

Winlink

A way to send/receive email

History

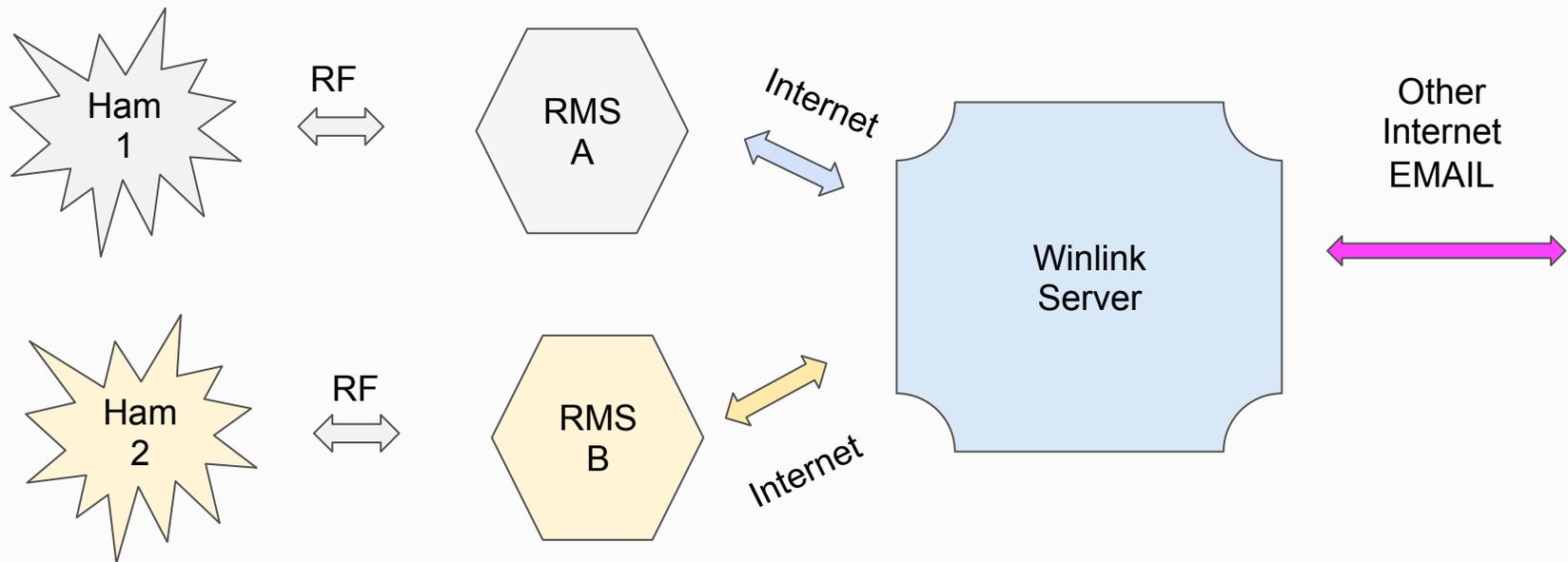
- Winlink created for sailors to send and receive email
 - Today also used for emcomm
 - Wilderness folks who need email
- Originally on HF
 - Today also on VHF
 - Software modems



