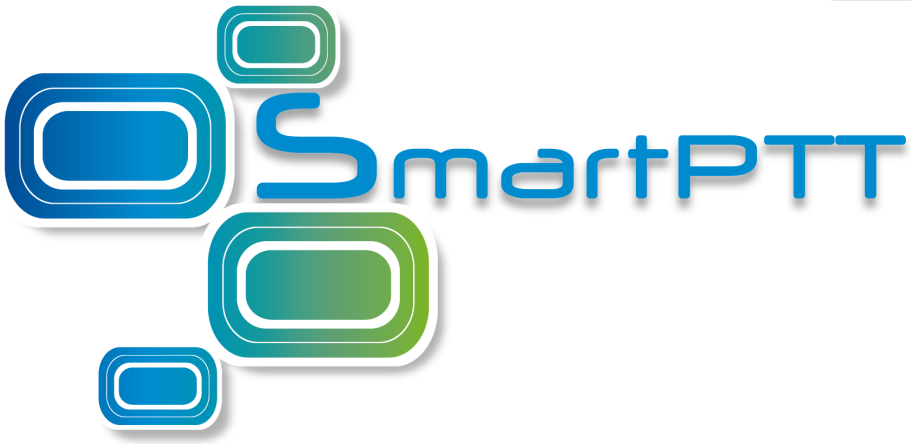

SmartPTT PLUS 9.4

System Requirements

November 2018

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.

