



TRX Krzysztof Kryński

Digital call recorders KSRC series

Konsola 2

USER'S MANUAL

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Information about changes:

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1: The basic

The *Konsola 2* application is a basic tool for the remote operation and configuration of TRX call recorders. Access to this application (and thus to the stored recordings and recorder configuration settings) is protected by a password or hardware key dongle (USB pendrive).

With *Konsola 2* you can perform the following operations:

- searching, viewing and playback of recordings from the recorder disk space,
- write the selected calls to audio files *wav* or *mp3*,
- write the call report to files *html* or *txt*,
- channels status monitoring and eavesdropping the active calls,
- retrieval recorded calls to the computer's hard drive,
- manual archiving of recordings,
- configuration channels for TDM or VoIP call recording,
- virtual channels programming,
- configuring access control lists ACL,
- viewing logs of recorder's users,
- software updates.

A program run with administrator privileges can include change the configuration of the supported recorders, software updates and adding and granting privileges for new *Konsola 2* user accounts.

1.1 Definitions

In the next section is a description of some terms used in the *Konsola 2* User's Guide. Getting acquainted with following definitions will help in further work with the program.

1.1.1 The physical channel

The physical channel represents a single phone line connected to the recorder. In case of analogue lines, it means one pair of wires connected to one recorder's socket. Some digital transmission standards (eg ISDN) allow sending more than

one call at a time through one line (ISDN PRI trunk line can handle up to 30 simultaneous calls).

In this case, for one ISDN PRA interface, the recorder can assign up to 30 physical channels. For comparison, ISDN BRI interface can support up to two physical channels.

The physical channels on TRX recorder can also represent logical VoIP channels configured on Ethernet interface.

Maximum number of these channels is determined by number of VoIP licenses purchased by customer.

1.1.2 The virtual channel

The virtual channels are based on physical channels, with a set of additional recording rules related to them, therefore they allow to record preferred calls according to the specified parameters (an exact phone number, call direction, and so on).

The most important feature of the virtual channel is the ability to define the conditions that must be fulfilled a call to have "registered" on the virtual channel.

For a defined virtual channel may be assigned only calls with a specific direction of the connection, defined origination or destination phone number, etc. Apart from rules of recording, the virtual channel is being defined by the set of physical channels, which are the source audio signal.

For each **virtual channel** must be assigned at least one **physical channel**.

In case of recording calls on **ISDN** (BRI or PRI) lines or **VoIP** systems, you should arrange at least one **virtual channel**.

1.1.3 The monitoring

The term *Monitoring* means preview signal level of the selected channel, as well as listen to call placed on the monitored channel. This function provides information whether the channel (physical or virtual) conducted a phone call and is currently being recorded by the recorder.

Using Monitoring function has no effect on the process of call recording.

1.1.4 The playback (audition)

Playback means listening to the recordings stored on hard disk of the recorder. The user can play phone calls registered at channels (physical or virtual), to which he has given a granted access and the security level of recordings is not higher than the level of the user.

1.1.5 User account of the *Konsola 2* program

The *Konsola 2* application can be configured in order to individual users had access to a specific set of functionality. After installing the program only one user account exists by default - *Konsola 2 Admin*. The default login and password for this account is *admin* and *admin*.

Konsola 2 Admin user has administrative privileges access to each program function – handling and maintenance TRX recorders and permission to create accounts for new users (usually with limited access).

1.1.6 User account of the TRX recorder

The call recorder distinguishes between two kinds of users – common ones and administrators. Common users are able to handle the recorder at the most basic level (for example: playback of recorded calls or creating archives containing recordings from defined set of channels). Administrators have the rights to all functions of the recorder (e.g. recorder channel configuration, network settings, upgrade software on the recorder cards), and the power to create accounts for new users.

The default login and password for the administrator account on the recorder is: *admin* and *admin*.

Notice: *Do not confuse the user's login and account two with the console user account login and recorder TRX.*

1.1.7 Logging into *Konsola 2* program

Logging into *Konsola 2* takes place once, at the time of application launcher. Depending on their access rights users can use different sets of functionality.

For example, for *Konsola 2* user account named *user_k1* were assigned rights only to search for and audition recorded calls (*Playback* panel). The user, after logging in to the program will not be able to use the other *Konsola 2* functions, panels *Monitoring*, *Archiving*, *Configuration*, *Logs*, etc. will be inactive.

The program modules, to which particular users are granted access, are defined by *Konsola 2 Admin*.

Notice: *An access to the Playback panel to an exemplary user_k1 does not mean that the user has the ability to search and audition recordings from TRX recorder.*

*To the Konsola 2 user account must be assigned the recorder, initiated with the login name and the password of the user of the recorder (for example: *user_r1*).*

Playback the calls recorder on specific channels will be possible when additional conditions are met:

- 1. user_r1 user account exists on the recorder and the password entered is correct,*
- 2. recorder user user_r1 has permission to listening the desired channels on the device.*

1.1.8 Logging into TRX recorder

Logging into the recorder takes place (implicitly) every time a user uses a specific *Konsola 2* functionality relating to the TRX recorder (e.g. listens to a call recorded on a particular channel).

Log in to the recorder is strictly related to the set of privileges that the user has a recorder on a particular device (e.g. listening, monitoring, and archiving for the specified set of channels).

The combination of both of these logon mechanisms allows flexible configuration of access rights to system functions.

It is possible, for example, granting permission only to playback the calls, whose source is a strictly defined set of channels. In particular, the user can have grant access rights to only those records in which it participates as a party initiating or receiving a call.

1.1.9 Description of security levels

Recorders are equipped with different security systems, providing protection of all recorded information from unauthorized access. The security level system is one of them.

A number in range from 0 up to 255 is assigned to every user, channel and recording on the recorder. The default security level is set to 0 (the lowest level). Users with administrator privileges have level number 255 (the greatest one) assigned. Security level numbers are defined by administrator. The security level for a recording is initially set the same as the security level of channel it comes from.

Each user has granted access to recordings with either equal or lower security levels comparing to the security level of user. Each user is able to change recording's security level, but only up to the owned security level. In such a manner, he limits access to recordings for other users with lower security level.

1.1.10 User's log files

User's log files contain information about all actions taken by recorder's users. They are stored inside of the recorder. For example the following actions are logged: logging on, playback, archive building, and so forth.

1.1.11 Context menu (pop-up menu)

This is the menu available when you select your subject and click on the right mouse button. The context menu allows you to access the list of operations you can perform on selected object in the *Konsola 2* program.

2: Installation

Next section of this chapter provides a brief description of installation process of *Konsola 2*. The application works correctly under *Windows XP* (+ Service Pack 2), *Windows Vista*, *Windows 7* and *Windows 8*. Before installing *Konsola 2* make sure that the DirectX 9.0c package is installed.

2.1 The installation source

The installation file is supplied as an executable file (*.exe). The installer, apart from the program *Konsola 2*, contains essential accessories for the proper operation of applications (including Microsoft Visual C++).

Current stable version of *Konsola 2* is available on website: www.trx.com.pl (*Download Center*).

2.1.1 Running the setup file

To run the program installer you should double-click executable file named *TRX_Konsola2_2.x.x.exe*.

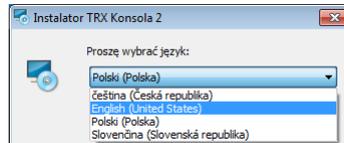
The installer is checking whether the operating system environment meets the necessary requirements of the program. If you detect any deficiencies, inform the user to complete them.

The next steps of the installer are available when you press *OK* or *Next*. It is possible at any time to stop the installation with button *Cancel*.

Notice: *Before running the installer it is recommended to uninstall any previous version of Konsola 2 application.*

2.1.2 Language preference

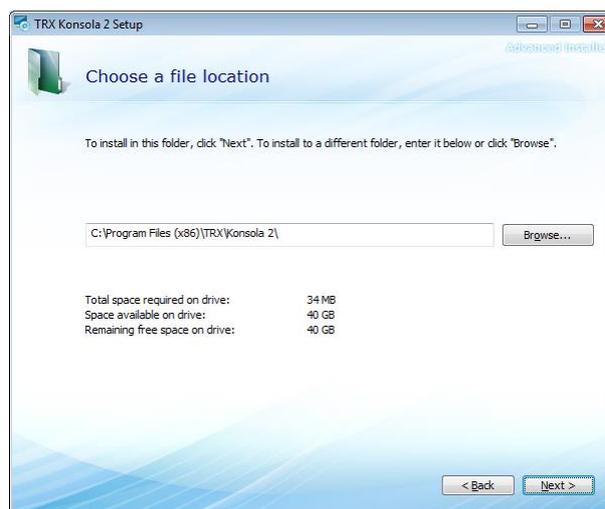
Right after setup has been launched, language selection window will appear. The default language is Polish, and optional English, Czech and Slovak.



User's choice will affect both setup dialog windows and *Konsola* interface language. Please note, that *Konsola* interface language can be changed after program has been installed.

2.1.3 Choice of the installation directory

At this stage, you must choose the directory in which *Konsola 2* will be installed. It is recommended to leave the default directory.



After you specify the destination folder, the installer allows you to select the location for application shortcuts: *Desktop*, *Start Menu Programs* folder and *Startup* folder.

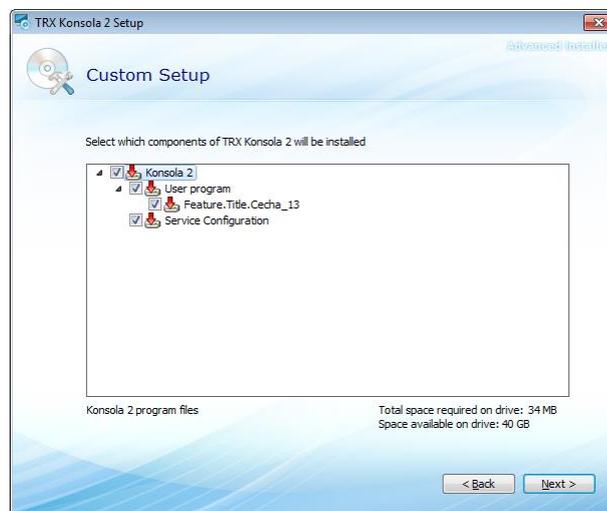
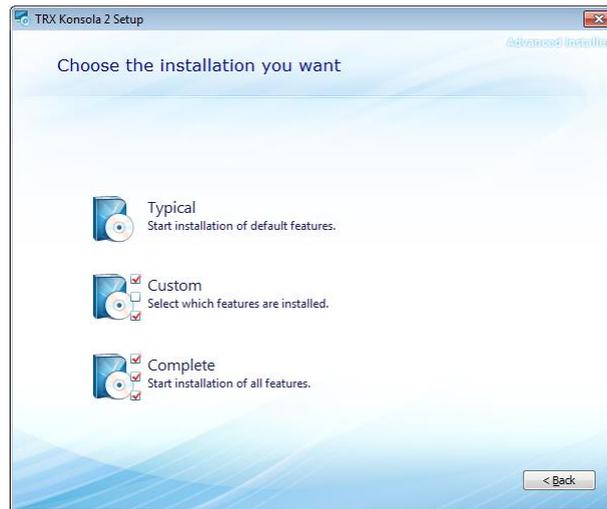
2.1.4 Choosing the installation type

In one of the first steps in installation of *Konsola 2* the user has a choice of three types of installation.

Typical - recommended for most users, default feature set is installed.

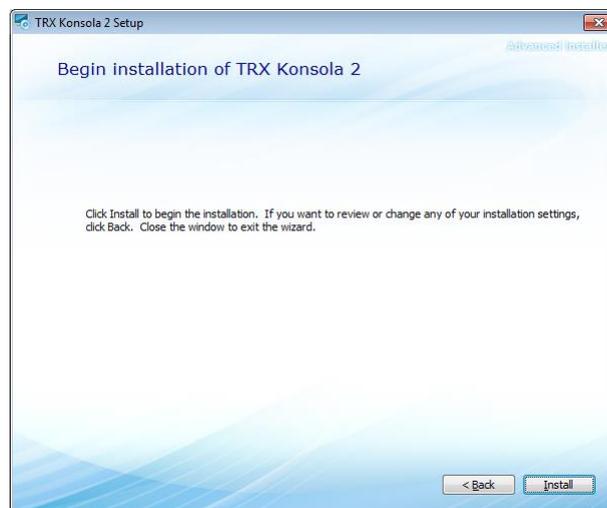
Complete - all the available software options are installed.

Custom - allows you to choose which software components to be installed.

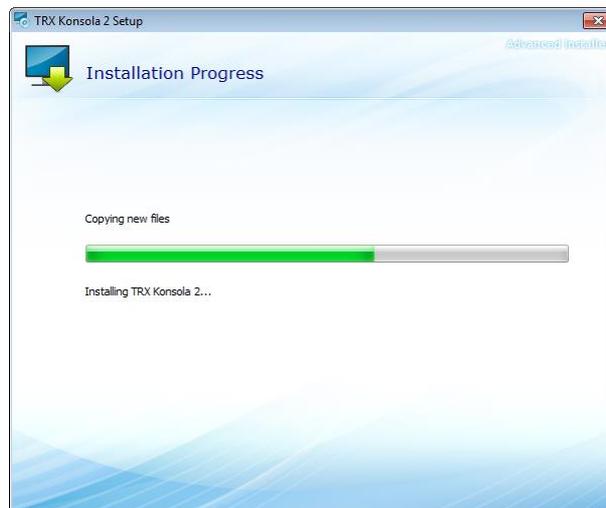


2.1.5 Installation process

Begin Installation ... window means that installer has all the necessary information needed to install the program.

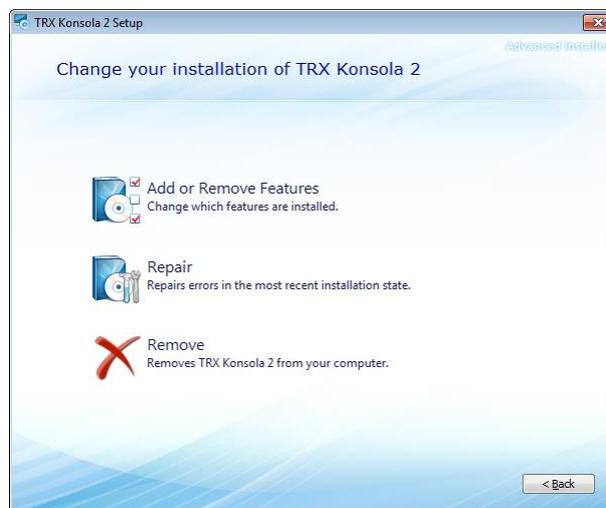


To continue, press the *Install* button. You can verify the installation parameters using the *Back* button or cancel the installation process.



2.2 Change of program components

If the current version of *Konsola 2* program is already installed, the user can change the components, repair or remove files from the hard drive.



Modify icon enables configuring **centralized management** for access to the *Konsola 2* modules.

For more information about the centralized management, see section: 4.4.

2.3 Uninstalling of the application

To remove the *Konsola 2* you can use the installer (section 2.2), or standard Windows tools. Depending on the system, they differ slightly from each other.

2.3.1 Windows XP

The installed software can be removed by:

- choose a shortcut *Uninstall*
(*Star Menu* → *Programs* → *TRX* → *Konsola 2*),
- choose a shortcut *TRX Konsola 2* in *Add / Remove Programs*
(menu *Start* → *Settings* → *Control panel* → *Add / Remove Programs*),
- run the *Konsola 2* installer program and select *Remove*.

2.3.2 Windows Vista/7

The installed software can be removed by:

- choose a shortcut *Uninstall*
(*Start Menu* → *All programs* → *TRX* → *Konsola 2*),
- choose a shortcut *TRX Konsola 2* in *Programs* or *Programs and functions*
(menu *Start* → *Control panel* → *Programs* or *Programs and functions*),
- run the *Konsola 2* installer program and select *Remove*.

2.3.3 Windows 8

The installed software can be removed by:

- choose a shortcut *TRX Konsola 2* in *Programs and features*
(menu *Start* → *Control panel* → *Programs*),
- run the *Konsola 2* installer program and select *Remove*.

Notice: *Konsola 2* installer creates many register entries, so it is not recommended to remove this program manually (by simple deletion of program files).

Notice: *All items such as shortcuts or configure files added manually by the user after the installation must also be removed manually too.*

3: Quick setup for call recording on ISDN PRI trunk line

This chapter describes the basic operations necessary to configure the recorder to be able to record calls on ISDN PRI trunk line with capacity of 15 voice channels.

Section 3 is intended to quickly familiarize with the configuration and handling of recorder at primary level.

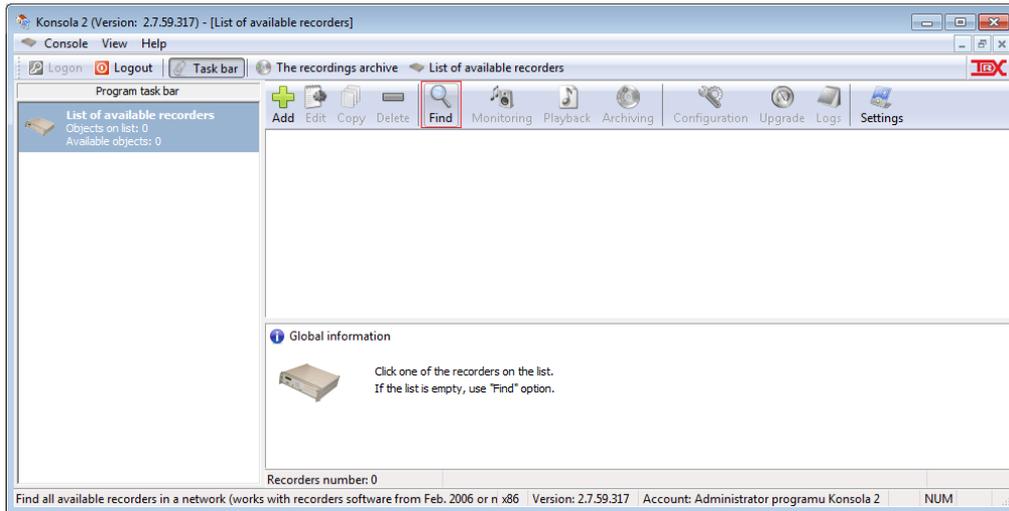
The more complex aspects of configuration and precise description of *Konsola 2* functionality was presented in the next chapter: *Description of Konsola 2 functions*.

3.1 Adding the recorder

In order to start work with the program user should log **onto the default Konsola 2 account** - login and password: **admin** and **admin**.



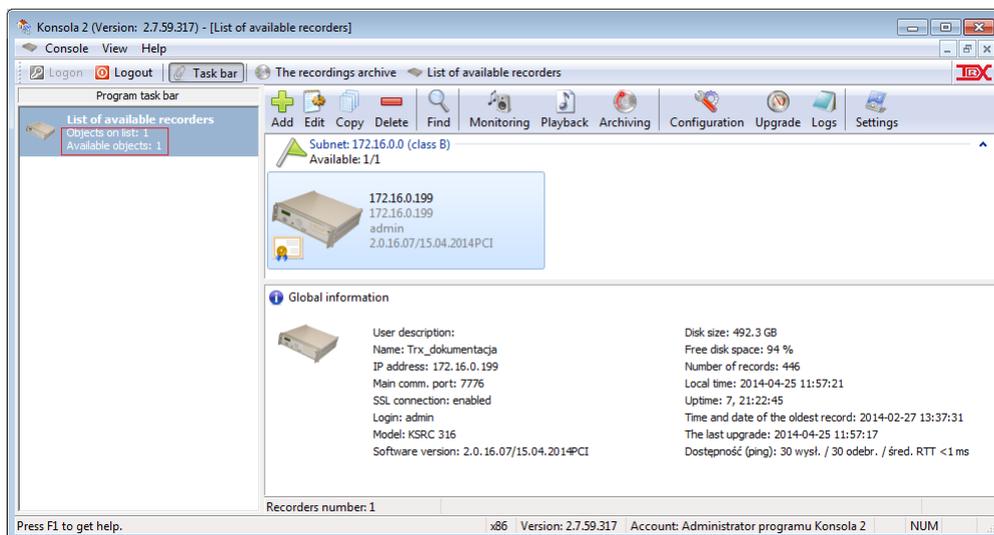
After first logging an empty window toolbar *List of available recorder* appears. At this point, user must create a list of recorders that will be handled by the *Konsola 2* application. The most convenient is to use the automatic search function. It starts with a click on the Search icon on the toolbar *List of available recorders*.



If the search operation completes successfully, you are prompted to launch any found address one common login and password. When you click on the Yes button opens a login window to enter the default user data recorder, that is: **admin** and **admin**.



After clicking *OK*, user will see icons representing all recorders detected by the *Konsola 2* program.



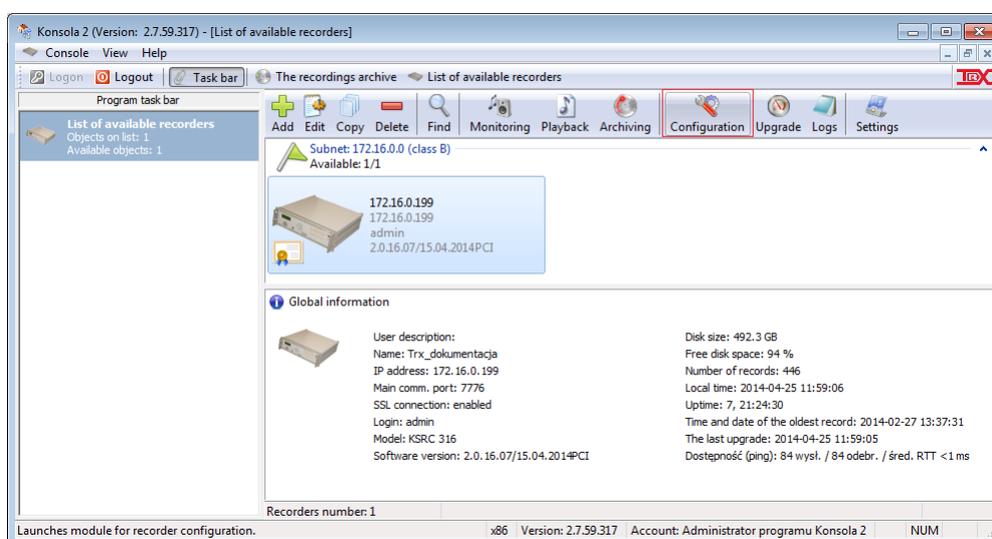
The symbol  at the recorder icon means that the connection between the station PC running *Konsola 2*, and the recorder has been established and is encrypted (SSL). After the click to the icon of the recorder, in the bottom part of window additional information appears (name, IP address, type of connection, software version, etc.).

In the case, if searching for recorders wouldn't end successfully, make sure that the recorder and the *Konsola 2* station is properly connected to the network, and whether valid IP addresses were placed.

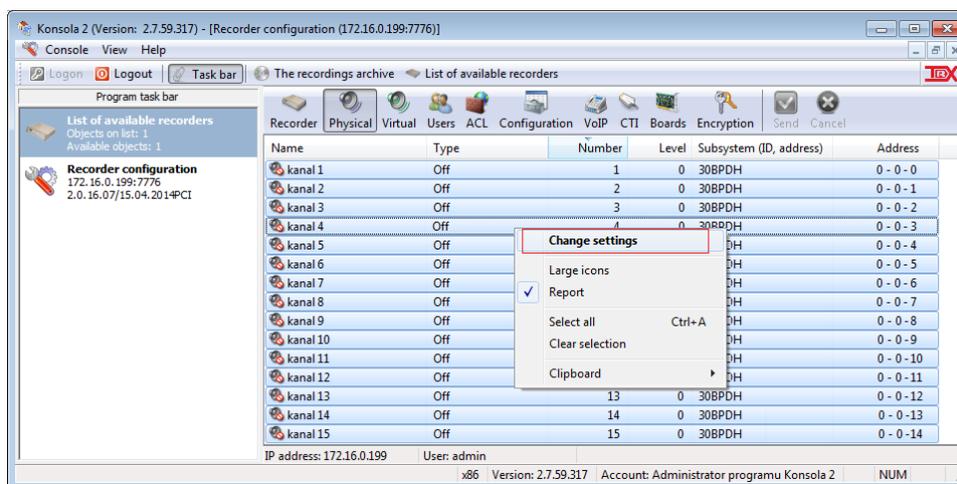
The correct link between recorder and the workstation causes the recorder responds to the *PING* echo command.

3.2 Physical channels configuration

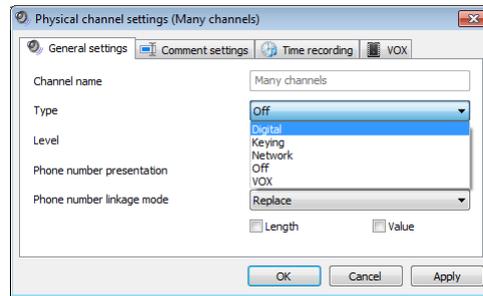
The next step is activating and configuration of physical channels of the recorder. In order to do it, select the recorder and click on the *Configuration* button located on the toolbar.



In the new window, go to the *Physical* panel and select all channels, i.e. click on the first channel, and then hold the *SHIFT* key click on the last channel. For a selected group, from the context menu select the option *Change settings*.



The next step is to choose the *Digital* parameter in Type field, and confirm with *OK*.



The changes in the channel configuration are sent to the recorder only after pressing the button in the window toolbar.

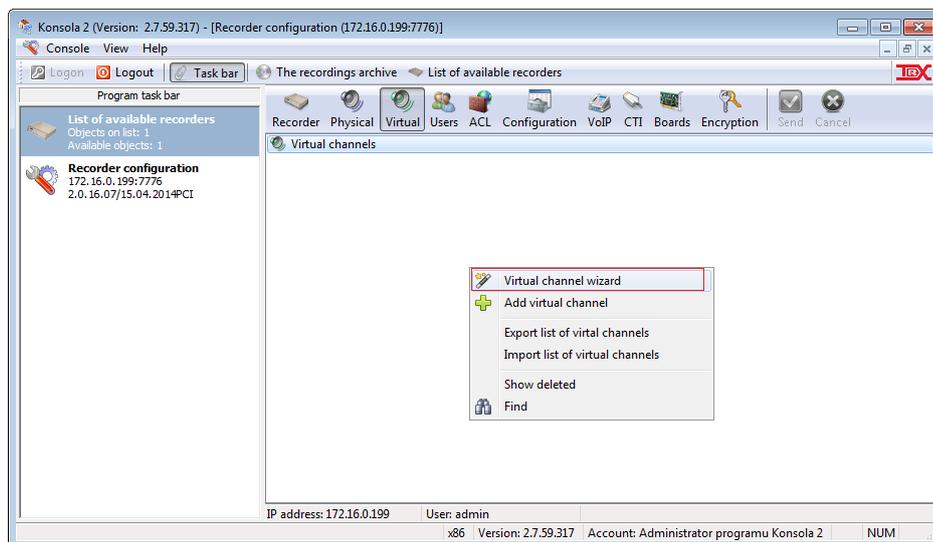
3.3 Virtual channels configuration

For proper operation the recorder equipped with an ISDN or VoIP channels, you should create at least one virtual channel.

In the case of analog or digital (system) phone lines here are not necessary to define these channels and section 3.3 *Virtual channels configuration* may be omitted.

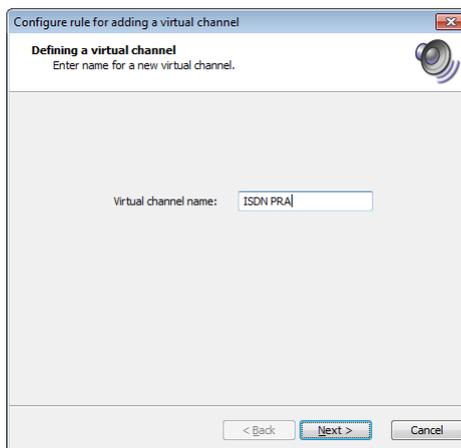
In this example one virtual channel that will represent any kind of connection on either ISDN time slot will be created.

To configure virtual channels, go to the *Virtual* panel, and from the context menu select *Virtual channel wizard*.

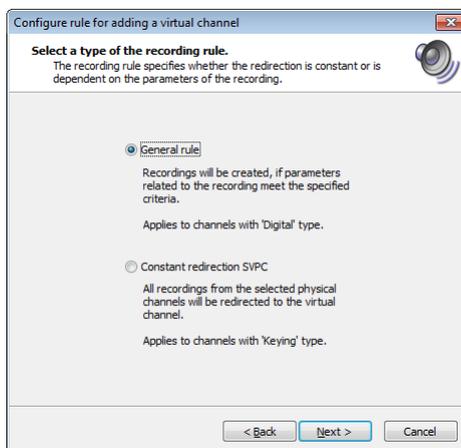


The wizard can automatically and comprehensive set of recorder’s virtual channels configuration in four stages.

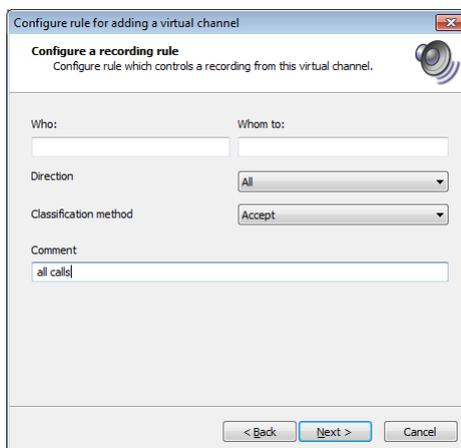
In the first step you should give a name for the virtual channel eg. “*ISDN PRA*”.



In the next stage the default settings: *General rule* need to be leaved.

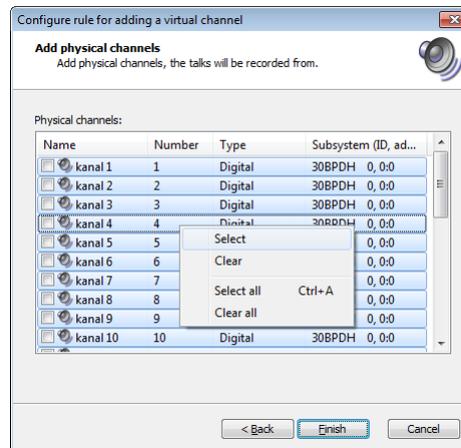


In the next dialog window *Who* and *Whom to* fields remain empty, this is consistent with the assumptions: calls from any origination number (*Who*) to any destination number (*Whom to*) will be recorded.



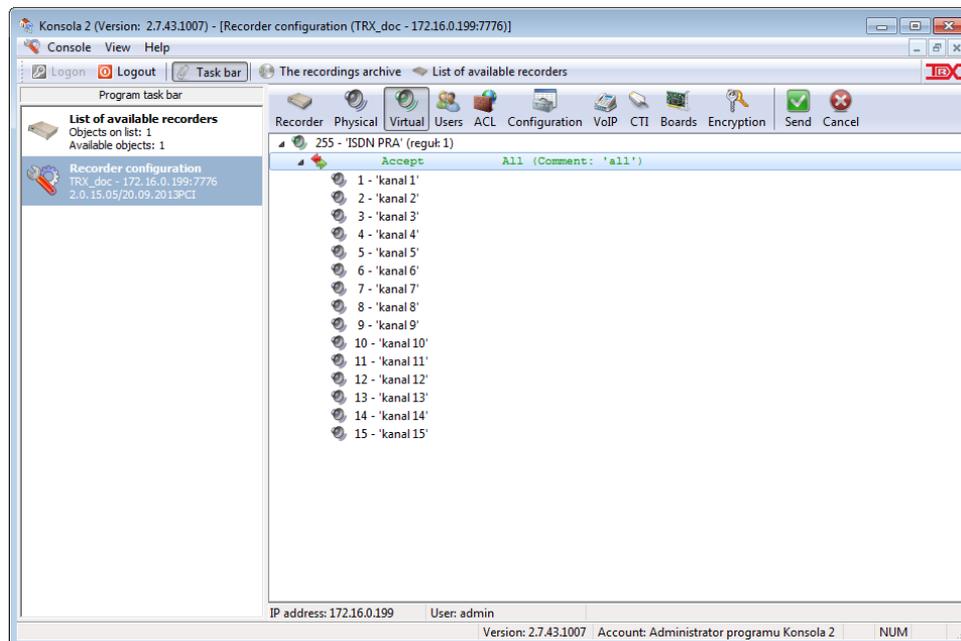
In the *Comment* field user can type a brief description of the virtual channel, for example: *all calls*.

The last stage of the wizard is used to allocate physical channels. In the *Add physical channels*, click on the first channel, and then hold the *SHIFT* key, click the last (15-th) ISDN channel.



For this selected group, click *Select* from the popup menu.

The *Finish* button closes the wizard window, after that the virtual channel appears in the panel *Virtual*. By clicking on the symbol ▸ under the name of the virtual channel you can extend the description of the configuration of selected channel.

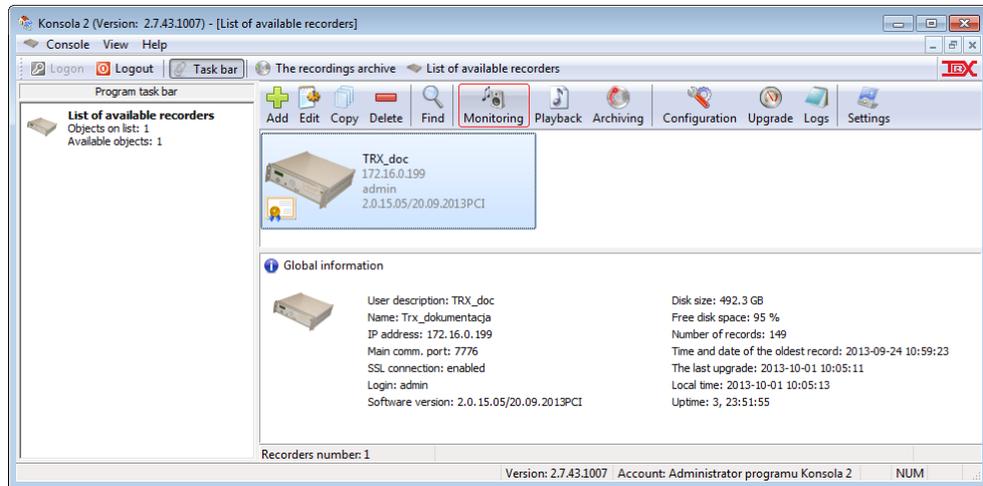


Changes in the channel configuration are sent to the recorder only after pressing the  button in the window toolbar.

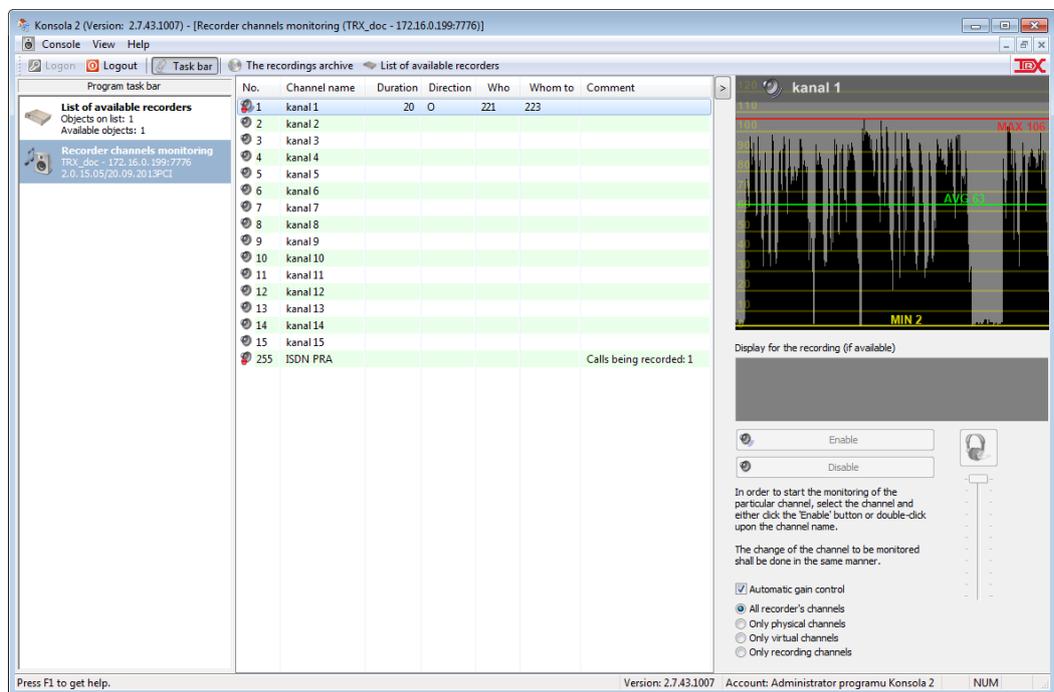
Clicking on the recorder icon in the column *Program task bar* exits from the recorder configuration and return to the main program window.

3.4 Monitoring channel status

The recorder configured in sections 3.1 - 3.3 is ready to work. In order to check whether audio signal is collected from the ISDN PRA interface, you should run the *Monitoring* panel.



A red dot beside the speaker indicates the channel have a call, while the inscription *Calls being recorded: ...* in the *Comment* column means that the call is being recorded to the hard disk.

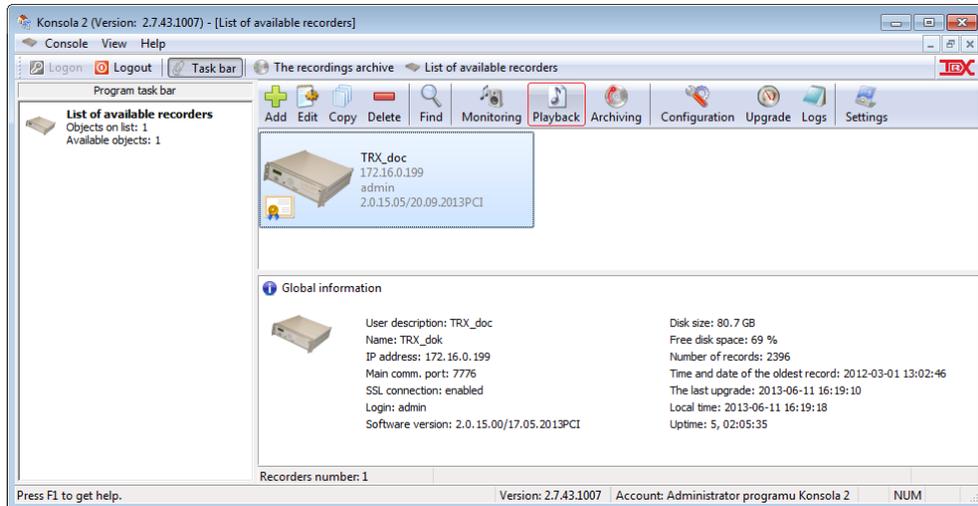


In our example, the user is informed that on the first ISDN physical channel is an outgoing call from 221 to 223. The same connection also occurs on virtual channel ISDN PRA, with the difference that the call from virtual channel is being recorded by the recorder, and call from the physical channel is not recorded. This explains why for ISDN channels at least one virtual channel must be formed.

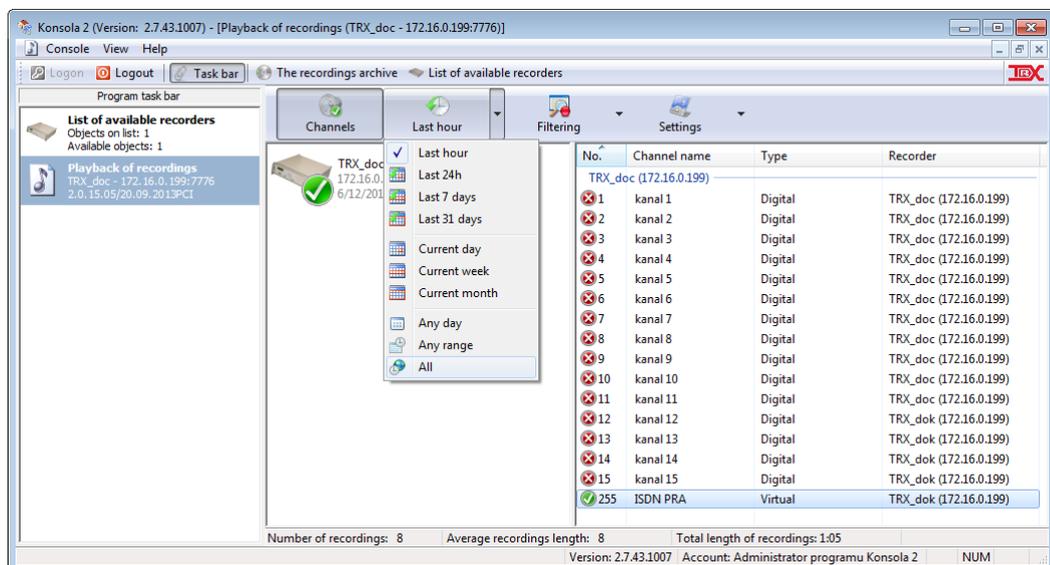
By means double-clicking on the channel's name you can hear the call.

3.5 Playback

Playback feature allows you to view and listen to phone calls that are stored on recorder’s hard disk.

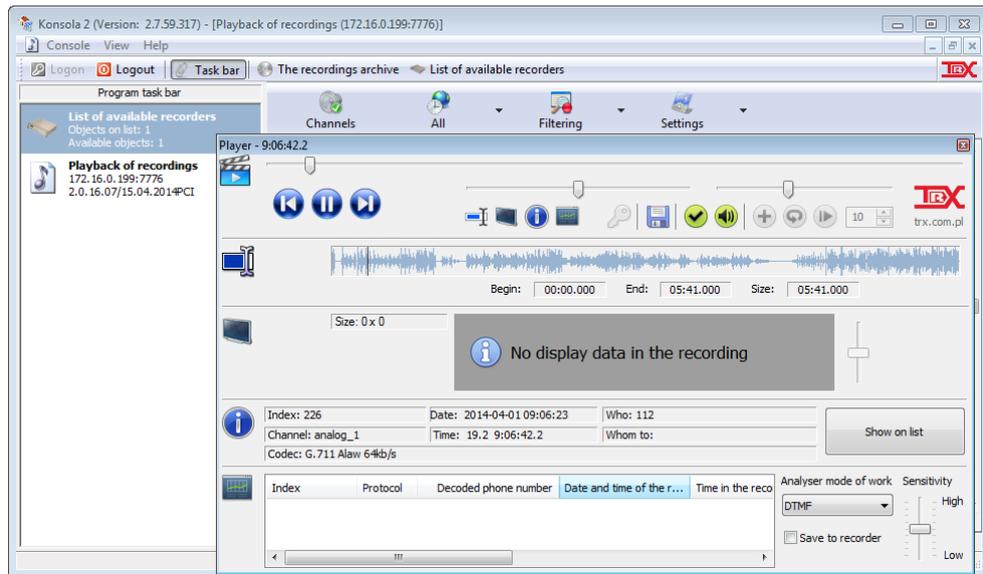


To retrieve the list of recordings, you should first select the channels, which search calls were recorded. By default, all channels are disabled (symbol ) , after make the channel active the symbol is changed to  . In this example *ISDN PRA* virtual channel should be switched on (by double mouse clicking).



After then, you should specify the time interval for playback the calls. In our example, you should select the parameter “All” . As a result the window with a list of calls that meet your search criteria appears.

