

The



of

**Internet ~~Connected~~ Radios
Shared**

Scotty Cowling, WA2DFI

Dan Babcock, N4XWE

Thunderbird ARC April 2016

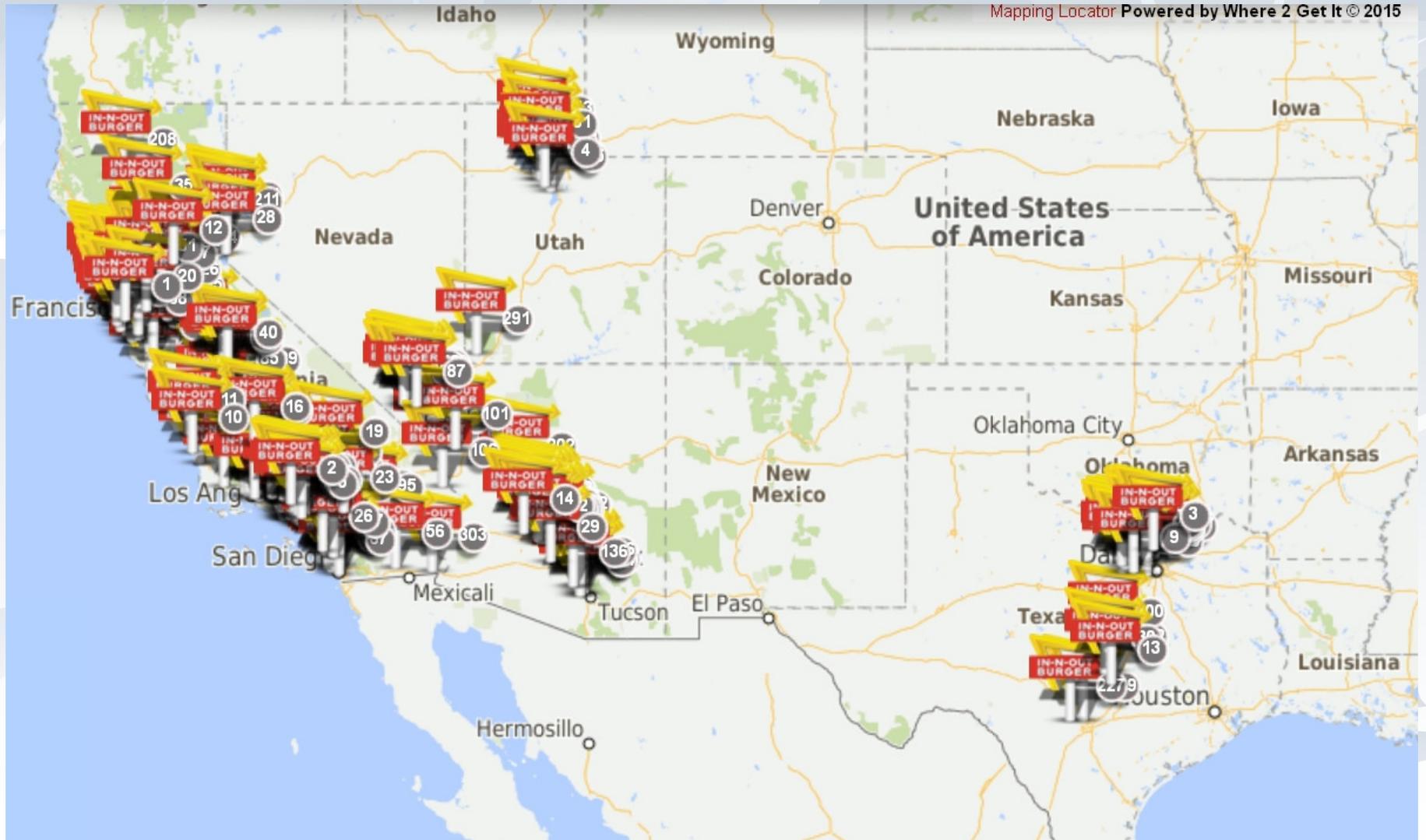
Frame of Reference for Easterners (i.e., anyone living east of I-15)



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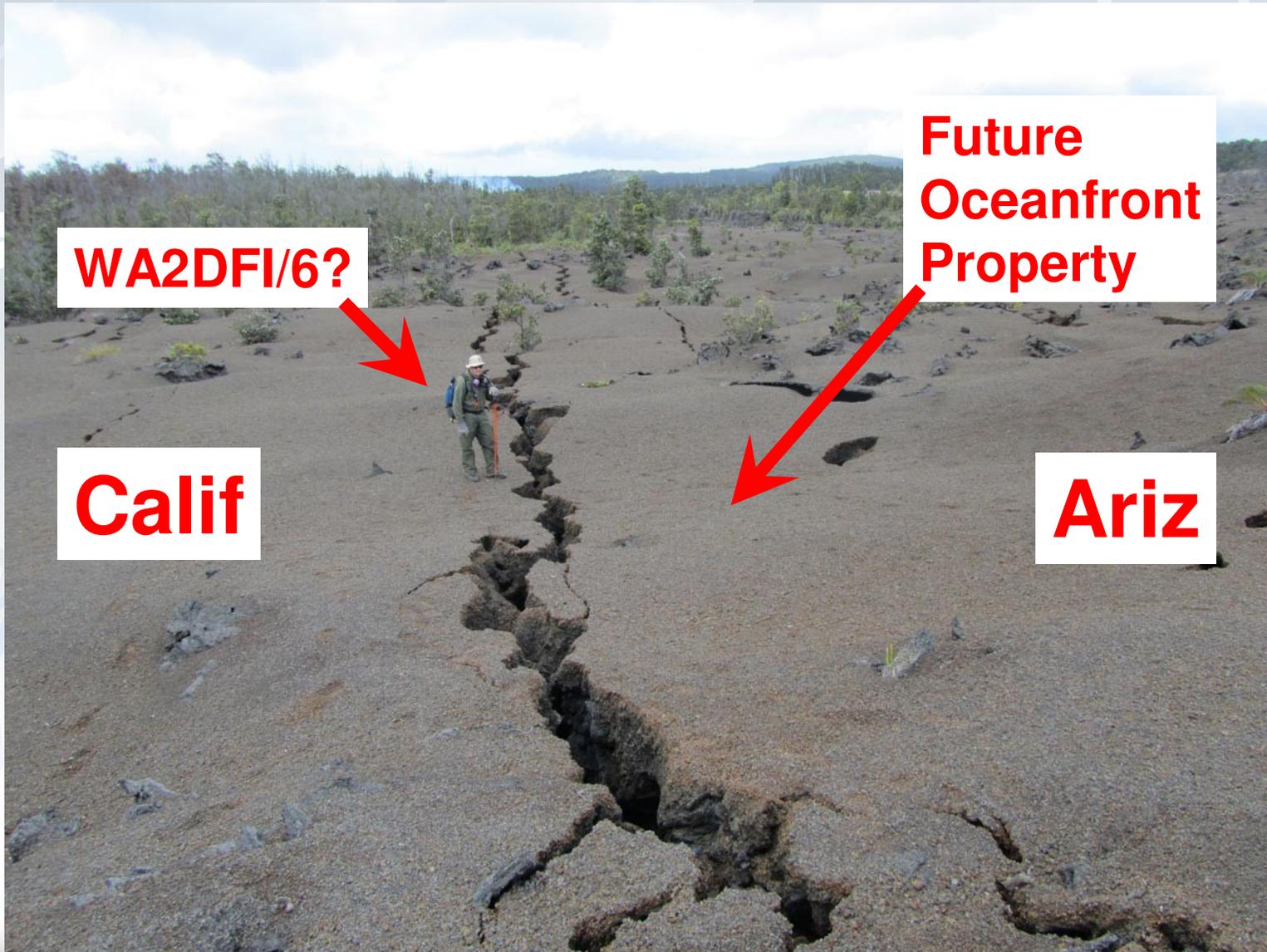
Real Cause of California Earthquakes

Mapping Locator Powered by Where 2 Get It © 2015



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Ground Fault (non electrical)



WA2DFI/6?

