





TRBONET Enterprise/PLUS Capacity Plus (Capacity Plus Single Site) **Deployment Guide**

World HQ

Neocom Software 8th Line 29, Vasilyevsky Island, St. Petersburg, 199004, Russia

USA Office

Neocom Software 150 South Pine Island Rd., Suite 300 Plantation, FL 33324 USA

Sales

EMEA: +44 203 608 0598 Americas: +1 872 222 8726 APAC: +61 28 607 8325

www.trbonet.com

info@trbonet.com

Notices

This document is for informational purposes only. Neocom Software offers no warranties, express or implied, in this document.

Neocom and the Neocom logo, TRBOnet and the TRBOnet logo are either registered trademarks or trademarks of Neocom Software, Ltd.

MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC.

Intellectual property rights protect the voice coding technology embodied in this product including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice coding technology is licensed solely for use within this communications equipment. U.S. Pat. Nos. 6,199,037, 5,870,405, 5,754,974, 5,664,051, 5,630,011, 5,517,511, 5,491,772, 5,247,579, 5,226,108, 5,226,084, 5,216,747 and 5,081,681.

Microsoft, Windows, SQL Server and the .NET logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other jurisdictions.

Other product or company names mentioned herein may be trademarks of their respective owners.

© 2021 by Neocom Software, Ltd. All rights reserved.

This document was last revised on June 22, 2021.



Contents

1	Intro	luction1
	1.1	About This Document
	1.2	About TRBOnet1
	1.3	Contacts1
2	Syste	m Components and Terms2
	2.1	TRBOnet Software
	2.2	IP Connection (Wireline Connection)
	2.3	Wireless Connection (Control Stations)
3	Syste	m Topology
	3.1	Capacity Plus without NAI
	3.2	Capacity Plus with NAI7
4	Config	guring MOTOTRBO Equipment10
	4.1	Configuring a Repeater
	4.2	Configuring a Control Station15
	4.3	Configuring a Subscriber Radio25
	4.4	Configuring MOTOTRBO DDMS
	4.5	Configuring MOTOTRBO MNIS
5	Config	guring TRBOnet Enterprise
	5.1	Configuring TRBOnet Server
	5.2	Configuring TRBOnet Dispatch Console57



1 Introduction

1.1 About This Document

The information in this guide is intended for administrators setting up evaluation and proof-of-concept deployments of MOTOTRBO Dispatch over IP solutions. The document describes the steps required to configure communication with a MOTOTRBO Capacity Plus system.

For more comprehensive information on the Neocom TRBOnet family of radio network software tools, refer to the <u>Documentation section</u> of our web site.

1.2 About TRBOnet

TRBOnet is a suite of professional applications for MOTOTRBO digital two-way radio networks. TRBOnet manages voice and data communication paths across network endpoints. It provides a unified graphical dispatcher workbench interface for the entire range of workforce fleet management tasks.

1.3 Contacts

Region	Phone	Email & Support
EMEA	+44 203 608 0598	<u>info@trbonet.com</u> — general and commercial inquiries
Americas	+1 872 222 8726	<u>support@trbonet.com</u> — technical support
АРАС	+61 28 607 8325	<u>http://trbonet.com/kb/</u> — online knowledge base



2 System Components and Terms

2.1 TRBOnet Software

The TRBOnet software consists of several modules, a combination of which enables you to build enterprise dispatch solutions of different levels of complexity and redundancy. The first step in implementing the best solution is determining the topology for the customer's system; then identifying the combination of modules to implement the best customer solution.

2.2 IP Connection (Wireline Connection)

TRBOnet Server can be connected to a two-way radio system via an IP connection creating a direct communications path for all voice and data information between them. The topologies can be in the form of a LAN, WAN, or VLAN and/or any combination thereof.

2.3 Wireless Connection (Control Stations)

If TRBOnet Server doesn't have an IP connection to the radio system, it can be connected via control stations (also known as control radios or donor radios). The number of control stations depends on how many talk groups and revert channels are registered in your system.



3 System Topology

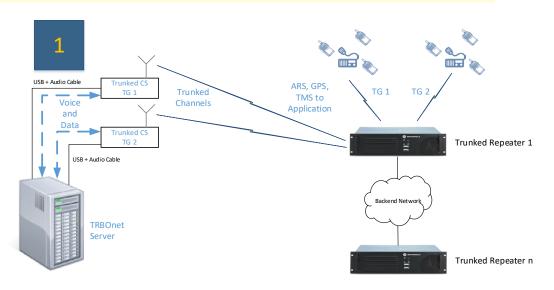
Capacity Plus (also known as Capacity Plus Single Site) is a digital trunked twoway MOTOTRBO system that allows you to accommodate high volume communication. It is designed to provide a stable connection between a few groups within one building or a set of buildings. This system type allows you to increase the number of channels for voice and data transmission between the radio units and control centers. The radio units are always automatically forwarded to a free channel. The main objective of a Capacity Plus system is to support more simultaneous voice and data transmissions within one capacious system.

Also note that, according to the Motorola MOTOTRBO System Planner, if two or more repeaters are used in a Capacity Plus system, these repeaters must reside on the same LAN behind a router. In addition, the PC with TRBOnet Server must not reside on the same LAN with the repeaters.

3.1 Capacity Plus without NAI

3.1.1 System with Trunked Control Stations

TRBOnet Server can be connected to a Capacity Plus system using one or more Trunked Control Stations. The number of Trunked Control Stations depends on how many talk groups are registered in your system. To make a call to a talk group, the dispatcher uses the Trunked Control Station associated with the group.



Note: It is reasonable that the number of Trunked Control Stations shouldn't be greater than the total number of repeaters slots.

Figure 1: System with Trunked Control Stations



3.1.2 System with Trunked Control Stations and Revert Control Stations

For a higher data throughput, the preferred configuration is to have channels dedicated for data only. Such channels are defined as Data Revert Channels. If Data Revert Repeaters are present in the system, then one Revert Control Station is required per Data Revert Slot.

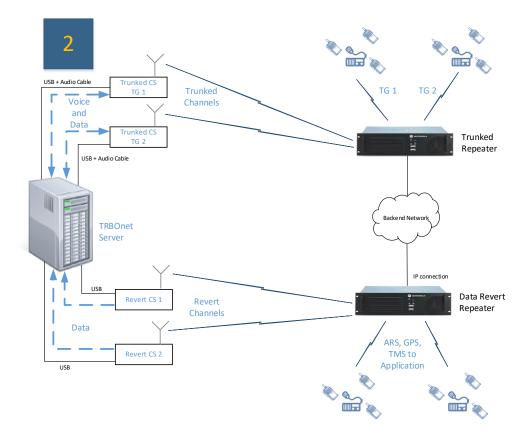


Figure 2: System with Trunked Control Stations and Revert Control Stations



3.1.3 System with Data Revert Repeaters having IP Connection

In this configuration, TRBOnet Server has an IP connection to Data Revert Repeaters to receive data from, and Trunked Control Stations associated with the talk groups.

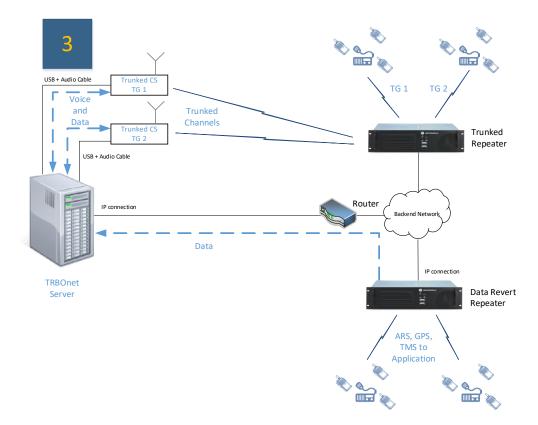


Figure 3: System with Data Revert Repeaters having IP Connection



3.1.4 System with Trunked and Data Repeaters having IP Connection

In this configuration, TRBOnet Server has an IP connection to Data Revert Repeaters as well as to Trunked Repeaters. To transmit voice and data from TRBOnet Server to radios, a Control Station shared by all talk groups can be used. Note that in this case only one radio call is possible at a time.

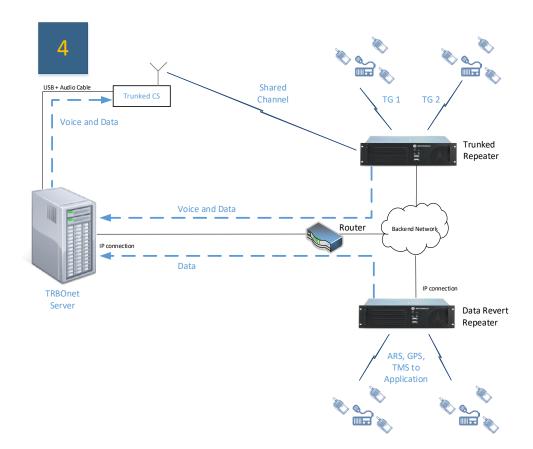


Figure 4: System with Trunked and Data Repeaters having IP Connection



3.2 Capacity Plus with NAI

In the following configurations, Motorola's NAI Data and NAI Voice protocols are used, which provide two-way transmission of data and voice over IP connection.

3.2.1 System with NAI Data and Trunked Control Stations

In this configuration, TRBOnet Server has an IP connection to Data Revert Repeaters as well as to Trunked Repeaters. In addition, NAI Data protocol is used on Data Revert repeaters and Trunked repeaters.

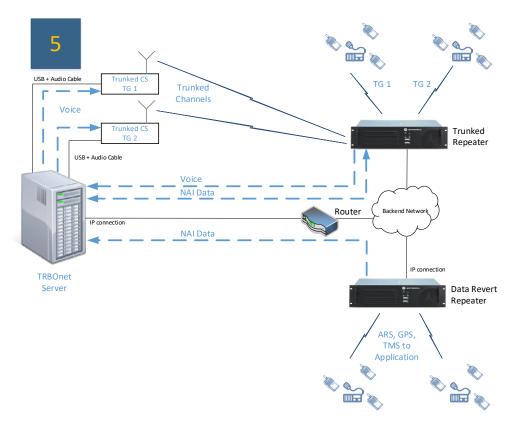


Figure 5: System with NAI Data and Trunked Control Stations



3.2.2 System with NAI Data and Shared Control Station

Analogously to the previous configuration, Trunk Repeaters and Data Revert Repeaters have IP connection to TRBOnet Server, as well as NAI Data protocol is used on Data Revert repeaters and Trunked repeaters. Unlike the previous configuration, to transmit voice from TRBOnet Server to radios, a Control Station shared by all talk groups is used. Note that in this case only one radio call is possible at a time.

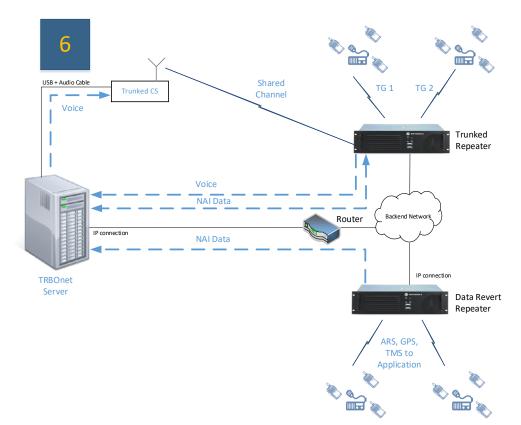


Figure 6: System with NAI Data and Shared Control Station



3.2.3 System with NAI Data and NAI Voice

This is the most advanced configuration using the power of NAI Data and NAI Voice protocols. All voice and data will be received and transmitted over an IP connection, that is, no Control Stations are required. Note that TRBOnet PLUS is required to utilize this system topology.

