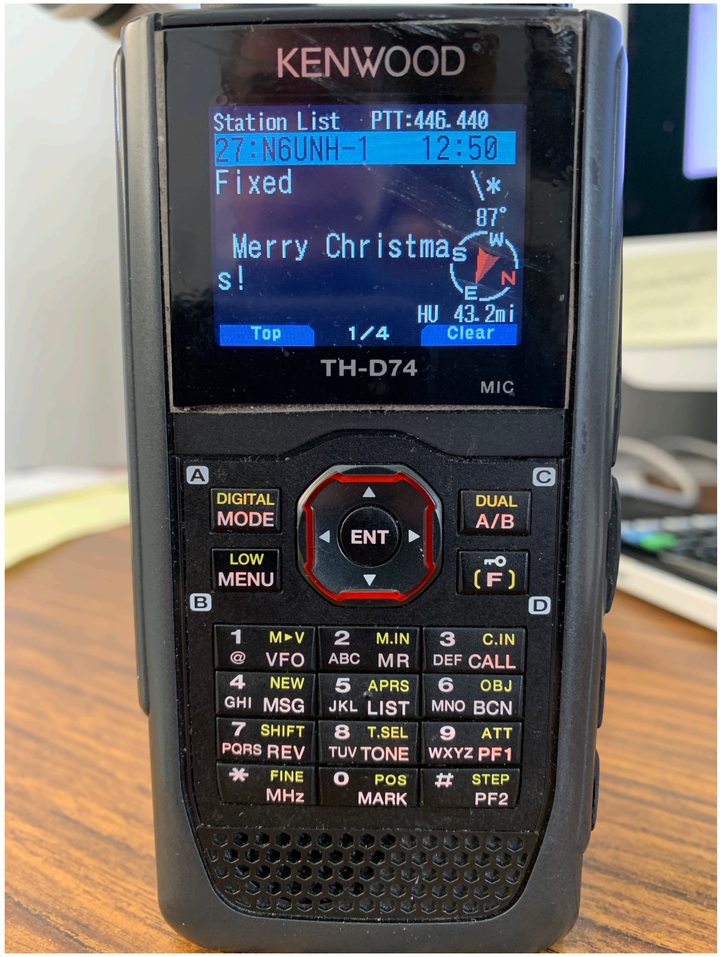
APRS

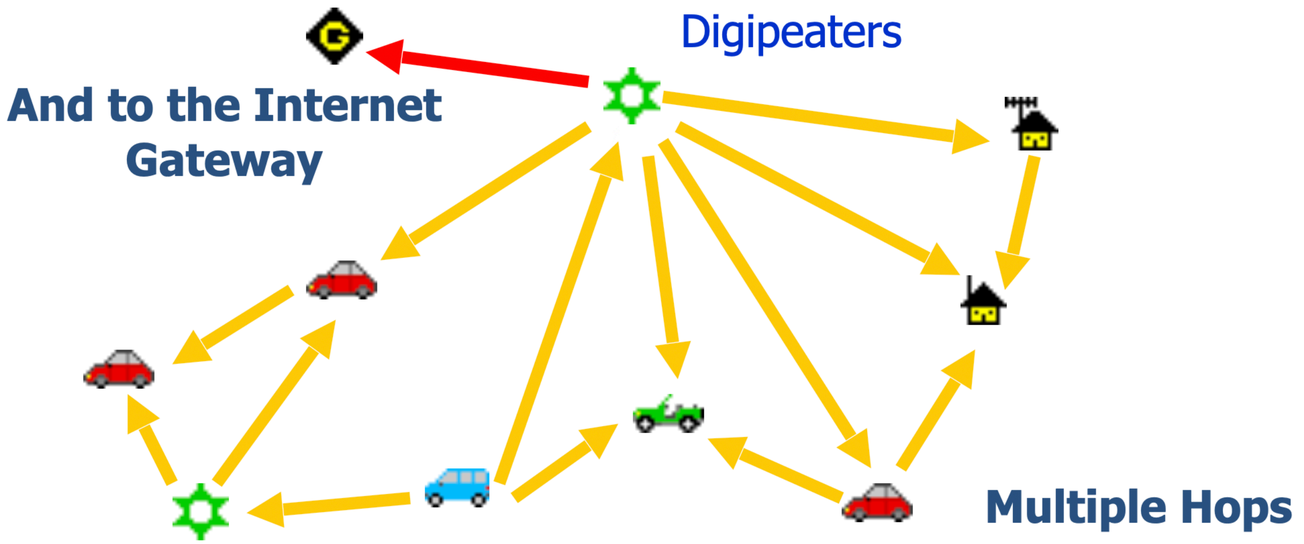
Automatic Packet Reporting System



APRS

What is it?

