

# What is APRS?

---

## Automatic Packet Reporting System

John Langner, WB2OSZ

October 2025

In the words of its creator:

*"APRS is not a vehicle tracking system. It is a two-way tactical real-time digital communications system between all assets in a network sharing information about everything going on in the local area. On ham radio, this means if something is happening now, or there is information that could be valuable to you, then it should show up on your APRS radio in your mobile."*

*"APRS is a real-time tactical digital communications protocol for exchanging information between a large number of stations covering a large (local) area. As a multi-user data network, it is quite different from conventional packet radio.*

*APRS is different from regular packet in four ways. First by the integration of maps and other data displays to organize and display data, second, by using a one-to-many protocol to update everyone in real time, third, by using generic digipeating so that prior knowledge of the network is not required, AND FORTH, since 1997, a worldwide transparent internet backbone, linking everyone worldwide. APRS turns packet radio into a real-time tactical communications and display system for emergencies and public service applications (and global communications). Normal packet radio is useful in passing bulk message traffic (Email) from point-to-point, but it does not do well at real time events where information has a very short life time and needs to get to everyone quickly.*

*APRS is a LOCAL RF network. Although the Internet monitors APRS worldwide, this is not the primary objective. But like all of our other radios, how we use APRS in an emergency of special event is what drives the design of the APRS protocol. Although APRS is used 99% of the time over great distances, and benign conditions, the protocol is designed to be optimized for short distance real-time crisis operations on RF.*

*APRS provides universal connectivity to all stations in the net by avoiding the complexity and limitations of a connected network. It permits any number of stations to exchange data just like voice users would on a voice net. Any station that has information to contribute simply sends it, and all stations receive it and log it. Secondly, APRS recognizes that one of the greatest real-time needs at any special event or emergency is*

*the tracking of key assets. Where is the Event Leader? Where are the emergency vehicles? What's the Weather at various points in the County? "*

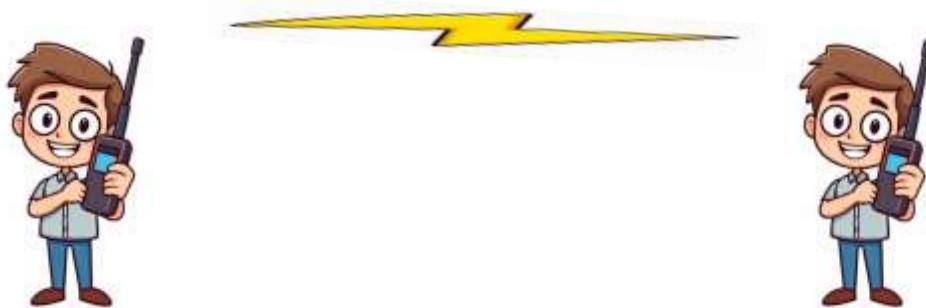
Bob Bruninga, WB4APR (SK)

APRS can send many types of data, including, but not limited to:

1. Positions with speed, heading, altitude.
2. Station capabilities.
3. Voice frequency.
4. Objects (usually on behalf of other entity).
5. Weather Reports from individual stations.
6. Weather Alerts forwarded from the National Weather Service.
7. Telemetry.
8. "Messages" addressed to specific stations, with automatic retries and acknowledgment.
9. Bulletins sent to wider groups.
10. Queries and Responses.
11. APRS of Things. (like Internet of Things but with Ham Radio)
12. User Defined data types.

A more concise description could be, "APRS is an ecosystem for doing cool stuff."

It can be used directly between users with no infrastructure.



Digital Repeaters ("digipeaters") retransmit packets to extend range. The sending station specifies the desired number retransmissions, often called hops.



