WINLINK 101

ECOMM email via Radio and Computer Networks
Basic and Intermediate WINLINK

Mitch Bayersdorfer • W7MDB • 9.17.2022 • Rev 1.0
Clackamas ARES Training Program

Part I

Part I – WINLINK Basics

1. Why Digital Messaging? Why WINLINK?
2. WINLINK Setup
3. Using WINLINK
4. Templates

Why Digital Messaging?

Digital Messaging is More Reliable than Voice

- Served agencies want “email” messaging
- Digital messages are faster than voice communication
- Generally “error free”
- Ability to store and forward information without loss
- File transfers
- “No pain” logging

Why WINLINK?

- Worldwide system for transferring e-mail over radio.
- Oregon OEM, DHS and ARES have standardized on WINLINK.
- E-mail layer on top of HF and VHF/UHF bands that support short and long range communication with attachments, and automatic logging. (Including producing the standard IC-309 logs that FEMA requires)
- Supports required standard ARES and served agency forms
- Standard across multiple organizations across the US
- Some modes are free (e.g. Packet). Others are fast and excellent in poor band conditions (e.g. VARA – fee for high speed mode, PACTOR – best modes require expensive modem).

WINLINK Naming

- When you are installing and using documentation you will see the overall system referred to as:
  - WINLINK
  - WINLINK Global Radio Email®
  - WINLINK 2000
  - WL2K
    - In this course, we will call the overall system, “WINLINK.”
- You will see the Windows Client Application referred to as
  - WINLINK Express
  - RMS Express
    - In this course, we will call the Windows client application, “WINLINK Express.”

Hierarchy of a WINLINK System

- Client system – Radio, Computer with WINLINK client software, Interface between the computer and the radio, and the Amateur radio operator
- Radio Message Server (RMS) – Radio gateway between the client (end-user) and the WINLINK network.
- Common Message Servers (CMS) – Passes messages between RMS stations and to the Internet. Redundant, fault-tolerant, located on multiple continents.
    - If your area has an Internet outage, your RMS can pass messages to another RMS to get it to the CMS or to your destination.

What is WINLINK Express?

A Windows application that:

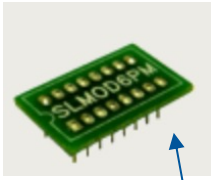
- Enables digital messaging over voice radios
- Email – looks familiar for past users of Outlook
- Offers many modes of operation and protocols
- Maintains a contacts list and multiple mailboxes
- Allows multi-user operation and tactical call signs
- Can automatically generate logs of your activity
- Works on many versions of Microsoft Windows

- Accounts are purged after 400 days of inactivity

How does a WINLINK e-mail become a radio signal?

- WINLINK communicates with a MODEM (Modulator/Demodulator) to convert the characters in the e-mail to a computer representation of tones that can be sent/received over the air.
- A MODEM can either be software (such as SoundModem or VARA FM) or hardware (such as a PACTOR Modem or a Terminal Node Controller (like a KPC3+))
- If the MODEM is software, it then sends those computer representations of tones to a sound card (such as a Signalink)
- The sound card or hardware modem then connects to your radio through the "data" connector (if available), or directly through the microphone input and speaker output to send/receive the signal.

Typical WINLINK Station Setup



"Plug and play" jumper goes inside

WINLINK Express App + MODEM Software

USB Type-B Cable

Radio Specific Cable

Coax Cable

Depending on your sound card and radio, your configuration may be different
If you are choosing a radio, the DIN-6 connector is a standard.

WINLINK Network Simplified Block Diagram

Common Message Server (CMS)

Telnet

Packet or VARA

WINLINK Express App + MODEM Software

Your Station

Packet or VARA

WINLINK Express + MODEM Software

Peer Station OR RMS Station

Sending Messages to Another Station

- There are multiple applications that can talk to the **WINLINK** network or to other WINLINK clients via the radio, but only **WINLINK Express** can easily use the protocols and forms that we use in **ARES**.
- **WINLINK Express** currently Windows only*.
- **A WINLINK Express** application can also communicate directly with another **WINLINK Express** application over the Internet.

* Advanced users can use emulation software to get WINLINK to run on other operating systems

Network Types

- WINLINK – Connect to another radio or network that then can forward your message to a node that will store your message until it is retrieved, or send it directly to an Internet e-mail address.
- Peer to Peer (P2P) – Connect directly to another radio operator. Think of this as “person-to-person”
- Post Office – Used with a Local Area Network. Allows one of the machines on that network to store messages
- Radio Only – For when the ENTIRE Internet is down. Inefficiently passes messages from station to station until delivered to a Message Pickup Station. (MPS)

WINLINK over Telnet (No Radio)
Peer to Peer (Post Office)

This is what we will focusing on first to learn the WINLINK Software…

Common Message Server (CMS)

Telnet (Internet/Mesh Network/etc.)

Packet or VARA

WINLINK
Express

Your
Station

Packet or VARA

WINLINK
Post Office

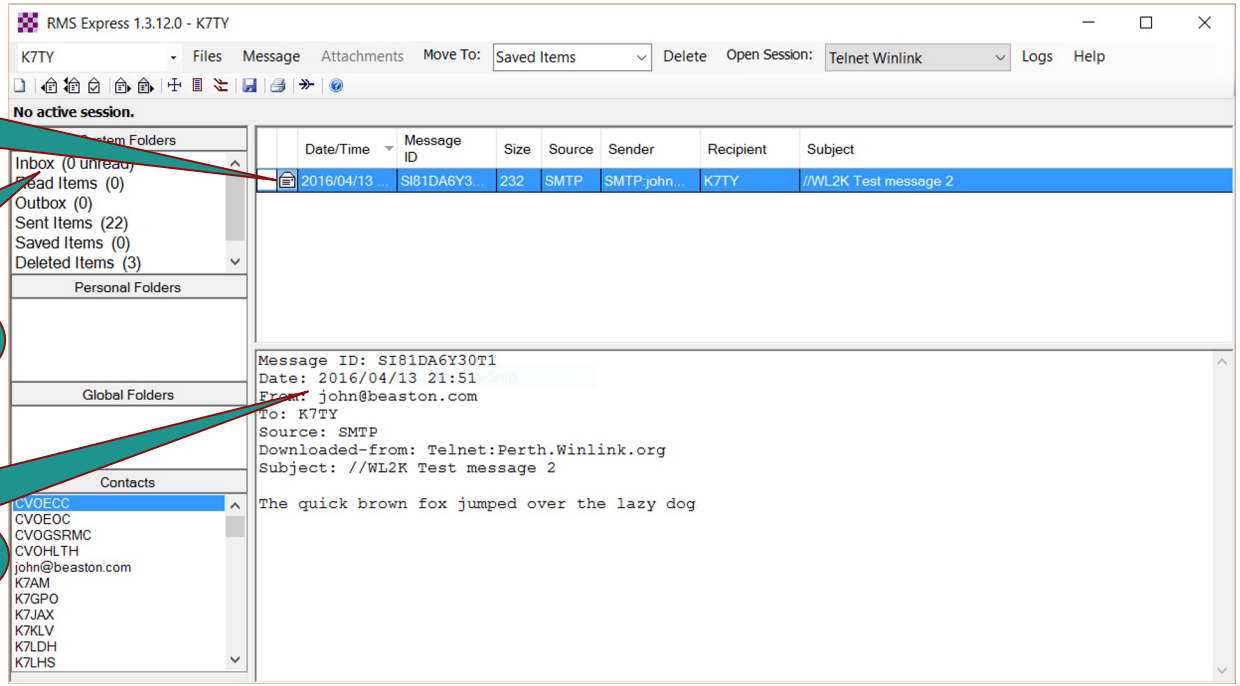
Peer Station
With Post Office

WINLINK Main Screen

Inbox

Folders

Message Text



Required Software

- WINLINK Express: https://WINLINK.org/WINLINKExpress
- UZ7HO Soundmodem: http://uz7.ho.ua/packetradio.htm

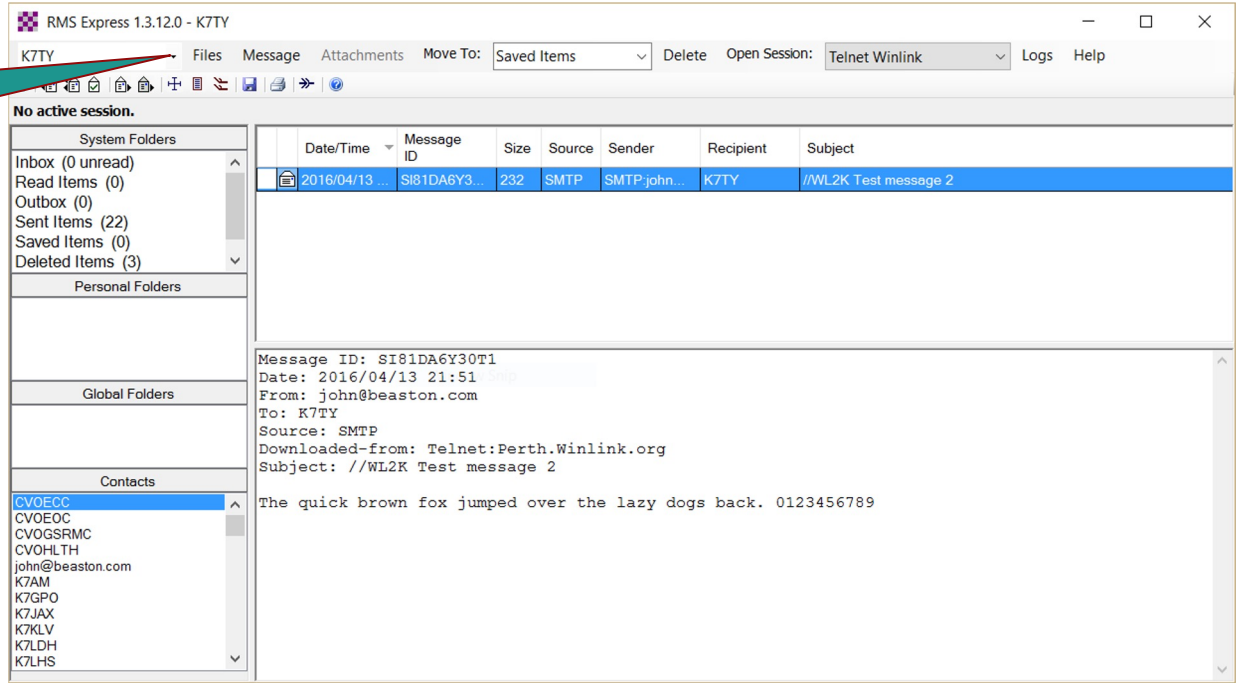
  Download and install: soundmodem114.zip
- VARA FM: https://rosmodem.wordpress.com/

How do I get started?

- Install and Launch WINLINK
- Under the Files Menu, choose “Setup”
  - Establish an account with password
  - Add recovery email address (used for forgotten passwords)
  - Add personal information: Grid square, location, etc.

