# TRBOnet Agent

## Use Cases

# Notices

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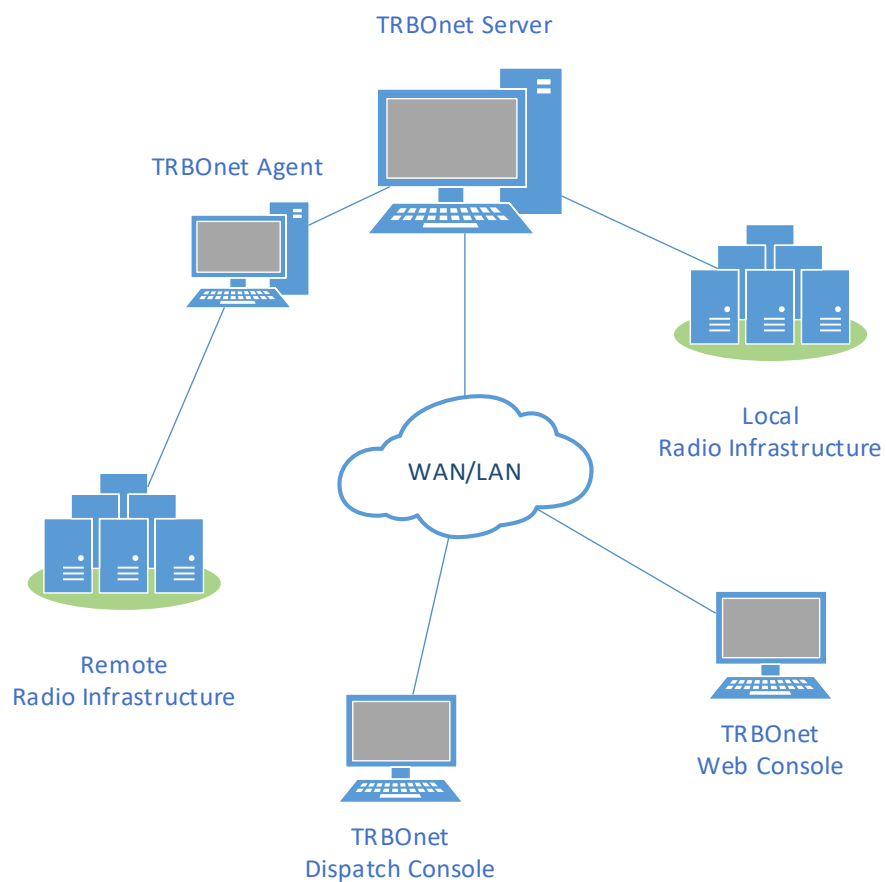# Contents

# 1 About TRBOnet Software

## 1.1 TRBOnet Server and Console

The TRBOnet software is designed as a client-server architecture, where **TRBOnet Server** is PC-based and runs as a Windows service on a network computer, stores data in an MS SQL database, and allows client connections from Web Consoles, Dispatch Consoles, and Mobile Clients. The TRBOnet service can be located on a dedicated remote PC, a local PC (along with the Dispatch Console), or on a virtual machine.

**TRBOnet Dispatch Console** is a PC-based voice dispatch and data application for MOTOTRBO professional digital two-way radio systems.

## 1.2 TRBOnet Agent

Software agents, such as **TRBOnet Agent**, can be connected to TRBOnet Server providing additional voice and data communications paths to and from remote sites. Such configurations can be used when radio equipment can't be connected directly to TRBOnet Server due to IP network limitations (see section 1.3, IP Backend Network Requirements).

TRBOnet Server

TRBOnet Agent

WAN/LAN

Local
Radio Infrastructure

Remote
Radio Infrastructure

TRBOnet
Dispatch Console

TRBOnet
Web Console

## 1.3 IP Backend Network Requirements

Before planning any IP connected MOTOTRBO system, read System Planner (chapter 4.6.3.2 Characteristics of Backend Network).

- **Delay/Latency**
  The amount of time it takes for voice to leave the source repeater and arrive at the destination repeater. The delay should be less than 60 ms. It can be up to 90 ms, but requires changes in CPS for both radio units and repeaters.

