

Dispatcher Control for MotoTRBO Capacity Plus Systems

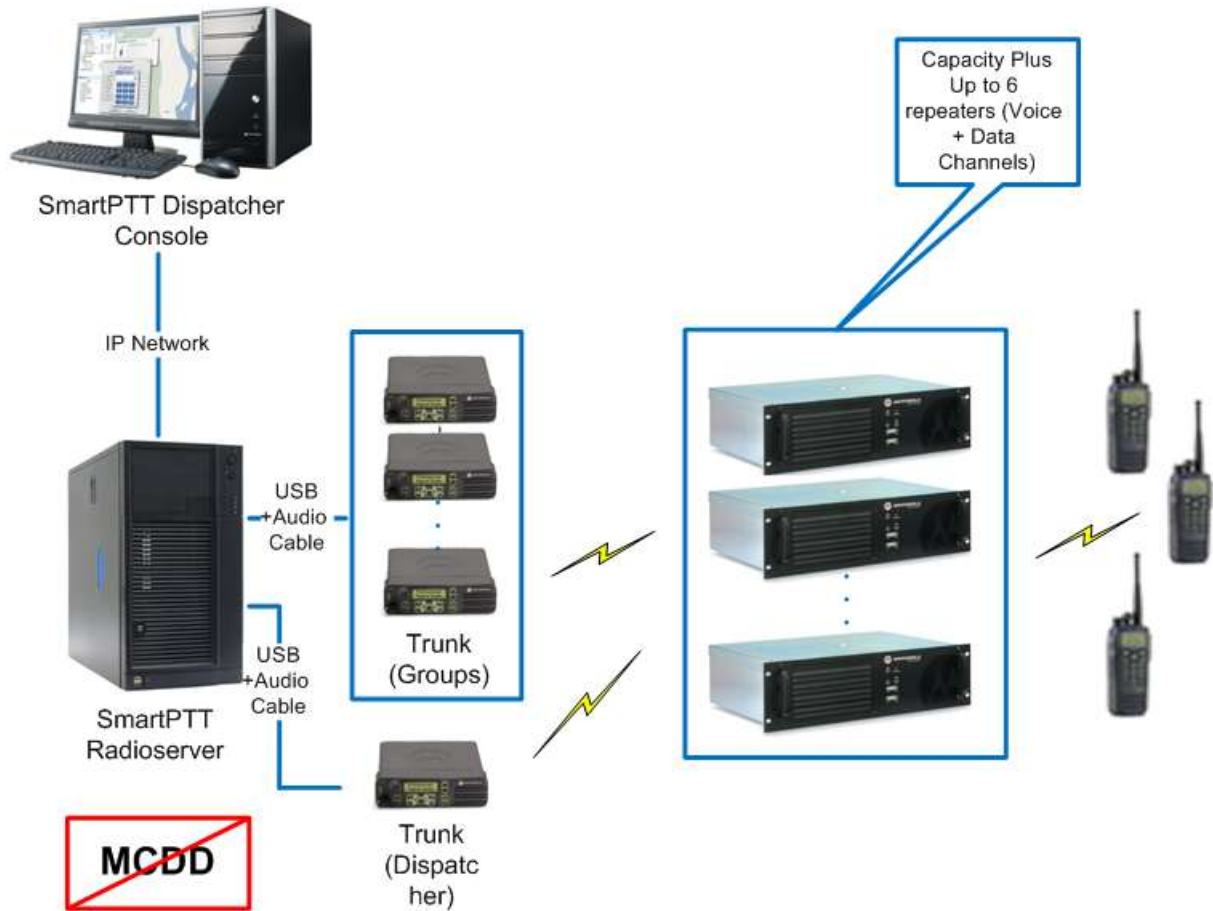
This tutorial provides brief instructions to set up the dispatch control over MotoTRBO Capacity Plus systems, using SmartPTT dispatch software. Both cases are considered: with and without data revert channels.

Please note, the tutorial can be changed during the development of SmartPTT. You can always download the latest version of this tutorial on our site <http://www.smartptt.com/>.

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1. Simple configuration (Without Data Revert Channels)



1.1. Repeater Settings

Use CPS to program MotoTRBO repeaters to work in Capacity Plus mode:

Create **Capacity Plus Voice Channel**

DR 3000

- General Settings
- Accessories
- Privacy
- Network
- Channels
- Zone1
- Trunk**

Trunk

Top RX TX

Color Code: 1

RSSI Threshold (dBm): -115

Preference Level: 1

Slot 1 Channel ID: 1

Slot 2 Channel ID: 2

RX

Frequency (MHz): 141,225000

Ref Frequency (MHz): Default

Offset (MHz)

