



# SmartPTT Plus

Radioserver Configurator  
User Guide

July 2014



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# 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.

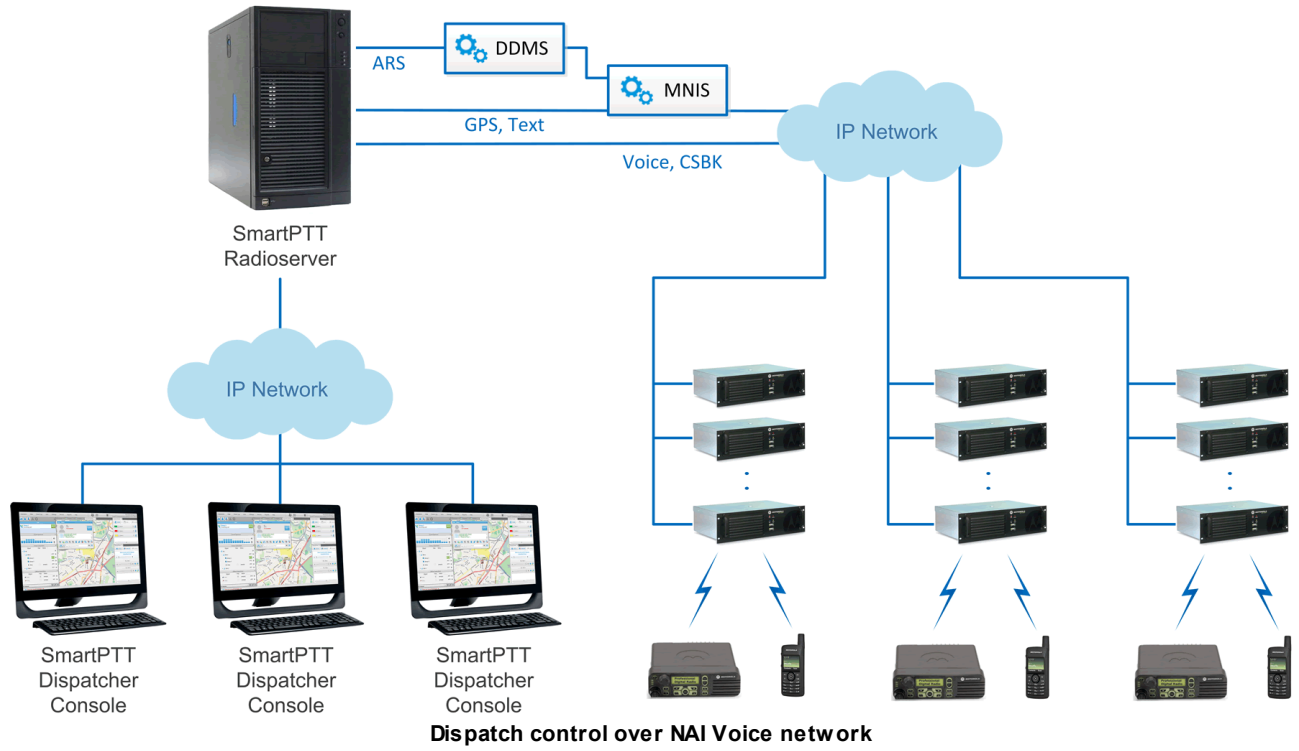
The dispatcher has either full or partial access to the system radioserver, that is software installed on PCs.

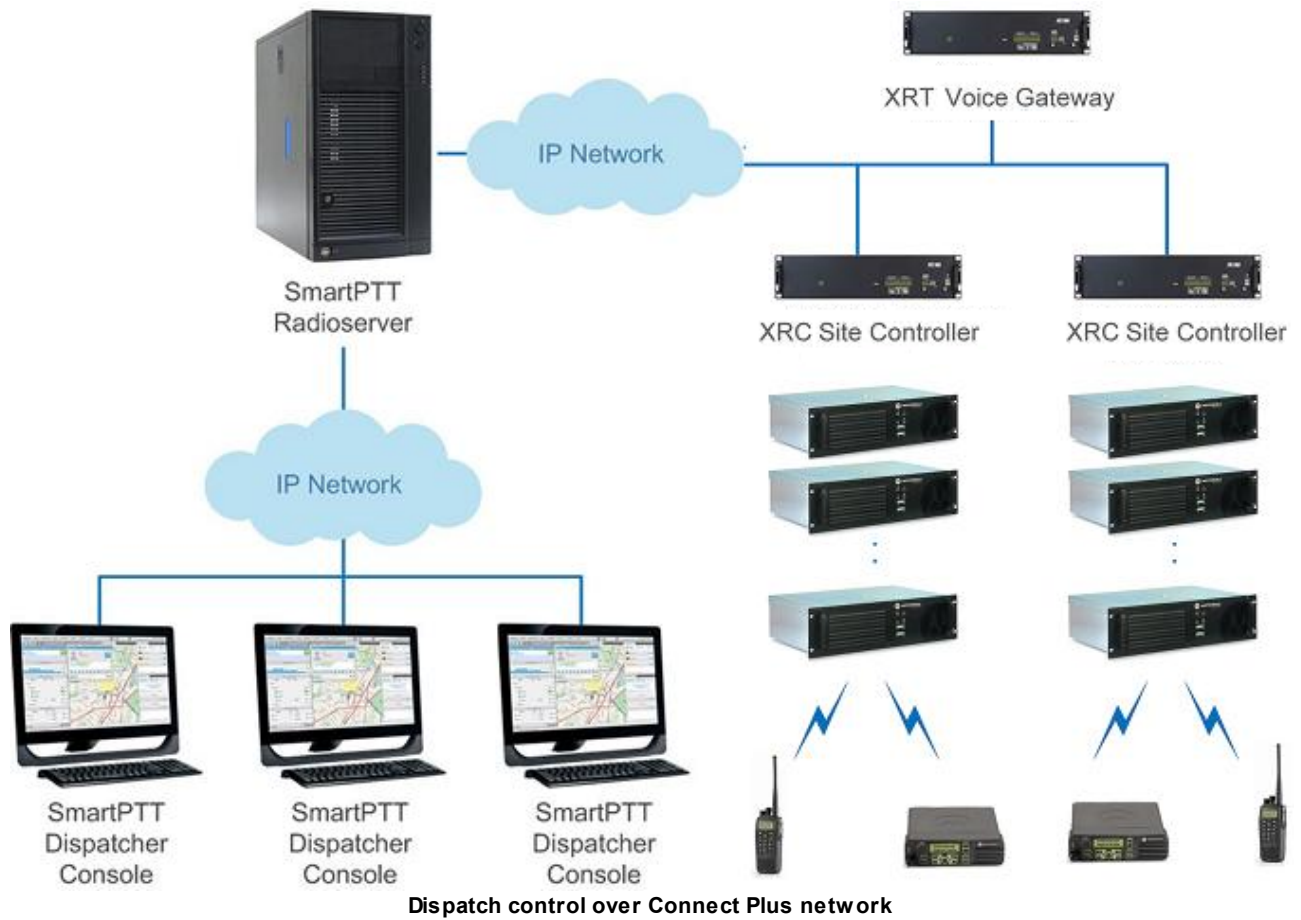
SmartPTT software enables various MOTOTRBO platform functions, which form the basis of the system.

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.







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 displays the 'Settings' window for the Radioserver. The left sidebar contains a tree view with the following items: Radio Server (selected), Radio Network Services, Add-on Modules, Control Stations, Connect Plus, Radio Activity Networks, NAI Networks, SmartPTT Radioservers, Profiles, Subscriber Groups, MultiGroups, and Metadata. The main configuration area on the right is titled 'Radio Server' and includes the following settings:

- Name:** Radioserver
- Interface:** 192.168.0.224
- Port:** 8888
- Authentication:** No
- Encryption
- 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.

**Encryption** – this function allows users to enable and disable encryption of transmitted data. VoIP data cannot be encrypted.



**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 60 s.

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.

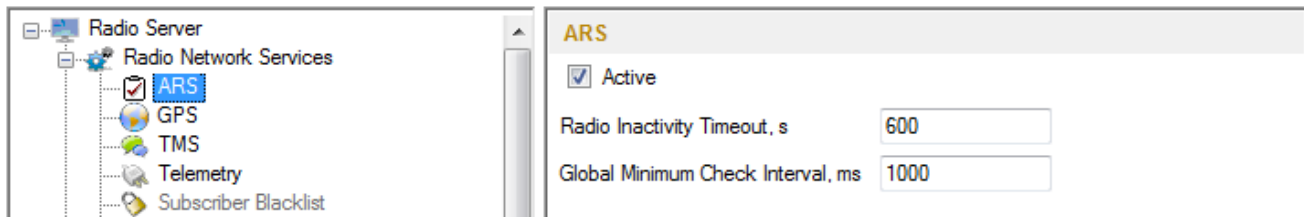
**Warning!** All the radios whose ID's were not specified will be ignored by the SmartPTT system.

## 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** checkbox.

**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.

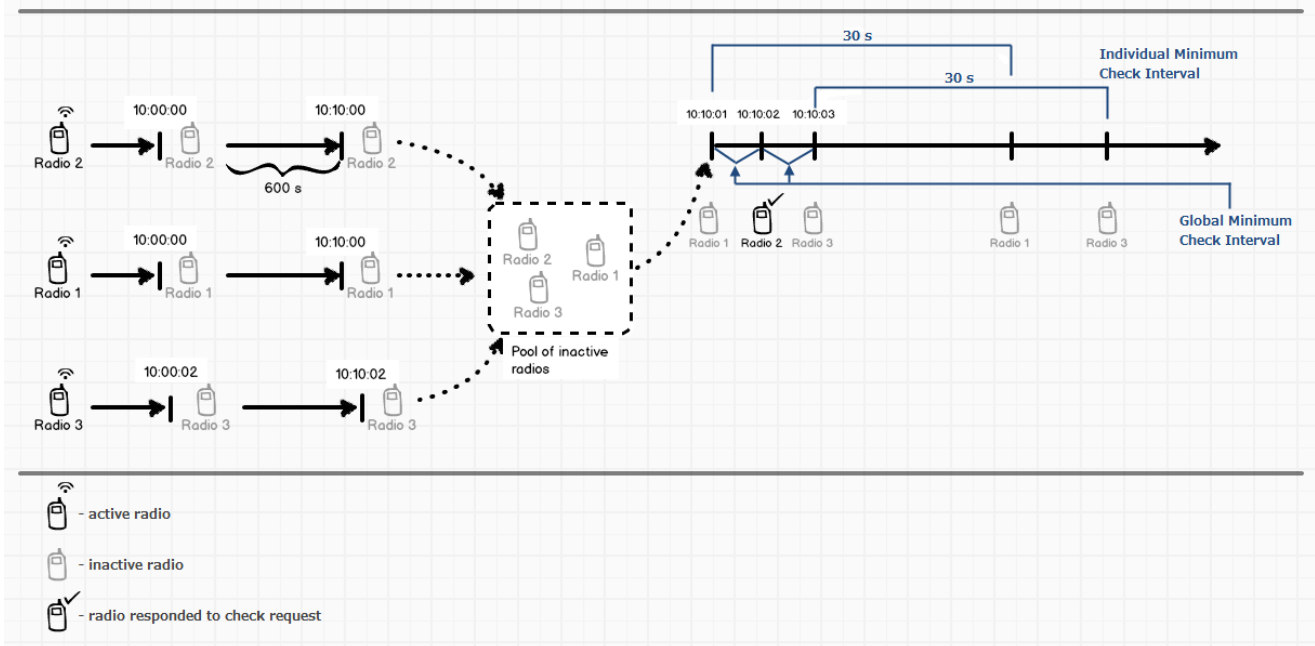
Generally, a radio can be sent 5 presence check requests successively with a 30-second interval. This parameter is called Individual Minimum Check Interval and equals 30 s; it can't be changed in SmartPTT Radioserver Configurator. This parameter sets the interval between presence check requests sent 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.

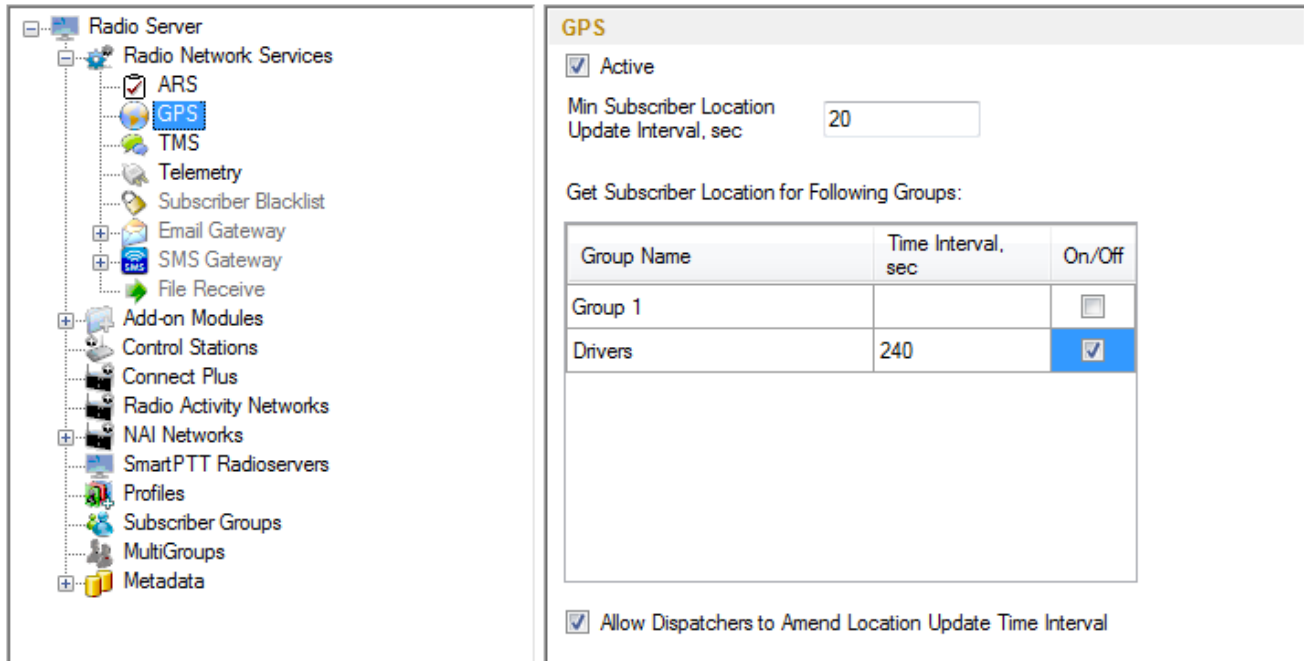


### 2.2.1.2 GPS

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** checkbox.

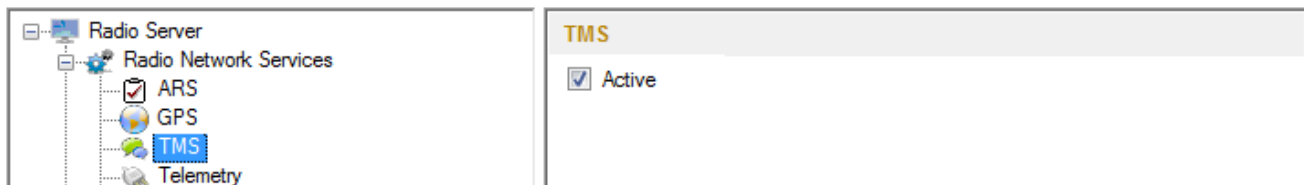
The list **Get Subscriber Location for Following Groups** allows you to specify time interval for location update per subscriber group added in SmartPTT Radioserver Configurator under **Subscriber Groups**.

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.

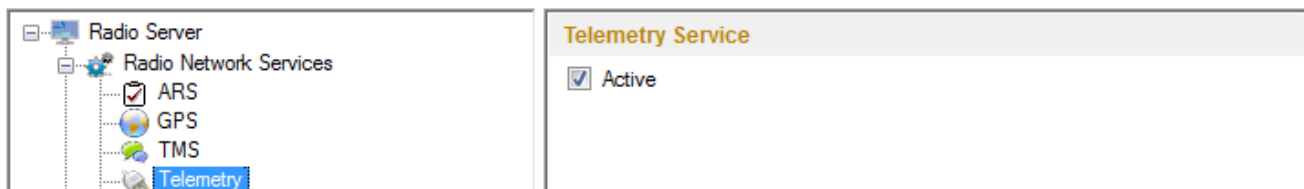
### 2.2.1.3 TMS

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** checkbox.



### 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** checkbox.

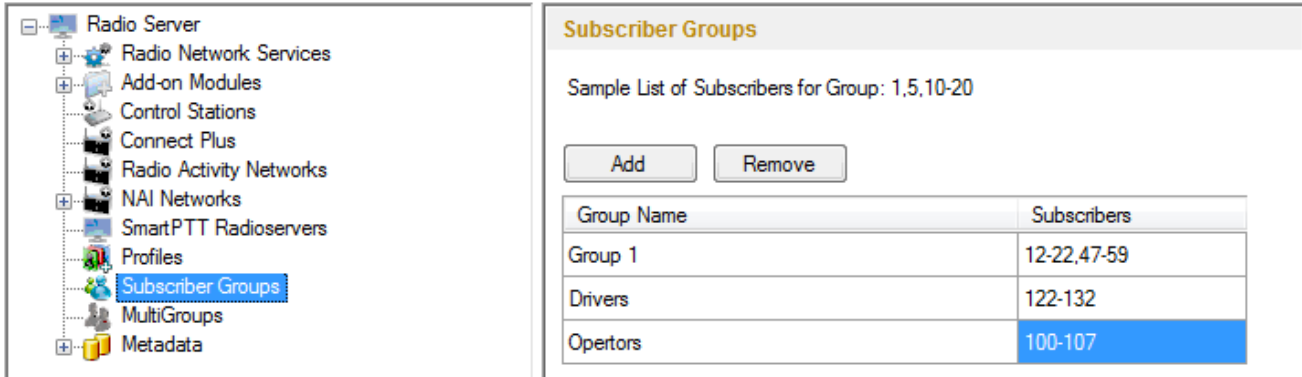


### 2.2.1.5 Subscriber Blacklist

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.

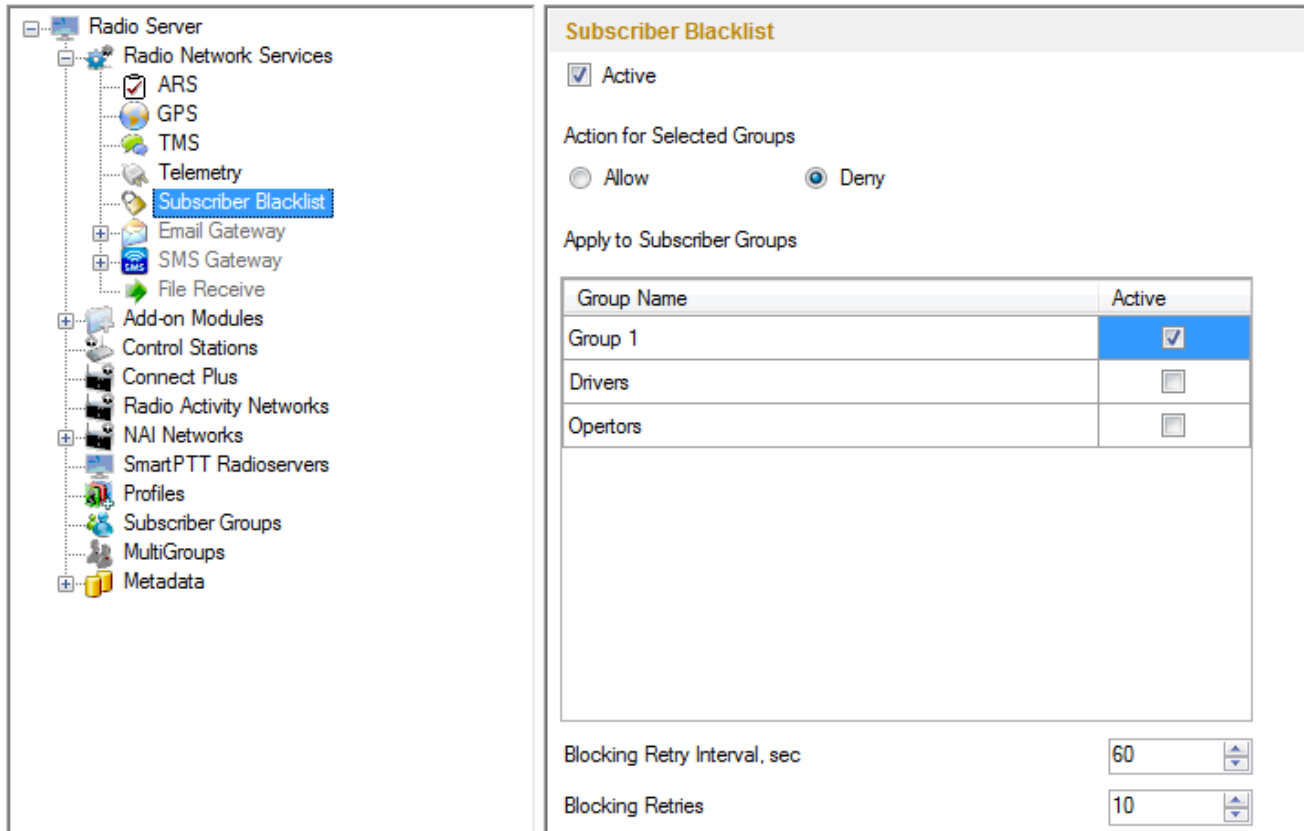
To add a subscriber group, click **Subscriber Groups** in the setting tree of SmartPTT Radioserver Configurator. At that, the **Subscriber Groups** window opens on the right.



**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** checkbox.



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 .

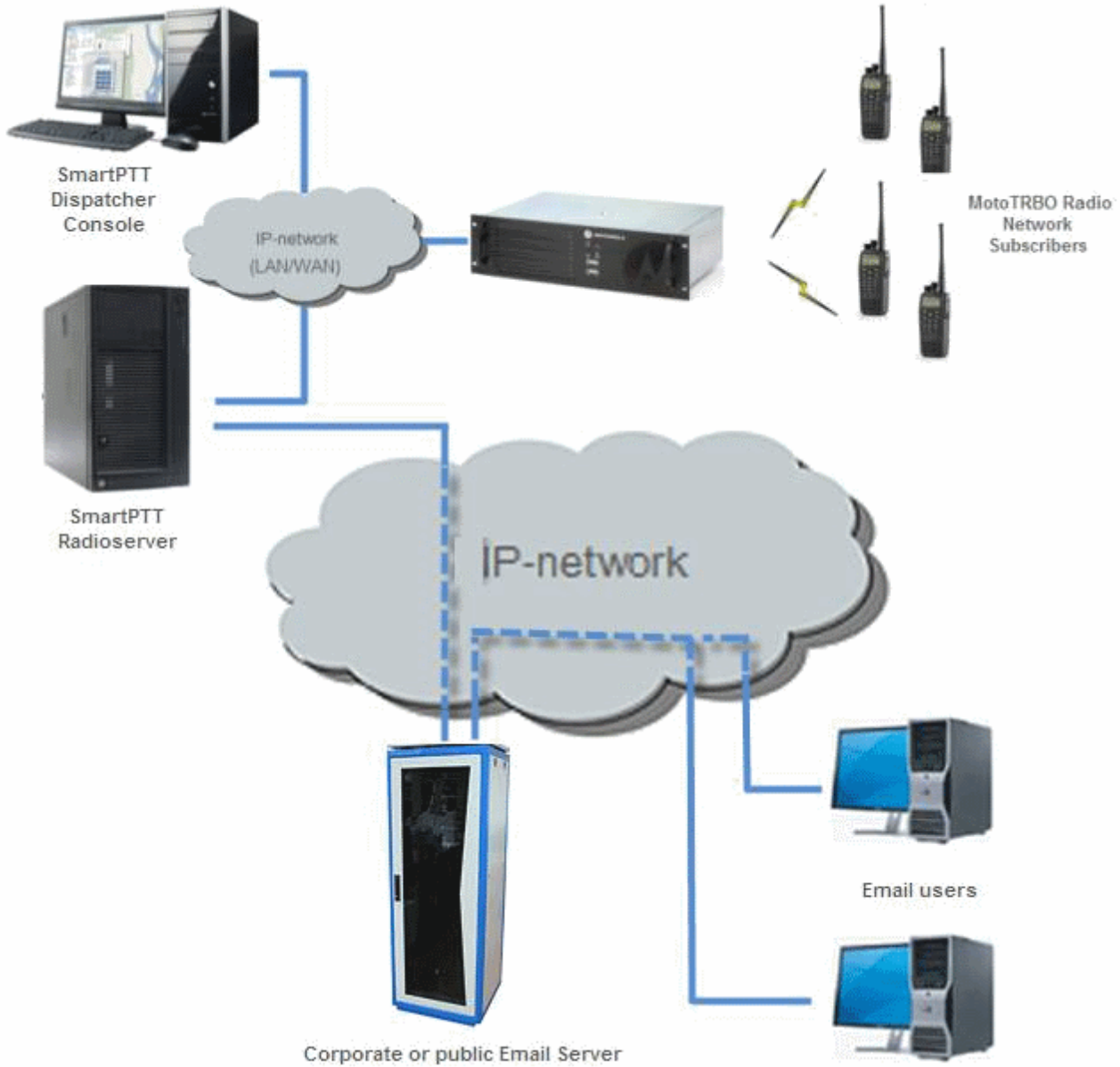
If a radio is in the blacklist and MOTORBO control station is used (MOTOTRBO control station, Capacity Plus system), then the radio will be completely unavailable. When the radio is unavailable, some actions are still available: **Monitoring**, **Radio Check** and **Radio Unblocking**. The dispatcher 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 MOTOTRBO Customer Programming Software (called MOTOTRBO 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 MOTOTRBO 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 MOTOTRBO 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.

General Labels Inbox Accounts and Import Filters **Forwarding and POP/IMAP** Chat Web Clips Labs Offline Themes

**POP Download:**  
[Learn more](#)

1. Status: **POP is enabled** for all mail that has arrived since 8/31/09

Enable POP for **all mail** (even mail that's already been downloaded)

Enable POP for **mail that arrives from now on**

**Disable POP**

2. When messages are accessed with POP

3. **Configure your email client** (e.g. Outlook, Eudora, Netscape Mail)  
[Configuration instructions](#)

**IMAP Access:**  
(access Gmail from other clients using IMAP)  
[Learn more](#)

Status: **IMAP is disabled**

**Enable IMAP**

**Disable IMAP**

**When I mark a message in IMAP as deleted:**

Auto-Expunge on - Immediately update the server. (default)

Auto-Expunge off - Wait for the client to update the server.

**When a message is marked as deleted and expunged from the last visible IMAP folder:**

Archive the message (default)

Move the message to the Trash

Immediately delete the message forever

**Folder Size Limits**

Do not limit the number of messages in an IMAP folder (default)

Limit IMAP folders to contain no more than this many messages

**Configure your email client** (e.g. Outlook, Thunderbird, iPhone)  
[Configuration instructions](#)

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).

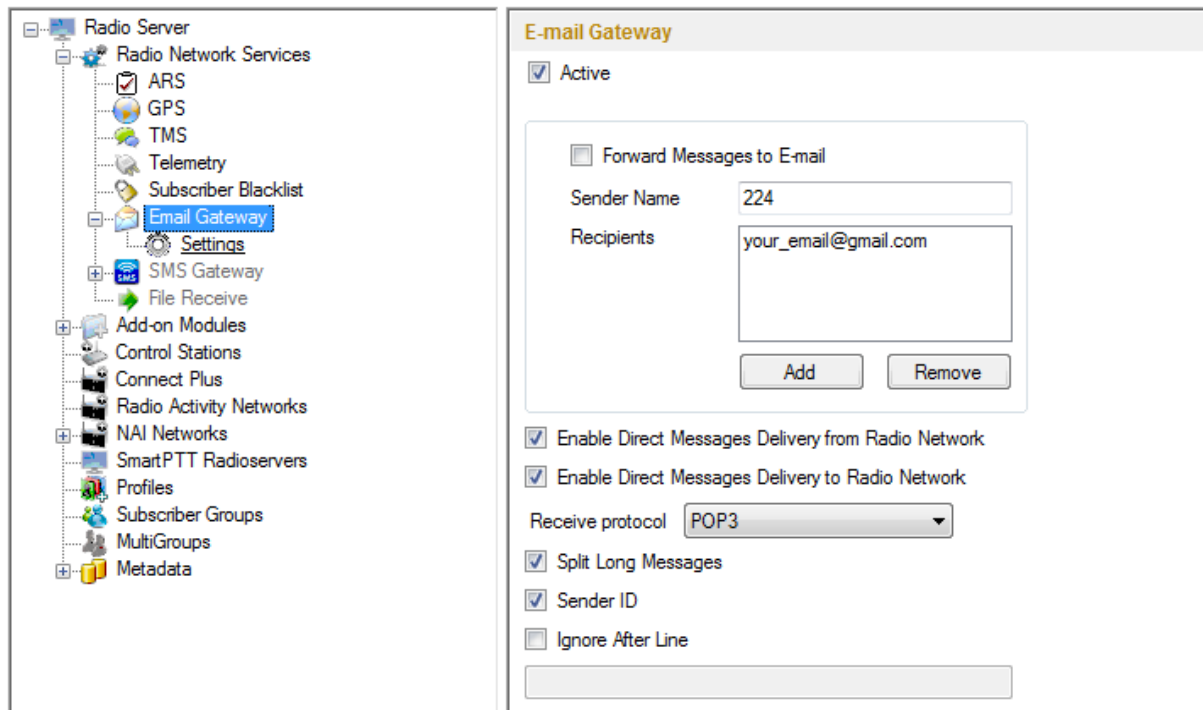
## Configure SmartPTT Radioserver Settings

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** checkbox 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.

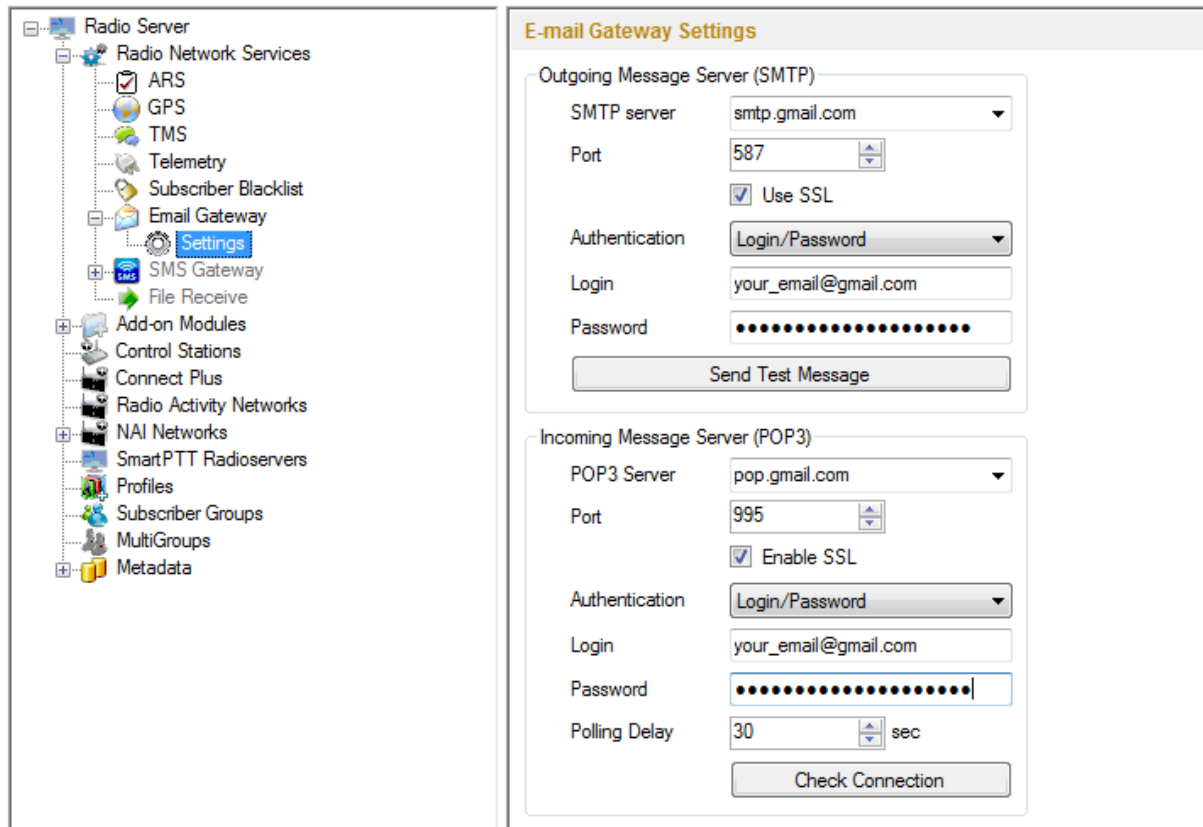
#### Example:

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 checkboxes 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' configuration window. On the left, a tree view shows the 'Radio Server' structure, with 'Settings' selected under the 'Email Gateway' category. The main configuration area 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.

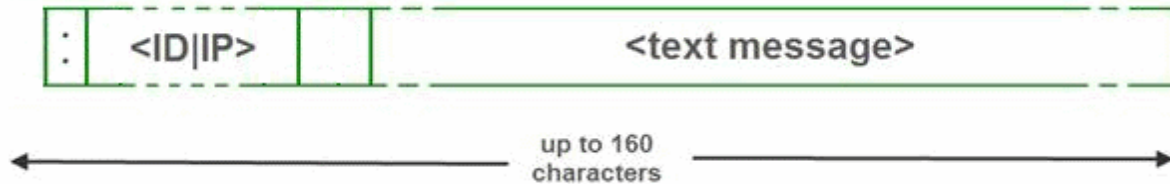
**Polling Delay** – polling interval for the mail server.

**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.

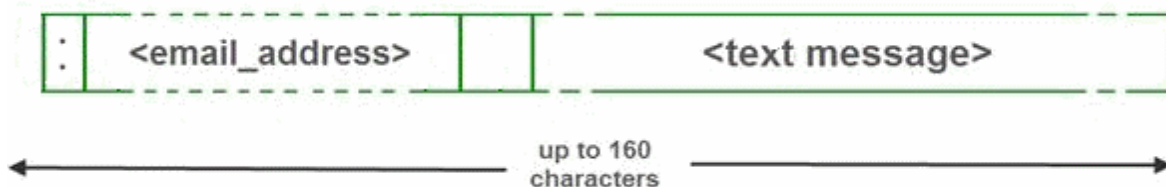
Space indicates the beginning of the message body.

### 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

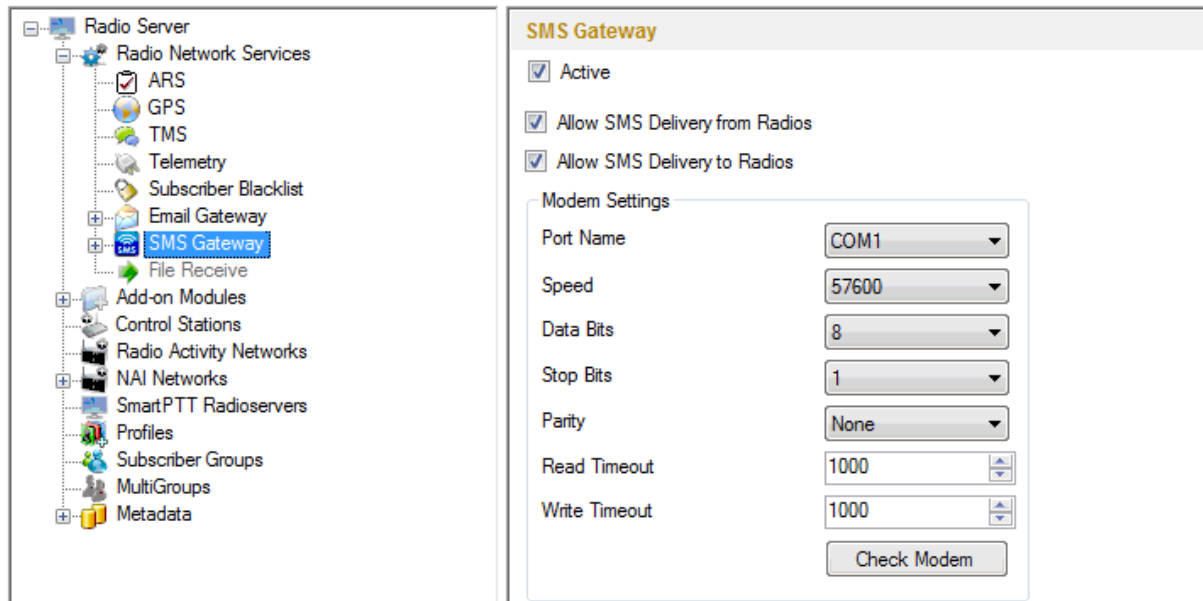
SmartPTT Radioserver has an integrated SMS Gateway service, which allows establishing communication between radios and mobile phones. There are 2 possible ways to communicate between each other:

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.



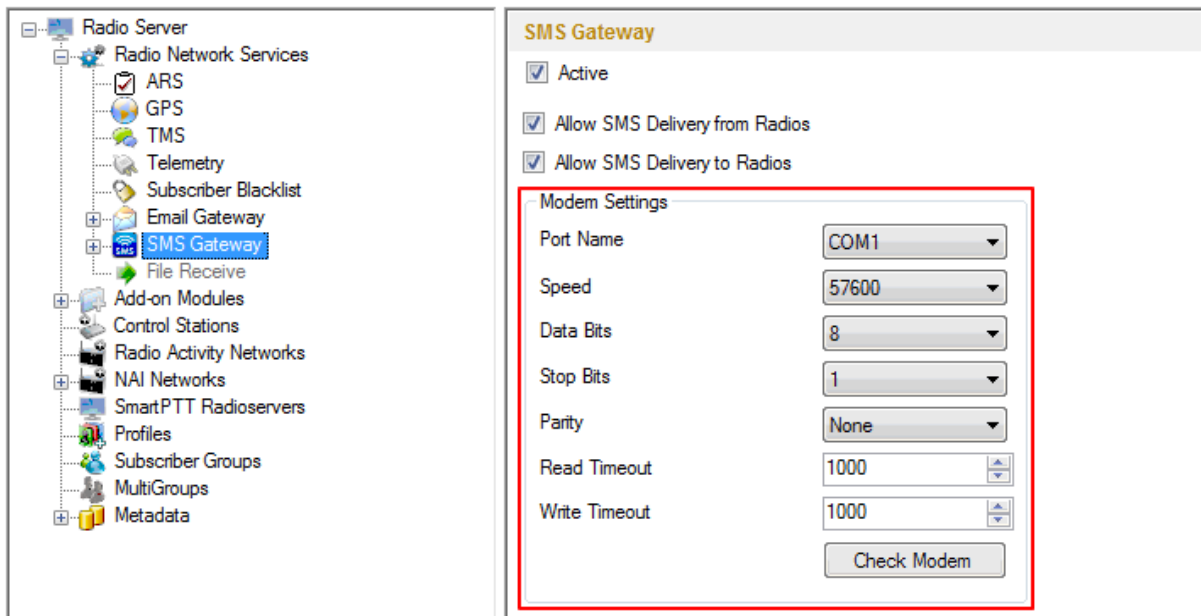
**Active** – select to enable SMS Gateway service.

