

# E-Mail With or Without the Internet

JOE GIRAUDO – N7JEH

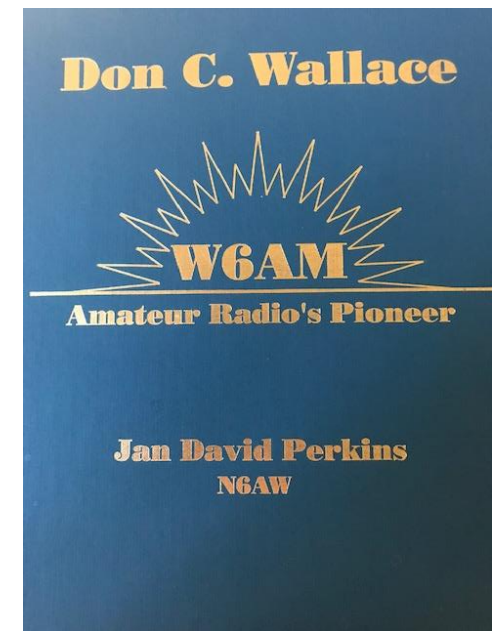
NOVEMBER 13, 2021

# Would you like to have:

- ▶ E-mail with or without the internet with premade templates for ICS and other forms (NTS, Red Cross, USGS, etc.)?
- ▶ A dedicated point-to-point network for passing information?
- ▶ A system that is extendable by digipeaters or HF radio?
- ▶ A system that can be a permanent installation, mobile or portable?
- ▶ A station that can be built for very little money?
- ▶ A system that can be used by office staff because it looks like E-mail?  
(Under direct supervision of licensed Ham operator)
- ▶ A system that will function during a major disaster with no commercial power, telephone lines or internet?

# History of Traffic Handling

- ▶ 1887 Spark Gap (Hand telegraphy) 40 KW was a smaller transmitter!
- ▶ 1913 Continuous Wave
- ▶ 1920-30s Hellschreiber, RTTY, ASCII
- ▶ 1973-76 Packet
- ▶ 1978 AMTOR (Mode A ARQ, Mode B FEC)
  - ▶ Error Correction
- ▶ 1991 PACTOR



# The HF-based E-mail system has existed in several forms for over 20 years!

## ▶ **Sail Mail**

- ▶ Used by Yachts etc. on Marine HF (PART 80) and Amateur (PART 97) frequencies (PACTOR)
- ▶ Relied on specialized TNC modems
- ▶ E-mail, position reporting, maritime Wx and bulletins.

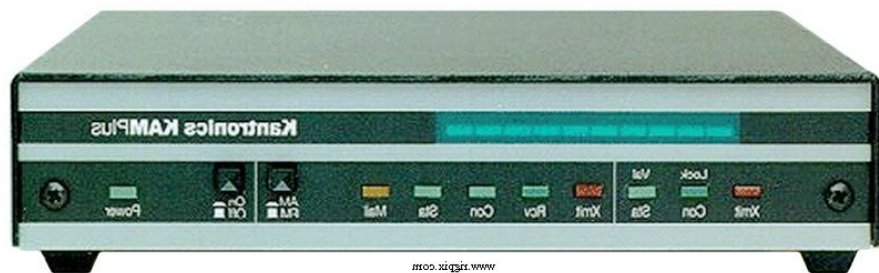
## ▶ **Air Mail**

- ▶ Used by Amateur community as well as MARS and SHARES ( Telnet, PACKET, PACTOR, then WINMOR)
- ▶ Primarily TNC modems with some soundcard modems
- ▶ Early Amateur success story
  - ▶ Hurricanes Katrina & Rita
  - ▶ US Army MARS (Operations Desert Shield & Desert Storm)
  - ▶ SHARES
  - ▶ NTSD

## ▶ **Winlink Express**

- ▶ Incorporated Templates, active updates and improvements. (Telnet, PACKET, PACTOR, ARDOP (BPQ-32), VARA, WINMOR, Iridium)
- ▶ Increased use of soundcard modems
- ▶ No support of older TNC modems (pre-KISS mode)

# TNC Modems



# TNC vs Sound Card Modem Software

- ▶ Expense
- ▶ Upgradability
- ▶ Backward compatibility
- ▶ Portability
- ▶ New mode development and obsolescence
  - ▶ Anyone remember AMTOR, Clover (\$1,000 modem) and other modes that have come and gone?

