



Version 9.2

# SmartPTT PLUS

## System Requirements

December 2017



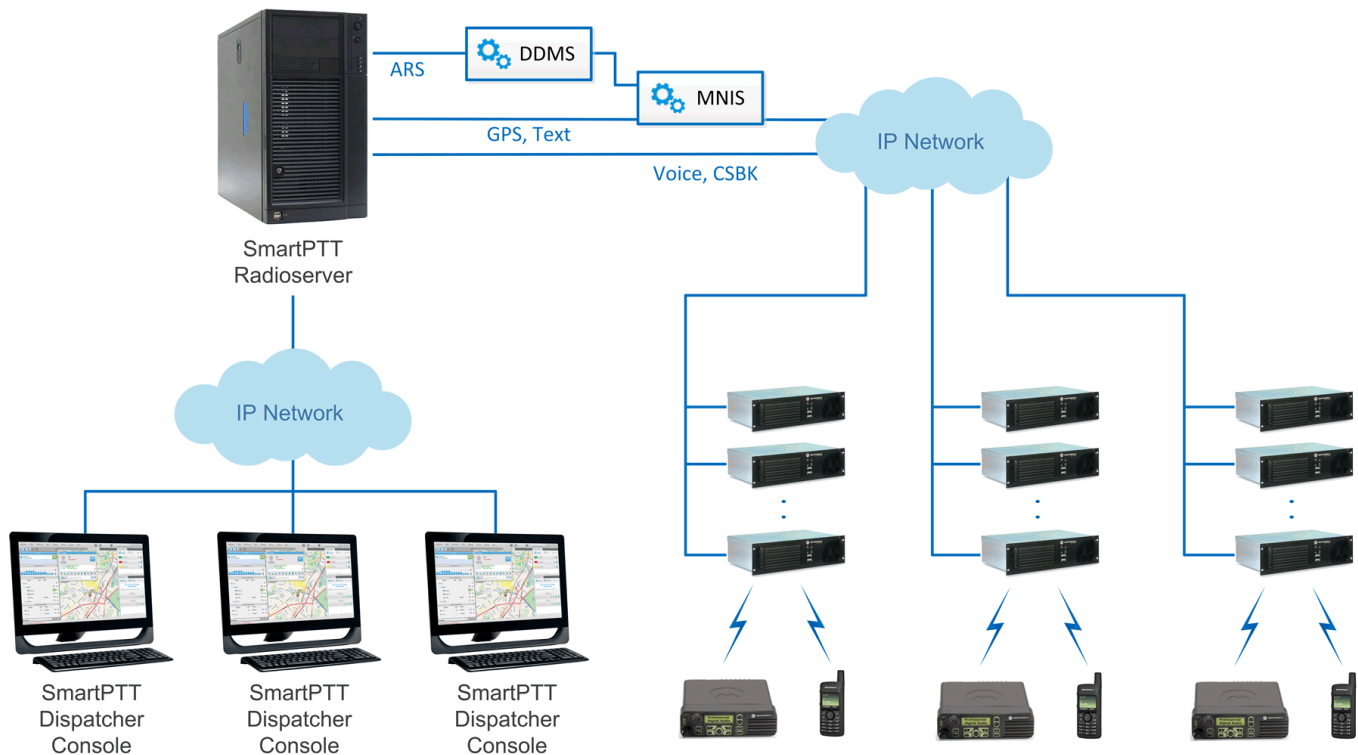
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