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Remote Contesting 101

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What is “Remote”?

- Remote Operating is operating a ham station remote from your location.
- Control is usually over the Internet, though it can be other technologies
- The distance can be from your basement to your den, or around the world.

What is Remote Contesting?

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- Remote Contesting is one or more ham operators participating in a radio contest, where one or more of the operators is remote from the transmitter site.
- Why do this? The reasons are varied and diverse.
- How hard is it to implement? It varies from incredibly simple to as complex as you want.

About the Internet…

- It is 2024. The internet is ubiquitous.

- High speed (>5 Mbps) and low jitter, two keys to successful remote operation, can be found anywhere on earth: DSL, Cable, Fiber, 4G LTE/5G Wireless, and Starlink are all perfect solutions for setting up remote.

Why Remote Contest?

- It's fun!
- You live: in a retirement home, in an HOA, or in a very poor location.
- You cannot/do not have a competitive station.
- You want to experience operating from somewhere else (your den, another part of the country or world).

How can I do Remote Contesting?

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- Many solutions exist:
- Microbit RemoteRig Pair: Elecraft/Icom/Yaesu radios + lots of config.
- Elecraft K4-to-K4, Flex, SunSDR. All these do remote operating natively.

If you don't own one (or two) of these radios, they are expensive.

All of these solutions require special configuration and a fair amount of networking skill.

What if?

- I want to remote with a team (M/S, M/M, etc)?
- I don't want my team to have to buy a lot of gear.
- I want to have control over my station from the station.
- I don't want to invest in a lot of new gear.

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There is a solution:

- Which will allow you to be single-op, multi, or everywhere in between.
- It requires no special equipment from the remote operator side.
- Is field proven, with lots of single and mutli-op wins (and over 100,000 QSOs in the N5J DXpedition, involving over 40 remote operators)

What do I need?

- At your station, a computer with CAT control of any radio, with your favorite logger (such as N1MM).
- A fast internet connection of ANY type (DSL, Cable, Fiber, 4G LTE/5G, or Starlink Satellite)
- As much station automation as you desire, on your computer desktop: Rotor, Amp, Antenna controls.

How about the Remote Op(s)?

- Remote Operators will need a PC, a headset, and a reasonably high-speed internet connection.
- This will allow FT8, SSB, and CW operation. CW will, however, be limited to keyboard sending (usually good in contests anyway).

Now, the details…

- This neat remote solution uses off-the-shelf, easily available and *FREE* software.
- Remote operators connect to your shack using a Remote Desktop software package.
- There are many brands: Anydesk, TeamViewer, RustDesk, etc. (No VNC)
- The KEY is that the remote desktop software must use a ***Rendezvous*** *Server.*

Remote Over RDP…

- You log over RDP
- You send CW over RDP, using the Capabilities of your Logger.
- Every piece of automation available to the main station is available to you. The more the station has, the more flexibility you have.
- But what about *audio*?

Audio over *Mumble*

- Mumble is a server-based high-performance audio conferencing application, which has very low latency and works in very challenging situations.

- Mumble was created by the real-time gaming community, where latency can literally mean death (in a game).

Mumble in Amateur Radio

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- Mumble is used in many ways in our hobby.
- The MFJ “Radio in a Pi” uses Mumble.
- The internet application CW-over-Internet chat uses Mumble.

- These forms of Mumble typically use a server application at the station. For high-performace contesting, we do it differently.

Mumble Servers in the Cloud.

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- I have created a world-wide network of Mumble servers in the cloud.
- These servers can be “seen” by any internet technology.
- Both your station and the remotes connect to a server in cloud as clients.
- This eliminates ANY network configuration: port forwarding, VPNs, etc. Nothing.

