CTI Products

RadioPro[™] IP Gateway Installation Guide for Motorola MOTOTRBO Radios (XPR 2500, 45xx, 55xx)



Document # S2-61903-830 For Version 8 Software

Contact Us

Support, replacement part ordering, and service may be arranged by contacting our Cincinnati office. Parts for service can be returned following a request of a Return Material Authorization.

CTI Products, Inc. 1211 W Sharon Rd Cincinnati, OH 45240

513-595-5900

support@ctiproducts.com

Disclaimer

Information in this document is provided with best efforts for completeness and accuracy. However, no guarantee is expressed or implied, and details may change without notice.

Fonts used in this document: *Technical terms Cross-references within this document* <u>Hyperlinks to other documents or web pages</u> Warnings Software menus, menu options, folders, pages, and parameters

Software parameter values

Contents

1 OVERVIEW	4
1.1 System Planner Document and Template	4
1.2 Required Items	4
1.2.1 Radio Interface Cable	4
1.2.2 Control Station Radio	4
1.2.3 Radio Programming Cable	4
2. FEATURE AVAILABILITY	5
3. CONFIGURATION AND INSTALLATION	6
Step 1a. for Motorola XPR 45XX & 55XX (Voice):	7
Configure Control Station Radio (For Voice) using MOTOTRBO CPS	7
Step 1b. for Motorola XPR 45XX & 55XX (DATA):	
Configure Control Station Radio (For Data) using MOTOTRBO CPS	
Step 1c. for Motorola XPR 45XX / 55XX Connect Plus Radios :	
Configure MOTOTRBO Connect Plus Option Board	
Step 1d. for Motorola MOTOTRBO Subscriber Radios:	
Configure Subscriber Radios for ARS, GPS, and TMS	
Step 1e. for Motorola XPR 2500 Radio:	
Configure Control Station Radio (For Voice) using MOTOTRBO CPS	
Step 1f. for Motorola MOTOTRBO Repeater:	
Configure Motorola Repeaters for Enhanced GPS Option	
Step 2. for Motorola MOTOTRBO systems:	
Connect the RadioPro IP Gateway to the Control Station Radio	
Step 3. Configure RadioPro IP Gateway	
4. APPENDIX	
4.1 Appendix - IP Addressing	
4.2 Appendix – Radio Interface Cables	
Motorola MOTOTRBO XPR4550/5550	
Motorola MOTOTRBO XPR2500	
5. INDEX	
6. SYSTEM PLANNER TEMPLATE PAGE 1 OF 2	34
RadioPro IP Gateways	
6. SYSTEM PLANNER TEMPLATE PAGE 2 OF 2	35
RadioPro Dispatch Clients	35
RadioPro Solo, Talk, and Mobile Clients	

1 OVERVIEW

This Manual will focus on configuring and using the Motorola MOTOTRBO Radios with the RadioPro System.

Please Refer to the <u>RadioPro IP Gateway Installation Guide</u> for general installation information relevant for all radio system types.

1.1 System Planner Document and Template

The <u>*RadioPro System Planner for Motorola MOTOTRBO S2-61645* includes examples for various MOTOTRBO radio network topologies and should be consulted if the RadioPro Dispatch client is being deployed.</u>

Use the System Planner Template on page 34 of this document in the planning phase of a project to record IP addresses, usernames, passwords, serial numbers, and device names.

1.2 Required Items

1.2.1 Radio Interface Cable

A radio interface cable must be ordered for each IP Gateway from the following table:

Control Station Radio	Cable Part #
Motorola XPR4550/5550	S2-61431
Motorola XPR2500	S2-61916

Other cables are available to connect a dedicated data revert radio. Contact CTI for more information.

1.2.2 Control Station Radio

Each Control Station radio used for voice requires one IP Gateway. The control station radio connected to the IP Gateway **must at least have the minimum firmware version listed below**. Motorola's CPS (Customer Programming Software) software will be needed to configure the control station radio.

Control Station Radio	Minimum Version	Programming Software
Motorola MOTOTRBO in Conventional, IPSC, Cap+, or LCP	1.08.0	CPS
Motorola MOTOTRBO in Connect Plus mode	2.2.0	CPS
Motorola MOTOTRBO Connect Plus Option Board	1.3.0	CPS

1.2.3 Radio Programming Cable

Either the Motorola programming cable or the RadioPro Gateway cable may be used with the CPS software to configure the Control Station radio.

Note: A programming cable connected to the front microphone connector on the Control Station radio may prevent communications to a RadioPro IP Gateway through the Rear Accessory Connector.

WARNING: Remove any other cables from the front microphone connector before attempting to connect and use the RadioPro IP Gateway or a programming PC on the rear accessory connector. The front and rear ports cannot be engaged at the same time.

2. FEATURE AVAILABILITY

Motorola MOTOTRBO Systems

Depending on MOTOTRBO System Type, some features may not be available. Use the following table to determine if a feature discussed in this document is not available.

System Type Feature	Anal og	Conv. Digital	Cap +	IP Site Connect	Linked Cap +	Connect Plus
Voice Dispatch	~	~	~	~	~	~
Text Messaging	-	\checkmark	\checkmark	\checkmark	~	-
GPS Mapping	-	~	\checkmark	\checkmark	~	-
ARS	-	~	\checkmark	\checkmark	\checkmark	-
Private Call	-	~	\checkmark	\checkmark	\checkmark	~
Remote Monitor	-	~	~	~	~	~
Remote Enable/Disabl e	-	~	\checkmark	\checkmark	\checkmark	~
Telephone interconnect Rec/Mon	-	~	\checkmark	\checkmark	~	~

3. CONFIGURATION AND INSTALLATION

Use the steps in the following table to install a RadioPro System. Each step is discussed in detail starting on page **7**. Following installation of the IP Gateway in Step 5, at least one Client must be installed from Step 6.

Step #	Description	Motorola MOTOTRBO
1a	Configure XPR 45xx / 55xx Control Station Radio(s) for Voice	S2-61903, page 7 IP Gateway Installation Guide
1b	Configure XPR 45xx / 55xx Control Station Radio(s) for Data	Same as the previous Step 1a
1c	Configure MOTOTRBO Connect Plus Option Board	S2-61903, page 17 IP Gateway Installation Guide (Required only if Connect Plus.)
1d	Configure Subscriber Radios for ARS, GPS, and TMS	S2-61903, page 18 IP Gateway Installation Guide (Required only for ARS, GPS, or TMS. Not required for Connect Plus.)
1e	Configure XPR 2500 Control Station Radio(s) for Voice	S2-61903, page 22 IP Gateway Installation Guide
1f	Configure MOTOTRBO repeater(s) for Enhanced GPS option	S2-61903, page 26 IP Gateway Installation Guide (Required only for GPS data using Enhanced GPS.)
2	Connect RadioPro IP Gateway to Control Station Radio	S2-61903, page 27 IP Gateway Installation Guide
3	Configure RadioPro IP Gateway(s) using ICU.exe	S2-61903, page 28 IP Gateway Installation Guide

Please Refer to the <u>RadioPro IP Gateway Installation Guide</u> for additional installation steps relevant for all radio system types.

Step 1a. for Motorola XPR 45XX & 55XX (Voice):

Configure Control Station Radio (For Voice) using MOTOTRBO CPS

Theory and the second s		
MOTOTRBO Radio	Programming Cable	
	CPS for	Connect Plus Option Board

Follow the 9 steps in this section to configure Control Station Radios for both Voice and Data operation.

Use MOTOTRBO CPS (Motorola's Customer Programming Software) to configure MOTOTRBO radio parameters using the following steps. (CTI Cable S2-61431 may be used for programming instead of the Motorola programming cable.)

