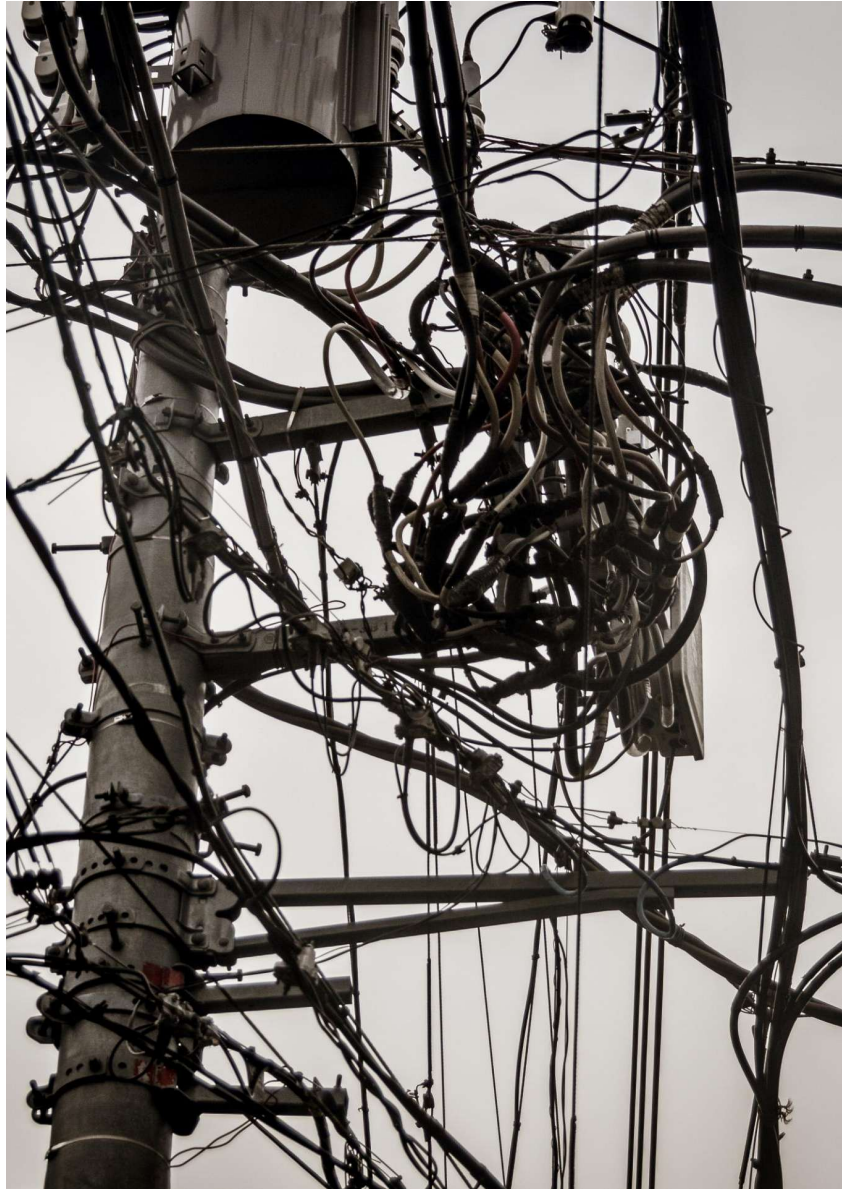


RESILIENT COMMUNICATIONS

MORE TOOLS FOR THE HAM TOOLBOX



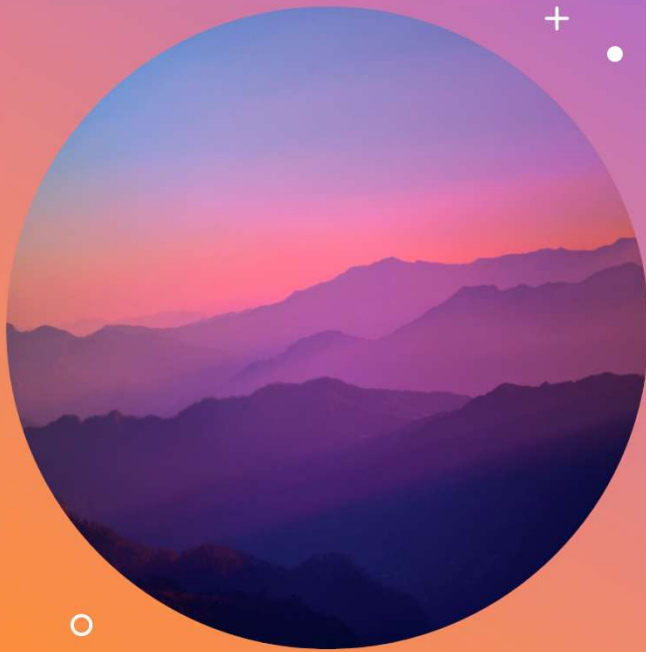
Newport County Radio Club
August 11, 2025
Bob WB4SON



