

Winlink Basics Presentation to 285 TechConnect Radio Club

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Introduction

- ▶ Who are we?
 - ▶ Jon - Technician license in mid-2020; General in 2024. Mainly have been doing ARES/EMCOMM
 - ▶ Art - Amateur Extra. Assistant Emergency Coordinator (EC) for ARES R1D6
- ▶ What this presentation IS
 - ▶ Basic setup of system on VHF/UHF
 - ▶ Demos of gateway and P2P connections
 - ▶ Basic Winlink Express functionality
- ▶ What this presentation IS NOT
 - ▶ Not a comprehensive review of the overall Winlink system
 - ▶ Not a comprehensive review of the Winlink Express program
 - ▶ Not a step-by-step guide for installation/setup of programs
 - ▶ Not about Winlink over HF

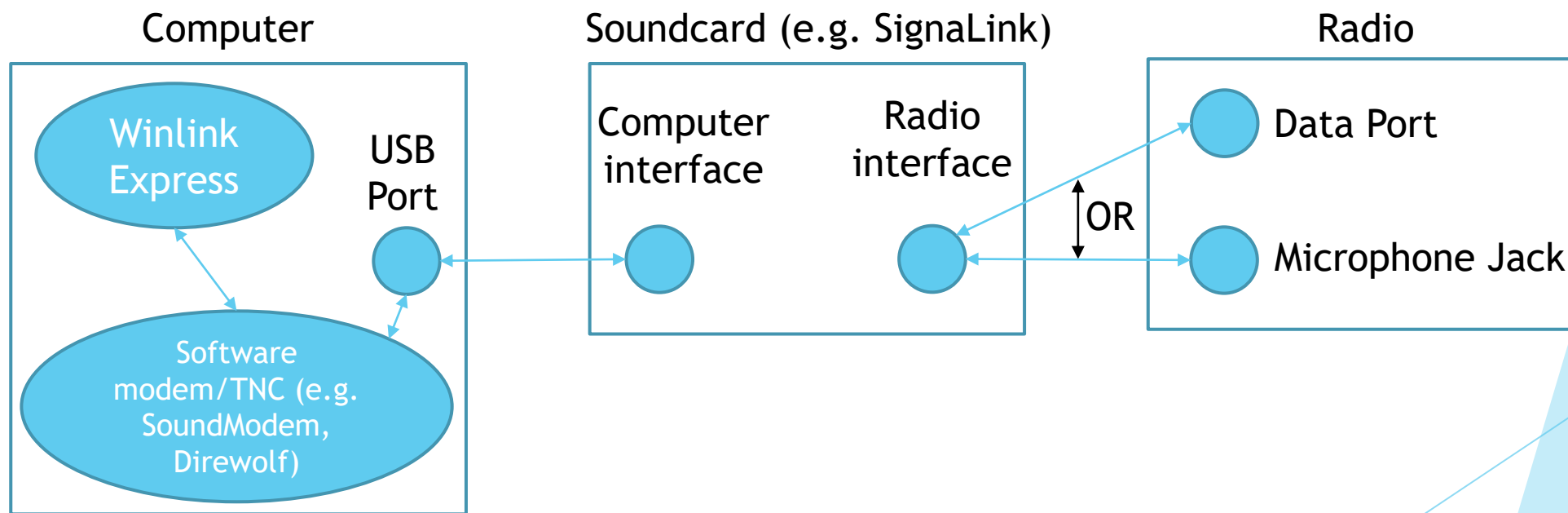
Resources

- ▶ YouTube is your friend
 - ▶ Overview of Winlink System - Rick Frost videos on youtube - <https://www.youtube.com/watch?v=qGhUfW8pjY8>
 - ▶ WaveTalkers videos - https://www.youtube.com/watch?v=vD_G9YCoDNM
 - ▶ Lots of other videos on different ways to do Winlink

Agenda

- ▶ Basic initial setup for doing VHF/UHF Winlink
 - ▶ HW/SW needed
 - ▶ Basic configuration
- ▶ Demo GW & P2P
 - ▶ VHF/UHF GW connection options - Packet Winlink, VARA FM Winlink
 - ▶ VHF/UHF P2P connection options - Packet P2P, VARA FM P2P
- ▶ Forms and sending images

Key components for running Winlink from your computer over VHF/UHF



Key components for running Winlink from your computer over VHF/UHF (cont.)