**Future
Oceanfront
Property**

Calif

Ariz

Questions?

- Do you have access to a Windows PC?
 - SDR grade
 - 4GB RAM – Multi-core CPU @ >2 GHz – 1080p display
- Do you have access to a Mac?
- Do you have Access to a Linux/Unix PC?
 - SDR grade
- Do you have access to an Android device?
 - Smartphone
 - Tablet
 - HTPC

Questions?

- Do you *NOT* have access to any PC running
 - Windows
 - OS-X
 - Linux/Unix
 - Android

Why are you here?

Internet Shared Radios

- Listen to someone else's radio

With browser

- Easy to do from anywhere
- Nothing to load onto your computer

With client software

- Wider selection of remote rigs
- More rig control
- One step on the way to sharing your rig

Internet Shared Radios

- Listen to your *own* radio

Why would you do this?

- Client is a radio control GUI on its own
 - Software split into two or more pieces
- Test your Server/Client system
- Operate your radio on your local network
 - “network” ≠ “Internet”
 - There are reasons why you might *not* want to share

Internet Shared Radios

- Letting others listen to your radio

Really, *why would you do this?!?*

- You have the connection bandwidth to spare
- You don't use your radio 24/7/365
- You're an early adopter and proud of it (admit it!)
- Because you can
- It is in the true spirit of amateur radio

Consider it SDR Elmering

Internet Shared Radios

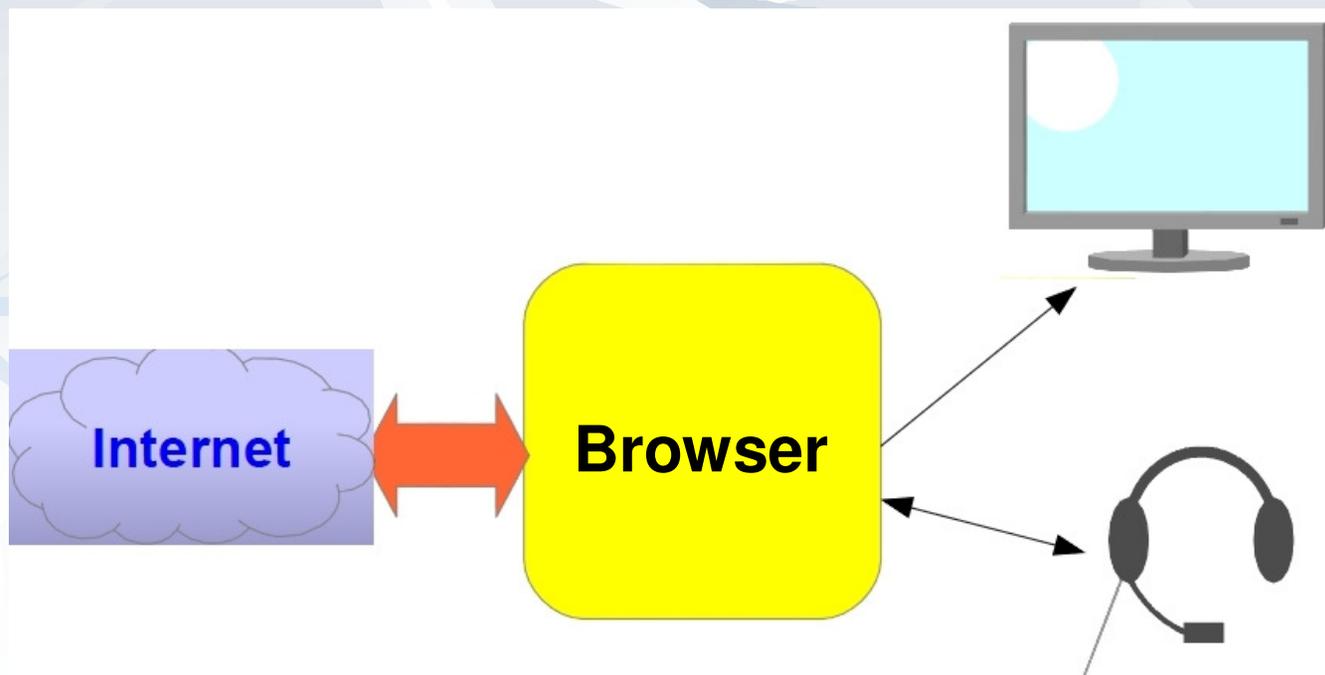
Transmitting

- Possible
- Not quite ready for prime time
- We will leave this for next time

Listen To Someone Else's Radio

With browser

- Easy to do from anywhere
- Nothing to load onto your computer



Listen To Someone Else's Radio

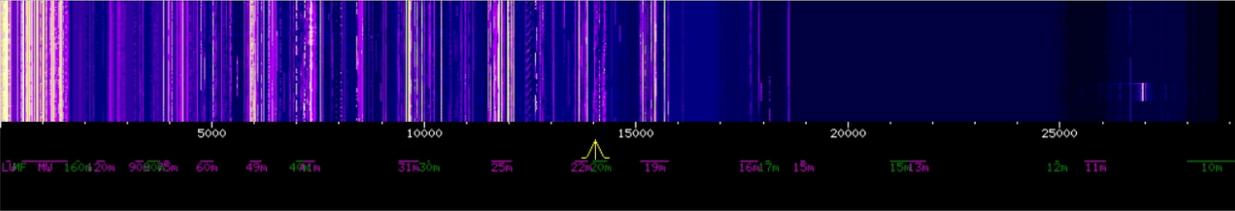
Firefox v30.0 under Windows XP

URL: <http://websdr.ewi.utwente.nl:8901/>

Your name or callsign:

View: waterfall blind Allow keyboard:

Waterfall: Java HTML5 Sound: Java HTML5



Frequency: kHz
Or tune by clicking/dragging/scrollwheel on the frequency scale.

Bandwidth: 7.80 kHz @ -6dB; 8.26 kHz @ -60dB.
wider CW-wide LSB USB AM FM
narrower CW-narrow LSB-nrw USB-nrw AM-nrw FM-nrw
Or drag the passband edges on the frequency scale.

Waterfall view:
zoom out zoom in
max out band max in
Or use scroll wheel and dragging on waterfall.
Speed: slow
Size: medium
View: waterfall
 Hide labels

Memories:

Logbook:
Call of station that you hear:
Comments, if any:
Note: time, frequency, your name/call, and DXCC information are added automatically.
View the [last 20 lines of the logbook](#), or the [entire logbook](#) (ctrl-click for new tab/window).

Station information:
Lookup in databases:

Volume:
 mute squelch autonotch

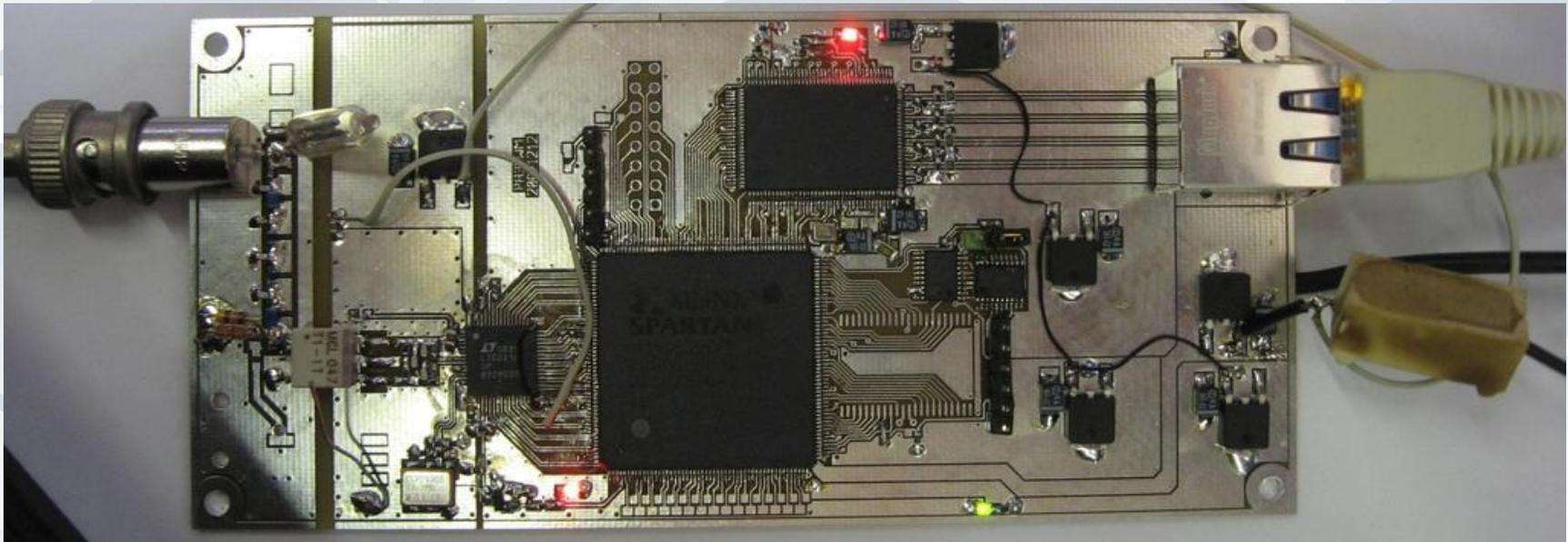
Audio recording:

Signal strength plot:

This WeSDR is currently being used by 97 user(s) simultaneously: compact view

Listen To Someone Else's Radio

URL: <http://websdr.ewi.utwente.nl:8901/>



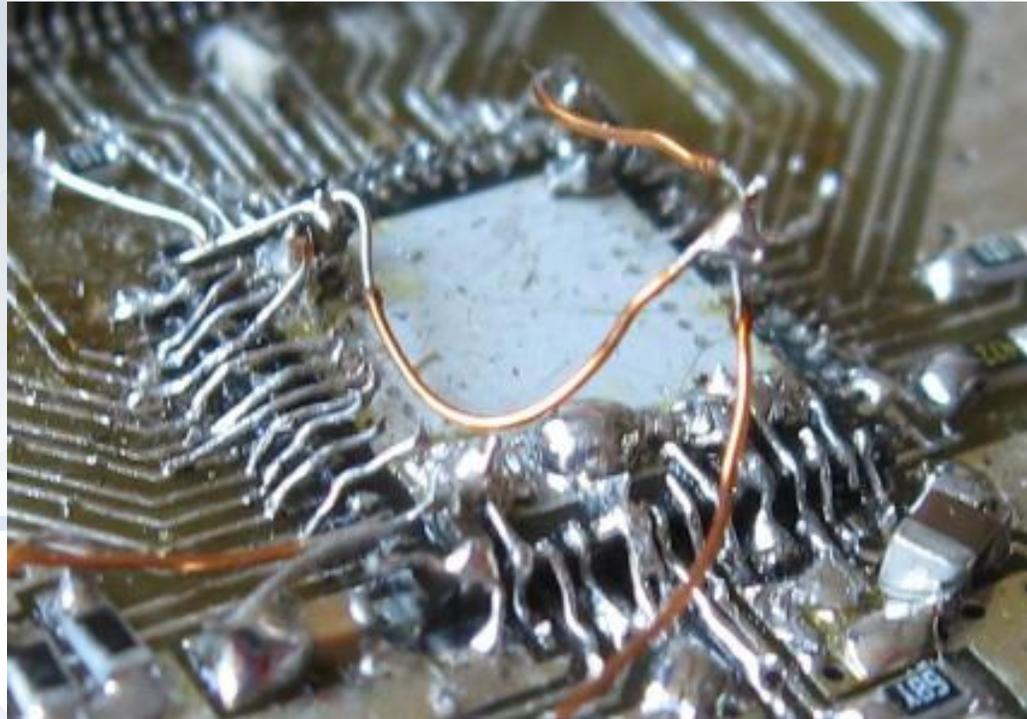
FPGA: Spartan 3 XC3S500E (~10K F-F)

ADC: LTC2216 16b@77.76MHz

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Listen To Someone Else's Radio

URL: <http://websdr.ewi.utwente.nl:8901/>

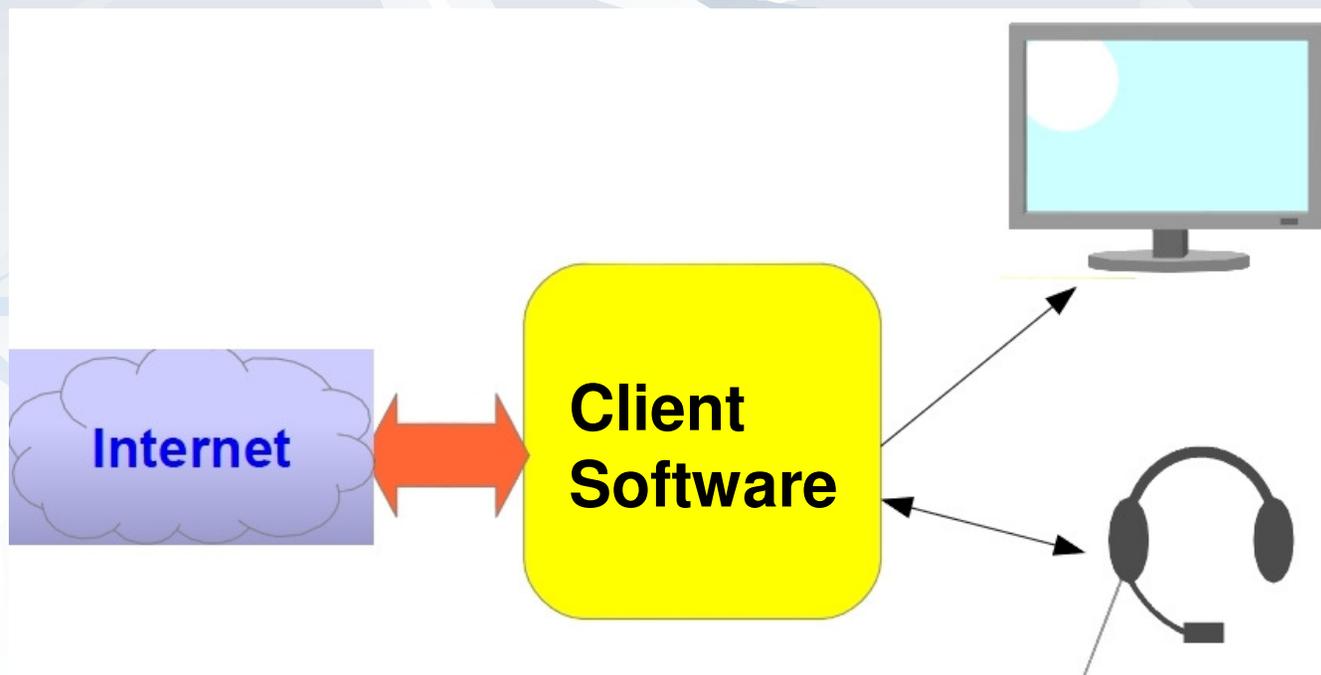


This took some excellent soldering skill!