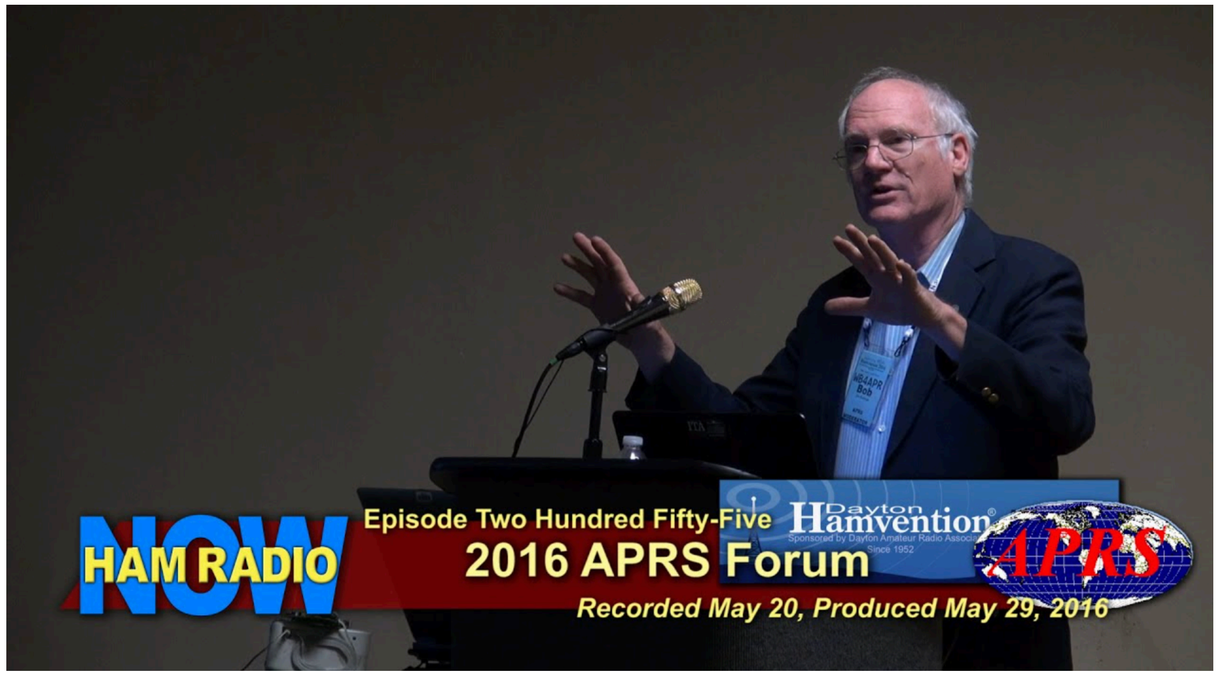
- a real-time tactical communications and display system (situational awareness)
- It was designed to be a resource for the local and traveling ham to show surrounding local information of immediate value.
- Is NOT primarily intended as a way to track cars on a map (although it will do that)