When you double click on the required recording, the separate window with player is started. The audio content of this call is played automatically.



The player window contains a set of buttons that increase comfort for listening to calls:

- ◀ and ▶ are used to play, respectively the previous and next records in the list,
- ⏸ or ▶ (depending on whether the current recording is played, or not) stops and resumes playback of the current call,
- 📁 - allows you to record whole or a part of selected call to a *wav* or *mp3* file on your local computer.

4: Description of Konsola 2 functions

This chapter contains a detailed description of all features available in *Konsola 2* application.

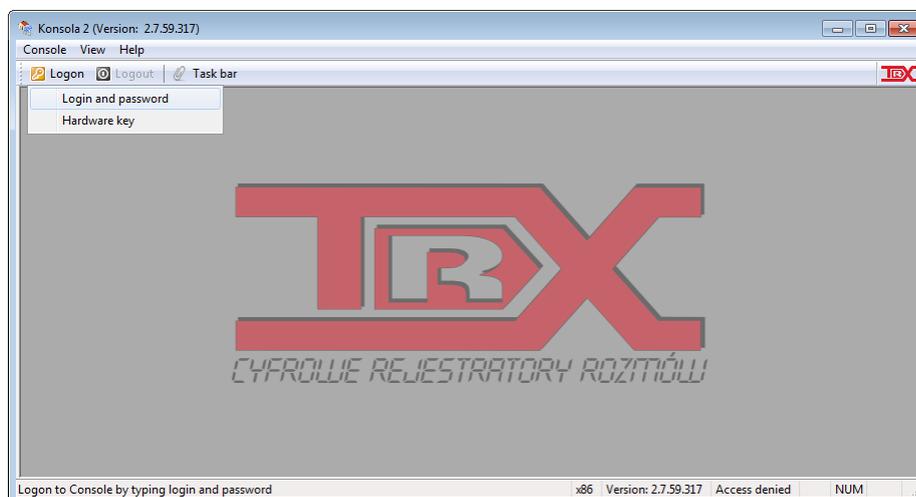
Description of functions is given in order of appearance in the main menu. During setup and handling the recorder, the sequence of operations performed is more akin to that described in the previous chapter: *Quick setup for call recording on ISDN PRI trunk line*.

4.1 Logging into Konsola 2

In *Konsola 2* has been introduced mechanism of distinguishing application users. It is based on assigning each user a customized application account. Therefore, at each launching application, the user must log on.

The default mode of the *Konsola 2* causes it to run with administrator privileges. If the mechanism turns off the default account, logging in to the program is available by clicking on the icon  and choosing one of two options, *Login and password* or a *Hardware key*.

Alternatively you can use the menu bar: *Console* → *Login*.



4.1.1 Login and password

This method logging into the program requires a *Login* and *Password*.



If you select *Remember last login and password*, every next time you log into the program, fields *Login* and *Password* will contain the data that been entered during the previous log.

This could potentially be used to gain unauthorized access to the program; therefore you should use this option with caution.

The default login and password for account of the *Konsola 2* administrator account is respectively: *admin* and *admin*.

4.1.2 Hardware key

The *Hardware key* allows on log into the *Konsola 2* for users who have a specially prepared USB pen drive. To access the program using hardware key, you should insert the pen drive to your local computer USB socket and enter the valid pin (maximum of 128 characters).



The hardware key wizard used to prepare configuration for USB pendrive has been described in section 4.3.2.6.

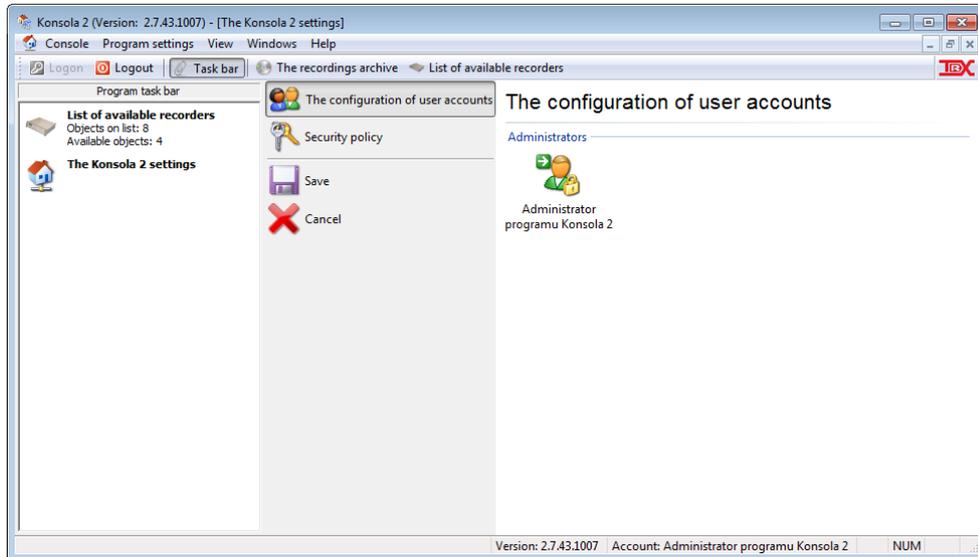
4.2 Logging out of the program

Logging out of the *Konsola 2* is taking place after clicking the  icon or select *Logout* from the *Console* menu. Logout operation does not close program window. You can login again by clicking on the  icon or selecting from the menu bar: *Console* → *Login*.

4.3 Program configuration

The *Konsola 2 settings* window (menu *Console* → *Program configuration*) allows accessing the following options:

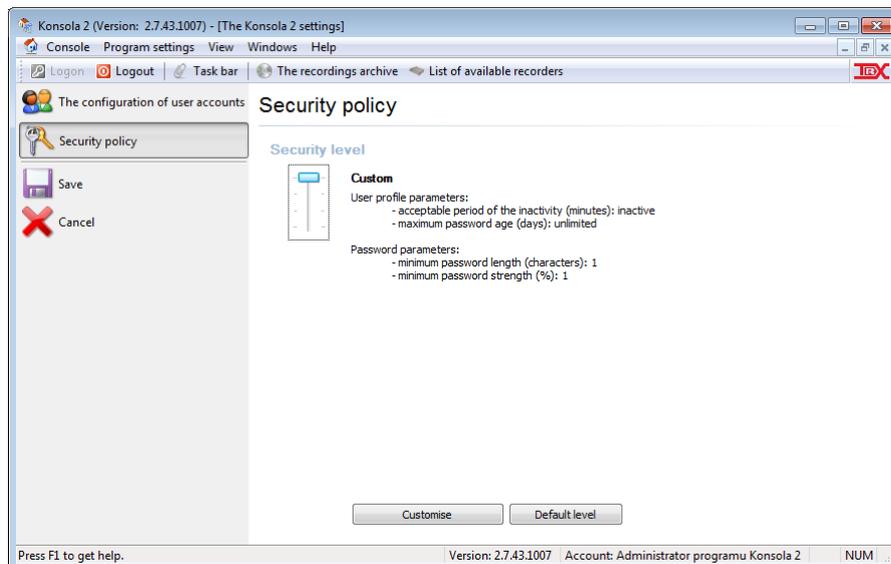
- security policy,
- user accounts configuration.



Notice: Saving all changes entered in the configuration will be included only after approval by clicking the *Save* icon -  *Save*.

4.3.1 Security policy

Security level dialog allows you to configure the global security policy. These settings will be taken into consideration when accounts for new *Konsola 2* users will be created.



There are four levels of security level:

Custom:

defined by user,

High:

lock account after a period of inactivity: 10 minutes,
 maximum password age: 30 days,
 minimum password length: 8 characters (lower case, upper case and digits),
 minimum password strength: 60 %
meets the requirements of high level MIA decree from 29 April 2004,

Medium:

lock account after a period of inactivity: 20 minutes,
 maximum password age: 30 days,
 minimum password length: 6 characters,
 minimum password strength: 40 %
meets the requirements of basic level MIA decree from 29 April 2004,

Low:

lock account after a period of inactivity: inactive,
 maximum password age: unlimited,
 minimum password length: 1 character,
 minimum password strength: 1 %

Customize button allows you to define rules for Custom level. This button is active only when the slider is set at this level.

Default level button automatically sets the security to default (*Medium*) level.

4.3.2 User accounts' managements

In *The configuration of user accounts* you can create, edit and delete user accounts and the management *Konsola 2* security passwords to access the program.

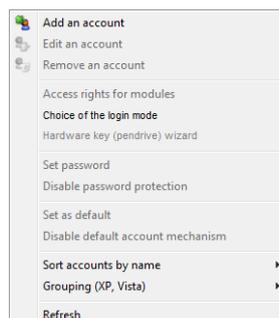
Before you create accounts for new users of *Konsola 2* application, we recommend that you create (from the administrator account) all required user accounts on all available recorders.

Keeping the recommended order will help the subsequent adding *Konsola 2* user accounts.

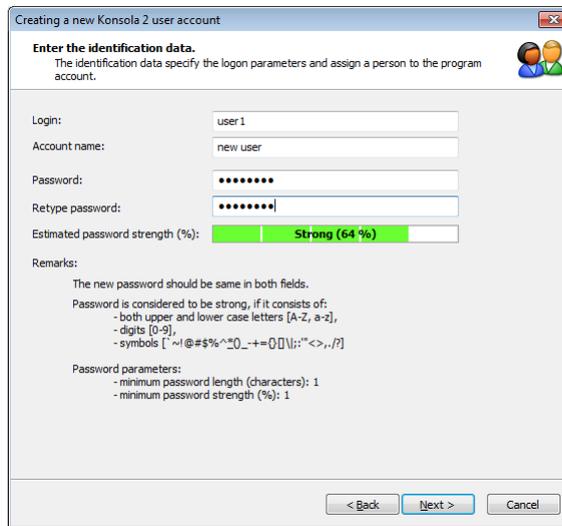
Adding recorders User Accounts is described in paragraph 4.8.4.1 *User accounts*.

4.3.2.1 Creating an account

In order to create a new account, you should select *Add an account* from context menu for window shown in section 4.3.

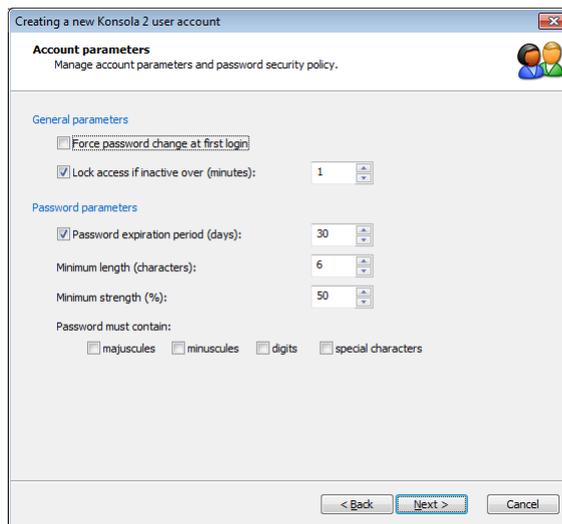


In the first window of the wizard, you should specify the type of account is created: *Administrator* or *Limited account*. In the next stage it is possible to specify account login and password.

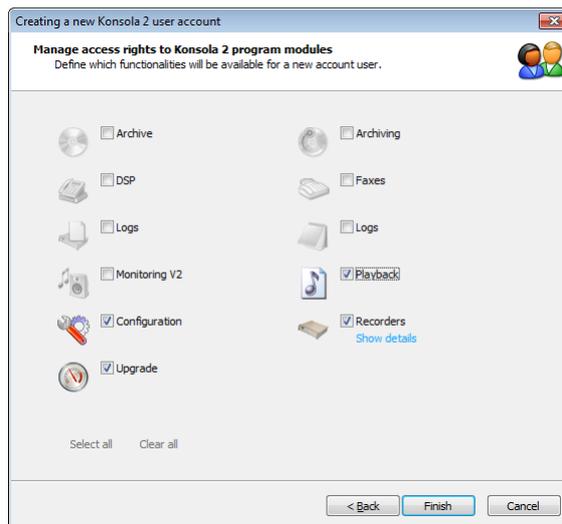


Password strength is tested here. It is recommended to supply passwords with as high strength value as possible. The higher the value, the better the password is. Requirements determined by the complexity of the password settings are described in section 4.3.1 global security policy.

Account creator will not allow to move to the next step, if not all fields are populated, or if passwords differ or if password strength is not big enough. Next step of wizard refers to local security policy for user accounts. It is possible to state here any additional requirements for password management and password itself.



The following wizard’s window allows granting access rights into selected application’s modules. Put a “tick” mark next to the modules you want to grant the access to for particular application user.



Archive – loading archives (*.tra, *.tra3) and playback calls contained in archive files,

Archiving – access to archive wizard, building the archives for recordings downloaded from TRX recorder,

DSP – access to the module that allows you to analyze additional information carried by different in band signaling (DTMF, CCIR, EEA, ZVEI1/2/3, EURO, EIA, VDEW, CCIT, NATEL, TONE56),

Faxes – access to the module, which allows you to decode recordings containing fax transmission,

Logs – access to browse recorder’s logs, where information about all conducted on the recorder operations is stored,

Monitoring V2 – access this module allows you to view the current status of the recorder input ports (whether on a given channel is audio signal and whether it is recorded), as well as eavesdropping of calls in progress on selected channel,

Playback – access to the recordings already stored on hard drive in the recorder. The module enables to searching phone calls meeting different criterions and their playback,

Configuration – this module allows configuring all recorders’ parameters, including all recording channels in it,

Recorders – recorders management, in particular:

- add, edit, delete, search for available recorders,
- set and record the parameters of the module, which is responsible for communication with the recorders.

Upgrades – access to the module that allows you to change the software (upgrade) oh the recorder (*.tru files).

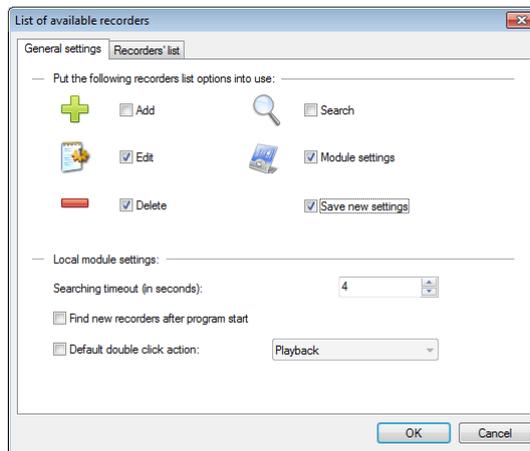
No grant to function Recorders will result lack of access to any available recorder. In this case, user can play only recordings from the archive files (*.tra, *.tra3).

Konsola 2 user will be able to take advantage of the modules *Monitoring V2*, *Playback*, *Archiving*, *Configuration*, *Upgrades* and *Logs* only when access to this modules is granted to the user and the authorization data (login, password), in which he logs to recorder are correct.

When you put a “tick” mark next to any of the following modules: *Configuration*, *Archiving*, *Playback*, *Monitoring V2*, *Logs*, or *Upgrades* - checkbox with the *Recorders* module are automatically selected. Similarly, disabling the *Recorders* module turns off the previously mentioned modules.

Clicking on the *Show details* link allows you to specify a set of functions and create a list of recorders available for the user.

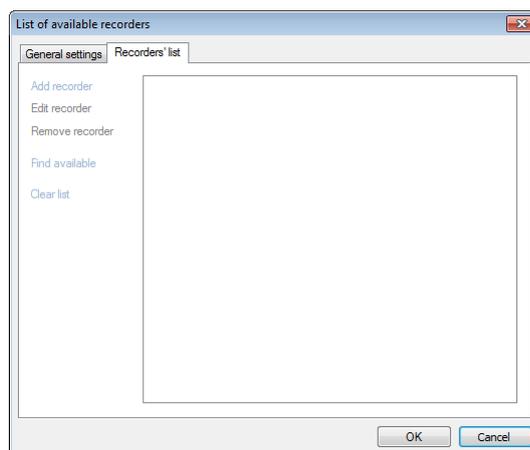
The *General settings* tab of new window displays a set of operations determine right to modify the list of recorders.



For example, selecting the checkbox next to *Add* option allows the user adding new recorders to one's list. He will not have permission to edit, delete, or automatic search function.

Put the following recorders list options into use section allow you to set parameters such as: timeout for response from the recorders during their search, enable / disable the automatic search for recorders after launch the application, the default action when you double click on the recorder icon.

On the *Recorders' list* tab of the wizard window you can add the recorder that the user will have access after the first login in to the *Konsola 2* program.

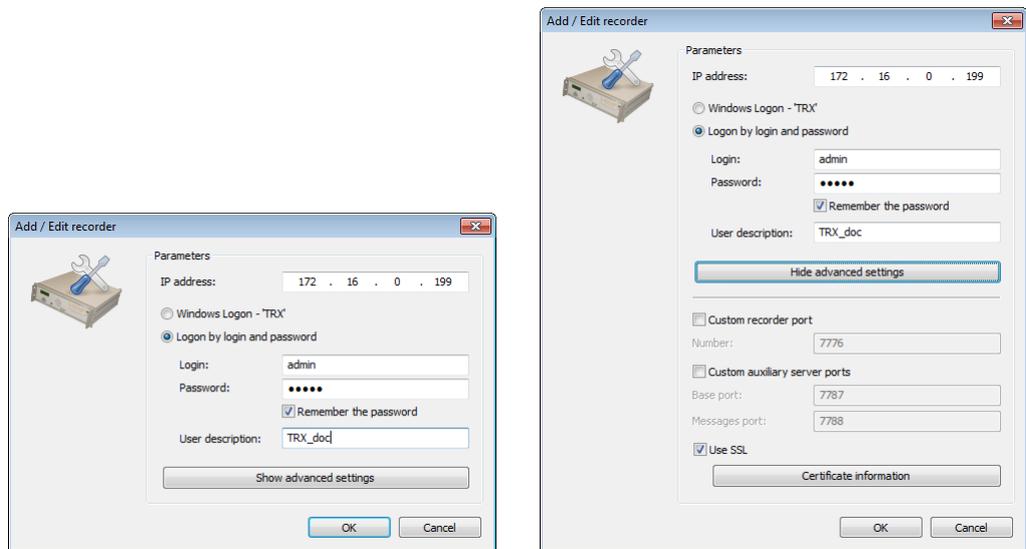


For users who do not have rights to self-add recorders (inactive *Add* option) are necessary to create this list when creating their account.

Recorders can be added (edit, delete) manually or using automatic search options (*Find available*).

If you manually add or edit recorders give, or update data from the dialog box.

Depending on the state the button *Show advanced settings* / *Hide advanced settings* this window looks like this:



IP Address – IP address added/edited recorder.

Windows Logon – ‘TRX’ – login details are taken from account settings through which a user logs on to Windows.

Logon by login and password – login details are taken from the fields *Login* and *Password* of the current window.

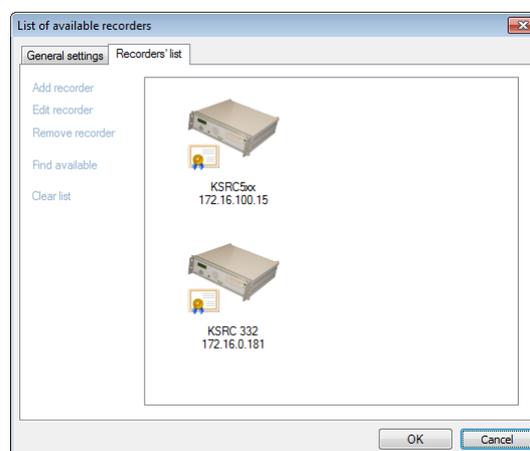
Login, Password – data authorizing the user of the recorder, which privileges the device will be available in the *Konsola 2* application.

User description – text label, that appears next to the IP address in the *List of available recorders* window. The names make it easy to find the device, especially for handling larger numbers of recorders. Recorders are being sorted by name. This field is optional.

Custom recorder port – a port number to communicate with the recorder, the value must be given if for some reason you decide to use other than standard TCP.

Use SSL – allows you to enable or disable data encryption mechanism (between the workstation and the recorder).

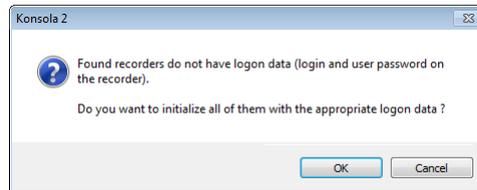
Certificate information – allow obtaining information about the SSL certificate, including name of the owner and validity period, the public key owner, etc.



When you click OK, the recorder appears in the *List of available recorders window*.

After selecting the device and choose from the side menu *Remove recorder* or *Edit recorder* is possible to properly edit the recorder parameters, or remove it from the list.

Search available option will start the process of automatic search for registrars. You will be able to initiate all the found devices one common login and password.



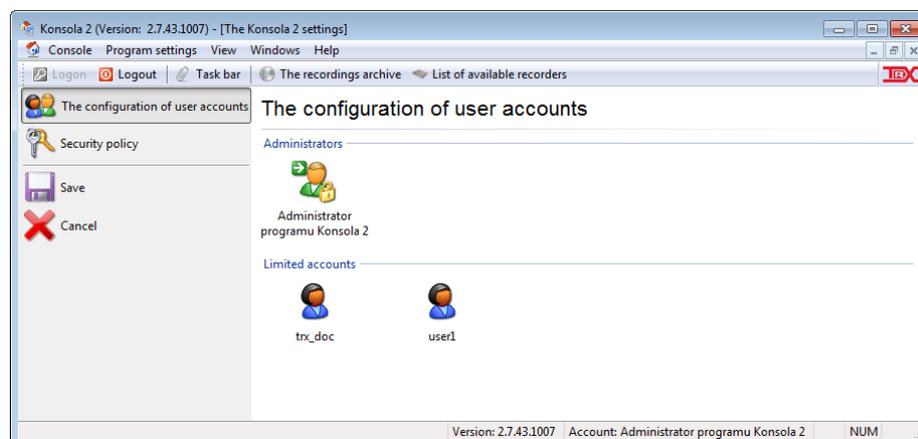
This option is useful, if user has accounts on many recorders and these accounts have **the same logins and passwords**, or will be used the default admin account.



Otherwise, each recorder shall be initiated separately. In order to do that, the *Edit recorder* option shall be selected from context menu for each recorder on the list. Optionally, it can be done by double click the left mouse button on the recorder icon. The window (like this, when you manually add a recorder) will appear where you can enter the *Login* and *Password* data.

Any changes in settings for access to *Recorders* module are instantaneously saved.

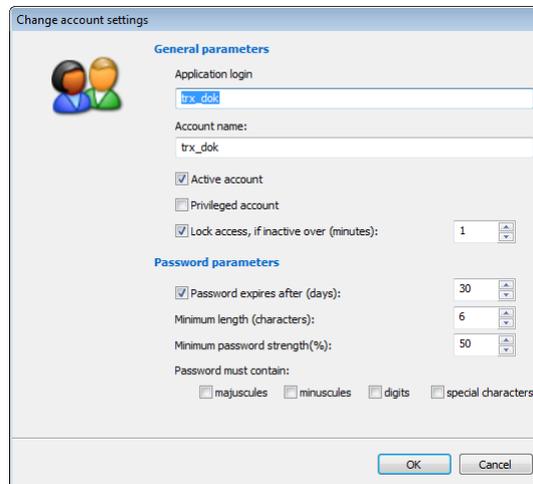
After doing all configuration settings for new *Konsola 2* application user, you should click the *Finish* button. After that in *The configuration of user accounts* window icon representing the new user will appear.



Notice: Saving all changes entered in the configuration will be included only after approval by clicking the *Save* icon - .

4.3.2.2 Edition account parameters

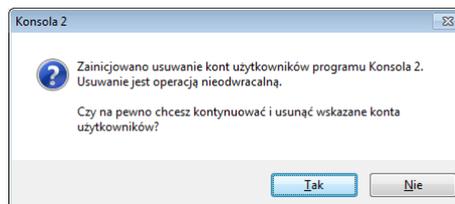
Using the *Edit an account* option in context menu from *The configuration of user accounts* window gives the possibility to change the setting from selected user.



Notice: Saving all changes entered in the configuration will be included only after approval by clicking the Save icon -  Save.

4.3.2.3 Removing an account

Removal a user account is available when you select the user icon and choose option *Remove an account* from the context menu. The program requires confirm of the operation.



Notice: Saving all changes entered in the configuration will be included only after approval by clicking the Save icon -  Save.

4.3.2.4 Granting access rights to application's modules

Option *Access rights for modules* allows you to change permissions for selected *Konsola 2* user accounts. Dialog boxes are similar to those described in the fourth step of the wizard from the point 4.3.2.1 (Creating an account). This option does not apply for the default account: *Konsola 2 Administrator*, which has the inherent access right to all modules of the program.

Notice: Saving all changes entered in the configuration will be included only after approval by clicking the Save icon -  Save.

4.3.2.5 Login mode selection

Login mode selection option allows you to change the default logon mode from *Login and Password* to *Hardware key* (pendrive). It is also possible to leave a user choosing the mode he will authorize.



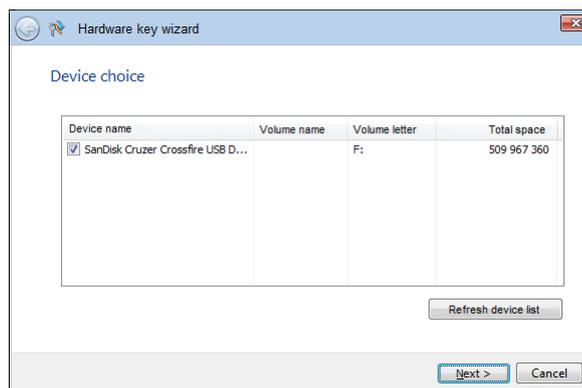
Notice: Saving all changes entered in the configuration will be included only after approval by clicking the Save icon -  Save.

The program has implemented a mechanism for the default account, which causes one of application’s users is being automatically logged into the application after it is run (no need to explicitly enter the login and password).

4.3.2.6 Hardware key wizard

Hardware key (pendrive) wizard option enables creating the file containing authorizing data. This file is stored on the memory stick, which can then be used as a hardware key. At one pendrive, you can create multiple accesses to different users.

In the first step of the wizard, select the USB flash drive to be used as hardware key.



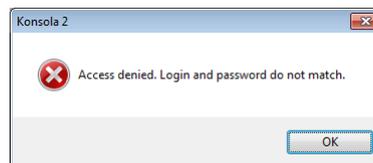
Device choice window shows all detected USB mass storage. For each of them displays the following parameters:

- device name,
- volume name,
- volume letter,
- total space.

The following steps should be given the password for the user for whom the key is created.



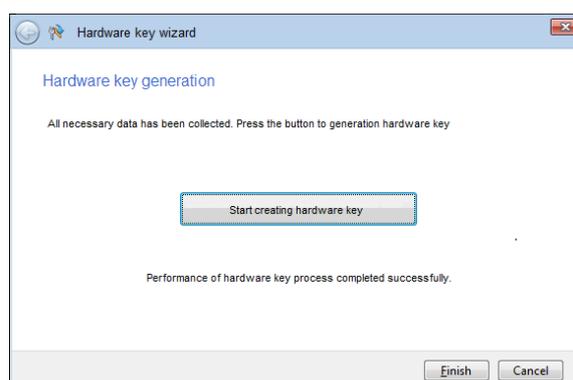
The wizard only checks whether the typed twice the same password, but does not check whether it complies with the password of the user. If you generate a key with an incorrect password when trying to log the user will be prompted an error.



The next step is to specify the pin with a length of 1 to 256 characters.



Complete the process of key generation is indicated by the appearance of the screen:



If you enter an incorrect pin at logon into the program an error window appears.



4.3.2.7 Changing the password

Changing the password for the account is possible from the context menu for the selected icon – select *Set password* or *Disable password protection*.

Notice: Saving all changes entered in the configuration will be included only after approval by clicking the Save icon -  Save.

4.3.2.8 Default user account mechanism

Default user account mechanism allows to run *Konsola 2* in context of one of application user accounts. In other words: one of application’s user is being automatically logged into the application after it is run.

In *The configuration of user accounts* window, the default application user is branded with a white arrow inside the green square.



If it is necessary for another account to become the default one, or to enable the default user mechanism, user shall select an account which he wants to be the default one, and use the *Set as default* option available from the context menu for this account.

In case where the default user mechanism shall be disabled, the *Disable default account mechanism* option shall be selected from the context menu for current default account.

4.4 Central management of *Konsola 2*

4.4.1.1 Introduction

If in one location (the network) a large number of people are using the *Konsola 2*, there is the problem with effective management settings of access accounts for individual users. In order to solve this issue was introduced the possibility of a centralized management. In this embodiment, the settings for all user accounts are stored in a centralized location remote to the user (on the configuration service server). The person who manages the server (usually an administrator) has control over access permissions to all users of the program modules.

By default, *Konsola 2* configuration service is installed on the same PC as the application itself. Centralized configuration management (called: SZK), is based on a client – server model. On the server, install the SZK *Konsola 2* configuration service, next at each of the clients station should be configured (for location of configuration module), the application itself. Installing configuration service on a server allows additional configuration management for all client applications.

SZK allows you to assign the *Konsola 2* configuration for a specified user, not the workstation. In this system, the user can log into the application on the any computer, entitlements of the access to the application will be following the user in the system.

4.4.1.2 SZK Service Server Configuration

SZK server configuration comes down to determine the port number on which the service runs and to which clients should connect. By default, the service is listening on port number 8000. To change this value, run the *KonsolaCfgMgrConfig.exe* (*Start Menu* → *All programs* → *TRX* → *Konsola 2* → *Service Settings Configuration*).



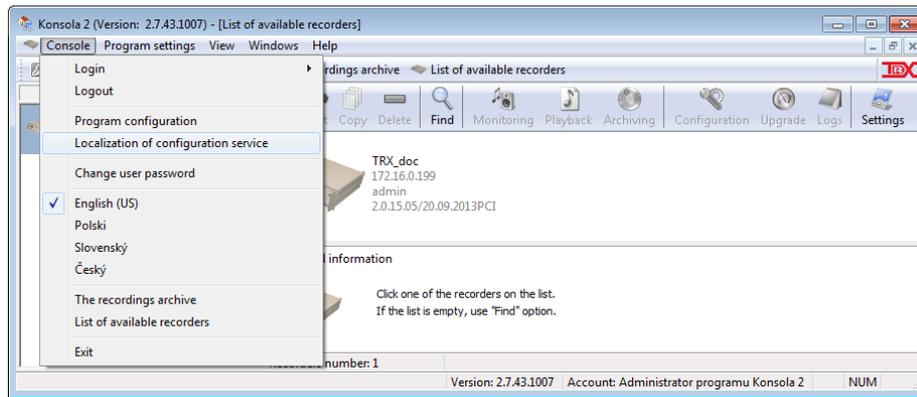
The application allows you to check or change the TCP port number or service status (start, stop and restart).

4.4.1.3 SZK service client configuration

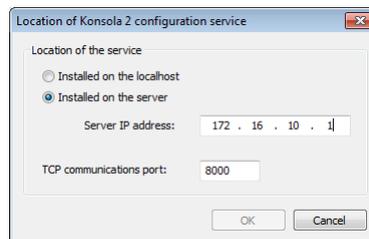
The SZK service client configuration consists of two parameters: IP address and port number of the server on which the SZK service runs.

The service configuration *Konsola 2* can be located in two different ways:

- *Konsola2Config.exe* through a shortcut in the *Start Menu* (*Start Menu* → *All programs* → *TRX* → *Konsola 2* → *Konsola 2 – Location Service*).
- *Location of the configuration service* option from *Konsola 2* main menu (*Console*).



The user then has the options to locate the configuration service.



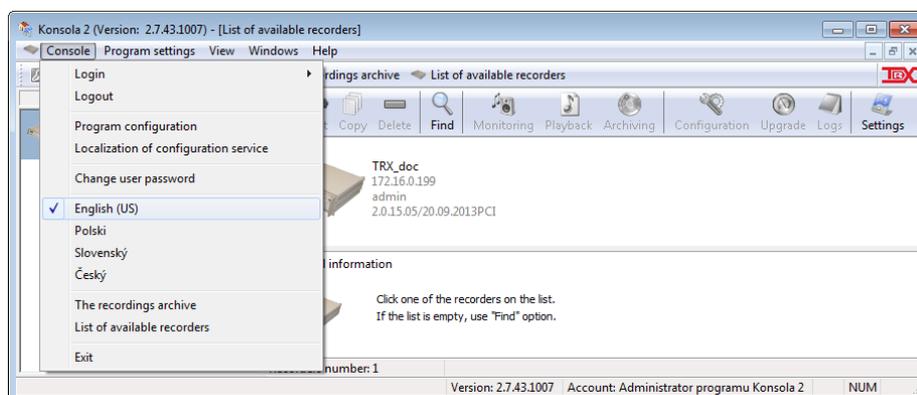
The dialog box allows you to specify an IP address and TCP port on which the SZK service server is listening on.

4.5 Changing the language version

Konsola 2 is capable to present its interface in different languages. By default, application language is the same as language chosen in application installer. However, it is possible to change the language by selecting one of options available in the *Console* menu.

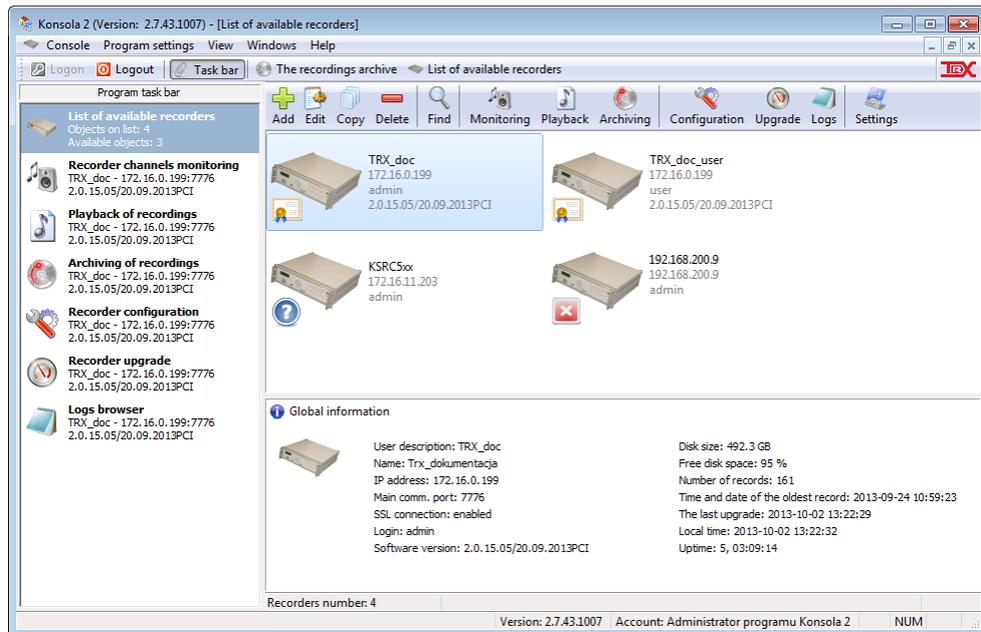
At this moment there are four language versions are available:

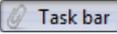
- English (US),
- Polish,
- Slovak,
- Czech.



4.6 Konsola 2 taskbar

In the left part of *Konsola 2* window, the taskbar is placed, where shortcuts to all currently active *Konsola 2* modules are present (*monitoring, playback, available recorders list, etc.*). These shortcuts also present some additional information related to objects they point to (for example: name and IP address of recorder, upon which example playback module is executed). This is useful in case of managing a few recorders at once.



The *Task bar* speeds up the movement between active program modules. In order to reopen active module window, only the double click of left mouse button is required upon the name of module in the taskbar. Taskbar's visibility can be changed (toggled on/off) with the  **Task bar** button, which is available in application main window.

4.7 The list of available recorders

After *Konsola 2* user logs into the application, he is presented with a list of available recorders. This list is a start point for all actions that can be taken upon the selected recorder. (adding, removing and editing).

List of available recorders is the starting point for all the operations you can perform on the selected recorder using the program.

If the option *Periodic test of the recorder availability* is selected *Konsola 2* checks periodically, if it is possible to communicate with recorders that are present on the list. The communication status is reflected in an appearance of icons that represent recorders on the list.



Recorders, which status is not determined yet (there is no information on their availability), are additionally marked with  symbol. On the picture above it is recorder with IP address: 172.16.11.12.

Recorders, which *Konsola 2* is not able to communicate with, are marked with  symbol. On the picture above, these is call recorder with the following IP address: 172.16.0.175.

The additional symbol  on the icon that representing a recorder (IP address: 172.16.11.11) stands for incorrect recorder initialization (empty login and/or password, or incorrect authorization data).

In the picture above the address recorders, IP: 172.16.100.15 and 172.16.100.11 are properly initiated and *Konsola 2* program is able to communicate with these devices.

The symbol  represents a communication with the recorder with the IP address: 172.16.100.15 via encrypted SSL connection. Due to sending encrypted data, is not possible eavesdropping transmission by unauthorized persons.

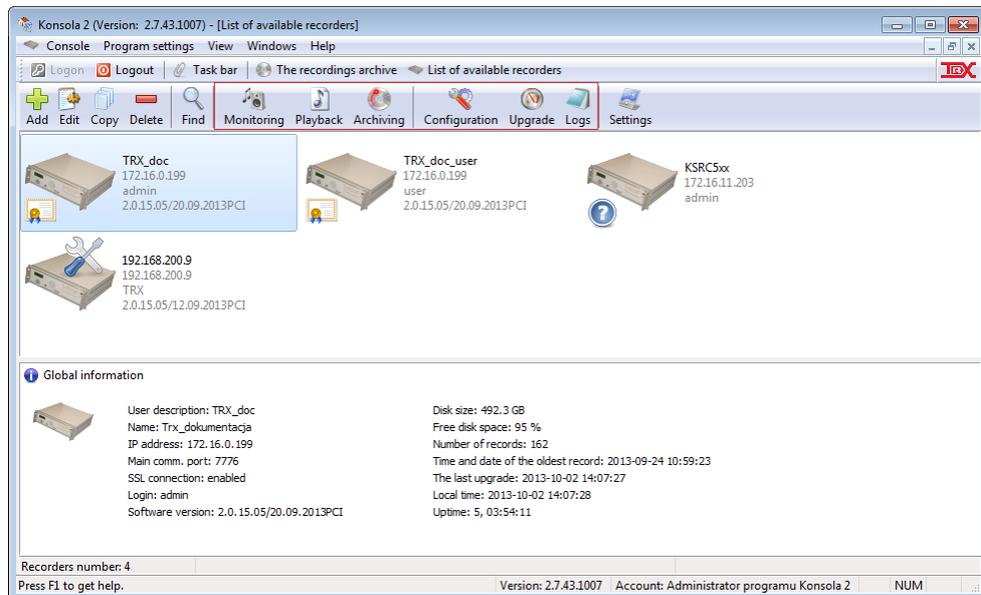
Communication with the recorder with the IP address: 172.16.100.11 does not provide mentioned security.

By default *Konsola 2* periodically checks status of all recorders on the list. It is possible to disable the check for certain recorders by means of unchecking the *Periodic test of the recorder availability* option in the context menu for a selected device.

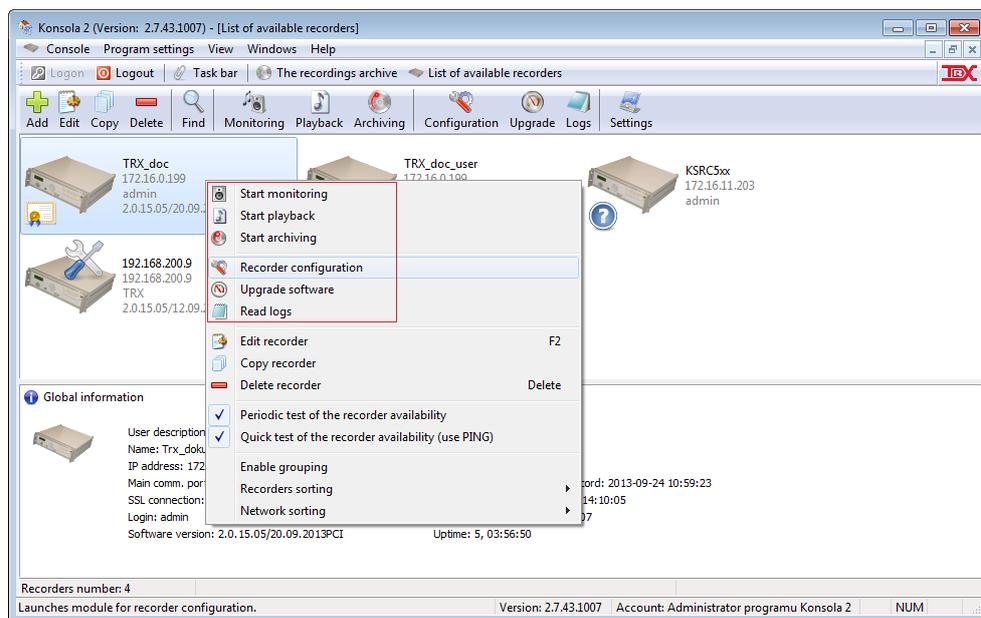
Next paragraphs give a brief description of all functionalities available from the list of available recorders. Any functionality can be accessed in a few ways. At the first, user shall select the recorder on the list. After that (depending on its privileges), is able to perform the following functions:

- Channels monitoring,
- Playback the selected recordings,
- Data archiving,
- Configuring the recorder settings,
- Upgrade the recorder’s software,
- Retrieve system logs.

The function mentioned above can be executed by use of appropriate buttons on the toolbar,



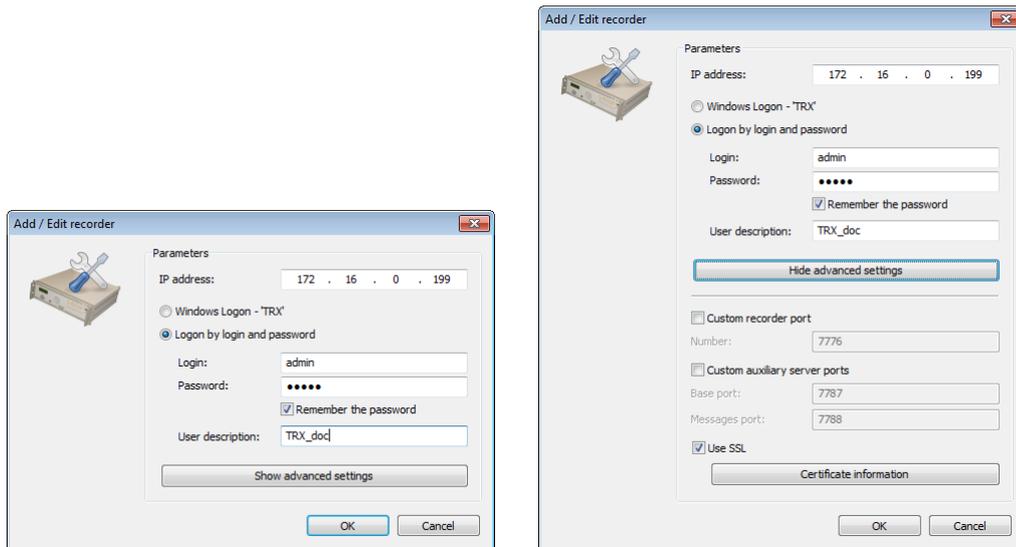
or by pick appropriate option from context menu for the *List of available recorders* window:



The context menu also allows you to switch on or switch off grouping the recorders (based on subnet class), as well as sorting them (by *User description* or *IP address*).

