PACIFICON 2019

ARRL Pacific Division Ham Radio Convention

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Remote Access to Your Amateur Radio Station

- Simple Solutions and Latest Developments

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These slides, and more, are at my website k6ufo.com

Rule Number 1: Follow the Rules!

There are Operator Rules, Station Rules, Award Rules, Contest Rules, …

- Operator must be licensed in transmitter country or have a reciprocal permit.

- Station (transmitter) must be controlled by a licensed operator and meet transmitter requirements in location country (power limits, frequencies, etc.)

- Awards and **Contests** each have their own rules.

E.g., DXCC Award Rule 9. - All contacts must be made from stations within the same DXCC entity. - All TX and RX of a station located within a 500-meter diameter circle.

- Remote receivers are widely available, but are not allowed for nearly all awards or contests. Only a 2nd receiver at your own transmitter site.

Using **OTHER people's stations** is useful when traveling, or when no station is allowed at your residence.

Use one of the Receive-only sites on the web: websdr.org sdr.hu globaltuners.com and many RemoteHams.com sites.

For Receive AND Transmit: you may need to register, provide a copy of your license, join a club, pay dues or dollars. Look for:

- A friend or club station setup for remote access, especially owners of a FlexRadio-based station. Many contest stations: N6RO, W7RN, …

- RemoteHams.com has many shared stations and club stations globally.

- RemoteHamRadio.com An established commercial operation. Free trial then pay, very high quality stations available in USA and Caribbean.

- BeLoud.us A newer commercial operation. Plans for stations in USA, Ecuador and Bonaire, Puerto Rico and Croatia.

Setting up **Your OWN Station** for remote access:

There is no one perfect solution. It depends on what you want to do:

Modes: Voice, CW, Digital? CW by keyboard only, or need key or paddle?

How much equipment will you haul around with you? Just a cellphone or tablet?

Fast setup? Do you need to be on in 1 minute from a Smartphone, Tablet or Laptop? Or will you take time to set up a Control Head, edit the router to open ports, have special equipment, keyers and paddles, an extra screen …

Will the station be used at home AND remotely, or dedicated to remote? How much re-configuration to go from local use to remote use? Will you do it every day before going to work? Do you need full band-changing, or is a "preset" on one band/mode sufficient?

Is the station easily accessible (in the garage), or is it a 4 hour trip to the hills?

Are you willing to keep a PC on-line at remote station, or does everything have to be extended across the internet with no on-site PC?

How much "reset" ability do you need? Is anyone on-site to help?

-- Recommendation: Start simple, gain experience, then expand or change.--

Four Basic Needs for Remote Operation

1. Audio In and Out to radio: Access to MIC/SPKR, Line In/Out, or **audio over USB**. Just like for digital modes (FT8, AFSK).

2. Radio Control: To read and set radio Freq., Mode, PTT ... Need a radio with a **serial port, CAT, CI-V, or USB control**.

3. Station Control: AC power outlets, antenna switching, rotators, tuners, amplifiers, ... Equipment must be highly **automatic**, or have PC control, or over-the-web control. Simplify your station if possible.

4. "Good" Internet service: Up and Down speeds over 0.5 Mbps, Low delay under 200ms, low packet loss, low jitter or variation, an IP address (dynamic or static) for the radio end. Reliable more important than speed. (DSL, cable, WiFi = good, Satellite or cell internet = bad.)

…and your patience and willingness to deal with problems.

