

The Ultimate Roaming Ham shack By Frederick Glenn, K9SO

Much has been written about how to disguise antennas in today's environment of downsizing and zoning restrictions. But little has been written about how to hide the ham shack itself. Internal "zoning" restrictions enforced by one's XYL often forces operating from a small closet, a cold basement, or a garage. I don't know about you, but I like to operate my station from the patio outside on a beautiful sunny day. Or maybe chase DX from the family room with my feet up while sitting in my favorite chair.

The Ultimate Roaming Ham Shack is a different spin on radio remote control and simply relieves you from the need to sit in front of your radio all the time. Of course, when you just have to "spin the knobs", or when you really want to "get serious", you can still go and operate from that closet. But I'll bet that 90% of the time you'll opt for the comfort of your family room or back porch for what I call "casual operating".

You may already have much of the needed equipment if you operate any rig control software and/or sound card interface modes such as RTTY and PSK31. Untethered roaming will require a local WIFI setup or a computer tied into a router. I already had a computer in the shack and a sound card interface to operate RTTY. I also had a laptop and a local WIFI (802.11b/g) setup. I was good to go. I'm a radio guy and not much of a computer guy so I had to keep it simple on the networking side.

This article is broken into two parts. In part one, I will describe a simple way to allow roaming within the range of your local WIFI network. This is quite simple and if you are already set up for sound card RTTY or PSK31, it can probably be completed in a lazy afternoon. Part two will address the complications (both technical and legal) that come about if you want access via the Internet. It is said that there are many ways to skin the cat and I'll be describing just one or two of them. I encourage you to experiment and embellish your basic roaming ham shack to personalize it and make it yours.

Let's Get Started

The first step is to master basic computer rig control. Then we'll move on to how to forward the speaker and microphone signals. There are many rig control software programs out there, but one free one I would recommend is Ham Radio Deluxe (HRD). Written by Simon Brown, HB9DRV and now silent key Peter Halpin PH1PH, it has excellent documentation and information about set ups and operating. Before you go too far, look at your rig's manual to see what functions can be controlled via computer. A good summary of available controls for most of the radios out there can be found in the HR Deluxe program itself. Under TOOLS-OPTIONS you'll find a complete listing under the Info: CAT SUPPORT tab.

You may use any rig control software you prefer at this point. I won't go into the setup of rig control ... just follow the instructions and get the computer at the rig controlling as many functions as your rig will allow. From now on I will refer to the computer at the

radio end as the HOST. This will avoid confusion with terms such as LOCAL and REMOTE in the future. The computer (or laptop) at the operating end will be called the CLIENT. Practice using the rig control software from the real ham shack computer if you're not already used to it. Depending on your particular radio, you may not be able to control PTT or VOLUME controls. More on that later.

Accessing the HOST computer from the CLIENT for Rig Control

The simplest way to make connection is to use available remote access software. Commercially available versions such as PCAnywhere will allow you to see the HOST computer screen from a CLIENT computer. It will also allow you to control the keyboard and mouse functions of the HOST computer. Collectively, this is called KVM control (Keyboard, Video, and Mouse). I use available freeware known as REAL VNC (Free Edition) available for download at <http://www.realvnc.com> . Follow the installation instructions and install REALVNC HOST on the HOST (radio end) computer and REALVNC Client on the CLIENT (operating end). Be sure to set up a password for access.

At this point you should be able to control everything on the HOST computer directly from the CLIENT computer. That means you will also have rig control from the CLIENT end. While this sounds good, you may soon discover the downside of this simplistic approach: speed of operation. While REALVNC and most other KVM software works well for text box based applications, many Rig control programs will force a full screen redraw when changing frequencies and that is very, very *slow*. A better way is to run the rig control software from the CLIENT end. That is more complicated to set up, but well worth the effort because of the increased speed of operation. We'll keep the KVM program for some other necessary functions.