**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.



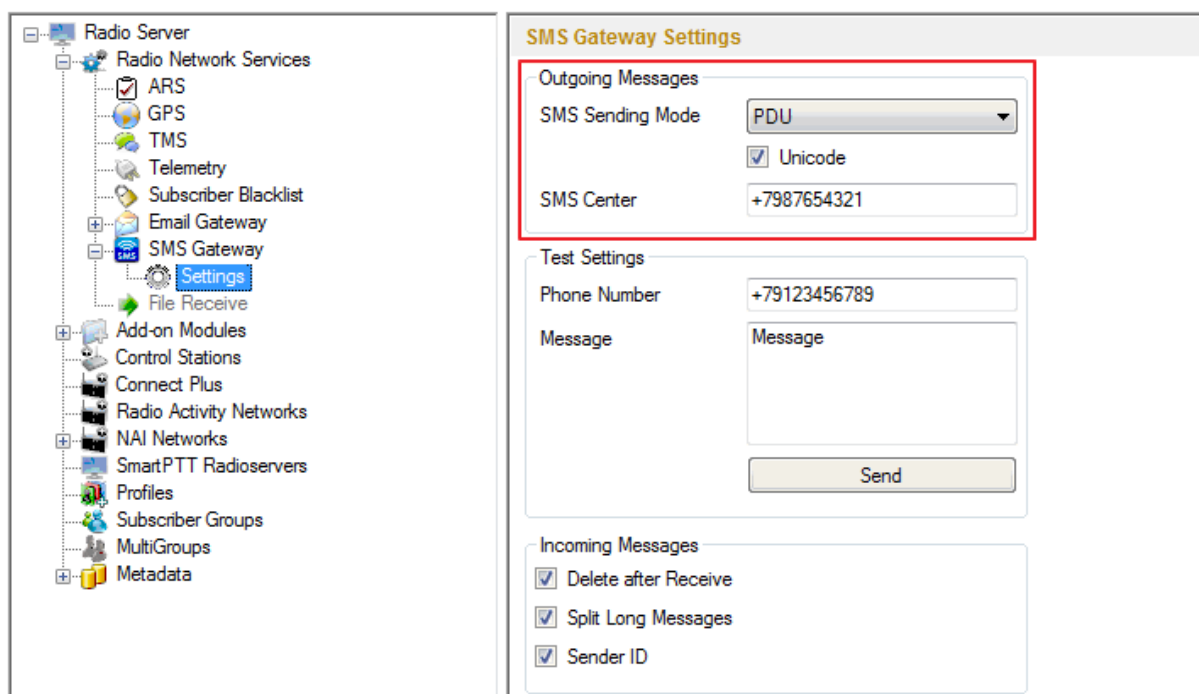
**Write Timeout** – number of milliseconds before a time-out occurs when a write operation does not finish.

**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.

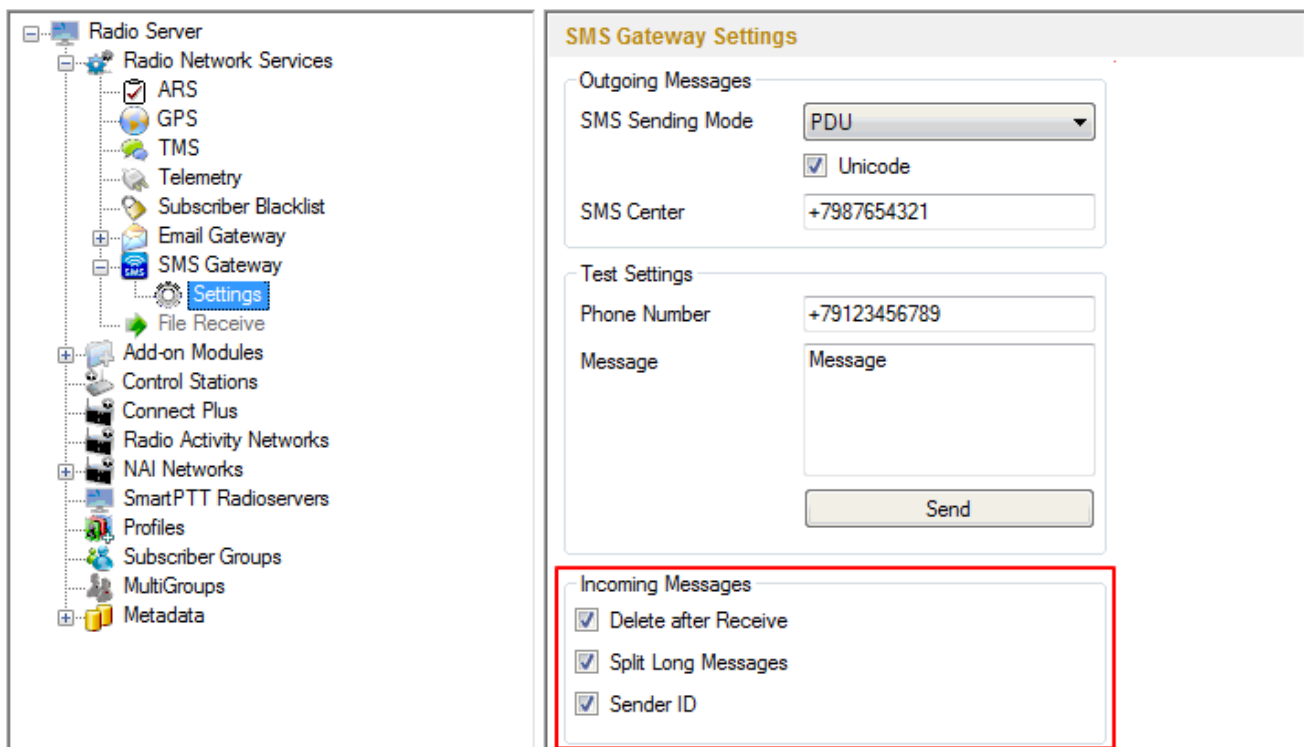
**SMS Center** – SMS message center number. If the number is registered on modem's SIM-card, there is no need to fill this field.

### 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.

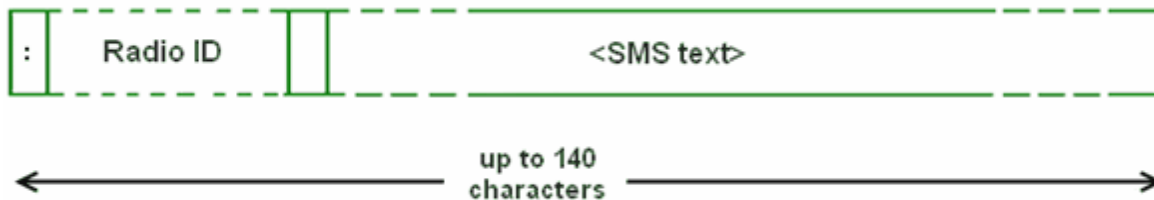
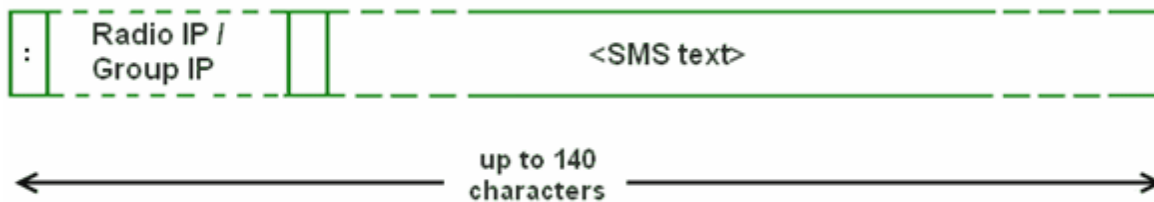
When modem is selected and test message is successfully sent, save the changes  and restart the

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**

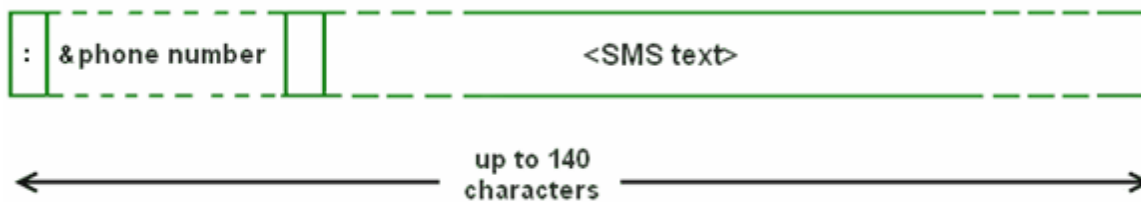
To multiple subscribers simultaneously:

**: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.

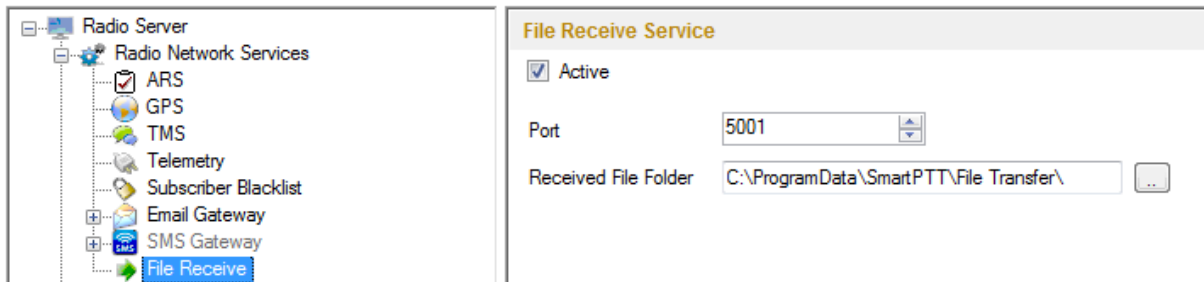
Note: Not all networks support the new scheme of file transfer. It is possible for IP Site Connect only. For other network types use the old file transfer method, that is using control stations and server application SmartPTT File Transfer version 1.0 or 2.0.

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

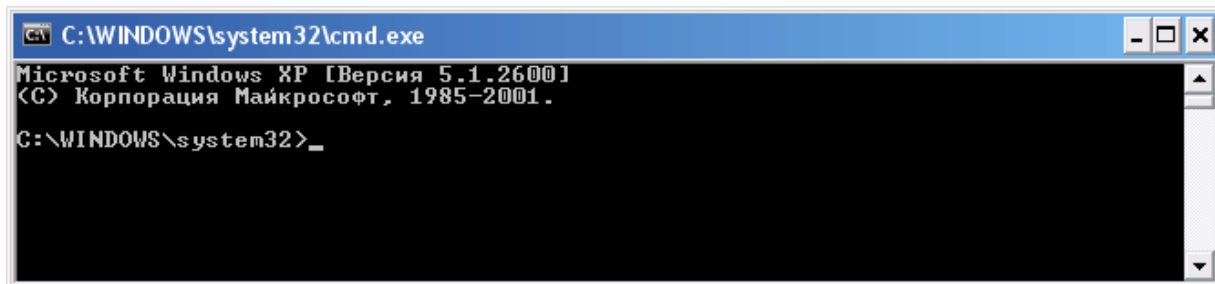
For the best file transfer rate a radio should be configured in the following way:

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;

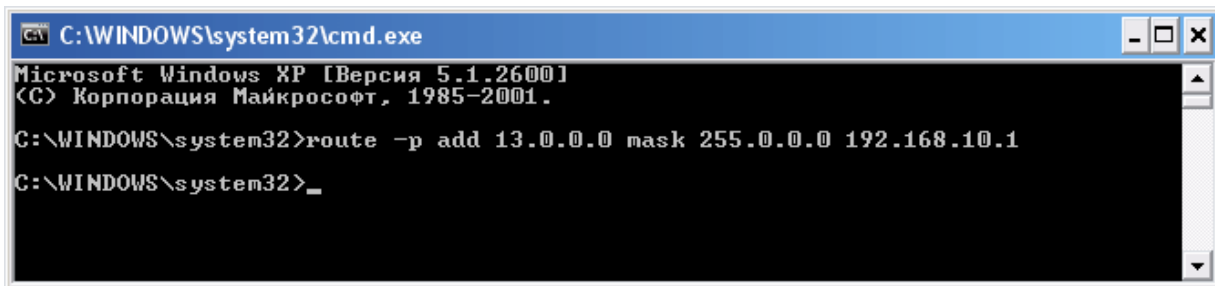
**mask 255.0.0.0** – network mask;

**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
```



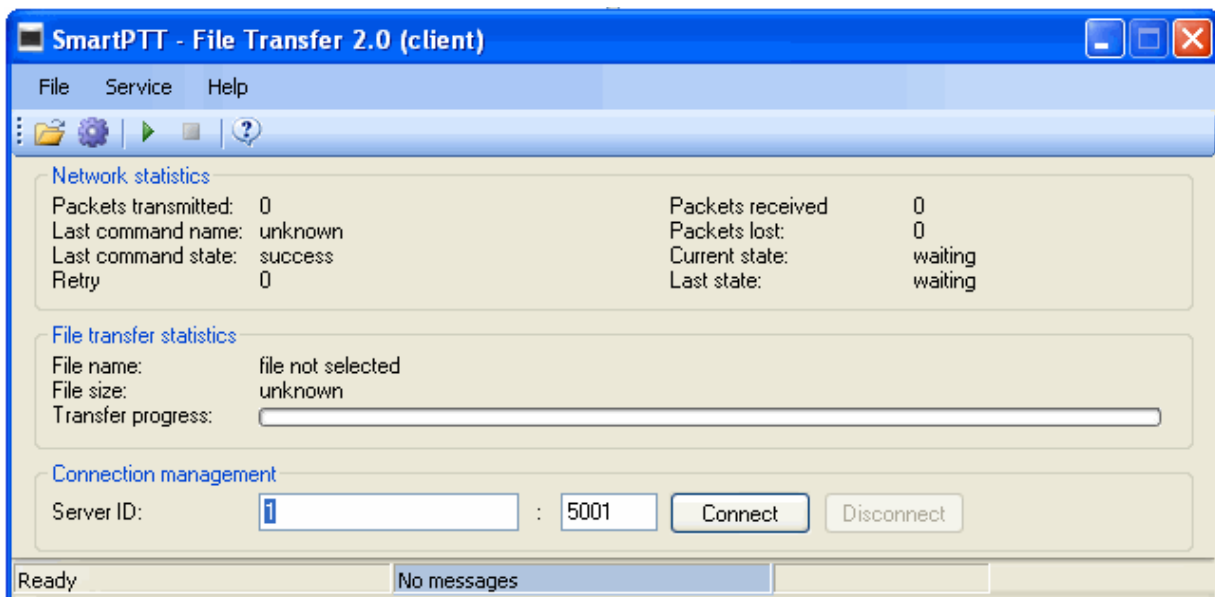
```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Версия 5.1.2600]
(C) Корпорация Майкрософт, 1985-2001.

