

**Operating Internet Radio – For Hams With Antenna Prohibitions**  
**Prepared by Daryl Stout, WX4QZ, Little Rock, Arkansas**  
**Updated Feb. 25, 2021**



**While many amateur radio operators think that one has to operate strictly RF...with rigs, antennas, and everything else in the shack (as was the case where I used to live, noted in the photo above), there may come a time where one has to switch to operating “internet radio” to stay on the air, and in the hobby.**

**This may be due to being in a medical or assisted living facility, where RF gear is forbidden, due to interference. Or, they could be living in areas where there are Covenants, Creeds, and Restrictions (CC&R’s), or Home Owners Association (HOA’s) restrict or prohibit antennas...either indoor, outdoor, or both.**

**“Internet radio”...sometimes known as VoIP (Voice Over Internet Protocol) modes...offers these ham radio operators a way to still get on the air, and stay active with the hobby...instead of their license “being just a sheet of paper”.**

**Now, while the “purists” think ANY form of “internet radio” is NOT amateur radio...if one can’t get on the air, WHY even bother to get licensed?? It’s hard enough to get folks to volunteer as a Net Control or a club officer...and one’s health can change in the blink of an eye.**

**There are obviously pros and cons of operating RF versus internet, as follows:**

**With RF, you have to buy rigs, microphones, power supplies, SWR meters, coaxial cable, antennas, masts, and towers...with computers and printers for logging, etc. The pro is that you also don't have to worry about operating if the internet or other regular communications goes out...as long as you have a backup power supply available. However, the con is that the cost of all these items can get rather expensive...and if you're on a fixed income or limited budget, you may not be able to have a fancy station.**

**With operating internet radio, all you need is a laptop computer, an internet connection (DSL, broadband, Wi-Fi – dial-up internet is NOT recommended, as it's too slow), and a power supply...you can set up and operate virtually anywhere...and not have to worry about SWR levels with the bands – never mind lugging a bunch of gear, towers, etc., back and forth. A headset mic is strongly recommended for operation in the shack, as it cuts out ambient noise.**

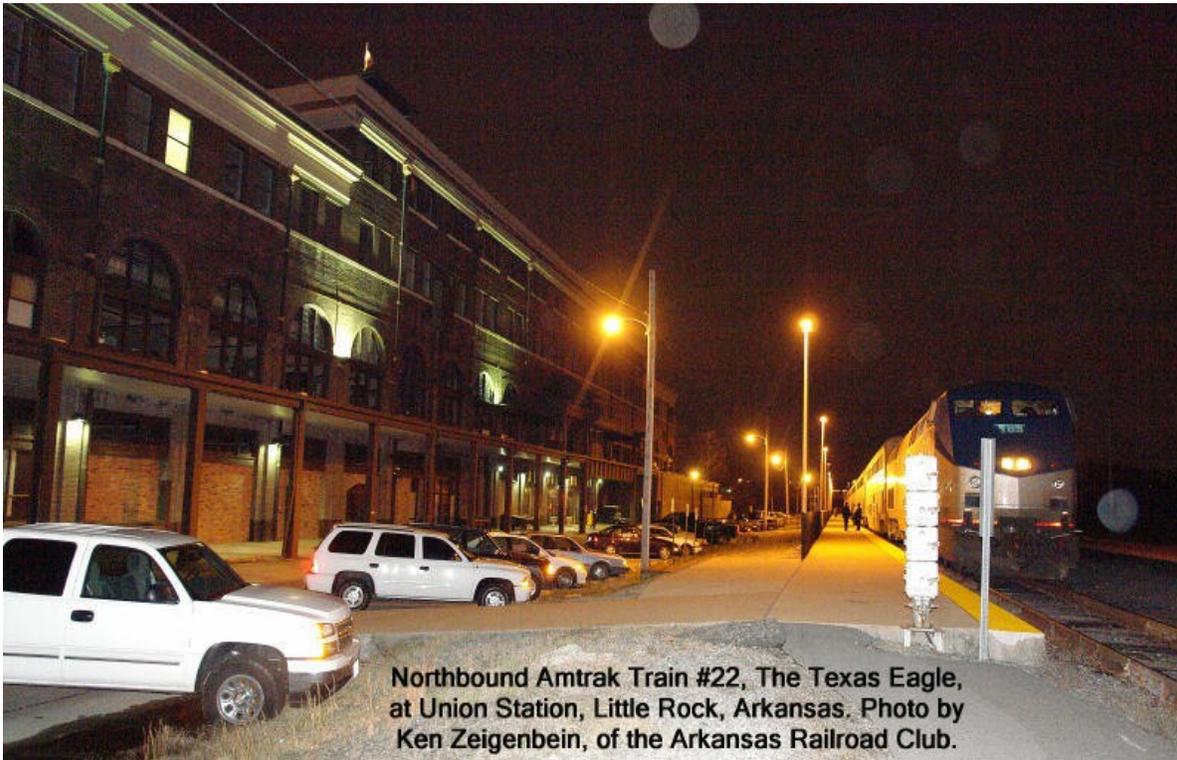
**In years past, at a “Hammin’ In The Park” or Field Day demo (most of these, unfortunately, have gone by the boards, due to COVID-19), you could set up RF, internet radio, or both.**

