Introduction to Automatic Packet Reporting System (APRS)
History

In 1982, Bob Bruninga (WB4APR), a senior research engineer at the United States Naval Academy, implemented the earliest ancestor of APRS on an Apple II computer.

Bob Bruninga describes APRS in this way: "APRS provides situational awareness to all operators of everything that is going on in his or her local area, whether it be weather reporting, traveler info, direction finding, objects pointing to ECHOlink and IRLP, or traffic reporting and emergency response."
APRS is
- a two-way tactical real-time digital communications system
- digital communications information channel for Ham radio.
- a single national channel (United States & Canada: 144.390 MHz)
- announcements, bulletins, messages, alerts, weather
APRS is

- a frequency to monitor at any time to capture what is happening in ham radio in the local surrounding area
- a map of all this activity including objects, frequencies, satellites, nets, meetings, Hamfests, etc.
- real time positioning can be monitored on the [http://aprs.fi/](http://aprs.fi/) website by call sign, location, etc.
APRS Technology

- APRS Technology
  - uses Global Positioning System (GPS)
  - operates entirely in an unconnected broadcast fashion, using unnumbered AX.25 protocol at 1200 bit/s
  - packet repeaters, called digipeaters, form the backbone of the APRS system
  - Internet gateway stations (IGates) connect the on-air APRS network to the **APRS Internet System** (APRS-IS)
• **Equipment**
  - Radio (2m)
  - Terminal Node Controller (TNC)
  - GPS receiver
  - Cell phone

• **APRS Software**
  - APRSDroid
  - APRSPoint
  - APRSPro
  - APRS-TW (Telemetry Watcher)
Yaesu FT-8800 with Bluetooth TNC-X
GPS from cell phone running APRSDroid
EQUIPMENT

Yaesu FTM-400XDR
built in GPS & APRS TNC
FTM-400XDR Displays

Moving Vehicle

Weather Station
APRS INTERNET SERVICE

APRS-IS via APRS.fi website
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0</td>
<td>Dot</td>
</tr>
<tr>
<td>-1</td>
<td>Ambulance</td>
</tr>
<tr>
<td>-2</td>
<td>Bus</td>
</tr>
<tr>
<td>-3</td>
<td>Fire Truck</td>
</tr>
<tr>
<td>-4</td>
<td>Bike</td>
</tr>
<tr>
<td>-5</td>
<td>Yacht (sail)</td>
</tr>
<tr>
<td>-6</td>
<td>HELO</td>
</tr>
<tr>
<td>-7</td>
<td>Aircraft</td>
</tr>
<tr>
<td>-8</td>
<td>Ships (power)</td>
</tr>
<tr>
<td>-9</td>
<td>Car</td>
</tr>
<tr>
<td>-10</td>
<td>Motorcycle</td>
</tr>
<tr>
<td>-11</td>
<td>Balloons</td>
</tr>
<tr>
<td>-12</td>
<td>Jeep</td>
</tr>
<tr>
<td>-13</td>
<td>Rv</td>
</tr>
<tr>
<td>-14</td>
<td>Truck</td>
</tr>
<tr>
<td>-15</td>
<td>Van</td>
</tr>
</tbody>
</table>

**Example** – **KG5JBJ-9**

SSID = service set identifier
# = STAR (digipeaters)

& = DIAMOND (gates)

_ = WEATHER Station (blue), WX and W-R DIGI (green)

Z = W in Red Diamond (APRSlink, part of Winlink)
APRS-IS Vehicle Info Map

FTM-400XDR sends main band freq. information

Vehicle Information at that point
APRS-IS Weather Station Info

APRS Weather Station
APRS-IS APRSlink / Winlink Station Info

APRS Winlink Station
APRSDroid Station List
APRSDroid Station Info

MAP – APRS.FI – QRZ.COM
APRSDroid Map

Smart Beaconing
APRSDroid map display
APRSDroid - aprs.fi & qrz.com

APRS station KG5JB-J-9 - show graphs

Comment: KG5JBJ@ARRL.NET
Location: 29°55'26" N 95°42'00" W - locator EL29DW61AA - show map
- static map
  5.4 km South bearing 183° from Cypress, Harris County, Texas, United States [7]
  7.1 km West bearing 265° from Oak Cliff Place, Harris County, Texas, United States
  36.9 km Northwest bearing 298° from Houston, Harris County, Texas, United States
  53.8 km Northwest bearing 298° from Pasadena, Harris County, Texas, United States

