

Introduction

This project attempts to integrate every ham utility using the raspberry pi. Programs include fldigi, echolink node, packet, SDR, and many more. The goal is to provide an easy way for people to just copy the sd image and not worry about all the setup involved in getting these software running. This project is always evolving, so more utilities will be added.

Hardware

There are many varieties for what type of hardware you choose, but the most important thing is the Raspberry Pi and a sound card (the pi does not have a mic input). Here are the hardware that I have setup for this.

Required hardware:

- Raspberry Pi Model B (512MB): Can be found from many places for about \$35-\$40. I got mine from [MCM](#).

- Sound Card \$8.49: [Syba SD-CM-UAUD](#)
- Sound Card interface: \$8.95: There are many methods of connecting your rig to the sound card, but the cheapest and safest way I found is to use the [EasyDigi](#) . There is also an assembled version in case you dont want to solder

[EasyDigi Assembled](#)

. You will still need to solder the connectors, so might as well solder the components (took me 5Min). The PTT connects directly to the GPIO on the pi, so I believe this is the best method, as it lets the pi have full control over the radio. You can also go the

[SignalLink](#)

route which is the simplest but will set you back \$100.

- 4GB SD Card: \$6.90 from [amazon](#) . More storage is better but not necessary.
- 5V Power supply: \$5.99 from [amazon](#) .

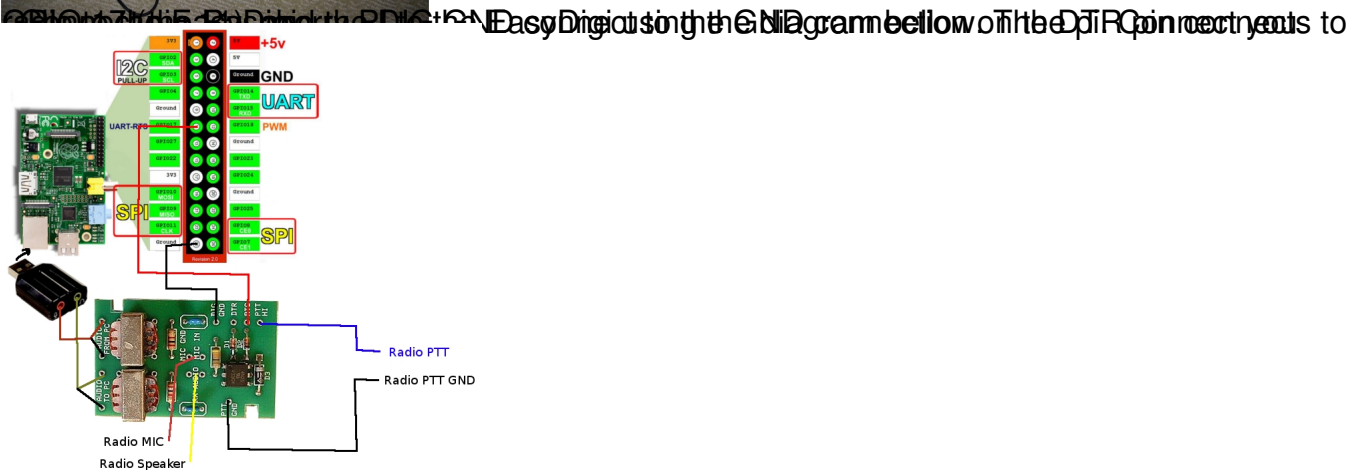
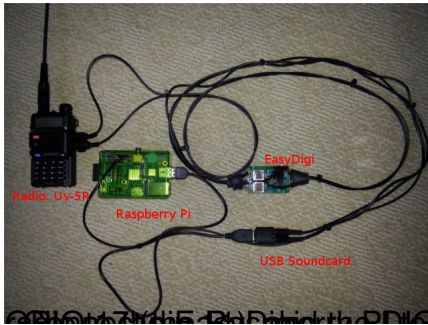
All of these will set you back about \$65. There are PI packages out there that will sell you the pi, the power supply case and sd card, so you might be able to go even cheaper. You will also need a keyboard, mouse display, and a wifi dongle. These are optional, since you could run an echolink node without them (or temporally hooking them up for setup).

Optional Hardware:

- Cheep VGA display (about \$50), Other options include an hdmi display for \$54 from [ebay](#) , or [PiTFT](#) for \$34.95 (I have not used that yet)

- Mini Wireless keyboard and touch pad. \$19.77 from [amazon](#) .
- Heat Sinks for over-clocking the pi: \$5.99 from [amazon](#) .
- Case: \$12.49 from [amazon](#) .
- USB Hub: \$7.99 from [amazon](#) .

Cable Connections



Setting up the pi and the SD Card

Get the wheezy raspbian image from here: <http://www.raspberrypi.org/downloads>

Once the file is downloaded, extract it and write the image to an sd card. You can use [dd](#) if you are on linux or

[Win32DiskImages](#)

on windows. If you are new to this, you can follow the easy step by step instruction [here](#)

Once the pi has booted, you may want to use the initial setup screen to increase the fs system, change the keyboard layout (if you are in the US), and change the password.

Applications

Setting up FLDIGI

To setup fldigi, you would need to download a patched version from this web site if you want to use the GPIO pin as a trigger for the PTT. Once the file is downloaded, configure and compile it. Additionally, you will need a script to setup the gpio. This script can be part of the bashrc file so it will start automatically. You can follow the step by step instruction bellow, which will also download the file.

Here is a link to the patched version: [fldigi-3.21.76_patched.tar.gz](http://www.elazary.com/images/mediaFiles/ham/hampi/fldigi-3.21.76_patched.tar.gz)

Here is the patch if you know what you are doing: [fldigi-3.21.76_gpio.patch](http://www.elazary.com/images/mediaFiles/ham/hampi/fldigi-3.21.76_gpio.patch)

Script to setup the gpio (must be run as root): [setGPIO](#)

There is an automated script that I created that can be used to set all this up, once you log in to your pi exec the following command

```
wget  
http://www.elazary.com/images/mediaFiles/ham/hampi/setup.sh -O  
- | sh
```

Once this script is done (it will take a very long time, just Ham it up in the mean time) reboot the PI, log in and type startx. You should see fldigi under the internet tab

Configuring FLDIGI

Once you fill in the basic configurations for the callsign, QTH, etc you would need to configure the audio devices as follow:

select OSS and set the device to /dev/dsp1

on the next tab (the Hardware PTT) check 'Use GPIO PTT' and set the GPIO pin to the pin you have wired (in my case I chose pin 17).

Setting up NBEMS

For NBEMS, you can download the fldigi src suite from the website configure, and compile it.

todo

- FLDIGI
- NBEMS
- flmsg
- flnet
- fllog
- soundmodem (TNC)
- svxlink (EchoLink node and other apps like voice-mail and parrot)
- RTL-SDR: \$20 all mode receiver from 27MHz to 1600MHz.
- wspr beacon

Testing

I have tested almost all the modes with fldigi (did a test with K6POI from pi to pi), and it seems like the pi can handle all the modes very well.