**Another option is operating “Amtrak Railroad Mobile”, via “internet radio”, from your Sleeping Car compartment. Due to COVID-19 issues, passengers must wear masks while on board trains or in stations. They may remove their masks while eating or drinking...or if within their ticketed sleeping car accommodations.**

**As a note, regular meals for passengers in Sleeping Car accommodations are included in the price of ones ticket. Also, from 10pm to 7am local time daily, it is QUIET TIME on the train, and you basically can't operate during these times (the sleeping car compartment walls can seem to be “paper thin”). Besides, you have to sleep at some point.**

**If you are deemed a distraction by fellow passengers or the Conductor, you risk being removed from the train at the next station stop, whether it's your final destination or not. Your ticket is also confiscated, and your reservation is canceled; where you basically are now “on your own” to get transportation, and you may be banned from traveling via Amtrak again.**

**On the next page is a photo of Amtrak's Texas Eagle at Little Rock, Arkansas.**



Northbound Amtrak Train #22, The Texas Eagle, at Union Station, Little Rock, Arkansas. Photo by Ken Zeigenbein, of the Arkansas Railroad Club.

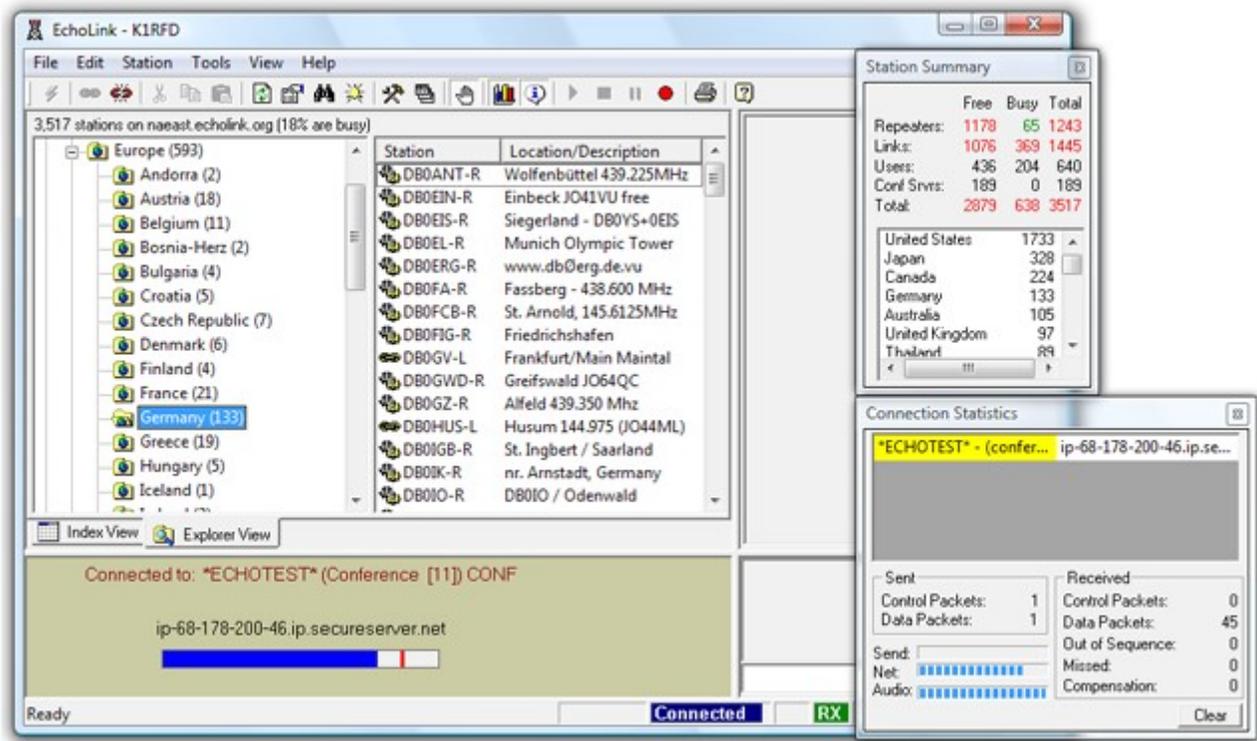
**Before being granted access to these modes, you likely will need to provide a copy of your amateur radio license to the administrators. Full details are on each site...and I've provided the URL for program downloads, etc., where available.**