- ▶ Email program
 - ▶ e.g. Winlink Express (formerly RMS Express)
- ▶ Modem / SW Terminal Node Controller (TNC)
 - ▶ e.g. Direwolf, UZ7HO SoundModem, Vara FM
- ▶ Sound card
 - ▶ e.g. Signalink, Masters Communications DRA-30
- ▶ Radio
 - ▶ Data port for faster potential speeds

Connection to data port on mobile radio

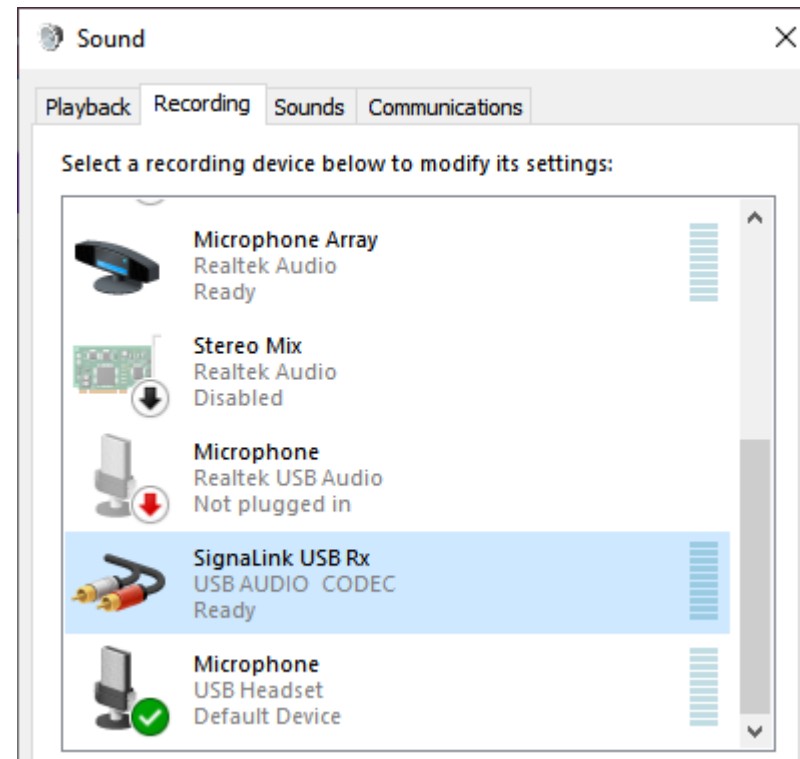
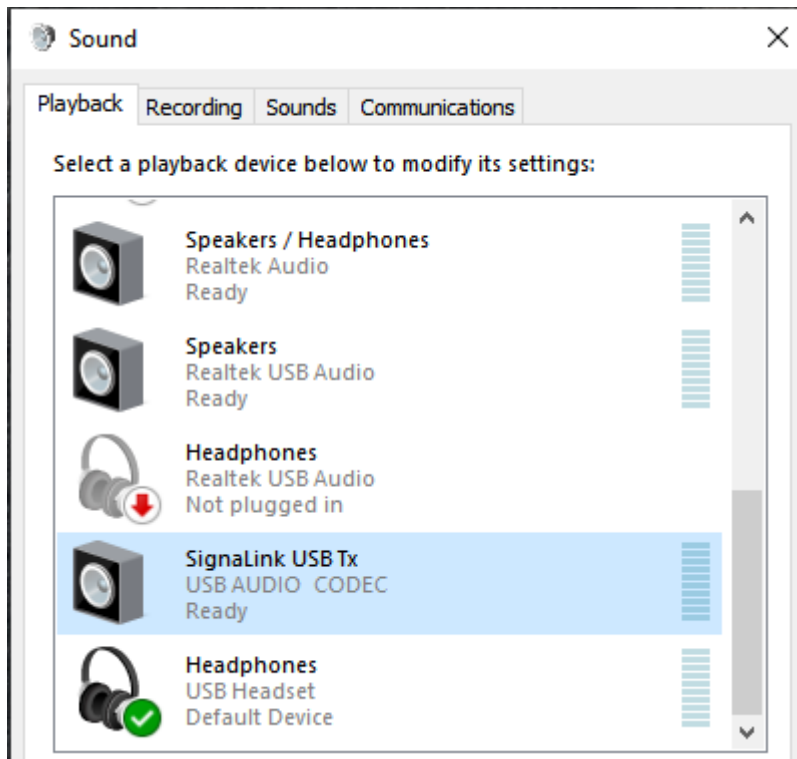


