

# VARAC Primer by W1JKU

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Thank KO4LEM-Alan Longworth for providing additional link on leverage VARAC with EmComm  
[http://cherokee-ares.org/documents/VarAC\\_for\\_EmComm\\_tactical\\_guide.pdf](http://cherokee-ares.org/documents/VarAC_for_EmComm_tactical_guide.pdf)

## Training Overview:

1. Cherokee ARES is currently experimenting with VARAC as a tool to be added to our toolbox for real-time digital/RF communications while conducting our Weekly NETS, SKYWARN, etc. Tonight's training is just to hit some highlights and prime the pump to gain interest and allow you to decide if you would like to incorporate this tool into your Emergency Communications Toolbox. Details will be posted on the Cherokee-ARES.ORG Website and the NWGA ARES Groups.IO by End of Day tomorrow 10JAN2024 recapping what I am covering tonight...
2. With any tool, it's important to use the most appropriate tool you have based on resources, conditions, and objectives.
  - a. If Everyone has Internet capability there is nothing wrong with using our District Standard Chat program, **DRATS**, to pass real-time messages. DRATS reduces the delay that is received when sending via Winlink or waiting for members to poll their CMS Servers and download the Winlink Message, which can add minutes or longer to receive the message. **DRATS will remain a priority tool we will continue to leverage and utilize.**
  - b. However DRATS despite have a few updates over the years, is behind the curve on stability and missing a few features you will find in VARAC and we will briefly discuss tonight.
3. **VARAC, *What is this digital mode?*** VARAC is a free Chatting Application that can be used over VARA-HF, or VARA=FM allowing users to communicate with other Armature Radio Operators leveraging the Vara protocol using RF. VARAC is designed to be used without any Internet Backbone, pure RF between stations.
  - a. VARAC has setup/defined various Popular Calling Frequencies for HF and preloaded/configured in the Dropdown list when you install VARAC.
  - b. You also have the capability of editing that list and adding your own local Frequencies that you may decide to use in your county or district.
  - c. What sets VARAC apart from just using VARA-CHAT is the following:
    - i. **VARA-CHAT:**
      - 1) a separate application download from VARA that allows only two operators to communicate with one another. Both operators must be online at the same time and have direct line of communications to transmit/receive messages.
      - 2) Using Vara Chat, users cannot actively see which stations are online and able to receive your traffic.
    - ii. **VARAC:**

- 1) A 3rd party application you must download and install along with VARA-HF and VARA-FM (I will provide the link in the program when I publish it, or you can simply google Download VARAC <https://www.varac-hamradio.com/>)
- 2) VARAC is supported on Windows, Linux, MAC, and PI
- 3) VARAC contains a comprehensive Installation, Training, & Instruction manual that is available on-line where you download VARAC, and embedded within the application.
- 4) VARAC supports **Beacons**. This is a feature where you can configure your system to send a beacon out on **demand** or every x minutes to let other stations know you are on frequency and able to take traffic. (Note, if operating VARAC on a Voice NET/Repeater, you will want automated Beacons disabled during the NET so that it does not automatically send and interrupt the net or impact NCS. Beacons could be used prior to NET or when instructed by NCS.)
- 5) VARAC Supports **Broadcasts**. Broadcasts is a feature allows an operator to send a 91byte message to a Specific Station or "ALL" stations on Frequency. This is a primary method of being able to deliver short messages to multiple stations at the same time that you cannot do in a one-on-one standard Vara-Chat. Broadcasts is a feature we will leverage on our Cherokee-ARES NETS to allow mass RF communication between all listening members running VARAC at the same time.
- 6) VARAC Supports **VMAIL**. VMMAIL is a feature allows composing and sending larger messages or can be store as an offline message on your machine that is picked up and received by the recipient when they are online.
  - a) VARAC **VMMAIL** also supports **PARKING**, where you store and forward VMMAILS to a 3rd Party to help deliver to your intended recipient.
  - b) VARAC has protocol built into the solution that when a station Beacons itself, if there is a message waiting for that station on frequency, VARAC will be instructed and automatically download the message to VARAC. The Protocol also determines which stations online can hear a station you are attempting to communicate with and can be used to forward your message through that station that you do not have direct access to... Similar to digipeating...
  - c) This is an advanced task that we will cover at a later time in more depth. For EmComm, Winlink is still the best universal/consistent vehicle for delivering stored messages, ICS Forms, etc when the internal and CMS Servers are online. VARAC **VMMAIL** simply takes Point to Point message delivery once step forward and allows you to store that message on either your station or another station to help deliver to your intended recipient...
  - d) VARAC does not have ICS forms built into the solution and is NOT a replacement for Winlink. But another tool that can be used to communicate!

