

## Porting Angstrom on to Beagle Xm:

Following are the steps to load Angstrom kernel on your Beagleboard Xm:

Preparing the SD card:

- Plug in the SD card on your host system and wait for it to mount. You can check by the command **df -h** . Look for the line which starts with `/dev/sdXX`, it will generally be mounted in `/media/`
- Make sure the size of the SD card is enough.
- Now un-mount the SD card using `umount /dev/sdXX`
- For Angstrom to run you will need to have a sd-card with two partitions; one fat partition to hold the boot files and then a ext3 partition with the root file system on it.
- Make 2 partitions p1:Fat32 (0x0c) and other p2: ext3 (0x83) partition.
- Make p1 bootable and keep around 50-70 Mb space.
- To make the two partitions you can either use the GUI based application: *Disk Utility*. The other way would be to use the script *omap-mkcard.sh* in the folder ‘ ‘ by running the following commands:  
**chmod +x omap3-mkcard.sh**  
**sudo ./omap3-mkcard.sh /dev/sdX**  
**sync**
- Remove the SD card and plug it in after 2-3 seconds. You will find two partitions `/media/boot` and `/media/Angstrom`.
- The next step would be to generate a build. You can use the `rootangstrom.tar.gz` in the folder, or else you can generate your custom build at <http://narcissus.angstrom-distribution.org/>.
- Select: BeagleBoard (the original BeagleBoard and BeagleBoard-xM both use the same build); simple; and console only. Now in the “additional packages” section, make sure you select the following:  
**Toolchain**  
**Native u-boot mkimage**  
**All kernel modules**  
**Ffmpeg**  
**Bootloader Files (x-load/u-boot/scripts) in the “Platform specific packages section”**
- Now click on ‘build me!’ which will generate a “\*.tar.gz”. Download this “\*.tar.gz” in your working directory.

- There are only three files that are mandatory for boot partition. The following lines will extract the files from the download build and copy those to the boot partition on the sd-card.

```
tar -xvf [your-file].tar.gz  
cp boot/MLO-* /media/boot/MLO  
cp boot/ulmage-* /media/boot/ulmage  
cp boot/u-boot-*.bin /media/boot/u-boot.bin  
sync
```

- Now we have to copy/extract the filesystem to your SD card.

```
cd /media/Ansgtrom  
sudo tar -xvf [path to you download file].tar.gz  
sync
```

- Make it safe to remove your SD card.

```
umount /media/boot  
umount /media Angstrom
```

- Remove the SD card and place it inside the card case on your Beagleboard.

- Connect the Serial (BeagleBoardxM) to USB(Host PC) converter and configure the minicom connection.

- Start minicom on your host machine in configuration mode. As root: #

```
minicom -o -s -w
```

- A menu of configuration should appear. Use the Down-arrow key to scroll down and select the Serial port setup option, and press Enter.
- Verify that the listed serial port is the same one that is connected to the target board. If it is not, press A, and enter the correct device. This is /dev/ttyUSB0 on most Linux distributions.
- Set the Bps/Par/Bits option by pressing the letter E and using the next menu to set the appropriate values. You press the key that corresponds to the value **115200**, and then press Enter.
- Set Hardware flow control to **No** using the F key.
- Set Software flow control to **No** using the G key.
- Press Enter to return to the main configuration menu, and then press Esc to exit this menu.

- Reset the board, and wait for a moment. If you do not see output from the board, press Enter several times until you see the prompt. If you do not see any output from the board, and have verified that the serial terminal connection is setup correctly, contact your board vendor.
- When you boot Angstrom for the first time on the beagleboard, it will take some time. Be patient. Once it is done , you will be asked for a beagleboard login: (enter 'root')
- Run the following command:  
**ifconfig usb0 192.168.1.10 (gives an ip address to your usb)**
- Now run the following command on your host:  
**ifconfig eth0 192.168.1.4 (configures a static ip address)**
- From your beagleboard see if you can ping your host.  
**ping 192.168.1.4**
- If you are able to ping, then you are all set and ready to work with Angstrom on beagleboard and to transfer files between your beagle and the host system !

## **Remote debugging using GDB:**

Get the following cross-compiler tools (arm-none-linux-gnueabi-gcc) from <http://www.codesourcery.com/sgpp/lite/arm/portal/release1600>

Using command line:

Now, for example the ip address of my system (host) is 192.168.1.4 and the ip address of the target (Beagle) is 192.168.1.14

With the given Angstrom kernel, you indeed have gdbserver installed on your target.

To start gdbserver on the target you need to specify a port number which you will listen and then connect through and the executable to debug. The port can be anything so long as it's not a reserved port e.g. 21,80.

I am using the port number 2345.

**gdbserver test:2345 a.out**

This creates the pid and starts listening on port 2345.

Run the gdb command from the host system:

**arm-none-linux-gnueabi-gdb ./a.out**

Once gdb starts, run the following:

**(gdb) target remote 192.168.1.14:2345**