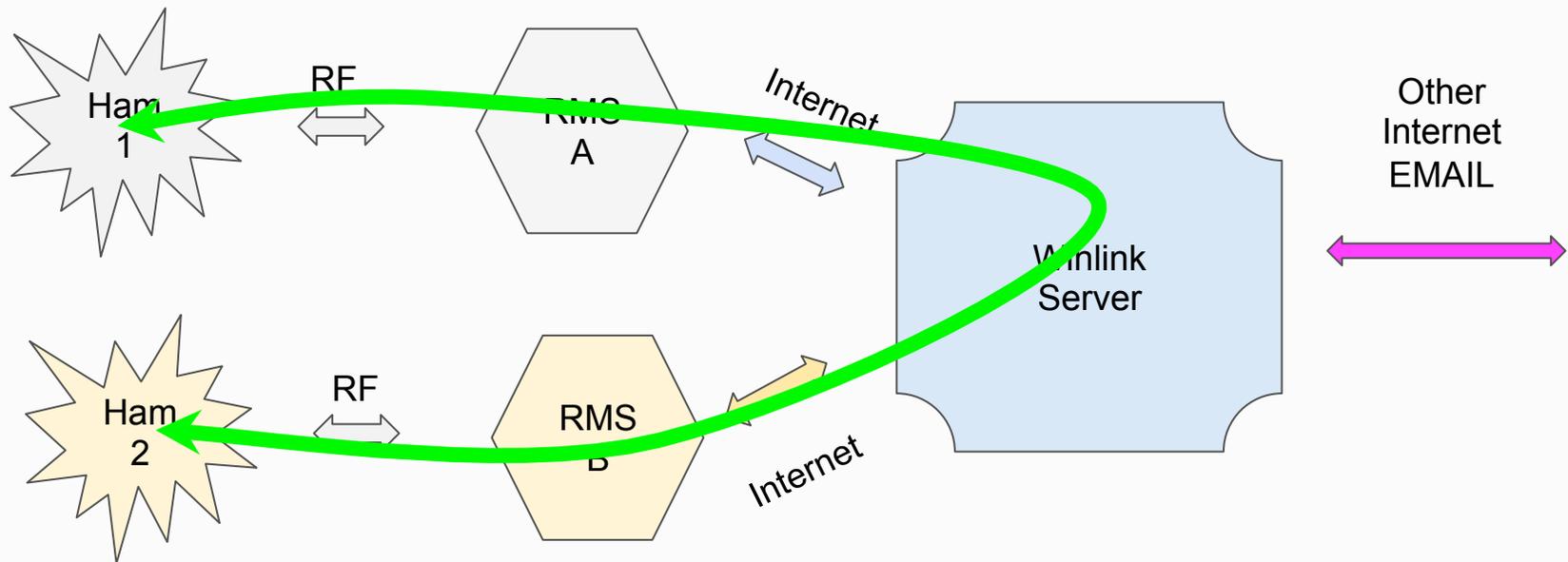
Structure

- User (Ham)
 - Has a radio with digital capabilities
 - TNC/PACTOR box or Software based modem
 - Runs software conforming to winlink protocol
- RMS (Remote Mail Server)
 - Has a radio with digital capabilities
 - Has internet connection
- Winlink
 - Manages email flow for RMS stations

Message Flows



Message Flow Ham1 to Ham2



Email Creation and Reading

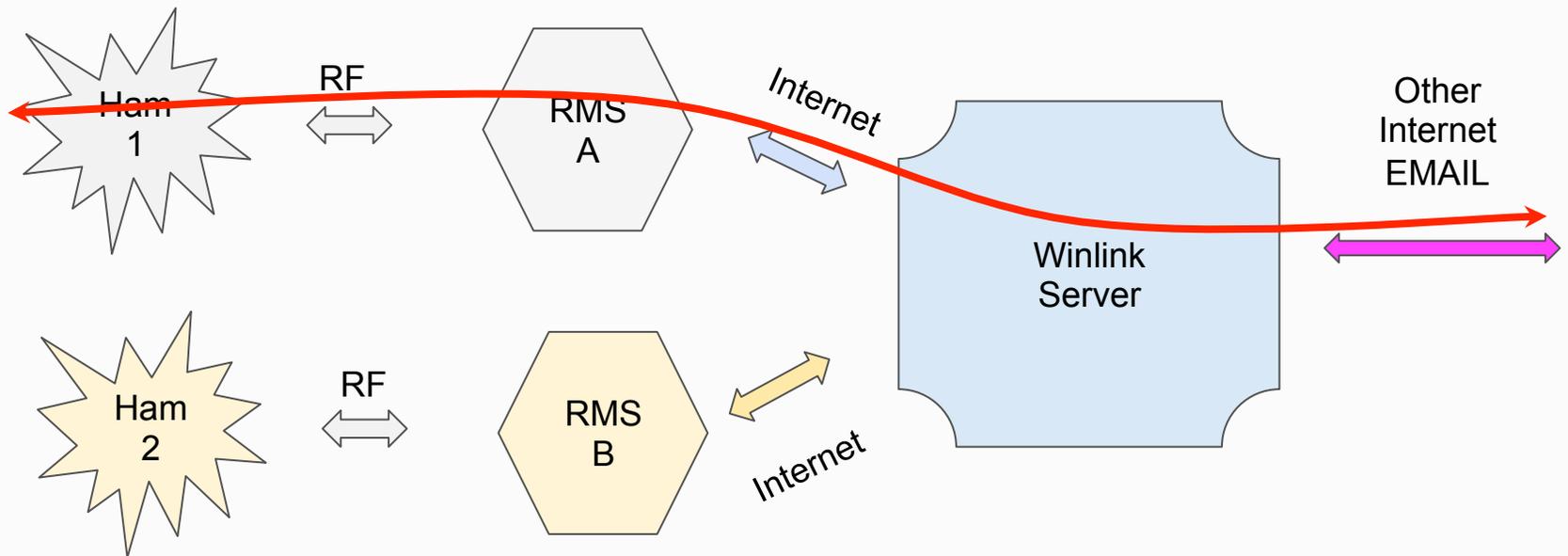
- Are offline
 - After sending or receiving data to/from the Winlink server
- Remember the ships at sea model, campers in the wilderness
 - Limited power for communications
- Program is structured for offline message creation and reading

Contact a RMS to send or receive EMAIL

- Sent mail goes to the Central RMS server
 - Stored until the recipient requests it
- Connect to a RMS to find out if you have EMAIL