WINLINK Express --- Setup

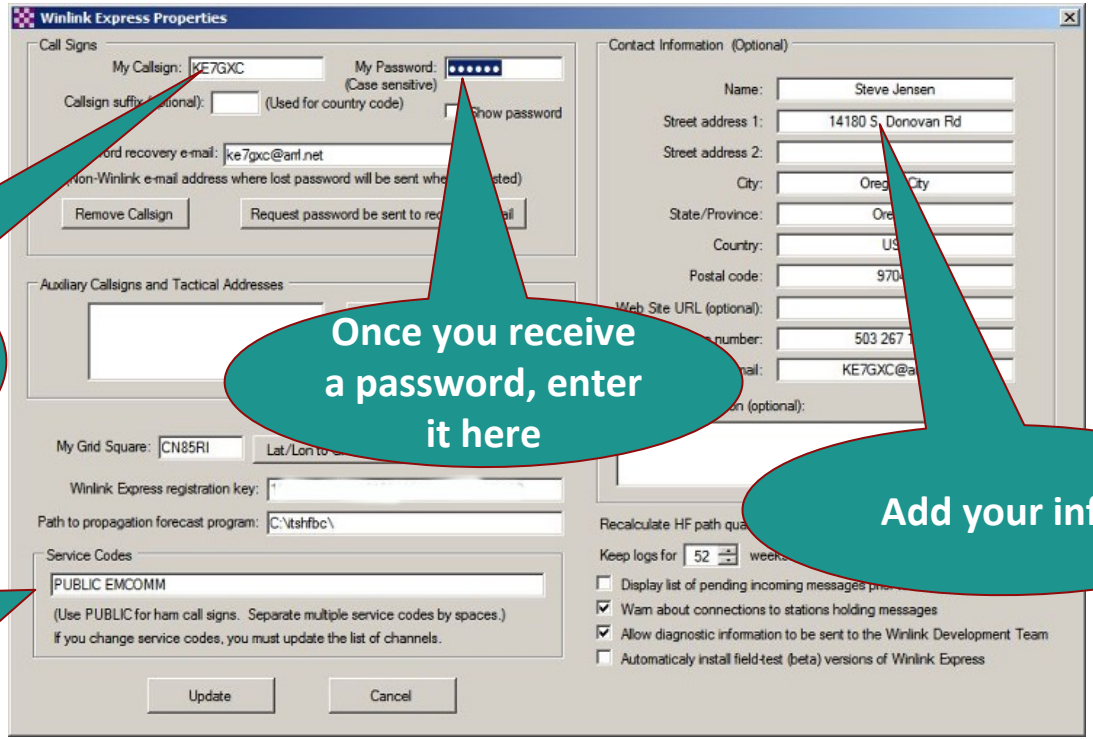
1. Select “Files” then “Setup”



Establishing an Account

- You must have a valid amateur radio license (or a license from a participating government service or agency)
- Establish WINLINK account by configuring setup in WINLINK (this screen is shown automatically the first time you run WINLINK) and running a WINLINK Telnet session (no radio needed).
- Make sure you fill in a password
- Make sure you fill in a recovery address (this is where WINLINK will send e-mail if you forget your password, etc.)
- You can use the same account for HF, VHF, Telnet, Radio Only
- Important: Accounts purged after 400 days of “network” inactivity. Make sure you at least send “test” messages through the WINLINK network at least once a year.

WINLINK Express Setup



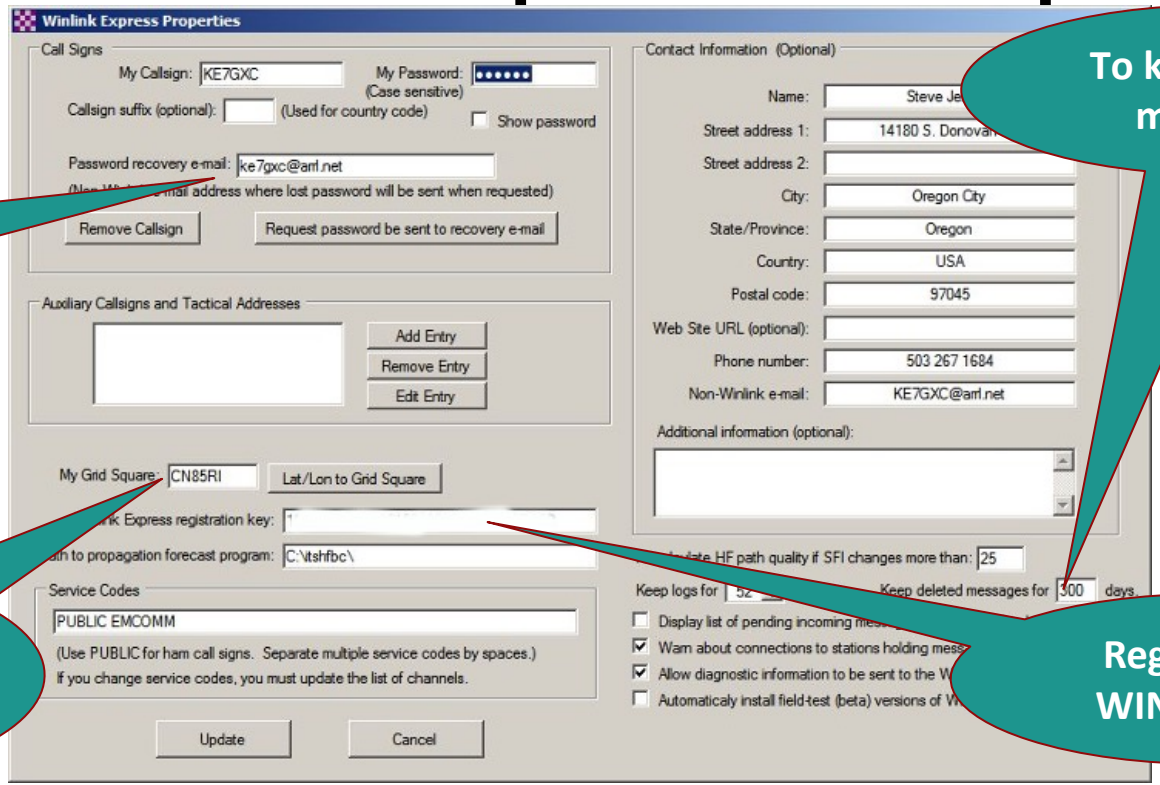
Enter your callsign

Once you receive a password, enter it here

Add your info

Set to PUBLIC EMCOMM

WINLINK Express --- Setup



Add a recovery e-mail address

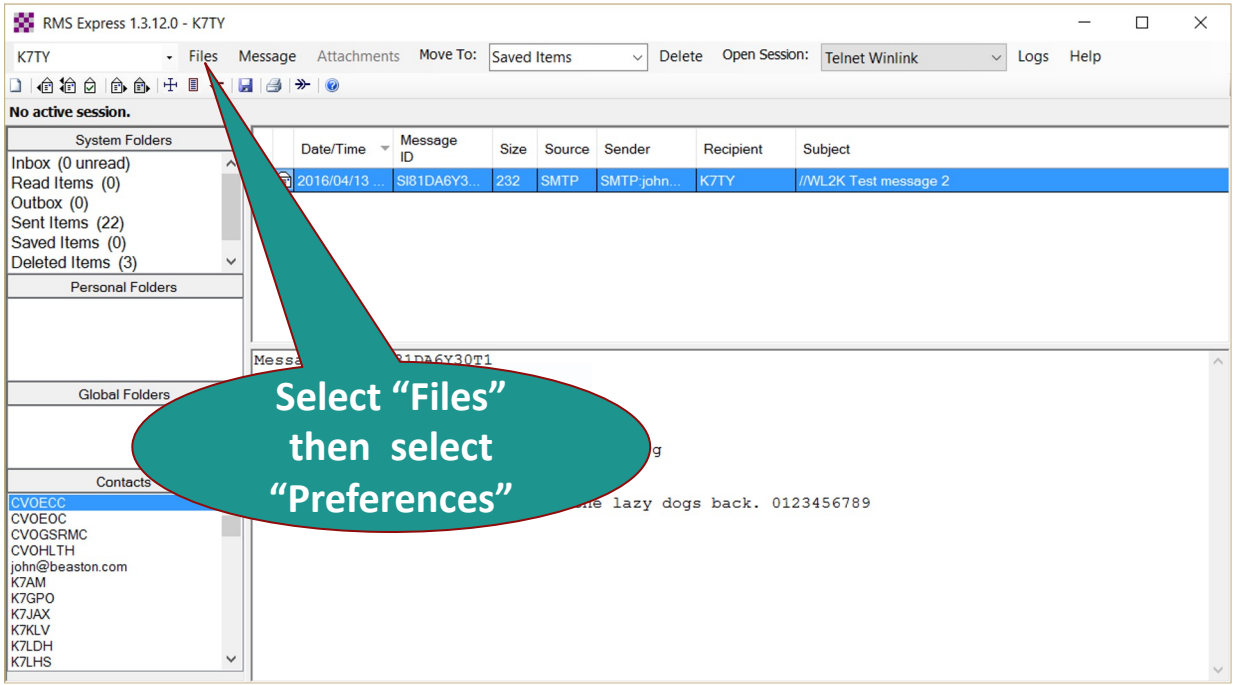
To keep lots of messages

Add your 6 letter "grid Square" location

Registry key WINLINK.org

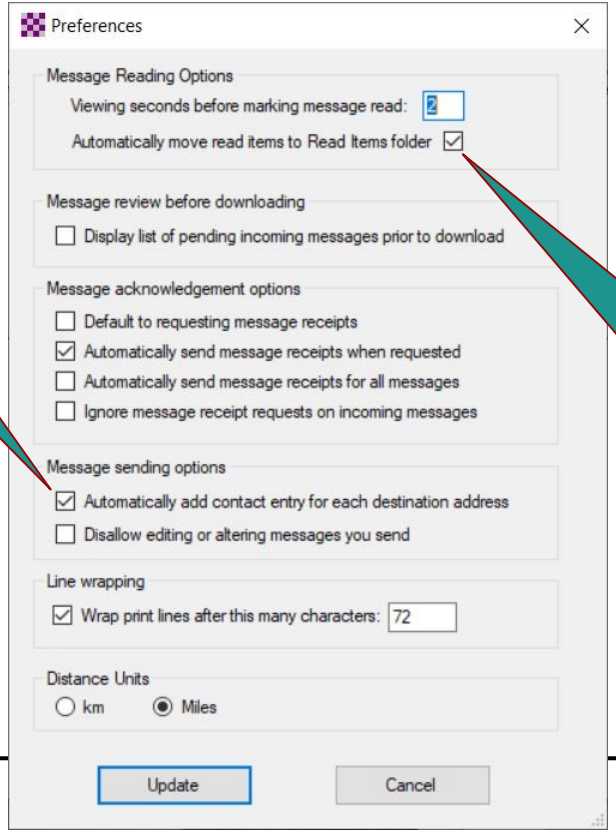
Although Registration is not required, registration helps fund the WINLINK system, and prevents reminder popups which could slow you down in an emergency. To register, fill out the form presented on first launch after installation.

WINLINK Express --- Preferences



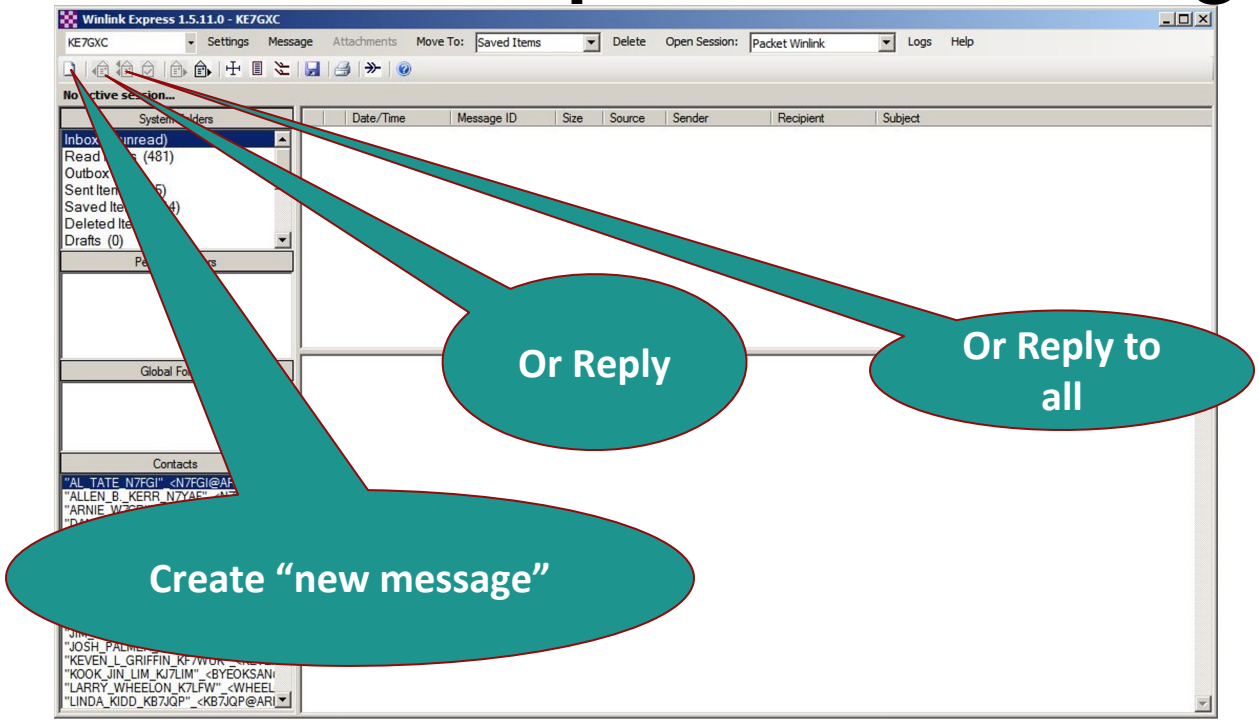
Preferences (continued)