RESILIENCY

- Traditional communication infrastructure is prone to damage from natural disasters and accidents, leading to service interruptions
- Storms can and do take out the internet, phones, power, etc.
- Our bay is beautiful but can create vulnerabilities such as flooding and even nautical accidents

As Radio Amateurs, we are already part of the resiliency solution, but some non-ham tools can add to our capabilities



AGENDA

Starlink Internet Service
Winlink Email

WHAT IS STARLINK?

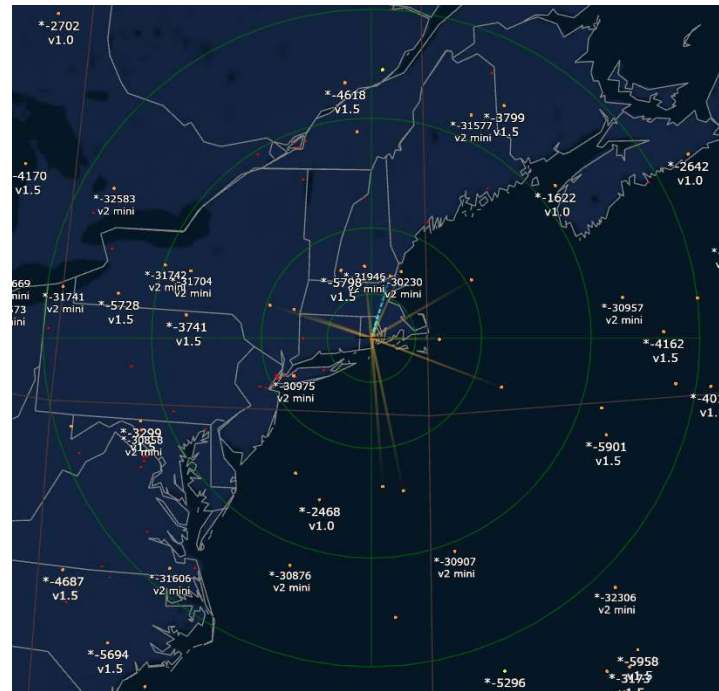
- Commercial satellite-based internet (2019)
- Over 8000 satellites in orbit, growing at a rate of 2,300+ a year => 42,000 goal
- Each satellite orbits about 350 miles above the earth, weighs a bit under a ton, and has a fuel lifespan of about 5 years
- There are over 6 million subscribers today + (adding about 2.5 million per year) • ○
- Peak speeds: 475Mbps down/75Mbps up, Average: 105Mbps down/15Mbps up



ALL THOSE SATELLITES!!



Starlink in Orbit around Earth



23 Satellites above my house

Residential antennas are larger and intended for fixed installations.

- 24"x15" weighing 6.5 pounds
- Needs 65 watts average (100 watts peak when melting snow)
- Costs about \$99 for the hardware and plans vary from \$80/\$120 a month

Roaming systems are much smaller/lighter and can be used anywhere

- 12x10" weighing 2.5 pounds
- Needs about 30 watts average (Peak of 60 watts if melting snow).
- Cost \$300 for hardware and \$10/month (10GB/Month) up to \$165 unlimited
- Router is built into the antenna!!