Let's Speed Things Up a Bit

Running the rig control software from the CLIENT (operating) side eliminates the slow screen redraws of KVM software when things get fast and furious. What we're going to do is install the rig control software on the CLIENT computer. We then need some CLIENT end software that looks like a COM port to the rig control software. This added software (generically called COM PORT REDIRECTORS or VIRTUAL COM PORT REDIRECTORS) forwards the serial data via the Internet protocol (IP) to the HOST computer. So we will be fooling the rig control software into thinking it is controlling a real COM port when in reality it is working into a VIRTUAL com port that is redirecting the data to a HOST computer located elsewhere. Software on the HOST end will need to sort all of this out and send the data out a physical serial port to the rig. This sounds complicated and it really can be. Fortunately, there are some simple solutions with large support groups to help you get it all set up properly.

I would have to say that the simplest approach is to use the Remote features of HRDeluxe. Simon and Peter built in virtual COM port software written by Phil Covington, N8VB. Once again, this is all freeware if used only for personal applications.

There are excellent step-by-step instructions included in the HRD documentation as well as a great on-line support group so I won't go into the details here.

If you'd rather not use HRD as your rig control software, another approach is to use the Internet Tool Kit (IRT) written by Stan, W4MQ. You can download the IRT software at <http://www.w4mq.com>. IRT will establish the virtual COM port link (also using the N8VB software) that will allow the use of other rig control programs running on the CLIENT computer.

While I've successfully used both the HRD and IRT approaches, I've recently gone to another one that does not even need a computer at the HOST end. But my no-HOST-computer approach is another whole story.

At this point you should have full control of your radio from your CLIENT computer. Speed over your local LAN should not be a factor any more. But you still need audio. Fortunately, that's even easier.

Let's Add the Audio

While there are once again many ways to accomplish this, my recommendation is to use a free Internet VOIP (Voice Over IP) service called SKYPE. SKYPE service will require Internet access. Full instructions for installation of SKYPE and the program itself can be found at <http://www.skype.com>. You will need to set up two accounts, one for the CLIENT computer and one for the HOST. At the HOST end, you will need to set it up for AUTO-ANSWER. Since there will not be anyone at the HOST end, you will need that end to automatically connect to any incoming calls. Setup at the CLIENT end is self-explanatory and well covered by the installation instructions. Setup at the HOST will require a sound card interface (also used for PSK31 and RTTY interface) such as those made by QST advertisers West Mountain Radio and MFJ. Inexpensive computer-grade headsets work well in both directions. This can be a bit tricky to set up the proper levels since there are a lot of real and virtual volume control knobs to turn (in the interface, in the radio, in both computers, and on each end of the SKYPE connection). A systematic approach should get you zeroed in. Use the "VU meters" in the SKYPE toolkit to assist you.

While you're at it, pop for \$10-\$20 or so and buy an inexpensive USB camera and connect to it via the same SKYPE service. When you're ready to move on to the next step (Internet access), you'll find that redundancy is key to a successful operation. I keep the camera trained on the front panel of the radio.

What about CW?

I use keyboard CW software running on the HOST computer. With a computerized keyer such as those available from K1EL (<http://www.k1el.com>) you can access it via the REALVNC KVM program discussed earlier. This is text based when typing in the text so there are no full screen redraws triggered.

Other Functions (PTT, Antenna Switching, Rotator, Logging, Power monitoring)

If you're using HRD and a radio that doesn't support software PTT, you can simply set up according to the HRD documentation. Other approaches can be solved via a simple program running on the HOST (again accessed by KVM). All other less time-sensitive controls (such as antenna switching and rotator control) can all be accessed by the REALVNC KVM software that sees the HOST desktop and then via external software running on the HOST. Existing solutions for computer control of these functions can still be used.

So What's Next?

Even though I've called this "Casual Operating", I've been able to jump into DX pileups as well as operate contests both of which require fast agility and performance of the station. Fact, I've worked over 250 countries this way from an otherwise modest station. My newer rig (IC746PRO) gives me computer control of virtually every radio function. In many ways it is easier to operate via computer than sitting in front of it (the computer interfaces eliminate the "menu searches" for the right control). My older rig (IC735) presents more challenges due to its limited control set.

I travel a great deal (my business has taken me to 36 countries so far). Naturally, I wanted to operate my home station when away via the Internet. Having come this far, it's not a giant leap to get to Internet access. But there are pitfalls that I'll cover in the next chapter.