#### 4. References

There are several YouTube Videos that provide an overview of VARAC, how to install, Configure, etc. You should consider reviewing this material and decide if this is a tool you would like to add to your tool kit.

- **You Tube Video:** [VarAC HF Digital Instructional Video From A - Z](#)
- **VARAC Download:** <https://www.varac-hamradio.com/>
- **Help** is built into the Resource TAB when you install VARAC

#### 5. Quick Concept of Leveraging VARAC on a Cherokee-ARES NET:

- Prior to the NET all stations with VARAC capability can set their station to point to our Cherokee ARES Repeater and manually send a **Beacon** to let all other stations know they are on Frequency with VARAC capability. Again this is the same Frequency used by the Voice NET.
- During NET, NET Control may make a Net Call giving additional instructions that VARAC users may re-Beacon.
- When NET Control has digital traffic it would like to Broadcast via VARAC to all Listening stations on Frequency, then Net Control would make a NET Call to alert stations that Digital traffic is about to be sent and if the recipients must make a quick change to their rig to put in Digital Mode briefly, they can..

**I will provide an example of how this would flow:**

**Example NCS Sending Traffic:**

- Cherokee County ARES, this is W1JKU, NETCONTROL, Prepare to Receive VARAC Broadcast Message, Out.** [Give a pause of 5-10 seconds to give stations an opportunity to adjust RIG if necessary if they must put into FM-D mode]
- Cherokee COUNTY ARES, this is W1JKU, MESSAGE OVER.** [This is a warning, I am about to *Send the digital message. After I give the Message Over, I will transmit my digital message.*]
- Cherokee County ARES, this is W1JKU, any stations needs Fills Over.** [ This is a method to see if I must retransmit the message to anyone. Simply Listen for a few seconds in case a station needs a resend, if not move on...]
- Cherokee County ARES, this is W1JKU, MESSAGE COMPLETE. OUT.**

[That is how simple the protocol process would be for NCS to send Digital Traffic during a Voice Net. This could be done with other modes like DRATS-RF, FLDIGI, ETC... The Key is having a process and maintaining Command and Control of the NET.]

- Net Control can also make NETCALL and allow others to pass traffic as they need by simply putting the NET in '**FREE STATE**' versus '**DIRECTED**'. Reminder we start the Voice NET as a '**DIRECTED NET**, where all stations must go through NET Control. While a NET is in **FREE STATE**, users do not ask NCS for permission to send traffic. This is a temporary state sometimes lasting 5-15minutes. **Recap:** "**FREE**" State versus "**DIRECTED**" allow any traffic to be passed for a few minutes without asking NCS for permission. After a period of time, then NCS will regain control of the NET returning to **DIRECTED** and all traffic and activity must flow through NETCONTROL. [Stations should ensure they are prepared to receive Digital Traffic when in **Free Mode.**]

#### 7. Example of using FREE State:

- Cherokee County ARES, this is W1JKU, NETCONTROL, The NET is now Free, OUT** [At this point NCS will allow this to stay in this mode for a few minutes, where other operators do not need to request permission of NCS to broadcast]
  - Stations can now either send a Broadcast message to the NET or a VMAIL Message to a Specific User. **For Example May want to send the current NET Roster to another user. So they would follow this protocol to ensure both sides are ready to Transmit and Receive**

**Example of the Two Stations:**

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- **KJ4UC This is KO4IFY, VARAC Message, Over** [At this point KO4IFY just alerted KJ4UC to prepare to receive a VARAC Message]
- **KO4IFY, This is KJ4UC , Ready to Receive, Over** [KJ4UC just notified KO4IFY, that he is ready to receive traffic...]
- [KO4IFY Sends the Digital message Message, after message transmitted then the following would occur]
- **KO4IFY, this is KJ4UC, Message Received, OUT** [This lets the Sender know the message was received, or if the message needs to be resent, KJ4UC would ask KO4IFY to retransmit...]
- **KO4IFY, Message Complete, OUT.** [That alerts all other stations he is done transmitting, message was delivered, and anyone else wanting to transmit during Free NET may do so following same process.]

8. NET Control at reasonable amount of time will move Net back into "**DIRECTED**" and regain Command and Control:

**Example:**

- i. **Cherokee County ARES, this is W1JKU, NET Control. The NET has Returned to Directed, All stations must go through Net Control, OUT.**
- ii. Then continue NET as normal, and if needed rinse/repeat Free NET and Sending Messages outline above...

**I hope this little primer on VARAC and incorporating Digital with Voice Nets was helpful. We will be performing additional training and continuing this experiment/journey over the next several weeks. Details will be posted on the Cherokee-ARES.ORG Website under News and a link will be added to the NWGA ARES Groups.IO page recapping what I am covering tonight...**

**This concludes the training material for tonight, Any Questions or Comments, please contact Net Control.**