APRS

History

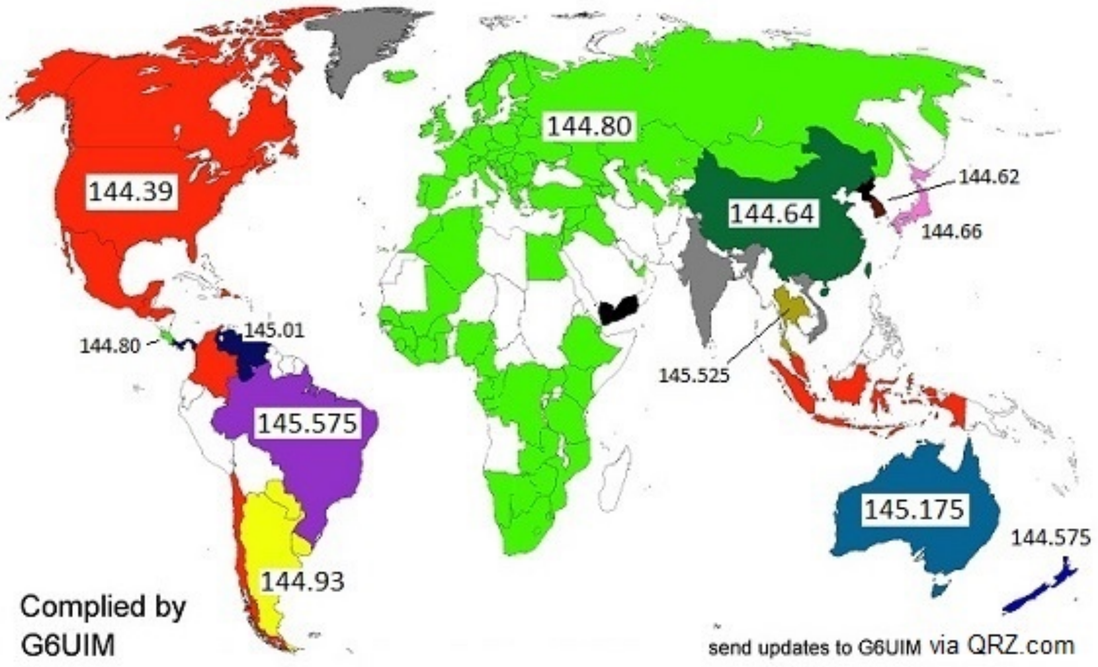
- Developed by Bob Bruninga WB4APR (thus the name)
- Introduced at the 1992 TAPR/Arrl Digital Communications Conference



APRS

How it works

- Uses packet radio
- Original packet radio is point-to-point with ‘connected’ stations
- APRS is point-to-many
- Packet radio, but unconnected packets (no “ack”)



APRS

How it works - direct - without the internet

- Uses radio, TNC (hardware or software), and (sometimes) a computer
- Simplex mode - Generally VHF FM on 144.39 MHz (North America)
- Sender’s radio transmits a packet.
- Packet can contain callsign, lat/long/altitude/speed/direction, a symbol, status message, telemetry, short messages directed to specific stations
- Multiple radios (in simplex range) can receive it.
- No ack returned (unless it is a “message”)

APRS

How it works - using digipeater(s) - without the internet

- Sender’s radio transmits a packet.
- Packet is received by a digipeater which temporarily stores and then retransmits the packet. Like voice repeaters, digipeaters are generally at a high elevation to cover a large area
- Packet can contain callsign, lat/long/altitude/speed/direction, a symbol, status message, telemetry, short messages directed to specific stations
- Multiple radios (in simplex range) can receive it.
- No ack returned (unless it is a “message”)

APRS

How it works - using digipeater(s) - combined with the internet

- Specialized stations called iGates, pass APRS packets traffic from RF to the internet and vice-versa (requires a radio, TNC, and a computer - often a Raspberry Pi)
- A server network (APRS-IS) manages the storing and routing of packets
- APRS-IS a common name given to the Internet-based network which inter-connects various APRS radio networks throughout the world (and space)
- Other servers can exchange packets with APRS-IS and make them available via the web (aprs.fi, aprsdirect.com, etc.)
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APRS