# What's needed?

- ▶ Radio (mobile preferred but HT will work)
- ▶ Signal link computer/radio interface (~ \$140)
- ▶ Computer
- ▶ Software (free except for high speed upgrade of VARA (~ \$65 for lifetime license which covers both VARA FM and VARA HF)
  - ▶ Amateur Radio Safety Foundation (WINLINK) asks for a donation
- ▶ Antenna



# Let's look at it!

The screenshot displays the Winlink Express 1.5.40.1 - N7JEH application window. The title bar includes the application name and standard window controls. The menu bar contains: N7JEH, Settings, Message, Attachments, Move To: Saved Items, Delete, Open Session: Telnet Winlink, Logs, and Help. Below the menu bar is a toolbar with icons for home, back, forward, search, and other functions. The main interface is divided into a left sidebar and a main pane. The sidebar shows a tree view of folders: System Folders (Inbox (0 unread), Read Items (10), Outbox (0), Sent Items (25), Saved Items (0), Deleted Items (9), Drafts (0)), Personal Folders, Global Folders, and Contacts (ALAN\_MALAN, ANNE\_BLANKENSHIP, BILL\_MOYES\_N7IE, BRENT\_THOMAS, CHUCK\_KILLIAN, DAN\_MERKILG). The main pane displays a table with columns: Date/Time, Message ID, Size, Source, Sender, Recipient, and Subject. The table is currently empty, and a status bar at the top of the main pane reads "No active session...".

Winlink Express 1.5.40.1 - N7JEH

N7JEH Settings Message Attachments Move To: Saved Items Delete Open Session: Telnet Winlink Logs Help

No active session...

Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
-----------	------------	------	--------	--------	-----------	---------

System Folders

- Inbox (0 unread)
- Read Items (10)
- Outbox (0)
- Sent Items (25)
- Saved Items (0)
- Deleted Items (9)
- Drafts (0)

Personal Folders

Global Folders

Contacts

- ALAN\_MALAN
- ANNE\_BLANKENSHIP
- BILL\_MOYES\_N7IE
- BRENT\_THOMAS
- CHUCK\_KILLIAN
- DAN\_MERKILG



# A Caution

- ▶ Packet is a carrier sense, multiple access (CSMA) mode.
  - ▶ Multiple users can connect simultaneously.
- ▶ VARA is not. It is a frequency hog. **Listen, listen, listen** before initiating a VARA FM connection on a frequency shared with Packet.
- ▶ P2P VARA FM on a secondary frequency is less problematic.
- ▶ While VARA FM hogs a frequency, air time is less than Packet so there is a tradeoff.

# Where Could This Be of Value?

- ▶ Served Agency support exchanging information using standardized forms (ICS, Red Cross, State Agency, NTS etc.).
- ▶ Widespread disaster response where normal infrastructure is down. (P2P or HF operation).
- ▶ Special Events exchanging tabular information.
- ▶ Off-the-grid applications where commercial infrastructure is unavailable or expensive (Yachts at sea, remote cabin,

# References

- ▶ **Winlink Express:**

- ▶ Help file
- ▶ Youtube, etc.

- ▶ **Sound Modem Packet Radio**

- ▶ [UZ7HO Personal page - Packet-Radio - English version](#)

- ▶ **Vara FM / Vara HF**

- ▶ [www.wavetaklers.com](http://www.wavetaklers.com) Los Angeles County (CA) ARES

# Winlink Express



## Winlink Express



Winlink Express (formerly RMS Express) is the preferred Winlink radio email client because it supports all new system features, and it is the only client supporting the [Winlink Hybrid Network](#) for email delivery with or without the internet. Winlink Express is designed to be easily used by single users with a single call sign but it may also be used to simultaneously send and receive mail with one or two more tactical addresses or alternate Winlink accounts. It supports a wide selection of transceivers, TNCs and multimode controllers, sound card modes using the ARDOP, and VARA HF and FM virtual TNCs (ARDOP software TNC included), Pactor, SCS Robust Packet, VHF/UHF AX.25 packet radio, and direct telnet to CMS servers or RMS Relay (for amateur radio High Speed Multimedia [HSMM], Broadband HamNet, D-Star DD mode, internet, and any other TCP/IP network).

