

# EPICS on Raspberry Pi

2015-07-14

## 1 Install notes

Based on <http://prjemian.github.io/epicspi/>

This assumes you have a clean install of raspbian (I'm using 2015-05-05)

### 1.1 EPICS Base

- Boot into raspbian and make sure you have a network connections
- Log in as user: pi
- Set up the date (if it's wrong!)

```
sudo dpkg-reconfigure tzdata
```

- Make a new user: enge (make whatever you want for the password)

```
sudo adduser --home /home/enge enge
```

- Add that user to the sudoers list

```
sudo adduser enge sudo
```

- Log out and then in as that user
- Make the file structure

```
mkdir bin
mkdir extensions
mkdir project
mkdir synApps
```

- Download and untar the EPICS base package

```
wget http://www.aps.anl.gov/epics/download/base/base-3.15.2.tar.gz
tar -xzvf base-3.15.2.tar.gz
ln -s base-3.15.2 base
```

- Paste the following into .bashrc

```
#####
##  EPICS
#####

## Base
export EPICS_ROOT=/home/enge
export EPICS_BASE=${EPICS_ROOT}/base/
export EPICS_HOST_ARCH=`${EPICS_BASE}/startup/EpicsHostArch`
export EPICS_BASE_BIN=${EPICS_BASE}/bin/${EPICS_HOST_ARCH}
export EPICS_BASE_LIB=${EPICS_BASE}/lib/${EPICS_HOST_ARCH}
if [ "" = "${LD_LIBRARY_PATH}" ]; then
    export LD_LIBRARY_PATH=${EPICS_BASE_LIB}
else
    export LD_LIBRARY_PATH=${EPICS_BASE_LIB}:${LD_LIBRARY_PATH}
fi
export PATH=${PATH}:${EPICS_BASE_BIN}

## EPICS Extensions
export EPICS_EXT=${EPICS_ROOT}/extensions
export EPICS_EXT_BIN=${EPICS_EXT}/bin/${EPICS_HOST_ARCH}
export EPICS_EXT_LIB=${EPICS_EXT}/lib/${EPICS_HOST_ARCH}
if [ "" = "${LD_LIBRARY_PATH}" ]; then
    export LD_LIBRARY_PATH=${EPICS_EXT_LIB}
else
    export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:${EPICS_BASE_LIB}
fi
export EPICS_SYNAPPS_BASE=${EPICS_ROOT}/synApps
export EPICS_SYNAPPS_BIN=${EPICS_SYNAPPS_BASE}/support/utils
export PATH=${PATH}:${EPICS_EXT_BIN}:${EPICS_SYNAPPS_BIN}
```

- Load it

```
source ~/.bashrc
```

- Compile EPICS

```
cd base
make -j3
```

- Buy and drink some coffee
- Once finished, check that it works

```
softIoc
```

- Epics should have started. Now run the IOC

```
iocInit
```

- You should see something that looks like

```
epics> iocInit
Starting iocInit
#####
## EPICS R3.15.2 $Date: Thu 2015-05-14 14:09:28 +0200$
## EPICS Base built Jul 17 2015
#####
iocRun: All initialization complete
epics> exit
```

## 1.2 synApps (needed for streamdevice and serial connections)

- Get the extensions and msi first

```
cd ~
wget http://www.aps.anl.gov/epics/download/extensions/extensionsTop_20120904.tar.gz
tar -xzf extensionsTop_20120904.tar.gz
wget http://www.aps.anl.gov/epics/download/extensions/msi1-7.tar.gz
cd extensions/src
tar -xzf ../../msi1-7.tar.gz
cd msi1-7
make
```

- Install re2c (I don't know what it's for)

```
sudo apt-get install re2c
```

- Download and unzip synApps

```
cd ~
wget http://www.aps.anl.gov/bcda/synApps/tar/synApps_5_8.tar.gz
tar -xzf synApps_5_8.tar.gz
ln -s synApps_5_8 synApps
```

- We don't need all the junk included

```
cd synApps/support/configure
emacs RELEASE
```

- Edit the SUPPORT line

```
SUPPORT=/home/enge/synApps/support
```

- Edit EPICS<sub>BASE</sub>

```
EPICS_BASE=/home/enge/base
```

- Comment out (with a '#') the modules we don't want

```
- ALLEN_BRADLEY
- AREA_DETECTOR
- ADCORE
- ADBINARIES
- CAPUTREORDER
- CAMAC
- DAC128V
- DXP
- IP
- IP330
- IPUNIDIG
- OPTICS
- QUADEM
- SOFTGLUE
- VME
```

- Prepare the makefile

```
cd ~/synApps/support
make release
```

- Compile!

```
make -j3 rebuild
```

### 1.3 Tidy up

- Make a folder to keep zip files

```
cd ~
mkdir download
mv *.tar.gz download
```