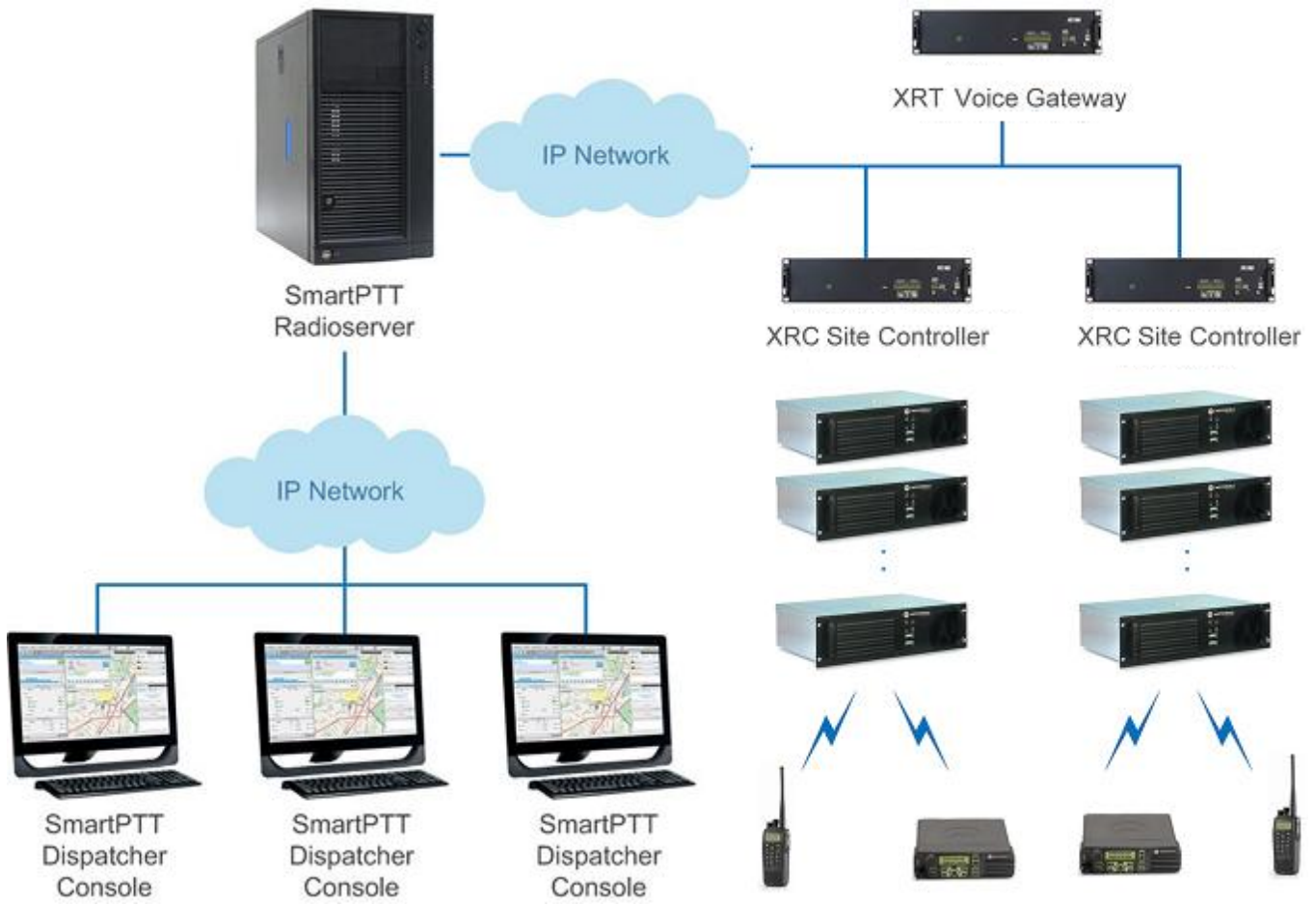
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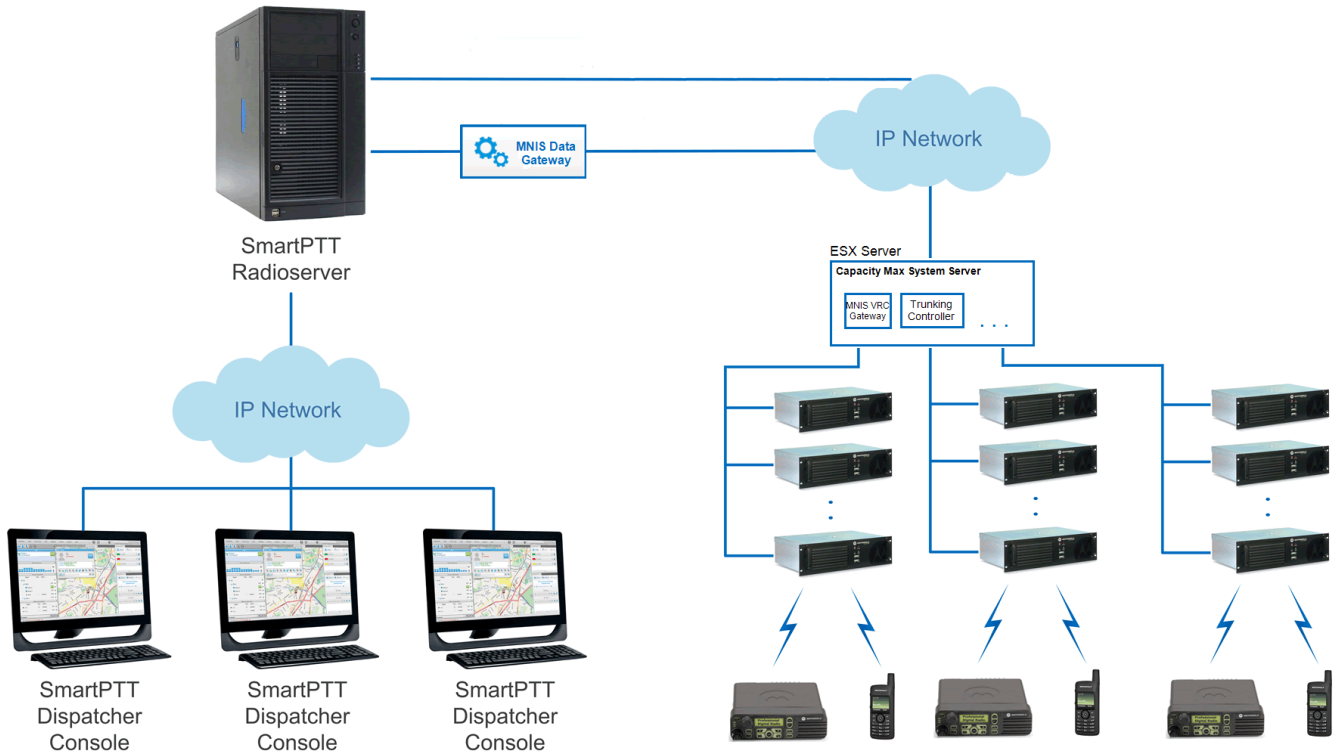
# 1 Introduction