- There is a direct person to person mode (P2P)
 - Not too hard to set up
 - Good for practice
- There is a mode where messages are stored in message pick-up stations
 - Advanced topic for another day

Message Flows



Security

- Have to be an Amateur Radio Operator
- Sign up for Winlink (Free)
- Use Winlink Software
- Enable someone to send you a message
 - Otherwise, the winlink server will not deliver that email
 - Send them a message
 - Adds them to a 'white list'
 - Put email address in winlink server white list.
 - Log in to the server over the internet
- Account creation uses passwords
- Keys used in sending and receiving emails to authenticate sender

Limits Junk Mail

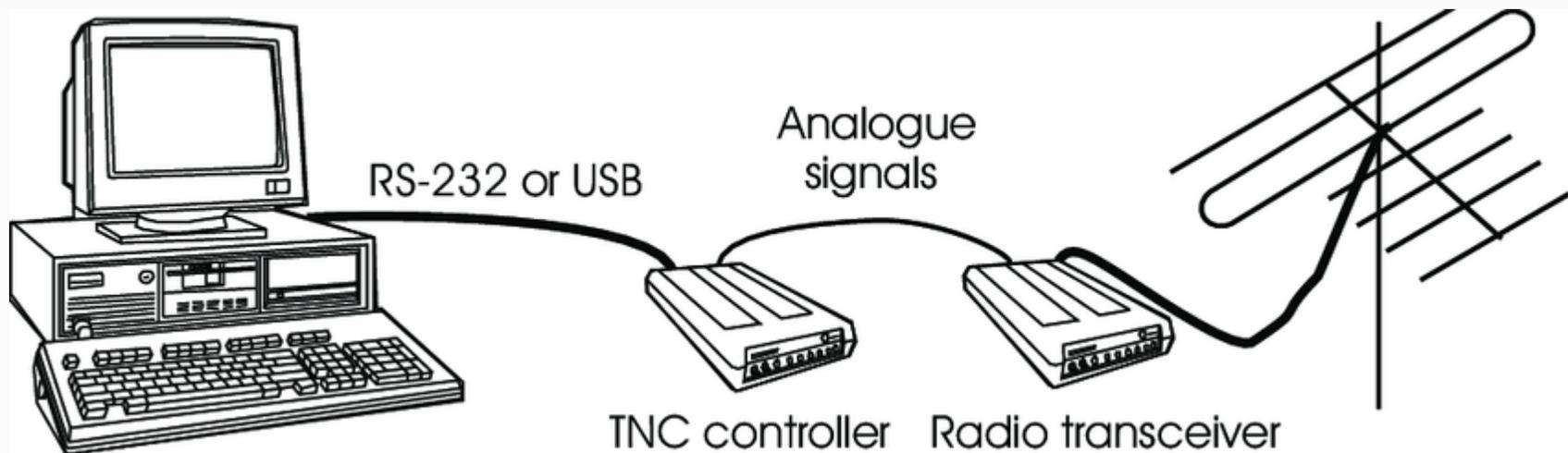
You are responsible for message content

- Stay inside amateur requirements
 - No commercial use
- The system knows where all email comes from, and where it goes
 - They have security and message tracking
 - The FCC can track it to you

What equipment is needed?

- Same things as 'packet'
- VHF
 - Radio
 - Computer
 - TNC (KPC3+, or could be software TNC)
 - Interface(s) between items
- HF?
 - Radio
 - Computer
 - TNC (Pactor, or could be software TNC)
 - Interface(s) between items