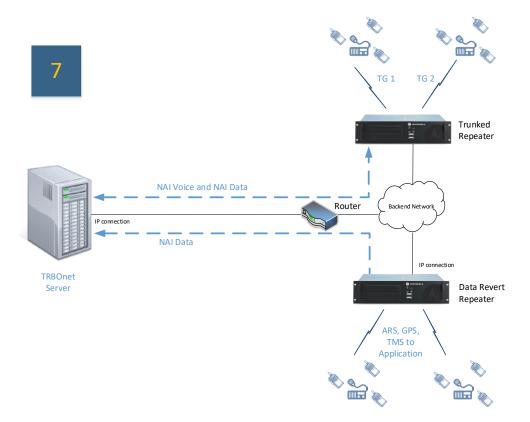


Figure 7: System with NAI Data and NAI Voice



4 Configuring MOTOTRBO Equipment

This section describes how to configure MOTOTRBO equipment, such as repeaters, control stations and subscriber radios, using MOTOTRBO Customer Programming Software (CPS).

- Launch MOTOTRBO CPS.
- On the menu bar, select **View > Expert**.

4.1 Configuring a Repeater

This section describes how to configure a repeater to be used in a Capacity Plus system.

- Connect your repeater to the PC via a programming cable (USB).
- Click the **Read** button on the toolbar.

4.1.1 General Settings

• In the **Set Categories** pane, select **General > General Settings**.

ategories 4	General CWID	Voting Microphone	
Configuration*			
Device Information	General General		
General	Radio Alias	C+ Master	
General Settings	Radio ID	222	
Security	SIT (ms)	6000	
Network	Group Call Hang Time (ms)	3000	
Link Establishment	Private Call Hang Time (ms)	4000	
Sites Talkgroups	Emergency Call Hang Time (ms)	4000	
Zone/Channel Assignment	Call Hang Time (sec)	3	
	Repeat Gain (dB)	0.0	
	Antenna Relay Delay Timer (ms)	100	
	Digital/Band 1 TX Low Power (W)	1.0	
	Digital/Band 1 TX High Power (W)	1.0	
	Band 1 DC TX Power (W)	1.0	
	Disable All LEDs		
	Backup Repeater Connected		
	Codeplug Password	<u>^</u>	

• In the right pane, specify the **Radio ID** of the repeater. This must be a unique Peer ID among the repeaters in a radio system and also not in conflict with any other third-party application Peer ID. The recommended range is from 1 to 255.

4.1.2 Network

• In the **Set Categories** pane, select **General > Network**.

TRBOnet Capacity Plus — Deployment Guide



DR3000 • Network	×
Set Categories 7	General Radio Network Network Setting IP Repeater Programming
 Configuration Device Information General General Settings Accessories Security Network Link Establishment Sites Talkgroups Zone/Channel Assignment 	Calcular Association Render Schuler Programming Calcular Association Render Schuler Association Radio IP 172.168.0.1 Accessory IP 172.168.0.2 Cal Network Cal Network Cal Network Cal Group Network
	Gateway Netmask 255.255.255.0
Validation Results Warning Messages Search R	IP Repeater Programming Enable
	Serial Number: 484TMG4110

• In the right pane, specify the following parameters:

Radio IP

This is the IP address used by the radio to communicate with a PC (using USB connection) and has to be unique. To avoid conflicts in case there are several stations connected with USB, you can change the third octet of the address.

Network Setting

If your radio system is on a Private Network, specify the following network parameters:

Ethernet IP

This is the LAN address of the repeater that can be obtained from your network details; the last octet of the IP address must be unique for the system's local network.

Gateway IP

This is the address of an upstream system (router). If a router exists, specify its LAN address here.

Gateway Netmask

Set the Subnet Mask, for example, **255.255.255.0** or **255.255.0.0** depending on the subnet.

IP Repeater Programming

Enable

Select this checkbox to provide the ability to remotely program the repeater.



4.1.3 Link Establishment

• In the **Set Categories** pane, select **General > Link Establishment**.

DR3000 🕨 Link Establishment		×
Set Categories 🛛 🖁 🗍	Network Setting IP Site Connect Capacity Plus	
▼		
General Settings	Link Type Master Authentication Key Ø	
Security Network	Master IP 10.10.188.35 Master UDP Port 50000	
Link Establishment 🏠 Sites	Peer Firewall Open Timer (sec) 6	
Zone/Channel Assignment	⊙ IP Site Connect	
	Beacon Duration (ms) 4320 Beacon Interval (sec) 60	
	⊙ Capacity Plus	
	Site ID 1	
	Site Alias Site 1 - MSTR	
	Beacon Duration (ms) 180	
	Beacon Interval (ms) 1920	
	Rest Channel/Site IP 192.168.1.10	
	Rest Channel/Site UDP Port 55004	
< ─── →	Rest Channel TOT (min) 8	
Validation Results Warning Messages Search		under ARATMOA11

- In the right pane, specify the following parameters:
 - Link Type

From the drop-down list, select **Master** if you are configuring a master repeater, or **Peer** if you are configuring a peer repeater.

Authentication Key

Specify the authentication key that can optionally be used to access the repeater.

- Master IP
 - Enter the WAN IP address of the site router if you are configuring a master repeater, or the LAN IP address of the master repeater, if you are configuring a peer repeater and a NAT loopback is disabled on the router.
 - Enter the WAN IP address of the site router on all the repeaters, if a NAT loopback is enabled and the port forwarding rules are specified for all the repeaters and the rest channel on the site router.
 - Note: In all the cases, the port forwarding rules must be specified for both the master repeater and the rest channel on the site router.

Master UDP Port

Enter the UDP port number of the master repeater.



UDP Port

Enter the UDP port number of this repeater. If you are configuring a master repeater, set this value the same as that for **Master UDP Port**.

Rest Channel/Site IP

This is a private network IP address that is required for correct operation of a Capacity Plus system. This IP address MUST be the same for all repeaters.

Rest Channel/Site UDP Port

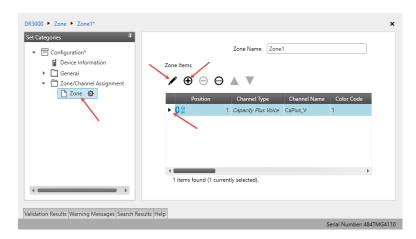
This is the UDP port of the Repeater's rest channel. This UDP port MUST be the same for all repeaters.

4.1.4 Capacity Plus Channel

Depending on its role in a Capacity Plus system (Trunked or Data Revert Repeater), the repeater can be configured either with a Voice Channel or with a Data Channel, respectively.

4.1.4.1 Adding a Voice Channel

- In the **Set Categories** pane, select **Zone/Channel Assignment > Zone**.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Voice**.
- In the right pane, select the channel you have added (for example, CaPlus_V) and click the pencil button.



• In the right pane, specify the following channel-related parameters:



: Categories 🏾 🖗	Genera	I RX/TX
 Configuration* Device Information 	General General General General Second and a	
General General Zone/Channel Assignment	Channel Type	Capacity Plus Voice
Zone &	Channel Name	CaPlus_V
	Color Code	1
	Network Application Interface Phone	
	Repeater RSSI Threshold (dBm)	-60
	IF Filter Type	Wide
	Preference Level	
	Slot 1 Channel ID	
	Slot 2 Channel ID	2
	RX	ТХ
	(MHz) 146.420000 0.000	et (MHz) 0000 Frequency 167.420000 (MHz) 167.420000
	Ref Frequency (MHz) Default	Ref Frequency (MHz) Default
		TOT (sec) 60

Network Application Interface Phone

Select this option to support the telephone calls over the repeater's NAI interface.

Slot 1 Channel ID

Specify the Channel ID of Slot 1 for voice channels. This also determines the value for **Slot 2 Channel ID** which is always one increment higher than the value of Slot 1 Channel ID.

Note: The Slot IDs of the repeater must not match with the Slot IDs of other repeaters within a single Capacity Plus system.

- In the **RX Frequency** box, enter the radio frequency the repeater will receive on.
- In the **TX Frequency** box, enter the radio frequency the repeater will transmit on.

4.1.4.2 Adding a Data Channel

- In the **Set Categories** pane, select **Zone/Channel Assignment > Zone**.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Data**.
- In the right pane, select the channel you have added (for example, CaPlus_D) and click the pencil button.

TRBOnet Capacity Plus — **Deployment Guide**



R3000 ► Zone ► Zone1* Set Categories	Zone Items	Zone Name	Zone1		
Cone Channel Assignment Cone Channel Assignment Zone Channel Assignment	Position	Channel Type	Channel Name CaPlus_D	Color Code	Repeater RSS -100
()	1 items found (1 curr	ently selected).			Þ
alidation Results Warning Messages Search Res	ts Help				

• In the right pane, specify the following parameters:

t Categories 🕴			Gener	al Enha	nced GNSS	RX/TX	
Configuration*							
General General Zone/Channel Assignment			Cha	annel Type	Capacity F	Plus Data	
🗋 Zone 🏚			Chan	inel Name	CaPlus_D		
			с	olor Code	1		
		Rep	peater RSSI Thresh	old (dBm)	-100		
			IFI	Filter Type	Wide		*
	 Enhance 	d GNSS					
			Enable	Wi	ndow Size	Periodic Window Reservation (%)	Shared Channel Frequency
		Slot 1		8		75	No
		Slot 2		8		75	No
	⊙ RX/TX						
	RX				T	х	
	Fre	equency 147.0 Hz)	087500	0.00	et (MHz) 0000 Copy	Frequency (MHz)	159.662500
	Ref Frequency	y (MHz) Defa	ult 💌			Ref Frequency (MHz)	Default
						Power Level	
(>						TOT (sec)	60

- In the **RX Frequency** box, enter the radio frequency the repeater will receive on.
- In the **TX Frequency** box, enter the radio frequency the repeater will transmit on.
- Once you have finished configuring the desired repeater parameters, click the **Write** button on the toolbar.

4.2 Configuring a Control Station

This section describes how to configure the radio to be used as a control station in a Capacity Plus system. Control stations are used in the topologies depicted in Figures 1-6.

- Connect your radio to the PC via a programming cable.
- Turn on the radio.
- Click the **Read** button on the toolbar.



4.2.1 General Settings

• In the **Set Categories** pane, select **General > General Settings**.

Set Categories	Micro	phone	Backlight	Battery Saver	Alerts	Persistent LRRP Requests	Lone Worker	Power Up	Password and Lock	
▼	elete All	5 Tone	e ID							
Device Information										
▼ 🛱 General										
🗋 Welcome Bitmap										
Language Packs				Radio Alias	Contro	I Station				
🗋 General Settings 🔅				Radio ID	64250					
Accessories				GNSS	~					
Control Buttons				GNSS	GPS/Q	ZSS				
	~			Private Calls	~					
			Cito Co-	arch Timor (coc)	6					

- In the right pane, specify the following:
 - Radio ID

Enter the Radio ID of the control station. The default value is **64250**.

Note: This value will then be used as the control station's **Radio ID** when connecting a control station to the TRBOnet Server. See section <u>5.1.2</u>, <u>Adding a Control Station</u>.

Control Station #1	
Name:	Control Station #1
Radio ID:	64250 🗘
IP Address:	192.168.98.2 🔻 🕫
Mode:	Capacity Plus
System Identifier:	Department 1

4.2.2 Network

• In the **Set Categories** pane, select **General > Network**.

