

# EDM\* TRAINING & BLACK SKY OPERATIONS

Training on Winlink and VarAC

\*EmComm Direct Messaging

Some Information  
Sourced from  
ChatGPT



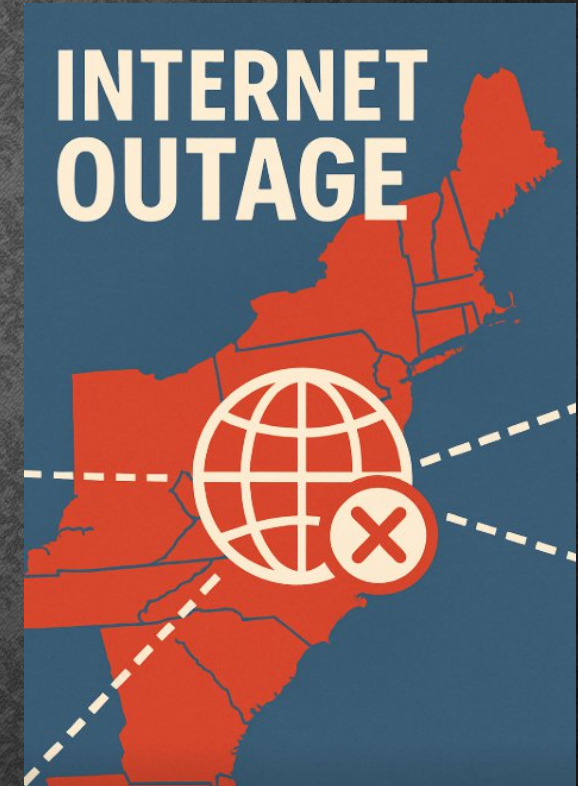
# GOALS

- Create Awareness of EDM Training Processes
- Justify Local Amateur Groups/Operators Interest in EDM
- Describe 'Black Sky' Conditions and the Relevant Operational Environments
- Encourage Operator Involvement in EDM and/or Other Training and Exercise Groups
- Describe Advantages and Disadvantages of Common Digital Data Applications
  - Emphasis on Winlink and VarAC as Used in EDM
  - **Empasis on Selection, Tailoring and Training on a Viable Technical Approach to EmComm Needs**



# BLACK SKY CONDITIONS

- Black Sky = No Reliable Internet Services
  - Local Area
  - Broad Area
- No Cellular, No Winlink RMS/CMS Gateways, No Email, etc.
- County/Locality EmComm
  - Established EOC with ARES Coordination Plans
  - Compromised, Personnel Shortages, etc.
  - Limited Operations Areas
- EmComm FM Voice via VHF/UHF Potentially Viable
  - Dependent on Repeater Backup Power
  - Used for General Coordination and to Help Position Resources to Relay Form Information to EOC



# TRAINING AND EXERCISE COMMUNITY

- Why Do We Train?
  - FM Radio Talk is OK, When Available; But Has Limited Value to EOCs
  - EOCs Typically Require Form Data
  - Available Tools Providing Form Data Require Operator Expertise
  - Internet is Useful IF And Only IF Available
  - Training Emphasis On Direct Delivery of Form/Message Traffic
    - Including Large Data Sets
- EDM Trains on Winlink and VarAC
- Winlink Wednesday and Winlink Thursday Train on Winlink, only
  - Emphasis On RMS/CMS Operations; Or Telnet
  - WW Also Encourages P2P Message Traffic (Ardop/Vara)
- NBEMS (Narrow Band EM Software/ARRL) Trains on Fldigi Modes
- Other Regional Exercises, MDC, VDEMS, etc.