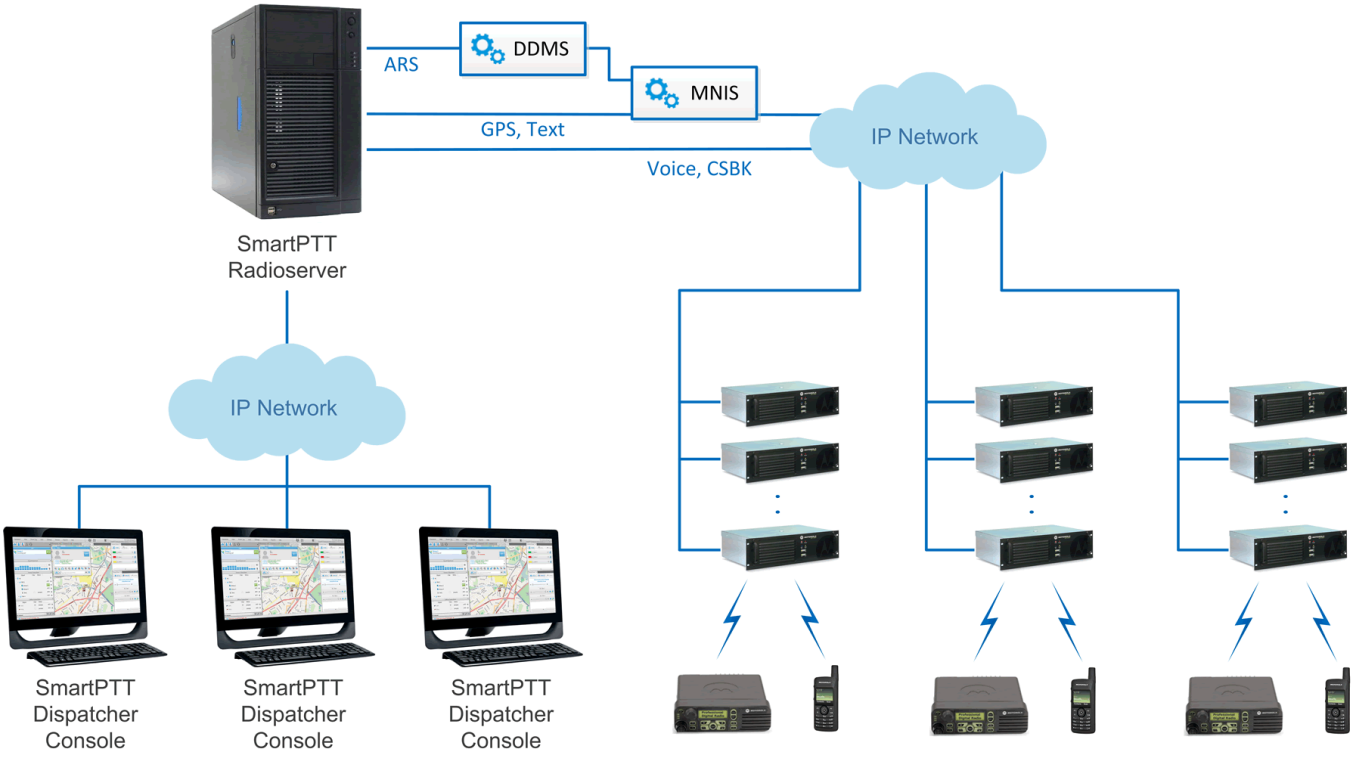

Fig. 1 — NAI System

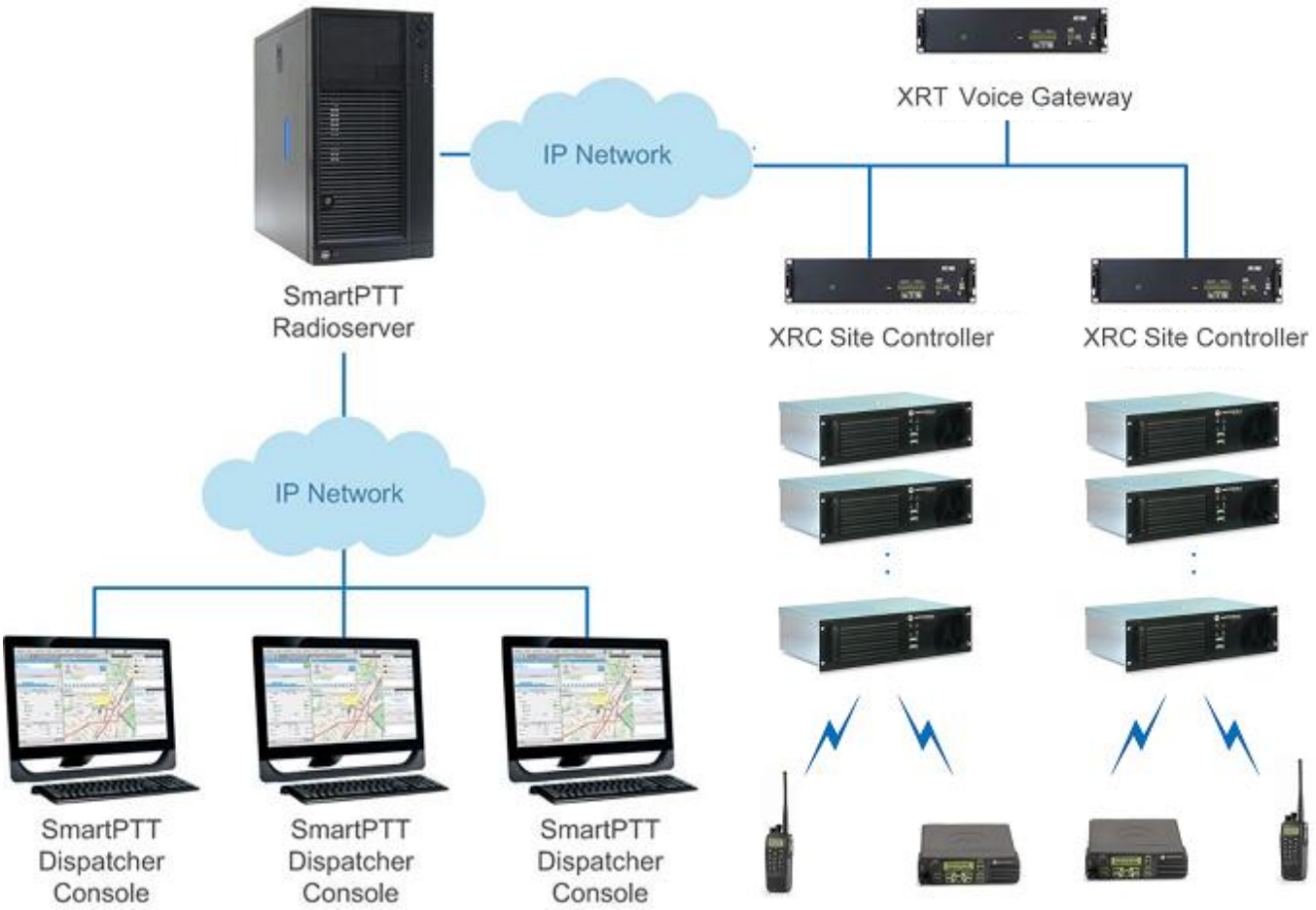

Fig. 2 — Connect Plus System

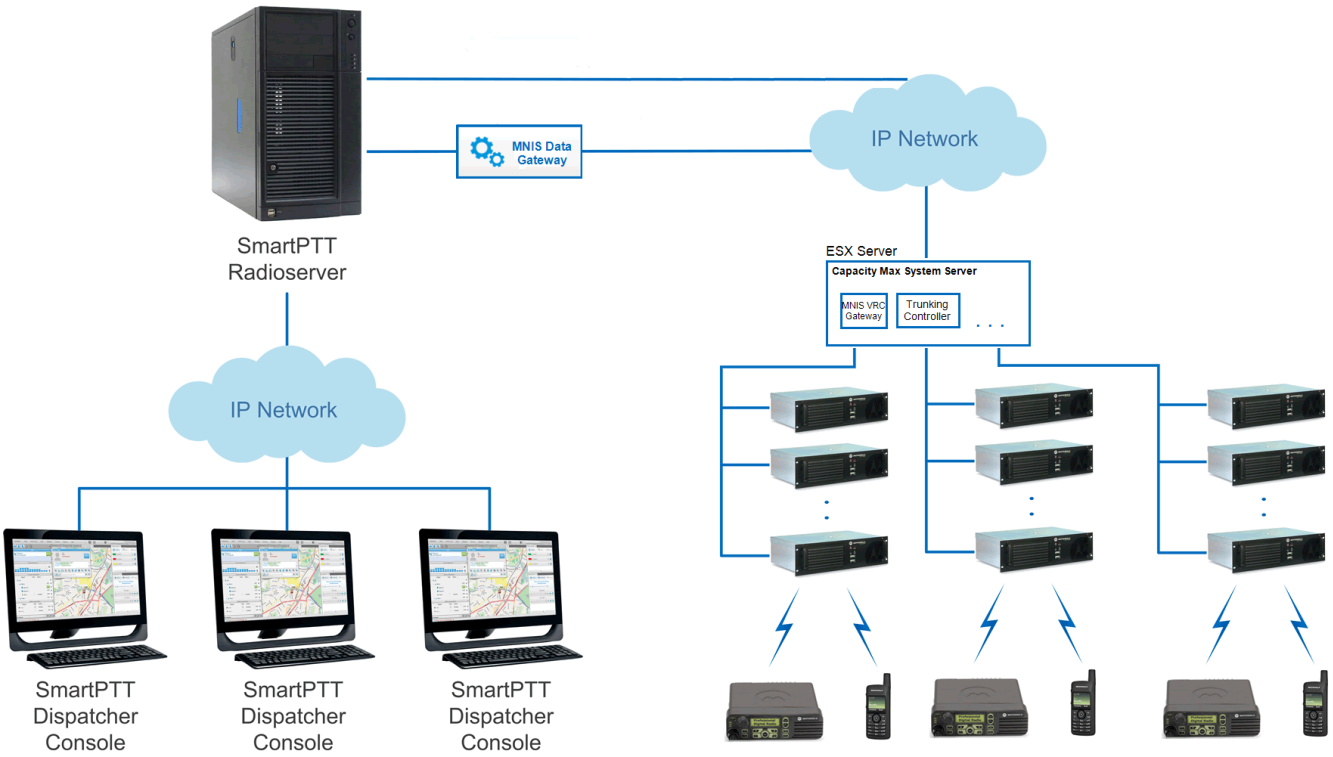

Fig. 3 — Capacity Max System

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

2 Minimum System Requirements for SmartPTT Dispatcher

Operating system:	Windows 10 Pro (version 1809 and newer), 64-bit Windows 10 Enterprise 2016 LTSC, 64-bit Windows 8.1, 64-bit
	NOTE Windows 8.1 must have the latest updates, or the KB 2919355 update. For details, see Microsoft Support information.
Processor:	Intel® Core i5 for systems with less than 3,000 subscribers. Intel® Core i7 for systems with more than 3,000 subscribers or activated GPS/Monitoring/Indoor services.
Memory:	4 GB of RAM or better for systems with less than 3,000 subscribers. 8 GB of RAM or better for systems with more than 3,000 subscribers or activated GPS/Monitoring/Indoor services.
Hard disk:	7200 rpm SATA drive 20 GB space for software and database
Video card:	1 GB RAM PCI-E or similar CPU-integrated for systems with voice transmission only. 2 GB RAM PCI-E or similar CPU-integrated for systems with activated GPS/Monitoring/Indoor services.
Monitor:	1366 × 768 pixel or better. 16-bit color. 23" or larger LCD monitor recommended for full-featured console position.
USB ports:	At least 6 USB ports (2.0 or 3.0).