4.7.1 Manage the list of recorders

If the *Konsola 2* user has granted permission to the module *Recorder*, he can manage the list of recorders, for example add, delete or modify their settings. The window to add or edit the recorders parameters has the following characteristics:

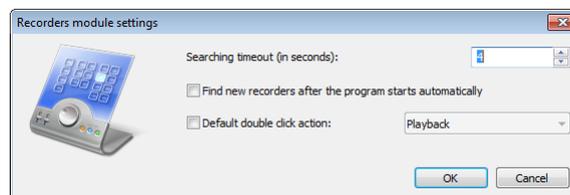


A detailed description of the parts of a window is described in section 4.3.2.1.

The program can also automatically search all available TRX recorders. To do this, click on the *Search* icon on the toolbar or select *Find available recorders* option from the context menu for main window.

4.7.2 Recorders module settings

The *Settings* option is available both via toolbar in top of the list window and via the *Recorders list* option available in the application menu. It allows defining the behavior of recorder’s list module, after the user logs into the application.



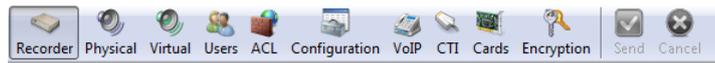
User may declare, how long shall application wait for response from new recorders if the *Search* option was selected. Search time can be increased in case of low bandwidth networks. The default search time is suitable for typical network.

The *Find new recorders after the program starts automatically* options allow defining, if looking for available recorders shall take place each time the recorders list is being open.

The *Default double click action* option lets you to decide, what function (if any) shall be launched, when user double clicks on an icon representing particular recorder on the list. Options can be toggled on/off by means of double clicking on option’s description. After the *Default double click action* option is enabled, the list of available actions (*Playback, Monitoring, Configuration, Archiving, Upgrade* or *Logs*) is available in drop down menu next to the option name.

4.8 Recorder configuration

With this module, it is possible to verify and change configuration of the recorder. After it is run, current recorder's configuration is retrieved and new window appears where user may get familiar with details of each section of configuration of recorder. The configuration is divided into the following sections: *Recorder*, *Physical*, *Virtual*, *Users*, *ACL*, *Configuration*, *VoIP*, *CTI*, *Cards* and *Encryption*.



User can access configuration of each section by selection of proper option either from the toolbar placed in upper part of the configuration window, or from the *Recorder configuration* menu.

Configuration module allows you to **remotely reboot** the recorder, which is required after the introduction of some changes in the configuration.

The remote shut down was not implemented for safety reasons.

Notice: *The one and only valid way to store the changed configuration on the recorder is by means of the  button on the toolbar. Each configuration change, in any section, is stored in Konsola 2 memory only, until the  button on the toolbar is pressed. Alternatively, the  button can be pressed in order to discard changes.*

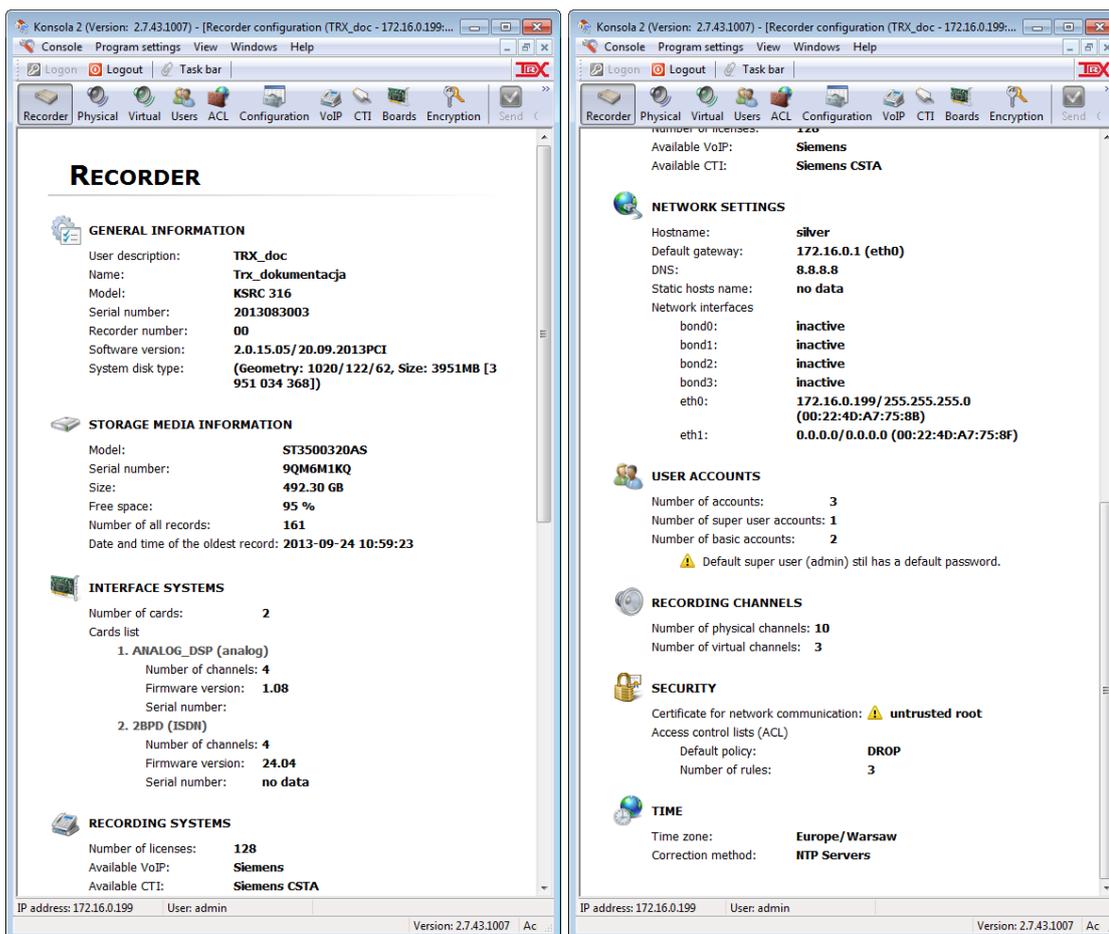
Non-privileged recorder's users have access only to sections: *Recorders* and *Configuration*.



4.8.1 Recorder

The *Recorder* panel appears by default when you start *Configuration* module. The window is purely for information purposes. Running in administrator mode provides complete information about all of the following parameters:

- recorder name,
- serial number,
- software version,
- type and size of hard disk installed in the recorder,
- total number of recordings stored on hard drive,
- date and time of last recording,
- description of the expansion boards installed in the device,
- supported recording systems,
- network settings,
- number of user accounts formed on the device,
- total number of physical and virtual channels,
- security rules for remote connection to the recorder,
- time zone and time synchronization source.



If *Konsola 2* has been launched in standard user mode the window of *Recorder* panel contains only basic information about the recorder module.

4.8.2 Physical channels

This section allows verifying and reconfiguring parameters of each physical channel existing in the recorder.

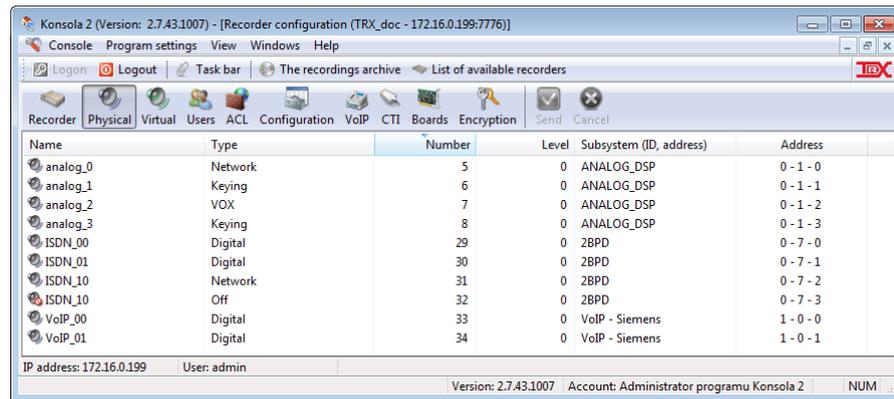
4.8.2.1 List of channels

Right after this section is selected, the window presents current parameters for all available physical channels. The list includes channels relating to the installed cards and VoIP channels declared previously in the *Konsola 2* program. **The total number of VoIP physical channels cannot exceed value specified in the license.**

The parameter list involves:

- user friendly channel name (up to 15 characters),
- channel type,
- the physical number of channel,
- security level assigned to a channel recordings,
- recording interface name or VoIP system, assigned to the channel.

The list of channels can be sorted by any column.



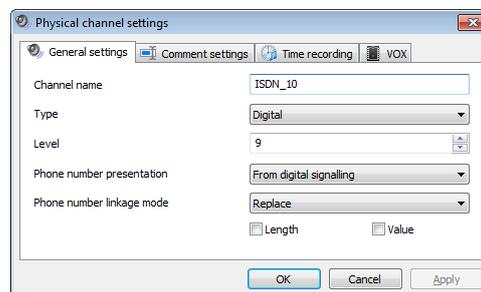
4.8.2.2 Setting up the channel

It is possible to change parameters of particular channel by means of the *Change settings* option available in the context menu for each channel. You can change parameters for multiple channels simultaneously. You must first select the channels (left mouse button and *CTRL* or *SHIFT* key), whose parameters are subject to change and then select *Change settings* option.

The *Physical channel settings* window consists of four tabs: *General settings*, *Comment settings*, *Recording time control* and *VOX*.

General Settings

Tab allows you to set the basic parameters of the channel:



Channel name – user friendly name shall be placed here, allowing for easy identification of channel location in the recorder. Length of the name is limited to 15 characters.

Type – this parameter is related to the way, how recording is created (what events cause the recording process to begin and end). There are several options available here:

- **Digital** - the beginning and the end of the recording process is determined by means of the digital signaling in lines.

Usage: recording from ISDN PRA/BRA interfaces and VoIP systems.

- **Keying** - both start and stop of the recording process is controlled by the signal generated by interface card (the so called *keying signal*). Interface cards generate this signal according to either digital signaling (in case of the system cards) or presence of external keying devices (in case of the analog cards).

Usage: system interface cards, analog interface cards with external keying sources.

- **Network** - the standalone network application called *Pilot* is used to control via IP network the recording process on the selected channel.

Usage: recording on demand triggered by the LAN,

- **VOX** - the control of the recording process is based on the incoming audio signal parameters, which are continuously being monitored.

Usage: audio recording without keying signal.

- **Off** – the channel configured in this way does not record any calls. It is excluded from recorder’s operation.

Level – this parameter is related to the security level mechanism. Values range from 0 up to 255. All recorded calls on particular channel will inherit channel’s security level.

Phone number presentation – this parameter defines the source information about the phone numbers. Received phone numbers are linked to the recording.

Phone number linkage mode – this parameter states how recorder shall handle multiple phone number signalizations. This option may become handy especially in case of system cards, where cards send to the recorder a few possible phone numbers. Available options are:

- **Insert:** the first number will be linked to the recording,

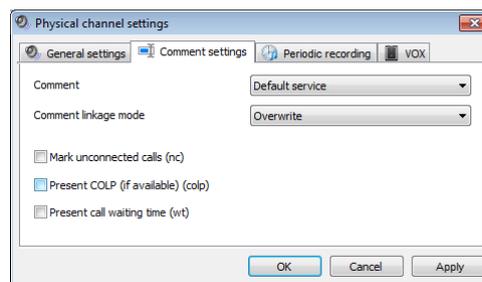
- **Replace:** number presentation meeting the conditions determined by the active (selected) *Length* and/or *Value* parameters will be linked to the recording.

- **Length** - new information is longer than previous.

- **Value** - new information contains a whole previous presentation, i.e. for the following sequence of numbers: **0**, **01**, **02**, **014**, **015**, **0148**, **01477** - number **0148** will be linked to the recording.

Comment settings

Tab allows you to control the comments that can be assigned to the recorded calls:



Comment – it defines the source for recording’s comment. It can be sent by the interface card or it can be the name of recording’s origin channel or it can be information about the rule that activated the recording or this can be the name of user logged into the recorder when VPC mechanism is used.

The recommended setting: *Default service*.

Comment linkage mode – this option defines how the recorder handles multiple comments which may be sent from the system boards. It is possible to either append or overwrite or set the first comment only.

In case where the type of channel is set to the *Digital*, it is possible to store some additional info in recording's comment:

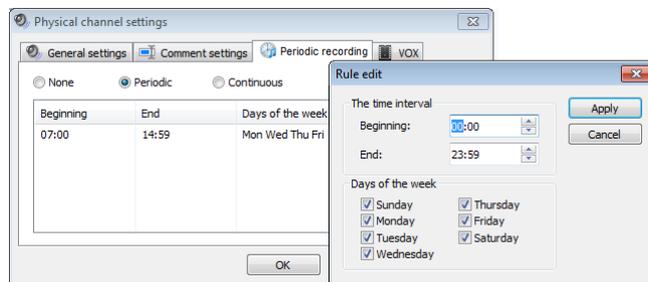
- mark for unconnected calls (**nc**), along with time of triggering *Called* number,
- COLP number (reached number identification),
- call waiting time (**wt**).

Notice: Information **nc** and **wt** are included to the Comment field only for ISDN and VoIP Alcatel stations.

Notice: Activation of **nc** option allows for registration (record to the list of calls) connections which have not been answered.

Periodic recording

Tab allows you to set (using the context menu) additional conditions control call recording on selected channels:



None – recording on the channel is only based on the settings in tab *General Settings*.

Periodic – call recording on selected channel is based on the general criteria, but it is saved to the hard disk recorder only at intervals defined by the user.

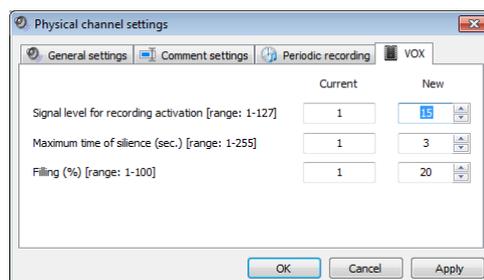
Continuous – switching unconditional recording on selected channel. Few hours of recordings are divided by the recorder to files with duration of 1 hour 0 min. 0 sec. or 2 hours 32 min. 16 seconds depending on the recorder firm-ware version.

These settings are superior to the recording criterion defined in the General Settings tab (in the Type field).

VOX

After VOX channel type has been chosen, the VOX bookmark becomes active. It allows the user to set additional parameters for the audio signal that activates a recording on VOX channel.

For other types of channels (*Digital*, *Keying*, *Network*) settings on this tab are unavailable.



The recording process will begin **only, if** both the level of audio signal exceeds value stated in *Signal level for recording activation* option and within the last second the percentage of audio samples exceeding threshold level is greater than the value stated in the *Filling* option. The *Filling* option immunizes VOX mechanism against spikes and other random peaky disturbances in the monitored audio, which could cause undesired recording to begin.

The recording process will stop, if the signal level is below the threshold level for the time-lapse defined with the *Maximum time of silence* option.

The standard parameters for the VOX mechanism are:

- the signal threshold level: **30** units
- the silence timeout: **3** seconds
- the filling: **40** %

The threshold level units are the same as units presented on the graph in the *Monitoring* module. The correct procedure of setting the VOX threshold value shall include determination of background noise level, and setting threshold value a bit higher (5 to 10 units).

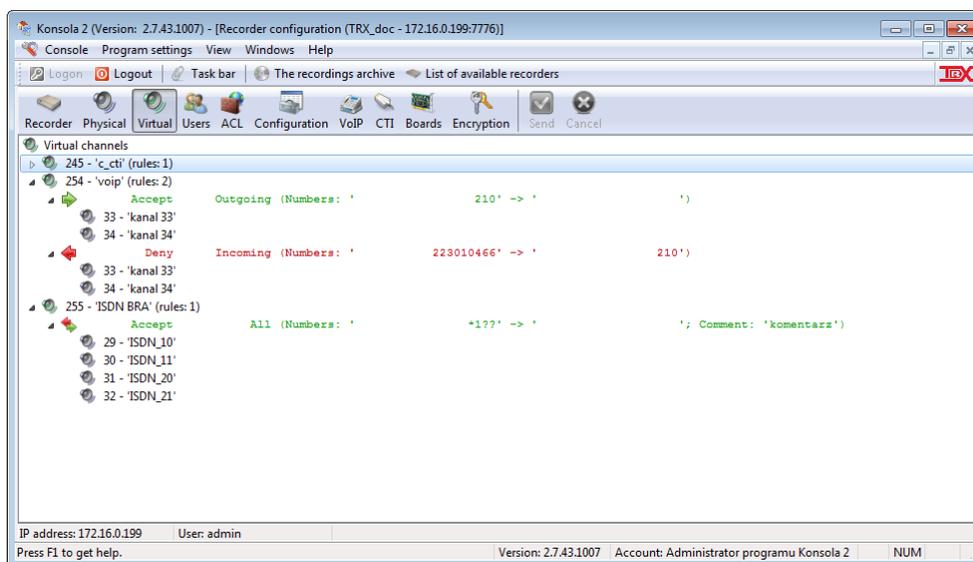
The default parameter values are optimized for use with analog telephone line. For other sources reduction the *Signal level for recording activation* parameter can be advantageous.

4.8.3 Virtual channels

Virtual panel allows you to manage virtual channels on TRX recorder. Virtual channels have been created to gain a better access control to the recorded calls. It allows the user to control access to the recordings on different levels (channels, incoming/outgoing calls phone numbers, and so on).

Virtual channels are based on existing physical channels and the defined rules.

Notice: For the group of physical channels, if Digital type was declared, must be created at least one virtual channel. Fulfillment of these conditions is essential to the recorder can record any calls at the interfaces with channels set as Digital type.



4.8.3.1 Virtual channel mechanism

Virtual channel is described by a set of rules that control the recording calls on a particular channel. Each recording rule for the specific virtual channel consists of a few parameters. The first parameter distinguishes, if the rule is permission or a prohibition.

A call will be recorded if there exists at least one permission rule, and at the same time there is no prohibition rule for that call.

Other recording parameters defining the rules are:

- number (or pattern for numbers) **Who** (the party initiating the call),
- number (or pattern for numbers) **Whom to** (party receiving a call),
- direction of the connection (*All, Incoming, Outgoing*),
- comment (description field, may contain information describing the rule).

The mechanism of the virtual channel configuration allows you to start recording in four basic situations:

- any local phone initiates outgoing call with precise city phone number (key parameters: *Direction, Whom to*),
- precise local phone initiates outgoing call with any city phone number (key parameters: *Direction, Who*),
- any city call initiates incoming call with precise local phone number (key parameters: *Direction, Whom to*),
- precise city call initiates incoming call with any local phone number (key parameters: *Direction, Who*).

The mechanism of the virtual channel configuration allows you to start recording by the criterion of a superposition of the above (e.g. precise city call initiates call with precise local phone).

Sections *The virtual channel management* and Example applications of the virtual channels mechanism contain a few typical examples of the virtual channels' configuration. It is recommended to get familiar with them.

4.8.3.2 The virtual channel management

All options regarding the virtual channel management are available from the context menu of the *Virtual channels* section, where current list of virtual channels is presented. The mechanism of the virtual channel configuration is simple and flexible. It is advised to give some thoughts on the configuration which is about to be either created or altered.

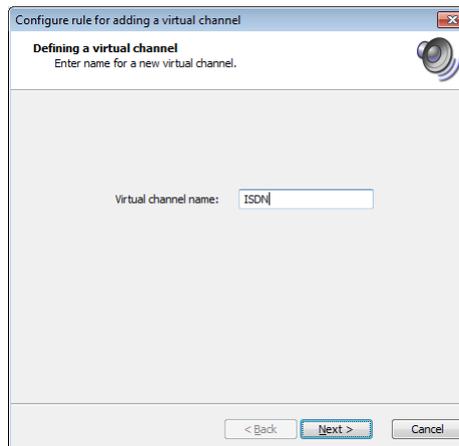
Changes in the channel configuration are sent to the recorder only when you press the  button in the toolbar panel.

There are two ways of creating the new virtual channel (manually or using the wizard). In case of single rule for the channel, it will be more efficient to use virtual channel wizard. Otherwise, it is possible to create virtual channel manually, or use wizard, and after the channel is created, user may add more rules into it.

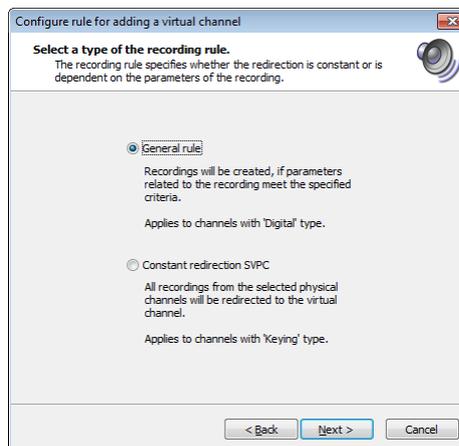
Virtual channel wizard

Virtual channel creator can be accessed by selection of appropriate option from the context menu. In three basic steps, it allows to define the virtual channel with a single recording rule.

At the first step, user shall give new virtual channel a friendly name.



The second step involves setting the type of the recording rule. Depending on this type, the creator will present different options in next steps.



Choosing the *Constant redirection SVPC* option will cause all calls that take place on physical channels related to this virtual channel to be directly recorded on this channel. Since no additional permissions or prohibitions are needed in this case, creator will skip the step, where these are created, and will lead user directly to the window, where association between the virtual channel and selected physical channels is being created.

This type of the virtual channel is suitable for physical channels of *Keying* types only.

Selection of the *General rule* option allows creating virtual channel, where some additional requirements must be met in order to record a call in this channel.

***General rule* is allowed only for Digital type channels (ISDN and VoIP).**

The set of accept and deny rules for call recording is created in subsequent stage of the wizard.

Within the *Who* and *Whom to* fields, it is possible defining calling and called party numbers for calls, which are supposed to be recorded. The empty number field stands for any phone number.

It is possible to create there phone number patterns by means of the following wildcards:

- * - stands for any number of digits
- ? - stands for any single digit in the pattern

*Notice: The * symbol can be used only at the beginning of the number pattern.*

An example pattern	Suitable numbers
0800?22222	0800022222, 0800122222, ..., 0800922222. (10 numbers in total)
506?5?617	506050617, 506051617, ..., 506959617. (100 numbers in total)
673????3	6730003, 6730013, ..., 6739993. (1000 numbers in total)
*8713333	8713333, 228713333, 1033228713333...
(empty)	All numbers are accepted

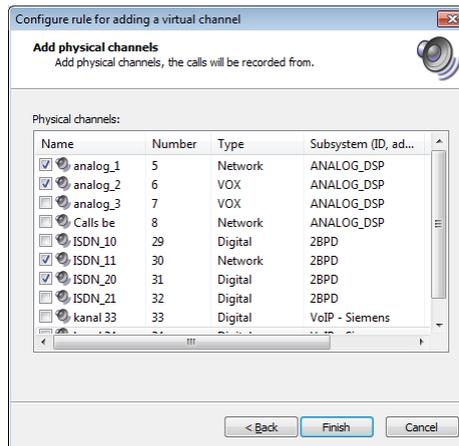
The **Direction** parameter allows specifying, if either incoming or outgoing or both kinds of calls shall be considered as valid.

The **Classification method** field lets you to decide, if a call meeting all conditions mentioned above either shall be recorded or must not be recorded. User states here, if a rule is a permission or prohibition.

Notice: The deny rules have higher priority over the accept rules. This means that, if call meets any deny rule it will not be recorded, even if it meets a few accept rules.

The last creator's step is the defining which calls (from which physical channels) shall be monitored and have virtual channel rules checked upon them. Selection the physical channel is being done by means of clicking on checkbox next to its name on the list of channels. You can also use the context menu: *Select all* or *Clear all*.

After the *Finish* button is pressed, newly created channel will appear in the *Virtual* panel.

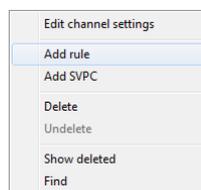


It is possible to review channel's parameters, by means of clicking on the ► symbol placed next to the channel name.

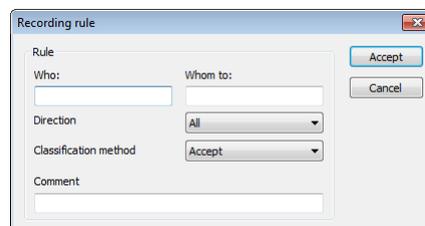
Manually adding and editing parameters of virtual channel

The manual creation of virtual channel starts after the *Add virtual channel* option is selected from the context menu for the *Virtual* panel. At the first step it is necessary to enter the name for a new channel.

After the name is entered and accepted, a new channel appears on the virtual channel list in the *Virtual* panel. No rules are defined for this channel, so the next step of manual adding of virtual channel shall involve defining a set of rules for the channel. This can be done by means of the *Add rule* option from the context menu for the channel.



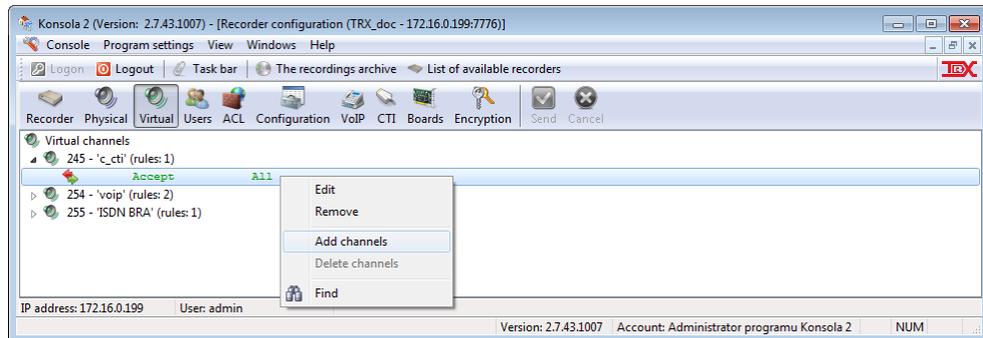
A new window described in the *Virtual channel creator* section appears. It allow to define the rule for the channel
In the same way you can add more recording rules to the existing virtual channels.



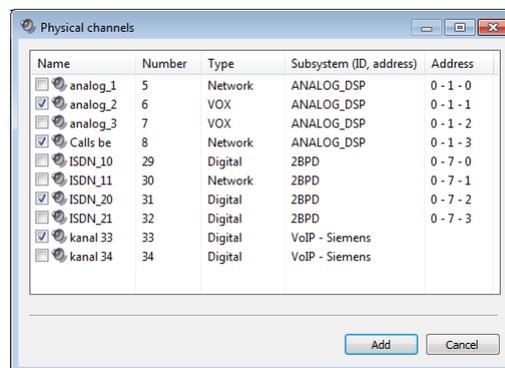
Single virtual channel may contain a few rules. Please keep in mind, that the call will be recorded on the virtual channel, if it meets at least one of permission rules and, at the same time, it does not meet any prohibition rules.

Each rule for the virtual channel must be related to a set of physical channels. If there is no relation defined, the rule is not active. This relation states which calls (from which physical channels) shall be monitored and have rule checked upon them.

Selection of physical channels is possible by means of the *Add channels* option from the context menu for a particular rule.



New window, similar to the one described in the *Virtual channel wizard* section will appear, allowing to select a set of physical channels which will be related to the selected rule for the virtual channel.



Physical channel selection is being done by means of clicking on checkbox next to its name on the list of channels.

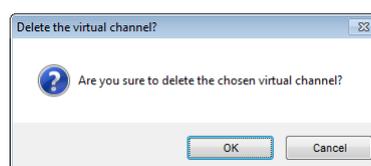
The creation of the virtual channel is completed, if there are rules defined for the channel, and if these rules are related to physical channels.

It is possible to change virtual channel's parameters by means of options available from context menus for both rules and related physical channels that are presented on the virtual channel list in *Virtual* panel.

The user then has to do with editing windows as described previously.

Removal of the virtual channel

Selected virtual channel can be removed from the recorder by means of the *Delete* option available in the context menu for the channel. The program requires the confirmation removal of the channel.



Notice: *Virtual channel removal will cause all recordings on this channel to become inaccessible (these however are not deleted).*

Deleted virtual channels

By default, virtual channels that have been removed are not visible on the virtual channels list. This can be changed, allowing user to restore deleted channels.

In order to show deleted channels on the list, make sure that the *Show deleted* option from the context menu for virtual channels list is enabled.

Channels that have been deleted are represented by the modified icon (instead of) and the “~” symbol before the name. It is possible to restore deleted channel by means of the *Undelete* option available from the context menu for deleted channel.

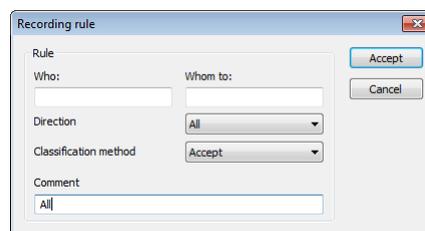
The restoration of virtual channel will cause all recordings created on the particular channel to become accessible.

4.8.3.3 Example applications of the virtual channels mechanism

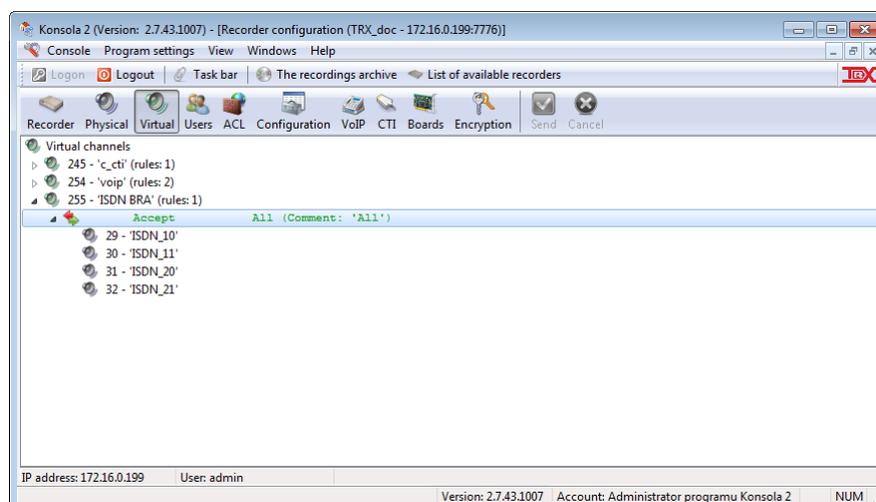
This section presents a few examples of configuration of virtual channels for the most common cases. Example phone numbers 228713333, 228713334 represent local phones, and randomly selected 608xxxxxx numbers represent external (*city*) phones.

Recording all calls

In order to record all (incoming and outgoing) calls from a set of physical channels of *Digital* type, only one permission rule related to all *Digital* type physical channels is required.



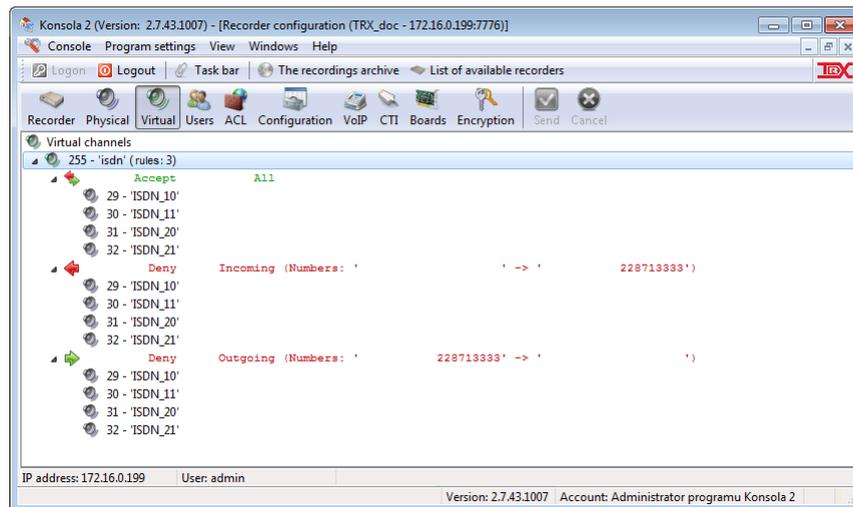
In the dialog box to configure this rule fields *Who* and *Whom* are empty, and the *Direction* and *Classification method* parameters have default values: *All* and *Accept*.



Recording all calls, except for one local number

This configuration is useful in cases, where there is a single phone number of which calls must not be recorded (e.g. Boss office). All other calls shall be recorded. The configuration of virtual channel in this case will consist of:

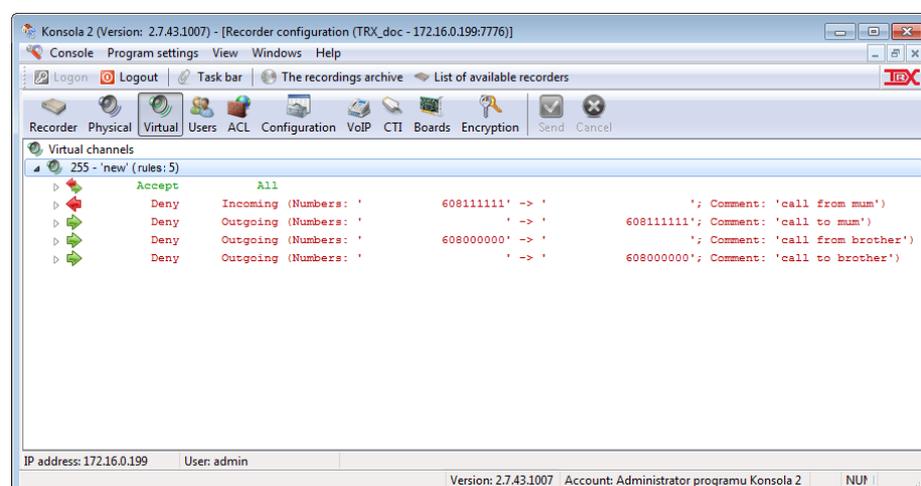
- one permission rule for recording of all calls,
- two prohibition rules per each phone number, which shall be excluded from recording: one rule for incoming calls to specified number and the second one for outgoing calls from the specified number. Both rules shall be related to the same set of physical channels which permission rule is related to.



You should note that two independent deny rules are required for each phone number excluded from the recording. In case only one rule is set, where the same number (228713333) is placed both in *Whom* and *Whom to* fields, it is applied only in case of calls from specified number to specified number (caller calls himself), which rather does not make sense at all. Additionally it is worthwhile making sure that the deny rules concern the same physical channels as the allow rules.

Recording all calls, except a few external numbers

In this case, it is necessary to record all calls, except for one particular type of calls related to a few particular external phone number (for example the home number of an employee).



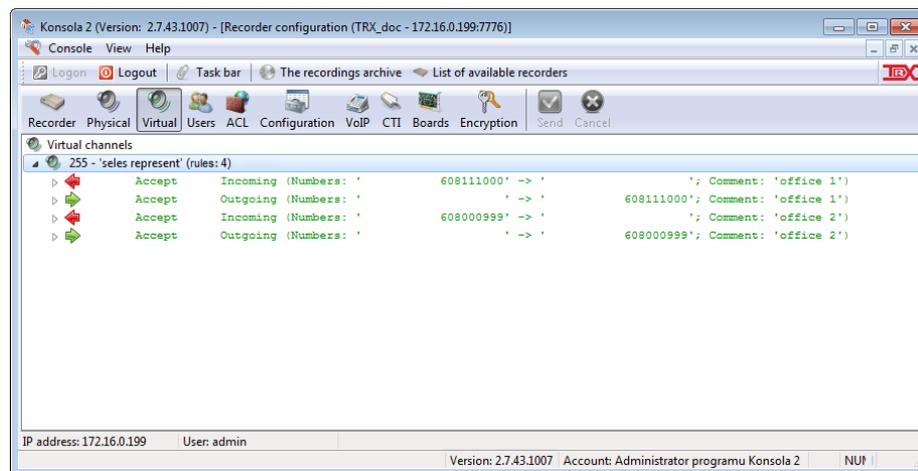
The example configuration presented on the picture above, will cause all calls to be recorded, except the ones related to mum and brother home numbers. It is important to configure a rule that allows recording all calls.

For increasing the legibility lists of channels have been rolled up, be sure to fix the same range of channels for all rules.

Recording calls related to particular city phone numbers

This type of configuration may become handy, when user wants to record all calls related to predefined list of city phone numbers (for example: sales representatives, employees' mobile phones and so on) on one channel.

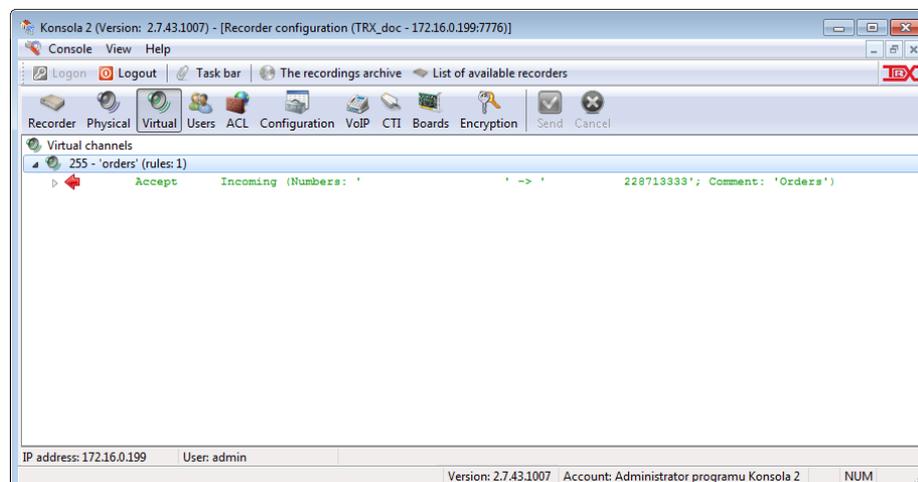
In this case, two permission rules are required for each number, one for incoming and the second for outgoing calls.



In example above, the virtual channel *sales representatives*, will be recorded only calls to and from the number 608111000 and 608000999.

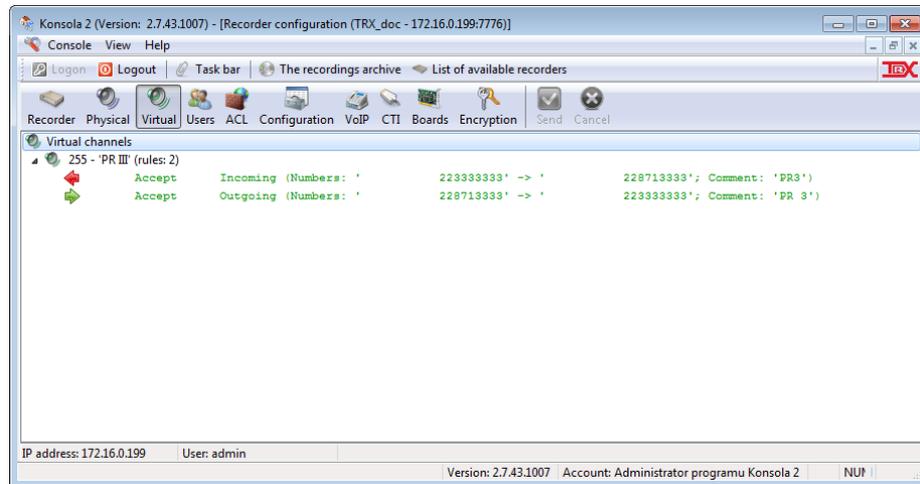
Recording calls incoming into particular local phone number

This example configuration may become useful in situation where there is a need to record incoming calls on specific lines (for example: when taking orders by phone). Such a situation may occur for example in a company where one number is used mainly for receiving orders, but sometimes are made of the private calls that should not be recorded.



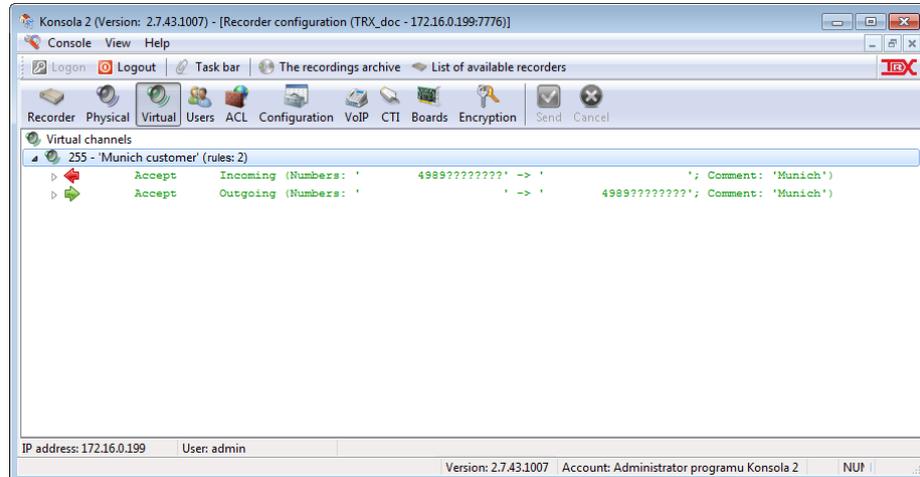
Recording calls between two known numbers

If calls between two particular numbers (local and city phone) shall be recorded, two rules must be set, one for each call direction.



Recording calls with common prefix (specific country, state, region)

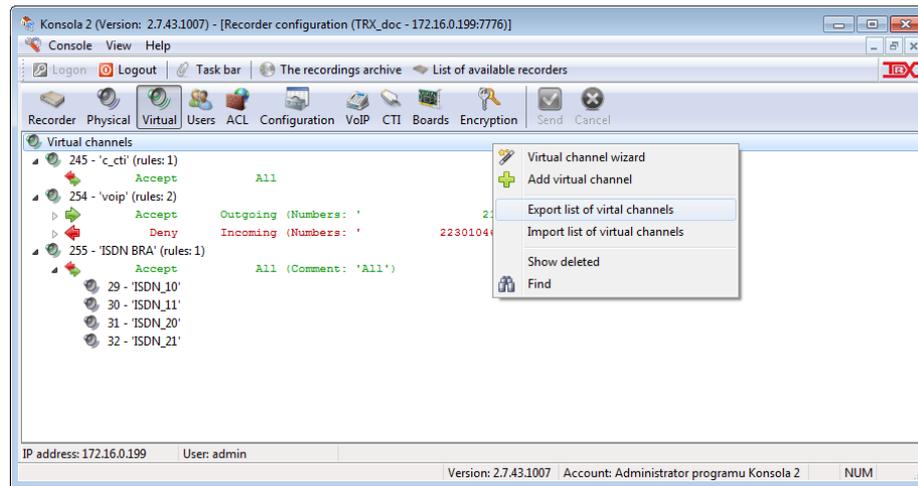
Since it is possible to use wildcards in virtual channel's rules, one rule may match different phone numbers. This allows creating configuration, where calls from specific country or state will be recorded. In example below, virtual channel is created and all phone calls from and to Munich in Germany are recorded on it.



Note: If wildcards are used, it is necessary to check out the way of how numbers are presented on the phone (if there is '0' digit, or '+' sign at the beginning, if country prefix is presented (for local calls), and so on).

