



SmartPTT PLUS

Radioserver Configurator
User Guide

Version 8.6

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Table of Contents

1 Introduction	3
2 SmartPTT Radioserver Configurator	6
2.1 Main Features	6
2.2 Radioserver	7
2.2.1 Services	10
2.2.1.1 ARS	10
2.2.1.2 GPS	10
2.2.1.3 TMS	10
2.2.1.4 Telemetry	10
2.2.1.5 Subscriber Blacklist	10
2.2.1.6 Email Gateway	10
2.2.1.7 SMS Gateway	10
2.2.1.8 File Receive	10
2.2.2 Add-on Modules	37
2.2.2.1 Licenses	37
2.2.2.2 Event Log	37
2.2.2.3 Telephone Interconnect	37
2.2.2.4 Bridging	37
2.2.2.5 Voice Notifications	37
2.2.2.6 Monitoring	37
2.2.3 Control Station	57
2.2.3.1 How to Configure Control Station Channels	57
2.2.3.2 How to Configure Control Station Talkgroups	57
2.2.3.3 How to Configure Control Station Audio Settings	57
2.2.4 Connect Plus	67
2.2.4.1 How to Configure Connect Plus	67
2.2.4.2 XRC Controller	67

2.2.4.3 XRT Gateway	67
2.2.5 Radio Activity	74
2.2.5.1 How to Configure Radio Activity Network	74
2.2.6 NAI	78
2.2.6.1 How to Configure NAI	78
2.2.7 SmartPTT Radioservers	95
2.2.8 Security Settings	113
2.3 Profiles	119
2.4 Subscriber Groups	123
2.5 Multigroups	124
2.6 Metadata	125
2.6.1 Subscribers	127
2.6.2 Automatic Database Backup	127
2.7 Rules	129
2.8 Activity	133
2.9 Client List	134
2.10 Network Configuration	135
2.11 Log	146
2.12 Export/Import Settings	146
2.13 Statistics	148
3 Troubleshooting	150

1 Introduction

SmartPTT is a software package designed to manage dispatch communication between linear-extended and geographically-distributed objects where it is necessary to facilitate voice and data transmission between remote control stations of the radio network.

SmartPTT implements all benefits of the MOTOTRBO digital platform.

SmartPTT architecture manages subscriber networks of any size and topology, using both digital functions of MOTOTRBO radio stations and analog mode to facilitate a gradual upgrade to the new radio communication standard. It is also possible to use a "mixed" mode when some sites operate in the analog mode and others in the digital mode.

SmartPTT architecture consists of three segments:

- Management segment (dispatcher network administrators)
- Base segment, including radioservers connected to stationary radios (mobile MOTOTRBO stations as control stations) and repeaters.
- User segment or subscribers (mobile and portable radios)

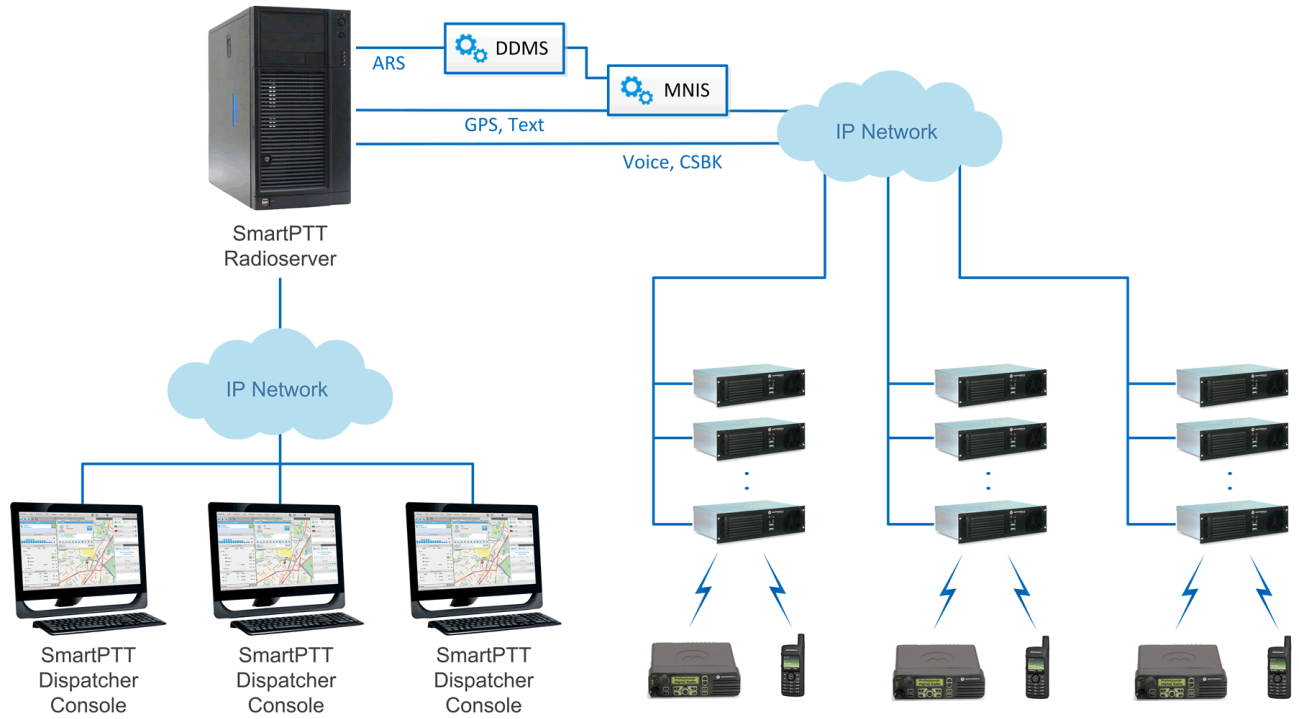
The management segment implements control and monitoring functions – data management (telemetry, telemechanics), human resources management and industrial process control – via access to the base segment.

The dispatcher has either full or partial access to the system radioserver, that is software installed on PCs.

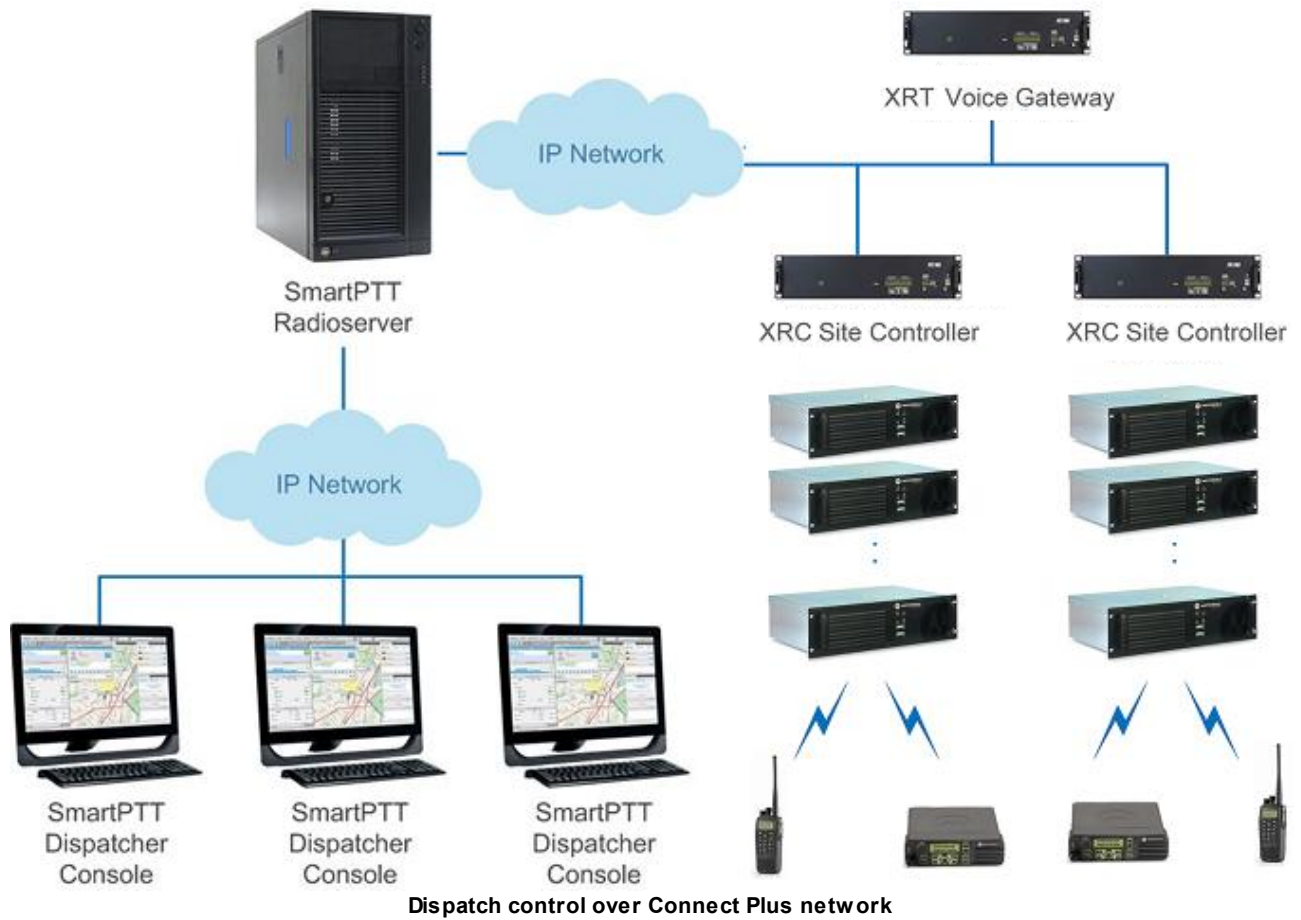
SmartPTT software enables various MOTOTRBO platform functions, which form the basis of the system.

Radioservers are linked to fixed stations, which are control stations for the system, and repeaters. All repeaters are interconnected via IP network and enable subscriber roaming and formation of a common, geographically distributed communication network. Communication zones can be both adjacent and separated. The number of radioserver and dispatcher seats is unlimited.

The radioserver database stores radio station pool data. When the MOTOTRBO subscriber digital radio station enters the SmartPTT network coverage zone, it sends a request to the radioserver and, in the event of successful authentication, it is registered automatically.



Dispatch control over NAI Voice network



Using SmartPTT dispatchers can easily perform their daily functions, i.e., organize radio communication, monitor subscribers and communicate data to subscribers. As for radio subscribers, they can take advantage of all the features of MOTOTRBO radios. The number of subscribers per radioserver is unlimited.

2 SmartPTT Radioserver Configurator

2.1 Main Features

SmartPTT Radioserver Configurator is an application designed as a tool to configure SmartPTT Radioserver parameters. SmartPTT Radioserver is an application server implemented as a Windows service.

The radioserver setup process includes configuration of registration, location, text messaging, control station services and other settings. Here is a list of the most important system features.

The **registration service** provides information on availability of subscriber radios in the radio network.

The **location service** provides coordinates of subscriber radios with a GPS receiver so you can determine their current location. In terms of subscriber monitoring you can also take advantage of the features provided by Tallysman Sprite™ and **Indoor Tracking**.

The **text messaging service** is used to exchange text messages between dispatchers and radio subscribers.

The **telemetry service** is used for transmission and processing of telemetry signals between the dispatcher console and radio subscribers.

The **SMS** and **Email Gateways** allow you to configure message sending to mobile phones and email boxes.

The **telephone interconnect service** allows establishing intercommunication between telephone and radio subscribers.

The **event log** provides functionality for saving and representation of all events specific for the SmartPTT system and also incoming or outgoing voice records.

In SmartPTT Radioserver Configurator you can set up networks based on:

- Control Stations (analog, including Select 5, and digital)
- Connect Plus
- Radio Activity
- IP Site Connect, Capacity Plus and Linked Capacity Plus using MNAI protocol

You can also enable bridging between some networks in the list.

Other available features include:

- **Profiles** used to limit operators' access to the objects managed by the radioserver, such as control stations,

talkgroups, services, IP Site Connect slots, etc.

- **Rules** used to perform automatic actions (playback sounds, send messages, play predefined voice notifications) based on conditions specified.
- **Export/Import Settings** used to allow exporting configuration settings and database from one radioserver and importing them into another.

2.2 Radioserver

To set up the radioserver, click **Radioserver** in the left list of the SmartPTT Radioserver Configurator window. At that, the settings window will display on the right.

The screenshot shows the 'Settings' window of the SmartPTT Radioserver Configurator. The left pane displays a tree view with 'Radio Server' selected. The right pane shows the configuration for the selected 'Radio Server'.

Radio Server

Name: Radioserver

Interface: 192.168.0.224 | Port: 8888

Authentication: No

VoIP Listen Port: 18500

Block Options: Kill Radio

Redundant Server Settings

Server Role: Primary

Primary Server Address (host:port): remotehost:8888

Connection Timeout, sec: 60

Limit Radios to Service


Enabled

Allowed Radio Numbers: Example: 1-99,150

Language: English

Name – radioserver alias. You cannot type more than 20 characters into this field.

Interface and **Port** – radioserver IP address, i.e. the IP address of the PC where the radioserver is installed. Default port is 8888.

Note: If the specified port is occupied, you will see a warning icon  next to the input field. Hover the mouse over the icon to see where the port is being used.

Authentication – authentication parameters required for connection to the radioserver.

No – anonymous authentication.

Windows – Windows authentication. To connect, the dispatcher must use the user name and password of the account where the radioserver service was started.



VoIP Listen Port – number of a UDP port for receiving voice data from the dispatcher.

Block Options – allows selecting the way how to block a radio. When *Kill Radio* is applied, radioserver sends *Kill Radio* command to block the radio. The *Deny Channel* option denies the subscriber radio to work on the given channel.



Note: The *Deny Channel* option is applicable only to IP Site Connect (direct IP connection) or NAI based configurations.




Note: When the **Block Radio** command is sent from one radio unit to another, the radio will be blocked, even if *Deny Channel* is selected.

Language – allows selecting languages of the user interface of the SmartPTT Radioserver Configurator application.

You can save changes made by clicking **Save** . If you want to cancel changes made, click **Restore** .

All the changes made after the last save will be restored. To exit SmartPTT Radioserver Configurator, click **Close**

. To view help, click **Help** .

The radioserver is implemented as Windows service SmartPTT Radio Service. To enable saved changes you must restart the service. Service is managed using the following buttons: **Start**, **Stop and Restart** , , .

How to Set up the Redundant Server

The redundant server can be useful in case of the primary server breakdown. Switching between the servers is

made automatically.

To set up the redundant server correctly follow the steps enumerated below:

1. Define the role of the current radioserver as **Redundant**. If you select **Primary**, you will need to configure the redundant server for it elsewhere.

Note: A primary server can be backed up with only one redundant server.

2. Fill in the fields **Primary Server Address (host:port)** and **Connection Timeout**.

Primary Server Address (host:port) – IP address and port of the computer where the primary radioserver is installed.

Connection Timeout, sec – time interval that starts ticking as soon as the primary server is down. If the primary server has not recovered within the specified time interval, the redundant server takes over. The least possible value is 20 seconds.

Note: The **Primary Server Address (host:port)** and **Connection Timeout** fields are unavailable if the role of the server is set to **Primary**.

How to Limit the Number of Radios

The **Limit Radios to Service** area was designed to manage the number of radios allowed in the network. Here the user can specify which radios are to be controlled by the system and which are not.

To make this functionality active select **Enabled**. Then, in the **Allowed Radio Numbers** field, enter ID's of the radios which are to be controlled by the system.

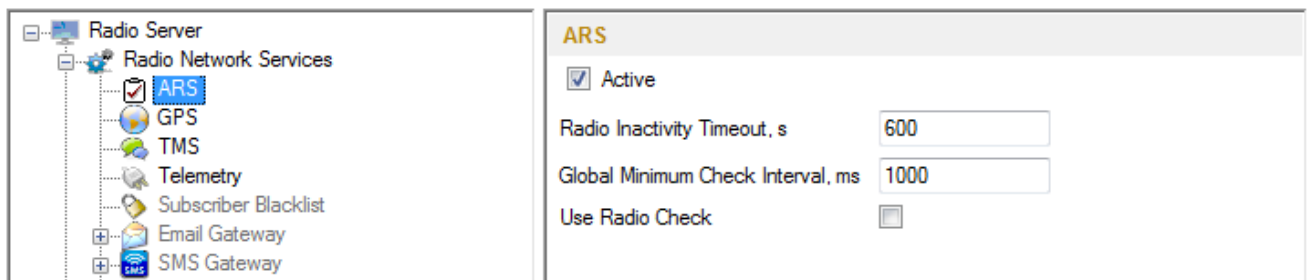
Warning! All the radios whose ID's were not specified will be ignored by the SmartPTT system.

2.2.1 Services

2.2.1.1 ARS

ARS or registration service provides information on the availability of radio subscribers in the radio network.

To set up the registration service parameters, click **ARS** in the list in the left area of the SmartPTT Radioserver Configurator window. At that, a new window appears on the right.



To enable the service select the **Active** check box.

Radio Inactivity Timeout, s – time period, after which the radio that did not display any activity becomes potentially absent. In this case the system includes this radio into a special presence check process.

Note: Radio activity includes the following events: GPS location, telemetry signal, text message or voice call.

Generally, a radio can be sent 5 presence check requests successively with a 30-second interval. This parameter is called Individual Minimum Check Interval and equals 30 s; it can't be changed in SmartPTT Radioserver Configurator. This parameter sets the interval between presence check requests sent to one radio. Therefore, it can be increased depending on the number of radios to check. If the radio does not respond to the presence check requests and does not display any activity, it will acquire the Offline status after the 5th unsuccessful presence check request.

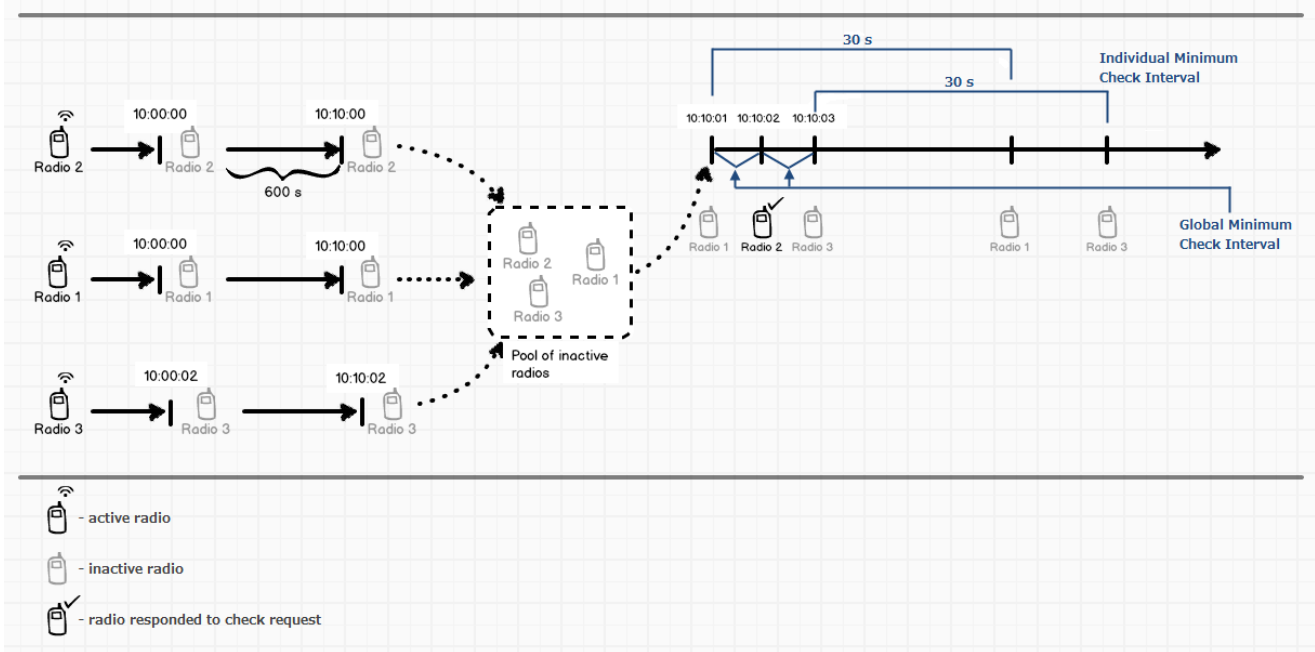
Global Minimum Check Interval, ms – sets the minimum interval between presence check requests sent to all inactive radios. Instead of sending presence check requests to all inactive radios at one time, the system puts them on a queue and sends one presence check request to one radio at a time with the interval set in the **Global Minimum Check Interval** field. This method allows us to eliminate the risk of sending too many presence check requests at one time, thus removing traffic overload on the channel and spreading network load evenly.

Note: **Global Minimum Check Interval** is applied in NAI networks only. For other networks, this feature will

become available in the next version.

Example

There are three radios active till 10:00:00 and 10:00:02 (see pic. below). Then, for the following 600 s they do not display any activity. So, the radio activity timeout for Radios 1 and 2 runs out at 10:10:00 and for Radio 3 at 10:10:02. When it happens, the system creates a pool of inactive radios. The system puts the radios on a queue and starts sending presence check requests with the interval set in the **Global Minimum Check Interval** field. Radio 2 responds to the presence check request and is no longer regarded as potentially offline. Radios 1 and 3 do not respond to the presence check request and do not display any activity, so the system sends another request in 30 s to each radio. After the 5th presence check request, the radios get the Offline status.

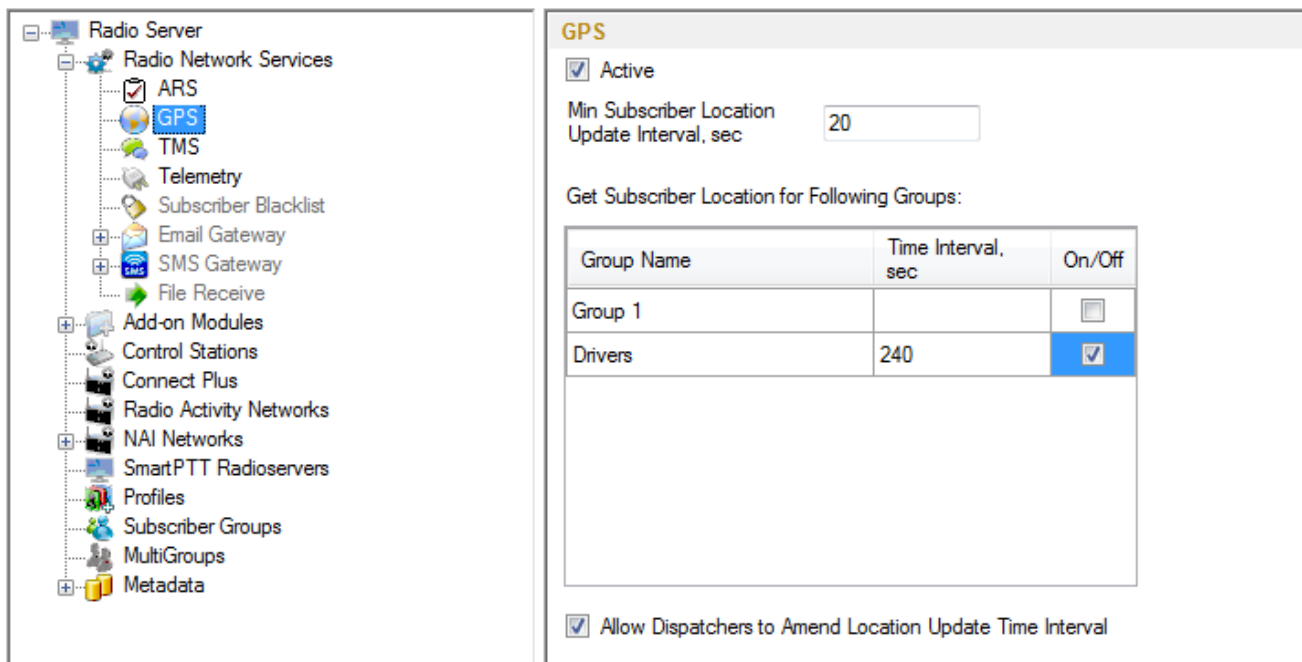


Use Radio Check – this setting defines the mechanism used for checking radio subscriber presence in the network. If selected, the system uses the command Radio Check. This option was implemented for radios that do not support ARS.

2.2.1.2 GPS

GPS or location service provides coordinates of radio subscribers with a GPS receiver so you can determine their current location.

To set up the location service parameters, click **GPS** in the list in the left area of the SmartPTT Radioserver Configurator window. At that, the following window opens.



By default, the minimum time interval for GPS data transfer is set to 20 seconds.

If necessary, location service can be unavailable. To do this, clear the **Active** check box.

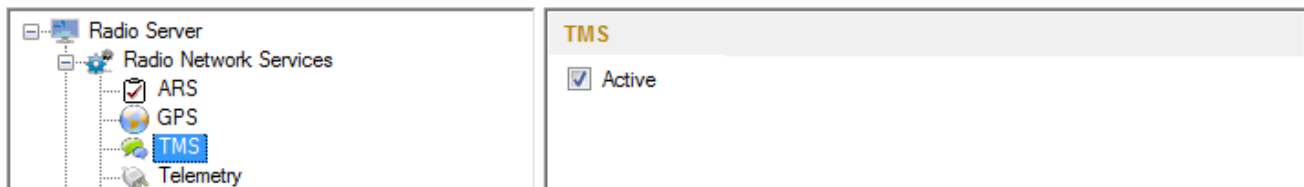
The list **Get Subscriber Location for Following Groups** allows you to specify time interval for location update per subscriber group added in SmartPTT Radioserver Configurator under **Subscriber Groups**.

If **Allow Dispatchers to Amend Location Update Time Interval** is selected, dispatchers can reduce the location update time interval configured in the table above. However, if the time interval specified by the dispatcher is less than **Min Subscriber Location Update Interval, sec**, the new value set by the dispatcher will be ignored, and subscriber location will be updated according to **Min SU Location Update Interval, sec**.

If **Allow Dispatchers to Amend Location Update Time Interval** is not selected, dispatchers won't be able to change the time interval for location update, and location will be updated within the time interval set in the table per each group.

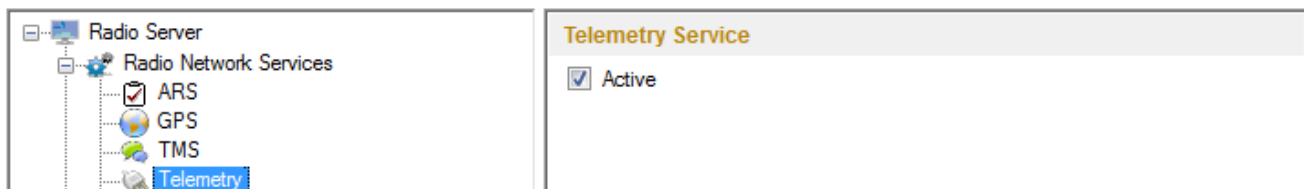
2.2.1.3 TMS

TMS or text messaging service is used to exchange text messages between radio subscribers and SmartPTT Dispatcher. To set up the messaging service parameters, click **TMS** in the setting tree of the SmartPTT Radioserver Configurator window. At that, a window opens. To enable the messaging service, select the **Active** check box.



2.2.1.4 Telemetry

The telemetry service is used for transmission and processing of telemetry signals between SmartPTT Dispatcher and radio subscribers. To set up the telemetry service parameters, click **Telemetry** in the list in the left area of the SmartPTT Radioserver Configurator window. At that, the following window is displayed on the right. To enable the telemetry service, select the **Active** check box.

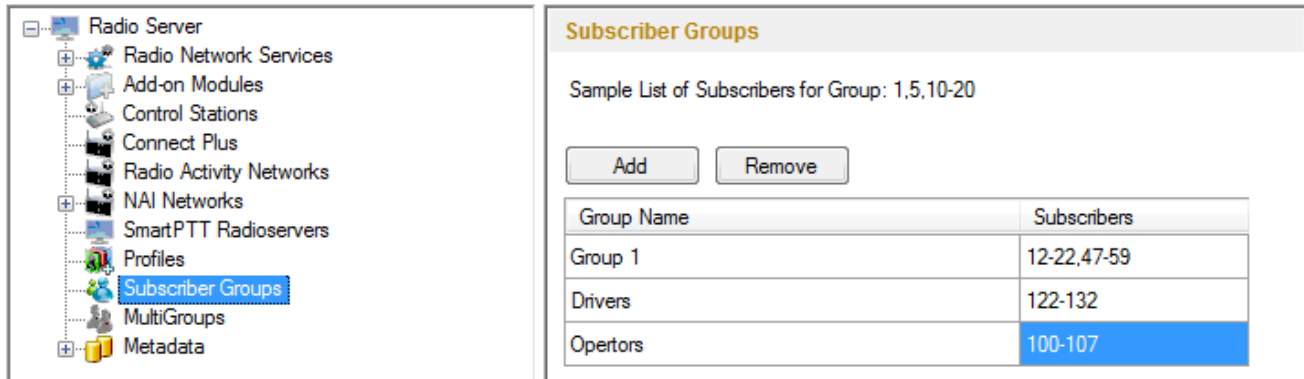


2.2.1.5 Subscriber Blacklist

Subscriber blacklist allows managing the number of available radio subscribers and operators in the network.

To create a blacklist, first it is necessary to create subscriber groups. We will need these to form a blacklist.

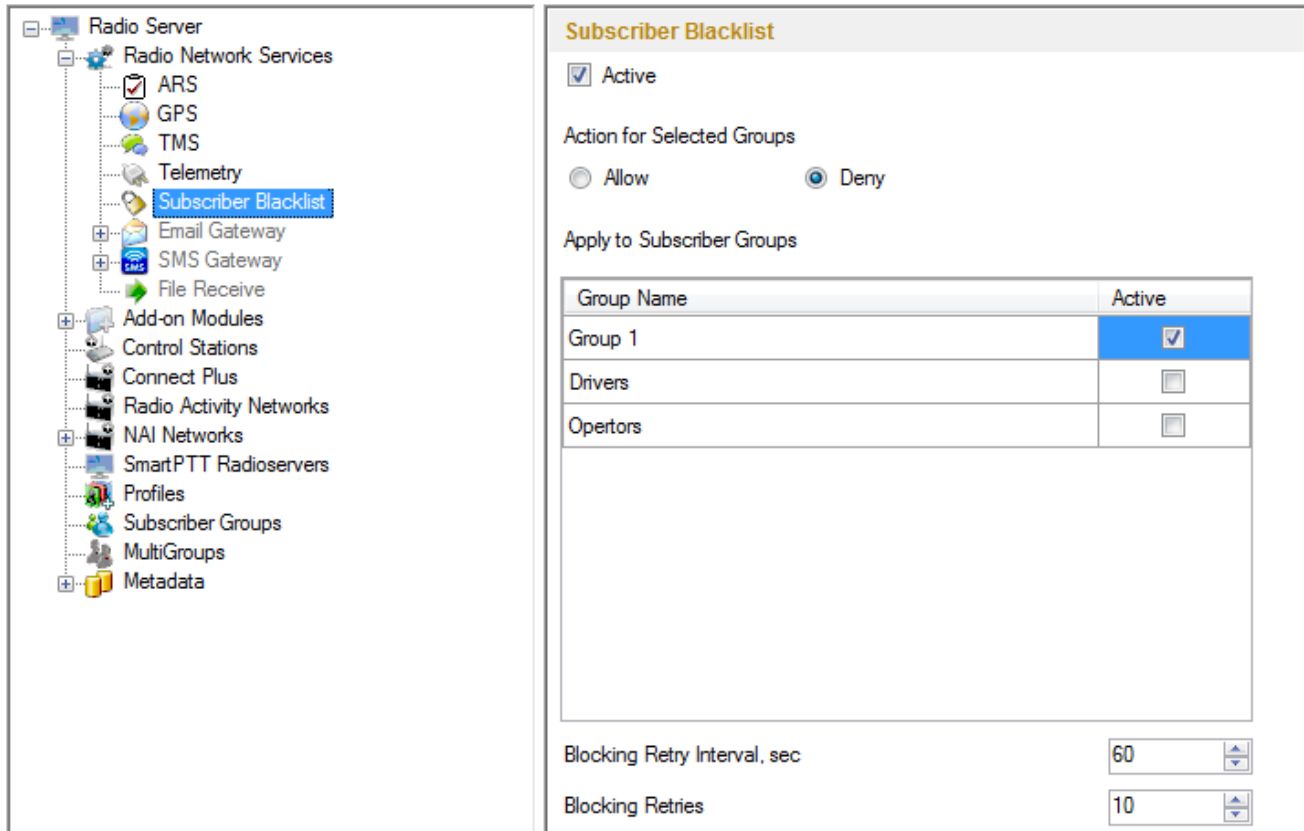
To add a subscriber group, click **Subscriber Groups** in the setting tree of SmartPTT Radioserver Configurator. At that, the **Subscriber Groups** window opens on the right.



Group Name – any name of a subscriber group.

Subscribers – the list of radio IDs that are to be included in the created group.

To configure blacklist parameters, click **Subscriber Blacklist** in the setting tree of SmartPTT Radioserver Configurator. At that, the following window opens.



Enable subscriber blacklist service by ticking off the **Active** check box.



Note: **Subscriber Blacklist** allows not only blocking certain radios, but also creating the so-called "whitelist" of radios that are allowed in the radio network. In the latter case all other radios, that is not included in the whitelist, will be blocked.

To block certain groups of subscribers, choose **Deny** and select groups that are not permitted to communicate in MOTOTRBO network.

To allow certain groups of subscribers to communicate in MOTOTRBO network, that is to create a whitelist, select **Allow** and mark those groups that will be available in radio network when all other radios are blocked.

Blocking Retry Interval, sec – sets a minimum time period for sending a command to block the radio added in the blacklist.

Blocking Retries – number of retries to send the Block command to the radio before confirmation comes.

To save changes, click **Save**  and then restart SmartPTT Radioserver .

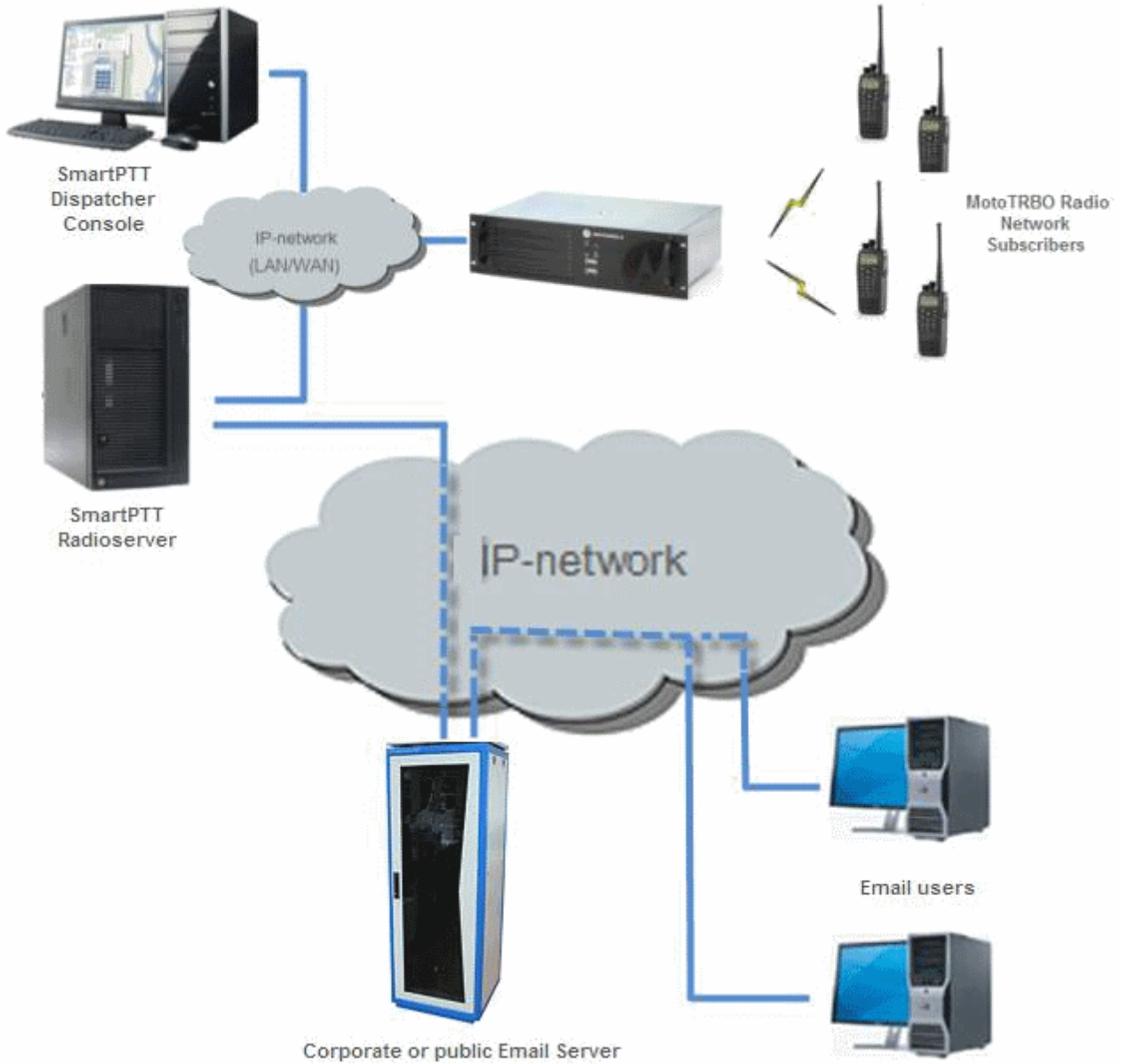
If a radio is in the blacklist and MOTORBO control station is used (MOTORBO control station, Capacity Plus system), then the radio will be completely unavailable. When the radio is unavailable, some actions are still available: **Monitoring**, **Radio Check** and **Radio Unblocking**. The dispatcher can remove the block from the radio by sending the "Unblock" command. To enable the radio without dispatcher's help, just read the codeplug of the radio in MOTORBO Customer Programming Software (called MOTORBO CPS) and then write the settings to the codeplug.

To be able to process the Radio Disable command, the radio must have the **Radio Disable Decode** parameter selected in the codeplug. You can find it in MOTORBO CPS, in the **Signaling Systems** section. If **Radio Disable Decode** is not selected, the radio can't be blocked even if it is in the blacklist.

When direct IP connection is used (for example, IP Site Connect) in MOTORBO network, radio blocking allows to block the channel only. At that, "Channel Denied" is displayed on the radio screen. The radio can change the channel and resume its operation. To enable the blocked channel, the dispatcher should send the "Unblock" command to the radio. To enable the radio without dispatcher's help, delete the blocked channel and create the channel equal to the deleted one.

2.2.1.6 Email Gateway

Email gateway provides the ability to exchange digital messages between e-mail users and MOTOTRBO radio network subscribers. The following scheme displays how it is done.



To be able to exchange email messages between radio subscribers and email users you need:

1. Create and configure email account.
2. Configure the radioserver.

Create and Configure Email Account

First of all, create your email account, if you do not have one. This section describes how to do it as well as how to configure it properly.

1. Create your email account. You can use your corporate email server or any other server. In this example we are using *gmail.com*.
2. In the settings of the newly created email account specify all the necessary parameters.
3. In the settings of the email account in the Forwarding and POP/IMAP tab select the following items:
 - 1) Enable POP for all email (even mail that has already been downloaded).
 - 2) Enable IMAP.
 - 3) Save changes.



4. If you have an email client (for example, Microsoft Outlook), for the outgoing messages you need the following settings:

- 1) Use plain text as message format.
- 2) Use Unicode (UTF-8) for outgoing images (with Base64 encoder).

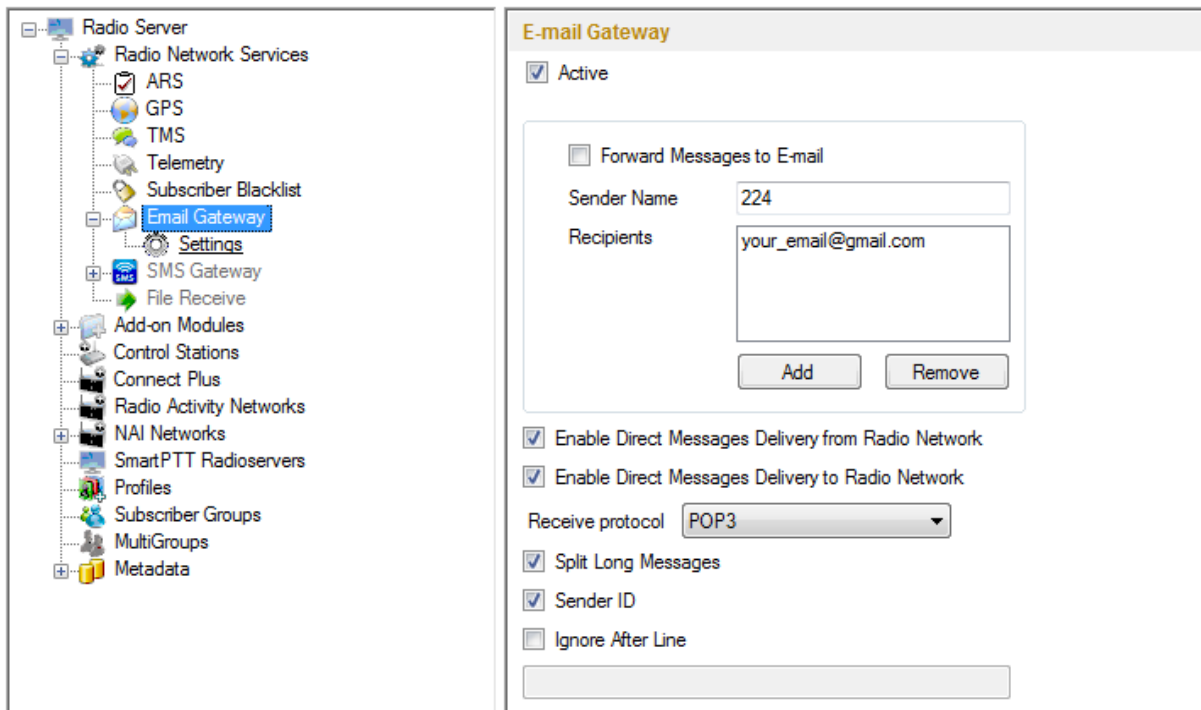
Configure SmartPTT Radioserver Settings

The radioserver configuration includes the following steps:

1. Configure email gateway (activate email gateway, choose the direction of text message sending).
2. Setup POP3/IMAP4 protocols for sending text messages.

Email Gateway Configuration

Select **Email Gateway** in SmartPTT Radioserver Configurator.



Select the **Active** check box to enable the email gateway service.

Forward Messages to E-mail – select to enable message forwarding from radio subscribers to the email addresses specified in the **Recipients** list.

Note: When a radio subscriber sends a text message to another radio subscriber, all email users whose emails

are given in the **Recipients** list will receive 1 or 2 text messages. The first one with the confirmation that the message was sent and the second – with the confirmation on delivery.

Sender Name – specify domain name, in the name of which all email messages will be sent (for example, *smartptt.com*).

Recipients – list of email addresses to receive forwarded text messages.

Enable Direct Message Delivery from Radio Network – forwarding mail messages directly from radio subscribers.

Enable Direct Message Delivery to Radio Network – forwarding mail messages directly to radio subscribers.

Receive protocol – select protocol for email message receiving (POP3 or IMAP4).

Split Long Messages – if not selected, a long E-mail message (over 140 characters) addressed to a radio is trimmed to size limit (that is some information gets lost). If selected, the original message is split into several packages during transmission. Thus, the radio subscriber receives the message without information loss.

Sender ID – when selected, the received message contains the sender e-mail address.

Ignore After Line — ignore everything after a certain string in the received e-mail message.

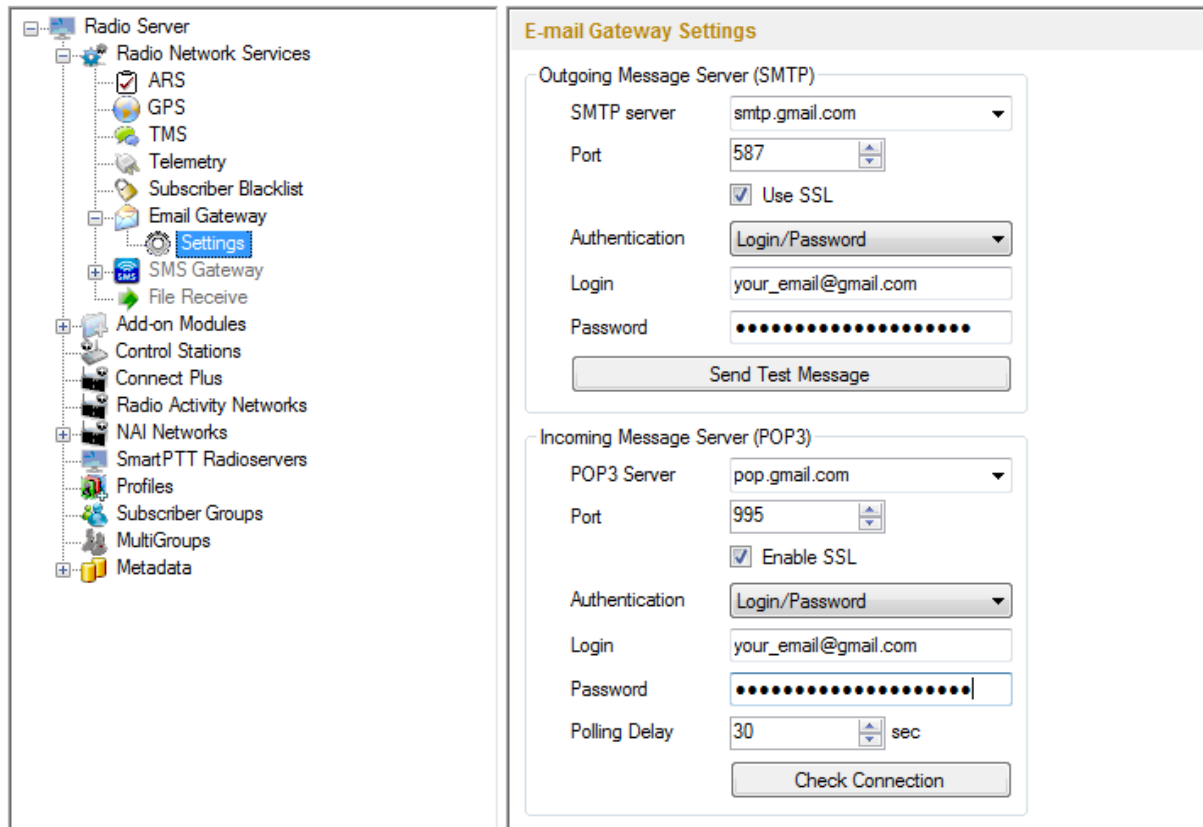
Example:

The original e-mail message: *Due to technical works on the PBX, the PI will have no telephony for the whole day. To turn off these notifications, open **Personal Settings**, click **Manage Alerts**. Clear check boxes next to unwanted notifications.*

If you enter *To turn off* in the **Ignore After Line** field, the radio subscribers will receive the message: *Due to technical works on the PBX, the PI will have no telephony for the whole day.*

POP3 Protocol Configuration

In the **Receive Protocol** field, select *POP3* and click **Settings** in the left setting tree.



SMTP server – domain name of the SMTP server which is used for delivering outgoing email messages (for example, *smtp.gmail.com*).

Port – SMTP server port number.

Use SSL – check this option if you need secure connection to SMTP server.

Authentication – select authentication method for SMTP server (**Anonymous** – connect anonymously, **Windows** – connect to the server under Windows user account, **Login/Password** – connect with Login/Password specified).

Login – email address or login required by the mail server.

Password – user's password.

Send test message – click the button to check server connection. In case of successful connection and correct settings, the mail user specified above will receive a test email message.

POP3 server – specify domain name of POP3 server which is used to deliver incoming e-mail messages.

Port – enter POP3 server port number.

Use SSL – check this option if you need a secure connection to POP3 server.

Authentication – select authentication method for POP3 server.

Login – enter email address or login required by mail server.

Password – user's password.

Polling Delay – polling interval for the mail server.

Check connection – click to check connection with the server. In case of successful connection, the pop-up window message shows the number of unread email messages in your email box. In case of connection failure, a window with connection error message opens.

IMAP4 Protocol Configuration

Select "IMAP4" in the drop-down list of **Receive** protocol and click **Settings**.

The screenshot displays the 'E-mail Gateway Settings' window. On the left, a tree view shows the configuration hierarchy, with 'Settings' selected under 'Email Gateway'. The main window is divided into two sections:

- Outgoing Message Server (SMTP):**
 - SMTP server: smtp.gmail.com
 - Port: 587
 - Use SSL
 - Authentication: Login/Password
 - Login: your_email@gmail.com
 - Password: [masked]
 - Send Test Message button
- Incoming Message Server (IMAP4):**
 - IMAP4 Server: imap.gmail.com
 - Port: 993
 - Enable SSL
 - Authentication: Login/Password
 - Login: your_email@gmail.com
 - Password: [masked]
 - Polling Delay: 30 sec
 - Check Connection button

IMAP4 server – specify the domain name of IMAP4 server which is used for incoming email messages delivery.

Port – enter IMAP4 server port number.

Use SSL – check this option if you need secure connection to IMAP4 server.

Authentication – select authentication method for IMAP4 server.

Login – enter email address or login required by mail server.

Password – user's password.

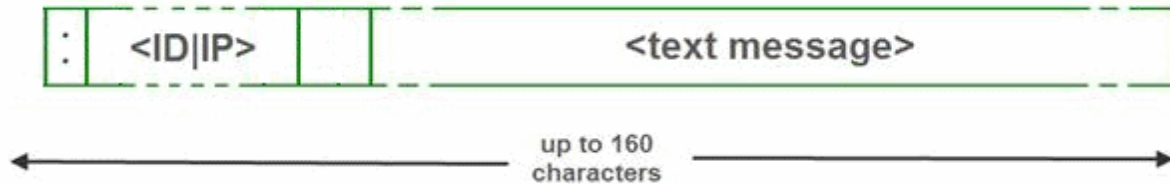
Polling Delay – polling interval for the mail server.

Check connection – click the button to check connection with the server. In case of successful connection, the pop-up window shows the number of unread mail messages in your email. If connection is failed, connection error

window opens.

Supported Message Formats

When sending an email message to radio subscribers, use the following format of the message.



: – prefix indicating that this message is addressed to a radio subscriber or talkgroup.

<ID|IP> – ID or IP address of the radio subscriber or subscriber group.

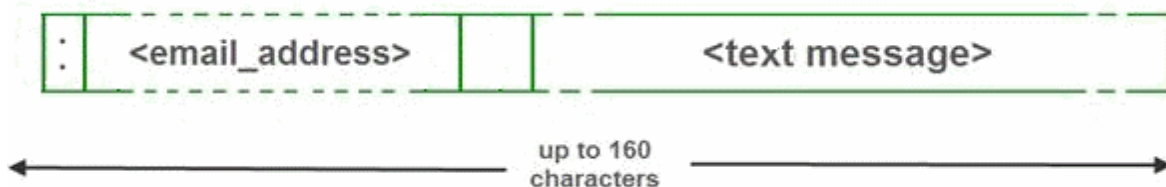
Space indicates the beginning of the message body.

Example:

1. The email message **:12.0.0.77 Hello!** or **:77 Hello!** received from the mail server will be forwarded to the radio subscriber with ID 77.
2. The email message **:225.0.0.1 Please, call to the station** received from the mail server will be forwarded to the subscriber group with ID 1.

The email message **:12.0.0.80,12.0.0.81,12.0.0.82,12.0.0.50 Hello!** or **:9080,9081,9800,9050 Hello!** received from the mail server will be forwarded to the radio subscribers with corresponding IDs.

When sending a text message from a radio subscriber to an email user, use the following format.



: – prefix indicating that this message is addressed to an email user.

<email_address> – email address of the email user.

Space indicates the beginning of the message body.

Example:

1. The message `:email_address@example.com Hello!` from a radio subscriber will be forwarded to the email user with the email address `email_address@example.com`.
2. The message `:email_address1@example.com,email_address2@example.com Hello!` from a radio subscriber will be forwarded to the email users `email_address1@example.com` and `email_address2@example.com`.

Note: When **Forward Messages to E-mail** is enabled together with the options of receiving messages from radio network and from the email, all messages sent or received by email users will be duplicated to the specified email addresses.

2.2.1.7 SMS Gateway

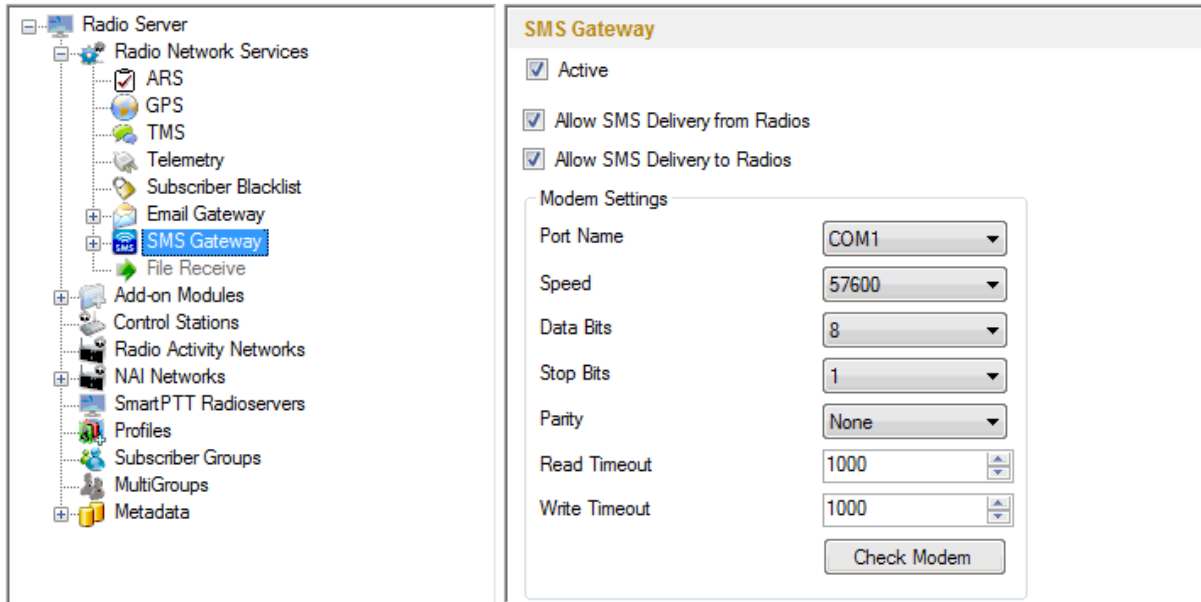
SmartPTT Radioserver has an integrated SMS Gateway service, which allows establishing communication between radios and mobile phones. There are 2 possible ways to communicate between each other:

1. A radio subscriber sends an SMS to a phone subscriber.
2. A phone subscriber sends an SMS to a radio subscriber.

To be able to send an SMS, it is necessary to do preliminary settings on both modem and SmartPTT Radioserver.

How to Configure SmartPTT Radioserver

Select the **SMS Gateway** item in SmartPTT Radioserver Configurator.



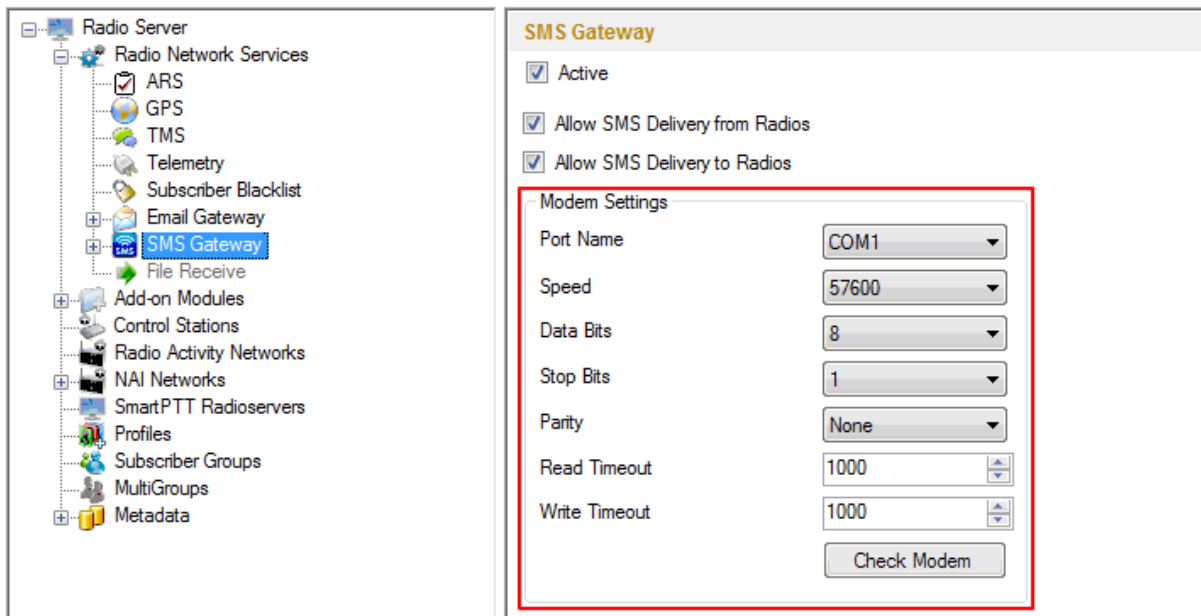
Active – select to enable SMS Gateway service.

