EPICS Base Installation on Debian (intel)

Prerequisites

Update your system and install required build tools and dependencies:

```
sudo apt update
sudo apt upgrade
sudo apt install build-essential git libreadline-dev perl
```

Download EPICS Base

Choose your preferred EPICS version. For the latest stable release: (git tag -n shows R7.0.9 on 6.2.26)

```
cd ~
mkdir EPICS
cd EPICS
git clone --recursive https://github.com/epics-base/epics-base.git
cd epics-base
git checkout R7.0.9  # or your preferred version
```

Alternatively, download a specific release tarball:

```
cd ~/epics
wget https://epics-controls.org/download/base/base-7.0.9.tar.gz
tar -xzf base-7.0.9.tar.gz
cd base-7.0.9
```

Configure Build

EPICS Base uses default configuration files that work well for most Linux systems. For custom configurations, you can modify files in `configure/`:

```
# Optional: Review configuration
cat configure/CONFIG_SITE
cat configure/os/CONFIG_SITE.Common.linux-x86_64
```

> if on raspberry Pi arm architecture get used e.g. CONFIG_SITE.Common.linux-aarch64

Build EPICS Base

Compile EPICS Base using make:

```
make clean uninstall  # if rebuilding
make -j$(nproc)
```

This will build all architectures configured in your system (typically `linux-x86_64`, on raspberry pi `linux-aarch64, linux-arm`).

Set Environment Variables

Add EPICS environment variables to your shell configuration (`~/.bashrc` or `~/.profile`):

```
# EPICS Base Configuration
export EPICS_BASE=$HOME/EPICS/epics-base
export EPICS_HOST_ARCH=$(${EPICS_BASE}/startup/EpicsHostArch)
export PATH=${EPICS_BASE}/bin/${EPICS_HOST_ARCH}:${PATH}
```

Apply the changes:

```
source ~/.bashrc
```

Verify Installation

Test your EPICS installation:

```
# Check EPICS host architecture
echo $EPICS_HOST_ARCH

# Verify tools are accessible
which caget
which caput
which softIoc

# Test with a simple IOC
softIoc
```

In the softIoc shell, try:

```
epics> dbl
epics> exit
```

Create a Test IOC

Create a simple test IOC to verify everything works:

```
mkdir -p ~/EPICS/FHI/myTestIoc
cd ~/EPICS/FHI/myTestIoc
makeBaseApp.pl -t example myTest
makeBaseApp.pl -i -t example myTest
```

> get asked for Application name, just accept the proposed name

```
make
```

Run the test IOC:

```
cd iocBoot/iocmyTest
chmod +x st.cmd
./st.cmd
```

Troubleshooting

Build errors: Ensure all dependencies are installed and you have sufficient disk space.

Command not found: Verify your `PATH` includes `${EPICS_BASE}/bin/${EPICS_HOST_ARCH}`.

Architecture issues: Check that `EPICS_HOST_ARCH` is set correctly with `EpicsHostArch`.

Next Steps

- Building a simple device support
- Install EPICS modules (asyn, StreamDevice, etc.)
- Create your own IOC applications
- Explore EPICS documentation at https://docs.epics-controls.org/