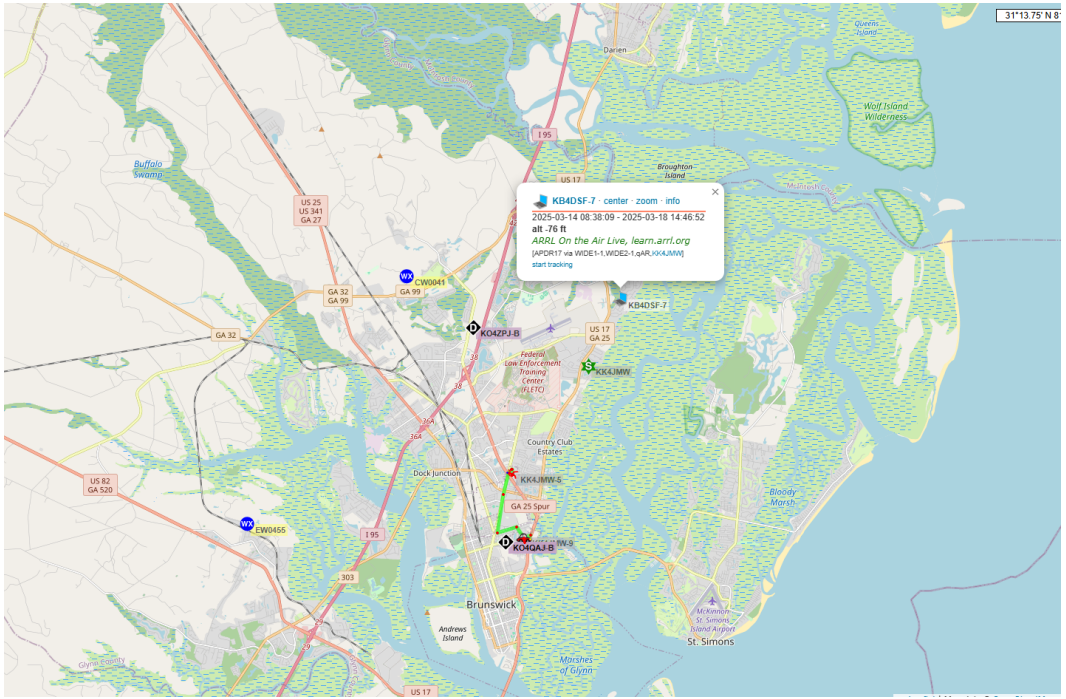
On the Air Live: APRS

wgreene@ARRL.org

ARRL
The National Association for Amateur Radio®

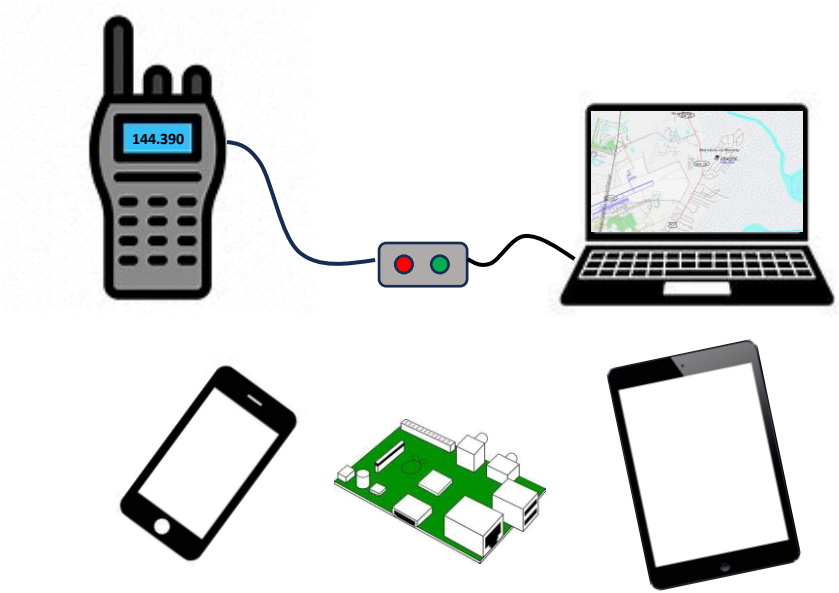
To Cover

- What is APRS
- APRS Paths
- Digipeaters
- iGates
  - APRS-IS
    - Extended capabilities



Data Modes with the HT

- Computing Device
- Soundcard or TNC
- Efficient communication
- Fast, accurate data transfer
- Transfer files
- Text communication
- Pass location information
  - GPS
  - Lat/Long
  - What Three Words



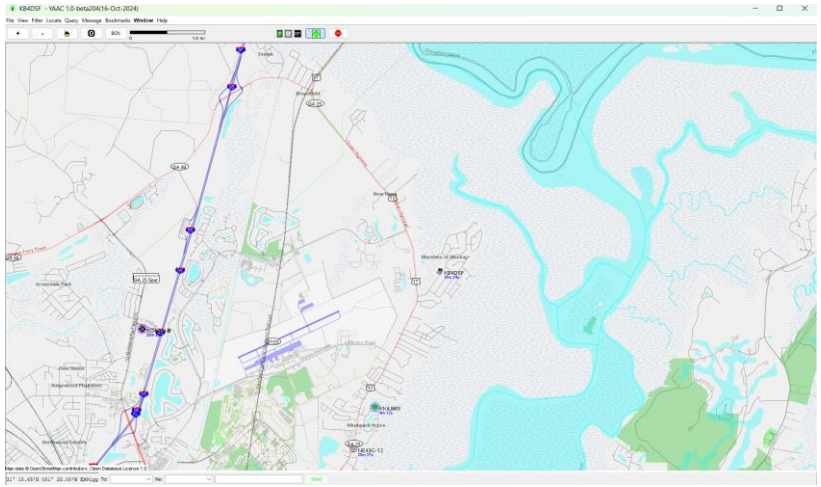
Soundcards and TNCs

- Transmitted data is converted to audio via a soundcard or a Terminal Node Controller
- Soundcards can operate any data mode including packet radio and APRS
  - Can also be used for SSTV
- Terminal Node Controllers are specific to packet radio to include APRS
  - Hardware and software TNCs

