APRS Turns 35. What's Next?

Ray Rischpater, KF6GPE kf6gpe@arrl.net | kf6gpe.org

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The Automated Packet Reporting System...

- Was developed by Bob Bruniga, WB4APR beginning in 1984
- Is a packet format for the exchange telemetry, messages, and position over amateur radio
- Uses primarily AFSK ("packet radio") on 2m (144.390 MHz in the US)
- Is widely used for tactical work in public service

What can you do?

- Share position information with other stations
- Obtain local weather conditions
- Short text messaging between stations or to SMS or email
- Satellite operations through the ISS or cubesats

Then. . .
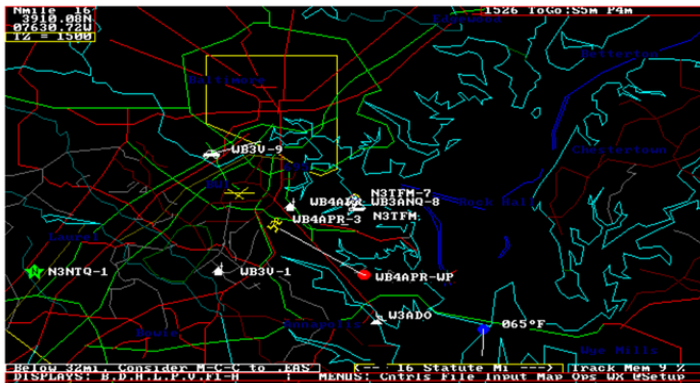
This APRSdos map shows the display of the WB4APR-WP waypoint to the WB4APR-3 hiker.
This white line association remains between the two map symbols even as the hiker moves.
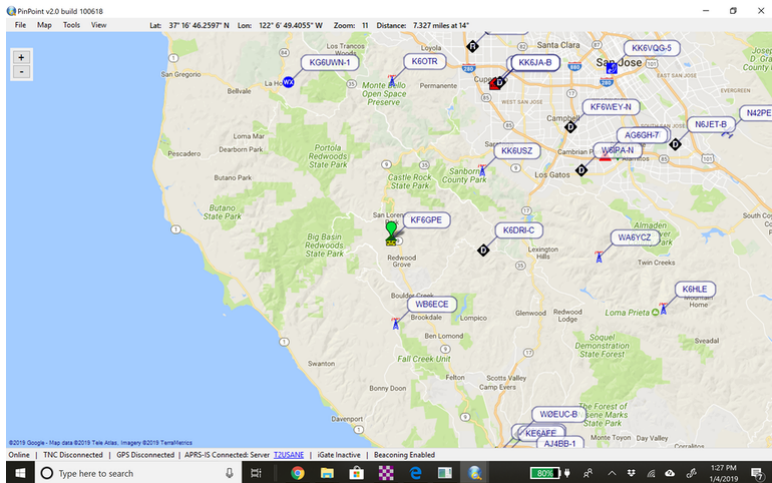
Figure 1: DOS APRS

And now!

