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Linux-Sdk-Card Guide

Version	Author
V-1.0 init version	Aaron Keepace
V-2.0 adding fex2bin tools	Aaron Keepace

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Overview

This sdk can pack Cubieboard1,Cubieboard2,and Cubieboard3 tf card firmware ,support list :

- Cubieboard1 ，based on the A10, also called “cb1”
- Cubieboard2， based on the A20，also called “cb1”
- Cubiebaord2-dualcard , based on the A20，also called “cb2-dualcard”
- Cubieboard3(Cubietruck), based on the A20，also called “ct”

It is recommended to use a better tf card(class 10 suggested) , on the one hand ,time of packing firmware based on you tf card write speed,on the other hand ,higher tf-card reading and writing speed can improve the fluency of linux system ,and shoten boot time . This is a 8G tf-card(class 10)

1.Hardware requirements

- Tf card >=4G ,class 10 suggested
- Tf-card reader
- Of course,you need a Cubieboard
- A computer host,the recommended configuration: Intel® Core™ i5-3470 CPU @ 3.20GHz × 4 ，Memory 8G

2.Software requirements

- The host operating system： Ubuntu12.04 64-bit operating system, Otherwise, there will be a unknown compile errors
- Cross-compilation environment，install the necessary in the Ubuntu12.04 host cross-compilation toolchain and packages

3.Cross-compilation environment set up

3.1 cross compiler building

$sudo apt-get update

$sudo apt-get upgrade

$sudo apt-get install ia32-libs

$sudo apt-get install ncurses-dev

$sudo apt-get install build-essential git u-boot-tools

$sudo apt-get install texinfo texlive ccache zlib1g-dev gawk bison flex gettext uuid-dev

$sudo apt-get install build-essential u-boot-tools uboot-mkimage

$sudo apt-get install binutils-arm-linux-gnueabihf gcc-arm-linux-gnueabi

$sudo apt-get install gcc-arm-linux-gnueabihf cpp-arm-linux-gnueabihf

$ sudo apt-get install libusb-1.0-0 libusb-1.0-0-dev

$sudo apt-get install git wget fakeroot kernel-package zlib1g-dev libncurses5-dev

3.2 fex2bin bin2fex tools adding

$ git clone https://github.com/cubieboard/sunxi-tools

$ cd sunxi-tools

$ make

$ sudo cp fex2bin bin2fex /usr/bin

4.Get source code

All source code can get from github

building a work space

$ mkdir linux-sdk-card

$ cd linux-sdk-card

1) kernel-source:

$ git clone https://github.com/cubieboard/linux-sdk-kernel-source.git

$ mv linux-sdk-kernel-source linux-sunxi

2) tools:

$ git clone https://github.com/cubieboard/linux-sdk-card-tools.git

$ mv linux-sdk-card-tools tools

3) products:

$ git clone https://github.com/cubieboard/linux-sdk-card-products.git

$ mv linux-sdk-card-products products

4) rootfs&u-boot:

$ git clone https://github.com/cubieboard/linux-sdk-binaries.git

$ mv linux-sdk-binaries binaries

Get file from:

http://dl.cubieboard.org/model/commom/linux-sdk-binaries

binaries-list (20141125):

u-boot-a20.tar.gz | a20 U-boot , please extract to linux-sdk-card/binaries

u-boot-v10.tar.gz | a10 U-boot , please extract to linux-sdk-card/binaries

cubieez-cb-20140827.tar.gz | Cubieboard1/2 cubieez-rootfs , do not need extract

cubieez-ct-20140916.tar.gz | Cubietruck Cubieez-rootfs,do not need extract

debian-server-rootfs-20140923.tar.gz | debian-sever-v1.0 ,do not need extract

5.Before Compilation

5.1 Check repo

repo	linux-sunxi	products	tools	binaries
function	kernel source	configuration	Packaging scripts	rootfs and u-boot
branch	master	master	master	no branch

5.2 Insert tf-card into PC

Please backup your TF data, the following compilation will format your TF card

After insert TF card, ubuntu will automatically mount, please manually uninstalled into the card :

$ sudo umount /dev/sdx

Please make sure that the host has arrived in TF card, generated the drive equipment, and is in the unloading state,check your tf card status:

$ sudo fdisk -l

6. Compilation

$ cd linux-sdk-card

$ source tools/scripts/envsetup.sh

Choose product and linux-distribution,this is the list (20141125)

Products

0 - cb

1 - cb2

2 – ct

Linux-distribution

Cubieboard1:

0 - cb-cubieez

Cubieboard2:

0 - cb2-cubieez

Cubietruck:

0 - ct-cubieez-hdmi

1 - ct-cubieez-vga

2 – ct-debian-server

And you can see a compilation README

More compilaton process can found on tools/scripts/boardenvsetup.sh.

```
1. tf card boot
(1)cb_build_card_image (compile code to prepare cb_install_tfcard)
(2)cb_install_tfcard  storage_medium dev_label [pack]
        storage_medium: nand tsd tfx2
        dev_label:      sdb sdc sdd ...
        pack:           the parameter mean we will make a img for dd or win32writer
        cmd for example: cb_install_tfcard tsd sdb

2. tsd or nand card boot
(1)cb_build_flash_card_image(compile code to prepare cb_install_flash_card)
(2)cb_install_flash_card storage_medium dev_label [pack]
        (install TF card to flash img to tsd/emmc sdx is your sdcard label pc)
        storage_medium: nand tsd (tfx2 don`t need this mode)
        dev_label:      sdb sdc sdd ...
        pack:           the parameter mean we will make a img for dd or win32writer
        cmd for example: cb_install_flash_card tsd sdb
```

1) **tf card boot**

$ cb_build_card_image

Compiling kernel and packing config for linux-distribution,It will take about 15 minutes

$ cb_install_tfcard

Writing u-boot into tf card and moving uImage and rootfs to tf card ,It will take about 10 minutes

This command with the 2 necessary parameters and 1 unnecessary parameters:

storage_medium : CB2-dualcard-> tfx2 ,CB1,CB2&CB3-> nand

dev_label : The device drive on your pc , sdx

pack : Optional parameters, firmware release option, backup your tf card image

Take CubieTruck Cubieez card firmware as example :

$ source tools/scripts/envsetup.sh

Please type 2，0，Selectct ct and ct-cubieez

```
Products
   0 - cb
   1 - cb2
   2 - ct
please select a board:2
   0 - ct-cubieez
   1 - ct-debian-server
please select a system:0
Creating working dirs
```

Then please input the following commands to compile:

$ cb_build_card_image

$ cb_install_tfcard nand sdb pack

2) Nand/Tsd boot

In this mode ,you can pack a tf card firmware to flash a whole Image to onboard nand/tsd flash.Pay attention please ,this is a test mode , the firmware can't flash some Cubiebaord nand flash due to chip IC version differences.

7. Get the firmware

1) After several steps ,your tf card is a bootable card, can boot from tf card or flash nand / tsd

2) If you added [pack] ,you can find backup/relased card firmware on linux-sdk-card/output

8. Compilation Issue

1) If you are fail to compile ,please check compilation toolchain and packages

2) Clean sdk can slove some unknow problem

$ cd linux-sdk-card

$ cd linux-sunxi

$ make mrproper

$ cd ..

$ sudo rm -rf output build

3)More system to fit the document and compile the document, please visit:

http://cubieboard.org/model/

4) Any problem about document and compilaton please mail me : aaron@cubietech.com