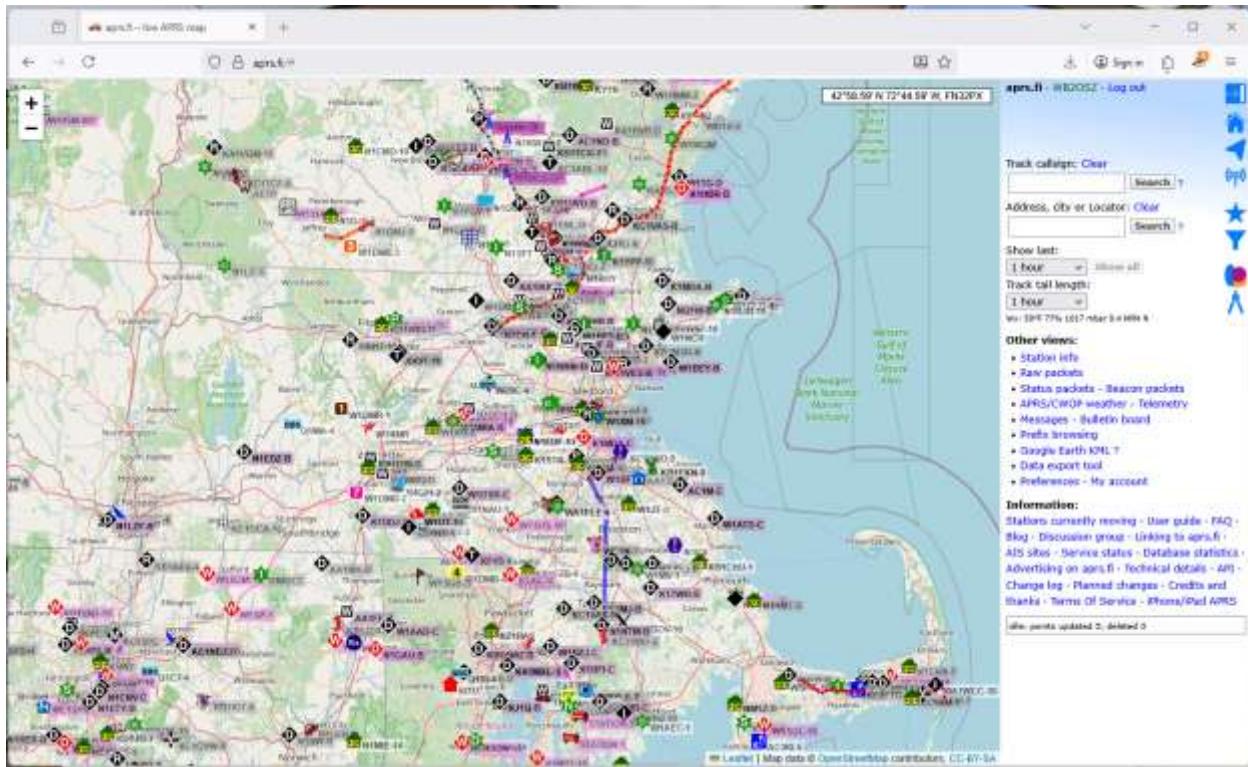
The International Space Station (ISS) and some amateur radio satellites carry APRS digipeaters.



Internet Gateway (“IGate”) stations forward radio communications to a global network of computers, called the APRS Internet Service (APRS-IS). Messages, and other configured data, are forwarded to local radio networks. You can send a message to someone on the other side of the earth and receive a delivery confirmation or failure alert.



Some websites, such as [aprs.fi](http://aprs.fi) and [aprs.to](http://aprs.to), extract information from the APRS-IS servers and provide a map view, and other analysis, of APRS activity without the need for a radio. Sample aprs.fi screenshot:

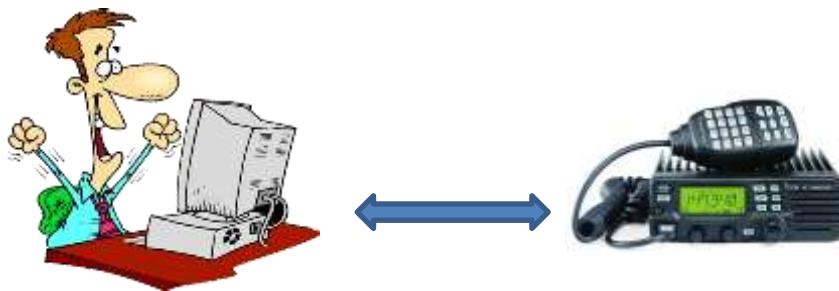


Besides communicating with other people, there are many automated systems which will provide a response to your message. One popular service, called WHO-IS, performs a callsign lookup and responds with the result. In this case, I sent a message with the callsign W1AW.