0,000000

Copy

TX

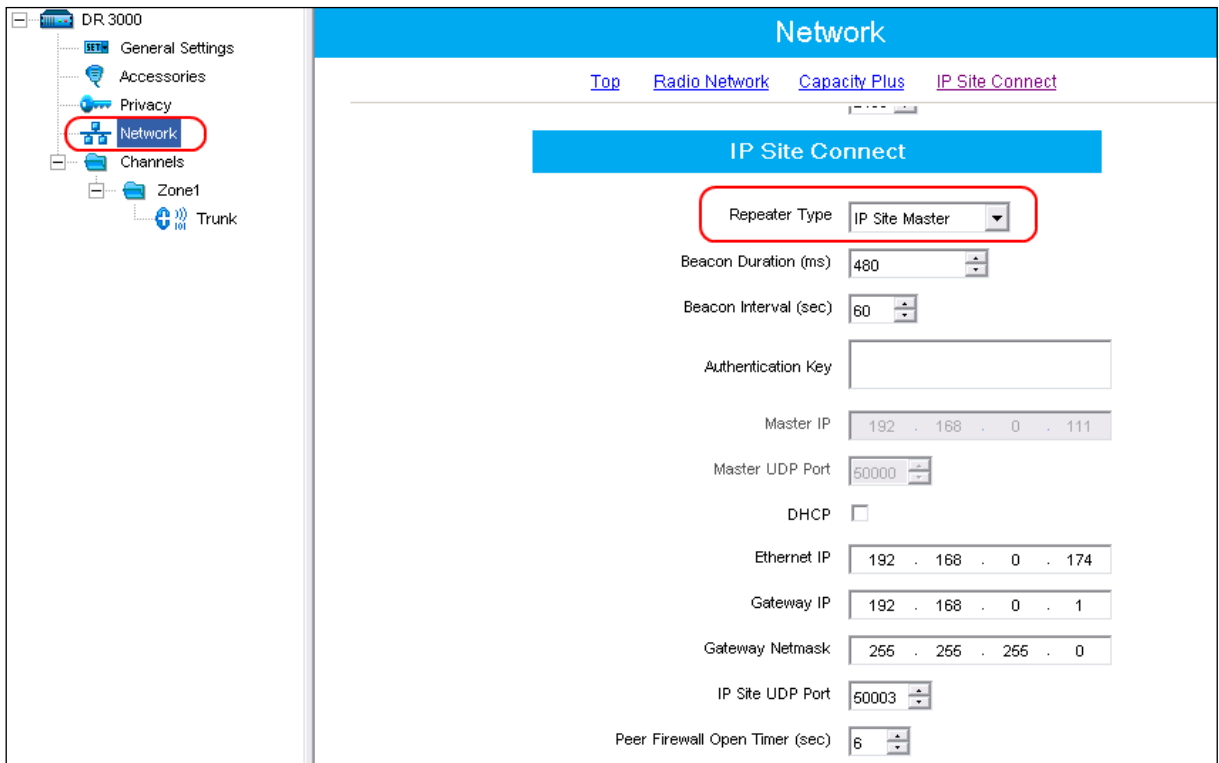
Frequency (MHz): 136,225000

Ref Frequency (MHz): Default

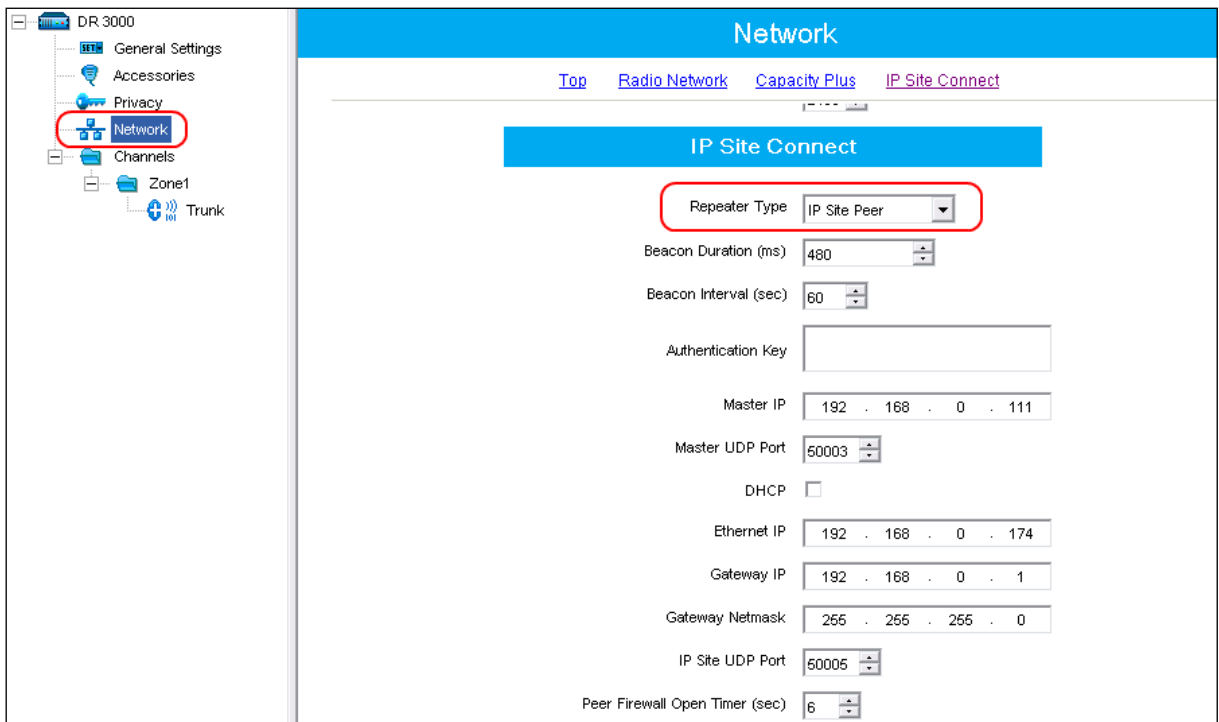
Power Level: High

TOT (sec): 60

Select **IP Site Master** in **Repeater Type** list



If Capacity Plus system consists of several repeaters, one of them is programmed as **Master** and the others are programmed as **Peers** (Repeater Type = IP Site Peer).

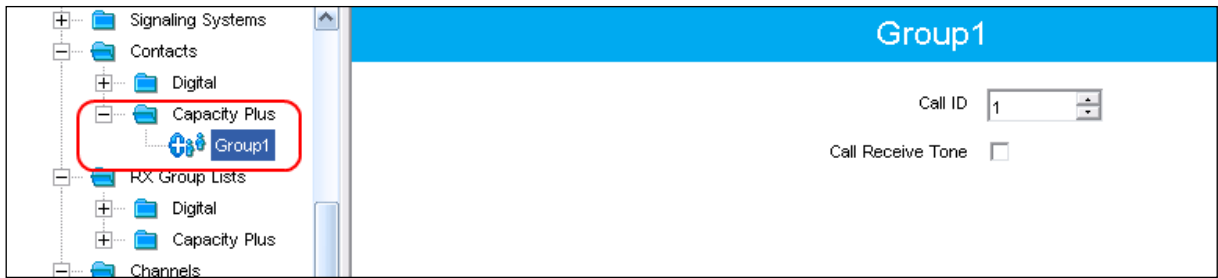


1.2. Base Radio Settings for Talk Groups. Trunk (Groups)

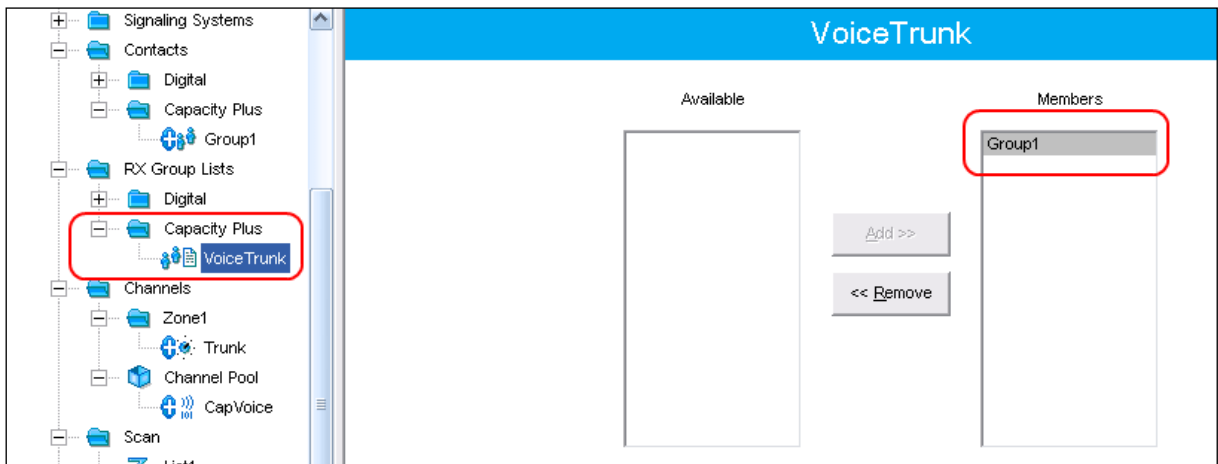
Base radios **Trunk (Groups)** are used for two-ways group calls on the dispatcher console. To eliminate lost group calls because of the busy channel, each base radio must be programmed to work with the only one talk group.

Steps to program **Trunk (Groups)** base radio:

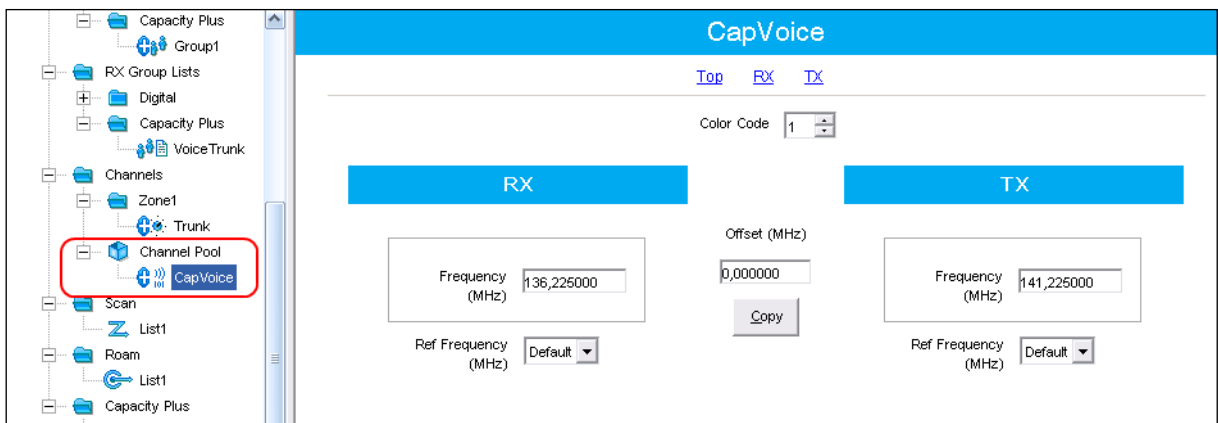
1. Add group to Capacity Plus contact list:



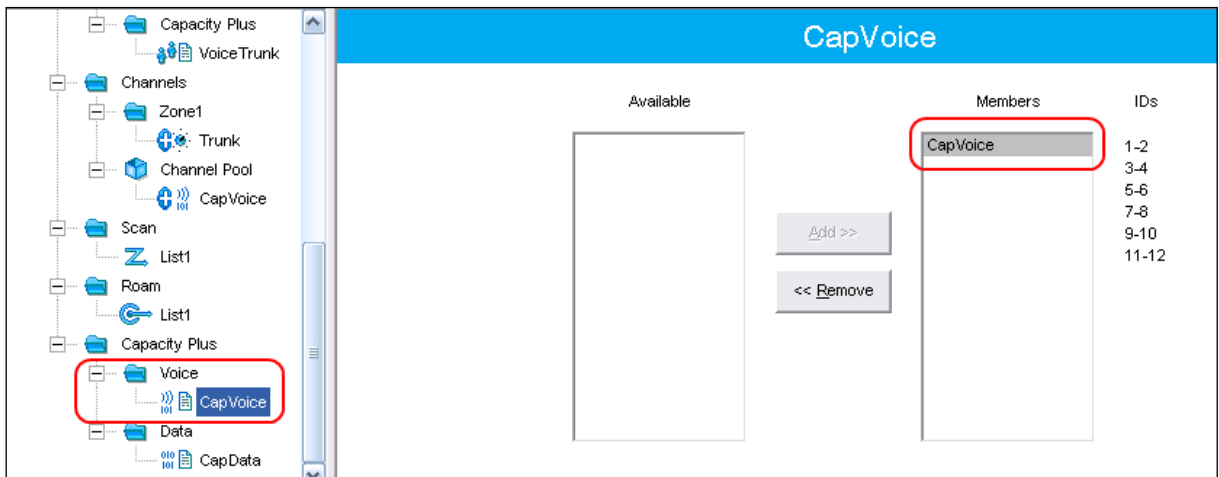
2. Add the group to Members list of Capacity Plus RX Group list:



3. Add Capacity Plus Voice Channel to Channel Pool. Set frequency pair of the trunk repeater:

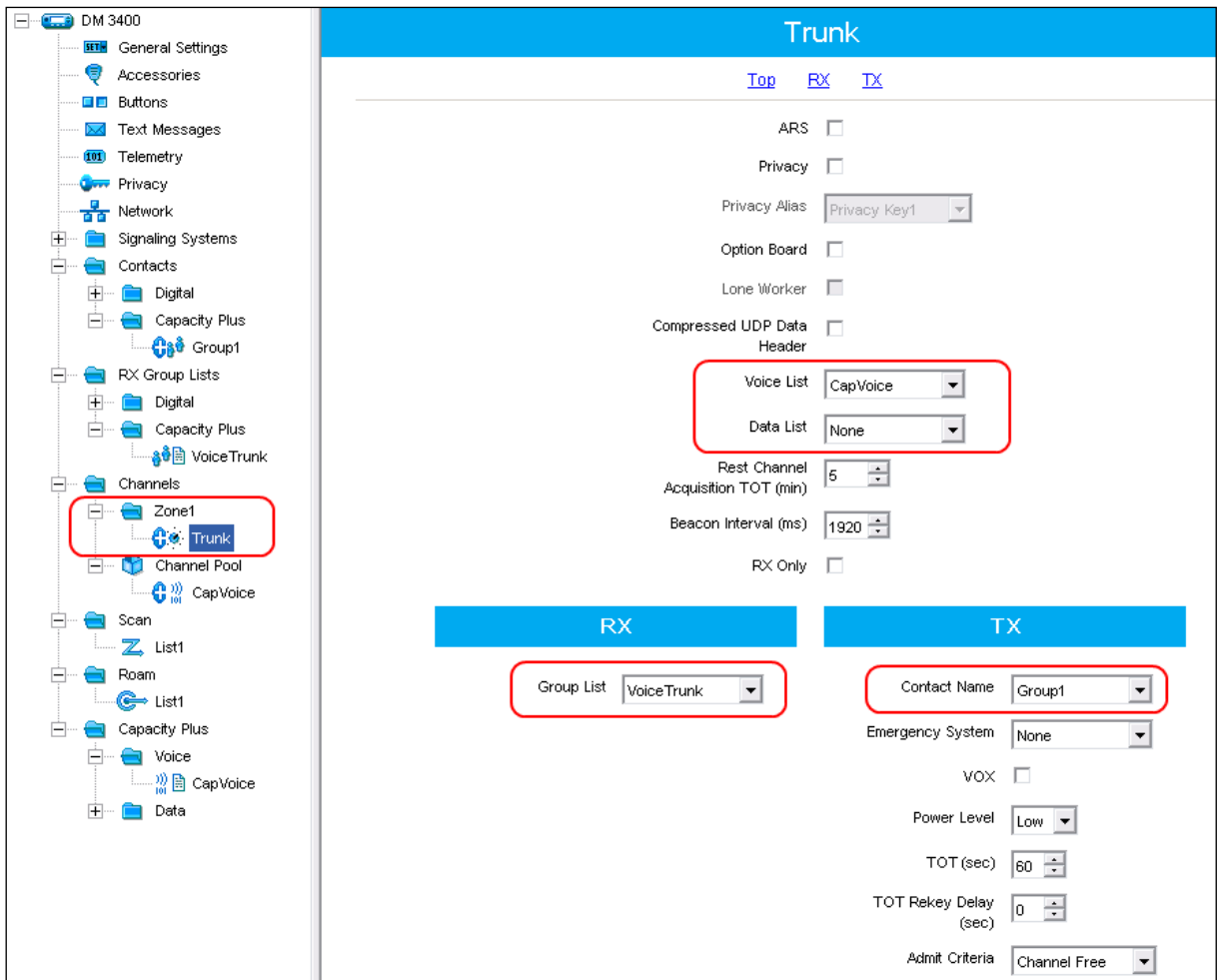


4. Add the voice channel to Members list of Capacity Plus voice channels:



5. Add **Capacity Plus Personality** channel

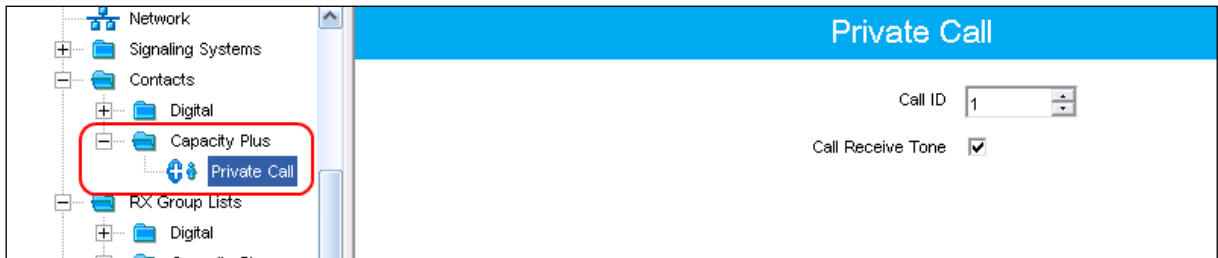
- Select previously created Capacity Plus voice channel in the **Voice List**
- Select **None** in the **Data List**
- Select Capacity Plus RX Group in the **Group List**
- Select contact name to call in the **Contact Name list**



1.3. Base Radio Settings for Dispatcher Individual Calls. Trunk (Dispatcher)

Trunk (Dispatcher) MotoTRBO base radios are used for private calls, private text messages from the dispatcher console or for Telephone Interconnect Service.

