

# Newbies guide (v1.4) to HPSDR and Ubuntu 10.04

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This howto relates to installation of the ghpsdr3-alex branch of the ghpsdr3 software and also the ghpsdr application under ubuntu gnu/linux, and draws together the input of many on the reflector, as well as various FAQs and wiki pages. Contributions are welcome.

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## Revision history:

- 1.4 - Some build instructions added for ghpsdr3-alex bundled applications, and for building the standalone version of ghpsdr
- 1.3 - Metis configuration information added
- 1.2 - fixed dsp-server typo  
added QtRadio direct down conversion zero offset: dspserver --lo 0
- 1.1 - added /etc/udev/rules.d configuration info for ozy
- 1.0 - draft howto

## This howto assumes:

An up to date ubuntu 10.04 installation on the computer, and either a USB connection to the HPSDR (Ozy board) or an ethernet connection to the HPSDR (Metis board)

These instructions have been tested on a fairly clean ubuntu 10.04 installation on a dumpster grade celeron 2.8GHz with 1GB of RAM

### Cautionary note:

Don't blame us if you accidentally delete your tax records, homework, wedding photos, or windows partition.

USB HPSDR PRELIMINARIES (For an HPSDR with an Ozy board)

If the Ozy based HPSDR has not been used under linux previously, the operating system needs to be told what to do if the HPSDR is plugged into a USB port.

Settings for identification and use of the USB device must be put in place

This is also discussed at: [http://openhpsdr.org/wiki/index.php?title=Ghpsdr\\_FAQ](http://openhpsdr.org/wiki/index.php?title=Ghpsdr_FAQ)

A new file called "90-ozy.rules" must be added to the /etc/udev/rules.d directory

The easiest way to do this is to open your favourite text editor, i.e. "Applications-Accessories-GEdit text Editor" and enter (you can copy and paste)

```
SUBSYSTEMS=="usb",ATTRS{idVendor}=="fffe",ATTRS{idProduct}=="0007",SYMLINK+="ozy",MODE="666"
```

and then save the file as

```
90-ozy.rules
```

in your Documents folder.

the file must now be copied into the /etc/udev/rules.d directory. Bring up a terminal window on the ubuntu machine (i.e. via "applications-accessories-terminal") and paste, followed by enter:

```
sudo cp ~/Documents/90-ozy.rules /etc/udev/rules.d
```

next reload the udev daemon:

```
sudo udevadm control --reload-rules
```

Once you do this the hpsdr should be recognised on the USB bus and you won't need to do it again unless you do a complete operating system reinstallation at some point in the future.

## TRYING THE GHPSDR3 DISTRIBUTION THE EASY (PACKAGED) WAY

The first step is to install the ghpsdr3-alex software

Bring up a terminal window on the ubuntu machine (i.e. via "applications-accessories-terminal") and paste, followed by enter:

```
sudo add-apt-repository ppa:andrew-montefusco/ghpsdr3
```

this adds the ghpsdr3 software repository to your ubuntu installation's software sources. Now type, followed by enter:

```
sudo apt-get update
```

this pulls down a list of the software available on the newly added repository, plus the usual software repositories. Now type, followed by enter:

```
sudo apt-get install ghpsdr3
```

this installs ghpsdr3 from the new repository

Now, you only need to drop copies of the current ozyfw-sdr1k.hex and Ozy\_Janus.rbf files you're using for the

HPSDR into the directory you launch the software from (by copying, downloading or copy and pasting them using a file browser) if they are not found automatically by the software when you fire them up in the next step.

Firing up the newly installed ghpsdr3-alex software components.

If you are using a USB (i.e. Ozy based) HPSPDR, type, followed by enter:

```
hpsdr-server
```

If you are using an ethernet (i.e. Metis based) HPSPDR, type, followed by enter:

```
hpsdr-server --metis --interface eth0
```

by default the interface hpsdr-server will look for Metis on is eth0, but this can be changed using the --interface option, for example, if metis is on eth1

```
hpsdr-server --metis --interface eth1
```

now that hpsdr-server is running...

in another terminal window, type, followed by enter:

```
dspserver --lo 0
```

running them in different windows will allow you to watch the messages scrolling by if required.

the "--lo 0" tells the dspserver that you are using a direct down conversion (DDC) radio such as an HPSPDR, and an 18kHz offset is not added by default, which would leave you wondering WWV or BCB stations are out by 18kHz.

