

Winlink Overview

Jan (KD7ZWV)

Murray Amateur Radio Club (MARC)

Background

- ▶ I recently attended a series of classes that were offered by an ARES group in California (specifically the North LA area)
- ▶ These classes presented a lot of information about Winlink
- ▶ All of the classes were recorded and are available online <http://www.wavetalkers.com/>
- ▶ The ARES LAX group is going to run the classes again starting September 10th
- ▶ I highly recommend these classes, which are presented via Zoom

So What is Winlink?

- ▶ In general, Winlink is a way to send e-mail via radio
- ▶ One of the goals of Winlink is to provide reliable message passing
- ▶ Reliable means that if you send it, the recipient will be able to receive it
- ▶ Winlink is a GLOBAL system... it is not limited to a local region
- ▶ Winlink operates on amateur bands AND on some commercial radio services AND on the Internet
- ▶ Winlink does NOT require the Internet to deliver messages
- ▶ ***“Winlink Global Radio Email®...is a network of amateur radio and authorized government-licensed stations that provides worldwide radio email using radio pathways where the internet is not present.”***

What is Winlink?

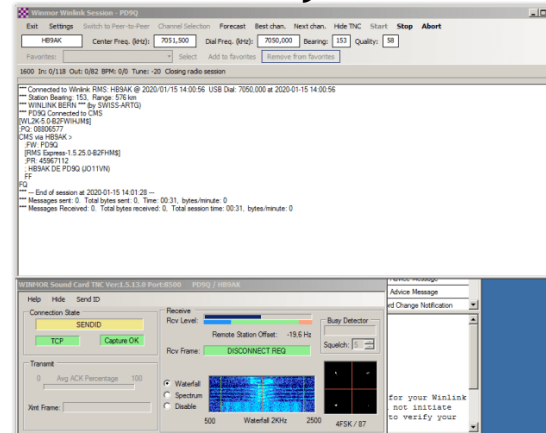
- ▶ Built, maintained, and managed by amateur radio operators
- ▶ Supports e-mail with attachments, position reporting, weather, and informational briefings
- ▶ Well known for use in interoperable emergency and disaster relief communications
- ▶ The group that builds and maintains it is called the Amateur Radio Safety Foundation, Inc. (a non-profit organization)
- ▶ Can operate entirely without the Internet (for times when the net is down)
- ▶ <https://winlink.org/>

How Does It Work?