Settings for **Trunk (Dispatcher)** base radio is the same as for **Trunk (Groups)** base radios, but with the one difference: Private Call must be added to Capacity Plus contacts, instead of Group Call.



Important: All Trunk base radios must have different Radio ID.

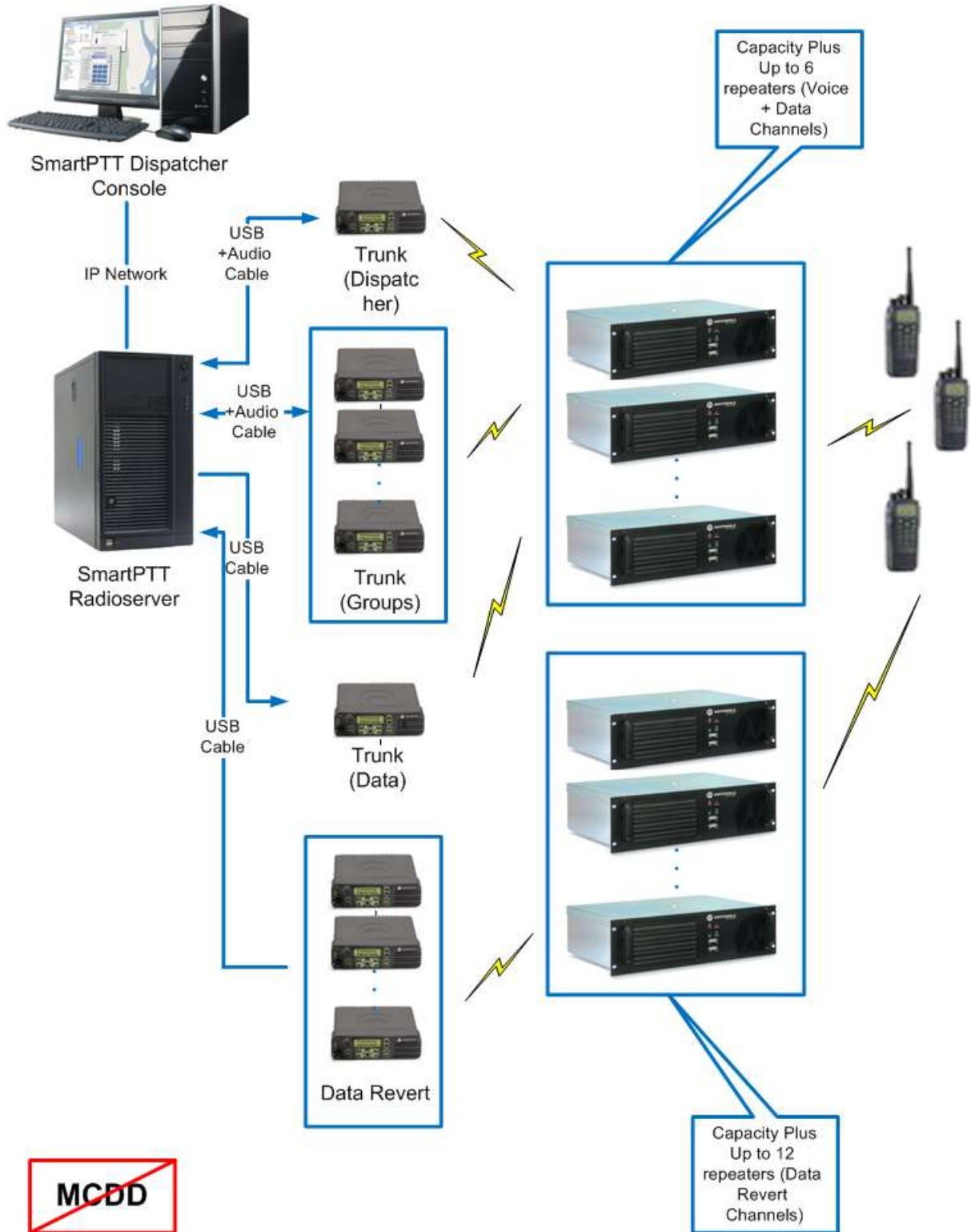
1.4. Subscriber Radio Settings

Subscriber radio settings are similar to **Trunk (Groups)** base radio settings. In Capacity Plus contacts add the talk groups which are specific for this subscriber.

Note:

- Subscriber radio should have **Automatic Registration Service (ARS)** enabled on Capacity Plus channel.
- Subscriber radio **ARS ID** must be set to one of trunk base radios **Radio ID**. In Motorola documentation it is recommended to balance ARS workload between available trunk base radios.

2. Configuration with Data Revert Channels



2.1. Repeater Settings for Trunk Channels

Trunk repeater settings are the same as described in section 1.1.

2.2. Repeater Settings for Data Revert Channels

Data Revert repeater settings are similar to trunk repeater settings with the one difference: Capacity Plus Data Channel must be created instead of Capacity Plus Voice Channel.

The screenshot displays the 'DataRevert' configuration page for a DR 3000 repeater. On the left, a navigation tree shows 'DataRevert' selected under 'Zone1'. The main configuration area is divided into RX and TX sections. The RX section has a Frequency (MHz) of 161,225000 and a Ref Frequency (MHz) set to Default. The TX section has a Frequency (MHz) of 156,225000 and a Ref Frequency (MHz) set to Default. Other settings include Color Code 1, RSSI Threshold (dBm) -115, Offset (MHz) 0,000000, Power Level High, and TOT (sec) 60. A 'Copy' button is located between the RX and TX frequency fields.

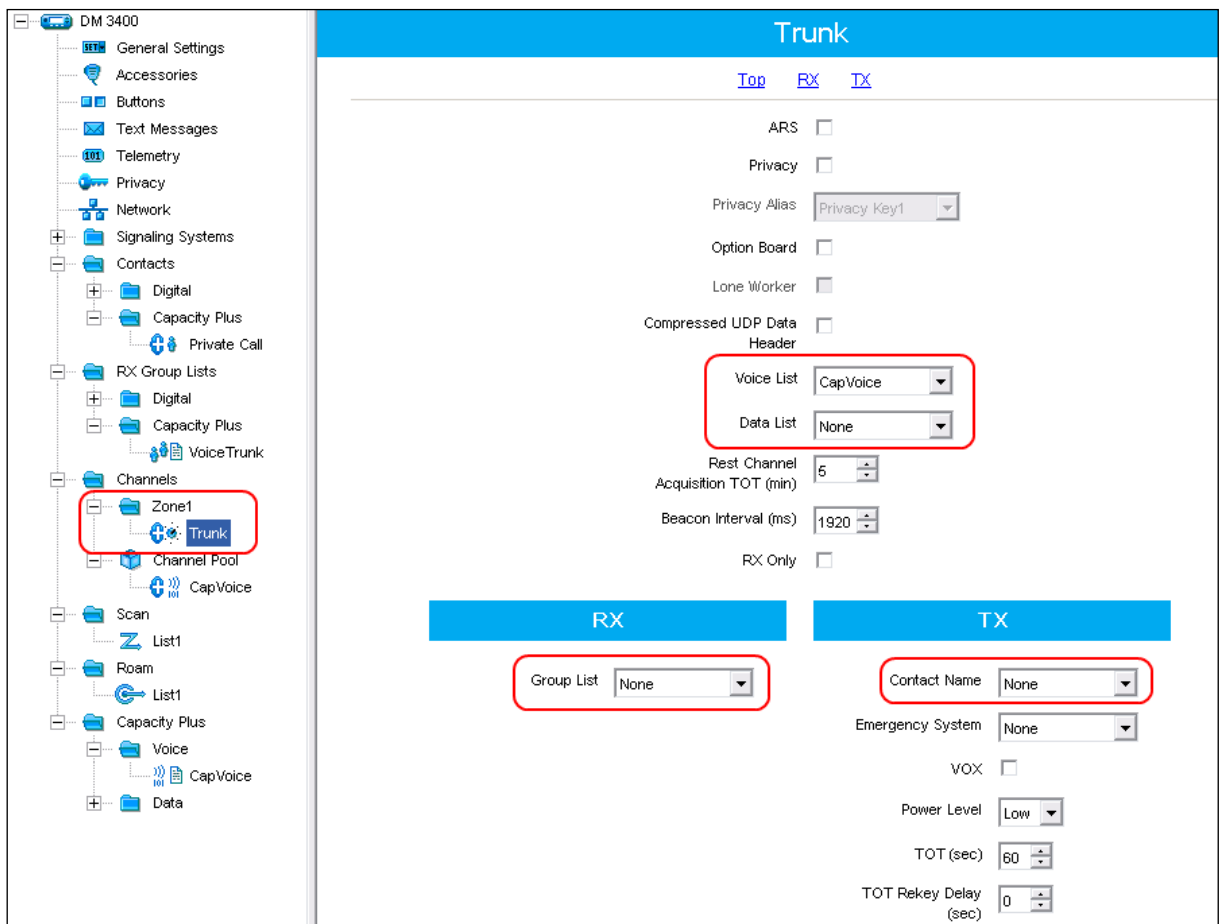
2.3. Base Radio Settings for Talk Groups. Trunk (Groups)