Allow SMS delivery from radios – select this option if you need to forward SMS directly from subscriber radios.

Allow SMS delivery to radios – select this option if you need to forward SMS directly to subscriber radios.

How to Configure a Modem

Warning! To enable Modem Settings and SMS Gateway Settings, stop SmartPTT Radioserver.



Port Name – COM port number which modem is connected to. You can find the COM port number by opening modem properties in Windows Control Panel.

Speed – data flow rate through COM port (in bits/sec).

Data Bits – number of data bits to transmit.

You can configure **Data Bits** to be 5, 6, 7, or 8. Data is transmitted as a series of five, six, seven, or eight bits (five and six bit data formats are used rarely for specialized communications equipment).

Stop Bits – number of bits used to indicate the end of a byte. You can configure **Stop Bits** to be 1, 1.5, or 2. If **Stop Bits** is 1.5, the stop bit is transferred for 150% of the normal time used to transfer one bit.

Both the computer and the peripheral device must be configured to transmit the same number of stop bits.

Parity – method of detecting errors in transmission.

You can configure **Parity** to be **None**, **Odd** or **Even**.

If **Parity** is **None**, parity checking is not performed and the parity bit is not transmitted.

If **Parity** is **Odd**, the number of mark bits in the data is counted, and the parity bit is asserted or unasserted to obtain an odd number of mark bits.

If **Parity** is **Even**, the number of mark bits in the data is counted, and the parity bit is asserted or unasserted to obtain an even number of mark bits.

Read Timeout – number of milliseconds before a time-out occurs when a read operation does not finish.

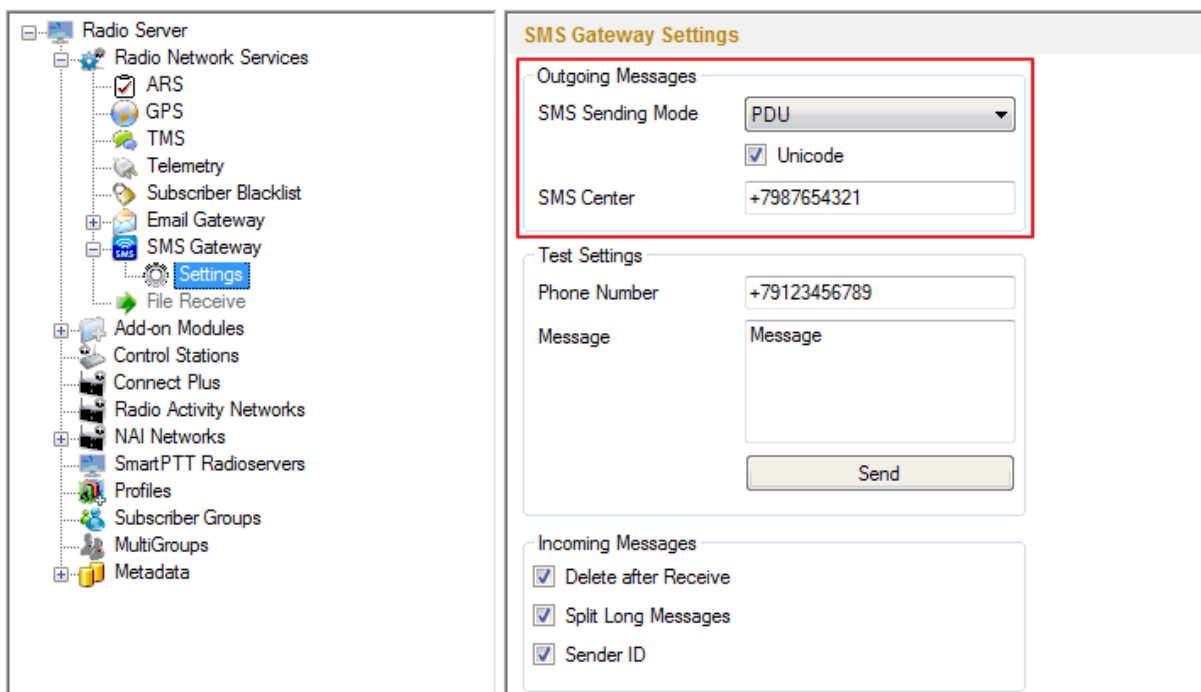
Write Timeout – number of milliseconds before a time-out occurs when a write operation does not finish.

Check Modem – modem operation test. If a modem is detected, you will see information regarding the type of modem installed on your system. If there is no modem detected, you will see "Modem not found" message.

The next step is to check the settings for outgoing messages and to send a test message.

Set Parameters for Outgoing Messages

To set parameters for outgoing messages, select **Settings** in SmartPTT Radioserver Configurator. At that, the following window opens.



SMS Sending Mode – Text or PDU mode.

There are two ways of sending and receiving SMS messages: in text mode and in the protocol description unit (PDU) mode. The text mode (unavailable on some phones) is just an encoding of the bit stream represented by the PDU mode, and can be used only for English; PDU mode and Unicode are used for all languages.

Unicode is the universal character encoding which provides the basis for the consistent encoding, representation and handling of text expressed in most of the world's writing systems. Select **Unicode**, if other languages except English are used.

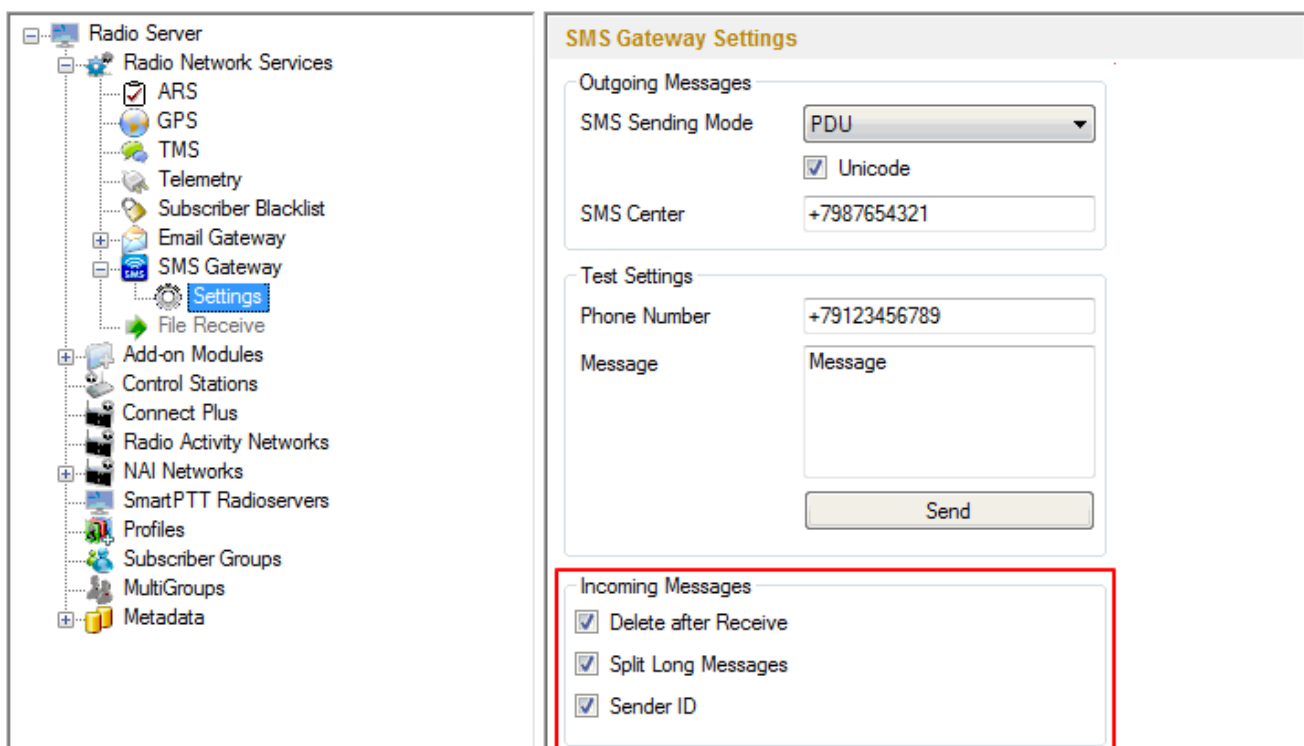
SMS Center – SMS message center number. If the number is registered on modem's SIM-card, there is no need to fill this field.

Set Parameters for Incoming Messages

Delete after Receive – select **Delete after Receive** to avoid saving SMS messages in the modem memory.

Split Long Messages – if not selected, a long SMS message (over 140 characters) addressed to a radio is trimmed to size limit (that is some information gets lost). When selected, the original message is split into several packages during transmission. Thus, the radio subscriber receives the message without information loss.

Sender ID – when selected, the received message contains the sender phone number.




Run Tests on SMS Sending

Make sure SMS messages can be sent to recipients from SmartPTT Radioserver. Use the **Test Settings** option to do it.

First, in the field **Phone Number** specify the phone number where you will send the test message.

Second, enter the text of the message in the field **Message**. And then click **Send**.

If the message is successfully sent, you will get a confirmation notification.

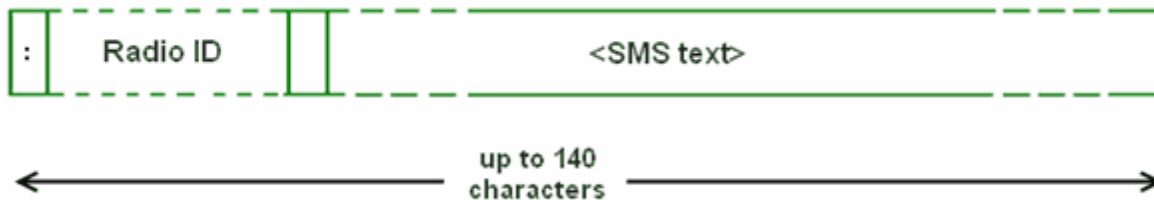
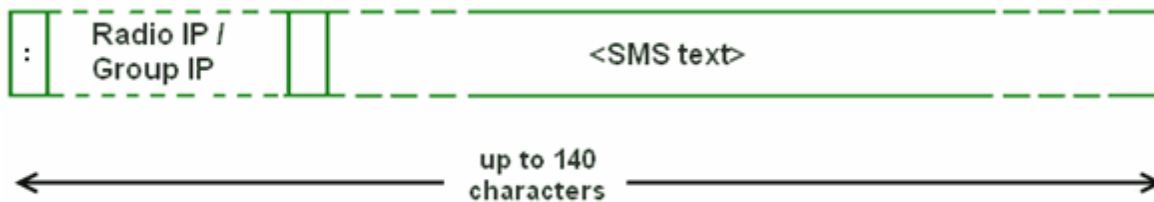
When modem is selected and test message is successfully sent, save the changes  and restart the

radioserver 

After radioserver is restarted, **Check modem** and **Send** (test message) will be unavailable. It means that now you can send SMS messages from the radio and to the radio.

Supported Message Formats

To send SMS from the mobile phone to the radio, the message forwarded to the modem number should comply with one of the following formats.



: – prefix indicating that this message is addressed to a radio subscriber or talkgroup.

<Radio/Talkgroup IP> – radio or talkgroup IP address of the recipient

<Radio ID> – radio ID of the recipient

Space indicates the beginning of the message body.

Example:

When the radioserver gets the following message, it sends the message to subscriber 77 (or to talkgroup ID=2):

To subscriber 77:

:12.0.0.77 SMS text

:77 SMS text

To talkgroup 2:

:225.0.0.2 SMS text

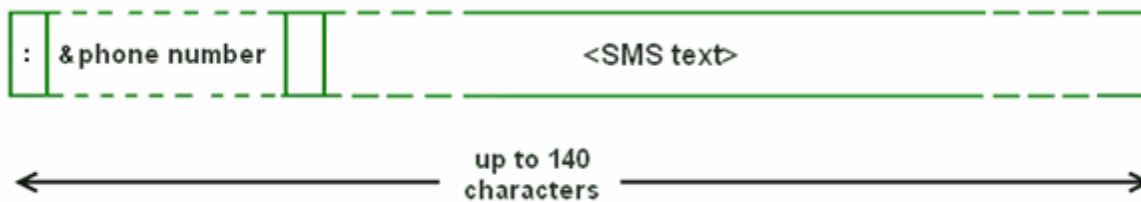
To multiple subscribers simultaneously:

:12.0.0.80, 12.0.0.81, 12.0.0.82, 12.0.0.50 SMS text

:9080,9081,9082,9050 SMS text

Note: When only ID is specified (with no IP address of the radio or talkgroup), SMS can be sent only to the subscriber with the specified ID. To send group SMS, it is necessary to use a full talkgroup IP address.

To send SMS from the radio to the mobile phone, the message should comply with the following format.



: – prefix indicating that this message is addressed to a mobile phone.

&phone number – mobile phone number of the SMS recipient (symbol "&" is used instead of "+" because there is no "+" symbol on the MOTOTRBO radios).

Space indicates the beginning of the message body.

Example:

On receiving the message **:&71234567890 SMS text**, the radioserver sends it to the mobile radio with the phone number +71234567890.

To several mobile subscribers simultaneously:

:&71234567890,&81234567890 SMS text

2.2.1.8 File Receive

File Receive service is an easy and useful tool, which allows sending files for almost all MOTOTRBO radios. This function is even more necessary in field communication characterized by the absence of the Internet connection and other channels to transmit data.

In version 2.0 SmartPTT File Transfer allows receiving files without the server application or base stations. The user needs to have only a radio connected to the PC via USB port and the client application SmartPTT File Transfer version 2.0.

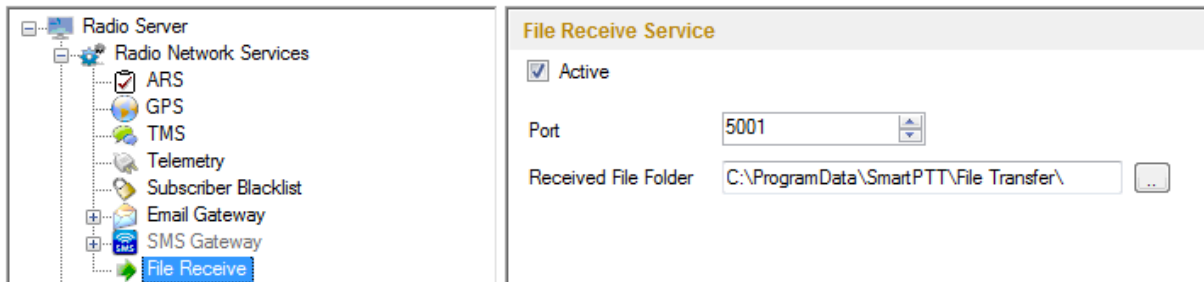
Note: Not all networks support the new scheme of file transfer. It is possible for IP Site Connect only. For other network types use the old file transfer method, that is using control stations and server application SmartPTT File Transfer version 1.0 or 2.0.

To enable this functionality the following steps should be taken:

1. Configure SmartPTT Radioserver settings.
2. Configure the radio with the help of MOTOTRBO CPS.
3. Configure routing settings for file transfer on a remote computer.
4. Configure the client application SmartPTT File Transfer 2.0.

How to Configure SmartPTT Radioserver

To configure the settings, select the **File Receive** menu item in the left setting tree of SmartPTT Radioserver Configurator. At that, the **File Receive Service** window opens on the right.



Active – enables the service.

Port – port used by file receive service.

Received File Folder – field to specify the folder name where received files are to be stored.

To apply the changes, save the new settings and restart the radioserver.

How to Configure Radio Settings in MOTOTRBO CPS

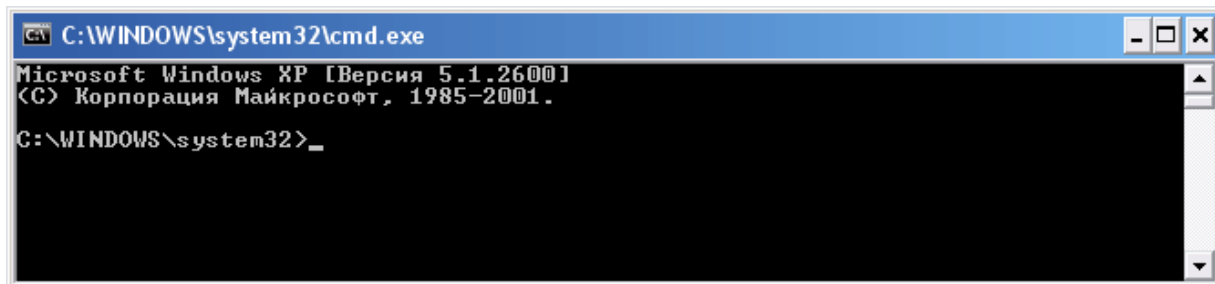
For the best file transfer rate a radio should be configured in the following way:

1. Open MOTOTRBO CPS and go to **General Settings** and configure the **TX Preamble Duration** parameter to be *60* ms.
2. Go to **Network** and configure the **Max TX PDU Size** parameter to be *500* byte.
3. Clear **Data Call Confirmed** for the channel where the files are to be transmitted.

How to Configure Routing Settings for File Transmission

To configure file transmission correctly, add information on the new route for file transmission in the routing table of the PC to which a radio is connected.

The routing table is configured via Windows command line. To open the command line, run file C:\\WINDOWS\\system32\\cmd.exe.



To add the file transmission route, use Windows command line:

route -p add 13.0.0.0 mask 255.0.0.0 192.168.X.X, where:

route is a command to add a route;

-p – the key for adding a route into the list of fixed routes;

add – adding the route;

13.0.0.0 – IP address of all radios available in the radio network;

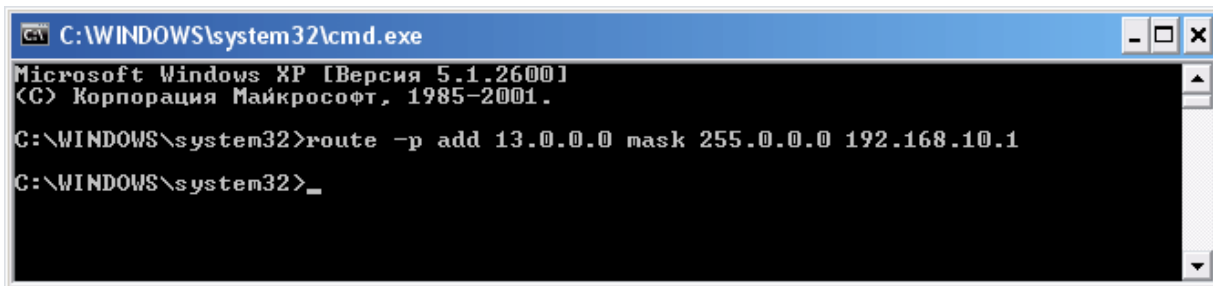
mask 255.0.0.0 – network mask;

192.168.X.X – radio IP address.

Example:

To transmit data packets from the radio with IP address **192.168.10.1** (radio IP address can be found in the MOTOTRBO CPS application, **Network** menu item), the following command needs to be entered:

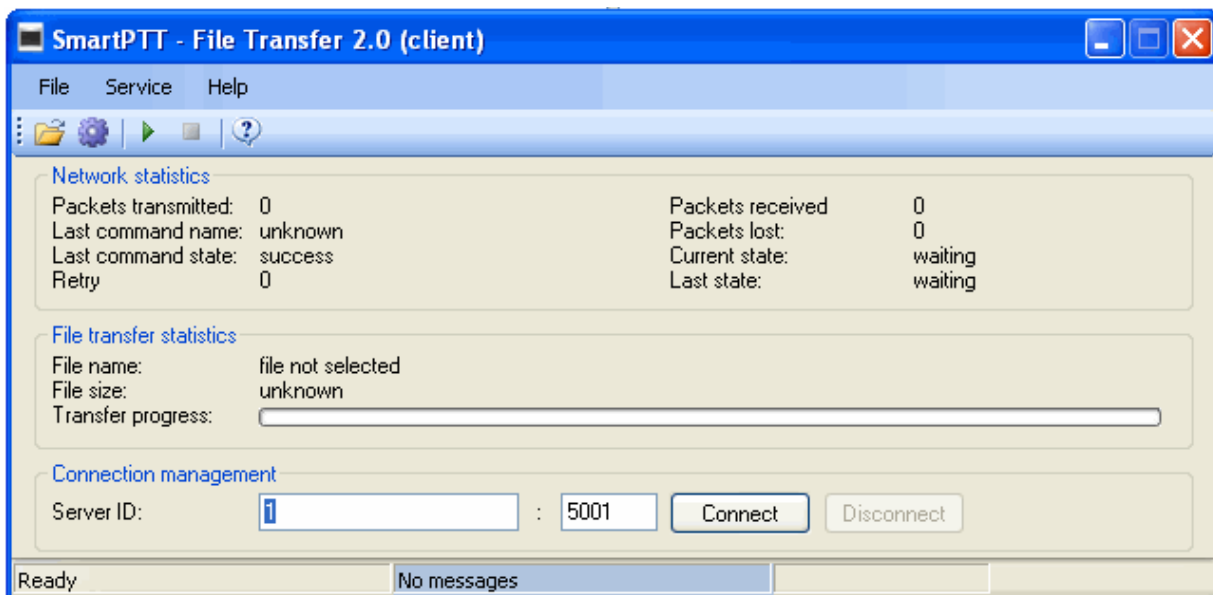
```
route -p add 13.0.0.0 mask 255.0.0.0 192.168.10.1
```



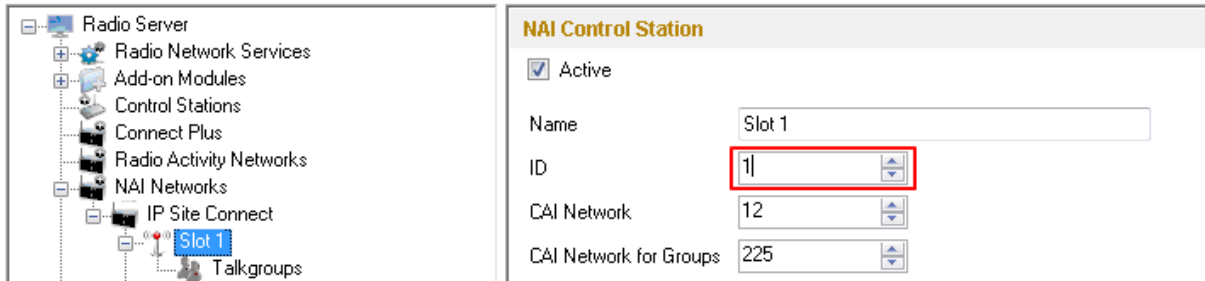
How to Configure SmartPTT File Transfer Settings

Download and install the latest version of the application SmartPTT File Transfer (http://www.smartptt.com/demo_versija.html).

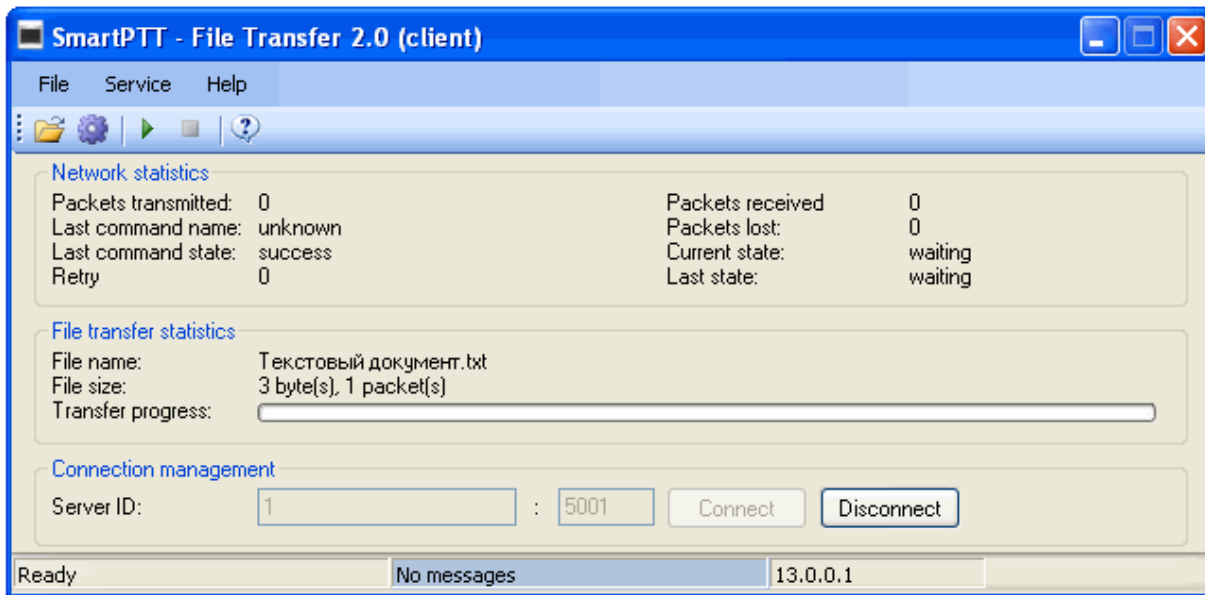
Launch the client application (Start > All Programs > SmartPTT File Transfer > SmartPTT File Transfer Client).




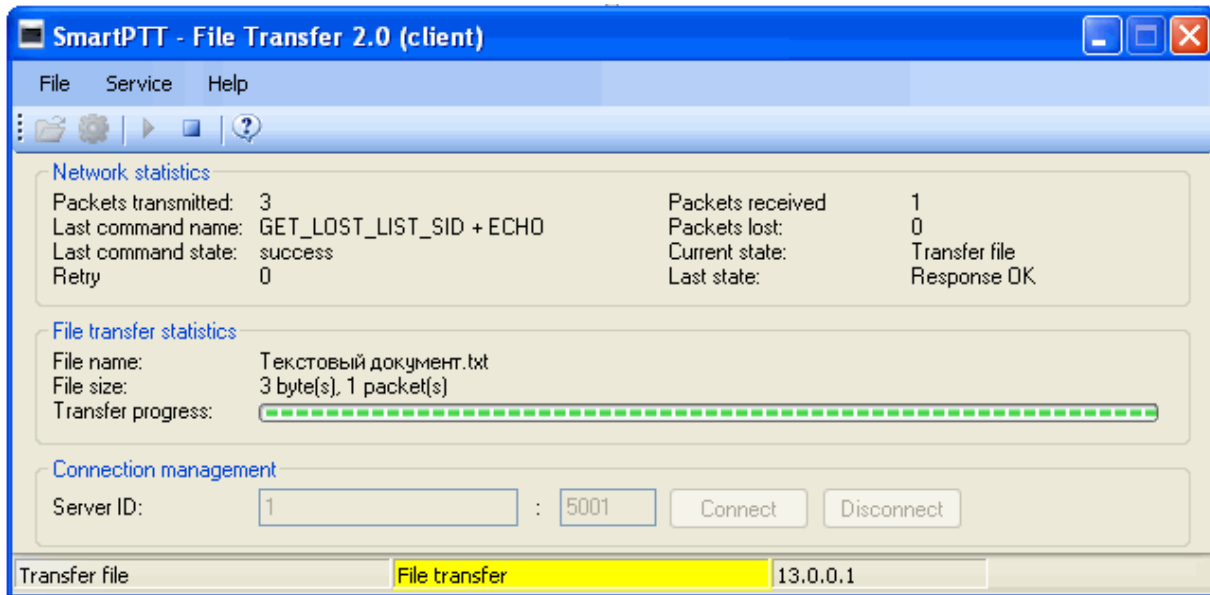
In the **Server ID** field, enter the slot ID of the IP Site Connect, which will be used for file transmission. The slot ID is set in Smart PTT Radioserver Configurator, in the **Slot** window.



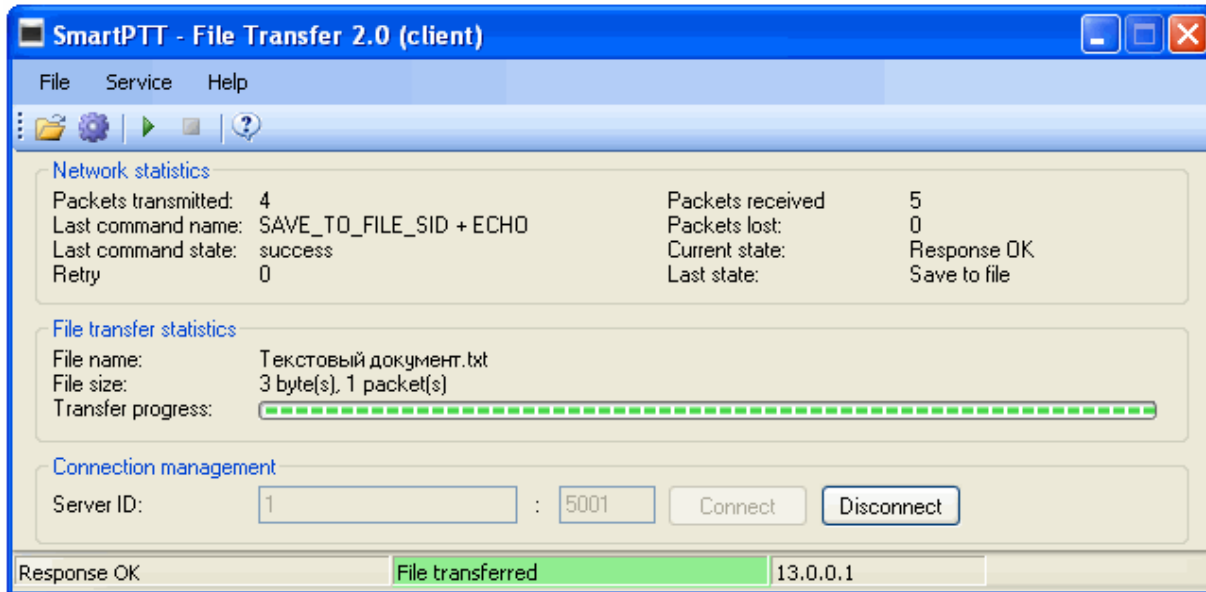
To connect to the radioserver, click **Connect**.



Select file to transmit (**File > Select File**) and click the **Start File Transfer** button . At that, the radio will start transmitting the file to the radioserver, and at the bottom of the window a record will appear informing about the ongoing file transmission process.



As soon as the file is successfully transmitted, the corresponding notification appears at the bottom of the window.



Note: For more information about the settings of SmartPTT File Transfer, please check SmartPTT File Transfer User Guide.

2.2.2 Add-on Modules

2.2.2.1 Licenses

To use the SmartPTT application you need to install licenses. There are licenses for basic features, which allow you to run the application, and licenses for additional features, like telephone connection support, bridging, SNMP service, etc.

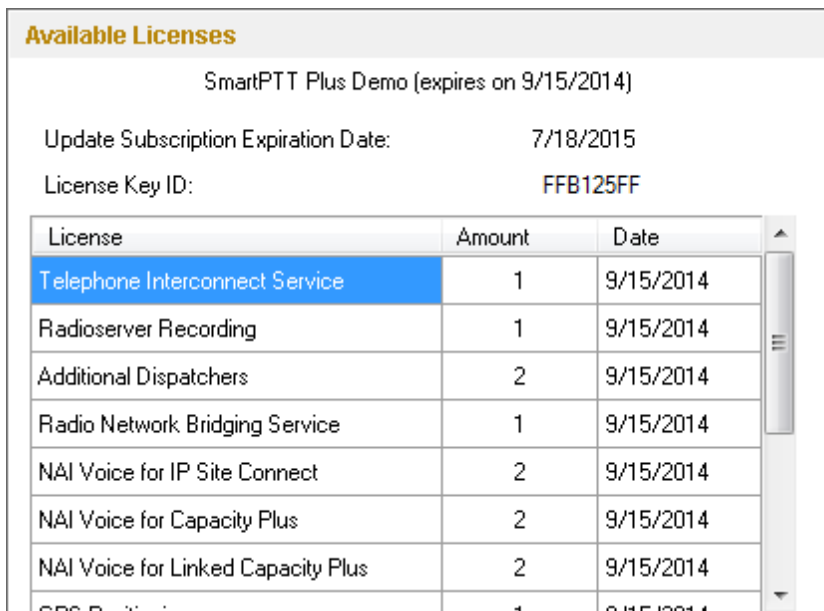
To install server licenses, select **Licenses** section in SmartPTT Radioserver Configurator. At that, the following window opens.

Click **Change License** – the browse window is displayed. Specify location of the license file and click **Open**.



The **License Installation** window appears, which displays information on the license type and functionality. Click **Apply** to install the license. Click **Cancel** to select another license.

The license is installed, and the window displays information on the license type.

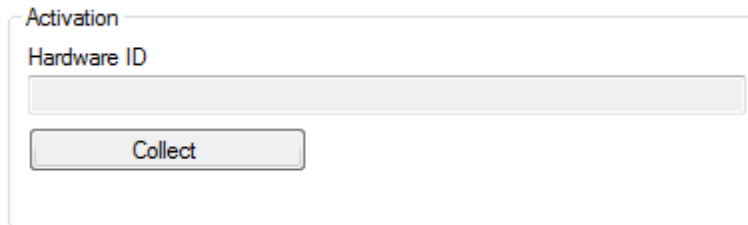


License – title of the license.

Amount – allowed number of computers where the service can be installed or the number of repeater connections.

Date – license expiry date.

Licenses can be tied to the hardware ID. You can generate it in the **Activation** area by clicking **Collect**.

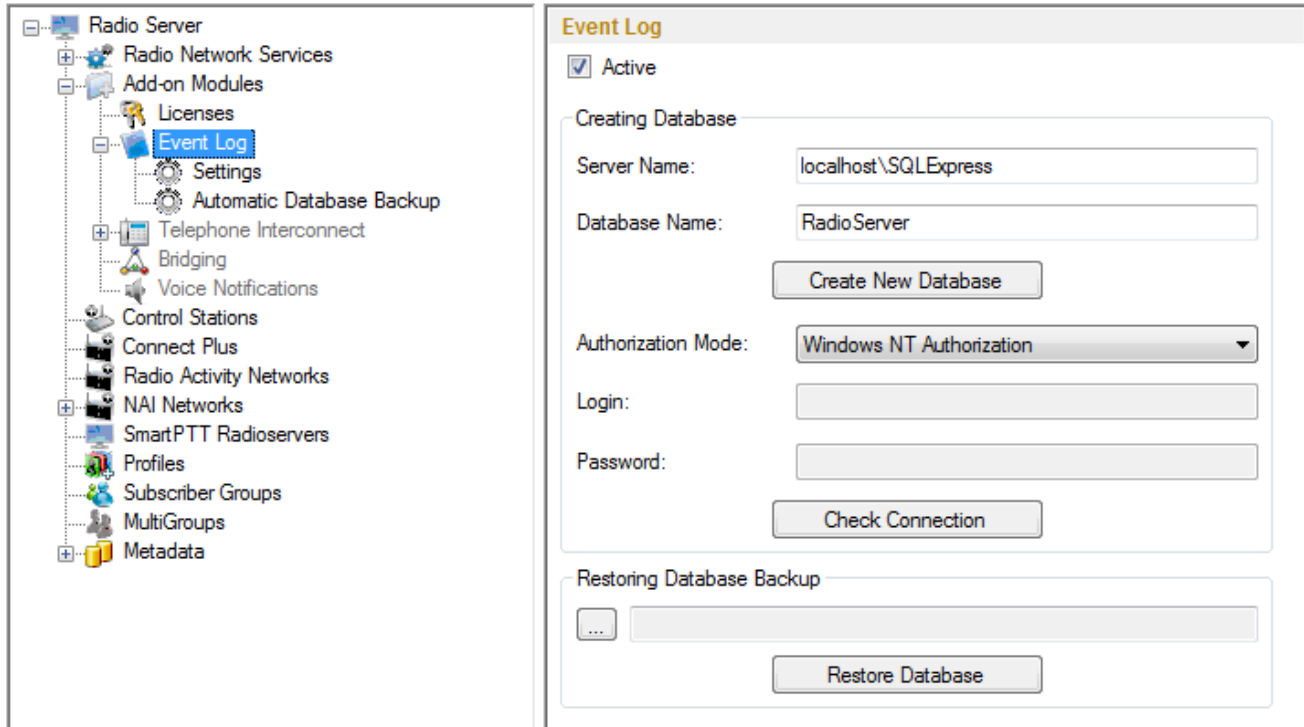


2.2.2.2 Event Log

The **Event Log** is a special SmartPTT Radioserver log. It tracks all events from all dispatch systems connected to the radioserver. Events are registered in the event log even if SmartPTT Radioserver Configurator is closed.

First activate the event log by checking off **Enable Event Logging**. To do it, select **Event Log** item in the setting tree in SmartPTT Radioserver Configurator.

Then create the database for the log.



Warning! To enable Event Log on the radioserver, the corresponding license should be available. Go to

the **Licenses** section to acquire the necessary license.

To create a new database, type in the **Server Name** and the **Database Name** fields, and click **Create New Database**. If creation is successful, a message about successful database creation is displayed. If a database is not created, the cause of failure will be displayed at the bottom of the window.

Note: Database creation process at SmartPTT Radioserver is similar to the database creation process at SmartPTT Dispatcher.

Note: For the database server installed together with the radioserver enter the name using the following format: Name of computer\SQLExpress (for example, MYCOMP\SQLExpress).

Select **Authorization Mode** between the two:

SQL Server Authorization – you must have the login name and password of the account with SQL server access.

Windows NT Authorization – the user who has logged into the Windows system, must be listed in the SQL server's list of users to make connection.

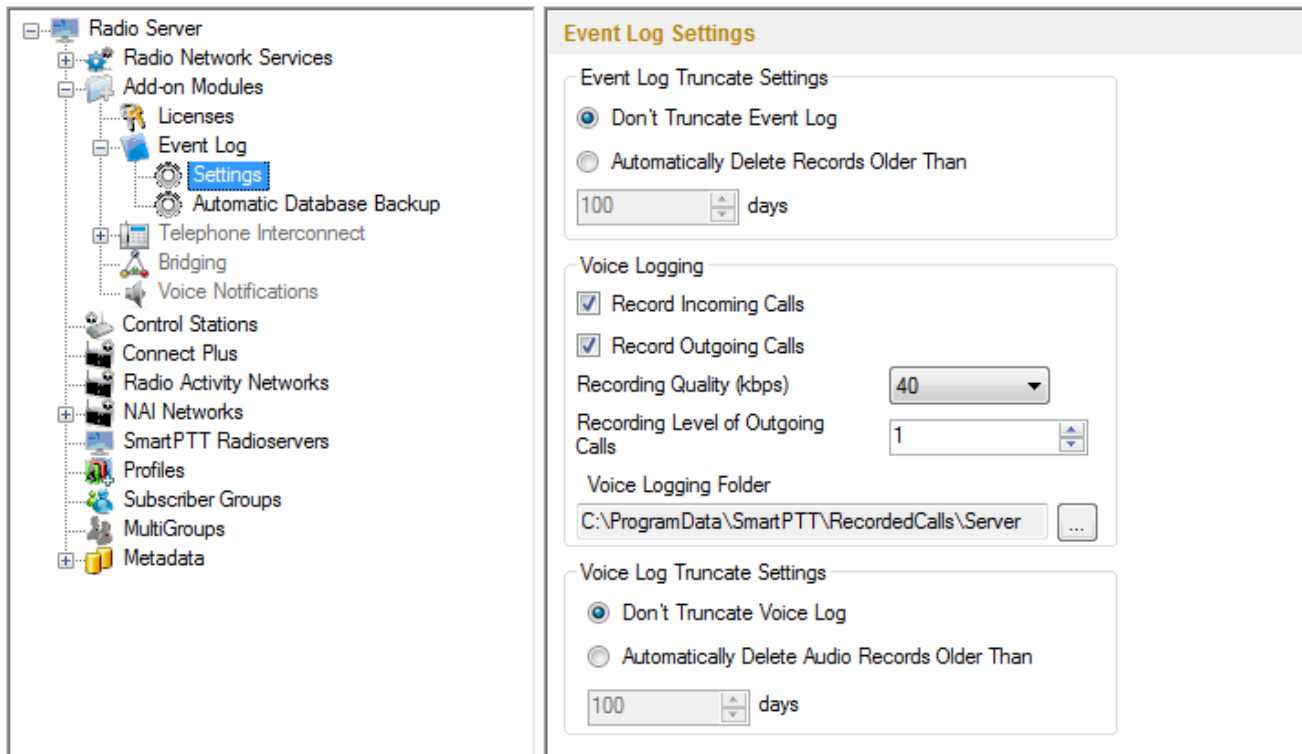
Click **Check Connection**. In case of successful authorization the message "The connection is established successfully!" is displayed. If authorization fails, the cause will be displayed at the bottom of the window.

To restore the event log database from the backup, select the required database backup file in the **Path** field and click **Restore Database**.

Note: To set up the auto backup of the event log database, go to the [Automatic Database Backup](#) window.

Settings

To tune the radioserver event log select **Settings** under **Event Log** in the setting tree of SmartPTT Radioserver Configurator.



Event Log Truncate Settings – settings to manage records deletion in the log.

Record Incoming Calls – if this option is on, incoming calls are recorded.

Record Outgoing Calls – if this option is on, outgoing calls are recorded.

Recording Quality (kbps) – audio files sound quality.

Recording Level of Outgoing Calls – increase or decrease sound volume for recording outgoing calls.

Voice Logging Folder – set path to the folder where recorded audio files are stored.

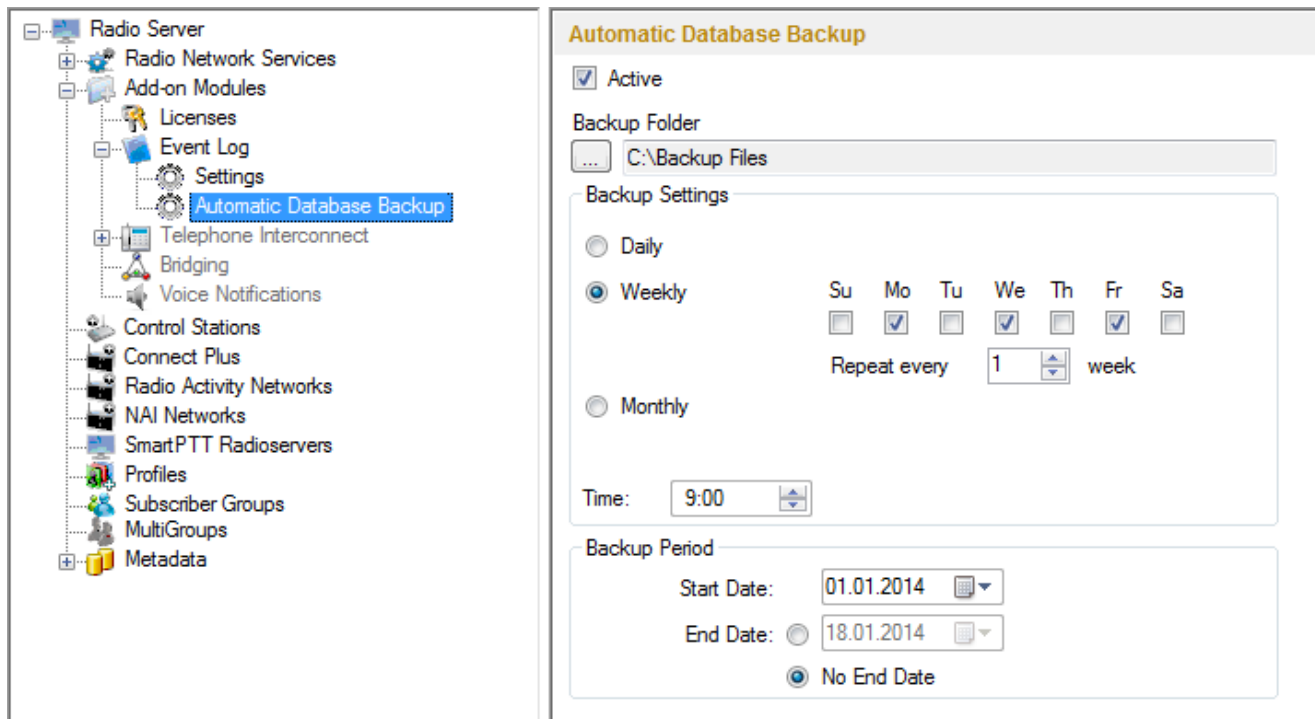
Voice Log Truncate Settings – settings to control audio records truncate parameters.

Automatic Database Backup

Backing up data on a regular basis helps to protect it from being erased in case of the server hardware or software

failure. SmartPTT Radioserver Configurator allows user to back up the event log database automatically.

In order to set up automatic backup schedule of the event log database, select **Automatic Database Backup** under **Event Log** in the setting tree of SmartPTT Radioserver Configurator.



Active – select the check box to enable the ability to create current event log database backups in the automatic mode.

Backup Folder – full path to the file for saving the database backup.

Backup Settings – schedule for creating the current database backup:

- **Daily** – every fixed day at the specified time (for example, every day, every third day at 9:00 a.m.).
- **Weekly** – every fixed day of the week at the specified time (for example, every Monday, Wednesday and Friday at 11:00 p.m.).
- **Monthly** – once a month on the fixed day of the selected month and at the specified time.

Backup Period – allows you to set time period when automatic database backup is to be made according to the selected backup settings.

Note: The number of stored backup files in the same folder is limited to 3. Otherwise, when creating a new copy, the old files are deleted.

Note: The event log database recovery from the automatically created backup is performed manually in the [Event Log](#) window.

2.2.2.3 Telephone Interconnect

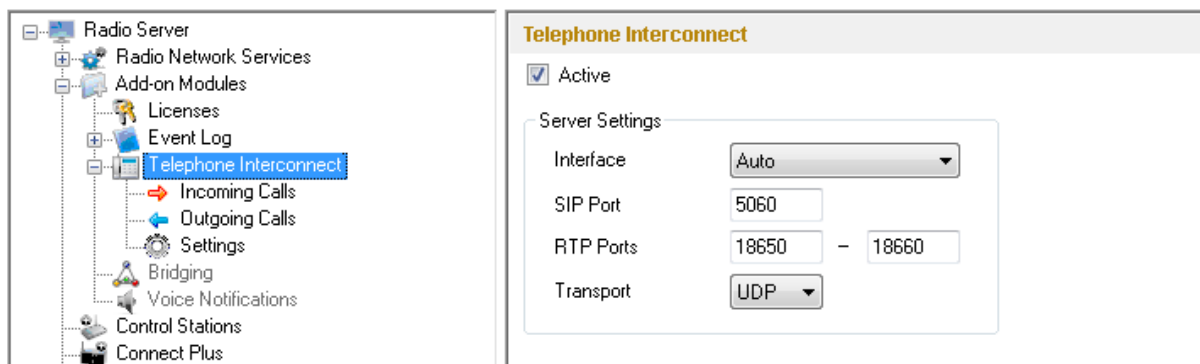
Telephone Interconnect service allows for communication between radio and telephone subscribers, and uses SIP and RTP protocols for signaling and voice data transmission. Voice data transmission is done in half-duplex mode. Switching between receiving and transmitting modes is carried out by voice interrupt initiated by a radio subscriber. There are several ways how to make the interconnection:

- A telephone subscriber makes a private call.
- A telephone subscriber makes a group call.
- A radio subscriber makes a call to a telephone subscriber.
- The dispatcher connects telephone and radio subscribers.
- The dispatcher connects a telephone subscriber and a talkgroup.

To use Telephone Interconnect service, configure the radioserver and VoIP gateway settings. Also, make sure that **Allow Telephone Interconnect** is enabled in the network slot parameters.

How to configure SmartPTT Radioserver

To configure SmartPTT Radioserver settings, go to SmartPTT Radioserver Configurator and select **Telephone Interconnect** as shown on the picture.



Warning! To activate Telephone Interconnect, install the corresponding license. The license can be installed under Licenses.

In the **Server Settings** area specify the interface that will be used for sending and receiving commands and voice data when working with VoIP gateway.

SIP Port – UDP or TCP port number to receive and send SIP data packets. The default value is *5060*. Accordingly, the specified port must be available for incoming and outgoing traffic.

Warning! If both **SmartPTT Dispatcher** and **SmartPTT Radioserver** are installed on one computer, their **SIP ports must differ**. For example, **5060** for the radioserver and **5061** for the dispatch console.

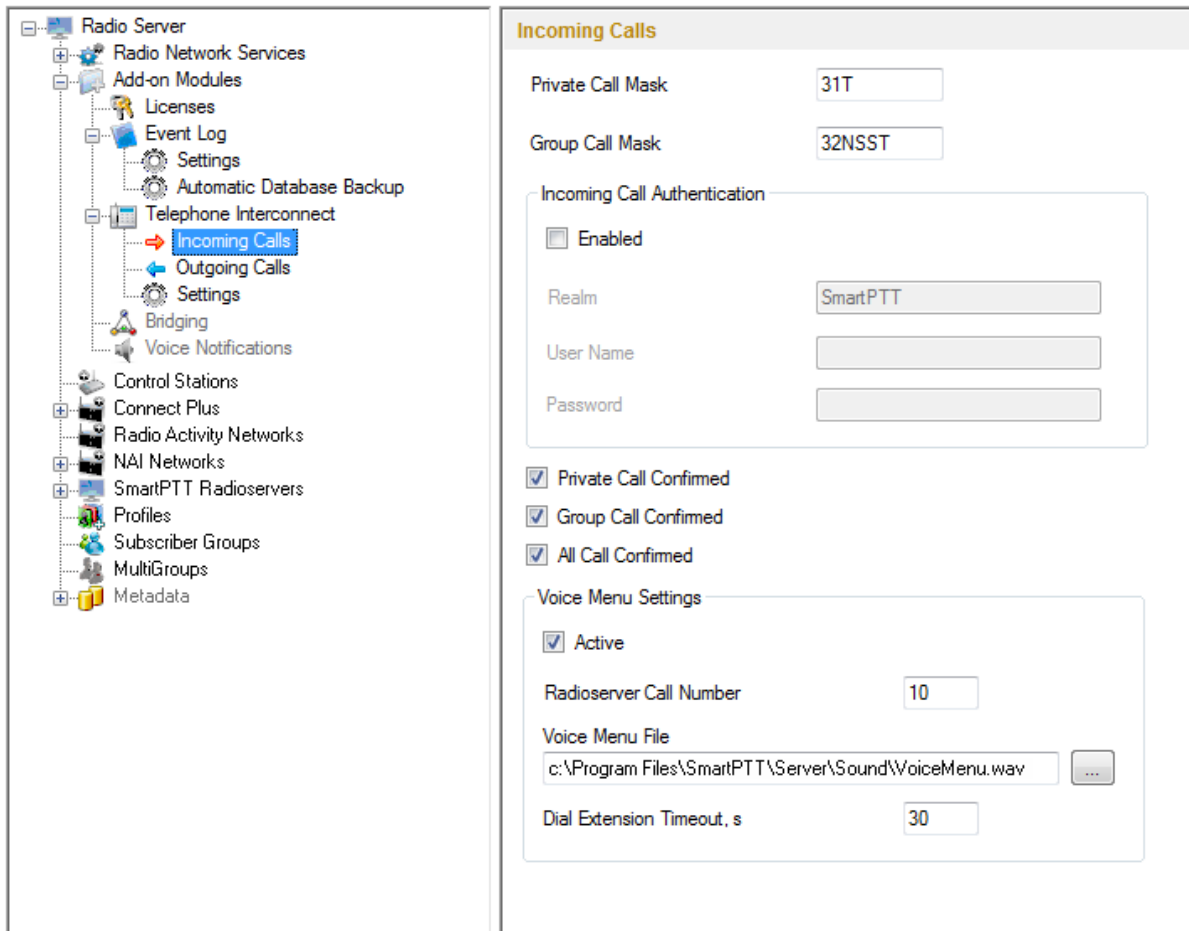
RTP Ports – UDP or TCP port number to receive and send SIP data packets. Accordingly, the specified port must be available for incoming and outgoing traffic. The default range of values is from *18650* to *18660*.

Warning! The address and the port of the VoIP gateway must be real (NAT is not supported). If both **SmartPTT Dispatcher** and **SmartPTT Radioserver** are installed on one computer, the port range set in the **RTP Ports** field must differ from the port range set in the **Incoming Sound Port** field in **SmartPTT Dispatcher**.

Transport – allows selecting between TCP and UPD for SIP commands transmit.

Incoming Calls

In terms of the SmartPTT system "incoming calls" are calls that are made from telephone subscribers to radio subscribers.



A telephone subscriber can make two types of calls to radio subscribers.

1. Private call is a call when the radioserver calls to a radio subscriber. You can use **Private Call Mask** when making a private call.
2. Group call is a call when the radioserver calls to a talkgroup. You can use **Group Call Mask** to make a group call.

A mask is a regular expression. In the following table you can find all the symbols used in masks.

Symbols	Description
.	Used for any figure
[m-n]	Used for any figure in the interval from m to n
[a,b,c] or [abc]	Used for any figure from the list
T	Used for any number of any figures

Symbols	Description
()	Used to unite regular expressions
N	Used to denote network ID. N=0 when there is only one network. Can be used only as Group Call Mask .
S	Used to denote Slot ID (in IP Site Connect) or Site ID (Linked Capacity Plus). Can be used only as Group Call Mask .

Example:

Let's review sample masks:

Private Call Mask: *31* or *31T*

Group Call Mask: *32NSST*

Then the dialed numbers will mean the following:

31403, i.e. 31 403: private call to subscriber with ID=403.

3200013, i.e. 32 0 00 13: wide group call to a talkgroup 13, which must be either unique for the radioserver, or located in the only network connected to the radioserver.

3210013, i.e. 32 1 00 13: wide group call to a talkgroup 13 located in network 1.

32112123, i.e. 32 1 12 123: local group call to a talkgroup 123 in network 1, on site 12.

The **S** symbol can be assigned different values and they depend on the network type. Below is the list of values that can be used for the **S** symbol:

- In the IP Site Connect network the **S** symbol can be assigned values *1* and *2* only, which corresponds to the number of the IP Site Connect slot.
- In the Capacity Plus network the **S** symbol can have only one value: *0*.
- In the Linked Capacity Plus network the **S** symbol can be assigned any value. **S=0** stands for a wide group call. **S=1**, **S=2**, **S=any other number** stand for a local group call specifying the LCP site number.

To make the All Call, use the following values:

- In the IP Site Connect network: **S=1/2** and talkgroup ID=*0*.
- In the Capacity Plus and Linked Capacity Plus networks: **S=0** and talkgroup ID=*0*.

Incoming Call Authentication – receiving an incoming call from a phone/softphone, the radioserver asks for user name and password corresponding to **Realm** in the described setting. Calling subscriber must send back user

name and password specified in this setting. To activate this ability, select **Enabled**.

Realm – parameter used for the incoming telephone calls authentication.

User Name – name of the user used for authentication.

Password – password used for authentication. It should correspond to the specified realm.

Private Call Confirmed – if enabled, when making a private call, the telephone subscriber can hear the ringing tone until the radio subscriber has pressed the PTT button. If **Private Call Confirmed** is not selected, the call starts immediately.

Group Call Confirmed – if enabled, when making a group call, the telephone subscriber can hear the ringing tone until one of the radio subscribers of the talkgroup has pressed the PTT button. If **Group Call Confirmed** is not selected, the call starts immediately.

All Call Confirmed – if enabled, when making an **All Call**, the telephone subscriber can hear the ringing tone until one of the radio subscribers of the channel has pressed the PTT button. If **All Call Confirmed** is not selected, the call starts immediately.

