Remote Contesting

How the Big Guns operate remotely
And how one Little Pistol does it

South Lyon Area ARC
14 April 2024
Frank Maynard, NF8M

What Is Remote Contesting?

- Operating your station from anywhere
- Operating another ham's station
- Distributed Multi-Op at a Superstation
- Operating a rental station

Why Remote Contesting?

- Compromised or restricted QTH
- Or no home station
- No amplifier
- Travel
- Tech-nerd

Two types of remote operation

- Operate another ham / club station
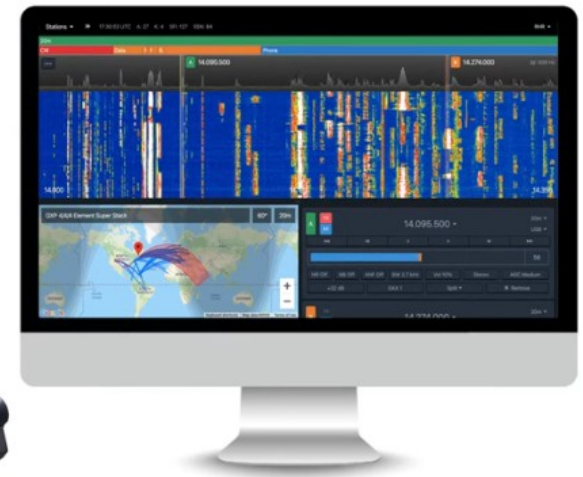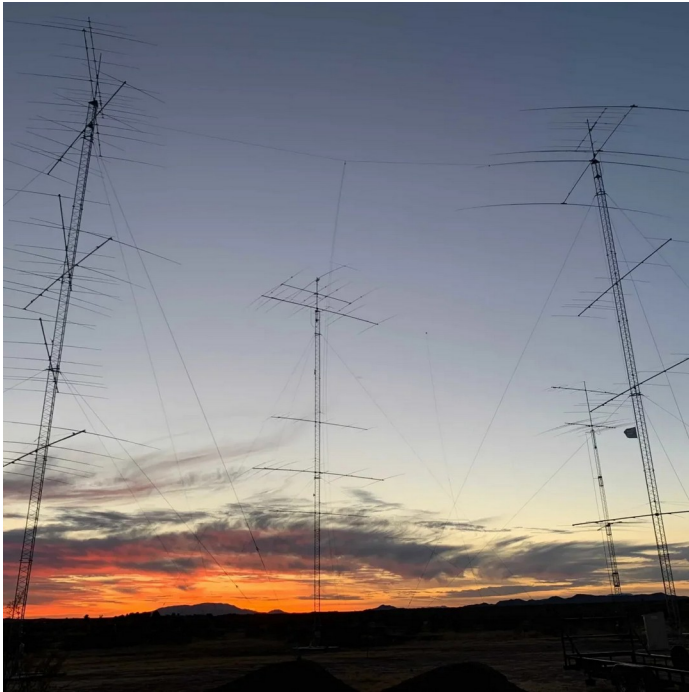- Operate your own home station

Rental & Club Superstations

- Remote Ham Radio (RHR)