Trunk (Groups) base radio settings are the same as described in section 1.2.

2.4. Base Radio Settings for Trunk Data Channel

Trunk (Data) base radio is dedicated to transfer commands and data to radio subscribers. Steps to **Trunk (Data)** base radio settings:

- Add Capacity Plus Voice Channel to Channel Pool. Specify frequency pair of Revert repeater
- Add the voice channel to Members list of Capacity Plus voice channels
- Add **Capacity Plus Personality** channel
 - Select the voice channel in the **Voice List**
 - Set **None** in **Data List**
 - Set **None** in **Group List**
 - Set **None** in **Contact Name** list



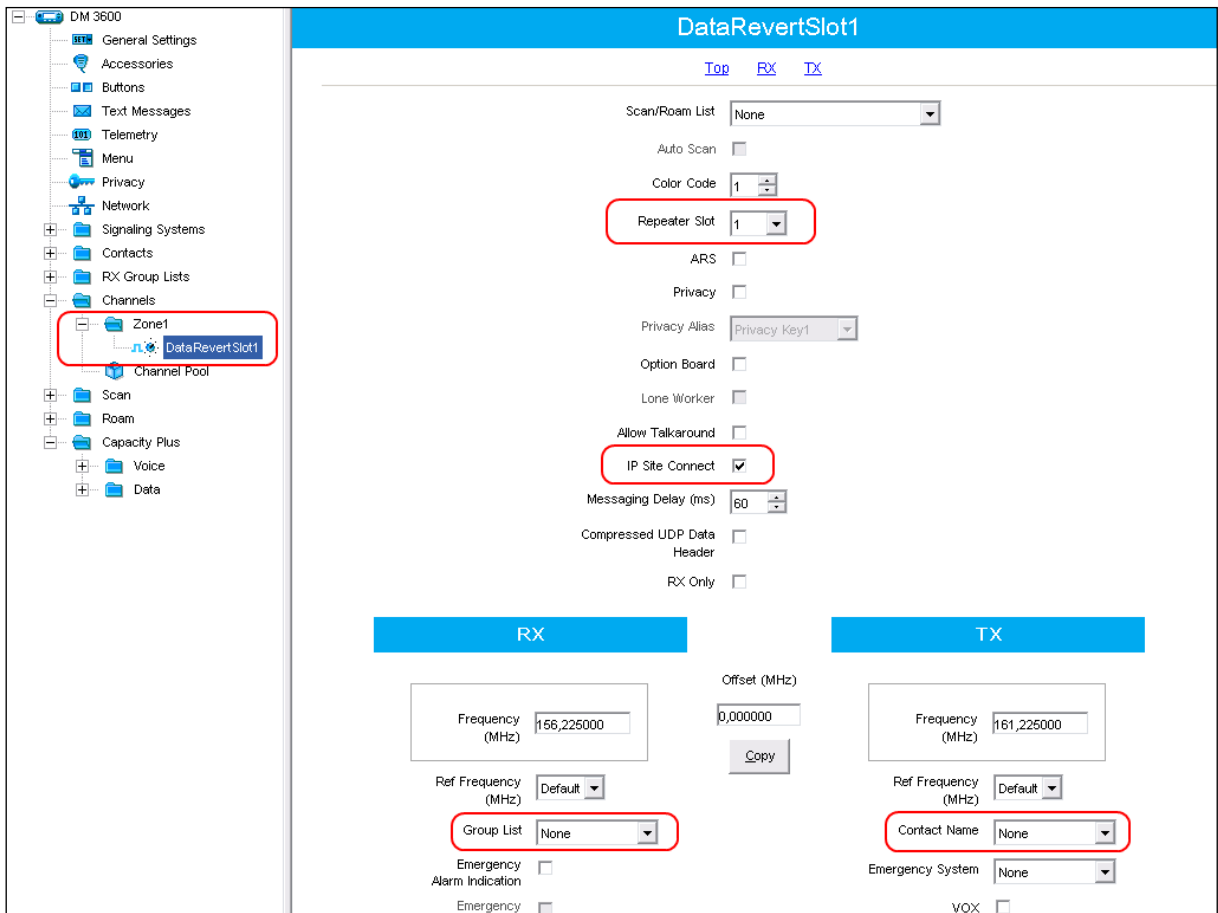
Important: Radio ID of Trunk (Data) base radio and Data Revert base radios must be all the same.

2.5. Base Radio Settings for Data Revert Channel

Data Revert base radios are dedicated to get data only from the subscriber radios.

Steps to do the settings for Data Revert base radio in MotoTRBO CPS:

- Create **Digital Channel**
- Set **Repeater Slot** to the Data Revert repeater slot number which will be processed by the radio
- Set **IP Site Connect** checkbox
- Set frequency pair of Data Revert repeater
- Set **None** in **Group List**
- Set **None** in **Contact Name** list



Note: Data Revert base radio is only used to receive data from **Data Revert** repeaters.

Important: Radio ID of all **Data Revert** base radios must be the same.