QtRadio can then be launched either from the Applications-Internet-QtRadio menu or, by typing in another terminal, followed by enter:

```
QtRadio &
```

QtRadio needs to be aimed at the computer running the server software, in the "receiver-configure-server" dialogue. If it is the same machine, it will already be aiming at the default loopback address of 127.0.0.1, and nothing needs to be changed.

if it is another machine on the network with the HPSPDR connected and running dspserver and hpsdr-server, enter its IP address, i.e. 192.168.0.5 for example - yours will probably be different.

select "receiver 0" in the "receiver-configure-server" dialogue if it isn't already, and you're not doing funky stuff with multiple receivers.

then select "Receiver-Connect" and you should be off and away.

Further info on using QtRadio in the ghpsdr3-alex distribution can be found at:

<http://napan.ca/ghpsdr3/index.php/QtRadio> - Operation

## TO PLAY WITH BLEEDING EDGE GHPSDR3-ALEX CODE

For those wishing to play with the bleeding edge code, the ghpsdr3-alex software repository is available via git. A number of additional packages will be required.

using the command line in a terminal again, type

```
sudo apt-get install libqt4-opengl-dev glutg3-dev libusb-0.1-4
sudo apt-get install libfftw3-dev portaudio19-dev libpulse-dev
sudo apt-get install libsamplerate0-dev libusb-1.0-0-dev libconfig8-dev
sudo apt-get install autoconf
sudo apt-get install libtool
sudo apt-get install libusb-dev
sudo apt-get install libjack-dev
sudo apt-get install git-core
```

this last instruction installs the git software revision control system. You can then pull down a copy of the development software to the directory you are in if you issue the following command from the terminal window

```
git clone git://github.com/alexlee188/ghpsdr3-alex.git
```

this will create a clone of the ghpsdr3-alex software repository

to build the ghpsdr3 software

```
cd ghpsdr3-alex
utoreconf -i
./configure
make all
```

you will then have the three key pieces of ghpsdr3 software built

```
ghpsdr3-alex/trunk/src/QtRadio/QtRadio
ghpsdr3-alex/trunk/src/dspserver/dspserver
ghpsdr3-alex/trunk/src/server/hpsdr-server
```

it would pay to try them before using, from the ghpsdr3-alex directory,

```
make install
```

so that you do not overwrite working software previously installed using the aforementioned apt-get install ghpsdr3 approach

if you go into

```
/home/esh/ghpsdr3-alex/trunk/src/monitor
```

you can type "make", and "monitor" the binary will end up in ghpsdr3-alex/trunk/bin

if you go into

```
/home/esh/ghpsdr3-alex/trunk/src/bandscope
```

you can type "make", and "bandscope" the binary will end up in ghpsdr3-alex/trunk/bin

if you go into

```
/home/esh/ghpsdr3-alex/trunk/src/receiver
```

you can type "make", and the network client version of "ghpsdr" will end up in ghpsdr3-alex/trunk/bin

further instructions can be found on the hpsdr reflector and

<https://github.com/alexlee188/ghpsdr3-alex/blob/master/README>

[http://napan.ca/ghpsdr3/index.php/Main\\_Page](http://napan.ca/ghpsdr3/index.php/Main_Page)

## BUILDING AND INSTALLING THE STANDALONE VERSION OF GOORX/N6LYT GHPSDR

To play with with a USB attached HPSDR directly, you can use the standalone NY6LT/G0ORX ghpsdr application

First of all, make sure the 90-ozy.rules file has been set up as described at the beginning of this howto.

To install standalone ghpsdr under ubuntu, additional packages will be needed (you may have some already installed by now):

```
sudo apt-get install make gcc
sudo apt-get install libfftw3-dev
sudo apt-get install libusb-1.0-0-dev libgs10-dev
sudo apt-get install libgtk2.0-dev
```

```
sudo apt-get install subversion
svn co svn://svn.openhpsdr.org/svn/repos_sdr_hpsdr/trunk/N6LYT/ghpsdr ghpsdr
```

On U11.04 please add into INCLUDE macro (inside ghpsdr/Makefile) the following directory:

```
-I/usr/lib/i386-linux-gnu/glib-2.0/include/
```

With all of the preliminaries out of the way

```
cd ghpsdr/
make clean
rm libDttSP.a
tar xvzf DttSP.tar.gz
cd DttSP
make clean
make -j4
cp libDttSP.a ..
cd ..
make -j4
```

which gives you the following binary to play with

```
ghpsdr/bin/ghpsdr
```

and you can aim your desktop launcher, if you want to, at the associated shell script

```
ghpsdr/bin/ghpsdr.sh
```