C:\WINDOWS\system32>route -p add 13.0.0.0 mask 255.0.0.0 192.168.10.1
C:\WINDOWS\system32>_
```

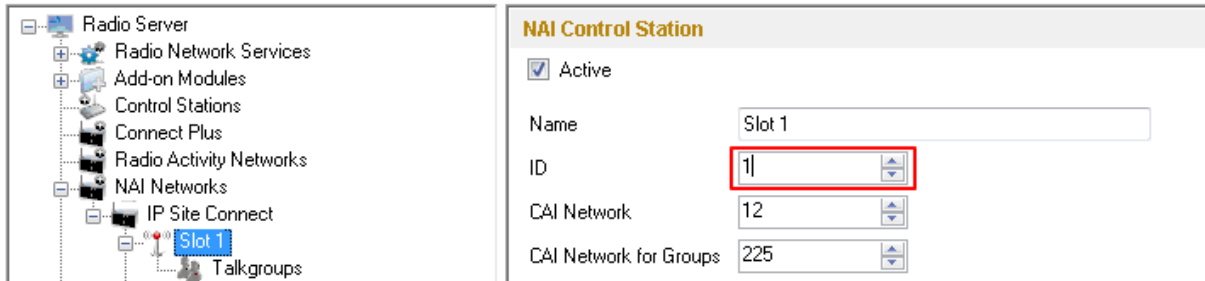
## How to Configure SmartPTT File Transfer Settings

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

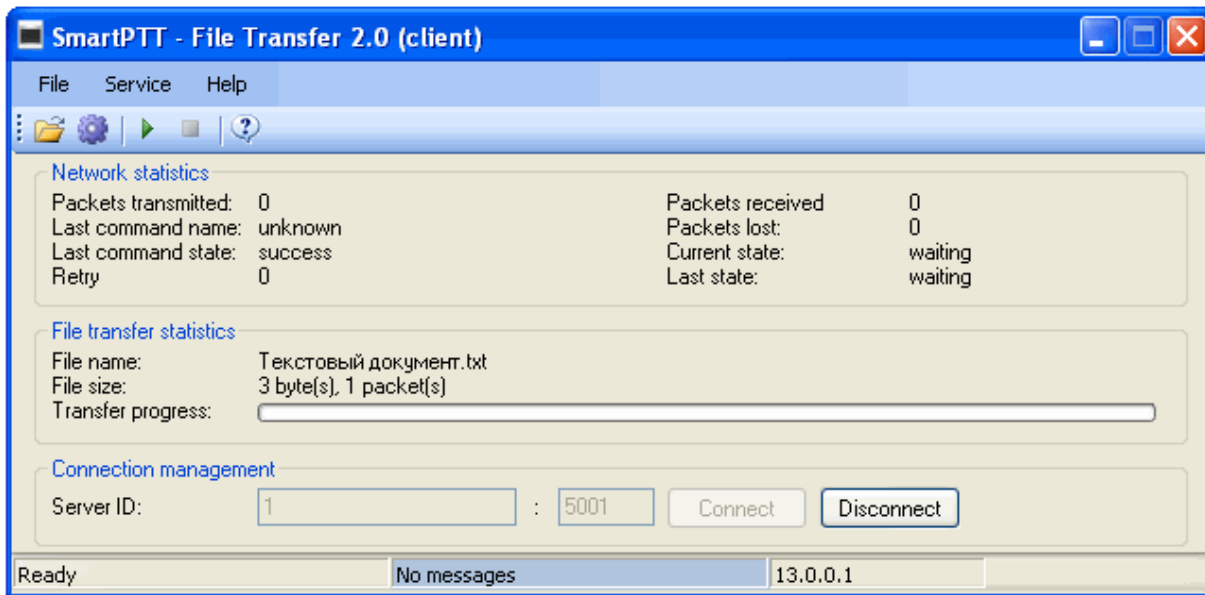
Launch the client application (Start > All Programs > SmartPTT File Transfer > SmartPTT File Transfer Client).




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.

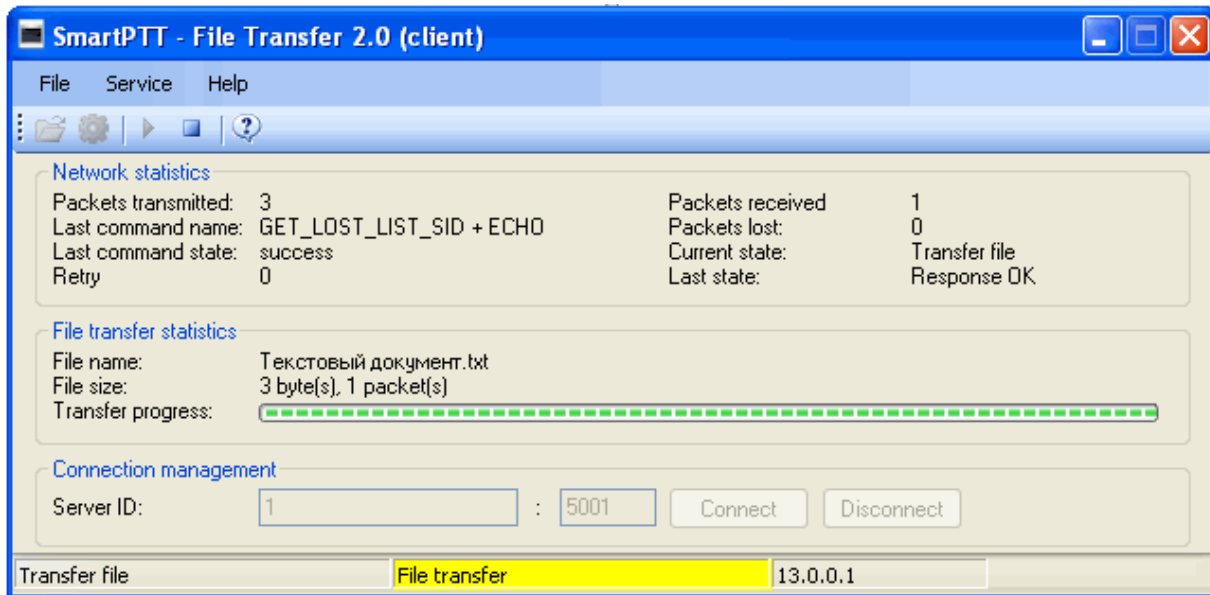


To connect to the radioserver, click **Connect**.

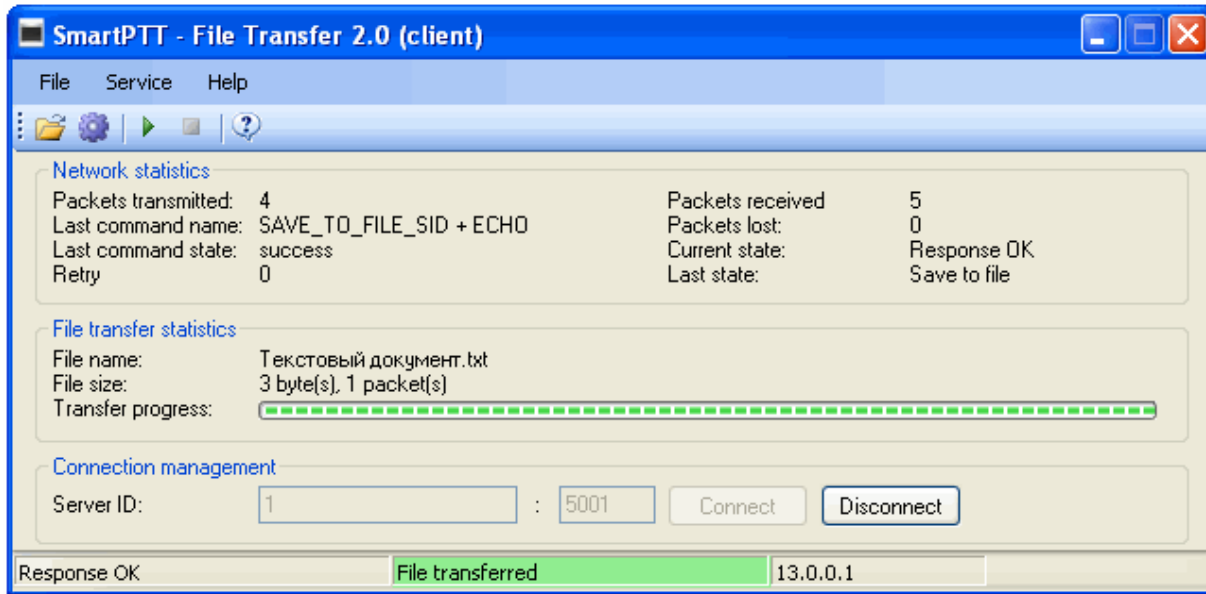




Select file to transmit (**File > Select File**) and click the **Start File Transfer** button . At that, the radio will start transmitting the file to the radioserver, and at the bottom of the window a record will appear informing about the ongoing file transmission process.



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

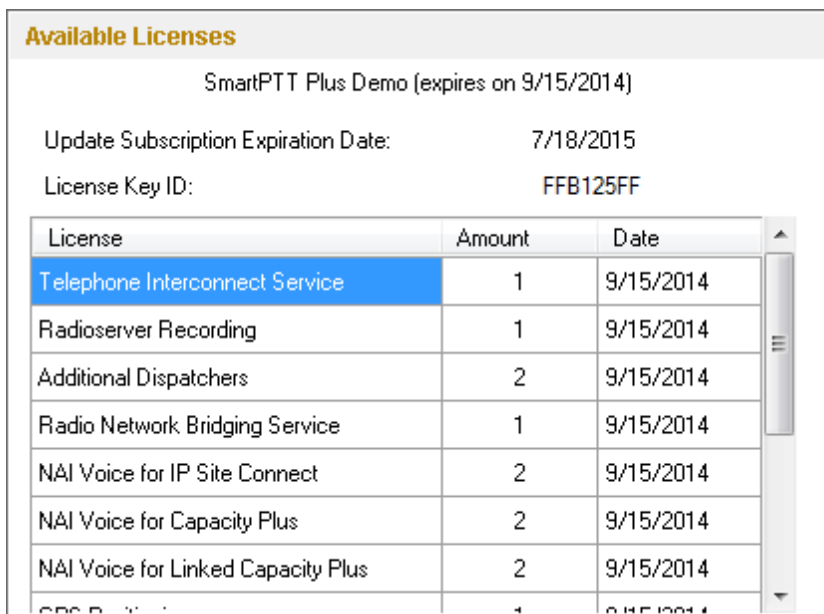
To use the SmartPTT application you need to install licenses. There are licenses for basic features, which allow you to run the application, and licenses for additional features, like telephone connection support, bridging, SNMP service, etc.

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

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



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

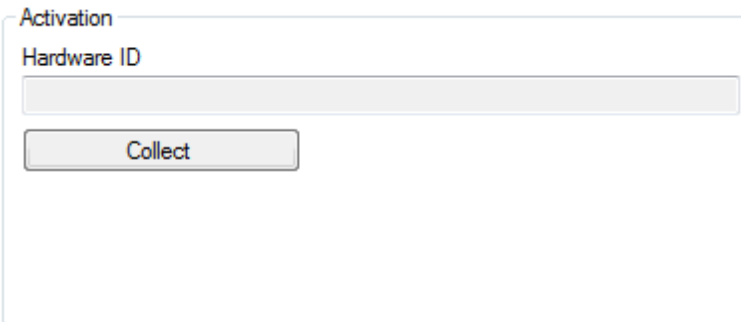


**License** – title of the license.

**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**.



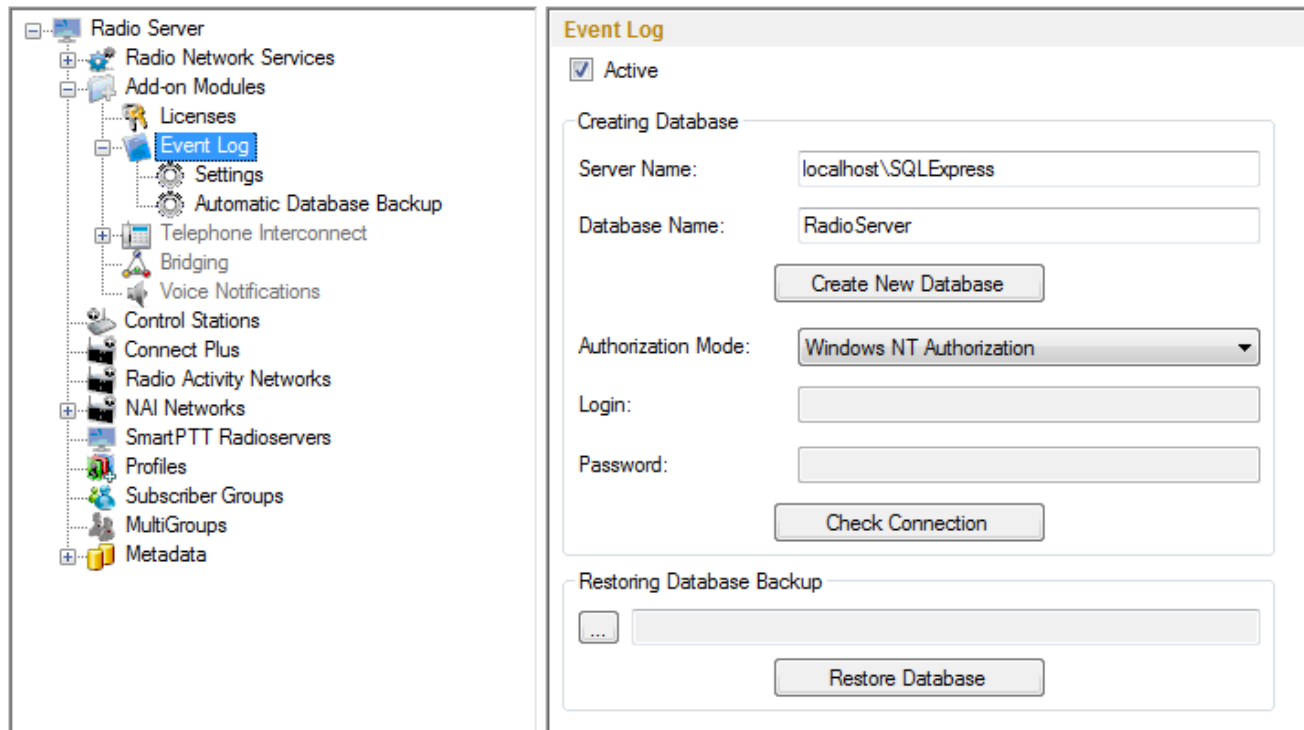
The screenshot shows a window titled "Activation". Inside the window, there is a label "Hardware ID" above a text input field. Below the input field is a button labeled "Collect".

### 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.

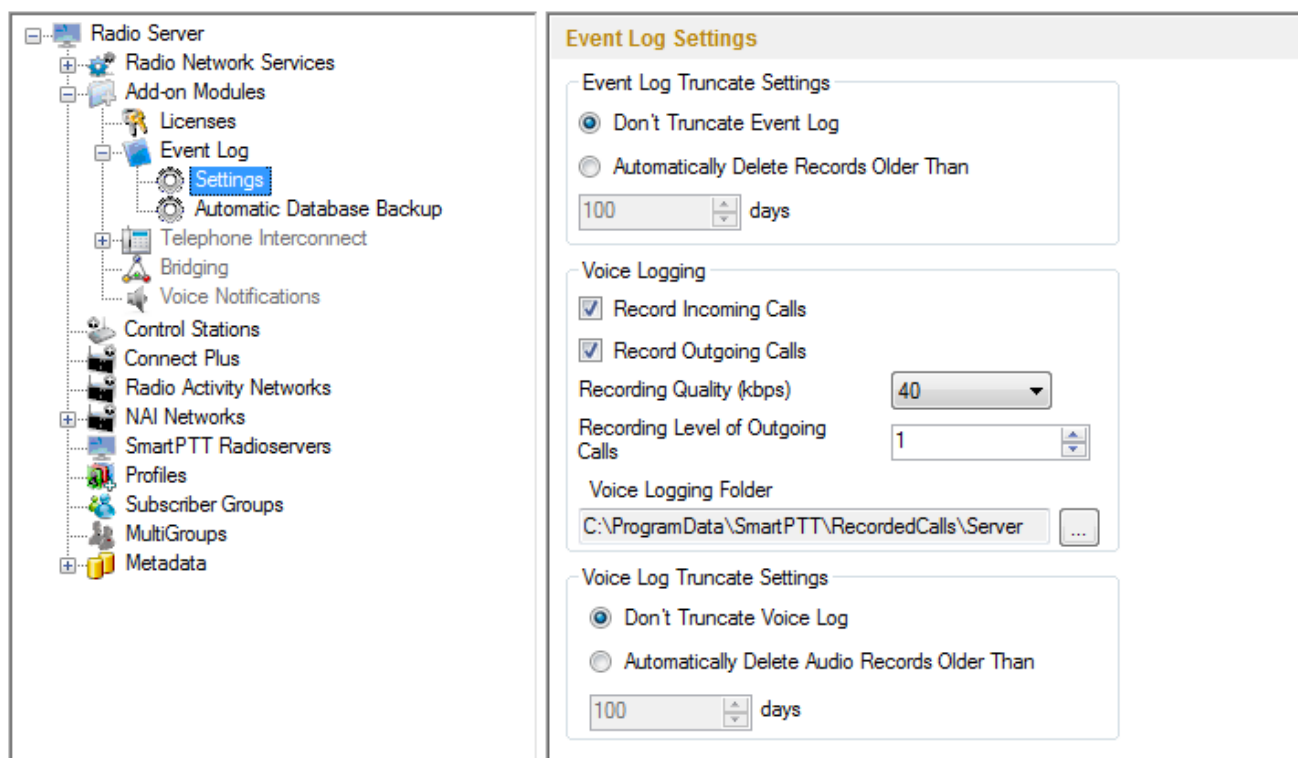
Click **Check Connection**. In case of successful authorization the message "The connection is established successfully!" is displayed. If authorization fails, the cause will be displayed at the bottom of the window.

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.

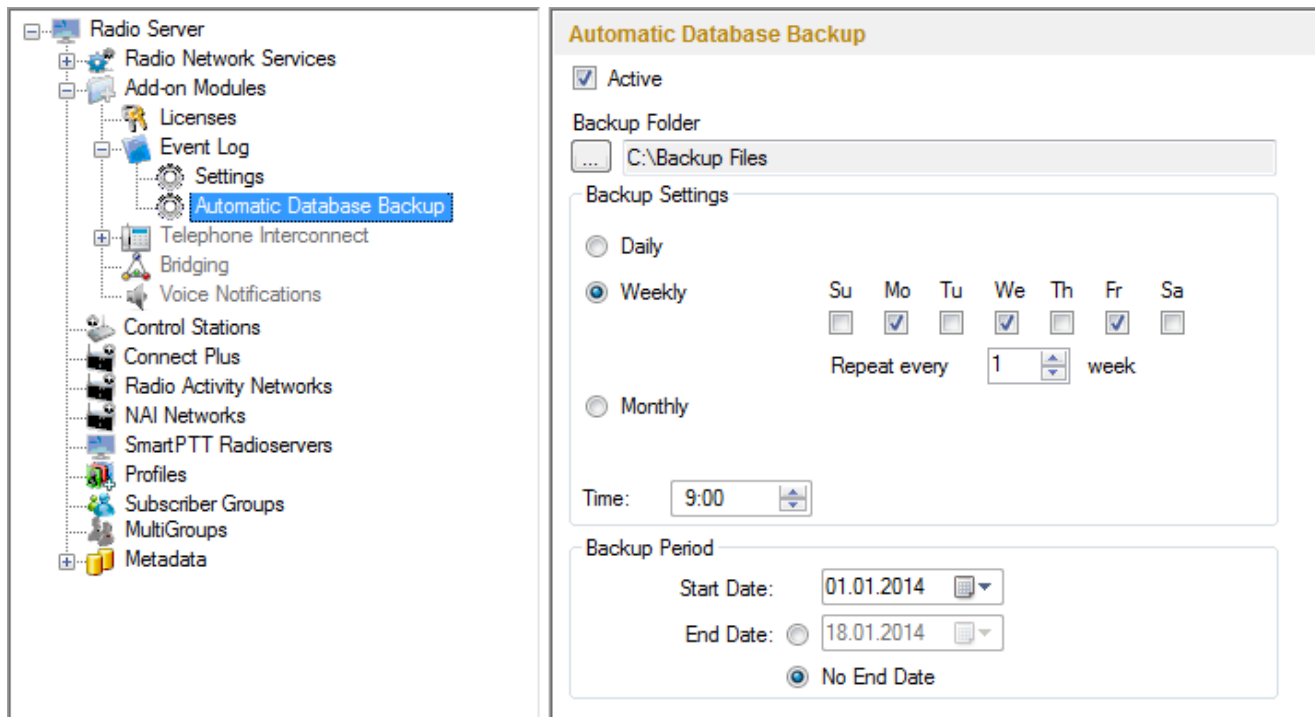
**Voice Logging Folder** – set path to the folder where recorded audio files are stored.

**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 checkbox 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:

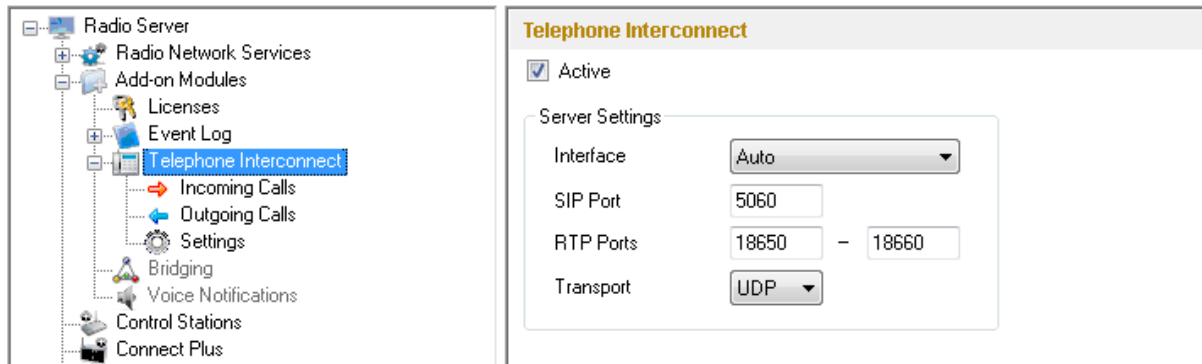
- A telephone subscriber makes a private call.
- A telephone subscriber makes a group call.
- A radio subscriber makes a call to a telephone subscriber.
- The dispatcher connects telephone and radio subscribers.
- The dispatcher connects a telephone subscriber and a talkgroup.

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.

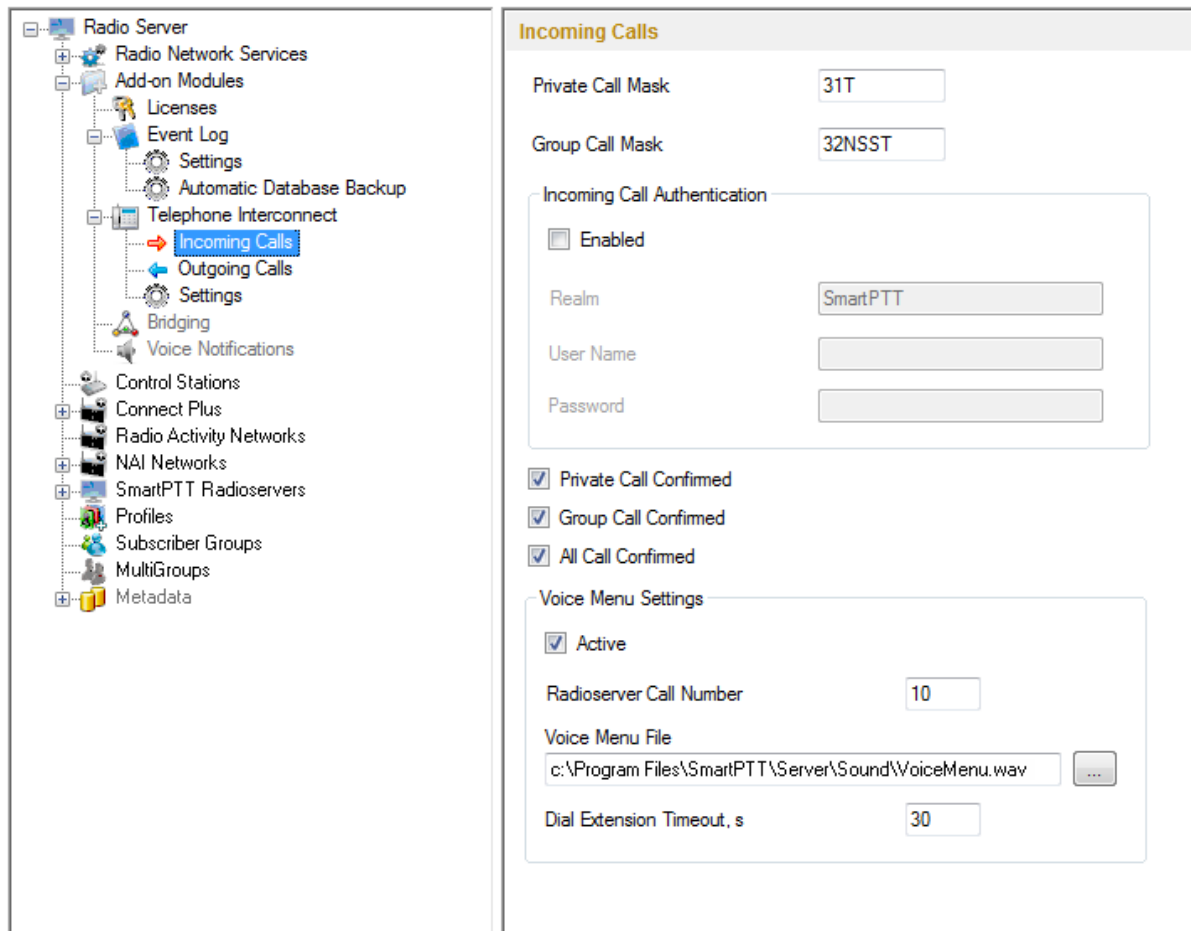
**RTP Ports** – UDP or TCP port number to receive and send SIP data packets. Accordingly, the specified port must be available for incoming and outgoing traffic. The default range of values is from 18650 to 18660.

**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 UDP 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

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

### 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 displays the 'Outgoing Calls' configuration page in the Radioserver Configurator. On the left, a tree view shows the navigation structure, with 'Outgoing Calls' highlighted. 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: [Empty]
  - User Name: [Empty]
  - Password: [Empty]
  - 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.

**IP Address** – 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 checkbox next to the action in the table to allow it. Clear the checkbox 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.

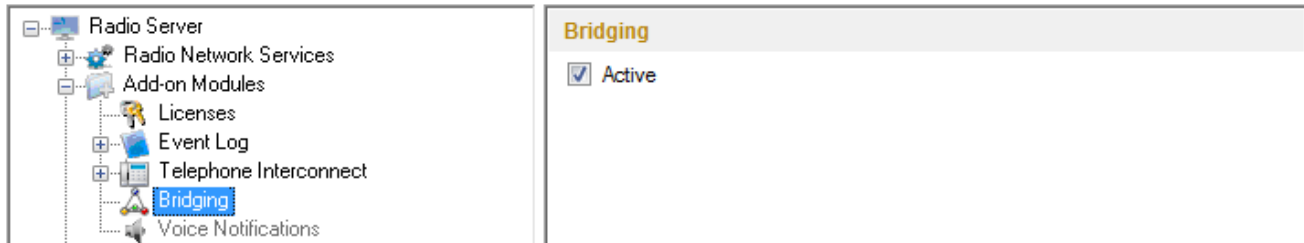
**Call Error Notification for Subscriber Radio** – if errors occur when connecting to the telephone subscriber, the radio subscriber receives a text message clarifying the error.

**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.

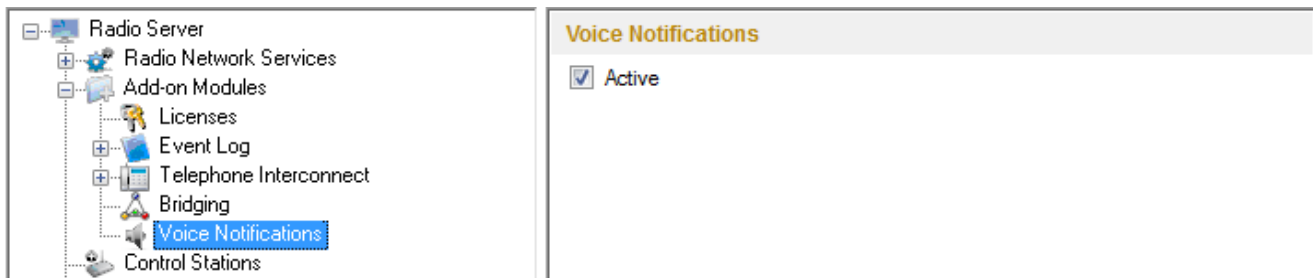
To activate the Bridging service, click **Bridging** in the setting tree of SmartPTT Radioserver Configurator. In the opened window select the **Active** checkbox.



### 2.2.2.5 Voice Notifications

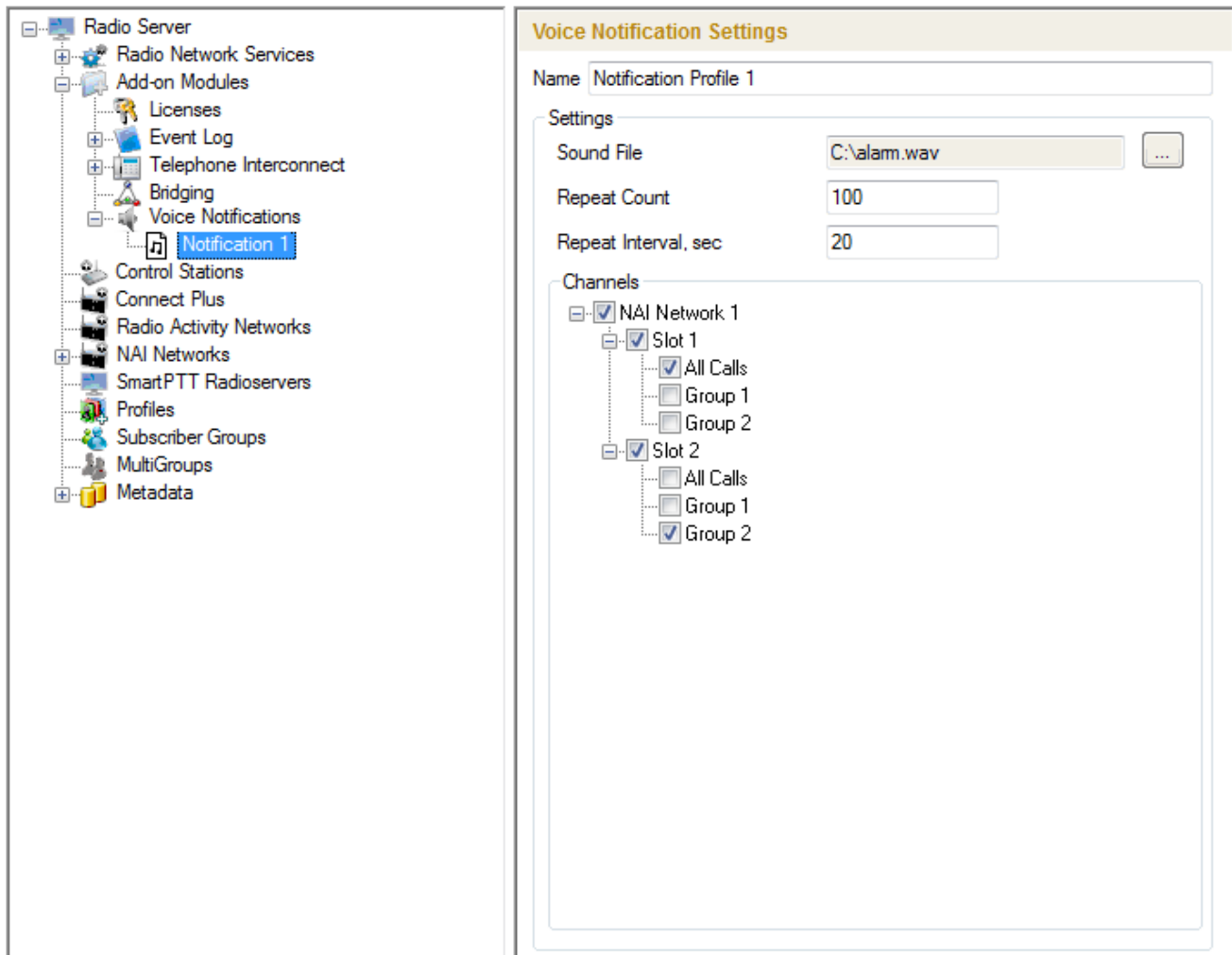
The main purpose of the voice notification functionality is to warn talkgroups about the fire or other emergency and to manage evacuation. However, in normal mode voice notifications can be used to transmit ordinary announcements.

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** checkbox.



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.

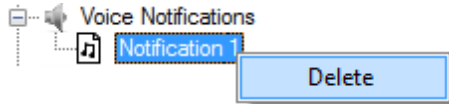
**Play Count** – specifies how many times the voice notification will be played on the channel. To be set in the range from 1 to 9999.

**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**.



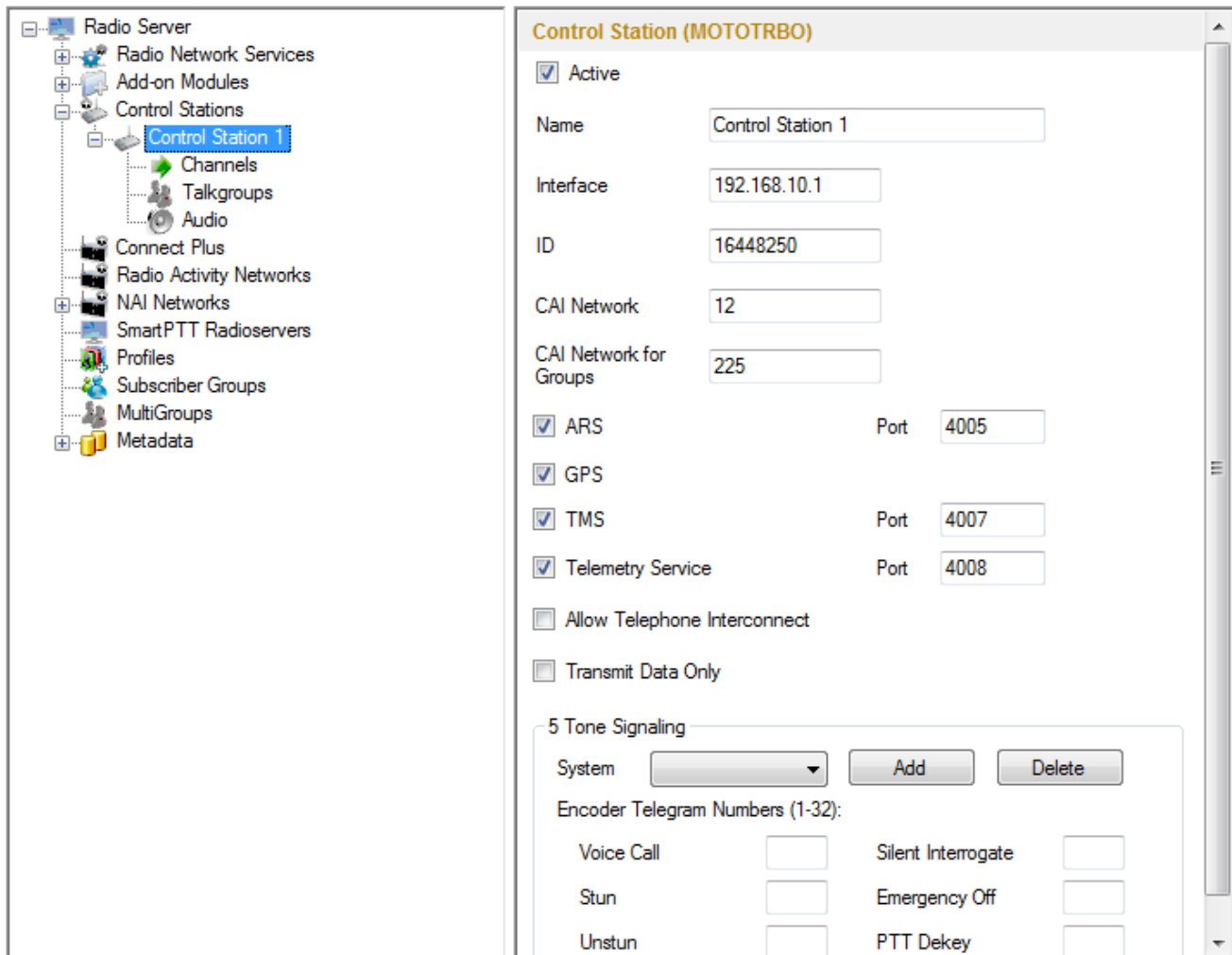
## 2.2.3 Control Station

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.

**Location Service** – enables location service which provides coordinates of radio subscribers.

**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.

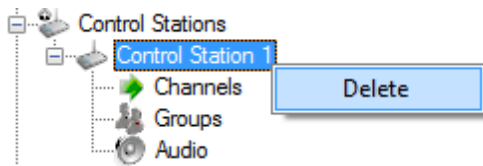
**Emergency Off** – when the radio receives the telegram number while in an emergency mode, the radio terminates the emergency mode.

**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** checkbox.

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

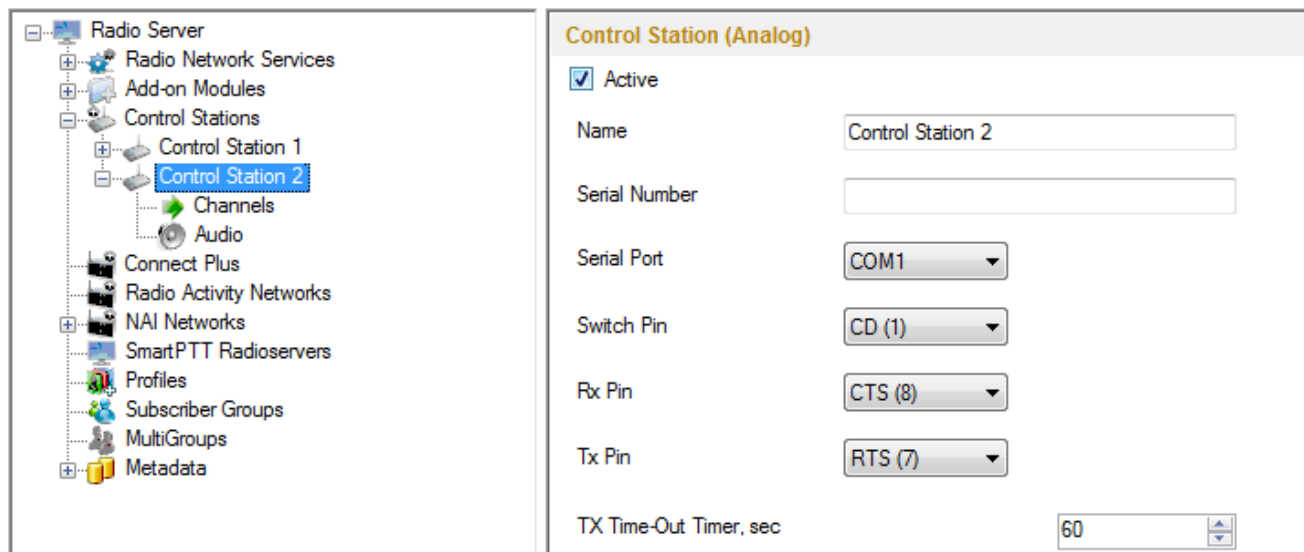


## How to Configure Analog Control Station

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:

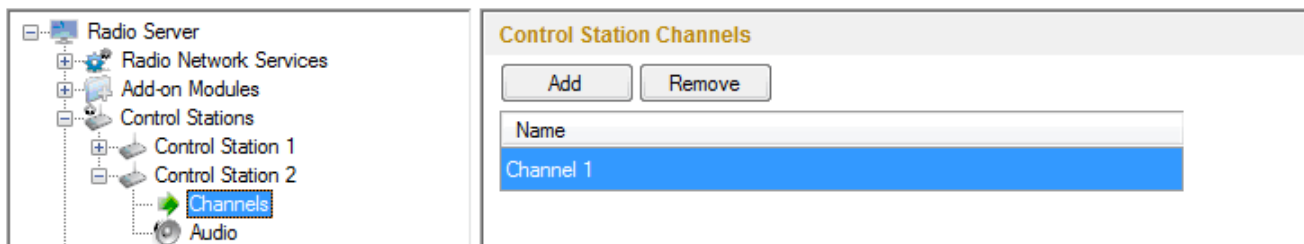
- **Switch Pin** (incoming) is set to 1 (< -3.0V) when the control station is switched on.
- **Rx Pin** (incoming) is set to 1 when a signal carrier is registered on the channel.
- **Tx Pin** (outgoing) is set to 1 to switch to transmit mode.

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.

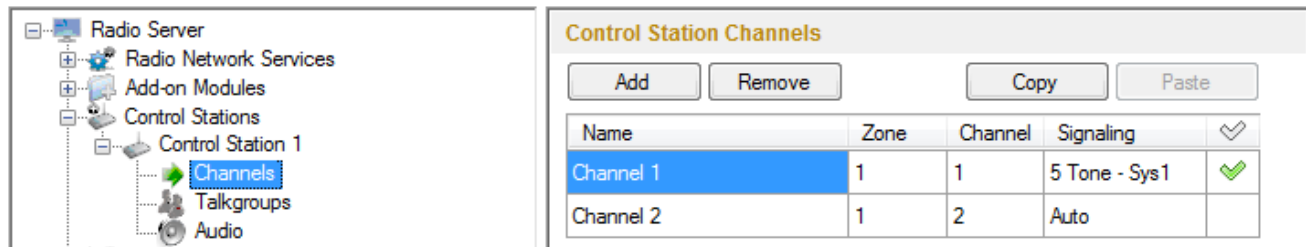
Save the changes and restart the service.

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
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.

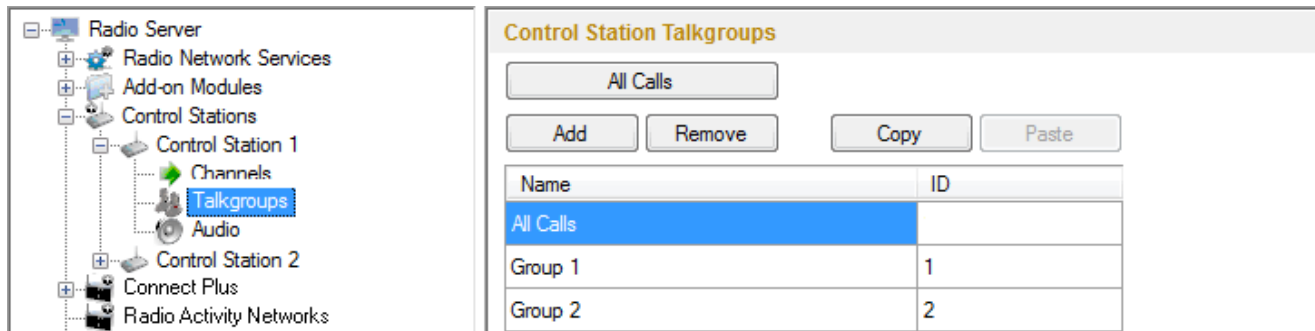


– selected channel will be set at the control station, when you start the radioserver.

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.

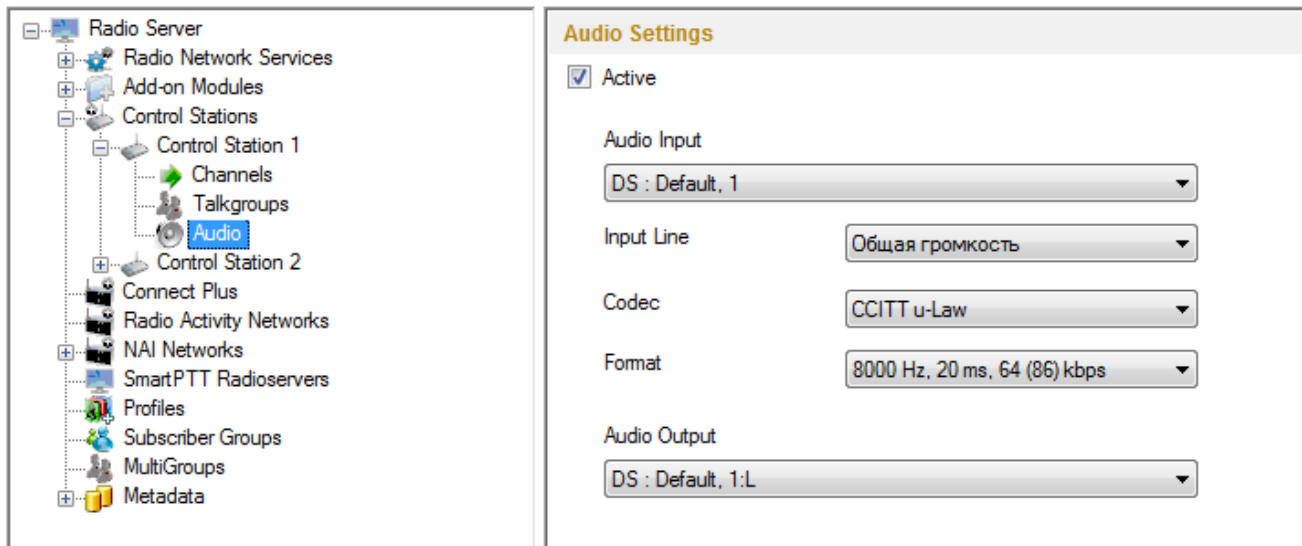
**ID** – talkgroup unique identifier used during communications. To be set in the range from 1 to 16776415.

**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** checkbox 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 8.3 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 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.

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:

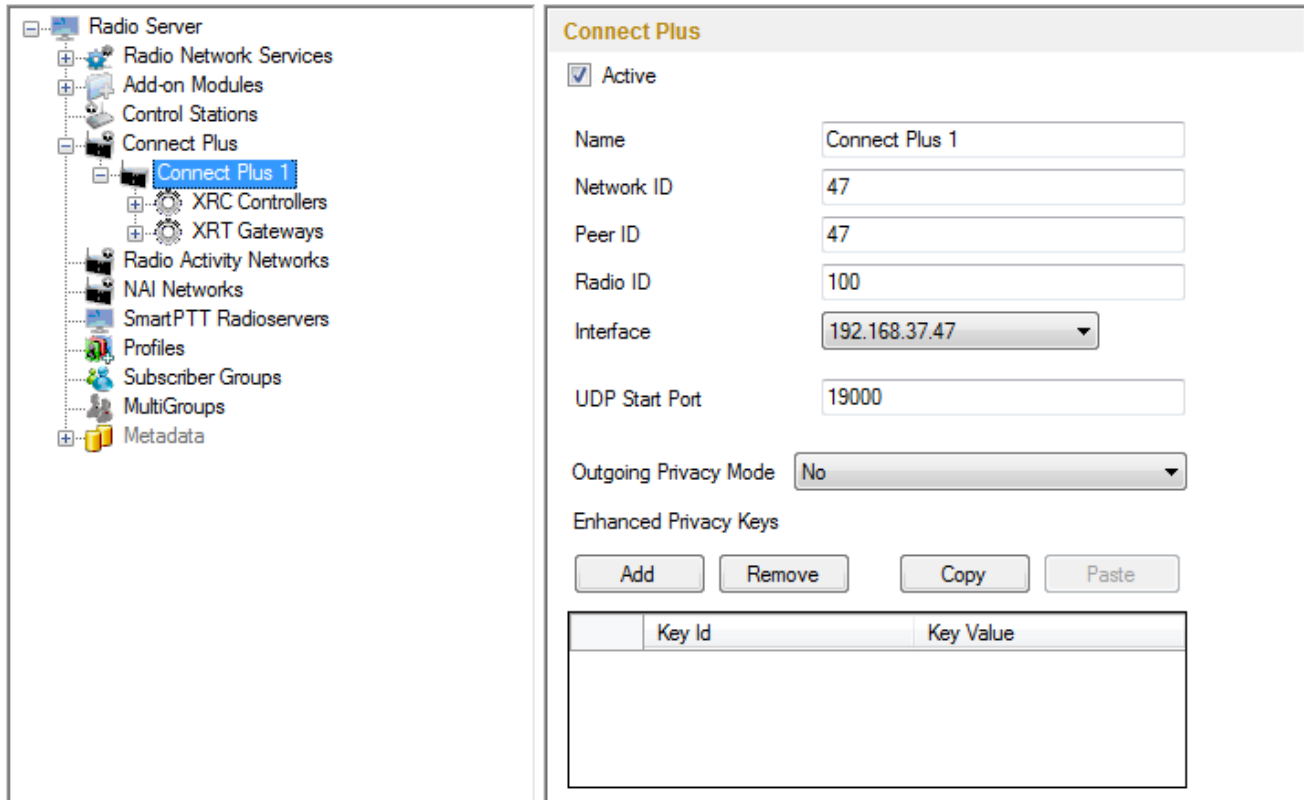
1. Adding new network and its basic configuration.
2. Setting up XRC Controller configurations.
3. Setting up talkgroups for group messages.
4. Setting up XRT Gateway parameters for voice communication.
5. Adding talk paths for voice calls.

### 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.

**Peer ID** – unique ID of the virtual repeater in the Connect Plus network.

**Radio ID** – dispatcher identifier. It must correspond to the **Console User ID** field in the XRT Gateway settings.

The screenshot shows a 'User Details' configuration window. It includes 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 window 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.

**Outgoing Privacy Mode** – the encryption mode for outgoing calls. Privacy is a software-based scrambling solution that is not robust, and is only meant to prevent eavesdropping. A radio must have privacy enabled on the channel to transmit a privacy-enabled transmission, but this is not necessary for a receiving radio. Privacy-enabled channels are still able to receive clear (unscrambled) transmissions.

There are two types of **Outgoing Privacy Mode**:


- *No*
- *Enhanced*

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

To ensure the *Enhanced* mode for traffic encryption, add enhanced privacy keys for outgoing calls. There can be only one key for outgoing calls. To select the key for outgoing calls, first select *Enhanced* in the **Privacy Mode** field. In the table add the **Key ID** and the **Key Value** which matches the **Key ID** and the **Key Value** set in the radio settings in MOTOTRBO CPS. In the **TX Key** column select the key used for encryption of the outgoing calls.

Outgoing Privacy Mode

Enhanced Privacy Keys

	Key Id	Key Value	TX Key
	1	123456789	<input checked="" type="radio"/>
	2	987654321	<input type="radio"/>

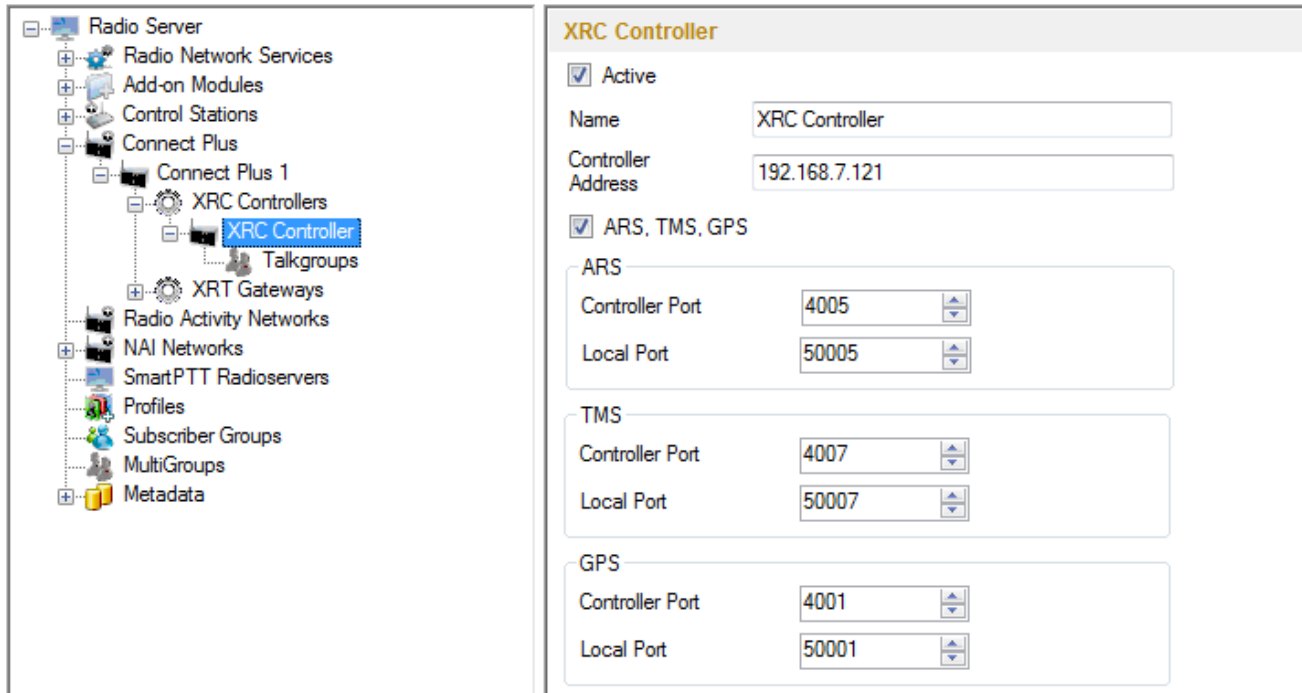
If the values in the **Key ID** fields are the same, but the values in the **Key Value** fields do not match, the receiving radio hears only a distorted voice. If **Key ID** specified in the MOTOTRBO CPS of the radio does not match any of the **Key IDs** specified in the table, the dispatcher hears nothing during transmission.

### 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.

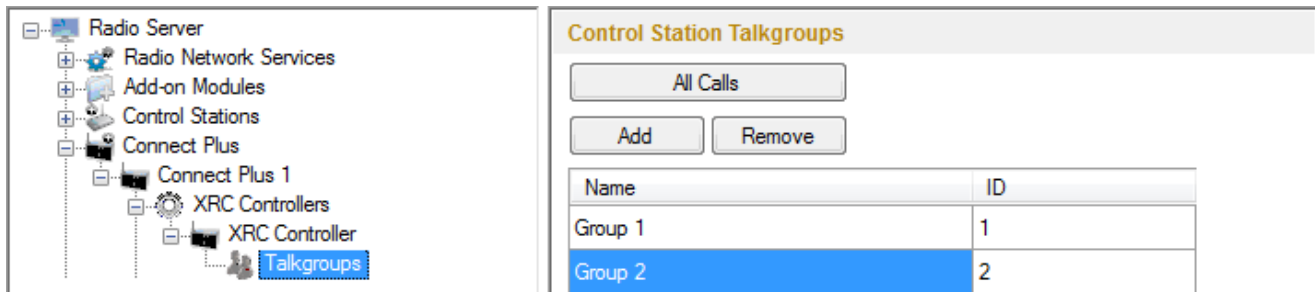
In order to enable data services on the controller select **ARS, TMS, GPS**.

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

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

Note: The ARS, TMS and GPS services can be set up only on one of the XRC Controllers in the network. These settings will be used by other controllers available in the network.

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

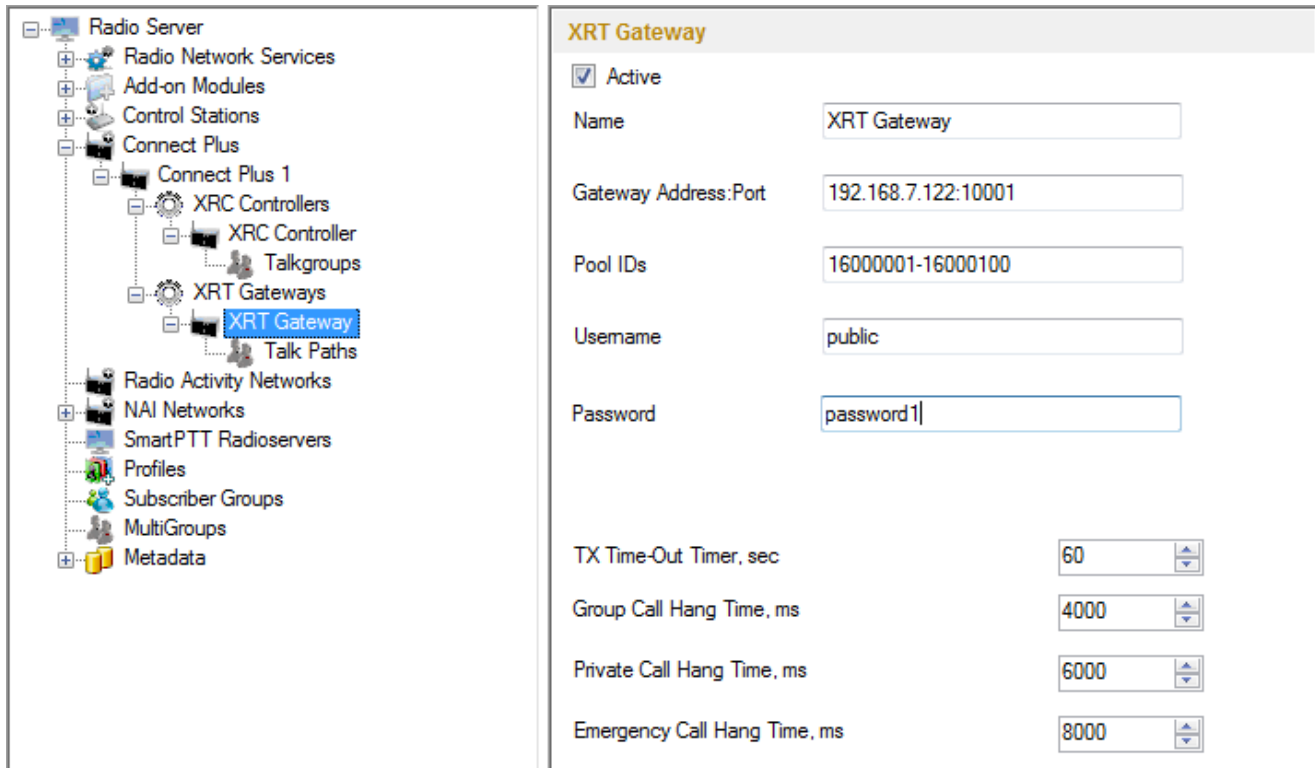


### 2.2.4.3 XRT Gateway

The XRT Gateway allows making voice calls in the Connect Plus system. You can have maximum 4 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:



**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 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 are several other settings: 'Max Talk Paths' is set to '10'; 'Billing Enabled' is an unchecked checkbox; 'Network Wide All Call (NWAC) Enabled' is a checked checkbox; 'Group Talk Paths' is a section containing a 'Group ID' field with the value '1001,1002'; 'Private Talk Paths' is a section containing a 'Console User ID' field with the value '100'. At the bottom of the window are three buttons: 'New', 'Save', and 'Delete'.

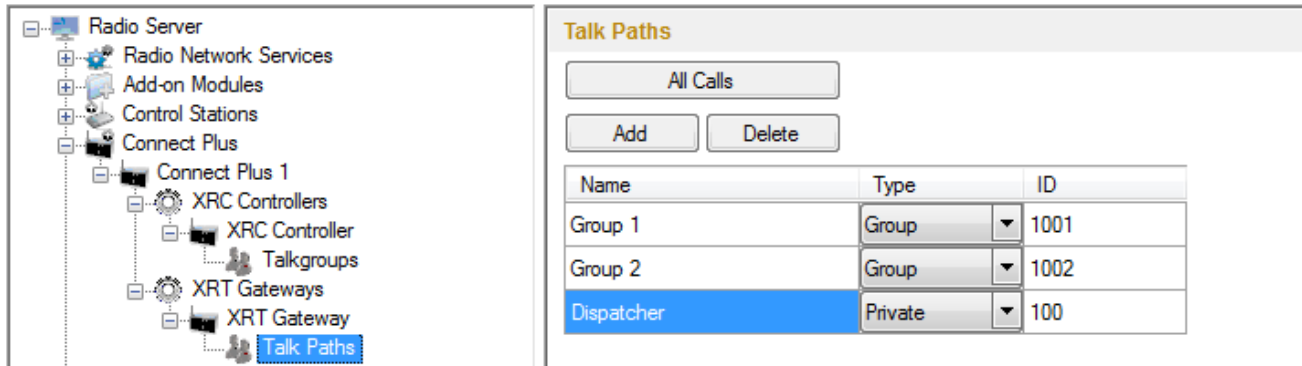
**TX Time-Out Timer, s** – time period during which the radio can transmit without interruptions. After this time is over, the transmission is interrupted.

**Group Call Hang Time, ms** – time during which the 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.

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.



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
  - TS B: 40130
- Analog Voice:**
  - TS A: 30130
  - TS B: 50128
- Data:**
  - TS A: 50128
  - TS B: 50130
- Uplink Ports:** 40128, 40130
- Downlink Ports:** 40132, 40134
- 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.

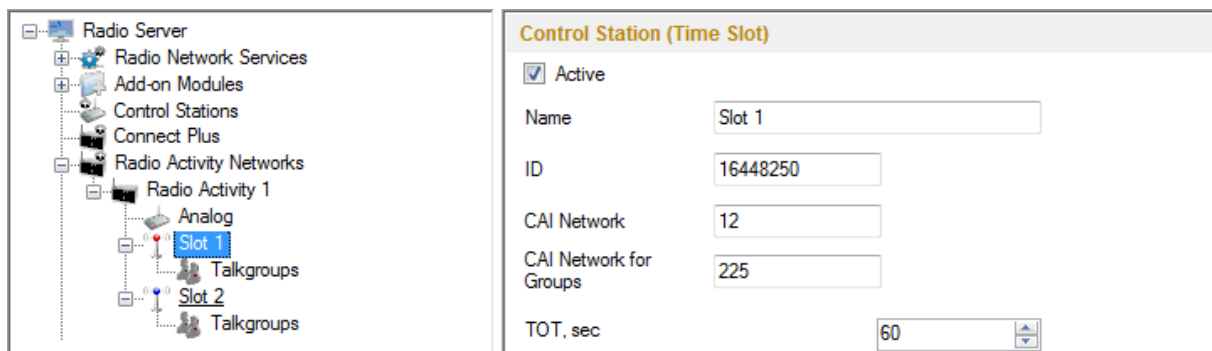
**Private Call Hang Time (ms)** – time during which the repeater reserves the channel to a private call after the end of transmission. During the timeout, only the participants of the private call can transmit.

**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.

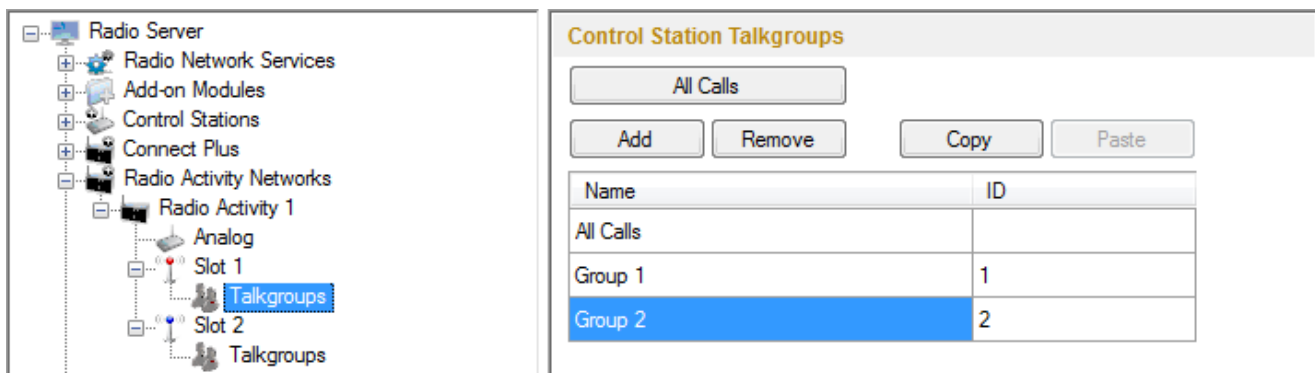
**TOT** – Time-Out Timer. The duration that the radio can continuously transmit before a transmission is automatically terminated. The default value is 60 sec.

**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.

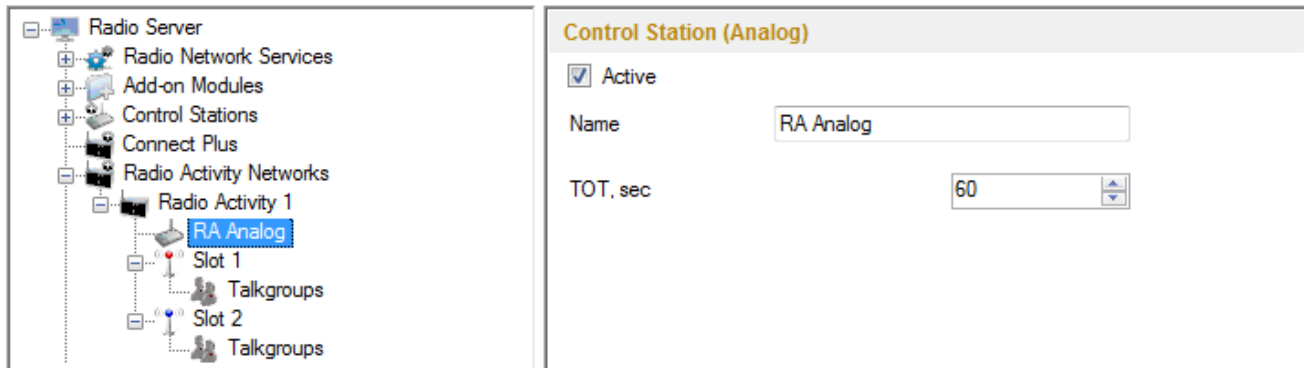


Note: Configuration process of Radio Activity talkgroups is similar to the configuring control station talkgroups.



## Control Station (Analog)

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



**Name** – control station alias.

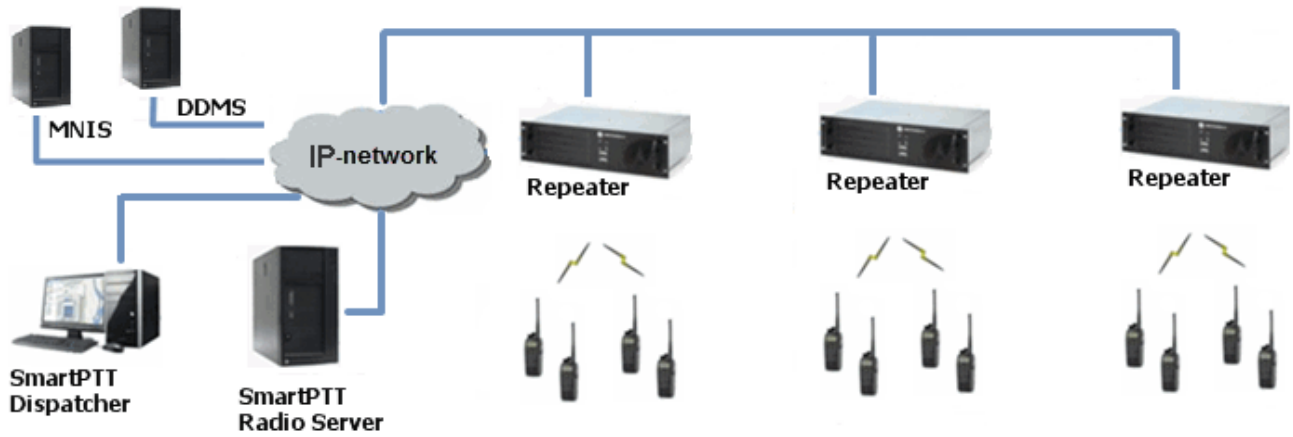
**TX Time-Out Timer, sec** – continuous radio transmission timeout. After this time the transmission is interrupted.

## 2.2.6 NAI

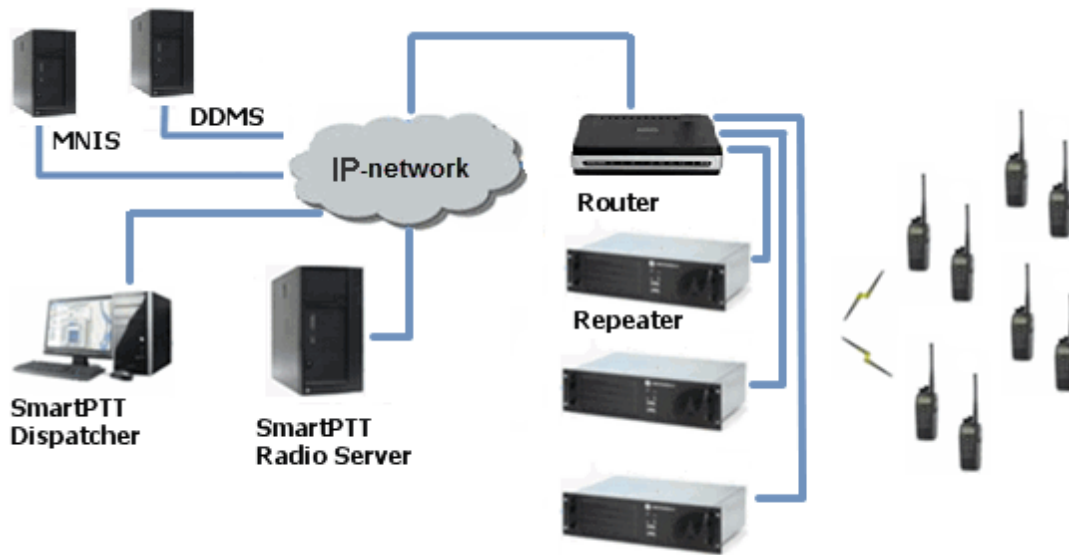
SmartPTT supports MOTOTRBO Network Application Interface (NAI) protocol for networks such as IP Site Connect, Capacity Plus, and Linked Capacity Plus. NAI network configuration uses this protocol for voice, data and monitoring data transmission.

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

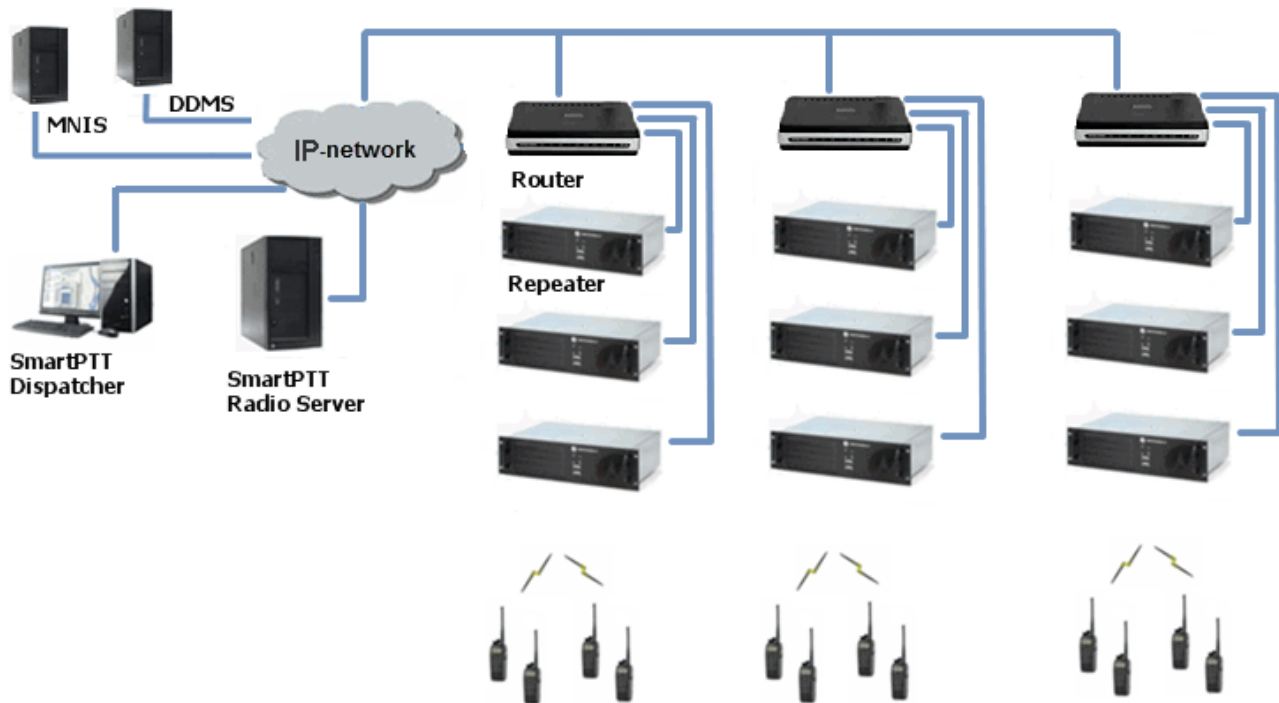
1. IP Site Connect



2. Capacity Plus



### 3. Linked Capacity Plus



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

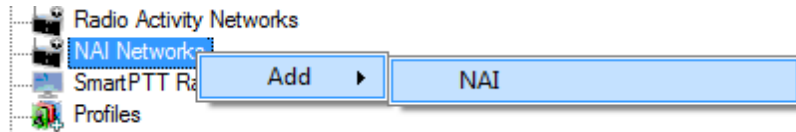
The MOTOTRBO Network Interface Service (MNIS) lets you transmit data (text messages, GPS, telemetry, etc.) without control stations. MNIS connects with the repeater system over IP and uses them to transmit and receive data packets.

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.

**NAI Network**

Active

Name: NAI Network 1

Network ID: 2

Peer ID: 1

Interface: 192.168.0.114 Port: 50000

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

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

**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.

The screenshot displays the 'NAI Network' configuration window. On the left is a tree view of the software interface. The main area contains the following configuration fields:

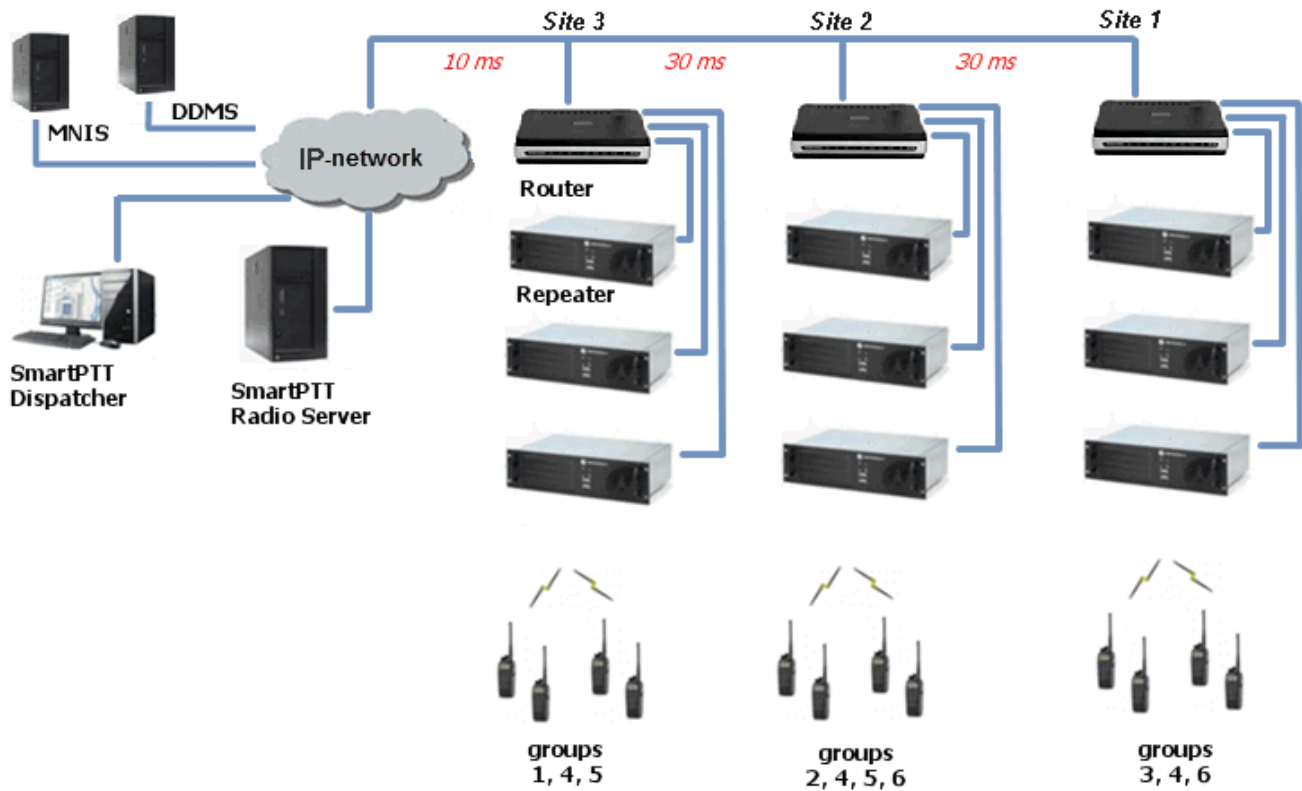
- Active:**
- Name:** Network NAI 1
- Network ID:** 2
- Peer ID:** 1
- Interface:** 192.168.0.114 (dropdown) | **Port:** 50000 (spinner)
- Master Repeater Address (host:port):** 192.168.7.132:50000 | **Test** button
- Authentication Key:** (empty text field)
- Network Type:** Linked Capacity Plus (dropdown)
- Connection Type:** Voice, Data, Monitoring (checkboxes)
- Repeaters:**  Voice,  Data,  Monitoring
- Control Stations:**  Voice,  Data,  Monitoring

The **Site Priority Configuration** table is highlighted with a red border and contains the following data:

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).



## How to Configure NAI Slots

After you have selected the network type, configure the slots. In order to do that, go to the **Slot 1** item in the setting tree of SmartPTT Radioserver Configurator. At that, the following window appears.

The screenshot shows the configuration window for a NAI Control Station. On the left is a tree view with 'Slot 1' selected under 'NAI Network 1'. The main window is titled 'NAI Control Station' and contains the following settings:

- Active
- Name: Slot 1
- ID: 1
- CAI Network: 12
- CAI Network for Groups: 225
- Emergency Alarm Confirmed
- Private Call Confirmed
- Allow Transmit Interrupt
- Allow Telephone Interconnect
- GPS Transmission Mode: Data
- Outgoing Privacy Mode: Enhanced
- Basic Privacy Key: 1
- Enhanced Privacy Keys section with buttons: Add, Remove, Copy, Paste

	Key Id	Key Value	TX Key
	1	1234567890	<input type="radio"/>
▶	2	0987654321	<input checked="" type="radio"/>

Note: For Capacity Plus or Linked Capacity Plus networks, there is only one slot to configure.

**Name** – slot name.

**ID** – unique ID of a virtual control station corresponding to the network slot.

**CAI Network** – CAI-network ID. Use the default value of 12 (must match MOTOTRBO CPS settings).

**CAI Network for Groups** – CAI-network for groups ID. Use the default value of 225 (must match MOTOTRBO CPS settings).

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

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

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

**Allow Telephone Interconnect** – enables telephone calls on the slot.

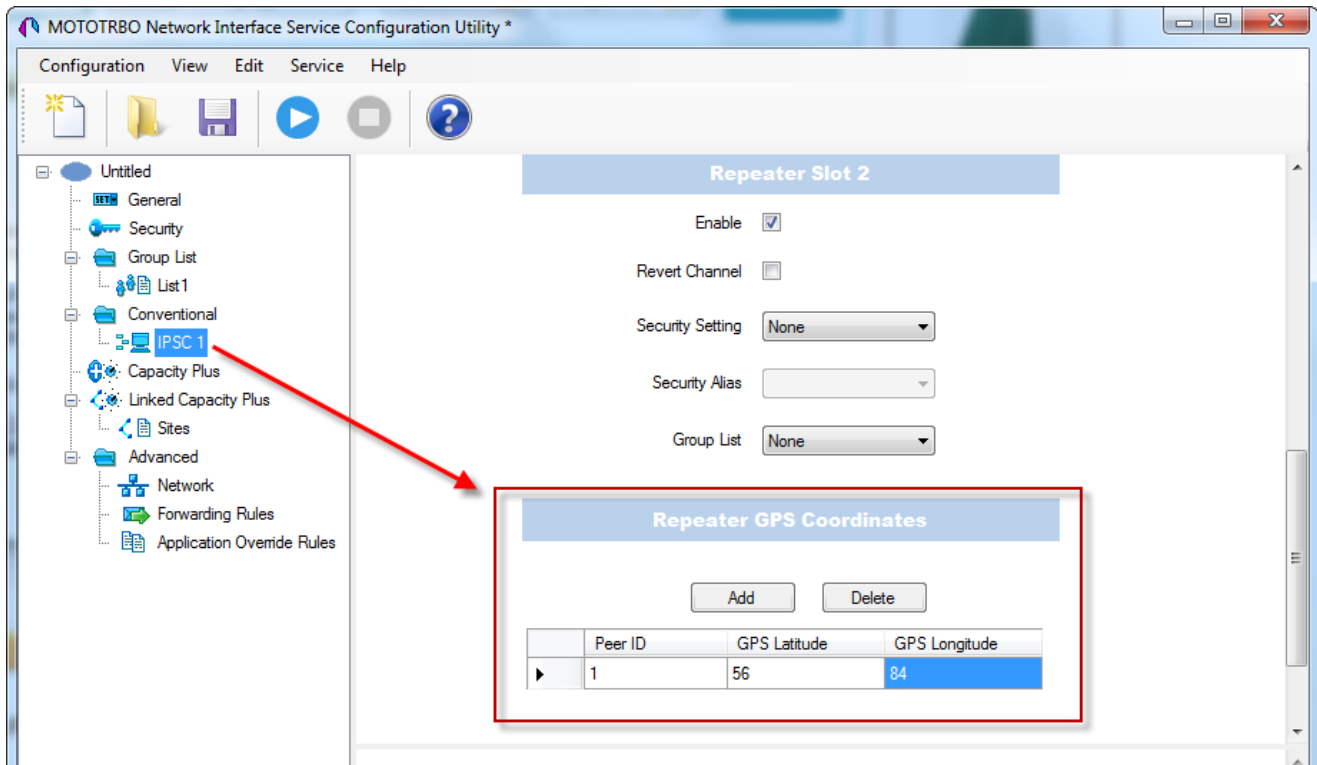
**GPS Transmission Mode** – allows you to select the way how to transmit location updates: as data packet in multiple bursts or as a single CSBK (Control Signaling Block).

Each solution has its own advantages and disadvantages:

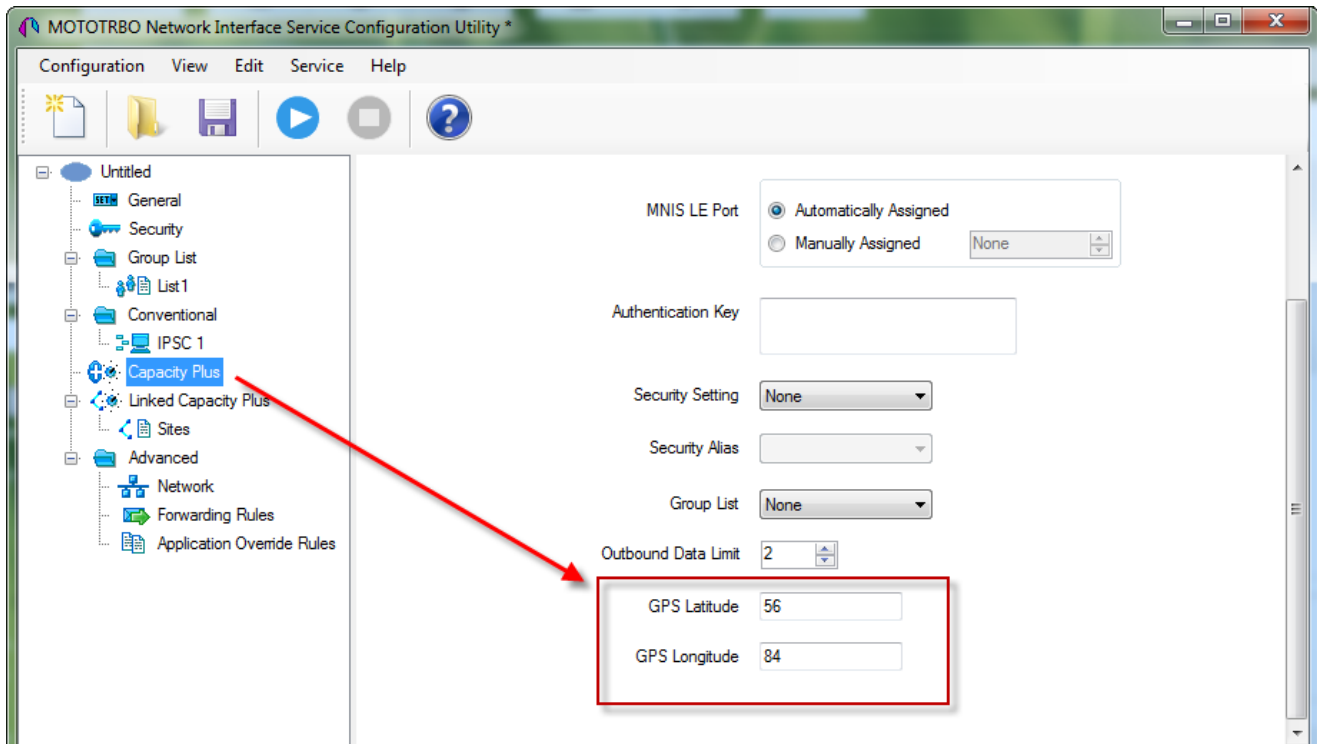
GPS Transmission Mode	Advantages	Disadvantages
Data	<ul style="list-style-type: none"> <li>• No need to configure additional settings for receiving GPS data</li> </ul>	<ul style="list-style-type: none"> <li>• Increased traffic load on a channel</li> </ul>
CSBK	<ul style="list-style-type: none"> <li>•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

\* To transmit location data using *CSBK* and *Enhanced CSBK*, configure additional MNIS settings, which include adding repeater latitude and longitude. This information is used for calculation of radio locations.

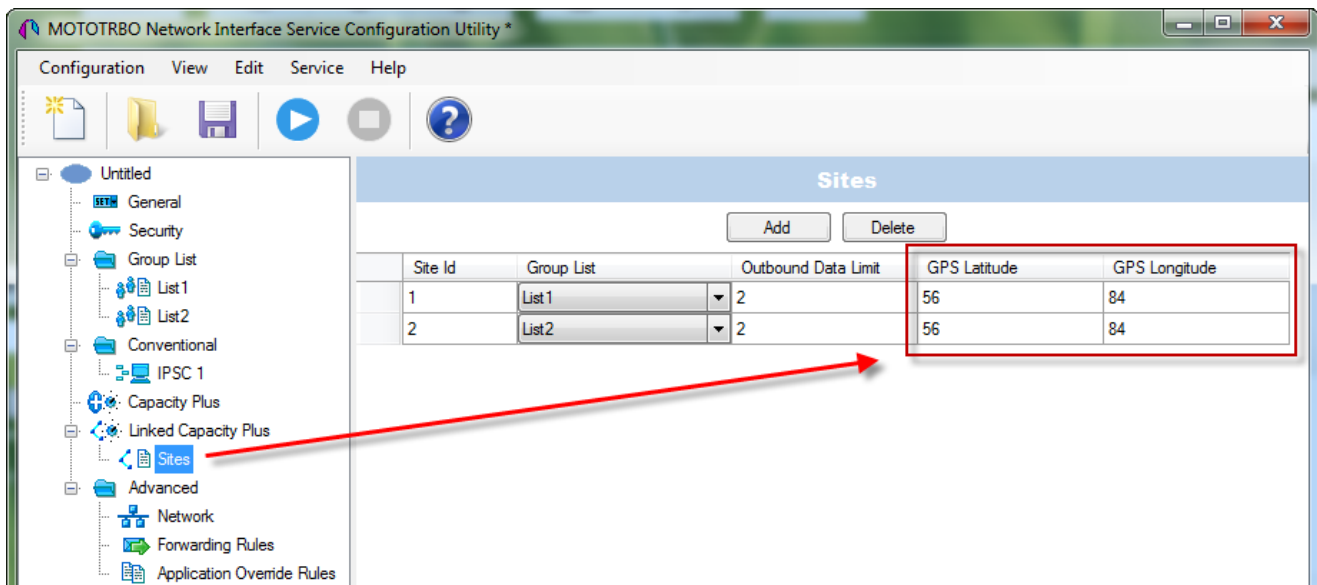
For IP Site Connect configuration specify latitude and longitude for each network system:



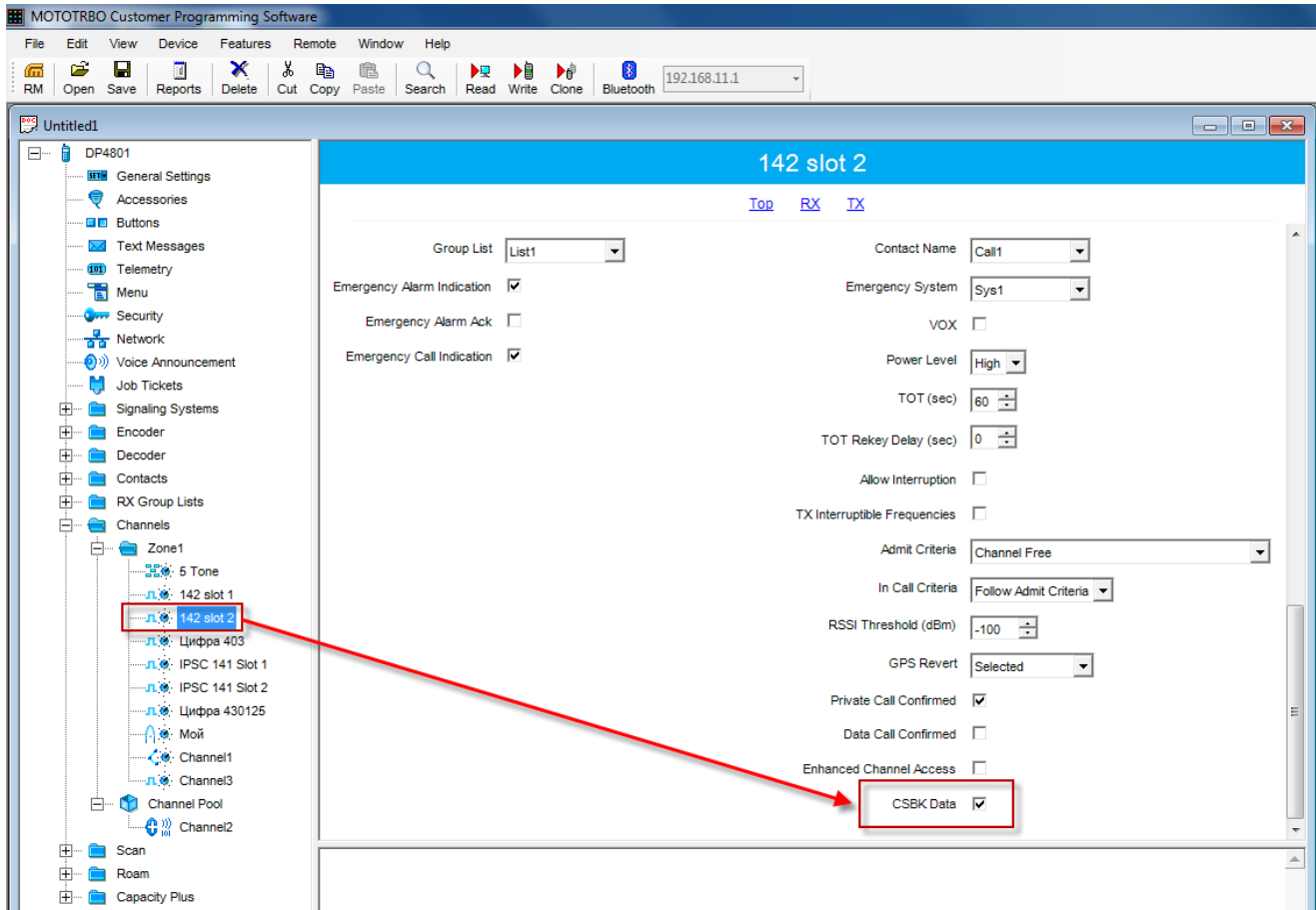
For Capacity Plus configuration specify latitude and longitude just in one place:



For Linked Capacity Plus configuration specify latitude and longitude for each site:



Also, to transmit location data using *CSBK* or *Enhanced CSBK*, enable **CSBK Data** in radio settings:



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

**Outgoing Privacy Mode** – allows you to select encryption mode on the side of SmartPTT Dispatcher for voice only.

There are three types of **Outgoing Privacy Mode**:

- *No*
- *Basic*
- *Enhanced*

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

To ensure the *Basic* mode, set the key value in the **Basic Privacy Key** field. Make sure that **Basic Privacy Key** set in SmartPTT Radioserver Configurator matches **Basic Privacy Key** set in radio settings in MOTOTRBO GPS. A radio can have only one key. You can specify any value for the **Basic Privacy Key** from the range from 1 to 255.

Outgoing Privacy Mode Basic  
 Basic Privacy Key 1

The screenshot shows the 'Security' configuration page for DP 3601. The 'Privacy' section is highlighted with a blue header. Below it, the 'Privacy Type' is set to 'Basic' and the 'Basic Privacy Key' is set to '1'. Both fields are enclosed in a red box.

To ensure the *Enhanced* mode for outbound traffic encryption, add enhanced privacy keys for incoming and outgoing calls. There can be many enhanced privacy keys for incoming calls, and only one key for outgoing calls. To select the key for outgoing calls, first select *Enhanced* in the **Outgoing Privacy Mode** field. At that, a new column **TX Key** will appear. In the **TX Key** column select the key used for encryption of the outgoing calls.

The screenshot shows the 'Security' configuration page for DP 3601 with 'Enhanced' mode selected. The 'Privacy Type' is set to 'Enhanced'. Below it, a table of 'Enhanced Privacy Keys' is shown. The 'TX Key' column has a dropdown menu with key ID 2 selected. A red box highlights the 'Outgoing Privacy Mode' field, the 'Enhanced Privacy Keys' table, and the 'TX Key' dropdown.

Key ID	Key Alias	Key Value
1	Privacy Key1	1234567890
2	Privacy Key2	0987654321

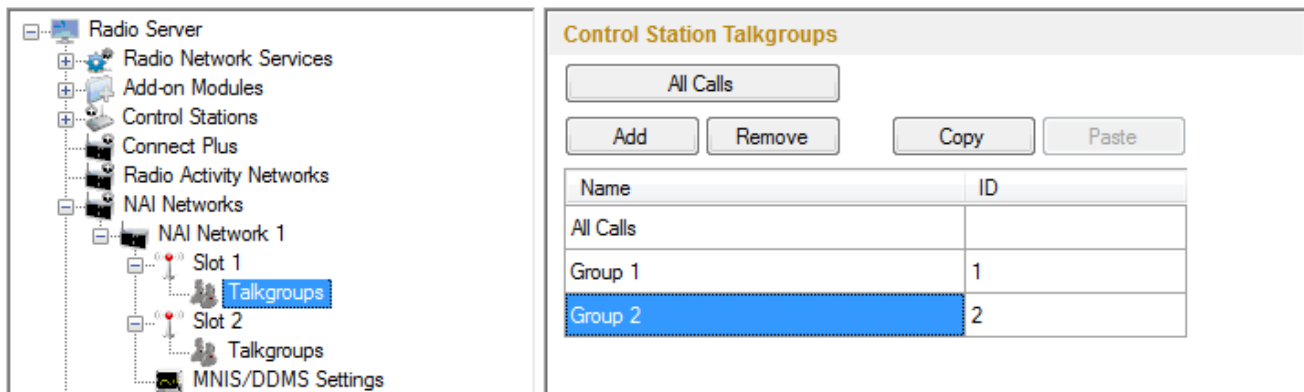
If the values in the **Key ID** fields are the same, but the values in the **Key Value** fields do not match, the receiving

radio hears only a distorted voice. If **Key ID** specified in the MOTOTRBO CPS of the radio does not match any of the **Key IDs** specified in the table, the dispatcher hears nothing during transmission.

If the radioserver is configured to transmit outbound traffic without encryption (**Outgoing Privacy Mode = No**), and **Basic Privacy Key** and **Enhanced Privacy Keys** are set, the encrypted data received from the radios can be decrypted correctly.

## How to Configure NAI Talkgroups

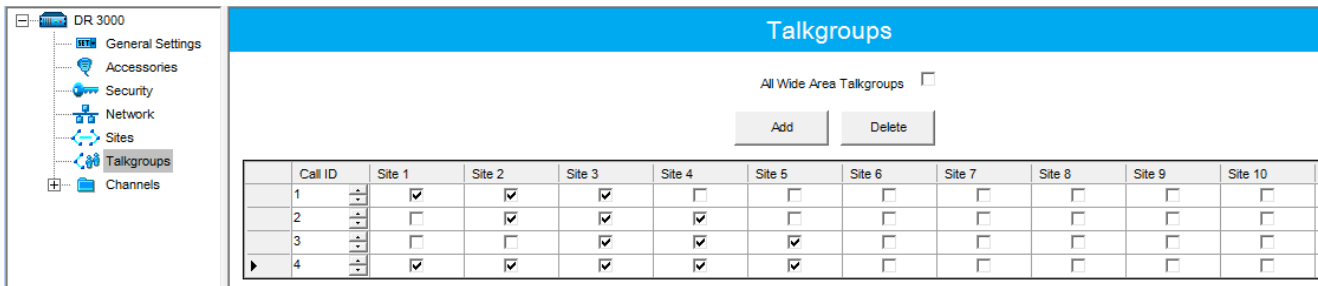
To configure slot groups, click **Talkgroups** in the setting tree of SmartPTT Radioserver Configurator. At that, the **Control Station Talkgroups** window opens.



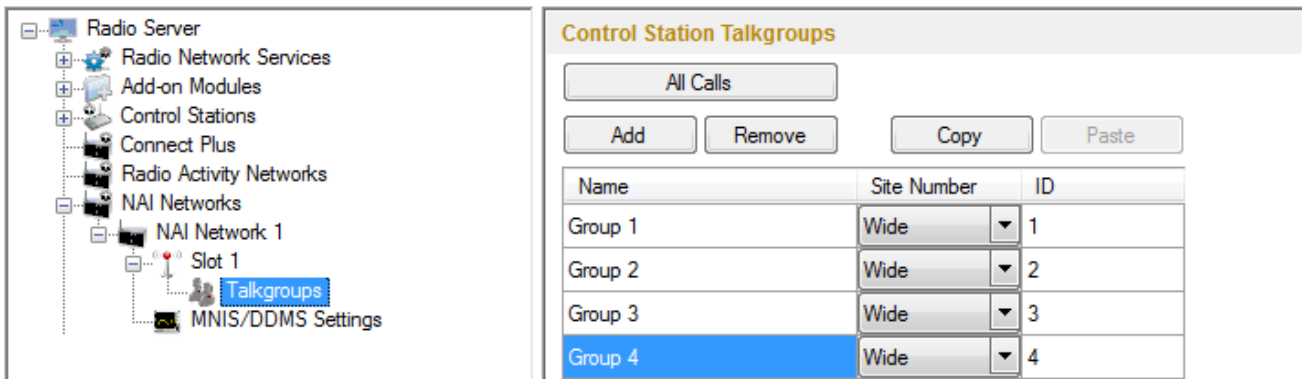
Note: The configuration process of the virtual control station talkgroups for NAI network (with **Network type = IP Site Connect or Capacity Plus**) is absolutely similar to the configuration of MOTOTRBO control station talkgroups.