How Mumble works for Remote Contesting

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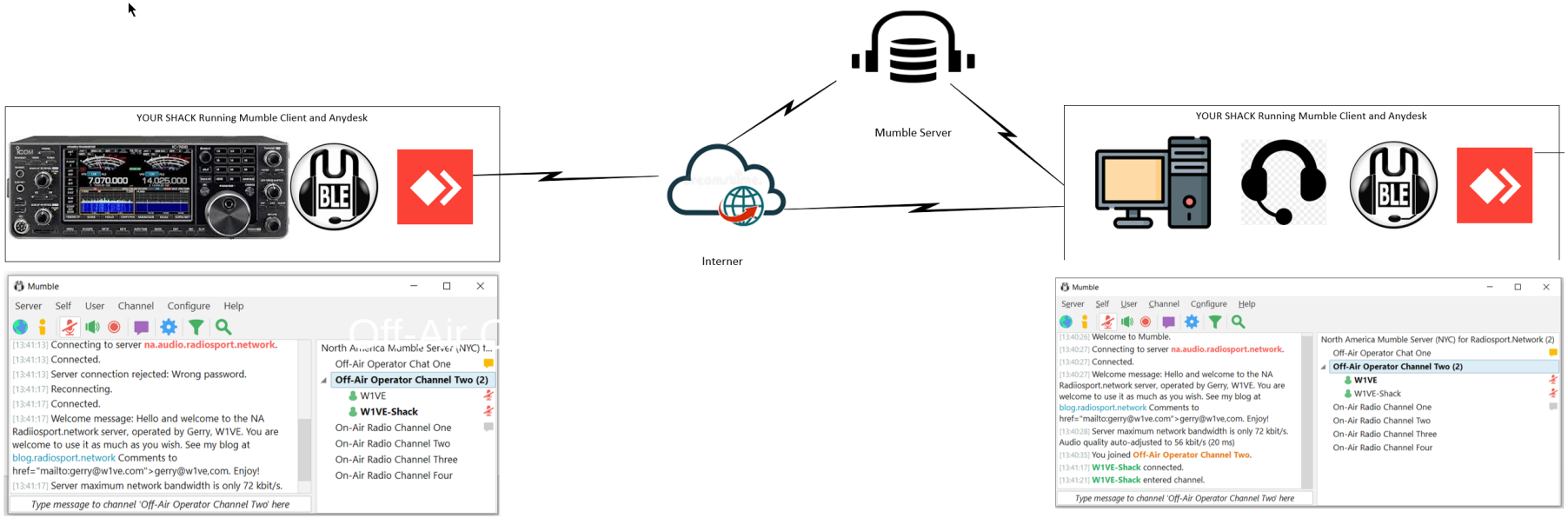

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Interfacing Audio to Mumble

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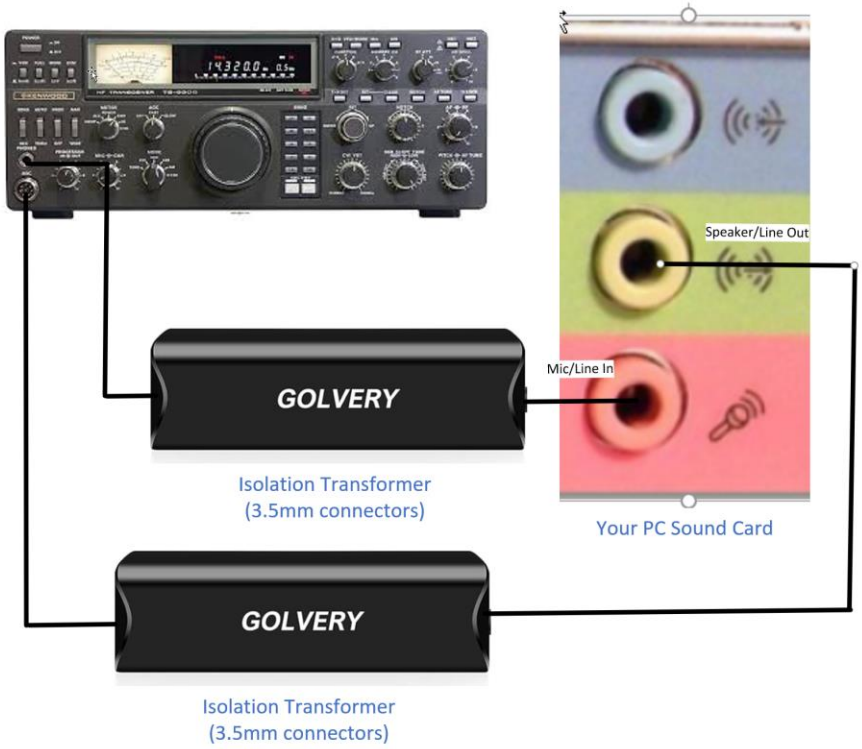
- The Mumble client uses the sound card in your PC or radio.
- Many modern radios have built-in USB sound cards, which makes connections easy. However, beware that the Sound Card goes away when the radio is off.
- For any other radio, you can interface to the radio speaker or line out for receiving, and the Microphone or line in for SSB/FT8 etc.