## EmComm Resources

### EDM

Groups.io: EmComm Direct Messaging

### ETO and Winlink Thursday

Groups.io: EmComm Training

Emcomm-training.org

### Winlink Wednesday (National)

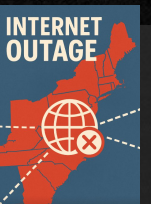
winlinkwednesdays.net

### NBEMS (National)

arrl.org/nbems

### MDC (Maryland/District of Columbia)

www.arrl-mdc.net



# WHAT IS EDM?

- **Training and Exercise Group**
  - Focus on HF Communications
  - Regional and National Level Exercises
  - Detailed Training Syllabus
  - Monthly Exercises use Target Station ('EOC') and Field Station (Operators) Context
- Focus on Winlink Peer to Peer (P2P) Modes
- Recent Emphasis on VarAC for **Situational Awareness; with Vmail (Forms, Messages)**
- Managed by Professional Trainers and Experienced EmComm Operators
- Emphasis on Post Exercise Lessons Learned and Feedback

## Training Examples

- EDM TRAINING MODULE #2-v1d-PEER-to-PEER MESSAGE BASICS.docx
- EDM TRAINING MODULE #3 -v1e-EDM CHANNELS-CENTER-DIAL-FREQS.docx
- EDM TRAINING MODULE #4-v1c-HOW TO SET UP VARA HF 500 HZ MODE.docx
- EDM TRAINING MODULE #1-TARGET STATIONS VS FIELD STATIONS
- EDM TRAINING MODULE #5-v1e-THE FREQUENCY IS IN USE
- EDM TRAINING MODULE #6 -V1-RIG FILTERING WITH VARA
- EDM TRAINING MODULE #7 -V1a-STARTING A P2P TARGET STATION SESSION.docx
- EDM TRAINING MODULE #8 -v1a-WINLINK EXPRESS MESSAGE SETTINGS TO CONSIDER
- EDM TRAINING MODULE #9 -v1a -TARGET STATION REPORTING INSTRUCTIONS
- EDM TRAINING MODULE #10 -v1b-VARA LICENSED OR UNLICENSED
- EDM TRAINING MODULE #11 -v1-WINLINK VARA P2P SUMMARY & TIDBITS
- EDM TRAINING MODULE #12 -v1.1-VARAC INTRO- USE WITH EDM
- EDM TRAINING MODULE #13-v1- VARAC INTERMEDIATE TRAINING
- EDM TRAINING MODULE #14 -v1- PROPPY
- EDM TRAINING MODULE #15 -v.1- VARAC WITH EDM - ADVANCED LEVEL
- EDM TRAINING MODULE #16 -v.1- MEMBER EMCOMM SURVEY
- EDM TRAINING MODULE #17 -v1- VARAC PRACTICE AFTER-ACTION RPT
- EDM TRAINING MODULE #18 -v1- WINDOWS SOUNDS
- EDM TRAINING MODULE #19 -v1- WINLINK EXPRESS GPS-POSITION REPORTING
- EDM TRAINING MODULE #20-0A-v1- EDM P2P ANSWERS WITH EXPLANATIONS

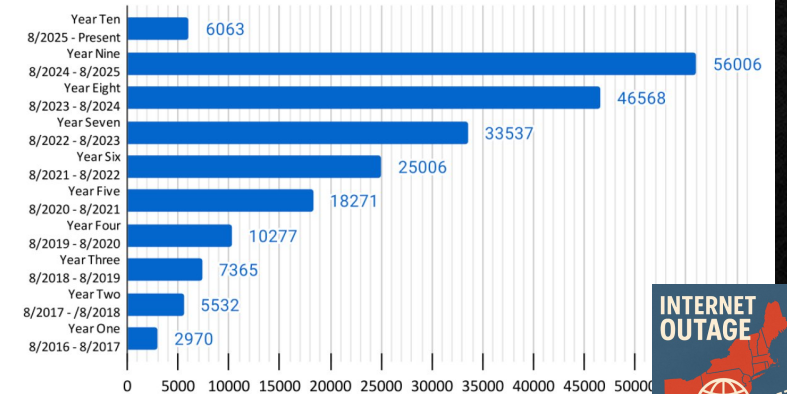


# EXERCISES

- Many Exercise Groups Hold Weekly Exercise/Training
  - Winlink Wednesday
  - Winlink Thursday
  - NBEMS
- EDM Hosts Monthly Training Exercises
  - After Action/Lessons Learned Reports
  - Continuous Feedback into Training Modules
- Several Groups Support Annual Thematic Exercises
  - September Hurricane Scenarios
  - October Earthquake Scenarios – “The Great Shake-Out”
  - Exercise Groups Provide Liaison with National Groups, e.g. USGS and Local EOC/ARES Groups