Winlink Station Requirements



The Same as any other Packet Station

Example Setup -- Radio



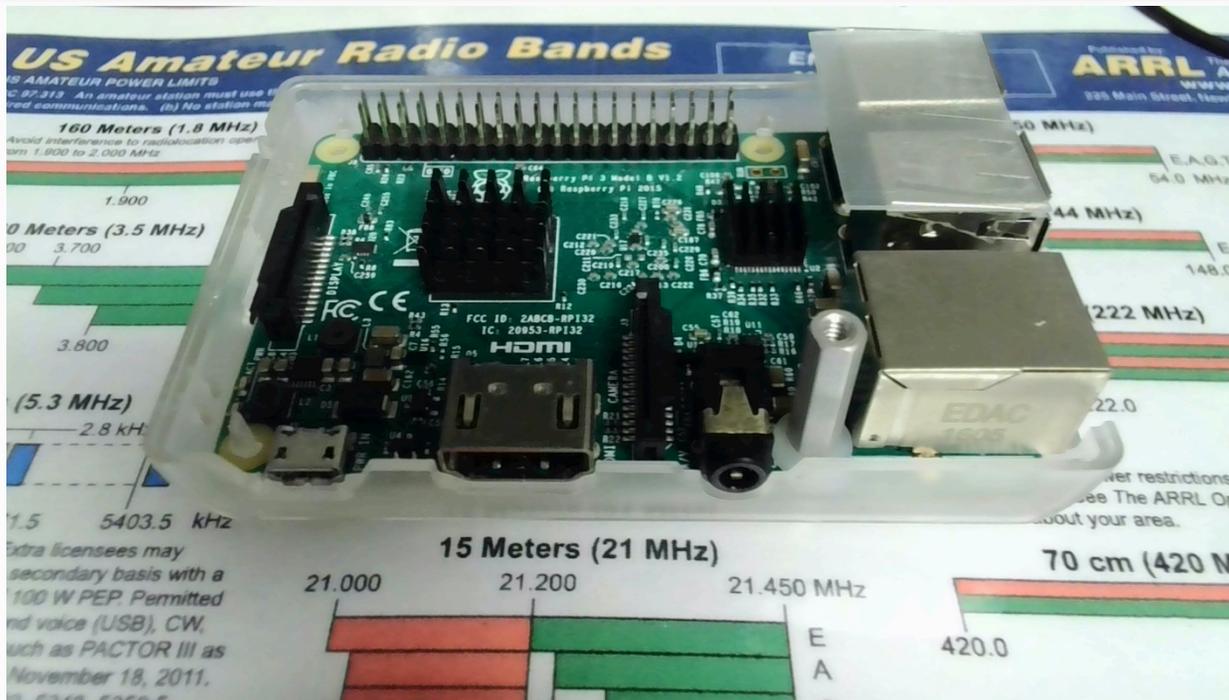
Sample Setup -- TNC



Sample Setup -- Computer (Small Computer)

