Memo #016
ECHO project danielcjacobs.com/ECHO
ASU LoCo Lab MHz Astronomy Division

Notes on a docker setup for GNU radio testing

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$ at the front of a line means it was entered in a standard terminal
% at the front of a line mean it was entered in a docker container terminal

Installation https://docs.docker.com/install/linux/docker-ce/ubuntu/#install-docker-ce-1
$ sudo apt-get update
$ sudo apt-get install apt-transport-https ca-certificates curl software-properties-common
    #all already installed
$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
    #OK output
$ sudo add-apt-repository “deb [arch=amd64] https://download.docker.com/linux/ubuntu xenial stable”
$ sudo apt-get update
$ sudo apt-get install docker-ce
    #good to go

Setup https://www.howtoforge.com/tutorial/docker-installation-and-usage-on-ubuntu-16.04/
$ sudo docker search ubuntu
$ sudo docker pull ubuntu
    #downloads the Ubuntu image
$ sudo docker create ubuntu:16.04
    #creates the container
$ sudo docker run -i -t ubuntu:16.04 /bin/bash
    #starts the container

No docker commands can be run, have to install again inside container???
% apt-get install apt-transport-https ca-certificates curl software-properties-common
% apt-get install curl
% curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
% add-apt-repository “deb [arch=amd64] https://download.docker.com/linux/ubuntu xenial stable”
% apt-get upgrade
% apt-get update
% apt-get install docker-ce
% apt-get install git-core
% cd usr/src
% git clone https://github.com/dannyjacobs/ECHO

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UHD Installation

https://kb.ettus.com/Building_and_Installing_the_USRP_Open-Source_Toolchain_(UHD_and_GNU_Radio)_on_Linux

% apt-get -y install git swig cmake doxygen build-essential libboost-all-dev libtool libusb-1.0-0 libusb-1.0-0-dev libudev-dev libncurses5-dev libfftw3-bin libfftw3-dev libfftw3-doc libcppunit-1.13-0v5 libcppunit-dev libcppunit-doc ncurses-bin cpufrequtils python-numpy python-numpy-doc python-numpy-dbg python-scipy python-docutils qt4-bin-dbg qt4-default qt4-doc libqt4-dev libqt4-dev-bin python-qt4 python-qt4-dbg python-qt4-dev python-qt4-doc python-qt4-doc libqwt6abi1 libfftw3-bin libfftw3-dev libfftw3-doc ncurses-bin libncurses5 libncurses5-dev libncurses5-dbg libfontconfig1-dev libxrender-dev libpulse-dev swig g++ automake autoconf libtool python-dev libfftw3-dev libcppunit-dev libboost-all-dev libusb-dev libusb-1.0-0-dev fort77 libsdl1.2-dev python-wxgtk3.0 git-core libqt4-dev python-numpy ccache python-opengl libgsl-dev python-cheetah python-mako python-lxml doxygen qt4-default qt4-dev-tools libusb-1.0-0-dev libqwt5-qt4-dev libqwtplot3d-qt4-dev pyqt4-dev-tools python-qwt5-qt4 cmake git-core wget libxi-dev gtk2-engines-pixbuf r-base-dev python-tk liborc-0.4-0 liborc-0.4-dev libasound2-dev python-gtk2 libzmq-dev libzmq1 python-requests python-sphinx libcomedi-dev python-zmq

#input America and Phoenix when prompted for time zone

still in usr/src

% mkdir uhd
% cd uhd
% git clone https://github.com/EttusResearch/uhd
% cd uhd
% git tag -l
% git checkout release_003_011_000_001

#most recent as of writing this

% cd host
% mkdir build
% cd build
% cmake ../
% make
% make install
% ldconfig
% export LD_LIBRARY_PATH=/usr/local/lib

Networking Setup

% apt-get install iputils-ping

% apt-get install net-tools

$ sudo docker network create -d macvlan --subnet=192.168.40.0/24 --gateway=192.168.40.2 -o parent=ens4f0 z_10gig

#ens4f0 is the network that the Ettus is connected to (may be different on different setup)

#default gateway follows alphabetical order of the network names (default or z_10gig)

https://github.com/docker/libnetwork/issues/784

$ sudo docker network connect 10gig d8cfc03d4c1e

#d8cfc03d4c1e is the container ID (will be different on a different setup)

$% uhd_find_devices

#this command should work in both terminal windows to confirm connection to the Ettus

Install GNURadio