- **Jitter**
  The variation of the packet inter-arrival time. It should be less than 60 ms.

- **Packet Loss**
  In the case of voice, the ongoing call ends if six consecutive packets do not arrive within 60 ms of their expected arrival time. In the case of data, the repeater waits for the expected number of packets (as per the data header) before ending the call.

- **Bandwidth**
  Refer to System Planner for bandwidth calculations, but roughly, it requires 96 kbps for each repeater connection and should be summed up for all repeaters.

If the IP backend network does not satisfy MOTOTRBO requirements, it will degrade audio quality significantly, including dropped voice calls.

## 2 Example Topologies

### 2.1 Remote Control Room

This configuration can be used when TRBOnet Server and a MOTOTRBO radio system are located away from each other being connected via VSAT satellite communications. Such a configuration allows latencies between Server and Agent of up to 3000 msec.
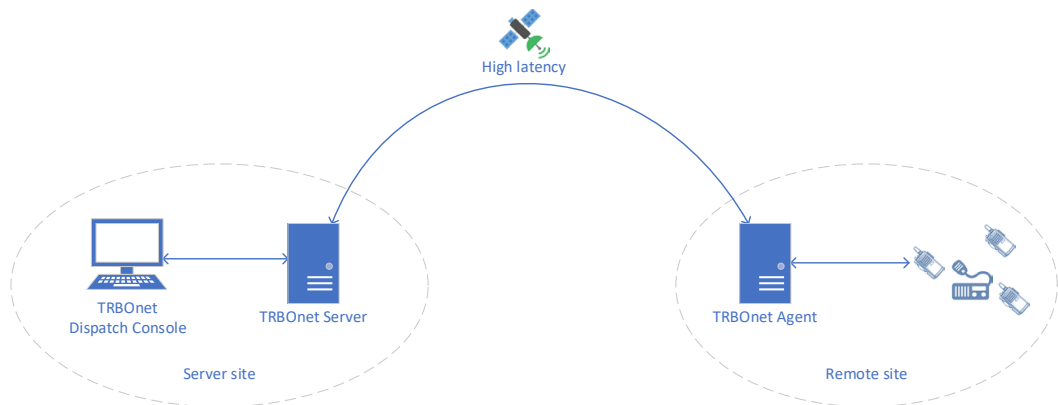
### 2.2 Multiple Trunked Systems connected to single TRBOnet Server

Since one MNIS service can be connected to one trunked system, and only one MNIS service can run on one PC (either virtual or physical), TRBOnet Agents can be used when multiple trunked systems (CP or LCP) are connected to a single TRBOnet Server.