Sound card:	Internal PCI-E Sound Blaster Audigy RX. External Sound Blaster X-Fi Go.
Audio recording device:	A microphone or a headset.
Playback device:	Headphones or a headset.
Network adapter:	10/100/1000 Gbps Ethernet adapter.
Pointer:	A mouse or a trackball.
Keyboard:	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 System Requirements for SmartPTT Radioserver

Operating system:

Windows 10 Pro (version 1809 and newer), 64-bit
Windows 10 Enterprise 2016 LTSC, 64-bit
Windows 8.1, 64-bit

> **NOTE**
> Windows 8.1 must have the latest updates, or the KB 2919355 update. For details, see Microsoft Support information.

Windows Server 2016
Windows Server 2012 R2

Processor:

Intel® Core i5 for systems with less than 3,000 subscribers.
Intel® Core i7 for systems with more than 3,000 subscribers or activated GPS/Monitoring/Indoor services.

Memory:

4 GB of RAM or better for systems with less than 3,000 subscribers.
8 GB of RAM or better for systems with more than 3,000 subscribers or activated GPS/Monitoring/Indoor services.

Hard disk drive:

7200 rpm SATA drive

40 GB space (software and database only)

190 GB space (software, database, and voice records; for details, see “HDD Space Estimation” in *SmartPTT PLUS Installation and Configuration Guide*)

USB ports:

One USB port per USB input device (mouse, keyboard) or expansion hub

One USB per each control station connected directly to the computer

Sound card:

Multi-channel AUDIO–Delta 1010LT, MAYA44XTe, ICON Digital Cube Pro USB

> **NOTE**
> External sound cards required to support multiple control stations connected directly to the computer.

Network adapter:

10/100/1000 Gbps 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 Network Quality

Computer networks where SmartPTT installed and used, must comply the following requirements:

Packet Loss:	Slightly distorted voice: 0–2.5 % Distorted voice: 2.5–15.0 %
Two-Way Delay:	IP access to radio network: 0–90 ms SIP gateway: 0–60 ms
Jitter:	IP access to radio network: 0–90 ms SIP gateway: 0–60 ms

IP access to radio network means the connection to the hardware/software solution that provides access to the radio network:

- Connection to the RG-1000e device.
- Connection to repeaters:
  - Master repeater (for voice calls and monitoring).
  - Other repeaters (for monitoring).
- Connection to the computer with MNIS Data Gateway Relay application.
- Connection to the computer with Device Discovery and Mobility Service.
- Connection to XRC controller (Connect Plus).
- Connection to XRT controller (Connect Plus).
- Connection to each Presence Server (Capacity Max).
- Connection to each voice gateway (Capacity Max).