Basic Soundcard & Winlink Express setup

- ▶ Downloading & installing
 - ▶ Winlink Express - www.winlink.org -> Download -> User Programs -> Winlink_Express_install_1-5-36-0.zip
 - ▶ SoundModem by UZ7HO - uz7.ho.ua/packetradio.htm -> soundmodem114.zip
- ▶ Setting up sound devices for Signalink
 - ▶ Sound Control Panel
- ▶ Configuration for Packet Winlink
 - ▶ Winlink Express, SoundModem
- ▶ Configuration for VARA FM
 - ▶ Winlink Express, VARA FM

Soundcard setup

Go to Sound Control Panel in Windows:



Winlink Express Properties

Settings -> Winlink Express Setup

Winlink Express Properties

Call Signs

My Callsign: My Password: (Case sensitive) Show password

Callsign suffix (optional): (Used for country code)

Password recovery e-mail: (Non-Winlink e-mail address where lost password will be sent when requested)

Auxiliary Callsigns and Tactical Addresses

My Grid Square:

Winlink Express registration key:

Service Codes

(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)
If you change service codes, you must update the list of channels.

Contact Information (Optional)

Name:

Street address 1:

Street address 2:

City:

State/Province:

Country:

Postal code:

Web Site URL (optional):

Phone number:

Non-Winlink e-mail:

Additional information (optional):

Recalculate HF path quality if SFI changes more than:

Keep logs for weeks. Keep deleted messages for days.

Display list of pending incoming messages prior to download

Warn about connections to stations holding messages

Allow diagnostic information to be sent to the Winlink Development Team

Automatically install field-test (beta) versions of Winlink Express

Winlink Express -> Open Session -> Packet Winlink Session -> Settings

Packet Winlink/P2P Setup

TNC Connection

Packet TNC Type: KISS

Packet TNC Model: NORMAL Serial Port: TCP

Autoconnect time: Disabled

TCP Host/Port: 127.0.0.1 8100

Packet sound modem: C:\soundmodem.exe Browse

Automatically launch packet sound modem

TNC Parameters

1200 Baud 9600 Baud

TX Delay (Milliseconds): 400 300

Maximum Packet Length: 128 255

Maximum Frames: 4 7

Frack: 2 2

Persistence: 160 224

Slot time: 30 20

Maximum Retries: 5 5

Disable Xmit Level Adjust Transmit Level: 100 100

Enable IPoll:

Update Cancel

SoundModem -> Settings -> Devices

Settings

Sound Card

Output device: Signalink USB Tx (USB AUDIO CO)

Input device: Signalink USB Rx (USB AUDIO CO)