Listen To Someone Else's Radio

With client software

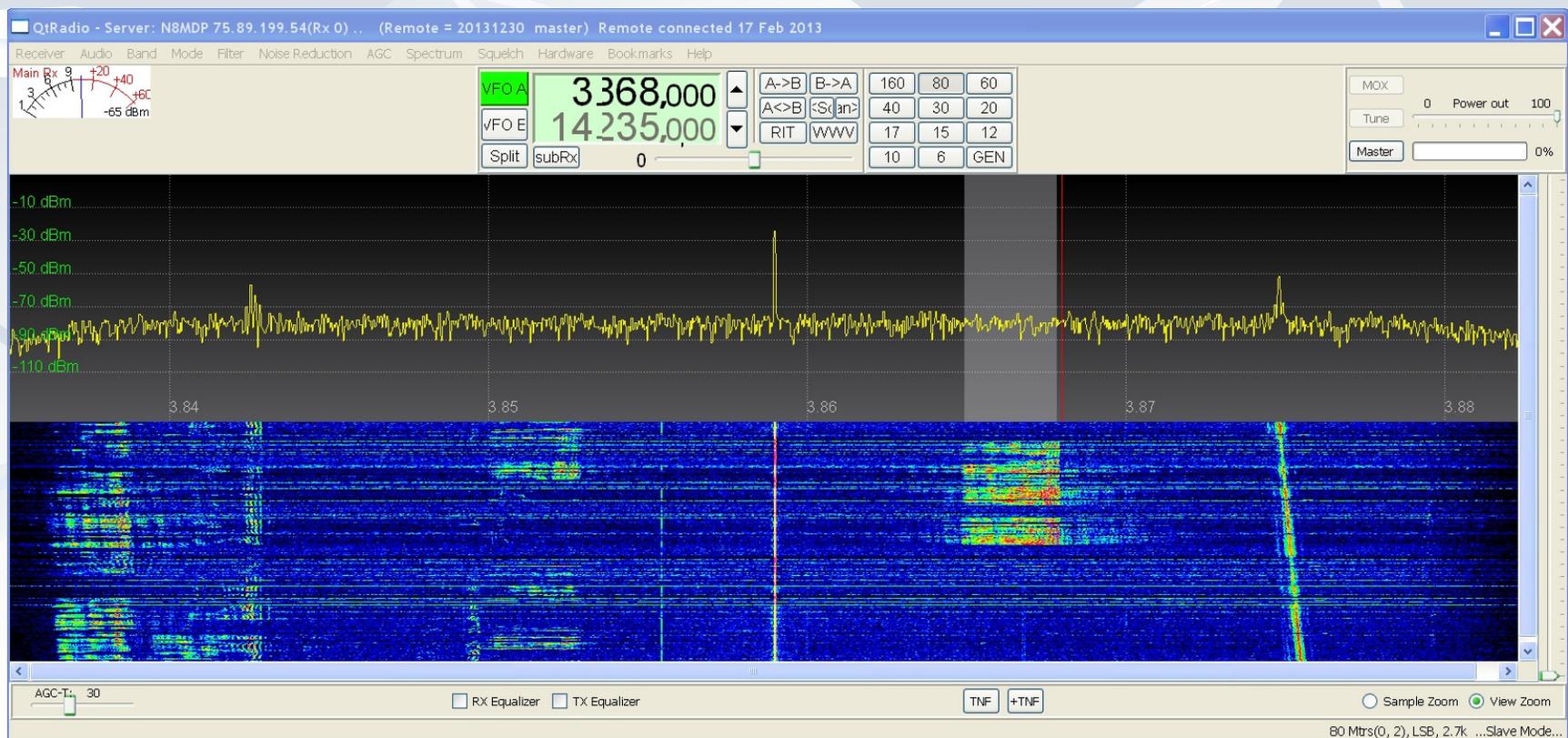
- Wider selection of remote rigs
- More rig control
- One step on the way to sharing your rig



Listen To Someone Else's Radio

QtRadio client under Windows XP

http://napan.ca/ghpsdr3/index.php/QtRadio_on_Windows



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Browsers and Servers and Clients, oh my!

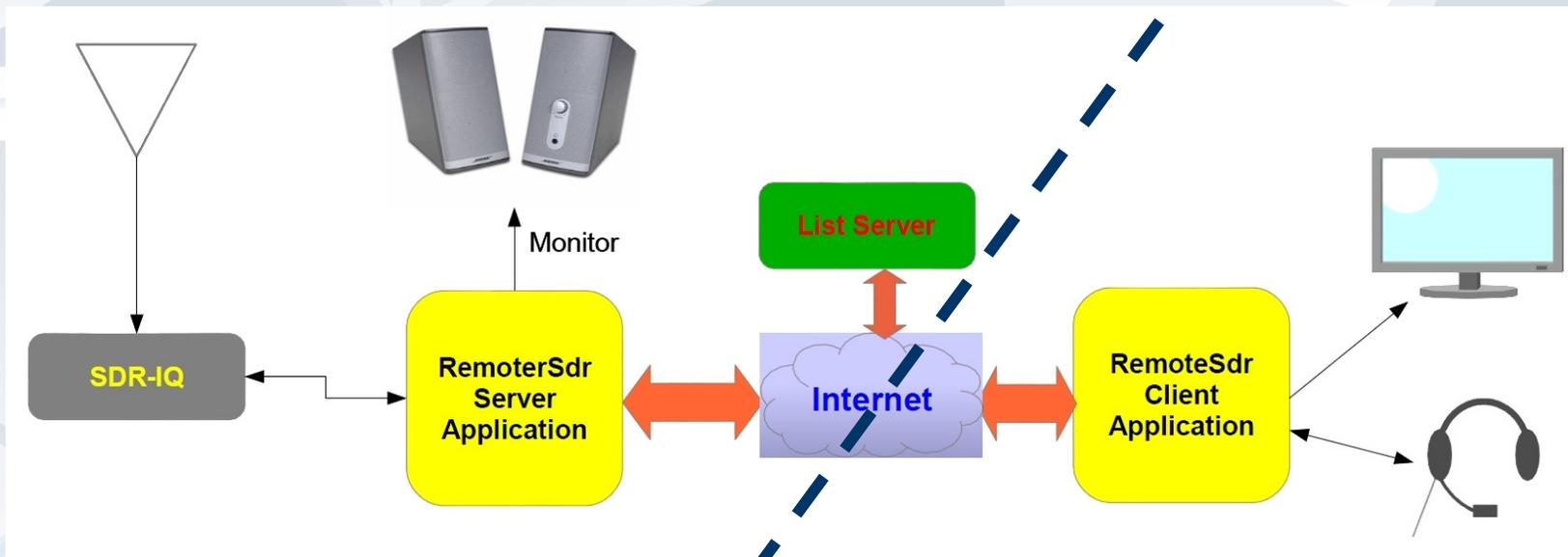
Remember...

- A Browser is just a web *client*
 - View HTML, run client side scripts (e.g., Java), etc

- MS IIS and Apache are *servers*
 - They *serve up* http data to *clients* (e.g., your browser)
 - Typically, web site hosts worry about these, not you!

Now let's look at some SDR server/client software

RemoteSDR System Setup



Courtesy RFSPACE with permission

REMOTE SIDE ↔ **LOCAL SIDE**

RemoteSDR Software

<http://www.rfspace.com/RFSPACE/CloudIQ.html>

At this URL, you can get:

- QuickStartGuide108.pdf
 - The instruction manual
- Remote Client Application for Windows 1.2
 - Windows server and client installer
- Remote Client Application for Mac 1.2
 - Mac client

Listen To Someone Else's Radio

RemoteSDR Client *Network Setup* Menu

Network Setup

This Client Description (80 Char max)
WA2DFI

Domain Name (Leave blank to use IP address)