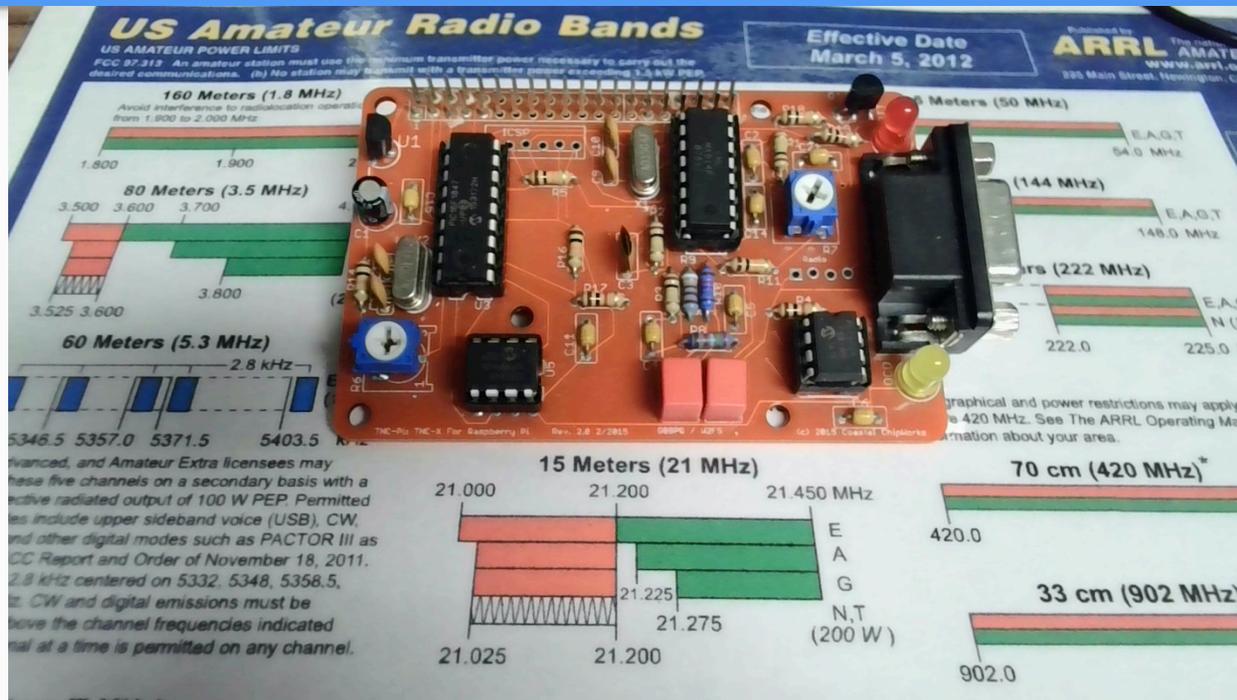


Fun Size -- Computer Pi3+



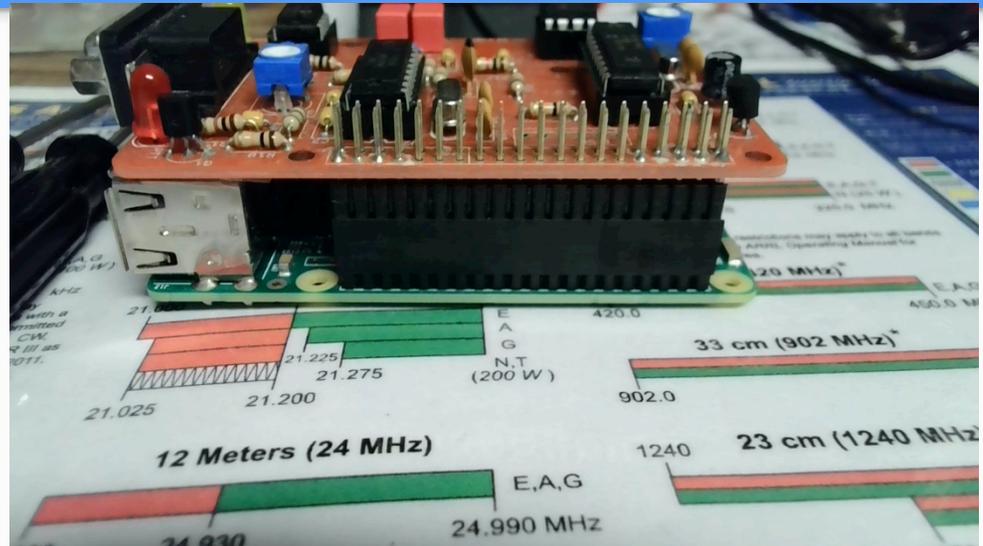
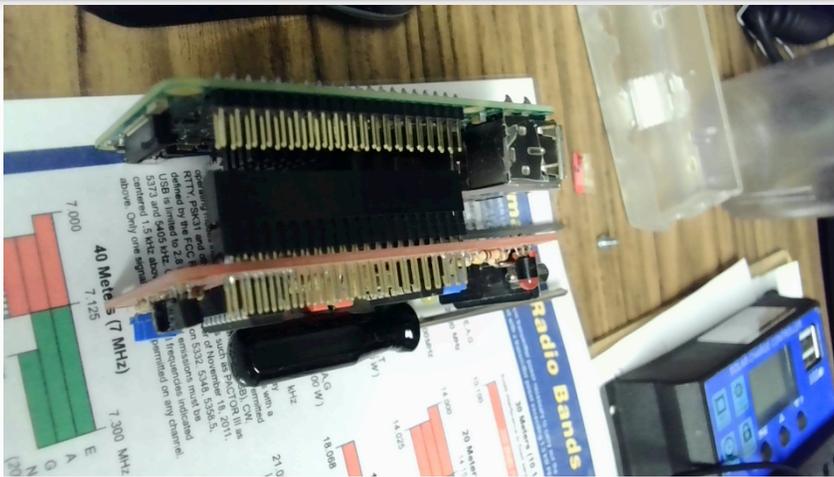
- 1GB Ram
- 32 GB micro SDHC
- Linux OS (Raspbian)
- 4 USB ports
- 1 HDMI port
- 1 Ethernet port
- ? Audio (Not very good)
- Power in over micro USB
 - Can power from usb pack

Fun Size -- Pi-TNC



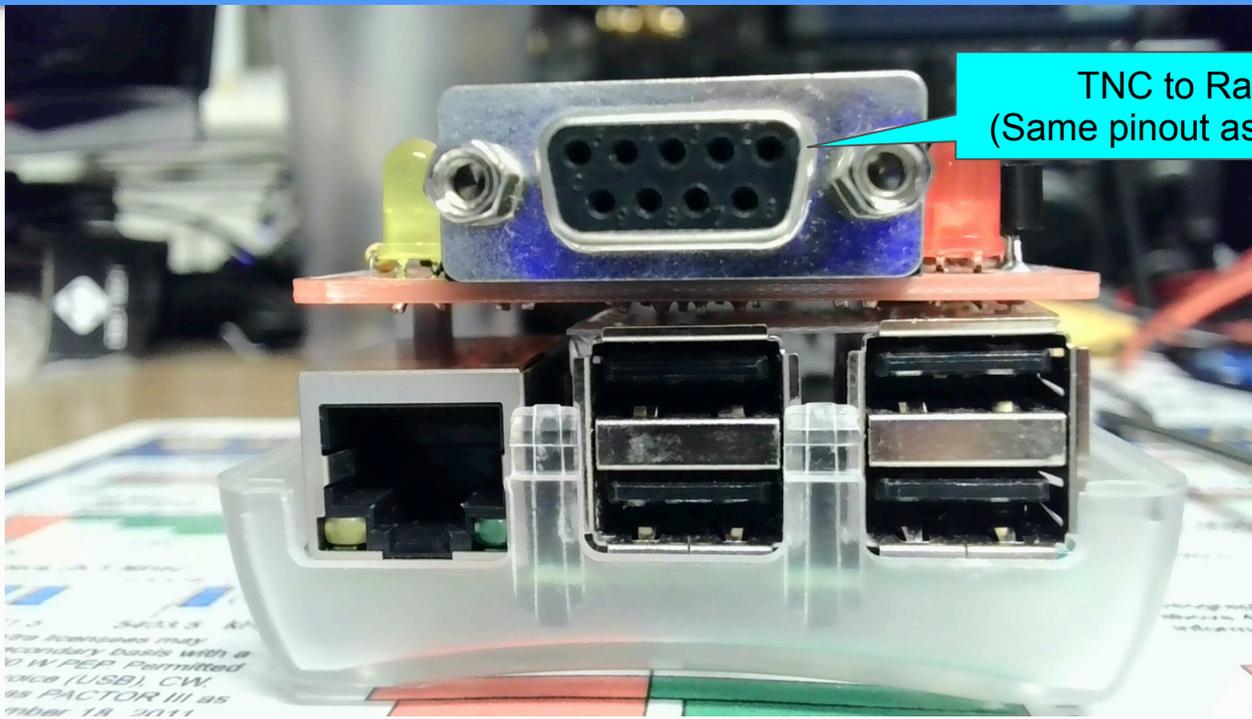
Sadly, The Pi-TNC kit is no longer available.