Dual channel TX SampleRate: 11025

TX rotation TX corr. PPM: 0

Single channel output RX SampleRate: 11025

Color waterfall RX corr. PPM: 0

Stop waterfall on minimize Priority: Highest

Minimized window on startup

Server setup

AGWPE Server Port: 8000 Enabled

KISS Server Port: 8100 Enabled

PTT Port

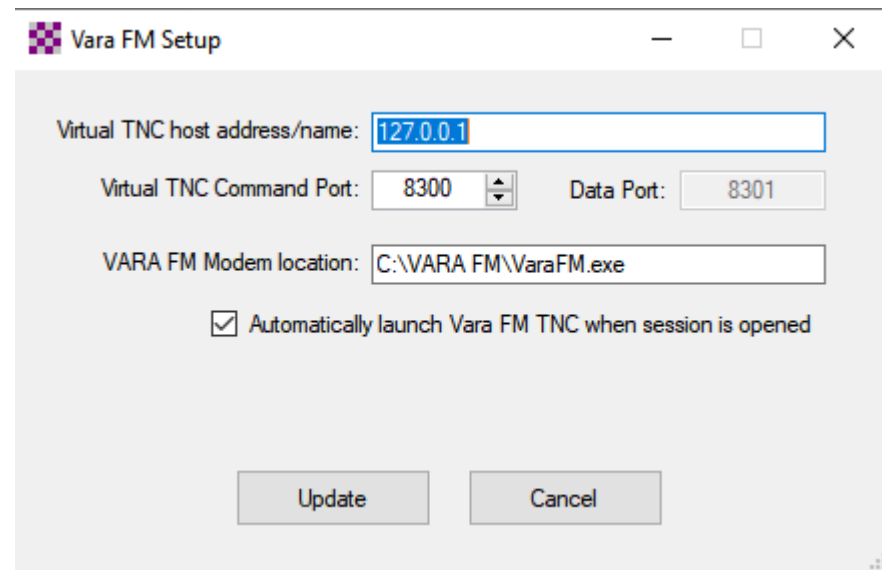
Select PTT port: NONE Dual PTT

Swap COM pins for PTT

Advanced PTT settings

OK Cancel

Winlink Express -> Open Session -> Vara FM Winlink Session -> Settings



The image shows a screenshot of the 'Vara FM Setup' dialog box. The window title is 'Vara FM Setup'. It contains the following fields and options:

- Virtual TNC host address/name:
- Virtual TNC Command Port: (with a spinner control)
- Data Port:
- VARA FM Modem location:
- Automatically launch Vara FM TNC when session is opened

At the bottom of the dialog are two buttons: 'Update' and 'Cancel'.

VARA FM -> Settings -> VARA setup
VARA FM -> Settings -> SoundCard

The VARA Setup dialog box contains the following fields and controls:

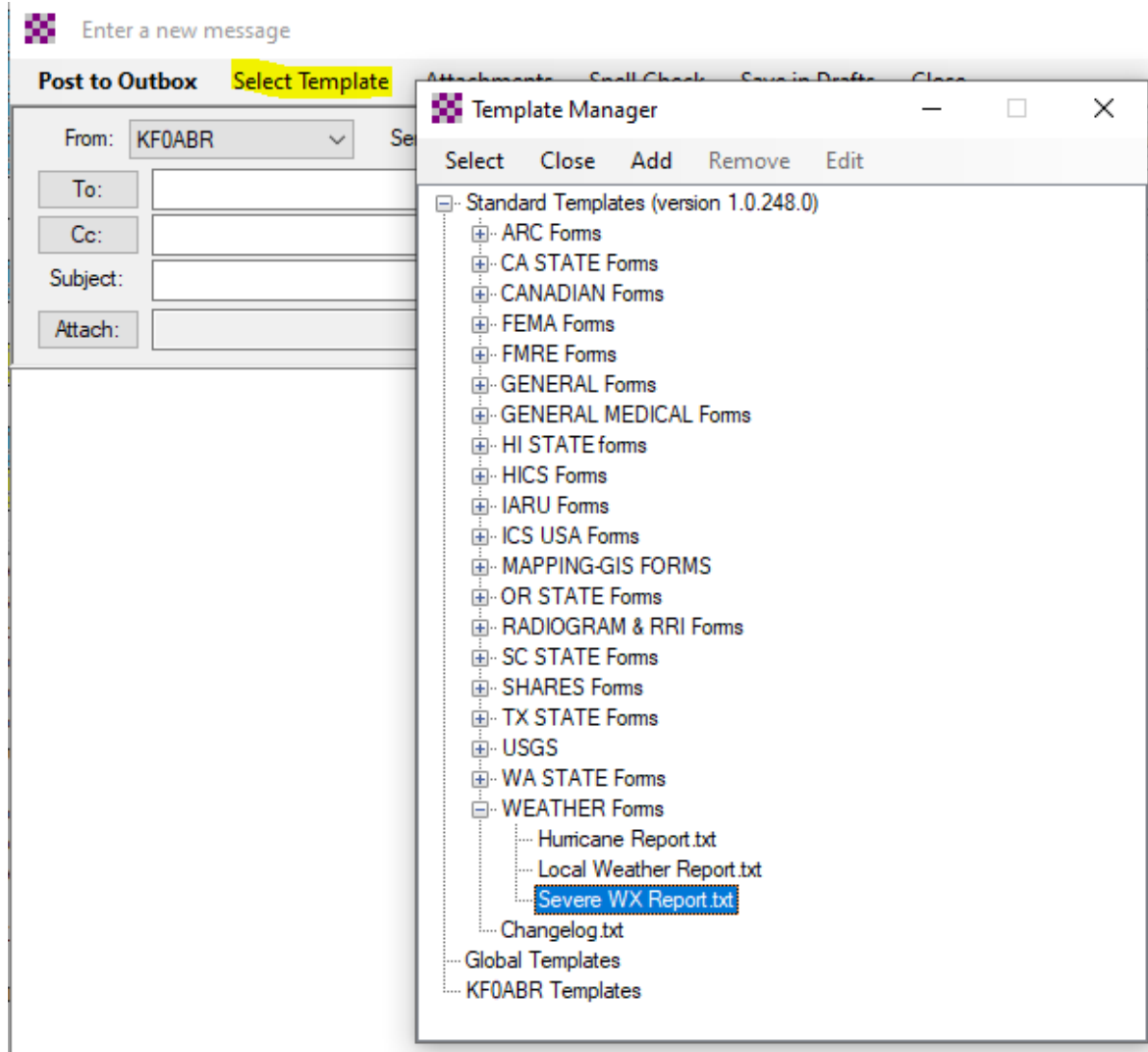
- TCP Ports:**
 - Command: 8300
 - Data: 8301
- FM System:** NARROW (dropdown menu)
- Digipeater:** (empty text field)
- Retries:** 3 (dropdown menu)
- Allow VARA check for updates
- VARA Licenses:**