**Total Winlink Wednesday Messages Received by Year  
(through September 24, 2025)**



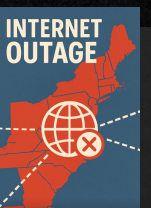
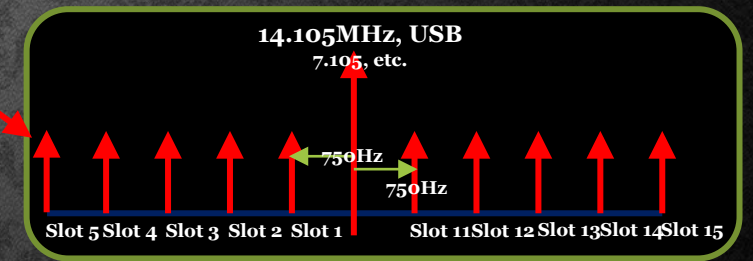
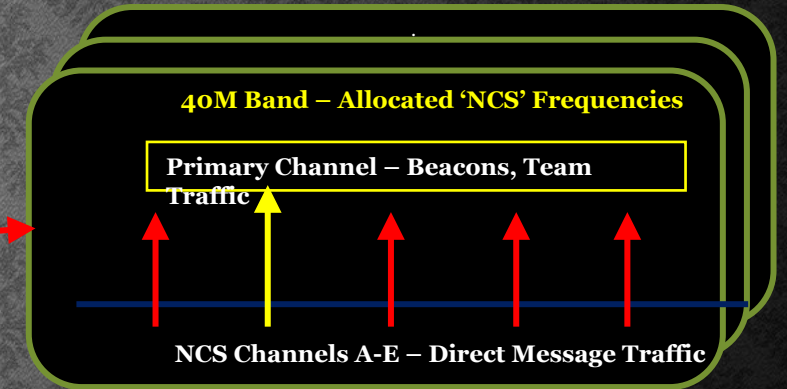
# WHY EXERCISES ARE IMPORTANT

- Application of Training Skills Sets
  - HF Communications – Regional and National
  - VHF/UHF Communications – Local
  - Operational Modes/Options
  - Frequency Plans
- Identify Shortfalls in Preparedness
- Validate Interfaces with Local or National Emergency Management Groups
- Validate Operator Skills and Readiness
  - Equipment, Including Mobile and Remote Operations Gear
  - Power, Including Local Backup and Batteries
  - Liaison Constraints with Local EOCs and ARES Coordinators
  - Situational Awareness Among Capable Operators and Conditions
  - Operator, Equipment, Environmental, and Liaison Strengths and Limitations



# WINLINK AND VARAC

- Winlink P2P Provides ICS Forms or General Message Traffic, Text, etc.
  - Remote Operator to EOC
  - EOC Remote Locations May Benefit from VHF Digipeaters
  - Winlink P2P is a small step beyond Winlink RMS Messaging via CMS (Internet Servers)
- VarAC Provides ICS Forms or General Message Traffic, Text, etc.
  - Provides **EmComm Mode** and Operational Enhancements
  - Provides Beacons, Relay and Broadcast Modes; Supports Separate Channel Allocations for P2P Connections
  - Widely Used in HF 'Chat' Scenarios – **This is the Mode Many Amateurs Know**
  - 'Vmail' Supports ICS Forms (i.e. a Text File) (TBR)
  - Provides Insight to Multiple Users in the Network
  - 'De Facto' Standard Among EmComm Groups
  - Extensive Training Available Through Several Sources, e.g. Emcomm Direct Messaging (groups.io)
- VHF or HF? - VHF Recommended for Local Applications Due to Ease of Antenna Deployment and Potential Digipeater Access
- JS8Call – Has Weak Signal Advantage
  - Not considered viable for significant messaging traffic, speed, etc.



