

ConSEL PLUS – Capacity Max

Installation Guide



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1. Introduction

1.1 The content of this document

This guide is designed for administrators who are configuring evaluation and proof-of-concept deployments of MOTOTRBO Dispatch over IP solutions. The document provides instructions for installing ConSEL PLUS and outlines the essential steps needed to configure communication with a MOTOTRBO Capacity MAX system.

1.2 About ConSEL PLUS

ConSEL PLUS stands out as a comprehensive suite of sophisticated applications meticulously crafted for MOTOTRBO digital two-way radio networks. Within this suite, ConSEL PLUS assumes a pivotal role in efficiently overseeing and orchestrating the intricate web of voice and data communication paths that span across network endpoints. This robust platform goes beyond conventional capabilities by delivering a unified graphical dispatcher workbench interface that seamlessly integrates with the complete spectrum of workforce fleet management tasks, providing a user-friendly and comprehensive solution for enhanced operational control and efficiency.





1.3 Contact us

Service & Support department – +48 32 42 95 112

Upon connecting with our Technical Support department, you will be redirected to the appropriate specialists who will endeavor to resolve the issue.

2. Consistuent parts of the System

2.1 ConSEL PLUS Radio Server

Radio Server is software designed for the Microsoft Windows operating system, with the purpose of communicating with Mototrbo systems. Its role is to facilitate data transmission between the Mototrbo system and dispatcher consoles. Another important task is to aggregate and store transmitted information from radio systems in databases. It is responsible for ensuring smooth and, consequently, secure voice communication.

The Radio Server is capable of operating in basic server mode without the need for an attached redundant server, as well as serving as a redundant server in relation to the primary server.





2.2 ConSEL PLUS Dispatch Console

ConSEL PLUS Dispatch Console Client stands as a Windows software application designed to establish a connection with the ConSEL PLUS Radio Server, offering operators an interface for seamless interaction with individual radio network subscribers and groups of subscribers. In a typical setup, each ConSEL PLUS Dispatch Console is linked to a specific ConSEL PLUS Radio Server.

In the event of a ConSEL PLUS Radio Server failure, the ConSEL PLUS Dispatch Console demonstrates its resilience by automatically transitioning to the redundant server specified next in the prioritized list. This intelligent failover mechanism ensures uninterrupted communication, assuring operators of a smooth transition and continued functionality even in the face of server-related challenges. This dual-server configuration enhances the reliability and robustness of the overall ConSEL PLUS system, providing a dependable solution for critical communication needs.

3. Building the Radio Communication Network with Dispatching Software

While strategizing the development of a radio system in conjunction with a dispatch console built on Capacity Max, it becomes imperative to verify the necessity of implementing redundancy for the radio system components such as CMSS, Presence Notifier, and MNIS Data Gateway. The consideration of





redundancy introduces two primary topological options, each bearing distinct advantages and implications.

Ensuring system reliability and fault tolerance, this pivotal decision influences the overall architecture, shaping the robustness and resilience of the deployed radio infrastructure. By thoroughly evaluating the specific requirements and operational priorities, clients can make choices that align with the objectives of the radio communication network, contributing to a seamless and dependable system implementation.

3.1 Simple One Server Topology



Figure 1: One Server Topology





3.2 Redundant Server Topology

It's beneficial to have a backup ConSEL PLUS server with a redundant Capacity Max system, enhancing system security and maintaining continuity. ConSEL PLUS allows configuring both redundant ConSEL PLUS and parameters for smooth switching between Capacity Max components.

Such a system should have:

- 2 x CMSS with Trunked Controller
- 2 x VRC Gateway
- 2 x MNIS Data Gateway
- 2 x ConSEL PLUS Radio Server







Figure 2: Redundant Server Topology





4. Installation

4.1 Requirements

ConSEL is a fully scalable solution that can be adapted to the user's requirements, capabilities and expectations.

ConSEL software modules can be installed and run on a single computer, or they can be installed and configured to run in a client-server configuration.

