# 2024-01-23 Hamlet Net - fldigi and Associated Applications

**Announcements:**

- Test Session Info
    - Next VE session is this Saturday, January 27th in the Clover Building at the Boulder County Fairgrounds, and starts at 9 am. It is a Patriot VE team session, so pre-registration is recommended. For more info, and to pre-register, see the Licensing/Testing page on the club web site, https://w0eno.org/, under the Education menu.

- We have some volunteer opportunities available where you can help out LARC:

    - Photographer / videographer - record team activities and upload to web site / YouTube

    - Newsletter Editor - put together the monthly Splatter newsletter

- There are several Board positions that will be available in October. Currently, the President, Treasurer and Secretary are planning to make this their last year of service. If you are interested in serving on the board of a 501(c)3 non-profit, please consider running for one of these positions. The current members would be more than happy to "show you the ropes" during the year, so you wouldn't start with zero experience.

- January 27th, 2024 Winter Field Day - Clover Building at the Boulder County Fair Grounds. Runs from Noon to ?? - currently (checking with Setup will start after the VE testing at around 10:30 - 11am.

- Our sister club up in Nederland is looking for some help with events they are running. They have a weekly Monday night net with no predetermined agenda, so you can lead it however you want. They are also planning a Field Day site at Golden Gate State Park and are welcoming anyone who wants to participate. Finally, they are looking for operators for the Ned Gravel run on July 8th. They have signup links for all these events, so head over to their web site https://w0ned.org/ for more information!

- You can start earning your 2024 membership or future renewal by acting as NCS for at least 5 nets this year. You can run either this Tuesday night net or the Thursday night net (or both). We have scripts available for both, so all you need is a good connection into the repeater, and somewhere to keep track of names and call signs as people check in. If you're going to be on the net anyway, why not save some dough at the same time! There are four free memberships available for 2023, so don't wait to get started!

- Chuck has set a goal for the Club of running at least one activity a month. This can be a hands-on construction activity, an operating activity like Field Day, a fox hunt, or a

special event station. The goal is to get people together to have fun with amateur radio! We have multiple locations at our disposal, as well as lots of Club equipment, so if you have an idea for something you think others hams would like to do, please let us know, and if you're willing to run it, even better!

- The Club is also looking for presentation topics for 2024. If you have any ideas, or better yet, would like to present, please let Chuck know and we'll get you on the schedule!
- All club activities are open to anyone - members and non-members. If you have questions, ask them on a net or **send email to elmer@w0eno.org**

**Presenter: Bryan, AF0W**

**Topic: fldigi**

- fldigi is a suite of computer programs used for Amateur Radio Digital Modes operation using a PC
- The name stands for "Fast Light Digital"
- It is available for Windows, Mac, and Linux - and has even been ported to Android
- It is free, open-source, and actively being maintained
- It works with a conventional transceiver connected to a PC via a soundcard
- Some modes are even functional when used in "acoustic coupling" mode - that is, holding the radio up to the computer's microphone and speaker (and manually pressing the radio's PTT)
- It can also control the radio using CAT control
- It is multi-mode, so the user can utilize many digital modes without having to change programs
- The modes it supports are chat modes and are used for keyboard-to-keyboard communication (as opposed to something like FT8 with its regimented exchanges)
- So why all the different digital modes?
    a. Most HF communications rely on atmospheric propagation, which can vary from moment to moment
    b. There are also issues of multipath, or multiple copies of the signal arriving at different times, as well as atmospheric and man made noise and interference
    c. Depending on the exact current conditions, different digital modes will perform better than others

    d. As with a lot of things related to amateur radio, experience is the best teacher when it comes to digital mode selection

- One other issue is identifying the particular mode being used when tuning across the band

    a. The manual methods of determining the correct mode will be either listening to or looking at the signal, or switching to different modes until one of them decodes properly

    b. Determining the mode by listening isn't as difficult as you might imagine - FT8 sounds much different than RTTY or JT65, for instance (PERHAPS PLAY EXAMPLES HERE)

    c. Here again, experience will be very beneficial

- There is a system for automatically selecting the appropriate mode using the Reed-Solomon Identification or RSID feature

    a. RSID transmits a short burst at the start of your transmission which identifies the mode you are using

    b. Those amateur radio operators also using RSID while listening will be alerted by their software that you are transmitting in the specific mode (such as Olivia), what settings you are using, and where on the waterfall your transmission is located.

