WTF is this APRS

Presentation by Bob, VK5FO 2017

Who We are ?

- Bob, VK5FO Ray, VK5RR

- Licensed 1993

- Bob – Works as a Systems Engineer and previously as a Network Engineer

- Ray – Works in IT Systems Support

- Packet BBS, in 90's

- Packet HF gateway

- APRS Digi – VK5THB @ Morgan

- APRS iGate and Digi @ Sunlands

APRS – What is it – where did it come from?

- APRS or Automatic Packet Reporting System is an Implementation of Packet Radio that came about when the Packet Network was seeing a decline (having been replaced by Internet)

- Packet Radio is a Digital communications based on sending AX.25 Packets over (often unreliable) RF links.

- APRS and Packet utilizes a TNC to convert the digital information to Audio tones suitable for transmitting over a voice channel, and also converting those tones back to Digital Information

- We will be focussed today on VHF (2M) Implementation.

- APRS Uses A TNC (Terminal Node Controller) with a specific APRS firmware.

APRS – (continued)

- Uses
  - APRS is not just a way of spying on hams!
- Real time (and near real time) Reporting of Position, Telemetry, Short messaging.
- Operates on A Single Frequency – 145.175* in VK
- Operates at 1200bd, so has a limited throughput – more later on this.

What Makes up an APRS Network

- 3 (4) Main components

- Igate – or Internet Gateway – Radio RX, 1 or more TNC's Computer* running APRS Gateway Software, Internet connection

- Digipeater or Digi – AX.25 Packet Repeater – It RX, stores then Forwards the Packet on the same Frequency – implemented in firmware on the TNC

- Tracker – Transceiver and TNC, usually also has a GPS and other Telementry Devices – eg, Temperature probe, Volt Meter.

APRS Network (continued)

- The 4th Part is the Internet website where we can view the APRS traffic that is passed via an Igate.
  http://aprs.fi/

- APRS protocol allows for up to 7 Digi's but normal implementation is not more than 2 as it leads to congestion, very quickly!

- An Igate often also has a Digi as part of it's configuration – we like to know that we have been heard!*

Tracker -> digi -> digi* -> Igate

APRS Equipment - Trackers

- Tracker – can be 100% implemented in a Handheld – eg VX8, TH-D72A

- Some Mobile Radio's – eg TM-D710G

- Assembled from components – 2M TXCVR, TNC, GPS

- Some examples of TNC's = Byonics TinyTrack4, Argent Data, OT-2 (Open Tracker V2), OT-USB,

- GPS – Typically for car/mobile use a magnetic serial puck.

APRS Equipment – Digi

- Strategic location that provides coverage to Trackers and is visible to either an Igate or another Digi that is visible to an IGate

- Same Handheld – D72 can also be configured as a digi, As can the D710G

- Discreet Components – A 2M Txcvr and antenna

- TNC – Not ALL TNC's are capable of being configured as a Digi – EG the OT-USB is a tracker only – whereas the TT4 and OT-2 can be.

- Telemetry devices –eg voltage monitor (great for unattended remote sites)

- GPS NOT required – as a digi doesn't move and locations can be configured

APRS Equipment – Igate

- Site that is Internet connected.
- Transceiver or Receiver*
- TNC – can be one of the ones already discussed, or here can be software running on the Computer.
- Igates can and actualy do use some of the older Packet modems (re-purposed) that run a KISS firmware and the APRS "smarts" are done in software on the Computer
- A Suitable Computer – can be a Rpi – which is a good choice as it is low power (low cost to run 24x7x365)
- Internet – For passing packets to APRS.fi and also for Messaging from Internet back to RF.

APRS in the Riverland

- VK5BRL – Igate – physically located at Renmark
- VK5RLD – co-located with the 5RLD voice repeater near Moorook
- VK5THB – Igate and Digi Located Sunlands

- APRS Goes crazy during the June Long Weekend in the Riverland with the RPM – Canoe Race from Berri to Morgan over 3 days. APRS is part of the comms – and is used for real time asset tracking and positional awareness of key assets (people & objects). During this time additional Temporary infrastructure is deployed, Igates and Digipeaters, both fixed and Yes, Mobile.

APRS Software

- Lots of different Software packages that have various uses.
- Both Windows and Linux Packages
- APRX (what we use on our portable Igate)
- Xastir (Linux)
- YAAC – Linux and Windows – Software – Includes Option for Mapping

- Software can be used for running an Igate, Igate + Digi, Digi or even running as a tracker.

Have a look – and Questions

- A quick look at APRS.fi – it is more than just mapping – RAW, INFO, Telemetry.

- We have some examples of the components that make up APRS have a look!

QUESTIONS ?