Two “simple” ways to Implement Remote Access

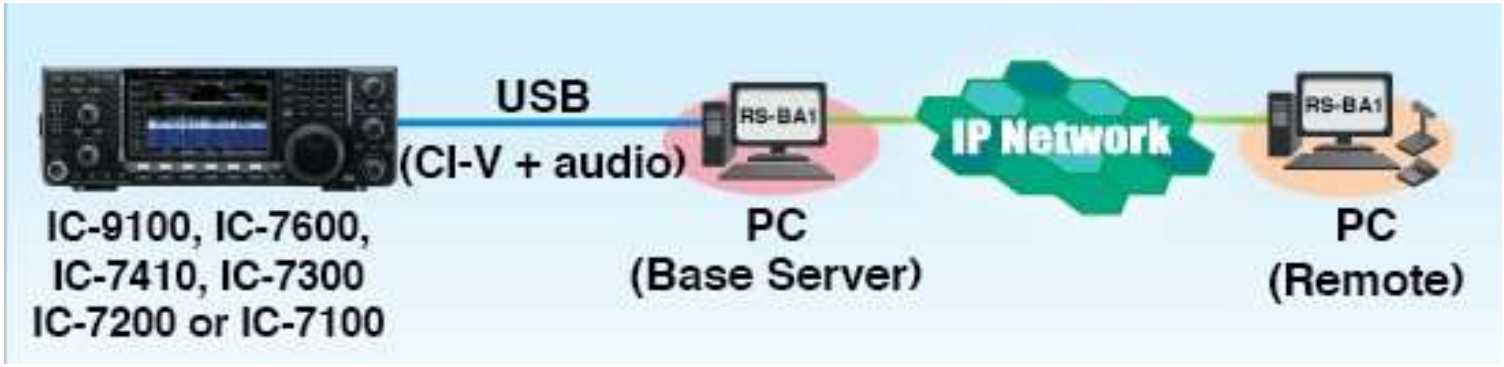
1. Software Programs designed to control remote radios.

2. Remote Desktop Software

1. SW Programs designed to control remote radios.

RemoteHams.com is both a software Program (RCForb) and a community of users & stations. Many stations free to use, some are "membership". Wide range of capability and reliability. You can use the server software to offer up your own station. See, QST Magazine, April 2017, p30: "DIY Remote Radio Now"

ICOM's RS-BA-1 IP Remote Control software. $99.



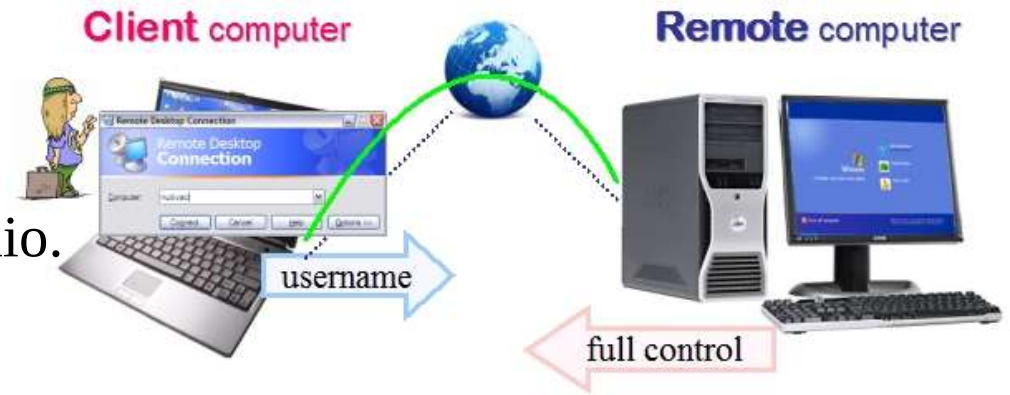
See also: Kenwood Radio Control Program ARCP-480, Ham Radio Deluxe, TRX-Manager, DF3CB software FT2000RC, N4PY Software, …

2. Remote Desktop software

Set up your shack PC to control your station. Use any software - even if it doesn't have any "remote" ability: N1MM+, Logger32, DXLab, WSJT-X, ...

Then, use the "remote desktop" software to "connect-in" to your shack PC. You "see" the shack desktop, and control the station, just like being there.

There are many good free "Remote desktop" programs (also called VNC):
Chrome Remote Desktop,
TeamViewer (license problems),
Windows Remote Desktop,
Splashtop,
...others, make sure it includes audio.