Callsign:	Registration Key:
KF0ABR	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]

The SoundCard dialog box contains the following controls:

- Device Input:** Signalink USB Rx (USB AUDIO CO) (dropdown menu)
- Device Output:** Signalink USB Tx (USB AUDIO CO) (dropdown menu)
- Drive level:** -5 dB (slider control)
- Tune:** (red button)
- Auto Tune:** (red button)
- Ping:** (green button)
- Close:** (orange button)

Winlink Forms



STEPS to use:

1. New Message
2. Select Template
3. Find the template you want and double-click
4. Fill in the information on the web page and hit Submit; info from page transfers to body of message
5. Post message to Outbox

Demos

- ▶ Telnet Winlink
- ▶ Packet Winlink w/ Soundmodem (via Gateway)
- ▶ VARA FM Winlink (via Gateway)
- ▶ Packet P2P w/ Soundmodem
 - ▶ Make sure message is set to type P2P
- ▶ VARA FM P2P
 - ▶ Make sure message is set to type P2P

Speed comparisons

Method	Attachment size	Time to send	Transfer speed
Telnet Winlink	~24 KB	0 min 0 sec	4.2 MB/min
Packet Winlink	~24 KB	6 min 26 sec	3.63 KB/min
VARA FM	~24 KB	1 min 7 sec	20.813 KB/min

```
Telnet Winlink Session
Exit Settings Start Stop Time to next Autoconnect = Disabled
*** Connecting to a CMS...
*** Connected to CMS-SSL at 2024/02/04 22:10:54
[WL2K-5.0-B2FWIHJM$]
:PQ: 64798061
CMS>
:FW: KF0ABR
[RMS Express-1.7.12.0-B2FHM$]
:PR: 39716362
: WL2K DE KF0ABR (DM79LU)
FC EM J LHDC59V54I3 25003 23177 0
F> FC
FS Y
*** Sending J LHDC59V54I3.
FF
*** Completed send of message J LHDC59V54I3
*** Sent 1 message. Bytes: 23407, Time: 00:00, bytes/minute: 4200071
FQ
*** --- End of session with WL2K at 2024/02/04 22:10:59 ---
*** Messages sent: 1. Total bytes sent: 23407, Time: 00:05, bytes/minute: 275703
*** Messages Received: 0. Total bytes received: 0, Total session time: 00:05, bytes/minute: 0
*** Disconnecting
*** Disconnected at 2024/02/04 22:10:59
```

Speed comparisons

Packet Winlink Session

Exit Settings Channel Selection 1200 Baud **Start** Stop

Connection type: Direct Via

Connection script:

Received: 136 Sent: 23521 Time to next Autoconnect = Disabled

```
*** Starting to call KONTS-10
*** Opening KISS over TCP Host 127.0.0.1 Port 8100
*** Connecting to KONTS-10
*** Connected to KONTS-10 at 2024/02/04 21:59:39

Trying ec2-54-210-141-87.compute-1.amazonaws.com
*** KFOABR Connected to CMS
[WL2K-5.0-B2FWIHJM$]
:PQ: 36136007
CMS via KONTS >
:FW: KFOABR
[RMS Express-1.7.12.0-B2FHM$]
:PR: 28121277
; KONTS-10 DE KFOABR (DM79LU)
FC EM RPJIGJJK7G 24996 23169 0
F> B3
FS Y
*** Sending RPJIGJJK7G.
FF
*** Completed send of message RPJIGJJK7G
*** Sent 1 message. Bytes: 23392, Time: 06:26, bytes/minute: 3630
FQ
*** -- End of session with KONTS-10 at 2024/02/04 22:06:22 --
*** Messages sent: 1. Total bytes sent: 23392, Time: 06:42, bytes/minute: 3487
*** Messages Received: 0. Total bytes received: 0, Total session time: 06:42, bytes/minute: 0
*** Disconnecting
*** Disconnecting
*** Disconnected at 2024/02/04 22:06:25

*** Disconnect reported.
```