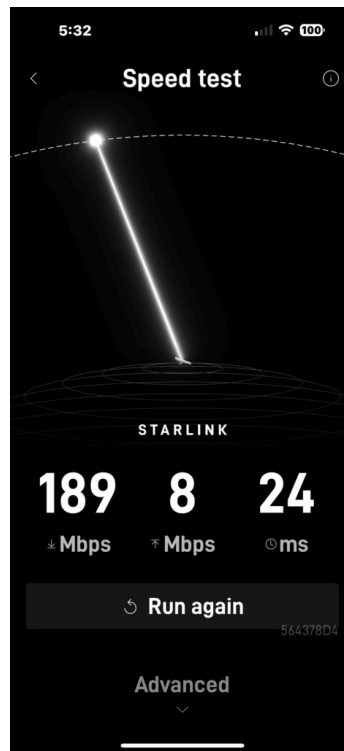
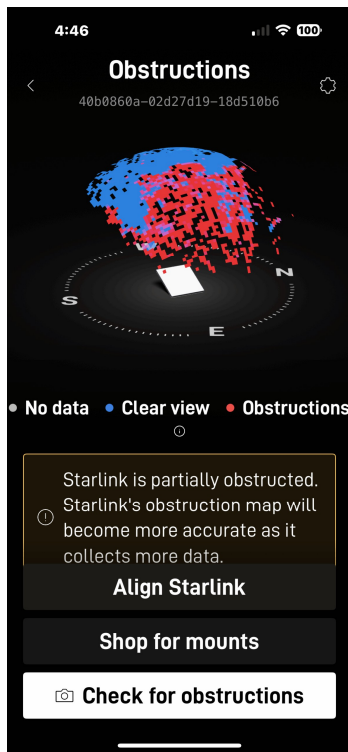


RESIDENTIAL

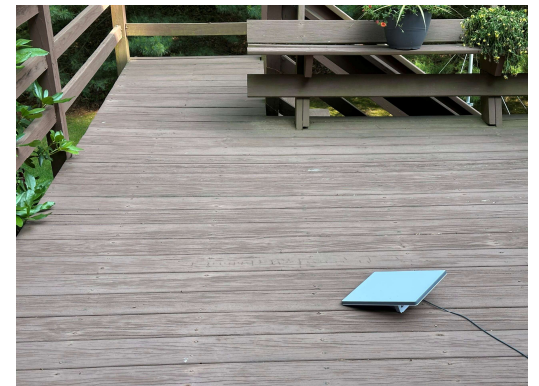


ROAMING

REAL LIFE EXPERIENCE



150' trees everywhere but up



Starlink Mini on deck



WINLINK

Winlink is an Email system first used in the 1980s by blue-sea boaters. It really took off around 2000 as it was adopted for Public Safety

Just like traditional email systems...

- You can send and receive messages
- You can have attachments (120KB limit)
- You can run the Winlink Express email client on your Windows PC

BUT – No Public Internet Connection is required!!!
In addition to a regular internet connection, you can use HF and VHF/UHF Radio Connections



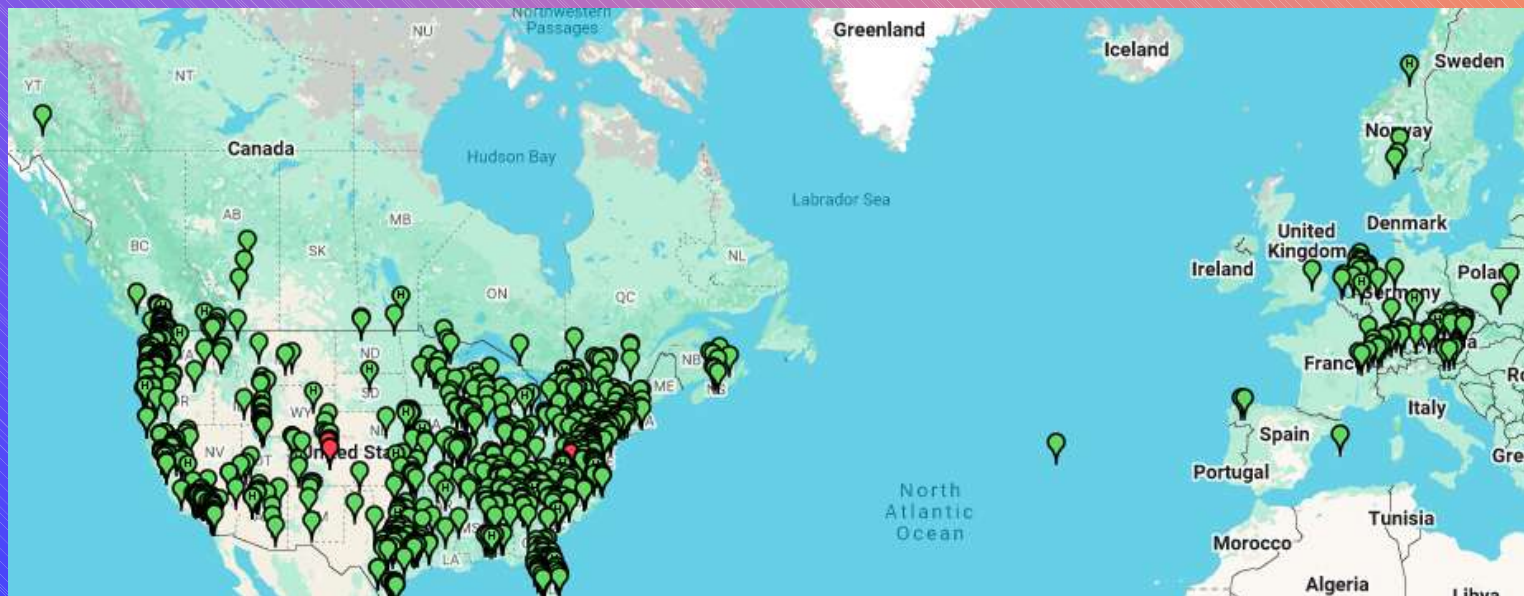
Why Use Winlink??

