Raspberry Pi SDR IGate

It's easy to build a receive-only APRS Internet Gateway (IGate) with only a Raspberry Pi and a software defined radio (RTL-SDR) dongle. Here's how.

Hardware Required

- **Raspberry Pi**

  I happened to use the model 2 so I can't say, with certainty, that the earlier models would be fast enough to keep up. "top" shows about 93% cpu idle time so the older models are probably more than adequate.

   The procedure here is known to work with the Raspbian operating system. Some adjustments might be required for other operating systems.

- **SDR Dongle**

  This connects to the USB port and an antenna. This is the one I used.

  http://www.amazon.com/NooElec-RTL-SDR-RTL2832U-Software-Packages/dp/B008S7AVTC

  There are many others that appear to be equivalent such as https://www.adafruit.com/products/1497

Software Required

- **Dire Wolf**

  Install following the instructions in **Raspberry-Pi-APRS.pdf.**

  You can stop at the section called **Interface for Radio**. Here we are using the SDR dongle rather than a USB audio adapter.

  Don't worry about the configuration part because we will build our own configuration file here.

- **RTL-SDR** Library from http://sdr.osmocom.org/trac/wiki/rtl-sdr

Install it like this:

```
sudo apt-get update
sudo apt-get install cmake build-essential libusb-1.0-0-dev
cd ~
git clone git://git.osmocom.org/rtl-sdr.git
```

```
cd rtl-sdr
mkdir build
cd build
cmake ../ -DINSTALL_UDEV_RULES=ON -DDETACH_KERNEL_DRIVER=ON
make
sudo make install
sudo ldconfig
```

Configuration

We need to construct a configuration file for Dire Wolf. Take the following text and put it into a text file, such as **sdr.conf**:

```
CHANNEL 0
MYCALL xxx

# First you need to specify the name of a Tier 2 server.
# The current preferred way is to use one of these
# regional rotate addresses:
#       noam.aprs2.net          - for North America
#       soam.aprs2.net          - for South America
#       euro.aprs2.net          - for Europe and Africa
#       asia.aprs2.net          - for Asia
#       aunz.aprs2.net          - for Oceania

IGSERVER noam.aprs2.net

# You also need to specify your login name and passcode.
# Contact the author if you can't figure out how to generate
# the passcode.

IGLOGIN xxx 123456

# That's all you need for a receive only IGate which relays
# messages from the local radio channel to the global servers.
```

Put your callsign and optional SSID in the two places that have xxx above. Put your actual passcode in place of 123456.

Run It

```
rtl_fm -f 144.39M - | direwolf -n 1 -r 24000 -D 1 -
```

You should now have a functioning receive only IGate. Consult the **User Guide** for more details.