871	FPH7036 ► Network*							x
Set	Set Categories 🗧 🕂	Services	Control Station	IP Site Connect	Bluetooth	Bluetooth Serial Port Profile Data Routing	USB HID Data Routing	
Set Categories	Validation Results Warning Messages Search Res		USB I CAI Protected Mode Max TX F	Radio IP Accessory (P DNS-SD Interval CAI Network Group Network	192.168.98.1 192.168.98.2 90 sec 12 225 750 4008 Via USB			
	· · · · · · · · · · · · · · · · · · ·						Serial Nur	nber: 871TDH7036



• In the **Network** pane, specify the following parameters:

Radio IP

This is the IP address used by the radio to communicate with the PC (using the USB connection) and has to be unique. To avoid conflicts in case there are several stations connected with USB, you can change the third octet of the address.

Accessory IP

This is the IP address that is given to the PC by the radio that is connected to it.

Note: This value will then be used as the control station's **IP Address** when connecting a control station to the TRBOnet Server. See section <u>5.1.2</u>, <u>Adding a Control</u> <u>Station</u>.

Control Station #1	
Name:	Control Station #1
Radio ID:	64250
IP Address:	192.168.98.2 * Ø
Mode:	Capacity Plus
System Identifier:	Department 1

Forward to PC

From the drop-down list, select Via USB.

4.2.3 Contacts

- In the **Set Categories** pane, select **Contacts > Contacts**.
- In the right pane, click the plus sign button, then click **Capacity Plus** and choose the call type.

871TNV1690 Contacts*					x
Set Categories 🛛	View by: By Name	Ву	Type 🗌 Name Only		
▼)			
Device Information					
General	Contact Name)	Call Type	Call ID	
Job Tickets	All	CB	Capacity Plus Calls-All Call	255	
Systems	Radio 125	C &	Capacity Plus Calls-Private Call	125	
Encoder	10010 125				
Decoder	TG 11	Cas	Capacity Plus Calls-Group Call	11	
Contacts	TG 22	Caa	Capacity Plus Calls-Group Call	22	
All					
TG 11					
TG 22					
Radio 125					
RX Group Lists					
 Zone/Channel Assignment 					
Zone					
Scan Lists					
Capacity Plus Lists					
Validation Results(13*) Warning Messages Search Resu	ults Help				
					Serial Number: 871TNV1690

• Enter the **Contact Name** and **Call ID** for the contacts you have added.



4.2.4 RX Group Lists

- In the Set Categories pane, select RX Group Lists > Capacity Plus RX Group List.
- In the right pane, click the plus sign button and add the corresponding group list.

871TNV1690 CapacityGroup List List1*	×
Set Categories	General
 ▼ Configuration* ■ Device Information 	⊗ General
General Job Tickets	Capacity Plus Name List1
Systems Encoder Decoder	Available Members
Decoder Contacts RX Group Lists Digital RX Group List	TG 22 TG 11
Capacity Plus RX Group List List Experimentary Flexible Capacity Plus RX Gr	Add
Zone/Channel Assignment Scan Lists Capacity Plus Lists	Remove
·	
Validation Results(5*) Warning Messages Search R	lesuits Heln
	Serial Number: 871TNV169

- In the left pane, select the group you have added.
- In the right pane, in the **Available** list select a group, or multiple groups using the SHIFT key, and click the **Add** button.

As a result, the group(s) will appear in the **Members** list.

4.2.5 Channel

4.2.5.1 Important Notes

Depending on its role in a Capacity Plus system (<u>Trunked Control Station</u> or <u>Data Revert Control Station</u>), the control station can be configured either with a Capacity Plus Personality Channel or with a Digital Channel, respectively.

When using the configurations depicted on figures 1, 3, 4, 5, and 6, you are employing a Capacity Plus Personality Channel.

In the configuration depicted in fig. 2, that is a configuration with the data revert repeater, you will need to use a Digital Channel. The fact is that there are no rest channels on a data revert repeater. Thus, to send data to TRBOnet Server, the subscriber radios will use a data revert channel. In this case, you'll have to forcibly set the control station to the corresponding frequencies of the data revert repeater.

A single data revert control station may receive data from only one data revert slot. If there is only one data revert control station in the radio system, then all subscribers must send data only to the slot with which this control station operates. The Radio ID of this data revert control station must match the Radio ID of at least one voice control station. If the system has several data revert



control stations, their Radio ID's be the same and match at least one voice control station.

Also note that the system identifier in TRBOnet Server should be the same for all control stations and repeaters used in the same radio system.

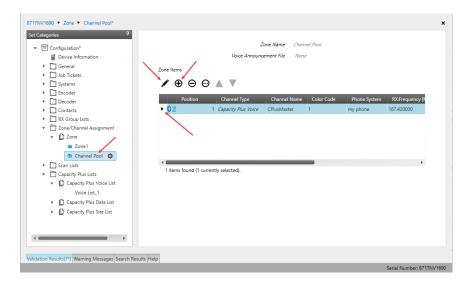
4.2.5.2 Trunked Control Station

This section describes how to configure channels on a trunked control station.

Adding Channels to Channel Pool

The Channel Pool is used for organizing channels in the radio that are not tied to a channel selector position. The Channel Pool is not visible when the radio user navigates through the zones.

- In the Set Categories pane, select Zone/Channel Assignment > Zone > Channel Pool.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Voice**.
- In the right pane, select the channel you have added (for example, CPlusMaster) and click the pencil button.



• In the right pane, specify the following parameters:



871TNV1690 Zone Channel Pool Zone I	tems CPlusMaster*	×
Set Categories 📮	General RX/TX	
Validation Results(7) [Warning Messager Search R		
valuation results(r) wathing wessages search ro	esuits neip Serial Number: 871TNV16	690

Color Code

Enter the color code for the radio. Note that the color codes on the radios must match the color code of the repeater.

Phone System

Select the phone system you have specified in section <u>4.3.6</u>, <u>Phone</u> <u>System</u>.

- In the **RX Frequency** box, specify the radio frequency the radio will receive on.
- In the **TX Frequency** box, specify the radio frequency the radio will transmit on.
 - Note: The RX and TX frequencies of the radio must be the opposite to the RX and TX frequencies of the repeater. In other words, the RX frequency of the repeater must be the same as the TX frequency of the radio; the TX frequency of the repeater must be the same as the RX frequency of the radio.

Capacity Plus Voice List

This section describes how to add the channels contained in the Channels Pool to a Capacity Plus Voice List.

- In the Set Categories pane, select Capacity Plus Lists> Capacity Plus Voice List.
- In the right pane, click the plus sign button and add the corresponding voice list.



ategories [#]		Ge	neral	
Configuration*				
Device Information	→ General			
General		(
Job Tickets		Voice Name	Voice List_1	
Systems				IDs
Encoder	Available		Members	1-2
Decoder	CPlusPeer1		CPlusMaster	3-4
Contacts				5-6 7-8
RX Group Lists				9-10
Zone/Channel Assignment				11-12 13-14
Scan Lists				13-14 15-16
Capacity Plus Lists				
Capacity Plus Voice List		Add		
Voice List_1				
Capacity Plus Data List		Remove		
Capacity Plus Site List				

- In the left pane, select the voice list you have added.
- In the right pane, in the **Available** list select a channel, or multiple channels using the SHIFT key, and click the **Add** button.

As a result, the channel(s) will appear in the **Members** list.

Note: The order of the channels in the Members list must follow the order of their respective Slot IDs, for example 1-2, 3-4, and so on.

Adding a Capacity Plus Personality Channel

- In the Set Categories pane, select Zone/Channel Assignment.
- In the right pane, click the plus sign button to add a zone.
- In the **Set Categories** pane, select the zone you have added.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Personality**.
- In the right pane, select the channel (for example, TG 11) you have added and click the pencil button.



871TNV1690 • Zone • Zone1* Set Categories 9 	Voice A Zone Items	Zone Name nnouncement File	Zone1 None		
	Position Channel Type	Channel Name	Voice Announcement File None	ARS Disabled	Privacy
Scan Lists Capacity Plus Lists	I items found (1 currently selected).				,
Validation Results(5*) Warning Messages Search	Results Help	_	_	_	Serial Number: 871

Categories [‡]	General RX/TX
Configuration*	
Device Information	(A) General
 General 	Channel Type Capacity Plus Personality
Job Tickets	Channel Name TG 11
Systems Therefore	
Decoder	Voice Announcement File None
Contacts	ARS Disabled
RX Group Lists	(Privacy)
 Zone/Channel Assignment 	Privacy Alias Privacy Key1
🔻 🗋 Zone	AES Alias None
🔳 Zone1 🚯	RAS Alias None
Channel Pool	Option Board
Scan Lists	Lone Worker No
Capacity Plus Lists	Compressed UDP Data Header None
 Capacity Plus Voice List 	Over-the-Air Battery Management
Voice List_1	Voice List_1
Capacity Plus Data List	Data List
 Capacity Plus Site List 	Rest Channel Acquisition TOT (min) 5
	_
	Channel Inhibit RX Only
	RX TX
	Group List None TG 11
	Emergency Alarm Emergency System None
	Emergency Alarm Ack No
	Emergency Call Indication

• In the right pane, specify the following parameters:

Privacy

Select this option to allow privacy on the channel.

- Note: The **Privacy** option is available if the Basic or Enhanced Privacy Type has been selected in the Security section.
- Privacy Alias

From the drop-down list, select the Key Alias.

Note: The **Privacy Alias** option is available if the Enhanced Privacy Type has been selected in the Security section. The same Key Alias must be used on all system nodes (repeaters and radios).



Option Board

Select this option to enable the option board capability on the channel. The option board must be installed and enabled in the radio otherwise this feature will not function.

Voice List

Select the Capacity Plus Voice List you have specified in section <u>Capacity Plus Voice List</u>.

RX Group List

Select the Group list you have specified in section <u>4.2.4, RX Group Lists</u>. If you select **None**, the radio will receive calls only from the group specified in the **TX Contact Name** box.

TX Contact Name

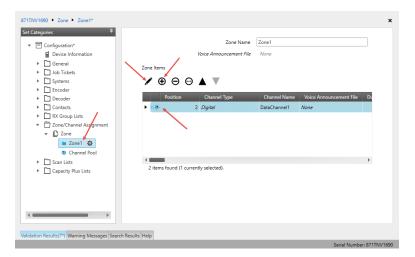
Select the contact to which a call will be initiated on the channel when pressing the PTT button. The contact is selected from the Contact list you have created in section <u>4.2.3, Contacts</u>.

4.2.5.3 Data Revert Control Station

Adding a Digital Channel for Receiving Data

This section describes how to configure a data revert channel for receiving data on a control station (see also section <u>4.2.5.1, Important Note</u>).

- In the Set Categories pane, select Zone/Channel Assignment >Zone > Zone1.
- In the right pane, click the plus sign button and then choose **Type: Digital**.
- In the right pane, select the channel (for example, DataChannel1) you have added and click the pencil button.



• In the right pane, specify the following parameters:



Categories 4	General RX/TX
☑ Configuration* Image: Second sec	Channel Type Digital Channel Name DataChannel1 Voice Announcement File None Dual Capacity Direct Mode
	Timing Leader Preference Eligibile Scar/Roam List Hone Auto Scan No Color Code 1 Repeater/Time Stot 1
Capacity Plus Lists	Phone System Phone_100

Color Code

Enter the color code for the radio. Note that the color codes on the radios must match the color code of the data repeater.

Repeater/Time Slot

Select one of the data repeater time slots.

Privacy

Select this option to allow privacy on the channel.

Note: The **Privacy** option is available if the Basic or Enhanced Privacy Type has been selected in the Security section.

Privacy Alias

From the drop-down list, select the Key Alias.

