E-Mail With or Without the Internet

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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

Don C. Wallace
W6AM
Amateur Radio's Pioneer
Jan David Perkins
N6AW
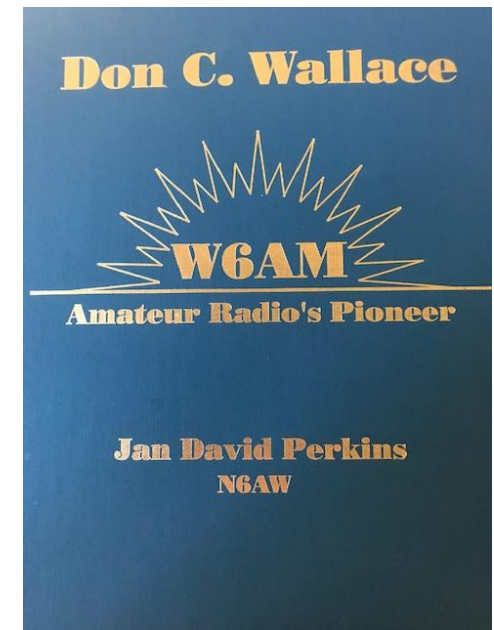
The HF-based E-mail system has existed in several forms for over 20 years!

- **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
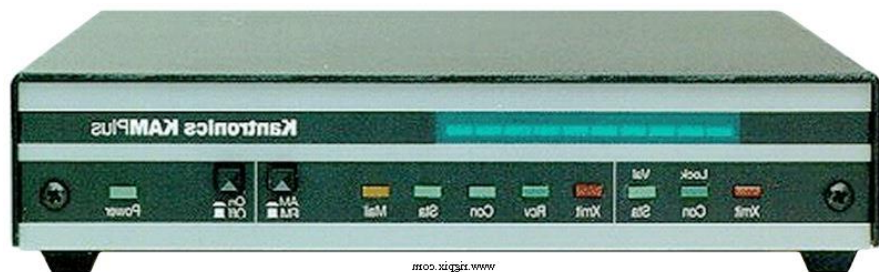
TNC vs Sound Card Modem Software

- 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!

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 Los Angeles County (CA) ARES

Winlink Express

https://winlink.org/WinlinkExpress

WINLINK Global Radio Email ®

> My Account   > Tools   > News   > Positions   > User Programs   > Book of Knowledge   > Download   > Support

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

Vara FM / Vara HF

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/

Image: mocares.org
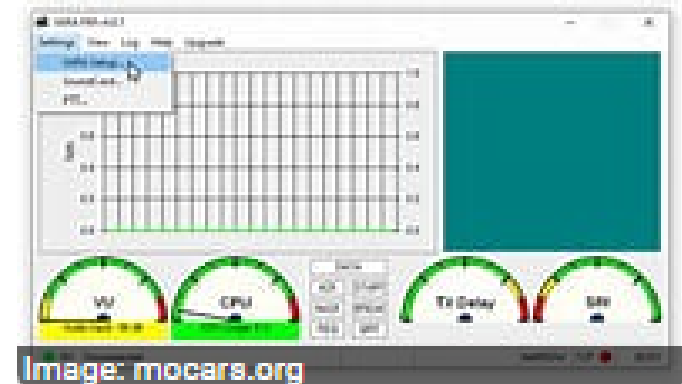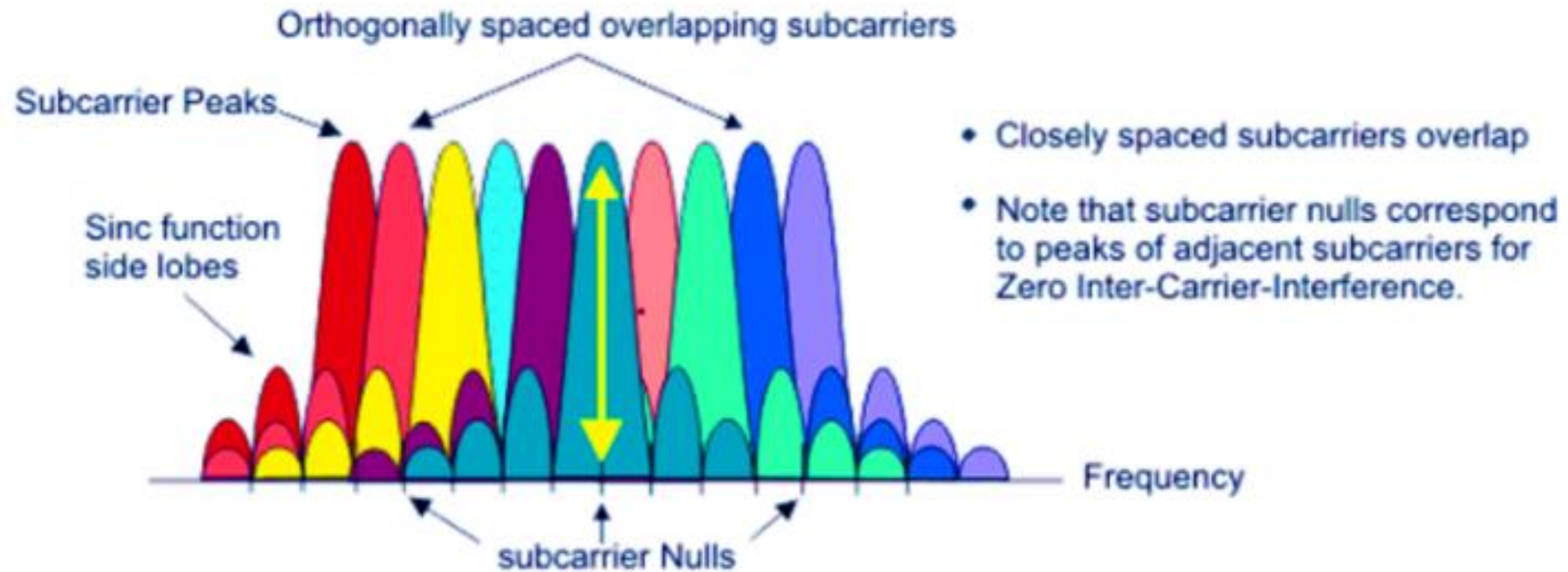
VARA

Gateways

- Gateways receive, store and re-transmit data
  - Vhf/Uhf PACKET/ARDOP/VARA
  - HF PACTOR/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.wavetaklers.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…