Figure 2: Pin Point APRS on Windows 10

Some portable stations then & now

Figure 3: Stations Then and Now

In the field

Mobile

Figure 5: Mobile

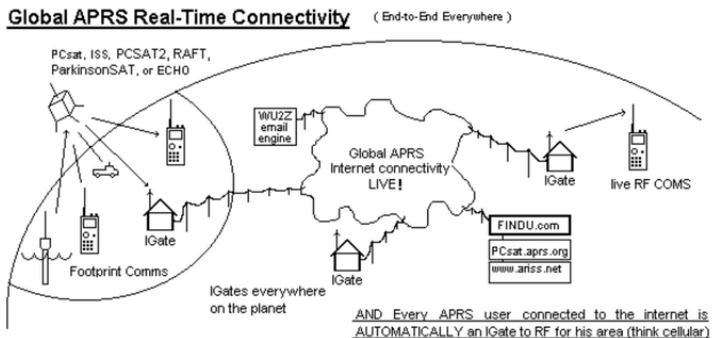Figure 6: Satellite Operations

The APRS network

Figure 7: The APRS Network Today
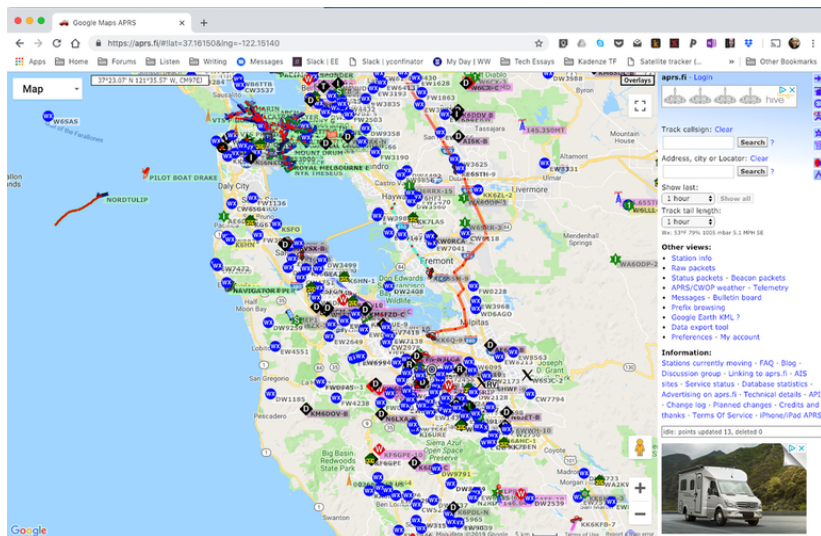
A word about the internet...

Figure 8: aprs.fi

Getting on the air

What you need

- Software for Windows, Mac, Linux, iOS or Android
- A PC, tablet, or cell phone (portable is fun!)
- A 2m radio
- TNC or soft modem cable for your radio
- (Optional) GPS receiver

Terminology

- *Callsign* - Your callsign
- *SSID* - A unique integer from 1-15 to identify your station
- *Icon* - An icon identifying your station on the map
- *Digipeater* - A station that repeats (digipeats) packets
- *IGate* - A station configured to route packets to (and possibly from) the Internet

Frequencies & APRSIS hostnames

- 144.390 MHz - National Simplex APRS Frequency
- 145.825 MHz - Satellite uplink / downlink
- rotate.aprs2.net - Picks an appropriate APRSIS server
- noam.aprs2.net - APRSIS server for North America
- euro.aprs2.net - APRSIS server for Europe

Software

- APRSIS32 - Windows, very full featured
- PinPoint APRS - Windows, good UI, best for monitoring
- YAAC - Java, all platforms, a bit fiddly
- APRSdroid - Android
- PocketPacket - iOS & Mac OS
- aprs.fi (iOS, not the web site)

Older software

You'll see these, don't bother trying with them!

- UIView-32
- MacAPRS & WinAPRS
- javAPRS (for embedding in a Web browser)

Radios

- Kenwood TH-D7A, TH-D72A (GPS), TH-D74A (GPS, D-STAR, & Bluetooth)
- Kenwood TH-D700, TH-D710
- Yaesu VX-8DR, FT1DR, FT2DR
- PicoAPRS mini-APRS Transceiver
- Any other 2m radio connected to a Mobilinkd Bluetooth TNC

Connecting to the network

- ▶ Bluetooth
- ▶ USB (and USB-to-serial)
- ▶ Sound modem
- ▶ TCP/IP

Bluetooth

- Low-power, wireless protocol for audio and serial
- Bluetooth Serial replaces RS-232 or USB serial
- Works with some KISS TNCs (Mobilinkd, Kenwood TH-D74A/E)
- Great choice for portable with Android smartphones
- Can work with Windows, but expect weird problems.
- On iOS, only the Mobilinkd v3 works, and only with the aprs.fi app

USB

- ► Serial connections for the new millennium
- ► Some TNCs and radios have USB
- ► Others will require a USB-RS232 adapter
- ► Drivers for USB-RS232 can be fussy!
- ► Works with Windows, Linux, Mac OS X, Android (maybe)

Sound modem

- Uses the sound card in your computer or an external adapter like a TigerTronics SignaLink.
- PC, Mac and Linux need software (Direwolf, AGWPE, others)
- Can be tricky to set up (not all APRS apps work with all sound modem apps)

Sound modems and cell phones

- APRSdroid and PocketPacket include sound card modem software!
- Just hold your phone next to your radio. . .
- . . . or make a cable and use VOX

TCP/IP

- ▶ Used as backhaul to APRSIS
- ▶ Most APRS clients support this today
- ▶ Generally does *not* transmit your telemetry to the RF network.
- ▶ A great choice for learning on your cell phone!