4.8.3.4 Export of virtual channels to a csv file

Virtual channel settings and related rules can be saved to an external file. This feature, combined with the import channel configuration allows faithful reproduction of previously established rules from a copy stored in a csv file.



To save a set of rules to the file, select *Export list of virtual channels* option and enter the path and file name.

4.8.3.5 Import virtual channels of a csv file

Virtual channel settings are stored in csv files with character ';' as the field separator. The format (fully human readable) also allows you to view and edit the contents of the file.

Below is a sample line from the virtual channels configuration export file of and a description of the fields:

253;name_1;;223019999;;A;announcement;29-32

Position	Value	Description
1	253	Virtual channel number (digits)
2	name_1	Channel name
3	210	Who rules field
4	223019999	Who rules field
5	I	Direction: empty – all calls, I – incoming calls, O – outgoing calls
6	A	classification method: A – accept D – deny
7	announcement	Comment (up to 40 characters)
8	29-32	Physical channel numbers

Each virtual channel rule is written on a separate line. If to one channel is set up some rules, csv file will contain appropriate number of rows.

To load a set of rules from a file to the recorder, select *Import list of virtual channel* option from context menu and specify the path and file name.

4.8.4 The Users section

By default on the list of the recorder users is only one user with administrator privileges. Default login and password for this account is *admin* and *admin*.

The administrator account has a number of additional rights in relation to an ordinary user - except access to all configuration modules can create and change the permissions to other user accounts recorder.

Using an administrator account during the routine work with the recorder is not recommended. This unnecessarily increases the risk of unintended change critical settings, and thus - damage to the recorder configuration.

The User panel allows managing user accounts on the recorder. Individual operations that can be done using this module are:

- adding an account,
- edition of parameters,
- setting time range limitation for browsing the recordings,
- change the passwords,
- removing account,
- assigning rights to the monitoring, playback and archiving for individual recorder channels.

After the *User* section of *Configuration* module is selected, the list of users' accounts will be shown. This presents recorder users logins, their security level, optional name for the private virtual channel is assigned to the user and information whether the account has admin privileges.

4.8.4.1 User accounts management

User account management is done by means of the context menu of the *Users* panel (options: *Add*, *Edit*, *Change password* or *Delete*). The program does not allow deleting the default administrator account.

Adding an account

Selection of the *Add* option will cause a new window to appear, allowing defining basic parameters of new account on the recorder.

Login – the username for recorder's account shall be provided here.

Logon mode – this option allows defining the way user authenticates on the recorder. The *Login and password* option is set by default. If the VPC mech-

anism will be used by particular user, it is necessary to select *Windows* account option.

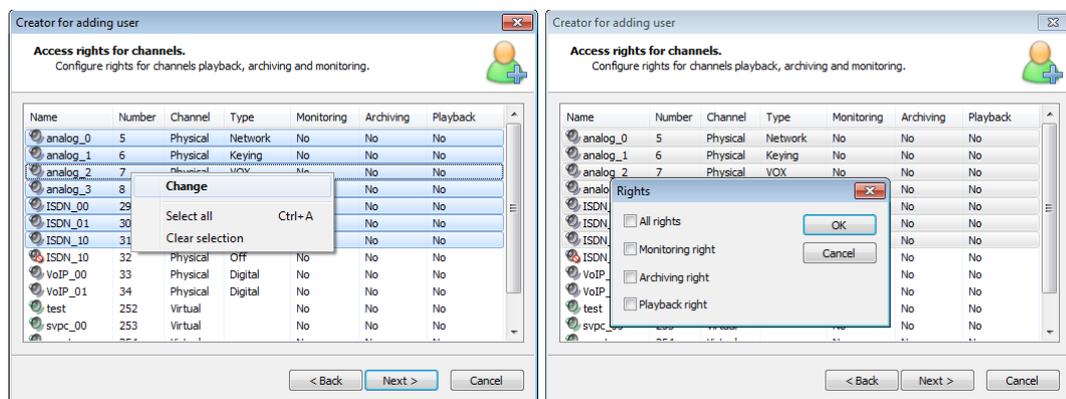
Password, Repeat password – in these two fields, the access password for account shall be provided. The password must be the same on both fields.

Level – this option allows you to define user’s position in hierarchy of the security level mechanism. This user will be able to access channels and recordings with the same or lower value security level.

Administrator rights – if selected, this option gives the user all privileges regarding the access to the recorder, which means that he can manage resources of the recorder.

In the second step of wizard you must configure the user access to functions of the recorder: monitoring, archiving and playback recordings from selected channels. These functions are set for both physical and virtual channels.

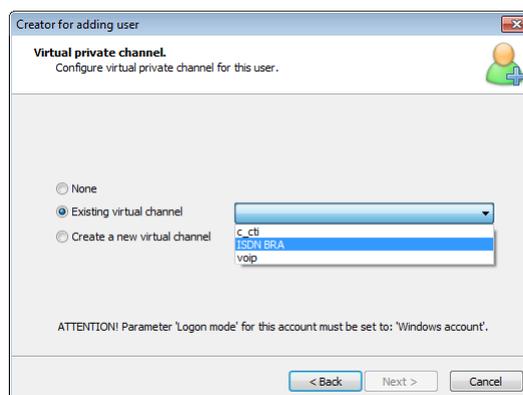
To change permissions for a single channel, double-click the mouse on the selected channel. To change the settings for group channels you must previously select the channels and choose option *Change* from the context menu.



The new *Right* window allows allocation of the previously selected channels. Each user of the recorder can have a set of access rights for particular recorder functionalities (monitoring, playback and building archives out of selected channels).

In the third step of the wizard, you can select one of the already existing, or create a new virtual private channel for a given user.

Notice: *Virtual channels can be assigned exclusively to users who have logon mode configured as “Windows account”.*



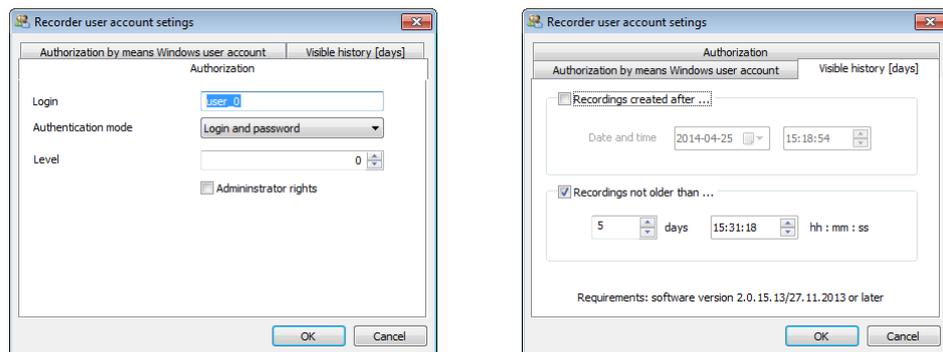
None – the user haven't a virtual private channel.

Existing virtual channel – this option allows the user to assign a virtual channel selected from a list of previously created channels.

Create a new virtual channel – this option allows creating a new virtual channel and automatically assigning it as a personal virtual channel for new user. This channel appears in the virtual panel, where it is possible to define rules and physical channels.

Edit an account, restricting visible history

After selecting the *Edit* option the window with all data fields corresponding to the current configuration of the account appears.



The *Authorization* tab allows you to make the following changes to the edited account:

- user name (login),
- authentication mode,
- permission level,
- the granting or withdrawal of administrator privileges

The *Visible history [days]* tab allows you to specify how old recordings can be viewed and/or archived by the user.

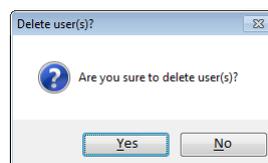
Recordings created after – this option refers to the recordings that have been recorded after specified date and time.

Recordings not older than – this option refers to the recordings that have been recorded in the past few days (hours, minutes, seconds).

Notice: The *Visible history [days]* function requires recorder firmware version 2.0.15.13/21.12.2013 or later and *Konsola 2* in version 2.7.50 or later.

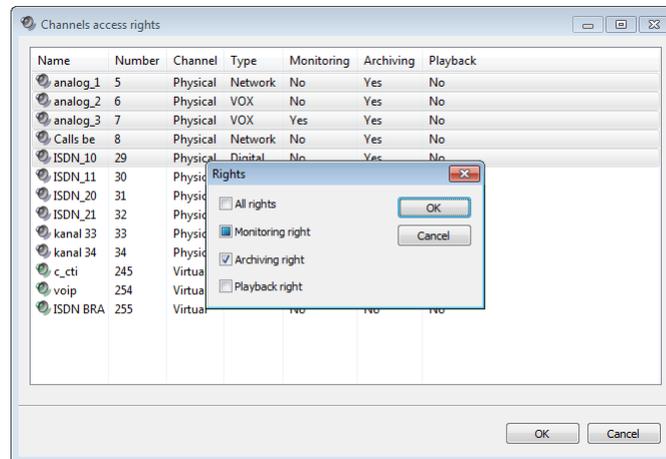
Removing an account

If you select *Delete* option, the *Konsola 2* program requires confirmation the intention of removing the account from the recorder.



4.8.4.2 Edition of permissions to the channels

Channels option from the context menu *Users* panel enables to change permissions to channels of the recorder. Modification of the settings is similar to the adding, described in section 4.8.4.1 the second step of user account wizard.



Depending on the current permissions for the selected channels, the checkbox in the *Rights* may have a different appearance.

If the box is checked , it means that the user has permissions to the described functions on all selected channels.

If the box is empty , it means that the user do not have permissions to the described function on any of the selected channels.

The last (third) possibility is the symbol. It means that the user has permissions to the function only on some of the selected channels.

You can change the permissions for multiple accounts simultaneously. After selection user accounts (using the *SHIFT* key and/or *CTRL*) select *Channels* option from the context menu.

Changes in the channel configuration are sent to the recorder after pressing the *Send* button on the toolbar.

4.8.4.3 The Virtual Private Channels (VPC) mechanism

The VPC Agent application is compatible with Windows: XP, Vista, 7 and 8 operating systems. It uses the Windows login mechanism by which the information is retrieved by the name of the logged in user account.

VPC mechanism description

In the standard operation mode of the recorder it is possible to identify numbers of phone calls involved in the call. VPC mechanism extends recorder’s functionality, allowing assigning a person to the recording, regardless of the phone involved in establishing the call. This mechanism shows its prevailed performance in the area of analysis of agent services in call-centers, where particular agents may do calls from any phone available in the call center.

In order to be able to use VPC mechanism, the following requirements must be fulfilled:

- VPC mechanism shall be enabled in the recorder. By default it is disabled. The mechanism activation may be done by TRX service only.
- a PC with Windows installed on it shall be placed at each agent station. All these PCs shall be able to communicate with the recorder. Agents shall login into the system before they can operate.
- An application called VPC Agent shall be installed on each PC mentioned above. This application allows identifying the line where a particular agent operates, and this information is sent to the recorder. Thanks to this information, the recorder is able to track agent position and is able to collect all agent calls in one channel, even if these calls are done by means of different phones.

The VPC configuration

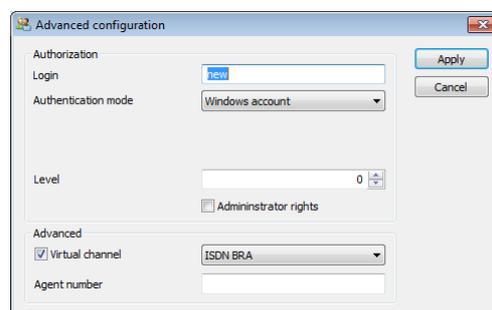
The recorder configuration

It is necessary to create as many virtual channels, as many agents, whose calls user wants to record, exist. Each such channel will contain recordings related to a single agent only. Adding of the virtual channel is presented in section 4.8.3.2. *The virtual channel management*. For VPC configuration, it is advised not to alter default channel rules (no number filtering, both incoming and outgoing calls shall be recorded).

Every agent shall have its own user account on the recorder. Detailed description of user account management on the recorder is presented in section 4.8.4. Each particular agent must be able to monitor physical channels, which will be used in call center. Recorder's login for each agent shall be the same as login which he uses to login into Windows on PC at the agent station. At the time when the agent's account is being created on the recorder, it is required both to change the *Authentication mode* option into *Windows account* and assign a private virtual channel to the user.

The accounts names on the recorder should be fully compatible with the PC users' accounts.

Individual agents must have privileges to monitor the physical and virtual SVPC channels, which will be held phone calls with agents.



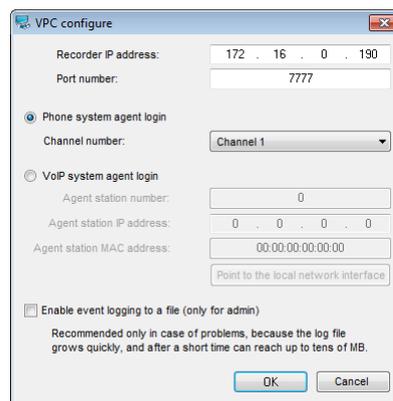
There is a limit for a combined number of physical channels and agents' private channels on a single recorder and it equals 255 channels in total (for example: if there are 30 physical channels on the recorder, the agent channel count cannot exceed 225).

Configuring the vpcAgent service

After the VPC agent application (*TRX_VPC.exe*) has been installed on each agent station, it is necessary to configure vpcAgent service. This can be done after the setup finishes its work.

In VPC agent configuration window should be given the IP address of the recorder. Subsequently, depending on the type of recorded agents (system phone lines or VoIP stations) should be defined respectively:

- the physical channel number on the recorder, or
 - station number, IP address and MAC address
- corresponding to the recorded calls from agents stations.



VPC service observes, what agent is currently logged into the Windows system, and this information is sent to the TRX recorder. The recorder associates specific agent login with a particular phone line or with IP address of VoIP station and records all agent calls on the personal virtual channel.

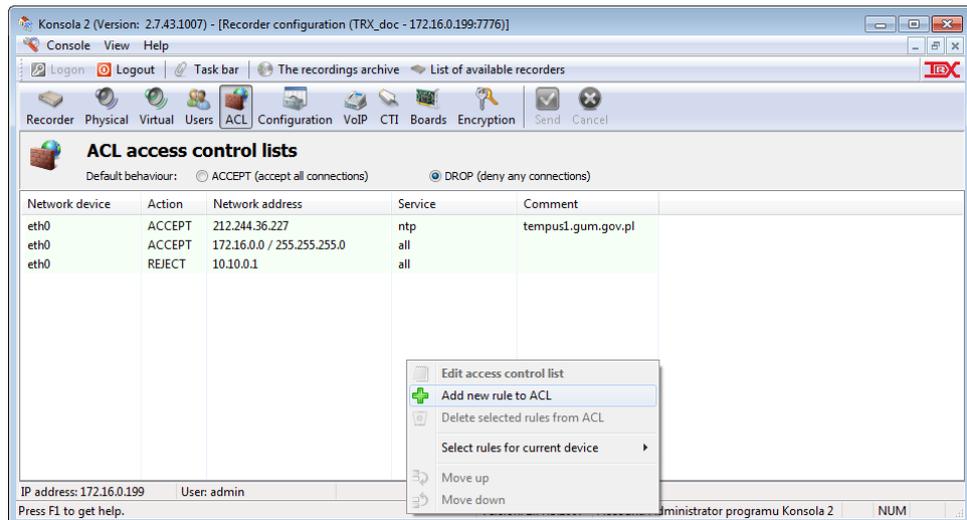
The connection status between agent PC station and TRX recorder is presented in system tray by means one of the following icons:

-  - VPC service cannot connect to the recorder (incorrect configuration of either VPC agent or agent’s account in the recorder).
-  - *VPC_Agent* can communicate with the recorder and agent is online.
-  - when the call is being recorded on VPC channel.

After you set up the VPC on all desks, logging channel mechanism is ready for action. The agent can log on to any position in Call Center. The VPC service that running on his PC workstation recognizes that the agents is logged into the system and sending this data to the recorder. With information about the physical channel (for analog or digital station) or IP/MAC address (for VoIP stations) and ability to identify agent by his login, the recorder is able recording the calls on private virtual channel, regardless of which phone is used by the agent.

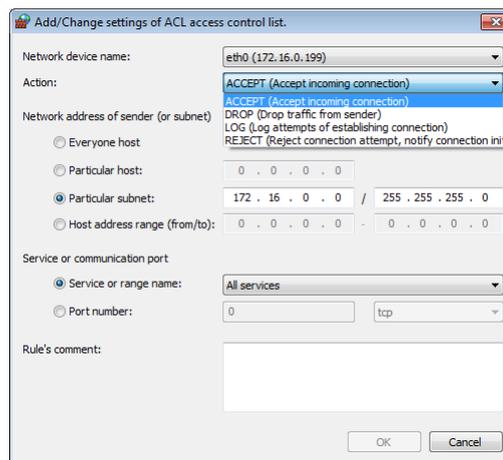
4.8.5 ACL

ACL (Access Control List) section enables the addition removing and the edition of rules for the recorder access control list. Setting the default security policy to DROP significantly improves resistance to any attempt to the recorder in computer network attacks. To allow access to the device you must add one or more trusted hosts or ranges of IP addresses.



It is possible to create ACL rules (accept or reject access) for:

- all network devices (*Everyone host*).
- single device specified by IP address (*Particular host*),
- devices with IP addresses from a specified subnet (*Particular subnet*),
- devices with IP addresses from a specified range (*Host address range*).



The access rules may apply to all or specified (e.g. TRX API) recorder services. In addition to the names of services, the rules can be built based on port numbers and protocol type (TCP or UDP).

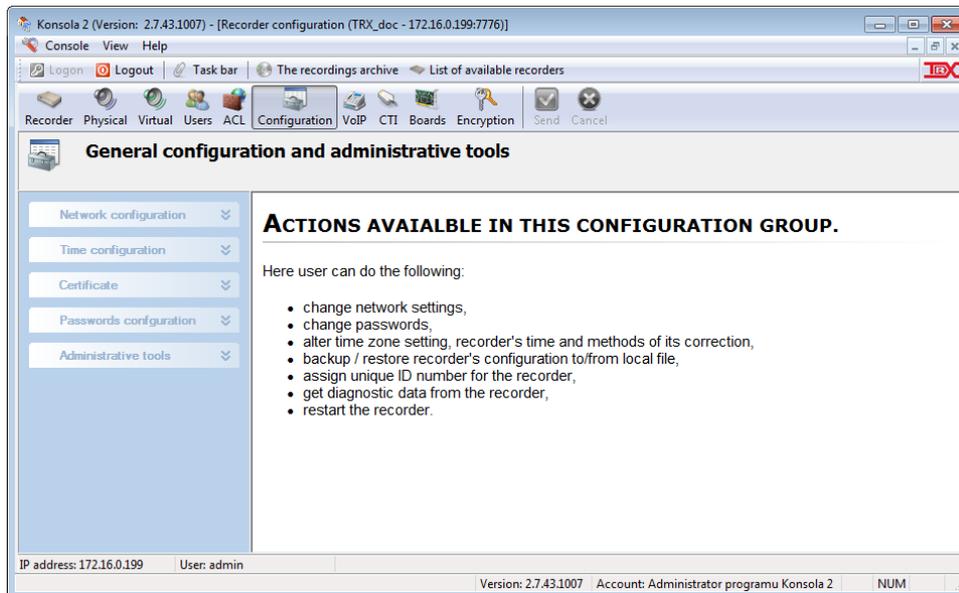
Konsola 2 program warns the user if the access list ACL rules, a complete cut-off communication with the recorder.

If despite the warnings configuration will be sent to the recorder, remote monitoring and management will be blocked. Restoring IP communications in this case is possible only after turning off the *Firewall* function from local keyboard on front panel of the recorder.

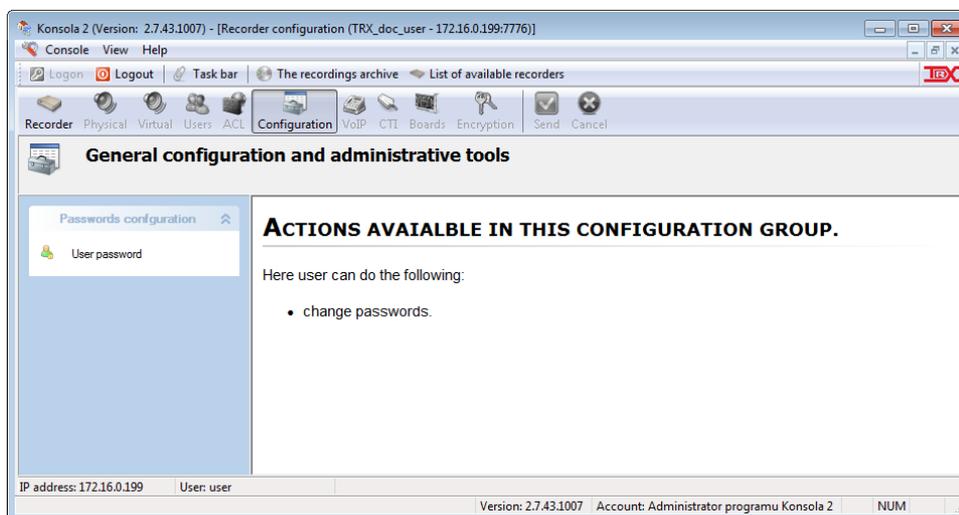
4.8.6 The Configuration section

Configuration panel provides users with administrator privileges a set of tools for configuration and diagnostics the recorder general, among others export and import the configuration data, download diagnostic data.

Access to the options in the panel is possible by double clicking the left mouse button on the appropriate link from the menu on the left side of the window.



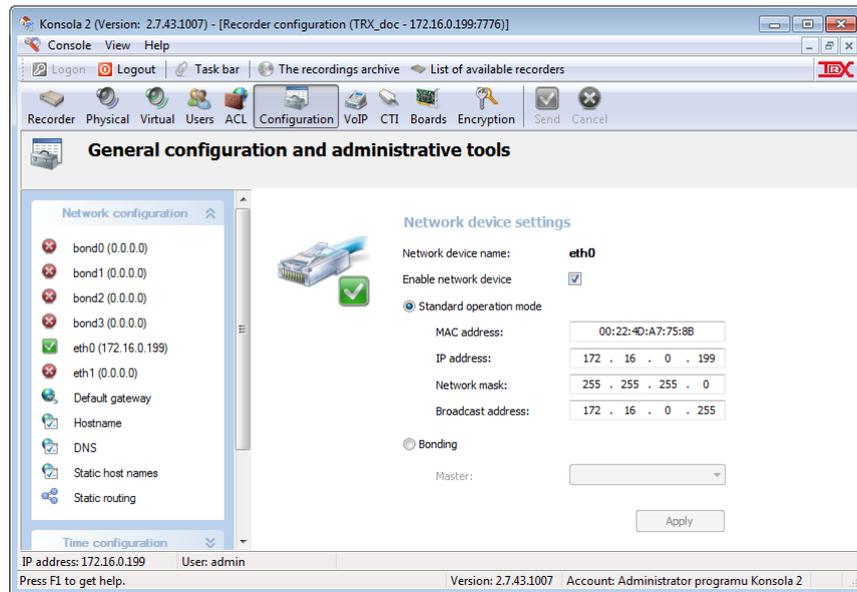
Non-privileged user will be able to change his access password only.



4.8.6.1 The network configuration

The network interface configuration

Each network interface available on the recorder can be configured independently. Logical (*bond0 .. bond3*) and physical (*eth0, eth1*) interfaces are distinguished in case, if recorder’s software has the bonding of network interfaces implemented.



The network configuration panel window allows you to:

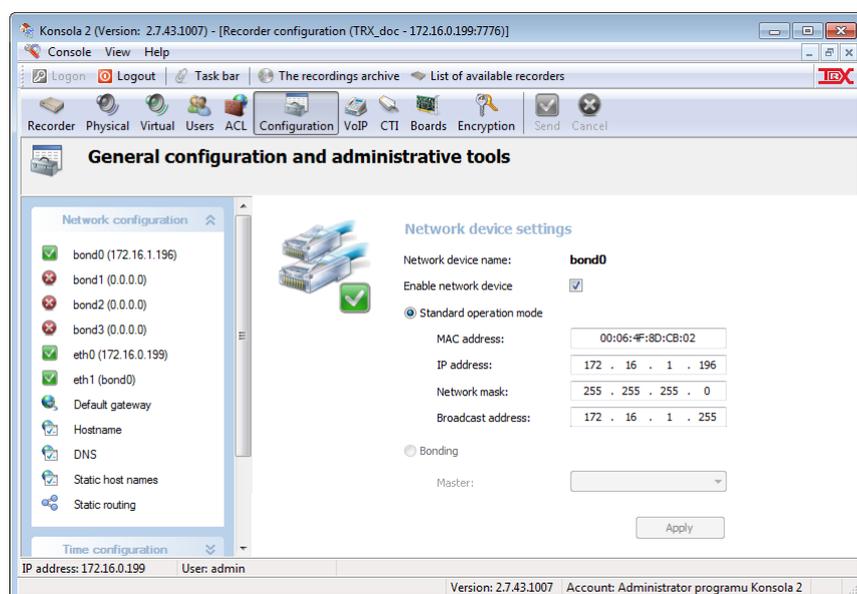
- verify the MAC address of network interfaces,
- setting the network parameters: IP address, network mask and broadcast address for each interface,
- setting the default gateway address and hostname of the recorder,
- setting the DNS servers and / or static host names.

The changes to each parts of the *Network configuration* module are stored in the application after approval of the *Apply* button.

The settings are stored in the recorder when you send them to the device using the *Send* button .

Port bonding

The *Bonding* function used in the *Konsola 2* allows you to combine several physical network interfaces into one virtual *bond(0 - 3)*.



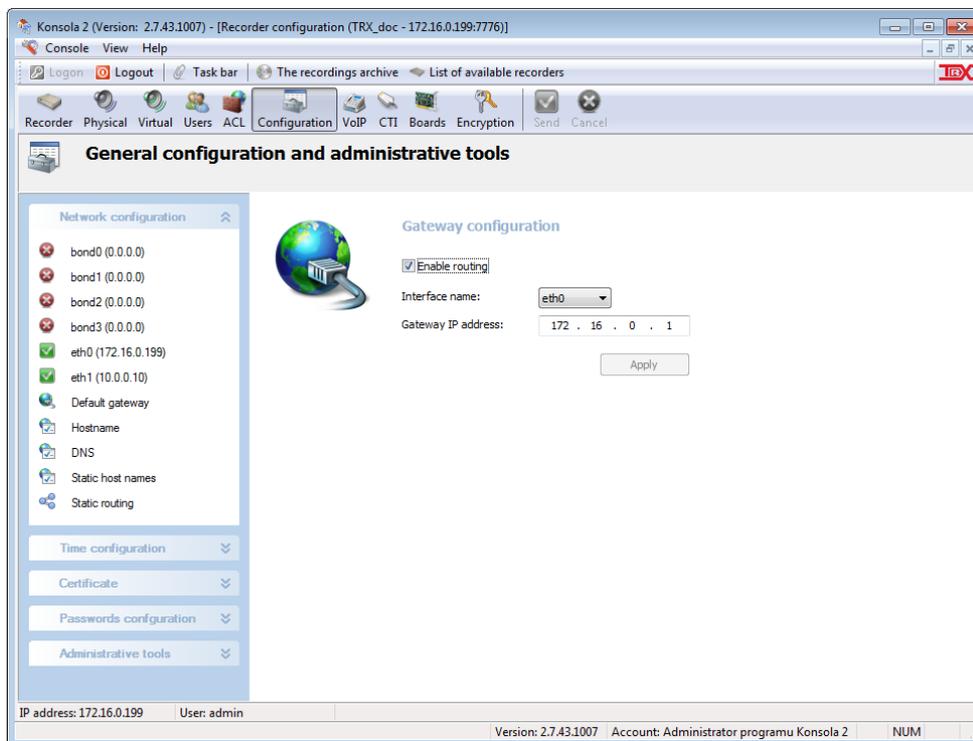
KSRC 332, KSRC 5128 and KSRC 2U recorders have built-in standard two Ethernet ports. In VoIP calls recording configuration the first interface is intended for communication with the computer running the *Konsola 2* application, and the second is used to connect recorder to the customer's network. If the network a structure requires connecting the recorder to two or more switches, the only solution is equipping TRX device with an additional multiport Network Adapter Card. All network interfaces of the recorder, which are connected to customer’s computer network, must be configured as a single multi-port logical interface, for example *bond0*.

Default gateway

The IP address of the gateway is required, if recorder is not connected to the same local network as the user workstation is. This parameter must also be set up if the recorder is supposed to be available to devices from outside the user network, for example, when recorder uses time synchronization service through NTP public servers, or it is necessary to provide remote access to the recorder via Internet network.

To configure the default IP gateway you should use the *Default gateway* reference placed in a group of *Network configuration*. Activating the IP gateway comes down to:

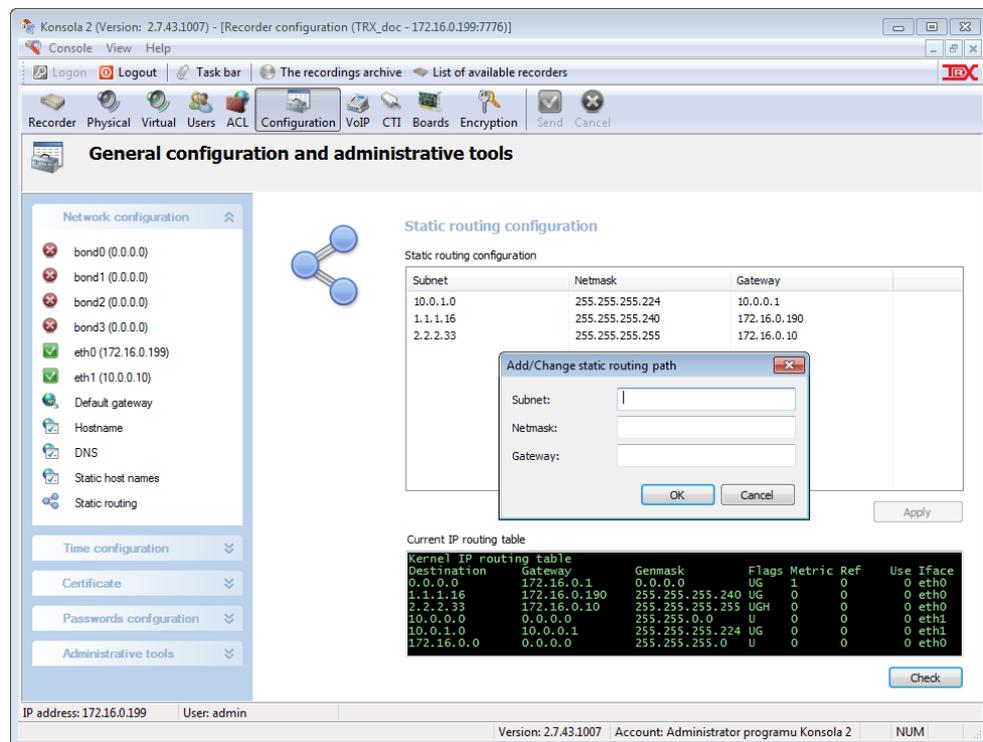
1. switching the *Enable routing* option,
2. choosing the default Ethernet interface,
3. entering the proper gateway IP address.



Static routing

The basic routing path for all network traffic incoming and outgoing from the recorder are created automatically when you configure eth0, eth1 network interfaces. The default route gateway is configured by means *Default gateway* link.

If you need more advanced routing table configuration, you should use the *Static routing* function.



The context menu for *Static routing configuration* windows allows you to easily add new routes, as well as to remove or modify existing static routes.

To create a new routing path you should give three parameters:

- desired subnet or single host IP address,
- netmask,
- gateway IP address in order to access the subnet or host.

The network interface that carries the traffic for specified path is being adjusted automatically.

After entering the data into the *Add/Change static routing path*, click *OK*, and then confirm with *Apply* button. The new settings will be sent to the recorder after pressing the *Send* button .

Notice: In order to verify the routing changes (after sending the configuration to the recorder), click on the *Check* button. If the routing data was entered correctly - a new line in the *Current IP routing table* window should appear for each entry.

The routing table contains both the paths created automatically during the network interfaces and default gateway configuration, as well as data corresponding to the routes that were made during the static routing configuration.

For the example shown in the figure above, the corresponding rows displays:

- row 3 - routing path created automatically during the default gateway configuration,
- rows 6 and 8 - data created automatically during eth0 and eth1 network interfaces configuration,

rows 4, 5 and 7 - routing paths entered manually during the static routing configuration.

The *Current IP routing table* window lets you see a 8 lines at the same time. If the routing table has more than 8 entries, it can be scrolled by using the \vee \wedge cursor buttons.

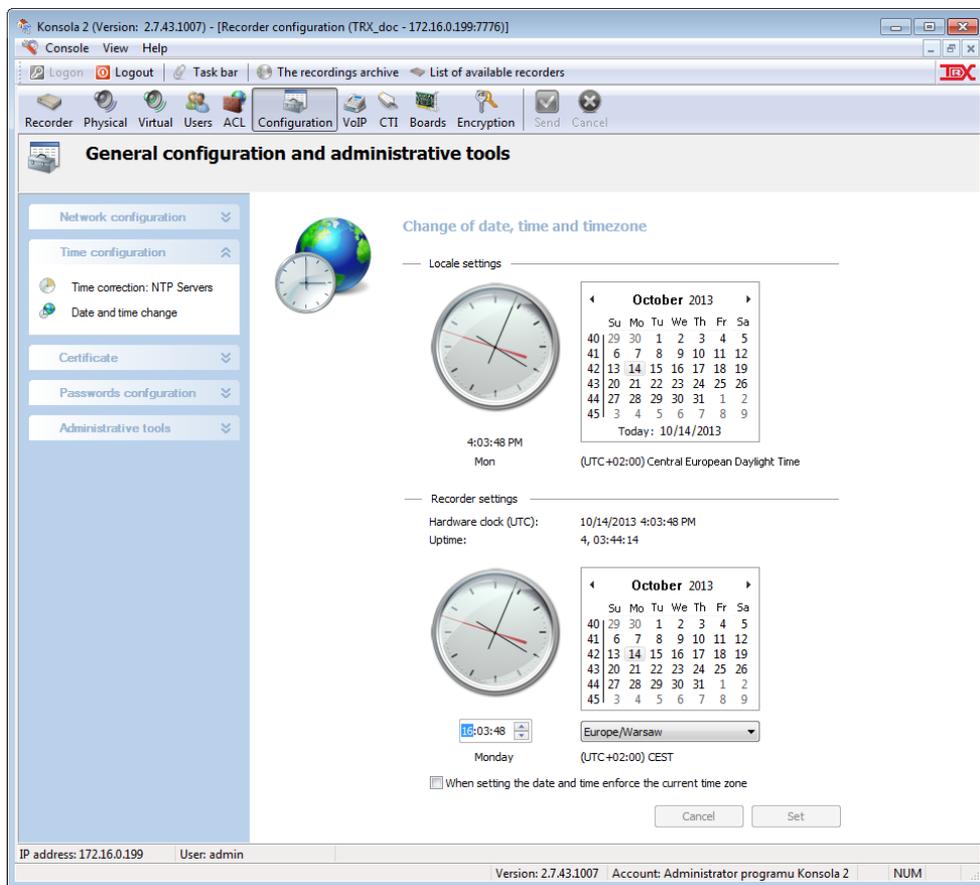
4.8.6.2 The time base configuration

All recordings on the recorder can be uniquely identified because of they are related to the specific channel they came from and because of they are all time stamped. That’s why, it is important to maintain the recorder’s time base in order to keep the system time as accurate as possible.

At the very beginning of recorder’s operation, it is recommended to verify (and to correct if needed) the system timer. Current time setting for the recorder is presented in the lower part of the *Change date, time and time zone* window and it can be changed if necessary. For this purpose, from the side menu *Time configuration* you must select *Date and time change*. After setting the appropriate values in the lower part of windows, changes should be saved through you press the *Set* button.

Notice: *The time will be sent to the recorder after pressing the Send button* .

The stability of internal recorder’s time base is suitable in most of cases (a few minutes error per one year time range). It is recommended to check time base settings periodically.



Konsola 2 (Version: 2.7.43.1007) - [Recorder configuration (TRX_doc - 172.16.0.199:7776)]

Console View Help

Logon Logout Task bar The recordings archive List of available recorders

Recorder Physical Virtual Users ACL Configuration VoIP CTI Boards Encryption Send Cancel

General configuration and administrative tools

Network configuration

Time configuration

Time correction: NTP Servers

Date and time change

Certificate

Passwords configuration

Administrative tools

Change of date, time and timezone

Locale settings

4:03:48 PM
Mon
(UTC+02:00) Central European Daylight Time

Recorder settings

Hardware clock (UTC): 10/14/2013 4:03:48 PM
Uptime: 4, 03:44:14

16:03:48
Monday
(UTC+02:00) CEST

When setting the date and time enforce the current time zone

Cancel Set

IP address: 172.16.0.199 User: admin

Version: 2.7.43.1007 Account: Administrator programu Konsola 2 NUM

The time correction: NTP Servers

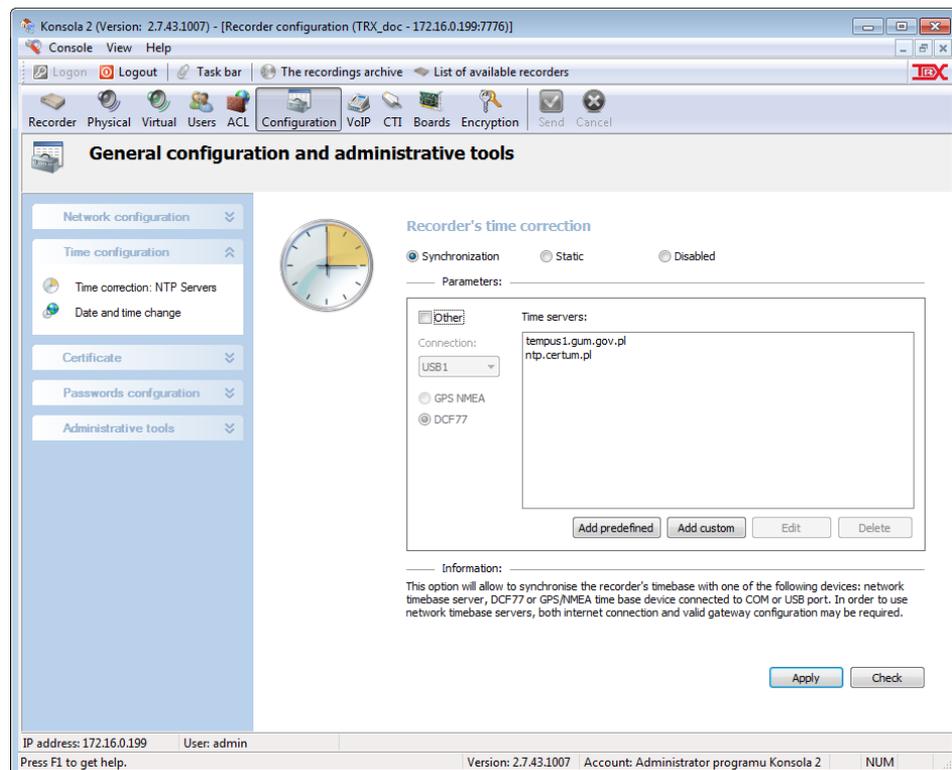
If the accuracy of internal recorder's time base is not satisfactory, it is possible to improve it in a few ways – using *Time correction: NTP Servers* options.

The Synchronization option

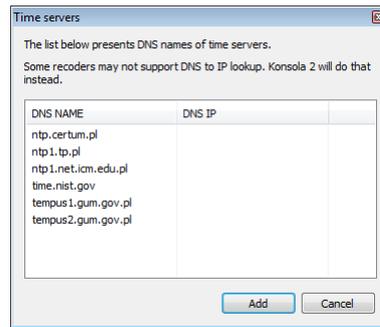
This option allows synchronizing recorder's clock with an external time base device. These may be network time servers, DCF77 time base devices or GPS receivers working according to NMEA standard. In order to use network time servers, both internet connection and valid gateway configuration may be required. You should also check the rules in the ACL table.

The program allows you to determine which source will be used as pattern of time for the recorder. In case of GPS or DCF77 devices, it is necessary to connect it to the recorder via USB or COM port, power it up, and select the appropriate option in the *Recorder's time correction* window. Then also cleaning the list of IP addresses of timeservers is being recommended.

An example of how the time for external DCF77 time source connected to the USB port 1 is shown in the figure below.



Usage of the network time base devices (ntp servers) requires providing their IP address or domain name. This can be done in two ways: either by selection from the list of predefined time servers (*Add predefined* button),

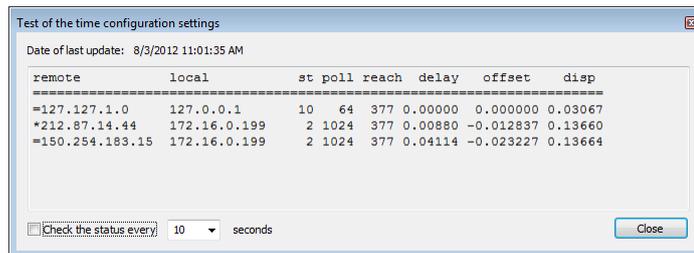


or by entering manually (*Add custom* button).

Each selected (or typed in) IP address is added to the list of time servers in the *Time configuration* window. It is recommended to create a list of at least two addresses of time servers. This will protect recorder against synchronization loss, if one of these servers will become unavailable.

The synchronization with network time servers is based on the *NTP* protocol and it may take up to several minutes to complete.

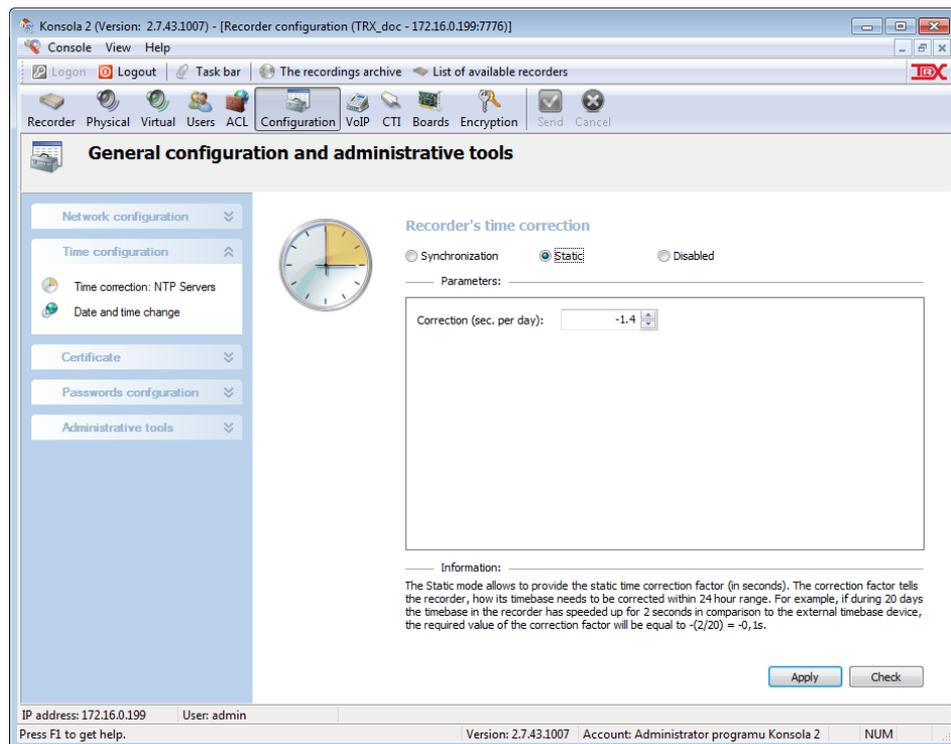
By means of the *Check* button, user is able to see what time server is the recorder synchronized with. In a new window the list of time servers is presented. The server that is being currently the time base for the recorder is marked with the asterisk mark at the IP address field. Other parameters presented in this window are meaningless and will not be described here.