Configuring Linked Capacity Plus network type, the parameters of wide area and local talkgroups are also set in the **Control Station Talkgroups** window. All the configured groups are displayed in SmartPTT Dispatcher. For more information about wide area and local groups of Linked Capacity Plus network see Motorola System Planer.

The wide area group calls are accessible to the subscribers that are in the coverage area of sites designated in MOTOTRBO CPS for this talkgroup. Select checkboxes in the required columns of the **Talkgroups** tab in the repeater MOTOTRBO CPS settings. Each column corresponds to the site where the talkgroup is available for a call.



In order to display wide area talkgroups by the SmartPTT Dispatcher application, add necessary talkgroups in SmartPTT Radioserver Configurator, define talkgroup identifiers that correspond to the identifiers of the wide area talkgroups in the repeater MOTOTRBO CPS settings and select *Wide* in the **Site Number** field.



The talkgroups that are absent in the repeater MOTOTRBO CPS settings are considered as local talkgroups. The local talkgroup call does not go beyond the site where the call is initiated.

Add the required local talkgroups in SmartPTT Radioserver Configurator, define identifiers for them and select site number from the list in the **Site Number** field.



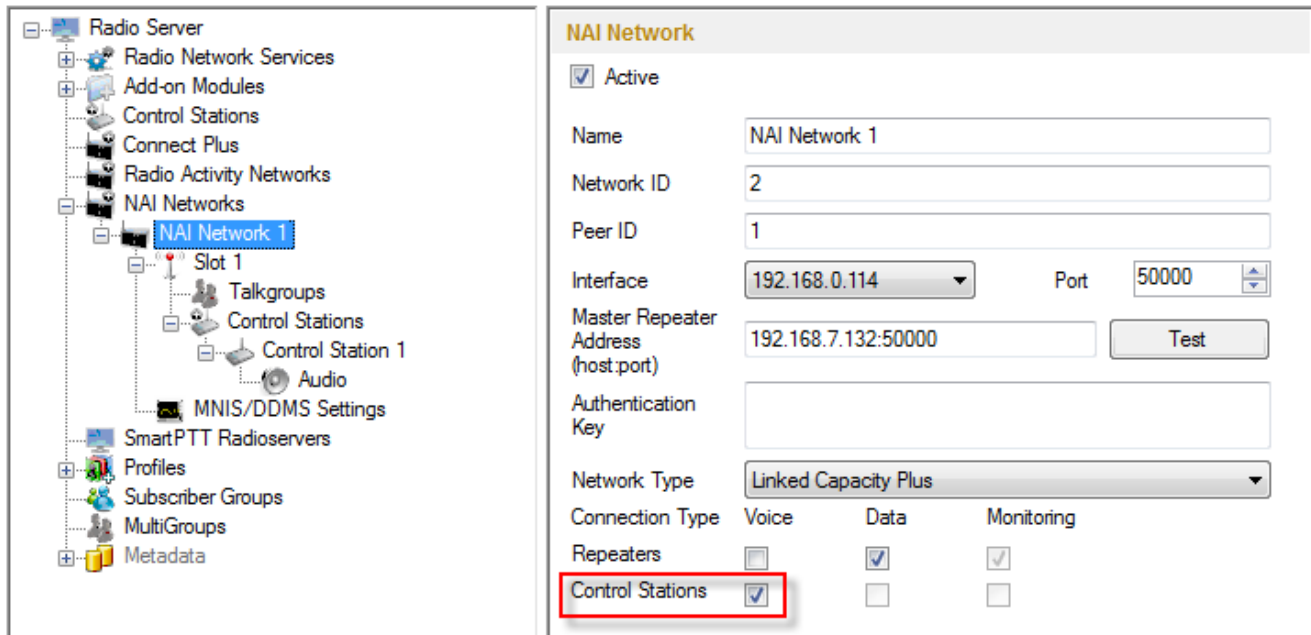
Note: Wide area and local talkgroup identifiers must not match.

Name	Site Number	ID
Group 1	Wide	1
Group 2	Wide	2
Group 3	Wide	3
Group 4	Wide	4
Group 5	1	5
Group 6	2	6
Group 7	3	7

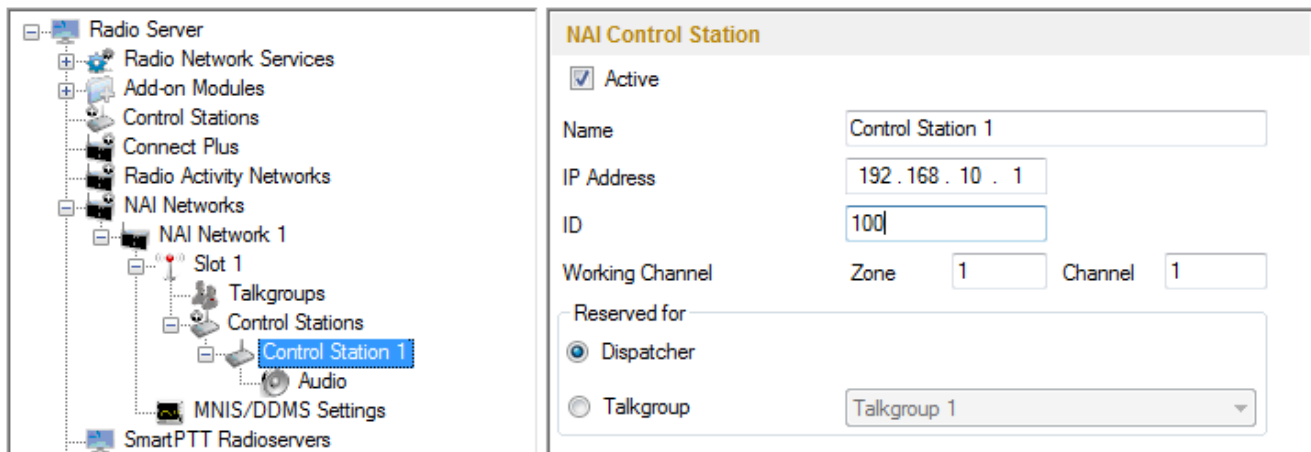
It is important to specify all talkgroups actually supported by the system in SmartPTT Radioserver Configurator. Otherwise, the operator can't initiate a call to such a talkgroup until the talkgroup member has made a group call to the operator.

## How to Configure Control Stations

To transmit voice packets over control station, you need to configure its settings. Control station settings become available, when you select voice packet transmission over control stations, not repeaters:



To configure the control station settings, right-click **Control Stations** and click **Add**. At that, a new setting window appears.



**Name** – control station name.

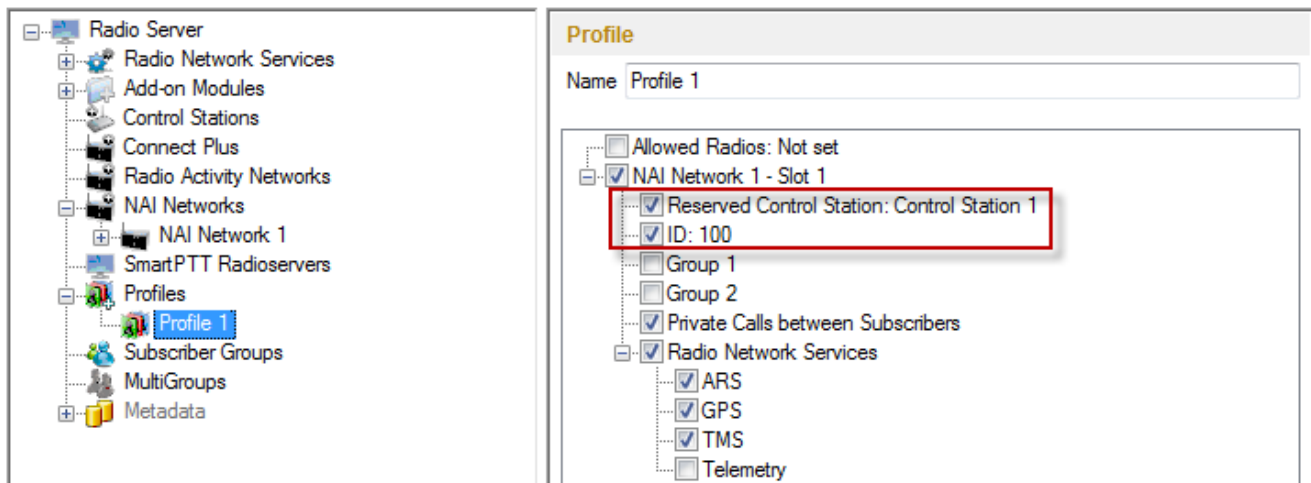
**IP Address** – local IP address of the control station. The following address format and range are used: (001-223).(000-255).(000-255).(001-253). Users can use any address except 127.x.x.x in the range from 1.x.x.x to 223.x.x.x. We recommend to use the address 192.168.10.1 by default, and in case of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

**Note:** If two or more control stations are connected to the PC, 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. In the IP Site Connect network, the ID is to be set in the range from 1 to 16776415. In the Capacity Plus or Linked Capacity Plus networks, the ID is to be set in the range from 1 to 65535.

**Working Channel** – select the channel and the zone to be set at the control station at the radioserver launch.

**Reserved for** – allows you to define how the control station is to be used. It can be used for private calls (**Dispatcher**) or for group calls (**Talkgroup**). This parameter is available only for Linked Capacity Plus and Capacity Plus networks. You can use one control station per one dispatcher or per one talkgroup. To allow group calls, select **Talkgroup**. At that, the dropdown list with added talkgroups becomes enabled. To allow private calls to and from the dispatcher, select **Dispatcher** and add [profiles](#) — one per dispatcher. In the profile, select the reserved control station. At that, **ID** will change and will match **ID** set in the **NAI Control Station** settings.



Also, make sure the following settings are made in CPS in control stations' configurations:

1. When using for talkgroups:

- In **General Settings**, clear **Private Calls**.
- In **Network** under **Control Station** section, select **Voice Only**.
- In the **Channel** settings, in **RX Group List**, select the talkgroup, for which the control station is reserved in SmartPTT Radioserver Configurator.

2. When using for dispatcher:

- In **General Settings**, select **Private Calls**.
- In **Network** under **Control Station** section, select **Voice Only**.
- In the **Channel** settings, in **RX Group List** select *None*.

Note: All Calls can be initiated via a control station reserved for a group. If the control station is reserved for the dispatcher, you can only listen to All Calls.

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

**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

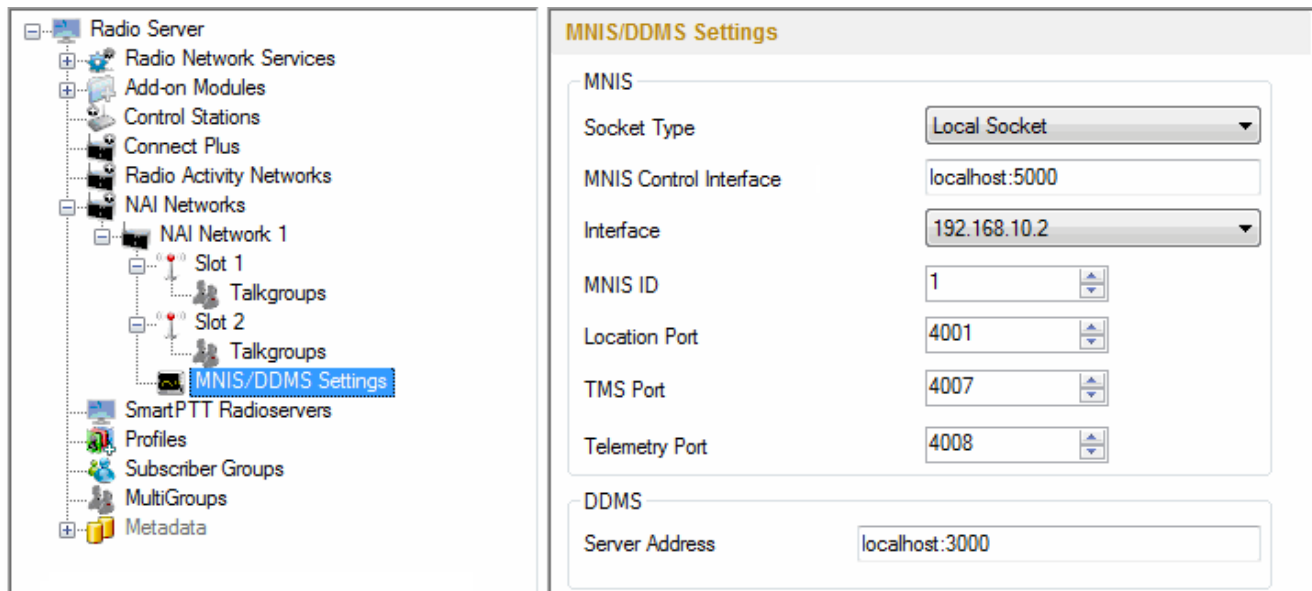
**64 kbps** is the voice data bit rate

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

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

## MNIS and DDMS Settings

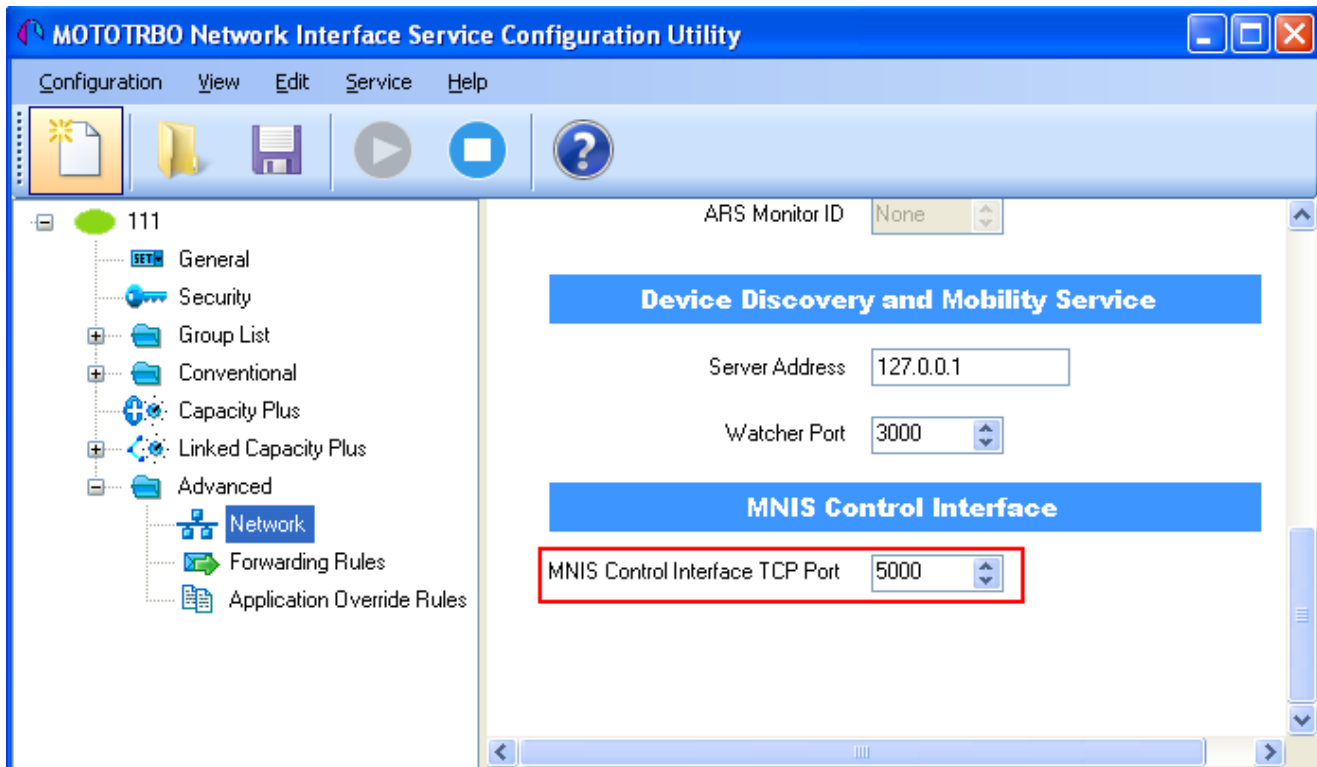
To set up data transfer over NAI network, click **MNIS/DDMS Settings** in the setting tree of SmartPTT Radioserver Configurator. At that, the **MNIS/DDMS Settings** window opens.



## MNIS

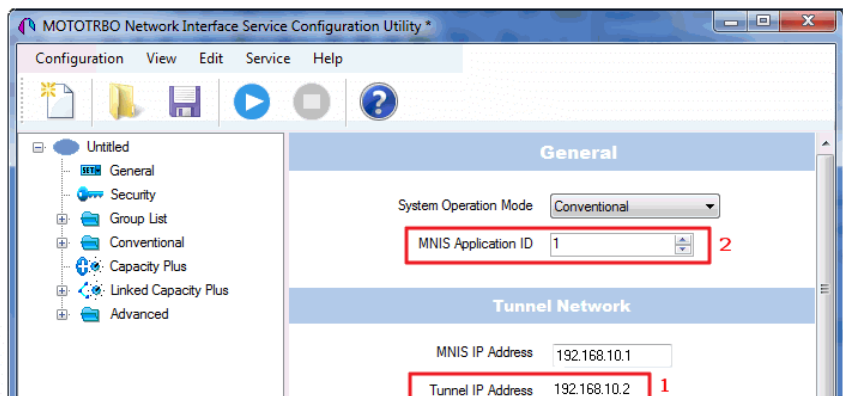
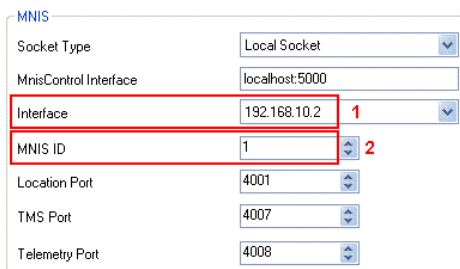
**Socket type** – defines the software interface type to enable communication between processes. Select the *Local Socket* value if the MOTOTRBO Network Interface Service Configuration Utility application is installed on the same PC as SmartPTT Radioserver. Select *Remote Socket* if MOTOTRBO Network 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

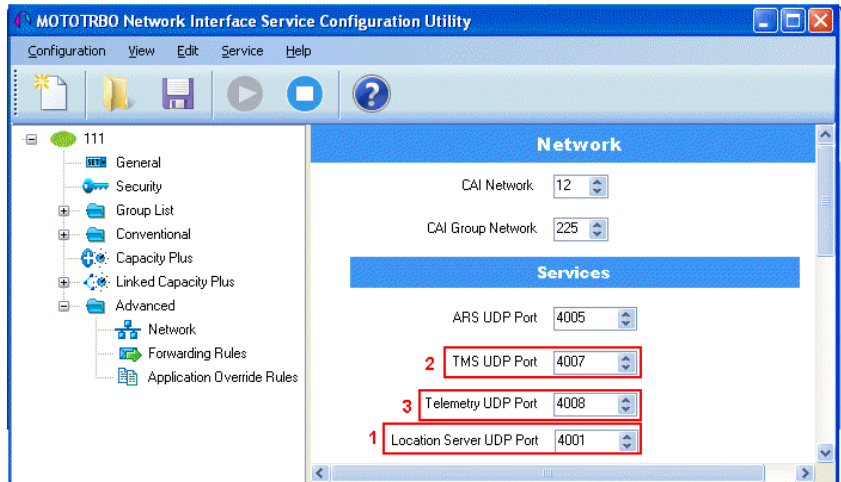
Interface: 192.168.10.2

MNIS ID: 1

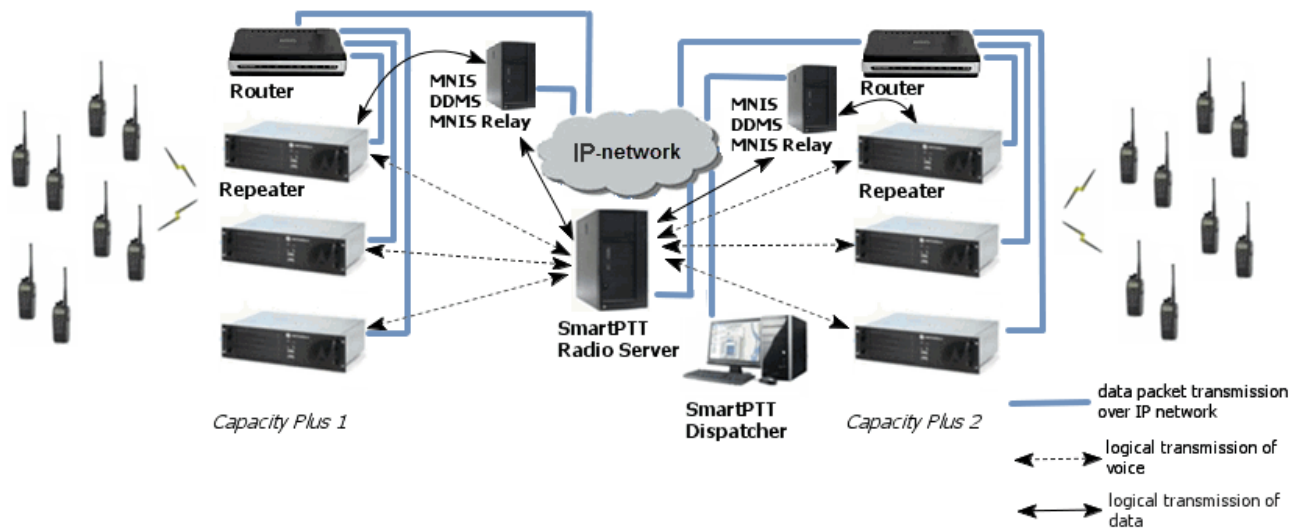
Location Port: 4001 **1**

TMS Port: 4007 **2**

Telemetry Port: 4008 **3**

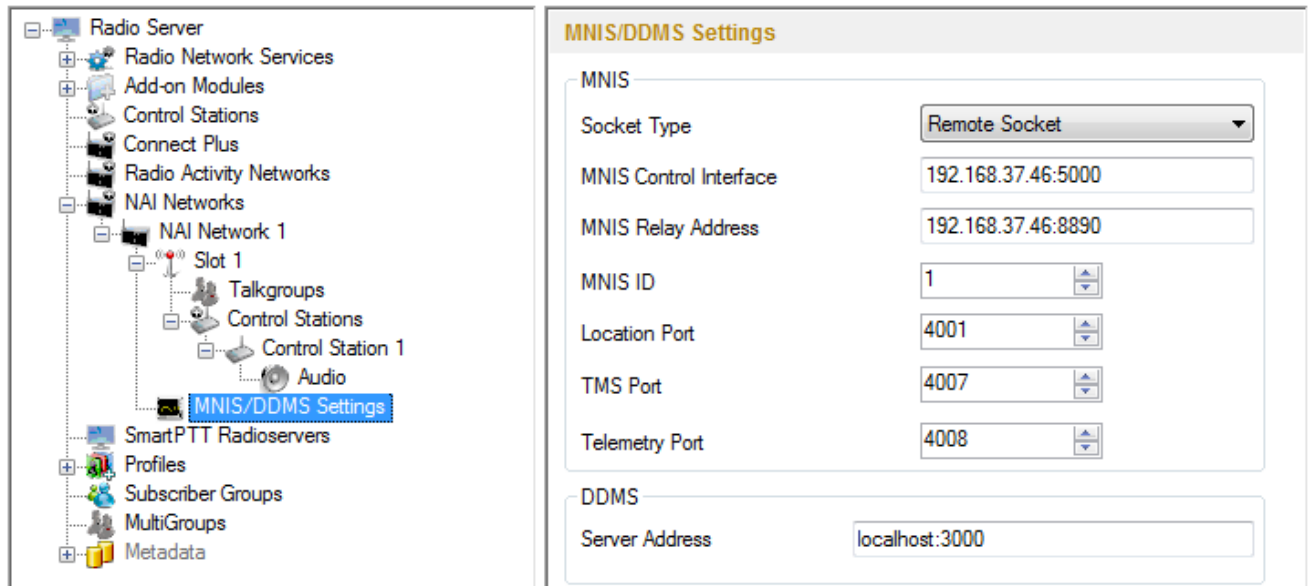


*Remote Socket* is used when you want to connect more than one network such as Capacity Plus or Linked Capacity Plus to SmartPTT Radioserver. To ensure proper functioning of all connected networks (voice and/or data transmission), each network requires separate MNIS and DDMS services set up and running. 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.

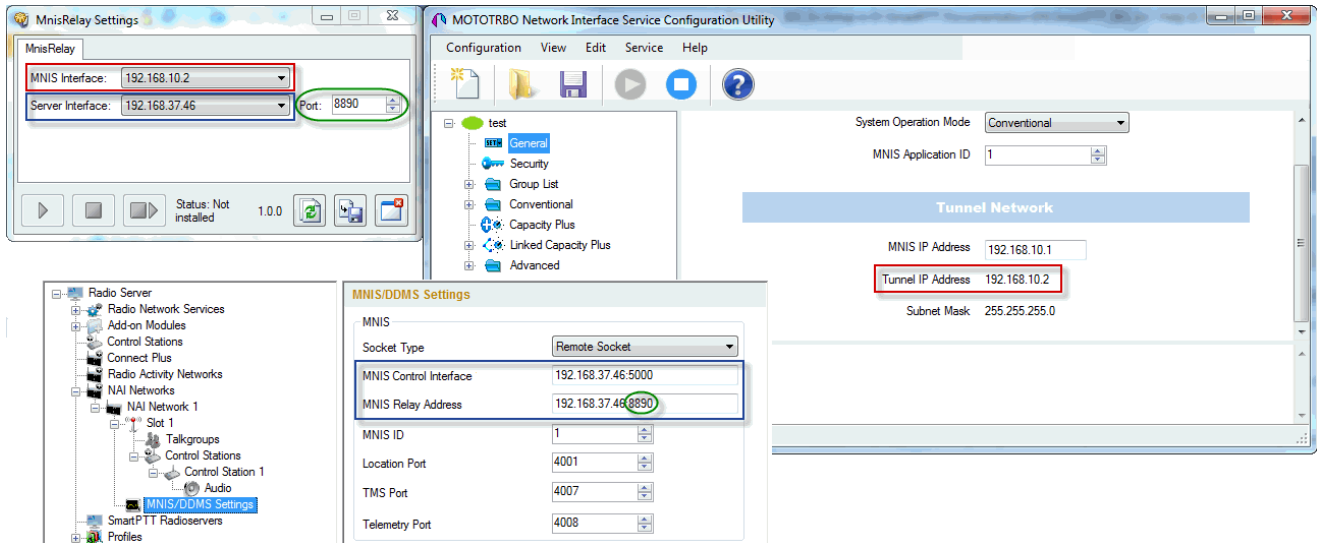
**MNIS Relay Address** – the IP address of the PC where MNIS Relay is installed. The **MNIS Control Interface** and **MNIS Relay Address** fields must be equal, except for ports.


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).

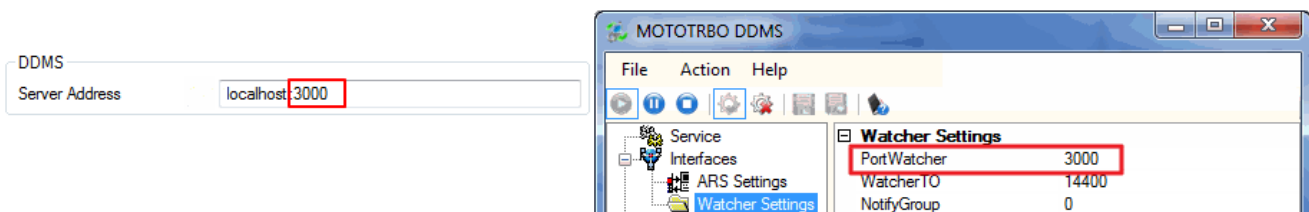
In the **Port** field enter the port number for the MNIS Relay application. The default value – 8890.



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**).

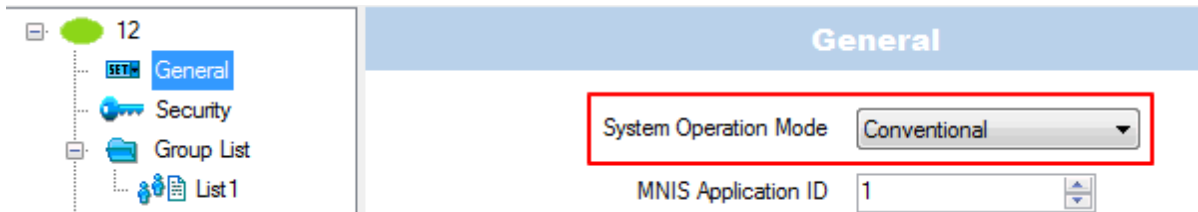


## MNIS and DDMS service settings

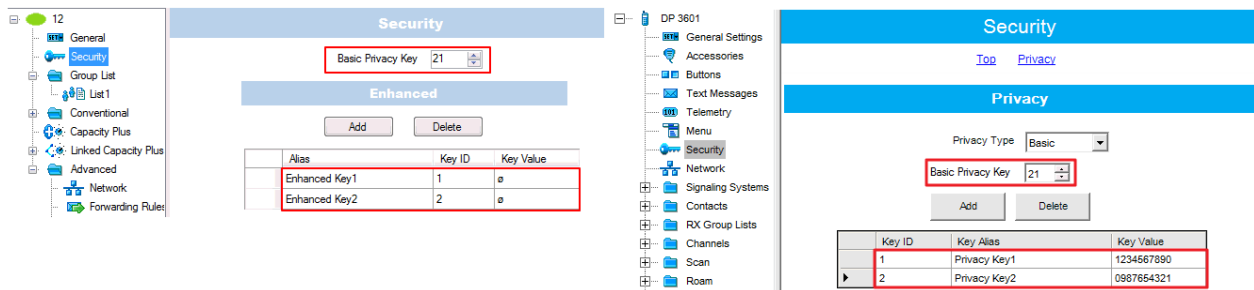
The following section describes MNIS service settings in MOTOTRBO Network Interface Service Configuration Utility and DDMS service settings in MOTOTRBO DDMS Administrative Client, which are necessary for proper data transmission over network.

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.

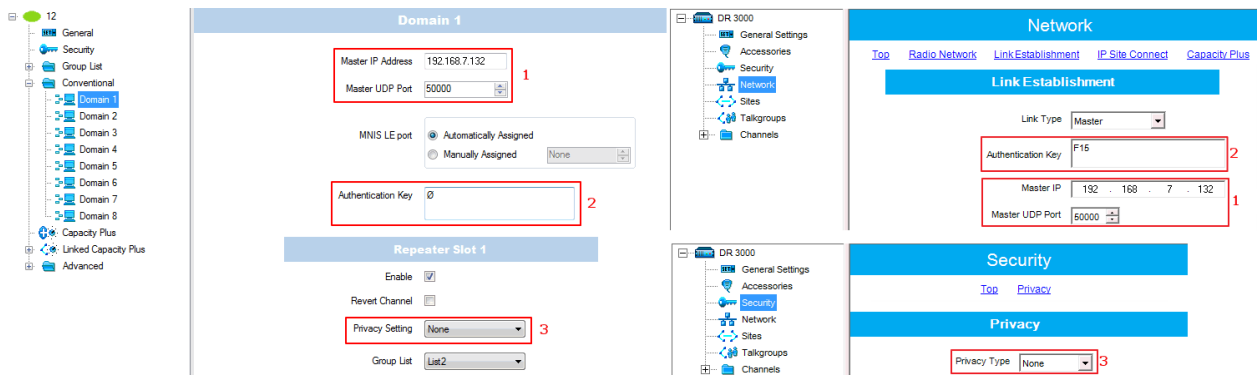


2. In the **Security** section set the encryption keys that match the keys specified in the radio MOTOTRBO CPS settings.

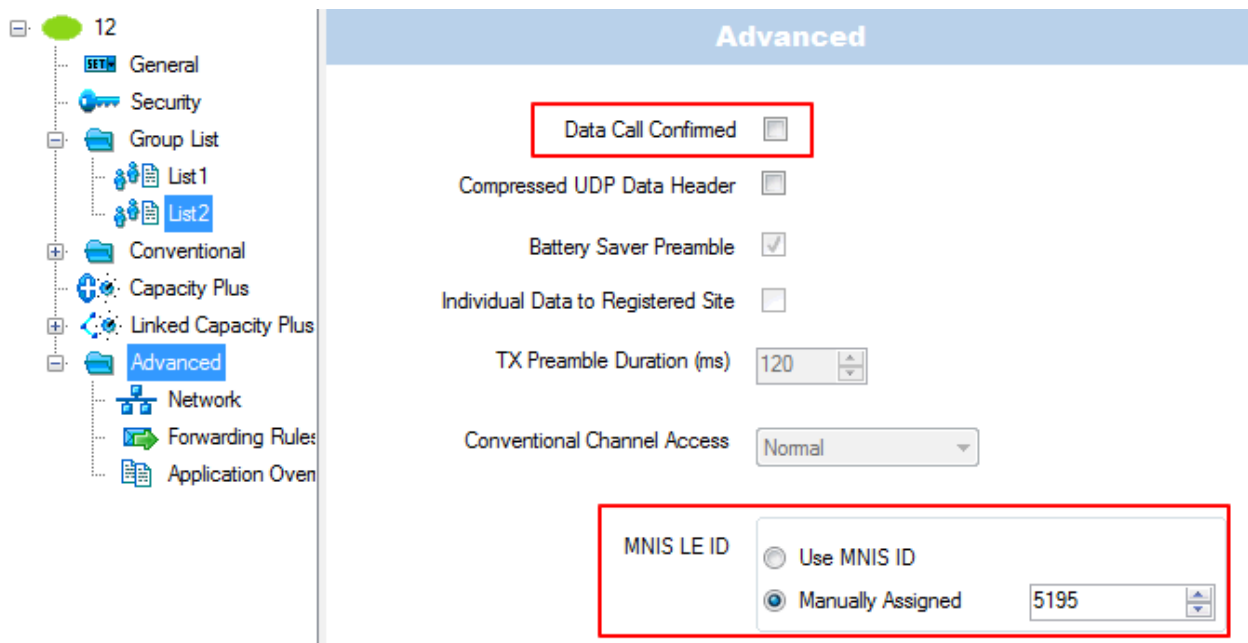


3. Set up the following parameters in the **Conventional/Capacity Plus/Linked Capacity Plus** sections respectively:

- 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.

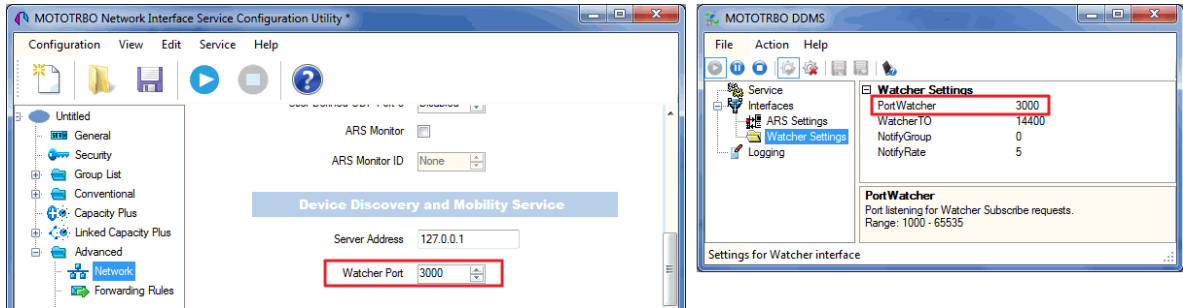


- It is recommended to clear the **Data Call Confirmed** field in the **Advanced** section and to specify the identifier in the **MNIS LE ID** field explicitly.

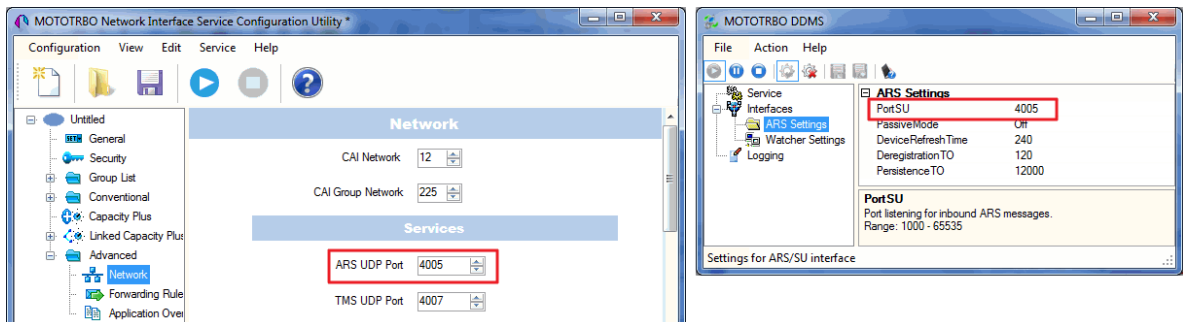


DDMS operation is closely connected to MNIS for data exchange (MNIS serves as DDMS Watcher). DDMS filters the registration service packets (ARS), received by the repeater, and information on the radio presence in the network is sent to all systems for further processing. Therefore, when you configure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

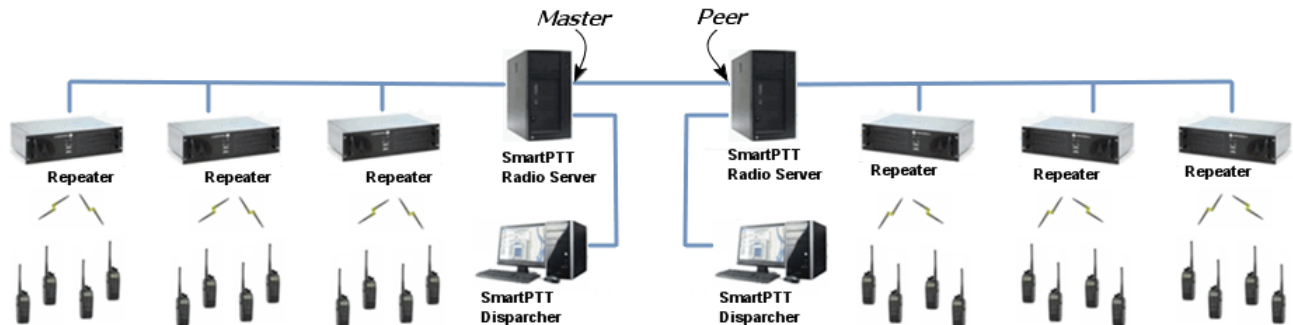


b) The **PORT SU** field (**Interfaces > ARS Settings**) in MOTOTRBO DDMS Administrative Client matches the **ARS UDP Port** field in MOTOTRBO Network Interface Service Configuration Utility (**Advanced > Networks**).



## 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

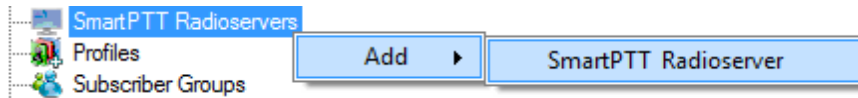
Configuration of bridging service between two radioservers includes:

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.

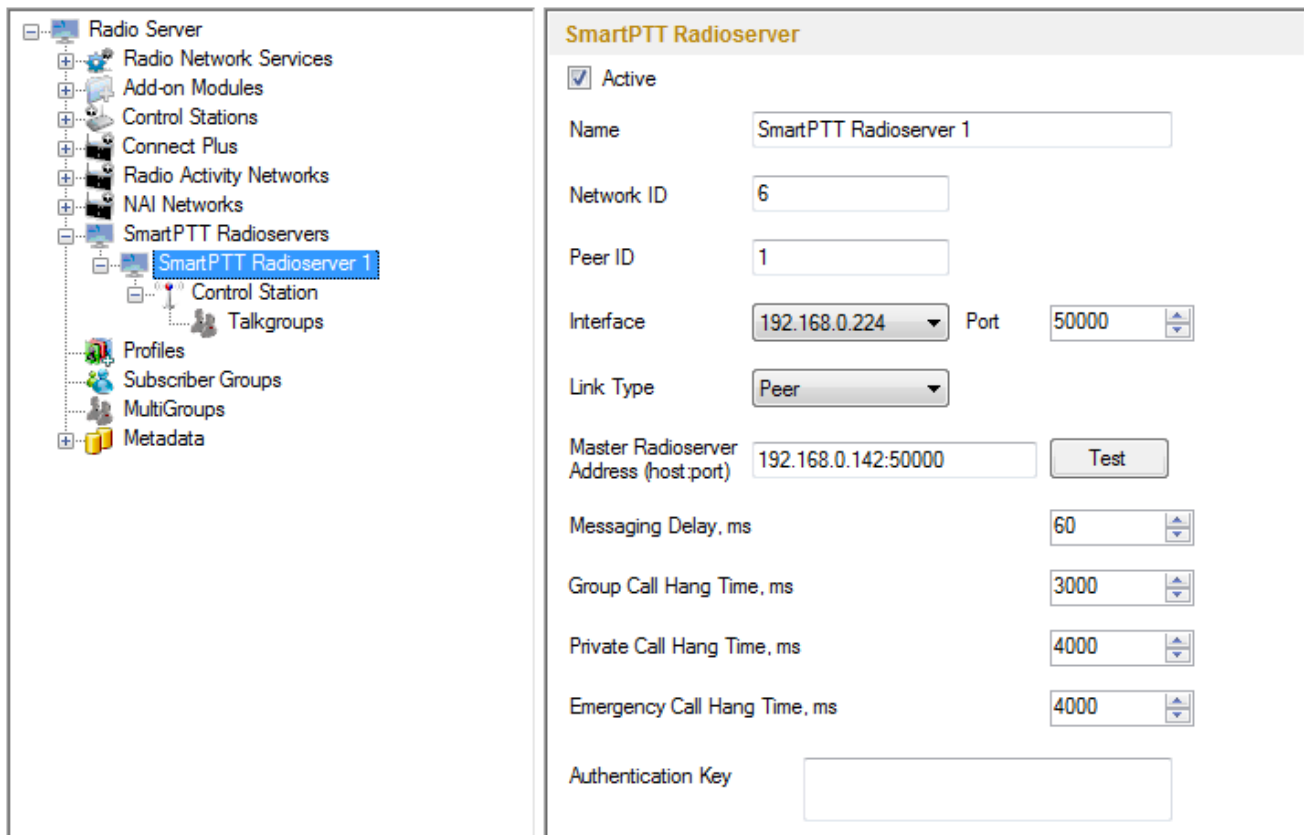
## SmartPTT Radioservers

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.

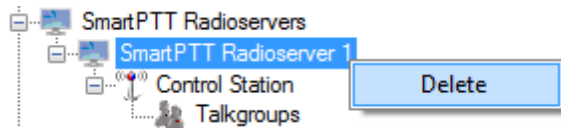
**Private Call Hang Time (ms)** – duration for which the repeater reserves the channel after the end of a private call transmission. During this time, only members of the private call that the channel is reserved for can transmit. After the hang timer expires, the radio transmits using the TX contact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

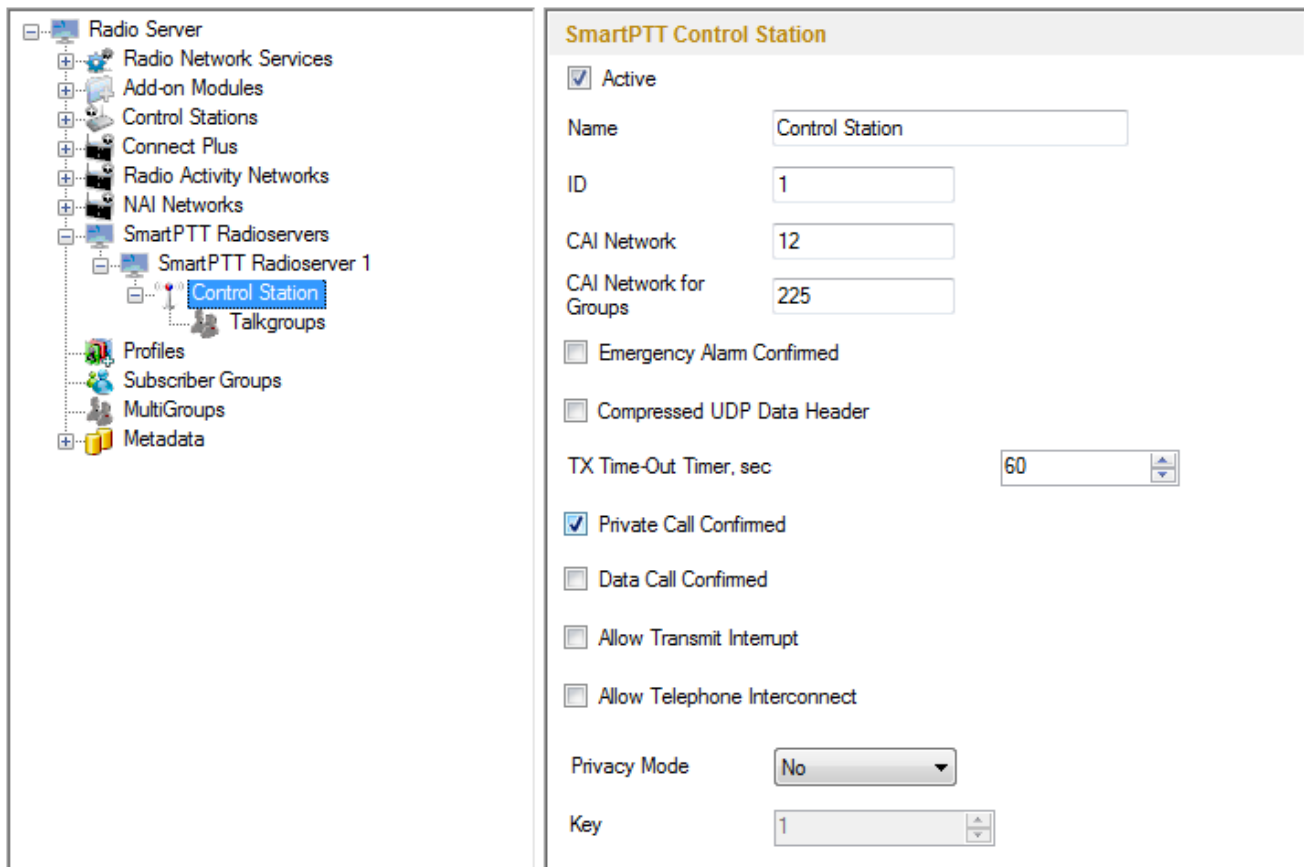


To delete the SmartPTT radioserver, right-click on the selected SmartPTT Radioserver system and choose **Delete**.



### 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.

**Encrypt Transmission** – encrypt transmission on the side of SmartPTT Dispatcher.

**Privacy Mode** – choice of the encryption mode. Privacy is a software-based scrambling solution that is not robust, and is only meant to prevent eavesdropping. A radio must have privacy enabled on the channel to transmit a privacy-enabled transmission, but this is not necessary for a receiving radio. Privacy-enabled channels are still able to receive clear (unscrambled) transmissions.

There are three types of **Privacy Mode**:

- *No*
- *Basic*
- *Enhanced*