Connecting Computer to PI3+



All connections made through the header.
Including power

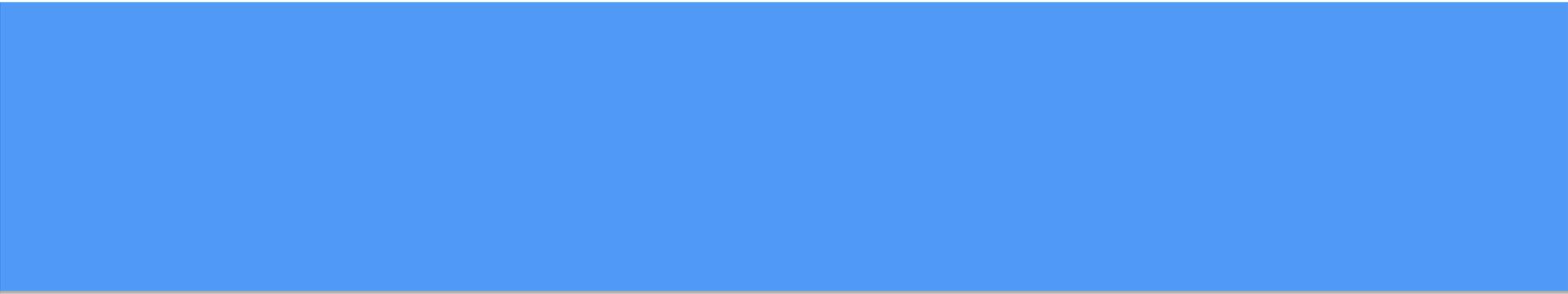
Fun Size -- Connection to radio



TNC to Radio.
(Same pinout as KPC3+)

There is a winlink email program for PI3+

- Not the windows program
- It can send and receive email
- Supports many interfaces
- I have sent and received messages on this raspberry pi setup



Software

The winlink program tries to be helpful

- Basic settings 'work'
 - Options can make things better
- If you enter location
 - Grid square locator like 'CM87xg'
 - Let's you know what RMS stations you should try
 - Can remember, or use the internet
- All messages get a unique identifier, easy to track things down
- Lots of built in retries and error detection

Winlink Home screen

Winlink Express 1.5.39.0 - AD6ZH

AD6ZH Settings Message Attachments Move To: Saved Items Delete Open Session: Packet Winlink Logs

Help

No active session...

	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)	2021/07/29 23:12	BIHGDBB6CKHW	388	KD6PJE	KD6PJE	N6SLV...	Winlink challenge for the week ending July 31.
Read Items (0)	2021/07/27 13:50	K744SG2RRVZ7	376	KD6PJE	KD6PJE	AD6ZH	Re: Weekly checking
Outbox (0)	2021/07/24 13:10	OVNPL1HD4DHU	678	KD6PJE	KD6PJE	AD6ZH	Re: Email test over winlink
Sent Items (45)	2021/07/23 14:01	A28NS4XZO18V	688	SMTP	SMTP.rtw3960@...	KD6PJE...	Re: Email test over winlink
Saved Items (0)	2021/07/23 04:32	MO31PH2KQOZR	709	SMTP	SMTP.colinrobins...	KD6PJE...	Re: Email test over winlink
Deleted Items (4)	2021/07/18 13:08	CPJSEW5FXXP	553	KD6PJE	KD6PJE	N6SLV...	This Week's Winlink Check-in Ch...
Drafts (0)	2021/07/16 11:57	AR0IRHWMR6N4	377	KD6PJE	KD6PJE	AD6ZH	Re: Weekly Checkin Morns AD6Z
Personal Folders	2021/07/16 04:50	BSZ4VGFV1EHN	306	SMTP	SMTP.ad6zh.mj...	AD6ZH	Re: Outbound message
Global Folders	2021/07/11 12:44	Q8NH0F6DD1CA	704	KD6PJE	KD6PJE	N6SLV...	This Week's Assignment