Note: The **Privacy Alias** option is available if the Enhanced Privacy Type has been selected in the Security section. The same Key Alias must be used on all system nodes (repeaters and radios).

Set Categories 4				D/		
Configuration* Device Information	RX/TX Ref Frequency [1] Ref Frequency [1] Group List [k Emergency Atam Indication Emergency Call Indication	Default	General RX/	TX Frequency (MHz) Contact Name Emergency System VOX Power Level TOT (sec) Allow Interruption TX Interruptible Frequencies	None None High 60 0	
Validation Results(7*) Warning Messages Search	Results Help			Admit Criteria	Channel Free	·



- In the **RX Frequency** box, specify the radio frequency the radio will receive on.
- In the **TX Frequency** box, specify the radio frequency the radio will transmit on.
 - Note: The RX and TX frequencies of the radio must be the opposite to the RX and TX frequencies of the corresponding data repeater. In other words, the RX frequency of the repeater must be the same as the TX frequency of the radio; the TX frequency of the repeater must be the same as the RX frequency of the radio.
- Once you have finished configuring the desired radio parameters, click the **Write** button on the toolbar.

4.3 Configuring a Subscriber Radio

This section describes how to configure a subscriber radio to be used in a Capacity Plus system.

- Connect your radio to the PC via a programming cable.
- Turn on the radio.
- Click the **Read** button on the toolbar.

4.3.1 General Settings

• In the **Set Categories** pane, select **General > General Settings**.

871TPH7036 🕨 General Settings*		×
Set Categories 7	General CWID Audio Profile Microphone Backlight Battery Saver Alerts	
▼	Persistent LRRP Requests Lone Worker Power Up Password and Lock Front Programming Password	
Device Information	Delete All 5 Tone ID	
▼ 🗍 General		
🗋 Welcome Bitmap 🥖	Connect	1
Language Packs		_
🕒 General Setting 🖌 🔅	Radio Alias Radio 235	
Accessories	Radio ID 235	
Control Buttons	GNSS	
🎦 Text Messages 🚽	GNSS GPS/QZSS	
4 •••••• ••	Private Calls	-
Validation Results Warning Messages Search Result	s Help Sarial Number 871TD	-

- In the right pane, specify the following parameters:
 - Radio ID

Enter the Radio ID of the radio. This ID is used by other calling radios when addressing the radio, for instance, when making a private call or sending a text message.

GNSS

Select this checkbox to track the location of the radio if the radio is equipped with a GPS module.



Private calls

Select this checkbox to enable the initiation of a Private Call on a digital channel. When disabled, a prohibit tone will sound when the user tries to initiate a Private Call.

4.3.2 Network

• In **Set Categories** pane, select **General > Network**.

ategories [‡]	General Radio Network Services	Control Station IP Site Connect E	Bluetooth
Configuration*	Bluetooth Serial Port Profile Data Routing	USB HID Data Routing	
Device Information			
 General 	🔿 General		
🗅 Welcome Bitmap	<u> </u>	(
Language Packs	Radio IP	192.168.10.1	
🗋 General Settings	Accessory IP	192.168.10.2	
Accessories	USB DNS-SD Interval	90 sec	
Control Buttons			
Text Messages	🐼 Radio Network		
Telemetry	CAI Network	12	< >
🗋 Menu	CAI Group Network	225	
🗅 Security	Protected Mode Control Station		
🗋 Network 🔅	Max TX PDU Size (bytes)	750	-
Voice Announcement	Telemetry UDP Port	4008	
Job Tickets		Disabled	▼
 Systems 	(Forward to PC)	Disabled	
Encoder	 Services 		
Decoder	ARS Radio ID	64250	< >
Contacts			
RX Group Lists Discrete Channel Assignment	ARS IP	13.0.250.250	
Zone/Channel Assignment Tone	ARS UDP Port	4005	
	TMS Radio ID	64250	

- In the right pane, specify the following parameters.
 - Radio IP

This is the IP address used by the radio to communicate with the PC (using the USB connection) and has to be unique. To avoid conflicts in case there are several stations connected with USB, you can change the third octet of the address.

Forward to PC

From the drop-down list, select **Disabled**.

ARS Radio ID

Specify the Radio ID of the ARS server.

TMS Radio ID
 Specify the Radio ID of the TMS server.



Note: The **ARS Radio ID** and **TMS Radio ID** must be the same as either **TRBOnet Radio ID** in the Repeater settings if the master repeater is connected to TRBOnet Server via a wireline connection (see section <u>5.1.1</u>, <u>Adding a</u> <u>Master Repeater</u>), or **Radio ID** in the Control Station settings if the control station is connected to TRBOnet Server via USB (see section <u>5.1.2</u>, <u>Adding a Control</u> <u>Station</u>), or **MNIS Application ID**, if MNIS is enabled (see section <u>4.5</u>, <u>Configuring MOTOTRBO MNIS</u>). The recommended value is **64250** for both parameters.

4.3.3 Contacts

- In the Set Categories pane, select Contacts > Contacts.
- In the right pane, click the plus sign button, then click **Capacity Plus** and choose the call type.

871TNV1690 Contacts*					×
Set Categories #	View by: 🔍 By Na	ame 🗌 By	Type 🗌 Name Only		
▼		\odot			
Device Information		-	<i>_</i>		
General	Contact Name		Call Type	Call ID)
Job Tickets	All	CB	Capacity Plus Calls-All Call	255	
Systems Tencoder	Radio 125	69	Capacity Plus Calls-Private Call	125	
Decoder	TG 11		Capacity Plus Calls-Group Call		
▼ ☐ Contacts	TG 22				
▼ D Contacts 🔅	1G 22	694	Capacity Plus Calls-Group Call	22	
All					
TG 11					
TG 22					
Radio 125					
RX Group Lists					
 Zone/Channel Assignment 					
 D Zone 					
Scan Lists					
Capacity Plus Lists					
Validation Results(13*) Warning Messages Search Re	sults Help				
					Serial Number: 871TNV1690

• Enter the **Contact Name** and **Call ID** for the contacts you have added.

4.3.4 RX Group Lists

- In the Set Categories pane, select RX Group Lists > Capacity Plus RX Group List.
- In the right pane, click the plus sign button and add the corresponding group list.



871TNV1690 CapacityGroup List List1* Set Categories	General
▼	General Capacity Plus Name Int Avaiable TG 22 Add Remore
Validation Results(5*) Warning Messages Search Re	ssuits Help Serial Number: 871TNV165

- In the left pane, select the group you have added.
- In the right pane, in the **Available** list select a group, or multiple groups using the SHIFT key, and click the **Add** button.

As a result, the group(s) will appear in the **Members** list.

4.3.5 Channels

4.3.5.1 Adding Channels to Channel Pool

The Channel Pool is a zone for keeping all the Trunked and Data Revert Channels in a Capacity Plus system. It is used for organizing channels in the radio that are not tied to a channel selector position. The Channel Pool is not visible when the radio user navigates through the zones.

Adding Capacity Plus Voice Channel

- In the Set Categories pane, select Zone/Channel Assignment > Zone > Channel Pool.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Voice**.
- In the right pane, select the channel you have added (for example, CPlusMaster) and click the pencil button.

TRBOnet Capacity Plus — **Deployment Guide**



871TNV1690 > Zone > Channel Pool*						
▼		Z Voice Annound		el Pool		
Device Information General Job Tickets	Zone Items		enen ne none			
Systems Encoder Decoder	Position	Channel Type	Channel Name	Color Code	Phone System	RX:Frequency ()
Contacts In RX Group Lists Di RX Group Lists Di Zone/Channel Assignment	• 0 #	1 Capacity Plus Voice	CPlusMaster	1	my phone	167.420000
▼ D Zone ■ Zone1 ③ Channel Pool ۞						
Capacity Plus Lists Capacity Plus Voice List Capacity Plus Voice List	1 items found (1 o	currently selected).		-		Þ
Voice List_1 Capacity Plus Data List						
 Capacity Plus Site List 						
4 — •						
alidation Results(7*) Warning Messages Search Re	esults Help					Carlot Musek av 0717M

• In the right pane, specify the following parameters:

71TNV1690 V Zone V Channel Pool V Zone It Set Categories	General RX/TX
 ▼ □ Configuration* ■ Device Information ▶ □ General 	⊘ General
Job Tickets Systems	Channel Type Capacity Plus Voice Channel Name CPlusMaster
Encoder Decoder Decoder Contacts	Color Code 1 8
Carl RX Group Lists Discrete Control Assignment Discrete Control Assignment Discrete Control Contro Control Control Contro Control Control Control Control Control Co	© RX/TX RX
 ■ Zone1 ③ Channel Pool ♦ □ Scan Lists ▼ □ Capacity Plus Lists 	(Frequency (MHz) 167.420000 Offset (MHz) (Frequency (MHz) 146.420000 0.0000000 Copy Copy
Capacity Plus Voice List Voice List_1 Capacity Plus Data List Capacity Plus Site List	Ref Frequency (MHz) Default Ref Frequency (MHz) Default
<	
alidation Results(7*) Warning Messages Search Re	sults Help

Color Code

Enter the color code for the radio. Note that the color codes on the radios must match the color code of the repeater.

Phone System

Select the phone system you have specified in section <u>4.3.6, Phone</u> <u>System</u>.

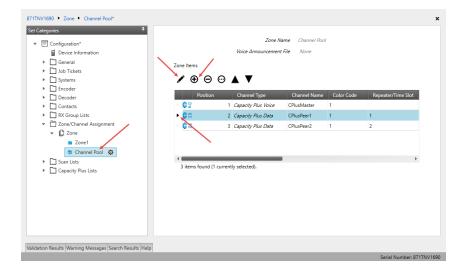
- In the **RX Frequency** box, specify the radio frequency the radio will receive on.
- In the **TX Frequency** box, specify the radio frequency the radio will transmit on.



Note: The RX and TX frequencies of the radio must be the opposite to the RX and TX frequencies of the repeater. In other words, the RX frequency of the repeater must be the same as the TX frequency of the radio; the TX frequency of the repeater must be the same as the RX frequency of the radio.

Adding Capacity Plus Data Channel

- In the Set Categories pane, select Zone/Channel Assignment > Zone > Channel Pool.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Data**.
- In the right pane, select the channel you have added (for example, CPlusPeer1) and click the pencil button.



• In the right pane, specify the following parameters:

871TNV1690 Zone Channel Pool Zone Items Set Categories	CPlusPeer1* General RX/TX	×
▼	General	
General General Gontation Gontation Gontation Contacts Gontacts Contacts Contacts Contacts Contacts Gontacts Contacts Gontacts Gontacts	Channel Type Capacity PI Channel Type Capacity PI Channel Name (CPlusPeerl Color Code) 1 Repeater/Time Slot) 1 Enhanced GNSS	us Data
Cone Zone Zone1 Schannel Pool Copacity Plus Lists	RX TX (MH2) (MH2) (000000 (Copy) (Co	(Trequenc) (MH2) 147.087500
Validation Results Warning Messages Search Results Hel	Ref Frequency (MHz) Default	Ref Frequency (MHz) Default
valuation nesults warning Messages Search Results Hel		Serial Number: 871TNV1690



Color Code

Enter the color code for the radio. Note that the color codes on the radios must match the color code of the data repeater.

Repeater/Time Slot

Select one of the data repeater time slots.

- In the **RX Frequency** box, specify the radio frequency the radio will receive on.
- In the **TX Frequency** box, specify the radio frequency the radio will transmit on.

Note: The RX and TX frequencies of the radio must be the opposite to the RX and TX frequencies of the repeater (see section <u>4.1.4.2</u>, Adding a Data Channel).