SSIDs are station designators appended to your callsign

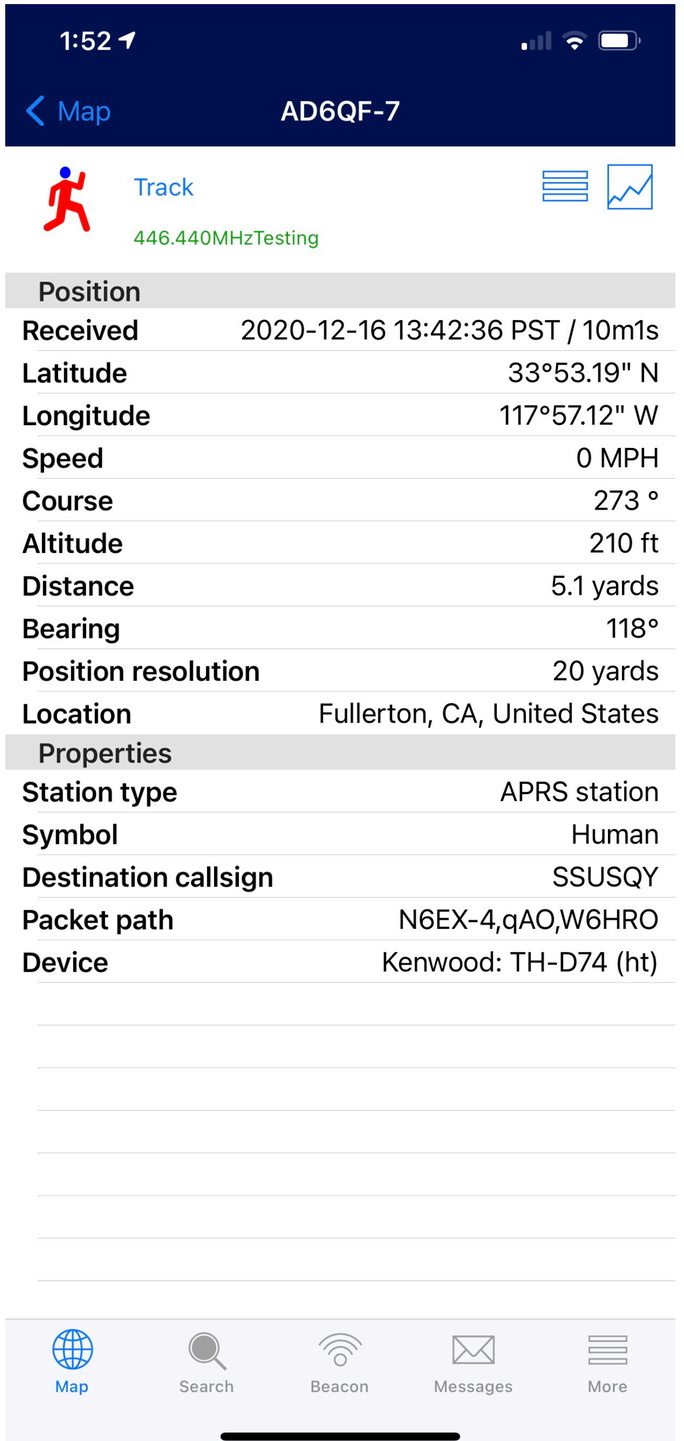
- a station’s SSID gives you an idea of it’s purpose
- The common ones to know are
  - -0 for base stations
  - -7 for HTs
  - -9 for mobile
  - Example: AD6QF-7

– 0	Your primary station usually fixed and message capable
-1	generic additional station, digi, mobile, wx, etc
-2	generic additional station, digi, mobile, wx, etc
-3	generic additional station, digi, mobile, wx, etc
-4	generic additional station, digi, mobile, wx, etc
-5	Other networks (Dstar, Iphones, Androids, Blackberry's etc
-6	Special activity, Satellite ops, camping or 6 meters, etc
-7	walkie talkies, HT's or other human portable
-8	boats, sailboats, RV's or second main mobile
-9	Primary Mobile (usually message capable)
-10	internet, Igates, echolink, winlink, AVRS, APRN, etc
-11	balloons, aircraft, spacecraft, etc
-12	APRStt, DTMF, RFID, devices, one-way trackers*, etc
-13	Weather stations
-14	Truckers or generally full time drivers
-15	generic additional station, digi, mobile, wx, etc

APRS

What's needed?