Keep track of the addresses you have used



Separate the "Read" items so you know what you have processed

Create or Respond to a Message



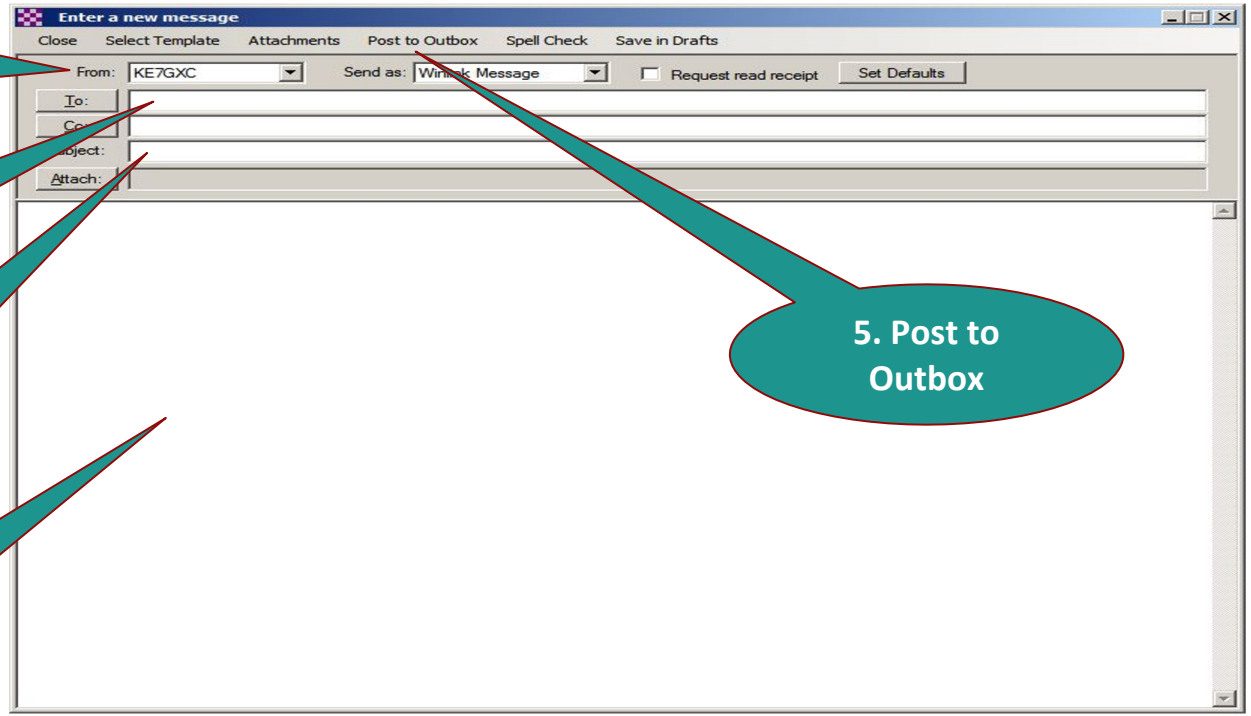
Write Your Message

1. Callsign of Operator (probably you)

2. Destination callsigns or e-mail addresses

3. Message subject

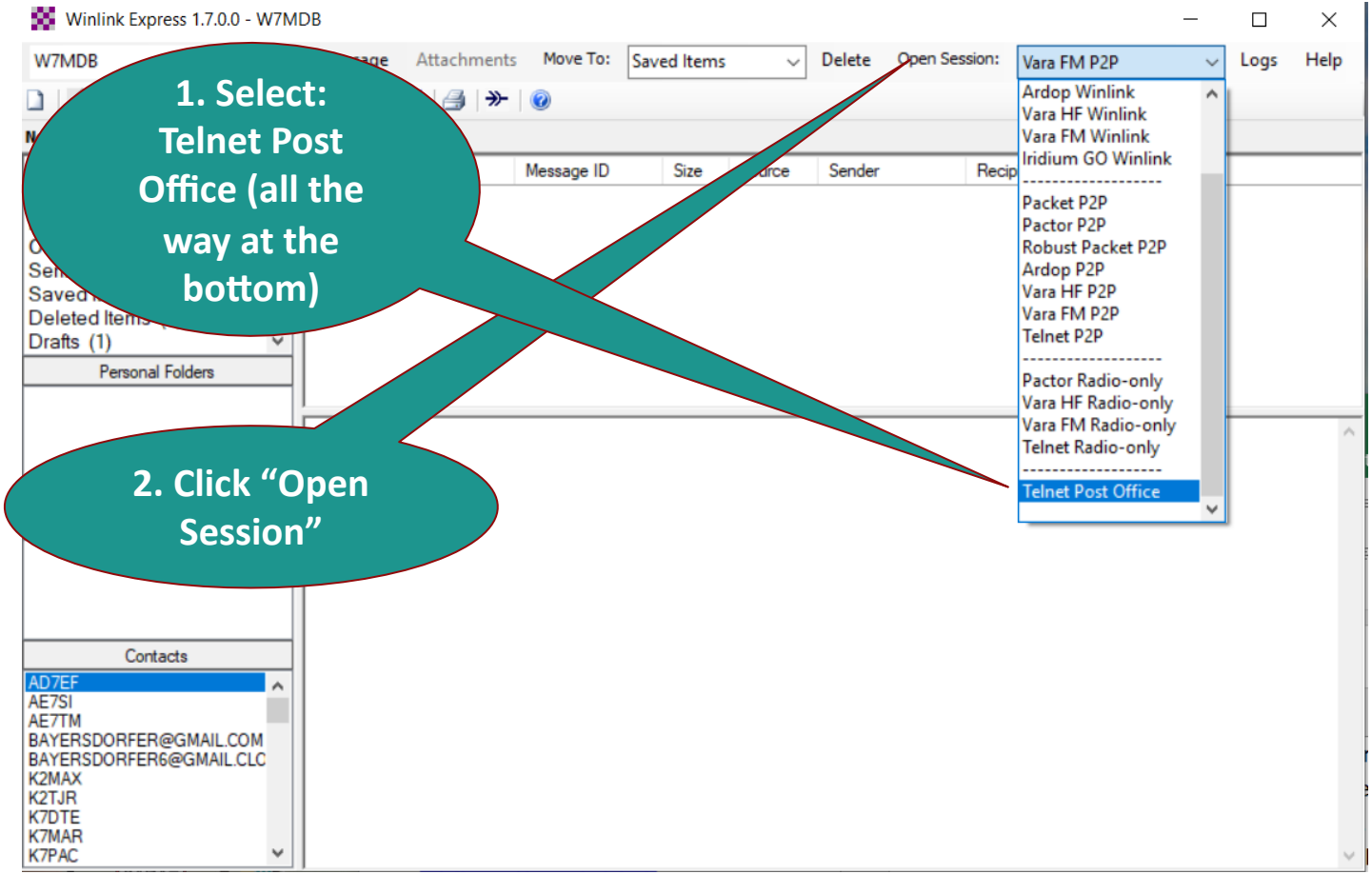
4. Type the message here (keep it short)



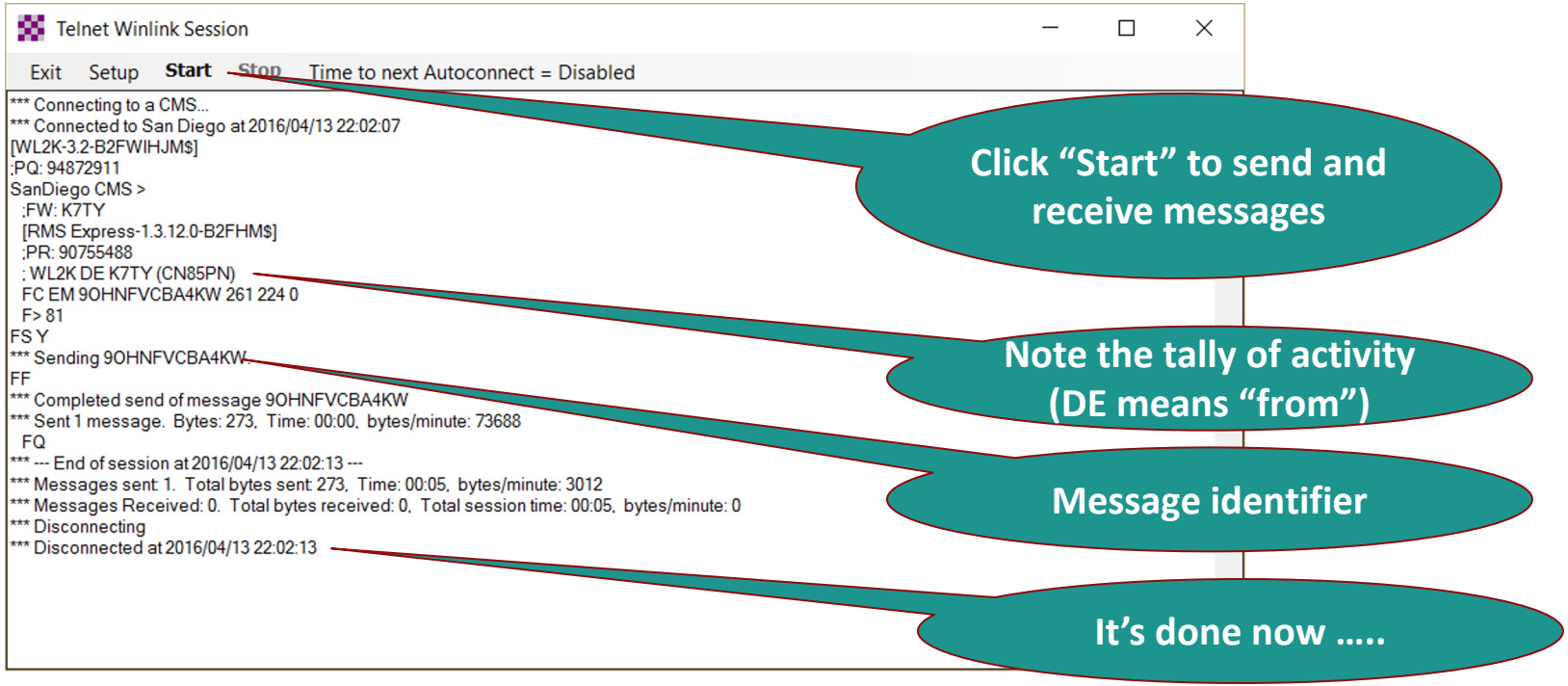
5. Post to Outbox

Remember: radio connections are slow. Keep messages short – concise.