Message ID: BIHGDBB6CKHW
Date: 2021/07/29 23:12
From: KD6PJE
To: N6SLV; K6GAN; KO6PW; N6CK; W6KRK; N6JKH; AE6IQ; KE6EEG; KD6PJE; AD6ZH; NO6X; KJ6PFK; KN6FLC; KC7XE
Source: KD6PJE
Downloaded-from: RMS:W6SCF-10
Subject: Winlink challenge for the week ending July 31.

This week try to use a different RMS or different mode or antenna than you have used in the last month.

73
KD6PJE

Feels dated and simple
Uses very little resources
I run it on a notebook with a celeron

Session Screen

The screenshot shows the 'Packet Winlink Session' application window. The title bar includes the application name and standard window controls. The menu bar contains 'Exit', 'Settings', 'Switch to Peer-to-Peer Session', 'Channel Selection', '1200 Baud', 'Start', and 'Stop'. The main interface features a 'Connection type' dropdown set to 'Direct', a 'Via' field containing 'W6SCF-10', and a 'Connection script' dropdown. Below these are buttons for 'Edit script', 'Add script', and 'Remove script'. A status bar indicates 'Time to next Autoconnect = Disabled'. The main text area displays the following log output:

```
*** Starting WL2K packet session...  
*** Initializing Kantronics; port COM3; 9600 baud  
*** Initialization complete  
*** Ready
```

VHF station selection

Packet Channel Selector

Exit Select Channel Update Table Via Internet Update Table Via Radio

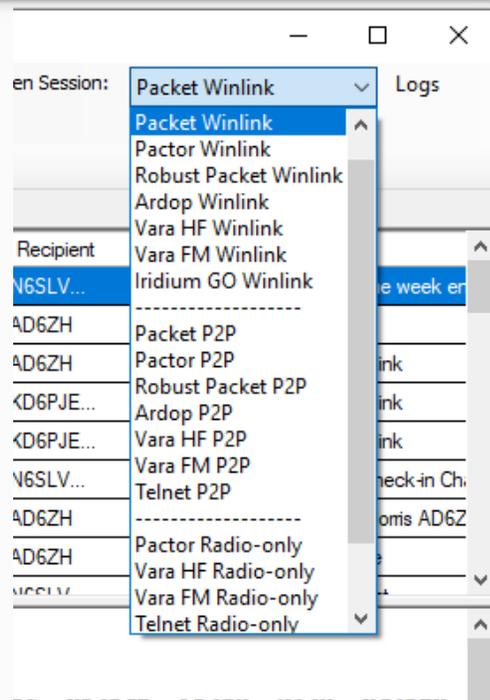
Stations found within 185 miles of your grid square.

Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (mi)	Bearing (Degrees)
K2RDX-10	145.630	1200	CM97AH	PUBLIC	005	058
W6SCF-10	145.630	1200	CM87WH	PUBLIC	006	299
K6ATH-10	145.730	1200	CM87VL	PUBLIC	017	327
K6BJ-10	145.010	1200	CM87XA	PUBLIC	017	180
W6TUW-10	144.910	1200	CM97AA	PUBLIC	018	166
WB6RJH-10	145.690	1200	CM87WA	PUBLIC	018	196
KE6AFE-10	145.630	1200	CM97CC	PUBLIC	018	130
K6BJ-11	145.710	9600	CM96AX	PUBLIC	021	168
WR6HMB-10	145.630	1200	CM87SL	PUBLIC	027	302
NZ6J-10	144.910	1200	CM87SS	PUBLIC	042	326
K9ONR-10	145.630	1200	CM87WV	PUBLIC	043	354
WA6LIE-10	145.690	1200	CM96CP	PUBLIC	045	162
KC6SSM-10	145.630	1200	CM87UV	PUBLIC	045	343
KB6HOH-11	144.910	1200	CM87RV	PUBLIC	052	328
K6SDR-10	144.910	1200	CM87RX	PUBLIC	056	331
KB6HOH-10	144.910	1200	CM88RC	PUBLIC	063	335
AI6EE-10	144.910	1200	CM88RC	PUBLIC	063	335

Winlink VHF in Santa Clara Valley

- I can get to about 8-10 RMS nodes from my house
- Clustered on several frequencies
 - Most will also 'digipeat'
 - Winlink supports going through 2 digipeaters to get to an RMS node
- You can get into a RMS in Sacramento from Saratoga by digipeating

Session Types



Supports internet (telnet), packet, robust packet (HF OFDM X.25), Pactor, Ardop, Vara HF, Vara FM, and Iridium connections.

