“Best” Practices for APRS

Operational Guidelines

What is APRS?

- Automatic Position Reporting System
- Tactical Communications Protocol
- Position Reporting
- Weather Reporting
- Telemetry Reporting
- Tactical Messaging
- DFing

What is Tactical?

- Tactical: Of, relating to, used in, or involving military or naval operations that are **smaller, closer to base**, and of less long-term significance than strategic operations.
- APRS was created by Bob Bruninga, employed by the Naval Academy in Annapolis, MD
- Key elements of the protocol preclude attempting to use as-is over long distances

What are These Key Elements?

- Aloha broadcast protocol
  - Broadcast does not mean blind broadcast
- AX.25
  - Parts of protocol are integral
- 2 meter, 1200 bps primary; HF, 300 bps secondary

Key APRS Constructs

- APRS 1.01 Specification
  http://www.tapr.org/tapr/html/Faprswg.html
- Callsigns
- Unprotos
- Paths
- Packet types
- Packet timing

Callsigns

- RF Callsigns
  - 3-6 capital alphanumeric characters
  - SSID of 0 through 15
- Internet Callsigns
  - 3-9 total alphanumeric characters, up to 1 hyphen followed by 1 or 2 alphanumeric characters

Unprotos

- **Un**connected **pro**tocol **to**
- AP…. – standard APRS
- GPS/SPC/SYM… – For trackers, includes symbol
- Mic-E Encoded – Trackers, Kenwood D radios
- Maidenhead Locator – obsolete
- Many special purpose (altnets)
- SSID may be used for path

Paths

- Explicit
- RELAY
- WIDE
- WIDEn-n
- TRACEn-n
- LANn-n

- GATE
- NOGATE, RFONLY
- TCPIP, TCPXX, q..

Should I Be a Digi?

- Mobile – Only if requested for a special event
- Portable – Only if requested for a special event
- Home – RELAY if adds coverage to WIDEn-n digis
- Broad area coverage – WIDEn-n

What Path Should I Use?

- It Depends…
  - Mobile/stationary
  - Purpose of transmission
  - Digi coverage and type of digi(s)
  - IGate coverage

North Texas Recommendations

- Fixed Stations – Digi,WIDE – Digi = nearest digi
- Mobile Stations – RELAY,WIDE
- Airmobile Stations – WIDE
- Special Event Stations – RELAY or RELAY,WIDE
- Digis – None

Packet Types

- Position Reports
  - Standard
  - Compressed
  - Mic-E
  - Objects and Items
- Status
- Weather
  - Raw
  - Positionless
  - Full
- Telemetry
- Messages, Bulletins
- Station Capabilities
- Third-Party (Tunneled)
- Queries
- User Defined
- Non-APRS specific
  - DX Spots

Packet Timing

- Net Cycle Time
  - Spec defines various timings for various types of stations
- General Recommendations:
  - 3 minutes minimum for mobile
  - 5 minutes minimum for air mobile
  - 10 minutes minimum for weather
  - 20 minutes minimum for stationary

Basis for Recommendations

- Single frequency nationwide – SHARED
- Limited bandwidth
- User can severely affect networks hundreds of miles away
- Sufficient to convey information without overloading channel

What is APRS-IS?

- APRS Internet Service
- World-wide interconnection of local APRS networks
- Provides a method for “strategic” communication using a tactical protocol
- Messaging can occur between two stations on opposite sides of the world WITHOUT requiring knowledge of specific paths.

How Does APRS-IS Affect Our Local Network?

- IGate – Gateway between RF and Internet
- IGates must be properly configured to prevent overloading RF network
- Ability for Internet-connected hams to combine APRS data with other Internet services
- High speed backbone interconnecting local RF networks improving messaging reliability

Should I be an IGate?

- No, unless…
  - There is no other 24/7 IGate in your area
  - You configure for RF to Internet only
  - You coordinate with other IGate operators in your area
- Why? Because multiple IGates can quickly overload the local RF network

Summary

- APRS is a tactical protocol
- 144.39 is a low bandwidth, shared frequency
- Reliable communication can only be achieved via all participants using common courtesy
- APRS has many capabilities which can be utilized by amateurs in many types of services

Q&A

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