The choice of system installation and configuration depends on user requirements and the expected number and size of ICT systems to be integrated.

ConSEL is developed using best programming practices and we make every effort to ensure that it has the lowest possible use of system resources.

ConSEL software can be installed and run on computers running Windows operating systems (Windows 10, Windows 11) in 64- bit versions.

The database system for the ConSEL software is created and managed using a relational database management system.

A dispatcher system built on ConSEL in its basic version, for a small dispatching system (2-3 operator consoles, up to 15-20 users/monitored objects) can be run

on a standard office computer with a Pentium i3 class processor, 4 GB RAM, 500 GB HDD, equipped with a sound card (in case of using voice).

For more complex systems (several integrated radio communication systems, several or more dispatch consoles; e.g.: more than 500 users), primarily due to the need to correctly estimate the amount of data to be processed and stored, it is advisable to consult the hardware requirements.

ConSEL Plus Client minimum requirements tested for 1 module (system), 1 dispatcher, 10 objects

Minimum requirements – ConSEL PLUS client version		
Operating system	X64: Windows 10, Windows 11, Windows Server 2019	
CPU	1 GHz	
RAM	4GB	
HDD	64 GB Type Flash	
Network card	Yes	
Sound Card	Yes	
Additional Equipment	speakers, microphone, monitor, keyboard, mouse	

ConSEL Plus Client recommended requirements tested for 10 modules (systems), 10 dispatchers, 1000 objects

Recomend	ed requirements – ConSEL PLUS client version
Operating system	x64: Windows 10, Windows 11, Windows Server 2019

CPU	Intel Core i5
RAM	8GB
HDD	256 GB Type Flash
Network card	Yes
Sound Card	separate microphone input and speaker output
Additional Equipment	speakers, microphone, monitor (1920x1080), keyboard, mouse

ConSEL Plus Radioserver minimum requirements tested for 1 module (system), 1 dispatcher,

10 objects

Minimum requirements - Server (IPSC, Capacity Plus, MultiSite CP)				
Onerating system	x64: Windows 10, Windows 11, Windows			
	Server 2019			
СРИ	Intel Core i5			
RAM	8GB			
HDD	256 GB Type Flash			
Network card	Yes			

ConSEL Plus Radioserver recomended requirements tested for 10 modules (systems), 10

dispatchers, 1000 objects

Recomended requirements - Server (IPSC, Capacity Plus, MultiSite CP)					
Operating system	x64: Windows 10, Windows 11, Windows				
	Server 2019				
СРО	Intel Core i5				
RAM	16GB				
HDD	512 GB Type Flash				
Network card	Yes				

4.2 Installation and basic configuration of ConSEL PLUS Radio Server

After downloading the latest version of ConSEL PLUS, initiate the installation process and follow the on-screen instructions displayed on the monitor.

4.2.1 Installation steps

1. Choose language

Język ir	stalacji	×
	Wybierz język używany podczas instalacji:	
	English	~
	OK Anuluj	

2. Accept the License Agreement

3. Select Destination Location

러고 Setup - System ConSEL PLUS v7.0.77.0	—		×
Select Destination Location Where should System ConSEL PLUS v7.0.77.0 be installed?			(In)
Setup will install System ConSEL PLUS v7.0.77.0 into the following folder.			
To continue, click Next. If you would like to select a different folder, click Browse.			
C:\Program Files\Aksel		Browse	
At least 27,2 MB of free disk space is required.			
Back	ext		ancel

4. Choose ConSEL PLUS – Radioserver Capacity Max

5. Choose instalation versions

If you have purchased license keys, you can choose 'Load purchased license keys.' In this case, you will be prompted to specify the location of the key for loading. If you plan to install the demo version for application testing, select 'demo version', which will generate a 30-day demo key.