In addition, private and group calls can be established between the radios through the server.
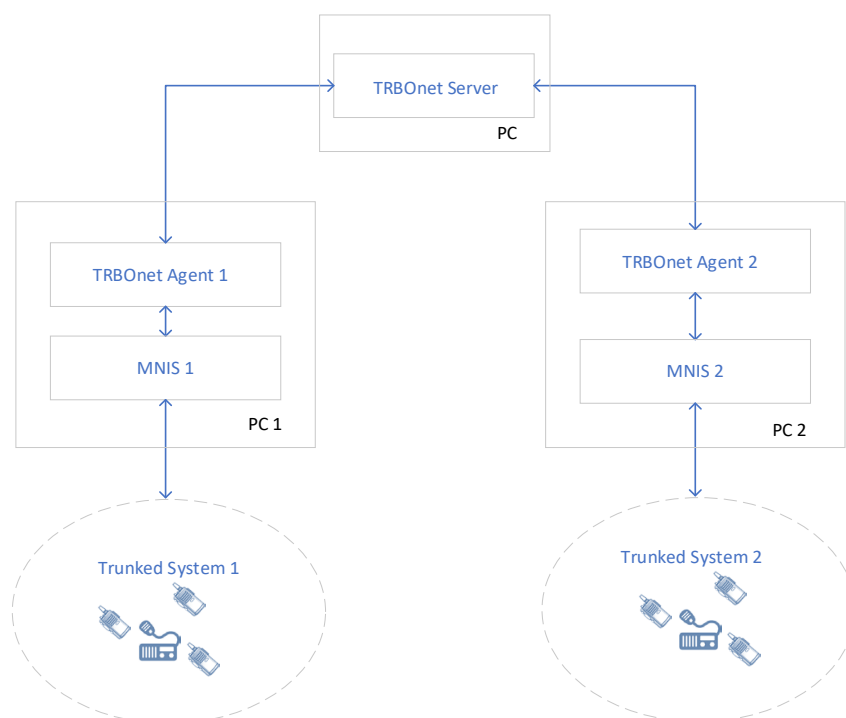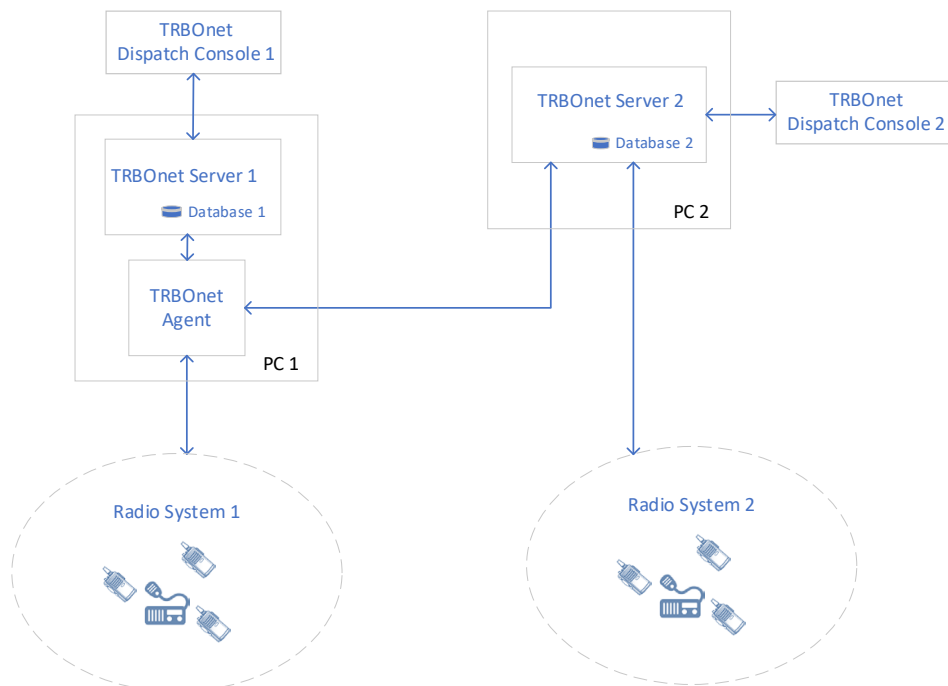
## 2.3 Multiple TRBOnet Servers connected to Radio System

This case is used when you want to connect multiple servers to a MOTOTRBO radio system.

Note that in the example below, TRBOnet Server 1 and TRBOnet Agent are running on the same PC (in this case, the server and agent can both be installed simultaneously, or the agent can be installed later on the same PC).

The second server (TRBOnet Server 2) is connected to Radio System 1 via TRBOnet Agent. Also note that in the example below, TRBOnet Dispatch Console 2 that is connected to TRBOnet Server 2 has access to both radio systems (Radio System 1 and Radio System 2).

# 3   Example System

Here is an example of a system where multiple trunked radio systems are connected to a single TRBOnet Server.

**System Components**

- TRBOnet Server -1
- TRBOnet Agent – 2
- TRBOnet Dispatch Console - 2
- MOTOTRBO Trunked System (LCP, Cap+, or CapMax) - 2
- MOTOTRBO MNIS – 2

**Addressed Issues**

- Only one MNIS service can be connected to one trunked system
- Only one MNIS service can run on one PC
- MOTOTRBO radio system is located far from TRBOnet Server (latencies of up to 3000 msec)

**Benefits**

- Single Dispatch Center
- Crosspatch between remote radio systems (Voice + Data)
- Storing the full history of radio user movements between remote radio systems

**System topology**