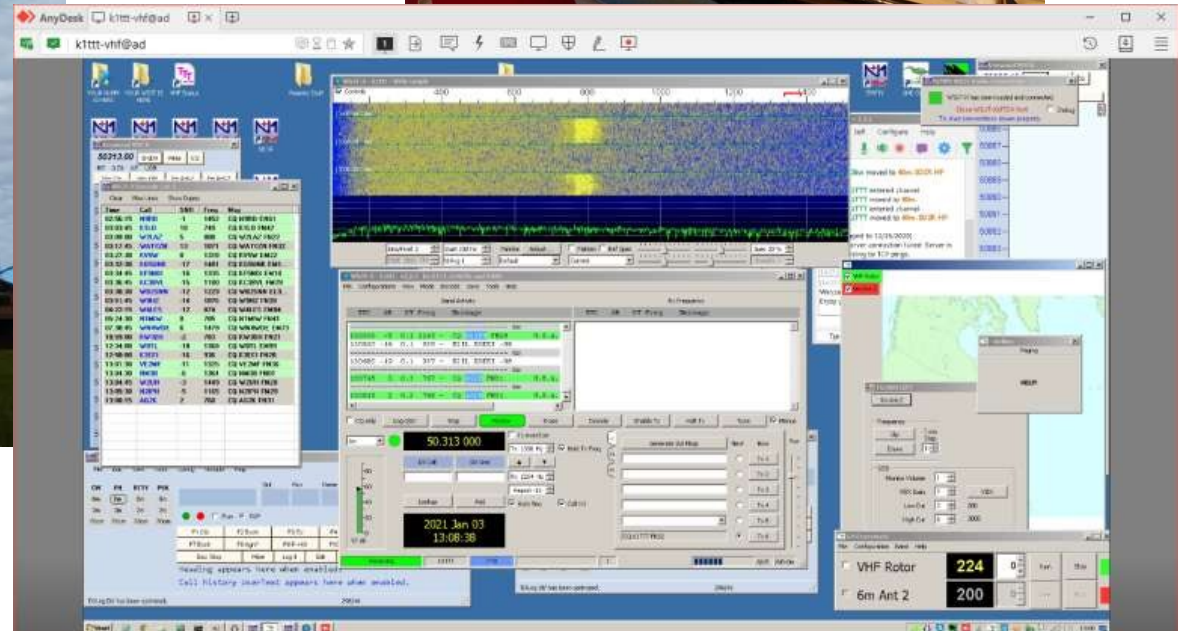- RemoteHams

- K1TTT

- PJ2T (Caribbean Contest Consortium)

Remote Ham Radio

- 29 stations in US and worldwide
- Strategic locations
- QRO, multiple antennas
- Web-based interface
- $99/year, $0.50-$1.29 per minute
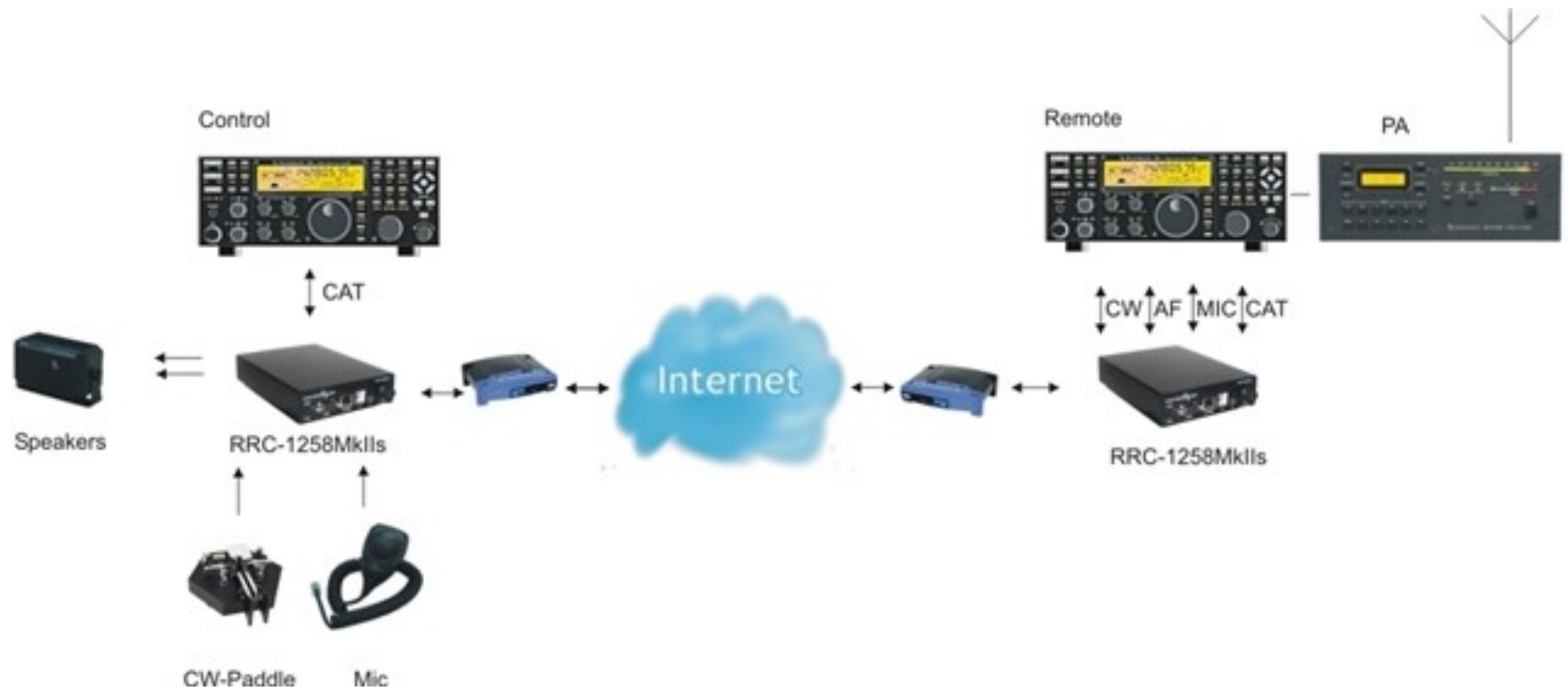- Free programs for youth operators

Remote Ham Radio

K1TTT - Massachusetts

PJ2T - Curacao

PJ2T - Curacao

Remoting Your Home Station

What do you need?