2.6. Base Radio Settings for Dispatcher Individual Calls. Trunk (Dispatcher)

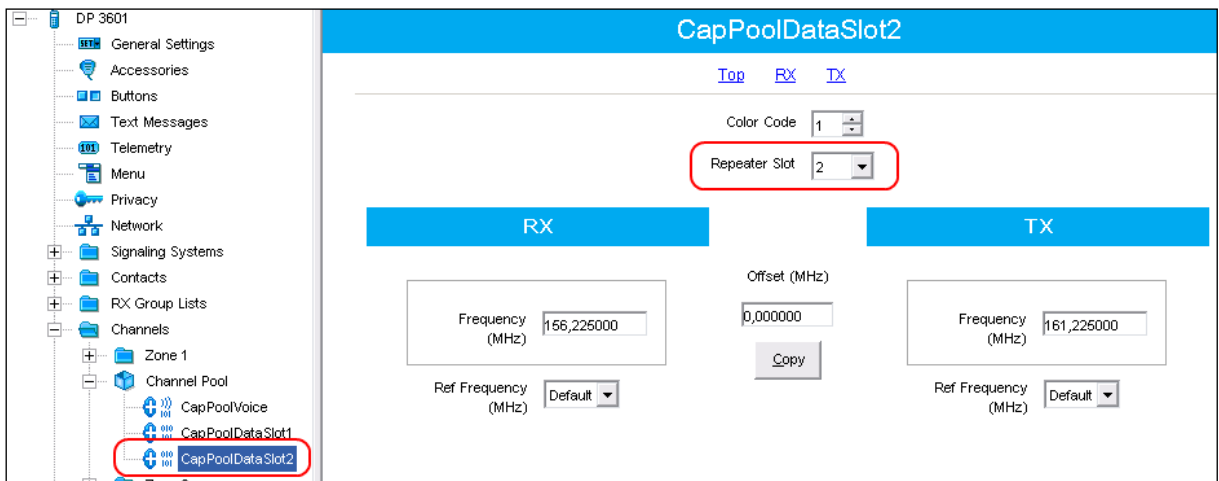
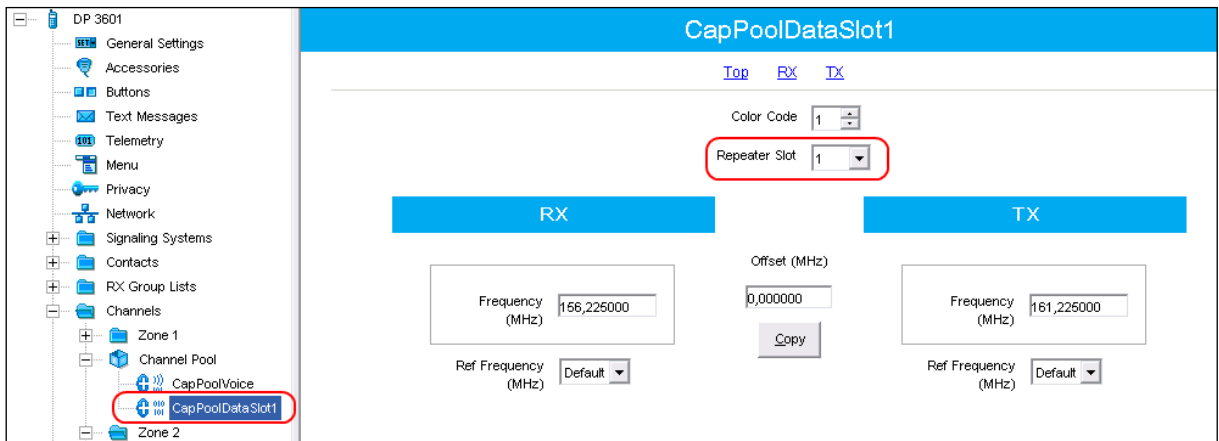
Trunk (Dispatcher) base radio settings are the same as described in section 1.4.

2.7. Subscriber Radio Settings

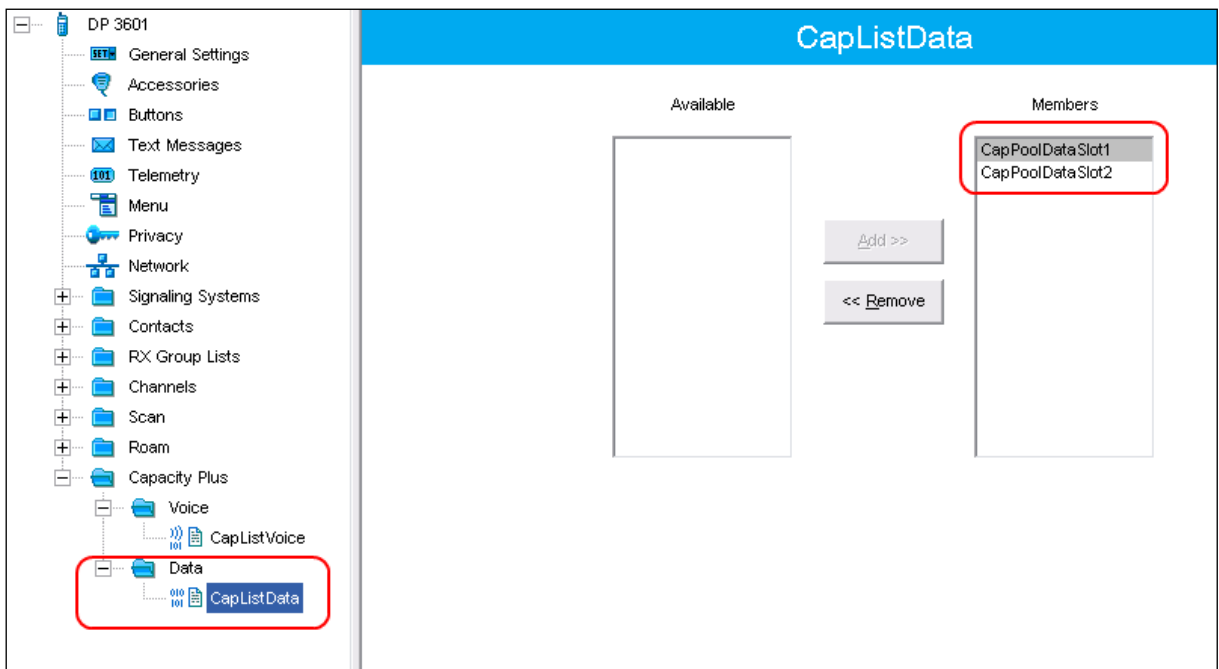
Subscriber radio settings are similar to **Trunk (Groups)** base radio settings.

Additional steps to program subscriber radio:

- In Capacity Plus Contacts add the talk groups which are specific for this subscriber.
- Add **Capacity Plus Data Channel** to **Channel Pool** for all available **Data Revert** channels.