The Static option

In situations, where access to the time servers is hindered or simply impossible, it is feasible to improve the long-term stability of the recorder time base device by means of mechanism of fluent time correction. Recorder’s timer will be fluently corrected by the correction factor which is scaled in seconds per day (24 hours).

Correction value can be manually set a longer period of time. For example, if during 7 days of recorder’s operation, the time base in the recorder has speeded up for 10 seconds in comparison to the external time base device. The required value of the correction factor will be equal to: $-(10/7) \approx -1.4$ second.



The Disabled option

With this option selected the recorder time base works independently. It is strongly advised to check out and to correct the timer settings periodically.

If any time correction mode is enabled, the recorder may be used as a network time server for other devices in the local network. This allows you to keep all local network devices time-synchronized. This ensures that the same time for all devices on the network.

Notice: Please, keep in mind that any changes in the recorder's configuration will be stored on the recorder after pressing the  button.

4.8.6.3 The password configuration

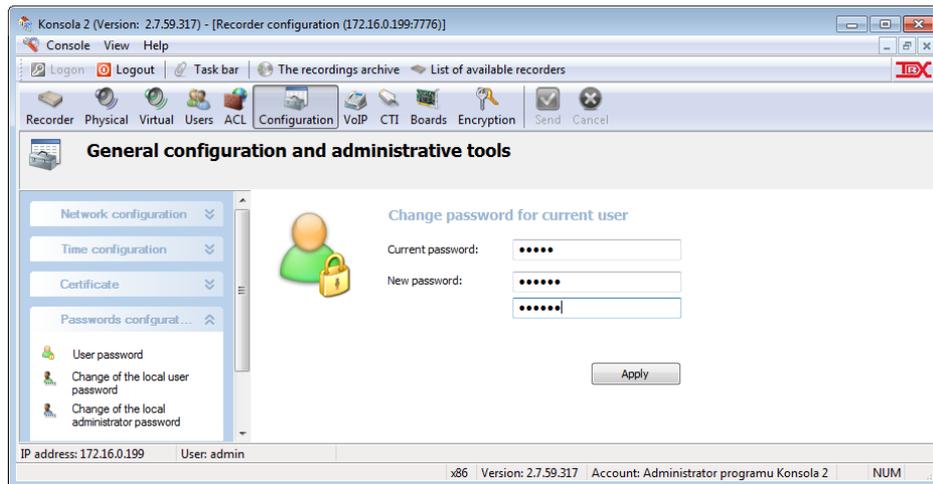
The password configuration involves possibility of changing the password for the access to the recorder for current recorder user. The privileged user of *Konsola 2* application is also able to set passwords for the local access to the recorder (via built-in menu on the recorder).

The current user password option

With this option, the current recorder access password for the current recorder user may be altered.

It is required to provide the old password correctly. Also, new access password shall be typed twice in order to complete the password changing procedure successfully.

This option is the only one available in the *Configuration* section for non-privileged recorder users.



Change of the local access user password

The functionality of this option is the same as of option described above, with one difference: it is related to the local access password for privileged recorder user. The knowledge of old user password is not required.

Change of the local access admin password

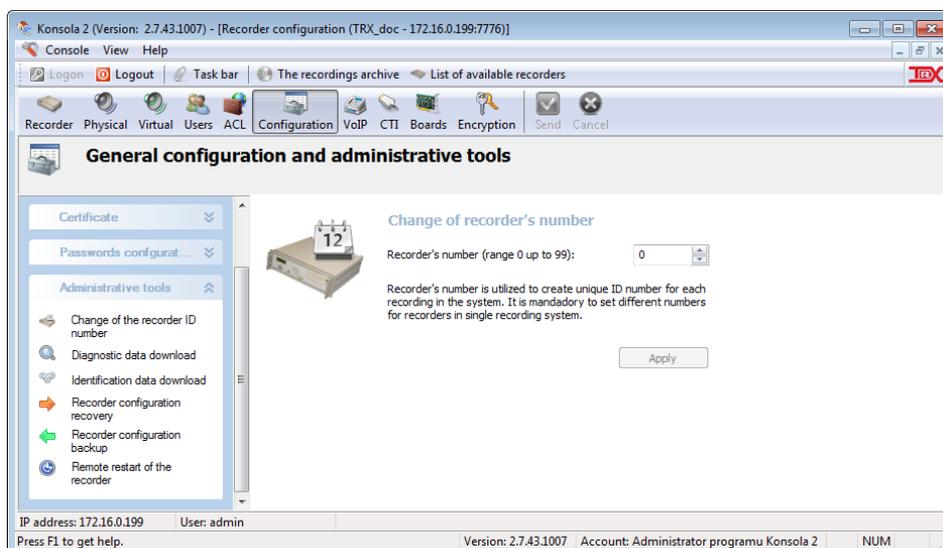
This option is similar to that described above. However it apply user with administrator privileges.

4.8.6.4 Administrative tools

Group contains a set of tools having a major impact on the work of the recorder. It is recommended to use special caution, especially when using the *Recorder configuration recovery* and *Remote restart of the recorder*.

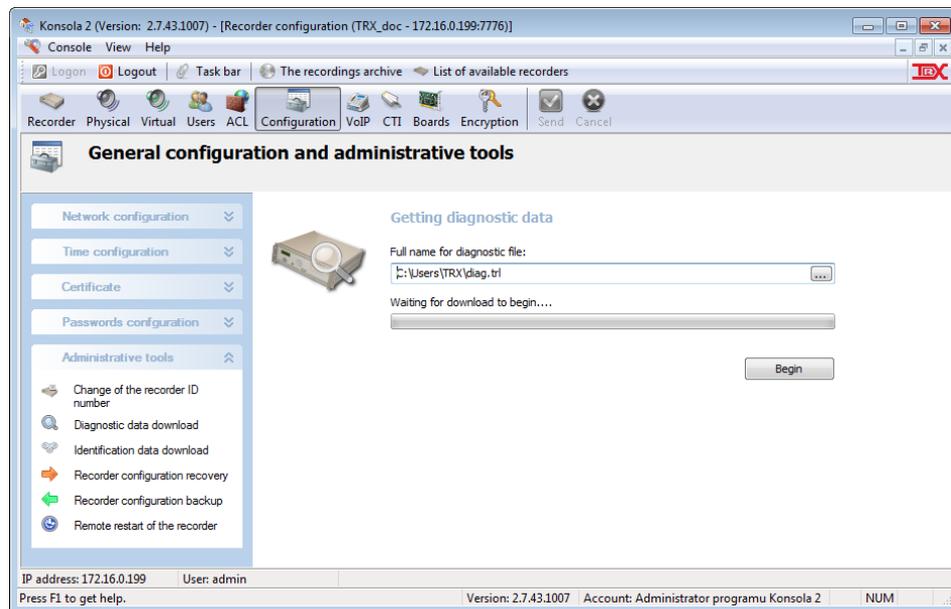
Change of the recorder ID number

The change of the recorder ID is required in case, if there are a few recorders in the system. Each recorder in the system shall be given a particular ID number. This allows building unique identifiers for all recordings in the system.



Diagnostic data download

This option allows you to download specific data from the recorder, which allows TRX servicemen to diagnose the reason of problems on the recorder.



It is strongly advised to download this data and email it to TRX service (serwis@trx.com.pl) when reporting problems with the recorder operation.

User shall at first state the folder, where he wants the diagnostic data to be stored, and then the *Download* button shall be pressed in order to get the data from the recorder. The download process may take some time, since the volume of diagnostic data on the recorder can be relatively large.

Identification data download

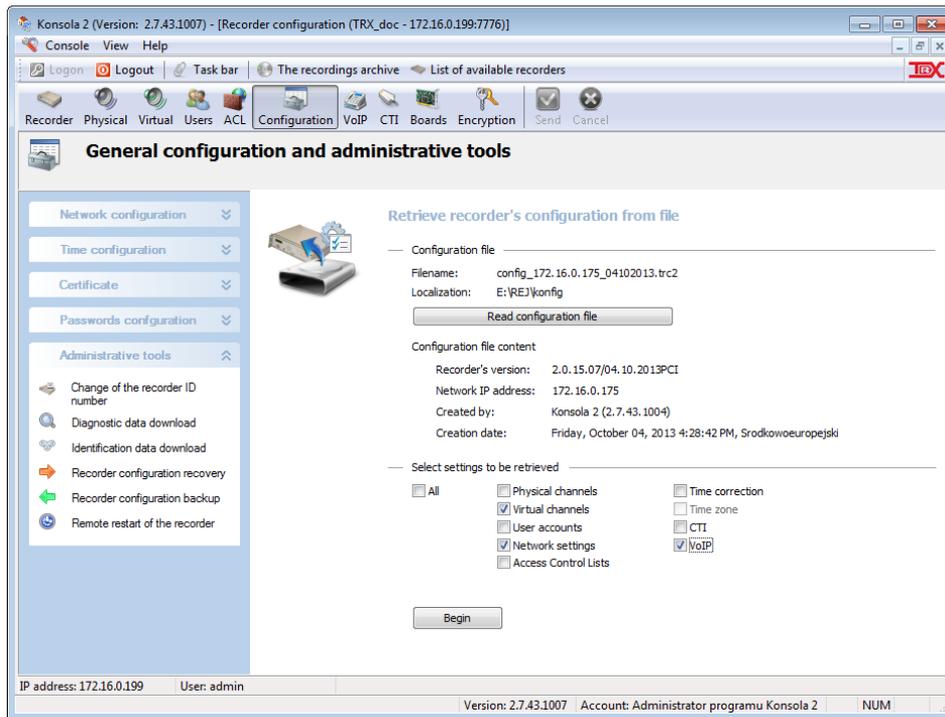
This option allows you to download the identification data of the recorder. Identification data contains "reduced" information about the functioning of the recorder, thus the file volume is much smaller than the diagnostic file. The retrieve process is analogous to the retrieve of recorder diagnostic data.

Recorder configuration recovery

The *Recorder configuration recovery* option together with the *Recorder configuration backup* option described below allow to fix recorder configuration issues quickly and efficiently, after it has been corrupted. Before the configuration may be recovered, it shall be loaded from the backup file.

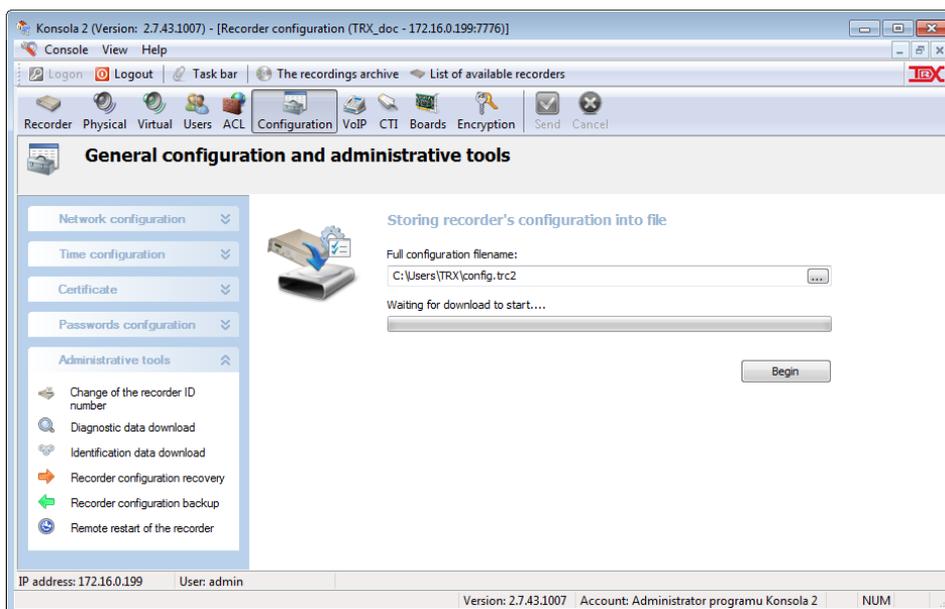
After the configuration file is loaded, it is possible to choose what sections of the recorder configuration were backed up and may be restored (e.g. *Virtual channels*, *Network setting*, *Time zone*).

After the selection of configuration sections to be recovered is done, the recovery process may begin. It starts after user presses the *Begin* button. After the configuration is restored, it is advised to restart the recorder by means of the *Remote restart of the recorder* function.



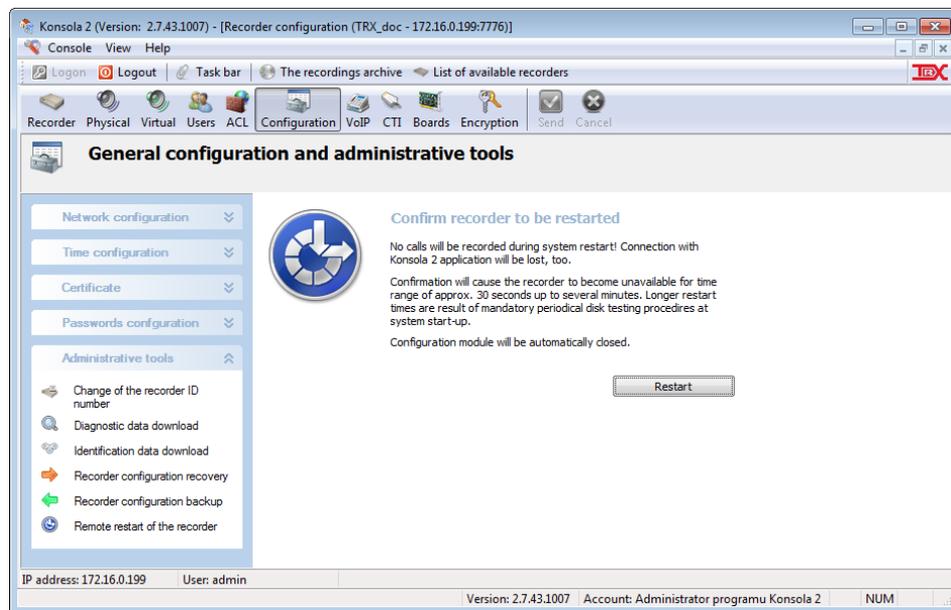
Recorder configuration backup

This option allows the recorder to save the configuration file on your computer. This allows recovering it later on, if any configuration corruption happens. It is strongly recommended to back up the configuration of the recorder after all its parameters have been set. User shall provide the file path for backup file and press the *Begin* button. For the backup file is saved the entire configuration of the recorder.



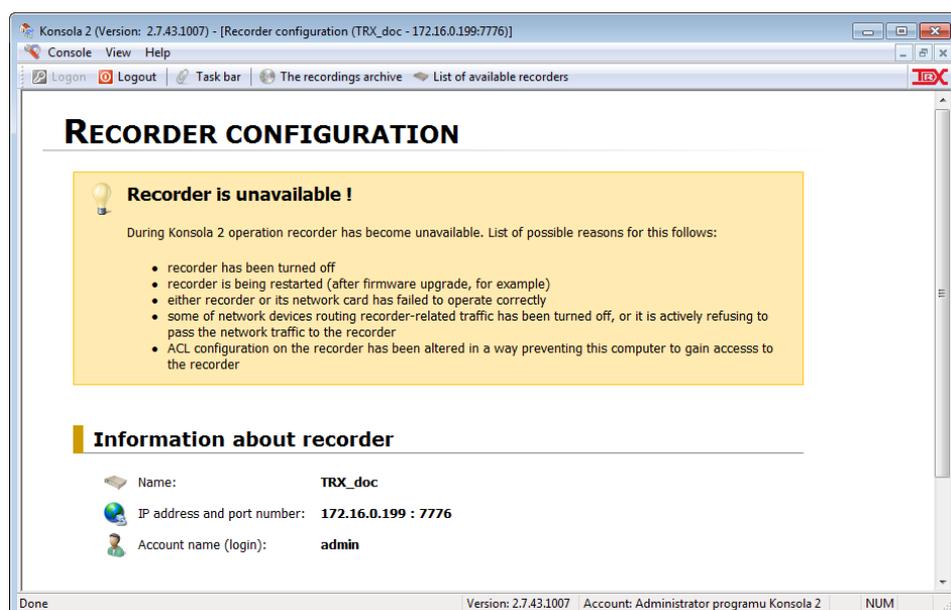
Remote restart of the recorder

This function allows you to remotely reboot the recorder. TRX device restart should be performed after significant changes in the configuration (e.g. loading new VoIP channels license file, restoring recorder configuration from backup file). *Konsola 2* requires the user to confirm this operation before the device will be restarted.



Usually it takes approximately about 30 seconds for the recorder to restart. Sometimes it may take more time, because once per several restarts, the recorder will verify the integrity of data on the hard drive.

Any *Konsola 2* windows related to the recorder, that is about to be restarted, shall be closed and reopened when the recorder becomes available on the list of available recorders.



Notice: Before attempting to perform further operations on the recorder, close the *Configuration* window and wait a few minutes.

After this time, you can re-use functionality of the recorder from *List of available recorders* window.

4.8.7 VoIP

VoIP calls recording can be done by means of KSRC 332, KSRC 5128 or KSRC 2U recorders. If the TRX device records also other calls from TDM lines (analogue, ISDN or digital lines), the maximum number VoIP channels on the recorder is reduced by number of active TDM channels.

Activation of VoIP call recording feature on the recorder can be done only by TRX service.

In order to record VoIP calls, user shall obtain the licenses. TRX provides VoIP licenses for a maximum number of VoIP calls simultaneously recorded.

The rules for VoIP call recording are determined with the mechanism of virtual channels. It provides to specify the desired criteria (eg. VoIP terminal number, call direction) determining whether the call should be recorded or not.

4.8.7.1 Supported VoIP systems

KSRC recorders allow you to record telephone call based on the proprietary IP protocols:

- Aastra (Matra / Nortel),
- Alcatel,
- Avaya,
- Cisco,
- Ericsson,
- Panasonic,
- Siemens.

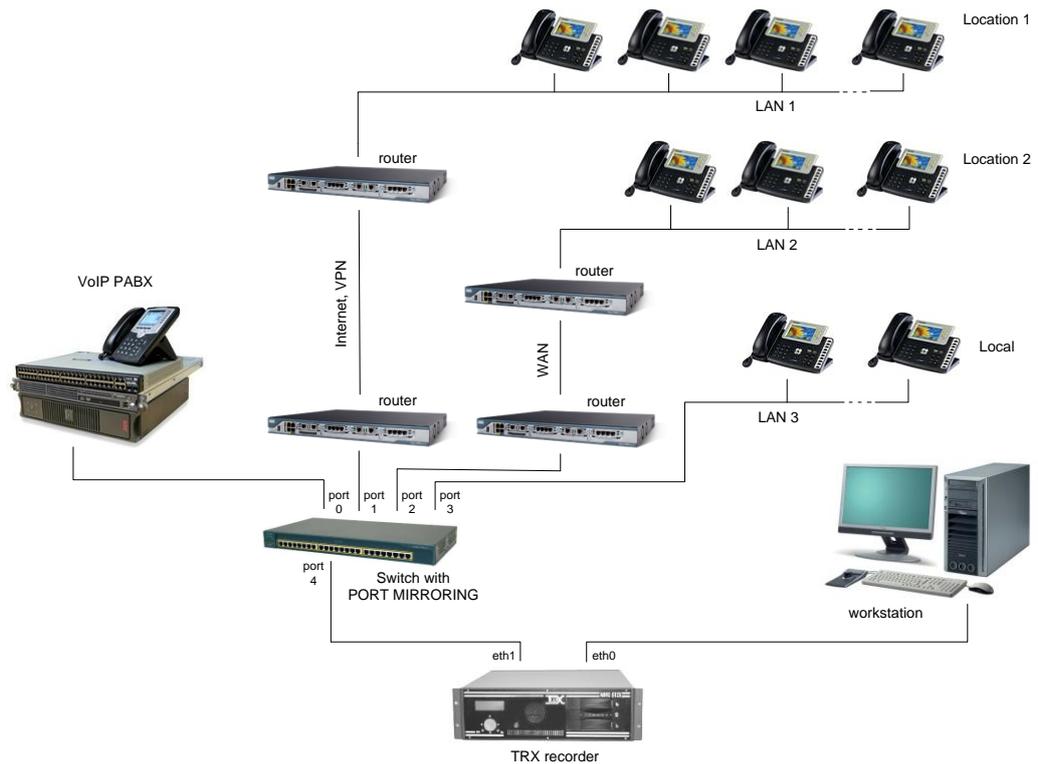
They also enable call recording based on generic (commonly-used) VoIP protocols:

- SIP (version 2.0),
- H.323.

4.8.7.2 Network structure of recorder workplace

Recorders designed for recording VoIP calls are equipped with at least two Ethernet interfaces (*eth0* and *eth1*) described on the case respectively as LAN 1 and LAN 2. It is recommended to use one of them (usually *eth0* interface) for communication between recorder and PC computer with *Konsola 2* application. The VoIP related network traffic shall be duplicated and routed to another Ethernet interface (*eth1*) of the recorder.

Customers, who intend to record calls with VoIP systems, should assure that all the network traffic generated by components of VoIP infrastructure reaches the recorder. This is achieved by setting a *Port mirroring* mode on one port of the switch and connects it to the TRX device.



The following picture presents a structure of VoIP system, where calls are recorded on TRX recorder. In this configuration there are recorded calls from IP stations operating in several locations. Whole network traffic that reaches ports: *port 0*, *port 1*, *port 2* and *port 3* of the switch device, shall be mirrored into *port 4*, in order to allow the recorder to monitor VoIP network events.

4.8.7.3 Configuration of the recorder

Configuring of TRX call recorder in order to ensure registration of the IP packet consists of two parts:

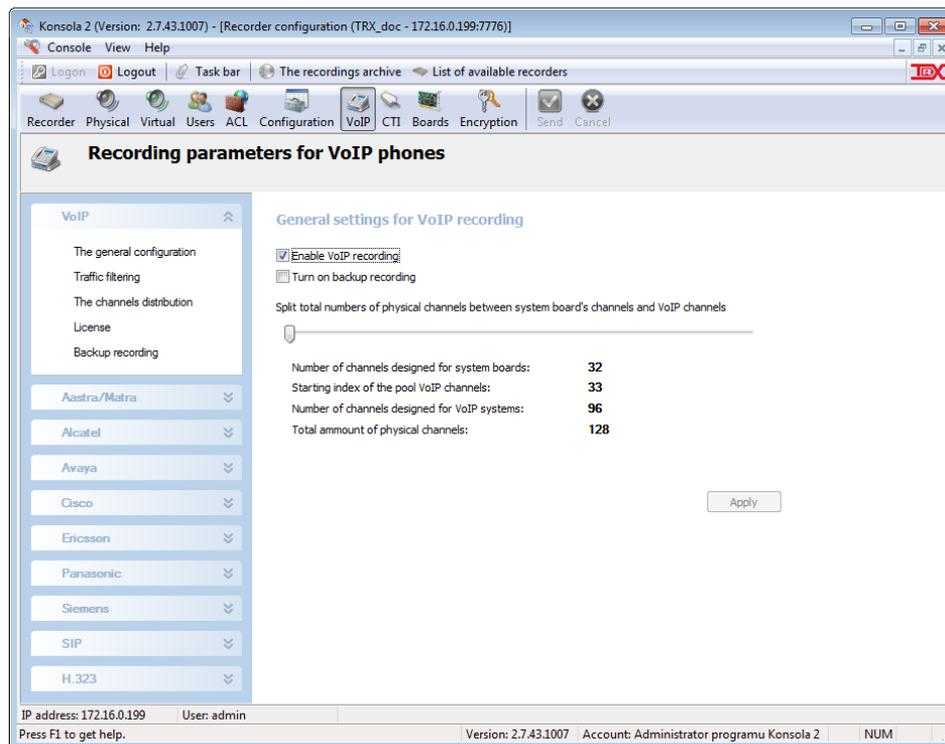
- general parameters settings for all recorded VoIP systems (initial setup - VoIP section),
- detailed settings for the selected IP protocol (*Aastra/Matra*, *Alcatel*, *Avaya*, *Cisco*, *Ericsson*, *Panasonic*, *Siemens*, *SIP* and *H.323*. section).

Initial setup (VoIP section)

General Configuration

The function allows you to switch VoIP recording mechanism and to determine (using the slider), how many from the total number of physical channels will be allocated for recording VoIP calls.

Number of VoIP calls simultaneously recorded by TRX solution is limited by the number of physical VoIP channels. This cannot be greater than the number of licenses for VoIP calls recording.



The channel distribution

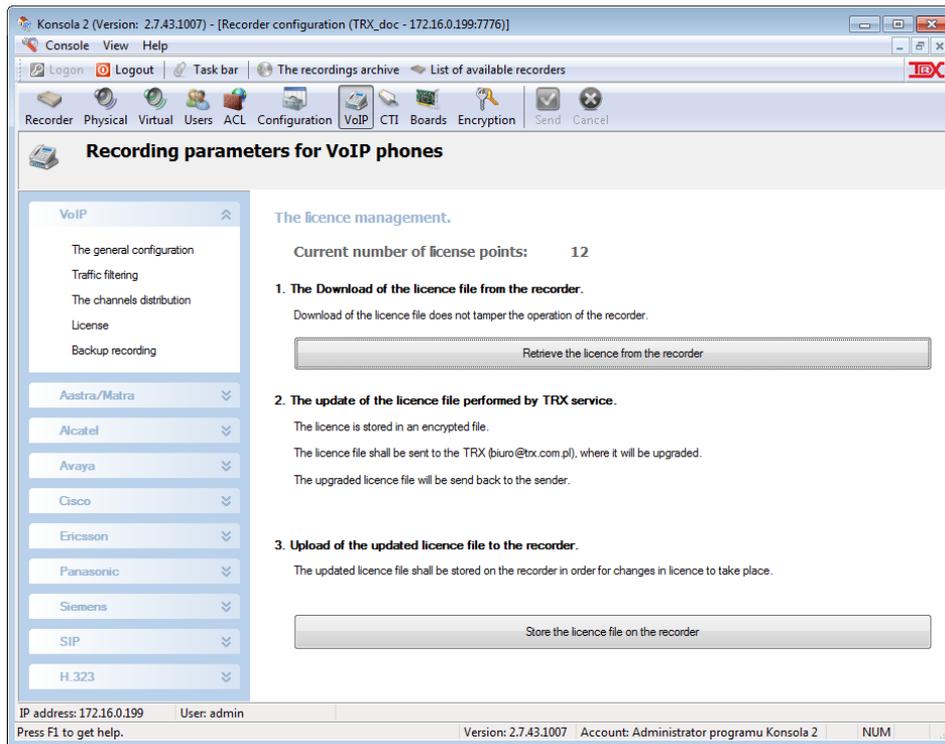
For each of the recording VoIP systems, the user specifies the index of the base channels of VoIP (*Base*) and the number of channels reserved for the chosen system (*Number*). Arranged channels will appear later (after the restart of the recorder) in the *Physical* panel.

The channel distribution option lets user to verify, if VoIP channels are properly distributed among available recorder channels. Proper distribution is the one, where VoIP channels of different systems relate to different channels in the recorder. In other words: VoIP channel distribution is valid, if there are no recorder channels that are assigned to more than one VoIP channels.

Different VoIP systems are represented by means of different colors of boxes representing recorder channels. It makes it visually easy to check, if everything is fine with the distribution. When moving the mouse pointer over the boxes, user is being informed about what VoIP system is it related to. It is possible to get familiar with the current channel distribution and with the predicted distribution. The left diagram illustrates the current distribution channels of VoIP in a pool of physical channels of recorder (*Current channel arrangement*), while the right one gives a quick overview of the current changes, introduced by the user (*Projected channel arrangement*).

The channel of the recorder cannot be assigned simultaneously to several VoIP systems. Graphical representations of each distribution channels allow verify that this condition is fulfilled.

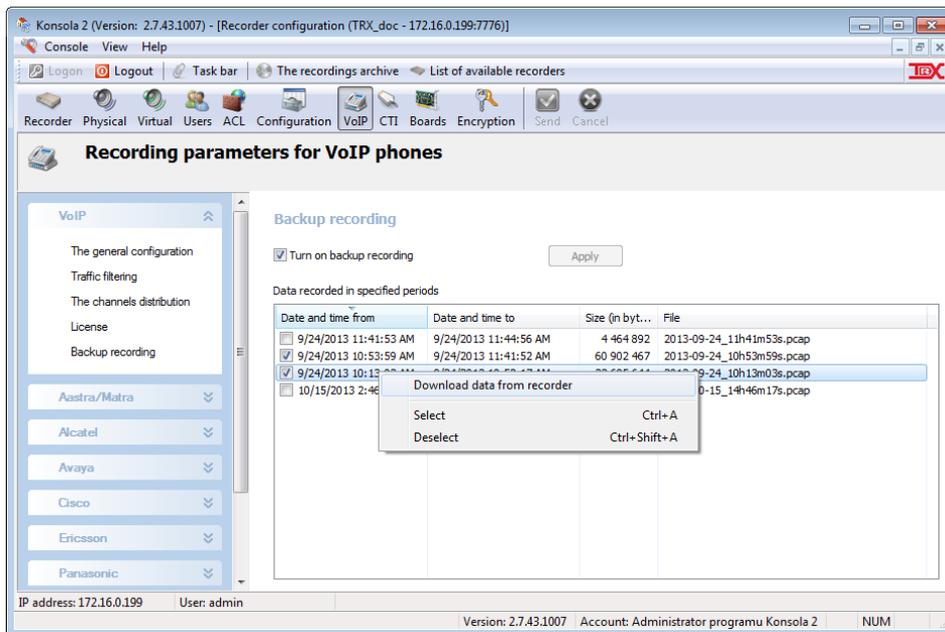
The following figure is an example of an incorrect distribution channels in a pool of channels VoIP recorder - channels 115 and 116 are assigned both to Avaya and Cisco systems simultaneously.



Notice: After uploading the license file, a restart of the recorder is necessary.

Backup recording

The activation of the backup recording enables launching the process of sniffing IP packet traffic on the network interface connected to observed VoIP network. All gathered data are stored in files on the hard disk recorder.



If necessary the files can be downloaded and analyzed using the diagnostic tools of network traffic (e.g. Wireshark).

Backup recording window allows you to switch on the sniffer (*Turn on backup recording*) and displays information about files previously saved on the recorder. After selecting the file or few files you can download data to local disk your computer for further analysis.

Because of the relatively large size of the backup recording files Backup recording function should be switched only for diagnostic purposes, and only for the possibly short time of observation. The *Konsola 2* program has also implemented a mechanism to ensure that the space used for backup recording files does not exceed 10 % capacity of hard disk installed in the recorder. After reaching this limit, recorder will overwrite the oldest files.

Detailed configuration

Each of the supported systems is configured independently in a separate section of the VoIP module. Detailed settings for individual VoIP sections are very close to each other.

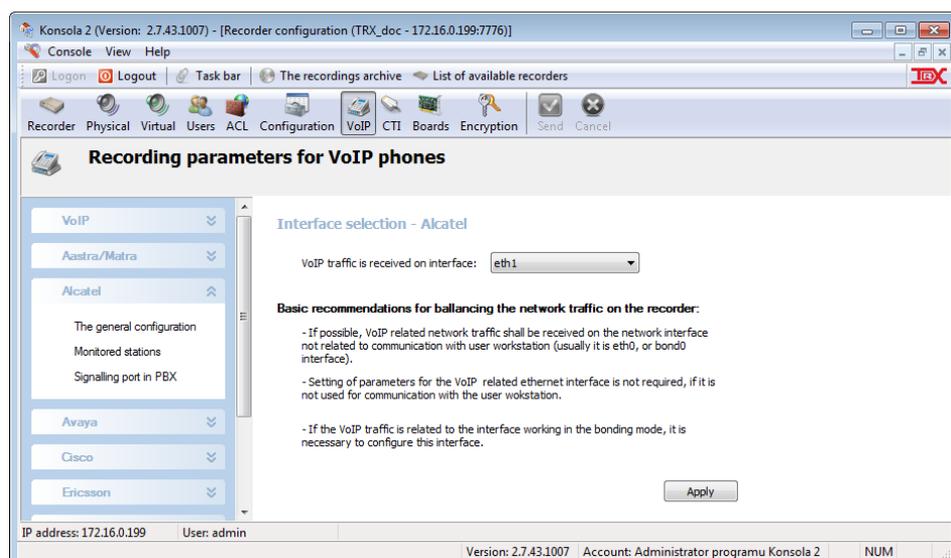
Since the general configuration for all systems is same, it will be described based on the Alcatel VoIP system.

The general configuration

This part of the configuration window lets you specify, which network interface on the recorder will receive the network traffic related to VoIP calls.

Basic suggestions regarding the network traffic balance are also provided there.

1. VoIP related network traffic shall be received on the network interface not related to communicate with workstation (usually eth0 interface).
2. Setting of parameters for the VoIP related interface is not required, if it is not used for communication with the user workstation.
3. If the VoIP traffic is related to the interface working in the bonding mode, it is necessary to configure this interface.

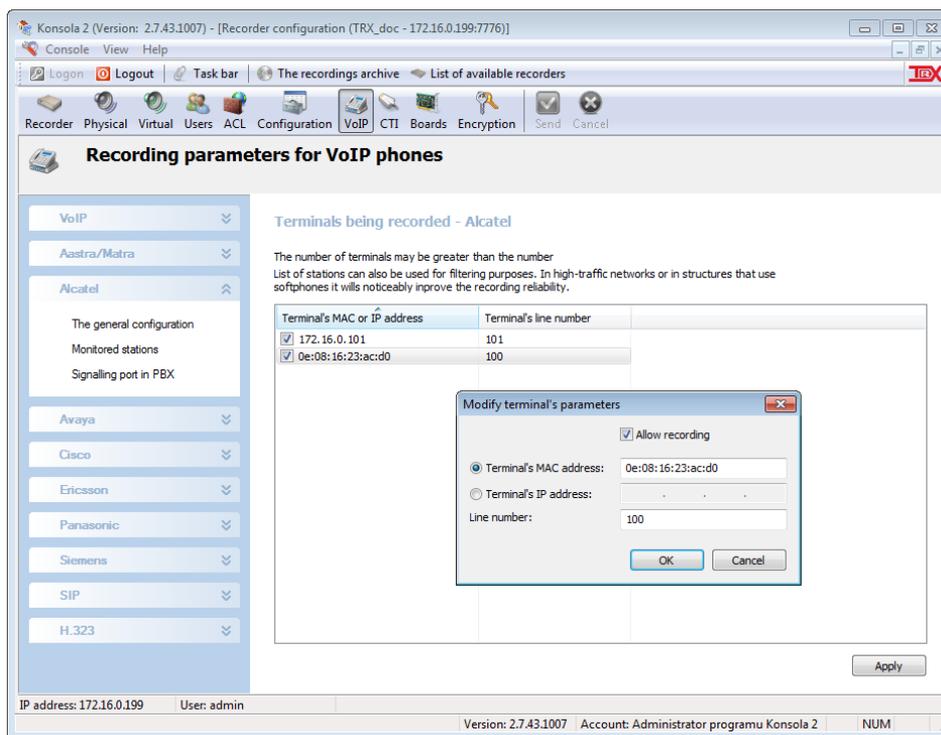


Monitored stations

For some VoIP systems (Alcatel, Avaya), it is necessary to build relations between VoIP terminals and the numbers of station they are connected to, in order to allow the recorder to assign these numbers to appropriate terminals. It is necessary, because the PBX does not send this data to the terminals, and there is a need to provide this information to the recorder in the other way.

The number of entries in the table can be greater than the number of purchased VoIP licenses.

However, the number simultaneously recorded terminals will be equal to the number of licenses.



The terminals can be identified using either IP address or MAC address. List of station can also be used for filtering purposes. In high-traffic networks or in structures that use softphones it will noticeably improve the recording reliability. Checkbox next to IP or MAC address allows management of the filter elements. Building the list of IP station recording is recommended for all VoIP recording systems, and for some (such as Alcatel, Avaya) is indeed necessary.

In order to add to the list a new terminal, select the *Add* option from context menu. In the dialog window define MAC address or IP address of new station and its line number. To edit or delete a terminal from the list, select it in the list and select from the context menu options *Edit* or *Delete* respectively.

For the selected terminal can also turn off the recording, without removing it from the list. For this, uncheck the checkbox next to the station's IP/MAC address. Alternatively you can use the *Disable* option from context menu.

Enable the recording of the selected station requires a check the checkbox or select *Enable* option from the context menu.

After making changes, click *Apply* to save changes, and then use *Send* button to send the configuration to the recorder.

Signaling port in PBX

This option is set only for the central Alcatel system, are required to specify the port number for UDP protocol, which is used to exchange the signaling messages with VoIP stations.

4.8.7.4 Supported audio standards

TRX recorders are able to record audio stream encoded according to G.711, G.722 and G.729. Before attempting to install the recorder, user shall check out, if at least one of the above standards is in use in the target VoIP system.

4.8.8 CTI

CTI module allows you to configure the recorder to work with the PBX'es using a CTI interface. TRX recorders support interworking with the following PBX-es/telecommunication servers:

- Alcatel OmniPCX Enterprise (OXE),
- Avaya Communication Manager (ACM),
- Cisco Unified Communications Manager (formerly Cisco Call Manager),
- Siemens HiPath 3000/4000,
- HiPath Trading,
- OpenScape Xpert Trading,
- OpenScape Voice.

as well as radio communication systems:

- Kenwood NEXEDGE,
- Multikom 2.

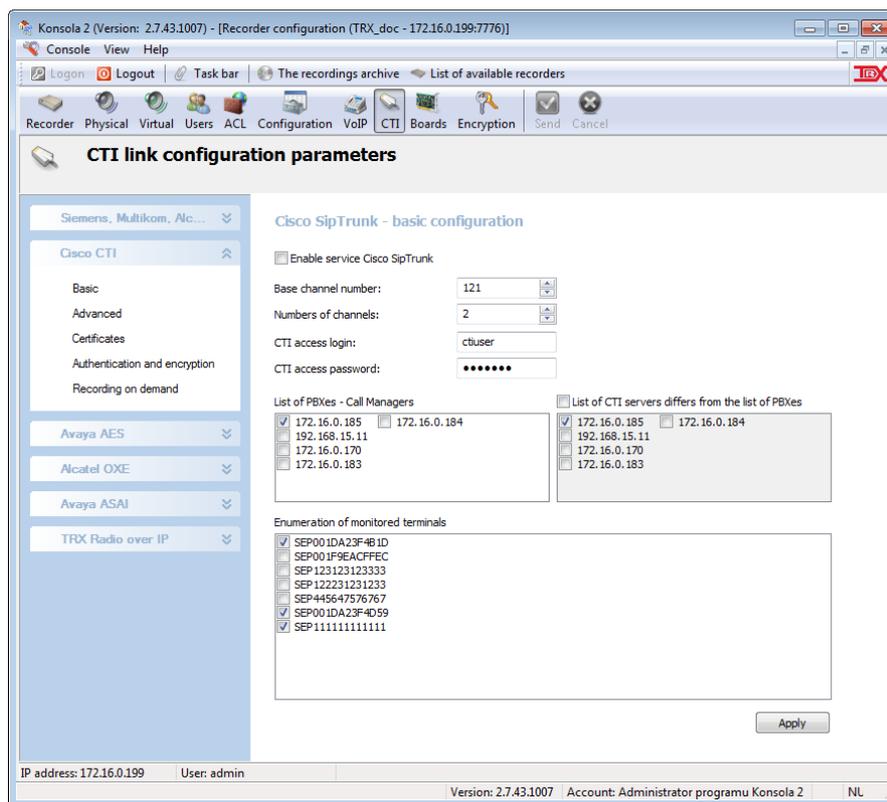
4.8.8.1 PBX/softswitch requirements

The PBX/softswitch should enable the communication with the recorder in CSTA or similar standard. Please reserve required hardware and software resources required for each end of the CTI. In some embodiments, purchase a license from the PBX manufacturer is necessary to the integration, which may involve an increase in the cost of a solution.

All PABX configuration settings are made by the PBX user party in consultation with the service TRX.

4.8.8.2 Recorder configuration

Depending on the system to which the registrar is to communicate with the CTI interface, configuration menu has a different design. For example, for the Avaya ASAI and Siemens, Multikom or Alcatel is only available *Manual configuration* (*xml* file). The following example shows the configuration of the CTI link to Cisco Unified Communication Manager.



Enable service Cisco SipTrunk – enabling the Cisco CTI integration service.

Base channel number – starting number the pool of channels allocated to recording calls on Cisco platform.

Number of channels – total number of channels in the Cisco pool.

CTI access login / CTI access password – authorization data for the recorder as CTI user account on the Cisco UCM.

List of PBXes – Call Managers – IP addresses of Cisco CallManagers are being recorded.

List of CTI servers differs from the list of PBXes – if you select this option, you can specify IP addresses dedicated CTI server.

Enumeration of monitored terminals – list of VoIP terminals in the Cisco format („SEP” + address MAC).

4.8.9 Boards

The *Cards* section allows you to configure parameters of the interface cards installed in the recorder. The modification of the default parameters of cards allows to fine tune it according to the user requirements.

It is also possible here to upgrade the card’s firmware. This process (as much as any other programming process) involves the risk of failure, which user shall be aware of and which in the worst scenario will make the card inoperative. Inoperative cards can be fixed (reprogrammed) by TRX service only. Upgrade failure does not involve the risk of hardware failure.

4.8.9.1 Hardware and software requirements

In order to be able both access card's parameters and upgrade its firmware, some requirements must be met. These requirements include:

- proper recorder's software version (ver. 2.0.6.19 and later for KSRC 5128 recorders and ver. 1.9.6.07 and later for KSRC 3xx recorders),
- for KSRC 5128 recorders, also the PCI card version is important, it shall be ver. 10.5 and later.
- TRX card software version:
digital system phone interface board (Up0):
 - Alcatel: v5.50 and later,
 - Avaya (Lucent): v12.06 and later,
 - Bosch: any version,
 - Coral: v1.54 and later,
 - DGT: 4.16 and later,
 - Ericsson: v3.80 and later,
 - LG: any version,
 - Matra: v5.14 and later,
 - Panasonic: v1.32 and later,
 - Philips_NEC: any version,
 - Platan: any version,
 - Siemens: v3.84 and laterPRA and BRA interface board: v24.00 and later,
Analog_DSP interface board: v1.04 and later.

In general, any recorder obtained in the year 2008 and later is fully capable of changing parameters and upgrading firmware of interface cards.