Winlink Express is built by the Winlink Development Team and leverages its features with simplicity as the prime design objective. It uses the open [B2F](#) extension radio transfer protocol that supports attachments, multiple addresses and tactical addresses. Winlink Express may be used in the peer-to-peer mode (connecting directly via RF to other Winlink Express or Airmail clients). Winlink Express also contains manual and automated GPS position reporting abilities, support for the Winlink catalog of downloadable weather, information and help bulletins, Saildocs and Globalmarinenet for obtaining GRIB files, and

# Soundmodem Packet Radio

Not secure | uz7.ho.ua/packetradio.htm

Welcome to the personal page  
**UZ7HO**

[Home](#) [Contesting](#) [Guestbook](#) [Log search](#) [Packet-Radio](#)


### Solar-Terrestrial Data

10 Oct 2021 0128 GMT  
SFI: 90 SN: 13  
A-Index: 5  
K-Index: 1  
X-Ray: B1.0  
304A: 125 @ EVE

### Calculated Conditions

Band	Day	Night
80m-40m:	Fair	Good
30m-20m:	Good	Good
17m-15m:	Fair	Fair
12m-10m:	Poor	Poor

Signal Noise: S0-S1  
Click to Install Solar Data On your Web Site  
<http://www.m0nib.com>  
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### The software Packet-Radio TNC

I am developing a software dual-port Packet-Radio TNC that uses a soundcard as a modem and supports AX.25 protocol. It has been tested on Windows XP, Vista, 7, 8, 10 and has proved stable in operation. The Soundmodem has two TCP/IP interfaces to link with client application: AGW PE and (X)KISS. In case of AGW PE interface, this modem is a direct replacement of original AGW Packet Engine and emulates AGW PE API. The Soundmodem may be used to build EMCOMM, APRS, BBS, Node station, for satellites etc. It supports such modes:

Soundmodem	High-Speed Soundmodem
<ul style="list-style-type: none"><li>• AFSK 300, 600, 1200, 2400 bps</li><li>• (D)BPSK 300, 600, 1200, 2400 bps</li><li>• (D)QPSK 2400, 3600, 4800 bps</li><li>• (D)8PSK 4800 bps</li></ul>	<ul style="list-style-type: none"><li>• G3RUH 4800, 9600, 19200 bps</li><li>• Manchester 1200, 2400, 3600, 7200 bps</li><li>• HAPN 4800 bps</li><li>• GOMX-1/3, Mobitex-NX (BeeSAT-2/4), AAUSAT-4, LilacSat-2 decoders</li></ul>

UZ7HO SoundModem

# Vara FM / Vara HF

https://www.winlink.org/content/vara\_fm\_version\_401\_released



[My Account](#) [Tools](#) [News](#) [Positions](#) [User Programs](#) [Book of Knowledge](#) [Download](#) [Support](#)

## VARA FM Version 4.01 Released

VARA FM v4.0.0  
Speed Levels

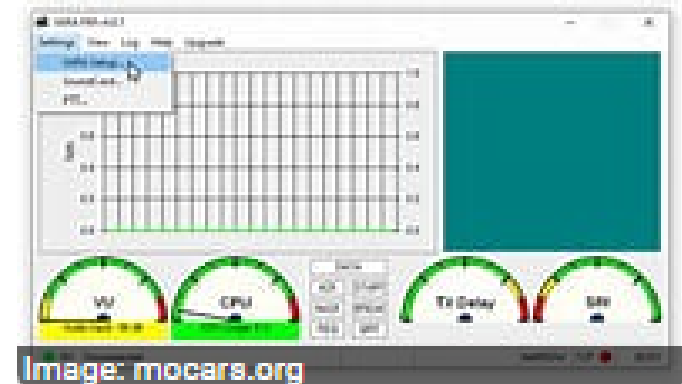
Level	VARA FM WIDE				VARA FM NARROW			
	Symbol Rate	Carriers	Mod	Net Rate (bps)	Symbol Rate	Carriers	Mod	Net Rate (bps)
1	42	14	4PSK	566	42	14	4PSK	549
2	42	29	4PSK	1188	42	29	4PSK	1181
3	42	58	4PSK	2390	42	58	4PSK	2390
4	42	98	4PSK	4040	42	58	4PSK	3188
5	42	98	4PSK	5387	42	58	8QAM	4252
6	42	98	8QAM	7185	42	58	16QAM	5668
7	42	98	16QAM	9580	42	58	32QAM	7087
8	42	116	16QAM	11340	42	58	64QAM	8505
9	42	116	32QAM	14144	42	58	64QAM	9567
10	42	116	64QAM	16932	42	58	128QAM	11162
11	42	116	64QAM	19003	42	58	256QAM	12750
12	42	116	128QAM	22102				
13	42	116	256QAM	25210				

We are pleased to announce that Jose Alberto Nieto Paz EA4HWK has released VARA FM version 4.01 as of 1700UTC November 28, 2020. Highlights of this