TCP IP Adr 88 . 149 . 150 . 61 Find SDR

TCP Port 50000

List Server Domain
sdranywhere.com

List Server Script Path
/cloud/get.py

Receive Password (16 char max) Leave Blank for No password

Required Transmit Password (16 char max) Blank not Allowed
password

OK Cancel

Listen To Someone Else's Radio

RemoteSDR Client *Find SDRs* Menu

Find SDR's on Internet

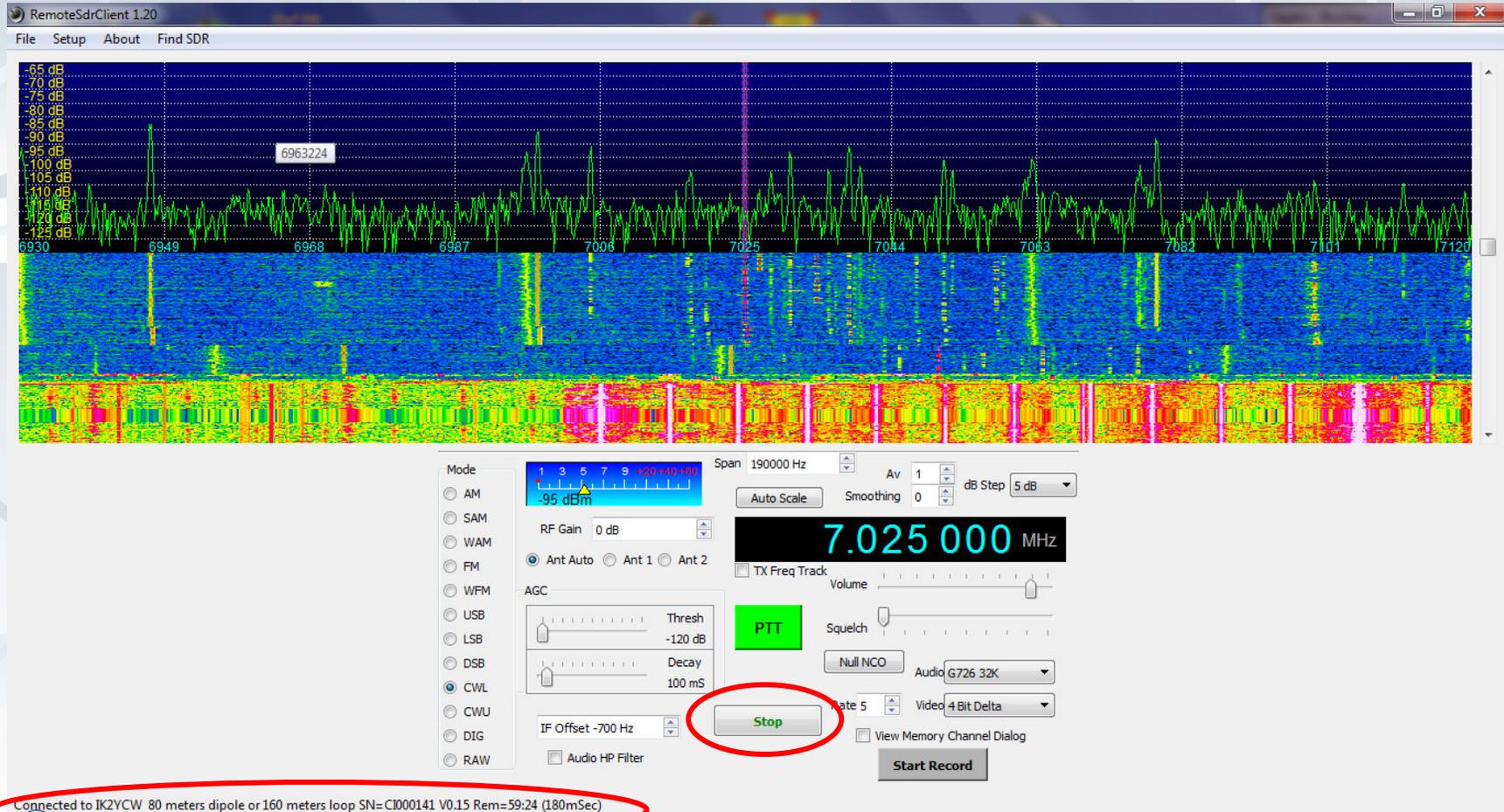
Refresh List Click Link for Cloud Network Status/News sdranywhere.com

Status	SN	Address	Lat,Lon	Security	Description	Descr
Idle	CI000134	37.4.15.126:50000	0,-180	Password Required	stralsundDX, Germany, Cloud-IQ, Ant1: Fenu-HDLA2 WNW/ESE, Ant2: ALA 1530 NNE/SSW	
Idle	CI000113	24.237.73.104:50000	61.2,-149.886	Open	WL7NO Cloud-IQ: Ant 1: BEV-S; Ant 2: Well ALA-1000 L/M	South Anchorage C
Idle	CI000083	110.140.196.210:50000	-38.365,144.894	Open	VK3APG Remote site_OFCD_HF	
Idle	CI000201	76.20.222.90:49999	34.08,-83.9	Open	W700 - CloudIQ (Durford, GA - EM64) - HF - wire	
Idle	CI000141	88.149.150.61:50000	45,-11	Open	IK2YCW 80 meters dipole or 160 meters loop	http://www.ik2ycw
Idle	CI000067	91.43.147.151:50000	50.9276,11.6842	Open	Eckrot's CloudIQ on active loop HDLA3 (ANT1) and active whip BoniWhip (Ant2). Enjoy! eckrot@yahoo.de	
Idle	CI000064	203.197.237.119:50000	28,77	Open	Default Server	
Idle	CI000142	79.77.108.233:50000	55,-1	Open	Cloud-IQ @ G0SBN = Newcastle Upon Tyne, UK [Ant1 = 20/15/10m 2 element mini beam]	www.grz.com/db/
Idle	CI000008	24.96.181.231:50000	34.79,-86.74	Open	N4MHO: Cloud-IQ EM64	
Idle	HV000722	98.190.154.220:50000	0,-180	Open	WA2DFI W7 SDR-IQ Tempe, AZ	
Idle	CI000061	46.230.235.9:50001	59.87,15.15	Open	sm0goj@hotmail.com; Ant 1 200M BOG, RPA-1 mostly on;; Ant 2 ALA-1530	
Idle	CI000028	188.22.106.195:3392	0,-180	Open	CloudIQ oe5nvl	
Idle	CI000160	71.84.177.156:50002	47,-120.414	Open	Ellensburg/Kittitas, WA CloudIQ (Ant1) Wellbrook Loop ALA1530LNPro Imperium (Ant2) BigIR Vert 80m KC7JLU/AJ7JA Cloud Mode	aprs.fi/kittas