Tell WINLINK which Protocol and Network Type



Telnet WINLINK Session



Class Exercise

- If it is not already installed on your computer, Install and Launch WINLINK Express (parts of the process call it RMS Express)
- Setup a WINLINK account for your callsign (if you haven't already done so)
- Create a new message (your instructor will provide details on what to type based on your classroom setup)
- "Post to Outbox."
- Open Session: "Telnet WINLINK"
- Select "Start" to send the message to the WINLINK Post office

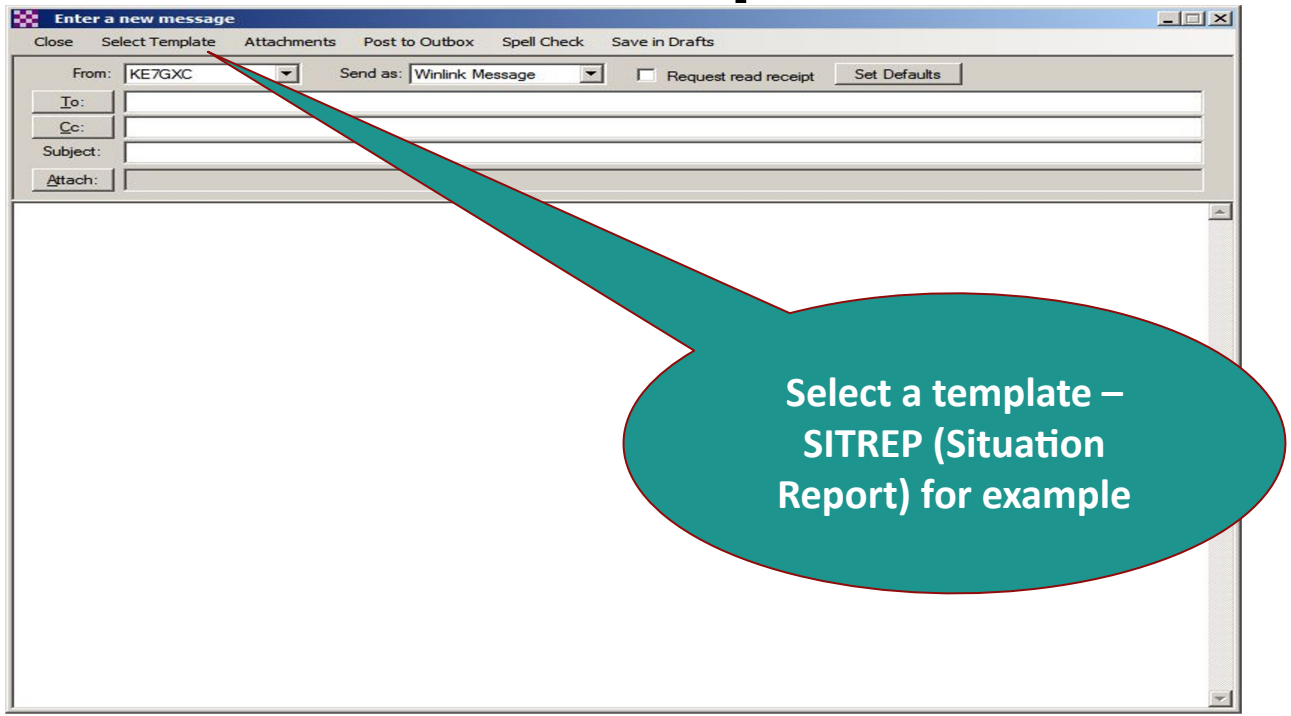
Class Exercise

- Address 192.168.1.55
- Port Number 8772

Templates

- Templates enable us to send/receive forms that are used by our served agencies
- The form will appear as a standard form when it is received
- If the form is not installed by the receiver, it will be shown as a readable text file
- All of the standard forms we currently use are installed as part of standard installation
- WINLINK launches your web browser as an editor to allow you to fill in the form fields.
- When you exit your browser, the form is converted to text so that it can be sent via WINLINK
- If necessary, the text version can still be edited

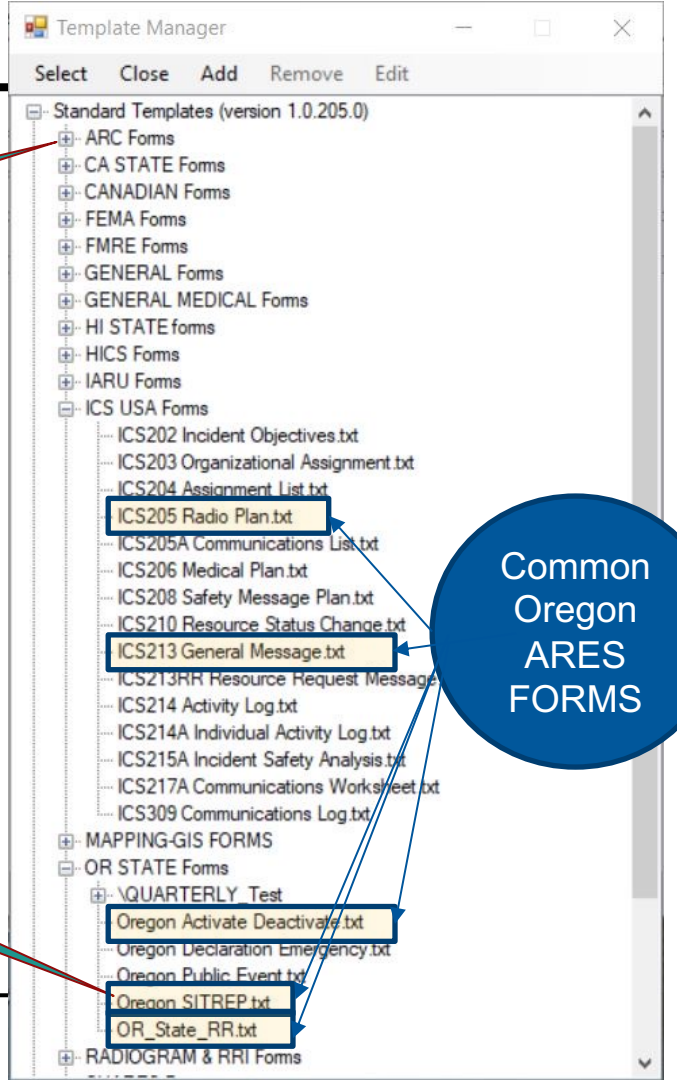
Choose Which Template



Select Template

1. Click a plus sign to expand

2. Select a template from the list



EXERCISE
REAL EVENT

OREGON *Situation Report SITREP* Vers 7

Load OR SITREP data

TO W7OEM;

CC

If known, enter call or email of your DEC

1. To

Agency Name and Office Routing

2. SITREP

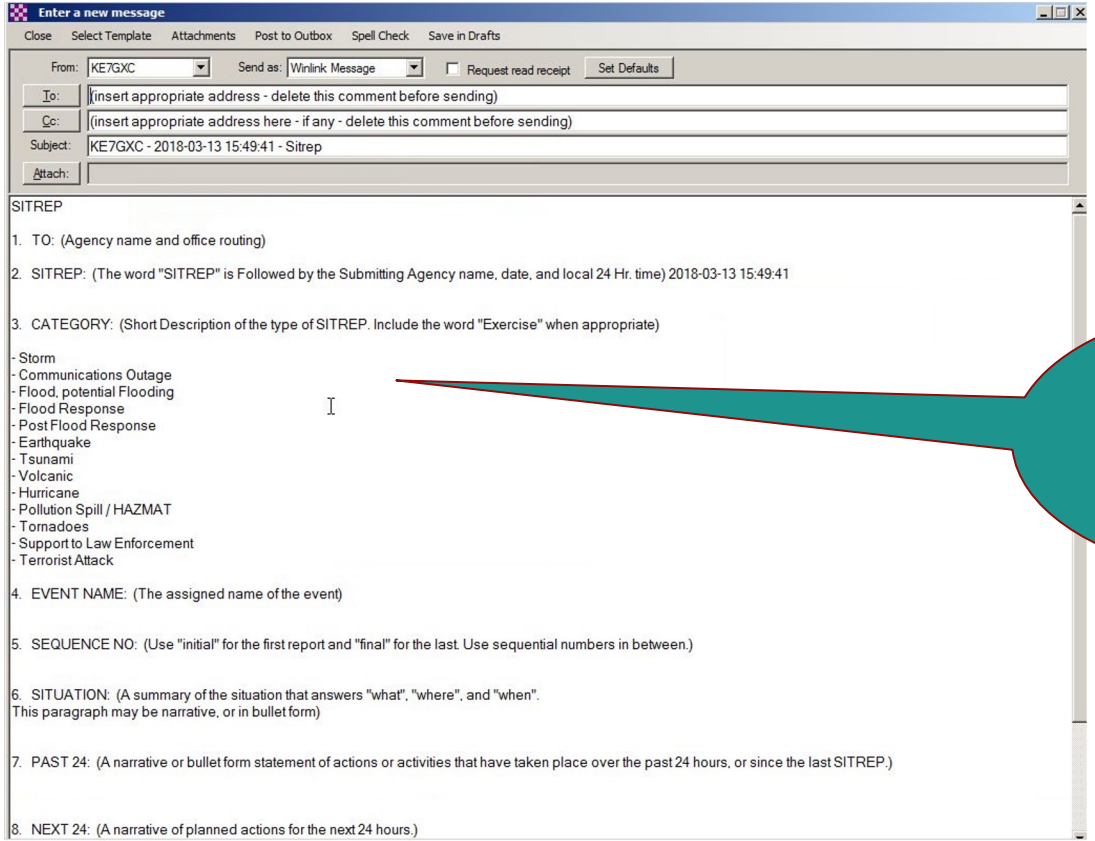
3. Categories with Brief Description

4. Event Name

5 Initial Report / Sequential Number / Final Report . If Report is "Sequential Number" then increment # here

6. Brief Situation Summary

SITREP Template After Editing



SITREP Template Ready to be sent (fields will be filled in)

Class Exercise: SITREP Template

Example SITREP (Situation Report) Template Form.

Submit an example SITREP via WINLINK Express to the WINLINK Post Office your instructor has set up.

Make **simulated message**. (Select EXERCISE and make the SITREP Field “TEST MESSAGE”)
In this simulation you are an operator at a warming tent in Clackamette Park, and there are only 20 hours of fuel left. You need to tell Clackamas Disaster Management. The operator for Disaster Management is at KD7ZDO.

After you open up RMS Express Telnet Session and click on the plain white sheet of paper (or New Message)

- Select Template
- Click on SITREP, double click to insert template into message
- In the "To" – insert the call sign of your instructor.
- In the "Cc" - Using the class Roster of Participants.

Send the message to the WINLINK Post Office. Wait a few minutes, and see what other SITREPS you can retrieve from the Post Office.

Questions and Answers

Part II

Part II – Practical WINLINK

1. Connecting your Radio
2. The WINLINK channel list
3. Debugging

Network Types

- WINLINK – Connect to another radio or network that then can forward your message to a node that will store your message until it is retrieved, or send it directly to an Internet e-mail address.
- Peer to Peer (P2P) – Connect directly to another radio operator. Think of this as “person-to-person”
- Post Office – Used with a Local Area Network. Allows one of the machines on that network to store messages
- Radio Only – An inefficient multi-hop mode that does not use a CMS. Used when Internet fails. Messages get relayed between RMS stations and eventually stored in Message Pickup Stations(MPS) which are RMS stations that the recipient designates beforehand.

Some ways WINLINK “talks” to other WINLINK Apps

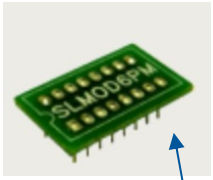
- Telnet – connects computer via Wi-Fi/Ethernet to a server without using Amateur Radio
- Packet – Generally VHF/UHF. Uses two different tones to encode the signal. Computer can encode/decode letters (using Software like SoundModem) or hardware device (e.g. KPC3). The protocol that the programs at each end “speak” is called AX.25.
- VARA FM – Newer protocol that runs on your computer that uses up to 49 overlapping carriers (tones) to encode/decode letters. Optimizes based on the quality of the connection.
- PACTOR – Uses an expensive hardware device from Special Communications Systems GmbH to encode the message.

Connecting Computer to Radio

- The interface may be:
  - A external (USB) sound card device (your computer interprets the sounds from the radio). Most users use an external sound card so that “system sounds” (like alerts) don’t go “over the air.” For new users, a Signalink has “plug and play” solutions for many common radios.
  - Some newer radios have built-in USB sound cards.
  - Sometimes specialized modems are used to encode/decode signal:
    - For Packet, a Packet TNC (Terminal Node Controller) (microprocessor inside interprets the AX.25 protocol), KPC3+, or other cards encode/decode packet in hardware.
    - PACTOR modem (expensive proprietary interface) for a highly efficient protocol.

We will focus on the Signalink because of their plug-and-play solutions. This does not represent an endorsement of Tigertronics.

Connecting a Typical Radio to a Signalink Soundcard



Install “plug and play” jumper.

WINLINK Express + MODEM Software

USB Type-B Cable

Radio Specific Cable

Coax Cable

Depending on your sound card and radio, your configuration may be different

MODEM Software

- Translates an e-mail from WINLINK into tones that are fed into a soundcard.
- Uses a protocol that allows the software at either end to communicate. Includes how the message is broken up into “packets” and error detection so that packets are re-sent in case of a detected error.

WINLINK Protocols and Software

Protocol	Software	Max Number of Tones
Packet	SoundModem	2
VARA FM (for VHF/UHF)	VARA FM	49
VARA HF (for HF)	VARA HF	52

Why Does ARES Use VARA?