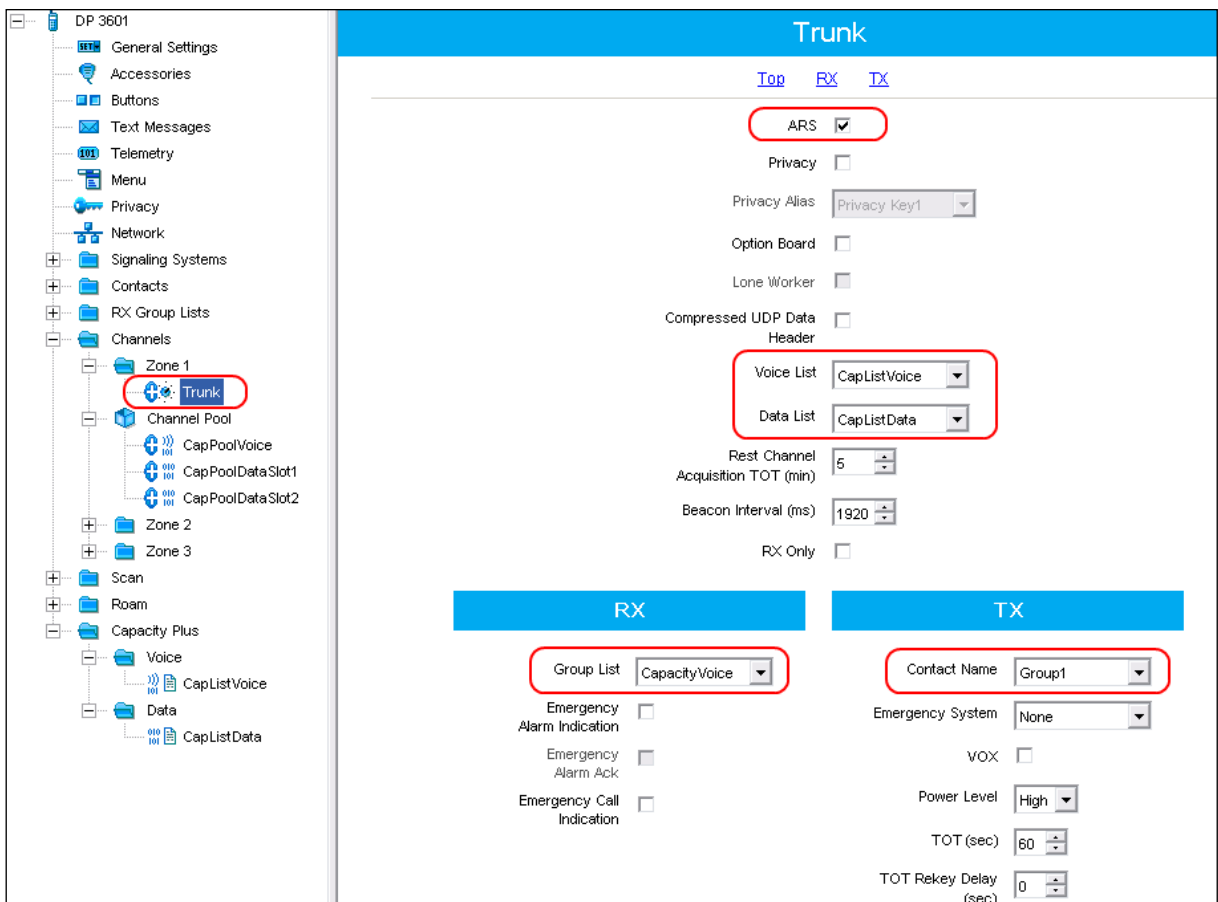


2.8. Add the channels to Members list at Capacity Plus Data section.



- Create **Capacity Plus Personality** channel
- Enable **Automatic Registration Service (ARS)**
- Select the voice channel in the **Voice List**

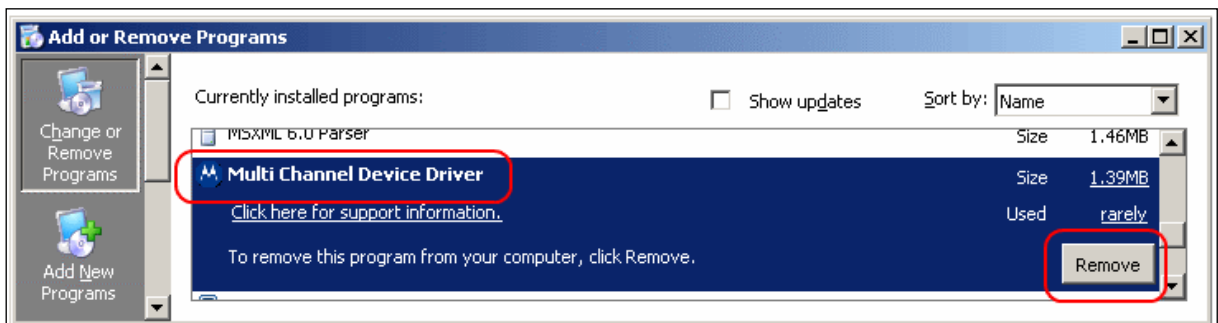
- Select the data channel in the **Data List**
- Select RX talk group in the **Group List**
- Select the contact to call on PTT in the **Contact Name** list



3. SmartPTT Radioserver Settings

3.1. MCDD Uninstall

For either configuration of Capacity Plus Multi Channel Device Driver (MCDD) must be uninstalled at the Radioserver. To uninstall MCDD use **Add or Remove Programs** in the Control Panel.

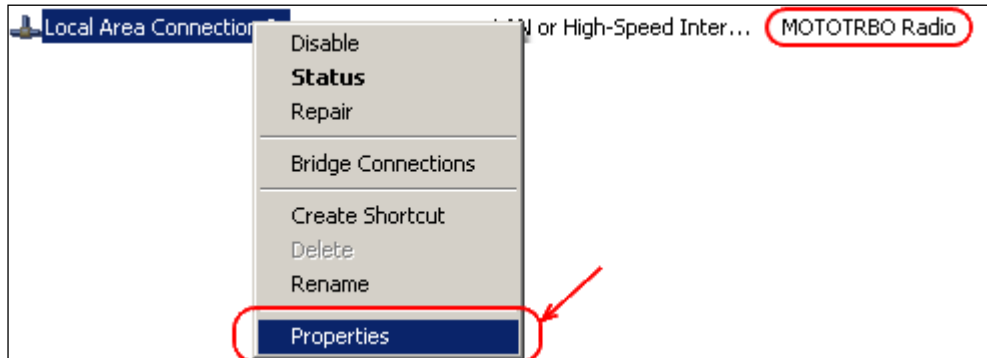


3.2. Base Radio Network Settings

For all base radio network interfaces It is recommended to disable all network components except **Internet Protocol (TCP/IP)**.

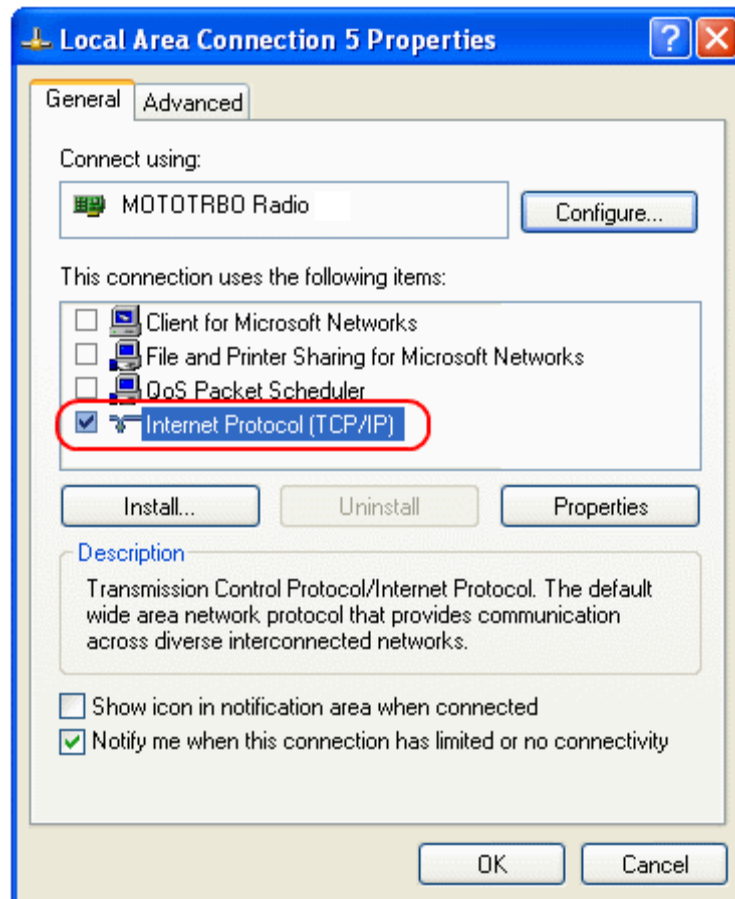
To disable network components at the base radios:

- Use Windows **Control Panel, Network Connections**
- Select base radio network interface and open its **Properties** window



Note: The base radio must be turned on and connected to the PC via USB.