Isolation Transformers

- If you directly interface to the radio audio, use Isolation Transformers to eliminate ground loops, as well as impedance matching.



Configuring Mumble Audio

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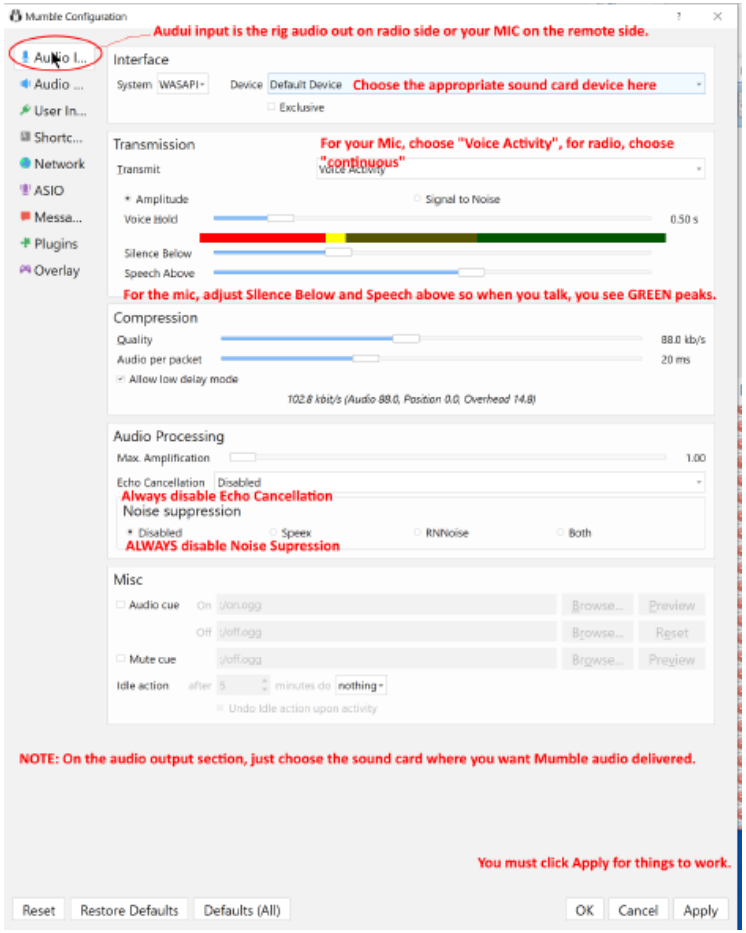
Mumble uses soft

Vox for SSB, with a soft PTT available.

Your radio must be in VOX for SSB.



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Radiosport.Network Mumble Servers

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North America Servers

Pick a server with the lowest latency and jitter.

New York, NY
Washington, DC
Tampa, FL
Dallas, TX
Phoenix, AZ
Seattle, WA (Best for Starlink)
Los Angeles, CA

European Servers

Pick a server with the lowest latency and jitter.

London, UK
Reddich, UK
Frankfurt, Germany

Middle-East Servers

Pick a server with the lowest latency and jitter.

Tel Aviv, Israel

Asian Servers

Pick a server with the lowest latency and jitter.

Tokyo, Japan
Singapore

See all the server details at http://radiosport.network.

Full Mumble tutorial at http://blog.radiosport.network

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Contesting Remotely with this simple technique

