

Operating Internet Radio – For Hams With Antenna Prohibitions
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Updated March 31, 2025



The above photo was when I was at HUD subsidized housing for the disabled. But, I'm back at what was my late parents home now, and no longer have any of the setup that's noted in the above photo.

While many ham 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 in the hobby. This may be due to one being in a medical/assisted living facility, where RF gear isn't allowed, due to RFI (which may cause failure of medical equipment, that could end up in a fatality). Or, they could be in areas with Home Owners Association (HOA's), or Covenants, Creeds, and Restrictions (CC&R's), restricting/prohibiting antennas (indoor, outdoor, or both).

"Internet radio"...also known as VoIP (Voice Over Internet Protocol) modes...offers hams 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 even 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.

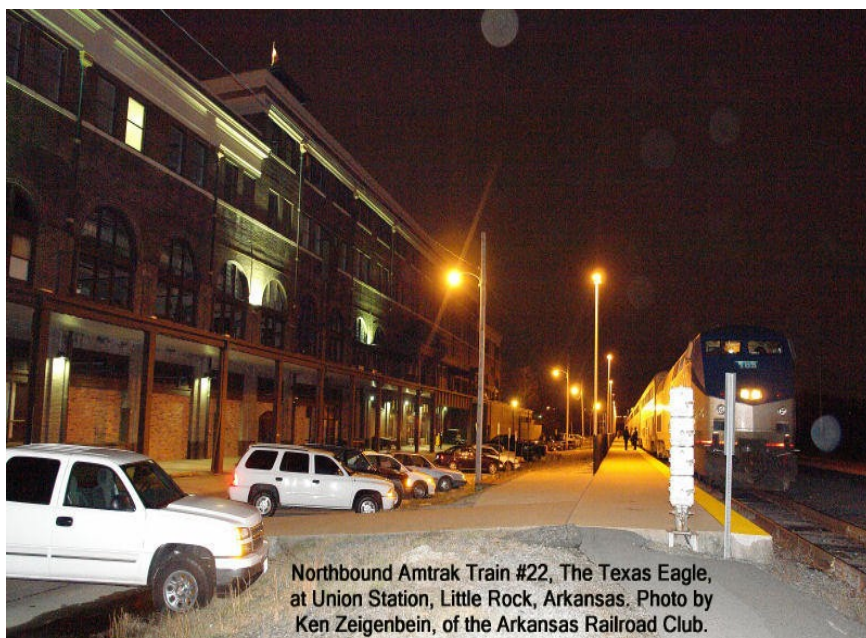
There are obviously pros and cons of operating RF versus internet, as follows: With RF, you have to buy rigs, microphones, power supplies, SWR meters, coaxial cable, antennas, masts, and towers...with computers and printers for logging, etc.

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 reliable backup power supply available. The CON is that the cost of all these items can be

expensive, and if you're on a fixed income, you may not be able to have a fancy station.

With operating internet radio, all you need is a computer (desktop, laptop, tablet, or smartphone), 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, as it cuts out ambient noise. Plus, you don't have to worry about RFI issues if you have a pacemaker, due to a heart condition. If using a HotSpot, such as the SharkRF OpenSpot 4 Pro, you just need your smartphone and that device to get on the air. In years past, at a “Hammin’ In The Park” or Field Day demo (most of these have gone by the boards, due to COVID-19), you could set up RF, internet radio, or both. One can also demo these at a high school ham radio club...students are more worried about paying for college tuition, books, dormitory fees, etc., than having to purchase ham radio gear, once they get their license.

Another option is operating “Amtrak Railroad Mobile”, via “internet radio”, from your Sleeping Car compartment. 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 be “paper thin”). If deemed a distraction by fellow passengers, or by 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 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.