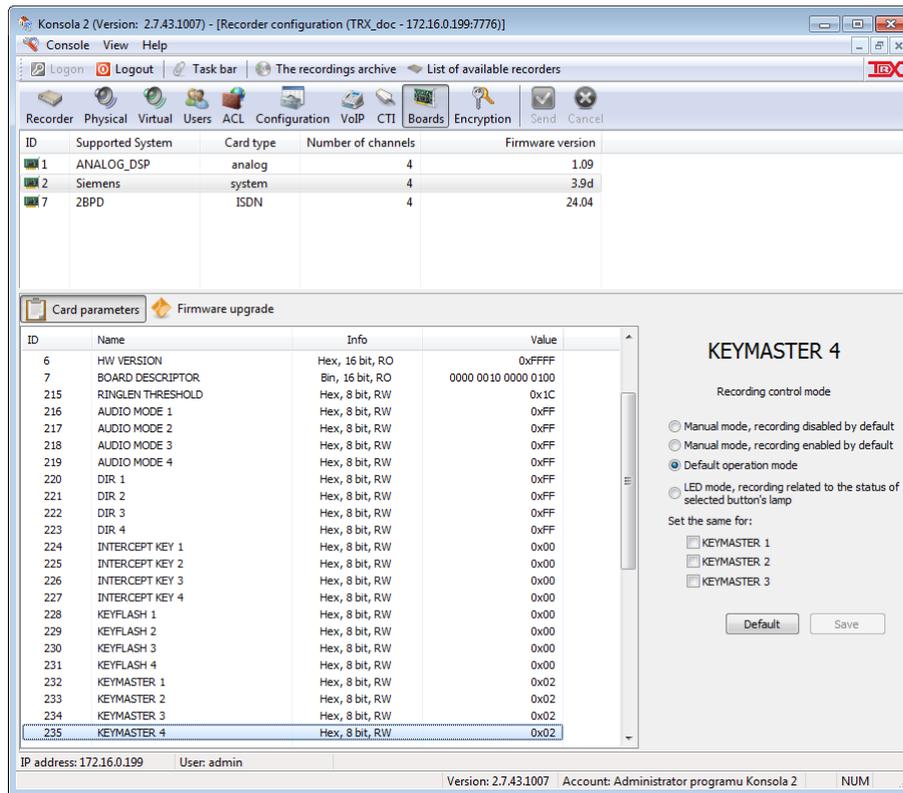
4.8.9.2 List of available cards

After the *Cards* section of the *Configuration* menu is selected, *Konsola 2*, in the upper part of the application window, presents the list of cards installed in the recorder. If in comparison to the recorder's configuration, the list of available cards seems to be incomplete, the requirements stated in section 4.8.9.1 may not be met for some cards.

If it is not the case, the cold restart of the recorder may be necessary.

The list interface boards of the recorder contain the following data:

- ID number,
- name of supported system,
- the board type,
- number of active channel,
- the firmware version.



4.8.9.3 List of boards parameters

When you select a board, the bottom of the window shows a list of all available parameters:

ID – ID of the parameter.

Name – related to the functionality or character of the parameter.

The individual parameters are described in further part this manual.

Info – specifies the type (*string*, *hex*, *bin*), the size in bits, and parameter attribute:

RW (*read/write*) - parameter can be modified,

RO (*read only*) - read-only parameter,

Value – shall be read out in context of parameter type.

string – parameter should be read as a string of alphanumeric characters.

hex – parameter should be interpreted as a number in hexadecimal.

bin – parameter should be interpreted as a state of individual bits:

(1 – bit set, 0 – bit not set).

Bit value “1” corresponds to the active functionality the given position.

4.8.9.4 Modifying card’s parameters

After the parameter is selected, its current value or its value interpretation is presented in the right part of the application window.

The review contains the parameter name, the current settings, and comments describing the meaning of its individual elements. This simplifies the parameter changes.

For example, for the selected parameter KEYMASTER4 (figure from section 4.8.9.2) the value 0x02 means the standard operation mode.

Only parameters of type RW (*read/write*) can be altered.

The ways of changing current parameter's value depend on how it is being presented by the application. You can also use the following functions:

- select one of available options – then *Konsola 2* will set appropriate value for the parameter,
- enter the value of the parameter directly in either decimal or hexadecimal format,
- toggle the functionalities on or off (for parameters of type *bin*),
- adjust the parameter value using the slider indicates the current adjustable values.

After the new value for parameter has been set, it is necessary to press the *Save* button, in order to store the new value in the *Konsola 2* memory.

Please, keep in mind that this will not cause new value to be send to the recorder.

After the new value is saved, user may continue changing other parameters of the card. If user moves from one parameter to another without pressing the *Save* button, all changes will be lost.

If all parameters have been set appropriately, it is necessary to send it to the card. This can be done by means of the *Send* button  available in the upper-right part of the *Cards* window.

For some parameters, it is also possible to copy its value from one channel into other channels. This can be done with the *Set the same for* option. User states there, what parameters shall be given the same value.

4.8.9.5 Interface board parameters

In this section of manual, a brief description of all available parameters will be presented. For parameters, which name ends with *_n*, this *n* stands for a digit representing the channel. Parameters are presented in an alphabetical order.

AC4_n

This parameter consists of permissions for recording for AC4 Siemens system lines. These permissions are related to the different system events, like call on *Line 1* (bit no 0), call on *Line 2* (bit no 1), *Line 3* (bit no 2) and *Line 4* (bit no 3), *PARK ON* (bit no 4), *TAPE ON* (bit no 5). If any such event occurs and the according bit is set, the recording process is launched.

It is possible to set any combination of parameter's bits depending on what events the recording process shall be based on. By default, calls on line 1 up to 4 enable the recording process.

AUDIO_MODE_n

It is related to the *SIEMENS* system card only. For Siemens system lines, it is possible to connect two phones into one system line. One of the phones is connected directly to the system line (it is called *Master*) and it can be equipped with the adaptor, which allows for connecting the second phone (it's called *Slave*). Depending on the adaptor type, the *Slave* phone may be either system phone or analog phone. The *AUDIO_MODE* parameter allows to decide which phone shall be recorded by the card (both signaling and audio streams). It is possible to record calls related to both phones. In this case, *Master* phone calls will be recorded on

the current channel and *Slave* phone calls will be recorded on the next channel on the card. By default, this option allows to record single *Master* phone.

BOARD DESCRIPTOR

This parameter brings the information about the kind of the board and the number of channels available on it.

BOOLS_n

The screenshot shows a configuration window titled "BOOLS 1". It contains a list of options with checkboxes. The "New set of bits" section is active, showing options: NUM LEN (unchecked), SERVICE OBSERVING (unchecked), RELEASE (unchecked), VOX (unchecked), COMMENT (unchecked), RECGROUP (checked), RECRING (unchecked), and HANDSET (checked). There are "Default arrangement" and "Save" buttons at the bottom.

A binary value is returned in case of this parameter. Each bit of it is related to particular functionality on the card. If the bit is set, so is the functionality. If the functionality is inactive (it is grayed out), it is not available on the particular card. Each of functionalities available in the BOOLS option is briefly described below, in the order occurrence.

NUM LEN

This option is related to the *AVAYA* system cards only. It defines the minimum length of digit string, which is to be considered useful (brings the information about the caller). If it is not enabled, strings with at least 3 successive digits in it are considered to contain useful data. And the requirement is 4 digits in the other case.

SERVICE OBSERVING

Avaya system card needs to have this option enabled, if it is connected to the line, where the phone works in the *SERVICE_OBSERVING* mode.

RELEASE

Avaya system card will react properly (will stop recording), when the *RELEASE* button is pressed in the *CALLMASTER* phone. For other types of phone being recorded, it is recommended not to enable this option.

VOX

This setting allows to enable onboard *VOX* mechanism. This becomes useful in emergency cases, where problems with signalization decoding arise.

COMMENT

This functionality, if enabled, allows the card to send some additional information to the recorder for recording on the current channel. This information will be presented in the *Comment* column of the *Playback* window.

RECGROUP

Active *RECGROUP* function allows recording not connected incoming calls. Such calls are recorded, if this option is enabled, and the incoming call was not

answered for the duration of time set in another parameter called *RINGLEN THRESHOLD*.

Recording related to such call is marked with the *NC (not connected)* string in the comment in the *Playback* window.

RECRING

This function allows recording the incoming call from the moment of the arrival of the first ring signal on the phone.

HANDSET

With this option, it is possible to allow the recording process to begin when the handset is picked up on the phone. The recording ends when the handset is put down. If it is disabled, recording process will begin if some other events occur on the phone (for example, when some lamps are lit on the phone).

BOOLS2_n

The type of this parameter is the same as of *BOOLS* parameter. A brief description of available functionalities follows.

ENABLE_302

This option allows the card to detect the presence of 302A/302B phones on the Avaya system line

CARD ID

String presented here brings information about the name of system supported by the card's firmware.

DIR_n

By default, the Siemens system card records both incoming and outgoing calls. With the *DIR* parameter, it is possible to set (based on the call direction) which calls shall be recorded.

FLASH MODE

The interpretation and modification of the contents of this register is reserved for service companies TRX.

HW VERSION

The PCB version of the card is presented in this parameter.

JUMPER SETTINGS

The current setting of the card's jumpers is available here.

KEYFLASH_n

For the Siemens system, it is possible to provide here the key code for the *FLASH* function programmed on the selected button of the phone. If card detects, that this key has been pressed, it stops current recording and begins a new one.

KEYMASTER_n

This parameter enables manual steering of the recording process on system line interface boards.

In general, you can choose one of the following options:

1. default behavior (recording is controlled by the signaling data send between the PBX and the system phone),
2. manual takeover of the recording process, by default the recorder starts the recording process when the call begins,

3. manual takeover of the recording process, by default the recorder does not start the recording process when the call begins,
4. LED status mode controlling of the recording process, where it is controlled by the status of selected lamp on the phone. The recording process takes place only if the selected lamp lights.

LED status mode controlling is available for selected PBX manufacturers. For non-default options it is required to define which keys of the phone, when pressed, will start/stop the recording process. For the LED mode it is necessary to define, which button lamp status will control the recording process. The definition of the keys can be done by means of the following parameters.

KEYOFF_n, KEYON_n

User shall provide here the codes for keys on the phone, which will take control over the recording process. If these key codes are different (it stands for two distinguished keys), it will be possible to enable and disable the recording process as many times as required during the call. If these codes are the same, the manual override of recording process will be possible just once per each call.

For the LED mode selected in the *KEYMASTER* parameter, it does not matter if user defines the key code for the button in *KEYON* or *KEYOFF* parameter. The recording process will be controlled by the status of the lamp related to the button, which code has been provided lastly in either *KEYON* or *KEYOFF* parameter.

INTERCEPT KEY_n

This parameter is related to the Siemens digital boards and allows to define the code of the key used for call interception. With this parameter it is possible to obtain the valid call direction (incoming) for calls intercepted with this button. In addition the calls intercepted by defined key, are presented in the call list with attached comment *Intercept*.

LEDMASK_n

For AVAYA system phones it is required to tell the card, what is the configuration of the function keys on the phone. The most important thing here is to inform the card, where the *call appearance* function is programmed. Sometimes it may be necessary to look for the *bridge appearance* function too. Every single bit of this parameter (from LSB to MSB) stands for function keys *a, b, c* and so on. It is necessary to set these bits, if the mentioned above functions are programmed on the respective buttons on the phone. By default bits 0 and 1 are set, which relates to call-appearance function programmed under the following function keys on the phone: *a* and *b*;

MINIMUM_NUMBER_LENGTH_n

With the slider available here, it is possible to state the minimum length of the phone number to be considered valid. This is useful in situations, where the name presentation for callers appears on the display and it contains digits. With this option the decision, if the number on the display is valid or not, is taken based on the length criterion set with this parameter.

PWM_n

With this parameter is possible to improve the matching between the phone line and digital card's input. Although the signal in the system line is digital, sometimes it is necessary to adjust system boards in order to match different levels of this signal. In most installations (~95 %) it is not necessary, however in

some – it is. The matching improvement is necessary, if the monitored audio signal from the line is distorted by ticks, pops or the noise. The goal of the matching process is to obtain clear audio signal.

Obtaining the correct audio signal will also mean a correct decoding of signaling transmitted between the phone and PBX.

The procedure for setting the optimum PWM parameter value:

In a separate *Konsola 2* window start the monitoring process for selected channel. In the *Cards* window, change the value of PWM parameter slightly (max. 10 mV at once), press the *Save* button, and press the *Send* button .

The effects of changing the parameter's value will be audible via monitoring. If the change caused more noise and pops to appear, you need to change the parameter value in the other way. The goal of the matching procedure is to set the value of the parameter equal to the mean of values defining the range. While the regulation takes place, user will notice that two values of the parameter exist.

Setting the PWM value less than some minimum value, and greater than some maximum value will result in audible clicks.

Both these values are not constant, depending on the type and topology of the system to which the chosen channel of the card is connected.

Ultimately, you must set the parameter value being the mean value of the limit values.

For example, let's assume that:

- values below 20 mV result in disturbances in audio signal,
- values between 20 mV and 60 mV result in a clear audio signal,
- values above 60 mV result in disturbed audio signal.

*Therefore, the optimum value of this parameter in this case will be:
(20 + 60) / 2 = 40 mV.*

The PWM value setting recommendations:

- if the recorder and system phones are placed close to the PBX, the matching can be usually improved by increase of the value of the parameter.
- if the system phone on a particular line is placed far away from the PBX (more than approx. 100 m), the matching may be improved by decrease of parameter value.

RINGLEN_THRESHOLD

The recorder allows for recording unanswered incoming calls. With this parameter, it is possible to set the limit value of waiting time for incoming calls to be answered. If such call is not answered within the stated time, recording of this call begins. If the remote user will finally drop the call, it will be marked as *NC* (*not connected*) on the recorder. If the call will be finally answered, it will not be marked as “not connected”. For this mechanism to work, it is necessary to enable the *RECRING* option.

SERIAL NUMBER

The serial number of the card is presented in this parameter.

SERVICE MODE

This parameter enables the card to send some diagnostic data to the recorder. This parameter shall not be altered, unless TRX service recommends to do so.

SW VERSION

This parameter brings the information about version of the firmware on card.

VOLUME_BOOST_n

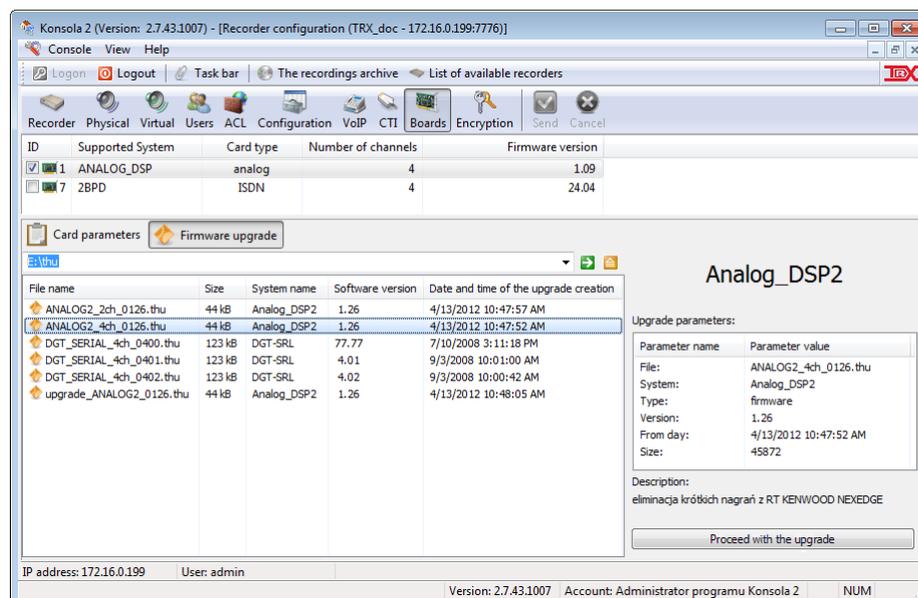
For low level signals, it is possible to increase the signal level for 6dB with this option. Six decibels stands for doubled amplitude of the signal. If not carefully used, it may induce distortions for high-level signals).

4.8.9.6 The upgrade of cards’ firmware

In order to upgrade the boards’ firmware, *Konsola 2* user shall have administrative privileges.

WARNING: DESPITE OF ALL TRX EFFORTS TO MAKE UPGRADE PROCESS AS SAFE AS POSSIBLE, THERE IS ALWAYS A RISK OF UPGRADE FAILURE (E.G. POWER SOURCE FAILURE, AND SO ON), WHICH IN WORST CASE WILL CAUSE BOARD TO FAIL TO OPERATE. IN SUCH CIRCUMSTANCES, BOARD WILL HAVE TO BE REPROGRAMMED BY TRX SERVICE.

The upgrade file can be obtained from TRX service (serwis@trx.com.pl). While sending request for upgrade file, provide us the information about the current system type and the current software version on board.



In order to perform change of the software, select the checkbox next to description desired board and select the *Firmware upgrade* option. User may select a few boards as long as they support the same system. All selected boards will be upgraded with same firmware.

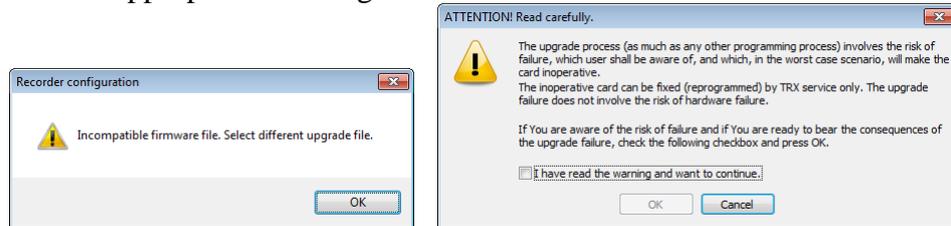
Next step is selection of the upgrade file. User shall point the directory where the upgrade file is stored by means of the icon.

After the directory has been selected, a list of compatible upgrades shall be obtained by means of the icon.

User shall select upgrade file by means of the double-click on its name. File selection is confirmed by the change of the look of the icon placed on the left side of filename. The icon assigned to the upgrade file will change the appearance of to (the green dot appears in it).

There are some dependencies between *current board’s firmware type and version* and *type and version of upgrade file*. These are checked by *Konsola 2* in

order to prevent loading of incompatible firmware version which always leads to failure of board operation. If the upgrade incompatibility is detected, *Konsola 2* presents the appropriate warning.



If that's not the case, *Proceed with the upgrade* button will become active, and by means of this button user will be able to start firmware upgrade process.

User is informed about the probability of the upgrade failure, which may cause board to become inoperative:

After the knowledge of risk of failure is confirmed by the user, proper upgrade process begins. It consists of three steps:

- new firmware is being loaded into the board,
- new firmware verification is being performed,
- boards' parameter list and parameters values are read from the card.

The cards are ready to operate right after the upgrade process is successfully finished. In case of the upgrade failure, it is recommended to restart recorder and to check if the card is available on the card's list. If it is present there, user may retry to upgrade firmware. If the board is no longer available, it can be recovered by the TRX service only.

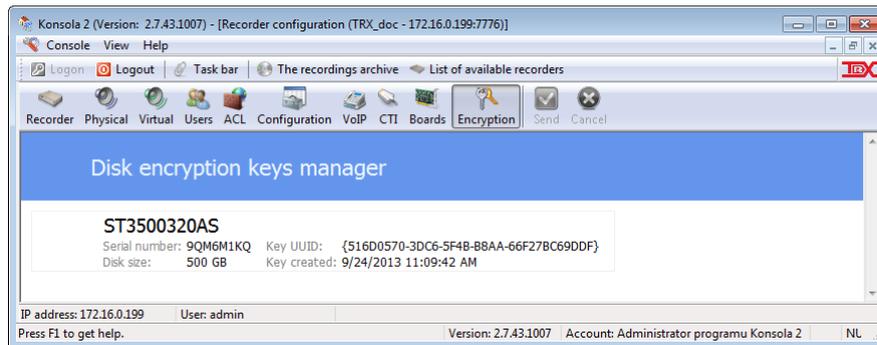
4.8.10 Disk encryption

The recordings stored on the hard disk of the recorder are stored in a specific format. An attempt of access to the drive using a PC does not give any possibility of recovery or modification of recorded calls. These data can be read only in TRX recorders.

Additionally, as required, you can secure disk recorder in such a way that the recording can be read only by means of this device, that calls was recorded. This additional protection involves encrypt data using 256-bit AES.

Hard disk data encryption can be enabled from the recorder local menu, when the new drive is installed.

```
#####
# AES encryption ? #
#####
59s
```



The *Encryption* panel in *Konsola 2* application allows you to preview the encryption keys (if used). If the window is empty, this means that AES disk encryption is not enabled.

4.9 The Upgrade module

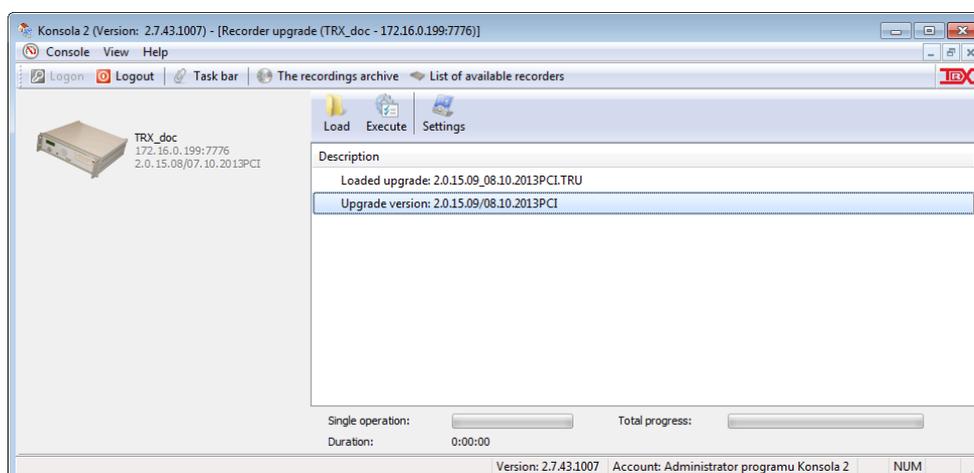
The recorder works under the control of the Linux operating system equipped with proprietary TRX software. At the moment of recorder purchase, user obtains it with the latest current version of software installed in it. TRX continuously improves the quality of recorder’s software and periodically releases new versions of software. The *Upgrade* module allows user to upgrade recorder’s software.

The first step performed during the upgrade to the recorder should be to save the current configuration to a file.

Recorder configuration backup function was presented in chapter 4.8.6.4 *Administrative tools* in section *Recorder configuration backup*.

4.9.1 The Load option

The next step (after saving the current configuration of recorder to the file) is to load the (*.tru) file containing the new recorder software. This can be done by clicking on the *Load* button in the toolbar.

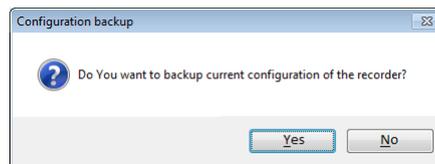


4.9.2 The execute option

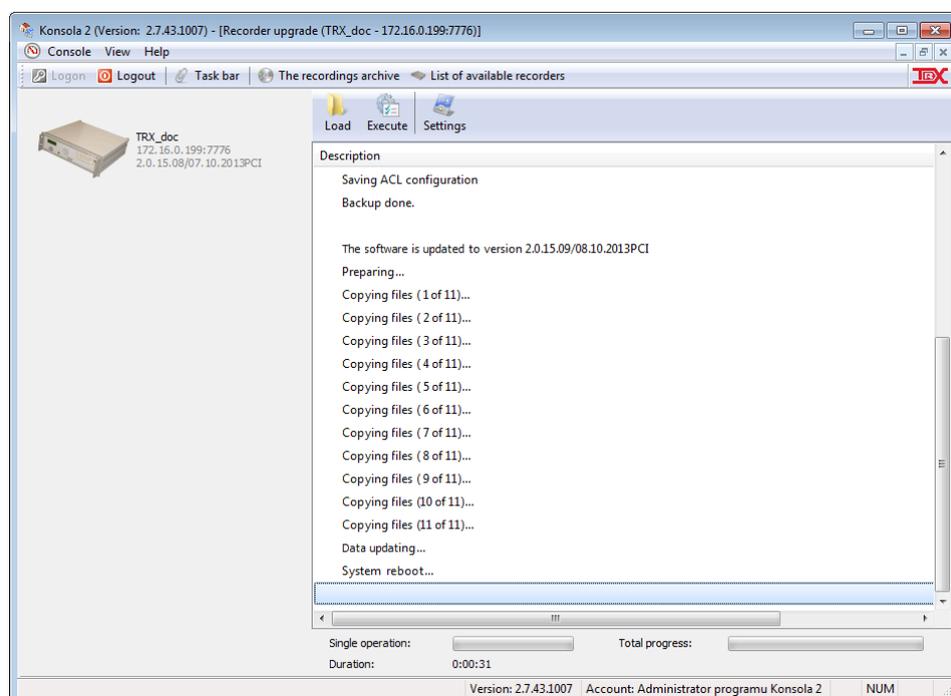
After the upgrade file (*.tru) is loaded, it should be send to the recorder. This can be done by means of the *Execute* option from the icon bar.

Before the upgrade is sent to the recorder, user is asked if current recorder's configuration shall be backed up.

In order to avoid the risk of losing the current configuration of the recorder it is strongly recommended to create recorder configuration backup.



At the time of upgrade upload, its status is presented in the application window.



The recorder is being restarted after the upgrade process ends.

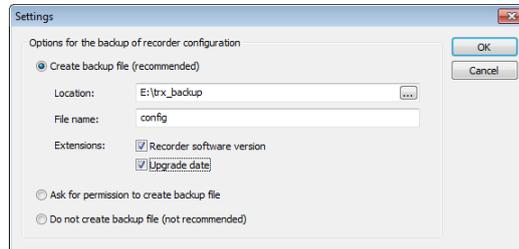
During the period of about 30 seconds to several minutes required for restart to take place, the recorders is inoperative (it does not record any calls and it cannot be accessed).

It is necessary to reopen all currently active windows of *Konsola 2* modules (monitoring, playback, and so on) for the recorder that is restarted.

If the upgrade process will not succeed, it may be necessary to turn off the power for the recorder, wait for a while, and power it up. The recorder shall start with the old software on it.

4.9.3 Settings

The *Settings* option of the *Upgrade* module allows for declaring, if recorder configuration shall be saved into the file.



Three options are available there. If the first option (*Create backup file*) is selected, current recorder configuration is always saved into a file before the upgrade takes place. With this option user states the folder for storing the configuration files and states the configuration filename pattern. The filename may be extended by the current recorder software version and the upgrade date in order to create unique configuration filenames.

The selection of the second option will result in asking user for configuration backup every time the upgrade is uploaded into the recorder.

If the last option is selected, the current recorder configuration will not be backed up. It is not recommended to use that option.

4.10 The Logs module

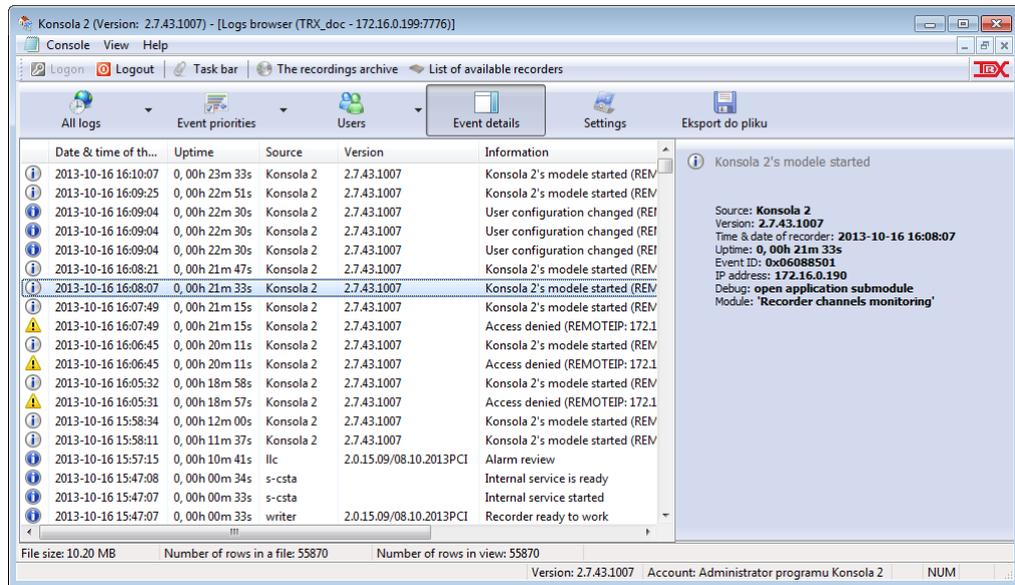
Each user related operation on the recorder is logged into the log file. The *Logs* module allows browsing the logs on the recorder in a convenient way. Logs may be filtered according to the following criteria: the time of occurrence, the user they are related to and the type of logs.

The screenshot shows the 'Logs browser' window for 'Konsola 2 (Version: 2.7.43.1007)'. The window displays a table of log entries with the following columns: Date & time of th..., Uptime, Source, Version, Information, and User.

Date & time of th...	Uptime	Source	Version	Information	User
2013-10-16 16:10:07	0, 00h 23m 33s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Playback of r...	user
2013-10-16 16:09:25	0, 00h 22m 51s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Recorder ch...	user
2013-10-16 16:09:04	0, 00h 22m 30s	Konsola 2	2.7.43.1007	User configuration changed (REMOTEP: 172.16.0.190, USERID: 3, USERSEQ: 11,...	admin
2013-10-16 16:09:04	0, 00h 22m 30s	Konsola 2	2.7.43.1007	User configuration changed (REMOTEP: 172.16.0.190, USERID: 2, USERSEQ: 11,...	admin
2013-10-16 16:09:04	0, 00h 22m 30s	Konsola 2	2.7.43.1007	User configuration changed (REMOTEP: 172.16.0.190, USERID: 1, USERSEQ: 11,...	admin
2013-10-16 16:08:21	0, 00h 21m 47s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Recorder co...	admin
2013-10-16 16:08:07	0, 00h 21m 33s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Recorder ch...	admin
2013-10-16 16:07:49	0, 00h 21m 15s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Recorder ch...	user
2013-10-16 16:07:49	0, 00h 21m 15s	Konsola 2	2.7.43.1007	Access denied (REMOTEP: 172.16.0.190, SERVICE: 11)	user
2013-10-16 16:06:45	0, 00h 20m 11s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Recorder ch...	user
2013-10-16 16:06:45	0, 00h 20m 11s	Konsola 2	2.7.43.1007	Access denied (REMOTEP: 172.16.0.190, SERVICE: 11)	user
2013-10-16 16:05:32	0, 00h 18m 58s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Recorder ch...	user
2013-10-16 16:05:31	0, 00h 18m 57s	Konsola 2	2.7.43.1007	Access denied (REMOTEP: 172.16.0.190, SERVICE: 11)	user
2013-10-16 15:58:34	0, 00h 12m 00s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Logs browser')	admin
2013-10-16 15:58:11	0, 00h 11m 37s	Konsola 2	2.7.43.1007	Konsola 2's modele started (REMOTEP: 172.16.0.190, SUBAPPID: 'Logs browser')	admin
2013-10-16 15:57:15	0, 00h 10m 41s	ilc	2.0.15.09/08.10.2013PCI	Alarm review	
2013-10-16 15:47:08	0, 00h 00m 34s	s-csta		Internal service is ready	
2013-10-16 15:47:07	0, 00h 00m 33s	s-csta		Internal service started	
2013-10-16 15:47:07	0, 00h 00m 33s	writer	2.0.15.09/08.10.2013PCI	Recorder ready to work	
2013-10-16 15:47:06	0, 00h 00m 32s	shell	2.0.15.09/08.10.2013PCI	Recorder started	

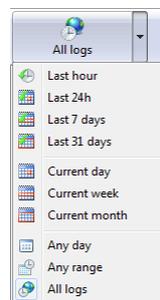
File size: 10.20 MB Number of rows in a file: 55870 Number of rows in view: 55870
 Press F1 to get help. Version: 2.7.43.1007 Account: Administrator programu Konsola 2 NUM

Detailed information about the selected event is activated by a click on the *Event details* button.



4.10.1 Setting time range

It is possible to set the time range for logs by means of the options available either on the icon bar or in the *Logs* menu.

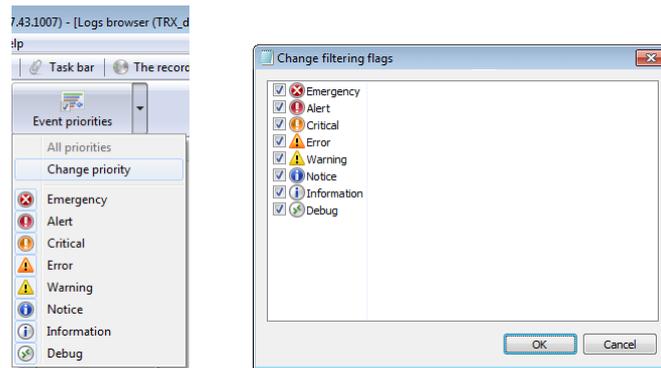


4.10.2 Filtering logs by their type

Records on the log list can be filtered by means of two buttons: *Events priorities* and *Users*.

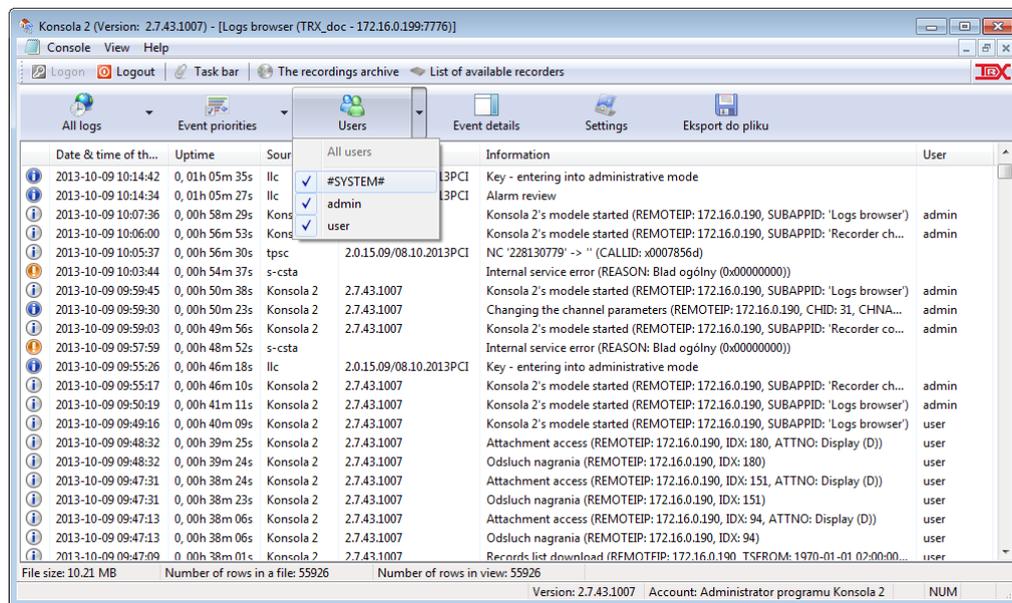
4.10.2.1 Event priorities

The menu enables to control the display of logs depending on the level of importance (alerts, errors, warnings, etc.). Each priority level has a different graphic symbol, located to the left of the event message.



4.10.2.2 Users

The *Users* list allows to select what type of log is presented. The filtering is related to all user accounts with one exception of the #SYSTEM# pseudo account. All types of logged information are presented for this account.



4.11 The channel monitoring

With the *Monitoring* module it is possible to supervise the current state of each channel on the recorder. The user is able to monitor channels (physical or virtual) which he is granted access right to. The *channel monitoring* stands here for determining, if there is recording in progress on the particular channel.

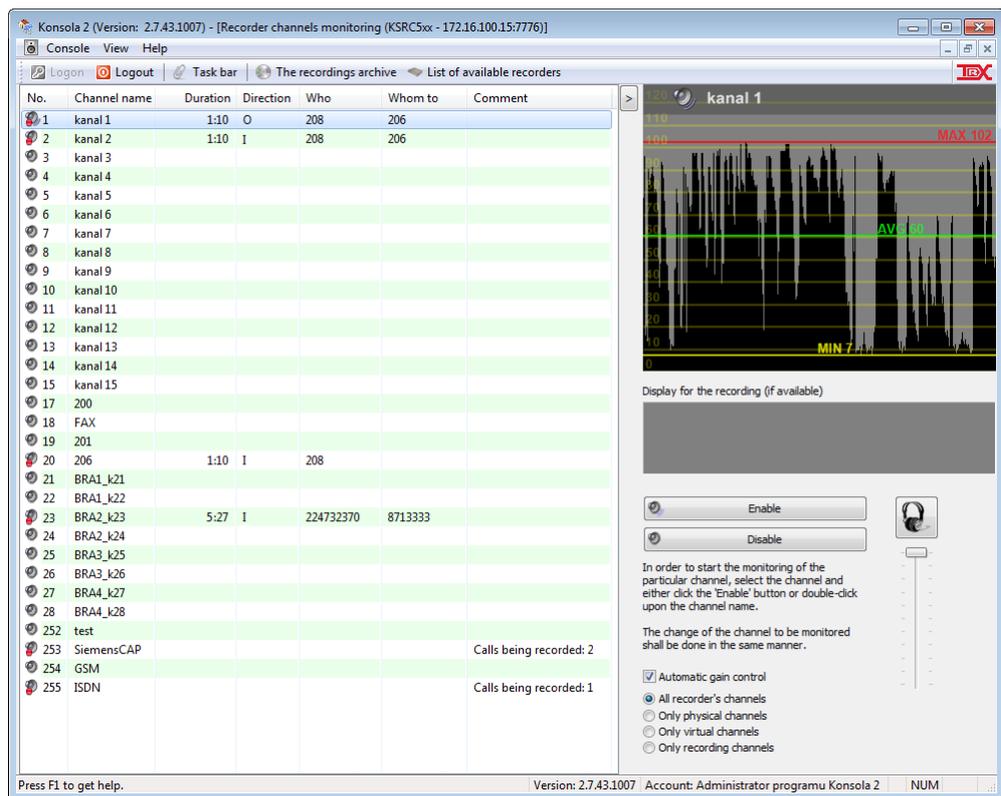
It is also possible to listen to a content of calls on the selected channel (regardless of whether it is on the call, or not). It is possible to simultaneously monitor the same or different channels of the recorder by several users logged on different workstations.

These actions are independent of the recording process on the recorder and do not affect it.

4.11.1 Information about recording in progress

The channel status is presented right after the Monitoring module is launched. It can be read out directly from the channel list.

If there is a call being recorded on the particular channel, the icon representing the channel on the list will change its appearance. It will change from  to  (there will appear a red dot on the speaker symbol). Also, the duration of the recording appears on the list. The numbers that identify *Who* and *Whom to* is calling are presented too, if only recorder was able to obtain these data.



The screenshot shows the 'Konsola 2' application window. The main window is titled 'Konsola 2 (Version: 2.7.43.1007) - [Recorder channels monitoring (KSRC5xx - 172.16.100.15:7776)]'. It features a menu bar with 'Console', 'View', and 'Help'. Below the menu bar is a toolbar with 'Logon', 'Logout', 'Task bar', 'The recordings archive', and 'List of available recorders'. The central part of the window is a table with the following columns: 'No.', 'Channel name', 'Duration', 'Direction', 'Who', 'Whom to', and 'Comment'. The table contains 25 rows of data, with some channels marked as being recorded (indicated by a red speaker icon in the 'No.' column). To the right of the table is a monitoring window for 'kanal 1'. This window displays a real-time audio waveform with a red line indicating the maximum level (MAX 102) and a green line indicating the average level (AV 10). Below the waveform are controls for 'Enable' and 'Disable' recording, a volume slider, and a checkbox for 'Automatic gain control'. The status bar at the bottom of the window shows 'Version: 2.7.43.1007', 'Account: Administrator programu Konsola 2', and 'NUM'.

No.	Channel name	Duration	Direction	Who	Whom to	Comment
1	kanal 1	1:10	O	208	206	
2	kanal 2	1:10	I	208	206	
3	kanal 3					
4	kanal 4					
5	kanal 5					
6	kanal 6					
7	kanal 7					
8	kanal 8					
9	kanal 9					
10	kanal 10					
11	kanal 11					
12	kanal 12					
13	kanal 13					
14	kanal 14					
15	kanal 15					
17	200					
18	FAX					
19	201					
20	206	1:10	I	208		
21	BRA1_k21					
22	BRA1_k22					
23	BRA2_k23	5:27	I	224732370	8713333	
24	BRA2_k24					
25	BRA3_k25					
26	BRA3_k26					
27	BRA4_k27					
28	BRA4_k28					
252	test					
253	SiemensCAP					Calls being recorded: 2
254	GSM					
255	ISDN					Calls being recorded: 1

4.11.2 Phone line eavesdropping

In the particular circumstances, it may be necessary to listen to the content of calls that take place and are recorded on any channel of the recorder. In order to eavesdrop a call on the selected channel, the user shall double-click upon the channel name on the channels list. Alternatively, he may press the *Enable* button on the right side of the *Monitoring* module window. After a short time required for audio buffers to be fulfilled, the current conversation from the selected channel will be heard in the PC sound system.

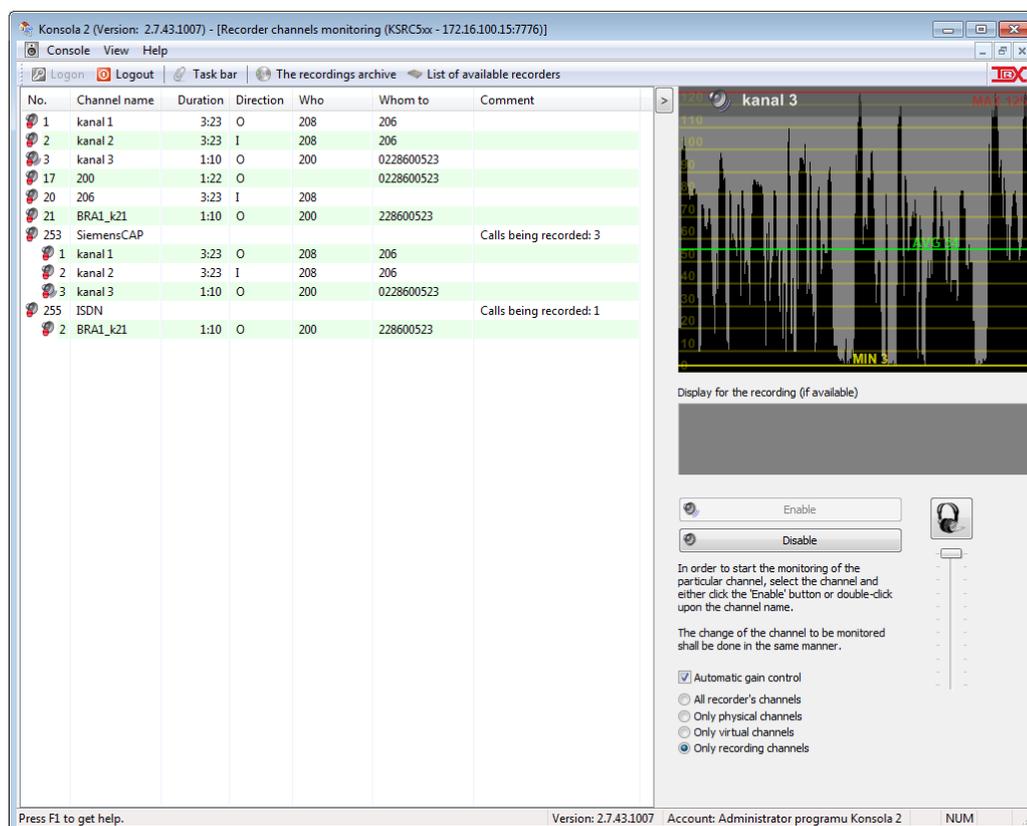
The user can change the channel which he listens to at any time, in the ways described above.

