

# ***The Winlink***

## **Radio e-Mail Network**

### **Radio Email Update for Cruisers**

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# What is Winlink?

- Worldwide system for sending free e-mail via radio
- Provides e-mail from almost anywhere in the world.
- Provides vital support for 10,000+ sailors
- Adopted for contingency communication by many government agencies – county/state/federal
- Compatible with multiple radio “clients”
  - Winlink Express (previously RMS Express)
  - AirMail
  - BPQ32 Radio Email Client

# Emergency Communication

- “... we got nothing when we tried calling out on HF. We tried calling the Maritime Mobile Net, but nothing was out there. As a last-ditch effort, we used Winlink to e-mail the Coast Guard for help. Within an hour, we heard a C-130 plane, and later, a helicopter overhead.”
- *Doug Faunt, N6TQS*
- (Bounty survivor)
- 14 of 16 Crew rescued





# CMS Servers... *the brains of Winlink*

- Provide redundancy (only 1 required to run the system)
- Protection from cyber attacks, DOS attacks, loss of local internet, loss of power.
- These are ***NOT*** “in my closet” servers!!

***Winlink San Diego Server  
in 1 of these secure  
cabinets! .***



# What do you need?

- Laptop or tablet computer (Windows, Apple or Linux)
- Get help with the installation! (hardware & software)
- Someone that has *real* experience on small boats.
- HF Radio (Ham or Marine SSB)
- Beware of outrageous claims (e.g. ground systems)
- *Good* antenna tuner!
- *Good* Installation:

*Make **SURE** it **works** and you **know** how to **use** it...*  
***BEFORE** leaving the dock!*

- RF on a boat is not

Amateur Radio Safety Foundation, Inc.  
• Line isolator magic...it takes sound

# Winlink Connection Modes

- **HF Pactor 1, 2, 3 and 4** – Fast and reliable but requires an expensive modem (\$1500+). *(PI NOT recommended/minimal support)*
- **HF WINMOR** – “Poor man’s Pactor”. Not as good as Pactor, but operates with inexpensive sound card device (\$100). Speed between Pactor 2 and 3.
- **Robust Packet** - Not as fast/reliable as Pactor 2-4 (\$400 Tracker Modem)
- **VHF/UHF Packet** *(short range typically < 20 miles)*
  - 9600 baud – Fast, reliable with good signal, range limited and requires \$400 modem (Kantronics or SCS Tracker) and 9600 baud data radio .
  - 1200 baud – ~~Slower, but can use inexpensive Byonics~~ <sup>Antenna</sup> ~~Antenna~~



# “Sound card” Modes: WINMOR & future ARDOP

- Replace Pactor TNC (modem) with *free* DSP software and common sound card.
- External SignalLink soundcard costs about \$100 and works well for WINMOR and ARDOP and most other digital modes.



- Future Winlink “appliance” to support ARDOP (Amateur Radio Digital Open Protocol) and other sound cards modes with built in Single board computer DSP processor & sound card. (In preliminary testing).
- Many new HF radios have built-in USB soundcards.
  - Icom 7100, 7200, 7300, 7410, 7600, 9100, Kenwood TS590S/SG, Yaesu FT-991
- “Plug and Play” <sup>Amateur Radio Safety Foundation, Inc.</sup> with a *SINGLE USB cable and minimal*