**A spreadsheet list of selected Echolink, D-Star, and D-Rats Nets, is available at <https://www.theweatherwonder.com/elk.htm> – it's set up in the 4 main US time zones. You'll need Microsoft Office, LibreOffice, or OpenOffice, to view the spreadsheet files. If you have any additions, deletions, corrections, or changes to the listings, please email me at [wx4qz@arrl.net](mailto:wx4qz@arrl.net) – I'd like to keep that list as current as possible.**

**Other PDF files related to ham radio are there as well. You'll need a PDF reader (Fox-It, Adobe Acrobat) to view the PDF files.**

**I am running "internet radio" via a Lenovo laptop computer, running Windows 10 64-bit. The programs and modes I use are as follows:**

**! Echolink – <https://www.echolink.org>**



**! Developed by Jonathan Taylor, K1RFD, this allows either single user setups (from a desktop, laptop computer, or smartphone app) to connect to other single user setups, simplex links, repeater links, or conference servers. They are defined as follows:**

**@ Callsign Only – Single User Setup.** While these users can connect to other modes, if one is connected on another mode, they can NOT connect to those using the smartphone app. I believe the smartphone app is available both in the iPhone store, and via Google Play (for Android phones).

**@ Callsign followed by -L – Simplex Link.** This is connected to a rig on a simplex frequency.

**@ Callsign followed by -R – Repeater Link.** This is connected to a rig on a local repeater.

**@ Conference Server – A name with an asterisk on either side of it.** While one's bandwidth can limit how many stations can connect with it, the conference servers usually allow the most connections. If you have the bandwidth, you can allow multiple users (conferencing). Obviously, the higher the bandwidth, the more stations you can have connect to your station.

Note that some of the conference servers do NOT allow connections from stations that are in “conference mode”...because it could result in a “digital loopback effect”. As a result, no one can transmit, due to the loop. If a station does connect in “conference mode”, they are likely immediately disconnected; and can not reconnect, until they disable conference mode.

With Echolink, if both connections are just single user setup, or smartphone app and single user setup, no RF occurs. But, if there is a simplex link, repeater link, or conference server, there will be RF at some point.

You’re required to do port forwarding (TCP and UDP) for ports 5198-5200 via your router for Echolink, unless you go through a proxy server.

You’re also required to have the equivalent of a US Technician Class Amateur Radio License, or higher, to access the network. Full details are available at <https://www.echolink.org>

! CQ100 – <https://www.qsonet.com>



Unlike Echolink, CQ100 does NOT require “port forwarding”, you only need a valid amateur radio license (any class) to access, and it’s VoIP only (no RF). CQ100 offers simulated communications via voice and digital, on CW, FSK, and PSK modulation (such as PSK-31). Operations are on portions of 80, 40, 20, 15, and 10 meters. You can use programs such as DigiPan with PSK31,

and various CW programs for Morse Code. You can also type CW at the keyboard, or use a keyer.

Cost (as of Dec. 28, 2020) is \$39 a year in US funds. Paid users get access to a program called QSO-TV, a quasi-ATV (amateur television) program. Usage is free on Sunday (UTC Time), and new users get a 30 day free trial.

There is a list of CQ100 Nets at <http://www.w2blc.net/cq100nets.htm>

Another nice thing is that when another station is keyed up on a particular frequency, no one else can key up and transmit at the same time. So, you don't have to worry about "doubling" with another station. While another station is transmitting, you can send images via the QSO-TV addon. You can also see on the dial, which frequency may be "active" at any given time.

**! D-Star, DMR, and Fusion:**



Since this document is for "internet only", I'm going to discuss the BlueDV program by David, PA7LIM...where you can operate D-Star, DMR, or Fusion with the program, and a ThumbDV from Northwest Digital Radio. No rig is needed to operate the modes noted.

The latest version, available at <https://www.pa7lim.nl/bluedv-windows/> (I use Windows, but versions for Apple and Linux are also available), is 1.0.0.9599 (as of Feb. 25, 2021). I use it for several D-Star Nets during the week. As a

side note, the ThumbDV costs around \$120, but at times, it may be back ordered. It's \$80 cheaper than the blue DV Dongle, done by Robin, AA4RC.