- New protocol that uses the modern signal processing algorithms
- High speed compared to older protocols like Packet
- Works well on noisy and low-signal radio connections.
- Has functions to provide feedback on appropriate signal levels between stations.
- Well integrated into WINLINK
- VARA FM (NARROW Mode) is about 18 times faster than Packet

Why Does ARES (Still) Use Packet?

- The current version has been around since 1998
- A large number of hardware MODEMS for the protocol exist. These boxes, called Terminal Node Controllers (TNCs). are dedicated boxes that translate characters to tones that a radio can transmit.
- Many marine installations use dedicated hardware (TNCs).
- ARES needs to support this large number of existing installations.
- Part of EMCOMM is having multiple ways to get the message through. Packet is a fall-back mode in case VARA is not working properly.

VARA FM Speeds

VARA Mode	Bandwidth	Max Speed	Comment
Unregistered	3KHz	2500 bps	Free
NARROW	3KHz	12750 bps	Connected to 1200 baud port on radio. Requires fee-based registration.
WIDE	6KHz	25210 bps	Requires 5800Hz capable soundcard (e.g. new Signalink, Masters Communication or built-in). Often hard to get benefit in real-world conditions. Connected to 9600 port on radio.

Because it requires a lot of fine tuning to get WIDE working properly, and capable sound-card and transceivers at both ends, today we will focus on NARROW mode. Today, CARES typically uses NARROW.

WINLINK Setup Guides

VARA FM

https://WINLINK.org/content/vara_fm_quick_setup_vara_fm_305_and_higher_signalink

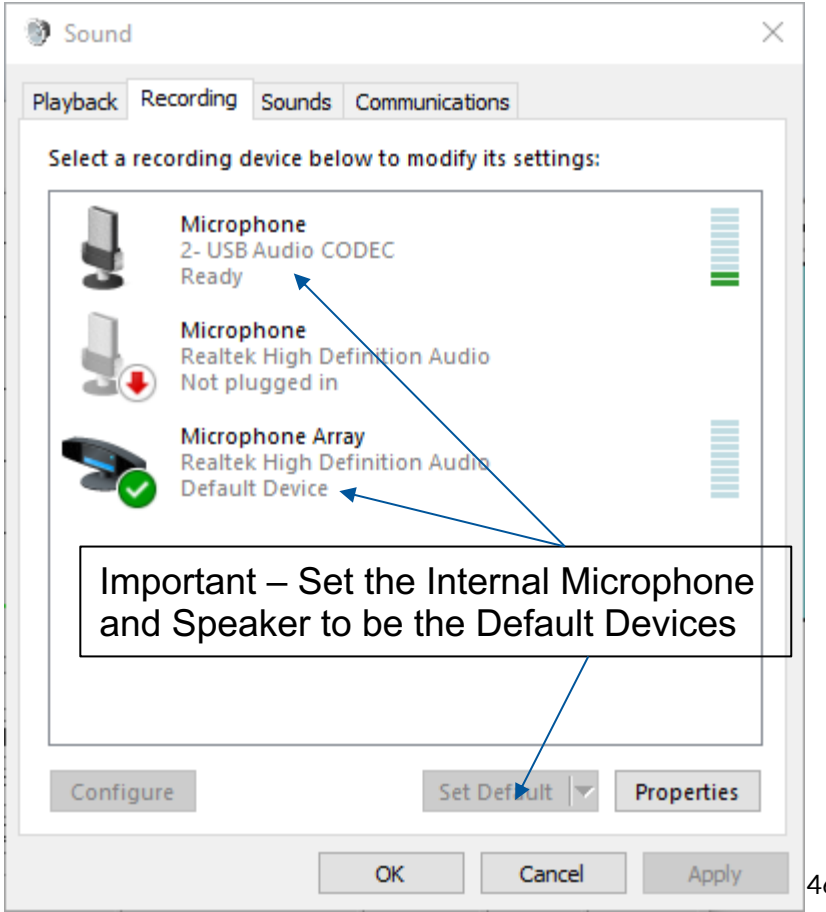
Packet

https://WINLINK.org/content/packet_radio_WINLINK_uz7ho_software_using_sound_card_interfaces_signalink_dra_built_in_2019

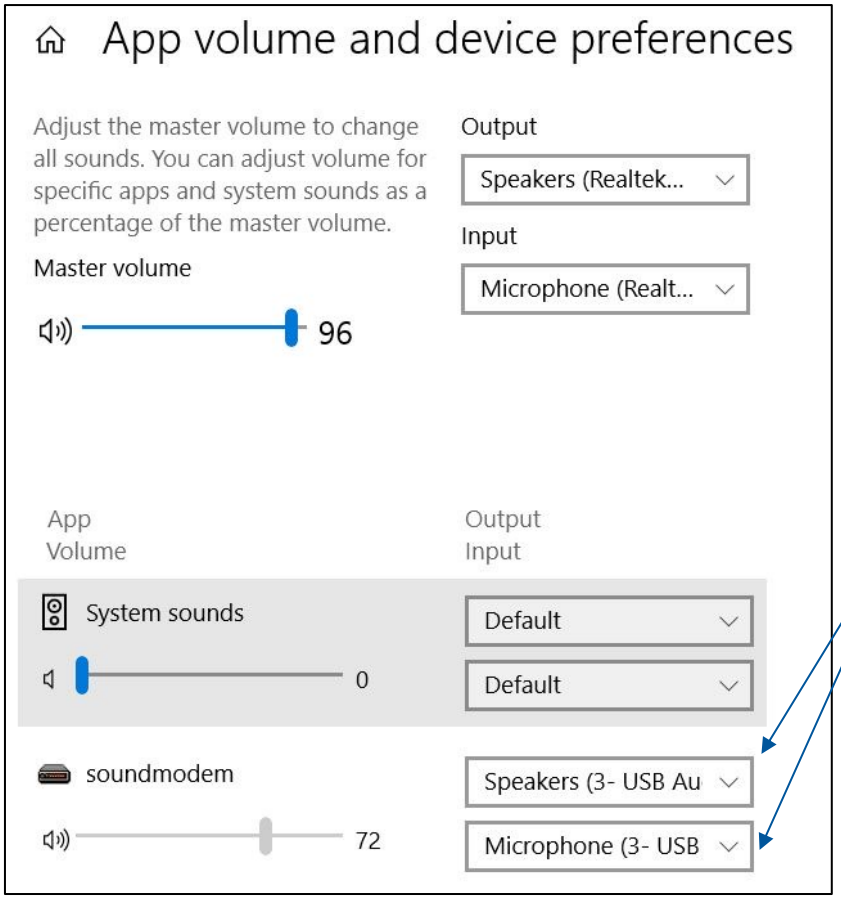
Windows Sound Control Panel

The Windows “Sound Control Panel” is used to adjust audio into and out of a modem program (SoundModem or VARA). Windows 10/11 make it harder to access this control panel. A quick way to launch the Sound Control Panel is with a Windows ‘Run’ command: Press the “Win’ key and ‘R’ key together, and in the resulting “Run” window, type the command, “control mmsys.cpl” and press Enter.

Instructions to make a desktop shortcut:
https://www.isunshare.com/windows-10/create-sound-shortcut-on-windows-10-desktop.html



Windows 10/11 – Make USB settings “stick”

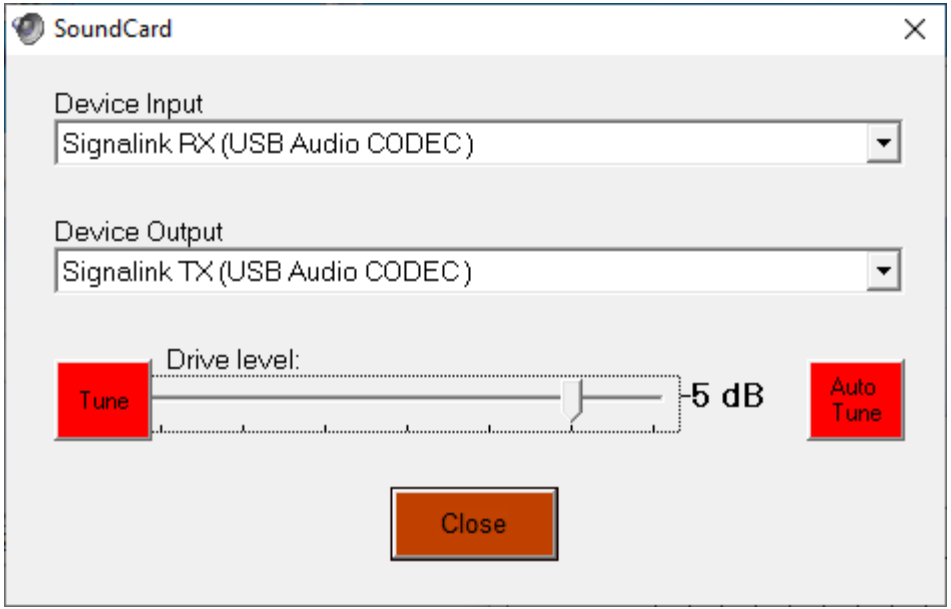


In Windows 10/11 you also should make sure that the USB connection is associated with the SoundModem and VARA Apps.

- Launch soundmodem
- Search for Sound Settings
- Click on “App volume and device preferences
- Next to “soundmodem” select the USB Audio Codec for both Speakers and Microphone
- Quit soundmodem, Launch VARA, and then do the same thing for VARA.
- Reboot

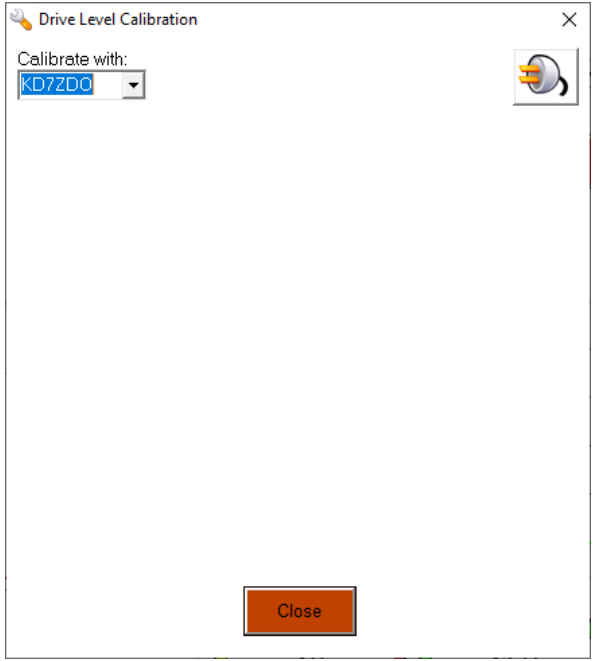
Getting VARA Drive Levels Correct

- Click on the VARA Window and select Settings -> SoundCard
- Make sure that the USB Audio Codec device is selected for both Input and Output
- Click on Tune and make sure that the Signalink PTT light comes on (then unclick)
- Click on Auto Tune
- *Good Sound Control Panel levels/ Signalink settings for VARA are usually ”good enough” for Packet*



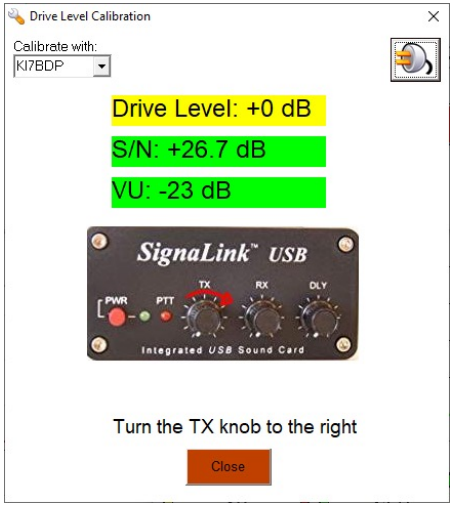
Getting VARA Drive Levels Correct

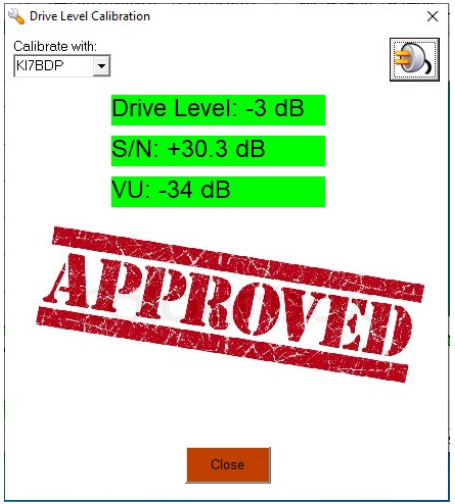
- Enter in the Station ID that you want to calibrate with (that station must accept incoming VARA communications)
- Make sure you are on the right frequency to communicate with that station.
- Click on the “plug” icon
- VARA will send out 11 test signals – on test 4 or 5 the Signalink VOX should engage and your radio should start transmitting.
- If the remote station is hearing you it will send a report back