SIP gateway means the IP connection to the gateway that provides the access to the analog telephone line.

4.2 Bandwidth Requirements

Computer networks where SmartPTT is installed and used must provide the specific bandwidth between the computer with SmartPTT Radioserver and other IP devices of the dispatch system. All the following requirements are applicable to the one way transmissions.

Voice transmission

All the following requirements are applicable to the single voice stream.

Source / Target	Minimum	Comments
SmartPTT Dispatcher application	13 kbps	for DMR vocoder
	100 kbps	for G.711 vocoder
RG-1000e radio gateway	from 65 kbps	exact value depends on the vocoder parameters
Master repeater XRT controller MNIS VRC gateway	20 kbps	
SIP gateway	65 kbps	for G.729 or Speex vocoders
	100 kbps	for G.711 vocoder
Application that uses SmartPTT WebSocket	from 65 kbps	for each of the following application: • SmartPTT Web Client • Third Party app over SmartPTT Server API. Exact value depends on the vocoder parameters

Bandwidth must be increased if you activate and use the Bridging feature in SmartPTT Radioserver or create a Cross Patch or organize a Conference Call.

If you have the redundand SmartPTT Radioserver, the bandwidth to that computer must comply the synchronization settings between the main and redundant servers.

Voice traffic between SmartPTT Dispatcher applications (the “Dispatchers” feature) is not sent to SmartPTT Radioserver. To provide this feature, the bandwidth between dispatcher computers

must be 65 kbps or more per each configured contact.

NOTE
The “Dispatchers” feature may refer to as Intercom.

Data transmisison

In SmartPTT, data transmisison implies text messages, indoor and outdoor location, telemetry information and control commands.

Source / Target	Minimum	Comments
SmartPTT Dispatcher application	3.5 kbps	For Enhanced CSBK location data from 10 subsribers and location update period T = 7.5 s
Master repeater XRC controller Computer with MNIS Data Gateway Relay	20.0 kbps	for each repeater without revert channel
	45.0 kbps	for each repeater with revert channel

Bandwidth must be increased if you activate and use the Bridging feature in SmartPTT Radioserver or create a Cross Patch or organize a Conference Call.

If you have the redundand SmartPTT Radioserver, the bandwidth to that computer must comply the synchronization settings between the main and redundant servers.

Monitoring service

Source / Target	Minimum	Comments
SmartPTT Dispatcher application	42 kbps	for each configured repeater if the **Monitoring** panel is closed.
	45 kbps	for each configured repeater if the **Monitoring** panel is opened
Repeater	42 kbps	for each configured repeater

5 Support and Compatibility

5.1 MOTOTRBO Infrastructure

SmartPTT PLUS supports the following MOTOTRBO firmware and software:

Firmware/Software	Version	Comments
Control Stations Subscriber radios	R02.09.XX	
	R02.08.XX	
	R02.07.XX	
Repeaters	R02.09.XX	All repeater-based MOTOTRBO radio systems
	R02.08.XX	
	R02.07.XX	
MOTOTRBO Network Interface Services	R2.90.X	Current generation of IP Site Connect, Capacity Plus and Linked Capacity Plus only
	R2.80.X	
	R2.70.X	
Device Discovery and Mobility Services	3.70.X	Current generation of IP Site Connect, Capacity Plus and Linked Capacity Plus only
XRC and XRT Controllers	R02.80.XX	Connect Plus only
Capacity Max System Server Firmware (CMSS)	R2.9	Capacity Max only
	R2.8	

Additional information on infrastructure:

- Within the radio system, all repeaters, subscriber radios and control stations should use the same or compatible firmware versions.
- If you activate the Bridging feature, you should bridge only the radio fleet objects which are associated with the same or compatible firmware versions.