4.3.5.2 Capacity Plus Voice List

This section describes how to add the channels contained in the Channels Pool to a Capacity Plus Voice List.

- In the Set Categories pane, select Capacity Plus Lists> Capacity Plus Voice List.
- In the right pane, click the plus sign button and add the corresponding voice list.

871TNV1690 Capacity Voice List Voice	List_1*		×
Set Categories #		General	
▼			
Device Information	📀 General		Î
General		Voice Name Voice List_1	
Job Tickets Systems			
Systems Encoder	Available	Members	IDs
Decoder	CPlusPeer1	CPlusMaster	1-2 3-4
Contacts	L	1	5-6
RX Group Lists			9-10
Zone/Channel Assignment Scan Lists			11-12 13-14
Capacity Plus Lists			15-16
Capacity Plus Voige List			
Voice List_1		Add	
Capacity Plus Data List		Remove	
Capacity Plus Site List			
			*
Validation Results(7*) Warning Messages Searc	h Results Help		
			0 1 H H 1 07475 H 4 C 0 0

- In the left pane, select the Voice List you have added.
- In the right pane, in the **Available** list select a channel, or multiple channels using the SHIFT key, and click the **Add** button.

As a result, the channel(s) will appear in the **Members** list.

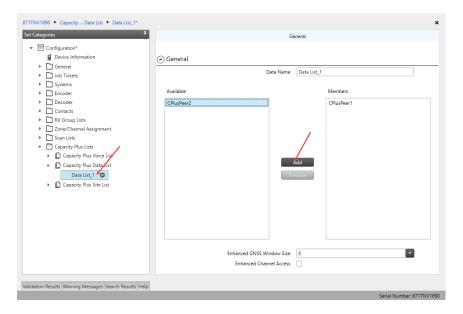
Note: The order of the channels in the Members list must follow the order of their respective Slot IDs, for example 1-2, 3-4, and so on.



4.3.5.3 Capacity Plus Data List

This section describes how to add the channels contained in the Channels Pool to a Capacity Plus Data List.

- In the Set Categories pane, select Capacity Plus Lists> Capacity Plus Data List.
- In the right pane, click the plus sign button and add the corresponding data list.



- In the left pane, select the Data List you have added.
- In the right pane, in the **Available** list select a channel, or multiple channels using the SHIFT key, and click the **Add** button.

As a result, the channel(s) will appear in the **Members** list.

4.3.5.4 Adding a Capacity Plus Personality Channel

- In the **Set Categories** pane, select **Zone/Channel Assignment**.
- In the right pane, click the plus sign button to add a zone.
- In the Set Categories pane, select the zone you have added.
- In the right pane, click the plus sign button and then choose **Type: Capacity Plus Personality**.
- In the right pane, select the channel (for example, TG 11) you have added and click the pencil button.

TRBOnet Capacity Plus — **Deployment Guide**



7/11NV1690 > Zone > Zone > Zone1* Set Categories Q	Voice Ann Zone Items	Zone Name iouncement File	Zone1 None		
Decoder Contacts	Position Channel Type Channel Type Capacity Plus Personality	Channel Name TG 11	Voice Announcement File	ARS Disabled	Privacy
 RX Group Lists Zone/Channel Assignment Done Zone Channel Pool Channel Pool Channel Pool Channel Pool Channel Pool Chancits Capacity Plus Lists 	1 items found (1 currently selected).				>
alidation Results(57) Warning Messages Search	Results Help				

• In the left pane, select the first channel (for example, named CapacityPlus) that has previously been added.

Categories	Ф.	Gener	eral RX/TX	
Configuration*	General			
General Job Tickets		hannel Type	Capacity Plus Personality	
 Systems 	CH	annel Name	TG 11	
Encoder	Voice Annou	cement File	None	
Decoder		ARS	On System Change	•
Contacts Contacts RX Group Lists		Privacy		
 Zone/Channel Assignment 	(Privacy Alias	Privacy Key1	•
💌 🗋 Zone		AES Alias	None	•
😑 Zone1 🏟		RAS Alias	None	-
Channel Pool		ption Board		
Capacity Plus Lists		one Worker	No	
	Compressed UDP		None	•
	Over-the-Air Battery M	-		_
		Voice List		-
		Data List		
	Rest Channel Acquisitie	n TOT (min)		
		nterval (ms)	1920	
	Ch	RX Only		
		KX Only		
	⊙ RX/TX			
	RX		TX	
	Group List CapacityPlusRXGrc	1	Contact Name TG 11	
	Emergency Alarm	,	Emergency System None	-
	Indication		VOX No	
	Emergency Alarm Ack No		Power Level High	•
	Emergency Call			

- In the right pane, specify the following parameters:
 - ARS

Select **On System Change** to provide the automated registration for the radio.

Privacy

Select this option to allow privacy on the channel.

Note: The **Privacy** option is available if the Basic or Enhanced Privacy Type has been selected in the Security section.



Privacy Alias

From the drop-down list, select the Key Alias.

Note: The **Privacy Alias** option is available if the Enhanced Privacy Type has been selected in the Security section. The same Key Alias must be used on all system nodes (repeaters and radios).

Option Board

Select this option to enable the option board capability on the channel. The option board must be installed and enabled in the radio or this feature will not function.

Voice List

Select the Capacity Plus Voice List you have specified in section <u>4.3.5.2</u>, <u>Capacity Plus Voice List</u>.

Data List

Select the Capacity Plus Data List you have specified in section <u>4.3.5.3</u>, <u>Capacity Plus Data List</u>.

RX Group List

Select the Group list you have specified in section <u>4.3.4, RX Group Lists</u>.

TX Contact Name

Select the contact to which a call will be initiated on the channel when pressing the PTT button. The contact is selected from the Contact list you have created in section <u>4.3.3, Contacts</u>.

4.3.6 Phone System

- In the Set Categories pane, select Systems > Phone Systems.
- In the right pane, click the plus sign button and add the corresponding phone system.
- In the left pane, select the phone system you have added.

871TPH7036 Phone Systems Phone_100*			×
Set Categories 2 Configuration* Device Information General Job Tickets Systems Signaling Systems User Defined 5 Tone 5 Tone Systems MDC Systems Digital Emergency Systems Digital Emergency Systems Digital Emergency Systems Decoder Contacts RX Group Lists Zone/Channel Assignment Socie/Channel Assignment<td>General System Name Gateway ID Access Code Deaccess Code (*) DTMF Pretime (ms) TX Tone Interval (ms) Pause Duration (ms)</td><td>Phone_100 9 100 9 0 0 # 9 500 9 120 9</td><td>×</td>	General System Name Gateway ID Access Code Deaccess Code (*) DTMF Pretime (ms) TX Tone Interval (ms) Pause Duration (ms)	Phone_100 9 100 9 0 0 # 9 500 9 120 9	×
Capacity Plus Lists Capacity Plus Lists Validation Results Warning Messages Search Results Help	3		
		Serial Number: 871TPH	7036



- In the right pane, specify the following parameters:
 - Gateway ID
 Enter the same ID as TRBOnet Peer ID in the Repeater settings of TRBOnet Server.
 - Set Access Code to 0 and Deaccess Code to #, respectively.
 - TX Tone Duration (ms)

Enter the duration of the DTMF tone digits, in milliseconds, for the phone system. It is recommended to set this value to **120**.

• TX Tone Interval (ms)

Enter the duration of the intervals between the DTMF tone digits in a transmission sequence, in milliseconds, for the phone system. It is recommended to set this value to **80**.

• Once you have finished configuring the desired radio parameters, click the **Write** button on the toolbar.

4.4 Configuring MOTOTRBO DDMS

The DDMS, or Device Discovery and Mobility Service is a service for tracking the presence of radio subscribers in the radio network and transmitting the data to the server. The topologies using DDMS are depicted in Figures 6-7. This section describes how to configure and run MOTOTRBO DDMS service using MOTOTRBO DDMS Administrative Client.

- Launch MOTOTRBO DDMS Administrative Client.
- In the left pane, select Watcher Settings.

👶 MOTOTRBO DDMS			_	×
File Action Help				
000 🖗 🍇 🔜 🔜 🐁				
Service	Watcher Settings			
🚊 🦉 Interfaces	PortWatcher	3000		
ARS Settings	WatcherTO	14400		
	NotifyGroup	0		
📲 Authentication Server Settings	NotifyRate	5		
I 🦉 Logging				
	PortWatcher			
	Port listening for Watcher \$ Range: 1000 - 65535	oudscribe requests.		
Settings for Watcher interface				:

PortWatcher

This is the port number for listening TRBOnet Server requests.



Note:	This value will be used when configuring DDMS
	parameters in section 5.1.1.3, DDMS Service, Service
	port.

DDMS service			
🗹 Use DDMS service			
Local port:	0		
Local port:	•	-	
Service IP Address:	127.0.0.1	•	
Service port:	3000	*	
bernee porer			
Authentication Port:	5055	÷	

• In the left pane, select **Authentication Server Settings**.

🐉 MOTOTRBO DDMS			_	×
File Action Help				
۵ 🕲 🔜 🏟 🏟 🔘 🛇				
Service	Authentication Server Set	tings		
🚊 🦉 Interfaces	AuthenticationServerIP	127.0.0.1		
ARS Settings	AuthenticationServerPort	5055		
Authentication Server Settings				
🛄 🦉 Logging				
	AuthenticationServerIP			
	Authentication Server IP Address			
Setting for authentication server				.:

AuthenticationServerIP

This is the authentication server IP address.

AuthenticationServerPort

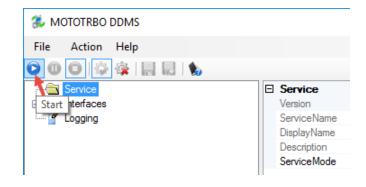
This is the authentication server port number.

- Note: These values will be used when configuring DDMS parameters in section <u>5.1.1.3</u>, <u>DDMS Service</u>, **Service IP Address** and **Authentication Port**,
 - respectively.

DDMS service		
Use DDMS service		
Local port:	0	;
Service IP Address:	127.0.0.1	•
Service port:	3000	;
Authentication Port:	5055	;



• Once you have finished configuring the desired DDMS parameters, click the **Start** button on the toolbar.



4.5 Configuring MOTOTRBO MNIS

This section describes how to configure and run MOTOTRBO MNIS service using MNIS Configuration Utility.

- Launch MNIS Configuration Utility.
- In the left pane, select **General**.

MOTOTRBO Network Interfac	e Service Configuration Utility *	-	×
Configuration View Edit	Service Help		
⊡· 🛑 CAP+ 🎟 General	General		
♀ Security 	System Operation Mode Capacity Plus V MNIS Application ID 64250 Image: Capacity Plus		
 Geocity Plus Geocity Plus Geocity Plus 	Tunnel Network		
😟 💼 Advanced	MNIS IP Address 172.16.10.1		
	Subnet Mask 255,255,255.0		

System Operation Mode

From the drop-down list, select **Capacity Plus**.

MNIS Application ID

Configure an individual ID that uniquely identifies the MNIS application in the radio system. The recommended value is **64250**.

Note: This is the ID that TRBOnet Server uses as its **Radio ID** when connecting a master repeater.

MNIS IP Address

It is recommended that the value of **172.16.10.1** is used unless there are conflicts with other network interfaces on the PC.



Tunnel IP Address

This is the IP Address used by the MNIS to communicate with TRBOnet Enterprise (see <u>5.1.1.4, MNIS Data Service</u>, **IP Address**).