Software

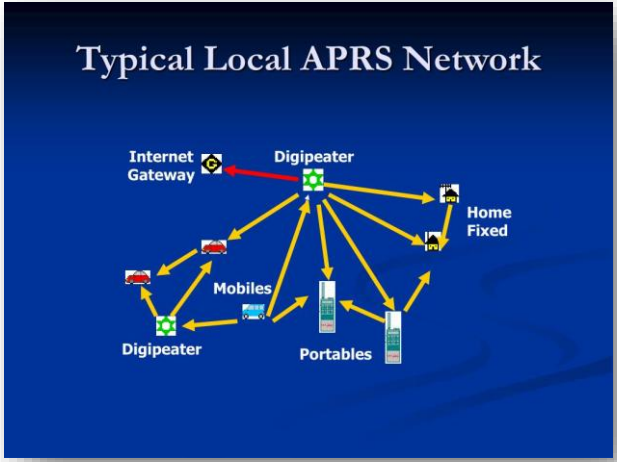
- YAAC
  - Yet Another APRS Client
- Direwolf
  - Software TNC
- APRS-IS Passcode
  - n5dux.com/ham/aprs-passcode/
- Pinpoint APRS: pinpointaprs.com
  - Windows
- Xastir APRS: xastir.org
  - Linux
- Soundmodem: uz7.ho.ua/packetradio.htm
  - Software TNC
- AGWPE:Soundpacket.org/2agwget.aspx
  - Software TNC

Direwolf

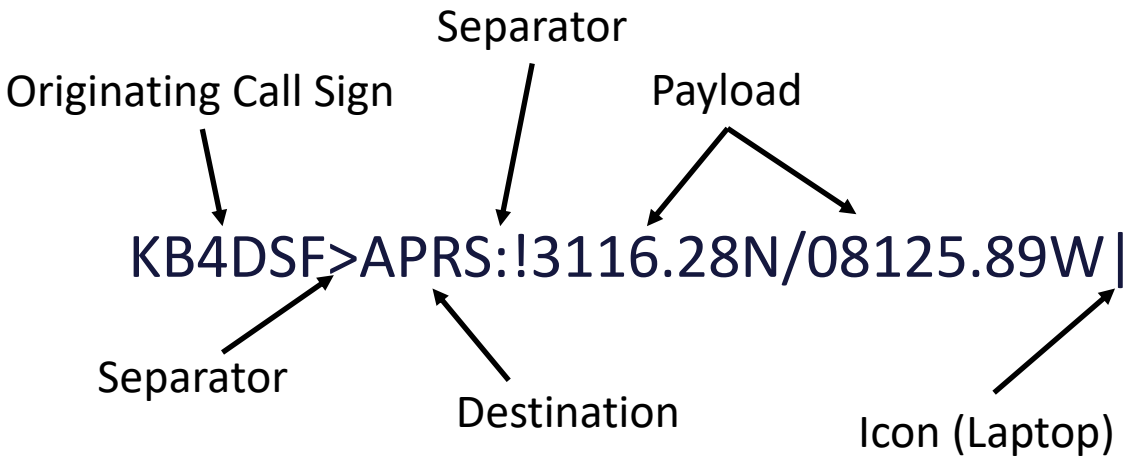


Automatic Packet Reporting System

- APRS: two-way, tactical, real-time digital communications system: 144.390 MHz
- Decentralized, local, information sharing network, no need for internet*
- Network can be as simple as two APRS devices operating in simplex
- Can be substantial consisting of multiple user devices, digipeaters*, and iGates
- Data can include:
  - GPS location
  - Text messages
  - Telemetry and weather data
  - Objects
    - Field Day location, emergency shelters, etc
  - Bulletins