6. If you wish to use raster maps, please check the 'Raster map calibration module' option

Setup - System ConSEL PLUS v7.0.77.0	—		×
Select Additional Tasks Which additional tasks should be performed?		((n)
Select the additional tasks you would like Setup to perform while installing System Con then dick Next.	ISEL PLUS V	7.0.77.0	,
Raster map calibration module			
Back	Next	Car	ncel

7. Following the above steps, the installation should proceed

4.2.2 Basic Configuration Steps

After the installation, you will be prompted to perform the basic configuration of the radio server.

1. Features tab

AKSEĽ sp. z o.o.

🎲 Capa	city Max	configuratio	n			_	×
Features	System	Advanced	Recorder	Privacy	Rep.pos.		
🔽 Dadio	concola						
Raulo		CDS atc.)					
	services (and married	_				
Record	nd sound	and message	-				
Redu		dupamic grou	una in tha h	ackarour	d		
	amming (uynamic groi	ups in the b	ackgrour	ia		
	nostics (Al	n to the date	hace				
	o not writ	e to the data	ibase				
	age map						
			Save con	figuratio	n		

- Radio console Access to the radio console
- Data services (GPS etc.) The ability to access data such as GPS information or messages
- **Record sound and message** Recording and saving calls and messages
- **Redundancy of connections** If you have a redundant radio infrastructure, you can utilize this option
- **Programming dynamic groups in the background** The capability to program dynamic groups

- Diagnostics (ATIA) Access to data from Advanced Telemetry Information Access
- Coverage map Allows enabling the coverage map feature
- **AMG** It allows for the retrieval of data shared in the API by other information systems
- 2. System tab

Features	System	Advanced	Perorder	Privacy	Pen nos		
reatures		Auvanceu	Recorder	Flivacy	Kepipusi		
VRC Gate	way IP Ad	Idress	Port	Local port	System	n ID	
I			56000	56000		_	
Dedicated	I AMBE po	orts			_		
MNIS IP A	Address		Port	MNIS ID			
127.0.0.1			55000				
Trunk Cor	ntroller He	ost	Port				
			50000				
Text port	Messag	je type		Individual	voice call	type	
4007	MSI		\sim	FOACSU		\sim	
Presence	Notifier II	P Address	Port				
			50015				
ATIA Inter	face		Port				
			51112				

The required fields for completion:

- VRC Gateway IP Address
- System ID
- MNIS IP Address
- Trunk Controller Host
- Individual Voice Call Type (OASCU, FOASCU)
- Presence Notifier IP Address

If the ports used in the radio infrastructure are different from the default ones, they should also be changed.

3. Recorder tab

🔅 Capa	city Max	configuratio	n			—	\times
Features	System	Advanced	Recorder	Privacy	Rep.pos.		
Recorder	console	ID					
Range of	private r	adios					
	Sta	rt range			Endr	ange	
Group nu	umbers						
			Grou	ıp			-
			Save con	figuratio	n		

The required fields for completion:

- Recorder console ID The console ID through which the recorder will save conversations on the radio server
- Range of private radios check in SAC in RM (Radio Management) range of radios (lowest and highest value of ID)
- Group numbers groups that have been added in RM as TG

4. Privacy tab

If audio stream encryption is applied in the system, it is also necessary to add it in the privacy tab.

The available encryption includes enhanced encryption and AES256. In both cases, it is necessary to provide the key ID and the encryption key value.

4.3 Installation and basic configuration of ConSEL PLUS Console Client

After installing the ConSEL PLUS radio server, you can install the ConSEL PLUS Console Client. To do this on the machine that will serve as the dispatcher console, you have two installation options:

- a. The installation file is located in the "Aksel" folder within the directory where the radio server is installed. Its name is **ConSELPLUSClientSetup.exe**. This file should be copied and executed on the machine where you intend to install the client.
- b. In a web browser, enter: **[radio server IP address]:5595**, which will initiate the client download.

Please note that the ConSEL PLUS Console Client must be in the same IP network as the server!