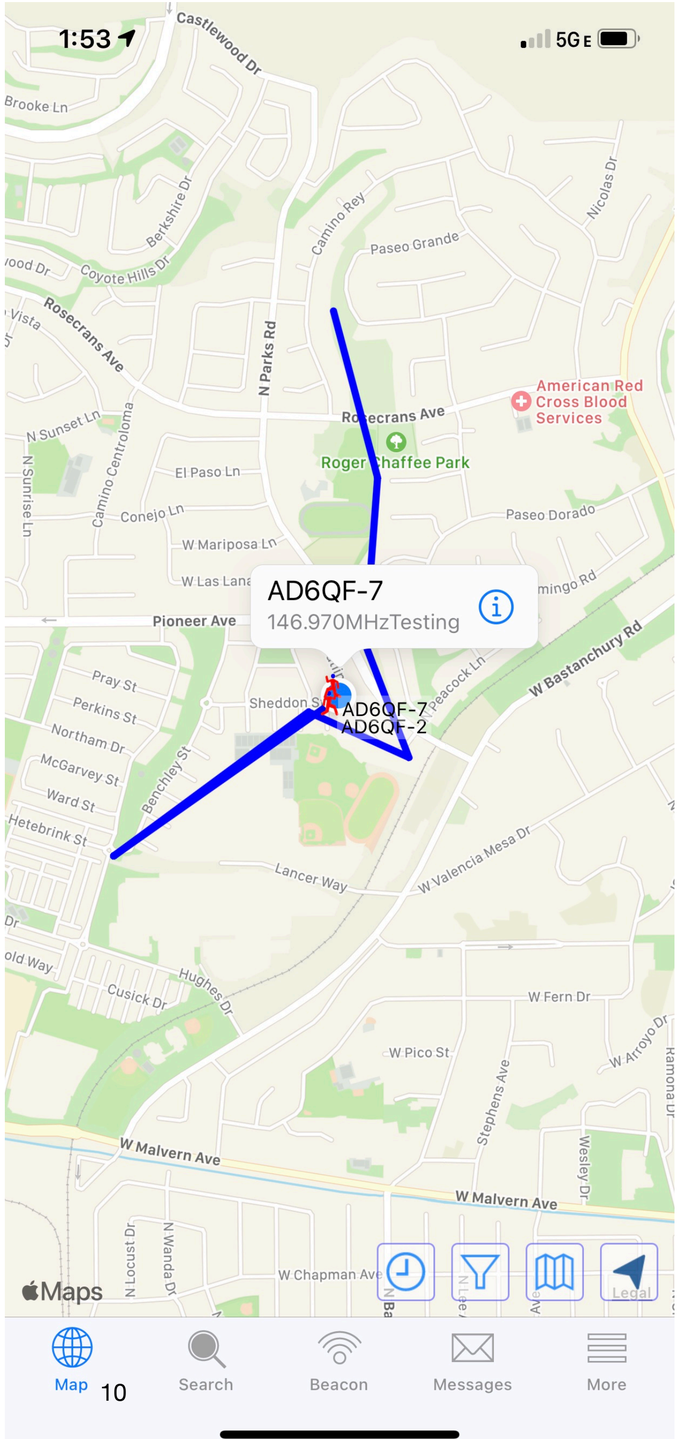
- To observe
  - aprs.fi
  - aprsdirect.com
- To participate
  - radio, TNC, computer or tablet
  - cellphone or tablet w/app
  - APRS capable radio