Voice Menu Settings is used for setting up interactive voice response (IVR), i.e., a technology that allows the SmartPTT system to interact with subscribers through the use of voice and DTMF tones input via keypad. If enabled and set up properly, the telephone subscriber can make a call to the radioserver and then to the required radio subscriber or talkgroup using the information heard in the voice menu file.

Radioserver Call Number – number to call to the radioserver.

Voice Menu File – the audio file which will be played to the telephone subscriber. The sampling frequency of the audio file must be 8000 Hz.

Dial Extension Timeout – period in seconds when the caller can dial the ID of the radio subscriber or talkgroup after listening to the voice menu file. If the caller has not dialed the ID before the time is out, the call will be dropped.

Here is the list of steps to make a call using voice menu:

1. Dial your PBX number.
2. Dial the radioserver call number.
3. Dial * to turn on DTMF mode on the telephone (not obligatory, depends on the telephone parameters).

4. Dial the private or group call mask, and then the radio subscriber or talkgroup ID.
5. Dial #.

Example:

The radio subscriber ID: 120.
 The PBX number: 9649.
 The radioserver call number: 10.
 The private call mask: 1.
 The telephone subscriber will call: 9649 10 (*) 1 120 #.

Outgoing Calls

The screenshot shows the 'Outgoing Calls' configuration page in the Radioserver Configurator. On the left is a tree view with 'Outgoing Calls' selected. The main configuration area is divided into three sections:

- Default Gateway Settings:**
 - Allow Calls to Default VoIP Gateway
 - Interface: 192.168.8.111
 - SIP Port: 5060
 - Source Mask: 1 (Example: 32%15)
 - Destination Mask: 12
- Dialing Rules:**
 - TMS Prefix: A
- Outgoing Call Authentication:**
 - Enabled
 - Realm: []
 - User Name: []
 - Password: []
 - Subscriber Name at Private Call: Radio % (Example: Radio %)
 - Subscriber Name at Group Call: Group % (Example: Group %)

Allow Calls to Default VoIP Gateway – if enabled, radio subscriber calls to telephone subscribers are made automatically, using all the data given, such as **IP Address** of the automatic exchange, **Source** and **Destination**

Masks, Dialing Rules. If the option is not selected, radio subscribers will need to enter the IP address and the full number of the telephone subscriber to make a call.

Interface – IP address of the automatic exchange.

Source Mask – must correspond to the source mask specified in the automatic exchange. It includes only figures, for example, 32%15, where % is the number of the radio subscriber.

Destination Mask – contains only figures, for example, 32%15, where % is the dialed telephone number. It is used to speed up dialing of the telephone number.

TMS Prefix is used for making a call to a telephone subscriber with the help of a text message sent from a radio. **TMS Prefix** can contain any available symbol on the radio keyboard. Figures following the specified prefix are regarded as the telephone subscriber's number.

Outgoing Call Authentication – the setting includes parameters required for outgoing call authentication. If **Realm** is left blank, the specified user name and password are used in response to any authentication request from the called party. Otherwise, **Realm** is checked whether it corresponds to the requesting user name and password. If it matches, user name and password are sent. If not, the authentication is failed immediately.

Realm – if the value is set, SmartPTT Radioserver responds to authentication requests with the matching **Realm** value. If the value is not set, SmartPTT Radioserver sends user name and password given in response to any authentication request.

User Name – user name used for authentication.

Password – password used for authentication.

Subscriber Name at Private Call – name of the radio subscriber that will be shown to the telephone subscriber. % will be replaced automatically by the radio number.

Subscriber Name at Group Call – name of the talkgroup that will be shown to the telephone subscriber. % will be replaced automatically by the talkgroup number.

Telephone Interconnect settings

Telephone Interconnect Settings

Enable Permissions for Subscriber Groups:

Group Name	Incoming Calls	Outgoing Calls
Drivers_Group 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Drivers_Group 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Operators	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Telephone Ring Timeout sec

Radio Subscriber Call Timeout sec

Idle Session Timeout sec

Inactive Conference Session Timeout sec

Telephone Subscriber Sound Level ▼

Radio Sound Level ▼

Access Code Deaccess Code

Play Sound to Telephone on Connection

Call Start Notification for Subscriber Radio

Call End Notification for Subscriber Radio

Play Ring Sound for Subscriber Radio

Call Error Notification for Subscriber Radio

Enable G729 Codec

Enable Permissions for Subscriber Groups – if selected, permissions specified in the table become active.

Note: Groups for the table can be created under **Subscriber Groups** in SmartPTT Radioserver Configurator.

Select the check box next to the action in the table to allow it. Clear the check box to forbid the action.

Telephone Ring Timeout – sets the time interval during which the radioserver waits for the telephone subscriber to pick up the phone.

Radio Subscriber Ring Timeout – sets the time interval during which the radioserver waits for the radio subscriber to press the PTT button.

Idle Session Timeout – sets the time interval starting from the last PTT button pressing, after which telephone call will be automatically finished.

Inactive Conference Session Timeout – sets the time interval starting from the last PTT button pressing at conference call, after which the conference call will be automatically finished.

Telephone Subscriber Sound Level – sound level on the telephone during incoming or outgoing radio calls.

Radio Sound Level – sound level on the radio during incoming or outgoing telephone calls.

Access Code – must match the access code specified in MOTOTRBO CPS settings (IP Site Connect and Capacity Plus systems).

Deaccess Code – must match the deaccess code specified in MOTOTRBO CPS settings (IP Site Connect and Capacity Plus systems).

Play Sound to Telephone on Connection – if enabled, when picking up the phone, the telephone subscriber will hear a signal prompting to start conversation.

Call Start Notification for Radio Subscriber – if enabled, the radio subscriber will hear a signal notifying that the telephone subscriber has picked up the phone.

Call End Notification for Radio Subscriber – if enabled, the radio subscriber will hear a signal notifying that the telephone subscriber has replaced the receiver.

Play Ring Sound for Subscriber Radio – If enabled, the radio subscriber will hear a signal notifying that the telephone subscriber's line is free.

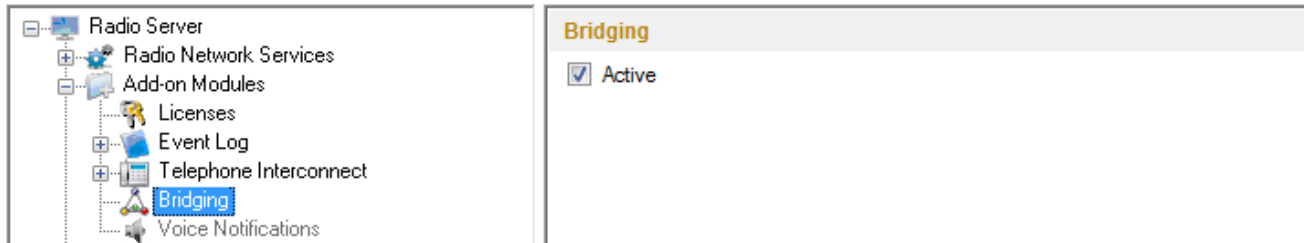
Call Error Notification for Subscriber Radio – if errors occur when connecting to the telephone subscriber, the radio subscriber receives a text message clarifying the error.

Enable G729 Codec – if enabled, allows you to use G729 codec for voice transmission.

2.2.2.4 Bridging

SmartPTT bridging service allows joining various network systems into a single radio network. The bridging service is implemented in the scope of SmartPTT PLUS Radioserver and provides intelligent means of redirecting voice and data streams among different network systems.

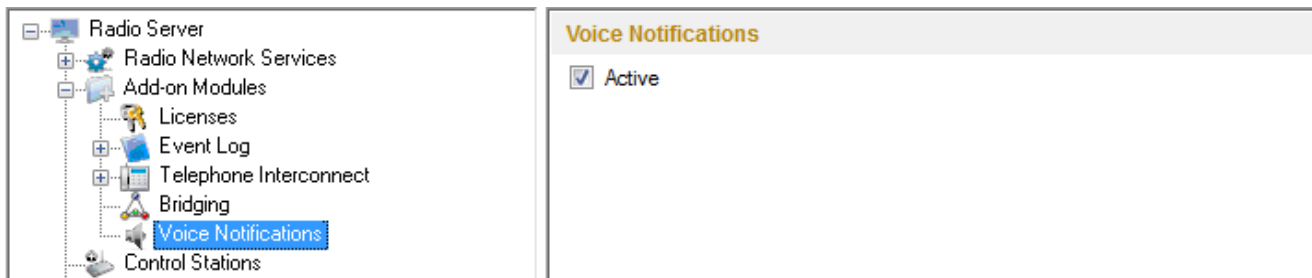
To activate the Bridging service, click **Bridging** in the setting tree of SmartPTT Radioserver Configurator. In the opened window select the **Active** check box.



2.2.2.5 Voice Notifications

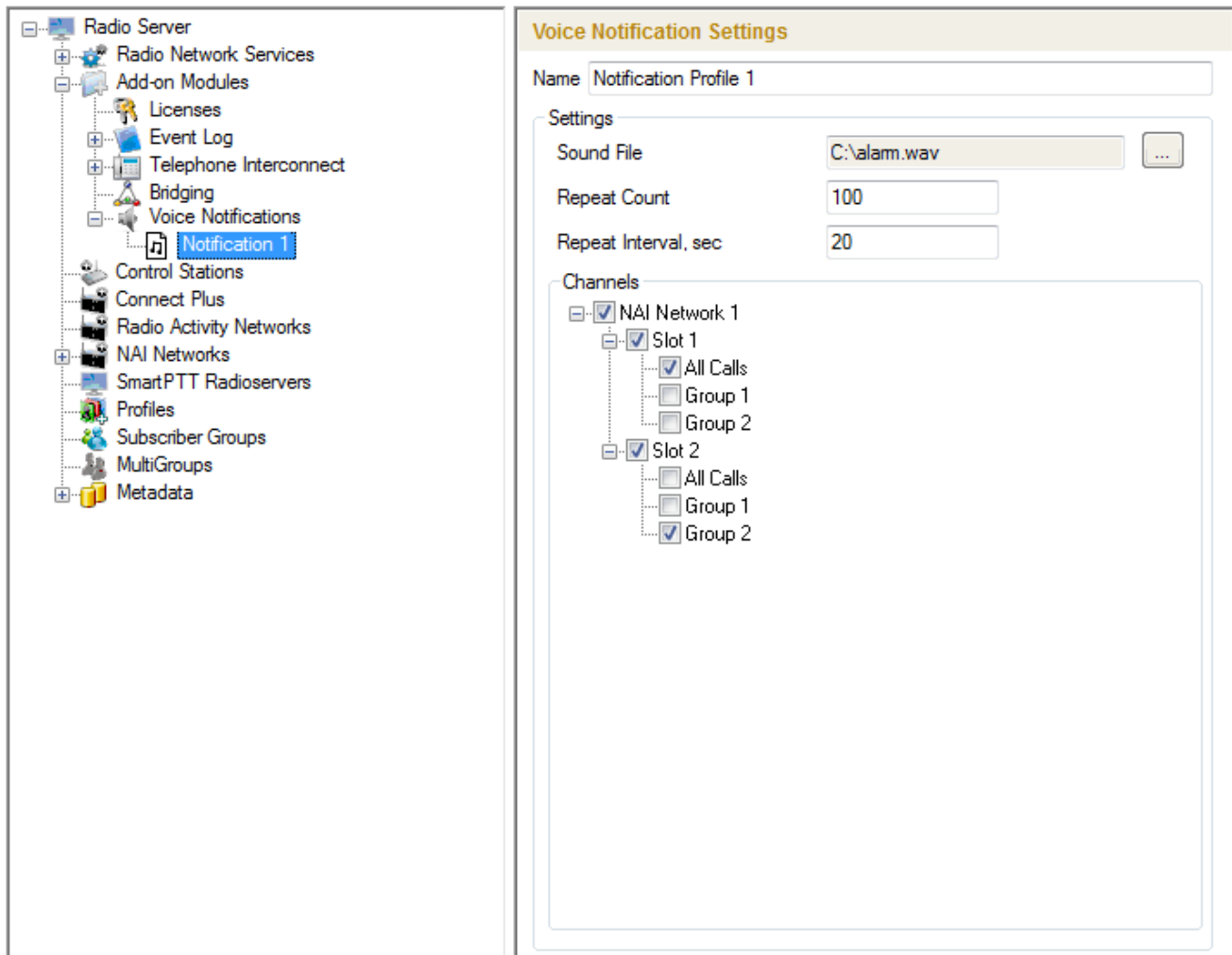
The main purpose of the voice notification functionality is to warn talkgroups about the fire or other emergency and to manage evacuation. However, in normal mode voice notifications can be used to transmit ordinary announcements.

To create a voice notification, select the **Voice Notifications** item in SmartPTT Radioserver Configurator. At that, the **Voice Notifications** window appears on the right. To enable the service, select the **Active** check box.



To add a voice notification, right-click on **Voice Notifications** and select **Add**. At that, the **Voice Notification Settings** window opens.

Set the following parameters in the **Voice Notification Settings** window.



Name – name of the voice notification displayed in SmartPTT Dispatcher.

Sound File – sound file in WAV format. Only monophonic files can be used as voice notifications.

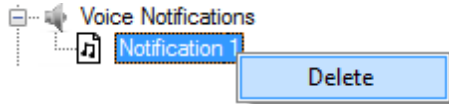
Play Count – specifies how many times the voice notification will be played on the channel. To be set in the range from 1 to 9999.

Play Interval, sec – specifies the interval between the voice notification plays. To be set in the range from 5 to 216000.

Select channels of the hardware or/and virtual control stations in the **Channels** area (**All Call** or **Group Call**) that play the voice notification (after it was run in SmartPTT Dispatcher).

Note: Playing voice notification on the channel corresponds to an outgoing call of SmartPTT Radioserver and fully occupies the selected channel. Thus, each control station (hardware or virtual) can have only one call type to be used for playing voice notifications on the channel – an all call or a group call.

To delete the voice notification profile, right-click on the selected profile and click **Delete**.



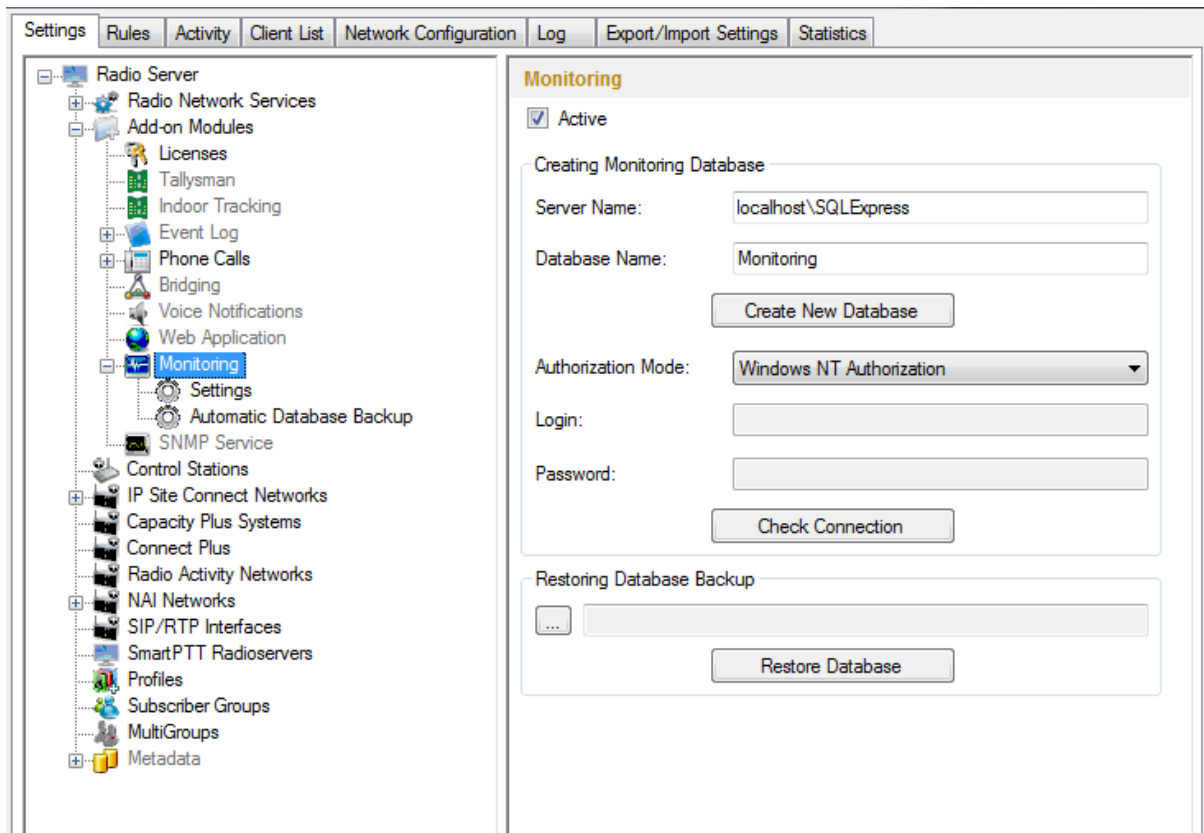
2.2.2.6 Monitoring

The Monitoring service gives an outlook for the whole radio system in the real time. With the help of this service the dispatcher can see what is happening on the channels and get information on the state of the devices.

Warning! Monitoring service requires corresponding license to be installed at SmartPTT Radioserver.

Licenses are installed under the Licenses section of SmartPTT Radioserver Configurator.

By default, the Monitoring service is not active. Select **Monitoring** in the setting tree in SmartPTT Radioserver Configurator and select **Active** to enable it. If the **Monitoring** service is not activated, the radioserver and its network won't be displayed on the **Monitoring** panel.



To create a database for the monitoring purpose, type in the **Database Server Name** and **Database Name** fields, and click **Create New Monitoring Database**. If creation is successful, a message about successful database creation is displayed. If the database is not created, the cause of the issue will be displayed at the bottom of the window.

Note: If the database server and SmartPTT Radioserver are installed on one computer, enter the name of the following format: Computer Name\SQLExpress (for example, MYCOMP\SQLExpress).

Select **Authorization Mode** between the two:

SQL Server Authorization – the **Account Name** and **Password** must belong to the account with access to the SQL server.

Windows NT Authorization – the user, who has logged into the Windows system, must be listed in the SQL

server user list to make connection.

Click **Check Connection**. In case of successful authorization the message "The connection is established successfully!" is displayed. If authorization fails, the reason will appear at the bottom of the window.

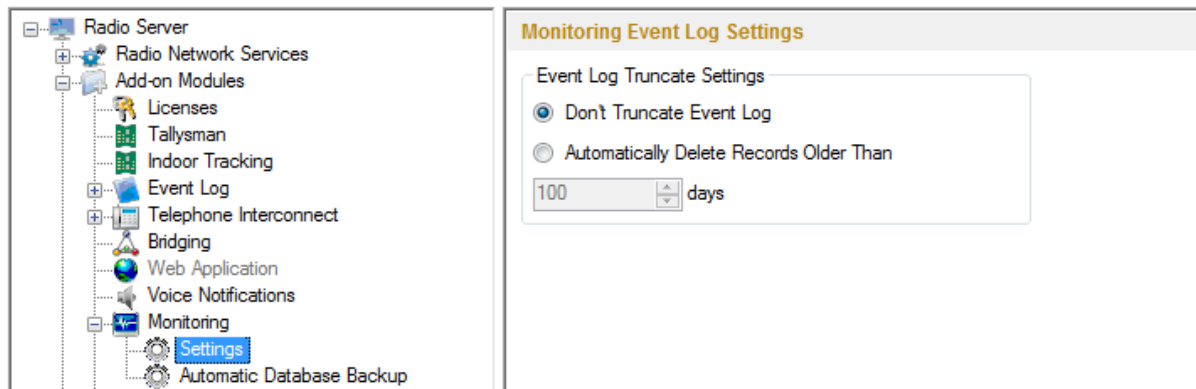
Note: The radioserver event log database, the Monitoring database and the Dispatcher event log database must be different.

To restore the monitoring database from the backup, select the required database backup file in the **Path** field and click **Restore Database**.

Note: To set up the auto backup of the monitoring database, go to the [Database Backup](#) window.

Settings

To configure automatic cleaning for the monitoring event log, go to the **Settings** section of the monitoring in SmartPTT Radioserver Configurator. At that, the following window appears.



Don't Truncate Event Log – if selected, monitoring event log is not cleared automatically.

Automatically Delete Records Older Than n days – if selected, the system will delete records older than the number of days set in the field. By default, it is set to 100 days.

Automatic Database Backup

Backing up data on a regular basis helps to protect it from being erased in case of the server hardware or software failure. SmartPTT Radioserver Configurator allows user to back up the monitoring database automatically.

In order to set up automatic backup schedule of the monitoring database, select **Automatic Database Backup** under **Monitoring** in the setting tree of SmartPTT Radioserver Configurator.

Active – select the check box to enable the ability to create current monitoring database backups in the automatic mode.

Backup Folder – full path to the file for saving the database backup.

Backup Settings – schedule for creating the current database backup:

- **Daily** – every fixed day at the specified time (for example, every day, every third day at 9:00 a.m.).
- **Weekly** – every fixed day of the week at the specified time (for example, every Monday, Wednesday and Friday at 11:00 p.m.).
- **Monthly** – once a month on the fixed day of the selected month and at the specified time.

Backup Period – allows you to set time period when automatic database backup is to be made according to the selected backup settings.

Note: The number of stored backup files in the same folder is limited to 3. Otherwise, when creating a new copy, the old files are deleted.

Note: The monitoring database recovery from the automatically created backup is performed manually in the [Monitoring](#) window.

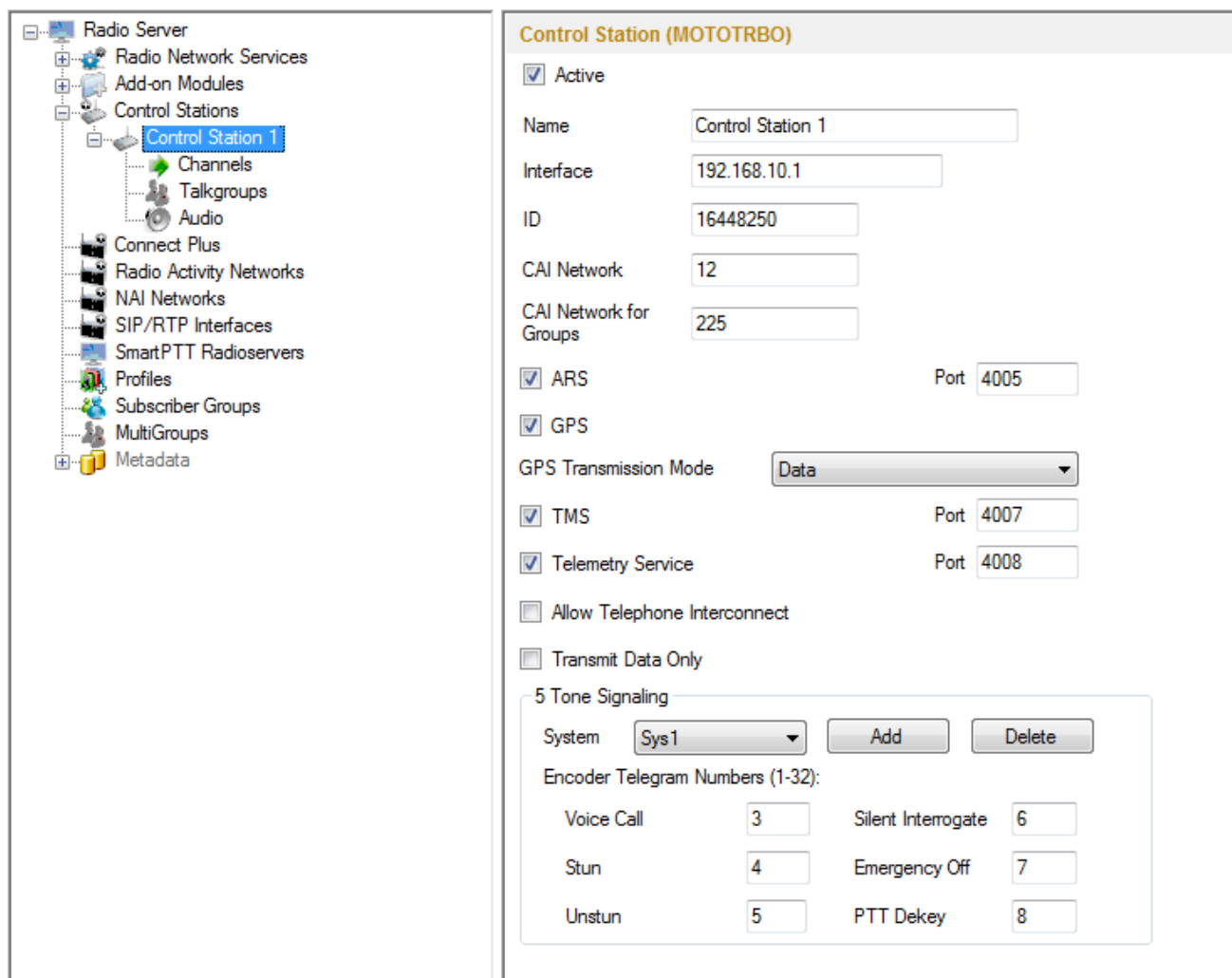
2.2.3 Control Station

In this section you can configure MOTOTRBO and Analog Control Stations, which are used as a gateway to radio network.

MOTOTRBO Control Station is a mobile or portable MOTOTRBO radio station connected to the PC via USB and used as a gateway to radio network. The maximum allowed number of MOTOTRBO control station working at the same time is 8.

To set up the MOTOTRBO control station, right-click **Control Stations** in the setting tree of SmartPTT Radioserver Configurator, point to **Add** and click **MOTOTRBO Control Station**.

At that, a new setting window appears on the right.



Name – control station name.

Interface – local IP address of the control station. The following address format and range are used: (001-223).(000-255).(000-255).(001-253). Users can use any address except 127.x.x.x in the range from 1.x.x.x to 223.x.x.x. We recommend to use the address 192.168.10.1 by default, and in case of conflicts with other network interfaces you should select a different IP address.

Note: If two or more control stations are connected to the computer, one of the first three octets of the IP address

must be unique for each control station.

ID – unique radio station identifier used during communication with it. ID is to be set in the range from 1 to 16776415. It is highly recommended to use 16448250 as ID.

CAI Network – CAI-Network identifier. To be set in the range from 1 to 126. Use the default value of 12.

CAI Network for Groups – the identifier of the group's CAI-Network. To be set in the range from 225 to 239. Use the default value of 225.

ARS – enables registration service. Port 4005 is used as default.

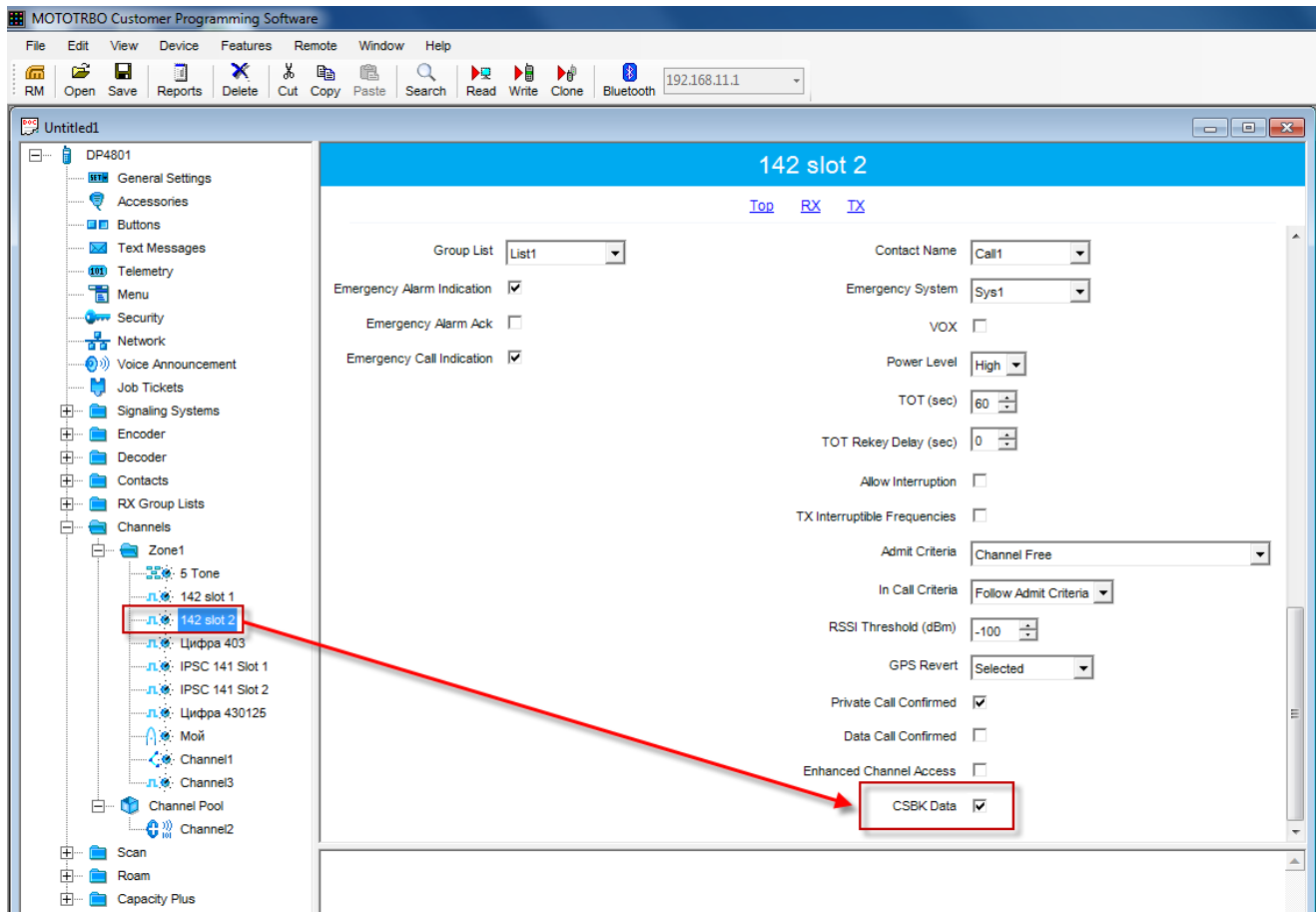
GPS – enables location service which provides coordinates of radio subscribers.

GPS Transmission Mode – allows you to select the way how to transmit location updates: as data packet in multiple bursts or as a single CSBK (Control Signaling Block).

Each solution has its own advantages and disadvantages:

GPS Transmission Mode	Advantages	Disadvantages
Data	<ul style="list-style-type: none"> • No need to configure additional settings for receiving GPS data 	<ul style="list-style-type: none"> • Increased traffic load on a channel
CSBK	<ul style="list-style-type: none"> • Low traffic load on a channel • Increased GPS transmission frequency rate —once in 15 seconds 	<ul style="list-style-type: none"> • Not all radios support CSBK commands
Enhanced CSBK	<ul style="list-style-type: none"> • Low traffic load on a channel • Increased GPS transmission frequency rate —once in 7.5 seconds 	<ul style="list-style-type: none"> • Not all radios support CSBK commands

To transmit location data using *CSBK* or *Enhanced CSBK*, enable **CSBK Data** in radio settings.



Note: *Enhanced CSBK* can be used on **Enhanced GPS** channels only.

TMS – enables the service for exchanging text messages amid dispatchers and radio subscribers. Port 4007 is used by default.

Telemetry Service – enables the service responsible for transmitting and processing of telemetry signals between SmartPTT Dispatcher and subscriber stations. Port 4007 is used by default.

Allow Telephone Interconnect – allows you to enable voice calls to telephone subscribers.

Transmit Data Only – if selected, the control station is used for data transmit only and is not displayed in SmartPTT Dispatcher.

Note: Although the control station can't be seen in the **Subscriber** panel, you can still find it in **Report Wizard** and **Radio Activity Report**.

5 Tone Signaling – settings for 5 Tone signaling, also known as SelectV.

SelectV is used in the analog networks to arrange selective calls. As a result, the analog channel provides additional services other than all call. For example, group and private calls to the radio, blocking or unblocking the radio, checking the radio presence on the channel.

Note: The current version of SmartPTT Radioserver Configurator supports SelectV signaling for MOTOTRBO DM 46xx Series radios and DP 46xx, DP 48xx Series radios used as control stations.

Note: Make sure that control stations and radios operating on the analog channel are configured properly in MOTOTRBO CPS.

Selective call is based on subscriber addressing, i.e., on assigning IDs to subscribers. At the beginning of each session the sound signals of different frequencies are transmitted and received by the radio. Such signals are called telegrams. Each telegram contains from one to three sequences. Every sequence may include up to 12 tones. The telegram formed in this way may include the calling subscriber or talkgroup address, the radio ID, a status message or a command. The radio receives all signals, but handles only its telegrams, i.e., telegrams addressed to this radio.

Note: You can specify one or several identifiers (**CAI + Radio ID** or **IP**, **MDC ID** or **5 Tone ID**) as a radio ID in SmartPTT Dispatcher in the **Properties** window. If the radio is used on the analog channel only, enter **5 Tone ID** (and **MDC ID** if necessary); the **CAI** and **Radio ID** or **IP** fields must be left empty.

System – 5 Tone signaling system. Parameters in this section allow you to match the outgoing command from SmartPTT Radioserver and the telegram number.

Note: When decoded, telegrams are verified if the telegram sequences correspond to one of the definitions, and then the command of this definition is applied. To configure the command definition, use MOTOTRBO CPS (**Decoder > Definitions**, the **Matching Encode Telegram** field).

To create a 5 Tone signaling system in SmartPTT Radioserver Configurator, click **Add**. The several signaling systems can be added for each control station. To change the control station signaling system, select the required value from the list.

To delete the selected 5 Tone signaling system, click **Delete**.

Voice Call – the telegram number conforming to the private or group voice calls.

Silent Interrogate – the telegram number which corresponds to the check command of the radio presence on the network without notifying the subscriber.

Stun – the telegram number which stands for sending the **Block** command to the radio.

Unstun – the telegram number which stands for sending the **Unblock** command to the radio.

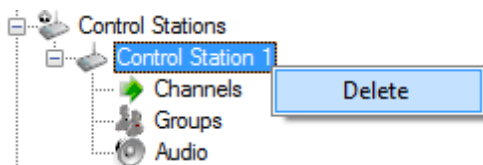
Emergency Off – when the radio receives the telegram number while in an emergency mode, the radio terminates the emergency mode.

PTT Dekey – when the radio receives the telegram number, the radio stops the current call session.

When the telegram encoding parameters are set, it is required to assign the signaling system for the channel (see the [Channels](#) tab).

If necessary, the control station can be disabled from the connection list. To do this, clear the **Active** check box.

To delete the control station, right-click **Control Stations** entry in the setting tree of SmartPTT Radioserver Configurator and click **Delete**.

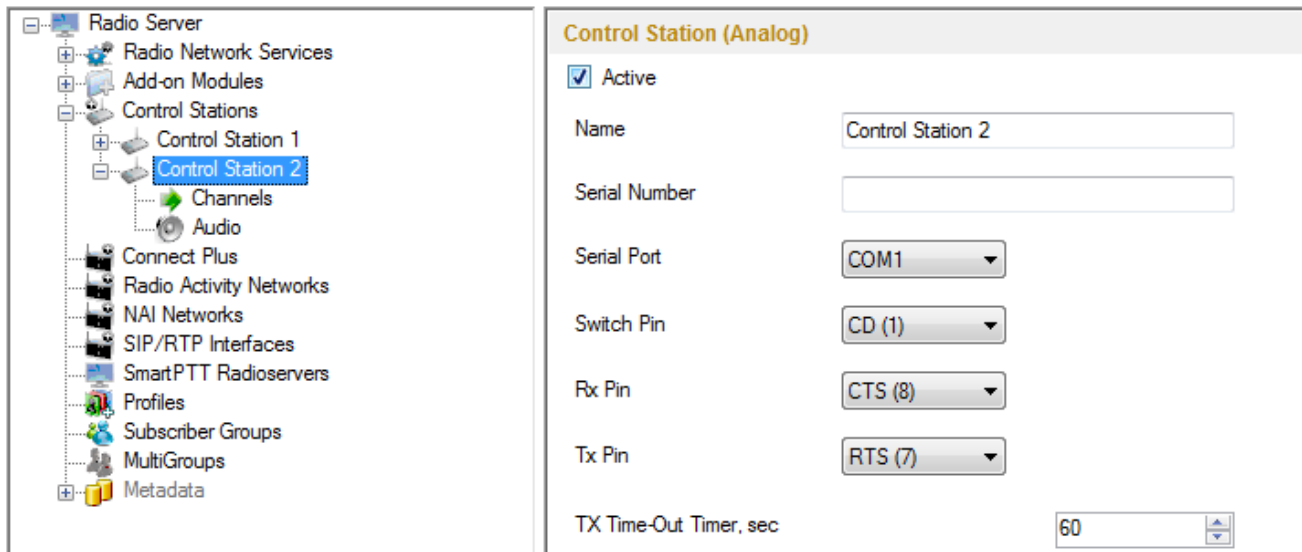


How to Configure Analog Control Station

Following user evaluations and to facilitate migration from analog technology to digital technology, SmartPTT has been complemented with support of analog control stations. Here you can find the configuration manual for the analog control station connected to the computer COM port via interface card. The interface card schematic is shown on the [website](#).

To add an analog control station, right-click **Control Stations** in the setting tree of SmartPTT Radioserver Configurator, point to **Add** and click **Analog Control Station**.

At that a new setting window appears on the right.



Name – control station name.

Serial Number – the control station serial number.

Serial Port – the port to which the control station is connected.

Control station control signals:

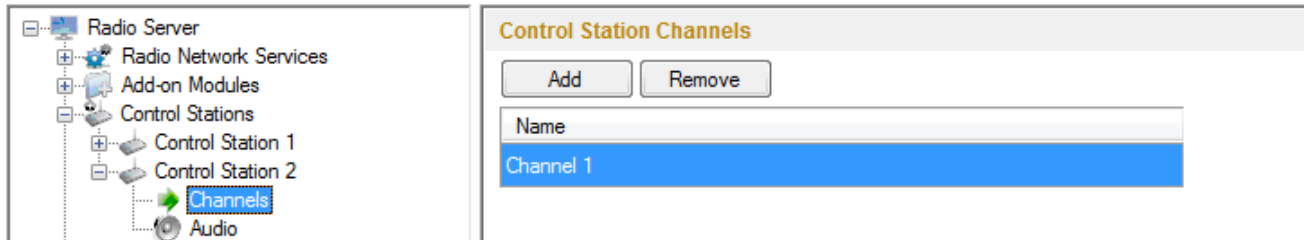
- **Switch Pin** (incoming) is set to 1 (< -3.0V) when the control station is switched on.
- **Rx Pin** (incoming) is set to 1 when a signal carrier is registered on the channel.
- **Tx Pin** (outgoing) is set to 1 to switch to transmit mode.

Change the display of the control signals of the control station to the pins of the socket RS323 (see the DE-9 pin numbers in brackets), if it is different from the one that is specified.

Note: The default values of the control signals are universal and usually do not require any changes.

TX Time-Out Timer (sec) – continuous radio transmission timeout. After this time the transmission is interrupted.

In the **Control Station Channels** window add a channel and name it (otherwise the dispatcher displays 1:1).



Audio is configured in the same way as for the control stations MOTOTORBO.

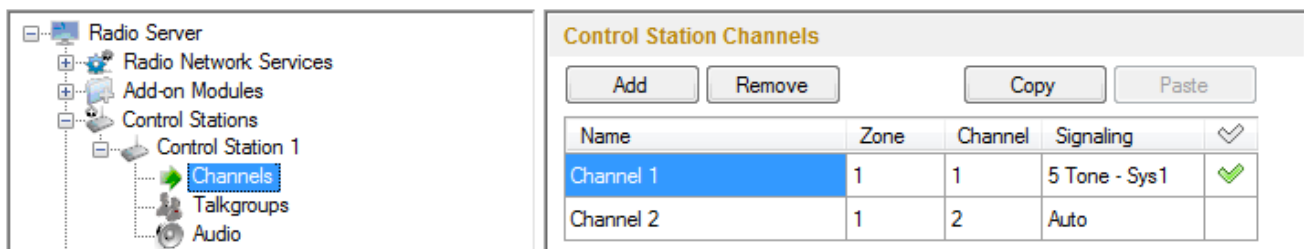
Save the changes and restart the service.

Note: In SmartPTT Dispatcher the operation of the analog control station is the same as for MOTOTRBO stations in analog mode without signaling.

2.2.3.1 How to Configure Control Station Channels

After adding a control station, configure its channels. To set up and edit control station channels, click **Channels** in the setting tree of SmartPTT Radioserver Configurator. At that, the following window is displayed.

To add a channel, click **Add**. At that, you will see a record of the added channel appear in the table.



Name – channel alias visible to SmartPTT Dispatcher.

Zone – serial number of a channel group. Information on the maximum possible number of zones and radio station channels is shown in the following table.

Model	Maximum number of zones	Maximum number of channels per zone	Maximum total number of channels
Mobile radio station with display	50	160	160

Model	Maximum number of zones	Maximum number of channels per zone	Maximum total number of channels
Mobile radio station with digital display	2	32	32

Channel – channel sequence number.

Signaling – 5 Tone signaling system taken from the [Control Station \(MOTOTRBO\)](#) settings window. The field is available only if the MOTOTRBO control station has at least one 5 Tone signaling system.

When *Auto* is selected, the automatic detection of the channel type is set (analog, digital, IP Site Connect slot, etc.). The detection take place when you connect the control station.

Note: If the channel type can't be determined automatically, you should specify the signaling system explicitly.

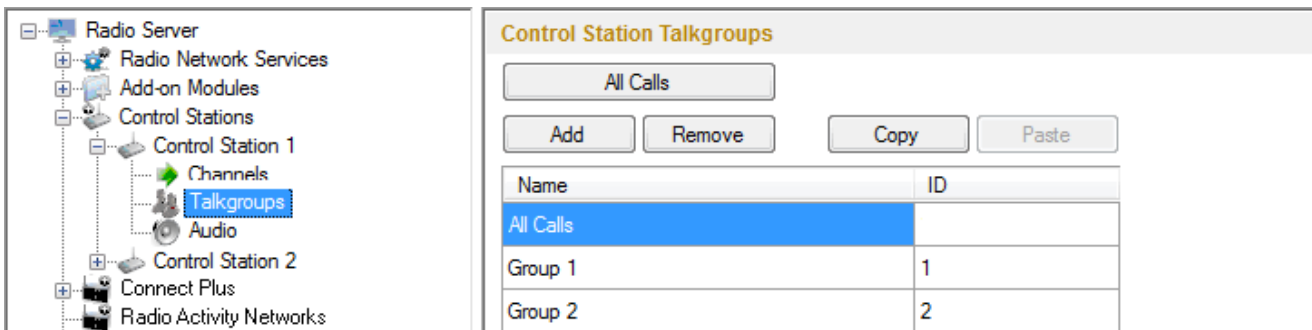


– selected channel will be set at the control station, when you start the radioserver.

To remove a channel, click **Delete**. To edit channel name, zone or channel number, place the cursor on the corresponding field and make changes.

2.2.3.2 How to Configure Control Station Talkgroups

To set up and edit **Control Station Talkgroups**, click **Talkgroups** in the setting tree of SmartPTT Radioserver Configuration. At that, the following window opens.



To add a talkgroup, click **Add**. To add an all-call, click **All Calls**. The added talkgroups will also appear in the **Profiles** window.

Name – talkgroup alias displayed by the control station.

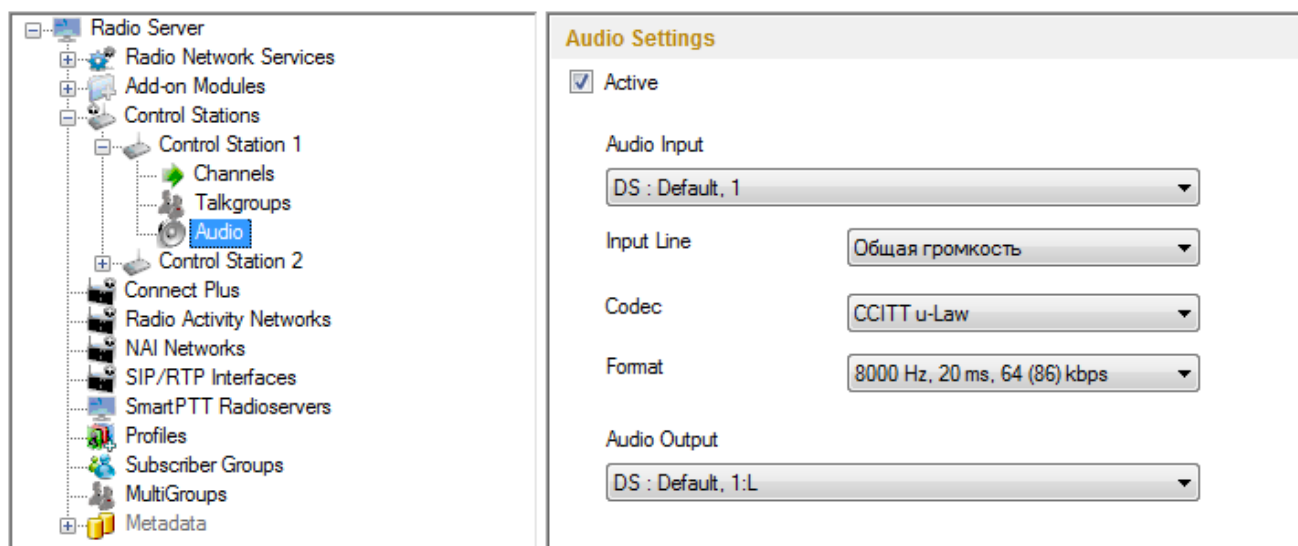
ID – talkgroup unique identifier used during communications. To be set in the range from 1 to 16776415.

Remove – deletes the selected talkgroup.

To edit talkgroup name or ID, set the cursor on the corresponding field and make changes.

2.2.3.3 How to Configure Control Station Audio Settings

To select audio devices and set up VoIP parameters, click **Audio** in the setting tree of SmartPTT Radioserver Configurator.



The **Active** check box allows disabling calls for a control station if it is used to transmit data only.

Audio Input – an audio device to which the control station audio output is connected.

Input Line – audio mixer line used for connections. The control station audio output can be connected to the line input of the audio device.

Codec – outgoing audio stream compression method.

Format – sampling frequency of an outgoing audio stream.

Example:

Specifications of the codec format **8000 Hz, 20 ms, 64 (89) kbps**:

8000Hz is the sampling rate

20 ms is the frame size

64 kbps is the voice data bit rate

89 kbps is a full bit rate (required network bandwidth)

Audio Output – an audio device to which the control station audio input is connected.

2.2.4 Connect Plus

SmartPTT PLUS supports Connect Plus multi-site trunking system, which starting from version 8.5 can be used not only for ARS, TMS and GPS functionality, but also for voice communication between the dispatcher and radio subscribers.

Connect Plus network can include up to 15 repeaters (29 channels + 1 control channel) on each site. Each site must have at least one XRC Controller. It is the core of the Connect Plus network and its presence on each site is obligatory. The XRC Controller provides central call processing and real-time resource management for MOTOTRBO Connect Plus digital trunking systems. There can be two XRC Controllers per site if one of them serves as backup to the primary XRC. The secondary controller provides backup capability, but it does not increase the number of repeaters and calls that can be managed per site.

XRT Gateways are required for voice communication only. MOTOTRBO Connect Plus multi-site trunking network provides extended load capacity and provides digital communication to as many as 2,900 users per site.

When using Connect Plus network, SmartPTT Radioserver plays the role of a virtual repeater.

The Connect Plus network configuration includes the following stages:

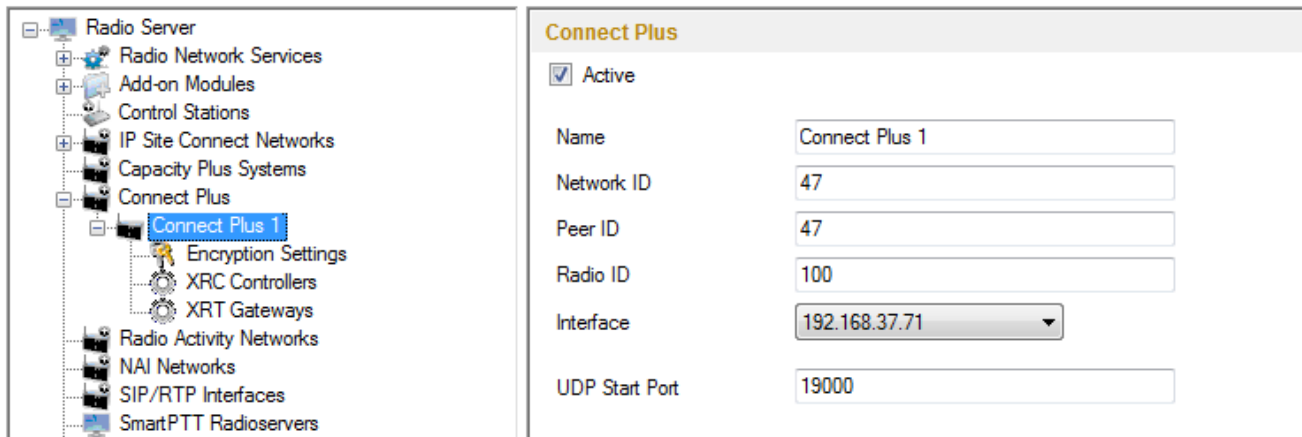
1. Adding new network and its basic configuration.
2. Setting up XRC Controller configurations.
3. Setting up talkgroups for group messages.
4. Setting up XRT Gateway parameters for voice communication.
5. Adding talk paths for voice calls.

2.2.4.1 How to Configure Connect Plus

First of all, make sure you have the necessary license for the Connect Plus network, i.e., Connect Plus Voice Support and Connect Plus Data Support.

To configure Connect Plus settings, add new Connect Plus system: right-click **Connect Plus** in the setting tree of SmartPTT Radioserver Configurator, point to **Add** and click **Connect Plus**.

At that, the **Connect Plus** window opens.



Active – enables Connect Plus Network.

Name – Connect Plus network name.

Network ID – unique ID of the Connect Plus network, which is used inside the SmartPTT system. This is important if you have more than one Connect Plus network. Note that this ID is different from the Network ID defined in the XRC Controller codeplug.

Peer ID – unique ID of the virtual repeater in the Connect Plus network. Make sure this ID is different from the repeater ID in the Connect Plus network.

Radio ID – dispatcher identifier. This is the identifier radio subscribers will see at receiving a text message from the dispatcher. Also, it must correspond to the **Console User ID** field in the XRT Gateway settings. Leave the field empty if the user should have permission for any Private Talk Path that it validly registers with the XRT 9000. If any Private Talk Path ID is entered, then all Private Talk path IDs not configured into this field will be disallowed!

The screenshot shows a 'User Details' configuration window. It contains the following fields and options:

- Username: public
- Password: masked with dots
- Max Talk Paths: 10
- Billing Enabled:
- Network Wide All Call (NWAC) Enabled:
- Group Talk Paths: Group ID: 1001,1002
- Private Talk Paths: Console User ID: 100 (highlighted with a red box)

At the bottom of the form are three buttons: 'New', 'Save', and 'Delete'.

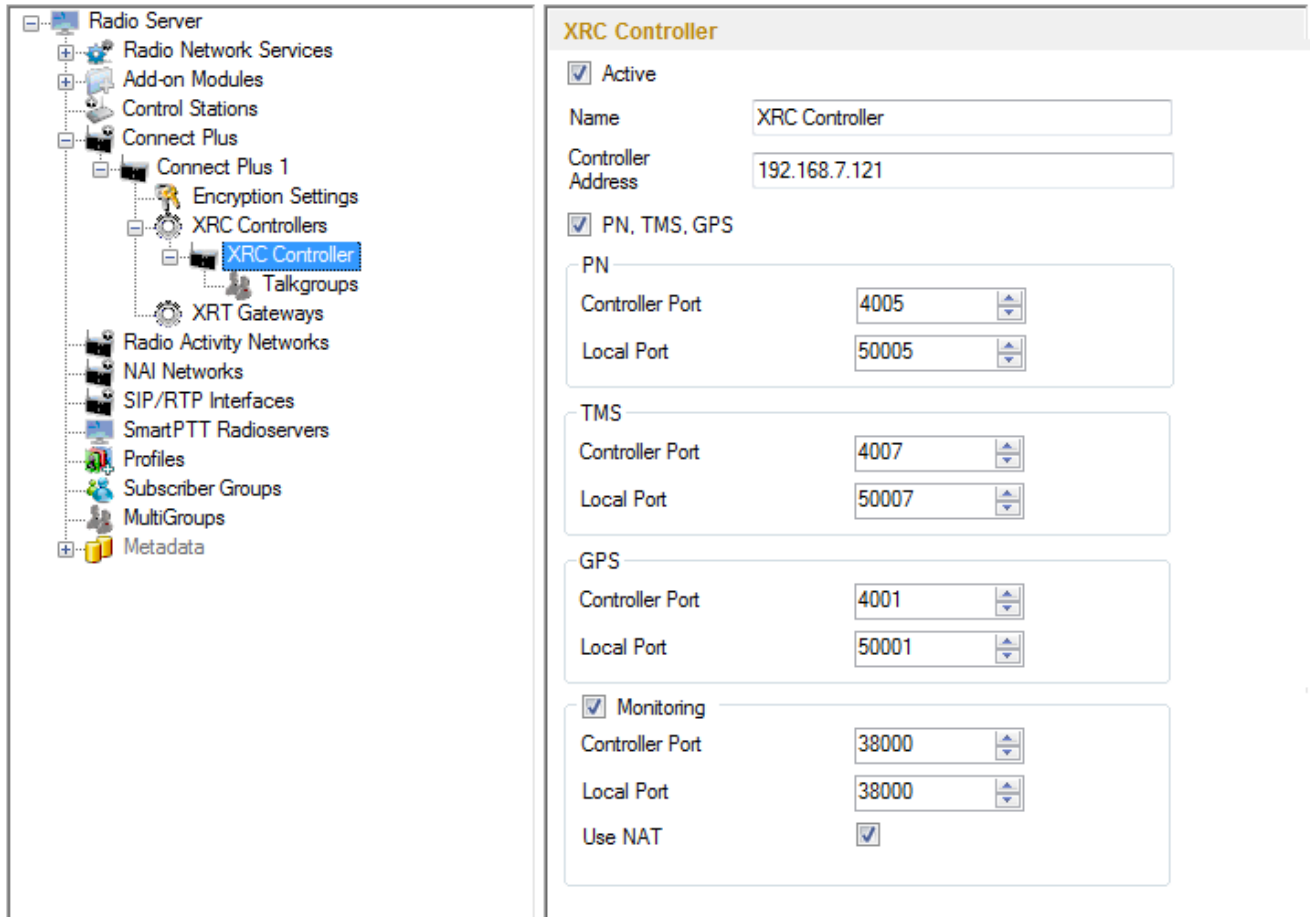
Interface – IP address of the virtual repeater, i.e. SmartPTT Radioserver. Specify the IP address of the PC where the radioserver is installed..

UDP Start Port – this is the starting port number for local UDP ports that will be used by SmartPTT Radioserver for talk paths. It is recommended to use the default value of 19000. If the created Connect Plus network should not transmit voice packets, this field can be ignored.

2.2.4.2 XRC Controller

The XRC Controller is necessary for transmitting registration and de-registration, GPS data, text messages. The XRC Controller is also required for making private calls, because without it, radios will be regarded as offline, and dispatcher won't be able to make private calls.

You can add only one XRC Controller per site. Right-click on **XRC Controller** to add. At that, the following window opens:



Name – XRC Controller name. This is used only in SmartPTT Radioserver Configurator.

Controller Address – IP address of the XRC Controller. Port is not required in this field.

In order to enable data services on the controller select **PN, TMS, GPS**.

Controller port – port of XRC Controller for the corresponding service.