- 1. From the **View** menu, choose **Expert**.
- 2. General Settings folder:
 - a. The **Radio IDs** of the *Voice Radio* and the *Data Revert Radio* that share a RadioPro IP Gateway must be the same.
 - b. Disable GPS.

e Device Licenses Tools Help		
िक्र ⊨) =) ही Open Save Read Write	불료 극료보 ↑료 ☆ ★립 Clone Express Update Register Activate	
50eDispatch_VoiceID_5506[Demo Settings] 🕨 Gene	eral Settings	3
t Categories	General Audio Profile Microphone Battery Saver Alerts	
Configuration	Persistent LRRP Requests Lone Worker Power Up Password and Lock	c
Device Information	Front Programming Password Delete All	
▼ 🗍 General		
Welcome Bitmap	General	1
Language Packs	General	
	Radio Alias Dispatch 1	
General Settings		
General Settings 😥	2a h Radio ID 100	
General Settings Accessories Control Buttons	2a b Radio ID 100	
General Settings Accessories Control Buttons Text Messages	2a b Radio ID 100 GNSS GPS/QZSS	
General Settings 42 Accessories Control Buttons Text Messages Telemetry	2a b Radio ID GNSS GNSS GNSS Private Calls	
General Settings Control Buttons Control Buttons Text Messages Telemetry Menu Menu	2a b Radio ID 100 GNSS GNSS GNSS Frivate Calls G Site Search Timer (sec) 15	
General Settings Control Buttons Control Buttons Text Messages Telemetry Menu Security	2a b Radio ID 100 GNSS GNSS GNSS GNSS GPS/QZSS Private Calls G Site Search Time (see) 15	

c. In the Microphone section, change Analog Mic AGC and Digital Mic AGC to Unchecked.

5550eDispatch_Voice5506[Demo Settings].ctb2 - MOTOT File Device Lineare Table Hele	RBO CPS 2.0 —	×
Image Device Deleties I does meip Open Save Read Write Clor 5550eDispatch_VoiceID_5506[Demo Settings] General St	e Clone Express Update Register Activate	×
Set Categories	General Audio Profile Microphone Battery Saver Alerts Persistent LRRP Requests Lone Worker Power Up Password and Lock	
Bevice Information General Welcome Bitmap Language Packs	Front Programming Password Delete All	^
General Settings Control Buttons	Analog Mic AGC Digital Mic AGC Analog Mic Aga Analog Mic Aga Analog Mic Gain (dB)	
Text Messages Telemetry	Digital Mic Gain (dB) -3	
		-

d. In the **Persistent LRRP Requests** section, verify that **Save** and **Delete** parameters are **Unchecked**.

File Device Licenses Tools Help	~
िया ो में कि	
cti xpr 2500ctb 🔸 General Settings*	×
Set Categories	
Configuration Password and Lock Front Programming Password Delete All	
Device Information OPersistent LRRP Requests	•
Language Packs	
Accessories Octone Worker	
Control Buttons Response Timer (min) 10	
Text Messages Reminder Timer (sec)	1
☐ Menu P Security OP Power Up	
MDC Status	
Desired Channel Zone None	-
Validation Results Warning Messages Search Results Help	

- 3. Accessories folder:
 - a. Change Ignition Sense to On/Off Or Ignition.
 - b. Change Analog Rear Mic Gain to +10db. (This setting is not needed for a *Data Revert Radio*.)
 - c. Change Digital Rear Mic Gain to +10db. (This setting is not needed for a Data Revert Radio.)

Note: The above mentioned 'Rear Mic Gain Settings' may tolerate <u>minor</u> adjustments to optimize mic audio levels.

Warning: Do not set levels outside the range of +9db to +11db, or adverse audio quality will be the result!

d. Change Cable Type to Rear PC and Audio.

\$5550eDispatch_Voice\$506[Demo Settings].ctb2 - MOTOTRBO CPS 2.0 —		×
File Device Licenses Tools Help Tools Help Save Read Write Clone Express Update Register Activate 5550eDispatch.VoiceID.5506[Demo Settings] > Accessories		×
Set Categories		
 Configuration Device Information General Veluce Bitmap Language Packs General Settings Accessories 20 Technetry Technetry Telemetry Menu Security Network Voice Announcement Voice Announcement 		Ē
validation results warning messages bearch results Heip Serial Numb	er: 511TU)	(8748

- 4. Network folder:
 - a. Typically, the factory default Radio IP Address programmed into the Control Station radios 'Network' tab, does not need to be changed. However, it must be on a different subnet than the RadioPro IP Gateway that is connected to it via the Rear Accessory Connector. See *4.1 Appendix IP Addressing* on page *30* for more information.

For radios sharing an IP Gateway, the following rules must be met:

- i. All radios sharing an IP Gateway MUST have the SAME Radio ID.
- ii. All radios sharing an IP Gateway MUST be on DIFFERENT IP subnets.

See <u>RadioPro System Planner for Motorola MOTOTRBO</u> for more details and system diagrams.

iii. The **IP address** of the *Voice Radio* must be LOWER than the **IP addresses** of the *GPS Data Revert Radio(s)*.



b. Change **Forward to PC** to **Via USB**. This step is required for the *Text Message* function when using RadioPro Dispatch, Solo, Talk, or Talk for Mobile client.

\$550eDispatch_Voice5506[Demo Settings].ctb2 - MC	ITOTRBO CPS 2.0 —	×
File Device Licenses Tools Help		
	▋▋ ─▋▋ ↑▋ ☆ ★▋	
Open Save Read Write	Clone Clone Express Update Register Activate	
5550eDispatch_VoiceID_5506[Demo Settings] • Netwo	ork	×
Set Categories	General Radio Network Services Control Station IP Site Connect	
▼	Bluetooth Bluetooth Serial Port Profile Data Routing USB HID Data Routing	
Device Information		
▼ 🛱 General	CAI Group Network 225	-
🗋 Welcome Bitmap	Protected Mode Control Station	
Language Packs	Max TX PDU Size (bytes) 750	
General Settings	Telemetry UDP Port 4008	
Accessories	(4b)	
Control Buttons	Forward to PC Via USB	
Text Messages	Services	-
Validation Results Warning Messages Search Results Help		

c. The ARS Radio ID and TMS Radio ID fields MUST be blank.

♦ 5550e,Dispatch_Voice,5506(Demo Settings).ctb2 - MOTOTRBO CPS 2.0 - □ File Device Licences Tools Help	×
Copen Save Read Write Clone Express Update Register Activate	
S550eDispatch_VoiceID_S506[Demo Settings] Network Set Categories General Radio Network Services Control Station IP Site Connect	×
Configuration Bluetooth Bluetooth Serial Port Profile Data Routing USB HID Data Routi	ng
General General Services	^
Welcome Bitmap Language Packs ARS Radio ID 0 - (Blank)	_
C General Settings C ARS LIDP Port 4005	
Control Buttons TMS Radio ID 0 - (Blank)	
Text Messages TMS IP 0.0.0.0	
Menu User Defined UDP Port 1 0 - Disabled	
User Defined UDP Port 2 0 - Disabled	-
Validation Results Warning Messages Search Results Help	
Serial Number: 511	TUX8748

5. Signaling Systems folder:

This step is required if a RadioPro client will be sending an emergency indication to other radios. (Also, see Step 7d below for required setup of **Channels** folder.)

Right-Click **MDC**, **Digital**, or **Capacity Plus**, depending on type of channel(s) programmed in radio. Then click **Add**, and then **System**. Choose appropriate parameters for the **Signaling System** being added.