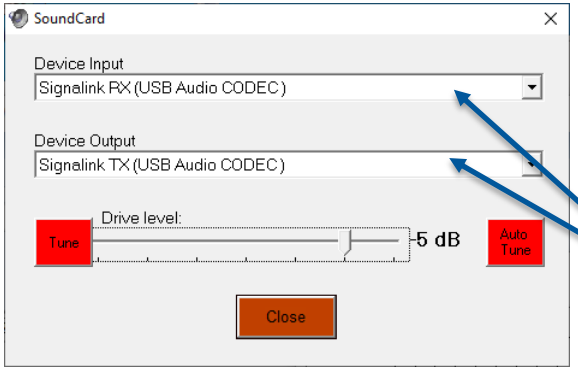
Getting VARA Drive Levels Correct

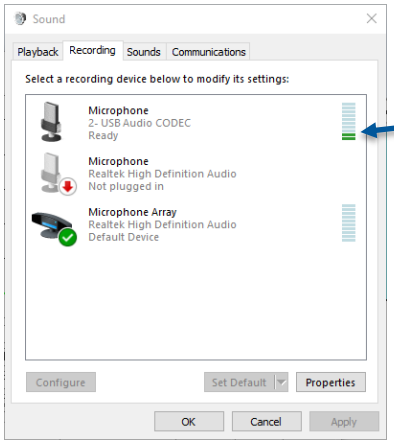
- The report will tell you to adjust your sound control panel levels or it will tell you to adjust your Signalink knobs. Follow the instructions and try again.
- It may take a few tries to get the levels correct. Don't make huge changes.
- If you are finding that the tuning doesn't work, the problem may be with your radio.
- If anything changes in your station, including propagation, you may need to recalibrate.
- If tests 3-4 are not triggering PTT, turn the DLY knob slightly clockwise.





Troubleshooting VARA





- Is the VARA VU Meter at 0, or do sounds from the room make it the VU meter move?

In VARA FM->Settings->SoundCard, check that the Signalink (USB Audio Codec) is selected for both Input and Output. (not available? Check USB cable from Signalink; change which USB port used.)

- Still not working? Check the Sound Control panel to see if the incoming sound are turning green as the sound comes in.

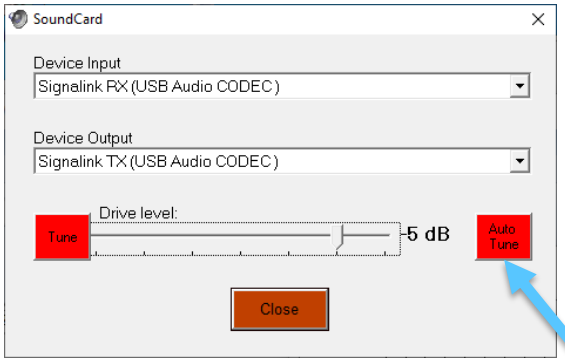
- No green bars? Check to make sure that Squelch is off/turned all the way down, volume is up. Check the cables from your radio to the Signalink. Unplug from the Signalink and make sure that radio is receiving noise.

Troubleshooting VARA

- Radio not transmitting when attempting to connect?
  - Is the Red PTT (Push to Talk) light coming on when trying to transmit?
    - No? In VARA FM->Settings->PTT, is VOX selected as the PTT port? Is the Signalink on? (green light). Is the USB cable connected?
    - Yes? There is a problem with the PTT line (either the chip or wire in the Signalink that controls PTT, the cable, or the radio), or the audio level that the computer is outputting is too low.

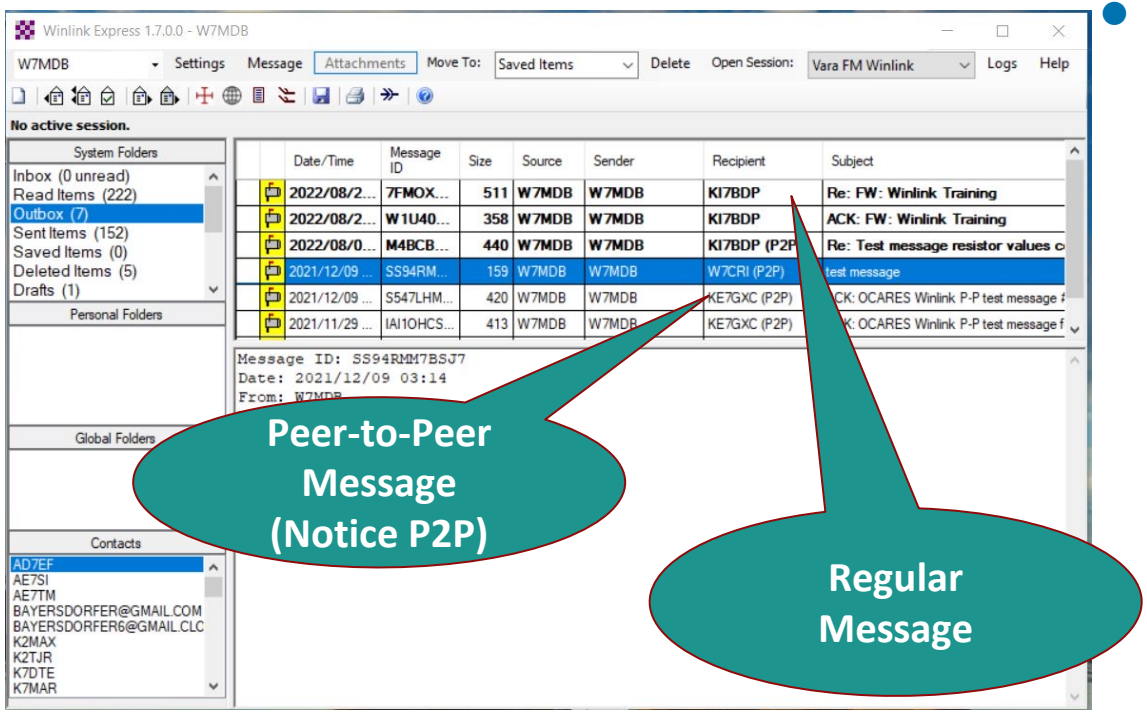
Troubleshooting VARA

- Remote station not answering?



- **Are you sure the receiving station receives VARA? Is the frequency busy? Is the station too far away? Is a friend successful connecting to the station?**
- Are you sure you have the receiving station call sign correct - note that some stations have suffixes (e.g. KD7ZDO-10)
- Try increasing and decreasing power level, moving antenna, different antenna. If you have a different radio, try it.
- See if other stations can receive your signal
- Listen with another radio – is your signal clear? Retry calibration instructions.
- Don't forget that amateur radio can be unpredictable – your success can be dependent on propagation, terrain, noise, and other factors outside your control.

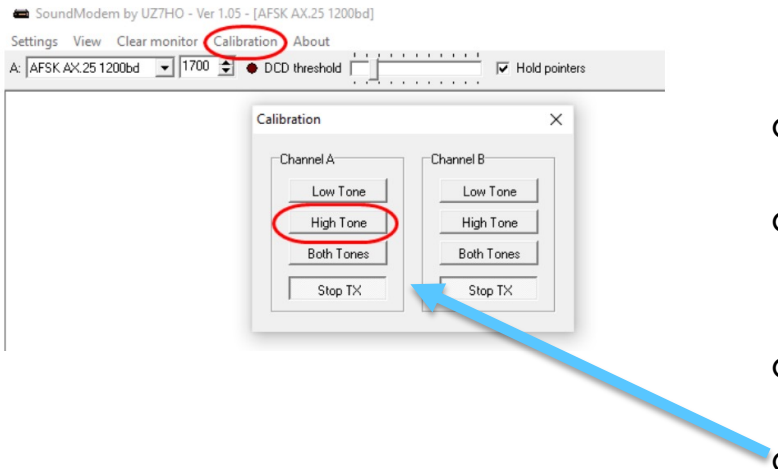
Troubleshooting VARA



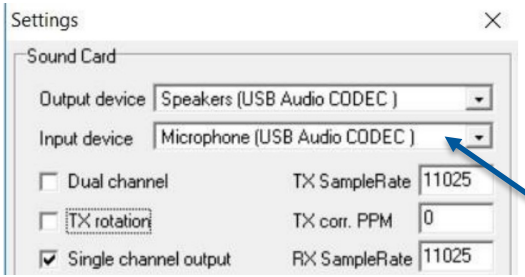
- Remote station is answering, but messages aren't being sent
  - Are you connecting to a Peer-to-Peer station but trying to send regular WINLINK messages? Peer-to-Peer sessions can only send Peer-to-Peer messages.
  - Are you connecting to a regular WINLINK station but trying to send Peer-to-Peer messages?
  - Are you sure the messages you want to send are in the Outbox?

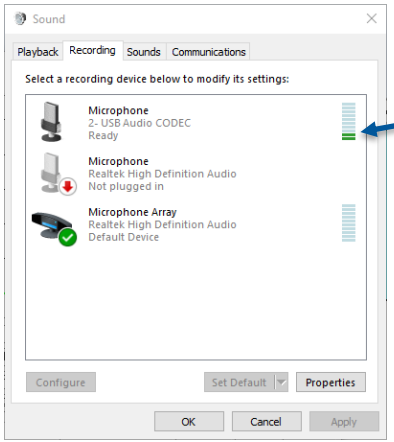
Troubleshooting Packet

- Remote station not answering?
  - Are you sure you have the receiving station call sign correct - note that some stations have suffixes (e.g. KD7ZDO-10)
  - Are you sure the receiving station receives PACKET?
  - Try increasing and decreasing power level, moving antenna, different antenna. If you have a different radio, try it.
  - See if other stations can receive your signal
  - Listen with another radio – is your signal clear? Retry calibration tone instructions in the set-up guide.



Troubleshooting Packet





- Nothing or sounds from the room on the SoundModem waterfall?

  In SoundModem Settings->Devices, check that the Signalink (USB Audio Codec) is selected for both Input and Output. (not available? Check USB cable from Signalink; change which USB port used.)

  - Still not working? Check the Sound Control panel to see if the incoming sound are turning green as the sound comes in.

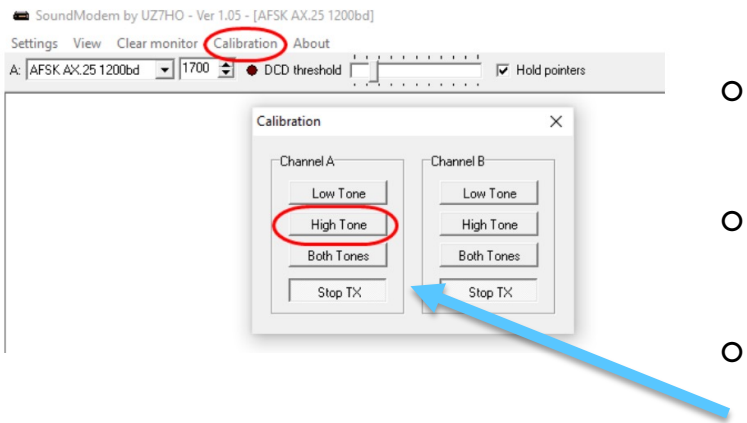
  - No green bars? Check to make sure that Squelch is off/turned all the way down, volume is up. Check the cables from your radio to the Signalink. Unplug from the Signalink and make sure that radio is receiving noise.

Troubleshooting Packet

- Radio not transmitting when attempting to connect?
  - Is the Red PTT (Push to Talk) light coming on when trying to transmit?
    - No? In SoundModem in the Device Screen, is VOX selected as the PTT port? Is the Signalink on? (green light). Is the USB cable connected?
    - Yes? There is a problem with the PTT line (either the chip or wire in the Signalink that controls PTT, the cable, or the radio).

Troubleshooting Packet

- Remote station not answering?