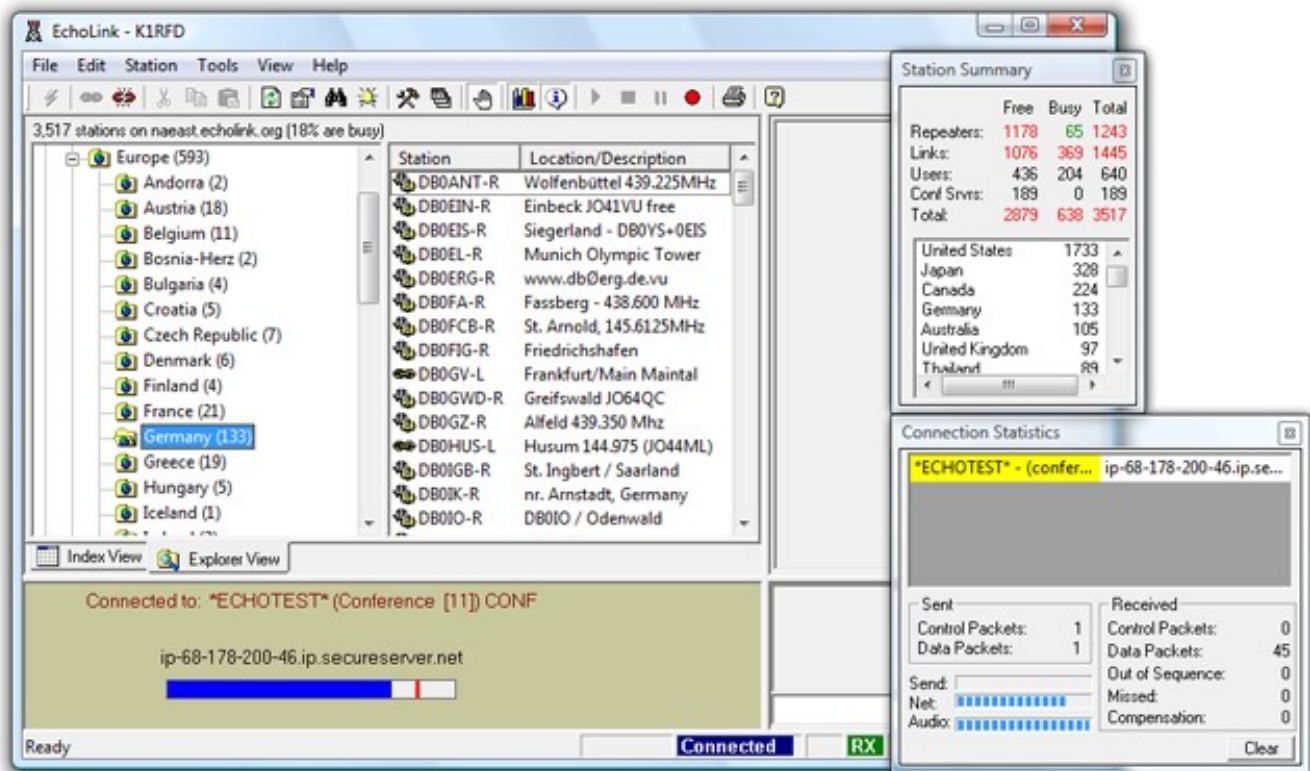
Northbound Amtrak Train #22, The Texas Eagle, at Union Station, Little Rock, Arkansas. Photo by Ken Zeigenbein, of the Arkansas Railroad Club.

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 list of selected Echolink, D-Star, and D-Rats Nets (in Excel or PDF format), can be found at <http://www.wx4qz.net/elk.htm> – it's set up in the 4 main US time zones. You'll need either Microsoft Office, LibreOffice, OpenOffice, or a PDF reader, to view the files. If you have any additions, deletions, corrections, or changes to the listings, please email me at wx1der@gmail.com – I want to keep that list as current as possible, and that's what noted in the Spreadsheet files. You can also email me at either n5vlz@winlink.org, n5vlz@duck.com, or vhfnetmanager@qcwa.org – note that 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 Windows 11 64-bit...along with a SharkRF OpenSpot 4 Pro. The programs and modes that I use are as follows, noted on the following pages. Note that I'm normally on the air ONLY for my nets, and RARELY am on the air to check into other nets...never mind I rarely get “sked requests”.