5550eDispatch_Voice5506[Demo Settings].ctt File Device Licenses Tools Help	2 - MOTOTRBO CPS 2.0	>
Image: Source of the	료료 -=료료 tale Clone Express Update	☆ ★료 Register Activate
Set Categories 4	G	ieneral
▼		
Device Information	🔿 General	
General Iob Tickets	System Name	Sys1
▼	Alarm Type	Regular
Signaling Systems	Mode	Emergency Alarm
MDC Systems	Revert Channel Zone	None
Quik-Call II Systems	Revert Channel	Selected
Digital Emergency Systems	Contact	None
Capacity Plus Emergency System	5a. ACK Required	
Sys1	Impolite Retries	15
Phone Systems	Polite Retries	5
Contacts	Cycles	3
RX Group Lists	TX Cycle Time (sec)	10
Zone/Channel Assignment	RX Cycle Time (sec)	10
Capacity Plus Lists	TX Interrupt	
	Preamble	Default
Validation Results Warning Messages Search Results	Help	
		Serial Number: 511TUX874

- 6. **Contacts** folder:
 - a. Right-Click **MDC**, **Digital**, or **Capacity Plus**, depending on type of channel programmed in radio. Then click **Add**, **Group Call**, and then enter the **Call ID** (Group ID programmed in radio). This step is required for *Group Calls*.
 - b. Right-Click **MDC**, **Digital**, or **Capacity Plus**, depending on type of channel programmed in radio. Then click **Add**, and then **All Call**. This step is required for the *All-Call* function when using RadioPro Dispatch.

	Licenses Tools Help						
7 Onen	Save Bead	▶ 🖬 🖬 🖬 🚽 · Write Clone Clo	==⊟ ⊟ ↑ ⊟ ne Express Undate	San tariater Activate			
50eDispat	tch_VoiceID_5506[Demo Settin	gs] 🕨 Contacts 🕨 Group ca	ill 56*				
et Categories	. Ф		D	igital			
	Lift Maint 3 🔺						
	Lift Maint 4		Contact	Group call 56			
	Trail/Vhc Mnt 1	A					
	Trail/Vhc Mnt 2	G MDC					
	Trail/Vhc Mnt 3						
	Race Club 1	Quik-Call II					
	Race Club 2						
	Page Chub 2	🔿 Digital					
	Nace Club 5						
	Open 1	Θ					
	Open 1 Open 2	Θ	C-#17	C		_	
	Open 1 Open 2 Open 3	Θ	Call Type	Group Call			
	Open 1 Open 2 Open 3 Events	Θ	Call Type Contact Name	Group Call Group call 56			
	Open 1 Open 2 Open 3 Events Dispatch 1	Θ	Call Type Contact Name Call ID	Group Call Group call 56 56	G		
	Open 1 Open 2 Open 3 Events Dispatch 1 Dispatch 2	Θ	<i>Call Type</i> <i>Contact Name</i> Call ID Route Type	Group Call Group call 56 Sci Regular	R) V		
	Open 1 Open 2 Open 3 Events Dispatch 1 Dispatch 2 Dispatch 3	⊖ 6a)	<i>Call Type</i> <i>Contact Name</i> Call ID Route Type Call Receive Tone	Group Call Group call 56 5¢ Regular	()		
	Open 1 Open 2 Open 3 Events Dispatch 1 Dispatch 3 Dispatch 4	⊖ 6a	Call Type Contact Name Call ID Route Type Call Receive Tone Ring Style	Group Call Group call 56 56 Regular No Style	×		
4	Alee Vulo 3 Open 1 Open 2 Open 3 Events Dispatch 1 Dispatch 2 Dispatch 4 Dispatch 4	⊖ 6a	Call Type Contact Name Call ID Route Type Call Receive Tone Ring Style Text Message Alert Tone	Group Call Group call 56 5¢ Regular No Style Repetitive	× •		

7. Channels folder:

a) For each Digital channel, change the **ARS** parameter to **Unchecked**.



- b) If this is a *Data Revert* control station radio, and if the repeater for this channel has the *Enhanced GPS Option* enabled, then **enable** the **Enhanced GPS** parameter. If this is a *Voice* control station, then change the **Enhanced GPS** parameter to **Unchecked**.
- c) If Enhanced GPS is enabled in step b. above, then set the Window Size to 5 normally or 6, if using the selection for Privacy Type. Note that the Window Size parameter is system-wide and must also be set in the Data Revert Repeater(s) to match this value. See the tables below for more details.

In the following *Enhanced GPS Radio Update Tables*, the number of radio GPS updates is indicated based on selection criteria of **Update Interval** and **Window Reservation**.

RadioPro IP Gateway In

Enhanced GPS Radio Update Tables

Window Size = 5, Privacy Type must be None

Window Reservation Update Interval	90% (Recommended)	75%	60%	45%
30 sec	90	75	60	45
1 min	180	150	120	90
2 min	360	200	240	18
4 min	720	600	480	360
8 min	1440	1200	960	720

Window Size = 6, Privacy Type is Basic or Enhanced

Window Reservation Update Interval	90% (Recommended)	75%	60%	45%
30 sec	74	62	49	37
1 min	148	124	98	74
2 min	296	248	196	148
4 min	592	496	392	296
8 min	1184	992	784	592

- d) For each Digital channel, enable **Compressed UDP Data Header** by choosing **MSI**.
- e) If this control station radio will be used ONLY to collect GPS location data using a Data Revert repeater slot, then change the **RX Only** parameter to **Checked**.

\$5550eDispatch_Voice5506[Demo Settings].ctb2 - MOTO	ITRBO CPS 2.0	- 0	×
File Device Licenses Tools Help			
Den Save Read Write Ck	La -=La La ★La ☆ one Clone Express Update Regist	+⊟ Activate	
5550eDispatch_VoiceID_5506[Demo Settings] + Zone +	Data 🕨 Zone Items 🕨 Channel44*		×
Set Categories Review R	Gene	ral RX/TX	
	Compressed UOP Data Header Tet Message Type Channel Inibia Tet Message Type Channel Inibia Tet Message Tet Message	MG Propretary Propretary Peduat Pedu	Ì
Capacity Plus Lists	RX	TX	
			-
Validation Results(3") Warning Messages Search Results Help			
		Serial Number: 511T	UX8748

 f) This step is required if a RadioPro Dispatch client will be sending an emergency indication to other radios. (Also see Step 5a above for required setup of Signaling Systems folder.) In the TX section, choose an Emergency System (for digital channels) or Signaling System (for analog channels).

This step is required for the **All-Emergency** function when using RadioPro Dispatch client.



g) In the **TX** section for each Digital channel, change the **Data Call Confirmed** parameter to **Unchecked**.



Additional CPS Setup for Connect Plus Channels

In a Connect Plus radio, the Connect Plus Option Board is configured with the various Talk Groups for the radio system. The Connect Plus Option Board CPS must be used to configure these various Talk Groups, or "Zones". However, for a radio that is used as a control station, since the Connect Plus Option Board cannot pass this information out the rear connector, an application (such as RadioPro Dispatch, Solo, Talk, or Talk for Mobile) does not have knowledge of these Connect Plus "Zones" (talk groups).

Further, MOTOTRBO CPS is used to configure a radio for only one digital "Channel", i.e., "Transportation". Control of the talk group selection is passed to the Option Board by enabling two options described in Step 7h below.

In order to allow selection of a talk group from a RadioPro client, the following configuration must be performed for a Control Station radio using MOTOTRBO CPS.

- h) In the **Channels** folder, add a quantity of channels to match the number of **zones** configured in the Connect Plus Option Board. In the following screen shot, **Channel1**, **Channel2**, etc., have been added to match the number of "Zones" configured in the Connect Plus Option Board. The Channel Names are not important since these names are not transferred out of the rear connector of the control station radio; only the generic names of "Channel1", "Channel2", etc. will be sent to a RadioPro client.
- i) For each of the added channels, **enable** both the **Option Board** and **Option Board Trunking** parameters. It is not necessary to change any other parameters.