- **Are you sure the receiving station receives PACKET? Is the frequency busy? Is the station too far away? Is a friend successful connecting to the station?**
- Are you sure you have the receiving station call sign correct - note that some stations have suffixes (e.g. KD7ZDO-10)
- Try increasing and decreasing power level, moving antenna, different antenna. If you have a different radio, try it.
- See if other stations can receive your signal
- Listen with another radio – is your signal clear? Retry calibration tone instructions in the set-up guide.

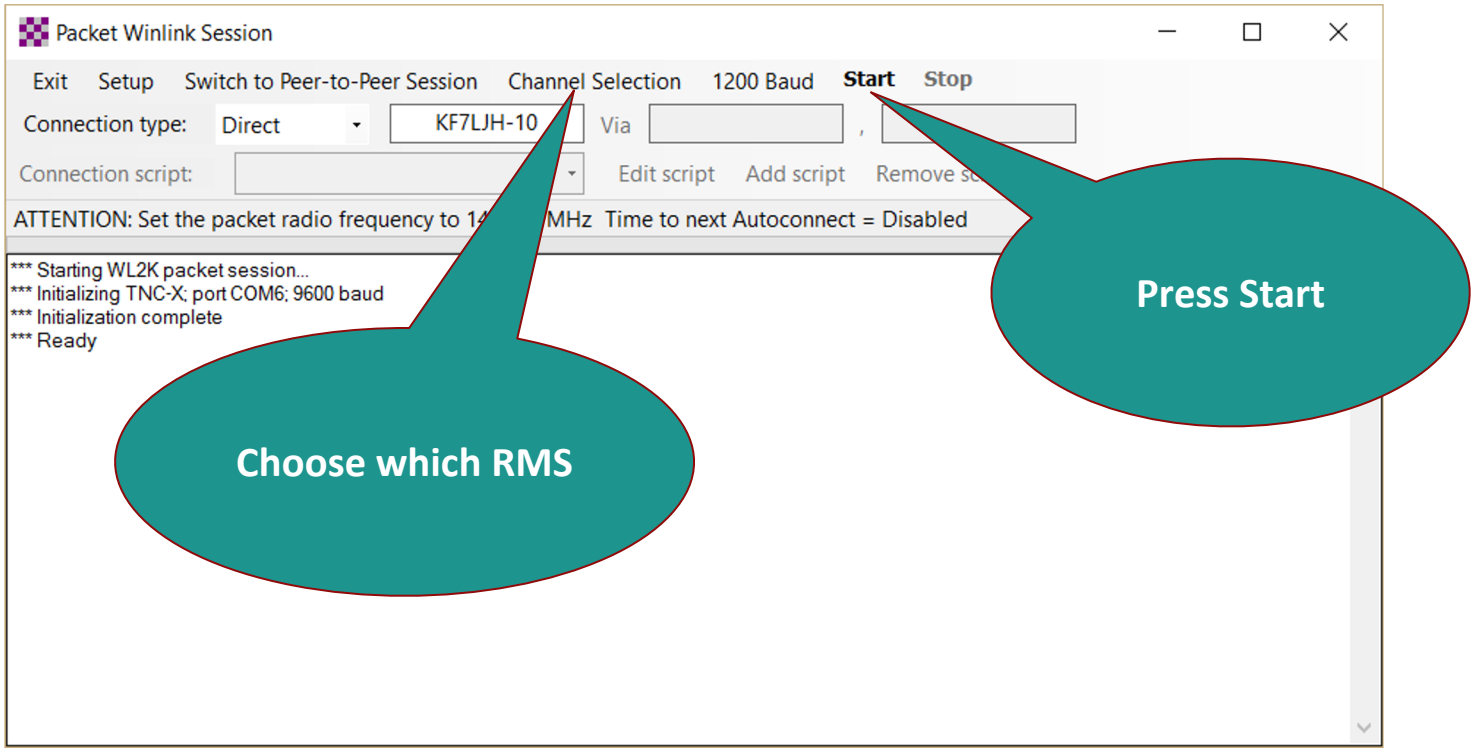
Troubleshooting - General

- Go through the set-up guide and make sure all the boxes are checked correctly and levels are set correctly
- Wait a few minutes and try again
- Listen on the frequency to check if the target machine is busy
- Check your cables with an ohm meter (digital voltmeter)
- If WINLINK hangs when launching it, the COM ports that WINLINK knows about are different than the WINLINK port that the Signalink is plugged into. Go into device manager and renumber the COM port that the Signalink is plugged into
- Try clip on Ferrite beads on your cable between your Radio and your Signalink.

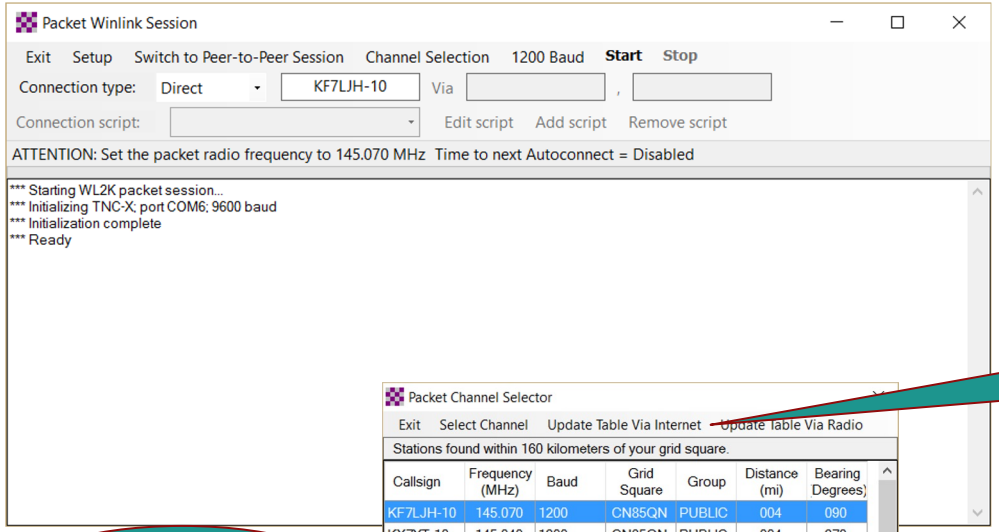
What is an RMS Gateway?

- RMS – Radio Message Server (also Remote Message Server)
- Listens (typically) on many bands (usually VHF or UHF and HF) and using many modes.
- Forwards radio traffic to the Internet. Can store messages for pickup when the Internet goes down.
- Listens for other stations to call the RMS Gateway – typically does not call out.

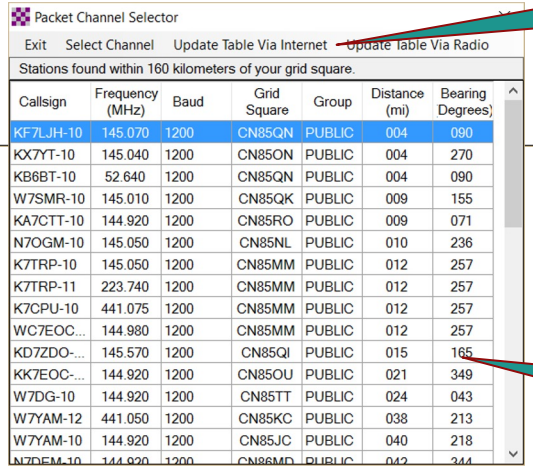
Initiate Packet WINLINK



Packet WINLINK – Which RMS Station?



GATEWAY SELECTION



Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (mi)	Bearing Degrees)
KF7LJH-10	145.070	1200	CN85QN	PUBLIC	004	090
KX7YT-10	145.040	1200	CN85ON	PUBLIC	004	270
KB6BT-10	52.640	1200	CN85QN	PUBLIC	004	090
W7SMR-10	145.010	1200	CN85QK	PUBLIC	009	155
KA7CTT-10	144.920	1200	CN85RO	PUBLIC	009	071
N7OGM-10	145.050	1200	CN85NL	PUBLIC	010	236
K7TRP-10	145.050	1200	CN85MM	PUBLIC	012	257
K7TRP-11	223.740	1200	CN85MM	PUBLIC	012	257
K7CPU-10	441.075	1200	CN85MM	PUBLIC	012	257
WC7EOC...	144.980	1200	CN85MM	PUBLIC	012	257
KD7ZDO-...	145.570	1200	CN85QI	PUBLIC	015	165
KK7EOC-...	144.920	1200	CN85OU	PUBLIC	021	349
W7DG-10	144.920	1200	CN85TT	PUBLIC	024	043
W7YAM-12	441.050	1200	CN85KC	PUBLIC	038	213
W7YAM-10	144.920	1200	CN85JC	PUBLIC	040	218
N7DEM-10	144.920	1200	CN86MD	PUBLIC	042	344

Press to update the gateway table when connected to the Internet

Note: It is important to update this table When you are connected to the Internet.

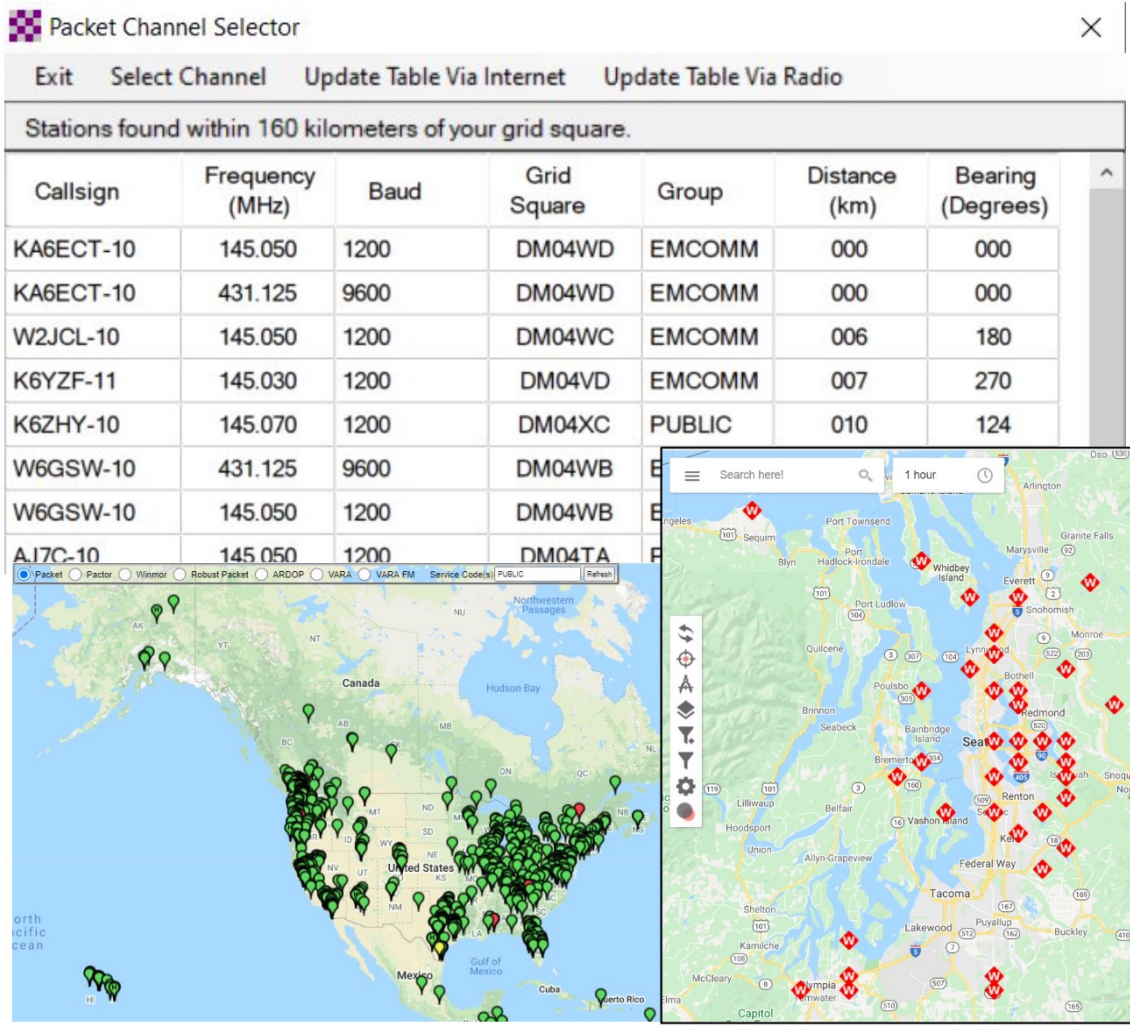
If you wait until you are deployed, it will be too late.