SmartPTT-based dispatching system can include several dispatch consoles, SmartPTT Radioservers and communication channels connecting them. Thus, technical requirements are related to the following system components:

- SmartPTT Dispatcher
- SmartPTT Radioserver Configurator
- Communication channels connecting SmartPTT Dispatcher and SmartPTT Radioserver, and communication channels connecting SmartPTT Dispatcher and MOTOTRBO repeaters and control stations







However, the number of the required components can increase. This depends on the product type and required functionality.

## 2 Minimum Hardware Requirements for SmartPTT Dispatcher

<b>Operating system:</b>	Windows® 7 Professional SP1, 32-bit and 64-bit. Windows® 8 Enterprise or 8.1, 32-bit and 64-bit. Windows® 8.1, 32-bit and 64-bit. Windows® 10 Professional, 32-bit and 64-bit.
<b>Processor:</b>	Intel® Core i5 for systems with less than 80 radios. Intel® Core i7 for systems with more than 80 radios or activated GPS/Monitoring/Indoor services.
<b>Memory:</b>	4 GB of RAM or better for systems with less than 80 radios. 8 GB of RAM or better for systems with more than 80 radios or activated GPS/Monitoring/Indoor services.
<b>Hard disk:</b>	7.2K RPM SATA 40GB.
<b>Video card:</b>	1GB RAM PCI-E or similar CPU-integrated for systems with voice transmission only. 2GB RAM PCI-E or similar CPU-integrated for systems with activated GPS/Monitoring/Indoor services.
<b>Monitor:</b>	1366 × 768 pixel or better. 16-bit color. 23" or larger LCD monitor recommended for full-featured console position.
<b>USB ports:</b>	At least 6 USB ports (2.0 or 3.0).
<b>Sound card:</b>	Internal PCI-E Sound Blaster Audigy RX. External Sound Blaster X-Fi Go.
<b>Audio recording device:</b>	A microphone or a headset.
<b>Playback device:</b>	Headphones or a headset.
<b>Network adapter:</b>	An Ethernet adapter.
<b>Pointer:</b>	A mouse or a trackball.
<b>Keyboard:</b>	A standard keyboard.