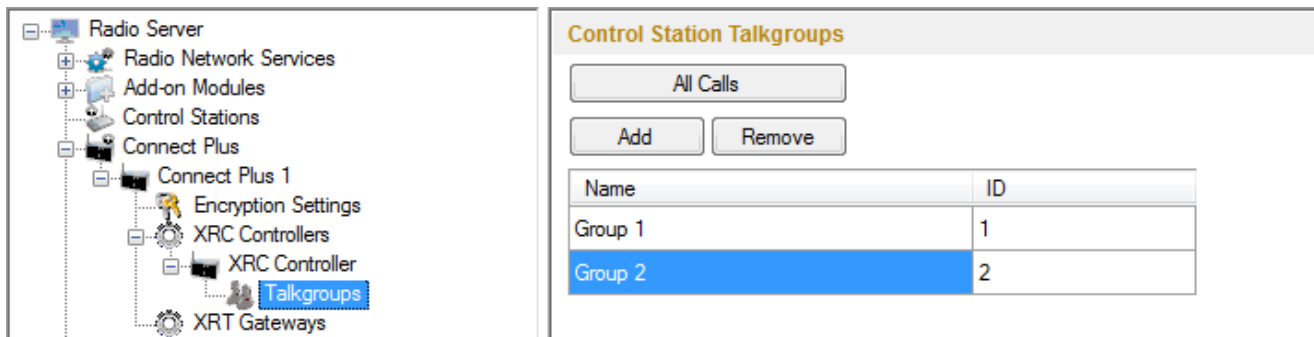
Local port – port of the virtual repeater for the corresponding service.

Note: **PN Controller Port** should match the port of Presence Notification service set in XRC Controller.

To be able to review the XRC Controller on the **Monitoring** panel in SmartPTT Dispatcher, select **Monitoring** and specify **Controller port** and **Local port**. If the XRC Controller is in one local network with the radioserver, leave **Use NAT** unchecked. If the XRC Controller is outside the local network of the radioserver, select **Use NAT**.

Note: Make sure that you have the general Monitoring service enabled ([Monitoring](#)).

In order to send group text messages, add talkgroups. Select **Talkgroups** under **XRC Controller**. At that, the following window opens:

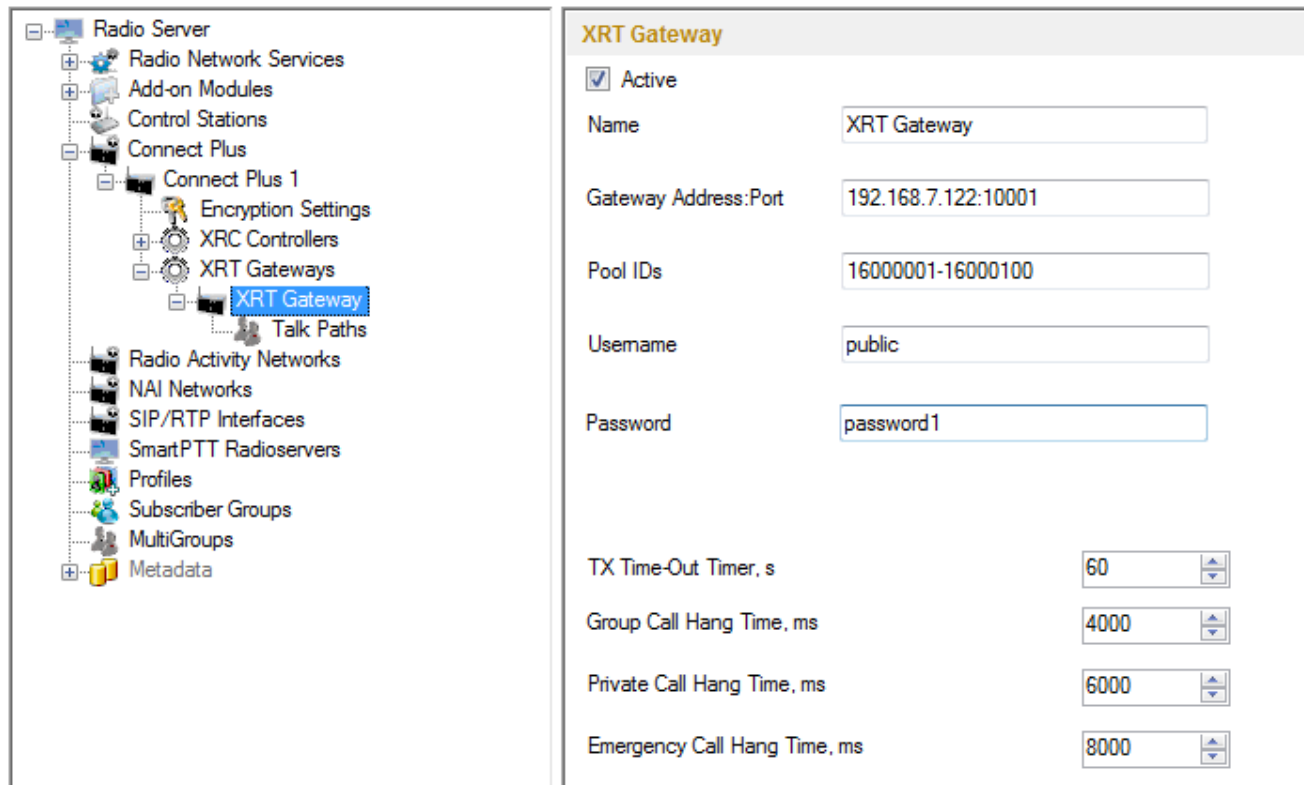


2.2.4.3 XRT Gateway

The XRT Gateway allows making voice calls and monitor call events in the Connect Plus system. You can have maximum 5 XRT Gateways working in one network.

Note: To support private voice communication, it is necessary to have an XRC Controller. Otherwise, radio subscribers will be regarded as offline, and private calls will be impossible.

To add the gateway, right-click on **XRT Gateway**. At that, the following window opens.



The screenshot displays the configuration window for an XRT Gateway. On the left, a tree view shows the hierarchy: Radio Server > XRT Gateways > XRT Gateway (selected). The right pane is titled 'XRT Gateway' and contains the following settings:

- Active
- Name: XRT Gateway
- Gateway Address:Port: 192.168.7.122:10001
- Pool IDs: 16000001-16000100
- Username: public
- Password: password1
- TX Time-Out Timer, s: 60
- Group Call Hang Time, ms: 4000
- Private Call Hang Time, ms: 6000
- Emergency Call Hang Time, ms: 8000

Name – XRT Gateway name, which is displayed only in SmartPTT Radioserver Configurator.

Gateway Address:Port – IP address and port of the XRT Gateway.

Pool IDs – it is recommended to use default values. The values must correspond to the range of IDs set in the XRT Gateway settings (**Pool ID**).

Username and **Password** – used for authentication with the gateway and must equal the corresponding values in the XRT Gateway settings:

The screenshot shows a 'User Details' configuration window. A red box highlights the 'Username' and 'Password' fields. The 'Username' field contains the text 'public'. The 'Password' field is filled with ten black dots. Below these fields, there is a 'Max Talk Paths' field with the value '10'. There are two checkboxes: 'Billing Enabled' (unchecked) and 'Network Wide All Call (NWAC) Enabled' (checked). Below the checkboxes are two sections: 'Group Talk Paths' with a 'Group ID' field containing '1001,1002', and 'Private Talk Paths' with a 'Console User ID' field containing '100'. At the bottom of the window are three buttons: 'New', 'Save', and 'Delete'.

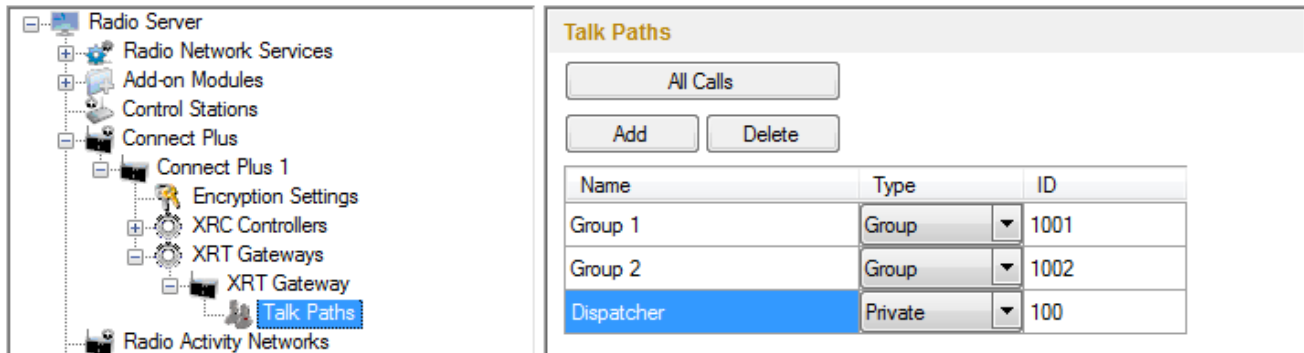
TX Time-Out Timer, s – time period during which the radio can transmit without interruptions. After this time is over, the transmission is interrupted.

Group Call Hang Time, ms – time during which the channel is reserved for a group call after the end of transmission. During the timeout, only the participants of the talkgroup can transmit. This parameter should match the same parameter set in the XRC Controller.

Private Call Hang Time, ms – time during which the channel is reserved for a private call after the end of transmission. During the timeout, only the participants of the private call can transmit. This parameter should match the same parameter set in the XRC Controller.

Emergency Call Hang Time, ms – time during which the channel is reserved for an emergency call after the end of transmission. During the timeout only the participants of the talkgroup can transmit. This parameter should match the same parameter set in the XRC Controller.

The next step is to add talk paths. They are necessary for voice communication. For each talkgroup or/and dispatcher add a talk path. This can be done in the **Talk Paths** window. Group IDs should match the IDs set in the **Group ID** field in the XRT Gateway settings (see above). If the **Group ID** field is empty in the XRT Gateway settings, the user should have permission for any Group Talk Path that it validly registers with the XRT 9000. Dispatcher ID should match the ID set in the **Console User ID** in the XRT Gateway settings (see above).



Note: When adding talk paths make sure that talk paths with the same identifiers are specified in the XRT Gateway settings.

2.2.5 Radio Activity

SmartPTT supports Radio Activity DMR network system. When working in Radio Activity DMR network system, SmartPTT Radioserver serves as a virtual repeater.

2.2.5.1 How to Configure Radio Activity Network

Configuration of Radio Activity DMR network includes:

1. Adding Radio Activity DMR network and basic configurations
2. Slot configuration
3. Talkgroup configuration

To add a new Radio Activity network, right-click **Radio Activity DMR Networks** in the settings tree of SmartPTT Radioserver Configurator, point to **Add** and click **Radio Activity**.

To configure the newly added network, click **Radio Activity 1** under **Radio Activity Networks**. At that, the following window opens.

The screenshot displays the configuration window for a Radio Activity Network. On the left is a tree view of the configuration hierarchy, with 'Radio Activity 1' selected. The main window is titled 'Radio Activity Network' and contains the following settings:

- Active
- Name: Radio Activity 1
- Network ID: 5
- DTI ID (Hex): 00000001
- DTI DMR ID: 1
- Interface: 192.168.0.224
- DTI IP Address: 192.168.0.14
- Digital Voice:

TS A	40128	40132
TS B	40130	40134
- Analog Voice:

TS A	30130	40132
TS B	50128	50134
- Data:

TS A	50128	50132
TS B	50130	50134
- Passive ARS:
- Group Call Hang Time, ms: 3000
- Private Call Hang Time, ms: 4000

Active – enables the Radio Activity network.

Name – Radio Activity network name.

Network ID – unique ID of the Radio Activity network.

DTI ID (Hex) – identifier of the audio gateway of the Radio Activity repeater. It should match **RA DTI ID** in the DTI Manager software in the **About** section.

DTI DMR ID – it should match **DMR ID** in the DTI Manager software in the **About** section.

Interface (host:port) – IP address and port of the virtual repeater, i.e. SmartPTT Radioserver. Specify the IP

address of the PC where the radioserver is installed.

DTI IP Address – IP address of the audio gateway of the Radio Activity repeater.

Uplink Ports – outgoing ports for data and voice that are set in the Radio Activity repeater.

Downlink Ports – incoming ports for data and voice that are set in the Radio Activity repeater.

Passive ARS – when **Passive ARS** is active, the radioserver does not send any ARS and GPS commands (passive ARS is used for routing between radioservers).

Group Call Hang Time (ms) – time during which the repeater reserves the channel to a group call after the end of transmission. During the timeout, only the participants of the talkgroup can transmit.

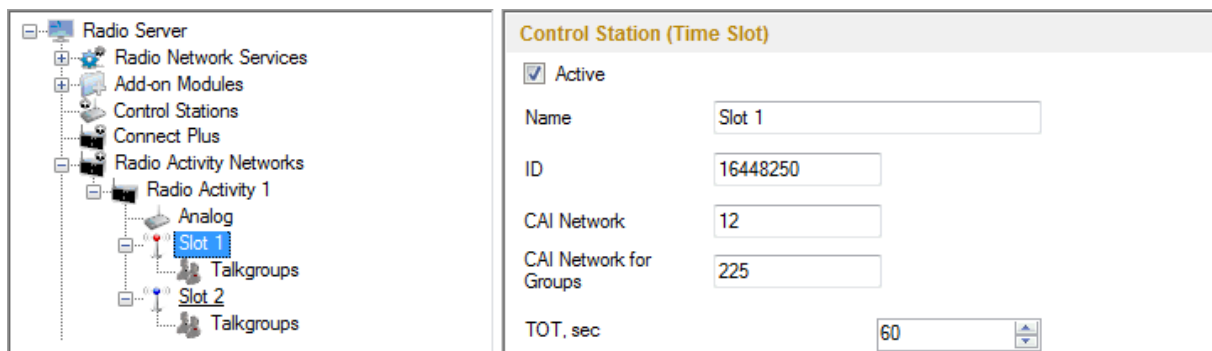
Private Call Hang Time (ms) – time during which the repeater reserves the channel to a private call after the end of transmission. During the timeout, only the participants of the private call can transmit.

Emergency Call Hang Time (ms) – time during which the repeater reserves the channel to an emergency call after the end of transmission. During the timeout only the participants of the talkgroup can transmit.

To delete Radio Activity, right-click on the selected Radio Activity and choose **Delete**.

How to Configure Radio Activity Slots

To configure Radio Activity network slots, click **Slot 1** in the setting tree of SmartPTT Radioserver Configurator. At that, the following window opens.



Active – enables the slot.

Name – slot name. The name is displayed in SmartPTT Dispatcher.

ID – ID of a virtual control station to work with the selected Radio Activity slot.

CAI Network – CAI-network ID. Use default value of 12. The allowed value range is 1–126.

CAI Network for Groups – CAI-network for groups ID. Use default value of 225. The allowed value range is 225–

239.

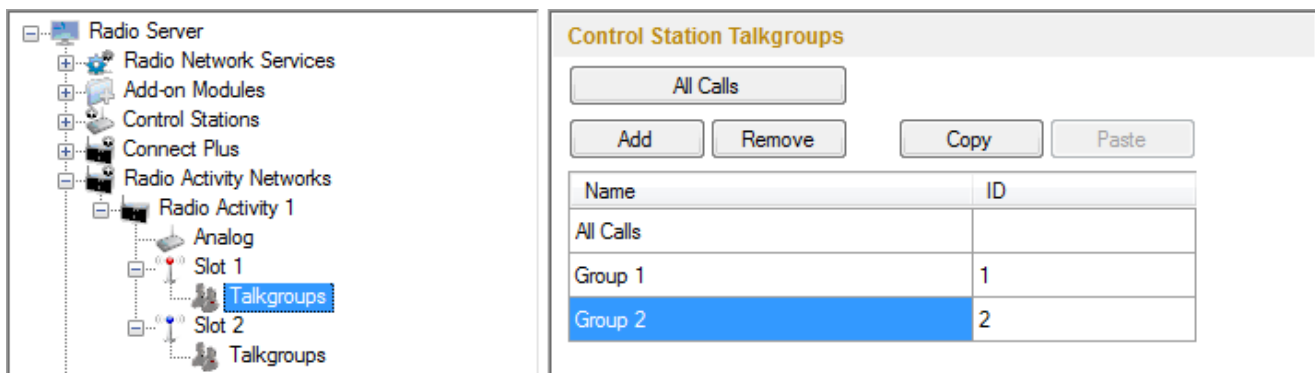
TOT – Time-Out Timer. The duration that the radio can continuously transmit before a transmission is automatically terminated. The default value is 60 sec.

Allow Subscriber Interrupt – enables or disables the ability of SmartPTT Dispatcher to interrupt voice transmissions by radios that are Transmit Interrupt capable.

Allow Telephone Interconnect – allow radio subscribers to make calls to telephone subscribers and vice versa.

How to Configure Radio Activity Talkgroups

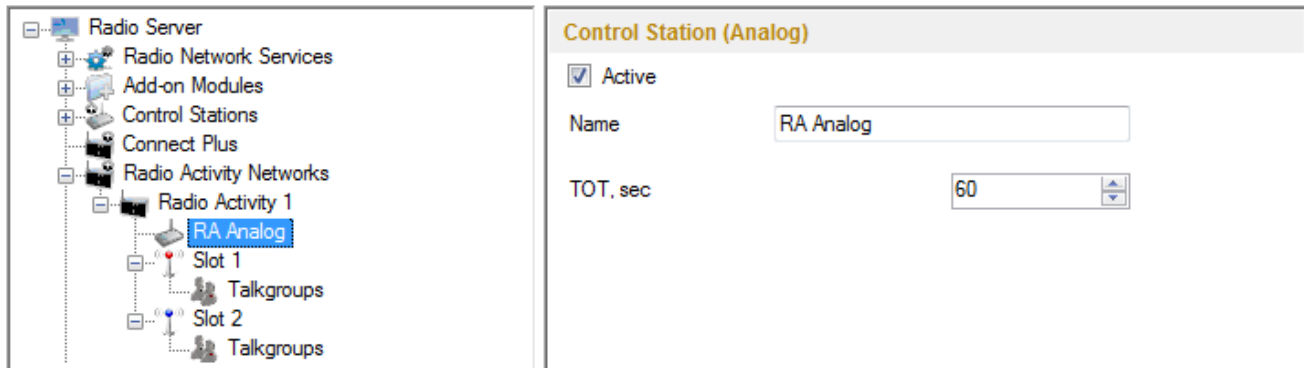
Click **Talkgroups** under Radio Activity Networks in the setting tree of SmartPTT Radioserver Configurator. At that, a window opens.



Note: Configuration process of Radio Activity talkgroups is similar to the configuring control station talkgroups.

Control Station (Analog)

To add the analog control station select **Analog.**]



Name – control station alias.

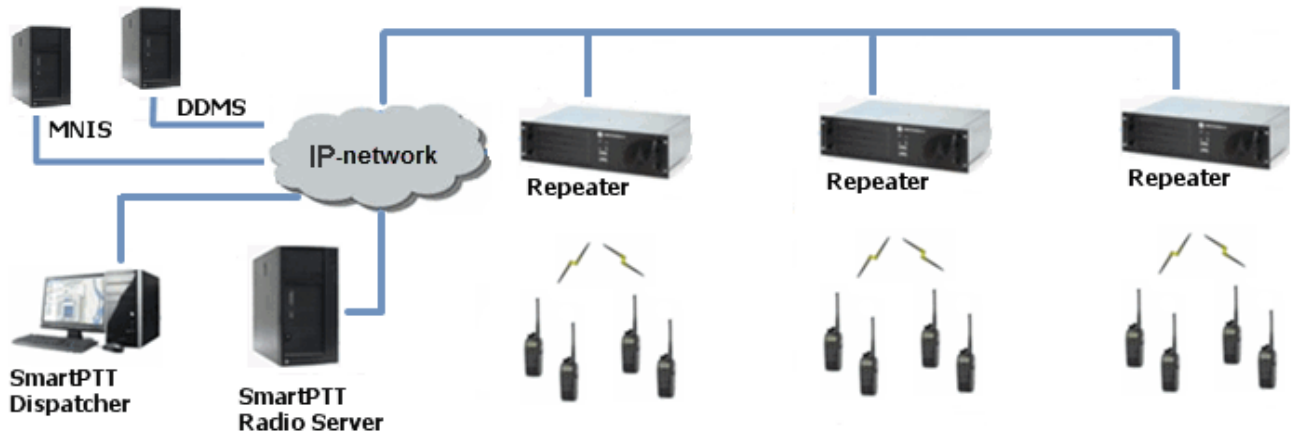
TX Time-Out Timer, sec – continuous radio transmission timeout. After this time the transmission is interrupted.

2.2.6 NAI

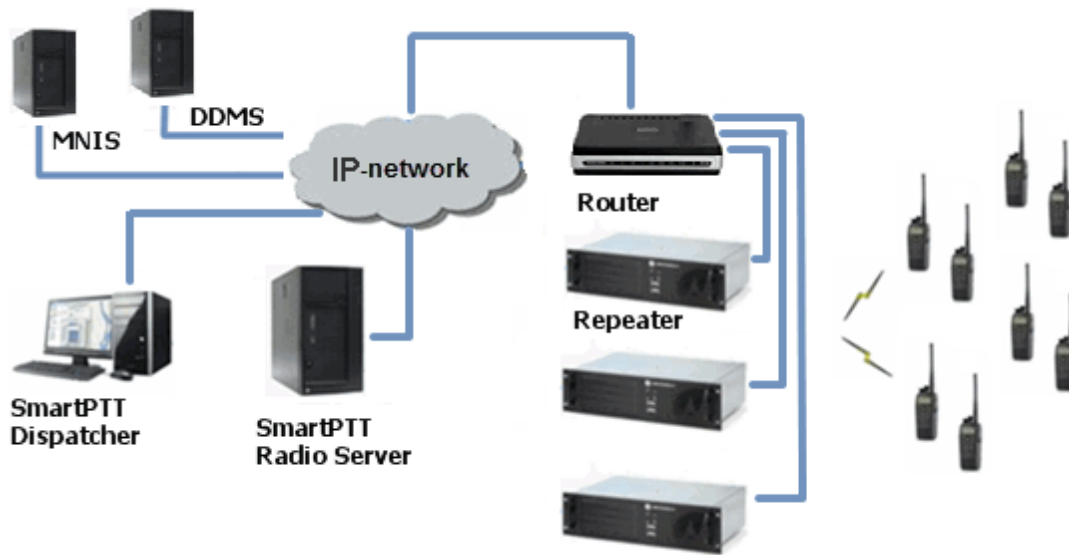
SmartPTT supports MOTOTRBO Network Application Interface (NAI) protocol for networks such as IP Site Connect, Capacity Plus, and Linked Capacity Plus. NAI network configuration uses this protocol for voice, data and monitoring data transmission.

Currently, you can configure three network types with the NAI protocol:

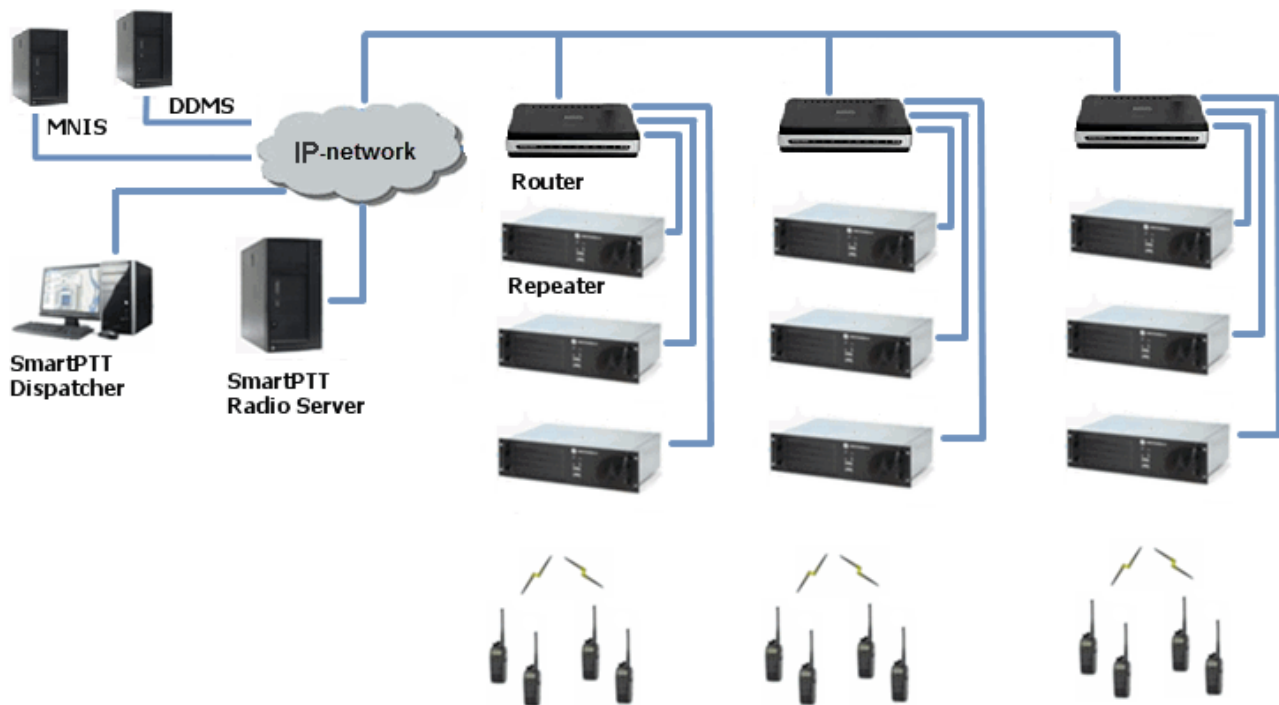
1. IP Site Connect



2. Capacity Plus



3. Linked Capacity Plus



Note: You can install SmartPTT Radioserver, DDMS and MNIS on the same PC.

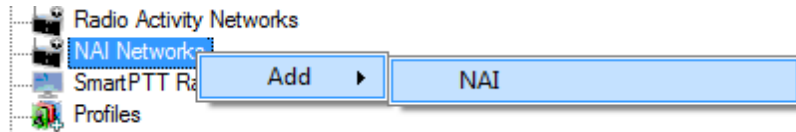
The MOTOTRBO Network Interface Service (MNIS) lets you transmit data (text messages, GPS, telemetry, etc.) without control stations. MNIS connects with the repeater system over IP and uses them to transmit and receive data packets.

Note: MNIS allows data transmission only. It does not support transmission of voice calls and CSBK commands (Radio Check, Call Alert commands and so on).

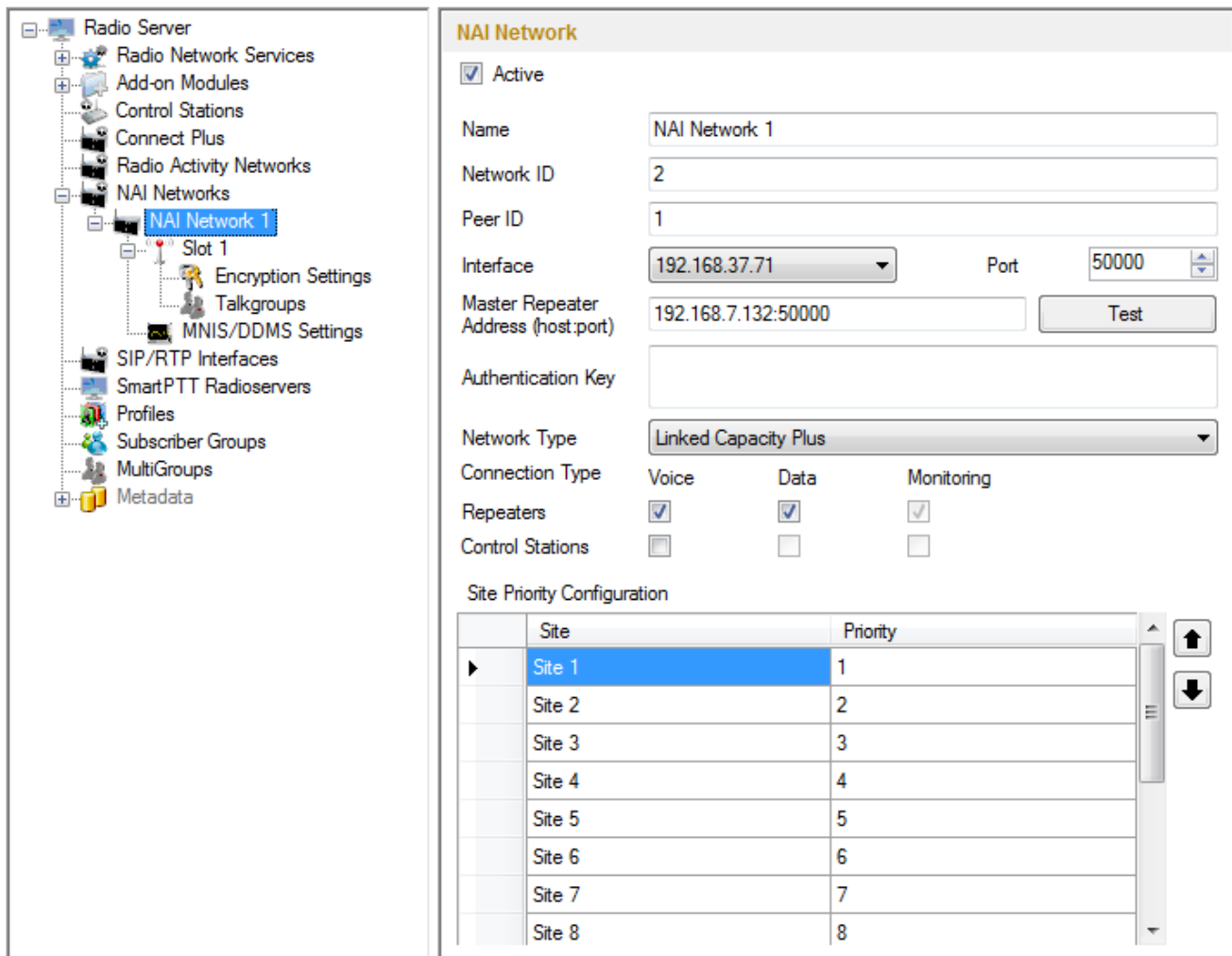
The Device Discovery and Mobility Service (DDMS) is a service that monitors the presence of ARS capable radio units and reports their parameters (IP address, Radio ID, etc.) to interested applications, such as SmartPTT Radioserver and MNIS.

2.2.6.1 How to Configure NAI

To add NAI network, right-click **NAI Networks** in the setting tree of SmartPTT Radioserver Configurator, point to **Add** and then click **NAI**.



At that, the **NAI Network** window opens.



Name – network name.

Network ID – unique ID of the network. The network ID must not match any ID of the other SmartPTT Radioserver

networks.

Peer ID – unique ID of the virtual repeater in the network. The virtual repeater ID must not match any of the other repeater IDs in this network.

Interface – local IP address of the virtual repeater in the network, i.e. SmartPTT Radioserver. Specify the IP address of the PC where the radioserver is installed. This IP address is used by other virtual repeaters as the primary gateway for connection with repeaters over the network.

Port – port number of the virtual repeater. It should differ from the corresponding ports in other networks.

Master repeater address (host:port) – IP address and port number of the network Master repeater.

Click **Test** to check connection between the virtual (i.e. the radioserver) and Master repeaters.

Authentication Key – repeater authorization key (to be equal to the **Authentication key** in the repeater settings in MOTOTRBO CPS).

Network Type – type of network, which can be built based on NAI protocol. There are three network types: IP Site Connect, Capacity Plus, and Linked Capacity networks.

Connection type – defines the type of data transmitted over the network: voice, data.

There are two ways how to transmit voice packets: via repeaters and via control stations. To transmit voice via control stations, configure control station parameters and profiles for making private calls. To transmit voice via repeaters, configure virtual control station channels and talkgroups of the channel. The number of channels depends on the network type. To transmit CSBK commands use control stations for voice transfer.

When selecting the *Linked Capacity Plus* network type for voice data transmission via repeaters, the **Site Priority Configuration** table appears in the **NAI Network** window.

NAI Network

Active

Name: NAI Network 1

Network ID: 2

Peer ID: 1

Interface: 192.168.37.71 Port: 50000

Master Repeater Address (host:port): 192.168.7.132:50000

Authentication Key:

Network Type: Linked Capacity Plus

Connection Type: Voice Data Monitoring

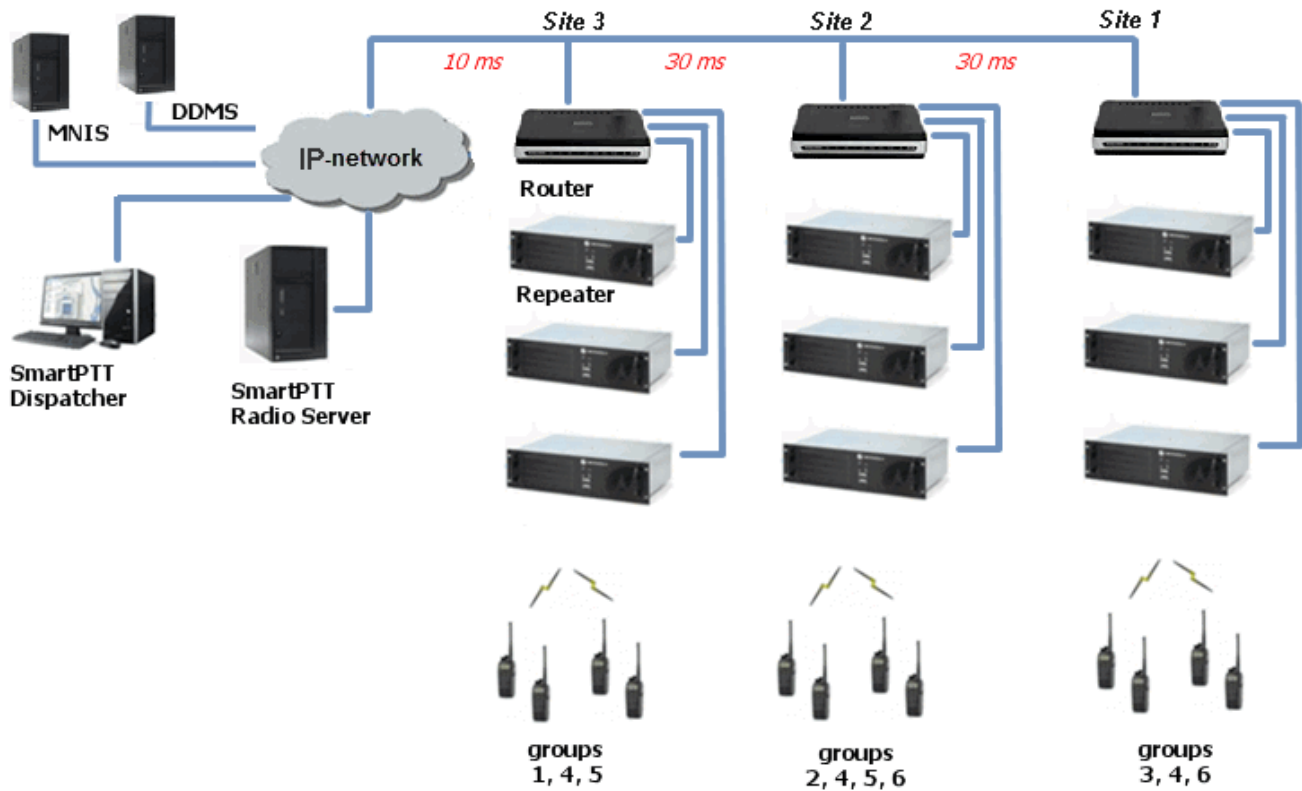
Repeaters:

Control Stations:

Site Priority Configuration	
Site	Priority
Site 1	1
Site 2	2
Site 3	3
Site 4	4
Site 5	5
Site 6	6
Site 7	7
Site 8	8

Filling this table allows you to reduce delay in data transmission over the network.

The following example describes site location in respect to the radioserver and talkgroup distribution at sites.



Here, talkgroups 3, 4, 6 are assigned to Site 1; talkgroups 2, 4, 5, 6 – to Site 2; talkgroups 1, 4, and 5 – to Site 3. The **Talkgroups** tab of repeater MOTOTRBO CPS settings allows you to configure group calls as wide area calls on the specific sites. It presents this schema in the following way.

- DR 3000
- General Settings
- Accessories
- Security
- Network
- Sites
- Talkgroups**
- Channels

Talkgroups

All Wide Area Talkgroups

Call ID	Site 1	Site 2	Site 3	Site 4	Site 5
1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

By default, repeater sends data to Site 1. Then, voice data will be sent from Site 1 to other sites. For example,

when you call to talkgroup 4, total time delay amounts 130 ms.

Setting up the site priorities in the manner that sites with less time delay are associated with a higher priority allows sending voice data to the nearest site, from which it is distributed to other sites. Ultimately, total time delay in case of talkgroup 4 reduces up to 70 ms.

Site Priority Configuration

	Site	Priority	
▶	Site 1	3	▲
	Site 2	2	▼
	Site 3	1	☰
	Site 4	4	
	Site 5	5	

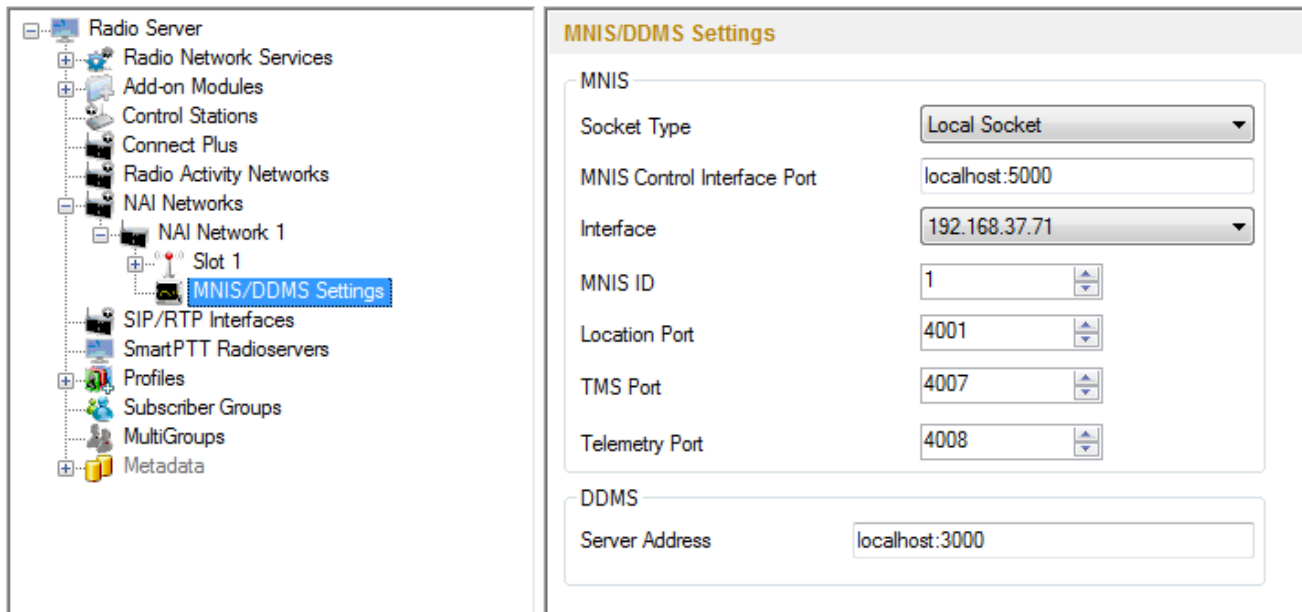
If connection with site of the highest priority fails, the radioserver tries to work through the site of lower priority.

To assign site priority, drag the site name to the desired location or use arrows on the right to the table.

Note: Talkgroup distribution data is provided by the **Talkgroups** table on each site (repeater settings in MOTOTRBO CPS).

MNIS and DDMS Settings

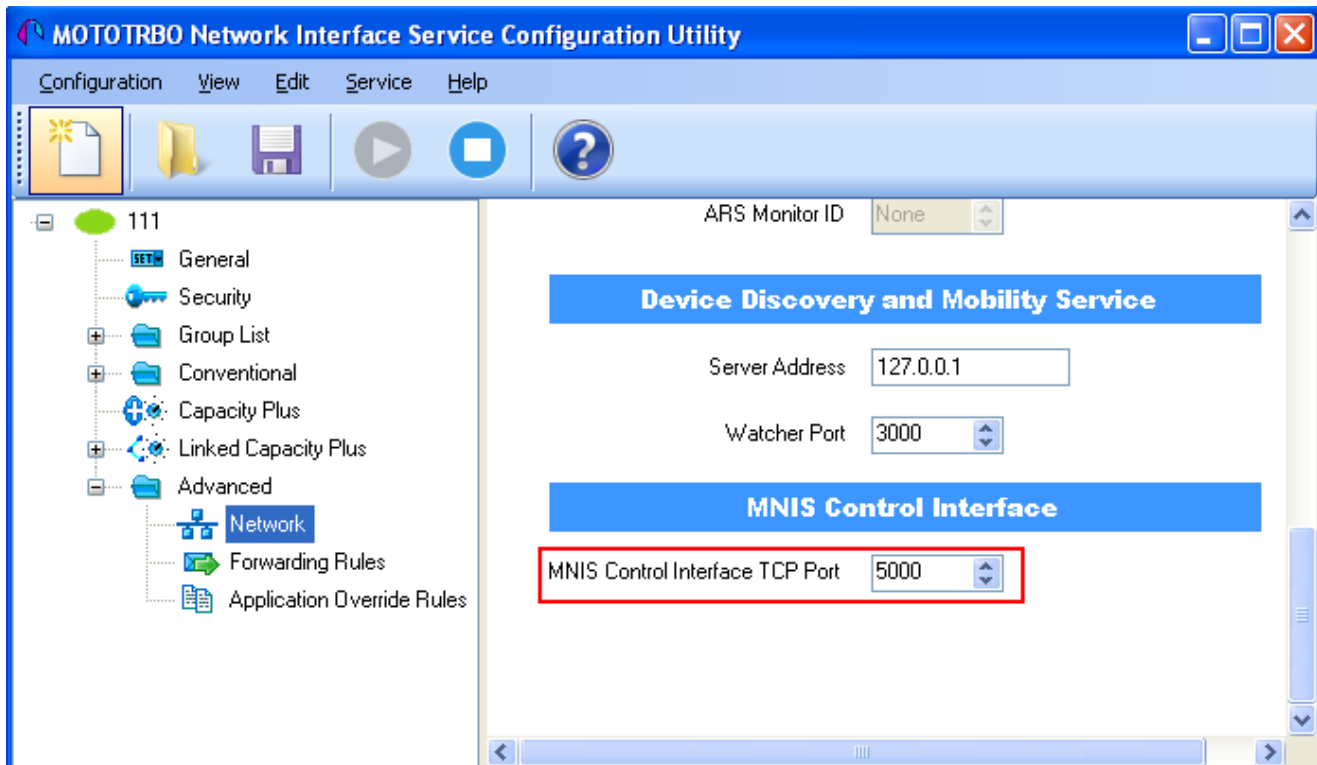
To set up data transfer over NAI network, click **MNIS/DDMS Settings** in the setting tree of SmartPTT Radioserver Configurator. At that, the **MNIS/DDMS Settings** window opens.



MNIS

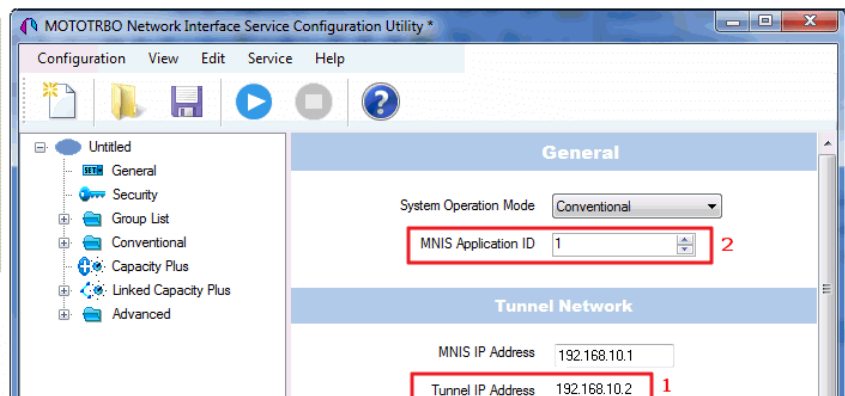
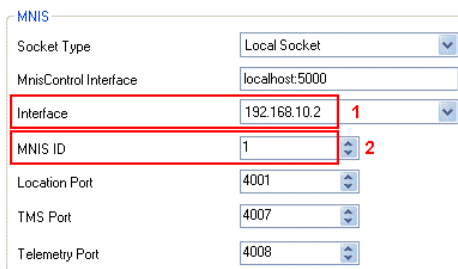
Socket type – defines the software interface type to enable communication between processes. Select the *Local Socket* value if the MOTOTRBO Network Interface Service Configuration Utility application is installed on the same PC as SmartPTT Radioserver. Select *Remote Socket* if MOTOTRBO Network Interface Service Configuration Utility and SmartPTT Radioserver are installed on a different PCs. In this case, information exchange between the processes is supported by the MNIS Relay application.

MNIS Control Interface – use *localhost*, if MOTOTRBO Network Interface Service Configuration Utility is installed on the same PC as the radioserver. If MOTOTRBO Network Interface Service Configuration Utility and the radioserver are installed on different PCs, enter the IP address of the PC where MOTOTRBO Network Interface Service Configuration Utility is installed. The port should match the port number specified in the **MNIS Control Interface TCP Port** field in MOTOTRBO Network Interface Service Configuration Utility settings:



Interface – MOTOTRBO Network Interface Service interface. It must match the interface specified in the **Tunnel IP Address** field of MOTOTRBO Network Interface Service Configuration Utility.

MNIS ID – the Common Air Interface (CAI) ID of the MNIS in the radio network. The ID is used by other calling radios when addressing MOTOTRBO Network Interface Service. Make sure **MNIS ID** matches the **MNIS Application ID** field (the **General** tab) in MOTOTRBO Network Interface Service Configuration Utility. It is also recommended that **MNIS ID** match the **Slot ID** field value in the radioserver settings.



Location Port – the port where the radioserver will expect GPS data.

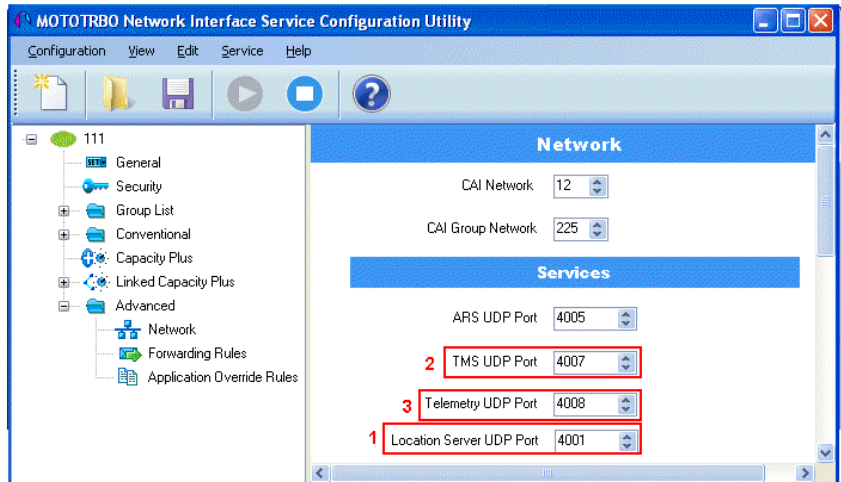
TMS Port – the port where the radioserver will expect text messages.

Telemetry Port – the port where the radioserver will expect telemetry data.

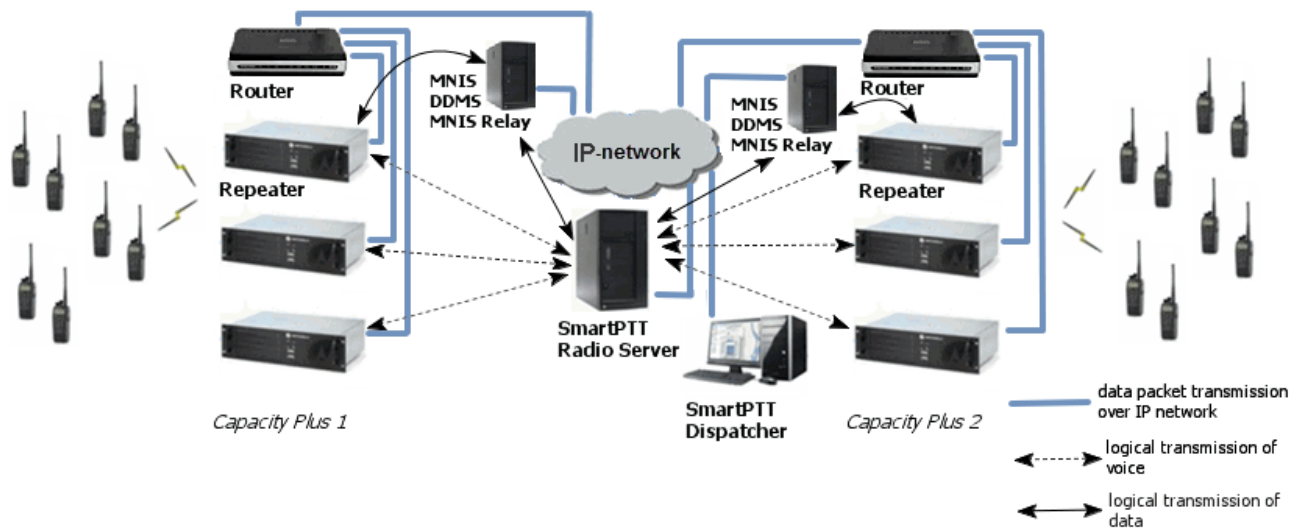
The ports should match the ports set in the **TMS UDP PORT**, **Telemetry UDP Port** and **Location Server UDP Port** fields in MOTOTRBO Network Interface Service Configuration Utility (**Advanced > Network**).

MNIS

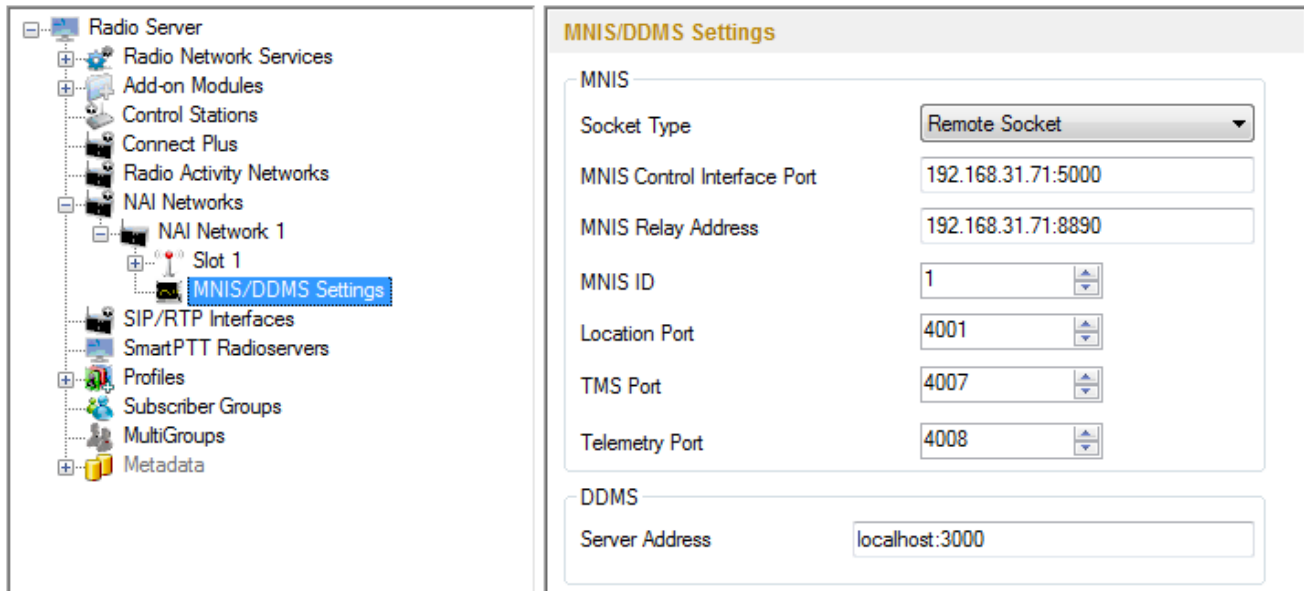
Socket Type	Local Socket
MnisControl Interface	localhost:5000
Interface	192.168.10.2
MNIS ID	1
Location Port	4001
TMS Port	4007
Telemetry Port	4008



Remote Socket is used when you want to connect more than one network such as Capacity Plus or Linked Capacity Plus to SmartPTT Radioserver. To ensure proper functioning of all connected networks (voice and/or data transmission), each network requires separate MNIS and DDMS services set up and running. At the same time, multiple MNIS and DDMS can't be installed on one PC. To work around this problem, you should install and configure MOTOTRBO Network Interface Service Configuration Utility, MOTOTRBO DDMS Administrative Client and MNIS Relay applications on multiple PCs. The number of PCs depends on the number of networks (Capacity Plus or Linked Capacity Plus) connected to SmartPTT Radioserver. Thus, the transmission of voice data from repeaters to SmartPTT Radioserver is carried out directly, and data transfer – via PC with MNIS Relay and the MNIS and DDMS service applications.



In SmartPTT Radioserver Configurator, in the **Socket Type** field, select *Remote Socket*. At that, the **Interface** field will turn into **MNIS Relay Address**.



In the **MNIS Control Interface** field, enter the IP address of the PC where MOTOTRBO Network Interface Service Configuration Utility is installed.

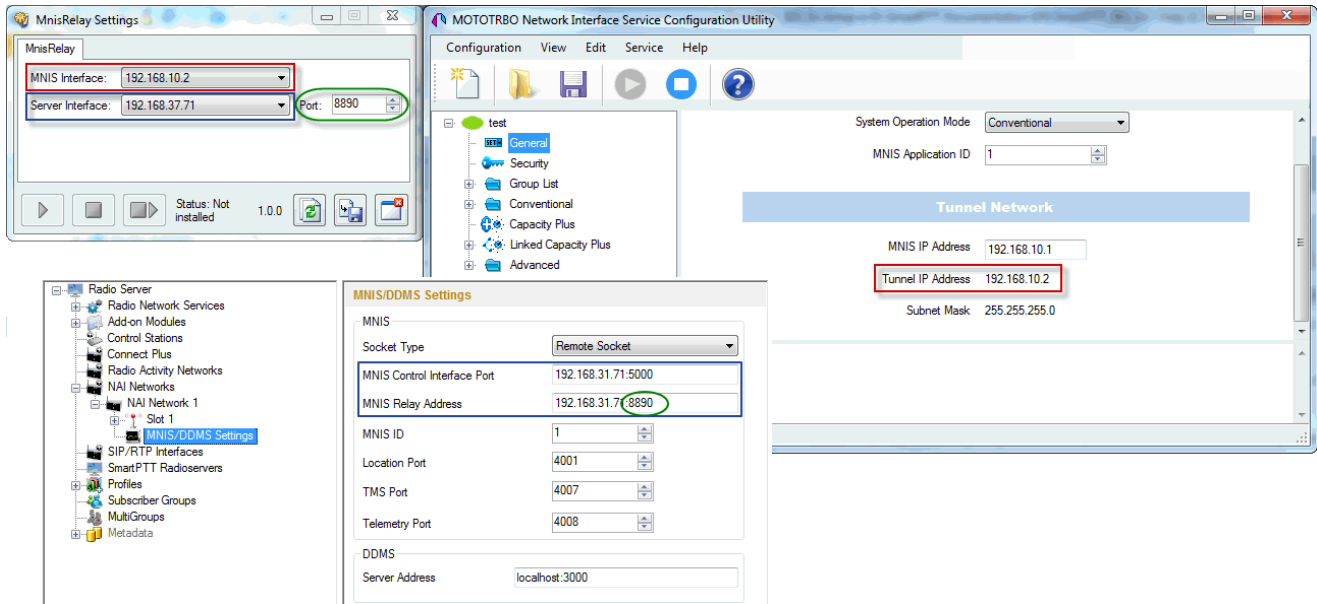
MNIS Relay Address – the IP address of the PC where MNIS Relay is installed. The **MNIS Control Interface** and **MNIS Relay Address** fields must be equal, except for ports.


Run MNIS Relay and do the the following settings.

In the **MNIS Interface** field enter the interface created by the MOTOTRBO Network Interface Service. The value in this field must match the value in the **Tunnel IP Address** field (the **General** tab) of MOTOTRBO Network Interface Service Configuration Utility.

In the **Server Interface** field specify the IP address of the PC with the MNIS Relay application explicitly, or select *Any* (the service is available from any network interface) or *Loopback* (the service is available from the local interface only).