- Transceiver

- Antenna switching

- Rotor control

- Audio and keying

Remoting Your Home Station

What do you need?

- Software – Rig control

- Software – Logging

- Software – Audio and Monitoring

- Software – Ancillary controls

Remote Contesting   NF8M

Remoting Your Home Station

What do you need?

- Networking
- Stable internet connectivity

NETWORK BASICS -
SPEED, LATENCY, JITTER

GOOD   BAD

```
C:\>ping -t google.com
Pinging google.com [172.217.11.46] with 32 bytes of data:
Reply from 172.217.11.46: bytes=32 time=15ms TTL=116
Reply from 172.217.11.46: bytes=32 time=15ms TTL=116
Reply from 172.217.11.46: bytes=32 time=14ms TTL=116
Reply from 172.217.11.46: bytes=32 time=17ms TTL=116
Reply from 172.217.11.46: bytes=32 time=14ms TTL=116
Reply from 172.217.11.46: bytes=32 time=14ms TTL=116
Reply from 172.217.11.46: bytes=32 time=20ms TTL=116
Reply from 172.217.11.46: bytes=32 time=17ms TTL=116
Reply from 172.217.11.46: bytes=32 time=16ms TTL=116
Reply from 172.217.11.46: bytes=32 time=23ms TTL=116
Reply from 172.217.11.46: bytes=32 time=14ms TTL=116
Reply from 172.217.11.46: bytes=32 time=14ms TTL=116
Reply from 172.217.11.46: bytes=32 time=16ms TTL=116
Reply from 172.217.11.46: bytes=32 time=17ms TTL=116
Ping statistics for 172.217.11.46:
    Packets: Sent = 14, Received = 14, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 23ms, Average = 16ms
```

```
C:\>ping -t 192.168.0.233
Pinging 192.168.0.233 with 32 bytes of data:
Reply from 192.168.0.233: bytes=32 time=374ms TTL=64
Reply from 192.168.0.233: bytes=32 time=173ms TTL=64
Reply from 192.168.0.233: bytes=32 time=189ms TTL=64
Reply from 192.168.0.233: bytes=32 time=204ms TTL=64
Reply from 192.168.0.233: bytes=32 time=87ms TTL=64
Reply from 192.168.0.233: bytes=32 time=101ms TTL=64
Reply from 192.168.0.233: bytes=32 time=123ms TTL=64
Reply from 192.168.0.233: bytes=32 time=151ms TTL=64
Reply from 192.168.0.233: bytes=32 time=162ms TTL=64
Reply from 192.168.0.233: bytes=32 time=197ms TTL=64
Reply from 192.168.0.233: bytes=32 time=212ms TTL=64
Reply from 192.168.0.233: bytes=32 time=71ms TTL=64
Reply from 192.168.0.233: bytes=32 time=85ms TTL=64
Reply from 192.168.0.233: bytes=32 time=302ms TTL=64
Ping statistics for 192.168.0.233:
    Packets: Sent = 27, Received = 27, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 17ms, Maximum = 374ms, Average = 122ms
```

