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Linux-Sdk-Card Guide

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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

$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 Install fex2bin/bin2fex tools

This tool is implemented with script.bin and script.fex conversion

$ 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 umount the card :

$ sudo umount /dev/sdx

Please make sure that the host has recognied in TF card, generated the drive inode, and been the state of unmount , check your tf card status:

$ sudo fdisk -l

5.3 Compile introduce

$ cd linux-sdk-card

$ source tools/scripts/envsetup.sh

Select corresponing number to choose the compiling version of the type and the distro version,

After the selecting , a compilation readme hint will be given as following:

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        * Building Micro-sd Card Image Step:
        0.Insert Micro-sd Card into host PC
        !!!!! WARNNING !!!!!
        The below steps will format your Micro-sd Card
        Please make sure your Micro-sd Card label
        $ sudo fdisk -l
        $ sudo umount /dev/sdx

        1.Micro-sd Card Image packing:
        (1)$ cb_build_card_image
        (2)$ cb_part_install_tfcard nand/tfx2/tsd sdx pack
        (3)$ cb_install_tfcard nand/tfx2/tsd sdx [pack]

        2.Micro-sd Card flash TSD:
        (1)$ cb_build_flash_card_image
        (2)$ cb_part_install_flash_card tsd sdx
        (3)$ cb_install_flash_card tsd sdx [pack]


        * Explanation of parameters
        - nand:   Nand flash storage version for cbs
        - tfx2:   Cubieboard2-dualcard version
        - tsd:    Tsd flash storage version for cbs
        - sdx:    Micro-sd Card label on host PC
        - pack:   Calculation Micro-sd Card  partition size
        - [pack]: Optional parameters,backup and release image


        * Building example for nand version Micro-sd Card Image
        $ cb_build_card_image
        $ cb_part_install_tfcard nand sdc pack
        $ cb_install_tfcard nand sdc


------------------------------------------------------------
```

You can compile the two card image, 1.**Micro-sd Card Image packing** : build the TFcard image , the system will run directly on the TF card. 2. **Micro-sd Card flash TSD** : build the TF card image which can flash systerm to tsd/emmc/nand.. note: flashing to nand have bug, don't recommend use.

The production process is analyzed separately:

1）**Micro-sd Card Image packing**

$ cb_build_card_image

Compiling kernel

$ cb_part_install_tfcard

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

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

dev_label : The device inode on your pc , sdx

pack : Optional parameters, Using this option will generate a image

$ 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 also takes 2 necessary parameters and 1 unnecessary parameters, using the same method as the last command.

5.4 Start compiling

Take CubieTruck Cubieez card as example :

1） **Micro-sd Card Image packing**

Here we will build a card image which can run systerm in tfcard

$ source tools/scripts/envsetup.sh

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

```
cubieboard:/work/tmp/a20$ source tools/scripts/envsetup.sh
Products
   0 - cb
   1 - cb2
   2 - ct
please select a board:2
   0 - ct-cubieez-hdmi
   1 - ct-cubieez-vga
   2 - ct-debian-server
   3 - ct-linaro-server
please select a system:0
Creating working dirs
```

Then please run the following commands to compile:

$ cb_build_card_image

$ cb_part_install_tfcard nand sdb pack

$ cb_install_tfcard nand sdb pack

2) Micro-sd Card flash TSD

Here we will build a card image which can flashing systerm to tsd/emmc.

$ source tools/scripts/envsetup.sh

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

```
cubieboard:/work/tmp/a20$ source tools/scripts/envsetup.sh
Products
   0 - cb
   1 - cb2
   2 - ct
please select a board:2
   0 - ct-cubieez-hdmi
   1 - ct-cubieez-vga
   2 - ct-debian-server
   3 - ct-linaro-server
please select a system:0
Creating working dirs
```

Then please run the following commands to compile:

$cb_build_flash_card_image

$cb_part_install_flash_card tsd sdb pack

$cb_install_flash_card tsd sdb pack

Note: The above operation is for the TSD board or EMMC board, For NAND board, TF Card flashing the systerm to nand has problems so don't recommend .

6. Get the image

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 the generated card image are on linux-sdk-card/output

7. 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 : support@cubietech.com