### NOTE

These are standard system requirements for SmartPTT Dispatcher. They can change depending on the configuration, complexity and/or workload of the system.

## 3 Minimum Hardware Requirements for SmartPTT Radioserver

<b>Operating system:</b>	Windows® 7 Professional SP1, 32-bit and 64-bit. Windows® 8 Enterprise or 8.1, 32-bit and 64-bit. Windows® 8.1, 32-bit and 64-bit. Windows® 10 Professional, 32-bit and 64-bit. Windows® Server 2008. Windows® Server 2012 R2. Windows® Server 2016.
<b>Processor:</b>	Intel® Core i5 for systems with less than 80 radios. Intel® Core i7 for systems with more than 80 radios or activated GPS/Monitoring/Indoor services.
<b>Memory:</b>	4 GB of RAM or better for systems with less than 80 radios. 8 GB of RAM or better for systems with more than 80 radios or activated GPS/Monitoring/Indoor services.
<b>Hard disk:</b>	7.2K RPM SATA 40GB.
<b>USB ports:</b>	At least 6 USB ports (2.0 or 3.0) if control stations are used.
<b>Sound card:</b>	Multi-channel AUDIO-Delta 1010LT, MAYA44XTe, ICON Digital Cube Pro USB.
<b>Network adapter:</b>	An Ethernet adapter.

### NOTE

These are standard system requirements for SmartPTT Radioserver. They can change depending on the configuration, complexity and/or workload of the system.

## 4 Networking Requirements

### 4.1 Radio Server Connection to Repeater

#### Communication Channels

##### Bandwidth

NAI Networks: 19 kbps (min.) per channel for incoming/outgoing voice.  
14 kbps (min.) per channel for incoming/outgoing data.  
+ 42 kbps per repeater if monitoring is active.

Connect Plus: 19 kbps (min.) per channel for incoming/outgoing voice.  
14 kbps (min.) per channel for incoming/outgoing data.  
+ 42 kbps per repeater if monitoring is active.

Capacity Max: 19 kbps (min.) per channel for incoming/outgoing voice.  
14 kbps (min.) per channel for incoming/outgoing data.  
+ 42 kbps per repeater if monitoring is active.

**Relative Packet Loss:** <5% (max.) for intelligible speech.  
<15% (max.) for distorted speech.

**Network Delay:** 90 ms (max.)

**Network Jitter:** 90 ms (max.)



## 4.2 Radio Server Connection to Client

### Communication Channels Bandwidth

#### for Data Transmission:

2.5 kbps (min.) per 1 GPS sending.

3 kbps (min.) per 1 monitoring column.

+ 42 kbps per repeater if monitoring is active.

### Communication Channels Bandwidth

#### for Voice Transmission:

13 kbps (min.) per channel if DMR codec is used.

100 kbps (min.) per channel if G.711 codec is used.

+ 42 kbps per repeater if monitoring is active.

#### Relative Packet Loss:

<5% (max.) for intelligible speech.

<15% (max.) for distorted speech.

#### Network Delay:

90 ms (max.)

#### Network Jitter:

90 ms (max.)

## 4.3 Radio Server Connection to PBX

### Communication Channels

<b>Bandwidth:</b>	125 kbps (min.) per channel if G711 codec is used. 60 kbps (min.) per channel if G729/Speex codec is used.
<b>Relative Packet Loss:</b>	<5% (max.) for intelligible speech. <15% (max.) for distorted speech.
<b>Network Delay:</b>	60 ms (max.)
<b>Network Jitter:</b>	60 ms (max.)