APRS Message Format



Simplex APRS Message Format

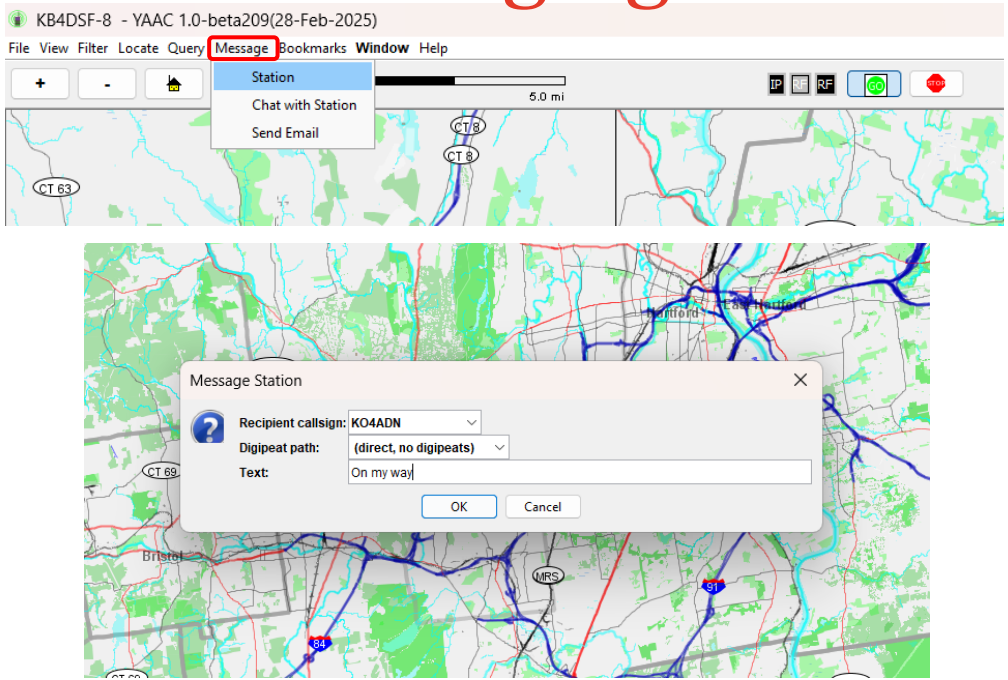
KB4DSF>KO4ADN:On my way

- Simplex
- No digipeaters but can be gated to the internet

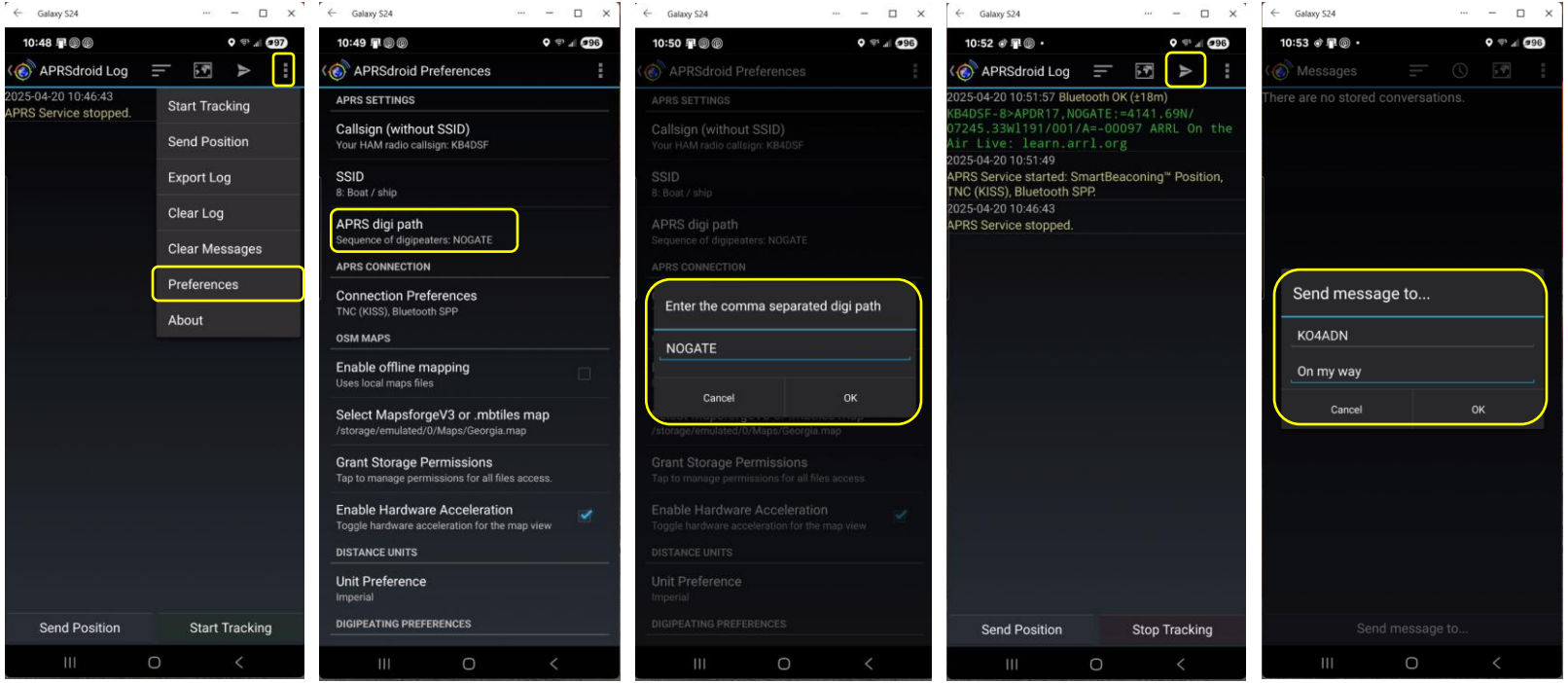
KB4DSF>KO4ADN,NOGATE:On my way

- Simplex
- No repeaters, no iGates
  - NOGATE, RFONLY, or both

Simplex APRS Messaging with YAAC

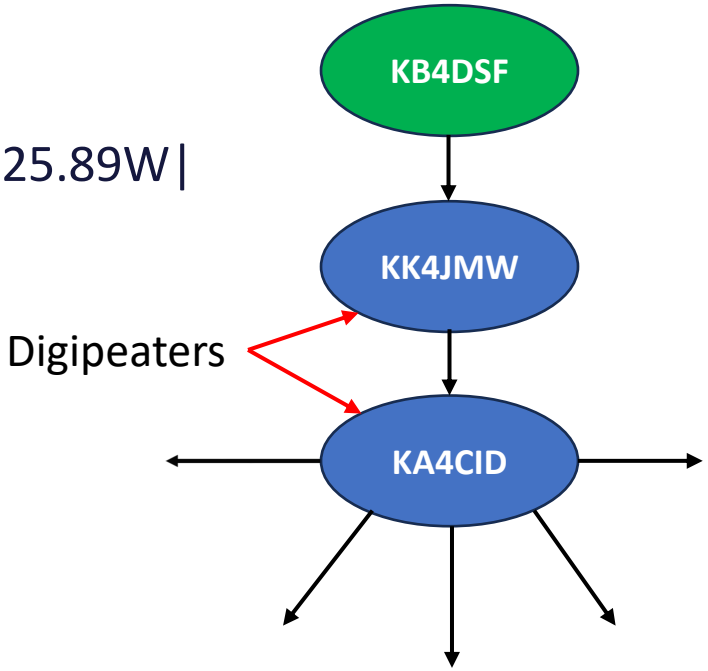


Simplex APRS Messaging with APRSdroid



