# AIS to APRS

A module to take AIS data and convert to APRS format

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# 3 Introduction

There exist a variety of systems to allow tracking of resources (goods, vehicles, vessels etc). In this document we will examine two systems in current usage by the Australian Volunteer Coast Guard Association (AVCGA), Victorian Branch. To aid with interpretation a Definition of Terms is included in Appendix 1.

For some time the AVCGA has utilised a tracking system originally developed in the Amateur Radio community known as **A**utomatic **P**osition **R**eporting **S**ystem (APRS) which receives a data stream containing position information and displays it using a software utility known as **UIView32**. This protocol is defined in the document labelled Reference 2.

An internationally defined system known as **A**utomatic **I**dentification **S**ystem (AIS) has been adopted by the GMDSS community which is used both by commercial vessels and by recreational vessels. This system also relies on reception of a data stream containing position and other relevant data and the protocol stream is defined in Reference 1. Some years ago it was deemed necessary to incorporate information obtained from AIS into the APRS/UI-View system.

This document describes the evolution of and installation and operating procedures of a software utility to act as an intermediary between AIS and APRS.

# Background

AVCGA (Victoria) has utilised for many years the APRS system developed within the amateur radio community and the display system (UI-View) developed by amateur radio operator Roger Barker callsign G4IDE to track its various rescue vessels (RVs). This system relies on reception (currently using the commercial land mobile frequency assigned to AVCGA and known internally as “Domestic”) of a data stream which contains position, heading and speed information transmitted from the rescue vessel.

Most AVCGA (Victoria) RVs have been equipped with so-called TinyTrak units which take GPS information from the RV chartplotter and multiplex an audio datastream onto the Domestic frequency. This datastream is received and decoded at AVCGA bases (primarily Sandringham (VF12) and Paynesville (VF22) and aggregation of data is carried out in a server at the Sandringham base. This server redistributes information to connected UI-View systems at the various bases.

# Installation

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## Appendix 1 - Definition of Terms

**AIS** – Automatic Identification System. The AIS is a maritime communications device. It uses the very high frequency (VHF) radio broadcasting system to transfer data. AIS equipped vessels (shipborne AIS) and shore based stations (non-shipborne AIS) can use it to send and receive identifying information. This identifying information can be displayed on an electronic chart, computer display, chart plotter or compatible navigation radar.

**APRS** – **Automatic Position Reporting System** also known as **Automatic Packet Reporting System** (**APRS**) is an [amateur radio](https://en.wikipedia.org/wiki/Amateur_radio)-based system for real time digital communications of information of immediate value in the local area.[[1]](https://en.wikipedia.org/wiki/Automatic_Packet_Reporting_System#cite_note-1) Data can include object [Global Positioning System](https://en.wikipedia.org/wiki/Global_Positioning_System) (GPS) coordinates, [weather station](https://en.wikipedia.org/wiki/Weather_station) telemetry, text messages, announcements, queries, and other [telemetry](https://en.wikipedia.org/wiki/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.

AVCGA – Australian Volunteer Coast Guard Association

**GMDSS** - The Global Maritime Distress and Safety System (**GMDSS**) is an internationally agreed-upon set of safety procedures, types of equipment, and communication protocols used to increase safety and make it easier to rescue distressed ships, boats and aircraft.

**Python** – A programming language used in the re-development of the AIS2APRS utility.

## Architecture

## References

1. AIVDM/AIVDO Protocol Decoding [www.catb.org/gpsd/AIVDM.html](http://www.catb.org/gpsd/AIVDM.html)
2. Automatic Position Reporting System – APRS Protocol Reference , Protocol Version1.0 - <http://www.aprs.org/doc/APRS101.PDF>