscriber** box, and select the subscriber.

If you need to charge the periodical services for subscribers, select the **Charge services** check box. In this case the previously charged services for the selected month will be canceled and recharged.

To expedite the processing, select the **Use multithreading** check box.

Click **OK**. The process of the rating starts. After the end of the process, go to the required view and refresh it. To refresh data, click **F5** or select the appropriate icon on the toolbar.

4 Contact Information

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