



# **Automatic Packet Reporting System**

**In its simplest implementation, APRS is used to transmit real-time data, information and, optionally, reports of the exact location of a person or object via a data signal sent over amateur radio frequencies. In addition to real-time position reporting capabilities using attached GPS receivers, APRS is also capable of transmitting a wide variety of data, including weather reports, short text messages, radio direction finding bearings, telemetry data, short e-mail messages (send only) and storm forecasts. Once transmitted, these reports can be combined with a computer and mapping software to show the transmitted data superimposed with great precision upon a map display.**

**1.) Automatic Packet Reporting System (APRS) is an amateur radio-based system for real time digital communications of information of immediate value in the local area.**

**2.) Data can include object Global Positioning System (GPS) coordinates, non-directional beacon, weather station telemetry, text messages, announcements, queries, and other telemetry. APRS data can be displayed on a map, which can show stations, objects, tracks of moving objects, weather stations, search and rescue data, and direction finding data.**

**3.) APRS data is typically transmitted on a single shared frequency (144.390 MHz) to be repeated locally by area relay stations (digipeaters) for widespread local consumption. In addition, all such data are typically ingested into the APRS Internet System (APRS-IS) via an Internet-connected receiver (IGate) and distributed globally for ubiquitous and immediate access. Data shared via radio or Internet are collected by all users and can be combined with external map data to build a shared live view APRS.fi [APRS.FI](https://aprs.fi)**

**4.) All stations operate on the same radio channel, and packets move through the network from digipeater to digipeater, propagating outward from their point of origin. Digipeaters keep track of the packets they forward for a period of time, thus preventing duplicate packets from being retransmitted. This keeps packets from circulating in endless loops inside the ad hoc network.**

**5.) The position/object/item packets contain the latitude and longitude, and a symbol to be displayed on the map, and have many optional fields for altitude, course, speed, radiated power, antenna height above average terrain, antenna gain, and voice operating frequency. Moving stations (portable or mobile) automatically derive their position information from a GPS receiver connected to the APRS equipment.**

**6.) The map display uses these fields to plot communication range of all participants and facilitate the ability to contact users during both routine and emergency situations. Each position/object/item packet can use any of several hundred different symbols. They include the mundane (i.e a house symbol) or can be emergency symbols like flood, fire, earthquake, etc.**

**7.) Beaconing (e.g. every 10 minutes) can be very useful in tracking a moving station.**

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**Digipeater**



**iGate to Internet**