The slider placed on the right side of the module window presents the volume level of the conversation that is being recorded on the recorder. This level cannot be altered; however, it is possible to adjust the level of eavesdropped audio signal which is reproduced by the local computer's sound system.

The *Automatic gain control* option allows you to automatically control the audio level of eavesdropped calls.

Automatic gain control function does not change the parameters of the original recording that is saved on the hard disk recorder.

It is also possible to reduce the monitored list only to physical channels, virtual channels or only to channels with arranging calls - options *All recorder’s channels*, *Only physical channels*, *Only virtual channels*, *Only recording channels* (picture).



4.12 The playback module

The main designation of the *Konsola 2* program is browsing and playback of calls stored on the recorder.

Separate player window provide additional functionality during the playback, for example it is possible to listen to whole or a selected part of the recording in slow or fast motion. Module functionalities also involve saving recordings in either the common *wav* file format (in order to play it back on virtually any other computer), or in TRX-proprietary format archive. If the DTMF signaling is present in the recording, it can be decoded using the DSP module.

A detailed description of the features of the player is presented in section 4.12.5.1.

For recordings of fax transmission, it is possible to decode this transmission and get the picture of the document that’s been faxed (additional license is required).

List of searched calls along with the date and time of call, initiating (*Calling*) and called (*Called*) numbers, and other parameters can be saved to a file in csv or html format.

The security features allow you to limit the possibility of playback calls for users whose security level is less than the level assigned for secured recordings. Regardless of the calls can be protected by a password that must be given when you try to play them. Another advantage of the *Konsola 2* is a possibility to add text notes or attachments (files of up to 2 MB) to the selected recording.

To view the list of recordings, it is necessary to determine:

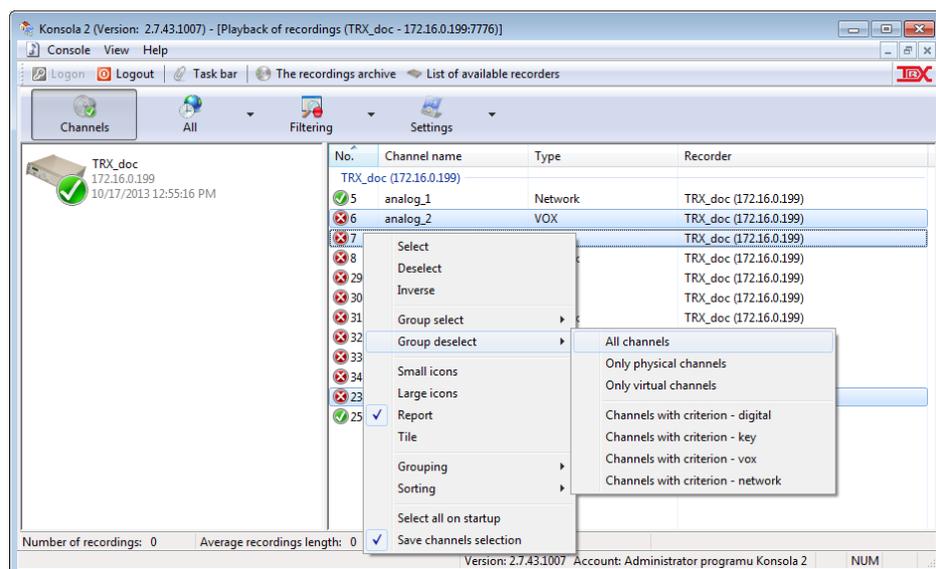
- **source of the recordings**, i.e. logical and / or physical channels,
- **time range** for searched calls.

4.12.1 Channels selection

After the click to the *Channels* button a window with the list of recorder channels is being opened. By default all channels are disabled, therefore the channels which are the source for the recordings should be activating.

Symbol  indicates active channels, and  channels inactive. Single click selects the channel, and the double will change its status. In order to mark the group of channels one should additionally use keys the *CTRL* and *SHIFT*.

The context menu of the window enables also fast checking / unchecking channels from a specific group (e.g. all virtual channels).



Notice: To enable playback the calls recorded on interfaces with physical channels of digital type in the channel list it is essential to select the appropriate virtual channels.

Notice: User is able to operate on channels, which he's granted access to. Other channels are not present on the list of available channels.

4.12.2 Select time scope

After the channel selection is done, user shall define the time range for recordings.



The user has the following options:

Last hour – only the calls recorded during the last 60 minutes are taken into account,

Last 24h – only the calls that has been recorded during the last 24 hours are taken into account,

Last 7 days – only the calls that has been recorded during the last 7 days are taken into account,

Last 31 days – only the calls recorded during the last 31 days are taken into account,

Current day – the playback of recordings created on the current day (from the time of last midnight) will be possible,

Current week – the playback of recordings created in the current week (from the time of last midnight between Sunday and Monday) will be possible,

Current month – the playback of recordings created in the last month (from the time of the midnight of the first day in the month) will be possible,

Any day – this choice lets user to state the date of creation of the recordings to be played back. All recordings created between 0:00:00 and 23:59:59 at the selected date are taken into account,

Any range – the beginning and the end of the time range for recordings to be taken into account, is specified here by the user. Both timestamps can be specified with one second resolution, if necessary,

All – with this option, the playback of all calls ever recorded on the selected set of channels (see 4.12.1) will be possible.

After the user defines both the channel and the time range for recordings to be taken account during the creation of the recording list, this list will be populated with recordings meeting both selected channel and time range criteria. If it does not, click the *Refresh* button on the toolbar.

4.12.3 The customization of module window appearance

When you specify the channels and time range for searched recordings, downloading data from the recorder is taking place. Upon completion of this operation, the window displays the list of all the records that meet the search criteria. The details of searched connections (number of columns in the list) may be altered at any time freely.

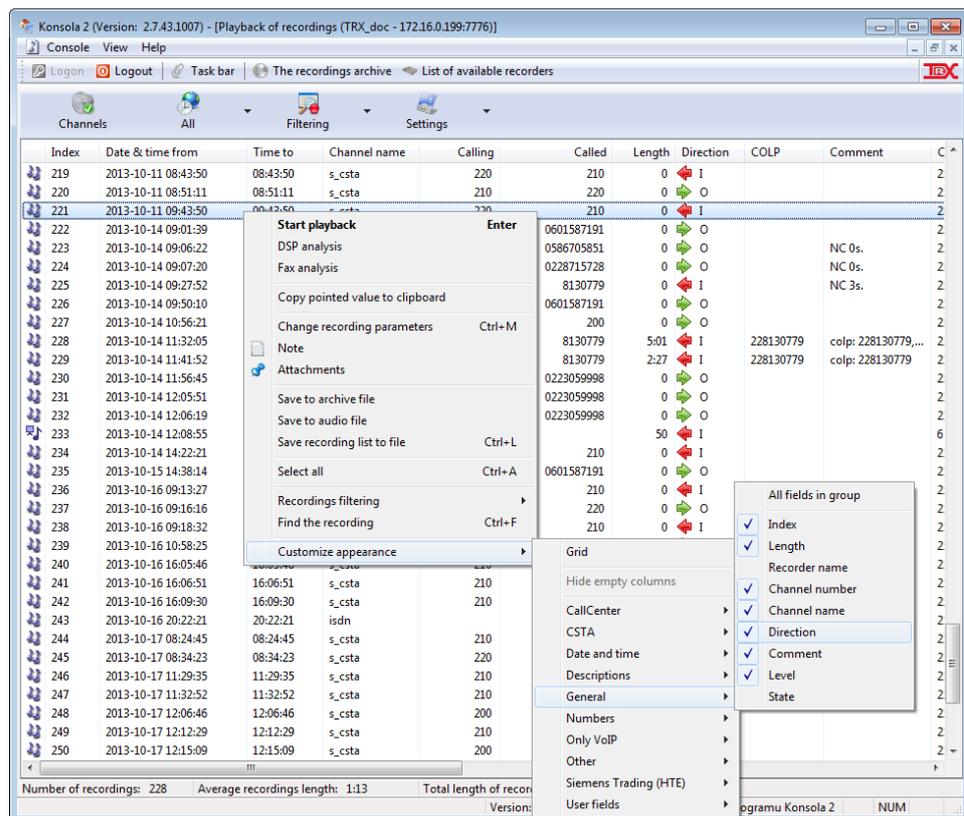
In order to adjust the content of the recording database to the user's needs he should select *Customize appearance* option from the context menu.

Particular names of the columns are sorted into groups. You can select a single field from a group, or all at once. There is also the possibility of switching to hide

empty columns in the table. To do this, switch the *Detect empty data fields* option in context menu.

Column of the table can be placed in any order. To do this, hover over a column header, press the left mouse button and drag the column to the desired location in the table.

You can also sort recordings in order by any column of the table. In order to sort the records click on the column name corresponding to the desired sort criterion. The column by which the records are currently sorted is distinguished by arrow symbol on a blue background. The direction of the arrow will indicate the sort order (ascending or descending).

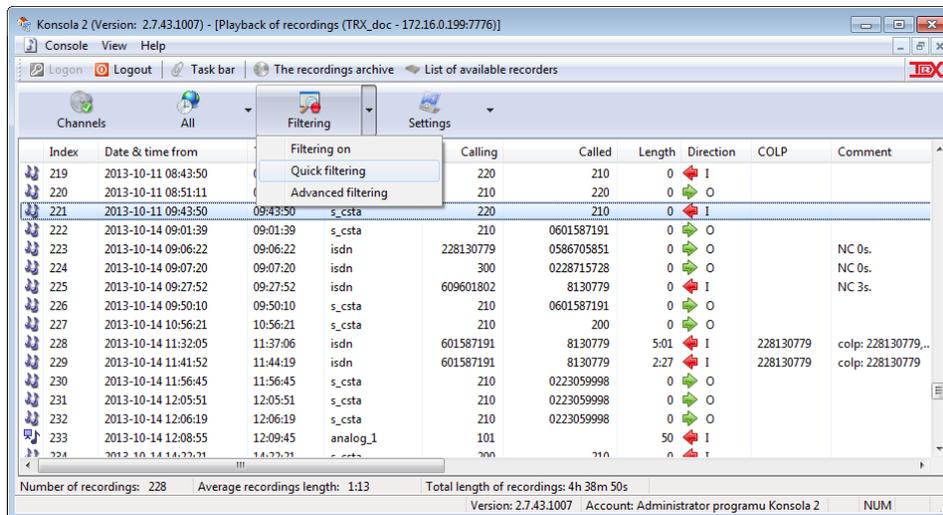


Re-click on the table header causes the change sorting order - from decreasing to ascending or vice versa. You can sort the list of calls by title of any column presented in the table.

Notice: If you want to sort the list by a column that is not currently displayed, you should first add the desired column using Customize appearance options available in the context menu of the window.

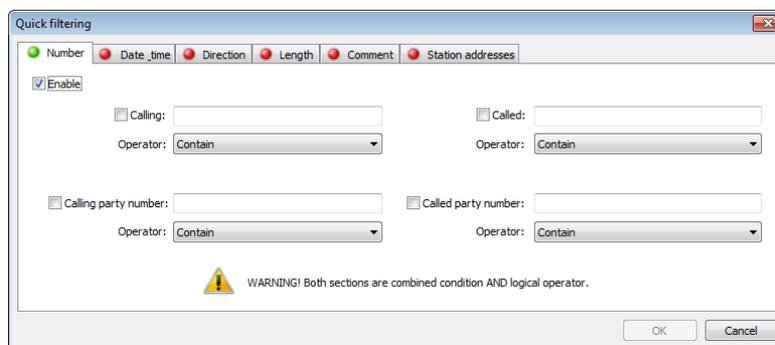
4.12.4 Filtering the recordings list

The recording list may be passed through some additional criteria defined by the user.



The filtering allows searching for particular call in a set of recorded calls and the bigger is the set, the more useful this feature is. The user can choose from two types of filtering: quick or advanced. The advanced filtering allows you to create any number of filters with strictly defined conditions.

The *Quick filtering* is used in the case when there is no need to build sophisticated filter expressions. It allows you to build a single filter rule that can be made up of the six components (configured in each tab window).



These are respectively:

- phone numbers (*Calling* and *Called* party parameters),
- date and time of beginning filtering connections,
- direction of the call (incoming, outgoing),
- call duration (length of the call),
- contents of the recordings *Comment*,
- IP or MAC address of the recorded stations (only for VoIP terminals).

If the parameters of the selected tab are enabled the indicator dot next to the tabs changes the appearance of ● (red) to ● (green).

Keep in mind that all active (enabled) filter elements are combined logical **AND** operator, i.e. will search only those recordings that simultaneously satisfy all the filtering conditions.

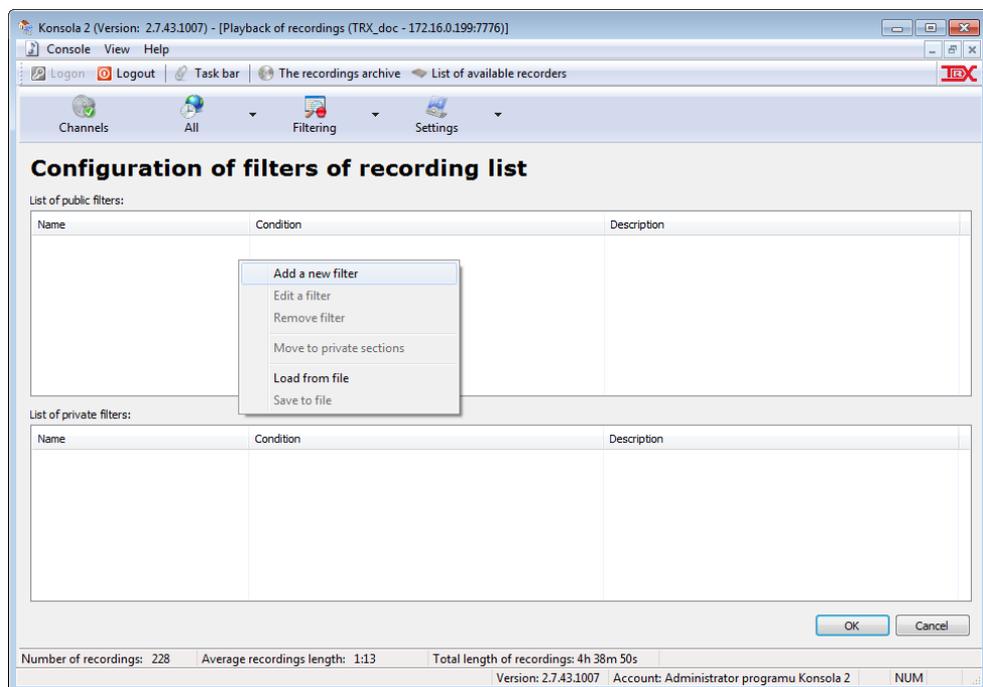
The advanced filters configuration

The window for advanced filter configuration is divided in two fields: the public (upper) and private (bottom) filters. In typical applications, this distinguishing is not important. However, when the *Konsola 2* application uses an external configuration server, the public filter rules are created on the server and cover all workstations, while the private filter rules created and cover individual workstations.

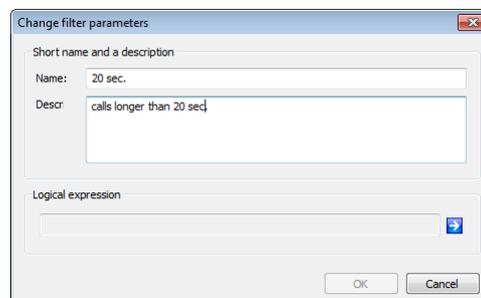
To create a new rule using advanced filtering mechanism, you should use *Add a new filter* option, that is available in the context menu filter configuration window.

Other options available in the context menu allow to:

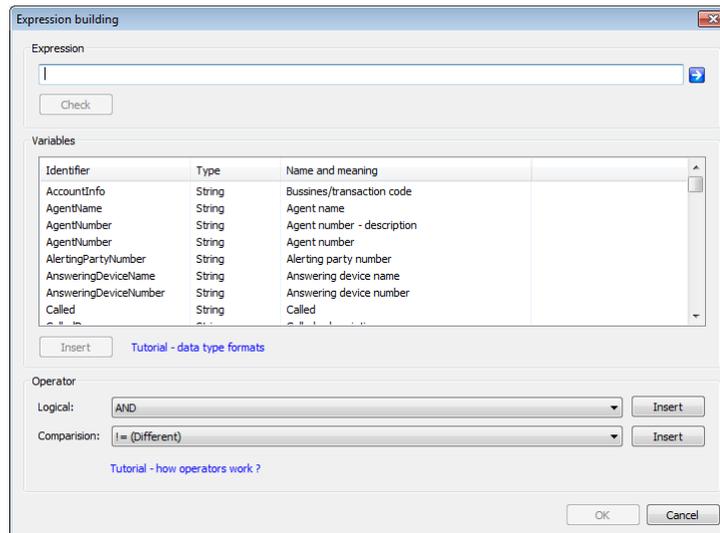
- import rules that were previously stored in an xml file (*Load from file*),
- save all created filters to file in xml format (*Save to file*).



In new window enter the name and, optionally, a brief description of the filter you are creating. The name you entered will appear in the menu *Filtering* function.



To go to create a rule, click the  icon in the lower right part of the window.



The window above allows you to create your own rule conditions (field *Expression*) or using logical expressions wizard (recommended, especially for less experienced users).

Manually creating filters

At the bottom part of window, there are tools to help build filtering expression. They allow you to insert the *Expression* field, the names of variables and the corresponding operators (comparison or logical). The names of the variables available in the center part of window correspond to parameters of recordings stored on the recorder.

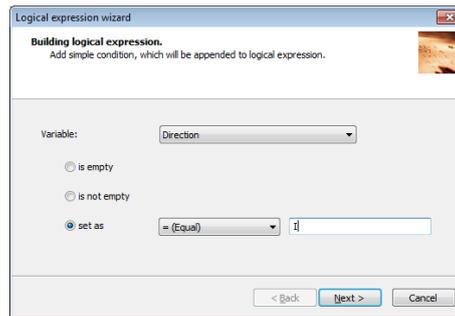
When you select a variable or an appropriate condition and click on the *Insert* button the values are copied to the *Expression* field.

Logical expression wizard

Even more easier to build filters by using the logical expressions wizard. The wizard is started by clicking on the  icon on the right side of the field *Expression*.



It is possible at any time to stop the wizard with button *Cancel*. When you click on the *Next* button in the welcome window of the wizard, you go to the next stage.



From the list of predefined variables (that describing the recordings features) choose a parameter that you want be used in the condition for created filter rule. The list of available variables, the format and the corresponding recording (call) parameters are presented in the table below.

Call parameter	Variable	Variable format
IP4 address of the station	StationIP4	text
IP6 address of the station	StationIP6	text
MAC address of the station	StationMAC	aa:bb:cc:dd:ee:ff (hex)
Time of end the call	TimeTo	HH:MM:SS
Time of beginning the call	TimeFrom	HH:MM:SS
Date and time of end the call	DateTimeTo	YYYY-MM-DD HH:MM:SS
Date and time of beginning the call	DateTimeFrom	YYYY-MM-DD HH:MM:SS
Date of beginning the call	DateFrom	YYYY-MM-DD
Call duration	Length	duration of the calls in second
Index of the call	Index	number
Direction of the call	Direct	I – incoming, O – outgoing
Comment of the recording	Comment	text
Called party name	CalledName	text
Calling party name	CallingName	text
Agent name	AgentName	text
Channel name	ChannelName	text
Recorder name	RecDeviceName	text
Agent number	AgentNumber	text
Group number (callcenter)	GroupNumber	text
Channel number	ChannelNo	number
Reached number	COLP	text
Number of the station	StationNumber	text
Called party number	Called	text
Calling party number	Calling	text
Agent description	AgentNumberDesc	text
Group description (callcenter)	GroupNumberDesc	text
Description of the station	StationNumberDesc	text
Called party number description	CalledDesc	text
Calling party number description	CallingDesc	text
State of the call	State	R, C, D, F, N, A, descr. below
Level of the call	Level	number
Unique ident. number of the record	UID	text
Unique ident. number of the call	UCID	text

Status of the recording is described by combination of the letters:

- R** – call currently is being recorded,
- C** – call is encoded,
- D** – recording contains the contents of system phone display,
- F** – recording contains a fax,
- N** – recording has an enclosed note (memo),
- A** – recording has an enclosed attachment.

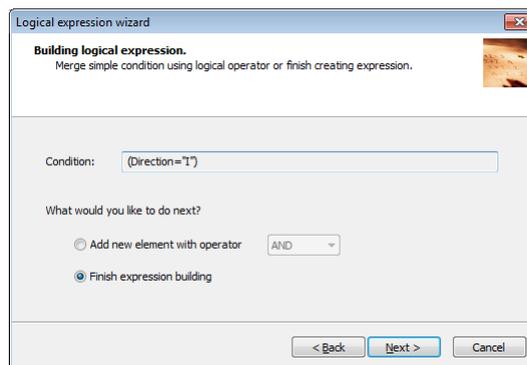
The next step is to determine the condition to be fulfilled by the selected variable. You can choose one of three options:

- is empty** – corresponds to the connections where the selected parameter is not set (is empty),
- is not empty** – corresponds to the connections where the selected parameter has any, irrelevant (at this point) for user value,
- set as** – corresponds to the connections where the selected parameter has the value specified in the adjacent fields.

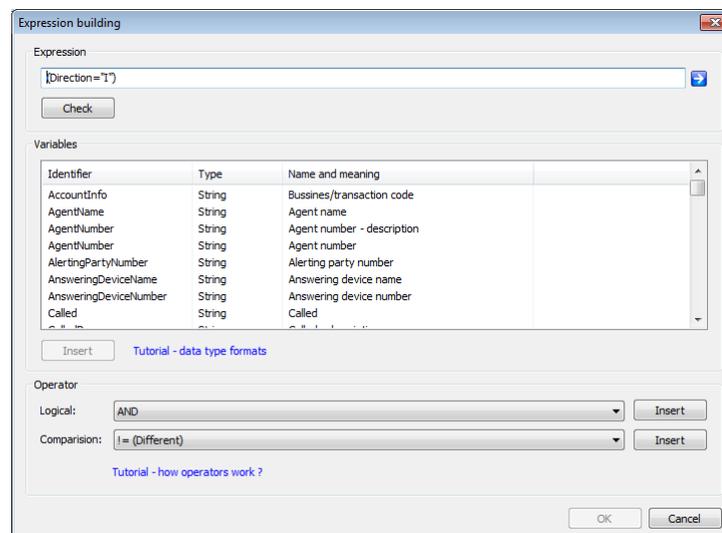
In the example shown in the figure above the table, choosing the first option will cause, that the recording list after filtering will include only calls with an empty field *Direction*. Choosing the second option will cause the opposite situation - on the list of calls only recordings with set direction will remain (incoming or outgoing). Select the third option allows to specify the content of the parameter *Direction* (here: I - incoming calls).

The values entered for the third options are varied. They may be strings of letters or digits. In some cases, they should have the format as specified in the table above.

After determining the simple condition, the user has a choice: either finish the rule, or create another condition which is connected to the previous using the AND or the OR logical operator.

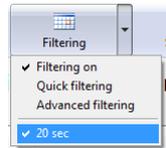


Upon completion of creating the rule, the formula appears in the Expression field in *Expression building* window.



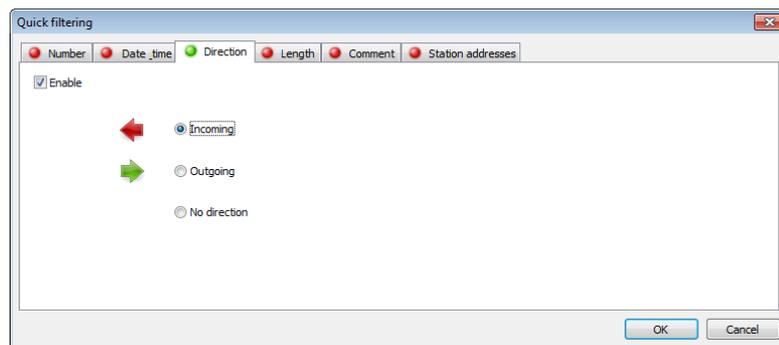
Before saving the rule, it is necessary to check the terms of the lexical (correctness of syntax). To do this, use the *Check* button below the *Expression* field. If the rule syntax is correct suitable message appears (in green). At the same time the OK button is used to write the rules in the application becomes active. Otherwise, a message in red indicates an error in the syntax rules.

After creating the filtering rule its name is added to the list of filters that is available when you select the arrow next to the *Filtering* button.



Quick filtering

An alternative to the advanced filters created on the basis of logical expressions can be use of fast filtering. Configuration a filter for incoming calls (corresponding to the example described in the previous section) is shown in figure below.



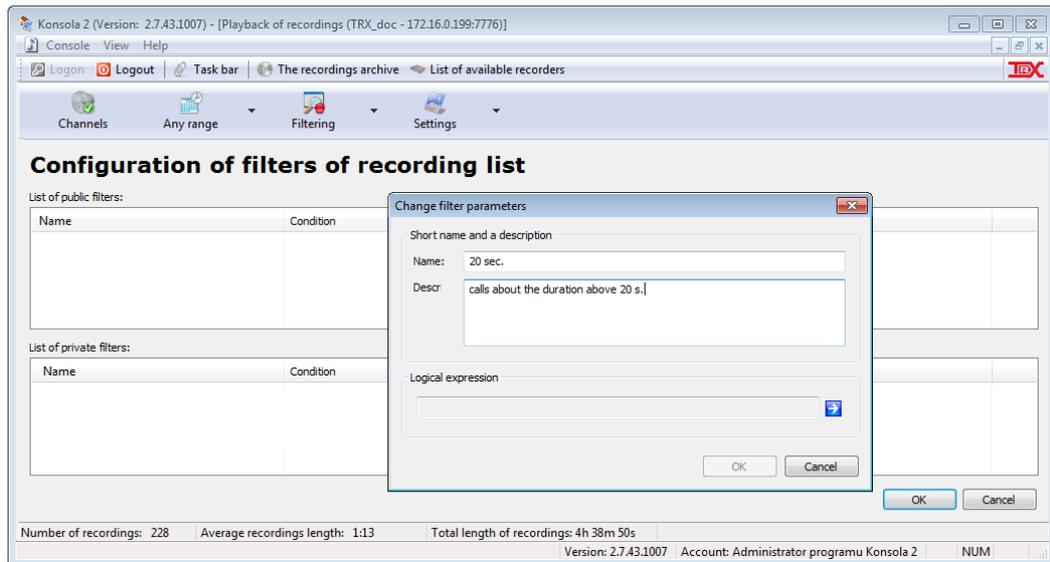
4.12.4.1 Examples of the filters applications

This section contains examples of how to configure call list filters. The first filter is formed using the "manual" process, and the other using the wizard. In both examples, the beginning is the same: in the *Playback of recordings* window click the *Filtering* button.

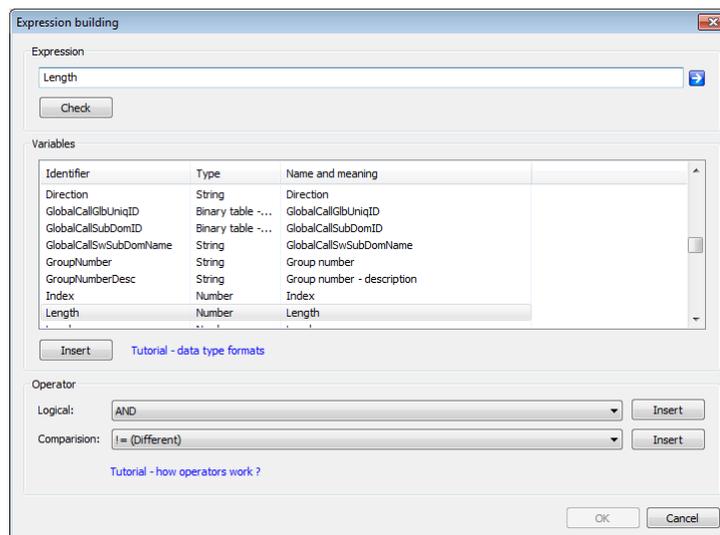


Searching for calls about the duration above 20 seconds (manual process)

In the next step in field *List of public filters* select *Add a new filter* option from the context menu. In the new window, enter a name and description for the filter, that is appropriately "20 sec." and "calls about the duration above 20 s." and click on the arrow  next to the *Logical expression* field.



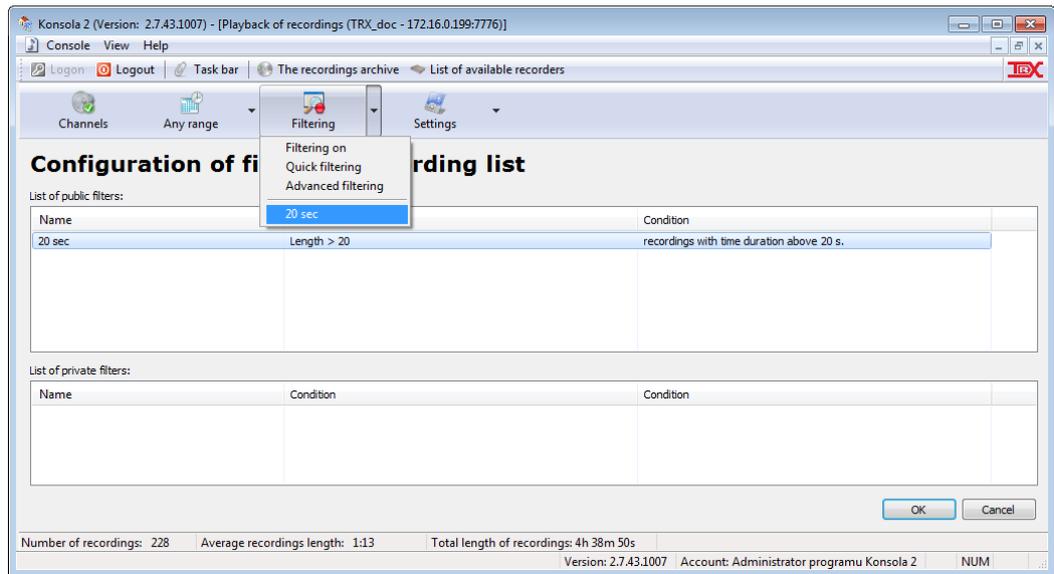
In a new *Expression building* window locate and select from the *Expression* list the variable representing duration of a call (*Length*).



Then double-click the found Identifier or select it and use the *Insert* button. The identifier name should appear in the *Expression* field. For this selected *Length* identifier you must specify a condition that it must meet. For this purpose, you can use the *Operator* section. From the drop-down list *Comparison* box, select the ">,> (*Greater*)" option and click on the *Insert* button. The content in the *Expression* field should be completed by the ">" character. The desired value of 20 (seconds) must be entered manually, so that the whole expression has the form: *Length* > 20.

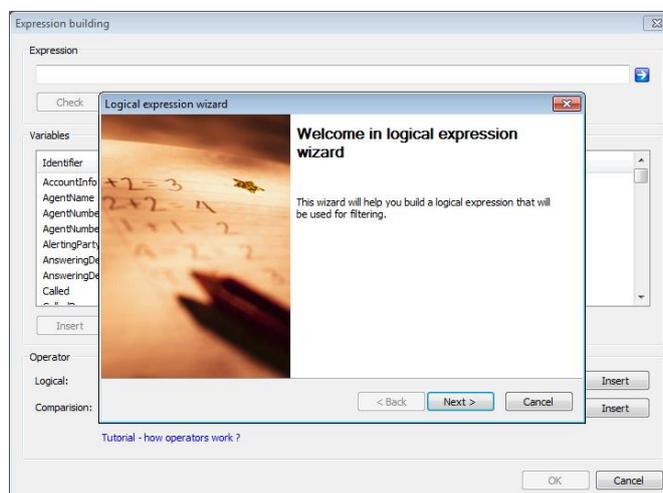
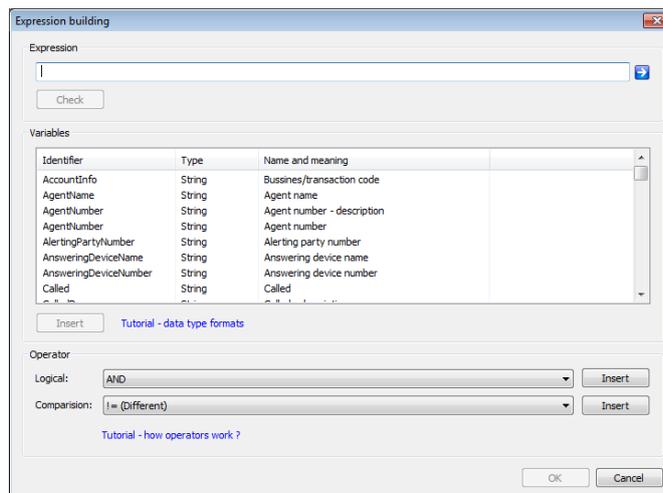
The next (mandatory) step is to validate the expression syntax, by clicking on the *Check* button. If the rule is built correctly, the *Filter expression is valid* message appears. Then approved the whole operation click on OK in both windows *Expression building* and *Change filter parameters*.

The filter name "20 sec." should appear in the *Configuration of filters of recording list* window and in drop-down menu *Filtering* button.

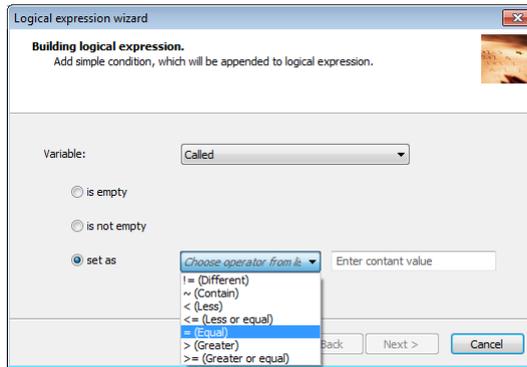


Searching for incoming calls to extension 200 (expression wizard)

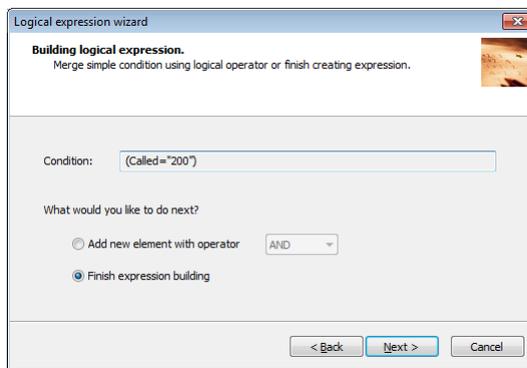
Creating this filter is based on logical expressions wizard, which is started when you click on the arrow  next to the *Expression* field in the *Expression building* window.



Next wizard window will be opened when you click on the *Next* button.

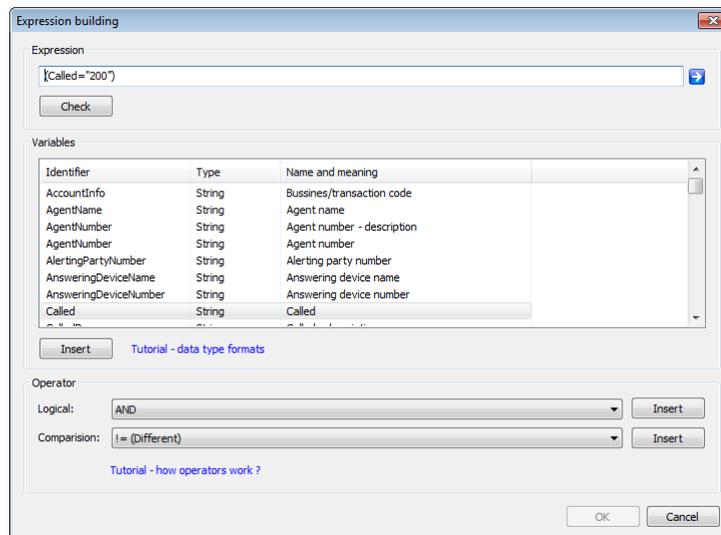


In the *Variable* drop-down menu, select “*Called*” parameter, after then select the “*set as*” condition. From next drop-down menu select “*= (Equal)*” option and in the *Enter constant value* field write the extension number “*200*”.



The *Next* button is opening next wizard window where you need to select the *Finish expression building* option and click on the *Next* button.

The next window informs about finishing building the expression of the filter. When you click on the *Finish* button you will return to the window from which the wizard was started.



Formed by the expression wizard rule appears in the *Expression* box. To finish building process of the filter (as in the case of the “manual” method) you must validate the rule by pressing *Check* button.

4.12.5 Playback of recorded calls

Playback of the recording by the *Konsola 2* program has no effect on change of contents or other parameters of recordings saved on the recorder hard disk.

The recording that is currently being played back is distinguished on the recordings list (it's bolded). Recordings that have been played back are grayed out on the list.

Calls of the above hour duration are divided over the length of 1:00:00.

94 866	2013-09-03 12:55:13		12:55:45	32	221	← I	200	253
94 867	2013-09-03 12:55:13	D	12:55:45	32	221	← I	220	17
94 868	2013-09-03 12:55:44	D	13:02:06	6:22	200	→ O	220	17
94 869	2013-09-03 12:55:52		13:02:06	6:14	200	→ O	220	253
94 871	2013-09-03 13:58:53		13:59:51	58	211	→ O	220	253
94 872	2013-09-03 14:48:47		14:49:10	23	220	← I	210	253
94 873	2013-09-03 14:55:28		14:55:54	26	220	← I	200	253
94 874	2013-09-03 14:55:28	D	15:55:28	1:00:00	220	← I	220	17
94 875	2013-09-03 15:55:28	D	15:58:36	3:08	200	→ O	220	17
94 876	2013-09-03 15:58:08		15:58:38	30	200	→ O	220	253

Graphic symbol next to the record index number can have one of the forms:



- the recording is a part of the call about the total duration above one hour,



- currently lasting call is being recorded,



- recording contains information about the contents system phone display,



- for other (ordinary) calls.

It is possible to get familiar with the contents of the recording, by double clicking on the recording. Alternatively user may first select the recording on the list and then press the *ENTER* button or choose from the context menu the *Start playback* option.

The player allows to playback the selected call and provides additional information relating to the recording. It is divided into a few sections, presenting different information related to the recording.

4.12.5.1 The *Player* window

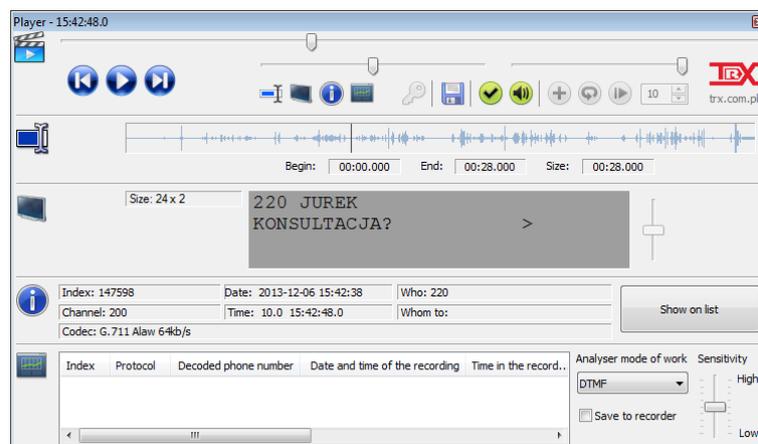
The appearance of the window in the minimized version (when you first start the program) is shown in the picture below



Set of buttons  (under the left, bottom slider) allows you to display or hide the following modules:

- the graphical representation of the recording,
- the display of the system phone (for most producers),
- information about the parameters of the playback call,
- tone signaling chars (if they have been used in recording).

The Player window in maximized version (with all modules switched) is shown in the figure below.



The top slider indicates the part-listening position relating to the entire call duration, slider also enables playback the call from the marked point of time.

The left bottom slider allows adjusting the speed of playback process (in the range -50% ... +50%). Position of this slider is remembered for **all** played recordings.

The  button (next to the „floppy”) restores the "normal" playback speed.

The right bottom slider allows raise or lower the volume for played calls. The slider setting is stored for all recordings recorded on **the same channel** (even after restart the *Konsola 2* application).

The  button means inactive, and the  button - enabled *MUTE* function (while the playback continues).

The active  button means the enabled *Automatic gain control (AGC)* function. This feature allows switching the mechanism causes all played calls have equal, similar to each other volume level.

***Automatic gain control* does not change the volume of the original recordings stored on the recorder.**

The  button enables saving audio signal from whole or selected part of current recording to *.wav file.

Set of buttons  or  (depending on whether the current recording is played, or not) enables appropriately:

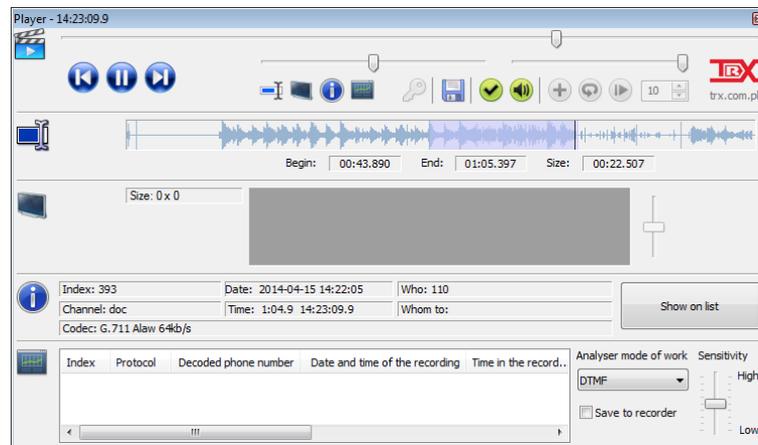
- jump the playback to the previous call on the list,
- pause or play the call,
- jump the playback to the next record in the list.

Active  [*Continuous playback*] button allows to automatically play successive recordings from the list.

Enabling the  [*Play beginnings (sec.)*] button allows to playback only the beginning of recordings. Duration of the played parts of the calls can be determined in the range of 1 to 300 second.

The Markers the playback range section

The window provides a graphical representation spectrum of the call in form of instantaneous level of the audio signal.



Implementation of the markers enables playback or save to file all or a selected part of the recording. For that purpose at first select the chosen fragment of the scope and then use  or  buttons (respectively, for playback or save to a file).

The Display section

In case of recording calls from the system lines some vendors, additional data presented on the display of the system phone is also recorded. This data is presented during the recording playback in the *Display* section in the synchronous manner: the content of display changes in the same way as it's been changing during the call.

The Information section

This section presents the basic information about the recording: its index, the name of the source channel, timestamp for the beginning of the recording, absolute and relative time during the listening numbers *Who* and *Whom to* and type of codec by means the recording has been saved.

The DSP analysis section

The options contained herein, allow you to decode any additional information stored in the recording by means of the following tone encoding systems: FSK, DTMF, CCIR, EEA, ZVEI1/2/3, PZVEI, EURO, EIA, VDEW, CCITT, NATEL and TONE5 6. The user may redefine the sensitivity of the mechanism in case of low signal level recordings or if the recording contains a lot of noise and other disturbances in it. Decoded data may be saved on the recorder for future use.