MNIS data service				
☑ Use Data Gateway ☑ Service is on a lo	cal	host		
IP Address:)	172.16.10.2	- ¢	
Control port:		5000	+	

• In the left pane, select Capacity Plus

MOTOTRBO Network Interfac	e Service Configuration Utility *	_		×
Configuration View Edit	Service Help			
1				
E CAP+	Capacity Plus			
General General Group List Group List Group List Group Conventional Group Capacity Plus Group Linked Capacity Plus Advanced	Master IP Address 10.10.188.35 Master UDP Port 50000 MNIS LE Port Automatically Assigned Manually Assigned None		¢.	
	Authentication Key			
	Security Setting Basic V			
	Security Alias			
	Group List List1 ~			
	GPS Latitude			
	GPS Longitude			

Master IP Address

Enter the Ethernet IP address of the master repeater.

Master UDP Port

Enter the UDP port number of the master repeater.

Authentication Key

Enter the master repeater's authentication key (if any).



• In the left pane, select **Advanced**.

MOTOTRBO Network Interface Service	Configuration Utility *	-		×
Configuration View Edit Service	Help			
	Advanced			
	Data Call Confirmed Compressed UDP Data Header None Battery Saver Preamble			
	Individual Data to Registered Site			
··· 🚰 Network ··· 📾 Forwarding Rules	Selective Forwarding			
Application Override Rules	TX Preamble Duration (ms) 120			
	Conventional Channel Access Normal ~			
	MNIS LE ID Use MNIS ID	200	-	

Compressed UDP Data Header

From the drop-down list, select the type of compression protocol used for the UDP Data Header (None, MSI, DMR). It is recommended selecting **MSI**. Note that the same type must be set on all subscriber radio channels (*CPS*>*Channels*>*Compressed UDP Data Header*).

MNIS LE ID > Manually Assigned

Enter a unique Peer ID among the repeaters in a radio system.



• In the left pane, select **Network**

MOTOTRBO Network Interfac	-	n Utility *		-)
onfiguration View Edit	Service Help				
		?			
Untitled					
- Ceneral		CAI Network	12 🜲		
🖃 💼 Group List		CAI Group Network	225 🔹		
E Conventional					
- 🚬 Domain 1		2	ervices		
 Geo Capacity Plus ⊕ Capacity Plus 		ARS UDP Port	4005		
🖃 💼 Advanced		TMS UDP Port	4007		
- 🚼 Network - 🕞 Forwarding Rules		Telemetry UDP Port	4008		
Application Oven		Location Server UDP Port	4001 🗢		
		Battery Management UDP Port	4012 🗢		
		User Defined UDP Port 1	Disabled 🔷		
		User Defined UDP Port 2	Disabled 🜲		
		User Defined UDP Port 3	Disabled 🜩		
		XCMP Enable			
		XCMP Enable	4004 🗢		
		ARS Monitor			
		ARS Monitor ID	None 🜲		
		ARS Monitor ID	INDIRE V		
		Device Discover	ry and Mobility Service		
		Server Address	127.0.0.1		
		Watcher Port	3000 🗢		
			ontrol Interface		
		MNIS Control Interface TCP Port	5000 ≑		
>					

Device Discovery and Mobile Service

Server Address

This is the IP address of the MOTOTRBO Device Discovery and Mobility Service (DDMS). The recommended value is **127.0.0.1** if both DDMS and MNIS reside on the same PC.

Watcher Port

This is the port number on the MOTOTRBO Device Discovery and Mobility Service (DDMS) server to which the Watcher requests should be sent.

MNIS Control Interface

MNIS Control Interface TCP Port

This is the Transmission Control Protocol (TCP) port for the MNIS Control Interface server. This value is used when connecting TRBOnet Server to MNIS Service (see <u>5.1.1.4</u>, <u>MNIS Data Service</u>, **Control port**).



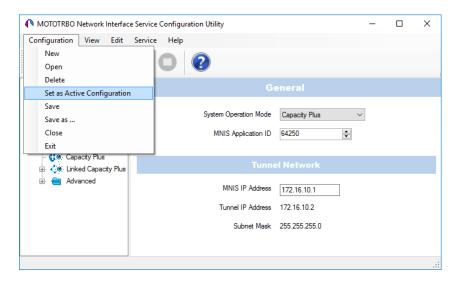
MNIS data service				
🗹 Use Data Gateway				
🗹 Service is on a local host				
IP Address:	172.16.10.2	- \$		
Control port:	5000	‡		

Once you have finished configuring the desired MNIS parameters, do the following:

• Click the **Save** button on the toolbar.



• On the **Configuration** menu, click **Set as Active Configuration**.



• Click the **Start** button on the toolbar.





5 **Configuring TRBOnet Enterprise**

This section describes how to configure TRBOnet Enterprise software. By properly configuring TRBOnet Server and TRBOnet Dispatch Console, you will be able to utilize the full capabilities of your Capacity Plus system.

5.1 Configuring TRBOnet Server

To start TRBOnet Server, click the corresponding shortcut on the desktop, or click **Start > All Programs > Neocom Software > TRBOnet Server x.x**

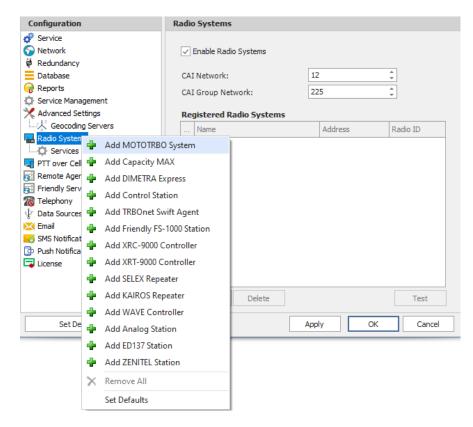
For how to configure TRBOnet Server's Database, Service, Network parameters, etc., refer to *TRBOnet Enterprise Quick Start Guide*.

5.1.1 Adding a Master Repeater

This section describes how to configure TRBOnet Server for communication with the master repeater of a Capacity Plus system.

Note: Only the Master repeater needs to be added to TRBOnet Server.

- In the **Radio Systems** pane, click **Add**. Or, in the **Configuration** pane, right-click **Radio Systems**.
- In the drop-down menu, click Add MOTOTRBO System.





In the **Repeater** pane, specify the connection parameters. To ensure your connection parameters match the actual configuration of your radio network, you may need to use Motorola CPS to determine the values. Contact your radio network administrator, if you do not have this information.

Configuration	Repeater #1	
💣 Service	N	
S Network	System Name:	Repeater #1
🛱 Redundancy	TRBOnet Peer ID:	100 1
Database	TRBOnet Radio ID:	64250
😪 Reports	TROUTEL RADIO ID;	· · · · · · · · · · · · · · · · · · ·
Service Management	TRBOnet Local Port:	50000
🔀 Advanced Settings	Master Repeater Cor	nnection Info:
Geocoding Servers	Master IP Address:	10.10.188.35
Radio Systems	Master UDP Port:	50000 1 Test
Services	Master ODP Port:	50000 C Test
Repeater #1	Authentication Key:	123456
Advanced Settings	System Type:	Capacity Plus 👻
Privacy	System Identifier:	
DDMS service	bystem toentment	
MNIS data service	✓ Use NAI Voice	
Audio Paths	Use NAI Data (MNIS a	and DDMS)
TT over Cellular	Use RCM for control r	radio activity
Remote Agents		
Friendly Servers		
Telephony		
↓ Data Sources		
Email	/	
Set Defaults		Apply OK Cancel

• System Name

Enter a name for the repeater. This name will be displayed in the Dispatch Console.

• TRBOnet Peer ID

Enter a Peer ID for TRBOnet Server. The Peer ID must be unique among the repeaters in the radio system.

• TRBOnet Radio ID

Enter the Radio ID of the gateway for voice and data in the radio system. This Radio ID is used as **ARS Radio ID** and **TMS Radio ID** in the Network settings of subscriber radios (see sections <u>4.3, Configuring a Subscriber</u> <u>Radio, 4.3.2, Network</u>). The default value is **64250**.

• TRBOnet Local Port

Enter the local port number that will be used by TRBOnet Server to establish a connection to the repeater. Use unique port numbers for each repeater connection if there are several repeaters connected.

Master IP Address

Enter the WAN IP address of the site router behind which the master repeater resides. Or, enter the LAN address of the single master repeater if there is no site router.



Note: This value is programmed for a repeater via MOTOTRBO CPS, in *Link Establishment>Master IP*. See section <u>4.1.3</u>.

• Master UDP Port

Enter the UDP port number of the master repeater.

Note: This value is programmed for a repeater via MOTOTRBO CPS, in *Link Establishment>Master UDP Port*. See section <u>4.1.3</u>.

• Authentication Key

Enter the repeater's authentication key (if any).

Note: This value is programmed for a repeater via MOTOTRBO CPS, in *Link Establishment>Authentication Key*. See section <u>4.1.3</u>.

• System Type

From the drop-down list, select Capacity Plus.

• Test

Click this button to check the connection to your master repeater. If the test is successful, you'll see the information on the repeater you are connected to, such as the serial number, firmware version, and other relevant information.

• System Identifier

Enter the system identifier. Note that the system identifier should be the same for all control stations and repeaters used in the same radio system.

• Use NAI Voice, Use NAI Data (MNIS and DDMS)

Select these options if the Network Application Interface Voice and Network Application Interface Data features are enabled on the repeaters.

Click **Apply** after entering all the required values. A confirmation dialog will appear, prompting you to save the configuration and restart the TRBOnet Server service. You can also restart the service manually.



5.1.1.1 Advanced Settings

• In the **Configuration** pane, under the corresponding **Repeater**, select **Advanced settings**.

Configuration		Advanced Settings		
🛷 Service 🎧 Network	^	Voice Call Hang Time (ˈms):	
🛱 Redundancy		Group Call:	3000 ‡	
Database Reports		Private Call:	4000 ‡	
🔅 Service Management		Emergency Call:	4000 ‡	
Advanced Settings		TX Preamble:	120 ‡	
🖶 Radio Systems		TX Timeout:	60 ‡	seconds
Services				
Repeater #1		Phone System:	Motorola Phone System	*
X Advanced Settings		TX Interrupt Mode:	MSI Proprietary	Ţ
		Allow CSBK Data		
💷 Audio Paths				
🖵 PTT over Cellular				
🔂 Remote Agents				
📷 Friendly Servers				
7 Telephony				
∲ Data Sources				
Email	~			
Set Defaults			Apply	OK Cancel

• In the **Advanced Settings** pane, specify the following repeater-related advanced settings:

Voice Call Hang Time (ms):

Group Call

This value sets the duration the repeater reserves the channel after the end of a group call transmission. During this time, only members of the group that the channel is reserved for can transmit.

Private Call

This value sets the duration a radio keeps the private call setup after a user releases the PTT button. This is to avoid setting up the call again each time a user presses the PTT button to transmit. During this time, other radios can still transmit since the channel is essentially idle. After the hang timer expires, the radio transmits using the *TX Contact Name* parameter specified for this channel in MOTOTRBO CPS.

Emergency Call

This value sets the duration the repeater reserves the channel after the end of an emergency call transmission. During this time, only members of the Group that the channel is reserved for can transmit.

Note: The values of the above three parameters must be taken from the corresponding parameter values programmed for the repeater via MOTOTRBO CPS in *General Settings*.



TX Preamble

Enter the value of the TX Preamble. The TX Preamble is a string of bits added in front of a data or control message (Text Messaging, Location Messaging, Registration, Radio Check, Private Call, and other message types) before transmission. The acceptable range is 0 - 8640 ms. The recommended value is 120 ms.

TX Timeout

Enter the time, in seconds, to be used as a voice session limit. When the dispatcher starts any voice session in the Dispatch Console, transmission will be interrupted after this TX Timeout expires.