Double Click on Entry to Select

OK Cancel

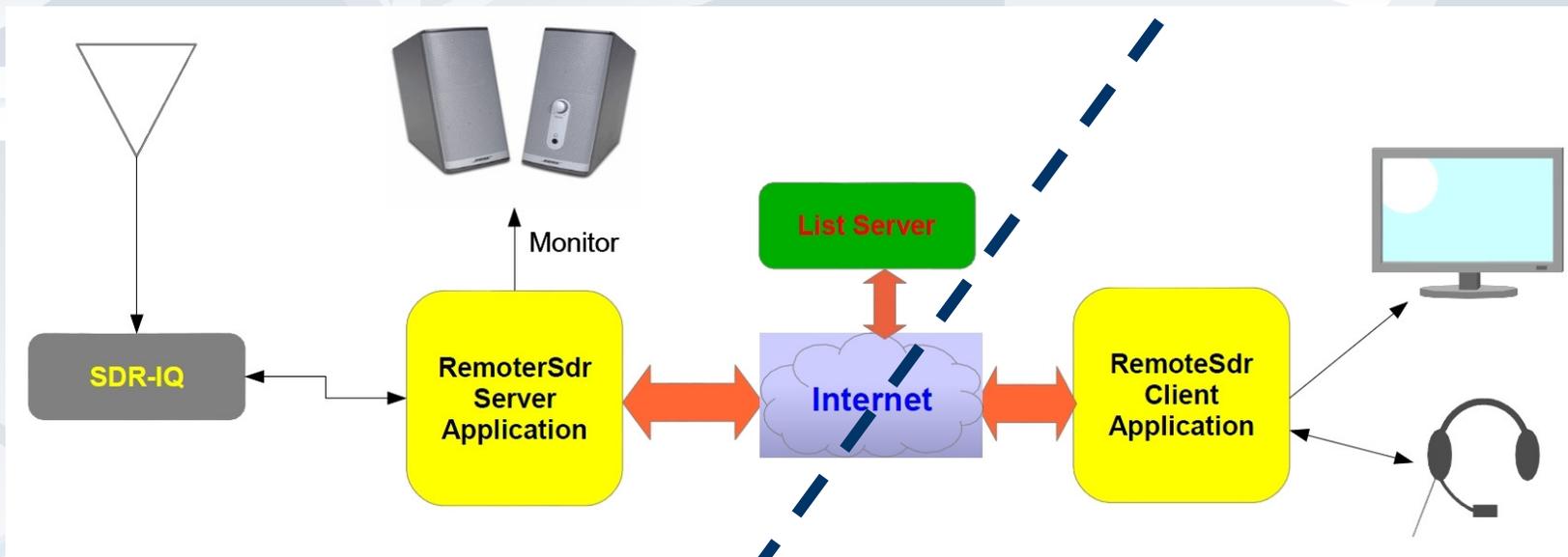
Listen To Someone Else's Radio



RemoteSDR Client in operation

©2016 Scotty Cowling WA2DFI

RemoteSDR System Setup

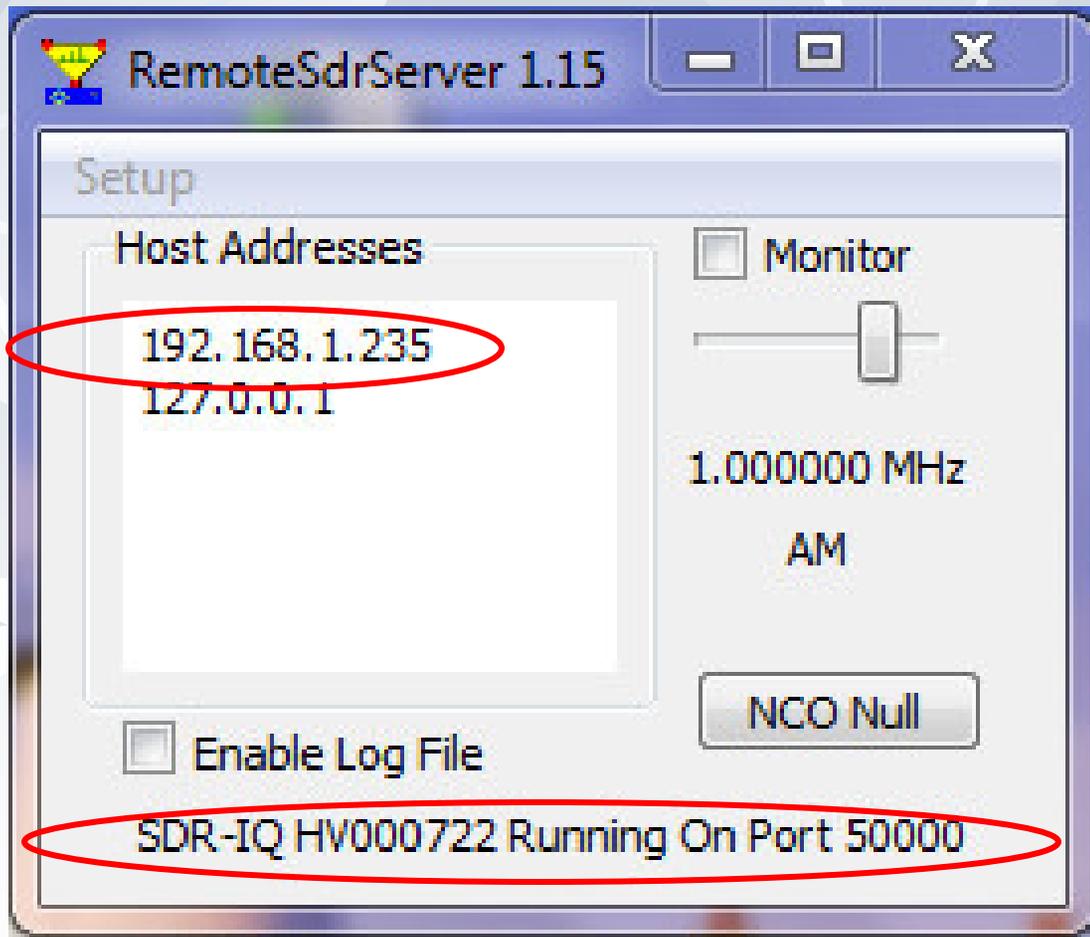


Courtesy RFSPACE with permission

REMOTE SIDE ↔ **LOCAL SIDE**

Listen To Your Own Radio

RemoteSDR
Server



Listen To Your Own Radio

RemoteSDR *Server Setup*

Server Setup

SDR Description (150 char max)
WA2DFI W7 SDR-IQ Tempe, AZ

Optional SDR Description URL (150 char max, omit "http://")

Server Port 50000 Use Nagle

Enter 8 Char SN Filter or leave blank

Optional SDR Server URL

List Server Domain
sdranywhere.com

List Server Script Path
/cloud/put.py

Connection Time Limit 0-255 Minutes (0==No Limit)
0 Min

My Location(decimal degrees)
Latitude 33
Longitude -112

Receive Password (16 char max) Leave Blank for No password

Required Transmit Password (16 char max) Blank not Allowed
password

OK Cancel

Listen To Your Own Radio

RemoteSDR Client *Find SDRs* Menu

Find SDR's on Internet

Refresh List Click Link for Cloud Network Status/News sdranywhere.com

Status	SN	Address	Lat,Lon	Security	Description	Descr
Idle	CI000134	37.4.15.126:50000	0,-180	Password Required	stralsundDX, Germany, Cloud-IQ, Ant1: Fenu-HDLA2 WNW/ESE, Ant2: ALA 1530 NNE/SSW	
Idle	CI000113	24.237.73.104:50000	61.2,-149.886	Open	WL7NO Cloud-IQ: Ant 1: BEV-S; Ant 2: Well ALA-1000 L/M	South Anchorage C
Idle	CI000083	110.140.196.210:50000	-38.365,144.894	Open	VK3APG Remote site_OFCD_HF	
Idle	CI000201	76.20.222.90:49999	34.08,-83.9	Open	W7QO - CloudIQ [Buford, GA - EM84] - HF - wire	
Idle	CI000141	88.149.150.61:50000	45,-11	Open	IK2YCW 80 meters dipole or 160 meters loop	http://www.ik2ycw
Idle	CI000067	91.43.147.151:50000	50.9276,11.6842	Open	Eckrot's CloudIQ on active loop HDLA3 (Ant1) and active whip BoniWhip (Ant2). Enjoy! eckrot@yahoo.de	
Idle	CI000064	203.197.237.119:50000	28,77	Open	Default Server	
Idle	CI000142	79.77.108.233:50000	55,-1	Open	Cloud-IQ @ G0SBN = Newcastle Upon Tyne, UK [Ant1 = 20/15/10m 2 element mini beam]	www.qrz.com/db/
Idle	CI000008	24.96.181.231:50000	34.79,-86.74	Open	N4MHO: Cloud-IQ EM64	
Idle	HV000722	98.190.154.220:50000	0,-180	Open	WA2DFI W7 SDR-IQ Tempe, AZ	
Idle	CI000061	46.230.235.9:50001	59.87,15.15	Open	sm0goj@hotmail.com; Ant 1 200M BOG, RPA-1 mostly on; Ant 2 ALA-1530	
Idle	CI000028	188.22.106.195:3392	0,-180	Open	CloudIQ oe5nvl	
Idle	CI000160	71.84.177.156:50002	47,-120.414	Open	Ellensburg/Kittitas, WA CloudIQ (Ant1) Wellbrook Loop ALA1530LNPro Imperium (Ant2) BigIR Vert 80m KC7JLU/AJ7JA Cloud Mode	aprs.fi/kittas

Double Click on Entry to Select

OK Cancel

Listen To Someone Else's Radio

RemoteSDR Client *Network Setup* Menu

Network Setup

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WA2DFI

Domain Name (Leave blank to use IP address)