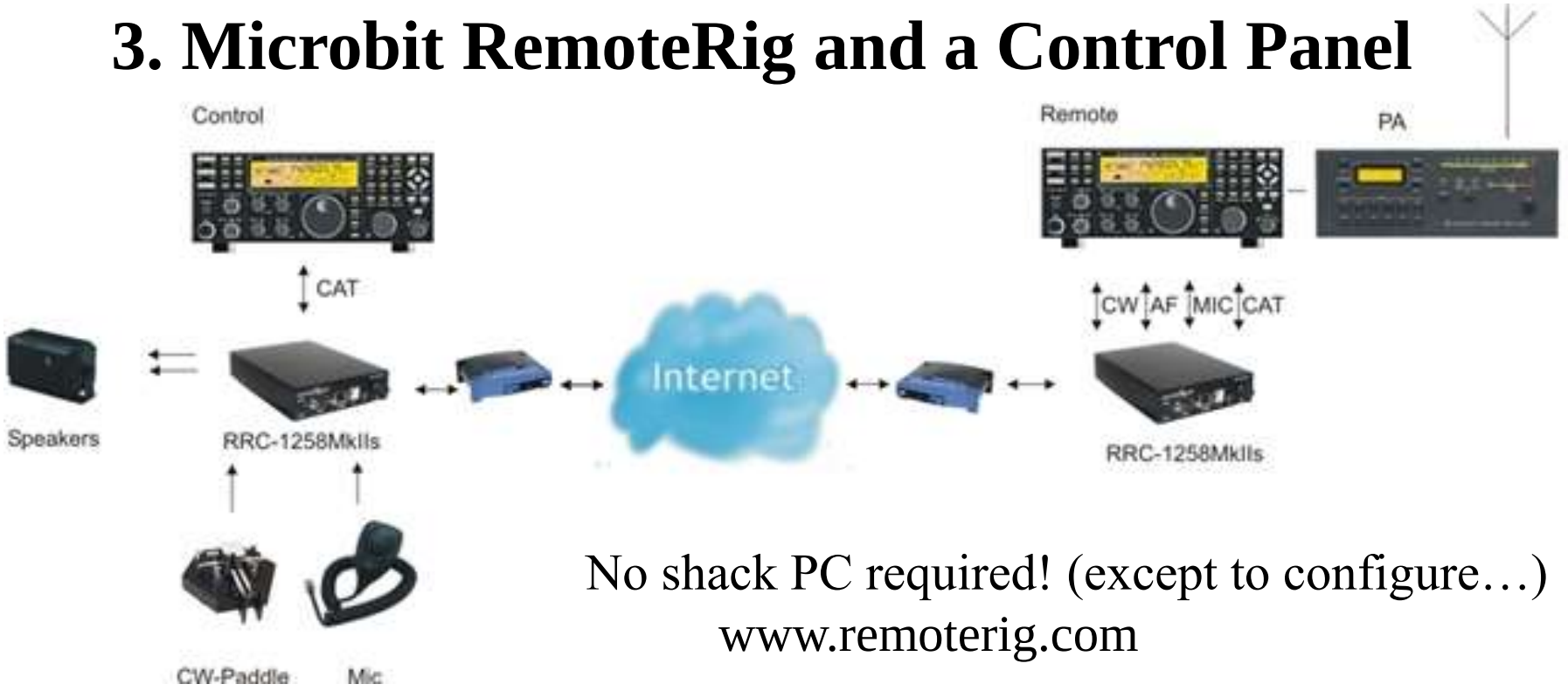
+ Use any software in the station.
+ Audio decoding for FT8 is best at station.
- Needs the most internet speed.

Two “advanced” ways to Implement Remote Access

3. Microbit RemoteRig.

4. FlexRadio SmartLink.

3. Microbit RemoteRig and a Control Panel



No shack PC required! (except to configure…)
www.remoterig.com

Use a pair of RemoteRig "modems" to send audio and control signals to station. Can use with: Radio with a detached front panel, "control heads" (Elecraft K3/0-Mini), "twin" radios, PC program or Android App.

+ No shack or remote PC to operate. Real knobs. Good CW keying from computer or paddle or straight key.
- Expensive? ($500 a pair, plus a $700 control head or 2nd radio)
- Hard to configure the 1st time.

4. FlexRadio software and Maestro control panel

A FlexRadio Maestro (wireless or wired) connects across a local network or the internet to control a FlexRadio station. Can also control from a PC program or App on smartphone or tablet. Remote access is “built-in” to the SmartSDR software.

+ Good support, one vendor.
+ No shack PC required.
+ Knobs
+ Good CW keying from paddle or straight key.
- Expensive? $2k radio and $1k Maestro

What are the REAL problems?

Station Control: **The control of "everything else"**: AC power outlets, antenna switching, rotators, tuners, amplifiers, RX-only antennas, watt meters, …

Simplify your station, make your station as **automatic** as possible, then solve remaining issues… Look for devices that are "**automatic**" or "computer-controlled"(needs a PC in shack). (Trust, but verify)

Eliminate things that require you to manually switch, plug or adjust them.