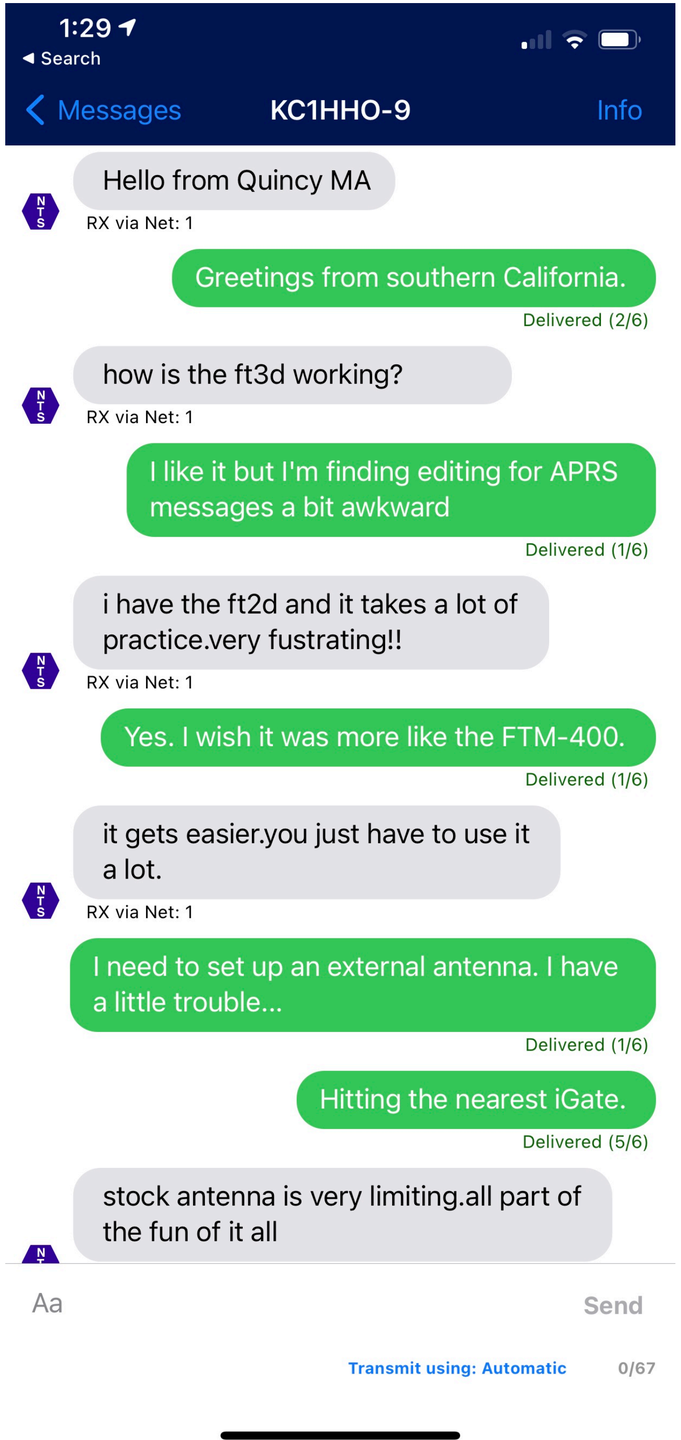


APRS

Beaconing vs. messages

- Beaconing is a broadcast
  - Contains information of interest to the general recipient
  - Location, beacon status text, wx information, telemetry





APRS

Beaconing vs. messages

- Messages are station-to-station
- But are not private (still packets)
- If station A has beaconed recently, it will be known to the APRS-IS network
- If station B sends a message to station A, the APRS-IS network will route the message to the last iGate that heard station B

APRS

APRS-capable radios

- Stand-alone (built-in TNC)
  - Kenwood TH-d7, d72, d74
  - Kenwood TM-700, 710G
  - Yaesu FT-8, FT1DR, FT2DR, FT3DR
  - Yaesu FTM-100, 300, 350, 400
  - Icom has some DPRS radios that send APRS to the internet but do not use analog rf digis
  - There are others

APRS

Other solutions

- Mobilnkd 2 ($65) + Computer w/ bluetooth or Android device + radio
- Moblinkd 3 ($120) + Computer or iOS device (or Android device) + radio
- Better than an APRS-capable HT due to detailed map on tablet, computer, or cellphone

APRS

Non-rf solutions

- aprs.fi app for iOS ($7+)

- aprsDroid app for android ($5 Google play store or OpenSource supportware)

APRS

Mobile frequency beaconing

- This is a way for hams to “find each other” by announcing the frequency they are currently monitoring.
- The frequency of your VFO A is included in the status text of your beacon. Other hams can see this.
- When you receive a station with frequency info included in your beacon you press the TUNE button to switch to that frequency

APRS

Future topics to explore

- What are paths?
- What does Wide 1-1 mean?
- How do I send an APRS message to somebody’s email address?
- How do I send and receive aprs messages to SMS?
- What is smart beaconing

Questions?

Where do we go from here?