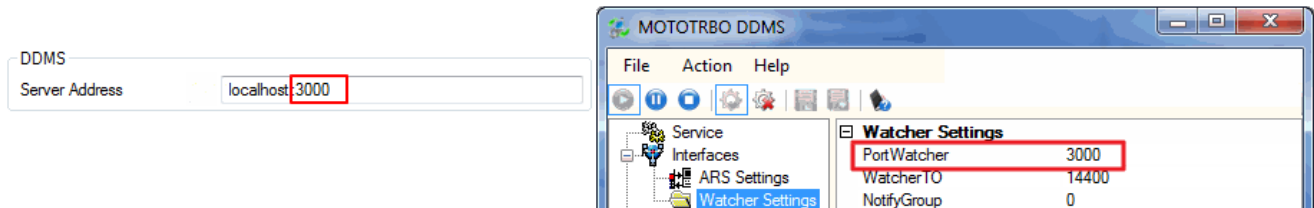
In the **Port** field enter the port number for the MNIS Relay application. The default value – 8890.



Save the settings in the MNIS Relay application and start the service by clicking .

DDMS

Server Address – IP address of the PC with the MOTOTRBO DDMS Administrative Client application installed on it, and port number of the DDMS server. The port number in this field must match the port number in the **PortWatcher** field of the MOTOTRBO DDMS Administrative Client (**Interfaces > Watcher Settings**).



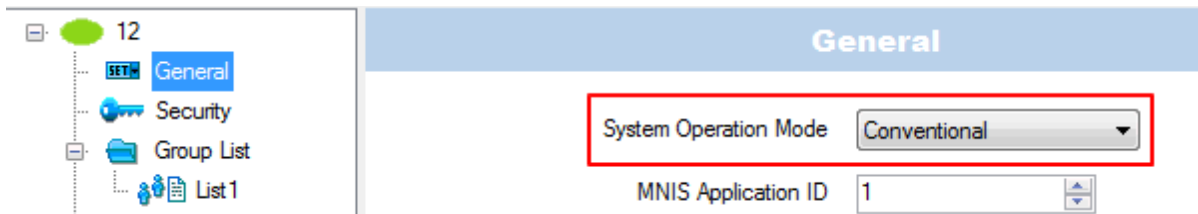
MNIS and DDMS service settings

The following section describes MNIS service settings in MOTOTRBO Network Interface Service Configuration Utility and DDMS service settings in MOTOTRBO DDMS Administrative Client, which are necessary for proper

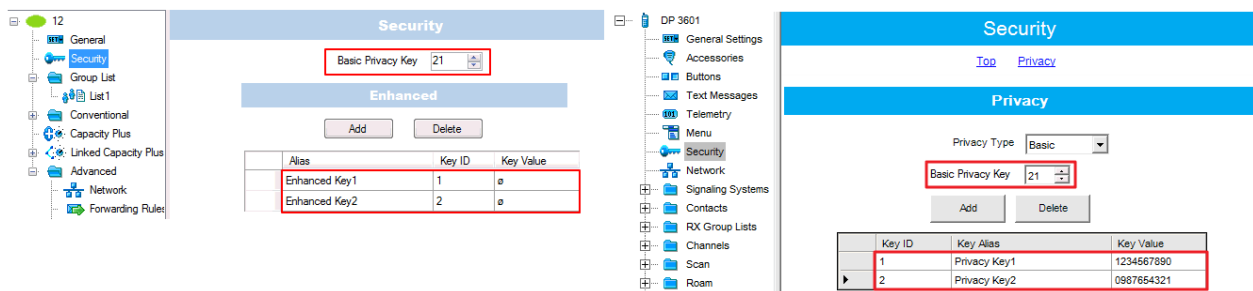
data transmission over network.

You should configure the following settings in the MOTOTRBO Network Interface Service Configuration Utility application:

1. In the **System Operation Mode** field of the **General** section, select a mode depending on the network type selected in SmartPTT Radioserver Configurator. If IP Site Connect is used, select *Conventional*. Other modes correspond to the Capacity Plus and Linked Capacity Plus networks.

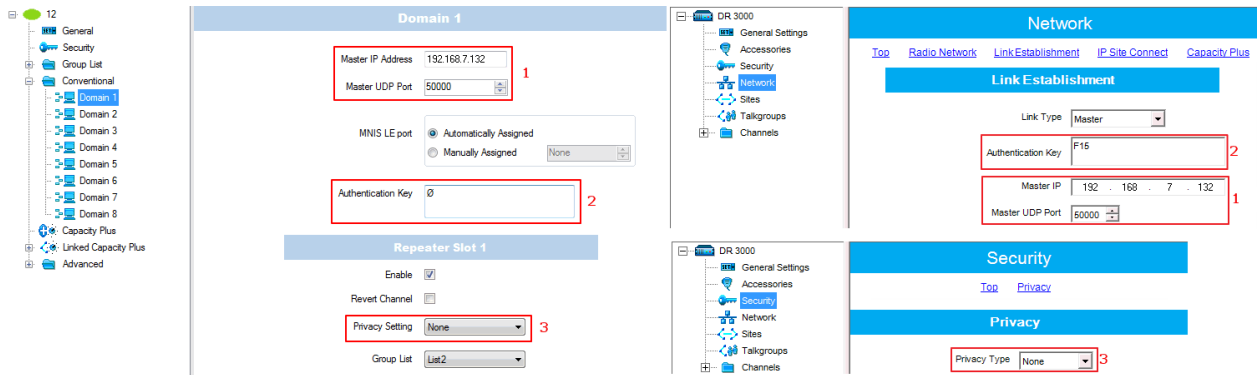


2. In the **Security** section set the encryption keys that match the keys specified in the radio MOTOTRBO CPS settings.

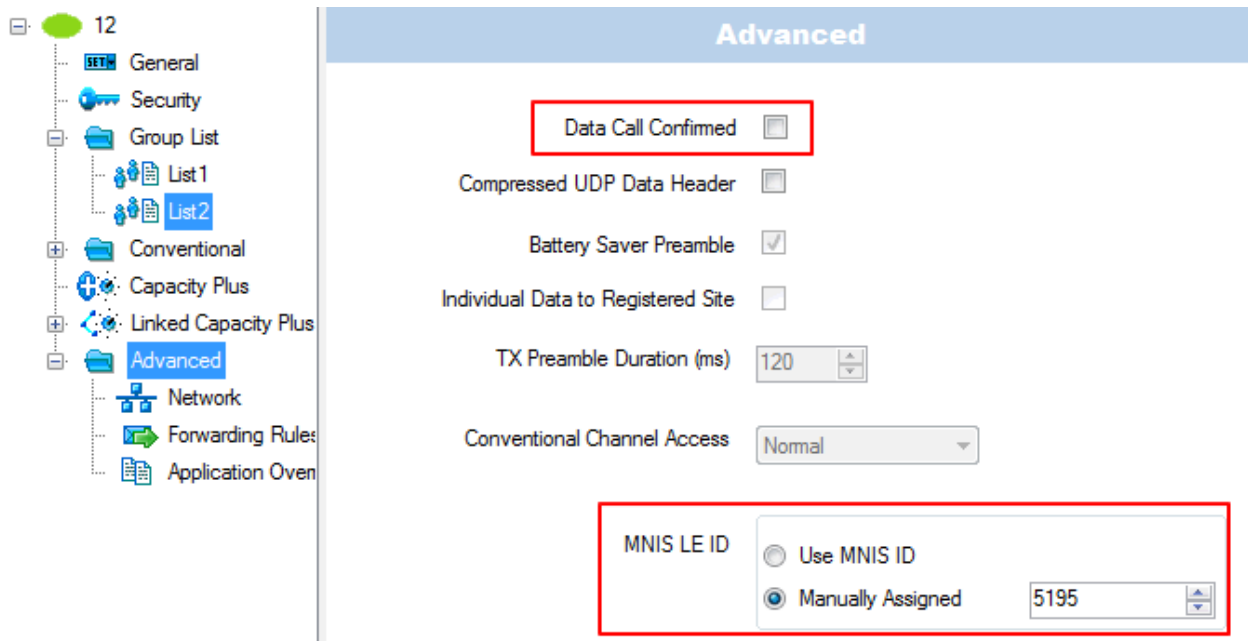


3. Set up the following parameters in the **Conventional/Capacity Plus/Linked Capacity Plus** sections respectively:

- IP address and UDP port of the Master repeater in the **Master IP Address** and the **Master IP Port** fields. These values should match the values in the corresponding fields in the Master repeater MOTOTRBO CPS settings and in the network settings of SmartPTT Radioserver Configurator.
- Authentication key, if it is set in the repeater MOTOTRBO CPS settings.
- Privacy settings that match repeater encryption settings in MOTOTRBO CPS.

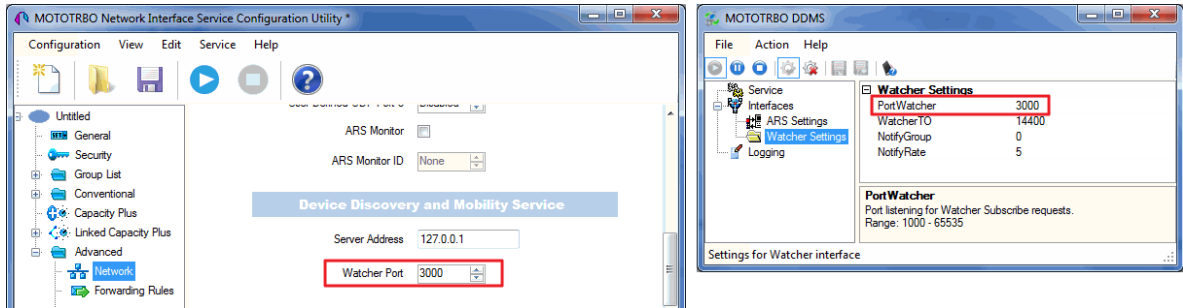


- It is recommended to clear the **Data Call Confirmed** field in the **Advanced** section and to specify the identifier in the **MNIS LE ID** field explicitly.

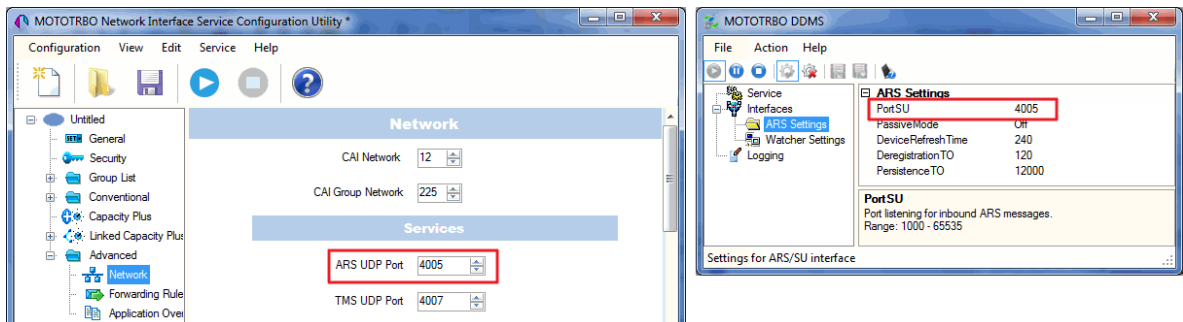


DDMS operation is closely connected to MNIS for data exchange (MNIS serves as DDMS Watcher). DDMS filters the registration service packets (ARS), received by the repeater, and information on the radio presence in the network is sent to all systems for further processing. Therefore, when you configure DDMS settings, make sure that:

- The **PortWatcher** field in MOTOTRBO DDMS Administrative Client matches the **WatcherPort** field in MOTOTRBO Network Interface Service Configuration Utility settings (**Advanced > Network**).

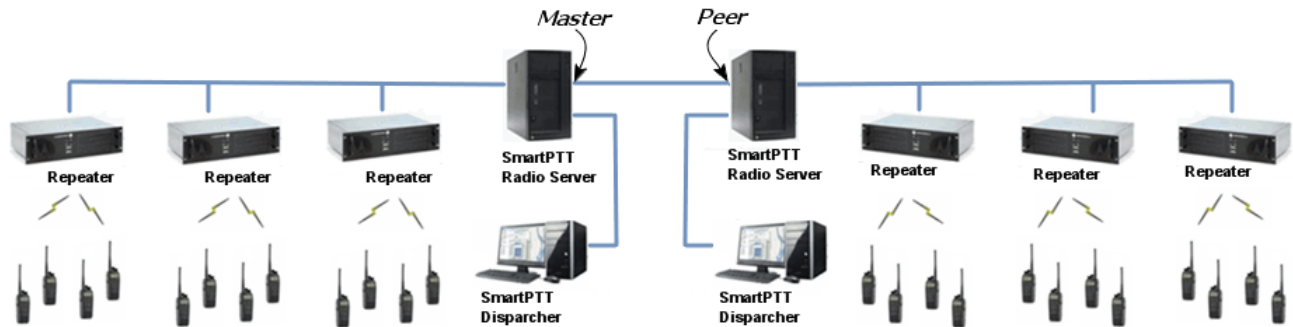


b) The **PORT SU** field (**Interfaces > ARS Settings**) in MOTOTRBO DDMS Administrative Client matches the **ARS UDP Port** field in MOTOTRBO Network Interface Service Configuration Utility (**Advanced > Networks**).



2.2.7 SmartPTT Radioservers

SmartPTT Bridging service allows joining two radioservers into a single radio network with the help of intelligent means of patching for voice and data streams. Thus, radio subscribers or talkgroups under control of one radioserver become available for another radioserver for voice call and data packet transmissions.



Note: Currently, bridging service between two radioservers is supported only with the IP Site Connect network configuration.

SmartPTT Bridging service allows joining radio networks, managed by two different radioservers, to cover distributed regions. The important advantages of the network are dynamic redirection of private and group calls and data packets from one radioserver to another, short voice delay (60 ms).

How to Configure SmartPTT Radioservers

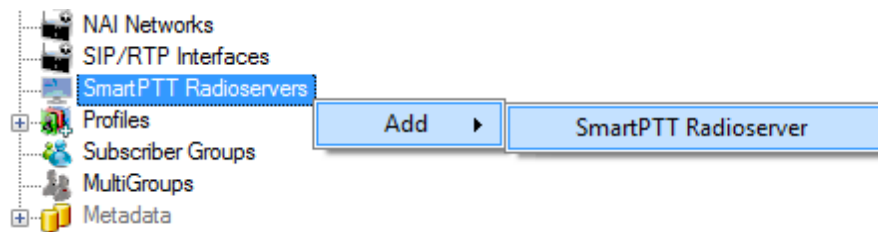
Configuration of bridging service between two radioservers includes:

1. Adding an external radioserver:
 - basic configuration of the external radioserver
 - control station configuration of the external radioserver
 - talkgroup configuration
2. Activating bridging service
3. Configuring bridging settings in SmartPTT Dispatcher

These actions are required for both joined radioservers in the system.

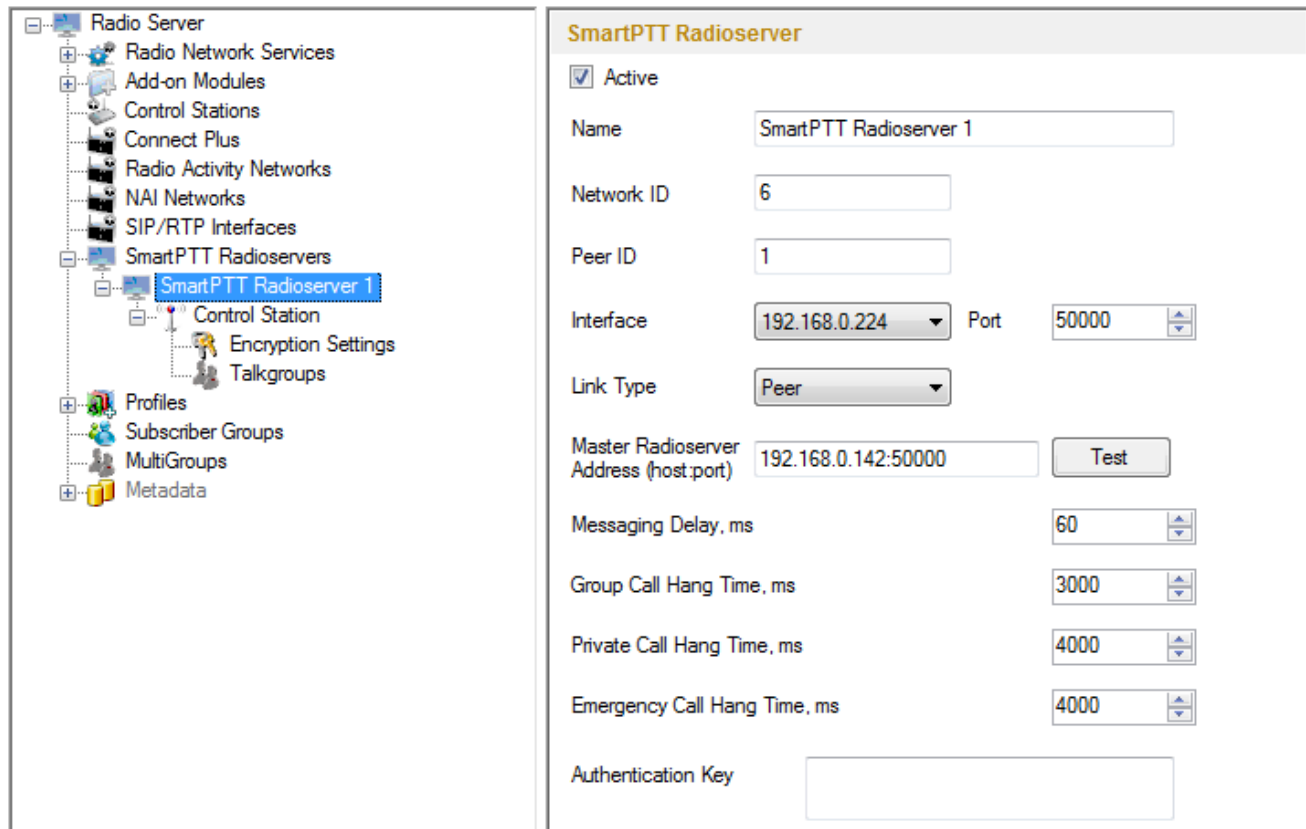
SmartPTT Radioservers

To add a new external radioserver, right-click **SmartPTT Radioservers** in the setting tree of SmartPTT Radioserver Configurator, point to **Add** and click **SmartPTT Radioserver**.



Configuring SmartPTT Radioserver

To configure the newly added network, click **SmartPTT Radioserver 1** under **SmartPTT Radioservers**. At that, the following window opens.



Name – SmartPTT radioserver system name.

Network ID – unique ID of the SmartPTT radioserver system.

Peer ID – unique ID of the radioserver in the network.

Warning! Peer ID must be unique. No other repeater in this network can have the same ID.

Interface – IP address of the local SmartPTT Radioserver. Specify the IP address of the PC where the radioserver is installed..

Port – a port number associated with an IP address of the local SmartPTT Radioserver.

Warning! Port number must be unique.

Link Type – select the role of the local SmartPTT Radioserver: Peer or Master.

Master Radioserver Address (host:port) – IP address and port of the other SmartPTT Radioserver, which plays the role of the Master in the network.

Note: Select **Master** in the **Link Type** field for one of the radioservers acting as a master, select **Peer** for another. If **Master** is selected in the **Link Type** field, the **Master Radioserver Address** field becomes dimmed. If **Peer** is selected in the **Link Type** field, make sure that the **Master Radioserver Address** field contains the interface and port number of the master repeater, that is the second radioserver.

TX Preamble Duration (ms) – duration of TX preamble.

Messaging Delay (ms) – message exchange delay between repeaters.

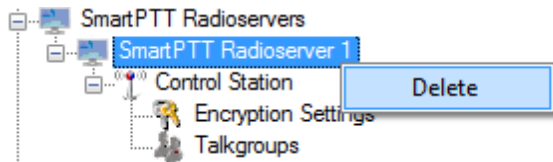
Group Call Hang Time (ms) – duration for which the repeater reserves the channel after the end of a group call transmission. During this time, only members of the talkgroup that the channel is reserved for can transmit. After expiration of the group call hang timer, the radio will transmit using the TX contact name (digital group) specified for this channel in MOTOTRBO CPS.

Private Call Hang Time (ms) – duration for which the repeater reserves the channel after the end of a private call transmission. During this time, only members of the private call that the channel is reserved for can transmit. After the hang timer expires, the radio transmits using the TX contact name specified for this channel in MOTOTRBO CPS.

Emergency Call Hang Time (ms) – duration for which the repeater reserves the channel after the end of an emergency call transmission. During this time, only members of the talkgroup that the channel is reserved for can transmit.

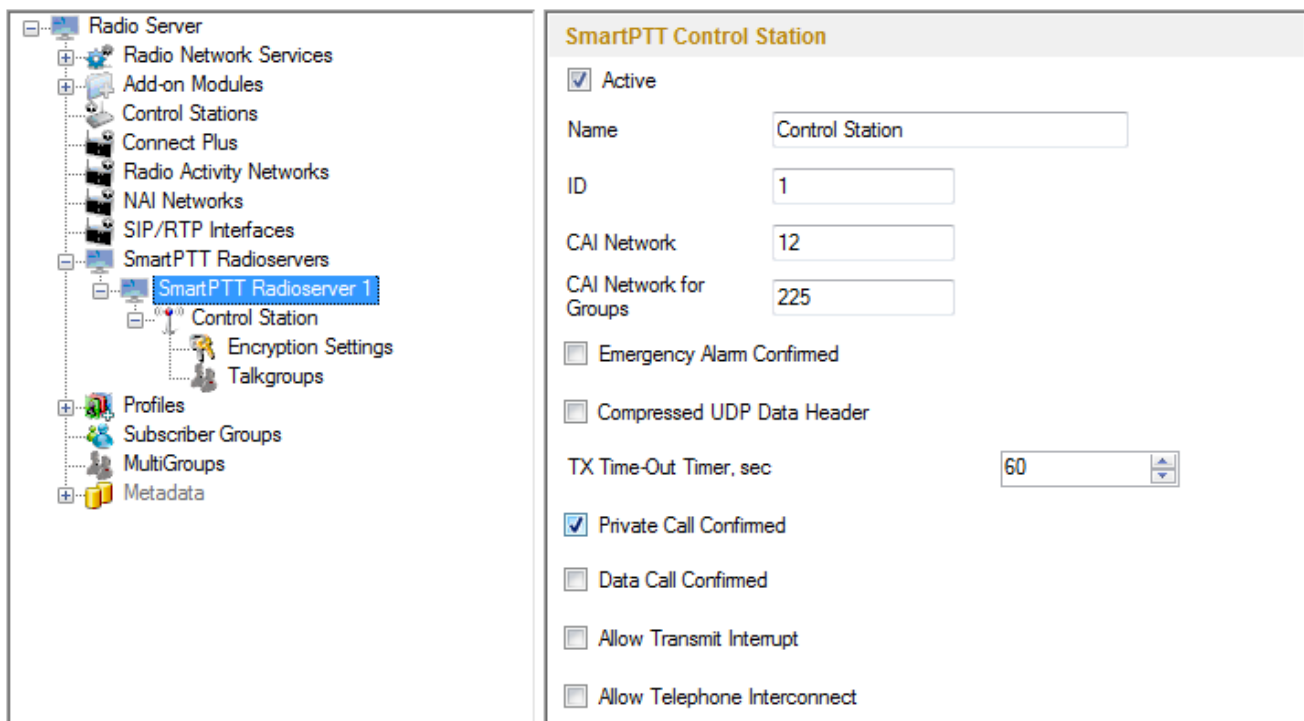
Authentication Key – repeater authorization key (to be equal to the **Authentication key** in MOTOTRBO CPS).

To delete the SmartPTT radioserver, right-click on the selected SmartPTT Radioserver system and choose **Delete**.



Control Station Configuration

To set up the SmartPTT radioserver control station, click **Control Station** under **SmartPTT Radioserver 1** in the setting tree of SmartPTT Radioserver Configurator. At that, the following window opens.



Name – virtual control station name.

ID – ID of a virtual control station of the network.

CAI Network – CAI-network ID. Use default value of 12.

CAI Network for Groups – CAI-network for groups ID. Use default value of 225.

Emergency Alarm Confirmed – determines if the emergency alarm is allowed to be acknowledged.

Compressed UDP Data Header – enabling this item reduces delays data transmissions.

TX Time-Out Timer, sec – continuous radio transmission timeout. After this time the transmission is interrupted.

Private Call Confirmed – this feature sets private calls on the current digital channel as confirmed.

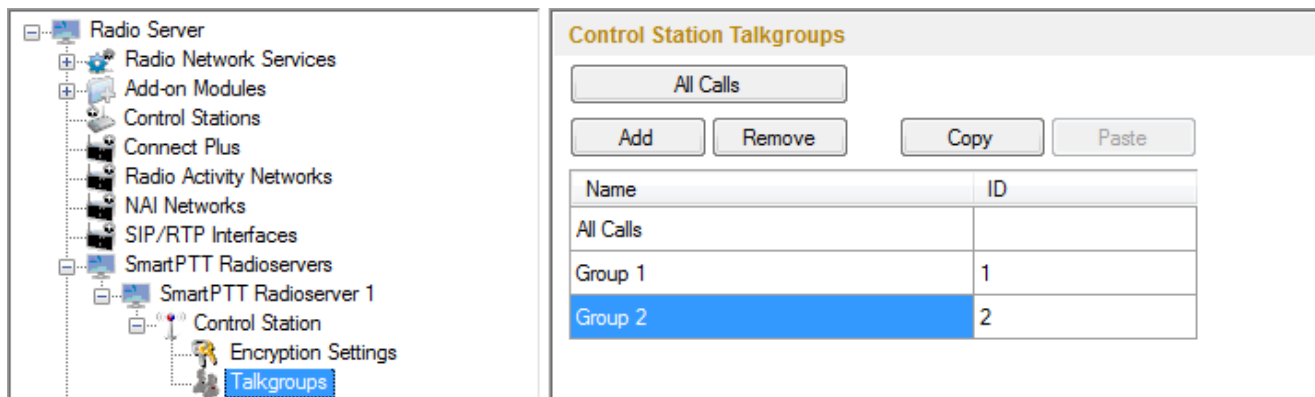
Data Call Confirmed – this feature enables individual packets in data calls (ARS, GPS and Text Message) on the current digital channel or personality to be confirmed.

Allow Transmit Interrupt – enables or disables the ability to interrupt a radio subscriber.

Allow Telephone Interconnect – allow telephone interconnect on the slot.

Configuring Talkgroups

To configure talkgroups, click **Talkgroups** in the setting tree of SmartPTT Radioserver Configurator. At that, the **Control Station Talkgroups** window opens.



Note: Configuration process of SmartPTT Radioserver control station talkgroups for this network is similar to the configuration of control station talkgroups (see [Control Station > Talkgroups](#)).

Bridging Service

To activate the bridging service, click **Bridging** in the setting tree of SmartPTT Radioserver Configurator. In the opened window select the **Active** check box (see the [Bridging](#) section in the Help of SmartPTT Radioserver Configurator).

Bridging Service in SmartPTT Dispatcher

To set up the redirection of voice calls and data packets correctly, configure routes, route groups and profiles for

the bridging service in SmartPTT Dispatcher. For more information see Bridging in the Help file of SmartPTT Dispatcher.

Example

The following example presents bridging configuration between two radioservers. Each of them works with the IP Site Connect network topology.

User 1 (in SmartPTT Radioserver Configurator) makes the settings for direct connection of the radioserver to repeaters' network, functioning in IP Site Connect system (**Network ID = 1**).

The IP address and port number of the master repeater must be specified in the **Master Repeater Address** field (the example displays connection settings only with one repeater).

In the **Interface** field select the IP address of the virtual repeater in the network with **Network ID = 1**.

The screenshot displays the configuration window for 'NAI Network 111'. The left-hand tree view shows the hierarchy: Radio Server > NAI Networks > NAI Network 111. The right-hand configuration panel includes the following fields:

- Active:**
- Name:** NAI Network 1
- Network ID:** 1
- Peer ID:** 1
- Interface:** 192.168.37.71
- Port:** 50000
- Master Repeater Address (host:port):** 192.168.7.111:50000
- Authentication Key:** (empty)
- Network Type:** IP Site Connect
- Connection Type:**

Connection Type	Voice	Data	Monitoring
Repeaters	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Control Stations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Slot and group settings for IP Site Connect network with **Network ID = 1**

Slot

Active

Name:

ID:

CAI Network:

CAI Network for Groups:

Control Station Talkgroups

All Calls

Add Remove Copy Paste

Name	ID
All Call(Slot 111_1)	
Group1 (Slot 111_1)	1
Group2 (Slot 111_1)	2

Slot

Active

Name:

ID:

CAI Network:

CAI Network for Groups:

Control Station Talkgroups

All Calls

Add Remove Copy Paste

Name	ID
All Call(Slot 111_2)	
Group3 (Slot 111_2)	3
Group4 (Slot 111_2)	4

User 2 also configures the IP Site Connect network connection (**Network ID = 2**) in SmartPTT Radioserver Configurator. Fill in the **Master Repeater Address** and the **Interface** fields with data corresponding to the network with **Network ID = 2**.

Radio Server

- Radio Network Services
- Add-on Modules
- Control Stations
- Connect Plus
- Radio Activity Networks
- NAI Networks
 - NAI Network 211
 - Slot 211_1
 - Encryption Settings
 - Talkgroups
 - Slot 211_2
 - Encryption Settings
 - Talkgroups
 - MNIS/DDMS Settings
- SIP/RTP Interfaces
- SmartPTT Radioservers
- Profiles
- Subscriber Groups
- MultiGroups
- Metadata

NAI Network

Active

Name:

Network ID:

Peer ID:

Interface: Port:

Master Repeater Address:

Authentication Key:

Network Type:

Connection Type	Voice	Data	Monitoring
Repeaters	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Control Stations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Slot and talkgroup settings for IP Site Connect network with **Network ID = 2**

The image displays two side-by-side screenshots of the configuration interface for Slot 211_1 (left) and Slot 211_2 (right).

Slot Configuration:

- Slot 211_1:** Name is "Slot 211_1", ID is 16448250, CAI Network is 12, and CAI Network for Groups is 225. The tree view shows "Slot 211_1" selected under "NAI Network 2111".
- Slot 211_2:** Name is "Slot 211_2", ID is 16448250, CAI Network is 12, and CAI Network for Groups is 225. The tree view shows "Slot 211_2" selected under "NAI Network 2111".

Control Station Talkgroups:

Buttons: All Calls, Add, Remove, Copy, Paste.

Name	ID
All Call(Slot 211_1)	
Group1 (Slot 211_1)	1
Group2 (Slot 211_1)	2

Name	ID
All Call(Slot 211_2)	
Group1 (Slot 211_2)	3
Group2 (Slot 211_2)	4

Next, *user 1* adds an SmartPTT radioserver (Radioserver 111) with the **Master** link type and chooses the corresponding IP address in the **Interface** field of SmartPTT Radioserver Configurator.

User 2 also adds a SmartPTT radioserver (Radioserver 211) and defines its connection type as a **Peer**. **Master Radioserver Address** is filled with the IP address and port number according to the **Interface** and **Port** values of the **Master**.

User 1

SmartPTT Radioserver

Active

Name: Radioserver 111

Network ID: 3

Peer ID: 1

Interface: 192.168.37.71 Port: 50001

Link Type: Master

User 2

SmartPTT Radioserver

Active

Name: Radioserver 211

Network ID: 4

Peer ID: 1

Interface: 192.168.0.186 Port: 50001

Link Type: Peer

Master Radioserver Address (host:port): 192.168.37.71:50001 Test

Messaging Delay, ms: 60

Settings for control station and its talkgroups of the radioservers

User 1

SmartPTT Control Station

Active

Name

ID

CAI Network

CAI Network for Groups

Control Station Talkgroups

Name	ID
All Call (CS 111)	
Group1 (CS 111)	1
Group2 (CS 111)	2

User 2

SmartPTT Control Station

Active

Name

ID

CAI Network

CAI Network for Groups

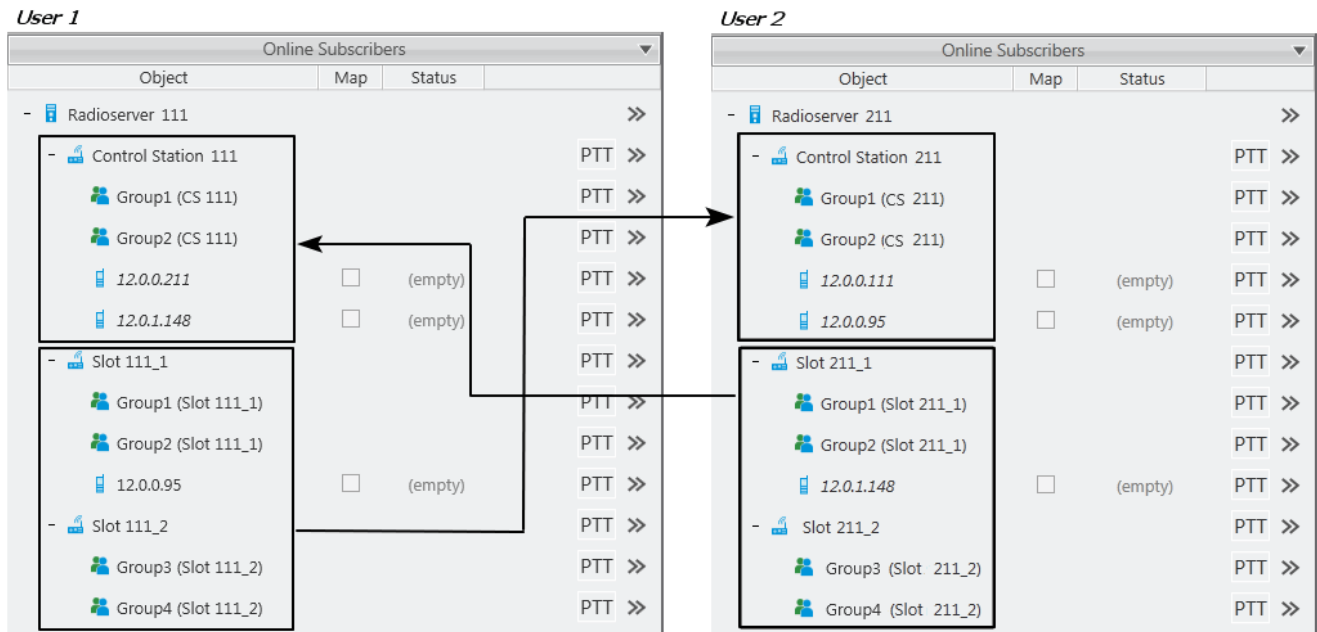
Control Station Talkgroups

Name	ID
All Call (CS211)	
Group1 (CS 211)	1
Group2 (CS 211)	2

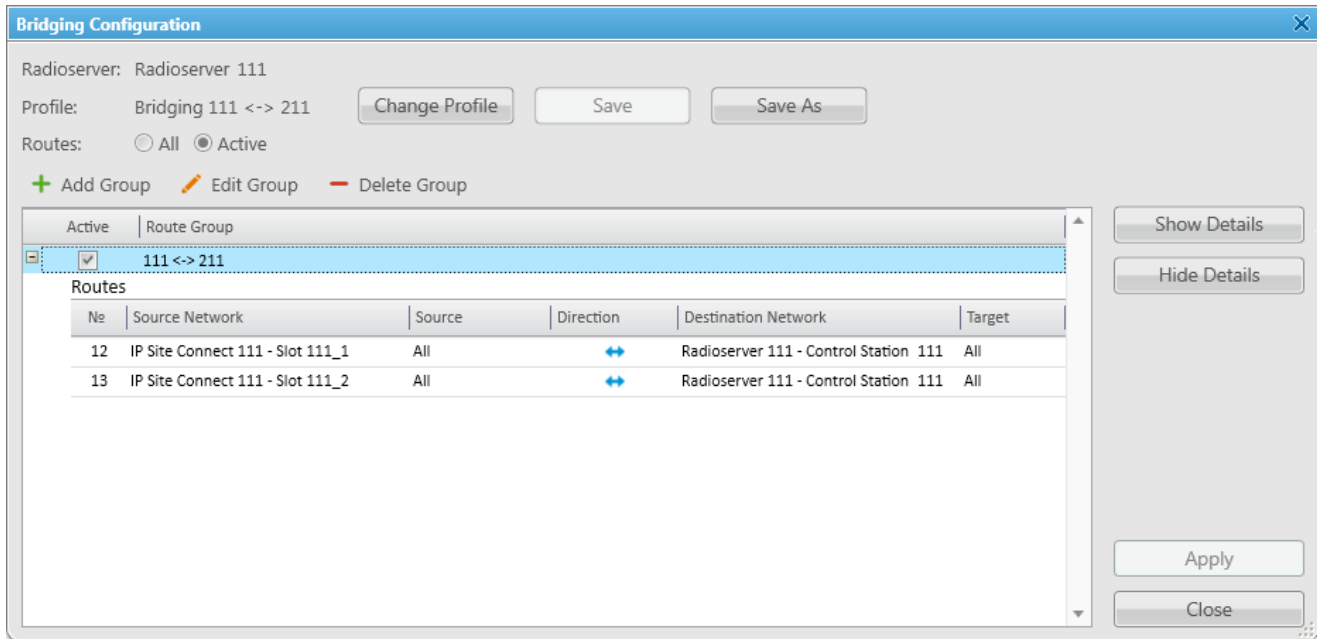
After that, both *user 1* and *user 2* activate the bridging service in SmartPTT Radioserver Configurator.

To apply settings, click **Save** and restart the service in SmartPTT Radioserver Configurator (for *user 1* and *user 2*).

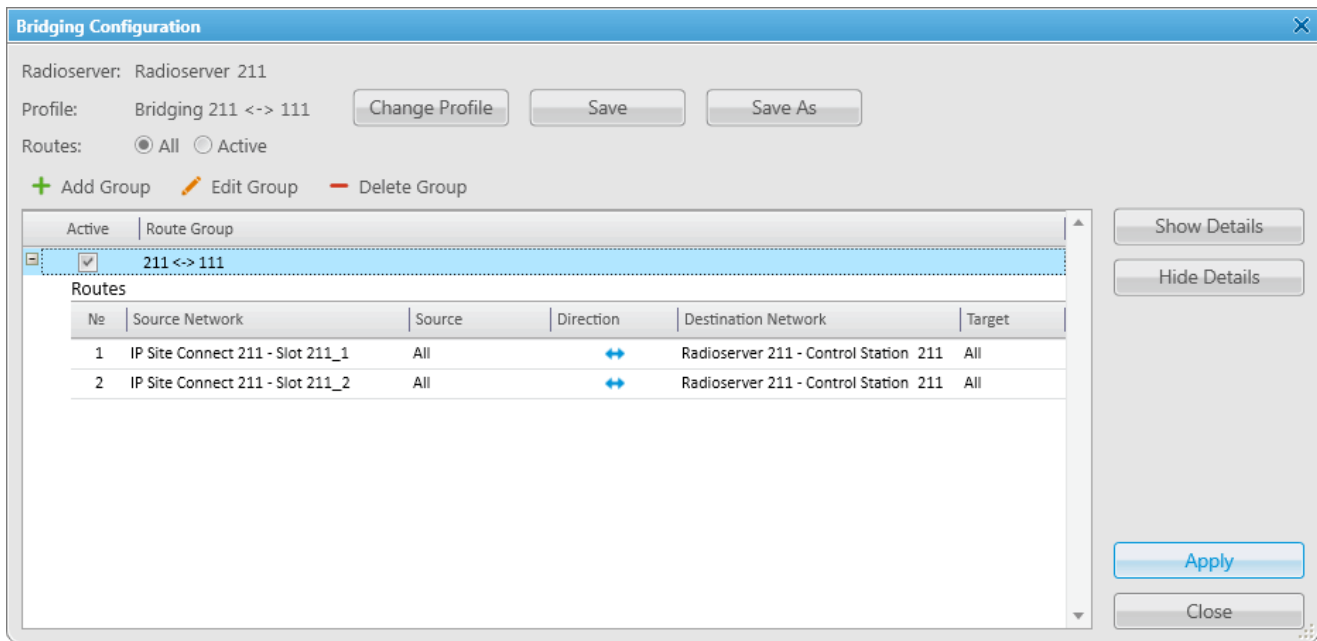
In the SmartPTT Dispatcher application of *user 1* (Master), a radio with the **IP address** = 12.0.0.95 is registered at Slot 111_1. The SmartPTT radioserver (*user 2*) with its radios and talkgroups is shown in the *user 1* system as Control Station 111. In SmartPTT Dispatcher of *user 2*, a radio with the **IP address** = 12.0.1.148 is registered at Slot 211_1. SmartPTT radioserver (*user 1*) in respect to *user 2* is displayed as Control Station 211.



In SmartPTT Dispatcher of *user 1* set up the bridging service of voice calls and data. To do this, create a group with routes to redirect calls of all types in duplex mode (from Slot 111_1 and Slot 111_2 to Control Station 111). Make this route group active.



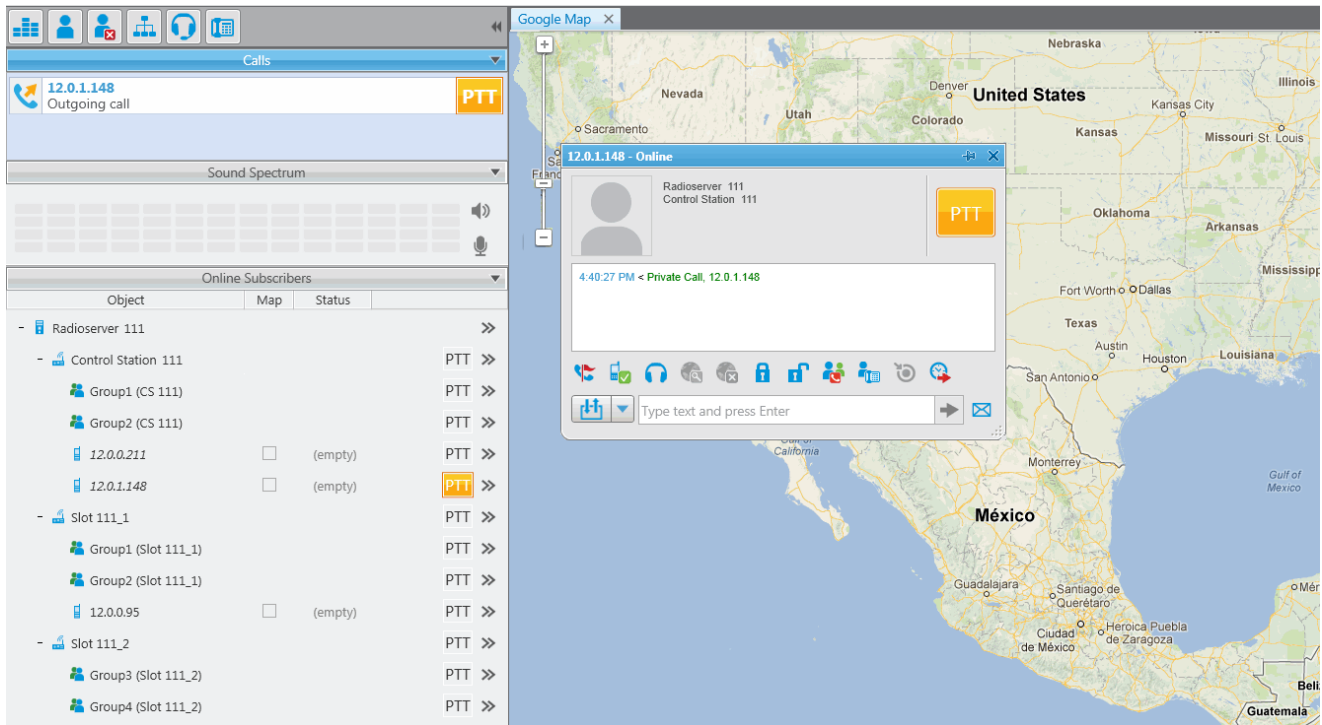
Make similar settings in SmartPTT Dispatcher for *user 2*.



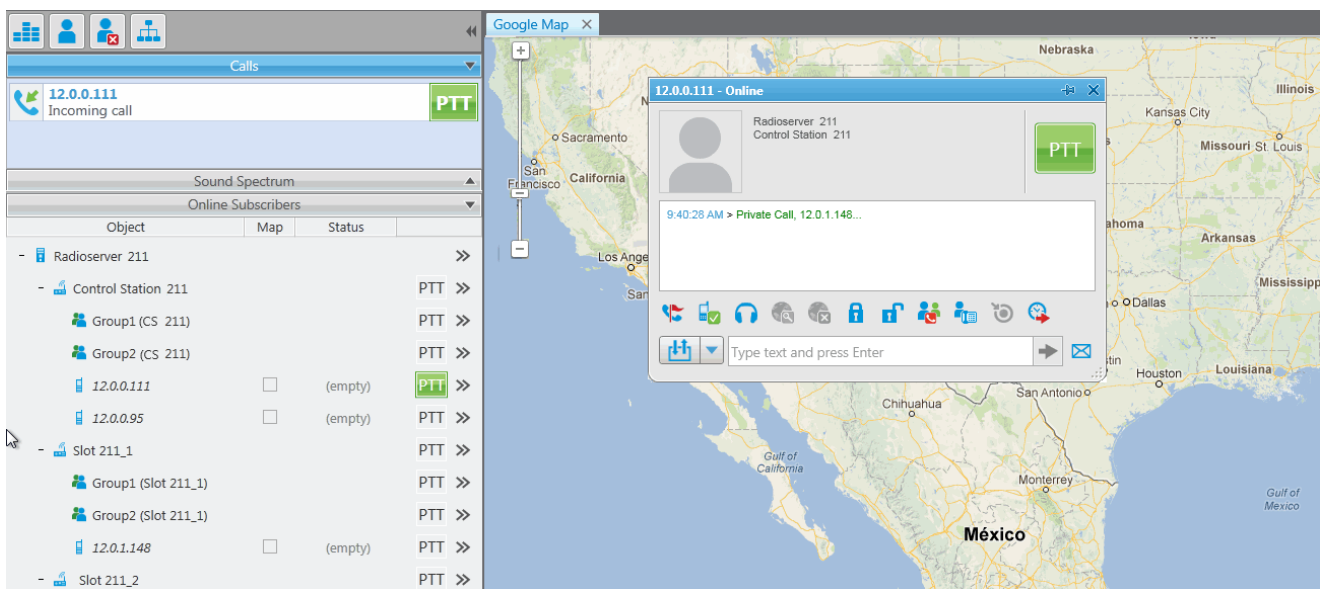
System verification:

1. User 1 makes a private call to the radio registered in the system of user 2.

User 1 (an outgoing call)



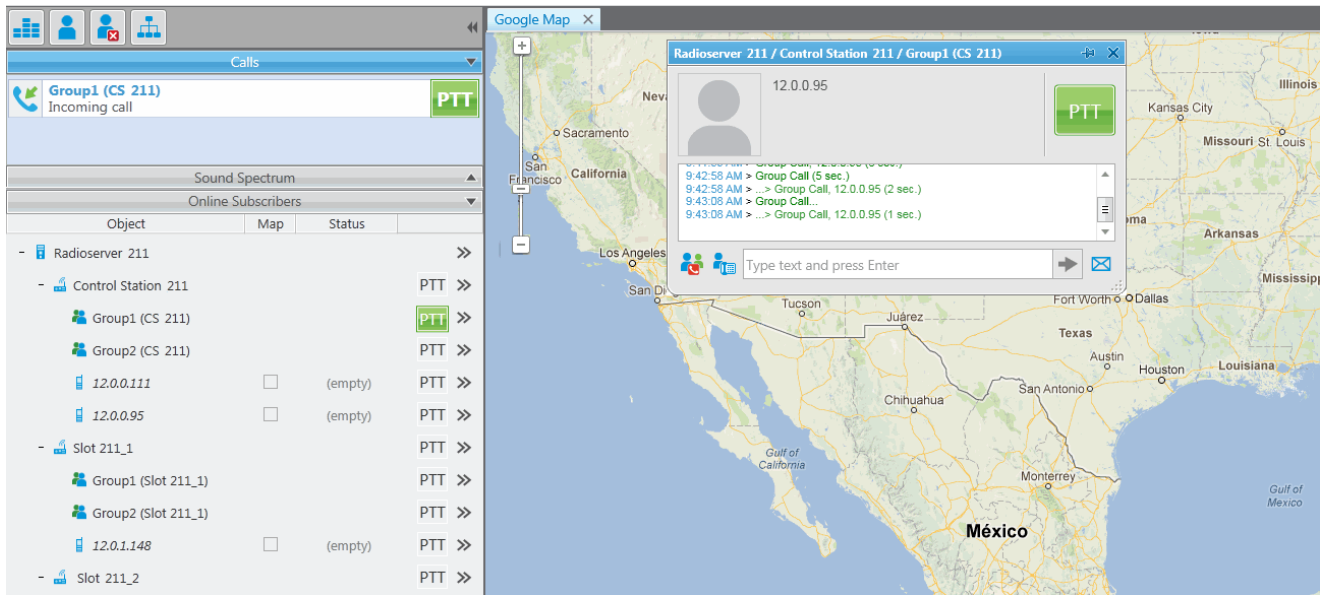
User 2 (incoming call, a radio has a corresponding indication about the incoming call)



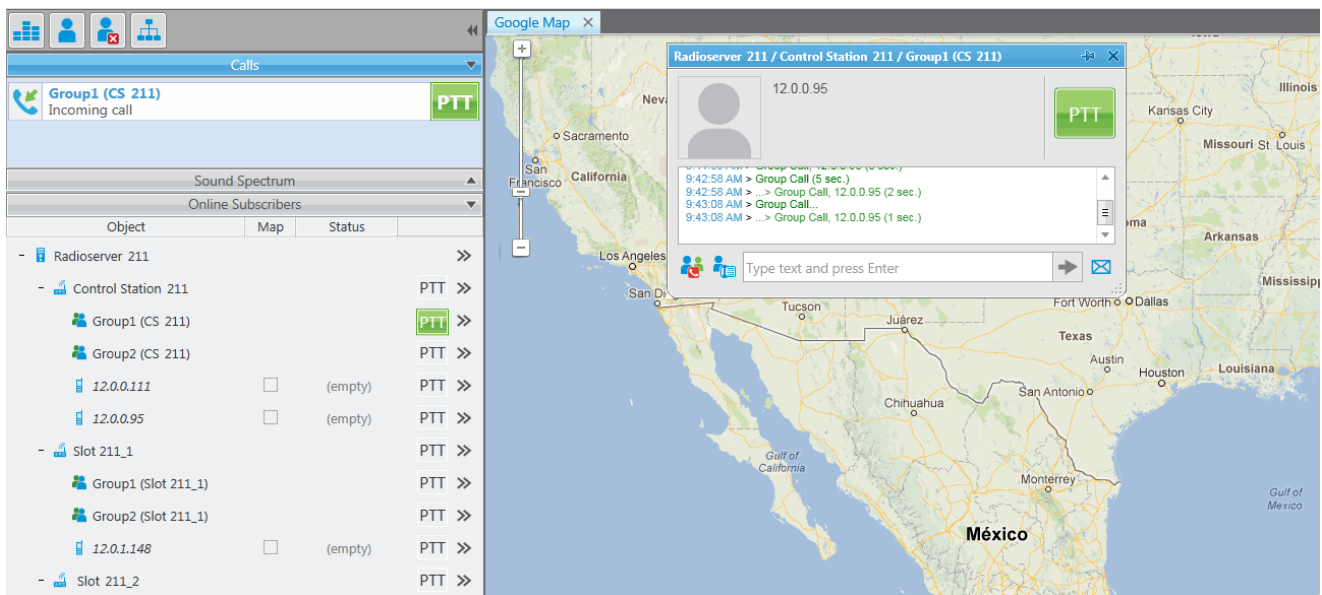
2. A group call is initiated by the radio registered in the system of *user 2*.

The radio, registered in the network of *user 2*, makes a group call. In this case, the group call is redirected to the appropriate group of Control Station 111 (*user 1*).