After writing the CPS configuration to the control station radio, the radio will send messages to the RadioPro IP Gateway and indicate that the radio has been programmed for the "additional" talk groups.

ICU.exe can be used to view and configure the IP Gateway for zones and channels as follows:

- i. Use the **Zones/Channels** tab in ICU.exe to view Channel names as they will appear in RadioPro clients. By default, they will be generically named "Channel1", Channel2", etc.
- ii. If it is desired to display more descriptive channel names, right-click on a channel name to edit it.
- iii. If it is desired that a channel or zone is not displayed in a RadioPro client, click on the zone or channel, and then **uncheck** the **Visible** parameter near the bottom of this tab page.
- iv. Write the new configuration to the RadioPro IP Gateway by choosing **Write Settings** from the **Gateway** menu.

8. Writing CPS Parameters to Radio:

After writing the CPS parameters to the MOTOTRBO Control Station radio, remove the programming cable from the Control Station radio. A programming cable connected to the front mic connector on the Control Station radio will prevent communications to a RadioPro IP Gateway from the Rear Accessory Connector. Therefore, when a cable is connected to the Rear Accessory Connector to connect a RadioPro IP Gateway or a PC (during programming), ensure that the programming cable has been disconnected from the front mic connector.

Summary of MOTOTRBO CPS Setup for Control Station Radios

Folder	Sub-Folder	Parameter	Step #	Setting
General Settings	Main	Radio ID	2a.	Voice Radio and Data Revert Radio that share an IP Gateway must have the same Radio ID
	Main	GPS	2b.	Disable
	Microphone	Analog Mic AGC	2c.	Disable
	Microphone	Digital Mic AGC	2c.	Disable
	Persistent LRRP	Save	2d.	Disable
	Persistent LRRP	Delete	2d.	Disable
Accessories	Main	Ignition Sense	За.	"On/Off" Or "Ignition"
	Main	Analog Rear Mic Gain	3b.	+ 10dB: May need to be adjusted for appropriate audio level transmitted from RadioPro client. Data Revert radio does not require this.
	Main	Digital Rear Mic Gain	Зс.	+ 10dB: May need to be adjusted for appropriate audio level transmitted from RadioPro client. Data Revert radio does not require this.
	Main	Cable Type	3d.	"Rear PC and Audio"
Network	Main	Radio IP	4a.	For radios sharing an IP Gateway, the IP address of the Voice Radio must be lower (and in a different subnet) than the IP addresses of the Data Revert Radios. An IP Gateway and all radios connected to it must have unique subnets.
	Radio Network	Forward to PC	4b.	"Via USB"
	Services	ARS Radio ID	4c.	Leave this field blank (ARS disabled)
	Services	TMS Radio ID	4c.	Leave this field blank (TMS disabled)
Signaling Systems	MDC, Digital, or Capacity Plus	System	5a.	Choose appropriate parameters for the signaling system being added for All-Emergency function. Data Revert radio does not require this.
Contacts	MDC, Digital, or Capacity Plus	add Group Call	6a.	Add Group Call contact for the Group Call function. Data Revert radio does not require this.
		add All Call	6b.	Add All-Call contact for the All-Call function. Data Revert radio does not require this.
Channels	Digital	ARS	7a.	Disable for all channels
	Digital	Enhanced GPS	7b.	Enable if this control station is a data revert radio
	Digital	Window Size	7c.	5 if Privacy Type is "None" 6 if Privacy Type is "Basic" or "Enhanced"
	Digital	Compressed UDP Data Header	7d.	"MSI" for all channels
	Digital or Analog	RX Only	7e.	Enable for a data revert radio that will ONLY receive GPS location data from a data revert repeater slot.
	Digital or Analog	Emergency System	7f.	Choose appropriate Emergency ID for All- Emergency function. Data Revert radio does not require this.
	Digital	Data Call Confirmed	7g.	Disable for all channels
	Connect Plus	Option Board	7h.	Enable for all Connect Plus talk groups. Data Revert radio does not require this.
	Connect Plus	Option Board Trunking	7i.	Enable for all Connect Plus talk groups. Data Revert radio does not require this

Step 1b. for Motorola XPR 45XX & 55XX (DATA):

Configure Control Station Radio (For Data) using MOTOTRBO CPS

SAME AS THE PREVIOUS STEPS

Follow the previous process starting at 1a on page 7

Step 1c. for Motorola XPR 45XX / 55XX Connect Plus Radios :

Configure MOTOTRBO Connect Plus Option Board

Contraction of the second seco		
	Programming Cable	
MOTOTRBO Radio	g	
	000 (

CPS for Connect Plus Option Board

If this Control Station radio is being used in a Connect Plus system, then the Connect Plus Option Board must also be configured. Use Connect Plus Option Board CPS version R01.30.100 (or later) to configure the Option Board using the following steps. (CTI Cable S2-61431 may be used as a programming cable in lieu of the Motorola programming cable.)

- 1. **General -> Menu** folder:
 - a. In the Contacts section, enable the following parameters: Call Alert, Manual Dial, Radio Check, Remote Monitor, Radio Enable, and Radio Disable.
 - b. In the **Call Log** section, **enable** the following parameters: **Missed, Answered, and Outgoing**.
- 2. Write the CPS parameters to the Connect Plus Option Board. CTI Cable S2-61431 may be used as a programming cable in lieu of the Motorola programming cable.



3. Remove the programming cable from the Control Station radio. A programming cable connected to the front mic connector on the Control Station radio will prevent communications to a RadioPro IP Gateway from the Rear Accessory Connector. Therefore, when a cable is connected to the Rear Accessory Connector to connect a RadioPro IP Gateway or a PC (during programming), ensure that the programming cable has been disconnected from the front mic connector.

Folder	Section	Parameter	Step #	Setting
Menu	Contacts	Call Alert	1a.	Enable
		Manual Dial	1a.	Enable
		Radio Check	1a.	Enable
		Remote Monitor	1a.	Enable
		Radio Enable	1a.	Enable
		Radio Disable	1a.	Enable
	Call Log	Missed	1b.	Enable
		Answered	1b.	Enable
		Outgoing	1b.	Enable

Step 1d. for Motorola MOTOTRBO Subscriber Radios:

Configure Subscriber Radios for ARS, GPS, and TMS



This step is required if *ARS*, *GPS*, or *Text Messaging Service* is needed at the RadioPro client (such as Dispatch, Solo, Talk, or Talk for Mobile). This step is not required for a Connect Plus system, since these functions are not available using a Control Station interface.

Use **MOTOTRBO CPS** (Motorola's Customer Programming Software) to configure MOTOTRBO radio parameters using the following steps.

- 1. From the **View** menu, choose **Expert**.
- 2. **General Settings** folder:
 - a. Change the **GNSS** parameter to **Checked**.



b. In the **Persistent LRRP Requests** section, verify that **Save** and **Delete** parameters are **Unchecked**.