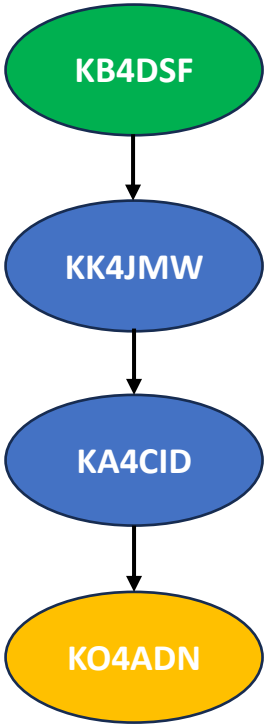
APRS Directed Path

- KB4DSF>KK4JMW,KA4CID:!3116.28N/08125.89W|

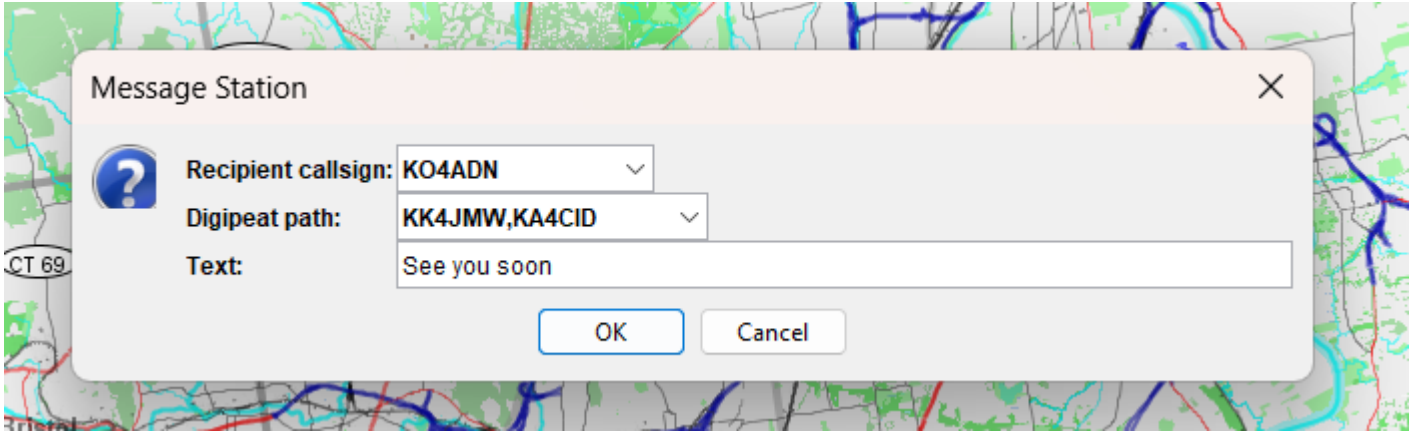


APRS Directed Path

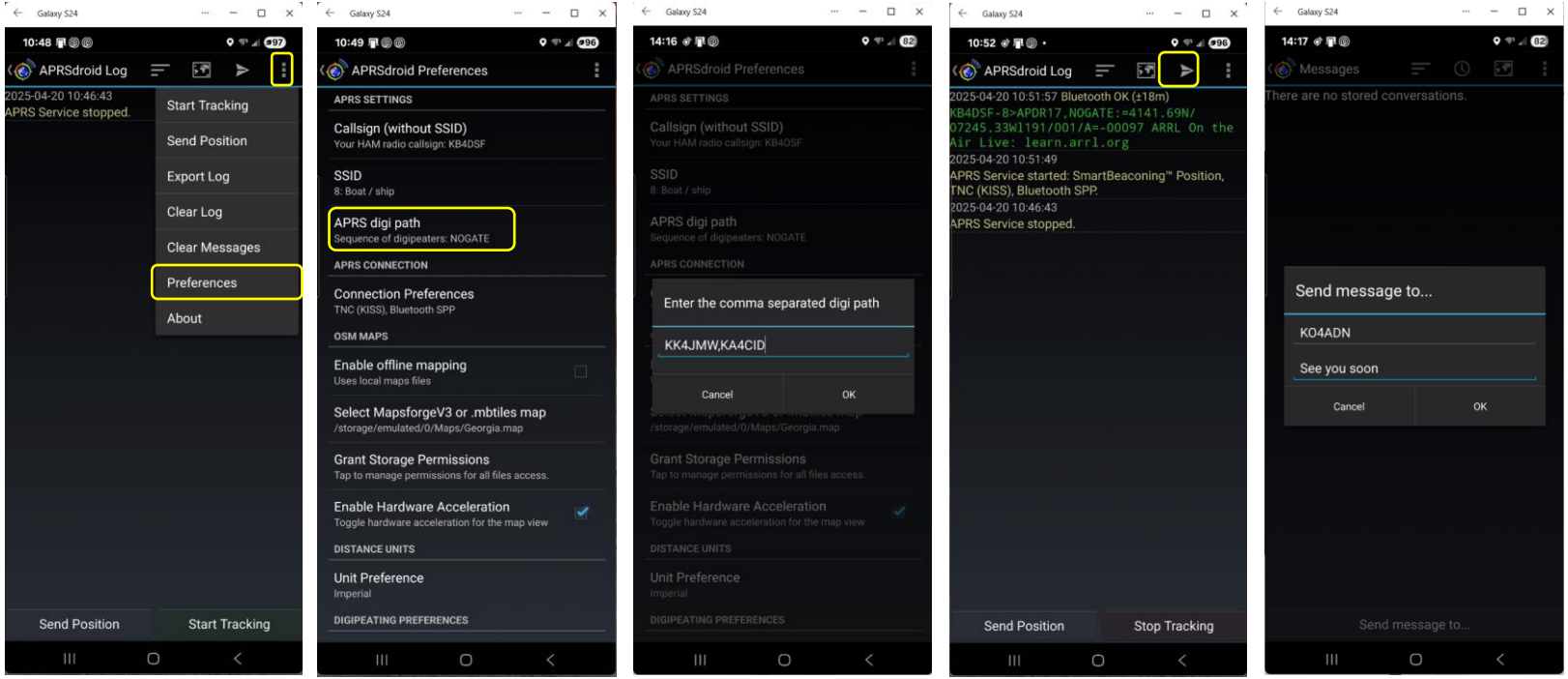
- KB4DSF>KK4JMW,KA4CID,KO4ADN:See you soon



APRS Directed Path

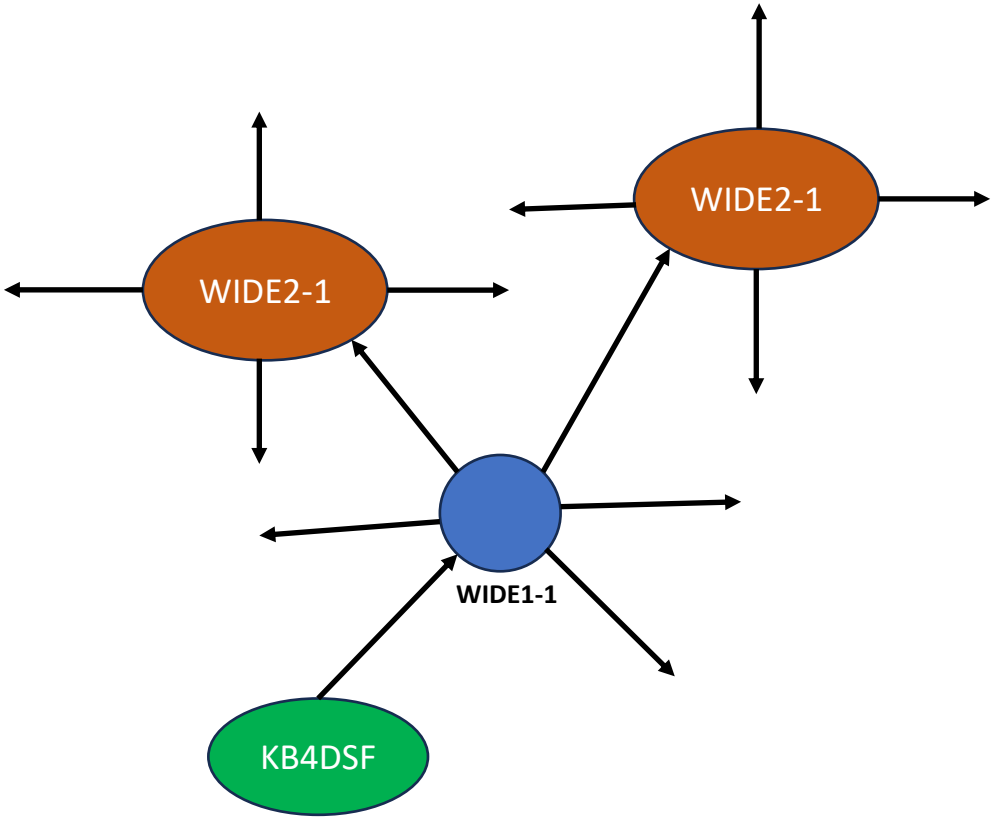


APRS Directed Path



Digipeaters

- Provides for wider coverage
- Two types
  - Fill-in (WIDE1-1)
  - Higher Level (WIDE2-1, WIDE2-2, WIDE3-3)