User 2:

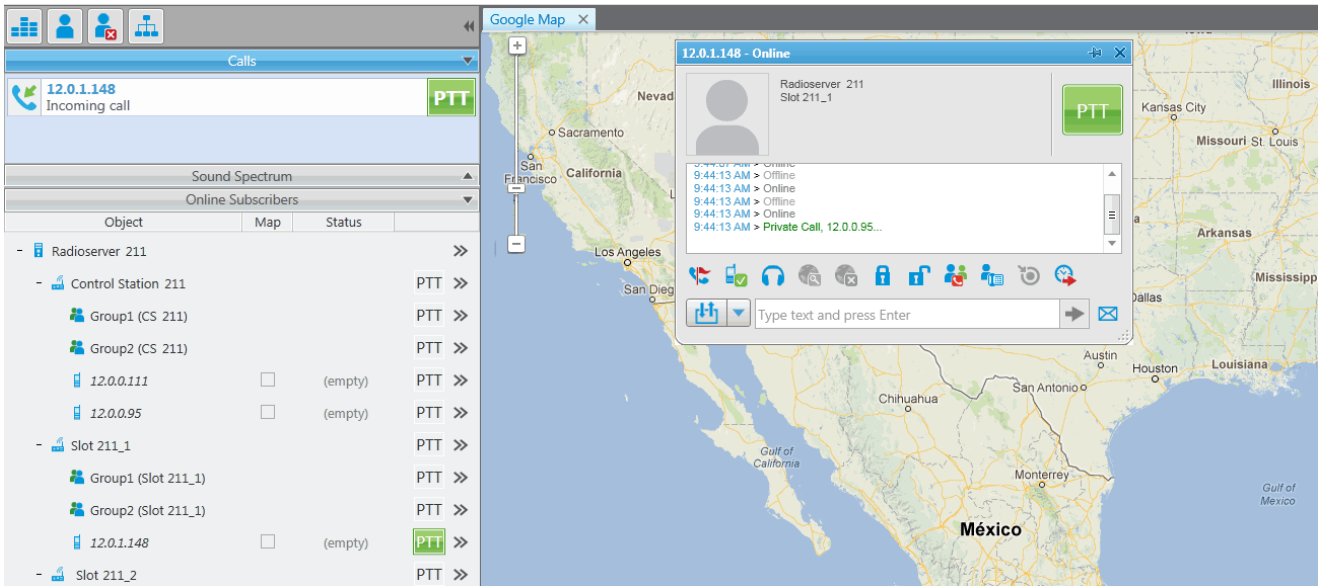


User 1:

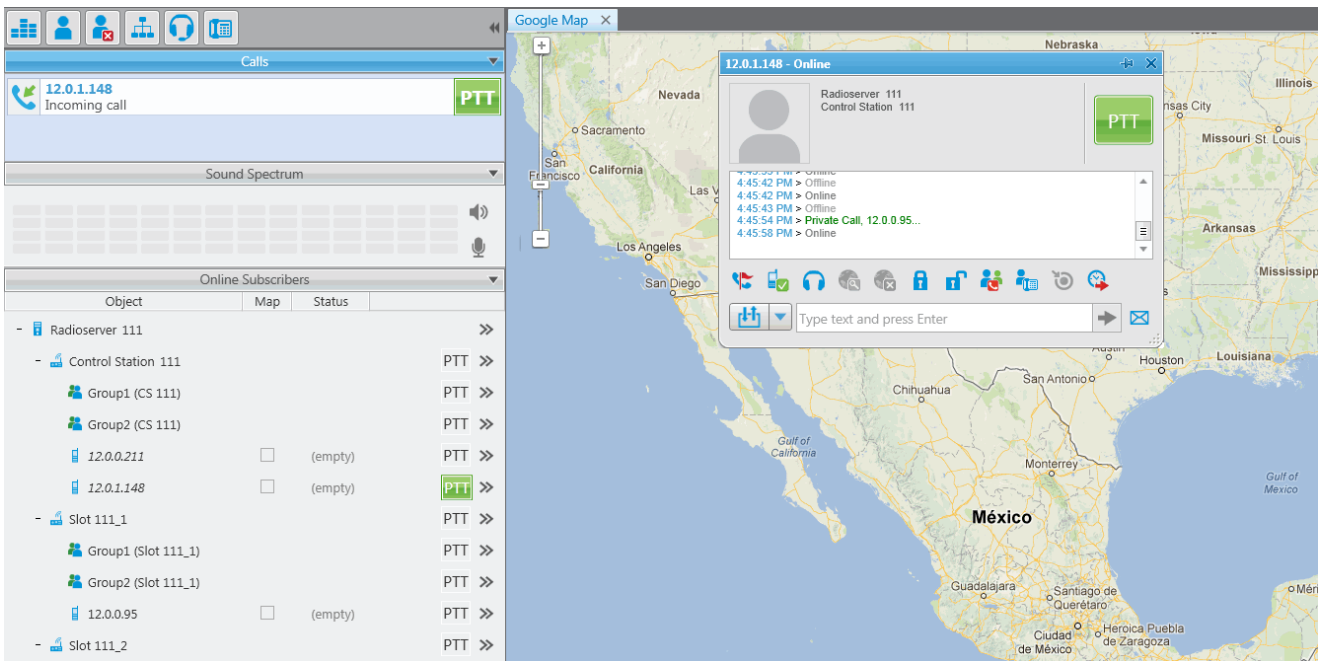


3. A private call from the radio, listed in the system of user 2, to the radio of user 1.

User 2:

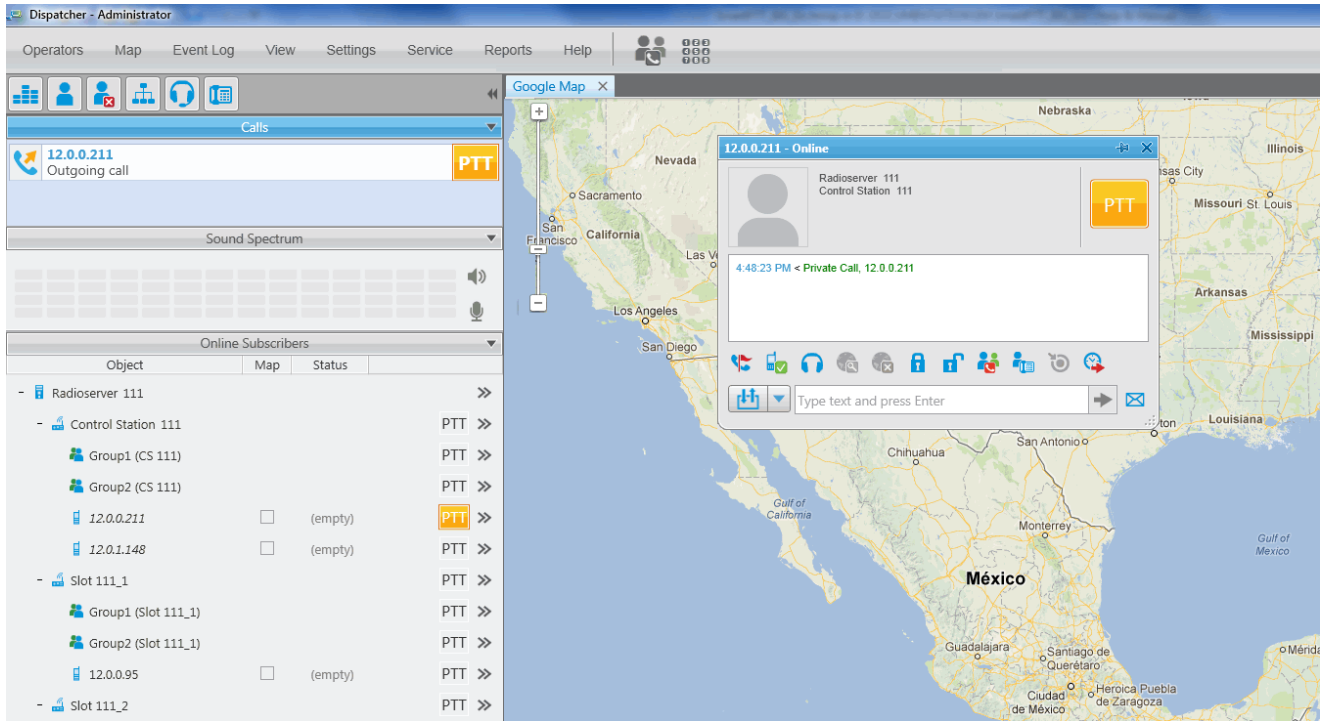


User 1:

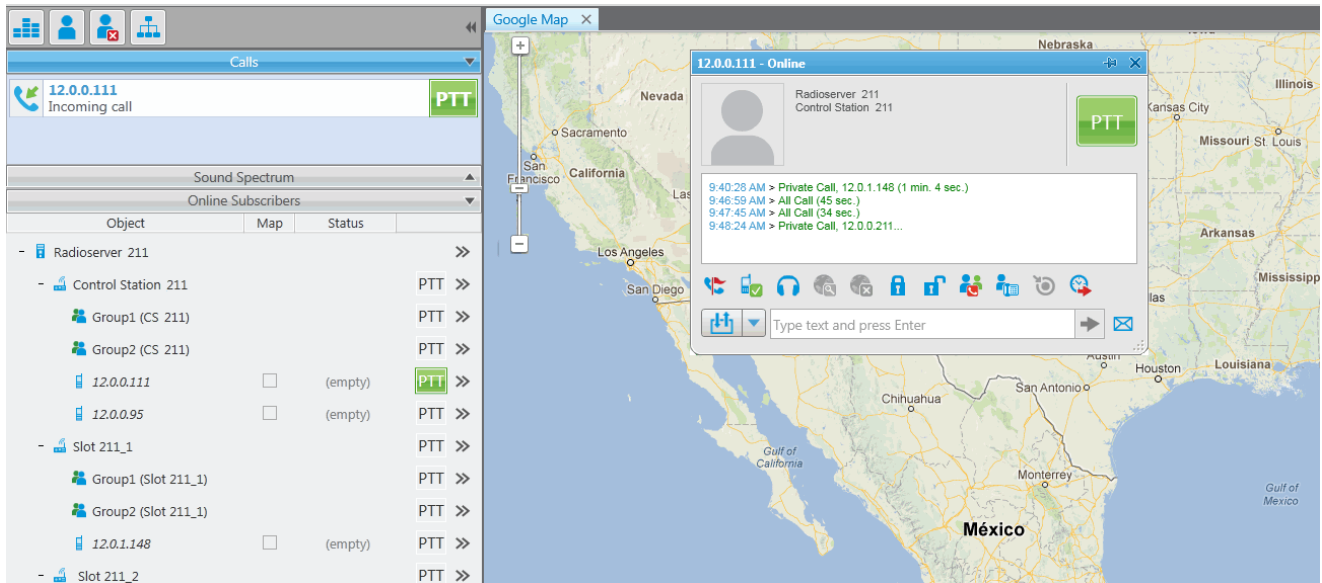


4. A call from the control station of user 1 to the control station of user 2.

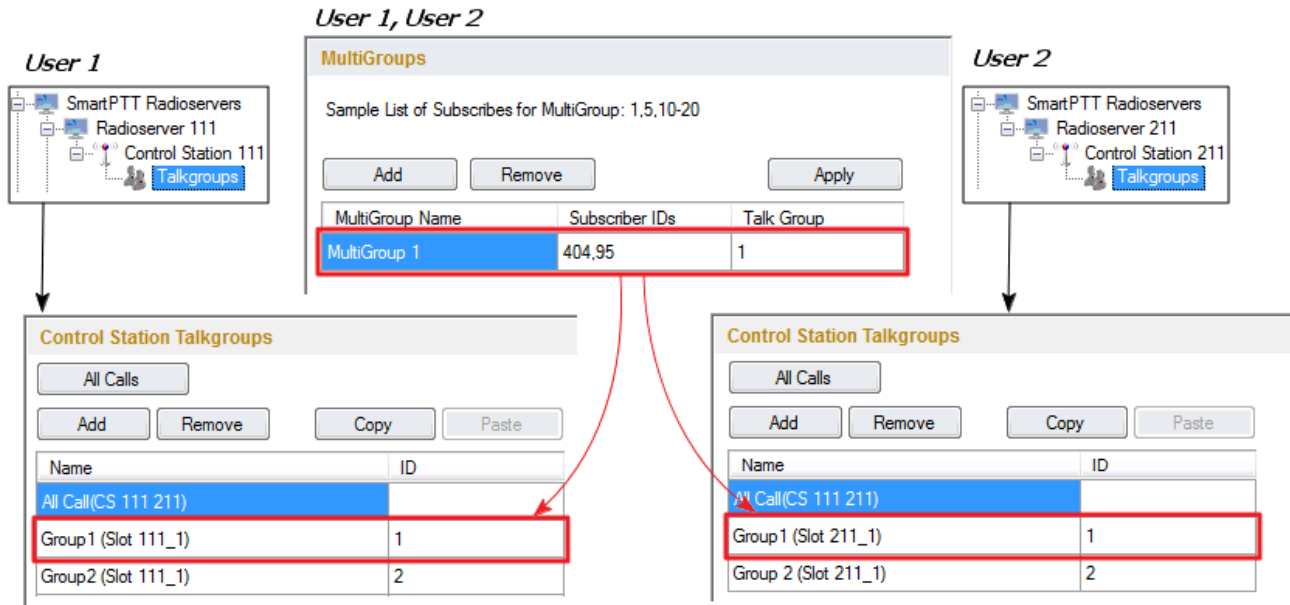
User 1:



User 2:

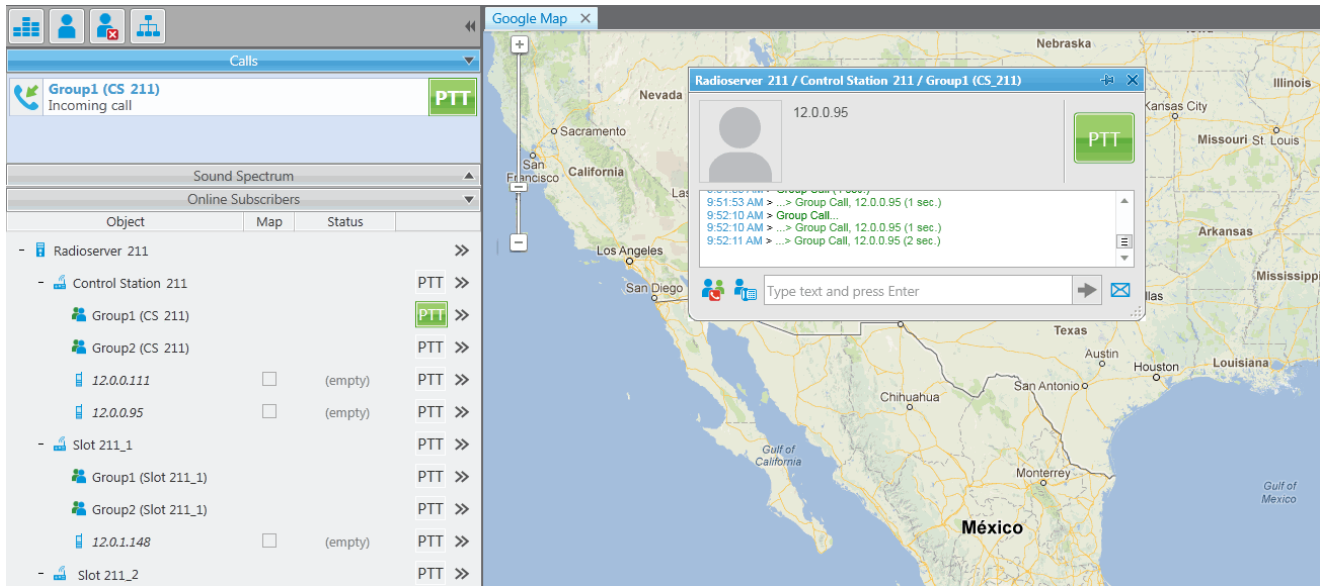


To redirect only group calls between two radioservers without setting up routes in SmartPTT Dispatcher, create multigroups with the list of radios, that support group call bridging in SmartPTT Radioserver Configurator (for both radioservers). For more details see the [Multigroups](#) section in the Help of SmartPTT Radioserver Configurator.

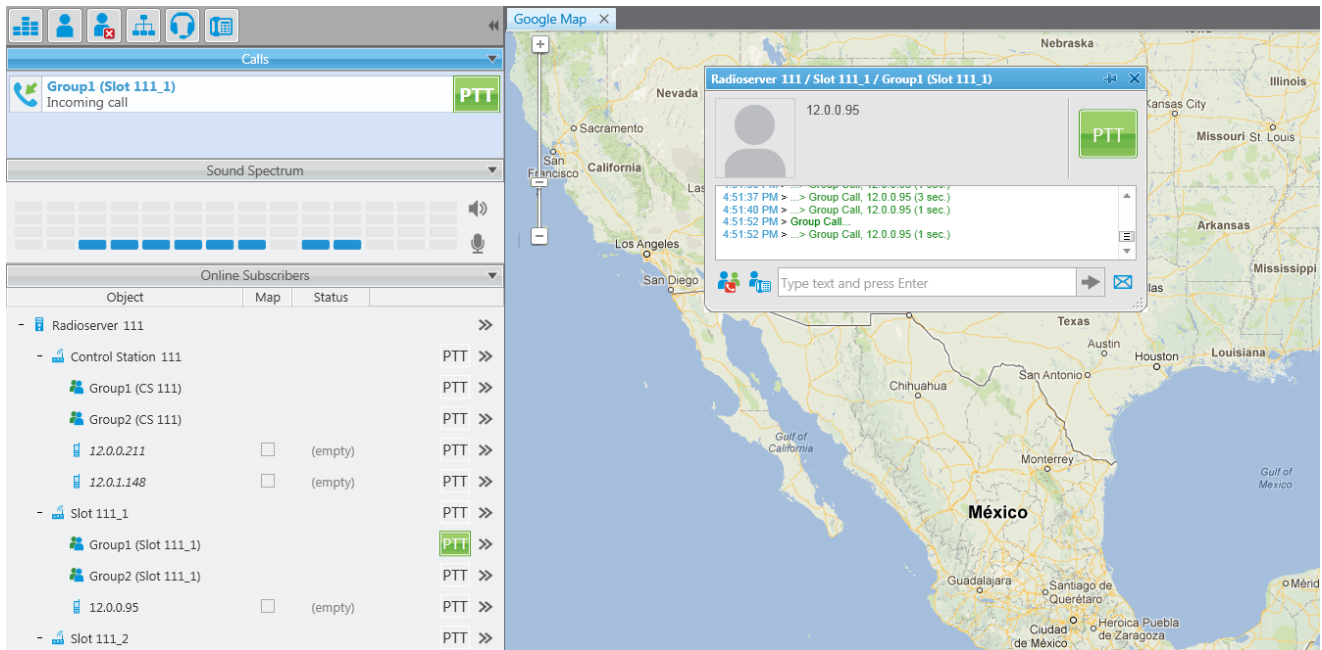


The following example demonstrates a call to Group 1. Group 1 corresponds to the created Multigroup 1 with the a list of radios – 95 (IP address = 12.0.0.95) and 404 (IP address = 12.0.1.148). The radio with the IP address = 12.0.1.148 (ID = 404) initiates a group call. The radio with the IP address = 12.0.0.95 (ID = 95) is also able to participate in the call due to Multigroup 1.

User 2:



User 1:



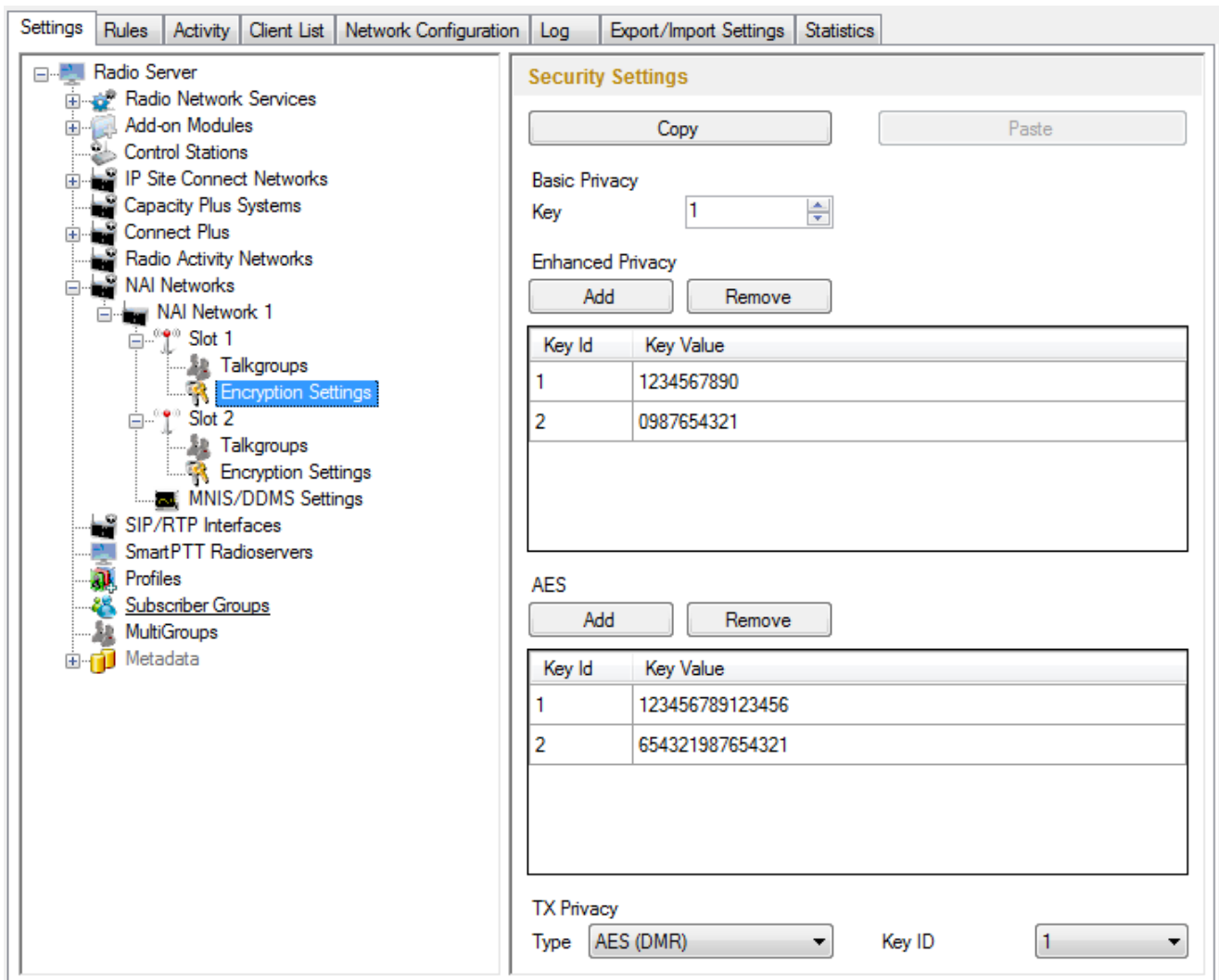
2.2.8 Security Settings

SmartPTT supports three types of privacy mechanisms – Basic, Enhanced, and Advanced Encryption Standard

(AES). Both Basic and Enhanced Privacy utilize Motorola proprietary algorithms and therefore are not interoperable with other vendor's privacy offerings. The main differences between Basic and Enhanced Privacy are that the Enhanced Privacy provides higher level of protection by means of 40-bit key length. Enhanced Privacy supports multiple keys in a radio compared to one key in the case of Basic Privacy.

The Advanced Encryption Standard (AES) is a specification for the encryption of electronic data established by the U.S. National Institute of Standards and Technology (NIST). The AES feature supports 256-bit key length, unlike Enhanced Privacy. Similar to Enhanced Privacy, the AES also supports multiple keys. For AES encryption a special license is required.

The **Encryption Settings** window allows you to specify the encryption keys for incoming and outgoing traffic on the digital channel.



Copy – copy encryption settings of the channel to the clipboard.

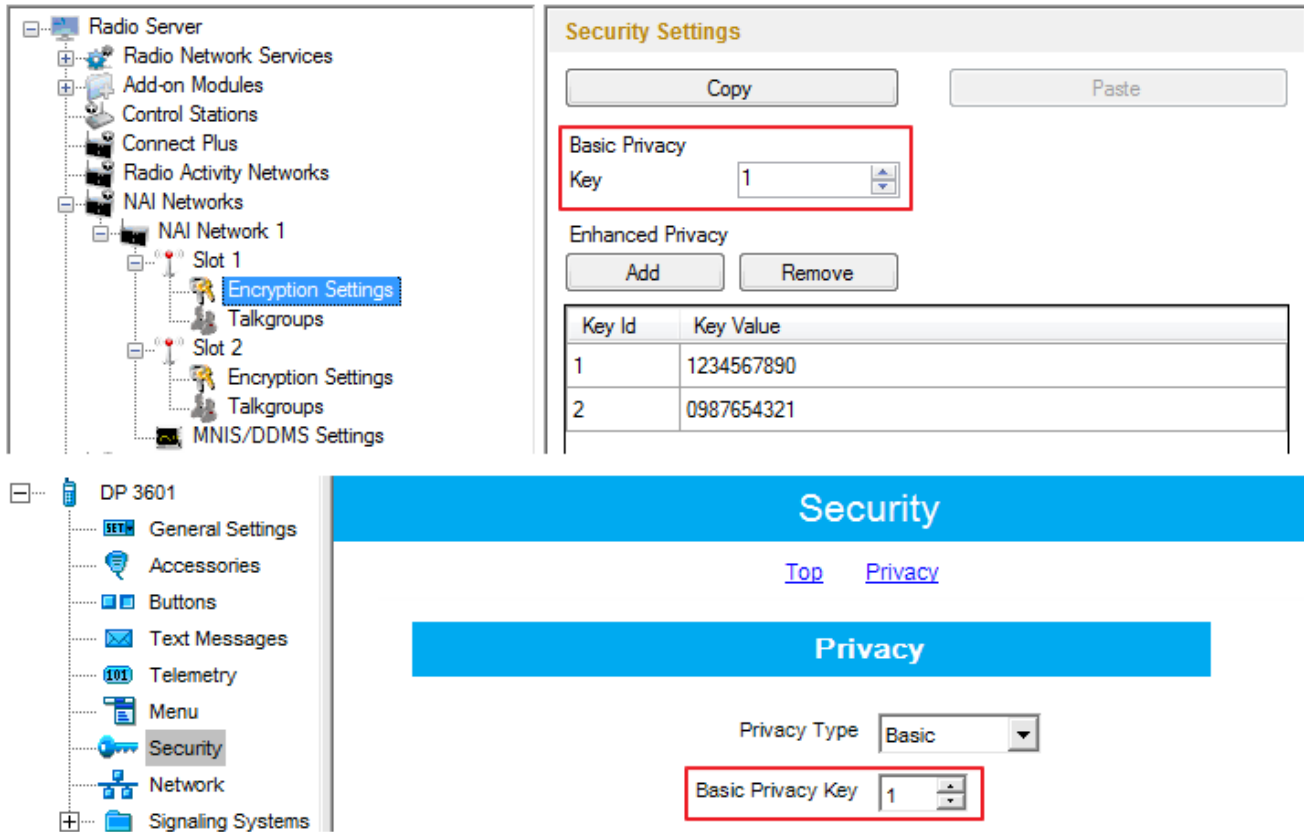
Paste – paste encryption settings of the channel from the clipboard.

Basic Privacy

Key – a key for the basic encryption mode. The value ranges from 1 to 255. Make sure that **Key** set in SmartPTT Radioserver Configurator matches **Basic Privacy Key** set in radio settings in MOTOTRBO CPS.

If basic encryption keys of receiving and transmitting side do not match, the receiving side hears only a distorted

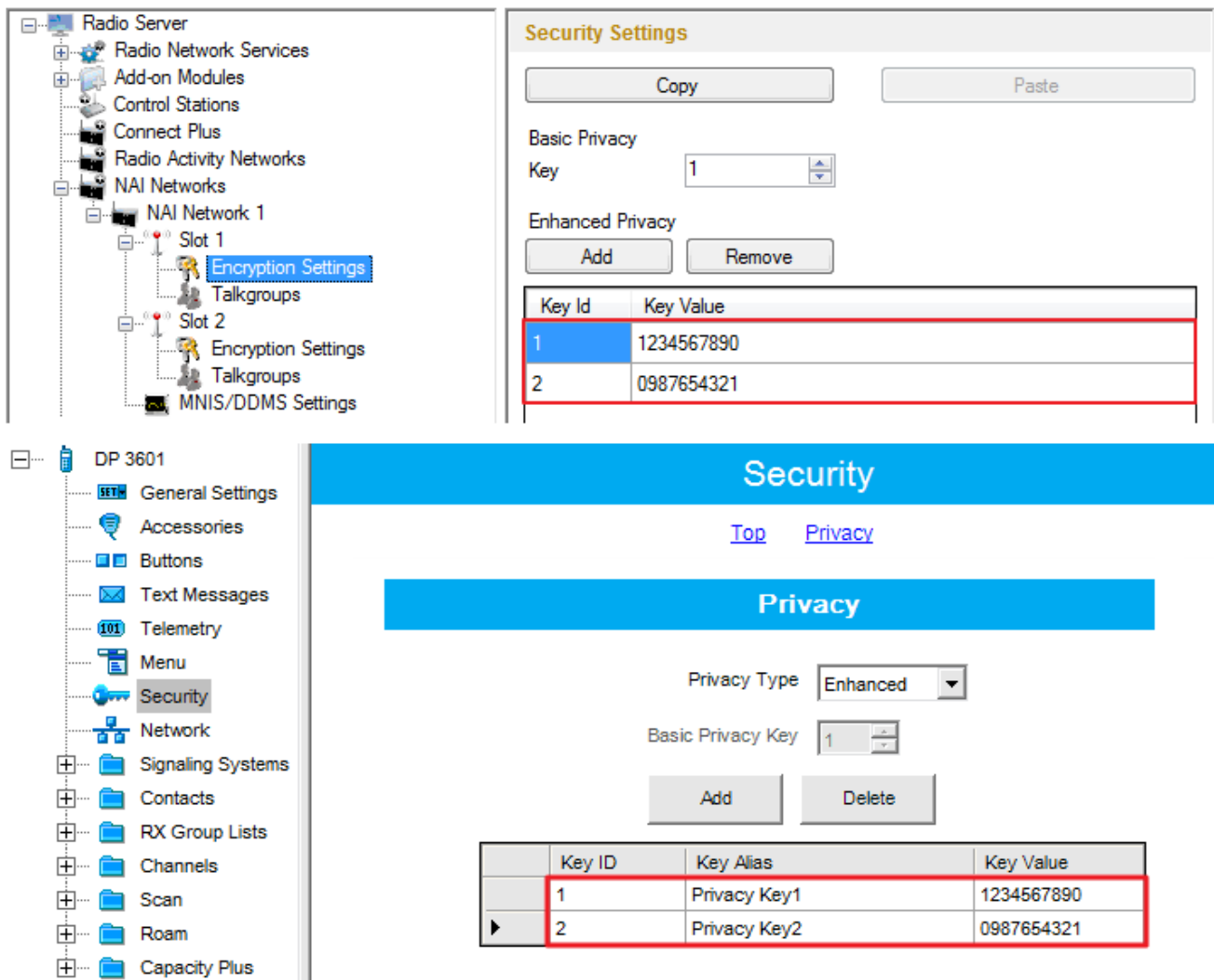
voice.



Enhanced Privacy

To add an enhanced privacy key, click **Add**. To edit the key, click the cell that contains the key you want to edit and type the new value. To delete a key, select the key from the list and click **Remove**.

Key Id and **Key Value** must match the values set in the radio settings in MOTOTRBO CPS. If the values in the **Key Id** fields are the same, but the values in the **Key Value** fields do not match, the receiving side hears only a distorted voice. If the key identifier receiving side does not coincide with one of the key identifiers in the list of the transmitting side, then transfer to the receiving party will not be heard.



AES

To add an AES privacy key, click **Add**. To edit the key, click the cell that contains the key you want to edit and type the new value. To delete a key, select the key from the list and click **Remove**.

Key Id and **Key Value** must match the values set in the radio settings in MOTOTRBO CPS and in MNIS Configuration Utility. If the values in the **Key Id** fields are the same, but the values in the **Key Value** fields do not match, the receiving side hears only a distorted voice. If the key identifier receiving side does not coincide with one of the key identifiers in the list of the transmitting side, then transfer to the receiving party will not be heard.

AES (Legacy Key) – AES encryption (Motorola Solutions implementation, MOTOTRBO firmware earlier than R2.4).

AES (Symmetric Key) – AES encryption (DMR-compliant implementation, MOTOTRBO firmware R2.4 and later).

TX Privacy

Type – allows you to select encryption mode on the side of SmartPTT Dispatcher.

If *No* is set, radioserver does not support outbound traffic encryption.

If *Basic* is set, the key specified in the **Key** field in the **Basic Privacy** section is used for encryption of outgoing

traffic.

If *Enhanced* is set, specify the **Key Id** value from the **Enhanced Privacy** table, which will be used to encrypt outbound traffic.

Select AES (Legacy Key) or AES (Symmetric Key), with the required **Key ID**, if you want to use AES (Legacy Key) or AES (Symmetric Key) for outgoing traffic. If TX Privacy is not set, and you have AES encryption for incoming traffic, AES (Symmetric Key) will be used for incoming traffic by default.

The screenshot shows the 'Security Settings' configuration window for Slot 1. On the left is a tree view of the system hierarchy. The main panel contains the following sections:

- Basic Privacy:** Includes a 'Copy' button and a 'Key' dropdown menu set to '1'.
- Enhanced Privacy:** Includes 'Add' and 'Remove' buttons and a table of key values.
- AES:** Includes 'Add' and 'Remove' buttons and a table of key values.
- TX Privacy:** This section is highlighted with a red border. It contains a 'Type' dropdown menu set to 'AES (Symmetric Key)' and a 'Key ID' dropdown menu set to '2'.

Key Id	Key Value
1	1234567890
2	0987654321

Key Id	Key Value
1	123456789012345678901234567890
2	09876543210987654321AABBCCDDEEFF1234567890

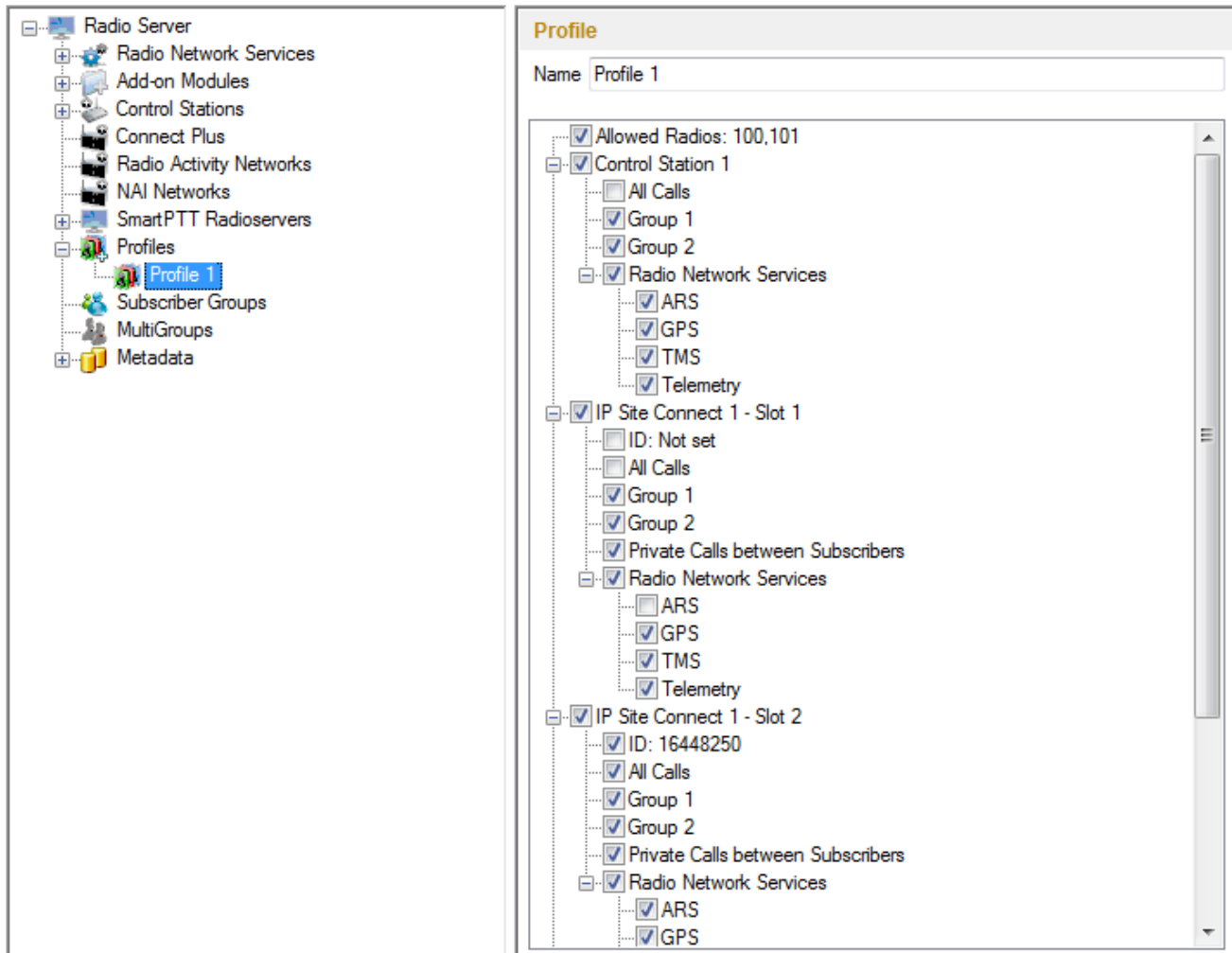
2.3 Profiles

SmartPTT Radioserver Configurator allows creating permission profiles. The permission profiles are used to limit operator access to objects managed by SmartPTT Radioserver (control stations, talkgroups, services, IP Site

Connect slots), and to provide additional opportunities in the organization of calls between dispatchers and radio subscribers.

To create a profile right-click **Profiles** in the setting tree of SmartPTT Radioserver Configurator and click **Add**.

At that, the following window opens.

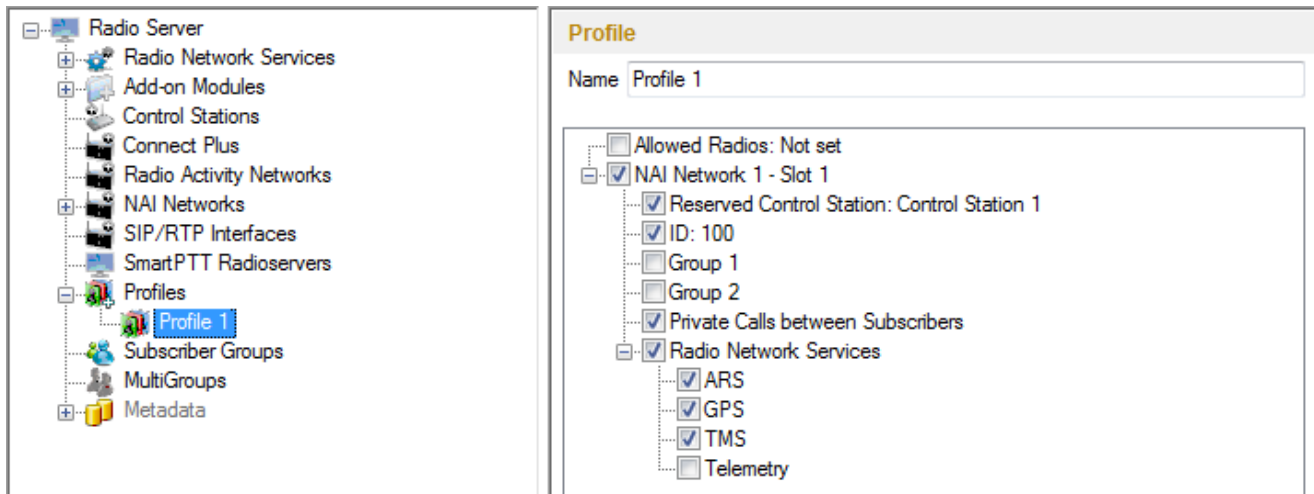


Use **Name** field to specify the profile name. Select control stations, talkgroups, IP Site Connect slots, services that will be available to the operator working under the profile.

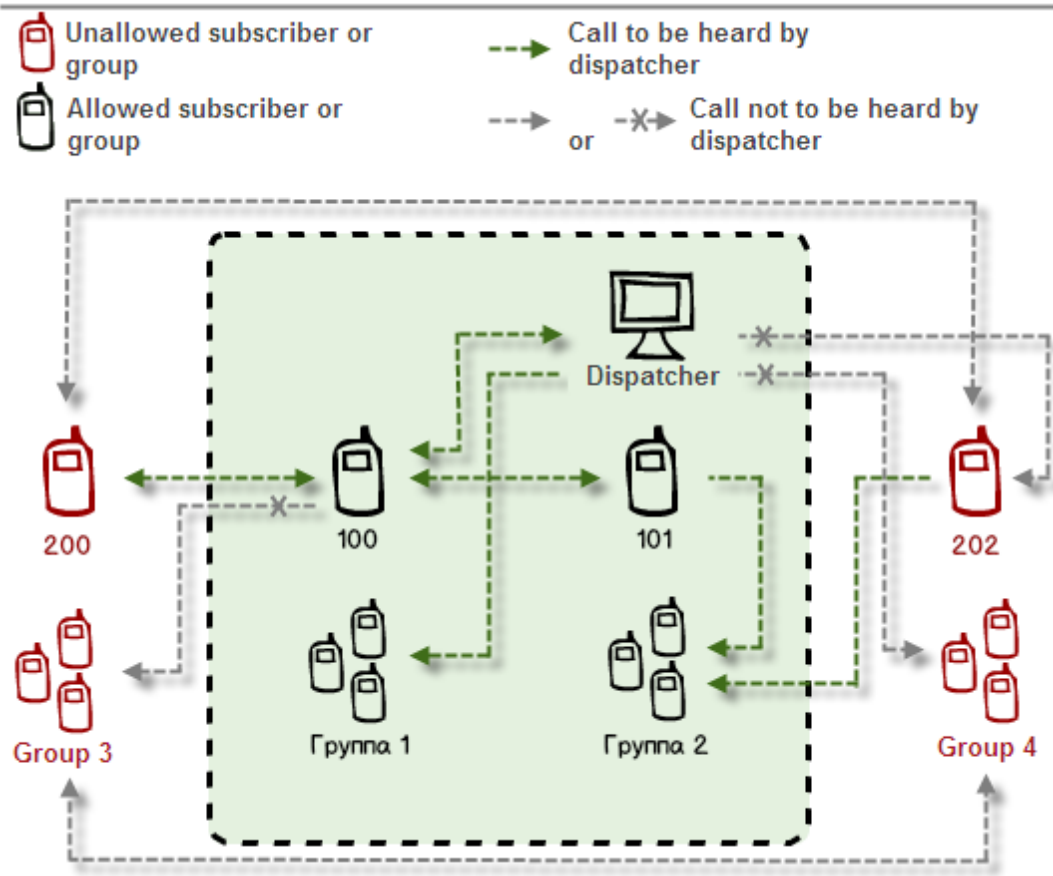
If there is more than one operator on the same channel, set unique **ID** for each operator. This will allow radio subscribers to make private calls to particular operators, dialing the specified ID instead of the **Slot ID**. This feature is available only in IP Site Connect network configuration.

In Capacity Plus and Linked Capacity Plus configurations based on NAI protocol, when using control stations

reserved for dispatcher private calls, a new parameter **Reserved Control Station** appears and the **ID** value matches the reserved control station **ID** automatically:



It is possible to limit the number of radios per operator. To do this, select the **Allowed Radios** check box and enter the radio IDs which will be allowed for this profile. Radios whose IDs were not added will be ignored by the operator. The following scheme shows how it works:



This is how this scheme can be presented in the table:

Call From	Call To				
	Allowed group	Unallowed group	Allowed radio	Unallowed radio	Dispatcher
Unallowed radio	allowed	Not allowed	allowed	Not allowed	Not allowed
Allowed radio	allowed	Not allowed	allowed	allowed	allowed
Dispatcher	allowed	Not allowed	allowed	Not allowed	allowed

Note: When adding allowed radios make sure that the same radios are specified in the [Limit Radios to Service](#) section (if this setting is enabled). Otherwise, the radios not registered in both lists will be regarded as unallowed.

Private Calls between Subscribers, if enabled, allows the dispatcher to hear private calls among radio subscribers, read their messages. This feature is available for networks with direct connection to repeater, e.g., IP Site Connect, Capacity Plus.

To allow the dispatcher to make an all or group call, select the corresponding check box. To allow the dispatcher

to use services like ARS, GPS, TMS, telemetry, select the corresponding check boxes.

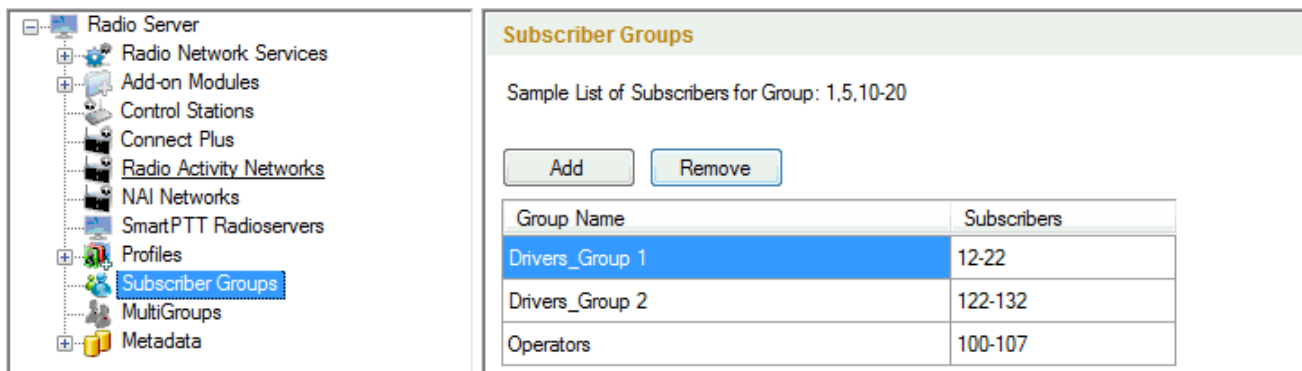
Save changes and restart the server to apply the new profile.

Note: Profile assignment is carried out at the dispatch console under the administrative account and described in the Help document of SmartPTT Dispatcher.

2.4 Subscriber Groups

Subscriber groups are used in many places, for example, to organize dynamic bridging of private calls, or to control telephone calls, or to set different location update intervals.

To add subscriber groups, click **Subscriber Groups** in the setting tree of SmartPTT Radioserver Configurator window. At that, **Subscriber Groups** window is displayed on the right.



The screenshot shows the 'Subscriber Groups' window in the SmartPTT Radioserver Configurator. On the left, a tree view shows the configuration structure, with 'Subscriber Groups' selected. The main window displays a table of subscriber groups. Above the table, there are 'Add' and 'Remove' buttons. The table has two columns: 'Group Name' and 'Subscribers'.

Group Name	Subscribers
Drivers_Group 1	12-22
Drivers_Group 2	122-132
Operators	100-107

Group Name – subscriber group name.

Subscribers ID – the list of radio IDs that will be included in the created group.

Dynamic routing is configured in SmartPTT Dispatcher in the **Route** window.

Select **Dynamic** in the **Route Type** list. Select the group in **Subscriber Group** list.

Note: Routing configuration is described in details in SmartPTT Dispatcher help (Bridging).

2.5 Multigroups

Multigroups are used to organize dynamic routing of group calls between sites without any bridging service enabled.

To add multigroups, click **Multigroups** in the list in SmartPTT Radioserver Configurator. At that, **Multigroups** window opens on the right.

MultiGroup Name	Subscriber IDs	Talk Group
MultiGroup 1	12-22,122-132	1
MultiGroup 2	100-106	2

Multigroup Name – random name of a multigroup.

Subscribers IDs – radio IDs that are included in the multigroup.

Talk Group – group ID (subscriber calls of this talkgroup will be routed dynamically).

There can be the following scenarios:

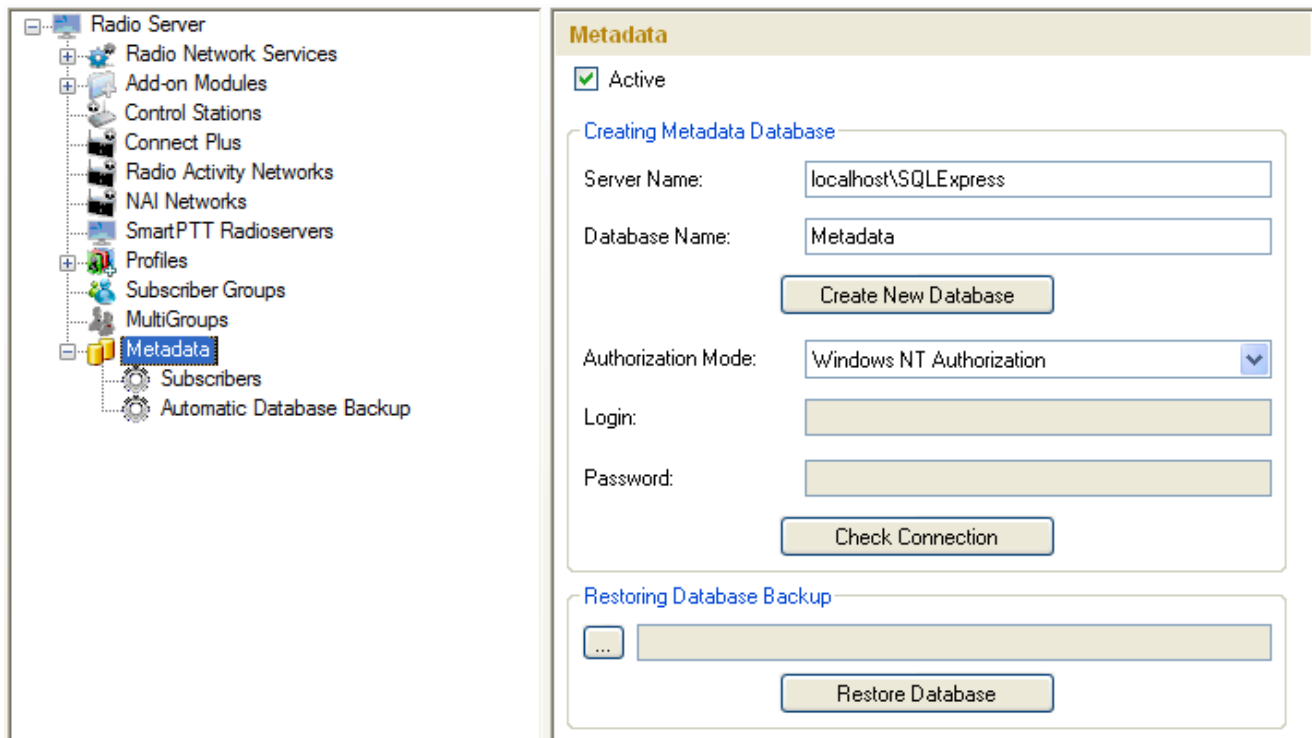
1. The initiator of the group call belongs to the multigroup;
2. The initiator of the group call does not belong to the multigroup;
3. The initiator of the group call does not belong to the multigroup, but at least one subscriber, to whom the call is addressed, belongs to the multigroup.
 - 1) If a group call is initiated by the subscriber included in the multigroup, this group call will be passed to all of the radios from the same talk group on all time slots and regardless of the IP Site Connect system.
 - 2) If a group call is initiated by the subscriber which is not included in the multigroup, this group call will be passed only to the subscribers of the talkgroup from the same time slot, which the initiator of the call is currently using.
 - 3) If a group call is initiated by the subscriber which is not included in the multigroup, and there is one or more subscribers who are included in the multigroup, this group call will be passed to all of the radios from the same talk group on all time slots and regardless of the IP Site Connect system.

Note: When you add, change or delete a multigroup, it is not necessary to restart the radioserver. Click **Apply** to make multigroup settings come into effect.

2.6 Metadata

To provide several dispatch consoles with one consistent list of subscribers it was decided to keep subscriber metadata, e.g., radio ID, radio subscriber name, and whether it supports GPS. This data appears in SmartPTT Dispatcher automatically as soon as the radioserver is up and running.

To create the database for subscriber metadata, select **Metadata** in SmartPTT Radioserver Configurator:



Type in the **Server Name** and the **Database Name** fields, and click **Create New Database**. If creation is successful, a message about successful database creation is displayed. If a database is not created, the cause of failure will be displayed at the bottom of the window.

Note: For the database server installed together with the radioserver enter the name using the following format: Name of computer\SQLEXPRESS (for example, MYCOMP\SQLEXPRESS).

Select **Authorization Mode** between the two:

SQL Server Authorization – you must have the login name and password of the account with SQL server access.

Windows NT Authorization – the user who has logged into the Windows system, must be listed in the SQL server's list of users to make connection.

Click **Check Connection**. In case of successful authorization the message "The connection is established successfully!" is displayed. If authorization fails, the cause will be displayed at the bottom of the window.

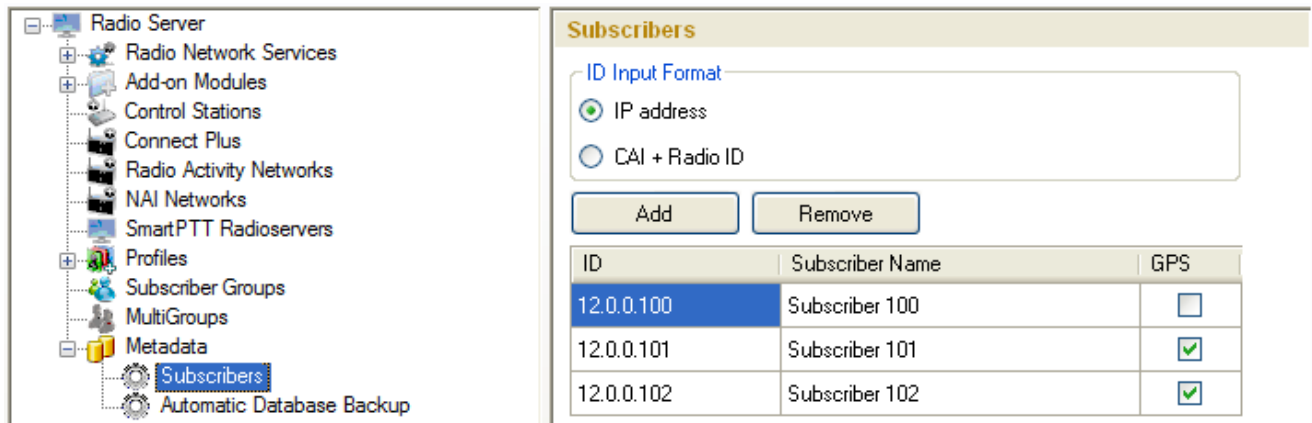
To restore the database from the backup folder, select the required database backup file in **Restoring Database**

Backup and click **Restore Database**.

Note: To set up the auto backup of the database, go to the [Automatic Database Backup](#) window.

2.6.1 Subscribers

To add subscriber metadata, select **Radio Subscribers**:



The screenshot shows the 'Subscribers' configuration window. On the left, a tree view shows the 'Subscribers' option selected under the 'Metadata' category. The main window has a section for 'ID Input Format' with two radio buttons: 'IP address' (selected) and 'CAI + Radio ID'. Below this are 'Add' and 'Remove' buttons. A table lists the current subscribers:

ID	Subscriber Name	GPS
12.0.0.100	Subscriber 100	<input type="checkbox"/>
12.0.0.101	Subscriber 101	<input checked="" type="checkbox"/>
12.0.0.102	Subscriber 102	<input checked="" type="checkbox"/>

ID Input Format – allows you to select the radio ID format to use.

To add a radio to the list, click on **Add**. At that, a window for entering the radio ID opens up. The ID format depends on the selection in the **ID Input Format** section. In the **Subscriber Name** column enter the name of the added radio subscriber. In the **GPS** column select whether the radio supports GPS.

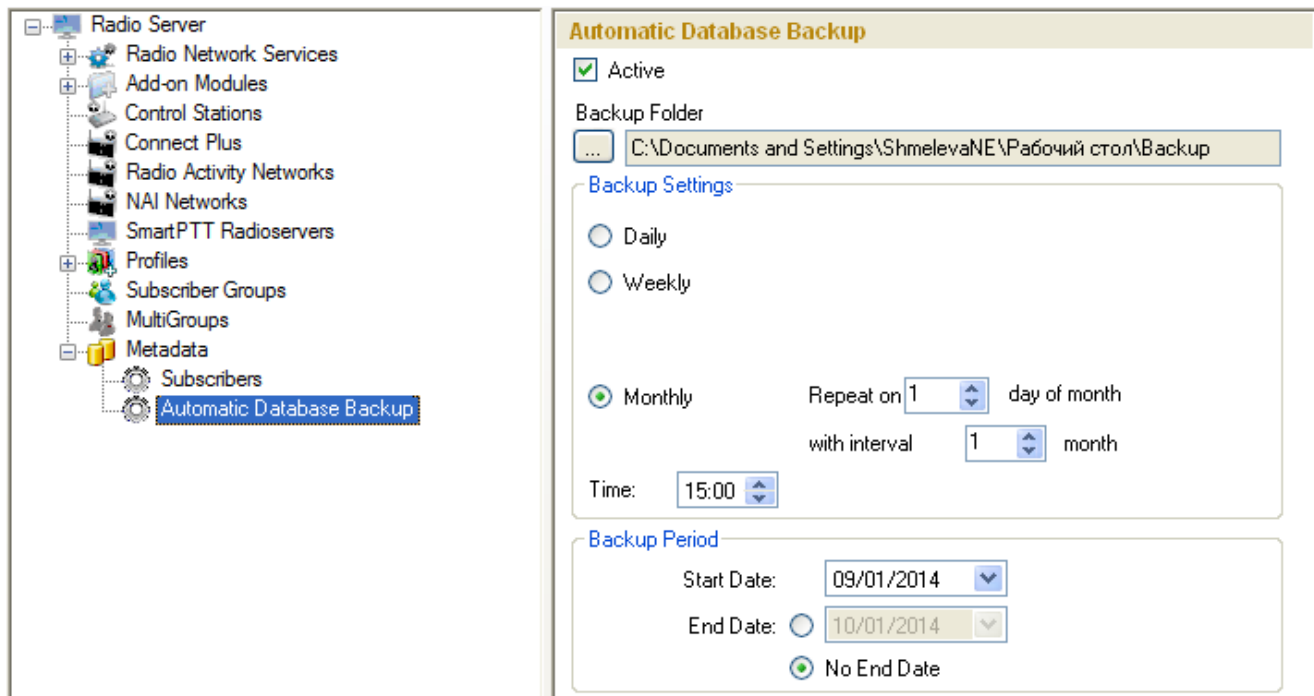
To delete the radio subscriber from the database, select it in the list and click on **Remove**.

Click **Save** to keep changes and restart the radioserver to see the newly added radio subscribers in the dispatch console.

2.6.2 Automatic Database Backup

Backing up data on a regular basis helps to protect it from being erased in case of the server hardware or software failure. SmartPTT Radioserver Configurator allows user to back up the metadata database automatically.

In order to set up automatic backup schedule of the metadata, select **Automatic Database Backup** under **Metadata** in the setting tree of SmartPTT Radioserver Configurator.



Active – select the check box to enable the ability to create database backups in the automatic mode.

Backup Folder – full path to the file for saving the database backup.

Backup Settings – schedule for creating the current database backup:

- **Daily** – every fixed day at the specified time (for example, every day, every third day at 9:00 a.m.).
- **Weekly** – every fixed day of the week at the specified time (for example, every Monday, Wednesday and Friday at 11:00 p.m.).
- **Monthly** – once a month on the fixed day of the selected month and at the specified time.

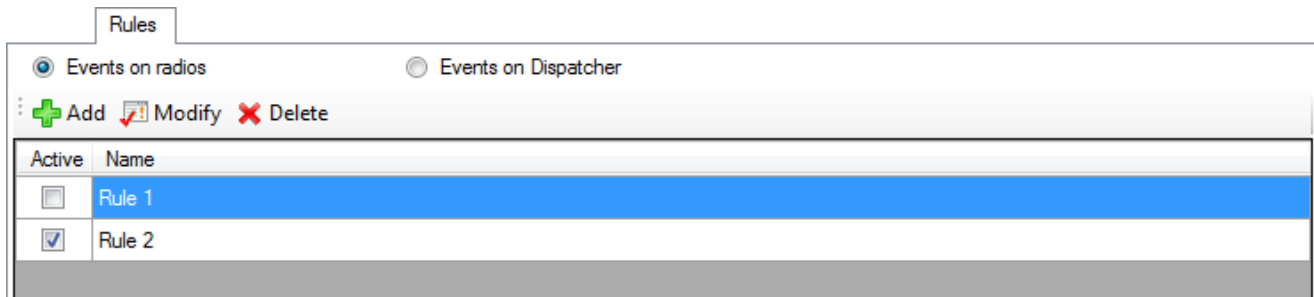
Backup Period – allows you to set time period when automatic database backup is to be made according to the selected backup settings.