K1TTT

NETWORK BASICS -
SPEED, LATENCY, JITTER

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K1TTT

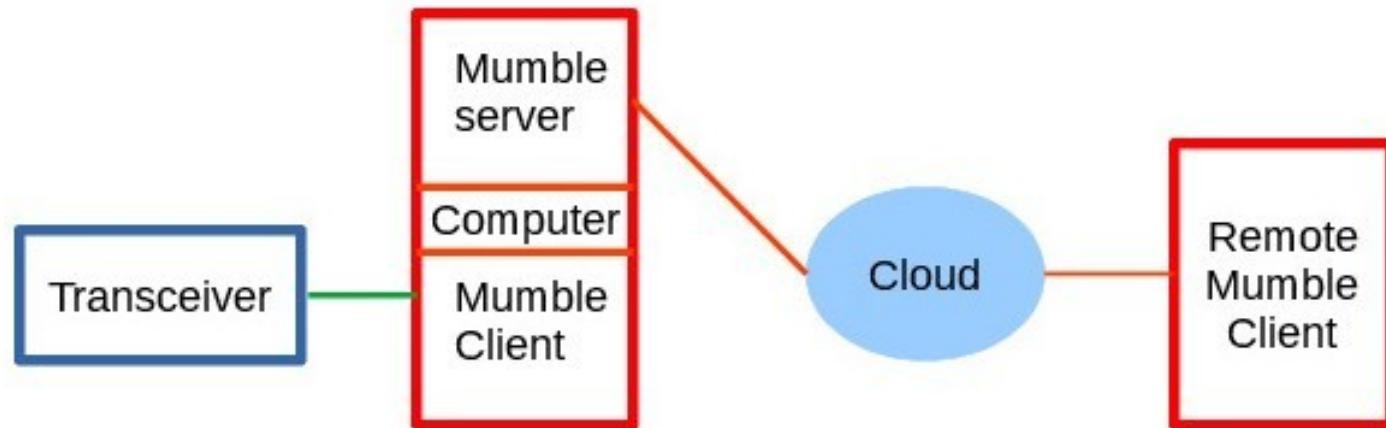## Remoting Your Home Station

What do you need?

- Networking

- Stable internet connectivity

- Remote access method

- Audio delivery

Mumble

- Low-latency audio gateway

- Open source, multi platform

- Server + clients topology

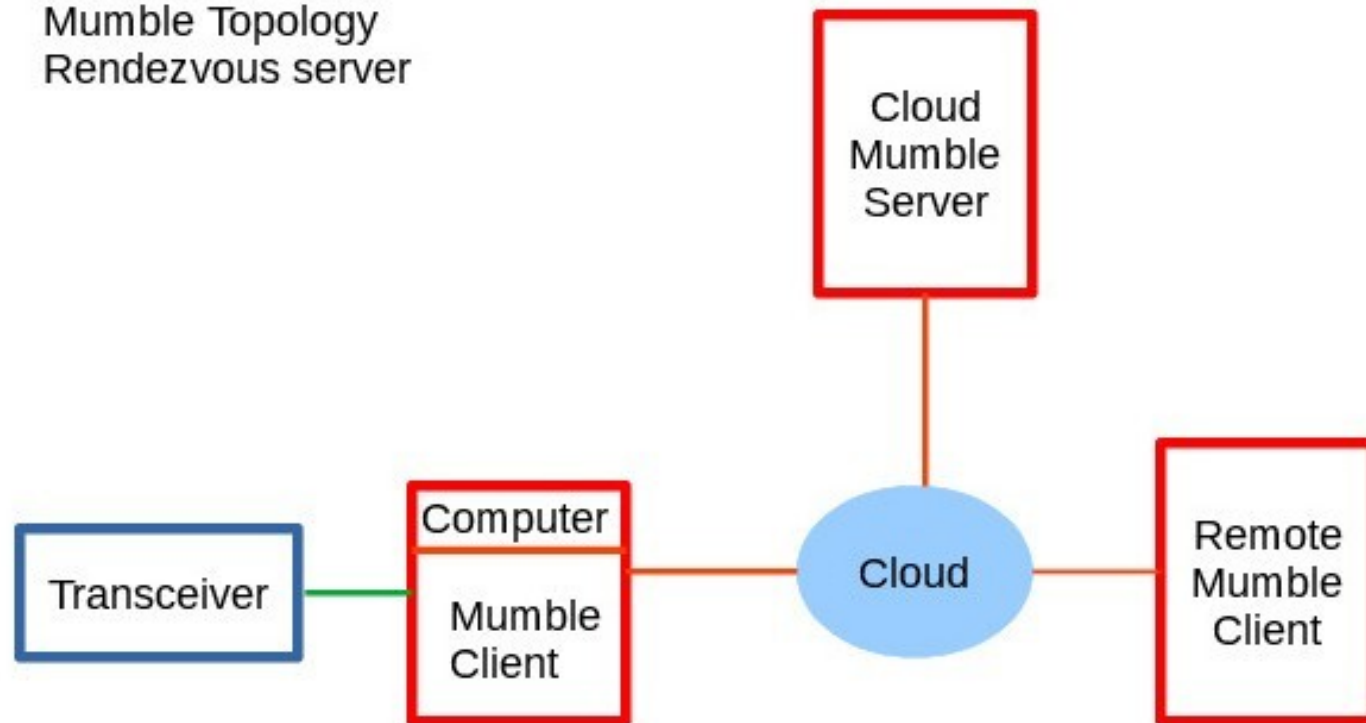- Rendezvous server or local

- Gerry Hull, W1VE

Mumble

Mumble Topology
Local server

Mumble

Mumble Topology
Rendezvous server

Cloud Mumble Server

Computer

Transceiver

Mumble Client

Cloud

Remote Mumble Client

Remoting Your Home Station

Three methods we'll discuss

Remote Station Server

RemoteRig

Remote Desktop

Remote Station Server

aka RigPi

Remote Station Server

aka RigPi

Features:

- Radio & rotor control
- CW keying, VOIP audio
- Spotting, logging & LOTW
- Digital modes
- Browser, email

Control from any browser – even a smartphone

Remote Station Server

aka RigPi

Configurations:

- Software only, $30
- Everything but the Pi $299 (use your own Pi)
- Audio, keying modules separately $99
- Available from MFJ

RemoteRig

By Microbit (Sweden)

Features:
- Hardware end-to-end w/o computer
- Handles rig control, audio, keying
- Serial ports for rotor & amplifier
- Three remote modes

RemoteRig

In use at W1NN

RemoteRig

In use at W1NN

W1NN
Station Connections

MS-Windows PC

K3/0

Cloud

Remote Rig Client

Japan

Internet Router

IP Controlled relays

Remote Rig Server

Ohio

Antenna Switches

Elecraft K3

Blue = RF stuff
Red = Computer stuff
Black = Control stuff
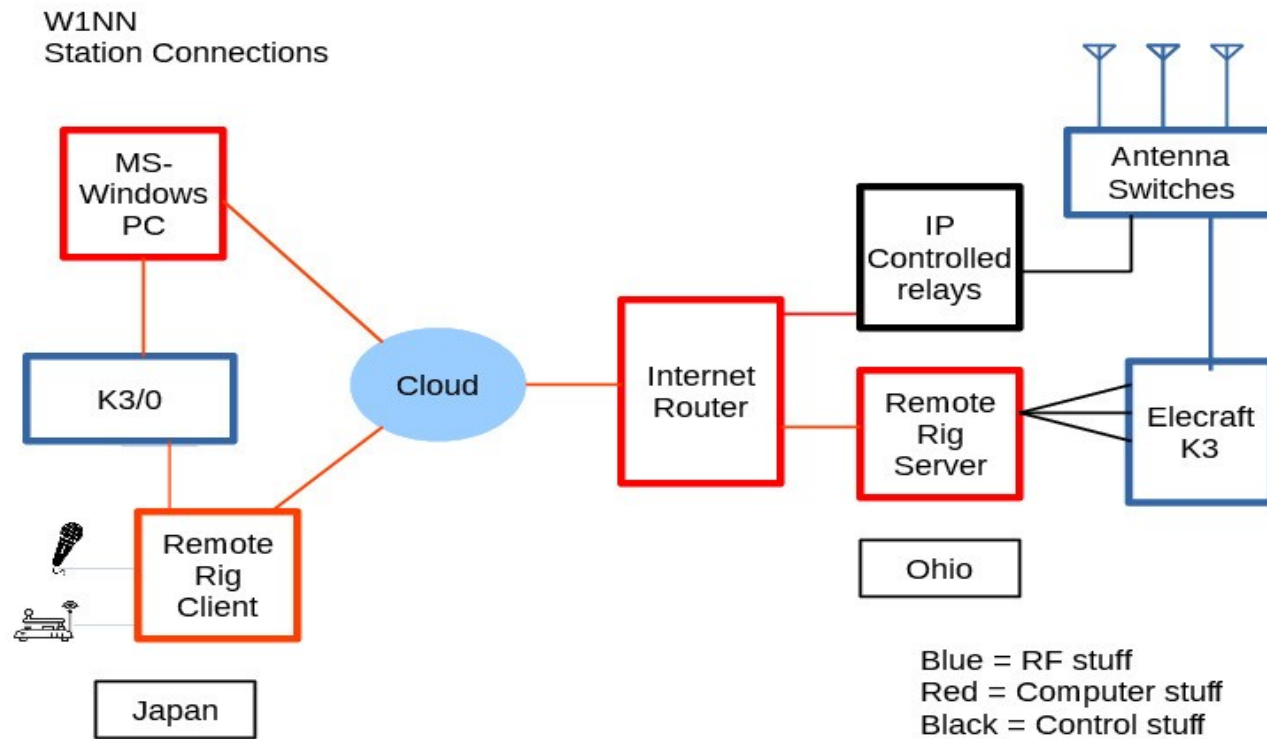
Remote Desktop Methods

Rendezvous servers

Tunneling to RDP

Remote Desktop Methods

Rendezvous Servers

- Anydesk – anydesk.com

- Teamviewer

- Chrome Remote Desktop

- etc.

