Android user manual

1. Host Setup

The following notes assume a Ubuntu-12.04 64 bit build machine.

Note : The host must be a 64 bit machine.

1.1 Packages

Android development requires certain packages to be installed. Run the following commands to ensure that you have the packages installed:

```
$ sudo apt-get update

$ sudo apt-get install git-core flex bison gperf libesd0-dev zip gawk ant libwxgtk2.6-dev

$ sudo apt-get install zlib1g-dev build-essential tofrodos libx11-dev libncurses5-dev

$ sudo apt-get install lib32readline-gplv2-dev libstdc++6 lib32z1 ia32-libs g++-multilib

$ sudo apt-get install libx11-dev libncurses5-dev uboot-mkimage libxml2-utils xsltproc

$ sudo apt-get install mtd-utils
```

1.2 Install Java SE 6 JDK from Oracle:

Please follow the steps in the below link

http://akbarahmed.com/2012/06/22/install-java-jdk-6-0-update-26-on-ubuntu-12-04-lts/

Add the bin directory of the Oracle JDK package to your PATH.

Android does not build using openjdk. If you have openjdk installed on your development machine, you will need to ensure that the PATH variable includes the path to the Oracle JDK bin directory first. That is, **"*type java*"** should indicate the Oracle binary.

```
$ type java
```

2) Building a BSP

2.1 Downloading Source

To install Repo:

Download the Repo tool and ensure that it is executable:

```
$ mkdir ~/bin

$ curl https://storage.googleapis.com/git-repo-downloads/repo > ~/bin/repo

$ chmod a+x ~/bin/repo

$ export PATH=~/bin:$PATH

$ mkdir ~/android

$ cd ~/android

$ repo init -u git://gitorious.org/rowboat/manifest.git -m TI-Android-JB-4.2.2-DevKit-4.1.1.xml

$ repo sync
```

Add the phyCORE-AM335X components :

copy the **phyCORE-AM335X-JellyBean-4.2.2.tar.bz2** into your HOST-PC and execute below command.

```
$ cd ~/android

$ wget   ftp://ftp.phytec.de/pub/Products/India/Others/KSP-0534/PD14.0.0alpha/src/phyCORE-AM335X-JellyBean-4.2.2.tar.bz2

$ tar -xjf  phyCORE-AM335X-JellyBean-4.2.2.tar.bz2

$ cd  ~/android/phyCORE-AM335X-JellyBean-4.2.2

$ patches/patchandroid
```

2.2 Build Environment Setup

```
$ cd ~/android

$ export PATH=`pwd`/prebuilts/gcc/linux-x86/arm/arm-eabi-4.6/bin:$PATH

$ cp build/core/root.mk Makefile
```

2.3 Building The Bootloaders, The Android Filesystem And The Kernel

To build the Android Filesystem and kernel:

```
$ cd android
$ make TARGET_PRODUCT=pcm051 OMAPES=4.x -j<N>
```

Note : where N is the number of CPUs in your development system.

2.4 Creating The Root Filesystem

To assemble the components into a root filesystem

```
$ cd android
$ make TARGET_PRODUCT=pcm051 fs_tarball
```

The root filesystem will be contained in **out/target/product/pcm051**/rootfs.tar.bz2

If you wish to boot from the target's NAND, run:

```
$ ./mkrootfs
```

after this you will be getting **root.ubi**

2.5 Partitioning Micro SD card in Ubuntu Using Graphical User Interface

Use the application Disk Utility in Ubuntu.
- Select Mass storage device
- Umount the volume
- Delete the partition
- Create the two partition **boot** and **rootfs** with fat and ext3 support respectively
- Select the first fat partition and then select "edit partition" and mark it as bootable.
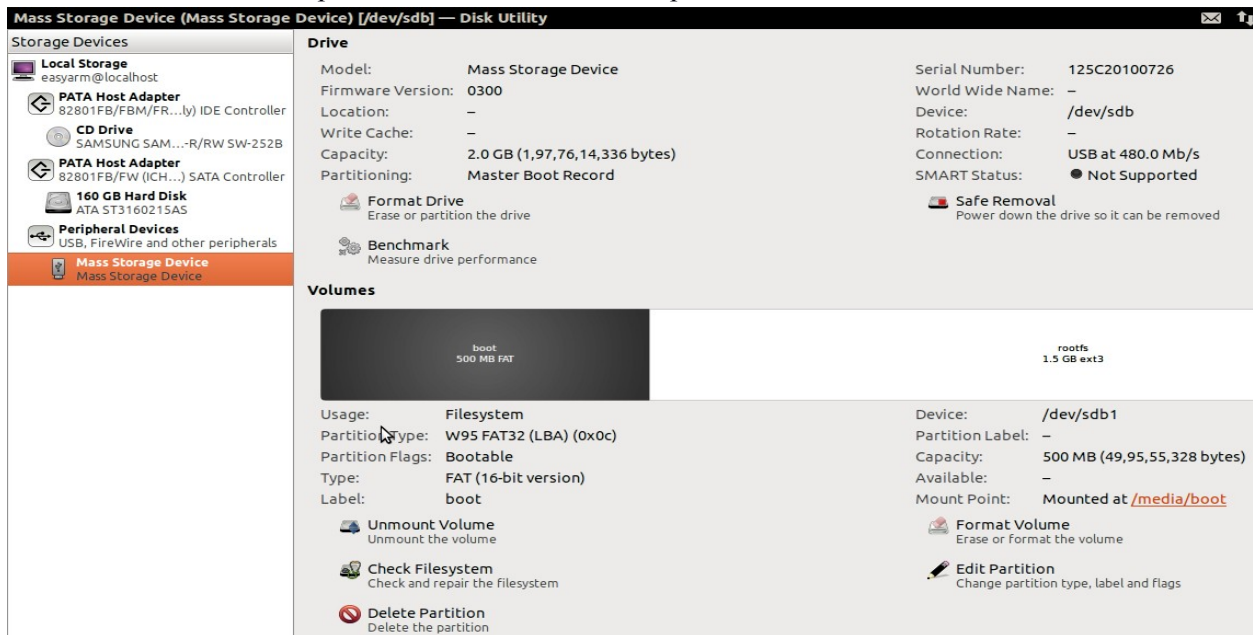
After that mount the both two (**boot** and **rootfs**)volumes.