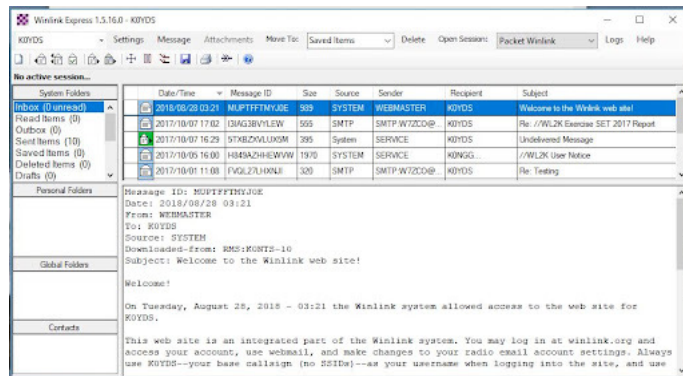
CMS Cloud



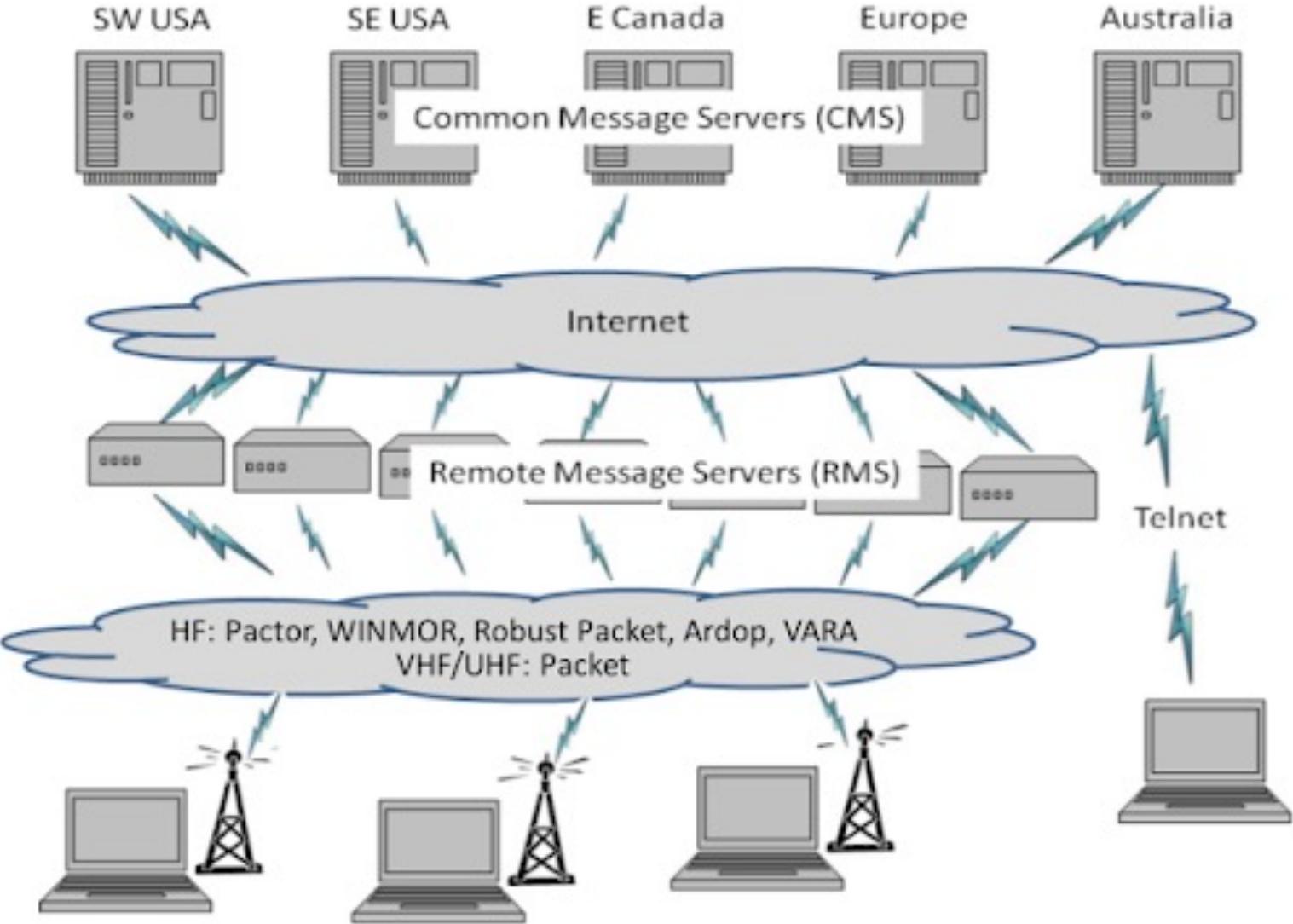
RMS Gateway



Client
e.g. Winlink Express



How Does It Work?



How Does It Work?

▶ Clients

- ▶ Winlink Express - <https://winlink.org/WinlinkExpress>
- ▶ Outpost - <https://www.outpostpm.org/index.php>
- ▶ AirMail - <http://www.siriuscyber.net/ham/>
- ▶ Pat - <https://getpat.io/> (cross platform, written in Go)
- ▶ WoAD - <https://woad.sumusltd.com/> (Android)
- ▶ Paclink - <https://winlink.org/Paclink> (gateway to normal e-mail clients)

How Does It Work?

- ▶ Communications Protocols
 - ▶ HF
 - ▶ PACTOR
 - ▶ ARDOP
 - ▶ VARA HF
 - ▶ VHF/UHF
 - ▶ AX.25 Packet
 - ▶ VARA FM
 - ▶ Network (Internet, AREDN, LAN)
 - ▶ Telnet

How Does It Work?