- Think of a disaster like a hurricane – Cell phones, internet, and power are impacted
- The area where communications have been disrupted is the “Donut Hole”. This might be tens or hundreds of square miles
- Surrounding that hole is where all the good stuff is still working, like the public internet
- Winlink RF is used to communicate outside of the Donut hole

Best reason of all: Wildly adopted messaging standard!!

How popular??

- 4,200+ gateways on the air 24x7
- Tens of thousands of users
- 100,000 messages a month



A FAIRLY TYPICAL WINLINK STATION



- Windows Computer
- VHF or HF Radio, Power Supply, Antenna
- Radio to Computer Interface
 - Audio In & Out for RX and TX
 - PTT Control

Alinco VHF and DRA-50 shown

Typical Radio to Computer Interfaces

- Signalink – about \$120 to \$150 with radio cable



- DRA-50 – about \$125 with cables (DIN)



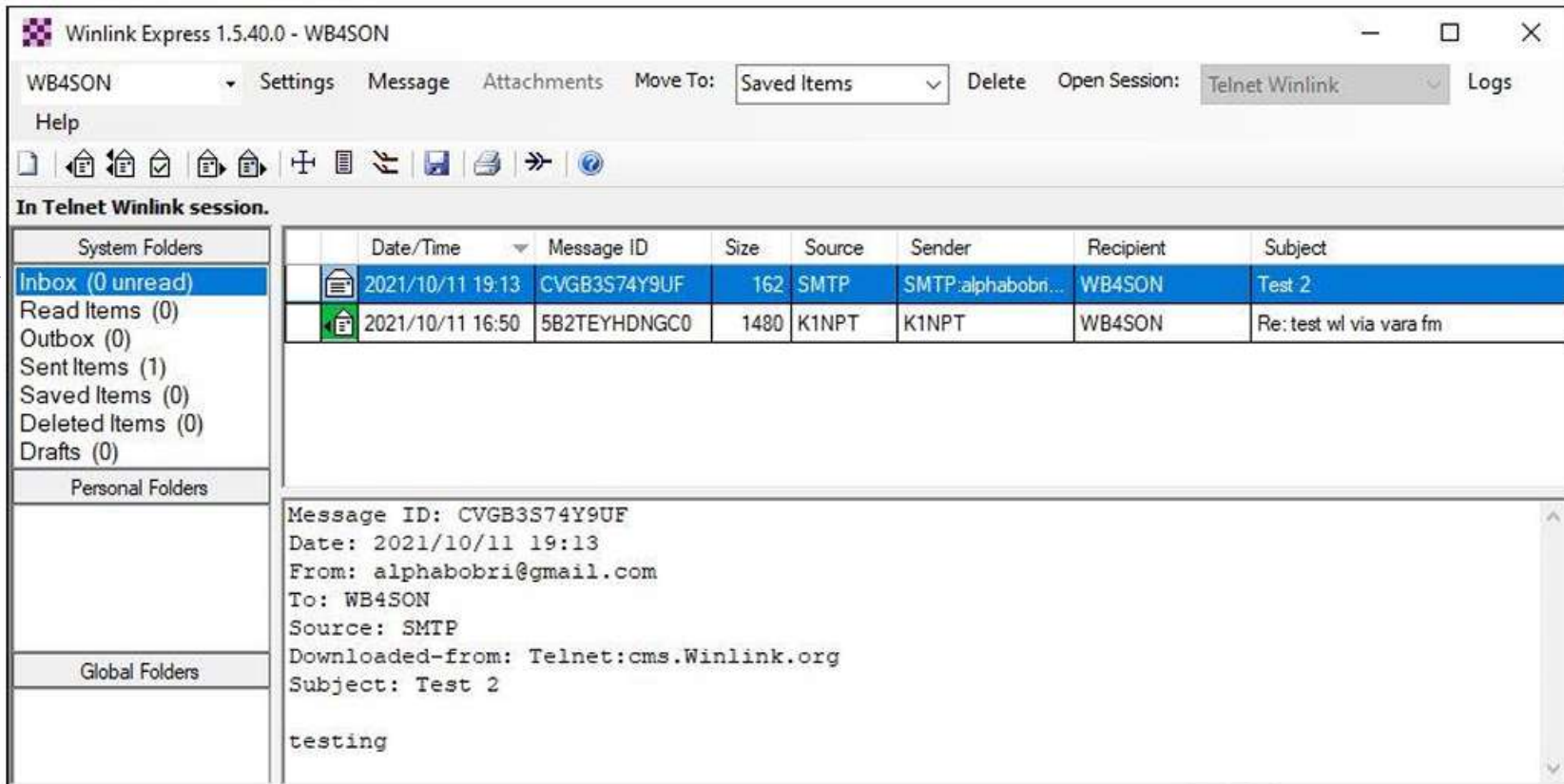
- Built-in like IC-7300 and IC-9700



Install and Register Winlink x •

- Go to Winlink.org
- Registration will require your call sign information and mailing address
- Winlink is free but you are encouraged to donate \$25, which gets you a registration key
- Your call sign becomes your Winlink address like WB4SON@winlink.org
- Install RMS Express (Winlink Software) – slow speed VARA modem is included
- You might consider registering VARA FM/HF for \$70

What does RMS Express look like?