! 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. I believe that 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 available 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 while in “conference mode”, they're immediately disconnected; and can not reconnect, until they disable it.

Also, with Echolink, if both connections are just single user setup, or smartphone app and single user setup, no RF occurs. But, if there's 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.

The latest version (Windows) will allow you to test your outbound and inbound connections, the latter via “a ping test” with your web browser. If they both “pass”, and you've been validated to use the network, then you are ready to connect. If you're using the smartphone app, it's automatically set up for you, going through a proxy server.

Full details are available at <https://www.echolink.org>

! CQ200 – <https://cqplace.com/>



Formerly CQ100, which was originally for Windows based systems only, it's now CQ200, accessible via any web browser, via a desktop, laptop, tablet, or personal smartphone.

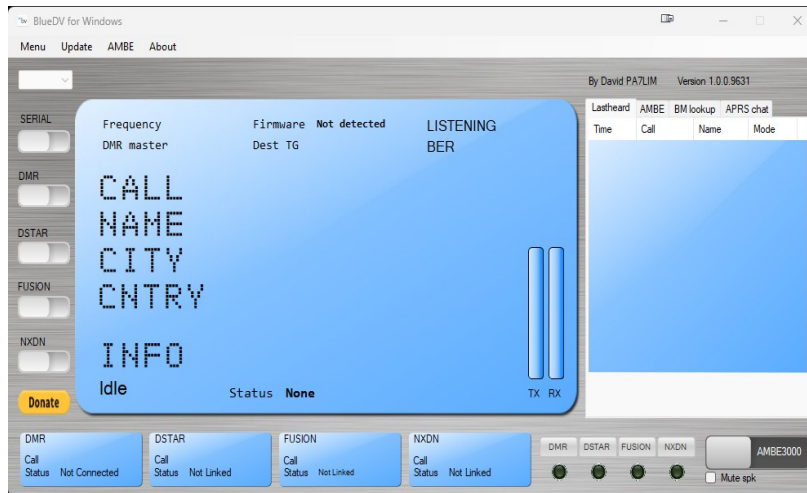
Unlike Echolink, CQ200 doesn't require "port forwarding", you only need a valid amateur radio license (any class) to access, and it's VoIP only (no RF). CQ200 offers simulated communications via voice and digital, on CW, FSK, and PSK modulation (such as PSK-31). Operations are on portions of 80, 40, 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. See their online FAQ for more info.

Cost is \$39 a year in US funds (see website for the current fee). Usage is free from 0000 UTC to 2359 UTC on Sunday), and all users to CQ200 get a 90 day free trial. If you have a CQ100 account, you'll need to sign up, using your callsign, and your desired password. The system will recognize you, and your former account info will be activated. The former CQ100 and QSO-TV programs will soon be discontinued, and they can be uninstalled from your system.

Another nice thing is that when another station is keyed up on a certain 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. You can also see on the dial, which frequency may be "active" at any given time. They are working on adding a QSO-TV utility to CQ200. There's also a list of CQ100 Nets at <http://www.w2blc.net/cq100nets.htm>

This option is particularly useful for those hams who have “mic fright”, a very real fear with new amateur radio operators. The only ones that will “hear them” are those on the particular frequency at the time...and all ham radio operators were beginners at one time.

! D-Star, DMR, Fusion, and NXDN (BlueDV and SharkRF OpenSpot 4 Pro):



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, NXDN, or Fusion with the program, and a ThumbDV from Northwest Digital Radio. No rig is needed to operate the modes noted. The latest version that is available can be found at <https://www.pa7lim.nl/bluedv-windows/> . Note that I use Windows, but versions for Mac and Linux are also available.