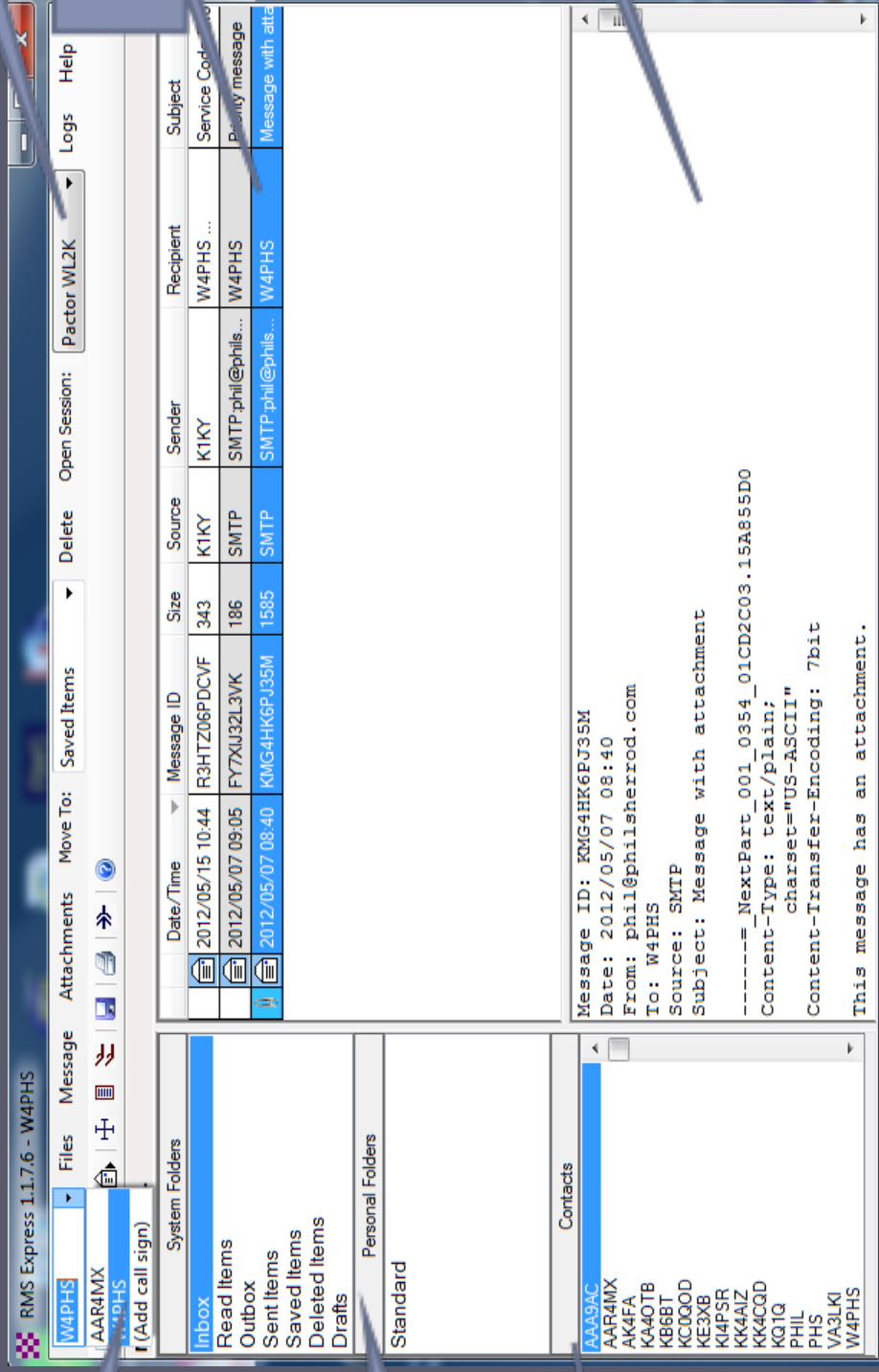
# Client Programs

- A Client program is a special “email-like” program with additions for connecting to a radio, TNC(radio modem) and remote radio server.
- AirMail....Mature and well established. Compatible with Sailmail.
- BPQ32 More “nuts and bolts” and configuration files but will work with most hardware and run on Windows or Linux
- Winlink Express (prior RMS Express) Full featured. Will run on Windows or Apple under Dual boot (e.g. Parallels, VM Ware)
- *WINLINK system, Winlink Express, and WINMOR are free and the Amateur Radio Software Foundation **NOT** expire...but your \$24*

# Winlink Express E-mail Client Program

Multiple modes:  
Pactor,  
Robust Packet,  
Packet  
WINMOR  
Telnet (Internet)  
Future ARDOP