Note: The number of stored backup files in the same folder is limited to 3. Otherwise, when creating a new copy, the old files are deleted.

2.7 Rules

SmartPTT Radioserver allows setting rules to perform automatic actions (playback sounds, send messages, play predefined voice notifications) based on conditions specified in the **Rules** tab in SmartPTT Radioserver Configurator.

To set up rules, open the **Rules** tab in SmartPTT Radioserver Configurator.



Events on radios – allows to specify conditions for rules related to the subscriber radios.

Events on Dispatcher – allows to specify conditions for rules related to SmartPTT Dispatcher.

To create a new rule for events on radios, click **Events on radios** and then click **Add**. To change the existing rule, click **Modify** or double-click on the rule name in the list of rules.

The screenshot shows the 'Rule' configuration dialog box. It has a title bar with 'Rule' and standard window controls. The main area is divided into two sections: 'Conditions' and 'Actions'.

Conditions Section:

- Name: Rule 1
- Active:
- Direction: Equals Incoming
- Event Type: Equals Call Message Status
- Date:
- Additional Information:
- Control Station:
- Talkgroup:
- Subscriber:
- Status:
- Duration:

Actions Section:

- Play Sound: C:\alam.wav
- Send Message: Call/Message/Status
- Send To:
 - Subscriber
 - Talkgroup: 1 IP Site Connect 1 - Slot 1
- Send Message To Initiator
- Start Voice Notification: [Empty dropdown]
- Stop Current Voice Notification: Any

At the bottom, there are 'Save' and 'Cancel' buttons.

Name – any name of the rule.

Active – activates the rule.

The **Conditions** area defines the set of rule criteria. Each condition is described by:

- Rule name.
- Operation – mathematical operations to be performed on the attribute value.
- Value – condition value.

Name	Operation	Value
Direction	Equals	Incoming, Outgoing
Event Type	Equals, Not Equals	ARS, Call, Message, Telemetry, Alarm, Status, Block
Date	In Interval	Period of time
Additional Information	Equals, Contains	Type event additional information, e. g. text messages, titles and description of tasks, talkers from a group call.
Control Station	Equals, Contains	Control station name
Subscriber	Equals, Not Equals	Subscriber ID
Talkgroup	Equals, Contains	Talkgroup name
Status	Equals, Not Equals	Status from the list of statuses
Duration	Equals, Not Equals, Greater, Greater than or Equal, Less, Less than or Equal, In Interval	Duration of time (seconds)

To create a new rule for events on SmartPTT Dispatcher, click **Events on Dispatcher** and then click **Add**. To change the existing rule, click **Modify** or double-click on the rule name in the list of rules.

Connection to Radioserver – if *Lost* is selected, the system performs predefined actions when the connection between SmartPTT Radioserver and the last dispatch console is terminated. If *Restored* is selected, the system performs predefined actions when the first dispatch console connects SmartPTT Radioserver.

Timeout (s) – time period in seconds, after which the SmartPTT Radioserver performs actions defined under the **Actions** area.

Under **Actions** you can define the actions that the system will perform when the rule conditions are fulfilled:

- **Play Sound** – when selected, you can specify the path to the folder with the audio file to play, and select a subscriber or a talkgroup to who you want it to be sent. Supported audio file format is WAV.
- **Send Message** – when selected, there is a field for short text messages, options defining text message recipients (Subscriber or Talkgroup, specified by ID and Channel), and the **Send Message to Initiator** option.

Note: The **Send Message to Initiator** option is available only for **Events on radios**.

- **Start Voice Notification** – when selected, you can specify the notification to play (to learn how to create a voice notification, see [Voice Notifications](#)). If the rule conditions were fulfilled at the moment when the operator played a voice notification, the voice notification specified in the rule actions won't play. To avoid this, select **Stop Current Voice Notification**. You can also specify which notification must be stopped.

2.8 Activity

The **Activity** tab displays events going on the radio network. Mostly, it is used for debugging purposes, but it can be useful for Administrators too.

To open **Activity**, click in the **Activity** tab in SmartPTT Radioserver Configurator.

Activity

Auto Scroll

Filter

Registration (ARS)

Locations (GPS)

Calls (Call)

Messages (TMS)

Telemetry (Tel)

Other (Other)

All Events

Date/Time	Type	Control Station	Event
2/6/2014 12:26:38 ...	Other	IP Site Connect 1 - Slot 1	Connected
2/6/2014 12:26:38 ...	Other	IP Site Connect 1 - Slot 2	Connected
2/6/2014 12:28:35 ...	Other	IP Site Connect 1 - Slot 1	Disconnected
2/6/2014 12:28:35 ...	Other	IP Site Connect 1 - Slot 2	Disconnected
2/6/2014 12:29:07 ...	Other	Control Station 1	Connected

There are six types of monitored events:

1. Registration
2. Messages
3. Location
4. Telemetry
5. Calls
6. Other (includes connection or disconnection of slots or control stations)

Select an event to monitor it.


Date/Time – date and time of the event.

Type – one of the six event types.

Control Station – source of the event.

Event – short description of the event and its status.

Auto Scroll – by default the list of monitored events scrolls down to the latest recording. If you want to switch off the automatic scrolling, unselect this option.

The **Clear Event Log** button  deletes all the records of the registered events and cleans the log.

2.9 Client List

The **Client List** tab shows the list of dispatch consoles connected to the radioserver.

To open the **Client List**, click in the **Client List** tab.

Client List			
Client Name	Address	Connect Time	Profile
Admin	192.168.0.224-53823	5/7/2013 11:26:30 AM	

To connect the dispatch console to the radioserver, go to the **Settings > Radioservers** in SmartPTT Dispatcher and select the radioserver to which you want to be connected. At that, in the **Client List** tab of SmartPTT Radioserver Configurator the connected dispatch console will show up.

Client Name – name of the dispatch console. It is always a "Dispatcher".

Address – the IP address of the dispatch console.

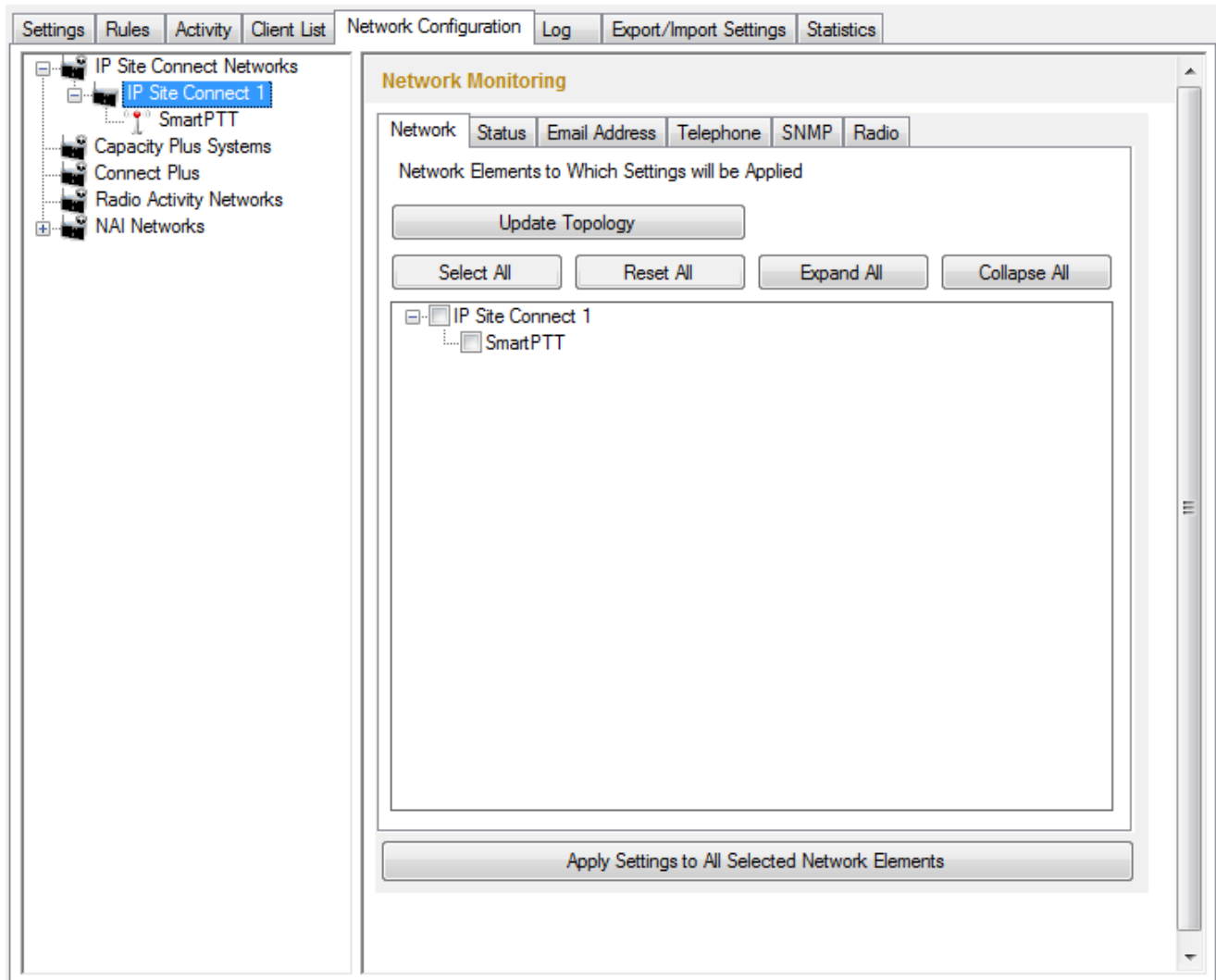
Connect Time – time of the last session.

Profile – assigned profile to the dispatcher.

Note: Profiles are assigned in SmartPTT Dispatcher under **Settings > Radioservers**. For more information about profiles see [Profiles](#) in the Help document.

2.10 Network Configuration

In the **Network Configuration** tab you can set up elements of the networks used in the system. The added elements will be displayed in the **Topology** tab. You can also define parameters for alarm notification sending.

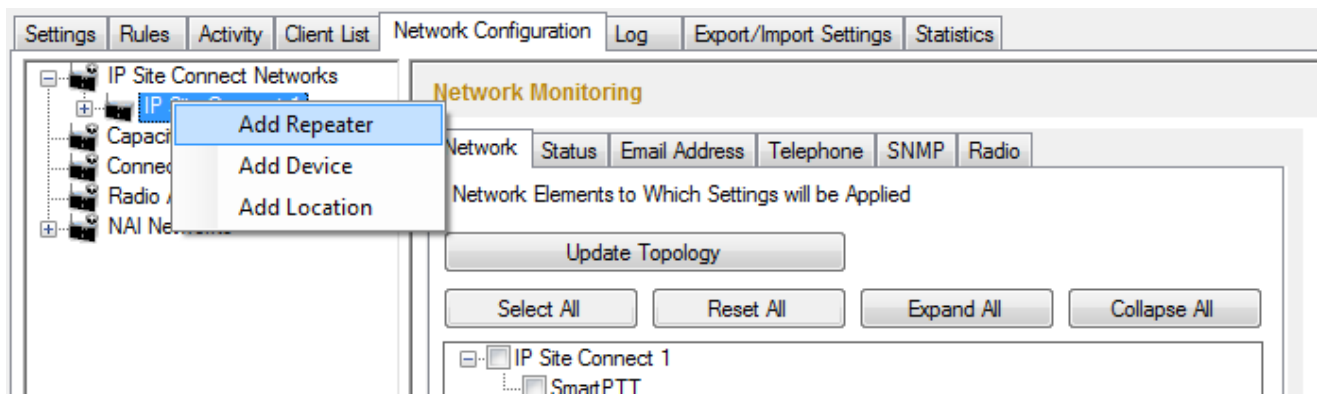


Note: This tab is available only if there is a license for monitoring. If you have it, make sure you have selected the **Active** check box in the [Monitoring](#) window.

To add elements of the network, select the network in the list. The supported network elements include: repeaters, routers, UPS and location. To add devices, open the context menu by right-clicking on the existing network. The context menu contains the following options:

- Add Repeater
- Add Device
- Add Location

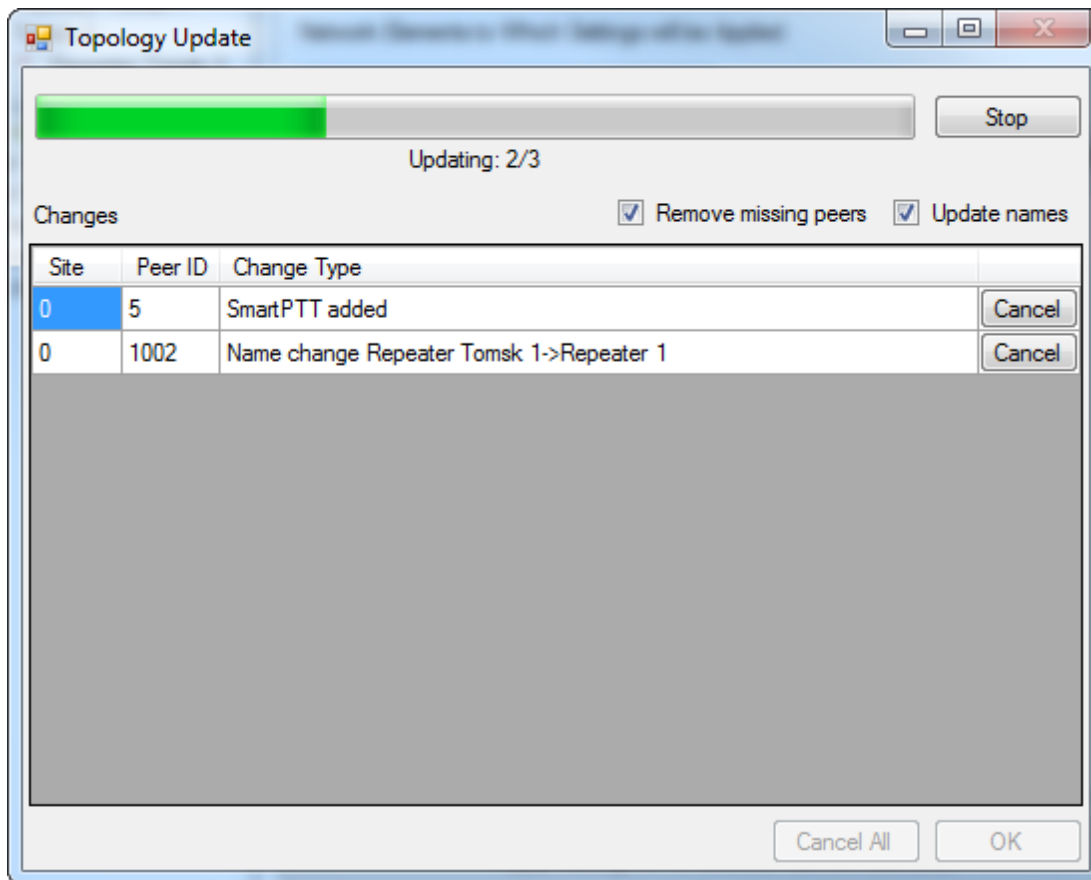
Note: Radioservers are added automatically with the name *SmartPTT*.



The **Network** tab shows all the added elements. You can select, clear, expand and collapse the elements. This tab can be used for setting up common parameters, i.e., applied to all elements.

The screenshot displays the Network Configuration interface. The top navigation bar includes tabs for Settings, Rules, Activity, Client List, Network Configuration (selected), Log, Export/Import Settings, and Statistics. On the left, a tree view shows the network structure under 'IP Site Connect Networks', with 'IP Site Connect 1' selected. Below it are 'Radioserver SmartPTT', 'Repeater Tomsk 1', 'Tomsk 2', 'Repeater Tomsk 2', 'Cisco_TMSK 2', and 'Eaton_TMSK 2'. Other categories include 'Capacity Plus Systems', 'Connect Plus', 'Radio Activity Networks', 'NAI Networks', and 'NAI Network 1'. The main panel, titled 'Network Monitoring', has tabs for Network, Status, Email Address, Telephone, SNMP, and Radio. It contains a section 'Network Elements to Which Settings will be Applied' with an 'Update Topology' button and 'Select All', 'Reset All', 'Expand All', and 'Collapse All' buttons. Below this is a tree view of the selected elements: 'IP Site Connect 1' (expanded) containing 'Tomsk 2' (expanded) with sub-elements 'Repeater Tomsk 2', 'Cisco_TMSK 2', and 'Eaton_TMSK 2', and 'Radioserver SmartPTT' with sub-element 'Repeater Tomsk 1'. At the bottom of the panel is an 'Apply Settings to All Selected Network Elements' button.

You can upload the network elements, instead of adding them manually. To do it, click **Update Topology**. At that, a pop-up window opens and the update process begins:



Stop – interrupts the ongoing update process. All the changes that were made prior interruption—these you can see in the **Changes** table—will be applied after clicking **OK**.

Remove missing peers – checks if there are any missing peers to exclude them from network topology.

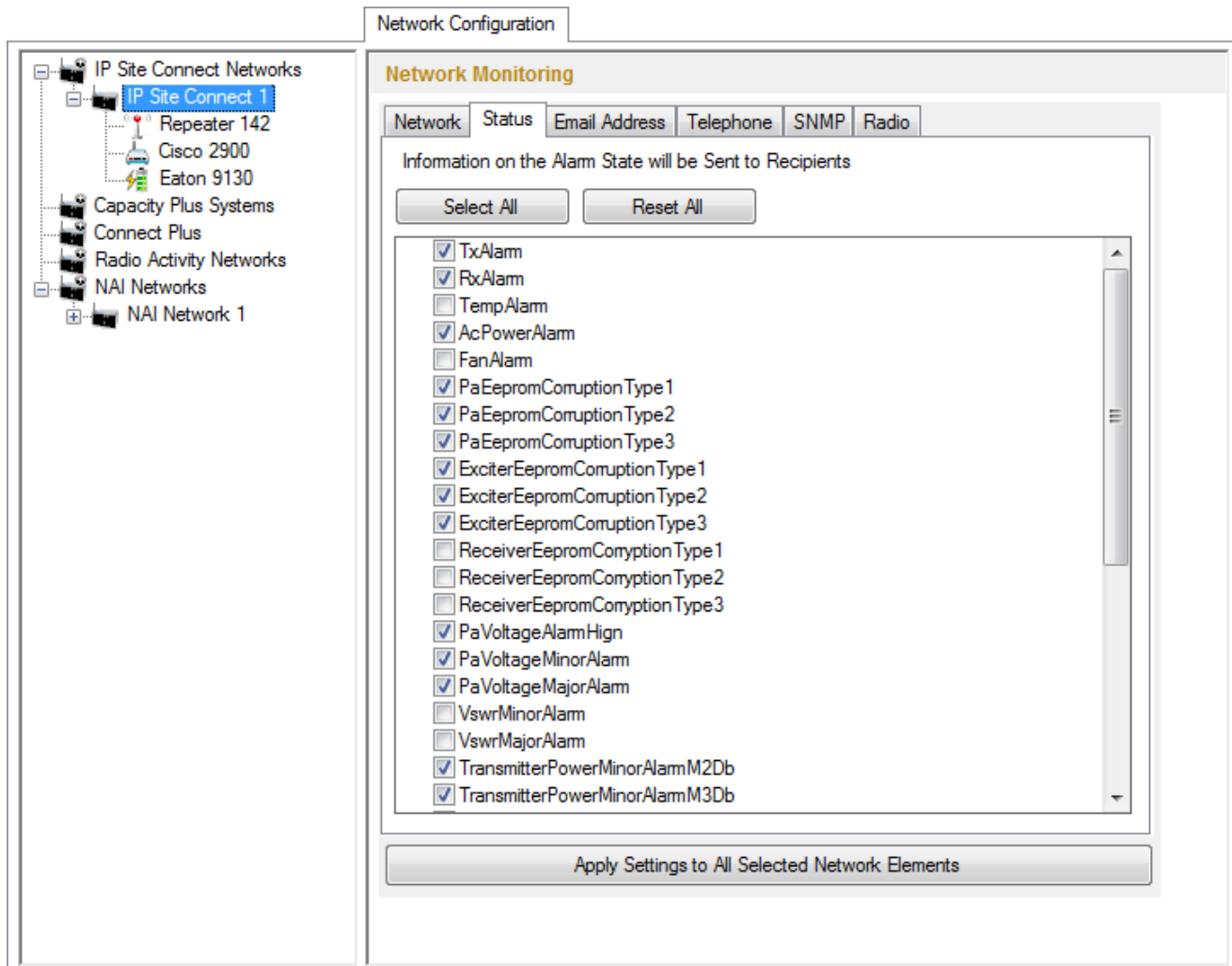
Update names – replaces names of repeaters by those defined in CPS.

The **Changes** table shows all the changes made during the update process. You can discard changes by clicking **Cancel**. To discard all changes, click **Cancel All**.

To apply the changes, click **OK**.

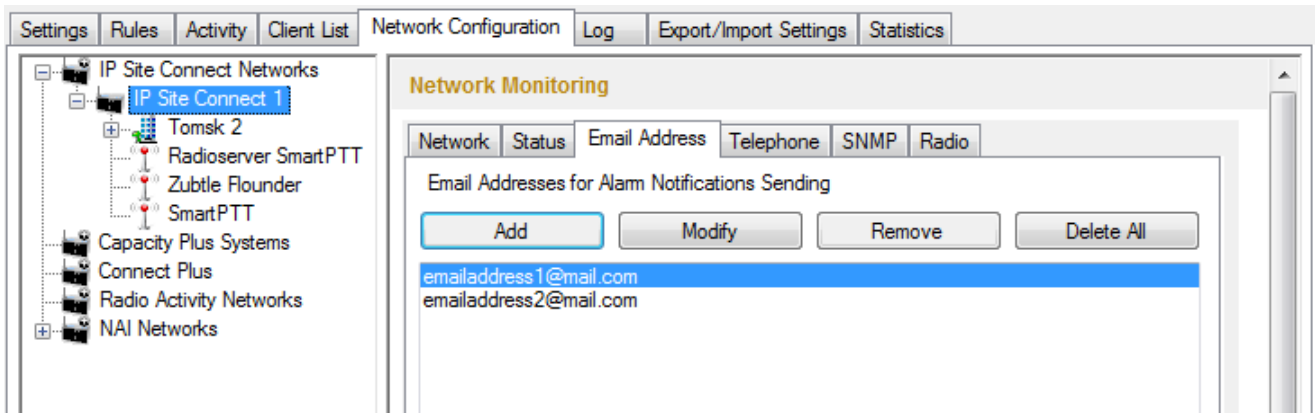
Tabs (**Status**, **Email Address**, **Telephone**, **SNMP**, **Radio**) are used for alarm notification settings.

In the **Status** tab you can select alarms that will trigger alarm notification sending:

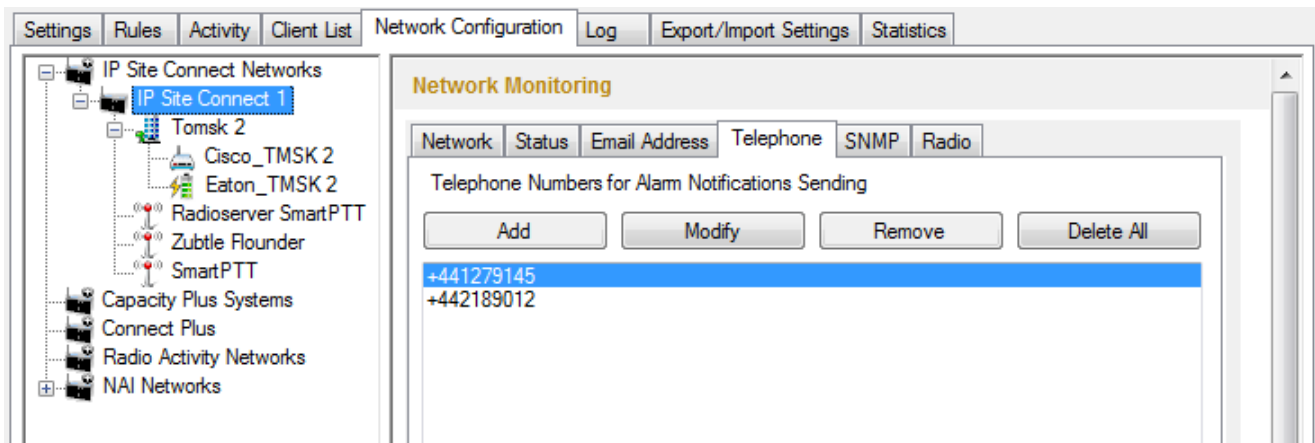


To save the list of alarms for all the selected elements of the network (see the [list_of_network_elements](#)), click **Apply Settings to All Selected Network Elements**.

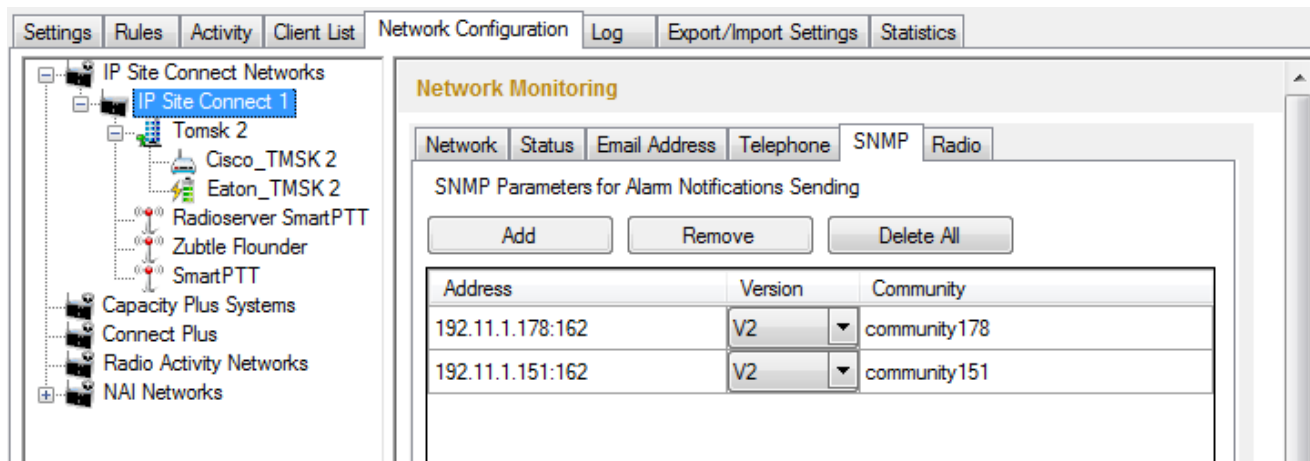
In the **Email Address** tab define email addresses where the alarm notifications are to be sent:



In the **Telephone** tab define telephones where the alarm notifications are to be sent:



In the **SNMP** tab, define SNMP clients where alarm notifications are to be sent:

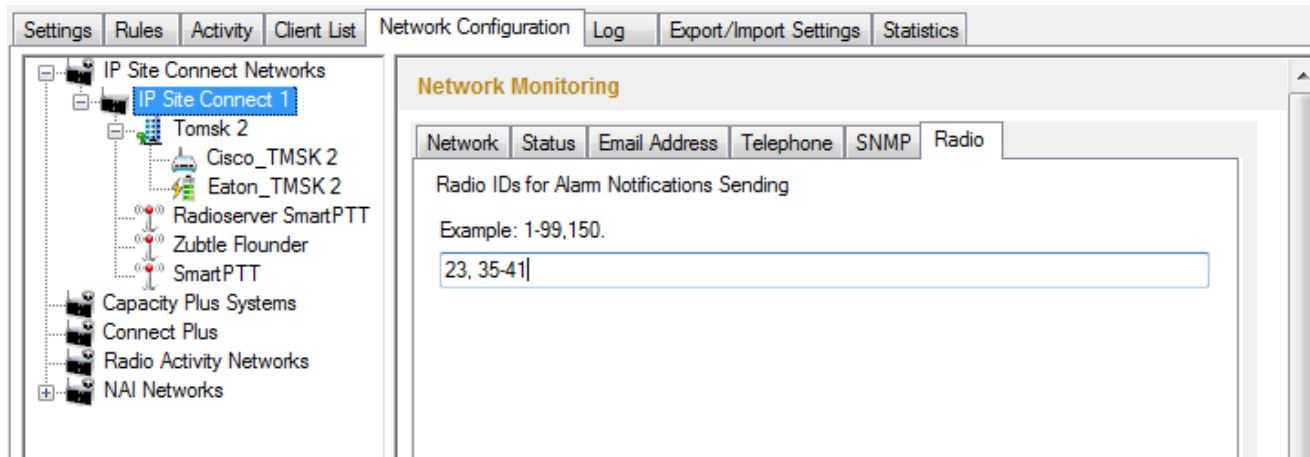


Address – address and port of the PC to receive the data. Use port 162 as default. Remember to have SNMP client installed on the PC.

Version – version of the SNMP data received. The SNMP client must be able to read it.

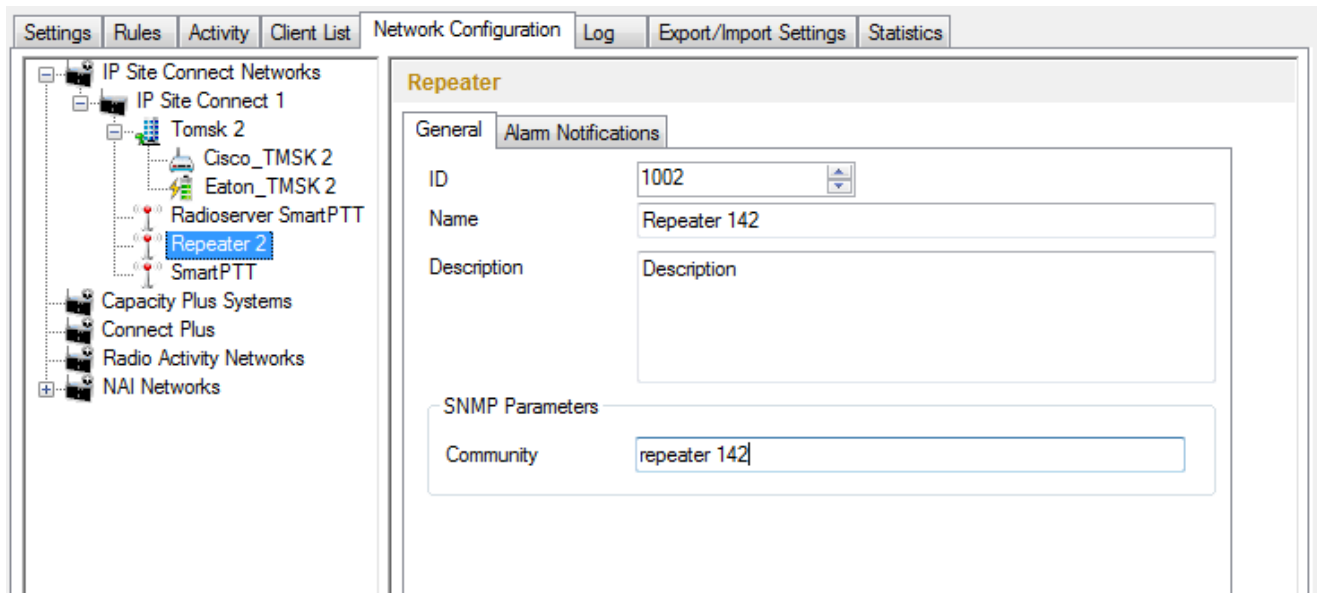
Community – community name, which is used as password for connecting to the SNMP client on the PC.

In the **Radio** tab, define radio IDs where alarm notifications are to be sent:



How to Add Repeaters

To add a repeater, select the **Add Repeater** option in the context menu. At that, the window for setting up repeater parameters opens.



ID – unique identifier of the repeater.

Name – any random name of the repeater. The name will be used in the **Topology** tab in SmartPTT Dispatcher. If the name is not set, the name from the repeater codeplug will be displayed.

Description – random description of the repeater.

SNMP Parameters – here you can set up the community name, which is used as a password for the external SNMP client to connect to the repeater.

Apart from getting information about repeater performance on request, you can get alarm notifications from the repeater as soon as malfunctioning or errors are observed by the repeater. You can decide how to get the information: you can have it sent to your email, your cell phone, to an SNMP client or to radio subscribers. To set up the automatic alarm notifications for this repeater go to the **Alarm Notifications** tab.

For the email or cell phone, click **Add** in the preferred section and add the telephone number or the email address.

For the SNMP client fill the following fields:

Address – address and port of the PC which must receive the data. Use port 162 as default. Remember to have SNMP client installed on the PC.

Version – version of the SNMP data received. The SNMP client must be able to read it.

Community – community name, which is used as password for connecting to the SNMP client on the machine.

How to Add UPS and Routers

The supported devices include a router and an uninterruptible power supply (UPS). To add a device, select the **Add Device** option in the context menu. At that, the following window opens.

The screenshot shows the 'Network Configuration' window with the 'Device' configuration tab selected. The left sidebar shows a tree view of the network topology, with 'Cisco_TMSK 2' highlighted. The main configuration area is divided into 'General' and 'Alarm Notifications' tabs. The 'General' tab contains the following fields:

Type	Cisco2900	
Name	Cisco_TMSK 2	
Description		
Interface	192.168.37.170	Port 162
IP-address	0.0.0.0	Port 161
SNMP Version	V1	
Community	?	
Response Timeout, s	3	
Polling Interval, s	30	
External Community		

A 'Check Connection' button is located at the bottom right of the configuration area.

Type – device type. There are three device types to choose from:

- Cisco2900 (router)
- Eaton9130 (UPS)
- Unknown (for devices other than Cisco2900 and Eaton9130)

Name – random name of the device which is displayed in **Topology** in SmartPTT Dispatcher.

Description – random description of the device.

Interface – the radioserver IP address used for interacting with the device.

IP address – device IP address.

SNMP version – version of SNMP protocol used in the system. There are two options: versions 1 and 2 (V1 and V2).

Community – community name, which is used as password to locally connect to the device over SNMP protocol.

Response Timeout, sec – time during which the server expects a response from the device. The maximum value is 10 sec.

Polling Interval, sec – time period at the end of which the radioserver sends a request to the device. The default value is 30 sec.

External Community – special community name which is used as password to connect to the device via external SNMP client.

Check Connection – checks if there is a connection to the device. At clicking the button a new window with the information on the connection status opens.

To set up the automatic alarm notifications for this device, go to the **Alarm Notifications** tab.

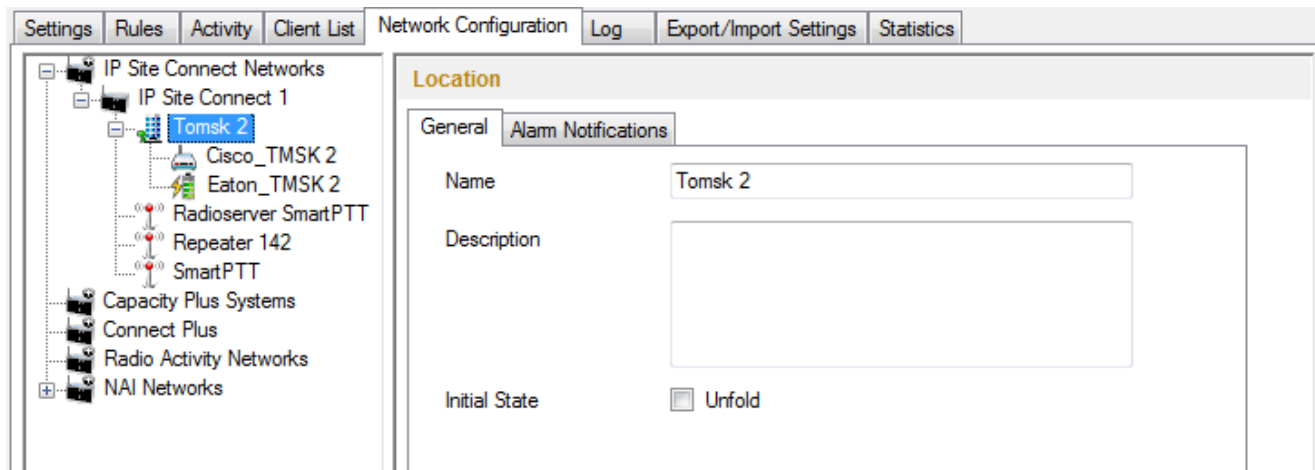
To add a telephone number or/and email address, click **Add** in the preferred section. The user can add more than one telephone number or email address. To remove the telephone number or email address from the list, select the record and click **Remove**.

How to Add Location

If there are many repeaters and devices, they can be grouped by location.

To add a location, select the **Add Location** option in the context menu.

At that, the following window opens.



Name – any random name of the location. The name is displayed in the **Topology** tab in SmartPTT Dispatcher.

Description – random description of the location which is displayed in the **Topology** tab in SmartPTT Dispatcher when hovering the mouse pointer over the object.

Initial State – defines how the object, representing location, is to be displayed in the **Topology** tab in SmartPTT Dispatcher. If the check box is selected, all the devices and repeaters allocated to the location will be displayed by default. If the check box is not selected, the devices won't be seen inside the location by default. In this case, to see the devices, click on the location object in the **Topology** tab.

To add or remove a device or repeater from the location, simply drag it into another place.

To delete the created object, right-click on the object and then select **Remove Repeater**, **Remove Device** or **Remove Location** respectively.

Note: When deleting a location with devices and repeaters allocated to it, all the devices will be deleted together with the location.

In Connect Plus networks, in locations or XRC Controller there is an additional field (**Site ID**) defined automatically.

To set up the automatic alarm notifications for the devices in this location, go to the **Alarm Notifications** tab. For the email or cell phone, click **Add** under the box you need and add the telephone number or the email address.

For the SNMP client fill the following fields:

Address – address and port of the PC which must receive the data. Use port 162 as default. Remember to have

SNMP client installed on the PC.

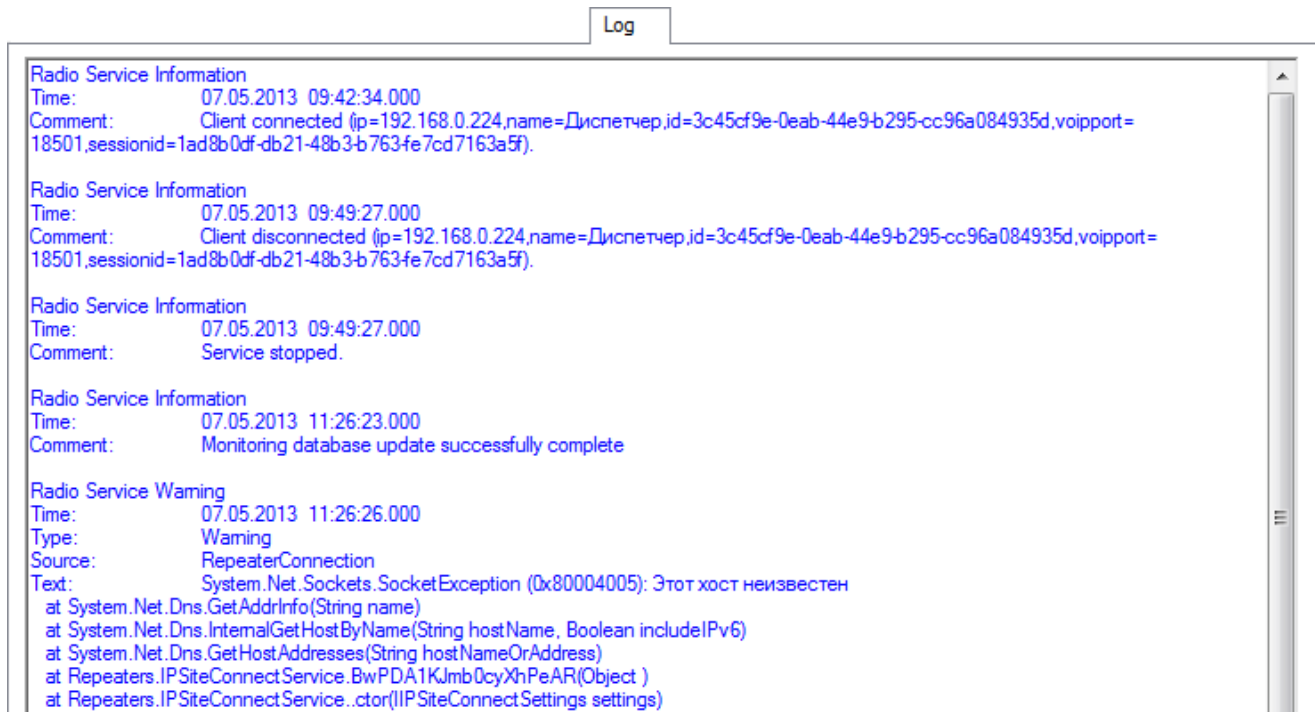
Version – version of the SNMP data received. The SNMP client must be able to read it.

Community – community name, which is used as password for connecting to the SNMP client on the machine.

2.11 Log

The **Log** tab was designed to give information about the radio service system events. Mostly it is used for debugging purposes.

To see the log of the radio service, open the **Log** tab.



```
Log
Radio Service Information
Time: 07.05.2013 09:42:34.000
Comment: Client connected (ip=192.168.0.224,name=Диспетчер,id=3c45cf9e-0eab-44e9-b295-cc96a084935d,voipport=18501,sessionId=1ad8b0df-db21-48b3-b763-fe7cd7163a5f).

Radio Service Information
Time: 07.05.2013 09:49:27.000
Comment: Client disconnected (ip=192.168.0.224,name=Диспетчер,id=3c45cf9e-0eab-44e9-b295-cc96a084935d,voipport=18501,sessionId=1ad8b0df-db21-48b3-b763-fe7cd7163a5f).

Radio Service Information
Time: 07.05.2013 09:49:27.000
Comment: Service stopped.

Radio Service Information
Time: 07.05.2013 11:26:23.000
Comment: Monitoring database update successfully complete

Radio Service Warning
Time: 07.05.2013 11:26:26.000
Type: Warning
Source: RepeaterConnection
Text: System.Net.Sockets.SocketException (0x80004005): Этот хост неизвестен
at System.Net.Dns.GetAddrInfo(String name)
at System.Net.Dns.InternalGetHostByName(String hostName, Boolean includeIPv6)
at System.Net.Dns.GetHostAddresses(String hostNameOrAddress)
at Repeaters.IPSiteConnectService.BwPDA1KJmb0cyXhPeAR(Object )
at Repeaters.IPSiteConnectService..ctor(IIPSiteConnectSettings settings)
```

2.12 Export/Import Settings

SmartPTT Radioserver allows exporting configuration settings and database from one radioserver and importing them into another. Thus, the process of setting up new radioserver(s) with similar configuration settings becomes much easier and quicker.

How to Export or Import Settings

To export or import the radioserver settings or/and the database, click **Export/Import Settings**.

The screenshot shows a web-based interface for exporting and importing settings. The main title is "Export/Import Settings". There are two main panels: "Export" and "Import".

Export Panel:

- Text: "Save Export File As:"
- Input field: A text box for the file path.
- Button: "Browse" (to the right of the input field).
- Section: "Settings"
- Checkbox: "Export Radioserver Database"
- Button: "Export" (at the bottom of the panel).

Import Panel:

- Text: "Choose File to Import:"
- Input field: A text box for the file path.
- Button: "Browse" (to the right of the input field).
- Section: "Settings"
- Checkbox: "Import Radioserver Database"
- Section: "Override Settings"
- Radio buttons: "Keep Server GUID" and "All"
- Button: "Import" (at the bottom of the panel).

Note: Before exporting or importing the radioserver configuration settings and the database, stop the server. Otherwise, the buttons **Browse**, **Export** and **Import** will be unavailable.

Exporting the Settings and/or the Database

To export the settings and/or the database of the radioserver, take the following steps:

1. Stop the radioserver.
2. Select the file where you want the settings to be exported by entering the path to the file in the **Save Export File As** field or by clicking **Browse**.
3. Select **Export Radioserver Database** if you want the database to be exported too.
4. Click **Export**.

Note: You cannot export the radioserver database separately, i.e., without the settings.

Importing the Settings and/or the Database

To import the settings and/or the database to the radioserver, take the following steps:

1. Stop the radioserver.
2. Select the file from where you want the settings to be imported by entering the path to the file in the **Choose File to Import** field or by clicking **Browse**.
3. Select **Import Radioserver Database** if you want the database to be imported too.
4. Select the import mode:
 - 1) **Keep Server GUID** – import mode when the server globally unique ID is left unchanged. After importing, there are two servers with same configuration settings, but different globally unique GUID's.
 - 2) **All** – import mode when all the server configuration settings, including the GUID, are replaced with the imported values. After importing, there are two servers with absolutely identical settings and GUID's.
5. Click **Import**.

Note: After importing the radioserver settings with the option to override all the existing settings (**All**), it is important to delete one of the two servers to avoid GUID conflict.

2.13 Statistics

The **Statistics** tab was designed to give you information on:

1. The total number of events taking place on the radioserver.
2. Free space of the used databases.
3. The size of the folder with audio recordings.

To open the window click in the **Statistics** tab.

Statistics

Events

Registration	244
Calls	981
Messages	61
Telemetry	0
Alarms	0

Database

	Name	Current Size	Max Size
▶	RadioServer.mdf	2.3 Mb	Unlimited
	RadioServer_log.LDF	576 Kb	2048.00 Gb

Audio

Record Folder Size	39.1 Mb
--------------------	---------

3 Troubleshooting

Can't launch SmartPTT Dispatcher and/or Radioserver

1. (for control stations) Make sure you have a sound card on your computer. If SmartPTT Dispatcher and radioserver are installed on one PC, there must be two sound cards (this is true if there is only one control stations connected to the radioserver). Each additional control stations connected to the radioserver requires additional sound card (if the control station is used for transmitting both data and voice).
2. Make sure the installed license is correct (for example, the license for the Basic version can be installed for the Enterprise version and vice versa).
3. Select the correct interface in SmartPTT Radioserver Configurator.
4. Make sure that the ports used by SmartPTT system are available by other applications.
5. Open the sound card properties in Windows audio configuration interface and check if the card functionality is enabled.
6. Connect your microphone to the sound card. Sometimes, when microphone is not connected, audio input is not defined.

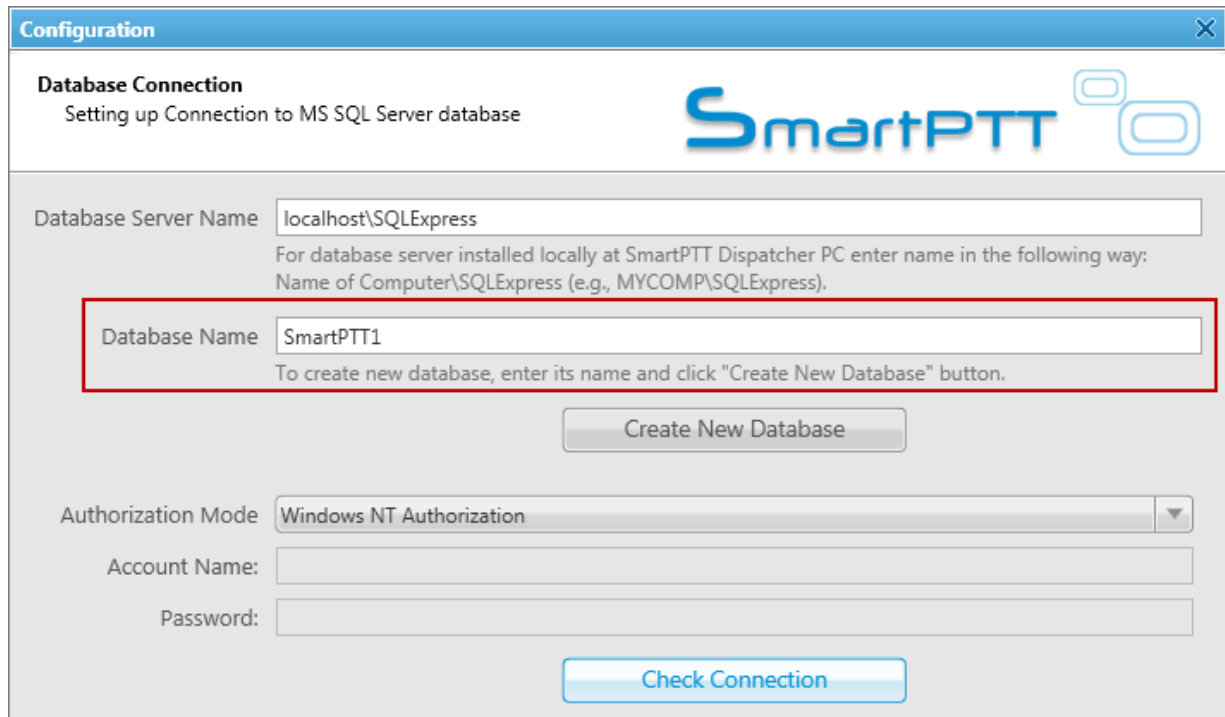
Can't install SQLEXPRESS

1. Make sure Windows user name and Computer name are different.
2. To install SQL Express to run on x64 Windows, download SQL Server 2008 R2 Express 64-bit here: <http://www.microsoft.com/betaexperience/pd/SQLEXP08V2/enus/default.aspx> or <http://www.microsoft.com/en-us/download/details.aspx?id=26729>

Can't create database

1. Make sure the **Database Server Name** field is filled correctly. Read carefully the comments below the **Database Name** field. Right-click **My Computer** and select **Properties** to find the computer name in the **Computer Name** tab. Make sure that the computer name in the **Database Server Name** field is specified without the domain name, that is only the first part of the name that goes before the dot.
2. Your database name must be other than *database*. This name is used by SQL Server.

3. Make sure **Database Name** is filled correctly. There can be three different databases. One for registering events on SmartPTT Dispatcher (mandatory). Use unique database names.



The screenshot shows a 'Configuration' window titled 'Database Connection' with the subtitle 'Setting up Connection to MS SQL Server database'. The SmartPTT logo is in the top right. The 'Database Server Name' field contains 'localhost\SQLEXPRESS'. Below it is a note: 'For database server installed locally at SmartPTT Dispatcher PC enter name in the following way: Name of Computer\SQLEXPRESS (e.g., MYCOMP\SQLEXPRESS)'. The 'Database Name' field, which is highlighted with a red box, contains 'SmartPTT1'. Below it is a note: 'To create new database, enter its name and click "Create New Database" button.' There is a 'Create New Database' button. The 'Authorization Mode' dropdown is set to 'Windows NT Authorization'. Below are fields for 'Account Name:' and 'Password:'. At the bottom is a 'Check Connection' button.

Configuration

Database Connection
Setting up Connection to MS SQL Server database

SmartPTT

Database Server Name: localhost\SQLEXPRESS
For database server installed locally at SmartPTT Dispatcher PC enter name in the following way:
Name of Computer\SQLEXPRESS (e.g., MYCOMP\SQLEXPRESS).

Database Name: SmartPTT1
To create new database, enter its name and click "Create New Database" button.

Create New Database

Authorization Mode: Windows NT Authorization

Account Name:

Password:

Check Connection

Event Log

Enable Event Logging

Database Server Name:
localhost\SQLExpress

Database Name:
RadioServer

Create New Database

Authorization Mode:
Windows NT Authorization

Account Name:

Password:

Check Connection

4. Check authentication type. By default, **Windows NT Authorization** is used.

No connection between SmartPTT Dispatcher and Radioserver

1. If SmartPTT radioserver and dispatch console are installed on different PCs, check network connection between them by executing the ping command.

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\surkovasv>ping 192.168.7.111

Pinging 192.168.7.111 with 32 bytes of data:
Reply from 192.168.7.111: bytes=32 time=2ms TTL=254
Reply from 192.168.7.111: bytes=32 time=1ms TTL=254
Reply from 192.168.7.111: bytes=32 time=2ms TTL=254
Reply from 192.168.7.111: bytes=32 time=2ms TTL=254

Ping statistics for 192.168.7.111:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

2. Make sure that SmartPTT Dispatcher and radioserver are configured correctly (**Settings > Radioservers**), that is host:port, login, password, proxy, if necessary.

The screenshot shows a 'Server Settings' dialog box with the 'IPMI' tab selected. The 'Active' checkbox is checked. The 'Name' field contains 'Radioserver'. The 'Address' field contains '192.168.37.13' and the 'Port' field contains '8888'. The 'Proxy' and 'Proxy Port' fields are empty. The 'Login' and 'Password' fields are empty. Below these fields is a table with 'Operator' and 'Profile Name' columns. The 'Operator' column has 'Administrator' selected. At the bottom are 'OK' and 'Cancel' buttons.

3. Check the **Authentication** field in SmartPTT radioserver settings. If *No* is selected in the **Authentication** field, the fields **Login** and **Password** must be empty (SmartPTT Radioserver Configurator, **Settings > Radio Servers**). If *Windows* authentication is used, read documentation on Windows Authentication.

Radio Server

Name
Radioserver

Interface Port
192.168.0.169 8888

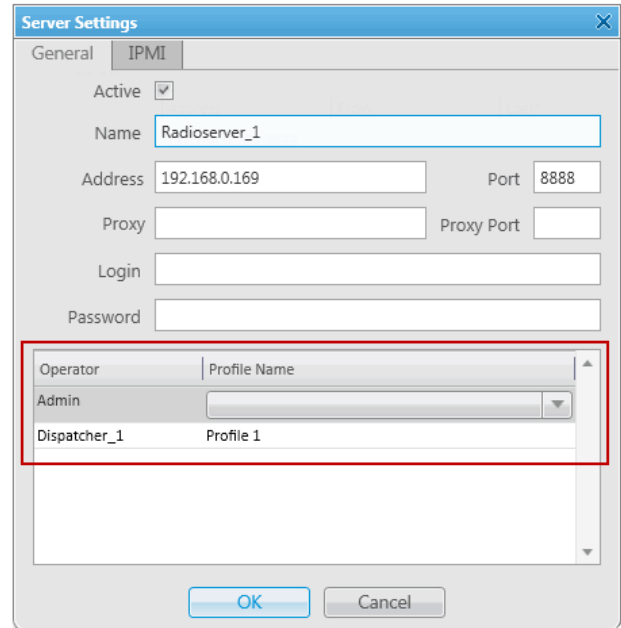
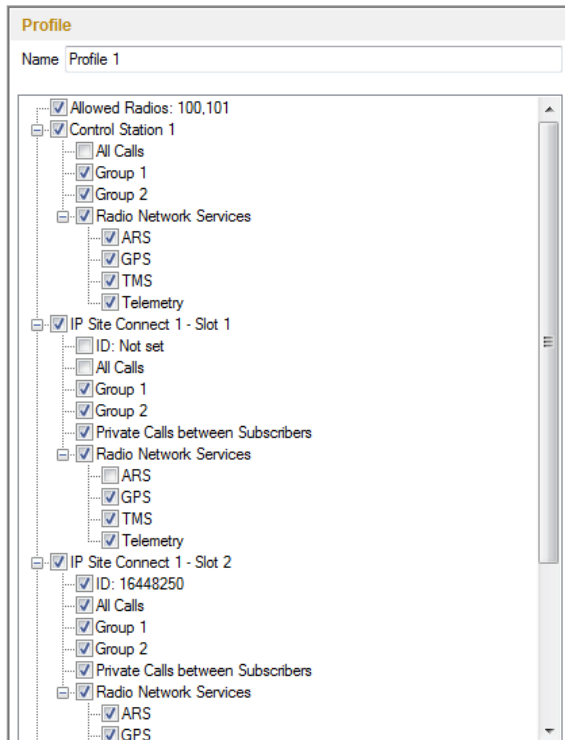
Authentication
No

Encryption

4. Check if Windows Firewall is disabled.

Slots are not displayed in SmartPTT Dispatcher

1. Check if Windows Firewall is disabled.
2. Check whether a profile (**Settings > Radio Servers > Operator (Profile name)**) for this dispatcher is added and allows using this system. If a profile name is added in the radioserver settings, delete it, in case it was not designed to restrict functionality.