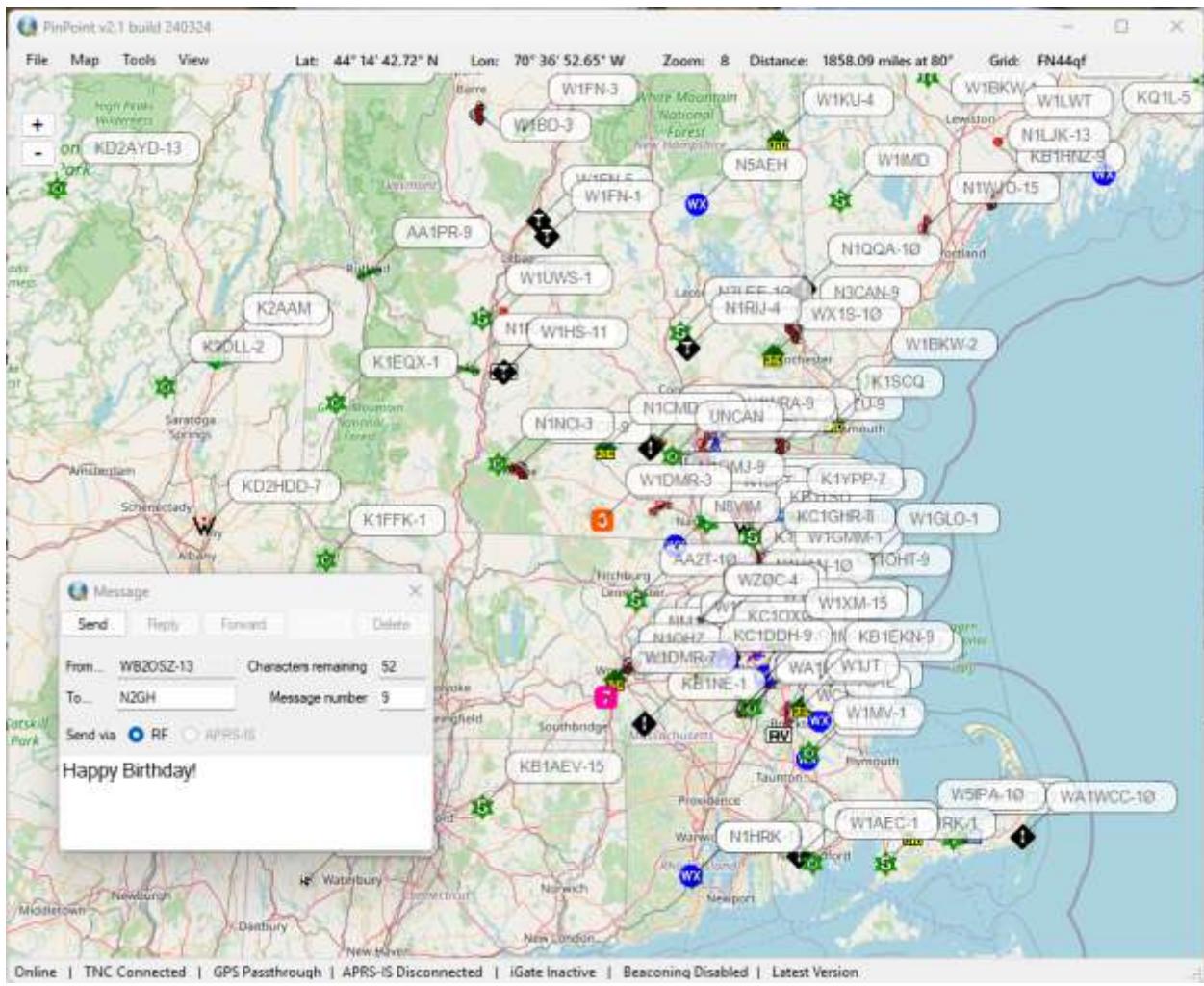


Kenwood, Yaesu, and a growing number of other manufacturers, recognize the importance of this mode, and build the capability into many of their radios.

You don't need to buy expensive specialized equipment. You can also participate with an ordinary transceiver and free software applications which often provide a map view and messaging capability.



Sample application screenshot, showing stations received over the air:



For more information, see <https://how.aprs.works/00-aprs-resources/>