Supports  
Multiple user  
call signs



Message  
summary

Radio  
Email  
Message

Personal  
message  
folders

Contacts  
address  
book

# Winlink Express Channel List... (but Who do I call?)

**HF Channel Selector**

Exit Filter Select Update Table Update Table Via Radio SSN

Pactor channels available at 1200Z, Up to 20000 Kilometers, Q >= 12

Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (Kilometers)	Bearing (Degrees)	Path Quality Estimate
N0IA	7063.900	P1, P2, P3	EL98JV	00-23	PUBLIC	952	145	48
HP2XBA	21102.900	P1, P2, P3	EJ88RK	00-23	PUBLIC	3095	171	48
AE5R	10141.200	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	48
KN6KB	7083.000	P1, P2	EL98PF	00-23	PUBLIC	1041	144	48
W5SEG	7098.500	P1, P2, P3	EL19AN	00-23	EMCOMM	1258	238	47
HP2XBA	18119.000	P1, P2, P3	EJ88RK	00-23	PUBLIC	3095	171	48
W0MAC	7101.200	P3	EM20GB	00-23	EMCOMM	1037	233	47
W0MAC	7066.900	P1, P2	EM20GB	00-23	EMCOMM	1037	233	47
KB5HCD	7096.000	P1, P2	EL29FU	00-23	PUBLIC	1058	232	47
W5SEG	7067.500	P1, P2, P3	EL19AN	00-23	EMCOMM	1258	238	47
KK5AN	7103.400	P3	EM11CC	00-23	PUBLIC	1147	245	47
KJ6VW	21122.500	P1, P2, P3	FK87ML	00-23	PUBLIC	3125	125	47
VE1YZ	14114.000	P1, P2, P3, P4	FN84BG	00-23	PUBLIC	2162	056	47
VA3LK1	7092.000	P1, P2, P3	EM20GB	00-23	PUBLIC	1037	233	47
KB5HCD	7065.300	P1, P2, P3	EL29FU	00-23	PUBLIC	1058	232	47
KF5JUK	7105.900	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	46
WB0TAX	10143.700	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	46
K6IXA	14063.900	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	46
K6CYC	14108.500	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	46
K6IXA	14102.700	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	46

Estimate of Signal Path Quality

Service Code Group

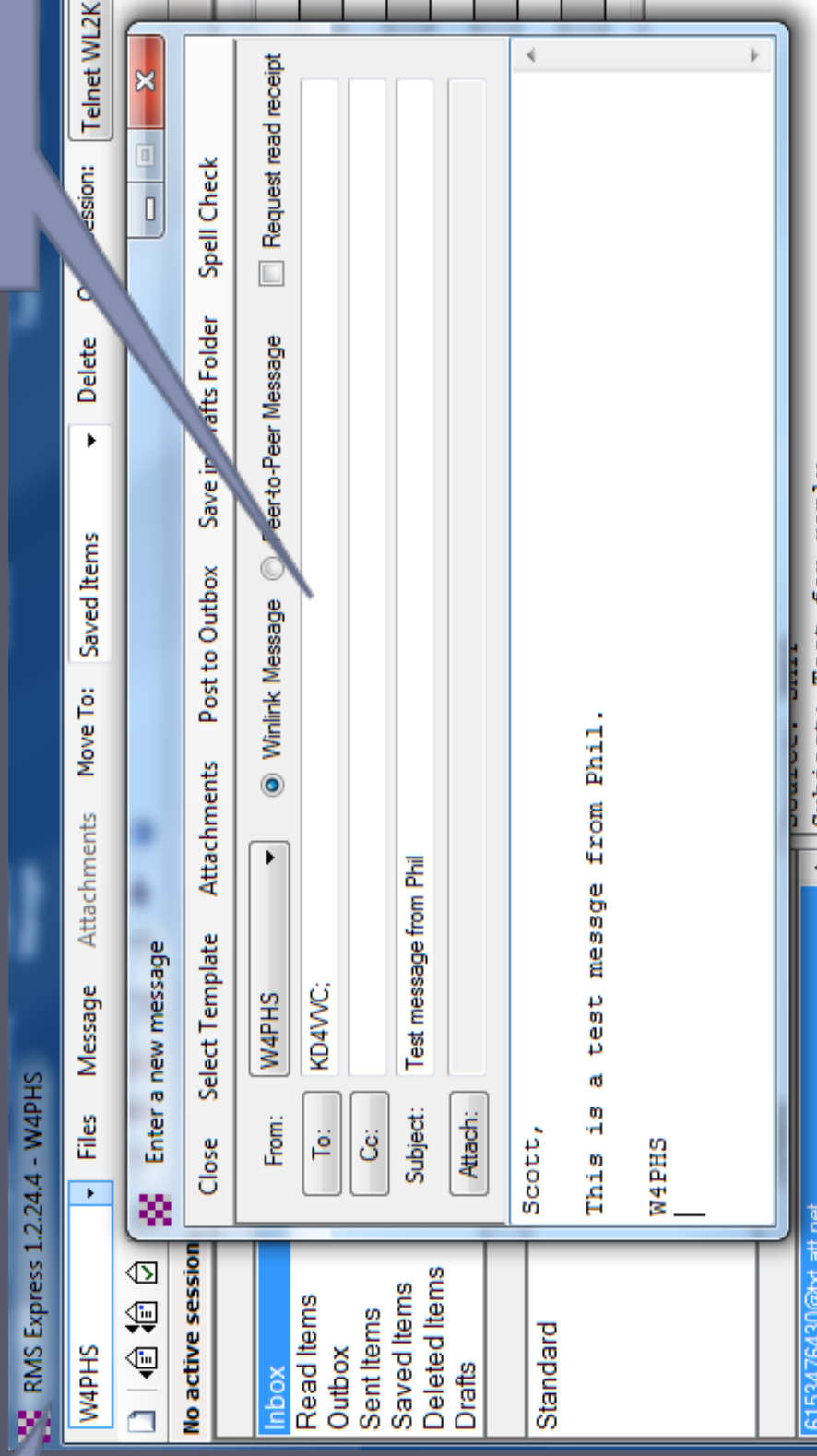
Pactor Modes Supported on this Frequency

Tools like this are helpful but understanding HF propagation takes practice! Develop a list of 4 or 5 favorite stations.