While the ThumbDV costs around \$120, but at times, it may be back ordered at times. It’s \$80 cheaper than the blue DV Dongle, done by Robin, AA4RC. You can also order the DVMegastick30 from Gigaparts, which basically does the same thing as the ThumbDV. 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 list of selected D-Star, D-Rats, and Echolink Nets (in Excel or PDF format), plus PDF files on setting up the BlueDV program with a ThumbDV, and setting up Netlogger for use with nets is at <http://www.wx4qz.net/elk.htm> -- for DMR, a list of selected nets is at <https://mrickey.com/dmr-nets/>

Note that with Microsoft Windows 11, the sound card settings may no longer work with the BlueDV program. However, an alternate is available via the SharkRF

OpenSpot, available at <https://www.sharkrf.com> – note that with the OpenSpot 4 Pro, you just need your smartphone or computer, and the device, to work the same modes, and you don't need the BlueDV program.

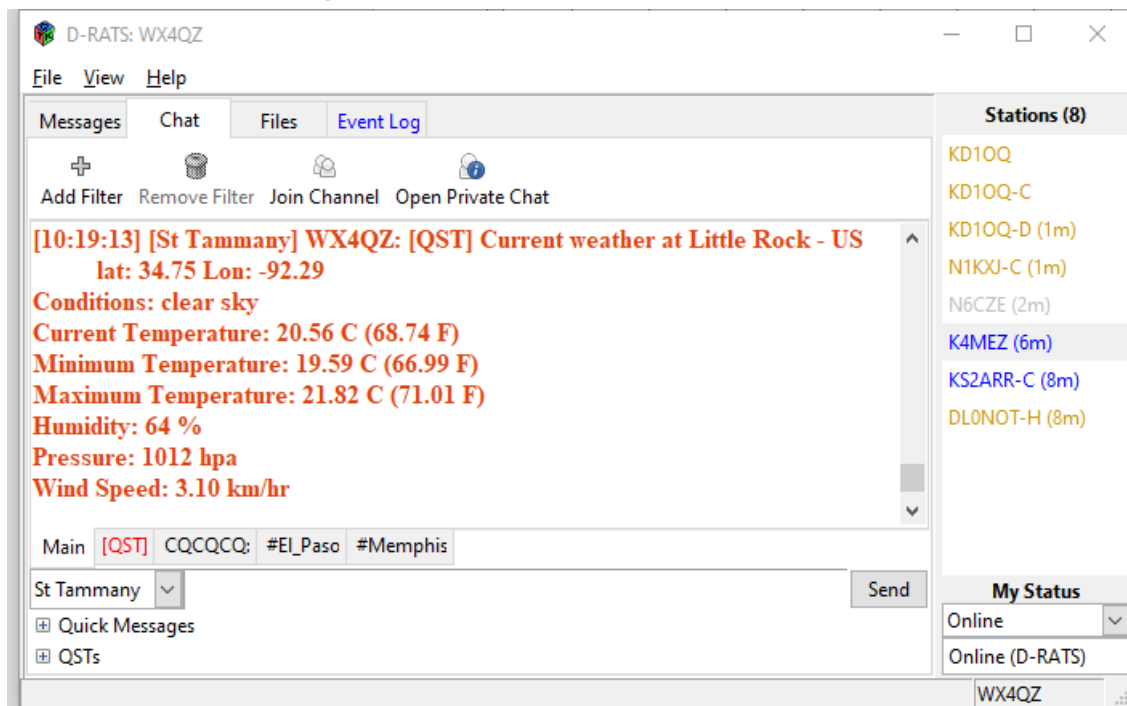
Plus, both operate off of a Wi-Fi network (either your personal network, a public Wi-Fi, or the phone network), and operate off of battery; with the charging via USB cables, so you could stay online during a power failure, as long as the outage doesn't last too long. While the OpenSpot 4 Pro does not require a radio, the OpenSpot 4 and other hotspots do require such.

Admittedly, it's a bit pricey (over 300 US Dollars), but shipped from Estonia from 1-3 business days of your order, via FedEx to your home or business. The user manual is available online (not in PDF format). It also comes with instructions on a smartphone and desktop app for setup. See the Mode Overview file for more info.