4.3.1 The installation of the ConSEL PLUS client

1. Run the client installation file

📥 ConSELPLUSClientSetup

2. Chooose language

Język ir	nstalacji	×
	Wybierz język używany podczas instalacji:	
	English	\sim
	OK Anuluj	

3. Accept License Agreement

طع Setup - ConSEL PLUS - client 7.0.77.0	-		×
License Agreement Please read the following important information before continuing.			
Please read the following License Agreement. You must accept the terms of this agreemen continuing with the installation.	nt before		
SOFTWARE LICENSE TERMS AND CONDITIONS			
 PRELIMINARY CLAUSE These Software license terms and conditions - hereinafter referred to as `License terms and conditions' set the rules that govern the use of software by the Licensee. The terms and have been provided in an electronic form, whereas the declaration on admowledgement acceptance of the License terms and conditions constitutes a necessary condition for inst Program. 	nd condition and talling of f	is the	
II. DEFINITIONS The terms used in these License terms and conditions shall have the following meaning Program' – an independent and original work in the form of a computer program, while to protection specified in: 	s: h is subje am opyrights the Licer	and	
I accept the agreement			
I do not accept the agreement			
Nex	(t	Ca	ancel

4. Select Destionation Location

Setup - ConSEL PLUS - client 7.0.77.0	—		×
Select Destination Location Where should ConSEL PLUS - dient be installed?			
Setup will install ConSEL PLUS - client into the following folder.			
To continue, dick Next. If you would like to select a different folder, dick Browse.			
C:\Program Files\Aksel\ConSEL		Browse	
At least 82, 1 MB of free disk space is required.			
Back	xt	Ca	ancel

5. Select Additional Tasks

When installing the client, you can select additional tasks:

- Launch after installation ConSEL PLUS client will be launched after installation.
- **Server address configuration** during the installation, the server address configuration window will be displayed.
- Auto-run component (advanced) an option thanks to which the client application will be automatically launched at system startup and after it is shut down.
- **Install in log mode** during the installation, a window with the configuration of the log server address will be displayed.
- 6. Type the Configuration Server Address

-	
Next	Cancel

The configuration address is the IP address of the machine where the radio server is installed.

If the radio server requires encryption of data transmission (not related to encrypting conversations), check this option for later entry of the password used in the radio server when enabling encryption.

- 7. After clicking 'Next,' the client will be installed, and application will run.
- 4.3.2 Basic configuration of ConSEL PLUS Console Client
 - 1. Setting up Administrators login and password

ConSEL PLUS			×
	🕘 Con S		
C	onSEL Administrator cre	ation required	
	login		
	password		
	repeat password	Enter	

Create an administrative account by entering a login and password, and confirm the information.

2. After this step, the user will be prompted to re-enter the previously created login and password.

 If all previous steps are completed successfully, After installing ConSEL PLUS, a shortcut on the desktop will be created. After pressing it twice, the ConSEL PLUS console client will start.

In order for the system to work properly, the dispatcher's console must be additionally configured. The Console Administration window is available from the main program menu

- 4. After opening the 'Radio Consoles Configuration' window, you should configure:
 - Radio server address
 - Module type (in our case, Capacity Max)
 - Requests handling (what our console should handle)

4 Cont	figuration of radiose	erver modules					- 🗆 X
Basic	Basic configurati	on: 1	⊠ Radio co Module nar	onsole 🗹 Recorder ne:	🗹 Data		Add a radioserver module
r Max	127.0.0.1		Radioserver	r address			Remove the radioserver module
apacity	basic		\sim SckClient m	odule No. ひ			Remove all modules
cional Ca			✓ Playing devi ✓ Recording devi	ice device			Import from CSV
Addit			✓ External PTT	Г			Export to CSV
			✓ Pressing PT				Save changes
			Exclusion m				
	Module type:	-	-	-			
	MotoTRBO	🔘 NAI IPSite	🔘 NAI CP (M)	O NAI SFR	🔾 IPSite		
		RActivity		Capacity Max			
	Requests handlin	ıg:					
	Voice call			🔲 Module with out			
	Position repo	rting, diagnostics	and telemetry	🔲 Global intercom			
	Sending mes	sage					Channel dictionaries editors
	🔲 Disable conta						External PTTs config
1	I					∇	

In the next step, moving to the 'Capacity Max' tab, enter the Radio Console ID and the default talkgroup. If privacy is enabled in the system, you can set it to 'default from radioserver.'