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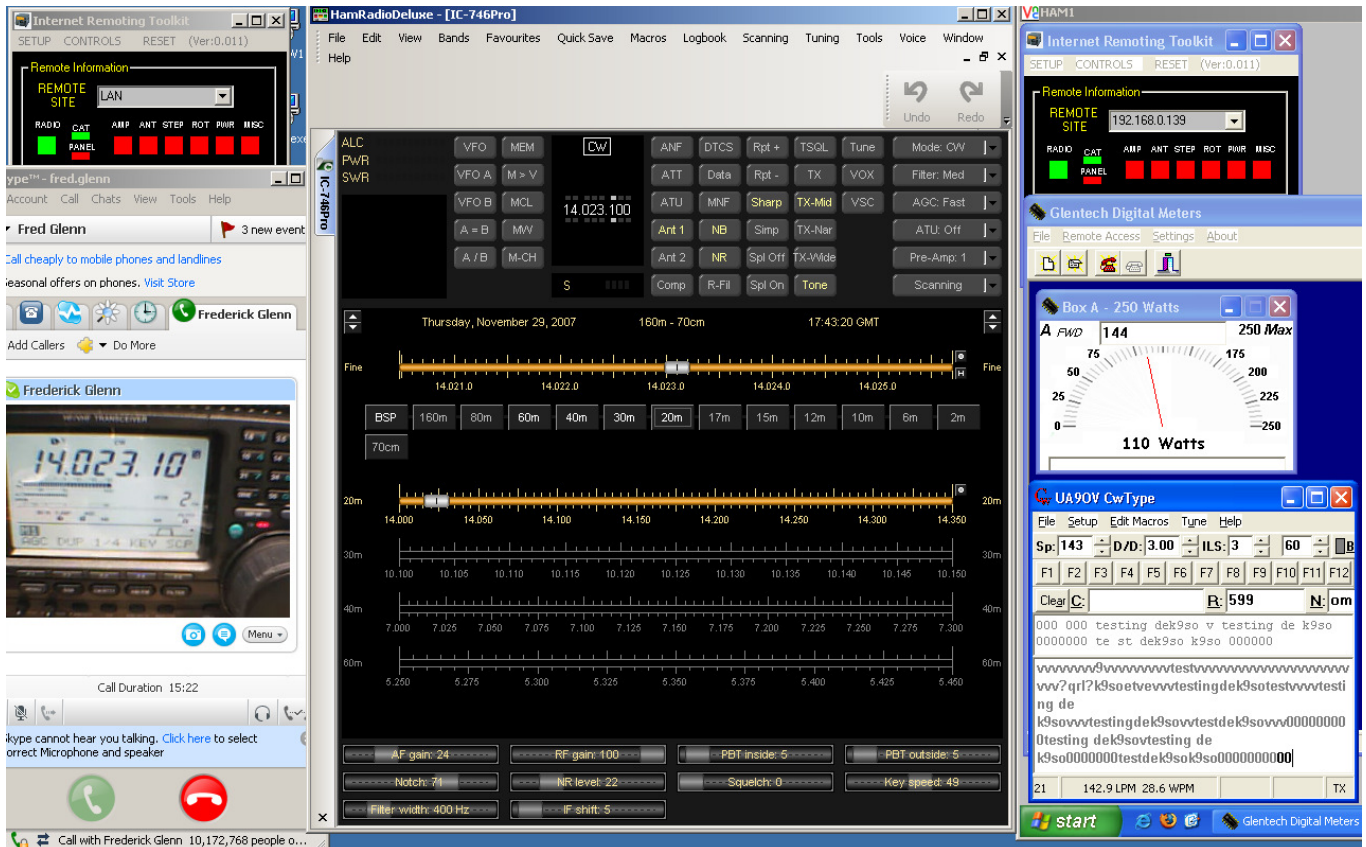


Figure 1. CLIENT computer showing one possible operating view. In the center is HRDeluxe. Counter-Clockwise from upper left a) IRT running on CLIENT b) Rig screen video shot via SKYPE c) “CW Type” by UA9OV (lower right) running on HOST computer d) software view of Bird Wattmeter output on HOST and finally e) IRT running on HOST computer