- The fldigi application currently supports 19 different digital modes, such as CW, Contestia, Olivia, PSK, and RTTY with multiple variations of each

    a. For example, the PSK mode has PSK-31, -63, -125, -250, -500 and -1000 in addition to 6 multicarrier variants

    b. PSK-31 is the slowest mode - and is intended for keyboard-to-keyboard QSOs

    c. PSK-63 and -125 are used mainly with macros as they are much faster

    d. Of course, this additional speed comes with a cost - they also occupy more bandwidth

- It also supports two special modes

    a. The first is WWV mode, which allows you to receive the standard time signal and use it to calibrate the software to your soundcard

    b. The second is called Frequency Analysis and displays a very narrow waterfall along with a frequency meter that is accurate to two decimal places, which can be used to measure the frequencies of incoming signals

        - The ARRL has a yearly frequency measuring test where participants measure the frequency of HF signals transmitted by the ARRL and report their results to see how close they come to the actual signal frequency

- The fldigi application has three main sections or panes - one each for receive and transmit, and one for the waterfall
    a. The send and receive windows are similar to many older messaging applications
    b. The waterfall resembles the waterfalls on the ICOM IC-7300 or in the WSJT-X software
    c. One feature of the program is that you can type in the transmit pane while you are receiving - your typing will be queued up until you switch to transmit mode, at which point it'll quickly be sent
- Some additional fldigi features are:
    a. Automatic frequency control, or AFC - this feature automatically follows signals that drift in frequency
    b. Macros allow you to configure sequences of actions and information to be transmitted
        - For example, you can answer a QSO with your call sign and that of the sending station
    c. It also supports CW decoding, but the decoder isn't as good as CW Skimmer (http://www.dxatlas.com/cwskimmer/) , another software decoder
- fldigi also contains its own logging facility
    a. 70% of the fields being logged are either gathered from the data transmissions or from the program configuration, thus reducing operator time to make an entry
    b. The log does interface to the LoTW TQSL application for uploading and downloading records
- There are also a few other programs available as part of fldigi:
    a. flmsg
        - flmsg is a simple forms management editor for the amateur radio that supports standard message formats.
        - Form data can be transferred between computers either using standard internet email or via RF

- flmsg forms can be very complex and include embedded images and other controls that make data entry less error prone. The template information is not transferred between computers, only the volatile information contained in the form entry controls.
- The form template must reside on each flmsg computer that will be used to create, edit, or review the data.
- It uses fldigi to perform the modulation/demodulation for RF signals

b. Flamp

- flamp is a program for AMP or Amateur Multicast Protocol, allowing a file to be transmitted to multiple stations simultaneously
- An FLAMP session will transmit one or more files with one or more repetitions of the transmission
- Files can be of any format - text or binary
- Each file is broken into blocks having a checksum. - the receiving station saves the blocks that pass checksum
- Successive transmissions will fill in the missing blocks provided that the new blocks pass the checksum.
- “Fills,” or missing information, may be provided by retransmitting the entire file or by the sending station only sending the missing blocks.
- fldigi modems are used to perform the actual transmission
- flamp also supports a sort of digipeater operation for use where all stations cannot hear on another directly
- One use of this application is to send form definitions to be used with flmsg

c. flarq

- flarq implements the Automatic Repeat Query or ARQ specification to transfer files over radio.
- This protocol is unicast, or point-to-point, and connection-based
- If the receiving station does not receive the packet without errors, it will send an ARQ to request a retransmit of the packet

        - The software seamlessly integrates with existing email clients such as Microsoft Outlook, Mozilla Thunderbird

    d. Flrig

        - Provides rig control via CAT or Computer Aided Transceiver
        - The exact functionality will depend on the commands supported by your radio
        - It can be used by itself or with fldigi

    e. flcluster can be used to access DX spotting clusters

    f. flnet is an application that can assist a net control station with running a net by keeping track of participants

- There are also two Android-only apps:

    a. andflmsg is a combination of Fldigi and Flmsg for portable devices running Android

        - The last update to this app was in 2021

    b. Tivar is an Android app that provides read-only access to a few of the fldigi modes: PSK, DOMINOEX, THOR, OLIVIA and MT63

        - The objective of this app is to provide a low power highly-portable fldigi read-only solution. There is no facility to transmit any signal.
        - This app appears to no longer be in active development - the last update was in 2019, but they are looking for someone to take it over

- fldigi is part of the ARRL's Narrow Band Emergency Message System or NBEMS
- To download the fldigi software, go to: http://www.w1hkj.com/

**Questions:**

- **The question for the week is:** What type of cell phones and tablets do you have (IOS, Android, other), and would you be interested in trying out some digital modes on a net?
- **In my case,** I've got an Android phone and tablet, while my wife has Apple devices. We've got Windows and Linux computers - no Macintoshes.

**More Info:**

- Fldigi software: http://www.w1hkj.com/
- ARRL NBEMS: http://www.arrl.org/nbems
- CW Skimmer: https://www.dxatlas.com/CwSkimmer/

**Backup Questions:**

1. What hobbies do you have other than ham radio?  Do you (or could you) use ham radio in these hobbies?
2. Share an "a-ha" moment you had with amateur radio?

- If you have ideas for net topics or general meeting topics / presenters, please let us know!  Tell us on a net, or send email to k0itp@w0eno.org

**Email to elmer@w0eno.org**

1. W0PPC - Steve - Lyons
2. WA0JJC - Bob - Boulder
3. KF0MXH - Art - Longmont
4. W7PGF - Philip - Frederick
5. AF0W - Bryan - El Paso via Echolink
6. KM6SJA - Steve - Longmont
7. KC0CT - Joe - Broomfield
8. KA0CFR - Charles - Longmont

**End:** 7:50pm