! D-Rats:

Originally done by Dan, KK7DS, it's now 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, at <http://www.wx4qz.net/elk.htm> A list of selected D-Rats nets are within the noted file at that URL as well.

Version 0.3.9 is the latest stable version, but it's no longer supported, yet it will work on Windows XP or later. There is apparently a newer version...but most users I've talked to are still using version 0.3.9



! 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. The latter are recommended when using The PCL Net, noted below.

A file on setting up Outpost for connecting to the NS2B Packet BBS in Penfield, New York, is located at <http://www.wx4qz.net/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” (Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas, and New Years Day), the net will NOT meet on that particular Monday.

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



Using Winlink Express, RMS Express, or related program you can send messages via RF or over a telnet connection. The program is shareware, and registration is highly recommended. At times, when you load the program, it will announce updates of either the message forms, or the program itself. It’s recommended you take care of the updates before proceeding.

! Hamshack Hotline – <https://www.hamshackhotline.com>



Hamshack

Hotline (HH) is a FREE dedicated VoIP telecom service for the Ham Radio community. Typically, phones are established in hamshacks, EOCs, Clubs and club members, ARES, and other Ham related areas and functions. High speed internet (DSL, broadband, etc.) is required. It is NOT the intention of HH to replace traffic carried over radio in an emergency or other tactical operation, but rather to augment it...by offloading managerial tactical operations, and providing a full duplex path for such communications when spectrum is occupied, conditions diminished, or otherwise unavailable. HH also supports FAXing of information (with the appropriate equipment) which allows tactical offices to share documents and data between tactical locations.

In a non-tactical use, HH is an effective resource for off-air troubleshooting when you need to coordinate a troubleshoot of a radio circuit off-air and between multiple SMEs. In addition to all this, conference bridges on the HH network allow large groups of Hams to coordinate and meet in real time anywhere in the world. On some nets, you dial the node number, then use *99 to transmit, and # when you're done with your transmission (net checkins).

They do offer a “softphone (cellphone) only” option, but you're only allowed on the experimental servers. This is useful if your HH phone won't work with your setup, even after provisioning it, or it quickly shuts off after you initially power it up.

There's a fee for the Groundwire app noted at the URL below, with more info:

<https://wiki.hamshackhotline.com/doku.php?id=pg:groundwire>

! RemoteHams – <https://remotehams.com>



While I currently do not use this, I had looked into it awhile back...but at the moment, scheduling does not permit me to use this option, and there is a bit of a learning curve to working with the software.

Basically, there are remote operations websites, where you can login, and with your computer, operate HF remotely, via an HF station that another amateur radio operator has graciously set up, and allowed to be controlled remotely. Or, if you have your own home station set up, it allows you to do likewise, as when you're on vacation, or away from your home shack.

RemoteHams.Com offers this, free of charge. There are similar sites, but they are expensive to use. Most hams are "frugal cheapskates", and if you're on a fixed income, the free option is best. On their website, you can sign up (you use your callsign as your user name). Then, once set up and validated, you can download the software for your computer (desktop or laptop) or even for your Android phone.

The website notes "Enjoy operating remote amateur transceivers and more by joining our community today! Don't miss rare DX you may never have a chance to hear. Test your own signal propagation, are you being heard in a DX location? Multiple operator support allows for new methods of contesting, nets, round tables, etc. between RF and REMOTE operators."

The minimum requirements are as follows:

- Windows XP, Vista, 7 or 8. Note that Microsoft no longer supports or provides security updates for these systems. Support for Windows 10 will end in October, 2025, and most computers now are Windows 11, which is 64-bit only (32-bit support ended with Windows 10).**
- .NET Framework 4.0 – these are downloaded with Windows Updates.**
- Adobe Flash Player Active X. Note that it's no longer supported because of security issues, and it may no longer be available for new installations.**
- 1.0 GHz CPU**
- 1GB RAM**

Please email me if you have questions...my email address is good on QRZ.

Daryl Stout, N5VLZ, Little Rock, Arkansas