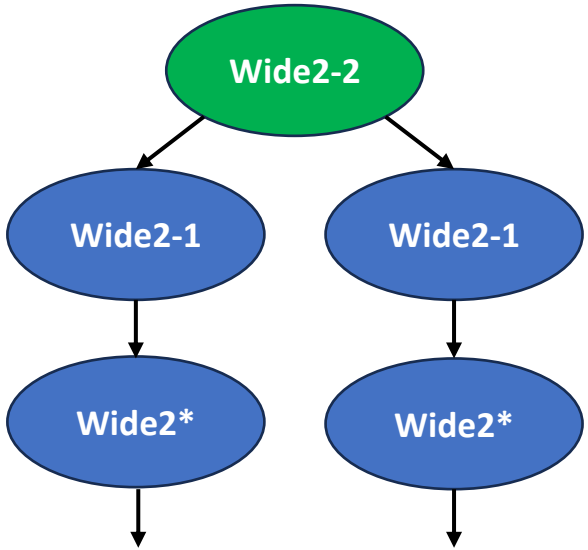


WIDE1-1,WIDE2-1

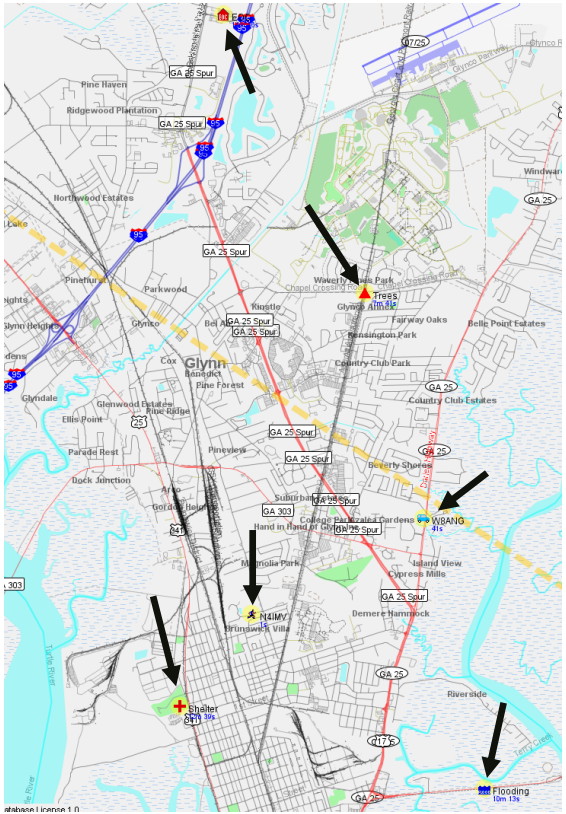
APRS Paths

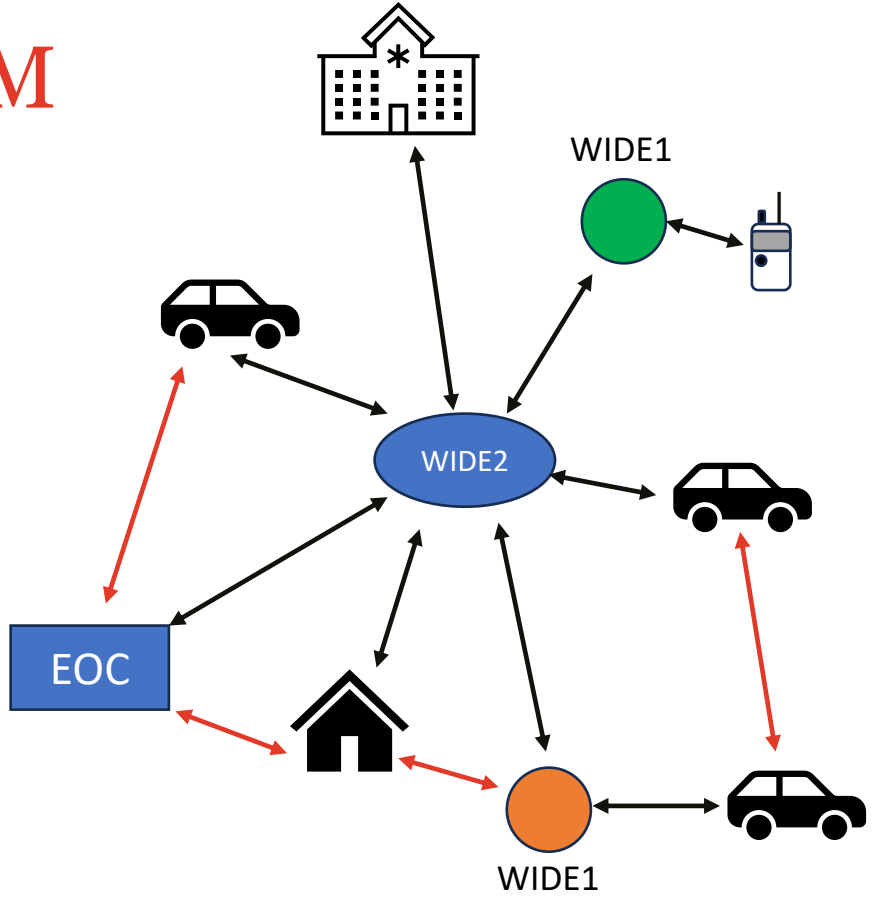
- Digipeater hops
  - Wide1-1 = Fill in
  - Wide2-1 = 2 hops w/ 1 remaining*
  - Wide2-2 = 2 hops w/ 2 remaining
  - Wide3-3 = 3 hops w/ 3 remaining
- Most common path settings
  - Wide1-1,Wide2-1
  - Wide1-1,Wide2-2
- Can request up to 7, but don't
  - Some digipeaters do not accept anything over 2
  - Anything over 3 is likely to fail