KD7ZDO

VARA has a similar selection process

How Do I Find RMS Gateways?

1. **Within Winlink**
   a. Session -> Channel Selector
2. **Using Winlink.org**
   a. https://winlink.org/RMSChannels

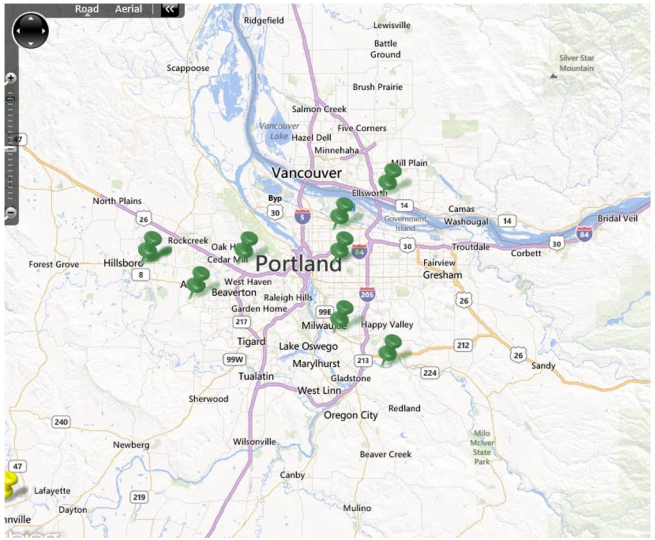


Clackamas Specific WINLINK Operations

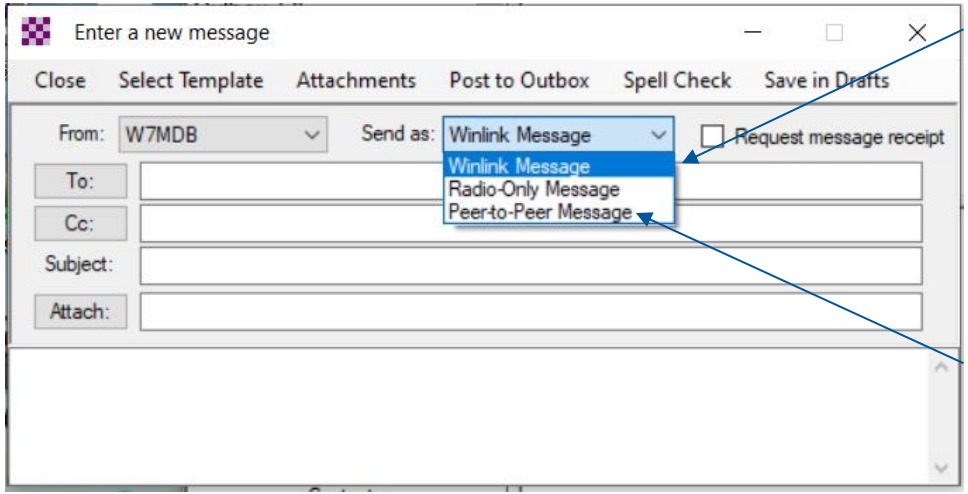
- Clackamas County RMS KD7ZDO-10 supports:
  - VHF PACKET -- 145.570 (CLAD6) -- 1200 baud
  - PACTOR and VARA HF on 3,587.500 KHz, 7,103.000 KHz, 10,148.700 KHz, 14,102.700 KHz
  - This is a Hybrid RMS node so it will use “Radio Forwarding Mode” to forward to Message Pickup Stations if the Internet fails.
- Stand-alone VARA Peer-to-Peer station KD7ZDO -- 145.830 (CLAD7)

Local WINLINK RMS Gateways

- K7MCE-10 145.070
- K7GJT-10 144.940
- KA7CTT-10 144.920
- WC7EOC-10 144.980
- N7OGM-10 145.050
- N7AAM-11 145.040
- W7SMR-10 145.010
- KF7LJH-10 145.070
- KD7ZDO-10 145.570 CARES CLAD6



Differences between WINLINK and Peer-to-Peer messages



- Regular WINLINK
  - Transmitted to a RMS Gateway and forwarded to a CMS where they are stored until they are retrieved.
  - Regular messages can be addressed to both radio and Internet destinations.
  - Many addresses on a regular message transmitted at the same time. Sent via regular WINLINK sessions.
- Peer-to-Peer (P2P)
  - Transmitted directly to a receiving station and stored there. Only callsign-based addressing. (no Internet @)
  - Many addressees on a peer-to-peer message are expanded into many messages. Sent via P2P Sessions.

Disadvantages of Peer-to-Peer

- Both stations must be on the air at the same time and must have clear reception of each other
- Stations must coordinate the frequency
- Both stations must use the same transmission protocol, for example, VARA.
- Messages cannot be sent to Internet e-mail accounts such as Gmail and Yahoo.

But… you might be able to use Peer-to-Peer when you can't reach any RMS stations (perhaps because they are all busy during an emergency)

Exercise 1

- Class exercise: Using a Signalink, radio and cables, follow the handouts and manufacturer's instructions to set it up now for both VARA and Packet. If you don't have the equipment today, pair with another student who does or ask to borrow a set of the instructor's equipment.

- Set up your radio with a dummy load (the Instructor has a few extras) rather than an antenna at this time.

- Set your radio for low power.

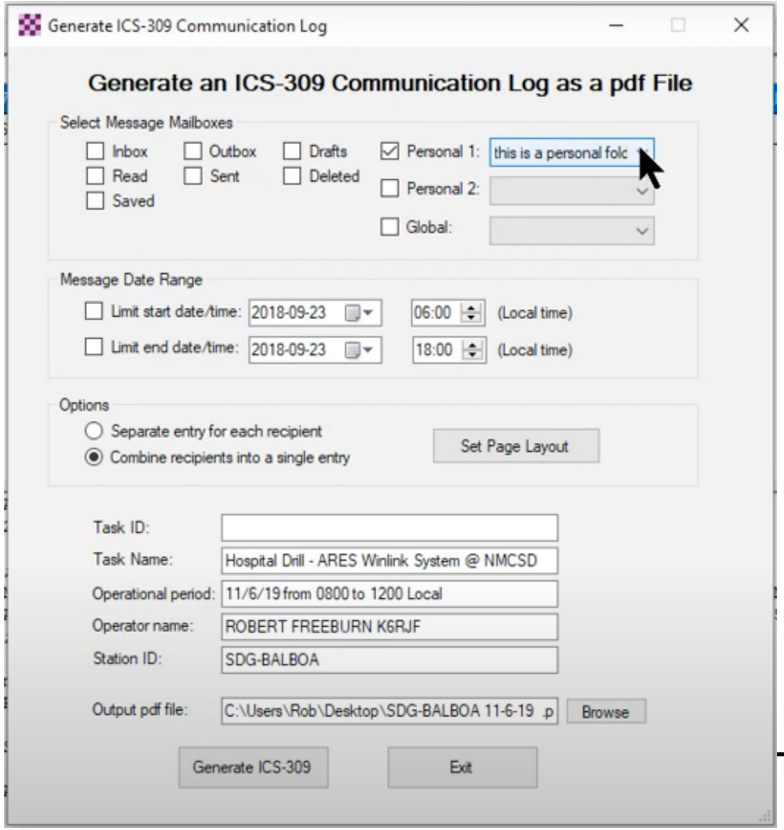
Exercise 2

- For this exercise, the instructor has set up his station as a peer-to-peer VARA FM station with the antenna outside. Using a dummy-load as an antenna (which the instructor can lend to you)
- The instructor will provide frequency information where to tune your radio.
    - Part A: On the VARA->Soundcard screen, Autotune with the Instructor's radio making adjustments until you get an "Approved" response.
    - Part B: Create a message, put it in your outbox, and save it as a Peer-to-peer message.
    - Part C: Start a VARA FM Peer-to-Peer session. Listen to see if the frequency is clear. If it is, send the message that is in your outbox as peer-to-peer message to that station.

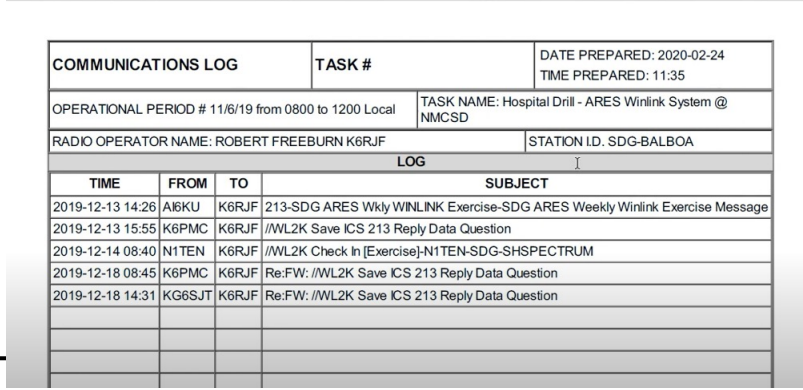
Exercise 3

- If they aren't being used by another student, connect your radio to the antennas that the Instructor has provided (coax is out the window)
- Tune your radio to CLAD6 -- KD7ZDO-10 -- 145.570 -- 1200 baud
- Create a WINLINK message and put it in your outbox addressed to W7MDB and also addressed to your own internet e-mail address.
- Open a WINLINK Packet session – In channel selection, choose KD7ZDO-10
- Send the message to KD7ZDO-10. RMS Station. If you are having difficulty connecting, you may need to increase your radio's power.

Generate ICS-309 Log



- Message->Generate ICS-309 Communication Log
- Choose which messages/Dates
- Create your headers
- Choose output location



COMMUNICATIONS LOG	TASK #	DATE PREPARED: 2020-02-24 TIME PREPARED: 11:35
OPERATIONAL PERIOD # 11/6/19 from 0800 to 1200 Local	TASK NAME: Hospital Drill - ARES Winlink System @ NMCSD	
RADIO OPERATOR NAME: ROBERT FREEBURN K6RJF	STATION I.D. SDG-BALBOA	

LOG

TIME	FROM	TO	SUBJECT
2019-12-13 14:26	AI6KU	K6RJF	213-SDG ARES Wkly WINLINK Exercise-SDG ARES Weekly Winlink Exercise Message
2019-12-13 15:55	K6PMC	K6RJF	//WL2K Save ICS 213 Reply Data Question
2019-12-14 08:40	N1TEN	K6RJF	//WL2K Check In [Exercise]-N1TEN-SDG-SHSPECTRUM
2019-12-18 08:45	K6PMC	K6RJF	Re:FW: //WL2K Save ICS 213 Reply Data Question
2019-12-18 14:31	KG6SJT	K6RJF	Re:FW: //WL2K Save ICS 213 Reply Data Question

ICS-309 Exercise

- Generate an ICS-309 log for your station.
- Use different selections for folders, dates and headers and note how the output changes.

About sending messages from Radio to Internet

- WINLINK RMS nodes and radio time are a scarce resource - to reduce radio traffic, Internet users cannot respond to messages by default
- If you need an Internet user to be able to respond, you can override this if you start the subject line with “//WL2K”
- During an event, it is recommended that you only use this feature with served agencies, and a reminder in the message that any reply will be sent over the radio, so please keep replies short.

WINLINK Protocols

- Internet
  - Telnet – good for training and mesh networks.
- VHF/UHF
  - Packet – Uses old AX.25 protocol. Because hardware is common, widely used.
  - VARA FM – Recommend for CARES VHF/UHF digital communications. Requires $70 software license for higher speed mode.
- HF
  - PACTOR -Fast and reliable but requires an expensive modem ($1500+). (P1 NOT recommended/minimal support)
  - VARA HF –Same license as above. Almost as good as PACTOR 3. Requires a sound card device. Recommend by CARES
  - Robust Packet – Requires a $400 tracker modem – not used in ARES
  - ARDOP – Amateur Radio Digital Open Protocol. No longer used in CARES.
- Satellite
  - Iridium Go

Questions and Answers

Thank you for attending today !

Authors:

- Mitch W7MDB
- Steve KE7GXC
- Jeremy KI7BDP

Helpful videos on YouTube:

"What is WINLINK"
https://www.youtube.com/watch?time_continue=127&v=1v330_1dezw

https://www.youtube.com/user/K4REF/videos