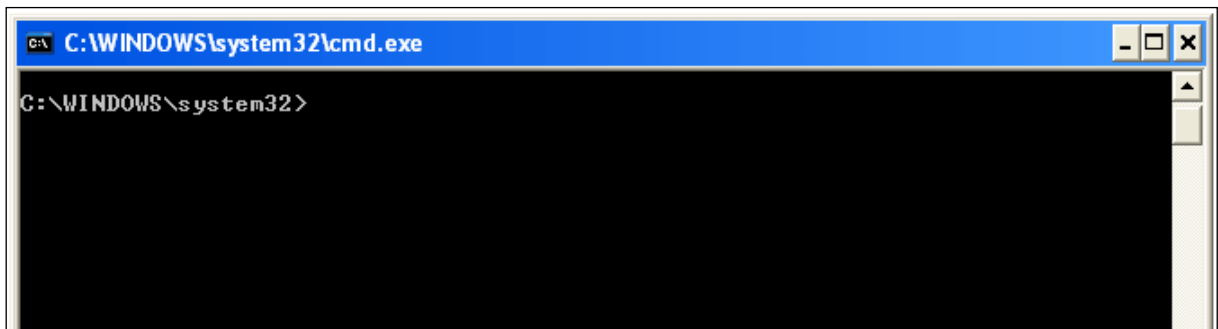
Uncheck all network components except **Internet Protocol (TCP/IP)**:



3.3. Route Table Settings for Private Text Messages

Route table is set by console utility **ROUTE**.

Launch the **Command Prompt**:



To add the routes for private text messages use command:

route -p add IP(Subscriber) mask netmask IP(ControlStation)

-p – add the route to Persistent Routes

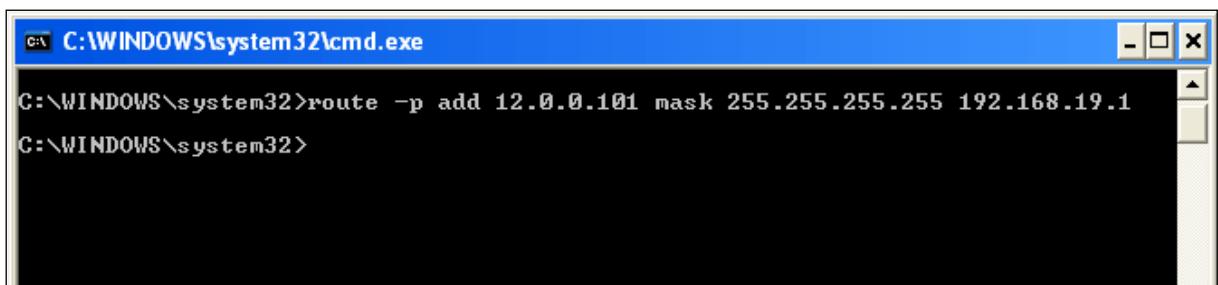
IP(Subscriber) – Subscriber radio IP

netmask – network mask

IP(ControlStation) – Base radio IP

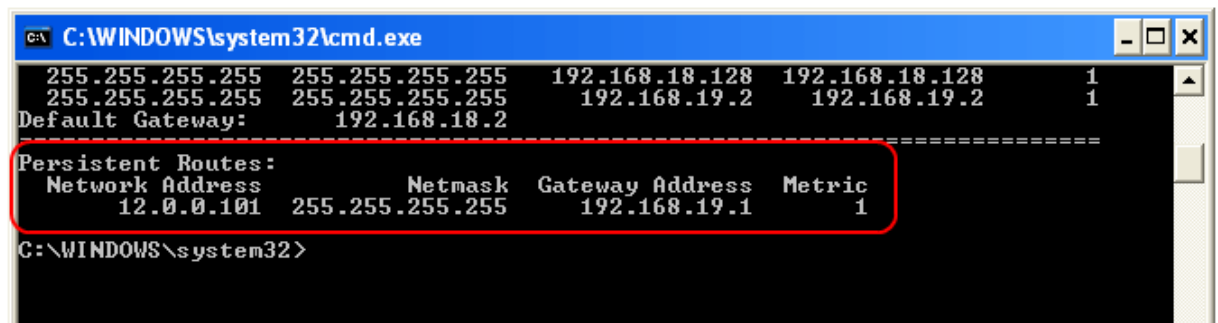
For example, to add the route for subscriber - **12.0.0.101** (CAI-Network – 12, Radio ID - 101) to send and receive text messages through the base radio **192.168.19.1** there must be executed following command:

route -p add 12.0.0.101 mask 255.255.255.255 192.168.19.1



To view route table use **route print** command

Persistent Routes will be displayed at the bottom of the list



Route command allows adding the routes for multiple subscribers simultaneously. For example, to add the route for subscribers in the range of 1-255 use command:

route -p add 12.0.0.0 mask 255.255.255.0 192.168.19.1

To delete the route use the same command but with **delete** keyword instead of the **add**. For example:

```
route -p delete 12.0.0.101 mask 255.255.255.255 192.168.19.1
```

3.4. Route Table Settings for Group Text Messages

Route table settings for group text messages are mostly the same as for private text messages. Use following command to add the route for group text messages:

```
route -p add IP(Group) mask netmask IP(ControlStation)
```

IP(Group) – IP of the group

For example, to send and receive text messages for group **225.0.0.1** (CAI-group network – 225, Group ID - 1) through base radio **192.168.19.1**, use command:

```
route -p add 225.0.0.1 mask 255.255.255.255 192.168.19.1
```

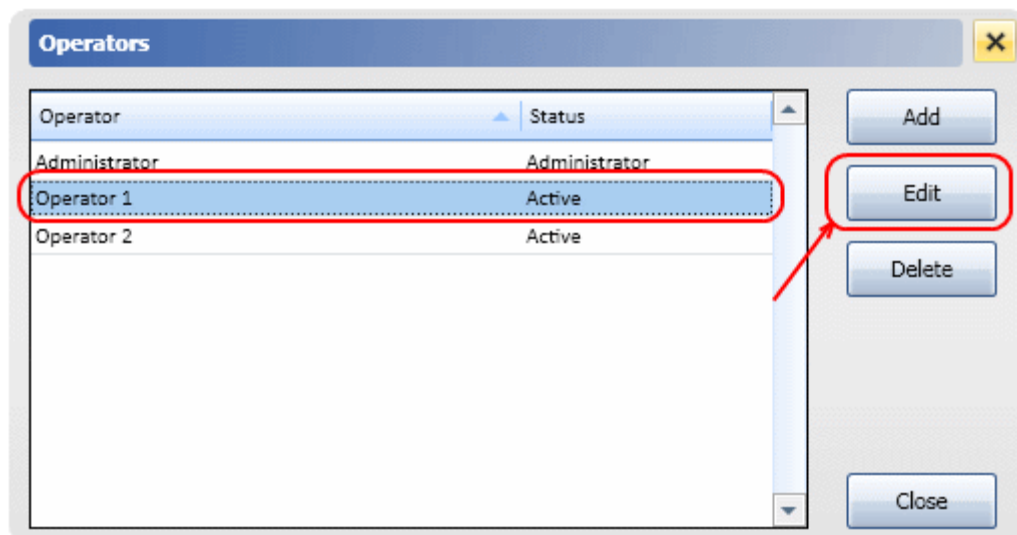
4. SmartPTT Dispatcher Console Settings

SmartPTT Dispatcher Console allows showing of all subscribers under predefined base radio, no matter which radio was used to accept ARS signal. It is specially done for working in Capacity Plus configuration to arrange the subscribers in the most convenient way. This setting is done individually for each operator of the dispatcher console.

Steps to assign the base radio to show online subscribers:



- Use menu **Operators**
- Select operator and click **Edit**:



Set **Register subscribers on selected Control Station** checkbox and select the base radio to show all online subscribers (In the **Online** tree)

Operator [X]

Name

Status [v]

Allow Subscriber List Modification

Allow Unregistered Subscriber Control

Register subscribers on selected Control Station

[v]