- Wide*n*-*N*
  - *n* = requested number of hops
  - *N* = remaining hops

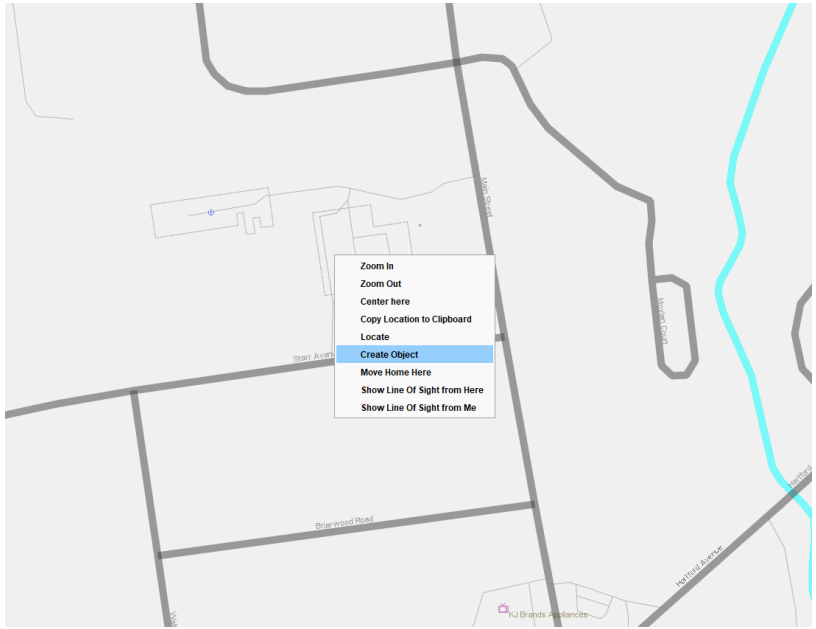


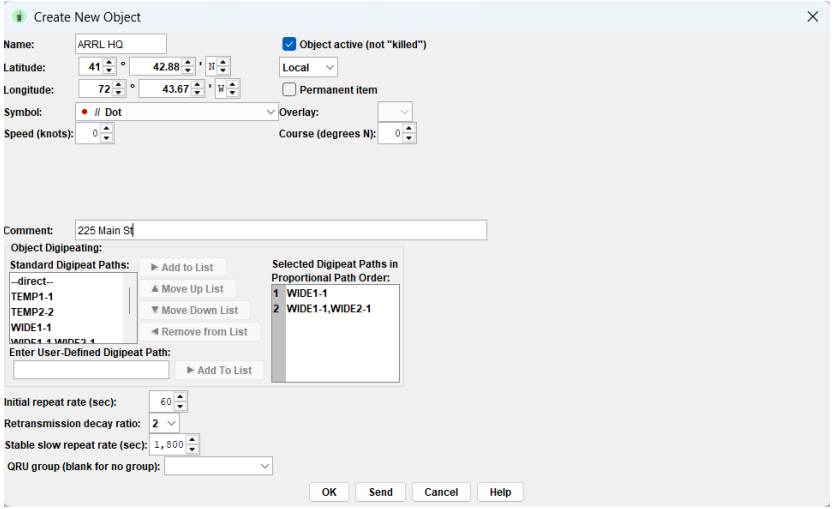
Use Case: EMCOMM





Objects


Zoom In
Zoom Out
Center here
Copy Location to Clipboard
Locate
Create Object
Move Home Here
Show Line Of Sight from Here
Show Line Of Sight from Me
Briarwood Road
Hartford Avenue

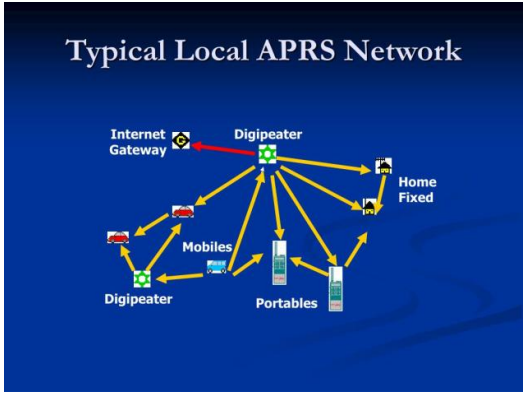

Create New Object
Name: ARRL HQ
Object active (not "killed")
Latitude: 41 ° 42.88 ' N
Local
Longitude: 72 ° 43.67 ' W
Permanent item
Symbol: // Dot
Overlay:
Speed (knots): 0
Course (degrees N): 0
Comment: 225 Main St
Object Digipeating:
Standard Digipeat Paths:
--direct--
TEMP1-1
TEMP2-2
WIDE1-1
Add to List
Move Up List
Move Down List
Remove from List
Selected Digipeat Paths in Proportional Path Order:
1 WIDE1-1
2 WIDE1-1,WIDE2-1
Enter User-Defined Digipeat Path:
Add To List
Initial repeat rate (sec): 60
Retransmission decay ratio: 2
Stable slow repeat rate (sec): 1,800
QRU group (blank for no group):
OK
Send
Cancel
Help

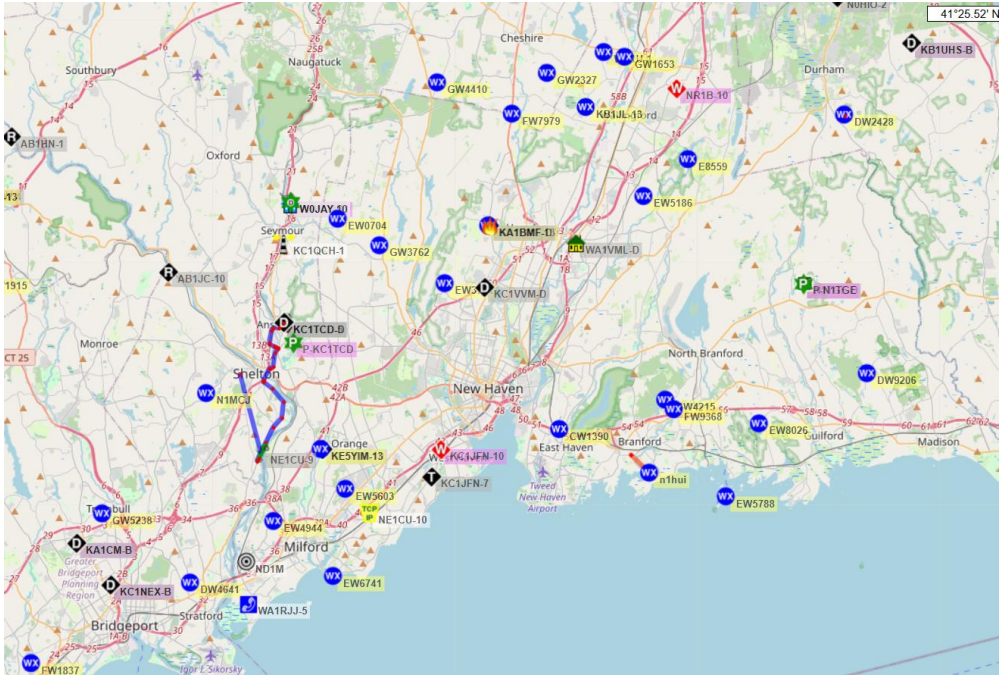
Objects


W1AW
2m 46s
ARRL HQ
1s
Main Street
Starr Avenue
Colby Circle
Briarwood Road
Mayflen Court

iGates

- Internet Gateway
- APRS.FI
- APRS-IS
- [N5DUX APRS Passcode Generator]