# VARAC SESSION EXAMPLE

Slots – used in HF  
VaraChat – NOT here

Broadcast Messages are  
here for all stations on the  
channel

Vmail deliver, e.g. ICS  
Form

General chat

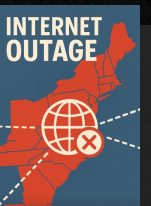
The screenshot shows the VarAC software interface. At the top, there are menu items: Settings, Tools, Logs, Resources, About. The main window displays a chat log with columns for Time, Callsign, and Datastream message. A dialog box titled 'Switch VarAC profile' is open, providing instructions on how to manage configuration files. The chat log contains the following messages:

Time	Callsign	Datastream message
14:46:10	AB4VA	de AB4VA <R+26> <SMR>
14:46:13		VMAIL DELIVERED SUCCESSFULLY
14:46:18	KN4GDX	de KN4GDX <R+21>
14:46:24	KN4GDX	I sent you a blank ICS format
14:47:40	AB4VA	Are ICS messages passed as text files like that, except filled in?
14:49:03	KN4GDX	Yes, I believe so. You would use any method to create the ICS, then save the text as an attached file; or use the
14:49:45	AB4VA	I just found the Mailbox, and I see the messages there.
14:50:14	KN4GDX	Great. How much power you running?
14:51:00	AB4VA	The low setting on my dual band digital radio, about 5W I think
14:51:37	KN4GDX	I'm at about 10W on my dual band vertical.
14:52:48	KN4GDX	I see +21 on your beacon
14:53:04	AB4VA	Well this seems to work. I see you at +25
14:53:52	KN4GDX	This has been a great test. I'll capture the exchange and send it to Mark and JoeK.
14:55:07	AB4VA	Sounds good. Now that I've got the basics figured out, happy to try again sometime.\
14:55:47	KN4GDX	MANY THANKS!! I'll be in touch for next steps. 73
14:56:03	AB4VA	de AB4VA <R+26>
14:56:12	KN4GDX	de KN4GDX <R+21>
14:56:14	AB4VA	73