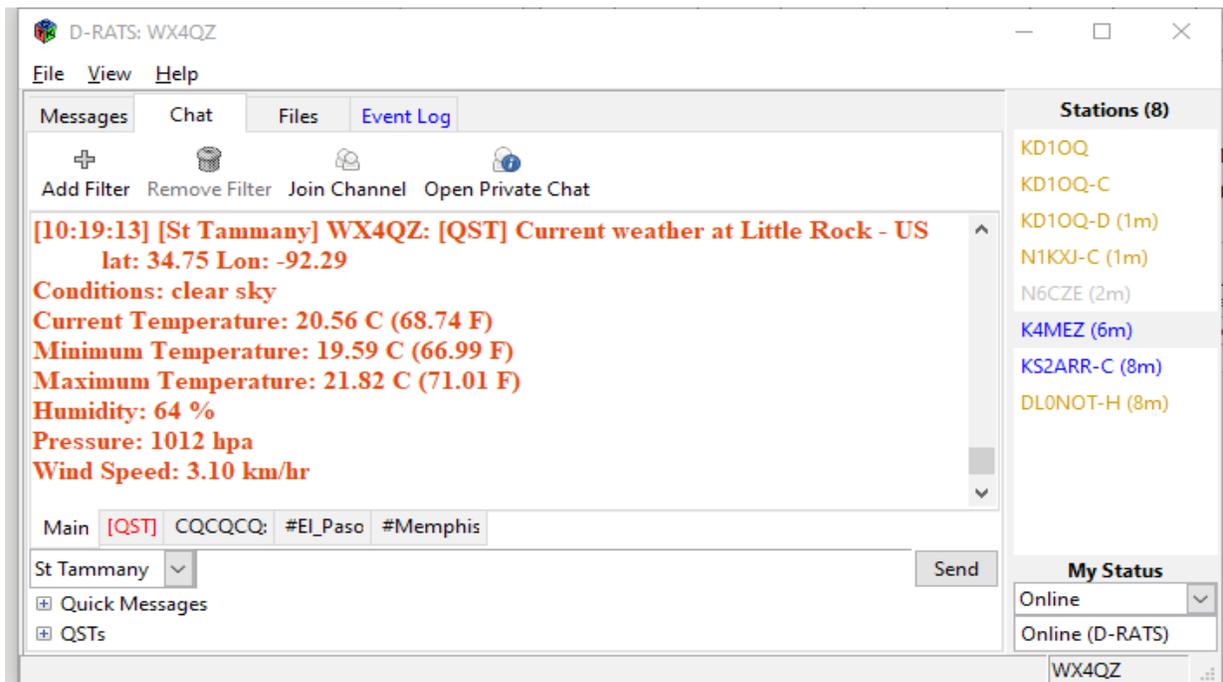
On D-Star, unlike the DV Tools program from Robin, AA4RC, where you can only access the US Trust Servers (REF ###), using the BlueDV program and the ThumbDV, allows you to also access the XRF, XLX, and DCS reflectors on D-Star. You can also access DMR talk groups, and channels with Fusion.

A spreadsheet of selected D-Star, D-Rats, and Echolink Nets, plus PDF files on setting up the BlueDV program with a ThumbDV, and setting up Netlogger for use with nets is at the hyperlink URL on my profile on the QRZ website.

A list of selected DMR Nets is at:

<https://mrickey.com/dmr-nets/>

**! D-Rats:**



Originally done by Dan, KK7DS, it's now being developed by Maurizio, IZ2LXI, and Marius, YO2LOJ. It allows messaging, chat, and file transfers in real time. Full details on setup are in the Mode Overview file, which is located at the hyperlink URL on my profile on QRZ – scroll down and click on the link. A list of selected D-Rats nets are at this URL as well.

**! Packet Via Telnet Via the Outpost Packet Client – <https://outpostpm.org>**



**Done by Jim, KN6PE, Outpost can be used either via RF, or telnet access. The ipserial client is used for individual serial connections, while the iptelnet client is used for individual telnet connections.**

**A file on setting up Outpost for connecting to the NS2B Packet BBS in Penfield, New York, is located at <https://www.theweatherwonder.com/elk.htm> – also on that page is information on “The PCL Net”. You will need a PDF viewer to view those files. The PCL Net meets on Mondays at 8pm US Eastern Time...but during weeks where there are “U.S. Holidays”, the net will NOT meet on that particular Monday.**

**! Winlink: <https://winlink.org/user>**



**Using Winlink Express (recommended), you can send messages via RF or over a telnet connection. The program is shareware, and registration is highly recommended.**

**If you have any further questions, you can contact me at [wx4qz@arrl.net](mailto:wx4qz@arrl.net) or [wx4qz@winlink.org](mailto:wx4qz@winlink.org)**

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