

How to Join Winlink Part 2

~~~~~

### Switching to RF

This is a followup to “How to Join Winlink - Part 1 Getting Started and Acquainted With Only a PC”

#### RF WINLINK INTRO

Hopefully we have downloaded and installed Winlink per the prior Part 1 ‘How to Join Winlink - Getting Started and Acquainted with only a PC’

If so, it will undoubtedly have been noticed next to the Open Session tab that there are numerous mode choices other than Telnet. Some of those are Packet Winlink, Ardop Winlink and VARA. For now, the focus is on that list.

This writeup is meant to help Telnet Winlink users elevate their ability with either VHF or HF modes (optimally both, in time) to send and receive email RF.

~~~~~

A Brief on Radio Message Servers (RMS) - Irrespective of the chosen RF mode, when sending and receiving email the Winlink client will usually but not always be connecting with a RMS. The RMS is commonly thought of as a gateway to the Internet.

What actually happens is that the RMS provides the calling Winlink Express client with a connection to Central Message Servers (CMS). CMS, in turn, handle the distribution and collection of email to- and from other RMS installations, and also regular email servers, around the World by way of the Internet. (CMS is provided by the enormous capacity of Amazon Web Services).

The general idea and normal intent of Winlink is to communicate from- and to an area whose Internet services are stricken by a crisis or other abnormality, by accessing another place where the 'net is still functioning.

Despite these comments about RMS and CMS, one should not conclude the Internet must be operative in order for Winlink to function. It is possible for Winlink to work *Radio-only* should the Internet be completely down everywhere. That could be a Peer-to-Peer connection for instance... and a topic for another time.

~~~~~

There are two basic types of Winlink RMS: Packet Winlink and HF.

**Packet Winlink** can be VHF or UHF. The majority of high-band RMSes in East Central Florida, and most everywhere, are VHF.

Coming on the scene late 2019 is VARA FM. This is a military grade, weak signal protocol which can use the 1200b or 9600b radio pins. Narrow is the term used for setups running 1200b, and Wide refers to 9600b. They are ambidextrous, and the VARA softwares will switch gears as necessary to accommodate the connecting station. VARA FM is up to 2.6 times faster than regular Packet Winlink - 25,000 bps, and gives greater range to boot.

Late 2020 brought another upgrade to VARA FM: Digipeating - up to two hops easy to do.

**Winmor, Ardop and VARA HF Winlink** are HF alternatives. The speed of HF messaging is 300 baud - much slower than VHF - but a worthwhile tradeoff to gain very long ranges. Thousand-mile HF Winlink is not unusual.

Winmor is the oldest of these, and has been replaced by the Winlink Development Team (WDT) with Ardop.

Faster than Ardop is VARA HF, a unique third-party, weak-signal software product, and is a fee-licensed package should a user wish to gain its highest-speed benefits which are excellent.

It should be remembered that when using any of these modes, it is essential to select a destination RMS that is running the same mode as your calling station. This is easily determined by maps at [winlink.org](http://winlink.org)

~~~~~

EQUIPMENT

It will already be obvious that there is an extensive array of equipment possibilities for Winlink RF, just like all things amateur radio. While that's true, some combinations simply work better, more-easily and cost-effectively than others.

Winlink Equipment and Configuration Caveats

Workable packets are 100% perfect. In order for this to happen, signals must be strong and clean.

One is encouraged to abandon the notion that, because you can work out what an OM is saying through the noise floor while using a handy talkie inside a QTH, it'll work for Winlink. This is a faulty assumption.

Humans have the amazing ability to single-out one voice among many, and fill in the blanks when syllables and whole words are missing; Winlink cannot do this.

Similarly, success with HF phone and other HF digital modes does not mean the station as presently set up is suitable for Winlink. Still needed are strong, clean signals. On top of that, Winlink waveforms can and often will be corrupted by shack RFI that does not interfere with other modes. For example, the radio's PTT can lock up, and unexplained disconnects may occur. This can at first be confusing - and must be mitigated.

~~~~~

**Basic Equipment Needs for Packet Winlink VHF** - For VHF Packet Winlink, three components other than the Winlink software are needed: A VHF radio\*, a Terminal Node Controller (TNC) and a Windows Personal Computer (PC).

For VARA FM, no TNCs support; the interface must be a sound card, such as Masters Communications "DRA" boards, or Signalink. Older Signalinks with red transformers do not support the higher speeds of VARA FM Wide.

\* Users should not expect handheld radios to give consistently reliable results without a good external antenna, and in addition an amplifier if the calling station is very distant from the RMS or digipeater.

### **General Comments for Packet Winlink VHF**

- Most good VHF radios can be used, although ideally a mobile with a data port. Without data port, the mic connector and sometimes also the speaker jack are utilized. Check radio manual for pinouts. We are looking for four essential connections: Audio in, Audio out, PTT, Ground
- Terminal Node Controller (TNC) - The TNC with its modem turns digital data from the computer into sound for the radio, and back.
- Sound cards with VARA FM software (the TNC in this case) works for VARA FM.
- Personal computers must be running Windows 7 or later. Mac iOS is not supported.
- Radio-to-TNC cable - This cable will carry the four connections mentioned above. Some are available for purchase, others custom-built.
- The cable between TNC or Sound Cards and PC is usually a standard USB A-Type to USB B-Type. It will power the TNC or Sound Card and carry data. Non-USB TNCs will use a serial cable and external power supply.
- Ferrite beads on both ends of cables is recommended to arrest RFI
- A look at Winlink, Packet Winlink, Open Session, Settings, TNC will show a workable TNC list.

## **Equipment needs for HF - Winmor, Ardop and VARA**

- For HF, the building blocks are HF radio, Sound Card and PC
- Many good HF radios work very well. It is suggested to check Winlink for a list of potential rigs: Ardop, Open Session, Settings, Radio Setup, Select Radio Model
- Some modern radios have in-built sound cards, such as recent rigs from Kenwood, Icom and Elecraft. (The Icom 7300 is quite commonly-used due to its price point and Plug and Play setup routine)
- More-current radios with internal sound card may require only one USB cable for rig control and data transfer
- If rig has no sound card, the external Masters Communication DRA boards or Signalink from Tigertronics are often-chosen and very reliable
- Software sound cards are also possible when using newer, strong computers - a more challenging endeavor and generally discouraged.

## **Et Cetera**

- Often overlooked during equipment choosing and configuration is a wealth of information and needed answers built right into Winlink under the Help tab
- Another excellent source of everything-Winlink is the Book of Knowledge at [Winlink.org](http://Winlink.org)
- There is much to be gained from YouTube videos by WDT member Rick Frost K4REF
- As with so many things, an experienced mentor, especially someone with your same setup, is invaluable