TCP/IP Adr 192 . 168 . 1 . 235 Find SDR

TCP Port 50000

List Server Domain
sdranywhere.com

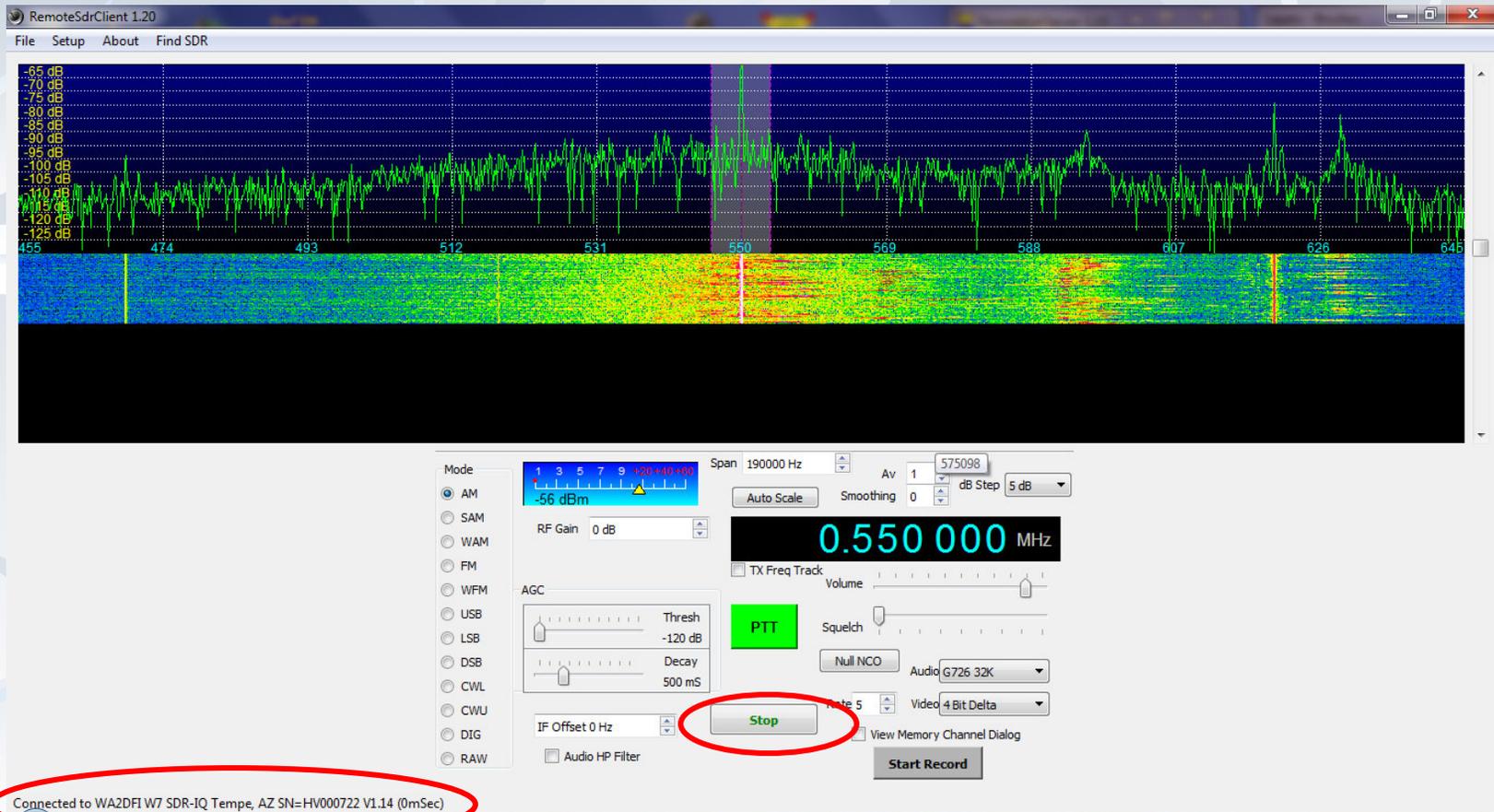
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/cloud/get.py

Receive Password (16 char max) Leave Blank for No password

Required Transmit Password (16 char max) Blank not Allowed
password

OK Cancel

Listen To Your Own Radio



RemoteSDR Client in operation

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Visibility on the Internet

Go to: <http://sdranywhere.com/cloud/sdrweb.py>

RFSPACE SDR's On The WEB

Your IP is: 24.248.2.60

Date/Time: 2016 Apr 21 16:36:34

Latest RemoteSdrClient is Version 1.19

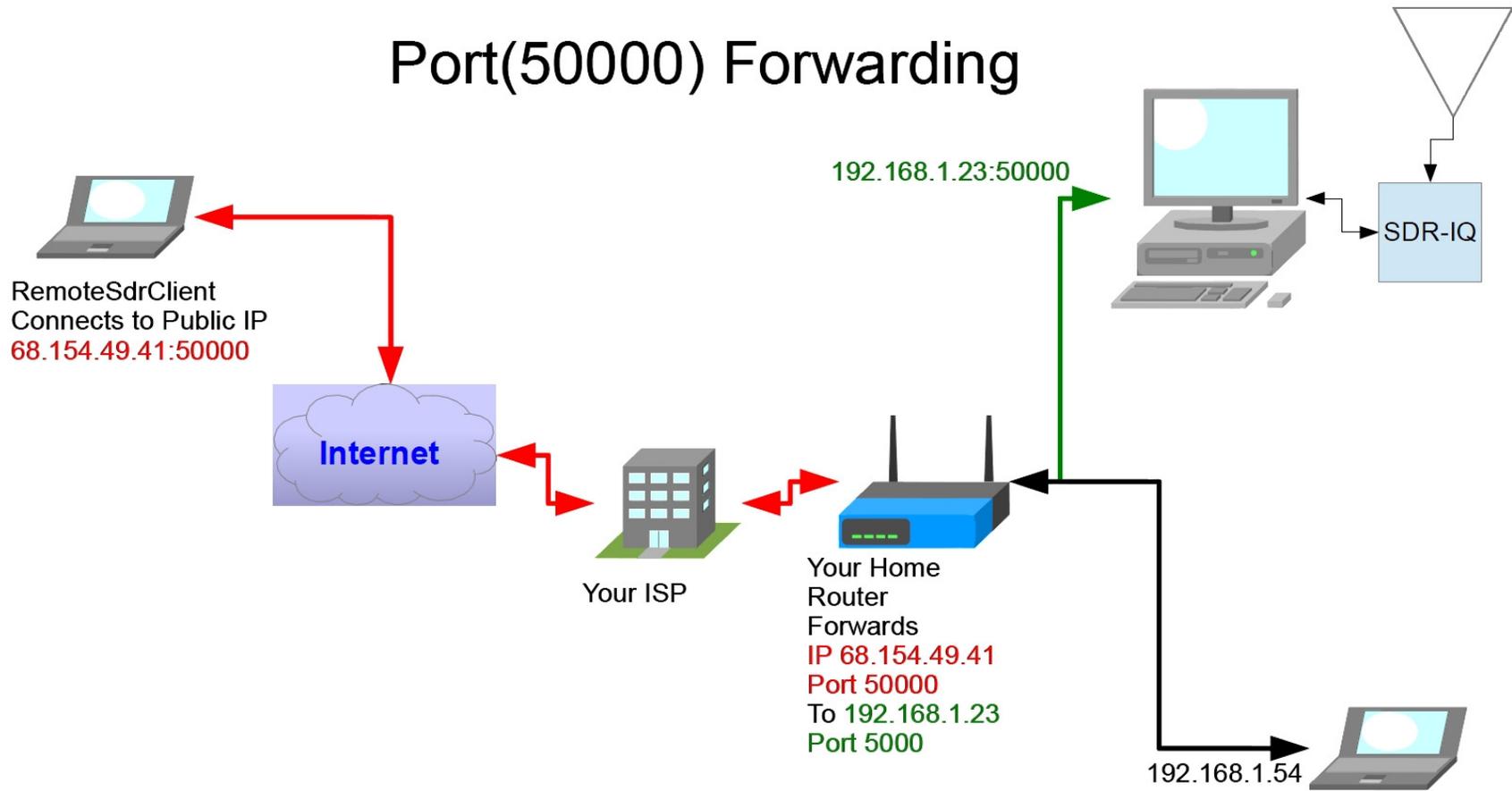
[Link to RemoteSdrClient Download Page](#)