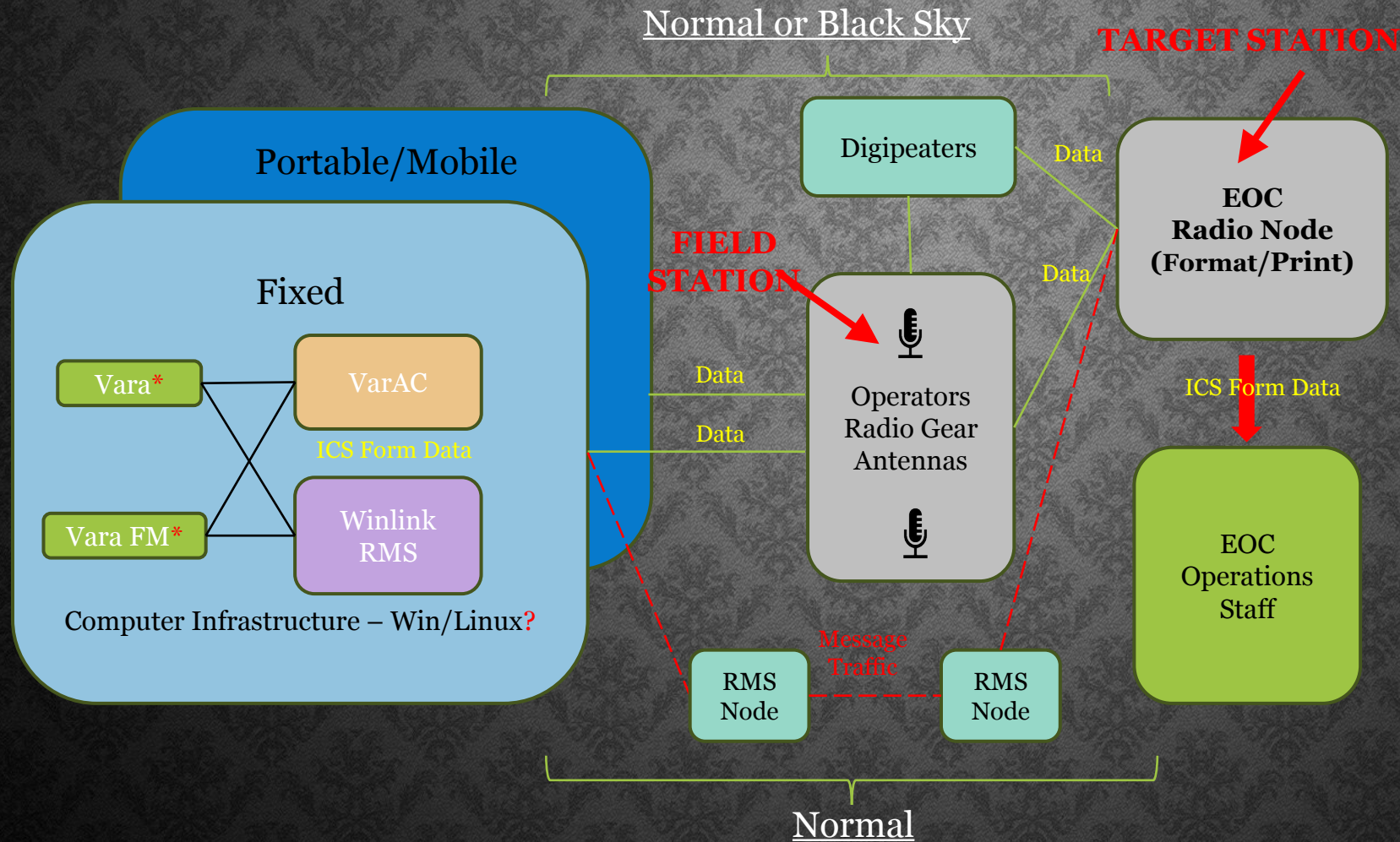
Beacons

Settings menu ...  
quick selection of  
alternate profiles

Your VarAC app  
maintains  
complete logs of  
sessions,  
configurations  
and traffic

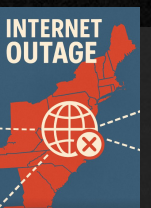


# LOCALITY OPERATIONS EXAMPLE



- Beacons, Broadcasts and Coordination Information Shared on a Primary VHF or UHF Channel
- Field Stations Share Availability Information and General Traffic
- Traffic Data, ICS Forms Passed to EOC Using P2P or Vmail

\*Separate Modules are Shared by Both Apps with Only One Modem Active at a Time



# REGIONAL OPERATIONS (EDM EXAMPLE)

- Target Stations (Representing EOCs) Located in 6-10 Regions of US
  - E.g. Virginia, Florida, Georgia, Texas, California, Arizona, Oregon, Minnesota, Michigan, New York
- Field Stations (Representing Operators Reporting to EOCs)
  - Nation-Wide
- Target Stations Broadcast 'I Am on x,y,z-Band, on a,b,c-NCS Frequency on Dates and Times- --- Using Primary NCS Channels
- Field Stations Monitor Likely Primary Channels for Coordination Information; Broadcast Availability Information, etc.
- Beacons Used for 'Markers' on Primary Channels – Same as in 'Classic' VarAC