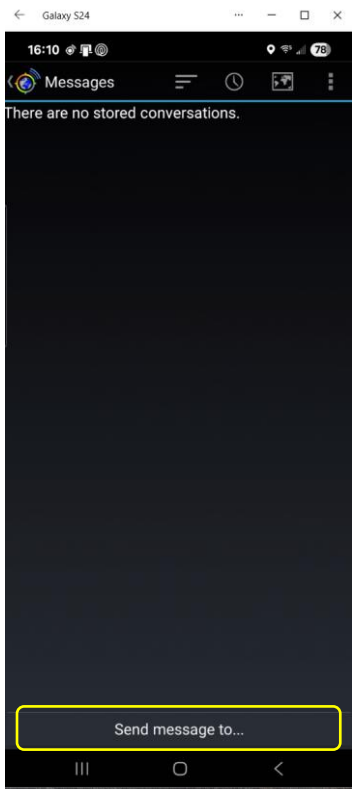


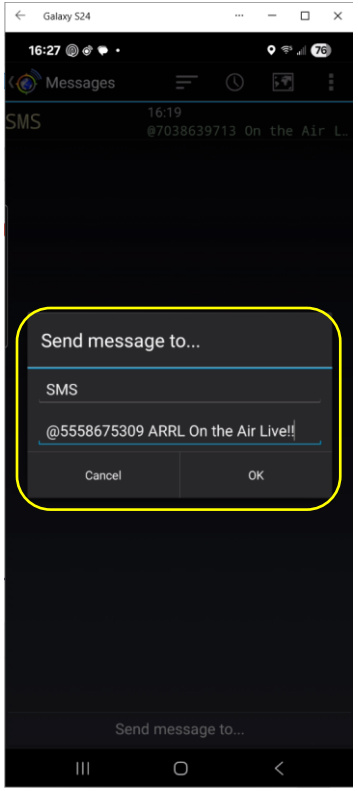
Extended Capabilities via APRS-IS

- SMS to a cell phone
- Opt in at https://aprs.wiki/
- Send message to SMS
- Format

To: SMS

@5558675309 Jenny, I've got your number





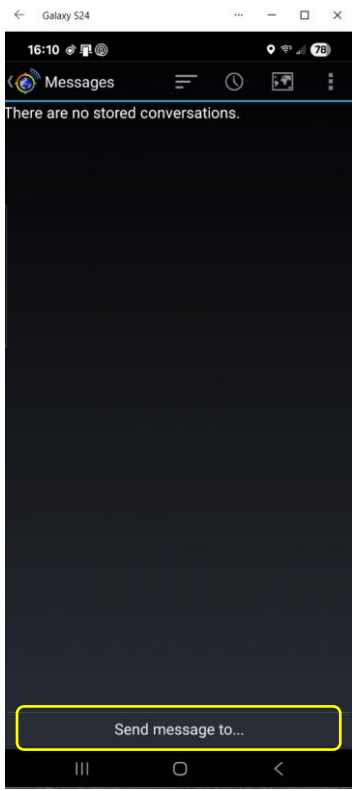
Extended Capabilities via APRS-IS

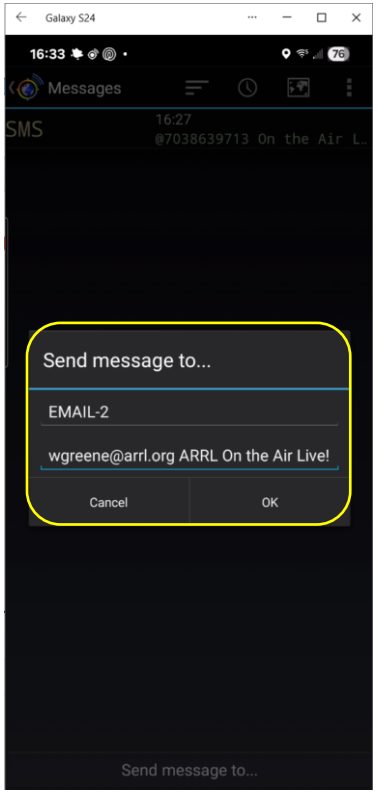
- Email via APRS

To: EMAIL-2

email@emailaddress.com Message

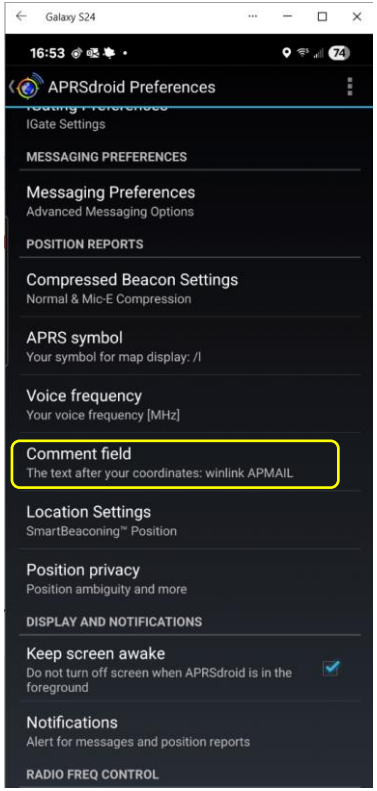
- Keep the message as short as possible

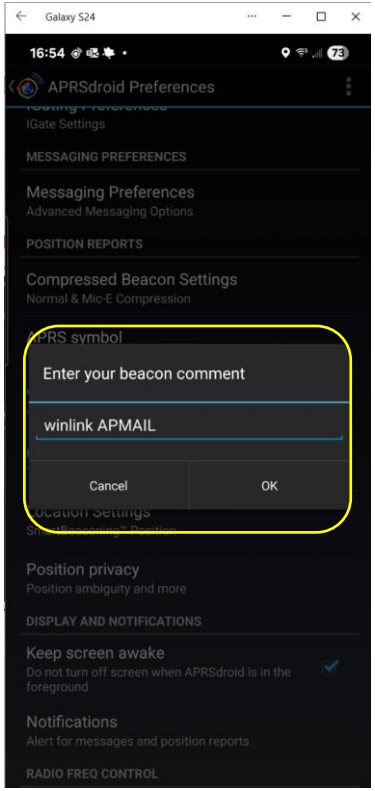




Extended Capabilities via APRS-IS

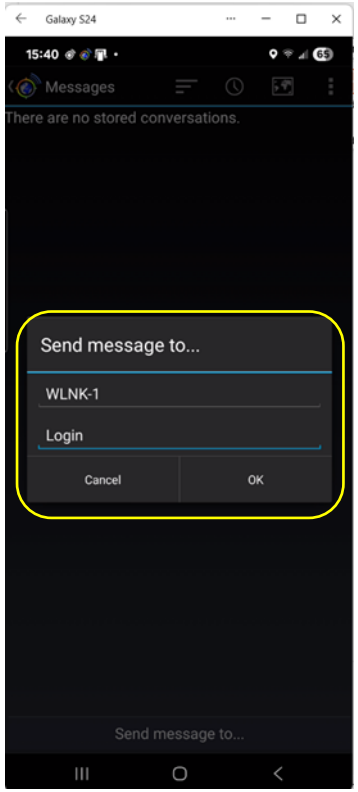
- Store-and-forward messaging
- Messages will wait in a queue awaiting for recipient to beacon APRS
- Stored in the Queue for 7 days
- To retrieve
  - Manually: send aprsm to MAIL
  - Automatically: add APMAIL to your APRS status message