#	Serial Num	Description	Status	IP	Port	Domain	Lat,Lon	Security	User url	Options	Last Client
1	CI000134	stralsundDX, Germany, Cloud-IQ, Ant1: Fenu-HDLA2 WNW/ESE, Ant2: ALA 1530 NNE/SSW	idle	37.4.15.126	50000		0.0, -180.0	private		None	Unknown Client
1	CI000113	WL7NO Cloud-IQ: Ant 1: BEV-S; Ant 2: Well ALA-1000 L/M	idle	24.237.73.104	50000		61.2, -149.886	open	South Anchorage Cloud IQ Server	None	Unknown Client
1	CI000083	VK3APG Remote site_OFCD_HF	idle	110.140.196.210	50000		-38.365, 144.894	open		None	Unknown Client
1	CI000201	W7QO - CloudIQ [Buford, GA - EM84] - HF - wire	idle	76.20.222.90	49999		34.08, -83.9	open		None	WA2DFI
1	CI000141	IK2YCW 80 meters dipole or 160 meters loop	idle	88.149.150.61	50000		45.0, -11.0	open	http://www.ik2ycw.it/RFSPACE.html	None	Unknown Client
1	CI000067	Eckrot's CloudIQ on active loop HDLA3 (ANT1) and active whip BoniWhip (Ant2). Enjoy! eckrot@yahoo.de	idle	91.43.147.151	50000		50.927609882910474, 11.68417839333415	open		None	Unknown Client
1	CI000064	Default Server	idle	203.197.237.119	50000		28, 77	open		None	Unknown Client
1	CI000142	Cloud-IQ @ G0SBN = Newcastle Upon Tyne, UK [Ant1 = 20/15/10m 2 element mini beam]	idle	79.77.108.233	50000		55.0, -1.0	open	www.qrz.com/db/G0SBN	None	Unknown Client
1	CI000008	N4MHO: Cloud-IQ EM64	idle	24.96.181.231	50000		34.79, -86.74	open		None	Unknown Client
1	HV000722	WA2DFI W7 SDR-IQ Tempe, AZ	idle	98.190.154.220	50000		33, -112	open		None	
1	CI000061	sm0goj@hotmail.com; Ant 1 200M BOG, RPA-1 mostly on;; Ant 2 ALA-1530	idle	46.230.235.9	50001		59.87, 15.15	open		None	Unknown Client
1	CI000028	CloudIQ oe5nv1	idle	188.22.106.195	3392		0.0, -180.0	open		None	Unknown Client

1	HV000722	WA2DFI W7 SDR-IQ Tempe, AZ	idle	98.190.154.220	50000						
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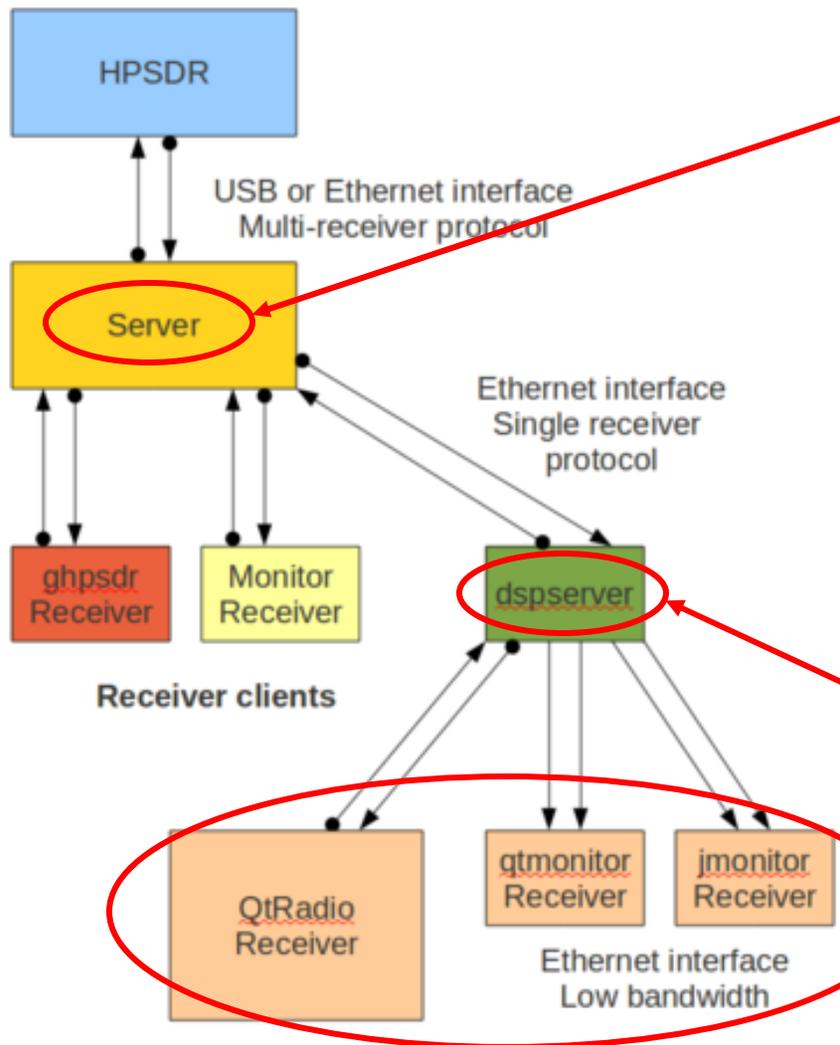
Visibility on the Internet

Port(50000) Forwarding



Courtesy RFSPACE with permission

GHPSDR-Alex Software Components



Hardware Server

- HPSDR
- SDRstick™
- Softrock
- UHFSDR
- Microtelecom Perseus
- SDR-IQ
- HiQSDR
- USRP
- RTL-SDR dongle

DSP Server

Clients

WA2DFI¹ GHPSDR-Alex 8-step² Rehab³ Program⁴ for Windows Users⁵

¹Actually written by N4XWE

²More like 10 steps

³To turn Windows users away from the dark side

⁴Not a program, more like a script

⁵Also for Mac users

Simple Steps to Install GHPSTR-Alex under Ubuntu 14.04 LTS Linux

1. Install the gcc compiler and the compiling tools
2. Check that the universe repository is enabled and install the prerequisite packages for ghpsdr3-alex
3. Install qt5 to complete the build
4. Verify the version of qmake
5. Install CODEC2 low bit rate for audio encoding and decoding
6. Install ghpsdr3-alex from Git
7. Start the compile
8. Set network settings for the firewall
9. Start the servers
10. Start QtRadio

Since I am out of time, see details in the Hands-On SDR column in **Jul/Aug 2015 issue of QEX.**

Summary

RFSPACE RemoteSDR

- Easy to setup and use
- Server: Windows only
- Clients: Windows, Mac, Linux, Android
- Server requires RFSPACE radio

GHPSTR-Alex (QtRadio)

- More complex to setup, easy to use
- Server: Linux only
- Clients: Windows, Mac, Linux, Android
- Useable with many types of SDR hardware

Android Clients

You know that if I had given this to you earlier, you would have wasted 20 minutes playing with your phone instead of wasting 20 minutes listening to me...

Android client for RemoteSDR:

http://sdranywhere.com/SDRanywhere/SDRanywhere_files/SDRanywhere.apk

Android client for GHPSSDR-Alex:

Install **gISDR** from the Google Play Store

Thank You!

University of Twente Web SDR:

<http://websdr.ewi.utwente.nl:8901/>

RemoteSDR:

<http://www.rfspace.com/RFSPACE/CloudIQ.html>

GHPsDR-Alex:

http://napan.ca/ghpsdr3/index.php/Main_Page

QtRadio on Windows:

http://napan.ca/ghpsdr3/index.php/QtRadio_on_Windows

GHPSTR3_ALEX at Zephyr



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