Remote Desktop Methods

Tunneling

- Remote Access VPN e.g. NordVPN

- OpenVPN appliance

- OpenVPN on a Raspberry Pi or Linux

Remote Desktop Methods

NordVPN Meshnet
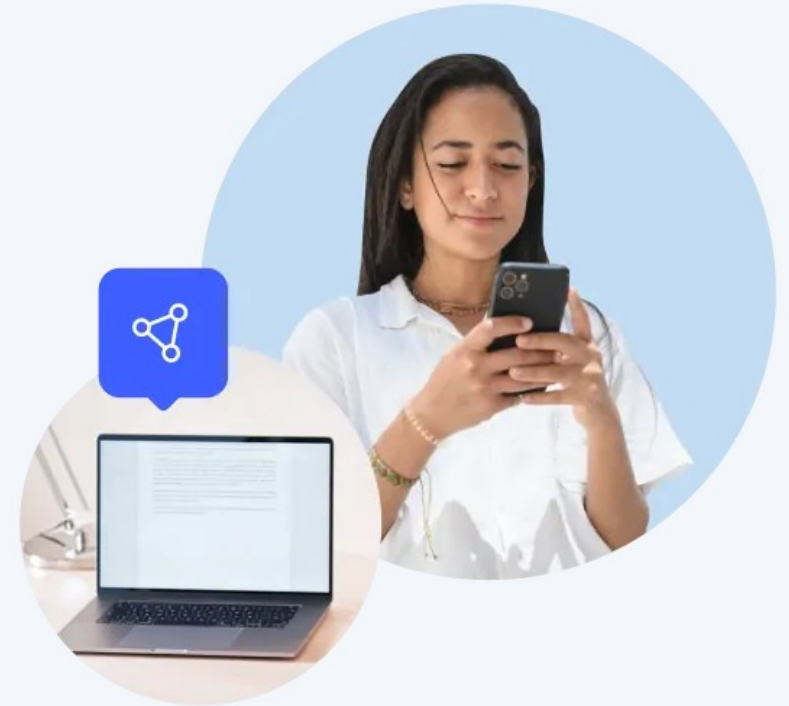
Locally Hosted VPN

Ubiquiti UniFi Gateway

Locally Hosted VPN

Synology DiskStation

Locally Hosted VPN

The NF8M Setup

NF8M
Station Connections

RAAS — USB — Windows PC N1MM LP100 CP RAAS CP

LP100 — USB

Mortty — USB

TS590S — Serial