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

To ensure the *Basic* mode, set the key value in the **Key** field. Make sure that **Key** set in SmartPTT Radioserver Configurator matches **Basic Privacy Key** set in radio settings in MOTOTRBO CPS. A radio can have only one key. The value ranges from 1 to 255.

To ensure the *Enhanced* mode for traffic encryption, add enhanced privacy keys. In the table add the **Key ID** and the **Key Value** which matches the **Key ID** and the **Key Value** set in the radio settings in MOTOTRBO CPS.

Privacy Mode Enhanced ▼

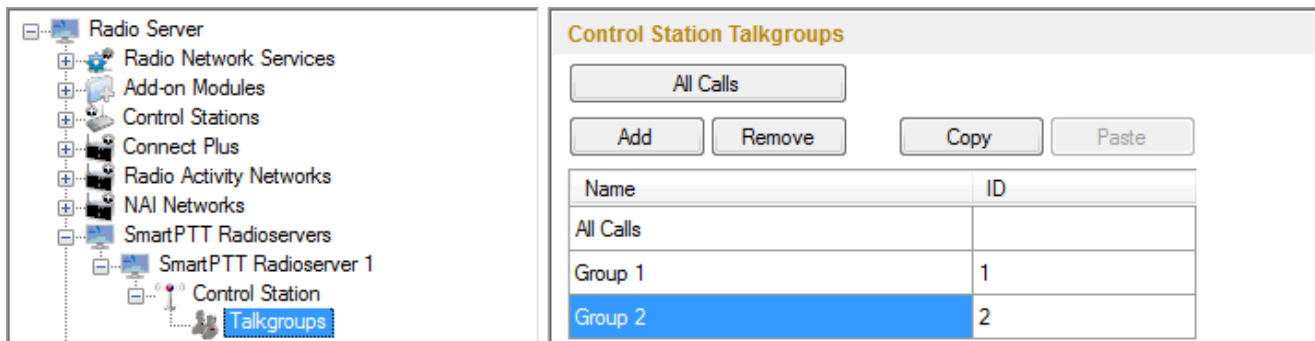
Add
Remove
Copy
Paste

	Key Id	Key Value
	1	7467823409
	2	7123092342

If the values in the **Key ID** fields are the same, but the values in the **Key Value** fields do not match, the receiving radio hears only a distorted voice. If **Key ID** specified in the MOTOTRBO CPS of the radio does not match any of the **Key IDs** specified in the table, the dispatcher hears nothing during transmission.

### 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** checkbox (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 interface for an NAI Network. On the left, a tree view shows the hierarchy: Radio Server > NAI Networks > IP Site Connect 111. The right pane, titled 'NAI Network', contains the following configuration details:

- Active:**
- Name:** IP Site Connect 111
- Network ID:** 1
- Peer ID:** 1
- Interface:** 192.168.36.104
- Port:** 50000
- Master Repeater Address (host:port):** 192.168.7.111:50000
- Authentication Key:** (empty field)
- 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**

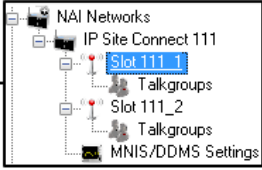
Active

Name:

ID:

CAI Network:

CAI Network for Groups:



**Slot**

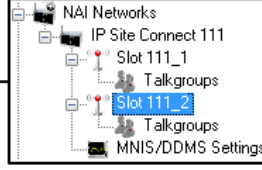
Active

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

**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
    - IP Site Connect 211
    - Slot 1
      - Talkgroups
    - Slot 2
      - Talkgroups
    - MNIS/DDMS Settings
  - 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 four screenshots from a configuration interface, arranged in a 2x2 grid. The top row shows the 'Slot' configuration for Slot 211\_1 (left) and Slot 211\_2 (right). The bottom row shows the 'Control Station Talkgroups' configuration for Slot 211\_1 (left) and Slot 211\_2 (right). Red boxes highlight the 'Name' field in the Slot configuration and the 'All Call' row in the Control Station Talkgroups table. A tree view on the right of each Slot configuration shows the network hierarchy, with Slot 211\_1 and Slot 211\_2 highlighted in blue.

**Slot 211\_1 Configuration:**

- Active:
- Name: Slot 211\_1
- ID: 16448250
- CAI Network: 12
- CAI Network for Groups: 225

**Control Station Talkgroups for Slot 211\_1:**

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

**Slot 211\_2 Configuration:**

- Active:
- Name: Slot 211\_2
- ID: 16448250
- CAI Network: 12
- CAI Network for Groups: 225

**Control Station Talkgroups for Slot 211\_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 an 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*

The screenshot shows the configuration for Radioserver 111. On the left, a tree view shows the hierarchy: Radio Server > SmartPTT Radioservers > Radioserver 111. The main configuration panel includes: **Active** (checked), **Name**: Radioserver 111, **Network ID**: 3, **Peer ID**: 1, **Interface**: 192.168.36.104, **Port**: 50001, **Link Type**: Master, **Master Radioserver Address (host:port)**: (empty), **Test** button, and **Messaging Delay, ms**: 60. Red boxes highlight the Interface, Port, and Link Type fields.

*User 2*

The screenshot shows the configuration for Radioserver 211. On the left, a tree view shows the hierarchy: Radio Server > SmartPTT Radioservers > Radioserver 211. The main configuration panel includes: **Active** (checked), **Name**: Radioserver 211, **Network ID**: 4, **Peer ID**: 1, **Interface**: 192.168.37.71, **Port**: 50001, **Link Type**: Peer, **Master Radioserver Address (host:port)**: 192.168.36.104:50001, **Test** button, and **Messaging Delay, ms**: 60. Red boxes highlight the Interface, Port, Link Type, and Master Radioserver Address fields. A black arrow points from the Master Radioserver Address field to the Interface and Port fields of the Radioserver 111 configuration in the User 1 screenshot above.

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**

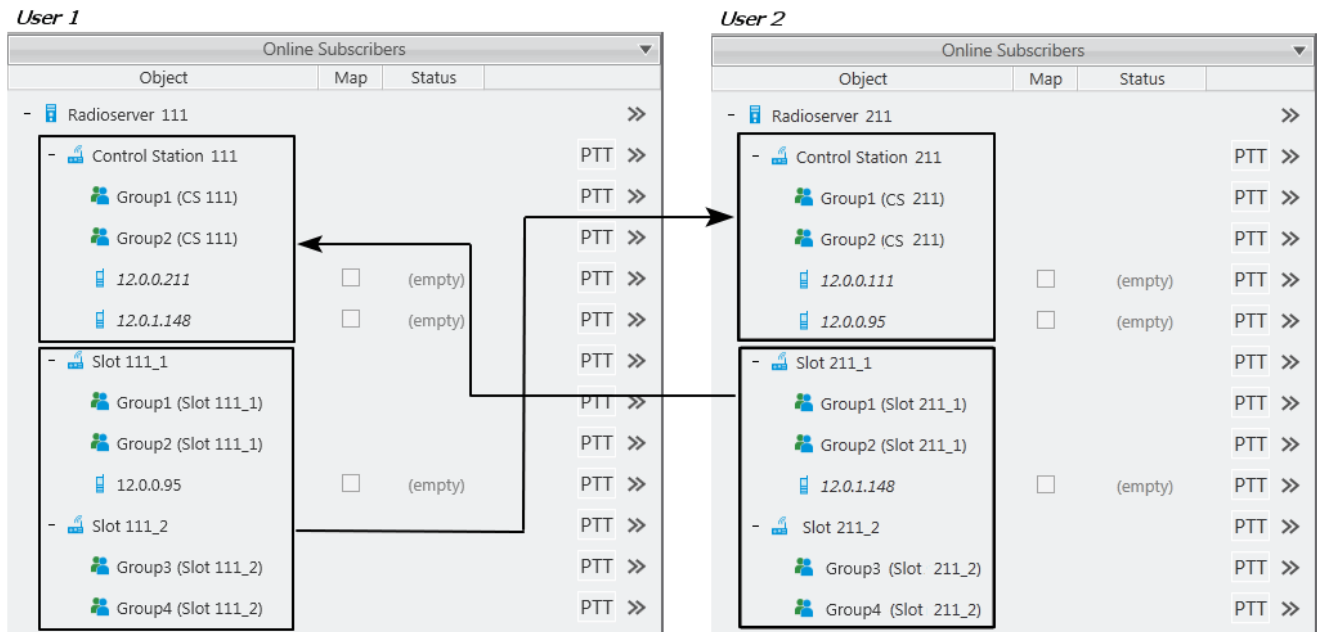
Name	ID
All Call (CS211)	
Group1 (CS 211)	1
Group2 (CS 211)	2

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

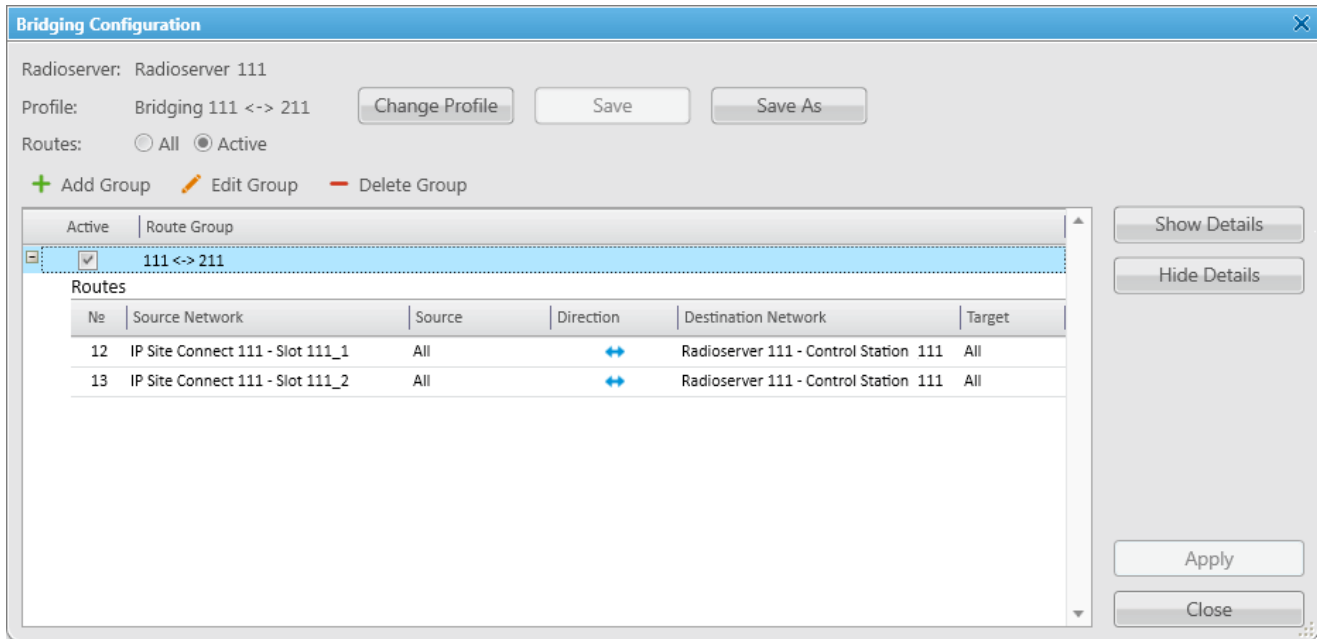
To apply settings, click **Save** and restart the service in SmartPTT Radioserver Configurator (for *user 1* and *user 2*).



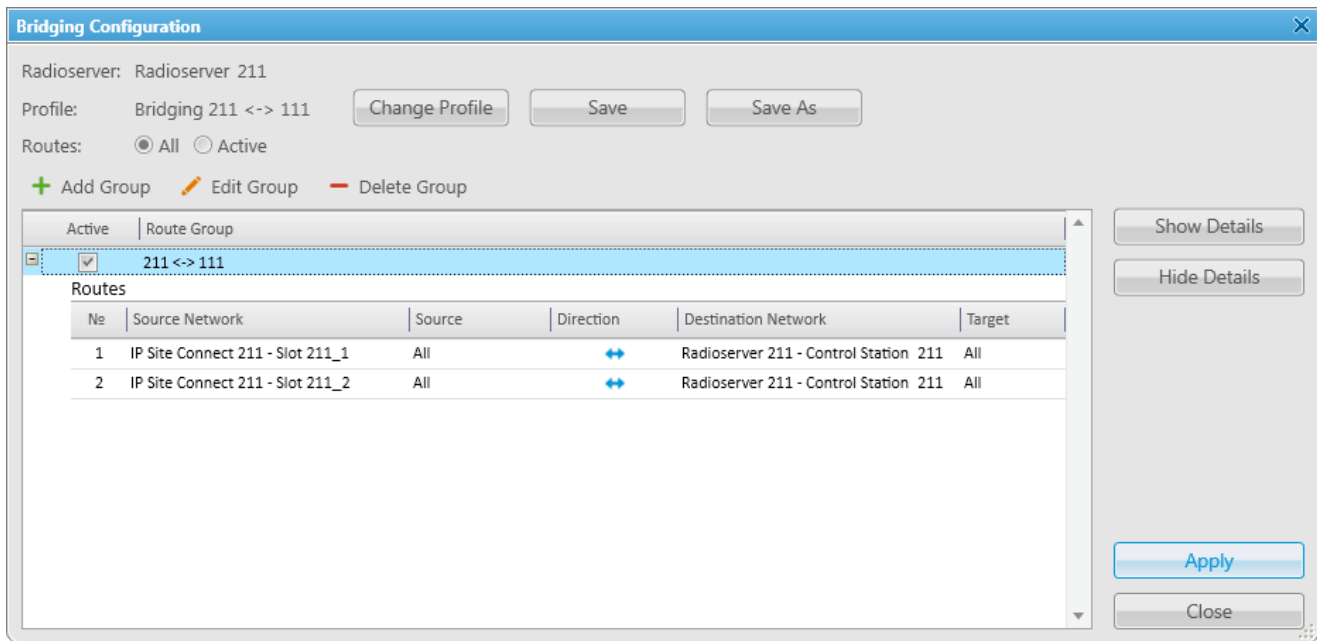
In the SmartPTT Dispatcher application of *user 1* (Master), a radio with the **IP address = 12.0.0.95** is registered at Slot 111\_1. The SmartPTT radioserver (*user 2*) with its radios and talkgroups is shown in the *user 1* system as Control Station 111. In SmartPTT Dispatcher of *user 2*, a radio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



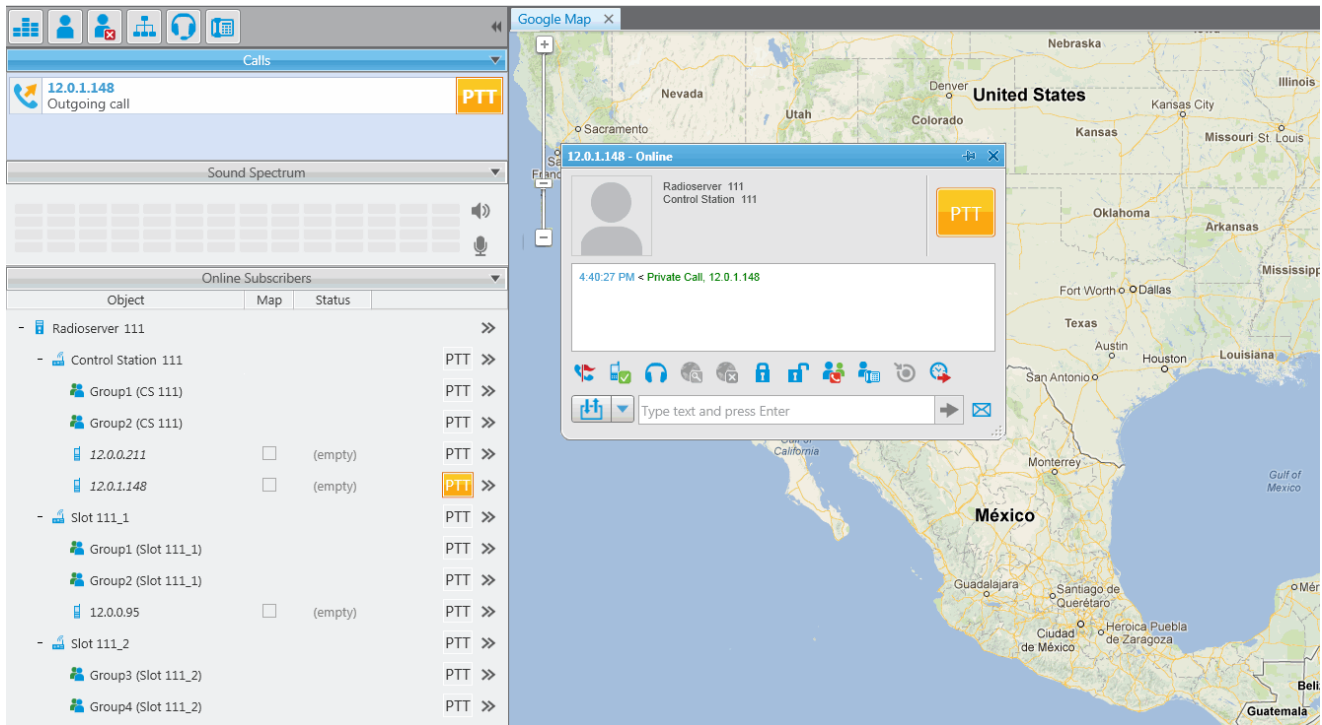
Make similar settings in SmartPTT Dispatcher for *user 2*.



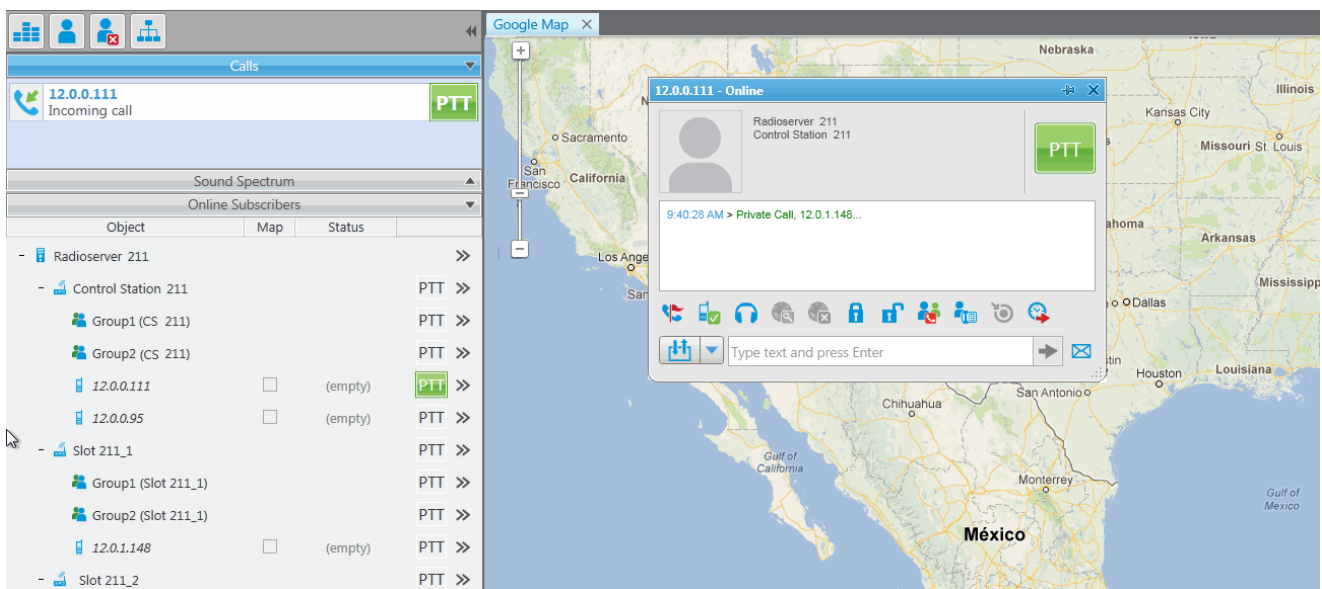
System verification:

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

*User 1* (an outgoing call)



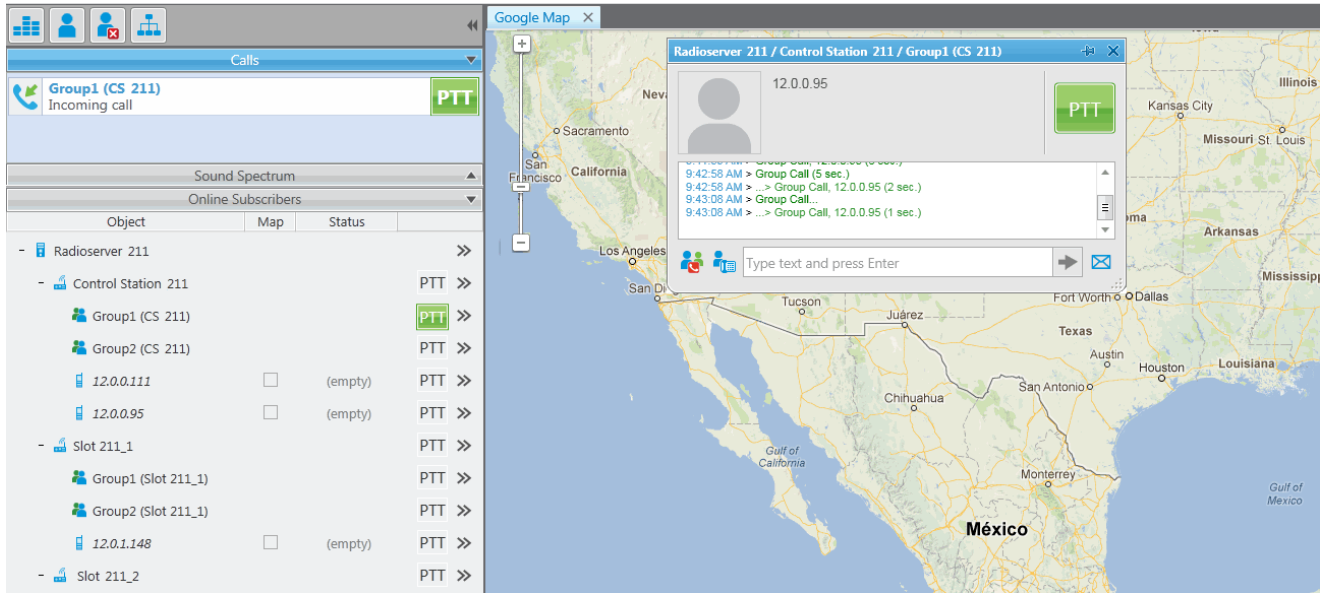
*User 2* (incoming call, a radio has a corresponding indication about the incoming call)



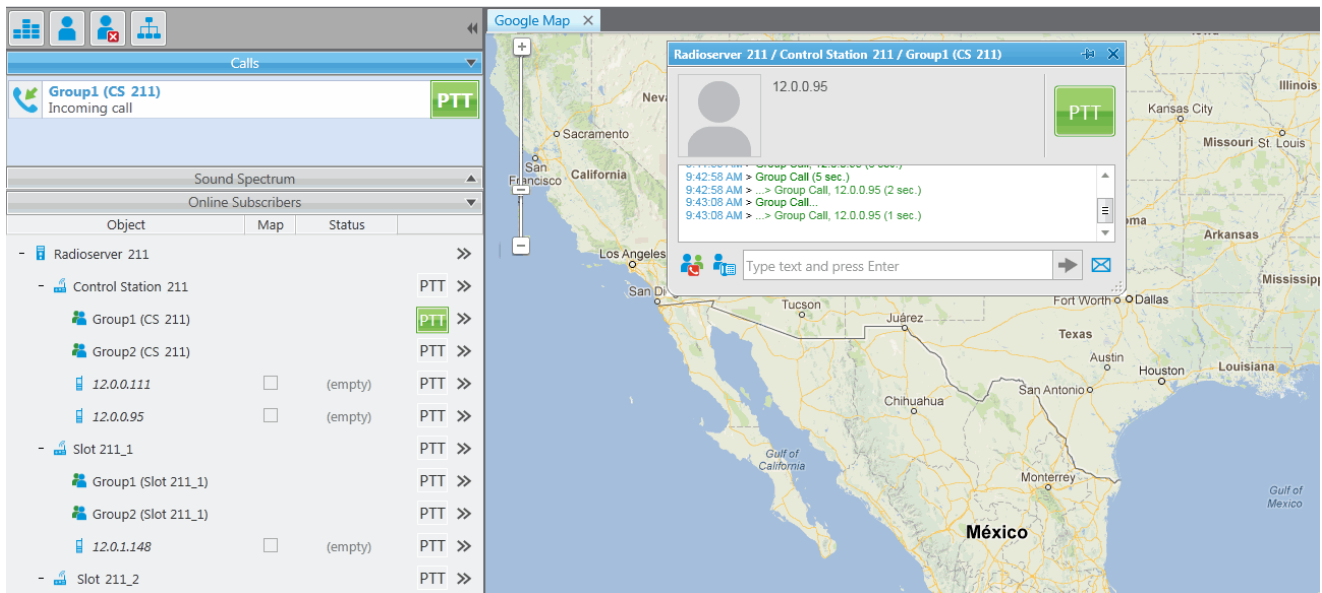
2. A group call is initiated by the radio registered in the system of *user 2*.

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:

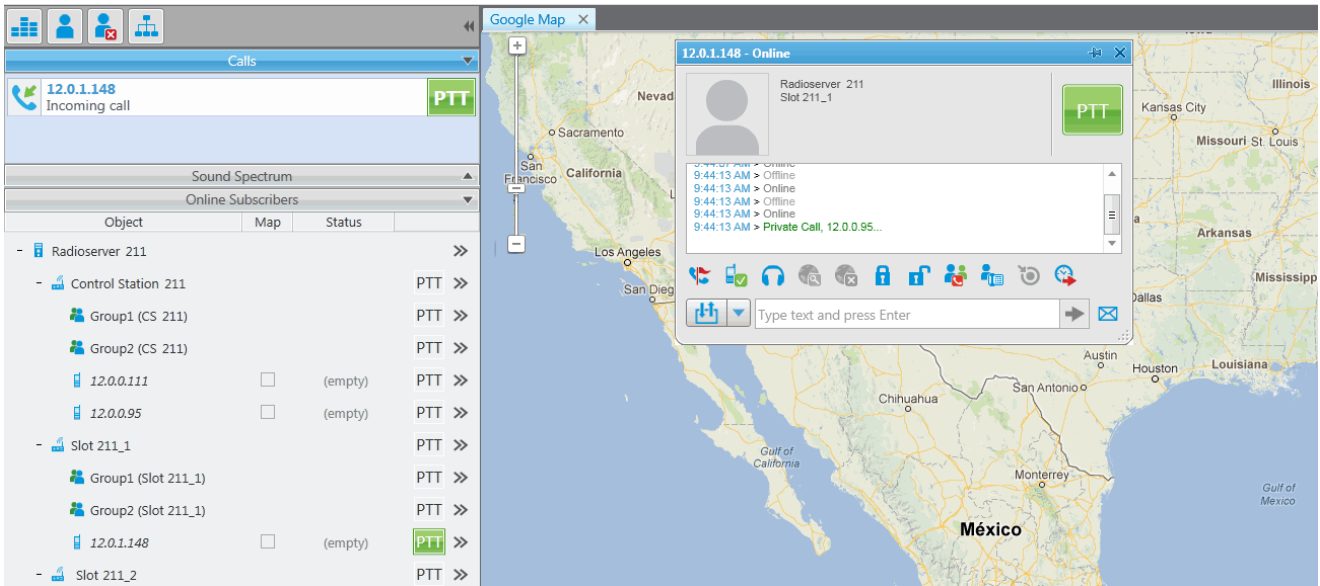


User 1:

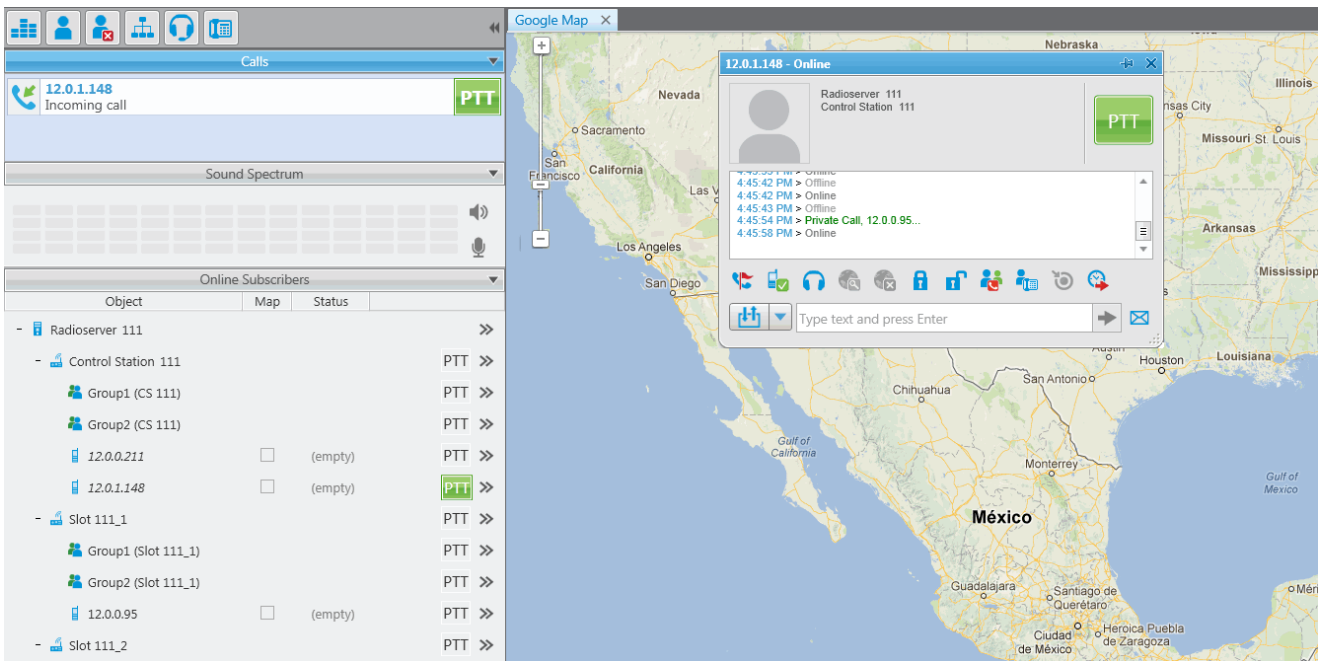


3. A private call from the radio, listed in the system of user 2, to the radio of user 1.

User 2:

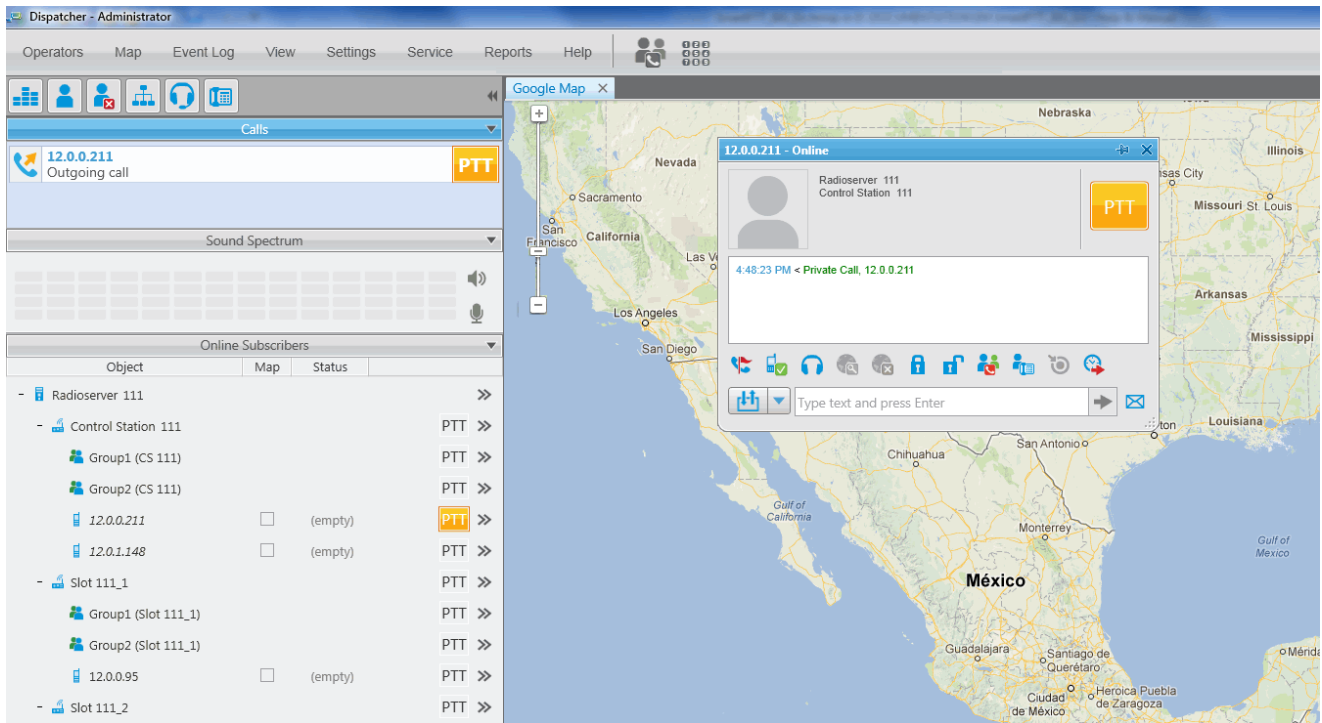


User 1:

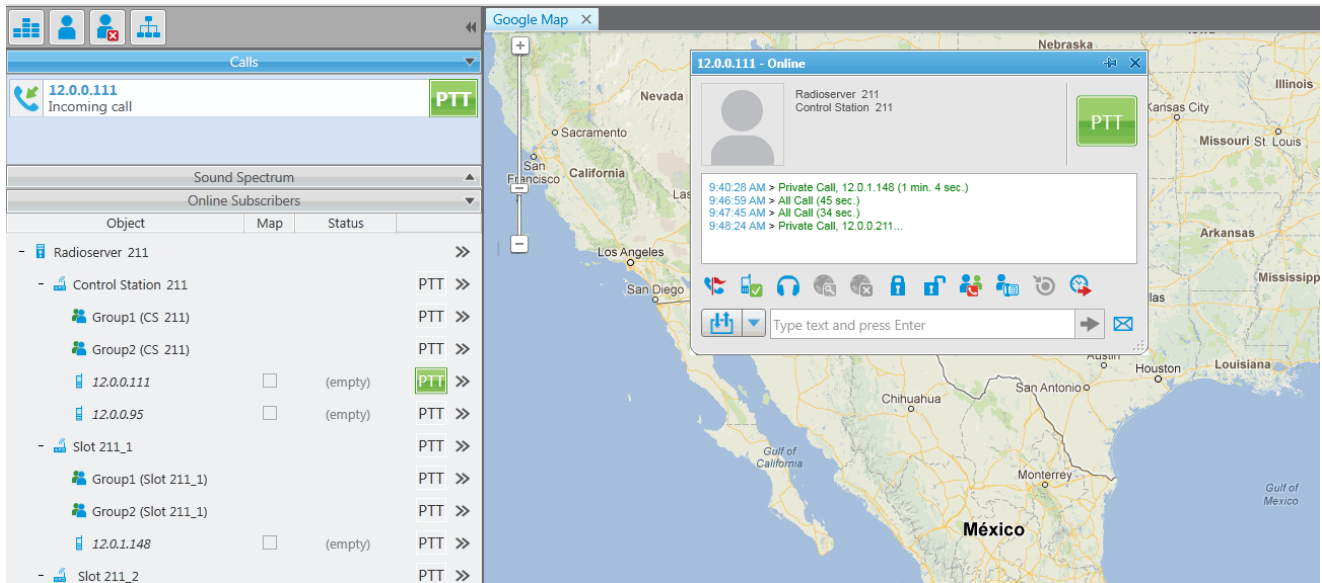


4. A call from the control station of user 1 to the control station of user 2.

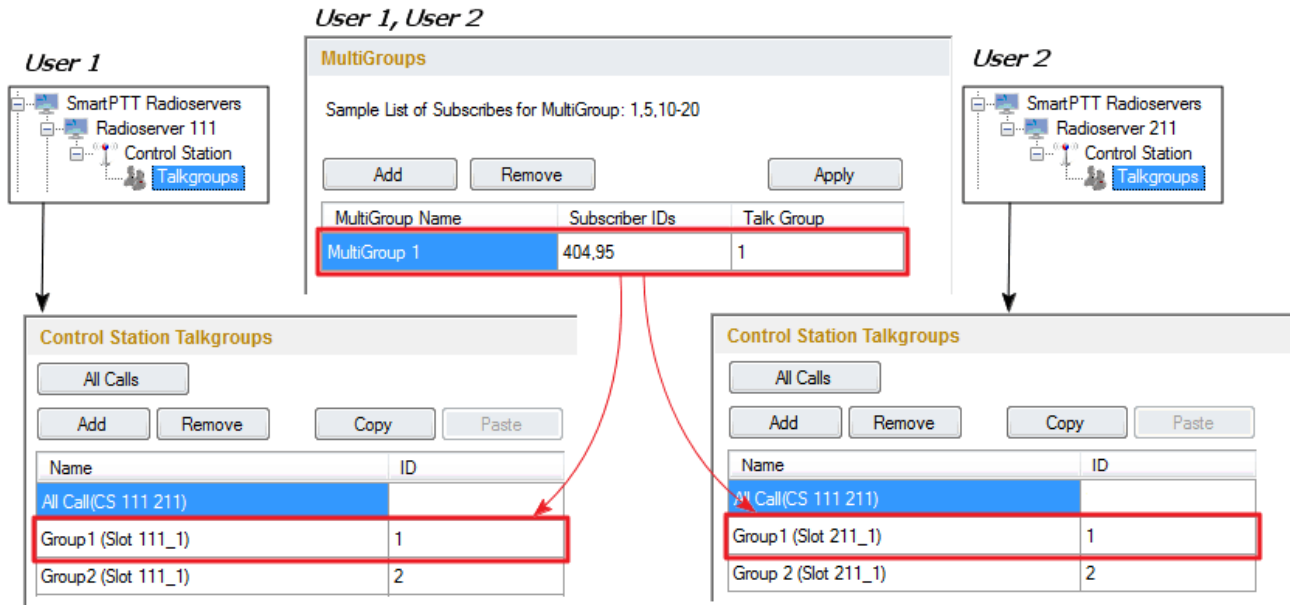
User 1:



User 2:



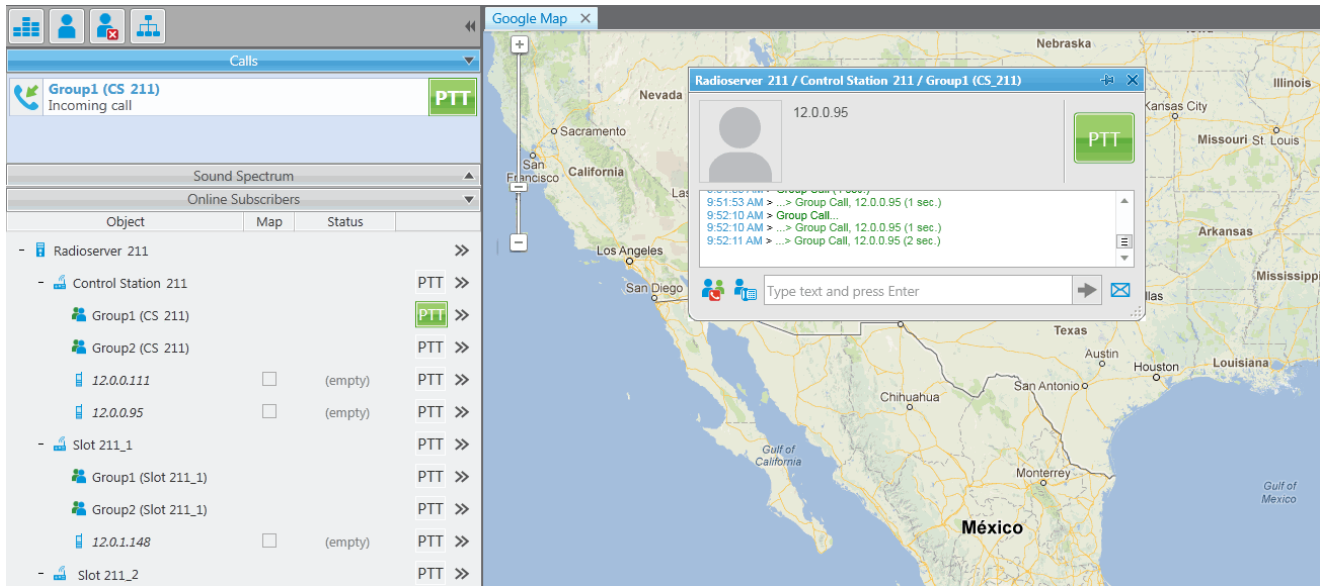
To redirect only group calls between two radioservers without setting up routes in SmartPTT Dispatcher, create multigroups with the list of radios, that support group call bridging in SmartPTT Radioserver Configurator (for both radioservers). For more details see the [Multigroups](#) section in the Help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



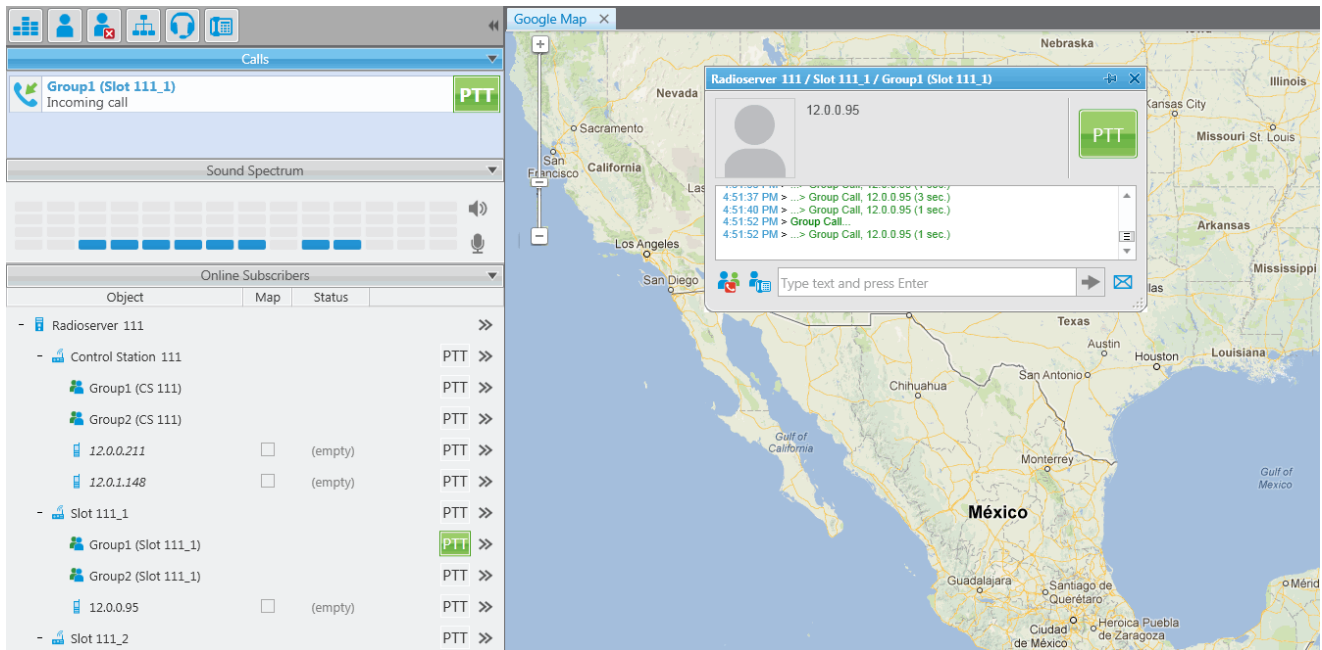
The following example demonstrates a call to Group 1. Group 1 corresponds to the created Multigroup 1 with the a list of radios – 95 (IP address = 12.0.0.95) and 404 (IP address = 12.0.1.148). The radio with the IP address = 12.0.1.148 (ID = 404) initiates a group call. The radio with the IP address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



User 2:



User 1:

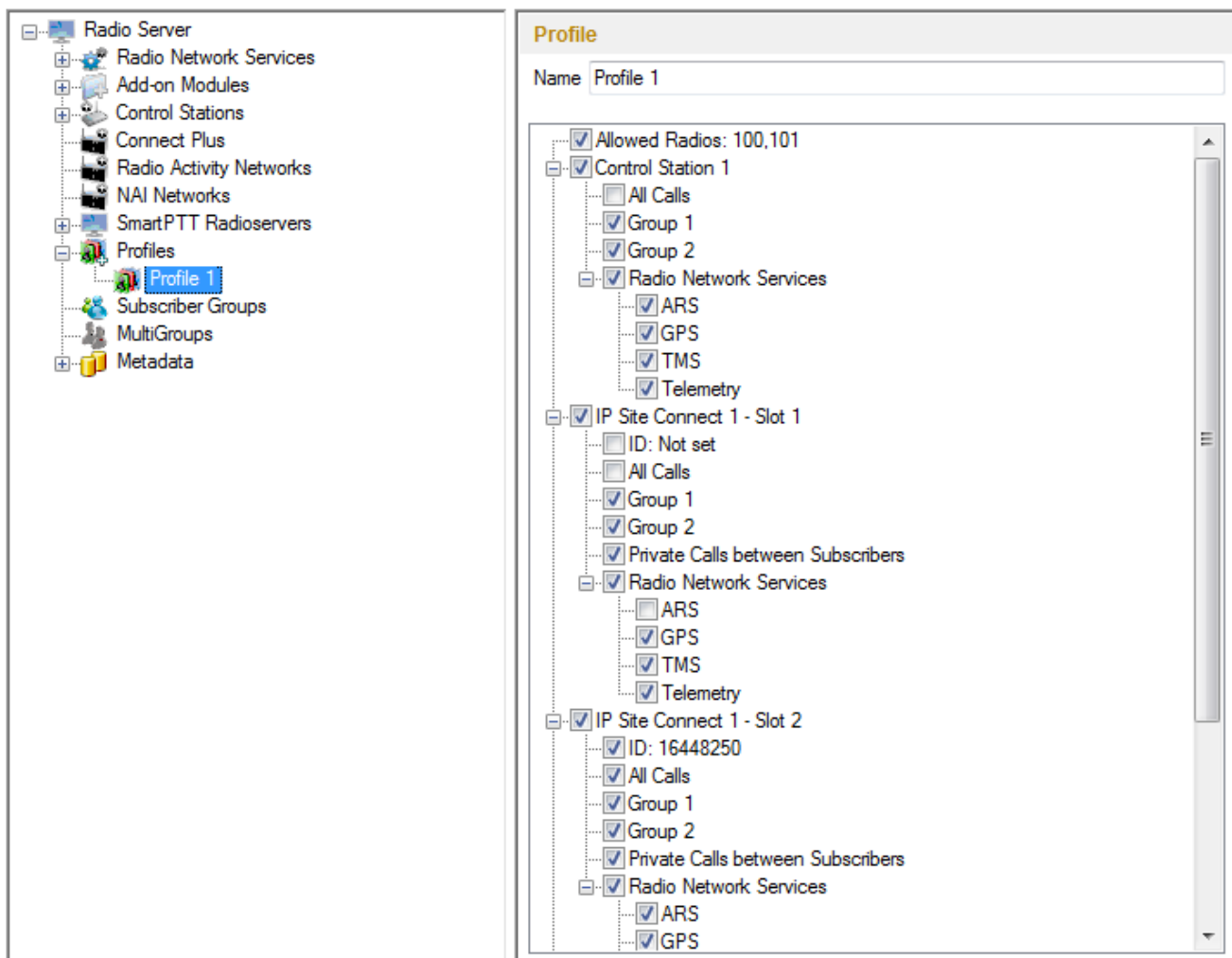


## 2.3 Profiles

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**.

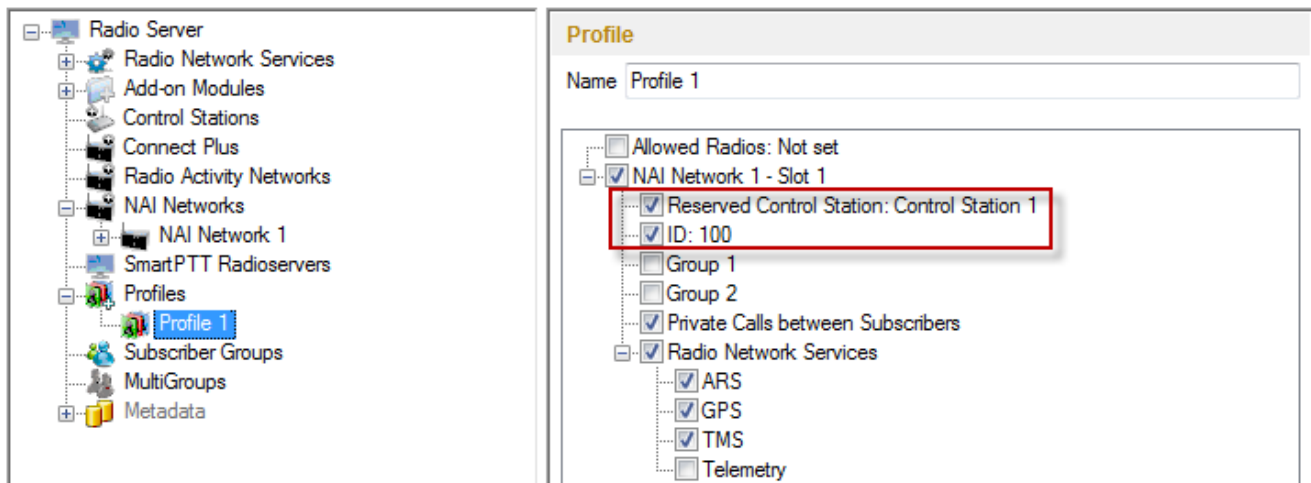
At that, the following window opens.



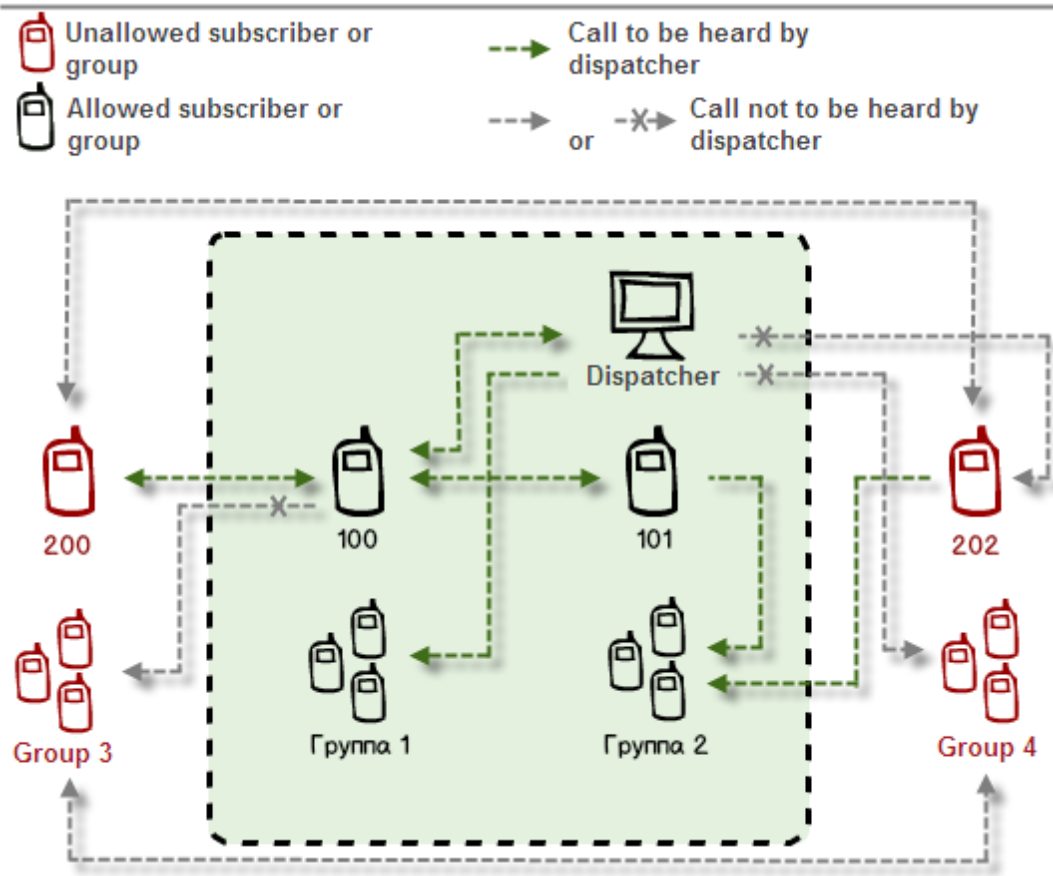
Use **Name** field to specify the profile name. Select control stations, talkgroups, IP Site Connect slots, services that will be available to the operator working under the profile.

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** checkbox 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 checkbox. To allow the dispatcher

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

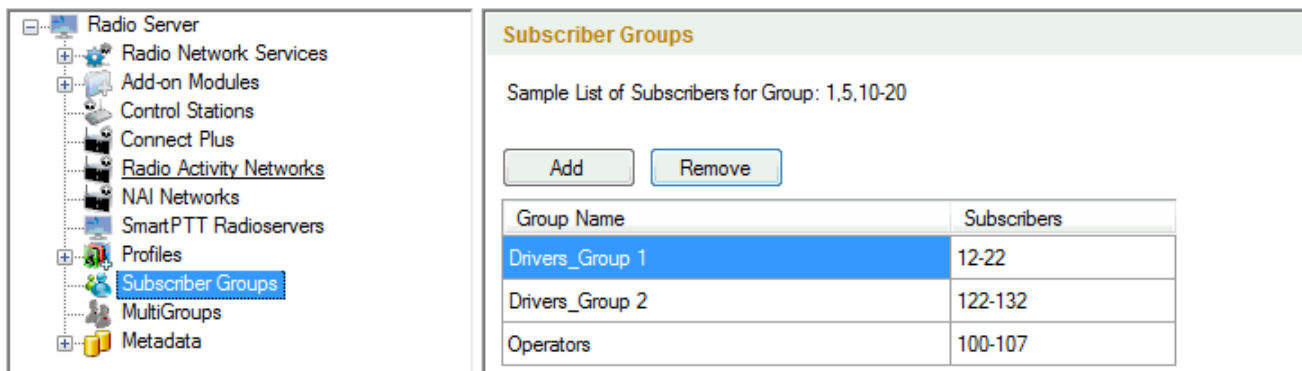
Save changes and restart the server to apply the new profile.

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 hierarchy, 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:

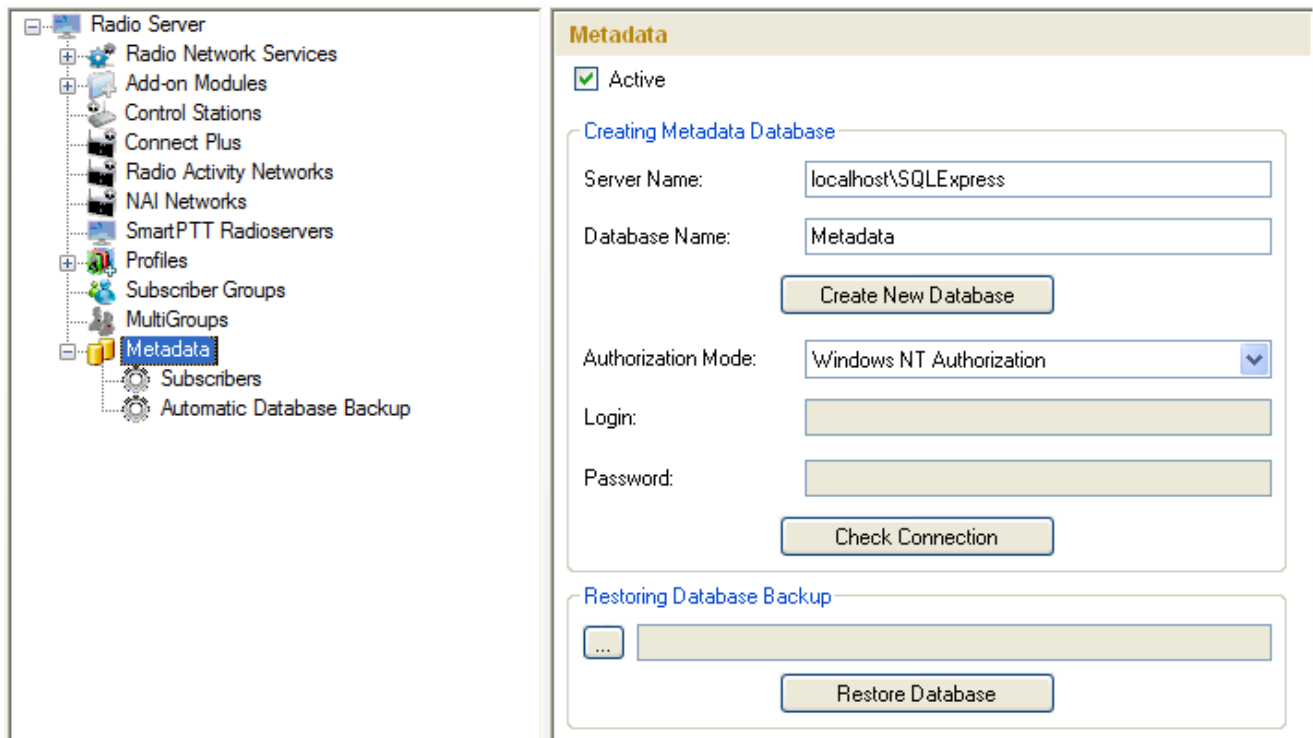
1. The initiator of the group call belongs to the multigroup;
2. The initiator of the group call does not belong to the multigroup;
3. The initiator of the group call does not belong to the multigroup, but at least one subscriber, to whom the call is addressed, belongs to the multigroup.
  - 1) If a 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**

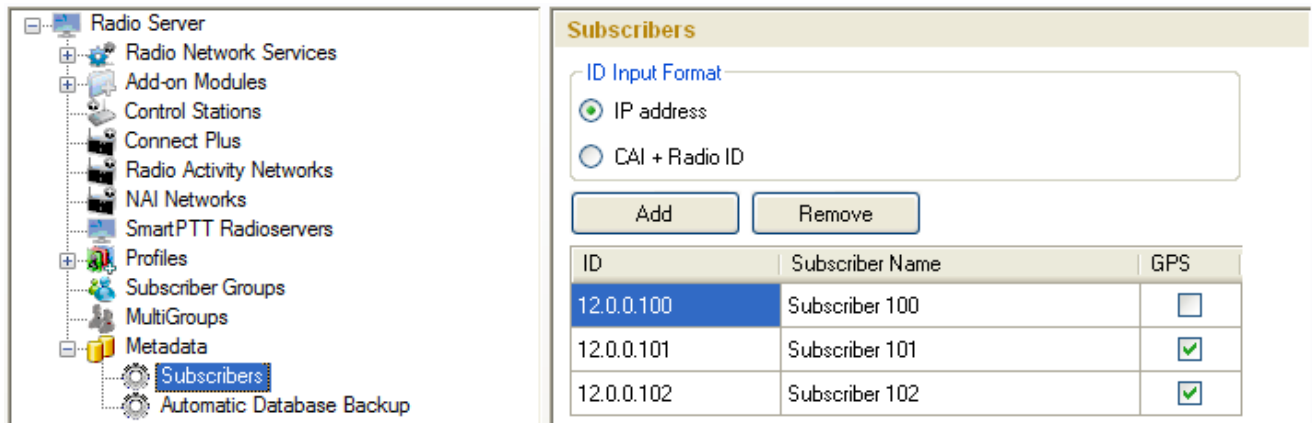


**Backup** and click **Restore Database**.

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' folder. 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.

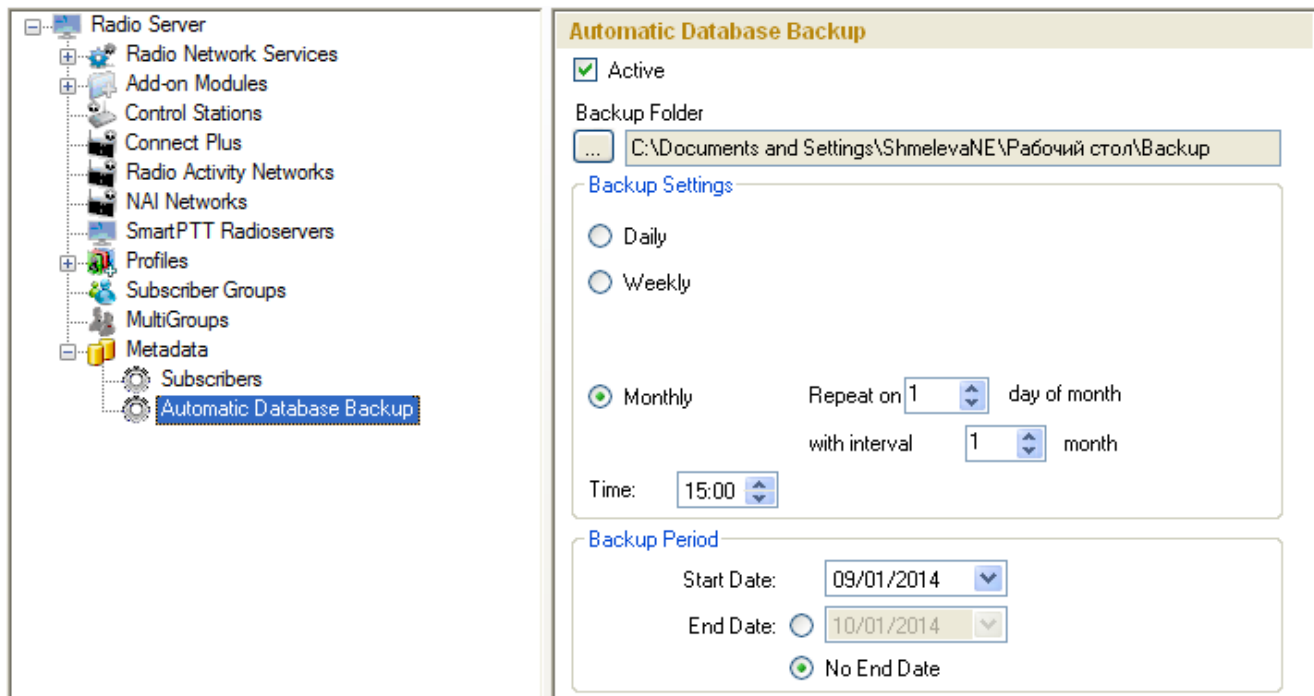
To delete the radio subscriber from the database, select it in the list and click on **Remove**.

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 checkbox 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.

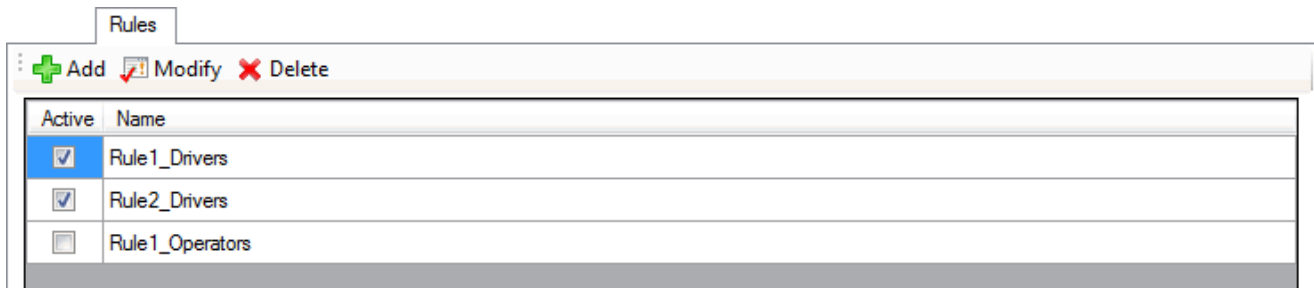
**Backup Period** – allows you to set time period when automatic database backup is to be made according to the selected backup settings.

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.



To create a new rule, click **Add**. To change the existing rule, click **Modify** or double-click on the rule name in the list of rules.

**Rule**

Name:

Active:

**Conditions**

Direction:  Equals

Event Type:  Equals

Date/Time:

Description:

Additional Information:

Talkgroup:

Subscriber:

Status:

Duration:

**Actions**

Play Sound:

Send Message:

Send To:

Subscriber  Talkgroup

Send Message To Initiator

Start Voice Notification:

Stop Current Voice Notification:

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

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.
- **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.

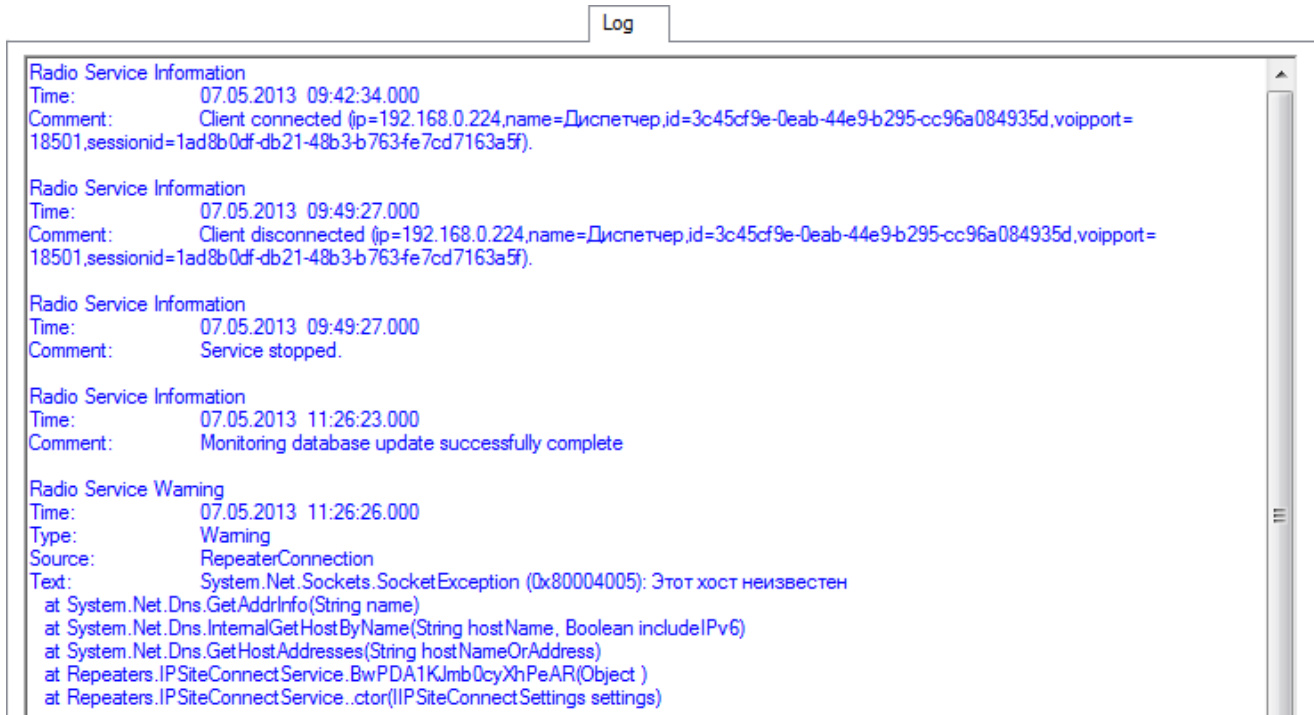
**Profile** – assigned profile to the dispatcher.

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

## 2.10 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-44e9b295-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-44e9b295-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)
```