# What is VARA?

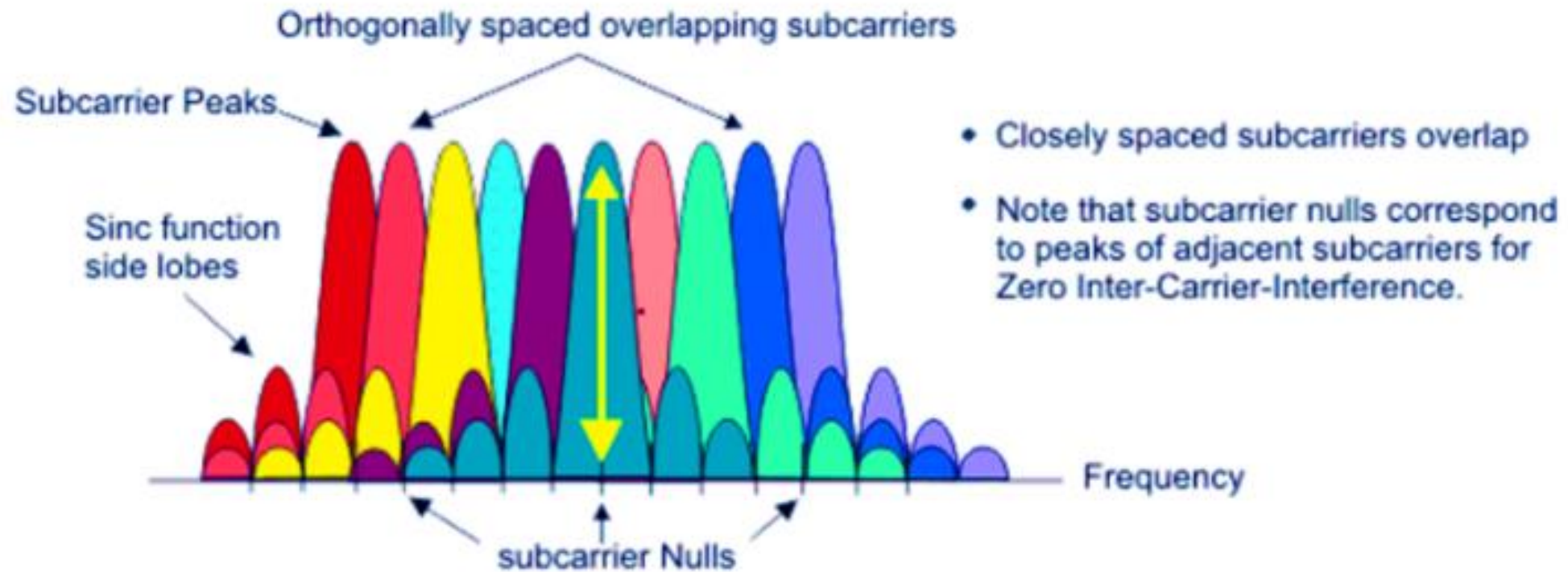
VARA is a **software modem** using orthogonal frequency-division multiplexing (OFDM) modulation. VARA is capable of HF speeds comparable with Pactor 3. It does this using 52 carriers limited to 42 bps thus satisfying the FCC symbol rate requirements of 300 baud or less for any carrier.

VARA, a presentation by Tim, AD4CJ – WCARES  
[wcares.org/vara-a-presentation-by-tim-ad4cj/](http://wcares.org/vara-a-presentation-by-tim-ad4cj/)





# VARA





# Gateways

- ▶ Gateways receive, store and re-transmit data
  - ▶ Vhf/Uhf PACKET/ARDOP/VARA
  - ▶ HF FACTOR/ARDOP/VARA/WINMOR
  - ▶ MESH
  - ▶ Internet
- ▶ Simple to build
  - ▶ Same process as building a station
- ▶ Like the PACKET NET-ROM and THE-NET systems of the past, they will find a path (self-healing)
- ▶ Closest Gateways
  - ▶ K7DAV (sheriff's office)
  - ▶ K2WWC West Valley
  - ▶ AC7II Paradise (down on Sundays)

# What's Next?

- ▶ Build a station
  - ▶ Workshop / Elmering
  - ▶ [www.wavetakers.com](http://www.wavetakers.com) Los Angeles County (CA) ARES
    - ▶ PowerPoint presentations
    - ▶ Zoom-based classes
    - ▶ Online help
- ▶ Build Gateways
  - ▶ Help fill the vhf/uhf coverage holes
  - ▶ Tie into DCARC MESH system
  - ▶ No more difficult than building a station
- ▶ Resources
  - ▶ Other DCARC Hams
  - ▶ YouTube and Google searches

# Easy Questions?

- ▶ Careful, I'm not as smart as I look...