TS590S — USB — Linux PC Mumble

Windows PC — Ethernet — Internet Gateway

VPN Server

Internet Gateway — Cloud

Linux PC Mumble — Ethernet

Power "Boot box" — Ethernet

Blue = RF stuff
Red = Computer stuff
Green = Keying stuff

Remote Contesting   NF8M

The NF8M Setup

Stupid N1MM Trick #15

Contesting on the High Iron
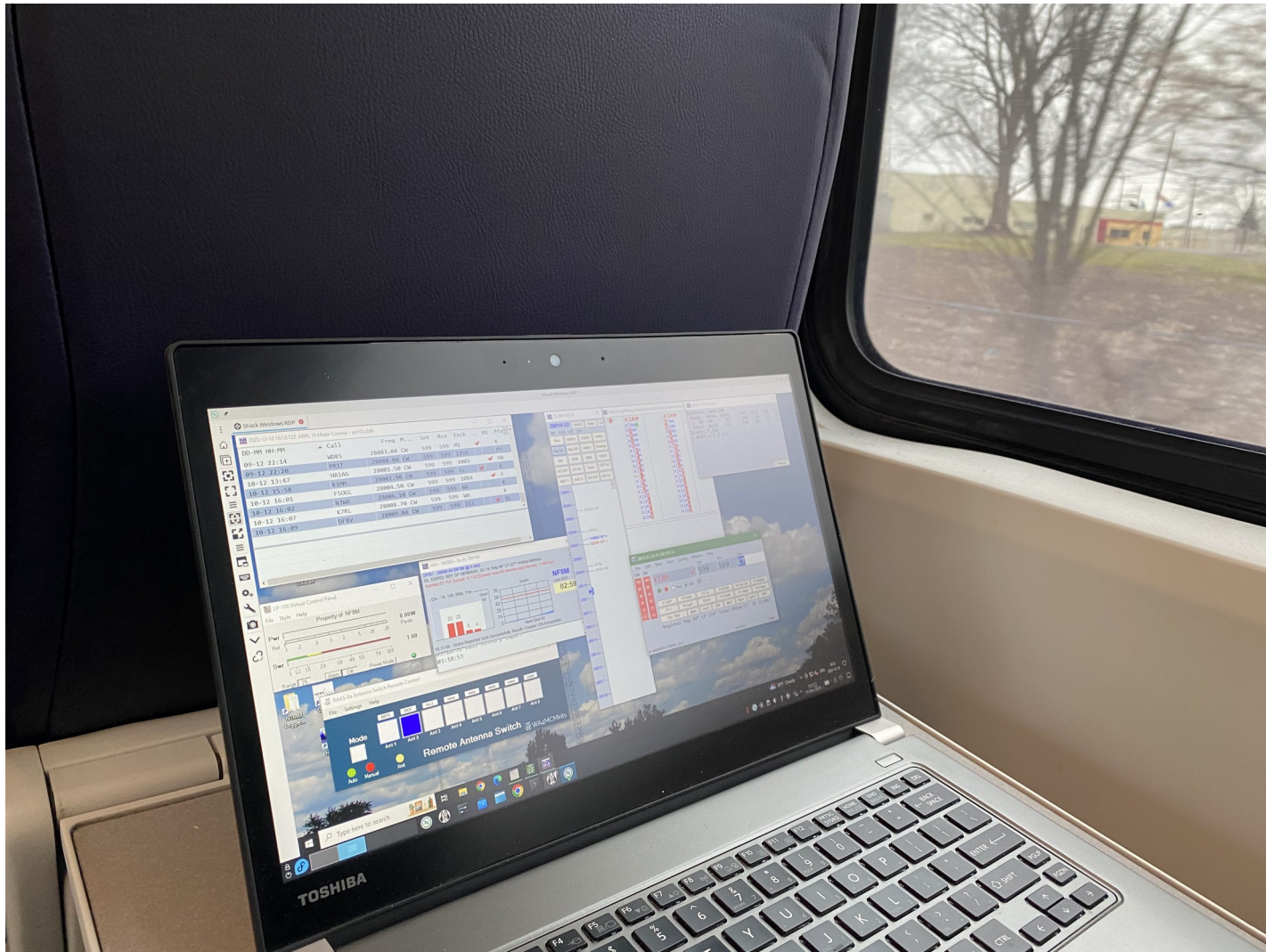
Waiting for the train
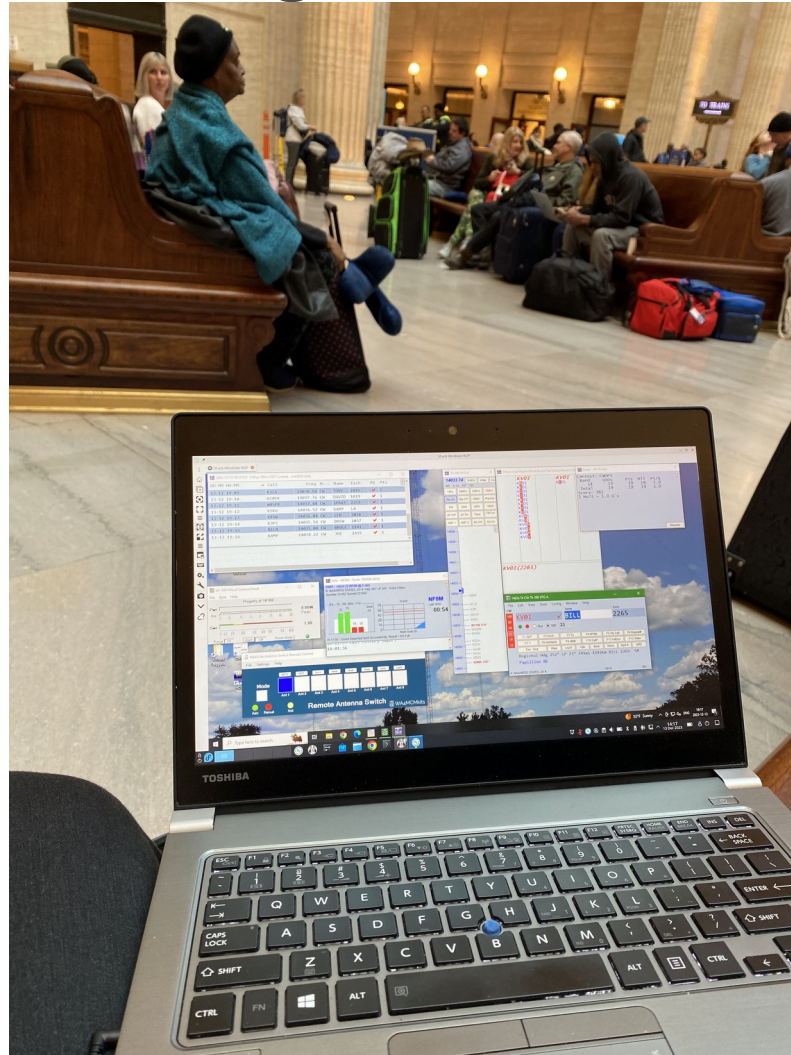
What's next ?

