Documentation for Ettus USRP and srsRAN 4G software installation

For UHD driver install:

`sudo apt-get update`

Reboot

```
sudo apt-get -y install autoconf automake build-essential ccache cmake cpufrequtils doxygen ethtool fort77 g++ gir1.2-gtk-3.0 git gobject-introspection gpsd gpsd-clients inetutils-tools libasound2-dev libboost-all-dev libcomedi-dev libcppunit-dev libfftw3-bin libfftw3-dev libfftw3-doc libfontconfig1-dev libgmp-dev libgps-dev libgsl-dev liblog4cpp5-dev libncurses5 libncurses5-dev libpulse-dev libqt5opengl5-dev libqwt-qt5-dev libsdl1.2-dev libtool libudev-dev libusb-1.0-0 libusb-1.0-0-dev libusb-dev libxi-dev libxrender-dev libzmq3-dev libzmq5 ncurses-bin python3-cheetah python3-click python3-click-plugins python3-click-threading python3-dev python3-docutils python3-gi python3-gi-cairo python3-gps python3-lxml python3-mako python3-numpy python3-opengl python3-pyqt5 python3-requests python3-scipy python3-setuptools python3-six python3-sphinx python3-yaml python3-zmq python3-ruamel.yaml swig wget
```

Reboot

Test UHD device recognition with `lsusb` - make sure it is connected directly to the USB port of the computer, not through a USB hub.

If it is present as `Ettus Research LLC USRP B205-mini` then proceed to srsRAN steps.

https://github.com/srsran/srsRAN_4G

For srsRAN 4G dependencies install:

```
sudo apt-get install build-essential cmake libfftw3-dev libmbedtls-dev libboost-program-options-dev libconfig++-dev libsctp-dev

sudo add-apt-repository ppa:softwareradiosystems/srsran

sudo apt-get update
```

Reboot

```
sudo apt-get install libboost-system-dev libboost-test-dev libboost-thread-dev libqwt-qt5-dev qtbase5-dev

git clone https://github.com/srsLTE/
cd srsGUI
mkdir build
cd build
cmake ../
```

```
make

make test
```

For srsRAN 4G install:

```
git clone https://github.com/srsRAN/srsRAN_4G.git
cd srsRAN_4G
mkdir build
cd build
cmake ../
make
sudo make install
sudo ./srsran_install_configs.sh user
sudo ./srsran_install_configs.sh service
```

This installs srsRAN 4G and also copies the default srsRAN 4G config files to *~/.config/srsran*.

Test srsRAN:

srsEPC

On machine 1, open a terminal and run srsEPC as follows:

`sudo srsepc`

Using the default configuration (made in the last section), this creates a virtual network interface named `“srs_spgw_sgi”` on machine 1 with the IP address 172.16.0.1. All connected machines running srsUE will be assigned an IP in this network.

srsENB

Also on machine 1, but in another terminal, run srsENB as follows:

`sudo srsenb`

srsUE

On machine 2, run srsUE as follows:

`sudo srsue`

Using the default configuration, this creates a virtual network interface named `“tun_srsue”` on machine 2 with an IP in the network 172.16.0.x. Assuming the UE has been assigned IP 172.16.0.2, you may now exchange IP traffic with machine 1 over the LTE link. For example, run a ping to the default SGi IP address using the command:

`ping 172.16.0.1`

END