## 2.11 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. It features two main panels: 'Export' and 'Import'. The 'Export' panel includes a text input for the file name, a 'Browse' button, a checkbox for 'Export Radioserver Database', and an 'Export' button. The 'Import' panel includes a text input for the file path, a 'Browse' button, a checkbox for 'Import Radioserver Database', and an 'Override Settings' section with radio buttons for 'Keep Server GUID' (selected) and 'All'. An 'Import' button is located at the bottom of the 'Import' 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.

## 2.12 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.

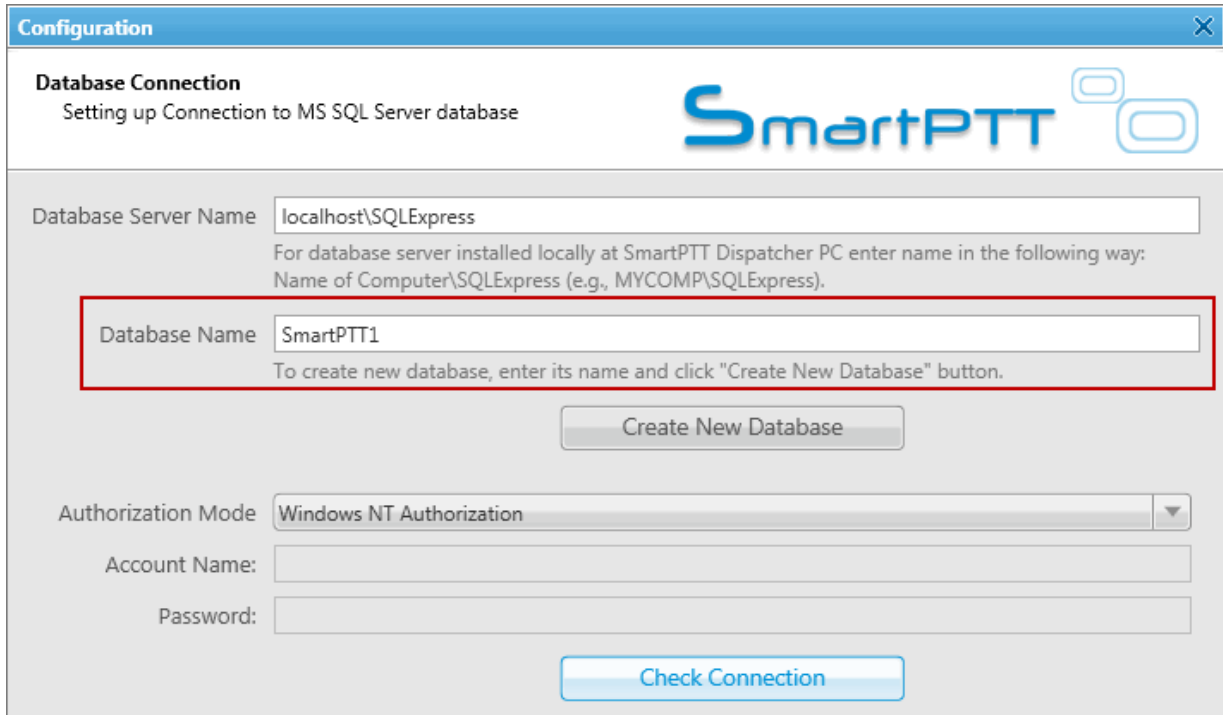
### Can't install SQLEXPRESS

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 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 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 "Configuration" with a close button (X) in the top right corner. The window is titled "Database Connection" and has a subtitle "Setting up Connection to MS SQL Server database". The SmartPTT logo is visible in the top right. The "Database Server Name" field contains "localhost\SQLEXPRESS". Below it, a note reads: "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 border, contains "SmartPTT1". Below it, a note reads: "To create new database, enter its name and click 'Create New Database' button." There is a "Create New Database" button. The "Authorization Mode" dropdown menu is set to "Windows NT Authorization". Below it are fields for "Account Name:" and "Password:". At the bottom, there is a "Check Connection" button.