Works in:

- winlink server mode
- person to person (P2P) without going through an RMS to the winlink server
- Radio-only modes which don't use the internet, and go to Message Pick-up Stations (MPS). Mail can be forwarded to other MPS over HF, and routing is automated. Each winlink user chooses an MPS.

HF channel selection

Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
KB6HOH-12	3570.000	V500	CM88RC	00-23	PUBLIC	63	335	95	59
K6SDR	3589.000	V2300	CM87RX	00-23	PUBLIC	56	331	95	59
KL7RI	3586.500	V2300	DM09DL	00-23	PUBLIC	198	039	92	57
W7DEM	3598.000	V2300	DM09DD	00-23	PUBLIC	181	044	93	57
KD7TNG	3590.000	V2300	CN92DE	00-23	PUBLIC	340	003	89	55
KF7RSF	7101.500	V2300	CN73SC	00-23	PUBLIC	422	343	84	55
KG7AV	7103.500	V2300	CN94IB	00-23	PUBLIC	470	005	86	54
KF7RSF	3588.000	V2300	CN73SC	00-23	PUBLIC	422	343	87	53
KF7RFI	7101.800	V2300	CN95IC	00-23	PUBLIC	542	004	87	52
N7TRY-2	7102.500	V2300	CN85NI	00-23	PUBLIC	559	356	87	51
KD7ZDO	7103.000	V2300	CN85QH	00-23	PUBLIC	556	357	87	51
KG7AV	3586.500	V2300	CN94IB	00-23	PUBLIC	470	005	84	51
K7UNI	7102.000	V2300	DN05WH	00-23	PUBLIC	591	019	84	50
W6BI	3597.000	V2300	DM04PG	00-23	PUBLIC	278	137	91	50
AJ7C	3597.000	V2300	DM04TA	00-23	PUBLIC	304	136	89	49
XE2BC	7068.000	V2300	DM12MM	00-23	PUBLIC	436	137	75	48
KF7RFI	3597.000	V2300	CN95IC	00-23	PUBLIC	542	004	78	48
KO0000	3578.500	V500	DM26JG	00-23	PUBLIC	384	098	79	47
KO0000	3589.000	V2300	DM26JG	00-23	PUBLIC	384	098	79	47
KD7ZDO	3587.500	V2300	CN85QH	00-23	PUBLIC	556	357	77	47
N0DAJ	7108.000	V500	DM340A	00-23	PUBLIC	565	111	81	47
N0DAJ	7103.000	V2300	DM340A	00-23	PUBLIC	565	111	81	47
KD6OAT	7097.000	V500	DN40BO	00-23	PUBLIC	592	064	78	47
A17HH	7103.800	V2300	DM33TM	00-23	PUBLIC	601	113	79	47
W7PLC	7101.900	V2300	CN87MA	00-23	PUBLIC	675	356	72	46

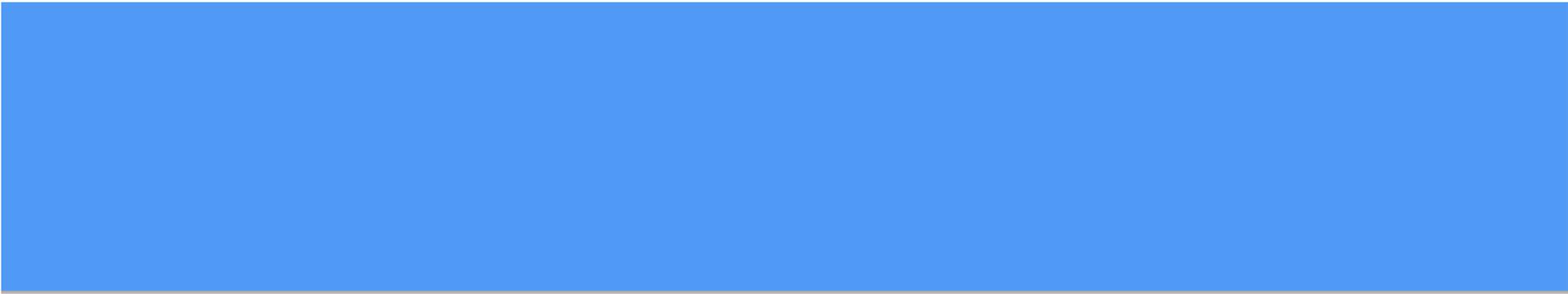
Gives probability of getting through on HF
Shows distance and bearing to station

Handy if you have a beam

Frequencies change by time of day

I did this at night

Automatically sets frequency and mode on my ICOM 7600. Just need to select one.



Demo