**Installing LCWA Speedtest on a Raspberry Pi:**

* From a terminal window, SSH into your Raspberry Pi
* Pre-install all dependencies:
* Check for Python v. 2.7.X with **python --version**
* Install Pip with **sudo apt install python-pip**
* Install Git with **sudo apt install git**
* Install Dropbox with: **pip install dropbox**
* Install PulseAudio with **sudo apt-get install pulseaudio**
* Install the Ookla Speedtest CLI:

**sudo apt-get install gnupg1 apt-transport-https dirmngr**

**export INSTALL\_KEY=379CE192D401AB61**

**export DEB\_DISTRO=$(lsb\_release -sc)**

**sudo apt-key adv --keyserver keyserver.ubuntu.com --recv-keys $INSTALL\_KEY**

**echo "deb https://ookla.bintray.com/debian ${DEB\_DISTRO} main" | sudo tee /etc/apt/sources.list.d/speedtest.list**

**sudo apt-get update**

**sudo apt-get install speedtest**

* Launch Ookla Speedtest with **speedtest.** If asked, accept the license agreement.
* Create the necessary directories:

**mkdir ~/speedfiles**

**mkdir git**

* Install the LCWA Speedtest app from GitHub:

**cd git**

**git clone https://github.com/pabloemma/speedtest.git speedtest**

* Get a Dropbox API Token
* Open your web browser and go to <https://www.dropbox.com/developers/documentation>
* Log in with your Dropbox credentials (or create an account if you don’t have one)
* Click the “App console” button in the upper-right corner
* Click the “Create app” button
* Under “Choose an API,” select “Dropbox API”
* Under “Choose the type of access you need,” select “App folder”
* Give your app a name (e.g., “LCWA\_speedtest”) and click the “Create app” button
* When the app settings appeas, click the “Generate” button under “Generated access token”
* Copy the token to your clipboard
* Back in your terminal session, open the token file with

**nano ~/git/speedtest/src/LCWA\_d.txt**

* Delete the sample token in the file and paste in the token you copied from Dropbox. Write out the change with **^0** and exit with **^X**
* You are ready to start the app. To see a list of options, use:

**python ~/git/speedtest/src/test\_speed1.py -h**

* A typical launch command would be

**python ~/git/speedtest/src/test\_speed1.py -s 9686 -t 10 -d ~/git/speedtest/src/LCWA\_d.txt**

This runs a speed test to an NMSurf server (**–s 9686**) every 10 minutes (**–t 10**), using the LCWA\_d.txt Dropbox token file (**-d ~/git/speedtest/src/LCWA\_d.txt**).

If you don’t use the **–d** switch to specify a Dropbox upload, your data will be only stored locally in **~/speedfiles** with the format **YYYY-MM-DDspeedfile.csv** (e.g., **2020-02-13speedfile.csv**). A new file is created every day at midnight.

You can plot the data using something like Excel. The first line of the CSV file shows the name of each column.