\$550eDispatch_Voice5506[Demo Settings]	.ctb2 - MOTOTRBO CPS 2.0	-	- 🗆 X
File Device Licenses Tools Help			
Den Save Read Wr	Image: Image	☆ ★量 Register Activate	
5550eDispatch_VoiceID_5506[Demo Settings]	General Settings*		×
Set Categories	General Audio Profile Microphone Battery Saver Alerts Front Programming Password Delete All	Persistent LRRP Requests Lone Worker Power Up	Password and Lock
Device Information	Persistent LRRP Requests		-
General	2b Save	□ Ng	
	🕞 Lone Worker		
	Response Timer (min)	10	50
	Reminder Timer (sec)	10	
Accessories	Power Up		
Control Buttons	MDC Status		
< ────	Desired Channel Zone	None	
	Desired Channer	Mark and some some	-
Validation Results(2*) Warning Messages Search R	esults Help		

3. Network folder:

- a. Enter the **ARS Radio ID**. This should be the Radio ID of the Control Station radio that is connected to the RadioPro IP Gateway.
- b. Enter the **TMS Radio ID**. This should be the Radio ID of the Control Station radio that is connected to the RadioPro IP Gateway.

\$5550eDispatch_Voice5506[Demo Settings].ctb2 - MOTOTRBO CPS 2.0	- 0	×
File Device Licenses Tools Help		
Image: Deen Ima		x
Set Categories General Radio Network Services Control Station IP Site Connect Bluetooth Blueto	le Data Routing	
Accessories Control Buttons Text Messages	80	-
ARS UP Part 4005	00 00	
Validation Results(2*) Warning Messages Search Results Help		

4. **Channels** folder:

Make the following changes for each digital channel that will be used to transmit GPS coordinates:

- a. Set Scan/Roam List to None. (ARS and GPS will not function if Scan is enabled with a Scan List.)
- b. Set **ARS** to **On System Change**.
- c. For *Data Revert* channels, and if the repeater for this channel has the *Enhanced GNSS Option* enabled, **enable** the **Enhanced GNSS** parameter.

\$550eDispatch_Voice5506[Demo Settings].ctb2 - MOTOT	RBO CPS 2.0		-		×
File Device Licenses Tools Help					
	-==⊟⊟ +=	☆ ★⊟			
Open Save Read Write Clon	Clone Express Update	Register Activate			
5550eDispatch_VoiceID_5506[Demo Settings] Zone	lata 🕨 Zone Items 🕨 Channel44*				×
Set Categories #	Gene	eral RX/TX			
Configuration*	Repeater/Time Slot	1			-
Device Information	Phone System	None		•	
General	ARS	On System Change			
Job Tickets	Enhanced GNSS Window Size	Y			
Systems	Privacy				
Contacts	& d Privacy Alias	None			
RX Group Lists	Fixed Privacy Key Decryption	No			
 Zone/Channel Assignment 	Ignore Rx Clear Voice/Packet Data	No			
▼ C Zone	RAS Alias	RAS Key1			
 MAIN 	Option Board				
	Option Board Trunking	No			
Channel Pool	Allow Talkaround	No			
🔳 Data 🔅	IP Site Connect				
🖿 Site1	MOTOTRBO Link	No			
▶ 🗋 Scan Lists 👻 🗸 🤙	Per-Site RSSI Threshold (dBm)	- 108			
	Messaaina Delav (ms)	60			
	Compressed UDP Data Header	MSI			*
Mildeline Devile (24) Minster Manager Course Devile Hale					
validation Results(2") warning Messages Search Results Help			al Maria la a		10740
		Sen	ai Number	r: 511103	48748

- d. If Enhanced GPS is enabled in step c. above, then set the Window Size to either 5 or 6, depending on the selection for Privacy Type. Note that the Window Size parameter is system-wide and must also be set in the Data Revert Repeater(s) to match this value. See the tables on page 17 for more details.
- e. Set the Compressed UDP Data Header parameter to MSI
- f. In the TX section of this channel, change GPS Revert to one of the following:
 If this radio will use a *Data Revert* repeater slot to send GPS data to a RadioPro client, then change this parameter to the appropriate Channel Name.
 If there is no *Data Revert* repeater slot, then change this parameter to Selected
 - If there is no *Data Revert* repeater slot, then change this parameter to **Selected**.
- g. Disable the **Data Call Confirmed** parameter by changing it to **Unchecked**. If this parameter is greyed-out, then ensure that the **Enhanced GPS** parameter is disabled (**Unchecked**).

\$550eDispatch_Voice5506[Demo Settings]	.ctb2 - MOTOTRBO CPS 2.0	- 0	\times
File Device Licenses Tools Help Open Save Read W 5550eDispatch_VoiceID_5506[Demo Settings] Void Void Void	ii	☆ ★届 Register Activate	×
Set Categories 7	General	RX/TX	
 Configuration* Device Information General Job Tickets Job Tickets Contacts RX Group Lists Zone/Channel Assignment Zone/Channel Assignment Site1 Site1 Scan Lists 	Decode Tone 4f	Internet strengt one inter- Tri Interruption - Tri Interruption - Tri Interruption - Tri Interruption - Tri Interruption - Interruption	Ĵ
Validation Results(2*) Warning Messages Search R	esults Help		

5. Write the CPS parameters to the MOTOTRBO Control Station radio.

Summary of MOTOTRBO CPS Setup for Subscriber Radios

Folder	Sub-Folder	Parameter	Step #	Setting
	Main	GPS	2a.	Enable (if applicable)
General Settings	Persistent LRRP	Save	2b.	Disable
	Persistent LRRP	Delete	2b.	Disable
Network		ARS Radio ID	За.	Must match Radio ID of control station connected to IP Gateway
		TMS Radio ID	3b.	Must match Radio ID of control station connected to IP Gateway
Channels	Digital	Scan/Roam List	4a.	"None" (ARS and GPS will not function if Scan is enabled)
		ARS	4b.	"On System Change"
		Enhanced GPS	4c.	Enable if this control station is a data revert radio
		Window Size	4d.	5 if Privacy Type is "None" 6 if Privacy Type is "Basic" or "Enhanced"
		Compressed UDP Data Header	4e.	"MSI"
		GPS Revert	4f.	If no Data Revert: "Selected" If Data Revert: "Channel Name" of Data Revert Channel
		Data Call Confirmed	4g.	Disable

Step 1e. for Motorola XPR 2500 Radio:

Configure Control Station Radio (For Voice) using MOTOTRBO CPS



Use this section to configure Control Station Radios for Voice.

Use MOTOTRBO CPS (Motorola's Customer Programming Software) to configure MOTOTRBO radio parameters via the following steps.

Note: (*CTI Cable S2-61916 may be used as a programming cable in place of the Motorola programming cable.*)

- 6. From the **View** menu, choose **Expert**.
- 7. General Settings folder:
 - a. The **Radio IDs** of both the *Voice Radio* and *Data Revert Radio* that share a RadioPro IP Gateway must be the same.
 - b. In the Microphone section, be sure to Uncheck the Analog Mic AGC and Digital Mic AGC.

🔷 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0			\times
File Device Licenses Tools Help			
Open Save Read Wr	법 대료 -=結법 수급 ☆ ★급 Ite Clone Express Update Register Activate		
cti xpr 2500ctb 🕨 General Settings			×
Set Categories 4	General Audio Profile Microphone Battery Saver Alerts Persistent LRRP Requests	Lone Worker	
▼ □ Configuration	Power Up Password and Lock Front Programming Password Delete All		
Device Information		_	
	Trill Enhancement		
Language Packs	Microphone		
General Settings 🏟	Analog Mic AGC		-
Accessories	Digital Mic AGC	_	
Control Buttons	Analog wie Colin (co) = [4		-
Text Messages	Digital Mic Gain (dB) 7	8	
🗅 Menu	VOX Sensitivity Level 2		
C Security	Hot Mic Source Rear Accessory	· ·	
Network	Battery Saver		
Voice Announcement	Preamble 2		-
Systems			
4 Contacte	Alerts		
	Disable All Tones		-
Validation Results Warning Messages Search Result	ts Help		

c. In the **Persistent LRRP Requests** section, verify that **Save** and **Delete** parameters are **Unchecked**.