The FSK signaling (that provide Calling Party Number) detection and processing is done automatically when you playback the call.

4.12.6 Storing recordings into wav files

Each recording from the list may be saved in the common *wav* or *mp3* file format on the local hard drive. User may save a single file or many files at the same time. In both cases, he can declare what codec shall be used for the *wav* file.

Saving single recording

After the recording is selected on the list, user shall use the *Save to audio file* option available in the context menu for the list of the recordings. The Save as dialog window will appear allowing to define the location and the name for the file. By default, recording’s *Index*, *Date &time from*, *Calling*, *Called* and *Channel name* stands for the filename.

Saving many recordings at a time

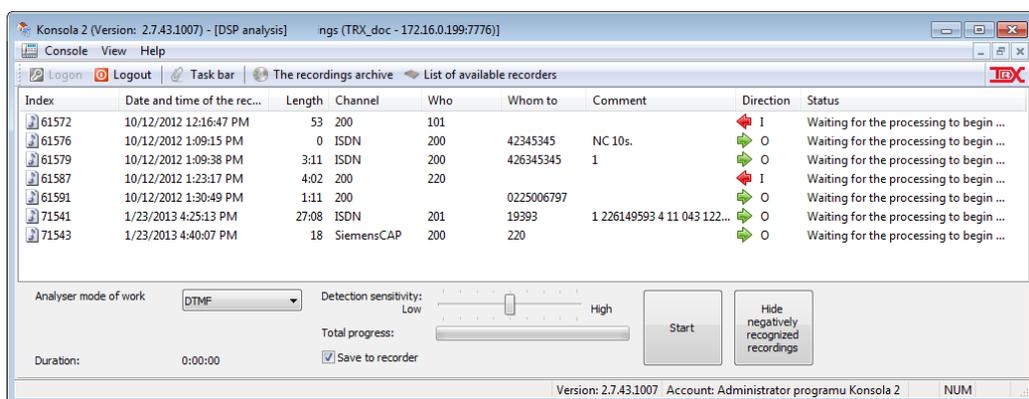
If there is a need to save a few recordings at a time, additional options related to the creation of unique filenames for each recording will appear, after the *Save to audio file* option is selected. These options allow defining location of the files, the common part of filenames (the name prefix) and the name extension which is unique for each recording.

4.12.7 DSP analysis

The *Konsola 2* application provides decoding the DTMF signaling information transmitted during a call. The processing speed is limited only by the PC throughput.

To decode the data from the recording, it is necessary to select it on the list and then select the *DSP analysis* option available in the context menu for the list of recordings.

All selected recordings will be presented in a new window, where the basic information about the recordings will be present, including the detection status for each file.

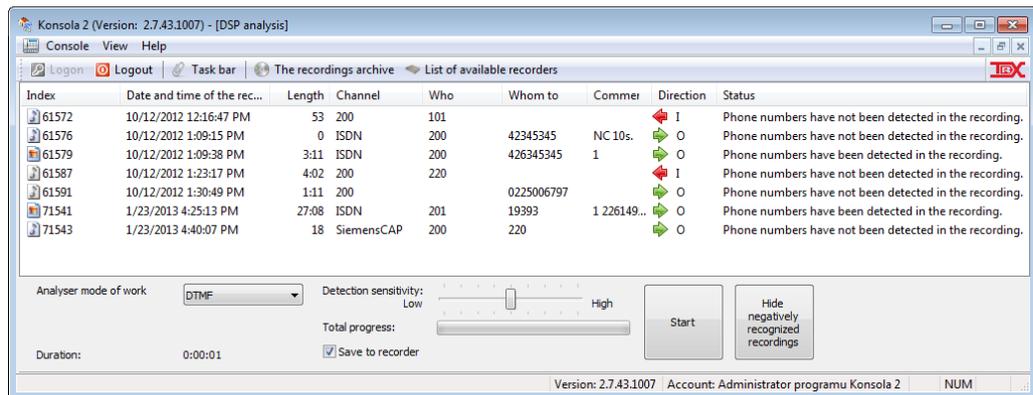


The DSP analysis allows supplementing the recordings with additional info related to these recordings. Before the detection is started, it is required to select detection mode (what kind of tone modulation shall the application look for).

If the recording has no number attached to it, and any number will be decoded by the application, it will be automatically appended to the recording in appropri-

ate field (*Who* or *Whom to*) depending on the recorded call direction. If there are more than 31 decoded characters, they will be attached into the recording's comment. The gaps between consecutive symbols can last no longer than 12 seconds. Any character sent after such gap will be put into the comment field of the recording.

On the picture below in recordings 3 and 4 were detected digits dialed in DTMF format. For these recordings the icon next to the index number of record has the  appearance, also in the *Status* column is the information *Phone numbers has been detected in the recording*. Because the field of *Who* and *Whom to* are not empty, decoded information is added to the *Comment* field.



The selection of the *Save to recorder* option before the beginning of the analysis will cause the permanent addition of the decoded data into the recorder's database. In the other case, the decoded data may be browsed only.

If the recording contains information about the caller number (CID) encoded in FSK and the *Who* number does not exist yet, the CID is automatically appended as *Who* number. In the other case, the decoded CID is inserted into the recording's comment field.

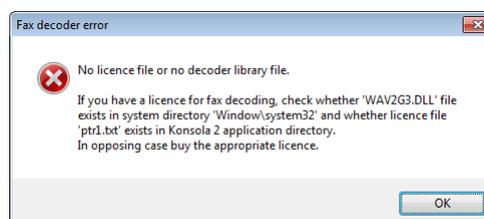
Detection of FSK encoded signaling (Calling Party Number for analogue line) is carried out automatically.

For all other coding schemes, the decoded information is put into the comment field.

4.12.8 The fax decoding

Konsola 2 application allows retrieving fax content data from any recorded calls which contain fax transmission. The analysis is based on the third-party software, which requires the license for fax decoding and the usage of the hardware key.

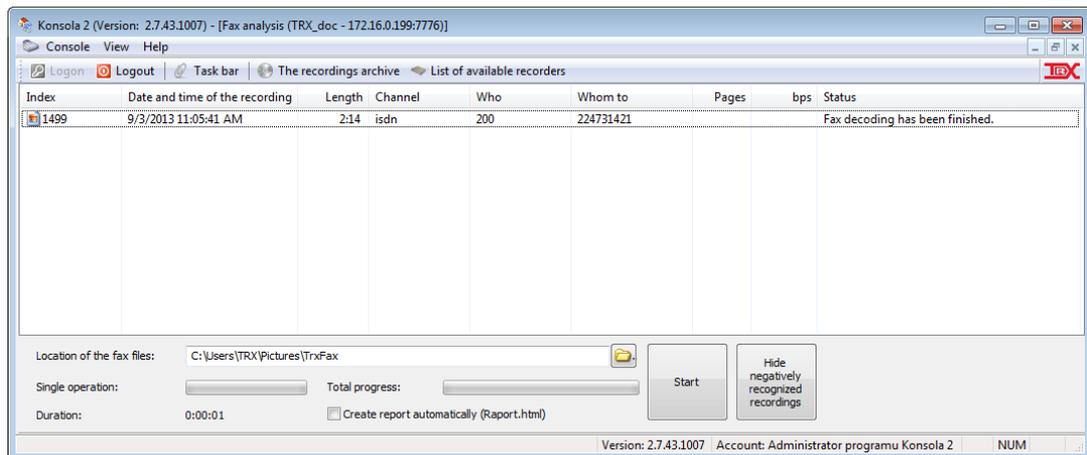
Without meeting these conditions decoding faxes is impossible (which informs the message below).



The license and the hardware key may be purchased directly from TRX or from the library distributor.

The manner of selection of recordings for detection is the same as in case of DTMF analysis. After it is done, user shall select the *Fax analysis* option from the context menu for the selected recordings list.

The *Fax analysis* window will appear, giving access to features related to fax decoding, browsing the decoded documents and saving to the graphic file in the *TIFF* format.



This window contains the list of recordings designated for fax decoding. Basic information about each recording is presented. Also, the decoding status is given here, too.

Before the decoding takes place, user shall provide the path to the folder where decoded documents will be stored in the *tiff* format. To do this, enter or select using the  button the desired path to the folder with location the files.

The *Start* button triggers the decoding process upon all files on the list. Status of each recording is presented on the list. Also the appearance of the icon related to the recording changes according to the current status of this recording:

-  - the file's been processed,
-  - the file is being processed,
-  - the file waits for being processed).

In order to view the decoded document, user shall select the *Display fax* option from the context menu for the recording that's been processed.

4.12.9 Additional features

The additional features allow you to change some of the recordings parameters (security level, comments), add text notes or attachments. Options are available from the context menu for the one or group of selected calls.

4.12.9.1 Changing the recording parameters

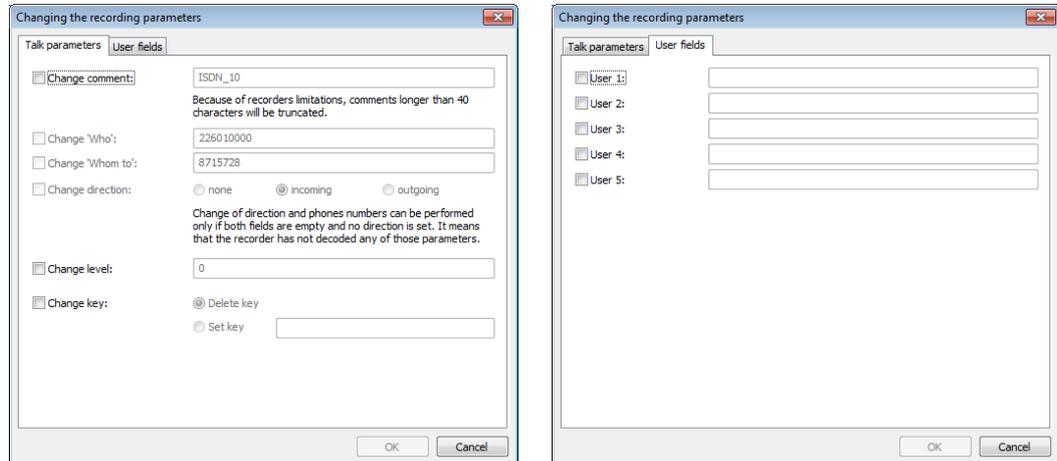
The *Change recording parameters* option allows adding or modifying some parameters of selected recordings.

Changing the recording parameters will in no way interfere with the content of the recorded conversations.

Function is available both from the context menu and by using *CTRL+M* keyboard shortcut.

Some parameters such as *Comment*, *Level* (access to record), or user fields (*User 1* to *User 5*) may be modified unconditionally.

The *Who*, *Whom to* and *Direction* parameters can be changed only if have not been determined by the recorder during the call recording.

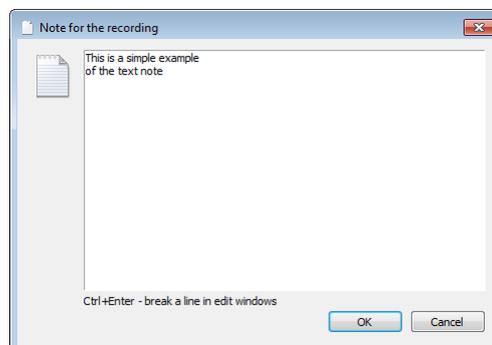


The *Changing the recording parameters* window allows for protecting the access to chosen recordings (*Set key* option) regardless of the level of security. Recording protected with a key is marked the  symbol, and during the attempt of playback the *Enter the recording's password* window appears.



4.12.9.2 Note

The *Note* function allows adding or editing text notes attached to the selected recording.

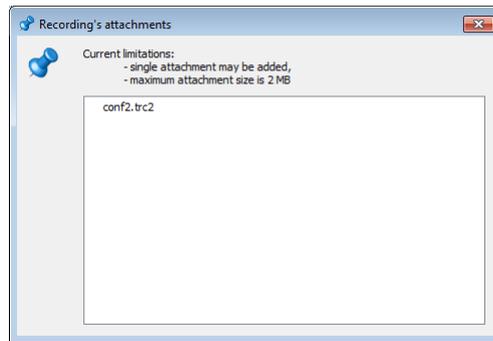


Unlike the *Comment* the *Note* isn't one of parameters of the recording and can be much longer. The rows in the note are not automatically wrapped, break to a new line (during the addition or the edition) is possible with the *CTRL+ENTER* combination.

The information about the added note is marked with the *N* letter in the *State* column in the list of recordings. Content of the message is shown in the *Note* column, or the separate window, opened from the context menu.

4.12.9.3 Attachment

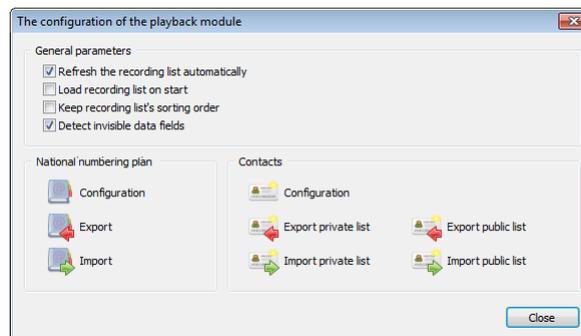
The *Attachments* function allows adding or downloading (previously attached) file to the selected record.



The program enables to attach one file about size not exceeding 2 MB. The information about the added attachment is marked with the *A* letter in the *State* column in the list of recordings.

4.12.10 The configuration of the *Playback* module

User can modify the settings for the *Playback* module. This can be done by means of selection of the respective icon (the last one) on the icon bar.



4.12.10.1 The General parameters

Refresh the recording list automatically – the recording list shall be automatically refreshed, after each change of either the time or channel range,

Load recording list on start – at the start of the module recording list for the last specified time or channel range will be loaded, if this option is unchecked the call list is empty,

Keep recording list's sorting order – when you refresh or change time range for the recording list a previously set sorting order is retained, if this option is unchecked the recording list is sorted by index,

Detect invisible data fields – if downloaded recordings contain information that cannot be displayed in the current table layout, the program prompts for the ability to automatically expand the recording list for new columns.

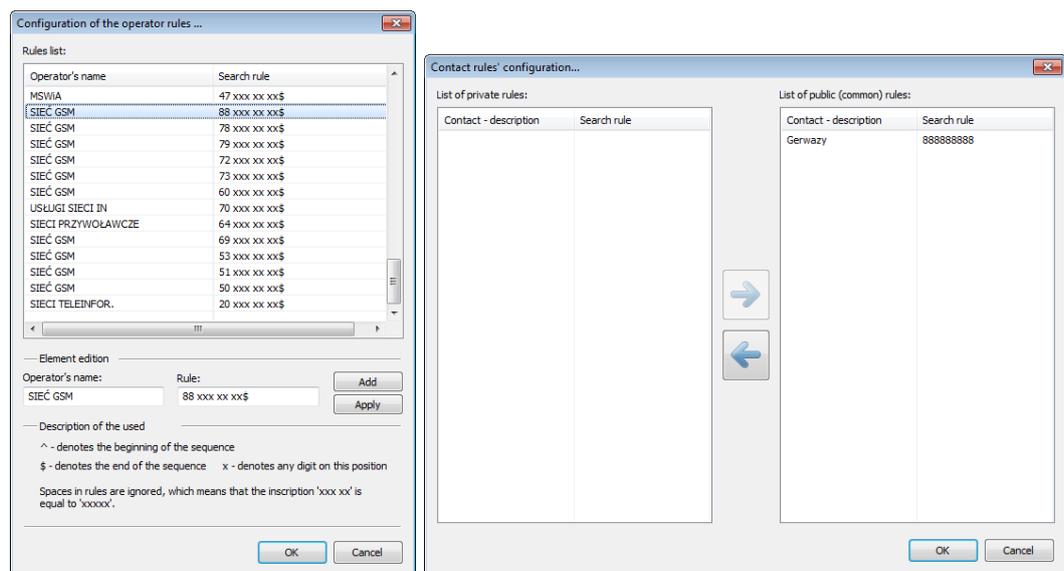
4.12.10.2 The numbering plan and address book

Konsola 2 application includes built-in list containing the national numbering plan. It can be edited, exported to and imported from external file. By default, the domestic numbering plan for Poland is active.

Based on this information, and the numbers attached to the recordings, *Konsola 2* presents additional information about the GSM operator or geographical location of the callers in the *Who – description* and *Whom to – description* columns of the recording list. By default, both the columns are inactive. Customizing a list view recordings described in section 4.12.3 *The customization of module window appearance*.

The numbering plan contains the set of number patterns for phone numbers for different regions of Poland and for Polish mobile operators. The contact book contains the phone numbers of different contacts.

It is possible to manage the numbering plan and private or public (common to all *Konsola 2* users) address book. The lists can be edited, exported to and imported from external file. By default the national numbering plan for Poland is active.



If the number matches both the numbering plan and a particular contact data, this data will be presented.

If the number matches with the pattern defined in both lists, the address book has a high priority. In the case presented on the above pictures, the following phone number 888888888 will not be presented as *SIEĆ GSM* (general description from the numbering plan), but as “*Gerwazy*” (more precise description from the contact list).

The user can modify both lists. New items may be added to the list, after appropriate fields are populated and the *Add* button is pressed. The editing of elements of the list is also possible. After the link is selected, its current parameters are presented in the edit fields. These can be changed and then saved with the

Apply button. The deletion of links is possible from the context menu for link that is about to be deleted.

It is important to put the start (^) and end (\$) markers when the pattern is being defined.

4.13 The Archiving module

The *Archiving* module is responsible for creating archive files on the local hard drive, out of the set of recordings on the remotely operated recorder. This shall be considered as a backup feature.

Recorder will automatically create space for new recordings by erasing the oldest ones when the disk is close to full capacity, therefore recordings that need to be kept longer should be archived.

Archived may affect all (saved on recorder) calls, or only those that meet the conditions specified by the user. By using the wizard, you can select the appropriate channels, time interval and audio codec used to create the archives.

The archiving process does not erase any data from recorder.

It is not possible erase recorded calls from hard disk in a different way that overwriting them through the same recorder.

4.13.1 The archive builder

The archive builder is launched, after user enters the *Archiving* module of *Konsola 2* application. Each step of operating the archive builder is described in the following paragraphs. The current status of the builder is presented in the left part of the application window. The list of steps that are necessary to create the archive file set is presented there. The current phase of builder operation is marked off by the name of the step presented in bold.

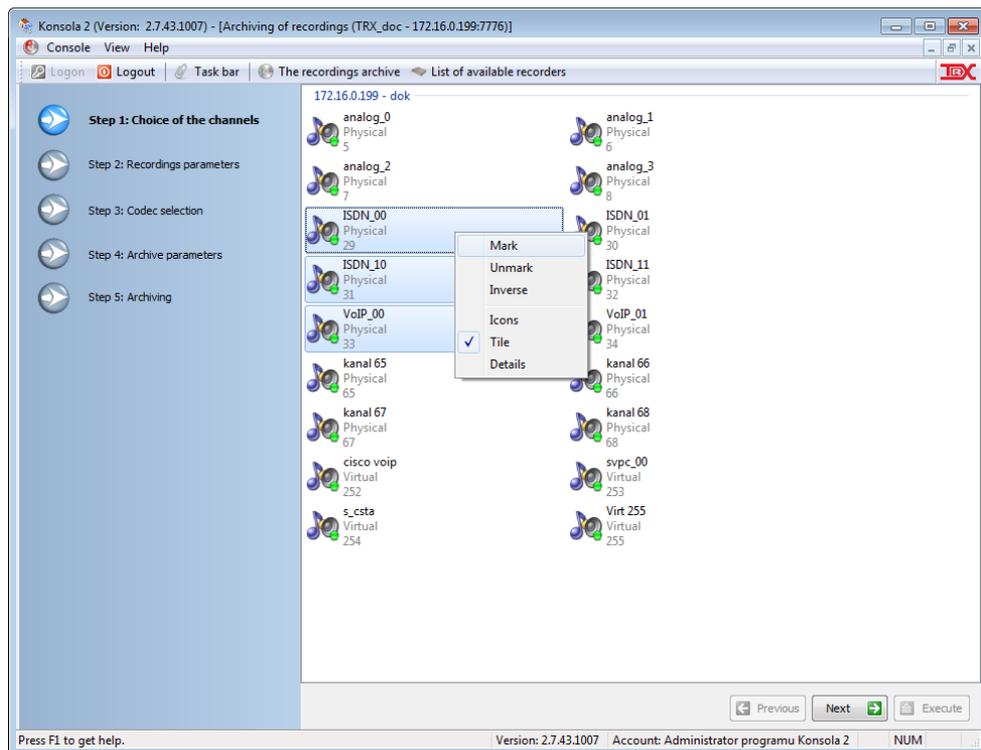
It is possible to move between successive builder steps by means of the *Next* and the *Previous* buttons. The *Next* button will not become active until all the necessary data is provided.

4.13.1.1 Channel selection

At the first stage the archiving wizard there is a need for defining the channel (physical and/or virtual) list that will be source of archived recordings. The user has access only these channels for which his account has granted right to archive on chosen recorder.

The selected (active) channels are marked with the green dot . By default all (available to the user) channels are selected.

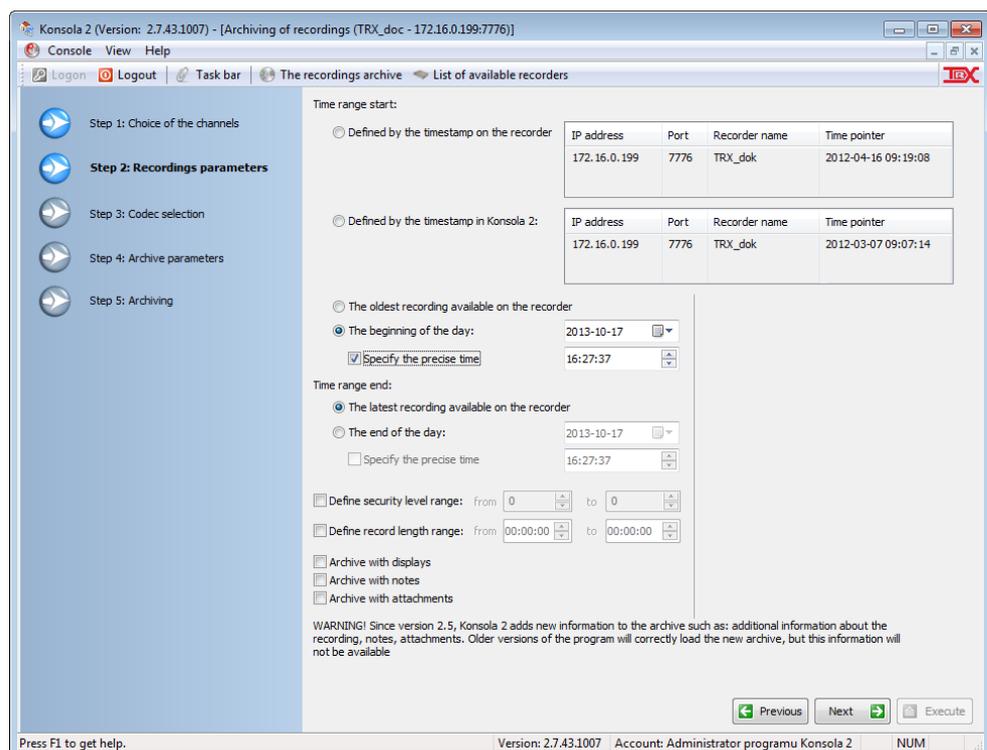
It is possible to select single channel by clicking on it, or it is possible to use context menu for the list and select or deselect all channels at once. The following options are available: *Mark*, *Unmark*, and *Inverse*.



The next step of this wizard is achieved by enter the *Next* button.

4.13.1.2 Recordings parameters

In this step it is possible to define the time range for recordings that are about to be stored in the archive. Defining the time range can be done in a different ways, each one providing different time and date resolution. By default, the time range is defined as: from the timestamp on the recorder to the latest call.



Description of the *Time range start* parameter settings:

Defined by the timestamp on the recorder – the timestamp of beginning archived files is read from the recorder.

The value means global timestamp for any archives made out of the recordings from this recorder, by any user of the recorder,

Defined by the timestamp in Konsola 2 – the timestamp of beginning archived files is read from the *Konsola 2* program,

The value means timestamp for archives made out of the recordings from this recorder in the context of current *Konsola 2* user,

The oldest recording available on the recorder – setup the beginning archived files to the oldest recording,

The beginning of the day – allows setup the beginning of the archived files to the any specified range. After mark the *Specify the precise time* option the user can setup the range with the second precision.

Description of the *Time range end* parameter settings:

The latest recording available on the recorder – setup the ending of archived files to the latest recording,

The end of the day – allows setup the ending of the archived files to the any specified range. After mark the *Specify the precise time* option the user can setup the range with the second precision.

The timestamp memorize mechanism allows to build archives efficiently (no overlapping recordings in successive archives) and conveniently (no risk of loss of any recording in between the successive archives)

Define security level range option allow to narrow down the range of recordings to be archived, by defining the range of security levels for these recordings

Define record length range option allow to narrow down the range of recordings to be archived, by defining the range of the duration for these recordings.

Archive with displays, **Archive with notes** and **Archive with attachments** options allows including the content of system phone displays, text notes and attachments into the archive. Selection any of these options will lengthen the archive building time significantly.

Notice: *Since version 2.5, Konsola 2 adds new information to the archive such as: additional information about the recordings, notes and attachments. Older version of the program will correctly load the new archives, but the information above will not be available.*

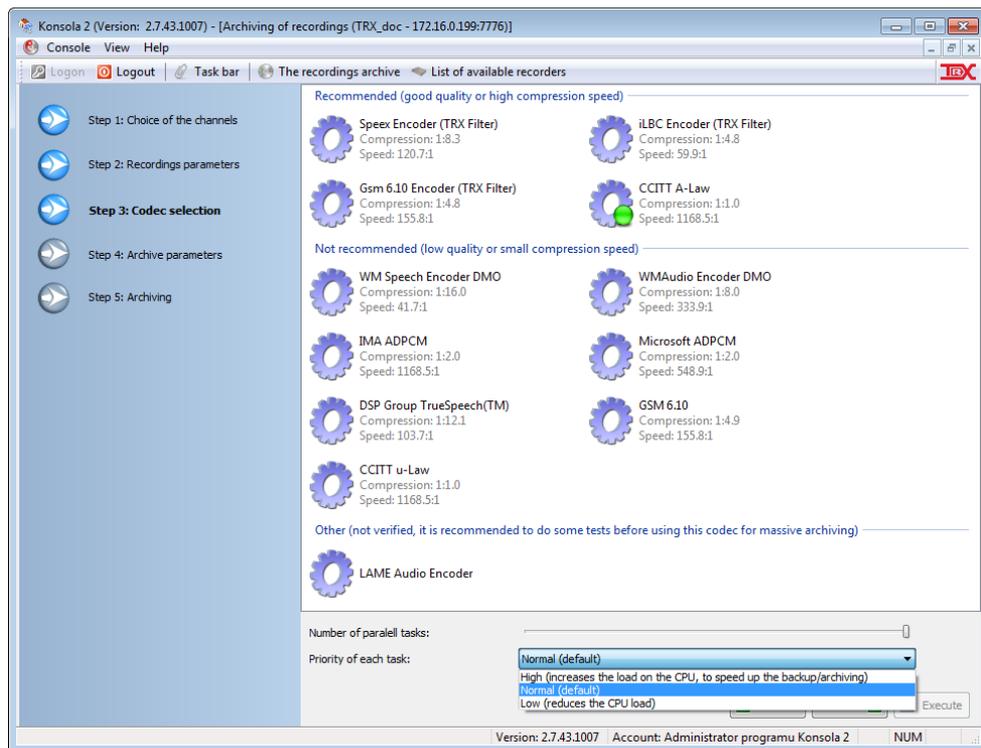
4.13.1.3 The audio codec selection

The third step of archive builder involves defining what codec will be used to encode recordings in the archive. Is possible to use codec that produces compressed file (with some loss in recording quality) in order to reduce the size of the archive.

The wizard window shows two groups of audio codecs that can be used for recording audio data.

The first group contains a set of codecs recommended for archiving because of the good audio quality or a sufficiently high ratio of compression factor. The native recorder codec the CCiTT A-law is in this group (due to good quality).

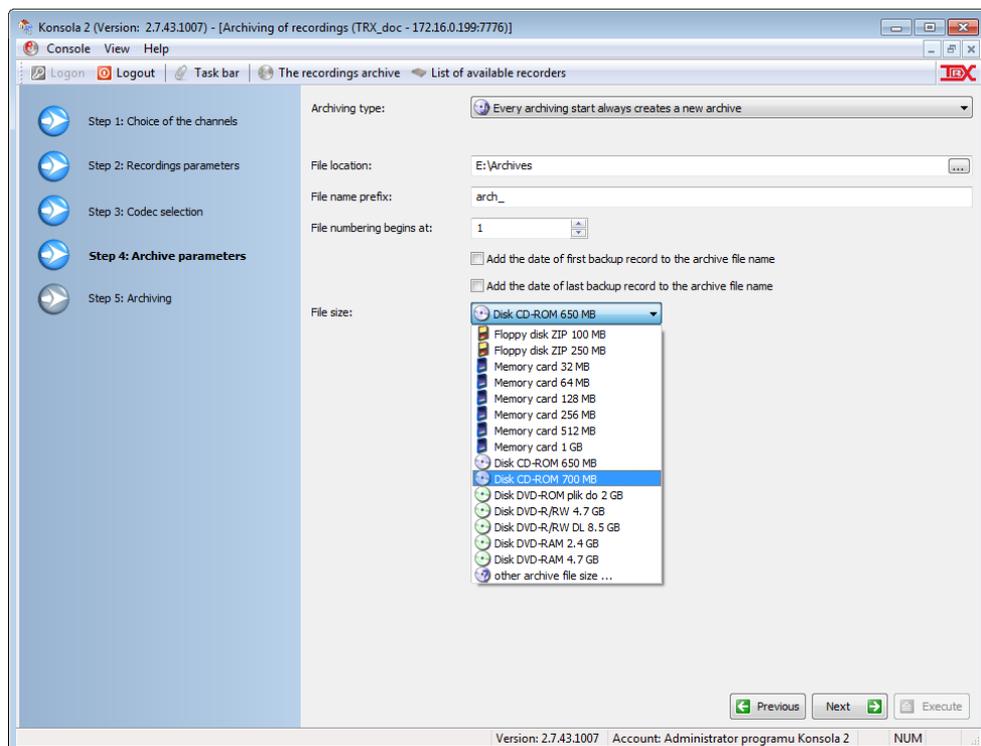
Second group contains a set of codecs not recommended for archiving because of the poor audio quality or a relatively small ratio of compression.



In order to select the codec, one should double click on the icon representing particular codec. This will cause the icon appearance to change (green dot appears).

4.13.1.4 Archive parameters

The parameters of the archive file can be stated in this step of the archive builder.



The archiving mode states what type of archiving will take place. By default, each archive file is independent of any other archives. The incremental archiving is under development.

In *File location* field user is able to state where the archive files shall be stored.

File name prefix, *File numbering begins at* and *File size* fields determine what shall be the name of archive files and what size the archive files should be

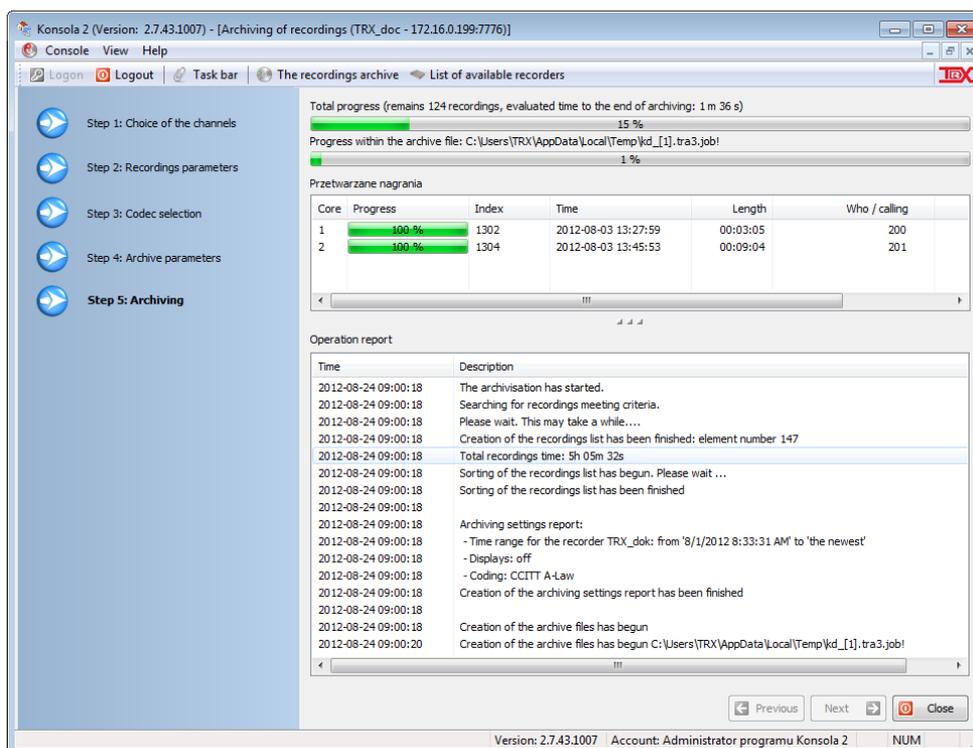
The date of the first or last backup record can be added to the archive file name. *File name prefix* is the common part of name for the all created archive files; this field cannot be blank.

If the amount of archived data exceeds the file size limit stated by the user, another archive file is created with the same filename prefix, but with successive number attached to it. The multi-part archive will be created then.

It is required to enter all the necessary data in order to move to the next step.

4.13.1.5 The archive building process

In the final step of the archive builder, the archive is being actually built after the *Execute* button is pressed.



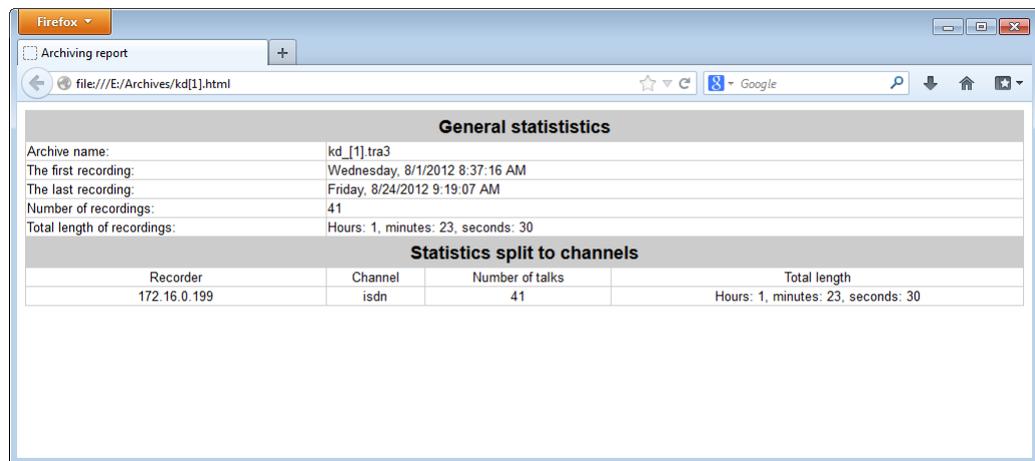
The archiving progress is presented here in the contexts of the whole archive, the current archive file and the recording that’s being archived.

Additional info about the archiving progress is also presented in the *Operation report* window.

The archiving process can be interrupted at any time using the *Stop* button Application requires confirmation of this action. Created archive files are not deleted.

Archive files have a specific format and can be opened only using the *Konsola 2* application.

In directory entered in section 4.13.1.4 files with the archive data will appear. Additional files (in the html format) contain summary and statistics for each archive file.



The screenshot shows a Firefox browser window with the address bar pointing to a local file: file:///E:/Archives/kd[1].html. The page content is an 'Archiving report' for the file 'kd_[1].tra3'. It includes the following data:

General statistics	
Archive name:	kd_[1].tra3
The first recording:	Wednesday, 8/1/2012 8:37:16 AM
The last recording:	Friday, 8/24/2012 9:19:07 AM
Number of recordings:	41
Total length of recordings:	Hours: 1, minutes: 23, seconds: 30

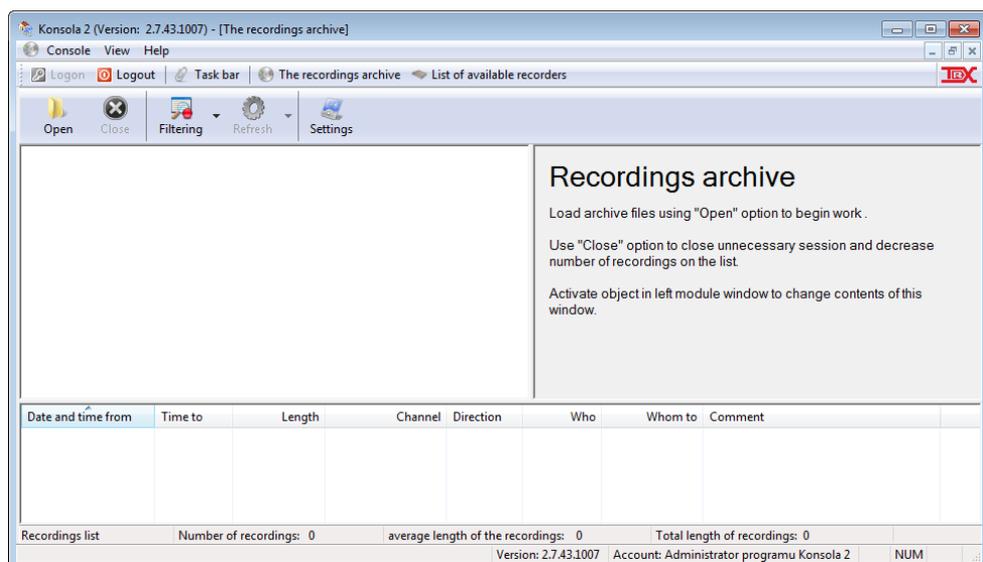
Statistics split to channels			
Recorder	Channel	Number of talks	Total length
172.16.0.199	isdn	41	Hours: 1, minutes: 23, seconds: 30

After the archive builder finishes its operation, it is required to close its window.

4.14 The playback of archives

The *Konsola 2* application allows to playback the contents of information stored in the TRX archive files. This can be done by means of the *Archive* module, which can be run by means of clicking the  **The recordings archive** button on the *Konsola 2* toolbar.

A new window appears, after this option is selected, allowing loading contents of the archive file and browsing the list of archived recordings.



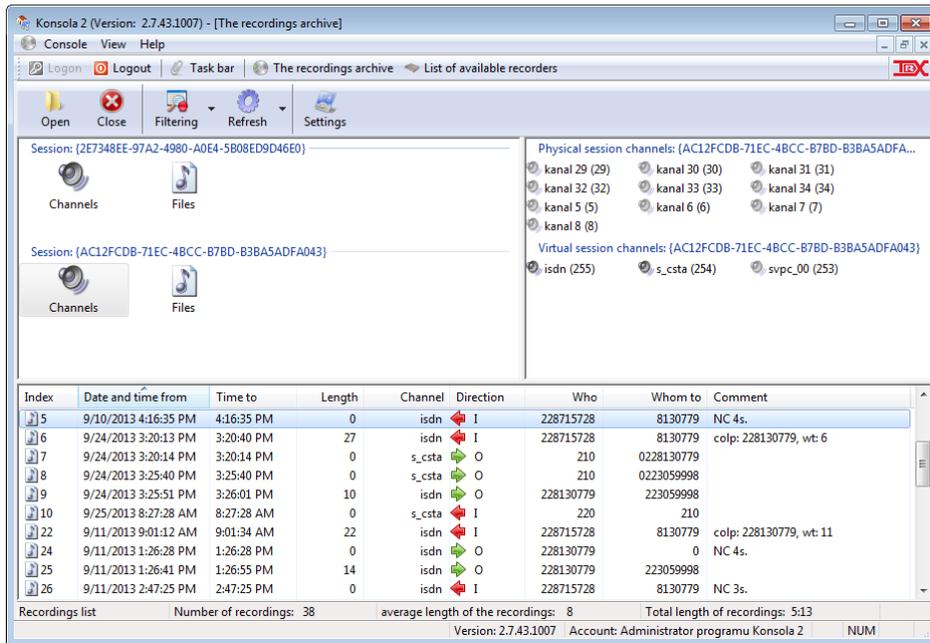
In order to get to the recordings in the archive, it is necessary to open it first and load its content to the application. This can be done with the *Open* option

available on the icon bar, or using the F6 shortcut. The file open dialog will appear then, allowing to point particular archive file.

When you upload the file, click on the  icon (left panel) and then, by double clicking on the icon, select a channel or channels (right panel).

The list of archived calls for selected channels appears at the bottom of the window.

The playback of recordings from the archive file is analogous to playback calls directly from recorder.



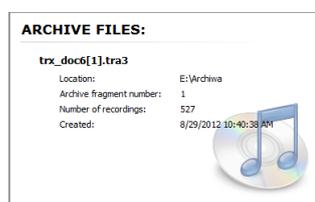
4.14.1 Archive detail

Each opened archive file is assigned with the session number. This number is unique for each archive; however each file of the multipart archive will have the same session number.

The selection of the *Channels* icon will cause the list of channels, out of which the recordings are archived, to appear in the right side of the application window. This list allows selecting channels with valuable data which user wants to playback. Inactive channels are grayed out. User can modify the list of active channels from the context menu for the list. This is described in the next section (4.14.2).

The *Files* icon allows user to get familiar with basic archive parameters such as its name and file location, date of archive creation, the number of recordings in the archive and (for multipart archives) the archive part-number.

The program allows you to play files with the *tra* and *tra3* extensions.



4.14.2 The list of archived recordings

After the archive is loaded, and the channel selection is done, the list of archived recordings is presented in the main window of the application.

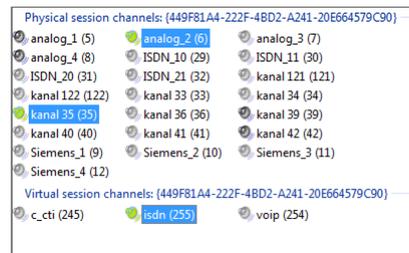
The list of available options related to the recording list is the same as in the *Playback* module: filtering (sec. 4.12.4), sorting (sec. 4.12.3), saving into the wav file (sec 4.12.6), DSP analysis (sec. 4.12.7) and fax decoding (sec. 4.12.8).

The description of each option may be found in the respective sections of this manual.

When browsing multi-part archive files, user shall keep in mind, that the presented recording list is related to the single archive file that's been opened, not to the whole archive.

The list of recordings can be filtered by channel names that are stored in the archive. To do this, select the *Channel* icon under the session number (in the upper left corner of the program window) and then enable (activate) the desired channels (by default, all channels are disabled).

The icons representing the inactive channels are light gray, the active channels - dark gray, and the marked channels - light green.



Single channel selection is done by clicking the left mouse button on the channel name (the icon lights up in green). The groups of channels activation is obtained by additionally using the *CTRL* or *SHIFT* keyboard buttons.

Alternatively you can use the context menu options: *Select all*, *Deselect all* or *Inverse*.

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