- Access and operation in radio systems for SmartPTT requires a separate licensing.

5.2 Elcomplus Products

SmartPTT PLUS is compatible with the following Elcomplus LLC products:

Product	Version	Comments
Radio gateway RG-1000e	R2.2	Hardware device for remote access and control over MOTOTRBO control stations
SmartPTT File Transfer	2.0	Application for files transmission over the radio network
SmartPTT SCADA	1.0.0	Application for remote control over the AdapTel device, the telemetry data interface adapter

5.3 Third Party Products

SmartPTT is compatible with a range of third-party products. Below you will find a list of hardware and software products that proved to be compatible with SmartPTT applications.

Database Management Systems

SmartPTT uses Microsoft SQL Server as the database. The following versions are supported:

- Microsoft SQL Server 2014 Express
- Microsoft SQL Server 2008 R2 Enterprise

For details on use of other Microsoft SQL Server versions and editions, please contact our Technical Support Center.

Option Boards

SmartPTT supports MOTOTRBO™ option boards programmed using Tallysman Sprite Configurator (also known as Sprite TW251 software APP). For the specific features, the corresponding software versions are required:

- Version 0.2.68 for the Heartbeats feature.
- Version 0.3.16 for the Movement Reports Restoration feature.

These software versions are incompatible and they do not provide both features to one option board.

Audio Accessories

- Desktop USB microphone D-9 by Holmco
- Desktop USB microphone PS12 by pei tel
- Desktop microphone DM-160 by CXD
- Push-to-talk button PTT-13 by Imtradex
- USB corded headsets Blackwire C310-M and C320-M by Plantronics

Hardware

- SmartPTT Dispatcher can be installed and used on BeFREE 10 computers.
- SmartPTT supports the IP Gear Claro 30 SIP-gateway (by ESTel) for access to analog telephone networks.
- SmartPTT can connect to NexLog recorders running NexLog Recorder Software 2.8.2.

6 List of Ports Used by SmartPTT System

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

4001: Port can't be changed.

List of SmartPTT Dispatcher ports (Source):

Transport Protocol	Source	Destination	Comments
TCP	ANY	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	ANY	Telephone Interconnect (Voice)

List of SmartPTT Radioserver ports (Source):

Transport Protocol	Source	Destination	Comments
TCP	8888	ANY	Client (Commands)
UDP	18500	18501	Client (Voice)
TCP	ANY	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	ANY	Telephone Interconnect (Voice)
TCP	ANY	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)	ANY	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
UDP	ANY	NexLog Recorder	NexLog Recording System

List of default SmartPTT Radioserver ports used in Capacity Max:

Transport Protocol	Source	Destination	Comments
TCP	ANY	60015	Link to Capacity Max Presence Server

Transport Protocol	Source	Destination	Comments
TCP	ANY	56000	Link to MNIS VRC Gateway (voice call control and signaling commands)
UDP	40000–40015	56000	Voice traffic to and from MNIS VRC Gateway
TCP	ANY	55000	Link to MNIS Data Gateway
UDP	4001	4001	Location (GNSS / GPS) service over the primary MNIS Data Gateway
UDP	4007	4007	Text messaging over the primary MNIS Data Gateway
UDP	4008	4008	Telemetry data and commands over the primary MNIS Data Gateway
UPD	4011	4011	Location (GNSS / GPS) service over the redundant (alternate) MNIS Data Gateway
UPD	4017	4017	Text messaging over the redundant (alternate) MNIS Data Gateway
UPD	4018	4018	Telemetry data and commands over the redundant (alternate) MNIS Data Gateway
TCP	ANY	8890	Link to SmartPTT MNIS Data Gateway Relay

The following features are related to the voice traffic port:

- The same port number is used for both main and redundant (alternate) VRC gateway.
- Different voice gateways require different voice traffic ports.

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