Phone system

From the drop-down list, select the system for phone calls:

• Motorola Phone System

This system uses a special call type with the parameters specified for a radio unit in MOTOTRBO CPS.

• TRBOnet Phone System (TX Interrupt)

This is a phone call system based on the private call type using TX Interrupt feature. This phone system is available for radio systems with control stations.

5.1.1.2 Privacy

• In the **Configuration** pane, under the corresponding **Repeater**, select **Privacy**.

Configuration	Privacy				
💣 Service \land					
🕤 Network	Privacy Type:	Enhan	rced -		
🕏 Redundancy	Basic Privacy Key ID:	1	÷		
Database	Enhanced Privacy Ke	vs.			
😪 Reports					
Service Management	Alghoritm	ID	Name	Value	
X Advanced Settings	ARC4 (40 bit) 👻	1			
Geocoding Servers	ARC4 (40 bit)	1	1		
🔜 Radio Systems					
Services					
Repeater #1					
Advanced Settings					
Privacy					
DDMS service					
Audio Paths					
TT over Cellular					
🔂 Remote Agents					
🔂 Friendly Servers					
Telephony					
🜵 Data Sources					
🔀 Email 🗸 🗸	Add	lemove			File
Set Defaults			Apply	ОК	Cancel

• In the **Privacy** pane, specify the following privacy-related settings:



Privacy Type

From the drop-down list, select one of the privacy types: **None**, **Basic**, or **Enhanced**.

Basic Privacy Key ID

Enter the Privacy Key ID available for the **Basic** privacy type.

Enhanced Privacy Keys

Here you add enhanced privacy keys when the **Enhanced** privacy type is selected.

- Click **Add** and specify the required **Algorithm**, **ID**, **Name**, and **Value** for the privacy key being added.
 - ✓ Algorithm

From the drop-down list, select one of the enhanced algorithms if you are going to use additional encryption.

5.1.1.3 DDMS Service

The DDMS, or Device Discovery and Mobility Service is a service for tracking the presence of radio subscribers in the radio network and transmitting the data to the server.

• In the **Configuration** pane, under the corresponding **Repeater**, select **DDMS service**.

Configuration	D	DDMS service
 ✓ Service ✓ Network 	^	Use DDMS service
Redundancy		Local port: 0
Reports		Service IP Address: 127.0.0.1 Test
Service Management		Service port: 3000
Advanced Settings		Authentication Port: 5055 ‡
Radio Systems		Redundant services:
Services		Service IP Address Service port Local port
Repeater #1		1 🗸 10.10.101.207 3000 0
Advanced Settings Privacy DDMS service Advanced Setting MNIS data service LIII Audio Paths		
🖵 PTT over Cellular		
Remote Agents	,	Add Delete Test
< > Set Defaults		Apply OK Cancel

• In the **DDMS service** pane, specify the following DDMS service-related settings:

Use DDMS service

Select this option to enable the DDMS service for the server.



Local Port

Enter the number of the local port to be used on a PC with TRBOnet Dispatch Software for DDMS service.

Service IP Address

Enter the IP Address of the PC with the DDMS service installed and running.

Service port

Enter the service port number.

Note: This value is programmed for a DDMS service via MOTOTRBO DDMS Administrative Client, in Interfaces>Watcher Settings>PortWatcher.

Authentication Port

Enter the authentication server port number.

Note: This value is programmed for a DDMS service via MOTOTRBO DDMS Administrative Client, in Interfaces>Authentication Server Settings> AuthenticationServerPort.

Redundant services

Here you see the list of redundant DDMS services for failover purposes.

- Click **Add** and specify the required parameters for the DDMS service being added.
- Click **Test** to test if the selected DDMS service is available.
- Use the Up (
) and Down (
) buttons to move a selected DDMS service up and down in the priority list of DDMS services.

5.1.1.4 MNIS Data Service

The MNIS, or Motorola Network Interface Service, is a Windows application which acts as a data gateway between the data applications and the radio system. Data messages are routed through the MNIS.

• In the **Configuration** pane, under the corresponding **Repeater**, select **MNIS data service**.

TRBOnet Capacity Plus — Deployment Guide



Configuration	MNIS data service
Configuration	Image: Service Use Data Gateway Service is on a local host IP Address: 172.16.10.2 • ¢ Control port: 5000 • ¢ MNIS Service: MOTOTRBO Network Interface Service • ¢ MNIS Service: MOTOTRBO Network Interface Service • ¢ IP Address Control port Local port 1 1 10.10.101.220 5000 ¢
MIIS data service Advanced Setting PTT over Cellular Remote Agents Friendly Servers	Add Delete Test V Apply OK Cancel

- In the **MNIS data service** pane, specify the following MNIS data service-related settings:
 - Use Data Gateway

Select this option to enable the MNIS data service for the server.

Service is on a local host

Select this option if the MNIS data service will be used on the local PC.

IP Address

Enter the IP Address used by the MNIS to communicate with the PC.

Note: This value is programmed for a MNIS data service via MOTOTRBO MNIS Configuration Utility, and can be retrieved from *General>Tunnel Network>Tunnel IP Address*.

Control port

Enter the number for the MNIS control port.

Note: This value is programmed for a MNIS data service via MOTOTRBO MNIS Configuration Utility, in Advanced>Network>MNIS Control Interface TCP Port.

MNIS Service

Select this option, and from the drop-down list select the available MNIS service.

Redundant services

Here you see the list of redundant MNIS data services for failover purposes.

• Click **Add** and specify the required parameters for the MNIS data service being added.



- Click **Test** to test if the selected MNIS data service is available.
- Use the Up (
) and Down (
) buttons to move a selected MNIS data service up and down in the priority list of MNIS data services.

5.1.1.5 Audio Paths

The Audio Paths are talk paths of the system to make and receive Voice Calls; in general, they are talk groups. TRBOnet Server requires that all audio paths of a Capacity Plus system be registered in its configuration. If an audio path is not registered, the TRBOnet operator will not be able to receive and transmit to the corresponding talk group.

• In the **Configuration** pane, under the corresponding **Repeater**, select **Audio Paths**.

Configuration	Audio Paths	
💣 Service 🔨 🔨	Load Groups Map	
S Network		1
🛱 Redundancy	Call Type	Group ID
Database	Group Call	11
Reports	Group Call	22
Service Management		22
🔀 Advanced Settings	Private Call	
Geocoding Servers	All Call	
Radio Systems		
🗘 Services		
Repeater #1		
🔒 Privacy		
DDMS service		
X Advanced Setting		
MNIS data service		
Advanced Setting		
Audio Paths		
🖵 PTT over Cellular		
Remote Agents		
Friendly Servers		
<pre> *</pre>	Add Delete	Configure
		Canad
Set Defaults	Apply OK	Cancel

- In the **Audio Paths** pane, specify the following Audio Path-related settings:
 - To add an audio path to the system, click **Add**.
 - Make sure the check box in the first column is selected to make and receive voice calls from the selected subscriber.
 - From the drop-down list, select the **Call Type** for the audio path. The available call types are All Call, Group Call, and Private Call.
 - Enter the Group ID, which is an ID of the talk group the dispatcher can make calls to. The Group ID is not applicable for Private Calls and All Calls.
 - To configure the selected audio path, click **Configure**.
 - Specify the desired audio path settings similar to those for a common repeater slot.



5.1.2 Adding a Control Station

This section describes how to configure TRBOnet Server for communication with a control station in a Capacity Plus system.

- In the **Radio Systems** pane, click **Add**. Or, in the **Configuration** pane, right-click **Radio Systems**.
- In the drop-down menu, click Add Control Station.

Configuration	Control Station #1	
Configuration Co	Name: Radio ID: IP Address: Mode:	Control Station #1 64250 192.168.10.2 Capacity Plus
Geocoding Servers Control Station #1 Control Station #1 Advanced Settings	System Identifier: Use the radio for RX I Playback device: Recorder device:	Department 1 Data only (GPS Revert or Data Revert) Speakers (Logitech USB Headset) * 야 Line In (2- High Definition Audio Device) * 야
Image: PTT over Cellular Remote Agents Friendly Servers Telephony ↓ Data Sources Email SMS Notifications Image: Push Notifications Image: License		
Set Defaults		Apply OK Cancel

- In the **Control Station** pane, specify the following control station-related parameters:
 - Name

Enter a name for the control station. This name will be displayed in the Dispatch Console.

Radio ID

This is the Radio ID of the radio unit connected as a control station.

Note: This box is populated automatically once you have successfully tested the control station by clicking the **Test** button.

IP Address

Enter, or select from the list, the IP Address of the control station network interface.

Note: This value can be taken from the radio's configuration in MOTOTRBO CPS, in *Network*>Accessory IP.



Test

Click this button to check the connection to the control station. If the test is successful, you'll see the information on the control station you are connected to, such as radio ID, serial number, firmware version, and other relevant information.

Mode

From the drop-down list, select **Capacity Plus**.

System Identifier

Enter the system identifier. Note that the system identifier should be the same for all control stations and repeaters used in the same radio system.

Use the radio for RX data only (GPS Revert or Data Revert) Select this option to configure the radio channel so that it will only

receive data, thus having no transmission capability.

Playback device

From the drop-down list, select the playback device on the PC that will be used to transfer audio data to the connected control station.

Recorder device

From the drop-down list, select the recording device on the PC that will be used to receive audio data from the control station connected via a line-in jack.

• Click **Apply** after entering all the required values. A confirmation dialog will appear, prompting you to save the configuration and restart the TRBOnet Server service. You can also restart the service manually.

5.1.2.1 Advanced Settings

• In the **Configuration** pane, under the corresponding **Control Station**, select **Advanced Settings**.

TRBOnet Capacity Plus — Deployment Guide



Configuration	Advanced Settings
Configuration Configuration Service Network Redundancy Database Reports Control Station #1 Advanced Settings Control Station #1 Advanced Settings Control Station #1 Advanced Settings Control Station #1 Control S	Advanced Settings Automatically reset alarm mode Automatically handle call alert Emergency Call/Alarm indication Use front microphone Always transmit when the PTT is pressed ("Impolite" channel access) Use serial port for PTT key up Serial port: TX Timeout: 60 60 \$ seconds Signaling System: None Allow CSBK Data
K Email	
 Push Notifications License 	
Set Defaults	Apply OK Cancel

• In the **Advanced Settings** pane, specify the following control stationrelated advanced settings:

Automatically reset alarm mode Select this option to reset alarm mode on the control station radio automatically. It is recommended to enable this option.

Automatically handle call alert Select this option to automatically redirect call alerts from the control station radio to the Dispatch Console.

Emergency Call/Alarm indication

Select this option so that audio and visual indication is given by the control station radio when an emergency Call/Emergency Alarm is received.

Use front microphone (for PTT key up)

Select this option to use a remote control of the PTT button via a remote speaker microphone on the radio.

Always transmit when the PTT is pressed ("Impolite" channel access)

Select this option so that when the PTT button is pressed, the radio will start transmitting regardless of whether the channel is free or not (that is any transmission in progress will be interrupted).

Use serial port for PTT key up

Select this option to use a remote control of the PTT button via the serial port of the PC, and select the serial port from the drop-down list.



TX Timeout

Enter the time, in seconds, to be used as a voice session limit. When a dispatcher starts any voice session in the Dispatch Console, the ongoing transmission will be interrupted after this TX Timeout expires.

Allow CSBK Data

Select this option so that the GPS data are compressed into a single CSBK data.