Last position: 2016-03-15 15:53:20 CDT local time at Cypress, United States [7]

Altitude: 6 m
Device: Open Source: APRSDroid (app, Android)

Last path: KG5JB-J-9@APR13 via N5LJY-2@qAR,KCSDAQ-1

Good path!

Positions stored: 22
Packet rate: 187 seconds between packets on average during 3554 seconds.

Other SSIDs: KG5JB, KG5JB-10, KG5JB-5, KG5JB-P

Stations near current position of KG5JB-J-9 - show more callsign distance last heard - UTC

APRSDroid screen capture
APRSlink is a part of Winlink System which allows you to send messages, text, and emails

**Commands:**

- **WLNK-1** start login process  LOGIN [123] – response 123xxx
- **H** or ? Return brief Help
- **L** List of messages
- **R#** Read message number #
- **Y#** reply to message #
- **SP** <email address – or- call sign –or- alias> <subject>
  
  SP sam@iam.com Header Test Message
  /EX Complete and send the composed
• **P** Playback message
• **SMS** Send short message
  Syntax: SMS <email address, call sign, or alias> <message>
• **A** Create an alias for an e-mail address
  Example: A sam=sammy.miller@somelongdomainname.net
• **F#** Forward message number # to address or call sign following
• **K#** Kill (mark as deleted) message number
• **G#** Return information about closest active RMS Packet Gateway
• **I** Return Information about APRSlink
APRSlink Messages

List
1
2
R1

log off

There are no stored conversations.

Send message to...
WLNK-1

CANCEL OK

SEND MESSAGE TO...

Messages
WLNK-1
2016-08-15 12:33:39 K65JBJ
2016-08-15 12:33:40 WLNK-1
1) 08/15/2016 17:33:43 APRS MSG TEST
445 bytes
2) 08/15/2016 17:33:43 //WL2K Packet
Test via Telnet 969 bytes
2016-08-15 12:34:19 K65JBJ
r1
2016-08-15 12:34:22 WLNK-1
APRS MSG TEST Fm:SMTP:k65jbj@gmail.com Msg:This is a msg test.
73
2016-08-15 12:34:24 WLNK-1
... Michael Deaver KG5JBJ
713-201-4495
2016-08-15 12:34:45 K65JBJ
bye
2016-08-15 12:34:46 WLNK-1
Log off successful

OK
After WNLK-1 login

SP sam@iam.com Test Message (Msg Tx)
Some text for the body of the message (Msg Tx)
Some more text for the message (Msg Tx)
/EX (Msg Tx)

Each line is a separate APRS message, but the need for entering specific commands for each line/message has been removed. You type and send as much text as necessary and then send /EX as a separate APRS message to complete your email and send the composed message. You should receive a confirmation message.

SMS 7135551234 call me asap
SMSGTE @5551234567
<Your short message here>
Sources and Links

- http://aprs.fi/#!addr=77433
- http://www.aprs.org/
- http://www.openaprs.net/
- https://aprsdroid.org/
- http://www.aprs-is.net/
- http://www.winlink.org/APRSLink
- Emails and Texts with APRS by K7DCC (PPT)
- http://smsgte.wixsite.com/smsgte
Sources and Links

- http://www.dxzone.com/catalog/Software/APRS/
- http://aprsisce.wikidot.com/start
- http://www.aprs.net/
- http://www.dxzone.com/catalog/Software/APRS/
- YouTube “APRS tutorial SMS messaging APRSDroid”
- http://aprstw.blandranch.net/
- http://www.aprs.net(vm/DOS/SYMBOLS.HTM
- https://groups.yahoo.com/neo/groups/APRS/info
Thank You!