Vara FM Winlink Session - KFOABR

Exit Settings Channel Selection **Start** Stop Abort

Connection: Direct via

Favorites:

In: 0/0 Out: 23170/23170 BPM: 21797 Disconnected Time to next Autoconnect = Disabled

```
*** Connected to Winlink RMS: W0VG-10 @ 2024/02/04 22:14:13 Freq: 144.950
RMHAM Packet/Vara RMS 144.95
[WL2K-5.0-B2FWIHJM$]
:PQ: 54526457
CMS via W0VG >
:FW: KFOABR
[RMS Express-1.7.12.0-B2FHM$]
:PR: 85154662
; W0VG-10 DE KFOABR (DM79LU)
FC EM JA415TPZD79J 24996 23170 0
F> DC
FS Y
*** Sending JA415TPZD79J.
FF
*** Completed send of message JA415TPZD79J
*** Sent 1 message. Bytes: 23393, Time: 01:07, bytes/minute: 20813
FQ
*** -- End of session with W0VG-10 at 2024/02/04 22:15:35 --
*** Messages sent: 1. Total bytes sent: 23393, Time: 01:22, bytes/minute: 17066
*** Messages Received: 0. Total bytes received: 0, Total session time: 01:22, bytes/minute: 0
*** Disconnecting
*** Disconnected from Winlink RMS: W0VG-10 @ 2024/02/04 22:15:36
*** Session: 1.4 min; Avg Throughput: 17117 Bytes/min; 1 Min Peak Throughput: 17117 Bytes/min
```

Sending attachments

- ▶ Keep them as small as possible
- ▶ Use a program to reduce image sizes prior to attaching to message
 - ▶ Lots of free programs available online that don't require you to install anything
 - ▶ Winlink has a built-in way to reduce size of image, but you can't tell how legible it is after it's been reduced
- ▶ If you're mobile, be prepared to do direct transfer of pic from phone to computer; don't assume cellular will be available

Decoding connections

- ▶ *PQ = account authentication challenge*
- ▶ *FW = Forward message(s)*
- ▶ *PR = Account authentication response*
- ▶ *FC = Proposal to send message*
- ▶ *EM = Encapsulated message*
- ▶ *FS = Proposal response*
- ▶ *FF = No more messages to send*
- ▶ *FQ - No message to send, time to disconnect*

```
Packet Winlink Session
Exit Settings Channel Selection 1200 Baud Start Stop
Connection type: Direct KONTs-10 Via
Connection script: Edit script Add script
Received: 136 Sent: 23521 Time to next Autoconnect = Disabled

*** Starting to call KONTs-10
*** Opening KISS over TCP Host 127.0.0.1 Port 8100
*** Connecting to KONTs-10
*** Connected to KONTs-10 at 2024/02/04 21:59:39

Trying ec2-54-210-141-87.compute-1.amazonaws.com
*** KF0ABR Connected to CMS
[WL2K-5.0-B2FWIHJM$]
:PQ: 36136007
CMS via KONTs >
:FW: KF0ABR
[RMS Express-1.7.12.0-B2FHMS]
:PR: 28121277
: KONTs-10 DE KF0ABR (DM79LU)
FC EM RPJI6J0JK7G 24996 23169 0
F> B3
FS Y
*** Sending RPJI6J0JK7G.
FF
*** Completed send of message RPJI6J0JK7G
*** Sent 1 message. Bytes: 23392, Time: 06:26, bytes/minute: 3630
FQ
*** -- End of session with KONTs-10 at 2024/02/04 22:06:22 --
*** Messages sent: 1. Total bytes sent: 23392, Time: 06:42, bytes/minute: 3487
*** Messages Received: 0. Total bytes received: 0, Total session time: 06:42, bytes/minute: 0
*** Disconnecting
*** Disconnecting
*** Disconnected at 2024/02/04 22:06:25

*** Disconnect reported.
```