Setting up

- Call sign and SSID
- Icon (funky codes abound!)
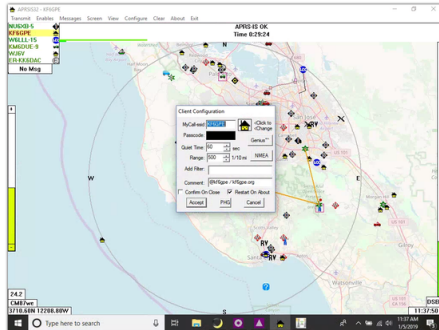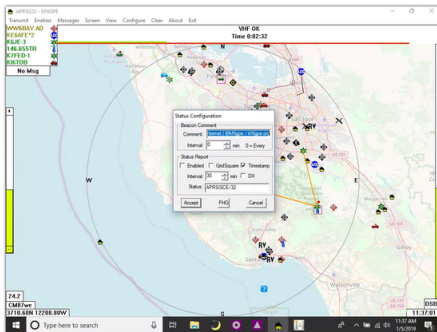- Digipeater path (stick with WIDE1-1)

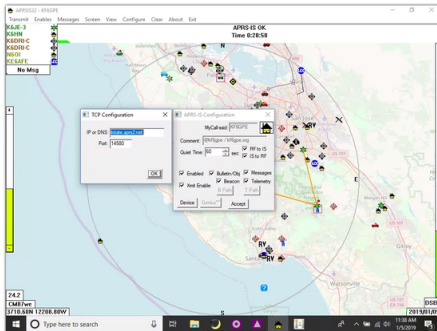Figure 9: APRSIS32 Station

Figure 10: APRSIS32 Beacon

Figure 11: APRSIS32 Port

It looks complicated. . .

But it isn't.
Most apps have a setup wizard. Know your callsign, SSID, passcode, and TNC port before you begin.

Setting up for APRSIS access

- ▶ You need a callsign and a passcode to transmit on APRS-IS.
- ▶ The passcode is generated from your callsign. It's semi-secret.
- ▶ You can get the passcode from any APRS software author, or some hams.

Setting up internet gating

- You'll need your callsign and passcode (you're accessing APRSIS after all!)
- Most APRS applications support Internet Gating; check the settings.
- Do *not* blindly transmit the APRSIS feed to the RF network. You'll swamp the channel!

Messaging

- Address a message to a callsign and send it.
- Messages are *short* - 60 characters or so.
- Messages are retried a handful of times with exponential backoff.

Special message recipients

- SMSGTE 8885551212 Here's a text message
- EMAIL2 kf6gpe@arrl.net Hi via APRS & email!
- WXBOT

Now it's your turn (time permitting)

Pair up with a neighbor and. . .

▶ Download APRSdroid, PocketPacket, or aprs.fi on your mobile phone!

▶ Start at tinyurl.com/get-aprs

▶ Use -1 as the passcode (you won't be able to transmit) or see me for a passcode.

APRS software links

- APRSdroid, APRSdroid on the Play Store
- APRS.fi on iOS
- APRS.fi on the Web
- APRSIS32
- PocketPacket iOS, Pocket Packet on the App Store
- PocketPacket Mac OS, Pocket Packet on the Mac App Store
- PinPoint APRS
- YAAC
- Xastir

Sound card modem links

- AGWPE Resources
- Packet Engine Pro
- UZ7HO

Protocol & implementation links

- ▶ APRS Protocol Specification
- ▶ APRS Internet Service
- ▶ Python APRS Module (one of many!)
- ▶ pyaprs-stationservice Python Web service to monitor APRS-IS feed and provide REST interface to report station positions.