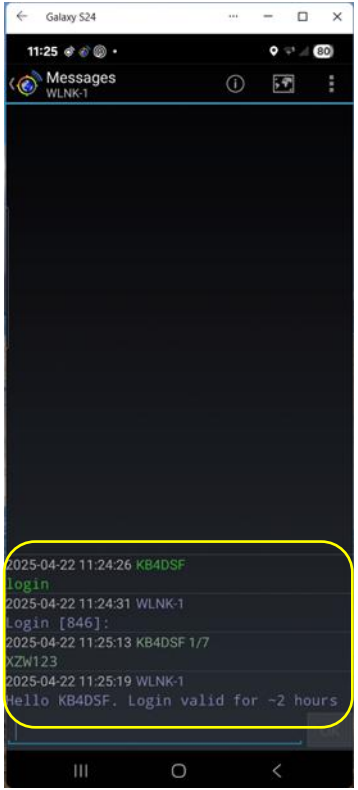




Extended Capabilities via APRS-IS

- APRSLink
- Receive and Send winlink email
- Send message to WLNK-1 to login
- Challenge will consist of 3 numbers
  - Correspond to the character positions of your password
  - Follow up with three random characters
  - EX: your password is P@$$W0RD
  - Challenge is 351
  - Response: $WP123
  - Login will be good for 2 hours





Extended Capabilities via APRS-IS

- APRSLink
- L = list of messages
- R# = read message #
- Y# = replay to message #

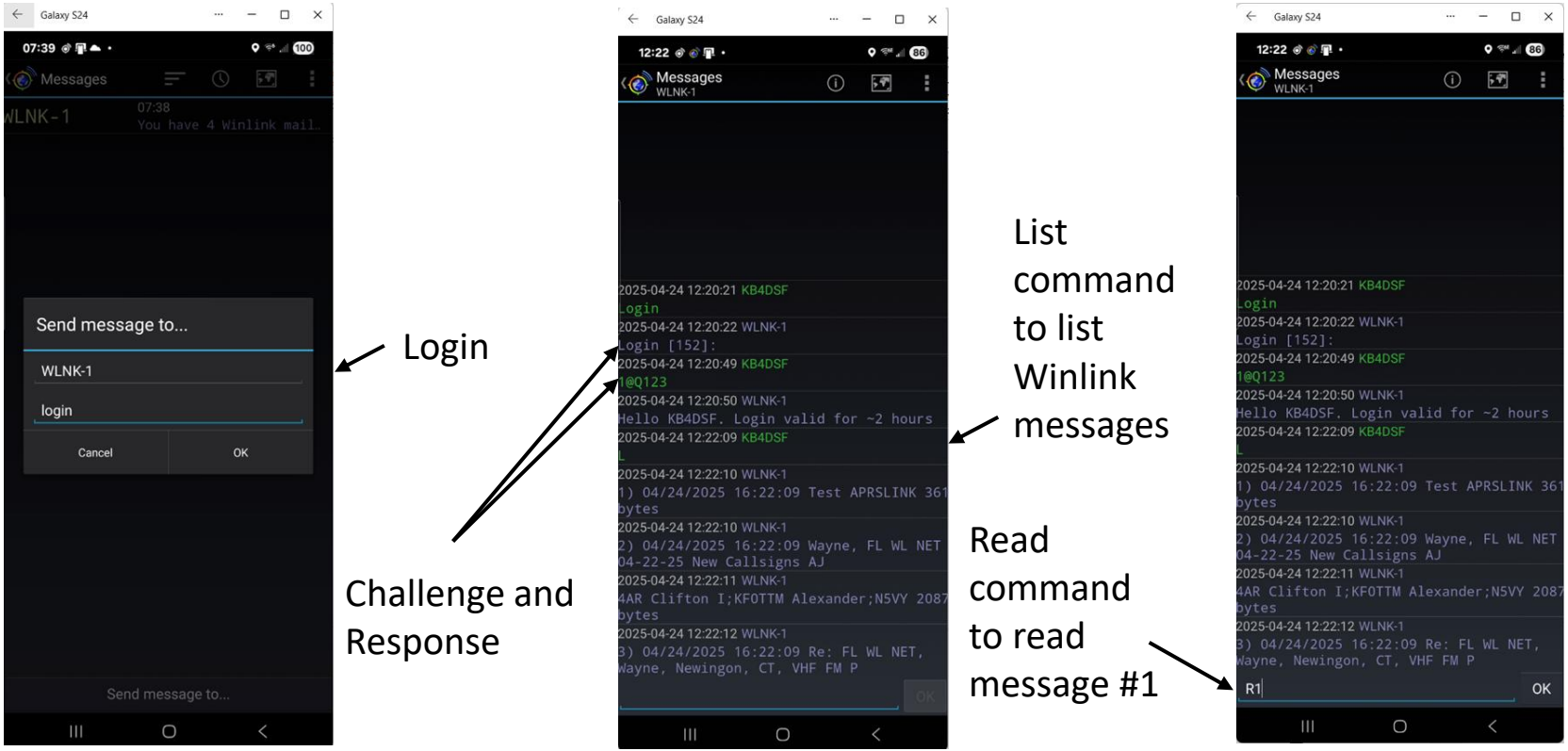
- All APRSlink commands are found here:

https://winlink.org/APRSLink

- SP = write a message
  - Line by line
  - First line is the Subject
  - Write each line
  - Last line = /EX

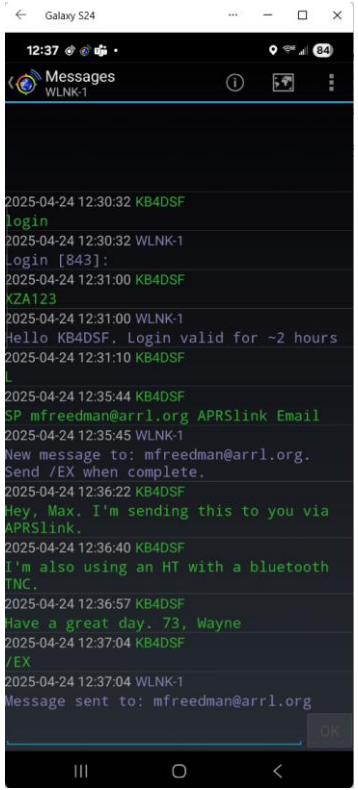
SP wgreene@arrl.org Winlink Message
First line of message.
Second line of message
/EX

Extended Capabilities via APRS-IS

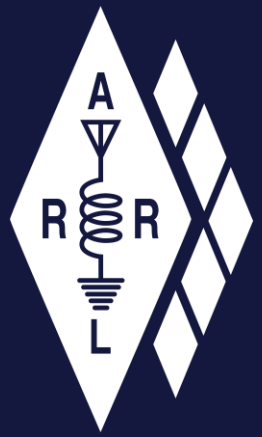


Extended Capabilities via APRS-IS

Email via APRSlink



Thank You!



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