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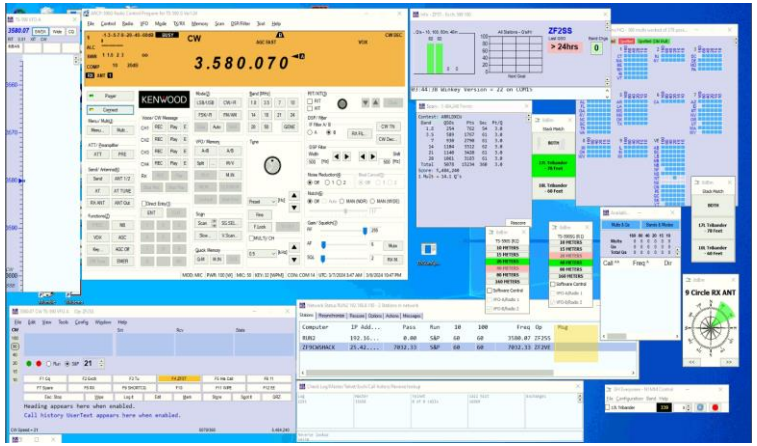
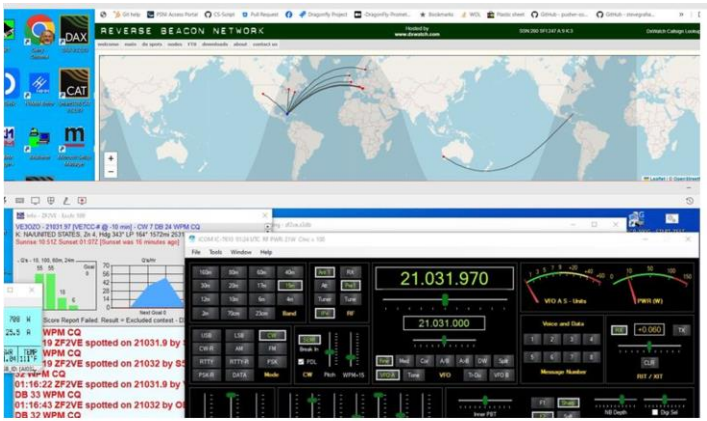
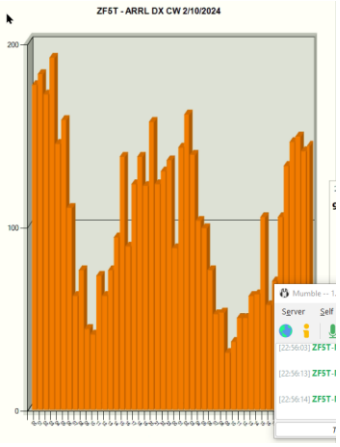


ZF5T Run Station Desktop – Hybrid Remote – ARRL DX CW



Remote Single-Op ZF2VE (@ZF9CW). Icom 7610, Win4IcomSuite, Mumble.



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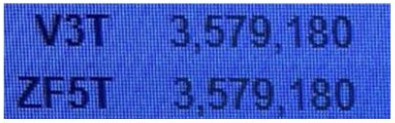
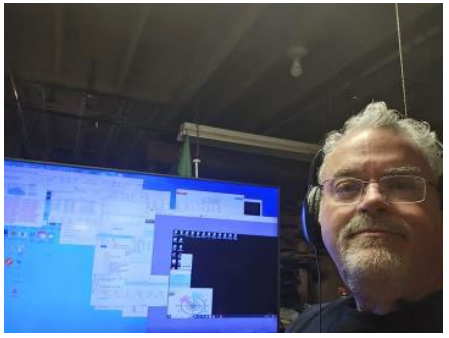


Tight Competiiton
with Non-Remote V3T
#1 World



VE4AA@VE4YH SO IARU K3/
WinForK3Suite, Mumble

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Who is using this simple remote trechnique?

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Stan, ZF9CW – Remote hybrid Multi-ops from Cayman Brac.

Dave, K1TTT – from Single-Op to Multi-Multi

Chas, K3WW – Single Op

Tom, K3AJ – Multi-Single Remote Ops, , SO2R with Mumble

Serge, VA3SB – Single Op – Laptop from Europe

Don, 7Q6M – operating from CA

Ed, N4OC – Hybrid Multio-OP

Dave, AA4VT – Hybrid Multiop

Ulf, DL5AXX – Single Op

Holger, DF1QR – Remote for Contest Gruppe Schöppinger Berg e.V. (DP7D)

N5J DXPedition – two remote CW stations with 21 operators, all using Mumble and AnyDesk… about 42,000 CW of the more than 100K QSOs

Info, Thank you, Questions…

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Mumble Tutorial for Contesting: https://blog.radiosport.network/2023/05/and-configuring-mumble-for-amateur.html

The Radiosport.Network Mumble Servers: http://radiosport.network

groups.io Email Reflector: https://groups.io/g/contesting-with-mumble

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Thank You everyone! Questions…

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