# SITUATIONAL AWARENESS

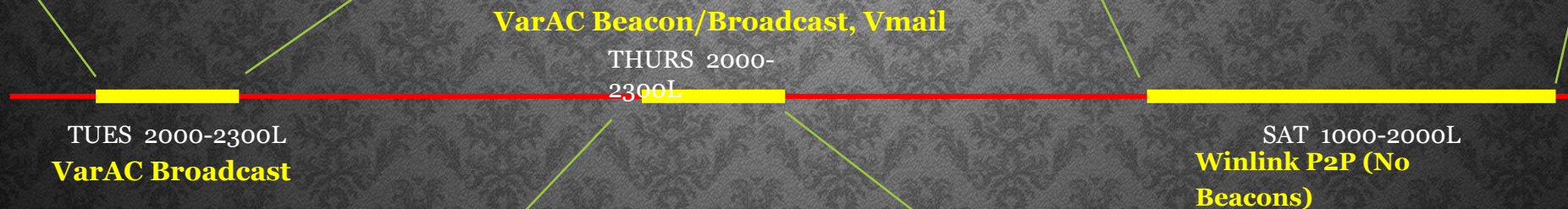
- EDM Evolution from Winlink to Winlink and/or VarAC => Major Situational Awareness Improvements
- In EmComm, Situational Awareness Using VarAC EmComm is Similar to 'Classic' VarAC
  - In Classic, Stations Beacon on a Central Calling Frequency, Then QSY to a Standard Offset Channel in the Same Band
  - In EDM VarAC EmComm, Target Stations Beacon and Broadcast on a Primary Frequency, by Meter-Band, and Coordinate Times/Dates of Availability on any of the Primary or Secondary Frequencies Across All Meter-Bands.
  - Field Stations Share Plans/Availability by Time/Date/Band
- EmComm Situational Awareness, Whether HF-Regional or VHF-Local, Is Achieved Rapidly Because Field Stations Access a Specific Frequency/Band for Coordination During a Disaster



# TYPICAL EDM\* EXERCISE (SEPT/2025)

- 3 Hour Exercise in 15 Minute Windows
- Windows Cycle Through HF Bands (80/40/30/20)
- T and F Use Primary Frequency on Each Band to Broadcast Availability on Saturday
- Special Stations Identify NCSs for Thurs/Sat by Call Sign

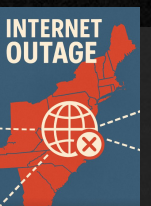
- 10 Hours, Unstructured
- Ts Are 'Open' on NCS Frequencies in HF P2P for Connections from Fs; NO BEACONS
- Ts Choose Times and Bands for Their NCS Channel
- Fs Must Connect by T Call Sign
- Fs Send P2p ICS Reports to Ts



- 3 Hours, Unstructured
- Ts Beacon and Broadcast Availability by Time/Band (Each T is a Specific NCS)
- Fs Send Vmail ICS Reports (Storm-Related Messaging) to Ts
- Fs Must Know NCS by Call Sign for Vmail Connection

Post Exercise, Target Stations Package Vmail and P2P Messages Using Winlink and VarAC Tools and Email Exercise Results to EDM for Post Exercise Analysis and Lessons Learned

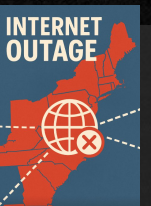
\* Target Stations, T; Field Stations, F



# VARA\* PERFORMANCE, COMPARISONS

- For Perspective: Weak Signal Modes are Well Known and Extremely Popular
  - WSJTX-Modes (FT-8/FT4, etc.) – SNR to levels ~ -30db
  - JS8Call – Similar Performance, But Does Have Situational Awareness Features
  - 50Hz Bandwidth
  - Very Limited Data Throughput – Tens of Characters
- Vara Modes:
  - License Required Above Basic Data Rates
  - HF Use of 500 (up to 500bps), 2300 or 2750Hz ( up to 3Kbps) Bandwidth; Lowest SNR levels to ~-18 to -14db [EDM Uses 500Hz Exclusively for Vmail on HF]
  - HF Pactor-4 Levels, 7200bps, Under High SNR Conditions
  - VHF/UHF Performance on 12.5 or 25KHz Channels – ~3-25Kbps Depending on Radio and Repeater Bandwidth Capabilities [3-6Kbps on NBFM, Simplex, Good SNR]
- NBEMS/Fldigi
  - Ranges from ~ 100-500bps (Olivia 32/1000); Relatively Slow, But Highly Resilient to Poor Band Conditions