3. **Peer ID** specified in SmartPTT Radioserver Configurator must be unique. Other peer ID's in the system must be different. Make sure that none of the repeaters in the system has the same peer ID.

IP Site Connect Network

Active

Name

Network ID

Peer ID

Interface Port

Link Type

Passive ARS

Master Repeater Address

TX Preamble Duration, ms

Messaging Delay, ms

Group Call Hang Time, ms

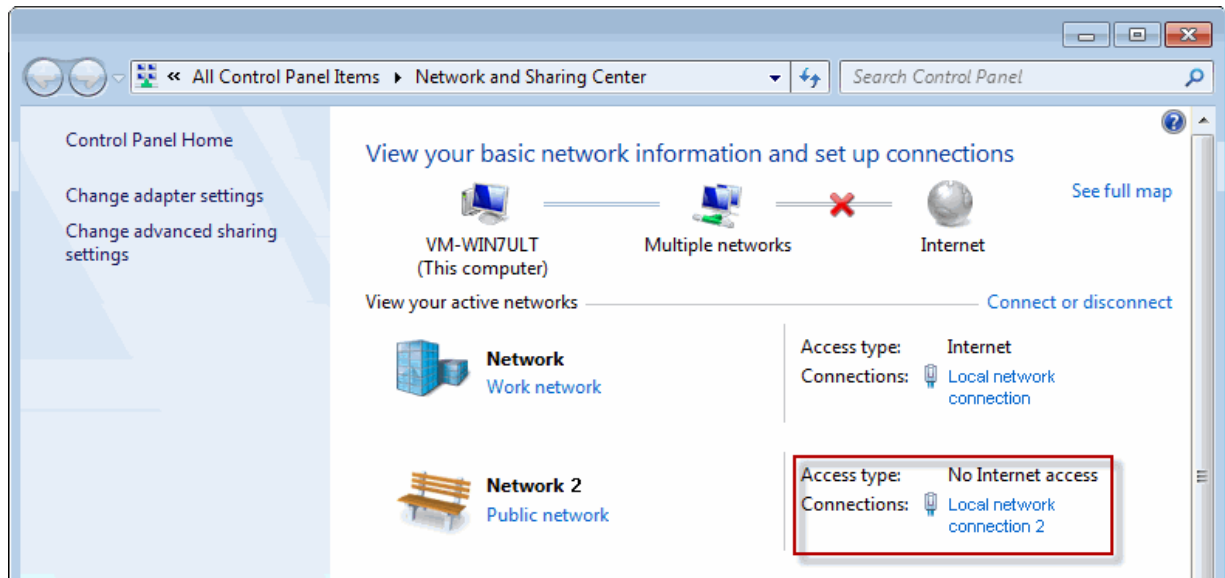
Private Call Hang Time, ms

Emergency Call Hang Time, ms

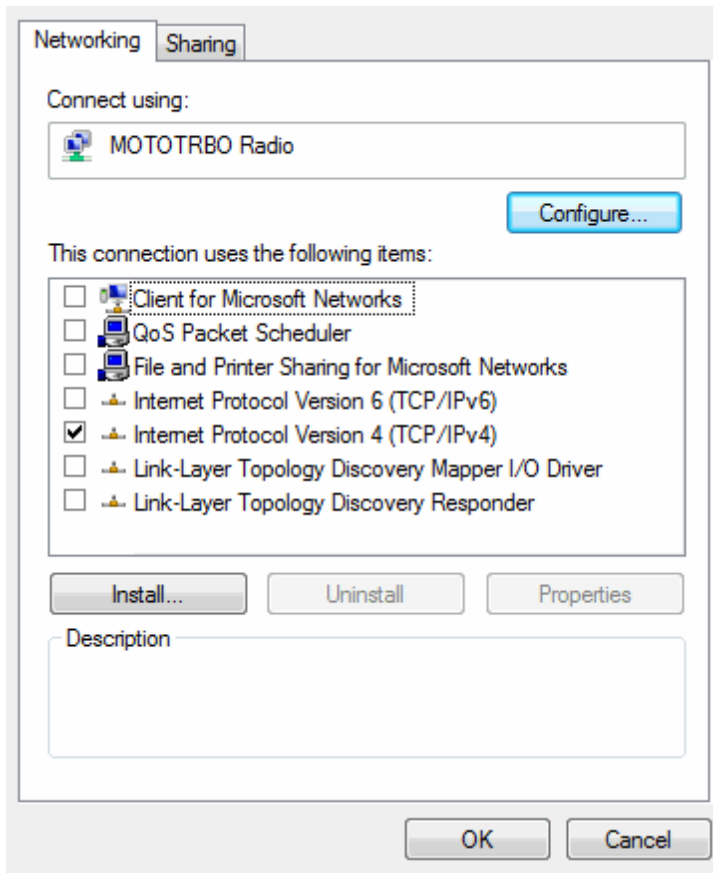
Authentication Key

Control station is not displayed in SmartPTT Dispatcher, but Radioserver is there

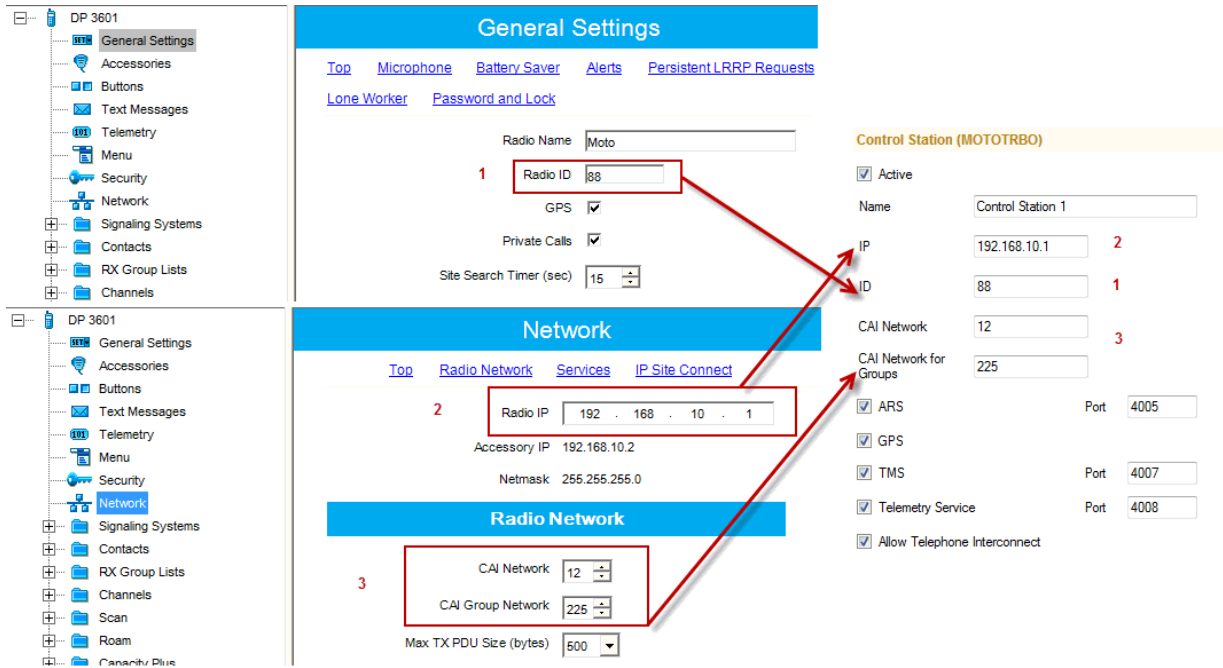
1. Make sure MOTOTRBO control station is installed properly on the computer where the radioserver is installed (MOTOTRBO Radio connection should appear in the state **Connected** in the **Network Connection Properties** window).



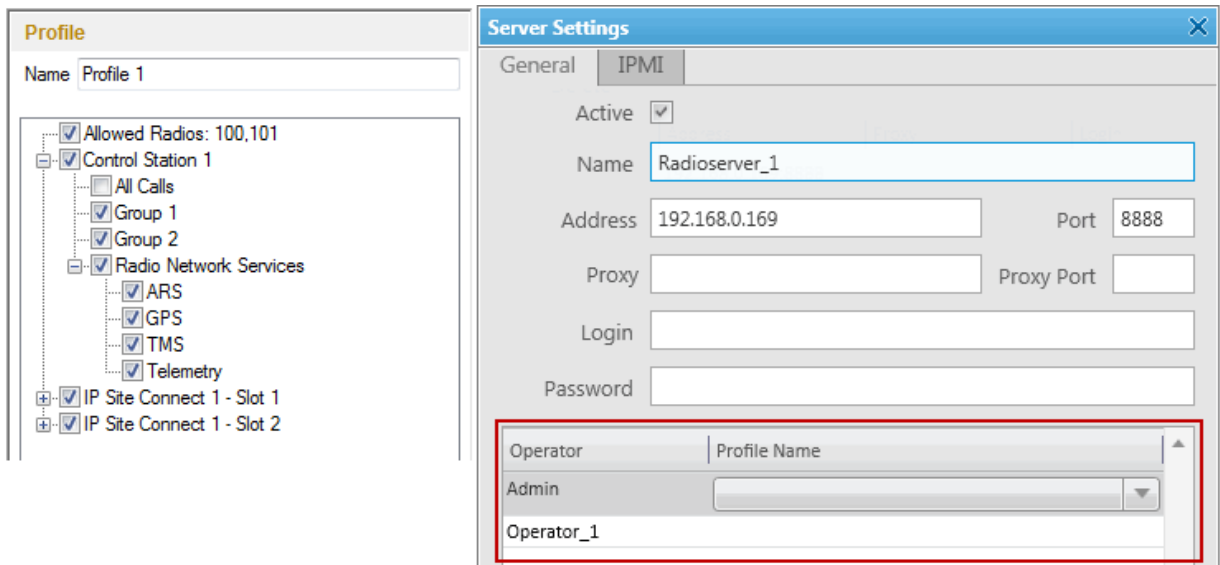
2. In the network connection properties of MOTOTRBO, which is created automatically at connecting the control stations to the computer via USB, disable all the interfaces except for TCP/IP v4.



3. Please check that the control station settings in SmartPTT Radioserver Configurator match the settings of the control station in MOTOTRBO CPS (**IP Address**, **CAI Network**, **CAI Network for Groups**).



4. Please check whether a profile (**Settings > Radio Servers > Operator (Profile name)**) for this dispatcher exists and allows using this control station. If a profile name is added in the **Server Settings** window, delete it, in case it was not designed to restrict functionality.



Radio subscribers are offline

1. (for control stations) Check subscriber radio settings in MOTOTRBO CPS. The **Radio ARS ID** value of

the radio (the **Network** section) and the **Radio ID** value (the **General Settings** section) must match.

Control Station

- DM 3400
 - General Settings
 - Accessories
 - Buttons
 - Text Messages
 - Telemetry
 - Security
 - Network
 - Signaling Systems
 - Contacts

General Settings

[Top](#) [Microphone](#) [Battery Saver](#) [Alerts](#) [Lone Worker](#)

Radio Name

Radio ID

Private Calls

Site Search Timer (sec)

Radio

- DP 3601
 - General Settings
 - Accessories
 - Buttons
 - Text Messages
 - Telemetry
 - Menu
 - Security
 - Network
 - Signaling Systems
 - Contacts
 - RX Group Lists
 - Channels

General Settings

[Top](#) [Microphone](#) [Battery Saver](#) [Alerts](#) [Persistent LRRP Requests](#) [Lone Worker](#)
[Password and Lock](#)

Radio Name

Radio ID

GPS

Private Calls

Site Search Timer (sec)

- DP 3601
 - General Settings
 - Accessories
 - Buttons
 - Text Messages
 - Telemetry
 - Menu
 - Security
 - Network
 - Signaling Systems
 - Contacts
 - RX Group Lists
 - Channels
 - Scan
 - Roam
 - Capacity Plus

Network

[Top](#) [Radio Network](#) [Services](#) [IP Site Connect](#)

Max TX PDU Size (bytes)

Telemetry UDP Port

Forward to PC

Services

ARS Radio ID

ARS IP

ARS UDP Port

- (for system configuration) Check radio settings in MOTOTRBO CPS. The **Radio ARS ID** and **ID** values of both slots 1 and 2 in SmartPTT Radioserver Configurator in the IP Site Connect system must match.
- Set the **ARS Initialization Delay** value to 0 in the **General Settings** section of the radio in MOTOTRBO CPS.

The screenshot shows the 'General Settings' screen for radio DP 3601. The left sidebar lists various settings categories, with 'General Settings' selected. The main content area shows the following settings:

- Radio Name: Moto
- Radio ID: 88
- GPS:
- Private Calls:
- Site Search Timer (sec): 15
- ARS Initialization Delay (min): 0** (highlighted with a red box)
- TX Preamble Duration (ms): 60

- Enable **ARS** in MOTOTRBO CPS in the channel settings of the radio. Select either *On System Change* or *On System/Site Change*.

The screenshot shows the 'IPSC_slot1' channel settings screen for radio DP 3601. The left sidebar shows the 'Channels' category expanded, with 'IPSC_slot1' selected. The main content area shows the following settings:

- Scan/Roam List: Scan List1
- Auto Scan:
- Color Code: 1
- Repeater/Time Slot: 1
- Phone System: None
- ARS: On System Change** (highlighted with a red box)
- Enhanced GPS:
- Window Size: 8
- Privacy:

5. (for control stations) In the **Forward to PC** field select *Via USB* in the **Network** settings in MOTOTRBO CPS.

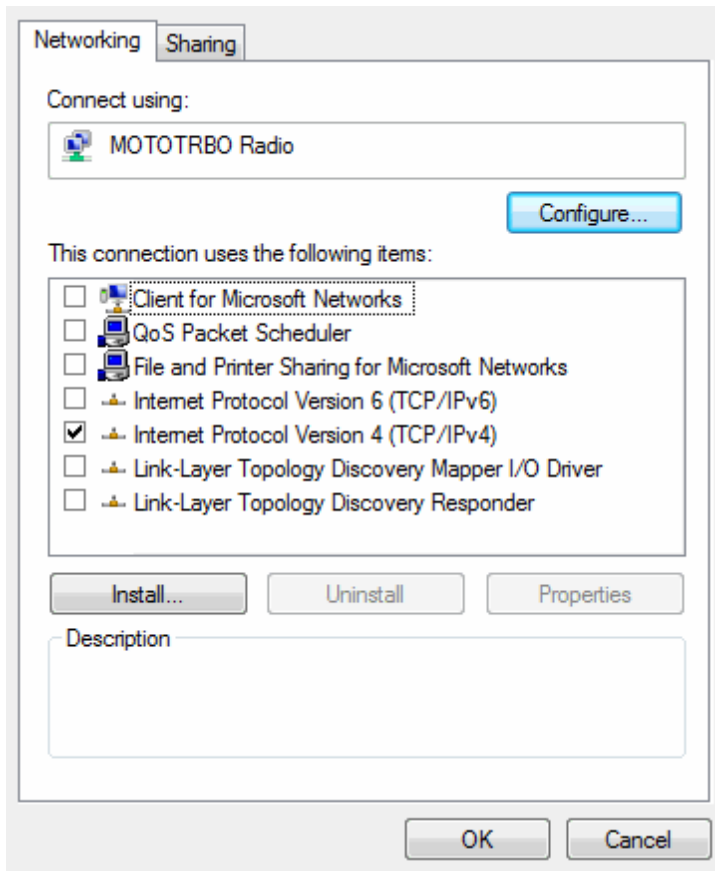
The screenshot shows the configuration interface for a DM 3400 radio. On the left is a navigation tree with categories like General Settings, Accessories, Buttons, Text Messages, Telemetry, Security, Network, Signaling Systems, Contacts, RX Group Lists, Channels, Scan, and Roam. The 'Network' section is selected. The main panel is titled 'Network' and has sub-sections: Top, Radio Network, Services, and IP Site Connect. The 'Radio Network' sub-section is active, showing settings for CAI Network (12), CAI Group Network (225), Max TX PDU Size (bytes) (500), and Telemetry UDP Port (4008). The 'Forward to PC' dropdown menu is highlighted with a red box and is set to 'Via USB'.

6. (for IP Site Connect configuration) Make sure that both slots 1 and 2 are selected in the **Network** section in the repeater codeplug.

The screenshot shows the configuration interface for a DR 3000 radio. On the left is a navigation tree with categories like General Settings, Accessories, Security, Network, Phone System, Channels, and Zone1. The 'Channels' section is selected, and 'Channel1' is highlighted. The main panel is titled 'Channel1' and has sub-sections: Top, Enhanced GPS, RX, and TX. The 'Enhanced GPS' sub-section is active, showing settings for Color Code (1), Phone Gateway (None), IP Site Connect (Slot 1 & Slot 2), and Messaging Delay (Normal). The 'IP Site Connect' dropdown menu is highlighted with a red box and is set to 'Slot 1 & Slot 2'.

7. Check **Privacy Type** set for the radio, repeater and SmartPTT radioserver. It is important that the **Privacy Types** and **Privacy Keys** values match. Otherwise, the radio should transmit without privacy set up.

8. (for control stations) In the network connection properties of MOTOTRBO, which is created automatically at connecting the control stations to the computer via USB, disable all the interfaces except for TCP/IP v4.



9. Check if Windows Firewall is disabled.

10. (for control stations (SmartPTT v7.2.0 and older)) Make sure that routing is configured for the control stations. If the dynamic route is not added in the routing table, add the following static route:

route -p add 12.0.0.0 mask 255.0.0.0 192.168.10.1, where **192.168.10.1** is the IP address of the control station.

Can't get GPS coordinates

1. In one radio system control stations, repeater and all the subscriber radios must share the same firmware version. Firmware version can't be older than R01.07.00. The recommend version is R01.08.00 and later.

Device Information

[Top](#) [Device Features](#)

Model Number	M27JNR9JA7AN
Tanapa Number	PMUD2092CA
Serial Number	484TLY5153
Frequency Range (MHz)	136.000000-174.000000
Power Range (W)	1.0-30.0
Firmware Version	R01.08.00
Codeplug Version	09.00.08
Bootloader Version	R02.03.01
MAC Address	00-24-A0-A6-6E-2D
Last Programmed Date and Time	11/28/2011 10:58 AM

2. Subscriber radios must have an inbuilt GPS module (models DP/DM 3401/3601). The control station can be of any model, even without the GPS module.
3. Enable **GPS** functionality in the **General Settings** of the subscriber radio in MOTOTRBO CPS.

DP 3601

- General Settings
- Accessories
- Buttons
- Text Messages
- Telemetry
- Menu
- Security
- Network
- Signaling Systems
- Contacts

General Settings

[Top](#) [Microphone](#) [Battery Saver](#) [Alerts](#) [Persistent LRRP Requests](#) [Lone Worker](#)

[Password and Lock](#)

Radio Name	<input type="text" value="Moto"/>
Radio ID	<input type="text" value="88"/>
GPS	<input checked="" type="checkbox"/>
Private Calls	<input checked="" type="checkbox"/>

4. Enable **ARS** in the channel settings of the radio in MOTOTRBO CPS. Select either *On System Change* or *On System/Site Change*.

The screenshot displays the configuration interface for a radio system. On the left, a tree view shows the hierarchy: DP 3601 > Channels > Zone2 > IPSC_slot1. The main panel is titled "IPSC_slot1" and contains various settings:

- Scan/Roam List: Scan List1
- Auto Scan:
- Color Code: 1
- Repeater/Time Slot: 1
- Phone System: None
- ARS: On System Change** (highlighted with a red box)
- Enhanced GPS:
- Window Size: 8
- Privacy:

5. (for control stations) Check subscriber radio settings in MOTOTRBO CPS. The **Radio ARS ID** of the radio (the **Network** section) and the **Radio ID** (the **General Settings** section) must be the same.

DM 3400

- General Settings
- Accessories
- Buttons
- Text Messages
- Telemetry
- Security
- Network
- Signaling Systems
- Contacts

Control Station

General Settings

[Top](#) [Microphone](#) [Battery Saver](#) [Alerts](#) [Lone Worker](#)

Radio Name

Radio ID

Private Calls

Site Search Timer (sec)

DP 3601

- General Settings
- Accessories
- Buttons
- Text Messages
- Telemetry
- Menu
- Security
- Network
- Signaling Systems
- Contacts
- RX Group Lists
- Channels

Radio

General Settings

[Top](#) [Microphone](#) [Battery Saver](#) [Alerts](#) [Persistent LRRP Requests](#) [Lone Worker](#) [Password and Lock](#)

Radio Name

Radio ID

GPS

Private Calls

Site Search Timer (sec)

DP 3601

- General Settings
- Accessories
- Buttons
- Text Messages
- Telemetry
- Menu
- Security
- Network
- Signaling Systems
- Contacts
- RX Group Lists
- Channels
- Scan
- Roam
- Capacity Plus

Network

Network

[Top](#) [Radio Network](#) [Services](#) [IP Site Connect](#)

Max TX PDU Size (bytes)

Telemetry UDP Port

Forward to PC

Services

ARS Radio ID

ARS IP

ARS UDP Port

6. *(for system configuration)* Check radio settings in MOTOTRBO CPS. The **Radio ARS ID** and **ID** values of both slots 1 and 2 in SmartPTT Radioserver Configurator in the system must be the same.

Radio Server (IP Site Connect)

Slot	Slot
<input checked="" type="checkbox"/> Active	<input checked="" type="checkbox"/> Active
Name <input type="text" value="Slot 1"/>	Name <input type="text" value="Slot 2"/>
ID <input type="text" value="1"/>	ID <input type="text" value="1"/>
CAI Network <input type="text" value="12"/>	CAI Network <input type="text" value="12"/>
CAI Network for Groups <input type="text" value="225"/>	CAI Network for Groups <input type="text" value="225"/>
<input type="checkbox"/> Emergency Alarm Confirmation	<input type="checkbox"/> Emergency Alarm Confirmation
<input type="checkbox"/> Compressed UDP Data Header	<input type="checkbox"/> Compressed UDP Data Header
TX Time-Out Timer, sec <input type="text" value="60"/>	TX Time-Out Timer, sec <input type="text" value="60"/>
<input checked="" type="checkbox"/> Private Call Confirmed	<input checked="" type="checkbox"/> Private Call Confirmed
<input type="checkbox"/> Data Call Confirmed	<input type="checkbox"/> Data Call Confirmed
<input type="checkbox"/> Allow Transmit Interrupt	<input type="checkbox"/> Allow Transmit Interrupt
<input type="checkbox"/> Allow Telephone Interconnect	<input type="checkbox"/> Allow Telephone Interconnect

Radio

- DP 3601
 - General Settings**
 - Accessories
 - Buttons
 - Text Messages
 - Telemetry
 - Menu
 - Security
 - Network
 - Signaling Systems
 - Contacts
 - RX Group Lists
 - Channels
 - Scan
 - Roam
 - Capacity Plus
- DP 3601
 - General Settings**
 - Accessories
 - Buttons
 - Text Messages
 - Telemetry
 - Menu
 - Security
 - Network**
 - Signaling Systems
 - Contacts
 - RX Group Lists
 - Channels
 - Scan

General Settings

[Top](#)
[Microphone](#)
[Battery Saver](#)
[Alerts](#)
[Persistent LRRP Requests](#)
[Lone Worker](#)
[Password and Lock](#)

Radio Name

Radio ID

GPS

Private Calls

Site Search Timer (sec)

ARS Initialization Delay (min)

TX Preamble Duration (ms)

Network

[Top](#)
[Radio Network](#)
[Services](#)
[IP Site Connect](#)

Max TX PDU Size (bytes)

Telemetry UDP Port

Forward to PC

Services

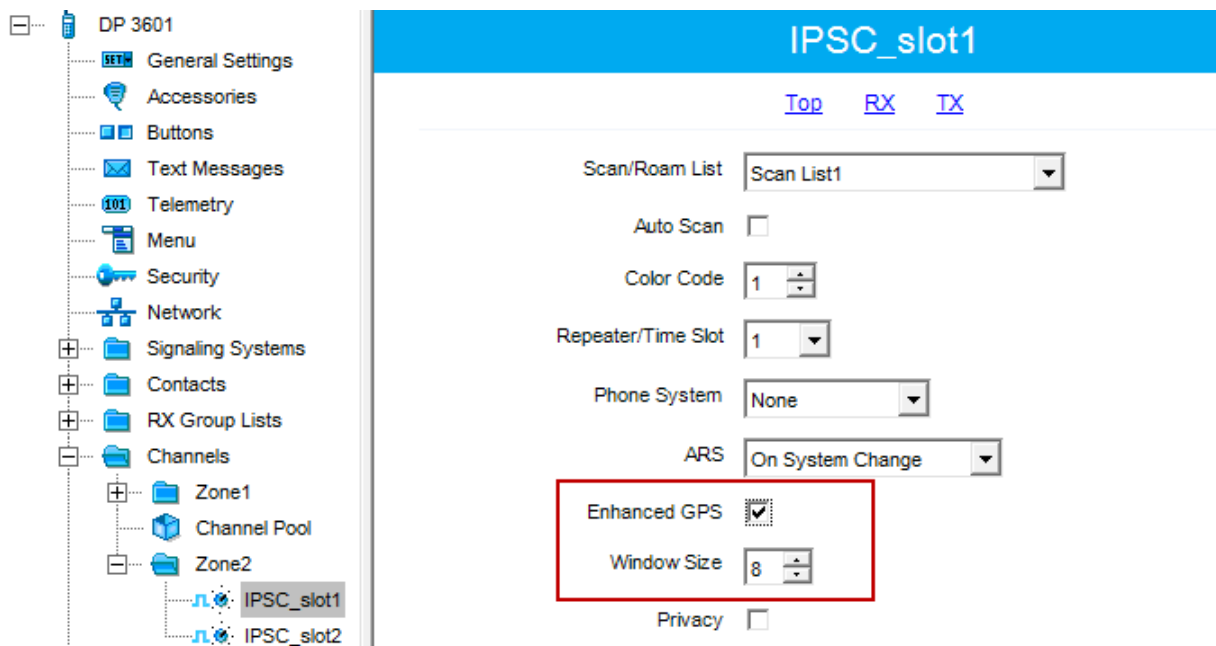
ARS Radio ID

ARS IP 13.0.0.1

7. (for system configuration) Make sure that both slots 1 and 2 are selected in the **Network** section in the repeater codeplug.



8. If enhanced GPS is used, check that the **Window size** is set to 8 in the channel settings of the repeater and subscriber radios in MOTOTRBO CPS.



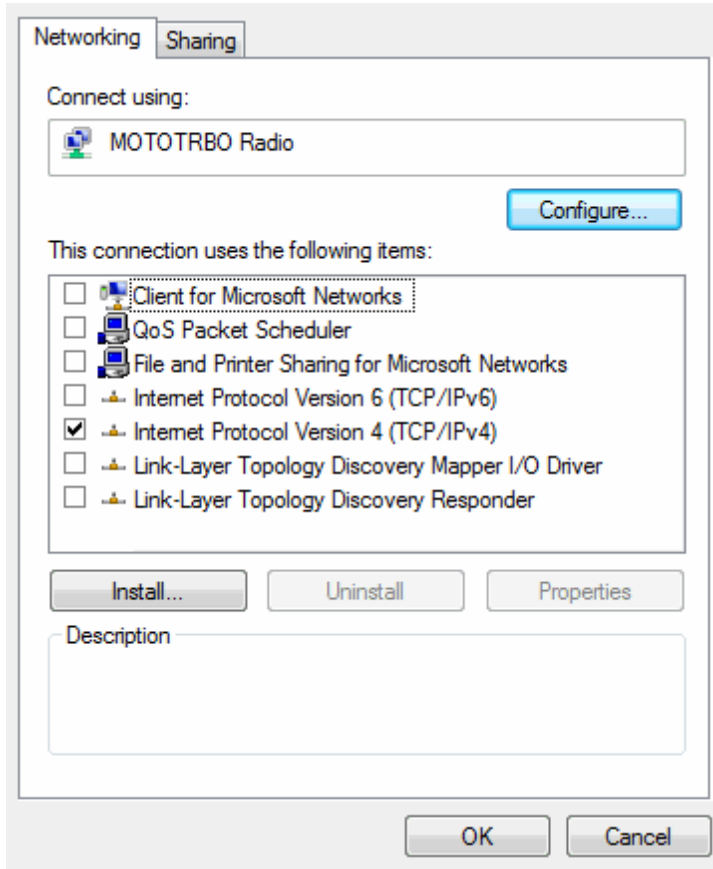
9. Check if Windows Firewall is disabled.

10. (for control stations) For the field **Forward to PC** select *Via USB* in the **Network** settings in MOTOTRBO CPS.

The screenshot shows the MOTOTRBO CPS configuration interface. On the left is a navigation tree for a DM 3400 radio, with the 'Network' option selected. The main panel is titled 'Network' and contains several sub-sections: 'Top', 'Radio Network', 'Services', and 'IP Site Connect'. The 'Radio Network' section is active and displays the following settings:

- CAI Network: 12
- CAI Group Network: 225
- Max TX PDU Size (bytes): 500
- Telemetry UDP Port: 4008
- Forward to PC: Via USB (highlighted with a red box)

11. (for control stations) In the network connection properties of MOTOTRBO, which is created automatically at connecting the control stations to the computer via USB, disable all the interfaces except for TCP/IP v4.



12. (for system configuration) Clear the **Passive ARS** check box in the system settings in SmartPTT Radioserver Configurator.

IP Site Connect Network

Active

Name

Network ID

Peer ID

Interface Port

Link Type

Passive ARS

Master Repeater Address

TX Preamble Duration, ms

Messaging Delay, ms

Group Call Hang Time, ms

Private Call Hang Time, ms

Emergency Call Hang Time, ms

Authentication Key

13. Select the **GPS** settings in SmartPTT Radioserver Configurator. If the **Allow Dispatcher to Amend Location Update Time Interval** check box is not selected, the dispatcher won't be able to change the location update time interval, which is specified in SmartPTT Radioserver Configurator for a group of radio subscribers. If the **Allow Dispatcher to Amend Location Update Time Interval** check box is not selected and **GPS** is disabled for a particular group of radio subscribers, the dispatcher won't be able to receive GPS coordinates from the radio subscribers of this group.

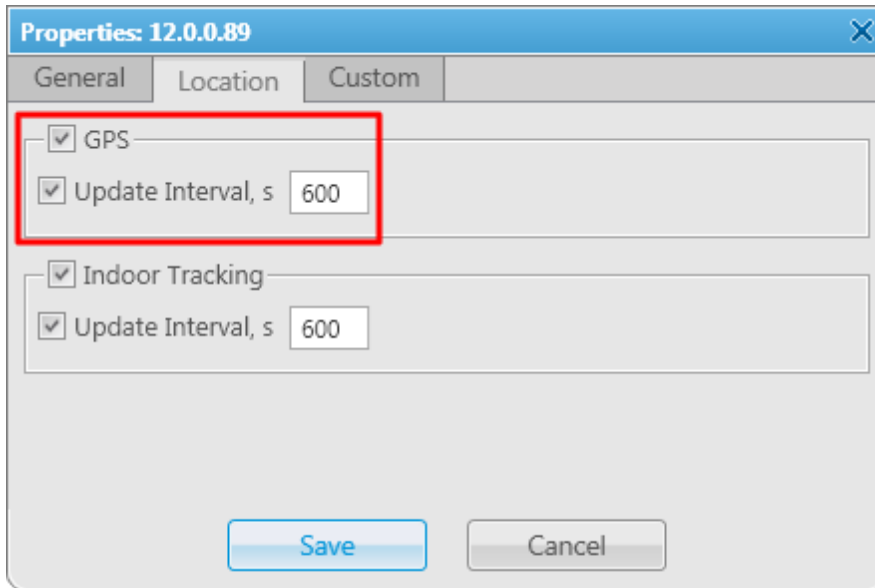
The screenshot displays the SmartPTT Radioserver Configurator interface. On the left, a tree view shows the 'Radio Server' structure, with 'GPS' selected under 'Radio Network Services'. The main panel on the right is titled 'GPS' and contains the following settings:

- Active
- Min Subscriber Location Update Interval, sec:
- Get Subscriber Location for Following Groups:

Group Name	Time Interval, sec	On/Off
Group 1		<input type="checkbox"/>
Drivers	240	<input checked="" type="checkbox"/>

At the bottom of the panel, there is a check box: Allow Dispatchers to Amend Location Update Time Interval.

14. If the **Allow Dispatcher to Amend Location Update Time Interval** check box is selected in the **Location Service** window of SmartPTT Radioserver Configurator, make sure that in the **Location** tab of the **Subscriber Properties** window the **GPS** check box is selected, and the time interval for GPS coordinates update is set (the **Update Interval, s** field).



15. (for control stations (SmartPTT v7.2.0 and older)) Make sure that routing is configured for the control stations properly. If the dynamic route is not added, add the following static route:

route -p add 12.0.0.0 mask 255.0.0.0 192.168.10.1, where **192.168.10.1** is the IP address of the control station.

Calls do not get through

1. Reboot your PS(s) where SmartPTT Radioserver Configurator and SmartPTT Dispatcher are installed.
2. Switch off/on the control station and/or repeater.

3. (for system configuration) Make sure that both slots 1 and 2 are selected in the **Network** section in the repeater codeplug.

The screenshot shows the configuration interface for a DR 3000 repeater. On the left is a tree view with the following items: General Settings, Accessories, Security, Network, Phone System, Channels, Zone1, and Channel1. The 'Channel1' item is selected and highlighted in blue. On the right is the 'Channel1' configuration page. It has a blue header and navigation links: Top, Enhanced GPS, RX, and TX. The settings are as follows: Color Code is 1; Phone Gateway is None; IP Site Connect is Slot 1 & Slot 2 (highlighted with a red box); and Messaging Delay is Normal.

4. Select *Rear PC and Audio* in the control station settings (**MOTOTRBO > Accessories > Cable Type**).

The screenshot shows the configuration interface for a DM 3400 control station. On the left is a tree view with the following items: General Settings, Accessories, Buttons, Text Messages, Telemetry, Security, Network, Signaling System, Contacts, RX Group Lists, Channels, Scan, Roam, and Capacity Plus. The 'Accessories' item is selected and highlighted in blue. On the right is the 'Accessories' configuration page. It has a blue header and navigation links: Top, GPIO Physical Pins, and Horn & Lights. The settings are as follows: Digital Front Mic Gain (dB) is -5; Analog Rear Mic Gain (dB) is -6; Digital Rear Mic Gain (dB) is -5; RX Audio Type is Filtered Squelch; Data Revert Channel is Selected; Debounce Duration (ms) is 100; and Cable Type is Rear PC & Audio (highlighted with a red box).

5. Make sure that the radios and repeaters or base stations are programmed correctly.
6. Test the cable connecting the control stations and the computer for correct pinouts.
7. Disable Windows Firewall.

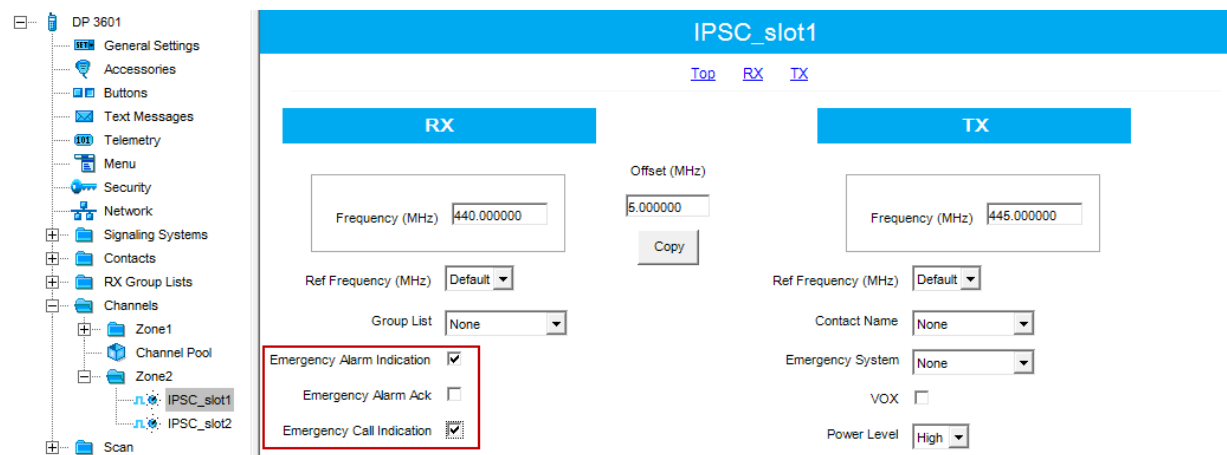
Remote monitoring does not work

To enable remote monitoring, clear the **Remote Monitor Decode** check box in in the **Signaling Systems** section of the radio configuration settings in MOTOTRBO CPS.



Orange button does not work, emergency alarm signal does not get through

1. Clear the **Emergency Alarm Indication** and **Emergency Call Indication** check boxes in the channel settings of the subscriber radio in MOTOTRBO CPS.



2. (for control stations) Clear the **Emergency Alarm Indication**, **Emergency Alarm Ack** and **Emergency Call Indication** check boxes in the channel settings of the subscriber radio in MOTOTRBO CPS.

The screenshot displays the configuration interface for a subscriber radio in MOTOTRBO CPS, specifically for channel 173 - Slot1. The interface is divided into RX and TX sections. The RX section includes fields for Frequency (MHz) (173.950000), Offset (MHz) (5.000000), Ref Frequency (MHz) (Default), and Group List (List1). A red box highlights the Emergency Alarm Indication, Emergency Alarm Ack, and Emergency Call Indication checkboxes, all of which are checked. The TX section includes fields for Frequency (MHz) (171.155000), Ref Frequency (MHz) (Default), Contact Name (Грпyna1), Emergency System (Sys1), VOX (unchecked), and Power Level (Low).

3. (for system configuration) Clear the **Emergency Alarm Confirmation** check box for both slots 1 and 2 in SmartPTT Radioserver Configurator. Save the changes and restart the service.

The screenshot shows the SmartPTT Radioserver Configurator interface. On the left is a tree view with the following structure:

- Radio Server
 - Radio Network Services
 - Add-on Modules
 - Control Stations
 - Connect Plus
 - Radio Activity Networks
 - NAI Networks
 - NAI Network 1
 - Slot 1 (selected)
 - Talkgroups
 - Slot 2
 - Talkgroups
 - MNIS/DDMS Settings
 - SmartPTT Radioservers
 - Profiles
 - Subscriber Groups
 - MultiGroups
 - Metadata

The right panel shows the configuration for Slot 1:

- Slot**
 - Active
 - Name: Slot 1
 - ID: 1
 - CAI Network: 12
 - CAI Network for Groups: 225
 - Emergency Alarm Confirmed (highlighted with a red box)
 - Private Call Confirmed
 - Allow Transmit Interrupt
 - Allow Telephone Interconnect
 - GPS Transmission Mode: Data
 - Outgoing Privacy Mode: Enhanced
 - Basic Privacy Key: 1
 - Enhanced Privacy Keys
 - Buttons: Add, Remove, Copy, Paste

At the bottom, there is a table with the following data:

	Key Id	Key Value	TX Key
	1	1234567890	<input type="radio"/>
▶	2	0987654321	<input checked="" type="radio"/>

4. Make sure that the **Emergency Signaling System** in the channel settings of a subscriber radio in MOTOTRBO CPS is configured properly (**Signaling Systems > Digital Emergency**).

The screenshot shows the configuration for IPSC_slot1. On the left is a tree view with 'IPSC_slot1' selected under 'Channels'. The main window has tabs for 'RX' and 'TX'. In the RX section, Frequency (MHz) is 440.000000 and Offset (MHz) is 5.000000. In the TX section, Frequency (MHz) is 445.000000. The 'Emergency System' dropdown menu is highlighted with a red box and set to 'Sys'. Other settings include 'Emergency Alarm Indication' checked, 'Emergency Alarm Ack' unchecked, and 'Emergency Call Indication' checked.

5. Select *Group Call* in the **Contact Name** field in the channel settings of a subscriber radio.

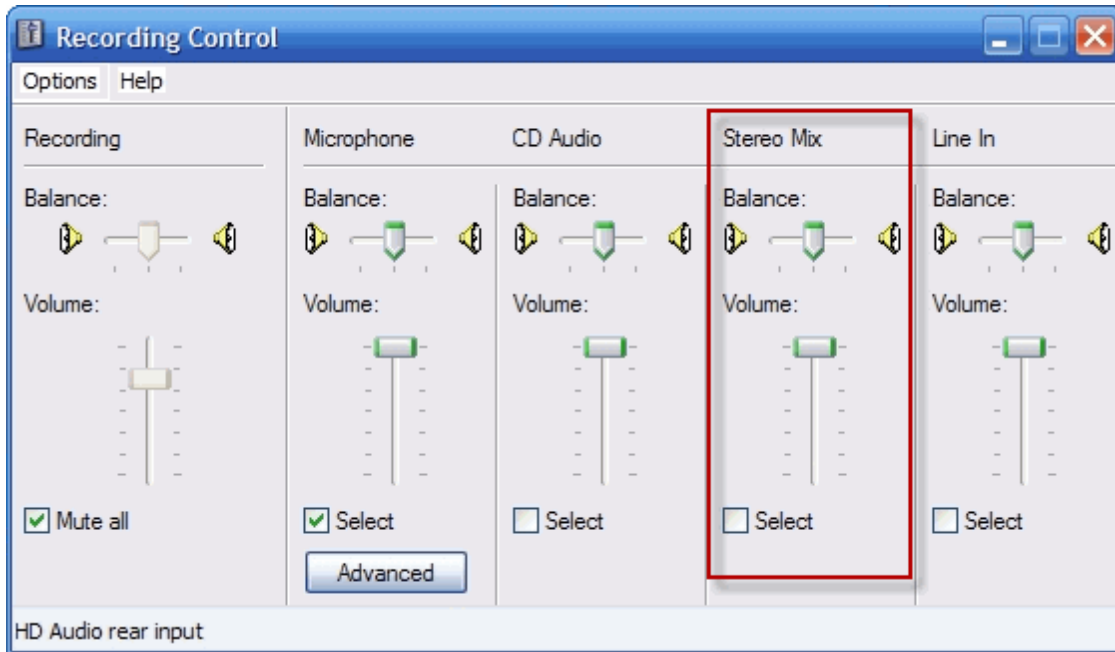
Add **Group Call** in the **Contacts** section in advance and then select the newly added group call in the **Channels** settings.

The screenshot shows the configuration for IPSC_slot1. On the left is a tree view with 'IPSC_slot1' selected under 'Channels'. The main window has tabs for 'RX' and 'TX'. In the RX section, Frequency (MHz) is 440.000000 and Offset (MHz) is 5.000000. In the TX section, Frequency (MHz) is 445.000000. The 'Contact Name' dropdown menu is highlighted with a red box and set to 'Group9'. Other settings include 'Emergency System' set to 'Sys', 'Emergency Alarm Indication' checked, 'Emergency Alarm Ack' unchecked, and 'Emergency Call Indication' checked.

6. (for control stations) Make sure that its model is one of the following with a display DM3600/3601/4600/4601 . Otherwise, the emergency call will be displayed as a usual group call. In order to receive emergency alarm signal, the control stations must confirm it. For this purpose the **Emergency Alarm Confirmation** check box should be selected in MOTOTRBO CPS. Control stations without screen do not have the ability to confirm emergency alarm.

Telephone subscribers can hear themselves through interlocutor

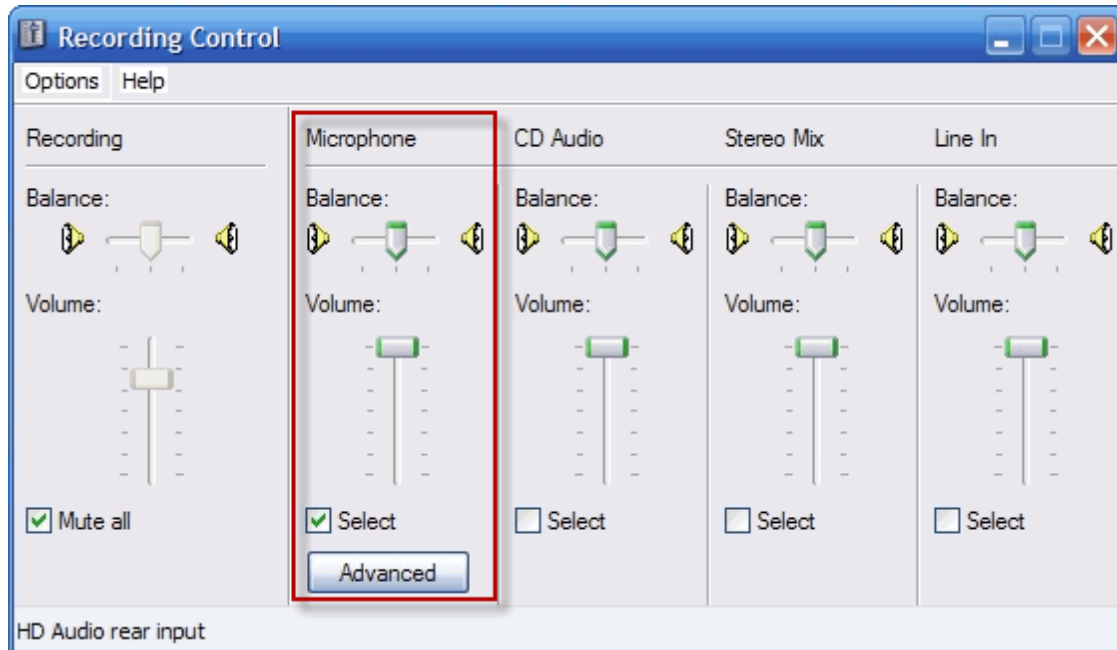
Switch off **Stereo Mix** in the sound card settings.



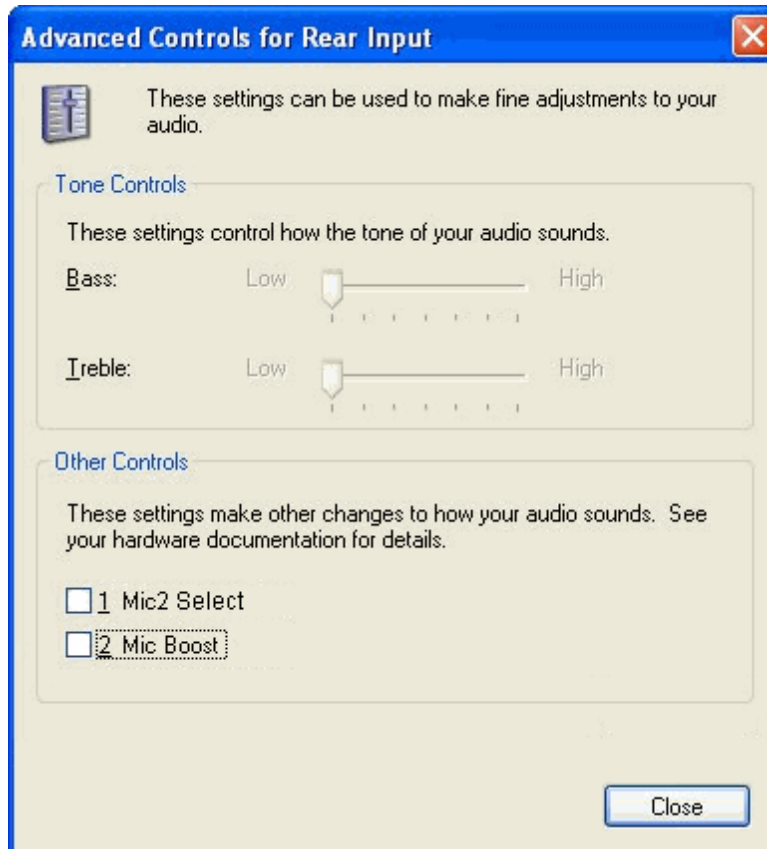
Unacceptable sound quality

1. (for control stations) Test the cable which connects the control stations and the computer for correct pinouts.

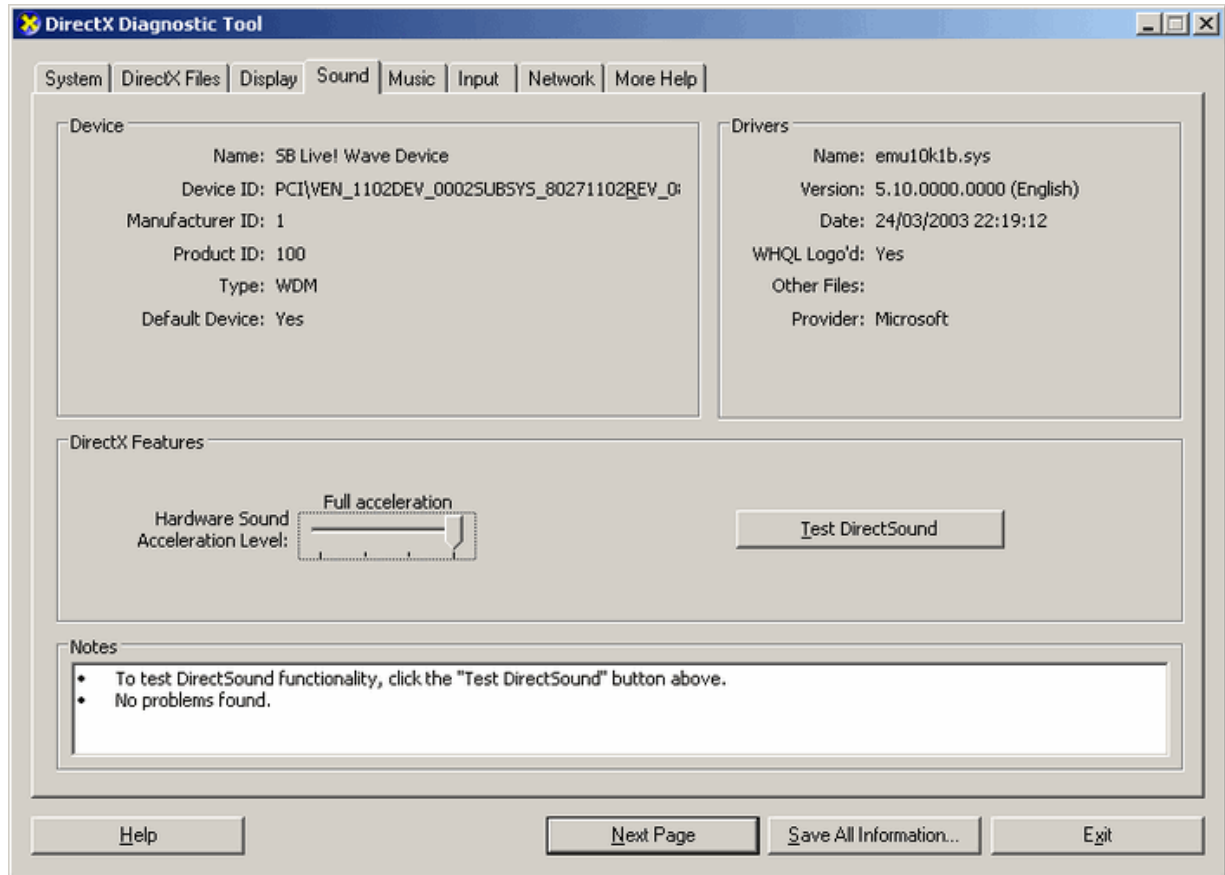
2. Reduce microphone sound level.



3. Clear **MIC Boost**.



- Configure basic hardware acceleration of the sound card. Basic hardware acceleration is configured in the **DirectX Diagnostic Tool** window (go to **Start** menu, click the **Run** button, type **dxdiag**) in the **Sound** tab, with the help of **Hardware Sound Acceleration Level**.



- Check if the microphone is working. Record an audio file by the **Sound Recorder** application (**Start Menu > All Programs > Entertainment > Sound Recorder**) and play it back. Make sure the sound is recorded and you can play it back.

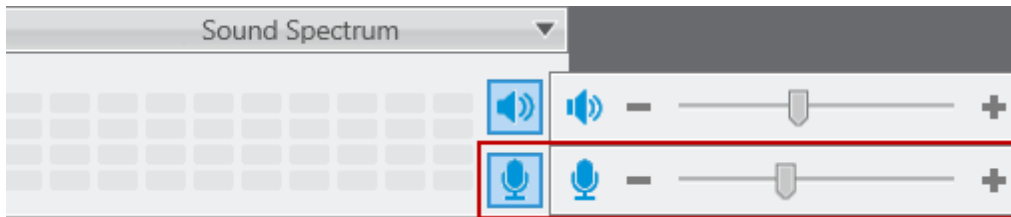
- Disable Windows Firewall.

No sound

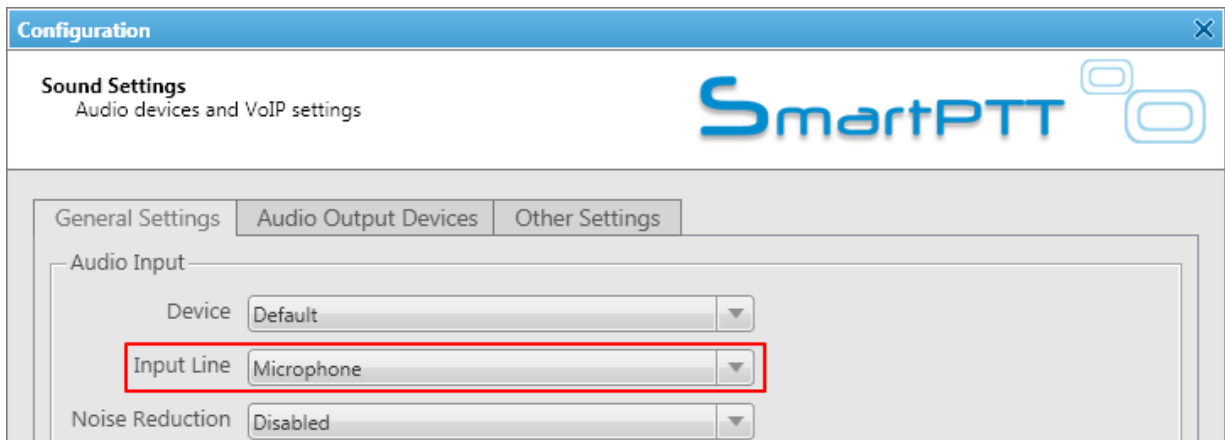
- (for control stations) Test the cable connecting the control stations and the computer for correct pinouts.
- Check if the microphone is working. Record an audio file by the **Sound Recorder** application (**Start Menu > All Programs > Entertainment > Sound Recorder**) and play it back.
- Make sure that the audio input and output are selected correctly in the sound settings of SmartPTT system.
- (for control stations) Make sure you have a sound card on your computer. If SmartPTT Dispatcher and

radioserver are installed on one PC, there must be two sound cards (this is true if there is only one control station connected to the radioserver). Each additional control station connected to the radioserver requires additional sound card (if the control station is used for transmitting both data and voice).

5. Check if **Microphone Audio Setting** is available in SmartPTT Dispatcher.



6. If **Microphone Audio Setting** is not available, open the **Sound** settings window in SmartPTT Dispatcher (**Settings > Sound**). In the **Audio Input** section, select *Microphone* in the **Input Line** field and then click **Finish**.



7. If **Microphone Audio Settings** is still unavailable or *Microphone* was already selected in the **Input Line** field, select *Recording Level* and click **Finish**.



8. Disable Windows Firewall.

Radio coordinates are displayed in the corner or outside the raster map

Latitude, longitude, X or Y values are mixed up when assigning coordinates to points in the **Raster Maps Settings** window.

Note: If you took the coordinates from the polish format of the map, note that the first coordinate on the left is latitude and the second - longitude.

Configuration

Raster Maps
Create Raster Maps from Image File

Select Image of Map: ...

Map Parameters: Width: 3025 Height: 3025

Points

Point:	Longitude:	Latitude:	X:	Y:
1	<input type="text" value="84.91759423"/>	<input type="text" value="56.54381305"/>	<input type="text" value="2"/>	<input type="text" value="2"/>
2	<input type="text" value="85.09616492"/>	<input type="text" value="56.54381305"/>	<input type="text" value="3023"/>	<input type="text" value="2"/>
3	<input type="text" value="84.91759423"/>	<input type="text" value="56.44654957"/>	<input type="text" value="2"/>	<input type="text" value="3023"/>
4	<input type="text" value="85.09616492"/>	<input type="text" value="56.44654957"/>	<input type="text" value="3023"/>	<input type="text" value="3023"/>

Channel name of the control station is displayed in the dispatch console as "1:0", "1:1", "1:2". etc.

Use SmartPTT Radioserver Configurator to make sure that the channels specified for the control station correspond to the channels programmed by MOTOTRBO CPS.