🔷 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0 — 🗆	×
File Device Licenses Tools Help 	
cti xpr 2500ctb ▶ General Settings	×
Set Categories Image: Contract of Cont	íp
Device Information Device Information Visual Indication On	
□ Language Packs	_
Accessories Control Buttons	
() Lone Worker	
Validation Results Warning Messages Search Results Help	_

- 8. General -> Accessories folder:
 - a. Change Ignition Sense to On/Off Or Ignition.
 - b. Change Analog Rear Mic Gain to +10db. (This setting is not needed for a *Data Revert Radio*.)
 - c. Change Digital Rear Mic Gain to +10db. (This setting is not needed for a Data Revert Radio.)

Note: The above mentioned 'Rear Mic Gain Settings' may tolerate <u>minor</u> adjustments to optimize mic audio levels.

Warning: Do not set levels outside the range of +9db to +12db, as severe audio quality will result!

File Device Licenses Tools He	0	- 0
Open Save Read) II IIII -=IIII ↑II ☆ ★II Write Clone Clone Express Update Register Activate	
ti xpr 2500ctb 🕨 Accessories		
Set Categories	General Bluetooth GPIO Physical Pins Hore	1 & Lights
▼	*	
Device Information	General General	
🔻 🗍 General	Ignition Sense On/Off Or Ignition	•
🗋 Language Packs	Ignition Sense Auto Power Down Timer (min) 0	
General Settings	Handset	
🗅 Accessories 🔅	Analog Accessory Mic Gain (d) 10	8
Control Buttons	Digital Accessory Mic Gain (db. 10	
	RX Audio Type Filtered Squelch	

9. **Network** folder:

Typically, the factory default IP Address programmed into the XPR 2500 Control Station radio **does not need to be changed**. However, when it is connected to a RadioPro IP Gateway via the Rear Accessory Connector, it must be on a different subnet than that gateway. See *4.1 Appendix - IP Addressing* on page *30* for more information.

For radios sharing an IP Gateway, the following conditions must be met:

- i. All radios sharing an IP Gateway MUST have the SAME Radio ID.
- ii. All radios sharing an IP Gateway MUST be on DIFFERENT **IP subnets**.

See <u>RadioPro System Planner for Motorola MOTOTRBO</u> for more details and system diagrams.

iii. The **IP address** of the *Voice Radio* must be LOWER than the **IP addresses** of the *GPS Data Revert Radio*(*s*).

🗞 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0	- C) X
File Device Licenses Tools Help		
Open Save Read	rite Clone Clone Express Update Register Activate	
cti xpr 2500ctb 🕨 Network		×
Set Categories #	General Radio Network Services Control Station	
Configuration Device Information	(General	î.
General	Radio IP 192.168.10.1	_
Language Packs	Accessory IP 192-100-102	_
General Settings	USB DNS-SD Interval 90 sec	
Accessories		
Control Buttons 👻	Radio Network	_
	CAI Network 12	-
'alidation Results Warning Messages Search Re	ults Help	_

iv. Change **Forward to PC** to **Via USB**. This step is required for the **Text Message** function when using RadioPro Dispatch, Solo, Talk, or Talk for Mobile client.

🔷 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0	-		\times
File Device Licenses Tools Help			
Image: Dependence of the sector of the s			
cti xpr 2500ctb 🕨 Network			×
Set Categories General Radio Network Services Control Station			
	8	l	Î
General Settings Forward to PC Via USB	¥		
Accessories			
Control Buttons ARS Radio ID 0 - (Blank)	8		-
ARS IP 0.0.00			-
Validation Results Warning Messages Search Results Help			

The ARS Radio ID and TMS Radio ID fields MUST be blank.

ile Device Licenses Tools	Help						
Open Save Rea	L) II nd Write	Clone Clone Express	↑ Update	☆ ★目 Register Activate			
i xpr 2500ctb 🕨 Network					•		
et Categories	.		General Radio N	etwork Services Contro	l Station		
 Configuration Device Information 	î		ARS Radi	o ID 0 - (Blank)			
▼ 🗍 General			Al	RS IP 0.0.0.0			
 General Language Packs 			ARS LIDE	R5 IP 0.0.0.0 Post 1005		8	
 General Language Packs General Settings 			AF ABS LIDP TMS Radi	RS IP 0.0.0.0 Port 1995 o ID 0 - (Blank)		32 33	
 General Language Packs General Settings Accessories 			ARS LIDE TMS Radi	RS IP 0.0.00 Port 1000 o ID 0 - (Blank) 15 IP 0.0.00		88 88	
Ceneral Ceneral Canguage Packs General Settings Accessories Control Buttons	•		AFS HOP TMS Radi 7M TMS UDP	25 IP a.a.a.0 Port 4005 10 ID 0 - (Blank) 15 IP a.a.a.0 Port 4001		00 00	

10. Signaling Systems folder:

This step is required, if a RadioPro client will be sending an emergency indication to other radios. Also, see Step 7 below for required setup of **Channels** folder.)

Right-Click **MDC** or **Digital** depending on type of channel(s) programmed in radio. Click **Add**, and then click **System**. Choose appropriate parameters for the **Signaling System** being added.

🔷 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0					-		×
File Device Licenses Tools Help	fite Clone	-=믋료료 Clone Express	↑⊟ Update	☆ ★量 Register Activate			×
Set Categories				General			
Configuration	🔿 General						î
▶ 🛅 General			System Name	Sys1			
▼ □ Systems			Alarm Type	Disabled			
Signaling Systems			Mode	Emergency Alarm			
Outly Call II Surfaces		A	Revert Channel Zone	None			
			Revert Channel	Selected			
Svel di			Contact	None			
► Contacts			Impolite Retries	15			
RX Group Lists			Polite Retries	5			
Zone/Channel Assignment			Cycles	3			
Scan Lists			TX Cycle Time (sec)	10			
4 — •			RX Cycle Time (sec)	10			
Validation Results Warning Messages Search Resu	ults Help						

11. **Contacts** folder:

- a. Right-Click **MDC** or **Digital**, depending on type of channel programmed in radio. Then click **Add, Group Call**, and then enter the **Call ID** (Group ID programmed in radio). This step is required for *Group Calls*.
- b. Right-Click MDC or Digital, depending on type of channel programmed in radio. Click Add, and then click All Call. This step is required for the *All-Call* function when using RadioPro Dispatch.

🔷 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0		-	\times
File Device Licenses Tools Help			
[] · · · · · · · · · · · · · · · · · · ·	∎ 届 ≔≣ 届 ↑ 届 ★ 届 Clone Clone Express Update Register		
cti xpr 2500ctb 🔸 Contacts 🔸 Digital*			×
Set Categories R	MDC Quik-Call II Digital		
Systems Signaling Systems			•
MDC Systems	Θ		
Quik-Call II Systems	Call Type Group Call		
Digital Emergency Syste	Contact Name Digital	-	
Contacts	Call ID 40003	8	
- Contacts	Call Receive Tone		
Digital 😥	king style No style	<u> </u>	_
KX Group Lists	Text Message Alert Tone Repetitive		
Zone/Channel Assignment	💮 Digital		Į
Validation Results Warning Messages Search Results Hel	P		1

12. Channels folder:

a. For each Digital channel, change the **ARS** parameter to **Disabled**.

