

# LimeSDR Setup Guide (Ubuntu 16.04)

This guide details the process of setting up the various layers of software required to be able to use the LimeSDR, specifically using gnuradio to interface with LimeSuite through the gr-limesdr block. In addition, SoapySDR is installed in case it is required in future. The process is identical for both the LimeSDR and LimeSDR-Mini. This guide was written by Matthew Coates using a fresh install of Ubuntu 16.04 LTS.

**The order of installation below is critical for success.**

## 1 SoapySDR

**Install Instructions:** <https://github.com/pothosware/SoapySDR/wiki/BuildGuide>

SoapySDR is not required to get the LimeSDR working with gnuradio, however lots of other applications that may not have native support for the LimeSDR can sometimes be made to work through Soapy. It is recommended to install SoapySDR from source. To begin, install dependencies.

```
sudo apt-get install \  
    cmake g++ git \  
    libpython-dev python-numpy swig
```

Next navigate to the desired directory and clone the source code.

```
git clone https://github.com/pothosware/SoapySDR.git  
cd SoapySDR  
git pull origin master
```

Finally build and install.

```
mkdir build  
cd build  
cmake ..  
make -j4  
sudo make install  
sudo ldconfig  
SoapySDRUtil --info
```

If successful then the last command `SoapySDRUtil --info` should have been recognised and a some information about the version of SoapySDR printed out.

## 2 LimeSuite

**Install Instructions:** [https://wiki.myriadrf.org/Lime\\_Suite](https://wiki.myriadrf.org/Lime_Suite)

LimeSuite is the package that contains the low level drivers required for the computer to be able to interface with the LimeSDR board. Again it is recommended to install LimeSuite from source. To begin, install dependencies.

```
#install core library and build dependencies
sudo apt-get install git g++ cmake libsqlite3-dev

#install hardware support dependencies
sudo apt-get install libsoapysdr-dev libi2c-dev libusb-1.0-0-dev

#install graphics dependencies
sudo apt-get install libwxgtk3.0-dev freeglut3-dev
```

Next navigate to the desired directory and clone the source code.

```
git clone https://github.com/myriadrf/LimeSuite.git
cd LimeSuite
git pull origin master
```

Finally build and install. Here the udev rules must also be modified to allow non-root users to access the USB port the LimeSDR is connected to.

```
mkdir builddir && cd builddir
cmake ../
make -j4
sudo make install
sudo ldconfig
cd LimeSuite/udev-rules
sudo ./install.sh
```

Finally verify the install by running LimeSuite with the LimeSDR plugged into the computer.

```
#make sure that FT601 or FX3 are one of the available connections
LimeUtil --info

#now run LimeUtil with --find to locate devices on the system
LimeUtil --find

#Example print output from LimeUtil
* [LimeSDR Mini, media=USB 3.0, module=FT601, addr=24607:1027, serial=1D3AC]
```

Additionally verify that LimeSuite and SoapySDR are interfacing correctly.

```
#make sure that lime is one of the available factories
SoapySDRUtil --info

#now run SoapySDRUtil with --find to locate devices on the system
SoapySDRUtil --find="driver=lime"

#Example print output from SoapySDRUtil
Found device 0
  addr = 24607:1027
  driver = lime
  label = LimeSDR Mini [USB 3.0] 1D3AC940C7E517
  media = USB 3.0
  module = FT601
  name = LimeSDR Mini
  serial = 1D3AC940C7E517
```

### 3 GNURadio

**Install Instructions:** <https://wiki.gnuradio.org/index.php/InstallingGR>

GNURadio is the software in which the actual development is done using flow graphs and other signal processing blocks. This will interface with LimeSuite using gr-limesdr, which must be installed *after* installing gnuradio. It is recommended to install using the already available binaries.

```
sudo apt install gnuradio
```

### 4 gr-limesdr

**Install Instructions:** <https://wiki.myriadrf.org/Gr-limesdr.Plugin.for.GNURadio>

gr-limesdr is a plugin that allows interfacing between gnuradio and LimeSuite. It is required to install from source. First install dependencies.

```
sudo apt-get install libboost-all-dev swig
```

Next download the source.

```
git clone https://github.com/myriadrf/gr-limesdr
```

Finally build and install.

```
cd gr-limesdr
mkdir build
cd build
cmake ..
make
sudo make install
sudo ldconfig
```

If successful, the LimeSuite Source and Sink blocks should now be available inside gnuradio. The [link above](#) explains the individual settings within each of these blocks.