Elecraft K4 to K4 seamless remote

- Control a K4 from another K4 anywhere via Internet

- Switch between multiple K4s – Multiple clients

- Desktop/Tablet app – K4/0 control head

- Software in beta – releasing soon

Before we go...

A quick commercial

Dayton Contest University

Thursday, May 16, 2024

Hope Hotel, Dayton

www.contestuniversity.com

Contest University

2024 Dayton Contest University "CTU" – COURSE OUTLINE – 7:00 AM to 5:00 PM

7:00 ALL ROOMS – Student Registration and Contest Buffet Breakfast – ALL – 60 minutes
8:00 ALL ROOMS – Welcome to CTU 2024 – K3LR, W8CI & N9JA – ALL – 10 minutes
8:10 ALL ROOMS – It's our Radiosport Game – Let's Play Fair – K5ZD – ALL – 40 minutes

9:00 CONTEST TOPIC SESSION #1 – attend ONE of 4 sessions – 60 minutes
ROOM 1 – Optimizing the Use of Waterfall Displays for Contesting – N6TV
ROOM 2 – HF Propagation Tips to Improve your Competitiveness in Contests – W3LPL
ROOM 3 – Feeding and Detuning Towers – N0AX
ROOM 4 – Contesting Fun on That "Other Mode" RTTY – W0YK

10:00 ALL – *CONTEST SNACK* – 15 minutes

10:15 CONTEST TOPIC SESSION #2 – attend ONE of 4 sessions – 60 minutes
ROOM 1 – How to Integrate Youth Operators in Multiop Contesting – KE8LQR and KE8RJU
ROOM 2 – Station Improvements to Improve your Competitiveness in Contests – W3LPL
ROOM 3 – Success Strategies for Remote & Hybrid Multiop Contesting – W1VE
ROOM 4 – Contesting Fun on That "Really Other Mode" FT8/FT4 – W0YK

11:20 CONTEST TOPIC SESSION #3 – attend ONE of 4 sessions – 55 minutes
ROOM 1 – Next Level Contesting; Making the Move to SO2R – K5ZD
ROOM 2 – Antenna Improvements to Improve your Competitiveness in Contests – W3LPL
ROOM 3 – Using Automation in Your Contest Station – Techniques and Recommendations – N6TV
ROOM 4 – Busting Contesting Myths to Get Started in RadioSport – K8ZT

Contest University

*1:45 CONTEST TOPIC SESSION by REQUEST to RERUN – 50 minutes
ROOM 1 –   As determined by *vote 1
ROOM 2 –   As determined by *vote 2
ROOM 3 –   As determined by *vote 3
ROOM 4 –   As determined by *vote 4

2:40 CONTEST OPEN DISCUSSION Q&A GROUPs Attend ONE of 4 sessions – 30 minutes
ROOM 1 – The World of QRP Contesting – K8ZT
ROOM 2 – Feeding and Detuning Towers – N0AX
ROOM 3 – Remote Station Ideas and Q&A – W1VE
ROOM 4 – Tower Safety – W3YQ

3:15 CONTEST OPEN DISCUSSION Q&A GROUPs Attend ONE of 4 sessions – 30 minutes
ROOM 1 – SO2R and Station Design Q&A – K5ZD
ROOM 2 – How to Improve Your Station – Better Contest Results – W3LPL
ROOM 3 – Digital and RTTY Contesting – W0YK
ROOM 4 – Antenna/Tower Reliability – W3YQ

<u>3:45 ALL – *CONTEST SNACK* – 15 minutes</u>

4:00 ALL ROOMS – Are you Considering a New Radio? Is My TX Clean? – NC0B – ALL – 50 minutes
4:50 ALL ROOMS – 2024 CTU Survey & Eyeball Sprint Results – K3LR & K1DG – ALL – 10 minutes

Contest University

Registration now open

- Textbook

- T-shirt and hat

- Discounts at ARRL and DX Engineering

- Breakfast and lunch

- Rub elbows with top contesters

$85

Remote Contesting   NF8M

Contest University

Registration now open

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$85

Register at www.contestuniversity.com

Contest University

Thanks for listening !

Slide deck, links and other resources
can be found at :

www.nf8m.com

Click **Presentations** in the right
column