- ▶ Just like sending e-mail with an e-mail client
- ▶ Can send to/receive from Internet e-mail addresses!
- ▶ Can send attachments (files, pictures, etc.)
 - ▶ be careful about the size... keep in mind that you're probably not going to get more than 300 baud over HF (except maybe with VARA) and typically 1200 baud on VHF
- ▶ Can send/receive HTML forms (sends only the form data, not the entire form)
- ▶ Is used extensively in EMCOMM environments

How Does It Work?

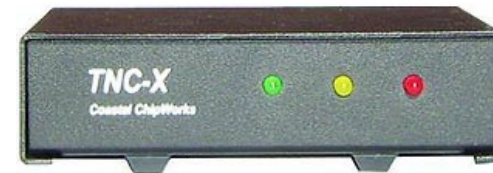
DEMO TIME

Recommended Configurations

- ▶ VHF/UHF
 - ▶ Packet Radio
 - ▶ TNC, radio
 - ▶ Software TNC (UZ7HO), audio interface, radio
 - ▶ VARA FM, audio interface, radio
- ▶ HF
 - ▶ PACTOR (1-4), audio interface, radio
 - ▶ ARDOP, audio interface, radio
 - ▶ VARA HF, audio interface, radio
- ▶ Other

What's a TNC?

- ▶ Terminal Node Controller
 - ▶ Kantronix KPC-3 or similar
 - ▶ MFJ-1270X
 - ▶ Mobilinkd TNC
- ▶ Radio with built-in TNC
 - ▶ Kenwood TH-D7, TH-D72, TH-D74, TM-D700, TM-D710
- ▶ Pi-TNC “hat” for Raspberry Pi
 - ▶ (WVC ARC sells one on etsy)



Audio Interface

- ▶ Connects the radio to the computer
- ▶ Most people use something like the Signalink
 - ▶ Provides an audio device to the computer
 - ▶ Isolates the radio from the computer
 - ▶ Simplifies the configuration for different radios
- ▶ Other products are available, or home brew
 - ▶ <http://www.db.net/~db/hownotto.pdf>
 - ▶ <http://audiosystemsgroup.com/HamInterfacing.pdf>



Other Interfacing

- ▶ For HF, you need some type of CAT control so the software can change the band/frequency on the radio
 - ▶ most HF radios have a control/command port
 - ▶ you might need to build a cable yourself
- ▶ VHF/UHF mode does not support automatic radio control
 - ▶ you'll have to tune the radio to the right band/frequency manually

So What's This “Other” Thing?

- ▶ Internet Protocol
 - ▶ Winlink uses the “telnet” protocol
 - ▶ Works anywhere you have Internet access
- ▶ AREDN
 - ▶ provides an IP network
 - ▶ Use the “telnet” protocol in Winlink
 - ▶ Connect to other nodes/RMS Gateways on the same AREDN network
 - ▶ *fast fast fast!*

More Advanced Things

- ▶ **RMS Gateway**
 - ▶ can run multiple protocols (i.e. VHF, UHF, HF, and AREDN)
- ▶ **Digipeating**
 - ▶ YOU might not be able to reach a working gateway
 - ▶ someone else can
 - ▶ you can route to them via digipeating (you send it to his node, his sends to the gateway)
- ▶ **Attachments**
 - ▶ images, files

Forms

- ▶ Winlink supports encoding form data

DEMO TIME

Let's Talk a Little About VARA

- ▶ High performance digital “modem”
- ▶ Three versions - VARA HF, VARA FM, VARA SAT (for QO-100 geosync satellite)
- ▶ Requires a license key for some features
 - ▶ higher speeds
 - ▶ “digipeat” capability
- ▶ <https://rosmodem.wordpress.com/>
- ▶ there is some controversy about this software

Q&A and Resources

- ▶ <https://www.winlink.org/>