**Configuration** [X]

**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:  
[Empty field]

Password:  
[Empty field]

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 the '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 also empty. Below these fields is a table with two columns: 'Operator' and 'Profile Name'. The 'Operator' column has 'Administrator' selected. The 'Profile Name' column is empty. At the bottom of the dialog 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

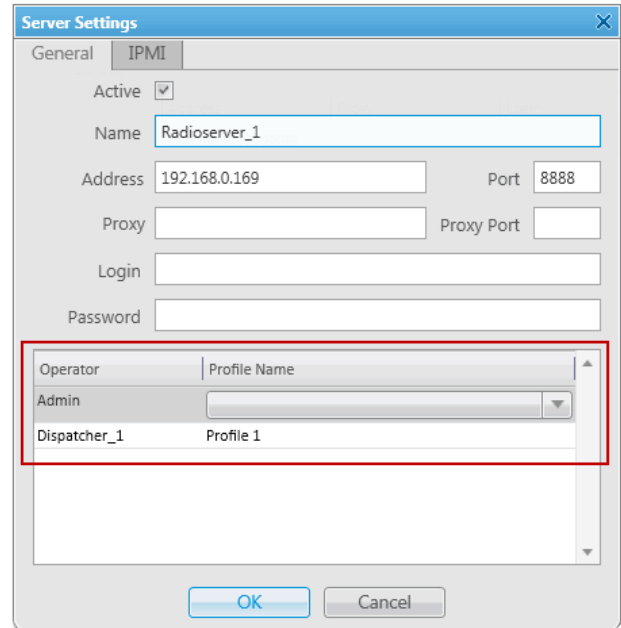
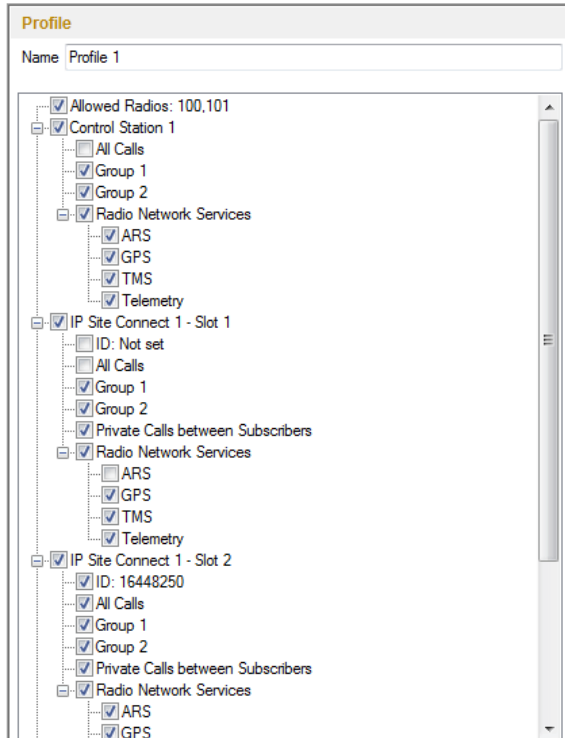
Authentication  
No

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

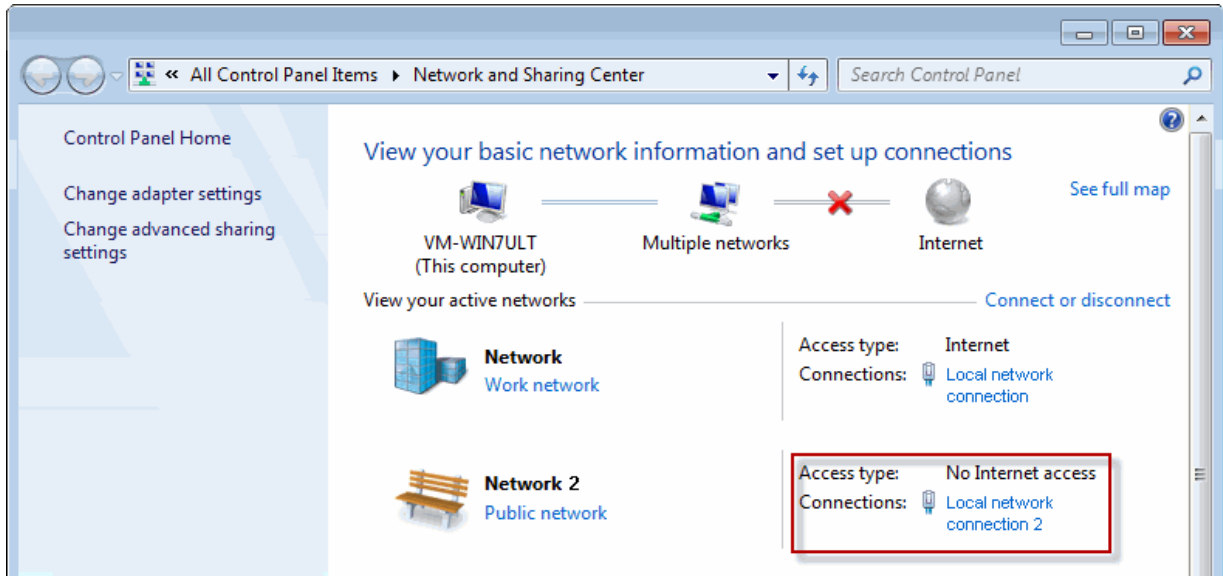
Private Call Hang Time, ms

Emergency Call Hang Time, ms

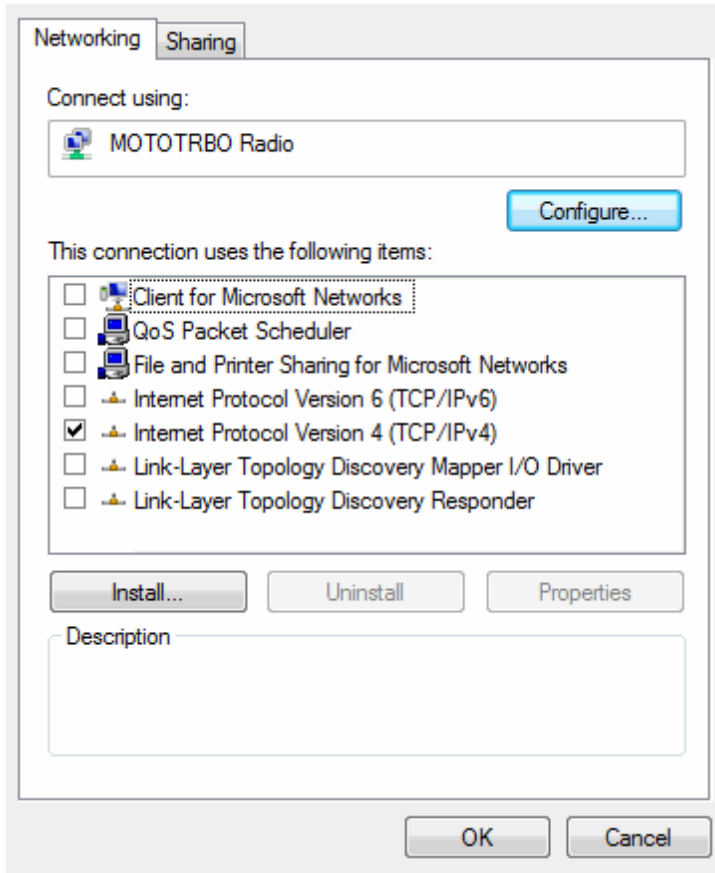
Authentication Key

Control station is not displayed in SmartPTT Dispatcher, but Radioserver is there

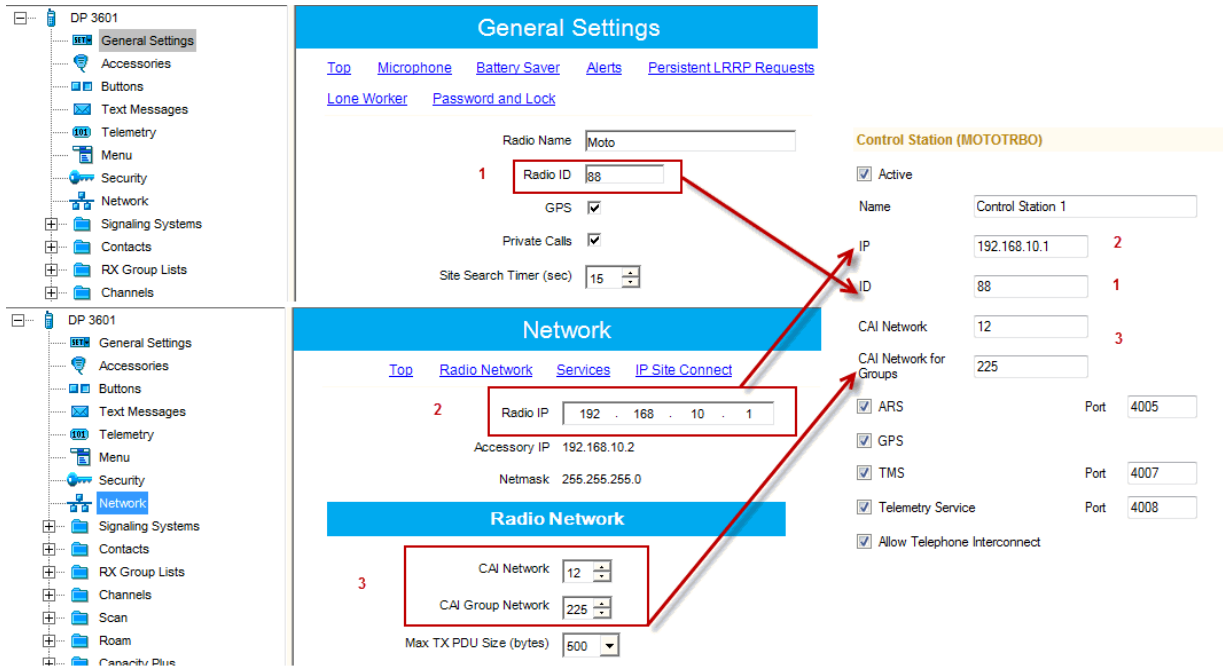
1. Make sure MOTOTRBO control station is installed properly on the computer where the radioserver is installed (MOTOTRBO Radio connection should appear in the state **Connected** in the **Network Connection Properties** window).



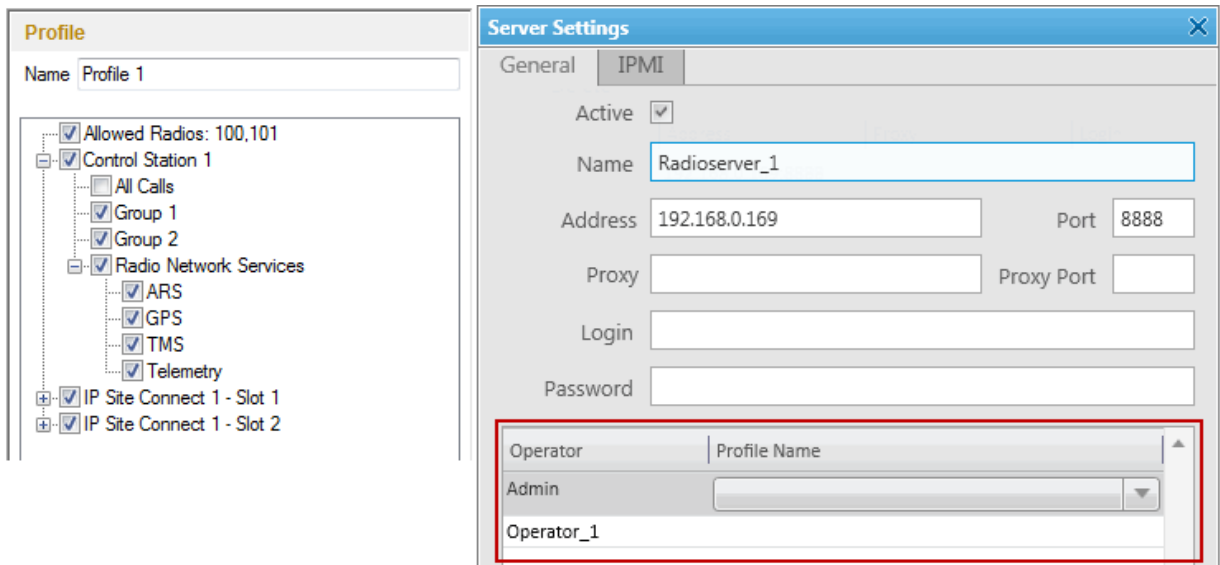
2. In the network connection properties of MOTOTRBO, which is created automatically at connecting the control stations to the computer via USB, disable all the interfaces except for TCP/IP v4.



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.

- 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

- (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' interface for radio DP 3601. The left sidebar lists various settings categories, with 'General Settings' selected. The main panel displays 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 interface for radio DP 3601. The left sidebar shows the 'Channels' section expanded, with 'IPSC\_slot1' selected. The main panel displays 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 tree view with categories like General Settings, Accessories, Buttons, Text Messages, Telemetry, Security, Network, Signaling Systems, Contacts, RX Group Lists, Channels, Scan, and Roam. The 'Network' category is selected. The main panel is titled 'Network' and has sub-sections: Top, Radio Network, Services, and IP Site Connect. The 'Radio Network' section is active and contains 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)

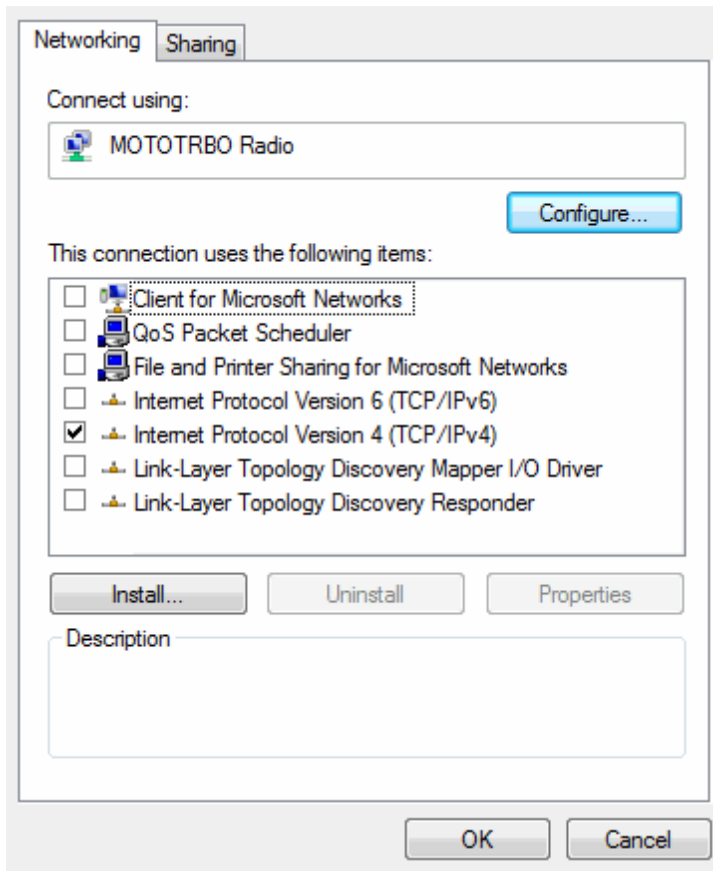
6. (for IP Site Connect configuration) Make sure that both slots 1 and 2 are selected in the **Network** section in the repeater codeplug.

The screenshot shows the configuration interface for a DR 3000 radio. On the left is a tree view with categories like General Settings, Accessories, Security, Network, Phone System, Channels, and Zone1. The 'Channels' category 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' section is active and contains the following settings:

- Color Code: 1
- Phone Gateway: None
- IP Site Connect: Slot 1 & Slot 2 (highlighted with a red box)
- Messaging Delay: Normal

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

Radio ID

GPS

Private Calls

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 configuration area is titled 'IPSC\_slot1' and includes 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) 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	Name Slot 1	<input checked="" type="checkbox"/> Active	Name Slot 2
<input type="text" value="1"/> ID	CAI Network 12	<input type="text" value="1"/> ID	CAI Network 12
<input type="text" value="225"/> CAI Network for Groups	<input type="checkbox"/> Emergency Alarm Confirmation	<input type="text" value="225"/> CAI Network for Groups	<input type="checkbox"/> Emergency Alarm Confirmation
<input type="checkbox"/> Compressed UDP Data Header	TX Time-Out Timer, sec 60	<input type="checkbox"/> Compressed UDP Data Header	TX Time-Out Timer, sec 60
<input checked="" type="checkbox"/> Private Call Confirmed	<input type="checkbox"/> Data Call Confirmed	<input checked="" type="checkbox"/> Private Call Confirmed	<input type="checkbox"/> Data Call Confirmed
<input type="checkbox"/> Allow Transmit Interrupt	<input type="checkbox"/> Allow Telephone Interconnect	<input type="checkbox"/> Allow Transmit Interrupt	<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 Moto

Radio ID

GPS

Private Calls

Site Search Timer (sec) 15

ARS Initialization Delay (min) 0

TX Preamble Duration (ms) 60

#### Network

[Top](#) [Radio Network](#) [Services](#) [IP Site Connect](#)

Max TX PDU Size (bytes) 500

Telemetry UDP Port 4008

Forward to PC Disabled

#### 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.

The screenshot displays the configuration for 'Channel1' on a DR 3000 repeater. The left sidebar shows a tree view with 'Channel1' selected under 'Zone1'. The main panel shows settings for 'Channel1' with tabs for 'Top', 'Enhanced GPS', 'RX', and 'TX'. The 'IP Site Connect' dropdown is highlighted with a red box and set to 'Slot 1 & Slot 2'.

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.

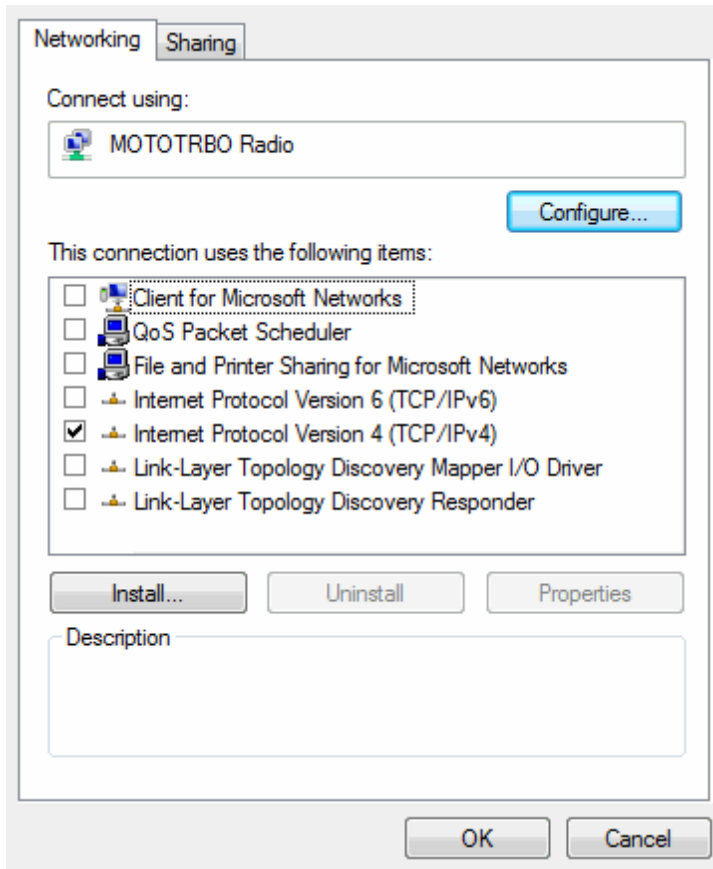
The screenshot displays the configuration for 'IPSC\_slot1' on a DP 3601 subscriber radio. The left sidebar shows a tree view with 'IPSC\_slot1' selected under 'Zone2'. The main panel shows settings for 'IPSC\_slot1' with tabs for 'Top', 'RX', and 'TX'. The 'Enhanced GPS' checkbox is checked and the 'Window Size' dropdown is highlighted with a red box and set to 8.

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 settings interface. On the left is a navigation tree for 'DM 3400' with categories like General Settings, Accessories, Buttons, Text Messages, Telemetry, Security, Network, Signaling Systems, Contacts, RX Group Lists, Channels, Scan, and Roam. The 'Network' category is selected. The main panel has a blue header 'Network' and sub-headers 'Top', 'Radio Network', 'Services', and 'IP Site Connect'. The 'Radio Network' sub-panel 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'.

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** checkbox 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** checkbox 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** checkbox 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 shows the SmartPTT Radioserver Configurator interface. On the left is a tree view of the configuration structure, with 'GPS' selected under 'Radio Network Services'. The main panel displays the 'GPS' settings for the selected 'Drivers' group.

**GPS**

Active

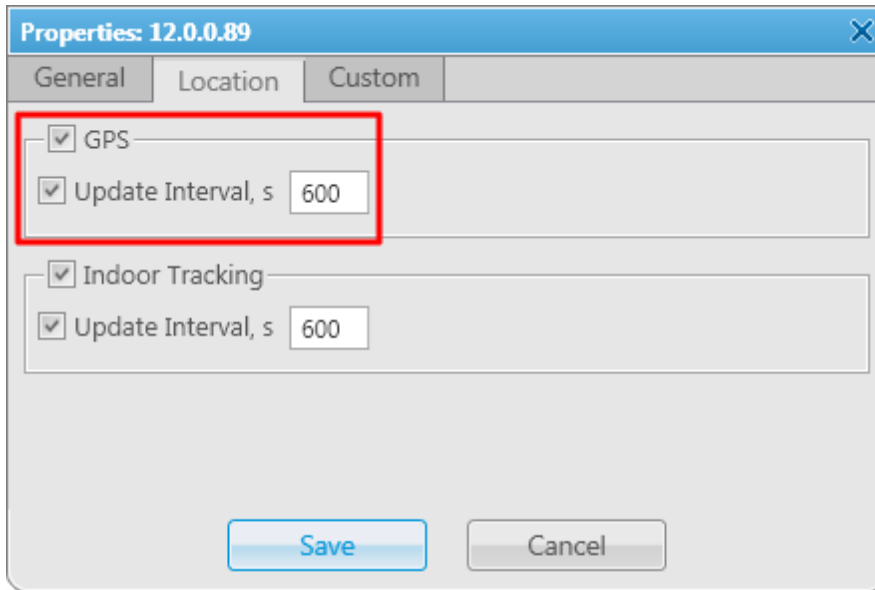
Min Subscriber Location Update Interval, sec:

Get Subscriber Location for Following Groups:

Group Name	Time Interval, sec	On/Off
Group 1		<input type="checkbox"/>
Drivers	240	<input checked="" type="checkbox"/>

Allow Dispatchers to Amend Location Update Time Interval

14. If the **Allow Dispatcher to Amend Location Update Time Interval** checkbox 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** checkbox is selected, and the time interval for GPS coordinates update is set (the **Update Interval, s** field).



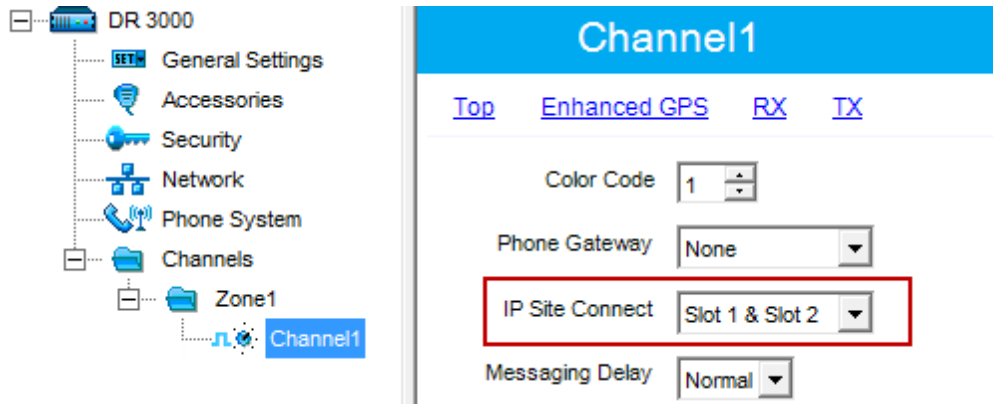
15. (for control stations (SmartPTT v7.2.0 and older)) Make sure that routing is configured for the control stations properly. If the dynamic route is not added, add the following static route:

**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.

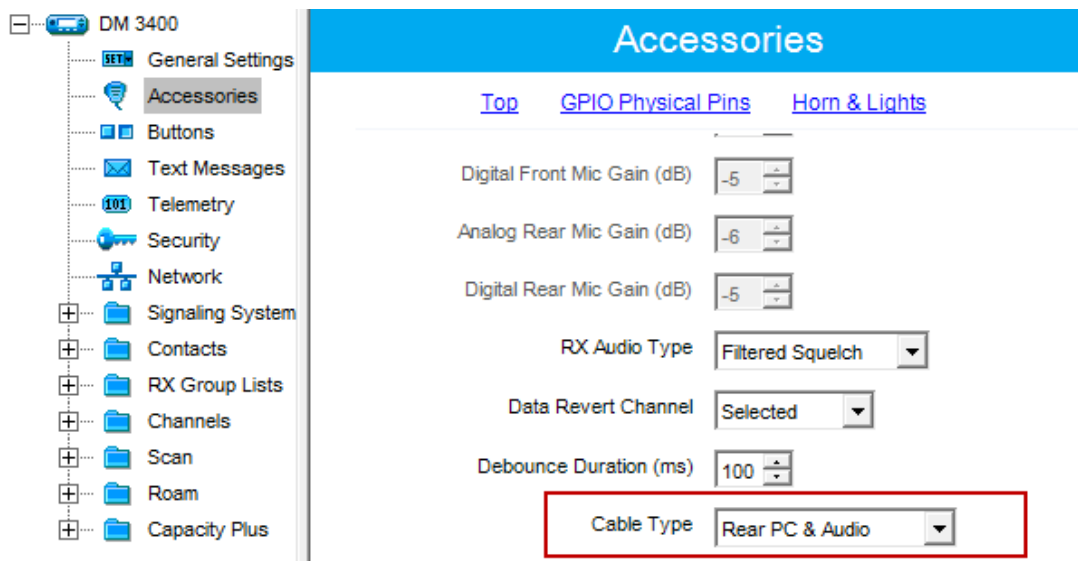
Calls do not get through

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.



4. Select *Rear PC and Audio* in the control station settings (**MOTOTRBO > Accessories > Cable Type**).



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.

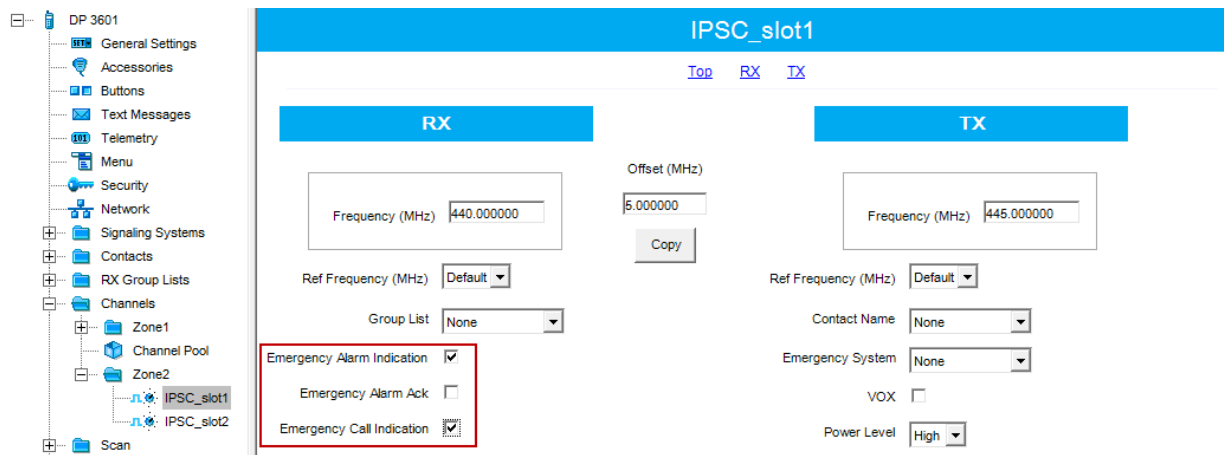
Remote monitoring does not work

To enable remote monitoring, clear the **Remote Monitor Decode** checkbox 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** checkboxes 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** checkboxes 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 '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 currently checked. The TX section includes fields for Frequency (MHz) (171.155000), Ref Frequency (MHz) (Default), Contact Name (Грывает), Emergency System (Sys1), VOX (unchecked), and Power Level (Low).

3. (for system configuration) Clear the **Emergency Alarm Confirmation** checkbox 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

Below the configuration panel are buttons for Add, Remove, Copy, and Paste. At the bottom is a table:

	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, the Frequency (MHz) is 440.000000 and the Offset (MHz) is 5.000000. In the TX section, the Frequency (MHz) is 445.000000. The 'Emergency System' dropdown menu is highlighted with a red box and is 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.

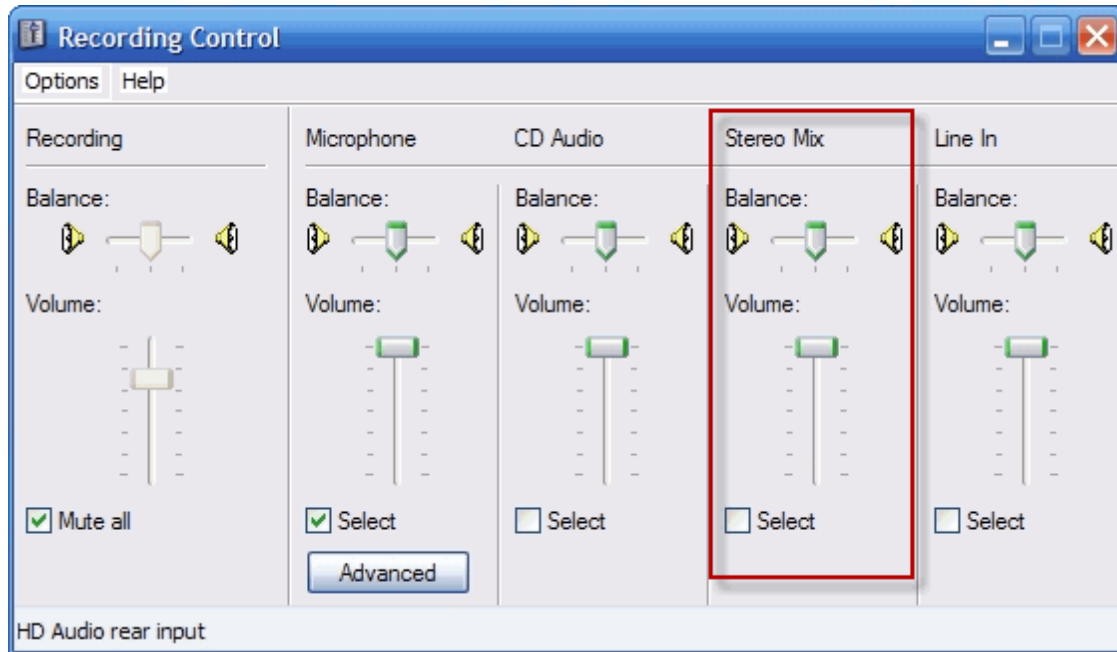
This screenshot is similar to the previous one but shows the 'Contact Name' dropdown menu in the TX section highlighted with a red box and set to 'Group9'. The 'Emergency System' is still set to 'Sys'. The 'Group List' dropdown in the RX section is set to 'None'.

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** checkbox 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.

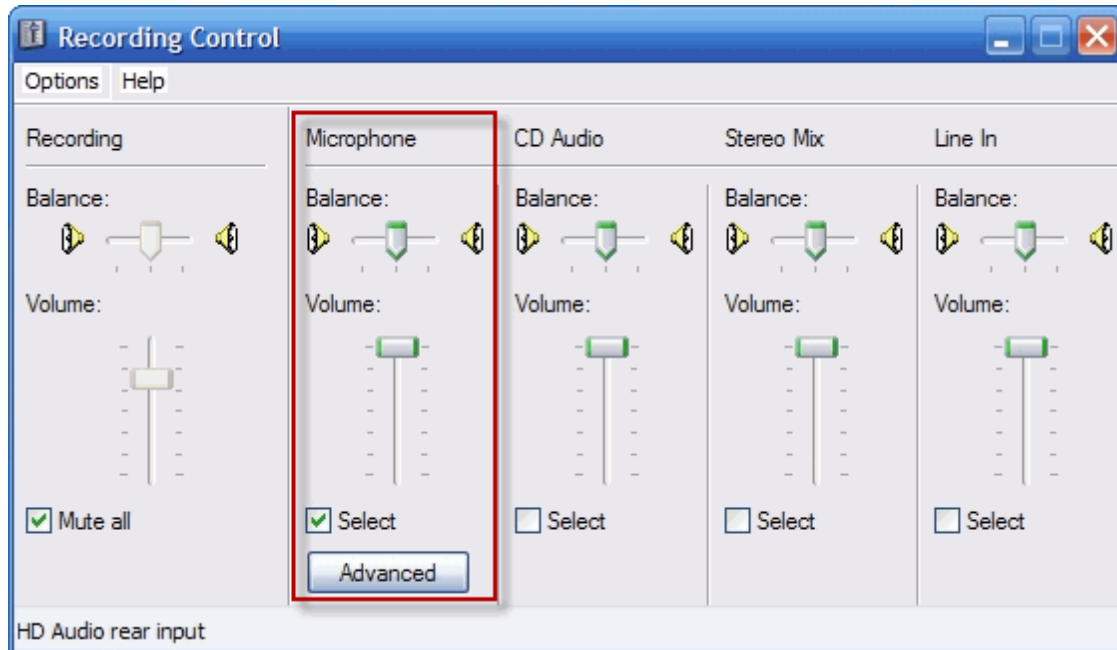




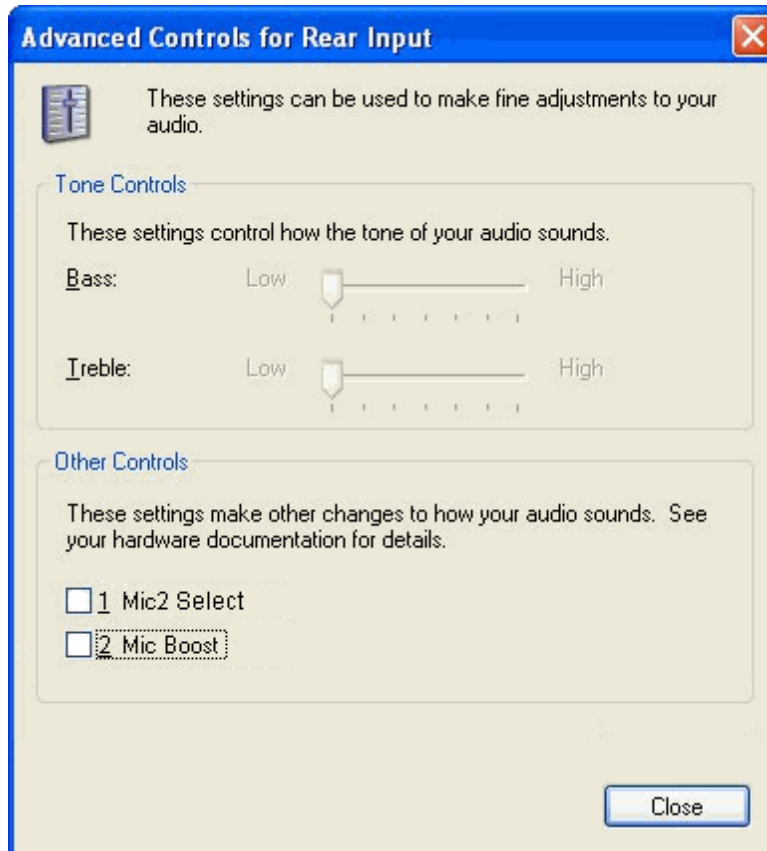
Unacceptable sound quality

1. (for control stations) Test the cable which connects the control stations and the computer for correct pinouts.

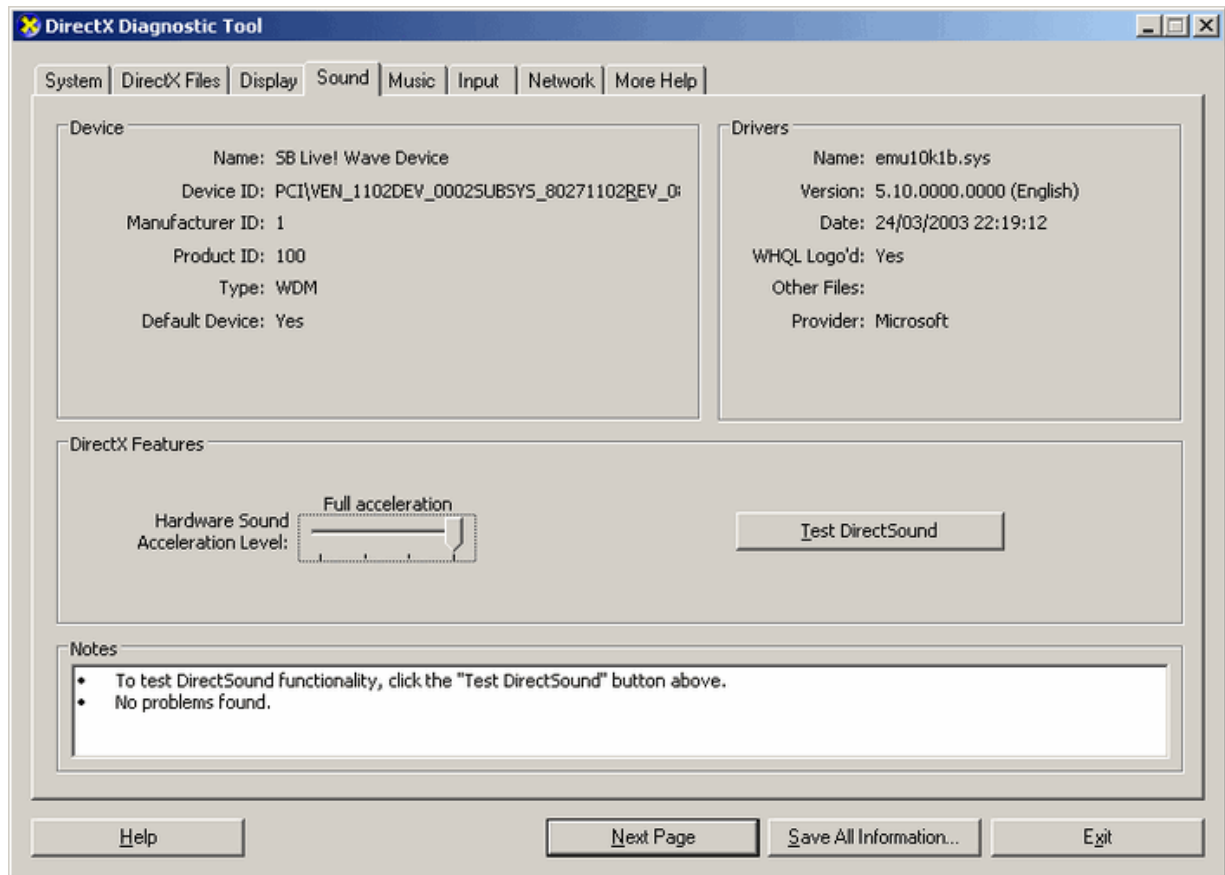
2. Reduce microphone sound level.



### 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.

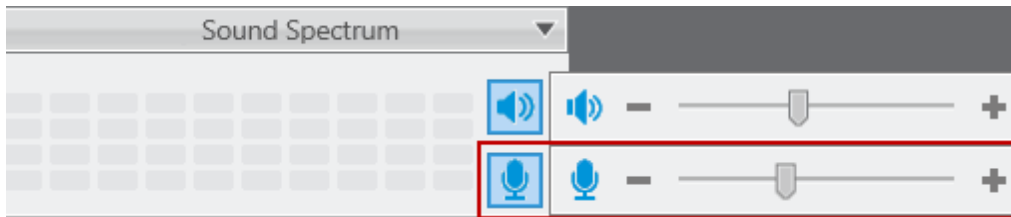
- Disable Windows Firewall.

No sound

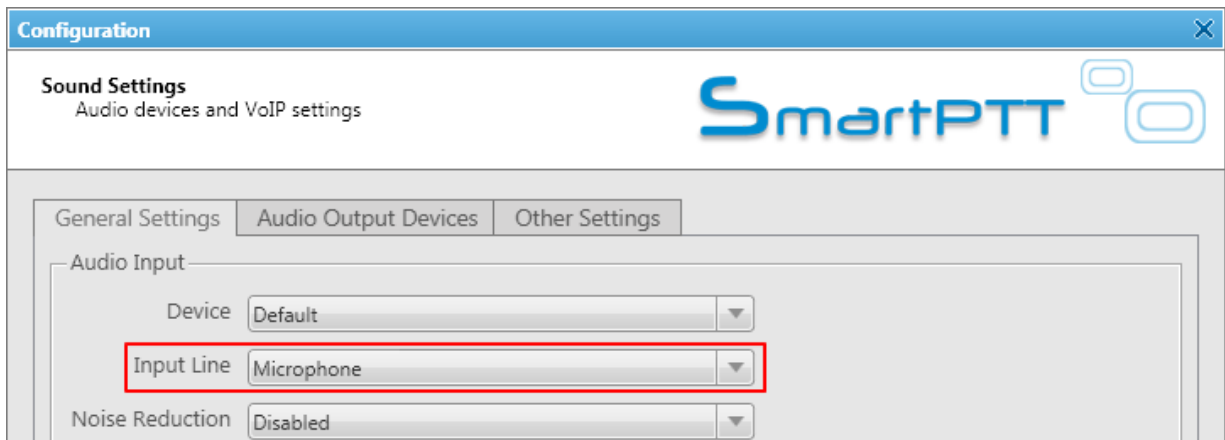
- (for control stations) Test the cable connecting the control stations and the computer for correct pinouts.
- Check if the microphone is working. Record an audio file by the **Sound Recorder** application (**Start Menu > All Programs > Entertainment > Sound Recorder**) and play it back.
- Make sure 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).

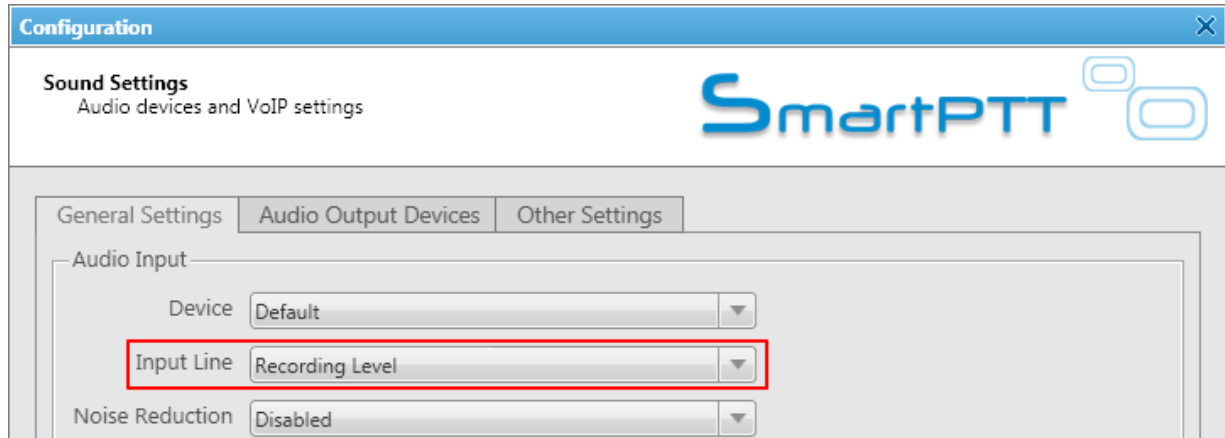
5. Check if **Microphone Audio Setting** is available in SmartPTT Dispatcher.



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: Tomsk.jpg ...

Map Parameters: Width: 3025 Height: 3025

Points

Point:	Longitude:	Latitude:	X:	Y:
1	84.91759423	56.54381305	2	2
2	85.09616492	56.54381305	3023	2
3	84.91759423	56.44654957	2	3023
4	85.09616492	56.44654957	3023	3023

Open...

Help Cancel Finish

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.