5.1.2.2 Audio Paths

The Audio Paths are talk paths of the system to make and receive Voice Calls; in general, they are talk groups. TRBOnet Server requires that all audio paths of a radio system be registered in its configuration. If an audio path is not registered, the TRBOnet operator will not be able to receive and transmit to the corresponding talk group.

• In the **Configuration** pane, under the corresponding **Control Station**, select **Audio Paths**.

Configuration	Audio Paths	
🛷 Service		
🕤 Network	Call Type Group	DID
🛱 Redundancy	All Call	
Database		
😪 Reports	✓ Private Call	
Service Management	Group Call 11	
🔀 Advanced Settings	Group Call 22	
Geocoding Servers		
🔚 Radio Systems		
Services		
Control Station #1		
Advanced Settings		
Audio Paths		
TT over Cellular		
🔂 Remote Agents		
📷 Friendly Servers		
776 Telephony		
Ψ Data Sources		
🔀 Email		
SMS Notifications		
Push Notifications		
📮 License	Add Delete	
Set Defaults	Арріу ОК	Cancel

- In the **Audio Paths** pane, specify the following Audio Path-related settings:
 - To add an audio path to the system, click **Add**.
 - Make sure the check box in the first column is selected to make and receive voice calls from the selected subscriber.
 - From the drop-down list, select the **Call Type** for the audio path. The available call types are All Call, Group Call, and Private Call.
 - Enter the **Group ID**, which is an ID of the talk group the dispatcher can make calls to. The Group ID is not applicable for Private Calls and All Calls.



5.1.3 Enabling Telephony

TRBOnet Server has its own built-in SIP server to support VoIP communications between the radios as well as other SIP-compliant clients.

- In the Configuration pane, select Telephony
- In the **Telephony** pane, select **Use Telephony**.

Configuration		Tel	epho	ony	/										
Reports	^														
Service Management		\checkmark	Use	Te	lephon	у									
X Advanced Settings					SIP Se	rver			 		 		 		
—————————————————————————————————————				_					 		 				
Radio Systems			Ŀ	~	Interr	al PB	X Ser	ver							
Services															
Repeater #1															
Privacy															
DDMS service															
Advanced Settings															
MNIS data service															
Advanced Settings															
Audio Paths															
TT over Cellular															
🔂 Remote Agents															
Friendly Servers															
Telephony Telephony															
Internal PBX Server															
Advanced Settings				٨dd			Delet					Test		•	
Ψ Data Sources	~		P	100			Delet	le				rest		•	
Set Defaults									Арр	ly	(ж	Can	cel]

5.1.3.1 Internal PBX Server

- Make sure the **Internal PBX Server** option is selected in the **Telephony** pane.
- In the **Configuration** pane, select **Internal PBX Server**.

Configuration	I	nternal PBX Server		
Reports Service Management Advanced Settings		✓ Use Internal PBX Se Local IP:	rver 10.10.100.99 - 🌣 Port	: 5060 🗘
Radio Systems		Dispatch Cente	24	
Repeater #1		User Extension: User Name:	1234 1234	
DDMS service				
🖵 PTT over Cellular				
Remote Agents Friendly Servers Telephony Advanced Settings Advanced Settings Advanced Settings Advanced Settings Data Sources	×			
Set Defaults			Apply OK	Cancel



- In the **Internal PBX Server** pane, specify the following parameters:
 - Local IP

Enter the IP address of the PC with TRBOnet Server.

Port

Enter the local UDP port number for the SIP service (5060, by default).

Dispatch Center

User Extension

Enter the user extension number that will be used by the Dispatch Center.

- **User Name** Enter the user name that will be used by the Dispatch Center.
- Note: In addition, make sure that the Private Call audio path has been added to the repeater's Audio Paths (see section <u>5.1.1.5,</u> <u>Audio Paths</u>).



5.2 Configuring TRBOnet Dispatch Console

To start TRBOnet Server, click the corresponding shortcut on the desktop, or click **Start > All Programs > Neocom Software > TRBOnet Dispatch x.x**

The dialog box will appear prompting you to enter the TRBOnet Server IP address, User Name, and Password. The default Administrator credentials are *admin* for the login and *admin* for the password.

For a more detailed information on how to use TRBOnet Dispatch Console, refer to *TRBOnet Enterprise User Manual*.

5.2.1 Registering Radio Groups

Go to **Administration** (1), **Radio Group** (2) to add/edit/delete Radio Groups in the system.

File View Map Tools Help							
Administration		Radio Groups					👲 🐠 😉
Disabled Radios Dispatcher Groups Dispatchers Dispatchers Dispatchers Email Groups SMS Groups	^	Group 10) 4:0) 4:0	3: Line free Group 20	•) •) •)	All Call	•) * (0) •) * (0)
		Add 🦻 Edit 📑	Delete │ 🚟 Gro △ Radio ID		r 🌼 Default Settir MDC / Sel-5 (Hex)	lgs Descriprion	
Radios 2	¥	Cleaners Firemen	30 20	5		Cleaning group	
Voice Dispatch		Police	10	C)		
Location Tracking		3					
Boute Management	-						
RFID Tracker							
Text Messages							
 Voice Recording Event Viewer 							
্রিষ্ঠী Radio Allocation		1					
Administration	-	141 44 4 Record 1 of 3	► ₩ 4				Þ
🔂 127.0.0.1 🛞 🕵 🧕 Administrator	📑 📑 Li	censed to: demo Demo Li	cense				Active

- Click Add (3) to add a radio group to the system:
- In the dialog box that appears, specify the **Name** and **Group ID** (Radio ID) of the group you are adding.
- Note: Make sure that the radio group(s) created in the Dispatch Console are present in the radio's RX Group List (see section <u>4.3.4, RX Group Lists</u>). In addition, make sure these radio groups have been added to TRBOnet Server as Audio Paths.



5.2.2 Registering Radios

Go to **Administration** (1), **Radios** (2) to add/edit/delete Radios in the system.

File View Map Tools Help								
Administration	Radios							🔮 🐠 🕓
	1: Line free Private Ca Group 20			Intercom Group 10 All Call	•)) 4 6 •)) 4 6	0		
Logical Groups Radio Groups Radios	Registered		adio	🗕 🛃 Add W	AVE Radio 📑	Add TRBOne	t Mobile 📑	Add Range
Kadios V	Radio Name∆	Type	Radio ID	MDC ID	SIP ID	Radio Gro	Logical Gr	Description
	125	Digital Radio	125	0	125	11; Firemen	Cleaning,	
Voice Dispatch	13	Digital Radio	13	0		All		
	335	Digital Radio	235	0	235	Firemen; P	Cleaning	
Location Tracking	3333	TRBOnet Mobile	3333	0	3333	11; 22		
	\$ 555	Digital Radio	555	0		All		
🙀 Job Ticketing	🛞 Radio 300	Digital Radio	300	0		All		
😥 Route Management				\ 3				
🖂 Text Messages								
Voice Recording								
Event Viewer								
B Radio Allocation	1							
Administration	HI II Record	d1of6 ▶ ₩ ₩	4					1
访 127.0.0.1 🛞 🔥 💆 Administrator 🛛	🚦 Licensed to: den	10						🕑 Active

- Click Add Digital Radio (3) to add a new radio.
- In the dialog box that appears, specify the **Radio Name** and **Radio ID**, and **Radio Groups**, to which the radio belongs.



5.2.3 Configuring Telephony

5.2.3.1 Registering SIP extensions

This section describes how to add SIP extensions to TRBOnet Dispatch Console.

- Go to Administration (1), Telephony (2).
- In the **Telephone** pane, click the **Extensions** tab (3), and then **Add** (4).

File View Map Tools Help								
Administration	Telephony	😫 🕸 🔽						
Server	🔷 🔊 1: Line free 📧 🕢 🔽 Intercom 🗐 📧 🖉 🗌 Private Call							
🗌 间 Database	Cleaners 🕖 🔣 🕗 Firemen 🕖 📢 🖉 IPSC 1: Slot	#1 🜒 📢 🧭						
	✓ IPSC 1: Slot #2 • 1) • ♥							
	Configure Calls Extensions Redirect Calls Phone Contacts Dial Plans							
Tasks 2	and a black and							
	Type 3 User Extension User Name First Name Last Name Display Na	. Logical Groups						
Voice Dispatch 4	Dispatch Cer Phone User X Internal PB.							
	Jispatch Cei sipnet.ru							
Location Tracking	General Logical Groups Custom Fields Walt							
-	✓ ⊗ SIP Phone User Extension: 2408 Eugene ✓ ⊗ SIP Phone User Extension: 2408 Prune							
🚰 Job Ticketing	View SIP Phone Prune Prune							
~	liser Password:							
👷 Route Management								
✓ Text Messages	Password (repeat):							
	First Name: John							
Voice Recording	Last Name: Bingham							
2	Display Name: John B.							
Reports								
Event Viewer								
Radio Allocation	1 OK Cancel							
Administration	₩ ≪ 4 Record 1 of 5 ▶ ₩ ₩ 4							
)Connected 🛞 🔂 🔂 💈	ministrator El Licensed to: demo Demo License	🕑 Activ						

In the **Phone User** dialog box, specify the following parameters:

User Extension

Enter the extension number that will be used by the phone user.

User Name

Enter the user name that will be used by the phone user.

User Password

Enter the password for the phone user to be authenticated by the telephone system.

Password (repeat)

Enter the password again.

- Fist Name/Last Name/Display Name
 Enter the first, last and display names of the phone user.
- In addition, on the **Logical Groups** tab, specify logical groups for the phone user.
- On the **Custom Fields** tab, specify the desired values for the custom fields.



5.2.3.2 Setting DTMF codes

This section describes how to set DTMF Access and Deaccess codes in TRBOnet Dispatch Console.

Go to Administration (1), Telephony (2), Configure Calls (3), Configure (4) and

set **Access code** and **Deaccess code** (5) to **0** and **#**, respectively:

Administration	Telephony		
Server Lorse Lorse Control Server Control	Image: Line free Intercom Al Cal Image: Call Call Image: Line free Image: Call Call Image: Line free Image: Line free Configure Calls Extensions Redrect Calls Phone Control	Group 11 Group 22 Geners D Fremen Geners D Fremen Geners	*)) *))
Modus O'Connectors 2 Modus O'Connectors 2 D'Connectors 4 D'Connectors 4 D'Connectors 4 D'Connectors 4 D'Connector 4 D'C	Radio Call Configuration 3 Access code: Deaccess code: Callback Request Options Allow radio users to make outpoing calls: Send a DTM-F command to request a callback: Send a text message to request a callback: Start transmission: Phone-to-Radio Calls Start transmission: Response timeout: Check if radio is available before establishing the call: Missed Call confectations:	0 # Radio Call Configuration × Yes, Yes, P Deaccess code: 5	
Uvice Dispatch	Play sound on the phone when PTT is pressed or released: Configure 4 Inbound Call Configuration Inbound Call Control Call to Dispatch Centre :	Yes Start transmission: Immediately Phone-to-Radio Calls Start transmission: Wait for PTT Response timeout: 120 + Forma Check frado as available before establishing the call	
 Route Management Text Messages 	Call to unregistered number: Interactive Voice Response (IVR) Options Do not wait for Accept code: Maximum number of digits;	Forma IP Mssed Call notifications Yes IP Nay sound on the phone when PTT is pressed or released 3 Sound level: +++	
Voice Recording Reports	Accept code: Number 0 1 <number></number>	# Destin Call de Call radio writin Radio ID = OK Cancel	
Administration Connected B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B <tr< td=""><td>1 235 56 Configure</td><td>Call radio Radio 235 Call dispatcher (any available)</td><td>Activ</td></tr<>	1 235 56 Configure	Call radio Radio 235 Call dispatcher (any available)	Activ