# Composing a Message in Winlink Express

Click to start  
a message

- Similar to most email programs



# Attachments over Radio!

- Remember this is slow HF radio (or slow satellite radio) not a 25 Mb/sec WiFi connection.
- Always be cognizant of what adds to message bulk:
  - Pictures (.jpg, .gif, .png, .avi etc.)
  - Formatted Text docs (.doc, .pdf, etc.)
  - Sound files (.wav, .mp3 etc.)

Remind corresponds: No videos, only tiny pictures, No emoticons! *Learn how to resize pictures!*

Keep weather requests bounded: Satellite pics usually > 25K, WEFAX > 10 K, GRIB files 3-50K...don't request high resolution, large area, multi day GRIB files.

*In Winlink ~~shorter~~ messages Amateur Radio Safety Foundation, Inc. always go first!*

# New Winlink Express Features

- Secure login now required (security feature)
- Winlink Express Registration:
  - Optional but \$24 Registration donation helps offset real operating costs. Prior WINMOR registration is OK.
- Numerous bug fixes and minor enhancements.
- Form (template) support expanded (emergency and/or rally support.)
- Radio support added:
  - Kenwood TS-590SG, Icom 7300, 7410, CODAN radios

# How to get familiar with Winlink Express

- Winlink Program Group
  - [https://groups.yahoo.com/neo/groups/Winlink\\_Programs\\_Group](https://groups.yahoo.com/neo/groups/Winlink_Programs_Group)
- What is Winlink? Video by Rick Frost K4REF
  - [www.winlink.org](http://www.winlink.org)
- Quick Start for Mariners
  - [http://winlink.org/content/quick\\_start\\_links\\_mariners\\_and\\_everyone](http://winlink.org/content/quick_start_links_mariners_and_everyone)
- The Winlink Book of Knowledge
  - [http://winlink.org/content/winlink\\_book\\_knowledge](http://winlink.org/content/winlink_book_knowledge)
- When all else fails....**READ THE HELP FILES!**

*Just 3 clicks will zero you in to most topics!*  
**Your Help options are limited once you've "pulled the plug" !**

- E.g. **1)Help, 2)Help Index, 3)GRIB file requests**

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# What Can't I send/receive over Amateur Radio ? ...A Clarification from the FCC

- No Encryption... Compression (B1, B2F etc.) with public algorithms is **NOT** encryption (in use since mid 1980's)
- You can **occasionally** order spare parts, equipment etc. but not on a regular basis.
- You cannot order '**for fee**' informational services (weather reports, stock reports etc.) that are delivered via amateur radio. This is the case **even** if the report arrives indirectly via a non amateur third party.
- You cannot **conduct any business** activity over amateur radio.
- Winlink has been in communications with the FCC on this and we are awaiting a formal clarification of this often

# Winlink...what to expect in 2017

- Internal CMS enhancements for reliability, robustness and security.
- ARDOP Deployment for Winlink Express and all RMS radio servers (Windows and BPQ)
- Winlink “Appliance” A “super sound card” with built in DSP and support for ARDOP will work across all computer platforms.
- Possible Short Message System support. Ability to send short fast SMS text messages via tablet and cell phone devices.
- Now doing initial testing of “Instant SMS Message” client programs like **AKIM** by Anatoliy Baitov, Radio Faulty Foundation, Inc. Bob Cummings, NW8L based on the

# Conclusion

- WINLINK is a proven system in *CONTINUOUS* use since 1999 and has served thousands of sailors and marine interests with > 99.9% uptime!
- The all-volunteer Winlink Development Team continues to enhance capabilities, improve robustness, advance protocols and adapt to changing needs.
- Winlink supports radio/satellite email, location services and weather products for the sailor.
- Winlink Express is a complete and supported radio client providing many tools to the Sailor and EmComm user.



- More info and links on the Handout
- Thanks for your interest and support of the Winlink system and the Amateur Radio Safety Foundation Inc.
- Fair Winds and following seas!