Winlink Express 1.5.40.0 - WB4SON

WB4SON Settings Message Attachments Move To: Saved Items Delete Open Session: Telnet Winlink Logs

Help

In Telnet Winlink session.

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)	2021/10/11 19:13	CVGB3S74Y9UF	162	SMTP	SMTP:alphabobri...	WB4SON	Test 2
Read Items (0)	2021/10/11 16:50	5B2TEYHDNGC0	1480	K1NPT	K1NPT	WB4SON	Re: test wl via vara fm
Outbox (0)							
Sent Items (1)							
Saved Items (0)							
Deleted Items (0)							
Drafts (0)							

Personal Folders

Global Folders

Message ID: CVGB3S74Y9UF
Date: 2021/10/11 19:13
From: alphabobri@gmail.com
To: WB4SON
Source: SMTP
Downloaded-from: Telnet:cms.Winlink.org
Subject: Test 2

testing

- 
- Starlink Website: <https://www.starlink.com/>
 - Realtime Map: <https://satellitemap.space/>
 - Fun facts: <https://www.space.com/spacex-starlink-satellites.html>
 - Starlink & Ham Radio: https://www.youtube.com/live/o1j45Sj_4BQ

 - Winlink Website: <https://winlink.org/>
 - VARA FM & HF: <https://rosmodem.wordpress.com/>
 - Set up for IC-7300:
<https://www.youtube.com/watch?app=desktop&v=ijxkqvqkOyw&t=0s>
 - DRA-50 Radio interface:
<https://masterscommunications.com/products/radio-adapter/dra/dra50m.html>
 - Winlink Thursday Drills: https://emcomm-training.org/Winlink_Thursdays.html
 - Winlink Basics: [Winlink Basics for PART – wg1v.org](http://Winlink Basics for PART - wg1v.org)

REFERENCES