🐴 Co	nfiguration of radioserver modules		- 🗆 ×	
Additional Capacity Max Basic	Capacity Max configuration: 900 Console radio ID 10 Default talkgroup Allow interruption of an incoming of Privacy: O Default from radioserver O None Forced key d: •	call Alarm state: Receiving	Add a radioserver module Add a radioserver module Remove the radioserver module Remove all modules Import from CSV Export to CSV Save changes Channel dictionaries editors External PTTs config	
	-			

Important! The Radio Console ID must match the one set in the Radio Management dispatcher contact. The default group must also match one of the existing groups in Radio Management.

Additional information regarding the configuration of radio panels and other components of ConSEL PLUS software can be found in additional documents prefixed with 'HowTo,' as well as in the user manuals.

5. Critical configuration elements

1. Recorder Console ID

To enable the use of the recorder, you need to specify the appropriate ID of the recording console in the radio server under the Modules tab.

Seneral	Modules	Advanced	Remote	License		
odules:				Litteriot		
))					×	+ 🙂
vpe:						
Max Mo	dule				~	
options:						
System	Advance	d Record	er Privacy	Rep.pos		
r console	ID					
f private	radios					
St	tart range			En	d range	
umbers						
umbers		0	Group			v
umbers			iroup			
	ieneral odules:) ype: Max Mo options: System r console f private Si	eneral Modules odules:) max Module options: System Advance r console ID f private radios Start range	eneral Modules Advanced dules:) ype: Max Module options: System Advanced Records r console ID f private radios Start range	eneral Modules Advanced Remote dules:) ype: Max Module options: System Advanced Recorder Privacy r console ID f private radios Start range	eneral Modules Advanced Remote License odules:) ype: Max Module sptions: System Advanced Recorder Privacy Rep.pos r console ID f private radios Start range En	ieneral Modules Advanced Remote License idules:) Max Module iptions: System Advanced Recorder Privacy Rep.pos. r console ID f private radios Start range End range

Remember to set the appropriate parameter in the 'Voice Recording Site' column in Subscriber Access Control in the Radio Management tool for this ID.

1003

1

🗢 Device ID 보 Enabled on System 😕 Queue Priority 🈕 Allowed Sites 🗢 Telephone Gateway Siti 🈕 Voice Recording Site 🕫

<All Sites>

None

MINIS VIDO

Dev 3

Console

Device Type 🔺 🍽 Radio Alias 🖶 Serial Number 🖶 Physical Serial Number

2. HeGPS in ConSEL PLUS

To use HeGPS, on the CoSEL PLUS side, in the radio server application, go to the 'Modules' tab, then 'Pos. Rep.' (Position Reporting). In the bottom part of the window, in the 'Reporting type' column, select 'CSBK Enhanced.' On the Radio Management side, set CSBK as the GPS type and configure the geographic coordinates for SITE.

3. Enhanced GNSS Window Size

To properly set the Enhanced GPS Window Size parameter in Radio Management, first, during the configuration of GPS position reporting on the object (Properties - right mouse button - edit), use a calculator to calculate the window size value.

After determining the window size, set this parameter in Radio Management.

4. Private Call Type

In both the 'module' section of the Radio Server Configuration and in Radio Management, set the type of private calls (FOASCU, OACSU). The parameter must be the same in both cases.

5. Dispatcher and radio contact

To both send messages to the console and make private calls, add two contacts with the same ID in Radio Management. One contact is the dispatcher contact, and the other is the radio contact. In this setup, messages from the radio will be sent to the dispatcher contact, while private messages will be made to the radio contact.