2.6 Booting from Micro SD card

On HOST-PC :

Copy The required Files into to the Micro SD card

$ cp $MYDROID/u-boot-2011.09/MLO /media/boot

$ cp $MYDROID/barebox-2012.11.0/barebox.bin /media/boot/

If you intend to run Android from NAND, the above two files are all that you need on the SD card. If you intend to run Android from the SD card, additional files are necessary:

$ cp $MYDROID/kernel/arch/arm/boot/uImage /media/boot/uImage

$ sudo rm -rf /media/rootfs/*

$ sudo tar xjf out/target/product/pcm051/rootfs.tar.bz2 -C /media/rootfs

$ sync ; umount /media/boot /media/rootfs

On Target :

Insert the Micro SD Card into board, and connect the serial cable. Open the minicom then powerup the board.

Then Interrupt the auto boot by pressing any key to get Barebox prompt.

Edit the config file do the modifications in below file.

---

barebox@Phytec phyBOARD-WEGA-AM335x:/ **edit env/config**

global.boot.default=mmc

Press Ctrl+d to save the file and exit.

barebox@Phytec phyBOARD-WEGA-AM335x:/ **saveenv**

barebox@Phytec phyBOARD-WEGA-AM335x:/ **reset**

Now The Board will reboot and boot from MMC.

2.7 Booting from NAND:

On HOST-PC :

If booting from NAND start from here,

Insert the Micro SD card into Host-PC , copy below images into SD Card boot partition.

$ cp $MYDROID/u-boot-2011.09/MLO /media/boot

$ cp $MYDROID/barebox-2012.11.0/barebox.bin /media/boot/

$ cp $MYDROID/kernel/arch/arm/boot/uImage /media/boot/uImage

$ cp *$MYDROID/*root.ubi /media/boot

/* refor 2.4 Creating The Root Filesystem for root.ubi */

On Target:

Insert the Micro SD card, Power On the board. Interrupt the auto boot by pressing any key to get Barebox prompt.

Give below commands to copy images into NAND.

If boot directory is not exist start from here

barebox@Phytec phyBOARD-WEGA-AM335x:/ **mkdir boot**

barebox@Phytec phyBOARD-WEGA-AM335x:/ **mount /dev/disk0.0 /boot**

If boot directory is exist start from here

barebox@Phytec phyBOARD-WEGA-AM335x:/ **cd boot**

barebox@Phytec phyBOARD-WEGA-AM335x:/ boot/ **cp MLO /dev/nand0.xload.bb**

barebox@Phytec phyBOARD-WEGA-AM335x:/boot/ **cp barebox.bin /dev/nand0.barebox.bb**

barebox@Phytec phyBOARD-WEGA-AM335x:/ boot/ **cp uImage /dev/nand0.kernel.bb**

barebox@Phytec phyBOARD-WEGA-AM335x:/ boot/ **cp root.ubi /dev/nand0.root.bb**

Edit the config file do the modifications in below file.

barebox@Phytec phyBOARD-WEGA-AM335x:/ **edit env/config**

global.boot.default=nand

Ctrl + d to save the file and exit.

barebox@Phytec phyBOARD-WEGA-AM335x:/ **saveenv**

barebox@Phytec phyBOARD-WEGA-AM335x:/ **reset**

Remove the Power Cable and SD card. And Power up The Board.
Now The Board will boot from NAND.

If you experience any error act accordingly or post the errors at our Mail ID
you will get help accordingly.

Support Mail id   :   support@phytec.in

Contact No   :   080-40867047

Useful Link for updates   :   www.phytec.in

***** All The Best *****

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