

MO ARES Digital Data modes of operation/transmission

Digital Data modes are useful when we want to transfer data as text, forms, spreadsheets, lists, etc.

With the exception of Telnet and Pactor, the data modes described in this document are sound-card based/compatible. Traditional hardware TNC's may also be used for packet and are compatible with sound-card based packet.

There are two common use cases, tactical transmissions, and routine transmissions.

- Tactical
 - tend to be more urgent
 - Internet may be unavailable, more likely to be peer to peer
 - more likely to result as assignment in a voice net; example - W0XXX and W0YYY go to MESN 80M net +10 Khz and arrange to pass Digital Data traffic from Aid Station 1 to EOC
 - W0XXX and W0YYY choose FSQcall for this task as the data to be passed is not in large amounts and is more sporadic.
 - both stations must use the same data mode to pass traffic and usually must both be present for the duration of the traffic transfer
- Routine
 - tends to be less time sensitive
 - originating station to gateway as email is convenient
 - may be repetitive, scheduled times
 - Internet may be available at one or multiple origins/destinations

- suggested method is Winlink Express from originating station to local Gateway

The transmission modes, in the Tactical scenario would be determined by the stations assigned to pass the traffic.

In the routine scenario, the data modes provided within Winlink Express would be used (Telnet, Packet, Pactor, Ardop, VARA). The originating operator would choose the data mode he is equipped/familiar with to connect to a local gateway system. The destination station would also utilize Winlink Express, with data mode appropriate for the gateway system they intend to pick up traffic from. The data modes need not match between originating and receiving stations, and they do not need to be present at the same time.

Suggested Tactical modes:

- FSQcall
- VarAC
- Winlink Express point-point
- FLDIGI/FLMSG

Suggested Routine modes:

Winlink Express originating station to gateway

- Packet 1200 is the most common on VHF gateways
- Packet 9600 is available on some UHF gateways
- VARA HF or VARA FM are very fast and are robust
 - Full speed requires a one-time license purchase from the author

- Ardop is a legacy soundcard mode built into in Winlink Express

Sources of sound-card software:

- UZ7HO soundmodem is recommended for VHF 1200 baud packet, download soundmodem114.zip from <http://uz7.ho.ua/packetradio.htm>
- 9600 baud UHF packet UZ7HO high speed packet, download from above site, hs_soundmodem27.zip
- Direwolf is an alternative 1200 baud packet program, download from <https://github.com/wb2osz/direwolf/releases>

You should scroll down to the Assets section at the bottom of the current release and for 32 bit systems download:

https://github.com/wb2osz/direwolf/releases/download/1.7/direwolf-1.7.0-2260df1_i686.zip

If you have a 64-bit version of Windows, then download this version:

https://github.com/wb2osz/direwolf/releases/download/1.7/direwolf-1.7.0-9807304_x86_64.zip

- Optional but very nice - VARA HF and VARA FM, download from Winlink.org

<https://downloads.winlink.org/VARA%20Products/>

[VARA FM v4.3.8 or later](#)

[VARA HF v4.8.8 later](#)

Both VARA programs can be run for free, but will function at reduced speed. To get full speed, a one-time license is required, currently \$60.

- VarAC a relatively new program that uses VARA HF in a packaged chat/EMCOMM format. It can do chat and file transfers with robust error correction.

Download from <https://www.varac-hamradio.com/>

This seems like a very nice package, however as of September 2024, it's use in EMMCOMM is not yet widespread.

- FSQcall is used by the MODES operators in Missouri. General information is available here:

<http://fsqcall.org/#starters>

- FLDIGI offers full support for FSQcall as a built-in mode:

W1HKJ is the author of the FLDIGI suite of products, downloads from here:

<http://www.w1hkj.com/>

or here

<https://sourceforge.net/projects/fldigi/files/fldigi/>

Soundcard hardware

- Signalink USB version manufactured since June 2018 with surface mount black transformers. Older ones with red transformers will work but will not manage the highest data rates with Vara Wide. Wide variety of radio cables and jumper modules available from many sources.

<https://tigertronics.com/slusbmain.htm>

- DRA series by Masters Communications, several models in kits through fully assembled and tested with printed case.

DRA-100 is high end with full aluminum case, power switch, TX & RX level and Delay controls. The RJ45 version is compatible with Tigertronics Signalink radio cables and “Plug-&Play” jumper modules.

<https://www.masterscommunications.com/products/radio-adapter/dra/dra-description.html>

- Avoid the low priced USB adapters from Amazon and e-bay. They can be prone to RF interference, high internal noise and poor isolation.

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