🔷 cti xpr 2500ctb.ctb - MOTOTRBO CPS 2.0		_	
File Device Licenses Tools Help	H H H H H H H H H H H H H H H H H H H		
cti xpr 2500ctb ► Zone ► Zone1 ► Zone Items ►	Channel1*		×
Set Categories *	General RX/TX		
 Configuration* Device Information General Systems Systems MDC Systems MLIK-Systems MLIK-Call II Systems Out-Call Systems Contacts Contacts 	Color Code 1 Extended Range Direct Mode Disabled Disabled Disabled Disabled Disabled Incound Color Code I Outbound Color Code I Reporter Turnking No Option Board No No		Ì
Validation Results Warning Messages Search Results	Help		

13. Write the CPS parameters to the XPR 2500 Control Station radio.

 Writing CPS Parameters to Radio: After writing the CPS parameters to the XPR 2500 Control Station radio, remove the programming cable from the Control Station radio.

Warning: You must remove the programming cable from the front connector and power cycle the Control Station radio, to prevent communication failure with the RadioPro IP Gateway on the Rear Accessory Connector.

NOTE: The XPR 2500 Radio does not offer any GPS functionality. Therefore, the Data-revert operation cannot be utilized when using this model radio.

Folder	Sub-Folder	Parameter	Step #	Setting
General Settings	Main	Radio ID	7a.	Voice Radio and Data Revert Radio that share an IP Gateway must have the same Radio ID
	Microphone	Analog Mic AGC	7b.	Disable
	Microphone	Digital Mic AGC	7b.	Disable
	Persistent LRRP	Save	7c.	Disable
	Persistent LRRP	Delete	7c.	Disable
Accessories	Main	Ignition Sense	8a.	"On/Off" Or "Ignition"
	Main	Analog Rear Mic Gain	8b.	+ 10dB: May need to be adjusted for appropriate audio level transmitted from RadioPro client. Data Revert radio does not require this.
	Main	Digital Rear Mic Gain	8c.	+ 10dB: May need to be adjusted for appropriate audio level transmitted from RadioPro client. Data Revert radio does not require this.
Network	Main	Radio IP	9a.	For radios sharing an IP Gateway, the IP address of the Voice Radio must be lower (and in a different subnet) than the IP addresses of the Data Revert Radios. An IP Gateway and all radios connected to it must have unique subnets.
	Radio Network	Forward to PC	9a.	"Via USB"
	Services	ARS Radio ID	9b.	Leave this field blank (ARS disabled)
	Services	TMS Radio ID	9b.	Leave this field blank (TMS disabled)
Signaling Systems	MDC, Digital, or Capacity Plus	System	10.	Choose appropriate parameters for the signaling system being added for All-Emergency function. Data Revert radio does not require this.
Contacts	MDC, Digital, or Capacity Plus	add Group Call	11a.	Add Group Call contact for the Group Call function. Data Revert radio does not require this.
		add All Call	11b.	Add All-Call contact for the All-Call function. Data Revert radio does not require this.
Channels	Digital	ARS	12a.	Disable for all channels

Summary of MOTOTRBO CPS Setup for Control Station Radios

Step 1f. for Motorola MOTOTRBO Repeater:

Configure Motorola Repeaters for Enhanced GPS Option

If RadioPro Dispatch will map GPS data for more than 25 radios per repeater slot, then it is recommended to dedicate one or more Data Revert slots for this GPS data. Further, repeaters with Data Revert slots should have the "Enhanced GPS Option" enabled. Contact Motorola for ordering information for this option.

Configure the **Enhanced GPS Option** in the repeater using Motorola installation information. Set the **Window Size** parameter in the repeater to **5** or **6**, depending on the setting for **Privacy Type**.

See the **Window Size** parameter on Page 12. This parameter must match the **Window Size** parameter in the Subscriber radios.

Step 2. for Motorola MOTOTRBO systems:

Connect the RadioPro IP Gateway to the Control Station Radio



Note: Before continuing, ensure that the programming cable has been disconnected from the front mic connector.

See Section 4.2 Appendix – Radio Interface Cables

Motorola MOTOTRBO XPR4550 on Page 31 for interface cable details.

Connect the IP Gateway to the Control Station Voice radio using the following steps:

- 1. Connect the USB connector of cable S2-61431 to any USB port on the rear of the RadioPro IP Gateway module. In addition, for this Voice Control Station radio, connect the DE-9 side of cable S2-61431 to the DE-9 connector on the rear of the RadioPro IP Gateway module.
- 2. Connect the other end of the cable to the Rear Accessory Connector on the MOTOTRBO Voice radio.

Connect the RadioPro IP Gateway to the Data Revert Control Station radios using the following steps:

- 3. Connect the USB connector of cable S2-61664 to any USB port on the rear of the RadioPro IP Gateway module.
- 4. Connect the other end of the cable to the Rear Accessory Connector on the MOTOTRBO Data radio.

Note: Since the IP Gateway has not yet been configured with appropriate IP parameters, do NOT connect the IP Gateway to an IP network.

Step 3. Configure RadioPro IP Gateway



Note: Before continuing, ensure that Wi-Fi connection has been disabled in the PC or Laptop being used to configure the IP Gateway.

The RadioPro ICU (IP Configuration Utility) must be used to configure each RadioPro IP Gateway with the necessary parameters. Configuration of each RadioPro IP Gateway must be performed before connecting the IP Gateway to a local area network.

Configure RadioPro IP Gateway settings:

Please Refer to the <u>RadioPro IP Gateway Installation Guide</u> for information about how to connect to the IP Gateway and for settings that apply to all radio systems.

Configure MOTOTRBO specific settings: (Once connected to the IP Gateway with the ICU Utility)

Mototrbo Radio tab

Use the **ARS Subscriber Refresh Rate** to set the time between successive ARS (Automatic Registration Service) updates for subscribers. The default value is **0.5** hours.

Other parameters on this tab are factory-default values and match the default parameters programmed into the Control Station radio. Under normal circumstances, these values **should not be altered**.

Zones/Channels Aliases tab

This list is downloaded from the connected MOTOTRBO radio and will be displayed in a RadioPro Dispatch client's radio controller. A **Zone** or **Channel** can be re-named by clicking on it, then editing its name. If a name cannot be edited, be sure that the MOTOTRBO radio is connected and powered on. In Capacity Plus systems, the MOTOTRBO radio adds an additional Zone to the list called **Channel Pool**. In most cases, this should be hidden from the Dispatcher by clicking on this **Channel Pool**, then removing the check mark in the **Visible** box.

File	Gateway			100		Dealer		long
Chernetan	Accounts	Network	License Ne	y	- COLOO	110000	Zones / Charmes A	lases GFS
		CAI Netw	ork	12	*			
	CA	Group Netw	ork i	225	4			
		ARS UDP F	Port 4	005	-			
		TMS UDP F	Port 4	007	0			
	Subscriber /	ARS refresh r	ze	0.5	1	hours		
_								

General	Accounts Network License Key Mototho Radio Zones / Channels Alases GPS	
Z	anes / Channels	_
	- CTI Digital	
	Vable	

GPS tab

If mapping locations of subscribers is required, place a check mark next to **Enable GPS Updates**. Since this option will increase the amount of radio transmissions, leave this unchecked if GPS mapping is not needed.

Then choose a **Minimum Poll Rate** to set the minimum time between successive GPS updates. Increasing this parameter will decrease the number of GPS updates, thereby allowing more channel bandwidth for voice conversations.

CU ICU	- 0 - X	
File Read Device Help		
198.144.49.99 00:22:4D:9E:CE:78		^
File Gateway		
General Accounts Network License Key Mototrbo Radio Zones / Channels Aliase	IS GPS	
Enable GPS updates		
* ARS must be enabled for this feature to work.		
Minimum poli rate: 30 🚖 seconds		
		1
Awas names for each zone and channel. This is for display purposes only. (Fight click to e	at an alias)	
· · · · · · · · · · · · · · · · · · ·	F.	