\*Some Information Sourced from ChatGPT



# RESOURCES

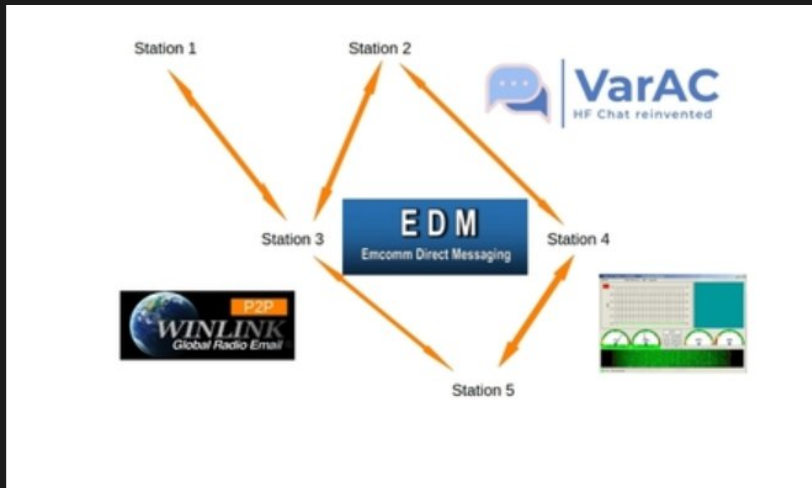
\* **Emcomm Direct Messaging -Target Station Group** [EDM-Target-Stations@groups.io](mailto:EDM-Target-Stations@groups.io)

This is the Target Station Team for Emcomm Direct Messaging.

Thanks for your interest!

We are always looking for operators looking to plan for that exceptional time that should be planned for.

73



**EmComm Training** [main@EmComm-Training.groups.io](mailto:main@EmComm-Training.groups.io)

This group is for announcements and information concerning the nationwide Winlink training drills and exercises. The top level group is announcement only so it doesn't accept emails.

## VarAC for EmComm

The complete EmComm Tactical scenarios guide

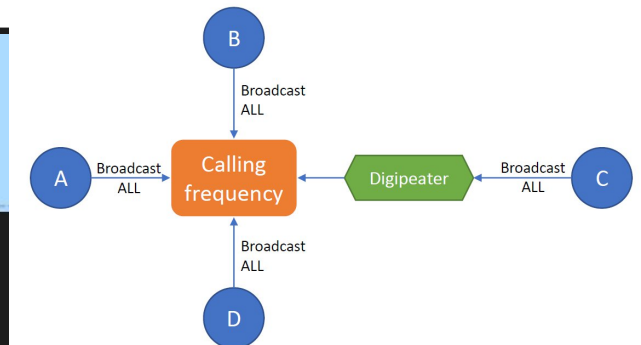
V1.3

The image shows the cover of a tactical scenarios guide titled 'VarAC for EmComm'. The cover features the VarAC logo and a screenshot of the software interface, which displays a grid of tactical scenarios with various parameters and status indicators.

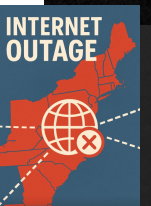


**VarAC**  
HF Chat reinvented

Irad Deutsch, 4Z1AC



\* *Thorough and very professional- supported by ARES groups like us*



# QUESTIONS???

Thanks for Attending  
KN4GDX, Bruce at  
[kn4gdx@gmail.com](mailto:kn4gdx@gmail.com)