## 5 MOTOTRBO Hardware System Requirements

**Table 1** – Versions of MOTOTRBO Hardware.

Regions	Mobile Radio	Firmware Version	Portable Radio	Firmware Version	Repeater	Firmware Version
APAC	XiR M82xx series  XiR M86xx series	R01.12.11 or higher  R02.30.10 or higher	XiR P82xx series, XiR E8608/8600  XiR P8668/8660, XiR P8628/8620,  XiR P8608/8600, SL1K	R01.12.11 or higher  R02.30.10 or higher	XiR R8200	R02.30.12 or higher
EA	DM 1000, 2000 series  DM 3000 series  DM 4000 series	R01.00.10 or higher  R01.12.11 or higher  R2.6 or higher	DP 3000 series  DP 4000 and SL series	R01.12.11 or higher  R2.6 or higher	DR3000	R2.6 or higher
LACR	DGM 6100+/6100, DGM 4100+/4100  DGM 8000 series	R01.12.11 or higher  R02.30.10 or higher	DGP 6150+/6150, DGP 4150+/4150, DGP 8050 ELITE  DGP 8550/5550, DGP 8050/5050	R01.12.11 or higher  R02.30.10 or higher	DGR 6175	R02.30.12 or higher

It's recommended to use firmware version of MOTOTRBO radios and repeaters not lower than R2.6. For Connect Plus network, the XRC Controllers and XRT Gateway should have firmware

version 1.5 or higher. Only Capacity Max 2.7 is fully supported by the current software. Reliable operation with earlier version of MOTOTRBO firmware is not guaranteed.

**NOTE**

MOTOTRBO repeaters in one network must have same firmware versions. The firmware versions of the repeaters and MOTOTRBO Network Interface Service must be compatible (you can find compatibility information in MNIS Release Notes).

**NOTE**

Only repeaters with 32MB of internal memory support NAI protocol. For all data functionality the required license should be installed. For voice transmission both licenses (Network Application Interface Data and Network Application Interface Voice) are required.

## 6 List of Ports Used by SmartPTT System

**5060:** Port is set by default and can be changed.

**4001:** Port can't be changed.

**Table 2** – List of SmartPTT Dispatcher ports (Source).

Transport Protocol	Source	Destination	Comments
TCP	X	8888	Server (Commands)
UDP	18501	18500	Server (Voice)
UDP	18501	18501	Intercom (Communication between Dispatchers), Data, Commands
TCP	18501	18501	Intercom (Communication between Dispatchers), Voice
UDP/TCP	5060	5060	Telephone Interconnect (Commands)
UDP	18700-18748	X	Telephone Interconnect (Voice)

**Table 3** – List of SmartPTT Radioserver ports (Source).

Transport Protocol	Source	Destination	Comments
TCP	8888	X	Client (Commands)
UDP	18500	18501	Client (Voice)
TCP	X	110, 25, 587 (with SSL), 995 (with POP3), 993 (IMAP4)	E-mail gateway
UDP	161	161	SNMP (Monitoring)
UDP	162	161	SNMP (Monitoring)

Transport Protocol	Source	Destination	Comments
UDP/TCP	5060	5060	Telephone Interconnect (Commands)
UDP	18650-18660	X	Telephone Interconnect (Voice)
TCP	X	8002	Connection to control station
UDP	4001	4001	Location service for control stations
UDP	4005	4005	Registration Service for control stations
UDP	4007	4007	Messaging Service for control stations
UDP	4008	4008	Telemetry Service for control stations
UDP	50000	50000	For repeater configuration only
UDP	19000–(19000 + Talk Path number)	X	Used by SmartPTT Radioserver for talk paths for Connect Plus network configuration
UDP	5005	4005	Registration Service for Connect Plus network configuration
UDP	5007	4007	Messaging Service for Connect Plus network configuration
UDP	5001	4001	Location Service for Connect Plus network configuration