Refer to the <u>RadioPro IP Gateway Installation Guide</u> for instructions on how to connect the RadioPro IP Gateway to an IP Network, configure Port Forwarding, and installing RadioPro Clients.

4. APPENDIX

4.1 Appendix - IP Addressing

Normally, the factory default IP Address programmed into the Control Station radio **should not be changed**. However, it must be on a different subnet than the RadioPro IP Gateway that is connected to it via the Rear Accessory Connector.

For example, if the network's Subnet Mask is 255.255.255.0, then at least one of the first three octets of the MOTOTRBO radio IP address must be different than the RadioPro IP Gateway module IP address.

The following **IS NOT** a valid IP addressing scheme since both devices are on the **SAME** subnet:

	Control Station Radio	RadioPro IP Gateway
IP Address:	192.168.12 .2	192.168.12 .3
Subnet Mask:	255.255.255.0	255.255.255.0

The following **IS** a valid IP addressing scheme since the devices are on **DIFFERENT** subnets:

	Control Station Radio	RadioPro IP Gateway
IP Address:	192.168. 12 .2	192.168. 10 .3
Subnet Mask:	255.255.255.0	255.255.255.0

For additional information see Cisco's "IP Addressing and Subnetting for New Users", Document ID 13788, located at: http://www.cisco.com/en/US/tech/tk365/technologies_tech_note09186a00800a67f5.shtml

4.2 Appendix – Radio Interface Cables

Motorola MOTOTRBO XPR4550/5550

Voice Radio

Interface Cable # S2-61431

Signal Name	IP Gateway DE-9 Pin #	IP Gateway USB Pin #	XPR Radio J2 Accessory Connector
Tx+ (Mic audio to radio) Transformer isolated, 600 ohms	4	-	11 (Yel)
Tx- (Mic audio to radio)	5	-	16 (Blk)*
Rx+ (Speaker audio from radio) Transformer isolated, 600 ohms	8	-	14 (Gry)
Rx- (speaker audio from radio	9	-	16 (Blk)*
Accessory ID	6	-	5 (Blu)
12v Accessory	2	-	25 (Red)
Power Gnd	1	-	8 (Brn)
USB Data +	-	3	1 (Grn)
USB Data -	-	2	2 (Wht)
USB 5Vdc	-	1	3 (RED)
USB Gnd	-	4	4 (Blk)

* These signal wires are pinned together.

This interface cable requires DE-9 Male to connect to the IP Gateway female connector.

Data Radio

Interface Cable # S2-61664

Signal Name	IP Gateway DE-9* Pin #	XPR Radio J2 Accessory Connector
USB Data +	3	1
USB Data -	2	2
USB 5Vdc	1	3
USB Gnd	4	4

Motorola MOTOTRBO XPR2500

Voice Radio

Signal Name	IP Gateway DE-9* Pin #	IP Gateway USB Pin #	XPR Radio J2 Accessory Connector
Tx+ (Mic audio to radio) Transformer isolated, 600 ohms	4 (Yell)		5
Tx- (Mic audio to radio)	5 (Blck)		1
Rx+ (Speaker audio from radio) Transformer isolated, 600 ohms	8 (Grey)		11
Rx- (speaker audio from radio)	9 (Blck)		1
12v Accessory	2 (Red)		10
Power Ground	1 (Brwn)		7
USB Data +		3	17 (Grn)
USB Data -		2	18 (Wht)
USB 5Vdc		1	19 (RED)
USB Gnd		4	20 (Blk)

* Interface cable requires DE-9 Male to connect to the IP Gateway female connector.

5. INDEX

Α

Analog Mic AGC, 7, 22 Analog Rear Mic Gain, 8, 23 ARS Radio ID, 9, 19 ARS Subscriber Refresh Rate, 28 Automatic Registration Service, 28

С

Channel Pool, 28 Compressed UDP Data Header, 12, 20 Connect Plus, 14, 17 Contact us, 2 CPS Accessories folder, 8, 23 Channels folder, 11, 20, 25 Contacts folder, 10, 25 Expert, 18, 22 General Settings folder, 7, 17, 18, 22 Network folder, 9, 19, 23 Signaling Systems folder, 10, 13, 24 Writing CPS Parameters to Radio, 14

D

Data Call Confirmed, 13, 20 Data Revert Radio, 7, 9 Default Gateway, 34 Digital Mic AGC, 7, 22 Digital Rear Mic Gain, 8, 23

Ε

Enable GPS Updates, 29 Enhanced GNSS, 20 Enhanced GPS, 11, 12, 20, 26

F

Forward to PC Via USB, 9, 24

G

GNSS, 18 GPS, 7 GPS Revert, 20

ICU, 28, 34 GPS tab, 29 Zones/Channels Aliases tab, 28 Ignition Sense, 8, 23 IP Addressing, 30, 34 IP Configuration Utility, 28

Μ

I

Minimum Poll Rate, 29

Ν

NTP Server IP, 34

0

Option Board Trunking, 14 Overview, 4

Ρ

Persistent LRRP Requests, 8, 19, 22

R

Radio Interface Cables, 4, 27, 31 Radio Programming Cable, 4 Rear Accessory Connector, 9, 14, 17, 23, 25, 27, 30 Rear Mic Gain, 8, 23

S

Scan/Roam List, 20 Subnet Mask, 30, 34 System Planner, 34 System Planner Template, 34, 35

Т

TMS Radio ID, 9, 19

W

Writing CPS Parameters to Radio, 25

6. SYSTEM PLANNER TEMPLATE

PAGE 1 OF 2

RadioPro IP Gateways

Parameters Common to all IP Gateways

ICU.exe Admin Password for ICU.exe, default is "admin"	Dispatch Client Password for Dispatch client connections default is "user"	NTP Server IP Address Network Time Protocol

Parameters Unique to each IP Gateway

GPS = GPS Data Revert. Each IP Gateway supports 1 Voice & 1 GPS Data Radio.	Name IP Gateway name has max 2 lines, 24 chars per line	Serial #	IP Address	Subnet Mask	Default Gateway
IP Gateway A	Example Gateway Name	1234	192.168.56.22	255.255.255.0	192.168.56.1
Voice Radio A0	Example Radio VR A0		192.168.10.1	255.255.255.0	
GPS Radio A1	Example Radio GPS A1		192.168.11.1	255.255.255.0	
IP Gateway B					
Voice Radio B0					
GPS Radio B1					
IP Gateway C					
Voice Radio C0					
GPS Radio C1					
IP Gateway D					
Voice Radio D0					
GPS Radio D1					
IP Gateway E					
Voice Radio D0					
GPS Radio D1					
IP Gateway F					
Voice Radio D0					
GPS Radio D1					
IP Gateway G					
Voice Radio D0					
GPS Radio D1					
IP Gateway H					
Voice Radio D0					
GPS Radio D1					
IP Gateway J					
Voice Radio E0					
GPS Radio E1					

If additional IP Gateways are needed, copy this page.

See next page for System Planner Template Page 2 of 2

6. SYSTEM PLANNER TEMPLATE

PAGE 2 OF 2

RadioPro Dispatch Clients

See <u>RadioPro Dispatch Installation and Configuration Guide S2-61785</u> for more information.

Parameters Common to all Dispatch clients

Parameters Unique to each Dispatch client

Administrator Password for Edit Mode	PC Name	IP Address	License #	Licensed IP Gateway Connections

RadioPro Solo, Talk, and Mobile Clients

See <u>RadioPro Solo Client Installation Guide S2-61568</u>, for more information.

Parameters Common to all Talk Clients

Administrator Login Name	Administrator Password
Not Editable	default is "admin"
admin	

User Login Name default is "user"	User Password default is "user"

If additional Solo, Talk, or Mobile client logins are needed, copy this page.