A "killer" problem when remote is when something needs to be reset or unplugged. There are more of these than you think.

There are solutions to the REAL problems:

AC Power switching: WeMo Mini Smart Plug $26, or DLI Web Power Switch $170

Antenna switching: The radio's ANT 1/2 button, or band decoders & coax switches.

Rotators: Control box with a serial port, use logging software or PstRotatorAz sw.

Tuners and amplifiers: If manual tune, use on one band switched-in by antenna switch. If auto-tune: use anywhere. Use in Automatic-mode or with control sw on shack PC, or over internet if remote-capable sw.

Other devices can be controlled across the internet with serial port extenders, “web” relays and switches, computer controlled switches, ...

Latest Developments in Remote Access:

ARRL DX Contest, SSB 2019 Mar 2 Claimed Scores

SOAB HP

Call	SO2R	Remote	QSOs	Mults	Op	Time	Score	Club
8P5A(W2SC)	x		7400	287	47		6,371,400	NCCC
P49Y(AE6Y)	x		6280	286	40		5,388,240	NCCC
KH7XS(K4XS)			6490	269	45		5,237,430	FCG
ZF9CW(K5GO)			6165	272	44.5		5,030,640	CARS
NP2P(N2TTA)	x	x	4381	246	41		3,220,226	
TO5A(F5VHJ)	x		4107	237	37		2,920,077	CDXC
W2RE(@W1/EASTPORT)	x	x	2314	317	43		2,200,614	
VY2ZM	x		2172	323	38		2,104,668	YCCC
N1UR	x		2166	314	40		2,001,352	YCCC
CE2LR			3155	209	25		1,977,558	LUCG

Remote stations are being used in all major contests: ARRL DX, CQ WW, Stew Perry, CQ WPX, Sprints, QSO Parties…

Hundreds of remote stations on-the-air.
Thousands of remote stations in existence.

Newer “SDR” radios are particularly well-suited for remote operation: FlexRadio, Apache ANAN, Expert Electronics SunSDR, …

Elecraft has a control head “K3/0-Mini” and provides good support of the RemoteRig boxes, and the RemoteHams.com system. Elecraft also has “remote” utility software for its K3 radios and KPA amplifiers. The K4 radio is planned to have remote capability built-in.

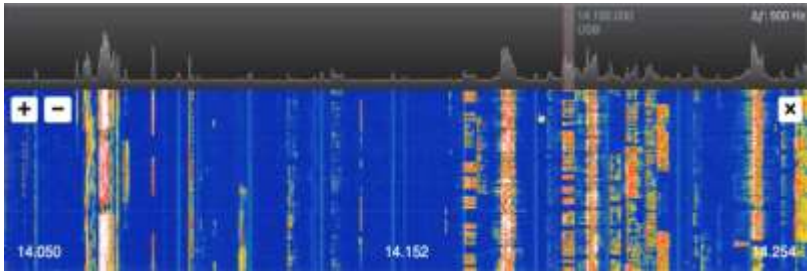
“Traditional” manufacturers are providing the “weakest” solutions: Icom RS-BA1, Kenwood ARCP-480, Yaesu PCC-2000…

Latest Developments in Remote Access:

Automatic and remote antenna switching and control being well supported by Green Heron Engineering, HamPlus, Hamation, Array Solutions, DX Engineering, RemoteQTH.com, EA4TX, 4O3A, microHam, …

Writelog contest logging program has built-in remote control of another Writelog program. This allows remote operation without changing any cables or settings (if you use Writelog, and your antenna switching is automatic). www.writelog.com/category/remote-control $30

Ham Radio Deluxe logging software can control a remote copy connected to a radio. hamradiodeluxe.com/features/rigcontrol/ $100



RemoteHamRadio.com is running full panadapter/waterfall displays from FlexRadios in your Chrome web browser – no plugins, no extra hardware or software. (aka, “full waterfall over internet”) (and you didn’t have to buy the radio.)

RemoteTX.net RigPi.net and MFJ-1234 offering Rasberry Pi controllers for remote radio control: CAT and Audio, keyer, some power and USB devices.

Q & A

What are your questions and concerns?

Maybe someone here can help!

Thank you!